



Prepared for

Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89015

CAMU PARTIAL FINAL CLOSURE CONSTRUCTION QUALITY ASSURANCE REPORT

PHASE IIIA & PORTION OF PHASE II

BASIC REMEDIATION COMPANY CORRECTIVE ACTION MANAGEMENT UNIT HENDERSON, NEVADA

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1. INTRODUCTION

1.1 Terms of Reference

This report presents documentation of the Construction Quality Assurance (CQA) monitoring activities conducted by Geosyntec Consultants (Geosyntec) for the construction of the final cover system associated with Phase IIIA and a portion of Phase II of the Basic Remediation Company (BRC) Corrective Action Management Unit (CAMU) (hereafter referred to as the Project). The San Diego office of Geosyntec provided CQA services on behalf of BRC. The CQA activities for the Project included monitoring construction activities and installation of: (i) earthworks; (ii) geosynthetics; (iii) drainage aggregate; (iv) corrugated HDPE pipes; and (v) concrete.

This report contains documentation that the construction and CQA activities associated with the Project were performed in general accordance with the Project Documents, as defined by the Technical Specifications, Construction Drawings, CQA Plan, and Design Engineer-approved design modifications.

This report was prepared for BRC by Ms. Rebecca Flynn, P.E., of Geosyntec. The work described in this report was performed under the responsible charge of Mr. Ron Johnson, P.E., of Geosyntec. Mr. Greg Corcoran, P.E., reviewed this report in accordance with Geosyntec's peer review policy.

1.2 Report Organization

This report is organized as follows:

- Section 2 presents a brief description of the Project;
- Section 3 presents a description of the Project Documents, Geosyntec's scope of services, and project personnel;
- Section 4 describes the CQA activities related to earthworks;
- Section 5 describes the CQA activities related to geosynthetics;
- Section 6 describes the CQA activities related to drainage aggregates;

- Section 7 describes the CQA activities related to pipe and fittings;
- Section 8 describes the CQA activities related to concrete;
- Section 9 describes the CQA activities related to surveying;
- Section 10 summarizes the CQA work and presents Geosyntec's statement that the work was completed in general accordance with the Project Documents;
- Section 11 presents the Engineer-of-Record stamp and signature;
- Section 12 presents the Environmental Manager Jurat; and
- Section 13 presents the references.

Supporting information and data are presented in appendices at the end of this report.

2. PROJECT DESCRIPTION

The BRC CAMU is an approximately 52-acre lined landfill constructed concurrently with the BMI Common Areas Remediation Project. The CAMU is designed with storage capacity for approximately 3.4 million cubic yards (MCY) of soil and sludge waste received from the Eastside Area, Western Ditch, and Slit Trenches.

Closure of the BRC CAMU is being performed in phases as portions of the CAMU are filled to the design capacity. The closure areas covered by the report include all of Phase IIIA and a portion of Phase II. The total area closed to date is approximately 9.1 acres. The Project construction included the following:

- waste placement;
- top of placed waste topographic survey;
- interim cover placement;
- subgrade preparation;
- top of interim cover survey;
- installation of needle-punched geosynthetic clay liner (GCL);
- installation of textured 60-mil HDPE geomembrane;
- installation of 270-2-8 geocomposite;
- installation of 1 foot of 1-inch minus final cover material;
- installation of 1 foot of 6-inch minus final cover material including a 2-inch veneer of decorative rock; and
- installation of concrete side slope riser pipe monument.

Interim cover placement began 12 May 2009 followed by geosynthetic cover installation for the project beginning on 12 October 2009. Construction was completed on 19 April 2010. A photo log of the various stages of construction is presented in Appendix A.

Design and CQA services for the Project were performed by Geosyntec's San Diego, California office. Construction management services were provided by Weston

Solutions, Inc. (Weston). ENTACT Environmental Services (ENTACT) of Friendswood, Texas was the General Contractor for the Project. ENTACT's subcontractors included the following:

- Environmental Specialties International, Inc (ESI) installed the geosynthetic cover system.
- Absolute Boundary and Control Solutions (Absolute) provided surveying services to ENTACT for earthworks, liner placement, and concrete stormwater controls.
- Jenson Precast and Ross Co Construction provided structural concrete installation.

3. CONSTRUCTION QUALITY ASSURANCE PROGRAM

3.1 Introduction

This section presents a description of the CQA program implemented for the construction of the Project. The project documents which provided the guidelines for the CQA program and key project personnel are identified in the following Sections.

3.2 Project Documents

CQA monitoring conducted during the Project was carried out in general accordance with the requirements of the following Project Documents:

Technical Specifications for the BRC Eastside Common Areas Soils Remediation, Henderson, Nevada

Prepared For: Basic Remediation Company

Prepared By: Geosyntec Consultants

Dated: May 2008

Construction Quality Assurance Plan for the Construction of Corrective Action Management Unit Henderson, Nevada

Prepared For: Basic Remediation Company

Prepared By: Geosyntec Consultants

Dated: May 2008

Final Design: Basic Remediation Company, Corrective Action Management Unit, Control Systems Design, Henderson, Nevada

Prepared For: Basic Remediation Company

Prepared By: Geosyntec Consultants

Dated: October 2007, Conformed May 2008

In this CAMU Partial Final Closure CQA Report, the above documents are referred to as the Technical Specifications, the CQA Plan, and the Construction Drawings, respectively, or collectively as the Project Documents.

3.3 Design Changes

During construction, minor design changes were made to the Project Documents, as approved by the Design Engineer. This report only documents design changes directly related to CAMU construction. Documents containing the details of these design changes, referred to as Design Change Notices (DCNs), are included in Appendix B-1 and are referenced in appropriate sections of this report. The following sections describe each of the design changes.

3.3.1 DCN-036, Final Cover Soil Compaction

This design change modified the Specifications and CQA plan to create a method specification and a CQA procedure to evaluate compaction of the final cover soils.

3.3.2 DCN-037, Aggregate Base Thickness

This design change modifies Detail 27 on Drawing No. 44 to indicate material type and thickness needed to achieve grades indicated on Drawings 38 and 39. A minimum of 1ft of aggregate base is required beneath the grouted rip rap. Beneath the aggregate base, either aggregate base or 1-inch minus final cover soil may be placed to achieve grade.

3.3.3 DCN-038, Concrete Lined Channels

This design change revises east and west channel details from riprap sideslopes to all reinforced concrete channel. The proposed embankment sideslopes are revised from 3H:1V to 2.7H:1V maximum.

3.3.4 DCN-038 – Rev 1, Concrete Lined Channels

This design change revises channel details to show 3H:1V slope typical, 2H:1V slope maximum.

3.3.5 DCN-038 – Rev 2, Concrete Lined Channels

This design change revises Detail A to show No. 4 bars rather than wire mesh reinforcing.

3.3.6 DCN-039, Aggregate Base Compaction

This design change allows up to a 12-inch lift for placement of Type II Aggregate Base. Depth of compaction testing is specified as 6-inches when overlying geosynthetics and 12-inches when overlying soil.

3.3.7 DCN-040, Cross Section Deletion

This design change deletes cross section 6.

3.3.8 DCN-041, Stormwater Channel

This design change adjusts the stormwater channel slope adjacent to the CAMU from 3:1 H:V to 2.7:1 H:V and reconfigures the slope terminations to allow for a 10 ft wide access road in the base of the channel.

3.4 Scope of Services

3.4.1 CQA Activities

CQA activities involved the monitoring of the construction of the Project, including performing and reviewing CQA tests, reviewing and generating appropriate correspondence, reviewing Contractor submittals, and summarizing field activities. Documentation of these CQA and construction activities is included herein.

Project correspondence and documentation related to design changes are presented in Appendix B-1, requests for information (RFIs) are presented in Appendix B-2, and contractor submittals are presented in Appendix B-3.

3.4.2 Construction Record Drawings

The Construction Record Drawings for the Project are included in Appendix H. The Construction Record Drawings, prepared by the Contractor and reviewed by Geosyntec, indicate top of waste elevations, interim cover elevations, limits of geosynthetic liner system components, final cover elevations, and stormwater drainage features as-built conditions.

3.4.3 Final Report

The tasks performed by Geosyntec during CQA monitoring are summarized in this Final Report. Documentation of construction and CQA monitoring including correspondence, field CQA test results, laboratory results of conformance testing, and Construction Record Drawings are also included.

3.5 Project Personnel

The following personnel participated in Project construction activities:

Basic Remediation Company (BRC)

(Project Owner)

- Lee Farris
Construction Manager
- Ranajit Sahu
Project Manager

Weston Solutions, Inc (Weston)

(Construction Manager Assistant)

- Dan Brennecke
Project Manager
- Richard Laubinger
Project Superintendent

Geosyntec Consultants (Geosyntec)

(Construction Quality Assurance Consultant and Design Engineer)

- Ron Johnson, P.E.
Engineer-of-Record
- Gregory T Corcoran
Design Engineer
- Rebecca B Flynn
Design Engineer
- Dan Street
Site CQA Manager
- Camon Liddell
CQA Field Technician
- Kevin Brown
CQA Field Technician

- Stuart Irwin
CQA Field Technician
- Graciano Malana, Jr.
CQA Field Technician

ENTACT Environmental Services (ENTACT)

(Contractor)

- Greg S. Tunstall
Project Director
- Erik Gehringer
Project Manager
- James Long
Field Project Manager
- Jeremy Schissler
Project Management
- Mike Carlson
Field Engineer

Environmental Specialties International, Inc (ESI)

(Geosynthetic Installer)

- Kerry Gregg Abney
Project Manager
- Ismael Buitron
Superintendent
- Mario Buitron
Master Seamer/Foreman
- Victor Buitron
QC Foreman

TRI/Environmental, Inc. (TRI)

(Off-site Geosynthetics Testing Laboratory)

- Sam R. Allen
Laboratory Director

SGI Testing Services, LLC (SGI)

(Off-site Geosynthetics Testing Laboratory)

- Zehong Yuan
Laboratory Manager

Excel Geotechnical Testing (EGT)

(Off-site Soils Testing Laboratory)

- Nader Rad
Laboratory Manager

Geotechnical & Environmental Services, Inc.

(Off-site Concrete Testing Laboratory)

- Paul E. Simpson
Laboratory Manager

AMTI, Inc.

(Off-site Concrete Testing Laboratory)

- Koda Singh
Laboratory Manager

4. CONSTRUCTION QUALITY ASSURANCE - EARTHWORKS

4.1 General

CQA monitoring of the earthwork components of the Project included the observation of construction methods, testing of earthwork materials in place, and reviewing field test results for general conformance with the Project Documents. Geosyntec CQA personnel monitored the waste placement, interim cover placement, and final cover placement. The following sections present an overview of the materials used for the earthwork components of the Project and summarize the methods, frequency, and results of Geosyntec's CQA testing.

4.2 CQA Monitoring and Testing – Waste Placement

4.2.1 Overview

Waste processing and placement was performed by Entact. Waste material placed in Phases IIIA and II originated from three sources: eastside common areas, slit trenches, and waste trenches. Eastside sludge pond material was processed by drying and mixing to a minimum of 83 percent solids in accordance with the Project Documents and Waste Processing and Placement Plan (Geosyntec, 2008a). Eastside dry ponds and ditches and slit and waste trench materials were sized and placed in accordance with the Project Documents.

4.2.2 Eastside Sludge Pond Material

Geosyntec observed the placement of eastside sludge pond material in Phases IIIA and II of the CAMU. Geosyntec performed percent solids testing for all eastside sludge pond material to be placed in all phases of the CAMU. Geosyntec performed 290 percent solids tests on processed eastside sludge pond material in accordance with the Project Documents. Of the 290 tests, 22 samples failed, resulting in re-processing of the waste material represented by the failed sample, and 268 passed representing 1,145,000 cy of processed sludge material (Appendix C-1). Waste materials represented by the failing test results were re-processed and re-tested.

Geosyntec observed waste placement and compaction in accordance with the Project Documents. Waste material was placed in 12-inch thick loose lifts. Compaction was performed with a minimum of three passes of a compactor, operating in a vibratory

mode, with a weight exceeding 20,000 pounds, until the material was visibly stable. Visibly stable was observed when a loaded 40 ton articulated dump truck did not rut the compacted surface more than 1 inch.

During placement of waste materials, visibly wet materials were segregated for further processing prior to final placement and compaction in the CAMU. The wet waste materials were removed and reprocessed, dried in place, disced and dried in place, or mixed with dry waste materials.

4.2.3 Eastside Dry Pond Material

Geosyntec observed the placement of eastside dry pond and ditch material in Phases IIIA and II of the CAMU. Geosyntec observed waste placement and compaction in accordance with the Project Documents. Eastside dry pond material was placed in 12-inch thick loose lifts. Compaction was performed with a minimum of three passes of a compactor, operating in a vibratory mode, with a weight exceeding 20,000 pounds, until the material is visibly stable. Visibly stable was observed when a loaded 40 ton articulated dump truck did not rut the compacted surface more than 1 inch.

4.2.4 Slit and Waste Trench Material

Geosyntec observed the placement of the slit and waste trench material in Phase II of the CAMU. Slit trench material was not placed closer than the minimum distance from the liner in accordance with the Project Documents. In addition, Geosyntec observed a minimum of 6-inches daily cover placement and compaction of eastside waste material above slit and waste trench material. Hazardous materials were observed to be covered with a minimum of 2 ft of eastside material and compacted.

Daily cover material was placed over the slit trench and hazardous material. Compaction was performed with a minimum of three passes of a compactor, operating in a vibratory mode, with a weight exceeding 20,000 pounds, until the material is visibly stable. Visibly stable was observed when a loaded 40 ton articulated dump truck did not rut the compacted surface more than 1 inch.

4.2.5 Debris and Oversized Material

Geosyntec observed the placement of debris and oversized material in Phase II of the CAMU. Geosyntec did not observe material placement within 15 ft of the side slope liner or 5 ft of the geosynthetic liner or final cover systems. Geosyntec observed that debris and oversized material were surrounded with eastside material and compacted in accordance with the Project Documents.

Processed eastside sludge and dry pond material was placed around the debris and oversized material in minimum 12-inch thick loose lifts. Compaction was performed with a minimum of three passes of a compactor, operating in a vibratory mode, with a weight exceeding 20,000 pounds, until the material is visibly stable. Visibly stable was observed when a loaded 40 ton articulated dump truck did not rut the compacted surface more than 1 inch.

4.3 CQA Monitoring and Testing – Interim Cover Placement

4.3.1 Overview

Interim cover placement began on 12 May 2009 and was completed 9 November 2009. Interim cover placement in Phases IIIA and II was performed by Entact. Interim cover was obtained from the 200,000 cy stockpile, was screened, placed, moisture conditioned, and compacted overlying the waste surface.

Side slopes were fine graded, raked by hand, and had protrusions greater than ¾-inch removed from the prepared subgrade by hand. The slopes were rolled smooth using a roller attached to excavator. Geosyntec observed approximately 15,849 cubic yards (cy) of interim cover placed during partial closure.

4.3.2 Compaction and Moisture/Density Testing

Modified proctor compactions tests (ASTM D 1557) were performed on two samples collected from the 1-inch minus stockpile, and selected to represent materials used as interim cover for this project. The frequency of testing for this material was one test per 7,925 cy of interim cover meeting the required frequency of one test per source and one per 10,000 cy as outlined in the Project Documents. Laboratory test results for IC-01 and IC-02 are presented in Appendix C-2.

Geosyntec personnel performed 36 passing in-place moisture/density tests on interim cover using the nuclear gauge moisture/density method (ASTM D 6938). This corresponds to a frequency of one passing test per 440 cy. This frequency meets the minimum requirement of one test per lift per 500 cy as outlined in the Project Documents. Results of nuclear gauge moisture/density tests indicate that the interim cover satisfies the requirements set forth in the Project Documents. Results and location of in-place nuclear gauge moisture/density tests are summarized on test logs presented in Appendix C-3.

Geosyntec personnel performed 3 passing field sand cone density tests on interim cover in accordance with ASTM D 1556. The field sand cone density tests correspond to a frequency of one per 12 nuclear gauge moisture/density tests, exceeding the required frequency of one test per 20 nuclear gauge moisture/density tests. Results of sand cone tests are presented in Appendix C-4.

4.3.3 Particle Size Test Results

Geosyntec personnel performed two particle size analyses (ASTM D 422) on the material. This results in a frequency of 1 test per 7,925 cy of interim cover which meets the minimum requirement of one test per material type and one per 10,000 cy. The test results indicate that the material is acceptable for use as interim cover, in accordance with the requirements outlined in the Technical Specifications. Results of the particle size analysis for IC-01 and IC-02 are presented in Appendix C-2.

4.3.4 Atterberg Limits Test Results

Geosyntec personnel performed two Atterberg limits tests (ASTM D 4318) on the interim cover material. This results in a sampling frequency of 1 test per 7,925 cy meeting the minimum requirements of one test per 10,000 cy of interim cover placed and one test per material type. The test results indicate that the material was acceptable for use as interim cover, in accordance with the requirements outlined in the Technical Specifications. Results of Atterberg limits tests for IC-01 and IC-02 are presented in Appendix C-2.

4.3.5 Soil Classification Test Results

Geosyntec personnel performed two soil classification tests (ASTM D 2487) on the interim cover material. This results in a sampling frequency of 1 test per 7,925 cy

meeting the minimum requirements of one test per 10,000 cy of interim cover placed and one test per material type. The test results indicate that the material was acceptable for use as interim cover, in accordance with the requirements outlined in the Technical Specifications. Results of soil classification tests for IC-01 and IC-02 are presented in Appendix C-2.

4.4 CQA Monitoring and Testing – Final Cover Soil Placement

4.4.1 Overview

Final cover soil placement began 28 October 2009 and was completed 19 April 2009. Final cover soil material was obtained from the 200,000 cy stockpile and screened to 1-inch minus for the first 1-ft lift and 6-inch minus for the second 1-ft lift. Geosyntec observed approximately 27,013 cy of final cover placement and approximately 1,936 cy of decorative rock mulch placement.

4.4.2 Material Placement and Compaction Observation

Geosyntec observed the first foot of operations layer material had no particles greater than 1 inch and the second foot of operations layer material had no particles greater than 6 inch. The first lift of material was observed to be placed using a caterpillar D-6 dozer exhibiting a ground contact pressure less than 10 psi and compacted with four (4) passes (each pass includes forward and reverse motions) in accordance with the Project Documents. The second lift of final cover soil was observed to be placed in the same manner as the first lift and compacted with 4 passes of a 20,000lb compactor operating in vibratory mode going upslope and static mode going downslope on 3H:1V sideslopes. On the top deck, the second lift was observed to be compacted by 2 passes of the compactor operating in vibratory mode in both directions.

4.4.3 Moisture Content Test Results

Geosyntec personnel performed nine moisture content tests (ASTM D 4643) on the final cover material; four samples were from the 1 in. minus material (MC-01, MC-02, MC-05, and MC-06) and five samples were collected from the 6 in. minus material (MC-03, MC-04, and MC-07 through MC-09). This results in a frequency of 1 per 3,001 cy of final cover soil meeting the minimum requirement of one test per material type and one per 5,000 cy. The test results indicate that the material is acceptable for

use as final cover, in accordance with the requirements outlined in the Technical Specifications. Results of the moisture content tests are presented in Appendix C-5.

4.4.4 Particle Size Test Results

Geosyntec personnel performed four particle size analysis (ASTM D 422) on the final cover material; two from the 1-inch minus stockpile (CS-09, -10) and two from the 6-inch minus stockpile (CS-07, -08). This results in a frequency of one test per 6,753 cy of final cover soil meeting the minimum requirement of one test per material type and one test per 10,000 cy. The test results indicate that the material is acceptable for use as final cover, in accordance with the requirements outlined in the Technical Specifications. Results of the particle size analysis for CS-07 through CS-10 are presented in Appendix C-2.

4.4.5 Atterberg Limits Test Results

Geosyntec personnel performed four Atterberg limits tests (ASTM D 4318) on the final cover material; two from the 1-inch minus stockpile (CS-09, -10) and two from the 6-inch minus stockpile (CS-07, -08). This results in a sampling frequency of 1 test per 6,753 cy meeting the minimum requirements of one test per 10,000 cy of final cover placed and one test per material type. The test results indicate that the material was acceptable for use as final cover soil, in accordance with the requirements outlined in the Technical Specifications. Results of Atterberg limits tests for CS-07 through CS-10 are presented in Appendix C-2.

4.4.6 Soil Classification Test Results

Geosyntec personnel performed four soil classification tests (ASTM D 2487) on the final cover material; two from the 1-inch minus stockpile (CS-09, -10) and two from the 6-inch minus stockpile (CS-07, -08). This results in a sampling frequency of 1 test per 6,753 cy meeting the minimum requirements of one test per 10,000 cy of final cover placed and one test per material type. The test results indicate that the material was acceptable for use as final cover soil, in accordance with the requirements outlined in the Technical Specifications. Results of soil classification tests for CS-07 through CS-10 are presented in Appendix C-2.

4.4.7 Triaxial Shear Test Results

Geosyntec personnel performed two triaxial shear tests (ASTM D 4767) on the final cover material exceeding the requirement of one per source for final cover placed on the side slopes. In accordance with the specifications at the time, the first triaxial shear test was performed at 90 percent compaction, based on Modified Proctor. Due to changes in compaction requirements for the first lift of final cover soil (DCN-015), the triaxial shear test was conducted again at 85 percent compaction, based on Modified Proctor. The test results indicate that the material was acceptable for use as final cover soil, in accordance with the requirements outlined in the Technical Specifications. Results of triaxial shear test for F-4 and CS-09 are presented in Appendix C-6.

5. CONSTRUCTION QUALITY ASSURANCE - GEOSYNTHETICS

5.1 General Overview

Geosyntec monitored installation of the geosynthetic components of the Project's engineered final cover system. This section contains a description of CQA tasks performed in support of geosynthetics installation and the geosynthetic components used in construction of the Project's final cover system. Subsequent sections contain descriptions of geosynthetic conformance testing and documentation and CQA monitoring and testing performed by Geosyntec during final cover construction. Documentation of the geosynthetic final cover materials and installation is presented in Appendices D through F.

The following geosynthetic materials were used during construction of the Project's composite liner system:

Geosynthetic Clay Liner (GCL):	<ul style="list-style-type: none">• CETCO Lining Technologies BENTOMAT DN
Geomembrane:	<ul style="list-style-type: none">• Agru 60-mil double-sided textured HDPE geomembrane (Microspike)
Geocomposite	<ul style="list-style-type: none">• Skaps Industries Transnet 270-2-8
Non-Woven Geotextile:	<ul style="list-style-type: none">• Skaps Industries GE160 6 oz./sy Nonwoven Geotextile

5.2 Geosynthetic Clay Liner (GCL) CQA

5.2.1 General

ESI installed a total of approximately 397,563 square feet (sf) of GCL during this phase of closure. This section contains a description of CQA tasks performed in support of the GCL material and installation methods used in construction of the Project's liner system. GCL manufactured by CETCO was used as the GCL component of the final cover system. Documentation of the GCL material and installation during this phase is presented in Appendix D.

Installation of the GCL component of the final cover system began on 12 October 2009 and was completed on 20 November 2009. The CQA tasks performed during

construction of the GCL component of the Project's composite final cover system included the following:

- documenting the GCL storage methods at the site and comparing the delivered inventory against the inventory list prepared in the factory;
- reviewing the manufacturer's certification and manufacturer quality control (MQC) test results for general compliance with the Project Documents;
- documenting the acceptance and/or rejection of GCL materials;
- monitoring and documenting the deployment and installation of the GCL materials; and
- monitoring and documenting damaged materials and the repairs performed on the GCL material.

Documentation in support of the GCL materials and installation is presented in Appendix D.

5.2.2 Conformance Testing and Documentation

5.2.2.1 Manufacturer Quality Control Documentation

The Contractor submitted certification and MQC documentation provided by CETCO for the rolls of GCL delivered to the site. Geosyntec compared the information contained in the manufacturer's documentation against the requirements listed in the Project Documents. The documentation included information regarding the properties of the geotextile and bentonite clay components used to manufacture the GCL. Based on this comparison, the GCL material delivered to the site met the requirements of the Project Documents. The submittal package for the GCL materials, which contains certification and MQC documentation for all of the CAMU final closure, is presented in Appendix B-3.

Geosyntec performed a material inventory of the on-site GCL and compared the inventoried material to the list of MQC data submitted by the contractor. MQC data was received for the material inventoried and used for the Project. GCL Material Inventory Logs are presented in Appendix D-1.

5.2.2.2 Sampling and Conformance Testing

TRI sampled the GCL material for conformance testing at the CETCO manufacturing plant and shipped twenty six samples to their laboratory in Austin, Texas for testing. Twenty six GCL samples were tested for mass per unit area and eight of the twenty six GCL samples were tested for index flux with an approximate testing frequency of one test per 95,254 sf and 309,575 sf, respectively for each test, of GCL manufactured (2,476,600 sf manufactured for the entire final cover). This frequency exceeds the testing frequency of one test per 100,000 sf and 400,000 sf for bentonite mass per unit area and moisture content, and index flux, respectively, as required in the Project Documents. In addition, six samples of GCL as well as six samples of geomembrane and geocomposite were tested for interface shear testing. The GCL was tested at a frequency of one test per 412,766 sf of material manufactured, exceeding the testing frequency of one test per 400,000 sf; however, the estimated total material to be installed for CAMU final closure is 2,317,392 sf which results in a test frequency of one test per 386,232 sf of installed material, which meets the frequency as required in the Project Documents. The GCL samples were tested by using the following standards:

- Bentonite Mass per Unit Area (ASTM D 5993);
- Moisture Content (ASTM D 2216);
- Index Flux (ASTM D 5887); and
- Interface Shear Testing (ASTM D 5321).

Results indicate that the GCL meets the material requirements of the Project Documents. The CQA conformance testing results are included in Appendix D-2 and D-4.

5.2.3 Construction Quality Assurance Monitoring

5.2.3.1 On-Site Storage

On-site storage methods for the GCL material were monitored by Geosyntec personnel. Material stored longer than 30 days were stored out of drainage areas and covered with tarps to prevent damage or premature hydration of the bentonite. In addition, rolls were monitored for damage and thin areas of bentonite prior to placement. Geosyntec did not observe damage to the material during storage at the site.

5.2.3.2 Placement Methods

Geosyntec observed the subgrade prior to deployment of the GCL.

Geosyntec also monitored for the following potential problems:

- manufacturing defects;
- presence of needles that are used during the manufacturing process;
- evidence of damage which may have occurred during shipping, storage, or handling; and
- damage caused during installation activities, as a consequence of placement, connection operations, or weather.

Repairs were made to the GCL in accordance with the Project Documents. In addition, Geosyntec monitored that entrapment of stones or other objects that could potentially damage the GCL or the overlying geomembrane did not occur.

5.2.3.3 Seaming Methods

The GCL was placed in individual panels. Adjacent panels were overlapped at least six inches along the sides and a minimum of 1 ft along the panel ends in accordance with the requirements of the Project Documents. Bentomat DN materials installed for this project included CETCO's "supergroove" along the sides, which negates the need for installing granular bentonite between the overlapped panels. End seams included bentonite between the overlapped panels in accordance with the project documents.

In areas where GCL was placed on slopes steeper than 10 horizontal to 1 vertical (10H:1V), adjacent panels were overlapped at least twelve (12) inches along the sides and a minimum of 2 ft along the panel ends in accordance with the general requirements of the Project Documents. Along the 3H:1V side slopes, overlapped GCL end seams were minimize; however, several seams were required and were seamed using a small propane torch to heat-seal the overlapped seams in addition to the granular bentonite. This method was approved by the manufacturer for use (Appendix B-3, Phase I CQA Report, Geosyntec, 2008).

5.2.3.4 Geosynthetic Clay Liner Repairs

Geosyntec observed that holes or tears in the GCL were repaired in accordance with the requirements outlined in the Project Documents. Repairs were made by placing an additional piece of GCL over the defective area to a distance of at least 2 ft in all directions from the defect on slopes steeper than 10 percent. On slopes 10 percent or flatter, repairs were made by placing an additional piece of GCL over the defective area to a distance of at least 1 foot in all directions from the defect. Overlaps were seamed with granular bentonite.

5.3 Geomembrane CQA

5.3.1 General

Geosyntec monitored installation of approximately 397,653 sf of geomembrane for the project. This section contains a description of CQA tasks performed in support of the geomembrane installation methods used in construction of the Project. Textured 60-mil HDPE geomembrane manufactured by Agru was used as the geomembrane component of the final cover system. Documentation of the geomembrane material and installation is presented in Appendix E.

Construction of the geomembrane components of the final cover system began on 12 October 2009 and was completed on 20 November 2009. The CQA tasks performed during construction of the geomembrane components of the Project's composite liner system included the following:

- documenting the geomembrane storage methods at the site and comparing the delivered inventory against the inventory list prepared in the factory;
- reviewing the geosynthetic installer's qualifications and resumes of personnel responsible for the project;
- reviewing the MQC documentation and test results for compliance with the Project Documents;
- reviewing the results of conformance testing for compliance with the Project Documents;
- documenting the acceptance and/or rejection of geomembrane materials;
- monitoring trial geomembrane seaming and the on-site destructive testing of trial seams by the contractor;
- monitoring and documenting production seaming of the adjacent geomembrane panels;
- monitoring and documenting the repairs for geomembrane;
- monitoring and documenting the non-destructive field testing of production geomembrane seams and other repairs;

- selecting destructive geomembrane production seam sample locations and documenting their location;
- shipping of geomembrane production seam samples for destructive testing;
- reviewing the destructive seam test results for compliance with the specifications;
- monitoring installation of overlying materials for damage to geomembrane; and
- monitoring and reviewing documentation of the repair of geomembrane production seams that failed either non-destructive or destructive CQA testing criteria.

5.3.2 Conformance Testing and Documentation

5.3.2.1 Manufacturer Quality Control Documentation

The Contractor submitted certification and MQC documentation for the rolls of 60-mil HDPE geomembrane. The documentation for the rolls of geomembrane material includes:

- polyethylene resin certificates;
- geomembrane inventory list; and
- geomembrane certificates and MQC test results.

The documentation indicates that the geomembrane and resin properties met the requirements specified in the Project Documents. This documentation reviewed by Geosyntec is presented in Appendix B-3.

Geosyntec performed a material inventory of the on-site geomembrane and compared this to the list of MQC data submitted by the contractor. The geomembrane Material Inventory Log is presented in Appendix E-1.

5.3.2.2 Sampling and Conformance Testing

TRI collected twenty four samples of the geomembrane material for conformance testing at the geomembrane manufacturing plant and shipped the samples to their laboratory in Austin, Texas for testing. The 60-mil geomembrane was sampled and tested with an approximate testing frequency of one test per 96,658 sf of geomembrane material manufactured for final closure (2,366,930 sf manufactured for final CAMU

closure). These frequencies exceed the testing frequency of one test per 100,000 sf. The geomembrane samples were tested for the following:

- Thickness (ASTM D 5199);
- Specific Gravity (ASTM D 792, Method A);
- Tensile Properties (ASTM D 638);
- Carbon Black Content (ASTM D 1603);
- Interface Shear Strength (ASTM 5321; and
- Carbon Black Dispersion (ASTM D 5596).

Geosyntec reviewed the results of the conformance testing and found the results to meet or exceed the requirements of the Project Documents. The conformance test results are included in Appendix E-2, except interface shear strength test results that are included in Appendix D-4.

5.3.3 Construction Quality Assurance Monitoring

5.3.3.1 Delivery and On-Site Storage

The geomembrane rolls were stored in such a way as to reduce exposure to sources of damage. Geosyntec did not observe damage to the material during storage at the site.

5.3.3.2 Placement Methods

The installer transported the rolls to the Project area by using a fork lift and attached spreader bar in a manner intended to reduce damage to the geomembrane. Panels were manually placed into position and temporarily secured with sandbags. Panel Placement Logs for the geomembrane installation were prepared by Geosyntec and are presented in Appendix E-4. The limits of HDPE geomembrane placed during the Project's composite liner system construction are shown on Construction Record Drawings presented in Appendix H.

During deployment, geomembrane panels or rolls were visually observed for the following potential problems:

- manufacturing defects;
- evidence of damage that may have occurred during shipping, storage, and handling; and
- damage caused by the installation activities, (e.g., as a consequence of panel placement, seaming operations, or weather).

Damaged materials were either discarded or repaired, as described herein. Geosyntec observed repair locations. Whenever possible, the cause(s) of the damage was ascertained and addressed to minimize the potential for further damage.

5.3.3.3 Trial Seams

Geomembrane trial seams for each welding technician and for each piece of seaming equipment (i.e., fusion or extrusion) were prepared at the beginning of the morning and afternoon seaming shifts. Additional trial seams were performed if the welding material changed, if adjustments were made to the seaming equipment, or if there was a significant change in weather. Geosyntec observed that the trial seams were prepared in general accordance with the requirements of the Project Documents. Each trial seam was approximately 1 ft wide by 5 ft long for both fusion and extrusion welds, with the seam centered lengthwise. Following completion of the trial seams, the seams were destructively tested in the field by ESI by using a calibrated field tensiometer (Calibration Certificate found in Appendix E-3 of the Phase IIIB CQA Report [Geosyntec, 2009]). Geosyntec monitored and documented the geomembrane trial seams for general conformance to the Project Documents. The following procedure was followed for trial seam testing:

- four (4) 1-in. wide coupons were cut every 1 ft along the trial weld;
- two (2) coupons were tested in peel strength (both tracks were tested for the fusion welds) and two (2) coupons were tested for shear strength by using a digital tensiometer;
- a passing test for each specimen was confirmed when the requirements in the Project Documents were met or exceeded; and
- if a specimen failed a test, two (2) additional new trial seams were fabricated and the test procedure was repeated.

The technician proceeded with the production seaming operations once a technician produced a trial seam or seams passing the above-described tests and his trial seams met or exceeded the requirements of the Project Documents. A total of 116 trial seams were tested by ESI and documented by Geosyntec. These trial seams met the requirements of the Project Documents. Geosyntec CQA personnel recorded the trial seam testing results on Trial Seam Logs. Copies of the completed logs are presented in Appendix E-3.

5.3.3.4 Production Seaming

Geomembrane production seaming operations were monitored and documented by Geosyntec CQA personnel. Geosyntec recorded the date, seam and panel numbers, time, technician, and machine number for each seam on the Seam Logs. These Seam Logs are presented in Appendix E-5. Approximately 20,868 and 2,760 LF of production fusion and extrusion seams, respectively, were welded during installation of the Project's liner system. Geomembrane seams were visually examined for workmanship and continuity. Areas of the seams suspected of being substandard were marked by Geosyntec CQA personnel for destructive testing and, if necessary, for repair. During seaming, geomembrane panels were observed for the following:

- joints between geomembrane panels were overlapped by a minimum of four (4) inches;
- weld area was free of dirt, dust, moisture, or other foreign material;
- extrusion welding rod resin used for extrusion welding were the same resin type used to manufacture geomembrane material;
- edges of the geomembrane were protected during placement to prevent movement by wind or other damage prior to seaming;
- seams were wiped with oil-free rags, where appropriate, to remove moisture or dirt and dust;
- weld was made immediately after preparation and cleaning is complete;
- excessive wrinkles were cut, overlapped, and extrusion welded;
- geomembrane areas showing excessive scuffing, puncture, or distress were replaced; and
- damage caused by the installation activities (e.g., as a consequence of panel placement, seaming operations, or weather) was repaired.

Damaged geomembrane welds that were identified by Geosyntec CQA personnel were brought to the attention of the installer for repair. Geomembrane repairs are described in Section 5.3.6. Repairs were destructively tested as described herein.

5.3.4 Nondestructive HDPE Geomembrane Seam Testing

5.3.4.1 General

Geomembrane seams were nondestructively tested by ESI for continuity by using air-pressure or vacuum test procedures. Double-track fusion seams were tested by using the air-pressure test method (ASTM D 5820). The extrusion welds were tested with the vacuum test method (ASTM D 5641). Defects identified by nondestructive testing were repaired, as described in Section 5.3.6.

5.3.4.2 Test Methods

Double-track fusion seams were nondestructively tested by using the air-pressure test. The procedures followed for the air-pressure test were:

- visually observe the integrity of the section of seam being tested;
- seal both ends of the air channel by using heat and pressure;
- insert the needle of a pressure gauge into the air channel at one end of the seam;
- pressurize the air channel between 25-30 psi gauge pressure with an air pump;
- maintain the gauge pressure for at least five minutes;
- if a loss of pressure exceeding 3 psi occurs or if the pressure does not stabilize during the test, identify the faulty area and repair in accordance with the procedure described in Section 5.3.6 of this report;
- record the location of the test; and
- upon completion of the nondestructive test, confirm the continuity of the air channel by releasing air from the end of the seam opposite the end in which the needle was inserted.

The vacuum test was used to nondestructively test extrusion seams. The procedures followed were:

- connect the hose and vacuum box assembly to the vacuum pump;
- wet a strip of seam approximately 1 ft wide by 3 ft long with soapy solution;
- place the vacuum box over the wetted area;

- open the bleed valve on the vacuum box test apparatus;
- force the box onto the sheet until a vacuum is established, as evidenced by a negative box pressure of approximately 5 psi gauge;
- hold the vacuum box in place for a minimum of 10 seconds while examining the seam through the viewing window for the occurrence of air bubbles; and
- record the location of leaks, if any, and repair the area.

5.3.4.3 Summary of Test Results

Seams passing the nondestructive testing were temporarily accepted. Final evaluation of the seams is measured by the destructive test results described in the following section. Portions of the seam that did not pass nondestructive testing were repaired as outlined in Section 5.3.6.

5.3.5 Destructive HDPE Geomembrane Seam Testing

5.3.5.1 General

Geomembrane seam samples were destructively tested by TRI in accordance with the Project Documents. Samples of the production geomembrane seams for the Project were obtained by Geosyntec CQA personnel according to the procedures identified in the Project Documents. Geosyntec obtained 44 destructive geomembrane samples from fusion welds and 7 destructive geomembrane samples from extrusion welds. This equates to a frequency of one destruct per 463 linear foot (LF) of total production seaming, which satisfies the requirements of the Project Documents of one destructive sample per 500 LF of production seam. The locations of the destructive seam samples are described on the Destructive Test Logs presented in Appendix E-7. Sampling procedures, test methods, and test results of seam samples are discussed further in the following sections.

5.3.5.2 Seam Sampling and Destructive Testing

ESI removed destructive seam samples at locations designated by Geosyntec CQA personnel for destructive testing. Each sample's location was chosen to either satisfy the frequency requirement or if the seam was suspected of excess crystallinity, weld contamination, or other potential cause of poor welds.

Seam samples were tested in the field by ESI prior to laboratory testing. Field testing consisted of testing five (5) coupons for peel adhesion and five (5) coupons for bonded

seam strength (shear) from each sample. Testing of the seams was performed under the observation of Geosyntec CQA personnel in general accordance with the requirements of the Project Documents. When test results and observations of seam testing in the field indicated that the seam satisfied the Project Documents, a portion of the sample was forwarded to TRI for laboratory destructive seam testing. Laboratory testing consisted of testing five (5) coupons for peel adhesion and five (5) coupons for bonded seam strength (shear).

5.3.5.3 Summary of Destructive Test Results

All of the 51 geomembrane seam samples destructive test results met or exceeded the requirements outlined in the Project Documents as outlined below:

60-mil Geomembrane Seam Strength Requirements	
• Peel – Fusion (lbs/in.)	91
• Peel – Extrusion (lbs/in.)	78
• Shear (lbs/in.)	120

Destructive test results are presented in Appendix E-7.

5.3.6 Geomembrane Repairs

Defects identified by visual inspection, nondestructive testing, or destructive testing were repaired by the installer by using hand-held extrusion welders. Tears and holes in the geomembrane were patched (i.e., capped) by using extrusion welders. Repairs were performed in accordance with the requirements of the Project Documents. Geosyntec personnel monitored the geomembrane repair work and recorded the locations and subsequent nondestructive testing on the Repair Summary Logs located in Appendix E-6. Geomembrane repair locations are shown on the Construction Record Drawings presented in Appendix H.

5.4 Geocomposite CQA

5.4.1 General

The contractor installed approximately 397,653 ft² of geocomposite overlying the geomembrane for final cover drainage. The tasks performed to monitor the geocomposite component installation included the following:

- documenting the geocomposite storage methods at the site and comparing the delivered inventory against the inventory list prepared in the factory;
- reviewing the manufacturer's certification for compliance with the Project Documents;
- documenting the acceptance and/or rejection of geocomposite materials;
- monitoring the deployment and installation of the geocomposite materials; and
- monitoring and documenting damaged materials and the repair methods performed on the geocomposite material.

5.4.2 Manufacturer Quality Control Documentation

The Contractor submitted certification and MQA/MQC documentation provided by Skaps for the geocomposite delivered to the site. Geosyntec compared the information contained in the manufacturer's documentation against the requirements listed in the Project Documents. Based on this comparison, the geocomposite material delivered to the site met or exceeded the requirements of the Project Documents. The submittal package for the geocomposite materials is presented in Appendix B-3.

Geosyntec performed a material inventory of the on-site geocomposite and compared this to the list of MQC data submitted by the contractor. The geocomposite Material Inventory Log is presented in Appendix F-1.

5.4.2.1 Sampling and Conformance Testing

TRI sampled the geocomposite material at the manufacturing facility and sent the samples to their laboratory in Austin, Texas for testing. Thirteen samples were sent to TRI for conformance testing for peel strength (ASTM D 413) and hydraulic transmissivity (ASTM D 4716) with an approximate testing frequency of one test per 195,638 sf of geocomposite manufactured (2,543,300 sf of geocomposite manufactured for final CAMU closure). This frequency exceeds the testing frequency of one test per 200,000 ft for peel strength and hydraulic transmissivity as required in the Project Documents. Results indicate that the geocomposite meets or exceeds the requirements of the Project Documents. The CQA conformance testing results are included in Appendix F-2.

5.4.3 Construction Quality Assurance Monitoring

5.4.3.1 On-Site Storage

On-site storage methods for the geocomposite material were monitored by Geosyntec personnel. Geosyntec personnel observed that the geocomposite material was properly stored to prevent damage. Geosyntec did not observe damage to the material during storage at the site.

5.4.3.2 Placement Methods

Geosyntec monitored for the following potential problems:

- manufacturing defects;
- evidence of damage which may have occurred during shipping, storage, or handling; and
- damage caused during installation activities, as a consequence of placement, connection operations, or weather.

Damaged geocomposite that was identified was brought to the attention of the installer for removal or repair. Repairs performed on the material are described in Section 5.4.3.4.

5.4.3.3 Seaming Methods

The geocomposite was placed in individual panels. Geosyntec monitored that the geonet adjacent rolls were overlapped by at least 4 (inches) in. along the length and 12 in. along the width. Geonet overlaps were secured with nylon ties at a minimum of 5-ft intervals on side to side seams and every 12 in. along end to end seams. Bottom geotextile components were overlapped and top geotextile components were continuously sewn. Geosyntec monitored seaming was performed in general accordance with the Project Documents.

5.4.3.4 Geocomposite Repairs

Geosyntec observed that holes or tears in the geocomposite were repaired. Repairs were made by placing an additional piece of geocomposite over the defective area to a distance of at least 2 ft in all directions from the defect and secured every 6 in. with nylon ties. The top geotextile component of the patch was heat sealed to the top geotextile of the geocomposite needing repair.

5.5 Non-Woven Geotextile (NWG) CQA

5.5.1 General

A 6-oz. filtration geotextile (non-woven geotextile (NWG)) was installed overlying the drainage aggregate as shown on the Drawings. The contractor supplied a 6-oz. geotextile for this project and installed approximately 484 sf of material. Documentation in support of the NWG materials and installation was presented in the Phase I CQA Report (Geosyntec, 2008). The tasks performed to construct the NWG components of the Project's composite liner system included the following:

- documenting the NWG storage methods at the site;
- reviewing the manufacturer's certification for general compliance with the Project Documents;
- documenting the acceptance and/or rejection of NWG materials;
- monitoring the deployment and installation of the NWG materials; and
- monitoring and documenting damaged materials and the repairing methods performed on the NWG materials.

5.5.2 Conformance Testing and Documentation

5.5.2.1 Manufacturer Quality Control Documentation

The Contractor submitted certification and MQC documentation provided by Skaps for the rolls of NWG delivered to the site. Geosyntec compared the information contained in the manufacturer's documentation against the requirements listed in the Project Documents. Based on this comparison, the NWG material delivered to the site met the requirements of the Project Documents. The submittal package for the NWG materials, which contains certification and MQC documentation, is presented in Appendix B of the Phase I CQA Report (Geosyntec, 2008).

MQC data was received for the material inventoried and used for the Project. NWG Material Inventory Logs are presented in the Phase I CQA Report (Geosyntec, 2008).

5.5.2.2 Sampling and Conformance Testing

TRI sampled the NWG material at the manufacturing facility. Subsequently, one sample was sent to TRI for conformance testing. The 6 oz. NWG was sampled and

tested with an approximate testing frequency of one test per 4,000 sf of material delivered to the site. This frequency exceeds the testing frequency of one test per 200,000 ft² as required in the Project Documents. The NWG sample was tested for the following:

- Grab Strength (ASTM D 4632);
- Permittivity (ASTM D 4491);
- Mullen Burst (ASTM D 3786);
- Trapezoidal Tear (ASTM D 4533);
- A.O.S. (ASTM D 4751); and
- Puncture Strength (ASTM D 4833).

Results indicate that the NWG meets or exceeds the general requirements of the Project Documents. The CQA conformance testing results are included in the Phase I CQA Report (Geosyntec, 2008).

5.5.3 Construction Quality Assurance Monitoring

5.5.3.1 On-Site Storage

On-site storage methods for the NWG material were monitored by Geosyntec personnel. Conditions that could damage the material (i.e., exposure to precipitation, mud, dirt, dust, etc.) were noted and brought to the attention of the contractor. Geosyntec personnel observed that the NWG material was properly stored to prevent damage. Geosyntec did not observe damage to the material during storage at the site.

5.5.3.2 Placement Methods

Geosyntec monitored for the following potential problems:

- manufacturing defects;
- evidence of damage which may have occurred during shipping, storage, or handling;
- damage caused during installation activities, as a consequence of placement, connection operations, or weather; and
- measures were taken to avoid the entrapment of stones, dust, moisture, or other objects that could potentially damage the NWG or the adjacent materials.

Damaged material that was identified was brought to the attention of the installer for removal or repair. Repairs performed on the NWG are described in Section 5.5.3.4.

5.5.3.3 Seaming Methods

The NWG was placed in individual panels. Adjacent panels were overlapped and continuously sewn.

5.5.3.4 NWG Repairs

Geosyntec observed that holes or tears in the NWG were repaired. Repairs were made by placing an additional piece of NWG over the defective area and sewing material into place no closer than 1 in. from any panel edge.

6. CONSTRUCTION QUALITY ASSURANCE – DRAINAGE AGGREGATE

6.1 Overview

Geosyntec personnel observed the placement of drainage aggregate in the drainage channels on the top of the CAMU. The submittal package for the drainage aggregate was included in Appendix B-3 of the Phase I CQA Report (Geosyntec, 2008).

Geosyntec CQA personnel observed that the material was placed in accordance with the locations and dimensions required by the Project Documents and in a manner intended to protect underlying materials.

6.2 Drainage Aggregate Laboratory Testing

Geosyntec personnel observed the placement of approximately 8 cy of drainage aggregate. Geosyntec personnel collected one drainage aggregate sample for laboratory sieve analysis and hydraulic conductivity testing. This frequency meets the minimum requirement of one sieve analysis per 5,000 cy and one hydraulic conductivity test per 10,000 cy as outlined in the Project Documents. The results of the testing indicated that the drainage aggregate met the requirements of the Project Documents. The test results for the LCRS drainage aggregate are included in the Phase I CQA Report (Geosyntec, 2008).

7. CORRUGATED HDPE PIPE

ESI installed a total of approximately 121 lf of perforated 4 in. corrugated HDPE pipe. The tasks performed to construct the HDPE pipe components of the Project's composite liner system included the following:

- documenting the HDPE pipe storage methods at the site;
- reviewing the manufacturer's certification for general compliance with the Project Documents;
- reviewing the installers qualifications;
- documenting the acceptance and/or rejection of HDPE pipe materials;
- observing the piping was installed to grade; and
- monitoring and documenting the installation and joining of the HDPE pipe materials.

Corrugated HDPE pipe submittals are provided in Appendix B-3. Installed locations of pipe are shown on the as-built record drawings in Appendix H.

7.1 Documentation

7.1.1 HDPE Pipe Manufacturer Documentation

The Contractor submitted certification documentation provided by Hancor for the corrugated HDPE pipe delivered to the site. Geosyntec compared the information contained in the manufacturer's documentation against the requirements listed in the Project Documents. The documentation included information regarding the properties of the material used to manufacture the pipe. Based on this comparison, the corrugated HDPE pipe material delivered to the site met the requirements of the Project Documents. The submittal package for the corrugated HDPE pipe is presented in Appendix B-3.

8. CONSTRUCTION QUALITY ASSURANCE – CONCRETE

8.1 General

Geosyntec monitored the concrete placement in the concrete headwalls, manholes, and LCRS and vadose zone side slope riser pipes' monuments. CQA activities in support of concrete placement included the following:

- Reviewing the submitted concrete mix design for general compliance with the Project Documents;
- Monitoring the subgrade surface is prepared in accordance with the Project Documents;
- Monitoring and documenting that the liner system components, along with the anchor trench, are installed in accordance with the requirements of the Project Documents;
- Monitoring and documenting that the rebar is installed in accordance with the requirements of the Project Documents;
- Sampling and testing of the material to evaluate compliance with the Project Documents;
- Documenting that the concrete was constructed by using equipment and methods indicated in the Project Documents; and
- Reviewing the concrete tickets prior to installing the concrete to monitor that the concrete meets the requirements outlined in the Project Documents.

8.2 Submittal Review

Geosyntec personnel reviewed the submittals for the concrete mix design. The submittals were in compliance with the Project Documents and are presented in Appendix B-3.

8.3 Conformance Sampling and Testing

Approximately 91 cy of concrete was placed for the Project over eight events. Delivery tickets for each event and results of slump testing are presented in Appendix G-1. Ten concrete samples were collected by Geosyntec for conformance testing. The cylinders were cured and subjected to compression testing in accordance with ASTM C 172 and C31. The 7-day compression test results for the Project indicate that the average compression strength of the concrete is approximately 3,766 psi, which exceeds the

minimum required compressive strength in the Project Documents of 3,000 psi at 28 days. The compression test results are presented in Appendix G-2.

8.4 Construction Quality Assurance Monitoring

Placement of concrete for the Project was monitored by Geosyntec personnel for compliance with the Project Documents. Geosyntec CQA personnel monitored:

- quality of the subgrade prior to concrete placement;
- placement and consolidation of concrete; and
- curing of concrete.

9. CONSTRUCTION QUALITY ASSURANCE – SURVEYING

Geosyntec personnel reviewed the surveyor's submittals to ensure the interim cover and final cover were graded to specified tolerances for the Project. Surveyed grid points were compared to design grid and points were confirmed within tolerances. PBS&J performed a 10 percent QA survey of grid points to verify the survey performed by Absolute Surveying. Design data points and surveyed grades are included in Appendix B-3. Record drawings of the waste surface, interim cover, cover geosynthetics, HDPE pipe, and final cover, along with the associated data tables, are included in Appendix H.

10. SUMMARY AND CONCLUSIONS

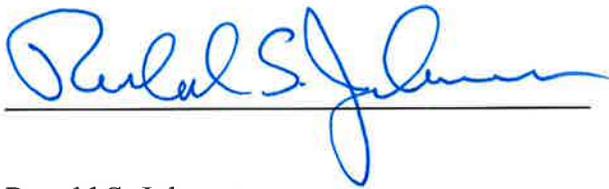
Partial Final Closure of the BRC CAMU began on 12 May 2009 and was completed following final cover placement on 19 April 2010. During this time, Geosyntec provided CQA personnel on site to monitor construction and document consistency with the requirements of the Project Documents. As part of the CQA activities, Geosyntec personnel monitored the construction and installation of the following:

- Earthworks (waste placement and interim and final cover placement);
- Geosynthetics (non-woven geotextile, geocomposite, geomembrane, and GCL);
- Drainage aggregate placement;
- Corrugated HDPE pipe; and
- Cast-in-place Concrete.

During construction, Geosyntec CQA personnel performed conformance testing and CQA testing on the construction materials identified in this report at the frequencies required in the Project Documents. Geosyntec CQA personnel monitored that the materials used for construction conformed to the requirements of the Project Documents. A condition or material that was identified as not conforming to the requirements of the Project Documents or approved modifications thereto was corrected, repaired, and retested (as described in this report) or discarded and not used. Based on our observations and testing, Geosyntec concludes that the partial final cover system associated with Phases IIIA/II of the BRC CAMU was constructed in accordance with the drawings, specifications, and approved modifications.

11. ENGINEER - OF - RECORD

Based on the observations made on site during the construction of the partial final cover systems associated with Phases IIIA/II of the BRC CAMU site by Geosyntec personnel working under my direction and supervision as described herein and based on the logs and test results presented in the appendices to this report, the Partial Final Cover of the BRC CAMU in Henderson, Nevada was constructed in accordance with the Technical Specifications, CQA Plan, Construction Drawings, and design changes.



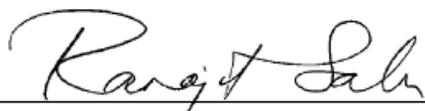
Ronald S. Johnson

Registered Professional Engineer (Civil)

Certificate No. 12835

12. CERTIFIED ENVIRONMENTAL MANAGER JURAT

I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been provided in a manner consistent with the current standards of the profession and to the best of my knowledge comply with all applicable federal, state and local statutes, regulations and ordinances. I hereby certify that all laboratory analytical data was generated by a laboratory certified by the NDEP for each constituent and media presented herein.



4/23/2010

Dr. Ranajit Sahu, C.E.M. (No. EM-1699, Exp. 10/07/2010)

Date

BRC Project Manager

13. REFERENCES

Geosyntec, 2008. Phase I Construction Quality Assurance Report, Basic Remediation Company, Corrective Action Management Unit, Henderson, Nevada. September, 2008

Geosyntec, 2008a, BRC CAMU Waste Processing and Placement Plan, September 2008, (Addendum October 2008).

Geosyntec, 2009. Phase IIIB Construction Quality Assurance Report, Basic Remediation Company, Corrective Action Management Unit, Henderson, Nevada. May 2009.

APPENDIX A
Photo Log

Date:
10/12/2009

Direction:
East

Description:
Sub-grade
preparation of
12" of interim
cover



Date: N/A

Direction:
Southwest

Description:
Installation of
geosynthetics
began on
10-13-09



Date: N\A

Direction:
N\A

Description:
GCL butt
seam with
granular
bentonite



Date: N\A

Direction:
N\A

Description:
Trial welds
were made
and tested
using an
electronic
tensiometer



Date:
8/22/2009

Direction:
South

Description:
Geomembrane
Deployment



Date: N/A

Direction:
North

Primary
seaming
produces a
dual track
fusion weld



Date: N/A

Direction:
N/A

Description:
Dual track
fusion
seaming is
tested for
continuity
with air
pressure



Date: N/A

Direction:
N/A

Description:
Cover system
geomembrane
tie-in seam to
CAMU Ph.
IIIA base liner
at anchor
trench being
completed
with an
extrusion
welder.



Date:
N/A

Direction:
N/A

Description:
Extrusion
welds are
tested for
leaks using a
soapy solution
and a vacuum
box



Date: N/A

Direction:
Southeast

Description:
Installation of
double sided
geocomposite
includes net
ties and
geotextile sew
seams



Date:
N/A

Direction:
North

Description:
Installation of
Final Cover
includes 12" of
1" minus
material and a
second 12" lift of
6" minus
material. Photo
shows second lift
being placed
over first lift
with track marks
from first lift
compaction



Date:
N/A

Direction:
South

Description:
The second lift
was compacted
with a steel drum
vibratory
compactor.



Date: N/A

Direction: West

Description:
Typical
spreading
operation of
gravel mulch



APPENDIX B

Construction Documentation and Correspondence

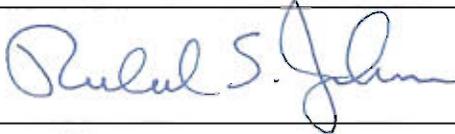
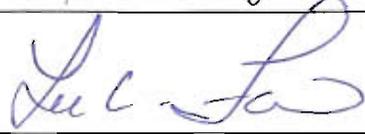
APPENDIX B-1

Design Changes

FILE COPY



Design Change Notification

Project: BRC Eastside Common Areas Soils Remediation, Henderson, Nevada		DCN No.: ESR DCN-036
Contract No.: 6389		Contractor: ENTACT Environmental Services
References:		
RFI No.: 088		Drawing No.:
Specification Section: 02200		CQA Section No.: Section 7 Tables 1, 3, and 4
Design Change: This design change modifies the Specifications and CQA plan to create a method specification and CQA procedures to evaluate compaction on the cover soils.		
Attachments: Revised Specification Section 02200 and Revised Section 7 and Tables 1, 3, and 4 of the CQA Plan		
This design change notification shall be included into the contract documents referenced above and is officially incorporated into the contract documents as of the date latest signature approval date on this document.		
Approved By:		
Engineer of Record:		Date: 2-Nov-09
Construction Manager:		Date: 11/2/09
BRC Project Manager:		Date: 11/2/09

SECTION 02200

EARTHWORK

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. The Contractor shall furnish all labor, materials, tools, supervision, transportation, and equipment necessary to perform all Work specified herein and as shown on the Construction Drawings.
- B. The Work shall include, but not be limited to excavating, hauling, placing, moisture conditioning, backfilling, compacting, grading, stockpiling, and subgrade preparation, including subgrade preparation for storm water pipeline and appurtenances. Earthwork shall conform to the dimensions, lines, grades and sections shown on the Drawings or as directed by the Construction Manager.
- C. Construction of the final CAMU cover system and associated storm water management features overlying the CAMU will be held as an Option Scope that may be added to the contract via Contract Modification at the Owner's sole discretion. If the Owner decides to exercise its option to add the Option Scope, the Construction Manager will notify the Contractor no later than 30 days after receipt of the final Eastside Area confirmation sampling

1.02 RELATED SECTIONS

Section 01025 — Measurement and Payment

Section 02110 — Site Clearing

Section 02205 — Remedial Excavating and Filling

Section 02771 — Geotextile

Section 02772 — Geosynthetic Clay Liner

Section 02773 — Geocomposite

Section 03400 — Cast-in-Place Concrete

1.03 REFERENCES

- A. Construction Drawings
- B. Clark County Area Uniform Standard Specifications (CCAUSS) and Clark County Area Uniform Standard Drawings (CCAUSD).
- C. Geosyntec, 2007 “Construction Quality Assurance Plan for the Construction of the Corrective Action Management Unit, Basic Remediation Company, Henderson, Nevada,” August.
- D. Latest version of American Society for Testing and Materials (ASTM) standards:
 - ASTM D 422 Standard Method for Particle-Size Analysis of Soils

CAMU Construction

Earthwork Rev-3.DCN-011
Rev-5.DCN-015
Rev-14.DCN-036
Basic Remediation Company

- ASTM D 1557 Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³))
 - ASTM D 2216 Standard Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures
 - ASTM D 2487 Standard Test Method for Classification of Soils for Engineering Purposes
 - ASTM D 2922 Standard Test Methods for Density of Soil and Soil-Aggregate In-Place by Nuclear Density Methods (Shallow Depth)
 - ASTM D 3017 Standard Test Method for Water Content of Soil and Rock In-Place by Nuclear Methods (Shallow Depth)
 - ASTM D 3080 Standard Test Method for Direct Shear Test of Soils Under Consolidated Drained Conditions
 - ASTM D 4318 Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- E. Latest version of American Association of State Highway and Transportation Officials (AASHTO) standards:
- AASHTO T 180 Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop

1.04 SUBMITTALS

- A. Prior to beginning earthwork, Contractor shall perform baseline topographic survey on a minimum 50-foot grid and at all grade breaks. Baseline topographical survey shall be submitted to the Construction Manager within 20 working days of notice to proceed.
- B. The Contractor shall submit to the Construction Manager a notice of completion for within 24 hours of completed excavation, engineered fill, prepared subgrade and cover layer as-built survey to provide the Owner with sufficient time to verify as-built surveys
- C. The Contractor shall submit to the Construction Manager laboratory test data for cover soils demonstrating shear strength parameters. Shear strength tests shall be conducted at 90 percent maximum dry density at optimum moisture content.
- D. The Contractor shall submit to the Construction Manager the GPS excavation control methods the Contractor has available for use.
- E. The Contractor shall submit to the Construction Manager the Stockpile Plan prior to Notice to Proceed.
- F. The Contractor shall submit to the Construction Manager product data sheets and manufacturer's recommendations for soil binder material that will be used.

1.05 QUALITY ASSURANCE

- A. The Contractor shall ensure that the materials and methods used for Earthwork meet the requirements of the Construction Drawings and this Section. Any material or method that does not conform to these documents, or to alternatives approved in writing by the

Construction Manager shall be rejected and shall be repaired or replaced by the Contractor.

- B. The Contractor shall be aware of and accommodate all monitoring and field/laboratory conformance testing required by the CQA Plan. This monitoring and testing, including random conformance testing of construction materials and completed work, shall be performed by the CQA Engineer. If nonconformances or other deficiencies are found in the materials or completed work, the Contractor shall be required to repair the deficiency or replace the deficient materials.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and protect products brought to the Project site in accordance with this Section.
- B. Stockpiles
 1. Stockpile materials at locations in accordance with the Stockpile Plan or as agreed to by the Contractor and the Construction Manager. Stockpiles shall be located so as not to interfere with other aspects of the work.
 2. Clear stockpile areas and install erosion and sedimentation controls before depositing fill or excavated materials on approved stockpile areas.
 3. Prevent segregation of fill materials and mixing of one type of fill material with other types.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Engineered fill shall consist of on-site relatively homogeneous, natural soils that contain <5% of debris, foreign objects, large rock fragments (greater than 6 inches in maximum dimension), roots, and organics. No materials larger than 6 inches shall be allowed within the Engineered fill. The Engineered fill shall be classified according to the Unified Soil Classification System (per ASTM D 2487) as SC, ML, CL, SM, SW, SP, GW, GP, GM, GC, or combinations of these materials. The Contractor may propose the use of other soil types as Engineered fill, but then such use shall be at the sole discretion of the Engineer.

~~Cover soil shall consist of on-site relatively homogeneous, natural soils that are free of debris, foreign objects, large rock fragments (greater than 6 inches in maximum dimension), roots, and organics. The first lift of cover soil placed directly overlying the geosynthetic components of the cover system shall have a maximum particle size of 1 inch. The cover soil shall be classified according to the Unified Soil Classification System (per ASTM D 2487) as SC, ML, CL, SM, SW, GW, GM, GC, or combinations of these materials. The Contractor may propose the use of other soil types as cover soil, but then such use shall be at the sole discretion of the Engineer. Cover soil shall have a remolded minimum shear strength of 32 degrees and at least 500 psf cohesion at 90% compaction, based on Modified Proctor, at optimum moisture content, as measured by ASTM D 3080 DCN-015, 12/01/08.~~

- B. ~~Cover soil shall consist of on-site relatively homogeneous, natural soils that are free of debris, foreign objects, large rock fragments (greater than 6 inches in maximum dimension), roots, and organics. The first lift of cover soil placed directly overlying the~~

geosynthetic components of the cover system shall have a maximum particle size of 1 inch. The cover soil shall be classified according to the Unified Soil Classification System (per ASTM D 2487) as SC, ML, CL, SM, SW, GW, GM, GC, or combinations of these materials. The Contractor may propose the use of other soil types as cover soil, but then such use shall be at the sole discretion of the Engineer. Cover soil shall have a remolded minimum angle of internal friction of 28 degrees at 85% compaction, based on Modified Proctor, at optimum moisture content, as measured by ASTM D 4767. Testing shall be run with normal loads of 1, 2, and 4 psi. Pore pressure measurements shall be collected such that the consolidated, drained strength parameters are obtained from the test. DCN-015, 12/01/08.

- C. Operations layer shall consist of Eastside Area or Western Ditch materials conforming to Specifications in Section 02205.
- D. Prepared subgrade is defined as the material directly underlying the geosynthetic liner system which shall meet the requirements listed above for Engineered fill. No materials larger than 3/4 inch shall project or protrude from the surface of the prepared subgrade. Prepared subgrade limits are the top inside edge of the perimeter anchor trench.
- E. Pipe Trench Backfill shall be in accordance with CCAUSS Section 208 and the Construction Drawings.
- F. Anchor Trench Backfill materials shall meet the requirements listed above for the Engineered Fill.
- G. Slit Trench Backfill shall consist of earthen materials excavated from the slit trenches that are separated and earthen materials adjacent to the slit trenches.
- H. Structure Embankment shall conform to CCAUSS Section 207 and the requirements shown on the Construction Drawings.
- I. Aggregate base for storm water channels and CAMU Base Road shall conform to CCAUSS Section 704.03.04 for Type II Aggregate Base and the Construction Drawings.
- J. Grouted Riprap atop 6-inch Type II aggregate base along the embankment channels shall have D50 = 12-inch rip rap. Grouted rip rap shall be in accordance with CCAUSS Section 610 and the Construction Drawings.
- K. Grout shall be in accordance with CCAUSS Section 706 and the Construction Drawings.
- L. Final cover side slope surface treatment layer (gravel mulch) shall be 3/4-inch "Vista Gold" by Vista Landscape, Henderson, NV; telephone (702) 565-6611, or Construction Manager approved equal.
- M. Soil binder shall be long lasting plant derived material such as pitch and rosin emulsion, polymeric emulsion blends, or Portland cement based material as approved by the Construction Manager.

2.02 EQUIPMENT

- A. The Contractor shall furnish, operate, and maintain compaction equipment as is necessary to produce the required in-place soil density and moisture content.

- B. The Contractor shall furnish, operate and maintain tank trucks, pressure distributors, or other equipment designed to apply water uniformly and in controlled quantities to variable surface widths.
- C. The Contractor shall furnish, operate, and maintain miscellaneous equipment such as scarifiers or disks, earth excavating equipment, earth hauling equipment, and other equipment, as necessary for Earthwork construction.
- D. Equipment used in spreading the cover layer material on top of the geosynthetic liner system shall be restricted to the following maximum allowable equipment ground pressures:

MAXIMUM ALLOWABLE EQUIPMENT GROUND PRESSURE (psi)	INITIAL LIFT THICKNESS OF OVERLYING AGGREGATE THICKNESS OF COVER SOIL OVERLYING GEOCOMPOSITE <u>DCN-015, 12/01/08</u> (ft)
<10	1.0
<20 <u>DCN-015, 12/01/08</u>	2.0 <u>DCN-015, 12/01/08</u>
≥20 <u>DCN-015, 12/01/08</u>	3.0 <u>DCN-015, 12/01/08</u>
<20 <u>DCN-015, 12/01/08</u>	>1.0 and <2.0 <u>DCN-015, 12/01/08</u>
≥20 <u>DCN-015, 12/01/08</u>	≥2.0 <u>DCN-015, 12/01/08</u>

PART 3 – EXECUTION

3.01 FAMILIARIZATION

- A. Prior to implementing any of the work in this Section, the Contractor shall become thoroughly familiar with the site, the site conditions, and all portions of the work falling within this and other related Sections.
- B. Inspection:
 - 1. The Contractor shall carefully inspect the installed work of all other Sections and verify that all work is complete to the point where the installation of the work specified in this Section may properly commence without adverse impact.
 - 2. If the Contractor has any concerns regarding the installed work of other Sections, the Construction Manager shall be notified in writing prior to commencing work. Failure to notify the Construction Manager or continuance of the work of this Section shall be construed as Contractor's acceptance of the related work of all other Sections.
- C. **For CAMU stormwater control grading, "Improvement Plans for Eastside Landfill" prepared by PBS&J, October 2006, shall take precedence over "Final Construction**

Drawings, Basic Remediation Company, Corrective Action Management Unit, Henderson, Nevada," August 2007, conformed May 2008, prepared by Geosyntec Consultants. DCN-011 09/24/08, RFI-031

3.02 SITE PREPARATION

- A. Prior to performing any earthworks on the site, the Contractor shall perform a baseline topographic survey. The survey, at a minimum shall be performed on a 50 foot grid and account for grade breaks and other topographic features affecting volume of earthworks. This survey shall be conducted by a Professional Land Surveyor licensed in the state of Nevada. This survey shall serve as the starting point for earthwork quantities, both excavation and fill placement.
- B. The Contractor shall perform demolition and site clearing in accordance with the Construction Drawings and Sections 02010 and 02110 of these Specifications prior to any Earthwork activity.
- C. Prior to performing earthworks on the site, the Contractor shall install drainage and erosion-control measures in accordance with the SWPPP.

3.03 GENERAL EXCAVATION

- A. The Contractor shall excavate materials to the limits and grades shown on the Drawings.
- B. All excavated materials not used for Engineered Fill shall be stockpiled in accordance with the Stockpile Plan or in an area designated by the Construction Manager in accordance with Subpart 3.06 of this Section.
- C. Excavated materials shall be used onsite only. Contractor shall not export excavated CAMU soils.
- D. Excavations in native soil shall not have slopes steeper than 2.1H:1V, unless otherwise indicated on the Construction Drawings or when approved by the Construction Manager.
- E. No excavations deeper than 4 feet with side slopes steeper than 2:1 (horizontal:vertical) shall be made unless otherwise indicated on the Construction Drawings or without the prior approval of the Construction Manager. When shoring is required, the design and inspection of such shoring shall be the Contractor's responsibility and shall be subject to the review of the Construction Manager prior to use. No personnel shall Work within or next to an excavation requiring shoring until such shoring has been installed, inspected, and approved by an engineer registered in the State of Nevada. The Contractor shall be responsible for any fines imposed due to violation of any laws and regulations relating to the safety of the Contractor's personnel.
- F. Excavations shall be kept free from water.
- G. The Contractor shall notify the Construction Manager at once of springs, seeps, or wet zones found in excavations.
- H. Oversized materials encountered within the excavation or that result from screening operations of clean fill shall be segregated and stockpiled in accordance with the Stockpile Plan and Subpart 2.06 of this Section or in a location approved by the Construction Manager.

I. Permanent Ditches and Channels:

1. Cut ditches and channels accurately to the cross sections, grades, and elevations indicated on the drawings. Do not cut below indicated grades without prior Construction Manager authorization.
2. Do not deposit excavated material within 4 feet from the edge of a ditch or channel, unless the material is fill placed as indicated and specified.
3. Keep completed ditches and channels free from blockage or obstruction by leaves, brush, sticks, trash, sediment, and other debris.
4. Storm water ditch excavation through the Western Ditch shall be excavated 2.5 feet lower than grades shown on Construction Drawings. Excavated Western Ditch soil shall be stockpiled over the Western Ditch within the footprint of the Cell II in accordance with the Stockpile Plan. The storm water ditch shall immediately have 2.5 foot over excavation backfilled with clean soil to the grades shown on the construction drawings.

3.04 ANCHOR TRENCH EXCAVATION

- A. The Contractor shall excavate the anchor trench to the limits and grades shown on the Drawings.
- B. All excavated materials not used for Anchor Trench Backfill or Engineered fill shall be stockpiled in areas shown on Construction Drawings or as designated by the Construction Manager in accordance with Subpart 3.06 of this Section and the Stockpile Plan.

3.05 SUBGRADE SURFACE PREPARATION

- A. The subgrade shall be prepared and made suitable as a foundation for placement and compaction of soil material and geosynthetic components of liner system, where applicable. The prepared subgrade shall be proof-rolled and meet the requirements outlined in Subpart 2.01 The subgrade shall be firm and able to support the Contractor's construction equipment without the development of depressions or ruts. In addition, the subgrade shall provide adequate support such that the overlying fill material may be placed and compacted to the specified density.

3.06 STOCKPILING

- A. Soil shall be stockpiled in areas shown on Construction Drawings and in accordance with the Stockpile Plan, or as designated by the Construction Manager. Stockpile shall be free of incompatible soil, clearing, clearing debris, or other objectionable materials.

~~Stockpiles shall be no steeper than 2H:1V (Horizontal:Vertical) or other slope approved by the Construction Manager, graded to drain, sealed by tracking parallel with the direction of to the slope with a dozer or other means approved by the Construction Manager, and dressed daily during periods when fill is taken from the stockpile. The Contractor shall employ temporary erosion and sediment control measures (i.e. silt fence) in accordance with the Contractor prepared SWPPP or as directed by the Construction Manager around stockpile areas. DCN-011 09/24/08, RFI-039~~

- B. The 200,000 cy stockpile as defined by the Construction Drawings shall be no steeper than 1.5H:1V (Horizontal:Vertical). Additional stockpiles shall be no steeper than 2H:1V

or other slope approved by the Construction Manager. All stockpiles shall be graded to drain, sealed by tracking parallel with the direction of the slope with a dozer or other means approved by the Construction Manager, and dressed daily during periods when fill is taken from the stockpile. The Contractor shall employ temporary erosion and sediment control measures (i.e. silt fence) in accordance with the Contractor prepared SWPPP or as directed by the Construction Manager around stockpile areas. DCN-011 09/24/08, RFI-039

- C. Western Ditch soil excavated during Phase IIIA shall be stockpiled over the Western Ditch within Cell II or placed within the lined areas of the CAMU as waste fill in accordance with Section 02205 of these Specifications.

3.07 PIPE TRENCH EXCAVATION AND BACKFILL

- A. See CCAUSS Sections 206, 207, and 208.
- B. Trench excavation and backfill shall conform to the lines and grades shown on the Construction Drawings.

ENGINEERED FILL, SLIT TRENCH BACKFILL, AND ANCHOR TRENCH BACKFILL **DCN-022, 02/03/2009**

- A. ~~The Engineered Fill, Slit Trench Backfill, and Anchor Trench Backfill shall be placed to the lines and grades shown on the Drawings. DCN-022, 02/03/2009~~
- B. ~~Soil used for the Engineered Fill, Slit Trench Backfill, and Anchor Trench Backfill shall be on-site materials meeting the requirements of Subpart 2.01 of this Section. DCN-022, 02/03/2009~~
- C. ~~Soil used for the Engineered Fill, Slit Trench Backfill, and Anchor Trench Backfill shall be placed in a loose lift that results in a compacted lift thickness of no greater than 12 inches. The maximum permissible pre-compaction soil clod size is 6 inches. DCN-022, 02/03/2009~~
- D. ~~Each 12-inch horizontal lift of Engineered Fill and Slit Trench Backfill placed against a slope shall be keyed into the slope a minimum of 3 feet, as measured horizontally from the top of the 12-inch lift. DCN-022, 02/03/2009~~
- E. ~~The Contractor shall compact each lift to at least 90 percent of its modified Proctor maximum dry density (ASTM D-1557) at a moisture content of between -4% and +4% of the optimum moisture content for the soil. The Contractor shall utilize compaction equipment suitable for achieving the soil compaction requirements DCN-022, 02/03/2009~~
- F. ~~Contaminated water shall not be used for moisture conditioning or as dust control of final cover soils. DCN-022, 02/03/2009~~
- G. ~~During wetting or drying, the material shall be regularly disced or otherwise mixed so that uniform moisture conditions in the appropriate range are obtained. DCN-022, 02/03/2009~~

3.08 ENGINEERED FILL AND SLIT TRENCH, WASTE TRENCH, AND ANCHOR TRENCH BACKFILL **DCN-022, 02/03/2009**

- A. The Engineered Fill and Slit Trench, Waste Trench, and Anchor Trench Backfill shall be placed to the lines and grades shown on the Drawings. DCN-022, 02/03/2009

- B. Soil used for the Engineered Fill, Slit Trench Backfill, and Anchor Trench Backfill shall be on-site materials meeting the requirements of Subpart 2.01 of this Section. DCN-022, 02/03/2009
- C. Soil used for the Waste Trench Backfill shall consist of on-site materials specified on the Construction Drawings. DCN-022, 02/03/2009
- D. Soil used for the Engineered Fill, Slit Trench and Waste Trench Backfill, and Anchor Trench Backfill shall be placed in a loose lift that results in a compacted lift thickness of no greater than 12 inches. DCN-022, 02/03/2009
- E. The maximum permissible Engineered Fill and Anchor Trench Backfill pre-compaction soil clod size is 6 inches. DCN-022, 02/03/2009
- F. Each 12-inch horizontal lift of Engineered Fill and Slit and Waste Trench Backfill placed against a slope shall be keyed into the slope a minimum of 3 feet, as measured horizontally from the top of the 12-inch lift. DCN-022, 02/03/2009
- G. The Contractor shall compact each lift to at least 90 percent of its modified Proctor maximum dry density (ASTM D 1557) at a moisture content of between -4% and +4% of the optimum moisture content for the soil. The Contractor shall utilize compaction equipment suitable for achieving the soil compaction requirements DCN-022, 02/03/2009
- H. The Contractor shall construct a test pad of Slit or Waste Trench Backfill materials, minimum of 2 lifts and a length and width 2 times the length and width of the compactor using in constructing the test pad to verify compaction requirements specified in 3.08. Gare achieved using proposed equipment. DCN-022, 02/03/2009
- I. Waste Trench and Slit Trench Backfill shall be compacted by a minimum of 2 passes, forward and backward are counted as one pass, of a smooth drum compactor operating in static mode, Ingersoll-Rand SD 122 or equivalent. DCN-022, 02/03/2009
- J. Contaminated water shall not be used for moisture conditioning or as dust control of final cover soils. DCN-022, 02/03/2009
- K. During wetting or drying, the material shall be regularly disced or otherwise mixed so that uniform moisture conditions in the appropriate range are obtained. DCN-022, 02/03/2009

3.09 STRUCTURE EXCAVATION AND EMBANKMENT

- A. This shall include, but not be limited to, the following: detention basins, footings for riprap, concrete-lined storm water channels, aggregate-lined storm water channels, and cut-off walls for concrete aprons.
- B. Refer to CCAUSS Sections 206 and 207 for Structure Excavation and Structure Backfill, respectively.

3.10 FINAL COVER SOIL

- A. Place only when underlying drainage aggregate and filter geotextile or geocomposite installation is complete including all Construction Quality Control (CQC) and CQA work and approved by the Construction Manager.

- B. The subgrade to the cover soil consists of a geotextile or geocomposite. Therefore, the Contractor shall avoid tearing, puncturing, folding, or damaging in any way the filter geotextile or geocomposite geotextile during placement of the cover layer material.
- C. Any damage to the geosynthetic liner system which is caused by the Contractor or representatives of the Contractor shall be repaired by the Geosynthetics Installer at the expense of the Contractor.

~~The Contractor shall compact each final lift of final cover soil to at least 90 percent of its modified Proctor maximum dry density (ASTM D-1557) at a moisture content between 4% and +4% of the optimum moisture content for the soil. The Contractor shall utilize compaction equipment suitable for achieving the soil compaction requirements. **DCN-015, 12/01/08**~~

~~The Contractor shall compact the first 12-inch lift of final cover soil by 4 passes of a D-6 dozer with ground pressure no less than 4 psi and no greater than 10 psi, or equivalent. The Contractor shall compact the second 12-inch lift of final cover soil to at least 90 percent of its modified Proctor maximum dry density (ASTM D-1557) at a moisture content between 4% and +4% of the optimum moisture content for the soil. The Contractor shall utilize compaction equipment suitable for achieving the soil compaction requirements that meets the requirements for maximum ground pressure of subpart 2.02 of this Section. **DCN-015, 12/01/08 DCN-036, 10/28/09**~~

- D. The Contractor shall compact the first 12-inch lift of final cover soil by 4 passes of a D-6 dozer with ground pressure no less than 4 psi and no greater than 10 psi, or equivalent. On 3:1 cover slopes, the Contractor shall compact the second 12-inch lift by 4 passes of a compactor with a weight exceeding 20,000 lb (Ingersoll Rand SD-122DX, or equivalent). The compactor shall operate in vibratory mode going upslope and in static mode while going down slope. On flat cover surfaces, the Contractor shall compact the second 12-inch lift by 2 passes of the compactor operating in vibratory mode in both directions. A pass shall be combined forward and reverse operation over the same area of the material being compacted. **DCN-036, 10/28/09**
- E. The cover soil material shall be placed out in front of the equipment used to place the cover layer such that a 1-foot minimum thickness requirement is maintained at all times between the geosynthetic materials and the wheels or tracks of the equipment used to place the cover layer material.
- F. Care must be exercised by the operators of tracked equipment to avoid sharp pivoting turns that could displace the cover layer material and result in damage to the liner system.
- G. Contaminated water shall not be used for moisture conditioning or as dust control of final cover soils.
- H. A 2 inch layer of ¾ inch gravel mulch shall be placed on side slopes equal and greater than 5H:1V for all CAMU and BMI Landfill Covers.
- I. Soil binder shall be placed on top deck areas less than 5H:1V. Soil binder shall be applied at rates as recommended by the manufacturer for the prevention of water and wind induced erosion on exposed soils.

3.11 AGGREGATE BASE

- A. Aggregate base placement and compaction shall be in accordance with CCAUSS Section 301 and 302 for Type II aggregate base. Aggregate base shall be compacted to not less than 95% compaction as determined by AASHTO T 180.

3.12 GROUTED RIPRAP

- A. Grouted rip rap shall be placed in accordance with Section 610 of the CCAUSS and the Construction Drawings.

3.13 FIELD TESTING

- A. The minimum frequency and details of quality control testing for engineered fill and final cover soil are provided below. The Contractor shall provide equipment and operators to accommodate testing. This testing shall be performed by the CQA Engineer and is not separate from the testing outlined in the CQA Plan (i.e. QC and QA testing are the same and will not be duplicated). The Contractor shall take this testing frequency into account in planning the construction schedule.

1. Engineered fill and final cover soil material quality control testing:
 - a. particle-size analyses conducted in accordance with ASTM D 422 at a frequency of one test per 10,000 yd³;
 - b. Atterberg Limits conducted in accordance with ASTM D 4318 at a frequency of one test per 10,000 yd³;
 - c. soil classification tests conducted in accordance with ASTM D 2487 at a frequency of one test per 10,000 yd³; and
 - d. ~~modified Proctor compaction tests conducted in accordance with ASTM D 1557 at a frequency of one test per 10,000 yd³/lift.~~ **DCN-036, 10/28/09**
2. Engineered fill material quality control testing:
 - a. **modified Proctor compaction tests conducted in accordance with ASTM D 1557 at a frequency of one test per 10,000 yd³/lift.** **DCN-036, 10/28/09**

~~The CQA Engineer shall perform conformance tests on placed and compacted engineered fill and cover soil to evaluate compliance with these Specifications. These tests shall include in situ moisture content and dry density. The frequency and procedures for moisture density testing are given in the CQA Plan. At a minimum, the dry density and moisture content of the soil shall be measured in situ in accordance with ASTM D 2922 and ASTM D 3017, respectively. **DCN-036, 10/28/09**~~

3. **The CQA Engineer shall perform conformance tests on placed and compacted engineered fill to evaluate compliance with these Specifications. These tests shall include in-situ moisture content and dry density. The frequency and procedures for moisture-density testing are given in the CQA Plan. At a minimum, the dry density and moisture content of the soil shall be measured in-situ in accordance with ASTM D 6938, respectively.** **DCN-036, 10/28/09**

4. A special testing frequency shall be used by the CQA Engineer when visual observations of construction performance indicate a potential problem. Additional testing shall be considered when:
 - a. the rollers slip during rolling operation;
 - b. the lift thickness is greater than specified;
 - c. the fill is at improper and/or variable moisture content;
 - d. fewer than the specified number of roller passes are made;
 - e. dirt-clogged rollers are used to compact the material;
 - f. the rollers do not have optimum ballast; or
 - g. the degree of compaction is doubtful.
5. During construction, the frequency of testing shall be increased by the CQA Engineer in the following situations:
 - a. adverse weather conditions;
 - b. breakdown of equipment;
 - c. at the start and finish of grading;
 - d. if the material fails to meet specifications; or
 - e. the work area is reduced.

B. Defective Areas:

1. If a defective area is discovered in the Earthwork, the CQA Engineer shall evaluate the extent and nature of the defect. If the defect is indicated by an unsatisfactory test result, the CQA Engineer shall determine the extent of the defective area by additional tests, observations, a review of records, or other means that the CQA Engineer deems appropriate. If the defect is related to adverse site conditions, such as overly wet soils or surface desiccation, the CQA Engineer shall define the limits and nature of the defect.
2. Once the extent and nature of a defect is determined, the Contractor shall correct the deficiency to the satisfaction of the CQA Engineer. The Contractor shall not perform additional work in the area until the CQA Engineer approves the correction of the defect.
3. Additional testing may be performed by the CQA Engineer to verify that the defect has been corrected. This additional testing shall be performed before any additional work is allowed in the area of deficiency. The cost of the additional testing after failure shall be borne by the Contractor.

3.14 SURVEY CONTROL

- A. The Contractor shall perform all surveys necessary for construction layout and control.

3.15 CONSTRUCTION TOLERANCE

- A. The Contractor shall perform the Earthwork construction to within ± 0.1 ft on areas with a slope less than 10 percent and ± 0.2 ft on areas with a slope greater than 10 percent of the grades indicated on the Drawings.

3.16 PROTECTION OF WORK

- A. The Contractor shall use all means necessary to protect completed work of this Section.
- B. At the end of each day, the Contractor shall verify that the entire work area is left in a state that promotes drainage of surface water away from the area and from finished work. If threatening weather conditions are forecast, at a minimum, compacted surfaces shall be seal-rolled to protect finished work.
- C. In the event of damage to prior work, the Contractor shall make repairs and replacements to the satisfaction of the Construction Manager.

PART 4 – MEASUREMENT AND PAYMENT

4.01 GENERAL

- A. Providing for and complying with the requirements set forth in this Section for CAMU Excavation shall be measured as Lump Sum (LS) and payment shall be based on the lump sum price provided on the Bid Schedule. Specified items incidental to CAMU Excavation include:
 - 1. Anchor trench excavation
 - 2. Storm water channel excavation
 - 3. Stockpiling
 - 4. Prepared subgrade
 - 5. And all other incidentals necessary for a complete CAMU excavation.
- B. Providing for and complying with the requirements set forth in this Section for CAMU Engineered Fill shall be measured as Lump Sum (LS) and payment shall be based on the lump sum price provided on the Bid Schedule. Anchor trench backfill shall be incidental to CAMU Engineered Fill. This lump sum shall include all incidentals necessary for a complete CAMU Engineered Fill.
- C. Providing for and complying with the requirements set forth in this Section for Slit Trench Backfill shall be measured as compacted and moisture conditioned in-place cubic yards (CY), and payment shall be based on the unit price provided on the Bid Schedule. Incidental to Slit Trench Backfill shall be slit trench cover excavation. This lump sum shall include all incidentals necessary for a complete slit trench backfill.
- D. Providing for and complying with the requirements set forth in this Section for the BMI Landfills Cover Soil shall be measured as Lump Sum (LS), and payment shall be based on the lump sum price provided on the Bid Schedule. Incidental to the BMI Landfill Cover Soil shall be soil binder and gravel mulch. This lump sum shall include all incidentals necessary for a complete Cover soil placement on the BMI Landfills.

- E. Providing for and complying with the requirements set forth in this Section for CAMU Cover Soil shall be measured as in-place cubic yards (CY), and payment shall be based on the unit price provided on the Option Scope Bid Item Schedule. Incidental to CAMU Cover soil shall be gravel mulch rip-rap and soil binder. The unit price shall include all incidentals necessary for a complete CAMU cover soil placement.
- F. Providing for and complying with the requirements set forth in this Section for the Storm Water Channel Excavation and Embankment shall be measured as Lump Sum (LS), and payment shall be based on the lump sum price provided on the Bid Schedule. The following are considered incidental to Storm water channel excavation and embankment:
 - 1. Subgrade preparation
 - 2. Aggregate base
 - 3. All other necessary incidentals for complete installation of storm water channels.
- G. Providing for and complying with the requirements set forth in this Section for the Storm Water Detention Basin Excavation and Embankment shall be measured as Lump Sum (LS), and payment shall be based on the lump sum price provided on the Bid Schedule. Lump sum shall include all necessary incidentals for complete installation of storm water detention basins.
- H. Providing for and complying with the requirements set forth in this Section for the Storm Water Channel Rip-Rap shall be measured as Lump Sum (LS), and payment shall be based on the lump sum price provided on the Bid Schedule. The following are considered incidental to Storm Water Collection Improvements:
 - 1. Rip Rap
 - 2. Aggregate base
 - 3. Subgrade Preparation
 - 4. All necessary incidentals for complete installation of storm water concrete channels.
- I. Providing for and complying with the requirements set forth in this Section for Aggregate Base Road shall be measured as-lump sum (LS) and payment shall be based on the lump sum price provided on the Option Scope Bid Schedule. The price shall include all incidentals necessary for a complete aggregate base road installation.
- J. Providing for and complying with the requirements set forth in this Section for CAMU cover embankment channel grouted rip rap shall be measured as Square Foot (SF), and payment shall be based on the unit price provided on the Option Scope Bid Schedule. Specified items incidental to CAMU cover embankment channel rip rap are as follows:
 - 1. Grout
 - 2. Aggregate Base
 - 3. Subgrade preparation
 - 4. All other necessary incidentals for a complete CAMU cover embankment channel installation.

K. Providing for and complying with the following incidentals shall be included in the Earthworks and Remedial Excavation and Filling, Sections 02200 and 02205, costs on the Bid Schedules:

1. Construction and Dust Control Water
2. Uncontaminated Dewatering
3. On-site Contaminated Water Management and Disposal
4. Dust Control
5. Vacuum Trucks
6. Spill Clean up
7. Health and Safety
 - a. Personal Protective Equipment
 - b. Monitoring
8. Operations and Maintenance of the following items:
 - a. Parking Areas
 - b. Temporary Roads
 - c. Temporary Trailers
 - d. Temporary Utilities
 - e. On-site communications
 - f. Weather Protection
 - g. Contractor Generated Debris and Trash Control
 - h. Temporary Sanitary Facilities
 - i. Lighting
 - j. Material and Equipment Storage
 - k. Dust Control Water Storage
 - l. Vacuum Truck Staging Area
 - m. Decontamination Area
 - n. Construction Equipment
 - o. First Aid Facilities
 - p. Dust Control

- q. Pollution Control
 - r. Traffic and Safety Control
 - s. Decontamination
 - t. Noise Control
9. And all other incidentals necessary for Earthwork

[END OF SECTION]

7. EARTHWORKS AND WASTE PLACEMENT

7.1 Introduction

This section prescribes the CQA activities to be performed to monitor that earthwork components are constructed in general accordance with *Construction Drawings* and *Technical Specifications*. In addition, this section describes the CQA activities to be performed to monitor that waste materials are placed appropriately. The earthworks construction procedures to be monitored by the CQA Consultant include:

- excavation and stockpiling;
- engineered fill placement;
- **slit trench and waste trench backfill; DCN-022, 02/03/2009**
- anchor trench excavation and backfill;
- storm water pipe excavation and backfill;
- subgrade preparation;
- operations layer material placement;
- waste placement; and
- cover soil placement.

7.2 Testing Activities

Soil testing will be performed for material qualification, material conformance, and construction quality control (CQC). These three stages of testing are defined as follows:

- Material qualification tests are used to evaluate the conformance of a proposed soil source to the material specifications for qualification of the source prior to construction.
- Soils conformance testing is used to evaluate the conformance of a particular batch of soil from a qualified source to the material specifications prior to installation of the soil.
- CQC tests are performed on completed portions of the earthwork and waste placement during construction to demonstrate that the

placement procedures are resulting in a product that meets or exceeds both material and performance specifications.

The Contractor will be responsible for submitting material qualification test results to the Construction Manager and to the CQA Site Manager for review. The CQA Laboratory will perform the conformance testing. Soil and waste testing will be conducted in general accordance with the current versions of the corresponding American Society for Testing and Materials (ASTM) and American Association of State Highway and Transportation Officials (AASHTO) test procedures. The test methods indicated in Table 1 are those that will be used for this testing unless the test methods are updated or revised prior to construction. Revisions to the test methods will be reviewed and approved by the Engineer and the CQA Site Manager prior to their usage.

7.2.1 Sample Frequency

The frequency of soils testing for material qualification will conform to the minimum frequencies presented in Table 2. The frequency of soils testing for material conformance will conform to the minimum frequencies presented in Table 3. The actual frequency of testing required will be increased by the CQA Site Manager as necessary if variability of materials is noted at the site, during adverse conditions, or to isolate failing areas of the construction.

7.2.2 Sample or Test Location Selection

With the exception of qualification samples, sampling locations will be selected by the CQA Site Manager, **or designee, (DCN-012, 11/10/08)**. Conformance samples will be obtained from borrow pits and/or stockpiles of material. The Contractor must plan the work and make soil available for sampling in a timely and organized manner so that the test results can be obtained before the material is installed. The CQA Site Manager must document sample locations so that failing areas can be immediately isolated. The CQA Site Manager, **or designee, (DCN-012, 11/10/08)** will follow standard sampling procedures to obtain representative samples of the proposed soil materials.

CQC sample and test locations will be selected by the CQA Site Manager, **or designee, (DCN-012, 11/10/08)** at the minimum test frequency specified in Table 4. Samples and test locations will generally be selected at random, however a special testing frequency will be used at the discretion of the CQA Site Manager when visual observations of construction performance indicate a potential problem. Additional testing for suspected areas will be considered when:

- rollers slip during rolling operation;
- lift thickness is greater than specified;
- fill is at improper and/or variable moisture content;
- less than specified number of roller passes are made;
- dirt-clogged rollers are used to compact the material;
- rollers may not have used optimum ballast;
- fill materials differ substantially from those specified;
- the degree of compaction is doubtful;
- **the percent solids of waste material is questionable; (DCN-012, 11/10/08)** and
- as directed by the Construction Manager or the CQA Site Manager.

The frequency of testing may also be increased in the following situations:

- adverse weather conditions;
- breakdown of equipment;
- at the start and finish of grading;
- material fails to meet specifications; and
- the work area is reduced.

7.3 CQA Monitoring Activities

7.3.1 Earthwork and Waste Placement

The CQA Site Manager will monitor and document the earthworks required for the Project. In general, monitoring the construction for earthwork includes the following activities:

- reviewing documentation of the material qualification test results provided by the Contractor;
- monitoring the prepared subgrade and subgrade surfaces for compliance with the *Technical Specifications* before geosynthetic materials are placed;
- sampling and testing for conformance of the materials to the *Technical Specifications*;
- documenting that the earthwork is constructed using the specified equipment and procedures;
- documenting that the earthwork is constructed to the lines and grades shown on the *Construction Drawings*;
- monitoring that the construction activities do not cause damage to underlying geosynthetic materials;
- quality control testing to determine the acceptability of the work during construction;
- monitoring that waste placement, grading, compaction, and ~~moisture condition~~ **percent solids (DCN-012, 11/10/08)** meet the requirements outlined in the *Technical Specifications*; ~~and~~
- monitoring the action of the compaction and heavy hauling equipment on the construction surface (i.e., penetration, pumping, cracking, etc.).

The specific activities required for CQA of each of the major soil components of the Liner System are presented in the following sections.

7.3.2 Engineered Fill Material

Monitoring the earthwork for the engineered fill material specifically includes the following:

- reviewing documentation of the qualification and conformance test results;
- monitoring soil for maximum particle size and deleterious materials;
- monitoring the thickness of lifts during placement of the materials;
- monitoring compaction operations; and
- measuring and recording the field density and the field moisture content of the in-place material.

7.3.3 Slit Trench and Waste Trench Backfill

Monitoring the earthwork for the slit trench and waste trench backfill material specifically includes the following:

- monitoring the soil for deleterious materials;
- monitoring the thickness of lifts during placement of the materials; and
- monitoring compaction operations. **DCN-022, 02/03/2009**

7.3.4 Prepared Subgrade

During construction, the CQA Site Manager will monitor the prepared subgrade to document that the prepared subgrade soil characteristics are consistent with those specified in the *Technical Specifications*. The CQA Site Manager will monitor the construction activities to document that sharp rocks and other undesirable materials are removed and that the subgrade is prepared using the procedures and equipment specified in the *Technical Specifications*.

The upper portion of the subgrade can be damaged by excess moisture (causing softening) or insufficient moisture (causing desiccation and shrinkage). At a minimum, the CQA Site Manager will determine the suitability of the subgrade for geomembrane placement by:

- documenting that the surface is free of sharp rocks, debris and other undesirable materials;
- documenting that the surface is smooth, uniform, and free from desiccation cracks by visually monitoring proof rolling activities; and
- documenting that the subgrade surface meets the lines and grades shown on the *Construction Drawings* by reviewing certified survey results.

7.3.5 Operations Layer Material

The CQA Site Manager will monitor the earthwork of the operations layer material for the following:

- the Contractor's submittals and qualification test results for consistency between the proposed methods and the approved methods;
- the conformance testing of the material and notifying the Contractor of results for compliance with material specifications;
- the thickness of lifts during placement;
- the placement equipment operation on the sideslopes is in general accordance with the *Technical Specifications*;
- placement of the overlying materials does not damage, create large wrinkles, or induce excessive tensile stress in the underlying geosynthetic materials;

- the construction procedures to monitor that completed sections of liner and geomembrane are protected from damage; and
- the survey data to monitor that operations layer material is constructed to the proposed lines and grades and to the specified thickness.

7.3.6 Waste Material

The CQA Site Manager will monitor the waste placement and daily slit trench cover soil material for the following:

- monitoring the type and size of waste materials being placed;
- ~~monitoring the moisture content of the waste materials being placed;~~
(DCN-012, 11/10/08)
- ~~monitoring the thickness of lifts during placement of the materials;~~
(DCN-023, 02/20/09)
- monitoring that the thickness of loose lifts prior to compaction are no greater than 12 inches. Exceptions may be allowed by exception but should not be allowed as a general practice. Loose lifts shall never be greater than 18 inches during placement of the materials, except when necessary to cover waste materials, sized in accordance with the Technical Specifications, that are thicker than 18 inches; **(DCN-023, 02/20/09)**
- monitoring the placement and maintenance of grade stakes indicating 12 inch loose lift thicknesses relative to previously placed lifts; **(DCN-023, 02/20/09)**
- monitoring grade stakes are placed at a spacing that will allow the equipment operator to provide a relatively uniform lift placement thickness between grade stakes and that will allow CQA personnel to

have adequate visual confirmation of the placed lift thickness; **DCN-023, 02/20/09**)

- monitor the distance between slit trench wastes and debris and the both the base and side slope liner system; and **(DCN-012, 11/10/08)**
- monitoring compaction operations. ; and
- ~~measuring and recording the field density and the field moisture content of the in-place waste materials.~~ **(DCN-012, 11/10/08)**

~~Material exhibiting more than 1-inch of rutting under a loaded 40-ton John Deere D400 off-road dump truck driving in a relatively straight line will be examined to determine if the waste is dry and powdery or soft and wet. If excessive rutting is observed, CQA personnel will determine corrective action, if any. Reprocessing of material will be performed on the CAMU. **(DCN-012, 11/10/08)**~~

Material exhibiting more than 1-inch of rutting under a loaded 40-ton John Deere D400 off-road dump truck driving in a relatively straight line will be examined to determine if the waste is dry and powdery or soft and wet. If excessive rutting is observed, CQA personnel will determine corrective action and notify the Nevada Division of Environmental Protection if material is deemed acceptable with no corrective action. Reprocessing of material will be performed on the CAMU. **(DCN-016, 12/09/08)**

7.3.7 Interim Cover Soil Material

The CQA Site Manager will monitor the earthwork for the interim cover soil material for the following:

- reviewing documentation of the qualification and conformance test results;
- monitoring soil for maximum particle size and deleterious materials;
- monitoring compaction operations; and

- measuring and recording the field density and the field moisture content of the in-place material.

7.3.8 Cover Soil Material

The CQA Site Manager will monitor the earthwork for the cover soil material for the following:

- reviewing documentation of the qualification and conformance test results;
- monitoring soil for maximum particle size and deleterious materials;
- monitoring the thickness of lifts during placement of the materials; and
- ~~• monitoring compaction operations. **(DCN-036, 10/28/09)**~~
- **monitoring compaction operations and documenting the methods used for compaction in daily field reports. **(DCN-036, 10/28/09)****
- ~~• measuring and recording the field density and the field moisture content of the in-place material. **(DCN-036, 10/28/09)**~~

7.3.9 Aggregate Base

The CQA Site Manager will monitor the earthwork for the aggregate base material for the following:

- reviewing documentation of the qualification and conformance test results;
- monitoring soil for maximum particle size and deleterious materials;
- monitoring the thickness of lifts during placement of the materials;

- monitoring compaction operations; and
- monitoring soil for maximum particle size and deleterious materials.

7.4 Deficiencies

If a defect is discovered in the earthwork product, the CQA Site Manager will immediately determine the extent and nature of the defect. If the defect is indicated by an unsatisfactory test result, the CQA Site Manager will determine the extent of the deficient area by additional tests, observations, a review of records, or other means that the CQA Site Manager deems appropriate. If the defect is related to adverse site conditions, such as overly wet soils or surface desiccation, the CQA Site Manager will define the limits and nature of the defect.

7.4.1 Notification

After evaluating the extent and nature of a defect, the CQA Site Manager will notify the Construction Manager and Contractor and schedule appropriate re-tests when the work deficiency is to be corrected.

7.4.2 Repairs and Re-Testing

At locations where the field testing indicates densities **or compaction not in accordance with** below **(DCN-012, 11/10/08)** the requirements of the specification, the failing area will be reworked. Additional tests shall be taken at half the distance to the next passing test. If the retest has failed, half the distance from the retest to the passing test shall be tested, and continue until the test passes. If a test passes, half the distance from the passing retest to the failed test shall be considered failed.

The Contractor will correct the deficiency to the satisfaction of the CQA Site Manager. If a project specification criterion cannot be met, or unusual weather conditions hinder work, then the CQA Site Manager will develop and present to the Construction Manager suggested solutions for his approval.

All re-tests recommended by the CQA Site Manager must verify that the defect has been corrected before any additional work is performed by the Contractor in the area of the deficiency. The CQA Site Manager will also verify that installation requirements are met and that submittals are provided.

**TABLE 1
TEST PROCEDURES FOR THE EVALUATION OF SOILS**

TEST METHOD	DESCRIPTION	TEST STANDARD
<u>Laboratory Test Procedures:</u>		
Classification	Classification of Soils	ASTM D 2487
Moisture Content	Moisture Content	ASTM D 2216 ASTM D 4643
Modified Proctor	Moisture/Density Relationship of Soil (10 lb (4.54 kg) rammer and 18 in. (457 mm) drop)	ASTM D 1557
Atterberg Limits	Plasticity of Soils	ASTM D 4318
Sieve Analysis	Particle Size Distribution of Coarse Fraction of Soils	ASTM D 422
Consolidated Undrained	Shear Strength of Cover Soil on Side Slopes	ASTM D 4767
Rapid One-Dimensional Consolidation (DCN-012, 11/10/08)	Consolidation and leachate generation potential of in-place Waste Material	Modified ASTM D 2435 (DCN-012, 11/10/08)
<u>Field Test Procedures:</u>		
Nuclear Densometer (DCN-036, 10/28/09)	In Situ Soil Unit Weight (DCN-036, 10/28/09) In Situ Moisture Content (DCN-036, 10/28/09)	ASTM D 2922 (DCN-036, 10/28/09) ASTM D 3017 (DCN-036, 10/28/09)
Nuclear Densometer (DCN-036, 10/28/09)	In Situ Soil Unit Weight and Moisture Content (DCN-036, 10/28/09)	ASTM D 6938 (DCN-036, 10/28/09)
Rubber Balloon Method	In Situ Soil Unit Weight In Situ Moisture Content	ASTM D 2167
Sand Cone	In Situ Soil Unit Weight Moisture Content	ASTM D 1556 ASTM D 2216
Drive Cylinder	In Situ Soil Unit Weight Moisture Content	ASTM D 2937 ASTM D 2216

TABLE 2
MINIMUM SOILS TESTING FREQUENCIES
FOR MATERIAL QUALIFICATION TESTING

TEST	ENGINEERED FILL AND COVER SOIL
Moisture Content	1 per source
Sieve Analysis	1 per source
Atterberg Limits	1 per source
Soil Classification	1 per source
Modified Proctor	1 per source
Consolidated Undrained	1 per source for cover side slope

TABLE 3
MINIMUM SOILS TESTING FREQUENCIES
FOR CONFORMANCE TESTING

TEST	ENGINEERED FILL	COVER SOIL	WASTE MATERIALS
Moisture Content ⁽⁺⁾ <u>DCN-015, 12/01/08</u> <u>(DCN-036, 10/28/09)</u>	1 per 10,000 yd ³ (7,646 m ³)	1 per 10,000 yd³ (7,646 m³) <u>(DCN-036, 10/28/09)</u>	1 per distinct type of material or contaminated soil to be placed in the CAMU <u>(DCN-012, 11/10/08)</u>
Sieve Analysis	1 per 10,000 yd ³ (7,646 m ³)	1 per 10,000 yd ³ (7,646 m ³)	--
Atterberg Limits	1 per 10,000 yd ³ (7,646 m ³)	1 per 10,000 yd ³ (7,646 m ³)	--
Soil Classification	1 per 10,000 yd ³ (7,646 m ³)	1 per 10,000 yd ³ (7,646 m ³)	--
Modified Proctor ⁽⁺⁾ <u>DCN-015, 12/01/08</u> <u>(DCN-036, 10/28/09)</u>	1 per 10,000 yd ³ (7,646 m ³)	1 per 10,000 yd³ (7,646 m³) <u>(DCN-036, 10/28/09)</u>	1 per distinct type of material or contaminated soil to be placed in the CAMU <u>(DCN-012, 11/10/08)</u>

Notes:

- (+) ~~Moisture content and modified proctor testing will only be performed on the cover material intend for second 12 in. lift of cover soil placed above the final cover system geocomposite material.~~ DCN-015, 12/01/08 (DCN-036, 10/28/09)

TABLE 4

**MINIMUM SOIL TESTING FREQUENCIES FOR
CONSTRUCTION QUALITY CONTROL**

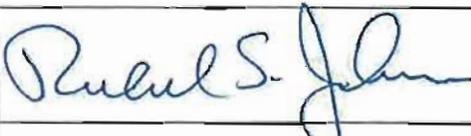
TEST	ENGINEERED FILL AND COVER SOIL	WASTE MATERIAL
Nuclear densometer ⁽⁺⁾ (DCN-012, 11/10/08) (DCN-036, 10/28/09)	1 per 500 yd ³ (76 m ³) (Note 3) (DCN-036, 10/28/09)	1 per 2,500 yd ³ — (765 m ³) (DCN-012, 11/10/08)
Sand cone or drive cylinder	1 per 20 nuclear densometer tests	--
Moisture Content (DCN-012, 11/10/08) Percent Solids (DCN-012, 11/10/08)	--	1 per 10,000 yd ³ - (7,646 m ³) 1 per 5,000 yd ³ (3,822 m ³) ⁽²⁾ (DCN-012, 11/10/08) ⁽¹⁾ (DCN- 036, 10/28/09)
Shelby Tube – Rapid One Dimensional Consolidation Test ⁽³⁾ (DCN-012, 11/10/08) ⁽²⁾ (DCN-036, 10/28/09)	--	1 per 50,000 yd ³ - (38,230 m ³) As Needed (DCN- 012, 11/10/08)

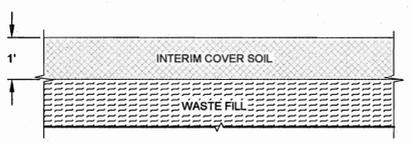
Notes: (1) ~~Nuclear densometer testing of the first lift of cover soil placed above the final cover system geosynthetics shall be performed at a depth no greater than 6 in. (i.e., 8 in. deep hole in 12 in. thick cover). DCN-015, 12/01/08~~
~~Nuclear densometer testing shall only be performed on the second 12 in. lift of cover soil placed above the final cover system geocomposite material. DCN-015, 12/01/08 (DCN-036, 10/28/09)~~

- (1) Percent Solids tests shall be performed on processed sludge pond, along with comingled soils and other waste, materials only. Minimum oven time shall be 36 hours. (DCN-012, 11/10/08)
- (2) Consolidation test to be performed to demonstrate liquids are not squeezed out of waste soils. Test shall be performed if percent solids testing indicates material has less than 83 percent solids and reworking/drying of material is undesirable. (DCN-012, 11/10/08) Normal stress for test shall be equivalent to final depth of sample (based on final cover system topography) multiplied by unit weight of overlying waste (110.8 pcf assumed density) (DCN-012, 11/10/08) and cover system materials. Specimen will be prepared using Standard Proctor effort in a mold with a diameter of 2.87 inches, and a height of approximately 2.8 inches. (DCN-012, 11/10/08)
- (3) Conformation of cover soil 2nd 12-inch lift compaction will be demonstrated through test pad construction. Two test pads will be constructed out of 1-inch minus cover soil (1st 12-inch lift): one on the 3:1 side slope and one on the top deck. For each pass of the compaction equipment, the following will be documented: two moisture/density test results per ASTM D6938, type of compaction equipment, and operation mode of the equipment (e.g., static or vibratory). Passes, testing, and record keeping will continue until 90% relative density results are obtained from each of the two moisture/density tests. Test pad construction and conformation will be repeated if cover soil material varies significantly. Nuclear density testing will not be performed on the 2nd 12-inch lift after placement and compaction in accordance with the results of the test pad demonstration. (DCN-036, 10/28/09)



Design Change Notification

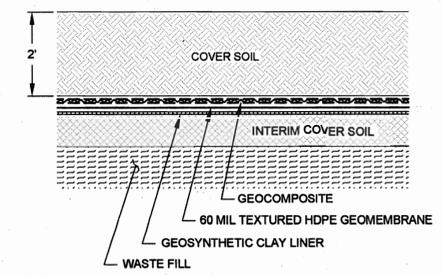
Project: BRC Eastside Common Areas Soils Remediation, Henderson, Nevada		DCN No.: ESR DCN-037
Contract No.: 6389		Contractor: ENTACT Environmental Services
References:		
RFI No.: 93	Drawing No.: 44	
Specification Section:	CQA Section No.:	
<p>Design Change: This design change modifies Detail 27 on Drawing No. 44 to indicate material needed between the cover system geosynthetics and aggregate base to achieve grades indicated on Drawings 38 and 39. A minimum of 1ft of aggregate base is required beneath the grouted rip rap. Beneath the aggregate base, either aggregate base or 1-inch minus cover soil may be placed.</p>		
<p>Attachments: Revised Drawing 44</p>		
<p>This design change notification shall be included into the contract documents referenced above and is officially incorporated into the contract documents as of the date latest signature approval date on this document.</p>		
Approved By:		
Engineer of Record:		Date: 10-MAR-2010
Construction Manager:		Date: 3/12/10
BRC Project Manager:		Date: 3/15/10



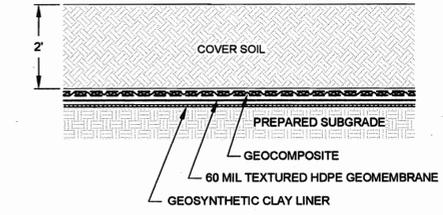
22 SECTION
INTERIM COVER SYSTEM
SCALE: 1" = 2'
SC0313.04-1028 Composite Liner Section.dwg



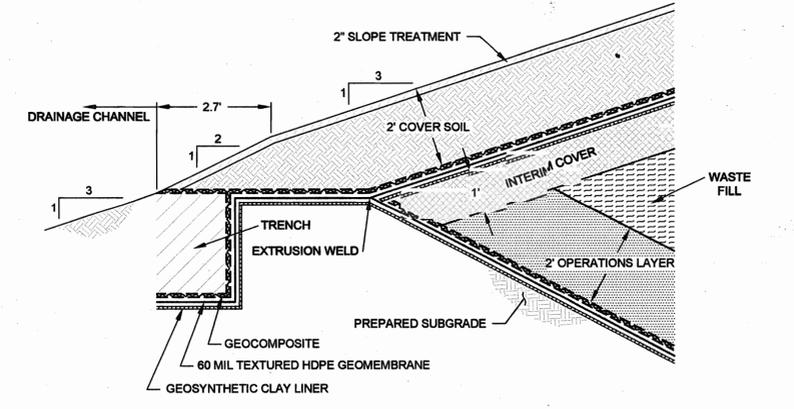
22A SECTION
INTERIM SURFACE
SCALE: 1" = 2'
SC0313.04-1028 Composite Liner Section.dwg



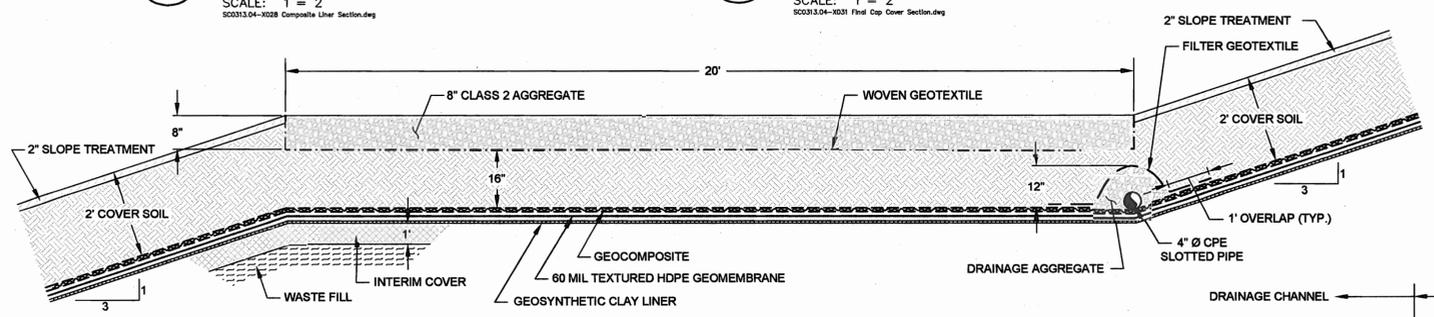
23 SECTION
FINAL CAMU COVER SYSTEM
SCALE: 1" = 2'
SC0313.04-1031 Final Cap Cover Section.dwg



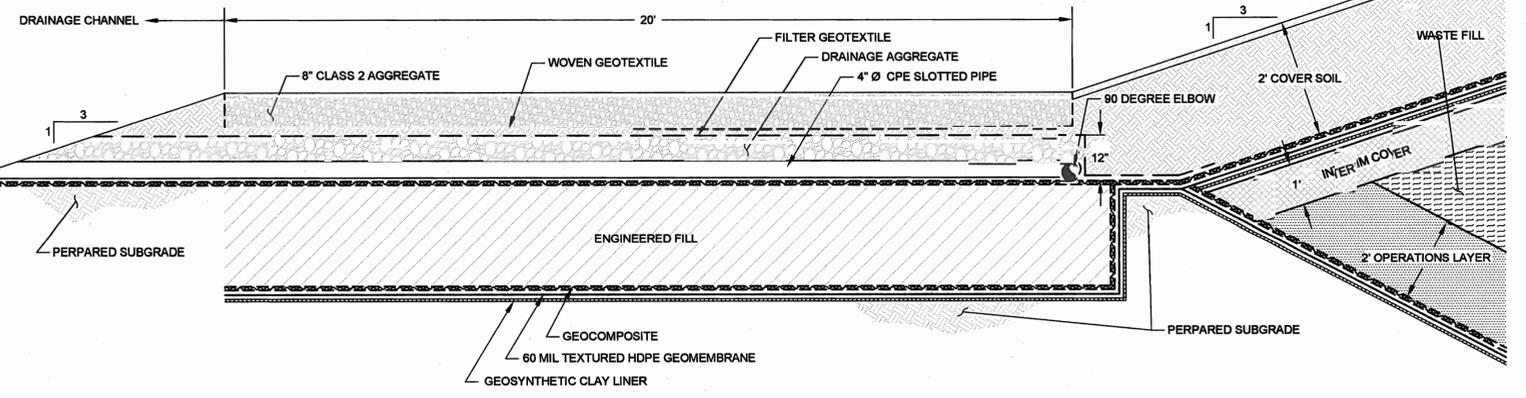
23A SECTION
FINAL BMI LANDFILLS COVER SYSTEM
SCALE: 1" = 2'
SC0313.04-1031 Final Cap Cover Section.dwg



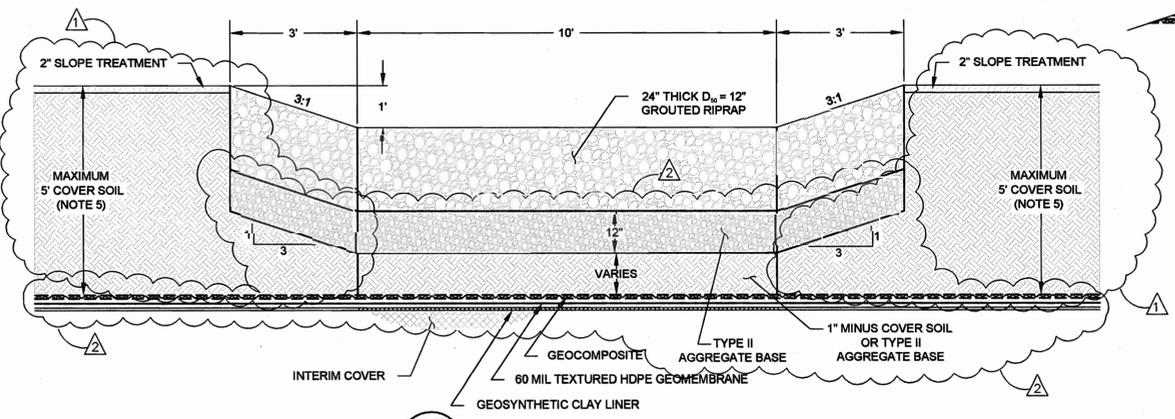
24 SECTION
FINAL COVER SYSTEM TERMINATION
SCALE: 1" = 2'
SC0313.04-1028 Composite Liner Section.dwg



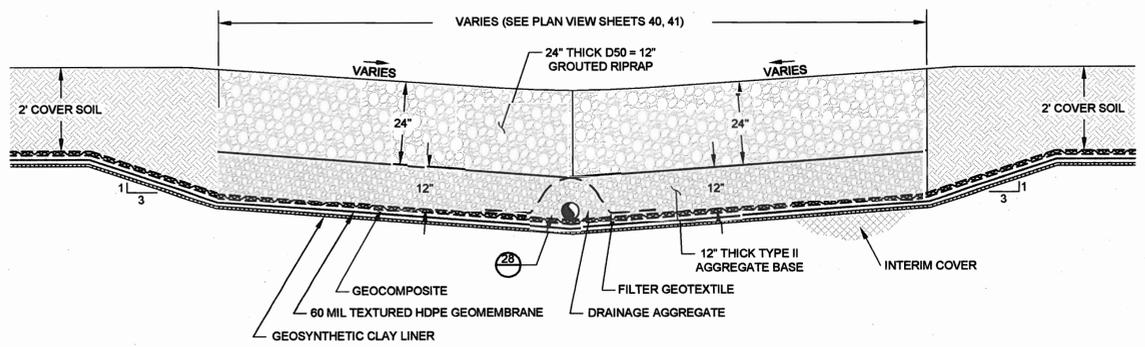
25 SECTION
FINAL COVER ACCESS ROAD
SCALE: 1" = 2'
SC0313.04-1028 Composite Liner Section.dwg



26 SECTION
FINAL COVER DRAIN OUTLET
SCALE: 1" = 2'
SC0313.04-1028 Composite Liner Section.dwg



27 SECTION
EMBANKMENT CHANNEL
SCALE: 1" = 2'
SC0313.04-1030 Embankment Channel.dwg



28 SECTION
RIP RAP PAD - TOP OF FINAL COVER
SCALE: 1" = 2'
SC0313.04-1028 Composite Liner Section.dwg

- NOTES:**
1. FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS, SEE DWG 2.
 2. DETAILS ARE SHOWN TO SCALE INDICATED EXCEPT FOR THE GEOSYNTHETICS, WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY.
 3. FINAL COVER SYSTEM FOR SOUTH BMI LANDFILL SHALL EXTEND BENEATH THE DRAINAGE CHANNEL AND THE GEOMEMBRANE SHALL BE EXTRUSION WELDED TO THE CAMU BASE LINER SYSTEM GEOMEMBRANE AT THE TOP OF THE ANCHOR TRENCH. CONTRACTOR MAY ELECT TO EXTEND CAMU BASE LINER SYSTEM COMPONENTS DURING LINER SYSTEM INSTALLATION.
 4. ANCHOR TRENCH SHALL EXTEND 3 FT VERTICAL FROM THE BASE OF THE DRAINAGE CHANNEL UP EACH SIDE OF THE DRAINAGE CHANNEL.
 5. COVER SOIL THICKNESS TRANSITIONS FROM 5' TO 2' MOVING AWAY FROM THE EDGE OF THE CHANNEL, SEE GRADING PLAN.

CONFORMED

2	3/8/10	DCN 037, RFI-093	MH	GTC
1	7/8/09	DCN 030	MH	GTC
0	5/8/08	CONFORMED SET	JA/MD	GTC
REV	DATE	DESCRIPTION	DRN	APP

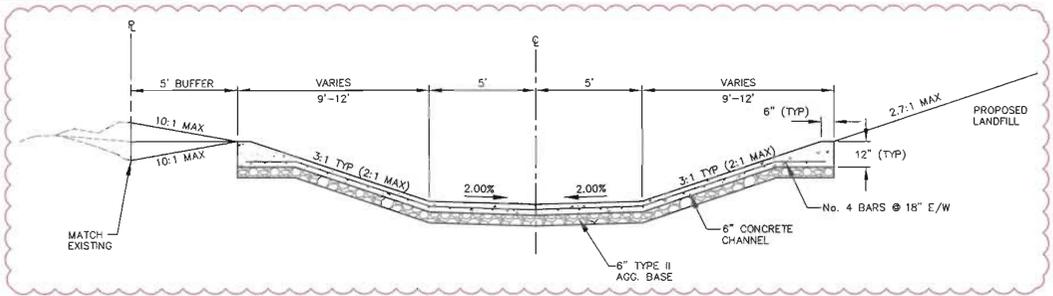
Geosyntec consultants 10875 RANCHO BERNARDO RD, SUITE 200 SAN DIEGO, CA 92127 PHONE: 858.674.6559		Basic Remediation CORP 875 WEST WARM SPRINGS ROAD HENDERSON, NEVADA 89015	
TITLE: DETAILS - MISCELLANEOUS			
PROJECT: FINAL DESIGN BRC CAMU			
SITE: HENDERSON, NEVADA			
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.		DESIGN BY: JA DRAWN BY: MD/JA CHECKED BY: RF REVIEWED BY: RJ APPROVED BY: GTC	DATE: OCTOBER 2007 PROJECT NO.: SC0313-04 FILE: DRAWING NO.: 44 OF 45

P:\PRA\SD02d\CADD\SC0313\planists\Conformed Set\REVISIONS TO CONFORMED SET\DCN-030 Sheet 44\SC0313.04-44.dwg



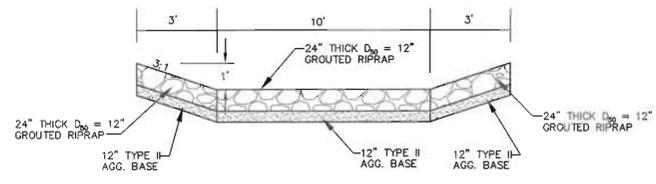
Design Change Notification

Project: BRC Eastside Common Areas Soils Remediation, Henderson, Nevada		DCN No.: ESR DCN-038 Rev 2
Contract No.: 6389		Contractor: ENTACT Environmental Services
References:		
RFI No.: 94	Drawing No.: D1	
Specification Section: N/A	CQA Section No.: N/A	
Design Change: Revised Detail A to change from mesh reinforcing to No. 4 bars.		
Attachments: electronic copy of revised sheet		
This design change notification shall be included into the contract documents referenced above and is officially incorporated into the contract documents as of the date latest signature approval date on this document.		
Approved By:		
Engineer of Record:		Date: 4-5-10
Construction Manager:		Date: 4/5/10
BRC Project Manager:		Date: 4/6/10



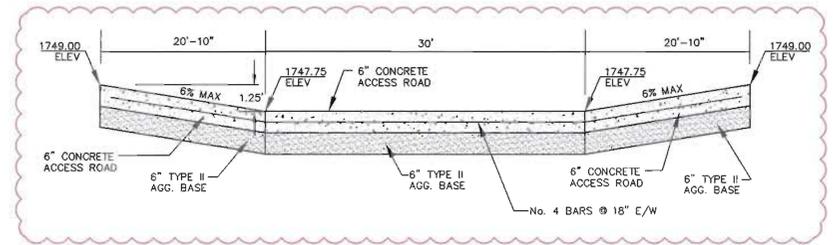
- NOTES:
- ALL WORK TO CONFORM TO CCAUSS #'s 301, 302, 409, 501, 610, 701, 702, 704, AND 706.
 - TYPE II AGGREGATE SHALL CONFORM TO CCAUSS # 704.03.04.
 - ALL CONCRETE SHALL BE CLASS AA PER CCAUSS # 501.
 - SEE CAMU DRAWINGS FOR GEOCOMPOSITE, GEOMEMBRANE, LINER, PIPE, GEOTEXTILE, COVER SOIL, SLOPE TREATMENT, INTERIM COVER, OPERATIONS LAYER, FINAL COVER, AND ALL OTHER SUBGRADE REQUIREMENTS.

(A) TYPICAL CHANNEL DETAIL
D1 SCALE H = V



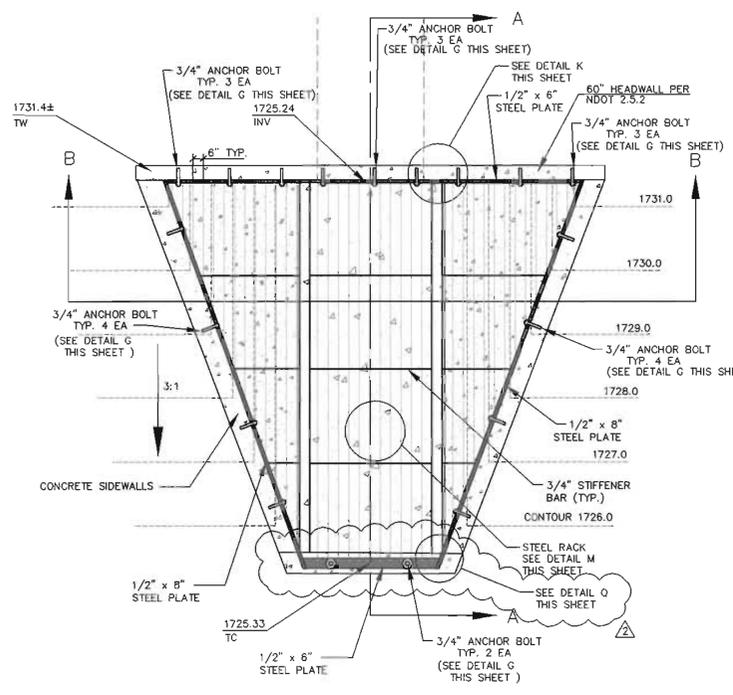
- NOTES:
- ALL WORK TO CONFORM TO CCAUSS #'s 301, 302, 610, AND 704.
 - TYPE II AGGREGATE SHALL CONFORM TO CCAUSS # 704.03.04.
 - ALL CONCRETE SHALL BE CLASS AA PER CCAUSS # 501.
 - SEE CAMU DRAWINGS FOR GEOCOMPOSITE, GEOMEMBRANE, LINER, PIPE, GEOTEXTILE, COVER SOIL, SLOPE TREATMENT, INTERIM COVER, OPERATIONS LAYER, FINAL COVER, AND ALL OTHER SUBGRADE REQUIREMENTS.

(B) TYPICAL LANDFILL EMBANKMENT CHANNEL DETAIL
D1 NTS

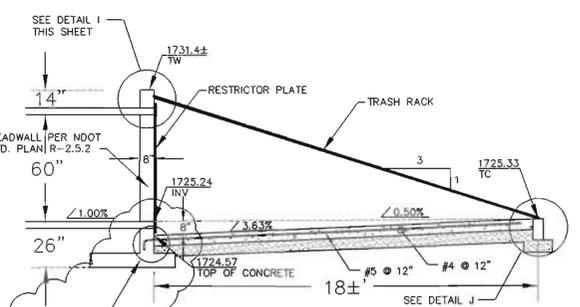


- NOTES:
- ALL WORK TO CONFORM TO CCAUSS #'s 301, 302, 409, 501, 610, 611, 701, 702, 704, AND 706.
 - TYPE II AGGREGATE SHALL CONFORM TO CCAUSS # 704.03.04.
 - ALL CONCRETE SHALL BE CLASS AA PER CCAUSS # 501.
 - SEE CAMU DRAWINGS FOR GEOCOMPOSITE, GEOMEMBRANE, LINER, PIPE, GEOTEXTILE, COVER SOIL, SLOPE TREATMENT, INTERIM COVER, OPERATIONS LAYER, FINAL COVER, AND ALL OTHER SUBGRADE REQUIREMENTS.

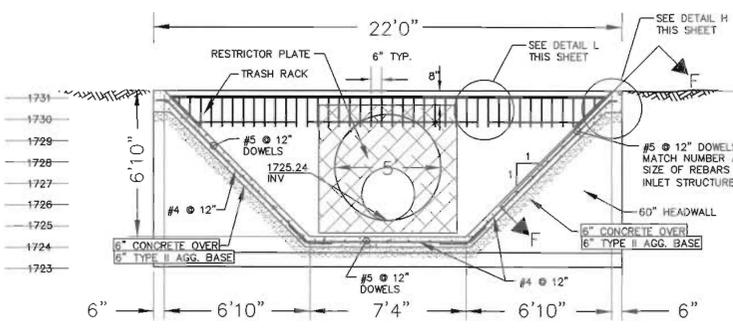
(C) EQUALIZER BASIN OVERFLOW DETAIL
D1 NTS



PLAN VIEW

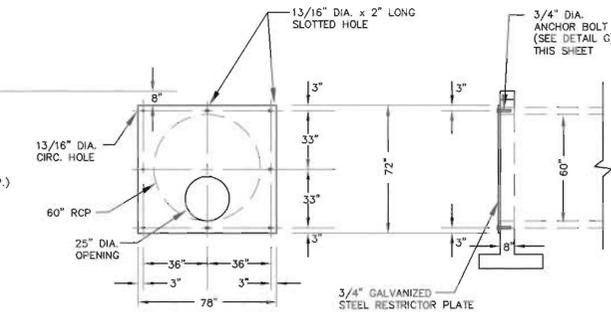


SECTION "A-A"



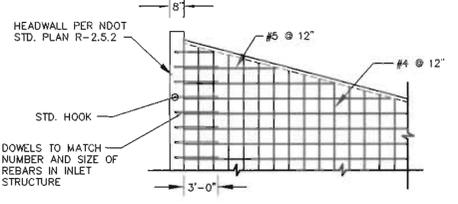
SECTION "B-B"

(D) INLET / TRASH RACK DETAIL
D1 SCALE 1" = 4'-0"

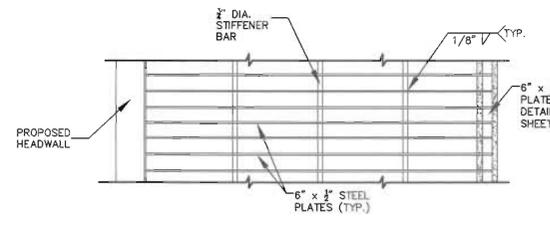


FRONT SECTION

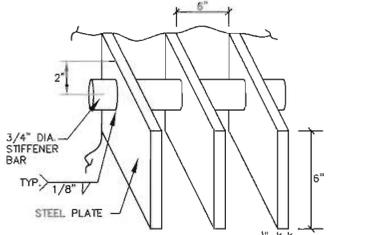
(E) RESTRICTOR PLATE DETAIL
D1 SCALE: 1" = 4'-0"



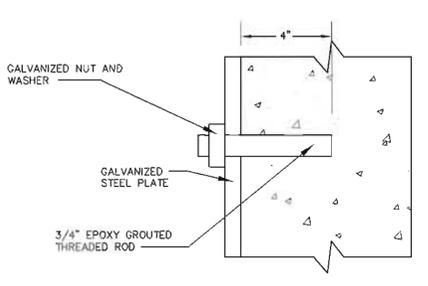
(F) PERPENDICULAR VIEW
D1 SIDEWALL REINFORCEMENT



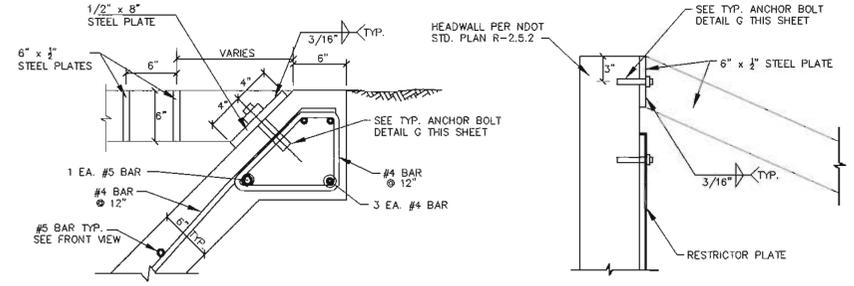
(M) TRASH RACK DETAIL
D1 NTS



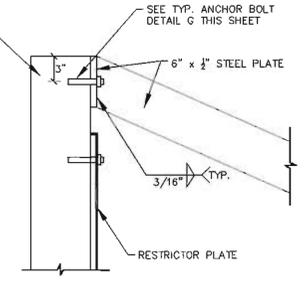
(N) STIFFENER BAR DETAIL
D1 NTS



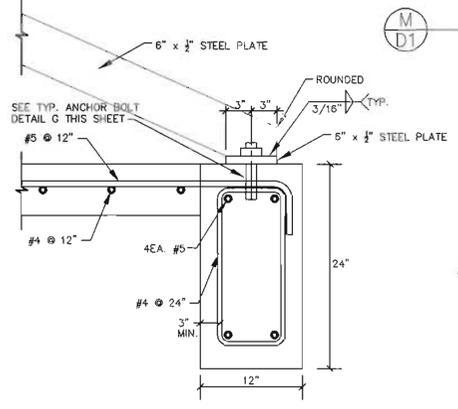
(G) ANCHOR BOLT DETAIL
D1 NTS



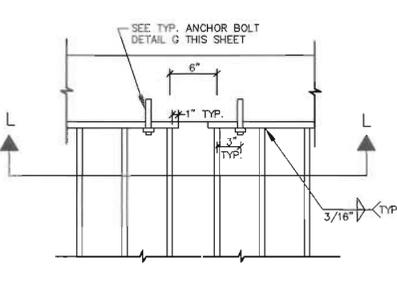
(H) DETAIL
D1 NTS



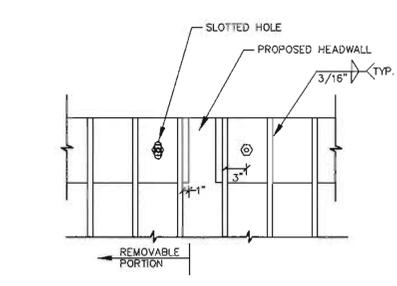
(I) DETAIL
D1 NTS



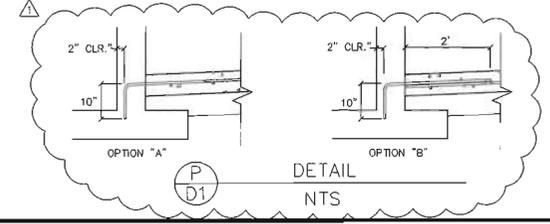
(J) DETAIL
D1 NTS



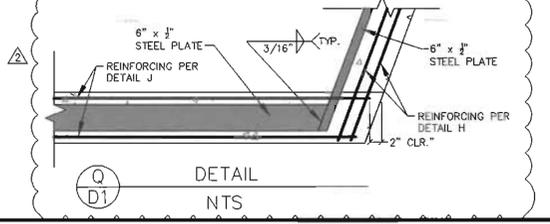
(K) DETAIL
D1 NTS



(L) DETAIL
D1 NTS



(P) DETAIL
D1 NTS



(Q) DETAIL
D1 NTS

- NOTES:
- HEADWALL PER NDOT STANDARD PLANS R2.5.2
 - ALL THREADED ROD ANCHORS SHALL BE 3/4" SIMPSON SET (HIGH STRENGTH EPOXY) OR SIMILAR. BOLTS FOR REMOVABLE PORTION SHALL BE STAINLESS STEEL.
 - ALL STEEL PARTS SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A153.
 - A HARDENED FLAT WASHER AND LOCK WASHER SHALL BE USED BETWEEN THE NUTS AND CONNECTED PARTS.
 - ALL WELDING SHALL BE DONE IN ACCORDANCE WITH AWS D1.5-96 CODE.
 - TYPE II AGGREGATE SHALL CONFORM TO CCAUSS # 704.03.04
 - ALL CONCRETE SHALL BE CLASS AA PER CCAUSS # 501.

Call before you Dig. 1-800-227-2600

Call before you Overhead. 1-702-227-2929

Professional Engineer Seal for M. Lee Jacoby Jr., License No. 5736, State of Nevada.

REV	DESCRIPTION	DATE	APPROVAL
1	ADDED DETAIL "P" - REF #634 - DGN 032	8/12/08	MLJ
2	ADDED DETAIL "Q" - DGN 034	8/12/08	MLJ
3	REVISED CHANNEL SECTION - DGN 038	5/17/10	MLJ
4	REVISED CHANNEL DETAIL - DGN 035-REV1	5/29/10	MLJ
5	REVISED CHANNEL REINFORCING - DGN 035-REV2	5/29/10	MLJ

PBSI Engineering & Construction Services, Inc. 1775 S. Rainbow Blvd., Suite 200, Las Vegas, NV 89102. Phone: 702-735-7200.

Basic Remediation, Inc. 11111 S. Eastern Ave., Suite 100, Las Vegas, NV 89123. Phone: 702-735-7200.

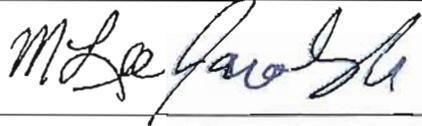
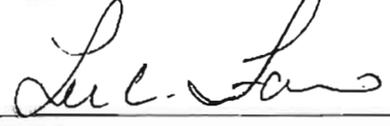
CONFORMED EASTSIDE LANDFILL DETAILS I

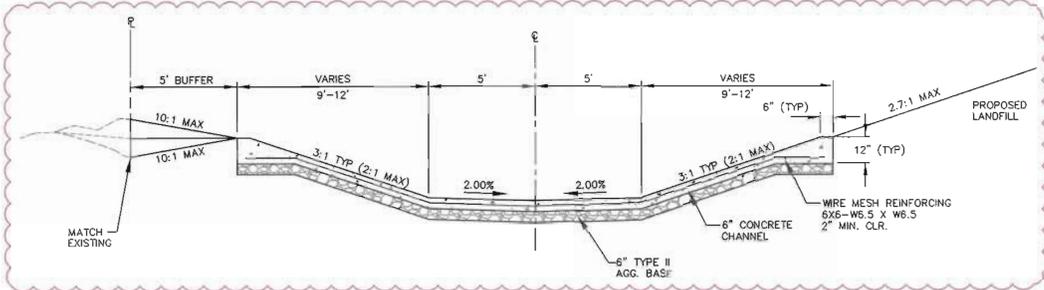
DESIGNED BY: -LJ
DRAWN BY: -DS
CHECKED BY: -DS
DATE: MAY, 2008

JTE# 06-44325
D1



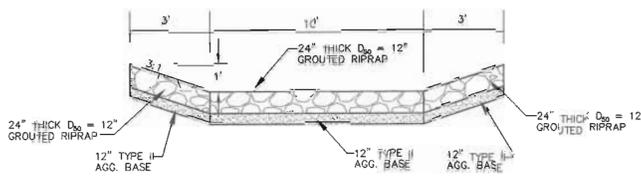
Design Change Notification

Project: BRC Eastside Common Areas Soils Remediation, Henderson, Nevada		DCN No.: ESR DCN-038 Rev 1
Contract No.: 6389		Contractor: ENACT Environmental Services
References:		
RFI No.: 94	Drawing No.: D1, S1, S2	
Specification Section: N/A	CQA Section No.: N/A	
Design Change: Revised channel details to show 3:1 slope typical, 2:1 slope max.		
Attachments: electronic copy of revised sheets		
This design change notification shall be included into the contract documents referenced above and is officially incorporated into the contract documents as of the date latest signature approval date on this document.		
Approved By:		
Engineer of Record:		Date: 3-29-10
Construction Manager:		Date: 3/30/10
BRC Project Manager:		Date: 03/30/10



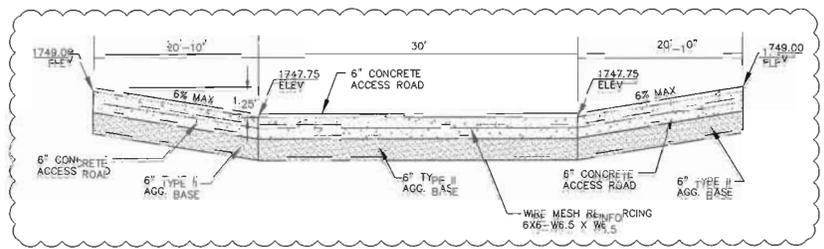
- NOTES:
1. ALL WORK TO CONFORM TO CCAUSS #s 301, 302, 409, 501, 610, 701, 702, 704, AND 706.
 2. TYPE II AGGREGATE SHALL CONFORM TO CCAUSS # 704.03.04.
 3. ALL CONCRETE SHALL BE CLASS AA PER CCAUSS # 501.
 4. SEE CAMU DRAWINGS FOR GEOCOMPOSITE, GEOMEMBRANE, LINER, PIPE, GEOTEXTILE, COVER SOIL, SLOPE TREATMENT, INTERIM COVER, OPERATIONS LAYER, FINAL COVER, AND ALL OTHER SUBGRADE REQUIREMENTS.

(A) TYPICAL CHANNEL DETAIL
SCALE: H = V



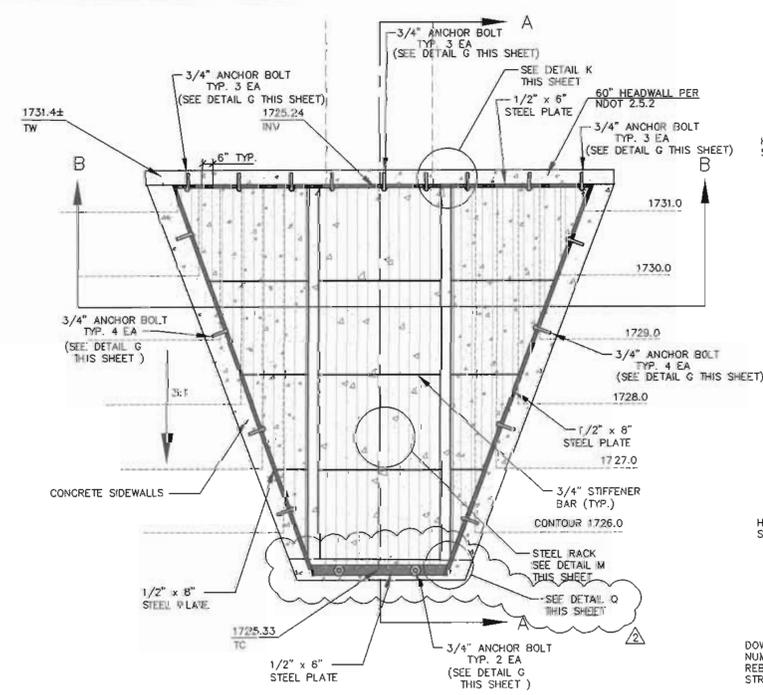
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(B) TYPICAL LANDFILL EMBANKMENT CHANNEL DETAIL
NTS

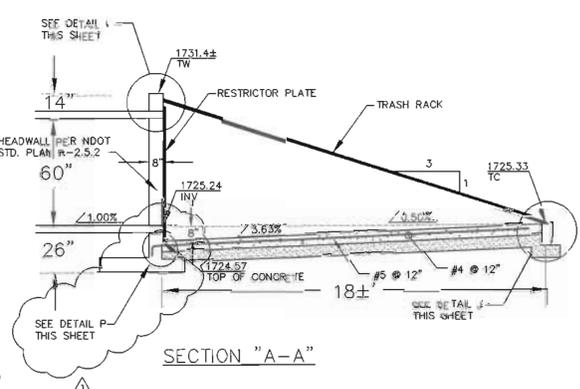


- NOTES:
1. ALL WORK TO CONFORM TO CCAUSS #s 301, 302, 409, 501, 610, 611, 701, 702, 704, AND 706.
 2. TYPE II AGGREGATE SHALL CONFORM TO CCAUSS # 704.03.04.
 3. ALL CONCRETE SHALL BE CLASS AA PER CCAUSS # 501.
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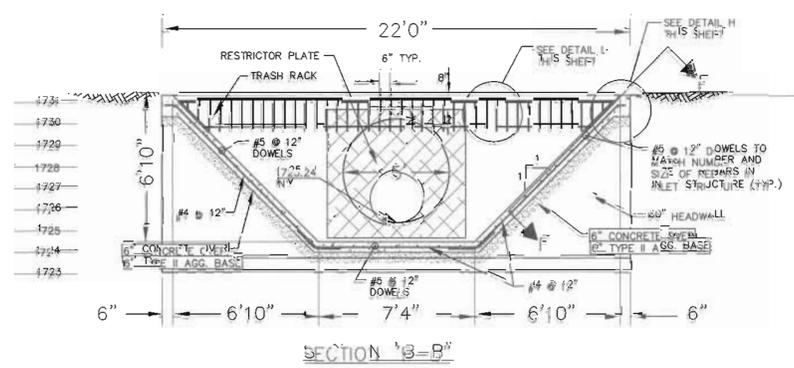
(C) EQUALIZER BASIN OVERFLOW DETAIL
NTS



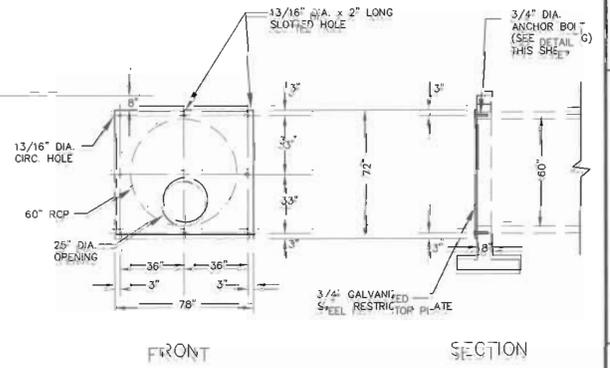
PLAN VIEW



SECTION "A-A"

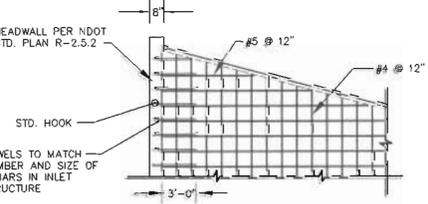


SECTION "B-B"

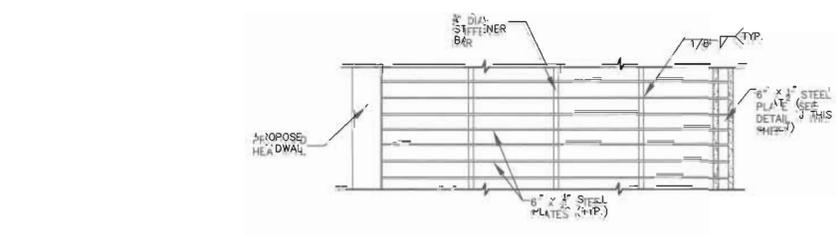


(E) RESTRICTOR PLATE DETAIL
SCALE: 1" = 4'-0"

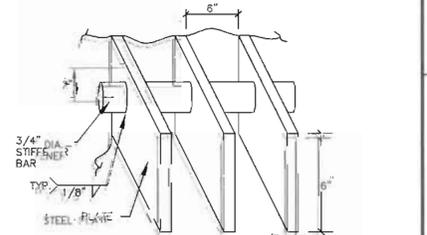
(D) INLET / TRASH RACK DETAIL
SCALE: 1" = 4'-0"



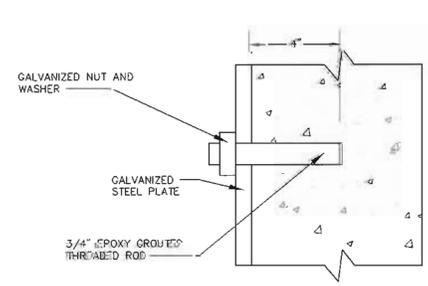
(F) PERPENDICULAR VIEW SIDEWALL REINFORCEMENT



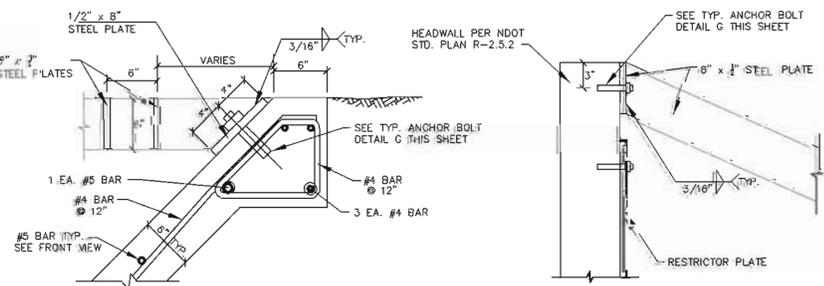
(M) TRASH RACK DETAIL
NTS



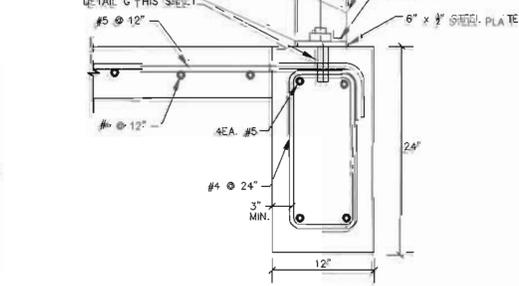
(N) STIFFENER BAR DETAIL
NTS



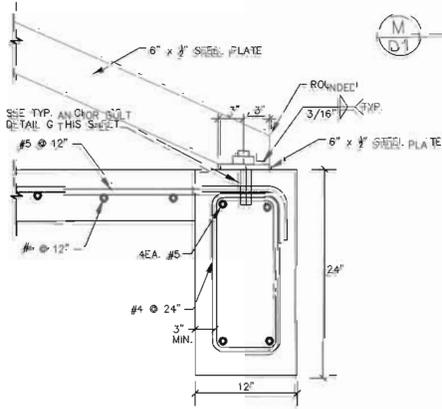
(G) ANCHOR BOLT DETAIL
NTS



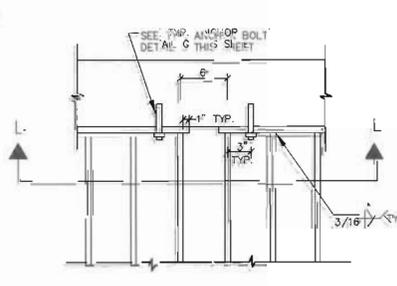
(H) DETAIL
NTS



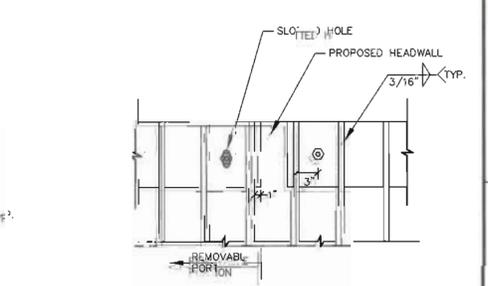
(I) DETAIL
NTS



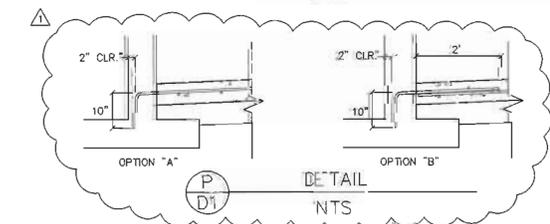
(J) DETAIL
NTS



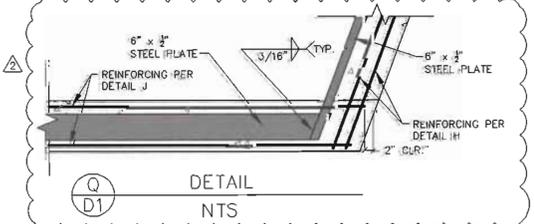
(K) DETAIL
NTS



(L) DETAIL
NTS



(P) DETAIL
NTS



(Q) DETAIL
NTS

- NOTES:
1. HEADWALL PER NDOT STANDARD PLANS R-2.5.2
 2. ALL THREADED ROD ANCHORS SHALL BE 3/4" SIMPSON SET (HIGH STRENGTH) (EPOXY) OR SIMILAR BOLTS FOR REMOVABLE PORTION SHALL BE STAINLESS STEEL.
 3. ALL STEEL PARTS SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A153.
 4. A HARDENED FLAT WASHER AND LOCK WASHER SHALL BE USED BETWEEN THE NUTS AND CONNECTED PARTS.
 5. ALL WELDING SHALL BE DONE IN ACCORDANCE WITH AWS D1.1S-98 CODE.
 6. TYPE II AGGREGATE SHALL CONFORM TO CCAUSS # 704.03.04.
 7. ALL CONCRETE SHALL BE CLASS AA PER CCAUSS # 501.

Call
1-800-227-2600

Call
1-702-227-2992

DiGi-
OVERHEAD

SEAL

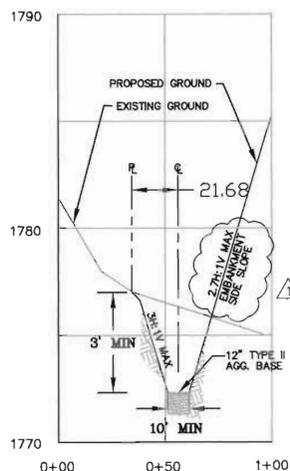
M. LEE JACOBY Jr.
CIVIL
No. 15730

REV.	DATE	DESCRIPTION	BY	DATE	APPROVAL
1	8/12/08	ADDED DETAIL P - REF #084 - DCR 032	MLJ		
2	8/12/08	ADDED DETAIL G - REF #034	MLJ		
3	8/21/11	REVISIONS TO DETAIL A - DCR 039-REV1	MLJ		
4	8/21/11	REVISIONS TO DETAIL A - DCR 039-REV1	MLJ		

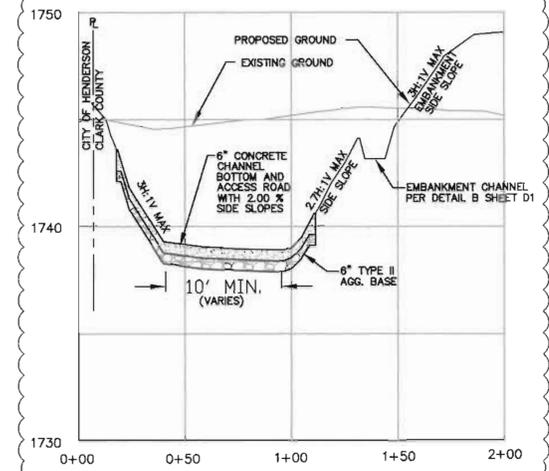
DESIGNED BY: J-L
DRAWN BY: DS
CHECKED BY: DS
DATE: MAY, 2008

FILE NO: 1608.19
FILE NAME: LANDFILL
SCALE: HORIZ.:
VERT.:

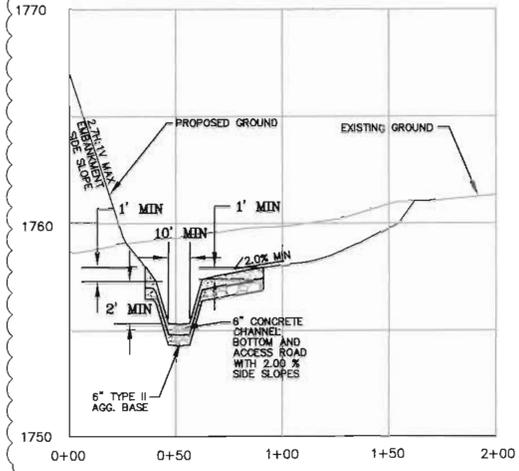
CONFORMED EAST SIDE LANDFILL DETAILS I



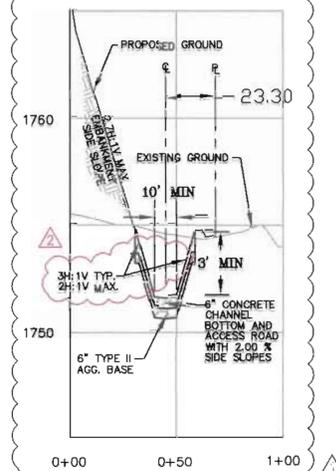
1 WEST CHANNEL CROSS SECTION
S1 STA. 16+05.81
TYP. STA. 10+00 TO 20+00



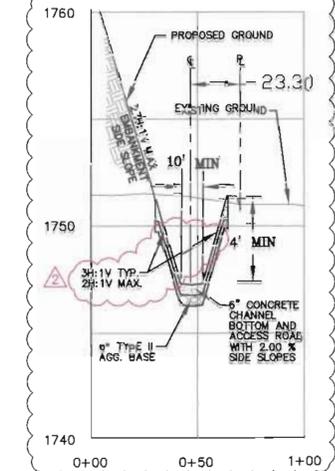
4 WEST CHANNEL CROSS SECTION
S1 STA. 39+60.72
TYP. STA. 38+50 TO 40+00



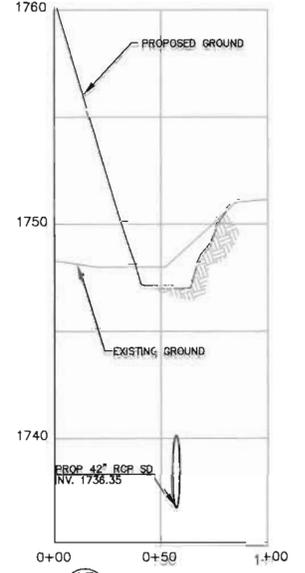
8 EAST CHANNEL CROSS SECTION
S1 STA. 21+70.62
TYP. STA. 20+00 TO 23+12.11



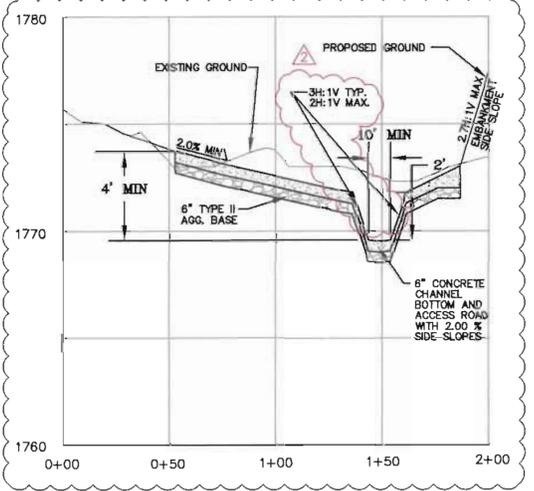
9 EAST CHANNEL CROSS SECTION
S1 STA. 23+86.32
TYP. STA. 23+12.11 TO 25+45



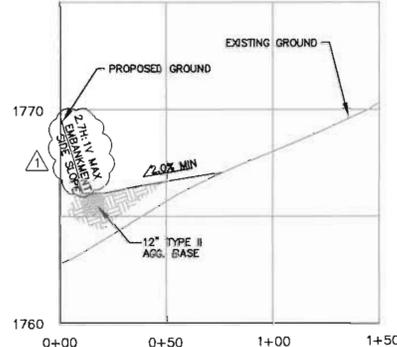
10 EAST CHANNEL CROSS SECTION
S1 STA. 25+94.79
TYP. STA. 25+45 TO 26+69.88



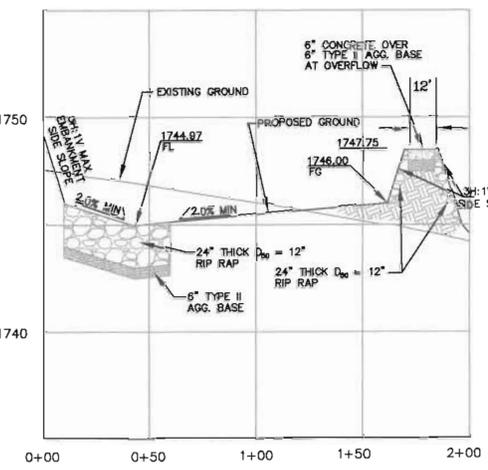
15 CROSS SECTION
S2



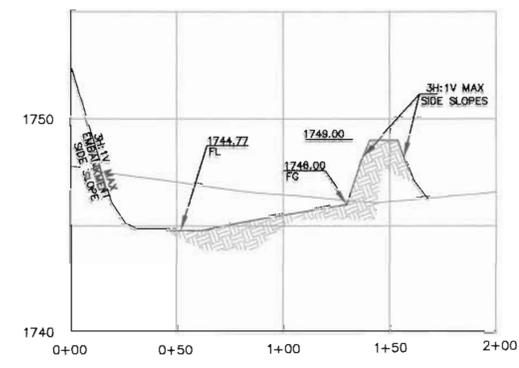
2 WEST CHANNEL CROSS SECTION
S1 STA. 21+77.81
TYP. STA. 20+00 TO 24+00



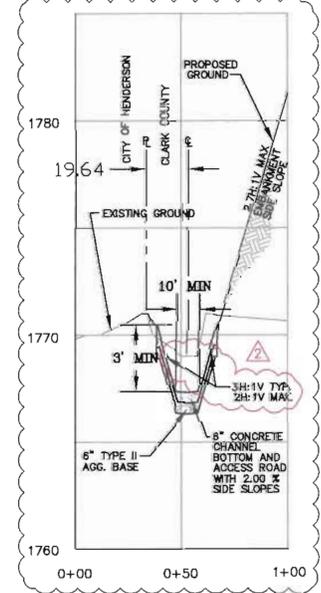
5 CROSS SECTION
S1



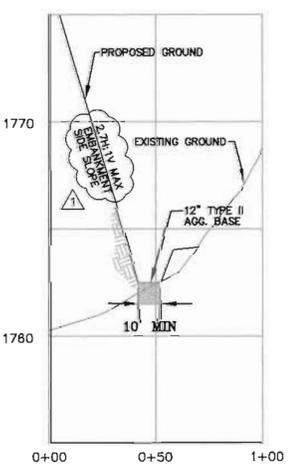
11 EAST CHANNEL CROSS SECTION
S1 STA. 29+18.23
TYP. STA. 29+17± TO 29+33±



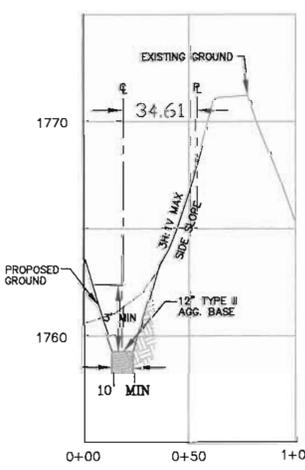
12 EAST CHANNEL CROSS SECTION
S1 STA. 29+72.95
TYP. STA. 26+69.88 TO 29+17± & STA. 29+33± TO 30+00



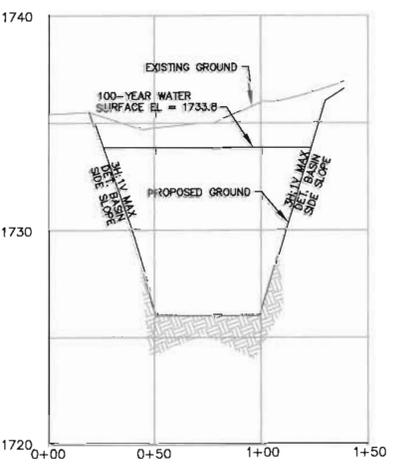
3 WEST CHANNEL CROSS SECTION
S1 STA. 24+22.75
TYP. STA. 24+00 TO 38+50



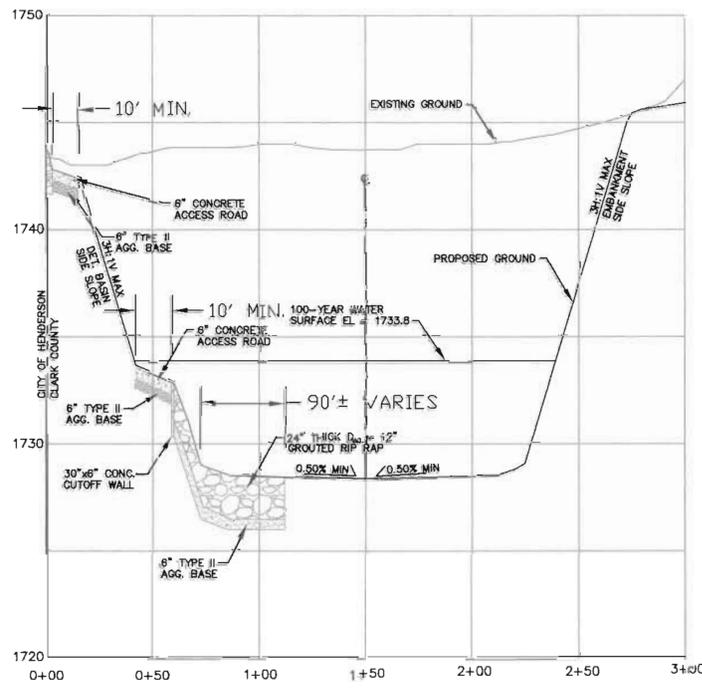
6 CROSS SECTION
S1



7 EAST CHANNEL CROSS SECTION
S1 STA. 16+76.44
TYP. STA. 10+00 TO 20+00



13 CROSS SECTION
S1

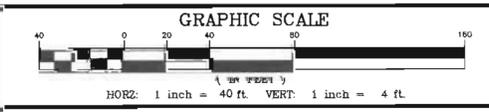


14 CROSS SECTION
S1

NOTES
1. ALL TYPE II AGGREGATE TO CONFORM TO OCAUSS 704.03.04.
2. ALL CONCRETE SHALL BE CLASS AA PER OCAUSS #501.
3. SEE CAMU DRAWINGS FOR GEOCOMPOSITE, GEOMEMBRANE, LINER, PIPE, GEOTEXTILE, COVER SOIL, SLOPE TREATMENT, INTERIM COVER, DRAINAGE LAYER, FINAL COVER, AND ALL OTHER SUBGRADE REQUIREMENTS.

BASIS OF BEARING
SOUTH 85°36'52" WEST - BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND "CC-GIS 851" AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BENCHMARK
CLARK COUNTY BENCHMARK NO. 6C22 4E6 - RIVET AND PLATE IN TOP OF CURB SOUTHEAST CORNER OF SUNSET ROAD AND CAMARLO PARK DRIVE NEAR THE PC OF SUNSET ROAD.
NAVD 1988 DATUM
ELEVATION = 633.553 METERS
1760.50 FEET
(REVISED 2003)



DESIGNED BY: DS
DRAWN BY: DS
CHECKED BY: LJ
DATE: 12/12/09

SEAL
PROFESSIONAL ENGINEER
JACOBY JR.
CIVIL
No. 15736

Call before you Dig. 1-800-227-2600
Call before you Overhead. 1-702-227-2929

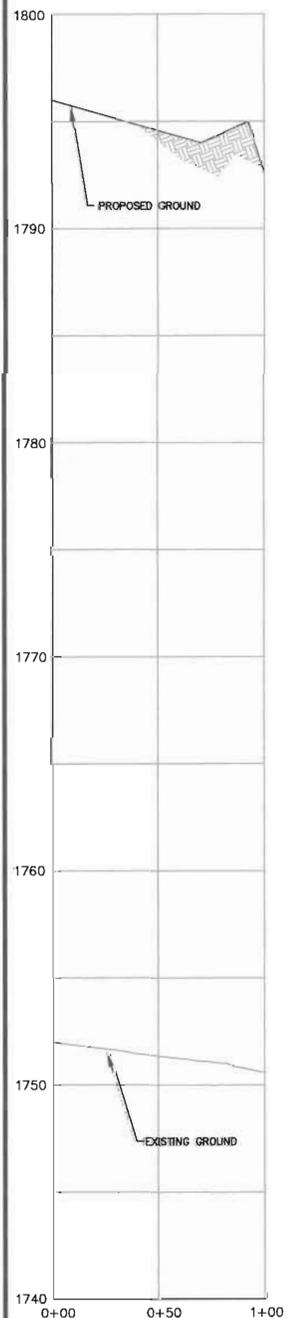
CONFORMED
EASTSIDE LANDFILL CROSS SECTIONS I

REV.	DESCRIPTION	DATE	APPROVAL
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2	REVISED CHANNEL DETAIL - 2003-08-REV1	08/20/03	MU

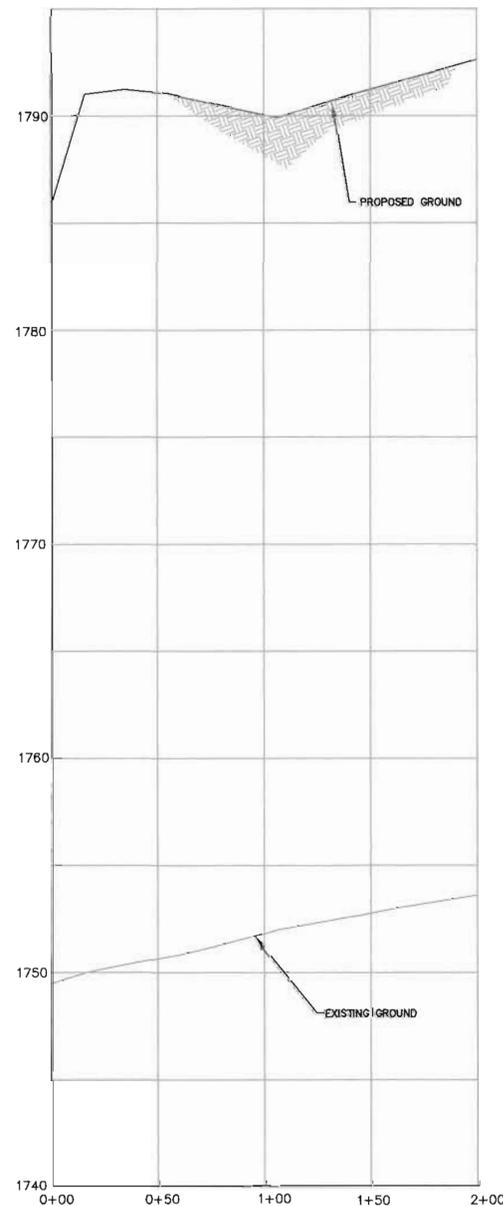
DESIGNED BY: DS
DRAWN BY: DS
CHECKED BY: LJ
DATE: 12/12/09

FILE NO: 511603.19
FILE NAME: LANDFILL
SCALE: HORIZ: 1" = 40'
VERT: 1" = 4'

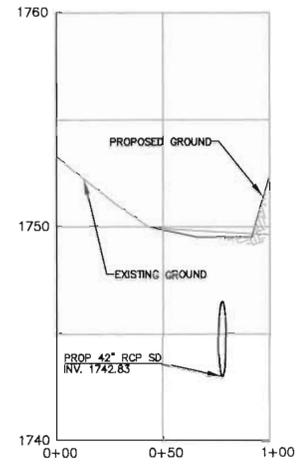
PROJECT NO: 06-44325
DATE: 12/12/09



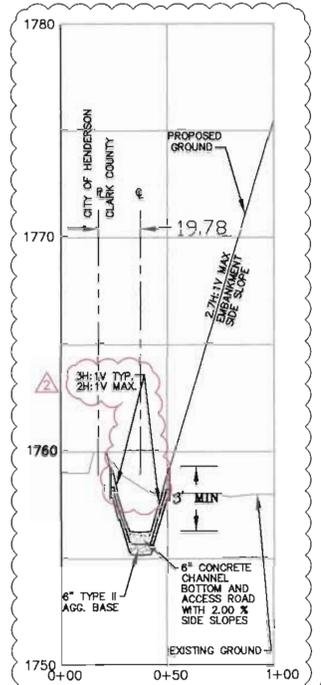
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S2 CROSS SECTION



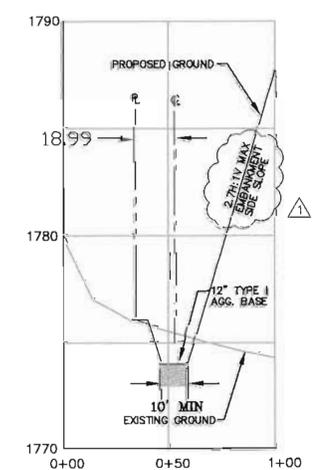
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S2 CROSS SECTION



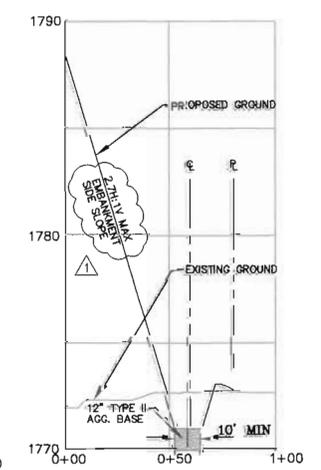
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S2 CROSS SECTION



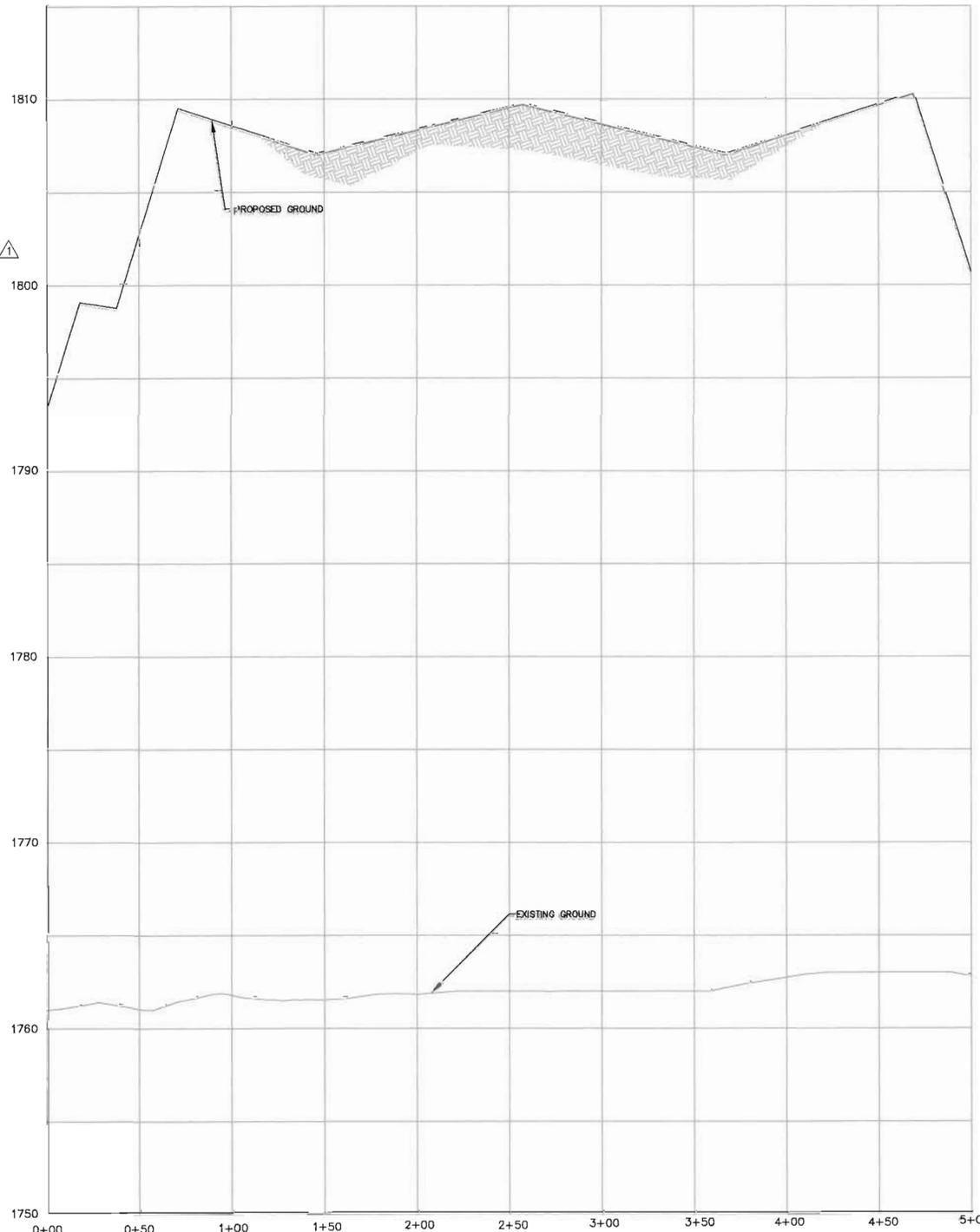
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S2 WEST CHANNEL CROSS SECTION
STA. 31+20.80



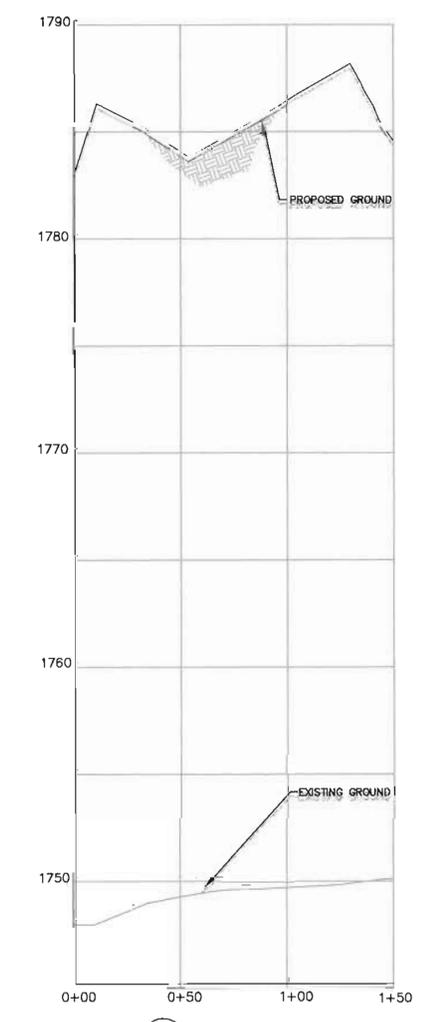
22
S2 WEST CHANNEL CROSS SECTION
STA. 12+77.92



23
S2 CROSS SECTION



20
S2 CROSS SECTION

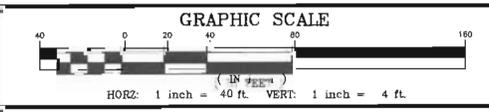


19
S2 CROSS SECTION

- NOTES**
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BASIS OF BEARING
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BENCHMARK
CLARK COUNTY BENCHMARK NO. 8622 4E6 - RIVET AND PLATE IN TOP OF CURB SOUTHEAST CORNER OF SUNSET ROAD AND CAMARLO PARK DRIVE NEAR THE PC OF SUNSET ROAD.
NAD83 DATUM
ELEVATION = 533.553 METERS
1750.50 FEET
(REVISED 2003)



DESIGNED BY: DS
DRAWN BY: DS
CHECKED BY: LJ
DATE: 03/24/10

FILE NO: 06-44325

PROFESSIONAL SEAL
JACOBY JR.
CIVIL
No. 15736

Call OVERHEAD
1-800-227-2600

CONFORMED

EASTSIDE LANDFILL

CROSS SECTIONS II

REV.	DESCRIPTION	DATE	APPROVAL
1	REVISED CHANNEL SECTION - DON OSB	03/17/10	MLJ
2	REVISED CHANNEL DETAIL - DON OSB	03/18/10	MLJ

DESIGNED BY: DS
DRAWN BY: DS
CHECKED BY: LJ
DATE: 03/24/10

FILE NO: 06-44325

PROFESSIONAL SEAL
JACOBY JR.
CIVIL
No. 15736

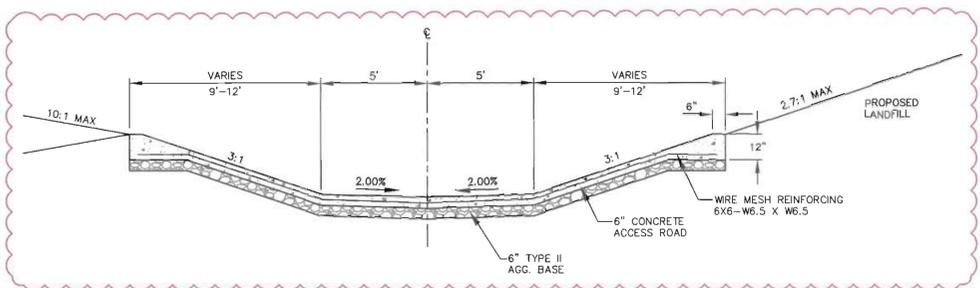
Call OVERHEAD
1-800-227-2600

FILE COPY



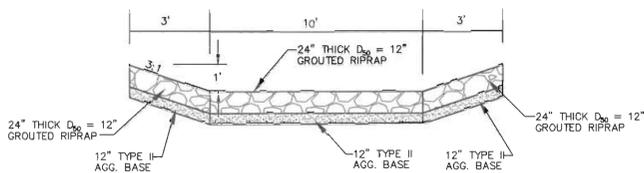
Design Change Notification

Project: BRC Eastside Common Areas Soils Remediation, Henderson, Nevada		DCN No.: ESR DCN-038
Contract No.: 6389		Contractor: ENTACT Environmental Services
References:		
RFI No.: 94	Drawing No.: D1, G2-G4, G6, P4, P8, S1, S2	
Specification Section: N/A	CQA Section No.: N/A	
Design Change: Revised east and west channel details from riprap sideslopes to all reinforced concrete channel. Revised proposed embankment sideslopes from 3H:1V to 2.7H:1V Max.		
Attachments: 6 full sized sets of revised Eastside Landfill Sheets		
This design change notification shall be included into the contract documents referenced above and is officially incorporated into the contract documents as of the date latest signature approval date on this document.		
Approved By:		
Engineer of Record:		Date: 3-19-10
Construction Manager:		Date: 3/19/10
BRC Project Manager:		Date: 3/22/10



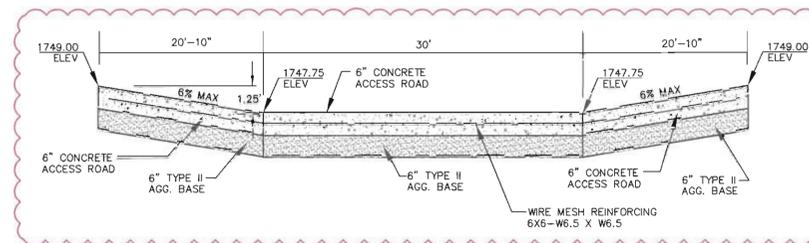
- NOTES:
1. ALL WORK TO CONFORM TO CCAUSS #s 301, 302, 409, 501, 610, 701, 702, 704, AND 706.
 2. TYPE II AGGREGATE SHALL CONFORM TO CCAUSS # 704.03.04.
 3. ALL CONCRETE SHALL BE CLASS AA PER CCAUSS # 501.
 4. SEE CAMU DRAWINGS FOR GEOCOMPOSITE, GEOMEMBRANE, LINER, PIPE, GEOTEXTILE, COVER SOIL, SLOPE TREATMENT, INTERIM COVER, OPERATIONS LAYER, FINAL COVER, AND ALL OTHER SUBGRADE REQUIREMENTS.

(A) TYPICAL CHANNEL DETAIL
D1 SCALE H = V



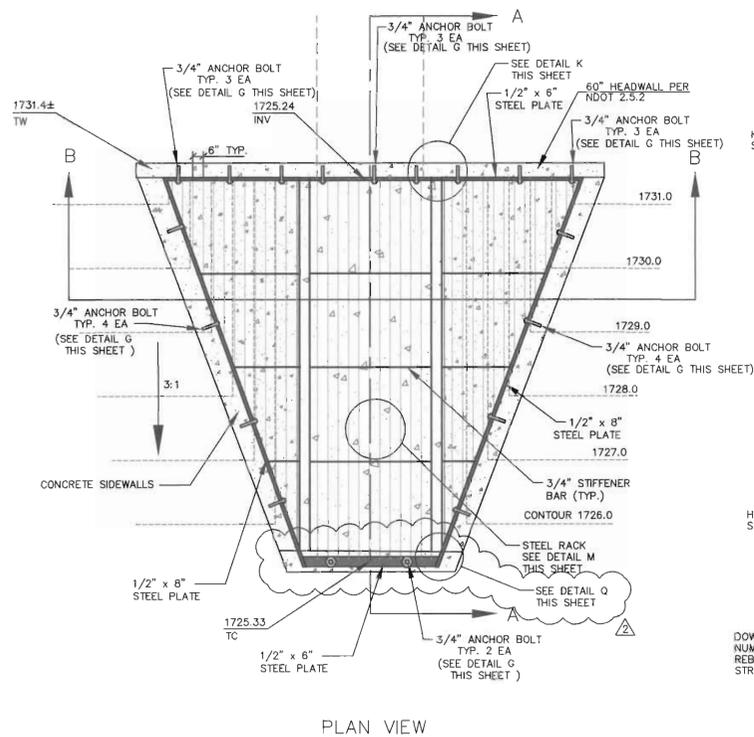
- NOTES:
1. ALL WORK TO CONFORM TO CCAUSS #s 301, 302, 610, AND 704.
 2. TYPE II AGGREGATE SHALL CONFORM TO CCAUSS # 704.03.04.
 3. ALL CONCRETE SHALL BE CLASS AA PER CCAUSS # 501.
 4. SEE CAMU DRAWINGS FOR GEOCOMPOSITE, GEOMEMBRANE, LINER, PIPE, GEOTEXTILE, COVER SOIL, SLOPE TREATMENT, INTERIM COVER, OPERATIONS LAYER, FINAL COVER, AND ALL OTHER SUBGRADE REQUIREMENTS.

(B) TYPICAL LANDFILL EMBANKMENT CHANNEL DETAIL
D1 NTS

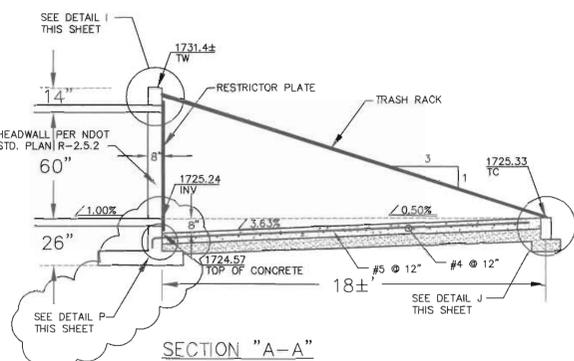


- NOTES:
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 2. TYPE II AGGREGATE SHALL CONFORM TO CCAUSS # 704.03.04.
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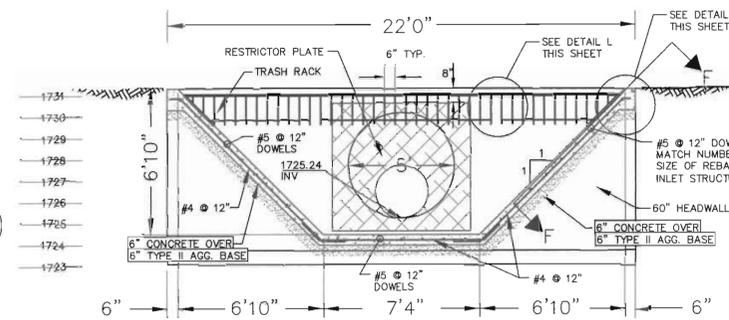
(C) EQUILIZER BASIN OVERFLOW DETAIL
D1 NTS



PLAN VIEW

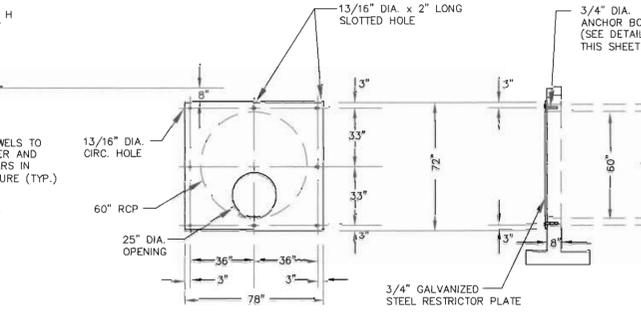


SECTION "A-A"



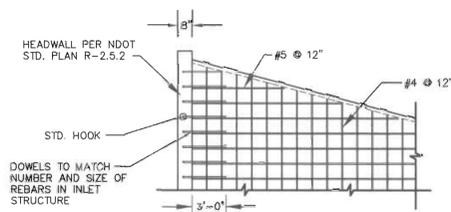
SECTION "B-B"

(D) INLET / TRASH RACK DETAIL
D1 SCALE 1" = 4'-0"

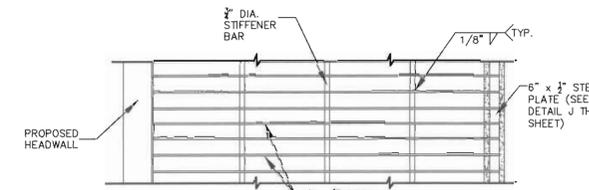


FRONT SECTION

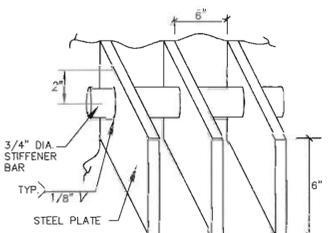
(E) RESTRICTOR PLATE DETAIL
D1 SCALE: 1" = 4'-0"



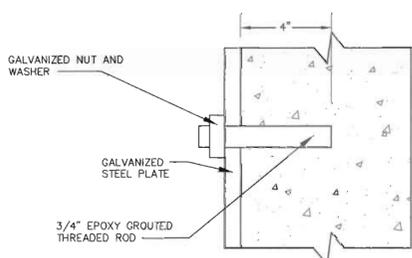
(F) PERPENDICULAR VIEW
D1 SIDEWALL REINFORCEMENT



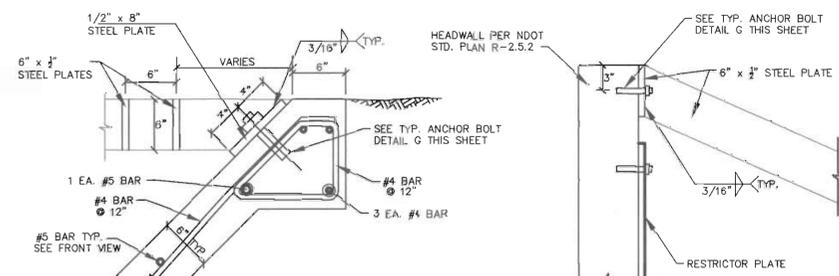
(M) TRASH RACK DETAIL
D1 NTS



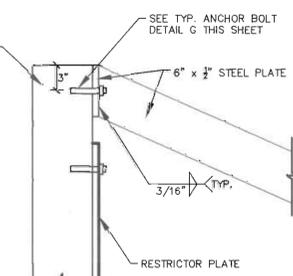
(N) STIFFENER BAR DETAIL
D1 NTS



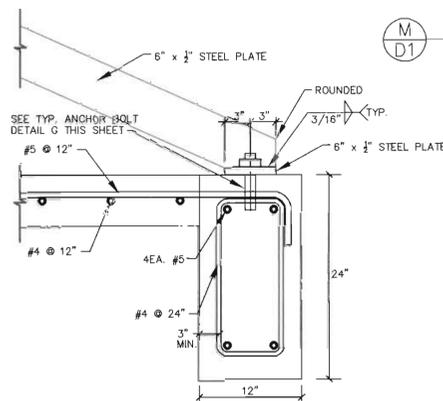
(G) ANCHOR BOLT DETAIL
D1 NTS



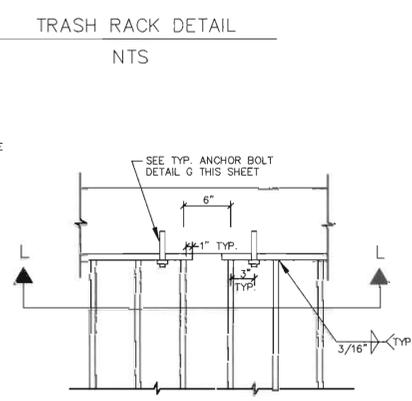
(H) DETAIL
D1 NTS



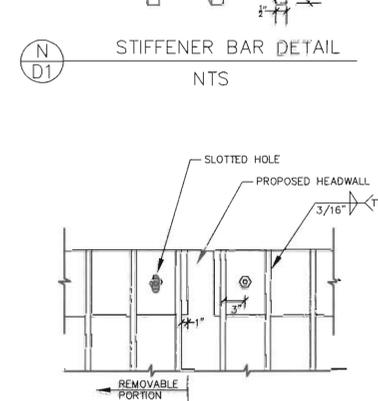
(I) DETAIL
D1 NTS



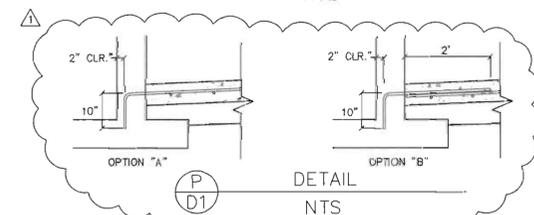
(J) DETAIL
D1 NTS



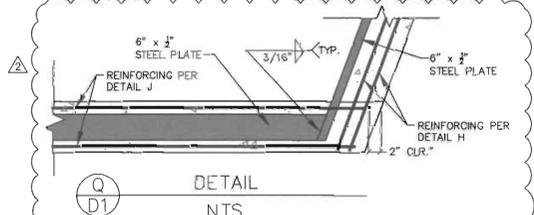
(K) DETAIL
D1 NTS



(L) DETAIL
D1 NTS



(P) DETAIL
D1 NTS



(Q) DETAIL
D1 NTS

- NOTES:
1. HEADWALL PER NDOT STANDARD PLANS R2.5.2
 2. ALL THREADED ROD ANCHORS SHALL BE 3/4" SIMPSON SET (HIGH STRENGTH EPOXY) OR SIMILAR. BOLTS FOR REMOVABLE PORTION SHALL BE STAINLESS STEEL
 3. ALL STEEL PARTS SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A153.
 4. A HARDENED FLAT WASHER AND LOCK WASHER SHALL BE USED BETWEEN THE NUTS AND CONNECTED PARTS.
 5. ALL WELDING SHALL BE DONE IN ACCORDANCE WITH AWS D1.5-96 CODE.
 6. TYPE II AGGREGATE SHALL CONFORM TO CCAUSS # 704.03.04
 7. ALL CONCRETE SHALL BE CLASS AA PER CCAUSS # 501.

Call before you dig. 1-800-227-2600

Call before you overhead. 1-702-227-2929

SEAL

M. LEE JACOBY Jr. CIVIL ENGINEER

5.19.10

REV.	DATE	DESCRIPTION	BY	DATE	APPROVAL
1	8/17/08	ADD DETAIL TO REF 4094	MLJ	8/17/08	MLJ
2	8/25/08	ADD DETAIL TO REF 4094	MLJ	8/25/08	MLJ
3	8/25/08	REVISED CHANNEL SECTION - CON	MLJ	8/25/08	MLJ
4	8/25/08	REVISED CHANNEL SECTION - CON	MLJ	8/25/08	MLJ

DESIGNED BY: ET/EBB:tb
DRAWN BY: -DS
CHECKED BY: -DS
DATE: MAY, 2008

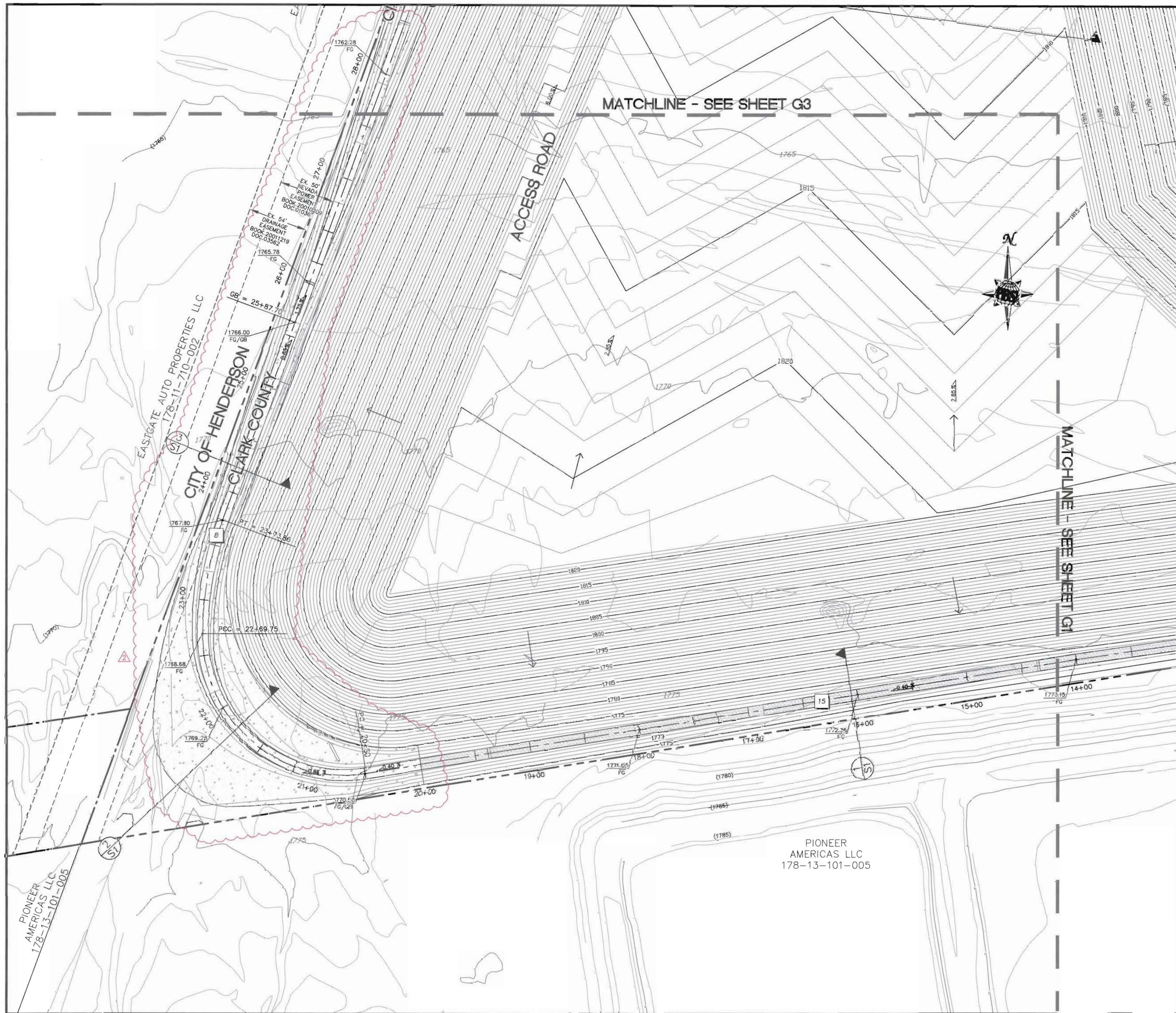
JOB NO.: 06-44325
FILE NAME: LANDFILL
SCALE:
HORIZ.:
VERT.:

HTE# 06-44325
D1

CONFORMED LANDFILL EASTSIDE LANDFILL DETAILS I

PBSI

Basic Reconfiguration



- ### KEY NOTES
1. INSTALL 60" CL III RCP SD PER CCAUSD DWG No. 502 AND CCAUSS 206, 207, 208, 601, 603, 708
 2. INSTALL 42" CL III RCP SD PER CCAUSD DWG No. 502 AND CCAUSS 206, 207, 208, 601, 603, 708
 3. INSTALL 42" EQUIVALENT CL III RCP ELLIPTICAL SD PER CCAUSD DWG No. 502 AND CCAUSS 206, 207, 208, 601, 603, 708
 4. NOT USED
 5. INSTALL TYPE III MANHOLE PER CCAUSD DWG No. 406 AND CCAUSS 609
 6. INSTALL 42" HEADWALL PER NDOT STD R-2.5.2 AND CCAUSS 502, 505, 713 SEE DETAIL SHEET D2
 7. INSTALL 60" HEADWALL PER NDOT STD R-2.5.2 AND CCAUSS 502, 505, 713 SEE DETAIL SHEET D2
 8. INSTALL CHANNEL AND ACCESS RD. PER DETAIL "A" SHEET D1
 9. INSTALL 24" THICK $D_{90}=12"$ RIPRAP OVER 6" TYPE II BEDDING PER CCAUSS 302, 610, 704.03.04
 10. INSTALL EMBANKMENT CHANNEL PER DETAIL "B" SHEET D1
 11. INSTALL TRASH RACK PER DETAIL "D" SHEET D1
 12. NOT USED
 13. NOT USED
 14. INSTALL EQUALIZER BASIN OVERFLOW PER DETAIL "C" SHEET D1
 15. INSTALL 12" THICK BY 10' WIDE TYPE II GRAVEL ACCESS DRIVE PER CCAUSS 704.03.04, 302
 16. INSTALL 24" THICK $D_{90}=12"$ GROUTED RIPRAP OVER 6" TYPE II BEDDING PER CCAUSS 302, 610, 704.03.04
 17. INSTALL 6" CONCRETE OVER 6" TYPE II AGG. BASE PER CCAUSS 302, 409, 501, 611, 701, 702, 706
 18. INSTALL 42" EQUIVALENT RCP ELLIPTICAL HEADWALL PER NDOT STD R-2.7.1 SEE DETAIL SHEET D2

- ### NOTES
1. ALL TYPE II AGGREGATE TO CONFORM TO CCAUSS 704.03.04
 2. ALL CONCRETE SHALL BE CLASS AA PER CCAUSS #501.



Call before you Dig.

1-800-227-2600

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

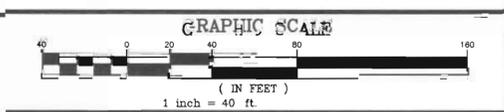
Call before you OVERHEAD

1-702-227-2929

AVOID OVERHEAD POWER LINE CONTACT. IT'S COSTLY.

FLOOD ZONE INFORMATION

THIS SITE IS LOCATED WITHIN FLOOD ZONE X PER FIRM PANEL 2596 OF 4090, MAP No. 32003C2596E, REVISED SEPTEMBER 27, 2002.



BASIS OF BEARING

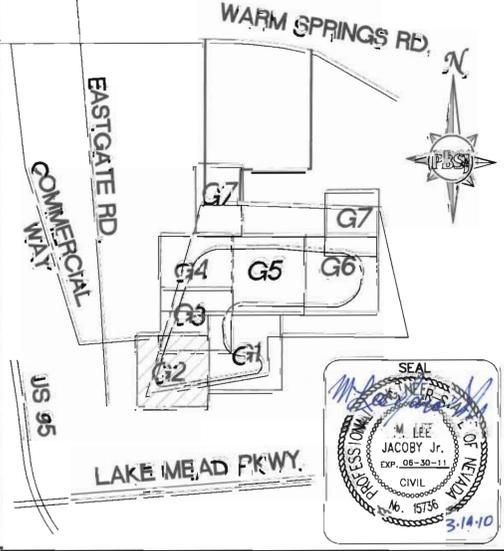
SOUTH 85°36'52" WEST - BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND "CC-GIS W51" AS SHOWN ON THE MAP IN FILE B8 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BENCHMARK

CLARK COUNTY BENCHMARK NO. 6C22 4E6- RIVET AND PLATE IN TOP OF CURB SOUTHEAST CORNER OF SUNSET ROAD AND CAMARLO PARK DRIVE NEAR THE PC OF SUNSET ROAD.

NAVD 1988 DATUM
ELEVATION = 533.553 METERS
1750.50 FEET
(REVISED 2003)

KEY MAP = SHEET INDEX



REV.	DESCRIPTION	DATE	APPROVAL
1	REVISION CHANNEL SECTION - DON OSB	03/17/13	MJL
2	REVISION CHANNEL SECTION - DON OSB	03/17/13	MJL

DESIGNED BY:	M. LEE	CHECKED BY:	J. JACOBY JR.	DATE:	MAY 2006
DRAWN BY:	M. LEE	DATE:	MAY 2006	SCALE:	HORIZ. 1" = 40'
PROJECT NO.:	51168-18	DATE:	MAY 2006	VERT.:	
FILE NUMBER:	UB-44923	DATE:	MAY 2006	VERT.:	

SEAL

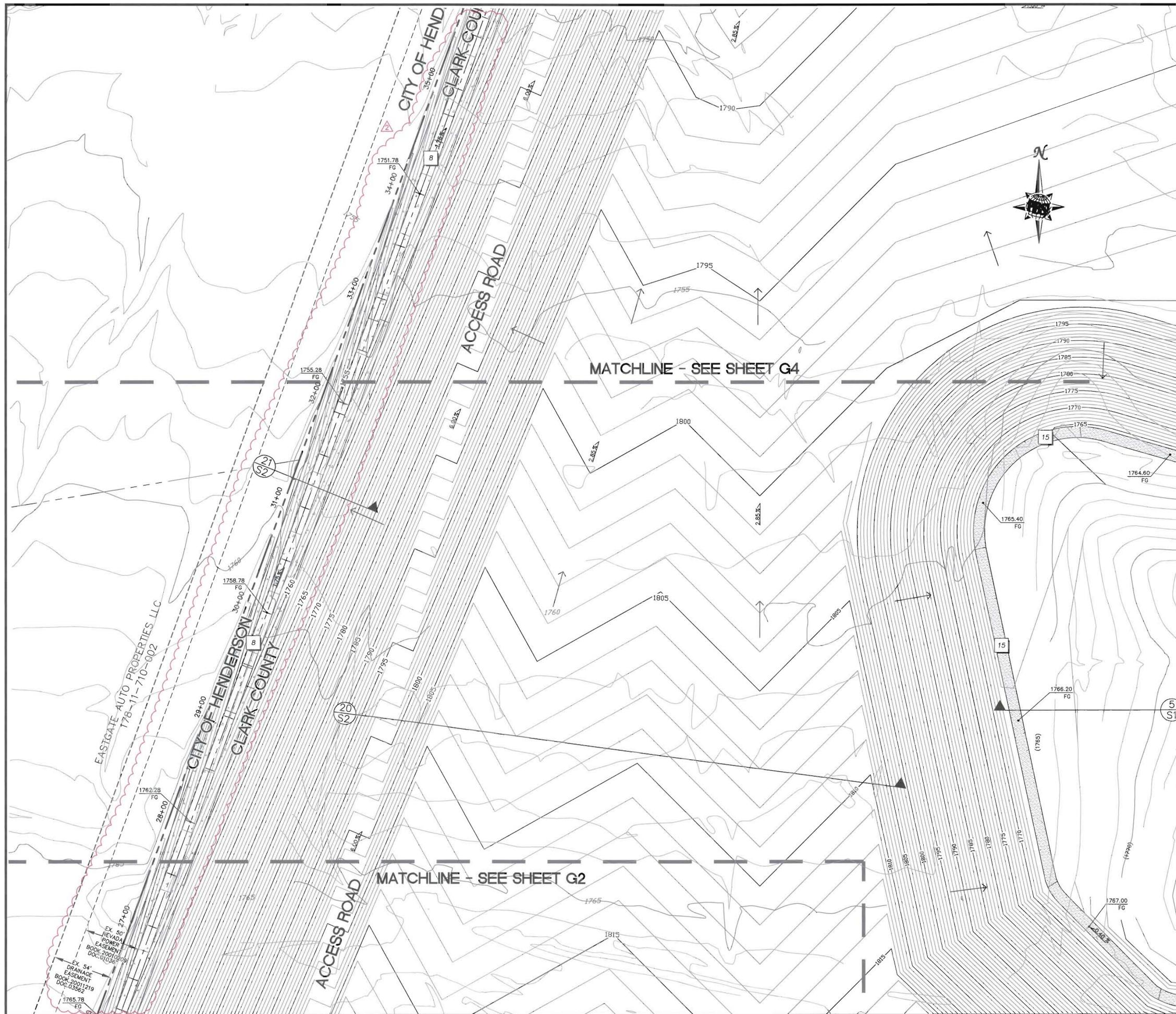
M. LEE

JACOBY JR.

CIVIL

NO. 6736

3-14-10



KEY NOTES

- 1 INSTALL 60" CL III RCP SD PER CCAUSD DWG No. 502 AND CCAUSS 206, 207, 208, 601, 603, 708
- 2 INSTALL 42" CL III RCP SD PER CCAUSD DWG No. 502 AND CCAUSS 206, 207, 208, 601, 603, 708
- 3 INSTALL 42" EQUIVALENT CL III RCP ELLIPTICAL SD PER CCAUSD DWG No. 502 AND CCAUSS 206, 207, 208, 601, 603, 708
- 4 NOT USED
- 5 INSTALL TYPE III MANHOLE PER CCAUSD DWG No. 406 AND CCAUSS 609
- 6 INSTALL 42" HEADWALL PER NDOT STD R-2.5.2 AND CCAUSS 502, 505, 713 SEE DETAIL SHEET D2
- 7 INSTALL 60" HEADWALL PER NDOT STD R-2.5.2 AND CCAUSS 502, 505, 713 SEE DETAIL SHEET D2
- 8 INSTALL CHANNEL AND ACCESS RD. PER DETAIL "A" SHEET D1
- 9 INSTALL 24" THICK $D_{90}=12"$ RIPRAP OVER 6" TYPE II BEDDING PER CCAUSS 302, 610, 704.03.04
- 10 INSTALL EMBANKMENT CHANNEL PER DETAIL "B" SHEET D1
- 11 INSTALL TRASH RACK PER DETAIL "D" SHEET D1
- 12 NOT USED
- 13 NOT USED
- 14 INSTALL EQUALIZER BASIN OVERFLOW PER DETAIL "C" SHEET D1
- 15 INSTALL 12" THICK BY 10' WIDE TYPE II GRAVEL ACCESS DRIVE PER CCAUSS 704.03.04, 302
- 16 INSTALL 24" THICK $D_{90}=12"$ GROUTED RIPRAP OVER 6" TYPE II BEDDING PER CCAUSS 302, 610, 704.03.04
- 17 INSTALL 6" CONCRETE OVER 6" TYPE II AGG. BASE PER CCAUSS 302, 409, 501, 611, 701, 702, 706
- 18 INSTALL 42" EQUIVALENT RCP ELLIPTICAL HEADWALL PER NDOT STD R-2.7.1 SEE DETAIL SHEET D2

NOTES

1. ALL TYPE II AGGREGATE TO CONFORM TO CCAUSS 704.03.04
2. ALL CONCRETE SHALL BE CLASS AA PER CCAUSS #501.

LEGEND



Call before you Dig.

1-800-227-2600

UNDERGROUND SERVICE ALERT (USA)

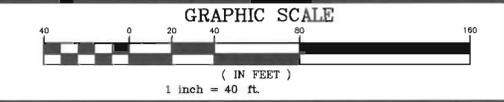
Call before you OVERHEAD

1-702-227-2929

UTILITY SERVICE DEPARTMENT

FLOOD ZONE INFORMATION

THIS SITE IS LOCATED WITHIN FLOOD ZONE X PER FIRM PANEL 2345 OF 4390, MAP No. 32003C2595E, REVISED SEPTEMBER 27, 2002.



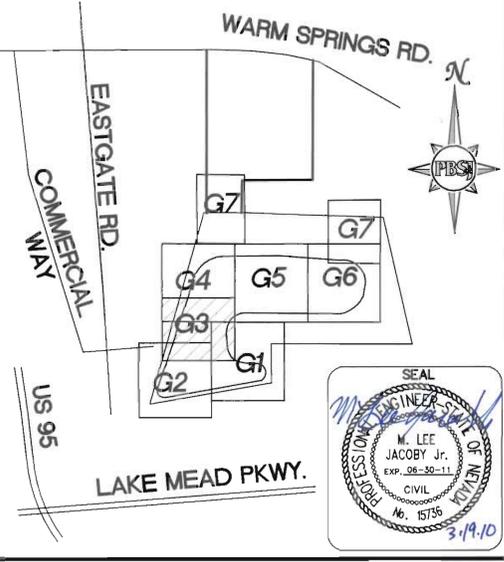
BASIS OF BEARING

SOUTH 85°36'52" WEST - BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND "CC-GIS W51" AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BENCHMARK

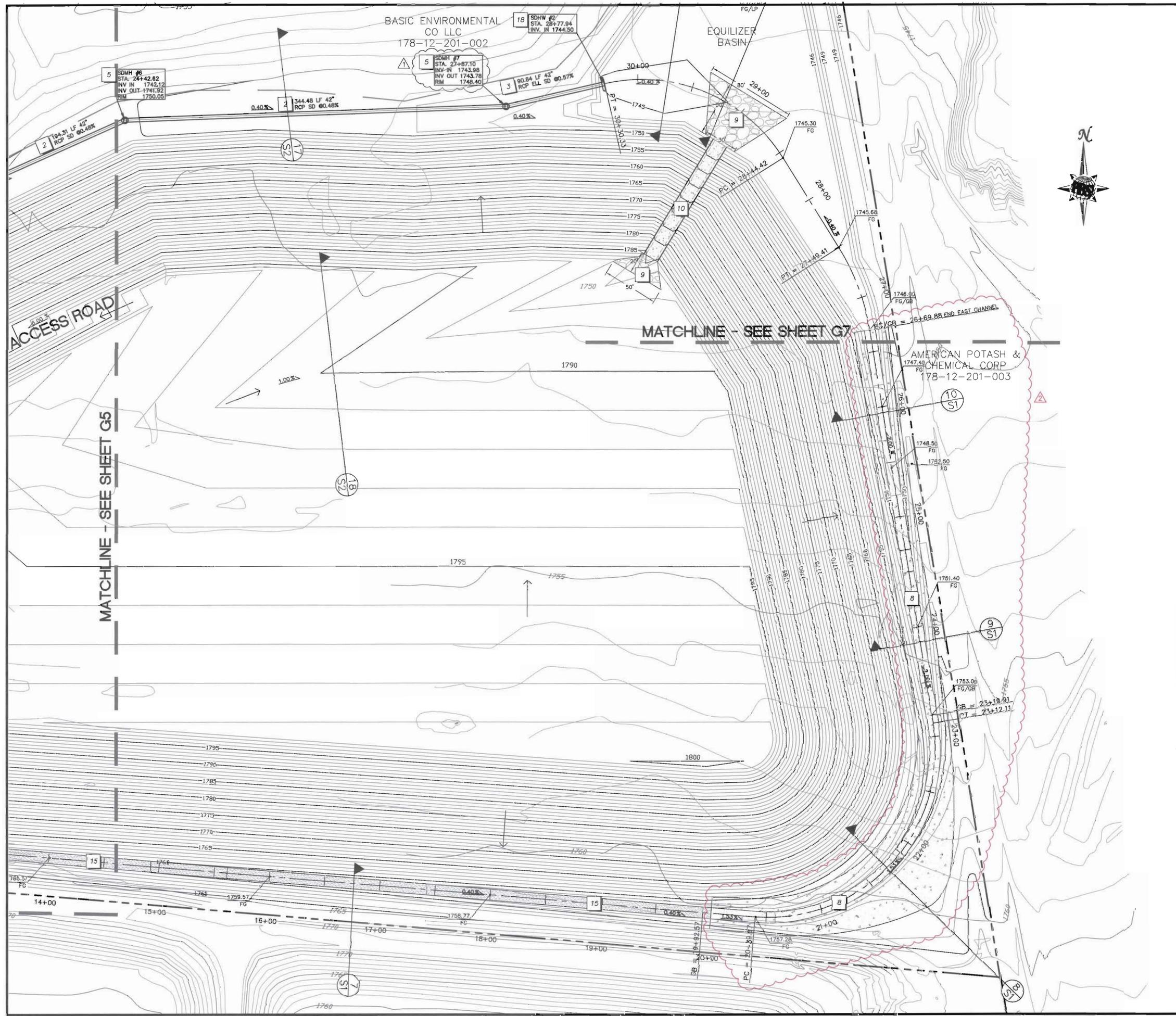
CLARK COUNTY BENCHMARK NO. 6C22 4E6- RIVET AND PLATE IN TOP OF CURB SOUTHEAST CORNER OF SUNSET ROAD AND CAMARLO PARK DRIVE NEAR THE PC OF SUNSET ROAD.
 NAVD 1988 DATUM
 ELEVATION = 533.553 METERS
 1750.50 FEET
 (REVISED 2003)

KEY MAP - SHEET INDEX



REVISIONS		BY	DATE	APPROVAL
1	REVISED MANHOLE TYPE - DICK 024	MJP	03/16/06	MJJ
2	REVISED CHANNEL SECTION - DICK 038	MJP	03/17/06	MJJ

DESIGNED BY: -DS	JOB NO.: 511683.19
DRAWN BY: -DS	FILE NAME: LANDFILL
CHECKED BY: -LJ	SCALE: HORIZ.: 1" = 40'
DATE: MAY, 2008	VERT.: 1" = 40'
PROJECT # 06-44325	DATE: MAY, 2008
PROJECT: 511729.39, MassGrading 161a Set\11-25-08\ESL\1683-GDWG Layout: G-3 Mar 19, 2010 - 8:57am	DATE: MAY, 2008



- ### KEY NOTES
1. INSTALL 60" CL III RCP SD PER CCAUSD DWG No. 502 AND CCAUSS 206, 207, 208, 601, 603, 708
 2. INSTALL 42" CL III RCP SD PER CCAUSD DWG No. 502 AND CCAUSS 206, 207, 208, 601, 603, 708
 3. INSTALL 42" EQUIVALENT CL III RCP ELLIPTICAL SD PER CCAUSD DWG No. 502 AND CCAUSS 206, 207, 208, 601, 603, 708
 4. NOT USED
 5. INSTALL TYPE III MANHOLE PER CCAUSD DWG No. 406 AND CCAUSS 609
 6. INSTALL 42" HEADWALL PER NDOT STD R-2.5.2 AND CCAUSS 502, 505, 713 SEE DETAIL SHEET D2
 7. INSTALL 60" HEADWALL PER NDOT STD R-2.5.2 AND CCAUSS 502, 505, 713 SEE DETAIL SHEET D2
 8. INSTALL CHANNEL AND ACCESS RD. PER DETAIL "A" SHEET D1
 9. INSTALL 24" THICK $D_{50}=12"$ RIPRAP OVER 6" TYPE II BEDDING PER CCAUSS 302, 610, 704.03.04
 10. INSTALL EMBANKMENT CHANNEL PER DETAIL "B" SHEET D1
 11. INSTALL TRASH RACK PER DETAIL "D" SHEET D1
 12. NOT USED
 13. NOT USED
 14. INSTALL EQUALIZER BASIN OVERFLOW PER DETAIL "C" SHEET D1
 15. INSTALL 12" THICK BY 10" WIDE TYPE II GRAVEL ACCESS DRIVE PER CCAUSS 704.03.04, 302
 16. INSTALL 24" THICK $D_{50}=12"$ GROUDED RIPRAP OVER 6" TYPE II BEDDING PER CCAUSS 302, 610, 704.03.04
 17. INSTALL 6" CONCRETE OVER 6" TYPE II AGG. BASE PER CCAUSS 302, 409, 501, 611, 701, 702, 706
 18. INSTALL 42" EQUIVALENT RCP ELLIPTICAL HEADWALL PER NDOT STD R-2.71 SEE DETAIL SHEET D2

- ### NOTES
1. ALL TYPE II AGGREGATE TO CONFORM TO CCAUSS 704.03.04
 2. ALL CONCRETE SHALL BE CLASS AA PER CCAUSS #501.
- ### LEGEND
- DIRECTION OF FLOW
 --- GRADE BREAK

Call before you Dig.

1-800-227-2600

NEVADA POWER ENVIRONMENT AND SAFETY SERVICE DIVISION

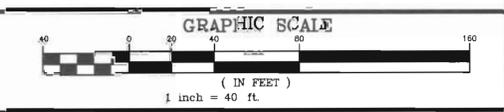
Call before you Overhead

1-702-227-2939

NEVADA POWER ENVIRONMENT AND SAFETY SERVICE DIVISION

FLOOD ZONE INFORMATION

THIS SITE IS LOCATED WITHIN FLOOD ZONE X PER FIRM PANEL 2595 OF 4090, MAP No. 32003C2595E, REVISED SEPTEMBER 27, 2002.



BASIS OF BEARING

SOUTH 85°36'52" WEST - BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND "CC-GIS W51" AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BENCHMARK

CLARK COUNTY BENCHMARK NO. 6C22 4E6 - RIVET AND PLATE IN TOP OF CURB SOUTHEAST CORNER OF SUNSET ROAD AND CAMARLO PARK DRIVE NEAR THE PC OF SUNSET ROAD.

NAVD 1988 DATUM
 ELEVATION = 533.553 METERS
 1750.50 FEET
 (REVISED 2003)

KEY MAP - SHEET INDEX

DESIGNED BY: -DS
 DRAWN BY: -DS
 CHECKED BY: -LJ
 DATE: MAY, 2008

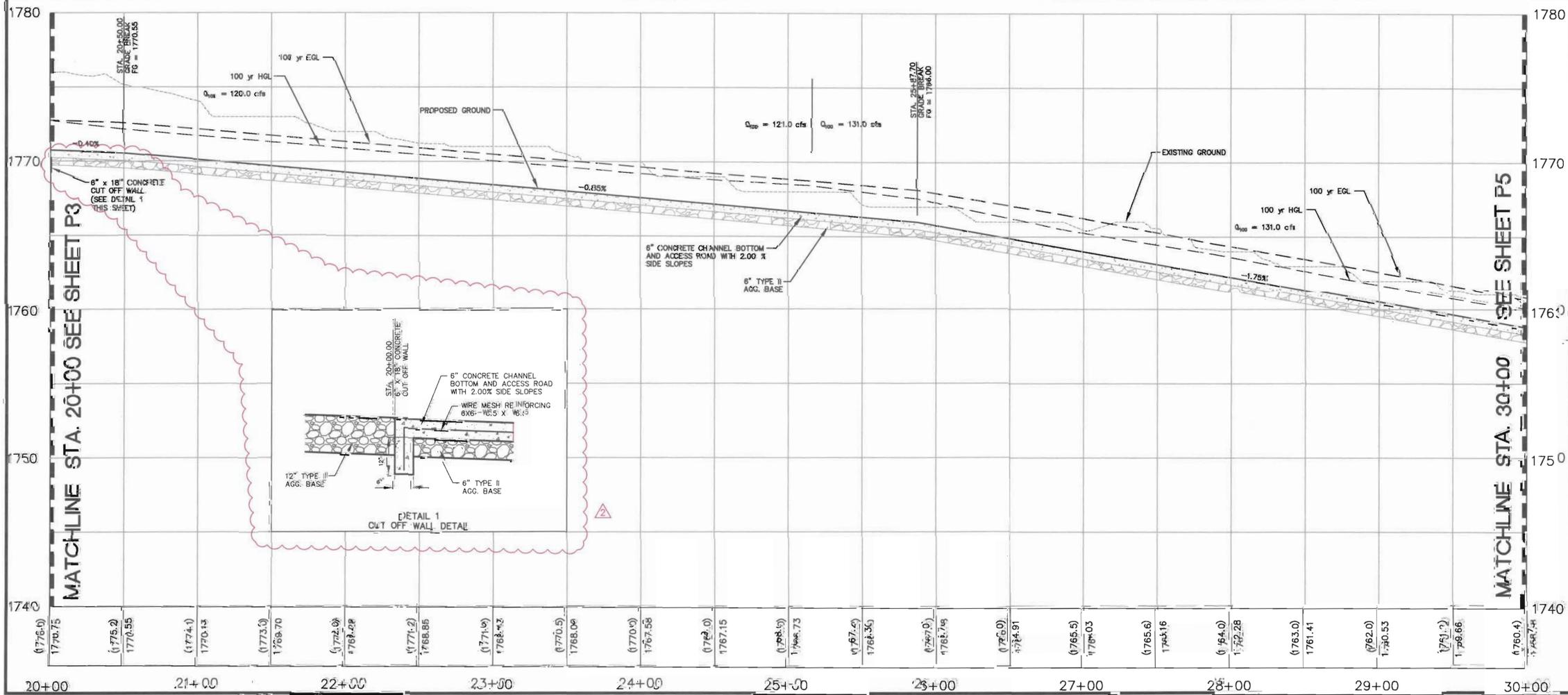
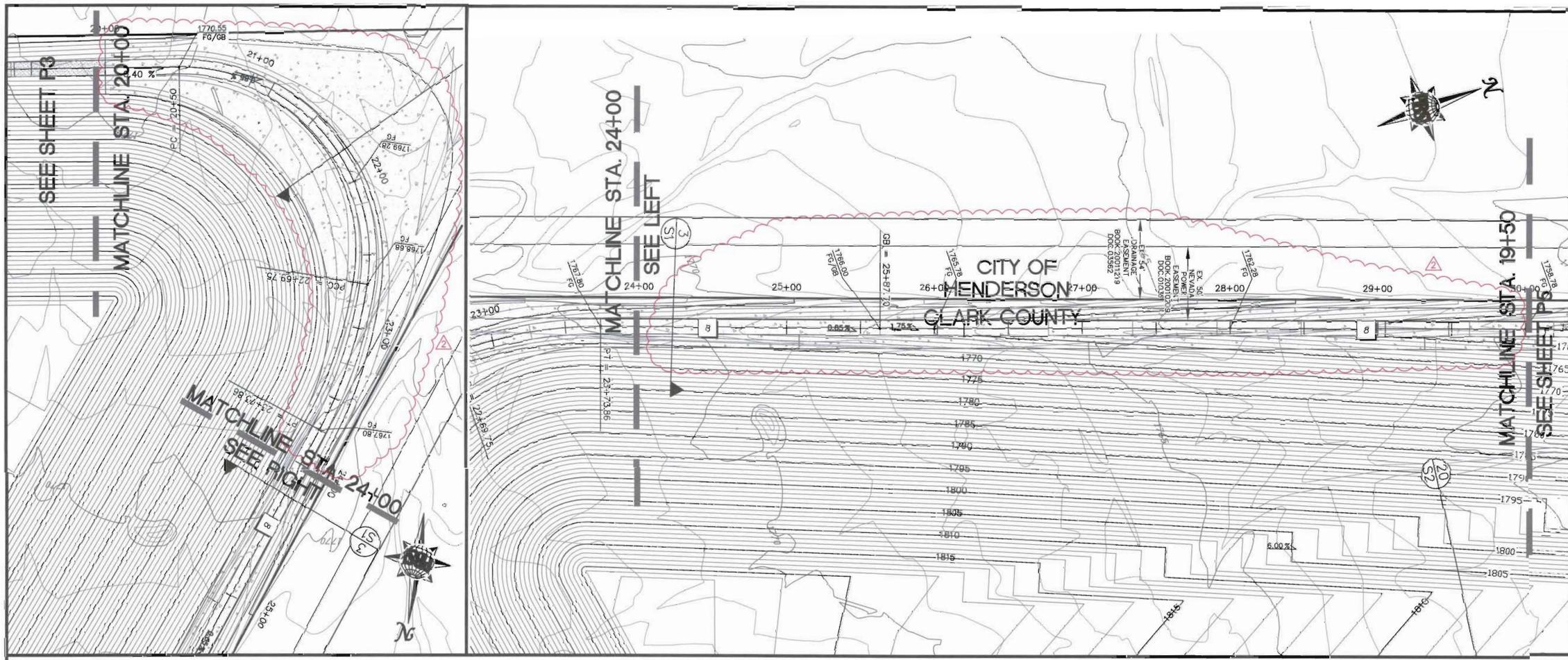
FILE NO.: 91683.rp
 SCALE: 1" = 40'
 SHEET: 1 OF 1

SEAL
 M. LIT. JACOBY Jr.
 CIVIL
 No. 15736
 3.14.10

REV.	DESCRIPTION	DATE	APPROVAL
1	REVISION		
2	REVISION		

DESIGNED BY: -DS	DRAWN BY: -DS	CHECKED BY: -LJ	DATE: MAY, 2008
FILE NO.: 91683.rp	SCALE: 1" = 40'	SHEET: 1 OF 1	

<p>CONFORMED</p> <p>EASTSIDE LANDFILL</p> <p>GRADING PLAN W</p>	
---	--



KEY NOTES

1. INSTALL 60" CL III RCP SD PER CCAUSS DWG No. 502 AND CCAUSS 206, 207, 208, 601, 603, 708
2. INSTALL 42" CL III RCP SD PER CCAUSS DWG No. 502 AND CCAUSS 206, 207, 208, 601, 603, 708
3. INSTALL 42" EQUIVALENT CL III RCP ELLIPTICAL SD PER CCAUSS DWG No. 502 AND CCAUSS 206, 207, 208, 601, 603, 708
4. NOT USED
5. INSTALL TYPE III MANHOLE PER CCAUSS DWG No. 406 AND CCAUSS 609
6. INSTALL 42" HEADWALL PER NDOT STD R-2.5.2 AND CCAUSS 502, 505, 713 SEE DETAIL SHEET D2
7. INSTALL 60" HEADWALL PER NDOT STD R-2.5.2 AND CCAUSS 502, 505, 713 SEE DETAIL SHEET D2
8. INSTALL CHANNEL AND ACCESS RD. PER DETAIL "A" SHEET D1
9. INSTALL 24" THICK $D_{90}=12"$ RIPRAP OVER 6" TYPE II BEDDING PER CCAUSS 302, 610, 704.03.04
10. INSTALL EMBANKMENT CHANNEL PER DETAIL "B" SHEET D1
11. INSTALL TRASH RACK PER DETAIL "D" SHEET D1
12. REMOVE EXISTING CAP AND EXTEND 60" RCP
13. INSTALL 60" PLUG FOR RCP
14. INSTALL EQUALIZER BASIN OVERFLOW PER DETAIL "C" SHEET D1
15. INSTALL 12" THICK BY 10' MADE TYPE II GRAVEL ACCESS DRIVE PER CCAUSS 704.03.04, 302
16. INSTALL 24" THICK $D_{90}=12"$ GROUDED RIPRAP OVER 6" TYPE II BEDDING PER CCAUSS 302, 610, 704.03.04
17. INSTALL 6" CONCRETE OVER 6" TYPE II AGG. BASE PER CCAUSS 302, 409, 501, 611, 701, 702, 706
18. INSTALL 42" EQUIVALENT RCP ELLIPTICAL HEADWALL PER NDOT STD R-2.7.1 SEE DETAIL SHEET D2

- NOTES**
1. ALL TYPE II AGGREGATE TO CONFORM TO CCAUSS 704.03.04.
 2. ALL CONCRETE SHALL BE CLASS AA PER CCAUSS #501.

CALL BEFORE YOU DIG

Call before you Dig.

1-800-227-2600

NEVADA POWER AND SAFETY SERVICES DIVISION

CALL BEFORE YOU OVERHEAD

Call before you OVERHEAD

1-702-227-2929

NEVADA POWER AND SAFETY SERVICES DIVISION



BASIS OF BEARING

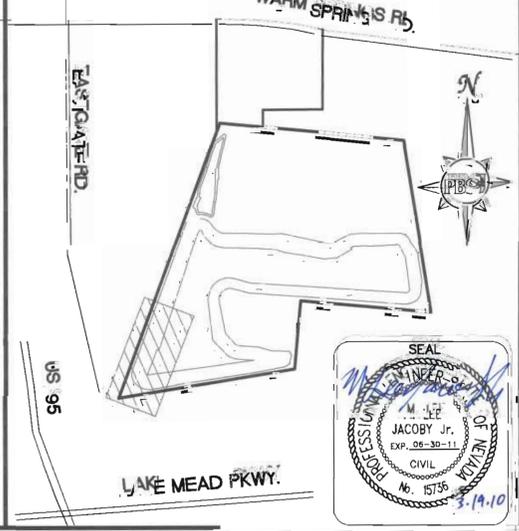
SOUTH 85°38'52" WEST - BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND "CC-GIS W51" AS SHOWN ON THE MAP IN FILE B8 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BENCHMARK

CLARK COUNTY BENCHMARK NO. 6C22 4E6 - RIVET AND PLATE IN TOP OF CURB SOUTHEAST CORNER OF SUNSET ROAD AND CAMARLO PARK DRIVE NEAR THE PC OF SUNSET ROAD.

NAVD 1988 DATUM
ELEVATION = 533.553 METERS
1750.50 FEET
(REVISED 2003)

KEY MAP - SHEET INDEX



NO.	REVISIONS	DATE	APPROVAL
1	REVISED CHANNEL SECTION	03.17.10	MAJ
2	REVISED MANHOLE TYPE	03.17.10	MAJ

CONFORMED

EASTSIDE LANDFILL

WEST CHANNEL PLAN AND PROFILE

STA 20+00 TO 30+00

DESIGNED BY: JDB

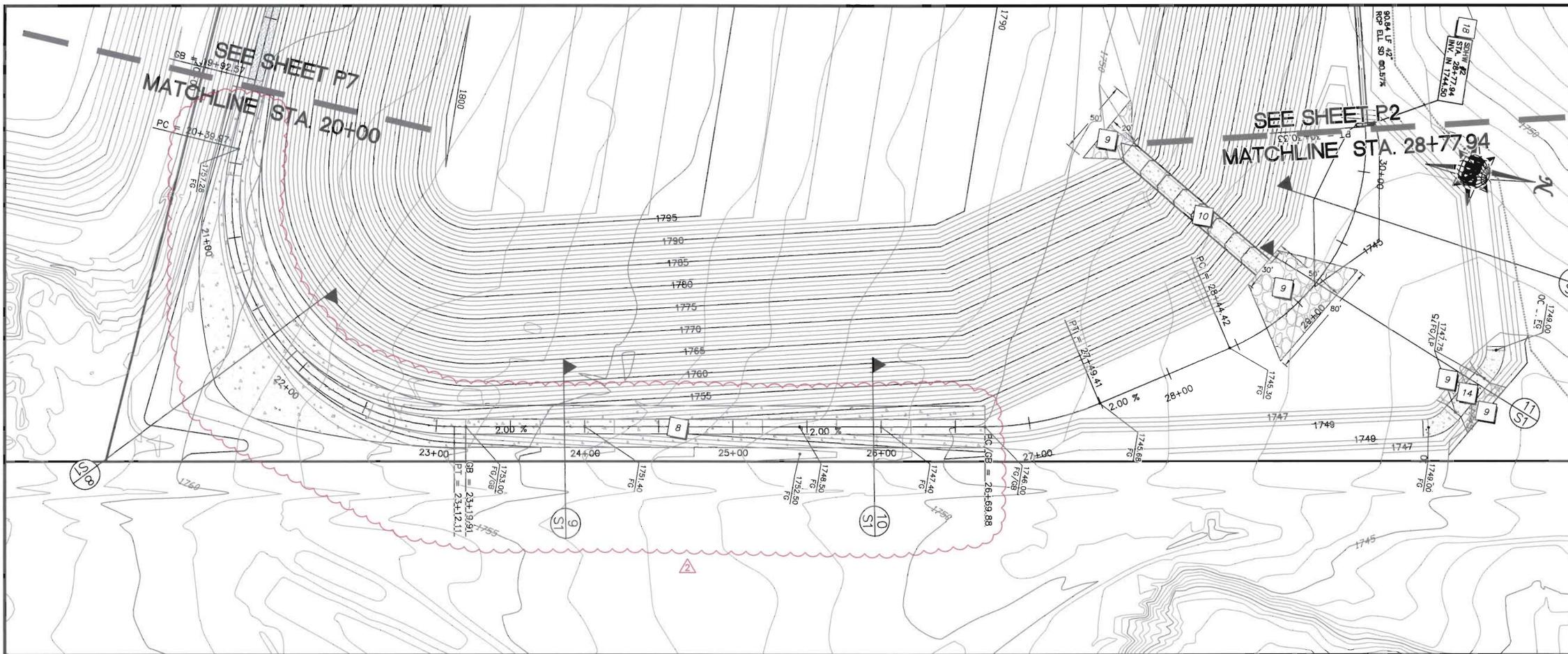
DRAWN BY: DS

CHECKED BY: MAJ

DATE: MAR 2008

PROJECT NO. 1511729.39

DATE: 3.19.10



- ### KEY NOTES
- INSTALL 60" CL III RCP SD PER CCAUSS DWG No. 502 AND CCAUSS 206, 207, 208, 601, 603, 708
 - INSTALL 42" CL III RCP SD PER CCAUSS DWG No. 502 AND CCAUSS 206, 207, 208, 601, 603, 708
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 - INSTALL EMBANKMENT CHANNEL PER DETAIL "B" SHEET D1
 - INSTALL TRASH RACK PER DETAIL "D" SHEET D1
 - REMOVE EXISTING CAP AND EXTEND 60" RCP
 - INSTALL 60" PLUG FOR RCP
 - INSTALL EQUALIZER BASIN OVERFLOW PER DETAIL "C" SHEET D1
 - INSTALL 12" THICK BY 10' WDE TYPE II GRAVEL ACCESS DRIVE PER CCAUSS 704.03.04, 302
 - INSTALL 24" THICK $D_{90}=12$ " GROUTED RIPRAP OVER 6" TYPE II BEDDING PER CCAUSS 302, 610, 704.03.04
 - INSTALL 6" CONCRETE OVER 6" TYPE II AGG. BASE PER CCAUSS 302, 409, 501, 611, 701, 702, 706
 - INSTALL 42" EQUIVALENT RCP ELLIPTICAL HEADWALL PER NDOT STD R-2.7.1 SEE DETAIL SHEET D2

- ### NOTES
- ALL TYPE II AGGREGATE TO CONFORM TO CCAUSS 704.03.04.
 - ALL CONCRETE SHALL BE CLASS AA PER CCAUSS #501.

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.

Call before you Dig.

1-800-227-2600

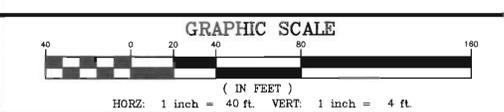
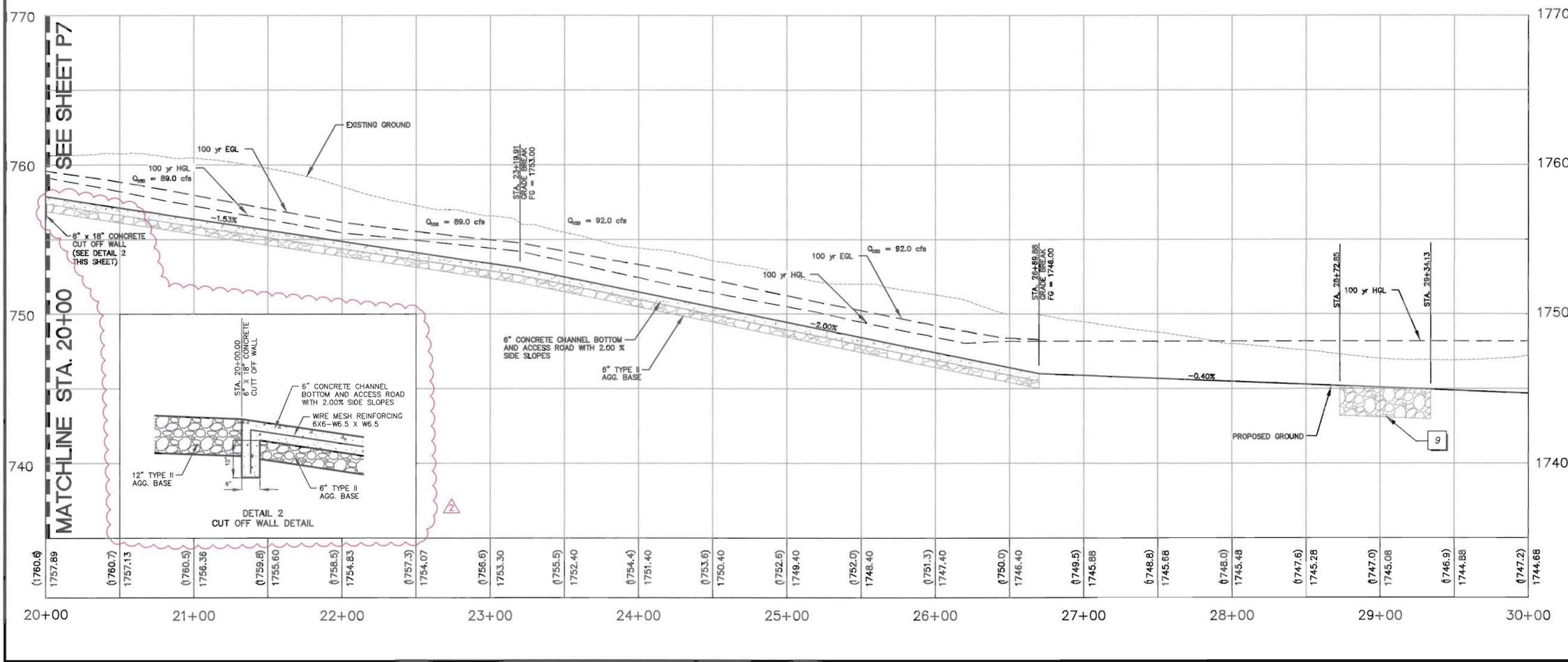
UNDERGROUND SERVICE ALERT (USA)

AVOID OVERHEAD POWER LINE CONTACT. IT'S COSTLY.

Call before you OVERHEAD

1-702-227-2929

NEVADA POWER ENVIRONMENT AND SAFETY SERVICE (NPESS)



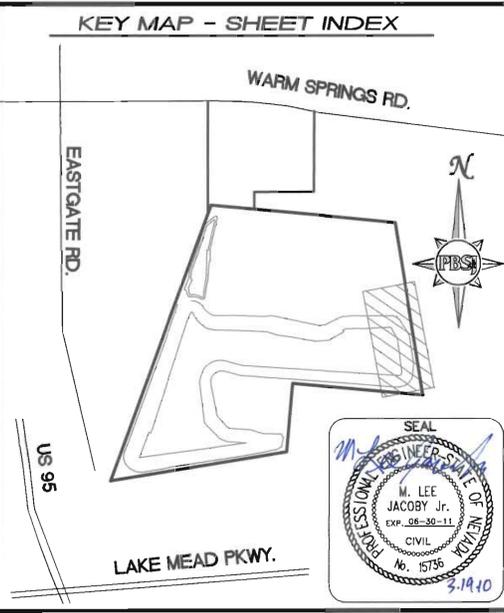
BASIS OF BEARING

SOUTH 85°36'52" WEST - BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND "CC-GIS W51" AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BENCHMARK

CLARK COUNTY BENCHMARK NO. 6C22 4E6- RIVET AND PLATE IN TOP OF CURB SOUTHEAST CORNER OF SUNSET ROAD AND CAMARLO PARK DRIVE NEAR THE PC OF SUNSET ROAD.

NAVD 1988 DATUM
ELEVATION = 533.553 METERS
1750.50 FEET
(REVISED 2003)

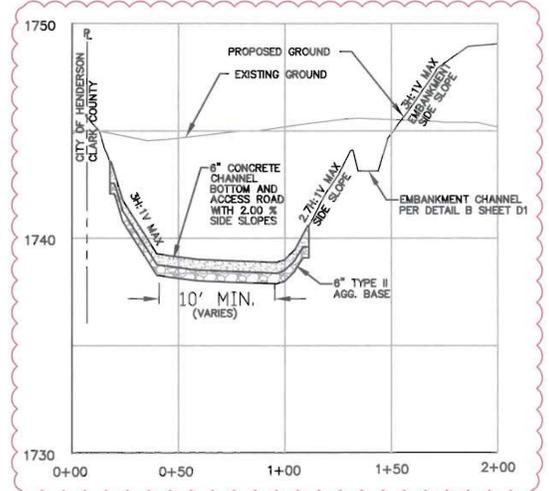


REVISIONS		DATE	APPROVAL
REV.	DESCRIPTION	BY	DATE
1	REVISED MANHOLE TYPE - D24, C24	MLJ	03/13/10
2	REVISED CHANNEL SECTION - C24, C28	BRM	03/17/10

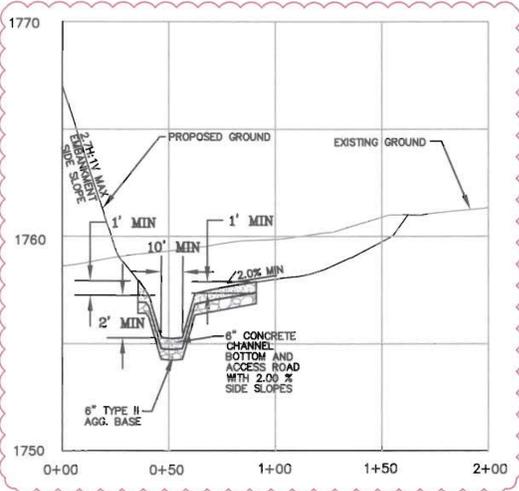
DESIGNED BY: -DS	DRAWN BY: -DS	CHECKED BY: -LJ	DATE: MAY, 2008
JOB NO.: 51168319	FILE NAME: LANDFILL	HORIZ. SCALE: 1" = 40'	VERT. SCALE: 1" = 4'
<p>CONFORMED EASTSIDE LANDFILL EAST CHANNEL PLAN AND PROFILE STA. 20+00 TO 30+00</p>			



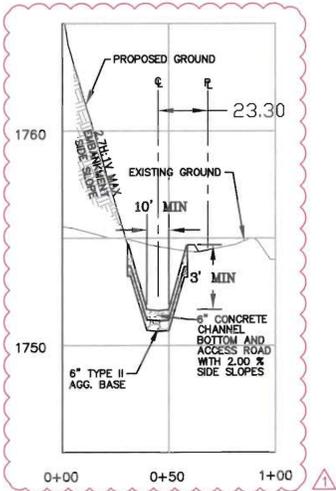
1 WEST CHANNEL CROSS SECTION
STA. 16+05.81
TYP. STA. 10+00 TO 20+00



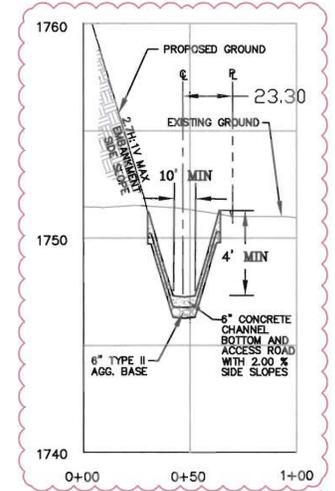
4 WEST CHANNEL CROSS SECTION
STA. 39+60.72
TYP. STA. 38+50 TO 40+00



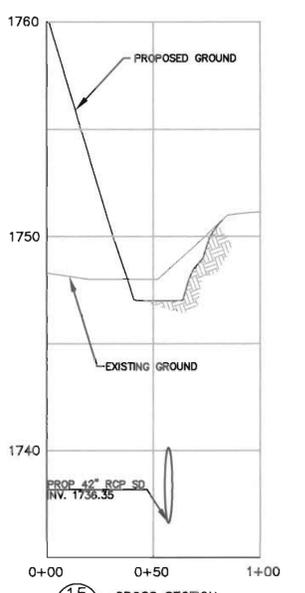
8 EAST CHANNEL CROSS SECTION
STA. 21+70.62
TYP. STA. 20+00 TO 23+12.11



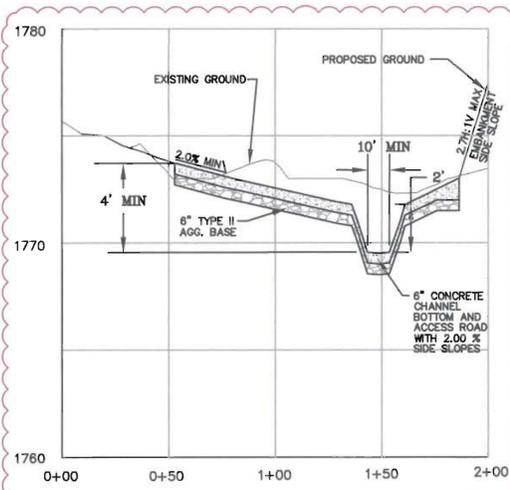
9 EAST CHANNEL CROSS SECTION
STA. 23+86.32
TYP. STA. 23+12.11 TO 25+45



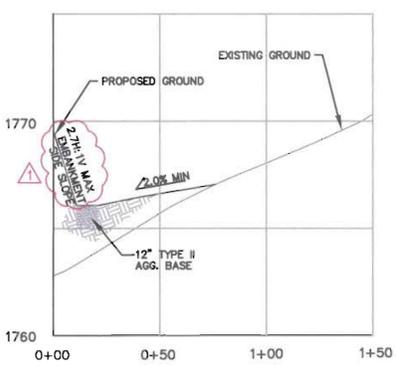
10 EAST CHANNEL CROSS SECTION
STA. 25+94.79
TYP. STA. 25+45 TO 26+69.88



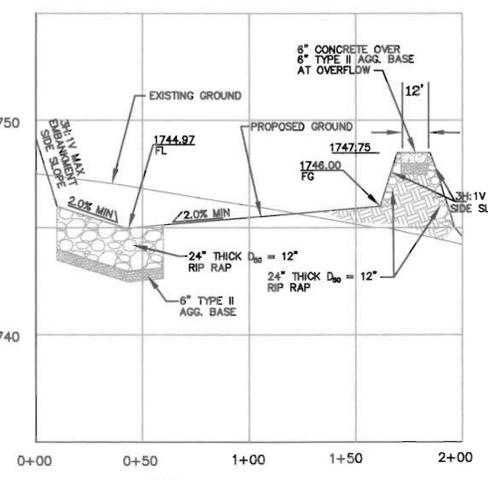
15 CROSS SECTION



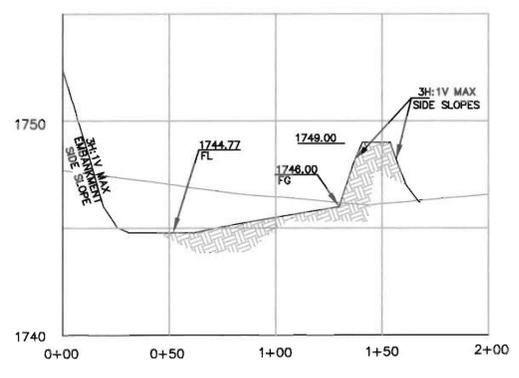
2 WEST CHANNEL CROSS SECTION
STA. 21+77.81
TYP. STA. 20+00 TO 24+00



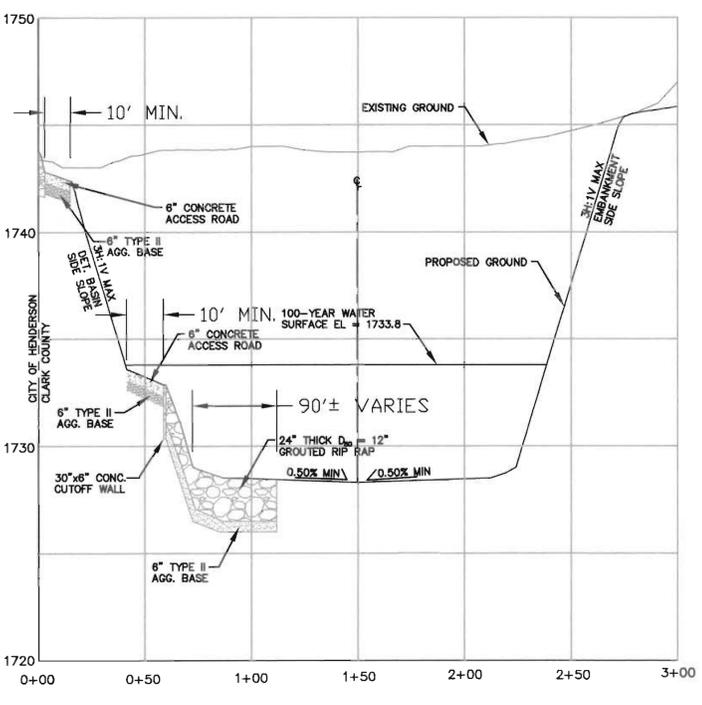
5 CROSS SECTION



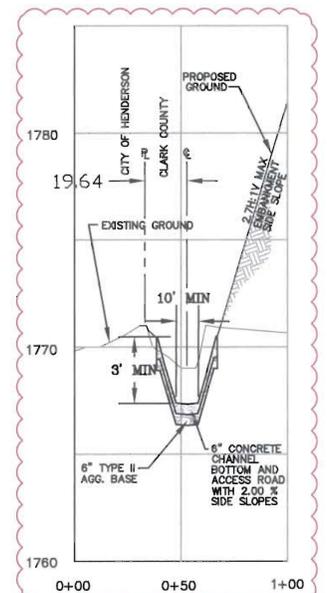
11 EAST CHANNEL CROSS SECTION
STA. 29+18.23
TYP. STA. 29+17± TO 29+33±



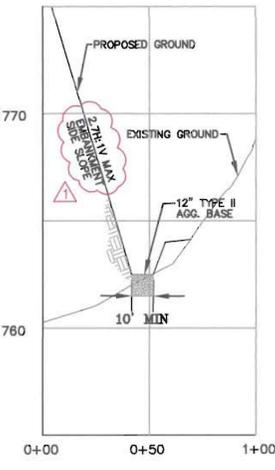
12 EAST CHANNEL CROSS SECTION
STA. 29+72.95
TYP. STA. 26+69.88 TO 29+17± & STA. 29+33± TO 30+00



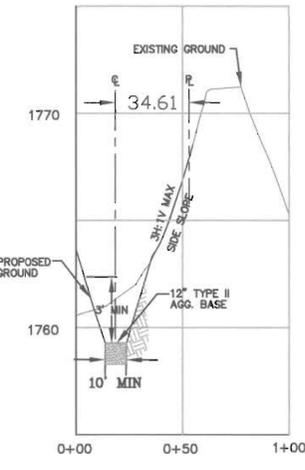
14 CROSS SECTION



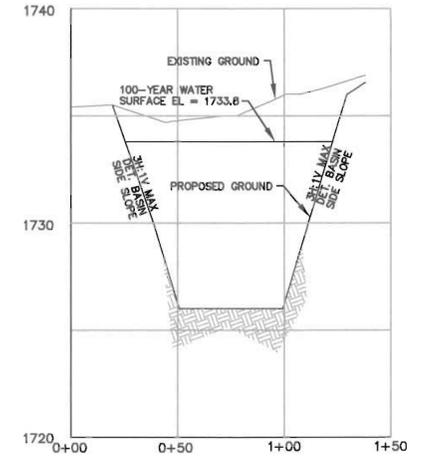
3 WEST CHANNEL CROSS SECTION
STA. 24+22.75
TYP. STA. 24+00 TO 38+50



6 CROSS SECTION



7 EAST CHANNEL CROSS SECTION
STA. 16+76.44
TYP. STA. 10+00 TO 20+00

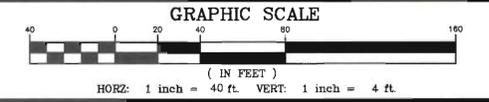


13 CROSS SECTION

- NOTES**
- ALL TYPE II AGGREGATE TO CONFORM TO CCAUSS 704.03.04.
 - ALL CONCRETE SHALL BE CLASS AA PER CCAUSS #501.
 - SEE CAMU DRAWINGS FOR GEOCOMPOSITE, GEOMEMBRANE, LINER, PIPE, GEOTEXTILE, COVER SOIL, SLOPE TREATMENT, INTERIM COVER, OPERATIONS LAYER, FINAL COVER, AND ALL OTHER SUBGRADE REQUIREMENTS.

BASIS OF BEARING
SOUTH 85°36'52" WEST - BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND "CC-GIS W51" AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BENCHMARK
CLARK COUNTY BENCHMARK NO. 6C22 4E6 - RIVET AND PLATE IN TOP OF CURB SOUTHEAST CORNER OF SUNSET ROAD AND CAMARLO PARK DRIVE NEAR THE PC OF SUNSET ROAD.
NAVD 1988 DATUM
ELEVATION = 533.553 METERS
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(REVISED 2003)



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1-800-227-2600
NEVADA POWER DIVISION AND SAFETY SERVICES DEPARTMENT

Call before you Overhead.
1-702-227-2929
NEVADA POWER DIVISION AND SAFETY SERVICES DEPARTMENT

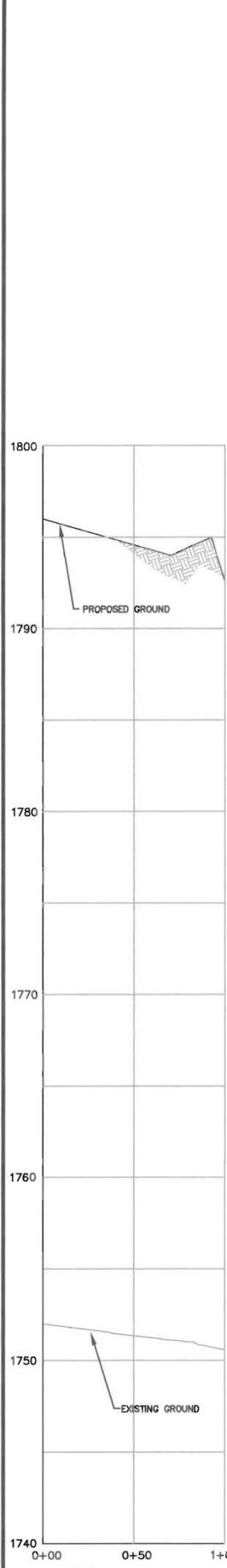
SEAL
PROFESSIONAL ENGINEER-STATE OF NEVADA
JACOB J. JACOBY JR.
NO. 15735
MAY 2008

REV.	DESCRIPTION	BY	DATE	APPROVAL
1	REVISED CHANNEL SECTION - DGN, DSB	DR	03/27/15	MLL

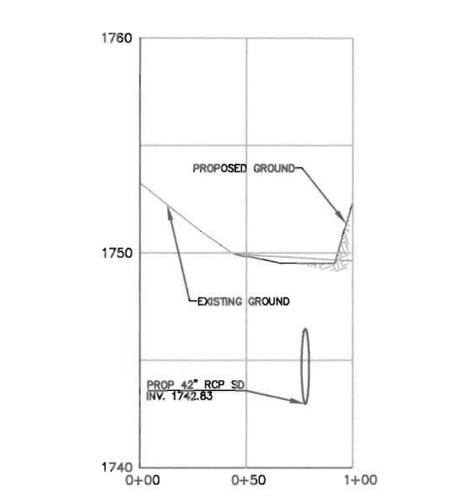
DESIGNED BY: -DS
DRAWN BY: -DS
CHECKED BY: -LJ
DATE: MAY, 2008

HTE# 06-44325
JOB NO. 51168319
FILE NAME: LANDFILL
SCALE: HORIZ.: 1" = 40'
VERT.: 1" = 4'

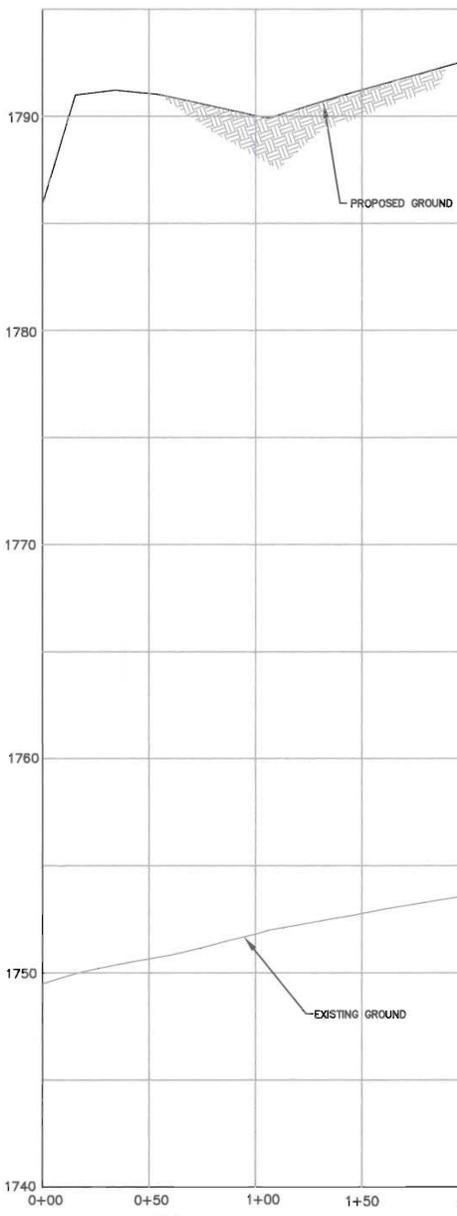
CONFORMED
EASTSIDE LANDFILL
CROSS SECTIONS I



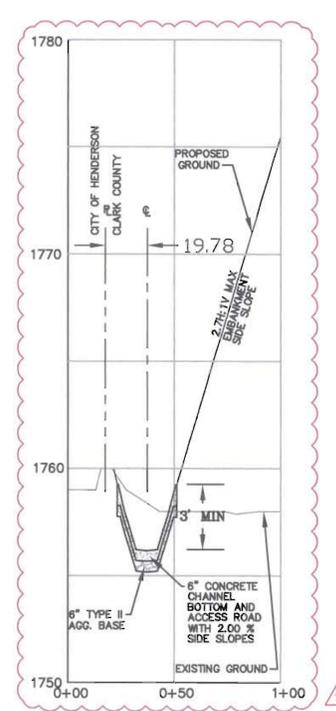
16 CROSS SECTION
S2



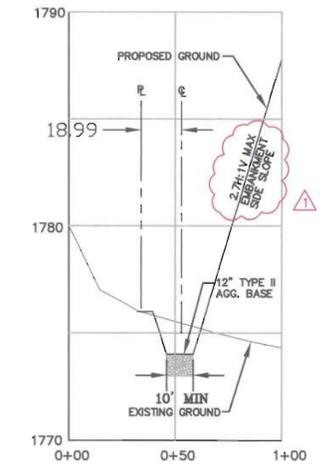
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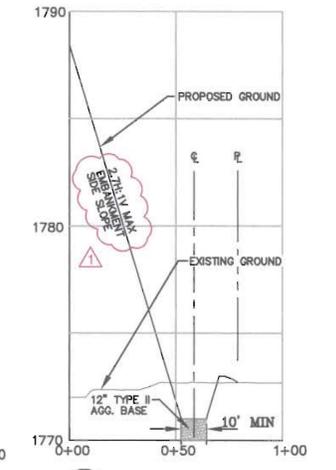
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S2



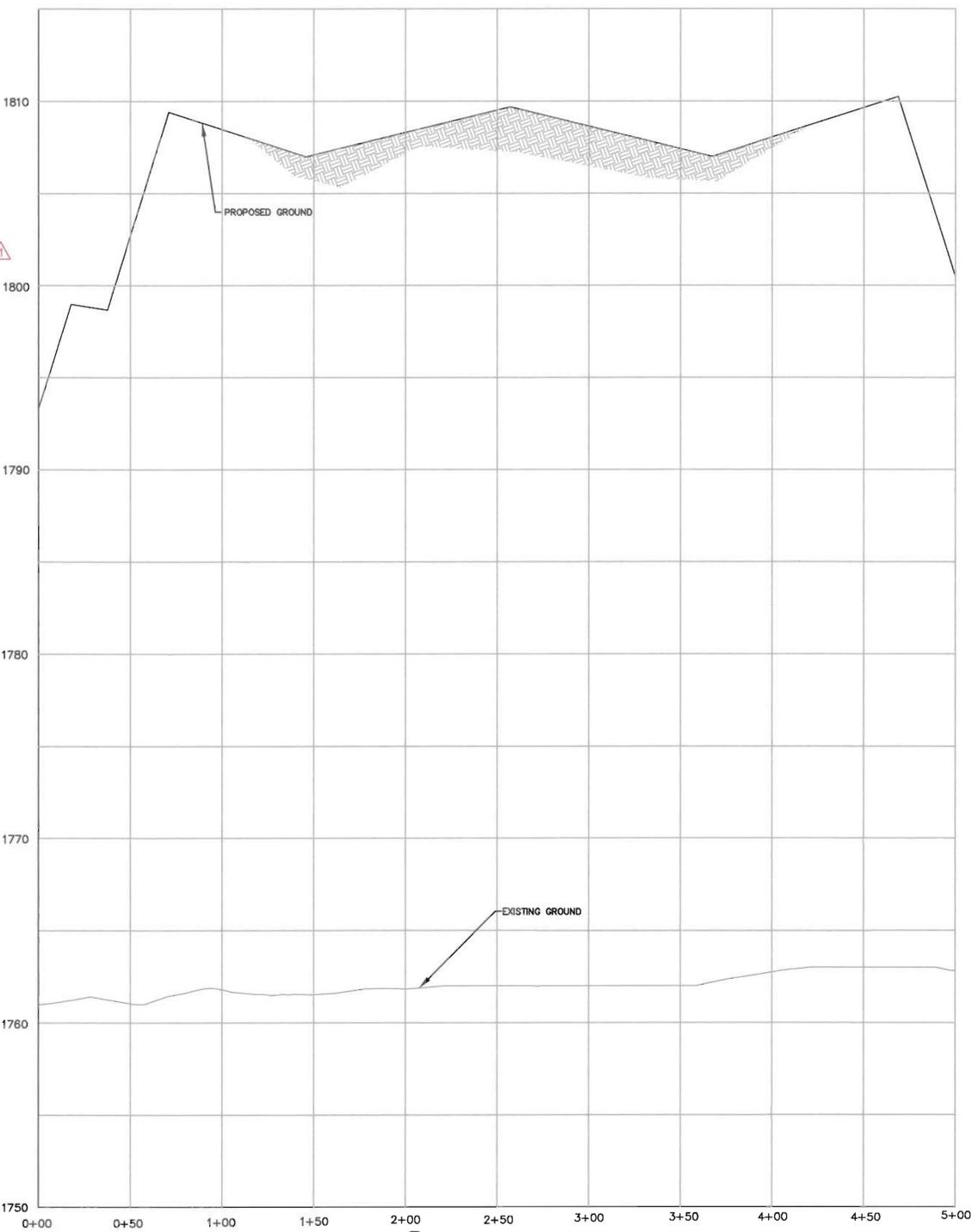
21 WEST CHANNEL CROSS SECTION
S2 STA. 31+20.80



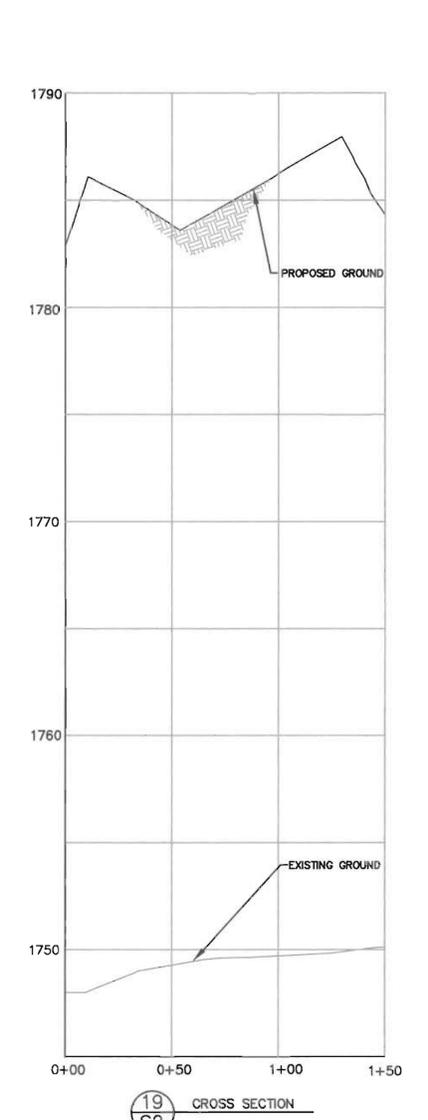
22 WEST CHANNEL CROSS SECTION
S2 STA. 12+77.92



23 CROSS SECTION
S2



20 CROSS SECTION
S2

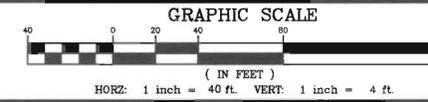


19 CROSS SECTION
S2

- NOTES**
- ALL TYPE II AGGREGATE TO CONFORM TO CCAUSS 704.03.04.
 - ALL CONCRETE SHALL BE CLASS AA PER CCAUSS #501.
 - SEE CAMU DRAWINGS FOR GEOCOMPOSITE, GEOMEMBRANE, LINER, PIPE, GEOTEXTILE, COVER SOIL, SLOPE TREATMENT, INTERIM COVER, OPERATIONS LAYER, FINAL COVER, AND ALL OTHER SUBGRADE REQUIREMENTS.

BASIS OF BEARING
SOUTH 85°36'52" WEST - BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND "CC-GIS W51" AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BENCHMARK
CLARK COUNTY BENCHMARK NO. 6C22 4E6- RIVET AND PLATE IN TOP OF CURB SOUTHEAST CORNER OF SUNSET ROAD AND CAMARLO PARK DRIVE NEAR THE PC OF SUNSET ROAD.
NAVD 1988 DATUM
ELEVATION = 5.33.653 METERS
1750.50 FEET
(REVISED 2003)



Call before you Dig.

1-800-227-2600

UNDERGROUND SERVICE ALERT (USA)

Call before you OVERHEAD

1-702-227-2929

NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT

SEAL

PROFESSIONAL ENGINEER-STATE OF NEVADA

JACOBY JR.

CIVIL

No. 15736

5-19-10

REV.	DESCRIPTION	BY	DATE	APPROVAL
1	REVISED CHANNEL SECTION - DGN 03B	BRW	03/17/10	MLJ

CONFORMED

EASTSIDE LANDFILL CROSS SECTIONS II

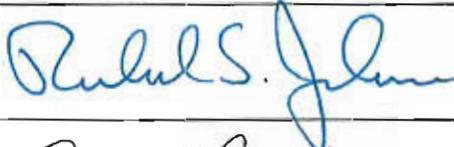
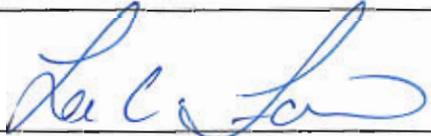
JOB NO.: 511683.19	DESIGNED BY: -DS
FILE NAME: LANDFILL	DRAWN BY: -DS
SCALE: HORIZ: 1" = 40'	CHECKED BY: -LJ
VERT: 1" = 4'	DATE: MAY, 2008

HTE# 06-44325

S2



Design Change Notification

Project: BRC Eastside Common Areas Soils Remediation, Henderson, Nevada		DCN No.: ESR DCN-039
Contract No.: 6389		Contractor: ENTACT Environmental Services
References:		
RFI No.: 97	Drawing No.:	
Specification Section:	CQA Section No.: 02200	
<p>Design Change: This design change allows up to a 12-inch lift for placement of Type II Aggregate Base. Depth of compaction testing is specified as 6-inches when overlying geosynthetics and 12-inches when overlying soil.</p>		
<p>Attachments: Revised Specification Section 02200</p>		
<p>This design change notification shall be included into the contract documents referenced above and is officially incorporated into the contract documents as of the date latest signature approval date on this document.</p>		
Approved By:		
Engineer of Record:		Date: 6-Apr-10
Construction Manager:		Date: 4/6/10
BRC Project Manager:		Date: 4/6/10

SECTION 02200

EARTHWORK

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. The Contractor shall furnish all labor, materials, tools, supervision, transportation, and equipment necessary to perform all Work specified herein and as shown on the Construction Drawings.
- B. The Work shall include, but not be limited to excavating, hauling, placing, moisture conditioning, backfilling, compacting, grading, stockpiling, and subgrade preparation, including subgrade preparation for storm water pipeline and appurtenances. Earthwork shall conform to the dimensions, lines, grades and sections shown on the Drawings or as directed by the Construction Manager.
- C. Construction of the final CAMU cover system and associated storm water management features overlying the CAMU will be held as an Option Scope that may be added to the contract via Contract Modification at the Owner's sole discretion. If the Owner decides to exercise its option to add the Option Scope, the Construction Manager will notify the Contractor no later than 30 days after receipt of the final Eastside Area confirmation sampling

1.02 RELATED SECTIONS

Section 01025 — Measurement and Payment

Section 02110 — Site Clearing

Section 02205 — Remedial Excavating and Filling

Section 02771 — Geotextile

Section 02772 — Geosynthetic Clay Liner

Section 02773 — Geocomposite

Section 03400 — Cast-in-Place Concrete

1.03 REFERENCES

- A. Construction Drawings
- B. Clark County Area Uniform Standard Specifications (CCAUSS) and Clark County Area Uniform Standard Drawings (CCAUSD).
- C. Geosyntec, 2007 “Construction Quality Assurance Plan for the Construction of the Corrective Action Management Unit, Basic Remediation Company, Henderson, Nevada,” August.
- D. Latest version of American Society for Testing and Materials (ASTM) standards:

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Rev-14.DCN-036
Rev-15.DCN-039
Basic Remediation Company

- ASTM D 422 Standard Method for Particle-Size Analysis of Soils
- ASTM D 1557 Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³))
- ASTM D 2216 Standard Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures
- ASTM D 2487 Standard Test Method for Classification of Soils for Engineering Purposes
- ASTM D 2922 Standard Test Methods for Density of Soil and Soil-Aggregate In-Place by Nuclear Density Methods (Shallow Depth)
- ASTM D 3017 Standard Test Method for Water Content of Soil and Rock In-Place by Nuclear Methods (Shallow Depth)
- ASTM D 3080 Standard Test Method for Direct Shear Test of Soils Under Consolidated Drained Conditions
- ASTM D 4318 Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

E. Latest version of American Association of State Highway and Transportation Officials (AASHTO) standards:

- AASHTO T 180 Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop

1.04 SUBMITTALS

- A. Prior to beginning earthwork, Contractor shall perform baseline topographic survey on a minimum 50-foot grid and at all grade breaks. Baseline topographical survey shall be submitted to the Construction Manager within 20 working days of notice to proceed.
- B. The Contractor shall submit to the Construction Manager a notice of completion for within 24 hours of completed excavation, engineered fill, prepared subgrade and cover layer as-built survey to provide the Owner with sufficient time to verify as-built surveys
- C. The Contractor shall submit to the Construction Manager laboratory test data for cover soils demonstrating shear strength parameters. Shear strength tests shall be conducted at 90 percent maximum dry density at optimum moisture content.
- D. The Contractor shall submit to the Construction Manager the GPS excavation control methods the Contractor has available for use.
- E. The Contractor shall submit to the Construction Manager the Stockpile Plan prior to Notice to Proceed.
- F. The Contractor shall submit to the Construction Manager product data sheets and manufacturer's recommendations for soil binder material that will be used.

1.05 QUALITY ASSURANCE

- A. The Contractor shall ensure that the materials and methods used for Earthwork meet the requirements of the Construction Drawings and this Section. Any material or method that does not conform to these documents, or to alternatives approved in writing by the Construction Manager shall be rejected and shall be repaired or replaced by the Contractor.
- B. The Contractor shall be aware of and accommodate all monitoring and field/laboratory conformance testing required by the CQA Plan. This monitoring and testing, including random conformance testing of construction materials and completed work, shall be performed by the CQA Engineer. If nonconformances or other deficiencies are found in the materials or completed work, the Contractor shall be required to repair the deficiency or replace the deficient materials.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and protect products brought to the Project site in accordance with this Section.
- B. Stockpiles
 1. Stockpile materials at locations in accordance with the Stockpile Plan or as agreed to by the Contractor and the Construction Manager. Stockpiles shall be located so as not to interfere with other aspects of the work.
 2. Clear stockpile areas and install erosion and sedimentation controls before depositing fill or excavated materials on approved stockpile areas.
 3. Prevent segregation of fill materials and mixing of one type of fill material with other types.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Engineered fill shall consist of on-site relatively homogeneous, natural soils that contain <5% of debris, foreign objects, large rock fragments (greater than 6 inches in maximum dimension), roots, and organics. No materials larger than 6 inches shall be allowed within the Engineered fill. The Engineered fill shall be classified according to the Unified Soil Classification System (per ASTM D 2487) as SC, ML, CL, SM, SW, SP, GW, GP, GM, GC, or combinations of these materials. The Contractor may propose the use of other soil types as Engineered fill, but then such use shall be at the sole discretion of the Engineer.

~~Cover soil shall consist of on-site relatively homogeneous, natural soils that are free of debris, foreign objects, large rock fragments (greater than 6 inches in maximum dimension), roots, and organics. The first lift of cover soil placed directly overlying the geosynthetic components of the cover system shall have a maximum particle size of 1 inch. The cover soil shall be classified according to the Unified Soil Classification System (per ASTM D 2487) as SC, ML, CL, SM, SW, GW, GM, GC, or combinations of these materials. The Contractor may propose the use of other soil types as cover soil, but then such use shall be at the sole discretion of the Engineer. Cover soil shall have a remolded minimum shear strength of 32 degrees and at least 500 psf cohesion at 90%~~

~~compaction, based on Modified Proctor, at optimum moisture content, as measured by ASTM D 3080 **DCN-015, 12/01/08.**~~

~~Cover soil shall consist of on-site relatively homogeneous, natural soils that are free of debris, foreign objects, large rock fragments (greater than 6 inches in maximum dimension), roots, and organics. The first lift of cover soil placed directly overlying the geosynthetic components of the cover system shall have a maximum particle size of 1 inch. The cover soil shall be classified according to the Unified Soil Classification System (per ASTM D 2487) as SC, ML, CL, SM, SW, GW, GM, GC, or combinations of these materials. The Contractor may propose the use of other soil types as cover soil, but then such use shall be at the sole discretion of the Engineer. Cover soil shall have a remolded minimum angle of internal friction of 28 degrees at 85% compaction, based on Modified Proctor, at optimum moisture content, as measured by ASTM D 4767. Testing shall be run with normal loads of 1, 2, and 4 psi. Pore pressure measurements shall be collected such that the consolidated, drained strength parameters are obtained from the test. **DCN-015, 12/01/08.**~~

- B. ~~Cover soil shall consist of on-site relatively homogeneous, natural soils that are free of debris, foreign objects, large rock fragments (greater than 6 inches in maximum dimension), roots, and organics. The first lift of cover soil placed directly overlying the geosynthetic components of the cover system shall have a maximum particle size of 1 inch. The cover soil shall be classified according to the Unified Soil Classification System (per ASTM D 2487) as SC, ML, CL, SM, SW, GW, GM, GC, or combinations of these materials. The Contractor may propose the use of other soil types as cover soil, but then such use shall be at the sole discretion of the Engineer. Cover soil shall have a remolded minimum angle of internal friction of 28 degrees at 87% compaction, based on Modified Proctor, at optimum moisture content, as measured by ASTM D 4767. Testing shall be run with normal loads of 1, 2, and 4 psi. Pore pressure measurements shall be collected such that the consolidated, drained strength parameters are obtained from the test. **DCN-036, 10/28/09.**~~
- C. Operations layer shall consist of Eastside Area or Western Ditch materials conforming to Specifications in Section 02205.
- D. Prepared subgrade is defined as the material directly underlying the geosynthetic liner system which shall meet the requirements listed above for Engineered fill. No materials larger than 3/4 inch shall project or protrude from the surface of the prepared subgrade. Prepared subgrade limits are the top inside edge of the perimeter anchor trench.
- E. Pipe Trench Backfill shall be in accordance with CCAUSS Section 208 and the Construction Drawings.
- F. Anchor Trench Backfill materials shall meet the requirements listed above for the Engineered Fill.
- G. Slit Trench Backfill shall consist of earthen materials excavated from the slit trenches that are separated and earthen materials adjacent to the slit trenches.
- H. Structure Embankment shall conform to CCAUSS Section 207 and the requirements shown on the Construction Drawings.
- I. Aggregate base for storm water channels and CAMU Base Road shall conform to CCAUSS Section 704.03.04 for Type II Aggregate Base and the Construction Drawings.

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Rev-5.DCN-015
Rev-14.DCN-036
Rev-15.DCN-039
Basic Remediation Company

- J. Grouted Riprap atop 6-inch Type II aggregate base along the embankment channels shall have D50 = 12-inch rip rap. Grouted rip rap shall be in accordance with CCAUSS Section 610 and the Construction Drawings.
- K. Grout shall be in accordance with CCAUSS Section 706 and the Construction Drawings.
- L. Final cover side slope surface treatment layer (gravel mulch) shall be 3/4-inch "Vista Gold" by Vista Landscape, Henderson, NV; telephone (702) 565-6611, or Construction Manager approved equal.
- M. Soil binder shall be long lasting plant derived material such as pitch and rosin emulsion, polymeric emulsion blends, or Portland cement based material as approved by the Construction Manager.

2.02 EQUIPMENT

- A. The Contractor shall furnish, operate, and maintain compaction equipment as is necessary to produce the required in-place soil density and moisture content.
- B. The Contractor shall furnish, operate and maintain tank trucks, pressure distributors, or other equipment designed to apply water uniformly and in controlled quantities to variable surface widths.
- C. The Contractor shall furnish, operate, and maintain miscellaneous equipment such as scarifiers or disks, earth excavating equipment, earth hauling equipment, and other equipment, as necessary for Earthwork construction.
- D. Equipment used in spreading the cover layer material on top of the geosynthetic liner system shall be restricted to the following maximum allowable equipment ground pressures:

MAXIMUM ALLOWABLE EQUIPMENT GROUND PRESSURE (psi)	INITIAL LIFT THICKNESS OF OVERLYING AGGREGATE THICKNESS OF COVER SOIL OVERLYING GEOCOMPOSITE DCN- 015, 12/01/08 (ft)
<10	1.0
≤20 <u>DCN-015, 12/01/08</u>	2.0 <u>DCN-015, 12/01/08</u>
≥20 <u>DCN-015, 12/01/08</u>	3.0 <u>DCN-015, 12/01/08</u>

<20 <u>DCN-015, 12/01/08</u>	>1.0 and <2.0 <u>DCN-015, 12/01/08</u>
≥20 <u>DCN-015, 12/01/08</u>	≥2.0 <u>DCN-015, 12/01/08</u>

PART 3 – EXECUTION

3.01 FAMILIARIZATION

- A. Prior to implementing any of the work in this Section, the Contractor shall become thoroughly familiar with the site, the site conditions, and all portions of the work falling within this and other related Sections.
- B. Inspection:
 - 1. The Contractor shall carefully inspect the installed work of all other Sections and verify that all work is complete to the point where the installation of the work specified in this Section may properly commence without adverse impact.
 - 2. If the Contractor has any concerns regarding the installed work of other Sections, the Construction Manager shall be notified in writing prior to commencing work. Failure to notify the Construction Manager or continuance of the work of this Section shall be construed as Contractor's acceptance of the related work of all other Sections.
- C. For CAMU stormwater control grading, “Improvement Plans for Eastside Landfill” prepared by PBS&J, October 2006, shall take precedence over “Final Construction Drawings, Basic Remediation Company, Corrective Action Management Unit, Henderson, Nevada,” August 2007, conformed May 2008, prepared by Geosyntec Consultants. **DCN-011 09/24/08, RFI-031**

3.02 SITE PREPARATION

- A. Prior to performing any earthworks on the site, the Contractor shall perform a baseline topographic survey. The survey, at a minimum shall be performed on a 50 foot grid and account for grade breaks and other topographic features affecting volume of earthworks. This survey shall be conducted by a Professional Land Surveyor licensed in the state of Nevada. This survey shall serve as the starting point for earthwork quantities, both excavation and fill placement.
- B. The Contractor shall perform demolition and site clearing in accordance with the Construction Drawings and Sections 02010 and 02110 of these Specifications prior to any Earthwork activity.
- C. Prior to performing earthworks on the site, the Contractor shall install drainage and erosion-control measures in accordance with the SWPPP.

3.03 GENERAL EXCAVATION

- A. The Contractor shall excavate materials to the limits and grades shown on the Drawings.
- B. All excavated materials not used for Engineered Fill shall be stockpiled in accordance with the Stockpile Plan or in an area designated by the Construction Manager in accordance with Subpart 3.06 of this Section.

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 Rev-5.DCN-015
 Rev-14.DCN-036
 Rev-15.DCN-039
 Basic Remediation Company

- C. Excavated materials shall be used onsite only. Contractor shall not export excavated CAMU soils.
- D. Excavations in native soil shall not have slopes steeper than 2.1H:1V, unless otherwise indicated on the Construction Drawings or when approved by the Construction Manager.
- E. No excavations deeper than 4 feet with side slopes steeper than 2:1 (horizontal:vertical) shall be made unless otherwise indicated on the Construction Drawings or without the prior approval of the Construction Manager. When shoring is required, the design and inspection of such shoring shall be the Contractor's responsibility and shall be subject to the review of the Construction Manager prior to use. No personnel shall Work within or next to an excavation requiring shoring until such shoring has been installed, inspected, and approved by an engineer registered in the State of Nevada. The Contractor shall be responsible for any fines imposed due to violation of any laws and regulations relating to the safety of the Contractor's personnel.
- F. Excavations shall be kept free from water.
- G. The Contractor shall notify the Construction Manager at once of springs, seeps, or wet zones found in excavations.
- H. Oversized materials encountered within the excavation or that result from screening operations of clean fill shall be segregated and stockpiled in accordance with the Stockpile Plan and Subpart 2.06 of this Section or in a location approved by the Construction Manager.
- I. Permanent Ditches and Channels:
 - 1. Cut ditches and channels accurately to the cross sections, grades, and elevations indicated on the drawings. Do not cut below indicated grades without prior Construction Manager authorization.
 - 2. Do not deposit excavated material within 4 feet from the edge of a ditch or channel, unless the material is fill placed as indicated and specified.
 - 3. Keep completed ditches and channels free from blockage or obstruction by leaves, brush, sticks, trash, sediment, and other debris.
 - 4. Storm water ditch excavation through the Western Ditch shall be excavated 2.5 feet lower than grades shown on Construction Drawings. Excavated Western Ditch soil shall be stockpiled over the Western Ditch within the footprint of the Cell II in accordance with the Stockpile Plan. The storm water ditch shall immediately have 2.5 foot over excavation backfilled with clean soil to the grades shown on the construction drawings.

3.04 ANCHOR TRENCH EXCAVATION

- A. The Contractor shall excavate the anchor trench to the limits and grades shown on the Drawings.
- B. All excavated materials not used for Anchor Trench Backfill or Engineered fill shall be stockpiled in areas shown on Construction Drawings or as designated by the Construction Manager in accordance with Subpart 3.06 of this Section and the Stockpile Plan.

3.05 SUBGRADE SURFACE PREPARATION

- A. The subgrade shall be prepared and made suitable as a foundation for placement and compaction of soil material and geosynthetic components of liner system, where applicable. The prepared subgrade shall be proof-rolled and meet the requirements outlined in Subpart 2.01 The subgrade shall be firm and able to support the Contractor's construction equipment without the development of depressions or ruts. In addition, the subgrade shall provide adequate support such that the overlying fill material may be placed and compacted to the specified density.

3.06 STOCKPILING

- A. Soil shall be stockpiled in areas shown on Construction Drawings and in accordance with the Stockpile Plan, or as designated by the Construction Manager. Stockpile shall be free of incompatible soil, clearing, clearing debris, or other objectionable materials.

~~Stockpiles shall be no steeper than 2H:1V (Horizontal:Vertical) or other slope approved by the Construction Manager, graded to drain, sealed by tracking parallel with the direction of to the slope with a dozer or other means approved by the Construction Manager, and dressed daily during periods when fill is taken from the stockpile. The Contractor shall employ temporary erosion and sediment control measures (i.e. silt fence) in accordance with the Contractor prepared SWPPP or as directed by the Construction Manager around stockpile areas. DCN-011 09/24/08, RFI-039~~

- B. The 200,000 cy stockpile as defined by the Construction Drawings shall be no steeper than 1.5H:1V (Horizontal:Vertical). Additional stockpiles shall be no steeper than 2H:1V or other slope approved by the Construction Manager. All stockpiles shall be graded to drain, sealed by tracking parallel with the direction of the slope with a dozer or other means approved by the Construction Manager, and dressed daily during periods when fill is taken from the stockpile. The Contractor shall employ temporary erosion and sediment control measures (i.e. silt fence) in accordance with the Contractor prepared SWPPP or as directed by the Construction Manager around stockpile areas. DCN-011 09/24/08, RFI-039
- C. Western Ditch soil excavated during Phase IIIA shall be stockpiled over the Western Ditch within Cell II or placed within the lined areas of the CAMU as waste fill in accordance with Section 02205 of these Specifications.

3.07 PIPE TRENCH EXCAVATION AND BACKFILL

- A. See CCAUSS Sections 206, 207, and 208.
- B. Trench excavation and backfill shall conform to the lines and grades shown on the Construction Drawings.

~~ENGINEERED FILL, SLIT TRENCH BACKFILL, AND ANCHOR TRENCH BACKFILL~~ DCN-022, 02/03/2009

- A. ~~The Engineered Fill, Slit Trench Backfill, and Anchor Trench Backfill shall be placed to the lines and grades shown on the Drawings. DCN-022, 02/03/2009~~

- B. ~~Soil used for the Engineered Fill, Slit Trench Backfill, and Anchor Trench Backfill shall be on-site materials meeting the requirements of Subpart 2.01 of this Section. DCN-022, 02/03/2009~~
- C. ~~Soil used for the Engineered Fill, Slit Trench Backfill, and Anchor Trench Backfill shall be placed in a loose lift that results in a compacted lift thickness of no greater than 12 inches. The maximum permissible pre-compaction soil clod size is 6 inches. DCN-022, 02/03/2009~~
- D. ~~Each 12-inch horizontal lift of Engineered Fill and Slit Trench Backfill placed against a slope shall be keyed into the slope a minimum of 3 feet, as measured horizontally from the top of the 12-inch lift. DCN-022, 02/03/2009~~
- E. ~~The Contractor shall compact each lift to at least 90 percent of its modified Proctor maximum dry density (ASTM D 1557) at a moisture content of between -4% and +4% of the optimum moisture content for the soil. The Contractor shall utilize compaction equipment suitable for achieving the soil compaction requirements DCN-022, 02/03/2009~~
- F. ~~Contaminated water shall not be used for moisture conditioning or as dust control of final cover soils. DCN-022, 02/03/2009~~
- G. ~~During wetting or drying, the material shall be regularly disced or otherwise mixed so that uniform moisture conditions in the appropriate range are obtained. DCN-022, 02/03/2009~~

3.08 ENGINEERED FILL AND SLIT TRENCH, WASTE TRENCH, AND ANCHOR TRENCH BACKFILL DCN-022, 02/03/2009

- A. ~~The Engineered Fill and Slit Trench, Waste Trench, and Anchor Trench Backfill shall be placed to the lines and grades shown on the Drawings. DCN-022, 02/03/2009~~
- B. ~~Soil used for the Engineered Fill, Slit Trench Backfill, and Anchor Trench Backfill shall be on-site materials meeting the requirements of Subpart 2.01 of this Section. DCN-022, 02/03/2009~~
- C. ~~Soil used for the Waste Trench Backfill shall consist of on-site materials specified on the Construction Drawings. DCN-022, 02/03/2009~~
- D. ~~Soil used for the Engineered Fill, Slit Trench and Waste Trench Backfill, and Anchor Trench Backfill shall be placed in a loose lift that results in a compacted lift thickness of no greater than 12 inches. DCN-022, 02/03/2009~~
- E. ~~The maximum permissible Engineered Fill and Anchor Trench Backfill pre-compaction soil clod size is 6 inches. DCN-022, 02/03/2009~~
- F. ~~Each 12-inch horizontal lift of Engineered Fill and Slit and Waste Trench Backfill placed against a slope shall be keyed into the slope a minimum of 3 feet, as measured horizontally from the top of the 12-inch lift. DCN-022, 02/03/2009~~
- G. ~~The Contractor shall compact each lift to at least 90 percent of its modified Proctor maximum dry density (ASTM D 1557) at a moisture content of between -4% and +4% of the optimum moisture content for the soil. The Contractor shall utilize compaction equipment suitable for achieving the soil compaction requirements DCN-022, 02/03/2009~~

- H. The Contractor shall construct a test pad of Slit or Waste Trench Backfill materials, minimum of 2 lifts and a length and width 2 times the length and width of the compactor using in constructing the test pad to verify compaction requirements specified in 3.08. Gare achieved using proposed equipment. DCN-022, 02/03/2009
- I. Waste Trench and Slit Trench Backfill shall be compacted by a minimum of 2 passes, forward and backward are counted as one pass, of a smooth drum compactor operating in static mode, Ingersoll-Rand SD 122 or equivalent. DCN-022, 02/03/2009
- J. Contaminated water shall not be used for moisture conditioning or as dust control of final cover soils. DCN-022, 02/03/2009
- K. During wetting or drying, the material shall be regularly disced or otherwise mixed so that uniform moisture conditions in the appropriate range are obtained. DCN-022, 02/03/2009

3.09 STRUCTURE EXCAVATION AND EMBANKMENT

- A. This shall include, but not be limited to, the following: detention basins, footings for riprap, concrete-lined storm water channels, aggregate-lined storm water channels, and cut-off walls for concrete aprons.
- B. Refer to CCAUSS Sections 206 and 207 for Structure Excavation and Structure Backfill, respectively.

3.10 FINAL COVER SOIL

- A. Place only when underlying drainage aggregate and filter geotextile or geocomposite installation is complete including all Construction Quality Control (CQC) and CQA work and approved by the Construction Manager.
- B. The subgrade to the cover soil consists of a geotextile or geocomposite. Therefore, the Contractor shall avoid tearing, puncturing, folding, or damaging in any way the filter geotextile or geocomposite geotextile during placement of the cover layer material.
- C. Any damage to the geosynthetic liner system which is caused by the Contractor or representatives of the Contractor shall be repaired by the Geosynthetics Installer at the expense of the Contractor.

~~The Contractor shall compact each final lift of final cover soil to at least 90 percent of its modified Proctor maximum dry density (ASTM D-1557) at a moisture content between -4% and +4% of the optimum moisture content for the soil. The Contractor shall utilize compaction equipment suitable for achieving the soil compaction requirements. DCN-015, 12/01/08~~

~~The Contractor shall compact the first 12 inch lift of final cover soil by 4 passes of a D-6 dozer with ground pressure no less than 4 psi and no greater than 10 psi, or equivalent. The Contractor shall compact the second 12 inch lift of final cover soil to at least 90 percent of its modified Proctor maximum dry density (ASTM D-1557) at a moisture content between -4% and +4% of the optimum moisture content for the soil. The Contractor shall utilize compaction equipment suitable for achieving the soil compaction requirements that meets the requirements for maximum ground pressure of subpart 2.02 of this Section. DCN-015, 12/01/08 DCN-036, 10/28/09~~

- D. The Contractor shall compact the first 12-inch lift of final cover soil by 4 passes of a D-6 dozer with ground pressure no less than 4 psi and no greater than 10 psi, or equivalent. On 3:1 cover slopes, the Contractor shall compact the second 12-inch lift by 4 passes of a compactor with a weight exceeding 20,000 lb (Ingersoll Rand SD-122DX, or equivalent). The compactor shall operate in vibratory mode going upslope and in static mode while going down slope. On flat cover surfaces, the Contractor shall compact the second 12-inch lift by 2 passes of the compactor operating in vibratory mode in both directions. A pass shall be combined forward and reverse operation over the same area of the material being compacted. The Contractor shall moisture condition cover soil (both 1-inch minus and 6-inch minus) to within -4% and +4% of optimum moisture content based on modified proctor (ASTM D 1557) for the 1-inch minus material. **DCN-036, 10/28/09**
- E. The cover soil material shall be placed out in front of the equipment used to place the cover layer such that a 1-foot minimum thickness requirement is maintained at all times between the geosynthetic materials and the wheels or tracks of the equipment used to place the cover layer material.
- F. Care must be exercised by the operators of tracked equipment to avoid sharp pivoting turns that could displace the cover layer material and result in damage to the liner system.
- G. Contaminated water shall not be used for moisture conditioning or as dust control of final cover soils.
- H. A 2 inch layer of ¾ inch gravel mulch shall be placed on side slopes equal and greater than 5H:1V for all CAMU and BMI Landfill Covers.
- I. Soil binder shall be placed on top deck areas less than 5H:1V. Soil binder shall be applied at rates as recommended by the manufacturer for the prevention of water and wind induced erosion on exposed soils.

3.11 AGGREGATE BASE

~~Aggregate base placement and compaction shall be in accordance with CCAUSS Section 301 and 302 for Type II aggregate base. Aggregate base shall be compacted to not less than 95% compaction as determined by AASHTO T 180.~~ **RFI-097; DCN-036, 4/1/10**

- A. **Aggregate base shall be placed and compacted at the following lift thickness: RFI-097; DCN-039, 4/1/10**
 - 1. **Where the required thickness is 6-inches or less, the base course may be spread and compacted in 1 layer. RFI-097; DCN-039, 4/1/10**
 - a. **Compaction testing shall be performed at the full depth of aggregate base installed over soil. RFI-097; DCN-039, 4/1/10**
 - 2. **If vibratory compaction equipment of a type approved by the Engineer is used, and the requirement for density is complied with, the compacted thickness of any 1 layer may be increased to 12 inches. RFI-097; DCN-039, 4/1/10**
 - a. **Compaction testing of the upper 6-inches shall be performed when aggregate base is overlying the geosynthetic liner system or woven geotextile; and RFI-097; DCN-039, 4/1/10**

- b. **Compaction testing shall be performed at the full depth of aggregate base installed over soil. RFI-097; DCN-039, 4/1/10**
- B. **Aggregate base shall be compacted to not less than 95% compaction as determined by AASHTO T 180. RFI-097; DCN-039, 4/1/10**

3.12 GROUTED RIPRAP

- A. Grouted rip rap shall be placed in accordance with Section 610 of the CCAUSS and the Construction Drawings.

3.13 FIELD TESTING

- A. The minimum frequency and details of quality control testing for engineered fill and final cover soil are provided below. The Contractor shall provide equipment and operators to accommodate testing. This testing shall be performed by the CQA Engineer and is not separate from the testing outlined in the CQA Plan (i.e. QC and QA testing are the same and will not be duplicated). The Contractor shall take this testing frequency into account in planning the construction schedule.

~~Engineered fill and final cover soil material quality control testing: DCN-036, 10/28/09~~

- 1. **Engineered fill and 1-inch minus final cover soil material quality control testing: DCN-036, 10/28/09**
 - a. **Moisture content in accordance with ASTM D2216 at a frequency of one test per 5,000 yd³ (1-inch minus cover soil material only); DCN-036, 10/28/09**
 - b. particle-size analyses conducted in accordance with ASTM D 422 at a frequency of one test per 10,000 yd³;
 - c. Atterberg Limits conducted in accordance with ASTM D 4318 at a frequency of one test per 10,000 yd³;
 - d. soil classification tests conducted in accordance with ASTM D 2487 at a frequency of one test per 10,000 yd³; and
 - e. modified Proctor compaction tests conducted in accordance with ASTM D 1557 at a frequency of one test per 10,000 yd³/lift.
- 2. **6-inch minus Final Cover material quality control testing:**
 - a. **Moisture content in accordance with ASTM D2216 at a frequency of one test per 5,000 yd³; DCN-036, 10/28/09**
 - b. **Particle-size analyses conducted in accordance with ASTM D 422 at a frequency of one test per 10,000 yd³; DCN-036, 10/28/09**
 - c. **Atterberg Limits conducted in accordance with ASTM D 4318 at a frequency of one test per 10,000 yd³; and DCN-036, 10/28/09**
 - d. **soil classification tests conducted in accordance with ASTM D 2487 at a frequency of one test per 10,000 yd³. DCN-036, 10/28/09**

~~The CQA Engineer shall perform conformance tests on placed and compacted engineered fill and cover soil to evaluate compliance with these Specifications. These tests shall include in situ moisture content and dry density. The frequency and procedures for moisture density testing are given in the CQA Plan. At a minimum, the dry density and moisture content of the soil shall be measured in situ in accordance with ASTM D 2922 and ASTM D 3017, respectively. **DCN-036, 10/28/09**~~

3. The CQA Engineer shall perform conformance tests on placed and compacted engineered fill and cover soil to evaluate compliance with these Specifications. These tests shall include moisture content (engineered fill and cover soil) and dry density (engineered fill only). The frequency and procedures for moisture-density testing are given in the CQA Plan. **DCN-036, 10/28/09**
4. A special testing frequency shall be used by the CQA Engineer when visual observations of construction performance indicate a potential problem. Additional testing shall be considered when:
 - a. the rollers slip during rolling operation;
 - b. the lift thickness is greater than specified;
 - c. the fill is at improper and/or variable moisture content;
 - d. fewer than the specified number of roller passes are made;
 - e. dirt-clogged rollers are used to compact the material;
 - f. the rollers do not have optimum ballast; or
 - g. the degree of compaction is doubtful.
5. During construction, the frequency of testing shall be increased by the CQA Engineer in the following situations:
 - a. adverse weather conditions;
 - b. breakdown of equipment;
 - c. at the start and finish of grading;
 - d. if the material fails to meet specifications; or
 - e. the work area is reduced.

B. Defective Areas:

1. If a defective area is discovered in the Earthwork, the CQA Engineer shall evaluate the extent and nature of the defect. If the defect is indicated by an unsatisfactory test result, the CQA Engineer shall determine the extent of the defective area by additional tests, observations, a review of records, or other means that the CQA Engineer deems appropriate. If the defect is related to adverse site conditions, such as overly wet soils or surface desiccation, the CQA Engineer shall define the limits and nature of the defect.

2. Once the extent and nature of a defect is determined, the Contractor shall correct the deficiency to the satisfaction of the CQA Engineer. The Contractor shall not perform additional work in the area until the CQA Engineer approves the correction of the defect.
3. Additional testing may be performed by the CQA Engineer to verify that the defect has been corrected. This additional testing shall be performed before any additional work is allowed in the area of deficiency. The cost of the additional testing after failure shall be borne by the Contractor.

3.14 SURVEY CONTROL

- A. The Contractor shall perform all surveys necessary for construction layout and control.

3.15 CONSTRUCTION TOLERANCE

- A. The Contractor shall perform the Earthwork construction to within ± 0.1 ft on areas with a slope less than 10 percent and ± 0.2 ft on areas with a slope greater than 10 percent of the grades indicated on the Drawings.

3.16 PROTECTION OF WORK

- A. The Contractor shall use all means necessary to protect completed work of this Section.
- B. At the end of each day, the Contractor shall verify that the entire work area is left in a state that promotes drainage of surface water away from the area and from finished work. If threatening weather conditions are forecast, at a minimum, compacted surfaces shall be seal-rolled to protect finished work.
- C. In the event of damage to prior work, the Contractor shall make repairs and replacements to the satisfaction of the Construction Manager.

PART 4 – MEASUREMENT AND PAYMENT

4.01 GENERAL

- A. Providing for and complying with the requirements set forth in this Section for CAMU Excavation shall be measured as Lump Sum (LS) and payment shall be based on the lump sum price provided on the Bid Schedule. Specified items incidental to CAMU Excavation include:
 1. Anchor trench excavation
 2. Storm water channel excavation
 3. Stockpiling
 4. Prepared subgrade
 5. And all other incidentals necessary for a complete CAMU excavation.
- B. Providing for and complying with the requirements set forth in this Section for CAMU Engineered Fill shall be measured as Lump Sum (LS) and payment shall be based on the lump sum price provided on the Bid Schedule. Anchor trench backfill shall be incidental

CAMU Construction

Earthwork Rev-3.DCN-011
Rev-5.DCN-015
Rev-14.DCN-036
Rev-15.DCN-039
Basic Remediation Company

to CAMU Engineered Fill. This lump sum shall include all incidentals necessary for a complete CAMU Engineered Fill.

- C. Providing for and complying with the requirements set forth in this Section for Slit Trench Backfill shall be measured as compacted and moisture conditioned in-place cubic yards (CY), and payment shall be based on the unit price provided on the Bid Schedule. Incidental to Slit Trench Backfill shall be slit trench cover excavation. This lump sum shall include all incidentals necessary for a complete slit trench backfill.
- D. Providing for and complying with the requirements set forth in this Section for the BMI Landfills Cover Soil shall be measured as Lump Sum (LS), and payment shall be based on the lump sum price provided on the Bid Schedule. Incidental to the BMI Landfill Cover Soil shall be soil binder and gravel mulch. This lump sum shall include all incidentals necessary for a complete Cover soil placement on the BMI Landfills.
- E. Providing for and complying with the requirements set forth in this Section for CAMU Cover Soil shall be measured as in-place cubic yards (CY), and payment shall be based on the unit price provided on the Option Scope Bid Item Schedule. Incidental to CAMU Cover soil shall be gravel mulch rip-rap and soil binder. The unit price shall include all incidentals necessary for a complete CAMU cover soil placement.
- F. Providing for and complying with the requirements set forth in this Section for the Storm Water Channel Excavation and Embankment shall be measured as Lump Sum (LS), and payment shall be based on the lump sum price provided on the Bid Schedule. The following are considered incidental to Storm water channel excavation and embankment:
 - 1. Subgrade preparation
 - 2. Aggregate base
 - 3. All other necessary incidentals for complete installation of storm water channels.
- G. Providing for and complying with the requirements set forth in this Section for the Storm Water Detention Basin Excavation and Embankment shall be measured as Lump Sum (LS), and payment shall be based on the lump sum price provided on the Bid Schedule. Lump sum shall include all necessary incidentals for complete installation of storm water detention basins.
- H. Providing for and complying with the requirements set forth in this Section for the Storm Water Channel Rip-Rap shall be measured as Lump Sum (LS), and payment shall be based on the lump sum price provided on the Bid Schedule. The following are considered incidental to Storm Water Collection Improvements:
 - 1. Rip Rap
 - 2. Aggregate base
 - 3. Subgrade Preparation
 - 4. All necessary incidentals for complete installation of storm water concrete channels.
- I. Providing for and complying with the requirements set forth in this Section for Aggregate Base Road shall be measured as-lump sum (LS) and payment shall be based on the lump

sum price provided on the Option Scope Bid Schedule. The price shall include all incidentals necessary for a complete aggregate base road installation.

- J. Providing for and complying with the requirements set forth in this Section for CAMU cover embankment channel grouted rip rap shall be measured as Square Foot (SF), and payment shall be based on the unit price provided on the Option Scope Bid Schedule. Specified items incidental to CAMU cover embankment channel rip rap are as follows:
 - 1. Grout
 - 2. Aggregate Base
 - 3. Subgrade preparation
 - 4. All other necessary incidentals for a complete CAMU cover embankment channel installation.

- K. Providing for and complying with the following incidentals shall be included in the Earthworks and Remedial Excavation and Filling, Sections 02200 and 02205, costs on the Bid Schedules:
 - 1. Construction and Dust Control Water
 - 2. Uncontaminated Dewatering
 - 3. On-site Contaminated Water Management and Disposal
 - 4. Dust Control
 - 5. Vacuum Trucks
 - 6. Spill Clean up
 - 7. Health and Safety
 - a. Personal Protective Equipment
 - b. Monitoring
 - 8. Operations and Maintenance of the following items:
 - a. Parking Areas
 - b. Temporary Roads
 - c. Temporary Trailers
 - d. Temporary Utilities
 - e. On-site communications
 - f. Weather Protection
 - g. Contractor Generated Debris and Trash Control

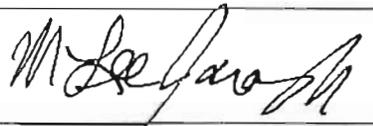
- h. Temporary Sanitary Facilities
 - i. Lighting
 - j. Material and Equipment Storage
 - k. Dust Control Water Storage
 - l. Vacuum Truck Staging Area
 - m. Decontamination Area
 - n. Construction Equipment
 - o. First Aid Facilities
 - p. Dust Control
 - q. Pollution Control
 - r. Traffic and Safety Control
 - s. Decontamination
 - t. Noise Control
9. And all other incidentals necessary for Earthwork

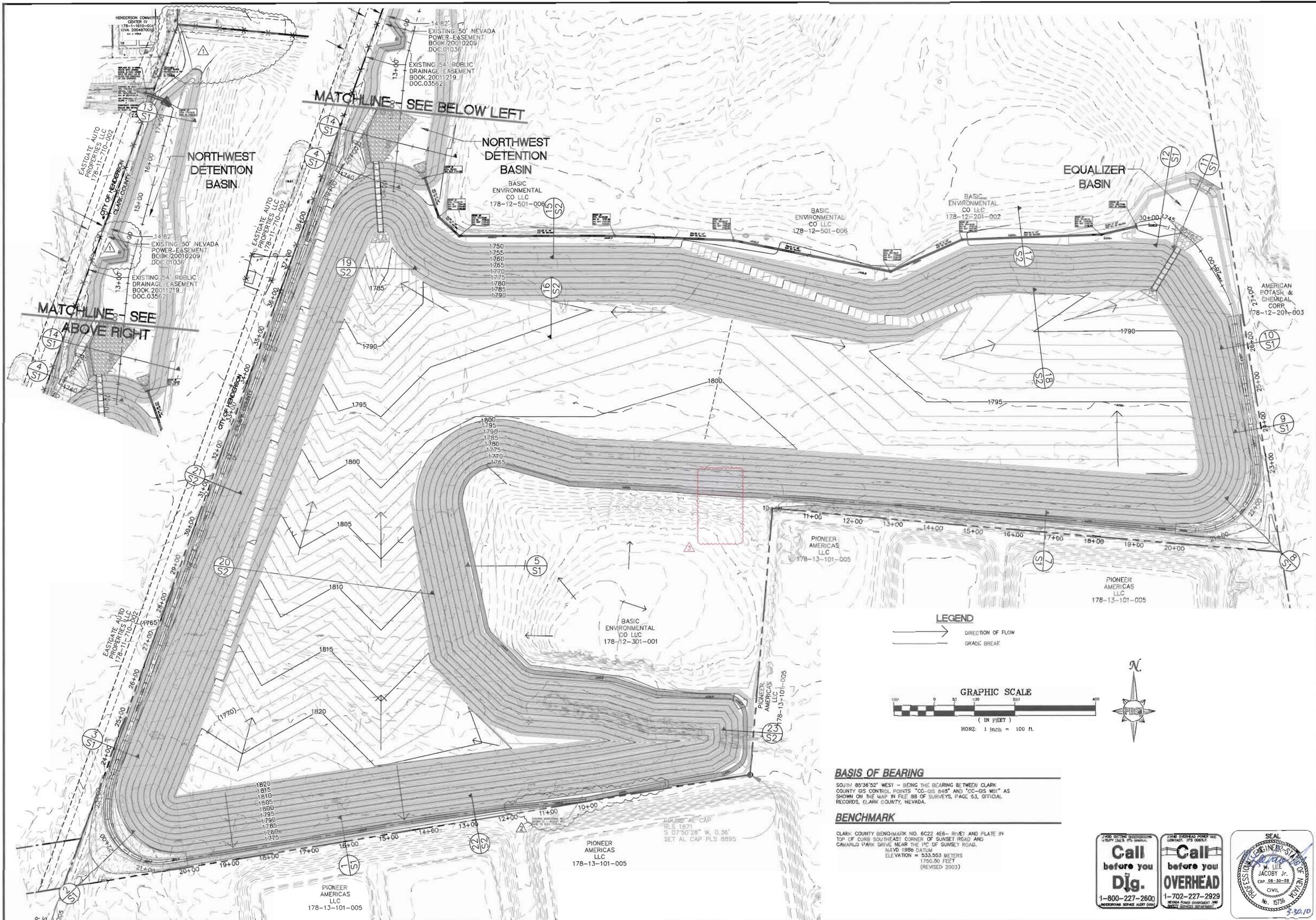
[END OF SECTION]

FILE COPY



Design Change Notification

Project: BRC Eastside Common Areas Soils Remediation, Henderson, Nevada		DCN No.: ESR DCN-040
Contract No.: 6389		Contractor: ENTACT Environmental Services
References:		
RFI No.: 96	Drawing No.: MG1, G5, S1	
Specification Section: N/A	COA Section No.: N/A	
Design Change: Deleted cross section 6.		
Attachments: electronic copy of revised sheets		
This design change notification shall be included into the contract documents referenced above and is officially incorporated into the contract documents as of the date latest signature approval date on this document.		
Approved By:		
Engineer of Record:		Date: 3-29-10
Construction Manager:		Date: 3/30/10
BRC Project Manager:		Date: 03/31/10



REVISIONS	
REV.	DESCRIPTION
1	REVISED GRADING - DUN 01/
2	REVISED CHANNEL ACCESS TO ALIGNMENT - DON 02/
3	DELETED SECTION - DON 04/

BY	DATE	APPROVAL
DS	03.12.09	MOP
MJP	04.21.09	MJJ
RPW	03.29.11	

DESIGNED BY:	DRAWN BY:	CHECKED BY:	DATE:
DS	DS	MJ	MAY, 2008

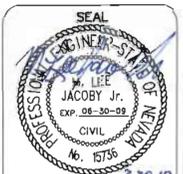
FILE#	PROJECT	DATE
06-44325	MassGrading, Bid Set 11-23-08	MAY 2008

JOB NO.:	FILE NAME:	SCALE:	HORIZ.:	VERT.:
311885-06	LANDFILL			

DATE	DESCRIPTION
MAY 2008	MASS GRADING

Call before you Dig.
 1-800-227-2600

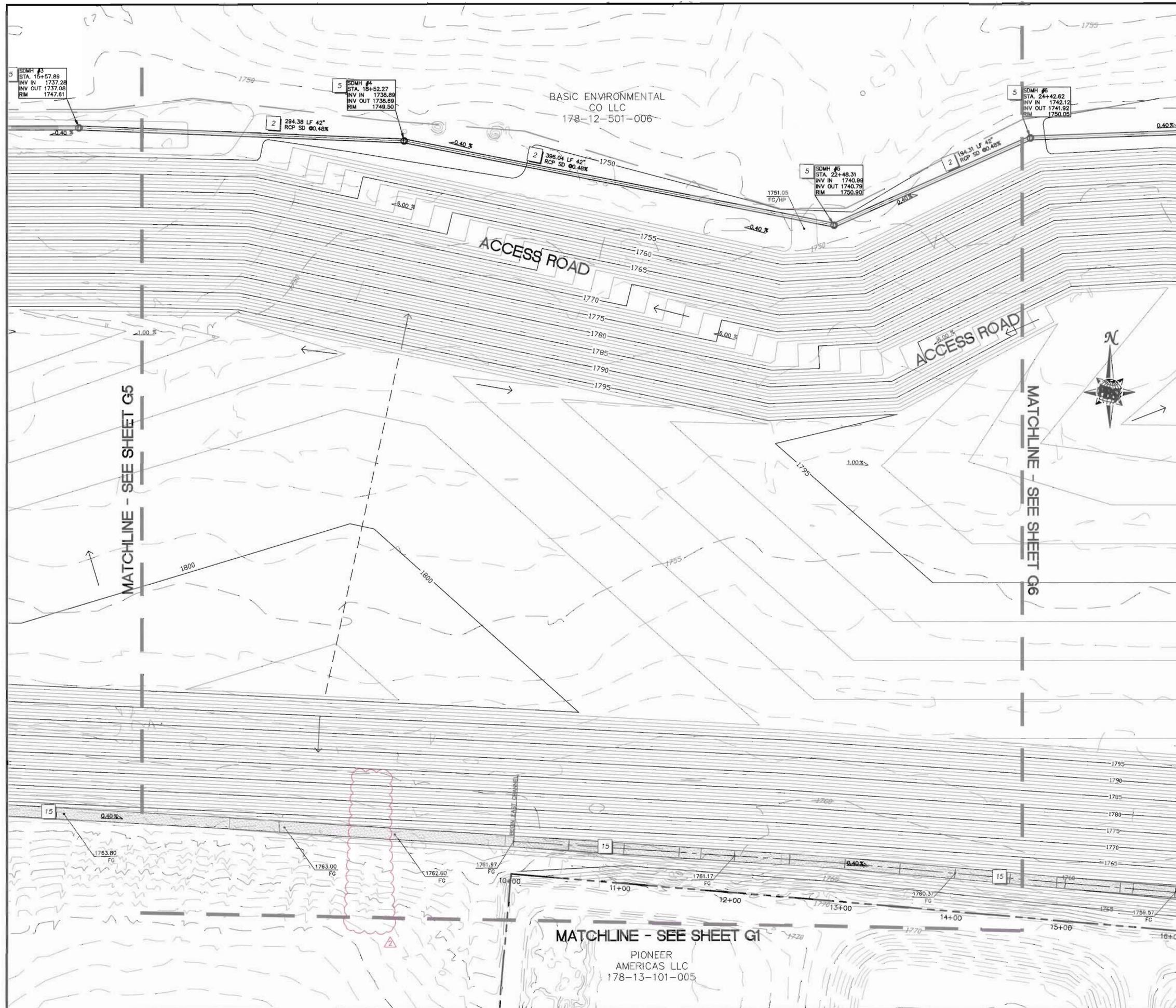
Call before you OVERHEAD
 1-702-227-2929



CONFORMED
EASTSIDE LANDFILL
MASS GRADING

DESIGNED BY: DS
 DRAWN BY: DS
 CHECKED BY: MJ
 DATE: MAY, 2008

FILE# 06-44325
 PROJECT MassGrading, Bid Set 11-23-08
 DATE MAY 2008



BASIC ENVIRONMENTAL
CO LLC
178-12-501-006

PIONEER
AMERICAS LLC
178-13-101-005

- ### KEY NOTES
1. INSTALL 60" CL III RCP SD PER CCAUSS DWG No. 502 AND CCAUSS 206, 207, 208, 601, 603, 708
 2. INSTALL 42" CL III RCP SD PER CCAUSS DWG No. 502 AND CCAUSS 206, 207, 208, 601, 603, 708
 3. INSTALL 42" EQUIVALENT CL III RCP ELLIPTICAL SD PER CCAUSS DWG No. 502 AND CCAUSS 206, 207, 208, 601, 603, 708
 4. NOT USED
 5. INSTALL TYPE III MANHOLE PER CCAUSS DWG No. 406 AND CCAUSS 609
 6. INSTALL 42" HEADWALL PER NDOT STD R-2.5.2 AND CCAUSS 502, 505, 713 SEE DETAIL SHEET D2
 7. INSTALL 60" HEADWALL PER NDOT STD R-2.5.2 AND CCAUSS 502, 505, 713 SEE DETAIL SHEET D2
 8. INSTALL CHANNEL AND ACCESS RD. PER DETAIL "A" SHEET D1
 9. INSTALL 24" THICK D₁₅=12" RIPRAP OVER 6" TYPE II BEDDING PER CCAUSS 302, 610, 704.03.04
 10. INSTALL EMBANKMENT CHANNEL PER DETAIL "B" SHEET D1
 11. INSTALL TRASH RACK PER DETAIL "D" SHEET D1
 12. NOT USED
 13. NOT USED
 14. INSTALL EQUALIZER BASIN OVERFLOW PER DETAIL "C" SHEET D1
 15. INSTALL 12" THICK BY 10' WIDE TYPE II GRAVEL ACCESS DRIVE PER CCAUSS 704.03.04, 302
 16. INSTALL 24" THICK D₁₅=12" GROUDED RIPRAP OVER 6" TYPE II BEDDING PER CCAUSS 302, 610, 704.03.04
 17. INSTALL 6" CONCRETE OVER 6" TYPE II AGG. BASE PER CCAUSS 302, 409, 501, 611, 701, 702, 706
 18. INSTALL 42" EQUIVALENT RCP ELLIPTICAL HEADWALL PER NDOT STD R-2.7.1 SEE DETAIL SHEET D2

- ### NOTES
1. ALL TYPE II AGGREGATE TO CONFORM TO CCAUSS 704.03.04.
 2. ALL CONCRETE SHALL BE CLASS AA PER CCAUSS #501.

LEGEND

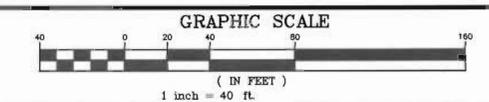
→ DIRECTION OF FLOW
- - - GRADE BREAK

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MISSISSIPPI POWER ALERT (USA)

Call before you OVERHEAD
1-702-227-2929
MISSISSIPPI POWER ALERT (USA)

FLOOD ZONE INFORMATION

THIS SITE IS LOCATED WITHIN FLOOD ZONE X PER FIRM PANEL 2595 OF 4090, MAP No. 32003C2595E, REVISED SEPTEMBER 27, 2002.

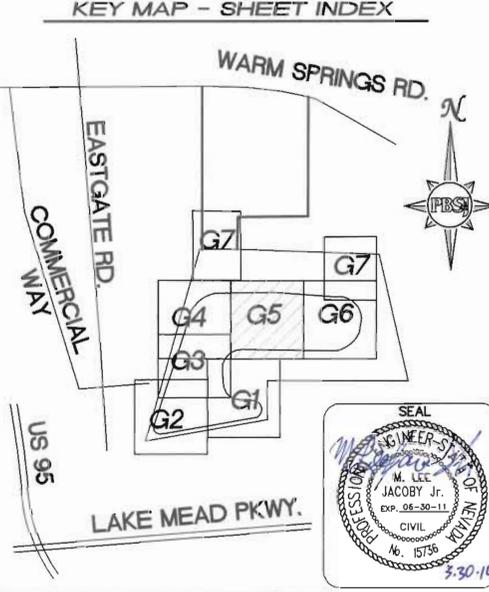


BASIS OF BEARING

SOUTH 85°36'52" WEST - BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND "CC-GIS W51" AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BENCHMARK

CLARK COUNTY BENCHMARK NO. 6C22 4E6 - RIVET AND PLATE IN TOP OF CURB SOUTHEAST CORNER OF SUNSET ROAD AND CAMARLO PARK DRIVE NEAR THE PC OF SUNSET ROAD.
NAVD 1988 DATUM
ELEVATION = 533.553 METERS
1750.50 FEET
(REVISED 2003)



REV.	DESCRIPTION	DATE	APPROVAL
1	REVISED MANHOLE TYPE - D2N D24	03.16.09	M.L.J.
2	DELETED SECTION - D2N D40	03.16.09	M.L.J.
3			
4			
5			

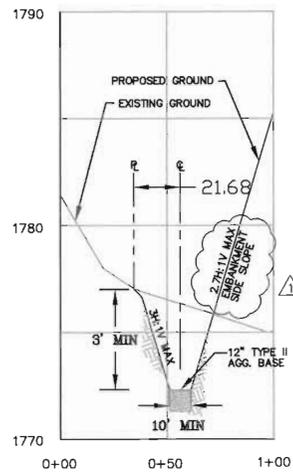
DESIGNED BY:	DRAWN BY:	CHECKED BY:	DATE:
DS	DS	MLJ	MAY, 2008

JOB NO.:	FILE NAME:	SCALE:	DATE:
511683.19	LANDFILL	HORIZAL: 1" = 40'	

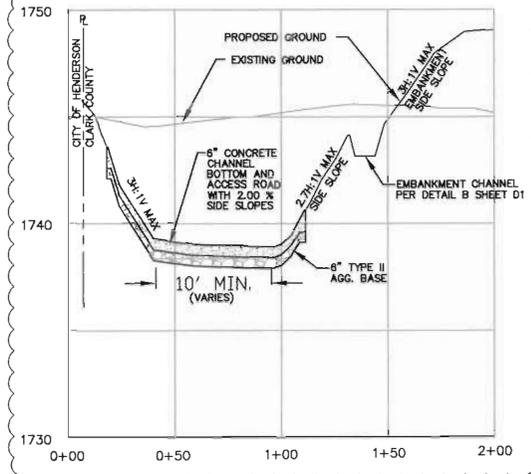
HT#	DATE	SCALE
06-44325	11	3.30-10

CONFORMED

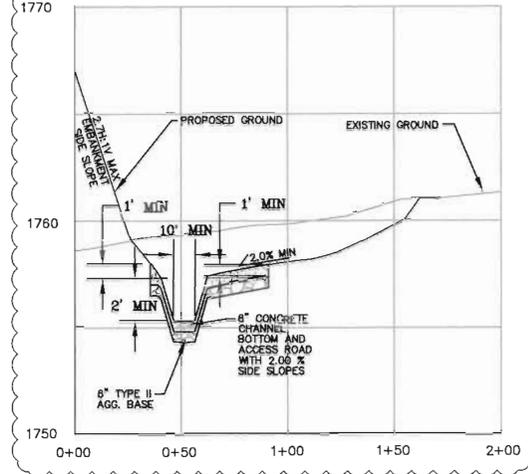
EASTSIDE LANDFILL GRADING PLAN V



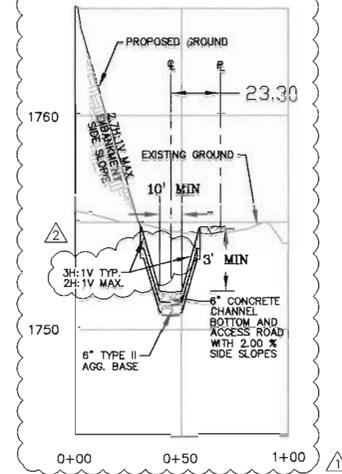
1 WEST CHANNEL CROSS SECTION
 S1 STA. 16+05.81
 TYP. STA. 10+00 TO 20+00



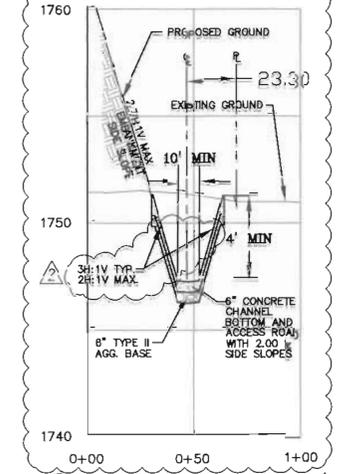
4 WEST CHANNEL CROSS SECTION
 S1 STA. 39+60.72
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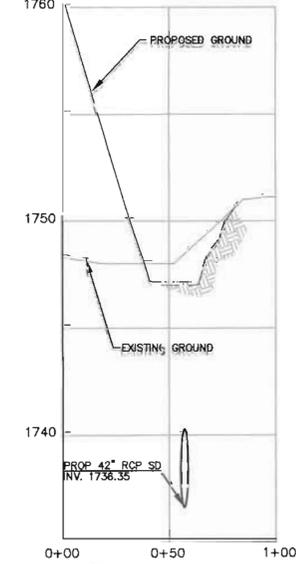
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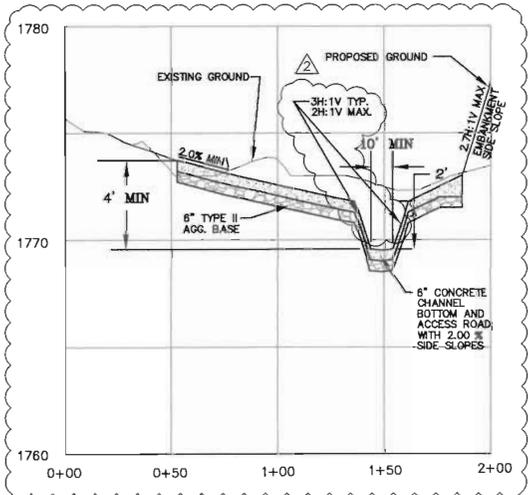
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 TYP. STA. 23+12.11 TO 25+45



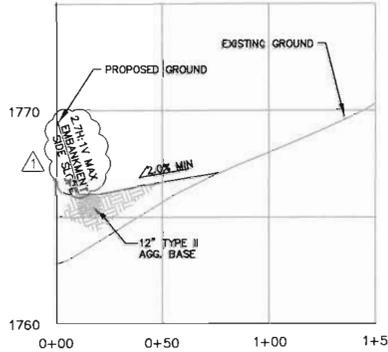
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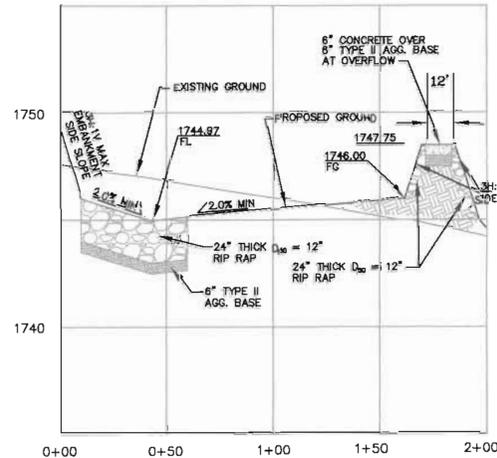
15 CROSS SECTION
 S2



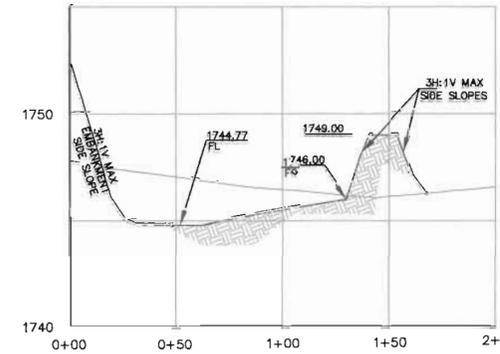
2 WEST CHANNEL CROSS SECTION
 S1 STA. 21+77.81
 TYP. STA. 20+00 TO 24+00



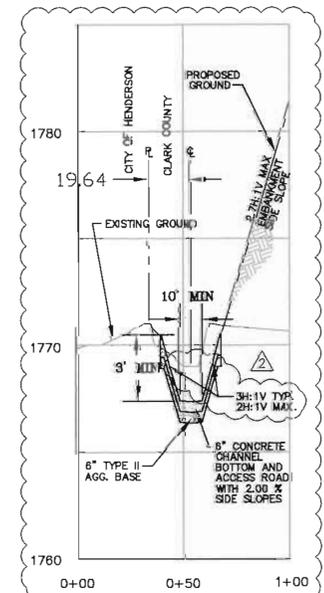
5 CROSS SECTION
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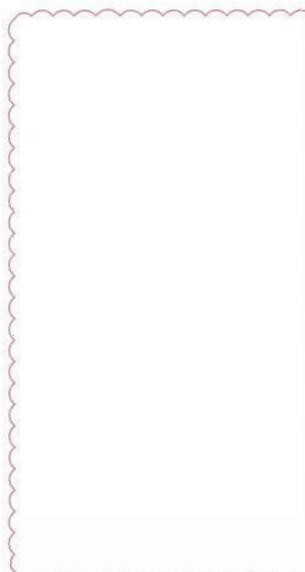
11 EAST CHANNEL CROSS SECTION
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 TYP. STA. 29+17± TO 29+33±



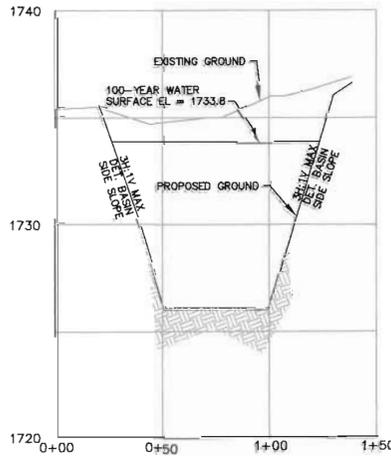
12 EAST CHANNEL CROSS SECTION
 S1 STA. 29+72.95
 TYP. STA. 26+69.88 TO 29+17±
 & STA. 29+33± TO 30+00



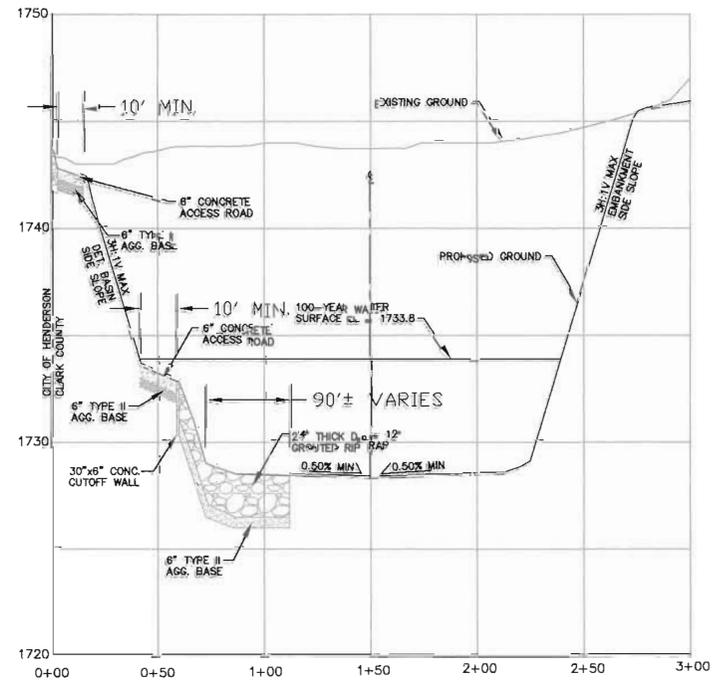
3 WEST CHANNEL CROSS SECTION
 S1 STA. 24+22.75
 TYP. STA. 24+00 TO 38+50



7 EAST CHANNEL CROSS SECTION
 S1 STA. 16+76.44
 TYP. STA. 10+00 TO 20+00



13 CROSS SECTION
 S1



14 CROSS SECTION
 S1

NOTES

- ALL TYPE II AGGREGATE TO CONFORM TO CCAUSS 704.03.04
- ALL CONCRETE SHALL BE CLASS AA PER CCAUSS #501.
- SEE CAMU DRAWINGS FOR GEOCOMPOSITE, GEOMEMBRANE, LINER, PIPE, GEOTEXTILE, COVER SOIL, SLOPE TREATMENT, INTERIM COVER, OPERATIONS LAYER, FINAL COVER, AND ALL OTHER SUBGRADE REQUIREMENTS.

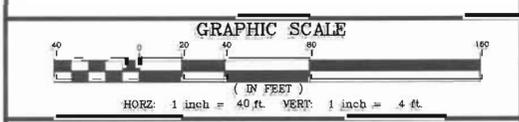
BASIS OF BEARING

SOUTH 85°36'52" WEST - BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 84" AND "CC-GIS W61" AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BENCHMARK

CLARK COUNTY BENCHMARK NO. 6222 4E6 - RIVET AND PLATE IN TOP OF CURB SOUTHEAST CORNER OF SUNSET ROAD AND CAMARLO PARK DRIVE NEAR THE PC OF SUNSET ROAD.

NAD 1988 DATUM
 ELEVATION = 533.553 METERS
 1750.50 FEET
 (REVISED 2003)



Call before you Dig.
 1-800-227-2660

Call before you OVERHEAD.
 1-702-227-2929

DESIGNED BY: DS
 DRAWN BY: DS
 CHECKED BY: JH
 DATE: MAY, 2008

PROJECT ENGINEER: JACOBY Jr.
 CIVIL
 No. 15736

CONFORMED

EASTSIDE LANDFILL CROSS SECTIONS I

REVISIONS

NO.	DESCRIPTION	DATE	APPROVAL
1	REVISED CHANNEL SECTION - DCN 03B	03.17.10	MLJ
2	REVISED CHANNEL SECTION - DCN 03B-REV1	03.29.10	MLJ
3	REVISED SECTION - DCN 04D	03.29.11	MLJ

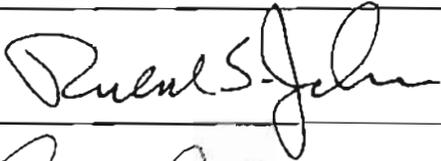
DESIGNED BY: DS
 DRAWN BY: DS
 CHECKED BY: JH
 DATE: MAY, 2008

PROJECT ENGINEER: JACOBY Jr.
 CIVIL
 No. 15736

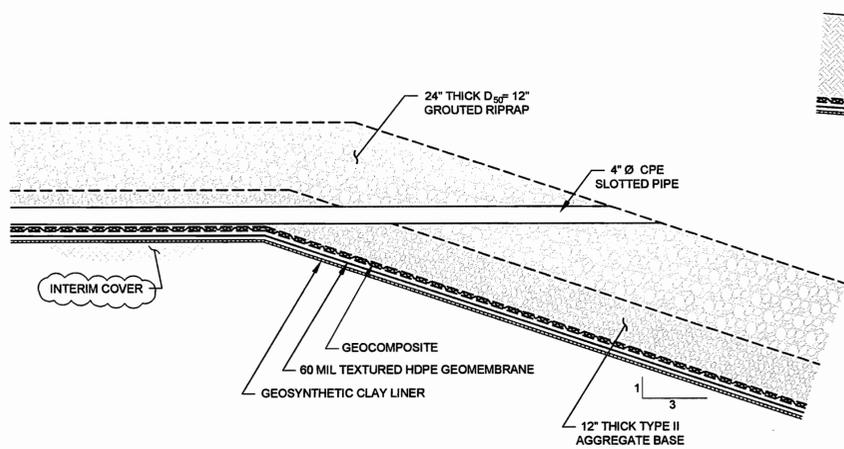
FILE# 06-44925



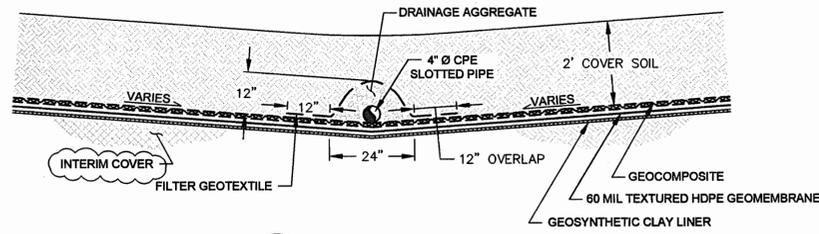
Design Change Notification

Project: BRC Eastside Common Areas Soils Remediation, Henderson, Nevada		DCN No.: ESR DCN-041
Contract No.: 6389		Contractor: ENTACT Environmental Services
References:		
RFI No.: 98	Drawing No.: 45	
Specification Section:	CQA Section No.:	
Design Change: This design change adjusts the stormwater channel slope adjacent to the CAMU from 3:1 H:V to 2.7:1 H:V and reconfigures the slope terminations to allow for a 10 ft access road in the rip rap lined channel.		
Attachments: Revised Drawing No. 45		
This design change notification shall be included into the contract documents referenced above and is officially incorporated into the contract documents as of the date latest signature approval date on this document.		
Approved By:		
Engineer of Record:		Date: 1-April-10
Construction Manager:		Date: 4/5/10
BRC Project Manager:		Date: 4/5/10

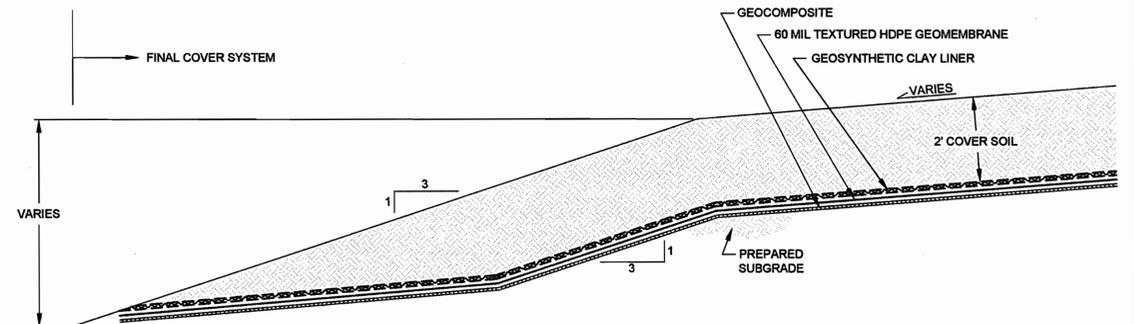
P:\PRJ\SD\Cadd\CADD_S00313\planets\Conformed Set\Revisions TO CONFORMED SET.DCN-038 Sheet 45 S00313.04-45.dwg



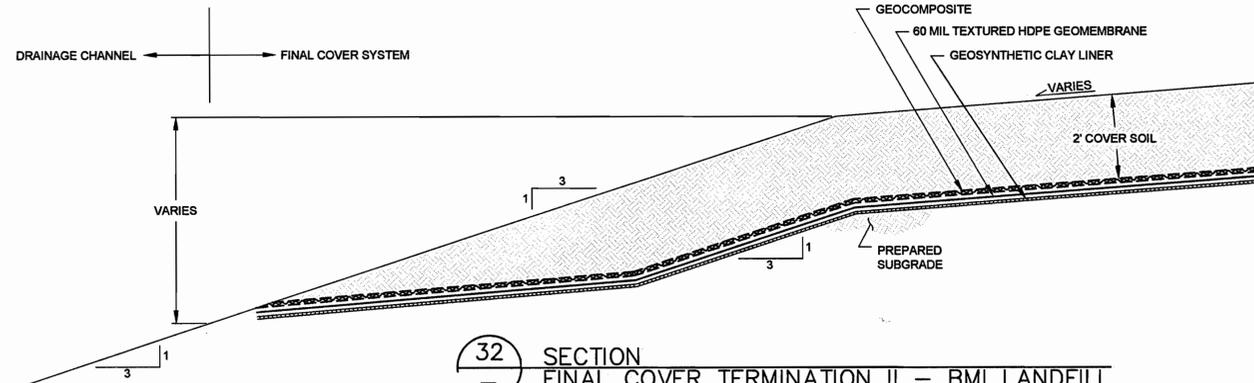
29 SECTION
FINAL COVER DRAIN OUTLET
SCALE: 1" = 2'
S00313.04-X028 Composite Liner Section.dwg



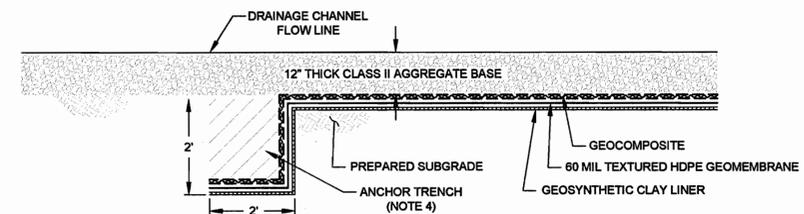
30 SECTION
FINAL COVER DRAIN
SCALE: 1" = 2'
S00313.04-X028 Composite Liner Section.dwg



31 SECTION
FINAL COVER TERMINATION I - BMI LANDFILL
SCALE: 1" = 2'
S00313.04-X028 Composite Liner Section.dwg



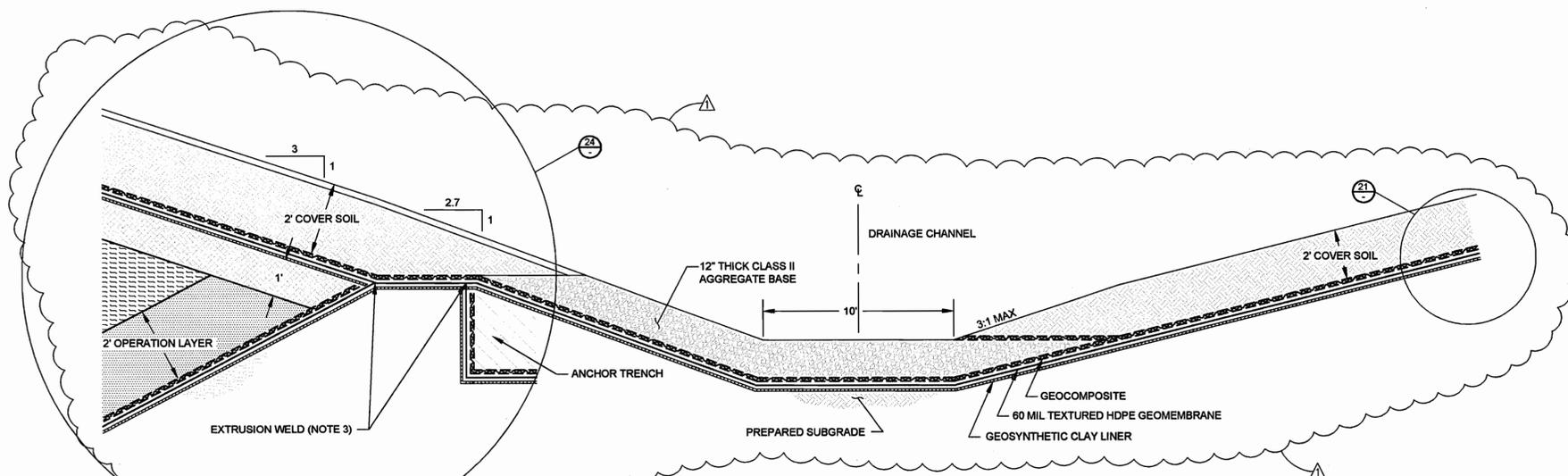
32 SECTION
FINAL COVER TERMINATION II - BMI LANDFILL
SCALE: 1" = 2'
S00313.04-X028 Composite Liner Section.dwg



33 SECTION
FINAL COVER TERMINATION III - BMI LANDFILL
SCALE: 1" = 2'
S00313.04-X028 Composite Liner Section.dwg

NOTES:

- FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS, SEE DWG 2.
- DETAILS ARE SHOWN TO SCALE INDICATED EXCEPT FOR THE GEOSYNTHETICS, WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY.
- FINAL COVER SYSTEM FOR SOUTH BMI LANDFILL SHALL EXTEND BENEATH THE DRAINAGE CHANNEL AND THE GEOMEMBRANE SHALL BE EXTRUSION WELDED TO THE CAMU BASE LINER SYSTEM GEOMEMBRANE AT THE TOP OF THE ANCHOR TRENCH. CONTRACTOR MAY ELECT TO EXTEND CAMU BASE LINER SYSTEM COMPONENTS DURING LINER SYSTEM INSTALLATION.
- ANCHOR TRENCH SHALL EXTEND 3 FT VERTICAL FROM THE BASE OF THE DRAINAGE CHANNEL UP EACH SIDE OF THE DRAINAGE CHANNEL.



34 SECTION
FINAL COVER TERMINATION IV - BMI LANDFILL
SCALE: N.T.S.
S00313.04-X028 Composite Liner Section.dwg

REV	DATE	DESCRIPTION	DRN	APP
1	3/31/10	RFI-94, DCN-41	BP	GTC
0	5/8/08	CONFORMED SET	JA/MD	GTC

Geosyntec
consultants
10875 RANCHO BERNARDO RD, SUITE 200
SAN DIEGO, CA 92127
PHONE: 858.674.6559

Basic Remediation
COMPANY
875 WEST WARM SPRINGS ROAD
HENDERSON, NEVADA 89015

TITLE: DETAILS - MISCELLANEOUS
PROJECT: FINAL DESIGN BRC CAMU
SITE: HENDERSON, NEVADA

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.	DESIGN BY: JA	DATE: OCTOBER 2007
<i>Ronald S. Johnson</i> SIGNATURE 1 - April - 10 DATE	DRAWN BY: MD/JA	PROJECT NO.: S00313-04
RONALD S. JOHNSON CIVIL Professional Engineer No. 12835	CHECKED BY: RF	FILE:
	REVIEWED BY: RJ	DRAWING NO.: 45 of 45
	APPROVED BY: GTC	

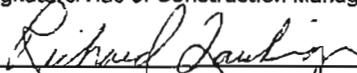
CONFORMED

APPENDIX B-2
Requests for Information



FILE COPY

EASTSIDE COMMON AREAS SOILS REMEDIATION

REQUEST FOR INFORMATION SHEET	
Project: BRC Eastside Common Areas Soils Remediation, Henderson, Nevada	
RFI No.: ESR RFI-087	
Contract No.: 6389	Contractor: ENTACT Environmental Services
Drawing Reference: N/A	
Specification Reference: 03400, Part 2.03	
Submittal Reference: N/A	
Information Requested: Please review the attached drawing, which depicts the proposed Phase IIIB LCRS Anchor Wall Footer Modification. This modification would only apply to the Phase IIIB's LCRS Anchor Wall. Additionally, we request authorization to lap-splice vertical rebar segments within the LCRS Anchor Walls when necessary. Lap-spliced segments would be overlapped a minimum of 24-inches to existing vertical reinforcement and wire-tied accordingly. Is this acceptable?	
Potential cost impact <input checked="" type="checkbox"/> No cost impact <input type="checkbox"/>	
Date Field Construction Will Be Affected: 10/27/09	
Date: 10/27/09	Name/Organization of Initiator: Michael Carlson / ENTACT Environmental Services, LLC
Response: No exceptions are taken to these changes. NOTE: If Contractor believes there are any cost/schedule increases associated with this response, he shall contact the Construction Manager for direction to proceed PRIOR TO taking/beginning any action.	
Date: 11/4/09	Signature/Title of Construction Manager Representative: 
Date: 11/5/09	Signature of BRC Project Manager: 
BRC Action:	
Distribution <input checked="" type="checkbox"/> BRC Proj. Mgr. <input checked="" type="checkbox"/> Const. Mgr. <input checked="" type="checkbox"/> Proj. Design Eng. <input type="checkbox"/> Contracts <input type="checkbox"/> QA/QC <input type="checkbox"/> H&S <input type="checkbox"/> Other <input type="checkbox"/> Other	
Revise Drawing:	Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Revise Spec: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
Revise Sketch:	Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Revisions Due: N/A
Refer to DCN No: N/A	



FILE COPY

EASTSIDE COMMON AREAS SOILS REMEDIATION

REQUEST FOR INFORMATION SHEET

Project: BRC Eastside Common Areas Soils Remediation, Henderson, Nevada		RFI No.: RFI-088
Contract No.: 6389	Contractor: ENTACT Environmental Services	
Drawing Reference:		
Specification Reference: 02200		
Submittal Reference: N/A		
Information Requested: The final cover soil, second 12-inch lift, will be comprised of soils meeting the specification requirement of a maximum particle size of 6-inches. ENTACT is creating this material by screening on-site soils to create both a final cover soil with a maximum particle size of 1-inch and 6-inches. As a result of the screening operation, the resulting material to be installed for the second 12-inch lift of final cover contains a lot of less than 6-inch cobbles. Due to the large percentage of cobble material within the second 12-inch lift of cover soil, compaction testing in accordance with ASTM D 6938 is not valid and a different compaction testing methodology is needed.		
Potential cost impact <input type="checkbox"/> No cost impact <input checked="" type="checkbox"/>		
Date Field Construction Will Be Affected: 10/29/09		
Date: 10/29/09	Name/Organization of Initiator: Rebecca Flynn/Geosyntec Consultants	
Response: Geosyntec will modify the current compaction testing specification to a method specification. Two test pads will be constructed, one representing side slope conditions and one representing top deck conditions. The test pads will be constructed using 1-inch minus soil material and the number of passes needed to achieve 90% compaction of both test pads will be documented. As the attached data table shows, 4 passes of a compactor operating in vibratory mode upslope and static mode down slope is required to achieve minimum 90% compaction on the 3:1 side slopes, while 2 passes of a compactor operating in vibratory mode are required to achieve minimum 90% compaction on the top deck area. NOTE: If Contractor believes there are any cost/schedule increases associated with this response, he shall contact the Construction Manager for direction to proceed PRIOR TO taking/beginning any action.		
Date: 11/2/09	Signature/Title of Construction Manager Representative: 	
Date: 11/2/09	Signature of BRC Project Manager: 	
BRC Action:		
Distribution <input checked="" type="checkbox"/> BRC Proj. Mgr. <input checked="" type="checkbox"/> Const. Mgr. <input checked="" type="checkbox"/> Proj. Design Eng. <input type="checkbox"/> Contracts <input type="checkbox"/> QA/QC <input type="checkbox"/> H&S <input type="checkbox"/> Other <input type="checkbox"/> Other		
Revise Drawing:	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Revise Spec: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
Revise Sketch:	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Revisions Due:
Refer to DCN No.: 036		

BRC - CAMU
 TEST PAD-03 COVER SOIL
 HENDERSON, NEVADA

NUCLEAR GUAGE TYPE: TROXLER 3440
 SOIL TYPE: Engineered Fill
 MOISTURE RANGE: +/- 4% of optimum

SERIAL NO:
 SOURCE: ON-SITE BORROW
 DENSITY: 90% MODIFIED

NUCLEAR MOISTURE/DENSITY TEST LOG

DATE	TEST #	LOCATION	PROBE DEPTH	LIFT #	LAB PROCTOR DATA			FIELD TEST DATA			CALCULATIONS		PASS/ FAIL	COMMENTS	QA ID
					PROCTOR ID	OMC %	MAX DRY WT (pcf)	FMC %	WET UNIT WT (pcf)	DRY UNIT WT (pcf)	% COMP				
24-Oct	1	SLOPE	10"	1	EF-05	10.8	125.6	7.9	113.7	105.4	83.9	F	PRIOR TO COMPACTION	SI	
"	2	"	"	"	"	"	"	"	8.8	116.1	106.7	85.0	F	PRIOR TO COMPACTION	"
"	3	"	"	"	"	"	"	"	10.5	120.0	108.6	86.5	F	1st pass	"
"	4	"	"	"	"	"	"	"	8.3	117.6	108.6	86.5	F	1st pass	"
"	5	"	"	"	"	"	"	"	9.1	117.0	107.2	85.4	F	2nd pass	"
"	6	"	"	"	"	"	"	"	7.5	119.8	111.4	88.7	F	2nd pass	"
"	7	"	"	"	"	"	"	"	10.2	120.6	109.4	87.1	F	3rd pass	"
"	8	"	"	"	"	"	"	"	10.3	120.4	109.2	86.9	F	3rd pass	"
"	9	"	"	"	"	"	"	"	9.4	123.1	112.5	89.6	F	4th pass	"
"	10	"	"	"	"	"	"	"	10.4	126.5	114.6	91.2	P	4th pass	"
"	11	"	"	"	"	"	"	"	11.1	124.5	112.1	89.3	F	5th pass	"
24-Oct	12	SLOPE	10"	1	EF-05	10.8	125.6	9.9	127.0	115.6	92.0	P	5th pass	SI	
NOTE: The compactor was operated in the vibratory mode going uphill on a 3:1 slope and in the static mode while backing down the hill as per the contractor's method of choice															
24-Oct	13	FLAT	10"	1	EF-05	10.8	125.6	7.2	105.5	98.4	78.3	F	PRIOR TO COMPACTION	SI	
"	14	"	"	"	"	"	"	6.9	118.6	110.9	88.3	F	1st pass	"	
"	15	"	"	"	"	"	"	7.8	120.8	112.1	89.3	F	1st pass	"	
"	16	"	"	"	"	"	"	7.0	124.4	116.3	92.6	P	2nd pass	"	
24-Oct	17	FLAT	10"	1	EF-05	10.8	125.6	6.9	123.8	115.8	92.2	P	2nd pass	SI	
NOTE: The compactor was operated in the vibratory mode on a flat surface, one pass was a forward and backward motion as per the contractor's method of choice															



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EASTSIDE COMMON AREAS SOILS REMEDIATION

REQUEST FOR INFORMATION SHEET

Project: BRC Eastside Common Areas Soils Remediation, Henderson, Nevada		RFI No.: ESR RFI-089
Contract No.: 6389	Contractor: ENTACT Environmental Services	
Drawing Reference: BRC CAMU Drawing #44 of 45		
Specification Reference: 02200-2.02.D		
Submittal Reference: N/A		
Information Requested: The details shown on Sections #24 to #27 of the referenced drawing show that the slope treatment (2" of ¾" gravel mulch) is part of the total 24" cover soil thickness. The referenced specification indicates that the maximum allowable ground pressure for equipment working on an initial lift thickness of > 1.0' and < 2.0 is 20 psi and that at with an initial lift thickness of 2' or greater, there is no maximum allowable ground pressure. When placing the cover soil on the sideslopes, we intend to place the second lift to a total loose thickness of approximately 24", however once the material is compacted, it will consolidate to 22" in order to accommodate the 2" of gravel mulch. Based on our interpretation of the referenced specifications, this is would be acceptable and we would be able to meet the requirements (operating a compactor and haul trucks with ground pressures of 40 psi and above) although the total <i>compacted</i> thickness of the cover soil is only 22". Please advise.		
Potential cost impact <input type="checkbox"/> No cost impact <input checked="" type="checkbox"/>		
Date Field Construction Will Be Affected: 11/14/09		
Date: 11/13/09	Name/Organization of Initiator: Erik Gehringer / ENTACT Environmental Services, LLC	
Response: No exception taken		
NOTE: If Contractor believes there are any cost/schedule increases associated with this response, he shall contact the Construction Manager for direction to proceed PRIOR TO taking/beginning any action.		
Date: 11/16/09	Signature/Title of Construction Manager Representative: 	
Date: 11/16/09	Signature of BRC Project Manager: 	
BRC Action:		
Distribution <input checked="" type="checkbox"/> BRC Proj. Mgr. <input checked="" type="checkbox"/> Const. Mgr. <input checked="" type="checkbox"/> Proj. Design Eng. <input type="checkbox"/> Contracts <input type="checkbox"/> QA/QC <input type="checkbox"/> H&S <input type="checkbox"/> Other <input type="checkbox"/> Other		
Revise Drawing:	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Revise Spec: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
Revise Sketch:	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Revisions Due: NA
Refer to DCN No.: NA		



FILE COPY

EASTSIDE COMMON AREAS SOILS REMEDIATION

REQUEST FOR INFORMATION SHEET

Project: BRC Eastside Common Areas Soils Remediation, Henderson, Nevada		RFI No.: RFI-090
Contract No.: 6389	Contractor: ENTACT Environmental Services	
Drawing Reference: NA		
Specification Reference: 02200-3.02.D		
Submittal Reference: N/A		
<p>Information Requested: In response to a BRC request at the 12/4/09 POD, please review the following Standard Operating Procedures that have been implemented during 6" minus Cover Soil load out and placement:</p> <ol style="list-style-type: none"> 1. Stockpiled 6" minus material will be loaded out using a wheel loader; 2. During load out, the loader bucket will dig into the lowest region of the stockpile and will move up and into the stockpile to ensure an adequate blend of fine-grained (typically found at the upper regions of the stockpile) and coarse material (typically found in the lower regions); 3. The operator will monitor the 6"-inch minus material composition across the active stockpile face during this process to note any irregularities; 4. A laborer will also be stationed at the dump site during placement to monitor the cover soil composition and will report to the ENTACT Field Project Manager any irregularities. <p>Please advise if this approach is acceptable.</p>		
Potential cost impact <input type="checkbox"/> No cost impact <input checked="" type="checkbox"/>		
Date Field Construction Will Be Affected: 12/14/09		
Date: 12/14/09	Name/Organization of Initiator: Michael M. Carlson / ENTACT Environmental Services, LLC	
Response: No exception is taken to the proposed procedure.		
NOTE: If Contractor believes there are any cost/schedule increases associated with this response, he shall contact the Construction Manager for direction to proceed PRIOR TO taking/beginning any action.		
Date: 12/16/09	Signature/Title of Construction Manager Representative: <i>Richard J. [Signature]</i>	
Date: 12/17/09	Signature of BRC Project Manager: <i>[Signature]</i>	
BRC Action:		
Distribution <input checked="" type="checkbox"/> BRC Proj. Mgr. <input checked="" type="checkbox"/> Const. Mgr. <input checked="" type="checkbox"/> Proj. Design Eng. <input type="checkbox"/> Contracts <input type="checkbox"/> QA/QC <input type="checkbox"/> H&S <input type="checkbox"/> Other <input type="checkbox"/> Other		
Revise Drawing:	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Revise Spec: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
Revise Sketch:	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Revisions Due:
Refer to DCN No.:		



FILE COPY

EASTSIDE COMMON AREAS SOILS REMEDIATION

REQUEST FOR INFORMATION SHEET

Project: BRC Eastside Common Areas Soils Remediation, Henderson, Nevada		RFI No.: RFI-091
Contract No.: 6389	Contractor: ENTACT Environmental Services	
Drawing Reference: CSD 43 of 45 and 45 of 45		
Specification Reference: 02200-2.02.D		
Submittal Reference: N/A		
Information Requested: Per Detail 34 on CSD Drawing 45 of 45, a 12-inch thick layer of Class II Aggregate Base has to be placed over BMF South Closure Geosynthetic Components within the perimeter drainage channel/road areas specified on Drawing 43. Since only 1' total material thickness is specified for this alignment, are the maximum allowable ground pressures specified in Specification Section 02200, Part 2.02.D applicable to Class II aggregate? If so, can an exception be made during the placement of this material to allow only the trucks transporting the Class II aggregate to run on the compacted 1' end product? Please advise.		
Potential cost impact <input checked="" type="checkbox"/> No cost impact <input type="checkbox"/>		
Date Field Construction Will Be Affected: 12/14/09		
Date: 12/14/09	Name/Organization of Initiator: Michael M. Carlson / ENTACT Environmental Services, LLC	
Response: The ground pressure requirements of Section 02200, Part 2.02D do apply to the class II aggregate. The Class II aggregate base shall be placed and compacted in accordance with the method specification for the first 12-inch lift of cover material requirements described in Section 02200 Part 3.10D. Only trucks meeting group pressure requires specified in Section 0220, Part 2.02D may operate above 1 ft of class II aggregate. NOTE: If Contractor believes there are any cost/schedule increases associated with this response, he shall contact the Construction Manager for direction to proceed PRIOR TO taking/beginning any action.		
Date: 12/17/09	Signature/Title of Construction Manager Representative: <i>Richard Jambrogi</i>	
Date: 12/17/09	Signature of BRC Project Manager: <i>Julia</i>	
BRC Action:		
Distribution: <input checked="" type="checkbox"/> BRC Proj. Mgr. <input checked="" type="checkbox"/> Const. Mgr. <input checked="" type="checkbox"/> Proj. Design Eng. <input type="checkbox"/> Contracts <input type="checkbox"/> QA/QC <input type="checkbox"/> H&S <input type="checkbox"/> Other <input type="checkbox"/> Other		
Revise Drawing:	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Revise Spec: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
Revise Sketch:	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Revisions Due:
Refer to DCN No.: N/A		



EASTSIDE COMMON AREAS SOILS REMEDIATION

FILE COPY

REQUEST FOR INFORMATION SHEET

Project: BRC Eastside Common Areas Soils Remediation, Henderson, Nevada		RFI No.: RFI-092
Contract No.: 6389	Contractor: ENTACT Environmental Services	
Drawing Reference: CSD 43 of 45 and 45 of 45		
Specification Reference: NA		
Submittal Reference: N/A		
Information Requested: Per Detail 34 on CSD Drawing 45 of 45, please provide further construction detail with respect to BMI South's Final Cover Termination IV. Specifically, please address the following:		
<ol style="list-style-type: none"> 1. Please confirm that the northern drainage channel side slope hinge point will be constructed at the inside edge of the anchor trench as shown on the drawing (rather than the outer edge). 2. If so, please specify the minimum slope required from this hinge point down to the drainage channel northern toe. A specified slope will aid in the determination of the position of the drainage channel toe alignment (assuming PBS&J's channel flowline design elevations) and will also determine where the termination point is for the Geocomposite that underlies the cover soil along the BMI South Termination IV alignment. 3. Please specify a minimum slope for the BMI South Northern Type IV termination. 		
Potential cost impact <input type="checkbox"/> No cost impact <input checked="" type="checkbox"/>		
Date Field Construction Will Be Affected: 12/14/09		
Date: 12/14/09	Name/Organization of Initiator: Michael M. Carlson / ENTACT Environmental Services, LLC	
Response:		
<ol style="list-style-type: none"> 1. Northern drainage channel side slope hinge point will be constructed as shown on detail 34, drawing 45 of 45 at the inside hinge point 2. There is no minimum slope required, however the maximum slope required by Geosyntec is 3:1 Horizontal:Vertical 		
NOTE: If Contractor believes there are any cost/schedule increases associated with this response, he shall contact the Construction Manager for direction to proceed PRIOR TO taking/beginning any action.		
Date: 12/18/09	Signature/Title of Construction Manager Representative: <i>Richard J. [Signature]</i>	
Date: 12/18/09	Signature of BRC Project Manager: <i>[Signature]</i>	
BRC Action:		
Distribution <input checked="" type="checkbox"/> BRC Proj. Mgr. <input checked="" type="checkbox"/> Const. Mgr. <input checked="" type="checkbox"/> Proj. Design Eng. <input type="checkbox"/> Contracts <input type="checkbox"/> QA/QC <input type="checkbox"/> H&S <input type="checkbox"/> Other <input type="checkbox"/> Other		
Revise Drawing:	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Revise Spec: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
Revise Sketch:	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Revisions Due:
Refer to DCN No.: N/A		



EASTSIDE COMMON AREAS SOILS REMEDIATION

REQUEST FOR INFORMATION SHEET

Project: BRC Eastside Common Areas Soils Remediation, Henderson, Nevada	RFI No.: ESR RFI-093
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Contract No.: 6389	Contractor: ENTACT Environmental Services
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Drawing Reference:
N/A

Specification Reference:
02200, Part 2.01

Submittal Reference:
N/A

Information Requested:

During construction of the Phase IIIB/NW Basin Outfall Structure, a discrepancy was discovered between Detail 27 on CSD Dwg. No. 44 and the Phase IIIB outfall flow line contours presented on Final Cover Grading Plan Dwg. No. 38. Per Detail 27, 1ft of Type II Aggregate Base shall be placed directly over the Final Closure geosynthetics followed by a 24-inch thick layer of grouted rip rap within the each CAMU outfall flowline. An elevation difference between Final Cover flow line elevations versus the Interim Cover Grading elevations was determined to be 4ft as opposed to 3ft per Detail 27. This is also the case in the Phase V/NE Equalizer Basin outfall area.

Please review the attached PDF, which depicts the Phase IIIB/NW Basin outfall area in plan and cross sections views. The green-hatched area represents the 1ft gap that we propose to fill with an additional 1ft lift of Type II material from the top of slope down to the anchor trench bench grade in both CAMU outfalls. If approved, this will require 2 drawing modifications to the construction details pertaining to the NE and NW Basin outfalls to maintain the 24-inch Rip Rap Layer down to the basin floors:

1. Detail 27's call out for 4ft of cover soil on each side of the outfall structure will need to be revised to show 5 feet of cover soil;
2. Detail 27 will need to show 24" of Type II aggregate across the outfall flowline and side slopes.

Please advise if this approach is acceptable.

Potential cost impact No cost impact

Date Field Construction Will Be Affected: 2/24/10

Date: 2/23/10	Name/Organization of Initiator: Michael Carlson / ENTACT Environmental Services, LLC
-------------------------	--

Response:

Geosyntec agrees that an additional 1 ft of material is needed beneath the outfall structure to obtain the grades presented on Drawing No. 38. A minimum of 1ft of aggregate base is required beneath the grouted rip rap. Beneath the aggregate base, either aggregate base or 1-inch minus cover soil may be placed.

Detail 27 on Drawing No. 44 will be revised to indicate the additional material and the 5 ft of cover material adjacent to the structure.

The additional material required beneath the outfall structure shall be compensated using the unit rate of \$11.13/cy for Option Scope Bid Schedule Item #23 – CAMU

NOTE: If Contractor believes there are any cost/schedule increases associated with this response, he shall contact the Construction Manager for direction to proceed PRIOR TO taking/beginning any action.



EASTSIDE COMMON AREAS SOILS REMEDIATION

Date: 3/9/10	Signature/Title of Construction Manager Representative: <i>Richard Gaudin</i>
Date: 3/10/10	Signature of BRC Project Manager: <i>Lee C. Long</i>
BRC Action:	
<u>Distribution</u>	
<input checked="" type="checkbox"/> BRC Proj. Mgr. <input checked="" type="checkbox"/> Const. Mgr. <input checked="" type="checkbox"/> Proj. Design Eng. <input type="checkbox"/> Contracts <input type="checkbox"/> QA/QC <input type="checkbox"/> H&S <input type="checkbox"/> Other <input type="checkbox"/> Other	
Revise Drawing:	Y <input checked="" type="checkbox"/> N <input type="checkbox"/> Revise Spec: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
Revise Sketch:	Y <input type="checkbox"/> N <input type="checkbox"/> Revisions Due: TBD
Refer to DCN No.: ESR DCN-037	



EASTSIDE COMMON AREAS SOILS REMEDIATION

REQUEST FOR INFORMATION SHEET

Project: BRC Eastside Common Areas Soils Remediation, Henderson, Nevada		RFI No.: ESR RFI-094
Contract No.: 6389	Contractor: ENTACT Environmental Services	
Drawing Reference: CSD DWG # 7, 18, 19, 44, and 45; PBS&J Final Improvement Plans DWG # MG1, G1-G7, P3-P5, P7-P8, and S1-S2		
Specification Reference: 02200		
Submittal Reference: N/A		
<p>Information Requested: Based upon ongoing discussions between ENTACT, Geosyntec, and PBS&J to resolve a grading issue identified along the southern slope of Phase IV's BMI South Type IV Termination zone, we're submitting this RFI to formally propose a slight modification to the CAMU perimeter side-slopes.</p> <p>Please review the attached PDFs. The first one depicts the proposed side slope modification, which will affect most the CAMU embankment lower side slope zones and the inside side slopes of all perimeter drainage channels around the CAMU. The 2nd shows the locations around the CAMU where this modification is proposed.</p> <p>This modification will maintain the 3H:1V to 2H:1V design hinge point of the final cover soil grading scheme (see 1st PDF attachment), but will slope down slightly steeper than originally designed at ~2.7H:1V to the inside toe of slope of the CAMU perimeter drainage channels. The horizontal position of the inside toe of slope of the perimeter drainage channels will be based upon Geosyntec CSD DWG # 7, 18, and 19 grade breaks, but the final flow line elevations within the channel will be based upon PBS&J's Final Improvement Plan specified elevations. This modification would eliminate the short embankment 2H:1V slope that was originally designed to terminate at the outside edge of the anchor trench around the CAMU (See Section 24 on CSD DWG No. 44).</p> <p>To be consistent, we're proposing this modification for all inside channel side slope zones as shown on the attached PDF mark up of PBS&J Drawing MG1. Please advise if this approach is acceptable.</p>		
Potential cost Impact <input type="checkbox"/> No cost Impact <input checked="" type="checkbox"/>		
Date Field Construction Will Be Affected: 3/9/10		
Date: 3/8/10	Name/Organization of Initiator: Michael Carlson / ENTACT Environmental Services, LLC	
<p>Response:</p> <p>BRC calculates that this proposed change will result in a rip rap slope reduction of 0.85 ft. With a rip rap depth of 2 ft this will reduce the total rip rap by 1.7 ft² per foot of channel. The total length of riprap lined channel affected by this change is approximately 2,500 ft, for a total of 4,250 ft³ of rip rap reduction. Based on ENTACT's Option Scope Bid Item #28, BRC believes that this change is worth a \$23,749 credit.</p> <p>The proposed change is acceptable if ENTACT agrees to provide this credit before executing the work. If ENTACT agrees to the credit, BRC will prepare the appropriate DCN.</p>		

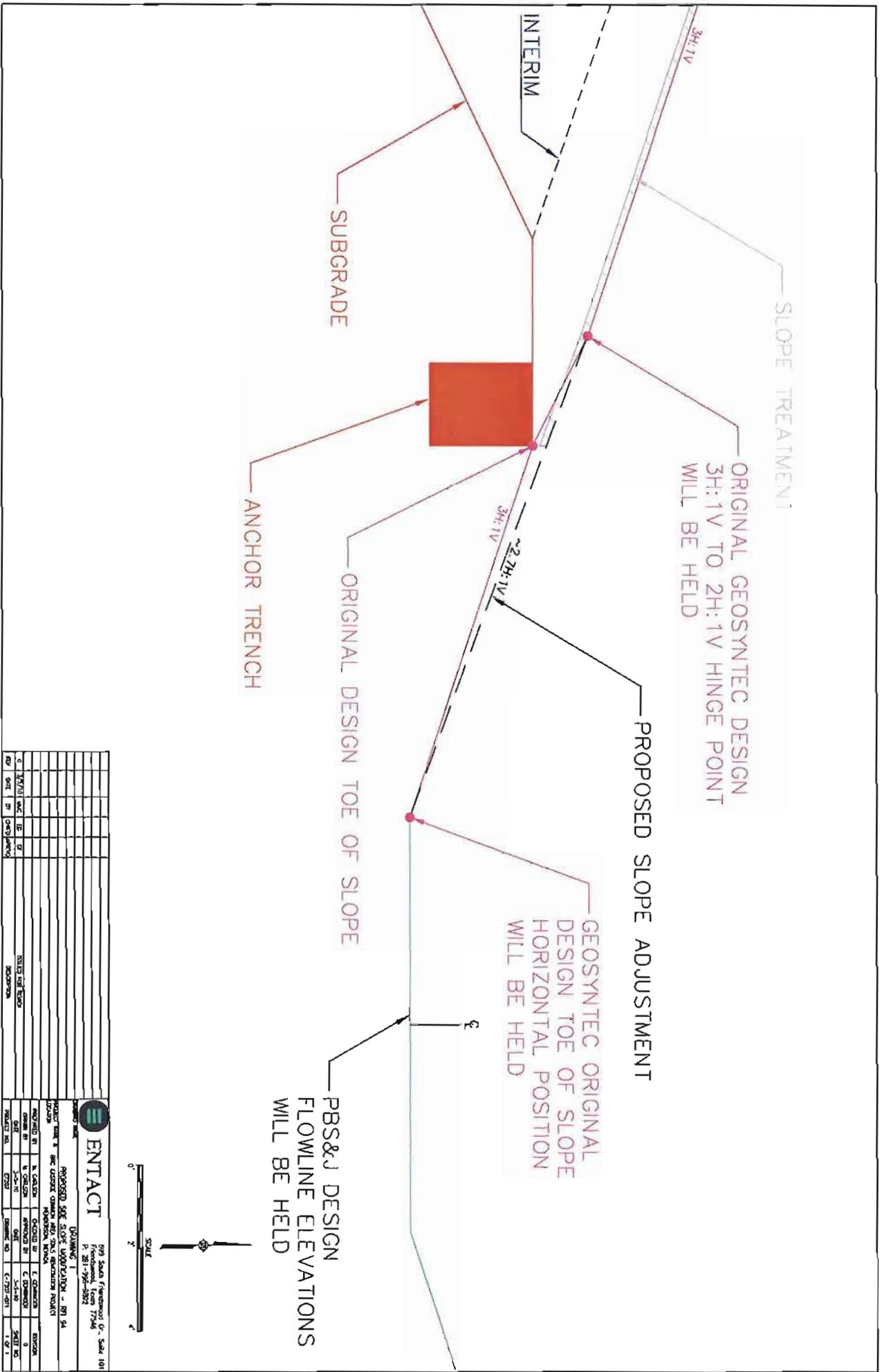


EASTSIDE COMMON AREAS SOILS REMEDIATION

A DCN will be initiated to accommodate this change.

NOTE: If Contractor believes there are any cost/schedule increases associated with this response, he shall contact the Construction Manager for direction to proceed PRIOR TO taking/beginning any action.

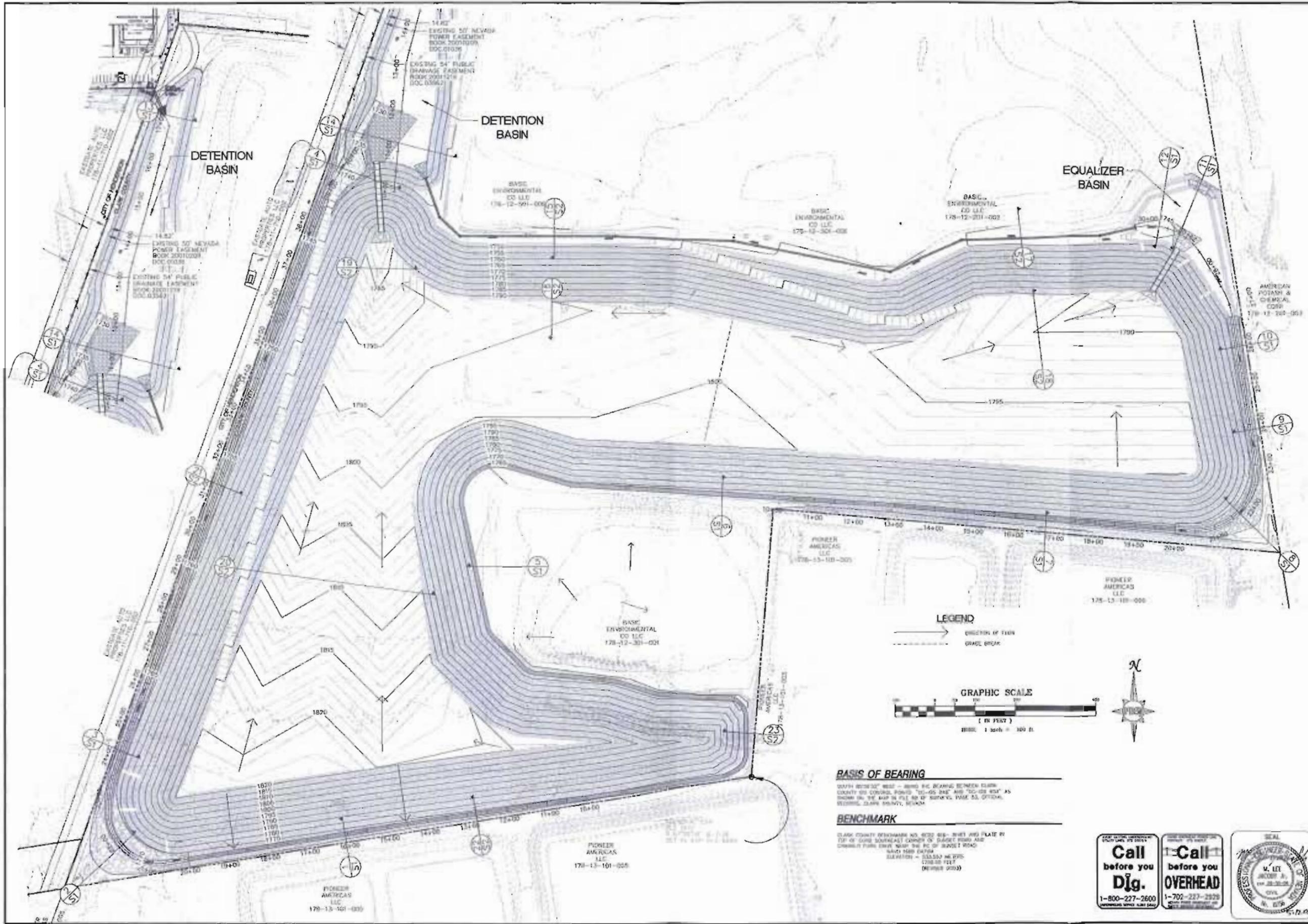
Date: 3/12/10	Signature/Title of Construction Manager Representative: <i>Richard Zaubinger</i>
Date: 3/15/10	Signature of BRC Project Manager: <i>Ken C. Fe...</i>
BRC Action:	
<u>Distribution</u>	
<input checked="" type="checkbox"/> BRC Proj. Mgr. <input checked="" type="checkbox"/> Const. Mgr. <input checked="" type="checkbox"/> Proj. Design Eng. <input type="checkbox"/> Contracts <input type="checkbox"/> QA/QC <input type="checkbox"/> H&S <input type="checkbox"/> Other <input type="checkbox"/> Other	
Revise Drawing:	Y <input checked="" type="checkbox"/> N <input type="checkbox"/> Revise Spec: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
Revise Sketch:	Y <input type="checkbox"/> N <input type="checkbox"/> Revisions Due: TBD
Refer to DCN No.: ESR DCN-038 which will be prepared if ENTACT provides credit for the change.	



NO.	DATE	BY	DESCRIPTION
1	05/11/21	ENTACT	ISSUED FOR PERMIT
2	05/11/21	ENTACT	ISSUED FOR PERMIT
3	05/11/21	ENTACT	ISSUED FOR PERMIT
4	05/11/21	ENTACT	ISSUED FOR PERMIT
5	05/11/21	ENTACT	ISSUED FOR PERMIT
6	05/11/21	ENTACT	ISSUED FOR PERMIT
7	05/11/21	ENTACT	ISSUED FOR PERMIT
8	05/11/21	ENTACT	ISSUED FOR PERMIT
9	05/11/21	ENTACT	ISSUED FOR PERMIT
10	05/11/21	ENTACT	ISSUED FOR PERMIT
11	05/11/21	ENTACT	ISSUED FOR PERMIT
12	05/11/21	ENTACT	ISSUED FOR PERMIT
13	05/11/21	ENTACT	ISSUED FOR PERMIT
14	05/11/21	ENTACT	ISSUED FOR PERMIT
15	05/11/21	ENTACT	ISSUED FOR PERMIT
16	05/11/21	ENTACT	ISSUED FOR PERMIT
17	05/11/21	ENTACT	ISSUED FOR PERMIT
18	05/11/21	ENTACT	ISSUED FOR PERMIT
19	05/11/21	ENTACT	ISSUED FOR PERMIT
20	05/11/21	ENTACT	ISSUED FOR PERMIT

ENTACT
 199 South Falmouth Dr. - Suite 101
 Falmouth, MA 01905
 P: 508-548-8872
 F: 508-548-8873

PROPOSED SLOPE ADJUSTMENT - RT 54
 PROJECT NO. 21-0000
 DRAWING NO. 21-0000-01
 DATE 05/11/21
 SCALE 1" = 40'



BASIS OF BEARING
 SOUTH BY 88° 30' 00" WEST - BEING THE BEARING BETWEEN CLARK COUNTY CO CORNER POINT "101-00 000" AND "101-00 000" AS SHOWN ON THE MAP IN FILE NO. OF SURVEY MAP 23, 03/04, RECORDING CLARK COUNTY, NEVADA.

BENCHMARK
 CLARK COUNTY BENCHMARK NO. 8220 SEE SHEET AND "PLATE B" TOP OF CURB (SOUTHWEST CORNER OF GARRET ROAD AND CHAMBERLAIN PARK DRIVE) NEAR THE PC OF GARRET ROAD. ELEVATION = 3335.57 METERS (10945.00 FEET) (NUMBER 2003)

Call before you Dig.
 1-800-227-2600

Call before you OVERHEAD
 1-702-227-2929



DATE 06-11-2008	BY V. LEE	REVISIONS	DATE	APPROVAL
		DESCRIPTION		
CONFIRMED				
EASTSIDE LANDFILL				
MASS GRADING				
DATE 06-11-2008	BY V. LEE	DATE 06-11-2008	BY V. LEE	DATE 06-11-2008
PROJECT NO. 06-44325	SCALE AS SHOWN	DATE MAY 2008	BY V. LEE	DATE MAY 2008



FILE COPY

EASTSIDE COMMON AREAS SOILS REMEDIATION

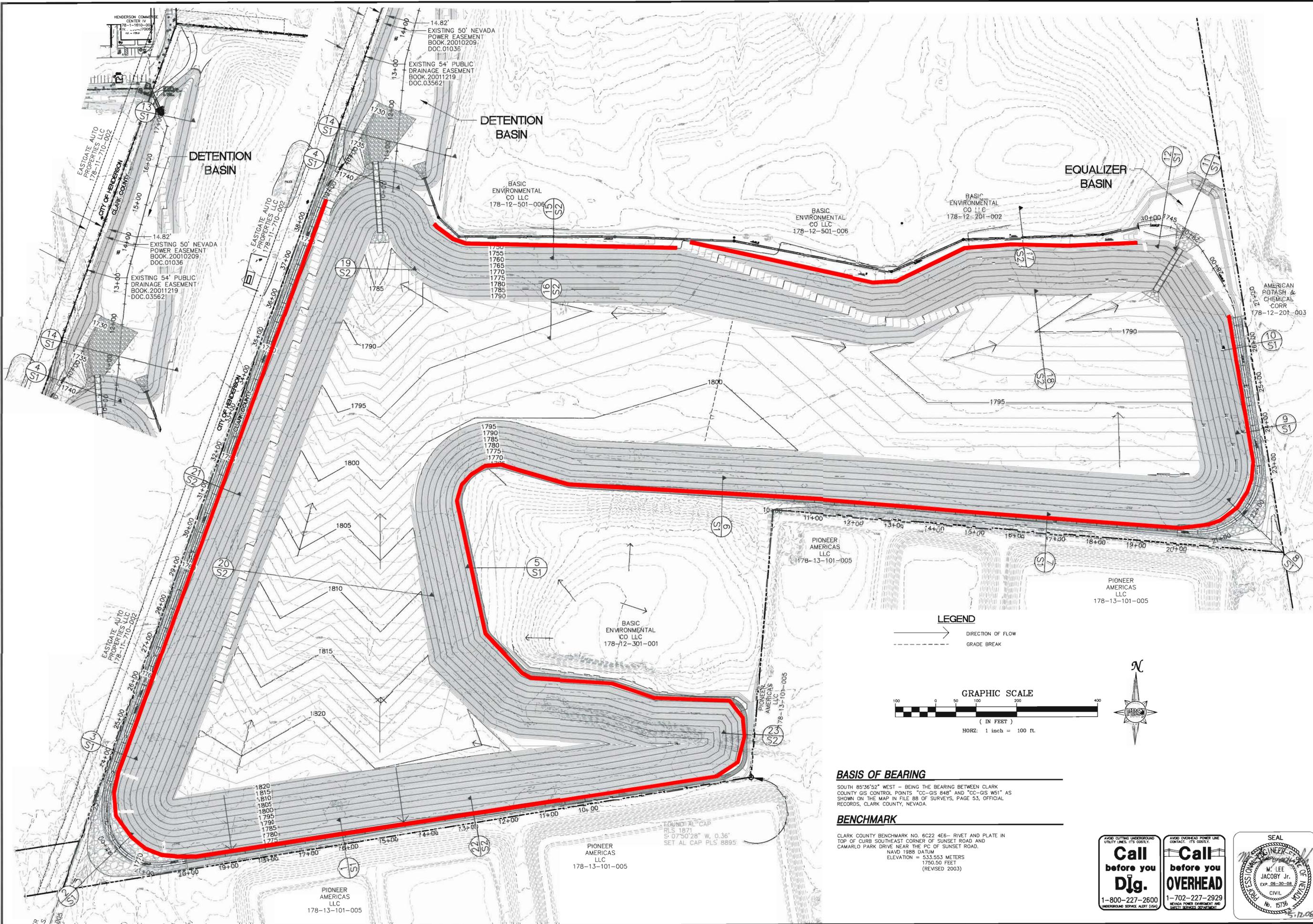
REQUEST FOR INFORMATION SHEET

Project: BRC Eastside Common Areas Soils Remediation, Henderson, Nevada	RFI No.: ESR RFI-094 Revised
Contract No.: 6389	Contractor: ENTACT Environmental Services
Drawing Reference: CSD DWG # 7, 18, 19, 44, and 45; PBS&J Final Improvement Plans DWG # MG1, G1-G7, P3-P5, P7-P8, and S1-S2	
Specification Reference: 02200	
Submittal Reference: N/A	
<p>Information Requested: Based upon ongoing discussions between ENTACT, Geosyntec, and PBS&J to resolve a grading issue identified along the southern slope of Phase IV's BMI South Type IV Termination zone, we're submitting this RFI to formally propose a slight modification to the CAMU perimeter side-slopes.</p> <p>Please review the attached PDFs. The first one depicts the proposed side slope modification, which will affect most the CAMU embankment lower side slope zones and the inside side slopes of all perimeter drainage channels around the CAMU. The 2nd shows the locations around the CAMU where this modification is proposed.</p> <p>This modification will maintain the 3H:1V to 2H:1V design hinge point of the final cover soil grading scheme (see 1st PDF attachment), but will slope down slightly steeper than originally designed at ~2.7H:1V to the inside toe of slope of the CAMU perimeter drainage channels. The horizontal position of the inside toe of slope of the perimeter drainage channels will be based upon Geosyntec CSD DWG # 7, 18, and 19 grade breaks, but the final flow line elevations within the channel will be based upon PBS&J's Final Improvement Plan specified elevations. This modification would eliminate the short embankment 2H:1V slope that was originally designed to terminate at the outside edge of the anchor trench around the CAMU (See Section 24 on CSD DWG No. 44).</p> <p>To be consistent, we're proposing this modification for all inside channel side slope zones as shown on the attached PDF mark up of PBS&J Drawing MG1. Please advise if this approach is acceptable.</p>	
Potential cost Impact <input type="checkbox"/> No cost impact <input checked="" type="checkbox"/>	
Date Field Construction Will Be Affected: 3/9/10	
Date: 3/8/10	Name/Organization of Initiator: Michael Carlson / ENTACT Environmental Services, LLC
<p>Response:</p> <p>The original response to this RFI represented a misunderstanding by BRC of ENTACT's proposed change. The proposed change is acceptable as presented and the original RFI response is rescinded.</p> <p>A DCN will be initiated to accommodate this change.</p>	
<p>NOTE: If Contractor believes there are any cost/schedule increases associated with this response, he shall contact the Construction</p>	



EASTSIDE COMMON AREAS SOILS REMEDIATION

Manager for direction to proceed PRIOR TO taking/beginning any action.	
Date: 3/17/10	Signature/Title of Construction Manager Representative: <i>Richard Johnson</i>
Date: 3/17/10	Signature of BRC Project Manager: <i>Richard Johnson</i>
BRC Action:	
<u>Distribution</u>	
<input checked="" type="checkbox"/> BRC Proj. Mgr. <input checked="" type="checkbox"/> Const. Mgr. <input checked="" type="checkbox"/> Proj. Design Eng. <input type="checkbox"/> Contracts <input type="checkbox"/> QA/QC <input type="checkbox"/> H&S <input type="checkbox"/> Other <input type="checkbox"/> Other	
Revise Drawing:	Y <input checked="" type="checkbox"/> N <input type="checkbox"/> Revise Spec: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
Revise Sketch:	Y <input type="checkbox"/> N <input type="checkbox"/> Revisions Due: TBD
Refer to DCN No.: ESR DCN-038	



LEGEND

→ DIRECTION OF FLOW
 - - - GRADE BREAK

GRAPHIC SCALE

(IN FEET)
 100 0 50 100 200 400
 HORIZ: 1 inch = 100 ft.

BASIS OF BEARING

SOUTH 85°36'52" WEST - BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND "CC-GIS W51" AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BENCHMARK

CLARK COUNTY BENCHMARK NO. 6C22 4E6- RIVET AND PLATE IN TOP OF CURB SOUTHEAST CORNER OF SUNSET ROAD AND CAMARLO PARK DRIVE NEAR THE PC OF SUNSET ROAD.
 NAVD 1988 DATUM
 ELEVATION = 533.553 METERS
 1760.50 FEET
 (REVISED 2003)

Call before you Dig.
 1-800-227-2600
 UNDERGROUND SERVICE ALERT (USA)

Call before you OVERHEAD
 1-702-227-2929
 NEVADA POWER ENVIRONMENT AND SAFETY SERVICES (NPESS)



CONFORMED EASTSIDE LANDFILL MASS GRADING	PROJECT NO: 1693.19 FILE NAME: LANDFILL SCALE: LANDFILL HORIZ: LANDFILL VERT: LANDFILL	DESIGNED BY: -DS DRAWN BY: -DS CHECKED BY: -LJ DATE: MAY 2008	REVISIONS BY DATE APPROVAL DESCRIPTION
	HITE# 06-44325 MGT	23 MAY 2008	23 MAY 2008

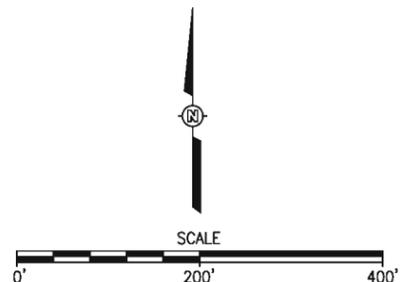
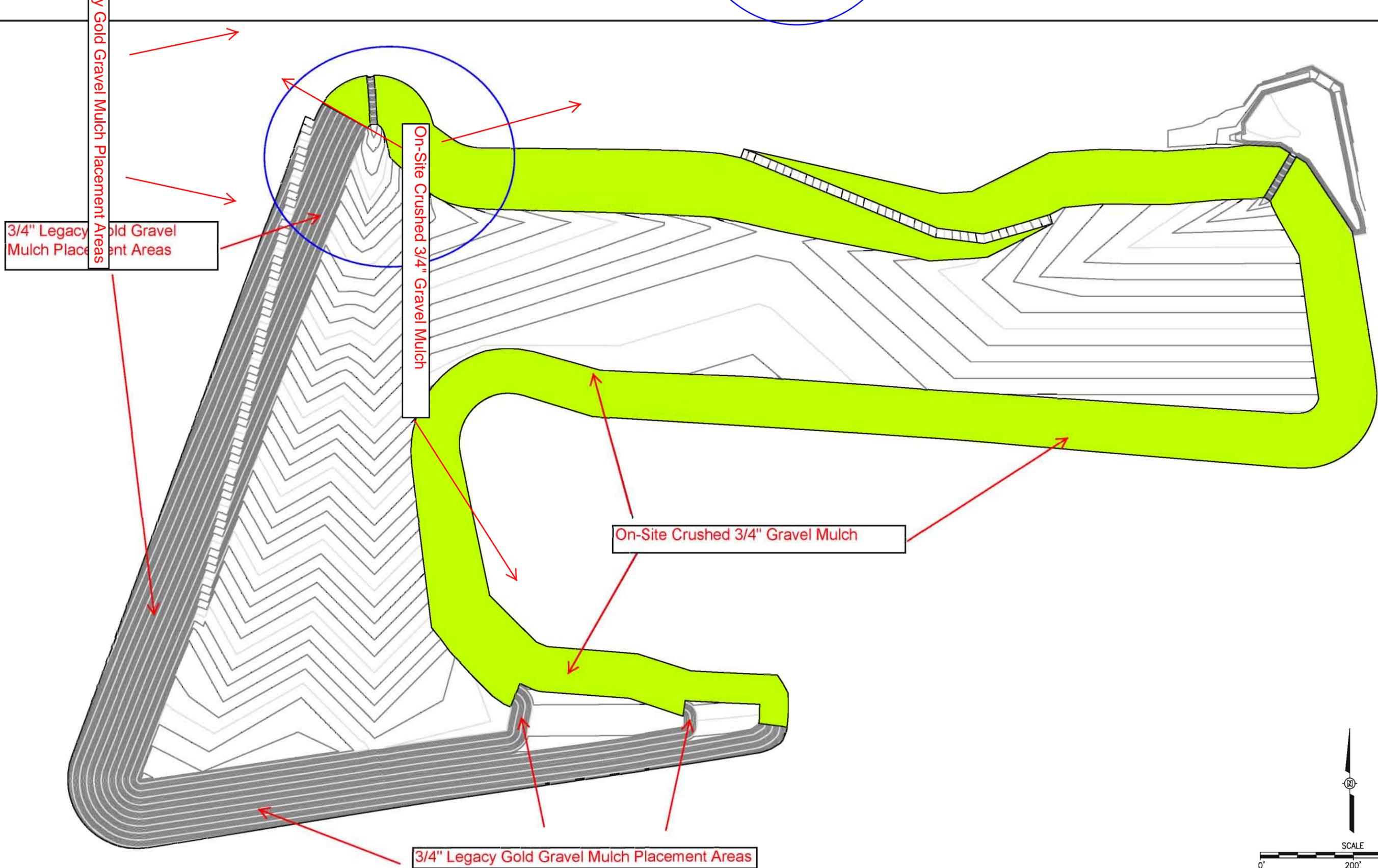
FILE COPY**EASTSIDE COMMON AREAS SOILS REMEDIATION****REQUEST FOR INFORMATION SHEET**

Project: BRC Eastside Common Areas Soils Remediation, Henderson, Nevada		RFI No.: ESR RFI-095
Contract No.: 6389	Contractor: ENTACT Environmental Services	
Drawing Reference: CSD DWG # 44 and 45		
Specification Reference: Section 02200, Part 2.01, Subpart N		
Submittal Reference: N/A		
<p>Information Requested: We are requesting formal confirmation that Legacy Rock Inc.'s 3/4" Legacy Gold gravel mulch is acceptable for placement on CAMU cover system side slopes as indicated on the attached PDF. For all other applicable CAMU Cover System side slopes, we propose to utilize the on-site 3/4" crushed gray-colored gravel mulch. These materials will be utilized in lieu of the 3/4" Vista Gold originally specified in Section 02200, Part 2.01.N.</p> <p>A representative sample of the 3/4" Legacy Gold gravel mulch material has been provided to BRC, but we have also attached a photograph of this material for other team members cc'd on this electronic RFI.</p> <p>Please advise if these materials are an acceptable substitution.</p>		
Potential cost impact <input type="checkbox"/> No cost impact <input checked="" type="checkbox"/>		
Date Field Construction Will Be Affected: 3/15/10		
Date: 3/11/10	Name/Organization of Initiator: Michael Carlson / ENTACT Environmental Services, LLC	
<p>Response: The use of Rock Inc's 3/4 Legacy Gold gravel mulch and the On-Site 3/4 Crushed Grey Colored gravel mulch is acceptable. BRC understands that on-Site Crushed Gravel Mulch will have a maximum particle size of 2 1/4 inches and a minimum particle size of 1/2 inch and that the Legacy Gold Gravel Mulch (off-site source) will fall within this particle size range as well.</p> <p>See the BRC modified pdf drawings showing the additional area in the NW corner of the CAMU where the Legacy Gold gravel mulch must be used.</p> <p>Please follow up with an official material submittal showing the material type, source, and gradations of the gravel mulch that will be used on the project.</p> <p>BRC expects to negotiate an appropriate credit with ENTACT for the use of the onsite crushed gravel mulch before installation of the gravel mulch commences.</p>		
NOTE: If Contractor believes there are any cost/schedule increases associated with this response, he shall contact the Construction Manager for direction to proceed PRIOR TO taking/beginning any action.		
Date: 3/17/10	Signature/Title of Construction Manager Representative: <i>Richard Lamborg</i>	



EASTSIDE COMMON AREAS SOILS REMEDIATION

Date: <i>3/17/10</i>	Signature of BRC Project Manager: <i>[Signature]</i>					
BRC Action:						
<u>Distribution</u>						
<input checked="" type="checkbox"/> BRC Proj. Mgr.	<input checked="" type="checkbox"/> Const. Mgr.	<input checked="" type="checkbox"/> Proj. Design Eng.	<input type="checkbox"/> Contracts	<input type="checkbox"/> QA/QC	<input type="checkbox"/> H&S	<input type="checkbox"/> Other <input type="checkbox"/> Other
Revise Drawing:	Y <input type="checkbox"/>	N <input checked="" type="checkbox"/>	Revise Spec:	Y <input type="checkbox"/>	N <input checked="" type="checkbox"/>	
Revise Sketch:	Y <input type="checkbox"/>	N <input checked="" type="checkbox"/>	Revisions Due:			
Refer to DCN No.: N/A						

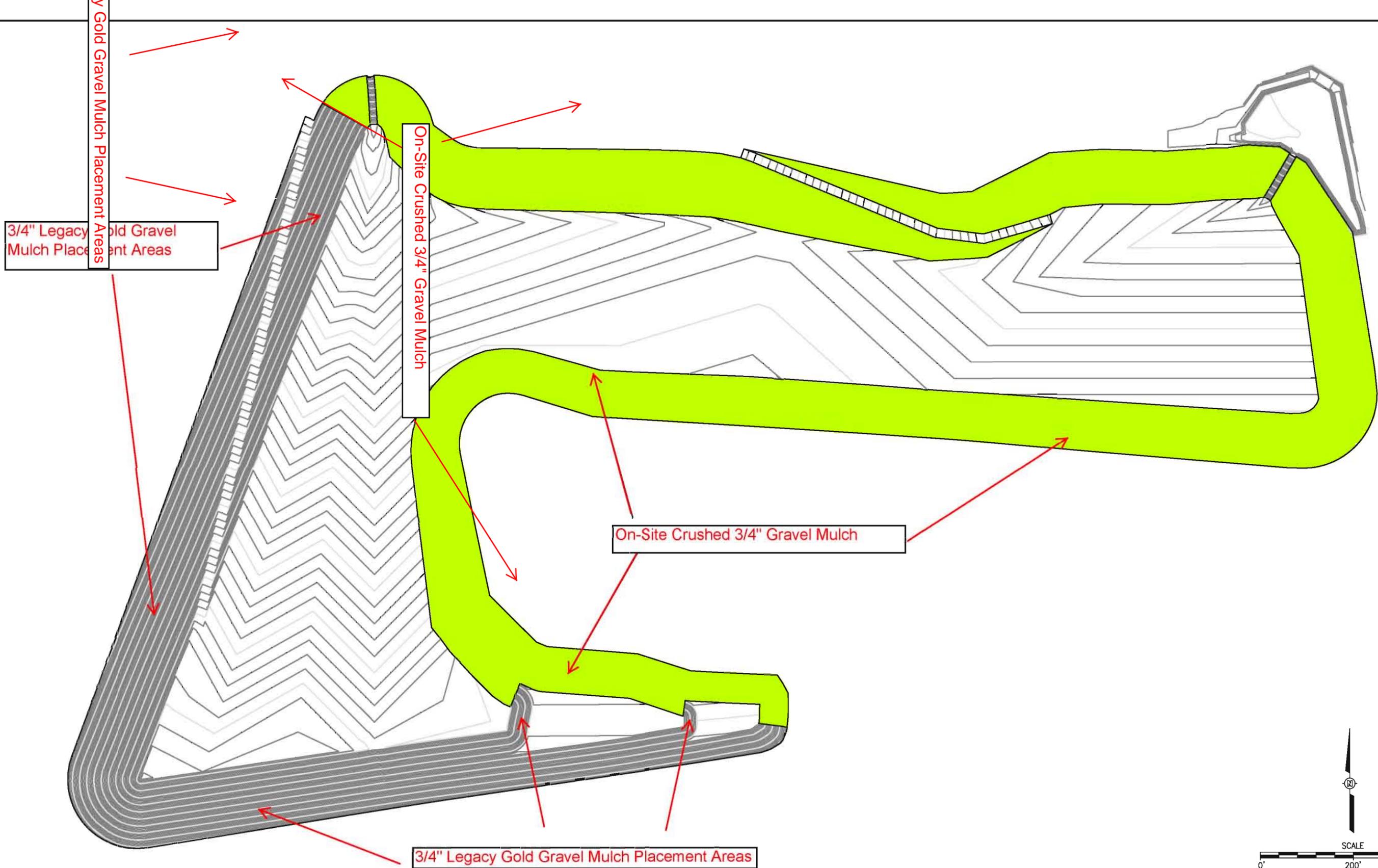


REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
0	2/12/10	MMC	EG	GT	ISSUED FOR REVIEW

ENTACT
 699 South Friendswood Dr., Suite 101
 Friendswood, Texas 77546
 P: 281-996-9892

DRAWING NAME: DRAWING 1
 PROJECT NAME & LOCATION: 2" GRAVEL MULCH ANALYSIS
 BRC EASTSIDE COMMON AREA SOILS REMEDIATION PROJECT
 HENDERSON, NEVADA

PREPARED BY	M. CARLSON	CHECKED BY	E. GEHRINGER	REVISION
DRAWN BY	M. CARLSON	APPROVED BY	E. GEHRINGER	0
DATE	2-12-10	DATE	2-12-10	SHEET NO.
PROJECT NO.	E7207	DRAWING NO.	E-7207-001	1 OF 1

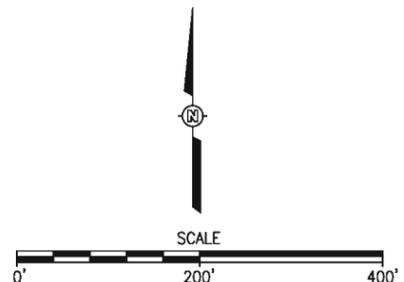


3/4" Legacy Gold Gravel Mulch Placement Areas

On-Site Crushed 3/4" Gravel Mulch

On-Site Crushed 3/4" Gravel Mulch

3/4" Legacy Gold Gravel Mulch Placement Areas



REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION
0	2/12/10	MMC	EG	GT	ISSUED FOR REVIEW

ENTACT
 699 South Friendswood Dr., Suite 101
 Friendswood, Texas 77546
 P: 281-996-9892

DRAWING NAME: 2" GRAVEL MULCH ANALYSIS
 PROJECT NAME & LOCATION: BRC EASTSIDE COMMON AREA SOILS REMEDIATION PROJECT HENDERSON, NEVADA

PREPARED BY	M. CARLSON	CHECKED BY	E. GEHRINGER	REVISION
DRAWN BY	M. CARLSON	APPROVED BY	E. GEHRINGER	0
DATE	2-12-10	DATE	2-12-10	SHEET NO.
PROJECT NO.	E7207	DRAWING NO.	E-7207-001	1 OF 1



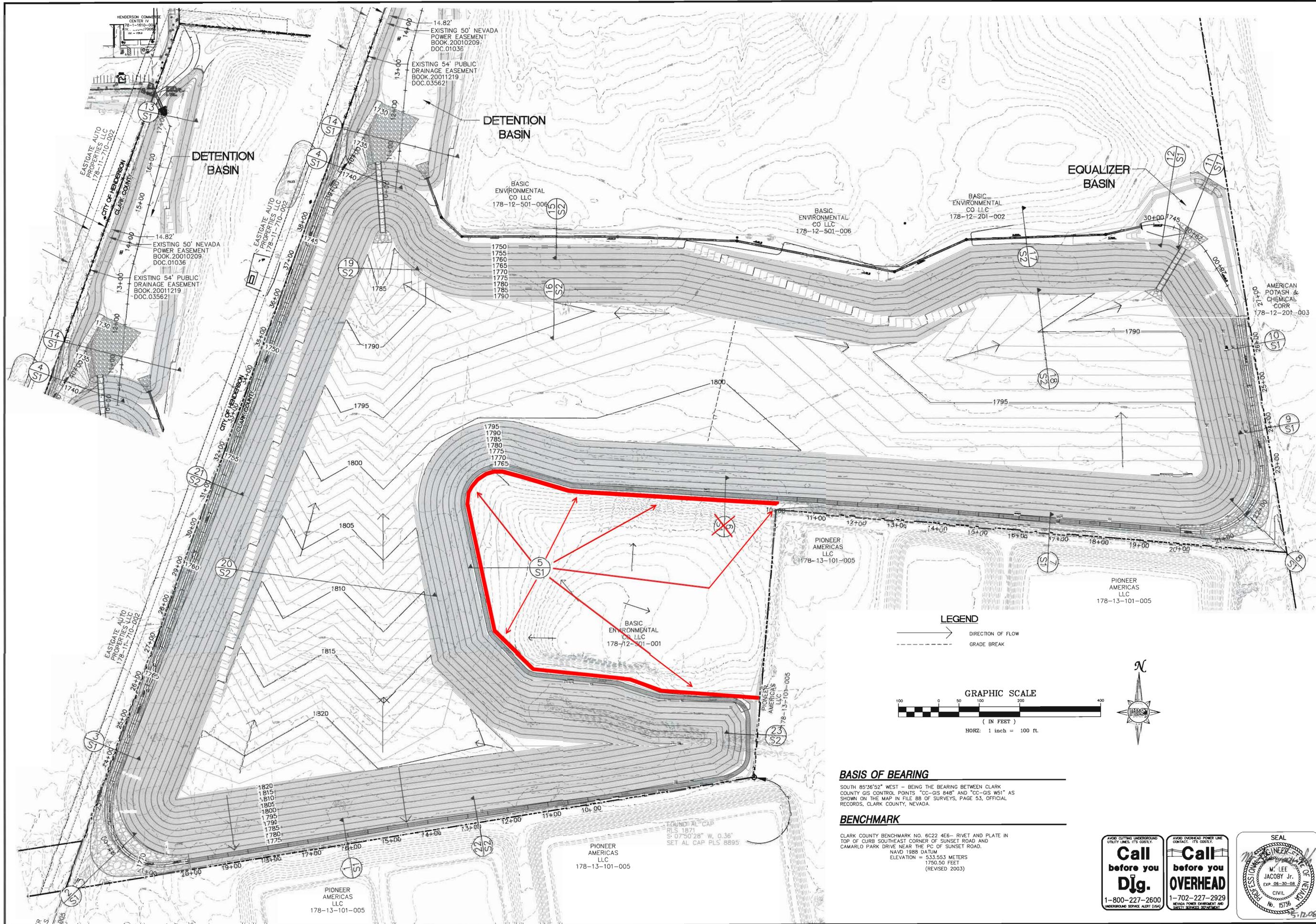


FILE COPY

EASTSIDE COMMON AREAS SOILS REMEDIATION

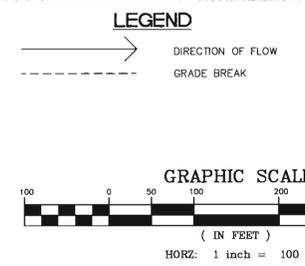
REQUEST FOR INFORMATION SHEET

Project: BRC Eastside Common Areas Soils Remediation, Henderson, Nevada		RFI No.: ESR RFI-096
Contract No.: 6389	Contractor: ENTACT Environmental Services	
Drawing Reference: CSD DWG # 18, 37 (Section 19), and 43; PBS&J ELF Improvement Plans DWG #MG-1, G-5, and S1		
Specification Reference: Section 02200		
Submittal Reference: N/A		
Information Requested: Per Section S1-5 on PBS&J ELF Improvement Plan DWG # S1, the perimeter drainage channel outer toe of slope will be constructed in conjunction with a 2% (Min.) grade that daylight out to the BMI-South Liner Limit. However, Section S1-6 and Section 19 on CSD DWG # 19 depict a trapezoidal grading feature along the outer channel edge in lieu of the 2% minimum grading requirement. Due to the grading restrictions specified on CSD DWG #s 41-43 within the BMI Closure Areas and the limited amount of vertical fall between the current lined grades on the BMI South landfill and the channel, we propose to maintain the grading requirements set forth per PBS&J Section S1-5 from the SE Corner of BMI South around to the NE Type IV Termination ending point (NE Corner of BMI South). This will allow a smooth transition from the BMI landfill into the channel without creating areas for water to pond. Therefore, PBS&J Section S1-6 and CSD Section 19 can be eliminated.		
Please advise if this approach is acceptable.		
Potential cost Impact <input type="checkbox"/> No cost Impact <input checked="" type="checkbox"/>		
Date Field Construction Will Be Affected: 3/24/10		
Date: 3/24/10	Name/Organization of Initiator: Michael Carlson / ENTACT Environmental Services, LLC	
Response: BRC agrees that this approach is acceptable.		
NOTE: If Contractor believes there are any cost/schedule increases associated with this response, he shall contact the Construction Manager for direction to proceed PRIOR TO taking/beginning any action.		
Date: 4/2/10	Signature/Title of Construction Manager Representative: <i>Richard Zaubinger</i>	
Date: 4/2/10	Signature of BRC Project Manager: <i>R. C. [Signature]</i>	
BRC Action:		
<u>Distribution</u> <input checked="" type="checkbox"/> BRC Proj. Mgr. <input checked="" type="checkbox"/> Const. Mgr. <input checked="" type="checkbox"/> Proj. Design Eng. <input type="checkbox"/> Contracts <input type="checkbox"/> QA/QC <input type="checkbox"/> H&S <input type="checkbox"/> Other <input type="checkbox"/> Other		
Revise Drawing:	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Revise Spec: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
Revise Sketch:	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Revisions Due: TBD
Refer to DCN No.: ESR DCN-040		



BASIS OF BEARING
 SOUTH 85°36'52" WEST - BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND "CC-GIS W51" AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BENCHMARK
 CLARK COUNTY BENCHMARK NO. 6C22 4E6 - RIVET AND PLATE IN TOP OF CURB SOUTHEAST CORNER OF SUNSET ROAD AND CAMARLO PARK DRIVE NEAR THE PC OF SUNSET ROAD.
 NAVD 1988 DATUM
 ELEVATION = 533.553 METERS
 1760.50 FEET
 (REVISED 2003)



REV.	DESCRIPTION	BY	DATE	APPROVAL

220 Corporate Oaks
 Henderson, NV 89074-4302
 Phone: 702.277.2200
 Fax: 702.277.2200
PBS
 ENGINEERING PLANNING SURVEYING CONSTRUCTION SERVICES

CONFORMED
EASTSIDE LANDFILL
MASS GRADING

JOB NO.: 1693.19
 FILE NAME: LANDFILL
 SCALE: HORIZ:
 VERT:
 DESIGNED BY: -DS
 DRAWN BY: -DS
 CHECKED BY: -LJ
 DATE: MAY, 2008
 HTE# 06-44325
 MGT

PROJECT: X:\Projects\511729_39\MassGrading_Via Set\RevA\511693.19\1693-MG.DWG Layout: MG-1 May 12, 2008 - 11:17am

Call before you Dig.
 1-800-227-2600
 UNDERGROUND SERVICE ALERT (USA)

Call before you OVERHEAD
 1-702-227-2929
 AVOID OVERHEAD POWER LINE CONTACT. IT'S COSTLY.

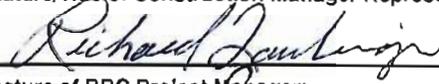




FILE COPY

EASTSIDE COMMON AREAS SOILS REMEDIATION

REQUEST FOR INFORMATION SHEET

Project: BRC Eastside Common Areas Soils Remediation, Henderson, Nevada		RFI No.: ESR RFI-097
Contract No.: 6389		Contractor: ENTACT Environmental Services
Drawing Reference: PBS&J ELF Improvement Plans DWG #MG-1 and G-1-7		
Specification Reference: Section 02200		
Submittal Reference: N/A		
<p>Information Requested: Per CCAUSS 302.03.05.A1-2, Type II Base Aggregates shall be placed and compacted in accordance with the following specifications:</p> <ol style="list-style-type: none"> 1. Where the required thickness is 6-inches or less, the base course may be spread and compacted in 1 layer; 2. However, if vibratory compaction equipment of a type approved by the Engineer is used, and the requirement for density is complied with, the compacted thickness of any 1 layer may be increased to 8 inches. <p>Since the aggregate base is being tested by the CQA Engineer, is it acceptable to modify the 2nd specification to allow for a compacted layer of Type II Aggregate Base of 12-inches? If we're unable to get compaction at a test depth of 6-inches, we would default back to the original standard above.</p> <p>Please advise if this approach is acceptable.</p>		
Potential cost impact <input type="checkbox"/> No cost impact <input checked="" type="checkbox"/>		
Date Field Construction Will Be Affected: 3/25/10		
Date: 3/24/10	Name/Organization of Initiator: Michael Carlson / ENTACT Environmental Services, LLC	
<p>Response:</p> <p>BRC takes no exception to use of a 12" lift and compaction testing of the upper 6" when aggregate base is placed overlying the geosynthetic liner system; however, when the aggregate base is installed overlying soil, compaction shall be measured at a depth of 12-inches. In the case of aggregate base overlying the woven geotextile for the access roads, compaction shall be measured at a depth of 10-inches.</p> <p>NOTE: If Contractor believes there are any cost/schedule increases associated with this response, he shall contact the Construction Manager for direction to proceed PRIOR TO taking/beginning any action.</p>		
Date: 3/26/10	Signature/Title of Construction Manager Representative: 	
Date: 3/26/10	Signature of BRC Project Manager: 	
BRC Action:		



EASTSIDE COMMON AREAS SOILS REMEDIATION

<u>Distribution</u>							
<input checked="" type="checkbox"/> BRC Proj. Mgr.	<input checked="" type="checkbox"/> Const. Mgr.	<input checked="" type="checkbox"/> Proj. Design Eng.	<input type="checkbox"/> Contracts	<input type="checkbox"/> QA/QC	<input type="checkbox"/> H&S	<input type="checkbox"/> Other	<input type="checkbox"/> Other
Revise Drawing:	Y <input type="checkbox"/>	N <input checked="" type="checkbox"/>	Revise Spec:	Y <input checked="" type="checkbox"/>	N <input type="checkbox"/>		
Revise Sketch:	Y <input type="checkbox"/>	N <input checked="" type="checkbox"/>	Revisions Due: TBD				
Refer to DCN No.: ESR DCN-039							



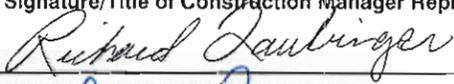
EASTSIDE COMMON AREAS SOILS REMEDIATION

REQUEST FOR INFORMATION SHEET

Project: BRC Eastside Common Areas Soils Remediation, Henderson, Nevada		RFI No.: ESR RFI-098
Contract No.: 6389	Contractor: ENTACT Environmental Services	
Drawing Reference: Control Systems Design DWG #45, Section Detail 34		
Specification Reference: Section 02200		
Submittal Reference: N/A		
Information Requested: Section Detail 34 depicts a channel flowline width <10ft, however it is our understanding that a 10ft channel is desired, if applicable. Please provide a revised section which provides further detail as to how the BMI South Cover Soil layer terminates to the outer/southern edge of the drainage channel's final Type II Aggregate base layer grade.		
Potential cost impact <input type="checkbox"/> No cost impact <input checked="" type="checkbox"/>		
Date Field Construction Will Be Affected: 3/25/10		
Date: 3/25/10	Name/Organization of Initiator: Michael Carlson / ENTACT Environmental Services, LLC	
Response: The minimum flow channel width is 10 ft. The revised section has been issued as DCN-041. NOTE: If Contractor believes there are any cost/schedule increases associated with this response, he shall contact the Construction Manager for direction to proceed PRIOR TO taking/beginning any action.		
Date: 4/6/10	Signature/Title of Construction Manager Representative: <i>Richard Saubinger</i>	
Date: 4/6/10	Signature of BRC Project Manager: <i>Dee C. [Signature]</i>	
BRC Action:		
Distribution <input checked="" type="checkbox"/> BRC Proj. Mgr. <input checked="" type="checkbox"/> Const. Mgr. <input checked="" type="checkbox"/> Proj. Design Eng. <input type="checkbox"/> Contracts <input type="checkbox"/> QA/QC <input type="checkbox"/> H&S <input type="checkbox"/> Other <input type="checkbox"/> Other		
Revise Drawing:	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Revise Spec: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
Revise Sketch:	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Revisions Due: TBD
Refer to DCN No.: ESR DCN-041		



EASTSIDE COMMON AREAS SOILS REMEDIATION

REQUEST FOR INFORMATION SHEET	
Project: BRC Eastside Common Areas Soils Remediation, Henderson, Nevada	
RFI No.: ESR RFI-100	
Contract No.: 6389	Contractor: ENTACT Environmental Services
Drawing Reference: N/A	
Specification Reference: N/A	
Submittal Reference: N/A	
Information Requested: At the southwestern corner of Phase 2, there is a concrete vault, which falls within the West Storm Channel (see attached photo). The coordinates of this structure are: N=16734.557; E=13362.940; Z=1772.149. This structure is depicted on the Design Drawings however there are no details as to how the West Storm channel is to be constructed around this structure. Please advise.	
Potential cost impact <input checked="" type="checkbox"/> No cost impact <input type="checkbox"/>	
Date Field Construction Will Be Affected: 4/6/10	
Date: 4/5/10	Name/Organization of Initiator: Michael Carlson / ENTACT Environmental Services, LLC
Response: At PBS&J's request, ENTACT has removed the concrete cover of what was perceived to be a vault of some sort. An exploratory trench was excavated beneath the concrete slab approximately 2-3 feet with nothing discovered. Construction of the West Storm channel may proceed as designed. NOTE: If Contractor believes there are any cost/schedule increases associated with this response, he shall contact the Construction Manager for direction to proceed PRIOR TO taking/beginning any action.	
Date: 4/6/10	Signature/Title of Construction Manager Representative: 
Date: 4/6/10	Signature of BRC Project Manager: 
BRC Action:	
Distribution <input checked="" type="checkbox"/> BRC Proj. Mgr. <input checked="" type="checkbox"/> Const. Mgr. <input checked="" type="checkbox"/> Proj. Design Eng. <input type="checkbox"/> Contracts <input type="checkbox"/> QA/QC <input type="checkbox"/> H&S <input type="checkbox"/> Other <input type="checkbox"/> Other	
Revise Drawing: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Revise Spec: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
Revise Sketch: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Revisions Due: N/A
Refer to DCN No.: N/A	



APPENDIX B-3
Contractor's Submittals



SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehringer
ADDRESS: ENTACT Environmental Services
Henderson, Nevada 89011

Date: 10/14/2009	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02200-002FF	Revision No.: - N/A	Date Submittal Rec'd by BRC: 10/12/2009
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Specification Section(s): 01050.3.01 Field Engineering Field Surveys

Submittal Subject: Phase IIIA Final Waste Surface As-Builts

Notations:

- No Exception Taken
- Correct as Noted
- Rejected
- Revise and Resubmit
- Submit Specified Items

Review Comments:

Comment #	Reference	Comment

Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work

 Design Engineer Construction Manager Representative	Date 10/14/09 Date	 BRC Project Manager Lee Farris, P.E.	Date 10/16/09 Date
--	--	--	--

Distribution: File



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company	DATE: 10/12/09
875 West Warm Springs Road	JOB NAME: BRC EASTSIDE COMMON AREAS
Henderson, NV 89011	SOIL REMEDIATION PROJECT
TEL#: (702)-568-2888 FAX#: (702)-567-0475	TRANSMITTAL NUMBER: 331
ATTENTION: Lee C. Farris, P.E.	ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:

SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	10/12/09			Submittal 02200-002FF - Phase IIIA Final Waste Surface As-Built	RC

ACTION (*)

AR - AS REQUESTED	FA - FOR APPROVAL
F - FILE	RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE
 COPY TO: Ranajit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....



10/12/2009

Attn: Erik Gehringer, Project Manager
ENTACT Environmental Services, LLC
699 South Friendswood Drive
Friendswood, TX. 77546

Re: Corrective Action Management Unit (CAMU), Phase IIIA – Final Waste As-Built

Mr. Gehringer,

Absolute Boundary & Control Solutions (ABCS) recently collected survey data within CAMU Phase IIIA to determine if said area was constructed in a fashion consistent with the Final Waste Design and coordinates provided by ENTACT. The attached Report reflects the results of this effort.

It should be noted that this report encompasses all of Phase IIIA but is being provided in advance of a complete and final report which will be prepared in accordance with the Project Technical Specifications and provided at a later date.

If you have any questions or if we can be of further assistance do not hesitate to call.

Sincerely,

Craig A. Givant, PLS
President

(702) 953-7452
(702) 839-9750 fax

2009.10.08.01A

<input checked="" type="checkbox"/> No Exception Taken	<input type="checkbox"/> Correct As Noted
<input type="checkbox"/> Revise And Resubmit	<input type="checkbox"/> Submit Specified Item
<input type="checkbox"/>	<input type="checkbox"/> Rejected

The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.

Checked By: [Signature] Date: 10/14/09
BRC Initials: ECF

BASIC REMEDIATION COMPANY

CAMU PHASE IIIA – Final Waste As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
33000	23227	16822.5744	14142.8175	1817.27	1817.265	-0.02	-0.02	0.01	As-Built
33014	23226	16883.287	14154.488	1816.196	1816.170	0.04	-0.08	0.03	As-Built
33013	23225	16948.424	14167.008	1815.627	1815.587	-0.04	-0.07	0.04	As-Built
33012	23224	16991.921	14175.369	1815.403	1815.388	0.00	0.02	0.02	As-Built
33011	23223	17020.897	14182.743	1814.899	1814.869	0.02	-0.02	0.03	As-Built
33010	23222	16992.432	14207.372	1816.184	1816.113	-0.02	-0.01	0.07	As-Built
33009	23221	16958.945	14238.489	1816.950	1816.940	-0.10	-0.08	0.01	As-Built
33008	23220	16916.513	14281.018	1817.307	1817.270	-0.06	-0.01	0.04	As-Built
33007	23219	16899.595	14305.320	1817.495	1817.453	0.00	0.09	0.04	As-Built
33006	23218	16893.951	14318.190	1817.606	1817.560	-0.02	0.03	0.05	As-Built
33005	23217	16873.746	14314.326	1817.463	1817.438	-0.08	-0.03	0.03	As-Built
33029	23216	16855.434	14310.823	1817.334	1817.330	0.03	0.03	0.00	As-Built
33004	23215	16845.750	14308.971	1817.617	1817.616	0.00	-0.07	0.00	As-Built
33003	23230	16840.865	14272.213	1817.622	1817.565	-0.01	0.06	0.06	As-Built
33002	23229	16835.561	14234.605	1817.524	1817.453	0.04	0.01	0.07	As-Built
33001	23228	16828.561	14184.971	1817.395	1817.346	-0.04	-0.04	0.05	As-Built
33028	23231	16863.311	14276.773	1817.000	1816.983	-0.01	-0.02	0.02	As-Built
33027	23232	16886.854	14222.604	1816.472	1816.431	-0.01	-0.04	0.04	As-Built
33026	23233	16907.909	14174.161	1816.000	1815.960	0.05	-0.07	0.04	As-Built
33015	23177	16793.015	14317.056	1799.834	1799.784	-0.07	-0.02	0.05	As-Built
33025	23214	16798.595	14332.940	1800.000	1799.969	0.01	0.01	0.03	As-Built
33016	23213	16808.623	14345.348	1800.301	1800.276	-0.03	0.03	0.02	As-Built

CAMU PHASE IIIA – Final Waste As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
33017	23212	16831.760	14356.771	1801.000	1800.956	0.03	-0.03	0.04	As-Built
33018	23211	16846.914	14357.708	1801.457	1801.421	0.04	0.02	0.04	As-Built
33019	23210	16865.137	14359.903	1802.000	1801.980	-0.06	-0.06	0.02	As-Built
33020	23209	16884.064	14365.586	1801.433	1801.416	-0.03	0.03	0.02	As-Built
33021	23208	16898.405	14367.872	1801.000	1800.973	0.06	-0.07	0.03	As-Built
33022	23207	16915.513	14364.974	1800.481	1800.458	-0.03	0.00	0.02	As-Built
33023	23206	16931.339	14355.604	1800.000	1799.954	0.04	-0.04	0.05	As-Built
33024	23178	16943.410	14339.688	1799.631	1799.577	-0.06	0.03	0.05	As-Built
33036	23179	16928.024	14376.213	1800.098	1800.077	0.01	-0.02	0.02	As-Built
33037	23180	16926.220	14385.540	1800.153	1800.144	0.01	0.01	0.01	As-Built
33038	23181	16922.031	14440.079	1800.288	1800.268	-0.01	0.02	0.02	As-Built
33039	23182	16918.258	14490.400	1800.410	1800.386	-0.01	0.00	0.02	As-Built
33040	23183	16915.129	14532.451	1800.511	1800.477	-0.02	0.03	0.03	As-Built
33041	23184	16911.966	14574.627	1800.614	1800.589	0.01	-0.02	0.03	As-Built
33042	23185	16899.325	14612.421	1801.000	1800.992	-0.06	0.04	0.01	As-Built
33043	23186	16887.185	14648.706	1801.370	1801.344	-0.01	0.00	0.03	As-Built
33044	23168	16875.139	14684.693	1801.738	1801.719	-0.04	0.01	0.02	As-Built
33045	23167	16873.301	14689.926	1801.802	1801.735	0.01	0.05	0.07	As-Built
33046	23163	16855.329	14690.324	1801.654	1801.616	0.01	-0.01	0.04	As-Built
33047	23164	16853.381	14690.353	1801.589	1801.534	0.03	0.08	0.05	As-Built
33048	23165	16852.772	14688.720	1801.562	1801.486	-0.01	0.00	0.08	As-Built
33049	23171	16842.540	14632.467	1801.265	1801.253	0.01	-0.05	0.01	As-Built
33050	23172	16833.418	14581.070	1801.000	1800.983	-0.05	0.04	0.02	As-Built

CAMU PHASE IIIA – Final Waste As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
33051	23173	16825.012	14531.481	1800.756	1800.708	-0.05	-0.05	0.05	As-Built
33052	23174	16816.811	14478.673	1800.519	1800.464	-0.02	0.00	0.06	As-Built
33053	23175	16807.403	14415.573	1800.248	1800.201	-0.01	0.00	0.05	As-Built
33054	23176	16800.469	14368.132	1800.048	1800.037	-0.03	-0.03	0.01	As-Built
33030	23191	16865.279	14408.315	1802.000	1801.968	-0.02	0.06	0.03	As-Built
33031	23190	16865.651	14473.072	1802.000	1801.983	-0.02	0.05	0.02	As-Built
33032	23189	16865.964	14527.530	1802.000	1801.970	0.00	-0.01	0.03	As-Built
33033	23188	16866.246	14576.606	1802.000	1801.991	0.00	-0.05	0.01	As-Built
33034	23187	16866.548	14629.218	1802.000	1801.935	-0.03	0.00	0.07	As-Built
33035	23166	16866.897	14689.861	1802.000	1801.989	-0.02	0.04	0.01	As-Built
33055	23114	16820.705	14694.127	1790.755	1790.732	0.03	0.01	0.02	As-Built
33056	23159	16830.475	14712.386	1791.000	1790.930	0.04	-0.05	0.07	As-Built
33057	23158	16842.663	14719.197	1791.350	1791.288	0.04	-0.05	0.06	As-Built
33058	23157	16855.095	14720.120	1791.723	1791.679	0.01	0.03	0.04	As-Built
33059	23156	16864.290	14719.361	1792.000	1791.938	0.00	-0.03	0.06	As-Built
33060	23155	16874.192	14720.125	1791.707	1791.627	-0.02	-0.01	0.08	As-Built
33062	23153	16896.785	14712.147	1791.000	1790.954	-0.02	0.01	0.05	As-Built
33063	23152	16902.994	14704.459	1790.789	1790.763	0.04	-0.07	0.03	As-Built
33064	23151	16907.005	14694.339	1790.640	1790.590	0.00	-0.01	0.05	As-Built
33065	23154	16887.023	14718.280	1791.314	1791.291	0.02	-0.03	0.02	As-Built
33066	23148	16905.465	14715.149	1790.743	1790.711	0.07	-0.02	0.03	As-Built
33067	23147	16903.623	14749.039	1790.892	1790.875	0.02	-0.01	0.02	As-Built
33068	23144	16901.584	14792.362	1791.073	1791.018	0.03	0.00	0.06	As-Built

CAMU PHASE IIIA -- Final Waste As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
33069	23143	16900.350	14822.322	1791.193	1791.144	-0.01	0.01	0.05	As-Built
33070	23134	16899.115	14854.083	1791.321	1791.277	0.00	0.00	0.04	As-Built
33071	23127	16876.679	14853.148	1792.000	1791.980	0.02	0.05	0.02	As-Built
33072	23126	16858.461	14852.325	1791.453	1791.445	0.07	0.00	0.01	As-Built
33073	23119	16846.691	14834.963	1791.141	1791.126	0.00	-0.04	0.02	As-Built
33074	23118	16840.845	14803.785	1791.052	1791.020	-0.01	-0.01	0.03	As-Built
33075	23117	16834.980	14772.500	1790.964	1790.943	0.03	0.00	0.02	As-Built
33076	23116	16828.169	14736.171	1790.861	1790.788	-0.02	-0.04	0.07	As-Built
33077	23160	16868.525	14764.862	1792.000	1791.970	0.05	0.02	0.03	As-Built
33078	23161	16871.312	14795.025	1792.000	1791.947	0.06	0.01	0.05	As-Built
33079	23162	16874.421	14828.460	1792.000	1791.954	0.03	0.01	0.05	As-Built

I, Craig A. Givant, a Professional Land Surveyor registered in the State of Nevada, certify (as defined by Nevada Revised Statutes 625.403) that:

1. This report and any Land Surveying Practices (N.R.S. 625.040) on which it is based were performed directly by me or under my responsible charge (N.R.S. 625.080) in accordance with the Standards and Practices Governing Land Surveyors in the State of Nevada as defined by any applicable sections of the Nevada Revised Statutes (N.R.S.) or the Nevada Administrative Code (N.A.C.).
2. By affixing my official seal and signature below I am confirming that I am a Registered Land Surveyor in the State of Nevada and thereby satisfy the requirements of Section 01050, Part 1.03, Subpart A or the Project Technical Specifications.



SURVEY DATA

As required by the project specification Absolute Boundary & Control Solutions (ABCS) utilized field survey methods which resulted in precisions equal to or better than the following:

Horizontal Coordinates: $\pm 1.0'$ (One Foot)

Vertical Coordinates: $\pm 0.10'$ (One Tenth of a Foot)

1. **Coordinate Printout of the reduced (measured) coordinates from the Field Collection Efforts.**

Point No.	Northing	Easting	Elevation	Description
23095	14153.98	16738.68	1789.03	mid
23096	14195.86	16746.64	1789.79	mid
23097	14244.92	16758.29	1791.52	mid
23098	14282.59	16763.14	1791.42	mid
23099	14320.75	16765.81	1790.62	mid
23100	14372.10	16770.98	1790.10	mid
23101	14419.87	16776.00	1789.66	mid
23102	14483.01	16784.24	1789.54	mid
23103	14536.59	16793.38	1790.11	mid
23104	14586.72	16798.39	1789.16	mid
23105	14638.24	16806.58	1789.09	mid
23106	14695.47	16812.79	1788.03	mid
23107	14737.87	16818.56	1787.56	mid
23108	14774.45	16824.52	1787.36	mid
23109	14806.87	16823.79	1785.22	mid
23114	16820.68	14694.12	1790.73	1st Toe
23115	16825.25	14705.34	1790.95	1st Toe
23116	16828.19	14736.21	1790.79	1st Top
23117	16834.95	14772.50	1790.94	1st Top
23118	16840.86	14803.80	1791.02	1st Top
23119	16846.69	14835.00	1791.13	1st Top
23120	14841.82	16828.64	1784.76	mid
23125	14875.95	16842.36	1782.70	mid
23126	16858.39	14852.33	1791.45	1st Top
23127	16876.66	14853.10	1791.98	1st crown
23128	14879.84	16872.49	1783.11	mid
23133	14876.06	16900.19	1783.98	mid

Point No.	Northing	Easting	Elevation	Description
23134	16899.12	14854.08	1791.28	1st Top
23135	14878.36	16909.36	1782.99	mid
23136	14866.32	16918.99	1784.50	mid
23137	14854.72	16923.99	1782.99	mid
23142	14823.02	16926.45	1782.47	mid
23143	16900.36	14822.32	1791.14	1st Top
23144	16901.56	14792.37	1791.02	1st Top
23145	14792.93	16922.08	1784.19	mid
23146	14749.96	16924.17	1783.98	mid
23147	16903.61	14749.05	1790.88	1st Top
23148	16905.40	14715.17	1790.71	1st Top
23149	14716.03	16926.08	1783.81	mid
23150	14698.46	16928.09	1783.47	mid
23151	16907.01	14694.35	1790.59	1st Toe
23152	16902.96	14704.53	1790.76	1st Toe
23153	16896.80	14712.14	1790.95	1st Toe
23154	16887.00	14718.31	1791.29	1st Toe
23155	16874.21	14720.13	1791.63	1st Toe
23156	16864.29	14719.39	1791.94	1st Toe-crown
23157	16855.09	14720.09	1791.68	1st Toe
23158	16842.62	14719.24	1791.29	1st Toe
23159	16830.43	14712.43	1790.93	1st Toe
23160	16868.48	14764.84	1791.97	1st crown
23161	16871.26	14795.01	1791.95	1st crown
23162	16874.39	14828.45	1791.95	1st crown
23163	16855.32	14690.33	1801.62	2nd Top
23164	16853.35	14690.28	1801.53	2nd Top
23165	16852.78	14688.72	1801.49	2nd Top
23166	16866.92	14689.83	1801.99	2nd Crown
23167	16873.29	14689.88	1801.74	2nd Top
23168	16875.18	14684.68	1801.72	2nd Top
23171	16842.53	14632.52	1801.25	2nd Top
23172	16833.47	14581.03	1800.98	2nd Top
23173	16825.06	14531.53	1800.71	2nd Top
23174	16816.83	14478.67	1800.46	2nd Top
23175	16807.42	14415.57	1800.20	2nd Top
23176	16800.50	14368.16	1800.04	2nd Top
23177	16793.08	14317.07	1799.78	3rd Toe
23178	16943.47	14339.66	1799.58	3rd Toe
23179	16928.02	14376.24	1800.08	2nd Top

October 12, 2009 - (CAMU - Phase IIIA, Final Waste As-Built)

Point No.	Northing	Easting	Elevation	Description
23180	16926.21	14385.53	1800.14	2nd Top
23181	16922.05	14440.06	1800.27	2nd Top
23182	16918.27	14490.40	1800.39	2nd Top
23183	16915.15	14532.42	1800.48	2nd Top
23184	16911.95	14574.64	1800.59	2nd Top
23185	16899.39	14612.38	1800.99	2nd Top
23186	16887.19	14648.71	1801.34	2nd Top
23187	16866.58	14629.22	1801.94	2nd Crown
23188	16866.25	14576.66	1801.99	2nd Crown
23189	16865.97	14527.54	1801.97	2nd Crown
23190	16865.67	14473.03	1801.98	2nd Crown
23191	16865.30	14408.25	1801.97	2nd Crown
23192	14358.14	16987.01	1783.84	mid
23193	14387.92	16977.93	1783.01	mid
23194	14391.98	16977.30	1782.98	mid
23195	14443.41	16971.38	1783.78	mid
23196	14493.71	16967.13	1784.09	mid
23197	14535.89	16966.80	1783.24	mid
23198	14583.77	16961.97	1783.74	mid
23199	14627.26	16948.24	1783.92	mid
23200	14664.26	16938.68	1783.43	mid
23206	16931.30	14355.64	1799.95	3rd Toe
23207	16915.54	14364.97	1800.46	3rd Toe
23208	16898.34	14367.94	1800.97	3rd Toe
23209	16884.10	14365.55	1801.42	3rd Toe
23210	16865.20	14359.97	1801.98	3rd Toe-crown
23211	16846.87	14357.69	1801.42	3rd Toe
23212	16831.73	14356.80	1800.96	3rd Toe
23213	16808.65	14345.32	1800.28	3rd Toe
23214	16798.59	14332.93	1799.97	3rd Toe
23215	16845.75	14309.04	1817.62	3rd Top
23216	16855.41	14310.79	1817.33	3rd FL
23217	16873.82	14314.36	1817.44	3rd Top
23218	16893.97	14318.16	1817.56	3rd Top
23219	16899.59	14305.23	1817.45	3rd Top
23220	16916.58	14281.03	1817.27	3rd Top
23221	16959.04	14238.57	1816.94	3rd Top
23222	16992.45	14207.38	1816.11	3rd Top
23223	17020.88	14182.76	1814.87	3rd Top
23224	16991.92	14175.35	1815.39	3rd Top

October 12, 2009 - (CAMU - Phase IIIA, Final Waste As-Built)

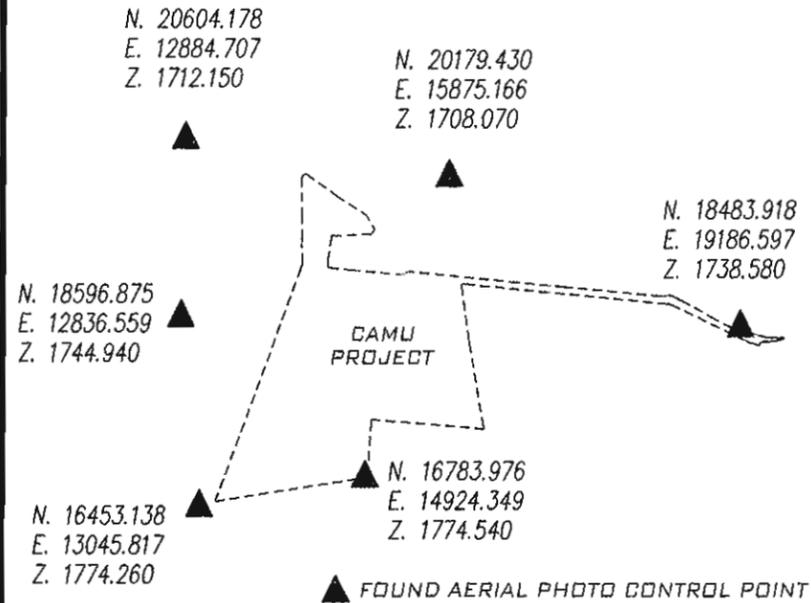
Point No.	Northing	Easting	Elevation	Description
23225	16948.46	14167.08	1815.59	3rd Top
23226	16883.25	14154.56	1816.17	3rd Top
23227	16822.60	14142.84	1817.27	3rd Top
23228	16828.60	14185.01	1817.35	3rd Top
23229	16835.53	14234.60	1817.45	3rd Top
23230	16840.88	14272.16	1817.57	3rd Top
23231	16863.32	14276.79	1816.98	3rd FL
23232	16886.87	14222.64	1816.43	3rd FL
23233	16907.86	14174.23	1815.96	3rd FL
23234	14300.95	16940.84	1806.85	mid
23235	14346.96	16996.87	1782.76	mid
23236	14314.34	17035.71	1780.93	mid
23237	14274.05	16994.93	1800.07	mid
23238	14244.60	17030.39	1798.37	mid
23239	14282.37	17068.92	1780.42	mid
23240	14260.41	17099.72	1778.17	mid
23241	17118.88	14279.40	1769.20	toe-1
23243	14220.48	17059.16	1797.02	mid
23408	16704.82	14201.46	1775.78	933117
23409	16712.12	14251.04	1775.98	933116
23410	16723.03	14326.41	1776.28	933114
23411	16730.39	14377.43	1776.53	933113
23412	16737.35	14425.01	1776.66	933112
23413	16746.52	14488.05	1776.98	933111
23414	16754.53	14542.75	1777.05	933110
23415	16769.71	14644.30	1776.63	933108
23416	16778.14	14701.03	1776.47	933107
23420	17005.49	14538.46	1770.43	933088
23421	17012.71	14446.09	1769.97	933086
23422	17060.13	14338.47	1769.52	933082
23423	17092.58	14305.65	1769.40	933081
23430	16827.04	14898.18	1774.46	733102
23431	16868.05	14908.28	1773.57	733101
23432	16922.14	14908.50	1772.74	733099
23433	16954.62	14887.98	1772.45	733098
23434	16956.69	14855.69	1772.10	733097
23435	16958.55	14823.88	1771.71	733096
23436	16959.96	14794.07	1771.57	733095
23437	16962.13	14751.60	1771.32	733094
23438	16964.14	14717.79	1771.11	733093

October 12, 2009 - (CAMU - Phase IIIA, Final Waste As-Built)

Point No.	Northing	Easting	Elevation	Description
23439	16901.88	14908.88	1773.04	733100
23440	16801.81	14852.04	1775.33	733103
23441	16795.42	14811.91	1775.63	733104
23442	16790.49	14780.48	1775.89	733105
23443	16784.76	14743.94	1776.17	733106
23444	16762.08	14592.53	1776.85	733109
23446	16698.68	14159.21	1775.59	733118
23448	16964.84	14705.56	1771.14	733092
23449	16974.47	14675.09	1770.98	733091
23450	16985.98	14638.77	1770.79	733090
23451	17001.11	14590.95	1770.55	733089
23452	17008.80	14496.46	1770.19	733087
23453	17016.67	14396.96	1769.88	733085
23454	17027.34	14371.86	1769.74	733083
23455	17025.95	14374.72	1769.71	733084
23456	17118.98	14279.48	1769.14	733080

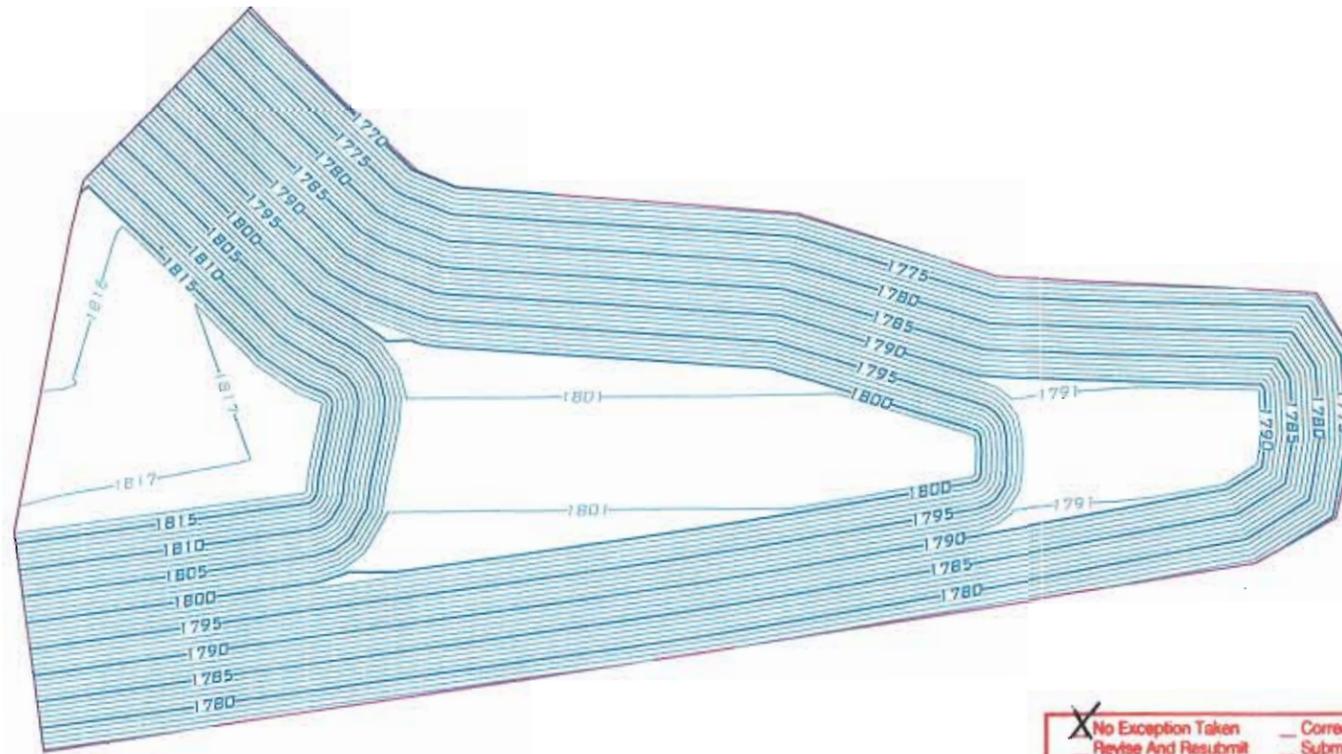
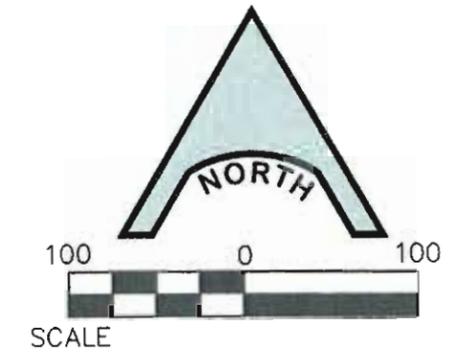
PROJECT CONTROL

1" = 2000'



SURFACE DETAILS

THE SURFACE SHOWN BELOW WAS GENERATED BASED UPON AS-BUILT DATA COLLECTED BY ABSOLUTE BOUNDARY & CONTROL SOLUTIONS. IT REPRESENTS THE FINAL CAMU PHASE IIIA WASTE PLACEMENT.



BENCHMARK

CLARK COUNTY BENCHMARK (6C22 2E4), BEING A RIVET AND SQUARE ALUMINUM PLATE IN A CONCRETE CENTERLINE ISLAND, 4' WEST OF THE NOSE IN THE MIDDLE OF SUNSET ROAD, WEST SIDE OF THE INTERSECTION OF BOULDER HIGHWAY AND SUNSET ROAD.

PUBLISHED ELEVATION - 505.816 METERS = 1659.50 FEET
NAVD 1988 DATUM - PUBLISHED (2003)

BASIS OF BEARINGS

SOUTH 85°36'52" WEST, BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 84B" AND CC-GIS W51", AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

COORDINATE SYSTEM

THE COORDINATE SYSTEM AND ASSOCIATED BEARING ROTATION INFORMATION WAS ESTABLISHED AND PROVIDED BY PBS&J.

LINE LEGEND

- MAJOR CONTOUR
- MINOR CONTOUR
- SURVEY LIMITS

No Exception Taken Correct As Noted
 Revise And Resubmit Submit Specified Item Rejected

The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.

Checked By: *[Signature]* Date: 10/14/09
 BRC Initials: *LCF*

BASIC REMEDIATION COMPANY

NO.	REVISION	DATE
△		
△		
△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)

PHASE IIIA

FINAL WASTE AS-BUILT

FIELD SURVEY DATE: JULY THRU OCTOBER, 2009
 FIELD CREW: G.G., M.C., T.G.

PROJECT # 2008.06.23.01

ABSOLUTE BOUNDARY & CONTROL SOLUTIONS

6440 SKY POINT DRIVE
 SUITE 140 - PMB 321
 LAS VEGAS, NV. 89131
 (702) 953-7452
 (702) 987-5943 FAX
 WWW.AB-CS.COM

Date: October 12, 2009
 Drawn: C. Givant
 Checked: C. Givant
 Task: 2009.10.08.01

Sheet No. 1 of 1



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Phase IIIA Final Waste Surface As-Built
Submittal Number:	02200-002FF
Specification Section:	Section 02200, Part 3.14
Drawing Number (s):	15
Page Number:	02200-10
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	10/12/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.

<input checked="" type="checkbox"/> No Exception Taken	<input type="checkbox"/> Correct As Noted
<input type="checkbox"/> Revise And Resubmit	<input type="checkbox"/> Submit Specified Item
<input type="checkbox"/> Rejected	
The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.	
Checked By: 	Date: 10/14/09
BRC Initials: 	
BASIC REMEDIATION COMPANY	



875 West Warm Springs Road
Henderson, Nevada 89011
Tel (702) 567-0400 · Fax (702) 567-0475

SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehringer
ADDRESS: ENTACT Environmental Services
Henderson, Nevada 89011

Date: 10/14/2009	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02200-002GG	Revision No.: - N/A	Date Submittal Rec'd by BRC: 10/12/2009
--	----------------------------	--

Specification Section(s): 01050.3.01 Field Engineering Field Surveys

Submittal Subject: Phase IIIA Final Interim Cover As-Built A

- Notations:**
- No Exception Taken
 - Correct as Noted
 - Rejected
 - Revise and Resubmit
 - Submit Specified Items

Review Comments:

Comment #	Reference	Comment

Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work

 Design Engineer Construction Manager Representative	Date 10/14/09 10/14/09	 BRC Project Manager Lee Farris, P.E.	Date 10/16/09
Distribution: <input checked="" type="checkbox"/> File			



ENTACT

environmental services

699 South Friendswood Drive
Suite 101
Friendswood, Texas 77546

TO: <u>Basic Remediation Company</u>	DATE: <u>10/12/09</u>
<u>875 West Warm Springs Road</u>	JOB NAME: <u>BRC EASTSIDE COMMON AREAS</u>
<u>Henderson, NV 89011</u>	<u>SOIL REMEDIATION PROJECT</u>
TEL#: <u>(702)-568-2888</u> FAX#: <u>(702)-567-0475</u>	TRANSMITTAL NUMBER: <u>332</u>
ATTENTION: <u>Lee C. Farris, P.E.</u>	ENTACT PROJECT NUMBER: <u>E-7207</u>

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:

SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	10/12/09			Submittal 02200-002GG - Phase IIIA Final Interim Cover As-Built - A	RC

ACTION (*)

AR - AS REQUESTED	FA - FOR APPROVAL
F - FILE	RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE
 COPY Ranajit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237
 TO: _____

If enclosures are not as noted, please notify us at once.....



10/12/2009

Attn: Erik Gehringer, Project Manager
ENTACT Environmental Services, LLC
699 South Friendswood Drive
Friendswood, TX. 77546

Re: Corrective Action Management Unit (CAMU), Phase IIIA – Partial Interim Cover As-Built

Mr. Gehringer,

Absolute Boundary & Control Solutions (ABCS) recently collected survey data within CAMU Phase IIIA to determine if said area was constructed in a fashion consistent with the Interim Cover Design and coordinates provided by ENTACT. The attached Report reflects the results of this effort.

It should be noted that this report encompasses Tier 1 (Lower Tier) Only and is being provided solely to reflect those positions that have been As-built as of 10/12/2009. Upon completion of the Phase IIIA Interim Cover efforts, ABCS will prepare and provide a final report for the entire area.

If you have any questions or if we can be of further assistance do not hesitate to call.

Sincerely,

Craig A. Givant, PLS
President

(702) 953-7452
(702) 839-9750 fax

2009.10.01.01A

<input checked="" type="checkbox"/>	No Exception Taken	<input type="checkbox"/>	Correct As Noted
<input type="checkbox"/>	Revise And Resubmit	<input type="checkbox"/>	Submit Specified Item
<input type="checkbox"/>		<input type="checkbox"/>	Rejected

The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.

Checked By: R. Givant Date: 10/14/09
BRC Initials: ECF

BASIC REMEDIATION COMPANY

CAMU PHASE IIIA – Partial Interim Cover As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
10055	510055	16820.55	14694.17	1791.76	1791.67	0.07	-0.02	0.09	As-Built
10056	510056	16830.37	14712.51	1792.00	1792.03	0.00	0.01	-0.03	As-Built
10057	510057	16842.62	14719.35	1792.35	1792.36	0.04	-0.03	-0.01	As-Built
10058	510058	16855.10	14720.28	1792.72	1792.80	0.06	-0.01	-0.07	As-Built
10059	510059	16864.32	14719.52	1793.00	1793.03	0.02	0.08	-0.03	As-Built
10060	510060	16874.19	14720.29	1792.71	1792.79	-0.05	-0.02	-0.08	As-Built
10062	510062	16896.78	14712.37	1792.00	1792.03	0.02	-0.06	-0.02	As-Built
10063	510063	16903.14	14704.54	1791.79	1791.76	0.10	-0.02	0.03	As-Built
10064	510064	16907.16	14694.39	1791.64	1791.63	0.01	0.10	0.01	As-Built
10065	510065	16887.06	14718.44	1792.31	1792.34	0.06	-0.06	-0.02	As-Built
10066	510066	16905.63	14715.17	1791.74	1791.66	0.07	0.08	0.08	As-Built
10067	510067	16903.78	14749.05	1791.89	1791.93	0.12	0.00	-0.04	As-Built
10068	510068	16901.74	14792.39	1792.07	1792.04	0.36	-0.01	0.03	As-Built
10069	510069	16900.51	14822.34	1792.19	1792.17	0.20	-0.13	0.02	As-Built
10070	510070	16899.27	14854.25	1792.32	1792.37	0.07	0.01	-0.05	As-Built
10071	510071	16876.75	14853.31	1793.00	1792.98	-0.02	0.06	0.02	As-Built
10072	510072	16858.37	14852.48	1792.45	1792.41	0.07	0.04	0.04	As-Built
10073	510073	16846.54	14835.03	1792.14	1792.13	-0.09	-0.04	0.01	As-Built
10074	510074	16840.69	14803.83	1792.05	1792.02	-0.01	0.06	0.03	As-Built
10075	510075	16834.82	14772.52	1791.96	1791.92	-0.09	-0.06	0.04	As-Built
10076	510076	16828.01	14736.22	1791.86	1791.89	0.03	0.07	-0.03	As-Built
10077	510077	16868.52	14764.86	1793.00	1793.02	-0.06	0.05	-0.02	As-Built

CAMU PHASE IIIA – Partial Interim Cover As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
10078	510078	16871.31	14795.03	1793.00	1793.01	0.01	-0.03	-0.01	As-Built
10079	510079	16874.42	14828.46	1793.00	1793.02	0.08	-0.07	-0.02	As-Built

I, Craig A. Givant, a Professional Land Surveyor registered in the State of Nevada, certify (as defined by Nevada Revised Statutes 625.403) that:

1. This report and any Land Surveying Practices (N.R.S. 625.040) on which it is based were performed directly by me or under my responsible charge (N.R.S. 625.080) in accordance with the Standards and Practices Governing Land Surveyors in the State of Nevada as defined by any applicable sections of the Nevada Revised Statutes (N.R.S.) or the Nevada Administrative Code (N.A.C.).
2. By affixing my official seal and signature below I am confirming that I am a Registered Land Surveyor in the State of Nevada and thereby satisfy the requirements of Section 01050, Part 1.03, Subpart A or the Project Technical Specifications.



SURVEY DATA

As required by the project specification Absolute Boundary & Control Solutions (ABCS) utilized field survey methods which resulted in precisions equal to or better than the following:

Horizontal Coordinates: $\pm 1.0'$ (One Foot)

Vertical Coordinates: $\pm 0.10'$ (One Tenth of a Foot)

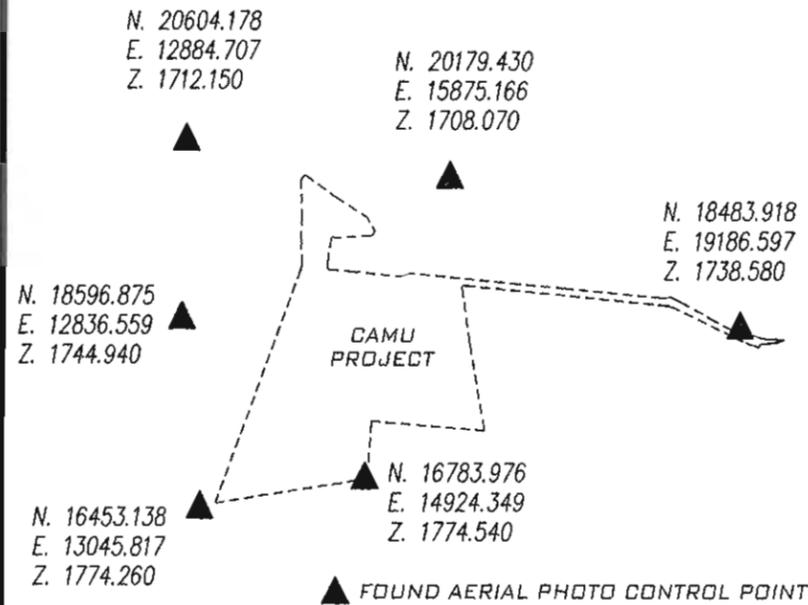
1. **Coordinate Printout of the reduced (measured) coordinates from the Field Collection Efforts.**

Point No.	Northing	Easting	Elevation	Description
84003	16776.82	14701.30	1777.05	810107
84004	16783.51	14744.22	1776.84	810106
84005	16788.89	14780.93	1776.59	810105
84006	16793.52	14812.47	1776.36	810104
84007	16800.38	14852.55	1776.03	810103
84008	16805.78	14869.81	1776.04	ic-toe
84009	16816.03	14888.20	1775.50	ic-toe
84010	16826.20	14899.51	1775.10	810102
84011	16836.69	14905.10	1775.03	ic-toe
84012	16867.86	14909.78	1774.28	810101
84013	16901.94	14911.12	1773.72	810100
84014	16922.64	14910.10	1773.31	810099
84015	16957.01	14889.38	1772.90	810098
84016	16958.46	14855.68	1772.65	810097
84017	16960.04	14823.91	1772.33	810096
84018	16961.39	14794.11	1772.12	810095
84019	16963.61	14751.63	1771.87	810094
84020	16965.51	14717.84	1771.81	810093
84021	16967.03	14705.96	1771.82	810092
510055	16820.48	14694.19	1791.67	10055
510056	16830.37	14712.50	1792.03	10056
510057	16842.57	14719.38	1792.36	10057
510058	16855.05	14720.30	1792.80	10058
510059	16864.30	14719.44	1793.03	10059
510060	16874.25	14720.26	1792.79	10060
510062	16896.75	14712.43	1792.03	10062
510063	16903.04	14704.56	1791.76	10063
510064	16907.15	14694.30	1791.63	10064

Point No.	Northing	Easting	Elevation	Description
510065	16887.00	14718.50	1792.34	10065
510066	16905.55	14715.09	1791.66	10066
510067	16903.67	14749.06	1791.93	10067
510068	16901.38	14792.40	1792.04	10068
510069	16900.31	14822.47	1792.17	10069
510070	16899.20	14854.24	1792.37	10070
510071	16876.77	14853.25	1792.98	10071
510072	16858.30	14852.44	1792.41	10072
510073	16846.63	14835.06	1792.13	10073
510074	16840.70	14803.77	1792.02	10074
510075	16834.91	14772.57	1791.92	10075
510076	16827.98	14736.14	1791.89	10076
510077	16868.59	14764.81	1793.02	10077
510078	16871.30	14795.06	1793.01	10078
510079	16874.34	14828.53	1793.02	10079

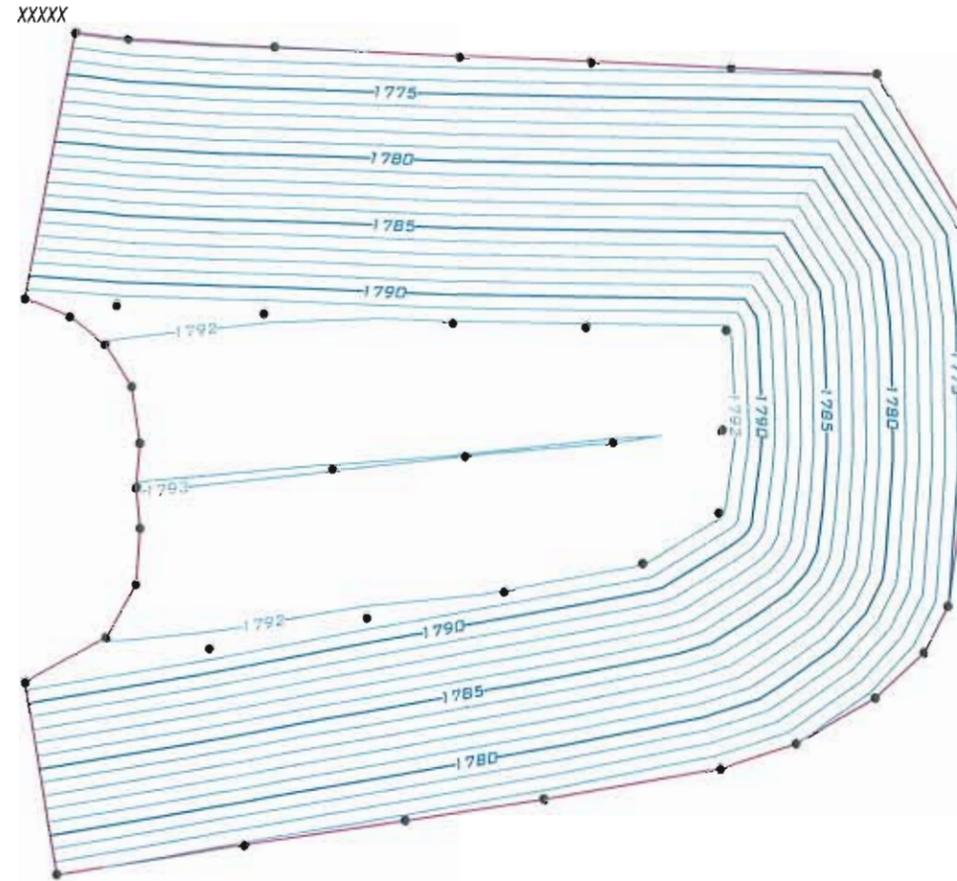
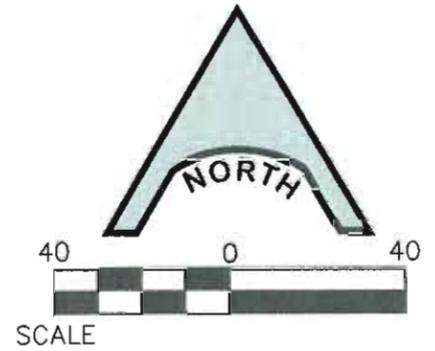
PROJECT CONTROL

1" = 2000'



SURFACE DETAILS

THE SURFACE SHOWN BELOW WAS GENERATED BASED UPON AS-BUILT DATA COLLECTED BY ABSOLUTE BOUNDARY & CONTROL SOLUTIONS. IT REPRESENTS THE LOWEST OF THE THREE TIERS WHICH COMPRISES THE PHASE IIIA INTERIM CLOSURE DESIGN.



BENCHMARK

CLARK COUNTY BENCHMARK (6022 2E4), BEING A RIVET AND SQUARE ALUMINUM PLATE IN A CONCRETE CENTERLINE ISLAND, 4' WEST OF THE NOSE IN THE MIDDLE OF SUNSET ROAD, WEST SIDE OF THE INTERSECTION OF BOULDER HIGHWAY AND SUNSET ROAD.

PUBLISHED ELEVATION - 505.816 METERS = 1659.50 FEET
NAVD 1988 DATUM - PUBLISHED (2003)

BASIS OF BEARINGS

SOUTH 85°36'52" WEST, BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND "CC-GIS W51", AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

COORDINATE SYSTEM

THE COORDINATE SYSTEM AND ASSOCIATED BEARING ROTATION INFORMATION WAS ESTABLISHED AND PROVIDED BY PBS&J.

LINE LEGEND

- MAJOR CONTOUR
- MINOR CONTOUR
- SURVEY LIMITS

AS-BUILT MEASUREMENT LOCATION
(SEE ATTACHED REPORT)

No Exception Taken Correct As Noted
 Revise And Resubmit Submit Specified Item Rejected

The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.

Checked By: Date: 10/14/09
 BRC Initials: LCF

BASIC REMEDIATION COMPANY

NO.	REVISION	DATE
△		
△		
△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)

PHASE IIIA PARTIAL INTERIM COVER AS-BUILT

FIELD SURVEY DATE: 10-1-2009 & 10-9-2009
 FIELD CREW: C.G. & T.G.
 PROJECT # 2008.06.23.01

ABSOLUTE BOUNDARY & CONTROL SOLUTIONS
 6440 SKY POINT DRIVE
 SUITE 140 - PMB 321
 LAS VEGAS, NV. 89131
 (702) 953-7452
 (702) 987-5943 FAX
 WWW.AB-CS.COM

Date:	October 12, 2009
Drawn:	C. Givant
Checked:	C. Givant
Task:	2009.10.01.01
Sheet No.	1 of 1



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Phase IIIA Final Interim Cover As-Built - A
Submittal Number:	02200-002GG
Specification Section:	Section 02200, Part 3.14
Drawing Number (s):	15
Page Number:	02200-10
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	10/12/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.

<input checked="" type="checkbox"/> No Exception Taken	<input type="checkbox"/> Correct As Noted
<input type="checkbox"/> Revise And Resubmit	<input type="checkbox"/> Submit Specified Item
<input type="checkbox"/>	<input type="checkbox"/> Rejected
The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.	
Checked By: 	Date: 10/14/09
BRC Initials: 	
BASIC REMEDIATION COMPANY	



SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehringer
ADDRESS: ENTACT Environmental Services
Henderson, Nevada 89011

Date: 10/15/2009	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02200-002HH	Revision No.: - N/A	Date Submittal Rec'd by BRC: 10/14/2009
--	----------------------------	--

Specification Section(s): 01050.3.01 Field Engineering Field Surveys

Submittal Subject: Phase IIIA Final Interim Cover As-Built B

Notations:

- No Exception Taken
- Correct as Noted
- Rejected
- Revise and Resubmit
- Submit Specified Items

Review Comments:

Comment #	Reference	Comment
1		Point 10036 was not included, it shall be included with the Tier 3 interim cover points

Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work

 Design Engineer	10/15/09 Date	 BRC Project Manager Lee Farris, P.E.	10/16/09 Date
 Construction Manager Representative	10/15/09 Date		

Distribution: File



ENTACT

environmental services

699 South Friendswood Drive
Suite 101
Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
ATTENTION: Lee C. Farris, P.E.

DATE: 10/14/09
JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
TRANSMITTAL NUMBER: 333
ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	10/14/09			Submittal 02200-002HH - Phase IIIA Final Interim Cover As-Built - B	RC

ACTION (*)

AR - AS REQUESTED	FA - FOR APPROVAL
F - FILE	RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE
COPY TO: Ranajit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....



10/14/2009

Attn: Erik Gehringer, Project Manager
ENTACT Environmental Services, LLC
699 South Friendswood Drive
Friendswood, TX. 77546

Re: Corrective Action Management Unit (CAMU), Phase IIIA – Partial Interim Cover As-Built

Mr. Gehringer,

Absolute Boundary & Control Solutions (ABCS) recently collected survey data within CAMU Phase IIIA to determine if said area was constructed in a fashion consistent with the Interim Cover Design and coordinates provided by ENTACT. The attached Report reflects the results of this effort.

It should be noted that this report encompasses a portion of Tier 2 (Middle Tier) Only and is being provided solely to reflect those positions that have been As-built as of 10/13/2009 and not previously reported. Upon completion of the Phase IIIA Interim Cover efforts, ABCS will prepare and provide a final report for the entire area.

If you have any questions or if we can be of further assistance do not hesitate to call.

Sincerely,

Craig A. Givant, PLS
President

(702) 953-7452
(702) 839-9750 fax

2009.10.01.01B

<input checked="" type="checkbox"/> No Exception Taken	<input type="checkbox"/> Correct As Noted
<input type="checkbox"/> Revise And Resubmit	<input type="checkbox"/> Submit Specified Item <input type="checkbox"/> Rejected
The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.	
Checked By <u>[Signature]</u>	Date <u>10/15/09</u>
BRC Initials <u>[Signature]</u>	
BASIC REMEDIATION COMPANY	

CAMU PHASE IIIA – Partial Interim Cover As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
10030	510030	16865.28	14408.31	1803.00	1802.95	0.04	-0.03	0.05	As-Built
10031	510031	16865.65	14473.07	1803.00	1802.97	-0.05	0.10	0.03	As-Built
10032	510032	16865.96	14527.53	1803.00	1802.99	0.02	0.13	0.01	As-Built
10033	510033	16866.25	14576.61	1803.00	1802.96	-0.07	0.01	0.04	As-Built
10034	510034	16866.55	14629.22	1803.00	1803.00	-0.08	0.04	0.00	As-Built
10035	510035	16866.90	14689.86	1803.00	1802.98	0.00	0.07	0.02	As-Built
10037	510037	16926.38	14385.58	1801.15	1801.23	-0.04	0.10	-0.08	As-Built
10038	510038	16922.19	14440.10	1801.29	1801.24	0.05	0.03	0.05	As-Built
10039	510039	16918.42	14490.41	1801.41	1801.39	0.00	0.14	0.02	As-Built
10040	510040	16915.29	14532.47	1801.51	1801.47	0.05	0.06	0.04	As-Built
10041	510041	16912.13	14574.66	1801.61	1801.56	0.00	-0.03	0.06	As-Built
10042	510042	16899.42	14612.64	1802.00	1802.04	-0.05	0.02	-0.04	As-Built
10043	510043	16887.34	14648.75	1802.37	1802.31	-0.04	0.08	0.06	As-Built
10044	510044	16875.29	14684.75	1802.74	1802.66	-0.05	-0.02	0.07	As-Built
10045	510045	16873.38	14690.07	1802.80	1802.83	-0.01	0.04	-0.03	As-Built
10046	510046	16855.34	14690.49	1802.65	1802.65	-0.07	0.03	0.01	As-Built
10047	510047	16853.30	14690.50	1802.59	1802.56	-0.02	0.01	0.03	As-Built
10048	510048	16852.61	14688.74	1802.56	1802.60	0.00	0.12	-0.03	As-Built
10049	510049	16842.38	14632.51	1802.26	1802.28	0.05	0.07	-0.01	As-Built
10050	510050	16833.26	14581.10	1802.00	1802.00	-0.10	0.12	0.00	As-Built
10051	510051	16824.85	14531.52	1801.76	1801.73	0.03	0.03	0.03	As-Built
10052	510052	16816.65	14478.71	1801.52	1801.55	-0.08	0.11	-0.03	As-Built

CAMU PHASE IIIA – Partial Interim Cover As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
10053	510053	16807.24	14415.61	1801.25	1801.23	-0.07	0.07	0.02	As-Built
10054	510054	16800.31	14368.18	1801.05	1801.06	-0.03	0.04	-0.01	As-Built

I, Craig A. Givant, a Professional Land Surveyor registered in the State of Nevada, certify (as defined by Nevada Revised Statutes 625.403) that:

1. This report and any Land Surveying Practices (N.R.S. 625.040) on which it is based were performed directly by me or under my responsible charge (N.R.S. 625.080) in accordance with the Standards and Practices Governing Land Surveyors in the State of Nevada as defined by any applicable sections of the Nevada Revised Statutes (N.R.S.) or the Nevada Administrative Code (N.A.C.).
2. By affixing my official seal and signature below I am confirming that I am a Registered Land Surveyor in the State of Nevada and thereby satisfy the requirements of Section 01050, Part 1.03, Subpart A or the Project Technical Specifications.



SURVEY DATA

As required by the project specification Absolute Boundary & Control Solutions (ABCS) utilized field survey methods which resulted in precisions equal to or better than the following:

Horizontal Coordinates: $\pm 1.0'$ (One Foot)

Vertical Coordinates: $\pm 0.10'$ (One Tenth of a Foot)

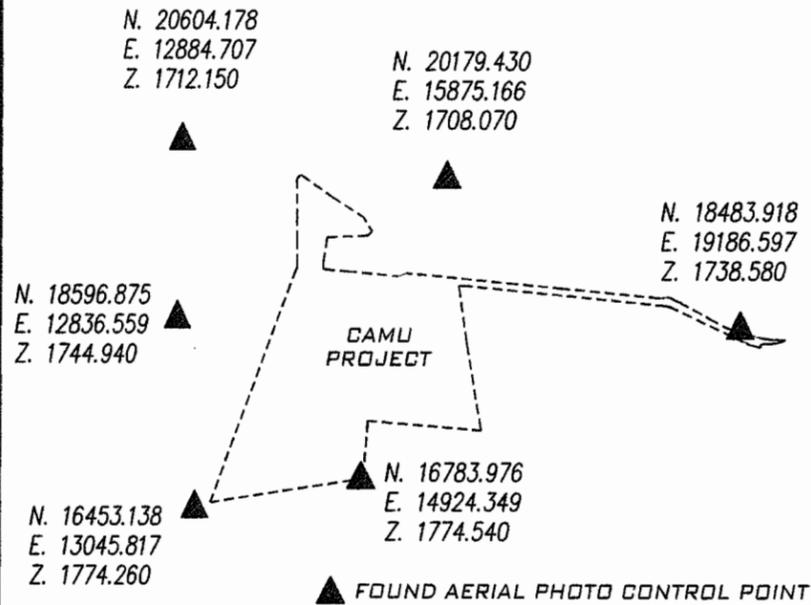
1. Coordinate Printout of the reduced (measured) coordinates from the Field Collection Efforts.

Point No.	Northing	Easting	Elevation	Description
84001	16760.71	14592.88	1777.44	810109
84002	16768.36	14644.51	1777.33	810108
84024	16975.59	14675.52	1771.70	810091
84025	17006.74	14538.54	1770.89	810088
84026	17017.82	14397.37	1770.32	810085
84027	17014.17	14446.25	1770.58	810086
84028	17010.00	14496.60	1770.70	810087
84029	17002.28	14591.27	1771.13	810089
84030	16987.09	14639.28	1771.40	810090
84036	16729.14	14377.61	1776.91	810113
84037	16736.08	14425.27	1777.30	810112
84038	16744.94	14488.16	1777.58	810111
84039	16752.87	14542.99	1777.76	810110
510030	16865.24	14408.34	1802.95	10030
510031	16865.70	14472.98	1802.97	10031
510032	16865.94	14527.40	1802.99	10032
510033	16866.32	14576.59	1802.96	10033
510034	16866.63	14629.18	1803.00	10034
510035	16866.90	14689.79	1802.98	10035
510037	16926.42	14385.48	1801.23	10037
510038	16922.14	14440.07	1801.24	10038
510039	16918.42	14490.28	1801.39	10039
510040	16915.24	14532.41	1801.47	10040
510041	16912.13	14574.68	1801.56	10041
510042	16899.47	14612.62	1802.04	10042
510043	16887.38	14648.66	1802.31	10043
510044	16875.35	14684.77	1802.66	10044

Point No.	Northing	Easting	Elevation	Description
510045	16873.38	14690.04	1802.83	10045
510046	16855.40	14690.46	1802.65	10046
510047	16853.32	14690.49	1802.56	10047
510048	16852.61	14688.63	1802.60	10048
510049	16842.33	14632.44	1802.28	10049
510050	16833.36	14580.98	1802.00	10050
510051	16824.82	14531.49	1801.73	10051
510052	16816.73	14478.60	1801.55	10052
510053	16807.31	14415.54	1801.23	10053
510054	16800.34	14368.13	1801.06	10054

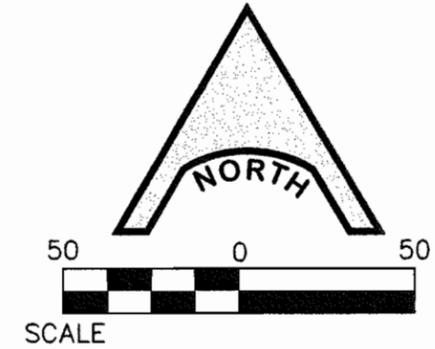
PROJECT CONTROL

1" = 2000'



SURFACE DETAILS

THE SURFACE SHOWN BELOW WAS GENERATED BASED UPON AS-BUILT DATA COLLECTED BY ABSOLUTE BOUNDARY & CONTROL SOLUTIONS. IT REPRESENTS THE EASTERN PORTION OF THE MIDDLE TIER OF THE PHASE IIIA INTERIM CLOSURE DESIGN.



BENCHMARK

CLARK COUNTY BENCHMARK (6C22 2E4), BEING A RIVET AND SQUARE ALUMINUM PLATE IN A CONCRETE CENTERLINE ISLAND, 4' WEST OF THE NOSE IN THE MIDDLE OF SUNSET ROAD, WEST SIDE OF THE INTERSECTION OF BOULDER HIGHWAY AND SUNSET ROAD.

PUBLISHED ELEVATION - 505.816 METERS = 1659.50 FEET
NAVD 1988 DATUM - PUBLISHED (2003)

BASIS OF BEARINGS

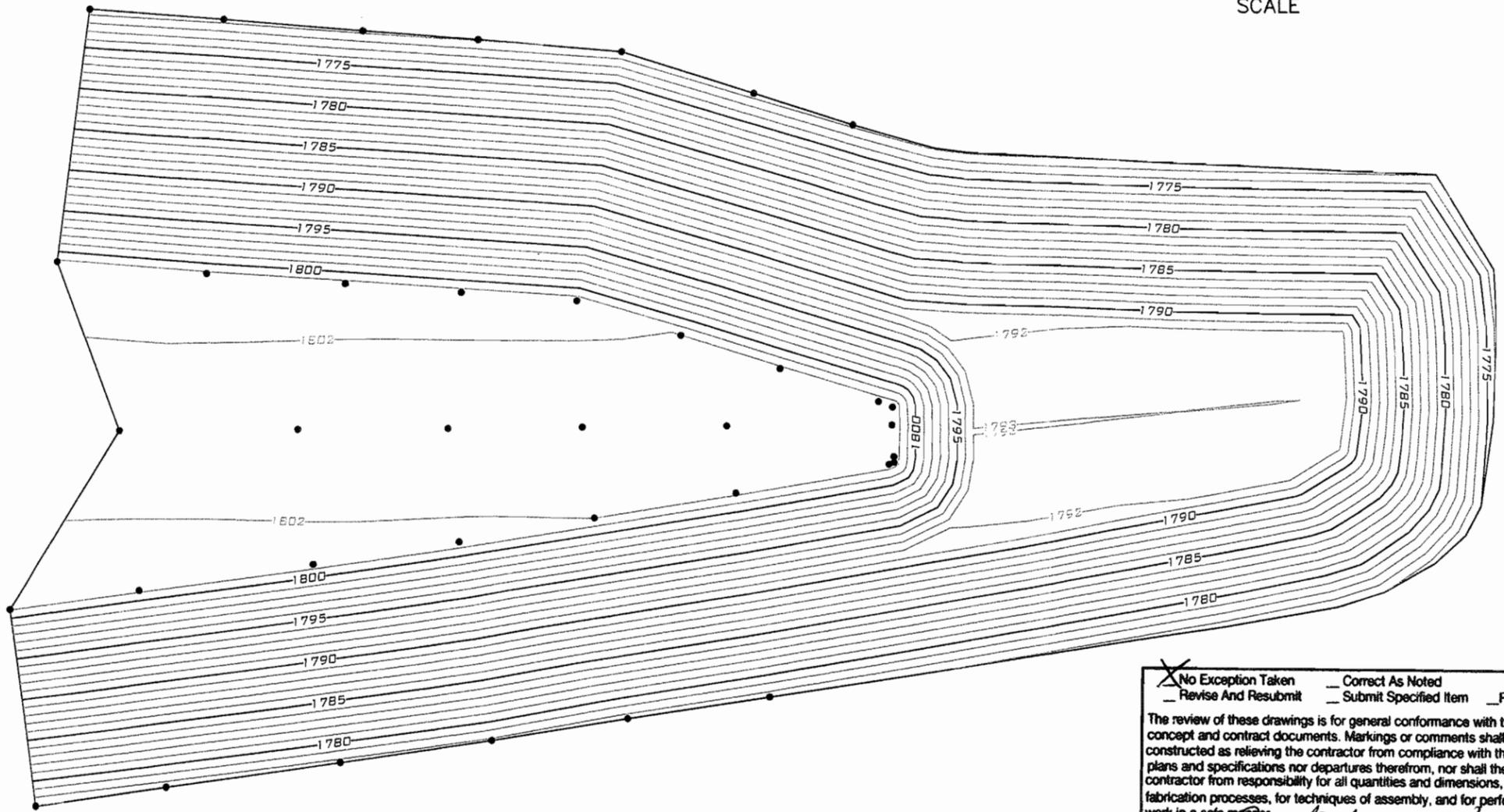
SOUTH 85°36'52" WEST, BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 84B" AND "CC-GIS W51", AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

COORDINATE SYSTEM

THE COORDINATE SYSTEM AND ASSOCIATED BEARING ROTATION INFORMATION WAS ESTABLISHED AND PROVIDED BY PBS&J.

LINE LEGEND

- MAJOR CONTOUR _____
- MINOR CONTOUR _____
- SURVEY LIMITS _____



AS-BUILT MEASUREMENT LOCATION PER THIS REPORT (SEE ATTACHED REPORT)

No Exception Taken Correct As Noted
 Revise And Resubmit Submit Specified Item Rejected

The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.

Checked By: *[Signature]* Date: 10/15/09
 BRC Initials: *[Signature]*

BASIC REMEDIATION COMPANY

NO.	REVISION	DATE
△		
△		
△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)

PHASE IIIA PARTIAL INTERIM COVER AS-BUILT

FIELD SURVEY DATE: 10-9-2009 & 10-13-09
 FIELD CREW: C.G. & T.G.
 PROJECT # 2008.06.23.01

ABSOLUTE BOUNDARY & CONTROL SOLUTIONS

6440 SKY POINT DRIVE
 SUITE 140 - PMB 321
 LAS VEGAS, NV. 89131
 (702) 953-7452
 (702) 987-5943 FAX
 WWW.AB-CS.COM

Date: October 14, 2009
 Drawn: C. Givant
 Checked: C. Givant
 Task: 2009.10.01.01-B

Sheet No. 1 of 1



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Phase IIIA Final Interim Cover As-Built - B
Submittal Number:	02200-002HH
Specification Section:	Section 02200, Part 3.14
Drawing Number (s):	15
Page Number:	02200-10
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	10/14/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.

<input checked="" type="checkbox"/> No Exception Taken	<input type="checkbox"/> Correct As Noted
<input type="checkbox"/> Revise And Resubmit	<input type="checkbox"/> Submit Specified Item <input type="checkbox"/> Rejected
<p>The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.</p>	
Checked By: 	Date: 10/15/09
BRC Initials: 	
BASIC REMEDIATION COMPANY	



875 West Warm Springs Road
Henderson, Nevada 89011
Tel (702) 567-0400 · Fax (702) 567-0475

SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehringer
ADDRESS: ENTACT Environmental Services
Henderson, Nevada 89011

Date: 10/26/2009	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02200-002II	Revision No.: - N/A	Date Submittal Rec'd by BRC: 10/19/2009
--	----------------------------	--

Specification Section(s): 01050.3.01 Field Engineering Field Surveys

Submittal Subject: Phase IIIA Final Interim Cover As-Built C

Notations:

- No Exception Taken
- Correct as Noted
- Rejected
- Revise and Resubmit
- Submit Specified Items

Review Comments:

Comment #	Reference	Comment

Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work

	10/27/09 Date		10/29/09 Date
Design Engineer		BRC Project Manager	
	10/27/09 Date	Lee Farris, P.E.	
Construction Manager Representative			

Distribution: File



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company
 875 West Warm Springs Road
 Henderson, NV 89011
 TEL#: (702)-568-2888 FAX#: (702)-567-0475
 ATTENTION: Lee C. Farris, P.E.

DATE: 10/19/09
 JOB NAME: BRC EASTSIDE COMMON AREAS
 SOIL REMEDIATION PROJECT
 TRANSMITTAL NUMBER: 334
 ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	10/19/09			Submittal 02200-002II - Phase IIIA Final Interim Cover As-Built - C	RC

ACTION (*)

AR - AS REQUESTED	FA - FOR APPROVAL
F - FILE	RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE

COPY TO: Ranajit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....



10/19/2009

Attn: Erik Gehringer, Project Manager
ENTACT Environmental Services, LLC
699 South Friendswood Drive
Friendswood, TX. 77546

Re: Corrective Action Management Unit (CAMU), Phase IIIA – Partial Interim Cover As-Built

Mr. Gehringer,

Absolute Boundary & Control Solutions (ABCS) recently collected survey data within CAMU Phase IIIA to determine if said area was constructed in a fashion consistent with the Interim Cover Design and coordinates provided by ENTACT. The attached Report reflects the results of this effort.

It should be noted that this report encompasses a portion of Tier 2 (Middle Tier) and ALL of Tier 3 (Upper Tier) and is being provided solely to reflect those positions that have been As-built as of 10/19/2009. This report along with the two (2) reports previously provided encompass the entire Phase IIIA Area and a final report reflecting all data will be prepared and provided as soon as possible.

If you have any questions or if we can be of further assistance do not hesitate to call.

Sincerely,

Craig A. Givant, PLS
President

(702) 953-7452
(702) 839-9750 fax

CAMU PHASE IIIA – Partial Interim Cover As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
10000	510000	16822.42	14142.86	1818.27	1818.19	-0.04	0.09	0.08	As-Built
10001	510001	16828.40	14185.01	1818.40	1818.31	-0.02	-0.03	0.09	As-Built
10002	510002	16835.40	14234.62	1818.52	1818.53	0.03	0.06	0.00	As-Built
10003	510003	16840.71	14272.26	1818.62	1818.60	0.10	0.10	0.02	As-Built
10004	510004	16845.60	14309.11	1818.62	1818.55	0.00	-0.01	0.07	As-Built
10005	510005	16873.74	14314.49	1818.46	1818.42	-0.05	-0.01	0.04	As-Built
10006	510006	16894.05	14318.37	1818.61	1818.54	-0.07	0.01	0.06	As-Built
10007	510007	16899.74	14305.39	1818.49	1818.45	0.00	0.07	0.05	As-Built
10008	510008	16916.63	14281.13	1818.31	1818.22	-0.05	-0.11	0.09	As-Built
10009	510009	16959.06	14238.61	1817.95	1817.90	0.04	0.06	0.06	As-Built
10010	510010	16992.55	14207.49	1817.18	1817.10	0.01	0.08	0.08	As-Built
10011	510011	17020.98	14182.87	1815.90	1815.83	-0.01	0.14	0.07	As-Built
10012	510012	16991.92	14175.37	1816.38	1816.38	-0.01	0.05	0.01	As-Built
10013	510013	16948.42	14167.01	1816.69	1816.61	-0.14	0.05	0.08	As-Built
10014	510014	16883.27	14154.57	1817.20	1817.20	0.02	0.03	0.00	As-Built
10015	510015	16792.85	14317.08	1800.83	1800.85	-0.07	0.09	-0.01	As-Built
10016	510016	16808.55	14345.50	1801.30	1801.23	0.02	0.37	0.07	As-Built
10017	510017	16831.74	14356.93	1802.00	1802.02	-0.08	0.13	-0.01	As-Built
10018	510018	16846.91	14357.87	1802.46	1802.50	0.01	0.07	-0.04	As-Built
10019	510019	16865.10	14360.06	1803.00	1802.98	-0.02	0.11	0.02	As-Built
10020	510020	16884.08	14365.76	1802.43	1802.44	-0.13	-0.01	0.00	As-Built
10021	510021	16898.40	14368.03	1802.00	1802.07	-0.01	0.06	-0.07	As-Built

CAMU PHASE IIIA – Partial Interim Cover As-Built

10022	510022	16915.57	14365.13	1801.48	1801.55	0.00	0.05	-0.07	As-Built
10023	510023	16931.42	14355.75	1801.00	1800.93	-0.04	0.02	0.07	As-Built
10024	510024	16943.56	14339.76	1800.63	1800.56	-0.01	-0.02	0.07	As-Built
10025	510025	16798.45	14333.02	1801.00	1800.96	-0.03	0.02	0.04	As-Built
10026	510026	16907.91	14174.16	1817.00	1816.91	0.02	0.04	0.09	As-Built
10027	510027	16886.85	14222.60	1817.47	1817.43	-0.01	0.11	0.04	As-Built
10028	510028	16863.31	14276.77	1818.00	1817.98	-0.10	0.03	0.02	As-Built
10029	510029	16855.42	14310.98	1818.33	1818.26	-0.01	0.04	0.07	As-Built
10036	510036	16928.18	14376.25	1801.10	1801.09	-0.02	0.03	0.01	As-Built

I, Craig A. Givant, a Professional Land Surveyor registered in the State of Nevada, certify (as defined by Nevada Revised Statutes 625.403) that:

1. This report and any Land Surveying Practices (N.R.S. 625.040) on which it is based were performed directly by me or under my responsible charge (N.R.S. 625.080) in accordance with the Standards and Practices Governing Land Surveyors in the State of Nevada as defined by any applicable sections of the Nevada Revised Statutes (N.R.S.) or the Nevada Administrative Code (N.A.C.).
2. By affixing my official seal and signature below I am confirming that I am a Registered Land Surveyor in the State of Nevada and thereby satisfy the requirements of Section 01050, Part 1.03, Subpart A or the Project Technical Specifications.



SURVEY DATA

As required by the project specification Absolute Boundary & Control Solutions (ABCS) utilized field survey methods which resulted in precisions equal to or better than the following:

Horizontal Coordinates: $\pm 1.0'$ (One Foot)

Vertical Coordinates: $\pm 0.10'$ (One Tenth of a Foot)

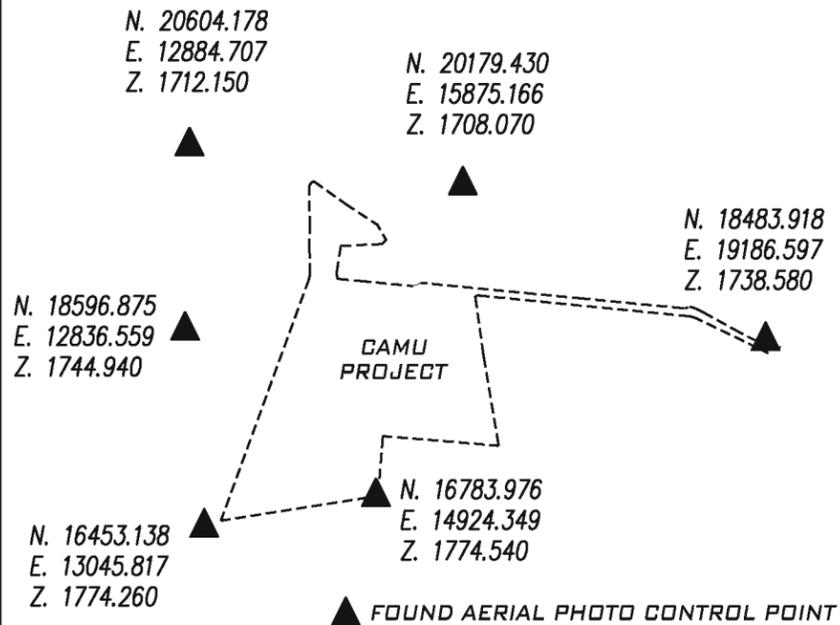
1. Coordinate Printout of the reduced (measured) coordinates from the Field Collection Efforts.

Point No.	Northing	Easting	Elevation	Description
84031	16697.01	14159.37	1776.41	810118
84032	16703.31	14201.75	1776.41	810117
84033	16710.80	14251.30	1776.59	810116
84034	16716.12	14288.90	1776.66	810115
84035	16721.46	14326.87	1776.82	810114
84042	17027.20	14375.29	1770.40	710084
84043	17060.93	14339.48	1770.16	710082
84045	17028.29	14372.61	1770.35	710083
84046	17093.47	14306.57	1769.97	710081
84047	17119.95	14280.40	1769.89	710080
510000	16822.46	14142.78	1818.19	10000
510001	16828.42	14185.05	1818.31	10001
510002	16835.37	14234.56	1818.53	10002
510003	16840.61	14272.15	1818.60	10003
510004	16845.61	14309.12	1818.55	10004
510005	16873.78	14314.50	1818.42	10005
510006	16894.12	14318.37	1818.54	10006
510007	16899.74	14305.32	1818.45	10007
510008	16916.69	14281.24	1818.22	10008
510009	16959.02	14238.55	1817.90	10009
510010	16992.53	14207.40	1817.10	10010
510011	17020.99	14182.74	1815.83	10011
510012	16991.94	14175.32	1816.38	10012
510013	16948.56	14166.96	1816.61	10013
510014	16883.25	14154.54	1817.20	10014
510015	16792.92	14316.99	1800.85	10015
510016	16808.53	14345.13	1801.23	10016
510017	16831.82	14356.80	1802.02	10017

Point No.	Northing	Easting	Elevation	Description
510018	16846.90	14357.80	1802.50	10018
510019	16865.12	14359.95	1802.98	10019
510020	16884.21	14365.77	1802.44	10020
510021	16898.42	14367.98	1802.07	10021
510022	16915.57	14365.08	1801.55	10022
510023	16931.46	14355.73	1800.93	10023
510024	16943.56	14339.78	1800.56	10024
510025	16798.48	14333.00	1800.96	10025
510026	16907.89	14174.12	1816.91	10026
510027	16886.86	14222.50	1817.43	10027
510028	16863.41	14276.74	1817.98	10028
510029	16855.42	14310.95	1818.26	10029
510036	16928.20	14376.22	1801.09	10036

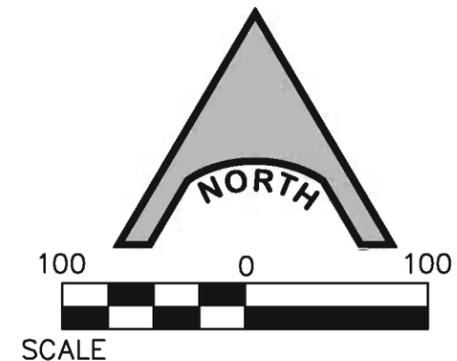
PROJECT CONTROL

1" = 2000'



SURFACE DETAILS

THE SURFACE SHOWN BELOW WAS GENERATED BASED UPON AS-BUILT DATA COLLECTED BY ABSOLUTE BOUNDARY & CONTROL SOLUTIONS. IT REPRESENTS THE REMAINING LOCATIONS NOT PREVIOUSLY REPORTED PURSUANT TO THE PHASE IIIA INTERIM CLOSURE VERIFICATION.



BENCHMARK

CLARK COUNTY BENCHMARK (6C22 2E4), BEING A RIVET AND SQUARE ALUMINUM PLATE IN A CONCRETE CENTERLINE ISLAND, 4' WEST OF THE NOSE IN THE MIDDLE OF SUNSET ROAD, WEST SIDE OF THE INTERSECTION OF BOULDER HIGHWAY AND SUNSET ROAD.

PUBLISHED ELEVATION - 505.816 METERS = 1659.50 FEET
NAVD 1988 DATUM - PUBLISHED (2003)

BASIS OF BEARINGS

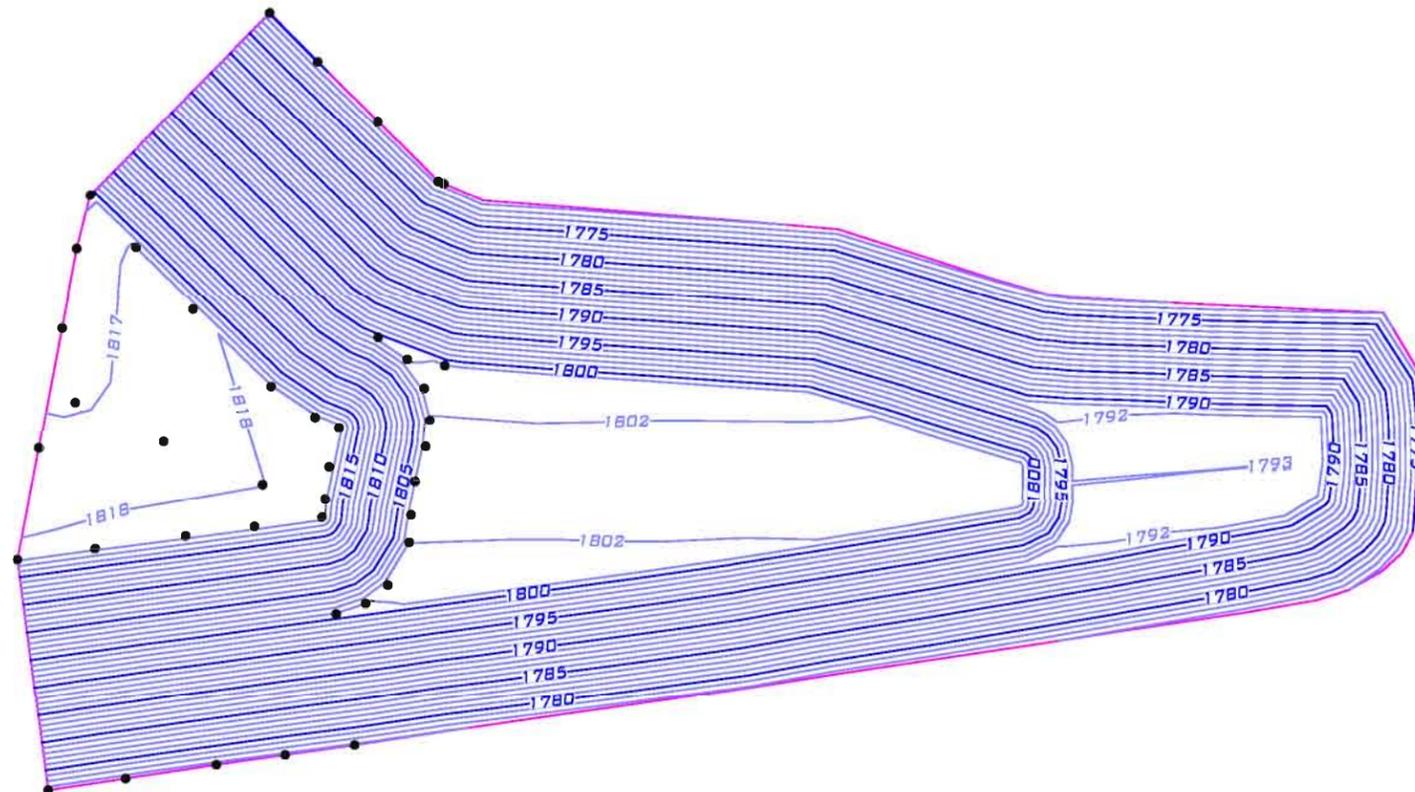
SOUTH 85°36'52" WEST, BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND CC-GIS W51", AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

COORDINATE SYSTEM

THE COORDINATE SYSTEM AND ASSOCIATED BEARING ROTATION INFORMATION WAS ESTABLISHED AND PROVIDED BY PBS&J.

LINE LEGEND

- MAJOR CONTOUR
- MINOR CONTOUR
- SURVEY LIMITS



NO.	REVISION	DATE
△		
△		
△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)

PHASE IIIA PARTIAL INTERIM COVER AS-BUILT

FIELD SURVEY DATE: 10/19/2009
FIELD CREW: G.G. & M.G.

PROJECT # 2008.06.23.01



ABSOLUTE BOUNDARY & CONTROL SOLUTIONS

6440 SKY POINT DRIVE
SUITE 140 - PMB 321
LAS VEGAS, NV. 89131
(702) 953-7452
(702) 987-5943 FAX
WWW.AB-CS.COM

Date: October 19, 2009
Drawn: C. Givant
Checked: C. Givant
Task: 2009.10.01.01-C

Sheet No. 1 of 1



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Phase IIIA Final Interim Cover As-Built - C
Submittal Number:	02200-002II
Specification Section:	Section 02200, Part 3.14
Drawing Number (s):	15
Page Number:	02200-10
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	10/19/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



875 West Warm Springs Road
Henderson, Nevada 89011
Tel (702) 567-0400 · Fax (702) 567-0475

SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehring
ADDRESS: ENTACT Environmental Services
Henderson, Nevada 89011

Date: 11/10/2009	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02200-002JJ	Revision No.: - N/A	Date Submittal Rec'd by BRC: 11/09/2009
--	----------------------------	--

Specification Section(s): 01050.3.01 Field Engineering Field Surveys

Submittal Subject: Phase II Interim Closure Final Waste Surface As-Built

- Notations:**
- No Exception Taken
 - Correct as Noted
 - Rejected
 - Revise and Resubmit
 - Submit Specified Items

Review Comments:

Comment #	Reference	Comment

Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work

Design Engineer	11/11/09 Date	BRC Project Manager	11/12/09 Date
Construction Manager Representative	11/16/09 Date		

Distribution: File



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
 ATTENTION: Lee C. Farris, P.E.

DATE: 11/9/09
 JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
 TRANSMITTAL NUMBER: 342
 ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	11/9/09			Submittal 02200-002JJ - Phase II Interim Closure Final Waste Surface As-Built	RC

ACTION (*)

AR - AS REQUESTED	FA - FOR APPROVAL
F - FILE	RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE
 COPY TO: Ranajit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....



11/09/2009

Attn: Erik Gehringer, Project Manager
ENTACT Environmental Services, LLC
699 South Friendswood Drive
Friendswood, TX. 77546

Re: Corrective Action Management Unit (CAMU), Phase II – Partial Waste As-Built

Mr. Gehringer,

Absolute Boundary & Control Solutions (ABCS) recently collected survey data within CAMU Phase II to determine if said area was constructed in a fashion consistent with the Final Waste Design and coordinates provided by ENTACT. The attached Report reflects the results of this effort.

It should be noted that this report ONLY covers that portion of Phase II in which interim closure activities are currently taking place and is being provided in advance of a complete and final report which will be prepared in accordance with the Project Technical Specifications and provided at a later date.

If you have any questions or if we can be of further assistance do not hesitate to call.

Sincerely,

Craig A. Givant, PLS
President

(702) 953-7452
(702) 839-9750 fax

CAMU PHASE II – Partial Waste As-Built

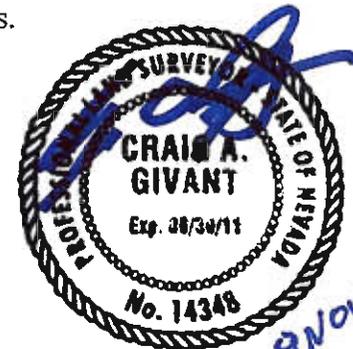
Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
34030	23339	16813.05	14080.17	1817.08	1817.04	0.00	-0.01	0.04	As-Built
34031	23340	16805.48	14033.98	1816.84	1816.81	0.01	-0.05	0.03	As-Built
34032	23342	16801.68	13982.12	1818.13	1818.07	0.02	-0.02	0.05	As-Built
34033	23343	16795.02	13912.36	1819.35	1819.33	-0.03	0.02	0.02	As-Built
34034	23344	16788.12	13859.89	1819.65	1819.62	-0.06	-0.03	0.03	As-Built
34035	23345	16779.89	13805.79	1819.59	1819.56	-0.05	0.01	0.03	As-Built
34036	23346	16770.45	13746.70	1819.37	1819.35	-0.06	-0.02	0.02	As-Built
34037	23347	16760.37	13684.19	1819.11	1819.09	-0.03	-0.01	0.02	As-Built
34038	23349	16752.42	13626.04	1819.34	1819.33	-0.02	0.00	0.01	As-Built
34039	23350	16745.81	13571.83	1819.81	1819.78	-0.05	0.00	0.03	As-Built
34040	23351	16740.50	13527.48	1820.23	1820.16	-0.02	0.05	0.07	As-Built
34041	23352	16810.43	13550.99	1819.00	1818.99	0.01	-0.02	0.01	As-Built
34042	23353	16856.42	13566.08	1818.00	1817.99	0.02	0.00	0.01	As-Built
34043	23354	16915.24	13585.39	1816.72	1816.68	0.02	0.04	0.04	As-Built
34044	23355	16985.96	13611.15	1815.63	1815.61	-0.01	0.02	0.02	As-Built
34067	23341	16804.76	14024.38	1816.70	1816.67	0.06	0.00	0.04	As-Built
34068	23348	16756.80	13659.24	1819.15	1819.14	-0.01	-0.02	0.01	As-Built
50040	23384	16903.99	14027.10	1813.79	1813.77	0.01	0.01	0.02	As-Built
50041	23382	16853.57	14027.10	1815.23	1815.20	0.01	0.02	0.03	As-Built
50042	23378	16874.42	13866.40	1818.54	1818.50	0.01	0.02	0.04	As-Built
50065	23462	16880.52	13819.39	1818.05	1818.00	0.01	0.02	0.06	As-Built
50066	23379	16867.53	13919.51	1817.91	1817.88	0.01	-0.03	0.03	As-Built

CAMU PHASE II – Partial Waste As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
50067	23381	16861.35	13967.14	1816.72	1816.72	0.02	0.00	0.01	As-Built
50126	23368	16951.26	13662.83	1815.21	1815.18	-0.02	-0.03	0.03	As-Built
50127	23369	16902.83	13647.48	1816.01	1815.99	-0.03	0.03	0.03	As-Built
50128	23386	16843.56	14104.18	1816.51	1816.50	-0.05	-0.02	0.01	As-Built
50129	23385	16894.35	14101.34	1815.55	1815.52	-0.02	0.02	0.03	As-Built
50162	23377	16824.55	13862.20	1819.23	1819.23	-0.03	0.01	0.01	As-Built
50163	23373	16847.39	13686.16	1816.70	1816.68	0.00	0.05	0.02	As-Built
50164	23372	16798.23	13672.10	1818.00	1817.99	0.00	0.02	0.01	As-Built
50165	23383	16826.71	14027.10	1816.00	1816.00	-0.03	0.00	0.00	As-Built
50166	23371	16805.97	13616.79	1818.43	1818.41	0.02	0.00	0.03	As-Built
50167	23370	16854.40	13632.14	1817.26	1817.25	0.06	0.04	0.01	As-Built
50168	23375	16837.53	13762.13	1818.24	1818.20	0.00	0.00	0.03	As-Built
50169	23376	16830.95	13812.88	1818.79	1818.78	-0.02	0.03	0.01	As-Built
50170	23380	16817.94	13913.08	1818.97	1818.97	0.00	-0.05	0.00	As-Built

I, Craig A. Givant, a Professional Land Surveyor registered in the State of Nevada, certify (as defined by Nevada Revised Statutes 625.403) that:

1. This report and any Land Surveying Practices (N.R.S. 625.040) on which it is based were performed directly by me or under my responsible charge (N.R.S. 625.080) in accordance with the Standards and Practices Governing Land Surveyors in the State of Nevada as defined by any applicable sections of the Nevada Revised Statutes (N.R.S.) or the Nevada Administrative Code (N.A.C.).
2. By affixing my official seal and signature below I am confirming that I am a Registered Land Surveyor in the State of Nevada and thereby satisfy the requirements of Section 01050, Part 1.03, Subpart A or the Project Technical Specifications.



SURVEY DATA

As required by the project specification Absolute Boundary & Control Solutions (ABCS) utilized field survey methods which resulted in precisions equal to or better than the following:

Horizontal Coordinates: $\pm 1.0'$ (One Foot)

Vertical Coordinates: $\pm 0.10'$ (One Tenth of a Foot)

1. Coordinate Printout of the reduced (measured) coordinates from the Field Collection Efforts.

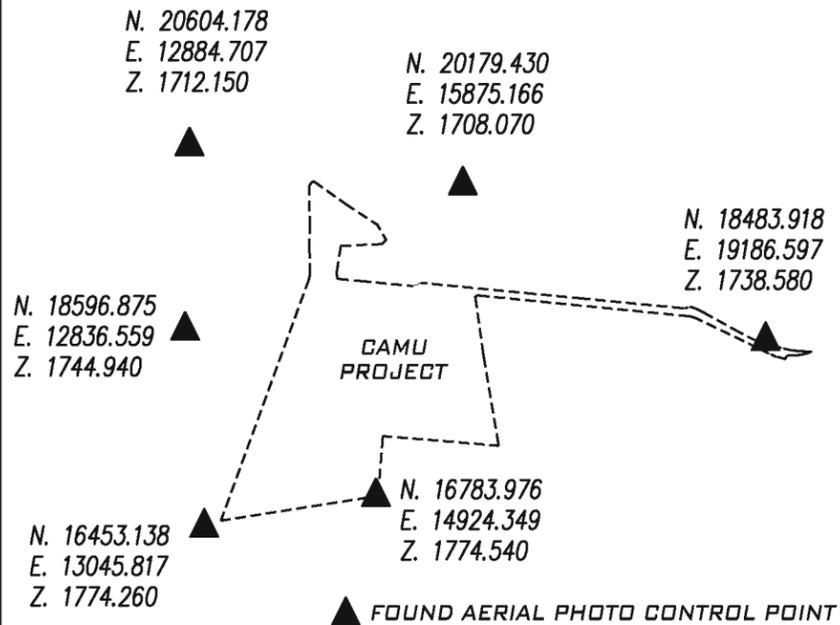
Point No.	Northing	Easting	Elevation	Description
23023	17034.85	13475.93	1767.61	toe-1
23025	17018.04	13522.28	1784.13	mid
23026	16945.96	13500.80	1786.74	mid
23027	16964.64	13450.38	1768.63	toe-1
23029	16905.64	13428.71	1769.19	toe-1
23031	16885.59	13485.90	1789.56	mid
23032	16839.99	13469.73	1790.14	mid
23033	16861.16	13412.09	1769.55	toe-1
23035	16789.25	13385.76	1770.15	toe-1
23037	16745.85	13377.83	1770.59	toe-1
23039	16707.02	13380.98	1771.02	toe-1
23041	16654.45	13405.34	1771.60	toe-1
23043	16627.67	13432.01	1771.81	toe-1
23045	16608.47	13465.45	1772.37	toe-1
23047	16600.07	13502.27	1772.79	toe-1
23049	16599.89	13538.63	1773.11	toe-1
23051	16607.90	13594.27	1773.30	toe-1
23053	16617.14	13647.88	1773.54	toe-1
23055	16626.41	13705.94	1773.78	toe-1
23057	16636.95	13768.56	1774.08	toe-1
23059	16646.11	13827.20	1774.32	toe-1
23061	16654.19	13881.69	1774.47	toe-1
23064	16770.50	13439.88	1789.34	mid
23065	16743.59	13440.45	1791.61	mid
23066	16721.97	13446.18	1793.07	mid
23067	16694.24	13461.85	1794.20	mid
23068	16678.47	13475.07	1793.76	mid
23069	16671.11	13494.96	1795.19	mid

Point No.	Northing	Easting	Elevation	Description
23070	16666.77	13514.14	1795.54	mid
23071	16667.88	13533.42	1795.92	mid
23072	16674.36	13583.40	1795.65	mid
23073	16680.72	13637.68	1795.08	mid
23074	16688.27	13695.88	1794.74	mid
23075	16696.60	13758.73	1794.38	mid
23076	16704.62	13818.00	1794.10	mid
23077	16713.50	13872.04	1794.41	mid
23079	16663.20	13933.89	1774.69	toe-1
23081	16721.96	13924.23	1794.64	mid
23084	16735.94	13992.80	1795.90	mid
23085	16674.49	14002.78	1774.96	toe-1
23087	16682.78	14053.60	1775.21	toe-1
23089	16741.66	14044.33	1795.26	mid
23090	16754.80	14089.66	1797.37	mid
23093	16692.17	14115.02	1775.48	toe-1
23094	16726.34	14112.55	1786.88	mid
23339	16813.05	14080.19	1817.04	top
23339	16813.05	14080.19	1817.04	top
23340	16805.47	14034.04	1816.81	top
23340	16805.47	14034.04	1816.81	top
23341	16804.70	14024.38	1816.67	top
23342	16801.66	13982.15	1818.07	top
23343	16795.05	13912.34	1819.33	top
23344	16788.18	13859.92	1819.62	top
23345	16779.95	13805.78	1819.56	top
23346	16770.50	13746.72	1819.35	top
23347	16760.40	13684.20	1819.09	top
23348	16756.81	13659.27	1819.14	top
23349	16752.44	13626.04	1819.33	top
23350	16745.86	13571.83	1819.78	top
23351	16740.52	13527.43	1820.16	top
23352	16810.42	13551.01	1818.99	top
23353	16856.40	13566.08	1817.99	top
23354	16915.22	13585.35	1816.68	top
23355	16985.98	13611.13	1815.61	top
23368	16951.27	13662.86	1815.18	50126
23369	16902.86	13647.45	1815.99	50127
23370	16854.34	13632.10	1817.25	50167
23371	16805.96	13616.79	1818.41	50166

Point No.	Northing	Easting	Elevation	Description
23372	16798.23	13672.08	1817.99	main fl
23373	16847.39	13686.11	1816.68	main fl
23375	16837.53	13762.14	1818.20	50168
23376	16830.97	13812.86	1818.78	50169
23377	16824.58	13862.20	1819.23	crest
23378	16874.42	13866.38	1818.50	crest
23379	16867.52	13919.54	1817.88	50066
23380	16817.94	13913.13	1818.97	50170
23381	16861.33	13967.15	1816.72	50067
23382	16853.56	14027.08	1815.20	main fl
23383	16826.74	14027.09	1816.00	main fl
23384	16903.97	14027.08	1813.77	main fl
23385	16894.38	14101.31	1815.52	50129
23386	16843.61	14104.20	1816.50	50128
23447	16689.73	14100.18	1775.41	34027
23462	16880.52	13819.37	1818.00	50065
23462	16880.52	13819.37	1818.00	50065

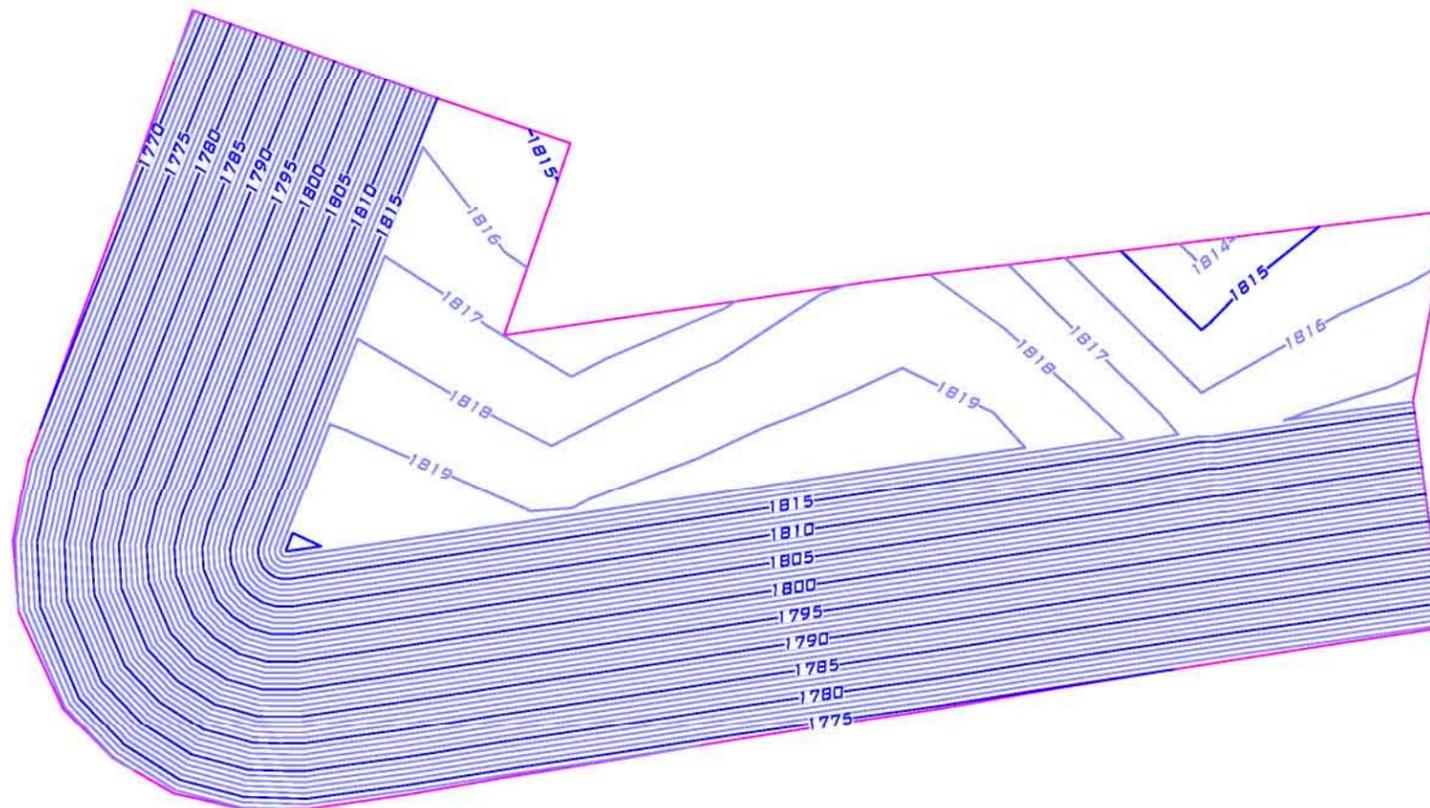
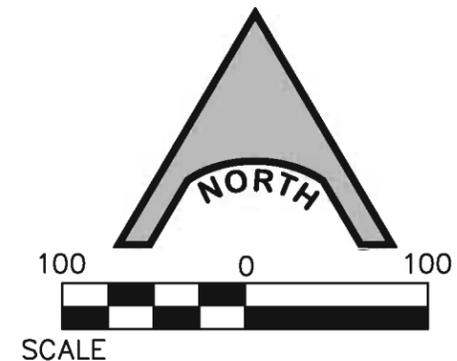
PROJECT CONTROL

1" = 2000'



SURFACE DETAILS

THE SURFACE SHOWN BELOW WAS GENERATED BASED UPON AS-BUILT DATA COLLECTED BY ABSOLUTE BOUNDARY & CONTROL SOLUTIONS. IT REPRESENTS THE FINAL CAMU PHASE II WASTE PLACEMENT WITHIN THE CURRENT INTERIM CLOSURE AREA.



BENCHMARK

CLARK COUNTY BENCHMARK (6C22 2E4), BEING A RIVET AND SQUARE ALUMINUM PLATE IN A CONCRETE CENTERLINE ISLAND, 4' WEST OF THE NOSE IN THE MIDDLE OF SUNSET ROAD, WEST SIDE OF THE INTERSECTION OF BOULDER HIGHWAY AND SUNSET ROAD.

PUBLISHED ELEVATION - 505.816 METERS = 1659.50 FEET
 NAVD 1988 DATUM - PUBLISHED (2003)

BASIS OF BEARINGS

SOUTH 85°36'52" WEST, BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 84B" AND CC-GIS W51", AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

COORDINATE SYSTEM

THE COORDINATE SYSTEM AND ASSOCIATED BEARING ROTATION INFORMATION WAS ESTABLISHED AND PROVIDED BY PBS&J.

LINE LEGEND

- MAJOR CONTOUR
- MINOR CONTOUR
- SURVEY LIMITS

NO.	REVISION	DATE
△		
△		
△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)

PHASE II - PARTIAL WASTE AS-BUILT

SOUTH / SOUTHWEST INTERIM CLOSURE AREA

FIELD SURVEY DATE: JULY 6, 2009 & NOVEMBER 4, 2009
 FIELD CREW: G.G., M.G., T.G.

PROJECT # 2008.06.23.01



ABSOLUTE BOUNDARY & CONTROL SOLUTIONS

6440 SKY POINT DRIVE
 SUITE 140 - PMB 321
 LAS VEGAS, NV. 89131
 (702) 953-7452
 (702) 987-5943 FAX
 WWW.AB-CS.COM

Date: November 9, 2009
 Drawn: C. Givant
 Checked: C. Givant
 Task: 2009.11.05.02 - A

Sheet No. 1 of 1



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Phase II Interim Closure Final Waste Surface As-Built
Submittal Number:	02200-002JJ
Specification Section:	Section 02200, Part 3.14
Drawing Number (s):	15
Page Number:	02200-10
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	11/9/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



875 West Warm Springs Road
Henderson, Nevada 89011
Tel (702) 567-0400 · Fax (702) 567-0475

SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehring
ADDRESS: ENTACT Environmental Services
Henderson, Nevada 89011

Date: 11/11/2009	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02200-002KK	Revision No.: - N/A	Date Submittal Rec'd by BRC: 11/09/2009
--	----------------------------	--

Specification Section(s): 01050.3.01 Field Engineering Field Surveys

Submittal Subject: Phase II Interim Closure Cover As Built A

Notations:

- No Exception Taken
- Correct as Noted
- Rejected
- Revise and Resubmit
- Submit Specified Items

Review Comments:

Comment #	Reference	Comment

Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work

<p>Design Engineer Date 11/11/09</p>	<p>BRC Project Manager Date 11/12/09</p> <p>Lee Farris, P.E</p>
<p>Construction Manager Representative Date 11/12/09</p>	

Distribution: File



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company
 875 West Warm Springs Road
 Henderson, NV 89011
 TEL#: (702)-568-2888 FAX#: (702)-567-0475
 ATTENTION: Lee C. Farris, P.E.

DATE: 11/9/09
 JOB NAME: BRC EASTSIDE COMMON AREAS
 SOIL REMEDIATION PROJECT
 TRANSMITTAL NUMBER: 345
 ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	11/9/09			Submittal 02200-002KK - Phase II Interim Closure Interim Cover As-Built -A	RC

ACTION (*)

AR - AS REQUESTED	FA - FOR APPROVAL
F - FILE	RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE
 COPY Ranajit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237
 TO: _____

If enclosures are not as noted, please notify us at once.....



11/9/2009

Attn: Erik Gehringer, Project Manager
ENTACT Environmental Services, LLC
699 South Friendswood Drive
Friendswood, TX. 77546

Re: Corrective Action Management Unit (CAMU), Phase II – Partial Interim Cover As-Built

Mr. Gehringer,

Absolute Boundary & Control Solutions (ABCS) recently collected survey data within CAMU Phase II to determine if said area was constructed in a fashion consistent with the Interim Closure Design and coordinates provided by ENTACT. The attached Report reflects the results of this effort.

It should be noted that this report covers ONLY that area of Phase II along the South and Southwest portions and is being provided solely to reflect those positions that have been As-built as of 11/5/2009. A final report reflecting all of Phase II will be prepared and provided in the future.

If you have any questions or if we can be of further assistance do not hesitate to call.

Sincerely,

Craig A. Givant, PLS
President

(702) 953-7452
(702) 839-9750 fax

CAMU PHASE II – Partial Interim Cover As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
10530	510530	16812.89	14080.21	1818.08	1818.12	0.06	-0.02	-0.04	As-Built
10531	510531	16805.32	14034.00	1817.84	1817.87	0.02	0.02	-0.02	As-Built
10532	510532	16801.51	13982.14	1819.13	1819.12	-0.08	0.05	0.01	As-Built
10533	510533	16794.86	13912.39	1820.35	1820.37	0.02	-0.01	-0.02	As-Built
10534	510534	16787.98	13859.92	1820.66	1820.64	0.01	-0.01	0.02	As-Built
10535	510535	16779.73	13805.82	1820.59	1820.52	-0.02	0.02	0.06	As-Built
10536	510536	16770.29	13746.76	1820.37	1820.36	-0.08	0.03	0.01	As-Built
10537	510537	16760.21	13684.21	1820.11	1820.07	-0.01	0.05	0.03	As-Built
10538	510538	16752.26	13626.06	1820.34	1820.31	0.05	0.11	0.02	As-Built
10539	510539	16745.65	13571.87	1820.81	1820.76	-0.07	0.03	0.05	As-Built
10540	510540	16740.31	13527.25	1821.23	1821.18	0.04	-0.03	0.06	As-Built
10541	510541	16810.51	13550.78	1819.98	1819.90	0.00	0.11	0.08	As-Built
10542	510542	16856.53	13565.88	1819.00	1818.97	0.03	0.11	0.03	As-Built
10543	510543	16912.27	13584.22	1817.79	1817.80	-0.08	0.13	-0.01	As-Built
10544	510544	16986.00	13610.99	1816.63	1816.63	-0.03	0.08	0.00	As-Built
10567	510567	16804.60	14024.38	1817.65	1817.67	-0.02	-0.01	-0.02	As-Built
10568	510568	16756.64	13659.27	1820.04	1820.00	-0.12	0.00	0.05	As-Built
10652	510652	16951.26	13662.83	1816.20	1816.23	0.07	0.01	-0.03	As-Built
10653	510653	16902.83	13647.48	1817.01	1816.99	0.03	0.02	0.03	As-Built
10654	510654	16854.40	13632.14	1818.26	1818.24	0.16	0.04	0.03	As-Built
10655	510655	16805.97	13616.79	1819.43	1819.34	-0.02	0.13	0.09	As-Built
10656	510656	16798.23	13672.10	1819.00	1818.95	-0.02	0.09	0.05	As-Built
10657	510657	16847.39	13686.16	1817.70	1817.68	-0.07	0.05	0.02	As-Built

CAMU PHASE II – Partial Interim Cover As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
10688	510688	16880.52	13819.39	1819.06	1819.09	0.03	0.04	-0.04	As-Built
10689	510689	16837.53	13762.13	1819.24	1819.15	-0.02	0.08	0.09	As-Built
10690	510690	16830.95	13812.88	1819.81	1819.76	0.03	0.08	0.05	As-Built
10691	510691	16824.55	13862.20	1820.23	1820.17	0.02	0.02	0.06	As-Built
10692	510692	16874.42	13866.40	1819.54	1819.51	0.06	-0.05	0.03	As-Built
10715	510715	16867.53	13919.51	1818.91	1818.82	-0.23	0.11	0.09	As-Built
10716	510716	16817.94	13913.08	1819.98	1819.92	-0.06	0.04	0.06	As-Built
10717	510717	16861.35	13967.14	1817.72	1817.66	-0.04	0.19	0.06	As-Built
10735	510735	16853.57	14027.10	1816.23	1816.24	-0.05	-0.01	0.00	As-Built
10736	510736	16826.71	14027.10	1817.00	1816.95	0.05	0.14	0.05	As-Built
10737	510737	16843.56	14104.18	1817.50	1817.49	0.01	0.09	0.01	As-Built
10738	510738	16894.35	14101.34	1816.54	1816.50	-0.06	0.07	0.05	As-Built

I, Craig A. Givant, a Professional Land Surveyor registered in the State of Nevada, certify (as defined by Nevada Revised Statutes 625.403) that:

1. This report and any Land Surveying Practices (N.R.S. 625.040) on which it is based were performed directly by me or under my responsible charge (N.R.S. 625.080) in accordance with the Standards and Practices Governing Land Surveyors in the State of Nevada as defined by any applicable sections of the Nevada Revised Statutes (N.R.S.) or the Nevada Administrative Code (N.A.C.).
2. By affixing my official seal and signature below I am confirming that I am a Registered Land Surveyor in the State of Nevada and thereby satisfy the requirements of Section 01050, Part 1.03, Subpart A or the Project Technical Specifications.



SURVEY DATA

As required by the project specification Absolute Boundary & Control Solutions (ABCS) utilized field survey methods which resulted in precisions equal to or better than the following:

Horizontal Coordinates: $\pm 1.0'$ (One Foot)

Vertical Coordinates: $\pm 0.10'$ (One Tenth of a Foot)

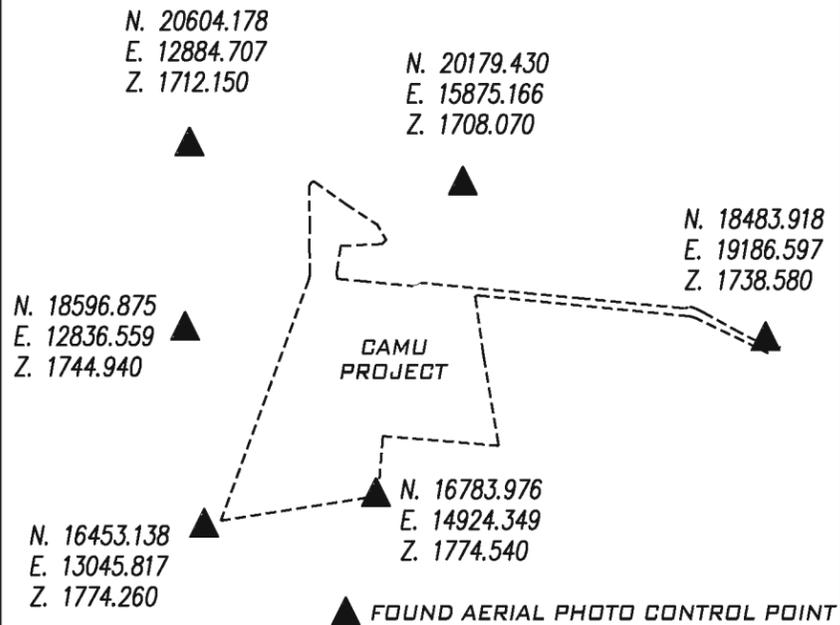
1. Coordinate Printout of the reduced (measured) coordinates from the Field Collection Efforts.

Point No.	Northing	Easting	Elevation	Description
84048	16933.20	14120.04	1816.22	160036
84049	16904.04	14027.09	1814.87	110734
84050	16889.65	13867.83	1819.30	1100506
84051	16864.41	13691.01	1817.21	1100507
84052	16875.58	13767.51	1818.21	1100511
84053	16901.00	13960.71	1816.74	139
84054	16857.89	13645.81	1817.99	1100502
84055	16899.50	13660.32	1816.84	1100509
84056	16962.27	13682.09	1815.55	1100501
510530	16812.84	14080.23	1818.12	10530
510531	16805.30	14033.99	1817.87	10531
510532	16801.60	13982.09	1819.12	10532
510533	16794.85	13912.40	1820.37	10533
510534	16787.97	13859.94	1820.64	10534
510535	16779.76	13805.80	1820.52	10535
510536	16770.38	13746.73	1820.36	10536
510537	16760.22	13684.16	1820.07	10537
510538	16752.21	13625.95	1820.31	10538
510539	16745.72	13571.84	1820.76	10539
510540	16740.27	13527.28	1821.18	10540
510541	16810.52	13550.67	1819.90	10541
510542	16856.50	13565.77	1818.97	10542
510543	16912.35	13584.09	1817.80	10543
510544	16986.03	13610.91	1816.63	10544
510567	16804.63	14024.39	1817.67	10567
510568	16756.77	13659.27	1820.00	10568
510652	16951.19	13662.82	1816.23	10652
510653	16902.80	13647.47	1816.99	10653
510654	16854.24	13632.10	1818.24	10654

Point No.	Northing	Easting	Elevation	Description
510655	16805.99	13616.67	1819.34	10655
510656	16798.25	13672.01	1818.95	10656
510657	16847.46	13686.11	1817.68	10657
510688	16880.49	13819.35	1819.09	10688
510689	16837.56	13762.06	1819.15	10689
510690	16830.91	13812.80	1819.76	10690
510691	16824.53	13862.19	1820.17	10691
510692	16874.36	13866.45	1819.51	10692
510715	16867.76	13919.41	1818.82	10715
510716	16818.01	13913.04	1819.92	10716
510717	16861.38	13966.95	1817.66	10717
510735	16853.61	14027.10	1816.24	10735
510736	16826.65	14026.95	1816.95	10736
510737	16843.55	14104.09	1817.49	10737
510738	16894.42	14101.27	1816.50	10738
1084025	16706.82	13379.54	1771.68	110514
1084026	16653.80	13404.06	1772.17	110515
1084027	16674.25	13392.30	1771.96	INT-TOE
1084028	16626.23	13431.15	1772.49	110516
1084029	16641.05	13415.07	1772.26	INT-TOE
1084030	16614.32	13449.17	1772.61	INT-TOE
1084031	16607.32	13464.88	1773.01	110517
1084032	16601.91	13482.63	1773.04	INT-TOE
1084033	16598.93	13501.91	1773.26	110528
1084034	16597.31	13526.91	1773.63	INT-TOE
1084035	16598.62	13539.08	1773.72	110529
1084036	16606.40	13594.50	1773.94	110518
1084037	16615.53	13648.25	1774.11	110519
1084038	16624.87	13706.15	1774.47	110520
1084039	16634.74	13768.74	1774.60	110521
1084040	16644.40	13827.83	1774.90	110522
1084041	16652.95	13881.90	1775.07	110523
1084042	16661.42	13933.98	1775.27	110524
1084043	16672.73	14003.06	1775.51	110525
1084044	16681.24	14054.24	1775.76	110526
1084045	16688.32	14100.49	1775.94	110527
1084047	16938.55	14148.90	1816.48	110750

PROJECT CONTROL

1" = 2000'



BENCHMARK

CLARK COUNTY BENCHMARK (6C22 2E4), BEING A RIVET AND SQUARE ALUMINUM PLATE IN A CONCRETE CENTERLINE ISLAND, 4' WEST OF THE NOSE IN THE MIDDLE OF SUNSET ROAD, WEST SIDE OF THE INTERSECTION OF BOULDER HIGHWAY AND SUNSET ROAD.

PUBLISHED ELEVATION - 505.816 METERS = 1659.50 FEET
 NAVD 1988 DATUM - PUBLISHED (2003)

BASIS OF BEARINGS

SOUTH 85°36'52" WEST, BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND CC-GIS W51", AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

COORDINATE SYSTEM

THE COORDINATE SYSTEM AND ASSOCIATED BEARING ROTATION INFORMATION WAS ESTABLISHED AND PROVIDED BY PBS&J.

LINE LEGEND

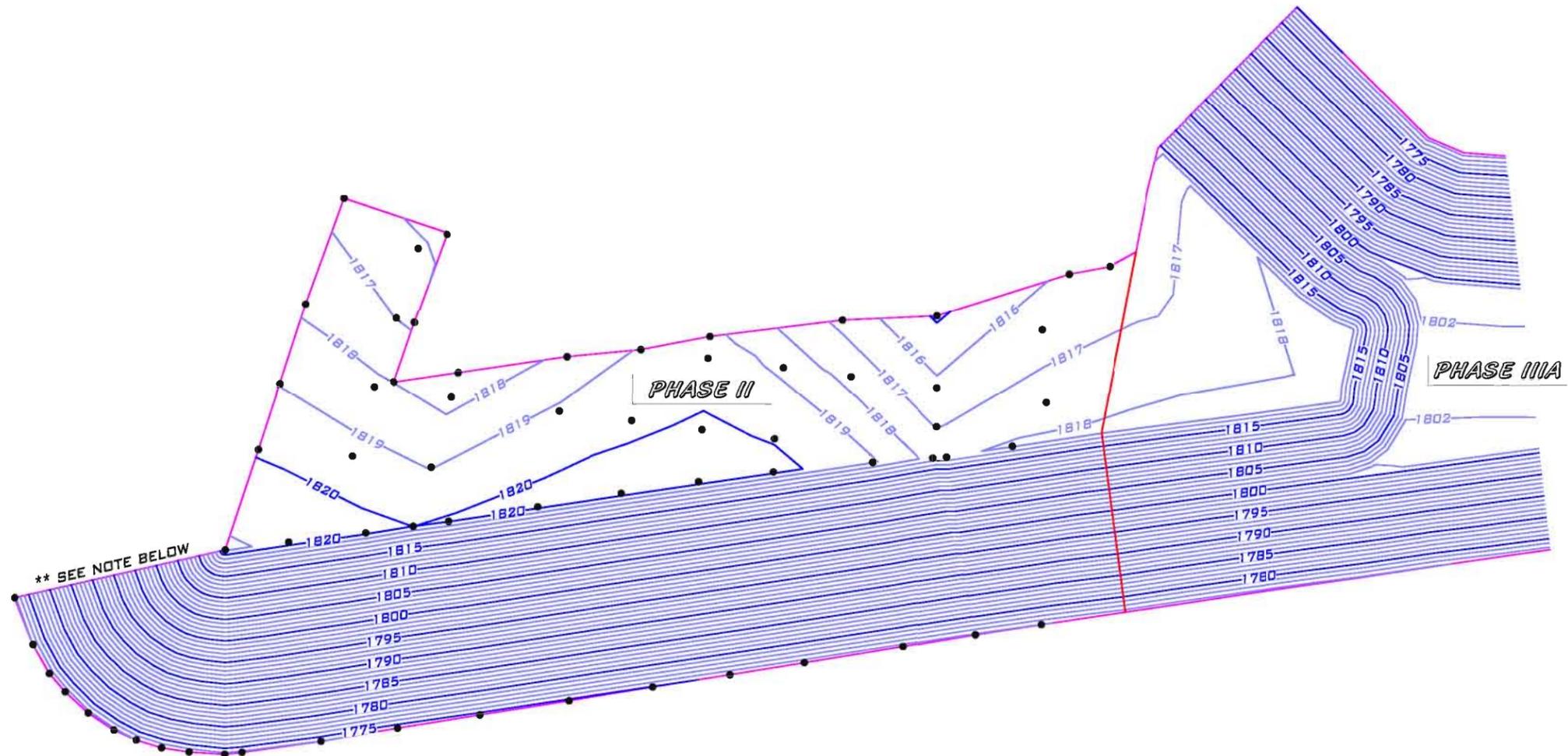
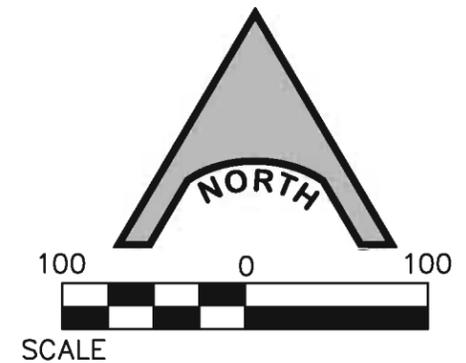
- MAJOR CONTOUR
- MINOR CONTOUR
- SURFACE LIMITS
- EXTENT OF DATA PREVIOUSLY REPORTED FOR PHASE IIIA

SURFACE DETAILS

THE SURFACE SHOWN BELOW WAS GENERATED BASED UPON AS-BUILT DATA COLLECTED BY ABSOLUTE BOUNDARY & CONTROL SOLUTIONS AS OF 11/6/2009. IT REPRESENTS A PORTION OF THE INTERIM COVER SOIL PLACEMENT WITHIN PHASE II PURSUANT TO THE PHASE II INTERIM CLOSURE DESIGN VERIFICATION AS WELL AS HOW THIS SURFACE TIES-IN TO THE PHASE IIIA INTERIM COVER WHICH WAS PREVIOUSLY REPORTED.

LEGEND

- AS-BUILT MEASUREMENT LOCATION PER THIS REPORT (SEE ATTACHED REPORT)



** VERIFICATION AND AS-BUILT EFFORTS ALONG THE TOE IN THIS AREA WERE ONGOING AS OF 11/9/2009. FOLLOWING COMPLETION OF THESE EFFORTS, THIS ADDITIONAL DATA WILL BE ADDED TO THIS REPORT AS AN AMENDMENT.

NO.	REVISION	DATE
△		
△		
△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)

PHASE II PARTIAL INTERIM COVER AS-BUILT

FIELD SURVEY DATE: 11/05/2009 & 11/06/2009
 FIELD CREW: C.G., M.G. & T.G.

PROJECT # 2008.06.23.01

ABSOLUTE BOUNDARY & CONTROL SOLUTIONS

6440 SKY POINT DRIVE
 SUITE 140 - PMB 321
 LAS VEGAS, NV. 89131
 (702) 953-7452
 (702) 987-5943 FAX
 WWW.AB-CS.COM

Date:	November 9, 2009
Drawn:	C. Givant
Checked:	C. Givant
Task:	2009.11.05.01-A
Sheet No.	1 of 1



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Phase II Interim Closure Interim Cover As-Built -A
Submittal Number:	02200-002KK
Specification Section:	Section 02200, Part 3.14
Drawing Number (s):	15
Page Number:	02200-10
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	11/9/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.

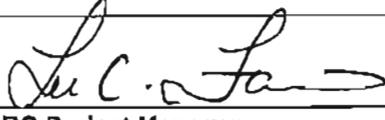
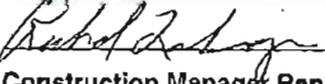


875 West Warm Springs Road
 Henderson, Nevada 89011
 Tel (702) 567-0400 · Fax (702) 567-0475

SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehringer
ADDRESS: ENTACT Environmental Services
 Henderson, Nevada 89011

Date: 11/13/2009	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02200-002LL	Revision No.: - N/A	Date Submittal Rec'd by BRC: 11/11/2009
Specification Section(s): 01050.3.01 Field Engineering Field Surveys		
Submittal Subject: Phase II Interim Closure Cover As Built B		
Notations:		
<input checked="" type="checkbox"/> No Exception Taken <input type="checkbox"/> Correct as Noted <input type="checkbox"/> Rejected <input type="checkbox"/> Revise and Resubmit <input type="checkbox"/> Submit Specified Items		
Review Comments:		
Comment #	Reference	Comment
<p>Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work</p>		
 _____ Design Engineer	11/16/09 _____ Date	 _____ BRC Project Manager Lee Farris, P.E.
 _____ Construction Manager Representative	11/16/09 _____ Date	11/17/09 _____ Date
Distribution: <input checked="" type="checkbox"/> File		



SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehring	ADDRESS: ENTACT Environmental Services Henderson, Nevada 89011
Date: 11/17/09	Project Name: BRC Eastside Common Areas Soils Remediation
Job No.: 6389	

Submittal I.D. No.: 02200-003A	Revision No.: N/A	Date Submittal Rec'd by BRC: 11/10/09
---------------------------------------	--------------------------	--

Specification Section(s): 02200.1.04C Earthwork Submittals	Submittal Subject: Revised CAMU Cover Soil Shear Strength Test Results
---	---

Notations:	<input checked="" type="checkbox"/> No Exception Taken <input type="checkbox"/> Correct as Noted <input type="checkbox"/> Rejected <input type="checkbox"/> Revise and Resubmit <input type="checkbox"/> Submit Specified Items
-------------------	---

Review Comments:

Comment	Reference	Comment

Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work

Design Engineer <i>[Signature]</i> Date: 11/17/09	Construction Manager Representative <i>[Signature]</i> Date: 11/17/09
BRC Project Manager <i>[Signature]</i> Date: 11/18/09	Lee Farris, P.E.

Distribution: File



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company

DATE: 11/10/09

875 West Warm Springs Road

JOB NAME: BRC EASTSIDE COMMON AREAS

Henderson, NV 89011

SOIL REMEDIATION PROJECT

TEL#: (702)-568-2888/FAX#: (702)-567-0475

TRANSMITTAL NUMBER: 347

ATTENTION: Lee C. Farris, P.E.

ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED

UNDER SEPARATE COVER VIA

THE FOLLOWING ITEMS:

- SHOP DRAWINGS
- PRINTS
- PLANS
- SAMPLES
- SPECIFICATIONS
- COPY OF LETTER
- CERTIFICATES
- REPORTS
- TECHNICAL DATA
- FORMS
- CHANGE ORDER
- SUBMITTALS
- RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	11/10/09			Submittal 02200-003A - Revised CAMU Cover Soil Shear Strength Test Results	RC

ACTION (*)

AR - AS REQUESTED

FA - FOR APPROVAL

F - FILE RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE

TO: Ranajit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....



Converse Consultants

Over 60 Years of Dedication
in Engineering and
Environmental Sciences

08-1037

Drawing No.

08-33180-01

Clark County, Nevada

BRC CAMU

Project No.

ENTACT

BASIC REMEDIATION COMPANY

The review of these drawings is for general conformance with the design concept and contract documents. Members or consultants shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting work in a safe manner.

Checked By: *[Signature]* Date: *11/7/09*

BRC Inhas: *LCF*

No Exception Taken Correct As Noted Revise And Resubmit Submit Specified Item Deleted Sample Type: **Remolded**

Test Condition: **Samuel**

Friction Angle (degrees): 36

Cohesion (psf): 130

Peak

Soil Description: CAMU Cover Material Stockpile

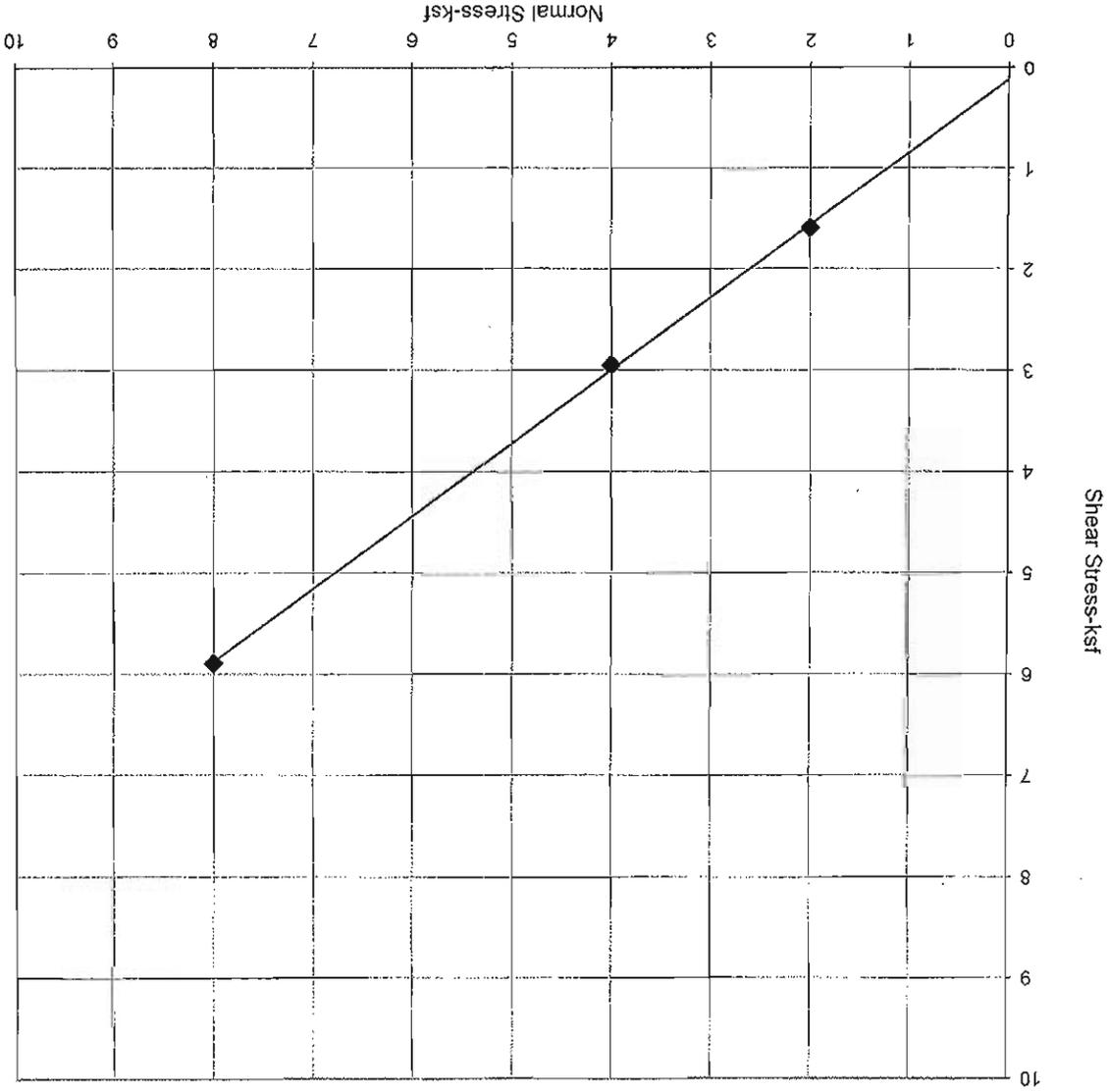
Depth: N/A

Boring No: N/A

Initial Dry Unit Weight (pcf): 109.7

Moisture Content Before (%): 10.9

Moisture Content After (%): 16.4



DIRECT SHEAR TEST

BASIC REMEDIATION COMPANY

Checked By: [Signature] Date: 11/17/09 BRC Initials: CF

The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.

No Exception Taken
 Correct As Noted
 Revise And Resubmit
 Submit Specified Item
 Rejected

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	6389
Submittal Summary:	Revised CAMU Cover Soil Shear Strength Test Results
Submittal Number:	02200-003A
Specification Section:	Section 02200, Part 1.04, Subpart C
Drawing Number (s):	NA
Page Number:	02200-2
Signed:	<u>[Signature]</u>
Signed:	Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	11/2/2009
Date Submitted:	11/10/2009

Contractor's Stamp





SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehringer
ADDRESS: ENTACT Environmental Services
Henderson, Nevada 89011

Date: April 5, 2010	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02200-009	Revision No.: - N/A	Date Submittal Rec'd by BRC: 3/19/10
--------------------------------------	----------------------------	---

Specification Section(s): 2200 Earthwork

Submittal Subject: Gravel Mulch Certification

- Notations:**
- No Exception Taken
 - Correct as Noted
 - Rejected
 - Revise and Resubmit
 - Submit Specified Items

Review Comments:

Comment #	Reference	Comment
		No comments.

Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work

 Design Engineer	Date 4/5/10	 BRC Project Manager Lee Farris, P.E.	Date 4/5/10
 Construction Manager Representative	Date 4/5/10		

Distribution: File



699 South Friendswood Drive
Suite 101
Friendswood, Texas 77546

March, 19, 2010

Lee C. Farris, P.E.
Vice President
Basic Remediation Company
875 West Warm Springs Road
Henderson, Nevada 89011

Re: Submittal 02200-009 – Gravel Mulch Certification

Attachments:

- 1. PDF Drawing (Planned Gravel Mulch Placement Areas)**

Dear Lee,

In accordance with BRC’s response to RFI-095, please review this certification letter. It provides the requested information pertaining to the gravel mulch we plan to utilize for the CAMU Cover System side slopes.

On-Site gravel mulch will be utilized for interior CAMU side slopes, as indicated on the attached PDF Drawing. This material was produced by crushing and screening available on-site rock through a 1 1/2” screen. A visual gradation scan of the on-site gravel indicated that there’s a maximum particle size of 2 1/4” and a minimum particle size of 1/2”.

For exterior CAMU side slope areas indicated on the attached PDF Drawing, we will utilize Legacy Rock Inc.’s “3/4” Legacy Gold” gravel mulch. Their facility is located in Nelson, NV. This gravel is produced by crushing and screening rock through a 1 1/8” screen. A visual gradation scan of the off-site gravel mulch indicated that the particle size range was within the on-site gravel mulch range.

Please feel free to call me at 630-330-8237 to go over any additional questions which arise during your review of this submittal.

Respectfully,

Michael M. Carlson
Field Engineer - ENTACT

<input checked="" type="checkbox"/> No Exception Taken	<input type="checkbox"/> Correct As Noted
<input type="checkbox"/> Revise And Resubmit	<input type="checkbox"/> Submit Specified Item <input type="checkbox"/> Rejected
<p>The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.</p>	
Checked By: <u>Michael Carlson</u>	Date: <u>4/5/10</u>
BASIC REMEDIATION COMPANY	

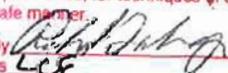
PDF Drawing



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	6389
Submittal Summary:	Gravel Mulch Certification
Submittal Number:	02200-009
Specification Section:	Section 02200, Part 2.01, Subpart N
Drawing Number (s):	CSD DWG# 44 and 45
Page Number:	02200-4
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	3/19/2010

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.

<input checked="" type="checkbox"/> No Exception Taken	<input type="checkbox"/> Correct As Noted
<input type="checkbox"/> Revise And Resubmit	<input type="checkbox"/> Submit Specified Item
<input type="checkbox"/> Rejected	
<p>The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.</p>	
Checked By 	Date 4/10/10
BRC Initials LCE	
BASIC REMEDIATION COMPANY	



875 West Warm Springs Road
Henderson, Nevada 89011
Tel (702) 567-0400 · Fax (702) 567-0475

SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehringer
ADDRESS: ENTACT Environmental Services
Henderson, Nevada 89011

Date: 11/17/2009	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02712-001	Revision No.: - N/A	Date Submittal Rec'd by BRC: 11/16/2009
--------------------------------------	----------------------------	--

Specification Section(s): 02712.1.04 Corrugated Polyethylene Pipe Submittals

Submittal Subject: Corrugated Polyethylene Pipe Certificates of Compliance for Pipe Materials & Fittings

Notations:

- No Exception Taken
- Correct as Noted
- Rejected
- Revise and Resubmit
- Submit Specified Items

Review Comments:

Comment	Reference	Comment

Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work

	11/17/09		11/18/09
Design Engineer	Date	BRC Project Manager	Date
	11/17/09		
Construction Manager Representative	Date		

Distribution: File



SUBMITTAL

To: ESI, Inc.
Robert Duthu
e-mail: rduthu@esiliners.com

Project: Basic Remediation
Henderson, NV

We certify that material we propose to supply will meet the following specifications. We also certify that samples of the material have been tested and the test results conform to the requirements for corrugated polyethylene pipe and fittings listed below:

<i>Feet</i>	<i>Part Number</i>	<i>Description</i>	<i>AASHTO/ASTM Designation</i>
6400	04110020IB	4" Corrugated Pipe	AASHTO M-252 Type SP with Class 2 perforations

and all related fittings

Copies of these test reports are on file and are available without cost upon request through this office for a period of seven years following shipment.

Signed: *Nicole Crawley* Date: November 16, 2009
Nicole Crawley
Zone Administrative Assistant

<input checked="" type="checkbox"/> No Exception Taken	<input type="checkbox"/> Correct As Noted
<input type="checkbox"/> Revise And Resubmit	<input type="checkbox"/> Submit Specified Item
<input type="checkbox"/> Rejected	
The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.	
Checked by: <i>Robert Duthu</i>	Date: <i>11/17/09</i>
BRC Initials: <i>LCE</i>	
BASIC REMEDIATION COMPANY	



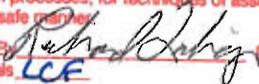
Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	6389
Submittal Summary:	Corrugated Polyethylene Pipe Certificates of Compliance for Pipe Materials & Fittings
Submittal Number:	02712-001
Specification Section:	Section 02712, Part 1.04, Subpart A
Drawing Number (s):	CSD - 38, 39, and 40
Page Number:	02712-1
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	11/16/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.

<input checked="" type="checkbox"/> No Exception Taken	<input type="checkbox"/> Correct As Noted
<input type="checkbox"/> Revise And Resubmit	<input type="checkbox"/> Submit Specified Item
	<input type="checkbox"/> Rejected

The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.

Checked By:  Date: 11/17/09
BRC initials: LCF

BASIC REMEDIATION COMPANY



875 West Warm Springs Road
Henderson, Nevada 89011
Tel (702) 567-0400 · Fax (702) 567-0475

SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehringer
ADDRESS: ENTACT Environmental Services
Henderson, Nevada 89011

Date: 11/13/2009	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02712-003	Revision No.: - N/A	Date Submittal Rec'd by BRC: 11/09/2009
--------------------------------------	----------------------------	--

Specification Section(s): 02712.1.04 Corrugated Polyethylene Pipe Submittals

Submittal Subject: Corrugated Polyethylene Pipe Product Information

Notations:

- No Exception Taken
- Correct as Noted
- Rejected
- Revise and Resubmit
- Submit Specified Items

Review Comments:

Comment	Reference	Comment

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<p>Design Engineer</p>	<p style="color: blue;">11/16/09</p> <p>Date</p>	<p>BRC Project Manager</p> <p>Lee Farris, P.E.</p>	<p style="color: blue;">11/17/09</p> <p>Date</p>
<p>Construction Manager Representative</p>	<p style="color: blue;">11/16/09</p> <p>Date</p>		

Distribution: File



875 West Warm Springs Road
Henderson, Nevada 89011
Tel (702) 567-0400 · Fax (702) 567-0475

SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehringer
ADDRESS: ENTACT Environmental Services
Henderson, Nevada 89011

Date: 12/03/2008	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02770-004D	Revision No.: - N/A	Date Submittal Rec'd by BRC: 10/20/08
Specification Section(s): 02770.1.06 Geomembrane Submittals		
Submittal Subject: Future CAMU Phases Resin/ Roll Production Data		
Notations: <input type="checkbox"/> No Exception Taken <input checked="" type="checkbox"/> Correct as Noted <input type="checkbox"/> Rejected <input type="checkbox"/> Revise and Resubmit <input type="checkbox"/> Submit Specified Items		
Review Comments:		
Comment #	Reference	Comment
1		Rolls 942223 through 942360 shall be used as Phase IIIB Liner
2		Rolls 942361 through 942613 shall be used as Phase IV Liner
3		Rolls 942614 through 943624 shall be used as Phase V Liner
4		Rolls 943625 through 944359 shall be used as CAMU Closure Cover material
<p>Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work</p>		
 Design Engineer Construction Manager Representative	<p style="text-align: right; margin-right: 20px;">12/8/08</p> Date <p style="text-align: right; margin-right: 20px;">12/8/08</p> Date	 BRC Project Manager Lee Farris, P.E.
Distribution: <input checked="" type="checkbox"/> File		



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company
 875 West Warm Springs Road
 Henderson, NV 89011
 TEL#: (702)-568-2888 FAX#: (702)-567-0475
 ATTENTION: Lee C. Farris, P.E.

DATE: 11/11/08
 JOB NAME: BRC EASTSIDE COMMON AREAS
 SOIL REMEDIATION PROJECT
 TRANSMITTAL NUMBER: 128
 ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
8	11/11/08			Submittal 02770-004D – Future CAMU Phases Resin/Roll Production Data	RC

ACTION (*)

AR - AS REQUESTED

FA - FOR APPROVAL

F – FILE

RC - REVIEW & COMMENT

COMMENTS: **Hard copies will be delivered to BRC this afternoon.**

SENT VIA:

E-MAIL

MAIL

OVERNIGHT

HAND DELIVERY

FACSIMILE

COPY TO: Ranajit Sahu, Lee Farris

BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....

60 mil micro
HDPE

ESI Landwell Basic Remed doc 10167
Henderson, NV

PO# 9036

METRIC DIMENSIONS

757 rolls 60 HD microspike

661

left

60 mil

ROLL #

wid len AREA

149 spools 5mm HD CHEVRON WELD ROD

wgt

lot #

prod

date

(K)942223 .08	7	125	875.0	60HD micro	757 TOT	317	3188	8180856	10/14/2008	1 w
(K)942224 .08	7	125	875.0	60HD micro	757 TOT	318	3190	8180856	10/14/2008	2 w
(K)942225 .08	7	125	875.0	60HD micro	757 TOT	319	3212	stage 8180856	10/14/2008	3 w
(K)942226 .08	7	125	875.0	60HD micro	757 TOT	320	3214	8180856	10/14/2008	4 w
(K)942227 .08	7	125	875.0	60HD micro	757 TOT	321	3214	8180856	10/14/2008	5 w
(K)942228 .08	7	125	875.0	60HD micro	757 TOT	322	3190	8180856	10/14/2008	6 w
(K)942229 .08	7	125	875.0	60HD micro	757 TOT	323	3166	8180856	10/14/2008	7 w
(K)942230 .08	7	125	875.0	60HD micro	757 TOT	324	3126	8180856	10/14/2008	8 w
(K)942231 .08	7	125	875.0	60HD micro	757 TOT	325	3108	8180856	10/14/2008	9 w
(K)942232 .08	7	125	875.0	60HD micro	757 TOT	326	3090	8180856	10/14/2008	10 w
(K)942233 .08	7	125	875.0	60HD micro	757 TOT	327	3082	8180856	10/14/2008	11 w
(K)942234 .08	7	125	875.0	60HD micro	757 TOT	328	3080	8180856	10/14/2008	12 w
(K)942235 .08	7	125	875.0	60HD micro	757 TOT	329	3076	8180856	10/14/2008	13 w
(K)942236 .08	7	125	875.0	60HD micro	757 TOT	330	3076	stage 8180856	10/14/2008	14 w
(K)942237 .08	7	125	875.0	60HD micro	757 TOT	331	3084	8180856	10/14/2008	15 w
(K)942238 .08	7	125	875.0	60HD micro	757 TOT	332	3084	8180856	10/14/2008	16 w
(K)942239 .08	7	125	875.0	60HD micro	757 TOT	333	3085	8180856	10/14/2008	17 w
(K)942240 .08	7	125	875.0	60HD micro	757 TOT	334	3084	8180856	10/14/2008	18 w
(K)942241 .08	7	125	875.0	60HD micro	757 TOT	335	3082	8180856	10/14/2008	19 w
(K)942242 .08	7	125	875.0	60HD micro	757 TOT	336	3082	8180856	10/14/2008	20 w
(K)942343 .08	7	125	875.0	60HD micro	757 TOT	337	3082	8180856	10/15/2008	21 w
(K)942344 .08	7	125	875.0	60HD micro	757 TOT	338	3084	8180856	10/15/2008	22 w
(K)942345 .08	7	125	875.0	60HD micro	757 TOT	339	3082	8180856	10/15/2008	23 w
(K)942346 .08	7	125	875.0	60HD micro	757 TOT	340	3084	sqgs + 3ft 8180856	10/15/2008	24 w
(K)942347 .08	7	125	875.0	60HD micro	757 TOT	341	3080	7181034	10/15/2008	25 w
(K)942348 .08	7	125	875.0	60HD micro	757 TOT	342	3082	7181034	10/15/2008	26 w
(K)942349 .08	7	125	875.0	60HD micro	757 TOT	343	3104	7181034	10/15/2008	27 w
(K)942350 .08	7	125	875.0	60HD micro	757 TOT	344	3106	7181034	10/15/2008	28 w
(K)942351 .08	7	125	875.0	60HD micro	757 TOT	345	3110	7181034	10/15/2008	29 w
(K)942352 .08	7	125	875.0	60HD micro	757 TOT	346	3124	7181034	10/15/2008	30 w
(K)942353 .08	7	125	875.0	60HD micro	757 TOT	347	3140	7181034	10/15/2008	31 w
(K)942354 .08	7	125	875.0	60HD micro	757 TOT	348	3140	7181034	10/15/2008	32 w
(K)942355 .08	7	125	875.0	60HD micro	757 TOT	349	3134	7181034	10/15/2008	33 w
(K)942356 .08	7	125	875.0	60HD micro	757 TOT	350	3134	7181034	10/15/2008	34 w
(K)942357 .08	7	125	875.0	60HD micro	757 TOT	351	3124	STAGE 7181034	10/15/2008	35 w
(K)942358 .08	7	125	875.0	60HD micro	757 TOT	352	3132	7181034	10/15/2008	36 w
(K)942359 .08	7	125	875.0	60HD micro	757 TOT	353	3148	7181034	10/15/2008	37 w
(K)942360 .08	7	125	875.0	60HD micro	757 TOT	354	3160	7181034	10/15/2008	38 w
(K)942361 .08	7	125	875.0	60HD micro	757 TOT	355	3168	7181034	10/15/2008	39 w
(K)942362 .08	7	125	875.0	60HD micro	757 TOT	356	3182	7181034	10/15/2008	40 w
(K)942363 .08	7	125	875.0	60HD micro	757 TOT	357	3204	7181034	10/15/2008	41 w
(K)942464 .08	7	125	875.0	60HD micro	757 TOT	358	3204	7181034	10/16/2008	42 w
(K)942465 .08	7	125	875.0	60HD micro	757 TOT	359	3172	7181034	10/16/2008	43 w
(K)942466 .08	7	125	875.0	60HD micro	757 TOT	360	3197	7181034	10/16/2008	44 w
(K)942467 .08	7	125	875.0	60HD micro	757 TOT	361	3172	STAGE 7181034	10/16/2008	45 w
(K)942468 .08	7	125	875.0	60HD micro	757 TOT	362	3166	7181034	10/16/2008	46 w
(K)942469 .08	7	125	875.0	60HD micro	757 TOT	363	3154	7181034	10/16/2008	47 w
(K)942470 .08	7	125	875.0	60HD micro	757 TOT	364	3154	7181034	10/16/2008	48 w
(K)942471 .08	7	125	875.0	60HD micro	757 TOT	365	3134	7181034	10/16/2008	49 w
(K)942472 .08	7	125	875.0	60HD micro	757 TOT	366	3142	7181034	10/16/2008	50 w
(K)942473 .08	7	125	875.0	60HD micro	757 TOT	367	3142	7181034	10/16/2008	51 w
(K)942474 .08	7	125	875.0	60HD micro	757 TOT	368	3148	7181034	10/16/2008	52 w
(K)942475 .08	7	125	875.0	60HD micro	757 TOT	369	3140	7181034	10/16/2008	53 w
(K)942476 .08	7	125	875.0	60HD micro	757 TOT	370	3134	7181034	10/16/2008	54 w
(K)942477 .08	7	125	875.0	60HD micro	757 TOT	371	3136	7181034	10/16/2008	55 w
(K)942478 .08	7	125	875.0	60HD micro	757 TOT	372	3144	STAGE 7181034	10/16/2008	56 w
(K)942479 .08	7	125	875.0	60HD micro	757 TOT	373	3134	7181034	10/16/2008	57 w
(K)942480 .08	7	125	875.0	60HD micro	757 TOT	374	3144	7181034	10/16/2008	58 w
(K)942481 .08	7	125	875.0	60HD micro	757 TOT	375	3138	7181034	10/16/2008	59 w
(K)942482 .08	7	125	875.0	60HD micro	757 TOT	376	3144	7181034	10/16/2008	60 w
(K)942483 .08	7	125	875.0	60HD micro	757 TOT	377	3146	7181034	10/16/2008	61 w
(K)942484 .08	7	125	875.0	60HD micro	757 TOT	378	3144	7181034	10/16/2008	62 w
(K)942585 .08	7	125	875.0	60HD micro	757 TOT	379	3144	7181034	10/17/2008	63 w
(K)942586 .08	7	125	875.0	60HD micro	757 TOT	380	3144	8180829	10/17/2008	64 w
(K)942587 .08	7	125	875.0	60HD micro	757 TOT	381	3144	8180829	10/17/2008	65 w
(K)942588 .08	7	125	875.0	60HD micro	757 TOT	382	3140	8180829	10/17/2008	66 w
(K)942589 .08	7	125	875.0	60HD micro	757 TOT	383	3142	sqgs + 3ft 8180829	10/17/2008	67 w
(K)942590 .08	7	125	875.0	60HD micro	757 TOT	384	3142	8180829	10/17/2008	68 w
(K)942591 .08	7	125	875.0	60HD micro	757 TOT	385	3140	8180829	10/17/2008	69 w
(K)942592 .08	7	125	875.0	60HD micro	757 TOT	386	3140	8180829	10/17/2008	70 w
(K)942593 .08	7	125	875.0	60HD micro	757 TOT	387	3144	8180829	10/17/2008	71 w
(K)942594 .08	7	125	875.0	60HD micro	757 TOT	388	3142	8180829	10/17/2008	72 w
(K)942595 .08	7	125	875.0	60HD micro	757 TOT	389	3142	8180829	10/17/2008	73 w
(K)942596 .08	7	125	875.0	60HD micro	757 TOT	390	3142	8180829	10/17/2008	74 w
(K)942597 .08	7	125	875.0	60HD micro	757 TOT	391	3140	8180829	10/17/2008	75 w
(K)942598 .08	7	125	875.0	60HD micro	757 TOT	392	3138	8180829	10/17/2008	76 w

60 mil micro
HDPE

ESI Landwell Basic Remed doc 10167
Henderson, NV

PO# 9036

METRIC DIMENSIONS

757 rolls 60 HD microspike

661

left

60 mil ROLL #	wid	len	AREA	149 spools 5mm HD CHEVRON WELD ROD				wgt	lot #	prod date		
(K)942599 .08	7	125	875.0	60HD	micro	757 TOT	393	3142	stage	8180829	10/17/2008	77 w
(K)942500 .08	7	125	875.0	60HD	micro	757 TOT	394	3140		8180829	10/17/2008	78 w
(K)942501 .08	7	125	875.0	60HD	micro	757 TOT	395	3150		8180829	10/17/2008	79 w
(K)942502 .08	7	125	875.0	60HD	micro	757 TOT	396	3154		8280549	10/17/2008	80 w
(K)942503 .08	7	125	875.0	60HD	micro	757 TOT	397	3154		8280549	10/17/2008	81 w
(K)942504 .08	7	125	875.0	60HD	micro	757 TOT	398	3140		8280549	10/17/2008	82 w
(K)942505 .08	7	125	875.0	60HD	micro	757 TOT	399	3144		8280549	10/17/2008	83 w
(K)942506 .08	7	125	875.0	60HD	micro	757 TOT	400	3148		8280549	10/17/2008	84 w
(K)942607 .08	7	125	875.0	60HD	micro	757 TOT	401	3140		8280549	10/18/2008	85 w
(K)942608 .08	7	125	875.0	60HD	micro	757 TOT	402	3148		8280549	10/18/2008	86 w
(K)942609 .08	7	125	875.0	60HD	micro	757 TOT	403	3146		8280549	10/18/2008	87 w
(K)942610 .08	7	125	875.0	60HD	micro	757 TOT	404	3136	stage	8280549	10/18/2008	88 w
(K)942611 .08	7	125	875.0	60HD	micro	757 TOT	405	3136		8280549	10/18/2008	89 w
(K)942612 .08	7	125	875.0	60HD	micro	757 TOT	406	3148		8280549	10/18/2008	90 w
(K)942613 .08	7	125	875.0	60HD	micro	757 TOT	407	3164		8280549	10/18/2008	91 w
(K)942614 .08	7	125	875.0	60HD	micro	757 TOT	408	3164		8280549	10/18/2008	92 w
(K)942615 .08	7	125	875.0	60HD	micro	757 TOT	409	3162		8280549	10/18/2008	93 w
(K)942616 .08	7	125	875.0	60HD	micro	757 TOT	410	3164		8280549	10/18/2008	94 w
(K)942617 .08	7	125	875.0	60HD	micro	757 TOT	411	3158		8280549	10/18/2008	95 w
(K)942618 .08	7	125	875.0	60HD	micro	757 TOT	412	3160		8280549	10/18/2008	96 w
(K)942619 .08	7	125	875.0	60HD	micro	757 TOT	413	3154		8280549	10/18/2008	97 w
(K)942620 .08	7	125	875.0	60HD	micro	757 TOT	414	3154		8280549	10/18/2008	98 w
(K)942621 .08	7	125	875.0	60HD	micro	757 TOT	415	3154	STAGE	8280549	10/18/2008	99 w
(K)942622 .08	7	125	875.0	60HD	micro	757 TOT	416	3160		8280549	10/18/2008	100 w
(K)942623 .08	7	125	875.0	60HD	micro	757 TOT	417	3164		8280549	10/18/2008	101 w
(K)942624 .08	7	125	875.0	60HD	micro	757 TOT	418	3164		8280549	10/18/2008	102 w
(K)942625 .08	7	125	875.0	60HD	micro	757 TOT	419	3160		8280549	10/18/2008	103 w
(K)942626 .08	7	125	875.0	60HD	micro	757 TOT	420	3154		8280549	10/18/2008	104 w
(K)942627 .08	7	125	875.0	60HD	micro	757 TOT	421	3154		8280549	10/18/2008	105 w
(K)942728 .08	7	125	875.0	60HD	micro	757 TOT	422	3164		8280549	10/19/2008	106 w
(K)942729 .08	7	125	875.0	60HD	micro	757 TOT	423	3178		8280549	10/19/2008	107 w
(K)942730 .08	7	125	875.0	60HD	micro	757 TOT	424	3196		8280549	10/19/2008	108 w
(K)942731 .08	7	125	875.0	60HD	micro	757 TOT	425	3174	stage+3ft	8280549	10/19/2008	109 w
(K)942732 .08	7	125	875.0	60HD	micro	757 TOT	426	3164		8280549	10/19/2008	110 w
(K)942733 .08	7	125	875.0	60HD	micro	757 TOT	427	3154		8280549	10/19/2008	111 w
(K)942734 .08	7	125	875.0	60HD	micro	757 TOT	428	3154		8280549	10/19/2008	112 w
(K)942735 .08	7	125	875.0	60HD	micro	757 TOT	429	3126		8280549	10/19/2008	113 w
(K)942736 .08	7	125	875.0	60HD	micro	757 TOT	430	3132		8280549	10/19/2008	114 w
(K)942737 .08	7	125	875.0	60HD	micro	757 TOT	431	3130		8280549	10/19/2008	115 w
(K)942738 .08	7	125	875.0	60HD	micro	757 TOT	432	3138		8280549	10/19/2008	116 w
(K)942739 .08	7	125	875.0	60HD	micro	757 TOT	433	3166		8280549	10/19/2008	117 w
(K)942740 .08	7	125	875.0	60HD	micro	757 TOT	434	3186		8280549	10/19/2008	118 w
(K)942741 .08	7	125	875.0	60HD	micro	757 TOT	435	3191		8280549	10/19/2008	119 w
(K)942742 .08	7	125	875.0	60HD	micro	757 TOT	436	3174	STAGE	8280549	10/19/2008	120 w
(K)942743 .08	7	125	875.0	60HD	micro	757 TOT	437	3170		8280549	10/19/2008	121 w
(K)942744 .08	7	125	875.0	60HD	micro	757 TOT	438	3168		8280549	10/19/2008	122 w
(K)942745 .08	7	125	875.0	60HD	micro	757 TOT	439	3174		8280549	10/19/2008	123 w
(K)942746 .08	7	125	875.0	60HD	micro	757 TOT	440	3170		8280549	10/19/2008	124 w
(K)942747 .08	7	125	875.0	60HD	micro	757 TOT	441	3166		8280549	10/19/2008	125 w
(K)942748 .08	7	125	875.0	60HD	micro	757 TOT	442	3164		8280549	10/19/2008	126 w
(K)942749 .08	7	125	875.0	60HD	micro	757 TOT	443	3160		8280549	10/19/2008	127 w
(K)943101 .08	7	125	875.0	60HD	micro	757 TOT	444	3166		8280549	10/20/2008	128 w
(K)943102 .08	7	125	875.0	60HD	micro	757 TOT	445	3176		8280549	10/20/2008	129 w
(K)943103 .08	7	125	875.0	60HD	micro	757 TOT	446	3176	STAGE	8280549	10/20/2008	130 w
(K)943104 .08	7	125	875.0	60HD	micro	757 TOT	447	3170		8280549	10/20/2008	131 w
(K)943105 .08	7	125	875.0	60HD	micro	757 TOT	448	3160		8280549	10/20/2008	132 w
(K)943106 .08	7	125	875.0	60HD	micro	757 TOT	449	3160		8280549	10/20/2008	133 w
(K)943107 .08	7	125	875.0	60HD	micro	757 TOT	450	3154		8280549	10/20/2008	134 w
(K)943108 .08	7	125	875.0	60HD	micro	757 TOT	451	3153		8280549	10/20/2008	135 w
(K)943109 .08	7	125	875.0	60HD	micro	757 TOT	452	3156		8280549	10/20/2008	136 w
(K)943110 .08	7	125	875.0	60HD	micro	757 TOT	453	3162		8280549	10/20/2008	137 w
(K)943111 .08	7	125	875.0	60HD	micro	757 TOT	454	3163		8280549	10/20/2008	138 w
(K)943112 .08	7	125	875.0	60HD	micro	757 TOT	455	3155		8280549	10/20/2008	139 w
(K)943113 .08	7	125	875.0	60HD	micro	757 TOT	456	3154		8280549	10/20/2008	140 w

60 mil micro
HDPE

ESI Landwell Basic Remed doc 10167
Henderson, NV

PO#	9036
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METRIC DIMENSIONS

757 rolls 60 HD microspike

661

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60 mil ROLL #	wid	len	AREA	149 spools 5mm HD CHEVRON WELD ROD	wgt	lot #	prod date
(K)943610 .08	7	125	875.0	60HD micro 757 TOT 457	3316	STAGE 7181245	10/25/2008
(K)943611 .08	7	125	875.0	60HD micro 757 TOT 458	3240	7181245	10/25/2008
(K)943612 .08	7	125	875.0	60HD micro 757 TOT 459	3184	7181245	10/25/2008
(K)943613 .08	7	125	875.0	60HD micro 757 TOT 460	3186	7181245	10/25/2008
(K)943614 .08	7	125	875.0	60HD micro 757 TOT 461	3190	7181245	10/25/2008
(K)943615 .08	7	125	875.0	60HD micro 757 TOT 462	3182	7181245	10/25/2008
(K)943616 .08	7	125	875.0	60HD micro 757 TOT 463	3171	7181245	10/25/2008
(K)943617 .08	7	125	875.0	60HD micro 757 TOT 464	3180	7181245	10/25/2008
(K)943618 .08	7	125	875.0	60HD micro 757 TOT 465	3184	7181245	10/25/2008
(K)943619 .08	7	125	875.0	60HD micro 757 TOT 466	3172	7181245	10/25/2008
(K)943620 .08	7	125	875.0	60HD micro 757 TOT 467	3154	7181245	10/25/2008
(K)943621 .08	7	125	875.0	60HD micro 757 TOT 468	3151	STAGE + 3ft 7181245	10/25/2008
(K)943622 .08	7	125	875.0	60HD micro 757 TOT 469	3150	7181245	10/25/2008
(K)943623 .08	7	125	875.0	60HD micro 757 TOT 470	3154	7181245	10/25/2008
(K)943624 .08	7	125	875.0	60HD micro 757 TOT 471	3154	7181245	10/25/2008
(K)943625 .08	7	125	875.0	60HD micro 757 TOT 472	3154	7181245	10/25/2008
(K)943726 .08	7	125	875.0	60HD micro 757 TOT 473	3154	7181245	10/26/2008
(K)943727 .08	7	125	875.0	60HD micro 757 TOT 474	3152	7181245	10/26/2008
(K)943728 .08	7	125	875.0	60HD micro 757 TOT 475	3154	7181245	10/26/2008
(K)943729 .08	7	125	875.0	60HD micro 757 TOT 476	3174	7181245	10/26/2008
(K)943730 .08	7	125	875.0	60HD micro 757 TOT 477	3174	7181245	10/26/2008
(K)943731 .08	7	125	875.0	60HD micro 757 TOT 478	3173	STAGE 7181245	10/26/2008
(K)943732 .08	7	125	875.0	60HD micro 757 TOT 479	3172	7181245	10/26/2008
(K)943733 .08	7	125	875.0	60HD micro 757 TOT 480	3172	7181245	10/26/2008
(K)943734 .08	7	125	875.0	60HD micro 757 TOT 481	3176	7181245	10/26/2008
(K)943735 .08	7	125	875.0	60HD micro 757 TOT 482	3180	7181245	10/26/2008
(K)943736 .08	7	125	875.0	60HD micro 757 TOT 483	3188	7181245	10/26/2008
(K)943737 .08	7	125	875.0	60HD micro 757 TOT 484	3188	7181245	10/26/2008
(K)943738 .08	7	125	875.0	60HD micro 757 TOT 485	3188	7181245	10/26/2008
(K)943739 .08	7	125	875.0	60HD micro 757 TOT 486	3184	7181245	10/26/2008
(K)943740 .08	7	125	875.0	60HD micro 757 TOT 487	3144	7181245	10/26/2008
(K)943741 .08	7	125	875.0	60HD micro 757 TOT 488	3152	7181245	10/26/2008
(K)943742 .08	7	125	875.0	60HD micro 757 TOT 489	3154	STAGE 7181245	10/26/2008
(K)943743 .08	7	125	875.0	60HD micro 757 TOT 490	3156	7181245	10/26/2008
(K)943744 .08	7	125	875.0	60HD micro 757 TOT 491	3156	7181245	10/26/2008
(K)943745 .08	7	125	875.0	60HD micro 757 TOT 492	3154	7181245	10/26/2008
(K)943746 .08	7	125	875.0	60HD micro 757 TOT 493	3156	7181245	10/26/2008
(K)944101 .08	7	125	875.0	60HD micro 757 TOT 494	3162	7181245	10/27/2008
(K)944102 .08	7	125	875.0	60HD micro 757 TOT 495	3174	7181245	10/27/2008
(K)944103 .08	7	125	875.0	60HD micro 757 TOT 496	3174	7181245	10/27/2008
(K)944104 .08	7	125	875.0	60HD micro 757 TOT 497	3182	7181245	10/27/2008
(K)944105 .08	7	125	875.0	60HD micro 757 TOT 498	3178	7181245	10/27/2008
(K)944106 .08	7	125	875.0	60HD micro 757 TOT 499	3170	stage 7181246	10/27/2008
(K)944107 .08	7	125	875.0	60HD micro 757 TOT 500	3172	7181246	10/27/2008
(K)944108 .08	7	125	875.0	60HD micro 757 TOT 501	3172	7181246	10/27/2008
(K)944109 .08	7	125	875.0	60HD micro 757 TOT 502	3172	7181246	10/27/2008
(K)944110 .08	7	125	875.0	60HD micro 757 TOT 503	3168	7181246	10/27/2008
(K)944111 .08	7	125	875.0	60HD micro 757 TOT 504	3164	7181246	10/27/2008
(K)944112 .08	7	125	875.0	60HD micro 757 TOT 505	3164	7181246	10/27/2008
(K)944113 .08	7	125	875.0	60HD micro 757 TOT 506	3162	7181246	10/27/2008
(K)944114 .08	7	125	875.0	60HD micro 757 TOT 507	3154	7181246	10/27/2008
(K)944115 .08	7	125	875.0	60HD micro 757 TOT 508	3166	7181246	10/27/2008
(K)944116 .08	7	125	875.0	60HD micro 757 TOT 509	3164	7181246	10/27/2008
(K)944117 .08	7	125	875.0	60HD micro 757 TOT 510	3162	STAGE + 3ft 7181246	10/27/2008
(K)944118 .08	7	125	875.0	60HD micro 757 TOT 511	3162	7181246	10/27/2008
(K)944119 .08	7	125	875.0	60HD micro 757 TOT 512	3156	7181246	10/27/2008
(K)944120 .08	7	125	875.0	60HD micro 757 TOT 513	3160	7181246	10/27/2008
(K)944121 .08	7	125	875.0	60HD micro 757 TOT 514	3158	7181246	10/27/2008

60 mil micro
HDPE

ESI Landwell Basic Remed doc 10167
Henderson, NV

PO#	9036
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METRIC DIMENSIONS

757 rolls 60 HD microspike

661

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60 mil ROLL #	wid	len	AREA	149 spools 5mm HD CHEVRON WELD ROD	wgt	lot #	prod date
(K)944222 .08	7	125	875.0	60HD micro 757 TOT 515	3162	7181246	10/28/2008
(K)944223 .08	7	125	875.0	60HD micro 757 TOT 516	3162	7181246	10/28/2008
(K)944224 .08	7	125	875.0	60HD micro 757 TOT 517	3162	7181246	10/28/2008
(K)944225 .08	7	125	875.0	60HD micro 757 TOT 518	3162	7181246	10/28/2008
(K)944226 .08	7	125	875.0	60HD micro 757 TOT 519	3164	7181246	10/28/2008
(K)944227 .08	7	125	875.0	60HD micro 757 TOT 520	3168	7181246	10/28/2008
(K)944228 .08	7	125	875.0	60HD micro 757 TOT 521	3170	stage 7181246	10/28/2008
(K)944229 .08	7	125	875.0	60HD micro 757 TOT 522	3172	7181246	10/28/2008
(K)944230 .08	7	125	875.0	60HD micro 757 TOT 523	3170	7181246	10/28/2008
(K)944231 .08	7	125	875.0	60HD micro 757 TOT 524	3168	7181246	10/28/2008
(K)944232 .08	7	125	875.0	60HD micro 757 TOT 525	3164	7181246	10/28/2008
(K)944233 .08	7	125	875.0	60HD micro 757 TOT 526	3168	7181246	10/28/2008
(K)944234 .08	7	125	875.0	60HD micro 757 TOT 527	3158	7181246	10/28/2008
(K)944235 .08	7	125	875.0	60HD micro 757 TOT 528	3162	7181246	10/28/2008
(K)944236 .08	7	125	875.0	60HD micro 757 TOT 529	3184	7181246	10/28/2008
(K)944237 .08	7	125	875.0	60HD micro 757 TOT 530	3186	7181246	10/28/2008
(K)944238 .08	7	125	875.0	60HD micro 757 TOT 531	3186	stage 7181246	10/28/2008
(K)944239 .08	7	125	875.0	60HD micro 757 TOT 532	3184	7181246	10/28/2008
(K)944240 .08	7	125	875.0	60HD micro 757 TOT 533	3186	7181246	10/28/2008
(K)944241 .08	7	125	875.0	60HD micro 757 TOT 534	3188	7181246	10/28/2008
(K)944242 .08	7	125	875.0	60HD micro 757 TOT 535	3190	7181246	10/28/2008
(K)944243 .08	7	125	875.0	60HD micro 757 TOT 536	3180	7181246	10/28/2008
(K)944344 .08	7	125	875.0	60HD micro 757 TOT 537	3180	7181246	10/29/2008
(K)944345 .08	7	125	875.0	60HD micro 757 TOT 538	3188	7181246	10/29/2008
(K)944346 .08	7	125	875.0	60HD micro 757 TOT 539	3186	7181246	10/29/2008
(K)944347 .08	7	125	875.0	60HD micro 757 TOT 540	3186	7181246	10/29/2008
(K)944348 .08	7	125	875.0	60HD micro 757 TOT 541	3180	7181246	10/29/2008
(K)944349 .08	7	125	875.0	60HD micro 757 TOT 542	3180	stage 7181246	10/29/2008
(K)944350 .08	7	125	875.0	60HD micro 757 TOT 543	3190	7181246	10/29/2008
(K)944351 .08	7	125	875.0	60HD micro 757 TOT 544	3186	7181246	10/29/2008
(K)944352 .08	7	125	875.0	60HD micro 757 TOT 545	3168	7181246	10/29/2008
(K)944353 .08	7	125	875.0	60HD micro 757 TOT 546	3166	7181246	10/29/2008
(K)944354 .08	7	125	875.0	60HD micro 757 TOT 547	3160	7181246	10/29/2008
(K)944355 .08	7	125	875.0	60HD micro 757 TOT 548	3150	7181246	10/29/2008
(K)944356 .08	7	125	875.0	60HD micro 757 TOT 549	3142	7181246	10/29/2008
(K)944357 .08	7	125	875.0	60HD micro 757 TOT 550	3140	7181246	10/29/2008
(K)944358 .08	7	125	875.0	60HD micro 757 TOT 551	3138	7181246	10/29/2008
(K)944359 .08	7	125	875.0	60HD micro 757 TOT 552	3132	7181246	10/29/2008



quality certificate

ROLL # **942223-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.50 mm	59 mil	Length.....	125 m
	MAX:	1.56 mm	61 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 32 mil	AVE:	1.53 mm	60 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 206

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.26
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Carbon Black Content ASTM D4218	Range	%	2.15
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	152 ppi	2,523 psi
	Average Strength @ Break	30 N/mm	171 ppi	2,840 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.40
	Average Elongation @ Break	%	469.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	276.2 N	62.096 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	411.9 N	92.607 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	576.4 N	129.58 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-13-08**

Signature..... *[Handwritten Signature]*

Quality Control Department

60HDmic.FRM
REV 03
12/23/05



quality certificate

ROLL # **942224-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.49 mm	59 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	32 mil	AVE:	1.53 mm	60 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 206

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.26
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Carbon Black Content ASTM D4218	Range		%		2.17
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	158 ppi	2,617 psi
	Average Strength @ Break	30 N/mm	169 ppi	2,800 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.39
	Average Elongation @ Break	%		467.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	264.9 N		59.560 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	431.6 N		97.040 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	608.5 N		136.80 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-13-08**

Signature..... *[Signature]*

Quality Control Department

60HDmic.FRM
REV 03
12/23/05



quality certificate

ROLL # **942225-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.45 mm	57 mil	Length.....	125 m
	MAX:	1.59 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 33 mil	AVE:	1.53 mm	60 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **206**

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.26
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Carbon Black Content ASTM D4218	Range	%	2.17
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	158 ppi	2,617 psi
	Average Strength @ Break	30 N/mm	169 ppi	2,800 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.39
	Average Elongation @ Break	%	467.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	264.9 N	59.560 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	431.6 N	97.040 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	608.5 N	136.80 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-13-08**

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ROLL # **942226-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.51 mm	59 mil	Length.....	125 m
	MAX:	1.59 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 32 mil	AVE:	1.55 mm	61 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 206

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.26
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Carbon Black Content ASTM D4218	Range	%	2.17
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,617 psi
	Average Strength @ Break	30 N/mm	171 ppi	2,800 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.39
	Average Elongation @ Break	%	467.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	264.9 N	59.560 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	431.6 N	97.040 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	608.5 N	136.80 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **942227-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	32 mil	AVE:	1.57 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 206

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.26
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Carbon Black Content ASTM D4218	Range		%		2.17
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,617 psi
	Average Strength @ Break	30 N/mm	173 ppi	2,800 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.39
	Average Elongation @ Break	%		467.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	264.9 N		59.560 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	431.6 N		97.040 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	608.5 N		136.80 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
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ROLL # **942228-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.66 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	32 mil	AVE:	1.61 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				206	TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.26
Carbon Black Content ASTM D4218	Range		%		2.17
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	166 ppi	2,617 psi
	Average Strength @ Break		31 N/mm	177 ppi	2,800 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		14.39
	Average Elongation @ Break		%		467.2
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.20
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		264.9 N		59.560 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		431.6 N		97.040 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		608.5 N		136.80 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
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Destination **Henderson, NV**

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ROLL # **942229-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	25 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 206

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.26
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Carbon Black Content ASTM D4218	Range		%		2.14
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,652 psi
	Average Strength @ Break	29 N/mm	167 ppi	2,690 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.04
	Average Elongation @ Break	%		428.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	271.1 N		60.955 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	454.3 N		102.14 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	612.3 N		137.65 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
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ROLL # **942230-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.66 mm	65 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	39 mil	AVE:	1.60 mm	63 mil		
ODD #: TOP	EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	206

TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.26
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Carbon Black Content ASTM D4218	Range			%		2.14
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			29 N/mm	167 ppi	2,652 psi
	Average Strength @ Break			30 N/mm	169 ppi	2,690 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		15.04
	Average Elongation @ Break			%		428.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			271.1 N		60.955 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			454.3 N		102.14 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			612.3 N		137.65 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **942231-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.67 mm	66 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	26 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895 minutes	206

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.26
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Carbon Black Content ASTM D4218	Range		%			2.14
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	166 ppi	2,652 psi
	Average Strength @ Break	29 N/mm	168 ppi	2,690 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.04
	Average Elongation @ Break	%		428.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	271.1 N		60.955 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	454.3 N		102.14 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	612.3 N		137.65 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
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Date:..... **10-13-08**

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ROLL # **942232-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.51 mm	59 mil	Length.....	125 m
	MAX:	1.64 mm	65 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 37 mil	AVE:	1.59 mm	63 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	206

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.26
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Carbon Black Content ASTM D4218	Range	%	2.14
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	166 ppi	2,652 psi
	Average Strength @ Break	29 N/mm	168 ppi	2,690 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.04
	Average Elongation @ Break	%	428.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	271.1 N	60.955 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	454.3 N	102.14 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	612.3 N	137.65 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **942233-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet
	MAX:	1.65 mm	65 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 24 mil	AVE:	1.59 mm	63 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	206

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.26
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Carbon Black Content ASTM D4218	Range	%	2.14
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	166 ppi	2,652 psi
	Average Strength @ Break	29 N/mm	168 ppi	2,690 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.04
	Average Elongation @ Break	%	428.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	271.1 N	60.955 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	454.3 N	102.14 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	612.3 N	137.65 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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 Destination **Henderson, NV**

Date:..... **10-13-08**

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ROLL # **942234-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.56 mm	61 mil	Length.....	125 m
	MAX:	1.63 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 38 mil	AVE:	1.59 mm	63 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes	206

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.26
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Carbon Black Content ASTM D4218	Range	%	2.13
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,615 psi
	Average Strength @ Break	29 N/mm	165 ppi	2,643 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.33
	Average Elongation @ Break	%	439.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	271.4 N	61.015 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	434.1 N	97.587 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	635.0 N	142.75 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **942235-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	24 mil	AVE:	1.56 mm	61 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 206

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.26
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Carbon Black Content ASTM D4218	Range		%		2.13
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,615 psi
	Average Strength @ Break	28 N/mm	162 ppi	2,643 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.33
	Average Elongation @ Break	%		439.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	271.4 N		61.015 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	434.1 N		97.587 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	635.0 N		142.75 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **942236-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.68 mm	66 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	39 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 206

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.945
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.26
Carbon Black Content ASTM D4218	Range		%		2.13
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		28 N/mm	163 ppi	2,615 psi
	Average Strength @ Break		29 N/mm	164 ppi	2,643 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		15.33
	Average Elongation @ Break		%		439.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.20
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		271.4 N		61.015 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		434.1 N		97.587 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		635.0 N		142.75 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-13-08**

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ROLL # **942237-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.53 mm	60 mil	Length.....	125 m	410.1 feet
	MAX: 1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 24 mil	AVE: 1.57 mm	62 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	206

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.26
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Carbon Black Content ASTM D4218	Range	%	2.13
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,615 psi
	Average Strength @ Break	29 N/mm	163 ppi	2,643 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.33
	Average Elongation @ Break	%	439.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	271.4 N	61.015 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	434.1 N	97.587 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	635.0 N	142.75 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **942238-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m
	MAX:	1.63 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 39 mil	AVE:	1.59 mm	63 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	206

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.26
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Carbon Black Content ASTM D4218	Range	%	2.13
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,615 psi
	Average Strength @ Break	29 N/mm	165 ppi	2,643 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.33
	Average Elongation @ Break	%	439.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	271.4 N	61.015 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	434.1 N	97.587 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	635.0 N	142.75 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **942239-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.59 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	31 mil	AVE:	1.57 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 206

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.26
Carbon Black Content ASTM D4218	Range		%		2.21
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,568 psi	
	Average Strength @ Break	30 N/mm	174 ppi	2,813 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.08	
	Average Elongation @ Break	%		472.9	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.20	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	288.3 N		64.817 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	434.8 N		97.746 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	583.1 N		131.08 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **942240-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **32** mil AVE: **1.57** mm **62** mil OIT(Standard) ASTM D3895 minutes **206** **TEST RESULTS**
 ODD #: TOP EVEN #: BOTTOM

Specific Gravity Density g/cc **.946**
 ASTM D792

MFI ASTM D1238 Melt Flow Index 190°C /2160 g g/10 min **.26**
 COND. E
 GRADE: **K307**

Carbon Black Content Range % **2.21**
 ASTM D4218

Carbon Black Dispersion Category **10 in Cat 1**
 ASTM D5596

Tensile Strength Average Strength @ Yield **28** N/mm **159** ppi **2,568** psi
 ASTM D6693
 ASTM D638 (Modified)
 (2 inches / minute)
 Average Strength @ Break **30** N/mm **174** ppi **2,813** psi

Elongation ASTM D6693 Average Elongation @ Yield % **15.08**
 ASTM D638 (Modified)
 (2 inches / minute)
 Lo = 1.3" Yield
 Average Elongation @ Break % **472.9**
 Lo = 2.0" Break

Dimensional Stability Average Dimensional change % **-0.20**
 ASTM D1204 (Modified)

Tear Resistance Average Tear Resistance **288.3** N **64.817** lbs
 ASTM D-1004 (Modified)

Puncture Resistance Load **434.8** N **97.746** lbs
 FTMS 101 Method 2065 (Modified)

Puncture Resistance Load **583.1** N **131.08** lbs
 ASTM D4833 (Modified)

ESCR Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**
 ASTM D1693

Notched Constant Tensile Load pass / fail @ 30% 300 hrs **ONGOING**
 ASTM D5397

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-13-08**

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ROLL # **942241-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	33 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				206	TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.26
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Carbon Black Content ASTM D4218	Range		%			2.21
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,568 psi
	Average Strength @ Break	31 N/mm	175 ppi	2,813 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.08
	Average Elongation @ Break	%		472.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	288.3 N		64.817 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	434.8 N		97.746 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	583.1 N		131.08 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-13-08**

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ROLL # **942242-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m
	MAX:	1.59 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	206

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.26	
Carbon Black Content ASTM D4218	Range	%	2.21	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,568 psi
	Average Strength @ Break	30 N/mm	174 ppi	2,813 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.08	
	Average Elongation @ Break	%	472.9	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	288.3 N	64.817 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	434.8 N	97.746 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	583.1 N	131.08 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-13-08**

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ROLL # **942343-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.55 mm	61 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 34 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 206

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.26	
Carbon Black Content ASTM D4218	Range	%	2.21	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,568 psi
	Average Strength @ Break	30 N/mm	174 ppi	2,813 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.08	
	Average Elongation @ Break	%	472.9	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	288.3 N	64.817 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	434.8 N	97.746 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	583.1 N	131.08 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-15-08**

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ROLL # **942344-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	32 mil	AVE:	1.57 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 206

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.26
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Carbon Black Content ASTM D4218	Range		%			2.22
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		27 N/mm	157 ppi	2,536 psi
	Average Strength @ Break		31 N/mm	176 ppi	2,846 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		13.96
	Average Elongation @ Break		%		490.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		279.9 N		62.922 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		436.6 N		98.166 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load		618.7 N		139.08 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures		1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%		300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-15-08**

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ROLL # **942345-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.55 mm	61 mil	Length.....	125 m
	MAX:	1.59 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 33 mil	AVE:	1.57 mm	62 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	206

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.26
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Carbon Black Content ASTM D4218	Range	%	2.22
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	157 ppi	2,536 psi
	Average Strength @ Break	31 N/mm	176 ppi	2,846 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.96
	Average Elongation @ Break	%	490.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	279.9 N	62.922 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	436.6 N	98.166 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	618.7 N	139.08 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **942346-08** Lot #: **8180856** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	33 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 206

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.26
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Carbon Black Content ASTM D4218	Range		%		2.22
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	158 ppi	2,536 psi
	Average Strength @ Break	31 N/mm	177 ppi	2,846 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		13.96
	Average Elongation @ Break	%		490.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	279.9 N		62.922 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	436.6 N		98.166 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	618.7 N		139.08 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-15-08**

Signature..... *[Signature]*

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ROLL # **942347-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.50 mm	59 mil	Length.....	125 m
	MAX:	1.58 mm	62 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 32 mil	AVE:	1.56 mm	61 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	211

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.22
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	156 ppi	2,536 psi
	Average Strength @ Break	31 N/mm	175 ppi	2,846 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.96
	Average Elongation @ Break	%	490.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	279.9 N	62.922 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	436.6 N	98.166 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	618.7 N	139.08 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-15-08**

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ROLL # **942348-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.57 mm	62 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	31 mil	AVE:	1.54 mm	61 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 211

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.23
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Carbon Black Content ASTM D4218	Range		%			2.22
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		27 N/mm	154 ppi	2,536 psi
	Average Strength @ Break		30 N/mm	173 ppi	2,846 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		13.96
	Average Elongation @ Break		%		490.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-1.10
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		279.9 N		62.922 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		436.6 N		98.166 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load		618.7 N		139.08 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures		1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%		300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **942349-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.49 mm	59 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.58 mm	62 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	32 mil	AVE:	1.55 mm	61 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	211

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.944
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
Carbon Black Content ASTM D4218	Range		%		2.16
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		26 N/mm	150 ppi	2,465 psi
	Average Strength @ Break		29 N/mm	167 ppi	2,733 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		14.75
	Average Elongation @ Break		%		467.4
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-1.10
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		260.5 N		58.560 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		424.4 N		95.420 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		585.0 N		131.52 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
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ROLL # **942350-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet
	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.57 mm	62 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	211

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.16
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	152 ppi	2,465 psi
	Average Strength @ Break	30 N/mm	169 ppi	2,733 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.75
	Average Elongation @ Break	%	467.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	260.5 N	58.560 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	424.4 N	95.420 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	585.0 N	131.52 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-15-08**

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ROLL # **942351-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.49 mm	59 mil	Length.....	125 m	410.1 feet
	MAX: 1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 29 mil	AVE: 1.55 mm	61 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	211

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.16
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	26 N/mm	150 ppi	2,465 psi
	Average Strength @ Break	29 N/mm	167 ppi	2,733 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.75
	Average Elongation @ Break	%	467.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	260.5 N	58.560 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	424.4 N	95.420 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	585.0 N	131.52 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **942352-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.49 mm	59 mil	Length.....	125 m
	MAX:	1.56 mm	61 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.53 mm	60 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **211**

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.16
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	26 N/mm	148 ppi	2,465 psi
	Average Strength @ Break	29 N/mm	165 ppi	2,733 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.75
	Average Elongation @ Break	%	467.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	260.5 N	58.560 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	424.4 N	95.420 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	585.0 N	131.52 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **942353-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m
	MAX:	1.59 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 32 mil	AVE:	1.55 mm	61 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	211

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.944	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23	
Carbon Black Content ASTM D4218	Range	%	2.16	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	26 N/mm	150 ppi	2,465 psi
	Average Strength @ Break	29 N/mm	167 ppi	2,733 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.75	
	Average Elongation @ Break	%	467.4	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	260.5 N	58.560 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	424.4 N	95.420 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	585.0 N	131.52 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-15-08**

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ROLL # **942354-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	29 mil	AVE:	1.56 mm	61 mil		
ODD #: TOP	EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	211

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.945
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.23
Carbon Black Content ASTM D4218	Range		%			2.24
Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		27 N/mm	156 ppi		2,543 psi
	Average Strength @ Break		28 N/mm	160 ppi		2,612 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			13.79
	Average Elongation @ Break		%			471.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-1.10
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		276.6 N			62.180 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		397.4 N			89.346 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		611.7 N			137.52 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures		1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%		300 hrs			ONGOING

Customer: **Environmental Specialties**
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 Destination **Henderson, NV**

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ROLL # **942355-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.55 mm	61 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 211

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23	
Carbon Black Content ASTM D4218	Range	%	2.24	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	158 ppi	2,543 psi
	Average Strength @ Break	28 N/mm	162 ppi	2,612 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.79	
	Average Elongation @ Break	%	471.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	276.6 N	62.180 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	397.4 N	89.346 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	611.7 N	137.52 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **942356-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.55 mm MAX: 1.63 mm AVE: 1.58 mm	ENGLISH 61 mil 64 mil 62 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 29 mil ODD #: TOP EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes 211	TEST RESULTS	

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.24
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Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	158 ppi	2,543 psi
	Average Strength @ Break	28 N/mm	162 ppi	2,612 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.79
	Average Elongation @ Break	%	471.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	276.6 N	62.180 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	397.4 N	89.346 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	611.7 N	137.52 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **942357-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	31 mil	AVE:	1.56 mm	61 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 211

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.945
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
Carbon Black Content ASTM D4218	Range		%		2.24
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		27 N/mm	156 ppi	2,543 psi
	Average Strength @ Break		28 N/mm	160 ppi	2,612 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		13.79
	Average Elongation @ Break		%		471.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-1.10
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		276.6 N		62.180 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		397.4 N		89.346 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		611.7 N		137.52 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **942358-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.50 mm	59 mil	Length.....	125 m	410.1 feet
	MAX: 1.56 mm	61 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 28 mil	AVE: 1.53 mm	60 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	211

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.24
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	153 ppi	2,543 psi
	Average Strength @ Break	28 N/mm	157 ppi	2,612 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.79
	Average Elongation @ Break	%	471.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	276.6 N	62.180 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	397.4 N	89.346 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	611.7 N	137.52 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-15-08**

Signature..... *[Signature]*

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ROLL # **942359-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.47 mm	58 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.54 mm	61 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **211**

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	152 ppi	2,502 psi
	Average Strength @ Break	31 N/mm	178 ppi	2,942 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.72
	Average Elongation @ Break	%	482.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	266.9 N	60.006 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	424.6 N	95.468 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	604.8 N	135.96 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-15-08**

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ROLL # **942360-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.51 mm	59 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.56 mm	61 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **211**

Specific Gravity ASTM D792	Density	g/cc	.945	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23	
Carbon Black Content ASTM D4218	Range	%	2.20	
Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	154 ppi	2,502 psi
	Average Strength @ Break	32 N/mm	181 ppi	2,942 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.72	
	Average Elongation @ Break	%	482.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	266.9 N	60.006 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	424.6 N	95.468 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	604.8 N	135.96 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **942361-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.47 mm	58 mil	Length.....	125 m
	MAX:	1.57 mm	62 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 32 mil	AVE:	1.53 mm	60 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 211

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	26 N/mm	151 ppi	2,502 psi
	Average Strength @ Break	31 N/mm	177 ppi	2,942 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.72
	Average Elongation @ Break	%	482.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	266.9 N	60.006 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	424.6 N	95.468 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	604.8 N	135.96 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **942362-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.49 mm MAX: 1.61 mm AVE: 1.53 mm	ENGLISH 59 mil 63 mil 60 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 33 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes 211	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	26 N/mm	151 ppi	2,502 psi
	Average Strength @ Break	31 N/mm	177 ppi	2,942 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.72
	Average Elongation @ Break	%	482.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	266.9 N	60.006 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	424.6 N	95.468 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	604.8 N	135.96 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-15-08**

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ROLL # **942363-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.51 mm	59 mil	Length.....	125 m
	MAX:	1.56 mm	61 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 33 mil	AVE:	1.53 mm	60 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 211

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	26 N/mm	151 ppi	2,502 psi
	Average Strength @ Break	31 N/mm	177 ppi	2,942 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.72
	Average Elongation @ Break	%	482.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	266.9 N	60.006 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	424.6 N	95.468 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	604.8 N	135.96 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-15-08**

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ROLL # **942464-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.58 mm	62 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	32 mil	AVE:	1.56 mm	61 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 211

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.944
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
Carbon Black Content ASTM D4218	Range		%		2.23
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	156 ppi	2,538 psi	
	Average Strength @ Break	31 N/mm	179 ppi	2,914 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.03	
	Average Elongation @ Break	%		465.6	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-1.10	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	270.3 N		60.775 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	419.5 N		94.321 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	619.3 N		139.23 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-16-08**

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ROLL # **942465-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.59 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	31 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM				OIT(Standard) ASTM D3895	minutes 211

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.944
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
Carbon Black Content ASTM D4218	Range		%		2.23
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		27 N/mm	157 ppi	2,538 psi
	Average Strength @ Break		32 N/mm	180 ppi	2,914 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		14.03
	Average Elongation @ Break		%		465.6
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-1.10
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		270.3 N		60.775 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		419.5 N		94.321 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		619.3 N		139.23 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-16-08**

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ROLL # **942466-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.56 mm	61 mil	Length.....	125 m	410.1 feet
	MAX: 1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 34 mil	AVE: 1.59 mm	63 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	211

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.23
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,538 psi
	Average Strength @ Break	32 N/mm	182 ppi	2,914 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.03
	Average Elongation @ Break	%	465.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	270.3 N	60.775 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	419.5 N	94.321 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	619.3 N	139.23 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-16-08**

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ROLL # **942467-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.57 mm	62 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.66 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	30 mil	AVE:	1.60 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 211

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
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Carbon Black Content ASTM D4218	Range		%		2.23
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,538 psi
	Average Strength @ Break	32 N/mm	184 ppi	2,914 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.03
	Average Elongation @ Break	%		465.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-1.10
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	270.3 N		60.775 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	419.5 N		94.321 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	619.3 N		139.23 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-16-08**

Signature..... *[Signature]*

Quality Control Department

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ROLL # **942468-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.56 mm	61 mil	Length.....	125 m
	MAX:	1.64 mm	65 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.59 mm	63 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	211

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.23
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,538 psi
	Average Strength @ Break	32 N/mm	182 ppi	2,914 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.03
	Average Elongation @ Break	%	465.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	270.3 N	60.775 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	419.5 N	94.321 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	619.3 N	139.23 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **942469-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m
	MAX:	1.65 mm	65 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.59 mm	63 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	211

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.16
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,565 psi
	Average Strength @ Break	29 N/mm	165 ppi	2,629 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.59
	Average Elongation @ Break	%	429.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	275.4 N	61.918 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	442.1 N	99.403 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	604.9 N	136.00 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-16-08**

Signature..... *[Handwritten Signature]*

Quality Control Department

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ROLL # **942470-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.55 mm	61 mil	Length.....	125 m
	MAX:	1.63 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.58 mm	62 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	211

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.16
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,565 psi
	Average Strength @ Break	29 N/mm	164 ppi	2,629 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.59
	Average Elongation @ Break	%	429.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	275.4 N	61.918 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	442.1 N	99.403 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	604.9 N	136.00 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-16-08**

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ROLL # **942471-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.59 mm	63 mil	Length.....	125 m
	MAX:	1.64 mm	65 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.61 mm	63 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **211**

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.16
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Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	163 ppi	2,565 psi
	Average Strength @ Break	29 N/mm	167 ppi	2,629 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.59
	Average Elongation @ Break	%	429.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	275.4 N	61.918 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	442.1 N	99.403 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	604.9 N	136.00 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-16-08**

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ROLL # **942472-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet
	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 211	TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.945
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
Carbon Black Content ASTM D4218	Range		%		2.16
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,565 psi	
	Average Strength @ Break	29 N/mm	165 ppi	2,629 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.59	
	Average Elongation @ Break	%		429.1	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-1.10	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	275.4 N		61.918 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	442.1 N		99.403 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	604.9 N		136.00 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
PO: **9036 Landwell Basic Remediation**
Destination **Henderson, NV**

Date:..... **10-16-08**

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ROLL # **942473-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	29 mil	AVE:	1.57 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 211

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
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Carbon Black Content ASTM D4218	Range		%		2.16
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,565 psi
	Average Strength @ Break	28 N/mm	162 ppi	2,629 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.59
	Average Elongation @ Break	%		429.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-1.10
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	275.4 N		61.918 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	442.1 N		99.403 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	604.9 N		136.00 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-16-08**

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ROLL # **942474-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	211

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.944	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23	
Carbon Black Content ASTM D4218	Range	%	2.20	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	156 ppi	2,532 psi
	Average Strength @ Break	32 N/mm	184 ppi	2,972 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.79	
	Average Elongation @ Break	%	492.8	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	271.5 N	61.037 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	408.7 N	91.873 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	614.0 N	138.02 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
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ROLL # **942475-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.51 mm	59 mil	Length.....	125 m
	MAX:	1.59 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.57 mm	62 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	211

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	156 ppi	2,532 psi
	Average Strength @ Break	32 N/mm	184 ppi	2,972 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.79
	Average Elongation @ Break	%	492.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	271.5 N	61.037 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	408.7 N	91.873 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	614.0 N	138.02 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-16-08**

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ROLL # **942476-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m
	MAX:	1.63 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	211

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.944	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23	
Carbon Black Content ASTM D4218	Range	%	2.20	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	156 ppi	2,532 psi
	Average Strength @ Break	32 N/mm	184 ppi	2,972 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.79	
	Average Elongation @ Break	%	492.8	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	271.5 N	61.037 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	408.7 N	91.873 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	614.0 N	138.02 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-16-08**

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ROLL # **942477-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.49 mm	59 mil	Length.....	125 m	410.1 feet
	MAX: 1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 30 mil	AVE: 1.54 mm	61 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	211

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	153 ppi	2,532 psi
	Average Strength @ Break	32 N/mm	180 ppi	2,972 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.79
	Average Elongation @ Break	%	492.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	271.5 N	61.037 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	408.7 N	91.873 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	614.0 N	138.02 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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 Destination **Henderson, NV**

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ROLL # **942478-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.57 mm	62 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.64 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	28 mil	AVE:	1.60 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 211

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.944
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
Carbon Black Content ASTM D4218	Range		%		2.20
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,532 psi	
	Average Strength @ Break	33 N/mm	187 ppi	2,972 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.79	
	Average Elongation @ Break	%		492.8	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-1.10	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	271.5 N		61.037 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	408.7 N		91.873 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	614.0 N		138.02 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **942479-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	29 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	211

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.23
Carbon Black Content ASTM D4218	Range		%			2.25
Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		27 N/mm	155 ppi		2,497 psi
	Average Strength @ Break		31 N/mm	177 ppi		2,846 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			14.99
	Average Elongation @ Break		%			480.1
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-1.10
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		269.7 N			60.623 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		435.7 N			97.956 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		616.5 N			138.60 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-16-08**

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ROLL # **942480-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	27 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	211

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
Carbon Black Content ASTM D4218	Range		%		2.25
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	155 ppi	2,497 psi	
	Average Strength @ Break	31 N/mm	177 ppi	2,846 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.99	
	Average Elongation @ Break	%		480.1	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-1.10	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	269.7 N		60.623 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	435.7 N		97.956 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	616.5 N		138.60 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
PO: **9036 Landwell Basic Remediation**
Destination **Henderson, NV**

Date:..... **10-16-08**

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ROLL # **942481-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.59 mm	63 mil	Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **29** mil AVE: **1.56** mm **61** mil OIT(Standard) ASTM D3895 minutes **211** **TEST RESULTS**
 ODD #: TOP EVEN #: BOTTOM

Specific Gravity Density g/cc **.946**
 ASTM D792

MFI ASTM D1238 Melt Flow Index 190°C /2160 g g/10 min **.23**
 COND. E
 GRADE: **K307**

Carbon Black Content Range % **2.25**
 ASTM D4218

Carbon Black Dispersion Category **10 in Cat 1**
 ASTM D5596

Tensile Strength Average Strength @ Yield **27** N/mm **153** ppi **2,497** psi
 ASTM D6693
 ASTM D638 (Modified)
 (2 inches / minute)
 Average Strength @ Break **31** N/mm **175** ppi **2,846** psi

Elongation ASTM D6693 Average Elongation @ Yield % **14.99**
 ASTM D638 (Modified)
 (2 inches / minute)
 Lo = 1.3" Yield
 Average Elongation @ Break % **480.1**
 Lo = 2.0" Break

Dimensional Stability Average Dimensional change % **-1.10**
 ASTM D1204 (Modified)

Tear Resistance Average Tear Resistance **269.7** N **60.623** lbs
 ASTM D-1004 (Modified)

Puncture Resistance Load **435.7** N **97.956** lbs
 FTMS 101 Method 2065 (Modified)

Puncture Resistance Load **616.5** N **138.60** lbs
 ASTM D4833 (Modified)

ESCR Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**
 ASTM D1693

Notched Constant Tensile Load pass / fail @ 30% 300 hrs **ONGOING**
 ASTM D5397

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-16-08**

Signature..... *[Signature]*
 Quality Control Department

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ROLL # **942482-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	211

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.25
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	154 ppi	2,497 psi
	Average Strength @ Break	31 N/mm	176 ppi	2,846 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.99
	Average Elongation @ Break	%	480.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-1.10
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	269.7 N	60.623 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	435.7 N	97.956 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	616.5 N	138.60 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-16-08**

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ROLL #

942483-08

Lot #:

7181034

Liner Type: **MICROSPIKE™ HDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	1.53 mm	60 mil
MAX:	1.62 mm	64 mil
AVE:	1.58 mm	62 mil

Thickness.....	1.5 mm	60 mil
Length.....	125 m	410.1 feet
Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **33** mil
ODD #: TOP EVEN #: BOTTOM

OIT(Standard) ASTM D3895 minutes **211** **TEST RESULTS**

Specific Gravity
ASTM D792

Density

g/cc

.946

MFI ASTM D1238
COND. E
GRADE: **K307**

Melt Flow Index 190°C /2160 g

g/10 min

.23

Carbon Black Content
ASTM D4218

Range

%

2.25

Carbon Black Dispersion
ASTM D5596

Category

10 in Cat 1

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Yield

27 N/mm

155 ppi

2,497 psi

Average Strength @ Break

31 N/mm

177 ppi

2,846 psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Yield

%

14.99

Average Elongation @ Break

%

480.1

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change

%

-1.10

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance

269.7 N

60.623 lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load

435.7 N

97.956 lbs

Puncture Resistance
ASTM D4833 (Modified)

Load

616.5 N

138.60 lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

CERTIFIED

Notched Constant Tensile Load
ASTM D5397

pass / fail @ 30%

300 hrs

ONGOING

Customer: **Environmental Specialties**
PO: **9036 Landwell Basic Remediation**
Destination **Henderson, NV**

Date:..... **10-16-08**

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ROLL # **942484-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m
	MAX:	1.63 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	211

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.944
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
Carbon Black Content ASTM D4218	Range		%		2.14
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		27 N/mm	154 ppi	2,498 psi
	Average Strength @ Break		30 N/mm	174 ppi	2,813 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		15.43
	Average Elongation @ Break		%		469.4
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-1.10
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		273.6 N		61.503 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		418.3 N		94.043 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		616.9 N		138.69 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-16-08**

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ROLL # **942585-08** Lot #: **7181034** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m	410.1 feet
	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 32 mil	AVE:	1.57 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 211	TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.23
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Carbon Black Content ASTM D4218	Range		%	2.14
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	154 ppi	2,498 psi
	Average Strength @ Break	30 N/mm	174 ppi	2,813 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%	15.43
	Average Elongation @ Break		%	469.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%	-1.10
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	273.6 N		61.503 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	418.3 N		94.043 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	616.9 N		138.69 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-17-08**

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ROLL # **942586-08** Lot #: **8180829** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.51 mm MAX: 1.63 mm AVE: 1.57 mm	ENGLISH 59 mil 64 mil 62 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 30 mil ODD #: TOP EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes 210	TEST RESULTS	

Specific Gravity ASTM D792	Density		g/cc	.945
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.26
Carbon Black Content ASTM D4218	Range		%	2.14
Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	154 ppi	2,498 psi
	Average Strength @ Break	30 N/mm	174 ppi	2,813 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.43
	Average Elongation @ Break	%		469.4
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.31
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	273.6 N		61.503 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	418.3 N		94.043 lbs
Puncture Resistance ASTM D4833 (Modified)	Load	616.9 N		138.69 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING

Customer: **Environmental Specialties**
PO: **9036 Landwell Basic Remediation**
Destination **Henderson, NV**

Date:..... **10-17-08**

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ROLL # **942587-08** Lot #: **8180829** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m
	MAX:	1.64 mm	65 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 32 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	210

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.26
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Carbon Black Content ASTM D4218	Range	%	2.14
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	154 ppi	2,498 psi
	Average Strength @ Break	30 N/mm	174 ppi	2,813 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.43
	Average Elongation @ Break	%	469.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.31
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	273.6 N	61.503 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	418.3 N	94.043 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	616.9 N	138.69 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-17-08**

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ROLL # **942588-08** Lot #: **8180829** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m
	MAX:	1.64 mm	65 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.57 mm	62 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	210

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.26
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Carbon Black Content ASTM D4218	Range	%	2.14
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	154 ppi	2,498 psi
	Average Strength @ Break	30 N/mm	174 ppi	2,813 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.43
	Average Elongation @ Break	%	469.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.31
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	273.6 N	61.503 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	418.3 N	94.043 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	616.9 N	138.69 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-17-08**

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ROLL # **942589-08** Lot #: **8180829** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 32 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	210

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.26	
Carbon Black Content ASTM D4218	Range	%	2.24	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	152 ppi	2,459 psi
	Average Strength @ Break	32 N/mm	181 ppi	2,921 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.41	
	Average Elongation @ Break	%	484.1	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.31	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	277.1 N	62.287 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	425.9 N	95.756 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	599.0 N	134.67 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-17-08**

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ROLL # **942590-08** Lot #: **8180829** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	31 mil	AVE:	1.57 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 210

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.26
Carbon Black Content ASTM D4218	Range		%		2.24
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		27 N/mm	152 ppi	2,459 psi
	Average Strength @ Break		32 N/mm	181 ppi	2,921 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		15.41
	Average Elongation @ Break		%		484.1
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.31
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		277.1 N		62.287 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		425.9 N		95.756 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		599.0 N		134.67 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
PO: **9036 Landwell Basic Remediation**
Destination **Henderson, NV**

Date:..... **10-17-08**

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ROLL # **942591-08** Lot #: **8180829** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	32 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	210

TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.26
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Carbon Black Content ASTM D4218	Range			%		2.24
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			27 N/mm	153 ppi	2,459 psi
	Average Strength @ Break			32 N/mm	182 ppi	2,921 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		15.41
	Average Elongation @ Break			%		484.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.31
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			277.1 N		62.287 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			425.9 N		95.756 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			599.0 N		134.67 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-17-08**

Signature..... *[Signature]*

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ROLL # **942592-08** Lot #: **8180829** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m
	MAX:	1.63 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 32 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 210

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.26
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Carbon Black Content ASTM D4218	Range	%	2.24
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	152 ppi	2,459 psi
	Average Strength @ Break	32 N/mm	181 ppi	2,921 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.41
	Average Elongation @ Break	%	484.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.31
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	277.1 N	62.287 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	425.9 N	95.756 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	599.0 N	134.67 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-17-08**

Signature..... *[Signature]*

Quality Control Department

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ROLL # **942593-08** Lot #: **8180829** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **30** mil AVE: **1.57** mm **62** mil OIT(Standard) ASTM D3895 minutes **210** **TEST RESULTS**
 ODD #: TOP EVEN #: BOTTOM

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.26
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Carbon Black Content ASTM D4218	Range	%	2.24
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	152 ppi	2,459 psi
	Average Strength @ Break	32 N/mm	181 ppi	2,921 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.41
	Average Elongation @ Break	%	484.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.31
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	277.1 N	62.287 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	425.9 N	95.756 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	599.0 N	134.67 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-17-08**

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ROLL # **942594-08** Lot #: **8180829** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.58 mm	62 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	210

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.26
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,639 psi
	Average Strength @ Break	31 N/mm	180 ppi	2,891 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.49
	Average Elongation @ Break	%	482.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.31
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	275.1 N	61.852 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	433.1 N	97.378 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	610.7 N	137.29 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-17-08**

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ROLL # **942595-08** Lot #: **8180829** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	28 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 210

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.945
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.26
Carbon Black Content ASTM D4218	Range		%		2.18
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	165 ppi	2,639 psi
	Average Strength @ Break		32 N/mm	181 ppi	2,891 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		15.49
	Average Elongation @ Break		%		482.2
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.31
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		275.1 N		61.852 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		433.1 N		97.378 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		610.7 N		137.29 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
PO: **9036 Landwell Basic Remediation**
Destination **Henderson, NV**

Date:..... **10-17-08**

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ROLL # **942596-08** Lot #: **8180829** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.54 mm	61 mil	Length.....	125 m	410.1 feet
	MAX: 1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 28 mil	AVE: 1.58 mm	62 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	210

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.26
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,639 psi
	Average Strength @ Break	31 N/mm	180 ppi	2,891 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.49
	Average Elongation @ Break	%	482.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.31
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	275.1 N	61.852 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	433.1 N	97.378 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	610.7 N	137.29 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-17-08**

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ROLL # **942597-08** Lot #: **8180829** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	29 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 210

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.26
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Carbon Black Content ASTM D4218	Range		%		2.18
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,639 psi
	Average Strength @ Break	31 N/mm	180 ppi	2,891 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.49
	Average Elongation @ Break	%		482.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.31
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	275.1 N		61.852 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	433.1 N		97.378 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	610.7 N		137.29 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-17-08**

Signature..... *[Signature]*

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ROLL # **942598-08** Lot #: **8180829** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.54 mm MAX: 1.61 mm AVE: 1.58 mm	ENGLISH 61 mil 63 mil 62 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 29 mil ODD #: TOP EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes 210	TEST RESULTS	

Specific Gravity ASTM D792	Density		g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.26
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Carbon Black Content ASTM D4218	Range		%	2.18
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,639 psi
	Average Strength @ Break	31 N/mm	180 ppi	2,891 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.49
	Average Elongation @ Break	%		482.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.31
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	275.1 N		61.852 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	433.1 N		97.378 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	610.7 N		137.29 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-17-08**

Signature..... 

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ROLL # **942599-08** Lot #: **8180829** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	30 mil	AVE:	1.57 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 210

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.26
Carbon Black Content ASTM D4218	Range		%		2.20
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		28 N/mm	160 ppi	2,596 psi
	Average Strength @ Break		30 N/mm	174 ppi	2,812 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		14.09
	Average Elongation @ Break		%		474.7
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.31
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		280.1 N		62.963 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		448.4 N		100.81 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		611.7 N		137.53 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-17-08**

Signature..... 

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ROLL # **942500-08** Lot #: **8180829** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	28 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	210

TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.26
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Carbon Black Content ASTM D4218	Range			%		2.20
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			28 N/mm	161 ppi	2,596 psi
	Average Strength @ Break			31 N/mm	175 ppi	2,812 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		14.09
	Average Elongation @ Break			%		474.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.31
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			280.1 N		62.963 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			448.4 N		100.81 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			611.7 N		137.53 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-17-08**

Signature..... *[Signature]*

Quality Control Department

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ROLL # **942501-08** Lot #: **8180829** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	28 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	210

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.26
Carbon Black Content ASTM D4218	Range		%			2.20
Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		28 N/mm	161 ppi		2,596 psi
	Average Strength @ Break		31 N/mm	175 ppi		2,812 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			14.09
	Average Elongation @ Break		%			474.7
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-0.31
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		280.1 N			62.963 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		448.4 N			100.81 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		611.7 N			137.53 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-17-08**

Signature..... *[Handwritten Signature]*

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ROLL # **942502-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.55 mm	61 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	201

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,596 psi
	Average Strength @ Break	31 N/mm	175 ppi	2,812 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.09
	Average Elongation @ Break	%	474.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	280.1 N	62.963 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	448.4 N	100.81 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	611.7 N	137.53 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-17-08**

Signature..... *[Signature]*

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ROLL #

942503-08

Lot #:

8280549

Liner Type: **MICROSPIKE™ HDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	1.54 mm	61 mil
MAX:	1.64 mm	65 mil
AVE:	1.58 mm	62 mil

Thickness.....	1.5 mm	60 mil
Length.....	125 m	410.1 feet
Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **25** mil
ODD #: TOP EVEN #: BOTTOM

OIT(Standard) ASTM D3895 minutes **201** **TEST RESULTS**

Specific Gravity
ASTM D792

Density

g/cc

.947

MFI ASTM D1238
COND. E
GRADE: **K307**

Melt Flow Index 190°C /2160 g

g/10 min

.23

Carbon Black Content
ASTM D4218

Range

%

2.20

Carbon Black Dispersion
ASTM D5596

Category

10 in Cat 1

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Yield

28 N/mm

161 ppi

2,596 psi

Average Strength @ Break

31 N/mm

175 ppi

2,812 psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Yield

%

14.09

Average Elongation @ Break

%

474.7

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change

%

-0.38

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance

280.1 N

62.963 lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load

448.4 N

100.81 lbs

Puncture Resistance
ASTM D4833 (Modified)

Load

611.7 N

137.53 lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

CERTIFIED

Notched Constant Tensile Load
ASTM D5397

pass / fail @ 30%

300 hrs

ONGOING

Customer: **Environmental Specialties**
PO: **9036 Landwell Basic Remediation**
Destination **Henderson, NV**

Date:..... **10-17-08**

Signature.....
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ROLL # **942504-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.51 mm	59 mil	Length.....	125 m
	MAX:	1.69 mm	67 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 36 mil	AVE:	1.59 mm	63 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **201**

Specific Gravity ASTM D792	Density		g/cc	.947	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.23	
Carbon Black Content ASTM D4218	Range		%	2.13	
Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		28 N/mm	162 ppi	2,591 psi
	Average Strength @ Break		31 N/mm	175 ppi	2,789 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%	14.57	
	Average Elongation @ Break		%	455.1	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%	-0.38	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		283.6 N	63.769 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		450.4 N	101.25 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load		643.4 N	144.64 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-17-08**

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ROLL # **942505-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **26** mil AVE: **1.58** mm **62** mil OIT(Standard) ASTM D3895 minutes **201** **TEST RESULTS**
 ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.947
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.23
COND. E			
GRADE: K307			

Carbon Black Content	Range	%	2.13
ASTM D4218			

Carbon Black Dispersion	Category	10 in Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	28 N/mm	161 ppi	2,591 psi
ASTM D6693				
ASTM D638 (Modified)				
(2 inches / minute)	Average Strength @ Break	30 N/mm	173 ppi	2,789 psi

Elongation ASTM D6693	Average Elongation @ Yield	%	14.57
ASTM D638 (Modified)			
(2 inches / minute)			
Lo = 1.3" Yield	Average Elongation @ Break	%	455.1
Lo = 2.0" Break			

Dimensional Stability	Average Dimensional change	%	-0.38
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	283.6 N	63.769 lbs
ASTM D-1004 (Modified)			

Puncture Resistance	Load	450.4 N	101.25 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	643.4 N	144.64 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	ONGOING
ASTM D5397			

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-17-08**

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ROLL # **942506-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.67 mm	66 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	35 mil	AVE:	1.60 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 201

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.947
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
Carbon Black Content ASTM D4218	Range		%		2.13
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	163 ppi	2,591 psi	
	Average Strength @ Break	31 N/mm	176 ppi	2,789 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.57	
	Average Elongation @ Break	%		455.1	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.38	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	283.6 N		63.769 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	450.4 N		101.25 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	643.4 N		144.64 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-17-08**

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ROLL # **942607-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m
	MAX:	1.59 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 26 mil	AVE:	1.56 mm	61 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 201

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.13
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,591 psi
	Average Strength @ Break	30 N/mm	171 ppi	2,789 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.57
	Average Elongation @ Break	%	455.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	283.6 N	63.769 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	450.4 N	101.25 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	643.4 N	144.64 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-18-08**

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ROLL # **942608-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m
	MAX:	1.63 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 39 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes	201

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.13
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,591 psi
	Average Strength @ Break	30 N/mm	173 ppi	2,789 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.57
	Average Elongation @ Break	%	455.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	283.6 N	63.769 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	450.4 N	101.25 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	643.4 N	144.64 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-18-08**

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ROLL # **942609-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m
	MAX:	1.68 mm	66 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 24 mil	AVE:	1.59 mm	63 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	201

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.15
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,556 psi
	Average Strength @ Break	33 N/mm	187 ppi	2,981 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.57
	Average Elongation @ Break	%	483.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	272.7 N	61.311 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	442.2 N	99.419 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	603.6 N	135.69 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-18-08**

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ROLL # **942610-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.56 mm	61 mil	Length.....	125 m
	MAX:	1.62 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 38 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 201

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.15
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,556 psi
	Average Strength @ Break	32 N/mm	185 ppi	2,981 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.57
	Average Elongation @ Break	%	483.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	272.7 N	61.311 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	442.2 N	99.419 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	603.6 N	135.69 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-18-08**

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ROLL # **942611-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.48 mm	58 mil	Length.....	125 m	410.1 feet
	MAX: 1.64 mm	65 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 27 mil	AVE: 1.54 mm	61 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	201

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.15
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	155 ppi	2,556 psi
	Average Strength @ Break	32 N/mm	181 ppi	2,981 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.57
	Average Elongation @ Break	%	483.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	272.7 N	61.311 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	442.2 N	99.419 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	603.6 N	135.69 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-18-08**

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ROLL # **942612-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.48 mm	58 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.57 mm	62 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	37 mil	AVE:	1.52 mm	60 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 201

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
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Carbon Black Content ASTM D4218	Range		%		2.15
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	153 ppi	2,556 psi
	Average Strength @ Break	31 N/mm	178 ppi	2,981 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		13.57
	Average Elongation @ Break	%		483.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	272.7 N		61.311 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	442.2 N		99.419 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	603.6 N		135.69 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-18-08**

Signature..... *[Signature]*

Quality Control Department

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ROLL # **942613-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.51 mm	59 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 24 mil	AVE:	1.55 mm	61 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 201

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.15
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	156 ppi	2,556 psi
	Average Strength @ Break	32 N/mm	182 ppi	2,981 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.57
	Average Elongation @ Break	%	483.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	272.7 N	61.311 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	442.2 N	99.419 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	603.6 N	135.69 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-18-08**

Signature..... *[Handwritten Signature]*

Quality Control Department

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ROLL # **942614-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.50 mm	59 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.57 mm	62 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM	OIT(Standard) ASTM D3895			minutes	201

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,667 psi
	Average Strength @ Break	33 N/mm	189 ppi	3,053 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.17
	Average Elongation @ Break	%	492.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	273.7 N	61.544 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	426.7 N	95.934 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	622.1 N	139.85 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-18-08**

Signature..... *[Signature]*

Quality Control Department

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ROLL # **942615-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.55 mm	61 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	201

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,667 psi
	Average Strength @ Break	33 N/mm	189 ppi	3,053 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.17
	Average Elongation @ Break	%	492.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	273.7 N	61.544 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	426.7 N	95.934 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	622.1 N	139.85 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-18-08**

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ROLL # **942616-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet
	MAX:	1.57 mm	62 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 28 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	201

TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.23
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Carbon Black Content ASTM D4218	Range			%		2.18
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			29 N/mm	166 ppi	2,667 psi
	Average Strength @ Break			33 N/mm	190 ppi	3,053 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		14.17
	Average Elongation @ Break			%		492.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			273.7 N		61.544 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			426.7 N		95.934 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			622.1 N		139.85 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-18-08**

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ROLL # **942617-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	31 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				201	TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
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Carbon Black Content ASTM D4218	Range		%		2.18
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	166 ppi	2,667 psi
	Average Strength @ Break	33 N/mm	190 ppi	3,053 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.17
	Average Elongation @ Break	%		492.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	273.7 N		61.544 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	426.7 N		95.934 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	622.1 N		139.85 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-18-08**

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ROLL # **942618-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m
	MAX:	1.62 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes	201

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,667 psi
	Average Strength @ Break	33 N/mm	189 ppi	3,053 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.17
	Average Elongation @ Break	%	492.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	273.7 N	61.544 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	426.7 N	95.934 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	622.1 N	139.85 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-18-08**

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ROLL # **942619-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet
	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.57 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 201	TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.23
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Carbon Black Content ASTM D4218	Range			%		2.19
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			29 N/mm	166 ppi	2,685 psi
	Average Strength @ Break			32 N/mm	185 ppi	2,994 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		13.93
	Average Elongation @ Break			%		466.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			277.1 N		62.306 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			449.2 N		100.99 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			625.5 N		140.61 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-18-08**

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ROLL # **942620-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	31 mil	AVE:	1.57 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				201	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	166 ppi	2,685 psi
	Average Strength @ Break	32 N/mm	185 ppi	2,994 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.93
	Average Elongation @ Break	%	466.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	277.1 N	62.306 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	449.2 N	100.99 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	625.5 N	140.61 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-18-08**

Signature..... *[Signature]*

Quality Control Department

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ROLL # **942621-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.50 mm	59 mil	Length.....	125 m	410.1 feet
	MAX: 1.60 mm	63 mil	Width.....	7.00 m	23.0 feet
Asperity GRI GM12: 30 mil	AVE: 1.55 mm	61 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	201

Specific Gravity ASTM D792	Density	g/cc	.946		
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23		
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Carbon Black Content ASTM D4218	Range	%	2.19		
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1			
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,685 psi
	Average Strength @ Break	32 N/mm	183 ppi	2,994 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.93		
	Average Elongation @ Break	%	466.6		

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38		
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	277.1 N	62.306 lbs		
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	449.2 N	100.99 lbs		
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Puncture Resistance ASTM D4833 (Modified)	Load	625.5 N	140.61 lbs		
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING		
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-18-08**

Signature..... *[Handwritten Signature]*

Quality Control Department

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ROLL # **942622-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	31 mil	AVE:	1.56 mm	61 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	201

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.23
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Carbon Black Content ASTM D4218	Range		%			2.19
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	165 ppi	2,685 psi
	Average Strength @ Break		32 N/mm	184 ppi	2,994 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		13.93
	Average Elongation @ Break		%		466.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		277.1 N		62.306 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		449.2 N		100.99 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load		625.5 N		140.61 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-18-08**

Signature..... *[Handwritten Signature]*

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ROLL # **942623-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	30 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 201

TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.23
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Carbon Black Content ASTM D4218	Range			%		2.19
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			29 N/mm	167 ppi	2,685 psi
	Average Strength @ Break			33 N/mm	186 ppi	2,994 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		13.93
	Average Elongation @ Break			%		466.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			277.1 N		62.306 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			449.2 N		100.99 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			625.5 N		140.61 lbs
--	------	--	--	----------------	--	-------------------

ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-18-08**

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ROLL # **942624-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.57 mm	62 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	31 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 201

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
Carbon Black Content ASTM D4218	Range		%		2.19
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	166 ppi	2,649 psi
	Average Strength @ Break		32 N/mm	183 ppi	2,923 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		13.23
	Average Elongation @ Break		%		469.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.38
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		281.4 N		63.258 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		440.9 N		99.125 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		644.8 N		144.96 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-18-08**

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ROLL # **942625-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.65 mm	65 mil	Width.....	7.00 m	23.0 feet	
Asperity GRI GM12:	25 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				201	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,649 psi
	Average Strength @ Break	32 N/mm	182 ppi	2,923 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.23
	Average Elongation @ Break	%	469.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	281.4 N	63.258 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	440.9 N	99.125 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	644.8 N	144.96 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-18-08**

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ROLL # **942626-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.51 mm	59 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.67 mm	66 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	38 mil	AVE:	1.57 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 201

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
Carbon Black Content ASTM D4218	Range		%		2.19
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,649 psi	
	Average Strength @ Break	32 N/mm	181 ppi	2,923 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		13.23	
	Average Elongation @ Break	%		469.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.38	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	281.4 N		63.258 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	440.9 N		99.125 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	644.8 N		144.96 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
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 Destination **Henderson, NV**

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ROLL # **942627-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.45 mm	57 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	25 mil	AVE:	1.53 mm	60 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				201	TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.23
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Carbon Black Content ASTM D4218	Range			%		2.19
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			28 N/mm	160 ppi	2,649 psi
	Average Strength @ Break			31 N/mm	176 ppi	2,923 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		13.23
	Average Elongation @ Break			%		469.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			281.4 N		63.258 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			440.9 N		99.125 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			644.8 N		144.96 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
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ROLL # **942728-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.43 mm	56 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	37 mil	AVE:	1.52 mm	60 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 201

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
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Carbon Black Content ASTM D4218	Range		%		2.19
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,649 psi
	Average Strength @ Break	31 N/mm	175 ppi	2,923 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		13.23
	Average Elongation @ Break	%		469.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	281.4 N		63.258 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	440.9 N		99.125 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	644.8 N		144.96 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
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ROLL # **942729-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.48 mm	58 mil	Length.....	125 m
	MAX:	1.59 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 24 mil	AVE:	1.52 mm	60 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	201

Specific Gravity ASTM D792	Density	g/cc		.946	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min		.23	
Carbon Black Content ASTM D4218	Range	%		2.16	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1			
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	156 ppi	2,610 psi	
	Average Strength @ Break	32 N/mm	181 ppi	3,031 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		13.71	
	Average Elongation @ Break	%		495.6	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.38	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	279.1 N	62.745 lbs		
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	445.1 N	100.06 lbs		
Puncture Resistance ASTM D4833 (Modified)	Load	593.4 N	133.40 lbs		
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING		

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ROLL # **942730-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	37 mil	AVE:	1.56 mm	61 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				201	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.16
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,610 psi
	Average Strength @ Break	33 N/mm	186 ppi	3,031 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.71
	Average Elongation @ Break	%	495.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	279.1 N	62.745 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	445.1 N	100.06 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	593.4 N	133.40 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **942731-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.58 mm	62 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.65 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	24 mil	AVE:	1.62 mm	64 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 201

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
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Carbon Black Content ASTM D4218	Range		%		2.16
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	166 ppi	2,610 psi
	Average Strength @ Break	34 N/mm	193 ppi	3,031 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		13.71
	Average Elongation @ Break	%		495.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	279.1 N		62.745 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	445.1 N		100.06 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	593.4 N		133.40 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
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ROLL # **942732-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.55 mm MAX: 1.66 mm AVE: 1.61 mm	ENGLISH 61 mil 65 mil 63 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 36 mil ODD #: TOP EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes 201	TEST RESULTS	

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.16
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Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,610 psi
	Average Strength @ Break	34 N/mm	192 ppi	3,031 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.71
	Average Elongation @ Break	%	495.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	279.1 N	62.745 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	445.1 N	100.06 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	593.4 N	133.40 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **942733-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.56 mm	61 mil	Length.....	125 m
	MAX:	1.69 mm	67 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 24 mil	AVE:	1.61 mm	63 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	201

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.16
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,610 psi
	Average Strength @ Break	34 N/mm	192 ppi	3,031 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.71
	Average Elongation @ Break	%	495.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	279.1 N	62.745 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	445.1 N	100.06 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	593.4 N	133.40 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **942734-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.69 mm	67 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	36 mil	AVE:	1.60 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 201

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
Carbon Black Content ASTM D4218	Range		%		2.19
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	172 ppi	2,727 psi	
	Average Strength @ Break	33 N/mm	190 ppi	3,016 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		15.53
	Average Elongation @ Break		%		489.6
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.38
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	280.0 N			62.947 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	437.3 N			98.303 lbs
Puncture Resistance ASTM D4833 (Modified)	Load	644.8 N			144.95 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
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 Destination **Henderson, NV**

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ROLL # **942735-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.64 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	30 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 201

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
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Carbon Black Content ASTM D4218	Range		%		2.19
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	170 ppi	2,727 psi
	Average Strength @ Break	33 N/mm	188 ppi	3,016 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.53
	Average Elongation @ Break	%		489.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	280.0 N		62.947 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	437.3 N		98.303 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	644.8 N		144.95 lbs
--	------	----------------	--	-------------------

ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **942736-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	29 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 201

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
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Carbon Black Content ASTM D4218	Range		%		2.19
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	170 ppi	2,727 psi
	Average Strength @ Break	33 N/mm	188 ppi	3,016 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.53
	Average Elongation @ Break	%		489.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	280.0 N		62.947 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	437.3 N		98.303 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	644.8 N		144.95 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-19-08**

Signature..... *[Signature]*

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ROLL # **942737-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.50 mm	59 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.56 mm	61 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	201

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	167 ppi	2,727 psi
	Average Strength @ Break	32 N/mm	185 ppi	3,016 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.53
	Average Elongation @ Break	%	489.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	280.0 N	62.947 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	437.3 N	98.303 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	644.8 N	144.95 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-19-08**

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ROLL # **942738-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.48 mm	58 mil	Length.....	125 m	410.1 feet
	MAX: 1.56 mm	61 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 29 mil	AVE: 1.52 mm	60 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	201

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	163 ppi	2,727 psi
	Average Strength @ Break	32 N/mm	180 ppi	3,016 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.53
	Average Elongation @ Break	%	489.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	280.0 N	62.947 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	437.3 N	98.303 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	644.8 N	144.95 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-19-08**

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ROLL # **942739-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.50 mm MAX: 1.58 mm AVE: 1.53 mm	ENGLISH 59 mil 62 mil 60 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 30 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes 201	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.15
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Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	169 ppi	2,806 psi
	Average Strength @ Break	30 N/mm	174 ppi	2,886 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.47
	Average Elongation @ Break	%	471.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	282.6 N	63.528 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	448.9 N	100.91 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	630.9 N	141.84 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-19-08**

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ROLL # **942740-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.48 mm	58 mil	Length.....	125 m	410.1 feet
	MAX:	1.58 mm	62 mil	Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **28** mil AVE: **1.54** mm **61** mil OIT(Standard) ASTM D3895 minutes **201** **TEST RESULTS**
 ODD #: TOP EVEN #: BOTTOM

Specific Gravity ASTM D792	Density		g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.23
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Carbon Black Content ASTM D4218	Range		%	2.15
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	170 ppi	2,806 psi
	Average Strength @ Break	31 N/mm	175 ppi	2,886 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%	13.47
	Average Elongation @ Break		%	471.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	282.6 N		63.528 lbs
---	-------------------------	----------------	--	-------------------

Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	448.9 N		100.91 lbs
--	------	----------------	--	-------------------

Puncture Resistance ASTM D4833 (Modified)	Load	630.9 N		141.84 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-19-08**

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ROLL # **942741-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	30 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				201	TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.23
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Carbon Black Content ASTM D4218	Range			%		2.15
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			31 N/mm	176 ppi	2,806 psi
	Average Strength @ Break			32 N/mm	181 ppi	2,886 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		13.47
	Average Elongation @ Break			%		471.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			282.6 N		63.528 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			448.9 N		100.91 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			630.9 N		141.84 lbs
--	------	--	--	----------------	--	-------------------

ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-19-08**

Signature..... *[Signature]*

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ROLL # **942742-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.61 mm MAX: 1.64 mm AVE: 1.62 mm	ENGLISH 63 mil 65 mil 64 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 30 mil ODD #: TOP EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes 201	TEST RESULTS	

Specific Gravity ASTM D792	Density		g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.23
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Carbon Black Content ASTM D4218	Range		%	2.15
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	31 N/mm	179 ppi	2,806 psi
	Average Strength @ Break	32 N/mm	184 ppi	2,886 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		13.47
	Average Elongation @ Break	%		471.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	282.6 N		63.528 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	448.9 N		100.91 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	630.9 N		141.84 lbs
--	------	----------------	--	-------------------

ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-19-08**

Signature..... *[Handwritten Signature]*

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ROLL #

942743-08

Lot #:

8280549

Liner Type: **MICROSPIKE™ HDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	1.53 mm	60 mil
MAX:	1.60 mm	63 mil
AVE:	1.58 mm	62 mil

Thickness.....	1.5 mm	60 mil
Length.....	125 m	410.1 feet
Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **30** mil
ODD #: TOP EVEN #: BOTTOM

OIT(Standard) ASTM D3895 minutes **201** **TEST RESULTS**

Specific Gravity
ASTM D792

Density

g/cc

.946

MFI ASTM D1238
COND. E
GRADE: **K307**

Melt Flow Index 190°C /2160 g

g/10 min

.23

Carbon Black Content
ASTM D4218

Range

%

2.15

Carbon Black Dispersion
ASTM D5596

Category

10 in Cat 1

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Yield

31 N/mm

175 ppi

2,806 psi

Average Strength @ Break

31 N/mm

179 ppi

2,886 psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Yield

%

13.47

Average Elongation @ Break

%

471.4

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change

%

-0.38

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance

282.6 N

63.528 lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load

448.9 N

100.91 lbs

Puncture Resistance
ASTM D4833 (Modified)

Load

630.9 N

141.84 lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

CERTIFIED

Notched Constant Tensile Load
ASTM D5397

pass / fail @ 30%

300 hrs

ONGOING

Customer: **Environmental Specialties**
PO: **9036 Landwell Basic Remediation**
Destination **Henderson, NV**

Date:..... **10-19-08**

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ROLL # **942744-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.56 mm	61 mil	Length.....	125 m
	MAX:	1.62 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.59 mm	63 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **201**

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.14
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	172 ppi	2,743 psi
	Average Strength @ Break	32 N/mm	183 ppi	2,926 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.78
	Average Elongation @ Break	%	463.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	263.7 N	59.296 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	433.5 N	97.461 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	646.1 N	145.26 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-19-08**

Signature..... *[Signature]*

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ROLL # **942745-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	201

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.14
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	171 ppi	2,743 psi
	Average Strength @ Break	32 N/mm	182 ppi	2,926 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.78
	Average Elongation @ Break	%	463.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	263.7 N	59.296 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	433.5 N	97.461 lbs
--	------	----------------	-------------------

Puncture Resistance ASTM D4833 (Modified)	Load	646.1 N	145.26 lbs
--	------	----------------	-------------------

ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-19-08**

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ROLL # **942746-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.65 mm	65 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	37 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	201

TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.23
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Carbon Black Content ASTM D4218	Range			%		2.14
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
---------------------------------------	----------	--	--	--	--	--------------------

Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			30 N/mm	171 ppi	2,743 psi
	Average Strength @ Break			32 N/mm	182 ppi	2,926 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		14.78
	Average Elongation @ Break			%		463.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			263.7 N		59.296 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			433.5 N		97.461 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			646.1 N		145.26 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-19-08**

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ROLL # **942747-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m
	MAX:	1.62 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 24 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes	201

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23	
Carbon Black Content ASTM D4218	Range	%	2.14	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	170 ppi	2,743 psi
	Average Strength @ Break	32 N/mm	181 ppi	2,926 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.78	
	Average Elongation @ Break	%	463.7	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	263.7 N	59.296 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	433.5 N	97.461 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	646.1 N	145.26 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
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ROLL # **942748-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.65 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	37 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 201

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
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Carbon Black Content ASTM D4218	Range		%		2.14
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	171 ppi	2,743 psi
	Average Strength @ Break	32 N/mm	182 ppi	2,926 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.78
	Average Elongation @ Break	%		463.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	263.7 N		59.296 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	433.5 N		97.461 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	646.1 N		145.26 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **942749-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.49 mm	59 mil	Length.....	125 m
	MAX:	1.57 mm	62 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 25 mil	AVE:	1.52 mm	60 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	201

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	158 ppi	2,646 psi
	Average Strength @ Break	30 N/mm	173 ppi	2,898 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.31
	Average Elongation @ Break	%	440.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	288.8 N	64.934 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	445.4 N	100.12 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	623.4 N	140.14 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **943101-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.44 mm	57 mil	Length.....	125 m
	MAX:	1.59 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 25 mil	AVE:	1.53 mm	60 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **201**

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,646 psi
	Average Strength @ Break	31 N/mm	175 ppi	2,898 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.31
	Average Elongation @ Break	%	440.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	288.8 N	64.934 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	445.4 N	100.12 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	623.4 N	140.14 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **943102-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.50 mm	59 mil	Length.....	125 m
	MAX:	1.54 mm	61 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 36 mil	AVE:	1.52 mm	60 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	201

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	158 ppi	2,646 psi
	Average Strength @ Break	30 N/mm	173 ppi	2,898 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.31
	Average Elongation @ Break	%	440.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	288.8 N	64.934 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	445.4 N	100.12 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	623.4 N	140.14 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **943103-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	25 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 201

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
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Carbon Black Content ASTM D4218	Range		%		2.18
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,646 psi
	Average Strength @ Break	32 N/mm	180 ppi	2,898 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.31
	Average Elongation @ Break	%		440.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	288.8 N		64.934 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	445.4 N		100.12 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	623.4 N		140.14 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **943104-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.58 mm	62 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.65 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	38 mil	AVE:	1.61 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				201	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	168 ppi	2,646 psi
	Average Strength @ Break	32 N/mm	184 ppi	2,898 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.31
	Average Elongation @ Break	%	440.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	288.8 N	64.934 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	445.4 N	100.12 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	623.4 N	140.14 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **943105-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.64 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	24 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 201

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
Carbon Black Content ASTM D4218	Range		%		2.21
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		28 N/mm	160 ppi	2,549 psi
	Average Strength @ Break		31 N/mm	175 ppi	2,792 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		13.30
	Average Elongation @ Break		%		474.8
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.38
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		288.8 N		64.934 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		429.2 N		96.482 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		642.7 N		144.48 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
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 Destination **Henderson, NV**

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ROLL # **943106-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.49 mm	59 mil	Length.....	125 m	410.1 feet
	MAX: 1.73 mm	68 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 36 mil	AVE: 1.61 mm	63 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	201

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.21
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,549 psi
	Average Strength @ Break	31 N/mm	177 ppi	2,792 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.30
	Average Elongation @ Break	%	474.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	288.8 N	64.934 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	429.2 N	96.482 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	642.7 N	144.48 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **943107-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	30 mil	AVE:	1.56 mm	61 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 201

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.23
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Carbon Black Content ASTM D4218	Range		%			2.21
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		27 N/mm	157 ppi	2,549 psi
	Average Strength @ Break		30 N/mm	171 ppi	2,792 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		13.30
	Average Elongation @ Break		%		474.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		288.8 N		64.934 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		429.2 N		96.482 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load		642.7 N		144.48 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures		1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%		300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-20-08**

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ROLL # **943108-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet
	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.57 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 201	TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.23
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Carbon Black Content ASTM D4218	Range			%		2.21
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			28 N/mm	158 ppi	2,549 psi
	Average Strength @ Break			30 N/mm	173 ppi	2,792 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		13.30
	Average Elongation @ Break			%		474.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			288.8 N		64.934 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			429.2 N		96.482 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			642.7 N		144.48 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-20-08**

Signature..... *[Signature]*

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ROLL # **943109-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.49 mm	59 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	31 mil	AVE:	1.55 mm	61 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	201

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.23
Carbon Black Content ASTM D4218	Range		%			2.21
Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		27 N/mm	156 ppi		2,549 psi
	Average Strength @ Break		30 N/mm	170 ppi		2,792 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			13.30
	Average Elongation @ Break		%			474.8
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-0.38
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		288.8 N			64.934 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		429.2 N			96.482 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		642.7 N			144.48 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-20-08**

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ROLL # **943110-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.49 mm MAX: 1.56 mm AVE: 1.53 mm	ENGLISH 59 mil 61 mil 60 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 30 mil ODD #: TOP EVEN #: BOTTOM					OIT(Standard) ASTM D3895 minutes 201

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.23
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Carbon Black Content ASTM D4218	Range		%	2.20
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,638 psi
	Average Strength @ Break	31 N/mm	178 ppi	2,958 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.92
	Average Elongation @ Break	%		456.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	267.9 N		60.233 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	435.2 N		97.838 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	621.5 N		139.71 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-20-08**

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ROLL # **943111-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.58 mm	62 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	31 mil	AVE:	1.55 mm	61 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				201	TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.23
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Carbon Black Content ASTM D4218	Range		%			2.20
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		28 N/mm	161 ppi	2,638 psi
	Average Strength @ Break		32 N/mm	180 ppi	2,958 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		14.92
	Average Elongation @ Break		%		456.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		267.9 N		60.233 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		435.2 N		97.838 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load		621.5 N		139.71 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures		1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%		300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-20-08**

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ROLL # **943112-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.57 mm	62 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	30 mil	AVE:	1.59 mm	63 mil		
ODD #: TOP	EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	201

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.947
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.23
Carbon Black Content ASTM D4218	Range		%			2.20
Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	165 ppi		2,638 psi
	Average Strength @ Break		32 N/mm	185 ppi		2,958 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			14.92
	Average Elongation @ Break		%			456.7
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-0.38
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		267.9 N			60.233 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		435.2 N			97.838 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		621.5 N			139.71 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-20-08**

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ROLL # **943113-08** Lot #: **8280549** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	30 mil	AVE:	1.56 mm	61 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 201

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.23
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Carbon Black Content ASTM D4218	Range		%			2.20
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		28 N/mm	162 ppi	2,638 psi
	Average Strength @ Break		32 N/mm	182 ppi	2,958 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		14.92
	Average Elongation @ Break		%		456.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.38
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		267.9 N		60.233 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		435.2 N		97.838 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load		621.5 N		139.71 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures		1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%		300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-20-08**

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ROLL # **943610-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.57 mm	62 mil	Length.....	125 m	410.1 feet
	MAX:	1.70 mm	67 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 27 mil	AVE:	1.61 mm	63 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	205

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.21
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	156 ppi	2,464 psi
	Average Strength @ Break	34 N/mm	193 ppi	3,049 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.67
	Average Elongation @ Break	%	514.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	268.4 N	60.338 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	436.9 N	98.231 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	616.8 N	138.66 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-25-08**

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ROLL # **943611-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.62 mm	64 mil	Length.....	125 m	410.1 feet
	MAX: 1.82 mm	72 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 28 mil	AVE: 1.72 mm	68 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	205

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.21
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	167 ppi	2,464 psi
	Average Strength @ Break	36 N/mm	206 ppi	3,049 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.67
	Average Elongation @ Break	%	514.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	268.4 N	60.338 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	436.9 N	98.231 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	616.8 N	138.66 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-25-08**

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ROLL # **943612-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.51 mm	59 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **34** mil AVE: **1.56** mm **61** mil OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**
 ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density			g/cc		.946
ASTM D792						

MFI ASTM D1238	Melt Flow Index 190°C /2160 g			g/10 min		.22
COND. E						
GRADE:	K307					

Carbon Black Content	Range			%		2.21
ASTM D4218						

Carbon Black Dispersion	Category					10 in Cat 1
ASTM D5596						

Tensile Strength	Average Strength @ Yield			27 N/mm	151 ppi	2,464 psi
ASTM D6693						
ASTM D638 (Modified)						
(2 inches / minute)	Average Strength @ Break			33 N/mm	187 ppi	3,049 psi

Elongation ASTM D6693	Average Elongation @ Yield			%		14.67
ASTM D638 (Modified)						
(2 inches / minute)						
Lo = 1.3" Yield						
Lo = 2.0" Break	Average Elongation @ Break			%		514.8

Dimensional Stability	Average Dimensional change			%		-0.82
ASTM D1204 (Modified)						

Tear Resistance	Average Tear Resistance			268.4 N		60.338 lbs
ASTM D-1004 (Modified)						

Puncture Resistance	Load			436.9 N		98.231 lbs
FTMS 101 Method 2065 (Modified)						

Puncture Resistance	Load			616.8 N		138.66 lbs
ASTM D4833 (Modified)						

ESCR	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
ASTM D1693						

Notched Constant Tensile Load	pass / fail @ 30%			300 hrs		ONGOING
ASTM D5397						

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-25-08**

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ROLL # **943613-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.51 mm	59 mil	Length.....	125 m	410.1 feet
	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **26** mil AVE: **1.57** mm **62** mil OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**
 ODD #: TOP EVEN #: BOTTOM

Specific Gravity ASTM D792	Density		g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.22
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Carbon Black Content ASTM D4218	Range		%		2.21
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	152 ppi	2,464 psi
	Average Strength @ Break	33 N/mm	188 ppi	3,049 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.67
	Average Elongation @ Break	%		514.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	268.4 N		60.338 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	436.9 N		98.231 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	616.8 N		138.66 lbs
--	------	----------------	--	-------------------

ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-25-08**

Signature..... *[Signature]*

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ROLL # **943614-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 35 mil	AVE:	1.56 mm	61 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.21
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	151 ppi	2,464 psi
	Average Strength @ Break	33 N/mm	187 ppi	3,049 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.67
	Average Elongation @ Break	%	514.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	268.4 N	60.338 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	436.9 N	98.231 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	616.8 N	138.66 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-25-08**

Signature..... *[Handwritten Signature]*

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ROLL # **943615-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **26** mil AVE: **1.57** mm **62** mil
 ODD #: TOP EVEN #: BOTTOM OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity Density g/cc **.947**
 ASTM D792

MFI ASTM D1238 Melt Flow Index 190°C /2160 g g/10 min **.22**
 COND. E
 GRADE: **K307**

Carbon Black Content Range % **2.19**
 ASTM D4218

Carbon Black Dispersion Category **10 in Cat 1**
 ASTM D5596

Tensile Strength Average Strength @ Yield **27** N/mm **154** ppi **2,500** psi
 ASTM D6693
 ASTM D638 (Modified)
 (2 inches / minute)
 Average Strength @ Break **29** N/mm **164** ppi **2,650** psi

Elongation ASTM D6693 Average Elongation @ Yield % **14.80**
 ASTM D638 (Modified)
 (2 inches / minute)
 Lo = 1.3" Yield
 Average Elongation @ Break % **444.6**
 Lo = 2.0" Break

Dimensional Stability Average Dimensional change % **-0.82**
 ASTM D1204 (Modified)

Tear Resistance Average Tear Resistance **264.6** N **59.497** lbs
 ASTM D-1004 (Modified)

Puncture Resistance Load **422.5** N **94.976** lbs
 FTMS 101 Method 2065 (Modified)

Puncture Resistance Load **622.1** N **139.86** lbs
 ASTM D4833 (Modified)

ESCR Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**
 ASTM D1693

Notched Constant Tensile Load pass / fail @ 30% 300 hrs **ONGOING**
 ASTM D5397

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-25-08**

Signature..... *[Signature]*

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ROLL # **943616-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.51 mm MAX: 1.64 mm AVE: 1.58 mm	ENGLISH 59 mil 65 mil 62 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 33 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes 205	TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.22
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Carbon Black Content ASTM D4218	Range		%	2.19
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	155 ppi	2,500 psi
	Average Strength @ Break	29 N/mm	165 ppi	2,650 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.80
	Average Elongation @ Break	%		444.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	264.6 N		59.497 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	422.5 N		94.976 lbs
--	------	----------------	--	-------------------

Puncture Resistance ASTM D4833 (Modified)	Load	622.1 N		139.86 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-25-08**

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ROLL # **943617-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.48 mm	58 mil	Length.....	125 m
	MAX:	1.59 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.53 mm	60 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	205

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	26 N/mm	151 ppi	2,500 psi
	Average Strength @ Break	28 N/mm	160 ppi	2,650 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.80
	Average Elongation @ Break	%	444.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	264.6 N	59.497 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	422.5 N	94.976 lbs
--	------	----------------	-------------------

Puncture Resistance ASTM D4833 (Modified)	Load	622.1 N	139.86 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **943618-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.57 mm	62 mil	Length.....	125 m
	MAX:	1.65 mm	65 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 33 mil	AVE:	1.61 mm	63 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	205

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	158 ppi	2,500 psi
	Average Strength @ Break	29 N/mm	168 ppi	2,650 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.80
	Average Elongation @ Break	%	444.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	264.6 N	59.497 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	422.5 N	94.976 lbs
--	------	----------------	-------------------

Puncture Resistance ASTM D4833 (Modified)	Load	622.1 N	139.86 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-25-08**

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ROLL # **943619-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.67 mm	66 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	28 mil	AVE:	1.60 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				205	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	157 ppi	2,500 psi
	Average Strength @ Break	29 N/mm	167 ppi	2,650 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.80
	Average Elongation @ Break	%	444.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	264.6 N	59.497 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	422.5 N	94.976 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	622.1 N	139.86 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-25-08**

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ROLL # **943620-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.47 mm	58 mil	Length.....	125 m
	MAX:	1.55 mm	61 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.53 mm	60 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	205

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	158 ppi	2,620 psi
	Average Strength @ Break	29 N/mm	165 ppi	2,746 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.14
	Average Elongation @ Break	%	438.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	263.7 N	59.276 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	423.7 N	95.262 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	593.0 N	133.32 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL #

943621-08

Lot #:

7181245

Liner Type: **MICROSPIKE™ HDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	1.54 mm	61 mil
MAX:	1.60 mm	63 mil
AVE:	1.58 mm	62 mil

Thickness.....	1.5 mm	60 mil
Length.....	125 m	410.1 feet
Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **27** mil
ODD #: TOP EVEN #: BOTTOM

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity
ASTM D792

Density

g/cc

.946

MFI ASTM D1238
COND. E
GRADE: **K307**

Melt Flow Index 190°C /2160 g

g/10 min

.22

Carbon Black Content
ASTM D4218

Range

%

2.18

Carbon Black Dispersion
ASTM D5596

Category

10 in Cat 1

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Yield

29 N/mm

163 ppi

2,620 psi

Average Strength @ Break

30 N/mm

171 ppi

2,746 psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Yield

%

15.14

Average Elongation @ Break

%

438.9

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change

%

-0.82

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance

263.7 N

59.276 lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load

423.7 N

95.262 lbs

Puncture Resistance
ASTM D4833 (Modified)

Load

593.0 N

133.32 lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

CERTIFIED

Notched Constant Tensile Load
ASTM D5397

pass / fail @ 30%

300 hrs

ONGOING

Customer: **Environmental Specialties**
PO: **9036 Landwell Basic Remediation**
Destination **Henderson, NV**

Date:..... **10-25-08**

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ROLL # **943622-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.58 mm MAX: 1.60 mm AVE: 1.57 mm	ENGLISH 62 mil 63 mil 62 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 23 mil ODD #: TOP EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes 205	TEST RESULTS	

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,620 psi
	Average Strength @ Break	30 N/mm	170 ppi	2,746 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.14
	Average Elongation @ Break	%	438.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	263.7 N	59.276 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	423.7 N	95.262 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	593.0 N	133.32 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-25-08**

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ROLL # **943623-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.49 mm	59 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.56 mm	61 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	205

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,620 psi
	Average Strength @ Break	30 N/mm	169 ppi	2,746 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.14
	Average Elongation @ Break	%	438.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	263.7 N	59.276 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	423.7 N	95.262 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	593.0 N	133.32 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-25-08**

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ROLL # **943624-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	29 mil	AVE:	1.60 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.22
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Carbon Black Content ASTM D4218	Range		%			2.18
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,620 psi
	Average Strength @ Break	30 N/mm	173 ppi	2,746 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.14
	Average Elongation @ Break	%		438.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	263.7 N		59.276 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	423.7 N		95.262 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	593.0 N		133.32 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-25-08**

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ROLL # **943625-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m
	MAX:	1.63 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 28 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22	
Carbon Black Content ASTM D4218	Range	%	2.20	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	156 ppi	2,519 psi
	Average Strength @ Break	32 N/mm	181 ppi	2,934 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.37	
	Average Elongation @ Break	%	484.2	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	256.0 N	57.558 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	417.9 N	93.961 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	596.8 N	134.16 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-25-08**

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ROLL # **943726-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.60 mm	63 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	29 mil	AVE:	1.61 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.22
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Carbon Black Content ASTM D4218	Range		%			2.20
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,519 psi
	Average Strength @ Break	33 N/mm	186 ppi	2,934 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.37
	Average Elongation @ Break	%		484.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	256.0 N		57.558 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	417.9 N		93.961 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	596.8 N		134.16 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-26-08**

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ROLL # **943727-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.56 mm	61 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 205

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	155 ppi	2,519 psi
	Average Strength @ Break	32 N/mm	180 ppi	2,934 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.37
	Average Elongation @ Break	%	484.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	256.0 N	57.558 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	417.9 N	93.961 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	596.8 N	134.16 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-26-08**

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ROLL # **943728-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.50 mm	59 mil	Length.....	125 m	410.1 feet
	MAX: 1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 28 mil	AVE: 1.54 mm	61 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	205

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	153 ppi	2,519 psi
	Average Strength @ Break	31 N/mm	178 ppi	2,934 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.37
	Average Elongation @ Break	%	484.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	256.0 N	57.558 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	417.9 N	93.961 lbs
--	------	----------------	-------------------

Puncture Resistance ASTM D4833 (Modified)	Load	596.8 N	134.16 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-26-08**

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ROLL # **943729-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.55 mm	61 mil	Length.....	125 m
	MAX:	1.64 mm	65 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 28 mil	AVE:	1.59 mm	63 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 205

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	158 ppi	2,519 psi
	Average Strength @ Break	32 N/mm	184 ppi	2,934 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.37
	Average Elongation @ Break	%	484.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	256.0 N	57.558 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	417.9 N	93.961 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	596.8 N	134.16 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **943730-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.51 mm	59 mil	Length.....	125 m
	MAX:	1.59 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 28 mil	AVE:	1.55 mm	61 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	205

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,646 psi
	Average Strength @ Break	31 N/mm	178 ppi	2,911 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.40
	Average Elongation @ Break	%	491.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	264.8 N	59.538 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	425.2 N	95.588 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	607.3 N	136.53 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-26-08**

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ROLL # **943731-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.57 mm	62 mil	Length.....	125 m
	MAX:	1.63 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.61 mm	63 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes			205	

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	168 ppi	2,646 psi
	Average Strength @ Break	32 N/mm	184 ppi	2,911 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.40
	Average Elongation @ Break	%	491.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	264.8 N	59.538 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	425.2 N	95.588 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	607.3 N	136.53 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-26-08**

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ROLL # **943732-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	29 mil	AVE:	1.55 mm	61 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				205	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,646 psi
	Average Strength @ Break	31 N/mm	178 ppi	2,911 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.40
	Average Elongation @ Break	%	491.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	264.8 N	59.538 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	425.2 N	95.588 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	607.3 N	136.53 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-26-08**

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ROLL # **943733-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.55 mm	61 mil	Length.....	125 m
	MAX:	1.65 mm	65 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 32 mil	AVE:	1.59 mm	63 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	205

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	166 ppi	2,646 psi
	Average Strength @ Break	32 N/mm	182 ppi	2,911 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.40
	Average Elongation @ Break	%	491.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	264.8 N	59.538 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	425.2 N	95.588 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	607.3 N	136.53 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-26-08**

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ROLL # **943734-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.56 mm	61 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	31 mil	AVE:	1.53 mm	60 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.945
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.22
Carbon Black Content ASTM D4218	Range		%		2.20
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,646 psi	
	Average Strength @ Break	31 N/mm	175 ppi	2,911 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.40	
	Average Elongation @ Break	%		491.2	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.82	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	264.8 N		59.538 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	425.2 N		95.588 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	607.3 N		136.53 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-26-08**

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ROLL # **943735-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.66 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	32 mil	AVE:	1.60 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				205	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.23
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,537 psi
	Average Strength @ Break	30 N/mm	169 ppi	2,678 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.80
	Average Elongation @ Break	%	438.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	280.1 N	62.977 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	427.4 N	96.084 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	629.0 N	141.41 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **943736-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.50 mm	59 mil	Length.....	125 m	410.1 feet
	MAX: 1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 31 mil	AVE: 1.55 mm	61 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	205

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.23
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	155 ppi	2,537 psi
	Average Strength @ Break	29 N/mm	163 ppi	2,678 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.80
	Average Elongation @ Break	%	438.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	280.1 N	62.977 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	427.4 N	96.084 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	629.0 N	141.41 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-26-08**

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ROLL # **943737-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.56 mm MAX: 1.62 mm AVE: 1.59 mm	ENGLISH 61 mil 64 mil 63 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 33 mil ODD #: TOP EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes 205	TEST RESULTS	

Specific Gravity ASTM D792	Density		g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.22
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Carbon Black Content ASTM D4218	Range		%	2.23
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,537 psi
	Average Strength @ Break	29 N/mm	168 ppi	2,678 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.80
	Average Elongation @ Break	%		438.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	280.1 N		62.977 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	427.4 N		96.084 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	629.0 N		141.41 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-26-08**

Signature..... *[Signature]*

Quality Control Department

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ROLL # **943738-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	30 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.22
Carbon Black Content ASTM D4218	Range		%		2.23
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,537 psi	
	Average Strength @ Break	29 N/mm	168 ppi	2,678 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.80	
	Average Elongation @ Break	%		438.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.82	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	280.1 N		62.977 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	427.4 N		96.084 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	629.0 N		141.41 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
PO: **9036 Landwell Basic Remediation**
Destination **Henderson, NV**

Date:..... **10-26-08**

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ROLL # **943739-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.58 mm	62 mil	Length.....	125 m	410.1 feet
	MAX: 1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 34 mil	AVE: 1.60 mm	63 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	205

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.23
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,537 psi
	Average Strength @ Break	30 N/mm	169 ppi	2,678 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.80
	Average Elongation @ Break	%	438.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	280.1 N	62.977 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	427.4 N	96.084 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	629.0 N	141.41 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-26-08**

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ROLL # **943740-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m
	MAX:	1.59 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.56 mm	61 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **205**

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.29
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	154 ppi	2,515 psi
	Average Strength @ Break	29 N/mm	166 ppi	2,707 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.69
	Average Elongation @ Break	%	439.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	274.4 N	61.697 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	429.2 N	96.493 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	605.9 N	136.21 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-26-08**

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ROLL # **943741-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.50 mm	59 mil	Length.....	125 m
	MAX:	1.58 mm	62 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.55 mm	61 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	205

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.29
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	153 ppi	2,515 psi
	Average Strength @ Break	29 N/mm	165 ppi	2,707 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.69
	Average Elongation @ Break	%	439.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	274.4 N	61.697 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	429.2 N	96.493 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	605.9 N	136.21 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **943742-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	28 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.944
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.22
Carbon Black Content ASTM D4218	Range		%		2.29
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	157 ppi	2,515 psi	
	Average Strength @ Break	30 N/mm	169 ppi	2,707 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		13.69	
	Average Elongation @ Break	%		439.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.82	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	274.4 N		61.697 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	429.2 N		96.493 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	605.9 N		136.21 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-26-08**

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ROLL # **943743-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.53 mm MAX: 1.58 mm AVE: 1.55 mm	ENGLISH 60 mil 62 mil 61 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 28 mil ODD #: TOP EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes 205	TEST RESULTS	

Specific Gravity ASTM D792	Density		g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.22
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Carbon Black Content ASTM D4218	Range		%	2.29
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	153 ppi	2,515 psi
	Average Strength @ Break	29 N/mm	165 ppi	2,707 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		13.69
	Average Elongation @ Break	%		439.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	274.4 N		61.697 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	429.2 N		96.493 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	605.9 N		136.21 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-26-08**

Signature..... *[Signature]*

Quality Control Department

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ROLL # **943744-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.54 mm	61 mil	Length.....	125 m	410.1 feet
	MAX: 1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 29 mil	AVE: 1.59 mm	63 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	205

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.29
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	157 ppi	2,515 psi
	Average Strength @ Break	30 N/mm	169 ppi	2,707 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.69
	Average Elongation @ Break	%	439.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	274.4 N	61.697 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	429.2 N	96.493 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	605.9 N	136.21 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-26-08**

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ROLL # **943745-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m
	MAX:	1.62 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 205

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22	
Carbon Black Content ASTM D4218	Range	%	2.24	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	156 ppi	2,520 psi
	Average Strength @ Break	31 N/mm	176 ppi	2,853 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.40	
	Average Elongation @ Break	%	487.9	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	269.3 N	60.541 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	425.5 N	95.670 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	611.0 N	137.36 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-26-08**

Signature..... *[Signature]*

Quality Control Department

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ROLL # **943746-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m
	MAX:	1.62 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.57 mm	62 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	205

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.24
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	156 ppi	2,520 psi
	Average Strength @ Break	31 N/mm	176 ppi	2,853 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.40
	Average Elongation @ Break	%	487.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	269.3 N	60.541 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	425.5 N	95.670 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	611.0 N	137.36 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-26-08**

Signature..... *[Handwritten Signature]*

Quality Control Department

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ROLL # **944101-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.57 mm	62 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.59 mm	63 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	205

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.24
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	158 ppi	2,520 psi
	Average Strength @ Break	31 N/mm	179 ppi	2,853 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.40
	Average Elongation @ Break	%	487.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	269.3 N	60.541 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	425.5 N	95.670 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	611.0 N	137.36 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-27-08**

Signature..... *[Handwritten Signature]*

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ROLL # **944102-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.45 mm	57 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.59 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	31 mil	AVE:	1.52 mm	60 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				205	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.24
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	26 N/mm	150 ppi	2,520 psi
	Average Strength @ Break	30 N/mm	170 ppi	2,853 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.40
	Average Elongation @ Break	%	487.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	269.3 N	60.541 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	425.5 N	95.670 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	611.0 N	137.36 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-27-08**

Signature..... *[Signature]*

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ROLL # **944103-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.59 mm	63 mil	Length.....	125 m
	MAX:	1.66 mm	65 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.62 mm	64 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.24
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,520 psi
	Average Strength @ Break	32 N/mm	182 ppi	2,853 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.40
	Average Elongation @ Break	%	487.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	269.3 N	60.541 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	425.5 N	95.670 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	611.0 N	137.36 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-27-08**

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ROLL # **944104-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.56 mm	61 mil	Length.....	125 m
	MAX:	1.62 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.58 mm	62 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	205

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.22
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	157 ppi	2,530 psi
	Average Strength @ Break	32 N/mm	181 ppi	2,903 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.51
	Average Elongation @ Break	%	505.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	274.6 N	61.727 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	437.7 N	98.410 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	610.2 N	137.18 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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 Destination **Henderson, NV**

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ROLL # **944105-08** Lot #: **7181245** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.58 mm	62 mil	Length.....	125 m	410.1 feet
	MAX:	1.67 mm	66 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.63 mm	64 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	205

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.22
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,530 psi
	Average Strength @ Break	33 N/mm	186 ppi	2,903 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.51
	Average Elongation @ Break	%	505.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.82
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	274.6 N	61.727 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	437.7 N	98.410 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	610.2 N	137.18 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **944106-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m	410.1 feet
	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.52 mm	60 mil			
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 202	TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.23
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Carbon Black Content ASTM D4218	Range		%	2.22
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	151 ppi	2,530 psi
	Average Strength @ Break	30 N/mm	174 ppi	2,903 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.51
	Average Elongation @ Break	%		505.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	274.6 N		61.727 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	437.7 N		98.410 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	610.2 N		137.18 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
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Date:..... **10-27-08**

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ROLL # **944107-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m
	MAX:	1.62 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.59 mm	63 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	202

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.944	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23	
Carbon Black Content ASTM D4218	Range	%	2.22	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	158 ppi	2,530 psi
	Average Strength @ Break	32 N/mm	182 ppi	2,903 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.51	
	Average Elongation @ Break	%	505.6	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	274.6 N	61.727 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	437.7 N	98.410 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	610.2 N	137.18 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **944108-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	202

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.22
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	157 ppi	2,530 psi
	Average Strength @ Break	32 N/mm	181 ppi	2,903 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.51
	Average Elongation @ Break	%	505.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	274.6 N	61.727 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	437.7 N	98.410 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	610.2 N	137.18 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-27-08**

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ROLL # **944109-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	33 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				202	TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
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Carbon Black Content ASTM D4218	Range		%		2.18
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	152 ppi	2,441 psi
	Average Strength @ Break	31 N/mm	179 ppi	2,871 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.21
	Average Elongation @ Break	%		493.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	273.2 N		61.425 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	429.4 N		96.529 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	615.5 N		138.36 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-27-08**

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ROLL # **944110-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	30 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 202

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
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Carbon Black Content ASTM D4218	Range		%		2.18
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	152 ppi	2,441 psi
	Average Strength @ Break	31 N/mm	179 ppi	2,871 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.21
	Average Elongation @ Break	%		493.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	273.2 N		61.425 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	429.4 N		96.529 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	615.5 N		138.36 lbs
--	------	----------------	--	-------------------

ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-27-08**

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ROLL # **944111-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 32 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	202

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	26 N/mm	151 ppi	2,441 psi
	Average Strength @ Break	31 N/mm	177 ppi	2,871 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.21
	Average Elongation @ Break	%	493.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	273.2 N	61.425 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	429.4 N	96.529 lbs
--	------	----------------	-------------------

Puncture Resistance ASTM D4833 (Modified)	Load	615.5 N	138.36 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **944112-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	202

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	26 N/mm	151 ppi	2,441 psi
	Average Strength @ Break	31 N/mm	177 ppi	2,871 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.21
	Average Elongation @ Break	%	493.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	273.2 N	61.425 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	429.4 N	96.529 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	615.5 N	138.36 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-27-08**

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ROLL # **944113-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.51 mm	59 mil	Length.....	125 m
	MAX:	1.59 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.57 mm	62 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	202

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	26 N/mm	151 ppi	2,441 psi
	Average Strength @ Break	31 N/mm	177 ppi	2,871 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.21
	Average Elongation @ Break	%	493.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	273.2 N	61.425 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	429.4 N	96.529 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	615.5 N	138.36 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-27-08**

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Quality Control Department

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ROLL # **944114-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	29 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895 minutes	202

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.944
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
Carbon Black Content ASTM D4218	Range		%		2.20
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		27 N/mm	152 ppi	2,425 psi
	Average Strength @ Break		33 N/mm	187 ppi	2,990 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		15.32
	Average Elongation @ Break		%		509.3
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.24
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		281.2 N		63.230 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		446.0 N		100.26 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		609.2 N		136.95 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **944115-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.50 mm	59 mil	Length.....	125 m
	MAX:	1.58 mm	62 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.56 mm	61 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes	202

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	26 N/mm	149 ppi	2,425 psi
	Average Strength @ Break	32 N/mm	184 ppi	2,990 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.32
	Average Elongation @ Break	%	509.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	281.2 N	63.230 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	446.0 N	100.26 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	609.2 N	136.95 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **944116-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	28 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895 minutes	202

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.944
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
Carbon Black Content ASTM D4218	Range		%		2.20
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	26 N/mm	151 ppi	2,425 psi	
	Average Strength @ Break	33 N/mm	186 ppi	2,990 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.32	
	Average Elongation @ Break	%		509.3	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.24	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	281.2 N		63.230 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	446.0 N		100.26 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	609.2 N		136.95 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-27-08**

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ROLL # **944117-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.55 mm	61 mil	Length.....	125 m
	MAX:	1.62 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 32 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes	202

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.944	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23	
Carbon Black Content ASTM D4218	Range	%	2.20	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	26 N/mm	151 ppi	2,425 psi
	Average Strength @ Break	33 N/mm	186 ppi	2,990 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.32	
	Average Elongation @ Break	%	509.3	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	281.2 N	63.230 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	446.0 N	100.26 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	609.2 N	136.95 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **944118-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.55 mm	61 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	202

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	26 N/mm	151 ppi	2,425 psi
	Average Strength @ Break	33 N/mm	186 ppi	2,990 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.32
	Average Elongation @ Break	%	509.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	281.2 N	63.230 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	446.0 N	100.26 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	609.2 N	136.95 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **944119-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m
	MAX:	1.59 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 34 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes	202

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23	
Carbon Black Content ASTM D4218	Range	%	2.20	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,597 psi
	Average Strength @ Break	28 N/mm	159 ppi	2,570 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.29	
	Average Elongation @ Break	%	458.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	261.3 N	58.754 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	423.1 N	95.112 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	606.5 N	136.35 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-27-08**

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ROLL # **944120-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 32 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes	202

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23	
Carbon Black Content ASTM D4218	Range	%	2.20	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,597 psi
	Average Strength @ Break	28 N/mm	160 ppi	2,570 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.29	
	Average Elongation @ Break	%	458.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	261.3 N	58.754 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	423.1 N	95.112 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	606.5 N	136.35 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-27-08**

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ROLL # **944121-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	29 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 202

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.945
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
Carbon Black Content ASTM D4218	Range		%		2.20
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,597 psi	
	Average Strength @ Break	28 N/mm	160 ppi	2,570 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		13.29	
	Average Elongation @ Break	%		458.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.24	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	261.3 N		58.754 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	423.1 N		95.112 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	606.5 N		136.35 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-27-08**

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ROLL # **944222-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.50 mm	59 mil	Length.....	125 m	410.1 feet
	MAX:	1.59 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.53 mm	60 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	202

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	156 ppi	2,597 psi
	Average Strength @ Break	27 N/mm	155 ppi	2,570 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.29
	Average Elongation @ Break	%	458.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	261.3 N	58.754 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	423.1 N	95.112 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	606.5 N	136.35 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-28-08**

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ROLL # **944223-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	30 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				202	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	163 ppi	2,597 psi
	Average Strength @ Break	28 N/mm	161 ppi	2,570 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.29
	Average Elongation @ Break	%	458.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	261.3 N	58.754 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	423.1 N	95.112 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	606.5 N	136.35 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **944224-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.51 mm	59 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 28 mil	AVE:	1.56 mm	61 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 202

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.22
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	166 ppi	2,697 psi
	Average Strength @ Break	32 N/mm	182 ppi	2,961 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.53
	Average Elongation @ Break	%	483.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	271.8 N	61.102 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	435.0 N	97.790 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	608.7 N	136.84 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-28-08**

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ROLL # **944225-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.58 mm	62 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	29 mil	AVE:	1.61 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				202	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.22
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	171 ppi	2,697 psi
	Average Strength @ Break	33 N/mm	188 ppi	2,961 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.53
	Average Elongation @ Break	%	483.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	271.8 N	61.102 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	435.0 N	97.790 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	608.7 N	136.84 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-28-08**

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ROLL # **944226-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.54 mm	61 mil	Length.....	125 m	410.1 feet
	MAX: 1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 29 mil	AVE: 1.56 mm	61 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	202

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.22
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	166 ppi	2,697 psi
	Average Strength @ Break	32 N/mm	182 ppi	2,961 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.53
	Average Elongation @ Break	%	483.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	271.8 N	61.102 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	435.0 N	97.790 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	608.7 N	136.84 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-28-08**

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ROLL # **944227-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	29 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 202

TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.23
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Carbon Black Content ASTM D4218	Range			%		2.22
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			30 N/mm	169 ppi	2,697 psi
	Average Strength @ Break			32 N/mm	185 ppi	2,961 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		13.53
	Average Elongation @ Break			%		483.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			271.8 N		61.102 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			435.0 N		97.790 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			608.7 N		136.84 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-28-08**

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ROLL # **944228-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet
	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 27 mil	AVE:	1.57 mm	62 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	202

Specific Gravity ASTM D792	Density		g/cc			.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.23
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Carbon Black Content ASTM D4218	Range		%			2.22
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	167 ppi	2,697 psi
	Average Strength @ Break	32 N/mm	183 ppi	2,961 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		13.53
	Average Elongation @ Break	%		483.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	271.8 N		61.102 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	435.0 N		97.790 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	608.7 N		136.84 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
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ROLL # **944229-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	33 mil	AVE:	1.56 mm	61 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				202	TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.23
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Carbon Black Content ASTM D4218	Range		%	2.22
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	158 ppi	2,576 psi
	Average Strength @ Break	32 N/mm	181 ppi	2,955 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		13.74
	Average Elongation @ Break	%		469.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	264.9 N		59.552 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	438.2 N		98.518 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	626.3 N		140.80 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
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Date:..... **10-28-08**

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ROLL # **944230-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.49 mm	59 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.55 mm	61 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	202

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.22
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	157 ppi	2,576 psi
	Average Strength @ Break	32 N/mm	180 ppi	2,955 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.74
	Average Elongation @ Break	%	469.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	264.9 N	59.552 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	438.2 N	98.518 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	626.3 N	140.80 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **944231-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.49 mm	59 mil	Length.....	125 m	410.1 feet
	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 32 mil	AVE:	1.55 mm	61 mil			
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	202

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.944
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.23
Carbon Black Content ASTM D4218	Range		%			2.22
Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		28 N/mm	157 ppi		2,576 psi
	Average Strength @ Break		32 N/mm	180 ppi		2,955 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			13.74
	Average Elongation @ Break		%			469.6
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-0.24
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		264.9 N			59.552 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		438.2 N			98.518 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		626.3 N			140.80 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures		1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%		300 hrs			ONGOING

Customer: **Environmental Specialties**
PO: **9036 Landwell Basic Remediation**
Destination **Henderson, NV**

Date:..... **10-28-08**

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ROLL # **944232-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	28 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895 minutes	202

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.944
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
Carbon Black Content ASTM D4218	Range		%		2.22
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,576 psi	
	Average Strength @ Break	32 N/mm	184 ppi	2,955 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		13.74	
	Average Elongation @ Break	%		469.6	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.24	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	264.9 N		59.552 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	438.2 N		98.518 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	626.3 N		140.80 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-28-08**

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ROLL # **944233-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.41 mm	56 mil	Length.....	125 m
	MAX:	1.59 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.55 mm	61 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	202

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.22
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	157 ppi	2,576 psi
	Average Strength @ Break	32 N/mm	180 ppi	2,955 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.74
	Average Elongation @ Break	%	469.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	264.9 N	59.552 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	438.2 N	98.518 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	626.3 N	140.80 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-28-08**

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ROLL # **944234-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	28 mil	AVE:	1.60 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				202	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.21
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	163 ppi	2,583 psi
	Average Strength @ Break	31 N/mm	178 ppi	2,826 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.28
	Average Elongation @ Break	%	473.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	273.2 N	61.417 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	417.5 N	93.862 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	604.3 N	135.86 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-28-08**

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ROLL # **944235-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.47 mm	58 mil	Length.....	125 m
	MAX:	1.57 mm	62 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.52 mm	60 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **202**

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.21
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	155 ppi	2,583 psi
	Average Strength @ Break	30 N/mm	169 ppi	2,826 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.28
	Average Elongation @ Break	%	473.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	273.2 N	61.417 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	417.5 N	93.862 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	604.3 N	135.86 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **944236-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m
	MAX:	1.62 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.59 mm	63 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	202

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.21
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,583 psi
	Average Strength @ Break	31 N/mm	177 ppi	2,826 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.28
	Average Elongation @ Break	%	473.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	273.2 N	61.417 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	417.5 N	93.862 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	604.3 N	135.86 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-28-08**

Signature..... *[Handwritten Signature]*

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ROLL # **944237-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 202

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.21
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,583 psi
	Average Strength @ Break	31 N/mm	176 ppi	2,826 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.28
	Average Elongation @ Break	%	473.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	273.2 N	61.417 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	417.5 N	93.862 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	604.3 N	135.86 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-28-08**

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ROLL # **944238-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.58 mm	62 mil	Length.....	125 m
	MAX:	1.64 mm	65 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.60 mm	63 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	202

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.21
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	163 ppi	2,583 psi
	Average Strength @ Break	31 N/mm	178 ppi	2,826 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.28
	Average Elongation @ Break	%	473.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	273.2 N	61.417 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	417.5 N	93.862 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	604.3 N	135.86 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **944239-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	32 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895 minutes	202

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.944
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
Carbon Black Content ASTM D4218	Range		%		2.15
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	164 ppi	2,627 psi
	Average Strength @ Break		29 N/mm	166 ppi	2,651 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		15.88
	Average Elongation @ Break		%		423.3
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.24
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		264.3 N		59.415 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		425.8 N		95.739 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		641.2 N		144.16 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **944240-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.56 mm	61 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.58 mm	62 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **202**

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.15
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	163 ppi	2,627 psi
	Average Strength @ Break	29 N/mm	165 ppi	2,651 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.88
	Average Elongation @ Break	%	423.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	264.3 N	59.415 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	425.8 N	95.739 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	641.2 N	144.16 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-28-08**

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ROLL # **944241-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.54 mm	61 mil	Length.....	125 m	410.1 feet
	MAX: 1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 29 mil	AVE: 1.59 mm	63 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	202

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.15
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,627 psi
	Average Strength @ Break	29 N/mm	166 ppi	2,651 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.88
	Average Elongation @ Break	%	423.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	264.3 N	59.415 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	425.8 N	95.739 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	641.2 N	144.16 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-28-08**

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ROLL # **944242-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.57 mm	62 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	202

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.15
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,627 psi
	Average Strength @ Break	29 N/mm	164 ppi	2,651 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.88
	Average Elongation @ Break	%	423.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	264.3 N	59.415 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	425.8 N	95.739 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	641.2 N	144.16 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-28-08**

Signature..... *[Signature]*

Quality Control Department

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ROLL # **944243-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.55 mm	61 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.59 mm	63 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	202

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.15
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,627 psi
	Average Strength @ Break	29 N/mm	166 ppi	2,651 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.88
	Average Elongation @ Break	%	423.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	264.3 N	59.415 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	425.8 N	95.739 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	641.2 N	144.16 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-28-08**

Signature..... *[Signature]*

Quality Control Department

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ROLL # **944344-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.58 mm	62 mil	Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **29** mil AVE: **1.55** mm **61** mil OIT(Standard) ASTM D3895 minutes **202** **TEST RESULTS**
 ODD #: TOP EVEN #: BOTTOM

Specific Gravity Density g/cc **.945**
 ASTM D792

MFI ASTM D1238 Melt Flow Index 190°C /2160 g g/10 min **.23**
 COND. E
 GRADE: **K307**

Carbon Black Content Range % **2.16**
 ASTM D4218

Carbon Black Dispersion Category **10 in Cat 1**
 ASTM D5596

Tensile Strength Average Strength @ Yield **28** N/mm **160** ppi **2,620** psi
 ASTM D6693
 ASTM D638 (Modified)
 (2 inches / minute)
 Average Strength @ Break **32** N/mm **182** ppi **2,975** psi

Elongation ASTM D6693 Average Elongation @ Yield % **13.29**
 ASTM D638 (Modified)
 (2 inches / minute)
 Lo = 1.3" Yield
 Average Elongation @ Break % **478.0**
 Lo = 2.0" Break

Dimensional Stability Average Dimensional change % **-0.24**
 ASTM D1204 (Modified)

Tear Resistance Average Tear Resistance **262.3** N **58.978** lbs
 ASTM D-1004 (Modified)

Puncture Resistance Load **422.2** N **94.924** lbs
 FTMS 101 Method 2065 (Modified)

Puncture Resistance Load **580.7** N **130.55** lbs
 ASTM D4833 (Modified)

ESCR Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**
 ASTM D1693

Notched Constant Tensile Load pass / fail @ 30% 300 hrs **ONGOING**
 ASTM D5397

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-29-08**

Signature..... *[Signature]*

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ROLL # **944345-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.57 mm	62 mil	Length.....	125 m
	MAX:	1.63 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.60 mm	63 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **202**

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.16
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,620 psi
	Average Strength @ Break	33 N/mm	187 ppi	2,975 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.29
	Average Elongation @ Break	%	478.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	262.3 N	58.978 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	422.2 N	94.924 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	580.7 N	130.55 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-29-08**

Signature..... *[Signature]*

Quality Control Department

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ROLL # **944346-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.54 mm	61 mil	Length.....	125 m	410.1 feet
	MAX: 1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 31 mil	AVE: 1.57 mm	62 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	202

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.16
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,620 psi
	Average Strength @ Break	32 N/mm	184 ppi	2,975 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.29
	Average Elongation @ Break	%	478.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	262.3 N	58.978 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	422.2 N	94.924 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	580.7 N	130.55 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-29-08**

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ROLL # **944347-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.55 mm	61 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.59 mm	63 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	202

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.16
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,620 psi
	Average Strength @ Break	33 N/mm	186 ppi	2,975 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.29
	Average Elongation @ Break	%	478.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	262.3 N	58.978 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	422.2 N	94.924 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	580.7 N	130.55 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-29-08**

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ROLL # **944348-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.54 mm MAX: 1.61 mm AVE: 1.58 mm	ENGLISH 61 mil 63 mil 62 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 30 mil ODD #: TOP EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes 202	TEST RESULTS	

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.16
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Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	163 ppi	2,620 psi
	Average Strength @ Break	32 N/mm	185 ppi	2,975 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.29
	Average Elongation @ Break	%	478.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	262.3 N	58.978 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	422.2 N	94.924 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	580.7 N	130.55 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
PO: **9036 Landwell Basic Remediation**
Destination **Henderson, NV**

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ROLL # **944349-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.57 mm	62 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **30** mil AVE: **1.59** mm **63** mil OIT(Standard) ASTM D3895 minutes **202** **TEST RESULTS**
 ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density		g/cc	.944
ASTM D792				

MFI ASTM D1238	Melt Flow Index 190°C /2160 g		g/10 min	.23
COND. E				
GRADE:	K307			

Carbon Black Content	Range		%	2.21
ASTM D4218				

Carbon Black Dispersion	Category			10 in Cat 1
ASTM D5596				

Tensile Strength	Average Strength @ Yield	28 N/mm	158 ppi	2,530 psi
ASTM D6693				
ASTM D638 (Modified)				
(2 inches / minute)	Average Strength @ Break	32 N/mm	184 ppi	2,945 psi

Elongation ASTM D6693	Average Elongation @ Yield		%	14.29
ASTM D638 (Modified)				
(2 inches / minute)				
Lo = 1.3" Yield	Average Elongation @ Break		%	500.9
Lo = 2.0" Break				

Dimensional Stability	Average Dimensional change		%	-0.24
ASTM D1204 (Modified)				

Tear Resistance	Average Tear Resistance	262.9 N		59.097 lbs
ASTM D-1004 (Modified)				

Puncture Resistance	Load	433.6 N		97.492 lbs
FTMS 101 Method 2065 (Modified)				

Puncture Resistance	Load	612.1 N		137.61 lbs
ASTM D4833 (Modified)				

ESCR	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
ASTM D1693				

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs		ONGOING
ASTM D5397				

Customer: **Environmental Specialties**
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ROLL # **944350-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.53 mm MAX: 1.61 mm AVE: 1.58 mm	ENGLISH 60 mil 63 mil 62 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 30 mil ODD #: TOP EVEN #: BOTTOM					OIT(Standard) ASTM D3895 minutes 202

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.23
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Carbon Black Content ASTM D4218	Range		%	2.21
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	157 ppi	2,530 psi
	Average Strength @ Break	32 N/mm	183 ppi	2,945 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.29
	Average Elongation @ Break	%		500.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	262.9 N		59.097 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	433.6 N		97.492 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	612.1 N		137.61 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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Date:..... **10-29-08**

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ROLL # **944351-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.57 mm	62 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.66 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	25 mil	AVE:	1.62 mm	64 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895 minutes	202

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.23
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Carbon Black Content ASTM D4218	Range		%			2.21
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,530 psi
	Average Strength @ Break	33 N/mm	188 ppi	2,945 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.29
	Average Elongation @ Break	%		500.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	262.9 N		59.097 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	433.6 N		97.492 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	612.1 N		137.61 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **944352-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m
	MAX:	1.63 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 39 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 202

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.21
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Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	157 ppi	2,530 psi
	Average Strength @ Break	32 N/mm	183 ppi	2,945 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.29
	Average Elongation @ Break	%	500.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	262.9 N	59.097 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	433.6 N	97.492 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	612.1 N	137.61 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **944353-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.66 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	25 mil	AVE:	1.62 mm	64 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895 minutes	202

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
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Carbon Black Content ASTM D4218	Range		%		2.21
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,530 psi
	Average Strength @ Break	33 N/mm	188 ppi	2,945 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.29
	Average Elongation @ Break	%		500.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	262.9 N		59.097 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	433.6 N		97.492 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	612.1 N		137.61 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
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ROLL # **944354-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.49 mm MAX: 1.55 mm AVE: 1.53 mm	ENGLISH 59 mil 61 mil 60 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 38 mil ODD #: TOP EVEN #: BOTTOM					OIT(Standard) ASTM D3895 minutes 202

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.944
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
Carbon Black Content ASTM D4218	Range		%		2.22
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		28 N/mm	157 ppi	2,607 psi
	Average Strength @ Break		29 N/mm	166 ppi	2,759 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		15.05
	Average Elongation @ Break		%		439.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.24
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		279.0 N		62.736 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		425.2 N		95.603 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		618.2 N		138.97 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
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ROLL # **944355-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.69 mm	67 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	25 mil	AVE:	1.60 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 202

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
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Carbon Black Content ASTM D4218	Range		%		2.22
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,607 psi
	Average Strength @ Break	30 N/mm	174 ppi	2,759 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.05
	Average Elongation @ Break	%		439.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	279.0 N		62.736 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	425.2 N		95.603 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	618.2 N		138.97 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **944356-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 39 mil	AVE:	1.56 mm	61 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **202**

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.22
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,607 psi
	Average Strength @ Break	30 N/mm	169 ppi	2,759 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.05
	Average Elongation @ Break	%	439.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	279.0 N	62.736 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	425.2 N	95.603 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	618.2 N	138.97 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-29-08**

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ROLL # **944357-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	25 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				202	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.23
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Carbon Black Content ASTM D4218	Range	%	2.22
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,607 psi
	Average Strength @ Break	30 N/mm	172 ppi	2,759 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.05
	Average Elongation @ Break	%	439.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.24
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	279.0 N	62.736 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	425.2 N	95.603 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	618.2 N	138.97 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-29-08**

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Quality Control Department

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ROLL # **944358-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	39 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 202

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
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Carbon Black Content ASTM D4218	Range		%		2.22
------------------------------------	-------	--	---	--	-------------

Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
---------------------------------------	----------	--	--	--	--------------------

Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,607 psi
	Average Strength @ Break	30 N/mm	172 ppi	2,759 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.05
	Average Elongation @ Break	%		439.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.24
--	----------------------------	---	--	--------------

Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	279.0 N		62.736 lbs
---	-------------------------	----------------	--	-------------------

Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	425.2 N		95.603 lbs
--	------	----------------	--	-------------------

Puncture Resistance ASTM D4833 (Modified)	Load	618.2 N		138.97 lbs
--	------	----------------	--	-------------------

ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
--------------------	--------------------------	----------	--	------------------

Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
---	-------------------	---------	--	----------------

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-29-08**

Signature..... 

Quality Control Department

60HDmic.FRM
REV 03
12/23/05



quality certificate

ROLL # **944359-08** Lot #: **7181246** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	24 mil	AVE:	1.54 mm	61 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 202

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.944
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.23
Carbon Black Content ASTM D4218	Range		%		2.20
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,631 psi	
	Average Strength @ Break	25 N/mm	145 ppi	2,400 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.16	
	Average Elongation @ Break	%		419.1	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.24	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	272.3 N		61.217 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	448.5 N		100.84 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	607.1 N		136.49 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **10-29-08**

Signature..... *[Signature]*

Quality Control Department

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REV 03
12/23/05

Certificate of Analysis

Shipped To: AGRU AMERICA INC
2000 EAST NEWLANDS
FERNLEY NV 89408
USA

Recipient: PALMER
Fax:

CPC Delivery #: 87741280
PO #: 004797
Weight: 65400 LB
Ship Date: 09/24/2008
Package: BULK
Mode: Hopper Car
Car #: PSPX002138
Seal No: 268540

Product:
MARLEX POLYETHYLENE K307 BULK

Lot Number: 8180856

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.260	g/10mi
HLMI Flow Rate	ASTM D1238	22.00	g/10mi
Density	ASTM D1505	0.9370	g/cm3
Pellet Count	P02.08.03	28.000	pel/g
Production Date		08/12/2008	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP.
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.



Troy Griffin
Quality Systems Coordinator

For CoA questions contact Tom Scheirman at 832-813-4637

Certificate of Analysis

Shipped To: AGRU AMERICA INC
2000 EAST NEWLANDS
FERNLEY NV 89408
USA

Recipient: PALMER
Fax:

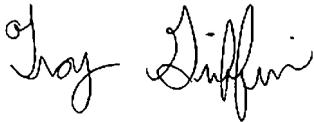
CPC Delivery #: 87741279
PO #: 004797
Weight: 107000 LB
Ship Date: 09/24/2008
Package: BULK
Mode: Hopper Car
Car #: CHVX896265
Seal No: 268115

Product:
MARLEX POLYETHYLENE K307 BULK

Lot Number: 7181034

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.230	g/10mi
HLMI Flow Rate	ASTM D1238	21.00	g/10mi
Density	ASTM D1505	0.9370	g/cm3
Pellet Count	P02.08.03	35.000	pel/g
Production Date		08/14/2008	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP.
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.



Troy Griffin
Quality Systems Coordinator

For CoA questions contact Tom Scheirman at 832-813-4637

Certificate of Analysis

Shipped To: AGRU AMERICA INC
2000 EAST NEWLANDS
FERNLEY NV 89408
USA

Recipient: PALMER
Fax:

CPC Delivery #: 87741357
PO #: 004797
Weight: 85200 LB
Ship Date: 09/24/2008
Package: BULK
Mode: Hopper Car
Car #: PSPX006579
Seal No: 268378

Product:
MARLEX POLYETHYLENE K307 BULK

Lot Number: 8180829

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.260	g/10mi
HLMI Flow Rate	ASTM D1238	22.00	g/10mi
Density	ASTM D1505	0.9370	g/cm3
Pellet Count	P02.08.03	31.000	pel/g
Production Date		08/05/2008	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP.
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.



Troy Griffin
Quality Systems Coordinator

For CoA questions contact Tom Scheirman at 832-813-4637

Certificate of Analysis

Shipped To: AGRU AMERICA INC
2000 EAST NEWLANDS
FERNLEY NV 89408
USA

Recipient: PALMER
Fax:

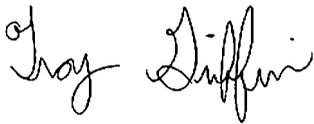
CPC Delivery #: 87658286
PO #: 004795
Weight: 186700 LB
Ship Date: 05/21/2008
Package: BULK
Mode: Hopper Car
Car #: PSPX006572
Seal No: 254968

Product:
MARLEX POLYETHYLENE K307 BULK

Lot Number: 8280549

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.230	g/10mi
HLMI Flow Rate	ASTM D1238	21.00	g/10mi
Density	ASTM D1505	0.9380	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP.
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Troy Griffin
Quality Systems Coordinator

For CoA questions contact Tom Scheirman at 832-813-4637

Certificate of Analysis

Shipped To: AGRU AMERICA INC
2000 EAST NEWLANDS
FERNLEY NV 89408
USA

Recipient: PALMER
Fax:

CPC Delivery #: 87750560
PO #: 004797
Weight: 193300 LB
Ship Date: 10/09/2008
Package: BULK
Mode: Hopper Car
Car #: CHVX890139
Seal No: 267694

Product:
MARLEX POLYETHYLENE K307 BULK

Lot Number: 7181245

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.220	g/10mi
HLMI Flow Rate	ASTM D1238	20.00	g/10mi
Density	ASTM D1505	0.9370	g/cm3
Pellet Count	P02.08.03	35.000	pel/g
Production Date		10/08/2008	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP.
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.



Troy Griffin
Quality Systems Coordinator

For CoA questions contact Customer Service Representative at 800-231-1212

Certificate of Analysis

Shipped To: AGRU AMERICA INC
2000 EAST NEWLANDS
FERNLEY NV 89408
USA

Recipient: PALMER
Fax:

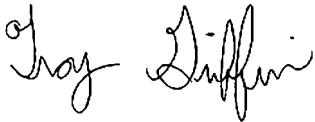
CPC Delivery #: 87750570
PO #: 004797
Weight: 194700 LB
Ship Date: 10/09/2008
Package: BULK
Mode: Hopper Car
Car #: CHVX889353
Seal No: 267656

Product:
MARLEX POLYETHYLENE K307 BULK

Lot Number: 7181246

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.230	g/10mi
HLMI Flow Rate	ASTM D1238	21.00	g/10mi
Density	ASTM D1505	0.9370	g/cm3
Pellet Count	P02.08.03	35.000	pel/g
Production Date		10/08/2008	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP.
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.



Troy Griffin
Quality Systems Coordinator

For CoA questions contact Customer Service Representative at 800-231-1212



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Future CAMU Phases Geomembrane Resin/Roll Production Data
Submittal Number:	02770-004D
Specification Section:	Section 02770, Part 2.02
Drawing Number (s):	8, 10, 14, 16, 19, 21, 23, 25, 27, 29, 31, 33, 35-36, 38-45
Page Number:	02770-5 and 02770-6
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	11/11/2008

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



875 West Warm Springs Road
Henderson, Nevada 89011
Tel (702) 567-0400 · Fax (702) 567-0475

SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehringer
ADDRESS: ENTACT Environmental Services
Henderson, Nevada 89011

Date: 01/05/2009	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02770-004E	Revision No.: - N/A	Date Submittal Rec'd by BRC: 12/15/08
---------------------------------------	----------------------------	--

Specification Section(s): 02770.1.06 Geomembrane Submittals

Submittal Subject: Additional CAMU Closure Geomembrane Resin/Roll Production Data

Notations:

- No Exception Taken
- Correct as Noted
- Rejected
- Revise and Resubmit
- Submit Specified Items

Review Comments:

Comment #	Reference	Comment

Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work

1/5/09

Design Engineer **Date**
1/5/09

Construction Manager Representative **Date**

1/5/09

BRC Project Manager
 Lee Farris, P.E.

Distribution: File



699 South Friendswood Drive
Suite 101
Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
ATTENTION: Lee C. Farris, P.E.

DATE: 12/15/08
JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
TRANSMITTAL NUMBER: 172
ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
8	12/15/08			Submittal 02770-004E – Additional CAMU Closure Geomembrane Resin/Roll Production Data	RC

ACTION (*)

AR - AS REQUESTED

FA - FOR APPROVAL

F – FILE

RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL

MAIL

OVERNIGHT

HAND DELIVERY

FACSIMILE

COPY TO: Ranjit Sahu, Lee Farris

BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....

60 mil micro
HDPE

ESI Landwell Basic Remed doc 10167

PO# 9036

Henderson, NV

METRIC DIMENSIONS

757 rolls 60 HD microspike

551

left

60 mil ROLL #	wid	len	AREA	149 spools 5mm HD CHEVRON WELD ROD	wgt	lot #	prod date
(K)950222 .08	7	125	875.0	60HD micro 757 TOT 553	3166	3ft + sqs 8181181	12/9/2008
(K)950223 .08	7	125	875.0	60HD micro 757 TOT 554	3170	8181181	12/9/2008
(K)950224 .08	7	125	875.0	60HD micro 757 TOT 555	3168	8181181	12/9/2008
(K)950225 .08	7	125	875.0	60HD micro 757 TOT 556	3168	8181181	12/9/2008
(K)950226 .08	7	125	875.0	60HD micro 757 TOT 557	3170	8181181	12/9/2008
(K)950227 .08	7	125	875.0	60HD micro 757 TOT 558	3170	8181181	12/9/2008
(K)950228 .08	7	125	875.0	60HD micro 757 TOT 559	3172	8181181	12/9/2008
(K)950229 .08	7	125	875.0	60HD micro 757 TOT 560	3188	8181181	12/9/2008
(K)950230 .08	7	125	875.0	60HD micro 757 TOT 561	3194	8181181	12/9/2008
(K)950231 .08	7	125	875.0	60HD micro 757 TOT 562	3202	8181181	12/9/2008
(K)950232 .08	7	125	875.0	60HD micro 757 TOT 563	3202	sqs 8181181	12/9/2008
(K)950233 .08	7	125	875.0	60HD micro 757 TOT 564	3200	8181181	12/9/2008
(K)950234 .08	7	125	875.0	60HD micro 757 TOT 565	3198	8181181	12/9/2008
(K)950235 .08	7	125	875.0	60HD micro 757 TOT 566	3200	8181181	12/9/2008
(K)950236 .08	7	125	875.0	60HD micro 757 TOT 567	3222	8181181	12/9/2008
(K)950237 .08	7	125	875.0	60HD micro 757 TOT 568	3232	8181181	12/9/2008
(K)950238 .08	7	125	875.0	60HD micro 757 TOT 569	3230	8181181	12/9/2008
(K)950239 .08	7	125	875.0	60HD micro 757 TOT 570	3228	8181181	12/9/2008
(K)950240 .08	7	125	875.0	60HD micro 757 TOT 571	3230	8181181	12/9/2008
(K)950341 .08	7	125	875.0	60HD micro 757 TOT 572	3238	8181181	12/10/2008
(K)950342 .08	7	125	875.0	60HD micro 757 TOT 573	3188	8181181	12/10/2008
(K)950343 .08	7	125	875.0	60HD micro 757 TOT 574	3188	sqs 8181181	12/10/2008
(K)950344 .08	7	125	875.0	60HD micro 757 TOT 575	3190	8181182	12/10/2008
(K)950345 .08	7	125	875.0	60HD micro 757 TOT 576	3188	8181182	12/10/2008
(K)950346 .08	7	125	875.0	60HD micro 757 TOT 577	3188	8181182	12/10/2008
(K)950347 .08	7	125	875.0	60HD micro 757 TOT 578	3190	8181182	12/10/2008
(K)950348 .08	7	125	875.0	60HD micro 757 TOT 579	3178	8181182	12/10/2008
(K)950349 .08	7	125	875.0	60HD micro 757 TOT 580	3150	8181182	12/10/2008
(K)950350 .08	7	125	875.0	60HD micro 757 TOT 581	3148	8181182	12/10/2008
(K)950351 .08	7	125	875.0	60HD micro 757 TOT 582	3144	8181182	12/10/2008
(K)950352 .08	7	125	875.0	60HD micro 757 TOT 583	3132	8181182	12/10/2008
(K)950353 .08	7	125	875.0	60HD micro 757 TOT 584	3122	sqs 8181182	12/10/2008
(K)950354 .08	7	125	875.0	60HD micro 757 TOT 585	3120	8181182	12/10/2008
(K)950355 .08	7	125	875.0	60HD micro 757 TOT 586	3120	8181182	12/10/2008
(K)950356 .08	7	125	875.0	60HD micro 757 TOT 587	3118	8181182	12/10/2008
(K)950357 .08	7	125	875.0	60HD micro 757 TOT 588	3116	8181182	12/10/2008
(K)950358 .08	7	125	875.0	60HD micro 757 TOT 589	3122	8181182	12/10/2008
(K)950359 .08	7	125	875.0	60HD micro 757 TOT 590	3122	8181182	12/10/2008
(K)950360 .08	7	125	875.0	60HD micro 757 TOT 591	3134	8181182	12/10/2008
(K)950361 .08	7	125	875.0	60HD micro 757 TOT 592	3148	8181182	12/10/2008
(K)950462 .08	7	125	875.0	60HD micro 757 TOT 593	3146	8181182	12/11/2008
(K)950463 .08	7	125	875.0	60HD micro 757 TOT 594	3148	8181182	12/11/2008
(K)950464 .08	7	125	875.0	60HD micro 757 TOT 595	3148	3ft + sqs 8181182	12/11/2008
(K)950465 .08	7	125	875.0	60HD micro 757 TOT 596	3148	8181182	12/11/2008
(K)950466 .08	7	125	875.0	60HD micro 757 TOT 597	3148	8181182	12/11/2008
(K)950467 .08	7	125	875.0	60HD micro 757 TOT 598	3148	8181182	12/11/2008
(K)950468 .08	7	125	875.0	60HD micro 757 TOT 599	3150	8181182	12/11/2008
(K)950469 .08	7	125	875.0	60HD micro 757 TOT 600	3136	8181182	12/11/2008
(K)950470 .08	7	125	875.0	60HD micro 757 TOT 601	3124	8181182	12/11/2008
(K)950471 .08	7	125	875.0	60HD micro 757 TOT 602	3116	8181182	12/11/2008
(K)950472 .08	7	125	875.0	60HD micro 757 TOT 603	3118	8181182	12/11/2008
(K)950473 .08	7	125	875.0	60HD micro 757 TOT 604	3116	8181182	12/11/2008
(K)950474 .08	7	125	875.0	60HD micro 757 TOT 605	3120	8181182	12/11/2008



quality certificate

ROLL # **950222-08** Lot #: **8181181** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m
	MAX:	1.67 mm	66 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.60 mm	63 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 208

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
---	-------------------------------	----------	------------

Carbon Black Content ASTM D4218	Range	%	2.26
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
---------------------------------------	----------	--------------------

Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	172 ppi	2,727 psi
	Average Strength @ Break	33 N/mm	187 ppi	2,961 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.45
	Average Elongation @ Break	%	479.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.36
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	253.0 N	56.878 lbs
---	-------------------------	----------------	-------------------

Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	438.8 N	98.645 lbs
--	------	----------------	-------------------

Puncture Resistance ASTM D4833 (Modified)	Load	640.2 N	143.93 lbs
--	------	----------------	-------------------

ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
--------------------	--------------------------	----------	------------------

Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
---	-------------------	---------	----------------

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-11-08**

Signature..... *[Signature]*

Quality Control Department

60HDmic.FRM
REV 03
12/23/05



quality certificate

ROLL # **950223-08**

Lot #: **8181181**

Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **26** mil AVE: **1.57** mm **62** mil OIT(Standard) ASTM D3895 minutes **208** **TEST RESULTS**
 ODD #: TOP EVEN #: BOTTOM

Specific Gravity ASTM D792	Density		g/cc		.945
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.25
Carbon Black Content ASTM D4218	Range		%		2.26
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	169 ppi	2,727 psi	
	Average Strength @ Break	32 N/mm	183 ppi	2,961 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		15.45
	Average Elongation @ Break		%		479.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-.36
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	253.0 N		56.878 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	438.8 N		98.645 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	640.2 N		143.93 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-11-08**

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ROLL # **950224-08** Lot #: **8181181** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.57 mm	62 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.65 mm	65 mil	Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **27** mil AVE: **1.60** mm **63** mil OIT(Standard) ASTM D3895 minutes **208** **TEST RESULTS**
 ODD #: TOP EVEN #: BOTTOM

Specific Gravity ASTM D792	Density		g/cc		.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.25
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Carbon Black Content ASTM D4218	Range		%		2.26
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	172 ppi	2,727 psi
	Average Strength @ Break	33 N/mm	187 ppi	2,961 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.45
	Average Elongation @ Break	%		479.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-.36
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	253.0 N		56.878 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	438.8 N		98.645 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	640.2 N		143.93 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
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ROLL # **950225-08** Lot #: **8181181** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.66 mm	65 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	26 mil	AVE:	1.60 mm	63 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	208

TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.25
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Carbon Black Content ASTM D4218	Range			%		2.26
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			30 N/mm	172 ppi	2,727 psi
	Average Strength @ Break			33 N/mm	187 ppi	2,961 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		15.45
	Average Elongation @ Break			%		479.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-36
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			253.0 N		56.878 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			438.8 N		98.645 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			640.2 N		143.93 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
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ROLL # **950226-08** Lot #: **8181181** Liner Type: **MICROSPIKE™ HDPE**

Measurement	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994 (Modified)	MIN: 1.50 mm	59 mil	Length.....	125 m	410.1 feet
	MAX: 1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 30 mil	AVE: 1.56 mm	61 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	208
Specific Gravity ASTM D792	Density		g/cc		.945
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.25
Carbon Black Content ASTM D4218	Range		%		2.26
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	167 ppi	2,727 psi
	Average Strength @ Break		32 N/mm	182 ppi	2,961 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		15.45
	Average Elongation @ Break		%		479.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-.36
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		253.0 N		56.878 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		438.8 N		98.645 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		640.2 N		143.93 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
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ROLL # **950227-08** Lot #: **8181181** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	208

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.24
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,667 psi
	Average Strength @ Break	31 N/mm	177 ppi	2,858 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.57
	Average Elongation @ Break	%	505.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.36
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	241.9 N	54.391 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	436.4 N	98.114 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	625.8 N	140.68 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **950228-08** Lot #: **8181181** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	31 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	208

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.945
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.25
Carbon Black Content ASTM D4218	Range		%			2.24
Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	165 ppi		2,667 psi
	Average Strength @ Break		31 N/mm	177 ppi		2,858 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			15.57
	Average Elongation @ Break		%			505.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-36
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		241.9 N			54.391 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		436.4 N			98.114 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		625.8 N			140.68 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **950229-08** Lot #: **8181181** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.48 mm	58 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.58 mm	62 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	30 mil	AVE:	1.52 mm	60 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 208

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.25
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Carbon Black Content ASTM D4218	Range		%		2.24
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,667 psi
	Average Strength @ Break	30 N/mm	171 ppi	2,858 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.57
	Average Elongation @ Break	%		505.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-.36
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	241.9 N		54.391 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	436.4 N		98.114 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	625.8 N		140.68 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **950230-08** Lot #: **8181181** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m
	MAX:	1.63 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.59 mm	63 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 208

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25	
Carbon Black Content ASTM D4218	Range	%	2.24	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	167 ppi	2,667 psi
	Average Strength @ Break	31 N/mm	179 ppi	2,858 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.57	
	Average Elongation @ Break	%	505.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-36	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	241.9 N	54.391 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	436.4 N	98.114 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	625.8 N	140.68 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **950231-08** Lot #: **8181181** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	29 mil	AVE:	1.60 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 208

TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.25
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Carbon Black Content ASTM D4218	Range			%		2.24
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			29 N/mm	168 ppi	2,667 psi
	Average Strength @ Break			32 N/mm	180 ppi	2,858 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		15.57
	Average Elongation @ Break			%		505.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.36
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			241.9 N		54.391 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			436.4 N		98.114 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			625.8 N		140.68 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **950232-08** Lot #: **8181181** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m
	MAX:	1.69 mm	67 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.58 mm	62 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **208**

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.35
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	167 ppi	2,684 psi
	Average Strength @ Break	30 N/mm	169 ppi	2,716 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.66
	Average Elongation @ Break	%	442.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.36
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	263.8 N	59.309 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	440.6 N	99.052 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	648.2 N	145.71 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **950233-08** Lot #: **8181181** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m
	MAX:	1.62 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	208

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.947	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25	
Carbon Black Content ASTM D4218	Range	%	2.35	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	166 ppi	2,684 psi
	Average Strength @ Break	29 N/mm	168 ppi	2,716 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.66	
	Average Elongation @ Break	%	442.6	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.36	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	263.8 N	59.309 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	440.6 N	99.052 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	648.2 N	145.71 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **950234-08** Lot #: **8181181** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.57 mm MAX: 1.63 mm AVE: 1.59 mm	ENGLISH 62 mil 64 mil 63 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 29 mil ODD #: TOP EVEN #: BOTTOM					OIT(Standard) ASTM D3895 minutes 208

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.947
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.25
Carbon Black Content ASTM D4218	Range		%		2.35
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	168 ppi	2,684 psi
	Average Strength @ Break		30 N/mm	170 ppi	2,716 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		15.66
	Average Elongation @ Break		%		442.6
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-.36
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		263.8 N		59.309 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		440.6 N		99.052 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		648.2 N		145.71 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures		1500 hrs		CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%		300 hrs		ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **950235-08** Lot #: **8181181** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.57 mm MAX: 1.63 mm AVE: 1.59 mm	ENGLISH 62 mil 64 mil 63 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 29 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes 208	TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.25
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Carbon Black Content ASTM D4218	Range		%	2.35
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	168 ppi	2,684 psi
	Average Strength @ Break	30 N/mm	170 ppi	2,716 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.66
	Average Elongation @ Break	%		442.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-.36
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	263.8 N		59.309 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	440.6 N		99.052 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	648.2 N		145.71 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-11-08**

Signature..... *[Handwritten Signature]*

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ROLL # **950236-08** Lot #: **8181181** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.47 mm MAX: 1.61 mm AVE: 1.52 mm	ENGLISH 58 mil 63 mil 60 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 30 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes 208	TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.25
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Carbon Black Content ASTM D4218	Range		%	2.35
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,684 psi
	Average Strength @ Break	28 N/mm	163 ppi	2,716 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.66
	Average Elongation @ Break	%		442.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-.36
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	263.8 N		59.309 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	440.6 N		99.052 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	648.2 N		145.71 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **950237-08** Lot #: **8181181** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.64 mm	65 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.70 mm	67 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	29 mil	AVE:	1.67 mm	66 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	208

TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.25
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Carbon Black Content ASTM D4218	Range			%		2.39
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			31 N/mm	175 ppi	2,667 psi
	Average Strength @ Break			32 N/mm	185 ppi	2,807 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		13.94
	Average Elongation @ Break			%		501.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.36
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			269.8 N		60.661 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			458.0 N		102.95 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			625.1 N		140.54 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **950238-08** Lot #: **8181181** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.56 mm	61 mil	Length.....	125 m
	MAX:	1.64 mm	65 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 28 mil	AVE:	1.61 mm	63 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	208

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.39
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	169 ppi	2,667 psi
	Average Strength @ Break	31 N/mm	178 ppi	2,807 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	13.94
	Average Elongation @ Break	%	501.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.36
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	269.8 N	60.661 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	458.0 N	102.95 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	625.1 N	140.54 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **950239-08** Lot #: **8181181** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	30 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				208	TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.25
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Carbon Black Content ASTM D4218	Range		%			2.39
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	166 ppi	2,667 psi
	Average Strength @ Break	31 N/mm	175 ppi	2,807 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		13.94
	Average Elongation @ Break	%		501.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-36
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	269.8 N		60.661 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	458.0 N		102.95 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	625.1 N		140.54 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-11-08**

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ROLL # **950240-08** Lot #: **8181181** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.55 mm	61 mil	Length.....	125 m
	MAX:	1.70 mm	67 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.59 mm	63 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	208

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.947
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.25
Carbon Black Content ASTM D4218	Range		%		2.39
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	167 ppi	2,667 psi
	Average Strength @ Break		31 N/mm	176 ppi	2,807 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		13.94
	Average Elongation @ Break		%		501.7
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-.36
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		269.8 N		60.661 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		458.0 N		102.95 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		625.1 N		140.54 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-11-08**

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ROLL # **950341-08** Lot #: **8181181** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.58 mm	62 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.70 mm	67 mil	Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **29** mil AVE: **1.65** mm **65** mil OIT(Standard) ASTM D3895 minutes **208** **TEST RESULTS**
 ODD #: TOP EVEN #: BOTTOM

Specific Gravity Density g/cc **.947**
 ASTM D792

MFI ASTM D1238 Melt Flow Index 190°C /2160 g g/10 min **.25**
 COND. E
 GRADE: **K307**

Carbon Black Content Range % **2.39**
 ASTM D4218

Carbon Black Dispersion Category **10 in Cat 1**
 ASTM D5596

Tensile Strength Average Strength @ Yield **30** N/mm **173** ppi **2,667** psi
 ASTM D6693
 ASTM D638 (Modified)
 (2 inches / minute)
 Average Strength @ Break **32** N/mm **182** ppi **2,807** psi

Elongation ASTM D6693 Average Elongation @ Yield % **13.94**
 ASTM D638 (Modified)
 (2 inches / minute)
 Lo = 1.3" Yield
 Average Elongation @ Break % **501.7**
 Lo = 2.0" Break

Dimensional Stability Average Dimensional change % **-.36**
 ASTM D1204 (Modified)

Tear Resistance Average Tear Resistance **269.8** N **60.661** lbs
 ASTM D-1004 (Modified)

Puncture Resistance Load **458.0** N **102.95** lbs
 FTMS 101 Method 2065 (Modified)

Puncture Resistance Load **625.1** N **140.54** lbs
 ASTM D4833 (Modified)

ESCR Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**
 ASTM D1693

Notched Constant Tensile Load pass / fail @ 30% 300 hrs **ONGOING**
 ASTM D5397

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-11-08**

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ROLL # **950342-08** Lot #: **8181181** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet
	MAX:	1.65 mm	65 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.59 mm	63 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	208

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.38
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,624 psi
	Average Strength @ Break	33 N/mm	186 ppi	2,973 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.37
	Average Elongation @ Break	%	504.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.36
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	260.0 N	58.458 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	457.6 N	102.86 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	642.9 N	144.54 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-11-08**

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Quality Control Department

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ROLL # **950343-08** Lot #: **8181181** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.51 mm	59 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **31** mil AVE: **1.56** mm **61** mil OIT(Standard) ASTM D3895 minutes **208** **TEST RESULTS**
 ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density		g/cc		.947
ASTM D792					

MFI ASTM D1238	Melt Flow Index 190°C /2160 g		g/10 min		.25
COND. E					
GRADE:	K307				

Carbon Black Content	Range		%		2.38
ASTM D4218					

Carbon Black Dispersion	Category				10 in Cat 1
ASTM D5596					

Tensile Strength	Average Strength @ Yield	28 N/mm	161 ppi	2,624 psi
ASTM D6693				
ASTM D638 (Modified)				
(2 inches / minute)	Average Strength @ Break	32 N/mm	183 ppi	2,973 psi

Elongation ASTM D6693	Average Elongation @ Yield		%	14.37
ASTM D638 (Modified)				
(2 inches / minute)				
Lo = 1.3" Yield	Average Elongation @ Break		%	504.0
Lo = 2.0" Break				

Dimensional Stability	Average Dimensional change		%	-.36
ASTM D1204 (Modified)				

Tear Resistance	Average Tear Resistance	260.0 N		58.458 lbs
ASTM D-1004 (Modified)				

Puncture Resistance	Load	457.6 N		102.86 lbs
FTMS 101 Method 2065 (Modified)				

Puncture Resistance	Load	642.9 N		144.54 lbs
ASTM D4833 (Modified)				

ESCR	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
ASTM D1693				

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs		ONGOING
ASTM D5397				

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-11-08**

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ROLL # **950344-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.56 mm	61 mil	Length.....	125 m
	MAX:	1.66 mm	65 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.61 mm	63 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	203

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.38
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	166 ppi	2,624 psi
	Average Strength @ Break	33 N/mm	188 ppi	2,973 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.37
	Average Elongation @ Break	%	504.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	260.0 N	58.458 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	457.6 N	102.86 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	642.9 N	144.54 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-11-08**

Signature..... *[Signature]*

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ROLL # **950345-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
	MIN:	1.58 mm	62 mil	Length.....	125 m	410.1 feet	
	MAX:	1.65 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	28 mil	AVE:	1.60 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				203	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.38
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,624 psi
	Average Strength @ Break	33 N/mm	187 ppi	2,973 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.37
	Average Elongation @ Break	%	504.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	260.0 N	58.458 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	457.6 N	102.86 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	642.9 N	144.54 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-11-08**

Signature..... *[Signature]*

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ROLL # **950346-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.49 mm	59 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	29 mil	AVE:	1.54 mm	61 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895 minutes	203

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.27
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Carbon Black Content ASTM D4218	Range		%			2.38
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,624 psi
	Average Strength @ Break	32 N/mm	180 ppi	2,973 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.37
	Average Elongation @ Break	%		504.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	260.0 N		58.458 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	457.6 N		102.86 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	642.9 N		144.54 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-11-08**

Signature..... *[Signature]*

Quality Control Department

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ROLL # **950347-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.54 mm	61 mil	Length.....	125 m	410.1 feet
	MAX: 1.68 mm	66 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 28 mil	AVE: 1.60 mm	63 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	203

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.29
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,614 psi
	Average Strength @ Break	30 N/mm	169 ppi	2,684 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.04
	Average Elongation @ Break	%	449.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	265.8 N	59.753 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	451.1 N	101.42 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	637.9 N	143.40 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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 Destination **Henderson, NV**

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ROLL # **950348-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.55 mm	61 mil	Length.....	125 m
	MAX:	1.68 mm	66 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 41 mil	AVE:	1.62 mm	64 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes	203

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.29
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	167 ppi	2,614 psi
	Average Strength @ Break	30 N/mm	171 ppi	2,684 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.04
	Average Elongation @ Break	%	449.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	265.8 N	59.753 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	451.1 N	101.42 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	637.9 N	143.40 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **950349-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet
	MAX:	1.64 mm	65 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 25 mil	AVE:	1.57 mm	62 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				203

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.29
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,614 psi
	Average Strength @ Break	29 N/mm	166 ppi	2,684 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.04
	Average Elongation @ Break	%	449.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	265.8 N	59.753 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	451.1 N	101.42 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	637.9 N	143.40 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **950350-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.47 mm	58 mil	Length.....	125 m
	MAX:	1.64 mm	65 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 33 mil	AVE:	1.54 mm	61 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	203

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.29
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	158 ppi	2,614 psi
	Average Strength @ Break	28 N/mm	163 ppi	2,684 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.04
	Average Elongation @ Break	%	449.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	265.8 N	59.753 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	451.1 N	101.42 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	637.9 N	143.40 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-11-08**

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ROLL # **950351-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.56 mm	61 mil	Length.....	125 m
	MAX:	1.65 mm	65 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.59 mm	63 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	203

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.29
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,614 psi
	Average Strength @ Break	29 N/mm	168 ppi	2,684 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.04
	Average Elongation @ Break	%	449.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	265.8 N	59.753 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	451.1 N	101.42 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	637.9 N	143.40 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-11-08**

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ROLL # **950352-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.51 mm	59 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.64 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	26 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				203	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.34
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,642 psi
	Average Strength @ Break	27 N/mm	157 ppi	2,507 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.34
	Average Elongation @ Break	%	433.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	265.8 N	59.753 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	432.2 N	97.161 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	624.9 N	140.49 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-11-08**

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Quality Control Department

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quality certificate

ROLL # **950353-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.68 mm	66 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	25 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 203

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.27
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Carbon Black Content ASTM D4218	Range		%		2.34
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,642 psi
	Average Strength @ Break	27 N/mm	157 ppi	2,507 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		16.34
	Average Elongation @ Break	%		433.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	265.8 N		59.753 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	432.2 N		97.161 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	624.9 N		140.49 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-11-08**

Signature..... *[Signature]*

Quality Control Department

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ROLL # **950354-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.51 mm	59 mil	Length.....	125 m	410.1 feet
	MAX: 1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 32 mil	AVE: 1.56 mm	61 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	203

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.34
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,642 psi
	Average Strength @ Break	27 N/mm	154 ppi	2,507 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.34
	Average Elongation @ Break	%	433.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	265.8 N	59.753 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	432.2 N	97.161 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	624.9 N	140.49 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-11-08**

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Quality Control Department

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ROLL # **950355-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.45 mm	57 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.66 mm	65 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	35 mil	AVE:	1.52 mm	60 mil		
ODD #: TOP	EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	203

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.27
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Carbon Black Content ASTM D4218	Range		%			2.34
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28	N/mm	158	ppi	2,642	psi
	Average Strength @ Break	26	N/mm	150	ppi	2,507	psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			16.34
	Average Elongation @ Break		%			433.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	265.8	N			59.753	lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	432.2	N			97.161	lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	624.9	N			140.49	lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-11-08**

Signature..... *[Signature]*

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ROLL # **950356-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.51 mm	59 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.56 mm	61 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **203**

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.34
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,642 psi
	Average Strength @ Break	27 N/mm	154 ppi	2,507 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.34
	Average Elongation @ Break	%	433.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	265.8 N	59.753 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	432.2 N	97.161 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	624.9 N	140.49 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-11-08**

Signature..... *[Handwritten Signature]*

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ROLL # **950357-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.66 mm	65 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	32 mil	AVE:	1.61 mm	63 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	203

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.27
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Carbon Black Content ASTM D4218	Range		%			2.18
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		30 N/mm	170 ppi		2,684 psi
	Average Strength @ Break		26 N/mm	149 ppi		2,349 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			15.38
	Average Elongation @ Break		%			443.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		270.0 N			60.710 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		447.1 N			100.50 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load		613.5 N			137.93 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures		1500 hrs			CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%		300 hrs			ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-11-08**

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ROLL # **950358-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.64 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	31 mil	AVE:	1.60 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 203

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.27
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Carbon Black Content ASTM D4218	Range		%			2.18
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	169 ppi	2,684 psi
	Average Strength @ Break	26 N/mm	148 ppi	2,349 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.38
	Average Elongation @ Break	%		443.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	270.0 N		60.710 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	447.1 N		100.50 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	613.5 N		137.93 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-11-08**

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ROLL # **950359-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.51 mm	59 mil	Length.....	125 m
	MAX:	1.59 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.56 mm	61 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **203**

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,684 psi
	Average Strength @ Break	25 N/mm	144 ppi	2,349 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.38
	Average Elongation @ Break	%	443.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	270.0 N	60.710 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	447.1 N	100.50 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	613.5 N	137.93 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-11-08**

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ROLL # **950360-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.48 mm	58 mil	Length.....	125 m
	MAX:	1.57 mm	62 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.52 mm	60 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	203

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,684 psi
	Average Strength @ Break	25 N/mm	141 ppi	2,349 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.38
	Average Elongation @ Break	%	443.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	270.0 N	60.710 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	447.1 N	100.50 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	613.5 N	137.93 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **950361-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	32 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	203

TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.27
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Carbon Black Content ASTM D4218	Range			%		2.18
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			29 N/mm	167 ppi	2,684 psi
	Average Strength @ Break			26 N/mm	146 ppi	2,349 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		15.38
	Average Elongation @ Break			%		443.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			270.0 N		60.710 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			447.1 N		100.50 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			613.5 N		137.93 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-11-08**

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ROLL # **950462-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.57 mm MAX: 1.64 mm AVE: 1.60 mm	ENGLISH 62 mil 65 mil 63 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 33 mil ODD #: TOP EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes 203	TEST RESULTS	

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.16
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Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	167 ppi	2,659 psi
	Average Strength @ Break	32 N/mm	182 ppi	2,893 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.53
	Average Elongation @ Break	%	491.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	254.9 N	57.309 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	434.9 N	97.779 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	635.3 N	142.83 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
PO: **9036 Landwell Basic Remediation**
Destination **Henderson, NV**

Date:..... **12-12-08**

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ROLL # **950463-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.57 mm	62 mil	Length.....	125 m
	MAX:	1.63 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 33 mil	AVE:	1.60 mm	63 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	203

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.16
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	167 ppi	2,659 psi
	Average Strength @ Break	32 N/mm	182 ppi	2,893 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.53
	Average Elongation @ Break	%	491.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	254.9 N	57.309 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	434.9 N	97.779 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	635.3 N	142.83 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-12-08**

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ROLL # **950464-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	34 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 203

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.945
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.27
Carbon Black Content ASTM D4218	Range		%		2.16
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,659 psi	
	Average Strength @ Break	32 N/mm	180 ppi	2,893 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.53	
	Average Elongation @ Break	%		491.4	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-.20	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	254.9 N		57.309 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	434.9 N		97.779 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	635.3 N		142.83 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-12-08**

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ROLL # **950465-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.49 mm	59 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 32 mil	AVE:	1.55 mm	61 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes	203

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc		.945
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min		.27
Carbon Black Content ASTM D4218	Range	%		2.16
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,659 psi
	Average Strength @ Break	31 N/mm	177 ppi	2,893 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.53
	Average Elongation @ Break	%		491.4
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-.20
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	254.9 N	57.309 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	434.9 N	97.779 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	635.3 N	142.83 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-12-08**

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ROLL # **950466-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	34 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 203

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.945
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.27
Carbon Black Content ASTM D4218	Range		%		2.16
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	165 ppi	2,659 psi
	Average Strength @ Break		32 N/mm	180 ppi	2,893 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		14.53
	Average Elongation @ Break		%		491.4
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-.20
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		254.9 N		57.309 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		434.9 N		97.779 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		635.3 N		142.83 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-12-08**

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ROLL # **950467-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.59 mm	63 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 32 mil	AVE:	1.59 mm	63 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **203**

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.15
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	163 ppi	2,607 psi
	Average Strength @ Break	34 N/mm	194 ppi	3,107 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.92
	Average Elongation @ Break	%	445.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	256.1 N	57.571 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	445.5 N	100.16 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	607.9 N	136.65 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-12-08**

Signature..... *[Signature]*

Quality Control Department

60HDmic.FRM
REV 03
12/23/05



quality certificate

ROLL # **950468-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.57 mm	62 mil	Length.....	125 m
	MAX:	1.62 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 33 mil	AVE:	1.59 mm	63 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes	203

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.15
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	163 ppi	2,607 psi
	Average Strength @ Break	34 N/mm	194 ppi	3,107 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.92
	Average Elongation @ Break	%	445.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	256.1 N	57.571 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	445.5 N	100.16 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	607.9 N	136.65 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-12-08**

Signature..... *[Handwritten Signature]*

Quality Control Department

60HDmic.FRM
REV 03
12/23/05



quality certificate

ROLL # **950469-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.46 mm	57 mil	Length.....	125 m	410.1 feet
	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 26 mil	AVE:	1.53 mm	60 mil			
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	203

TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.27
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Carbon Black Content ASTM D4218	Range			%		2.15
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			27 N/mm	157 ppi	2,607 psi
	Average Strength @ Break			33 N/mm	187 ppi	3,107 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		14.92
	Average Elongation @ Break			%		445.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			256.1 N		57.571 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			445.5 N		100.16 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			607.9 N		136.65 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-12-08**

Signature..... *[Signature]*

Quality Control Department

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REV 03
12/23/05



quality certificate

ROLL # **950470-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.54 mm	61 mil	Length.....	125 m	410.1 feet
	MAX: 1.67 mm	66 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 37 mil	AVE: 1.60 mm	63 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	203

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.15
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,607 psi
	Average Strength @ Break	34 N/mm	196 ppi	3,107 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.92
	Average Elongation @ Break	%	445.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	256.1 N	57.571 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	445.5 N	100.16 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	607.9 N	136.65 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-12-08**

Signature..... *[Handwritten Signature]*

Quality Control Department

60HDmic.FRM
REV 03
12/23/05



quality certificate

ROLL # **950471-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 26 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 203

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27	
Carbon Black Content ASTM D4218	Range	%	2.15	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,607 psi
	Average Strength @ Break	34 N/mm	192 ppi	3,107 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.92	
	Average Elongation @ Break	%	445.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.20	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	256.1 N	57.571 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	445.5 N	100.16 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	607.9 N	136.65 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-12-08**

Signature..... *[Handwritten Signature]*

Quality Control Department

60HDmic.FRM
REV 03
12/23/05



quality certificate

ROLL # **950472-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.64 mm	65 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	25 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	203

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.27
Carbon Black Content ASTM D4218	Range		%			2.14
Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	167 ppi		2,680 psi
	Average Strength @ Break		31 N/mm	175 ppi		2,811 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			16.36
	Average Elongation @ Break		%			478.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-.20
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		263.9 N			59.330 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		416.4 N			93.611 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		613.5 N			137.92 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-12-08**

Signature..... *[Handwritten Signature]*

Quality Control Department

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REV 03
12/23/05



quality certificate

ROLL # **950473-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.51 mm	59 mil	Length.....	125 m
	MAX:	1.63 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 26 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	203

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.14
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	166 ppi	2,680 psi
	Average Strength @ Break	30 N/mm	174 ppi	2,811 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.36
	Average Elongation @ Break	%	478.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	263.9 N	59.330 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	416.4 N	93.611 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	613.5 N	137.92 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
---	-------------------	---------	----------------

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-12-08**

Signature..... *[Signature]*

Quality Control Department

60HDmic.FRM
REV 03
12/23/05



quality certificate

ROLL # **950474-08** Lot #: **8181182** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.45 mm MAX: 1.59 mm AVE: 1.52 mm	ENGLISH 57 mil 63 mil 60 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 31 mil ODD #: TOP EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes 203	TEST RESULTS	

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
---	-------------------------------	----------	------------

Carbon Black Content ASTM D4218	Range	%	2.14
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Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1
---------------------------------------	----------	--	--------------------

Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,680 psi
	Average Strength @ Break	29 N/mm	168 ppi	2,811 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.36
	Average Elongation @ Break	%	478.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	263.9 N	59.330 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	416.4 N	93.611 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	613.5 N	137.92 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
---	-------------------	---------	----------------

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-12-08**

Signature..... *[Signature]*

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

Certificate of Analysis

Shipped To: AGRU AMERICA INC
2000 EAST NEWLANDS
FERNLEY NV 89408
USA

Recipient: PALMER
Fax:

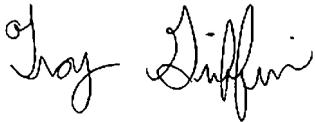
CPC Delivery #: 87771669
PO #: 4911
Weight: 188600 LB
Ship Date: 11/14/2008
Package: BULK
Mode: Hopper Car
Car #: PSPX001351
Seal No: 271079

Product:
MARLEX POLYETHYLENE K307 BULK

Lot Number: 8181181

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.250	g/10mi
HLMI Flow Rate	ASTM D1238	22.00	g/10mi
Density	ASTM D1505	0.9380	g/cm3
Pellet Count	P02.08.03	32.000	pel/g
Production Date		11/10/2008	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP.
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.



Troy Griffin
Quality Systems Coordinator

For CoA questions contact Customer Service Representative at +1-832-813-4637

Certificate of Analysis

Shipped To: AGRU AMERICA INC
2000 EAST NEWLANDS
FERNLEY NV 89408
USA

Recipient: PALMER
Fax:

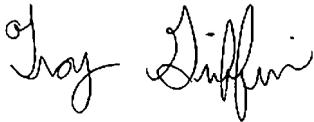
CPC Delivery #: 87775272
PO #: 4911
Weight: 190900 LB
Ship Date: 11/21/2008
Package: BULK
Mode: Hopper Car
Car #: CEFX054060
Seal No: 271076

Product:
MARLEX POLYETHYLENE K307 BULK

Lot Number: 8181182

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.270	g/10mi
HLMI Flow Rate	ASTM D1238	22.00	g/10mi
Density	ASTM D1505	0.9380	g/cm3
Pellet Count	P02.08.03	31.000	pel/g
Production Date		11/10/2008	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP.
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.



Troy Griffin
Quality Systems Coordinator

For CoA questions contact Customer Service Representative at +1-832-813-4637



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Additional CAMU Closure Geomembrane Resin/Roll Production Data
Submittal Number:	02770-004E
Specification Section:	Section 02770, Part 2.02
Drawing Number (s):	8, 10, 14, 16, 19, 21, 23, 25, 27, 29, 31, 33, 35-36, 38-45
Page Number:	02770-5 and 02770-6
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	12/15/2008

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



875 West Warm Springs Road
 Henderson, Nevada 89011
 Tel (702) 567-0400 · Fax (702) 567-0475

SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehringer
ADDRESS: ENTACT Environmental Services
 Henderson, Nevada 89011

Date: 01/14/2009	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02770-004F	Revision No.: - N/A	Date Submittal Rec'd by BRC: 01/05/2009
---------------------------------------	----------------------------	--

Specification Section(s): 02770.1.06 Geomembrane Submittals

Submittal Subject: Additional CAMU Closure Geomembrane Resin/Roll Production Data

- Notations:**
- No Exception Taken
 - Correct as Noted
 - Rejected
 - Revise and Resubmit
 - Submit Specified Items

Review Comments:

Comment #	Reference	Comment

Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work

<p> Design Engineer Date 1/14/09</p> <p> Construction Manager Representative Date 1/15/09</p>	<p> BRC Project Manager Date 1/15/09 Lee Farris, P.E.</p>
---	--

Distribution: File



699 South Friendswood Drive
Suite 101
Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
ATTENTION: Lee C. Farris, P.E.

DATE: 1/5/09
JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
TRANSMITTAL NUMBER: 184
ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	1/5/09			Submittal 02770-004F – Additional CAMU Closure Geomembrane Resin/Roll Production Data	RC

ACTION (*)

AR - AS REQUESTED

FA - FOR APPROVAL

F – FILE

RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL

MAIL

OVERNIGHT

HAND DELIVERY

FACSIMILE

COPY TO: Ranajit Sahu, Lee Farris

BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....

METRIC DIMENSIONS

757 rolls 60 HD microspike

551

left

60 mil ROLL #	wid	len	AREA	149 spools 5mm HD CHEVRON WELD ROD	wgt	lot #	prod date
(K)951352 .08	7	125	875.0	60HD micro 757 TOT 606	3268	sqgs 8181180	12/17/2008
(K)951353 .08	7	125	875.0	60HD micro 757 TOT 607	3234	8181180	12/17/2008
(K)951354 .08	7	125	875.0	60HD micro 757 TOT 608	3196	8181180	12/17/2008
(K)951355 .08	7	125	875.0	60HD micro 757 TOT 609	3164	8181180	12/17/2008
(K)951356 .08	7	125	875.0	60HD micro 757 TOT 610	3164	8181180	12/17/2008
(K)951357 .08	7	125	875.0	60HD micro 757 TOT 611	3176	8181180	12/17/2008
(K)951358 .08	7	125	875.0	60HD micro 757 TOT 612	3174	8181180	12/17/2008
(K)951359 .08	7	125	875.0	60HD micro 757 TOT 613	3172	8181180	12/17/2008
(K)951360 .08	7	125	875.0	60HD micro 757 TOT 614	3174	8181180	12/17/2008
(K)951361 .08	7	125	875.0	60HD micro 757 TOT 615	3170	8181180	12/17/2008
(K)951364 .08	7	125	875.0	60HD micro 757 TOT 616	3202	sqgs 8181180	12/17/2008
(K)951465 .08	7	125	875.0	60HD micro 757 TOT 617	3200	8181180	12/18/2008
(K)951466 .08	7	125	875.0	60HD micro 757 TOT 618	3204	8181180	12/18/2008
(K)951467 .08	7	125	875.0	60HD micro 757 TOT 619	3204	8181180	12/18/2008
(K)951468 .08	7	125	875.0	60HD micro 757 TOT 620	3204	8181180	12/18/2008
(K)951469 .08	7	125	875.0	60HD micro 757 TOT 621	3204	8181180	12/18/2008
(K)951470 .08	7	125	875.0	60HD micro 757 TOT 622	3208	8181180	12/18/2008
(K)951471 .08	7	125	875.0	60HD micro 757 TOT 623	3218	8181180	12/18/2008
(K)951472 .08	7	125	875.0	60HD micro 757 TOT 624	3198	8181180	12/18/2008
(K)951473 .08	7	125	875.0	60HD micro 757 TOT 625	3170	8181180	12/18/2008
(K)951474 .08	7	125	875.0	60HD micro 757 TOT 626	3180	8181180	12/18/2008
(K)951475 .08	7	125	875.0	60HD micro 757 TOT 627	3180	sqgs 8181180	12/18/2008
(K)951476 .08	7	125	875.0	60HD micro 757 TOT 628	3186	8181180	12/18/2008
(K)951477 .08	7	125	875.0	60HD micro 757 TOT 629	3184	8181180	12/18/2008
(K)951478 .08	7	125	875.0	60HD micro 757 TOT 630	3188	8181180	12/18/2008
(K)951479 .08	7	125	875.0	60HD micro 757 TOT 631	3188	8181180	12/18/2008
(K)951480 .08	7	125	875.0	60HD micro 757 TOT 632	3186	8181180	12/18/2008
(K)951481 .08	7	125	875.0	60HD micro 757 TOT 633	3188	8181180	12/18/2008
(K)951482 .08	7	125	875.0	60HD micro 757 TOT 634	3186	8181180	12/18/2008
(K)951483 .08	7	125	875.0	60HD micro 757 TOT 635	3186	8181180	12/18/2008
(K)951484 .08	7	125	875.0	60HD micro 757 TOT 636	3188	8181180	12/18/2008
(K)951485 .08	7	125	875.0	60HD micro 757 TOT 637	3192	8181180	12/18/2008
(K)951586 .08	7	125	875.0	60HD micro 757 TOT 638	3208	sqgs + 3ft 8181180	12/19/2008
(K)951587 .08	7	125	875.0	60HD micro 757 TOT 639	3208	8181180	12/19/2008
(K)951588 .08	7	125	875.0	60HD micro 757 TOT 640	3216	8181180	12/19/2008
(K)951589 .08	7	125	875.0	60HD micro 757 TOT 641	3210	7181343	12/19/2008
(K)951590 .08	7	125	875.0	60HD micro 757 TOT 642	3198	7181343	12/19/2008
(K)951591 .08	7	125	875.0	60HD micro 757 TOT 643	3188	7181343	12/19/2008
(K)951592 .08	7	125	875.0	60HD micro 757 TOT 644	3198	7181343	12/19/2008
(K)951593 .08	7	125	875.0	60HD micro 757 TOT 645	3196	7181343	12/19/2008
(K)951594 .08	7	125	875.0	60HD micro 757 TOT 646	3198	7181343	12/19/2008
(K)951595 .08	7	125	875.0	60HD micro 757 TOT 647	3200	7181343	12/19/2008
(K)951596 .08	7	125	875.0	60HD micro 757 TOT 648	3200	sqgs 7181343	12/19/2008
(K)951597 .08	7	125	875.0	60HD micro 757 TOT 649	3194	7181343	12/19/2008
(K)951598 .08	7	125	875.0	60HD micro 757 TOT 650	3182	7181343	12/19/2008
(K)951599 .08	7	125	875.0	60HD micro 757 TOT 651	3186	7181343	12/19/2008
(K)915500 .08	7	125	875.0	60HD micro 757 TOT 652	3186	7181343	12/19/2008
(K)951501 .08	7	125	875.0	60HD micro 757 TOT 653	3186	7181343	12/19/2008
(K)951502 .08	7	125	875.0	60HD micro 757 TOT 654	3196	7181343	12/19/2008
(K)951503 .08	7	125	875.0	60HD micro 757 TOT 655	3196	7181343	12/19/2008
(K)951504 .08	7	125	875.0	60HD micro 757 TOT 656	3186	7181343	12/19/2008
(K)951505 .08	7	125	875.0	60HD micro 757 TOT 657	3196	7181343	12/19/2008
(K)951506 .08	7	125	875.0	60HD micro 757 TOT 658	3188	7181343	12/19/2008
(K)951607 .08	7	125	875.0	60HD micro 757 TOT 659	3184	sqgs 7181343	12/20/2008
(K)951608 .08	7	125	875.0	60HD micro 757 TOT 660	3186	7181343	12/20/2008
(K)951609 .08	7	125	875.0	60HD micro 757 TOT 661	3186	7181343	12/20/2008
(K)951610 .08	7	125	875.0	60HD micro 757 TOT 662	3186	7181343	12/20/2008
(K)951611 .08	7	125	875.0	60HD micro 757 TOT 663	3184	7181343	12/20/2008
(K)951612 .08	7	125	875.0	60HD micro 757 TOT 664	3180	7181343	12/20/2008
(K)951613 .08	7	125	875.0	60HD micro 757 TOT 665	3178	7181343	12/20/2008
(K)951614 .08	7	125	875.0	60HD micro 757 TOT 666	3178	7181343	12/20/2008
(K)951615 .08	7	125	875.0	60HD micro 757 TOT 667	3182	7181343	12/20/2008
(K)951616 .08	7	125	875.0	60HD micro 757 TOT 668	3186	7181343	12/20/2008
(K)951617 .08	7	125	875.0	60HD micro 757 TOT 669	3188	sqgs 7181343	12/20/2008
(K)951618 .08	7	125	875.0	60HD micro 757 TOT 670	3188	7181343	12/20/2008
(K)951619 .08	7	125	875.0	60HD micro 757 TOT 671	3182	7181343	12/20/2008
(K)951620 .08	7	125	875.0	60HD micro 757 TOT 672	3178	7181343	12/20/2008
(K)951621 .08	7	125	875.0	60HD micro 757 TOT 673	3178	7181343	12/20/2008
(K)951622 .08	7	125	875.0	60HD micro 757 TOT 674	3176	7181343	12/20/2008
(K)951623 .08	7	125	875.0	60HD micro 757 TOT 675	3180	7181343	12/20/2008

60 mil micro
HDPE

ESI Landwell Basic Remed doc 10167
Henderson, NV

PO#	9036
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METRIC DIMENSIONS

757 rolls 60 HD microspike	551	left
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60 mil ROLL #	wid	len	AREA	149 spools 5mm HD CHEVRON WELD ROD	wgt	lot #	prod date
(K)951624 .08	7	125	875.0	60HD micro 757 TOT	676	3174	7181343 12/20/2008
(K)951625 .08	7	125	875.0	60HD micro 757 TOT	677	3164	7181343 12/20/2008
(K)951626 .08	7	125	875.0	60HD micro 757 TOT	678	3160	7181343 12/20/2008
(K)951627 .08	7	125	875.0	60HD micro 757 TOT	679	3160	7181343 12/20/2008
(K)951728 .08	7	125	875.0	60HD micro 757 TOT	680	3162	sqgs+3ft 7181343 12/21/2008
(K)951729 .08	7	125	875.0	60HD micro 757 TOT	681	3158	7181343 12/21/2008
(K)951730 .08	7	125	875.0	60HD micro 757 TOT	682	3158	7181343 12/21/2008
(K)951731 .08	7	125	875.0	60HD micro 757 TOT	683	3158	7181343 12/21/2008
(K)951732 .08	7	125	875.0	60HD micro 757 TOT	684	3158	7181343 12/21/2008
(K)951733 .08	7	125	875.0	60HD micro 757 TOT	685	3160	7181343 12/21/2008
(K)951734 .08	7	125	875.0	60HD micro 757 TOT	686	3156	7181343 12/21/2008
(K)951735 .08	7	125	875.0	60HD micro 757 TOT	687	3160	7181343 12/21/2008
(K)951736 .08	7	125	875.0	60HD micro 757 TOT	688	3160	7181343 12/21/2008
(K)951737 .08	7	125	875.0	60HD micro 757 TOT	689	3158	7181343 12/21/2008
(K)951738 .08	7	125	875.0	60HD micro 757 TOT	690	3160	7181343 12/21/2008
(K)951739 .08	7	125	875.0	60HD micro 757 TOT	691	3162	sqgs 7181343 12/21/2008
(K)951740 .08	7	125	875.0	60HD micro 757 TOT	692	3160	7181343 12/21/2008
(K)951741 .08	7	125	875.0	60HD micro 757 TOT	693	158	7181343 12/21/2008
(K)951742 .08	7	125	875.0	60HD micro 757 TOT	694	3162	7181343 12/21/2008
(K)951743 .08	7	125	875.0	60HD micro 757 TOT	695	3160	7181343 12/21/2008
(K)951744 .08	7	125	875.0	60HD micro 757 TOT	696	3156	7181343 12/21/2008
(K)951745 .08	7	125	875.0	60HD micro 757 TOT	697	3154	7181343 12/21/2008
(K)951746 .08	7	125	875.0	60HD micro 757 TOT	698	3146	7181343 12/21/2008
(K)951747 .08	7	125	875.0	60HD micro 757 TOT	699	3146	7181343 12/21/2008
(K)951748 .08	7	125	875.0	60HD micro 757 TOT	700	3138	7181343 12/21/2008
(K)952101 .08	7	125	875.0	60HD micro 757 TOT	701	3134	sqgs 7181343 12/22/2008
(K)952102 .08	7	125	875.0	60HD micro 757 TOT	702	3132	7181343 12/22/2008
(K)952103 .08	7	125	875.0	60HD micro 757 TOT	703	3136	7181343 12/22/2008
(K)952104 .08	7	125	875.0	60HD micro 757 TOT	704	3134	7181343 12/22/2008
(K)952105 .08	7	125	875.0	60HD micro 757 TOT	705	3138	7181343 12/22/2008



quality certificate

ROLL # **951352-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.63 mm	64 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.74 mm	69 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	29 mil	AVE:	1.68 mm	66 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 210

TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.27
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Carbon Black Content ASTM D4218	Range			%		2.26
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			31 N/mm	179 ppi	2,708 psi
	Average Strength @ Break			36 N/mm	208 ppi	3,141 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		15.22
	Average Elongation @ Break			%		532.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.47
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			327.0 N		73.506 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			458.0 N		102.97 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			665.4 N		149.59 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-17-08**

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ROLL # **951353-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.57 mm	62 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.68 mm	66 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	26 mil	AVE:	1.61 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 210

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.945
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.27
Carbon Black Content ASTM D4218	Range		%		2.26
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	172 ppi	2,708 psi	
	Average Strength @ Break	35 N/mm	199 ppi	3,141 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.22	
	Average Elongation @ Break	%		532.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.47	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	327.0 N		73.506 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	458.0 N		102.97 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	665.4 N		149.59 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-17-08**

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ROLL # **951354-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.60 mm	63 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.68 mm	66 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	28 mil	AVE:	1.65 mm	65 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 210

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.945
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.27
Carbon Black Content ASTM D4218	Range		%		2.26
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	31 N/mm	176 ppi	2,708 psi	
	Average Strength @ Break	36 N/mm	204 ppi	3,141 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		15.22
	Average Elongation @ Break		%		532.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.47
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	327.0 N		73.506 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	458.0 N		102.97 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	665.4 N		149.59 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-17-08**

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ROLL # **951355-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	30 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				210	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.26
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	168 ppi	2,708 psi
	Average Strength @ Break	34 N/mm	195 ppi	3,141 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.22
	Average Elongation @ Break	%	532.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.47
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	327.0 N	73.506 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	458.0 N	102.97 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	665.4 N	149.59 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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 Destination **Henderson, NV**

Date:..... **12-17-08**

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ROLL # **951356-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.48 mm	58 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.57 mm	62 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	30 mil	AVE:	1.53 mm	60 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 210

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.945
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.27
Carbon Black Content ASTM D4218	Range		%		2.26
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	163 ppi	2,708 psi
	Average Strength @ Break		33 N/mm	189 ppi	3,141 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		15.22
	Average Elongation @ Break		%		532.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.47
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		327.0 N		73.506 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		458.0 N		102.97 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		665.4 N		149.59 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
PO: **9036 Landwell Basic Remediation**
Destination **Henderson, NV**

Date:..... **12-17-08**

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ROLL # **951357-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	30 mil	AVE:	1.60 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 210

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.27
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Carbon Black Content ASTM D4218	Range		%		2.27
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,627 psi
	Average Strength @ Break	32 N/mm	184 ppi	2,927 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		16.09
	Average Elongation @ Break	%		495.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.47
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	318.2 N		71.530 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	441.3 N		99.218 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	599.2 N		134.71 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-17-08**

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ROLL # **951358-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.57 mm	62 mil	Length.....	125 m	410.1 feet
	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 27 mil	AVE:	1.59 mm	63 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	210

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.27
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,627 psi
	Average Strength @ Break	32 N/mm	183 ppi	2,927 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.09
	Average Elongation @ Break	%	495.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.47
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	318.2 N	71.530 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	441.3 N	99.218 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	599.2 N	134.71 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-17-08**

Signature..... *[Signature]*

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ROLL # **951359-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	27 mil	AVE:	1.60 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 210

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.27
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Carbon Black Content ASTM D4218	Range		%		2.27
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,627 psi
	Average Strength @ Break	32 N/mm	184 ppi	2,927 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		16.09
	Average Elongation @ Break	%		495.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.47
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	318.2 N		71.530 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	441.3 N		99.218 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	599.2 N		134.71 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-17-08**

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ROLL # **951360-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.56 mm	61 mil	Length.....	125 m
	MAX:	1.65 mm	65 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.60 mm	63 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **210**

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.27
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,627 psi
	Average Strength @ Break	32 N/mm	184 ppi	2,927 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.09
	Average Elongation @ Break	%	495.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.47
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	318.2 N	71.530 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	441.3 N	99.218 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	599.2 N	134.71 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-17-08**

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ROLL # **951361-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **30** mil AVE: **1.59** mm **63** mil OIT(Standard) ASTM D3895 minutes **210** **TEST RESULTS**
 ODD #: TOP EVEN #: BOTTOM

Specific Gravity Density g/cc **.946**
 ASTM D792

MFI ASTM D1238 Melt Flow Index 190°C /2160 g g/10 min **.27**
 COND. E
 GRADE: **K307**

Carbon Black Content Range % **2.27**
 ASTM D4218

Carbon Black Dispersion Category **10 in Cat 1**
 ASTM D5596

Tensile Strength Average Strength @ Yield **29** N/mm **164** ppi **2,627** psi
 ASTM D6693
 ASTM D638 (Modified)
 (2 inches / minute)
 Average Strength @ Break **32** N/mm **183** ppi **2,927** psi

Elongation ASTM D6693 Average Elongation @ Yield % **16.09**
 ASTM D638 (Modified)
 (2 inches / minute)
 Lo = 1.3" Yield
 Average Elongation @ Break % **495.8**
 Lo = 2.0" Break

Dimensional Stability Average Dimensional change % **-0.47**
 ASTM D1204 (Modified)

Tear Resistance Average Tear Resistance **318.2** N **71.530** lbs
 ASTM D-1004 (Modified)

Puncture Resistance Load **441.3** N **99.218** lbs
 FTMS 101 Method 2065 (Modified)

Puncture Resistance Load **599.2** N **134.71** lbs
 ASTM D4833 (Modified)

ESCR Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**
 ASTM D1693

Notched Constant Tensile Load pass / fail @ 30% 300 hrs **ONGOING**
 ASTM D5397

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **951364-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **32** mil AVE: **1.59** mm **63** mil OIT(Standard) ASTM D3895 minutes **210** **TEST RESULTS**
 ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density		g/cc	.946
ASTM D792				

MFI ASTM D1238	Melt Flow Index 190°C /2160 g		g/10 min	.27
COND. E				
GRADE:	K307			

Carbon Black Content	Range		%	2.18
ASTM D4218				

Carbon Black Dispersion	Category			10 in Cat 1
ASTM D5596				

Tensile Strength	Average Strength @ Yield	29 N/mm	168 ppi	2,677 psi
ASTM D6693				
ASTM D638 (Modified)				
(2 inches / minute)	Average Strength @ Break	32 N/mm	182 ppi	2,914 psi

Elongation ASTM D6693	Average Elongation @ Yield		%	14.06
ASTM D638 (Modified)				
(2 inches / minute)				
Lo = 1.3" Yield	Average Elongation @ Break		%	501.9
Lo = 2.0" Break				

Dimensional Stability	Average Dimensional change		%	-0.47
ASTM D1204 (Modified)				

Tear Resistance	Average Tear Resistance	311.2 N		69.961 lbs
ASTM D-1004 (Modified)				

Puncture Resistance	Load	439.6 N		98.826 lbs
FTMS 101 Method 2065 (Modified)				

Puncture Resistance	Load	637.0 N		143.20 lbs
ASTM D4833 (Modified)				

ESCR	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
ASTM D1693				

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs		ONGOING
ASTM D5397				

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-17-08**

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ROLL # **951465-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	31 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895 minutes	210

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.27
Carbon Black Content ASTM D4218	Range		%		2.18
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	167 ppi	2,677 psi
	Average Strength @ Break		32 N/mm	181 ppi	2,914 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		14.06
	Average Elongation @ Break		%		501.9
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.47
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		311.2 N		69.961 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		439.6 N		98.826 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		637.0 N		143.20 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **951466-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **30** mil AVE: **1.58** mm **62** mil OIT(Standard) ASTM D3895 minutes **210** **TEST RESULTS**
 ODD #: TOP EVEN #: BOTTOM

Specific Gravity ASTM D792	Density		g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.27
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Carbon Black Content ASTM D4218	Range		%	2.18
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	167 ppi	2,677 psi
	Average Strength @ Break	32 N/mm	181 ppi	2,914 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.06
	Average Elongation @ Break	%		501.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%	-0.47
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	311.2 N		69.961 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	439.6 N		98.826 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	637.0 N		143.20 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-18-08**

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ROLL # **951467-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	31 mil	AVE:	1.56 mm	61 mil		
ODD #: TOP	EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	210

TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.27
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Carbon Black Content ASTM D4218	Range			%		2.25
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			28 N/mm	162 ppi	2,639 psi
	Average Strength @ Break			29 N/mm	165 ppi	2,685 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		14.90
	Average Elongation @ Break			%		442.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.47
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			313.5 N		70.482 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			437.1 N		98.267 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			616.0 N		138.47 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-18-08**

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ROLL # **951468-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	31 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 210

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.27
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Carbon Black Content ASTM D4218	Range		%		2.25
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,639 psi
	Average Strength @ Break	29 N/mm	168 ppi	2,685 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.90
	Average Elongation @ Break	%		442.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.47
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	313.5 N		70.482 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	437.1 N		98.267 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	616.0 N		138.47 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-18-08**

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ROLL # **951469-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.64 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	31 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 210

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.27
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Carbon Black Content ASTM D4218	Range		%		2.25
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,639 psi
	Average Strength @ Break	29 N/mm	168 ppi	2,685 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.90
	Average Elongation @ Break	%		442.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.47
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	313.5 N		70.482 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	437.1 N		98.267 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	616.0 N		138.47 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-18-08**

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ROLL # **951470-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.46 mm	57 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.59 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	32 mil	AVE:	1.54 mm	61 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 210

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.944
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.27
Carbon Black Content ASTM D4218	Range		%		2.25
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		28 N/mm	160 ppi	2,639 psi
	Average Strength @ Break		29 N/mm	163 ppi	2,685 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		14.90
	Average Elongation @ Break		%		442.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.47
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		313.5 N		70.482 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		437.1 N		98.267 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		616.0 N		138.47 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-18-08**

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ROLL # **951471-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.55 mm MAX: 1.64 mm AVE: 1.60 mm	ENGLISH 61 mil 65 mil 63 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 30 mil ODD #: TOP EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes 210	TEST RESULTS	

Specific Gravity ASTM D792	Density		g/cc	.944
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.27
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Carbon Black Content ASTM D4218	Range		%	2.25
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	166 ppi	2,639 psi
	Average Strength @ Break	30 N/mm	169 ppi	2,685 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.90
	Average Elongation @ Break	%		442.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.47
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	313.5 N		70.482 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	437.1 N		98.267 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	616.0 N		138.47 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-18-08**

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ROLL # **951472-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.58 mm MAX: 1.68 mm AVE: 1.63 mm	ENGLISH 62 mil 66 mil 64 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 29 mil ODD #: TOP EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes 210	TEST RESULTS	

Specific Gravity ASTM D792	Density		g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.27
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Carbon Black Content ASTM D4218	Range		%	2.19
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	168 ppi	2,626 psi
	Average Strength @ Break	34 N/mm	197 ppi	3,063 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.96
	Average Elongation @ Break	%		536.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%	-0.47
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	322.8 N		72.573 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	443.9 N		99.801 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	639.4 N		143.74 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
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ROLL # **951473-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.58 mm	62 mil	Length.....	125 m
	MAX:	1.62 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 28 mil	AVE:	1.60 mm	63 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes			210	

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,626 psi
	Average Strength @ Break	34 N/mm	193 ppi	3,063 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.96
	Average Elongation @ Break	%	536.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.47
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	322.8 N	72.573 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	443.9 N	99.801 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	639.4 N	143.74 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **951474-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.50 mm	59 mil	Length.....	125 m
	MAX:	1.57 mm	62 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 32 mil	AVE:	1.54 mm	61 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 210

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27	
Carbon Black Content ASTM D4218	Range	%	2.19	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,626 psi
	Average Strength @ Break	33 N/mm	186 ppi	3,063 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.96	
	Average Elongation @ Break	%	536.1	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.47	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	322.8 N	72.573 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	443.9 N	99.801 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	639.4 N	143.74 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
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ROLL # **951475-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.58 mm	62 mil	Length.....	125 m
	MAX:	1.62 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.60 mm	63 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	210

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,626 psi
	Average Strength @ Break	34 N/mm	193 ppi	3,063 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.96
	Average Elongation @ Break	%	536.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.47
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	322.8 N	72.573 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	443.9 N	99.801 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	639.4 N	143.74 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **951476-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.56 mm	61 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.59 mm	63 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	210

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,626 psi
	Average Strength @ Break	34 N/mm	192 ppi	3,063 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.96
	Average Elongation @ Break	%	536.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.47
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	322.8 N	72.573 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	443.9 N	99.801 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	639.4 N	143.74 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **951477-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
	MIN:	1.49 mm	59 mil	Length.....	125 m	410.1 feet	
	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	31 mil	AVE:	1.56 mm	61 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 210

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.27
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Carbon Black Content ASTM D4218	Range		%		2.18
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	166 ppi	2,708 psi
	Average Strength @ Break	31 N/mm	175 ppi	2,844 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.17
	Average Elongation @ Break	%		466.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.47
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	309.0 N		69.461 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	445.9 N		100.23 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	617.5 N		138.83 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
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ROLL # **951478-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	28 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895 minutes	210

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.27
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Carbon Black Content ASTM D4218	Range		%			2.18
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	168 ppi	2,708 psi
	Average Strength @ Break		31 N/mm	177 ppi	2,844 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		15.17
	Average Elongation @ Break		%		466.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.47
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		309.0 N		69.461 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		445.9 N		100.23 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load		617.5 N		138.83 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures		1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%		300 hrs		ONGOING
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Customer: **Environmental Specialties**
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ROLL # **951479-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.59 mm	63 mil	Length.....	125 m
	MAX:	1.63 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.61 mm	63 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	210

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	172 ppi	2,708 psi
	Average Strength @ Break	32 N/mm	180 ppi	2,844 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.17
	Average Elongation @ Break	%	466.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.47
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	309.0 N	69.461 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	445.9 N	100.23 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	617.5 N	138.83 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **951480-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **29** mil AVE: **1.58** mm **62** mil OIT(Standard) ASTM D3895 minutes **210** **TEST RESULTS**
 ODD #: TOP EVEN #: BOTTOM

Specific Gravity Density g/cc **.947**
 ASTM D792

MFI ASTM D1238 Melt Flow Index 190°C /2160 g g/10 min **.27**
 COND. E
 GRADE: **K307**

Carbon Black Content Range % **2.18**
 ASTM D4218

Carbon Black Dispersion Category **10 in Cat 1**
 ASTM D5596

Tensile Strength Average Strength @ Yield **29** N/mm **168** ppi **2,708** psi
 ASTM D6693
 ASTM D638 (Modified)
 (2 inches / minute)
 Average Strength @ Break **31** N/mm **177** ppi **2,844** psi

Elongation ASTM D6693 Average Elongation @ Yield % **15.17**
 ASTM D638 (Modified)
 (2 inches / minute)
 Lo = 1.3" Yield
 Average Elongation @ Break % **466.2**
 Lo = 2.0" Break

Dimensional Stability Average Dimensional change % **-0.47**
 ASTM D1204 (Modified)

Tear Resistance Average Tear Resistance **309.0** N **69.461** lbs
 ASTM D-1004 (Modified)

Puncture Resistance Load **445.9** N **100.23** lbs
 FTMS 101 Method 2065 (Modified)

Puncture Resistance Load **617.5** N **138.83** lbs
 ASTM D4833 (Modified)

ESCR Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**
 ASTM D1693

Notched Constant Tensile Load pass / fail @ 30% 300 hrs **ONGOING**
 ASTM D5397

Customer: **Environmental Specialties**
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ROLL # **951481-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.55 mm	61 mil	Length.....	125 m
	MAX:	1.59 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	210

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.947
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.27
Carbon Black Content ASTM D4218	Range		%		2.18
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	167 ppi	2,708 psi
	Average Strength @ Break		31 N/mm	176 ppi	2,844 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		15.17
	Average Elongation @ Break		%		466.2
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.47
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		309.0 N		69.461 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		445.9 N		100.23 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		617.5 N		138.83 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **951482-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.64 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	31 mil	AVE:	1.60 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895 minutes	210

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.27
Carbon Black Content ASTM D4218	Range		%		2.18
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	168 ppi	2,670 psi
	Average Strength @ Break		34 N/mm	193 ppi	3,061 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		14.52
	Average Elongation @ Break		%		526.3
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.47
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		325.4 N		73.146 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		461.9 N		103.84 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		648.1 N		145.69 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-18-08**

Signature..... *[Signature]*

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ROLL # **951483-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **31** mil AVE: **1.58** mm **62** mil OIT(Standard) ASTM D3895 minutes **210** **TEST RESULTS**
 ODD #: TOP EVEN #: BOTTOM

Specific Gravity Density g/cc **.946**
 ASTM D792

MFI ASTM D1238 Melt Flow Index 190°C /2160 g g/10 min **.27**
 COND. E
 GRADE: **K307**

Carbon Black Content Range % **2.18**
 ASTM D4218

Carbon Black Dispersion Category **10 in Cat 1**
 ASTM D5596

Tensile Strength Average Strength @ Yield **29** N/mm **166** ppi **2,670** psi
 ASTM D6693
 ASTM D638 (Modified)
 (2 inches / minute)
 Average Strength @ Break **33** N/mm **190** ppi **3,061** psi

Elongation ASTM D6693 Average Elongation @ Yield % **14.52**
 ASTM D638 (Modified)
 (2 inches / minute)
 Lo = 1.3" Yield
 Average Elongation @ Break % **526.3**
 Lo = 2.0" Break

Dimensional Stability Average Dimensional change % **-0.47**
 ASTM D1204 (Modified)

Tear Resistance Average Tear Resistance **325.4** N **73.146** lbs
 ASTM D-1004 (Modified)

Puncture Resistance Load **461.9** N **103.84** lbs
 FTMS 101 Method 2065 (Modified)

Puncture Resistance Load **648.1** N **145.69** lbs
 ASTM D4833 (Modified)

ESCR Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**
 ASTM D1693

Notched Constant Tensile Load pass / fail @ 30% 300 hrs **ONGOING**
 ASTM D5397

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-18-08**

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ROLL # **951484-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	31 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	210

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.27
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Carbon Black Content ASTM D4218	Range		%			2.18
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	166 ppi	2,670 psi
	Average Strength @ Break		33 N/mm	190 ppi	3,061 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		14.52
	Average Elongation @ Break		%		526.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.47
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		325.4 N		73.146 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		461.9 N		103.84 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load		648.1 N		145.69 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-18-08**

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ROLL # **951485-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.50 mm	59 mil	Length.....	125 m	410.1 feet
	MAX:	1.58 mm	62 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 32 mil	AVE:	1.53 mm	60 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	210

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,670 psi
	Average Strength @ Break	32 N/mm	184 ppi	3,061 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.52
	Average Elongation @ Break	%	526.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.47
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	325.4 N	73.146 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	461.9 N	103.84 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	648.1 N	145.69 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **951586-08** Lot #: **8181180** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.55 mm	61 mil	Length.....	125 m
	MAX:	1.64 mm	65 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.60 mm	63 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **210**

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	168 ppi	2,670 psi
	Average Strength @ Break	34 N/mm	193 ppi	3,061 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.52
	Average Elongation @ Break	%	526.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.47
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	325.4 N	73.146 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	461.9 N	103.84 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	648.1 N	145.69 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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 Destination **Henderson, NV**

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ROLL # **951587-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m
	MAX:	1.62 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.57 mm	62 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **205**

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.16
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,619 psi
	Average Strength @ Break	29 N/mm	165 ppi	2,677 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.74
	Average Elongation @ Break	%	457.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	309.1 N	69.499 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	452.2 N	101.66 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	621.9 N	139.82 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-19-08**

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ROLL # **951588-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.64 mm	65 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	32 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.22
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Carbon Black Content ASTM D4218	Range		%			2.16
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	163 ppi		2,619 psi
	Average Strength @ Break		29 N/mm	166 ppi		2,677 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			14.74
	Average Elongation @ Break		%			457.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		309.1 N			69.499 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		452.2 N			101.66 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load		621.9 N			139.82 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures		1500 hrs			CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%		300 hrs			ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-19-08**

Signature..... *[Handwritten Signature]*

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ROLL # **951589-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.51 mm MAX: 1.72 mm AVE: 1.61 mm	ENGLISH 59 mil 68 mil 63 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 30 mil ODD #: TOP EVEN #: BOTTOM					OIT(Standard) ASTM D3895 minutes 205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.22
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Carbon Black Content ASTM D4218	Range		%	2.16
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	166 ppi	2,619 psi
	Average Strength @ Break	30 N/mm	170 ppi	2,677 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.74
	Average Elongation @ Break	%		457.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	309.1 N		69.499 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	452.2 N		101.66 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	621.9 N		139.82 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-19-08**

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ROLL # **951590-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet
	MAX:	1.66 mm	65 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 205	TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.22
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Carbon Black Content ASTM D4218	Range			%		2.16
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			29 N/mm	164 ppi	2,619 psi
	Average Strength @ Break			29 N/mm	168 ppi	2,677 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		14.74
	Average Elongation @ Break			%		457.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			309.1 N		69.499 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			452.2 N		101.66 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			621.9 N		139.82 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-19-08**

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ROLL # **951591-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.51 mm	59 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	31 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				205	TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.22
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Carbon Black Content ASTM D4218	Range		%	2.16
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	163 ppi	2,619 psi
	Average Strength @ Break	29 N/mm	166 ppi	2,677 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.74
	Average Elongation @ Break	%		457.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	309.1 N		69.499 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	452.2 N		101.66 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	621.9 N		139.82 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **951592-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.45 mm	57 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.72 mm	68 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	29 mil	AVE:	1.59 mm	63 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.22
Carbon Black Content ASTM D4218	Range		%			2.16
Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		30 N/mm	169 ppi		2,697 psi
	Average Strength @ Break		29 N/mm	165 ppi		2,637 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			15.19
	Average Elongation @ Break		%			435.9
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-0.20
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		317.4 N			71.354 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		450.1 N			101.19 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		650.1 N			146.15 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures		1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%		300 hrs			ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-19-08**

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ROLL # **951593-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.47 mm	58 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.56 mm	61 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **205**

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.16
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	166 ppi	2,697 psi
	Average Strength @ Break	28 N/mm	162 ppi	2,637 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.19
	Average Elongation @ Break	%	435.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	317.4 N	71.354 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	450.1 N	101.19 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	650.1 N	146.15 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-19-08**

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ROLL # **951594-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	28 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.22
Carbon Black Content ASTM D4218	Range		%		2.16
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	169 ppi	2,697 psi	
	Average Strength @ Break	29 N/mm	165 ppi	2,637 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.19	
	Average Elongation @ Break	%		435.9	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.20	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	317.4 N		71.354 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	450.1 N		101.19 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	650.1 N		146.15 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **951595-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	31 mil	AVE:	1.61 mm	63 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.22
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Carbon Black Content ASTM D4218	Range		%			2.16
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		30 N/mm	171 ppi		2,697 psi
	Average Strength @ Break		29 N/mm	167 ppi		2,637 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			15.19
	Average Elongation @ Break		%			435.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		317.4 N			71.354 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		450.1 N			101.19 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load		650.1 N			146.15 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures		1500 hrs			CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%		300 hrs			ONGOING
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Customer: **Environmental Specialties**
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 Destination **Henderson, NV**

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ROLL # **951596-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.59 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	30 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.22
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Carbon Black Content ASTM D4218	Range		%			2.16
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	168 ppi	2,697 psi
	Average Strength @ Break		29 N/mm	164 ppi	2,637 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		15.19
	Average Elongation @ Break		%		435.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		317.4 N		71.354 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		450.1 N		101.19 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load		650.1 N		146.15 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures		1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%		300 hrs		ONGOING
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Customer: **Environmental Specialties**
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 Destination **Henderson, NV**

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ROLL # **951597-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.60 mm	63 mil	Length.....	125 m	410.1 feet
	MAX: 1.68 mm	66 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 29 mil	AVE: 1.65 mm	65 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	205

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	168 ppi	2,581 psi
	Average Strength @ Break	32 N/mm	183 ppi	2,811 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.64
	Average Elongation @ Break	%	488.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	312.6 N	70.289 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	450.8 N	101.34 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	628.0 N	141.18 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **951598-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	29 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.22
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Carbon Black Content ASTM D4218	Range		%		2.19
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,581 psi
	Average Strength @ Break	31 N/mm	176 ppi	2,811 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		16.64
	Average Elongation @ Break	%		488.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	312.6 N		70.289 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	450.8 N		101.34 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	628.0 N		141.18 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
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Date:..... **12-19-08**

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ROLL # **951599-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.59 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	31 mil	AVE:	1.56 mm	61 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.22
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Carbon Black Content ASTM D4218	Range		%			2.19
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		28 N/mm	159 ppi		2,581 psi
	Average Strength @ Break		30 N/mm	173 ppi		2,811 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			16.64
	Average Elongation @ Break		%			488.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		312.6 N			70.289 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		450.8 N			101.34 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load		628.0 N			141.18 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				ONGOING
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Customer: **Environmental Specialties**
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 Destination **Henderson, NV**

Date:..... **12-19-08**

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ROLL # **951500-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet
	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.58 mm	62 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	205

Specific Gravity ASTM D792	Density			g/cc	.947	
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min	.22	
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Carbon Black Content ASTM D4218	Range			%	2.19	
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1		
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,581 psi
	Average Strength @ Break	31 N/mm	175 ppi	2,811 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%	16.64
	Average Elongation @ Break			%	488.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	312.6 N	70.289 lbs		
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	450.8 N	101.34 lbs		
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Puncture Resistance ASTM D4833 (Modified)	Load	628.0 N	141.18 lbs		
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING		
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Customer: **Environmental Specialties**
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Date:..... **12-19-08**

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ROLL # **951501-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	29 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.947
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.22
Carbon Black Content ASTM D4218	Range		%			2.19
Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		28 N/mm	161 ppi		2,581 psi
	Average Strength @ Break		31 N/mm	175 ppi		2,811 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			16.64
	Average Elongation @ Break		%			488.7
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-0.20
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		312.6 N			70.289 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		450.8 N			101.34 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		628.0 N			141.18 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **951502-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.49 mm MAX: 1.63 mm AVE: 1.54 mm	ENGLISH 59 mil 64 mil 61 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 30 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes 205	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	26 N/mm	150 ppi	2,475 psi
	Average Strength @ Break	32 N/mm	185 ppi	3,058 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.33
	Average Elongation @ Break	%	479.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	320.1 N	71.959 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	430.7 N	96.819 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	633.4 N	142.39 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-19-08**

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ROLL # **951503-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.68 mm	66 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	24 mil	AVE:	1.63 mm	64 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				205	TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.22
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Carbon Black Content ASTM D4218	Range			%		2.20
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			28 N/mm	159 ppi	2,475 psi
	Average Strength @ Break			34 N/mm	196 ppi	3,058 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		16.33
	Average Elongation @ Break			%		479.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			320.1 N		71.959 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			430.7 N		96.819 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			633.4 N		142.39 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-19-08**

Signature..... *[Signature]*

Quality Control Department

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ROLL # **951504-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.50 mm	59 mil	Length.....	125 m	410.1 feet
	MAX: 1.71 mm	67 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 37 mil	AVE: 1.61 mm	63 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	205

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	157 ppi	2,475 psi
	Average Strength @ Break	34 N/mm	194 ppi	3,058 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.33
	Average Elongation @ Break	%	479.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	320.1 N	71.959 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	430.7 N	96.819 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	633.4 N	142.39 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-19-08**

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ROLL # **951505-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.49 mm	59 mil	Length.....	125 m
	MAX:	1.58 mm	62 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.53 mm	60 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	205

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	26 N/mm	149 ppi	2,475 psi
	Average Strength @ Break	32 N/mm	184 ppi	3,058 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.33
	Average Elongation @ Break	%	479.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	320.1 N	71.959 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	430.7 N	96.819 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	633.4 N	142.39 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-19-08**

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ROLL # **951506-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.56 mm	61 mil	Length.....	125 m	410.1 feet
	MAX: 1.68 mm	66 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 34 mil	AVE: 1.63 mm	64 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	205

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,475 psi
	Average Strength @ Break	34 N/mm	196 ppi	3,058 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.33
	Average Elongation @ Break	%	479.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	320.1 N	71.959 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	430.7 N	96.819 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	633.4 N	142.39 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-19-08**

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ROLL # **951607-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.67 mm	66 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	32 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.22
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Carbon Black Content ASTM D4218	Range		%		2.20
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	158 ppi	2,541 psi
	Average Strength @ Break	29 N/mm	167 ppi	2,678 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		16.27
	Average Elongation @ Break	%		470.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	315.1 N		70.843 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	447.8 N		100.68 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	622.9 N		140.04 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-20-08**

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ROLL # **951608-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.67 mm	66 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	29 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.22
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Carbon Black Content ASTM D4218	Range			%		2.20
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			28 N/mm	158 ppi	2,541 psi
	Average Strength @ Break			29 N/mm	167 ppi	2,678 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		16.27
	Average Elongation @ Break			%		470.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			315.1 N		70.843 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			447.8 N		100.68 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			622.9 N		140.04 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-20-08**

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ROLL # **951609-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet
	MAX:	1.67 mm	66 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 22 mil	AVE:	1.63 mm	64 mil			
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.22
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Carbon Black Content ASTM D4218	Range			%		2.20
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			29 N/mm	163 ppi	2,541 psi
	Average Strength @ Break			30 N/mm	172 ppi	2,678 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		16.27
	Average Elongation @ Break			%		470.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			315.1 N		70.843 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			447.8 N		100.68 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			622.9 N		140.04 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-20-08**

Signature..... *[Signature]*

Quality Control Department

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ROLL # **951610-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.65 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	29 mil	AVE:	1.57 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				205	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	157 ppi	2,541 psi
	Average Strength @ Break	29 N/mm	165 ppi	2,678 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.27
	Average Elongation @ Break	%	470.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	315.1 N	70.843 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	447.8 N	100.68 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	622.9 N	140.04 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-20-08**

Signature..... *[Handwritten Signature]*

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ROLL # **951611-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.56 mm	61 mil	Length.....	125 m	410.1 feet
	MAX: 1.70 mm	67 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 30 mil	AVE: 1.62 mm	64 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	205

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,541 psi
	Average Strength @ Break	30 N/mm	171 ppi	2,678 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.27
	Average Elongation @ Break	%	470.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	315.1 N	70.843 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	447.8 N	100.68 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	622.9 N	140.04 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-20-08**

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ROLL # **951612-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
	MAX:	1.65 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	35 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.942
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.22
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Carbon Black Content ASTM D4218	Range		%		2.15
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,635 psi
	Average Strength @ Break	32 N/mm	185 ppi	2,980 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.14
	Average Elongation @ Break	%		502.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	307.2 N		69.068 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	428.0 N		96.226 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	631.8 N		142.04 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **951613-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.55 mm	61 mil	Length.....	125 m
	MAX:	1.66 mm	65 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 28 mil	AVE:	1.61 mm	63 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	205

Specific Gravity ASTM D792	Density	g/cc	.942
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.15
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	167 ppi	2,635 psi
	Average Strength @ Break	33 N/mm	189 ppi	2,980 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.14
	Average Elongation @ Break	%	502.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	307.2 N	69.068 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	428.0 N	96.226 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	631.8 N	142.04 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-20-08**

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ROLL # **951614-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.56 mm	61 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 28 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.942	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22	
Carbon Black Content ASTM D4218	Range	%	2.15	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,635 psi
	Average Strength @ Break	32 N/mm	185 ppi	2,980 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.14	
	Average Elongation @ Break	%	502.4	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	307.2 N	69.068 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	428.0 N	96.226 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	631.8 N	142.04 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-20-08**

Signature..... *[Signature]*

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ROLL # **951615-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.49 mm	59 mil	Length.....	125 m
	MAX:	1.55 mm	61 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.51 mm	60 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	205

Specific Gravity ASTM D792	Density	g/cc	.942
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.15
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	157 ppi	2,635 psi
	Average Strength @ Break	31 N/mm	177 ppi	2,980 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.14
	Average Elongation @ Break	%	502.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	307.2 N	69.068 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	428.0 N	96.226 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	631.8 N	142.04 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **951616-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.57 mm	62 mil	Length.....	125 m	410.1 feet
	MAX:	1.70 mm	67 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 27 mil	AVE:	1.63 mm	64 mil			
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.942
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.22
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Carbon Black Content ASTM D4218	Range			%		2.15
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			30 N/mm	169 ppi	2,635 psi
	Average Strength @ Break			33 N/mm	191 ppi	2,980 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		15.14
	Average Elongation @ Break			%		502.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			307.2 N		69.068 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			428.0 N		96.226 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			631.8 N		142.04 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
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ROLL # **951617-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	27 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.22
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Carbon Black Content ASTM D4218	Range		%			2.20
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		28 N/mm	161 ppi		2,586 psi
	Average Strength @ Break		30 N/mm	170 ppi		2,736 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			17.01
	Average Elongation @ Break		%			461.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		297.5 N			66.886 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		440.9 N			99.114 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load		618.7 N			139.09 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **951618-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.57 mm	62 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	205

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,586 psi
	Average Strength @ Break	30 N/mm	169 ppi	2,736 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	17.01
	Average Elongation @ Break	%	461.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	297.5 N	66.886 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	440.9 N	99.114 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	618.7 N	139.09 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **951619-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.66 mm	65 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	30 mil	AVE:	1.62 mm	64 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.22
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Carbon Black Content ASTM D4218	Range		%			2.20
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	165 ppi		2,586 psi
	Average Strength @ Break		31 N/mm	174 ppi		2,736 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			17.01
	Average Elongation @ Break		%			461.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		297.5 N			66.886 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		440.9 N			99.114 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load		618.7 N			139.09 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures		1500 hrs			CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%		300 hrs			ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-20-08**

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ROLL # **951620-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.947	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22	
Carbon Black Content ASTM D4218	Range	%	2.20	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,586 psi
	Average Strength @ Break	30 N/mm	169 ppi	2,736 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	17.01	
	Average Elongation @ Break	%	461.6	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	297.5 N	66.886 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	440.9 N	99.114 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	618.7 N	139.09 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
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 Destination **Henderson, NV**

Date:..... **12-20-08**

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ROLL # **951621-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	29 mil	AVE:	1.57 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				205	TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.22
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Carbon Black Content ASTM D4218	Range		%		2.20
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,586 psi
	Average Strength @ Break	30 N/mm	169 ppi	2,736 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		17.01
	Average Elongation @ Break	%		461.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	297.5 N		66.886 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	440.9 N		99.114 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	618.7 N		139.09 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
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 Destination **Henderson, NV**

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ROLL # **951622-08**

Lot #: **7181343**

Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.59 mm	63 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	30 mil	AVE:	1.61 mm	63 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.947
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.22
Carbon Black Content ASTM D4218	Range		%		2.19
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	166 ppi	2,625 psi
	Average Strength @ Break		32 N/mm	182 ppi	2,867 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		14.81
	Average Elongation @ Break		%		495.2
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.20
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		318.9 N		71.695 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		433.7 N		97.499 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		641.3 N		144.18 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
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 Destination **Henderson, NV**

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ROLL # **951623-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.57 mm	62 mil	Length.....	125 m
	MAX:	1.68 mm	66 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 43 mil	AVE:	1.61 mm	63 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	205

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	166 ppi	2,625 psi
	Average Strength @ Break	32 N/mm	182 ppi	2,867 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.81
	Average Elongation @ Break	%	495.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	318.9 N	71.695 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	433.7 N	97.499 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	641.3 N	144.18 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **951624-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.58 mm	62 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.66 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	29 mil	AVE:	1.62 mm	64 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.947
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.22
Carbon Black Content ASTM D4218	Range		%		2.19
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	167 ppi	2,625 psi	
	Average Strength @ Break	32 N/mm	183 ppi	2,867 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.81	
	Average Elongation @ Break	%		495.2	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.20	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	318.9 N		71.695 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	433.7 N		97.499 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	641.3 N		144.18 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **951625-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.67 mm	66 mil	Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **29** mil AVE: **1.60** mm **63** mil OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**
 ODD #: TOP EVEN #: BOTTOM

Specific Gravity ASTM D792	Density		g/cc		.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.22
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Carbon Black Content ASTM D4218	Range		%		2.19
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,625 psi
	Average Strength @ Break	32 N/mm	181 ppi	2,867 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.81
	Average Elongation @ Break	%		495.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	318.9 N		71.695 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	433.7 N		97.499 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	641.3 N		144.18 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **951626-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.49 mm MAX: 1.62 mm AVE: 1.57 mm	ENGLISH 59 mil 64 mil 62 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 32 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes 205	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,625 psi
	Average Strength @ Break	31 N/mm	177 ppi	2,867 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.81
	Average Elongation @ Break	%	495.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	318.9 N	71.695 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	433.7 N	97.499 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	641.3 N	144.18 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **951627-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.64 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	31 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				205	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.16
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,619 psi
	Average Strength @ Break	31 N/mm	179 ppi	2,866 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.40
	Average Elongation @ Break	%	496.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	308.7 N	69.410 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	446.7 N	100.42 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	607.9 N	136.65 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **951728-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.57 mm	62 mil	Length.....	125 m
	MAX:	1.69 mm	67 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.62 mm	64 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.16
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	167 ppi	2,619 psi
	Average Strength @ Break	32 N/mm	183 ppi	2,866 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.40
	Average Elongation @ Break	%	496.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	308.7 N	69.410 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	446.7 N	100.42 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	607.9 N	136.65 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **951729-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	29 mil	AVE:	1.56 mm	61 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				205	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.16
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,619 psi
	Average Strength @ Break	31 N/mm	176 ppi	2,866 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.40
	Average Elongation @ Break	%	496.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	308.7 N	69.410 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	446.7 N	100.42 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	607.9 N	136.65 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **951730-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.60 mm	63 mil	Length.....	125 m	410.1 feet
	MAX: 1.73 mm	68 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 29 mil	AVE: 1.64 mm	65 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	205

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.16
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	169 ppi	2,619 psi
	Average Strength @ Break	32 N/mm	185 ppi	2,866 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.40
	Average Elongation @ Break	%	496.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	308.7 N	69.410 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	446.7 N	100.42 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	607.9 N	136.65 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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ROLL # **951731-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.49 mm	59 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	32 mil	AVE:	1.59 mm	63 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.22
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Carbon Black Content ASTM D4218	Range			%		2.16
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			29 N/mm	164 ppi	2,619 psi
	Average Strength @ Break			31 N/mm	179 ppi	2,866 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		15.40
	Average Elongation @ Break			%		496.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			308.7 N		69.410 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			446.7 N		100.42 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			607.9 N		136.65 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
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ROLL # **951732-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.47 mm MAX: 1.60 mm AVE: 1.54 mm	ENGLISH 58 mil 63 mil 61 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 33 mil ODD #: TOP EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes 205	TEST RESULTS	

Specific Gravity ASTM D792	Density		g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.22
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Carbon Black Content ASTM D4218	Range		%	2.22
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	156 ppi	2,565 psi
	Average Strength @ Break	30 N/mm	173 ppi	2,851 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		16.24
	Average Elongation @ Break	%		473.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	306.1 N		68.822 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	411.8 N		92.589 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	620.9 N		139.59 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
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ROLL # **951733-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.50 mm	59 mil	Length.....	125 m	410.1 feet
	MAX: 1.66 mm	65 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 30 mil	AVE: 1.60 mm	63 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	205

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.22
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,565 psi
	Average Strength @ Break	31 N/mm	180 ppi	2,851 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.24
	Average Elongation @ Break	%	473.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	306.1 N	68.822 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	411.8 N	92.589 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	620.9 N	139.59 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **951734-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.57 mm MAX: 1.68 mm AVE: 1.60 mm	ENGLISH 62 mil 66 mil 63 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 30 mil ODD #: TOP EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes 205	TEST RESULTS	

Specific Gravity ASTM D792	Density		g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.22
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Carbon Black Content ASTM D4218	Range		%	2.22
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,565 psi
	Average Strength @ Break	31 N/mm	180 ppi	2,851 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		16.24
	Average Elongation @ Break	%		473.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	306.1 N		68.822 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	411.8 N		92.589 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	620.9 N		139.59 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
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ROLL # **951735-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m	410.1 feet
	MAX:	1.58 mm	62 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.55 mm	61 mil			
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.22
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Carbon Black Content ASTM D4218	Range			%		2.22
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			27 N/mm	157 ppi	2,565 psi
	Average Strength @ Break			30 N/mm	174 ppi	2,851 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		16.24
	Average Elongation @ Break			%		473.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			306.1 N		68.822 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			411.8 N		92.589 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			620.9 N		139.59 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
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ROLL # **951736-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	27 mil	AVE:	1.60 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.22
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Carbon Black Content ASTM D4218	Range		%		2.22
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,565 psi
	Average Strength @ Break	31 N/mm	180 ppi	2,851 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		16.24
	Average Elongation @ Break	%		473.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	306.1 N		68.822 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	411.8 N		92.589 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	620.9 N		139.59 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-21-08**

Signature..... *[Signature]*

Quality Control Department

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ROLL # **951737-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.51 mm MAX: 1.63 mm AVE: 1.58 mm	ENGLISH 59 mil 64 mil 62 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 30 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes 205	TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.22
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Carbon Black Content ASTM D4218	Range		%	2.20
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,571 psi
	Average Strength @ Break	31 N/mm	179 ppi	2,874 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.04
	Average Elongation @ Break	%		492.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	311.1 N		69.950 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	434.3 N		97.631 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	590.7 N		132.79 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-21-08**

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ROLL # **951738-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.57 mm	62 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	31 mil	AVE:	1.54 mm	61 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				205	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	156 ppi	2,571 psi
	Average Strength @ Break	31 N/mm	174 ppi	2,874 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.04
	Average Elongation @ Break	%	492.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	311.1 N	69.950 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	434.3 N	97.631 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	590.7 N	132.79 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-21-08**

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ROLL # **951739-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.50 mm	59 mil	Length.....	125 m	410.1 feet
	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.57 mm	62 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	205

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,571 psi
	Average Strength @ Break	31 N/mm	178 ppi	2,874 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.04
	Average Elongation @ Break	%	492.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	311.1 N	69.950 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	434.3 N	97.631 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	590.7 N	132.79 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-21-08**

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ROLL # **951740-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	31 mil	AVE:	1.57 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.22
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Carbon Black Content ASTM D4218	Range		%		2.20
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,571 psi
	Average Strength @ Break	31 N/mm	178 ppi	2,874 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.04
	Average Elongation @ Break	%		492.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	311.1 N		69.950 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	434.3 N		97.631 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	590.7 N		132.79 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-21-08**

Signature..... *[Signature]*

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ROLL # **951741-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	30 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.22
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Carbon Black Content ASTM D4218	Range			%		2.20
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
---------------------------------------	----------	--	--	--	--	-------------

Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			28 N/mm	160 ppi	2,571 psi
	Average Strength @ Break			31 N/mm	179 ppi	2,874 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		15.04
	Average Elongation @ Break			%		492.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			311.1 N		69.950 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			434.3 N		97.631 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			590.7 N		132.79 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-21-08**

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ROLL # **951742-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.58 mm	62 mil	Length.....	125 m
	MAX:	1.66 mm	65 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.61 mm	63 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **205**

Specific Gravity ASTM D792	Density	g/cc	.946	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22	
Carbon Black Content ASTM D4218	Range	%	2.18	
Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,587 psi
	Average Strength @ Break	33 N/mm	186 ppi	2,940 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.39	
	Average Elongation @ Break	%	502.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	311.2 N	69.971 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	424.0 N	95.333 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	623.9 N	140.26 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-21-08**

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ROLL #

951743-08

Lot #:

7181343

Liner Type: **MICROSPIKE™ HDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	1.53 mm	60 mil
MAX:	1.62 mm	64 mil
AVE:	1.58 mm	62 mil

Thickness.....	1.5 mm	60 mil
Length.....	125 m	410.1 feet
Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **31** mil
ODD #: TOP EVEN #: BOTTOM

OIT(Standard) ASTM D3895 minutes **205** **TEST RESULTS**

Specific Gravity
ASTM D792

Density

g/cc

.946

MFI ASTM D1238
COND. E
GRADE: **K307**

Melt Flow Index 190°C /2160 g

g/10 min

.22

Carbon Black Content
ASTM D4218

Range

%

2.18

Carbon Black Dispersion
ASTM D5596

Category

10 in Cat 1

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Yield

28 N/mm

161 ppi

2,587 psi

Average Strength @ Break

32 N/mm

183 ppi

2,940 psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Yield

%

16.39

Average Elongation @ Break

%

502.0

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change

%

-0.20

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance

311.2 N

69.971 lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load

424.0 N

95.333 lbs

Puncture Resistance
ASTM D4833 (Modified)

Load

623.9 N

140.26 lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

CERTIFIED

Notched Constant Tensile Load
ASTM D5397

pass / fail @ 30%

300 hrs

ONGOING

Customer: **Environmental Specialties**
PO: **9036 Landwell Basic Remediation**
Destination **Henderson, NV**

Date:..... **12-21-08**

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ROLL # **951744-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.48 mm	58 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.57 mm	62 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **205**

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,587 psi
	Average Strength @ Break	32 N/mm	182 ppi	2,940 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.39
	Average Elongation @ Break	%	502.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	311.2 N	69.971 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	424.0 N	95.333 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	623.9 N	140.26 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-21-08**

Signature..... 

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ROLL # **951745-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.58 mm	62 mil	Length.....	125 m	410.1 feet
	MAX:	1.71 mm	67 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 27 mil	AVE:	1.62 mm	64 mil			
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.22
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Carbon Black Content ASTM D4218	Range			%		2.18
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			29 N/mm	165 ppi	2,587 psi
	Average Strength @ Break			33 N/mm	188 ppi	2,940 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		16.39
	Average Elongation @ Break			%		502.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			311.2 N		69.971 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			424.0 N		95.333 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			623.9 N		140.26 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-21-08**

Signature..... *[Signature]*

Quality Control Department

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ROLL # **951746-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.45 mm	57 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.59 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	31 mil	AVE:	1.54 mm	61 mil		
ODD #: TOP	EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.22
Carbon Black Content ASTM D4218	Range		%			2.18
Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		27 N/mm	157 ppi		2,587 psi
	Average Strength @ Break		31 N/mm	178 ppi		2,940 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			16.39
	Average Elongation @ Break		%			502.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-0.20
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		311.2 N			69.971 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		424.0 N			95.333 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		623.9 N			140.26 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-21-08**

Signature..... *[Signature]*

Quality Control Department

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REV 03
12/23/05



quality certificate

ROLL # **951747-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m
	MAX:	1.63 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 33 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes	205

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,583 psi
	Average Strength @ Break	27 N/mm	157 ppi	2,537 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.77
	Average Elongation @ Break	%	431.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	307.1 N	69.040 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	443.0 N	99.586 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	601.5 N	135.22 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-21-08**

Signature..... *[Handwritten Signature]*

Quality Control Department

60HDmic.FRM
REV 03
12/23/05



quality certificate

ROLL # **951748-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.54 mm MAX: 1.66 mm AVE: 1.61 mm	ENGLISH 61 mil 65 mil 63 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 28 mil ODD #: TOP EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes 205	TEST RESULTS	

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,583 psi
	Average Strength @ Break	28 N/mm	161 ppi	2,537 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.77
	Average Elongation @ Break	%	431.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	307.1 N	69.040 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	443.0 N	99.586 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	601.5 N	135.22 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-21-08**

Signature..... *[Handwritten Signature]*

Quality Control Department

60HDmic.FRM
REV 03
12/23/05



quality certificate

ROLL # **952101-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	29 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 205

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.22
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Carbon Black Content ASTM D4218	Range		%		2.20
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,583 psi
	Average Strength @ Break	28 N/mm	159 ppi	2,537 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.77
	Average Elongation @ Break	%		431.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	307.1 N		69.040 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	443.0 N		99.586 lbs
--	------	----------------	--	-------------------

Puncture Resistance ASTM D4833 (Modified)	Load	601.5 N		135.22 lbs
--	------	----------------	--	-------------------

ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-22-08**

Signature..... *[Signature]*

Quality Control Department

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12/23/05



quality certificate

ROLL # **952102-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.58 mm	62 mil	Length.....	125 m	410.1 feet
	MAX: 1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 30 mil	AVE: 1.59 mm	63 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	205

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,583 psi
	Average Strength @ Break	28 N/mm	159 ppi	2,537 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.77
	Average Elongation @ Break	%	431.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	307.1 N	69.040 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	443.0 N	99.586 lbs
--	------	----------------	-------------------

Puncture Resistance ASTM D4833 (Modified)	Load	601.5 N	135.22 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-22-08**

Signature..... *[Handwritten Signature]*

Quality Control Department

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12/23/05



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ROLL # **952103-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.51 mm MAX: 1.66 mm AVE: 1.58 mm	ENGLISH 59 mil 65 mil 62 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 30 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes 205	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,583 psi
	Average Strength @ Break	28 N/mm	158 ppi	2,537 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.77
	Average Elongation @ Break	%	431.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	307.1 N	69.040 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	443.0 N	99.586 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	601.5 N	135.22 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-22-08**

Signature..... *[Handwritten Signature]*

Quality Control Department

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12/23/05



quality certificate

ROLL # **952104-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 32 mil	AVE:	1.56 mm	61 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 205

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22
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Carbon Black Content ASTM D4218	Range	%	2.22
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,666 psi
	Average Strength @ Break	28 N/mm	161 ppi	2,622 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.42
	Average Elongation @ Break	%	425.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	305.9 N	68.774 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	408.3 N	91.805 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	636.0 N	142.98 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-22-08**

Signature..... *[Handwritten Signature]*

Quality Control Department

60HDmic.FRM
REV 03
12/23/05



quality certificate

ROLL # **952105-08** Lot #: **7181343** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.55 mm	61 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 205

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.22	
Carbon Black Content ASTM D4218	Range	%	2.22	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	166 ppi	2,666 psi
	Average Strength @ Break	29 N/mm	163 ppi	2,622 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.42	
	Average Elongation @ Break	%	425.8	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.20	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	305.9 N	68.774 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	408.3 N	91.805 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	636.0 N	142.98 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
PO: **9036 Landwell Basic Remediation**
Destination **Henderson, NV**

Date:..... **12-22-08**

Signature..... 

Quality Control Department

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REV 03
12/23/05

Certificate of Analysis

Shipped To: AGRU AMERICA INC
2000 EAST NEWLANDS
FERNLEY NV 89408
USA

Recipient: PALMER
Fax:

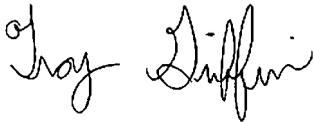
CPC Delivery #: 87775271
PO #: 4911
Weight: 166100 LB
Ship Date: 11/21/2008
Package: BULK
Mode: Hopper Car
Car #: PSPX002619
Seal No: 270812

Product:
MARLEX POLYETHYLENE K307 BULK

Lot Number: 8181180

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.250	g/10mi
HLMI Flow Rate	ASTM D1238	21.00	g/10mi
Density	ASTM D1505	0.9380	g/cm3
Pellet Count	P02.08.03	31.000	pel/g
Production Date		11/09/2008	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP.
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.



Troy Griffin
Quality Systems Coordinator

For CoA questions contact Customer Service Representative at +1-832-813-4637

Certificate of Analysis

Shipped To: AGRU AMERICA INC
2000 EAST NEWLANDS
FERNLEY NV 89408
USA

Recipient: PALMER
Fax:

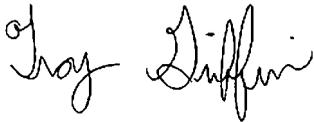
CPC Delivery #: 87780371
PO #: 4923
Weight: 193400 LB
Ship Date: 12/03/2008
Package: BULK
Mode: Hopper Car
Car #: CEFX053680
Seal No: 270532

Product:
MARLEX POLYETHYLENE K307 BULK

Lot Number: 7181343

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.220	g/10mi
HLMI Flow Rate	ASTM D1238	19.00	g/10mi
Density	ASTM D1505	0.9380	g/cm3
Pellet Count	P02.08.03	34.000	pel/g
Production Date		10/28/2008	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP.
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.



Troy Griffin
Quality Systems Coordinator

For CoA questions contact Customer Service Representative at +1-832-813-4637



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Additional CAMU Closure Geomembrane Resin/Roll Production Data
Submittal Number:	02770-004F
Specification Section:	Section 02770, Part 2.02
Drawing Number (s):	8, 10, 14, 16, 19, 21, 23, 25, 27, 29, 31, 33, 35-36, 38-45
Page Number:	02770-5 and 02770-6
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	1/5/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



875 West Warm Springs Road
Henderson, Nevada 89011
Tel (702) 567-0400 · Fax (702) 567-0475

SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehringer
ADDRESS: ENTACT Environmental Services
Henderson, Nevada 89011

Date: 01/14/2009	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02770-004G	Revision No.: - N/A	Date Submittal Rec'd by BRC: 01/08/2009
---------------------------------------	----------------------------	--

Specification Section(s): 02770.1.06 Geomembrane Submittals

Submittal Subject: Additional CAMU Closure Geomembrane Resin/Roll Production Data

- Notations:**
- No Exception Taken
 - Correct as Noted
 - Rejected
 - Revise and Resubmit
 - Submit Specified Items

Review Comments:

Comment #	Reference	Comment

Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work

<p>Design Engineer Date 1/14/09 Construction Manager Representative Date</p>		<p>BRC Project Manager Date Lee Farris, P.E. 1/14/09</p>
---	--	---

Distribution: File



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
 ATTENTION: Lee C. Farris, P.E.

DATE: 1/8/09
 JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
 TRANSMITTAL NUMBER: 184
 ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	1/8/09			Submittal 02770-004G – Additional CAMU Closure & BMI South Closure Geomembrane Resin/Roll Production Data	RC

ACTION (*)

AR - AS REQUESTED

FA - FOR APPROVAL

F – FILE

RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL

MAIL

OVERNIGHT

HAND DELIVERY

FACSIMILE

COPY TO: Ranjit Sahu, Lee Farris

BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....

60 mil micro
HDPE

ESI Landwell Basic Remed doc 10167
Henderson, NV

PO# 9036

METRIC DIMENSIONS

757 rolls 60 HD microspike

485

left

SURE

prod
date

SURE

SURE

SOUTH
SURE

60 mil ROLL #	wid	len	AREA	149 spools 5mm HD CHEVRON WELD ROD			wgt	lot #	prod date		
(K)952106 .08	7	125	875.0	60HD	micro	757 TOT	706	3134	7181327	12/22/2008	
(K)952107 .08	7	125	875.0	60HD	micro	757 TOT	707	3136	7181327	12/22/2008	
(K)952108 .08	7	125	875.0	60HD	micro	757 TOT	708	3136	7181327	12/22/2008	
(K)952109 .08	7	125	875.0	60HD	micro	757 TOT	709	3152	7181327	12/22/2008	
(K)952110 .08	7	125	875.0	60HD	micro	757 TOT	710	3144	7181327	12/22/2008	
(K)952111 .08	7	125	875.0	60HD	micro	757 TOT	711	3158	7181327	12/22/2008	
(K)952112 .08	7	125	875.0	60HD	micro	757 TOT	712	3164	sqgs	7181327	12/22/2008
(K)952113 .08	7	125	875.0	60HD	micro	757 TOT	713	3164	7181327	12/22/2008	
(K)952114 .08	7	125	875.0	60HD	micro	757 TOT	714	3164	7181327	12/22/2008	
(K)952115 .08	7	125	875.0	60HD	micro	757 TOT	715	3166	7181327	12/22/2008	
(K)952116 .08	7	125	875.0	60HD	micro	757 TOT	716	3160	7181327	12/22/2008	
(K)952117 .08	7	125	875.0	60HD	micro	757 TOT	717	3162	7181327	12/22/2008	
(K)952118 .08	7	125	875.0	60HD	micro	757 TOT	718	3164	7181327	12/22/2008	
(K)952119 .08	7	125	875.0	60HD	micro	757 TOT	719	3162	7181327	12/22/2008	
(K)952120 .08	7	125	875.0	60HD	micro	757 TOT	720	3158	7181327	12/22/2008	
(K)952121 .08	7	125	875.0	60HD	micro	757 TOT	721	3156	7181327	12/22/2008	
(K)952222 .08	7	125	875.0	60HD	micro	757 TOT	722	3158	sqgs+3ft	7181327	12/23/2008
(K)952223 .08	7	125	875.0	60HD	micro	757 TOT	723	3158	7181327	12/23/2008	
(K)952224 .08	7	125	875.0	60HD	micro	757 TOT	724	3158	7181327	12/23/2008	
(K)952225 .08	7	125	875.0	60HD	micro	757 TOT	725	3156	7181327	12/23/2008	
(K)952226 .08	7	125	875.0	60HD	micro	757 TOT	726	3156	7181327	12/23/2008	
(K)952227 .08	7	125	875.0	60HD	micro	757 TOT	727	3156	7181327	12/23/2008	
(K)952228 .08	7	125	875.0	60HD	micro	757 TOT	728	3158	7181327	12/23/2008	
(K)952229 .08	7	125	875.0	60HD	micro	757 TOT	729	3156	7181327	12/23/2008	
(K)952230 .08	7	125	875.0	60HD	micro	757 TOT	730	3160	7181327	12/23/2008	
(K)952231 .08	7	125	875.0	60HD	micro	757 TOT	731	3166	7181327	12/23/2008	
(K)952232 .08	7	125	875.0	60HD	micro	757 TOT	732	3160	7181327	12/23/2008	
(K)952233 .08	7	125	875.0	60HD	micro	757 TOT	733	3170	sqgs	7181327	12/23/2008
(K)952234 .08	7	125	875.0	60HD	micro	757 TOT	734	3172	7181327	12/23/2008	
(K)952235 .08	7	125	875.0	60HD	micro	757 TOT	735	3172	7181327	12/23/2008	
(K)952236 .08	7	125	875.0	60HD	micro	757 TOT	736	3172	7181327	12/23/2008	
(K)952237 .08	7	125	875.0	60HD	micro	757 TOT	737	3168	7181327	12/23/2008	
(K)952238 .08	7	125	875.0	60HD	micro	757 TOT	738	3164	7181327	12/23/2008	
(K)952239 .08	7	125	875.0	60HD	micro	757 TOT	739	3170	7181327	12/23/2008	
(K)952240 .08	7	125	875.0	60HD	micro	757 TOT	740	3166	7181327	12/23/2008	
(K)952241 .08	7	125	875.0	60HD	micro	757 TOT	741	3160	7181327	12/23/2008	
(K)952242 .08	7	125	875.0	60HD	micro	757 TOT	742	3158	7181327	12/23/2008	
(K)952243 .08	7	125	875.0	60HD	micro	757 TOT	743	3152	7181327	12/23/2008	
(K)952344 .08	7	125	875.0	60HD	micro	757 TOT	744	3148	sqgs	7181327	12/24/2008
(K)952345 .08	7	125	875.0	60HD	micro	757 TOT	745	3146	7181327	12/24/2008	
(K)952346 .08	7	125	875.0	60HD	micro	757 TOT	746	3142	7181327	12/24/2008	
(K)952347 .08	7	125	875.0	60HD	micro	757 TOT	747	3144	7181327	12/24/2008	
(K)952348 .08	7	125	875.0	60HD	micro	757 TOT	748	3140	7181327	12/24/2008	
(K)902101 .09	7	125	875.0	60HD	micro	757 TOT	749	3144	7181327	1/5/2008	
(K)902102 .09	7	125	875.0	60HD	micro	757 TOT	750	3142	7181327	1/5/2008	
(K)902103 .09	7	125	875.0	60HD	micro	757 TOT	751	3136	7181327	1/5/2008	
(K)902104 .09	7	125	875.0	60HD	micro	757 TOT	752	3136	7181327	1/5/2008	
(K)902105 .09	7	125	875.0	60HD	micro	757 TOT	753	3144	7181327	1/5/2008	
(K)902106 .09	7	125	875.0	60HD	micro	757 TOT	754	3148	sqgs	7181327	1/5/2008
(K)902107 .09	7	125	875.0	60HD	micro	757 TOT	755	3146	7181327	1/5/2008	
(K)902108 .09	7	125	875.0	60HD	micro	757 TOT	756	3150	7181327	1/5/2008	
(K)902109 .09	7	125	875.0	60HD	micro	757 TOT	757	3150	7181327	1/5/2008	



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ROLL # **952106-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	29 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	208

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.25
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Carbon Black Content ASTM D4218	Range		%			2.22
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	166 ppi	2,666 psi
	Average Strength @ Break	29 N/mm	163 ppi	2,622 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		16.42
	Average Elongation @ Break	%		425.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	305.9 N		68.774 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	408.3 N		91.805 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	636.0 N		142.98 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-22-08**

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ROLL # **952107-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	31 mil	AVE:	1.57 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 208

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.25
Carbon Black Content ASTM D4218	Range		%		2.22
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		29 N/mm	165 ppi	2,666 psi
	Average Strength @ Break		28 N/mm	162 ppi	2,622 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		16.42
	Average Elongation @ Break		%		425.8
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.21
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		305.9 N		68.774 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		408.3 N		91.805 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		636.0 N		142.98 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures		1500 hrs		CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%		300 hrs		ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-22-08**

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ROLL # **952108-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.49 mm	59 mil	Length.....	125 m	410.1 feet
	MAX: 1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 25 mil	AVE: 1.57 mm	62 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	208

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.22
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,666 psi
	Average Strength @ Break	28 N/mm	162 ppi	2,622 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.42
	Average Elongation @ Break	%	425.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	305.9 N	68.774 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	408.3 N	91.805 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	636.0 N	142.98 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL #

952109-08

Lot #:

7181327

Liner Type: **MICROSPIKE™ HDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	1.56 mm	61 mil
MAX:	1.61 mm	63 mil
AVE:	1.59 mm	63 mil

Thickness.....	1.5 mm	60 mil
Length.....	125 m	410.1 feet
Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **25** mil
ODD #: TOP EVEN #: BOTTOM

OIT(Standard) ASTM D3895 minutes **208** **TEST RESULTS**

Specific Gravity
ASTM D792

Density

g/cc

.946

MFI ASTM D1238
COND. E
GRADE: **K307**

Melt Flow Index 190°C /2160 g

g/10 min

.25

Carbon Black Content
ASTM D4218

Range

%

2.17

Carbon Black Dispersion
ASTM D5596

Category

10 in Cat 1

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Yield

27 N/mm

156 ppi

2,497 psi

Average Strength @ Break

32 N/mm

185 ppi

2,959 psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Yield

%

16.55

Average Elongation @ Break

%

507.3

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change

%

-0.21

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance

306.0 N

68.804 lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load

444.9 N

100.01 lbs

Puncture Resistance
ASTM D4833 (Modified)

Load

601.5 N

135.23 lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

CERTIFIED

Notched Constant Tensile Load
ASTM D5397

pass / fail @ 30%

300 hrs

ONGOING

Customer: **Environmental Specialties**
PO: **9036 Landwell Basic Remediation**
Destination **Henderson, NV**

Date:..... **12-22-08**

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ROLL # **952110-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.50 mm	59 mil	Length.....	125 m	410.1 feet
	MAX: 1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 26 mil	AVE: 1.57 mm	62 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	208

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.17
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	154 ppi	2,497 psi
	Average Strength @ Break	32 N/mm	183 ppi	2,959 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.55
	Average Elongation @ Break	%	507.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	306.0 N	68.804 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	444.9 N	100.01 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	601.5 N	135.23 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-22-08**

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ROLL # **952111-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.47 mm	58 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 27 mil	AVE:	1.53 mm	60 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **208**

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.17
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	26 N/mm	150 ppi	2,497 psi
	Average Strength @ Break	31 N/mm	178 ppi	2,959 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.55
	Average Elongation @ Break	%	507.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	306.0 N	68.804 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	444.9 N	100.01 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	601.5 N	135.23 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-22-08**

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ROLL # **952112-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.55 mm	61 mil	Length.....	125 m	410.1 feet
	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 27 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	208

TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		.25
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Carbon Black Content ASTM D4218	Range			%		2.17
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield			27 N/mm	155 ppi	2,497 psi
	Average Strength @ Break			32 N/mm	184 ppi	2,959 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%		16.55
	Average Elongation @ Break			%		507.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance			306.0 N		68.804 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load			444.9 N		100.01 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load			601.5 N		135.23 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures			1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%			300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-22-08**

Signature..... *[Signature]*

Quality Control Department

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ROLL # **952113-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.57 mm	62 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	26 mil	AVE:	1.60 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				208	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.17
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	157 ppi	2,497 psi
	Average Strength @ Break	33 N/mm	186 ppi	2,959 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.55
	Average Elongation @ Break	%	507.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	306.0 N	68.804 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	444.9 N	100.01 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	601.5 N	135.23 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-22-08**

Signature..... *[Signature]*

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ROLL # **952114-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.55 mm MAX: 1.68 mm AVE: 1.58 mm	ENGLISH 61 mil 66 mil 62 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 28 mil ODD #: TOP EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes 208	TEST RESULTS	

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	153 ppi	2,457 psi
	Average Strength @ Break	31 N/mm	179 ppi	2,881 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.03
	Average Elongation @ Break	%	484.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	299.2 N	67.255 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	420.9 N	94.625 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	619.9 N	139.36 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-22-08**

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ROLL # **952115-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.53 mm MAX: 1.62 mm AVE: 1.57 mm	ENGLISH 60 mil 64 mil 62 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 28 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes 208	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	152 ppi	2,457 psi
	Average Strength @ Break	31 N/mm	178 ppi	2,881 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.03
	Average Elongation @ Break	%	484.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	299.2 N	67.255 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	420.9 N	94.625 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	619.9 N	139.36 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-22-08**

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ROLL # **952116-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet
	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 26 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	208

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min			.25
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Carbon Black Content ASTM D4218	Range		%			2.20
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Carbon Black Dispersion ASTM D5596	Category					10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	154 ppi	2,457 psi
	Average Strength @ Break	32 N/mm	180 ppi	2,881 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		14.03
	Average Elongation @ Break	%		484.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	299.2 N		67.255 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	420.9 N		94.625 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	619.9 N		139.36 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
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 Destination **Henderson, NV**

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ROLL # **952117-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.53 mm MAX: 1.63 mm AVE: 1.59 mm	ENGLISH 60 mil 64 mil 63 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 28 mil ODD #: TOP EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes 208	TEST RESULTS	

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	154 ppi	2,457 psi
	Average Strength @ Break	32 N/mm	180 ppi	2,881 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.03
	Average Elongation @ Break	%	484.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	299.2 N	67.255 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	420.9 N	94.625 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	619.9 N	139.36 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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 Destination **Henderson, NV**

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ROLL # **952118-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet
	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.57 mm	62 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895			minutes	208

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	152 ppi	2,457 psi
	Average Strength @ Break	31 N/mm	178 ppi	2,881 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	14.03
	Average Elongation @ Break	%	484.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	299.2 N	67.255 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	420.9 N	94.625 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	619.9 N	139.36 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **952119-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.49 mm	59 mil	Length.....	125 m	410.1 feet
	MAX: 1.66 mm	65 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 29 mil	AVE: 1.60 mm	63 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	208

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,574 psi
	Average Strength @ Break	32 N/mm	184 ppi	2,915 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.96
	Average Elongation @ Break	%	506.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	309.4 N	69.559 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	442.4 N	99.458 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	637.0 N	143.20 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **952120-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	28 mil	AVE:	1.57 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				208	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,574 psi
	Average Strength @ Break	32 N/mm	180 ppi	2,915 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.96
	Average Elongation @ Break	%	506.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	309.4 N	69.559 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	442.4 N	99.458 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	637.0 N	143.20 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **952121-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.49 mm	59 mil	Length.....	125 m	410.1 feet
	MAX: 1.58 mm	62 mil	Width.....	7.00 m	23.0 feet
Asperity GRI GM12: 29 mil	AVE: 1.55 mm	61 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	208

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	157 ppi	2,574 psi
	Average Strength @ Break	31 N/mm	178 ppi	2,915 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.96
	Average Elongation @ Break	%	506.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	309.4 N	69.559 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	442.4 N	99.458 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	637.0 N	143.20 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-22-08**

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ROLL # **952222-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.53 mm MAX: 1.63 mm AVE: 1.59 mm	ENGLISH 60 mil 64 mil 63 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 24 mil ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes 208	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.18
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Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,574 psi
	Average Strength @ Break	32 N/mm	182 ppi	2,915 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.96
	Average Elongation @ Break	%	506.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	309.4 N	69.559 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	442.4 N	99.458 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	637.0 N	143.20 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-23-08**

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ROLL # **952223-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m
	MAX:	1.66 mm	65 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 25 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	208

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25	
Carbon Black Content ASTM D4218	Range	%	2.18	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,574 psi
	Average Strength @ Break	32 N/mm	181 ppi	2,915 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.96	
	Average Elongation @ Break	%	506.6	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	309.4 N	69.559 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	442.4 N	99.458 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	637.0 N	143.20 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **952224-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m	410.1 feet
	MAX:	1.59 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 33 mil	AVE:	1.55 mm	61 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes	208

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	157 ppi	2,578 psi
	Average Strength @ Break	31 N/mm	180 ppi	2,942 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.59
	Average Elongation @ Break	%	493.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	303.4 N	68.205 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	406.0 N	91.283 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	622.5 N	139.95 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-23-08**

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ROLL # **952225-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.65 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	32 mil	AVE:	1.58 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 208

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.25
Carbon Black Content ASTM D4218	Range		%		2.19
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,578 psi	
	Average Strength @ Break	32 N/mm	183 ppi	2,942 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.59	
	Average Elongation @ Break	%		493.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.21	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	303.4 N		68.205 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	406.0 N		91.283 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	622.5 N		139.95 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **952226-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.51 mm MAX: 1.61 mm AVE: 1.57 mm	ENGLISH 59 mil 63 mil 62 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 33 mil ODD #: TOP EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes 208	TEST RESULTS	

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,578 psi
	Average Strength @ Break	32 N/mm	182 ppi	2,942 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.59
	Average Elongation @ Break	%	493.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	303.4 N	68.205 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	406.0 N	91.283 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	622.5 N	139.95 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-23-08**

Signature..... *[Signature]*

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ROLL # **952227-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.50 mm	59 mil	Length.....	125 m	410.1 feet
	MAX: 1.57 mm	62 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 36 mil	AVE: 1.54 mm	61 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	208

Specific Gravity ASTM D792	Density	g/cc	.946		
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25		
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Carbon Black Content ASTM D4218	Range	%	2.19		
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1			
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	156 ppi	2,578 psi	
	Average Strength @ Break	31 N/mm	178 ppi	2,942 psi	

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.59		
	Average Elongation @ Break	%	493.0		

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21		
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	303.4 N	68.205 lbs		
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	406.0 N	91.283 lbs		
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Puncture Resistance ASTM D4833 (Modified)	Load	622.5 N	139.95 lbs		
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING		
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

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ROLL # **952228-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
	MIN:	1.52 mm	60 mil	Length.....	125 m	410.1 feet	
	MAX:	1.65 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	35 mil	AVE:	1.57 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				208	TEST RESULTS

Specific Gravity ASTM D792	Density			g/cc	.946	
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min	.25	
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Carbon Black Content ASTM D4218	Range			%	2.19	
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1		
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,578 psi
	Average Strength @ Break	32 N/mm	182 ppi	2,942 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%	15.59
	Average Elongation @ Break			%	493.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	303.4 N	68.205 lbs		
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	406.0 N	91.283 lbs		
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Puncture Resistance ASTM D4833 (Modified)	Load	622.5 N	139.95 lbs		
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING		
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Customer: **Environmental Specialties**
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ROLL # **952229-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.64 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	34 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 208

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.25
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Carbon Black Content ASTM D4218	Range		%		2.26
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	158 ppi	2,528 psi
	Average Strength @ Break	33 N/mm	187 ppi	2,981 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.42
	Average Elongation @ Break	%		498.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	303.8 N		68.292 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	428.1 N		96.242 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	611.3 N		137.44 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
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ROLL # **952230-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.49 mm	59 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.57 mm	62 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	27 mil	AVE:	1.54 mm	61 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				208	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.26
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	153 ppi	2,528 psi
	Average Strength @ Break	32 N/mm	181 ppi	2,981 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.42
	Average Elongation @ Break	%	498.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	303.8 N	68.292 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	428.1 N	96.242 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	611.3 N	137.44 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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 Destination **Henderson, NV**

Date:..... **12-23-08**

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ROLL # **952231-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.57 mm	62 mil	Length.....	125 m
	MAX:	1.62 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.59 mm	63 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **208**

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.26
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Carbon Black Dispersion ASTM D5596	Category		10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	158 ppi	2,528 psi
	Average Strength @ Break	33 N/mm	187 ppi	2,981 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.42
	Average Elongation @ Break	%	498.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	303.8 N	68.292 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	428.1 N	96.242 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	611.3 N	137.44 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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 Destination **Henderson, NV**

Date:..... **12-23-08**

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ROLL # **952232-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **27** mil AVE: **1.59** mm **63** mil
 ODD #: TOP EVEN #: BOTTOM OIT(Standard) ASTM D3895 minutes **208** **TEST RESULTS**

Specific Gravity ASTM D792	Density		g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.25
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Carbon Black Content ASTM D4218	Range		%		2.26
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	158 ppi	2,528 psi
	Average Strength @ Break	33 N/mm	187 ppi	2,981 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.42
	Average Elongation @ Break	%		498.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	303.8 N		68.292 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	428.1 N		96.242 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	611.3 N		137.44 lbs
--	------	----------------	--	-------------------

ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-23-08**

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ROLL # **952233-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m
	MAX:	1.59 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.56 mm	61 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	208

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.26
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	155 ppi	2,528 psi
	Average Strength @ Break	32 N/mm	183 ppi	2,981 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.42
	Average Elongation @ Break	%	498.7

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	303.8 N	68.292 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	428.1 N	96.242 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	611.3 N	137.44 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **952234-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.53 mm	60 mil	Length.....	125 m
	MAX:	1.64 mm	65 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 28 mil	AVE:	1.60 mm	63 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 208

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,567 psi
	Average Strength @ Break	31 N/mm	179 ppi	2,849 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.70
	Average Elongation @ Break	%	475.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	307.5 N	69.139 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	420.6 N	94.549 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	616.0 N	138.48 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **952235-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 28 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 208

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25	
Carbon Black Content ASTM D4218	Range	%	2.19	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,567 psi
	Average Strength @ Break	31 N/mm	177 ppi	2,849 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.70	
	Average Elongation @ Break	%	475.9	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	307.5 N	69.139 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	420.6 N	94.549 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	616.0 N	138.48 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **952236-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.50 mm	59 mil	Length.....	125 m
	MAX:	1.58 mm	62 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 28 mil	AVE:	1.54 mm	61 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 208

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc		.945
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min		.25
Carbon Black Content ASTM D4218	Range	%		2.19
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	156 ppi	2,567 psi
	Average Strength @ Break	30 N/mm	173 ppi	2,849 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.70
	Average Elongation @ Break	%		475.9
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.21
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	307.5 N	69.139 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	420.6 N	94.549 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	616.0 N	138.48 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **952237-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	27 mil	AVE:	1.59 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 208

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.945
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.25
Carbon Black Content ASTM D4218	Range		%		2.19
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,567 psi	
	Average Strength @ Break	31 N/mm	178 ppi	2,849 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.70	
	Average Elongation @ Break	%		475.9	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.21	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	307.5 N		69.139 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	420.6 N		94.549 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	616.0 N		138.48 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-23-08**

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ROLL # **952238-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m
	MAX:	1.62 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 26 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	208

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	160 ppi	2,567 psi
	Average Strength @ Break	31 N/mm	177 ppi	2,849 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.70
	Average Elongation @ Break	%	475.9

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	307.5 N	69.139 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	420.6 N	94.549 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	616.0 N	138.48 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-23-08**

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ROLL # **952239-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.59 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	27 mil	AVE:	1.57 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				208	TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.20
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	169 ppi	2,727 psi
	Average Strength @ Break	33 N/mm	189 ppi	3,060 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.25
	Average Elongation @ Break	%	490.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	309.5 N	69.585 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	430.2 N	96.707 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	588.1 N	132.21 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
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ROLL # **952240-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.66 mm	65 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	29 mil	AVE:	1.60 mm	63 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 208

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.25
Carbon Black Content ASTM D4218	Range		%		2.20
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	172 ppi	2,727 psi	
	Average Strength @ Break	34 N/mm	193 ppi	3,060 psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		16.25	
	Average Elongation @ Break	%		490.2	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.21	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	309.5 N		69.585 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	430.2 N		96.707 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	588.1 N		132.21 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-23-08**

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ROLL # **952241-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 27 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	208

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25	
Carbon Black Content ASTM D4218	Range	%	2.20	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	170 ppi	2,727 psi
	Average Strength @ Break	33 N/mm	190 ppi	3,060 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.25	
	Average Elongation @ Break	%	490.2	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	309.5 N	69.585 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	430.2 N	96.707 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	588.1 N	132.21 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-23-08**

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ROLL # **952242-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.57 mm	62 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.65 mm	65 mil	Width.....	7.00 m;	23.0 feet

Asperity GRI GM12: **29** mil AVE: **1.60** mm **63** mil OIT(Standard) ASTM D3895 minutes **208** **TEST RESULTS**
 ODD #: TOP EVEN #: BOTTOM

Specific Gravity	Density	g/cc	.946
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.25
COND. E			
GRADE: K307			

Carbon Black Content	Range	%	2.20
ASTM D4218			

Carbon Black Dispersion	Category	10 in Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	30 N/mm	172 ppi	2,727 psi
ASTM D6693				
ASTM D638 (Modified)				
(2 inches / minute)	Average Strength @ Break	34 N/mm	193 ppi	3,060 psi

Elongation ASTM D6693	Average Elongation @ Yield	%	16.25
ASTM D638 (Modified)			
(2 inches / minute)			
Lo = 1.3" Yield	Average Elongation @ Break	%	490.2
Lo = 2.0" Break			

Dimensional Stability	Average Dimensional change	%	-0.21
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	309.5 N	69.585 lbs
ASTM D-1004 (Modified)			

Puncture Resistance	Load	430.2 N	96.707 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Load	588.1 N	132.21 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	ONGOING
ASTM D5397			

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-23-08**

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ROLL # **952243-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.55 mm MAX: 1.65 mm AVE: 1.62 mm	ENGLISH 61 mil 65 mil 64 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 30 mil ODD #: TOP EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes 208	TEST RESULTS	

Specific Gravity ASTM D792	Density		g/cc	.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.25
Carbon Black Content ASTM D4218	Range		%	2.20
Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm	174 ppi	2,727 psi
	Average Strength @ Break	34 N/mm	195 ppi	3,060 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		16.25
	Average Elongation @ Break	%		490.2
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.21
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	309.5 N		69.585 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	430.2 N		96.707 lbs
Puncture Resistance ASTM D4833 (Modified)	Load	588.1 N		132.21 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING

Customer: **Environmental Specialties**
PO: **9036 Landwell Basic Remediation**
Destination **Henderson, NV**

Date:..... **12-23-08**

Signature..... 

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ROLL # **952344-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.51 mm	59 mil	Length.....	125 m
	MAX:	1.60 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 28 mil	AVE:	1.55 mm	61 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	208

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,644 psi
	Average Strength @ Break	29 N/mm	163 ppi	2,670 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.56
	Average Elongation @ Break	%	434.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	305.7 N	68.719 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	414.1 N	93.096 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	633.2 N	142.36 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-24-08**

Signature..... *[Handwritten Signature]*

Quality Control Department

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ROLL # **952345-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.51 mm	59 mil	Length.....	125 m
	MAX:	1.63 mm	64 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.58 mm	62 mil	TEST RESULTS	
ODD #: TOP EVEN #: BOTTOM					

OIT(Standard) ASTM D3895 minutes **208**

Specific Gravity ASTM D792	Density		g/cc	.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.25
Carbon Black Content ASTM D4218	Range		%	2.19
Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	164 ppi	2,644 psi
	Average Strength @ Break	29 N/mm	166 ppi	2,670 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.56
	Average Elongation @ Break	%		434.1
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.21
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	305.7 N		68.719 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	414.1 N		93.096 lbs
Puncture Resistance ASTM D4833 (Modified)	Load	633.2 N		142.36 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-24-08**

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ROLL # **952346-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC MIN: 1.52 mm MAX: 1.64 mm AVE: 1.59 mm	ENGLISH 60 mil 65 mil 63 mil	Thickness..... 1.5 mm Length..... 125 m Width..... 7.00 m;	60 mil 410.1 feet 23.0 feet	
Asperity GRI GM12: 30 mil ODD #: TOP EVEN #: BOTTOM			OIT(Standard) ASTM D3895 minutes 208	TEST RESULTS	

Specific Gravity ASTM D792	Density		g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.25
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Carbon Black Content ASTM D4218	Range		%	2.19
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm	165 ppi	2,644 psi
	Average Strength @ Break	29 N/mm	167 ppi	2,670 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.56
	Average Elongation @ Break	%		434.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	305.7 N		68.719 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	414.1 N		93.096 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	633.2 N		142.36 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-24-08**

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ROLL # **952347-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.47 mm	58 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 31 mil	AVE:	1.55 mm	61 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	208

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	161 ppi	2,644 psi
	Average Strength @ Break	29 N/mm	163 ppi	2,670 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.56
	Average Elongation @ Break	%	434.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	305.7 N	68.719 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	414.1 N	93.096 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	633.2 N	142.36 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
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ROLL # **952348-08** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m
	MAX:	1.58 mm	62 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.56 mm	61 mil	TEST RESULTS	
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895		minutes	208

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.19
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,644 psi
	Average Strength @ Break	29 N/mm	164 ppi	2,670 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.56
	Average Elongation @ Break	%	434.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	305.7 N	68.719 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	414.1 N	93.096 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	633.2 N	142.36 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **12-24-08**

Signature..... *[Signature]*

Quality Control Department

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quality certificate

ROLL # **902101-09** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.54 mm	61 mil	Length.....	125 m
	MAX:	1.65 mm	65 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 28 mil	AVE:	1.58 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 208

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc		.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min		.25
Carbon Black Content ASTM D4218	Range	%		2.46
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	159 ppi	2,553 psi
	Average Strength @ Break	34 N/mm	194 ppi	3,116 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.98
	Average Elongation @ Break	%		506.4
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.21
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	300.4 N	67.536 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	413.0 N	92.860 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	622.0 N	139.82 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **1-5-09**

Signature..... *[Signature]*

Quality Control Department

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12/23/05



quality certificate

ROLL # **902102-09** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN: 1.54 mm	61 mil	Length.....	125 m	410.1 feet
	MAX: 1.60 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 31 mil	AVE: 1.57 mm	62 mil	TEST RESULTS		
ODD #: TOP	EVEN #: BOTTOM		OIT(Standard) ASTM D3895	minutes	208

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.46
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Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	158 ppi	2,553 psi
	Average Strength @ Break	34 N/mm	193 ppi	3,116 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.98
	Average Elongation @ Break	%	506.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	300.4 N	67.536 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	413.0 N	92.860 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	622.0 N	139.82 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **1-5-09**

Signature..... *[Signature]*

Quality Control Department

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12/23/05



quality certificate

ROLL # **902103-09** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	125 m	410.1 feet
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12:	31 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP	EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	208

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.25
Carbon Black Content ASTM D4218	Range		%		2.46
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		28 N/mm	158 ppi	2,553 psi
	Average Strength @ Break		34 N/mm	193 ppi	3,116 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		15.98
	Average Elongation @ Break		%		506.4
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.21
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		300.4 N		67.536 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		413.0 N		92.860 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		622.0 N		139.82 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **1-5-09**

Signature..... *[Signature]*

Quality Control Department

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12/23/05



quality certificate

ROLL # **902104-09** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m
	MAX:	1.59 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 30 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	208

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.25
Carbon Black Content ASTM D4218	Range		%		2.46
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		28 N/mm	158 ppi	2,553 psi
	Average Strength @ Break		34 N/mm	193 ppi	3,116 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		15.98
	Average Elongation @ Break		%		506.4
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.21
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		300.4 N		67.536 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		413.0 N		92.860 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		622.0 N		139.82 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **1-5-09**

Signature..... 

Quality Control Department

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quality certificate

ROLL # **902105-09** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.45 mm	57 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.57 mm	62 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	27 mil	AVE:	1.52 mm	60 mil			
ODD #: TOP	EVEN #: BOTTOM					OIT(Standard) ASTM D3895	minutes 208

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.25
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Carbon Black Content ASTM D4218	Range		%		2.46
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Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27 N/mm	153 ppi	2,553 psi
	Average Strength @ Break	33 N/mm	186 ppi	3,116 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		15.98
	Average Elongation @ Break	%		506.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	300.4 N		67.536 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	413.0 N		92.860 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	622.0 N		139.82 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **1-5-09**

Signature..... *[Handwritten Signature]*

Quality Control Department

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quality certificate

ROLL # **902106-09** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.52 mm	60 mil	Length.....	125 m	410.1 feet
	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet
Asperity GRI GM12: 22 mil	AVE:	1.57 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM			OIT(Standard) ASTM D3895	minutes 208	TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.25
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Carbon Black Content ASTM D4218	Range		%	2.30
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
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Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,622 psi
	Average Strength @ Break	30 N/mm	173 ppi	2,806 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		16.49
	Average Elongation @ Break	%		475.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%	-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	302.3 N		67.971 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	410.4 N		92.255 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	634.9 N		142.74 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
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Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **1-5-09**

Signature..... *[Signature]*

Quality Control Department

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12/23/05



quality certificate

ROLL # **902107-09** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil	
ASTM D5994	MIN:	1.51 mm	59 mil	Length.....	125 m	410.1 feet	
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.00 m;	23.0 feet	
Asperity GRI GM12:	29 mil	AVE:	1.57 mm	62 mil			
ODD #: TOP	EVEN #: BOTTOM	OIT(Standard) ASTM D3895 minutes				208	TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc	.946
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MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min	.25
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Carbon Black Content ASTM D4218	Range		%	2.30
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Carbon Black Dispersion ASTM D5596	Category			10 in Cat 1
---------------------------------------	----------	--	--	--------------------

Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,622 psi
	Average Strength @ Break	30 N/mm	173 ppi	2,806 psi

Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		16.49
	Average Elongation @ Break	%		475.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.21
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Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	302.3 N		67.971 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	410.4 N		92.255 lbs
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Puncture Resistance ASTM D4833 (Modified)	Load	634.9 N		142.74 lbs
--	------	----------------	--	-------------------

ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING
---	-------------------	---------	--	----------------

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **1-5-09**

Signature..... *[Signature]*

Quality Control Department

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12/23/05



quality certificate

ROLL # **902108-09** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.55 mm	61 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	208

TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.946
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g		g/10 min		.25
Carbon Black Content ASTM D4218	Range		%		2.30
Carbon Black Dispersion ASTM D5596	Category				10 in Cat 1
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield		28 N/mm	162 ppi	2,622 psi
	Average Strength @ Break		30 N/mm	173 ppi	2,806 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		16.49
	Average Elongation @ Break		%		475.5
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.21
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance		302.3 N		67.971 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load		410.4 N		92.255 lbs
Puncture Resistance ASTM D4833 (Modified)	Load		634.9 N		142.74 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **1-5-09**

Signature..... *[Signature]*

Quality Control Department

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12/23/05



quality certificate

ROLL # **902109-09** Lot #: **7181327** Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
	MIN:	1.51 mm	59 mil	Length.....	125 m
	MAX:	1.61 mm	63 mil	Width.....	7.00 m; 23.0 feet
Asperity GRI GM12: 29 mil	AVE:	1.57 mm	62 mil		
ODD #: TOP EVEN #: BOTTOM				OIT(Standard) ASTM D3895 minutes	208

TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190°C /2160 g	g/10 min	.25	
Carbon Black Content ASTM D4218	Range	%	2.30	
Carbon Black Dispersion ASTM D5596	Category	10 in Cat 1		
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm	162 ppi	2,622 psi
	Average Strength @ Break	30 N/mm	173 ppi	2,806 psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.49	
	Average Elongation @ Break	%	475.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.21	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	302.3 N	67.971 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	410.4 N	92.255 lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	634.9 N	142.74 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	ONGOING	

Customer: **Environmental Specialties**
 PO: **9036 Landwell Basic Remediation**
 Destination **Henderson, NV**

Date:..... **1-5-09**

Signature..... *[Signature]*

Quality Control Department

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REV 03
12/23/05

Certificate of Analysis

Shipped To: AGRU AMERICA INC
2000 EAST NEWLANDS
FERNLEY NV 89408
USA

Recipient: PALMER
Fax:

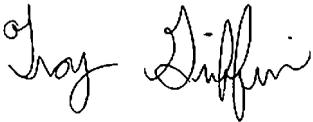
CPC Delivery #: 87780369
PO #: 4923
Weight: 191700 LB
Ship Date: 12/03/2008
Package: BULK
Mode: Hopper Car
Car #: PSPX006190
Seal No: 270461

Product:
MARLEX POLYETHYLENE K307 BULK

Lot Number: 7181327

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.250	g/10mi
HLMI Flow Rate	ASTM D1238	22.00	g/10mi
Density	ASTM D1505	0.9370	g/cm3
Pellet Count	P02.08.03	33.000	pel/g
Production Date		10/25/2008	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP.
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.



Troy Griffin
Quality Systems Coordinator

For CoA questions contact Customer Service Representative at +1-832-813-4637



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Additional CAMU Closure & BMI South Closure Geomembrane Resin/Roll Production Data
Submittal Number:	02770-004G
Specification Section:	Section 02770, Part 2.02
Drawing Number (s):	8, 10, 14, 16, 19, 21, 23, 25, 27, 29, 31, 33, 35-36, 38-45
Page Number:	02770-5 and 02770-6
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	1/8/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



875 West Warm Springs Road
 Henderson, Nevada 89011
 Tel (702) 567-0400 · Fax (702) 567-0475

SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehringer
ADDRESS: ENTACT Environmental Services
 Henderson, Nevada 89011

Date: 10/01/2009	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02770-006N	Revision No.: - N/A	Date Submittal Rec'd by BRC: 09/29/2009
---------------------------------------	----------------------------	--

Specification Section(s): 02270.1.06 Geomembrane Submittals

Submittal Subject: Revised Phase 3A Final Closure Geomembrane Panel Layout Drawing

Notations:

- No Exception Taken
- Correct as Noted
- Rejected
- Revise and Resubmit
- Submit Specified Items

Review Comments:

Comment	Reference	Comment

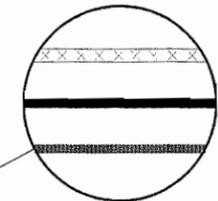
Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work

<p><i>[Signature]</i> _____ Design Engineer</p> <p><i>[Signature]</i> _____ Construction Manager Representative</p>	<p style="text-align: center;"><i>10/1/09</i> _____ Date</p> <p style="text-align: center;"><i>10/1/09</i> _____ Date</p>	<p style="text-align: center;"><i>[Signature]</i> _____ BRC Project Manager</p> <p style="text-align: center;"><i>10/2/09</i> _____ Date</p> <p style="text-align: center;">Lee Farris, P.E.</p>
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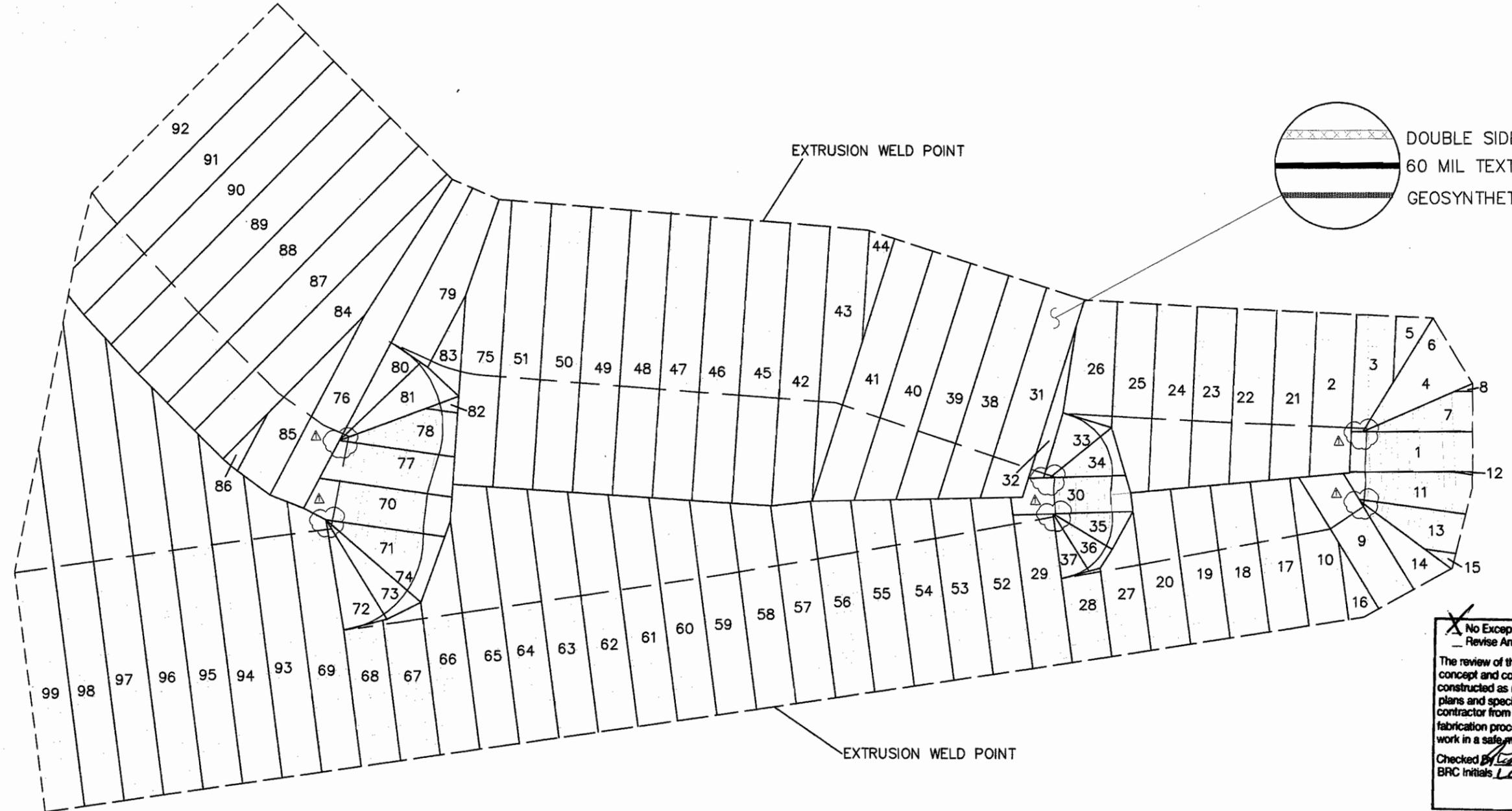
Distribution: File

LEGEND

- PANEL EDGE
- - - - SLOPE BREAK
- - - - TOE OF SLOPE
- - - - LIMIT OF LINER



DOUBLE SIDED GEOCOMPOSITE
60 MIL TEXTURED GEOMEMBRANE
GEOSYNTHETIC CLAY LINER

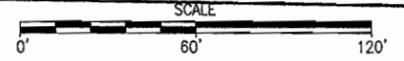


No Exception Taken Correct As Noted
 Revise And Resubmit Submit Specified Item Rejected

The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.

Checked By: *[Signature]* Date: 10/1/09
BRC Initials: *LOE*

BASIC REMEDIATION COMPANY



- NOTES:
- PROPOSED PANEL LAYOUT IS TENTATIVE AND MAY BE MODIFIED BY THE ESI SITE SUPERINTENDENT AS FIELD CONDITIONS DICTATE.
 - GEOSYNTHETIC TERMINATIONS WILL BE MADE IN ACCORDANCE WITH PROJECT TECHNICAL SPECIFICATIONS AND CONSTRUCTION DRAWINGS.

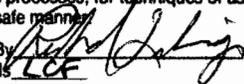
				ENTACT		699 South Friendswood Dr., Suite 101 Friendswood, Texas 77546 P: 281-996-9892	
				DRAWING NAME: PHASE 3A FINAL CLOSURE GEOMEMBRANE PANEL LAYOUT PLAN			
				PROJECT NAME & LOCATION: BRC EASTSIDE COMMON AREA SOILS REMEDIATION PROJECT HENDERSON, NEVADA			
PREPARED BY: M. CARLSON		CHECKED BY: E. GEHRINGER		REVISION: 0			
DRAWN BY: M. CARLSON		APPROVED BY: E. GEHRINGER		DATE: 9-24-09		SHEET NO. 1 OF 1	
DATE: 9-24-09		DATE: 9-24-09		PROJECT NO. E7207		DRAWING NO. E-7207-001	
REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION		
Δ	9/25/09	MMC	EG	GT	TO ADDRESS GEOSYNTEC COMMENTS		



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Reised Phase IIIA Final Closure Geomembrane Panel Layout Drawing
Submittal Number:	02770-006N
Specification Section:	Section 02770, Part 3.02, Subpart A
Drawing Number (s):	8
Page Number:	02770-7
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	9/24/2009
Date Submitted:	9/29/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.

<input checked="" type="checkbox"/> No Exception Taken	<input type="checkbox"/> Correct As Noted
<input type="checkbox"/> Revise And Resubmit	<input type="checkbox"/> Submit Specified Item <input type="checkbox"/> Rejected
<p>The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be constructed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.</p>	
Checked By: 	Date: 10/1/09
BRC initials: LCF	
BASIC REMEDIATION COMPANY	



875 West Warm Springs Road
Henderson, Nevada 89011
Tel (702) 567-0400 · Fax (702) 567-0475

SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehringer
ADDRESS: ENTACT Environmental Services
Henderson, Nevada 89011

Date: 11/10/2009	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02770-0060	Revision No.: - N/A	Date Submittal Rec'd by BRC: 11/06/2009
---------------------------------------	----------------------------	--

Specification Section(s): 02270.1.06 Geomembrane Submittals

Submittal Subject: Phase II Interim Closure Geomembrane Panel Layout Drawing

Notations:

- No Exception Taken
- Correct as Noted
- Rejected
- Revise and Resubmit
- Submit Specified Items

Review Comments:

Comment	Reference	Comment

Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work

Design Engineer	11/10/09 Date	BRC Project Manager	11/12/09 Date
Construction Manager Representative	11/11/09 Date		

Distribution: File



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company
 875 West Warm Springs Road
 Henderson, NV 89011
 TEL#: (702)-568-2888 FAX#: (702)-567-0475
 ATTENTION: Lee C. Farris, P.E.

DATE: 10/6/09
 JOB NAME: BRC EASTSIDE COMMON AREAS
 SOIL REMEDIATION PROJECT
 TRANSMITTAL NUMBER: 341
 ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	10/6/09			Submittal 02770-006O – Phase II Interim Closure Geomembrane Panel Layout Drawing	RC

ACTION (*)

AR - AS REQUESTED FA - FOR APPROVAL
 F – FILE RC - REVIEW & COMMENT

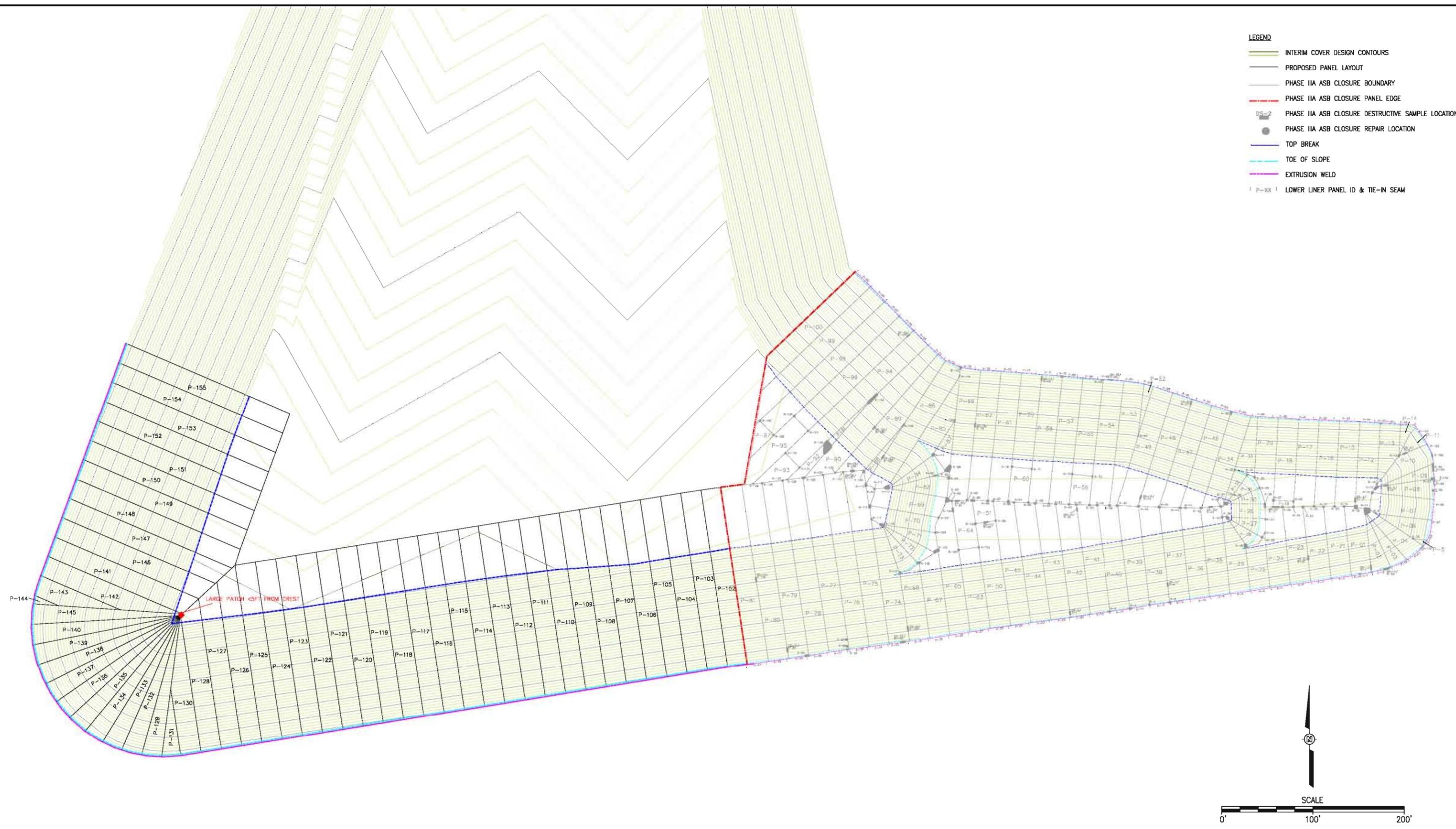
COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE
 COPY Ranajit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237
 TO: _____

If enclosures are not as noted, please notify us at once.....

- LEGEND**
-  INTERIM COVER DESIGN CONTOURS
 -  PROPOSED PANEL LAYOUT
 -  PHASE IIIA ASB CLOSURE BOUNDARY
 -  PHASE IIIA ASB CLOSURE PANEL EDGE
 -  PHASE IIIA ASB CLOSURE DESTRUCTIVE SAMPLE LOCATION
 -  PHASE IIIA ASB CLOSURE REPAIR LOCATION
 -  TOP BREAK
 -  TOE OF SLOPE
 -  EXTRUSION WELD
 -  LOWER LINER PANEL ID & TIE-IN SEAM



					 ENTACT		699 South Friendswood Dr., Suite 101 Friendswood, Texas 77546 P: 281-996-9892		
					DRAWING NAME		DRAWING 1		
					PROJECT NAME & LOCATION		INTERIM CLOSURE GEOMEMBRANE PANEL LAYOUT BRC EASTSIDE COMMON AREA SOILS REMEDIATION PROJECT HENDERSON, NEVADA		
					PREPARED BY	M. CARLSON	CHECKED BY	E. GEHRINGER	REVISION
					DRAWN BY	M. CARLSON	APPROVED BY	E. GEHRINGER	0
					DATE	11-6-09	DATE	11-6-09	SHEET NO.
					PROJECT NO.	E7207	DRAWING NO.	E-7207-001	1 OF 1
0	11/6/09	MMC	EG	GT	ISSUED FOR REVIEW				
REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION				



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Phase II Interim Closure Geomembrane Panel Layout Drawing
Submittal Number:	02770-0060
Specification Section:	Section 02770, Part 3.02, Subpart A
Drawing Number (s):	8
Page Number:	02770-7
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	11/6/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



875 West Warm Springs Road
Henderson, Nevada 89011
Tel (702) 567-0400 · Fax (702) 567-0475

SUBMITTAL TRANSMITTAL COVER SHEET

TO:	Mr. Erik Gehringer	Date: 12/15/2009	Job No.: 6389
ADDRESS:	ENTACT Environmental Services	Project Name	
	Henderson, Nevada 89011	BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02770-008H	Revision No.: - N/A	Date Submittal Rec'd by BRC: 12/07/2009
---------------------------------------	----------------------------	--

Specification Section(s): 02770 Geomembrane

Submittal Subject: Geomembrane QC Data-(CAMU Closure Phase IIIA & Phase II Interim Area)

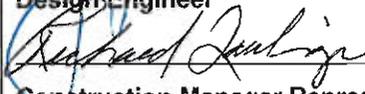
Notations:

- No Exception Taken
- Correct as Noted
- Rejected
- Revise and Resubmit
- Submit Specified Items

Review Comments:

Comment #	Reference	Comment
1	Repair Report	Repair R-11/DS-05 at panels <u>11/19/24</u>
2	Repair Report	Repair R-37 at panels 26/30/31/32/ <u>34</u>
3	Panel Seaming	Seam 32/33 has a length of 15 ft
4	Panel Seaming	Seam 26/33 – panels 26 and 33 not adjacent
5	Panel Seaming	Seams TN116/149 (Date: 11/17/09, Machine: 513, Extrusion Weld, Length: 3 ft, Seamer: Ivan Sanchez, Time: 0957), TN 116/149 (Date: 11/17/09, Machine: 513, Extrusion Weld, Length: 13 ft, Seamer: Ivan Sanchez, Time: 1010), and TN 43/081 (Date: 11/13/09, Machine: 513, Extrusion Weld, Length: 6 ft, Seamer: Ivan Sanchez, Time: 1523) missing
6	Non-Destructive Test Log	Seam 4/5 recorded on 10/15/09 should be seam 4/ <u>6</u>
7	Non-Destructive Test Log	Seams 34/46, 26/34, 26/29, and 26/35, 70/74, 77/92, 134/135, 124/TN-32, TN-81/43, and TN116/149 missing- See Geosyntec QC data for documentation of non-destructive testing

Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work

	12/15/09		12/18/09
Design Engineer	Date	BRC Project Manager	Date
	12/15/09	Lee Farris, P.E.	
Construction Manager Representative	Date		
Distribution: <input checked="" type="checkbox"/> File			



699 South Friendswood Drive
Suite 101
Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
ATTENTION: Lee C. Farris, P.E.

DATE: 12/7/09
JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
TRANSMITTAL NUMBER: 353
ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	12/7/09			Submittal 02770-008H – Geomembrane QC Data (CAMU Closure – Phase II Interim Closure Area & Phase IIIA)	RC

ACTION (*)

AR - AS REQUESTED

FA - FOR APPROVAL

F – FILE

RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL

MAIL

OVERNIGHT

HAND DELIVERY

FACSIMILE

COPY TO: Ranjit Sahu, Lee Farris

BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....

Panel Placement Forms

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

PANEL PLACEMENT FORM

PROJECT NAME: BASIC REMEDIATION 3-A CLOSURE COVER PROJECT NO. 07-11-1271 PAGE 3 of 13

Date	Panel #	Roll #	Panel Length	Panel Width	Comments/Panel Location
10/15/2009	29	951729-08	52/88	22.5	1575
10/15/2009	30	951740-08	44	20	440
10/15/2009	31	951740-08	42	20	420
10/15/2009	32	951740-08	42	16	336
10/15/2009	33	951740-08	70	15	1050
10/15/2009	34	951740-08	120	22.5	2700
10/15/2009	35	951740-08	98/100	22.5	2227.5
10/15/2009	36	951627-08	100/104	22.5	2295
10/15/2009	37	951627-08	104/108	22.5	2385
10/15/2009	38	951627-08	108/112	22.5	2475
10/15/2009	39	951738-08	112/116	22.5	2565
10/15/2009	40	951738-08	116/120	22.5	2655
10/15/2009	41	951738-08	120/124	22.5	2745
10/15/2009	42	951730-08	124/128	22.5	2835
10/15/2009	43	951730-08	128/132	22.5	2925
10/15/2009	44	951730-08	132/136	22.5	3015
10/15/2009	45	951732-08	136/140	22.5	3105
		TOTAL TODAY			35748.5
		TOTAL TO DATE			

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

PANEL PLACEMENT FORM

PROJECT NAME: BASIC REMEDIATION 3-A CLOSURE COVER

PROJECT NO. 07-11-1271

PAGE 8 of 13

Date	Panel #	Roll #	Panel Length	Panel Width	Comments/Panel Location
10/22/2009	97	952103-08	34/4	22.5	
10/22/2009	98	951747-08	198/200	22.5	
10/22/2009	99	951747-08	204/172	22.5	
10/22/2009	100	951748-08	172/146	22.5	
10/22/2009	101	951745-08	24	9	
TOTAL TODAY			0		
TOTAL TO DATE					

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

PANEL PLACEMENT FORM

PROJECT NAME: BASIC REMEDIATION 3-A CLOSURE COVER PROJECT NO. 07-11-1271 PAGE 9 of 13

Date	Panel #	Roll #	Panel Length	Panel Width	Comments/Panel Location
11/10/2009	102	952102-08	202	22.5	4545
11/10/2009	103	952102-08	202	22.5	4545
11/10/2009	104	951743-08	202	22.5	4545
11/10/2009	105	951743-08	202	22.5	4545
11/10/2009	106	952104-08	202	22.5	4545
11/10/2009	107	952104-08	202	22.5	4545
11/10/2009	108	951744-08	202	22.5	4545
11/10/2009	109	951744-08	202	22.5	4545
11/10/2009	110	952109-08	202	22.5	4545
11/10/2009	111	952109-08	202	22.5	4545
11/10/2009	112	952116-08	202	22.5	4545
11/10/2009	113	952116-08	202	22.5	4545
11/10/2009	114	952106-08	202	22.5	4545
11/10/2009	115	952106-08	202	22.5	4545
11/10/2009	116	952112-08	202	22.5	4545
11/10/2009	117	952112-08	202	22.5	4545
		TOTAL TODAY			72720
		TOTAL TO DATE			

Panel Seaming Forms

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

PANEL SEAMING FORM

PROJECT NAME: BASIC REMEDIATION 3-A CLOSURE COVER PROJECT NO. 07-11-1271 PAGE 1 OF 32

Date	Seam #	Machine ID #	E-Extrusion W-Wedge	Seam Length	Seamer ID	Weld Time		Comments
						Start	Stop	
10/13/2009	1/2	1210	W	74	EFREN BUITRON	10:25 AM	10:38 AM	
10/13/2009	2/3	1210	W	68	EFREN BUITRON	11:05 AM	11:20 AM	
10/13/2009	3/4	1210	W	70	EFREN BUITRON	11:25 AM	11:40 AM	
10/13/2009	4/5	1210	W	16	EFREN BUITRON	12:13 PM	12:18 PM	
10/13/2009	4/6	1210	W	52	EFREN BUITRON	12:00 PM	12:12 PM	
10/13/2009	4/7	1210	W	8	EFREN BUITRON	11:46 AM	12:48 PM	
10/13/2009	6/7	1210	W	66	EFREN BUITRON	11:43 AM	11:54 AM	
10/13/2009	7/8	1210	W	70	EFREN BUITRON	2:46 PM	2:58 PM	
10/13/2009	8/9	1210	W	68	EFREN BUITRON	3:00 PM	3:14 PM	
10/13/2009	8/10	1210	W	5	EFREN BUITRON	3:16 PM	3:16 PM	
10/13/2009	9/10	1210	W	72	EFREN BUITRON	3:16 PM	3:32 PM	
10/13/2009	10/11	1209	W	34	IVAN SANCHEZ	3:28 PM	3:35 PM	
10/13/2009	12/13	1210	W	70	EFREN BUITRON	3:52 PM	4:03 PM	
10/13/2009	13/14	1209	W	36	IVAN SANCHEZ	3:55 PM	4:00 PM	
10/13/2009	1/12	1209	W	10	IVAN SANCHEZ	4:13 PM	4:15 PM	
10/13/2009	7/12	1209	W	18	IVAN SANCHEZ	4:17 PM	4:19 PM	
10/13/2009	8/12	1209	W	6	IVAN SANCHEZ	4:20 PM	4:21 PM	
10/13/2009	10/12	1209	W	5	IVAN SANCHEZ	4:21 PM	4:22 PM	
10/13/2009	10/13	1209	W	40	IVAN SANCHEZ	4:22 PM	4:26 PM	
10/13/2009	11/14	1209	W	38	IVAN SANCHEZ	4:27 PM	4:34 PM	
10/13/2009	5/6	1210	W	16	EFREN BUITRON	11:56 AM	11:59 AM	

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

PANEL SEAMING FORM

PROJECT NAME: BASIC REMEDIATION 3-A CLOSURE COVER PROJECT NO. 07-11-1271 PAGE 4 OF 32

Date	Seam #	Machine ID #	E-Extrusion W-Wedge	Seam Length	Seamer ID	Weld Time		Comments
						Start	Stop	
10/15/2009	25/29	1209	W	52	JOSE CAMPOS	8:47 AM	8:56 AM	
10/15/2009	28/29	1210	W	38	EFREN BUITRON	8:44 AM	8:51 AM	
10/15/2009	26/30	1209	W	44	JOSE CAMPOS	9:50 AM	9:57 AM	
10/15/2009	30/31	1210	W	42	EFREN BUITRON	9:35 AM	9:42 AM	
10/15/2009	31/32	1210	W	42	EFREN BUITRON	9:24 AM	9:33 AM	
10/15/2009	20/33	1209	W	70	JOSE CAMPOS	9:02 AM	9:14 AM	
10/15/2009	32/34	1210	W	42	EFREN BUITRON	9:47 AM	9:53 AM	
10/15/2009	33/34	1210	W	64	EFREN BUITRON	9:54 AM	10:08 AM	
10/15/2009	32/33	1209	W	45	JOSE CAMPOS	10:00 AM	10:03 AM	
10/15/2009	31/33	1209	W	8	JOSE CAMPOS	10:04 AM	10:06 AM	
10/15/2009	20/31	1209	W	13	JOSE CAMPOS	10:06 AM	10:08 AM	
10/15/2009	20/30	1209	W	20	JOSE CAMPOS	10:09 AM	10:11 AM	
10/15/2009	20/26	1209	W	4	JOSE CAMPOS	10:12 AM	10:13 AM	
10/15/2009	24/26	1209	W	13	JOSE CAMPOS	10:13 AM	10:15 AM	
10/15/2009	24/27	1209	W	16	JOSE CAMPOS	10:15 AM	10:17 AM	
10/15/2009	25/27	1209	W	6	JOSE CAMPOS	10:18 AM	10:19 AM	
10/15/2009	25/28	1209	W	21	JOSE CAMPOS	10:20 AM	10:24 AM	
10/15/2009	29/35	1209	W	88	JOSE CAMPOS	10:41 AM	10:55 AM	
10/15/2009	35/36	1210	W	100	EFREN BUITRON	11:07 AM	11:22 AM	
10/15/2009	36/37	1209	W	104	JOSE CAMPOS	11:12 AM	11:28 AM	
10/15/2009	37/38	1210	W	108	EFREN BUITRON	1:34 PM	1:48 PM	

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

PANEL SEAMING FORM

PROJECT NAME: BASIC REMEDIATION 3-A CLOSURE COVER PROJECT NO. 07-11-1271 PAGE 8 OF 32

Date	Seam #	Machine ID #	E-Extrusion W-Wedge	Seam Length	Seamer ID	Weld Time		Comments
						Start	Stop	
10/17/2009	TN-25/50	513	E	20	IVAN SANCHEZ	7:54 AM	8:59 AM	
10/17/2009	TN-24/50	513	E	2	IVAN SANCHEZ	8:00 AM	8:08 AM	
10/17/2009	TN-24/45	513	E	20	IVAN SANCHEZ	8:00 AM	8:07 AM	
10/17/2009	TN-23/45	513	E	2	IVAN SANCHEZ	8:08 AM	8:08 AM	
10/17/2009	TN-23/44	513	E	20	IVAN SANCHEZ	8:08 AM	8:16 AM	
10/17/2009	TN-22/44	513	E	2	IVAN SANCHEZ	8:17 AM	8:17 AM	
10/17/2009	TN-22/43	513	E	21	IVAN SANCHEZ	8:17 AM	8:26 AM	
10/17/2009	TN-20/43	513	E	1	IVAN SANCHEZ	8:27 AM	8:27 AM	
10/17/2009	TN-20/42	513	E	21	IVAN SANCHEZ	8:27 AM	8:36 AM	
10/17/2009	TN-19/42	513	E	1	IVAN SANCHEZ	8:46 AM	8:46 AM	
10/17/2009	TN-19/41	513	E	22	IVAN SANCHEZ	8:46 AM	8:55 AM	
10/17/2009	TN-18/40	513	E	22	IVAN SANCHEZ	8:58 AM	9:08 AM	
10/17/2009	TN-14/39	513	E	22	IVAN SANCHEZ	9:24 AM	9:35 AM	
10/17/2009	TN-13/38	513	E	23	IVAN SANCHEZ	9:39 AM	9:48 AM	
10/17/2009	TN-12/37	513	E	23	IVAN SANCHEZ	9:50 AM	10:00 AM	
10/17/2009	TN-10/36	513	E	22	IVAN SANCHEZ	10:10 AM	10:16 AM	
10/17/2009	TN-09/35	513	E	23	IVAN SANCHEZ	10:17 AM	10:26 AM	
10/17/2009	TN-08/29	513	E	23	IVAN SANCHEZ	10:30 AM	10:40 AM	
10/17/2009	TN-06/25	513	E	23	IVAN SANCHEZ	10:54 AM	11:00 AM	
10/17/2009	TN-05/24	513	E	23	IVAN SANCHEZ	11:01 AM	11:10 AM	
10/17/2009	TN-04/23	513	E	23	IVAN SANCHEZ	11:16 AM	11:24 AM	

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

PANEL SEAMING FORM

PROJECT NAME: BASIC REMEDIATION 3-A CLOSURE COVER PROJECT NO. 07-11-1271 PAGE 9 OF 32

Date	Seam #	Machine ID #	E-Extrusion W-Wedge	Seam Length	Seamer ID	Weld Time		Comments
						Start	Stop	
10/17/2009	TN-03/22	513	E	23	IVAN SANCHEZ	11:27 AM	11:36 AM	
10/17/2009	TN-02/21	513	E	23	IVAN SANCHEZ	11:40 AM	11:50 AM	
10/17/2009	TN-01/01	513	E	23	IVAN SANCHEZ	1:23 PM	1:32 PM	
10/17/2009	TN-15/02	513	E	22	IVAN SANCHEZ	1:34 PM	1:44 PM	
10/17/2009	TN-15/03	513	E	1	IVAN SANCHEZ	2:04 PM	2:04 PM	
10/17/2009	TN-16/03	513	E	19	IVAN SANCHEZ	2:04 PM	2:11 PM	
10/17/2009	TN-16/04	513	E	1	IVAN SANCHEZ	2:12 PM	2:12 PM	
10/17/2009	TN-17/04	513	E	20	IVAN SANCHEZ	2:12 PM	2:20 PM	
10/17/2009	TN-100/04	513	E	1	IVAN SANCHEZ	2:22 PM	2:22 PM	
10/17/2009	TN-100/05	513	E	8	IVAN SANCHEZ	2:22 PM	4:25 AM	
10/17/2009	TN-100/06	513	E	10	IVAN SANCHEZ	2:25 PM	2:27 PM	
10/17/2009	TN-97/06	513	E	14	IVAN SANCHEZ	2:27 PM	2:34 PM	
10/17/2009	TN-97/07	513	E	9	IVAN SANCHEZ	2:35 PM	2:38 PM	
10/17/2009	TN-98/07	513	E	14	IVAN SANCHEZ	2:39 PM	2:44 PM	
10/17/2009	TN-98/08	513	E	9	IVAN SANCHEZ	2:45 PM	2:48 PM	
10/17/2009	TN-99/08	513	E	14	IVAN SANCHEZ	2:49 PM	2:54 PM	
10/17/2009	TN-99/09	513	E	8	IVAN SANCHEZ	3:02 PM	3:05 PM	
10/17/2009	TN-101/09	513	E	8	IVAN SANCHEZ	3:08 PM	3:11 PM	
10/17/2009	TN-101/10	513	E	9	IVAN SANCHEZ	3:14 PM	3:16 PM	
10/17/2009	TN-102/10	513	E	14	IVAN SANCHEZ	3:17 PM	3:21 PM	
10/17/2009	TN-102/11	513	E	6	IVAN SANCHEZ	3:22 PM	3:23 PM	

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

PANEL SEAMING FORM

PROJECT NAME: BASIC REMEDIATION 3-A CLOSURE COVER PROJECT NO. 07-11-1271 PAGE 11 OF 32

Date	Seam #	Machine ID #	E-Extrusion W-Wedge	Seam Length	Seamer ID	Weld Time		Comments
						Start	Stop	
10/19/2009	TN-95/13	513	E	16	IVAN SANCHEZ	7:32 AM	7:36 AM	
10/19/2009	TN-95/12	513	E	7	IVAN SANCHEZ	7:45 AM	7:47 AM	
10/19/2009	TN-94/12	513	E	16	IVAN SANCHEZ	7:50 AM	7:56 AM	
10/19/2009	TN-94/15	513	E	7	IVAN SANCHEZ	7:58 AM	8:00 AM	
10/19/2009	TN-93/15	513	E	17	IVAN SANCHEZ	8:04 AM	8:08 AM	
10/19/2009	TN-93/16	513	E	7	IVAN SANCHEZ	8:10 AM	8:12 AM	
10/19/2009	TN-92/16	513	E	17	IVAN SANCHEZ	8:14 AM	8:18 AM	
10/19/2009	TN-92/17	513	E	6	IVAN SANCHEZ	8:20 AM	8:22 AM	
10/19/2009	TN-91/17	513	E	17	IVAN SANCHEZ	8:22 AM	8:26 AM	
10/19/2009	TN-91/18	513	E	6	IVAN SANCHEZ	8:30 AM	8:32 AM	
10/19/2009	TN-89/18	513	E	17	IVAN SANCHEZ	8:33 AM	8:36 AM	
10/19/2009	TN-89/20	513	E	7	IVAN SANCHEZ	8:39 AM	8:41 AM	
10/19/2009	TN-88/20	513	E	17	IVAN SANCHEZ	8:43 AM	8:46 AM	
10/19/2009	TN-88/33	513	E	6	IVAN SANCHEZ	8:50 AM	8:52 AM	
10/19/2009	TN-82/33	513	E	1	IVAN SANCHEZ	8:53 AM	8:53 AM	
10/19/2009	TN-82/34	513	E	19	IVAN SANCHEZ	8:53 AM	8:56 AM	
10/19/2009	TN-83/34	513	E	4	IVAN SANCHEZ	9:02 AM	9:03 AM	
10/19/2009	TN-83/46	513	E	19	IVAN SANCHEZ	9:14 AM	9:18 AM	
10/19/2009	TN-84/46	513	E	5	IVAN SANCHEZ	9:20 AM	9:21 AM	
10/19/2009	TN-84/47	513	E	19	IVAN SANCHEZ	9:22 AM	9:25 AM	
10/19/2009	TN-85/47	513	E	5	IVAN SANCHEZ	9:26 AM	9:27 AM	

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

PANEL SEAMING FORM

PROJECT NAME: BASIC REMEDIATION 3-A CLOSURE COVER PROJECT NO. 07-11-1271 PAGE 12 OF 32

Date	Seam #	Machine ID #	E-Extrusion W-Wedge	Seam Length	Seamer ID	Weld Time		Comments
						Start	Stop	
10/19/2009	TN-85/48	513	E	18	IVAN SANCHEZ	9:28 AM	9:32 AM	
10/19/2009	TN-86/48	513	E	5	IVAN SANCHEZ	9:57 AM	9:58 AM	
10/19/2009	TN-86/49	513	E	18	IVAN SANCHEZ	9:59 AM	10:03 AM	
10/19/2009	TN-87/49	513	E	5	IVAN SANCHEZ	10:05 AM	10:06 AM	
10/19/2009	TN-87/52	513	E	11	IVAN SANCHEZ	10:08 AM	10:11 AM	
10/19/2009	TN-87/53	513	E	7	IVAN SANCHEZ	10:12 AM	10:14 AM	
10/19/2009	TN-65/53	513	E	16	IVAN SANCHEZ	10:15 AM	10:18 AM	
10/19/2009	TN-65/54	513	E	7	IVAN SANCHEZ	10:22 AM	10:25 AM	
10/19/2009	TN-66/54	513	E	16	IVAN SANCHEZ	10:26 AM	10:29 AM	
10/19/2009	TN-66/55	513	E	7	IVAN SANCHEZ	10:50 AM	10:52 AM	
10/19/2009	TN-68/55	513	E	16	IVAN SANCHEZ	10:53 AM	10:55 AM	
10/19/2009	TN-68/57	513	E	7	IVAN SANCHEZ	11:02 AM	11:04 AM	
10/19/2009	TN-69/57	513	E	16	IVAN SANCHEZ	12:18 PM	12:21 PM	
10/19/2009	TN-69/58	513	E	6	IVAN SANCHEZ	12:30 PM	12:32 PM	
10/19/2009	TN-71/58	513	E	17	IVAN SANCHEZ	12:33 PM	12:36 PM	
10/19/2009	TN-71/59	513	E	6	IVAN SANCHEZ	12:40 PM	12:42 PM	
10/19/2009	TN-72/59	513	E	17	IVAN SANCHEZ	12:45 PM	12:48 PM	
10/19/2009	TN-72/61	513	E	7	IVAN SANCHEZ	1:10 PM	1:12 PM	
10/19/2009	TN-73/61	513	E	17	IVAN SANCHEZ	1:14 PM	1:17 PM	
10/19/2009	TN-73/62	513	E	7	IVAN SANCHEZ	1:30 PM	1:32 PM	
10/19/2009	TN-75/62	513	E	17	IVAN SANCHEZ	1:35 PM	1:39 PM	

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

PANEL SEAMING FORM

PROJECT NAME: BASIC REMEDIATION 3-A CLOSURE COVER PROJECT NO. 07-11-1271 PAGE 17 OF 32

Date	Seam #	Machine ID #	E-Extrusion W-Wedge	Seam Length	Seamer ID	Weld Time		Comments
						Start	Stop	
10/21/2009	69/82	20831	W	70	JOSE CAMPOS	9:26 AM	9:38 AM	
10/21/2009	69/86	20831	W	15	JOSE CAMPOS	9:22 AM	9:25 AM	
10/21/2009	82/83	1210	W	14	EFREN BUITRON	9:34 AM	9:36 AM	
10/21/2009	82/84	1210	W	58	EFREN BUITRON	9:18 AM	9:27 AM	
10/21/2009	83/84	20831	W	12	JOSE CAMPOS	9:53 AM	9:55 AM	
10/21/2009	84/87	20831	W	22	JOSE CAMPOS	10:00 AM	10:04 AM	
10/21/2009	84/85	1210	W	64	EFREN BUITRON	8:49 AM	9:02 AM	
10/21/2009	85/87	1210	W	46	EFREN BUITRON	9:07 AM	9:14 AM	
10/21/2009	85/86	20831	W	154	JOSE CAMPOS	8:40 AM	9:03 AM	
10/21/2009	66/82	20831	W	22	JOSE CAMPOS	9:45 AM	9:49 AM	
10/21/2009	66/69	20831	W	4	JOSE CAMPOS	9:50 AM	9:51 AM	
10/21/2009	66/83	20831	W	9	JOSE CAMPOS	9:42 AM	9:44 AM	
10/21/2009	66/87	1210	W	52	EFREN BUITRON	9:42 AM	9:53 AM	
10/21/2009	66/85	1210	W	52	EFREN BUITRON	9:54 AM	10:02 AM	
10/21/2009	66/86	1210	W	10	EFREN BUITRON	10:03 AM	10:05 AM	
10/21/2009	86/88	20831	W	80	JOSE CAMPOS	1:30 PM	1:45 PM	
10/21/2009	86/89	20831	W	90	JOSE CAMPOS	1:46 PM	2:03 PM	
10/21/2009	88/89	1210	W	68	EFREN BUITRON	1:30 PM	1:42 PM	
10/21/2009	89/90	1210	W	182	EFREN BUITRON	1:56 PM	2:18 PM	
10/21/2009	90/91	20831	W	76	JOSE CAMPOS	2:40 PM	2:53 PM	
10/21/2009	91/94	1210	W	76	EFREN BUITRON	2:45 PM	2:58 PM	

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

PANEL SEAMING FORM

PROJECT NAME: BASIC REMEDIATION 3-A CLOSURE COVER PROJECT NO. 07-11-1271 PAGE 20 OF 32

Date	Seam #	Machine ID #	E-Extrusion W-Wedge	Seam Length	Seamer ID	Weld Time		Comments
						Start	Stop	
10/22/2009	TN-43/81	513	E	20	IVAN SANCHEZ	9:47 AM	9:55 AM	
10/22/2009	TN-42/81	513	E	2	IVAN SANCHEZ	9:56 AM	9:56 AM	
10/22/2009	TN-42/80	513	E	20	IVAN SANCHEZ	9:56 AM	10:02 AM	
10/22/2009	TN-40/80	513	E	2	IVAN SANCHEZ	10:03 AM	10:03 AM	
10/22/2009	TN-40/79	513	E	20	IVAN SANCHEZ	10:03 AM	10:08 AM	
10/22/2009	TN-39/79	513	E	2	IVAN SANCHEZ	10:10 AM	10:10 AM	
10/22/2009	TN-39/78	513	E	20	IVAN SANCHEZ	10:10 AM	10:17 AM	
10/22/2009	TN-37/78	513	E	2	IVAN SANCHEZ	10:18 AM	10:18 AM	
10/22/2009	TN-37/77	513	E	20	IVAN SANCHEZ	10:18 AM	10:28 AM	
10/22/2009	TN-36/77	513	E	2	IVAN SANCHEZ	10:30 AM	10:30 AM	
10/22/2009	TN-36/76	513	E	21	IVAN SANCHEZ	10:30 AM	10:40 AM	
10/22/2009	TN-34/76	513	E	2	IVAN SANCHEZ	10:50 AM	10:50 AM	
10/22/2009	TN-34/75	513	E	20	IVAN SANCHEZ	10:50 AM	10:57 AM	
10/22/2009	TN-33/75	513	E	2	IVAN SANCHEZ	10:58 AM	10:58 AM	
10/22/2009	TN-33/74	513	E	20	IVAN SANCHEZ	10:58 AM	11:06 AM	
10/22/2009	TN-31/74	513	E	2	IVAN SANCHEZ	11:07 AM	11:07 AM	
10/22/2009	TN-31/68	513	E	20	IVAN SANCHEZ	11:07 AM	11:16 AM	
10/22/2009	TN-30/68	513	E	2	IVAN SANCHEZ	11:20 AM	11:20 AM	
10/22/2009	TN-30/67	513	E	20	IVAN SANCHEZ	11:20 AM	11:28 AM	
10/22/2009	TN-28/67	513	E	2	IVAN SANCHEZ	11:35 AM	11:35 AM	
10/22/2009	TN-28/65	513	E	20	IVAN SANCHEZ	11:33 AM	11:41 AM	

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

PANEL SEAMING FORM

PROJECT NAME: BASIC REMEDIATION 3-A CLOSURE COVER PROJECT NO. 07-11-1271 PAGE 27 OF 32

Date	Seam #	Machine ID #	E-Extrusion W-Wedge	Seam Length	Seamer ID	Weld Time		Comments
						Start	Stop	
11/13/2009	TN-24/116	513	E	19	IVAN SANCHEZ	12:50 PM	12:55 PM	
11/13/2009	TN-24/115	513	E	3	IVAN SANCHEZ	12:56 PM	12:56 PM	
11/13/2009	TN-23/115	513	E	20	IVAN SANCHEZ	12:56 PM	1:01 PM	
11/13/2009	TN-23/114	513	E	3	IVAN SANCHEZ	1:02 PM	1:02 PM	
11/13/2009	TN-22/114	513	E	20	IVAN SANCHEZ	1:02 PM	1:06 PM	
11/13/2009	TN-22/113	513	E	3	IVAN SANCHEZ	1:07 PM	1:07 PM	
11/13/2009	TN-21/113	513	E	20	IVAN SANCHEZ	1:07 PM	1:13 PM	
11/13/2009	TN-21/112	513	E	3	IVAN SANCHEZ	1:14 PM	1:14 PM	
11/13/2009	TN-20/112	513	E	19	IVAN SANCHEZ	1:14 PM	1:20 PM	
11/13/2009	TN-20/111	513	E	3	IVAN SANCHEZ	1:26 PM	1:26 PM	
11/13/2009	TN-14/111	513	E	19	IVAN SANCHEZ	1:26 PM	1:32 PM	
11/13/2009	TN-14/110	513	E	3	IVAN SANCHEZ	1:33 PM	1:33 PM	
11/13/2009	TN-15/110	513	E	19	IVAN SANCHEZ	1:33 PM	1:49 PM	
11/13/2009	TN-15/109	513	E	3	IVAN SANCHEZ	1:40 PM	1:40 PM	
11/13/2009	TN-16/109	513	E	19	IVAN SANCHEZ	1:40 PM	1:47 PM	
11/13/2009	TN-16/108	513	E	3	IVAN SANCHEZ	2:00 PM	2:00 PM	
11/13/2009	TN-17/108	513	E	19	IVAN SANCHEZ	2:00 PM	2:05 PM	
11/13/2009	TN-17/107	513	E	3	IVAN SANCHEZ	2:06 PM	2:06 PM	
11/13/2009	TN-18/107	513	E	19	IVAN SANCHEZ	2:06 PM	2:14 PM	
11/13/2009	TN-18/106	513	E	3	IVAN SANCHEZ	2:15 PM	2:15 PM	
11/13/2009	TN-19/106	513	E	8	IVAN SANCHEZ	2:15 PM	2:17 PM	

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

PANEL SEAMING FORM

PROJECT NAME: BASIC REMEDIATION 3-A CLOSURE COVER PROJECT NO. 07-11-1271 PAGE 29 OF 32

Date	Seam #	Machine ID #	E-Extrusion W-Wedge	Seam Length	Seamer ID	Weld Time		Comments
						Start	Stop	
11/14/2009	TN-45/136	513	E	16	IVAN SANCHEZ	8:05 AM	8:10 AM	
11/14/2009	TN-42/136	513	E	6	IVAN SANCHEZ	8:11 AM	8:13 AM	
11/14/2009	TN-42/135	513	E	16	IVAN SANCHEZ	8:13 AM	8:16 AM	
11/14/2009	TN-43/135	513	E	6	IVAN SANCHEZ	8:16 AM	8:17 AM	
11/14/2009	TN-43/134	513	E	18	IVAN SANCHEZ	8:18 AM	8:22 AM	
11/14/2009	TN-44/134	513	E	6	IVAN SANCHEZ	8:23 AM	8:25 AM	
11/14/2009	TN-44/133	513	E	13	IVAN SANCHEZ	8:27 AM	8:29 AM	
11/14/2009	TN-39/133	513	E	9	IVAN SANCHEZ	8:30 AM	8:32 AM	
11/14/2009	TN-39/132	513	E	14	IVAN SANCHEZ	8:32 AM	8:35 AM	
11/14/2009	TN-40/132	513	E	8	IVAN SANCHEZ	8:38 AM	8:40 AM	
11/14/2009	TN-40/131	513	E	14	IVAN SANCHEZ	8:40 AM	8:43 AM	
11/14/2009	TN-41/131	513	E	7	IVAN SANCHEZ	8:45 AM	8:46 AM	
11/14/2009	TN-41/130	513	E	3	IVAN SANCHEZ	8:47 AM	8:47 AM	
11/14/2009	TN-38/130	513	E	18	IVAN SANCHEZ	8:48 AM	8:52 AM	
11/14/2009	TN-38/129	513	E	3	IVAN SANCHEZ	8:53 AM	8:54 AM	
11/14/2009	TN-37/129	513	E	19	IVAN SANCHEZ	8:54 AM	9:00 AM	
11/14/2009	TN-37/128	513	E	3	IVAN SANCHEZ	9:01 AM	9:02 AM	
11/14/2009	TN-36/128	513	E	19	IVAN SANCHEZ	9:02 AM	9:07 AM	
11/14/2009	TN-36/127	513	E	3	IVAN SANCHEZ	9:08 AM	9:09 AM	
11/14/2009	TN-35/127	513	E	19	IVAN SANCHEZ	9:09 AM	9:14 AM	
11/14/2009	TN-35/126	513	E	3	IVAN SANCHEZ	9:25 AM	9:26 AM	

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

PANEL SEAMING FORM

PROJECT NAME: BASIC REMEDIATION 3-A CLOSURE COVER PROJECT NO. 07-11-1271 PAGE 30 OF 32

Date	Seam #	Machine ID #	E-Extrusion W-Wedge	Seam Length	Seamer ID	Weld Time		Comments
						Start	Stop	
11/14/2009	TN-34/126	513	E	20	IVAN SANCHEZ	9:27 AM	9:31 AM	
11/14/2009	TN-34/125	513	E	3	IVAN SANCHEZ	9:34 AM	9:35 AM	
11/14/2009	TN-33/125	513	E	20	IVAN SANCHEZ	9:35 AM	9:39 AM	
11/14/2009	TN-33/124	513	E	3	IVAN SANCHEZ	9:40 AM	9:41 AM	
11/14/2009	TN-32/124	513	E	20	IVAN SANCHEZ	9:41 AM	9:46 AM	
11/14/2009	TN-32/123	513	E	3	IVAN SANCHEZ	9:55 AM	9:56 AM	
11/14/2009	TN-31/123	513	E	20	IVAN SANCHEZ	9:56 AM	9:59 AM	
11/14/2009	TN-31/122	513	E	3	IVAN SANCHEZ	10:00 AM	10:01 AM	
11/14/2009	TN-30/122	513	E	20	IVAN SANCHEZ	10:01 AM	10:06 AM	
11/14/2009	TN-30/121	513	E	3	IVAN SANCHEZ	10:09 AM	10:10 AM	
11/14/2009	TN-29/121	513	E	20	IVAN SANCHEZ	10:10 AM	10:16 AM	
11/14/2009	TN-29/120	513	E	3	IVAN SANCHEZ	10:25 AM	10:26 AM	
11/14/2009	TN-28/120	513	E	20	IVAN SANCHEZ	10:26 AM	10:30 AM	
11/14/2009	TN-28/119	513	E	3	IVAN SANCHEZ	10:31 AM	10:32 AM	
11/14/2009	TN-27/119	513	E	20	IVAN SANCHEZ	10:32 AM	10:35 AM	
11/14/2009	TN-27/118	513	E	3	IVAN SANCHEZ	10:36 AM	10:37 AM	
11/14/2009	TN-26/118	513	E	20	IVAN SANCHEZ	10:37 AM	10:42 AM	
11/14/2009	TN-26/117	513	E	3	IVAN SANCHEZ	10:47 AM	10:48 AM	
11/14/2009	TN-25/117	513	E	20	IVAN SANCHEZ	10:48 AM	10:50 AM	
11/14/2009	TN-25/116	513	E	3	IVAN SANCHEZ	10:51 AM	10:52 AM	
11/14/2009	TN-24/116	513	E	20	IVAN SANCHEZ	10:52 AM	10:55 AM	

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

PANEL SEAMING FORM

PROJECT NAME: BASIC REMEDIATION 3-A CLOSURE COVER PROJECT NO. 07-11-1271 PAGE 31 OF 32

Date	Seam #	Machine ID #	E-Extrusion W-Wedge	Seam Length	Seamer ID	Weld Time		Comments
						Start	Stop	
11/14/2009	TN-114/147	13	E	5	BRAULIO R. SILVA	9:05 AM	9:06 AM	
11/14/2009	TN-49/147	13	E	9	BRAULIO R. SILVA	9:07 AM	9:09 AM	
11/14/2009	TN-49/146	13	E	14	BRAULIO R. SILVA	9:10 AM	9:14 AM	
11/14/2009	TN-50/146	13	E	10	BRAULIO R. SILVA	9:15 AM	9:18 AM	
11/14/2009	TN-50/145	13	E	13	BRAULIO R. SILVA	9:29 AM	9:31 AM	
11/14/2009	TN-51/145	13	E	10	BRAULIO R. SILVA	9:34 AM	9:36 AM	
11/14/2009	TN-51/144	13	E	13	BRAULIO R. SILVA	9:38 AM	9:41 AM	
11/14/2009	TN-52/144	13	E	10	BRAULIO R. SILVA	9:44 AM	9:46 AM	
11/14/2009	TN-52/143	13	E	13	BRAULIO R. SILVA	9:48 AM	9:51 AM	
11/14/2009	TN-53/143	13	E	10	BRAULIO R. SILVA	9:53 AM	9:55 AM	
11/14/2009	TN-53/142	13	E	10	BRAULIO R. SILVA	9:57 AM	9:59 AM	
11/14/2009	TN-53/141	13	E	3	BRAULIO R. SILVA	10:00 AM	10:00 AM	
11/14/2009	TN-101/141	13	E	19	BRAULIO R. SILVA	10:01 AM	10:07 AM	
11/14/2009	TN-101/140	13	E	4	BRAULIO R. SILVA	10:25 AM	10:25 AM	
11/14/2009	TN-102/140	13	E	16	BRAULIO R. SILVA	10:26 AM	10:30 AM	
11/14/2009	TN-46/140	13	E	2	BRAULIO R. SILVA	10:32 AM	10:32 AM	
11/14/2009	TN-46/139	13	E	17	BRAULIO R. SILVA	10:32 AM	10:36 AM	
11/14/2009	TN-47/139	13	E	4	BRAULIO R. SILVA	10:37 AM	10:38 AM	
11/14/2009	TN-47/138	13	E	18	BRAULIO R. SILVA	10:50 AM	10:53 AM	
11/14/2009	TN-48/138	13	E	4	BRAULIO R. SILVA	10:54 AM	10:54 AM	
11/14/2009	TN-48/137	13	E	16	BRAULIO R. SILVA	10:55 AM	10:57 AM	

Repair Reports

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

REPAIR REPORT

Project Name: BASIC REMEDIATION 3-A CLOSURE COVER

PROJECT NO. 07-11-1271

PAGE 1 of 9

Repair #	Type of Repair	Panel #	Repair Date	Repair Time	Repair Crew	Machine #	Non-Destructive Test Date	Test Crew	Non-Destructive Test P/F	Comments
R -										
1	DS-08	42/43	10/17/2009	8:35 AM	I.S	513	10/22/2009	L.L	P	6' FROM S TO N
2	PATCH	TN-18/TN-19/40/41	10/17/2009	8:58 AM	I.S	513	10/22/2009	L.L	P	INTERSECTION
3	PATCH	TN-14/TN-18/39/40	10/17/2009	9:24 AM	I.S	513	10/22/2009	L.L	P	INTERSECTION
4	PATCH	TN-13/TN-14/38/39	10/17/2009	9:39 AM	I.S	513	10/22/2009	L.L	P	INTERSECTION
5	PATCH	TN-12/TN-13/37/38	10/17/2009	9:50 AM	I.S	513	10/22/2009	L.L	P	INTERSECTION
6	DS-07	37/38	10/17/2009	1:55 PM	E.B	14	10/22/2009	L.L	P	20' FROM S TO N
7	DS-01	1/2	10/17/2009	1:45 PM	I.S	513	10/22/2009	L.L	P	7' FROM S TO N
8	DS-02	8/9	10/17/2009	8:30 AM	E.B	14	10/22/2009	L.L	P	8' FROM W TO E
9	DS-03	10/11	10/17/2009	8:50 AM	E.B	14	10/22/2009	L.L	P	5' FROM W TO E
10	DS-04	12/15	10/17/2009	9:20 AM	E.B	14	10/22/2009	L.L	P	5' FROM S TO N
11	DS-05	19/24	10/17/2009	10:45 AM	E.B	14	10/22/2009	L.L	P	4' FROM W TO E
12	DS-06	22/23	10/17/2009	2:20 PM	E.B	14	10/22/2009	L.L	P	28' FROM S TO N
13	PATCH	10/11/13/14	10/17/2009	8:42 AM	E.B	14	10/22/2009	L.L	P	INTERSECTION
14	PATCH	10/12/13	10/17/2009	8:35 AM	E.B	14	10/22/2009	L.L	P	INTERSECTION
15	PATCH	8/9/10/12	10/17/2009	8:24 AM	E.B	14	10/22/2009	L.L	P	INTERSECTION
16	PATCH	7/8/12	10/17/2009	8:15 AM	E.B	14	10/22/2009	L.L	P	INTERSECTION
17	PATCH	1/2/3/4/7/12	10/17/2009	8:00 AM	E.B	14	10/22/2009	L.L	P	INTERSECTION
18	PATCH	1/12/15	10/17/2009	9:15 AM	E.B	14	10/22/2009	L.L	P	INTERSECTION
19	PATCH	1/15/21	10/17/2009	9:28 AM	E.B	14	10/22/2009	L.L	P	INTERSECTION
20	PATCH	15/16/21	10/17/2009	9:32 AM	E.B	14	10/22/2009	L.L	P	INTERSECTION
21	PATCH	16/21/22	10/17/2009	9:40 AM	E.B	14	10/22/2009	L.L	P	INTERSECTION

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Repair #	Type of Repair	Panel #	Repair Date	Repair Time	Repair Crew	Machine #	Non-Destructive Test Date	Test Crew	Non-Destructive Test P/F	Comments
R -										
22	PATCH	16/17/22	10/17/2009	9:45 AM	E.B	14	10/22/2009	L.L	P	INTERSECTION
23	PATCH	17/22/23	10/17/2009	9:50 AM	E.B	14	10/22/2009	L.L	P	INTERSECTION
24	PATCH	17/19/23	10/17/2009	10:10 AM	E.B	14	10/22/2009	L.L	P	INTERSECTION
25	PATCH	17/18/19	10/17/2009	10:15 AM	E.B	14	10/22/2009	L.L	P	INTERSECTION
26	PATCH	19/23/24	10/17/2009	10:25 AM	E.B	14	10/22/2009	L.L	P	INTERSECTION
27	PATCH	18/19/20	10/17/2009	10:55 AM	E.B	14	10/22/2009	L.L	P	INTERSECTION
28	PATCH	20/24/26/30	10/17/2009	11:45 AM	E.B	14	10/22/2009	L.L	P	INTERSECTION
29	PATCH	20/30/31	10/17/2009	1:15 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
30	PATCH	20/31/33	10/17/2009	1:17 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
31	PATCH	31/32/33	10/17/2009	1:22 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
32	PATCH	32/33/34	10/17/2009	1:25 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
33	PATCH	24/26/27	10/17/2009	11:30 AM	E.B	14	10/22/2009	L.L	P	INTERSECTION
34	PATCH	24/25/27	10/17/2009	11:15 AM	E.B	14	10/22/2009	L.L	P	INTERSECTION
35	PATCH	25/27/28	10/17/2009	11:10 AM	E.B	14	10/22/2009	L.L	P	INTERSECTION
36	PATCH	25/28/29	10/17/2009	11:05 AM	E.B	14	10/22/2009	L.L	P	INTERSECTION
37	PATCH	26/30/31/32/24	10/17/2009	1:40 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
38	PATCH	26/34/35	10/17/2009	1:50 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
39	PATCH	26/27/28/29	10/17/2009	2:00 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
40	PATCH	26/29/35	10/17/2009	2:07 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
41	DS-13	34/35	10/17/2009	2:30 PM	E.B	14	10/22/2009	L.L	P	12' FROM E TO W
42	PATCH	34/35/36/46	10/17/2009	2:35 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION

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Repair #	Type of Repair	Panel #	Repair Date	Repair Time	Repair Crew	Machine #	Non-Destructive Test Date	Test Crew	Non-Destructive Test P/F	Comments
R -										
43	PATCH	36/46	10/17/2009	2:40 PM	E.B	14	10/22/2009	L.L	P	4' FROM W TO E
44	PATCH	36/37/46/47	10/17/2009	2:45 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
45	PATCH	37/47/48/38	10/17/2009	2:54 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
46	PATCH	38/39/48/49	10/17/2009	3:00 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
47	PATCH	39/40/49/53	10/17/2009	3:13 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
48	PATCH	40/53/54	10/17/2009	3:17 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
49	PATCH	40/41/54	10/17/2009	3:35 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
50	PATCH	41/54/56	10/17/2009	3:39 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
51	PATCH	41/42/56	10/17/2009	3:45 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
52	PATCH	08	10/17/2009	2:55 PM	I.S	513	10/22/2009	L.L	P	2' FROM E TO W
53	PATCH	TN-99/8/9	10/17/2009	3:02 PM	I.S	513	10/22/2009	L.L	P	INTERSECTION
54	PATCH	99/TN-101/9/10	10/17/2009	3:14 PM	I.S	513	10/22/2009	L.L	P	INTERSECTION
55	PATCH	TN-95/12/13	10/19/2009	7:45 AM	I.S	513	10/22/2009	L.L	P	INTERSECTION
56	PATCH	TN-83/34/46	10/19/2009	9:14 AM	I.S	513	10/22/2009	L.L	P	INTERSECTION
57	DS-09	47/48	10/19/2009	9:47 AM	I.S	513	10/23/2009	L.L	P	5' FROM N TO S
58	PATCH	TN-66/54/55	10/19/2009	10:50 AM	I.S	513	10/23/2009	L.L	P	INTERSECTION
59	DS-12	58/59	10/19/2009	12:50 PM	I.S	513	10/23/2009	L.L	P	3' FROM N TO S
60	DS-16	TN-66/54	10/21/2009	9:00 AM	I.S	513	10/23/2009	L.L	P	6' FROM W TO E
61	DS-15	41/42	10/19/2009	12:45 PM	E.B	14	10/22/2009	L.L	P	5' FROM N TO S
62	PATCH	42/56/57	10/19/2009	12:30 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
63	PATCH	42/43/57	10/19/2009	12:35 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION

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Repair #	Type of Repair	Panel #	Repair Date	Repair Time	Repair Crew	Machine #	Non-Destructive Test Date	Test Crew	Non-Destructive Test P/F	Comments
R -										
64	PATCH	43/57/58	10/19/2009	12:40 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
65	PATCH	43/44/58	10/19/2009	1:15 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
66	PATCH	44/58/60	10/19/2009	1:20 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
67	PATCH	44/45/60	10/19/2009	1:25 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
68	PATCH	45/50/51	10/19/2009	1:32 PM	E.B	14	10/24/2009	L.L	P	INTERSECTION
69	DS-11	50/51	10/19/2009	1:40 PM	E.B	14	10/24/2009	L.L	P	10' FROM E TO W
70	PATCH	59/60/61	10/19/2009	1:05 PM	E.B	14	10/24/2009	L.L	P	INTERSECTION
71	PATCH	58/59/60	10/19/2009	1:00 PM	E.B	14	10/24/2009	L.L	P	INTERSECTION
72	PATCH	55/56/57	10/19/2009	12:55 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
73	PATCH	54/55/56	10/19/2009	12:50 PM	E.B	14	10/22/2009	L.L	P	INTERSECTION
74	DS-10	48/49	10/17/2009	3:05 PM	E.B	14	10/22/2009	L.L	P	10' FROM S TO N
75	PATCH	TN-69/57/58	10/19/2009	12:30 PM	I.S	513	10/24/2009	L.L	P	INTERSECTION
76	DS-18	62/66	10/21/2009	8:00 AM	I.S	513	10/24/2009	L.L	P	82' FROM S TO N
77	DS-17	59/61	10/21/2009	8:50 AM	I.S	513	10/24/2009	L.L	P	5' FROM N TO S
78	PATCH	4/5/6	10/21/2009	9:15 AM	I.S	513	10/22/2009	L.L	P	INTERSECTION
79	DS-14	TN-15/02	10/21/2009	10:00 AM	I.S	513	10/22/2009	L.L	P	5' FROM E TO W
80	PATCH	TN-15	10/21/2009	9:22 AM	I.S	513	10/22/2009	L.L	P	4' FROM E TO W
81	PATCH	4/6/7	10/17/2009	8:10 AM	E.B	14	10/22/2009	L.L	P	INTERSECTION
82	PATCH	49/52/53	10/17/2009	3:25 PM	E.B	14	10/23/2009	L.L	P	INTERSECTION
83	DS-21	79/80	10/22/2009	9:30 AM	I.S	513	10/24/2009	L.L	P	10' FROM S TO N
84	PATCH	TN-39/TN-40/78/79	10/22/2009	10:10 AM	I.S	513	10/24/2009	L.L	P	INTERSECTION

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Repair #	Type of Repair	Panel #	Repair Date	Repair Time	Repair Crew	Machine #	Non-Destructive Test Date	Test Crew	Non-Destructive Test P/F	Comments
R -										
85	PATCH	32	10/21/2009	10:30 AM	I.S	513	10/22/2009	L.L	P	10' FROM S TO N
86	PATCH	45/60/61	10/22/2009	10:35 AM	E.B	14	10/22/2009	L.L	P	INTERSECTION
87	PATCH	45/51/61	10/22/2009	10:42 AM	E.B	14	10/24/2009	L.L	P	INTERSECTION
88	PATCH	51/61/62	10/22/2009	10:47 AM	E.B	14	10/24/2009	L.L	P	INTERSECTION
89	PATCH	51/64/62	10/22/2009	10:53 AM	E.B	14	10/24/2009	L.L	P	INTERSECTION
90	PATCH	62/64/66	10/22/2009	10:57 AM	E.B	14	10/24/2009	L.L	P	INTERSECTION
91	DS-20	64/66	10/22/2009	11:10 AM	E.B	14	10/24/2009	L.L	P	4' FROM W TO E
92	PATCH	64/65/66	10/22/2009	11:14 AM	E.B	14	10/24/2009	L.L	P	INTERSECTION
93	PATCH	65/66/69/82	10/22/2009	11:20 AM	E.B	14	10/24/2009	L.L	P	INTERSECTION
94	PATCH	66/82/83	10/22/2009	11:30 AM	E.B	14	10/24/2009	L.L	P	INTERSECTION
95	PATCH	66/83/84/87	10/22/2009	11:50 AM	E.B	14	10/24/2009	L.L	P	INTERSECTION
96	PATCH	82/83/84	10/22/2009	11:40 AM	E.B	14	10/24/2009	L.L	P	INTERSECTION
97	PATCH	TN-36/TN-37/76/77	10/22/2009	10:30 AM	I.S	513	10/24/2009	L.L	P	INTERSECTION
98	PATCH	77	10/22/2009	10:33 AM	I.S	513	10/24/2009	L.L	P	4' FROM S TO N
99	PATCH	77	10/22/2009	10:36 AM	I.S	513	10/24/2009	L.L	P	12' FROM S TO N
100	DS-19	68/74	10/22/2009	1:30 PM	I.S	513	10/24/2009	L.L	P	14' FROM S TO N
101	DS-26	75/89	10/22/2009	1:30 PM	E.B	14	10/24/2009	L.L	P	10' FROM E TO N
102	DS-28	R-101/89	10/22/2009	1:35 PM	E.B	14	10/24/2009	L.L	P	10' FROM E TO W
103	PATCH	TN-76/66/86	10/22/2009	2:04 PM	I.S	513	10/24/2009	L.L	P	INTERSECTION
104	PATCH	66/85/86	10/22/2009	3:16 PM	I.S	513	10/24/2009	L.L	P	INTERSECTION
105	PATCH	66/85/87	10/22/2009	1:20 PM	I.S	513	10/24/2009	L.L	P	INTERSECTION

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Repair #	Type of Repair	Panel #	Repair Date	Repair Time	Repair Crew	Machine #	Non-Destructive Test Date	Test Crew	Non-Destructive Test P/F	Comments
R -										
106	PATCH	86/88/89	10/22/2009	3:25 PM	I.S	513	10/24/2009	L.L	P	INTERSECTION
107	DS-25	94/96	10/22/2009	3:10 PM	I.S	513	10/24/2009	L.L	P	10' FROM N TO S
108	DS-24	89/90	10/22/2009	3:20 PM	I.S	513	10/24/2009	L.L	P	65' FROM S TO N
109	PATCH	75/88/89	10/22/2009	3:30 PM	E.B	14	10/24/2009	L.L	P	INTERSECTION
110	PATCH	75/86/88/101	10/22/2009	3:24 PM	E.B	14	10/24/2009	L.L	P	INTERSECTION
111	PATCH	69/86/101	10/22/2009	1:50 PM	E.B	14	10/24/2009	L.L	P	INTERSECTION
112	PATCH	69/82/84/85/86	10/22/2009	1:40 PM	E.B	14	10/24/2009	L.L	P	INTERSECTION
113	PATCH	69/70/75/101	10/22/2009	2:00 PM	E.B	14	10/24/2009	L.L	P	INTERSECTION
114	PATCH	70/74/75	10/22/2009	2:05 PM	E.B	14	10/24/2009	L.L	P	INTERSECTION
115	PATCH	70/71/72/73/74	10/22/2009	2:10 PM	E.B	14	10/24/2009	L.L	P	INTERSECTION
116	DS-22	80/81	10/22/2009	1:40 PM	I.S	513	10/24/2009	L.L	P	105' FROM S TO N
117	PATCH	68/73/74	10/22/2009	3:10 PM	E.B	14	10/24/2009	L.L	P	INTERSECTION
118	PATCH	67/68/72/73	10/22/2009	3:05 PM	E.B	14	10/24/2009	L.L	P	INTERSECTION
119	PATCH	65/67/71/72	10/22/2009	2:55 PM	E.B	14	10/24/2009	L.L	P	INTERSECTION
120	PATCH	65/70/71	10/22/2009	2:22 PM	E.B	14	10/24/2009	L.L	P	INTERSECTION
121	PATCH	65/69/70	10/22/2009	2:17 PM	E.B	14	10/24/2009	L.L	P	INTERSECTION
122	PATCH	50/51/64	10/22/2009	2:35 PM	E.B	14	10/24/2009	L.L	P	INTERSECTION
123	PATCH	50/63/64	10/22/2009	2:40 PM	E.B	14	10/24/2009	L.L	P	INTERSECTION
124	PATCH	63/64/65	10/22/2009	2:45 PM	E.B	14	10/24/2009	L.L	P	INTERSECTION
125	DS-23	86/88	10/22/2009	3:44 PM	E.B	14	10/24/2009	L.L	P	36' FROM S TO N
126	PATCH	90/91/92/94	10/22/2009	4:10 PM	E.B	14	10/24/2009	L.L	P	INTERSECTION

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Repair #	Type of Repair	Panel #	Repair Date	Repair Time	Repair Crew	Machine #	Non-Destructive Test Date	Test Crew	Non-Destructive Test P/F	Comments
R -										
146	DS-29	103/104	11/13/2009	12:55 PM	E.B	13	11/14/2009	L.L	P	12' FROM S TO N
147	DS-30	104/105	11/13/2009	1:00 PM	E.B	13	11/14/2009	L.L	P	12' FROM S TO N
148	DS-31	109/110	11/13/2009	1:10 PM	E.B	13	11/14/2009	L.L	P	86' FROM S TO N
149	DS-32	110/111	11/13/2009	1:20 PM	E.B	13	11/14/2009	L.L	P	86' FROM S TO N
150	DS-33	113/114	11/13/2009	1:30 PM	E.B	13	11/14/2009	L.L	P	12' FROM S TO N
151	DS-34	114/115	11/13/2009	1:40 PM	E.B	13	11/14/2009	L.L	P	12' FROM S TO N
152	DS-35	119/120	11/13/2009	1:55 PM	E.B	13	11/14/2009	L.L	P	104' FROM S TO N
153	DS-36	120/121	11/13/2009	2:02 PM	E.B	13	11/14/2009	L.L	P	104' FROM S TO N
154	PATCH	128/129/130/131/132/133/134/135 136/137/138/139/140/141/144/145	11/14/2009	8:15 AM	B.R.S	13	11/14/2009	L.L	P	INTERSECTION
155	DS-37	123/124	11/13/2009	3:10 PM	E.B	13	11/14/2009	L.L	P	12' FROM S TO N
156	DS-38	126/127	11/13/2009	3:35 PM	E.B	13	11/14/2009	L.L	P	22' FROM N TO S
157	DS-39	128/129	11/13/2009	3:05 PM	E.B	13	11/14/2009	L.L	P	26' FROM N TO S
158	DS-40	130/131	11/13/2009	2:30 PM	E.B	13	11/14/2009	L.L	P	26' FROM N TO S
159	DS-41	134/135	11/13/2009	2:40 PM	E.B	13	11/14/2009	L.L	P	20' FROM S TO N
160	DS-42	137/138	11/13/2009	3:00 PM	E.B	13	11/14/2009	L.L	P	57' FROM E TO W
161	DS-43	139/140	11/13/2009	2:50 PM	E.B	13	11/14/2009	L.L	P	66' FROM E TO W
162	DS-44	128/145	11/13/2009	3:15 PM	E.B	13	11/14/2009	L.L	P	10' FROM N TO S
163	DS-45	146/147	11/13/2009	3:20 PM	E.B	13	11/14/2009	L.L	P	20' FROM E TO W
164	DS-46	TN-21/113	11/13/2009	4:00 PM	I.S	513	11/14/2009	L.L	P	8' FROM E TO W
165	PATCH	127/128/145/146	11/13/2009	3:45 PM	E.B	13	11/14/2009	L.L	P	INTERSECTION
166	PATCH	TN-45/102	11/13/2009	2:54 PM	I.S	513	11/14/2009	L.L	P	INTERSECTION

Destructive Test Logs

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DESTRUCTIVE TEST LOG

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Date	Sample ID	Seam #	Machine #	Seamer Initials	Peel Values lbs/inch					Shear Values lbs/inch					Pass/Fail	Lab Pass/Fail	Comments	
					Specified Value <u>91</u>					Specified Value <u>120</u>								
10/13/2009	DS-01	1/2	1210	E.B	inner	127	132	124	129	127	167	170	169	169	171	P	P	
					outer	132	132	119	126	123								
10/13/2009	DS-02	8/9	1210	E.B	inner	164	154	127	134	127	182	180	183	180	182	P	P	
					outer	138	147	133	137	124								
10/13/2009	DS-03	10/11	1209	I.S	inner	120	121	122	127	128	173	169	177	174	172	P	P	
					outer	140	139	138	133	132								
10/14/2009	DS-04	12/15	1209	J.C	inner	124	123	121	126	123	178	174	171	170	174	P	P	
					outer	123	123	130	120	121								
10/14/2009	DS-05	19/24	1209	J.C	inner	122	123	112	140	119	157	161	158	160	157	P	P	
					outer	129	112	116	110	128								
10/14/2009	DS-06	22/23	1210	E.B	inner	114	126	129	117	137	166	167	171	171	170	P	P	
					outer	107	112	128	116	114								
10/14/2009	DS-07	37/38	1210	E.B	inner	114	110	116	114	117	153	157	156	155	157	P	P	
					outer	124	124	126	122	116								
10/15/2009	DS-08	42/43	1209	J.C	inner	115	112	126	147	123	157	163	161	163	164	P	P	
					outer	119	118	113	123	116								
10/16/2009	DS-09	47/48	1209	J.C	inner	119	118	110	116	112	151	151	149	153	151	P	P	
					outer	110	120	107	118	126								
10/16/2009	DS-10	48/49	1210	E.B	inner	124	130	114	119	121	156	154	154	156	157	P	P	
					outer	136	110	107	108	111								
10/16/2009	DS-11	50/51	20831	J.C	inner	146	129	137	146	134	149	152	151	153	154	P	P	
					outer	110	118	112	122	126								
10/16/2009	DS-12	58/59	1210	E.B	inner	118	116	119	114	116	154	151	148	153	153	P	P	
					outer	114	111	122	123	110								
10/16/2009	DS-13	34/35	1209	J.C	inner	136	141	142	140	144	148	151	148	147	151	P	P	
					outer	119	127	118	125	133								
10/17/2009	DS-14	TN-15/2	513	I.S	inner	114	134	131	134	131	157	157	161	160	159	P	P	
					outer	~	~	~	~	~								
10/15/2009	DS-15	41/42	1210	E.B	inner	134	118	134	110	127	153	156	157	156	154	P	P	
					outer	114	136	120	112	130								
10/19/2009	DS-16	TN-66/54	513	I.S	inner	127	117	114	118	130	153	151	153	150	152	P	P	
					outer	~	~	~	~	~								
10/19/2009	DS-17	59/61	20831	J.C	inner	138	127	138	128	146	198	206	196	201	197	P	P	
					outer	141	128	150	146	127								

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DESTRUCTIVE TEST LOG

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Date	Sample ID DS-	Seam #	Machine #	Seamer Initials	Peel Values lbs/inch					Shear Values lbs/inch					Pass/Fail	Lab Pass/Fail	Comments	
					inner	outer	Specified Value					inner	outer	Specified Value				
11/10/2009	29	103/104	1209	J.C	inner	126	117	140	124	131	161	166	162	167	161	P	P	
				outer	130	129	131	128	128									
11/10/2009	30	104/105	1210	E.B	inner	123	128	126	123	130	169	167	168	167	168	P	P	
				outer	118	116	130	122	137									
11/10/2009	31	109/110	1209	J.C	inner	117	121	122	118	133	157	162	157	159	160	P	P	
				outer	126	127	126	128	126									
11/10/2009	32	110/111	1210	E.B	inner	112	116	117	121	123	159	161	156	159	154	P	P	
				outer	127	130	134	127	136									
11/10/2009	33	113/114	1209	J.C	inner	126	123	127	126	127	194	183	189	190	184	P	P	
				outer	128	129	124	126	147									
11/10/2009	34	114/115	1210	E.B	inner	143	131	130	134	137	186	185	184	180	183	P	P	
				outer	141	126	123	132	129									
11/11/2009	35	119/120	1209	J.C	inner	130	116	110	117	108	177	175	177	181	172	P	P	
				outer	136	137	126	123	128									
11/11/2009	36	120/121	1210	E.B	inner	137	126	134	128	137	163	163	166	169	164	P	P	
				outer	120	127	123	121	117									
11/11/2009	37	123/124	1209	J.C	inner	121	126	128	124	129	166	169	170	168	171	P	P	
				outer	126	122	126	122	126									
11/11/2009	38	126/127	1210	E.B	inner	139	138	127	132	127	168	162	164	159	168	P	P	
				outer	130	137	119	128	118									
11/11/2009	39	128/129	1209	J.C	inner	144	127	127	140	141	181	176	181	179	181	P	P	
				outer	129	128	131	138	133									
11/11/2009	40	130/131	1210	E.B	inner	146	144	142	140	153	183	179	180	181	180	P	P	
				outer	144	131	136	141	133									
11/12/2009	41	134/135	20831	J.C	inner	162	138	141	147	137	188	184	191	187	189	P	P	
				outer	138	126	133	138	134									
11/12/2009	42	137/138	20831	J.C	inner	141	141	138	137	141	200	197	206	203	201	P	P	
				outer	134	140	139	139	138									
11/12/2009	43	136/140	1210	E.B	inner	149	157	152	158	148	187	186	190	187	188	P	P	
				outer	157	152	146	143	140									
11/13/2009	44	128/145	20831	J.C	inner	157	148	147	137	133	168	171	167	166	168	P	P	
				outer	128	121	126	128	127									
11/13/2009	45	146/147	1210	E.B	inner	128	127	134	134	133	180	175	179	177	176	P	P	
				outer	126	131	126	120	126									

Non-Destructive Testing Forms

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NON-DESTRUCTIVE TESTING FORM

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Date	Seam #	Tester ID	Air Testing				Complete Y/N	V Box Complete Y/N	Location/Comments
			Pressure		Time				
			Start	End	Start	End			
10/15/2009	1/2	BRAULIO R SILVA	30	30	7:15 AM	7:20 AM	Y		
10/15/2009	2/3	BRAULIO R SILVA	30	30	7:16 AM	7:21 AM	Y		
10/15/2009	3/4	BRAULIO R SILVA	30	30	7:17 AM	7:22 AM	Y		
10/15/2009	4/7	BRAULIO R SILVA	30	30	7:21 AM	7:26 AM	Y		
10/15/2009	4/5	BRAULIO R SILVA	30	30	7:19 AM	7:24 AM	Y		
10/15/2009	6/7	BRAULIO R SILVA	30	30	7:20 AM	7:25 AM	Y		
10/15/2009	4/5	BRAULIO R SILVA	30	30	7:36 AM	7:41 AM	Y		
10/15/2009	5/6	BRAULIO R SILVA	30	30	7:35 AM	7:40 AM	Y		
10/15/2009	7/8	BRAULIO R SILVA	30	30	7:47 AM	7:52 AM	Y		
10/22/2009	8/10	LUIS LARA	VT	VT	OK	OK		Y	
10/14/2009	8/9	BRAULIO R SILVA	30	30	3:05 PM	3:10 PM	Y		
10/14/2009	9/10	BRAULIO R SILVA	30	30	3:06 PM	3:11 PM	Y		
10/14/2009	10/11	BRAULIO R SILVA	30	30	3:11 PM	3:16 PM	Y		
10/15/2009	12/13	BRAULIO R SILVA	30	30	8:28 AM	8:33 AM	Y		
10/14/2009	13/14	BRAULIO R SILVA	30	30	3:13 PM	3:18 PM	Y		
10/14/2009	11/14	BRAULIO R SILVA	30	30	3:12 PM	3:17 PM	Y		
10/14/2009	10/13	BRAULIO R SILVA	30	30	3:10 PM	3:15 PM	Y		
10/15/2009	10/12	BRAULIO R SILVA	30	30	7:45 AM	7:50 AM	Y		
10/15/2009	8/12	BRAULIO R SILVA	30	30	7:46 AM	7:51 AM	Y		
10/15/2009	7/12	BRAULIO R SILVA	30	30	7:49 AM	7:54 AM	Y		

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Date	Seam #	Tester ID	Air Testing				Complete Y/N	V Box Complete Y/N	Location/Comments
			Pressure		Time				
			Start	End	Start	End			
10/22/2009	4/12	LUIS LARA	VT	VT	OK	OK		Y	
10/15/2009	1/12	BRAULIO R SILVA	30	30	7:50 AM	7:55 AM	Y		
10/15/2009	12/15	BRAULIO R SILVA	30	30	8:30 AM	8:35 AM	Y		
10/15/2009	15/16	BRAULIO R SILVA	30	30	8:32 AM	8:37 AM	Y		
10/15/2009	16/17	BRAULIO R SILVA	30	30	8:34 AM	8:39 AM	Y		
10/15/2009	17/18	BRAULIO R SILVA	30	30	8:36 AM	8:41 AM	Y		
10/15/2009	17/19	BRAULIO R SILVA	30	30	8:53 AM	8:58 AM	Y		
10/15/2009	18/19	BRAULIO R SILVA	30	30	8:51 AM	8:56 AM	Y		
10/15/2009	19/20	BRAULIO R SILVA	30	30	8:50 AM	8:55 AM	Y		
10/15/2009	18/20	BRAULIO R SILVA	30	30	8:40 AM	8:45 AM	Y		
10/15/2009	1/21	BRAULIO R SILVA	30	30	8:12 AM	8:17 AM	Y		
10/15/2009	21/22	BRAULIO R SILVA	30	30	8:14 AM	8:19 AM	Y		
10/15/2009	22/23	BRAULIO R SILVA	30	30	8:16 AM	8:21 AM	Y		
10/15/2009	23/24	BRAULIO R SILVA	30	30	8:20 AM	8:25 AM	Y		
10/17/2009	24/25	BRAULIO R SILVA	30	30	9:15 AM	9:20 AM	Y		
10/15/2009	26/27	BRAULIO R SILVA	30	30	1:25 PM	1:30 PM	Y		
10/15/2009	27/28	BRAULIO R SILVA	30	30	1:27 PM	1:32 PM	Y		
10/15/2009	28/29	BRAULIO R SILVA	30	30	1:37 PM	1:42 PM	Y		
10/15/2009	25/29	BRAULIO R SILVA	30	30	1:38 PM	1:43 PM	Y		
10/15/2009	29/35	BRAULIO R SILVA	30	30	1:50 PM	1:55 PM	Y		

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Date	Seam #	Tester ID	Air Testing				Complete Y/N	V Box Complete Y/N	Location/Comments
			Pressure		Time				
			Start	End	Start	End			
10/15/2009	26/30	BRAULIO R SILVA	30	30	1:24 PM	1:29 PM	Y		
10/15/2009	30/31	BRAULIO R SILVA	30	30	1:21 PM	1:26 PM	Y		
10/15/2009	31/32	BRAULIO R SILVA	30	30	1:14 PM	1:19 PM	Y		
10/15/2009	32/34	BRAULIO R SILVA	30	30	1:10 PM	1:15 PM	Y		
10/15/2009	20/33	BRAULIO R SILVA	30	30	1:16 PM	1:21 PM	Y		
10/15/2009	33/34	BRAULIO R SILVA	30	30	1:11 PM	1:16 PM	Y		
10/15/2009	32/33	BRAULIO R SILVA	30	30	1:12 PM	1:17 PM	Y		
10/15/2009	31/33	BRAULIO R SILVA	30	30	1:15 PM	1:20 PM	Y		
10/15/2009	20/31	BRAULIO R SILVA	30	30	1:20 PM	1:25 PM	Y		
10/15/2009	20/30	BRAULIO R SILVA	30	30	1:22 PM	1:27 PM	Y		
10/22/2009	20/26	LUIS LARA	VT	VT	OK	OK		Y	
10/15/2009	24/26	BRAULIO R SILVA	30	30	1:30 PM	1:35 PM	Y		
10/15/2009	24/27	BRAULIO R SILVA	30	30	1:31 PM	1:36 PM	Y		
10/15/2009	25/27	BRAULIO R SILVA	30	30	1:33 PM	1:38 PM	Y		
10/15/2009	25/28	BRAULIO R SILVA	30	30	1:35 PM	1:40 PM	Y		
10/15/2009	20/24	BRAULIO R SILVA	30	30	8:21 AM	8:26 AM	Y		
10/15/2009	19/24	BRAULIO R SILVA	30	30	8:20 AM	8:25 AM	Y		
10/15/2009	19/23	BRAULIO R SILVA	30	30	8:06 AM	8:11 AM	Y		
10/15/2009	23/17	BRAULIO R SILVA	30	30	8:05 AM	8:10 AM	Y		
10/15/2009	17/22	BRAULIO R SILVA	30	30	8:04 AM	8:09 AM	Y		

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Date	Seam #	Tester ID	Air Testing				Complete Y/N	V Box Complete Y/N	Location/Comments
			Pressure		Time				
			Start	End	Start	End			
10/15/2009	16/22	BRAULIO R SILVA	30	30	8:03 AM	8:08 AM	Y		
10/15/2009	16/21	BRAULIO R SILVA	30	30	8:02 AM	8:07 AM	Y		
10/15/2009	15/21	BRAULIO R SILVA	30	30	8:01 AM	8:06 AM	Y		
10/15/2009	1/15	BRAULIO R SILVA	30	30	7:55 AM	8:00 AM	Y		
10/15/2009	1/12	BRAULIO R SILVA	30	30	7:50 AM	7:55 AM	Y		
10/22/2009	1/4	LUIS LARA	VT	VT	OK	OK		Y	
10/15/2009	35/36	BRAULIO R SILVA	30	30	1:51 PM	1:56 PM	Y		
10/15/2009	36/37	BRAULIO R SILVA	30	30	1:53 PM	1:58 PM	Y		
10/16/2009	37/38	BRAULIO R SILVA	30	30	7:35 AM	7:40 AM	Y		
10/16/2009	38/39	BRAULIO R SILVA	30	30	7:36 AM	7:41 AM	Y		
10/16/2009	39/40	BRAULIO R SILVA	30	30	7:37 AM	7:42 AM	Y		
10/16/2009	40/41	BRAULIO R SILVA	30	30	7:38 AM	7:43 AM	Y		
10/16/2009	41/42	BRAULIO R SILVA	30	30	7:39 AM	7:44 AM	Y		
10/16/2009	42/43	BRAULIO R SILVA	30	30	7:40 AM	7:45 AM	Y		
10/16/2009	43/44	BRAULIO R SILVA	30	30	8:30 AM	8:35 AM	Y		
10/16/2009	44/45	BRAULIO R SILVA	30	30	8:20 AM	8:25 AM	Y		
10/17/2009	50/51	BRAULIO R SILVA	30	30	7:24 AM	7:29 AM	Y		
10/16/2009	45/51	BRAULIO R SILVA	30	30	2:15 PM	2:20 PM	Y		
10/16/2009	45/50	BRAULIO R SILVA	30	30	2:16 PM	2:21 PM	Y		
10/16/2009	64/46	BRAULIO R SILVA	30	30	1:17 PM	1:22 PM	Y		

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Date	Seam #	Tester ID	Air Testing				Complete Y/N	V Box Complete Y/N	Location/Comments
			Pressure		Time				
			Start	End	Start	End			
10/16/2009	46/47	BRAULIO R SILVA	30	30	1:18 PM	1:23 PM	Y		
10/16/2009	47/48	BRAULIO R SILVA	30	30	1:20 PM	1:25 PM	Y		
10/16/2009	48/49	BRAULIO R SILVA	30	30	1:21 PM	1:26 PM	Y		
10/16/2009	49/53	BRAULIO R SILVA	30	30	1:22 PM	1:27 PM	Y		
10/16/2009	49/52	BRAULIO R SILVA	30	30	1:31 PM	1:36 PM	Y		
10/16/2009	52/53	BRAULIO R SILVA	30	30	1:30 PM	1:35 PM	Y		
10/16/2009	53/54	BRAULIO R SILVA	30	30	1:24 PM	1:29 PM	Y		
10/17/2009	55/56	BRAULIO R SILVA	30	30	9:10 AM	9:15 AM	Y		
10/17/2009	54/56	BRAULIO R SILVA	30	30	8:55 AM	9:00 AM	Y		
10/17/2009	54/55	BRAULIO R SILVA	30	30	9:00 AM	9:05 AM	Y		
10/17/2009	56/57	BRAULIO R SILVA	30	30	8:56 AM	9:01 AM	Y		
10/17/2009	55/57	BRAULIO R SILVA	30	30	9:05 AM	9:10 AM	Y		
10/17/2009	57/58	BRAULIO R SILVA	30	30	8:57 AM	9:02 AM	Y		
10/19/2009	59/60	VICTOR BUITRON	30	30	12:01 PM	12:06 PM	Y		
10/17/2009	58/60	BRAULIO R SILVA	30	30	8:59 AM	9:04 AM	Y		
10/17/2009	58/59	BRAULIO R SILVA	30	30	9:07 AM	9:12 AM	Y		
10/17/2009	45/60	BRAULIO R SILVA	30	30	8:30 AM	8:35 AM	Y		
10/17/2009	44/60	BRAULIO R SILVA	30	30	8:28 AM	8:33 AM	Y		
10/17/2009	44/58	BRAULIO R SILVA	30	30	8:27 AM	8:32 AM	Y		
10/17/2009	43/58	BRAULIO R SILVA	30	30	8:26 AM	8:31 AM	Y		

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Date	Seam #	Tester ID	Air Testing				Complete Y/N	V Box Complete Y/N	Location/Comments
			Pressure		Time				
			Start	End	Start	End			
10/20/2009	51/64	BRAULIO R SILVA	30	30	7:23 AM	7:28 AM	Y		
10/20/2009	50/64	BRAULIO R SILVA	30	30	7:25 AM	7:30 AM	Y		
10/20/2009	50/63	BRAULIO R SILVA	30	30	7:30 AM	7:35 AM	Y		
10/20/2009	63/64	BRAULIO R SILVA	30	30	7:26 AM	7:31 AM	Y		
10/20/2009	64/65	BRAULIO R SILVA	30	30	7:31 AM	7:36 AM	Y		
10/20/2009	63/65	BRAULIO R SILVA	30	30	7:32 AM	7:37 AM	Y		
10/21/2009	60/61	BRAULIO R SILVA	30	30	8:47 AM	8:52 AM	Y		
10/21/2009	59/61	BRAULIO R SILVA	30	30	8:45 AM	8:50 AM	Y		
10/20/2009	61/62	BRAULIO R SILVA	30	30	7:20 AM	7:25 AM	Y		
10/20/2009	62/66	BRAULIO R SILVA	30	30	7:21 AM	7:26 AM	Y		
10/20/2009	65/67	BRAULIO R SILVA	30	30	1:25 PM	1:30 PM	Y		
10/20/2009	67/68	BRAULIO R SILVA	30	30	1:16 PM	1:21 PM	Y		
10/20/2009	68/74	BRAULIO R SILVA	30	30	1:15 PM	1:20 PM	Y		
10/20/2009	69/70	BRAULIO R SILVA	30	30	12:56 PM	1:01 PM	Y		
10/20/2009	70/71	BRAULIO R SILVA	30	30	1:05 PM	1:10 PM	Y		
10/20/2009	71/72	BRAULIO R SILVA	30	30	1:06 PM	1:11 PM	Y		
10/20/2009	72/73	BRAULIO R SILVA	30	30	1:11 PM	1:16 PM	Y		
10/20/2009	73/74	BRAULIO R SILVA	30	30	1:13 PM	1:18 PM	Y		
10/20/2009	65/66	BRAULIO R SILVA	30	30	12:51 PM	12:56 PM	Y		
10/20/2009	64/66	BRAULIO R SILVA	30	30	12:50 PM	12:55 PM	Y		

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Date	Seam #	Tester ID	Air Testing				Complete Y/N	V Box Complete Y/N	Location/Comments
			Pressure		Time				
			Start	End	Start	End			
10/21/2009	69/86	BRAULIO R SILVA	30	30	9:42 AM	9:47 AM	Y		
10/21/2009	69/82	BRAULIO R SILVA	30	30	9:49 AM	9:54 AM	Y		
10/21/2009	82/84	BRAULIO R SILVA	30	30	9:48 AM	9:53 AM	Y		
10/21/2009	82/83	BRAULIO R SILVA	30	30	10:06 AM	10:11 AM	Y		
10/21/2009	83/84	BRAULIO R SILVA	30	30	10:10 AM	10:15 AM	Y		
10/21/2009	84/87	BRAULIO R SILVA	30	30	10:11 AM	10:16 AM	Y		
10/21/2009	84/85	BRAULIO R SILVA	30	30	9:31 AM	9:36 AM	Y		
10/21/2009	85/86	BRAULIO R SILVA	30	30	9:30 AM	9:35 AM	Y		
10/21/2009	85/87	BRAULIO R SILVA	30	30	9:33 AM	9:38 AM	Y		
10/21/2009	66/69	BRAULIO R SILVA	VT	VT	OK	OK		Y	
10/21/2009	66/82	BRAULIO R SILVA	30	30	10:05 AM	10:10 AM	Y		
10/21/2009	66/83	BRAULIO R SILVA	30	30	10:07 AM	10:12 AM	Y		
10/21/2009	66/87	BRAULIO R SILVA	30	30	10:12 AM	10:17 AM	Y		
10/21/2009	66/85	BRAULIO R SILVA	30	30	10:20 AM	10:25 AM	Y		
10/21/2009	66/86	BRAULIO R SILVA	30	30	10:22 AM	10:27 AM	Y		
10/21/2009	86/89	BRAULIO R SILVA	30	30	3:45 PM	3:50 PM	Y		
10/21/2009	86/88	BRAULIO R SILVA	30	30	3:33 PM	3:38 PM	Y		
10/21/2009	88/89	BRAULIO R SILVA	30	30	3:34 PM	3:39 PM	Y		
10/21/2009	89/90	BRAULIO R SILVA	30	30	3:36 PM	3:41 PM	Y		
10/21/2009	90/92	BRAULIO R SILVA	30	30	4:32 PM	4:37 PM	Y		

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Date	Seam #	Tester ID	Air Testing				Complete Y/N	V Box Complete Y/N	Location/Comments
			Pressure		Time				
			Start	End	Start	End			
10/24/2009	TN-43/81	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN-42/81	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN-42/80	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN-40/80	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN-40/79	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN-39/79	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN-39/78	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN-37/78	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN-37/77	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN-36/77	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN-36/76	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN-34/76	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN-34/75	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN-33/75	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN-33/74	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN-31/74	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN-31/68	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN-30/68	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN-30/67	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN-28/67	LUIS LARA	VT	VT	OK	OK			

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Date	Seam #	Tester ID	Air Testing				Complete Y/N	V Box Complete Y/N	Location/Comments
			Pressure		Time				
			Start	End	Start	End			
10/24/2009	TN- 25/50	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 24/50	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 24/45	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 23/45	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 23/44	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 22/44	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 22/43	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 20/43	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 20/42	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 19/42	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 19/41	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 18/40	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 14/39	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 13/38	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 12/37	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 10/36	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 9/35	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 8/29	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 6/25	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 5/24	LUIS LARA	VT	VT	OK	OK		Y	

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

NON-DESTRUCTIVE TESTING FORM

PROJECT NAME: BASIC REMEDIATION 3-A CLOSURE COVER

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Date	Seam #	Tester ID	Air Testing				Complete Y/N	V Box Complete Y/N	Location/Comments
			Pressure		Time				
			Start	End	Start	End			
10/22/2009	TN- 4/23	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 3/22	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 2/21	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 1/1	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 15/2	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 15/3	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 16/3	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 16/4	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 17/4	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 100/4	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 100/5	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 100/6	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 97/06	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 97/7	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 98/7	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 98/8	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 99/8	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 99/9	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 101/9	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 101/10	LUIS LARA	VT	VT	OK	OK		Y	

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

NON-DESTRUCTIVE TESTING FORM

PROJECT NAME: BASIC REMEDIATION 3-A CLOSURE COVER

PROJECT NO. 07-11-1271

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Date	Seam #	Tester ID	Air Testing				Complete Y/N	V Box Complete Y/N	Location/Comments
			Pressure		Time				
			Start	End	Start	End			
10/22/2009	TN- 102/10	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 102/11	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 103/11	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 103/14	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 96/14	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 96/13	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 95/13	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 95/12	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 94/12	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 94/15	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 93/15	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 93/16	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 92/16	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 92/17	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 91/17	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 91/18	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 89/18	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 89/20	LUIS LARA	VT	VT	OK	OK		Y	
10/22/2009	TN- 88/20	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 88/33	LUIS LARA	VT	VT	OK	OK		Y	

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

NON-DESTRUCTIVE TESTING FORM

PROJECT NAME: BASIC REMEDIATION 3-A CLOSURE COVER

PROJECT NO. 07-11-1271

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Date	Seam #	Tester ID	Air Testing				Complete Y/N	V Box Complete Y/N	Location/Comments
			Pressure		Time				
			Start	End	Start	End			
10/24/2009	TN- 82/33	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 82/34	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 83/34	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 83/46	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 84/46	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 84/47	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 85/47	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 85/48	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 86/48	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 86/49	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 87/49	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 87/52	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 87/53	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 65/53	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 65/54	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 66/54	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 66/55	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 68/55	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 68/57	LUIS LARA	VT	VT	OK	OK		Y	
10/24/2009	TN- 69/57	LUIS LARA	VT	VT	OK	OK		Y	

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

NON-DESTRUCTIVE TESTING FORM

PROJECT NAME: BASIC REMEDIATION 3-A CLOSURE COVER

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Date	Seam #	Tester ID	Air Testing				Complete Y/N	V Box Complete Y/N	Location/Comments
			Pressure		Time				
			Start	End	Start	End			
11/14/2009	TN- 24/116	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 24/115	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 23/115	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 23/114	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 22/114	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 22/113	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 21/113	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 21/112	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 20/112	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 20/111	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 14/111	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 14/110	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 15/110	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 15/109	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 16/109	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 16/108	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 17/108	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 17/107	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 18/107	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 18/106	LUIS LARA	VT	VT	OK	OK		Y	

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

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PROJECT NAME: BASIC REMEDIATION 3-A CLOSURE COVER

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Date	Seam #	Tester ID	Air Testing				Complete Y/N	V Box Complete Y/N	Location/Comments
			Pressure		Time				
			Start	End	Start	End			
11/14/2009	TN- 19/106	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 50/106	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 49/106	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 49/105	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 48/105	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 48/104	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 46/104	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 46/103	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 45/103	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 45/102	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 43/102	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 45/136	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 42/136	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 42/135	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 43/135	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 43/134	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 44/134	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 44/133	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 39/133	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 39/132	LUIS LARA	VT	VT	OK	OK		Y	

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

NON-DESTRUCTIVE TESTING FORM

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Date	Seam #	Tester ID	Air Testing				Complete Y/N	V Box Complete Y/N	Location/Comments
			Pressure		Time				
			Start	End	Start	End			
11/14/2009	TN- 40/132	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 40/131	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 41/131	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 41/130	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 38/130	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 38/129	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 37/129	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 37/128	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 36/128	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 36/127	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 35/127	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 35/126	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 34/126	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 34/125	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 33/125	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 33/124	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 32/123	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 31/123	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 31/122	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 30/122	LUIS LARA	VT	VT	OK	OK		Y	

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

NON-DESTRUCTIVE TESTING FORM

PROJECT NAME: BASIC REMEDIATION 3-A CLOSURE COVER

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Date	Seam #	Tester ID	Air Testing				Complete Y/N	V Box Complete Y/N	Location/Comments
			Pressure		Time				
			Start	End	Start	End			
11/14/2009	TN- 30/121	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 29/121	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 29/120	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 28/120	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 28/119	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 27/119	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 27/118	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 26/118	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 26/117	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 25/117	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 25/116	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 24/116	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 114/147	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 49/147	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 49/146	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 50/146	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 50/145	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 51/145	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 51/144	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 52/144	LUIS LARA	VT	VT	OK	OK		Y	

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

NON-DESTRUCTIVE TESTING FORM

PROJECT NAME: BASIC REMEDIATION 3-A CLOSURE COVER

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Date	Seam #	Tester ID	Air Testing				Complete Y/N	V Box Complete Y/N	Location/Comments
			Pressure		Time				
			Start	End	Start	End			
11/14/2009	TN- 52/143	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 53/143	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 53/142	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 53/141	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 101/141	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 101/140	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 102/140	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 46/140	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 46/139	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 47/139	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 47/138	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 48/138	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 48/137	LUIS LARA	VT	VT	OK	OK		Y	
11/14/2009	TN- 45/137	LUIS LARA	VT	VT	OK	OK		Y	
11/16/2009	TN- 114/147	LUIS LARA	VT	VT	OK	OK		Y	
11/16/2009	TN- 114/148	LUIS LARA	VT	VT	OK	OK		Y	
11/16/2009	TN- 115/148	LUIS LARA	VT	VT	OK	OK		Y	
11/16/2009	TN- 115/149	LUIS LARA	VT	VT	OK	OK		Y	
11/16/2009	TN- 116/150	LUIS LARA	VT	VT	OK	OK		Y	
11/16/2009	TN- 118/150	LUIS LARA	VT	VT	OK	OK		Y	

Trial Weld Logs

Inventory Checklist

ENVIRONMENTAL SPECIALTIES INTERNACIONAL, INC.
Material Delivery /
Inventory Checklist

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Date: 11/19/2009

QC ID: VICTOR BUITRON

Project#: 07-11-1271

Project Name: BASIC REMEDIATION

Location: HENDERSON, NV.

Material Type: CLOSURE COVER
60 MIL HDT

Number	Complete Roll Number	Batch Number	Roll Size	USED ON
1	915500-08		410' X 23'	11/16/09
2	951606-08		410' X 23'	11/13/09
3	951615-08		410' X 23'	11/13/09
4	951616-08		410' X 23'	11/16/09
5	951618-08		410' X 23'	11/16/09
6	951621-08		410' X 23'	10/21/09
7	951622-08		410' X 23'	10/20/09
8	951623-08		410' X 23'	10/13/09
9	951624-08		410' X 23'	10/20/09
10	951625-08		410' X 23'	10/20/09
11	951626-08		410' X 23'	10/20/09
12	951627-08		410' X 23'	10/15/09
13	951729-08		410' X 23'	10/14/09
14	951730-08		410' X 23'	10/15/09
15	951731-08		410' X 23'	10/14/09
16	951732-08		410' X 23'	10/15/09
17	951733-08		410' X 23'	10/16/09
18	951734-08		410' X 23'	10/20/09
19	951735-08		410' X 23'	10/14/09
20	951736-08		410' X 23'	10/19/09

ENVIRONMENTAL SPECIALTIES INTERNACIONAL, INC.
Material Delivery /
Inventory Checklist

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Date: 11/19/2009

QC ID: VICTOR BUITRON

Project#: 07-11-1271

Project Name: BASIC REMEDIATION

Location: HENDERSON, NV.

Material Type: CLOSURE COVER
60 MIL HDT

Number	Complete Roll Number	Batch Number	Roll Size	USED ON
21	951737-08		410' X 23'	10/13/09
22	951738-08		410' X 23'	10/15/09
23	951739-08		410' X 23'	10/19/09
24	951740-08		410' X 23'	10/15/09
25	951741-08		410' X 23'	10/16/09
26	951742-08		410' X 23'	10/16/09
27	951743-08		410' X 23'	11/10/09
28	951744-08		410' X 23'	11/10/09
29	951745-08		410' X 23'	10/21/09
30	951746-08		410' X 23'	10/21/09
31	951747-08		410' X 23'	10/22/09
32	951748-08		410' X 23'	10/22/09
33	952101-08		410' X 23'	11/11/09
34	952102-08		410' X 23'	11/10/09
35	952103-08		410' X 23'	10/20/09
36	952104-08		410' X 23'	11/10/09
37	952105-08		410' X 23'	11/12/09
38	952106-08		410' X 23'	11/10/09
39	952107-08		410' X 23'	11/11/09
40	952108-08		410' X 23'	11/11/09

Subgrade Acceptance Certificates

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10/13/09

PROJECT NUMBER: 07-11-1271

TIME: 09:30

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications.

Area Being Accepted: Phase IIIA

From PANEL # (01)
TO PANEL # (14)

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: Dan Street

TITLE: Site Manager

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MELUAE M. UACON

TITLE: FIELD SUPERVISOR

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Chris White

TITLE: ASSISTANT CM

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10/14/09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications.

Area Being Accepted: Phase IIIA

FROM PANEL # (15)
TO PANEL # 28

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: D-Stt

TITLE: Site Manager

SIGNATURE: D-Stt

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CAMPBELL

TITLE: RESIDENT ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Chris White

TITLE: ASSISTANT CM

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10/15/09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

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Area Being Accepted: Phase IIIA

FROM PANEL # (29)
TO PANEL # (75)

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: STUART IRWIN

TITLE: ENGINEERING TECH

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARSON

TITLE: FIELD ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Chris G. [Signature]

TITLE: Assistant CM

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10/16/09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

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Area Being Accepted: Phase IIIA

FROM PANEL # 46
TO PANEL # 60

ESI REPRESENTATIVE:

NAME: ISMAEL BUITON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: STUART IRWIN

TITLE: ENGR. TECH

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: WALTER CRUSA

TITLE: FIELD SUPERVISOR

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Richard Labiniera

TITLE: CONST MANAGER

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10-19-09

PROJECT NUMBER: 07-11-1271

TIME: 07:50

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

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Area Being Accepted: Phase IIIA

From PANEL # (61)
TO PANEL # (66)

ESI REPRESENTATIVE:

ENTACT REPRESENTATIVE:

NAME: ISMAEL BUITRON

NAME: MICHAEL M. CARSON

TITLE: SUPERINTENDENT

TITLE: FIELD OVERSEER

SIGNATURE: [Signature]

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

SUBMITTED TO WESTON SOLUTIONS

NAME: Shant Irwin

NAME: Christina

TITLE: Engineering Technician

TITLE: Assistant Chem

SIGNATURE: [Signature]

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10-20-09

PROJECT NUMBER: 07-11-1271

TIME: 08:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

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Area Being Accepted: Phase IIIA

From PANEL # 67
TO PANEL # 81

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRAN

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: Heart Irwin

TITLE: Engineering Technician

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARLSON

TITLE: FIBER ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Chris White

TITLE: Assistant CM

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10/21/09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

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Area Being Accepted: Phase IIIA

From PANEL # 82
TO PANEL # 96

ESI REPRESENTATIVE:

NAME: ISMAEL BUTTAN

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: Shart twin

TITLE: Engineering Technician

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARLSON

TITLE: FIELD ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Chris White

TITLE: ASSISTANT CHEF

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10-22-09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

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Area Being Accepted: Phase IIIA

From PANEL # 97
TO PANEL # 101

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: Stuart Irwin

TITLE: Engineering Technician

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARSON

TITLE: FIELD ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Chris White

TITLE: Assistant Chem

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU CLOSURE

DATE: 11/10/09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

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Area Being Accepted: Phase II

From PANEL # 102
TO PANEL # 117

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: Dan Street

TITLE: CQA Site Manager

SIGNATURE: Dan Street

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CALDWELL

TITLE: FIELD ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Chris White

TITLE: Assistant CM

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU CLOSURE

DATE: 11/11/09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

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Area Being Accepted: Phase II

From PANEL # 118
TO PANEL # 132

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRAN

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: CAMON LIDDELL

TITLE: SET

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARLSON

TITLE: FIELD ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Chris White

TITLE: Assistant CM

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU CLOSURE

DATE: 11-12-09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

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Area Being Accepted: Phase II

FROM PANEL # 133
TO PANEL # 140

ESI REPRESENTATIVE:

NAME: ISRAEL BUITRAN

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: CAMON LIDDELL

TITLE: SET

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARLSON

TITLE: FIELD ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: CHRIS WITZ

TITLE: ASSISTANT CM

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU CLOSURE

DATE: 11/16/07

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

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Area Being Accepted: Phase II

From PANEL # 148
TO PANEL # 154

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: CAMON LIDDELL

TITLE: SET

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARLSON

TITLE: FIELD ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Richard Lambinger

TITLE: Construction Manager

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU CLOSURE

DATE: 11/13/09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

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Area Being Accepted: Phase II

FROM PANEL # 141
TO PANEL # 147

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: CAMON LIDDELL

TITLE: SET

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARLSON

TITLE: FIELD ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: CHRIS OLSTE

TITLE: ASSISTANT CM

SIGNATURE: [Signature]



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Geomembrane QC Data (CAMU Closure – Phase II Interim Closure Area & Phase IIIA)
Submittal Number:	02770-008H
Specification Section:	Section 02770, Part 1.06, Subpart E
Drawing Number (s):	8, 10, 14, 16, 19, 21, 23, 25, 27, 29, 31, 33, 35-36, 38-45
Page Number:	02770-4
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	12/7/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



875 West Warm Springs Road
 Henderson, Nevada 89011
 Tel (702) 567-0400 · Fax (702) 567-0475

SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehringer
ADDRESS: ENTACT Environmental Services
 Henderson, Nevada 89011

Date: 12/15/2009	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02770-009F	Revision No.: - N/A	Date Submittal Rec'd by BRC: 12/07/2009
---------------------------------------	----------------------------	--

Specification Section(s): 02770.1.05.A.. Geomembrane Warranty

Submittal Subject: Geosynthetics Installer Warranty on Workmanship-(CAMU Closure Phase IIIA & Phase II Interim Area)

- Notations:**
- No Exception Taken
 - Correct as Noted
 - Rejected
 - Revise and Resubmit
 - Submit Specified Items

Review Comments:

Comment	Reference	Comment

Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work

Design Engineer Date Construction Manager Representative Date	BRC Project Manager Date Lee Farris, P.E.
--	---

Distribution: File



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: <u>Basic Remediation Company</u>	DATE: <u>12/7/09</u>
<u>875 West Warm Springs Road</u>	JOB NAME: <u>BRC EASTSIDE COMMON AREAS</u>
<u>Henderson, NV 89011</u>	<u>SOIL REMEDIATION PROJECT</u>
TEL#: <u>(702)-568-2888</u> FAX#: <u>(702)-567-0475</u>	TRANSMITTAL NUMBER: <u>355</u>
ATTENTION: <u>Lee C. Farris, P.E.</u>	ENTACT PROJECT NUMBER: <u>E-7207</u>

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:

SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	12/7/09			Submittal 02770-009F – Geosynthetics Installer Warranty on Workmanship - CAMU Closure Phase IIIA & Phase II Interim Area	RC

ACTION (*)

AR - AS REQUESTED FA - FOR APPROVAL _____

F - FILE RC - REVIEW & COMMENT _____

COMMENTS: Hard copies will be delivered to BRC this evening.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE
 COPY TO: Ranjit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....



<input checked="" type="checkbox"/> No Exception Taken	<input type="checkbox"/> Correct As Noted
<input type="checkbox"/> Revise And Resubmit	<input type="checkbox"/> Submit Specified Item
<input type="checkbox"/> Rejected	
The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.	
Checked By: <u>[Signature]</u>	Date: <u>12/15/09</u>
BRC Initials: <u>[Signature]</u>	
BASIC REMEDIATION COMPANY	

7943 Pecue Lane, Suite A. Baton Rouge, LA 70809

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.
ONE-YEAR INSTALLATION
LIMITED WARRANTY
FOR GEOSYNTHETIC MATERIAL INSTALLATION ONLY

Project: Landwell/Basic Remediation Restoration Project-CAMU Closure (Phase 3A & Phase 2 Interim)

Subject to the terms and conditions set forth below, ESI warrants to Basic Remediation Company that the installation of HDPE membrane liner, geosynthetic clay liner (GCL) and geocomposite sold to Basic Remediation Company pursuant to project number 07-11-1271 at the above referenced Project was performed in a good and workmanlike manner for a period of one year from the date upon which installation was completed.

The Warranty does not cover any damage to the HDPE liner, GCL or geocomposite material, or defects in the HDPE liner, GCL or geocomposite material found to have been a result of misuse, abuse or conditions existing after installation including, but not limited to, malicious mischief; vandalism; sabotage; fire; acts of God; acts of the public enemy; acts of war or public rebellion; severe weather conditions of all types; damage due to any of the following: ice, wind, subsidence, chemicals harmful to the liner, GCL or geocomposite, machinery, foreign objects or animals. The HDPE liner, GCL and geocomposite material will be warranted by the manufacturer only, not Environmental Specialties International, Inc.

In the event circumstances are found to exist which Basic Remediation Company believes may give rise to a claim under the Warranty, the following procedure shall be followed:

- a. Basic Remediation Company shall give ESI written notice of the facts and circumstances of said claim within 10 days of becoming aware of said facts and circumstances. Said notice shall be sent by registered or certified mail, return receipt requested, postage prepaid, addressed to Kevin Simms, ESI 7943 Pecue Lane, Suite A, Baton Rouge, LA 70809. The words "WARRANTY CLAIM" shall be clearly marked on the face of the envelope in the lower right hand corner. Said notice shall contain, at a minimum, the name and address of the owner, the name and address of the installation, the date upon which the installation was completed and the facts known to Basic Remediation Company upon which the claim is based. Failure to provide ESI with timely notice of the claim shall void the Warranty.



TEL: (225) 291-2700 FAX: (225) 291-2788 URL: www.ESILiners.com

- b. Within twenty days after receipt of the notice described in paragraph a, above, ESI shall inspect the allegedly defective HDPE liner, GCL and geocomposite. Basic Remediation Company shall pay the expenses incurred by ESI in making the inspection, including current per diem rates for personnel involved in making the inspection, in the event ESI determines that the claim is not covered by the Warranty.
- c. BASIC REMEDIATION COMPANY SHALL NOT REPAIR, REMOVE, ALTER, OR DISTURB ANY HDPE LINER, GCL OR GEOCOMPOSITE NOR SHALL BASIC REMEDIATION COMPANY ALLOW ANYONE ELSE TO REPAIR, REPLACE, REMOVE, ALTER, OR DISTURB ANY HDPE LINER, GCL OR GEOCOMPOSITE PRIOR TO SUCH INSPECTION PROVIDED; HOWEVER, THAT BASIC REMEDIATION COMPANY MAY TAKE EMERGENCY ACTION NECESSARY TO PREVENT DAMAGE TO PERSONS, PROPERTY OR THE ENVIRONMENT. A FAILURE TO STRICTLY COMPLY WITH THIS PARAGRAPH SHALL VOID THE WARRANTY.
- d. If it is determined that the claim is covered by the Warranty, ESI shall either repair or replace so much of the HDPE liner, GCL and geocomposite as is defective. THE REMEDIES PROVIDED HEREIN ARE THE EXCLUSIVE REMEDIES AVAILABLE UNDER THE WARRANTY. Any determination as to whether the claim is covered by the Warranty or what constitutes the appropriate method of remedying a defect will be made by ESI after consultation with Basic Remediation Company.
- e. Basic Remediation Company agrees that it shall provide ESI with clean, dry and unobstructed access to the damaged or defective HDPE liner, GCL and geocomposite in order for ESI to perform the inspections and repairs, which may be required pursuant to the Warranty. ESI shall not be liable for any costs relating to providing access to the HDPE liner, GCL and geocomposite.

THE REMEDIES PROVIDED TO BASIC REMEDIATION COMPANY HEREIN ARE THE EXCLUSIVE REMEDIES AVAILABLE UNDER THE WARRANTY AND ARE INTENDED FOR THE SOLE BENEFIT OF BASIC REMEDIATION COMPANY. NEITHER THE WARRANTY NOR ANY RIGHTS HEREUNDER SHALL BE ASSIGNABLE. ESI SHALL HAVE NO LIABILITY UNDER THE WARRANTY TO THIRD PARTIES OR STRANGERS TO THIS AGREEMENT. THE WARRANTY SET FORTH ABOVE IS THE ONLY WARRANTY APPLICABLE TO THE HDPE LINER, GCL AND GEOCOMPOSITE AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY OR FITNESS

FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL ESI BE LIABLE IN CONTRACT, TORT OR OTHERWISE FOR ANY DIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES FOR, RESULTING FROM, OR IN CONNECTION WITH, THE USE OF THE HDPE LINER, GCL OR GEOCOMPOSITE. IN THE EVENT THE EXCLUSIVE REMEDY PROVIDED HEREIN FAILS IN ITS ESSENTIAL PURPOSE, AND IN THAT EVENT ONLY, BASIC REMEDIATION COMPANY SHALL BE ENTITLED TO RETURN OF THE PURCHASE PRICE FOR SO MUCH OF THE MATERIAL AS ESI DETERMINES TO HAVE VIOLATED THE WARRANTY PROVIDED HEREIN.

Except for the warranty set forth above, no representation or warranty made by any sales or other representative of ESI, or any other person, concerning the HDPE liner, GCL or geocomposite shall be binding upon ESI.

This warranty shall not be effective until full payment has been made to ESI. Any waiver of the terms and conditions of the Warranty shall be in writing signed by ESI. The failure to insist upon strict compliance with any of the terms and conditions contained herein shall not act as a waiver of strict compliance with all of the remaining terms and conditions of the Warranty and shall not act as a waiver as to any of the terms and conditions of the Warranty as to future claims under the Warranty.

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

By:
Kevin Simms, Vice-President

Date: November 20, 2009

Acceptance: The foregoing Warranty is hereby duly accepted and shall become a binding Warranty upon approval.

Accepted by:

Approved by:

I have read and agree to the terms and conditions of the Warranty.

BY:

BY: (Kevin Simms)

TITLE: Vice-President

TITLE: Vice-President ESI

DATE: 12/17/09

DATE:



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	6389
Submittal Summary:	Geosynthetics Installer Warranty on Workmanship - CAMU Closure: Phase IIIA & Phase II Interim Area
Submittal Number:	02770-009F
Specification Section:	Section 02770, Part 1.05, Subpart B
Drawing Number (s):	8, 10, 14, 16, 19, 21, 23, 25, 27, 29, 31, 33, 35-36, 38-45
Page Number:	02770-3
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	12/7/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.

<input checked="" type="checkbox"/> No Exception Taken	<input type="checkbox"/> Correct As Noted
<input type="checkbox"/> Revise And Resubmit	<input type="checkbox"/> Submit Specified Item
<input type="checkbox"/> Rejected	
The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.	
Checked By: 	Date: 12/19/09
BRC Initials: <u>LLC</u>	
BASIC REMEDIATION COMPANY	



875 West Warm Springs Road
Henderson, Nevada 89011
Tel (702) 567-0400 · Fax (702) 567-0475

SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehringer
ADDRESS: ENTACT Environmental Services
Henderson, Nevada 89011

Date: 12/15/2009	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02770-013F	Revision No.: - N/A	Date Submittal Rec'd by BRC: 12/07/2009
---------------------------------------	----------------------------	--

Specification Section(s): 02770.1.05.A.. Geomembrane Warranty

Submittal Subject: Geomembrane Manufacturer's Warranty- -(CAMU Closure Phase IIIA & Phase II Interim Area)

Notations:

- No Exception Taken
- Correct as Noted
- Rejected
- Revise and Resubmit
- Submit Specified Items

Review Comments:

Comment	Reference	Comment

Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work

 Design Engineer	12/14/09 Date	 BRC Project Manager Lee Farris, P.E.	12/17/09 Date
 Construction Manager Representative	12/15/09 Date		

Distribution: File



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company	DATE: 12/7/09
875 West Warm Springs Road	JOB NAME: BRC EASTSIDE COMMON AREAS
Henderson, NV 89011	SOIL REMEDIATION PROJECT
TEL#: (702)-568-2888 FAX#: (702)-567-0475	TRANSMITTAL NUMBER: 354
ATTENTION: Lee C. Farris, P.E.	ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:

SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	12/7/09			Submittal 02770-013F – Geomembrane Manufacturer Warranty - CAMU Closure: Phase IIIA & Phase II Interim Area	RC

ACTION (*)

AR - AS REQUESTED FA - FOR APPROVAL _____
 F - FILE RC - REVIEW & COMMENT _____

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE
 COPY Ranajit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237
 TO:

If enclosures are not as noted, please notify us at once.....



<input checked="" type="checkbox"/> No Exception Taken	<input type="checkbox"/> Correct As Noted
<input type="checkbox"/> Revise And Resubmit	<input type="checkbox"/> Submit Specified Item
<input type="checkbox"/> Rejected	

The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.

Checked By: [Signature] Date: 12/15/09
 BRC Initials: [Signature]

BASIC REMEDIATION COMPANY

LIMITED MATERIAL WARRANTY

REQUESTED BY: Environmental Specialties, Inc.
 PROJECT: Landwell/Basic Remediation Restoration Project
 CAMU Closure (Phase 3A & Phase 2 Interim)

TYPE MATERIAL: 60 mil HDPE Microspike®
 LOCATION: Henderson, NV

The company, referred to herein as AGRU AMERICA, warrants that AGRU AMERICA liners will correspond to the specifications as indicated in AGRU AMERICA technical records, catalogs, guidelines and test certificates at the time when sold.

AGRU AMERICA warrants that the material is faultless and resistant for a period of twenty (20) years, prorated from the point of time sold when properly installed, covered and used for: Pond, Exposed.

AGRU AMERICA's liability under this warranty is not applicable when damage is caused by:
 -Natural phenomena such as thunderstorms, floods, earthquakes, act's of war or other acts of God;
 -Chemicals which are not suitable for HDPE liners according to chemical resistance guides or from experience.

Further, AGRU AMERICA is not liable for damages due to the misapplication, incorrect installation, and damages resulting from any kind of inadequate handling. In the event that any defects are noticed in the liner, AGRU AMERICA must be notified in writing within thirty (30) days.

AGRU AMERICA shall be given an opportunity to ascertain the cause of damages. AGRU AMERICA reserves the right to decide how damages will be settled.

Under no circumstances will AGRU AMERICA assume liability for consequential damages due to defective liner or incorrect installation. AGRU AMERICA will not be responsible for failures arising from incorrect welding of seams in the installation.

Further, AGRU AMERICA's warranty will be void in the event that the buyer performs repairs or makes alterations without the express approval of AGRU AMERICA in writing. AGRU AMERICA's maximum liability under this warranty will not exceed the purchase price of liner and will only be in force when payment has been made in full and further claims regardless of the legal suppositions are not applicable.

This warranty is only valid on condition that the generally approved technical standards and in particular the guidelines for the installation of the liner are followed and only after full bank funding of this project.

For AGRU AMERICA, Inc.

Paul Barker

Authorized Official

(Date)

Paul W. Barker, Vice President – (11/20/09)



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	6389
Submittal Summary:	Geomembrane Manufacturer Warranty - CAMU Closure: Phase IIIA & Phase II Interim Area
Submittal Number:	02770-013F
Specification Section:	Section 02770, Part 1.05, Subpart A
Drawing Number (s):	8, 10, 14, 16, 19, 21, 23, 25, 27, 29, 31, 33, 35-36, 38-45
Page Number:	02770-3
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	12/7/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.

<input checked="" type="checkbox"/> No Exception Taken	<input type="checkbox"/> Correct As Noted
<input type="checkbox"/> Revise And Resubmit	<input type="checkbox"/> Submit Specified Item <input type="checkbox"/> Rejected
<p>The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.</p>	
Checked By: 	Date: 12/15/09
BRC Initials: ZCF	
BASIC REMEDIATION COMPANY	



875 West Warm Springs Road
 Henderson, Nevada 89011
 Tel (702) 567-0400 · Fax (702) 567-0475

SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehringer
ADDRESS: ENTACT Environmental Services
 Henderson, Nevada 89011

Date: 10/26/2009	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02772-001FF	Revision No.: - N/A	Date Submittal Rec'd by BRC: 10/19/2009
--	----------------------------	--

Specification Section(s): 02772.1.05 -Geosynthetic Clay Liner Submittals

Submittal Subject: Subgrade Acceptance Certificates Phase IIIA Final Closure (Panels 1-60)

- Notations:**
- No Exception Taken
 - Correct as Noted
 - Rejected
 - Revise and Resubmit
 - Submit Specified Items

Review Comments:

Comment	Reference	Comment

Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work

	10/27/09		10/29/09
Design Engineer	Date	BRC Project Manager	Date
	10/27/09		
Construction Manager Representative	Date		

Distribution: File



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company
 875 West Warm Springs Road
 Henderson, NV 89011
 TEL#: (702)-568-2888 FAX#: (702)-567-0475
 ATTENTION: Lee C. Farris, P.E.

DATE: 10/19/09
 JOB NAME: BRC EASTSIDE COMMON AREAS
 SOIL REMEDIATION PROJECT
 TRANSMITTAL NUMBER: 335
 ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	10/19/09			Submittal 02772-001FF - Subgrade Acceptance Certificates - Phase IIIA Final Closure (Panels 1-60)	RC

ACTION (*)

AR - AS REQUESTED	FA - FOR APPROVAL
F - FILE	RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE
 COPY TO: Ranajit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10/13/09

PROJECT NUMBER: 07-11-1271

TIME: 09:30

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications.

Area Being Accepted: Phase IIIA

From PANEL # (01)
TO PANEL # (14)

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: Dan Street

TITLE: Site Manager

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MELUAE M. UACON

TITLE: FIELD SUPERVISOR

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Chris White

TITLE: ASSISTANT CM

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10/14/09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications.

Area Being Accepted: Phase IIIA

FROM PANEL # (15)
TO PANEL # 28

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: D-Stt

TITLE: Site Manager

SIGNATURE: D-Stt

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CAMPBELL

TITLE: RESIDENT ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Chris White

TITLE: ASSISTANT CM

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10/15/09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications.

Area Being Accepted: Phase IIIA

FROM PANEL # 29
TO PANEL # 75

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: STUART IRWIN

TITLE: ENGINEERING TECH

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARSON

TITLE: FIELD ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Chris G. [Signature]

TITLE: Assistant CM

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10/16/09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications.

Area Being Accepted: Phase IIIA

FROM PANEL # 46
TO PANEL # 60

ESI REPRESENTATIVE:

NAME: ISMAEL BUITON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: STUART IRWIN

TITLE: ENGR. TECH

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: WALTER CRUSA

TITLE: FIELD SUPERVISOR

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Richard Labiniere

TITLE: CONST MANAGER

SIGNATURE: [Signature]



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Subgrade Acceptance Certificates - Phase 3A Closure (Panels 1-60)
Submittal Number:	02772-001FF
Specification Section:	Section 02772, Part 3.02, Subpart A
Drawing Number (s):	NA
Page Number:	02772-6
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	10/19/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



875 West Warm Springs Road
Henderson, Nevada 89011
Tel (702) 567-0400 · Fax (702) 567-0475

SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehring
ADDRESS: ENTACT Environmental Services
Henderson, Nevada 89011

Date: 10/28/2009	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02772-001GG	Revision No.: - N/A	Date Submittal Rec'd by BRC: 10/23/2009
--	----------------------------	--

Specification Section(s): 02772.1.05 -Geosynthetic Clay Liner Submittals

Submittal Subject: Subgrade Acceptance Certificates Phase IIIA Final Closure (Panels 61-101)

- Notations:**
- No Exception Taken
 - Correct as Noted
 - Rejected
 - Revise and Resubmit
 - Submit Specified Items

Review Comments:

Comment	Reference	Comment

Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work

<p>Design Engineer Date 10/28/09</p>	<p>BRC Project Manager Date 10/29/09</p>
<p>Construction Manager Representative Date 10/28/09</p>	<p>Lee Farris, P.E.</p>

Distribution: File



699 South Friendswood Drive
Suite 101
Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
ATTENTION: Lee C. Farris, P.E.

DATE: 10/22/09
JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
TRANSMITTAL NUMBER: 339
ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	10/22/09			Submittal 02772-001GG - Subgrade Acceptance Certificates - Phase IIIA Final Closure (Panels 61-101)	RC

ACTION (*)

AR - AS REQUESTED	FA - FOR APPROVAL
F - FILE	RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE
 COPY TO: Ranjit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10-19-09

PROJECT NUMBER: 07-11-1271

TIME: 07:50

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications.

Area Being Accepted: Phase IIIA

From PANEL # (61)
TO PANEL # (66)

ESI REPRESENTATIVE:

ENTACT REPRESENTATIVE:

NAME: ISMAEL BUITRON

NAME: MICHAEL M. CARSON

TITLE: SUPERINTENDENT

TITLE: FIELD OVERSEER

SIGNATURE: [Signature]

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

SUBMITTED TO WESTON SOLUTIONS

NAME: Shant Irwin

NAME: Christina

TITLE: Engineering Technician

TITLE: Assistant Chem

SIGNATURE: [Signature]

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10-20-09

PROJECT NUMBER: 07-11-1271

TIME: 08:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications.

Area Being Accepted: Phase IIIA

From PANEL # 67
TO PANEL # 81

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRAN

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: Heart Irwin

TITLE: Engineering Technician

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARLSON

TITLE: FIBER ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Chris White

TITLE: Assistant CM

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10/21/09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications.

Area Being Accepted: Phase IIIA

From PANEL # 82
TO PANEL # 96

ESI REPRESENTATIVE:

NAME: ISMAEL BUTRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: Shart twin

TITLE: Engineering Technician

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARLSON

TITLE: FIELD ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Chris White

TITLE: ASSISTANT CHEF

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10-22-09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications.

Area Being Accepted: Phase IIIA

From PANEL # 97
TO PANEL # 101

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: Stuart Irwin

TITLE: Engineering Technician

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARSON

TITLE: FIELD ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Chris White

TITLE: Assistant Chem

SIGNATURE: [Signature]



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Subgrade Acceptance Certificates - Phase 3A Closure (Panels 61-101)
Submittal Number:	02772-001GG
Specification Section:	Section 02772, Part 3.02, Subpart A
Drawing Number (s):	NA
Page Number:	02772-6
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	10/22/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehringer
ADDRESS: ENTACT Environmental Services
Henderson, Nevada 89011

Date: 11/16/2009	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02772-001HH	Revision No.: - N/A	Date Submittal Rec'd by BRC: 11/13/2009
--	----------------------------	--

Specification Section(s): 02772.1.05 -Geosynthetic Clay Liner Submittals

Submittal Subject: Subgrade Acceptance Certificates Phase IIIA Final Closure (Panels 102-140)

- Notations:**
- No Exception Taken
 - Correct as Noted
 - Rejected
 - Revise and Resubmit
 - Submit Specified Items

Review Comments:

Comment	Reference	Comment

Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (Including safety), and coordination for performing the Work

 Design Engineer	Date	11/16/09	 BRC Project Manager	Date	11/17/09
 Construction Manager Representative	Date	11/16/09	Lee Farris, P.E		

Distribution: File



875 West Warm Springs Road
Henderson, Nevada 89011
Tel (702) 567-0400 · Fax (702) 567-0475

SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehringer
ADDRESS: ENTACT Environmental Services
Henderson, Nevada 89011

Date: 3/19/2009	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02772-004L	Revision No.: - N/A	Date Submittal Rec'd by BRC: 3/18/2009
---------------------------------------	----------------------------	---

Specification Section(s): 02272-1.03 Geosynthetic Clay Liner Submittals

Submittal Subject: GCL MQC Certificates, (1st Portion of CAMU Closure Allocation)

- Notations:**
- No Exception Taken
 - Correct as Noted
 - Rejected
 - Revise and Resubmit
 - Submit Specified Items

Review Comments:

Comment #	Reference	Comment
1		The material meets requirements of the technical specifications for MQC testing; however CQA testing remains outstanding.

Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work

	3/19/09		3/19/09
Design Engineer	Date	BRC Project Manager	Date
	3/19/09		
Construction Manager Representative	Date		

Distribution: File



699 South Friendswood Drive
Suite 101
Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
ATTENTION: Lee C. Farris, P.E.

DATE: 3/18/09
JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
TRANSMITTAL NUMBER: 237
ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	3/18/09			Submittal 02772-004L- GCL MQC Certificates (1 st Portion of CAMU Closure Allocation)	RC

ACTION (*)

AR - AS REQUESTED

FA - FOR APPROVAL

F - FILE

RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL

MAIL

OVERNIGHT

HAND DELIVERY

FACSIMILE

COPY TO: Ranjit Sahu, Lee Farris

BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....



Date: 3/9/2009
Purchase Order: 9114
ORDER NUMBER: 00238336E

Gregg Abney
ESI-Environmental Specialties INT'l, Inc.
7943 Pecue Lane
Baton Rouge, LA 70809
gabney@esiliners,.com

To Whom it May Concern:

Please find enclosed the MQA/MQC test data package for Geosynthetic Clay Liner shipments to ESI-Environmental Specialties INT'l, Inc..

The enclosed data package includes results of all the MQC tests required by ASTM D5889, with the exception of index flux/hydraulic conductivity. This test, which is run according to ASTM D5887, is normally performed once per production lot (once per week), unless a higher frequency is required by the project specifications. Because of the GCL's low permeability, this test can take several weeks to complete. The index flux/hydraulic conductivity results associated with this lot of material will be provided under separate cover as soon as they are available.

Although the index flux/hydraulic conductivity test results are not yet available, CETCO accepts responsibility for our GCL should the index flux/hydraulic conductivity tests produce unacceptable results. If, upon delivery and prior to installation, individual rolls of GCL are found to be nonconforming to accepted project specifications, CETCO will replace the nonconforming material at no charge.

Questions regarding this information should be directed to Chris Athanassopoulos, Technical Support Engineer, at (847) 851-1831.

Sincerely,

A handwritten signature in black ink, appearing to read 'Roger B. Wilkerson', is written over a horizontal line.

Roger B. Wilkerson
Quality Assurance Coordinator
CETCO Lovell Plant



**GEOSYNTHETIC CLAY LINER
MANUFACTURING QUALITY ASSURANCE DATA PACKAGE**

PROJECT NAME: Landwell
CUSTOMER P.O.: 9114
ORDER NUMBER: 00238336E
PREPARED FOR: ESI-Environmental Specialties INT'l, Inc.

CONTENTS:

- Daily production and needle detection certification
- GCL property specifications
- Order packing list
- GCL MQA tracking form
- GCL manufacturing quality control test data
- Bentonite clay certification
- Raw material test results

PREPARED BY: Roger B. Wilkerson
Quality Assurance Coordinator
CETCO
P.O. Box 428
92 Hwy. 37
Lovell, WY 82431

Telephone: 800-322-1149 ext. 413
Fax:
E-Mail: rwilke@cetco.com



PRODUCTION CERTIFICATION

PROJECT NAME: Landwell
CUSTOMER P.O.: 9114
PREPARED FOR: ESI-Environmental Specialties INT'l, Inc.

CETCO affirms that these products meet the physical and chemical criteria listed on the attached GCL property specification sheet.

NEEDLE REMOVAL AND DETECTION PROCEDURE

CETCO hereby affirms that all Bentomat[®] geosynthetic clay liner material manufactured for this project is continually passed under a magnet for needle removal and then screened with a metal detection device. CETCO certifies Bentomat[®] to be essentially free of broken needles and fragments of needles that would negatively effect the performance of the final product.

A handwritten signature in black ink, appearing to read 'Roger B. Wilkerson', is written over a horizontal line.

Roger B. Wilkerson
Quality Assurance Coordinator
Colloid Environmental Technologies Co. (CETCO)



Ship Date: 3/8/2009

Order Number: 00238336E

Prepared For: ESI-Environmental Specialties INT'l, Inc.

The GCL raw materials and GCL finished product manufactured for the above-referenced order number(s) are hereby certified to achieve the properties listed in the tables below.

GCL PROPERTY SPECIFICATIONS FOR BENTOMAT DN

Test Method	Test Method Property	Test Frequency	Certified Value
ASTM D 5891	Bentonite Fluid Loss	1 per 50 Tons	18 ml Max
ASTM D 5993	Bentonite Mass/Area	40,000 sq ft (4000 sq m)	0.75 lb /sq ft (3.6 kg/sq m) Min
ASTM D 5890	Bentonite Swell Index	1 per 50 Tons	24 ml/2g Min
ASTM D 6768	GCL Grab Strength	200,000 sq ft (20,000 sq m)	50 lbs/in MARV
ASTM D 6243	GCL Hydrated Internal Shear Strength	Periodic	500 psf (48 kPa) typ @ 200 psf
ASTM D 5887	GCL Hydraulic Conductivity	Weekly	5 x 10 ⁻⁹ cm/ sec Max
ASTM D 5887	GCL Index Flux	Weekly	1 x 10 ⁻⁸ m ³ /m ² /sec Max
ASTM D 6496	GCL Peel Strength	40,000 sq ft (4000 sq m)	3.5 lbs/in Min
ASTM D4632*	Grab Strength*modified with 4-inch grips	200,000 sq ft (20,000 sq m)	150 lbs (660 N) MARV
ASTM D4632*	Peel Strength*modified with 4-inch grips	40,000 sq ft (4000 sq m)	15 lbs (65 N) Min

SPECIALY REQUESTED CERTIFIED PROPERTIES FOR THIS ORDER OF BENTOMAT DN

Test Method	Test Method Property	Requested Frequency	Requested Value	Requested Conditions
ASTM D 5887	GCL Index Flux	1/200,000 sqft	Standard	Standard
ASTM D 4643	GCL Moisture	Standard	30% Moisture (max)	Standard

Bentonite property tests are performed at a bentonite processing facility before shipment to CETCO's production facility. All tensile testing is in the machine direction.

FABRIC SUPPLIER REQUIREMENTS FOR BENTOMAT DN

Raw Material	test method	mass per area	units
Nonwoven Cover Fabric	ASTM D 5261	6.0	oz/yd2
Bentomat DN Base Nonwoven Fabric	ASTM D 5261	6.0	oz/yd2

Fabric certifications from our raw material suppliers are on file at our production facility.



CETCO's MQA laboratory is GAI-accredited (www.geosynthetic-institute.org/gai/lab.html).

Roger B. Wilkerson
 Quality Assurance Coordinator
 CETCO Lovell Plant



GCL ORDER PACKING LIST

GCL shipped for certification package number 00238336E

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336E	LO-BENTOMAT DN	200910LO	00001142	200	14.5	2900	3770
00238336E	LO-BENTOMAT DN	200910LO	00001143	200	14.5	2900	3680
00238336E	LO-BENTOMAT DN	200910LO	00001144	200	14.5	2900	3640
00238336E	LO-BENTOMAT DN	200910LO	00001145	200	14.5	2900	3680
00238336E	LO-BENTOMAT DN	200910LO	00001146	200	14.5	2900	3620
00238336E	LO-BENTOMAT DN	200910LO	00001147	200	14.5	2900	3625
00238336E	LO-BENTOMAT DN	200910LO	00001148	200	14.5	2900	3640
00238336E	LO-BENTOMAT DN	200910LO	00001149	200	14.5	2900	3715
00238336E	LO-BENTOMAT DN	200910LO	00001150	200	14.5	2900	3710
00238336E	LO-BENTOMAT DN	200910LO	00001151	200	14.5	2900	3715
00238336E	LO-BENTOMAT DN	200910LO	00001152	200	14.5	2900	3705
00238336E	LO-BENTOMAT DN	200910LO	00001153	200	14.5	2900	3705
00238336E	LO-BENTOMAT DN	200910LO	00001154	200	14.5	2900	3710
00238336E	LO-BENTOMAT DN	200910LO	00001155	200	14.5	2900	3735
00238336E	LO-BENTOMAT DN	200910LO	00001156	200	14.5	2900	3740
00238336E	LO-BENTOMAT DN	200910LO	00001157	200	14.5	2900	3610
00238336E	LO-BENTOMAT DN	200910LO	00001158	200	14.5	2900	3615
00238336E	LO-BENTOMAT DN	200910LO	00001159	200	14.5	2900	3655
00238336E	LO-BENTOMAT DN	200910LO	00001160	200	14.5	2900	3630
00238336E	LO-BENTOMAT DN	200910LO	00001161	200	14.5	2900	3620
00238336E	LO-BENTOMAT DN	200910LO	00001162	200	14.5	2900	3615
00238336E	LO-BENTOMAT DN	200910LO	00001163	200	14.5	2900	3630
00238336E	LO-BENTOMAT DN	200910LO	00001164	200	14.5	2900	3560
00238336E	LO-BENTOMAT DN	200910LO	00001165	200	14.5	2900	3610
00238336E	LO-BENTOMAT DN	200910LO	00001166	200	14.5	2900	3625
00238336E	LO-BENTOMAT DN	200910LO	00001167	200	14.5	2900	3630
00238336E	LO-BENTOMAT DN	200910LO	00001168	200	14.5	2900	3675

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336E	LO-BENTOMAT DN	200910LO	00001169	200	14.5	2900	3620
00238336E	LO-BENTOMAT DN	200910LO	00001170	200	14.5	2900	3620
00238336E	LO-BENTOMAT DN	200910LO	00001171	200	14.5	2900	3600
00238336E	LO-BENTOMAT DN	200910LO	00001172	200	14.5	2900	3615
00238336E	LO-BENTOMAT DN	200910LO	00001173	200	14.5	2900	3610
00238336E	LO-BENTOMAT DN	200910LO	00001174	200	14.5	2900	3625
00238336E	LO-BENTOMAT DN	200910LO	00001175	200	14.5	2900	3630
00238336E	LO-BENTOMAT DN	200910LO	00001176	200	14.5	2900	3635
00238336E	LO-BENTOMAT DN	200910LO	00001177	200	14.5	2900	3640
00238336E	LO-BENTOMAT DN	200910LO	00001178	200	14.5	2900	3615
00238336E	LO-BENTOMAT DN	200910LO	00001179	200	14.5	2900	3665
00238336E	LO-BENTOMAT DN	200910LO	00001180	200	14.5	2900	3650
00238336E	LO-BENTOMAT DN	200910LO	00001181	200	14.5	2900	3685
00238336E	LO-BENTOMAT DN	200910LO	00001182	200	14.5	2900	3670
00238336E	LO-BENTOMAT DN	200910LO	00001183	200	14.5	2900	3640
00238336E	LO-BENTOMAT DN	200910LO	00001184	200	14.5	2900	3625
00238336E	LO-BENTOMAT DN	200910LO	00001185	200	14.5	2900	3620
00238336E	LO-BENTOMAT DN	200910LO	00001186	200	14.5	2900	3605
00238336E	LO-BENTOMAT DN	200910LO	00001187	200	14.5	2900	3580
00238336E	LO-BENTOMAT DN	200910LO	00001188	200	14.5	2900	3565
00238336E	LO-BENTOMAT DN	200910LO	00001189	200	14.5	2900	3580
00238336E	LO-BENTOMAT DN	200910LO	00001190	200	14.5	2900	3565
00238336E	LO-BENTOMAT DN	200910LO	00001191	200	14.5	2900	3560
00238336E	LO-BENTOMAT DN	200910LO	00001192	200	14.5	2900	3570
00238336E	LO-BENTOMAT DN	200910LO	00001193	200	14.5	2900	3565
00238336E	LO-BENTOMAT DN	200910LO	00001194	200	14.5	2900	3570
00238336E	LO-BENTOMAT DN	200910LO	00001195	200	14.5	2900	3575
00238336E	LO-BENTOMAT DN	200910LO	00001196	200	14.5	2900	3520
00238336E	LO-BENTOMAT DN	200910LO	00001197	200	14.5	2900	3520
00238336E	LO-BENTOMAT DN	200910LO	00001198	200	14.5	2900	3500
00238336E	LO-BENTOMAT DN	200910LO	00001199	200	14.5	2900	3505
00238336E	LO-BENTOMAT DN	200910LO	00001200	200	14.5	2900	3515

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336E	LO-BENTOMAT DN	200910LO	00001201	200	14.5	2900	3445
00238336E	LO-BENTOMAT DN	200910LO	00001202	200	14.5	2900	3475
00238336E	LO-BENTOMAT DN	200910LO	00001203	200	14.5	2900	3465
00238336E	LO-BENTOMAT DN	200910LO	00001204	200	14.5	2900	3475
00238336E	LO-BENTOMAT DN	200910LO	00001205	200	14.5	2900	3495
00238336E	LO-BENTOMAT DN	200910LO	00001206	200	14.5	2900	3500
00238336E	LO-BENTOMAT DN	200910LO	00001207	200	14.5	2900	3470
00238336E	LO-BENTOMAT DN	200910LO	00001208	200	14.5	2900	3485
00238336E	LO-BENTOMAT DN	200910LO	00001209	200	14.5	2900	3480
00238336E	LO-BENTOMAT DN	200910LO	00001210	200	14.5	2900	3465
00238336E	LO-BENTOMAT DN	200910LO	00001211	200	14.5	2900	3470
00238336E	LO-BENTOMAT DN	200910LO	00001212	200	14.5	2900	3485
00238336E	LO-BENTOMAT DN	200910LO	00001213	200	14.5	2900	3475
00238336E	LO-BENTOMAT DN	200910LO	00001214	200	14.5	2900	3445
00238336E	LO-BENTOMAT DN	200910LO	00001215	200	14.5	2900	3435
00238336E	LO-BENTOMAT DN	200910LO	00001216	200	14.5	2900	3445
00238336E	LO-BENTOMAT DN	200910LO	00001217	200	14.5	2900	3440
00238336E	LO-BENTOMAT DN	200910LO	00001218	200	14.5	2900	3455
00238336E	LO-BENTOMAT DN	200910LO	00001219	200	14.5	2900	3465
00238336E	LO-BENTOMAT DN	200910LO	00001220	200	14.5	2900	3570
00238336E	LO-BENTOMAT DN	200910LO	00001221	200	14.5	2900	3460
00238336E	LO-BENTOMAT DN	200910LO	00001222	200	14.5	2900	3435
00238336E	LO-BENTOMAT DN	200910LO	00001223	200	14.5	2900	3440
00238336E	LO-BENTOMAT DN	200910LO	00001224	200	14.5	2900	3440
00238336E	LO-BENTOMAT DN	200910LO	00001225	200	14.5	2900	3435
00238336E	LO-BENTOMAT DN	200910LO	00001226	200	14.5	2900	3415
00238336E	LO-BENTOMAT DN	200910LO	00001227	200	14.5	2900	3440
00238336E	LO-BENTOMAT DN	200910LO	00001228	200	14.5	2900	3445
00238336E	LO-BENTOMAT DN	200910LO	00001229	200	14.5	2900	3450
00238336E	LO-BENTOMAT DN	200910LO	00001230	200	14.5	2900	3480
00238336E	LO-BENTOMAT DN	200910LO	00001231	200	14.5	2900	3490
00238336E	LO-BENTOMAT DN	200910LO	00001232	200	14.5	2900	3505

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336E	LO-BENTOMAT DN	200910LO	00001233	200	14.5	2900	3500
00238336E	LO-BENTOMAT DN	200910LO	00001234	200	14.5	2900	3515
00238336E	LO-BENTOMAT DN	200910LO	00001235	200	14.5	2900	3440
00238336E	LO-BENTOMAT DN	200910LO	00001236	200	14.5	2900	3475
00238336E	LO-BENTOMAT DN	200910LO	00001237	200	14.5	2900	3500
00238336E	LO-BENTOMAT DN	200910LO	00001238	200	14.5	2900	3465
00238336E	LO-BENTOMAT DN	200910LO	00001239	200	14.5	2900	3550
00238336E	LO-BENTOMAT DN	200910LO	00001240	200	14.5	2900	3500
00238336E	LO-BENTOMAT DN	200910LO	00001241	200	14.5	2900	3485
00238336E	LO-BENTOMAT DN	200910LO	00001242	200	14.5	2900	3480
00238336E	LO-BENTOMAT DN	200910LO	00001243	200	14.5	2900	3475
00238336E	LO-BENTOMAT DN	200910LO	00001244	200	14.5	2900	3545
00238336E	LO-BENTOMAT DN	200910LO	00001245	200	14.5	2900	3530
00238336E	LO-BENTOMAT DN	200910LO	00001246	200	14.5	2900	3525
00238336E	LO-BENTOMAT DN	200910LO	00001247	200	14.5	2900	3530
00238336E	LO-BENTOMAT DN	200910LO	00001248	200	14.5	2900	3545
00238336E	LO-BENTOMAT DN	200910LO	00001249	200	14.5	2900	3530
00238336E	LO-BENTOMAT DN	200910LO	00001250	200	14.5	2900	3575
00238336E	LO-BENTOMAT DN	200910LO	00001251	200	14.5	2900	3570
00238336E	LO-BENTOMAT DN	200910LO	00001252	200	14.5	2900	3590
00238336E	LO-BENTOMAT DN	200910LO	00001253	200	14.5	2900	3615
00238336E	LO-BENTOMAT DN	200910LO	00001254	200	14.5	2900	3590
00238336E	LO-BENTOMAT DN	200910LO	00001255	200	14.5	2900	3570
00238336E	LO-BENTOMAT DN	200910LO	00001256	200	14.5	2900	3600
00238336E	LO-BENTOMAT DN	200910LO	00001257	200	14.5	2900	3595
00238336E	LO-BENTOMAT DN	200910LO	00001258	200	14.5	2900	3590
00238336E	LO-BENTOMAT DN	200910LO	00001259	200	14.5	2900	3620
00238336E	LO-BENTOMAT DN	200910LO	00001260	200	14.5	2900	3580
00238336E	LO-BENTOMAT DN	200910LO	00001261	200	14.5	2900	3585
00238336E	LO-BENTOMAT DN	200910LO	00001262	200	14.5	2900	3575
00238336E	LO-BENTOMAT DN	200910LO	00001263	200	14.5	2900	3560
00238336E	LO-BENTOMAT DN	200910LO	00001264	200	14.5	2900	3550

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336E	LO-BENTOMAT DN	200910LO	00001265	200	14.5	2900	3515
00238336E	LO-BENTOMAT DN	200910LO	00001266	200	14.5	2900	3510
00238336E	LO-BENTOMAT DN	200910LO	00001267	200	14.5	2900	3520
00238336E	LO-BENTOMAT DN	200910LO	00001268	200	14.5	2900	3560
00238336E	LO-BENTOMAT DN	200910LO	00001269	200	14.5	2900	3570
00238336E	LO-BENTOMAT DN	200910LO	00001270	200	14.5	2900	3560
00238336E	LO-BENTOMAT DN	200910LO	00001271	200	14.5	2900	3585
00238336E	LO-BENTOMAT DN	200910LO	00001272	200	14.5	2900	3550
00238336E	LO-BENTOMAT DN	200910LO	00001273	200	14.5	2900	3535
00238336E	LO-BENTOMAT DN	200910LO	00001274	200	14.5	2900	3520
00238336E	LO-BENTOMAT DN	200910LO	00001275	200	14.5	2900	3520
00238336E	LO-BENTOMAT DN	200910LO	00001276	200	14.5	2900	3530
00238336E	LO-BENTOMAT DN	200910LO	00001277	200	14.5	2900	3515
00238336E	LO-BENTOMAT DN	200910LO	00001278	200	14.5	2900	3510
00238336E	LO-BENTOMAT DN	200910LO	00001279	200	14.5	2900	3545
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00238336E	LO-BENTOMAT DN	200910LO	00001281	200	14.5	2900	3530
00238336E	LO-BENTOMAT DN	200910LO	00001282	200	14.5	2900	3540
00238336E	LO-BENTOMAT DN	200910LO	00001283	200	14.5	2900	3535
00238336E	LO-BENTOMAT DN	200910LO	00001284	200	14.5	2900	3555
00238336E	LO-BENTOMAT DN	200910LO	00001285	200	14.5	2900	3550
00238336E	LO-BENTOMAT DN	200910LO	00001286	200	14.5	2900	3560
00238336E	LO-BENTOMAT DN	200910LO	00001287	200	14.5	2900	3535
00238336E	LO-BENTOMAT DN	200910LO	00001288	200	14.5	2900	3580
00238336E	LO-BENTOMAT DN	200910LO	00001289	200	14.5	2900	3585
00238336E	LO-BENTOMAT DN	200910LO	00001290	200	14.5	2900	3580
00238336E	LO-BENTOMAT DN	200910LO	00001291	200	14.5	2900	3575
00238336E	LO-BENTOMAT DN	200910LO	00001292	200	14.5	2900	3555
00238336E	LO-BENTOMAT DN	200910LO	00001293	200	14.5	2900	3605
00238336E	LO-BENTOMAT DN	200910LO	00001294	200	14.5	2900	3605
00238336E	LO-BENTOMAT DN	200910LO	00001295	200	14.5	2900	3625
00238336E	LO-BENTOMAT DN	200910LO	00001296	200	14.5	2900	3560

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336E	LO-BENTOMAT DN	200910LO	00001297	200	14.5	2900	3535
00238336E	LO-BENTOMAT DN	200910LO	00001298	200	14.5	2900	3560
00238336E	LO-BENTOMAT DN	200910LO	00001299	200	14.5	2900	3535
00238336E	LO-BENTOMAT DN	200910LO	00001300	200	14.5	2900	3590
00238336E	LO-BENTOMAT DN	200910LO	00001301	200	14.5	2900	3525
00238336E	LO-BENTOMAT DN	200910LO	00001302	200	14.5	2900	3520
00238336E	LO-BENTOMAT DN	200910LO	00001303	200	14.5	2900	3505
00238336E	LO-BENTOMAT DN	200910LO	00001304	200	14.5	2900	3520
00238336E	LO-BENTOMAT DN	200910LO	00001305	200	14.5	2900	3565
00238336E	LO-BENTOMAT DN	200910LO	00001306	200	14.5	2900	3515
00238336E	LO-BENTOMAT DN	200910LO	00001307	200	14.5	2900	3510
00238336E	LO-BENTOMAT DN	200910LO	00001308	200	14.5	2900	3545
00238336E	LO-BENTOMAT DN	200910LO	00001309	200	14.5	2900	3520
00238336E	LO-BENTOMAT DN	200910LO	00001310	200	14.5	2900	3510
00238336E	LO-BENTOMAT DN	200910LO	00001311	200	14.5	2900	3520
00238336E	LO-BENTOMAT DN	200910LO	00001312	200	14.5	2900	3560
00238336E	LO-BENTOMAT DN	200910LO	00001313	200	14.5	2900	3575
00238336E	LO-BENTOMAT DN	200910LO	00001314	200	14.5	2900	3560
00238336E	LO-BENTOMAT DN	200910LO	00001315	200	14.5	2900	3565
00238336E	LO-BENTOMAT DN	200910LO	00001316	200	14.5	2900	3535
00238336E	LO-BENTOMAT DN	200910LO	00001317	200	14.5	2900	3565
00238336E	LO-BENTOMAT DN	200910LO	00001318	200	14.5	2900	3630
00238336E	LO-BENTOMAT DN	200910LO	00001319	200	14.5	2900	3680
00238336E	LO-BENTOMAT DN	200910LO	00001320	200	14.5	2900	3685
00238336E	LO-BENTOMAT DN	200910LO	00001321	200	14.5	2900	3690
00238336E	LO-BENTOMAT DN	200910LO	00001322	200	14.5	2900	3720
00238336E	LO-BENTOMAT DN	200910LO	00001323	200	14.5	2900	3715
00238336E	LO-BENTOMAT DN	200910LO	00001324	200	14.5	2900	3740
00238336E	LO-BENTOMAT DN	200910LO	00001325	200	14.5	2900	3745
00238336E	LO-BENTOMAT DN	200910LO	00001326	200	14.5	2900	3730
00238336E	LO-BENTOMAT DN	200910LO	00001327	200	14.5	2900	3720
00238336E	LO-BENTOMAT DN	200910LO	00001328	200	14.5	2900	3715

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336E	LO-BENTOMAT DN	200910LO	00001329	200	14.5	2900	3720
00238336E	LO-BENTOMAT DN	200910LO	00001330	200	14.5	2900	3715
00238336E	LO-BENTOMAT DN	200910LO	00001331	200	14.5	2900	3700
00238336E	LO-BENTOMAT DN	200910LO	00001332	200	14.5	2900	3705
00238336E	LO-BENTOMAT DN	200910LO	00001333	200	14.5	2900	3695
00238336E	LO-BENTOMAT DN	200910LO	00001334	200	14.5	2900	3740
00238336E	LO-BENTOMAT DN	200910LO	00001335	200	14.5	2900	3750
00238336E	LO-BENTOMAT DN	200910LO	00001336	200	14.5	2900	3715
00238336E	LO-BENTOMAT DN	200910LO	00001337	200	14.5	2900	3700
00238336E	LO-BENTOMAT DN	200910LO	00001338	200	14.5	2900	3730
00238336E	LO-BENTOMAT DN	200910LO	00001339	200	14.5	2900	3800
00238336E	LO-BENTOMAT DN	200910LO	00001340	200	14.5	2900	3700
00238336E	LO-BENTOMAT DN	200910LO	00001341	200	14.5	2900	3715
00238336E	LO-BENTOMAT DN	200910LO	00001342	200	14.5	2900	3720
00238336E	LO-BENTOMAT DN	200910LO	00001343	200	14.5	2900	3705
00238336E	LO-BENTOMAT DN	200910LO	00001344	200	14.5	2900	3710
00238336E	LO-BENTOMAT DN	200910LO	00001345	200	14.5	2900	3705
00238336E	LO-BENTOMAT DN	200910LO	00001346	200	14.5	2900	3655
00238336E	LO-BENTOMAT DN	200910LO	00001347	200	14.5	2900	3640
00238336E	LO-BENTOMAT DN	200910LO	00001348	200	14.5	2900	3665
00238336E	LO-BENTOMAT DN	200910LO	00001349	200	14.5	2900	3670
00238336E	LO-BENTOMAT DN	200910LO	00001350	200	14.5	2900	3660
00238336E	LO-BENTOMAT DN	200910LO	00001351	200	14.5	2900	3670
00238336E	LO-BENTOMAT DN	200910LO	00001352	200	14.5	2900	3645
00238336E	LO-BENTOMAT DN	200910LO	00001353	200	14.5	2900	3620
00238336E	LO-BENTOMAT DN	200910LO	00001354	200	14.5	2900	3635
00238336E	LO-BENTOMAT DN	200910LO	00001355	200	14.5	2900	3640
00238336E	LO-BENTOMAT DN	200910LO	00001356	200	14.5	2900	3685
00238336E	LO-BENTOMAT DN	200910LO	00001357	200	14.5	2900	3640
00238336E	LO-BENTOMAT DN	200910LO	00001358	200	14.5	2900	3665
00238336E	LO-BENTOMAT DN	200910LO	00001359	200	14.5	2900	3630
00238336E	LO-BENTOMAT DN	200910LO	00001360	200	14.5	2900	3575

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336E	LO-BENTOMAT DN	200910LO	00001361	200	14.5	2900	3590
00238336E	LO-BENTOMAT DN	200910LO	00001362	200	14.5	2900	3625
00238336E	LO-BENTOMAT DN	200910LO	00001363	200	14.5	2900	3605
00238336E	LO-BENTOMAT DN	200910LO	00001364	200	14.5	2900	3615
00238336E	LO-BENTOMAT DN	200910LO	00001365	200	14.5	2900	3660
00238336E	LO-BENTOMAT DN	200910LO	00001366	200	14.5	2900	3645
00238336E	LO-BENTOMAT DN	200910LO	00001367	200	14.5	2900	3685
00238336E	LO-BENTOMAT DN	200910LO	00001368	200	14.5	2900	3650
00238336E	LO-BENTOMAT DN	200910LO	00001369	200	14.5	2900	3655
00238336E	LO-BENTOMAT DN	200910LO	00001370	200	14.5	2900	3640
00238336E	LO-BENTOMAT DN	200910LO	00001371	200	14.5	2900	3655
00238336E	LO-BENTOMAT DN	200910LO	00001372	200	14.5	2900	3660
00238336E	LO-BENTOMAT DN	200910LO	00001373	200	14.5	2900	3675
00238336E	LO-BENTOMAT DN	200910LO	00001374	200	14.5	2900	3645
00238336E	LO-BENTOMAT DN	200910LO	00001375	200	14.5	2900	3655
00238336E	LO-BENTOMAT DN	200910LO	00001376	200	14.5	2900	3710
00238336E	LO-BENTOMAT DN	200910LO	00001377	200	14.5	2900	3670
00238336E	LO-BENTOMAT DN	200910LO	00001378	200	14.5	2900	3650
00238336E	LO-BENTOMAT DN	200910LO	00001379	200	14.5	2900	3655
00238336E	LO-BENTOMAT DN	200910LO	00001380	200	14.5	2900	3660
00238336E	LO-BENTOMAT DN	200910LO	00001381	200	14.5	2900	3655
00238336E	LO-BENTOMAT DN	200910LO	00001382	200	14.5	2900	3690
00238336E	LO-BENTOMAT DN	200910LO	00001383	200	14.5	2900	3620
00238336E	LO-BENTOMAT DN	200910LO	00001384	200	14.5	2900	3640
00238336E	LO-BENTOMAT DN	200910LO	00001385	200	14.5	2900	3650
00238336E	LO-BENTOMAT DN	200910LO	00001386	200	14.5	2900	3645
00238336E	LO-BENTOMAT DN	200910LO	00001387	200	14.5	2900	3620
00238336E	LO-BENTOMAT DN	200910LO	00001388	200	14.5	2900	3635
00238336E	LO-BENTOMAT DN	200910LO	00001389	200	14.5	2900	3640
00238336E	LO-BENTOMAT DN	200910LO	00001390	200	14.5	2900	3650
00238336E	LO-BENTOMAT DN	200910LO	00001391	200	14.5	2900	3660
00238336E	LO-BENTOMAT DN	200910LO	00001392	200	14.5	2900	3650

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336E	LO-BENTOMAT DN	200910LO	00001393	200	14.5	2900	3610
00238336E	LO-BENTOMAT DN	200910LO	00001394	200	14.5	2900	3630
00238336E	LO-BENTOMAT DN	200910LO	00001395	200	14.5	2900	3645
00238336E	LO-BENTOMAT DN	200910LO	00001396	200	14.5	2900	3675
00238336E	LO-BENTOMAT DN	200910LO	00001397	200	14.5	2900	3660
00238336E	LO-BENTOMAT DN	200910LO	00001398	200	14.5	2900	3700
00238336E	LO-BENTOMAT DN	200910LO	00001399	200	14.5	2900	3655
00238336E	LO-BENTOMAT DN	200910LO	00001400	200	14.5	2900	3720
00238336E	LO-BENTOMAT DN	200910LO	00001401	200	14.5	2900	3750
00238336E	LO-BENTOMAT DN	200910LO	00001402	200	14.5	2900	3740
00238336E	LO-BENTOMAT DN	200910LO	00001403	200	14.5	2900	3680
00238336E	LO-BENTOMAT DN	200910LO	00001404	200	14.5	2900	3720
00238336E	LO-BENTOMAT DN	200910LO	00001405	200	14.5	2900	3725
00238336E	LO-BENTOMAT DN	200910LO	00001406	200	14.5	2900	3715
00238336E	LO-BENTOMAT DN	200910LO	00001407	200	14.5	2900	3680
00238336E	LO-BENTOMAT DN	200910LO	00001408	200	14.5	2900	3705
00238336E	LO-BENTOMAT DN	200910LO	00001409	200	14.5	2900	3710
00238336E	LO-BENTOMAT DN	200910LO	00001410	200	14.5	2900	3680
00238336E	LO-BENTOMAT DN	200910LO	00001411	200	14.5	2900	3705
00238336E	LO-BENTOMAT DN	200910LO	00001412	200	14.5	2900	3715
00238336E	LO-BENTOMAT DN	200910LO	00001413	200	14.5	2900	3665
00238336E	LO-BENTOMAT DN	200910LO	00001414	200	14.5	2900	3670
00238336E	LO-BENTOMAT DN	200910LO	00001415	200	14.5	2900	3680
00238336E	LO-BENTOMAT DN	200910LO	00001416	200	14.5	2900	3665
00238336E	LO-BENTOMAT DN	200910LO	00001417	200	14.5	2900	3680
00238336E	LO-BENTOMAT DN	200910LO	00001418	200	14.5	2900	3690
00238336E	LO-BENTOMAT DN	200910LO	00001419	200	14.5	2900	3715
00238336E	LO-BENTOMAT DN	200910LO	00001420	200	14.5	2900	3815
00238336E	LO-BENTOMAT DN	200910LO	00001421	200	14.5	2900	3825
00238336E	LO-BENTOMAT DN	200910LO	00001422	200	14.5	2900	3745
00238336E	LO-BENTOMAT DN	200910LO	00001423	200	14.5	2900	3740
00238336E	LO-BENTOMAT DN	200910LO	00001424	200	14.5	2900	3745

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336E	LO-BENTOMAT DN	200910LO	00001425	200	14.5	2900	3775
00238336E	LO-BENTOMAT DN	200910LO	00001426	200	14.5	2900	3735
00238336E	LO-BENTOMAT DN	200910LO	00001427	200	14.5	2900	3740
00238336E	LO-BENTOMAT DN	200910LO	00001428	200	14.5	2900	3690
00238336E	LO-BENTOMAT DN	200910LO	00001429	200	14.5	2900	3695
00238336E	LO-BENTOMAT DN	200910LO	00001430	200	14.5	2900	3930
00238336E	LO-BENTOMAT DN	200910LO	00001431	200	14.5	2900	3840
00238336E	LO-BENTOMAT DN	200910LO	00001432	200	14.5	2900	3810
00238336E	LO-BENTOMAT DN	200910LO	00001433	200	14.5	2900	3815
00238336E	LO-BENTOMAT DN	200910LO	00001434	200	14.5	2900	3845
00238336E	LO-BENTOMAT DN	200910LO	00001435	200	14.5	2900	3765
00238336E	LO-BENTOMAT DN	200910LO	00001436	200	14.5	2900	3770
00238336E	LO-BENTOMAT DN	200910LO	00001437	200	14.5	2900	3785
00238336E	LO-BENTOMAT DN	200910LO	00001438	200	14.5	2900	3780
00238336E	LO-BENTOMAT DN	200910LO	00001439	200	14.5	2900	3785
00238336E	LO-BENTOMAT DN	200910LO	00001440	200	14.5	2900	3790
00238336E	LO-BENTOMAT DN	200910LO	00001441	200	14.5	2900	3795
00238336E	LO-BENTOMAT DN	200910LO	00001442	200	14.5	2900	3695
00238336E	LO-BENTOMAT DN	200910LO	00001443	200	14.5	2900	3715
00238336E	LO-BENTOMAT DN	200910LO	00001444	200	14.5	2900	3670
00238336E	LO-BENTOMAT DN	200910LO	00001445	200	14.5	2900	3635
00238336E	LO-BENTOMAT DN	200910LO	00001446	200	14.5	2900	3645
00238336E	LO-BENTOMAT DN	200910LO	00001447	200	14.5	2900	3665
00238336E	LO-BENTOMAT DN	200910LO	00001448	200	14.5	2900	3670
00238336E	LO-BENTOMAT DN	200910LO	00001449	200	14.5	2900	3685
00238336E	LO-BENTOMAT DN	200910LO	00001450	200	14.5	2900	3680
00238336E	LO-BENTOMAT DN	200910LO	00001451	200	14.5	2900	3675
00238336E	LO-BENTOMAT DN	200910LO	00001452	200	14.5	2900	3610
00238336E	LO-BENTOMAT DN	200910LO	00001453	200	14.5	2900	3745
00238336E	LO-BENTOMAT DN	200910LO	00001454	200	14.5	2900	3660
00238336E	LO-BENTOMAT DN	200910LO	00001455	200	14.5	2900	3610
00238336E	LO-BENTOMAT DN	200910LO	00001456	200	14.5	2900	3650

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336E	LO-BENTOMAT DN	200910LO	00001457	200	14.5	2900	3625
00238336E	LO-BENTOMAT DN	200910LO	00001458	200	14.5	2900	3600
00238336E	LO-BENTOMAT DN	200910LO	00001459	200	14.5	2900	3610
00238336E	LO-BENTOMAT DN	200910LO	00001460	200	14.5	2900	3595
00238336E	LO-BENTOMAT DN	200910LO	00001461	200	14.5	2900	3585
00238336E	LO-BENTOMAT DN	200910LO	00001462	200	14.5	2900	3585
00238336E	LO-BENTOMAT DN	200910LO	00001463	200	14.5	2900	3565
00238336E	LO-BENTOMAT DN	200910LO	00001464	200	14.5	2900	3570
00238336E	LO-BENTOMAT DN	200910LO	00001465	200	14.5	2900	3605
00238336E	LO-BENTOMAT DN	200910LO	00001466	200	14.5	2900	3510
00238336E	LO-BENTOMAT DN	200910LO	00001467	200	14.5	2900	3640
00238336E	LO-BENTOMAT DN	200910LO	00001468	200	14.5	2900	3615
00238336E	LO-BENTOMAT DN	200910LO	00001469	200	14.5	2900	3540
00238336E	LO-BENTOMAT DN	200910LO	00001470	200	14.5	2900	3570
00238336E	LO-BENTOMAT DN	200910LO	00001471	200	14.5	2900	3545
00238336E	LO-BENTOMAT DN	200910LO	00001472	200	14.5	2900	3535
00238336E	LO-BENTOMAT DN	200910LO	00001473	200	14.5	2900	3550
00238336E	LO-BENTOMAT DN	200910LO	00001474	200	14.5	2900	3545
00238336E	LO-BENTOMAT DN	200910LO	00001475	200	14.5	2900	3505
00238336E	LO-BENTOMAT DN	200910LO	00001476	200	14.5	2900	3545
00238336E	LO-BENTOMAT DN	200910LO	00001477	200	14.5	2900	3560
00238336E	LO-BENTOMAT DN	200910LO	00001478	200	14.5	2900	3550
00238336E	LO-BENTOMAT DN	200910LO	00001479	200	14.5	2900	3525
Totals:				67600	4901	980200	1221455
Total Number of Rolls Certified: 338							



GCL MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 00238336E

GCL			Geotextiles				Clay
LO-BENTOMAT DN			LO-N/W-WHITE-DN			LO-N/W-BLACK-DN-6 OZ	LO-CG 50-DN
GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200910LO	00001142	00001142	200906CV	00000164	00000164	2011013249	021009D
200910LO	00001143	00001142	200906CV	00000164	00000164	2011013249	021009D
200910LO	00001144	00001142	200906CV	00000164	00000164	2011013249	021009D
200910LO	00001145	00001142	200906CV	00000164	00000164	2011013249	021009D
200910LO	00001146	00001142	200906CV	00000164	00000164	2011067959	021009D
200910LO	00001147	00001142	200906CV	00000164	00000164	2011067959	021009D
200910LO	00001148	00001142	200906CV	00000195	00000164	2011067959	021009D
200910LO	00001149	00001142	200906CV	00000195	00000164	2011067959	021009D
200910LO	00001150	00001142	200906CV	00000195	00000164	2011067959	021009D
200910LO	00001151	00001142	200906CV	00000195	00000164	2011067959	021009D
200910LO	00001152	00001142	200906CV	00000195	00000164	2011067959	021009D
200910LO	00001153	00001142	200906CV	00000195	00000164	2011067959	021009D
200910LO	00001154	00001142	200907CV	00000233	00000233	2011067959	021009D
200910LO	00001155	00001155	200907CV	00000233	00000233	2011067959	021009D
200910LO	00001156	00001155	200907CV	00000233	00000233	2011013241	021109B
200910LO	00001157	00001155	200907CV	00000233	00000233	2011013241	021109B
200910LO	00001158	00001155	200907CV	00000247	00000243	2011013241	021109B
200910LO	00001159	00001155	200907CV	00000247	00000243	2011013241	021109B
200910LO	00001160	00001155	200907CV	00000247	00000243	2011013241	021109B
200910LO	00001161	00001155	200907CV	00000247	00000243	2011013241	021109B
200910LO	00001162	00001155	200907CV	00000247	00000243	2011013241	021109B
200910LO	00001163	00001155	200907CV	00000236	00000233	2011013241	021109B
200910LO	00001164	00001155	200907CV	00000236	00000233	2011013241	021109B
200910LO	00001165	00001155	200907CV	00000236	00000233	2011067958	021109B
200910LO	00001166	00001155	200907CV	00000236	00000233	2011067958	021109B
200910LO	00001167	00001155	200907CV	00000236	00000233	2011067958	021109B
200910LO	00001168	00001168	200907CV	00000236	00000233	2011067958	021109B
200910LO	00001169	00001168	200907CV	00000236	00000233	2011067958	021109B
200910LO	00001170	00001168	200907CV	00000256	00000248	2011067958	021109B

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200910LO	00001171	00001168	200907CV	00000256	00000248	2011067958	021109C
200910LO	00001172	00001168	200907CV	00000256	00000248	2011067958	021109C
200910LO	00001173	00001168	200907CV	00000256	00000248	2011067958	021109C
200910LO	00001174	00001168	200907CV	00000256	00000248	2011067958	021109C
200910LO	00001175	00001168	200907CV	00000235	00000233	2011050200	021109C
200910LO	00001176	00001168	200907CV	00000235	00000233	2011050200	021109C
200910LO	00001177	00001168	200907CV	00000235	00000233	2011050200	021109C
200910LO	00001178	00001168	200907CV	00000235	00000233	2011050200	021109C
200910LO	00001179	00001168	200907CV	00000235	00000233	2011050200	021109C
200910LO	00001180	00001168	200907CV	00000255	00000248	2011050200	021109C
200910LO	00001181	00001181	200907CV	00000255	00000248	2011050200	021109C
200910LO	00001182	00001181	200907CV	00000255	00000248	2011050200	021109C
200910LO	00001183	00001181	200907CV	00000255	00000248	2011050200	021109C
200910LO	00001184	00001181	200907CV	00000255	00000248	2011067974	021109C
200910LO	00001185	00001181	200907CV	00000255	00000248	2011067974	021109C
200910LO	00001186	00001181	200907CV	00000243	00000243	2011067974	021109C
200910LO	00001187	00001181	200907CV	00000243	00000243	2011067974	021109C
200910LO	00001188	00001181	200907CV	00000243	00000243	2011067974	021109C
200910LO	00001189	00001181	200907CV	00000243	00000243	2011067974	021109C
200910LO	00001190	00001181	200907CV	00000243	00000243	2011067974	021109C
200910LO	00001191	00001181	200907CV	00000168	00000168	2011067974	021109C
200910LO	00001192	00001181	200907CV	00000168	00000168	2011067974	021109C
200910LO	00001193	00001181	200907CV	00000168	00000168	2011067974	021109C
200910LO	00001194	00001194	200907CV	00000168	00000168	2011067974	021109C
200910LO	00001195	00001194	200907CV	00000168	00000168	2011115275	021109C
200910LO	00001196	00001194	200907CV	00000168	00000168	2011115275	021109C
200910LO	00001197	00001194	200907CV	00000244	00000243	2011115275	021109C
200910LO	00001198	00001194	200907CV	00000244	00000243	2011115275	021109C
200910LO	00001199	00001194	200907CV	00000244	00000243	2011115275	021109C
200910LO	00001200	00001194	200907CV	00000244	00000243	2011115275	021109C
200910LO	00001201	00001194	200907CV	00000246	00000243	2011115275	021209A
200910LO	00001202	00001194	200907CV	00000246	00000243	2011115275	021209A
200910LO	00001203	00001194	200907CV	00000246	00000243	2011115275	021209A
200910LO	00001204	00001194	200907CV	00000246	00000243	2011115275	021209A
200910LO	00001205	00001194	200907CV	00000246	00000243	2011032487	021209A

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200910LO	00001206	00001194	200907CV	00000246	00000243	2011032487	021209A
200910LO	00001207	00001207	200907CV	00000245	00000243	2011032487	021209A
200910LO	00001208	00001207	200907CV	00000245	00000243	2011032487	021209A
200910LO	00001209	00001207	200907CV	00000245	00000243	2011032487	021209A
200910LO	00001210	00001207	200907CV	00000245	00000243	2011032487	021209A
200910LO	00001211	00001207	200907CV	00000245	00000243	2011032487	021209A
200910LO	00001212	00001207	200907CV	00000254	00000248	2011032487	021209A
200910LO	00001213	00001207	200907CV	00000254	00000248	2011032487	021209A
200910LO	00001214	00001207	200907CV	00000254	00000248	2011032487	021209A
200910LO	00001215	00001207	200907CV	00000254	00000248	2011113255	021209A
200910LO	00001216	00001207	200907CV	00000254	00000248	2011113255	021209A
200910LO	00001217	00001207	200907CV	00000254	00000248	2011113255	021209A
200910LO	00001218	00001207	200907CV	00000252	00000248	2011113255	021209A
200910LO	00001219	00001207	200907CV	00000252	00000248	2011113255	021209A
200910LO	00001220	00001220	200907CV	00000252	00000248	2011113255	021209A
200910LO	00001221	00001220	200907CV	00000252	00000248	2011113255	021209A
200910LO	00001222	00001220	200907CV	00000252	00000248	2011113255	021209A
200910LO	00001223	00001220	200907CV	00000252	00000248	2011113255	021209A
200910LO	00001224	00001224	200907CV	00000234	00000233	2011113255	021209B
200910LO	00001225	00001224	200907CV	00000234	00000233	2011110507	021209B
200910LO	00001226	00001224	200907CV	00000234	00000233	2011110507	021209B
200910LO	00001227	00001224	200907CV	00000234	00000233	2011110507	021209B
200910LO	00001228	00001224	200907CV	00000234	00000233	2011110507	021209B
200910LO	00001229	00001224	200907CV	00000176	00000168	2011110507	021209B
200910LO	00001230	00001224	200907CV	00000176	00000168	2011110507	021209B
200910LO	00001231	00001224	200907CV	00000176	00000168	2011110507	021209B
200910LO	00001232	00001224	200907CV	00000176	00000168	2011110507	021209B
200910LO	00001233	00001224	200907CV	00000176	00000168	2011110507	021209B
200910LO	00001234	00001224	200907CV	00000176	00000168	2011113257	021209B
200910LO	00001235	00001224	200907CV	00000169	00000168	2011113257	021209B
200910LO	00001236	00001224	200907CV	00000169	00000168	2011113257	021209B
200910LO	00001237	00001237	200907CV	00000169	00000168	2011113257	021209B
200910LO	00001238	00001237	200907CV	00000169	00000168	2011113257	021209B
200910LO	00001239	00001237	200907CV	00000169	00000168	2011113257	021209B
200910LO	00001240	00001237	200907CV	00000171	00000168	2011113257	021209B

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200910LO	00001241	00001237	200907CV	00000171	00000168	2011113257	021209B
200910LO	00001242	00001237	200907CV	00000171	00000168	2011113257	021209B
200910LO	00001243	00001237	200907CV	00000171	00000168	2011113257	021209B
200910LO	00001244	00001237	200907CV	00000171	00000168	2011110512	021209B
200910LO	00001245	00001237	200907CV	00000171	00000168	2011110512	021209B
200910LO	00001246	00001237	200907CV	00000170	00000168	2011110512	021209B
200910LO	00001247	00001237	200907CV	00000170	00000168	2011110512	021209B
200910LO	00001248	00001237	200907CV	00000170	00000168	2011110512	021209B
200910LO	00001249	00001237	200907CV	00000170	00000168	2011110512	021209B
200910LO	00001250	00001250	200907CV	00000170	00000168	2011110512	021209B
200910LO	00001251	00001250	200907CV	00000177	00000177	2011067961	021209B
200910LO	00001252	00001250	200907CV	00000177	00000177	2011067961	021209B
200910LO	00001253	00001250	200907CV	00000177	00000177	2011067961	021209B
200910LO	00001254	00001250	200907CV	00000177	00000177	2011067961	021209C
200910LO	00001255	00001250	200907CV	00000177	00000177	2011067961	021209C
200910LO	00001256	00001250	200907CV	00000177	00000177	2011067961	021209C
200910LO	00001257	00001250	200907CV	00000175	00000168	2011067961	021209C
200910LO	00001258	00001250	200907CV	00000175	00000168	2011067961	021209C
200910LO	00001259	00001250	200907CV	00000175	00000168	2011067961	021209C
200910LO	00001260	00001250	200907CV	00000175	00000168	2011067961	021209C
200910LO	00001261	00001250	200907CV	00000175	00000168	2011113260	021209C
200910LO	00001262	00001250	200906CV	00000165	00000164	2011113260	021209C
200910LO	00001263	00001263	200906CV	00000165	00000164	2011113260	021209C
200910LO	00001264	00001263	200906CV	00000165	00000164	2011113260	021209C
200910LO	00001265	00001263	200906CV	00000165	00000164	2011113260	021209C
200910LO	00001266	00001263	200906CV	00000165	00000164	2011113260	021209C
200910LO	00001267	00001263	200906CV	00000165	00000164	2011113260	021209C
200910LO	00001268	00001263	200907CV	00000178	00000177	2011113260	021209C
200910LO	00001269	00001263	200907CV	00000178	00000177	2011113260	021209C
200910LO	00001270	00001263	200907CV	00000178	00000177	2011113260	021209C
200910LO	00001271	00001263	200907CV	00000178	00000177	2011113260	021209C
200910LO	00001272	00001263	200907CV	00000178	00000177	2011113258	021209C
200910LO	00001273	00001263	200907CV	00000178	00000177	2011113258	021209C
200910LO	00001274	00001263	200907CV	00000213	00000206	2011113258	021209C
200910LO	00001275	00001263	200907CV	00000213	00000206	2011113258	021209C

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200910LO	00001276	00001276	200907CV	00000213	00000206	2011113258	021209C
200910LO	00001277	00001276	200907CV	00000213	00000206	2011113258	021209C
200910LO	00001278	00001276	200907CV	00000213	00000206	2011113258	021209C
200910LO	00001279	00001276	200907CV	00000206	00000206	2011113258	021209C
200910LO	00001280	00001276	200907CV	00000206	00000206	2011113258	021209C
200910LO	00001281	00001276	200907CV	00000206	00000206	2011113258	021209C
200910LO	00001282	00001276	200907CV	00000206	00000206	2011113258	021209C
200910LO	00001283	00001276	200907CV	00000206	00000206	2011110506	021209C
200910LO	00001284	00001276	200907CV	00000206	00000206	2011110506	021609A
200910LO	00001285	00001276	200906CV	00000160	00000153	2011110506	021609A
200910LO	00001286	00001276	200906CV	00000160	00000153	2011110506	021609A
200910LO	00001287	00001276	200906CV	00000160	00000153	2011110506	021609A
200910LO	00001288	00001276	200906CV	00000160	00000153	2011110506	021609A
200910LO	00001289	00001289	200906CV	00000160	00000153	2011110506	021609A
200910LO	00001290	00001289	200906CV	00000160	00000153	2011110506	021609A
200910LO	00001291	00001289	200907CV	00000198	00000196	2011110506	021609A
200910LO	00001292	00001289	200907CV	00000198	00000196	2011110506	021609A
200910LO	00001293	00001289	200907CV	00000198	00000196	2011067975	021609A
200910LO	00001294	00001289	200907CV	00000198	00000196	2011067975	021609A
200910LO	00001295	00001289	200907CV	00000198	00000196	2011067975	021609A
200910LO	00001296	00001289	200907CV	00000174	00000168	2011067975	021609A
200910LO	00001297	00001289	200907CV	00000174	00000168	2011067975	021609A
200910LO	00001298	00001289	200907CV	00000174	00000168	2011067975	021609A
200910LO	00001299	00001289	200907CV	00000174	00000168	2011067975	021609A
200910LO	00001300	00001289	200907CV	00000174	00000168	2011067975	021609A
200910LO	00001301	00001289	200907CV	00000205	00000196	2011067975	021609A
200910LO	00001302	00001302	200907CV	00000205	00000196	2011110511	021609A
200910LO	00001303	00001302	200907CV	00000205	00000196	2011110511	021609A
200910LO	00001304	00001302	200907CV	00000205	00000196	2011110511	021609A
200910LO	00001305	00001302	200907CV	00000205	00000196	2011110511	021609A
200910LO	00001306	00001302	200907CV	00000205	00000196	2011110511	021609A
200910LO	00001307	00001302	200907CV	00000211	00000206	2011110511	021609A
200910LO	00001308	00001302	200907CV	00000211	00000206	2011110511	021609A
200910LO	00001309	00001302	200907CV	00000211	00000206	2011110511	021609A
200910LO	00001310	00001302	200907CV	00000211	00000206	2011110511	021609A

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200910LO	00001311	00001302	200907CV	00000211	00000206	2011110511	021609A
200910LO	00001312	00001302	200907CV	00000211	00000206	2011110511	021609A
200910LO	00001313	00001302	200907CV	00000210	00000206	2011115294	021609A
200910LO	00001314	00001302	200907CV	00000210	00000206	2011115294	021609A
200910LO	00001315	00001315	200907CV	00000210	00000206	2011115294	021709A
200910LO	00001316	00001315	200907CV	00000210	00000206	2011115294	021709A
200910LO	00001317	00001315	200907CV	00000210	00000206	2011115294	021709A
200910LO	00001318	00001315	200907CV	00000172	00000168	2011115294	021709A
200910LO	00001319	00001315	200907CV	00000172	00000168	2011115294	021709A
200910LO	00001320	00001315	200907CV	00000172	00000168	2011115294	021709A
200910LO	00001321	00001315	200907CV	00000172	00000168	2011115294	021709A
200910LO	00001322	00001315	200907CV	00000172	00000168	2011115294	021709A
200910LO	00001323	00001315	200907CV	00000172	00000168	2011115294	021709A
200910LO	00001324	00001315	200906CV	00000163	00000153	2011115294	021709A
200910LO	00001325	00001315	200906CV	00000163	00000153	2011113259	021709A
200910LO	00001326	00001315	200906CV	00000163	00000153	2011113259	021709A
200910LO	00001327	00001315	200906CV	00000163	00000153	2011113259	021709A
200910LO	00001328	00001328	200906CV	00000163	00000153	2011113259	021709A
200910LO	00001329	00001328	200906CV	00000163	00000153	2011113259	021709A
200910LO	00001330	00001328	200904CV	00000173	00000094	2011113259	021709A
200910LO	00001331	00001328	200904CV	00000173	00000094	2011113259	021709A
200910LO	00001332	00001328	200904CV	00000173	00000094	2011113259	021709A
200910LO	00001333	00001328	200904CV	00000173	00000094	2011113259	021709A
200910LO	00001334	00001328	200904CV	00000173	00000094	2011113259	021709A
200910LO	00001335	00001328	200907CV	00000204	00000196	2011067977	021709A
200910LO	00001336	00001328	200907CV	00000204	00000196	2011067977	021709A
200910LO	00001337	00001328	200907CV	00000204	00000196	2011067977	021709A
200910LO	00001338	00001328	200907CV	00000204	00000196	2011067977	021709A
200910LO	00001339	00001328	200907CV	00000204	00000196	2011067977	021709A
200910LO	00001340	00001328	200907CV	00000194	00000189	2011067977	021709A
200910LO	00001341	00001341	200907CV	00000194	00000189	2011067977	021709A
200910LO	00001342	00001341	200907CV	00000194	00000189	2011067977	021709A
200910LO	00001343	00001341	200907CV	00000194	00000189	2011067977	021709A
200910LO	00001344	00001341	200907CV	00000194	00000189	2011110508	021709A
200910LO	00001345	00001341	200907CV	00000190	00000189	2011110508	021809A

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200910LO	00001346	00001341	200907CV	00000190	00000189	2011110508	021809A
200910LO	00001347	00001341	200907CV	00000190	00000189	2011110508	021809A
200910LO	00001348	00001341	200907CV	00000190	00000189	2011110508	021809A
200910LO	00001349	00001341	200907CV	00000190	00000189	2011026246	021809A
200910LO	00001350	00001341	200907CV	00000212	00000206	2011026246	021809A
200910LO	00001351	00001341	200907CV	00000212	00000206	2011026246	021809A
200910LO	00001352	00001341	200907CV	00000212	00000206	2011026246	021809A
200910LO	00001353	00001341	200907CV	00000212	00000206	2011026246	021809A
200910LO	00001354	00001354	200907CV	00000212	00000206	2011026246	021809A
200910LO	00001355	00001354	200907CV	00000212	00000206	2011026246	021809A
200910LO	00001356	00001354	200907CV	00000202	00000196	2011026246	021809A
200910LO	00001357	00001354	200907CV	00000202	00000196	2011026246	021809A
200910LO	00001358	00001354	200907CV	00000202	00000196	2011026246	021809A
200910LO	00001359	00001354	200907CV	00000202	00000196	2010835780	021809A
200910LO	00001360	00001354	200907CV	00000202	00000196	2010835780	021809A
200910LO	00001361	00001354	200907CV	00000202	00000196	2010835780	021809A
200910LO	00001362	00001354	200907CV	00000196	00000196	2010835780	021809A
200910LO	00001363	00001354	200907CV	00000196	00000196	2010835780	021809A
200910LO	00001364	00001354	200907CV	00000196	00000196	2010835780	021809A
200910LO	00001365	00001354	200907CV	00000196	00000196	2010835780	021809A
200910LO	00001366	00001354	200907CV	00000196	00000196	2010835780	021809A
200910LO	00001367	00001367	200907CV	00000196	00000196	2010835780	021809A
200910LO	00001368	00001367	200907CV	00000189	00000189	2010835780	021809A
200910LO	00001369	00001367	200907CV	00000189	00000189	2011067967	021809A
200910LO	00001370	00001367	200907CV	00000189	00000189	2011067967	021809A
200910LO	00001371	00001367	200907CV	00000189	00000189	2011067967	021809A
200910LO	00001372	00001367	200907CV	00000189	00000189	2011067967	021809A
200910LO	00001373	00001367	200907CV	00000200	00000196	2011067967	021809A
200910LO	00001374	00001367	200907CV	00000200	00000196	2011067967	021809A
200910LO	00001375	00001367	200907CV	00000200	00000196	2011067967	021809B
200910LO	00001376	00001367	200907CV	00000200	00000196	2011067960	021809B
200910LO	00001377	00001367	200907CV	00000200	00000196	2011067960	021809B
200910LO	00001378	00001367	200907CV	00000200	00000196	2011067960	021809B
200910LO	00001379	00001367	200907CV	00000209	00000206	2011067960	021809B
200910LO	00001380	00001380	200907CV	00000209	00000206	2011067960	021809B

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200910LO	00001381	00001380	200907CV	00000209	00000206	2011067960	021809B
200910LO	00001382	00001380	200907CV	00000209	00000206	2011067960	021809B
200910LO	00001383	00001380	200907CV	00000209	00000206	2011067960	021809B
200910LO	00001384	00001380	200907CV	00000188	00000177	2011067960	021809B
200910LO	00001385	00001380	200907CV	00000188	00000177	2011067960	021809B
200910LO	00001386	00001380	200907CV	00000188	00000177	2011067960	021809B
200910LO	00001387	00001380	200907CV	00000188	00000177	2011067962	021809B
200910LO	00001388	00001380	200907CV	00000188	00000177	2011067962	021809B
200910LO	00001389	00001380	200907CV	00000188	00000177	2011067962	021809B
200910LO	00001390	00001380	200907CV	00000188	00000177	2011067962	021809B
200910LO	00001391	00001380	200907CV	00000208	00000206	2011067962	021809B
200910LO	00001392	00001380	200907CV	00000208	00000206	2011067962	021809B
200910LO	00001393	00001393	200907CV	00000208	00000206	2011067962	021809B
200910LO	00001394	00001393	200907CV	00000208	00000206	2011067962	021809B
200910LO	00001395	00001393	200907CV	00000208	00000206	2011067962	021809B
200910LO	00001396	00001393	200907CV	00000207	00000206	2011067962	021809B
200910LO	00001397	00001393	200907CV	00000207	00000206	2011067973	021809B
200910LO	00001398	00001393	200907CV	00000207	00000206	2011067973	021809B
200910LO	00001399	00001393	200907CV	00000207	00000206	2011067973	021809B
200910LO	00001400	00001393	200907CV	00000207	00000206	2011067973	021809B
200910LO	00001401	00001393	200907CV	00000199	00000196	2011067973	021809B
200910LO	00001402	00001393	200907CV	00000199	00000196	2011067973	021809B
200910LO	00001403	00001393	200907CV	00000199	00000196	2011067973	021809B
200910LO	00001404	00001393	200907CV	00000199	00000196	2011067973	021809B
200910LO	00001405	00001393	200907CV	00000199	00000196	2011067973	021809B
200910LO	00001406	00001406	200907CV	00000199	00000196	2011067973	021809B
200910LO	00001407	00001406	200907CV	00000199	00000196	2011067963	021809B
200910LO	00001408	00001406	200907CV	00000192	00000189	2011067963	021809B
200910LO	00001409	00001406	200907CV	00000192	00000189	2011067963	021909A
200910LO	00001410	00001406	200907CV	00000192	00000189	2011067963	021909A
200910LO	00001411	00001406	200907CV	00000192	00000189	2011067963	021909A
200910LO	00001412	00001412	200907CV	00000192	00000189	2011067963	021909A
200910LO	00001413	00001412	200907CV	00000193	00000189	2011067963	021909A
200910LO	00001414	00001412	200907CV	00000193	00000189	2011067963	021909A
200910LO	00001415	00001412	200907CV	00000193	00000189	2011067963	021909A

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200910LO	00001416	00001412	200907CV	00000193	00000189	2011067963	021909A
200910LO	00001417	00001412	200907CV	00000193	00000189	2011067963	021909A
200910LO	00001418	00001412	200907CV	00000193	00000189	2011067956	021909A
200910LO	00001419	00001412	200908CV	00000337	00000335	2011067956	021909A
200910LO	00001420	00001412	200908CV	00000337	00000335	2011067956	021909A
200910LO	00001421	00001412	200908CV	00000337	00000335	2011067956	021909A
200910LO	00001422	00001412	200908CV	00000337	00000335	2011067956	021909A
200910LO	00001423	00001412	200908CV	00000337	00000335	2011067956	021909A
200910LO	00001424	00001412	200908CV	00000337	00000335	2011067956	021909A
200910LO	00001425	00001425	200835CV	00004066	00004065	2011067956	021909A
200910LO	00001426	00001425	200835CV	00004066	00004065	2011067956	021909A
200910LO	00001427	00001425	200835CV	00004066	00004065	030609ANW1	021909A
200910LO	00001428	00001425	030609ANWA			030609ANW1	021909A
200910LO	00001429	00001425	030609ANWA			030609ANW1	021909A
200910LO	00001430	00001430	030609ANWA			030609ANW1	021909A
200910LO	00001431	00001430	030609ANWA			2010945506	021909A
200910LO	00001432	00001430	200907CV	00000184	00000177	2010945506	021909A
200910LO	00001433	00001430	200907CV	00000184	00000177	2010945506	021909A
200910LO	00001434	00001430	200907CV	00000184	00000177	2010945506	021909A
200910LO	00001435	00001430	200907CV	00000184	00000177	2010945506	021909A
200910LO	00001436	00001430	200907CV	00000184	00000177	2010945506	021909A
200910LO	00001437	00001430	200907CV	00000184	00000177	2010945506	021909A
200910LO	00001438	00001430	200907CV	00000197	00000196	2010945506	021909A
200910LO	00001439	00001430	200907CV	00000197	00000196	2010945506	021909A
200910LO	00001440	00001430	200907CV	00000197	00000196	2011040557	021909A
200910LO	00001441	00001430	200907CV	00000197	00000196	2011040557	021909A
200910LO	00001442	00001430	200907CV	00000197	00000196	2011040557	021909B
200910LO	00001443	00001443	200907CV	00000183	00000177	2011040557	021909B
200910LO	00001444	00001443	200907CV	00000183	00000177	2011040557	021909B
200910LO	00001445	00001443	200907CV	00000183	00000177	2011040557	021909B
200910LO	00001446	00001443	200907CV	00000183	00000177	2011040557	021909B
200910LO	00001447	00001443	200907CV	00000183	00000177	2011040557	021909B
200910LO	00001448	00001443	200907CV	00000183	00000177	2011040557	021909B
200910LO	00001449	00001443	200907CV	00000185	00000177	2011040557	021909B
200910LO	00001450	00001443	200907CV	00000185	00000177	2010884831	021909B

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200910LO	00001451	00001443	200907CV	00000185	00000177	2010884831	021909B
200910LO	00001452	00001443	200907CV	00000185	00000177	2010884831	021909B
200910LO	00001453	00001443	200907CV	00000185	00000177	2010884831	021909B
200910LO	00001454	00001443	200907CV	00000191	00000189	2010884831	021909B
200910LO	00001455	00001443	200907CV	00000191	00000189	2010884831	021909B
200910LO	00001456	00001456	200907CV	00000191	00000189	2010884831	021909B
200910LO	00001457	00001456	200907CV	00000191	00000189	2010884831	021909B
200910LO	00001458	00001456	200907CV	00000191	00000189	2010884831	021909B
200910LO	00001459	00001456	200907CV	00000191	00000189	2010884831	021909B
200910LO	00001460	00001456	200907CV	00000181	00000177	2011014658	021909B
200910LO	00001461	00001456	200907CV	00000181	00000177	2011014658	021909B
200910LO	00001462	00001456	200907CV	00000180	00000177	2011014658	021909B
200910LO	00001463	00001456	200907CV	00000180	00000177	2011014658	021909B
200910LO	00001464	00001456	200907CV	00000180	00000177	2011014658	021909B
200910LO	00001465	00001456	200907CV	00000180	00000177	2011014658	021909B
200910LO	00001466	00001456	200907CV	00000180	00000177	2011014658	021909B
200910LO	00001467	00001456	200907CV	00000180	00000177	2011014658	021909B
200910LO	00001468	00001456	200908CV	00000333	00000326	2011014658	021909B
200910LO	00001469	00001469	200908CV	00000333	00000326	2011014659	021909B
200910LO	00001470	00001469	200908CV	00000333	00000326	2011014659	021909B
200910LO	00001471	00001469	200908CV	00000333	00000326	2011014659	021909B
200910LO	00001472	00001469	200908CV	00000333	00000326	2011014659	021909B
200910LO	00001473	00001469	200908CV	00000333	00000326	2011014659	021909B
200910LO	00001474	00001469	200904CV	00000085	00000084	2011014659	021909B
200910LO	00001475	00001469	200904CV	00000085	00000084	2011014659	021909B
200910LO	00001476	00001469	200904CV	00000085	00000084	2011014659	022009A
200910LO	00001477	00001469	200904CV	00000085	00000084	2011014659	022009A
200910LO	00001478	00001469	200904CV	00000085	00000084	2011014659	022009A
200910LO	00001479	00001469	200904CV	00000085	00000084	2011014659	022009A



GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 00238336E have been tested in our production facility lab.

Product	Lot # Tested	Roll # Tested	Mass Area	Grab Strength	Peel Strength
Standard Test Method:			ASTM D 5993	ASTM D 6768	ASTM D 6496
Standard Specification:			0.75 lb/sq ft MARV	50lbs/in MARV	3.5lbs/in Min
Non-standard specifications were requested for this order as indicated on the attached property sheet					
LO-BENTOMAT DN	200910LO	00001142	0.93	68.1	6
LO-BENTOMAT DN	200910LO	00001155	0.92	68.1	6.9
LO-BENTOMAT DN	200910LO	00001168	0.86	68.1	6.4
LO-BENTOMAT DN	200910LO	00001181	0.93	68.1	8.8
LO-BENTOMAT DN	200910LO	00001194	0.93	68.1	8.2
LO-BENTOMAT DN	200910LO	00001207	0.86	71.5	5.6
LO-BENTOMAT DN	200910LO	00001220	0.90	71.5	8.3
LO-BENTOMAT DN	200910LO	00001224	0.90	71.5	5
LO-BENTOMAT DN	200910LO	00001237	0.89	71.5	5.4
LO-BENTOMAT DN	200910LO	00001250	0.92	71.5	6.9
LO-BENTOMAT DN	200910LO	00001263	0.91	62.3	7.3
LO-BENTOMAT DN	200910LO	00001276	0.88	62.3	5
LO-BENTOMAT DN	200910LO	00001289	1.00	89.4	5
LO-BENTOMAT DN	200910LO	00001302	1.00	89.4	5.4
LO-BENTOMAT DN	200910LO	00001315	0.95	89.4	8.2
LO-BENTOMAT DN	200910LO	00001328	0.89	89.4	7.7
LO-BENTOMAT DN	200910LO	00001341	0.91	89.4	6.9
LO-BENTOMAT DN	200910LO	00001354	0.91	78.3	6.9
LO-BENTOMAT DN	200910LO	00001367	0.90	78.3	5.7
LO-BENTOMAT DN	200910LO	00001380	0.82	78.3	6.6
LO-BENTOMAT DN	200910LO	00001393	0.87	78.3	5.9
LO-BENTOMAT DN	200910LO	00001406	0.98	78.3	6.3
LO-BENTOMAT DN	200910LO	00001412	0.87	77.2	6.3
LO-BENTOMAT DN	200910LO	00001425	0.84	77.2	9.2
LO-BENTOMAT DN	200910LO	00001430	0.88	85.9	5.7
LO-BENTOMAT DN	200910LO	00001443	0.96	85.9	6
LO-BENTOMAT DN	200910LO	00001456	0.95	85.9	8.4
LO-BENTOMAT DN	200910LO	00001469	0.97	85.9	6.4
Product	Lot # Tested	Roll # Tested	Moisture		
LO-BENTOMAT DN	200910LO	00001142	26.2		
LO-BENTOMAT DN	200910LO	00001155	29.7		

LO-BENTOMAT DN	200910LO	00001168	26.8
LO-BENTOMAT DN	200910LO	00001181	25.5
LO-BENTOMAT DN	200910LO	00001194	24.8
LO-BENTOMAT DN	200910LO	00001207	24.7
LO-BENTOMAT DN	200910LO	00001220	24.1
LO-BENTOMAT DN	200910LO	00001224	25.1
LO-BENTOMAT DN	200910LO	00001237	25.1
LO-BENTOMAT DN	200910LO	00001250	25.5
LO-BENTOMAT DN	200910LO	00001263	25.8
LO-BENTOMAT DN	200910LO	00001276	25.6
LO-BENTOMAT DN	200910LO	00001289	23.0
LO-BENTOMAT DN	200910LO	00001302	24.4
LO-BENTOMAT DN	200910LO	00001315	26.8
LO-BENTOMAT DN	200910LO	00001328	27.3
LO-BENTOMAT DN	200910LO	00001341	27.0
LO-BENTOMAT DN	200910LO	00001354	26.3
LO-BENTOMAT DN	200910LO	00001367	26.7
LO-BENTOMAT DN	200910LO	00001380	25.6
LO-BENTOMAT DN	200910LO	00001393	25.5
LO-BENTOMAT DN	200910LO	00001406	25.6
LO-BENTOMAT DN	200910LO	00001412	28.1
LO-BENTOMAT DN	200910LO	00001425	28.5
LO-BENTOMAT DN	200910LO	00001430	29.5
LO-BENTOMAT DN	200910LO	00001443	25.9
LO-BENTOMAT DN	200910LO	00001456	26.3
LO-BENTOMAT DN	200910LO	00001469	24.7

ASTM test methods and property specifications per CETCO standard unless non-standard specifications were requested.
Any non-standard property specifications requested for this order are noted on the attached GCL property specifications sheet.



BENTONITE CLAY CERTIFICATION

The Bentonite Clay used to produce package 00238336E has been tested by American Colloid Company and yielded the following test results.

Reference	Moist	Swell	Fluid Loss
Test Method:	ASTM D 2216	ASTM D 5890	ASTM D 5891
Specification:	12% Max	24 ml/2g Min	18 ml Max
021009D	11.2	27.0	15.2
021109B	11.2	27.0	14.2
021109C	11.2	26.0	15.4
021209A	11.2	25.0	15.4
021209B	11.2	27.0	14.8
021209C	11.6	26.0	14.8
021609A	10.0	27.0	14.8
021709A	10.8	26.0	15.0
021809A	10.4	25.0	13.0
021809B	10.8	24.0	13.0
021909A	11.6	27.0	14.6
021909B	11.2	24.0	14.8
022009A	10.0	24.0	14.6



GEOTEXTILE TEST RESULTS FOR RAW MATERIAL SUPPLIED BY A CETCO FACILITY

The GCL in certification package number 00238336E was manufactured using these geotextiles:

Material	Lot #	Roll #	Mass Area	Grab Strength
CV-NON-WOVEN	200835CV	00004065	7.5	62.0
CV-NON-WOVEN	200904CV	00000084	6.4	39.5
CV-NON-WOVEN	200904CV	00000094	7.2	47.5
CV-NON-WOVEN	200906CV	00000153	6.5	39.5
CV-NON-WOVEN	200906CV	00000164	6.8	45.2
CV-NON-WOVEN	200907CV	00000168	6.6	39.9
CV-NON-WOVEN	200907CV	00000177	7.1	39.4
CV-NON-WOVEN	200907CV	00000189	6.4	49.7
CV-NON-WOVEN	200907CV	00000196	7.0	47.6
CV-NON-WOVEN	200907CV	00000206	6.6	41.7
CV-NON-WOVEN	200907CV	00000233	6.4	40.1
CV-NON-WOVEN	200907CV	00000243	6.4	34.4
CV-NON-WOVEN	200907CV	00000248	6.3	37.7
CV-NON-WOVEN	200908CV	00000326	7.2	76.0
CV-NON-WOVEN	200908CV	00000335	6.4	65.0



GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 00238336E was manufactured with geotextiles which were tested with the following results.

BASE			
Material	Roll Number	Mass Area oz/yd ²	Grab Strength lbs
PT	030609ANW1	7.2	230.0
PPX HH65L	2010835780	6.3	216.1
PPX HH65L	2010884831	6.6	240.0
PXX HH65L	2010945506	6.8	174.2
PXX HH65L	2011013241	6.3	156.9
PXX HH65L	2011013249	6.7	240.0
PXX HH65L	2011014658	6.0	175.4
PXX HH65L	2011014659	6.0	175.4
PPX HH65L	2011026246	6.8	183.0
PPX HH65L	2011032487	6.3	166.7
PPX HH65L	2011040557	7.3	206.8
PPX HH65L	2011050200	6.4	216.4
PPX HH65L	2011067956	6.8	233.2
PPX HH65L	2011067958	6.2	212.2
PPX HH65L	2011067959	6.2	212.2
PPX HH65L	2011067960	6.0	191.7
PPX HH65L	2011067961	6.0	191.7
PPX HH65L	2011067962	6.0	191.7
PPX HH65L	2011067963	6.8	216.4
PPX HH65L	2011067967	6.6	218.7
PPX HH65L	2011067973	6.6	230.4
PPX HH65L	2011067974	6.6	230.4
PPX HH65L	2011067975	6.9	220.3
PPX HH65L	2011067977	6.9	220.3
PPX HH65L	2011110506	7.6	283.4
PPX HH65L	2011110507	7.6	283.4
PPX HH65L	2011110508	9.8	283.4
PPX HH65L	2011110511	6.7	154.3
PPX HH65L	2011110512	6.7	154.3
PPX HH65L	2011113255	6.7	152.6
PPX HH65L	2011113257	6.7	152.6
PPX HH65L	2011113258	6.7	152.6
PPX HH65L	2011113259	6.7	152.6

PPX HH65L	2011113260	6.7	152.6
PPX HH65L	2011115275	6.7	152.6
PPX HH65L	2011115294	6.4	178.6

CAP

Material	Roll Number	Mass Area oz/yd ²	Grab Strength lbs
PT	030609ANWA	6.3	76.4

Certifications from our suppliers are on file at our production facility.
 An '*' or 'PT' indicates supplier certifications were unavailable prior to shipping so testing was performed at a CETCO lab.

**INDEX FLUX AND PERMEABILITY OF GCL's
TEST RESULTS
ASTM D-5887 / D-5084**



Client : CETCO	Date : 03/18/2009
Project Location : BRC CAMU Henderson/Landwell	Job No. : 09LG1861.01
Sample Number : Roll 1393	Tested By : RL/MLB
Description : Bentomat DN Lot: 200910LO	Checked By : JBJr
Permeant Fluid : De-Aired Water	

Physical Property Data

	Total Sample		Total Sample
Initial Clay Height (in) :	0.21	Final Height of Clay (in) :	0.24
Initial Diameter (in) :	4.00	Final Diameter of Clay (in) :	4.00
Initial Wet Weight (g) :	52.70	Final Wet Weight(Clay) (g) :	88.90
Wet Density (pcf) :	76.01	Wet Density (pcf) :	112.19
Moisture Content % :	29.80	Moisture Content % :	106.60
Dry Density (pcf) :	58.56	Dry Density (pcf) :	54.31

Test Parameters

Fluid : De-Aired Water	Average Effective
Cell Pressure (psi) : 80.00	Confining Pressure (psi) : 4
Head Water (psi) : 77.00	Gradient : 230.00
Tail Water (psi) : 75.00	Effective Stress at Base : 5

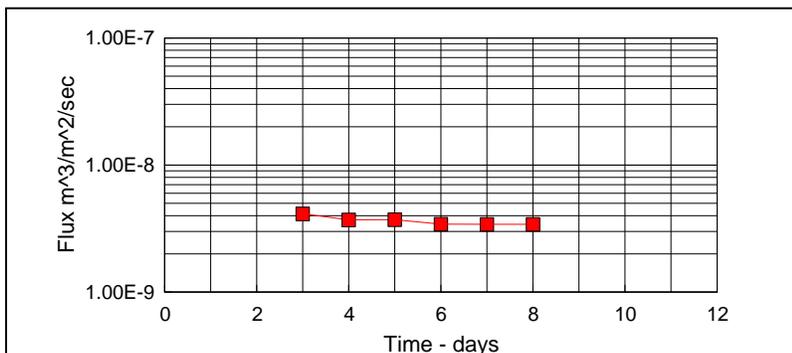
Flux and Permeability Input Data

Minimum Saturation Time is 48 hours

Area, A = 0.00811 m²
Thickness, t = 0.24 in

Days	Date	Flow	Time	Elapsed	Flux	k
		cc	min	Time (sec)	(m ³ /m ²)/sec	cm/sec
1	03/10/2009	48 hours of hydration per ASTM				
2	03/11/2009					
3	03/12/2009	2.90	1440	86400	4.14E-009	1.80E-009
4	03/13/2009	2.60	1442	86520	3.71E-009	1.61E-009
5	03/14/2009	2.60	1438	86280	3.72E-009	1.62E-009
6	03/15/2009	2.40	1439	86340	3.43E-009	1.49E-009
7	03/16/2009	2.40	1441	86460	3.42E-009	1.49E-009
8	03/17/2009	2.40	1441	86460	3.42E-009	1.49E-009

Average of Last 3 Test Readings : 3.43E-009 1.49E-009



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INDEX FLUX AND PERMEABILITY OF GCL's
TEST RESULTS
 ASTM D-5887 / D-5084



Client	: CETCO	Date	: 03/17/2009
Project Location	: Weekly Perm	Job No.	: 09LG1861.01
Sample Number	: Roll 1348	Tested By	: RL
Description	: Bentomat DN Lot: 200910LO	Checked By	: JB
Permeant Fluid	: De-Aired Water		

Physical Property Data

	Total Sample		Total Sample
Initial Clay Height (in)	: 0.21	Final Height of Clay (in)	: 0.23
Initial Diameter (in)	: 4.00	Final Diameter of Clay (in)	: 4.00
Initial Wet Weight (g)	: 55.70	Final Wet Weight(Clay) (g)	: 84.50
Wet Density (pcf)	: 80.34	Wet Density (pcf)	: 111.28
Moisture Content %	: 31.40	Moisture Content %	: 99.20
Dry Density (pcf)	: 61.14	Dry Density (pcf)	: 55.86

Test Parameters

Fluid	: De-Aired Water	Average Effective	
Cell Pressure (psi)	: 80.00	Confining Pressure (psi)	: 4
Head Water (psi)	: 77.00	Gradient	: 240.00
Tail Water (psi)	: 75.00	Effective Stress at Base	: 5

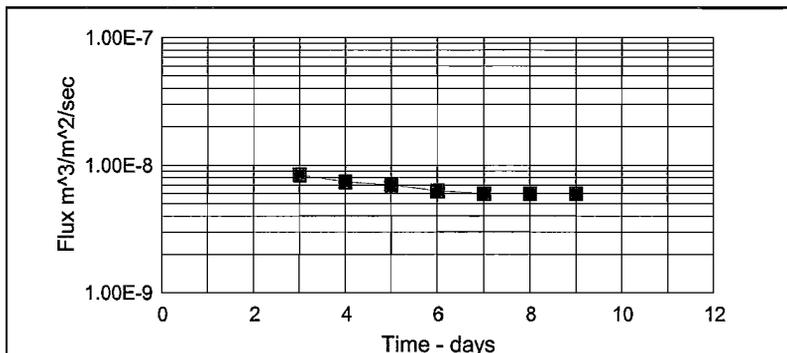
Flux and Permeability Input Data

Minimum Saturation Time is 48 hours

Area, A = 0.00811 m²
 Thickness, t = 0.23 in

Days	Date	Flow	Time	Elapsed	Flux	k	
		cc	min	Time (sec)	(m ³ /m ²)/sec	cm/sec	
1	03/06/2009	48 hours of hydration per ASTM					
2	03/07/2009						
3	03/08/2009	5.90	1439	86340	8.43E-009	3.51E-009	
4	03/09/2009	5.20	1441	86460	7.42E-009	3.09E-009	
5	03/10/2009	4.90	1442	86520	6.99E-009	2.91E-009	
6	03/11/2009	4.40	1438	86280	6.29E-009	2.62E-009	
7	03/12/2009	4.20	1439	86340	6.00E-009	2.50E-009	
8	03/13/2009	4.20	1440	86400	6.00E-009	2.50E-009	
9	03/14/2009	4.20	1442	86520	5.99E-009	2.50E-009	

Average of Last 3 Test Readings : 6.00E-009 2.50E-009



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**INDEX FLUX AND PERMEABILITY OF GCL's
TEST RESULTS
ASTM D-5887 / D-5084**



Client	: CETCO	Date	: 03/17/2009
Project Location	: BRC CAMU Henderson/Landwell	Job No.	: 09LG1861.01
Sample Number	: Roll 1263	Tested By	: RL
Description	: Bentomat DN Lot: 200910LO	Checked By	: JB
Permeant Fluid	: De-Aired Water		

Physical Property Data

	Total Sample		Total Sample
Initial Clay Height (in)	: 0.20	Final Height of Clay (in)	: 0.24
Initial Diameter (in)	: 4.00	Final Diameter of Clay (in)	: 4.00
Initial Wet Weight (g)	: 57.40	Final Wet Weight(Clay) (g)	: 91.40
Wet Density (pcf)	: 86.93	Wet Density (pcf)	: 115.35
Moisture Content %	: 25.10	Moisture Content %	: 99.20
Dry Density (pcf)	: 69.49	Dry Density (pcf)	: 57.91

Test Parameters

Fluid	: De-Aired Water	Average Effective	
Cell Pressure (psi)	: 80.00	Confining Pressure (psi)	: 4
Head Water (psi)	: 77.00	Gradient	: 230.00
Tail Water (psi)	: 75.00	Effective Stress at Base	: 5

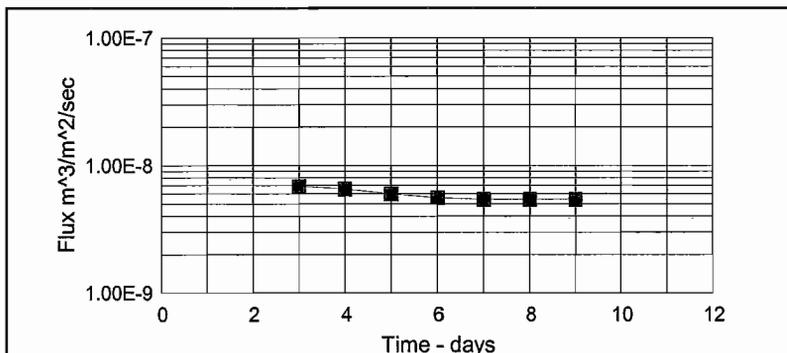
Flux and Permeability Input Data

Minimum Saturation Time is 48 hours

Area, A = 0.00811 m²
Thickness, t = 0.24 in

Days	Date	Flow cc	Time min	Elapsed Time (sec)	Flux (m ³ /m ²)/sec	k cm/sec
1	03/06/2009	48 hours of hydration per ASTM				
2	03/07/2009					
3	03/08/2009	4.80	1439	86340	6.86E-009	2.98E-009
4	03/09/2009	4.60	1441	86460	6.56E-009	2.85E-009
5	03/10/2009	4.20	1442	86520	5.99E-009	2.60E-009
6	03/11/2009	3.90	1438	86280	5.58E-009	2.42E-009
7	03/12/2009	3.80	1439	86340	5.43E-009	2.36E-009
8	03/13/2009	3.80	1440	86400	5.43E-009	2.36E-009
9	03/14/2009	3.80	1442	86520	5.42E-009	2.36E-009

Average of Last 3 Test Readings : 5.42E-009 2.36E-009



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INDEX FLUX AND PERMEABILITY OF GCL's



TEST RESULTS
ASTM D-5887 / D-5084

Client	: CETCO	Date	: 03/17/2009
Project Location	: BRC CAMU Henderson/Landwell	Job No.	: 09LG1861.01
Sample Number	: Roll 1207	Tested By	: RL
Description	: Bentomat DN Lot: 200910LO	Checked By	: JB
Permeant Fluid	: De-Aired Water		

Physical Property Data

	Total Sample		Total Sample
Initial Clay Height (in)	: 0.20	Final Height of Clay (in)	: 0.23
Initial Diameter (in)	: 4.00	Final Diameter of Clay (in)	: 4.00
Initial Wet Weight (g)	: 50.10	Final Wet Weight(Clay) (g)	: 77.60
Wet Density (pcf)	: 75.87	Wet Density (pcf)	: 102.19
Moisture Content %	: 28.50	Moisture Content %	: 98.90
Dry Density (pcf)	: 59.05	Dry Density (pcf)	: 51.38

Test Parameters

Fluid	: De-Aired Water	Average Effective	
Cell Pressure (psi)	: 80.00	Confining Pressure (psi)	: 4
Head Water (psi)	: 77.00	Gradient	: 240.00
Tail Water (psi)	: 75.00	Effective Stress at Base	: 5

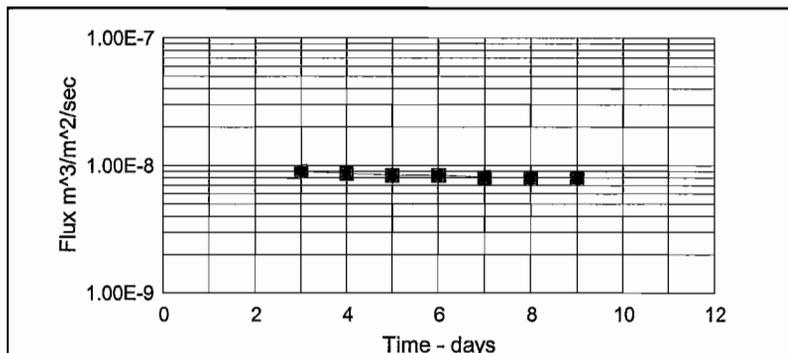
Flux and Permeability Input Data

Minimum Saturation Time is 48 hours

Area, A = 0.00811 m²
Thickness, t = 0.23 in

Days	Date	Flow	Time	Elapsed	Flux	k	
		cc	min	Time (sec)	(m ³ /m ²)/sec	cm/sec	
1	03/06/2009	48 hours of hydration per ASTM					
2	03/07/2009						
3	03/08/2009	6.30	1439	86340	9.00E-009	3.75E-009	
4	03/09/2009	6.10	1441	86460	8.70E-009	3.63E-009	
5	03/10/2009	5.90	1442	86520	8.41E-009	3.51E-009	
6	03/11/2009	5.90	1438	86280	8.44E-009	3.51E-009	
7	03/12/2009	5.70	1439	86340	8.14E-009	3.39E-009	
8	03/13/2009	5.70	1440	86400	8.14E-009	3.39E-009	
9	03/14/2009	5.70	1442	86520	8.13E-009	3.39E-009	

Average of Last 3 Test Readings : 8.14E-009 3.39E-009



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INDEX FLUX AND PERMEABILITY OF GCL's
TEST RESULTS
 ASTM D-5887 / D-5084



Client	: CETCO	Date	: 03/17/2009
Project Location	: BRC CAMU Henderson/Landwell	Job No.	: 09LG1861.01
Sample Number	: Roll 1142	Tested By	: RL
Description	: Bentomat DN Lot: 200910LO	Checked By	: JB
Permeant Fluid	: De-Aired Water		

Physical Property Data

	Total Sample		Total Sample
Initial Clay Height (in)	: 0.22	Final Height of Clay (in)	: 0.25
Initial Diameter (in)	: 4.00	Final Diameter of Clay (in)	: 4.00
Initial Wet Weight (g)	: 56.90	Final Wet Weight(Clay) (g)	: 91.10
Wet Density (pcf)	: 78.34	Wet Density (pcf)	: 110.37
Moisture Content %	: 23.10	Moisture Content %	: 97.40
Dry Density (pcf)	: 63.64	Dry Density (pcf)	: 55.91

Test Parameters

Fluid	: De-Aired Water	Average Effective	
Cell Pressure (psi)	: 80.00	Confining Pressure (psi)	: 4
Head Water (psi)	: 77.00	Gradient	: 220.80
Tail Water (psi)	: 75.00	Effective Stress at Base	: 5

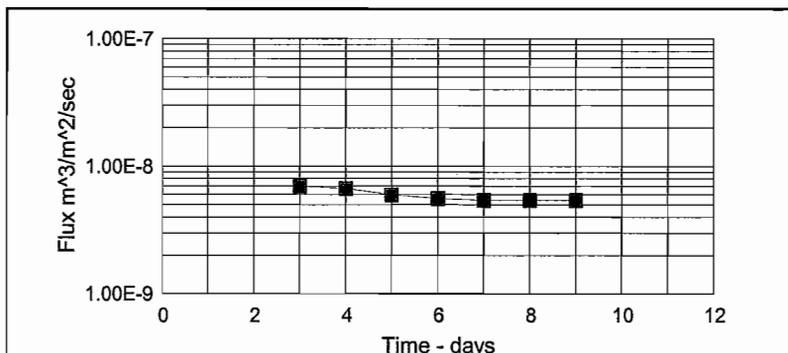
Flux and Permeability Input Data

Minimum Saturation Time is 48 hours

Area, A = 0.00811 m²
 Thickness, t = 0.25 in

Days	Date	Flow	Time	Elapsed	Flux	k	
		cc	min	Time (sec)	(m ³ /m ²)/sec	cm/sec	
1	03/06/2009	48 hours of hydration per ASTM					
2	03/07/2009						
3	03/08/2009	4.90	1439	86340	7.00E-009	3.17E-009	
4	03/09/2009	4.70	1441	86460	6.71E-009	3.04E-009	
5	03/10/2009	4.20	1442	86520	5.99E-009	2.71E-009	
6	03/11/2009	3.90	1438	86280	5.58E-009	2.53E-009	
7	03/12/2009	3.80	1439	86340	5.43E-009	2.46E-009	
8	03/13/2009	3.80	1440	86400	5.43E-009	2.46E-009	
9	03/14/2009	3.80	1442	86520	5.42E-009	2.45E-009	

Average of Last 3 Test Readings : 5.42E-009 2.46E-009



JLT Laboratories, Inc.

938 S Central Ave, Canonsburg, Pa. 15317 Tel 724-746-4441 , Fax 724-745-4261



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	GCL MQC Certificates (1st Portion of CAMU Closure Allocation)
Submittal Number:	02772-004L
Specification Section:	Section 02772, Part 2.03
Drawing Number (s):	8, 10, 14, 16, 19, 21, 23, 25, 27, 29, 31, 33, 35-36, 38-45
Page Number:	02772-4 and 02772-5
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	3/18/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



699 South Friendswood Drive
Suite 101
Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
ATTENTION: Lee C. Farris, P.E.

DATE: 5/12/09
JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
TRANSMITTAL NUMBER: 256
ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	5/12/09			Submittal 02772-004M- GCL MQC Certificates (BMI-South Allocation and 2 nd Portion of CAMU Closure Allocation)	RC

ACTION (*)

AR - AS REQUESTED

FA - FOR APPROVAL

F - FILE

RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL

MAIL

OVERNIGHT

HAND DELIVERY

FACSIMILE

COPY TO: Ranjit Sahu, Lee Farris

BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....



Date: 4/27/2009
Purchase Order: 9114
ORDER NUMBER: 00238336F

Gregg Abney
ESI-Environmental Specialties INT'l, Inc.
7943 Pecue Lane
Baton Rouge, LA 70809
gabney@esiliners,.com

To Whom it May Concern:

Please find enclosed the MQA/MQC test data package for Geosynthetic Clay Liner shipments to ESI-Environmental Specialties INT'l, Inc..

The enclosed data package includes results of all the MQC tests required by ASTM D5889, with the exception of index flux/hydraulic conductivity. This test, which is run according to ASTM D5887, is normally performed once per production lot (once per week), unless a higher frequency is required by the project specifications. Because of the GCL's low permeability, this test can take several weeks to complete. The index flux/hydraulic conductivity results associated with this lot of material will be provided under separate cover as soon as they are available.

Although the index flux/hydraulic conductivity test results are not yet available, CETCO accepts responsibility for our GCL should the index flux/hydraulic conductivity tests produce unacceptable results. If, upon delivery and prior to installation, individual rolls of GCL are found to be nonconforming to accepted project specifications, CETCO will replace the nonconforming material at no charge.

Questions regarding this information should be directed to Chris Athanassopoulos, Technical Support Engineer, at (847) 851-1831.

Sincerely,

A handwritten signature in black ink, appearing to read 'Roger B. Wilkerson', is written over a horizontal line.

Roger B. Wilkerson
Quality Assurance Coordinator
CETCO Lovell Plant



**GEOSYNTHETIC CLAY LINER
MANUFACTURING QUALITY ASSURANCE DATA PACKAGE**

PROJECT NAME: Landwell
CUSTOMER P.O.: 9114
ORDER NUMBER: 00238336F
PREPARED FOR: ESI-Environmental Specialties INT'l, Inc.

CONTENTS:

- Daily production and needle detection certification
- GCL property specifications
- Order packing list
- GCL MQA tracking form
- GCL manufacturing quality control test data
- Bentonite clay certification
- Raw material test results

PREPARED BY: Roger B. Wilkerson
Quality Assurance Coordinator
CETCO
P.O. Box 428
92 Hwy. 37
Lovell, WY 82431

Telephone: 800-322-1149 ext. 413
Fax:
E-Mail: rwilke@cetco.com



PRODUCTION CERTIFICATION

PROJECT NAME: Landwell
CUSTOMER P.O.: 9114
PREPARED FOR: ESI-Environmental Specialties INT'l, Inc.

CETCO affirms that these products meet the physical and chemical criteria listed on the attached GCL property specification sheet.

NEEDLE REMOVAL AND DETECTION PROCEDURE

CETCO hereby affirms that all Bentomat[®] geosynthetic clay liner material manufactured for this project is continually passed under a magnet for needle removal and then screened with a metal detection device. CETCO certifies Bentomat[®] to be essentially free of broken needles and fragments of needles that would negatively effect the performance of the final product.

A handwritten signature in black ink, appearing to read 'Roger B. Wilkerson', is written over a horizontal line.

Roger B. Wilkerson
Quality Assurance Coordinator
Colloid Environmental Technologies Co. (CETCO)



Ship Date: 4/26/2009
 Order Number: 00238336F

Prepared For: ESI-Environmental Specialties INT'l, Inc.

The GCL raw materials and GCL finished product manufactured for the above-referenced order number(s) are hereby certified to achieve the properties listed in the tables below.

GCL PROPERTY SPECIFICATIONS FOR BENTOMAT DN

Test Method	Test Method Property	Test Frequency	Certified Value
ASTM D 5891	Bentonite Fluid Loss	1 per 50 Tons	18 ml Max
ASTM D 5993	Bentonite Mass/Area	40,000 sq ft (4000 sq m)	0.75 lb /sq ft (3.6 kg/sq m) Min
ASTM D 5890	Bentonite Swell Index	1 per 50 Tons	24 ml/2g Min
ASTM D 6768	GCL Grab Strength	200,000 sq ft (20,000 sq m)	50 lbs/in MARV
ASTM D 6243	GCL Hydrated Internal Shear Strength	Periodic	500 psf (48 kPa) typ @ 200 psf
ASTM D 5887	GCL Hydraulic Conductivity	Weekly	5 x 10 ⁻⁹ cm/ sec Max
ASTM D 5887	GCL Index Flux	Weekly	1 x 10 ⁻⁸ m ³ /m ² /sec Max
ASTM D 6496	GCL Peel Strength	40,000 sq ft (4000 sq m)	3.5 lbs/in Min
ASTM D4632*	Grab Strength*modified with 4-inch grips	200,000 sq ft (20,000 sq m)	150 lbs (660 N) MARV
ASTM D4632*	Peel Strength*modified with 4-inch grips	40,000 sq ft (4000 sq m)	15 lbs (65 N) Min

SPECIALLY REQUESTED CERTIFIED PROPERTIES FOR THIS ORDER OF BENTOMAT DN

Test Method	Test Method Property	Requested Frequency	Requested Value	Requested Conditions
ASTM D 5887	GCL Index Flux	1/200,000 sqft	Standard	Standard
ASTM D 4643	GCL Moisture	Standard	30% Moisture (max)	Standard

Bentonite property tests are performed at a bentonite processing facility before shipment to CETCO's production facility. All tensile testing is in the machine direction.

FABRIC SUPPLIER REQUIREMENTS FOR BENTOMAT DN

Raw Material	test method	mass per area	units
Nonwoven Cover Fabric	ASTM D 5261	6.0	oz/yd ²
Bentomat DN Base Nonwoven Fabric	ASTM D 5261	6.0	oz/yd ²

Fabric certifications from our raw material suppliers are on file at our production facility.



CETCO's MQA laboratory is GAI-accredited (www.geosynthetic-institute.org/gai/lab.html).


 Roger B. Wilkerson
 Quality Assurance Coordinator
 CETCO Lovell Plant



GCL ORDER PACKING LIST

GCL shipped for certification package number 00238336F

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336F	LO-BENTOMAT DN	200917LO	00002290	200	14.5	2900	3430
00238336F	LO-BENTOMAT DN	200917LO	00002291	200	14.5	2900	3430
00238336F	LO-BENTOMAT DN	200917LO	00002292	200	14.5	2900	3430
00238336F	LO-BENTOMAT DN	200917LO	00002293	200	14.5	2900	3435
00238336F	LO-BENTOMAT DN	200917LO	00002294	200	14.5	2900	3460
00238336F	LO-BENTOMAT DN	200917LO	00002295	200	14.5	2900	3465
00238336F	LO-BENTOMAT DN	200917LO	00002296	200	14.5	2900	3470
00238336F	LO-BENTOMAT DN	200917LO	00002297	200	14.5	2900	3455
00238336F	LO-BENTOMAT DN	200917LO	00002298	200	14.5	2900	3460
00238336F	LO-BENTOMAT DN	200917LO	00002299	200	14.5	2900	3465
00238336F	LO-BENTOMAT DN	200917LO	00002300	200	14.5	2900	3495
00238336F	LO-BENTOMAT DN	200917LO	00002301	200	14.5	2900	3505
00238336F	LO-BENTOMAT DN	200917LO	00002302	200	14.5	2900	3505
00238336F	LO-BENTOMAT DN	200917LO	00002303	200	14.5	2900	3515
00238336F	LO-BENTOMAT DN	200917LO	00002304	200	14.5	2900	3470
00238336F	LO-BENTOMAT DN	200917LO	00002305	200	14.5	2900	3465
00238336F	LO-BENTOMAT DN	200917LO	00002306	200	14.5	2900	3445
00238336F	LO-BENTOMAT DN	200917LO	00002307	200	14.5	2900	3440
00238336F	LO-BENTOMAT DN	200917LO	00002308	200	14.5	2900	3445
00238336F	LO-BENTOMAT DN	200917LO	00002309	200	14.5	2900	3450
00238336F	LO-BENTOMAT DN	200917LO	00002310	200	14.5	2900	3445
00238336F	LO-BENTOMAT DN	200917LO	00002311	200	14.5	2900	3455
00238336F	LO-BENTOMAT DN	200917LO	00002312	200	14.5	2900	3435
00238336F	LO-BENTOMAT DN	200917LO	00002313	200	14.5	2900	3460
00238336F	LO-BENTOMAT DN	200917LO	00002314	200	14.5	2900	3470
00238336F	LO-BENTOMAT DN	200917LO	00002315	200	14.5	2900	3445
00238336F	LO-BENTOMAT DN	200917LO	00002316	200	14.5	2900	3450

**BMI SOUTH
CLOSURE (130
ROLLS--START)**



Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336F	LO-BENTOMAT DN	200917LO	00002317	200	14.5	2900	3450
00238336F	LO-BENTOMAT DN	200917LO	00002318	200	14.5	2900	3445
00238336F	LO-BENTOMAT DN	200917LO	00002319	200	14.5	2900	3440
00238336F	LO-BENTOMAT DN	200917LO	00002320	200	14.5	2900	3445
00238336F	LO-BENTOMAT DN	200917LO	00002321	200	14.5	2900	3455
00238336F	LO-BENTOMAT DN	200917LO	00002322	200	14.5	2900	3450
00238336F	LO-BENTOMAT DN	200917LO	00002323	200	14.5	2900	3445
00238336F	LO-BENTOMAT DN	200917LO	00002324	200	14.5	2900	3435
00238336F	LO-BENTOMAT DN	200917LO	00002325	200	14.5	2900	3430
00238336F	LO-BENTOMAT DN	200917LO	00002326	200	14.5	2900	3430
00238336F	LO-BENTOMAT DN	200917LO	00002327	200	14.5	2900	3450
00238336F	LO-BENTOMAT DN	200917LO	00002328	200	14.5	2900	3485
00238336F	LO-BENTOMAT DN	200917LO	00002329	200	14.5	2900	3430
00238336F	LO-BENTOMAT DN	200917LO	00002330	200	14.5	2900	3430
00238336F	LO-BENTOMAT DN	200917LO	00002331	200	14.5	2900	3435
00238336F	LO-BENTOMAT DN	200917LO	00002332	200	14.5	2900	3435
00238336F	LO-BENTOMAT DN	200917LO	00002333	200	14.5	2900	3435
00238336F	LO-BENTOMAT DN	200917LO	00002334	200	14.5	2900	3430
00238336F	LO-BENTOMAT DN	200917LO	00002335	200	14.5	2900	3420
00238336F	LO-BENTOMAT DN	200917LO	00002336	200	14.5	2900	3405
00238336F	LO-BENTOMAT DN	200917LO	00002337	200	14.5	2900	3450
00238336F	LO-BENTOMAT DN	200917LO	00002338	200	14.5	2900	3455
00238336F	LO-BENTOMAT DN	200917LO	00002339	200	14.5	2900	3470
00238336F	LO-BENTOMAT DN	200917LO	00002340	200	14.5	2900	3490
00238336F	LO-BENTOMAT DN	200917LO	00002341	200	14.5	2900	3485
00238336F	LO-BENTOMAT DN	200917LO	00002342	200	14.5	2900	3460
00238336F	LO-BENTOMAT DN	200917LO	00002343	200	14.5	2900	3455
00238336F	LO-BENTOMAT DN	200917LO	00002344	200	14.5	2900	3450
00238336F	LO-BENTOMAT DN	200917LO	00002345	200	14.5	2900	3465
00238336F	LO-BENTOMAT DN	200917LO	00002346	200	14.5	2900	3475
00238336F	LO-BENTOMAT DN	200917LO	00002347	200	14.5	2900	3430
00238336F	LO-BENTOMAT DN	200917LO	00002348	200	14.5	2900	3475

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336F	LO-BENTOMAT DN	200917LO	00002349	200	14.5	2900	3480
00238336F	LO-BENTOMAT DN	200917LO	00002350	200	14.5	2900	3495
00238336F	LO-BENTOMAT DN	200917LO	00002351	200	14.5	2900	3485
00238336F	LO-BENTOMAT DN	200917LO	00002352	200	14.5	2900	3480
00238336F	LO-BENTOMAT DN	200917LO	00002353	200	14.5	2900	3485
00238336F	LO-BENTOMAT DN	200917LO	00002354	200	14.5	2900	3485
00238336F	LO-BENTOMAT DN	200917LO	00002355	200	14.5	2900	3480
00238336F	LO-BENTOMAT DN	200917LO	00002356	200	14.5	2900	3480
00238336F	LO-BENTOMAT DN	200917LO	00002357	200	14.5	2900	3485
00238336F	LO-BENTOMAT DN	200917LO	00002358	200	14.5	2900	3510
00238336F	LO-BENTOMAT DN	200917LO	00002359	200	14.5	2900	3495
00238336F	LO-BENTOMAT DN	200917LO	00002360	200	14.5	2900	3495
00238336F	LO-BENTOMAT DN	200917LO	00002361	200	14.5	2900	3525
00238336F	LO-BENTOMAT DN	200917LO	00002362	200	14.5	2900	3520
00238336F	LO-BENTOMAT DN	200917LO	00002363	200	14.5	2900	3525
00238336F	LO-BENTOMAT DN	200917LO	00002364	200	14.5	2900	3515
00238336F	LO-BENTOMAT DN	200917LO	00002365	200	14.5	2900	3490
00238336F	LO-BENTOMAT DN	200917LO	00002366	200	14.5	2900	3480
00238336F	LO-BENTOMAT DN	200917LO	00002367	200	14.5	2900	3470
00238336F	LO-BENTOMAT DN	200917LO	00002368	200	14.5	2900	3475
00238336F	LO-BENTOMAT DN	200917LO	00002369	200	14.5	2900	3475
00238336F	LO-BENTOMAT DN	200917LO	00002370	200	14.5	2900	3470
00238336F	LO-BENTOMAT DN	200917LO	00002371	200	14.5	2900	3485
00238336F	LO-BENTOMAT DN	200917LO	00002372	200	14.5	2900	3695
00238336F	LO-BENTOMAT DN	200917LO	00002373	200	14.5	2900	3465
00238336F	LO-BENTOMAT DN	200917LO	00002374	200	14.5	2900	3460
00238336F	LO-BENTOMAT DN	200917LO	00002375	200	14.5	2900	3470
00238336F	LO-BENTOMAT DN	200917LO	00002376	200	14.5	2900	3465
00238336F	LO-BENTOMAT DN	200917LO	00002377	200	14.5	2900	3460
00238336F	LO-BENTOMAT DN	200917LO	00002378	200	14.5	2900	3485
00238336F	LO-BENTOMAT DN	200917LO	00002379	200	14.5	2900	3490
00238336F	LO-BENTOMAT DN	200917LO	00002380	200	14.5	2900	3485

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336F	LO-BENTOMAT DN	200917LO	00002381	200	14.5	2900	3505
00238336F	LO-BENTOMAT DN	200917LO	00002382	200	14.5	2900	3510
00238336F	LO-BENTOMAT DN	200917LO	00002383	200	14.5	2900	3495
00238336F	LO-BENTOMAT DN	200917LO	00002384	200	14.5	2900	3500
00238336F	LO-BENTOMAT DN	200917LO	00002385	200	14.5	2900	3505
00238336F	LO-BENTOMAT DN	200917LO	00002386	200	14.5	2900	3490
00238336F	LO-BENTOMAT DN	200917LO	00002387	200	14.5	2900	3555
00238336F	LO-BENTOMAT DN	200917LO	00002388	200	14.5	2900	3545
00238336F	LO-BENTOMAT DN	200917LO	00002389	200	14.5	2900	3575
00238336F	LO-BENTOMAT DN	200917LO	00002390	200	14.5	2900	3535
00238336F	LO-BENTOMAT DN	200917LO	00002391	200	14.5	2900	3540
00238336F	LO-BENTOMAT DN	200917LO	00002392	200	14.5	2900	3535
00238336F	LO-BENTOMAT DN	200917LO	00002393	200	14.5	2900	3525
00238336F	LO-BENTOMAT DN	200917LO	00002394	200	14.5	2900	3560
00238336F	LO-BENTOMAT DN	200917LO	00002395	200	14.5	2900	3550
00238336F	LO-BENTOMAT DN	200917LO	00002396	200	14.5	2900	3555
00238336F	LO-BENTOMAT DN	200917LO	00002397	200	14.5	2900	3470
00238336F	LO-BENTOMAT DN	200917LO	00002398	200	14.5	2900	3520
00238336F	LO-BENTOMAT DN	200917LO	00002399	200	14.5	2900	3515
00238336F	LO-BENTOMAT DN	200917LO	00002400	200	14.5	2900	3555
00238336F	LO-BENTOMAT DN	200917LO	00002401	200	14.5	2900	3505
00238336F	LO-BENTOMAT DN	200917LO	00002402	200	14.5	2900	3510
00238336F	LO-BENTOMAT DN	200917LO	00002403	200	14.5	2900	3495
00238336F	LO-BENTOMAT DN	200917LO	00002404	200	14.5	2900	3500
00238336F	LO-BENTOMAT DN	200917LO	00002405	200	14.5	2900	3480
00238336F	LO-BENTOMAT DN	200917LO	00002406	200	14.5	2900	3520
00238336F	LO-BENTOMAT DN	200917LO	00002407	200	14.5	2900	3525
00238336F	LO-BENTOMAT DN	200917LO	00002408	200	14.5	2900	3500
00238336F	LO-BENTOMAT DN	200917LO	00002409	200	14.5	2900	3505
00238336F	LO-BENTOMAT DN	200917LO	00002410	200	14.5	2900	3525
00238336F	LO-BENTOMAT DN	200917LO	00002411	200	14.5	2900	3520
00238336F	LO-BENTOMAT DN	200917LO	00002412	200	14.5	2900	3515

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336F	LO-BENTOMAT DN	200917LO	00002413	200	14.5	2900	3510
00238336F	LO-BENTOMAT DN	200917LO	00002414	200	14.5	2900	3520
00238336F	LO-BENTOMAT DN	200917LO	00002415	200	14.5	2900	3525
00238336F	LO-BENTOMAT DN	200917LO	00002416	200	14.5	2900	3515
00238336F	LO-BENTOMAT DN	200917LO	00002417	200	14.5	2900	3510
00238336F	LO-BENTOMAT DN	200917LO	00002418	200	14.5	2900	3490
00238336F	LO-BENTOMAT DN	200917LO	00002419	200	14.5	2900	3470
00238336F	LO-BENTOMAT DN	200917LO	00002420	200	14.5	2900	3470
00238336F	LO-BENTOMAT DN	200917LO	00002421	200	14.5	2900	3480
00238336F	LO-BENTOMAT DN	200917LO	00002422	200	14.5	2900	3510
00238336F	LO-BENTOMAT DN	200917LO	00002423	200	14.5	2900	3450
00238336F	LO-BENTOMAT DN	200917LO	00002424	200	14.5	2900	3445
00238336F	LO-BENTOMAT DN	200917LO	00002425	200	14.5	2900	3450
00238336F	LO-BENTOMAT DN	200917LO	00002426	200	14.5	2900	3450
00238336F	LO-BENTOMAT DN	200917LO	00002427	200	14.5	2900	3485
00238336F	LO-BENTOMAT DN	200917LO	00002428	200	14.5	2900	3460
00238336F	LO-BENTOMAT DN	200917LO	00002429	200	14.5	2900	3465
00238336F	LO-BENTOMAT DN	200917LO	00002430	200	14.5	2900	3490
00238336F	LO-BENTOMAT DN	200917LO	00002431	200	14.5	2900	3495
00238336F	LO-BENTOMAT DN	200917LO	00002432	200	14.5	2900	3500
00238336F	LO-BENTOMAT DN	200917LO	00002433	200	14.5	2900	3515
00238336F	LO-BENTOMAT DN	200917LO	00002434	200	14.5	2900	3490
00238336F	LO-BENTOMAT DN	200917LO	00002435	200	14.5	2900	3490
00238336F	LO-BENTOMAT DN	200917LO	00002436	200	14.5	2900	3475
00238336F	LO-BENTOMAT DN	200917LO	00002437	200	14.5	2900	3485
00238336F	LO-BENTOMAT DN	200917LO	00002438	200	14.5	2900	3485
00238336F	LO-BENTOMAT DN	200917LO	00002439	200	14.5	2900	3510
00238336F	LO-BENTOMAT DN	200917LO	00002440	200	14.5	2900	3475
00238336F	LO-BENTOMAT DN	200917LO	00002441	200	14.5	2900	3525
00238336F	LO-BENTOMAT DN	200917LO	00002442	200	14.5	2900	3475
00238336F	LO-BENTOMAT DN	200917LO	00002443	200	14.5	2900	3470
00238336F	LO-BENTOMAT DN	200917LO	00002444	200	14.5	2900	3505

BMI SOUTH
CLOSURE (130
ROLLS--END)

CAMU CLOSURE
(156 ROLLS--
START)

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336F	LO-BENTOMAT DN	200917LO	00002445	200	14.5	2900	3510
00238336F	LO-BENTOMAT DN	200917LO	00002446	200	14.5	2900	3485
00238336F	LO-BENTOMAT DN	200917LO	00002447	200	14.5	2900	3490
00238336F	LO-BENTOMAT DN	200917LO	00002448	200	14.5	2900	3460
00238336F	LO-BENTOMAT DN	200917LO	00002449	200	14.5	2900	3440
00238336F	LO-BENTOMAT DN	200917LO	00002450	200	14.5	2900	3460
00238336F	LO-BENTOMAT DN	200917LO	00002451	200	14.5	2900	3450
00238336F	LO-BENTOMAT DN	200917LO	00002452	200	14.5	2900	3455
00238336F	LO-BENTOMAT DN	200917LO	00002453	200	14.5	2900	3435
00238336F	LO-BENTOMAT DN	200917LO	00002454	200	14.5	2900	3480
00238336F	LO-BENTOMAT DN	200917LO	00002455	200	14.5	2900	3440
00238336F	LO-BENTOMAT DN	200917LO	00002456	200	14.5	2900	3500
00238336F	LO-BENTOMAT DN	200917LO	00002457	200	14.5	2900	3450
00238336F	LO-BENTOMAT DN	200917LO	00002458	200	14.5	2900	3440
00238336F	LO-BENTOMAT DN	200917LO	00002459	200	14.5	2900	3445
00238336F	LO-BENTOMAT DN	200917LO	00002460	200	14.5	2900	3440
00238336F	LO-BENTOMAT DN	200917LO	00002461	200	14.5	2900	3450
00238336F	LO-BENTOMAT DN	200917LO	00002462	200	14.5	2900	3425
00238336F	LO-BENTOMAT DN	200917LO	00002463	200	14.5	2900	3490
00238336F	LO-BENTOMAT DN	200917LO	00002464	200	14.5	2900	3465
00238336F	LO-BENTOMAT DN	200917LO	00002465	200	14.5	2900	3490
00238336F	LO-BENTOMAT DN	200917LO	00002466	200	14.5	2900	3505
00238336F	LO-BENTOMAT DN	200917LO	00002467	200	14.5	2900	3510
00238336F	LO-BENTOMAT DN	200917LO	00002468	200	14.5	2900	3540
00238336F	LO-BENTOMAT DN	200917LO	00002469	200	14.5	2900	3545
00238336F	LO-BENTOMAT DN	200917LO	00002470	200	14.5	2900	3560
00238336F	LO-BENTOMAT DN	200917LO	00002471	200	14.5	2900	3510
00238336F	LO-BENTOMAT DN	200917LO	00002472	200	14.5	2900	3555
00238336F	LO-BENTOMAT DN	200917LO	00002473	200	14.5	2900	3520
00238336F	LO-BENTOMAT DN	200917LO	00002474	200	14.5	2900	3560
00238336F	LO-BENTOMAT DN	200917LO	00002475	200	14.5	2900	3555
00238336F	LO-BENTOMAT DN	200917LO	00002476	200	14.5	2900	3560

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336F	LO-BENTOMAT DN	200917LO	00002477	200	14.5	2900	3550
00238336F	LO-BENTOMAT DN	200917LO	00002478	200	14.5	2900	3580
00238336F	LO-BENTOMAT DN	200917LO	00002479	200	14.5	2900	3560
00238336F	LO-BENTOMAT DN	200917LO	00002480	200	14.5	2900	3595
00238336F	LO-BENTOMAT DN	200917LO	00002481	200	14.5	2900	3520
00238336F	LO-BENTOMAT DN	200917LO	00002482	200	14.5	2900	3540
00238336F	LO-BENTOMAT DN	200917LO	00002483	200	14.5	2900	3545
00238336F	LO-BENTOMAT DN	200917LO	00002484	200	14.5	2900	3555
00238336F	LO-BENTOMAT DN	200917LO	00002485	200	14.5	2900	3550
00238336F	LO-BENTOMAT DN	200917LO	00002486	200	14.5	2900	2405
00238336F	LO-BENTOMAT DN	200917LO	00002487	200	14.5	2900	3545
00238336F	LO-BENTOMAT DN	200917LO	00002488	200	14.5	2900	3505
00238336F	LO-BENTOMAT DN	200917LO	00002489	200	14.5	2900	3495
00238336F	LO-BENTOMAT DN	200917LO	00002490	200	14.5	2900	3495
00238336F	LO-BENTOMAT DN	200917LO	00002491	200	14.5	2900	3475
00238336F	LO-BENTOMAT DN	200917LO	00002492	200	14.5	2900	3460
00238336F	LO-BENTOMAT DN	200917LO	00002493	200	14.5	2900	3465
00238336F	LO-BENTOMAT DN	200917LO	00002494	200	14.5	2900	3505
00238336F	LO-BENTOMAT DN	200917LO	00002495	200	14.5	2900	3485
00238336F	LO-BENTOMAT DN	200917LO	00002496	200	14.5	2900	3510
00238336F	LO-BENTOMAT DN	200917LO	00002497	200	14.5	2900	3515
00238336F	LO-BENTOMAT DN	200917LO	00002498	200	14.5	2900	3485
00238336F	LO-BENTOMAT DN	200917LO	00002499	200	14.5	2900	3495
00238336F	LO-BENTOMAT DN	200917LO	00002500	200	14.5	2900	3495
00238336F	LO-BENTOMAT DN	200917LO	00002501	200	14.5	2900	3490
00238336F	LO-BENTOMAT DN	200917LO	00002502	200	14.5	2900	3510
00238336F	LO-BENTOMAT DN	200917LO	00002503	200	14.5	2900	3510
00238336F	LO-BENTOMAT DN	200917LO	00002504	200	14.5	2900	3505
00238336F	LO-BENTOMAT DN	200917LO	00002505	200	14.5	2900	3465
00238336F	LO-BENTOMAT DN	200917LO	00002506	200	14.5	2900	3480
00238336F	LO-BENTOMAT DN	200917LO	00002507	200	14.5	2900	3500
00238336F	LO-BENTOMAT DN	200917LO	00002508	200	14.5	2900	3475

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336F	LO-BENTOMAT DN	200917LO	00002509	200	14.5	2900	3470
00238336F	LO-BENTOMAT DN	200917LO	00002510	200	14.5	2900	3465
00238336F	LO-BENTOMAT DN	200917LO	00002511	200	14.5	2900	3515
00238336F	LO-BENTOMAT DN	200917LO	00002512	200	14.5	2900	3510
00238336F	LO-BENTOMAT DN	200917LO	00002513	200	14.5	2900	3525
00238336F	LO-BENTOMAT DN	200917LO	00002514	200	14.5	2900	3460
00238336F	LO-BENTOMAT DN	200917LO	00002515	200	14.5	2900	3485
00238336F	LO-BENTOMAT DN	200917LO	00002516	200	14.5	2900	3480
00238336F	LO-BENTOMAT DN	200917LO	00002517	200	14.5	2900	3485
00238336F	LO-BENTOMAT DN	200917LO	00002518	200	14.5	2900	3500
00238336F	LO-BENTOMAT DN	200917LO	00002519	200	14.5	2900	3495
00238336F	LO-BENTOMAT DN	200917LO	00002520	200	14.5	2900	3460
00238336F	LO-BENTOMAT DN	200917LO	00002521	200	14.5	2900	3475
00238336F	LO-BENTOMAT DN	200917LO	00002522	200	14.5	2900	3480
00238336F	LO-BENTOMAT DN	200917LO	00002523	200	14.5	2900	3465
00238336F	LO-BENTOMAT DN	200917LO	00002524	200	14.5	2900	3460
00238336F	LO-BENTOMAT DN	200917LO	00002525	200	14.5	2900	3500
00238336F	LO-BENTOMAT DN	200917LO	00002526	200	14.5	2900	3480
00238336F	LO-BENTOMAT DN	200917LO	00002527	200	14.5	2900	3480
00238336F	LO-BENTOMAT DN	200917LO	00002528	200	14.5	2900	3475
00238336F	LO-BENTOMAT DN	200917LO	00002529	200	14.5	2900	3475
00238336F	LO-BENTOMAT DN	200917LO	00002530	200	14.5	2900	3480
00238336F	LO-BENTOMAT DN	200917LO	00002531	200	14.5	2900	3545
00238336F	LO-BENTOMAT DN	200917LO	00002532	200	14.5	2900	3465
00238336F	LO-BENTOMAT DN	200917LO	00002533	200	14.5	2900	3525
00238336F	LO-BENTOMAT DN	200917LO	00002534	200	14.5	2900	3460
00238336F	LO-BENTOMAT DN	200917LO	00002535	200	14.5	2900	3475
00238336F	LO-BENTOMAT DN	200917LO	00002536	200	14.5	2900	3460
00238336F	LO-BENTOMAT DN	200917LO	00002537	200	14.5	2900	3455
00238336F	LO-BENTOMAT DN	200917LO	00002538	200	14.5	2900	3460
00238336F	LO-BENTOMAT DN	200917LO	00002539	200	14.5	2900	3450
00238336F	LO-BENTOMAT DN	200917LO	00002540	200	14.5	2900	3455

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336F	LO-BENTOMAT DN	200917LO	00002541	200	14.5	2900	3490
00238336F	LO-BENTOMAT DN	200917LO	00002542	200	14.5	2900	3505
00238336F	LO-BENTOMAT DN	200917LO	00002543	200	14.5	2900	3500
00238336F	LO-BENTOMAT DN	200917LO	00002544	200	14.5	2900	3510
00238336F	LO-BENTOMAT DN	200917LO	00002545	200	14.5	2900	3510
00238336F	LO-BENTOMAT DN	200917LO	00002546	200	14.5	2900	3485
00238336F	LO-BENTOMAT DN	200917LO	00002547	200	14.5	2900	3500
00238336F	LO-BENTOMAT DN	200917LO	00002548	200	14.5	2900	3490
00238336F	LO-BENTOMAT DN	200917LO	00002549	200	14.5	2900	3495
00238336F	LO-BENTOMAT DN	200917LO	00002550	200	14.5	2900	3500
00238336F	LO-BENTOMAT DN	200917LO	00002551	200	14.5	2900	3520
00238336F	LO-BENTOMAT DN	200917LO	00002552	200	14.5	2900	3470
00238336F	LO-BENTOMAT DN	200917LO	00002553	200	14.5	2900	3475
00238336F	LO-BENTOMAT DN	200917LO	00002554	200	14.5	2900	3470
00238336F	LO-BENTOMAT DN	200917LO	00002555	200	14.5	2900	3460
00238336F	LO-BENTOMAT DN	200917LO	00002556	200	14.5	2900	3450
00238336F	LO-BENTOMAT DN	200917LO	00002557	200	14.5	2900	3490
00238336F	LO-BENTOMAT DN	200917LO	00002558	200	14.5	2900	3480
00238336F	LO-BENTOMAT DN	200917LO	00002559	200	14.5	2900	3475
00238336F	LO-BENTOMAT DN	200917LO	00002560	200	14.5	2900	3470
00238336F	LO-BENTOMAT DN	200917LO	00002561	200	14.5	2900	3510
00238336F	LO-BENTOMAT DN	200917LO	00002562	200	14.5	2900	3510
00238336F	LO-BENTOMAT DN	200917LO	00002563	200	14.5	2900	3495
00238336F	LO-BENTOMAT DN	200917LO	00002564	200	14.5	2900	3535
00238336F	LO-BENTOMAT DN	200917LO	00002565	200	14.5	2900	3515
00238336F	LO-BENTOMAT DN	200917LO	00002566	200	14.5	2900	3540
00238336F	LO-BENTOMAT DN	200917LO	00002567	200	14.5	2900	3615
00238336F	LO-BENTOMAT DN	200917LO	00002568	200	14.5	2900	3610
00238336F	LO-BENTOMAT DN	200917LO	00002569	200	14.5	2900	3660
00238336F	LO-BENTOMAT DN	200917LO	00002570	200	14.5	2900	3550
00238336F	LO-BENTOMAT DN	200917LO	00002571	200	14.5	2900	3585
00238336F	LO-BENTOMAT DN	200917LO	00002572	200	14.5	2900	3665

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336F	LO-BENTOMAT DN	200917LO	00002573	200	14.5	2900	3630
00238336F	LO-BENTOMAT DN	200917LO	00002574	200	14.5	2900	3650
00238336F	LO-BENTOMAT DN	200917LO	00002575	200	14.5	2900	3645
Totals:				57200	4147	829400	997440
Total Number of Rolls Certified: 286							

**CAMU CLOSURE
(156 ROLLS--end)**





GCL MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 00238336F

GCL			Geotextiles			Clay	
LO-BENTOMAT DN			LO-N/W-WHITE-DN			LO-N/W-BLACK-DN-6 OZ	LO-CG 50-DN
GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200917LO	00002290	00002288	200916CV	00001254	00001249	2011211850	042009A
200917LO	00002291	00002288	200916CV	00001254	00001249	2011211850	042009A
200917LO	00002292	00002288	200916CV	00001254	00001249	2011211850	042009A
200917LO	00002293	00002288	200916CV	00001254	00001249	2011211850	042009A
200917LO	00002294	00002288	200916CV	00001254	00001249	2011211850	042009A
200917LO	00002295	00002288	200916CV	00001254	00001249	2011211850	042009A
200917LO	00002296	00002288	200916CV	00001275	00001273	2011211850	042009A
200917LO	00002297	00002288	200916CV	00001275	00001273	2011211850	042009A
200917LO	00002298	00002288	200916CV	00001275	00001273	2011211850	042009A
200917LO	00002299	00002288	200916CV	00001275	00001273	2011211850	042009A
200917LO	00002300	00002288	200914CV	00000973	00000969	2010816962	042009A
200917LO	00002301	00002301	200914CV	00000973	00000969	2010816962	042009A
200917LO	00002302	00002301	200914CV	00000973	00000969	2010816962	042009A
200917LO	00002303	00002301	200914CV	00000973	00000969	2010816962	042009A
200917LO	00002304	00002301	200914CV	00000973	00000969	2010816962	042009A
200917LO	00002305	00002301	200914CV	00000973	00000969	2010816962	042009A
200917LO	00002306	00002301	200914CV	00000973	00000969	2010816962	042009A
200917LO	00002307	00002301	200914CV	00001022	00001021	2010816962	042009A
200917LO	00002308	00002301	200914CV	00001022	00001021	2010816962	042009A
200917LO	00002309	00002301	200914CV	00001022	00001021	2010816962	042009A
200917LO	00002310	00002301	200914CV	00001022	00001021	2011244922	042009A
200917LO	00002311	00002301	200914CV	00001022	00001021	2011244922	042009A
200917LO	00002312	00002301	200914CV	00001039	00001039	2011244922	042009A
200917LO	00002313	00002301	200914CV	00001039	00001039	2011244922	042009A
200917LO	00002314	00002314	200914CV	00001039	00001039	2011244922	042009A
200917LO	00002315	00002314	200914CV	00001039	00001039	2011244922	042009B
200917LO	00002316	00002314	200914CV	00001039	00001039	2011244922	042009B
200917LO	00002317	00002314	200914CV	00000975	00000969	2011244922	042009B
200917LO	00002318	00002314	200914CV	00000975	00000969	2011244922	042009B

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200917LO	00002319	00002314	200914CV	00000975	00000969	2011244922	042009B
200917LO	00002320	00002314	200914CV	00000975	00000969	2011244919	042009B
200917LO	00002321	00002314	200914CV	00000975	00000969	2011244919	042009B
200917LO	00002322	00002314	200914CV	00000975	00000969	2011244919	042009B
200917LO	00002323	00002314	200914CV	00000967	00000962	2011244919	042009B
200917LO	00002324	00002314	200914CV	00000967	00000962	2011244919	042009B
200917LO	00002325	00002314	200914CV	00000967	00000962	2011244919	042009B
200917LO	00002326	00002314	200914CV	00000967	00000962	2011244919	042009B
200917LO	00002327	00002327	200914CV	00000967	00000962	2011244919	042009B
200917LO	00002328	00002327	200914CV	00000976	00000969	2011244919	042009B
200917LO	00002329	00002327	200914CV	00000976	00000969	2011244919	042009B
200917LO	00002330	00002327	200914CV	00000976	00000969	2011244920	042009B
200917LO	00002331	00002327	200914CV	00000976	00000969	2011244920	042009B
200917LO	00002332	00002327	200914CV	00000976	00000969	2011244920	042009B
200917LO	00002333	00002327	200914CV	00000968	00000962	2011244920	042009B
200917LO	00002334	00002327	200914CV	00000968	00000962	2011244920	042009B
200917LO	00002335	00002327	200914CV	00000968	00000962	2011244920	042009B
200917LO	00002336	00002327	200914CV	00000968	00000962	2011244920	042009B
200917LO	00002337	00002327	200914CV	00000968	00000962	2011244920	042009B
200917LO	00002338	00002327	200914CV	00000968	00000962	2011244920	042009B
200917LO	00002339	00002327	200914CV	00000966	00000962	2011244920	042009B
200917LO	00002340	00002340	200914CV	00000966	00000962	2011244916	042009B
200917LO	00002341	00002340	200914CV	00000966	00000962	2011244916	042009B
200917LO	00002342	00002340	200914CV	00000966	00000962	2011244916	042009B
200917LO	00002343	00002340	200914CV	00000965	00000962	2011244916	042009B
200917LO	00002344	00002340	200914CV	00000965	00000962	2011244916	042009B
200917LO	00002345	00002340	200914CV	00000965	00000962	2011244916	042009B
200917LO	00002346	00002340	200914CV	00000965	00000962	2011244916	042009B
200917LO	00002347	00002340	200914CV	00000965	00000962	2011244916	042009C
200917LO	00002348	00002340	200914CV	00000960	00000952	2011244916	042009C
200917LO	00002349	00002340	200914CV	00000960	00000952	2011244916	042009C
200917LO	00002350	00002340	200914CV	00000960	00000952	2011244923	042009C
200917LO	00002351	00002340	200914CV	00000960	00000952	2011244923	042009C
200917LO	00002352	00002340	200914CV	00000960	00000952	2011244923	042009C
200917LO	00002353	00002353	200914CV	00000960	00000952	2011244923	042009C

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200917LO	00002354	00002353	200914CV	00000959	00000952	2011244923	042009C
200917LO	00002355	00002353	200914CV	00000959	00000952	2011244923	042009C
200917LO	00002356	00002353	200914CV	00000959	00000952	2011244923	042009C
200917LO	00002357	00002353	200914CV	00000959	00000952	2011244923	042009C
200917LO	00002358	00002353	200914CV	00000959	00000952	2011244923	042009C
200917LO	00002359	00002353	200914CV	00000951	00000947	2011244923	042009C
200917LO	00002360	00002353	200914CV	00000951	00000947	2011244924	042009C
200917LO	00002361	00002353	200914CV	00000951	00000947	2011244924	042009C
200917LO	00002362	00002353	200914CV	00000951	00000947	2011244924	042009C
200917LO	00002363	00002353	200914CV	00000951	00000947	2011244924	042009C
200917LO	00002364	00002353	200914CV	00000951	00000947	2011244924	042009C
200917LO	00002365	00002353	200914CV	00000940	00000935	2011244924	042009C
200917LO	00002366	00002366	200914CV	00000940	00000935	2011244924	042009C
200917LO	00002367	00002366	200914CV	00000940	00000935	2011244924	042009C
200917LO	00002368	00002366	200914CV	00000940	00000935	2011244924	042009C
200917LO	00002369	00002366	200914CV	00000940	00000935	2011244924	042009C
200917LO	00002370	00002366	200914CV	00000957	00000952	2011244902	042009C
200917LO	00002371	00002371	200914CV	00000957	00000952	2011244902	042109A
200917LO	00002372	00002371	200914CV	00000957	00000952	2011244902	042109A
200917LO	00002373	00002371	200914CV	00000941	00000935	2011244902	042109A
200917LO	00002374	00002371	200914CV	00000941	00000935	2011244902	042109A
200917LO	00002375	00002371	200914CV	00000941	00000935	2011244902	042109A
200917LO	00002376	00002371	200914CV	00000941	00000935	2011244902	042109A
200917LO	00002377	00002371	200914CV	00000941	00000935	2011244902	042109A
200917LO	00002378	00002371	200914CV	00000941	00000935	2011244902	042109A
200917LO	00002379	00002371	200914CV	00000941	00000935	2011244902	042109A
200917LO	00002380	00002371	200914CV	00000950	00000947	2011244893	042109A
200917LO	00002381	00002371	200914CV	00000950	00000947	2011244893	042109A
200917LO	00002382	00002371	200914CV	00000950	00000947	2011244893	042109A
200917LO	00002383	00002371	200914CV	00000950	00000947	2011244893	042109A
200917LO	00002384	00002384	200833CV	00003694	00003692	2011244893	042109A
200917LO	00002385	00002384	200833CV	00003694	00003692	2011244893	042109A
200917LO	00002386	00002384	200833CV	00003694	00003692	2011244893	042109A
200917LO	00002387	00002384	200833CV	00003694	00003692	2011244893	042109A
200917LO	00002388	00002384	200833CV	00003694	00003692	2011244891	042109A

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200917LO	00002389	00002384	200833CV	00003694	00003692	2011244891	042109A
200917LO	00002390	00002384	2010552070			2011244891	042109A
200917LO	00002391	00002391	2010552070			2011244891	042109A
200917LO	00002392	00002391	2010552070			2011244891	042109A
200917LO	00002393	00002391	2010552070			2011244891	042109A
200917LO	00002394	00002391	200830CV	00003208	00003203	2011244891	042109A
200917LO	00002395	00002391	200830CV	00003208	00003203	2011244891	042109A
200917LO	00002396	00002391	200914CV	00000937	00000935	2011244891	042109A
200917LO	00002397	00002391	200914CV	00000937	00000935	2010774431	042109A
200917LO	00002398	00002391	200914CV	00000937	00000935	2010774431	042109A
200917LO	00002399	00002391	200914CV	00000937	00000935	2010774431	042109A
200917LO	00002400	00002391	200914CV	00000937	00000935	2010774431	042109A
200917LO	00002401	00002391	200914CV	00000937	00000935	2010774431	042109B
200917LO	00002402	00002391	200914CV	00000937	00000935	2010774431	042109B
200917LO	00002403	00002391	200916CV	00001685	00001341	2010774431	042109B
200917LO	00002404	00002404	200916CV	00001285	00001281	2010774431	042109B
200917LO	00002405	00002404	200916CV	00001285	00001281	2010774431	042109B
200917LO	00002406	00002404	200916CV	00001285	00001281	2010750047	042109B
200917LO	00002407	00002404	200916CV	00001285	00001281	2010750047	042109B
200917LO	00002408	00002404	200914CV	00001029	00001021	2010750047	042109B
200917LO	00002409	00002404	200914CV	00001029	00001021	2010750047	042109B
200917LO	00002410	00002404	200914CV	00001029	00001021	2010750047	042109B
200917LO	00002411	00002404	200914CV	00001029	00001021	2010750047	042109B
200917LO	00002412	00002404	200914CV	00001029	00001021	2010750047	042109B
200917LO	00002413	00002404	200914CV	00001029	00001021	2010750047	042109B
200917LO	00002414	00002404	200914CV	00001029	00001021	2010750047	042109B
200917LO	00002415	00002404	200914CV	00001029	00001021	2010750047	042109B
200917LO	00002416	00002404	200914CV	00001030	00001021	2010825848	042109B
200917LO	00002417	00002417	200914CV	00001030	00001021	2010825848	042109B
200917LO	00002418	00002417	200914CV	00001030	00001021	2010825848	042109B
200917LO	00002419	00002417	200914CV	00001030	00001021	2010825848	042109B
200917LO	00002420	00002417	200914CV	00000963	00000962	2010825848	042109B
200917LO	00002421	00002417	200914CV	00000963	00000962	2010833983	042109B
200917LO	00002422	00002417	200914CV	00000963	00000962	2010833983	042109B
200917LO	00002423	00002417	200914CV	00000963	00000962	2010833983	042109B

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200917LO	00002424	00002417	200916CV	00001279	00001273	2010833983	042109B
200917LO	00002425	00002417	200916CV	00001279	00001273	2010833983	042109B
200917LO	00002426	00002417	200916CV	00001279	00001273	2010833983	042109B
200917LO	00002427	00002417	200916CV	00001279	00001273	2010833983	042109B
200917LO	00002428	00002417	200916CV	00001279	00001273	2010833983	042109B
200917LO	00002429	00002417	200916CV	00001279	00001273	2010833983	042109B
200917LO	00002430	00002430	200914CV	00000970	00000969	2010833983	042109B
200917LO	00002431	00002430	200914CV	00000970	00000969	2010774443	042109B
200917LO	00002432	00002430	200914CV	00000970	00000969	2010774443	042109B
200917LO	00002433	00002430	200914CV	00000970	00000969	2010774443	042109B
200917LO	00002434	00002430	200914CV	00000964	00000962	2010774443	042109C
200917LO	00002435	00002430	200914CV	00000964	00000962	2010774443	042109C
200917LO	00002436	00002430	200914CV	00000964	00000962	2010774443	042109C
200917LO	00002437	00002430	200914CV	00000964	00000962	2010774443	042109C
200917LO	00002438	00002430	200914CV	00000964	00000962	2010774443	042109C
200917LO	00002439	00002430	200914CV	00000964	00000962	2010774443	042109C
200917LO	00002440	00002430	200914CV	00000971	00000969	2010774443	042109C
200917LO	00002441	00002430	200914CV	00000971	00000969	2010835807	042109C
200917LO	00002442	00002430	200914CV	00000971	00000969	2010835807	042109C
200917LO	00002443	00002443	200914CV	00000971	00000969	2010835807	042109C
200917LO	00002444	00002443	200914CV	00000971	00000969	2010835807	042109C
200917LO	00002445	00002443	200914CV	00000971	00000969	2010835807	042109C
200917LO	00002446	00002443	200916CV	00001286	00001281	2010835807	042109C
200917LO	00002447	00002443	200916CV	00001286	00001281	2010835807	042109C
200917LO	00002448	00002443	200916CV	00001286	00001281	2010835807	042109C
200917LO	00002449	00002443	200916CV	00001286	00001281	2010835807	042109C
200917LO	00002450	00002443	200916CV	00001286	00001281	2010835807	042109C
200917LO	00002451	00002443	200916CV	00001290	00001281	2010835807	042109C
200917LO	00002452	00002443	200916CV	00001290	00001281	2010833982	042109C
200917LO	00002453	00002443	200916CV	00001290	00001281	2010833982	042109C
200917LO	00002454	00002443	200916CV	00001290	00001281	2010833982	042109C
200917LO	00002455	00002443	200916CV	00001290	00001281	2010833982	042109C
200917LO	00002456	00002456	200916CV	00001290	00001281	2010833982	042109C
200917LO	00002457	00002456	200916CV	00001278	00001273	2010833982	042109C
200917LO	00002458	00002456	200916CV	00001278	00001273	2010833982	042109C

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200917LO	00002459	00002456	200916CV	00001278	00001273	2010833982	042109C
200917LO	00002460	00002456	200916CV	00001278	00001273	2010833982	042109C
200917LO	00002461	00002456	200916CV	00001278	00001273	2010833982	042109C
200917LO	00002462	00002456	200916CV	00001278	00001273	2010833982	042109C
200917LO	00002463	00002456	200916CV	00001287	00001281	2010833982	042109C
200917LO	00002464	00002456	200916CV	00001287	00001281	2010774440	042109C
200917LO	00002465	00002456	200916CV	00001287	00001281	2010774440	042109C
200917LO	00002466	00002456	200916CV	00001287	00001281	2010774440	042109D
200917LO	00002467	00002456	200914CV	00000972	00000969	2010774440	042109D
200917LO	00002468	00002456	200914CV	00000972	00000969	2010774440	042109D
200917LO	00002469	00002469	200914CV	00000972	00000969	2010774440	042109D
200917LO	00002470	00002469	200914CV	00000972	00000969	2010774440	042109D
200917LO	00002471	00002469	200914CV	00000972	00000969	2010774440	042109D
200917LO	00002472	00002469	200916CV	00001289	00001281	2010766156	042109D
200917LO	00002473	00002469	200916CV	00001289	00001281	2010766156	042109D
200917LO	00002474	00002469	200916CV	00001289	00001281	2010766156	042109D
200917LO	00002475	00002469	200916CV	00001289	00001281	2010766156	042109D
200917LO	00002476	00002469	200916CV	00001289	00001281	2010766156	042109D
200917LO	00002477	00002469	200916CV	00001289	00001281	2010766156	042109D
200917LO	00002478	00002469	200916CV	00001291	00001291	2010766156	042109D
200917LO	00002479	00002469	200916CV	00001291	00001291	2010766156	042109D
200917LO	00002480	00002469	200916CV	00001291	00001291	2010766156	042109D
200917LO	00002481	00002469	200916CV	00001291	00001291	2010766156	042109D
200917LO	00002482	00002482	200916CV	00001291	00001291	2010766156	042109D
200917LO	00002483	00002482	200916CV	00001291	00001291	2010750076	042109D
200917LO	00002484	00002482	200916CV	00001177	00001169	2010750076	042109D
200917LO	00002485	00002482	200916CV	00001177	00001169	2010750076	042109D
200917LO	00002486	00002486	200916CV	00001177	00001169	2010750076	042109E
200917LO	00002487	00002486	200916CV	00001177	00001169	2010750076	042109E
200917LO	00002488	00002486	200916CV	00001177	00001169	2010750076	042109E
200917LO	00002489	00002486	200916CV	00001177	00001169	2010750076	042109E
200917LO	00002490	00002486	200916CV	00001176	00001169	2010750076	042109E
200917LO	00002491	00002486	200916CV	00001176	00001169	2010750076	042109E
200917LO	00002492	00002486	200916CV	00001176	00001169	2010750076	042109E
200917LO	00002493	00002486	200916CV	00001176	00001169	2010766163	042109E

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200917LO	00002494	00002486	200916CV	00001176	00001169	2010766163	042109E
200917LO	00002495	00002486	200916CV	00001176	00001169	2010766163	042109E
200917LO	00002496	00002486	200916CV	00001197	00001196	2010766163	042109E
200917LO	00002497	00002486	200916CV	00001197	00001196	2010766163	042109E
200917LO	00002498	00002486	200916CV	00001197	00001196	2010766163	042109E
200917LO	00002499	00002499	200916CV	00001197	00001196	2010766163	042109E
200917LO	00002500	00002499	200916CV	00001197	00001196	2010766163	042109E
200917LO	00002501	00002499	200916CV	00001197	00001196	2010766163	042109E
200917LO	00002502	00002499	200915CV	00001069	00001066	2010766163	042109E
200917LO	00002503	00002499	200915CV	00001069	00001066	2010750062	042109E
200917LO	00002504	00002499	200915CV	00001069	00001066	2010750062	042109E
200917LO	00002505	00002499	200915CV	00001069	00001066	2010750062	042109E
200917LO	00002506	00002499	200915CV	00001069	00001066	2010750062	042109E
200917LO	00002507	00002499	200914CV	00000966	00000962	2010750062	042109E
200917LO	00002508	00002499	200914CV	00000996	00000996	2010750062	042109E
200917LO	00002509	00002499	200914CV	00000996	00000996	2010750062	042109E
200917LO	00002510	00002499	200914CV	00000996	00000996	2010750062	042109E
200917LO	00002511	00002499	200914CV	00000996	00000996	2010750062	042109E
200917LO	00002512	00002512	200914CV	00001000	00000996	2010750062	042109E
200917LO	00002513	00002512	200914CV	00001000	00000996	2010750062	042109E
200917LO	00002514	00002512	200914CV	00001000	00000996	2010750062	042109E
200917LO	00002515	00002512	200914CV	00001000	00000996	2011244918	042109E
200917LO	00002516	00002512	200914CV	00001000	00000996	2011244918	042109E
200917LO	00002517	00002512	200914CV	00001000	00000996	2011244918	042109E
200917LO	00002518	00002512	200914CV	00001000	00000996	2011244918	042109F
200917LO	00002519	00002512	200914CV	00000995	00000986	2011244918	042109F
200917LO	00002520	00002512	200914CV	00000995	00000986	2011244918	042109F
200917LO	00002521	00002512	200914CV	00000995	00000986	2011244918	042109F
200917LO	00002522	00002512	200914CV	00000995	00000986	2011244918	042109F
200917LO	00002523	00002512	200914CV	00000995	00000986	2011244918	042109F
200917LO	00002524	00002512	200915CV	00001156	00001152	042409ANW1	042109F
200917LO	00002525	00002525	200915CV	00001156	00001152	042409ANW1	042109F
200917LO	00002526	00002525	200915CV	00001156	00001152	042409ANW1	042109F
200917LO	00002527	00002525	200915CV	00001156	00001152	042409ANW1	042109F
200917LO	00002528	00002525	200915CV	00001156	00001152	042409ANW1	042109F

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200917LO	00002529	00002525	200916CV	00001248	00001242	042409ANW1	042109F
200917LO	00002530	00002525	200916CV	00001248	00001242	2011244917	042109F
200917LO	00002531	00002525	200916CV	00001248	00001242	2011244917	042109F
200917LO	00002532	00002525	200916CV	00001248	00001242	2011244917	042109F
200917LO	00002533	00002525	200916CV	00001248	00001242	2011244917	042109F
200917LO	00002534	00002525	200916CV	00001248	00001242	2011244917	042109F
200917LO	00002535	00002525	200916CV	00001260	00001259	2011244917	042109F
200917LO	00002536	00002525	200916CV	00001260	00001259	2011244917	042109F
200917LO	00002537	00002525	200916CV	00001260	00001259	2011244917	042109F
200917LO	00002538	00002538	200916CV	00001260	00001259	2011244917	042109F
200917LO	00002539	00002538	200916CV	00001260	00001259	2011244917	042109F
200917LO	00002540	00002538	200916CV	00001260	00001259	2011244917	042109F
200917LO	00002541	00002538	200916CV	00001267	00001263	2011244921	042109F
200917LO	00002542	00002538	200916CV	00001267	00001263	2011244921	042109F
200917LO	00002543	00002538	200916CV	00001267	00001263	2011244921	042109F
200917LO	00002544	00002538	200916CV	00001267	00001263	2011244921	042109F
200917LO	00002545	00002538	200916CV	00001259	00001259	2011244921	042109F
200917LO	00002546	00002538	200916CV	00001259	00001259	2011244921	042109F
200917LO	00002547	00002538	200916CV	00001259	00001259	2011244921	042109F
200917LO	00002548	00002538	200916CV	00001259	00001259	2011244921	042109G
200917LO	00002549	00002538	200916CV	00001259	00001259	2011244921	042109G
200917LO	00002550	00002538	200916CV	00001259	00001259	2011244921	042109G
200917LO	00002551	00002538	200916CV	00001252	00001249	2011248392	042109G
200917LO	00002552	00002538	200916CV	00001252	00001249	2011248392	042109G
200917LO	00002553	00002538	200916CV	00001252	00001249	2011248392	042109G
200917LO	00002554	00002538	200916CV	00001252	00001249	2011248392	042109G
200917LO	00002555	00002538	200916CV	00001252	00001249	2011248392	042109G
200917LO	00002556	00002538	200916CV	00001258	00001249	2011248392	042109G
200917LO	00002557	00002538	200916CV	00001258	00001249	2011248392	042109G
200917LO	00002558	00002538	200916CV	00001258	00001249	2011244901	042109G
200917LO	00002559	00002538	200916CV	00001258	00001249	2011244901	042109G
200917LO	00002560	00002538	200916CV	00001258	00001249	2011244901	042109G
200917LO	00002561	00002538	200916CV	00001247	00001242	2011244901	042109G
200917LO	00002562	00002538	200916CV	00001247	00001242	2011244901	042109G
200917LO	00002563	00002538	200916CV	00001247	00001242	2011244901	042109G

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200917LO	00002564	00002564	200916CV	00001247	00001242	2011252980	042109G
200917LO	00002565	00002564	200916CV	00001247	00001242	2011252980	042109G
200917LO	00002566	00002564	200916CV	00001247	00001242	2011252980	042109G
200917LO	00002567	00002564	200916CV	00001247	00001242	2011252980	042109G
200917LO	00002568	00002564	200916CV	00001249	00001249	2011252980	042109G
200917LO	00002569	00002564	200916CV	00001249	00001249	2011252980	042109G
200917LO	00002570	00002564	200916CV	00001249	00001249	2011252980	042109G
200917LO	00002571	00002564	200916CV	00001249	00001249	2011252980	042109G
200917LO	00002572	00002564	200916CV	00001249	00001249	2011252980	042109G
200917LO	00002573	00002564	200916CV	00001249	00001249	2011211868	042109G
200917LO	00002574	00002564	200916CV	00001257	00001249	2011211868	042109G
200917LO	00002575	00002564	200916CV	00001257	00001249	2011211868	042109G



GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 00238336F have been tested in our production facility lab.

Product	Lot # Tested	Roll # Tested	Mass Area	Grab Strength	Peel Strength
Standard Test Method:			ASTM D 5993	ASTM D 6768	ASTM D 6496
Standard Specification:			0.75 lb/sq ft MARV	50lbs/in MARV	3.5lbs/in Min
Non-standard specifications were requested for this order as indicated on the attached property sheet					
LO-BENTOMAT DN	200917LO	00002288	0.84	83.2	6.7
LO-BENTOMAT DN	200917LO	00002301	0.96	83.2	7.2
LO-BENTOMAT DN	200917LO	00002314	0.91	83.2	7.3
LO-BENTOMAT DN	200917LO	00002327	0.92	72.1	6.8
LO-BENTOMAT DN	200917LO	00002340	0.84	72.1	6.5
LO-BENTOMAT DN	200917LO	00002353	0.85	72.1	6.3
LO-BENTOMAT DN	200917LO	00002366	0.87	72.1	6.6
LO-BENTOMAT DN	200917LO	00002371	0.82	72.1	6.5
LO-BENTOMAT DN	200917LO	00002384	0.85	75.9	7
LO-BENTOMAT DN	200917LO	00002391	0.86	79.7	7
LO-BENTOMAT DN	200917LO	00002404	0.81	79.7	8.2
LO-BENTOMAT DN	200917LO	00002417	0.85	79.1	9.7
LO-BENTOMAT DN	200917LO	00002430	0.90	79.7	7.4
LO-BENTOMAT DN	200917LO	00002443	0.85	79.7	9.2
LO-BENTOMAT DN	200917LO	00002456	0.80	67.4	6.4
LO-BENTOMAT DN	200917LO	00002469	0.85	67.4	6
LO-BENTOMAT DN	200917LO	00002482	0.82	67.4	7
LO-BENTOMAT DN	200917LO	00002486	0.90	67.4	9
LO-BENTOMAT DN	200917LO	00002499	0.84	67.4	6.8
LO-BENTOMAT DN	200917LO	00002512	0.97	88.1	9.6
LO-BENTOMAT DN	200917LO	00002525	0.87	88.1	10.2
LO-BENTOMAT DN	200917LO	00002538	0.84	88.1	8.6
LO-BENTOMAT DN	200917LO	00002564	0.89	88.1	6

Product	Lot # Tested	Roll # Tested	Moisture
LO-BENTOMAT DN	200917LO	00002288	27.5
LO-BENTOMAT DN	200917LO	00002301	24.5
LO-BENTOMAT DN	200917LO	00002314	25.6
LO-BENTOMAT DN	200917LO	00002327	24.6
LO-BENTOMAT DN	200917LO	00002340	25.1
LO-BENTOMAT DN	200917LO	00002353	25.7
LO-BENTOMAT DN	200917LO	00002366	25.1

LO-BENTOMAT DN	200917LO	00002371	26.7
LO-BENTOMAT DN	200917LO	00002384	25.1
LO-BENTOMAT DN	200917LO	00002391	25.9
LO-BENTOMAT DN	200917LO	00002404	26.9
LO-BENTOMAT DN	200917LO	00002417	25.1
LO-BENTOMAT DN	200917LO	00002430	24.1
LO-BENTOMAT DN	200917LO	00002443	24.9
LO-BENTOMAT DN	200917LO	00002456	25.6
LO-BENTOMAT DN	200917LO	00002469	25.9
LO-BENTOMAT DN	200917LO	00002482	26.5
LO-BENTOMAT DN	200917LO	00002486	24.5
LO-BENTOMAT DN	200917LO	00002499	26.1
LO-BENTOMAT DN	200917LO	00002512	24.2
LO-BENTOMAT DN	200917LO	00002525	26.3
LO-BENTOMAT DN	200917LO	00002538	26.2
LO-BENTOMAT DN	200917LO	00002564	25.4

ASTM test methods and property specifications per CETCO standard unless non-standard specifications were requested.
Any non-standard property specifications requested for this order are noted on the attached GCL property specifications sheet.



BENTONITE CLAY CERTIFICATION

The Bentonite Clay used to produce package 00238336F has been tested by American Colloid Company and yielded the following test results.

Reference	Moist	Swell	Fluid Loss
Test Method:	ASTM D 2216	ASTM D 5890	ASTM D 5891
Specification:	12% Max	24 ml/2g Min	18 ml Max
042009A	10.4	28.0	15.6
042009B	9.6	27.0	16.0
042009C	10.4	26.0	15.2
042109A	10.4	25.0	15.2
042109B	9.6	26.0	17.0
042109C	10.0	28.0	17.0
042109D	10.4	27.0	15.8
042109E	11.2	25.0	15.8
042109F	10.4	27.0	17.0
042109G	10.0	26.0	16.2



GEOTEXTILE TEST RESULTS FOR RAW MATERIAL SUPPLIED BY A CETCO FACILITY

The GCL in certification package number 00238336F was manufactured using these geotextiles:

Material	Lot #	Roll #	Mass Area	Grab Strength
CV-NON-WOVEN	200830CV	00003203	6.9	67.2
CV-NON-WOVEN	200833CV	00003692	7.1	55.9
CV-NON-WOVEN	200914CV	00000935	7.0	49.4
CV-NON-WOVEN	200914CV	00000947	6.9	50.6
CV-NON-WOVEN	200914CV	00000952	6.3	48.7
CV-NON-WOVEN	200914CV	00000962	6.5	44.9
CV-NON-WOVEN	200914CV	00000969	7.0	48.7
CV-NON-WOVEN	200914CV	00000986	6.8	49.6
CV-NON-WOVEN	200914CV	00000996	6.6	47.8
CV-NON-WOVEN	200914CV	00001021	6.6	46.8
CV-NON-WOVEN	200914CV	00001039	6.8	44.1
CV-NON-WOVEN	200915CV	00001066	6.7	44.0
CV-NON-WOVEN	200915CV	00001152	6.5	35.4
CV-NON-WOVEN	200916CV	00001169	6.5	45.6
CV-NON-WOVEN	200916CV	00001196	6.2	40.0
CV-NON-WOVEN	200916CV	00001242	7.6	47.5
CV-NON-WOVEN	200916CV	00001249	6.6	37.3
CV-NON-WOVEN	200916CV	00001259	6.5	35.2
CV-NON-WOVEN	200916CV	00001263	6.2	34.1
CV-NON-WOVEN	200916CV	00001273	7.0	40.0
CV-NON-WOVEN	200916CV	00001281	6.4	32.5
CV-NON-WOVEN	200916CV	00001291	6.6	37.2
CV-NON-WOVEN	200916CV	00001341	6.7	32.3



GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 00238336F was manufactured with geotextiles which were tested with the following results.

BASE			
Material	Roll Number	Mass Area oz/yd ²	Grab Strength lbs
PT	042409ANW1	6.5	234.1
PPX HH65L	2010750047	7.0	178.7
PPX HH65L	2010750062	6.4	183.9
PPX HH65L	2010750076	6.5	185.4
PPX HH65L	2010766156	6.6	177.8
PPX HH65L	2010766163	6.6	180.8
PPX HH65L	2010774431	6.7	165.0
PPX HH65L	2010774440	7.2	182.3
PPX HH65L	2010774443	7.8	169.6
PPX HH65L	2010816962	7.0	179.9
PPX HH65L	2010825848	6.7	221.6
PPX HH65L	2010833982	6.4	203.4
PPX HH65L	2010833983	6.4	203.4
PPX HH65L	2010835807	7.0	197.9
PPX HH65L	2011211850	6.7	186.5
PPX HH65L	2011211868	6.5	179.5
PPX HH65L	2011244891	8.5	185.4
PPX HH65L	2011244893	8.5	185.4
PPX HH65L	2011244901	6.6	191.8
PPX HH65L	2011244902	6.6	191.8
PPX HH65L	2011244916	6.7	224.7
PPX HH65L	2011244917	6.7	224.7
PPX HH65L	2011244918	7.0	251.5
PPX HH65L	2011244919	7.0	251.5
PPX HH65L	2011244920	7.0	251.5
PPX HH65L	2011244921	6.0	150.3
PPX HH65L	2011244922	6.0	150.3
PPX HH65L	2011244923	6.0	150.3
PPX HH65L	2011244924	6.4	175.4
PPX HH65L	2011248392	6.5	193.3
PPX HH65L	2011248392	6.5	193.3
PPX HH65L	2011252980	6.2	198.5
CAP			

Material	Roll Number	Mass Area oz/yd²	Grab Strength lbs
PPX 650	2010552070	7.4	85.6

Certifications from our suppliers are on file at our production facility.
An '*' or 'PT' indicates supplier certifications were unavailable prior to shipping so testing was performed at a CETCO lab.

**INDEX FLUX AND PERMEABILITY OF GCL's
TEST RESULTS
ASTM D-5887 / D-5084**



Client	: CETCO	Date	: 05/06/2009
Project Location	: Henderson / Landwell	Job No.	: 09LG1881.01
Sample Number	: Roll 2290	Tested By	: RL
Description	: Bentomat DN	Checked By	: JB

Permeant Fluid : De-Aired Water

Physical Property Data

	Total Sample		Total Sample
Initial Clay Height (in)	: 0.16	Final Height of Clay (in)	: 0.19
Initial Diameter (in)	: 4.00	Final Diameter of Clay (in)	: 4.00
Initial Wet Weight (g)	: 45.90	Final Wet Weight(Clay) (g)	: 68.20
Wet Density (pcf)	: 86.89	Wet Density (pcf)	: 108.72
Moisture Content %	: 37.00	Moisture Content %	: 103.60
Dry Density (pcf)	: 63.42	Dry Density (pcf)	: 53.40

Test Parameters

Fluid	: De-Aired Water	Average Effective	
Cell Pressure (psi)	: 80.00	Confining Pressure (psi)	: 4
Head Water (psi)	: 77.00	Gradient	: 290.53
Tail Water (psi)	: 75.00	Effective Stress at Base	: 5

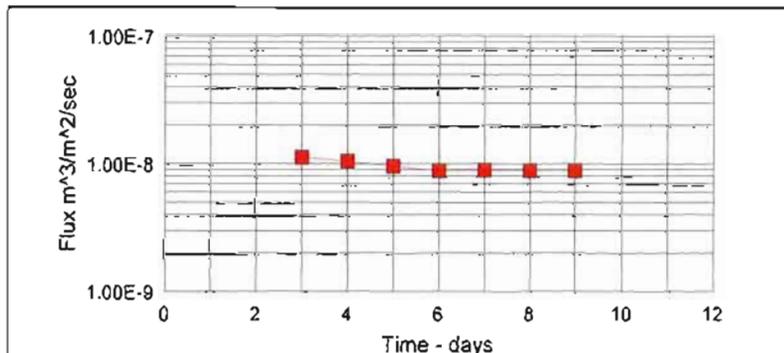
Flux and Permeability Input Data

Minimum Saturation Time is 48 hours

Area, A = 0.00811 m²
Thickness, t = 0.19 in

Days	Date	Flow	Time	Elapsed	Flux	k	
		cc	min	Time (sec)	(m ³ /m ²)/sec	cm/sec	
1	04/27/2009	48 hours of hydration per ASTM					
2	04/28/2009						
3	04/29/2009	7.90	1439	86340	1.13E-008	3.89E-009	
4	04/30/2009	7.40	1441	86460	1.06E-008	3.63E-009	
5	05/01/2009	6.70	1437	86220	9.59E-009	3.30E-009	
6	05/02/2009	6.20	1442	86520	8.84E-009	3.04E-009	
7	05/03/2009	6.30	1442	86520	8.98E-009	3.09E-009	
8	05/04/2009	6.20	1439	86340	8.86E-009	3.05E-009	
9	05/05/2009	6.20	1441	86460	8.85E-009	3.04E-009	

Average of Last 3 Test Readings : 8.90E-009 3.06E-009



JLT Laboratories, Inc.

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**INDEX FLUX AND PERMEABILITY OF GCL's
TEST RESULTS
ASTM D-5887 / D-5084**



Client	: CETCO	Date	: 05/06/2009
Project Location	: Henderson / Landwell	Job No.	: 09LG1881.01
Sample Number	: Roll 2358	Tested By	: RL
Description	: Bentomat DN	Checked By	: JB
Permeant Fluid	: De-Aired Water		

Physical Property Data

	Total Sample		Total Sample
Initial Clay Height (in)	: 0.19	Final Height of Clay (in)	: 0.23
Initial Diameter (in)	: 4.00	Final Diameter of Clay (in)	: 4.00
Initial Wet Weight (g)	: 51.60	Final Wet Weight(Clay) (g)	: 81.10
Wet Density (pcf)	: 82.26	Wet Density (pcf)	: 106.80
Moisture Content %	: 35.60	Moisture Content %	: 112.30
Dry Density (pcf)	: 60.66	Dry Density (pcf)	: 50.31

Test Parameters

Fluid	: De-Aired Water	Average Effective	
Cell Pressure (psi)	: 80.00	Confining Pressure (psi)	: 4
Head Water (psi)	: 77.00	Gradient	: 240.00
Tail Water (psi)	: 75.00	Effective Stress at Base	: 5

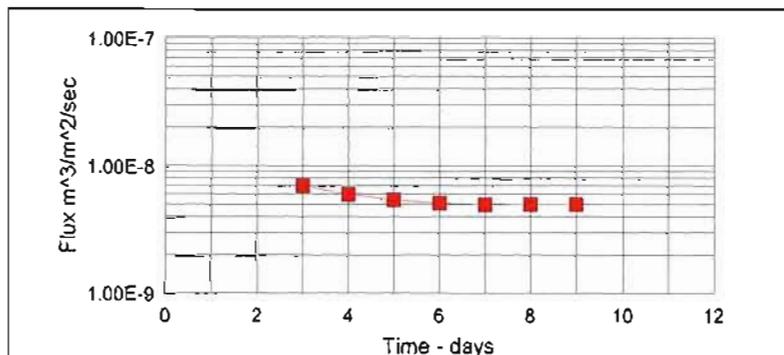
Flux and Permeability Input Data

Minimum Saturation Time is 48 hours

Area, A = 0.00811 m²
Thickness, t = 0.23 in

Days	Date	Flow	Time	Elapsed	Flux	k	
		cc	min	Time (sec)	(m ³ /m ²)/sec	cm/sec	
1	04/27/2009	48 hours of hydration per ASTM					
2	04/28/2009						
3	04/29/2009	4.80	1439	86340	7.00E-009	2.92E-009	
4	04/30/2009	4.20	1441	86460	5.99E-009	2.50E-009	
5	05/01/2009	3.80	1437	86220	5.44E-009	2.27E-009	
6	05/02/2009	3.60	1442	86520	5.13E-009	2.14E-009	
7	05/03/2009	3.50	1442	86520	4.99E-009	2.08E-009	
8	05/04/2009	3.50	1439	86340	5.00E-009	2.08E-009	
9	05/05/2009	3.50	1441	86460	4.99E-009	2.08E-009	

Average of Last 3 Test Readings : 4.99E-009 2.08E-009



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INDEX FLUX AND PERMEABILITY OF GCL's
TEST RESULTS
 ASTM D-5887 / D-5084



Client	: CETCO	Date	: 05/06/2009
Project Location	: Henderson / Landwell	Job No.	: 09LG1881.01
Sample Number	: Roll 2436	Tested By	: RL
Description	: Bentomat DN	Checked By	: JB
Permeant Fluid	: De-Aired Water		

Physical Property Data

	Total Sample		Total Sample
Initial Clay Height (in)	: 0.20	Final Height of Clay (in)	: 0.23
Initial Diameter (in)	: 4.00	Final Diameter of Clay (in)	: 4.00
Initial Wet Weight (g)	: 56.00	Final Wet Weight(Clay) (g)	: 81.30
Wet Density (pcf)	: 84.81	Wet Density (pcf)	: 107.06
Moisture Content %	: 43.50	Moisture Content %	: 108.50
Dry Density (pcf)	: 59.10	Dry Density (pcf)	: 51.35

Test Parameters

Fluid	: De-Aired Water	Average Effective	
Cell Pressure (psi)	: 80.00	Confining Pressure (psi)	: 4
Head Water (psi)	: 77.00	Gradient	: 240.00
Tail Water (psi)	: 75.00	Effective Stress at Base	: 5

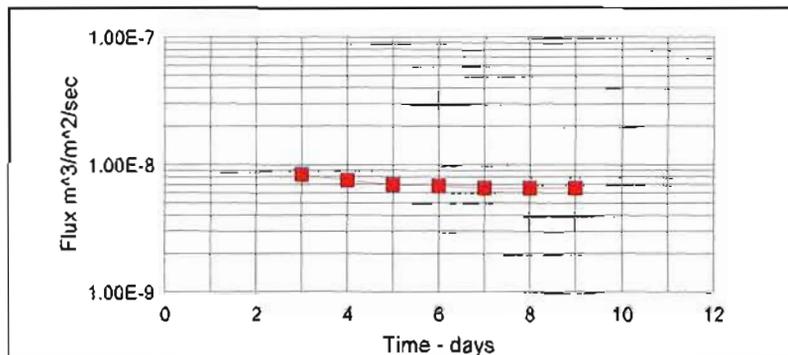
Flux and Permeability Input Data

Minimum Saturation Time is 48 hours

Area, A = 0.00811 m²
 Thickness, t = 0.23 in

Days	Date	Flow cc	Time min	Elapsed Time (sec)	Flux (m ³ /m ²)/sec	k cm/sec
1	04/27/2009	48 hours of hydration per ASTM				
2	04/28/2009					
3	04/29/2009	5.90	1439	86340	8.43E-009	3.51E-009
4	04/30/2009	5.30	1441	86460	7.56E-009	3.15E-009
5	05/01/2009	4.90	1437	86220	7.01E-009	2.92E-009
6	05/02/2009	4.80	1442	86520	6.84E-009	2.85E-009
7	05/03/2009	4.60	1442	86520	6.58E-009	2.73E-009
8	05/04/2009	4.60	1439	86340	6.57E-009	2.74E-009
9	05/05/2009	4.60	1441	86460	6.56E-009	2.73E-009

Average of Last 3 Test Readings : 6.56E-009 2.74E-009



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**INDEX FLUX AND PERMEABILITY OF GCL's
TEST RESULTS
ASTM D-5887 / D-5084**



Client : CETCO	Date : 05/06/2009
Project Location : Henderson / Landwell	Job No. : 09LG1881.01
Sample Number : Roll 2494 Lot: 200917LO	Tested By : RL
Description : Bentomat DN	Checked By : JB
Permeant Fluid : De-Aired Water	

Physical Property Data

Total Sample Initial Clay Height (in) : 0.17 Initial Diameter (in) : 4.00 Initial Wet Weight (g) : 58.60 Wet Density (pcf) : 104.41 Moisture Content % : 41.20 Dry Density (pcf) : 73.94	Total Sample Final Height of Clay (in) : 0.23 Final Diameter of Clay (in) : 4.00 Final Wet Weight (Clay) (g) : 87.80 Wet Density (pcf) : 115.62 Moisture Content % : 111.60 Dry Density (pcf) : 54.64
--	---

Test Parameters

Fluid : De-Aired Water	Average Effective
Cell Pressure (psi) : 80.00	Confining Pressure (psi) : 4
Head Water (psi) : 77.00	Gradient : 240.00
Tail Water (psi) : 75.00	Effective Stress at Base : 5

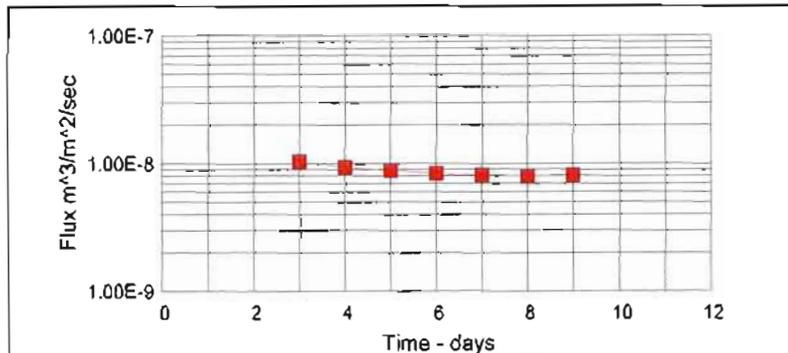
Flux and Permeability Input Data

Minimum Saturation Time is 48 hours

Area, A = 0.00811 m²
Thickness, t = 0.23 in

Days	Date	Flow	Time	Elapsed	Flux	k	
		cc	min	Time (sec)	(m ³ /m ²)/sec	cm/sec	
1	04/27/2009	48 hours of hydration per ASTM					
2	04/28/2009						
3	04/29/2009	7.30	1440	86400	1.04E-008	4.34E-009	
4	04/30/2009	6.60	1442	86520	9.41E-009	3.92E-009	
5	05/01/2009	6.20	1439	86340	8.86E-009	3.69E-009	
6	05/02/2009	5.90	1441	86460	8.42E-009	3.51E-009	
7	05/03/2009	5.70	1441	86460	8.13E-009	3.39E-009	
8	05/04/2009	5.60	1440	86400	8.00E-009	3.33E-009	
9	05/05/2009	5.70	1442	86520	8.13E-009	3.39E-009	

Average of Last 3 Test Readings : 8.08E-009 3.37E-009



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INDEX FLUX AND PERMEABILITY OF GCL's
TEST RESULTS
 ASTM D-5887 / D-5084



Client : CETCO	Date : 05/06/2009
Project Location : Henderson / Landwell	Job No. : 09LG1881.01
Sample Number : Roll 2562 Lot: 200917LO	Tested By : RL
Description : Bentomat DN	Checked By : JB
Permeant Fluid : De-Aired Water	

Physical Property Data

	Total Sample		Total Sample
Initial Clay Height (in) :	0.15	Final Height of Clay (in) :	0.21
Initial Diameter (in) :	4.00	Final Diameter of Clay (in) :	4.00
Initial Wet Weight (g) :	43.70	Final Wet Weight (Clay) (g) :	70.50
Wet Density (pcf) :	88.24	Wet Density (pcf) :	101.68
Moisture Content % :	31.20	Moisture Content % :	108.70
Dry Density (pcf) :	67.26	Dry Density (pcf) :	48.72

Test Parameters

Fluid : De-Aired Water	Average Effective
Cell Pressure (psi) : 80.00	Confining Pressure (psi) : 4
Head Water (psi) : 77.00	Gradient : 262.86
Tail Water (psi) : 75.00	Effective Stress at Base : 5

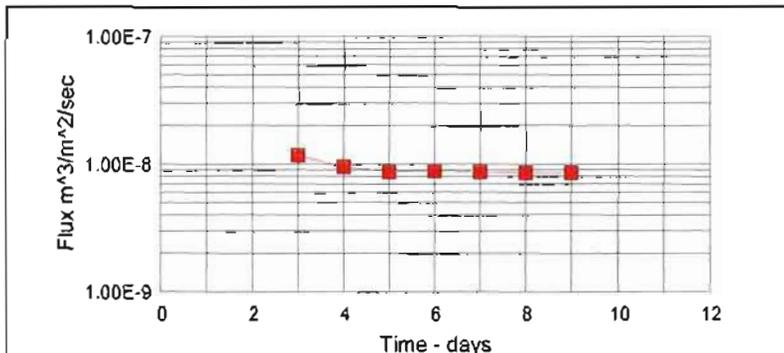
Flux and Permeability Input Data

Minimum Saturation Time is 48 hours

Area, A = 0.00811 m²
 Thickness, t = 0.21 in

Days	Date	Flow	Time	Elapsed	Flux	k	
		cc	min	Time (sec)	(m ³ /m ²)/sec	cm/sec	
1	04/27/2009	48 hours of hydration per ASTM					
2	04/28/2009						
3	04/29/2009	8.20	1437	86220	1.17E-008	4.46E-009	
4	04/30/2009	6.70	1442	86520	9.55E-009	3.63E-009	
5	05/01/2009	6.10	1439	86340	8.72E-009	3.32E-009	
6	05/02/2009	6.20	1438	86280	8.88E-009	3.37E-009	
7	05/03/2009	6.10	1441	86480	8.70E-009	3.31E-009	
8	05/04/2009	6.00	1440	86400	8.57E-009	3.28E-009	
9	05/05/2009	6.00	1438	86280	8.58E-009	3.28E-009	

Average of Last 3 Test Readings : 8.62E-009 3.28E-009



JLT Laboratories, Inc.

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Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	GCL MQC Certificates (BMI-South Allocation and 2nd Portion of CAMU Closure Allocation)
Submittal Number:	02772-004M
Specification Section:	Section 02772, Part 2.03
Drawing Number (s):	8, 10, 14, 16, 19, 21, 23, 25, 27, 29, 31, 33, 35-36, 38-45
Page Number:	02772-4 and 02772-5
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	5/12/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



699 South Friendswood Drive
Suite 101
Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
ATTENTION: Lee C. Farris, P.E.

DATE: 6/10/09
JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
TRANSMITTAL NUMBER: 270
ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	6/10/09			Submittal 02772-004N- GCL MQC Certificates (3 rd Portion of CAMU Closure Allocation)	RC

ACTION (*)

AR - AS REQUESTED

FA - FOR APPROVAL

F - FILE

RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL

MAIL

OVERNIGHT

HAND DELIVERY

FACSIMILE

COPY TO: Ranjit Sahu, Lee Farris

BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....



Date: 5/29/2009
Purchase Order: 9114
ORDER NUMBER: 00238336G

Gregg Abney
ESI-Environmental Specialties INT'l, Inc.
7943 Pecue Lane
Baton Rouge, LA 70809
gabney@esiliners,.com

To Whom it May Concern:

Please find enclosed the MQA/MQC test data package for Geosynthetic Clay Liner shipments to ESI-Environmental Specialties INT'l, Inc..

The enclosed data package includes results of all the MQC tests required by ASTM D5889, with the exception of index flux/hydraulic conductivity. This test, which is run according to ASTM D5887, is normally performed once per production lot (once per week), unless a higher frequency is required by the project specifications. Because of the GCL's low permeability, this test can take several weeks to complete. The index flux/hydraulic conductivity results associated with this lot of material will be provided under separate cover as soon as they are available.

Although the index flux/hydraulic conductivity test results are not yet available, CETCO accepts responsibility for our GCL should the index flux/hydraulic conductivity tests produce unacceptable results. If, upon delivery and prior to installation, individual rolls of GCL are found to be nonconforming to accepted project specifications, CETCO will replace the nonconforming material at no charge.

Questions regarding this information should be directed to Chris Athanassopoulos, Technical Support Engineer, at (847) 851-1831.

Sincerely,

A handwritten signature in black ink, appearing to read 'Roger B. Wilkerson', is written over a horizontal line.

Roger B. Wilkerson
Quality Assurance Coordinator
CETCO Lovell Plant



**GEOSYNTHETIC CLAY LINER
MANUFACTURING QUALITY ASSURANCE DATA PACKAGE**

PROJECT NAME: Landwell
CUSTOMER P.O.: 9114
ORDER NUMBER: 00238336G
PREPARED FOR: ESI-Environmental Specialties INT'l, Inc.

CONTENTS:

- Daily production and needle detection certification
- GCL property specifications
- Order packing list
- GCL MQA tracking form
- GCL manufacturing quality control test data
- Bentonite clay certification
- Raw material test results

PREPARED BY: Roger B. Wilkerson
Quality Assurance Coordinator
CETCO
P.O. Box 428
92 Hwy. 37
Lovell, WY 82431

Telephone: 800-322-1149 ext. 413
Fax:
E-Mail: rwilke@cetco.com



PRODUCTION CERTIFICATION

PROJECT NAME: Landwell
CUSTOMER P.O.: 9114
PREPARED FOR: ESI-Environmental Specialties INT'l, Inc.

CETCO affirms that these products meet the physical and chemical criteria listed on the attached GCL property specification sheet.

NEEDLE REMOVAL AND DETECTION PROCEDURE

CETCO hereby affirms that all Bentomat[®] geosynthetic clay liner material manufactured for this project is continually passed under a magnet for needle removal and then screened with a metal detection device. CETCO certifies Bentomat[®] to be essentially free of broken needles and fragments of needles that would negatively effect the performance of the final product.

A handwritten signature in black ink, appearing to read 'Roger B. Wilkerson', is written over a horizontal line.

Roger B. Wilkerson
Quality Assurance Coordinator
Colloid Environmental Technologies Co. (CETCO)



Ship Date: 5/28/2009

Order Number: 00238336G

Prepared For: ESI-Environmental Specialties INT'l, Inc.

The GCL raw materials and GCL finished product manufactured for the above-referenced order number(s) are hereby certified to achieve the properties listed in the tables below.

GCL PROPERTY SPECIFICATIONS FOR BENTOMAT DN

Test Method	Test Method Property	Test Frequency	Certified Value
ASTM D 5891	Bentonite Fluid Loss	1 per 50 Tons	18 ml Max
ASTM D 5993	Bentonite Mass/Area	40,000 sq ft (4000 sq m)	0.75 lb /sq ft (3.6 kg/sq m) Min
ASTM D 5890	Bentonite Swell Index	1 per 50 Tons	24 ml/2g Min
ASTM D 6768	GCL Grab Strength	200,000 sq ft (20,000 sq m)	50 lbs/in MARV
ASTM D 6243	GCL Hydrated Internal Shear Strength	Periodic	500 psf (48 kPa) typ @ 200 psf
ASTM D 5887	GCL Hydraulic Conductivity	Weekly	5 x 10 ⁻⁹ cm/ sec Max
ASTM D 5887	GCL Index Flux	Weekly	1 x 10 ⁻⁸ m ³ /m ² /sec Max
ASTM D 6496	GCL Peel Strength	40,000 sq ft (4000 sq m)	3.5 lbs/in Min
ASTM D4632*	Grab Strength*modified with 4-inch grips	200,000 sq ft (20,000 sq m)	150 lbs (660 N) MARV
ASTM D4632*	Peel Strength*modified with 4-inch grips	40,000 sq ft (4000 sq m)	15 lbs (65 N) Min

SPECIALLY REQUESTED CERTIFIED PROPERTIES FOR THIS ORDER OF BENTOMAT DN

Test Method	Test Method Property	Requested Frequency	Requested Value	Requested Conditions
ASTM D 5887	GCL Index Flux	1/200,000 sqft	Standard	Standard
ASTM D 4643	GCL Moisture	Standard	30% Moisture (max)	Standard

Bentonite property tests are performed at a bentonite processing facility before shipment to CETCO's production facility. All tensile testing is in the machine direction.

FABRIC SUPPLIER REQUIREMENTS FOR BENTOMAT DN

Raw Material	test method	mass per area	units
Nonwoven Cover Fabric	ASTM D 5261	6.0	oz/yd ²
Bentomat DN Base Nonwoven Fabric	ASTM D 5261	6.0	oz/yd ²

Fabric certifications from our raw material suppliers are on file at our production facility.



CETCO's MQA laboratory is GAI-accredited (www.geosynthetic-institute.org/gai/lab.html).

Roger B. Wilkerson
 Quality Assurance Coordinator
 CETCO Lovell Plant



GCL ORDER PACKING LIST

GCL shipped for certification package number 00238336G

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336G	LO-BENTOMAT DN	200922LO	00003125	200	14.5	2900	3480
00238336G	LO-BENTOMAT DN	200922LO	00003126	200	14.5	2900	3475
00238336G	LO-BENTOMAT DN	200922LO	00003127	200	14.5	2900	3515
00238336G	LO-BENTOMAT DN	200922LO	00003128	200	14.5	2900	3480
00238336G	LO-BENTOMAT DN	200922LO	00003129	200	14.5	2900	3435
00238336G	LO-BENTOMAT DN	200922LO	00003130	200	14.5	2900	3440
00238336G	LO-BENTOMAT DN	200922LO	00003131	200	14.5	2900	3445
00238336G	LO-BENTOMAT DN	200922LO	00003132	200	14.5	2900	3415
00238336G	LO-BENTOMAT DN	200922LO	00003133	200	14.5	2900	3420
00238336G	LO-BENTOMAT DN	200922LO	00003134	200	14.5	2900	3425
00238336G	LO-BENTOMAT DN	200922LO	00003135	200	14.5	2900	3390
00238336G	LO-BENTOMAT DN	200922LO	00003136	200	14.5	2900	3385
00238336G	LO-BENTOMAT DN	200922LO	00003137	200	14.5	2900	3390
00238336G	LO-BENTOMAT DN	200922LO	00003138	200	14.5	2900	3395
00238336G	LO-BENTOMAT DN	200922LO	00003139	200	14.5	2900	3525
00238336G	LO-BENTOMAT DN	200922LO	00003140	200	14.5	2900	3345
00238336G	LO-BENTOMAT DN	200922LO	00003141	200	14.5	2900	3405
00238336G	LO-BENTOMAT DN	200922LO	00003142	200	14.5	2900	3390
00238336G	LO-BENTOMAT DN	200922LO	00003143	200	14.5	2900	3395
00238336G	LO-BENTOMAT DN	200922LO	00003144	200	14.5	2900	3415
00238336G	LO-BENTOMAT DN	200922LO	00003145	200	14.5	2900	3395
00238336G	LO-BENTOMAT DN	200922LO	00003146	200	14.5	2900	3425
00238336G	LO-BENTOMAT DN	200922LO	00003147	200	14.5	2900	3390
00238336G	LO-BENTOMAT DN	200922LO	00003148	200	14.5	2900	3400
00238336G	LO-BENTOMAT DN	200922LO	00003149	200	14.5	2900	3405
00238336G	LO-BENTOMAT DN	200922LO	00003150	200	14.5	2900	3395
00238336G	LO-BENTOMAT DN	200922LO	00003151	200	14.5	2900	3435

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336G	LO-BENTOMAT DN	200922LO	00003152	200	14.5	2900	3410
00238336G	LO-BENTOMAT DN	200922LO	00003153	200	14.5	2900	3405
00238336G	LO-BENTOMAT DN	200922LO	00003154	200	14.5	2900	3385
00238336G	LO-BENTOMAT DN	200922LO	00003155	200	14.5	2900	3395
00238336G	LO-BENTOMAT DN	200922LO	00003156	200	14.5	2900	3400
00238336G	LO-BENTOMAT DN	200922LO	00003157	200	14.5	2900	3390
00238336G	LO-BENTOMAT DN	200922LO	00003158	200	14.5	2900	3395
00238336G	LO-BENTOMAT DN	200922LO	00003159	200	14.5	2900	3430
00238336G	LO-BENTOMAT DN	200922LO	00003160	200	14.5	2900	3385
00238336G	LO-BENTOMAT DN	200922LO	00003161	200	14.5	2900	3430
00238336G	LO-BENTOMAT DN	200922LO	00003162	200	14.5	2900	3385
00238336G	LO-BENTOMAT DN	200922LO	00003163	200	14.5	2900	3405
00238336G	LO-BENTOMAT DN	200922LO	00003164	200	14.5	2900	3440
00238336G	LO-BENTOMAT DN	200922LO	00003165	200	14.5	2900	3430
00238336G	LO-BENTOMAT DN	200922LO	00003166	200	14.5	2900	3390
00238336G	LO-BENTOMAT DN	200922LO	00003167	200	14.5	2900	3395
00238336G	LO-BENTOMAT DN	200922LO	00003168	200	14.5	2900	3430
00238336G	LO-BENTOMAT DN	200922LO	00003169	200	14.5	2900	3440
00238336G	LO-BENTOMAT DN	200922LO	00003170	200	14.5	2900	3405
00238336G	LO-BENTOMAT DN	200922LO	00003171	200	14.5	2900	3430
00238336G	LO-BENTOMAT DN	200922LO	00003172	200	14.5	2900	3420
00238336G	LO-BENTOMAT DN	200922LO	00003173	200	14.5	2900	3435
00238336G	LO-BENTOMAT DN	200922LO	00003174	200	14.5	2900	3480
00238336G	LO-BENTOMAT DN	200922LO	00003175	200	14.5	2900	3430
00238336G	LO-BENTOMAT DN	200922LO	00003176	200	14.5	2900	3455
00238336G	LO-BENTOMAT DN	200922LO	00003177	200	14.5	2900	3475
00238336G	LO-BENTOMAT DN	200922LO	00003178	200	14.5	2900	3435
00238336G	LO-BENTOMAT DN	200922LO	00003179	200	14.5	2900	3455
00238336G	LO-BENTOMAT DN	200922LO	00003180	200	14.5	2900	3450
00238336G	LO-BENTOMAT DN	200922LO	00003181	200	14.5	2900	3445
00238336G	LO-BENTOMAT DN	200922LO	00003182	200	14.5	2900	3425
00238336G	LO-BENTOMAT DN	200922LO	00003183	200	14.5	2900	3420

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336G	LO-BENTOMAT DN	200922LO	00003184	200	14.5	2900	3430
00238336G	LO-BENTOMAT DN	200922LO	00003185	200	14.5	2900	3440
00238336G	LO-BENTOMAT DN	200922LO	00003186	200	14.5	2900	3455
00238336G	LO-BENTOMAT DN	200922LO	00003187	200	14.5	2900	3465
00238336G	LO-BENTOMAT DN	200922LO	00003188	200	14.5	2900	3475
00238336G	LO-BENTOMAT DN	200922LO	00003189	200	14.5	2900	3480
00238336G	LO-BENTOMAT DN	200922LO	00003190	200	14.5	2900	3475
00238336G	LO-BENTOMAT DN	200922LO	00003191	200	14.5	2900	3460
00238336G	LO-BENTOMAT DN	200922LO	00003192	200	14.5	2900	3430
00238336G	LO-BENTOMAT DN	200922LO	00003193	200	14.5	2900	3435
00238336G	LO-BENTOMAT DN	200922LO	00003194	200	14.5	2900	3440
00238336G	LO-BENTOMAT DN	200922LO	00003195	200	14.5	2900	3470
00238336G	LO-BENTOMAT DN	200922LO	00003196	200	14.5	2900	3465
00238336G	LO-BENTOMAT DN	200922LO	00003197	200	14.5	2900	3435
00238336G	LO-BENTOMAT DN	200922LO	00003198	200	14.5	2900	3440
00238336G	LO-BENTOMAT DN	200922LO	00003199	200	14.5	2900	3455
00238336G	LO-BENTOMAT DN	200922LO	00003200	200	14.5	2900	3445
00238336G	LO-BENTOMAT DN	200922LO	00003201	200	14.5	2900	3435
00238336G	LO-BENTOMAT DN	200922LO	00003202	200	14.5	2900	3515
00238336G	LO-BENTOMAT DN	200922LO	00003203	200	14.5	2900	3455
00238336G	LO-BENTOMAT DN	200922LO	00003204	200	14.5	2900	3450
00238336G	LO-BENTOMAT DN	200922LO	00003205	200	14.5	2900	3460
00238336G	LO-BENTOMAT DN	200922LO	00003207	200	14.5	2900	3240
00238336G	LO-BENTOMAT DN	200922LO	00003208	200	14.5	2900	3300
00238336G	LO-BENTOMAT DN	200922LO	00003209	200	14.5	2900	3255
00238336G	LO-BENTOMAT DN	200922LO	00003210	200	14.5	2900	3330
00238336G	LO-BENTOMAT DN	200922LO	00003211	200	14.5	2900	3345
00238336G	LO-BENTOMAT DN	200922LO	00003212	200	14.5	2900	3375
00238336G	LO-BENTOMAT DN	200922LO	00003213	200	14.5	2900	3380
00238336G	LO-BENTOMAT DN	200922LO	00003214	200	14.5	2900	3370
00238336G	LO-BENTOMAT DN	200922LO	00003216	200	14.5	2900	3640
00238336G	LO-BENTOMAT DN	200922LO	00003217	200	14.5	2900	3630
Totals:				18200	1319.5	263900	311785
Total Number of Rolls Certified: 91							



GCL MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 00238336G

GCL			Geotextiles			Clay	
LO-BENTOMAT DN			LO-N/W-WHITE-DN			LO-N/W-BLACK-DN-6 OZ	LO-CG 50-DN
GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200922LO	00003125	00003125	200913CV	00000868	00000864	2020022102	051509A
200922LO	00003126	00003125	200913CV	00000878	00000874	2020022102	051509A
200922LO	00003127	00003125	200913CV	00000878	00000874	2020022102	051509A
200922LO	00003128	00003125	200913CV	00000878	00000874	2020022102	051509A
200922LO	00003129	00003125	200913CV	00000878	00000874	2020022102	051509A
200922LO	00003130	00003125	200913CV	00000878	00000874	2020022102	051509A
200922LO	00003131	00003125	200913CV	00000878	00000874	2020022102	051509A
200922LO	00003132	00003125	200913CV	00000884	00000881	2020022102	051509A
200922LO	00003133	00003125	200913CV	00000884	00000881	2020022102	051509A
200922LO	00003134	00003125	200913CV	00000884	00000881	2020022102	051509A
200922LO	00003135	00003125	200913CV	00000884	00000881	2020022146	051509A
200922LO	00003136	00003125	200913CV	00000884	00000881	2020022146	051509A
200922LO	00003137	00003125	200913CV	00000887	00000881	2020022146	051509A
200922LO	00003138	00003125	200913CV	00000887	00000881	2020022146	051509A
200922LO	00003139	00003125	200913CV	00000887	00000881	2020022146	051509A
200922LO	00003140	00003125	200913CV	00000887	00000881	2020022146	051509A
200922LO	00003141	00003125	200913CV	00000887	00000881	2020022146	051509A
200922LO	00003142	00003125	200913CV	00000880	00000874	2020022146	051509A
200922LO	00003143	00003125	200913CV	00000880	00000874	2020022146	051509A
200922LO	00003144	00003125	200913CV	00000880	00000874	2020022146	051509A
200922LO	00003145	00003125	200913CV	00000880	00000874	2020041406	051509A
200922LO	00003146	00003125	200913CV	00000880	00000874	2020041406	051509A
200922LO	00003147	00003125	200913CV	00000880	00000874	2020041406	051509A
200922LO	00003148	00003125	200917CV	00001448	00001442	2020041406	051509A
200922LO	00003149	00003125	200917CV	00001448	00001442	2020041406	051509A
200922LO	00003150	00003125	200917CV	00001448	00001442	2020041406	051509A
200922LO	00003151	00003125	200917CV	00001448	00001442	2020041406	051509A
200922LO	00003152	00003125	200917CV	00001448	00001442	2020041406	051509A
200922LO	00003153	00003125	200917CV	00001448	00001442	2020041406	051509A

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200922LO	00003154	00003125	200913CV	00000870	00000864	2020041406	051509B
200922LO	00003155	00003125	200913CV	00000870	00000864	2020022145	051509B
200922LO	00003156	00003125	200913CV	00000870	00000864	2020022145	051509B
200922LO	00003157	00003125	200913CV	00000870	00000864	2020022145	051509B
200922LO	00003158	00003125	200913CV	00000870	00000864	2020022145	051509B
200922LO	00003159	00003125	200917CV	00001457	00001452	2020022145	051509B
200922LO	00003160	00003125	200917CV	00001457	00001452	2020022145	051509B
200922LO	00003161	00003125	200917CV	00001457	00001452	2020022145	051509B
200922LO	00003162	00003125	200917CV	00001457	00001452	2020022145	051509B
200922LO	00003163	00003125	200917CV	00001457	00001452	2020022145	051509B
200922LO	00003164	00003164	200917CV	00001457	00001452	2020022145	051509B
200922LO	00003165	00003164	2011022784			2020022145	051509B
200922LO	00003166	00003164	2011022784			2020022115	051509B
200922LO	00003167	00003164	2011022784			2020022115	051509B
200922LO	00003168	00003164	2011022784			2020022115	051509B
200922LO	00003169	00003164	2011022784			2020022115	051509B
200922LO	00003170	00003164	2011022784			2020022115	051509B
200922LO	00003171	00003164	200913CV	00000871	00000864	2020022115	051509B
200922LO	00003172	00003164	200913CV	00000871	00000864	2020022115	051509B
200922LO	00003173	00003164	200913CV	00000871	00000864	2020022115	051509B
200922LO	00003174	00003164	200913CV	00000871	00000864	2020022115	051509B
200922LO	00003175	00003164	200913CV	00000871	00000864	2020022115	051509B
200922LO	00003176	00003164	200917CV	00001452	00001452	2020022115	051509B
200922LO	00003177	00003177	200917CV	00001452	00001452	2020022128	051509B
200922LO	00003178	00003177	200917CV	00001452	00001452	2020022128	051509B
200922LO	00003179	00003177	200917CV	00001452	00001452	2020022128	051509B
200922LO	00003180	00003177	200917CV	00001452	00001452	2020022128	051509B
200922LO	00003181	00003177	200917CV	00001452	00001452	2020022128	051509B
200922LO	00003182	00003177	200917CV	00001445	00001442	2020022128	051509B
200922LO	00003183	00003177	200917CV	00001445	00001442	2020022128	051509B
200922LO	00003184	00003177	200917CV	00001445	00001442	2020022128	051509C
200922LO	00003185	00003177	200917CV	00001445	00001442	2020022128	051509C
200922LO	00003186	00003177	200917CV	00001445	00001442	2020022116	051509C
200922LO	00003187	00003177	2011022760			2020022116	051509C
200922LO	00003188	00003177	2011022760			2020022116	051509C

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200922LO	00003189	00003177	2011022760			2020022116	051509C
200922LO	00003190	00003190	2011022760			2020022116	051509C
200922LO	00003191	00003190	2011022760			2020022116	051509C
200922LO	00003192	00003190	200917CV	00001373	00001369	2020022116	051509C
200922LO	00003193	00003190	200917CV	00001373	00001369	2020022116	051509C
200922LO	00003194	00003190	200917CV	00001373	00001369	2020022116	051509C
200922LO	00003195	00003190	200917CV	00001373	00001369	2020041346	051509C
200922LO	00003196	00003190	200917CV	00001373	00001369	2020041346	051509C
200922LO	00003197	00003190	200917CV	00001464	00001460	2020041346	051509C
200922LO	00003198	00003190	200917CV	00001464	00001460	2020041346	051509C
200922LO	00003199	00003190	200917CV	00001464	00001460	2020041346	051509C
200922LO	00003200	00003190	200917CV	00001464	00001460	2020041346	051509C
200922LO	00003201	00003190	200917CV	00001464	00001460	2020041346	051509C
200922LO	00003202	00003190	200917CV	00001464	00001460	2020041346	051509C
200922LO	00003203	00003203	200913CV	00000867	00000864	2020041346	051509C
200922LO	00003204	00003203	200913CV	00000867	00000864	2020041346	051509C
200922LO	00003205	00003203	200913CV	00000867	00000864	2020041346	051509C
200922LO	00003207	00003207	200920CV	00001607	00001607	2020022103	051809C
200922LO	00003208	00003207	200920CV	00001607	00001607	2020022143	051809C
200922LO	00003209	00003207	200917CV	00001444	00001442	2020022143	051809C
200922LO	00003210	00003207	200917CV	00001444	00001442	2020022143	051809C
200922LO	00003211	00003207	200917CV	00001444	00001442	2020022143	051809C
200922LO	00003212	00003207	200917CV	00001444	00001442	2020041409	051809C
200922LO	00003213	00003207	200917CV	00001444	00001442	2020041409	051809C
200922LO	00003214	00003207	200917CV	00001444	00001442	2020041409	051809C
200922LO	00003216	00003216	200916CV	00001219	00001216	2020041409	051909A
200922LO	00003217	00003216	200916CV	00001219	00001216	2020041409	051909A



GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 00238336G have been tested in our production facility lab.

Product	Lot # Tested	Roll # Tested	Mass Area	Grab Strength	Peel Strength
Standard Test Method:			ASTM D 5993	ASTM D 6768	ASTM D 6496
Standard Specification:			0.75 lb/sq ft MARV	50lbs/in MARV	3.5lbs/in Min
Non-standard specifications were requested for this order as indicated on the attached property sheet					
LO-BENTOMAT DN	200922LO	00003125	0.89	59.6	5.8
LO-BENTOMAT DN	200922LO	00003164	0.84	59.6	13.8
LO-BENTOMAT DN	200922LO	00003177	0.95	59.6	8.4
LO-BENTOMAT DN	200922LO	00003190	0.93	84.0	11.7
LO-BENTOMAT DN	200922LO	00003203	0.86	84.0	6.2
LO-BENTOMAT DN	200922LO	00003207	0.87	70.7	6.5
LO-BENTOMAT DN	200922LO	00003216	0.97	65.8	5

Product	Lot # Tested	Roll # Tested	Moisture
LO-BENTOMAT DN	200922LO	00003125	27.7
LO-BENTOMAT DN	200922LO	00003164	27.2
LO-BENTOMAT DN	200922LO	00003177	24.9
LO-BENTOMAT DN	200922LO	00003190	24.6
LO-BENTOMAT DN	200922LO	00003203	26.1
LO-BENTOMAT DN	200922LO	00003207	26.6
LO-BENTOMAT DN	200922LO	00003216	23.3

ASTM test methods and property specifications per CETCO standard unless non-standard specifications were requested.
Any non-standard property specifications requested for this order are noted on the attached GCL property specifications sheet.



BENTONITE CLAY CERTIFICATION

The Bentonite Clay used to produce package 00238336G has been tested by American Colloid Company and yielded the following test results.

Reference	Moist	Swell	Fluid Loss
Test Method:	ASTM D 2216	ASTM D 5890	ASTM D 5891
Specification:	12% Max	24 ml/2g Min	18 ml Max
051509A	10.8	26.0	14.8
051509B	10.8	25.0	14.8
051509C	10.8	27.0	15.6
051809C	10.8	26.0	14.6
051909A	10.8	25.0	15.8



GEOTEXTILE TEST RESULTS FOR RAW MATERIAL SUPPLIED BY A CETCO FACILITY

The GCL in certification package number 00238336G was manufactured using these geotextiles:

Material	Lot #	Roll #	Mass Area	Grab Strength
CV-NON-WOVEN	200913CV	00000864	6.7	40.7
CV-NON-WOVEN	200913CV	00000874	6.9	49.2
CV-NON-WOVEN	200913CV	00000881	6.6	43.3
CV-NON-WOVEN	200916CV	00001216	6.2	37.2
CV-NON-WOVEN	200917CV	00001369	6.4	44.6
CV-NON-WOVEN	200917CV	00001442	6.3	43.8
CV-NON-WOVEN	200917CV	00001452	7.1	49.0
CV-NON-WOVEN	200917CV	00001460	6.4	41.3
CV-NON-WOVEN	200920CV	00001607	6.6	51.3



GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 00238336G was manufactured with geotextiles which were tested with the following results.

BASE			
Material	Roll Number	Mass Area oz/yd ²	Grab Strength lbs
PPX HH65L	2020022102	6.5	193.0
PPX HH65L	2020022103	6.5	193.0
PPX HH65L	2020022115	6.6	213.1
PPX HH65L	2020022116	6.6	213.1
PPX HH65L	2020022128	6.8	206.2
PPX HH65L	2020022143	6.0	178.1
PPX HH65L	2020022145	6.0	178.1
PPX HH65L	2020022146	6.5	195.6
PPX HH65L	2020041346	7.0	212.2
PPX HH65L	2020041406	6.7	209.4
PPX HH65L	2020041409	6.6	219.2

CAP			
Material	Roll Number	Mass Area oz/yd ²	Grab Strength lbs
PPX 650	2011022760	7.6	87.3
PPX 650	2011022784	8.1	87.4

Certifications from our suppliers are on file at our production facility.
 An '*' or 'PT' indicates supplier certifications were unavailable prior to shipping so testing was performed at a CETCO lab.

**INDEX FLUX AND PERMEABILITY OF GCL's
TEST RESULTS
ASTM D-5887 / D-5084**



Client : CETCO	Date : 06/07/2009
Project Location : BRC CAMU Henderson/Landwell	Job No. : 09LG1900.01
Sample Number : Roll 3125	Tested By : RL/AM
Description : Bentomat DN Lot: 200922LO	Checked By : JB
Permeant Fluid : De-Aired Water	

Physical Property Data

Total Sample		Total Sample	
Initial Clay Height (in)	: 0.17	Final Height of Clay (in)	: 0.21
Initial Diameter (in)	: 4.00	Final Diameter of Clay (in)	: 4.00
Initial Wet Weight (g)	: 43.40	Final Wet Weight(Clay) (g)	: 76.80
Wet Density (pcf)	: 77.33	Wet Density (pcf)	: 110.77
Moisture Content %	: 31.90	Moisture Content %	: 115.10
Dry Density (pcf)	: 58.62	Dry Density (pcf)	: 51.50

Test Parameters

Fluid	: De-Aired Water	Average Effective	
Cell Pressure (psi)	: 80.00	Confining Pressure (psi)	: 4
Head Water (psi)	: 77.00	Gradient	: 262.86
Tail Water (psi)	: 75.00	Effective Stress at Base	: 5

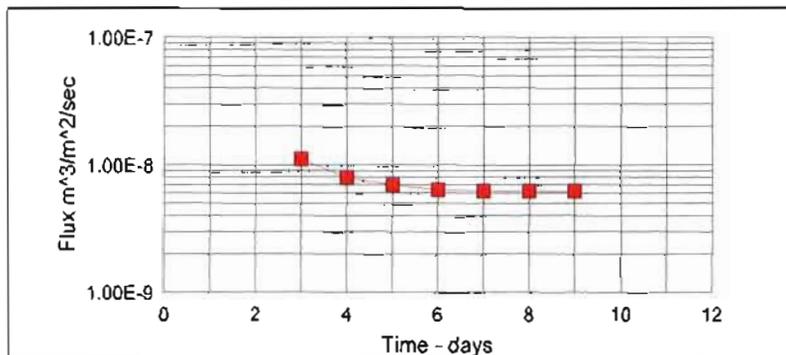
Flux and Permeability Input Data

Minimum Saturation Time is 48 hours

Area, A = 0.00811 m²
Thickness, t = 0.21 in

Days	Date	Flow	Time	Elapsed	Flux	k	
		cc	min	Time (sec)	(m ³ /m ²)/sec	cm/sec	
1	05/27/2009	48 hours of hydration per ASTM					
2	05/28/2009						
3	05/29/2009	7.80	1441	86460	1.11E-008	4.23E-009	
4	05/30/2009	5.60	1438	86280	8.01E-009	3.05E-009	
5	05/31/2009	4.90	1438	86280	7.01E-009	2.87E-009	
6	06/01/2009	4.50	1445	86700	6.40E-009	2.44E-009	
7	06/02/2009	4.40	1442	86520	6.27E-009	2.39E-009	
8	06/03/2009	4.40	1441	86460	6.28E-009	2.39E-009	
9	06/04/2009	4.40	1443	86580	6.27E-009	2.38E-009	

Average of Last 3 Test Readings : 6.27E-009 2.39E-009



JLT Laboratories, Inc.

938 S Central Ave, Canonsburg, Pa. 15317 Tel 724-746-4441, Fax 724-745-4261

INDEX FLUX AND PERMEABILITY OF GCL's
TEST RESULTS
 ASTM D-5887 / D-5084



Client : CETCO	Date : 06/07/2009
Project Location : BRC CAMU Henderson/Landwell	Job No. : 09LG1900.01
Sample Number : Roll 3190	Tested By : RL/AM
Description : Bentomat DN Lot: 200922LO	Checked By : JB
Permeant Fluid : De-Aired Water	

Physical Property Data

	Total Sample		Total Sample
Initial Clay Height (in)	: 0.18	Final Height of Clay (in)	: 0.22
Initial Diameter (in)	: 4.00	Final Diameter of Clay (in)	: 4.00
Initial Wet Weight (g)	: 51.80	Final Wet Weight(Clay) (g)	: 81.80
Wet Density (pcf)	: 87.16	Wet Density (pcf)	: 112.62
Moisture Content %	: 32.10	Moisture Content %	: 111.30
Dry Density (pcf)	: 65.98	Dry Density (pcf)	: 53.30

Test Parameters

Fluid : De-Aired Water	Average Effective
Cell Pressure (psi) : 80.00	Confining Pressure (psi) : 4
Head Water (psi) : 77.00	Gradient : 250.91
Tail Water (psi) : 75.00	Effective Stress at Base : 5

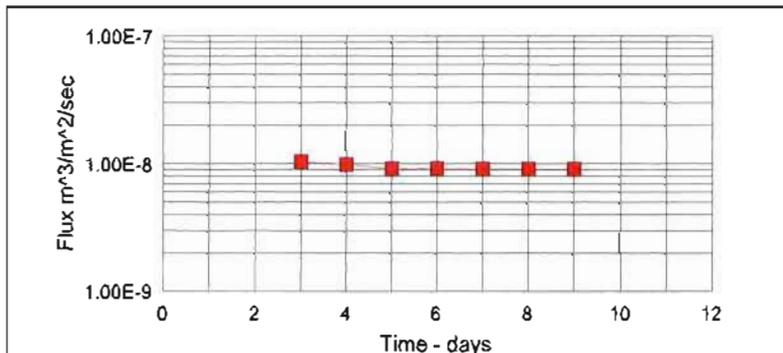
Flux and Permeability Input Data

Minimum Saturation Time is 48 hours

Area, A = 0.00811 m²
 Thickness, t = 0.22 in

Days	Date	Flow	Time	Elapsed	Flux	k	
		cc	min	Time (sec)	(m ³ /m ² /sec)	cm/sec	
1	05/27/2009	48 hours of hydration per ASTM					
2	05/28/2009						
3	05/29/2009	7.30	1441	86460	1.04E-008	4.15E-009	
4	05/30/2009	6.90	1438	86280	9.87E-009	3.93E-009	
5	05/31/2009	6.40	1438	86280	9.15E-009	3.65E-009	
6	06/01/2009	6.50	1445	86700	9.25E-009	3.69E-009	
7	06/02/2009	6.40	1442	86520	9.12E-009	3.64E-009	
8	06/03/2009	6.40	1441	86460	9.13E-009	3.64E-009	
9	06/04/2009	6.40	1443	86580	9.12E-009	3.63E-009	

Average of Last 3 Test Readings : 9.12E-009 3.64E-009



JLT Laboratories, Inc.

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Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	GCL MQC Certificates (3rd Portion of CAMU Closure Allocation)
Submittal Number:	02772-004N
Specification Section:	Section 02772, Part 2.03
Drawing Number (s):	8, 10, 14, 16, 19, 21, 23, 25, 27, 29, 31, 33, 35-36, 38-45
Page Number:	02772-4 and 02772-5
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	6/10/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
 ATTENTION: Lee C. Farris, P.E.

DATE: 6/17/09
 JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
 TRANSMITTAL NUMBER: 278
 ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	6/17/09			Submittal 02772-0040- GCL MQC Certificates (Remaining Portion of CAMU Closure Allocation)	RC

ACTION (*)

AR - AS REQUESTED

FA - FOR APPROVAL

F - FILE

RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL

MAIL

OVERNIGHT

HAND DELIVERY

FACSIMILE

COPY TO: Ranjit Sahu, Lee Farris

BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....



Date: 6/9/2009

Purchase Order: 9114

ORDER NUMBER: 00238336H

Gregg Abney
ESI-Environmental Specialties INT'l, Inc.
7943 Pecue Lane
Baton Rouge, LA 70809
gabney@esiliners,.com

To Whom it May Concern:

Please find enclosed the MQA/MQC test data package for Geosynthetic Clay Liner shipments to ESI-Environmental Specialties INT'l, Inc..

The enclosed data package includes results of all the MQC tests required by ASTM D5889, with the exception of index flux/hydraulic conductivity. This test, which is run according to ASTM D5887, is normally performed once per production lot (once per week), unless a higher frequency is required by the project specifications. Because of the GCL's low permeability, this test can take several weeks to complete. The index flux/hydraulic conductivity results associated with this lot of material will be provided under separate cover as soon as they are available.

Although the index flux/hydraulic conductivity test results are not yet available, CETCO accepts responsibility for our GCL should the index flux/hydraulic conductivity tests produce unacceptable results. If, upon delivery and prior to installation, individual rolls of GCL are found to be nonconforming to accepted project specifications, CETCO will replace the nonconforming material at no charge.

Questions regarding this information should be directed to Chris Athanassopoulos, Technical Support Engineer, at (847) 851-1831.

Sincerely,

A handwritten signature in black ink, appearing to read 'Roger B. Wilkerson', is written over a horizontal line.

Roger B. Wilkerson

Quality Assurance Coordinator
CETCO Lovell Plant



**GEOSYNTHETIC CLAY LINER
MANUFACTURING QUALITY ASSURANCE DATA PACKAGE**

PROJECT NAME: Landwell
CUSTOMER P.O.: 9114
ORDER NUMBER: 00238336H
PREPARED FOR: ESI-Environmental Specialties INT'l, Inc.

CONTENTS:

- Daily production and needle detection certification
- GCL property specifications
- Order packing list
- GCL MQA tracking form
- GCL manufacturing quality control test data
- Bentonite clay certification
- Raw material test results

PREPARED BY: Roger B. Wilkerson
Quality Assurance Coordinator
CETCO
P.O. Box 428
92 Hwy. 37
Lovell, WY 82431

Telephone: 800-322-1149 ext. 413
Fax:
E-Mail: rwilke@cetco.com



PRODUCTION CERTIFICATION

PROJECT NAME: Landwell
CUSTOMER P.O.: 9114
PREPARED FOR: ESI-Environmental Specialties INT'l, Inc.

CETCO affirms that these products meet the physical and chemical criteria listed on the attached GCL property specification sheet.

NEEDLE REMOVAL AND DETECTION PROCEDURE

CETCO hereby affirms that all Bentomat[®] geosynthetic clay liner material manufactured for this project is continually passed under a magnet for needle removal and then screened with a metal detection device. CETCO certifies Bentomat[®] to be essentially free of broken needles and fragments of needles that would negatively effect the performance of the final product.

A handwritten signature in black ink, appearing to read 'Roger B. Wilkerson', is written over a horizontal line.

Roger B. Wilkerson
Quality Assurance Coordinator
Colloid Environmental Technologies Co. (CETCO)



Ship Date: 6/8/2009

Order Number: 00238336H

Prepared For: ESI-Environmental Specialties INT'l, Inc.

The GCL raw materials and GCL finished product manufactured for the above-referenced order number(s) are hereby certified to achieve the properties listed in the tables below.

GCL PROPERTY SPECIFICATIONS FOR BENTOMAT DN

Test Method	Test Method Property	Test Frequency	Certified Value
ASTM D 5891	Bentonite Fluid Loss	1 per 50 Tons	18 ml Max
ASTM D 5993	Bentonite Mass/Area	40,000 sq ft (4000 sq m)	0.75 lb /sq ft (3.6 kg/sq m) Min
ASTM D 5890	Bentonite Swell Index	1 per 50 Tons	24 ml/2g Min
ASTM D 6768	GCL Grab Strength	200,000 sq ft (20,000 sq m)	50 lbs/in MARV
ASTM D 6243	GCL Hydrated Internal Shear Strength	Periodic	500 psf (48 kPa) typ @ 200 psf
ASTM D 5887	GCL Hydraulic Conductivity	Weekly	5 x 10 ⁻⁹ cm/ sec Max
ASTM D 5887	GCL Index Flux	Weekly	1 x 10 ⁻⁸ m ³ /m ² /sec Max
ASTM D 6496	GCL Peel Strength	40,000 sq ft (4000 sq m)	3.5 lbs/in Min
ASTM D4632*	Grab Strength*modified with 4-inch grips	200,000 sq ft (20,000 sq m)	150 lbs (660 N) MARV
ASTM D4632*	Peel Strength*modified with 4-inch grips	40,000 sq ft (4000 sq m)	15 lbs (65 N) Min

SPECIALLY REQUESTED CERTIFIED PROPERTIES FOR THIS ORDER OF BENTOMAT DN

Test Method	Test Method Property	Requested Frequency	Requested Value	Requested Conditions
ASTM D 5887	GCL Index Flux	1/200,000 sqft	Standard	Standard
ASTM D 4643	GCL Moisture	Standard	30% Moisture (max)	Standard

Bentonite property tests are performed at a bentonite processing facility before shipment to CETCO's production facility. All tensile testing is in the machine direction.

FABRIC SUPPLIER REQUIREMENTS FOR BENTOMAT DN

Raw Material	test method	mass per area	units
Nonwoven Cover Fabric	ASTM D 5261	6.0	oz/yd ²
Bentomat DN Base Nonwoven Fabric	ASTM D 5261	6.0	oz/yd ²

Fabric certifications from our raw material suppliers are on file at our production facility.



CETCO's MQA laboratory is GAI-accredited (www.geosynthetic-institute.org/gai/lab.html).


 Roger B. Wilkerson
 Quality Assurance Coordinator
 CETCO Lovell Plant



GCL ORDER PACKING LIST

GCL shipped for certification package number 00238336H

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336H	LO-BENTOMAT DN	200923LO	00003497	200	14.5	2900	3410
00238336H	LO-BENTOMAT DN	200923LO	00003498	200	14.5	2900	3395
00238336H	LO-BENTOMAT DN	200923LO	00003499	200	14.5	2900	3425
00238336H	LO-BENTOMAT DN	200923LO	00003500	200	14.5	2900	3425
00238336H	LO-BENTOMAT DN	200923LO	00003501	200	14.5	2900	3400
00238336H	LO-BENTOMAT DN	200923LO	00003502	200	14.5	2900	3425
00238336H	LO-BENTOMAT DN	200923LO	00003503	200	14.5	2900	3415
00238336H	LO-BENTOMAT DN	200923LO	00003504	200	14.5	2900	3375
00238336H	LO-BENTOMAT DN	200923LO	00003505	200	14.5	2900	3415
00238336H	LO-BENTOMAT DN	200923LO	00003506	200	14.5	2900	3500
00238336H	LO-BENTOMAT DN	200923LO	00003507	200	14.5	2900	3410
00238336H	LO-BENTOMAT DN	200923LO	00003508	200	14.5	2900	3415
00238336H	LO-BENTOMAT DN	200923LO	00003509	200	14.5	2900	3420
00238336H	LO-BENTOMAT DN	200923LO	00003510	200	14.5	2900	3430
00238336H	LO-BENTOMAT DN	200923LO	00003511	200	14.5	2900	3480
00238336H	LO-BENTOMAT DN	200923LO	00003512	200	14.5	2900	3490
00238336H	LO-BENTOMAT DN	200923LO	00003513	200	14.5	2900	3485
00238336H	LO-BENTOMAT DN	200923LO	00003514	200	14.5	2900	3490
00238336H	LO-BENTOMAT DN	200923LO	00003515	200	14.5	2900	3475
00238336H	LO-BENTOMAT DN	200923LO	00003516	200	14.5	2900	3460
00238336H	LO-BENTOMAT DN	200923LO	00003517	200	14.5	2900	3450
00238336H	LO-BENTOMAT DN	200923LO	00003518	200	14.5	2900	3450
00238336H	LO-BENTOMAT DN	200923LO	00003519	200	14.5	2900	3465
00238336H	LO-BENTOMAT DN	200923LO	00003520	200	14.5	2900	3460
00238336H	LO-BENTOMAT DN	200923LO	00003521	200	14.5	2900	3465
00238336H	LO-BENTOMAT DN	200923LO	00003522	200	14.5	2900	3470
00238336H	LO-BENTOMAT DN	200923LO	00003523	200	14.5	2900	3440

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336H	LO-BENTOMAT DN	200923LO	00003524	200	14.5	2900	3450
00238336H	LO-BENTOMAT DN	200923LO	00003525	200	14.5	2900	3445
00238336H	LO-BENTOMAT DN	200923LO	00003526	200	14.5	2900	3475
00238336H	LO-BENTOMAT DN	200923LO	00003527	200	14.5	2900	3450
00238336H	LO-BENTOMAT DN	200923LO	00003528	200	14.5	2900	3460
00238336H	LO-BENTOMAT DN	200923LO	00003529	200	14.5	2900	3480
00238336H	LO-BENTOMAT DN	200923LO	00003530	200	14.5	2900	3485
00238336H	LO-BENTOMAT DN	200923LO	00003531	200	14.5	2900	3500
00238336H	LO-BENTOMAT DN	200923LO	00003532	200	14.5	2900	3525
00238336H	LO-BENTOMAT DN	200923LO	00003533	200	14.5	2900	3490
00238336H	LO-BENTOMAT DN	200923LO	00003534	200	14.5	2900	3495
00238336H	LO-BENTOMAT DN	200923LO	00003535	200	14.5	2900	3475
00238336H	LO-BENTOMAT DN	200923LO	00003536	200	14.5	2900	3470
00238336H	LO-BENTOMAT DN	200923LO	00003537	200	14.5	2900	3430
00238336H	LO-BENTOMAT DN	200923LO	00003538	200	14.5	2900	3455
00238336H	LO-BENTOMAT DN	200923LO	00003539	200	14.5	2900	3450
00238336H	LO-BENTOMAT DN	200923LO	00003540	200	14.5	2900	3465
00238336H	LO-BENTOMAT DN	200923LO	00003541	200	14.5	2900	3470
00238336H	LO-BENTOMAT DN	200923LO	00003542	200	14.5	2900	3460
00238336H	LO-BENTOMAT DN	200923LO	00003543	200	14.5	2900	3450
00238336H	LO-BENTOMAT DN	200923LO	00003544	200	14.5	2900	3455
00238336H	LO-BENTOMAT DN	200923LO	00003545	200	14.5	2900	3460
00238336H	LO-BENTOMAT DN	200923LO	00003546	200	14.5	2900	3480
00238336H	LO-BENTOMAT DN	200923LO	00003547	200	14.5	2900	3490
00238336H	LO-BENTOMAT DN	200923LO	00003548	200	14.5	2900	3495
00238336H	LO-BENTOMAT DN	200923LO	00003549	200	14.5	2900	3500
00238336H	LO-BENTOMAT DN	200923LO	00003550	200	14.5	2900	3465
00238336H	LO-BENTOMAT DN	200923LO	00003551	200	14.5	2900	3470
00238336H	LO-BENTOMAT DN	200923LO	00003552	200	14.5	2900	3475
00238336H	LO-BENTOMAT DN	200923LO	00003553	200	14.5	2900	3435
00238336H	LO-BENTOMAT DN	200923LO	00003554	200	14.5	2900	3460
00238336H	LO-BENTOMAT DN	200923LO	00003555	200	14.5	2900	3450

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336H	LO-BENTOMAT DN	200923LO	00003556	200	14.5	2900	3445
00238336H	LO-BENTOMAT DN	200923LO	00003557	200	14.5	2900	3460
00238336H	LO-BENTOMAT DN	200923LO	00003558	200	14.5	2900	3465
00238336H	LO-BENTOMAT DN	200923LO	00003559	200	14.5	2900	3470
00238336H	LO-BENTOMAT DN	200923LO	00003560	200	14.5	2900	3510
00238336H	LO-BENTOMAT DN	200923LO	00003561	200	14.5	2900	3455
00238336H	LO-BENTOMAT DN	200923LO	00003562	200	14.5	2900	3465
00238336H	LO-BENTOMAT DN	200923LO	00003563	200	14.5	2900	3455
00238336H	LO-BENTOMAT DN	200923LO	00003564	200	14.5	2900	3400
00238336H	LO-BENTOMAT DN	200923LO	00003565	200	14.5	2900	3440
00238336H	LO-BENTOMAT DN	200923LO	00003566	200	14.5	2900	3420
00238336H	LO-BENTOMAT DN	200923LO	00003567	200	14.5	2900	3455
00238336H	LO-BENTOMAT DN	200923LO	00003568	200	14.5	2900	3425
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00238336H	LO-BENTOMAT DN	200923LO	00003570	200	14.5	2900	3420
00238336H	LO-BENTOMAT DN	200923LO	00003571	200	14.5	2900	3410
00238336H	LO-BENTOMAT DN	200923LO	00003572	200	14.5	2900	3430
00238336H	LO-BENTOMAT DN	200923LO	00003573	200	14.5	2900	3395
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00238336H	LO-BENTOMAT DN	200923LO	00003576	200	14.5	2900	3420
00238336H	LO-BENTOMAT DN	200923LO	00003577	200	14.5	2900	3425
00238336H	LO-BENTOMAT DN	200923LO	00003578	200	14.5	2900	3410
00238336H	LO-BENTOMAT DN	200923LO	00003579	200	14.5	2900	3420
00238336H	LO-BENTOMAT DN	200923LO	00003580	200	14.5	2900	3415
00238336H	LO-BENTOMAT DN	200923LO	00003581	200	14.5	2900	3420
00238336H	LO-BENTOMAT DN	200923LO	00003582	200	14.5	2900	3410
00238336H	LO-BENTOMAT DN	200923LO	00003583	200	14.5	2900	3400
00238336H	LO-BENTOMAT DN	200923LO	00003584	200	14.5	2900	3415
00238336H	LO-BENTOMAT DN	200923LO	00003585	200	14.5	2900	3375
00238336H	LO-BENTOMAT DN	200923LO	00003586	200	14.5	2900	3385
00238336H	LO-BENTOMAT DN	200923LO	00003587	200	14.5	2900	3375

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336H	LO-BENTOMAT DN	200923LO	00003588	200	14.5	2900	3390
00238336H	LO-BENTOMAT DN	200923LO	00003589	200	14.5	2900	3350
00238336H	LO-BENTOMAT DN	200923LO	00003590	200	14.5	2900	3360
00238336H	LO-BENTOMAT DN	200923LO	00003591	200	14.5	2900	3365
00238336H	LO-BENTOMAT DN	200923LO	00003592	200	14.5	2900	3370
00238336H	LO-BENTOMAT DN	200923LO	00003593	200	14.5	2900	3430
00238336H	LO-BENTOMAT DN	200923LO	00003594	200	14.5	2900	3395
00238336H	LO-BENTOMAT DN	200923LO	00003595	200	14.5	2900	3415
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00238336H	LO-BENTOMAT DN	200923LO	00003597	200	14.5	2900	3380
00238336H	LO-BENTOMAT DN	200923LO	00003598	200	14.5	2900	3405
00238336H	LO-BENTOMAT DN	200923LO	00003599	200	14.5	2900	3430
00238336H	LO-BENTOMAT DN	200923LO	00003600	200	14.5	2900	3415
00238336H	LO-BENTOMAT DN	200923LO	00003601	200	14.5	2900	3410
00238336H	LO-BENTOMAT DN	200923LO	00003602	200	14.5	2900	3415
00238336H	LO-BENTOMAT DN	200923LO	00003603	200	14.5	2900	3420
00238336H	LO-BENTOMAT DN	200923LO	00003604	200	14.5	2900	3410
00238336H	LO-BENTOMAT DN	200923LO	00003605	200	14.5	2900	3440
00238336H	LO-BENTOMAT DN	200923LO	00003606	200	14.5	2900	3470
00238336H	LO-BENTOMAT DN	200923LO	00003607	200	14.5	2900	3485
00238336H	LO-BENTOMAT DN	200923LO	00003608	200	14.5	2900	3490
00238336H	LO-BENTOMAT DN	200923LO	00003609	200	14.5	2900	3485
00238336H	LO-BENTOMAT DN	200923LO	00003610	200	14.5	2900	3490
00238336H	LO-BENTOMAT DN	200923LO	00003611	200	14.5	2900	3495
00238336H	LO-BENTOMAT DN	200923LO	00003612	200	14.5	2900	3490
00238336H	LO-BENTOMAT DN	200923LO	00003613	200	14.5	2900	3500
00238336H	LO-BENTOMAT DN	200923LO	00003614	200	14.5	2900	3520
00238336H	LO-BENTOMAT DN	200923LO	00003615	200	14.5	2900	3510
00238336H	LO-BENTOMAT DN	200923LO	00003616	200	14.5	2900	3515
00238336H	LO-BENTOMAT DN	200923LO	00003617	200	14.5	2900	3510
00238336H	LO-BENTOMAT DN	200923LO	00003618	200	14.5	2900	3505
00238336H	LO-BENTOMAT DN	200923LO	00003619	200	14.5	2900	3530

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336H	LO-BENTOMAT DN	200923LO	00003620	200	14.5	2900	3500
00238336H	LO-BENTOMAT DN	200923LO	00003621	200	14.5	2900	3535
00238336H	LO-BENTOMAT DN	200923LO	00003622	200	14.5	2900	3515
00238336H	LO-BENTOMAT DN	200923LO	00003623	200	14.5	2900	3540
00238336H	LO-BENTOMAT DN	200923LO	00003624	200	14.5	2900	3525
00238336H	LO-BENTOMAT DN	200923LO	00003625	200	14.5	2900	3520
00238336H	LO-BENTOMAT DN	200923LO	00003626	200	14.5	2900	3540
00238336H	LO-BENTOMAT DN	200923LO	00003627	200	14.5	2900	3520
00238336H	LO-BENTOMAT DN	200923LO	00003628	200	14.5	2900	3535
00238336H	LO-BENTOMAT DN	200923LO	00003629	200	14.5	2900	3520
00238336H	LO-BENTOMAT DN	200923LO	00003630	200	14.5	2900	3525
00238336H	LO-BENTOMAT DN	200923LO	00003631	200	14.5	2900	3515
00238336H	LO-BENTOMAT DN	200923LO	00003632	200	14.5	2900	3550
00238336H	LO-BENTOMAT DN	200923LO	00003633	200	14.5	2900	3560
00238336H	LO-BENTOMAT DN	200923LO	00003634	200	14.5	2900	3555
00238336H	LO-BENTOMAT DN	200923LO	00003635	200	14.5	2900	3545
00238336H	LO-BENTOMAT DN	200923LO	00003636	200	14.5	2900	3530
00238336H	LO-BENTOMAT DN	200923LO	00003637	200	14.5	2900	3585
00238336H	LO-BENTOMAT DN	200923LO	00003638	200	14.5	2900	3570
00238336H	LO-BENTOMAT DN	200923LO	00003639	200	14.5	2900	3665
00238336H	LO-BENTOMAT DN	200923LO	00003640	200	14.5	2900	3615
00238336H	LO-BENTOMAT DN	200923LO	00003641	200	14.5	2900	3545
00238336H	LO-BENTOMAT DN	200923LO	00003642	200	14.5	2900	3540
00238336H	LO-BENTOMAT DN	200923LO	00003643	200	14.5	2900	3555
00238336H	LO-BENTOMAT DN	200923LO	00003644	200	14.5	2900	3530
00238336H	LO-BENTOMAT DN	200923LO	00003645	200	14.5	2900	3550
00238336H	LO-BENTOMAT DN	200923LO	00003646	200	14.5	2900	3510
00238336H	LO-BENTOMAT DN	200923LO	00003647	200	14.5	2900	3490
00238336H	LO-BENTOMAT DN	200923LO	00003648	200	14.5	2900	3470
00238336H	LO-BENTOMAT DN	200923LO	00003649	200	14.5	2900	3475
00238336H	LO-BENTOMAT DN	200923LO	00003650	200	14.5	2900	3460
00238336H	LO-BENTOMAT DN	200923LO	00003651	200	14.5	2900	3465

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336H	LO-BENTOMAT DN	200923LO	00003652	200	14.5	2900	3450
00238336H	LO-BENTOMAT DN	200923LO	00003653	200	14.5	2900	3420
00238336H	LO-BENTOMAT DN	200923LO	00003654	200	14.5	2900	3435
00238336H	LO-BENTOMAT DN	200923LO	00003655	200	14.5	2900	3440
00238336H	LO-BENTOMAT DN	200923LO	00003656	200	14.5	2900	3430
00238336H	LO-BENTOMAT DN	200923LO	00003658	200	14.5	2900	3495
00238336H	LO-BENTOMAT DN	200923LO	00003659	200	14.5	2900	3490
00238336H	LO-BENTOMAT DN	200923LO	00003660	200	14.5	2900	3465
00238336H	LO-BENTOMAT DN	200923LO	00003661	200	14.5	2900	3460
00238336H	LO-BENTOMAT DN	200923LO	00003662	200	14.5	2900	3475
00238336H	LO-BENTOMAT DN	200923LO	00003663	200	14.5	2900	3470
00238336H	LO-BENTOMAT DN	200923LO	00003664	200	14.5	2900	3505
00238336H	LO-BENTOMAT DN	200923LO	00003665	200	14.5	2900	3510
00238336H	LO-BENTOMAT DN	200923LO	00003666	200	14.5	2900	3495
00238336H	LO-BENTOMAT DN	200923LO	00003667	200	14.5	2900	3455
00238336H	LO-BENTOMAT DN	200923LO	00003668	200	14.5	2900	3475
00238336H	LO-BENTOMAT DN	200923LO	00003669	200	14.5	2900	3485
00238336H	LO-BENTOMAT DN	200923LO	00003670	200	14.5	2900	3445
00238336H	LO-BENTOMAT DN	200923LO	00003671	200	14.5	2900	3460
00238336H	LO-BENTOMAT DN	200923LO	00003672	200	14.5	2900	3505
00238336H	LO-BENTOMAT DN	200923LO	00003673	200	14.5	2900	3490
00238336H	LO-BENTOMAT DN	200923LO	00003674	200	14.5	2900	3455
00238336H	LO-BENTOMAT DN	200923LO	00003675	200	14.5	2900	3460
00238336H	LO-BENTOMAT DN	200923LO	00003676	200	14.5	2900	3475
00238336H	LO-BENTOMAT DN	200923LO	00003677	200	14.5	2900	3465
00238336H	LO-BENTOMAT DN	200923LO	00003678	200	14.5	2900	3470
00238336H	LO-BENTOMAT DN	200923LO	00003679	200	14.5	2900	3500
00238336H	LO-BENTOMAT DN	200923LO	00003680	200	14.5	2900	3505
00238336H	LO-BENTOMAT DN	200923LO	00003681	200	14.5	2900	3500
00238336H	LO-BENTOMAT DN	200923LO	00003682	200	14.5	2900	3525
00238336H	LO-BENTOMAT DN	200923LO	00003683	200	14.5	2900	3510
00238336H	LO-BENTOMAT DN	200923LO	00003684	200	14.5	2900	3515

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336H	LO-BENTOMAT DN	200923LO	00003685	200	14.5	2900	3555
00238336H	LO-BENTOMAT DN	200923LO	00003686	200	14.5	2900	3560
00238336H	LO-BENTOMAT DN	200923LO	00003687	200	14.5	2900	3565
00238336H	LO-BENTOMAT DN	200923LO	00003688	200	14.5	2900	3535
00238336H	LO-BENTOMAT DN	200923LO	00003689	200	14.5	2900	3520
00238336H	LO-BENTOMAT DN	200923LO	00003690	200	14.5	2900	3530
00238336H	LO-BENTOMAT DN	200923LO	00003691	200	14.5	2900	3510
00238336H	LO-BENTOMAT DN	200923LO	00003692	200	14.5	2900	3500
00238336H	LO-BENTOMAT DN	200923LO	00003693	200	14.5	2900	3535
00238336H	LO-BENTOMAT DN	200923LO	00003694	200	14.5	2900	3530
00238336H	LO-BENTOMAT DN	200923LO	00003695	200	14.5	2900	3525
00238336H	LO-BENTOMAT DN	200923LO	00003696	200	14.5	2900	3520
00238336H	LO-BENTOMAT DN	200923LO	00003697	200	14.5	2900	3525
00238336H	LO-BENTOMAT DN	200923LO	00003698	200	14.5	2900	3510
00238336H	LO-BENTOMAT DN	200923LO	00003699	200	14.5	2900	3525
00238336H	LO-BENTOMAT DN	200923LO	00003700	200	14.5	2900	3520
00238336H	LO-BENTOMAT DN	200923LO	00003701	200	14.5	2900	3495
00238336H	LO-BENTOMAT DN	200923LO	00003702	200	14.5	2900	3480
00238336H	LO-BENTOMAT DN	200923LO	00003703	200	14.5	2900	3485
00238336H	LO-BENTOMAT DN	200923LO	00003704	200	14.5	2900	3480
00238336H	LO-BENTOMAT DN	200923LO	00003705	200	14.5	2900	3500
00238336H	LO-BENTOMAT DN	200923LO	00003706	200	14.5	2900	3515
00238336H	LO-BENTOMAT DN	200923LO	00003707	200	14.5	2900	3500
00238336H	LO-BENTOMAT DN	200923LO	00003708	200	14.5	2900	3455
00238336H	LO-BENTOMAT DN	200923LO	00003709	200	14.5	2900	3465
00238336H	LO-BENTOMAT DN	200923LO	00003710	200	14.5	2900	3430
00238336H	LO-BENTOMAT DN	200923LO	00003711	200	14.5	2900	3435
00238336H	LO-BENTOMAT DN	200923LO	00003712	200	14.5	2900	3415
00238336H	LO-BENTOMAT DN	200923LO	00003713	200	14.5	2900	3445
00238336H	LO-BENTOMAT DN	200923LO	00003714	200	14.5	2900	3415
00238336H	LO-BENTOMAT DN	200923LO	00003715	200	14.5	2900	3420
00238336H	LO-BENTOMAT DN	200923LO	00003716	200	14.5	2900	3465

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336H	LO-BENTOMAT DN	200923LO	00003717	200	14.5	2900	3445
00238336H	LO-BENTOMAT DN	200923LO	00003718	200	14.5	2900	3465
00238336H	LO-BENTOMAT DN	200923LO	00003719	200	14.5	2900	3435
00238336H	LO-BENTOMAT DN	200923LO	00003720	200	14.5	2900	3445
00238336H	LO-BENTOMAT DN	200923LO	00003721	200	14.5	2900	3450
00238336H	LO-BENTOMAT DN	200923LO	00003722	200	14.5	2900	3415
00238336H	LO-BENTOMAT DN	200923LO	00003723	200	14.5	2900	3420
00238336H	LO-BENTOMAT DN	200923LO	00003724	200	14.5	2900	3405
00238336H	LO-BENTOMAT DN	200923LO	00003725	200	14.5	2900	3415
00238336H	LO-BENTOMAT DN	200923LO	00003726	200	14.5	2900	3405
00238336H	LO-BENTOMAT DN	200923LO	00003727	200	14.5	2900	3410
00238336H	LO-BENTOMAT DN	200923LO	00003728	200	14.5	2900	3425
00238336H	LO-BENTOMAT DN	200923LO	00003729	200	14.5	2900	3420
00238336H	LO-BENTOMAT DN	200923LO	00003730	200	14.5	2900	3450
00238336H	LO-BENTOMAT DN	200923LO	00003731	200	14.5	2900	3445
00238336H	LO-BENTOMAT DN	200923LO	00003732	200	14.5	2900	3465
00238336H	LO-BENTOMAT DN	200923LO	00003733	200	14.5	2900	3430
00238336H	LO-BENTOMAT DN	200923LO	00003734	200	14.5	2900	3435
00238336H	LO-BENTOMAT DN	200923LO	00003735	200	14.5	2900	3420
00238336H	LO-BENTOMAT DN	200923LO	00003736	200	14.5	2900	3425
00238336H	LO-BENTOMAT DN	200923LO	00003737	200	14.5	2900	3435
00238336H	LO-BENTOMAT DN	200923LO	00003738	200	14.5	2900	3405
00238336H	LO-BENTOMAT DN	200923LO	00003739	200	14.5	2900	3395
00238336H	LO-BENTOMAT DN	200923LO	00003740	200	14.5	2900	3425
00238336H	LO-BENTOMAT DN	200923LO	00003741	200	14.5	2900	3420
00238336H	LO-BENTOMAT DN	200923LO	00003742	200	14.5	2900	3415
00238336H	LO-BENTOMAT DN	200923LO	00003743	200	14.5	2900	3475
00238336H	LO-BENTOMAT DN	200923LO	00003744	200	14.5	2900	3490
00238336H	LO-BENTOMAT DN	200923LO	00003745	200	14.5	2900	3495
00238336H	LO-BENTOMAT DN	200923LO	00003746	200	14.5	2900	3460
00238336H	LO-BENTOMAT DN	200923LO	00003747	200	14.5	2900	3445
00238336H	LO-BENTOMAT DN	200923LO	00003748	200	14.5	2900	3410

Order #	Product	Lot Number	Roll Number	Length (ft)	Width (ft)	Square Ft	Weight (lbs)
00238336H	LO-BENTOMAT DN	200923LO	00003749	200	14.5	2900	3490
00238336H	LO-BENTOMAT DN	200923LO	00003750	200	14.5	2900	3480
00238336H	LO-BENTOMAT DN	200923LO	00003751	200	14.5	2900	3505
00238336H	LO-BENTOMAT DN	200923LO	00003752	200	14.5	2900	3475
00238336H	LO-BENTOMAT DN	200923LO	00003753	200	14.5	2900	3480
00238336H	LO-BENTOMAT DN	200923LO	00003754	200	14.5	2900	3450
00238336H	LO-BENTOMAT DN	200923LO	00003755	200	14.5	2900	3455
00238336H	LO-BENTOMAT DN	200923LO	00003756	200	14.5	2900	3435
00238336H	LO-BENTOMAT DN	200923LO	00003757	200	14.5	2900	3430
00238336H	LO-BENTOMAT DN	200923LO	00003758	200	14.5	2900	3440
00238336H	LO-BENTOMAT DN	200923LO	00003759	200	14.5	2900	3435
00238336H	LO-BENTOMAT DN	200923LO	00003760	200	14.5	2900	3395
00238336H	LO-BENTOMAT DN	200923LO	00003761	200	14.5	2900	3395
00238336H	LO-BENTOMAT DN	200923LO	00003762	200	14.5	2900	3390
00238336H	LO-BENTOMAT DN	200923LO	00003763	200	14.5	2900	3390
00238336H	LO-BENTOMAT DN	200923LO	00003764	200	14.5	2900	3380
00238336H	LO-BENTOMAT DN	200923LO	00003765	200	14.5	2900	3410
00238336H	LO-BENTOMAT DN	200923LO	00003766	200	14.5	2900	3405
Totals:				53800	3900.5	780100	931650
Total Number of Rolls Certified: 269							



GCL MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 00238336H

GCL			Geotextiles			Clay	
LO-BENTOMAT DN			LO-N/W-WHITE-DN			LO-N/W-BLACK-DN-6 OZ	LO-CG 50-DN
GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200923LO	00003497	00003483	200920CV	00001583	00001579	2011211828	052109C
200923LO	00003498	00003498	200920CV	00001583	00001579	2011211828	052109C
200923LO	00003499	00003498	200922CV	00001757	00001756	2011211828	052109C
200923LO	00003500	00003498	200922CV	00001757	00001756	2011211828	052109C
200923LO	00003501	00003498	200922CV	00001757	00001756	2011211828	052109C
200923LO	00003502	00003498	200922CV	00001757	00001756	2011211828	052109C
200923LO	00003503	00003498	200922CV	00001757	00001756	2020022080	052109C
200923LO	00003504	00003498	200922CV	00001757	00001756	2020022080	052109C
200923LO	00003505	00003498	200922CV	00001735	00001733	2020022080	052109C
200923LO	00003506	00003498	200922CV	00001735	00001733	2020022080	052109C
200923LO	00003507	00003498	200922CV	00001735	00001733	2020022080	052209A
200923LO	00003508	00003498	200922CV	00001735	00001733	2020022080	052209A
200923LO	00003509	00003498	200922CV	00001735	00001733	2020022080	052209A
200923LO	00003510	00003498	200922CV	00001735	00001733	2020022080	052209A
200923LO	00003511	00003511	200922CV	00001741	00001738	2020022080	052209A
200923LO	00003512	00003511	200922CV	00001741	00001738	2020022080	052209A
200923LO	00003513	00003511	200922CV	00001741	00001738	2011211820	052209A
200923LO	00003514	00003511	200922CV	00001741	00001738	2011211820	052209A
200923LO	00003515	00003511	200922CV	00001741	00001738	2011211820	052209A
200923LO	00003516	00003511	200922CV	00001741	00001738	2011211820	052209A
200923LO	00003517	00003511	200922CV	00001736	00001733	2011211820	052209A
200923LO	00003518	00003511	200922CV	00001736	00001733	2011211820	052209A
200923LO	00003519	00003511	200922CV	00001736	00001733	2011211820	052209A
200923LO	00003520	00003511	200922CV	00001736	00001733	2011211820	052209A
200923LO	00003521	00003511	200922CV	00001736	00001733	2011211820	052209A
200923LO	00003522	00003511	200922CV	00001736	00001733	2011211820	052209A
200923LO	00003523	00003511	200922CV	00001738	00001738	2010945484	052209A
200923LO	00003524	00003524	200922CV	00001738	00001738	2010945484	052209A
200923LO	00003525	00003524	200922CV	00001738	00001738	2010945484	052209A

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200923LO	00003526	00003524	200922CV	00001738	00001738	2010945484	052209A
200923LO	00003527	00003524	200922CV	00001738	00001738	2010945484	052209A
200923LO	00003528	00003524	200921CV	00001672	00001669	2010945484	052209A
200923LO	00003529	00003524	200921CV	00001672	00001669	2010945484	052209A
200923LO	00003530	00003524	200921CV	00001672	00001669	2010945484	052209A
200923LO	00003531	00003524	200921CV	00001672	00001669	2010945484	052209A
200923LO	00003532	00003524	200921CV	00001672	00001669	2010945484	052209A
200923LO	00003533	00003524	200921CV	00001672	00001669	2020022135	052209A
200923LO	00003534	00003524	200922CV	00001778	00001772	2020022135	052209A
200923LO	00003535	00003524	200922CV	00001778	00001772	2020022135	052209A
200923LO	00003536	00003524	200922CV	00001778	00001772	2020022135	052209A
200923LO	00003537	00003537	200922CV	00001778	00001772	2020022135	052209B
200923LO	00003538	00003537	200922CV	00001778	00001772	2020022135	052209B
200923LO	00003539	00003537	200922CV	00001777	00001772	2020022135	052209B
200923LO	00003540	00003537	200922CV	00001777	00001772	2020022135	052209B
200923LO	00003541	00003537	200922CV	00001777	00001772	2011013224	052209B
200923LO	00003542	00003537	200922CV	00001777	00001772	2011013224	052209B
200923LO	00003543	00003537	200922CV	00001777	00001772	2011013224	052209B
200923LO	00003544	00003537	200922CV	00001777	00001772	2011013224	052209B
200923LO	00003545	00003537	200922CV	00001770	00001766	2011013224	052209B
200923LO	00003546	00003537	200922CV	00001770	00001766	2010774365	052209B
200923LO	00003547	00003537	200922CV	00001770	00001766	2010774365	052209B
200923LO	00003548	00003537	200922CV	00001770	00001766	2010774365	052209B
200923LO	00003549	00003537	200922CV	00001770	00001766	2010816989	052209B
200923LO	00003550	00003550	200922CV	00001729	00001723	2010816989	052209B
200923LO	00003551	00003550	200922CV	00001729	00001723	2010816989	052209B
200923LO	00003552	00003550	200922CV	00001729	00001723	2010816989	052209B
200923LO	00003553	00003550	200922CV	00001729	00001723	2010816989	052209B
200923LO	00003554	00003550	200922CV	00001729	00001723	2010816989	052209B
200923LO	00003555	00003550	200922CV	00001729	00001723	2010816989	052209B
200923LO	00003556	00003550	200922CV	00001756	00001756	2010816989	052209B
200923LO	00003557	00003550	200922CV	00001756	00001756	2010816989	052209B
200923LO	00003558	00003550	200922CV	00001756	00001756	2010816989	052209B
200923LO	00003559	00003550	200922CV	00001756	00001756	2010816989	052209B
200923LO	00003560	00003560	200922CV	00001756	00001756	2010816989	052209C

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200923LO	00003561	00003560	200920CV	00001608	00001607	2010816989	052209C
200923LO	00003562	00003560	200920CV	00001608	00001607	2010774388	052209C
200923LO	00003563	00003560	200920CV	00001608	00001607	2010774388	052209C
200923LO	00003564	00003560	200920CV	00001608	00001607	2010774388	052209C
200923LO	00003565	00003560	200920CV	00001608	00001607	2010774388	052209C
200923LO	00003566	00003560	200920CV	00001608	00001607	2010774388	052209C
200923LO	00003567	00003560	200922CV	00001727	00001723	2010774388	052209C
200923LO	00003568	00003560	200922CV	00001727	00001723	2010774388	052209C
200923LO	00003569	00003560	200922CV	00001727	00001723	2010774388	052209C
200923LO	00003570	00003560	200922CV	00001727	00001723	2010774388	052209C
200923LO	00003571	00003560	200922CV	00001727	00001723	2010774388	052209C
200923LO	00003572	00003560	200922CV	00001727	00001723	2011026253	052209C
200923LO	00003573	00003573	200922CV	00001776	00001772	2011026253	052209C
200923LO	00003574	00003573	200922CV	00001776	00001772	2011026253	052209C
200923LO	00003575	00003573	200922CV	00001776	00001772	2011026253	052209C
200923LO	00003576	00003573	200922CV	00001776	00001772	2020041342	052209C
200923LO	00003577	00003573	200922CV	00001776	00001772	2020041342	052209C
200923LO	00003578	00003573	200922CV	00001763	00001756	2020041342	052209C
200923LO	00003579	00003573	200922CV	00001763	00001756	2020041342	052209C
200923LO	00003580	00003573	200922CV	00001763	00001756	2020041342	052209C
200923LO	00003581	00003573	200922CV	00001763	00001756	2020041342	052209C
200923LO	00003582	00003573	200922CV	00001763	00001756	2011013220	052209C
200923LO	00003583	00003573	200922CV	00001763	00001756	2011013220	052209C
200923LO	00003584	00003573	200922CV	00001762	00001756	2011013220	052209C
200923LO	00003585	00003573	200922CV	00001762	00001756	2011248391	052209C
200923LO	00003586	00003586	200922CV	00001762	00001756	2011248391	052209C
200923LO	00003587	00003586	200922CV	00001762	00001756	2011248391	052209C
200923LO	00003588	00003586	200922CV	00001762	00001756	2011248391	052209C
200923LO	00003589	00003586	200922CV	00001740	00001738	2011248391	052209C
200923LO	00003590	00003586	200922CV	00001740	00001738	2011248391	052209D
200923LO	00003591	00003586	200922CV	00001740	00001738	2011248391	052209D
200923LO	00003592	00003586	200922CV	00001740	00001738	2011248391	052209D
200923LO	00003593	00003586	200922CV	00001740	00001738	2011248391	052209D
200923LO	00003594	00003586	200922CV	00001739	00001738	2011248391	052209D
200923LO	00003595	00003586	200922CV	00001739	00001738	2011211835	052209D

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200923LO	00003596	00003586	200922CV	00001739	00001738	2011211835	052209D
200923LO	00003597	00003586	200922CV	00001739	00001738	2011211835	052209D
200923LO	00003598	00003586	200922CV	00001739	00001738	2011211835	052209D
200923LO	00003599	00003599	200922CV	00001739	00001738	2011211835	052209D
200923LO	00003600	00003599	200922CV	00001728	00001723	2011211835	052209D
200923LO	00003601	00003599	200922CV	00001728	00001723	2011244925	052209D
200923LO	00003602	00003599	200922CV	00001728	00001723	2011244925	052209D
200923LO	00003603	00003599	200922CV	00001728	00001723	2011244925	052209D
200923LO	00003604	00003599	200922CV	00001728	00001723	2011244925	052209D
200923LO	00003605	00003599	200922CV	00001728	00001723	2011244925	052209D
200923LO	00003606	00003606	200922CV	00001742	00001738	2011244925	052209D
200923LO	00003607	00003606	200922CV	00001742	00001738	2011244925	052209D
200923LO	00003608	00003606	200922CV	00001742	00001738	2011244925	052209D
200923LO	00003609	00003606	200922CV	00001742	00001738	2011244925	052209D
200923LO	00003610	00003606	200922CV	00001742	00001738	2011244925	052209D
200923LO	00003611	00003606	200922CV	00001742	00001738	2010816930	052209D
200923LO	00003612	00003606	200916CV	00001221	00001216	2010816930	052209D
200923LO	00003613	00003606	200916CV	00001221	00001216	2010816930	052209D
200923LO	00003614	00003606	200916CV	00001221	00001216	2010816930	052209D
200923LO	00003615	00003606	200916CV	00001221	00001216	2010816930	052209D
200923LO	00003616	00003606	200916CV	00001221	00001216	2020041402	052209D
200923LO	00003617	00003606	200921CV	00001669	00001669	2020041402	052209D
200923LO	00003618	00003606	200921CV	00001669	00001669	2020041402	052209D
200923LO	00003619	00003619	200921CV	00001669	00001669	2020041402	052209D
200923LO	00003620	00003619	200921CV	00001669	00001669	2020041402	052209E
200923LO	00003621	00003619	200922CV	00001759	00001756	2020041402	052209E
200923LO	00003622	00003619	200922CV	00001759	00001756	2020041402	052209E
200923LO	00003623	00003619	200922CV	00001759	00001756	2020041402	052209E
200923LO	00003624	00003619	200922CV	00001759	00001756	2020041402	052209E
200923LO	00003625	00003619	200922CV	00001759	00001756	2020022129	052209E
200923LO	00003626	00003619	200922CV	00001759	00001756	2020022129	052209E
200923LO	00003627	00003619	200921CV	00001678	00001669	2020022129	052209E
200923LO	00003628	00003619	200921CV	00001678	00001669	2020022129	052209E
200923LO	00003629	00003619	200921CV	00001678	00001669	2020022129	052209E
200923LO	00003630	00003619	200921CV	00001678	00001669	2020022129	052209E

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200923LO	00003631	00003619	200921CV	00001678	00001669	2020022129	052209E
200923LO	00003632	00003632	200921CV	00001677	00001669	2020022129	052209E
200923LO	00003633	00003632	200921CV	00001677	00001669	2020022129	052209E
200923LO	00003634	00003632	200921CV	00001677	00001669	2020022129	052209E
200923LO	00003635	00003632	200921CV	00001677	00001669	2010766168	052209E
200923LO	00003636	00003632	200921CV	00001677	00001669	2010766168	052209E
200923LO	00003637	00003632	200921CV	00001677	00001669	2010816943	052209E
200923LO	00003638	00003632	200922CV	00001734	00001733	2010816943	052209E
200923LO	00003639	00003632	200922CV	00001734	00001733	2010816943	052209E
200923LO	00003640	00003632	200922CV	00001734	00001733	2010816943	052209E
200923LO	00003641	00003632	200922CV	00001734	00001733	2010816943	052209E
200923LO	00003642	00003632	200922CV	00001734	00001733	2010816943	052209E
200923LO	00003643	00003632	200921CV	00001671	00001669	2010816943	052209E
200923LO	00003644	00003632	200921CV	00001671	00001669	2010816943	052209E
200923LO	00003645	00003645	200921CV	00001671	00001669	2010816943	052209E
200923LO	00003646	00003645	200921CV	00001671	00001669	2010816943	052209E
200923LO	00003647	00003645	200922CV	00001779	00001772	2011244903	052209E
200923LO	00003648	00003645	200922CV	00001779	00001772	2011244903	052209E
200923LO	00003649	00003645	200922CV	00001779	00001772	2011244903	052209E
200923LO	00003650	00003645	200922CV	00001779	00001772	2011244903	052609A
200923LO	00003651	00003645	200922CV	00001779	00001772	2011244903	052609A
200923LO	00003652	00003645	200922CV	00001779	00001772	2011244903	052609A
200923LO	00003653	00003645	200922CV	00001766	00001766	2011244903	052609A
200923LO	00003654	00003645	200922CV	00001766	00001766	2011211842	052609A
200923LO	00003655	00003645	200922CV	00001766	00001766	2011211842	052609A
200923LO	00003656	00003645	200922CV	00001766	00001766	2011211842	052609A
200923LO	00003658	00003658	200922CV	00001764	00001756	2011211842	052609B
200923LO	00003659	00003658	200922CV	00001764	00001756	2011211842	052609B
200923LO	00003660	00003658	200922CV	00001764	00001756	2011211842	052609B
200923LO	00003661	00003658	200922CV	00001764	00001756	2011211842	052609B
200923LO	00003662	00003658	200917CV	00001473	00001470	2011211842	052609B
200923LO	00003663	00003658	200917CV	00001473	00001470	2011211842	052609B
200923LO	00003664	00003658	200917CV	00001473	00001470	2011211842	052609B
200923LO	00003665	00003658	200917CV	00001473	00001470	2010816935	052609B
200923LO	00003666	00003658	200917CV	00001473	00001470	2010816935	052609B

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200923LO	00003667	00003658	200913CV	00000915	00000910	2010816935	052609B
200923LO	00003668	00003658	200913CV	00000915	00000910	2010816935	052609B
200923LO	00003669	00003658	200913CV	00000915	00000910	2010816935	052609B
200923LO	00003670	00003658	200913CV	00000915	00000910	2010816935	052609B
200923LO	00003671	00003671	200913CV	00000915	00000910	2010816935	052609B
200923LO	00003672	00003671	200913CV	00000915	00000910	2010816935	052609B
200923LO	00003673	00003671	200913CV	00000901	00000900	2010816935	052609B
200923LO	00003674	00003671	200913CV	00000901	00000900	2010816966	052609B
200923LO	00003675	00003671	200913CV	00000901	00000900	2010816966	052609B
200923LO	00003676	00003671	200913CV	00000901	00000900	2010816966	052609B
200923LO	00003677	00003671	200913CV	00000901	00000900	2010816966	052609B
200923LO	00003678	00003671	200913CV	00000876	00000874	2010816966	052609B
200923LO	00003679	00003671	200913CV	00000876	00000874	2010816966	052609B
200923LO	00003680	00003671	200913CV	00000876	00000874	2010816966	052609B
200923LO	00003681	00003671	200913CV	00000876	00000874	2010816966	052609B
200923LO	00003682	00003671	200913CV	00000876	00000874	2010816966	052609B
200923LO	00003683	00003671	200913CV	00000876	00000874	2010816966	052609B
200923LO	00003684	00003684	200914CV	00000993	00000986	2010816966	052609B
200923LO	00003685	00003684	200914CV	00000993	00000986	2011026249	052609B
200923LO	00003686	00003684	200914CV	00000993	00000986	2011026249	052609B
200923LO	00003687	00003684	200914CV	00000993	00000986	2011026249	052609B
200923LO	00003688	00003684	200914CV	00001026	00001021	2011026249	052609C
200923LO	00003689	00003684	200914CV	00001026	00001021	2011026249	052609C
200923LO	00003690	00003684	200914CV	00001026	00001021	2010766164	052609C
200923LO	00003691	00003684	200914CV	00001026	00001021	2010766164	052609C
200923LO	00003692	00003684	200914CV	00001026	00001021	2010766164	052609C
200923LO	00003693	00003684	200914CV	00001026	00001021	2010766164	052609C
200923LO	00003694	00003684	200917CV	00001471	00001470	2010766164	052609C
200923LO	00003695	00003684	200917CV	00001471	00001470	2010766164	052609C
200923LO	00003696	00003684	200917CV	00001471	00001470	2010766164	052609C
200923LO	00003697	00003697	200917CV	00001471	00001470	2010766164	052609C
200923LO	00003698	00003697	200917CV	00001471	00001470	2010766164	052609C
200923LO	00003699	00003697	200917CV	00001471	00001470	2010766164	052609C
200923LO	00003700	00003697	200915CV	00001148	00001145	2010766164	052609C
200923LO	00003701	00003697	200915CV	00001148	00001145	2011252438	052609C

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200923LO	00003702	00003697	200915CV	00001148	00001145	2011252438	052609C
200923LO	00003703	00003697	200915CV	00001148	00001145	2011252438	052609C
200923LO	00003704	00003697	200914CV	00001015	00001013	2011252438	052609C
200923LO	00003705	00003697	200914CV	00001015	00001013	2011252438	052609C
200923LO	00003706	00003697	200914CV	00001015	00001013	2020022132	052609C
200923LO	00003707	00003707	200914CV	00001015	00001013	2020022132	052609C
200923LO	00003708	00003707	200914CV	00000999	00000996	2020022132	052609C
200923LO	00003709	00003707	200914CV	00000999	00000996	2020022132	052609C
200923LO	00003710	00003707	200914CV	00000999	00000996	2020022132	052609C
200923LO	00003711	00003707	200914CV	00000999	00000996	2020022132	052609C
200923LO	00003712	00003707	200914CV	00000999	00000996	2020022132	052609C
200923LO	00003713	00003707	200914CV	00001001	00000996	2020022132	052609C
200923LO	00003714	00003707	200914CV	00001001	00000996	2020022132	052609C
200923LO	00003715	00003707	200914CV	00001001	00000996	2011072929	052609C
200923LO	00003716	00003707	200914CV	00001001	00000996	2011072929	052609C
200923LO	00003717	00003707	200914CV	00001001	00000996	2011072929	052609C
200923LO	00003718	00003707	200914CV	00001001	00000996	2011072929	052609C
200923LO	00003719	00003707	200914CV	00001013	00001013	2011219360	052609C
200923LO	00003720	00003720	200914CV	00001013	00001013	2011219360	052609C
200923LO	00003721	00003720	200914CV	00001013	00001013	2011219360	052609C
200923LO	00003722	00003720	200914CV	00001013	00001013	2011219360	052609C
200923LO	00003723	00003720	200914CV	00001013	00001013	2011219360	052709A
200923LO	00003724	00003720	200914CV	00000998	00000996	2011219360	052709A
200923LO	00003725	00003720	200914CV	00000998	00000996	2011219360	052709A
200923LO	00003726	00003720	200914CV	00000998	00000996	2011219360	052709A
200923LO	00003727	00003720	200914CV	00000998	00000996	2011219360	052709A
200923LO	00003728	00003720	200914CV	00000998	00000996	2011219360	052709A
200923LO	00003729	00003720	200914CV	00000998	00000996	2011219360	052709A
200923LO	00003730	00003720	200914CV	00001007	00001003	2011219360	052709A
200923LO	00003731	00003720	200914CV	00001007	00001003	2011219360	052709A
200923LO	00003732	00003720	200914CV	00001007	00001003	2011219360	052709A
200923LO	00003733	00003733	200914CV	00001007	00001003	2011067953	052709A
200923LO	00003734	00003733	200914CV	00001007	00001003	2011067953	052709A
200923LO	00003735	00003733	200914CV	00001007	00001003	2011067953	052709A
200923LO	00003736	00003733	200915CV	00001149	00001145	2011067953	052709A

GCL Lot #	GCL Roll #	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
200923LO	00003737	00003733	200915CV	00001149	00001145	2011067953	052709A
200923LO	00003738	00003733	200915CV	00001149	00001145	2011067953	052709A
200923LO	00003739	00003733	200915CV	00001149	00001145	2011067953	052709A
200923LO	00003740	00003733	200915CV	00001149	00001145	2011067953	052709A
200923LO	00003741	00003733	200915CV	00001150	00001145	2011067953	052709A
200923LO	00003742	00003733	200915CV	00001150	00001145	2011067953	052709A
200923LO	00003743	00003733	200915CV	00001150	00001145	2011175755	052709A
200923LO	00003744	00003733	200915CV	00001150	00001145	2011175755	052709A
200923LO	00003745	00003733	200915CV	00001150	00001145	2011175755	052709A
200923LO	00003746	00003746	200915CV	00001150	00001145	2011211847	052709A
200923LO	00003747	00003746	200914CV	00001036	00001031	2011211847	052709A
200923LO	00003748	00003746	200914CV	00001036	00001031	2011211847	052709A
200923LO	00003749	00003746	200914CV	00001036	00001031	2011211847	052709A
200923LO	00003750	00003746	200914CV	00001036	00001031	2011211847	052709A
200923LO	00003751	00003746	200914CV	00001014	00001013	2011211847	052709B
200923LO	00003752	00003746	200914CV	00001014	00001013	2011211847	052709B
200923LO	00003753	00003746	200914CV	00001014	00001013	2011211847	052709B
200923LO	00003754	00003746	200914CV	00001014	00001013	2010774366	052709B
200923LO	00003755	00003746	200914CV	00001014	00001013	2010774366	052709B
200923LO	00003756	00003746	200922CV	00001725	00001723	2010774366	052709B
200923LO	00003757	00003746	200922CV	00001725	00001723	2011221868	052709B
200923LO	00003758	00003746	200922CV	00001725	00001723	2011221868	052709B
200923LO	00003759	00003759	200922CV	00001725	00001723	2011221868	052709B
200923LO	00003760	00003759	200922CV	00001725	00001723	2011221868	052709B
200923LO	00003761	00003759	200922CV	00001768	00001766	2011221868	052709B
200923LO	00003762	00003759	200922CV	00001768	00001766	2011221868	052709B
200923LO	00003763	00003759	200922CV	00001768	00001766	2011221868	052709B
200923LO	00003764	00003759	200922CV	00001768	00001766	2011221868	052709B
200923LO	00003765	00003759	200922CV	00001768	00001766	2011221868	052709B
200923LO	00003766	00003759	200922CV	00001768	00001766	2011221868	052709B



GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 00238336H have been tested in our production facility lab.

Product	Lot # Tested	Roll # Tested	Mass Area	Grab Strength	Peel Strength
Standard Test Method:			ASTM D 5993	ASTM D 6768	ASTM D 6496
Standard Specification:			0.75 lb/sq ft MARV	50lbs/in MARV	3.5lbs/in Min
Non-standard specifications were requested for this order as indicated on the attached property sheet					
LO-BENTOMAT DN	200923LO	00003483	0.93	75.3	5.9
LO-BENTOMAT DN	200923LO	00003498	0.87	75.3	4.4
LO-BENTOMAT DN	200923LO	00003511	0.83	75.3	5.9
LO-BENTOMAT DN	200923LO	00003524	0.89	75.3	9.1
LO-BENTOMAT DN	200923LO	00003537	0.93	75.3	7.6
LO-BENTOMAT DN	200923LO	00003550	0.87	75.3	6.2
LO-BENTOMAT DN	200923LO	00003560	0.86	56.8	7.6
LO-BENTOMAT DN	200923LO	00003573	0.86	56.8	6.5
LO-BENTOMAT DN	200923LO	00003586	0.84	56.8	5.3
LO-BENTOMAT DN	200923LO	00003599	0.81	56.8	5.4
LO-BENTOMAT DN	200923LO	00003606	0.89	66.7	5.8
LO-BENTOMAT DN	200923LO	00003619	0.86	66.7	6.6
LO-BENTOMAT DN	200923LO	00003632	0.85	66.7	8.9
LO-BENTOMAT DN	200923LO	00003645	0.99	66.7	10.4
LO-BENTOMAT DN	200923LO	00003658	0.89	72.9	7.8
LO-BENTOMAT DN	200923LO	00003671	0.89	72.9	5.8
LO-BENTOMAT DN	200923LO	00003684	0.90	72.9	7.3
LO-BENTOMAT DN	200923LO	00003697	0.85	72.9	8.2
LO-BENTOMAT DN	200923LO	00003707	0.83	72.9	6.3
LO-BENTOMAT DN	200923LO	00003720	0.88	70.8	7.8
LO-BENTOMAT DN	200923LO	00003733	0.86	70.8	8
LO-BENTOMAT DN	200923LO	00003746	0.92	70.8	6.7
LO-BENTOMAT DN	200923LO	00003759	0.92	70.8	8.1
Product	Lot # Tested	Roll # Tested	Moisture		
LO-BENTOMAT DN	200923LO	00003483	25.9		
LO-BENTOMAT DN	200923LO	00003498	26.9		

LO-BENTOMAT DN	200923LO	00003511	26.0
LO-BENTOMAT DN	200923LO	00003524	25.0
LO-BENTOMAT DN	200923LO	00003537	24.2
LO-BENTOMAT DN	200923LO	00003550	25.9
LO-BENTOMAT DN	200923LO	00003560	25.2
LO-BENTOMAT DN	200923LO	00003573	27.0
LO-BENTOMAT DN	200923LO	00003586	27.2
LO-BENTOMAT DN	200923LO	00003599	27.2
LO-BENTOMAT DN	200923LO	00003606	26.5
LO-BENTOMAT DN	200923LO	00003619	25.1
LO-BENTOMAT DN	200923LO	00003632	25.6
LO-BENTOMAT DN	200923LO	00003645	24.3
LO-BENTOMAT DN	200923LO	00003658	27.2
LO-BENTOMAT DN	200923LO	00003671	26.4
LO-BENTOMAT DN	200923LO	00003684	25.2
LO-BENTOMAT DN	200923LO	00003697	26.2
LO-BENTOMAT DN	200923LO	00003707	25.9
LO-BENTOMAT DN	200923LO	00003720	26.8
LO-BENTOMAT DN	200923LO	00003733	27.6
LO-BENTOMAT DN	200923LO	00003746	24.7
LO-BENTOMAT DN	200923LO	00003759	26.0

ASTM test methods and property specifications per CETCO standard unless non-standard specifications were requested.
Any non-standard property specifications requested for this order are noted on the attached GCL property specifications sheet.



BENTONITE CLAY CERTIFICATION

The Bentonite Clay used to produce package 00238336H has been tested by American Colloid Company and yielded the following test results.

Reference	Moist	Swell	Fluid Loss
Test Method:	ASTM D 2216	ASTM D 5890	ASTM D 5891
Specification:	12% Max	24 ml/2g Min	18 ml Max
052109C	10.8	26.0	16.4
052209A	10.4	25.0	16.8
052209B	11.2	24.0	16.8
052209D	11.2	24.0	15.8
052209C	10.8	24.0	17.4
052209E	10.8	25.0	17.2
052609A	11.2	24.0	15.8
052609B	10.4	25.0	17.2
052609C	11.2	25.0	15.6
052709A	12.0	25.0	15.0
052709B	10.8	24.0	15.0



GEOTEXTILE TEST RESULTS FOR RAW MATERIAL SUPPLIED BY A CETCO FACILITY

The GCL in certification package number 00238336H was manufactured using these geotextiles:

Material	Lot #	Roll #	Mass Area	Grab Strength
CV-NON-WOVEN	200913CV	00000874	6.9	49.2
CV-NON-WOVEN	200913CV	00000900	6.3	40.2
CV-NON-WOVEN	200913CV	00000910	7.4	45.8
CV-NON-WOVEN	200914CV	00000986	6.8	49.6
CV-NON-WOVEN	200914CV	00000996	6.6	47.8
CV-NON-WOVEN	200914CV	00001003	6.4	42.9
CV-NON-WOVEN	200914CV	00001013	7.1	48.9
CV-NON-WOVEN	200914CV	00001021	6.6	46.8
CV-NON-WOVEN	200914CV	00001031	6.6	45.9
CV-NON-WOVEN	200915CV	00001145	6.6	35.2
CV-NON-WOVEN	200916CV	00001216	6.2	37.2
CV-NON-WOVEN	200917CV	00001470	7.0	46.8
CV-NON-WOVEN	200920CV	00001579	6.2	48.4
CV-NON-WOVEN	200920CV	00001607	6.6	51.3
CV-NON-WOVEN	200921CV	00001669	6.6	48.3
CV-NON-WOVEN	200922CV	00001723	6.7	55.8
CV-NON-WOVEN	200922CV	00001733	6.9	50.8
CV-NON-WOVEN	200922CV	00001738	6.8	53.4
CV-NON-WOVEN	200922CV	00001756	6.6	49.1
CV-NON-WOVEN	200922CV	00001766	6.3	44.8
CV-NON-WOVEN	200922CV	00001772	6.5	47.1



GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 00238336H was manufactured with geotextiles which were tested with the following results.

BASE			
Material	Roll Number	Mass Area oz/yd ²	Grab Strength lbs
PPX HH65L	2010766164	6.3	172.0
PPX HH65L	2010766168	7.4	206.3
PPX HH65L	2010774365	6.5	258.4
PPX HH65L	2010774366	6.5	258.4
PPX HH65L	2010774388	6.5	145.0
PPX HH65L	2010816930	6.6	188.4
PPX HH65L	2010816935	6.7	202.7
PPX HH65L	2010816943	6.7	214.4
PPX HH65L	2010816966	7.4	210.6
PPX HH65L	2010816989	6.4	221.4
PXX HH65L	2010945484	6.2	195.3
PPX HH65L	2011013220	6.2	164.1
PXX HH65L	2011013224	6.0	188.4
PPX HH65L	2011026249	6.0	178.0
PPX HH65L	2011026253	6.8	177.9
PPX HH65L	2011067953	7.4	261.2
PPX HH65L	2011072929	6.5	188.8
PPX HH65L	2011175755	6.2	178.6
PPX HH65L	2011211820	6.2	171.1
PPX HH65L	2011211828	6.4	183.7
PPX HH65L	2011211835	6.5	187.5
PPX HH65L	2011211842	6.7	177.9
PPX HH65L	2011211847	6.6	183.1
PPX HH65L	2011219360	6.7	197.1
PPX HH65L	2011221868	6.6	187.7
PPX HH65L	2011244903	7.1	221.4
PPX HH65L	2011244925	6.4	175.4
PPX HH65L	2011248391	6.5	193.3

PPX HH65L	2011252438	6.2	198.5
PPX HH65L	2020022080	6.5	197.0
PPX HH65L	2020022129	6.8	206.2
PPX HH65L	2020022132	6.6	213.5
PPX HH65L	2020022135	6.6	213.5
PPX HH65L	2020041342	6.9	207.0
PPX HH65L	2020041402	7.2	205.4

**INDEX FLUX AND PERMEABILITY OF GCL's
TEST RESULTS
ASTM D-5887 / D-5084**



Client	: CETCO	Date	: 06/17/2009
Project Location	: BRC CAMU / Landwell	Job No.	: 09LG1912.01
Sample Number	: Roll 3498	Tested By	: RL
Description	: Bentomat DN Lot: 200923LO	Checked By	: JB
Permeant Fluid	: De-Aired Water		

Physical Property Data

	Total Sample		Total Sample
Initial Clay Height (in)	: 0.18	Final Height of Clay (in)	: 0.22
Initial Diameter (in)	: 4.00	Final Diameter of Clay (in)	: 4.00
Initial Wet Weight (g)	: 48.10	Final Wet Weight(Clay) (g)	: 74.20
Wet Density (pcf)	: 80.94	Wet Density (pcf)	: 102.16
Moisture Content %	: 40.30	Moisture Content %	: 116.70
Dry Density (pcf)	: 57.69	Dry Density (pcf)	: 47.14

Test Parameters

Fluid	: De-Aired Water	Average Effective	
Cell Pressure (psi)	: 80.00	Confining Pressure (psi)	: 4
Head Water (psi)	: 77.00	Gradient	: 250.91
Tail Water (psi)	: 75.00	Effective Stress at Base	: 5

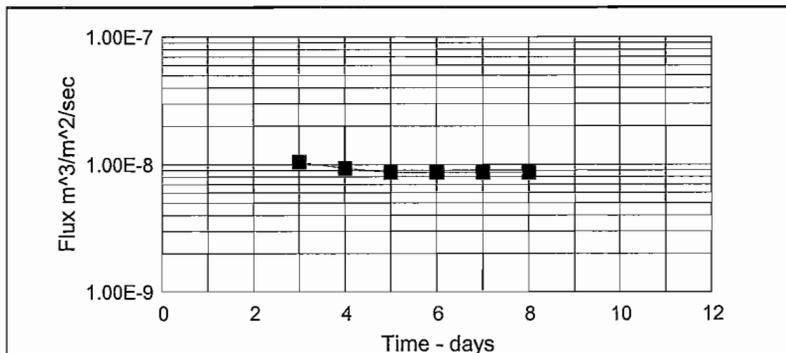
Flux and Permeability Input Data

Minimum Saturation Time is 48 hours

Area, A = 0.00811 m²
Thickness, t = 0.22 in

Days	Date	Flow	Time	Elapsed	Flux	k	
		cc	min	Time (sec)	(m ³ /m ²)/sec	cm/sec	
1	06/08/2009	48 hours of hydration per ASTM					
2	06/09/2009						
3	06/10/2009	7.40	1441	86460	1.06E-008	4.21E-009	
4	06/11/2009	6.60	1443	86580	9.40E-009	3.75E-009	
5	06/12/2009	6.10	1439	86340	8.72E-009	3.47E-009	
6	06/13/2009	6.10	1438	86280	8.72E-009	3.48E-009	
7	06/14/2009	6.10	1442	86520	8.70E-009	3.47E-009	
8	06/15/2009	6.10	1441	86460	8.70E-009	3.47E-009	

Average of Last 3 Test Readings : 8.71E-009 3.47E-009



JLT Laboratories, Inc.

938 S Central Ave, Canonsburg, Pa. 15317 Tel 724-746-4441, Fax 724-745-4261

INDEX FLUX AND PERMEABILITY OF GCL's
TEST RESULTS
 ASTM D-5887 / D-5084



Client	: CETCO	Date	: 06/17/2009
Project Location	: BRC CAMU / Landwell	Job No.	: 09LG1912.01
Sample Number	: Roll 3560	Tested By	: RL
Description	: Bentomat DN Lot: 200923LO	Checked By	: JB
Permeant Fluid	: De-Aired Water		

Physical Property Data

	Total Sample		Total Sample
Initial Clay Height (in)	: 0.18	Final Height of Clay (in)	: 0.22
Initial Diameter (in)	: 4.00	Final Diameter of Clay (in)	: 4.00
Initial Wet Weight (g)	: 49.80	Final Wet Weight(Clay) (g)	: 72.60
Wet Density (pcf)	: 83.80	Wet Density (pcf)	: 99.95
Moisture Content %	: 28.70	Moisture Content %	: 92.80
Dry Density (pcf)	: 65.11	Dry Density (pcf)	: 51.84

Test Parameters

Fluid	: De-Aired Water	Average Effective	
Cell Pressure (psi)	: 80.00	Confining Pressure (psi)	: 4
Head Water (psi)	: 77.00	Gradient	: 250.91
Tail Water (psi)	: 75.00	Effective Stress at Base	: 5

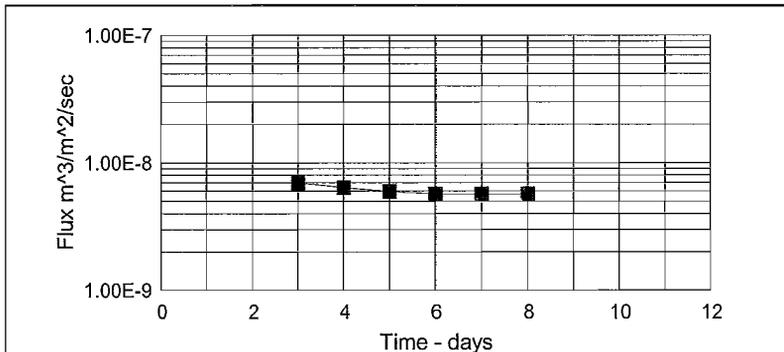
Flux and Permeability Input Data

Minimum Saturation Time is 48 hours

Area, A = 0.00811 m²
 Thickness, t = 0.22 in

Days	Date	Flow	Time	Elapsed	Flux	k
		cc	min	Time (sec)	(m ³ /m ²)/sec	cm/sec
1	06/08/2009	48 hours of hydration per ASTM				
2	06/09/2009					
3	06/10/2009	4.90	1441	86460	6.99E-009	2.79E-009
4	06/11/2009	4.50	1443	86580	6.41E-009	2.56E-009
5	06/12/2009	4.20	1439	86340	6.00E-009	2.39E-009
6	06/13/2009	4.00	1438	86280	5.72E-009	2.28E-009
7	06/14/2009	4.00	1442	86520	5.70E-009	2.27E-009
8	06/15/2009	4.00	1441	86460	5.71E-009	2.27E-009

Average of Last 3 Test Readings : 5.71E-009 2.28E-009



JLT Laboratories, Inc.

938 S Central Ave, Canonsburg, Pa. 15317 Tel 724-746-4441 , Fax 724-745-4261

INDEX FLUX AND PERMEABILITY OF GCL's
TEST RESULTS
 ASTM D-5887 / D-5084



Client	: CETCO	Date	: 06/17/2009
Project Location	: BRC CAMU / Landwell	Job No.	: 09LG1912.01
Sample Number	: Roll 3628	Tested By	: RL
Description	: Bentomat DN Lot: 200923LO	Checked By	: JB
Permeant Fluid	: De-Aired Water		

Physical Property Data

	Total Sample		Total Sample
Initial Clay Height (in)	: 0.18	Final Height of Clay (in)	: 0.21
Initial Diameter (in)	: 4.00	Final Diameter of Clay (in)	: 4.00
Initial Wet Weight (g)	: 49.60	Final Wet Weight(Clay) (g)	: 73.10
Wet Density (pcf)	: 83.46	Wet Density (pcf)	: 105.43
Moisture Content %	: 36.20	Moisture Content %	: 100.50
Dry Density (pcf)	: 61.28	Dry Density (pcf)	: 52.59

Test Parameters

Fluid	: De-Aired Water	Average Effective	
Cell Pressure (psi)	: 80.00	Confining Pressure (psi)	: 4
Head Water (psi)	: 77.00	Gradient	: 262.86
Tail Water (psi)	: 75.00	Effective Stress at Base	: 5

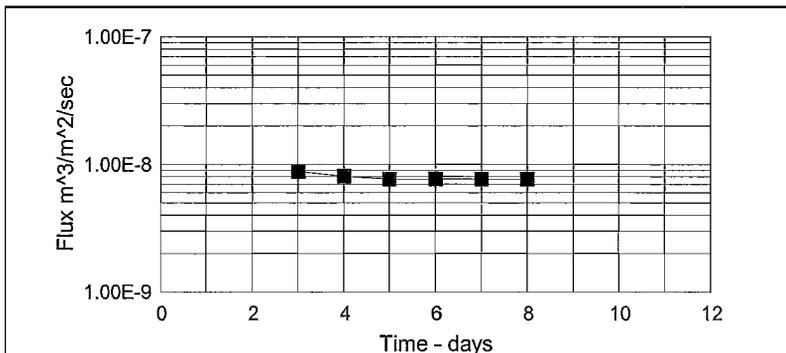
Flux and Permeability Input Data

Minimum Saturation Time is 48 hours

Area, A = 0.00811 m²
 Thickness, t = 0.21 in

Days	Date	Flow	Time	Elapsed	Flux	k	
		cc	min	Time (sec)	(m ³ /m ²)/sec	cm/sec	
1	06/08/2009	48 hours of hydration per ASTM					
2	06/09/2009						
3	06/10/2009	6.20	1441	86460	8.85E-009	3.37E-009	
4	06/11/2009	5.70	1443	86580	8.12E-009	3.09E-009	
5	06/12/2009	5.40	1439	86340	7.72E-009	2.94E-009	
6	06/13/2009	5.40	1438	86280	7.72E-009	2.94E-009	
7	06/14/2009	5.40	1442	86520	7.70E-009	2.93E-009	
8	06/15/2009	5.40	1441	86460	7.70E-009	2.93E-009	

Average of Last 3 Test Readings : 7.71E-009 2.93E-009



JLT Laboratories, Inc.

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**INDEX FLUX AND PERMEABILITY OF GCL's
TEST RESULTS
ASTM D-5887 / D-5084**



Client	: CETCO	Date	: 06/17/2009
Project Location	: BRC CAMU / Landwell	Job No.	: 09LG1912.01
Sample Number	: Roll 3696	Tested By	: RL
Description	: Bentomat DN Lot: 200923LO	Checked By	: JB
Permeant Fluid	: De-Aired Water		

Physical Property Data

	Total Sample		Total Sample
Initial Clay Height (in)	: 0.19	Final Height of Clay (in)	: 0.23
Initial Diameter (in)	: 4.00	Final Diameter of Clay (in)	: 4.00
Initial Wet Weight (g)	: 52.70	Final Wet Weight(Clay) (g)	: 82.20
Wet Density (pcf)	: 84.01	Wet Density (pcf)	: 108.25
Moisture Content %	: 36.90	Moisture Content %	: 113.50
Dry Density (pcf)	: 61.37	Dry Density (pcf)	: 50.70

Test Parameters

Fluid	: De-Aired Water	Average Effective	
Cell Pressure (psi)	: 80.00	Confining Pressure (psi)	: 4
Head Water (psi)	: 77.00	Gradient	: 240.00
Tail Water (psi)	: 75.00	Effective Stress at Base	: 5

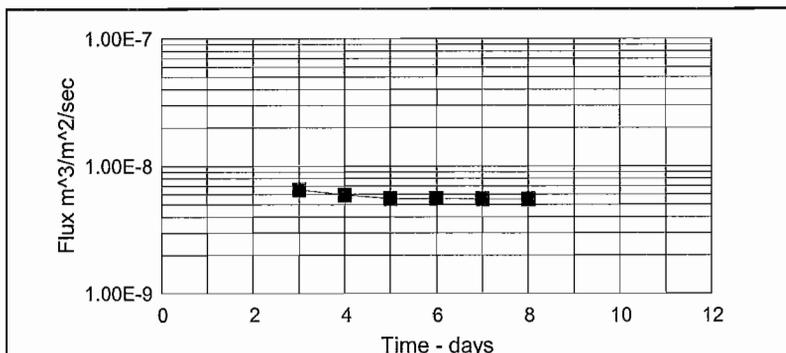
Flux and Permeability Input Data

Minimum Saturation Time is 48 hours

Area, A = 0.00811 m²
Thickness, t = 0.23 in

Days	Date	Flow	Time	Elapsed	Flux	k	
		cc	min	Time (sec)	(m ³ /m ²)/sec	cm/sec	
1	06/08/2009	48 hours of hydration per ASTM					
2	06/09/2009						
3	06/10/2009	4.60	1441	86460	6.56E-009	2.73E-009	
4	06/11/2009	4.20	1443	86580	5.98E-009	2.49E-009	
5	06/12/2009	3.90	1439	86340	5.57E-009	2.32E-009	
6	06/13/2009	3.90	1438	86280	5.58E-009	2.32E-009	
7	06/14/2009	3.90	1442	86520	5.56E-009	2.32E-009	
8	06/15/2009	3.90	1441	86460	5.56E-009	2.32E-009	

Average of Last 3 Test Readings : 5.57E-009 2.32E-009



JLT Laboratories, Inc.

938 S Central Ave, Canonsburg, Pa. 15317 Tel 724-746-4441 , Fax 724-745-4261



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	GCL MQC Certificates (Remaining Portion of CAMU Closure Allocation)
Submittal Number:	02772-0040
Specification Section:	Section 02772, Part 2.03
Drawing Number (s):	8, 10, 14, 16, 19, 21, 23, 25, 27, 29, 31, 33, 35-36, 38-45
Page Number:	02772-4 and 02772-5
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	6/17/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.

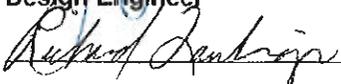


875 West Warm Springs Road
Henderson, Nevada 89011
Tel (702) 567-0400 · Fax (702) 567-0475

SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehring
ADDRESS: ENTACT Environmental Services
Henderson, Nevada 89011

Date: 11/20/2009	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 02772-001II	Revision No.: - N/A	Date Submittal Rec'd by BRC: 11/18/2009
Specification Section(s): 02772.1.05 -Geosynthetic Clay Liner Submittals		
Submittal Subject: Subgrade Acceptance Certificates Phase IIIA Final Closure (Panels 141-154)		
Notations: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> No Exception Taken <input type="checkbox"/> Correct as Noted <input type="checkbox"/> Rejected <input type="checkbox"/> Revise and Resubmit <input type="checkbox"/> Submit Specified Items 		
Review Comments:		
Comment	Reference	Comment
<p>Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work</p>		
 Design Engineer  Construction Manager Representative	11/20/09 Date 11/20/09 Date	 BRC Project Manager Lee Farris, P.E. Date 11/20/09
Distribution: <input checked="" type="checkbox"/> File		



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company DATE: 11/18/09
875 West Warm Springs Road JOB NAME: BRC EASTSIDE COMMON AREAS
Henderson, NV 89011 SOIL REMEDIATION PROJECT
TEL#: (702)-568-2888 FAX#: (702)-567-0475 TRANSMITTAL NUMBER: 351
 ATTENTION: Lee C. Farris, P.E. ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	11/18/09			Submittal 02772-00111 - Subgrade Acceptance Certificates - Phase IIIA Final Closure (Panels 141-154)	RC

ACTION (*)

AR - AS REQUESTED	FA - FOR APPROVAL
F - FILE	RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE
 COPY TO: Ranjit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU CLOSURE

DATE: 11/13/09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications.

Area Being Accepted: Phase II

FROM PANEL # 141
TO PANEL # 147

No Exception Taken Correct As Noted
 Revise And Resubmit Submit Specified Item Rejected

The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.

Checked By: [Signature] Date: 11/20/09
BRC Initials: LCE

BASIC REMEDIATION COMPANY

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: CAMON LIDDELL

TITLE: SET

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARLSON

TITLE: FIELD ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Christ White

TITLE: Assistant Cm

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU CLOSURE

DATE: 11/16/07

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications.

Area Being Accepted: Phase II

From PANEL # 148
TO PANEL # 154

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: CAMON LIDDELL

TITLE: SET

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARLSON

TITLE: FIELD ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Richard Lambinger

TITLE: Construction Manager

SIGNATURE: [Signature]



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Subgrade Acceptance Certificates - Phase 3A Closure (Panels 141-154)
Submittal Number:	02772-001II
Specification Section:	Section 02772, Part 3.02, Subpart A
Drawing Number (s):	NA
Page Number:	02772-6
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	11/18/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.

<input checked="" type="checkbox"/> No Exception Taken	<input type="checkbox"/> Correct As Noted
<input type="checkbox"/> Revise And Resubmit	<input type="checkbox"/> Submit Specified Item
<input type="checkbox"/> Rejected	
<p>The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.</p>	
Checked By: 	Date: 11/20/09
BRC Initials: 	
BASIC REMEDIATION COMPANY	



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
 ATTENTION: Lee C. Farris, P.E.

DATE: 12/11/08
 JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
 TRANSMITTAL NUMBER: 171
 ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
8	12/11/08			Submittal 02773-004G – Remaining 270-2-6 Geocomposite MQC Certificates for BMI-North, CAMU, and BMI South Closures	RC

ACTION (*)

AR - AS REQUESTED

FA - FOR APPROVAL

F – FILE

RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL

MAIL

OVERNIGHT

HAND DELIVERY

FACSIMILE

COPY TO: Ranjit Sahu, Lee Farris

BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....

October 21, 2008
 Environmental Specialties International, Inc.
 7943 Pecue Lane-Suite A
 Baton Rouge, LA 70809

**Ref. : Landwell / Basic Remediation, NV
 Customer P.O. # 9158
 Transnet 270-2-6**

We certify that the Transnet 270-2-6 drainage composite, meets the project requirements as stated in the specifications. The properties listed in this section are:

Property	Test Method	Unit	Required Value	Qualifier
Geonet³				
Mass per Unit Area	ASTM D 5261	lbs/ft ²	0.197	Minimum
Thickness	ASTM D 5199	mil	200	Minimum
Carbon Black	ASTM D 4218	%	2 - 3	Range
Tensile Strength	ASTM D 5035	lbs/in	75	Minimum
Melt Flow	ASTM D 1238 ²	g/10 min	1.0	Maximum
Density	ASTM D 1505	g/cm ³	0.935	Minimum
Composite				
Ply Adhesion	GRI GC7	lb/in	1.0	MARV ⁵
Transmissivity ¹	ASTM D 4716	m ² /sec	5.0 x 10 ⁻⁴	MARV
Geotextile^{3 & 4}				
Fabric Weight	ASTM D 5261	oz/yd ²	6.0	MARV
Grab Strength	ASTM D 4632	lbs	130	MARV
Grab Elongation	ASTM D 4632	%	50	MARV
Tear Strength	ASTM D 4533	lbs	40	MARV
Puncture Resistance	ASTM D 4833	lbs	40	MARV
Mullen Burst	ASTM D 3786	psi	210	MARV
Permittivity	ASTM D 4491	sec ⁻¹	0.5	MARV
AOS	ASTM D 4751	US Sieve	70	MARV
UV Resistance	ASTM D 4355	%/hrs	70/500	MARV

Notes:

- 1 Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.
- 2 Condition 190/2.16
- 3 Geotextile and Geonet properties are prior to lamination.
- 4 Geotextile data is provided by the supplier.
- 5 MARV is statistically defined as mean minus two standard deviations and it is the value which is exceeded by 97.5% of all the test data.

Sincerely,
Nilay Patel
 Nilay Patel
 QA Manager

Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269710433	269710433 - N	2697.622	2697.619			
2	269710434	269710434 - N	2697.622	2697.619			
3	269710435	269710435 - N	2697.629	2697.638			
4	269710436	269710436 - N	2697.629	2697.638			
5	269710437	269710437 - N	2697.629	2697.638			
6	269710438	269710438 - N	2697.629	2697.638			
7	269710439	269710439 - N	2697.629	2697.638			
8	269710440	269710440 - N	2697.629	2697.638			
9	269710441	269710441 - N	2697.629	2697.638			
10	269710442	269710442 - N	2697.641	2697.625			
11	269710443	269710443 - N	2697.641	2697.625			
12	269710444	269710444 - N	2697.641	2697.625			
13	269710445	269710445 - N	2697.641	2697.625			
14	269710446	269710446 - N	2697.641	2697.625			
15	269710447	269710447 - N	2697.641	2697.625			
16	269710448	269710448 - N	2697.641	2697.625			
17	269710449	269710449 - N	2697.626	2697.644			
18	269710450	269710450 - N	2697.626	2697.644			
19	269710451	269710451 - N	2697.626	2697.644			
20	269710452	269710452 - N	2697.626	2697.644			
21	269710453	269710453 - N	2697.626	2697.644			
22	269710454	269710454 - N	2697.626	2697.644			
23	269710455	269710455 - N	2697.626	2697.644	1.39	2.29	6.33 x 10 ⁻⁴
24	269710456	269710456 - N	2697.637	2697.632			
25	269710457	269710457 - N	2697.637	2697.632			
26	269710458	269710458 - N	2697.637	2697.632			
27	269710459	269710459 - N	2697.637	2697.632			

BMI-N



* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269710433 - N	26676-6	0.9555					
269710434 - N	26676-6	0.9555					
269710435 - N	26676-6	0.9555					
269710436 - N	26676-6	0.9555					
269710437 - N	26676-6	0.9555					
269710438 - N	26676-6	0.9555					
269710439 - N	26676-6	0.9555					
269710440 - N	26715-1	0.9552	0.244	262	2.69	89	
269710441 - N	26715-1	0.9552					
269710442 - N	26715-1	0.9552					
269710443 - N	26715-1	0.9552					
269710444 - N	26715-1	0.9552					
269710445 - N	26715-1	0.9552					
269710446 - N	26715-1	0.9552					
269710447 - N	26715-1	0.9552					
269710448 - N	26715-1	0.9552					
269710449 - N	26715-1	0.9552					
269710450 - N	26715-1	0.9552	0.252	267	2.27	94	
269710451 - N	26715-1	0.9552					
269710452 - N	26715-1	0.9552					
269710453 - N	26715-1	0.9552					
269710454 - N	26715-1	0.9552					
269710455 - N	26715-1	0.9552					
269710456 - N	26715-1	0.9552					
269710457 - N	26715-1	0.9552					
269710458 - N	26715-1	0.9552					
269710459 - N	26715-1	0.9552					



BMI N



Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269710460	269710460 - N	2697.637	2697.632			
2	269710461	269710461 - N	2697.637	2697.632			
3	269710462	269710462 - N	2697.637	2697.632			
4	269710463	269710463 - N	2697.627	2697.640			
5	269710464	269710464 - N	2697.627	2697.640			
6	269710465	269710465 - N	2697.627	2697.640			
7	269710466	269710466 - N	2697.627	2697.640			
8	269710467	269710467 - N	2697.627	2697.640			
9	269710468	269710468 - N	2697.627	2697.640			
10	269710469	269710469 - N	2697.627	2697.640			
11	269710470	269710470 - N	2697.645	2697.630			
12	269710471	269710471 - N	2697.645	2697.630			
13	269710472	269710472 - N	2697.645	2697.630			
14	269710473	269710473 - N	2697.645	2697.630			
15	269710474	269710474 - N	2697.645	2697.630			
16	269710475	269710475 - N	2697.645	2697.630			
17	269710476	269710476 - N	2697.645	2697.630			
18	269710477	269710477 - N	2697.633	2697.648			
19	269710478	269710478 - N	2697.633	2697.648			
20	269710479	269710479 - N	2697.633	2697.648			
21	269710480	269710480 - N	2697.633	2697.648			
22	269710481	269710481 - N	2697.633	2697.648			
23	269710482	269710482 - N	2697.633	2697.648			
24	269710483	269710483 - N	2697.633	2697.648			
25	269710484	269710484 - N	2697.643	2697.636			
26	269710485	269710485 - N	2697.643	2697.636			
27	269710486	269710486 - N	2697.643	2697.636			

BMI N

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269710460 - N	26715-1	0.9552	0.246	260	2.54	92	
269710461 - N	26715-1	0.9552					
269710462 - N	26715-1	0.9552					
269710463 - N	26715-1	0.9552					
269710464 - N	26715-1	0.9552					
269710465 - N	26715-1	0.9552					
269710466 - N	26715-1	0.9552					
269710467 - N	26715-1	0.9552					
269710468 - N	26715-1	0.9552					
269710469 - N	26715-1	0.9552					
269710470 - N	26715-1	0.9552	0.250	269	2.31	96	
269710471 - N	26715-1	0.9552					
269710472 - N	26715-1	0.9552					
269710473 - N	26715-1	0.9552					
269710474 - N	26715-1	0.9552					
269710475 - N	26715-1	0.9552					
269710476 - N	26715-1	0.9552					
269710477 - N	26715-1	0.9552					
269710478 - N	26715-1	0.9552					
269710479 - N	26715-1	0.9552					
269710480 - N	26715-1	0.9552	0.242	256	2.61	93	
269710481 - N	26715-1	0.9552					
269710482 - N	26715-1	0.9552					
269710483 - N	26715-1	0.9552					
269710484 - N	26715-1	0.9552					
269710485 - N	26715-1	0.9552					
269710486 - N	26715-1	0.9552					



BMI N



Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269710487	269710487 - N	2697.643	2697.636			
2	269710488	269710488 - N	2697.643	2697.636			
3	269710489	269710489 - N	2697.643	2697.636			
4	269710490	269710490 - N	2697.643	2697.636	1.56	2.59	6.57 x 10 ⁻⁴
5	269710491	269710491 - N	2697.631	2697.639			
6	269710492	269710492 - N	2697.631	2697.639			
7	269710493	269710493 - N	2697.631	2697.639			
8	269710494	269710494 - N	2697.631	2697.639			
9	269710495	269710495 - N	2697.631	2697.639			
10	269710496	269710496 - N	2697.631	2697.639			
11	269710497	269710497 - N	2697.631	2697.639			
12	269710498	269710498 - N	2697.647	2697.628			
13	269710499	269710499 - N	2697.647	2697.628			
14	269710500	269710500 - N	2697.647	2697.628			
15	269710501	269710501 - N	2697.647	2697.628			
16	269710502	269710502 - N	2697.647	2697.628			
17	269710503	269710503 - N	2697.647	2697.628			
18	269710504	269710504 - N	2697.647	2697.628			
19	269710505	269710505 - N	2697.635	2697.651			
20	269710506	269710506 - N	2697.635	2697.651			
21	269710507	269710507 - N	2697.635	2697.651			
22	269710508	269710508 - N	2697.635	2697.651			
23	269710509	269710509 - N	2697.635	2697.651			
24	269710510	269710510 - N	2697.635	2697.651			
25	269710511	269710511 - N	2697.635	2697.651			
26	269710512	269710512 - N	2697.649	2697.642			
27	269710513	269710513 - N	2697.649	2697.642			



BMI N



* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269710487 - N	26715-1	0.9552					
269710488 - N	26715-1	0.9552					
269710489 - N	26715-1	0.9552					
269710490 - N	26715-1	0.9552	0.257	265	2.24	95	
269710491 - N	26715-1	0.9552					
269710492 - N	26715-1	0.9552					
269710493 - N	26715-1	0.9552					
269710494 - N	26715-1	0.9552					
269710495 - N	26715-1	0.9552					
269710496 - N	26715-1	0.9552					
269710497 - N	26715-1	0.9552					
269710498 - N	26715-1	0.9552					
269710499 - N	26715-1	0.9552					
269710500 - N	26715-1	0.9552	0.240	261	2.56	88	
269710501 - N	26715-1	0.9552					
269710502 - N	26715-1	0.9552					
269710503 - N	26715-1	0.9552					
269710504 - N	26715-1	0.9552					
269710505 - N	26715-1	0.9552					
269710506 - N	26715-1	0.9552					
269710507 - N	26715-1	0.9552					
269710508 - N	26715-1	0.9552					
269710509 - N	26715-1	0.9552					
269710510 - N	26715-1	0.9552	0.255	266	2.37	91	
269710511 - N	26715-1	0.9552					
269710512 - N	26715-1	0.9552					
269710513 - N	26715-1	0.9552					



BMI N



Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269710514	269710514 - N	2697.649	2697.642			
2	269710515	269710515 - N	2697.649	2697.642			
3	269710516	269710516 - N	2697.649	2697.642			
4	269710517	269710517 - N	2697.649	2697.642			
5	269710518	269710518 - N	2697.649	2697.642			
6	269710519	269710519 - N	2697.634	2697.650			
7	269710520	269710520 - N	2697.634	2697.650			
8	269710521	269710521 - N	2697.634	2697.650			
9	269710522	269710522 - N	2697.634	2697.650			
10	269710523	269710523 - N	2697.634	2697.650			
11	269710524	269710524 - N	2697.634	2697.650			
12	269710525	269710525 - N	2697.634	2697.650	1.45	2.41	6.25 x 10 ⁻⁴
13	269710526	269710526 - N	2697.665	2697.646			
14	269710527	269710527 - N	2697.665	2697.646			
15	269710528	269710528 - N	2697.665	2697.646			
16	269710529	269710529 - N	2697.665	2697.646			
17	269710530	269710530 - N	2697.665	2697.646			
18	269710531	269710531 - N	2697.665	2697.646			
19	269710532	269710532 - N	2697.665	2697.646			
20	269710533	269710533 - N	2697.652	2697.662			
21	269710534	269710534 - N	2697.652	2697.662			
22	269710535	269710535 - N	2697.652	2697.662			
23	269710536	269710536 - N	2697.652	2697.662			
24	269710537	269710537 - N	2697.652	2697.662			
25	269710538	269710538 - N	2697.652	2697.662			
26	269710539	269710539 - N	2697.652	2697.662			
27	269710540	269710540 - N	2697.669	2697.655			

BMI N

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269710514 - N	26715-1	0.9552					
269710515 - N	26715-1	0.9552					
269710516 - N	26715-1	0.9552					
269710517 - N	26715-1	0.9552					
269710518 - N	26715-1	0.9552					
269710519 - N	26715-1	0.9552					
269710520 - N	26715-1	0.9552	0.241	259	2.65	89	
269710521 - N	26715-1	0.9552					
269710522 - N	26715-1	0.9552					
269710523 - N	26715-1	0.9552					
269710524 - N	26715-1	0.9552					
269710525 - N	26715-1	0.9552					
269710526 - N	26715-1	0.9552					
269710527 - N	26715-1	0.9552					
269710528 - N	26715-1	0.9552					
269710529 - N	26715-1	0.9552					
269710530 - N	26715-1	0.9552	0.253	263	2.23	94	
269710531 - N	26715-1	0.9552					
269710532 - N	26715-1	0.9552					
269710533 - N	26715-1	0.9552					
269710534 - N	26715-1	0.9552					
269710535 - N	26715-1	0.9552					
269710536 - N	26715-1	0.9552					
269710537 - N	26715-1	0.9552					
269710538 - N	26715-1	0.9552					
269710539 - N	26715-1	0.9552					
269710540 - N	26715-1	0.9552	0.245	257	2.58	90	

BMI N



Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269710541	269710541 - N	2697.669	2697.655			
2	269710542	269710542 - N	2697.669	2697.655			
3	269710543	269710543 - N	2697.669	2697.655			
4	269710544	269710544 - N	2697.669	2697.655			
5	269710545	269710545 - N	2697.669	2697.655			
6	269710546	269710546 - N	2697.669	2697.655			
7	269710547	269710547 - N	2697.661	2697.676			
8	269710548	269710548 - N	2697.661	2697.676			
9	269710549	269710549 - N	2697.661	2697.676			
10	269710550	269710550 - N	2697.661	2697.676			
11	269710551	269710551 - N	2697.661	2697.676			
12	269710552	269710552 - N	2697.661	2697.676			
13	269710553	269710553 - N	2697.661	2697.676			
14	269710554	269710554 - N	2697.673	2697.653			
15	269710555	269710555 - N	2697.673	2697.653			
16	269710556	269710556 - N	2697.673	2697.653			
17	269710557	269710557 - N	2697.673	2697.653			
18	269710558	269710558 - N	2697.673	2697.653			
19	269710559	269710559 - N	2697.673	2697.653			
20	269710560	269710560 - N	2697.673	2697.653	1.64	2.72	6.64 x 10 ⁻⁴
21	269710561	269710561 - N	2697.656	2697.670			
22	269710562	269710562 - N	2697.656	2697.670			
23	269710563	269710563 - N	2697.656	2697.670			
24	269710564	269710564 - N	2697.656	2697.670			
25	269710565	269710565 - N	2697.656	2697.670			
26	269710566	269710566 - N	2697.656	2697.670			
27	269710567	269710567 - N	2697.656	2697.670			

↑
BMI N
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* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269710541 - N	26715-1	0.9552					
269710542 - N	26715-1	0.9552					
269710543 - N	26715-1	0.9552					
269710544 - N	26715-1	0.9552					
269710545 - N	26715-1	0.9552					
269710546 - N	26715-1	0.9552					
269710547 - N	26715-1	0.9552					
269710548 - N	26715-1	0.9552					
269710549 - N	26715-1	0.9552					
269710550 - N	26715-1	0.9552	0.256	264	2.39	92	
269710551 - N	26715-1	0.9552					
269710552 - N	26715-1	0.9552					
269710553 - N	26715-1	0.9552					
269710554 - N	26715-1	0.9552					
269710555 - N	26715-1	0.9552					
269710556 - N	26715-1	0.9552					
269710557 - N	26715-1	0.9552					
269710558 - N	26715-1	0.9552					
269710559 - N	26715-1	0.9552					
269710560 - N	26715-1	0.9552	0.243	258	2.63	88	
269710561 - N	26715-1	0.9552					
269710562 - N	26715-1	0.9552					
269710563 - N	26715-1	0.9552					
269710564 - N	26715-1	0.9552					
269710565 - N	26715-1	0.9552					
269710566 - N	26715-1	0.9552					
269710567 - N	26715-1	0.9552					



BMI N



Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269710568	269710568 - N	2697.675	2697.658			
2	269710569	269710569 - N	2697.675	2697.658			
3	269710570	269710570 - N	2697.675	2697.658			
4	269710571	269710571 - N	2697.675	2697.658			
5	269710572	269710572 - N	2697.675	2697.658			
6	269710573	269710573 - N	2697.675	2697.658			
7	269710574	269710574 - N	2697.675	2697.658			
8	269710575	269710575 - N	2697.663	2697.666			
9	269710576	269710576 - N	2697.663	2697.666			
10	269710577	269710577 - N	2697.663	2697.666			
11	269710578	269710578 - N	2697.663	2697.666			
12	269710579	269710579 - N	2697.663	2697.666			
13	269710580	269710580 - N	2697.663	2697.666			
14	269710581	269710581 - N	2697.663	2697.666			
15	269710582	269710582 - N	2697.671	2697.660			
16	269710583	269710583 - N	2697.671	2697.660			
17	269710584	269710584 - N	2697.671	2697.660			
18	269710585	269710585 - N	2697.671	2697.660			
19	269710586	269710586 - N	2697.671	2697.660			
20	269710587	269710587 - N	2697.671	2697.660			
21	269710588	269710588 - N	2697.671	2697.660			
22	269710589	269710589 - N	2697.654	2697.678			
23	269710590	269710590 - N	2697.654	2697.678			
24	269710591	269710591 - N	2697.654	2697.678			
25	269710592	269710592 - N	2697.654	2697.678			
26	269710593	269710593 - N	2697.654	2697.678			
27	269710594	269710594 - N	2697.654	2697.678			

BMI-N
URES

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269710568 - N	26715-1	0.9552					
269710569 - N	26715-1	0.9552					
269710570 - N	26715-1	0.9552	0.249	268	2.47	96	
269710571 - N	26715-1	0.9552					
269710572 - N	26715-1	0.9552					
269710573 - N	26715-1	0.9552					
269710574 - N	26715-1	0.9552					
269710575 - N	26715-1	0.9552					
269710576 - N	26715-1	0.9552					
269710577 - N	26715-1	0.9552					
269710578 - N	26715-1	0.9552					
269710579 - N	26715-1	0.9552					
269710580 - N	26715-1	0.9552	0.244	260	2.60	93	
269710581 - N	26715-1	0.9552					
269710582 - N	26715-1	0.9552					
269710583 - N	26715-1	0.9552					
269710584 - N	26715-1	0.9552					
269710585 - N	26715-1	0.9552					
269710586 - N	26715-1	0.9552					
269710587 - N	26715-1	0.9552					
269710588 - N	26715-1	0.9552					
269710589 - N	26715-1	0.9552					
269710590 - N	26715-1	0.9552	0.251	267	2.35	95	
269710591 - N	26715-1	0.9552					
269710592 - N	26715-1	0.9552					
269710593 - N	26715-1	0.9552					
269710594 - N	26715-1	0.9552					

CAMU
CLOSURE



Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269710595	269710595 - N	2697.654	2697.678	1.37	2.27	6.43 x 10 ⁻⁴
2	269710596	269710596 - N	2697.667	2697.664			
3	269710597	269710597 - N	2697.667	2697.664			
4	269710598	269710598 - N	2697.667	2697.664			
5	269710599	269710599 - N	2697.667	2697.664			
6	269710600	269710600 - N	2697.667	2697.664			
7	269710601	269710601 - N	2697.667	2697.664			
8	269710602	269710602 - N	2697.667	2697.664			
9	269710603	269710603 - N	2697.659	2697.674			
10	269710604	269710604 - N	2697.659	2697.674			
11	269710605	269710605 - N	2697.659	2697.674			
12	269710606	269710606 - N	2697.659	2697.674			
13	269710607	269710607 - N	2697.659	2697.674			
14	269710608	269710608 - N	2697.659	2697.674			
15	269710609	269710609 - N	2697.659	2697.674			
16	269710610	269710610 - N	2697.677	2697.668			
17	269710611	269710611 - N	2697.677	2697.668			
18	269710612	269710612 - N	2697.677	2697.668			
19	269710613	269710613 - N	2697.677	2697.668			
20	269710614	269710614 - N	2697.677	2697.668			
21	269710615	269710615 - N	2697.677	2697.668			
22	269710616	269710616 - N	2697.677	2697.668			
23	269710617	269710617 - N	2697.657	2697.672			
24	269710618	269710618 - N	2697.657	2697.672			
25	269710619	269710619 - N	2697.657	2697.672			
26	269710620	269710620 - N	2697.657	2697.672			
27	269710621	269710621 - N	2697.657	2697.672			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269710595 - N	26715-1	0.9552					
269710596 - N	26715-1	0.9552					
269710597 - N	26715-1	0.9552					
269710598 - N	26715-1	0.9552					
269710599 - N	26715-1	0.9552					
269710600 - N	26715-1	0.9552	0.242	262	2.73	91	
269710601 - N	26715-1	0.9552					
269710602 - N	26715-1	0.9552					
269710603 - N	26715-1	0.9552					
269710604 - N	26715-1	0.9552					
269710605 - N	26715-1	0.9552					
269710606 - N	26715-1	0.9552					
269710607 - N	26715-1	0.9552					
269710608 - N	26715-1	0.9552					
269710609 - N	26715-1	0.9552					
269710610 - N	26715-1	0.9552	0.248	269	2.43	94	
269710611 - N	26715-1	0.9552					
269710612 - N	26715-1	0.9552					
269710613 - N	26715-1	0.9552					
269710614 - N	26715-1	0.9552					
269710615 - N	26715-1	0.9552					
269710616 - N	26715-1	0.9552					
269710617 - N	26715-1	0.9552					
269710618 - N	26715-1	0.9552					
269710619 - N	26715-1	0.9552					
269710620 - N	26715-1	0.9552	0.240	259	2.59	89	
269710621 - N	26715-1	0.9552					

CAMU
CLOSURE



Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269710622	269710622 - N	2697.657	2697.672			
2	269710623	269710623 - N	2697.657	2697.672			
3	269710624	269710624 - N	2697.690	2697.682			
4	269710625	269710625 - N	2697.690	2697.682			
5	269710626	269710626 - N	2697.690	2697.682			
6	269710627	269710627 - N	2697.690	2697.682			
7	269710628	269710628 - N	2697.690	2697.682			
8	269710629	269710629 - N	2697.690	2697.682			
9	269710630	269710630 - N	2697.690	2697.682	1.58	2.54	6.59 x 10 ⁻⁴
10	269710631	269710631 - N	2697.679	2697.695			
11	269710632	269710632 - N	2697.679	2697.695			
12	269710633	269710633 - N	2697.679	2697.695			
13	269710634	269710634 - N	2697.679	2697.695			
14	269710635	269710635 - N	2697.679	2697.695			
15	269710636	269710636 - N	2697.679	2697.695			
16	269710637	269710637 - N	2697.679	2697.695			
17	269710638	269710638 - N	2697.698	2697.686			
18	269710639	269710639 - N	2697.698	2697.686			
19	269710640	269710640 - N	2697.698	2697.686			
20	269710641	269710641 - N	2697.698	2697.686			
21	269710642	269710642 - N	2697.698	2697.686			
22	269710643	269710643 - N	2697.698	2697.686			
23	269710644	269710644 - N	2697.698	2697.686			
24	269710645	269710645 - N	2697.683	2697.701			
25	269710646	269710646 - N	2697.683	2697.701			
26	269710647	269710647 - N	2697.683	2697.701			
27	269710648	269710648 - N	2697.683	2697.701			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269710622 - N	26715-1	0.9552					
269710623 - N	26715-1	0.9552					
269710624 - N	26715-1	0.9552					
269710625 - N	26715-1	0.9552					
269710626 - N	26715-1	0.9552					
269710627 - N	26715-1	0.9552					
269710628 - N	26715-1	0.9552					
269710629 - N	26715-1	0.9552					
269710630 - N	26715-1	0.9552	0.254	265	2.32	92	
269710631 - N	26715-1	0.9552					
269710632 - N	26715-1	0.9552					
269710633 - N	26715-1	0.9552					
269710634 - N	26715-1	0.9552					
269710635 - N	26715-1	0.9552					
269710636 - N	26715-1	0.9552					
269710637 - N	26715-1	0.9552					
269710638 - N	26715-1	0.9552					
269710639 - N	26715-1	0.9552					
269710640 - N	26715-1	0.9552	0.247	256	2.74	90	
269710641 - N	26715-1	0.9552					
269710642 - N	26715-1	0.9552					
269710643 - N	26715-1	0.9552					
269710644 - N	26715-1	0.9552					
269710645 - N	26715-1	0.9552					
269710646 - N	26715-1	0.9552					
269710647 - N	26715-1	0.9552					
269710648 - N	26715-1	0.9552					

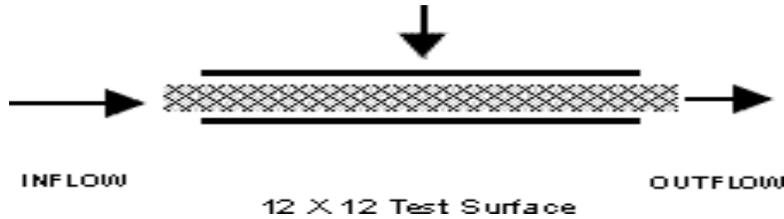


**CAMU
CLOSURES**



Client: Environmental Specialties International, Inc.	Job # 2697
Project: Landwell / Basic Remediation, NV	
Product: TN270-2-6	

Test Configuration:



Test Information:

Boundary Conditions:	Sand	Normal Load: 300 psf
	Geocomposite	Gradient: 0.1 ft
	Liner	Seating Time: 24 hours
		Flow Direction: MD

Test Results:

Roll No.	Pressure (psf)	Gradient, ft	Transmissivity, m ² /sec
			24 hours
269710455	300	0.1	6.33 x 10 ⁻⁴
269710490			6.57 x 10 ⁻⁴
269710525			6.25 x 10 ⁻⁴
269710560			6.64 x 10 ⁻⁴
269710595			6.43 x 10 ⁻⁴
269710630			6.59 x 10 ⁻⁴



POLYETHYLENE RESIN CERTIFICATION

Customer Name : Environmental Specialties International, Inc.
Project Name : Landwell / Basic Remediation, NV
Geocomposite Manufacturer : SKAPS Industries
Geocomposite Production Plant : Commerce, GA
Geocomposite Brand Name : TN270-2-6

We, the Geonet Manufacturer, hereby certify the following for the material delivered to the above referenced project:

Resin Supplier	Resin Production Plant	Resin Brand Name	Resin Lot Number	Property	Test Method	Units	Resin Supplier Value	Tested Value*
New South Polymers Inc	Formosa, TX	HDPE	26715-1	Density	ASTM D 1505	gm/cc	0.949	0.950
				Melt Flow Index	ASTM D 1238 ^(a)	gm/10 min	0.15	0.15

(a) Condition 190/2.16
* Data from SKAPS Quality Control





Engineered Synthetic
Products, Inc.

Product : TN270-2-6

Project : Landwell / Basic Remediation, NV

We, the Geocomposite Manufacturer, hereby certify the following for the material delivered to the above referenced project :

GEOCOMP ROLL#	FABRIC ROLL#	WEIGHT oz/sq yd	MD TENSILE lbs.	MD ELONG %	XMD TENSILE lbs.	XMD ELONG %	MD TRAP lbs.	XMD TRAP lbs.	PUNCTURE lbs.	MULLEN psi	AOS us sieve	PERM-ITY sec ⁻¹
269710455	2697.626	6.58	169	73	178	80	73	80	100	334	70	1.78
	2697.644	6.29	163	67	175	75	72	82	98	331	70	1.78
269710490	2697.643	6.29	163	67	175	75	72	82	98	331	70	1.78
	2697.636	6.67	167	71	180	82	76	85	96	336	70	1.78
269710525	2697.634	6.33	161	69	173	77	76	85	96	336	70	1.78
	2697.650	6.31	160	65	171	79	74	87	95	338	70	1.82
269710560	2697.673	6.39	164	66	172	78	77	89	97	340	70	1.82
	2697.653	6.31	160	65	171	79	74	87	95	338	70	1.82
269710595	2697.654	6.31	160	65	171	79	74	87	95	338	70	1.82
	2697.678	6.63	166	75	178	85	77	89	97	340	70	1.82
269710630	2697.690	6.35	165	67	173	75	80	86	95	337	70	1.82
	2697.682	6.41	163	68	170	79	73	80	100	333	70	1.82

October 21, 2008
 Environmental Specialties International, Inc.
 7943 Pecue Lane-Suite A
 Baton Rouge, LA 70809

**Ref. : Landwell / Basic Remediation, NV
 Customer P.O. # 9158
 Transnet 270-2-6**

We certify that the Transnet 270-2-6 drainage composite, meets the project requirements as stated in the specifications. The properties listed in this section are:

Property	Test Method	Unit	Required Value	Qualifier
Geonet³				
Mass per Unit Area	ASTM D 5261	lbs/ft ²	0.197	Minimum
Thickness	ASTM D 5199	mil	200	Minimum
Carbon Black	ASTM D 4218	%	2 - 3	Range
Tensile Strength	ASTM D 5035	lbs/in	75	Minimum
Melt Flow	ASTM D 1238 ²	g/10 min	1.0	Maximum
Density	ASTM D 1505	g/cm ³	0.935	Minimum
Composite				
Ply Adhesion	GRI GC7	lb/in	1.0	MARV ⁵
Transmissivity ¹	ASTM D 4716	m ² /sec	5.0 x 10 ⁻⁴	MARV
Geotextile^{3 & 4}				
Fabric Weight	ASTM D 5261	oz/yd ²	6.0	MARV
Grab Strength	ASTM D 4632	lbs	130	MARV
Grab Elongation	ASTM D 4632	%	50	MARV
Tear Strength	ASTM D 4533	lbs	40	MARV
Puncture Resistance	ASTM D 4833	lbs	40	MARV
Mullen Burst	ASTM D 3786	psi	210	MARV
Permittivity	ASTM D 4491	sec ⁻¹	0.5	MARV
AOS	ASTM D 4751	US Sieve	70	MARV
UV Resistance	ASTM D 4355	%/hrs	70/500	MARV

Notes:

- 1 Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.
- 2 Condition 190/2.16
- 3 Geotextile and Geonet properties are prior to lamination.
- 4 Geotextile data is provided by the supplier.
- 5 MARV is statistically defined as mean minus two standard deviations and it is the value which is exceeded by 97.5% of all the test data.

Sincerely,
Nilay Patel
 Nilay Patel
 QA Manager

Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269710649	269710649 - N	2697.683	2697.701			
2	269710650	269710650 - N	2697.683	2697.701			
3	269710651	269710651 - N	2697.683	2697.701			
4	269710652	269710652 - N	2697.696	2697.689			
5	269710653	269710653 - N	2697.696	2697.689			
6	269710654	269710654 - N	2697.696	2697.689			
7	269710655	269710655 - N	2697.696	2697.689			
8	269710656	269710656 - N	2697.696	2697.689			
9	269710657	269710657 - N	2697.696	2697.689			
10	269710658	269710658 - N	2697.696	2697.689			
11	269710659	269710659 - N	2697.681	2697.703			
12	269710660	269710660 - N	2697.681	2697.703			
13	269710661	269710661 - N	2697.681	2697.703			
14	269710662	269710662 - N	2697.681	2697.703			
15	269710663	269710663 - N	2697.681	2697.703			
16	269710664	269710664 - N	2697.681	2697.703			
17	269710665	269710665 - N	2697.681	2697.703	1.43	2.30	6.29 x 10 ⁻⁴
18	269710666	269710666 - N	2697.700	2697.691			
19	269710667	269710667 - N	2697.700	2697.691			
20	269710668	269710668 - N	2697.700	2697.691			
21	269710669	269710669 - N	2697.700	2697.691			
22	269710670	269710670 - N	2697.700	2697.691			
23	269710671	269710671 - N	2697.700	2697.691			
24	269710672	269710672 - N	2697.700	2697.691			
25	269710673	269710673 - N	2697.687	2697.705			
26	269710674	269710674 - N	2697.687	2697.705			
27	269710675	269710675 - N	2697.687	2697.705			

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OSURES



* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269710649 - N	26715-1	0.9552					
269710650 - N	26676-15	0.9542	0.250	266	2.41	93	
269710651 - N	26676-15	0.9542					
269710652 - N	26676-15	0.9542					
269710653 - N	26676-15	0.9542					
269710654 - N	26676-15	0.9542					
269710655 - N	26676-15	0.9542					
269710656 - N	26676-15	0.9542					
269710657 - N	26676-15	0.9542					
269710658 - N	26676-15	0.9542					
269710659 - N	26676-15	0.9542					
269710660 - N	26676-15	0.9542	0.241	261	2.66	88	
269710661 - N	26676-15	0.9542					
269710662 - N	26676-15	0.9542					
269710663 - N	26676-15	0.9542					
269710664 - N	26676-15	0.9542					
269710665 - N	26676-15	0.9542					
269710666 - N	26676-15	0.9542					
269710667 - N	26676-15	0.9542					
269710668 - N	26676-15	0.9542					
269710669 - N	26676-15	0.9542					
269710670 - N	26676-15	0.9542	0.257	264	2.34	95	
269710671 - N	26676-15	0.9542					
269710672 - N	26676-15	0.9542					
269710673 - N	26676-15	0.9542					
269710674 - N	26676-15	0.9542					
269710675 - N	26676-15	0.9542					

CAMU
CLOSURE



Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269710676	269710676 - N	2697.687	2697.705			
2	269710677	269710677 - N	2697.687	2697.705			
3	269710678	269710678 - N	2697.687	2697.705			
4	269710679	269710679 - N	2697.687	2697.705			
5	269710680	269710680 - N	2697.702	2697.680			
6	269710681	269710681 - N	2697.702	2697.680			
7	269710682	269710682 - N	2697.702	2697.680			
8	269710683	269710683 - N	2697.702	2697.680			
9	269710684	269710684 - N	2697.702	2697.680			
10	269710685	269710685 - N	2697.702	2697.680			
11	269710686	269710686 - N	2697.702	2697.680			
12	269710687	269710687 - N	2697.685	2697.699			
13	269710688	269710688 - N	2697.685	2697.699			
14	269710689	269710689 - N	2697.685	2697.699			
15	269710690	269710690 - N	2697.685	2697.699			
16	269710691	269710691 - N	2697.685	2697.699			
17	269710692	269710692 - N	2697.685	2697.699			
18	269710693	269710693 - N	2697.685	2697.699			
19	269710694	269710694 - N	2697.694	2697.684			
20	269710695	269710695 - N	2697.694	2697.684			
21	269710696	269710696 - N	2697.694	2697.684			
22	269710697	269710697 - N	2697.694	2697.684			
23	269710698	269710698 - N	2697.694	2697.684			
24	269710699	269710699 - N	2697.694	2697.684			
25	269710700	269710700 - N	2697.694	2697.684	1.66	2.67	6.66 x 10 ⁻⁴
26	269710701	269710701 - N	2697.688	2697.697			
27	269710702	269710702 - N	2697.688	2697.697			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269710676 - N	26676-15	0.9542					
269710677 - N	26676-15	0.9542					
269710678 - N	26676-15	0.9542					
269710679 - N	26676-15	0.9542					
269710680 - N	26676-15	0.9542	0.245	258	2.76	91	
269710681 - N	26676-15	0.9542					
269710682 - N	26676-15	0.9542					
269710683 - N	26676-15	0.9542					
269710684 - N	26676-15	0.9542					
269710685 - N	26676-15	0.9542					
269710686 - N	26676-15	0.9542					
269710687 - N	26676-15	0.9542					
269710688 - N	26676-15	0.9542					
269710689 - N	26676-15	0.9542					
269710690 - N	26676-15	0.9542	0.252	263	2.46	94	
269710691 - N	26676-15	0.9542					
269710692 - N	26676-15	0.9542					
269710693 - N	26676-15	0.9542					
269710694 - N	26676-15	0.9542					
269710695 - N	26676-15	0.9542					
269710696 - N	26676-15	0.9542					
269710697 - N	26676-15	0.9542					
269710698 - N	26676-15	0.9542					
269710699 - N	26676-15	0.9542					
269710700 - N	26676-15	0.9542	0.243	257	2.64	89	
269710701 - N	26676-15	0.9542					
269710702 - N	26676-15	0.9542					

CAMU
CLOSURE



Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269710703	269710703 - N	2697.688	2697.697			
2	269710704	269710704 - N	2697.688	2697.697			
3	269710705	269710705 - N	2697.688	2697.697			
4	269710706	269710706 - N	2697.688	2697.697			
5	269710707	269710707 - N	2697.688	2697.697			
6	269710708	269710708 - N	2697.704	2697.692			
7	269710709	269710709 - N	2697.704	2697.692			
8	269710710	269710710 - N	2697.704	2697.692			
9	269710711	269710711 - N	2697.704	2697.692			
10	269710712	269710712 - N	2697.704	2697.692			
11	269710713	269710713 - N	2697.704	2697.692			
12	269710714	269710714 - N	2697.704	2697.692			
13	269710715	269710715 - N	2697.693	2697.716			
14	269710716	269710716 - N	2697.693	2697.716			
15	269710717	269710717 - N	2697.693	2697.716			
16	269710718	269710718 - N	2697.693	2697.716			
17	269710719	269710719 - N	2697.693	2697.716			
18	269710720	269710720 - N	2697.693	2697.716			
19	269710721	269710721 - N	2697.693	2697.716			
20	269710722	269710722 - N	2697.712	2697.709			
21	269710723	269710723 - N	2697.712	2697.709			
22	269710724	269710724 - N	2697.712	2697.709			
23	269710725	269710725 - N	2697.712	2697.709			
24	269710726	269710726 - N	2697.712	2697.709			
25	269710727	269710727 - N	2697.712	2697.709			
26	269710728	269710728 - N	2697.712	2697.709			
27	269710729	269710729 - N	2697.706	2697.715			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269710703 - N	26676-15	0.9542					
269710704 - N	26676-15	0.9542					
269710705 - N	26676-15	0.9542					
269710706 - N	26676-15	0.9542					
269710707 - N	26676-15	0.9542					
269710708 - N	26676-15	0.9542					
269710709 - N	26676-15	0.9542					
269710710 - N	26676-15	0.9542	0.256	268	2.30	92	
269710711 - N	26676-15	0.9542					
269710712 - N	26676-15	0.9542					
269710713 - N	26676-15	0.9542					
269710714 - N	26676-15	0.9542					
269710715 - N	26676-15	0.9542					
269710716 - N	26676-15	0.9542					
269710717 - N	26676-15	0.9542					
269710718 - N	26676-15	0.9542					
269710719 - N	26676-15	0.9542					
269710720 - N	26676-15	0.9542	0.246	260	2.75	88	
269710721 - N	26676-15	0.9542					
269710722 - N	26676-15	0.9542					
269710723 - N	26676-15	0.9542					
269710724 - N	26676-15	0.9542					
269710725 - N	26676-15	0.9542					
269710726 - N	26676-15	0.9542					
269710727 - N	26676-15	0.9542					
269710728 - N	26676-15	0.9542					
269710729 - N	26676-15	0.9542					

CAMU
CLOSURE



Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269710730	269710730 - N	2697.706	2697.715			
2	269710731	269710731 - N	2697.706	2697.715			
3	269710732	269710732 - N	2697.706	2697.715			
4	269710733	269710733 - N	2697.706	2697.715			
5	269710734	269710734 - N	2697.706	2697.715			
6	269710735	269710735 - N	2697.706	2697.715	1.49	2.35	6.41 x 10 ⁻⁴
7	269710736	269710736 - N	2697.710	2697.707			
8	269710737	269710737 - N	2697.710	2697.707			
9	269710738	269710738 - N	2697.710	2697.707			
10	269710739	269710739 - N	2697.710	2697.707			
11	269710740	269710740 - N	2697.710	2697.707			
12	269710741	269710741 - N	2697.710	2697.707			
13	269710742	269710742 - N	2697.710	2697.707			
14	269710743	269710743 - N	2697.708	2697.713			
15	269710744	269710744 - N	2697.708	2697.713			
16	269710745	269710745 - N	2697.708	2697.713			
17	269710746	269710746 - N	2697.708	2697.713			
18	269710747	269710747 - N	2697.708	2697.713			
19	269710748	269710748 - N	2697.708	2697.713			
20	269710749	269710749 - N	2697.708	2697.713			
21	269710750	269710750 - N	2697.714	2697.711			
22	269710751	269710751 - N	2697.714	2697.711			
23	269710752	269710752 - N	2697.714	2697.711			
24	269710753	269710753 - N	2697.714	2697.711			
25	269710754	269710754 - N	2697.714	2697.711			
26	269710755	269710755 - N	2697.714	2697.711			
27	269710756	269710756 - N	2697.714	2697.711			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell / Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269710730 - N	26676-15	0.9542	0.249	265	2.44	96	
269710731 - N	26676-15	0.9542					
269710732 - N	26676-15	0.9542					
269710733 - N	26676-15	0.9542					
269710734 - N	26676-15	0.9542					
269710735 - N	26676-15	0.9542					
269710736 - N	26676-15	0.9542					
269710737 - N	26676-15	0.9542					
269710738 - N	26676-15	0.9542					
269710739 - N	26676-15	0.9542					
269710740 - N	26676-15	0.9542	0.244	262	2.55	93	
269710741 - N	26676-15	0.9542					
269710742 - N	26676-15	0.9542					
269710743 - N	26676-15	0.9542					
269710744 - N	26676-15	0.9542					
269710745 - N	26676-15	0.9542					
269710746 - N	26676-15	0.9542					
269710747 - N	26676-15	0.9542					
269710748 - N	26676-15	0.9542					
269710749 - N	26676-15	0.9542					
269710750 - N	26676-15	0.9542	0.255	269	2.40	95	
269710751 - N	26676-15	0.9542					
269710752 - N	26676-15	0.9542					
269710753 - N	26676-15	0.9542					
269710754 - N	26676-15	0.9542					
269710755 - N	26676-15	0.9542					
269710756 - N	26676-15	0.9542					

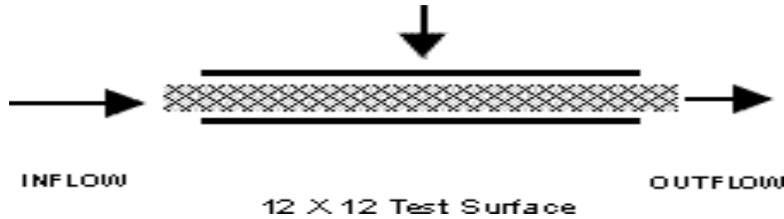
CAMU
CLOSURE



Client: Environmental Specialties International, Inc.
Project: Landwell / Basic Remediation, NV
Product: TN270-2-6

Job # 2697

Test Configuration:



Test Information:

Boundary Conditions: Sand
 Geocomposite
 Liner

Normal Load: 300 psf
Gradient: 0.1 ft
Seating Time: 24 hours
Flow Direction: MD

Test Results:

Roll No.	Pressure (psf)	Gradient, ft	Transmissivity, m ² /sec
			24 hours
269710665	300	0.1	6.29 x 10 ⁻⁴
269710700			6.66 x 10 ⁻⁴
269710735			6.41 x 10 ⁻⁴



POLYETHYLENE RESIN CERTIFICATION

Customer Name : Environmental Specialties International, Inc.
Project Name : Landwell / Basic Remediation, NV
Geocomposite Manufacturer : SKAPS Industries
Geocomposite Production Plant : Commerce, GA
Geocomposite Brand Name : TN270-2-6

We, the Geonet Manufacturer, hereby certify the following for the material delivered to the above referenced project:

Resin Supplier	Resin Production Plant	Resin Brand Name	Resin Lot Number	Property	Test Method	Units	Resin Supplier Value	Tested Value*
New South Polymers Inc	Formosa, TX	HDPE	26676-15	Density	ASTM D 1505	gm/cc	0.949	0.949
				Melt Flow Index	ASTM D 1238 ^(a)	gm/10 min	0.15	0.15

(a) Condition 190/2.16
* Data from SKAPS Quality Control





Engineered Synthetic
Products, Inc.

Product : TN270-2-6

Project : Landwell / Basic Remediation, NV

We, the Geocomposite Manufacturer, hereby certify the following for the material delivered to the above referenced project :

GEOCOMP ROLL#	FABRIC ROLL#	WEIGHT oz/sq yd	MD TENSILE lbs.	MD ELONG %	XMD TENSILE lbs.	XMD ELONG %	MD TRAP lbs.	XMD TRAP lbs.	PUNCTURE lbs.	MULLEN psi	AOS us sieve	PERM- ITY sec ⁻¹
269710665	2697.681	6.41	163	68	170	79	73	80	100	333	70	1.82
	2697.703	6.27	161	69	172	77	75	83	98	334	70	1.76
269710700	2697.694	6.35	165	67	173	75	80	86	95	337	70	1.82
	2697.684	6.41	163	68	170	79	73	80	100	333	70	1.82
269710735	2697.706	6.60	170	74	176	84	75	83	98	334	70	1.76
	2697.715	6.65	168	72	180	85	78	88	96	339	70	1.76

December 8, 2008
 Environmental Specialties International, Inc.
 7943 Pecue Lane-Suite A
 Baton Rouge, LA 70809

**Ref. : Landwell/Basic Remediation, NV
 Customer P.O. # 9158
 Transnet 270-2-6**

We certify that the Transnet 270-2-6 drainage composite, meets the project requirements as stated in the specifications. The properties listed in this section are:

Property	Test Method	Unit	Required Value	Qualifier
Geonet³				
Mass per Unit Area	ASTM D 5261	lbs/ft ²	0.197	Minimum
Thickness	ASTM D 5199	mil	200	Minimum
Carbon Black	ASTM D 4218	%	2.0 - 3.0	Range
Tensile Strength	ASTM D 5035	lbs/in	75	Minimum
Melt Flow	ASTM D 1238 ²	g/10 min	1.0	Maximum
Density	ASTM D 1505	g/cm ³	0.935	Minimum
Composite				
Ply Adhesion	GRI GC7	lb/in	1.0	MARV ⁵
Transmissivity ¹	ASTM D 4716	m ² /sec	5.0 x 10 ⁻⁴	MARV
Geotextile^{3 & 4}				
Fabric Weight	ASTM D 5261	oz/yd ²	6.0	MARV
Grab Strength	ASTM D 4632	lbs	130	MARV
Grab Elongation	ASTM D 4632	%	50	MARV
Tear Strength	ASTM D 4533	lbs	40	MARV
Puncture Resistance	ASTM D 4833	lbs	40	MARV
Mullen Burst	ASTM D 3786	psi	210	MARV
Permittivity	ASTM D 4491	sec ⁻¹	0.5	MARV
AOS	ASTM D 4751	US Sieve	70	MARV
UV Resistance	ASTM D 4355	%/hrs	70/500	MARV

Notes:

- 1 Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.
- 2 Condition 190/2.16
- 3 Geotextile and Geonet properties are prior to lamination.
- 4 Geotextile data is provided by the supplier.
- 5 MARV is statistically defined as mean minus two standard deviations and it is the value which is exceeded by 97.5% of all the test data.

Sincerely,

Nilay Patel

Nilay Patel
 QA Manager

Product : TN270-2-6

Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269710757	269710757 - N	2697.722	2697.735			
2	269710758	269710758 - N	2697.722	2697.735			
3	269710759	269710759 - N	2697.722	2697.735			
4	269710760	269710760 - N	2697.722	2697.735			
5	269710761	269710761 - N	2697.722	2697.735			
6	269710762	269710762 - N	2697.722	2697.735			
7	269710763	269710763 - N	2697.722	2697.735			
8	269710764	269710764 - N	2697.739	2697.726			
9	269710765	269710765 - N	2697.739	2697.726			
10	269710766	269710766 - N	2697.739	2697.726			
11	269710767	269710767 - N	2697.739	2697.726			
12	269710768	269710768 - N	2697.739	2697.726			
13	269710769	269710769 - N	2697.739	2697.726			
14	269710770	269710770 - N	2697.739	2697.726	1.25	2.02	6.19 x 10 ⁻⁴
15	269710771	269710771 - N	2697.718	2697.743			
16	269710772	269710772 - N	2697.718	2697.743			
17	269710773	269710773 - N	2697.718	2697.743			
18	269710774	269710774 - N	2697.718	2697.743			
19	269710775	269710775 - N	2697.718	2697.743			
20	269710776	269710776 - N	2697.718	2697.743			
21	269710777	269710777 - N	2697.718	2697.743			
22	269710778	269710778 - N	2697.742	2697.720			
23	269710779	269710779 - N	2697.742	2697.720			
24	269710780	269710780 - N	2697.742	2697.720			
25	269710781	269710781 - N	2697.742	2697.720			
26	269710782	269710782 - N	2697.742	2697.720			
27	269710783	269710783 - N	2697.742	2697.720			

FIGURES



* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269710757 - N	26676-15	0.9542					
269710758 - N	26676-15	0.9542					
269710759 - N	26676-15	0.9542					
269710760 - N	FPAX950119	0.9542	0.242	258	2.24	89	
269710761 - N	FPAX950119	0.9542					
269710762 - N	FPAX950119	0.9542					
269710763 - N	FPAX950119	0.9542					
269710764 - N	FPAX950119	0.9542					
269710765 - N	FPAX950119	0.9542					
269710766 - N	FPAX950119	0.9542					
269710767 - N	FPAX950119	0.9542					
269710768 - N	FPAX950119	0.9542					
269710769 - N	FPAX950119	0.9542					
269710770 - N	FPAX950119	0.9551	0.253	268	2.78	93	
269710771 - N	FPAX950119	0.9551					
269710772 - N	FPAX950119	0.9551					
269710773 - N	FPAX950119	0.9551					
269710774 - N	FPAX950119	0.9551					
269710775 - N	FPAX950119	0.9551					
269710776 - N	FPAX950119	0.9551					
269710777 - N	FPAX950119	0.9551					
269710778 - N	FPAX950119	0.9551					
269710779 - N	FPAX950119	0.9551					
269710780 - N	FPAX950119	0.9551	0.245	256	2.27	91	
269710781 - N	FPAX950119	0.9551					
269710782 - N	FPAX950119	0.9551					
269710783 - N	FPAX950119	0.9551					

CAMU
CLOSURE



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269710784	269710784 - N	2697.742	2697.720			
2	269710785	269710785 - N	2697.727	2697.741			
3	269710786	269710786 - N	2697.727	2697.741			
4	269710787	269710787 - N	2697.727	2697.741			
5	269710788	269710788 - N	2697.727	2697.741			
6	269710789	269710789 - N	2697.727	2697.741			
7	269710790	269710790 - N	2697.727	2697.741			
8	269710791	269710791 - N	2697.727	2697.741			
9	269710792	269710792 - N	2697.732	2697.723			
10	269710793	269710793 - N	2697.732	2697.723			
11	269710794	269710794 - N	2697.732	2697.723			
12	269710795	269710795 - N	2697.732	2697.723			
13	269710796	269710796 - N	2697.732	2697.723			
14	269710797	269710797 - N	2697.732	2697.723			
15	269710798	269710798 - N	2697.732	2697.723			
16	269710799	269710799 - N	2697.717	2697.738			
17	269710800	269710800 - N	2697.717	2697.738			
18	269710801	269710801 - N	2697.717	2697.738			
19	269710802	269710802 - N	2697.717	2697.738			
20	269710803	269710803 - N	2697.717	2697.738			
21	269710804	269710804 - N	2697.717	2697.738			
22	269710805	269710805 - N	2697.717	2697.738	1.76	2.79	6.68 x 10 ⁻⁴
23	269710806	269710806 - N	2697.737	2697.719			
24	269710807	269710807 - N	2697.737	2697.719			
25	269710808	269710808 - N	2697.737	2697.719			
26	269710809	269710809 - N	2697.737	2697.719			
27	269710810	269710810 - N	2697.737	2697.719			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269710784 - N	FPAX950119	0.9551					
269710785 - N	FPAX950119	0.9551					
269710786 - N	FPAX950119	0.9551					
269710787 - N	FPAX950119	0.9551					
269710788 - N	FPAX950119	0.9551					
269710789 - N	FPAX950119	0.9551					
269710790 - N	FPAX950119	0.9551	0.250	266	2.74	96	
269710791 - N	FPAX950119	0.9551					
269710792 - N	FPAX950119	0.9551					
269710793 - N	FPAX950119	0.9551					
269710794 - N	FPAX950119	0.9551					
269710795 - N	FPAX950119	0.9551					
269710796 - N	FPAX950119	0.9551					
269710797 - N	FPAX950119	0.9551					
269710798 - N	FPAX950119	0.9551					
269710799 - N	FPAX950119	0.9551					
269710800 - N	FPAX950119	0.9551	0.241	259	2.31	88	
269710801 - N	FPAX950119	0.9551					
269710802 - N	FPAX950119	0.9551					
269710803 - N	FPAX950119	0.9551					
269710804 - N	FPAX950119	0.9551					
269710805 - N	FPAX950119	0.9558					
269710806 - N	FPAX950119	0.9558					
269710807 - N	FPAX950119	0.9558					
269710808 - N	FPAX950119	0.9558					
269710809 - N	FPAX950119	0.9558					
269710810 - N	FPAX950119	0.9558	0.257	264	2.71	94	

CAMU CLOSURE



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269710811	269710811 - N	2697.737	2697.719			
2	269710812	269710812 - N	2697.737	2697.719			
3	269710813	269710813 - N	2697.729	2697.731			
4	269710814	269710814 - N	2697.729	2697.731			
5	269710815	269710815 - N	2697.729	2697.731			
6	269710816	269710816 - N	2697.729	2697.731			
7	269710817	269710817 - N	2697.729	2697.731			
8	269710818	269710818 - N	2697.729	2697.731			
9	269710819	269710819 - N	2697.729	2697.731			
10	269710820	269710820 - N	2697.733	2697.725			
11	269710821	269710821 - N	2697.733	2697.725			
12	269710822	269710822 - N	2697.733	2697.725			
13	269710823	269710823 - N	2697.733	2697.725			
14	269710824	269710824 - N	2697.733	2697.725			
15	269710825	269710825 - N	2697.733	2697.725			
16	269710826	269710826 - N	2697.733	2697.725			
17	269710827	269710827 - N	2697.721	2697.736			
18	269710828	269710828 - N	2697.721	2697.736			
19	269710829	269710829 - N	2697.721	2697.736			
20	269710830	269710830 - N	2697.721	2697.736			
21	269710831	269710831 - N	2697.721	2697.736			
22	269710832	269710832 - N	2697.721	2697.736			
23	269710833	269710833 - N	2697.721	2697.736			
24	269710834	269710834 - N	2697.740	2697.728			
25	269710835	269710835 - N	2697.740	2697.728			
26	269710836	269710836 - N	2697.740	2697.728			
27	269710837	269710837 - N	2697.740	2697.728			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269710811 - N	FPAX950119	0.9558					
269710812 - N	FPAX950119	0.9558					
269710813 - N	FPAX950119	0.9558					
269710814 - N	FPAX950119	0.9558					
269710815 - N	FPAX950119	0.9558					
269710816 - N	FPAX950119	0.9558					
269710817 - N	FPAX950119	0.9558					
269710818 - N	FPAX950119	0.9558					
269710819 - N	FPAX950119	0.9558					
269710820 - N	FPAX950119	0.9558	0.243	257	2.34	92	
269710821 - N	FPAX950119	0.9558					
269710822 - N	FPAX950119	0.9558					
269710823 - N	FPAX950119	0.9558					
269710824 - N	FPAX950119	0.9558					
269710825 - N	FPAX950119	0.9558					
269710826 - N	FPAX950119	0.9558					
269710827 - N	FPAX950119	0.9558					
269710828 - N	FPAX950119	0.9558					
269710829 - N	FPAX950119	0.9558					
269710830 - N	FPAX950119	0.9558	0.254	269	2.66	95	
269710831 - N	FPAX950119	0.9558					
269710832 - N	FPAX950119	0.9558					
269710833 - N	FPAX950119	0.9558					
269710834 - N	FPAX950119	0.9558					
269710835 - N	FPAX950119	0.9558					
269710836 - N	FPAX950119	0.9558					
269710837 - N	FPAX950119	0.9558					

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Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269710838	269710838 - N	2697.740	2697.728			
2	269710839	269710839 - N	2697.740	2697.728			
3	269710840	269710840 - N	2697.740	2697.728	1.32	2.07	6.22 x 10 ⁻⁴
4	269710841	269710841 - N	2697.724	2697.761			
5	269710842	269710842 - N	2697.724	2697.761			
6	269710843	269710843 - N	2697.724	2697.761			
7	269710844	269710844 - N	2697.724	2697.761			
8	269710845	269710845 - N	2697.724	2697.761			
9	269710846	269710846 - N	2697.724	2697.761			
10	269710847	269710847 - N	2697.724	2697.761			
11	269710848	269710848 - N	2697.746	2697.734			
12	269710849	269710849 - N	2697.746	2697.734			
13	269710850	269710850 - N	2697.746	2697.734			
14	269710851	269710851 - N	2697.746	2697.734			
15	269710852	269710852 - N	2697.746	2697.734			
16	269710853	269710853 - N	2697.746	2697.734			
17	269710854	269710854 - N	2697.746	2697.734			
18	269710855	269710855 - N	2697.730	2697.768			
19	269710856	269710856 - N	2697.730	2697.768			
20	269710857	269710857 - N	2697.730	2697.768			
21	269710858	269710858 - N	2697.730	2697.768			
22	269710859	269710859 - N	2697.730	2697.768			
23	269710860	269710860 - N	2697.730	2697.768			
24	269710861	269710861 - N	2697.730	2697.768			
25	269710862	269710862 - N	2697.764	2697.747			
26	269710863	269710863 - N	2697.764	2697.747			
27	269710864	269710864 - N	2697.764	2697.747			

CAMU CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269710838 - N	FPAX950119	0.9558					
269710839 - N	FPAX950119	0.9558					
269710840 - N	FPAX950119	0.9553	0.246	260	2.39	90	
269710841 - N	FPAX950119	0.9553					
269710842 - N	FPAX950119	0.9553					
269710843 - N	FPAX950119	0.9553					
269710844 - N	FPAX950119	0.9553					
269710845 - N	FPAX950119	0.9553					
269710846 - N	FPAX950119	0.9553					
269710847 - N	FPAX950119	0.9553					
269710848 - N	FPAX950119	0.9553					
269710849 - N	FPAX950119	0.9553					
269710850 - N	FPAX950119	0.9553	0.252	265	2.62	93	
269710851 - N	FPAX950119	0.9553					
269710852 - N	FPAX950119	0.9553					
269710853 - N	FPAX950119	0.9553					
269710854 - N	FPAX950119	0.9553					
269710855 - N	FPAX950119	0.9553					
269710856 - N	FPAX950119	0.9553					
269710857 - N	FPAX950119	0.9553					
269710858 - N	FPAX950119	0.9553					
269710859 - N	FPAX950119	0.9553					
269710860 - N	FPAX950119	0.9553	0.249	262	2.42	88	
269710861 - N	FPAX950119	0.9553					
269710862 - N	FPAX950119	0.9553					
269710863 - N	FPAX950119	0.9553					
269710864 - N	FPAX950119	0.9553					

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CLOSURE



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269710865	269710865 - N	2697.764	2697.747			
2	269710866	269710866 - N	2697.764	2697.747			
3	269710867	269710867 - N	2697.764	2697.747			
4	269710868	269710868 - N	2697.764	2697.747			
5	269710869	269710869 - N	2697.744	2697.758			
6	269710870	269710870 - N	2697.744	2697.758			
7	269710871	269710871 - N	2697.744	2697.758			
8	269710872	269710872 - N	2697.744	2697.758			
9	269710873	269710873 - N	2697.744	2697.758			
10	269710874	269710874 - N	2697.744	2697.758			
11	269710875	269710875 - N	2697.744	2697.758	1.57	2.71	6.63 x 10 ⁻⁴
12	269710876	269710876 - N	2697.769	2697.752			
13	269710877	269710877 - N	2697.769	2697.752			
14	269710878	269710878 - N	2697.769	2697.752			
15	269710879	269710879 - N	2697.769	2697.752			
16	269710880	269710880 - N	2697.769	2697.752			
17	269710881	269710881 - N	2697.769	2697.752			
18	269710882	269710882 - N	2697.769	2697.752			
19	269710883	269710883 - N	2697.751	2697.765			
20	269710884	269710884 - N	2697.751	2697.765			
21	269710885	269710885 - N	2697.751	2697.765			
22	269710886	269710886 - N	2697.751	2697.765			
23	269710887	269710887 - N	2697.751	2697.765			
24	269710888	269710888 - N	2697.751	2697.765			
25	269710889	269710889 - N	2697.751	2697.765			
26	269710890	269710890 - N	2697.762	2697.745			
27	269710891	269710891 - N	2697.762	2697.745			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269710865 - N	FPAX950119	0.9553					
269710866 - N	FPAX950119	0.9553					
269710867 - N	FPAX950119	0.9553					
269710868 - N	FPAX950119	0.9553					
269710869 - N	FPAX950119	0.9553					
269710870 - N	FPAX950119	0.9553	0.255	268	2.59	96	
269710871 - N	FPAX950119	0.9553					
269710872 - N	FPAX950119	0.9553					
269710873 - N	FPAX950119	0.9553					
269710874 - N	FPAX950119	0.9553					
269710875 - N	FPAX950119	0.9556					
269710876 - N	FPAX950119	0.9556					
269710877 - N	FPAX950119	0.9556					
269710878 - N	FPAX950119	0.9556					
269710879 - N	FPAX950119	0.9556					
269710880 - N	FPAX950119	0.9556	0.240	256	2.23	91	
269710881 - N	FPAX950119	0.9556					
269710882 - N	FPAX950119	0.9556					
269710883 - N	FPAX950119	0.9556					
269710884 - N	FPAX950119	0.9556					
269710885 - N	FPAX950119	0.9556					
269710886 - N	FPAX950119	0.9556					
269710887 - N	FPAX950119	0.9556					
269710888 - N	FPAX950119	0.9556					
269710889 - N	FPAX950119	0.9556					
269710890 - N	FPAX950119	0.9556	0.251	263	2.73	94	
269710891 - N	FPAX950119	0.9556					

**CAMU
CLOSURE**



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269710892	269710892 - N	2697.762	2697.745			
2	269710893	269710893 - N	2697.762	2697.745			
3	269710894	269710894 - N	2697.762	2697.745			
4	269710895	269710895 - N	2697.762	2697.745			
5	269710896	269710896 - N	2697.762	2697.745			
6	269710897	269710897 - N	2697.749	2697.763			
7	269710898	269710898 - N	2697.749	2697.763			
8	269710899	269710899 - N	2697.749	2697.763			
9	269710900	269710900 - N	2697.749	2697.763			
10	269710901	269710901 - N	2697.749	2697.763			
11	269710902	269710902 - N	2697.749	2697.763			
12	269710903	269710903 - N	2697.749	2697.763			
13	269710904	269710904 - N	2697.766	2697.750			
14	269710905	269710905 - N	2697.766	2697.750			
15	269710906	269710906 - N	2697.766	2697.750			
16	269710907	269710907 - N	2697.766	2697.750			
17	269710908	269710908 - N	2697.766	2697.750			
18	269710909	269710909 - N	2697.766	2697.750			
19	269710910	269710910 - N	2697.766	2697.750	1.41	2.13	6.27 x 10 ⁻⁴
20	269710911	269710911 - N	2697.754	2697.767			
21	269710912	269710912 - N	2697.754	2697.767			
22	269710913	269710913 - N	2697.754	2697.767			
23	269710914	269710914 - N	2697.754	2697.767			
24	269710915	269710915 - N	2697.754	2697.767			
25	269710916	269710916 - N	2697.754	2697.767			
26	269710917	269710917 - N	2697.754	2697.767			
27	269710918	269710918 - N	2697.770	2697.755			

**CAMU
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* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269710892 - N	FPAX950119	0.9556					
269710893 - N	FPAX950119	0.9556					
269710894 - N	FPAX950119	0.9556					
269710895 - N	FPAX950119	0.9556					
269710896 - N	FPAX950119	0.9556					
269710897 - N	FPAX950119	0.9556					
269710898 - N	FPAX950119	0.9556					
269710899 - N	FPAX950119	0.9556					
269710900 - N	FPAX950119	0.9556	0.247	259	2.25	89	
269710901 - N	FPAX950119	0.9556					
269710902 - N	FPAX950119	0.9556					
269710903 - N	FPAX950119	0.9556					
269710904 - N	FPAX950119	0.9556					
269710905 - N	FPAX950119	0.9556					
269710906 - N	FPAX950119	0.9556					
269710907 - N	FPAX950119	0.9556					
269710908 - N	FPAX950119	0.9556					
269710909 - N	FPAX950119	0.9556					
269710910 - N	FPAX950119	0.9550	0.256	261	2.79	92	
269710911 - N	FPAX950119	0.9550					
269710912 - N	FPAX950119	0.9550					
269710913 - N	FPAX950119	0.9550					
269710914 - N	FPAX950119	0.9550					
269710915 - N	FPAX950119	0.9550					
269710916 - N	FPAX950119	0.9550					
269710917 - N	FPAX950119	0.9550					
269710918 - N	FPAX950119	0.9550					

CAMU
CLOSURE



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269710919	269710919 - N	2697.770	2697.755			
2	269710920	269710920 - N	2697.770	2697.755			
3	269710921	269710921 - N	2697.770	2697.755			
4	269710922	269710922 - N	2697.770	2697.755			
5	269710923	269710923 - N	2697.770	2697.755			
6	269710924	269710924 - N	2697.770	2697.755			
7	269710925	269710925 - N	2697.756	2697.760			
8	269710926	269710926 - N	2697.756	2697.760			
9	269710927	269710927 - N	2697.756	2697.760			
10	269710928	269710928 - N	2697.756	2697.760			
11	269710929	269710929 - N	2697.756	2697.760			
12	269710930	269710930 - N	2697.756	2697.760			
13	269710931	269710931 - N	2697.756	2697.760			
14	269710932	269710932 - N	2697.759	2697.753			
15	269710933	269710933 - N	2697.759	2697.753			
16	269710934	269710934 - N	2697.759	2697.753			
17	269710935	269710935 - N	2697.759	2697.753			
18	269710936	269710936 - N	2697.759	2697.753			
19	269710937	269710937 - N	2697.759	2697.753			
20	269710938	269710938 - N	2697.759	2697.753			
21	269710939	269710939 - N	2697.748	2697.789			
22	269710940	269710940 - N	2697.748	2697.789			
23	269710941	269710941 - N	2697.748	2697.789			
24	269710942	269710942 - N	2697.748	2697.789			
25	269710943	269710943 - N	2697.748	2697.789			
26	269710944	269710944 - N	2697.748	2697.789			
27	269710945	269710945 - N	2697.748	2697.789	1.52	2.66	6.58 x 10 ⁻⁴

CAMU CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269710919 - N	FPAX950119	0.9550					
269710920 - N	FPAX950119	0.9550	0.244	257	2.29	90	
269710921 - N	FPAX950119	0.9550					
269710922 - N	FPAX950119	0.9550					
269710923 - N	FPAX950119	0.9550					
269710924 - N	FPAX950119	0.9550					
269710925 - N	FPAX950119	0.9550					
269710926 - N	FPAX950119	0.9550					
269710927 - N	FPAX950119	0.9550					
269710928 - N	FPAX950119	0.9550					
269710929 - N	FPAX950119	0.9550					
269710930 - N	FPAX950119	0.9550	0.253	267	2.77	95	
269710931 - N	FPAX950119	0.9550					
269710932 - N	FPAX950119	0.9550					
269710933 - N	FPAX950119	0.9550					
269710934 - N	FPAX950119	0.9550					
269710935 - N	FPAX950119	0.9550					
269710936 - N	FPAX950119	0.9550					
269710937 - N	FPAX950119	0.9550					
269710938 - N	FPAX950119	0.9550					
269710939 - N	FPAX950119	0.9550					
269710940 - N	FPAX950119	0.9550	0.249	260	2.32	88	
269710941 - N	FPAX950119	0.9550					
269710942 - N	FPAX950119	0.9550					
269710943 - N	FPAX950119	0.9550					
269710944 - N	FPAX950119	0.9550					
269710945 - N	FPAX950119	0.9559					

CAMU
CLOSURE



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269710946	269710946 - N	2697.792	2697.775			
2	269710947	269710947 - N	2697.792	2697.775			
3	269710948	269710948 - N	2697.792	2697.775			
4	269710949	269710949 - N	2697.792	2697.775			
5	269710950	269710950 - N	2697.792	2697.775			
6	269710951	269710951 - N	2697.792	2697.775			
7	269710952	269710952 - N	2697.792	2697.775			
8	269710953	269710953 - N	2697.757	2697.786			
9	269710954	269710954 - N	2697.757	2697.786			
10	269710955	269710955 - N	2697.757	2697.786			
11	269710956	269710956 - N	2697.757	2697.786			
12	269710957	269710957 - N	2697.757	2697.786			
13	269710958	269710958 - N	2697.757	2697.786			
14	269710959	269710959 - N	2697.757	2697.786			
15	269710960	269710960 - N	2697.795	2697.778			
16	269710961	269710961 - N	2697.795	2697.778			
17	269710962	269710962 - N	2697.795	2697.778			
18	269710963	269710963 - N	2697.795	2697.778			
19	269710964	269710964 - N	2697.795	2697.778			
20	269710965	269710965 - N	2697.795	2697.778			
21	269710966	269710966 - N	2697.795	2697.778			
22	269710967	269710967 - N	2697.773	2697.793			
23	269710968	269710968 - N	2697.773	2697.793			
24	269710969	269710969 - N	2697.773	2697.793			
25	269710970	269710970 - N	2697.773	2697.793			
26	269710971	269710971 - N	2697.773	2697.793			
27	269710972	269710972 - N	2697.773	2697.793			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269710946 - N	FPAX950119	0.9559					
269710947 - N	FPAX950119	0.9559					
269710948 - N	FPAX950119	0.9559					
269710949 - N	FPAX950119	0.9559					
269710950 - N	FPAX950119	0.9559	0.257	264	2.73	93	
269710951 - N	FPAX950119	0.9559					
269710952 - N	FPAX950119	0.9559					
269710953 - N	FPAX950119	0.9559					
269710954 - N	FPAX950119	0.9559					
269710955 - N	FPAX950119	0.9559					
269710956 - N	FPAX950119	0.9559					
269710957 - N	FPAX950119	0.9559					
269710958 - N	FPAX950119	0.9559					
269710959 - N	FPAX950119	0.9559					
269710960 - N	FPAX950119	0.9559	0.241	262	2.35	91	
269710961 - N	FPAX950119	0.9559					
269710962 - N	FPAX950119	0.9559					
269710963 - N	FPAX950119	0.9559					
269710964 - N	FPAX950119	0.9559					
269710965 - N	FPAX950119	0.9559					
269710966 - N	FPAX950119	0.9559					
269710967 - N	FPAX950119	0.9559					
269710968 - N	FPAX950119	0.9559					
269710969 - N	FPAX950119	0.9559					
269710970 - N	FPAX950119	0.9559	0.250	269	2.70	96	
269710971 - N	FPAX950119	0.9559					
269710972 - N	FPAX950119	0.9559					

CAMU
CLOSURE



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269710973	269710973 - N	2697.773	2697.793			
2	269710974	269710974 - N	2697.787	2697.781			
3	269710975	269710975 - N	2697.787	2697.781			
4	269710976	269710976 - N	2697.787	2697.781			
5	269710977	269710977 - N	2697.787	2697.781			
6	269710978	269710978 - N	2697.787	2697.781			
7	269710979	269710979 - N	2697.787	2697.781			
8	269710980	269710980 - N	2697.787	2697.781	1.29	2.17	6.18 x 10 ⁻⁴
9	269710981	269710981 - N	2697.771	2697.791			
10	269710982	269710982 - N	2697.771	2697.791			
11	269710983	269710983 - N	2697.771	2697.791			
12	269710984	269710984 - N	2697.771	2697.791			
13	269710985	269710985 - N	2697.771	2697.791			
14	269710986	269710986 - N	2697.771	2697.791			
15	269710987	269710987 - N	2697.771	2697.791			
16	269710988	269710988 - N	2697.796	2697.783			
17	269710989	269710989 - N	2697.796	2697.783			
18	269710990	269710990 - N	2697.796	2697.783			
19	269710991	269710991 - N	2697.796	2697.783			
20	269710992	269710992 - N	2697.796	2697.783			
21	269710993	269710993 - N	2697.796	2697.783			
22	269710994	269710994 - N	2697.796	2697.783			
23	269710995	269710995 - N	2697.779	2697.797			
24	269710996	269710996 - N	2697.779	2697.797			
25	269710997	269710997 - N	2697.779	2697.797			
26	269710998	269710998 - N	2697.779	2697.797			
27	269710999	269710999 - N	2697.779	2697.797			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269710973 - N	FPAX950119	0.9559					
269710974 - N	FPAX950119	0.9559					
269710975 - N	FPAX950119	0.9559					
269710976 - N	FPAX950119	0.9559					
269710977 - N	FPAX950119	0.9559					
269710978 - N	FPAX950119	0.9559					
269710979 - N	FPAX950119	0.9559					
269710980 - N	FPAX200256	0.9554	0.244	258	2.38	89	
269710981 - N	FPAX200256	0.9554					
269710982 - N	FPAX200256	0.9554					
269710983 - N	FPAX200256	0.9554					
269710984 - N	FPAX200256	0.9554					
269710985 - N	FPAX200256	0.9554					
269710986 - N	FPAX200256	0.9554					
269710987 - N	FPAX200256	0.9554					
269710988 - N	FPAX200256	0.9554					
269710989 - N	FPAX200256	0.9554					
269710990 - N	FPAX200256	0.9554	0.252	266	2.68	94	
269710991 - N	FPAX200256	0.9554					
269710992 - N	FPAX200256	0.9554					
269710993 - N	FPAX200256	0.9554					
269710994 - N	FPAX200256	0.9554					
269710995 - N	FPAX200256	0.9554					
269710996 - N	FPAX200256	0.9554					
269710997 - N	FPAX200256	0.9554					
269710998 - N	FPAX200256	0.9554					
269710999 - N	FPAX200256	0.9554					

**CAMU
CLOSURE**



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711000	269711000 - N	2697.779	2697.797			
2	269711001	269711001 - N	2697.779	2697.797			
3	269711002	269711002 - N	2697.790	2697.774			
4	269711003	269711003 - N	2697.790	2697.774			
5	269711004	269711004 - N	2697.790	2697.774			
6	269711005	269711005 - N	2697.790	2697.774			
7	269711006	269711006 - N	2697.790	2697.774			
8	269711007	269711007 - N	2697.790	2697.774			
9	269711008	269711008 - N	2697.790	2697.774			
10	269711009	269711009 - N	2697.776	2697.788			
11	269711010	269711010 - N	2697.776	2697.788			
12	269711011	269711011 - N	2697.776	2697.788			
13	269711012	269711012 - N	2697.776	2697.788			
14	269711013	269711013 - N	2697.776	2697.788			
15	269711014	269711014 - N	2697.776	2697.788			
16	269711015	269711015 - N	2697.776	2697.788	1.63	2.62	6.31 x 10 ⁻⁴
17	269711016	269711016 - N	2697.785	2697.780			
18	269711017	269711017 - N	2697.785	2697.780			
19	269711018	269711018 - N	2697.785	2697.780			
20	269711019	269711019 - N	2697.785	2697.780			
21	269711020	269711020 - N	2697.785	2697.780			
22	269711021	269711021 - N	2697.785	2697.780			
23	269711022	269711022 - N	2697.785	2697.780			
24	269711023	269711023 - N	2697.772	2697.794			
25	269711024	269711024 - N	2697.772	2697.794			
26	269711025	269711025 - N	2697.772	2697.794			
27	269711026	269711026 - N	2697.772	2697.794			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711000 - N	FPAX200256	0.9554	0.246	256	2.41	92	
269711001 - N	FPAX200256	0.9554					
269711002 - N	FPAX200256	0.9554					
269711003 - N	FPAX200256	0.9554					
269711004 - N	FPAX200256	0.9554					
269711005 - N	FPAX200256	0.9554					
269711006 - N	FPAX200256	0.9554					
269711007 - N	FPAX200256	0.9554					
269711008 - N	FPAX200256	0.9554					
269711009 - N	FPAX200256	0.9554					
269711010 - N	FPAX200256	0.9554	0.254	261	2.65	95	
269711011 - N	FPAX200256	0.9554					
269711012 - N	FPAX200256	0.9554					
269711013 - N	FPAX200256	0.9554					
269711014 - N	FPAX200256	0.9554					
269711015 - N	FPAX200256	0.9557					
269711016 - N	FPAX200256	0.9557					
269711017 - N	FPAX200256	0.9557					
269711018 - N	FPAX200256	0.9557					
269711019 - N	FPAX200256	0.9557					
269711020 - N	FPAX200256	0.9557	0.249	259	2.44	90	
269711021 - N	FPAX200256	0.9557					
269711022 - N	FPAX200256	0.9557					
269711023 - N	FPAX200256	0.9557					
269711024 - N	FPAX200256	0.9557					
269711025 - N	FPAX200256	0.9557					
269711026 - N	FPAX200256	0.9557					

**CAMU
CLOSURE**



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711027	269711027 - N	2697.772	2697.794			
2	269711028	269711028 - N	2697.772	2697.794			
3	269711029	269711029 - N	2697.772	2697.794			
4	269711030	269711030 - N	2697.819	2697.784			
5	269711031	269711031 - N	2697.819	2697.784			
6	269711032	269711032 - N	2697.819	2697.784			
7	269711033	269711033 - N	2697.819	2697.784			
8	269711034	269711034 - N	2697.819	2697.784			
9	269711035	269711035 - N	2697.819	2697.784			
10	269711036	269711036 - N	2697.819	2697.784			
11	269711037	269711037 - N	2697.777	2697.821			
12	269711038	269711038 - N	2697.777	2697.821			
13	269711039	269711039 - N	2697.777	2697.821			
14	269711040	269711040 - N	2697.777	2697.821			
15	269711041	269711041 - N	2697.777	2697.821			
16	269711042	269711042 - N	2697.777	2697.821			
17	269711043	269711043 - N	2697.777	2697.821			
18	269711044	269711044 - N	2697.816	2697.798			
19	269711045	269711045 - N	2697.816	2697.798			
20	269711046	269711046 - N	2697.816	2697.798			
21	269711047	269711047 - N	2697.816	2697.798			
22	269711048	269711048 - N	2697.816	2697.798			
23	269711049	269711049 - N	2697.816	2697.798			
24	269711050	269711050 - N	2697.816	2697.798	1.33	2.21	6.54 x 10 ⁻⁴
25	269711051	269711051 - N	2697.782	2697.813			
26	269711052	269711052 - N	2697.782	2697.813			
27	269711053	269711053 - N	2697.782	2697.813			

**CAMU
CLOSURE**

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711027 - N	FPAX200256	0.9557					
269711028 - N	FPAX200256	0.9557					
269711029 - N	FPAX200256	0.9557					
269711030 - N	FPAX200256	0.9557	0.251	263	2.61	93	
269711031 - N	FPAX200256	0.9557					
269711032 - N	FPAX200256	0.9557					
269711033 - N	FPAX200256	0.9557					
269711034 - N	FPAX200256	0.9557					
269711035 - N	FPAX200256	0.9557					
269711036 - N	FPAX200256	0.9557					
269711037 - N	FPAX200256	0.9557					
269711038 - N	FPAX200256	0.9557					
269711039 - N	FPAX200256	0.9557					
269711040 - N	FPAX200256	0.9557	0.243	257	2.47	88	
269711041 - N	FPAX200256	0.9557					
269711042 - N	FPAX200256	0.9557					
269711043 - N	FPAX200256	0.9557					
269711044 - N	FPAX200256	0.9557					
269711045 - N	FPAX200256	0.9557					
269711046 - N	FPAX200256	0.9557					
269711047 - N	FPAX200256	0.9557					
269711048 - N	FPAX200256	0.9557					
269711049 - N	FPAX200256	0.9557					
269711050 - N	FPAX200256	0.9552	0.256	265	2.58	96	
269711051 - N	FPAX200256	0.9552					
269711052 - N	FPAX200256	0.9552					
269711053 - N	FPAX200256	0.9552					

CAMU
CLOSURE



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711054	269711054 - N	2697.782	2697.813			
2	269711055	269711055 - N	2697.782	2697.813			
3	269711056	269711056 - N	2697.782	2697.813			
4	269711057	269711057 - N	2697.782	2697.813			
5	269711058	269711058 - N	2697.812	2697.808			
6	269711059	269711059 - N	2697.812	2697.808			
7	269711060	269711060 - N	2697.812	2697.808			
8	269711061	269711061 - N	2697.812	2697.808			
9	269711062	269711062 - N	2697.812	2697.808			
10	269711063	269711063 - N	2697.812	2697.808			
11	269711064	269711064 - N	2697.812	2697.808			
12	269711065	269711065 - N	2697.802	2697.817			
13	269711066	269711066 - N	2697.802	2697.817			
14	269711067	269711067 - N	2697.802	2697.817			
15	269711068	269711068 - N	2697.802	2697.817			
16	269711069	269711069 - N	2697.802	2697.817			
17	269711070	269711070 - N	2697.802	2697.817			
18	269711071	269711071 - N	2697.802	2697.817			
19	269711072	269711072 - N	2697.822	2697.801			
20	269711073	269711073 - N	2697.822	2697.801			
21	269711074	269711074 - N	2697.822	2697.801			
22	269711075	269711075 - N	2697.822	2697.801			
23	269711076	269711076 - N	2697.822	2697.801			
24	269711077	269711077 - N	2697.822	2697.801			
25	269711078	269711078 - N	2697.822	2697.801			
26	269711079	269711079 - N	2697.807	2697.814			
27	269711080	269711080 - N	2697.807	2697.814			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711054 - N	FPAX200256	0.9552					
269711055 - N	FPAX200256	0.9552					
269711056 - N	FPAX200256	0.9552					
269711057 - N	FPAX200256	0.9552					
269711058 - N	FPAX200256	0.9552					
269711059 - N	FPAX200256	0.9552					
269711060 - N	FPAX200256	0.9552	0.245	260	2.50	90	
269711061 - N	FPAX200256	0.9552					
269711062 - N	FPAX200256	0.9552					
269711063 - N	FPAX200256	0.9552					
269711064 - N	FPAX200256	0.9552					
269711065 - N	FPAX200256	0.9552					
269711066 - N	FPAX200256	0.9552					
269711067 - N	FPAX200256	0.9552					
269711068 - N	FPAX200256	0.9552					
269711069 - N	FPAX200256	0.9552					
269711070 - N	FPAX200256	0.9552	0.251	268	2.55	94	
269711071 - N	FPAX200256	0.9552					
269711072 - N	FPAX200256	0.9552					
269711073 - N	FPAX200256	0.9552					
269711074 - N	FPAX200256	0.9552					
269711075 - N	FPAX200256	0.9552					
269711076 - N	FPAX200256	0.9552					
269711077 - N	FPAX200256	0.9552					
269711078 - N	FPAX200256	0.9552					
269711079 - N	FPAX200256	0.9552					
269711080 - N	FPAX200256	0.9552	0.247	262	2.52	92	

CAMU CLOSURE



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711081	269711081 - N	2697.807	2697.814			
2	269711082	269711082 - N	2697.807	2697.814			
3	269711083	269711083 - N	2697.807	2697.814			
4	269711084	269711084 - N	2697.807	2697.814			
5	269711085	269711085 - N	2697.807	2697.814	1.47	2.58	6.35 x 10 ⁻⁴
6	269711086	269711086 - N	2697.815	2697.806			
7	269711087	269711087 - N	2697.815	2697.806			
8	269711088	269711088 - N	2697.815	2697.806			
9	269711089	269711089 - N	2697.815	2697.806			
10	269711090	269711090 - N	2697.815	2697.806			
11	269711091	269711091 - N	2697.815	2697.806			
12	269711092	269711092 - N	2697.815	2697.806			
13	269711093	269711093 - N	2697.804	2697.820			
14	269711094	269711094 - N	2697.804	2697.820			
15	269711095	269711095 - N	2697.804	2697.820			
16	269711096	269711096 - N	2697.804	2697.820			
17	269711097	269711097 - N	2697.804	2697.820			
18	269711098	269711098 - N	2697.804	2697.820			
19	269711099	269711099 - N	2697.804	2697.820			
20	269711100	269711100 - N	2697.823	2697.800			
21	269711101	269711101 - N	2697.823	2697.800			
22	269711102	269711102 - N	2697.823	2697.800			
23	269711103	269711103 - N	2697.823	2697.800			
24	269711104	269711104 - N	2697.823	2697.800			
25	269711105	269711105 - N	2697.823	2697.800			
26	269711106	269711106 - N	2697.823	2697.800			
27	269711107	269711107 - N	2697.799	2697.811			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711081 - N	FPAX200256	0.9552					
269711082 - N	FPAX200256	0.9552					
269711083 - N	FPAX200256	0.9552					
269711084 - N	FPAX200256	0.9552					
269711085 - N	FPAX200256	0.9560					
269711086 - N	FPAX200256	0.9560					
269711087 - N	FPAX200256	0.9560					
269711088 - N	FPAX200256	0.9560					
269711089 - N	FPAX200256	0.9560					
269711090 - N	FPAX200256	0.9560	0.255	264	2.62	95	
269711091 - N	FPAX200256	0.9560					
269711092 - N	FPAX200256	0.9560					
269711093 - N	FPAX200256	0.9560					
269711094 - N	FPAX200256	0.9560					
269711095 - N	FPAX200256	0.9560					
269711096 - N	FPAX200256	0.9560					
269711097 - N	FPAX200256	0.9560					
269711098 - N	FPAX200256	0.9560					
269711099 - N	FPAX200256	0.9560					
269711100 - N	FPAX200256	0.9560	0.240	260	2.26	89	
269711101 - N	FPAX200256	0.9560					
269711102 - N	FPAX200256	0.9560					
269711103 - N	FPAX200256	0.9560					
269711104 - N	FPAX200256	0.9560					
269711105 - N	FPAX200256	0.9560					
269711106 - N	FPAX200256	0.9560					
269711107 - N	FPAX200256	0.9560					

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Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711108	269711108 - N	2697.799	2697.811			
2	269711109	269711109 - N	2697.799	2697.811			
3	269711110	269711110 - N	2697.799	2697.811			
4	269711111	269711111 - N	2697.799	2697.811			
5	269711112	269711112 - N	2697.799	2697.811			
6	269711113	269711113 - N	2697.799	2697.811			
7	269711114	269711114 - N	2697.818	2697.803			
8	269711115	269711115 - N	2697.818	2697.803			
9	269711116	269711116 - N	2697.818	2697.803			
10	269711117	269711117 - N	2697.818	2697.803			
11	269711118	269711118 - N	2697.818	2697.803			
12	269711119	269711119 - N	2697.818	2697.803			
13	269711120	269711120 - N	2697.818	2697.803	1.24	2.28	6.51 x 10 ⁻⁴
14	269711121	269711121 - N	2697.809	2697.843			
15	269711122	269711122 - N	2697.809	2697.843			
16	269711123	269711123 - N	2697.809	2697.843			
17	269711124	269711124 - N	2697.809	2697.843			
18	269711125	269711125 - N	2697.809	2697.843			
19	269711126	269711126 - N	2697.809	2697.843			
20	269711127	269711127 - N	2697.809	2697.843			
21	269711128	269711128 - N	2697.824	2697.810			
22	269711129	269711129 - N	2697.824	2697.810			
23	269711130	269711130 - N	2697.824	2697.810			
24	269711131	269711131 - N	2697.824	2697.810			
25	269711132	269711132 - N	2697.824	2697.810			
26	269711133	269711133 - N	2697.824	2697.810			
27	269711134	269711134 - N	2697.824	2697.810			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711108 - N	FPAX200256	0.9560					
269711109 - N	FPAX200256	0.9560					
269711110 - N	FPAX200256	0.9560	0.257	267	2.59	93	
269711111 - N	FPAX200256	0.9560					
269711112 - N	FPAX200256	0.9560					
269711113 - N	FPAX200256	0.9560					
269711114 - N	FPAX200256	0.9560					
269711115 - N	FPAX200256	0.9560					
269711116 - N	FPAX200256	0.9560					
269711117 - N	FPAX200256	0.9560					
269711118 - N	FPAX200256	0.9560					
269711119 - N	FPAX200256	0.9560					
269711120 - N	FPAX200256	0.9555	0.244	257	2.30	91	
269711121 - N	FPAX200256	0.9555					
269711122 - N	FPAX200256	0.9555					
269711123 - N	FPAX200256	0.9555					
269711124 - N	FPAX200256	0.9555					
269711125 - N	FPAX200256	0.9555					
269711126 - N	FPAX200256	0.9555					
269711127 - N	FPAX200256	0.9555					
269711128 - N	FPAX200256	0.9555					
269711129 - N	FPAX200256	0.9555					
269711130 - N	FPAX200256	0.9555	0.252	265	2.63	96	
269711131 - N	FPAX200256	0.9555					
269711132 - N	FPAX200256	0.9555					
269711133 - N	FPAX200256	0.9555					
269711134 - N	FPAX200256	0.9555					

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Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711135	269711135 - N	2697.805	2697.840			
2	269711136	269711136 - N	2697.805	2697.840			
3	269711137	269711137 - N	2697.805	2697.840			
4	269711138	269711138 - N	2697.805	2697.840			
5	269711139	269711139 - N	2697.805	2697.840			
6	269711140	269711140 - N	2697.805	2697.840			
7	269711141	269711141 - N	2697.805	2697.840			
8	269711142	269711142 - N	2697.845	2697.825			
9	269711143	269711143 - N	2697.845	2697.825			
10	269711144	269711144 - N	2697.845	2697.825			
11	269711145	269711145 - N	2697.845	2697.825			
12	269711146	269711146 - N	2697.845	2697.825			
13	269711147	269711147 - N	2697.845	2697.825			
14	269711148	269711148 - N	2697.845	2697.825			
15	269711149	269711149 - N	2697.829	2697.849			
16	269711150	269711150 - N	2697.829	2697.849			
17	269711151	269711151 - N	2697.829	2697.849			
18	269711152	269711152 - N	2697.829	2697.849			
19	269711153	269711153 - N	2697.829	2697.849			
20	269711154	269711154 - N	2697.829	2697.849			
21	269711155	269711155 - N	2697.829	2697.849	1.77	2.55	6.41 x 10 ⁻⁴
22	269711156	269711156 - N	2697.848	2697.832			
23	269711157	269711157 - N	2697.848	2697.832			
24	269711158	269711158 - N	2697.848	2697.832			
25	269711159	269711159 - N	2697.848	2697.832			
26	269711160	269711160 - N	2697.848	2697.832			
27	269711161	269711161 - N	2697.848	2697.832			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711135 - N	FPAX200256	0.9555					
269711136 - N	FPAX200256	0.9555					
269711137 - N	FPAX200256	0.9555					
269711138 - N	FPAX200256	0.9555					
269711139 - N	FPAX200256	0.9555					
269711140 - N	FPAX200256	0.9555	0.248	260	2.33	88	
269711141 - N	FPAX200256	0.9555					
269711142 - N	FPAX200256	0.9555					
269711143 - N	FPAX200256	0.9555					
269711144 - N	FPAX200256	0.9555					
269711145 - N	FPAX200256	0.9555					
269711146 - N	FPAX200256	0.9555					
269711147 - N	FPAX200256	0.9555					
269711148 - N	FPAX200256	0.9555					
269711149 - N	FPAX200256	0.9555					
269711150 - N	FPAX200256	0.9555	0.256	269	2.69	92	
269711151 - N	FPAX200256	0.9555					
269711152 - N	FPAX200256	0.9555					
269711153 - N	FPAX200256	0.9555					
269711154 - N	FPAX200256	0.9555					
269711155 - N	FPAX200256	0.9558					
269711156 - N	FPAX200256	0.9558					
269711157 - N	FPAX200256	0.9558					
269711158 - N	FPAX200256	0.9558					
269711159 - N	FPAX200256	0.9558					
269711160 - N	FPAX200256	0.9558	0.250	262	2.38	90	
269711161 - N	FPAX200256	0.9558					

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CLOSURE



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711162	269711162 - N	2697.848	2697.832			
2	269711163	269711163 - N	2697.826	2697.846			
3	269711164	269711164 - N	2697.826	2697.846			
4	269711165	269711165 - N	2697.826	2697.846			
5	269711166	269711166 - N	2697.826	2697.846			
6	269711167	269711167 - N	2697.826	2697.846			
7	269711168	269711168 - N	2697.826	2697.846			
8	269711169	269711169 - N	2697.826	2697.846			
9	269711170	269711170 - N	2697.850	2697.830			
10	269711171	269711171 - N	2697.850	2697.830			
11	269711172	269711172 - N	2697.850	2697.830			
12	269711173	269711173 - N	2697.850	2697.830			
13	269711174	269711174 - N	2697.850	2697.830			
14	269711175	269711175 - N	2697.850	2697.830			
15	269711176	269711176 - N	2697.850	2697.830			
16	269711177	269711177 - N	2697.833	2697.851			
17	269711178	269711178 - N	2697.833	2697.851			
18	269711179	269711179 - N	2697.833	2697.851			
19	269711180	269711180 - N	2697.833	2697.851			
20	269711181	269711181 - N	2697.833	2697.851			
21	269711182	269711182 - N	2697.833	2697.851			
22	269711183	269711183 - N	2697.833	2697.851			
23	269711184	269711184 - N	2697.841	2697.827			
24	269711185	269711185 - N	2697.841	2697.827			
25	269711186	269711186 - N	2697.841	2697.827			
26	269711187	269711187 - N	2697.841	2697.827			
27	269711188	269711188 - N	2697.841	2697.827			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711162 - N	FPAX200256	0.9558					
269711163 - N	FPAX200256	0.9558					
269711164 - N	FPAX200256	0.9558					
269711165 - N	FPAX200256	0.9558					
269711166 - N	FPAX200256	0.9558					
269711167 - N	FPAX200256	0.9558					
269711168 - N	FPAX200256	0.9558					
269711169 - N	FPAX200256	0.9558					
269711170 - N	FPAX200256	0.9558	0.253	267	2.74	94	
269711171 - N	FPAX200256	0.9558					
269711172 - N	FPAX200256	0.9558					
269711173 - N	FPAX200256	0.9558					
269711174 - N	FPAX200256	0.9558					
269711175 - N	FPAX200256	0.9558					
269711176 - N	FPAX200256	0.9558					
269711177 - N	FPAX200256	0.9558					
269711178 - N	FPAX200256	0.9558					
269711179 - N	FPAX200256	0.9558					
269711180 - N	FPAX200256	0.9558	0.242	257	2.40	89	
269711181 - N	FPAX200256	0.9558					
269711182 - N	FPAX200256	0.9558					
269711183 - N	FPAX200256	0.9558					
269711184 - N	FPAX200256	0.9558					
269711185 - N	FPAX200256	0.9558					
269711186 - N	FPAX200256	0.9558					
269711187 - N	FPAX200256	0.9558					
269711188 - N	FPAX200256	0.9558					

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CLOSURE



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711189	269711189 - N	2697.841	2697.827			
2	269711190	269711190 - N	2697.841	2697.827	1.36	2.32	6.48 x 10 ⁻⁴
3	269711191	269711191 - N	2697.835	2697.839			
4	269711192	269711192 - N	2697.835	2697.839			
5	269711193	269711193 - N	2697.835	2697.839			
6	269711194	269711194 - N	2697.835	2697.839			
7	269711195	269711195 - N	2697.835	2697.839			
8	269711196	269711196 - N	2697.835	2697.839			
9	269711197	269711197 - N	2697.835	2697.839			
10	269711198	269711198 - N	2697.847	2697.836			
11	269711199	269711199 - N	2697.847	2697.836			
12	269711200	269711200 - N	2697.847	2697.836			
13	269711201	269711201 - N	2697.847	2697.836			
14	269711202	269711202 - N	2697.847	2697.836			
15	269711203	269711203 - N	2697.847	2697.836			
16	269711204	269711204 - N	2697.847	2697.836			
17	269711205	269711205 - N	2697.837	2697.842			
18	269711206	269711206 - N	2697.837	2697.842			
19	269711207	269711207 - N	2697.837	2697.842			
20	269711208	269711208 - N	2697.837	2697.842			
21	269711209	269711209 - N	2697.837	2697.842			
22	269711210	269711210 - N	2697.837	2697.842			
23	269711211	269711211 - N	2697.837	2697.842			
24	269711212	269711212 - N	2697.844	2697.834			
25	269711213	269711213 - N	2697.844	2697.834			
26	269711214	269711214 - N	2697.844	2697.834			
27	269711215	269711215 - N	2697.844	2697.834			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711189 - N	FPAX200256	0.9558					
269711190 - N	27561	0.9553	0.255	266	2.76	95	
269711191 - N	27561	0.9553					
269711192 - N	27561	0.9553					
269711193 - N	27561	0.9553					
269711194 - N	27561	0.9553					
269711195 - N	27561	0.9553					
269711196 - N	27561	0.9553					
269711197 - N	27561	0.9553					
269711198 - N	27561	0.9553					
269711199 - N	27561	0.9553					
269711200 - N	27561	0.9553	0.247	259	2.43	91	
269711201 - N	27561	0.9553					
269711202 - N	27561	0.9553					
269711203 - N	27561	0.9553					
269711204 - N	27561	0.9553					
269711205 - N	27561	0.9553					
269711206 - N	27561	0.9553					
269711207 - N	27561	0.9553					
269711208 - N	27561	0.9553					
269711209 - N	27561	0.9553					
269711210 - N	27561	0.9553	0.257	264	2.71	93	
269711211 - N	27561	0.9553					
269711212 - N	27561	0.9553					
269711213 - N	27561	0.9553					
269711214 - N	27561	0.9553					
269711215 - N	27561	0.9553					

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Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711216	269711216 - N	2697.844	2697.834			
2	269711217	269711217 - N	2697.844	2697.834			
3	269711218	269711218 - N	2697.844	2697.834			
4	269711219	269711219 - N	2697.831	2697.868			
5	269711220	269711220 - N	2697.831	2697.868			
6	269711221	269711221 - N	2697.831	2697.868			
7	269711222	269711222 - N	2697.831	2697.868			
8	269711223	269711223 - N	2697.831	2697.868			
9	269711224	269711224 - N	2697.831	2697.868			
10	269711225	269711225 - N	2697.831	2697.868	1.71	2.51	6.44 x 10 ⁻⁴
11	269711226	269711226 - N	2697.871	2697.838			
12	269711227	269711227 - N	2697.871	2697.838			
13	269711228	269711228 - N	2697.871	2697.838			
14	269711229	269711229 - N	2697.871	2697.838			
15	269711230	269711230 - N	2697.871	2697.838			
16	269711231	269711231 - N	2697.871	2697.838			
17	269711232	269711232 - N	2697.871	2697.838			
18	269711233	269711233 - N	2697.828	2697.876			
19	269711234	269711234 - N	2697.828	2697.876			
20	269711235	269711235 - N	2697.828	2697.876			
21	269711236	269711236 - N	2697.828	2697.876			
22	269711237	269711237 - N	2697.828	2697.876			
23	269711238	269711238 - N	2697.828	2697.876			
24	269711239	269711239 - N	2697.828	2697.876			
25	269711240	269711240 - N	2697.875	2697.855			
26	269711241	269711241 - N	2697.875	2697.855			
27	269711242	269711242 - N	2697.875	2697.855			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711216 - N	27561	0.9553					
269711217 - N	27561	0.9553					
269711218 - N	27561	0.9553					
269711219 - N	27561	0.9553					
269711220 - N	27561	0.9553	0.241	262	2.49	88	
269711221 - N	27561	0.9553					
269711222 - N	27561	0.9553					
269711223 - N	27561	0.9553					
269711224 - N	27561	0.9553					
269711225 - N	27561	0.9561					
269711226 - N	27561	0.9561					
269711227 - N	27561	0.9561					
269711228 - N	27561	0.9561					
269711229 - N	27561	0.9561					
269711230 - N	27561	0.9561	0.250	268	2.77	96	
269711231 - N	27561	0.9561					
269711232 - N	27561	0.9561					
269711233 - N	27561	0.9561					
269711234 - N	27561	0.9561					
269711235 - N	27561	0.9561					
269711236 - N	27561	0.9561					
269711237 - N	27561	0.9561					
269711238 - N	27561	0.9561					
269711239 - N	27561	0.9561					
269711240 - N	27561	0.9561	0.244	259	2.52	90	
269711241 - N	27561	0.9561					
269711242 - N	27561	0.9561					

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Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711243	269711243 - N	2697.875	2697.855			
2	269711244	269711244 - N	2697.875	2697.855			
3	269711245	269711245 - N	2697.875	2697.855			
4	269711246	269711246 - N	2697.875	2697.855			
5	269711247	269711247 - N	2697.858	2697.872			
6	269711248	269711248 - N	2697.858	2697.872			
7	269711249	269711249 - N	2697.858	2697.872			
8	269711250	269711250 - N	2697.858	2697.872			
9	269711251	269711251 - N	2697.858	2697.872			
10	269711252	269711252 - N	2697.858	2697.872			
11	269711253	269711253 - N	2697.858	2697.872			
12	269711254	269711254 - N	2697.867	2697.852			
13	269711255	269711255 - N	2697.867	2697.852			
14	269711256	269711256 - N	2697.867	2697.852			
15	269711257	269711257 - N	2697.867	2697.852			
16	269711258	269711258 - N	2697.867	2697.852			
17	269711259	269711259 - N	2697.867	2697.852			
18	269711260	269711260 - N	2697.867	2697.852	1.44	2.39	6.69 x 10 ⁻⁴
19	269711261	269711261 - N	2697.860	2697.870			
20	269711262	269711262 - N	2697.860	2697.870			
21	269711263	269711263 - N	2697.860	2697.870			
22	269711264	269711264 - N	2697.860	2697.870			
23	269711265	269711265 - N	2697.860	2697.870			
24	269711266	269711266 - N	2697.860	2697.870			
25	269711267	269711267 - N	2697.860	2697.870			
26	269711268	269711268 - N	2697.873	2697.859			
27	269711269	269711269 - N	2697.873	2697.859			

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



CAMU
CLOSURE

Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711243 - N	27561	0.9561					
269711244 - N	27561	0.9561					
269711245 - N	27561	0.9561					
269711246 - N	27561	0.9561					
269711247 - N	27561	0.9561					
269711248 - N	27561	0.9561					
269711249 - N	27561	0.9561					
269711250 - N	27561	0.9561	0.247	266	2.70	94	
269711251 - N	27561	0.9561					
269711252 - N	27561	0.9561					
269711253 - N	27561	0.9561					
269711254 - N	27561	0.9561					
269711255 - N	27561	0.9561					
269711256 - N	27561	0.9561					
269711257 - N	27561	0.9561					
269711258 - N	27561	0.9561					
269711259 - N	27561	0.9561					
269711260 - N	27561	0.9556	0.240	256	2.56	92	
269711261 - N	27561	0.9556					
269711262 - N	27561	0.9556					
269711263 - N	27561	0.9556					
269711264 - N	27561	0.9556					
269711265 - N	27561	0.9556					
269711266 - N	27561	0.9556					
269711267 - N	27561	0.9556					
269711268 - N	27561	0.9556					
269711269 - N	27561	0.9556					

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Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711270	269711270 - N	2697.873	2697.859			
2	269711271	269711271 - N	2697.873	2697.859			
3	269711272	269711272 - N	2697.873	2697.859			
4	269711273	269711273 - N	2697.873	2697.859			
5	269711274	269711274 - N	2697.873	2697.859			
6	269711275	269711275 - N	2697.856	2697.866			
7	269711276	269711276 - N	2697.856	2697.866			
8	269711277	269711277 - N	2697.856	2697.866			
9	269711278	269711278 - N	2697.856	2697.866			
10	269711279	269711279 - N	2697.856	2697.866			
11	269711280	269711280 - N	2697.856	2697.866			
12	269711281	269711281 - N	2697.856	2697.866			
13	269711282	269711282 - N	2697.877	2697.862			
14	269711283	269711283 - N	2697.877	2697.862			
15	269711284	269711284 - N	2697.877	2697.862			
16	269711285	269711285 - N	2697.877	2697.862			
17	269711286	269711286 - N	2697.877	2697.862			
18	269711287	269711287 - N	2697.877	2697.862			
19	269711288	269711288 - N	2697.877	2697.862			
20	269711289	269711289 - N	2697.853	2697.874			
21	269711290	269711290 - N	2697.853	2697.874			
22	269711291	269711291 - N	2697.853	2697.874			
23	269711292	269711292 - N	2697.853	2697.874			
24	269711293	269711293 - N	2697.853	2697.874			
25	269711294	269711294 - N	2697.853	2697.874			
26	269711295	269711295 - N	2697.853	2697.874	1.65	2.47	6.20 x 10 ⁻⁴
27	269711296	269711296 - N	2697.869	2697.857			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711270 - N	27561	0.9556	0.253	269	2.61	95	
269711271 - N	27561	0.9556					
269711272 - N	27561	0.9556					
269711273 - N	27561	0.9556					
269711274 - N	27561	0.9556					
269711275 - N	27561	0.9556					
269711276 - N	27561	0.9556					
269711277 - N	27561	0.9556					
269711278 - N	27561	0.9556					
269711279 - N	27561	0.9556					
269711280 - N	27561	0.9556	0.245	258	2.27	89	
269711281 - N	27561	0.9556					
269711282 - N	27561	0.9556					
269711283 - N	27561	0.9556					
269711284 - N	27561	0.9556					
269711285 - N	27561	0.9556					
269711286 - N	27561	0.9556					
269711287 - N	27561	0.9556					
269711288 - N	27561	0.9556					
269711289 - N	27561	0.9556					
269711290 - N	27561	0.9556	0.256	267	2.67	96	
269711291 - N	27561	0.9556					
269711292 - N	27561	0.9556					
269711293 - N	27561	0.9556					
269711294 - N	27561	0.9556					
269711295 - N	27561	0.9558					
269711296 - N	27561	0.9558					

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Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711297	269711297 - N	2697.869	2697.857			
2	269711298	269711298 - N	2697.869	2697.857			
3	269711299	269711299 - N	2697.869	2697.857			
4	269711300	269711300 - N	2697.869	2697.857			
5	269711301	269711301 - N	2697.869	2697.857			
6	269711302	269711302 - N	2697.869	2697.857			
7	269711303	269711303 - N	2697.854	2697.897			
8	269711304	269711304 - N	2697.854	2697.897			
9	269711305	269711305 - N	2697.854	2697.897			
10	269711306	269711306 - N	2697.854	2697.897			
11	269711307	269711307 - N	2697.854	2697.897			
12	269711308	269711308 - N	2697.854	2697.897			
13	269711309	269711309 - N	2697.854	2697.897			
14	269711310	269711310 - N	2697.878	2697.864			
15	269711311	269711311 - N	2697.878	2697.864			
16	269711312	269711312 - N	2697.878	2697.864			
17	269711313	269711313 - N	2697.878	2697.864			
18	269711314	269711314 - N	2697.878	2697.864			
19	269711315	269711315 - N	2697.878	2697.864			
20	269711316	269711316 - N	2697.878	2697.864			
21	269711317	269711317 - N	2697.863	2697.901			
22	269711318	269711318 - N	2697.863	2697.901			
23	269711319	269711319 - N	2697.863	2697.901			
24	269711320	269711320 - N	2697.863	2697.901			
25	269711321	269711321 - N	2697.863	2697.901			
26	269711322	269711322 - N	2697.863	2697.901			
27	269711323	269711323 - N	2697.863	2697.901			



**CAMU
CLOSURE**



* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711297 - N	27561	0.9558					
269711298 - N	27561	0.9558					
269711299 - N	27561	0.9558					
269711300 - N	27561	0.9558	0.248	260	2.32	91	
269711301 - N	27561	0.9558					
269711302 - N	27561	0.9558					
269711303 - N	27561	0.9558					
269711304 - N	27561	0.9558					
269711305 - N	27561	0.9558					
269711306 - N	27561	0.9558					
269711307 - N	27561	0.9558					
269711308 - N	27561	0.9558					
269711309 - N	27561	0.9558					
269711310 - N	27561	0.9558	0.251	265	2.54	94	
269711311 - N	27561	0.9558					
269711312 - N	27561	0.9558					
269711313 - N	27561	0.9558					
269711314 - N	27561	0.9558					
269711315 - N	27561	0.9558					
269711316 - N	27561	0.9558					
269711317 - N	27561	0.9558					
269711318 - N	27561	0.9558					
269711319 - N	27561	0.9558					
269711320 - N	27561	0.9558	0.243	262	2.35	88	
269711321 - N	27561	0.9558					
269711322 - N	27561	0.9558					
269711323 - N	27561	0.9558					

**CAMU
CLOSURE**



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711324	269711324 - N	2697.888	2697.865			
2	269711325	269711325 - N	2697.888	2697.865			
3	269711326	269711326 - N	2697.888	2697.865			
4	269711327	269711327 - N	2697.888	2697.865			
5	269711328	269711328 - N	2697.888	2697.865			
6	269711329	269711329 - N	2697.888	2697.865			
7	269711330	269711330 - N	2697.888	2697.865	1.23	2.43	6.53 x 10 ⁻⁴
8	269711331	269711331 - N	2697.861	2697.886			
9	269711332	269711332 - N	2697.861	2697.886			
10	269711333	269711333 - N	2697.861	2697.886			
11	269711334	269711334 - N	2697.861	2697.886			
12	269711335	269711335 - N	2697.861	2697.886			
13	269711336	269711336 - N	2697.861	2697.886			
14	269711337	269711337 - N	2697.861	2697.886			
15	269711338	269711338 - N	2697.891	2697.879			
16	269711339	269711339 - N	2697.891	2697.879			
17	269711340	269711340 - N	2697.891	2697.879			
18	269711341	269711341 - N	2697.891	2697.879			
19	269711342	269711342 - N	2697.891	2697.879			
20	269711343	269711343 - N	2697.891	2697.879			
21	269711344	269711344 - N	2697.891	2697.879			
22	269711345	269711345 - N	2697.880	2697.884			
23	269711346	269711346 - N	2697.880	2697.884			
24	269711347	269711347 - N	2697.880	2697.884			
25	269711348	269711348 - N	2697.880	2697.884			
26	269711349	269711349 - N	2697.880	2697.884			
27	269711350	269711350 - N	2697.880	2697.884			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711324 - N	27561	0.9558					
269711325 - N	27561	0.9558					
269711326 - N	27561	0.9558					
269711327 - N	27561	0.9558					
269711328 - N	27561	0.9558					
269711329 - N	27561	0.9558					
269711330 - N	27561	0.9552	0.249	268	2.50	92	
269711331 - N	27561	0.9552					
269711332 - N	27561	0.9552					
269711333 - N	27561	0.9552					
269711334 - N	27561	0.9552					
269711335 - N	27561	0.9552					
269711336 - N	27561	0.9552					
269711337 - N	27561	0.9552					
269711338 - N	27561	0.9552					
269711339 - N	27561	0.9552					
269711340 - N	27561	0.9552	0.246	260	2.44	90	
269711341 - N	27561	0.9552					
269711342 - N	27561	0.9552					
269711343 - N	27561	0.9552					
269711344 - N	27561	0.9552					
269711345 - N	27561	0.9552					
269711346 - N	27561	0.9552					
269711347 - N	27561	0.9552					
269711348 - N	27561	0.9552					
269711349 - N	27561	0.9552					
269711350 - N	27561	0.9552	0.252	264	2.57	95	

CAMU
CLOSURE



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711351	269711351 - N	2697.880	2697.884			
2	269711352	269711352 - N	2697.895	2697.881			
3	269711353	269711353 - N	2697.895	2697.881			
4	269711354	269711354 - N	2697.895	2697.881			
5	269711355	269711355 - N	2697.895	2697.881			
6	269711356	269711356 - N	2697.895	2697.881			
7	269711357	269711357 - N	2697.895	2697.881			
8	269711358	269711358 - N	2697.895	2697.881			
9	269711359	269711359 - N	2697.885	2697.890			
10	269711360	269711360 - N	2697.885	2697.890			
11	269711361	269711361 - N	2697.885	2697.890			
12	269711362	269711362 - N	2697.885	2697.890			
13	269711363	269711363 - N	2697.885	2697.890			
14	269711364	269711364 - N	2697.885	2697.890			
15	269711365	269711365 - N	2697.885	2697.890	1.59	2.78	6.27 x 10 ⁻⁴
16	269711366	269711366 - N	2697.889	2697.883			
17	269711367	269711367 - N	2697.889	2697.883			
18	269711368	269711368 - N	2697.889	2697.883			
19	269711369	269711369 - N	2697.889	2697.883			
20	269711370	269711370 - N	2697.889	2697.883			
21	269711371	269711371 - N	2697.889	2697.883			
22	269711372	269711372 - N	2697.889	2697.883			
23	269711373	269711373 - N	2697.882	2697.892			
24	269711374	269711374 - N	2697.882	2697.892			
25	269711375	269711375 - N	2697.882	2697.892			
26	269711376	269711376 - N	2697.882	2697.892			
27	269711377	269711377 - N	2697.882	2697.892			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711351 - N	27561	0.9552					
269711352 - N	27561	0.9552					
269711353 - N	27561	0.9552					
269711354 - N	27561	0.9552					
269711355 - N	27561	0.9552					
269711356 - N	27561	0.9552					
269711357 - N	27561	0.9552					
269711358 - N	27561	0.9552					
269711359 - N	27561	0.9552					
269711360 - N	27561	0.9552	0.248	257	2.36	89	
269711361 - N	27561	0.9552					
269711362 - N	27561	0.9552					
269711363 - N	27561	0.9552					
269711364 - N	27561	0.9552					
269711365 - N	27561	0.9562					
269711366 - N	27561	0.9562					
269711367 - N	27561	0.9562					
269711368 - N	27561	0.9562					
269711369 - N	27561	0.9562					
269711370 - N	27561	0.9562	0.255	267	2.62	93	
269711371 - N	27561	0.9562					
269711372 - N	27561	0.9562					
269711373 - N	27561	0.9562					
269711374 - N	27561	0.9562					
269711375 - N	27561	0.9562					
269711376 - N	27561	0.9562					
269711377 - N	27561	0.9562					

CAMU
CLOSURE



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711378	269711378 - N	2697.882	2697.892			
2	269711379	269711379 - N	2697.882	2697.892			
3	269711380	269711380 - N	2697.899	2697.887			
4	269711381	269711381 - N	2697.899	2697.887			
5	269711382	269711382 - N	2697.899	2697.887			
6	269711383	269711383 - N	2697.899	2697.887			
7	269711384	269711384 - N	2697.899	2697.887			
8	269711385	269711385 - N	2697.899	2697.887			
9	269711386	269711386 - N	2697.899	2697.887			
10	269711387	269711387 - N	2697.894	2697.902			
11	269711388	269711388 - N	2697.894	2697.902			
12	269711389	269711389 - N	2697.894	2697.902			
13	269711390	269711390 - N	2697.894	2697.902			
14	269711391	269711391 - N	2697.894	2697.902			
15	269711392	269711392 - N	2697.894	2697.902			
16	269711393	269711393 - N	2697.894	2697.902			
17	269711394	269711394 - N	2697.900	2697.896			
18	269711395	269711395 - N	2697.900	2697.896			
19	269711396	269711396 - N	2697.900	2697.896			
20	269711397	269711397 - N	2697.900	2697.896			
21	269711398	269711398 - N	2697.900	2697.896			
22	269711399	269711399 - N	2697.900	2697.896			
23	269711400	269711400 - N	2697.900	2697.896	1.28	2.04	6.49 x 10 ⁻⁴
24	269711401	269711401 - N	2697.893	2697.903			
25	269711402	269711402 - N	2697.893	2697.903			
26	269711403	269711403 - N	2697.893	2697.903			
27	269711404	269711404 - N	2697.893	2697.903			

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



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Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711378 - N	27561	0.9562					
269711379 - N	27561	0.9562					
269711380 - N	27561	0.9562	0.241	259	2.24	91	
269711381 - N	27561	0.9562					
269711382 - N	27561	0.9562					
269711383 - N	27561	0.9562					
269711384 - N	27561	0.9562					
269711385 - N	27561	0.9562					
269711386 - N	27561	0.9562					
269711387 - N	27561	0.9562					
269711388 - N	27561	0.9562					
269711389 - N	27561	0.9562					
269711390 - N	27561	0.9562	0.257	263	2.60	96	
269711391 - N	27561	0.9562					
269711392 - N	27561	0.9562					
269711393 - N	27561	0.9562					
269711394 - N	27561	0.9562					
269711395 - N	27561	0.9562					
269711396 - N	27561	0.9562					
269711397 - N	27561	0.9562					
269711398 - N	27561	0.9562					
269711399 - N	27561	0.9562					
269711400 - N	27561	0.9533	0.244	256	2.28	88	
269711401 - N	27561	0.9533					
269711402 - N	27561	0.9533					
269711403 - N	27561	0.9533					
269711404 - N	27561	0.9533					

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Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711405	269711405 - N	2697.893	2697.903			
2	269711406	269711406 - N	2697.893	2697.903			
3	269711407	269711407 - N	2697.893	2697.903			
4	269711408	269711408 - N	2697.912	2697.898			
5	269711409	269711409 - N	2697.912	2697.898			
6	269711410	269711410 - N	2697.912	2697.898			
7	269711411	269711411 - N	2697.912	2697.898			
8	269711412	269711412 - N	2697.912	2697.898			
9	269711413	269711413 - N	2697.912	2697.898			
10	269711414	269711414 - N	2697.912	2697.898			
11	269711415	269711415 - N	2697.904	2697.913			
12	269711416	269711416 - N	2697.904	2697.913			
13	269711417	269711417 - N	2697.904	2697.913			
14	269711418	269711418 - N	2697.904	2697.913			
15	269711419	269711419 - N	2697.904	2697.913			
16	269711420	269711420 - N	2697.904	2697.913			
17	269711421	269711421 - N	2697.904	2697.913			
18	269711422	269711422 - N	2697.915	2697.906			
19	269711423	269711423 - N	2697.915	2697.906			
20	269711424	269711424 - N	2697.915	2697.906			
21	269711425	269711425 - N	2697.915	2697.906			
22	269711426	269711426 - N	2697.915	2697.906			
23	269711427	269711427 - N	2697.915	2697.906			
24	269711428	269711428 - N	2697.915	2697.906			
25	269711429	269711429 - N	2697.905	2697.910			
26	269711430	269711430 - N	2697.905	2697.910			
27	269711431	269711431 - N	2697.905	2697.910			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711405 - N	27561	0.9533					
269711406 - N	27561	0.9533					
269711407 - N	27561	0.9533					
269711408 - N	27561	0.9533					
269711409 - N	27561	0.9533					
269711410 - N	27564	0.9533	0.253	265	2.53	94	
269711411 - N	27564	0.9533					
269711412 - N	27564	0.9533					
269711413 - N	27564	0.9533					
269711414 - N	27564	0.9533					
269711415 - N	27564	0.9533					
269711416 - N	27564	0.9533					
269711417 - N	27564	0.9533					
269711418 - N	27564	0.9533					
269711419 - N	27564	0.9533					
269711420 - N	27564	0.9533	0.246	258	2.31	92	
269711421 - N	27564	0.9533					
269711422 - N	27564	0.9533					
269711423 - N	27564	0.9533					
269711424 - N	27564	0.9533					
269711425 - N	27564	0.9533					
269711426 - N	27564	0.9533					
269711427 - N	27564	0.9533					
269711428 - N	27564	0.9533					
269711429 - N	27564	0.9533					
269711430 - N	27564	0.9533	0.256	269	2.50	95	
269711431 - N	27564	0.9533					

CAMU CLOSURE



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711432	269711432 - N	2697.905	2697.910			
2	269711433	269711433 - N	2697.905	2697.910			
3	269711434	269711434 - N	2697.905	2697.910			
4	269711435	269711435 - N	2697.905	2697.910	1.51	2.73	6.32 x 10 ⁻⁴
5	269711436	269711436 - N	2697.914	2697.907			
6	269711437	269711437 - N	2697.914	2697.907			
7	269711438	269711438 - N	2697.914	2697.907			
8	269711439	269711439 - N	2697.914	2697.907			
9	269711440	269711440 - N	2697.914	2697.907			
10	269711441	269711441 - N	2697.914	2697.907			
11	269711442	269711442 - N	2697.914	2697.907			
12	269711443	269711443 - N	2697.908	2697.920			
13	269711444	269711444 - N	2697.908	2697.920			
14	269711445	269711445 - N	2697.908	2697.920			
15	269711446	269711446 - N	2697.908	2697.920			
16	269711447	269711447 - N	2697.908	2697.920			
17	269711448	269711448 - N	2697.908	2697.920			
18	269711449	269711449 - N	2697.908	2697.920			
19	269711450	269711450 - N	2697.917	2697.916			
20	269711451	269711451 - N	2697.917	2697.916			
21	269711452	269711452 - N	2697.917	2697.916			
22	269711453	269711453 - N	2697.917	2697.916			
23	269711454	269711454 - N	2697.917	2697.916			
24	269711455	269711455 - N	2697.917	2697.916			
25	269711456	269711456 - N	2697.917	2697.916			
26	269711457	269711457 - N	2697.911	2697.922			
27	269711458	269711458 - N	2697.911	2697.922			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711432 - N	27564	0.9533					
269711433 - N	27564	0.9533					
269711434 - N	27564	0.9533					
269711435 - N	27564	0.9538					
269711436 - N	27564	0.9538					
269711437 - N	27564	0.9538					
269711438 - N	27564	0.9538					
269711439 - N	27564	0.9538					
269711440 - N	27564	0.9538	0.240	261	2.34	89	
269711441 - N	27564	0.9538					
269711442 - N	27564	0.9538					
269711443 - N	27564	0.9538					
269711444 - N	27564	0.9538					
269711445 - N	27564	0.9538					
269711446 - N	27564	0.9538					
269711447 - N	27564	0.9538					
269711448 - N	27564	0.9538					
269711449 - N	27564	0.9538					
269711450 - N	27564	0.9538	0.252	266	2.47	93	
269711451 - N	27564	0.9538					
269711452 - N	27564	0.9538					
269711453 - N	27564	0.9538					
269711454 - N	27564	0.9538					
269711455 - N	27564	0.9538					
269711456 - N	27564	0.9538					
269711457 - N	27564	0.9538					
269711458 - N	27564	0.9538					

CAMU CLOSURE



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711459	269711459 - N	2697.911	2697.922			
2	269711460	269711460 - N	2697.911	2697.922			
3	269711461	269711461 - N	2697.911	2697.922			
4	269711462	269711462 - N	2697.911	2697.922			
5	269711463	269711463 - N	2697.911	2697.922			
6	269711464	269711464 - N	2697.927	2697.909			
7	269711465	269711465 - N	2697.927	2697.909			
8	269711466	269711466 - N	2697.927	2697.909			
9	269711467	269711467 - N	2697.927	2697.909			
10	269711468	269711468 - N	2697.927	2697.909			
11	269711469	269711469 - N	2697.927	2697.909			
12	269711470	269711470 - N	2697.927	2697.909	1.33	2.11	6.45 x 10 ⁻⁴
13	269711471	269711471 - N	2697.924	2697.928			
14	269711472	269711472 - N	2697.924	2697.928			
15	269711473	269711473 - N	2697.924	2697.928			
16	269711474	269711474 - N	2697.924	2697.928			
17	269711475	269711475 - N	2697.924	2697.928			
18	269711476	269711476 - N	2697.924	2697.928			
19	269711477	269711477 - N	2697.924	2697.928			
20	269711478	269711478 - N	2697.929	2697.919			
21	269711479	269711479 - N	2697.929	2697.919			
22	269711480	269711480 - N	2697.929	2697.919			
23	269711481	269711481 - N	2697.929	2697.919			
24	269711482	269711482 - N	2697.929	2697.919			
25	269711483	269711483 - N	2697.929	2697.919			
26	269711484	269711484 - N	2697.929	2697.919			
27	269711485	269711485 - N	2697.918	2697.926			

CAMU
CLOSURE

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711459 - N	27564	0.9538					
269711460 - N	27564	0.9538	0.243	263	2.38	91	
269711461 - N	27564	0.9538					
269711462 - N	27564	0.9538					
269711463 - N	27564	0.9538					
269711464 - N	27564	0.9538					
269711465 - N	27564	0.9538					
269711466 - N	27564	0.9538					
269711467 - N	27564	0.9538					
269711468 - N	27564	0.9538					
269711469 - N	27564	0.9538					
269711470 - N	27564	0.9535	0.250	268	2.43	96	
269711471 - N	27564	0.9535					
269711472 - N	27564	0.9535					
269711473 - N	27564	0.9535					
269711474 - N	27564	0.9535					
269711475 - N	27564	0.9535					
269711476 - N	27564	0.9535					
269711477 - N	27564	0.9535					
269711478 - N	27564	0.9535					
269711479 - N	27564	0.9535					
269711480 - N	27564	0.9535	0.247	260	2.30	90	
269711481 - N	27564	0.9535					
269711482 - N	27564	0.9535					
269711483 - N	27564	0.9535					
269711484 - N	27564	0.9535					
269711485 - N	27564	0.9535					

**CAMU
CLOSURE**



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

JRES
BMI-S

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711486	269711486 - N	2697.918	2697.926			
2	269711487	269711487 - N	2697.918	2697.926			
3	269711488	269711488 - N	2697.918	2697.926			
4	269711489	269711489 - N	2697.918	2697.926			
5	269711490	269711490 - N	2697.918	2697.926			
6	269711491	269711491 - N	2697.918	2697.926			
7	269711492	269711492 - N	2697.932	2697.921			
8	269711493	269711493 - N	2697.932	2697.921			
9	269711494	269711494 - N	2697.932	2697.921			
10	269711495	269711495 - N	2697.932	2697.921			
11	269711496	269711496 - N	2697.932	2697.921			
12	269711497	269711497 - N	2697.932	2697.921			
13	269711498	269711498 - N	2697.932	2697.921			
14	269711499	269711499 - N	2697.925	2697.931			
15	269711500	269711500 - N	2697.925	2697.931			
16	269711501	269711501 - N	2697.925	2697.931			
17	269711502	269711502 - N	2697.925	2697.931			
18	269711503	269711503 - N	2697.925	2697.931			
19	269711504	269711504 - N	2697.925	2697.931			
20	269711505	269711505 - N	2697.925	2697.931	1.56	2.67	6.38 x 10 ⁻⁴
21	269711506	269711506 - N	2697.939	2697.923			
22	269711507	269711507 - N	2697.939	2697.923			
23	269711508	269711508 - N	2697.939	2697.923			
24	269711509	269711509 - N	2697.939	2697.923			
25	269711510	269711510 - N	2697.939	2697.923			
26	269711511	269711511 - N	2697.939	2697.923			
27	269711512	269711512 - N	2697.939	2697.923			

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711486 - N	27564	0.9535					
269711487 - N	27564	0.9535					
269711488 - N	27564	0.9535					
269711489 - N	27564	0.9535					
269711490 - N	27564	0.9535	0.254	264	2.51	94	
269711491 - N	27564	0.9535					
269711492 - N	27564	0.9535					
269711493 - N	27564	0.9535					
269711494 - N	27564	0.9535					
269711495 - N	27564	0.9535					
269711496 - N	27564	0.9535					
269711497 - N	27564	0.9535					
269711498 - N	27564	0.9535					
269711499 - N	27564	0.9535					
269711500 - N	27564	0.9535	0.244	256	2.34	88	
269711501 - N	27564	0.9535					
269711502 - N	27564	0.9535					
269711503 - N	27564	0.9535					
269711504 - N	27564	0.9535					
269711505 - N	27564	0.9539					
269711506 - N	27564	0.9539					
269711507 - N	27564	0.9539					
269711508 - N	27564	0.9539					
269711509 - N	27564	0.9539					
269711510 - N	27564	0.9539	0.257	262	2.56	92	
269711511 - N	27564	0.9539					
269711512 - N	27564	0.9539					



BMI-S



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711513	269711513 - N	2697.930	2697.942			
2	269711514	269711514 - N	2697.930	2697.942			
3	269711515	269711515 - N	2697.930	2697.942			
4	269711516	269711516 - N	2697.930	2697.942			
5	269711517	269711517 - N	2697.930	2697.942			
6	269711518	269711518 - N	2697.930	2697.942			
7	269711519	269711519 - N	2697.930	2697.942			
8	269711520	269711520 - N	2697.944	2697.934			
9	269711521	269711521 - N	2697.944	2697.934			
10	269711522	269711522 - N	2697.944	2697.934			
11	269711523	269711523 - N	2697.944	2697.934			
12	269711524	269711524 - N	2697.944	2697.934			
13	269711525	269711525 - N	2697.944	2697.934			
14	269711526	269711526 - N	2697.944	2697.934			
15	269711527	269711527 - N	2697.935	2697.945			
16	269711528	269711528 - N	2697.935	2697.945			
17	269711529	269711529 - N	2697.935	2697.945			
18	269711530	269711530 - N	2697.935	2697.945			
19	269711531	269711531 - N	2697.935	2697.945			
20	269711532	269711532 - N	2697.935	2697.945			
21	269711533	269711533 - N	2697.935	2697.945			
22	269711534	269711534 - N	2697.941	2697.937			
23	269711535	269711535 - N	2697.941	2697.937			
24	269711536	269711536 - N	2697.941	2697.937			
25	269711537	269711537 - N	2697.941	2697.937			
26	269711538	269711538 - N	2697.941	2697.937			
27	269711539	269711539 - N	2697.941	2697.937			

BMI-S

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711513 - N	27564	0.9539					
269711514 - N	27564	0.9539					
269711515 - N	27564	0.9539					
269711516 - N	27564	0.9539					
269711517 - N	27564	0.9539					
269711518 - N	27564	0.9539					
269711519 - N	27564	0.9539					
269711520 - N	27564	0.9539	0.241	258	2.26	90	
269711521 - N	27564	0.9539					
269711522 - N	27564	0.9539					
269711523 - N	27564	0.9539					
269711524 - N	27564	0.9539					
269711525 - N	27564	0.9539					
269711526 - N	27564	0.9539					
269711527 - N	27564	0.9539					
269711528 - N	27564	0.9539					
269711529 - N	27564	0.9539					
269711530 - N	27564	0.9539	0.253	267	2.59	95	
269711531 - N	27564	0.9539					
269711532 - N	27564	0.9539					
269711533 - N	27564	0.9539					
269711534 - N	27564	0.9539					
269711535 - N	27564	0.9539					
269711536 - N	27564	0.9539					
269711537 - N	27564	0.9539					
269711538 - N	27564	0.9539					
269711539 - N	27564	0.9539					

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Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711540	269711540 - N	2697.941	2697.937	1.38	2.18	6.62 x 10 ⁻⁴
2	269711541	269711541 - N	2697.933	2697.948			
3	269711542	269711542 - N	2697.933	2697.948			
4	269711543	269711543 - N	2697.933	2697.948			
5	269711544	269711544 - N	2697.933	2697.948			
6	269711545	269711545 - N	2697.933	2697.948			
7	269711546	269711546 - N	2697.933	2697.948			
8	269711547	269711547 - N	2697.933	2697.948			
9	269711548	269711548 - N	2697.950	2697.936			
10	269711549	269711549 - N	2697.950	2697.936			
11	269711550	269711550 - N	2697.950	2697.936			
12	269711551	269711551 - N	2697.950	2697.936			
13	269711552	269711552 - N	2697.950	2697.936			
14	269711553	269711553 - N	2697.950	2697.936			
15	269711554	269711554 - N	2697.950	2697.936			
16	269711555	269711555 - N	2697.943	2697.954			
17	269711556	269711556 - N	2697.943	2697.954			
18	269711557	269711557 - N	2697.943	2697.954			
19	269711558	269711558 - N	2697.943	2697.954			
20	269711559	269711559 - N	2697.943	2697.954			
21	269711560	269711560 - N	2697.943	2697.954			
22	269711561	269711561 - N	2697.943	2697.954			
23	269711562	269711562 - N	2697.947	2697.951			
24	269711563	269711563 - N	2697.947	2697.951			
25	269711564	269711564 - N	2697.947	2697.951			
26	269711565	269711565 - N	2697.947	2697.951			
27	269711566	269711566 - N	2697.947	2697.951			

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711540 - N	27564	0.9532	0.245	260	2.23	93	
269711541 - N	27564	0.9532					
269711542 - N	27564	0.9532					
269711543 - N	27564	0.9532					
269711544 - N	27564	0.9532					
269711545 - N	27564	0.9532					
269711546 - N	27564	0.9532					
269711547 - N	27564	0.9532					
269711548 - N	27564	0.9532					
269711549 - N	27564	0.9532					
BMI-S 269711550 - N	27564	0.9532	0.250	264	2.67	96	
269711551 - N	27564	0.9532					
269711552 - N	27564	0.9532					
269711553 - N	27564	0.9532					
269711554 - N	27564	0.9532					
269711555 - N	27564	0.9532					
269711556 - N	27564	0.9532					
269711557 - N	27564	0.9532					
269711558 - N	27564	0.9532					
269711559 - N	27564	0.9532					
269711560 - N	27564	0.9532	0.242	262	2.32	91	
269711561 - N	27564	0.9532					
269711562 - N	27564	0.9532					
269711563 - N	27564	0.9532					
269711564 - N	27564	0.9532					
269711565 - N	27564	0.9532					
269711566 - N	27564	0.9532					



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711567	269711567 - N	2697.947	2697.951			
2	269711568	269711568 - N	2697.947	2697.951			
3	269711569	269711569 - N	2697.938	2697.959			
4	269711570	269711570 - N	2697.938	2697.959			
5	269711571	269711571 - N	2697.938	2697.959			
6	269711572	269711572 - N	2697.938	2697.959			
7	269711573	269711573 - N	2697.938	2697.959			
8	269711574	269711574 - N	2697.938	2697.959			
9	269711575	269711575 - N	2697.938	2697.959	1.46	2.54	6.43 x 10 ⁻⁴
10	269711576	269711576 - N	2697.956	2697.952			
11	269711577	269711577 - N	2697.956	2697.952			
12	269711578	269711578 - N	2697.956	2697.952			
13	269711579	269711579 - N	2697.956	2697.952			
14	269711580	269711580 - N	2697.956	2697.952			
15	269711581	269711581 - N	2697.956	2697.952			
16	269711582	269711582 - N	2697.956	2697.952			
17	269711583	269711583 - N	2697.940	2697.963			
18	269711584	269711584 - N	2697.940	2697.963			
19	269711585	269711585 - N	2697.940	2697.963			
20	269711586	269711586 - N	2697.940	2697.963			
21	269711587	269711587 - N	2697.940	2697.963			
22	269711588	269711588 - N	2697.940	2697.963			
23	269711589	269711589 - N	2697.940	2697.963			
24	269711590	269711590 - N	2697.955	2697.953			
25	269711591	269711591 - N	2697.955	2697.953			
26	269711592	269711592 - N	2697.955	2697.953			
27	269711593	269711593 - N	2697.955	2697.953			

BMI-S

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711567 - N	27564	0.9532					
269711568 - N	27564	0.9532					
269711569 - N	27564	0.9532					
269711570 - N	27564	0.9532	0.255	269	2.60	94	
269711571 - N	27564	0.9532					
269711572 - N	27564	0.9532					
269711573 - N	27564	0.9532					
269711574 - N	27564	0.9532					
269711575 - N	27564	0.9537					
269711576 - N	27564	0.9537					
269711577 - N	27564	0.9537					
269711578 - N	27564	0.9537					
269711579 - N	27564	0.9537					
269711580 - N	27564	0.9537	0.248	259	2.38	89	
269711581 - N	27564	0.9537					
269711582 - N	27564	0.9537					
269711583 - N	27564	0.9537					
269711584 - N	27564	0.9537					
269711585 - N	27564	0.9537					
269711586 - N	27564	0.9537					
269711587 - N	27564	0.9537					
269711588 - N	27564	0.9537					
269711589 - N	27564	0.9537					
269711590 - N	27564	0.9537	0.251	266	2.53	92	
269711591 - N	27564	0.9537					
269711592 - N	27564	0.9537					
269711593 - N	27564	0.9537					

BMI-S



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711594	269711594 - N	2697.955	2697.953			
2	269711595	269711595 - N	2697.955	2697.953			
3	269711596	269711596 - N	2697.955	2697.953			
4	269711597	269711597 - N	2697.949	2697.946			
5	269711598	269711598 - N	2697.949	2697.946			
6	269711599	269711599 - N	2697.949	2697.946			
7	269711600	269711600 - N	2697.949	2697.946			
8	269711601	269711601 - N	2697.949	2697.946			
9	269711602	269711602 - N	2697.949	2697.946			
10	269711603	269711603 - N	2697.949	2697.946			
11	269711604	269711604 - N	2697.961	2697.957			
12	269711605	269711605 - N	2697.961	2697.957			
13	269711606	269711606 - N	2697.961	2697.957			
14	269711607	269711607 - N	2697.961	2697.957			
15	269711608	269711608 - N	2697.961	2697.957			
16	269711609	269711609 - N	2697.961	2697.957			
17	269711610	269711610 - N	2697.961	2697.957	1.27	2.22	6.68 x 10 ⁻⁴
18	269711611	269711611 - N	2697.958	2697.964			
19	269711612	269711612 - N	2697.958	2697.964			
20	269711613	269711613 - N	2697.958	2697.964			
21	269711614	269711614 - N	2697.958	2697.964			
22	269711615	269711615 - N	2697.958	2697.964			
23	269711616	269711616 - N	2697.958	2697.964			
24	269711617	269711617 - N	2697.958	2697.964			
25	269711618	269711618 - N	2697.965	2697.960			
26	269711619	269711619 - N	2697.965	2697.960			
27	269711620	269711620 - N	2697.965	2697.960			

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711594 - N	27564	0.9537					
269711595 - N	27564	0.9537					
269711596 - N	27564	0.9537					
269711597 - N	27564	0.9537					
269711598 - N	27564	0.9537					
269711599 - N	27564	0.9537					
269711600 - N	27564	0.9537	0.246	261	2.24	88	
269711601 - N	27564	0.9537					
269711602 - N	27564	0.9537					
269711603 - N	27564	0.9537					
269711604 - N	27564	0.9537					
269711605 - N	27564	0.9537					
269711606 - N	27564	0.9537					
269711607 - N	27564	0.9537					
269711608 - N	27564	0.9537					
269711609 - N	27564	0.9537					
269711610 - N	27564	0.9534	0.256	265	2.76	95	
269711611 - N	27564	0.9534					
269711612 - N	27564	0.9534					
269711613 - N	27564	0.9534					
269711614 - N	27564	0.9534					
269711615 - N	27564	0.9534					
269711616 - N	27564	0.9534					
269711617 - N	27564	0.9534					
269711618 - N	27564	0.9534					
269711619 - N	27564	0.9534					
269711620 - N	27564	0.9534	0.243	257	2.29	91	



BMI-S



Product : TN270-2-6

Project : Landwell/Basic Remediation, NV

We, the Geocomposite manufacturer, hereby certify the following for the material delivered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Top	Bottom	Minimum	Average	
1	269711621	269711621 - N	2697.965	2697.960			
2	269711622	269711622 - N	2697.965	2697.960			
3	269711623	269711623 - N	2697.965	2697.960			
4	269711624	269711624 - N	2697.965	2697.960			
5	269711625	269711625 - N	2697.962	2697.966			

* Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.1 and a confining pressure of 300 psf between sand & liner after 24 hours.



BMI-S ↑

Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geonet Manufacturer, hereby certify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
269711621 - N	27564	0.9534					
269711622 - N	27564	0.9534					
269711623 - N	27564	0.9534					
269711624 - N	27564	0.9534					
269711625 - N	27564	0.9534					

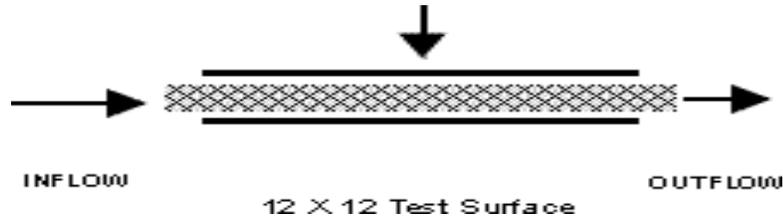


BMI-S



Client: Environmental Specialties International, Inc.	Job # 2697
Project: Landwell/Basic Remediation, NV	
Product: TN270-2-6	

Test Configuration:



Test Information:

Boundary Conditions: Sand Geocomposite Liner	Normal Load: 300 psf Gradient: 0.1 ft Seating Time: 24 hours Flow Direction: MD
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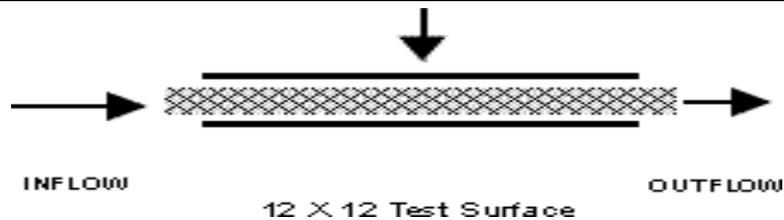
Test Results:

Roll No.	Pressure (psf)	Gradient, ft	Transmissivity, m ² /sec
			24 hours
269710770	300	0.1	6.19 x 10 ⁻⁴
269710805			6.68 x 10 ⁻⁴
269710840			6.22 x 10 ⁻⁴
269710875			6.63 x 10 ⁻⁴
269710910			6.27 x 10 ⁻⁴
269710945			6.58 x 10 ⁻⁴
269710980			6.18 x 10 ⁻⁴
269711015			6.31 x 10 ⁻⁴
269711050			6.54 x 10 ⁻⁴
269711085			6.35 x 10 ⁻⁴
269711120			6.51 x 10 ⁻⁴
269711155			6.41 x 10 ⁻⁴

Client: Environmental Specialties International, Inc.
Project: Landwell/Basic Remediation, NV
Product: TN270-2-6

Job # 2697

Test Configuration:



Test Information:

Boundary Conditions: Sand
 Geocomposite
 Liner

Normal Load: 300 psf
Gradient: 0.1 ft
Seating Time: 24 hours
Flow Direction: MD

Test Results:

Roll No.	Pressure (psf)	Gradient, ft	Transmissivity, m ² /sec
			24 hours
269711190	300	0.1	6.48 x 10 ⁻⁴
269711225			6.44 x 10 ⁻⁴
269711260			6.69 x 10 ⁻⁴
269711295			6.20 x 10 ⁻⁴
269711330			6.53 x 10 ⁻⁴
269711365			6.27 x 10 ⁻⁴
269711400			6.49 x 10 ⁻⁴
269711435			6.32 x 10 ⁻⁴
269711470			6.45 x 10 ⁻⁴
269711505			6.38 x 10 ⁻⁴
269711540			6.62 x 10 ⁻⁴
269711575			6.43 x 10 ⁻⁴
269711610			6.68 x 10 ⁻⁴



POLYETHYLENE RESIN CERTIFICATION

Customer Name : Environmental Specialties International, Inc.
Project Name : Landwell/Basic Remediation, NV
Geocomposite Manufacturer : SKAPS Industries
Geocomposite Production Plant : Commerce, GA
Geocomposite Brand Name : TN270-2-6

We, the Geonet Manufacturer, hereby certify the following for the material delivered to the above referenced project:

Resin Supplier	Resin Production Plant	Resin Brand Name	Resin Lot Number	Property	Test Method	Units	Resin Supplier Value	Tested Value*
Matrix Polymers	Formosa, TX	HDPE	FPAX950119	Density	ASTM D 1505	gm/cc	0.950	0.950
				Melt Flow Index	ASTM D 1238 ^(a)	gm/10 min	0.05	0.06
			FPAX200256	Density	ASTM D 1505	gm/cc	0.950	0.950
				Melt Flow Index	ASTM D 1238 ^(a)	gm/10 min	0.05	0.06
New South Polymers Inc	Chevron, TX		26676-15	Density	ASTM D 1505	gm/cc	0.949	0.949
				Melt Flow Index	ASTM D 1238 ^(a)	gm/10 min	0.15	0.15
			27561	Density	ASTM D 1505	gm/cc	0.950	0.950
				Melt Flow Index	ASTM D 1238 ^(a)	gm/10 min	0.40	0.36
		27561	Density	ASTM D 1505	gm/cc	0.948	0.948	
			Melt Flow Index	ASTM D 1238 ^(a)	gm/10 min	0.42	0.40	

(a) Condition 190/2.16
 * Data from SKAPS Quality Control





Engineered Synthetic
Products, Inc.

Product : TN270-2-6

Project : Landwell/Basic Remediation, NV

We, the Geocomposite Manufacturer, hereby certify the following for the material delivered to the above referenced project :

GEOCOMP ROLL#	FABRIC ROLL#	WEIGHT oz/sq yd	MD TENSILE lbs.	MD ELONG %	XMD TENSILE lbs.	XMD ELONG %	MD TRAP lbs.	XMD TRAP lbs.	PUNCTURE lbs.	MULLEN psi	AOS us sieve	PERM-ITY sec ⁻¹
269710770	2697.739	6.23	162	66	179	79	71	86	98	330	70	1.76
	2697.726	6.54	165	74	175	81	75	81	100	332	70	1.76
269710805	2697.717	6.65	168	72	180	85	78	88	96	339	70	1.76
	2697.738	6.23	162	66	179	79	71	86	98	330	70	1.76
269710840	2697.740	6.38	164	75	173	82	80	89	95	335	70	1.76
	2697.728	6.54	165	74	175	81	75	81	100	332	70	1.76
269710875	2697.744	6.38	164	75	173	82	80	89	95	335	70	1.76
	2697.758	6.34	161	73	174	78	76	84	97	338	70	1.82
269710910	2697.766	6.20	168	70	171	81	74	82	99	333	70	1.82
	2697.750	6.61	166	71	170	85	76	84	97	338	70	1.82
269710945	2697.748	6.45	169	69	177	75	80	89	95	335	70	1.76
	2697.789	6.64	164	68	175	77	72	90	100	331	70	1.82
269710980	2697.787	6.64	164	68	175	77	72	90	100	331	70	1.82
	2697.781	6.42	170	72	179	79	72	90	100	331	70	1.82
269711015	2697.776	6.57	162	65	173	84	79	87	96	336	70	1.82
	2697.788	6.64	164	68	175	77	72	90	100	331	70	1.82
269711050	2697.816	6.41	168	74	171	79	70	88	97	332	70	1.79
	2697.798	6.25	161	66	172	75	77	85	98	339	70	1.82
269711085	2697.807	6.28	165	71	179	85	75	81	95	334	70	1.79
	2697.814	6.54	160	69	173	83	70	88	97	332	70	1.79



Engineered Synthetic
Products, Inc.

Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite Manufacturer, hereby certify the following for the material delivered to the above referenced project :

GEOCOMP ROLL#	FABRIC ROLL#	WEIGHT oz/sq yd	MD TENSILE lbs.	MD ELONG %	XMD TENSILE lbs.	XMD ELONG %	MD TRAP lbs.	XMD TRAP lbs.	PUNCTURE lbs.	MULLEN psi	AOS us sieve	PERM- ITY sec ⁻¹
269711120	2697.818	6.41	168	74	171	79	70	88	97	332	70	1.79
	2697.803	6.60	167	73	177	80	75	81	95	334	70	1.79
269711155	2697.829	6.57	166	70	178	76	78	83	99	337	70	1.79
	2697.849	6.59	167	73	179	75	76	80	100	335	70	1.79
269711190	2697.841	6.45	165	75	175	82	76	80	100	335	70	1.79
	2697.827	6.57	166	70	178	76	78	83	99	337	70	1.79
269711225	2697.831	6.22	169	72	180	84	73	86	96	340	70	1.79
	2697.868	6.44	170	74	174	79	71	89	95	331	70	1.75
269711260	2697.867	6.44	170	74	174	79	71	89	95	331	70	1.75
	2697.852	6.70	161	68	173	80	79	84	98	333	70	1.75
269711295	2697.853	6.70	161	68	173	80	79	84	98	333	70	1.75
	2697.874	6.62	163	69	177	81	74	87	99	338	70	1.75
269711330	2697.888	6.21	162	70	178	78	80	82	97	336	70	1.75
	2697.865	6.44	170	74	174	79	71	89	95	331	70	1.75
269711365	2697.885	6.21	162	70	178	78	80	82	97	336	70	1.75
	2697.890	6.33	167	75	175	83	72	85	100	330	70	1.75
269711400	2697.900	6.55	161	73	179	75	77	88	98	334	70	1.81
	2697.896	6.69	164	65	171	80	72	85	100	330	70	1.75
269711435	2697.905	6.40	168	68	176	84	77	88	98	334	70	1.81
	2697.910	6.27	166	71	173	77	75	90	95	339	70	1.81



Engineered Synthetic
Products, Inc.

Product : TN270-2-6
Project : Landwell/Basic Remediation, NV

We, the Geocomposite Manufacturer, hereby certify the following for the material delivered to the above referenced project :

GEOCOMP ROLL#	FABRIC ROLL#	WEIGHT oz/sq yd	MD TENSILE lbs.	MD ELONG %	XMD TENSILE lbs.	XMD ELONG %	MD TRAP lbs.	XMD TRAP lbs.	PUNCTURE lbs.	MULLEN psi	AOS us sieve	PERM- ITY sec ⁻¹
269711470	2697.927	6.61	165	74	175	85	70	83	99	332	70	1.81
	2697.909	6.40	168	68	176	84	77	88	98	334	70	1.81
269711505	2697.925	6.61	165	74	175	85	70	83	99	332	70	1.81
	2697.931	6.57	167	72	180	76	78	81	97	337	70	1.81
269711540	2697.941	6.68	169	67	174	78	74	86	100	335	70	1.81
	2697.937	6.30	162	70	177	83	78	81	97	337	70	1.81
269711575	2697.938	6.30	162	70	177	83	78	81	97	337	70	1.81
	2697.959	6.54	166	73	179	76	71	84	98	340	70	1.77
269711610	2697.961	6.30	168	68	173	82	80	89	95	332	70	1.77
	2697.957	6.54	166	73	179	76	71	84	98	340	70	1.77



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Remaining 270-2-6 Geocomposite MQC Certificates for BMI-North, CAMU, and BMI South Closures
Submittal Number:	02773-004G
Specification Section:	Section 02773-2, Part 1.05, Subpart B
Drawing Number (s):	8, 10, 14, 16, 19, 21, 23, 25, 27, 29, 31, 33, 35-36, 38-45
Page Number:	02773-2
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	12/11/2008

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
 ATTENTION: Lee C. Farris, P.E.

DATE: 11/17/08
 JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
 TRANSMITTAL NUMBER: 154
 ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
8	11/17/08			Submittal 03400-001 – Headwall Concrete Mix Design / Trashrack Certification Letter	RC

ACTION (*)

AR - AS REQUESTED

FA - FOR APPROVAL

F – FILE

RC - REVIEW & COMMENT

COMMENTS:

SENT VIA:

E-MAIL

MAIL

OVERNIGHT

HAND DELIVERY

FACSIMILE

COPY TO: Ranjit Sahu, Lee Farris

BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....

JENSEN PRECAST

3853 Losee Road
North Las Vegas, NV 89030-3326
Tel: (702) 649-0045
Fax: (702) 649-2243

Contractor License No. 42231 (C5) - Unlimited Bid Limit

July 24, 2008

Via Facsimile

ENTACT SERVICES, LLC.
JOSHUA CARROLL
3129 Bass Pro Dr.
Grapevine, TX 76051

RE: Project Name: BMI INDUSTRIAL COMPLEX PROJECT
Job No.: 07874
Project Location: LAS VEGAS , NEVADA

Dear Josh :

Plans call out for a Headwall with Trash Rack. Plans show details on dimension for headwall, trash rack and a rebar lay out. Plans show an engineered design that we can use to build this structure in the field. No re-engineered drawings are needed.

Very truly yours,

Shawn Close
JENSEN PRECAST



7-24, 2008



Converse Consultants

Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

field mix Design

CONCRETE MIX DESIGN: SF232

Supplier : Silver State Materials	Project : N/A
Strength @ 28 Days : 4500 PSI	Application : N/A
Cement Sk : 6.50	Nom Size Agg : 3/4"
Cementitious Matl Sk : 6.63	Entrapped Air % : 1.2
Soluble Sulfates : N/A	W/C : 0.45
Slump : 4" +/- 1"	FA % : 10 1.2 : 1 Ratio

SOURCE OF MATERIALS

Cement (ASTM C150 Type V) : Ashgrove Cement
 Fly Ash (ASTM C618 Type F) : Headwaters Resources Navajo
 Sand (Washed Sand) : Construx, Eldorado
 Coarse Agg (3/4" - #67) : Las Vegas Paving , Apex Pil

AGGREGATE PHYSICAL PROPERTIES

Sieve Size	C33 Date: 8/8/2007		6/11/2007		Specification (D Modified)		
	Washed Sand	3/4" - #67			Combined	(Hi)	(Lo)
2"	100.0	100.0	0.0	0.0	100	100	100
1 1/2"	100.0	100.0	0.0	0.0	100	100	100
1"	100.0	100.0	0.0	0.0	100	100	100
3/4"	100.0	98.0	0.0	0.0	99	100	80
1/2"	100.0	50.0	0.0	0.0	72		
3/8"	100.0	28.0	0.0	0.0	59	70	46
#4	100.0	3.0	0.0	0.0	45	50	34
#8	83.0	1.0	0.0	0.0	36	42	24
#16	55.0	0.0	0.0	0.0	24	34	17
#30	35.0	0.0	0.0	0.0	15	25	10
#50	20.0	0.0	0.0	0.0	9	15	5
#100	9.0	0.0	0.0	0.0	4	7	2
#200	2.5	0.3	0.0	0.0	1.2	3	0
Bulk Specific Grav, SSD:	2.566	2.658	0	0			
Absorption %:	3.9	0.9	0	0			
Aggregate Ratio %:	43.00%	57.00%	0.00%	0.00%	100.00%		

BATCH WEIGHTS FOR ONE CUBIC YARD (SSD)

	Solid Volume	Weight (lbs)	Volume (ft3)
Cement (ASTM C150 Type V) :		550	2.80
Fly Ash (ASTM C618 Type F) :		73	0.50
Water :		280	4.49
% Entrapped Air :			0.32
Sand (Washed Sand) : 43.00%		1,300	8.12
Coarse Agg (3/4" - #67) : 57.00%		1,786	10.77
Coarse Agg 2: 0.00%		0	0.00
Coarse Agg 3: 0.00%		0	0.00
Total:		3,989	27.00



Theoretical Unit Weight : 147.74 PCF

Admixtures and or comments:

Type A Water Reducer, as per manufacturer's recommendations

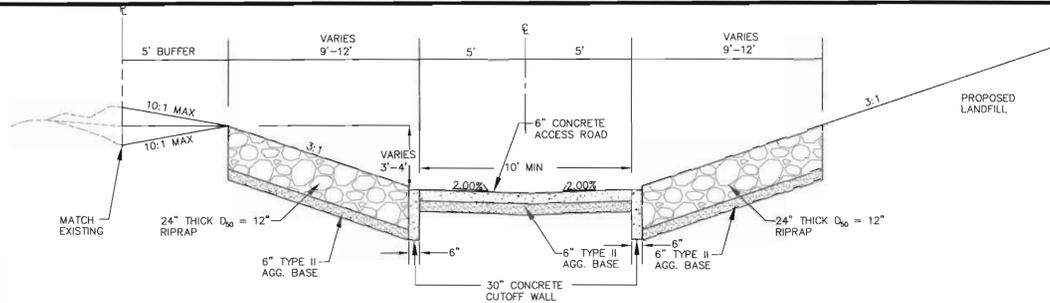
Submitted By _____
 Date _____



Converse Consultants

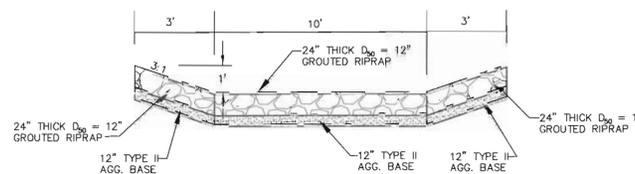
731 Pitt Road, Suite H, Las Vegas, Nevada 89119-4479

Telephone: (702) 269-8336 • Facsimile: (702) 269-8353 • e-mail: lasvegas@converseconsultants.com



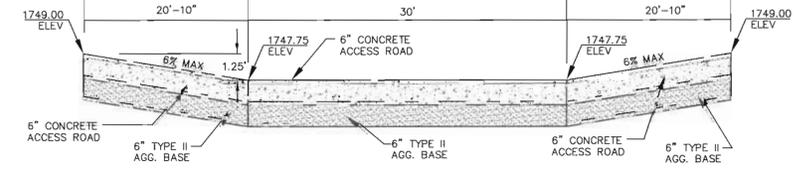
- NOTES:
1. ALL WORK TO CONFORM TO CCAUSS #s 301, 302, 409, 501, 610, 701, 702, 704, AND 706.
 2. TYPE II AGGREGATE SHALL CONFORM TO CCAUSS # 704.03.04.
 3. ALL CONCRETE SHALL BE CLASS AA PER CCAUSS # 501.
 4. SEE CAMU DRAWINGS FOR GEOCOMPOSITE, GEOMEMBRANE, LINER, PIPE, GEOTEXTILE, COVER SOIL, SLOPE TREATMENT, INTERIM COVER, OPERATIONS LAYER, FINAL COVER, AND ALL OTHER SUBGRADE REQUIREMENTS.

(A) TYPICAL CHANNEL DETAIL
D1 SCALE H = V



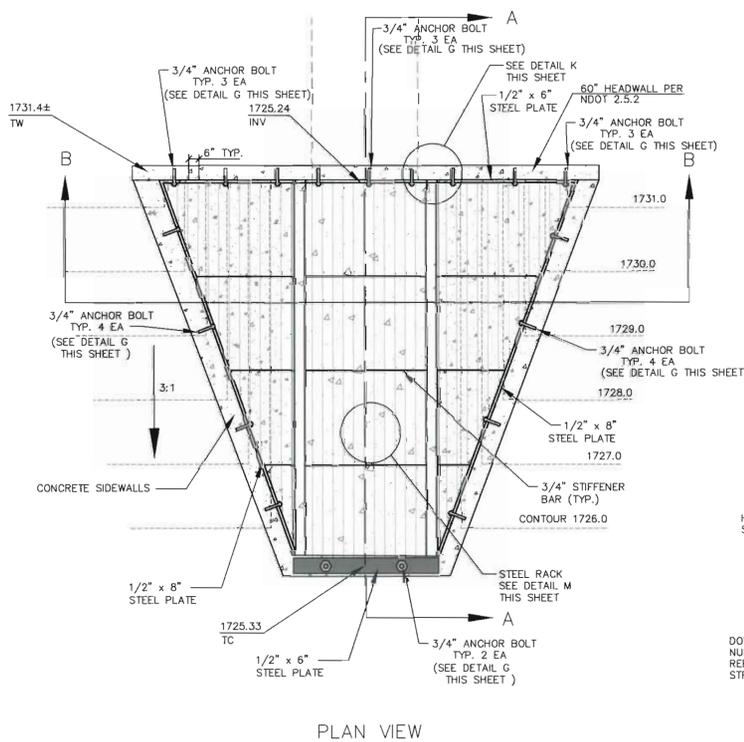
- NOTES:
1. ALL WORK TO CONFORM TO CCAUSS #s 301, 302, 610, AND 704.
 2. TYPE II AGGREGATE SHALL CONFORM TO CCAUSS # 704.03.04.
 3. ALL CONCRETE SHALL BE CLASS AA PER CCAUSS # 501.
 4. SEE CAMU DRAWINGS FOR GEOCOMPOSITE, GEOMEMBRANE, LINER, PIPE, GEOTEXTILE, COVER SOIL, SLOPE TREATMENT, INTERIM COVER, OPERATIONS LAYER, FINAL COVER, AND ALL OTHER SUBGRADE REQUIREMENTS.

(B) TYPICAL LANDFILL EMBANKMENT CHANNEL DETAIL
D1 NTS

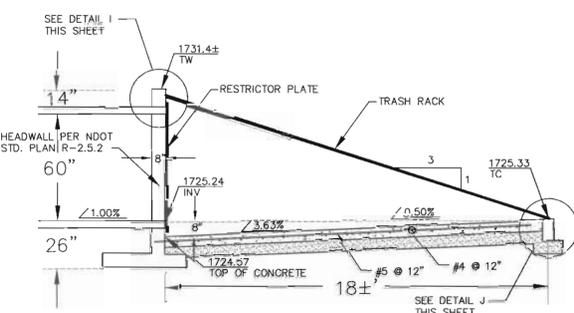


- NOTES:
1. ALL WORK TO CONFORM TO CCAUSS #s 301, 302, 409, 501, 610, 611, 701, 702, 704, AND 706.
 2. TYPE II AGGREGATE SHALL CONFORM TO CCAUSS # 704.03.04.
 3. ALL CONCRETE SHALL BE CLASS AA PER CCAUSS # 501.
 4. SEE CAMU DRAWINGS FOR GEOCOMPOSITE, GEOMEMBRANE, LINER, PIPE, GEOTEXTILE, COVER SOIL, SLOPE TREATMENT, INTERIM COVER, OPERATIONS LAYER, FINAL COVER, AND ALL OTHER SUBGRADE REQUIREMENTS.

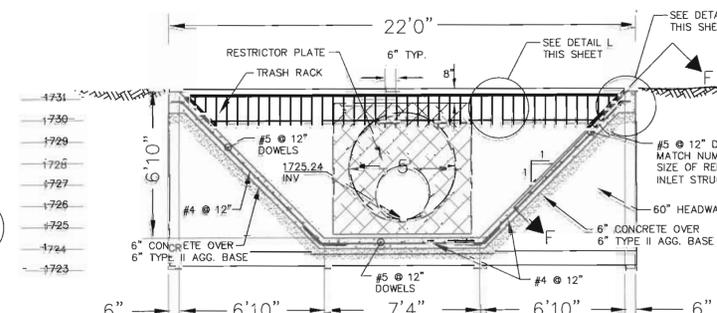
(C) EQUALIZER BASIN OVERFLOW DETAIL
D1 NTS



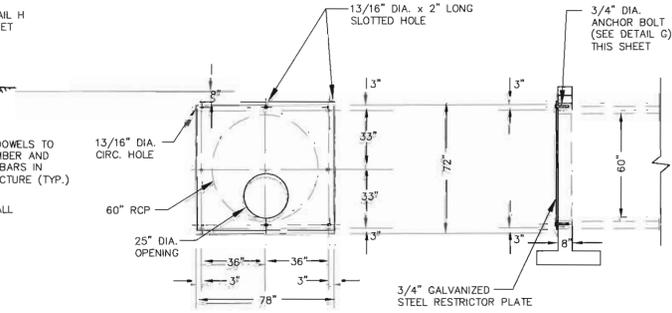
PLAN VIEW



SECTION "A-A"



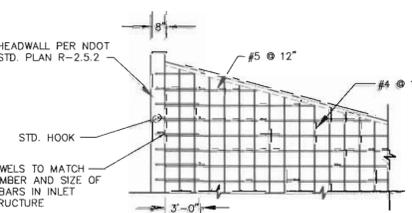
SECTION "B-B"



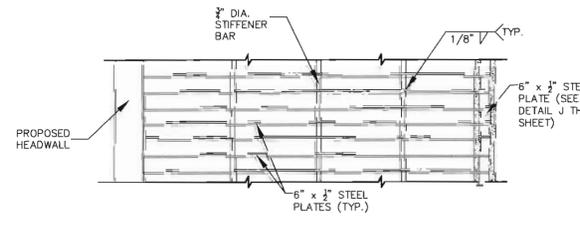
FRONT SECTION

(D) INLET / TRASH RACK DETAIL
D1 SCALE 1" = 4'-0"

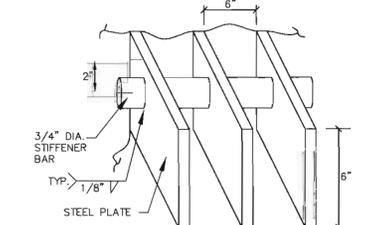
(E) RESTRICTOR PLATE DETAIL
D1 SCALE: 1" = 4'-0"



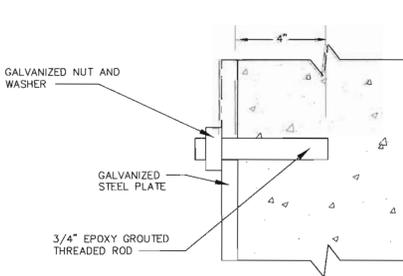
(F) PERPENDICULAR VIEW SIDE WALL REINFORCEMENT
D1



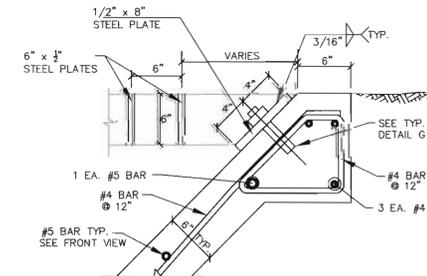
(M) TRASH RACK DETAIL
D1 NTS



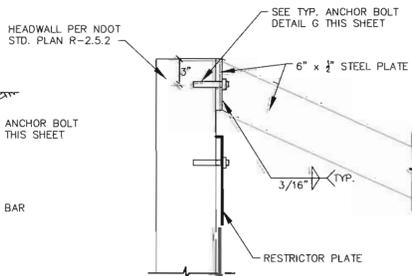
(N) STIFFENER BAR DETAIL
D1 NTS



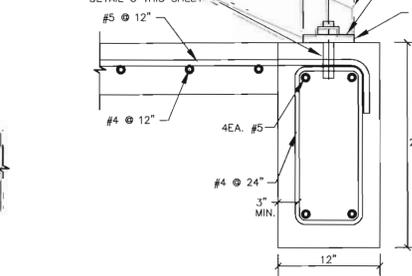
(G) ANCHOR BOLT DETAIL
D1 NTS



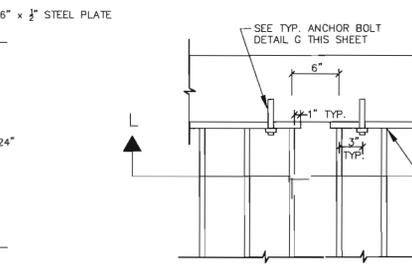
(H) DETAIL
D1 NTS



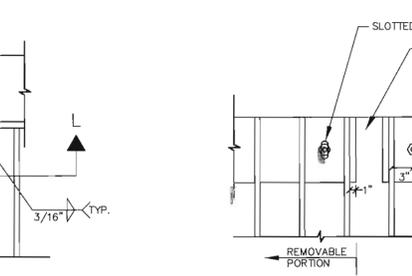
(I) DETAIL
D1 NTS



(J) DETAIL
D1 NTS



(K) DETAIL
D1 NTS



(L) DETAIL
D1 NTS

- NOTES:
1. HEADWALL PER NDOT STANDARD PLANS R2.5.2
 2. ALL THREADED ROD ANCHORS SHALL BE 3/4" SIMPSON SET (HIGH STRENGTH EPOXY) OR SIMILAR.
 3. BOLTS FOR REMOVABLE PORTION SHALL BE STAINLESS STEEL.
 4. ALL STEEL PARTS SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A153.
 5. A HARDENED FLAT WASHER AND LOCK WASHER SHALL BE USED BETWEEN THE NUTS AND CONNECTED PARTS.
 6. ALL WELDING SHALL BE DONE IN ACCORDANCE WITH AWS D1.5-96 CODE.
 7. TYPE II AGGREGATE SHALL CONFORM TO CCAUSS # 704.03.04
 8. ALL CONCRETE SHALL BE CLASS AA PER CCAUSS # 501.

Call before you Dig.
1-800-227-2600
UNDERGROUND SERVICE ALERT (USA)

Call before you OVERHEAD.
1-702-227-2929
SAFETY SERVICES DEPARTMENT

SEAL
M. LEE JACOBY Jr.
CIVIL
No. 15756

REV.	DESCRIPTION	BY	DATE	APPROVAL

CONFORMED EASTSIDE LANDFILL DETAILS I

JOB NO.: 511603.19
FILE NAME: LANDFILL
SCALE: HORIZ.:
VERT.:
DESIGNED BY: -LJ
DRAWN BY: -DS
CHECKED BY: -DS
DATE: MAY, 2008

HTE# 06-44325
D1



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Headwall Cast-In Place Concrete Mix Design / Trashrack Certification Letter
Submittal Number:	03400-001
Specification Section:	Section 03400, Part 1.04, Subpart A
Drawing Number (s):	D2
Page Number:	03400-2
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	11/17/2008

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
 ATTENTION: Lee C. Farris, P.E.

DATE: 12/10/08
 JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
 TRANSMITTAL NUMBER: 165
 ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
8	12/10/08			Submittal 03400-001A – RTC-Headwall Concrete Mix Design / Trashrack Certification Letter	RC

ACTION (*)

AR - AS REQUESTED

FA - FOR APPROVAL

F – FILE

RC - REVIEW & COMMENT

COMMENTS:

SENT VIA:

E-MAIL

MAIL

OVERNIGHT

HAND DELIVERY

FACSIMILE

COPY TO: Ranjit Sahu, Lee Farris

BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....



699 South Friendswood Drive
Suite 101
Friendswood, Texas 77546

December 10, 2008

Lee C. Farris, P.E.
Vice President
Basic Remediation Company
875 West Warm Springs Road
Henderson, Nevada 89011

Re: Submittal 03400-001A - Response to Comments for Headwall Concrete Mix Design/Trashrack Certification Letter

Attachments:

- 1. Cast-in-Place Concrete Mix Design**
- 2. Drawing D2**

Dear Lee,

Please find our response to the comments issued from Weston Solutions, Inc. (Weston) on 11/26/08 pertaining to Submittal 03400-001 – Headwall Concrete Mix Design/Trashrack Certification Letter submitted to BRC on 11/17/08. Each Weston comment is listed below in bold italic font followed by ENTACT's respective responses.

Comment 1:

Include in submittal any admixtures.

Response:

Please see Attachment 1 for the Cast-In-Place Concrete Field Mix Design that will be utilized for all cast-in-place concrete structures.

Comment 2:

Include Drawing D2 in submittal.

Response:

Improvement Plan Drawing D2 has been included as Attachment 2.

Please feel free to call me at 630-330-8237 to go over any additional questions which arise during your review of this revised submittal.

Respectfully,

A handwritten signature in black ink, appearing to read 'M. Carlson'.

Michael M. Carlson
Field Engineer - ENTACT

Attachment 1



Converse Consultants

Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

CONCRETE MIX DESIGN: SF232

Supplier : Silver State Materials
 Strength @ 28 Days : 4500 PSI
 Cement Sk : 6.50
 Cementitious Matl Sk : 6.63
 Soluble Sulfates : N/A
 Slump : 4" ± 1"

Project : Eastside Landfill
 Application : Class D Modified
 Nom Size Agg : 3/4"
 Entrapped Air % : 1.2
 W/C : 0.45
 FA % : 10 1.2 1 Ratio

SOURCE OF MATERIALS

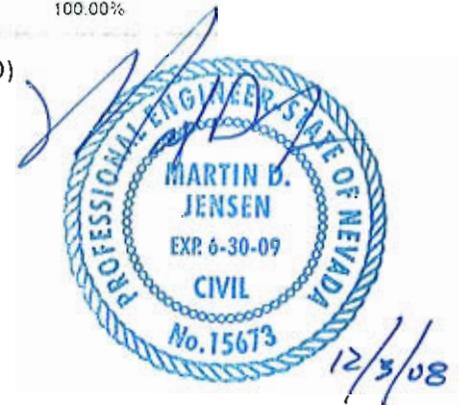
Cement (ASTM C150 Type V) : C.P.C
 Fly Ash (ASTM C618 Type F) : Headwaters Resources - Navajo
 Sand (Washed Sand) : Construx, Eldorado
 Coarse Agg (3/4" - #67) : Las Vegas Paving , Apex Pil

AGGREGATE PHYSICAL PROPERTIES

Sieve Size	C33 Date: 6/6/2008		5/23/2008		Combined	Specification (CCPW- D Modified)	
	Washed Sand	3/4" - #67				(Hi)	(Lo)
2"	100.0	100.0	0.0	0.0	100	100	100
1 1/2"	100.0	100.0	0.0	0.0	100	100	100
1"	100.0	100.0	0.0	0.0	100	100	100
3/4"	100.0	90.0	0.0	0.0	94	100	80
1/2"	100.0	52.0	0.0	0.0	73		
3/8"	100.0	28.0	0.0	0.0	59	74	46
#4	100.0	4.0	0.0	0.0	45	54	34
#8	84.0	1.0	0.0	0.0	37	50	24
#16	53.0	0.0	0.0	0.0	23	38	17
#30	31.0	0.0	0.0	0.0	13	29	10
#50	16.0	0.0	0.0	0.0	7	19	5
#100	6.0	0.0	0.0	0.0	3	9	2
#200	1.4	0.5	0.0	0.0	0.9	5	0
Bulk Specific Grav, SSD:	2.57	2.67	0	0			
Absorption %:	3.8	0.8	0	0			
Aggregate Ratio %:	43.00%	57.00%	0.00%	0.00%	100.00%		

BATCH WEIGHTS FOR ONE CUBIC YARD (SSD)

	Solid Volume	Weight (lbs)	Volume (ft3)
Cement (ASTM C150 Type V) :		550	2.80
Fly Ash (ASTM C618 Type F) :		73	0.50
Water :		280	4.49
% Entrapped Air :			0.32
Sand (Washed Sand) :	43.00%	1,302	8.12
Coarse Agg (3/4" - #67) :	57.00%	1,794	10.77
Coarse Agg 2:	0.00%	0	0.00
Coarse Agg 3:	0.00%	0	0.00
Total:		3,999	27.00



Theoretical Unit Weight : 148.11 PCF

Admixtures and or comments:

Type A Water Reducer: as per manufacturer's recommendations.



Submitted By _____
 Date 12/3/08





CALIFORNIA PORTLAND CEMENT COMPANY

9350 OAK CREEK ROAD, MOJAVE, CALIFORNIA 93502 / TEL. (805) 824-2401 FAX (805) 824-4901

Manufacturer's Certification

We hereby certify that Mojave Type II/V Low Alkali cement supplied to you has been manufactured in accordance with and meets the standard requirements of the current ASTM C 150 specification for TYPE II and TYPE V cement. Following are the average chemical and physical data for the month of February, 2008:

ASTM C 150 Requirements

Chemical Analysis	TYPE II Requirements	TYPE V Requirements	MOJAVE TYPE II / V
Silicon dioxide (SiO ₂), min, %	---	---	20.9
Aluminum oxide (Al ₂ O ₃), max, %	6.0	---	3.9
Ferric oxide (Fe ₂ O ₃), max, %	6.0	---	3.6
Magnesium oxide (MgO), max, %	6.0	6.0	2.7
Sulfur trioxide (SO ₃), max, %; (Note 2)	3.0	2.3	2.6
Loss on ignition, max, %	3.0	3.0	2.0
Insoluble residue, max, %	0.75	0.75	0.31
Alkalies (Na ₂ O+0.658K ₂ O), max, %	0.60	0.60	0.56
Tricalcium silicate (C ₃ S), %	---	---	57
Tricalcium aluminate (C ₃ A), max, %; (Note 3)	8	5	4
Tetracalcium aluminoferrite (C ₄ AF), %	---	---	11
C ₄ AF + 2 (C ₃ A), max, %; (Note 3)	---	25	19
C ₃ S + 4.75*(C ₃ A), max, %; (Note 4)	100	---	76
CO ₂ , %	---	---	1.0
limestone, max, %	5.0	5.0	2.5
CaCO ₃ in limestone, min, %	70	70	90.3
Physical Data			
Air content of mortar, max, %	12	12	6.6
Passing 45um (no. 325) sieve, %;	---	---	98.3
Blaine Fineness, min/max, m ² /kg; (Note 4)	280/430	280/---	394
Average Blaine Fineness, (last 5 samples)(Note 4)	420	---	394
Heat of Hydration C186, (cal/g), (Note 5)	---	---	80
Autoclave expansion, max, %	0.80	0.80	-0.01
Compressive Strength, min, MPa, (psi)			
3 days	10.0 (1450)	8.0 (1160)	27.9 (4048)
7 days	17.0 (2470)	15.0 (2180)	34.2 (4960)
28 days *(from previous month)	---	21.0 (3050)	*41.8 (6060)
Vicat, initial set, min.-max., minutes	45-375	45-375	139
C 1038, 14 day max, % expansion	0.020	0.020	0.010
C 452, 14 day max, % expansion; (Note 1)	---	0.040	0.030
False Set, final penetration, min, %	50	50	86

Apparatus and methods used in this laboratory have been checked by the Cement and Concrete Reference Laboratory of the National Institute of Standards and Technology. A copy of the report detailing their findings is available upon request. Major Oxides are analyzed by X-ray Fluorescence Spectrometry.

Note 1: ASTM C150, Table 4, Optional Physical Requirements, Sulfate Resistance at 14 days.

Note 2: ASTM C150, Table 1, Note D, The performance of the cement represented by this certificate has proven to be improved with SO₃ levels in excess of the 2.3% limit for Type V. The expansion, as measured by ASTM C1038, does not exceed the limit of 0.02% at 14 days.

Note 3: ASTM C150, Table 1, Note C, Does not apply when the optional sulfate resistance limit in Table 4 is specified

Note 4: ASTM C150, Table 3, Note F. Maximum Average and Maximum Single sample fineness limits do not apply if the sum of C₃S+4.75*C₃A is less than or equal to 90.

Note 5: ASTM C150, Table 1, Note H, For Informational Purposes Only

Jerold S. Kennedy, Quality Control Superintendent

Chemical and Physical Analysis of Fly Ash

Developed For: *Headwaters Resources*
 16817 - 155th PI SE
 Renton, WA 98058

Ticket: 8122	Plant of Origin: <i>Navajo</i>	Sample Date Range: 04/14/2008
Job: 14420	Sample ID: <i>Nv-034-08</i>	to: 04/16/2008
Report Date: 06/03/2008	Docket: -	Date Received: 04/22/2008

<u>Chemical Composition (%)</u> <small>(by Wyoming Analytical Laboratories, Inc.)</small>		ASTM C 618-05 Specifications	
		<u>Class F</u>	<u>Class C</u>
Total Silica, Aluminum, Iron:	86.0	70.0 Min	50.0 Min
Silicon Dioxide:	58.6		
Aluminum Oxide:	22.1		
Iron Oxide:	5.3		
Sulfur Trioxide:	0.4	5.0 Max	5.0 Max
Calcium Oxide:	6.2		
Moisture Content:	0.2	3.0 Max	3.0 Max
Loss on Ignition:	0.4	6.0 Max	6.0 Max
		AASHTO M 295-00 Specifications	
Available Alkalies (as Na ₂ O):	1.0	1.5 Max	1.5 Max
Sodium Oxide:	0.74		
Potassium Oxide:	0.40		

<u>Physical Test Results</u>		ASTM C 618-05 Specifications	
		<u>Class F</u>	<u>Class C</u>
Fineness, Retained on #325 Sieve (%):	18.8	34 Max	34 Max
Strength Activity Index (%)			
Ratio to Control @ 7 Days:	84.6		
Ratio to Control @ 28 Days:	90.0	75 Min	75 Min
Water Requirement, % of Control:	93.4	105 Max	105 Max
Soundness, Autoclave Expansion (%):	-0.01	0.8 Max	0.8 Max
Drying Shrinkage, Increase @ 28 Days (%):	0.00	0.03 Max	0.03 Max
Density Mg/m ³ :	2.23		

Comments:

CTL | Thompson Materials Engineers, Inc.



Orville R. Werner II, P.E.





Silver State Materials
4005 Dean Martin Drive
Las Vegas, Nevada 89103

June 06, 2008

Attention: Mr. Mark Bliss

MTC No.: 83002-6

Reference: Physical Properties of Coarse Concrete Aggregate Size No. 89
Construx Pit Eldorado Valley
Clark County, Nevada

Pursuant to your request and authorization, we have performed laboratory tests to determine physical properties of size No. 89 coarse aggregate submitted by Silver State Materials personnel on May 9, 2008. These tests were performed in accordance with standard ASTM test procedures for compliance with ASTM C33-03 Standard Specifications for Concrete Aggregates.

Test results for each aggregate are attached as Data Sheet Number 2.

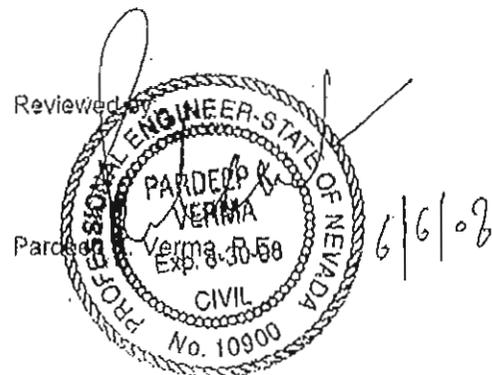
The sample meets the minimum requirements of ASTM Designation C33-03, Standard Specifications for Concrete Aggregate.

We trust this provides you with the information you require. Should you have any questions concerning the content of this report, or if we may be of additional service, please feel free to contact us.

Respectfully submitted,

MATERIALS TESTING CORPORATION

Daniel C. Thome



Silver State Materials
 Physical Properties of Fine Aggregates (Eldorado Valley)
 Construx Pit

DATE: 06-06-08
 MTC NO.: 83002-6
 DATA SHEET NO.: 1

REPORT OF DETERMINATION

1. Sieve Analysis and Material Finer than No. 200 Sieve (ASTM C117 & C136)

	PERCENT PASSING U.S. STANDARD SIEVE								FINENESS
Sieve Size:	<u>3/8"</u>	<u>#4</u>	<u>#8</u>	<u>#16</u>	<u>#30</u>	<u>#50</u>	<u>#100</u>	<u>#200</u>	<u>MODULUS</u>
Results:	100	100	84	53	31	16	6	1.4	3.10
ASTM C33 Specs.:	100	95-100	80-100	50-85	25-60	5-30	0-10	0-5*	2.3-3.1

*0-3% for concrete subject to abrasion.

	RESULTS	MAXIMUM ALLOWABLE, %
2. Specific Gravity and Absorption of Fine Aggregate (ASTM C128)		
Bulk Specific Gravity:	2.477	---
Bulk Specific Gravity (Saturated Surface Dry):	2.571	---
Apparent Specific Gravity:	2.733	---
Water Absorption, Percent:	3.8	
3. Clay Lumps and Friable Particles in Fine Aggregate (ASTM C142)	0.6	3.0
4. Coal and Lignite in Material Lighter than 2.0 SP.GR. (ASTM C123)		
Amount of Material Lighter than 2.0 sp.gr.	1.1	---
Coal and Lignite	None	---
5. Soundness of Aggregate by Use of Sodium Sulfate (ASTM C88)		
Percentage Loss (Weighted Average):	6.0	10.0
6. Organic Impurities in Fine Aggregate (ASTM C40)	Non-detrimental	---
7. Sand Equivalent Value of Fine Aggregate (ASTM D2419)	84	---
8. Damp Loose Unit Weight of Fine Aggregate (ASTM C29)	84pcf @ 3.2% Moisture	
9. Potential Alkali-Silica Reactivity of Aggregates (Chemical Method)		
ASTM Designation: C 289-03		

S_o	<u>mmol/L</u>	R_s	<u>mmol/L</u>
	80.4		767
	81.39		
	<u>87.43</u>		
Average	83.06		
Ratio:	0.11:1		

Material is considered innocuous by this method.



GeoTek, Inc.
6635 South Escondido Street, Suite A, Las Vegas, NV 89119-3832
702-897-1424 Office 702-897-2213 Fax www.geotekusa.com

TECHNICAL REPORT

REPORT TO: Las Vegas Paving Corporation
3401 North 5th Street
North Las Vegas, NV 89032

DATE: May 23, 2008
WORK ORDER NO: 5478
SHEET: 1 of 6
Revision No.

ATTENTION: Mr. Dan Peressini

REPORT OF: Concrete Aggregate Tests for Material Sampled at the Apex Pit for use in Portland
Cement Concrete Mixes for Concrete Production

SAMPLE IDENTIFICATION

On April 21, 2008, your personnel obtained five samples of concrete aggregates (#4, #67, #89, #7, Washed Fines) from the above referenced pit. At your request, the following tests were performed: sieve analysis, organic impurities, sodium sulfate soundness, LA abrasion, clay lumps and friable particles, specific gravity, and lightweight pieces in aggregate. These tests were sampled and performed in general accordance with ASTM C29, C40, C88, C117, C123, C127, C128, C535, C136, C142, C229, D75, C289 and CTM 227. Results of these tests are summarized on the attached sheets.



LABORATORY MANAGER: _____

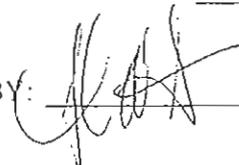
REVIEWED BY:  _____

TABLE NO.3 SIEVE ANALYSIS, SPECIFIC GRAVITY AND ABSORPTION OF NO. 67 (¾" - NO.4) COARSE AGGREGATE (ASTM C136, C117 AND C127)

Laboratory Number	95859/95976	ASTM C33 TABLE 2 No. 67
Description	Apex Pit No. 67 Coarse Aggregate (¾" - No.4)	
Screen or Sieve Size	Percent Passing	
1"	100	100
¾"	90	90 - 100
½"	52	-
⅜"	28	20 - 55
No. 4	4	0 - 10
No. 8	1	0 - 5
No. 200	0.5	0 - 1
Bulk Dry Specific Gravity	2.66	N/A
Bulk Specific Gravity, SSD	2.67	N/A
Apparent Specific Gravity	2.71	N/A
Absorption, %	0.8	N/A

TABLE NO.4 COARSE AGGREGATE PROPERTIES PERFORMED ON NO. 67 (¾" - NO.4) COARSE AGGREGATE

Laboratory Tests	Test Method	Test Results	ASTM C33 Table 3
Percentage of Wear (500 Rev.), %	ASTM C131	20	50 max
Clay Lumps and Friable Particles, %	ASTM C142	0	2 max*
Sodium Sulfate Soundness, % Loss after 5 Cycles	ASTM C88	0.7	12 max*
Lightweight Pieces	ASTM C123	0	0.5 max*
Cleanness Value**	CTM 227	89	71 min
Dry Rodded Unit Weight, pcf	ASTM C29	95.9	N/A
Potential Reactivity of Aggregate, Chemical Method***	ASTM C289	Innocuous	

* ASTM C33, Table 3

*** Tests performed by Silver State Analytical Laboratories



The Chemical Company

Description

Pozzolith 80 ready-to-use, liquid admixture is used for making more uniform and predictable quality concrete.

Pozzolith 80 admixture meets ASTM C 494/C 494M requirements for Type A, water-reducing, Type B, retarding, and Type D, retarding and water-reducing, admixtures.

Applications

Recommended for use in:

- Prestressed concrete
- Precast concrete
- Reinforced concrete
- Shotcrete
- Lightweight concrete
- Pumped concrete
- 4x4™ Concrete
- Pervious Concrete
- Rheodynamic® Self-Consolidating Concrete (SCC)

POZZOLITH® 80

Features

- Reduced water content required for a given workability
- Controlled setting characteristics – normal or retarded

Benefits

- Increased compressive and flexural strength
- Improved workability
- Reduced segregation
- Flexibility in the scheduling of placing and finishing operations
- Offsets effects of early stiffening during extended delays between mixing and placing
- Helps eliminate cold joints
- Dead-load deflection can take place (before concrete sets) in extended pours for bridge decks, cantilevers, nonshored structural elements, etc.
- Peak temperature and/or rate of temperature rise lowered in mass concrete thereby reducing thermal cracking

Performance Characteristics

Rate of Hardening: The temperature of the concrete mixture and the ambient temperature affect the hardening rate of concrete. At higher temperatures, concrete stiffens more rapidly which may cause problems with placing and finishing. The dosage range of Pozzolith 80 admixture can be varied to provide the desired setting characteristics.

Guidelines for Use

Dosage: Depending on the setting characteristics desired, Pozzolith 80 admixture is recommended for use within the dosage range of 4-10 fl oz/cwt (260-650 mL/100 kg) of cementitious materials for most concrete mixtures using average concrete ingredients. Because of variations in job conditions and concrete materials, dosages other than the recommended amounts may be required. In such cases, contact your BASF Construction Chemicals representative.

Master
Builders

Product Data:

Product Notes

Corrosivity – Non-Chloride, Non-Corrosive: Pozzolith 80 admixture will neither initiate nor promote corrosion of reinforcing steel in concrete. This admixture does not contain intentionally-added calcium chloride or other chloride-based ingredients.

Compatibility: Pozzolith 80 admixture may be used in combination with any BASF Construction Chemicals admixtures. When used in conjunction with other admixtures, each admixture must be dispensed separately into the mix.

Storage and Handling

Storage Temperature: If Pozzolith 80 admixture freezes, thaw at 35 °F (2 °C) or above and completely reconstitute by mild mechanical agitation. *Do not use pressurized air for agitation.*

Shelf Life: Pozzolith 80 admixture has a minimum shelf life of 18 months. Depending on storage conditions, the shelf life may be greater than stated. Please contact your BASF Construction Chemicals representative regarding suitability for use and dosage recommendations if the shelf life of Pozzolith 80 admixture has been exceeded.

Packaging

Pozzolith 80 admixture is supplied in 55 gal (208 L) drums, 275 gal (1040 L) totes and by bulk delivery.

Related Documents

Material Safety Data Sheets: Pozzolith 80 admixture.

Additional Information

For additional information on Pozzolith 80 admixture or its use in developing a concrete mix with special performance characteristics, contact your BASF Construction Chemicals representative.

The Admixture Systems business of BASF Construction Chemicals is a leading provider of innovative additives for specialty concrete used in the ready mix, precast, manufactured concrete products, underground construction and paving markets throughout the NAFTA region. The Company's respected Master Builders brand products are used to improve the placing, pumping, finishing, appearance and performance characteristics of concrete.

BASF Construction Chemicals, LLC
Admixture Systems

www.masterbuilders.com

United States 23700 Chagrin Boulevard, Cleveland, Ohio 44122-5544 Tel: 800 628-9990 Fax: 216 839-8821

Canada 1800 Clark Boulevard, Brampton, Ontario L6T 4M7 Tel: 800 387-5862 Fax: 905 792-0651

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**Master
Builders**

CALIFORNIA PORTLAND CEMENT COMPANY

9350 OAK CREEK ROAD, MOJAVE, CALIFORNIA 93502 / TEL. (805) 824-2401 FAX (805) 824-4901

Manufacturer's Certification

We hereby certify that Mojave Type II/V Low Alkali cement supplied to you has been manufactured in accordance with and meets the standard requirements of the current ASTM C 150 specification for TYPE II and TYPE V cement. Following are the average chemical and physical data for the month of February, 2008:

ASTM C 150 Requirements

Chemical Analysis	TYPE II Requirements	TYPE V Requirements	MOJAVE TYPE II / V
Silicon dioxide (SiO ₂), min, %	---	---	20.9
Aluminum oxide (Al ₂ O ₃), max, %	6.0	---	3.9
Ferric oxide (Fe ₂ O ₃), max, %	6.0	---	3.6
Magnesium oxide (MgO), max, %	6.0	6.0	2.7
Sulfur trioxide (SO ₃), max, %; (Note 2)	3.0	2.3	2.6
Loss on ignition, max, %	3.0	3.0	2.0
Insoluble residue, max, %	0.75	0.75	0.31
Alkalies (Na ₂ O+0.658K ₂ O), max, %	0.60	0.60	0.56
Tricalcium silicate (C ₃ S), %	---	---	57
Tricalcium aluminate (C ₃ A), max, %; (Note 3)	8	5	4
Tetracalcium aluminoferrite (C ₄ AF), %	---	---	11
C ₄ AF + 2 (C ₃ A), max, %; (Note 3)	---	25	19
C ₃ S + 4.75*(C ₃ A), max, %; (Note 4)	100	---	76
CO ₂ , %	---	---	1.0
limestone, max, %	5.0	5.0	2.5
CaCO ₃ in limestone, min, %	70	70	90.3
Physical Data			
Air content of mortar, max, %	12	12	6.6
Passing 45um (no. 325) sieve, %;	---	---	98.3
Blaine Fineness, min/max, m ² /kg; (Note 4)	280/430	280/---	394
Average Blaine Fineness, (last 5 samples)(Note 4)	420	---	394
Heat of Hydration C186, (cal/g), (Note 5)	---	---	80
Autoclave expansion, max, %	0.80	0.80	-0.01
Compressive Strength, min, MPa, (psi)			
3 days	10.0 (1450)	8.0 (1160)	27.9 (4048)
7 days	17.0 (2470)	15.0 (2180)	34.2 (4960)
28 days *(from previous month)	---	21.0 (3050)	41.8 (6060)
Vicat, initial set, min.-max., minutes	45-375	45-375	139
C 1038, 14 day max, % expansion	0.020	0.020	0.010
C 452, 14 day max, % expansion; (Note 1)	---	0.040	0.030
False Set, final penetration, min, %	50	50	86

Apparatus and methods used in this laboratory have been checked by the Cement and Concrete Reference Laboratory of the National Institute of Standards and Technology. A copy of the report detailing their findings is available upon request. Major Oxides are analyzed by X-ray Fluorescence Spectrometry.

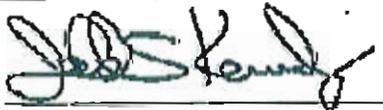
Note 1: ASTM C150, Table 4, Optional Physical Requirements, Sulfate Resistance at 14 days.

Note 2: ASTM C150, Table 1, Note D, The performance of the cement represented by this certificate has proven to be improved with SO₃ levels in excess of the 2.3% limit for Type V. The expansion, as measured by ASTM C1038, does not exceed the limit of 0.02% at 14 days.

Note 3: ASTM C150, Table 1, Note C, Does not apply when the optional sulfate resistance limit in Table 4 is specified.

Note 4: ASTM C150, Table 3, Note F. Maximum Average and Maximum Single sample fineness limits do not apply if the sum of C₃S+4.75*C₃A is less than or equal to 90.

Note 5: ASTM C150, Table 1, Note H, For Informational Purposes Only.



Jerold S. Kennedy, Quality Control Superintendent

Chemical and Physical Analysis of Fly Ash

Developed For: *Headwaters Resources*
 16817 - 155th Pl SE
 Renton, WA 98058

Ticket: 8122	Plant of Origin: <i>Navajo</i>	Sample Date Range: 04/14/2008
Job: 14420	Sample ID: <i>Nv-034-08</i>	to: 04/16/2008
Report Date: 06/03/2008	Docket: -	Date Received: 04/22/2008

<u>Chemical Composition (%)</u> <small>(by Wyoming Analytical Laboratories, Inc.)</small>		ASTM C 618-05 Specifications	
		<u>Class F</u>	<u>Class C</u>
Total Silica, Aluminum, Iron:	86.0	70.0 Min	50.0 Min
Silicon Dioxide:	58.6		
Aluminum Oxide:	22.1		
Iron Oxide:	5.3		
Sulfur Trioxide:	0.4	5.0 Max	5.0 Max
Calcium Oxide:	6.2		
Moisture Content:	0.2	3.0 Max	3.0 Max
Loss on Ignition:	0.4	6.0 Max	6.0 Max
		AASHTO M 295-00 Specifications	
Available Alkalies (as Na ₂ O):	1.0	1.5 Max	1.5 Max
Sodium Oxide:	0.74		
Potassium Oxide:	0.40		

<u>Physical Test Results</u>		ASTM C 618-05 Specifications	
		<u>Class F</u>	<u>Class C</u>
Fineness, Retained on #325 Sieve (%):	18.8	34 Max	34 Max
Strength Activity Index (%)			
Ratio to Control @ 7 Days:	84.6		
Ratio to Control @ 28 Days:	90.0	75 Min	75 Min
Water Requirement, % of Control:	93.4	105 Max	105 Max
Soundness, Autoclave Expansion (%):	-0.01	0.8 Max	0.8 Max
Drying Shrinkage, increase @ 28 Days (%):	0.00	0.03 Max	0.03 Max
Density Mg/m ³ :	2.23		

Comments:

CTL | Thompson Materials Engineers, Inc.

Orville R. Werner II

Orville R. Werner II, P.E.





Silver State Materials
4005 Dean Martin Drive
Las Vegas, Nevada 89103

June 06, 2008

Attention: Mr. Mark Bliss

MTC No.: 83002-6

Reference: Physical Properties of Coarse Concrete Aggregate Size No. 89
Construx Pit Eldorado Valley
Clark County, Nevada

Pursuant to your request and authorization, we have performed laboratory tests to determine physical properties of size No. 89 coarse aggregate submitted by Silver State Materials personnel on May 9, 2008. These tests were performed in accordance with standard ASTM test procedures for compliance with ASTM C33-03 Standard Specifications for Concrete Aggregates.

Test results for each aggregate are attached as Data Sheet Number 2.

The sample meets the minimum requirements of ASTM Designation C33-03, Standard Specifications for Concrete Aggregate.

We trust this provides you with the information you require. Should you have any questions concerning the content of this report, or if we may be of additional service, please feel free to contact us.

Respectfully submitted,

MATERIALS TESTING CORPORATION

Daniel C. Thorne

Reviewed by

Pardeep



6/6/08

Silver State Materials
 Physical Properties of Size #89 Coarse Aggregate
 Construx Pit

DATE: 06-06-08
 MTC NO.: 83002-6
 DATA SHEET NO.: 2

REPORT OF DETERMINATION

1. Sieve Analysis and Material Finer than No. 200 Sieve (ASTM C117 & C136)

PERCENT PASSING U.S. STANDARD SIEVE

Sieve Size:	1/2"	3/8"	#4	#8	#16	#50	#200
Results:	100	99	55	16	5	2	1.0
ASTM C33 Specs.:							
Size No. 89:	100	90-100	20-55	5-30	0-10	0-5	0-1

	RESULTS	MAXIMUM ALLOWABLE, %
2. Specific Gravity and Absorption of Coarse Aggregate (ASTM C127)		
Bulk Specific Gravity:	2.482	---
Bulk Specific Gravity (Saturated Surface Dry):	2.551	---
Apparent Specific Gravity:	2.667	---
Water Absorption, Percent:	2.8	---
3. Clay Lumps and Friable Particles in Coarse Aggregate (ASTM C142)	0	5.0
4. Sum of Clay Lumps, Friable Particles and Chert	0	---
5. Coal and Lignite in Material Lighter than 2.0 SP.GR. (ASTM C123)		
Amount of Material Lighter than 2.0 sp.gr.	0.5	---
Coal and Lignite	None	---
6. Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine (ASTM C131) (500 Rev) Percent Loss:	19	50.0
7. Soundness of Aggregate by Use of Sodium Sulfate (ASTM C88)		
Percentage Loss (Weighted Average)	10	12.0
8. Dry Rodded Unit Weight of Coarse Aggregate (ASTM C29)	96.5 pcf	---
9. Potential Alkali-Silica Reactivity of Aggregates (Chemical Method)		
ASTM Designation: C 289-03		

S _c	<u>mmo/L</u>	R _c	<u>mmo/L</u>
	80.4		767
	81.39		
	<u>87.43</u>		
Average	83.06		
Ratio:	0.11:1		

Material is considered innocuous by this method.

Silver State Materials
 Physical Properties of Fine Aggregates (Eldorado Valley)
 Construx Pit

DATE: 06-06-08
 MTC NO.: 83002-6
 DATA SHEET NO.: 1

REPORT OF DETERMINATION

1. Sieve Analysis and Material Finer than No. 200 Sieve (ASTM C117 & C136)

PERCENT PASSING U.S. STANDARD SIEVE

Sieve Size:	<u>3/8"</u>	<u>#4</u>	<u>#8</u>	<u>#16</u>	<u>#30</u>	<u>#50</u>	<u>#100</u>	<u>#200</u>	FINENESS MODULUS
Results:	100	100	84	53	31	16	6	1.4	3.10
ASTM C33 Specs.:	100	95-100	80-100	50-85	25-60	5-30	0-10	0-5*	2.3-3.1

*0-3% for concrete subject to abrasion.

	RESULTS	MAXIMUM ALLOWABLE, %
2. Specific Gravity and Absorption of Fine Aggregate (ASTM C128)		
Bulk Specific Gravity:	2.477	---
Bulk Specific Gravity (Saturated Surface Dry):	2.571	---
Apparent Specific Gravity:	2.733	---
Water Absorption, Percent:	3.8	
3. Clay Lumps and Friable Particles in Fine Aggregate (ASTM C142)	0.6	3.0
4. Coal and Lignite in Material Lighter than 2.0 SP.GR. (ASTM C123)		
Amount of Material Lighter than 2.0 sp.gr.	1.1	---
Coal and Lignite	None	---
5. Soundness of Aggregate by Use of Sodium Sulfate (ASTM C88)		
Percentage Loss (Weighted Average):	6.0	10.0
6. Organic Impurities in Fine Aggregate (ASTM C40)	Non-detrimental	---
7. Sand Equivalent Value of Fine Aggregate (ASTM D2419)	84	---
8. Damp Loose Unit Weight of Fine Aggregate (ASTM C29)	84pcf @ 3.2% Moisture	
9. Potential Alkali-Silica Reactivity of Aggregates (Chemical Method)		
ASTM Designation: C 289-03		

S _o	mmol/L	R _s	mmol/L
	80.4		767
	81.39		
	<u>87.43</u>		
Average	83.06		
Ratio:	0.11:1		

Material is considered innocuous by this method.



The Chemical Company

Description

Pozzolith 80 ready-to-use, liquid admixture is used for making more uniform and predictable quality concrete.

Pozzolith 80 admixture meets ASTM C 494/C 494M requirements for Type A, water-reducing, Type B, retarding, and Type D, retarding and water-reducing, admixtures.

Applications

Recommended for use in:

- Prestressed concrete
- Precast concrete
- Reinforced concrete
- Shotcrete
- Lightweight concrete
- Pumped concrete
- 4x4™ Concrete
- Pervious Concrete
- Rheodynamic® Self-Consolidating Concrete (SCC)

POZZOLITH® 80

Features

- Reduced water content required for a given workability
- Controlled setting characteristics – normal or retarded

Benefits

- Increased compressive and flexural strength
- Improved workability
- Reduced segregation
- Flexibility in the scheduling of placing and finishing operations
- Offsets effects of early stiffening during extended delays between mixing and placing
- Helps eliminate cold joints
- Dead-load deflection can take place (before concrete sets) in extended pours for bridge decks, cantilevers, nonshored structural elements, etc.
- Peak temperature and/or rate of temperature rise lowered in mass concrete thereby reducing thermal cracking

Performance Characteristics

Rate of Hardening: The temperature of the concrete mixture and the ambient temperature affect the hardening rate of concrete. At higher temperatures, concrete stiffens more rapidly which may cause problems with placing and finishing. The dosage range of Pozzolith 80 admixture can be varied to provide the desired setting characteristics.

Guidelines for Use

Dosage: Depending on the setting characteristics desired, Pozzolith 80 admixture is recommended for use within the dosage range of 4-10 fl oz/cwt (260-650 mL/100 kg) of cementitious materials for most concrete mixtures using average concrete ingredients. Because of variations in job conditions and concrete materials, dosages other than the recommended amounts may be required. In such cases, contact your BASF Construction Chemicals representative.

Master
Builders

Product Data:

Product Notes

Corrosivity - Non-Chloride, Non-Corrosive: Pozzolith 80 admixture will neither initiate nor promote corrosion of reinforcing steel in concrete. This admixture does not contain intentionally-added calcium chloride or other chloride-based ingredients.

Compatibility: Pozzolith 80 admixture may be used in combination with any BASF Construction Chemicals admixtures. When used in conjunction with other admixtures, each admixture must be dispensed separately into the mix.

Storage and Handling

Storage Temperature: If Pozzolith 80 admixture freezes, thaw at 35 °F (2 °C) or above and completely reconstitute by mild mechanical agitation. *Do not use pressurized air for agitation.*

Shelf Life: Pozzolith 80 admixture has a minimum shelf life of 18 months. Depending on storage conditions, the shelf life may be greater than stated. Please contact your BASF Construction Chemicals representative regarding suitability for use and dosage recommendations if the shelf life of Pozzolith 80 admixture has been exceeded.

Packaging

Pozzolith 80 admixture is supplied in 55 gal (208 L) drums, 275 gal (1040 L) totes and by bulk delivery.

Related Documents

Material Safety Data Sheets: Pozzolith 80 admixture.

Additional Information

For additional information on Pozzolith 80 admixture or its use in developing a concrete mix with special performance characteristics, contact your BASF Construction Chemicals representative.

The Admixture Systems business of BASF Construction Chemicals is a leading provider of innovative additives for specialty concrete used in the ready mix, precast, manufactured concrete products, underground construction and paving markets throughout the NAFTA region. The Company's respected Master Builders brand products are used to improve the placing, pumping, finishing, appearance and performance characteristics of concrete.

BASF Construction Chemicals, LLC
Admixture Systems

www.masterbuilders.com

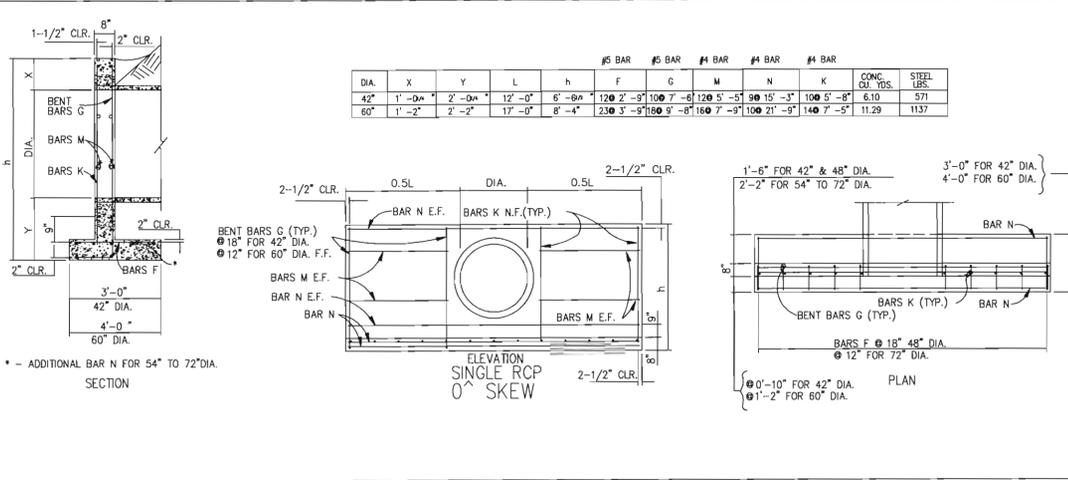
United States 23700 Chagrin Boulevard, Cleveland, Ohio 44122-5544 Tel: 800 628-9990 Fax: 216 839-8821
Canada 1800 Clark Boulevard, Brampton, Ontario L6T 4J7 Tel: 800 387-5852 Fax: 905 792-0651

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**Master
Builders**

Attachment 2

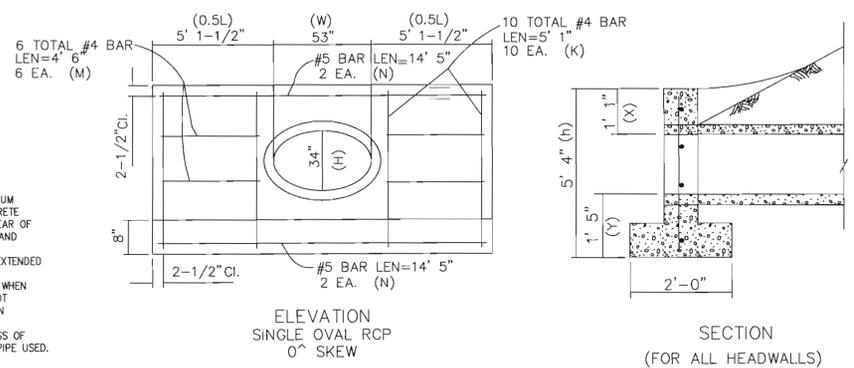


- GENERAL NOTES:**
- CONCRETE SHALL BE CLASS AA.
 - REINFORCING STEEL SHALL BE DEFORMED BARS WITH MAXIMUM SPACING OF 18" SET 2 1/2" CLEAR OF SURFACE OF CONCRETE EXCEPT AS NOTED. BAR ENDS SHALL BE KEPT 1 1/2" CLEAR OF SURFACE OF CONCRETE. REINFORCING BARS MAY BE CUT AND BENT IN FIELD.
 - FOOTINGS SHOWN ARE OF MINIMUM DEPTH AND SHALL BE EXTENDED IF SOIL IS UNSUITABLE OR LIABLE TO SCOUR.
 - CULVERT PIPES TO BE SET ON A SKEW SHALL BE MITERED WHEN HEADWALLS ARE CONSTRUCTED. WHEN HEADWALLS ARE NOT CONSTRUCTED THE PIPES SHALL NOT BE MITERED EXCEPT IN OVERFLOW SECTION.
 - FOR ESTIMATING HEADWALL QUANTITIES ON SKEWED CULVERTS:
 - 0° to 15° USE QUANTITIES FOR 0° SKEW.
 - 11° to 25° USE QUANTITIES FOR 15° SKEW.
 - 26° to 40° USE QUANTITIES FOR 30° SKEW.
 - 41° to 55° USE QUANTITIES FOR 45° SKEW.
 - OVER 55° CALCULATE QUANTITIES REQUIRED.
 - CULVERTS SHOULD BE INSTALLED ON 5' INCREMENTS WHERE IT IS FEASIBLE.
 - DIMENSIONS X, Y, L, AND h TO REMAIN CONSTANT REGARDLESS OF MINOR VARIATIONS IN WALL THICKNESS DUE TO CLASS OF PIPE USED.

NEVADA DEPARTMENT OF TRANSPORTATION
CULVERT HEADWALLS
 42" RCP TO 72" RCP
 (MODIFIED DRAWING)

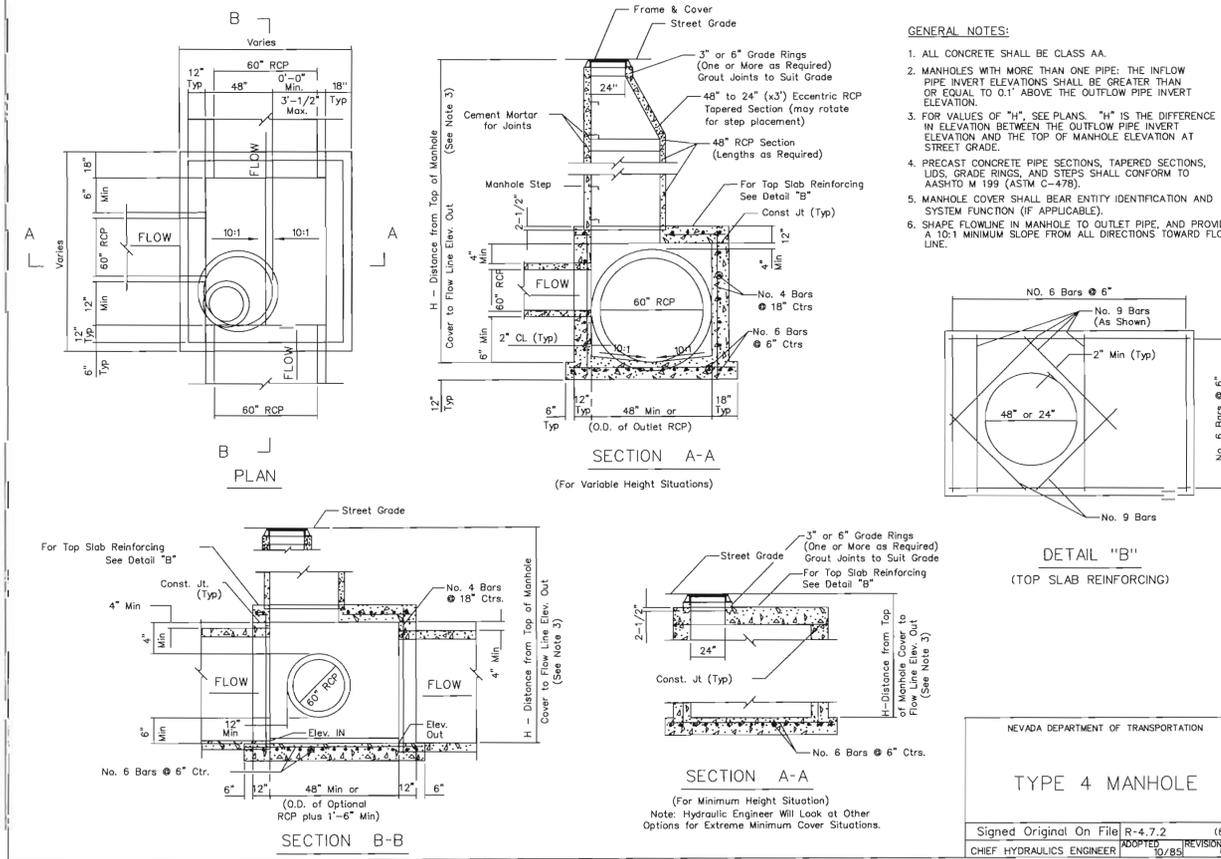
Signed Original On File R-2.5.2 MODIFIED (502)
 CHIEF HYDRAULICS ENGINEER ADOPTED 8/69 REVISION 8/97

- GENERAL NOTES:**
- CONCRETE SHALL BE CLASS AA.
 - REINFORCING STEEL SHALL BE DEFORMED BARS WITH MAXIMUM SPACING OF 18" SET 2 1/2" CLEAR OF SURFACE OF CONCRETE EXCEPT AS NOTED. BAR ENDS SHALL BE KEPT 1 1/2" CLEAR OF SURFACE OF CONCRETE. REINFORCING BARS MAY BE CUT AND BENT IN FIELD.
 - FOOTINGS SHOWN ARE OF MINIMUM DEPTH AND SHALL BE EXTENDED IF SOIL IS UNSUITABLE OR LIABLE TO SCOUR.
 - CULVERT PIPES TO BE SET ON A SKEW SHALL BE MITERED WHEN HEADWALLS ARE CONSTRUCTED. WHEN HEADWALLS ARE NOT CONSTRUCTED THE PIPES SHALL NOT BE MITERED EXCEPT IN OVERFLOW SECTION.
 - DIMENSIONS X, Y, L, AND h TO REMAIN CONSTANT REGARDLESS OF MINOR VARIATIONS IN WALL THICKNESS DUE TO CLASS OF PIPE USED.



NEVADA DEPARTMENT OF TRANSPORTATION
CULVERT HEADWALLS
 (MODIFIED DRAWING)
 53" x 34" OVAL RCP

Signed Original On File R-2.7.1-MODIFIED (502)
 CHIEF HYDRAULICS ENGINEER ADOPTED 8/69 REVISION 12/94

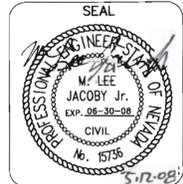


NEVADA DEPARTMENT OF TRANSPORTATION
TYPE 4 MANHOLE

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 CHIEF HYDRAULICS ENGINEER ADOPTED 8/85 REVISION 8/04

Call before you Dig.
 1-800-227-2600
 UNDERGROUND SERVICE ALERT (USA)

Call before you OVERHEAD.
 1-702-227-2929
 NEVADA POWER DIVISION AND UTILITY SERVICES DEPARTMENT



REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: -LJ
 DRAWN BY: -JS
 CHECKED BY: -DS
 DATE: MAY 23, 2008

HT# 06-44325
 D2

CONFORMED EASTSIDE LANDFILL DETAILS II

JOB NO.: 511693.19
 FILE NAME: LANDFILL
 SCALE:
 HORIZ.:
 VERT.:

DESIGNED BY: -LJ
 DRAWN BY: -JS
 CHECKED BY: -DS
 DATE: MAY 23, 2008

HT# 06-44325
 D2



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	RTC-Headwall Cast-In Place Concrete Mix Design / Trashrack Certification Letter
Submittal Number:	03400-001A
Specification Section:	Section 03400, Part 1.04, Subpart A
Drawing Number (s):	D2
Page Number:	03400-2
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	11/17/2008
Date Submitted:	12/10/2008

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
 ATTENTION: Lee C. Farris, P.E.

DATE: 1/20/09
 JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
 TRANSMITTAL NUMBER: 200
 ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	1/20/09			Submittal 03400-001B – RTC-Headwall Concrete Mix Design / Trashrack Certification Letter	RC

ACTION (*)

AR - AS REQUESTED _____
 FA - FOR APPROVAL _____
 F - FILE _____
 RC - REVIEW & COMMENT _____

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE
 COPY TO: Ranjit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....

January 20, 2009

Lee C. Farris, P.E.
Vice President
Basic Remediation Company
875 West Warm Springs Road
Henderson, Nevada 89011

Re: Submittal 03400-001B - Response to Comments for RTC Headwall Concrete Mix Design/Trashrack Certification Letter

Attachments:

- 1. Certification Letter**
- 2. Revised Cast-in-Place Concrete Mix Design**
- 3. Drawing D1 & D2**

Dear Lee,

Please find our response to the comments issued from Weston Solutions, Inc. (Weston) on 12/17/08 pertaining to Submittal 03400-001A – RTC Headwall Concrete Mix Design/Trashrack Certification Letter submitted to BRC on 12/10/08. Each Weston comment is listed below in bold italic font followed by ENTACT's respective responses.

Comment 1:

Drawing D-1 must be submitted as part of the submittal.

Response:

Drawing D-1 and D-2 are provided as Attachment 3. These drawings will be referenced during construction of the Trashrack, Type 4 Manhole, and Headwalls.

Comment 2:

Specification Section 03400, 1.06 requires that the maximum concrete slump shall not exceed 4 inches. The submittal's mix design shows a 4-inch \pm 1 inch slump. The maximum slump measured during concrete placement activities, including the testing method variance, shall not exceed 4 inches.

Response:

Please see RFI-053 requesting that this specification be changed to allow for 4-inch \pm 1 inch slump.

Comment 3:

Specification Section 03400, 2.06 requires concrete to conform to CCAUSS Specification 501, which requires 4-7% air entrainment for Class AA concrete. The submitted concrete contains 1.2%. The design must be changed to have an air entrainment of 4-7%.

Response:

Please see Attachment 2 for the revised cast-in-place concrete mix design, which has a target air entrainment percentage that is in accordance with project technical specifications.

Comment 4:

BRC understands that this concrete mix design will be used for all cast-in-place concrete placed on the job.

Response:

Correct, this revised concrete mix design will be used for all cast-in-place concrete placed on the job.

Please feel free to call me at 630-330-8237 to go over any additional questions which arise during your review of this revised submittal.

Respectfully,



Michael M. Carlson
Field Engineer - ENTACT

Attachment 1

JENSEN PRECAST

3853 Losee Road
North Las Vegas, NV 89030-3326
Tel: (702) 649-0045
Fax: (702) 649-2243

Contractor License No. 42231 (C5) - Unlimited Bid Limit

July 24, 2008

Via Facsimile

ENTACT SERVICES, LLC.
JOSHUA CARROLL
3129 Bass Pro Dr.
Grapevine, TX 76051

RE: Project Name: BMI INDUSTRIAL COMPLEX PROJECT
Job No.: 07874
Project Location: LAS VEGAS , NEVADA

Dear Josh :

Plans call out for a Headwall with Trash Rack. Plans show details on dimension for headwall, trash rack and a rebar lay out. Plans show an engineered design that we can use to build this structure in the field. No re-engineered drawings are needed.

Very truly yours,

Shawn Close
JENSEN PRECAST



7-24, 2008

Attachment 2



Converse Consultants

Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

CONCRETE MIX DESIGN: SF294

Supplier : Silver State Materials
 Strength @ 28 Days : 4500 PSI
 Cement Sk : 7.00
 Cementitious Matl Sk : 7.20
 Soluble Sulfates : N/A
 Slump : 4" +/- 1"

Project : N/A
 Application : AA Modified
 Nom Size Agg : 1.5"
 Entrained Air % : 5
 W/C : 0.45
 FA % : 15 1.2 : 1 Ratio

SOURCE OF MATERIALS

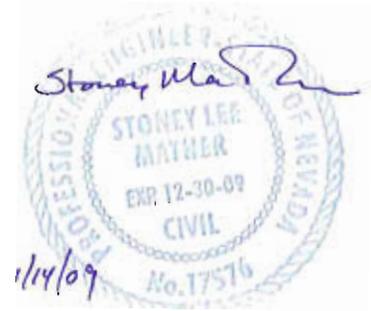
Cement (ASTM C150 Type V) : C.P.C
 Fly Ash (ASTM C618 Type F) : Headwaters Resources - Navajo
 Sand (Washed Sand) : Las Vegas Paving, Apex Pit
 Coarse Agg (3/4" - #67) : Las Vegas Paving , Apex Pit
 Coarse Agg (1 1/2" - #4) : Las Vegas Paving, Apex Pit

AGGREGATE PHYSICAL PROPERTIES

C33 Date:	5/23/2008			Combined	Specification CCPW - AA Modified	
	Washed Sand	3/4" - #67	1 1/2" - #4		(Hi)	(Lo)
Sieve Size						
2"	100.0	100.0	100.0	100	100	100
1 1/2"	100.0	100.0	100.0	100	100	87
1"	100.0	100.0	46.0	85	97	65
3/4"	100.0	90.0	5.0	71	91	48
1/2"	100.0	52.0	1.0	59		
3/8"	100.0	28.0	1.0	52	70	39
#4	96.0	4.0	0.0	42	54	30
#8	85.0	1.0	0.0	37	50	23
#16	65.0	0.0	0.0	28	37	15
#30	36.0	0.0	0.0	15	28	8
#50	21.0	0.0	0.0	9	15	4
#100	9.0	0.0	0.0	4	7	1
#200	2.7	0.5	0.2	1.4	5	0
Bulk Specific Grav, SSD:	2.61	2.67	2.68	0		
Absorption %:	2.1	0.8	0.5	0		
Aggregate Ratio %:	43.00%	30.00%	27.00%	0.00%	100.00%	

BATCH WEIGHTS FOR ONE CUBIC YARD (SSD)

	Solid Volume	Weight (lbs)	Volume (ft3)
Cement (ASTM C150 Type V) :		559	2.84
Fly Ash (ASTM C618 Type F) :		118	0.80
Water :		301	4.82
% Entrained Air :			1.35
Sand (Washed Sand) :	43.00%	1,204	7.39
Coarse Agg (3/4" - #67) :	30.00%	860	5.16
Coarse Agg (1 1/2" - #4) :	27.00%	776	4.64
Coarse Agg 3:	0.00%	0	0.00
Total:		3,818	27.00



Theoretical Unit Weight : 141.41 PCF

Admixtures and or comments:

Type A Water Reducer and Micro Air: as per manufacturer's recommendations.
Air content shall be 4 - 7%.



Converse Consultants

Submitted By

Date

[Signature]
 1/14/09





CALIFORNIA PORTLAND CEMENT COMPANY

9350 OAK CREEK ROAD, MOJAVE, CALIFORNIA 93502 / TEL. (805) 824-2401 FAX (805) 824-4901

Manufacturer's Certification

We hereby certify that Mojave Type II/V Low Alkali cement supplied to you has been manufactured in accordance with and meets the standard requirements of the current ASTM C 150 specification for TYPE II and TYPE V cement. Following are the average chemical and physical data for the month of February, 2008:

ASTM C 150 Requirements

Chemical Analysis	TYPE II Requirements	TYPE V Requirements	MOJAVE TYPE II / V
Silicon dioxide (SiO ₂), min, %	---	---	20.9
Aluminum oxide (Al ₂ O ₃), max, %	6.0	---	3.9
Ferric oxide (Fe ₂ O ₃), max, %	6.0	---	3.6
Magnesium oxide (MgO), max, %	6.0	6.0	2.7
Sulfur trioxide (SO ₃), max, %; (Note 2)	3.0	2.3	2.6
Loss on ignition, max, %	3.0	3.0	2.0
Insoluble residue, max, %	0.75	0.75	0.31
Alkalies (Na ₂ O+0.658K ₂ O), max, %	0.60	0.60	0.56
Tricalcium silicate (C ₃ S), %	---	---	57
Tricalcium aluminate (C ₃ A), max, %; (Note 3)	8	5	4
Tetracalcium aluminoferrite (C ₄ AF), %	---	---	11
C ₄ AF + 2 (C ₃ A), max, %; (Note 3)	---	25	19
C ₃ S + 4.75*(C ₃ A), max, %; (Note 4)	100	---	76
CO ₂ , %	---	---	1.0
limestone, max, %	5.0	5.0	2.5
CaCO ₃ in limestone, min, %	70	70	90.3
Physical Data			
Air content of mortar, max, %	12	12	6.6
Passing 45um (no. 325) sieve, %;	---	---	98.3
Blaine Fineness, min/max, m ² /kg; (Note 4)	280/430	280/---	394
Average Blaine Fineness, (last 5 samples)(Note 4)	420	---	394
Heat of Hydration C186, (cal/g), (Note 5)	---	---	80
Autoclave expansion, max, %	0.80	0.80	-0.01
Compressive Strength, min, MPa, (psi)			
3 days	10.0 (1450)	8.0 (1160)	27.9 (4048)
7 days	17.0 (2470)	15.0 (2180)	34.2 (4960)
28 days *(from previous month)	---	21.0 (3050)	*41.8 (6060)
Vicat, initial set, min.-max., minutes	45-375	45-375	139
C 1038, 14 day max, % expansion	0.020	0.020	0.010
C 452, 14 day max, % expansion; (Note 1)	---	0.040	0.030
False Set, final penetration, min, %	50	50	86

Apparatus and methods used in this laboratory have been checked by the Cement and Concrete Reference Laboratory of the National Institute of Standards and Technology. A copy of the report detailing their findings is available upon request. Major Oxides are analyzed by X-ray Fluorescence Spectrometry.

Note 1: ASTM C150, Table 4, Optional Physical Requirements, Sulfate Resistance at 14 days.

Note 2: ASTM C150, Table 1, Note D, The performance of the cement represented by this certificate has proven to be improved with SO₃ levels in excess of the 2.3% limit for Type V. The expansion, as measured by ASTM C1038, does not exceed the limit of 0.02% at 14 days.

Note 3: ASTM C150, Table 1, Note C, Does not apply when the optional sulfate resistance limit in Table 4 is specified

Note 4: ASTM C150, Table 3, Note F. Maximum Average and Maximum Single sample fineness limits do not apply if the sum of C₃S+4.75*C₃A is less than or equal to 90.

Note 5: ASTM C150, Table 1, Note H, For Informational Purposes Only

Jerold S. Kennedy, Quality Control Superintendent

Chemical and Physical Analysis of Fly Ash

Developed For: *Headwaters Resources*
 16817 - 155th PI SE
 Renton, WA 98058

Ticket: 8122	Plant of Origin: <i>Navajo</i>	Sample Date Range: 04/14/2008
Job: 14420	Sample ID: <i>Nv-034-08</i>	to: 04/16/2008
Report Date: 06/03/2008	Docket: -	Date Received: 04/22/2008

<u>Chemical Composition (%)</u> <small>(by Wyoming Analytical Laboratories, Inc.)</small>		ASTM C 618-05 Specifications	
		<u>Class F</u>	<u>Class C</u>
Total Silica, Aluminum, Iron:	86.0	70.0 Min	50.0 Min
Silicon Dioxide:	58.6		
Aluminum Oxide:	22.1		
Iron Oxide:	5.3		
Sulfur Trioxide:	0.4	5.0 Max	5.0 Max
Calcium Oxide:	6.2		
Moisture Content:	0.2	3.0 Max	3.0 Max
Loss on Ignition:	0.4	6.0 Max	6.0 Max
		AASHTO M 295-00 Specifications	
Available Alkalies (as Na ₂ O):	1.0	1.5 Max	1.5 Max
Sodium Oxide:	0.74		
Potassium Oxide:	0.40		

<u>Physical Test Results</u>		ASTM C 618-05 Specifications	
		<u>Class F</u>	<u>Class C</u>
Fineness, Retained on #325 Sieve (%):	18.8	34 Max	34 Max
Strength Activity Index (%)			
Ratio to Control @ 7 Days:	84.6		
Ratio to Control @ 28 Days:	90.0	75 Min	75 Min
Water Requirement, % of Control:	93.4	105 Max	105 Max
Soundness, Autoclave Expansion (%):	-0.01	0.8 Max	0.8 Max
Drying Shrinkage, Increase @ 28 Days (%):	0.00	0.03 Max	0.03 Max
Density Mg/m ³ :	2.23		

Comments:

CTL | Thompson Materials Engineers, Inc.



Orville R. Werner II, P.E.





Silver State Materials
4005 Dean Martin Drive
Las Vegas, Nevada 89103

June 06, 2008

Attention: Mr. Mark Bliss

MTC No.: 83002-6

Reference: Physical Properties of Coarse Concrete Aggregate Size No. 89
Construx Pit Eldorado Valley
Clark County, Nevada

Pursuant to your request and authorization, we have performed laboratory tests to determine physical properties of size No. 89 coarse aggregate submitted by Silver State Materials personnel on May 9, 2008. These tests were performed in accordance with standard ASTM test procedures for compliance with ASTM C33-03 Standard Specifications for Concrete Aggregates.

Test results for each aggregate are attached as Data Sheet Number 2.

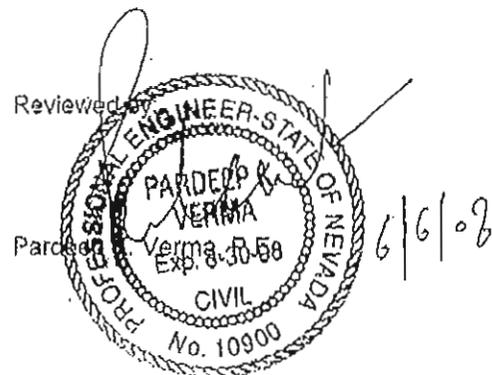
The sample meets the minimum requirements of ASTM Designation C33-03, Standard Specifications for Concrete Aggregate.

We trust this provides you with the information you require. Should you have any questions concerning the content of this report, or if we may be of additional service, please feel free to contact us.

Respectfully submitted,

MATERIALS TESTING CORPORATION

Daniel C. Thome



Silver State Materials
 Physical Properties of Fine Aggregates (Eldorado Valley)
 Construx Pit

DATE: 06-06-08
 MTC NO.: 83002-6
 DATA SHEET NO.: 1

REPORT OF DETERMINATION

1. Sieve Analysis and Material Finer than No. 200 Sieve (ASTM C117 & C136)

	PERCENT PASSING U.S. STANDARD SIEVE								FINENESS
Sieve Size:	<u>3/8"</u>	<u>#4</u>	<u>#8</u>	<u>#16</u>	<u>#30</u>	<u>#50</u>	<u>#100</u>	<u>#200</u>	<u>MODULUS</u>
Results:	100	100	84	53	31	16	6	1.4	3.10
ASTM C33 Specs.:	100	95-100	80-100	50-85	25-60	5-30	0-10	0-5*	2.3-3.1

*0-3% for concrete subject to abrasion.

	RESULTS	MAXIMUM ALLOWABLE, %
2. Specific Gravity and Absorption of Fine Aggregate (ASTM C128)		
Bulk Specific Gravity:	2.477	---
Bulk Specific Gravity (Saturated Surface Dry):	2.571	---
Apparent Specific Gravity:	2.733	---
Water Absorption, Percent:	3.8	
3. Clay Lumps and Friable Particles in Fine Aggregate (ASTM C142)	0.6	3.0
4. Coal and Lignite in Material Lighter than 2.0 SP.GR. (ASTM C123)		
Amount of Material Lighter than 2.0 sp.gr.	1.1	---
Coal and Lignite	None	---
5. Soundness of Aggregate by Use of Sodium Sulfate (ASTM C88)		
Percentage Loss (Weighted Average):	6.0	10.0
6. Organic Impurities in Fine Aggregate (ASTM C40)	Non-detrimental	---
7. Sand Equivalent Value of Fine Aggregate (ASTM D2419)	84	---
8. Damp Loose Unit Weight of Fine Aggregate (ASTM C29)	84pcf @ 3.2% Moisture	
9. Potential Alkali-Silica Reactivity of Aggregates (Chemical Method)		
ASTM Designation: C 289-03		

S_c	<u>mmol/L</u>	R_c	<u>mmol/L</u>
	80.4		767
	81.39		
	<u>87.43</u>		
Average	83.06		
Ratio:	0.11:1		

Material is considered innocuous by this method.



GeoTek, Inc.
6635 South Escondido Street, Suite A, Las Vegas, NV 89119-3832
702-897-1424 Office 702-897-2213 Fax www.geotekusa.com

TECHNICAL REPORT

REPORT TO: Las Vegas Paving Corporation
3401 North 5th Street
North Las Vegas, NV 89032

DATE: May 23, 2008
WORK ORDER NO: 5478
SHEET: 1 of 6
Revision No.

ATTENTION: Mr. Dan Peressini

REPORT OF: Concrete Aggregate Tests for Material Sampled at the Apex Pit for use in Portland
Cement Concrete Mixes for Concrete Production

SAMPLE IDENTIFICATION

On April 21, 2008, your personnel obtained five samples of concrete aggregates (#4, #67, #89, #7, Washed Fines) from the above referenced pit. At your request, the following tests were performed: sieve analysis, organic impurities, sodium sulfate soundness, LA abrasion, clay lumps and friable particles, specific gravity, and lightweight pieces in aggregate. These tests were sampled and performed in general accordance with ASTM C29, C40, C88, C117, C123, C127, C128, C535, C136, C142, C229, D75, C289 and CTM 227. Results of these tests are summarized on the attached sheets.



LABORATORY MANAGER: _____

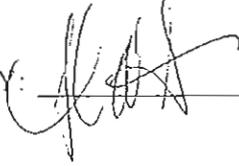
REVIEWED BY:  _____

TABLE NO.3 SIEVE ANALYSIS, SPECIFIC GRAVITY AND ABSORPTION OF NO. 67 (3/4" - NO.4) COARSE AGGREGATE (ASTM C136, C117 AND C127)

Laboratory Number	95859/95976	ASTM C33 TABLE 2 No. 67
Description	Apex Pit No. 67 Coarse Aggregate (3/4" - No.4)	
Screen or Sieve Size	Percent Passing	
1"	100	100
3/4"	90	90 - 100
1/2"	52	-
3/8"	28	20 - 55
No. 4	4	0 - 10
No. 8	1	0 - 5
No. 200	0.5	0 - 1
Bulk Dry Specific Gravity	2.66	N/A
Bulk Specific Gravity, SSD	2.67	N/A
Apparent Specific Gravity	2.71	N/A
Absorption, %	0.8	N/A

TABLE NO.4 COARSE AGGREGATE PROPERTIES PERFORMED ON NO. 67 (3/4" - NO.4) COARSE AGGREGATE

Laboratory Tests	Test Method	Test Results	ASTM C33 Table 3
Percentage of Wear (500 Rev.), %	ASTM C131	20	50 max
Clay Lumps and Friable Particles, %	ASTM C142	0	2 max*
Sodium Sulfate Soundness, % Loss after 5 Cycles	ASTM C88	0.7	12 max*
Lightweight Pieces	ASTM C123	0	0.5 max*
Cleanness Value**	CTM 227	89	71 min
Dry Rodded Unit Weight, pcf	ASTM C29	95.9	N/A
Potential Reactivity of Aggregate, Chemical Method***	ASTM C289	Innocuous	

* ASTM C33, Table 3

*** Tests performed by Silver State Analytical Laboratories



The Chemical Company

Description

Pozzolith 80 ready-to-use, liquid admixture is used for making more uniform and predictable quality concrete.

Pozzolith 80 admixture meets ASTM C 494/C 494M requirements for Type A, water-reducing, Type B, retarding, and Type D, retarding and water-reducing, admixtures.

Applications

Recommended for use in:

- Prestressed concrete
- Precast concrete
- Reinforced concrete
- Shotcrete
- Lightweight concrete
- Pumped concrete
- 4x4™ Concrete
- Pervious Concrete
- Rheodynamic® Self-Consolidating Concrete (SCC)

POZZOLITH® 80

Features

- Reduced water content required for a given workability
- Controlled setting characteristics – normal or retarded

Benefits

- Increased compressive and flexural strength
- Improved workability
- Reduced segregation
- Flexibility in the scheduling of placing and finishing operations
- Offsets effects of early stiffening during extended delays between mixing and placing
- Helps eliminate cold joints
- Dead-load deflection can take place (before concrete sets) in extended pours for bridge decks, cantilevers, nonshored structural elements, etc.
- Peak temperature and/or rate of temperature rise lowered in mass concrete thereby reducing thermal cracking

Performance Characteristics

Rate of Hardening: The temperature of the concrete mixture and the ambient temperature affect the hardening rate of concrete. At higher temperatures, concrete stiffens more rapidly which may cause problems with placing and finishing. The dosage range of Pozzolith 80 admixture can be varied to provide the desired setting characteristics.

Guidelines for Use

Dosage: Depending on the setting characteristics desired, Pozzolith 80 admixture is recommended for use within the dosage range of 4-10 fl oz/cwt (260-650 mL/100 kg) of cementitious materials for most concrete mixtures using average concrete ingredients. Because of variations in job conditions and concrete materials, dosages other than the recommended amounts may be required. In such cases, contact your BASF Construction Chemicals representative.

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Builders

Product Data:

Product Notes

Corrosivity – Non-Chloride, Non-Corrosive: Pozzolith 80 admixture will neither initiate nor promote corrosion of reinforcing steel in concrete. This admixture does not contain intentionally-added calcium chloride or other chloride-based ingredients.

Compatibility: Pozzolith 80 admixture may be used in combination with any BASF Construction Chemicals admixtures. When used in conjunction with other admixtures, each admixture must be dispensed separately into the mix.

Storage and Handling

Storage Temperature: If Pozzolith 80 admixture freezes, thaw at 35 °F (2 °C) or above and completely reconstitute by mild mechanical agitation. *Do not use pressurized air for agitation.*

Shelf Life: Pozzolith 80 admixture has a minimum shelf life of 18 months. Depending on storage conditions, the shelf life may be greater than stated. Please contact your BASF Construction Chemicals representative regarding suitability for use and dosage recommendations if the shelf life of Pozzolith 80 admixture has been exceeded.

Packaging

Pozzolith 80 admixture is supplied in 55 gal (208 L) drums, 275 gal (1040 L) totes and by bulk delivery.

Related Documents

Material Safety Data Sheets: Pozzolith 80 admixture.

Additional Information

For additional information on Pozzolith 80 admixture or its use in developing a concrete mix with special performance characteristics, contact your BASF Construction Chemicals representative.

The Admixture Systems business of BASF Construction Chemicals is a leading provider of innovative additives for specialty concrete used in the ready mix, precast, manufactured concrete products, underground construction and paving markets throughout the NAFTA region. The Company's respected Master Builders brand products are used to improve the placing, pumping, finishing, appearance and performance characteristics of concrete.

BASF Construction Chemicals, LLC
Admixture Systems

www.masterbuilders.com

United States 23700 Chagrin Boulevard, Cleveland, Ohio 44122-5544 Tel: 800 628-9990 Fax: 216 839-8821
Canada 1800 Clark Boulevard, Brampton, Ontario L6T 4M7 Tel: 800 387-5862 Fax: 905 792-0651

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**Master
Builders**

CALIFORNIA PORTLAND CEMENT COMPANY

9350 OAK CREEK ROAD, MOJAVE, CALIFORNIA 93502 / TEL. (805) 824-2401 FAX (805) 824-4901

Manufacturer's Certification

We hereby certify that Mojave Type II/V Low Alkali cement supplied to you has been manufactured in accordance with and meets the standard requirements of the current ASTM C 150 specification for TYPE II and TYPE V cement. Following are the average chemical and physical data for the month of February, 2008:

ASTM C 150 Requirements

Chemical Analysis	TYPE II Requirements	TYPE V Requirements	MOJAVE TYPE II / V
Silicon dioxide (SiO ₂), min, %	---	---	20.9
Aluminum oxide (Al ₂ O ₃), max, %	6.0	---	3.9
Ferric oxide (Fe ₂ O ₃), max, %	6.0	---	3.6
Magnesium oxide (MgO), max, %	6.0	6.0	2.7
Sulfur trioxide (SO ₃), max, %; (Note 2)	3.0	2.3	2.6
Loss on ignition, max, %	3.0	3.0	2.0
Insoluble residue, max, %	0.75	0.75	0.31
Alkalies (Na ₂ O+0.658K ₂ O), max, %	0.60	0.60	0.56
Tricalcium silicate (C ₃ S), %	---	---	57
Tricalcium aluminate (C ₃ A), max, %; (Note 3)	8	5	4
Tetracalcium aluminoferrite (C ₄ AF), %	---	---	11
C ₄ AF + 2 (C ₃ A), max, %; (Note 3)	---	25	19
C ₃ S + 4.75*(C ₃ A), max, %; (Note 4)	100	---	76
CO ₂ , %	---	---	1.0
limestone, max, %	5.0	5.0	2.5
CaCO ₃ in limestone, min, %	70	70	90.3
Physical Data			
Air content of mortar, max, %	12	12	6.6
Passing 45um (no. 325) sieve, %;	---	---	98.3
Blaine Fineness, min/max, m ² /kg; (Note 4)	280/430	280/---	394
Average Blaine Fineness, (last 5 samples)(Note 4)	420	---	394
Heat of Hydration C186, (cal/g), (Note 5)	---	---	80
Autoclave expansion, max, %	0.80	0.80	-0.01
Compressive Strength, min, MPa, (psi)			
3 days	10.0 (1450)	8.0 (1160)	27.9 (4048)
7 days	17.0 (2470)	15.0 (2180)	34.2 (4960)
28 days *(from previous month)	---	21.0 (3050)	41.8 (6060)
Vicat, initial set, min.-max., minutes	45-375	45-375	139
C 1038, 14 day max, % expansion	0.020	0.020	0.010
C 452, 14 day max, % expansion; (Note 1)	---	0.040	0.030
False Set, final penetration, min, %	50	50	86

Apparatus and methods used in this laboratory have been checked by the Cement and Concrete Reference Laboratory of the National Institute of Standards and Technology. A copy of the report detailing their findings is available upon request. Major Oxides are analyzed by X-ray Fluorescence Spectrometry.

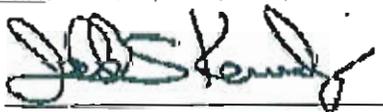
Note 1: ASTM C150, Table 4, Optional Physical Requirements, Sulfate Resistance at 14 days.

Note 2: ASTM C150, Table 1, Note D, The performance of the cement represented by this certificate has proven to be improved with SO₃ levels in excess of the 2.3% limit for Type V. The expansion, as measured by ASTM C1038, does not exceed the limit of 0.02% at 14 days.

Note 3: ASTM C150, Table 1, Note C, Does not apply when the optional sulfate resistance limit in Table 4 is specified.

Note 4: ASTM C150, Table 3, Note F. Maximum Average and Maximum Single sample fineness limits do not apply if the sum of C₃S+4.75*C₃A is less than or equal to 90.

Note 5: ASTM C150, Table 1, Note H, For Informational Purposes Only



Jerold S. Kennedy, Quality Control Superintendent

Chemical and Physical Analysis of Fly Ash

Developed For: *Headwaters Resources*
 16817 - 155th Pl SE
 Renton, WA 98058

Ticket: 8122	Plant of Origin: <i>Navajo</i>	Sample Date Range: 04/14/2008
Job: 14420	Sample ID: <i>Nv-034-08</i>	to: 04/16/2008
Report Date: 06/03/2008	Docket: -	Date Received: 04/22/2008

<u>Chemical Composition (%)</u> <small>(by Wyoming Analytical Laboratories, Inc.)</small>	ASTM C 618-05 Specifications	
	<u>Class F</u>	<u>Class C</u>
Total Silica, Aluminum, Iron:	86.0	70.0 Min
Silicon Dioxide:	58.6	50.0 Min
Aluminum Oxide:	22.1	
Iron Oxide:	5.3	
Sulfur Trioxide:	0.4	5.0 Max
Calcium Oxide:	6.2	5.0 Max
Moisture Content:	0.2	3.0 Max
Loss on Ignition:	0.4	3.0 Max
	6.0 Max	6.0 Max
	AASHTO M 295-00 Specifications	
Available Alkalies (as Na ₂ O):	1.0	1.5 Max
Sodium Oxide:	0.74	1.5 Max
Potassium Oxide:	0.40	

<u>Physical Test Results</u>	ASTM C 618-05 Specifications	
	<u>Class F</u>	<u>Class C</u>
Fineness, Retained on #325 Sieve (%):	18.8	34 Max
Strength Activity Index (%)		
Ratio to Control @ 7 Days:	84.6	
Ratio to Control @ 28 Days:	90.0	75 Min
Water Requirement, % of Control:	93.4	75 Min
Soundness, Autoclave Expansion (%):	-0.01	105 Max
Drying Shrinkage, increase @ 28 Days (%):	0.00	0.8 Max
Density Mg/m ³ :	2.23	0.03 Max

Comments:

CTL | Thompson Materials Engineers, Inc.

Orville R. Werner II

Orville R. Werner II, P.E.





Silver State Materials
4005 Dean Martin Drive
Las Vegas, Nevada 89103

June 06, 2008

Attention: Mr. Mark Bliss

MTC No.: 83002-6

Reference: Physical Properties of Coarse Concrete Aggregate Size No. 89
Construx Pit Eldorado Valley
Clark County, Nevada

Pursuant to your request and authorization, we have performed laboratory tests to determine physical properties of size No. 89 coarse aggregate submitted by Silver State Materials personnel on May 9, 2008. These tests were performed in accordance with standard ASTM test procedures for compliance with ASTM C33-03 Standard Specifications for Concrete Aggregates.

Test results for each aggregate are attached as Data Sheet Number 2.

The sample meets the minimum requirements of ASTM Designation C33-03, Standard Specifications for Concrete Aggregate.

We trust this provides you with the information you require. Should you have any questions concerning the content of this report, or if we may be of additional service, please feel free to contact us.

Respectfully submitted,

MATERIALS TESTING CORPORATION

Daniel C. Thorne

Reviewed by

Pardeep



6/6/08

Silver State Materials
 Physical Properties of Size #89 Coarse Aggregate
 Construx Pit

DATE: 06-06-08
 MTC NO.: 83002-6
 DATA SHEET NO.: 2

REPORT OF DETERMINATION

1. Sieve Analysis and Material Finer than No. 200 Sieve (ASTM C117 & C136)

PERCENT PASSING U.S. STANDARD SIEVE

Sieve Size:	1/2"	3/8"	#4	#8	#16	#50	#200
Results:	100	99	55	16	5	2	1.0
ASTM C33 Specs.:							
Size No. 89:	100	90-100	20-55	5-30	0-10	0-5	0-1

	RESULTS	MAXIMUM ALLOWABLE, %
2. Specific Gravity and Absorption of Coarse Aggregate (ASTM C127)		
Bulk Specific Gravity:	2.482	---
Bulk Specific Gravity (Saturated Surface Dry):	2.551	---
Apparent Specific Gravity:	2.667	---
Water Absorption, Percent:	2.8	---
3. Clay Lumps and Friable Particles in Coarse Aggregate (ASTM C142)	0	5.0
4. Sum of Clay Lumps, Friable Particles and Chert	0	---
5. Coal and Lignite in Material Lighter than 2.0 SP.GR. (ASTM C123)		
Amount of Material Lighter than 2.0 sp.gr.	0.5	---
Coal and Lignite	None	---
6. Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine (ASTM C131) (500 Rev) Percent Loss:	19	50.0
7. Soundness of Aggregate by Use of Sodium Sulfate (ASTM C88)		
Percentage Loss (Weighted Average)	10	12.0
8. Dry Rodded Unit Weight of Coarse Aggregate (ASTM C29)	96.5 pcf	---
9. Potential Alkali-Silica Reactivity of Aggregates (Chemical Method)		
ASTM Designation: C 289-03		

S _c	<u>mmo/L</u>	R _c	<u>mmo/L</u>
	80.4		767
	81.39		
	<u>87.43</u>		
Average	83.06		
Ratio:	0.11:1		

Material is considered innocuous by this method.

Silver State Materials
 Physical Properties of Fine Aggregates (Eldorado Valley)
 Construx Pit

DATE: 06-06-08
 MTC NO.: 83002-6
 DATA SHEET NO.: 1

REPORT OF DETERMINATION

1. Sieve Analysis and Material Finer than No. 200 Sieve (ASTM C117 & C136)

PERCENT PASSING U.S. STANDARD SIEVE

Sieve Size:	<u>3/8"</u>	<u>#4</u>	<u>#8</u>	<u>#16</u>	<u>#30</u>	<u>#50</u>	<u>#100</u>	<u>#200</u>	FINENESS MODULUS
Results:	100	100	84	53	31	16	6	1.4	3.10
ASTM C33 Specs.:	100	95-100	80-100	50-85	25-60	5-30	0-10	0-5*	2.3-3.1

*0-3% for concrete subject to abrasion.

	<u>RESULTS</u>	<u>MAXIMUM ALLOWABLE, %</u>
2. Specific Gravity and Absorption of Fine Aggregate (ASTM C128)		
Bulk Specific Gravity:	2.477	---
Bulk Specific Gravity (Saturated Surface Dry):	2.571	---
Apparent Specific Gravity:	2.733	---
Water Absorption, Percent:	3.8	
3. Clay Lumps and Friable Particles in Fine Aggregate (ASTM C142)	0.6	3.0
4. Coal and Lignite in Material Lighter than 2.0 SP.GR. (ASTM C123)		
Amount of Material Lighter than 2.0 sp.gr.	1.1	---
Coal and Lignite	None	---
5. Soundness of Aggregate by Use of Sodium Sulfate (ASTM C88)		
Percentage Loss (Weighted Average):	6.0	10.0
6. Organic Impurities in Fine Aggregate (ASTM C40)	Non-detrimental	---
7. Sand Equivalent Value of Fine Aggregate (ASTM D2419)	84	---
8. Damp Loose Unit Weight of Fine Aggregate (ASTM C29)	84pcf @ 3.2% Moisture	
9. Potential Alkali-Silica Reactivity of Aggregates (Chemical Method)		
ASTM Designation: C 289-03		

S _o	<u>mmo/L</u>	R _c	<u>mmo/L</u>
	80.4		767
	81.39		
	<u>87.43</u>		
Average	83.06		
Ratio:	0.11:1		

Material is considered innocuous by this method.



The Chemical Company

Description

Pozzolith 80 ready-to-use, liquid admixture is used for making more uniform and predictable quality concrete.

Pozzolith 80 admixture meets ASTM C 494/C 494M requirements for Type A, water-reducing, Type B, retarding, and Type D, retarding and water-reducing, admixtures.

Applications

Recommended for use in:

- Prestressed concrete
- Precast concrete
- Reinforced concrete
- Shotcrete
- Lightweight concrete
- Pumped concrete
- 4x4™ Concrete
- Pervious Concrete
- Rheodynamic® Self-Consolidating Concrete (SCC)

POZZOLITH® 80

Features

- Reduced water content required for a given workability
- Controlled setting characteristics – normal or retarded

Benefits

- Increased compressive and flexural strength
- Improved workability
- Reduced segregation
- Flexibility in the scheduling of placing and finishing operations
- Offsets effects of early stiffening during extended delays between mixing and placing
- Helps eliminate cold joints
- Dead-load deflection can take place (before concrete sets) in extended pours for bridge decks, cantilevers, nonshored structural elements, etc.
- Peak temperature and/or rate of temperature rise lowered in mass concrete thereby reducing thermal cracking

Performance Characteristics

Rate of Hardening: The temperature of the concrete mixture and the ambient temperature affect the hardening rate of concrete. At higher temperatures, concrete stiffens more rapidly which may cause problems with placing and finishing. The dosage range of Pozzolith 80 admixture can be varied to provide the desired setting characteristics.

Guidelines for Use

Dosage: Depending on the setting characteristics desired, Pozzolith 80 admixture is recommended for use within the dosage range of 4-10 fl oz/cwt (260-650 mL/100 kg) of cementitious materials for most concrete mixtures using average concrete ingredients. Because of variations in job conditions and concrete materials, dosages other than the recommended amounts may be required. In such cases, contact your BASF Construction Chemicals representative.

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Product Data:

Product Notes

Corrosivity - Non-Chloride, Non-Corrosive: Pozzolith 80 admixture will neither initiate nor promote corrosion of reinforcing steel in concrete. This admixture does not contain intentionally-added calcium chloride or other chloride-based ingredients.

Compatibility: Pozzolith 80 admixture may be used in combination with any BASF Construction Chemicals admixtures. When used in conjunction with other admixtures, each admixture must be dispensed separately into the mix.

Storage and Handling

Storage Temperature: If Pozzolith 80 admixture freezes, thaw at 35 °F (2 °C) or above and completely reconstitute by mild mechanical agitation. *Do not use pressurized air for agitation.*

Shelf Life: Pozzolith 80 admixture has a minimum shelf life of 18 months. Depending on storage conditions, the shelf life may be greater than stated. Please contact your BASF Construction Chemicals representative regarding suitability for use and dosage recommendations if the shelf life of Pozzolith 80 admixture has been exceeded.

Packaging

Pozzolith 80 admixture is supplied in 55 gal (208 L) drums, 275 gal (1040 L) totes and by bulk delivery.

Related Documents

Material Safety Data Sheets: Pozzolith 80 admixture.

Additional Information

For additional information on Pozzolith 80 admixture or its use in developing a concrete mix with special performance characteristics, contact your BASF Construction Chemicals representative.

The Admixture Systems business of BASF Construction Chemicals is a leading provider of innovative additives for specialty concrete used in the ready mix, precast, manufactured concrete products, underground construction and paving markets throughout the NAFTA region. The Company's respected Master Builders brand products are used to improve the placing, pumping, finishing, appearance and performance characteristics of concrete.

BASF Construction Chemicals, LLC
Admixture Systems

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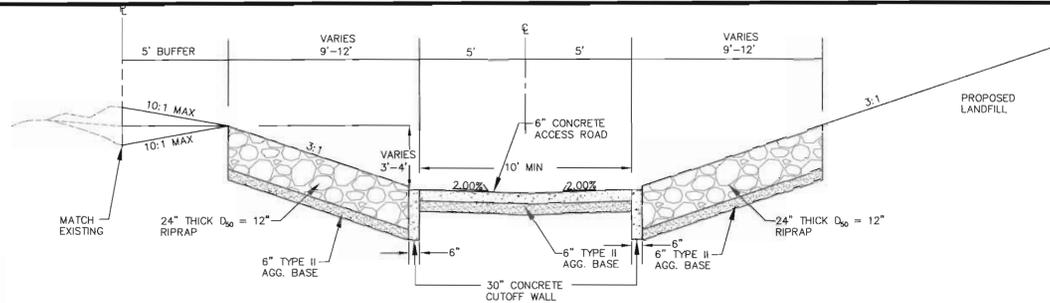
United States 23700 Chagrin Boulevard, Cleveland, Ohio 44122-5544 Tel: 800 628-9990 Fax: 216 839-8821
Canada 1800 Clark Boulevard, Brampton, Ontario L6T 4J7 Tel: 800 387-5852 Fax: 905 792-0651

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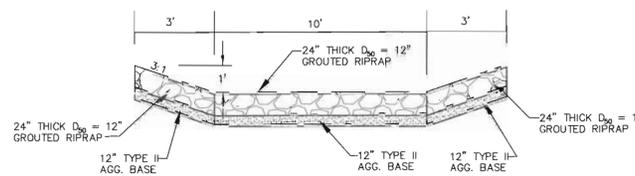
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Builders**

Attachment 3



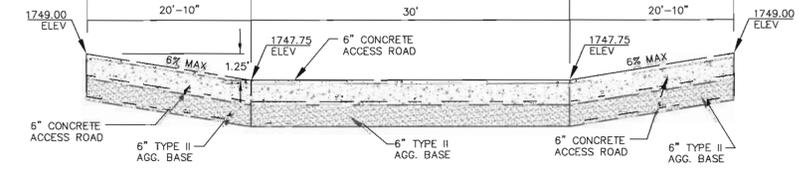
- NOTES:
1. ALL WORK TO CONFORM TO CCAUSS #s 301, 302, 409, 501, 610, 701, 702, 704, AND 706.
 2. TYPE II AGGREGATE SHALL CONFORM TO CCAUSS # 704.03.04.
 3. ALL CONCRETE SHALL BE CLASS AA PER CCAUSS # 501.
 4. SEE CAMU DRAWINGS FOR GEOCOMPOSITE, GEOMEMBRANE, LINER, PIPE, GEOTEXTILE, COVER SOIL, SLOPE TREATMENT, INTERIM COVER, OPERATIONS LAYER, FINAL COVER, AND ALL OTHER SUBGRADE REQUIREMENTS.

(A) TYPICAL CHANNEL DETAIL
D1 SCALE H = V



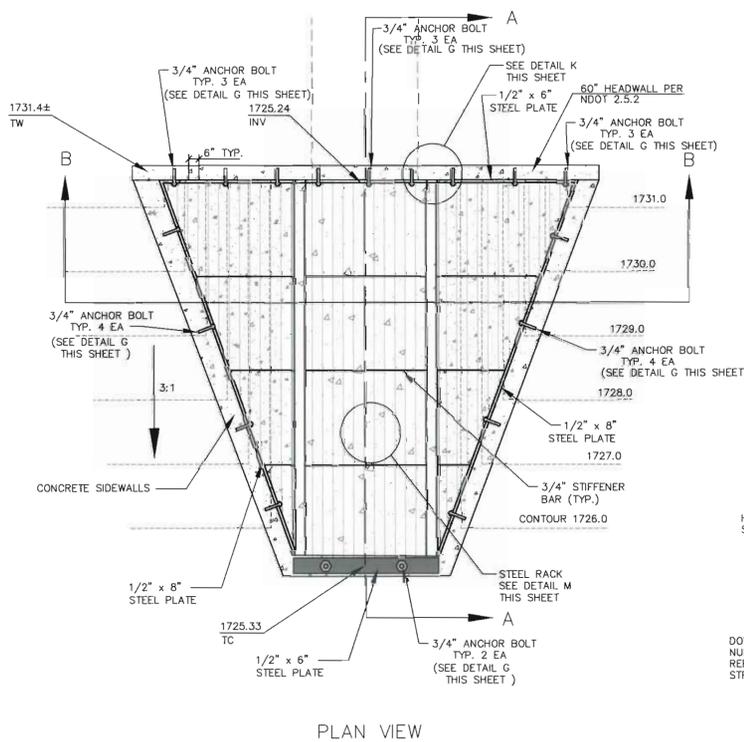
- NOTES:
1. ALL WORK TO CONFORM TO CCAUSS #s 301, 302, 610, AND 704.
 2. TYPE II AGGREGATE SHALL CONFORM TO CCAUSS # 704.03.04.
 3. ALL CONCRETE SHALL BE CLASS AA PER CCAUSS # 501.
 4. SEE CAMU DRAWINGS FOR GEOCOMPOSITE, GEOMEMBRANE, LINER, PIPE, GEOTEXTILE, COVER SOIL, SLOPE TREATMENT, INTERIM COVER, OPERATIONS LAYER, FINAL COVER, AND ALL OTHER SUBGRADE REQUIREMENTS.

(B) TYPICAL LANDFILL EMBANKMENT CHANNEL DETAIL
D1 NTS

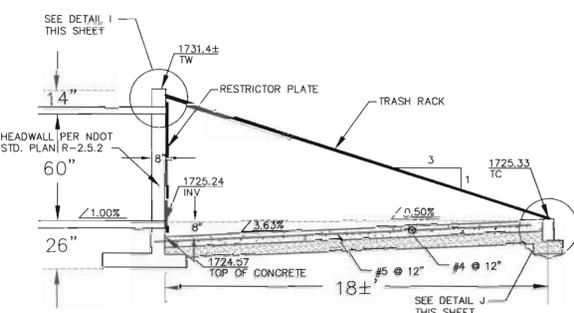


- NOTES:
1. ALL WORK TO CONFORM TO CCAUSS #s 301, 302, 409, 501, 610, 611, 701, 702, 704, AND 706.
 2. TYPE II AGGREGATE SHALL CONFORM TO CCAUSS # 704.03.04.
 3. ALL CONCRETE SHALL BE CLASS AA PER CCAUSS # 501.
 4. SEE CAMU DRAWINGS FOR GEOCOMPOSITE, GEOMEMBRANE, LINER, PIPE, GEOTEXTILE, COVER SOIL, SLOPE TREATMENT, INTERIM COVER, OPERATIONS LAYER, FINAL COVER, AND ALL OTHER SUBGRADE REQUIREMENTS.

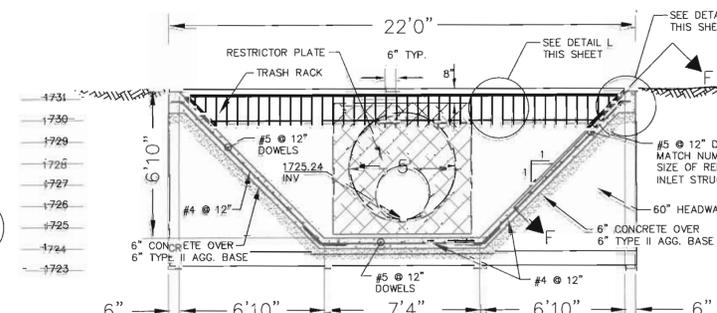
(C) EQUALIZER BASIN OVERFLOW DETAIL
D1 NTS



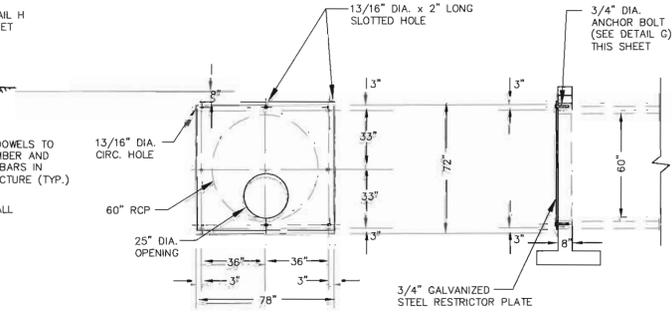
PLAN VIEW



SECTION "A-A"



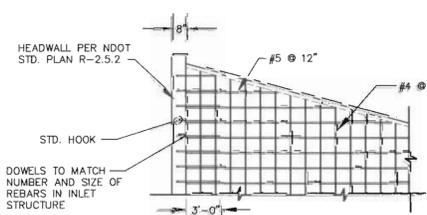
SECTION "B-B"



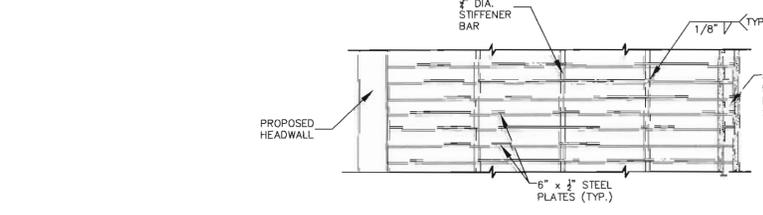
FRONT SECTION

(D) INLET / TRASH RACK DETAIL
D1 SCALE 1" = 4'-0"

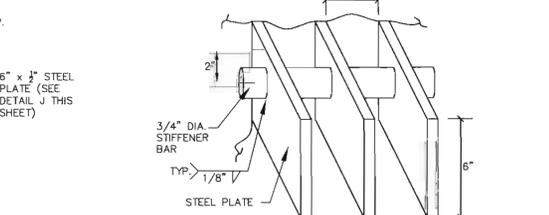
(E) RESTRICTOR PLATE DETAIL
D1 SCALE: 1" = 4'-0"



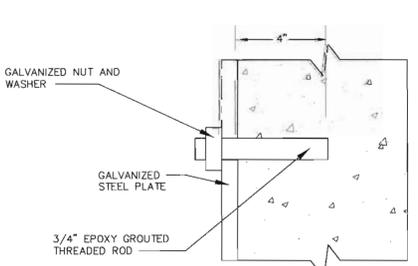
(F) PERPENDICULAR VIEW SIDE WALL REINFORCEMENT
D1



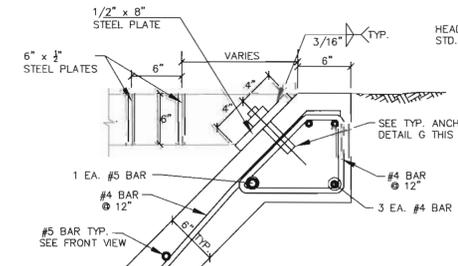
(M) TRASH RACK DETAIL
D1 NTS



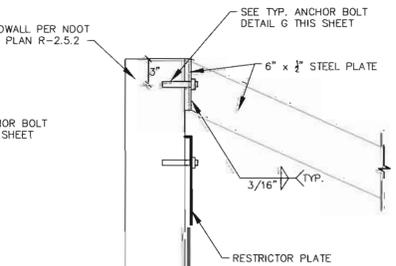
(N) STIFFENER BAR DETAIL
D1 NTS



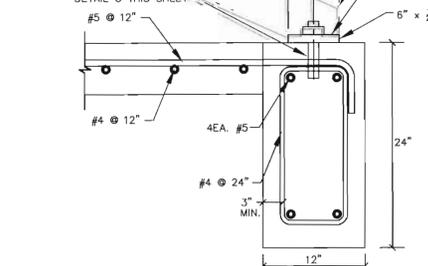
(G) ANCHOR BOLT DETAIL
D1 NTS



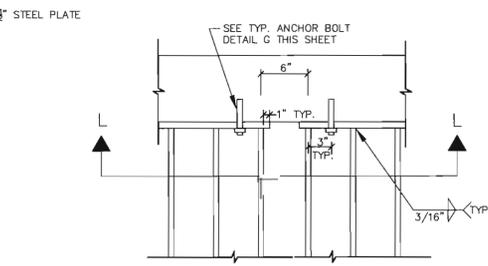
(H) DETAIL
D1 NTS



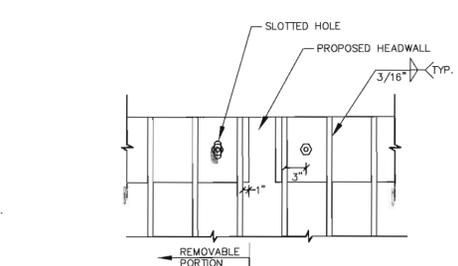
(I) DETAIL
D1 NTS



(J) DETAIL
D1 NTS



(K) DETAIL
D1 NTS



(L) DETAIL
D1 NTS

- NOTES:
1. HEADWALL PER NDOT STANDARD PLANS R2.5.2
 2. ALL THREADED ROD ANCHORS SHALL BE 3/4" SIMPSON SET (HIGH STRENGTH EPOXY) OR SIMILAR.
 3. ALL THREADED ROD ANCHORS SHALL BE 3/4" SIMPSON SET (HIGH STRENGTH EPOXY) OR SIMILAR.
 4. BOLTS FOR REMOVABLE PORTION SHALL BE STAINLESS STEEL.
 5. ALL STEEL PARTS SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A153.
 6. A HARDENED FLAT WASHER AND LOCK WASHER SHALL BE USED BETWEEN THE NUTS AND CONNECTED PARTS.
 7. ALL WELDING SHALL BE DONE IN ACCORDANCE WITH AWS D1.5-96 CODE.
 8. TYPE II AGGREGATE SHALL CONFORM TO CCAUSS # 704.03.04
 9. ALL CONCRETE SHALL BE CLASS AA PER CCAUSS # 501.

Call before you Dig.
1-800-227-2600
UNDERGROUND SERVICE ALERT (USA)

Call before you OVERHEAD.
1-702-227-2929
SAFETY SERVICES DEPARTMENT

SEAL
M. LEE JACOBY Jr.
CIVIL
No. 15756

REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: -LJ
DRAWN BY: -DS
CHECKED BY: -DS
DATE: MAY, 2008

JOB NO.: 511603.19
FILE NAME: LANDFILL
SCALE: HORIZ.:
VERT.:
DATE: MAY, 2008

DESIGNED BY: -LJ
DRAWN BY: -DS
CHECKED BY: -DS
DATE: MAY, 2008

FILE NO.: 06-44325
DATE: 5/23/08

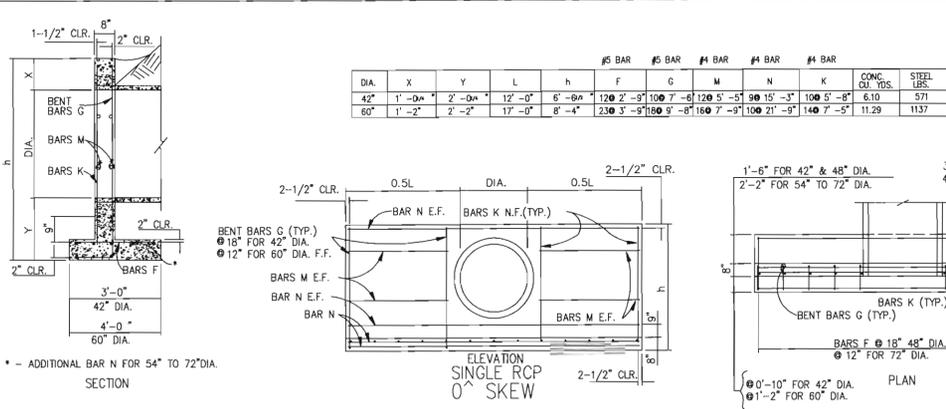
CONFORMED
EASTSIDE LANDFILL
DETAILS I

220 Corporate Center
Suite 100
Las Vegas, NV 89124-3342
Tel: 702.251.7271
Fax: 702.251.7272

PBS
ENGINEERING PLANNING SURVEYING CONSTRUCTION SERVICES

Blanco Architects
P.C.
A.S.P.C.

C:\Temp\AcPublish\2976\1693-D.DWG Layout: D-1 May 12, 2008 - 11:43am

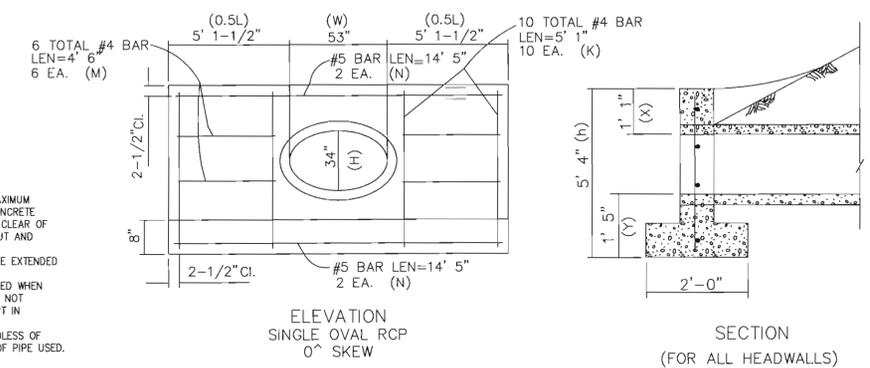


- GENERAL NOTES:**
- CONCRETE SHALL BE CLASS AA.
 - REINFORCING STEEL SHALL BE DEFORMED BARS WITH MAXIMUM SPACING OF 18" SET 2 1/2" CLEAR OF SURFACE OF CONCRETE EXCEPT AS NOTED. BAR ENDS SHALL BE KEPT 1 1/2" CLEAR OF SURFACE OF CONCRETE. REINFORCING BARS MAY BE CUT AND BENT IN FIELD.
 - FOOTINGS SHOWN ARE OF MINIMUM DEPTH AND SHALL BE EXTENDED IF SOIL IS UNSUITABLE OR LIABLE TO SCOUR.
 - CULVERT PIPES TO BE SET ON A SKEW SHALL BE MITERED WHEN HEADWALLS ARE CONSTRUCTED. WHEN HEADWALLS ARE NOT CONSTRUCTED THE PIPES SHALL NOT BE MITERED EXCEPT IN OVERFLOW SECTION.
 - FOR ESTIMATING HEADWALL QUANTITIES ON SKEWED CULVERTS: 0' to 10' USE QUANTITIES FOR 0° SKEW. 11' to 25' USE QUANTITIES FOR 15° SKEW. 26' to 40' USE QUANTITIES FOR 30° SKEW. 41' to 55' USE QUANTITIES FOR 45° SKEW. OVER 55' CALCULATE QUANTITIES REQUIRED. CULVERTS SHOULD BE INSTALLED ON 5' INCREMENTS WHERE IT IS FEASIBLE.
 - DIMENSIONS X, Y, L, AND H TO REMAIN CONSTANT REGARDLESS OF MINOR VARIATIONS IN WALL THICKNESS DUE TO CLASS OF PIPE USED.

NEVADA DEPARTMENT OF TRANSPORTATION
CULVERT HEADWALLS
 42" RCP TO 72" RCP
 (MODIFIED DRAWING)

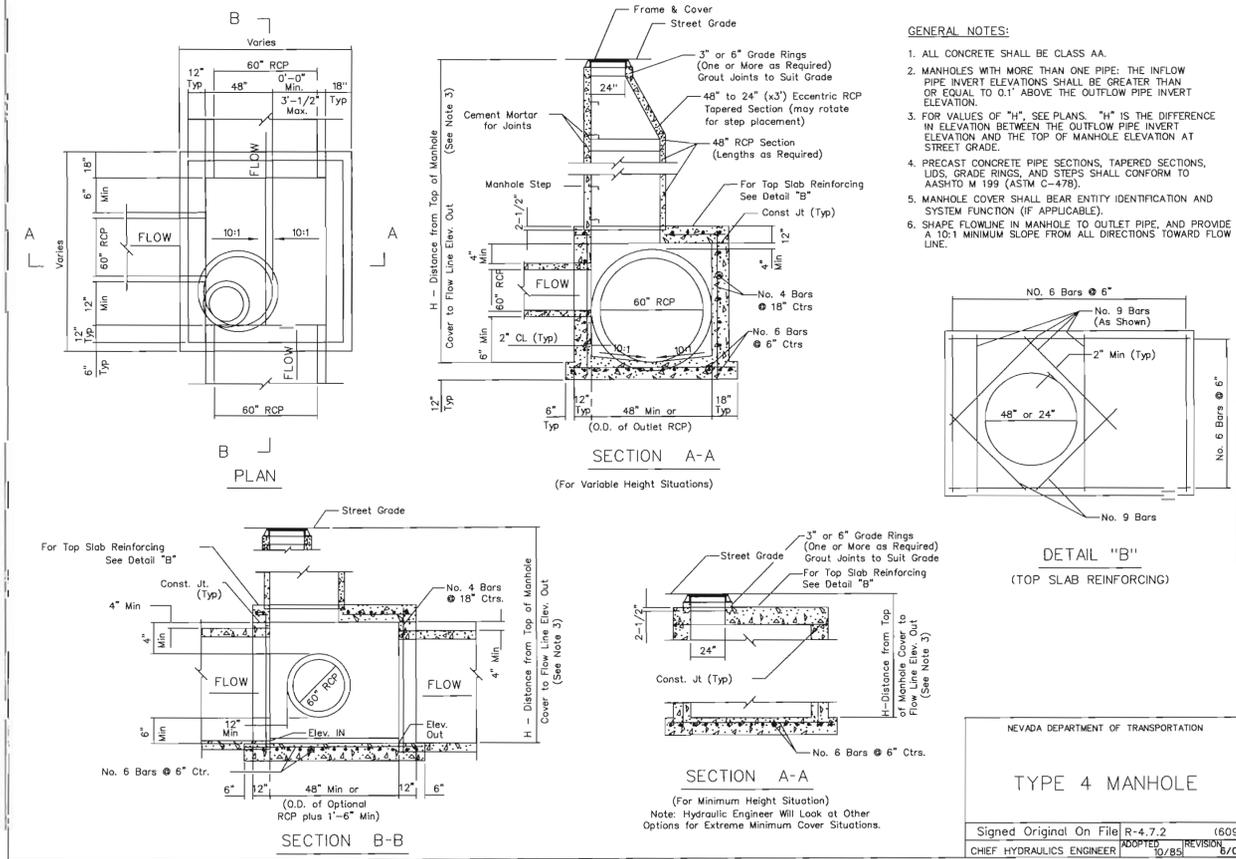
Signed Original On File R-2.5.2 MODIFIED (502)
 CHIEF HYDRAULICS ENGINEER ADOPTED 8/69 REVISION 8/97

- GENERAL NOTES:**
- CONCRETE SHALL BE CLASS AA.
 - REINFORCING STEEL SHALL BE DEFORMED BARS WITH MAXIMUM SPACING OF 18" SET 2 1/2" CLEAR OF SURFACE OF CONCRETE EXCEPT AS NOTED. BAR ENDS SHALL BE KEPT 1 1/2" CLEAR OF SURFACE OF CONCRETE. REINFORCING BARS MAY BE CUT AND BENT IN FIELD.
 - FOOTINGS SHOWN ARE OF MINIMUM DEPTH AND SHALL BE EXTENDED IF SOIL IS UNSUITABLE OR LIABLE TO SCOUR.
 - CULVERT PIPES TO BE SET ON A SKEW SHALL BE MITERED WHEN HEADWALLS ARE CONSTRUCTED. WHEN HEADWALLS ARE NOT CONSTRUCTED THE PIPES SHALL NOT BE MITERED EXCEPT IN OVERFLOW SECTION.
 - DIMENSIONS X, Y, L, AND H TO REMAIN CONSTANT REGARDLESS OF MINOR VARIATIONS IN WALL THICKNESS DUE TO CLASS OF PIPE USED.



NEVADA DEPARTMENT OF TRANSPORTATION
CULVERT HEADWALLS
 (MODIFIED DRAWING)
 53" x 34" OVAL RCP

Signed Original On File R-2.7.1-MODIFIED (502)
 CHIEF HYDRAULICS ENGINEER ADOPTED 8/69 REVISION 12/94



- GENERAL NOTES:**
- ALL CONCRETE SHALL BE CLASS AA.
 - MANHOLES WITH MORE THAN ONE PIPE: THE INFLOW PIPE INVERT ELEVATIONS SHALL BE GREATER THAN OR EQUAL TO 0.1' ABOVE THE OUTFLOW PIPE INVERT ELEVATION.
 - FOR VALUES OF "H", SEE PLANS. "H" IS THE DIFFERENCE IN ELEVATION BETWEEN THE OUTFLOW PIPE INVERT ELEVATION AND THE TOP OF MANHOLE ELEVATION AT STREET GRADE.
 - PRECAST CONCRETE PIPE SECTIONS, TAPERED SECTIONS, LIDS, GRADE RINGS, AND STEPS SHALL CONFORM TO AASHTO M 199 (ASTM C-478).
 - MANHOLE COVER SHALL BEAR ENTITY IDENTIFICATION AND SYSTEM FUNCTION (IF APPLICABLE).
 - SHAPE FLOWLINE IN MANHOLE TO OUTLET PIPE, AND PROVIDE A 10:1 MINIMUM SLOPE FROM ALL DIRECTIONS TOWARD FLOW LINE.

Call before you Dig.
 1-800-227-2600
 UNDERGROUND SERVICE ALERT (USA)

Call before you OVERHEAD.
 1-702-227-2929
 NEVADA POWER DIVISION



NEVADA DEPARTMENT OF TRANSPORTATION
TYPE 4 MANHOLE

Signed Original On File R-4.7.2 (609)
 CHIEF HYDRAULICS ENGINEER ADOPTED 8/85 REVISION 8/04

REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: -LJ-
 DRAWN BY: -JS-
 CHECKED BY: -DS-
 DATE: MAY 23, 2008

FILE NO.: 511693.19
 FILE NAME: LANDFILL
 SCALE: HORIZ.:
 VERT.:
 HTE# 06-44325
 D2

CONFORMED EASTSIDE LANDFILL DETAILS II

5/12/08



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	RTC-Headwall Cast-In Place Concrete Mix Design / Trashrack Certification Letter
Submittal Number:	03400-001B
Specification Section:	Section 03400, Part 1.04, Subpart A
Drawing Number (s):	D2
Page Number:	03400-2
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	11/17/2008, 12/10/08
Date Submitted:	1/20/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
 ATTENTION: Lee C. Farris, P.E.

DATE: 1/20/09
 JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
 TRANSMITTAL NUMBER: 200
 ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	1/20/09			Submittal 03400-001B – RTC-Headwall Concrete Mix Design / Trashrack Certification Letter	RC

ACTION (*)

AR - AS REQUESTED

FA - FOR APPROVAL

F – FILE

RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL

MAIL

OVERNIGHT

HAND DELIVERY

FACSIMILE

COPY TO: Ranjit Sahu, Lee Farris

BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....

January 20, 2009

Lee C. Farris, P.E.
Vice President
Basic Remediation Company
875 West Warm Springs Road
Henderson, Nevada 89011

Re: Submittal 03400-001B - Response to Comments for RTC Headwall Concrete Mix Design/Trashrack Certification Letter

Attachments:

- 1. Certification Letter**
- 2. Revised Cast-in-Place Concrete Mix Design**
- 3. Drawing D1 & D2**

Dear Lee,

Please find our response to the comments issued from Weston Solutions, Inc. (Weston) on 12/17/08 pertaining to Submittal 03400-001A – RTC Headwall Concrete Mix Design/Trashrack Certification Letter submitted to BRC on 12/10/08. Each Weston comment is listed below in bold italic font followed by ENTACT's respective responses.

Comment 1:

Drawing D-1 must be submitted as part of the submittal.

Response:

Drawing D-1 and D-2 are provided as Attachment 3. These drawings will be referenced during construction of the Trashrack, Type 4 Manhole, and Headwalls.

Comment 2:

Specification Section 03400, 1.06 requires that the maximum concrete slump shall not exceed 4 inches. The submittal's mix design shows a 4-inch \pm 1 inch slump. The maximum slump measured during concrete placement activities, including the testing method variance, shall not exceed 4 inches.

Response:

Please see RFI-053 requesting that this specification be changed to allow for 4-inch \pm 1 inch slump.

Comment 3:

Specification Section 03400, 2.06 requires concrete to conform to CCAUSS Specification 501, which requires 4-7% air entrainment for Class AA concrete. The submitted concrete contains 1.2%. The design must be changed to have an air entrainment of 4-7%.

Response:

Please see Attachment 2 for the revised cast-in-place concrete mix design, which has a target air entrainment percentage that is in accordance with project technical specifications.

Comment 4:

BRC understands that this concrete mix design will be used for all cast-in-place concrete placed on the job.

Response:

Correct, this revised concrete mix design will be used for all cast-in-place concrete placed on the job.

Please feel free to call me at 630-330-8237 to go over any additional questions which arise during your review of this revised submittal.

Respectfully,



Michael M. Carlson
Field Engineer - ENTACT

Attachment 1

JENSEN PRECAST

3853 Losee Road
North Las Vegas, NV 89030-3326
Tel: (702) 649-0045
Fax: (702) 649-2243

Contractor License No. 42231 (C5) - Unlimited Bid Limit

July 24, 2008

Via Facsimile

ENTACT SERVICES, LLC.
JOSHUA CARROLL
3129 Bass Pro Dr.
Grapevine, TX 76051

RE: Project Name: BMI INDUSTRIAL COMPLEX PROJECT
Job No.: 07874
Project Location: LAS VEGAS , NEVADA

Dear Josh :

Plans call out for a Headwall with Trash Rack. Plans show details on dimension for headwall, trash rack and a rebar lay out. Plans show an engineered design that we can use to build this structure in the field. No re-engineered drawings are needed.

Very truly yours,

Shawn Close
JENSEN PRECAST



7-24, 2008

Attachment 2



Converse Consultants

Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

CONCRETE MIX DESIGN: SF294

Supplier : Silver State Materials
 Strength @ 28 Days : 4500 PSI
 Cement Sk : 7.00
 Cementitious Matl Sk : 7.20
 Soluble Sulfates : N/A
 Slump : 4" +/- 1"

Project : N/A
 Application : AA Modified
 Nom Size Agg : 1.5"
 Entrained Air % : 4
 W/C : 0.45
 FA % : 15 1.2 : 1 Ratio

SOURCE OF MATERIALS

Cement (ASTM C150 Type V) : C.P.C
 Fly Ash (ASTM C618 Type F) : Headwaters Resources - Navajo
 Sand (Washed Sand) : Las Vegas Paving, Apex Pit
 Coarse Agg (3/4" - #67) : Las Vegas Paving, Apex Pit
 Coarse Agg (1 1/2" - #4) : Las Vegas Paving, Apex Pit

AGGREGATE PHYSICAL PROPERTIES

C33 Date:	5/23/2008				Specification		
	5/23/2008	5/23/2008	5/23/2008	5/23/2008	CCPW - AA Modified		
Sieve Size	Washed Sand	3/4" - #67	1 1/2" - #4	Combined	(Hi)	(Lo)	
2"	100.0	100.0	100.0	0.0	100	100	
1 1/2"	100.0	100.0	100.0	0.0	100	87	
1"	100.0	100.0	46.0	0.0	85	65	
3/4"	100.0	90.0	5.0	0.0	71	48	
1/2"	100.0	52.0	1.0	0.0	59		
3/8"	100.0	28.0	1.0	0.0	52	39	
#4	96.0	4.0	0.0	0.0	42	30	
#8	85.0	1.0	0.0	0.0	37	23	
#16	65.0	0.0	0.0	0.0	26	15	
#30	36.0	0.0	0.0	0.0	15	8	
#50	21.0	0.0	0.0	0.0	9	4	
#100	9.0	0.0	0.0	0.0	4	1	
#200	2.7	0.5	0.2	0.0	1.4	0	
Bulk Specific Grav, SSD:	2.61	2.67	2.68	0			
Absorption %:	2.1	0.8	0.5	0			
Aggregate Ratio %:	43.00%	30.00%	27.00%	0.00%	130.00%		

BATCH WEIGHTS FOR ONE CUBIC YARD (SSD)

	Solid Volume	Weight (lbs)	Volume (ft3)
Cement (ASTM C150 Type V) :		559	2.84
Fly Ash (ASTM C618 Type F) :		118	0.80
Water :		301	4.82
% Entrained Air :			1.08
Sand (Washed Sand) :	43.00%	1,223	7.51
Coarse Agg (3/4" - #67) :	30.00%	873	5.24
Coarse Agg (1 1/2" - #4) :	27.00%	788	4.71
Coarse Agg 3: :	0.00%	0	0.00
Total:		3,862	27.00



Theoretical Unit Weight : 143.04 PCF

Admixtures and or comments:

Type A Water Reducer and Micro Air: as per manufacturer's recommendations.
 Air content shall be 4 - 7%.



Submitted By: [Signature]
 Date: 1/28/09

731 Pilot Road, Suite H, Las Vegas, Nevada 89119-4429



Telephone: (702) 269-8336 ♦ Facsimile: (702) 269-8353 ♦ e-mail: lasvegas@converseconsultants.com



9350 OAK CREEK ROAD, MOJAVE, CALIFORNIA 93501 / TEL. (661) 823 3700, FAX (661) 824-4908

Manufacturer's Certification

We hereby certify that Mojave Type II/V Low Alkali cement supplied to you has been manufactured in accordance with and meets the standard requirements of the current ASTM C 150 specification for TYPE II and TYPE V cement. Following are the average chemical and physical data for the month of October, 2008:

ASTM C 150 Requirements

Chemical Analysis	TYPE II Requirements	TYPE V Requirements	MOJAVE TYPE II / V
Silicon dioxide (SiO ₂), min, %	---	---	21.2
Aluminum oxide (Al ₂ O ₃), max, %	6.0	---	3.5
Ferric oxide (Fe ₂ O ₃), max, %	6.0	---	3.7
Magnesium oxide (MgO), max %	6.0	6.0	2.4
Sulfur trioxide (SO ₃), max, %	(Note 2) 3.0	2.3	2.6
Loss on ignition, max, %	3.0	3.0	2.3
Insoluble residue, max, %	0.75	0.75	0.32
Alkalies (Na ₂ O+0.658K ₂ O), max, %	0.60	0.60	0.56
Tricalcium silicate (C ₃ S), %	---	---	54
Tricalcium aluminate (C ₃ A), max, %	(Note 3) 8	5	3
Tetracalcium aluminoferrite (C ₄ A _f), %	---	---	11
C ₄ AF + 2 (C ₃ A), max, %	(Note 3) ---	25	17
C ₃ S + 4.75*(C ₃ A), max, %	(Note 4) 100	---	68
CO ₂ , %	---	---	1.2
limestone, max, %	5.0	5.0	3.1
CaCO ₃ in limestone, min, %	70	70	91.5
Physical Data			
Air content of mortar, max, %	12	12	7.6
Passing 45um (no. 325) sieve, %	---	---	97.4
Blaine Fineness, min/max, m ² /kg	(Note 4) 280/430	280/---	392
Average Blaine Fineness, (last 5 samples)	(Note 4) 420	---	385
Heat of Hydration C186 (cal/g)	(Note 5) ---	---	76
Autoclave expansion, max, %	0.80	0.80	-0.02
Compressive Strength, min, MPa, (psi)			
3 days	10.0 (1450)	8.0 (1160)	29.2 (4240)
7 days	17.0 (2470)	15.0 (2180)	35.1 (5086)
28 days *(from previous month)	---	21.0 (3050)	*41.9 *(6076)
Vicat, initial set, min.-max., minutes	45-375	45-375	144
C 1038, 14 day max, % expansion	0.020	0.020	0.004
C 452, 14 day max, % expansion	(Note 1) ---	0.040	0.028
False Set, final penetration, min, %	50	50	86

Apparatus and methods used in this laboratory have been checked by the Cement and Concrete Reference Laboratory of the National Institute of Standards and Technology. A copy of the report detailing their findings is available upon request. Major Oxides are analyzed by X-ray Fluorescence Spectrometry.

Note 1: ASTM C150, Table 4, Optional Physical Requirements, Sulfate Resistance at 14 days.

Note 2: ASTM C150, Table 1, Note D, The performance of the cement represented by this certificate has proven to be improved with SO₃ levels in excess of the 2.3% limit for Type V. The expansion, as measured by ASTM C1038, does not exceed the limit of 0.02% at 14 days.

Note 3: ASTM C150, Table 1, Note C, Does not apply when the optional sulfate resistance limit in Table 4 is specified.

Note 4: ASTM C150, Table 5, Note F, Maximum Average and Maximum Single sample fineness limits do not apply if the sum of C₃S+4.75*C₃A is less than or equal to 90.

Note 5: ASTM C150, Table 1, Note H, For Informational Purposes Only.

Jerold S. Kennedy, Quality Control Superintendent



Chemical and Physical Analysis of Fly Ash

Developed For: *Headwaters Resources*
 16817 - 155th PI SE
 Renton, WA 98058

Ticket: 8122 Job: 14420 Report Date: 06/03/2008	Plant of Origin: <i>Navajo</i> Sample ID: <i>Nv-034-08</i> Docket: -	Sample Date Range: 04/14/2008 to: 04/16/2008 Date Received: 04/22/2008
---	--	--

<u>Chemical Composition (%)</u> <small>(by Wyoming Analytical Laboratories, Inc.)</small>	ASTM C 618-05 Specifications	
	Class F	Class C
Total Silica, Aluminum, Iron: 86.0	70.0 Min	50.0 Min
Silicon Dioxide: 58.6		
Aluminum Oxide: 22.1		
Iron Oxide: 5.3		
Sulfur Trioxide: 0.4	5.0 Max	5.0 Max
Calcium Oxide: 6.2		
Moisture Content: 0.2	3.0 Max	3.0 Max
Loss on Ignition: 0.4	6.0 Max	6.0 Max
	AASHTO M 295-00 Specifications	
Available Alkalies (as Na ₂ O): 1.0	1.5 Max	1.5 Max
Sodium Oxide: 0.74		
Potassium Oxide: 0.40		

<u>Physical Test Results</u>	ASTM C 618-05 Specifications	
	Class F	Class C
Fineness, Retained on #325 Sieve (%): 18.8	34 Max	34 Max
Strength Activity Index (%)		
Ratio to Control @ 7 Days: 84.6		
Ratio to Control @ 28 Days: 90.0	75 Min	75 Min
Water Requirement, % of Control: 93.4	105 Max	105 Max
Soundness, Autoclave Expansion (%): -0.01	0.8 Max	0.8 Max
Drying Shrinkage, Increase @ 28 Days (%): 0.00	0.03 Max	0.03 Max
Density Mg/m ³ : 2.23		

Comments:

CTL | Thompson Materials Engineers, Inc.

Orville R. Werner II

Orville R. Werner II, P.E.





GeoTek, Inc.
6835 South Escalante Street, Suite A, Las Vegas, NV 89119-3832
702-897-1424 Office 702-897-2213 Fax www.geotekusa.com

TECHNICAL REPORT

REPORT TO: Las Vegas Paving Corporation
3401 North 5th Street
North Las Vegas, NV 89032

DATE: May 23, 2008
WORK ORDER NO: 5478
SHEET: 1 of 6
Revision No.

ATTENTION: Mr. Dan Beressini

REPORT OF: Concrete Aggregate Tests for Material Sampled at the Apex Pit for use in Portland Cement Concrete Mixes for Concrete Production

SAMPLE IDENTIFICATION

On April 21, 2008, your personnel obtained five samples of concrete aggregates (#4, #67, #89, #7, Washed Fines) from the above referenced pit. At your request, the following tests were performed: sieve analysis, organic impurities, sodium sulfate soundness, LA abrasion, clay lumps and friable particles, specific gravity, and lightweight pieces in aggregate. These tests were sampled and performed in general accordance with ASTM C29, C40, C88, C117, C123, C127, C128, C535, C136, C142, C229, D75, C289 and CTM 227. Results of these tests are summarized on the attached sheets.



LABORATORY MANAGER: _____

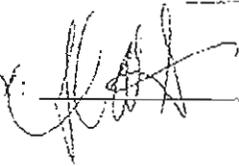
REVIEWED BY:  _____

TABLE NO. 9 SIEVE ANALYSIS, SPECIFIC GRAVITY AND ABSORPTION OF FINE AGGREGATE (ASTM C136, C117 AND C128)

Laboratory Number	95860/95877	
Description	Apex Pll Washed Sand	ASTM C33 TABLE 1
Screen or Sieve Size	Percent Passing	
3/8"	100	100
No. 4	96	95 - 100
No. 8	85	80 - 100
No. 16	65	50 - 85
No. 30	36	25 - 60
No. 50	21	10 - 30
No. 100	9	2 - 10
No. 200	2.7	0 - 5
Fineness Modulus	2.9	2.3 - 3.1
Bulk Dry Specific Gravity	2.59	N/A
Bulk Specific Gravity, SSD	2.61	N/A
Apparent Specific Gravity	2.69	N/A
Absorption	2.1	N/A
Void Content, %	36	N/A

TABLE NO. 10 FINE AGGREGATE PROPERTIES

Laboratory Tests	Test Method	Test Results	ASTM C33 Table 3
Clay Lumps and Friable Particles, %	ASTM C142	0	3 max*
Sodium Sulfate Soundness, % Loss after 5 Cycles	ASTM C88	0.6	10 max
Lightweight Pieces	ASTM C123	0	0.5 max*
Organic Impurities	ASTM C40	<1	Free of injurious amounts of organic impurities
Sand Equivalent	Nev. T227	86	N/R
Void Content, %	ASTM C29	36	-
Dry Rodded Unit Weight, pcf	ASTM C29	100.3	-
Potential Reactivity of Aggregate, Chemical Method	ASTM C289	innocuous	-

* ASTM C33, Table 1

*** Tests performed by Silver State Analytical Laboratories.

TABLE NO.7 SIEVE ANALYSIS, SPECIFIC GRAVITY AND ABSORPTION OF NO. 7 (1/2" - NO. 4) COARSE AGGREGATE (ASTM C136, C117 AND C127)

Laboratory Number	95861/95878	
Description	Apex Pit No. 7 Coarse Aggregate (1/2" - No. 4)	ASTM C33 TABLE 2 No. 7
Screen or Sieve Size	Percent Passing	
3/4"	100	100
1/2"	99	90 - 100
3/8"	61	40 - 70
No. 4	5	0 - 15
No. 8	2	0 - 5
No. 200	0.9	0 - 1
Bulk Dry Specific Gravity	2.65	N/A
Bulk Specific Gravity, SSD	2.68	N/A
Apparent Specific Gravity	2.71	N/A
Absorption, %	0.9	N/A

TABLE NO.8 COARSE AGGREGATE PROPERTIES PERFORMED ON NO. 7 (1/2" - NO. 4) COARSE AGGREGATE

Laboratory Tests	Test Method	Test Results	ASTM C33 Table 3
Percentage of Wear (500 Rev.), %	ASTM C131	26	50 max
Clay Lumps and Friable Particles, %	ASTM C142	0	2 max*
Sodium Sulfate Soundness, % Loss after 5 Cycles	ASTM C88	7.8	12 max*
Lightweight Pieces	ASTM C123	0	0.5 max ^d
Cleanliness Value**	CTM 227	91	71 min
Dry Rodded Unit Weight, pcf	ASTM C29	98	N/A
Potential Reactivity of Aggregate, Chemical Method***	ASTM C289	Innocuous	

* ASTM C33, Table 3

*** Tests performed by Silver State Analytical Laboratories

TABLE NO.3 SIEVE ANALYSIS, SPECIFIC GRAVITY AND ABSORPTION OF NO. 67
(3/4" - NO.4) COARSE AGGREGATE (ASTM C136, C117 AND C127)

Laboratory Number	95859/95976	
Description	Apex Pit No. 67 Coarse Aggregate (3/4" - No.4)	ASTM C33 TABLE 2 No. 67
Screen or Sieve Size	Percent Passing	
1"	100	100
3/4"	90	90 - 100
1/2"	52	-
3/8"	28	20 - 55
No. 4	4	0 - 10
No. 8	1	0 - 5
No. 200	0.5	0 - 1
Bulk Dry Specific Gravity	2.63	N/A
Bulk Specific Gravity, SSD	2.67	N/A
Apparent Specific Gravity	2.71	N/A
Absorption, %	0.8	N/A

TABLE NO.4 COARSE AGGREGATE PROPERTIES PERFORMED ON NO. 67 (3/4" - NO.4) COARSE AGGREGATE

Laboratory Tests	Test Method	Test Results	ASTM C33 Table 3
Percentage of Wear (500 Rev.), %	ASTM C131	20	50 max
Clay Lumps and Friable Particles, %	ASTM C142	0	2 max*
Sodium Sulfate Soundness, % Loss after 5 Cycles	ASTM C88	0.7	12 max*
Lightweight Pieces	ASTM C123	0	0.5 max*
Cleaness Value**	CTM 227	89	71 min
Dry Rodded Unit Weight, pcf	ASTM C29	95.9	N/A
Potential Reactivity of Aggregate, Chemical Method***	ASTM C289	Innocuous	

* ASTM C33, Table 3

*** Tests performed by Silver State Analytical Laboratories



The Chemical Company

Description

Pozzolith 80 ready-to-use, liquid admixture is used for making more uniform and predictable quality concrete.

Pozzolith 80 admixture meets ASTM C 494/C 494M requirements for Type A, water-reducing, Type B, retarding, and Type D, retarding and water-reducing, admixtures.

Applications

Recommended for use in:

- ☒ Prestressed concrete
- ☒ Precast concrete
- ☒ Reinforced concrete
- ☒ Shotcrete
- ☒ Lightweight concrete
- ☒ Pumped concrete
- ☒ 4x4TM Concrete
- ☒ Pervious Concrete
- ☒ Rheodynamic[®] Self-Consolidating Concrete (SCC)

POZZOLITH[®] 80

Water-Reducing Admixture

Features

- ☒ Reduced water content required for a given workability
- ☒ Controlled setting characteristics – normal or retarded

Benefits

- ☒ Increased compressive and flexural strength
- ☒ Improved workability
- ☒ Reduced segregation
- ☒ Flexibility in the scheduling of placing and finishing operations
- ☒ Offsets effects of early stiffening during extended delays between mixing and placing
- ☒ Helps eliminate cold joints
- ☒ Dead-load deflection can take place (before concrete sets) in extended pours for bridge decks, cantilevers, nonshored structural elements, etc.
- ☒ Peak temperature and/or rate of temperature rise lowered in mass concrete thereby reducing thermal cracking

Performance Characteristics

Rate of Hardening: The temperature of the concrete mixture and the ambient temperature affect the hardening rate of concrete. At higher temperatures, concrete stiffens more rapidly which may cause problems with placing and finishing. The dosage range of Pozzolith 80 admixture can be varied to provide the desired setting characteristics.

Guidelines for Use

Dosage: Depending on the setting characteristics desired, Pozzolith 80 admixture is recommended for use within the dosage range of 4-10 fl oz/cwt (260-650 mL/100 kg) of cementitious materials for most concrete mixtures using average concrete ingredients. Because of variations in job conditions and concrete materials, dosages other than the recommended amounts may be required. In such cases, contact your BASF Construction Chemicals representative.

Master
Builders

Product Data: POZZOLITH® 80

Product Notes

Corrosivity – Non-Chloride, Non-Corrosive: Pozzolith 80 admixture will neither initiate nor promote corrosion of reinforcing steel in concrete. This admixture does not contain intentionally-added calcium chloride or other chloride-based ingredients.

Compatibility: Pozzolith 80 admixture may be used in combination with any BASF Construction Chemicals admixtures. When used in conjunction with other admixtures, each admixture must be dispensed separately into the mix.

Storage and Handling

Storage Temperature: If Pozzolith 80 admixture freezes, thaw at 35 °F (2 °C) or above and completely reconstitute by mild mechanical agitation. **Do not use pressurized air for agitation.**

Shelf Life: Pozzolith 80 admixture has a minimum shelf life of 18 months. Depending on storage conditions, the shelf life may be greater than stated. Please contact your BASF Construction Chemicals representative regarding suitability for use and dosage recommendations if the shelf life of Pozzolith 80 admixture has been exceeded.

Packaging

Pozzolith 80 admixture is supplied in 55 gal (208 L) drums, 275 gal (1040 L) totes and by bulk delivery.

Related Documents

Material Safety Data Sheets: Pozzolith 80 admixture.

Additional Information

For additional information on Pozzolith 80 admixture or its use in developing a concrete mix with special performance characteristics, contact your BASF Construction Chemicals representative.

The Admixture Systems business of BASF Construction Chemicals is a leading provider of innovative additives for specialty concrete used in the ready mix, precast, manufactured concrete products, underground construction and paving markets throughout the NAFTA region. The Company's respected Master Builders brand products are used to improve the placing, pumping, finishing, appearance and performance characteristics of concrete.

BASF Construction Chemicals, LLC
Admixture Systems

www.masterbuilders.com

United States: 23700 Chagrin Boulevard, Cleveland, Ohio 44122-5644 ☎ Tel: 800 628-9990 ☎ Fax: 216 839-9621

Canada: 1800 Clark Boulevard, Brampton, Ontario L6T 2M7 ☎ Tel: 800 887-5882 ☎ Fax: 905 782-0951

☎ Construction Research & Technology GmbH

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**Master
Builders**



The Chemical Company



Description

Micro Air air-entraining admixture provides concrete with extra protection by creating air bubbles that are ultrastable, small and closely spaced – a characteristic especially useful in the types of concrete known for their difficulty to entrain and maintain the air content desired.

Even when used at a lower dosage than standard air-entraining admixtures, Micro Air admixture meets the requirements of ASTM C 260, AASHTO M 154, and CRD-C 13.

Applications

Recommended for use in:

- ☒ Concrete exposed to cyclic freezing and thawing
- ☒ Production of high-quality normal or lightweight concrete (heavyweight concrete normally does not contain entrained air)

MICRO AIR®

Air-Entraining Admixture

Features

- ☒ Ready-to-use in the proper concentration for rapid, accurate dispensing
- ☒ Greatly improved stability of air-entrainment
- ☒ Ultra stable air bubbles

Benefits

- ☒ Increased resistance to damage from cyclic freezing and thawing
- ☒ Increased resistance to scaling from deicing salts
- ☒ Improved plasticity and workability
- ☒ Improved air-void system in hardened concrete
- ☒ Improved ability to entrain and retain air in low-slump concrete, concrete containing high-carbon content fly ash, concrete using large amounts of fine materials, concrete using high-alkali cements, high-temperature concrete, and concrete with extended mixing times
- ☒ Reduced permeability – increased watertightness
- ☒ Reduced segregation and bleeding

Performance Characteristics

Concrete durability research has established that the best protection for concrete from the adverse effects of freezing and thawing cycles and deicing salts results from: proper air content in the hardened concrete, a suitable air-void system in terms of bubble size and spacing and adequate concrete strength, assuming the use of sound aggregates and proper mixing, transporting, placing, consolidation, finishing and curing techniques. Micro Air admixture can be used to obtain adequate freezing and thawing durability in a properly proportioned concrete mixture, if standard industry practices are followed.

Air Content Determination: The total air content of normal weight concrete should be measured in strict accordance with ASTM C 231, "Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method" or ASTM C 173/C 173M, "Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method."

The air content of lightweight concrete should only be determined using the Volumetric Method. The air content should be verified by calculating the gravimetric air content in accordance with ASTM C 138/C 138M, "Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete." If the total air content, as measured by the Pressure Method or Volumetric Method and as verified by the Gravimetric Method, deviates by more than 1-1/2%, the cause should be determined and corrected through equipment calibration or by whatever process is deemed necessary.

**Master
Builders**

Product Data: MICRO AIR[®]

Guidelines for Use

Dosage: There is no standard dosage for Micro Air admixture. The exact quantity of air-entraining admixture needed for a given air content of concrete varies because of differences in concrete making materials and ambient conditions. Typical factors that might influence the amount of air entrained include: temperature, cementitious materials, sand gradation, sand-aggregate ratio, mixture proportions, slump, means of conveying and placement, consolidation and finishing technique.

The amount of Micro Air admixture used will depend upon the amount of entrained air required under actual job conditions. In a trial mixture, use 1/8 to 1-1/2 fl oz/cwt (8-98 mL/100 kg) of cement. In mixtures containing water-reducing or set-control admixtures, the amount of Micro Air admixture needed is somewhat less than the amount required in plain concrete. Due to possible changes in the factors that can affect the dosage of Micro Air admixture, frequent air content checks should be made during the course of the work. Adjustments to the dosage should be based on the amount of entrained air required in the mixture at the point of placement. If an unusually high or low dosage of Micro Air admixture is required to obtain the desired air content, consult your BASF Construction Chemicals representative. In such cases, it may be necessary to determine that, in addition to a proper air content in the fresh concrete, a suitable air-void system is achieved in the hardened concrete.

Dispensing and Mixing: Add Micro Air admixture to the concrete mixture using a dispenser designed for air-entraining admixtures; or add manually using a suitable measuring device that ensures accuracy within plus or minus 3% of the required amount. For optimum, consistent performance, the air-entraining admixture should be dispensed on damp, fine aggregate or with the initial batch water. If the concrete mixture contains lightweight aggregate, field evaluations should be conducted to determine the best method to dispense the air-entraining admixture.

Precaution

In a 2005 publication from the Portland Cement Association (PCA R&D Serial No. 2789), it was reported that problematic air-void clustering that can potentially lead to above normal decreases in strength was found to coincide with late additions of water to air-entrained concretes. Late additions of water include the conventional practice of holding back water during batching for addition at the jobsite. Therefore, caution should be exercised with delayed additions to air-entrained concrete. Furthermore, an air content check should be performed after any post-batching addition to an air-entrained concrete mixture.

BASF Construction Chemicals, LLC
Admixture Systems

www.masterbuilders.com

United States: 23760 Chagrin Boulevard, Cleveland, Ohio 44122-5644 ☎ Tel: 204 526-9990 ☎ Fax: 216 839-6821
Canada: 1500 Clark Boulevard, Brampton, Ontario L5T 1M7 ☎ Tel: 905 367-5852 ☎ Fax: 905 792-0651

☎ Construction Research & Technology GmbH

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Product Notes

Corrosivity – Non-Chloride, Non-Corrosive: Micro Air admixture will neither initiate nor promote corrosion of reinforcing and prestressing steel embedded in concrete, or of galvanized steel floor and roof systems. No calcium chloride or other chloride-based ingredients are used in the manufacture of this admixture.

Compatibility: Micro Air admixture may be used in combination with any BASF Construction Chemicals admixture, unless stated otherwise on the data sheet for the other product. When used in conjunction with other admixtures, each admixture must be dispensed separately into the mixture.

Storage and Handling

Storage Temperature: Micro Air admixture should be stored and dispensed at 35 °F (2 °C) or higher. Although freezing does not harm this product, precautions should be taken to protect it from freezing. If it freezes, thaw and reconstitute by mild mechanical agitation. *Do not use pressurized air for agitation.*

Shelf Life: Micro Air admixture has a minimum shelf life of 18 months. Depending on storage conditions, the shelf life may be greater than stated. Please contact your BASF Construction Chemicals representative regarding suitability for use and dosage recommendations if the shelf life of Micro Air admixture has been exceeded.

Safety: Micro Air admixture is a caustic solution. Chemical goggles and gloves are recommended when transferring or handling this material. (See MSDS and/or product label for complete information.)

Packaging

Micro Air admixture is supplied in 55 gal (208 L) drums, 275 gal (1040 L) totes and by bulk delivery.

Related Documents

Material Safety Data Sheets, Micro Air admixture.

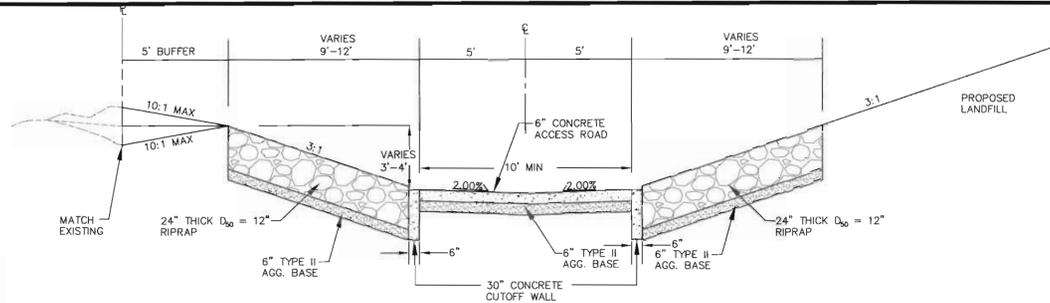
Additional Information

For suggested specification information or for additional product data on Micro Air admixture, contact your BASF Construction Chemicals representative.

The Admixture Systems business of BASF Construction Chemicals is a leading provider of innovative additives for specialty concrete used in the ready mix, precast, manufactured concrete products, underground construction and paving markets throughout the NAFTA region. The Company's respected Master Builders brand products are used to improve the placing, pumping, finishing, appearance and performance characteristics of concrete.

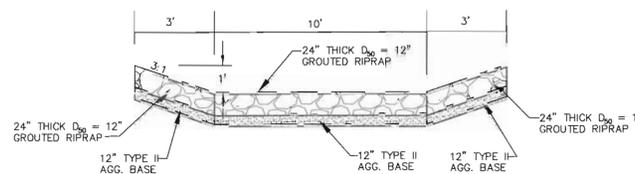
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Attachment 3



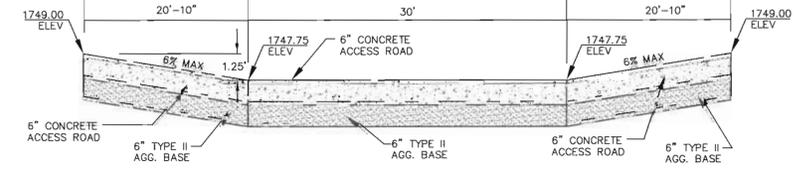
- NOTES:
1. ALL WORK TO CONFORM TO CCAUSS #s 301, 302, 409, 501, 610, 701, 702, 704, AND 706.
 2. TYPE II AGGREGATE SHALL CONFORM TO CCAUSS # 704.03.04.
 3. ALL CONCRETE SHALL BE CLASS AA PER CCAUSS # 501.
 4. SEE CAMU DRAWINGS FOR GEOCOMPOSITE, GEOMEMBRANE, LINER, PIPE, GEOTEXTILE, COVER SOIL, SLOPE TREATMENT, INTERIM COVER, OPERATIONS LAYER, FINAL COVER, AND ALL OTHER SUBGRADE REQUIREMENTS.

(A) TYPICAL CHANNEL DETAIL
D1 SCALE H = V



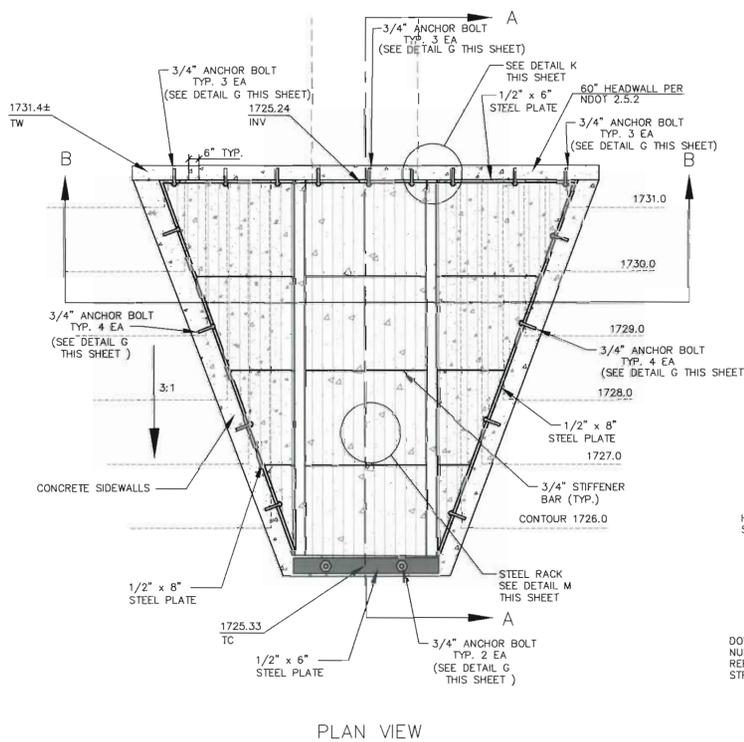
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1. ALL WORK TO CONFORM TO CCAUSS #s 301, 302, 610, AND 704.
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(B) TYPICAL LANDFILL EMBANKMENT CHANNEL DETAIL
D1 NTS

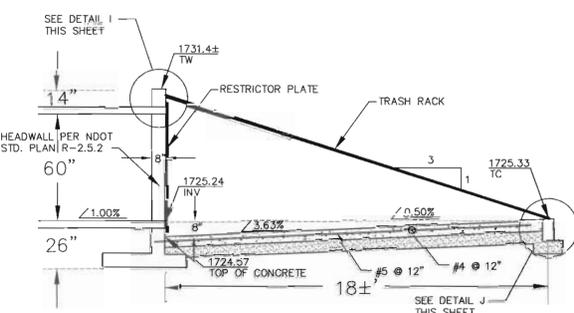


- NOTES:
1. ALL WORK TO CONFORM TO CCAUSS #s 301, 302, 409, 501, 610, 611, 701, 702, 704, AND 706.
 2. TYPE II AGGREGATE SHALL CONFORM TO CCAUSS # 704.03.04.
 3. ALL CONCRETE SHALL BE CLASS AA PER CCAUSS # 501.
 4. SEE CAMU DRAWINGS FOR GEOCOMPOSITE, GEOMEMBRANE, LINER, PIPE, GEOTEXTILE, COVER SOIL, SLOPE TREATMENT, INTERIM COVER, OPERATIONS LAYER, FINAL COVER, AND ALL OTHER SUBGRADE REQUIREMENTS.

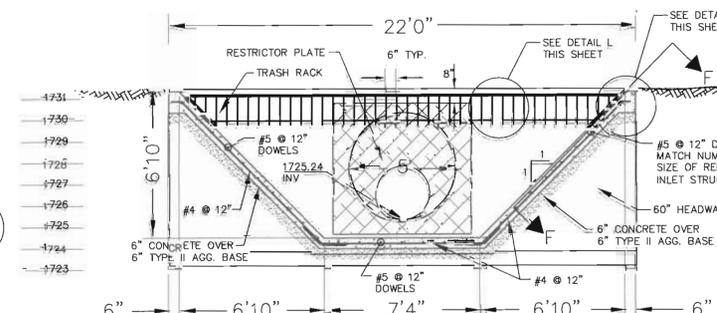
(C) EQUALIZER BASIN OVERFLOW DETAIL
D1 NTS



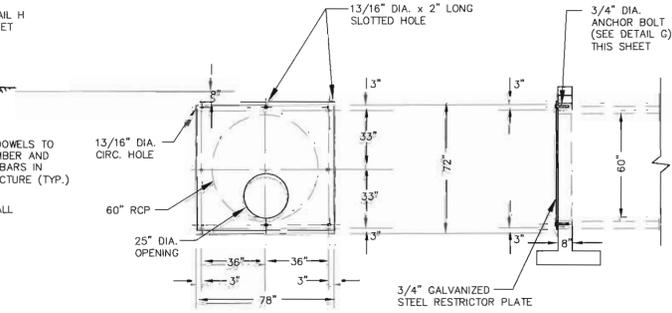
PLAN VIEW



SECTION "A-A"



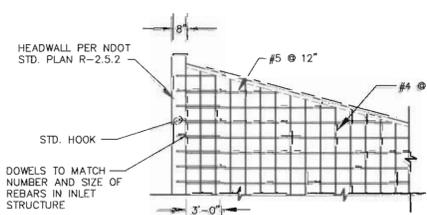
SECTION "B-B"



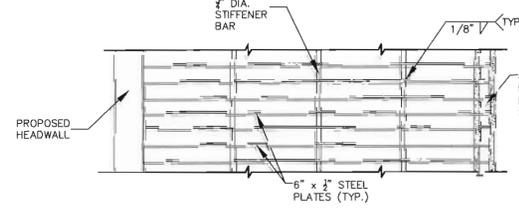
FRONT SECTION

(D) INLET / TRASH RACK DETAIL
D1 SCALE 1" = 4'-0"

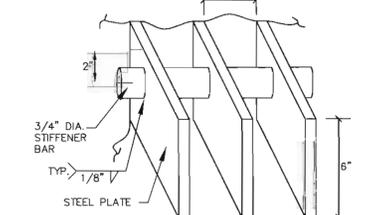
(E) RESTRICTOR PLATE DETAIL
D1 SCALE: 1" = 4'-0"



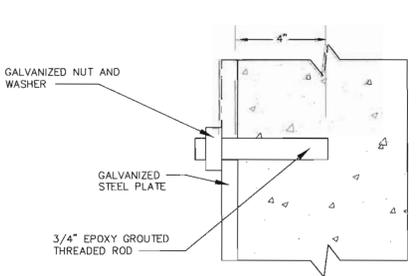
(F) PERPENDICULAR VIEW SIDE WALL REINFORCEMENT
D1



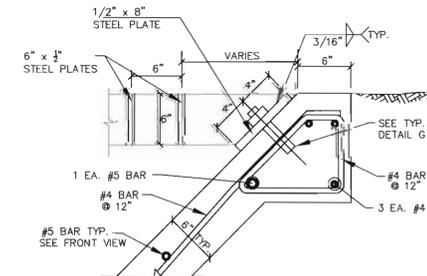
(M) TRASH RACK DETAIL
D1 NTS



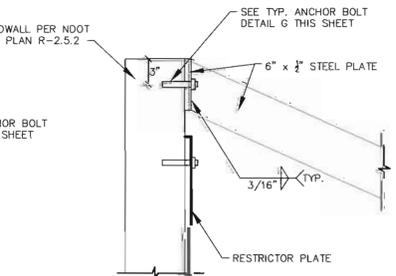
(N) STIFFENER BAR DETAIL
D1 NTS



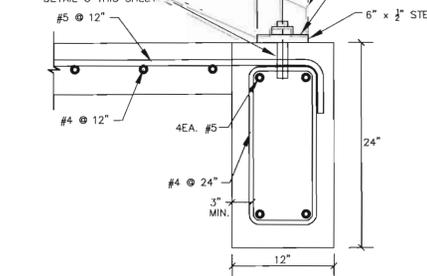
(G) ANCHOR BOLT DETAIL
D1 NTS



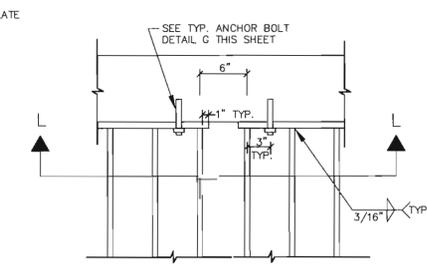
(H) DETAIL
D1 NTS



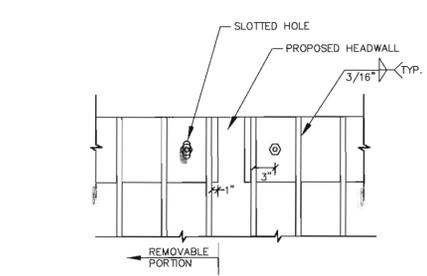
(I) DETAIL
D1 NTS



(J) DETAIL
D1 NTS



(K) DETAIL
D1 NTS



(L) DETAIL
D1 NTS

- NOTES:
1. HEADWALL PER NDOT STANDARD PLANS R2.5.2
 2. ALL THREADED ROD ANCHORS SHALL BE 3/4" SIMPSON SET (HIGH STRENGTH EPOXY) OR SIMILAR. BOLTS FOR REMOVABLE PORTION SHALL BE STAINLESS STEEL.
 3. ALL STEEL PARTS SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A153.
 4. A HARDENED FLAT WASHER AND LOCK WASHER SHALL BE USED BETWEEN THE NUTS AND CONNECTED PARTS.
 5. ALL WELDING SHALL BE DONE IN ACCORDANCE WITH AWS D1.5-96 CODE.
 6. TYPE II AGGREGATE SHALL CONFORM TO CCAUSS # 704.03.04
 7. ALL CONCRETE SHALL BE CLASS AA PER CCAUSS # 501.

Call before you Dig.
1-800-227-2600
UNDERGROUND SERVICE ALERT (USA)

Call before you OVERHEAD.
1-702-227-2929
SAFETY SERVICES DEPARTMENT

SEAL
M. LEE JACOBY Jr.
CIVIL
No. 15756

REV.	DESCRIPTION	BY	DATE	APPROVAL

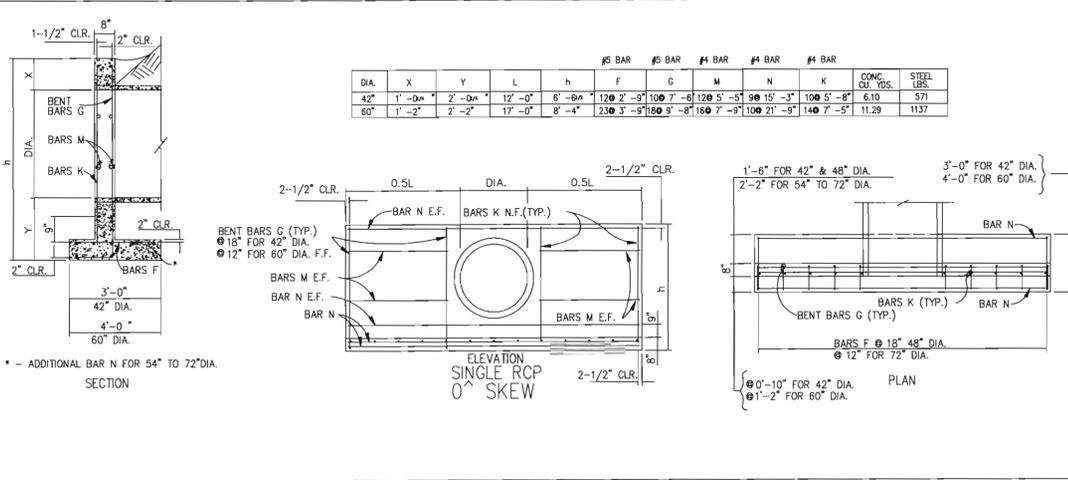
220 Corporate Center
Suite 100
Las Vegas, NV 89124-3434
Tel: 702/227-2929
Fax: 702/227-2928

PBSI
ENGINEERING PLANNING SURVEYING CONSTRUCTION SERVICES

CONFORMED
EASTSIDE LANDFILL
DETAILS I

JOB NO.: 511693.19
FILE NAME: LANDFILL
SCALE: HORIZ.:
VERT.:
DESIGNED BY: -LJ
DRAWN BY: -DS
CHECKED BY: -DS
DATE: MAY, 2008

HTE# 06-44325
D1

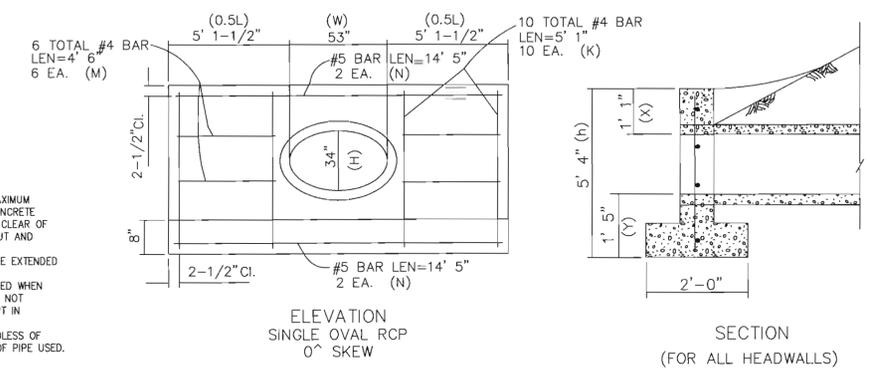


- GENERAL NOTES:**
- CONCRETE SHALL BE CLASS AA.
 - REINFORCING STEEL SHALL BE DEFORMED BARS WITH MAXIMUM SPACING OF 18" SET 2 1/2" CLEAR OF SURFACE OF CONCRETE EXCEPT AS NOTED. BAR ENDS SHALL BE KEPT 1 1/2" CLEAR OF SURFACE OF CONCRETE. REINFORCING BARS MAY BE CUT AND BENT IN FIELD.
 - FOOTINGS SHOWN ARE OF MINIMUM DEPTH AND SHALL BE EXTENDED IF SOIL IS UNSUITABLE OR LIABLE TO SCOUR.
 - CULVERT PIPES TO BE SET ON A SKEW SHALL BE MITERED WHEN HEADWALLS ARE CONSTRUCTED. WHEN HEADWALLS ARE NOT CONSTRUCTED THE PIPES SHALL NOT BE MITERED EXCEPT IN OVERFLOW SECTION.
 - FOR ESTIMATING HEADWALL QUANTITIES ON SKEWED CULVERTS:
 - 0' to 10' USE QUANTITIES FOR 0° SKEW.
 - 11' to 25' USE QUANTITIES FOR 15° SKEW.
 - 26' to 40' USE QUANTITIES FOR 30° SKEW.
 - 41' to 55' USE QUANTITIES FOR 45° SKEW.
 - OVER 55' CALCULATE QUANTITIES REQUIRED.
 - CULVERTS SHOULD BE INSTALLED ON 5' INCREMENTS WHERE IT IS FEASIBLE.
 - DIMENSIONS X, Y, L, AND h TO REMAIN CONSTANT REGARDLESS OF MINOR VARIATIONS IN WALL THICKNESS DUE TO CLASS OF PIPE USED.

NEVADA DEPARTMENT OF TRANSPORTATION
CULVERT HEADWALLS
 42" RCP TO 72" RCP
 (MODIFIED DRAWING)

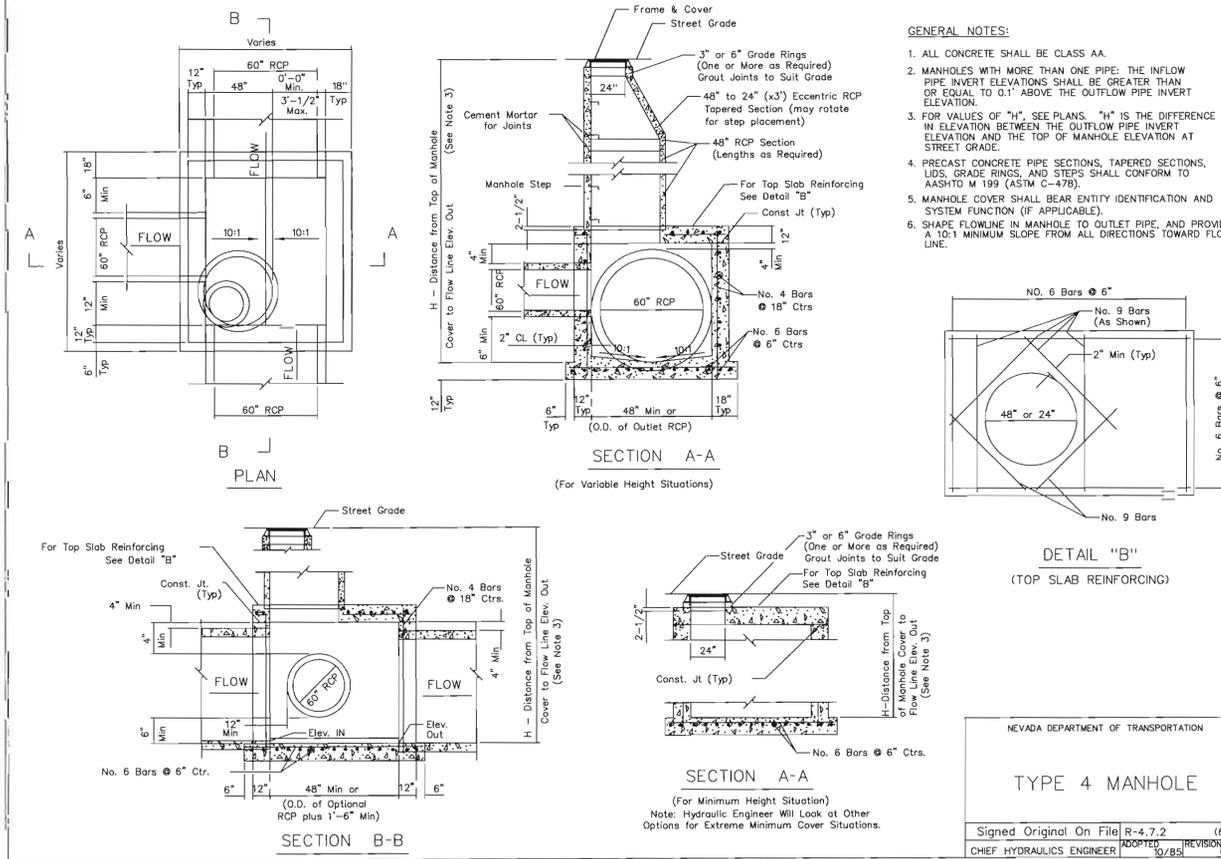
Signed Original On File R-2.5.2 MODIFIED (502)
 CHIEF HYDRAULICS ENGINEER ADOPTED 8/69 REVISION 8/97

- GENERAL NOTES:**
- CONCRETE SHALL BE CLASS AA.
 - REINFORCING STEEL SHALL BE DEFORMED BARS WITH MAXIMUM SPACING OF 18" SET 2 1/2" CLEAR OF SURFACE OF CONCRETE EXCEPT AS NOTED. BAR ENDS SHALL BE KEPT 1 1/2" CLEAR OF SURFACE OF CONCRETE. REINFORCING BARS MAY BE CUT AND BENT IN FIELD.
 - FOOTINGS SHOWN ARE OF MINIMUM DEPTH AND SHALL BE EXTENDED IF SOIL IS UNSUITABLE OR LIABLE TO SCOUR.
 - CULVERT PIPES TO BE SET ON A SKEW SHALL BE MITERED WHEN HEADWALLS ARE CONSTRUCTED. WHEN HEADWALLS ARE NOT CONSTRUCTED THE PIPES SHALL NOT BE MITERED EXCEPT IN OVERFLOW SECTION.
 - DIMENSIONS X, Y, L, AND h TO REMAIN CONSTANT REGARDLESS OF MINOR VARIATIONS IN WALL THICKNESS DUE TO CLASS OF PIPE USED.



NEVADA DEPARTMENT OF TRANSPORTATION
CULVERT HEADWALLS
 (MODIFIED DRAWING)
 53" x 34" OVAL RCP

Signed Original On File R-2.7.1-MODIFIED (502)
 CHIEF HYDRAULICS ENGINEER ADOPTED 8/69 REVISION 12/94



- GENERAL NOTES:**
- ALL CONCRETE SHALL BE CLASS AA.
 - MANHOLES WITH MORE THAN ONE PIPE: THE INFLOW PIPE INVERT ELEVATIONS SHALL BE GREATER THAN OR EQUAL TO 0.1' ABOVE THE OUTFLOW PIPE INVERT ELEVATION.
 - FOR VALUES OF "H", SEE PLANS. "H" IS THE DIFFERENCE IN ELEVATION BETWEEN THE OUTFLOW PIPE INVERT ELEVATION AND THE TOP OF MANHOLE ELEVATION AT STREET GRADE.
 - PRECAST CONCRETE PIPE SECTIONS, TAPERED SECTIONS, LIDS, GRADE RINGS, AND STEPS SHALL CONFORM TO AASHTO M 199 (ASTM C-478).
 - MANHOLE COVER SHALL BEAR ENTITY IDENTIFICATION AND SYSTEM FUNCTION (IF APPLICABLE).
 - SHAPE FLOWLINE IN MANHOLE TO OUTLET PIPE, AND PROVIDE A 10:1 MINIMUM SLOPE FROM ALL DIRECTIONS TOWARD FLOW LINE.

NEVADA DEPARTMENT OF TRANSPORTATION
TYPE 4 MANHOLE

Signed Original On File R-4.7.2 (609)
 CHIEF HYDRAULICS ENGINEER ADOPTED 8/85 REVISION 8/04

Call before you Dig.
 1-800-227-2600
 UNDERGROUND SERVICE ALERT (USA)

Call before you OVERHEAD.
 1-702-227-2929
 NEVADA POWER DIVISION AND UTILITY SERVICES DEPARTMENT



REVISIONS

REV.	DESCRIPTION	BY	DATE	APPROVAL

DESIGNED BY: -LJ-
 DRAWN BY: -JS-
 CHECKED BY: -DS-
 DATE: MAY 23, 2008

HT# 06-44325
 D2

CONFORMED EASTSIDE LANDFILL DETAILS II

JOB NO.: 511693.19
 FILE NAME: LANDFILL
 SCALE:
 HORIZ.:
 VERT.:

DESIGNED BY: -LJ-
 DRAWN BY: -JS-
 CHECKED BY: -DS-
 DATE: MAY 23, 2008

HT# 06-44325
 D2



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	RTC-Headwall Cast-In Place Concrete Mix Design / Trashrack Certification Letter
Submittal Number:	03400-001B
Specification Section:	Section 03400, Part 1.04, Subpart A
Drawing Number (s):	D2
Page Number:	03400-2
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	11/17/2008, 12/10/08
Date Submitted:	1/20/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



875 West Warm Springs Road
 Henderson, Nevada 89011
 Tel (702) 567-0400 · Fax (702) 567-0475

SUBMITTAL TRANSMITTAL COVER SHEET

TO: Mr. Erik Gehringer
ADDRESS: ENTACT Environmental Services
 Henderson, Nevada 89011

Date: 03/17/2009	Job No.: 6389
Project Name	
BRC Eastside Common Areas Soils Remediation	

Submittal I.D. No.: 03400-001C	Revision No.: - N/A	Date Submittal Rec'd by BRC: 03/12/2009
---------------------------------------	----------------------------	--

Specification Section(s): 03400.1.04 Cast-In-Place Concrete Submittals

Submittal Subject: MQC Testing Data for Cast-In-Place Concrete Reinforcement

Notations:

- No Exception Taken
- Correct as Noted
- Rejected
- Revise and Resubmit
- Submit Specified Items

Review Comments:

Comment #	Reference	Comment

Review of this submittal does not relieve the Contractor from their responsibility for deviations from the Contract Documents nor from their responsibility for errors or omissions in the submittal. Contractor is, and BRC is not, responsible for matters relating to fabrication, shipping, handling, storage, assembly, installation, construction (including safety), and coordination for performing the Work

 Design Engineer	3/17/09 Date	 BRC Project Manager Lee Farris, P.E.	3/17/09 Date
 Construction Manager Representative	3/17/09 Date		

Distribution: File

Mill Certification Details



Bluelinx-Plymouth

Mill Certification Details - 1/12/2009 10:20 AM

Customer: BLUELINX CORP - MONTCLAIR	
Bill of Lading #: 305218	
Chief Metallurgist: Scott Laurenti	Date: 7/7/2008
Heat #: PL0820531501	Tag #: PL0822131379
Product: RS	Size: 13/#4 Rebar
Grade: ASTM A615/A615M-08 GR 60[420]	Division: Plymouth, UT
Comments:	

Chemical Properties -Wt.%

C	Mn	Si	S	P	Cu	Cr	Ni	Mo	Al	V	Pb	Sn
.43	1.13	.26	.031	.013	.28	.11	.08	.028	.004	.008	.002	.012

Carbon Equiv. = .64

Physical Properties

Imperial -psi

Tensile: 105367
Yield: 68336
Elongation (in 8 inches): 13
Elongation (in 2 inches):
Bend Test: OK

The testing was conducted in accordance with the requirements of this specification. All melting and manufacturing processes were performed in the United States of America.

Scott Laurenti
 Scott J. Laurenti
 Chief Metallurgist

<input checked="" type="checkbox"/> No Exception Taken	<input type="checkbox"/> Correct As Noted
<input type="checkbox"/> Revise And Resubmit	<input type="checkbox"/> Submit Specified Item
<input type="checkbox"/> Rejected	
<p>The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.</p>	
Checked By: <i>PLC</i>	Date: <i>3/17/09</i>
BRC Initials: <i>PLC</i>	
BASIC REMEDIATION COMPANY	

TRANSLAD SERVICES - ONTARIO
 500 DALLAS STREET
 HOUSTON, TX 77002
 708-755-4100

PAGE: 1

SHIPPER:

BLUE LINX CORPORATION
 4300 WILDWOOD PARKWAY
 ATLANTA, GA 30339

SHIPPED TO:

JENSEN PRECAST / 603488
 3853 LOSEE RD
 NORTH LAS VEGAS, CA 89030-3326

DATE: 01/09/2009

RELEASE #:

SHIPPED VIA:

TIME: 14:38:25

603488

WILL CALL / EDGAR

ACTUAL QTY	WAREHOUSE TAG	CUSTOMER TAG	SPECIAL ID.	SIZE/DESCRIPTION	LENGTH	HEAT NO.	GRADE	ACTUAL LBS
154	18- 37463	NUCOR	237046	#4	60'	820531501	60	6,172
154	18- 37464	NUCOR	237046	#4	60'	820531501	60	6,172
154	18- 37465	NUCOR	237046	#4	60'	820531501	60	6,172
154	18- 37466	NUCOR	237046	#4	60'	820531501	60	6,172
154	18- 37467	NUCOR	237046	#4	60'	820531501	60	6,172
154	18- 37468	NUCOR	237046	#4	60'	820531501	60	6,172
154	18- 37469	NUCOR	237046	#4	60'	820531501	60	6,172
154	18- 37470	NUCOR	237046	#4	60'	820531501	60	6,172

TOTAL QTY. : 1,232

TOTAL LBS : 49,376 Collect: Prepaid: Received in good order by: _____

LOAD MUST BE TARPED. TIME: _____

We are not responsible for any shortages unless reported to us within eight (8) hours after delivery.

CERTIFIED MILL TEST REPORT

Page: 1

NUCOR
BAR MILL GROUP
PLYMOUTH DIVISION

SOLD BLUELINX CORP
 TO: 4300 WILDWOOD PKWY
 ATLANTA, GA 30339-8401

Ship from:
 Nucor Steel - Utah
 W Cemetery Road
 PLYMOUTH, UT 84330
 435-458-2300

SHIP TO: BLUELINX CORPORATION C/O TLS
 MONTCLAIR CA YARD 22 TRK 711
 CUSTOMER PICK-UP
 MONTCLAIR, CA 91763-0000

Date: 12-Jun-2008
 B.L. Number: 303114
 Load Number: 120512

Material Safety Data Sheets are available at www.nucorbar.com or by contacting your inside sales representative.

NBMC-08 MAY 16, 2008

HEAT NUM.	DESCRIPTION	PHYSICAL TESTS:				CHEMICAL TESTS:														
		YIELD P.S.I.	TENSILE P.S.I.	ELONG % IN 18"	BEND	WT% DEF	C	Ni	Mn	Cr	P	Mo	S	V	SI	Co	Cu	Sn	C.E.	
PO# =>	DMW53816F																			
PL0810450401	Nucor Steel - Utah	63,127	100,218	16.0%	OK		.39	1.16	.12	.016	.037	.18	.37	.61						
PL08104504	16#5 Rebar 60' 6K ASTM A615M Gr 420 (Gr60)	435MPa	691MPa				.12	.12	.024	.005	.005	.005	.005							
PO# =>	DMW53816F																			
PL0820456601	Nucor Steel - Utah	66,423	105,172	14.0%	OK		.39	1.16	.13	.016	.022	.24	.39	.61						
PL08204566	16#5 Rebar 60' 6K ASTM A615M Gr 420 (Gr60)	458MPa	725MPa				.09	.13	.017	.005	.005	.005	.005							
PO# =>	DMW53816F																			
PL0820456701	Nucor Steel - Utah	64,293	100,670	14.0%	OK		.40	1.13	.13	.015	.035	.22	.30	.61						
PL08204567	16#5 Rebar 60' 6K ASTM A615M Gr 420 (Gr60)	443MPa	694MPa				.11	.13	.020	.005	.005	.005	.005							
	ASTM A615/A615M-08 GR 60(420)																			

I HEREBY CERTIFY THAT THE ABOVE FIGURES ARE CORRECT AS CONTAINED IN THE RECORDS OF THE CORPORATION.

ALL MANUFACTURING PROCESSES OF THE STEEL MATERIALS IN THIS PRODUCT, INCLUDING MELTING, HAVE OCCURRED WITHIN THE UNITED STATES. ALL PRODUCTS PRODUCED ARE MELD FREE. MERCURY, IN ANY FORM, WAS NOT USED IN THE PRODUCTION OR TESTING OF THIS MATERIAL.

QUALITY ASSURANCE: SCOTT LAURENTI

SCOTT LAURENTI

TRANSCLOAD SERVICES - ONTARIO
500 DALLAS STREET
HOUSTON, TX 77002
708-755-4100

PAGE: 1

SHIPPER:

BLUE LINX CORPORATION
4300 WILLOWOOD PARKWAY
ATLANTA, GA 30339

SHIPPED TO:

JENSEN PRECAST/517110
3853 LOSEE RD
N LAS VEGAS, NV 89030-3326

DATE: 07/17/2008

RELEASE #:

SHIPPED VIA:

TIME: 14:47:49

517110

WILL CALL/517110

ACTUAL QTY	WAREHOUSE TAG	CUSTOMER TAG	SPECIAL ID.	SIZE/DESCRIPTION	LENGTH	HEAT NO.	GRADE	ACTUAL LBS
96	18-25873	NUCOR	312327	#5	60'	810450401	60	6,008
96	18-25874	NUCOR	312327	#5	60'	810450401	60	6,008
96	18-25875	NUCOR	312327	#5	60'	810450401	60	6,008
96	18-25876	NUCOR	312327	#5	60'	810450401	60	6,008
96	18-25877	NUCOR	312327	#5	60'	810450401	60	6,008
96	18-25878	NUCOR	312327	#5	60'	810450401	60	6,008
96	18-25904	NUCOR	312327	#5	60'	810450501	60	6,008
96	18-25905	NUCOR	312327	#5	60'	810450501	60	6,008

TOTAL QTY: 768

TOTAL LBS: 46,064

Collect:

Prepaid:

Received in good order by:

CO MUST BE TARPED.

TIME _____

are not responsible for any shortages unless reported to us within eight (8) hours after delivery.



Ivy Steel & Wire®

simplifying concrete construction

Plant Office: AZ 800/692-4091
Fax: 928/692-2003
4750 Olympic Way
Kingman, AZ 86401

DATE: 9/30/08

BL:000020961

PAGE: 2

MILL TEST MILL TEST MILL TEST MILLTEST MILL TEST MILL TEST MILL TEST

B- Jensen Precast
I- 3853 Losee Rd
L- North Las Vegas, NV 89030
L-

S- Jensen Precast-Las Vegas
H- 3853 Losee Rd
I- Las Vegas, NV 89030
P-

WIRE	DIAM	P. S. Y.	% R. A.	BEND	SHEAR	YIELD	LOOP
LINE	.500	94,861	* W	O.K.			
LINE	.500					91,296	
LINE	.500	94,820	* W	O.K.			
CROSS	.500		* W			91,112	
CROSS	.500	100,962	* W	O.K.			
CROSS	.500					92,029	
LINE	.500		* W		53,129		
LINE	.500		* W		46,631		
LINE	.500		* W		41,609		
LINE	.500		* W		47,700		

IVY STEEL AND WIRE BY: _____

ALL PRODUCTS ARE MANUFACTURED AND PRODUCED IN THE U.S.A.



Ivy Steel & Wire[®]

simplifying concrete construction

Plant Office: AZ 800/692-4091
Fax: 928/692-2003
4750 Olympic Way
Kingman, AZ 86401

DATE: 9/30/08

BL:000020961

PAGE: 1

MILL TEST MILL TEST MILL TEST MILL TEST MILL TEST MILL TEST MILL TEST

B- Jensen Precast
I- 3853 Losee Rd
L- North Las Vegas, NV 89030
L-

S Jensen Precast-Las Vegas
H- 3853 Losee Rd
I- Las Vegas, NV 89030
P-

YOUR ORDER #: 34232

OUR ORDER #: 85908-00

LINE:0001 01FD9175 3x6 3.00x3.00 45" 500'0" 0x0 Reg-Wind ASTM# A-185

TEST#: 1-01 TEST DATE: 9-11-2008 TEST AZ20 ROD MANUF.: N/A
N/A

ROD SIZE: N/A HEAT#: N/A
N/A N/A

WIRE	DIAM	P. S. I.	% R. A.	BEND	SHEAR	YIELD	LOOP
LINE	.195	81,368	64.0	O.K.			
LINE	.195	82,172	62.1	O.K.			
CROSS	.195	82,038	63.3	O.K.			
LINE	.195		* W		73,667		
LINE	.195		* W		52,169		
LINE	.195		* W		67,907		
LINE	.195		* W		74,203		

YOUR ORDER #: 34232

OUR ORDER #: 85908 00

LINE:0002 01WIREH Bright Basic Wire W3.5 A-62 (10 Stems)

TEST#: 3-01 TEST DATE: 9-12-2008 TEST AZWI ROD MANUF.: N/A
N/A

ROD SIZE: N/A HEAT#: N/A
N/A N/A

WIRE	DIAM	P. S. I.	% R. A.	BEND	SHEAR	YIELD	LOOP
LINE	.211	113,081	81.3	O.K.			
LINE	.211					99,182	

YOUR ORDER #: 34232

OUR ORDER #: 85908-00

LINE:0003 015020006915 VIXV2 D19.60XD19.60 80" 12'2" 0X0 SHEET ASTM# A-497

TEST#: 1 03 TEST DATE: 9-24-2008 TEST AZOC7 ROD MANUF.: N/A
N/A

ROD SIZE: N/A HEAT#: N/A
N/A N/A



LOGIN REGISTER ACCOUNT

1-800-WHITECAP HOME LOCATIONS EXPERTS EVENTS ARTICLES GSA REBAR JOBS CONTACT ABOUT BASKET: \$0.00

PRODUCT SEARCH



Products found matching "annealed tie wire"

>> THE WIRE LOOPS DOBBIS & CHAIRS

PRODUCT CATEGORIES

- All Trade
- Concrete Accessories
- Erosion Control
- Industrial / Commercial
- Jobsite Safety / Fall Arrest
- Knaack / Weatherguard
- Power Tools / Equipment
- Pre-Cast / Tilt-Up
- Residential
- Simpson Strong Tie
- Waterproofing

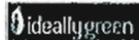
6" 16GA WIRE TIE 5M/BAG
AMERICAN WIRE TIE | 113WT616

564.54 / unit

1 **ADD**

Description:

DOUBLE LOOP TIE WIRES Easy to twist and hard to break Double Loop Wire Ties are made of dead soft annealed wire. In addition to bar tying, these ties have a variety of uses such as bagging and bundling. 16 gauge 6" wire ties are priced in 5,000 pieces (5 rolls of 1,000 per roll), wrapped in woven poly for storage.



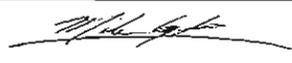
Website prices may vary from specific branch prices and represent prices for CASH and CREDIT CARD payments only. No payment terms are associated with website prices. Questions, problems or suggestions regarding this web site should be directed to customerservice@whitecap.com

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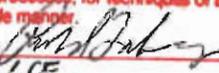
[Privacy Policy](#) [Terms of Use](#)



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	MQC testing data for cast-in-place concrete reinforcement
Submittal Number:	03400-001C
Specification Section:	Section 03400, Part 2.03
Drawing Number (s):	D2
Page Number:	03400-4
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	3/12/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.

<input checked="" type="checkbox"/> No Exception Taken	<input type="checkbox"/> Correct As Noted
<input type="checkbox"/> Revise And Resubmit	<input type="checkbox"/> Submit Specified Item
<input type="checkbox"/> Rejected	
The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.	
Checked By: 	Date: 3/17/09
BRC Initials: L.C.F.	
BASIC REMEDIATION COMPANY	

APPENDIX C

Earthworks

APPENDIX C-1

Waste Percent Solids Test Results

Summary of Percent Solids Analysis
 Processed Eastside Sludge
 BRC CAMU
 Henderson, Nevada



INPUT						CALCULATED						QUANTITIES			
Date	Sample ID	Sample Location	Mass of dish, M _{dish}	Mass of total (wet) sample + dish, M _t	Mass of dry sample + dish, M _{d+dish}	Mass of water, M _w	Mass of dry soil, M _d	Water Content, (M _w /M _d) x 100%	Percent Water, M _w /(M _t -M _{dish}) x 100%	Percent Solids, (M _t -M _{dish} -M _w)/(M _t -M _{dish}) x 100%	Pass	Running Percent Solids Average	Represented Quantity (CY)	Count	Total Represented Quantity (CY)
			(g)	(g)	(g)	(g)	(g)	(g)	%	%					
10/8/08	W - 040	BETA 1	31.5	554.1	521.0	33.1	489.5	6.8%	6.3%	93.7%	YES	93.7%	5,000	1	5,000
10/8/08	W - 041	BETA 2	31.3	549.5	481.7	67.8	450.4	15.1%	13.1%	86.9%	YES	90.3%	5,000	2	10,000
10/8/08	W - 042	BETA 3	31.6	543.3	500.0	43.3	468.4	9.2%	8.5%	91.5%	YES	90.7%	5,000	3	15,000
10/8/08	W - 043	BETA 4	31.4	541.2	515.5	25.7	484.1	5.3%	5.0%	95.0%	YES	91.8%	5,000	4	20,000
10/8/08	W - 044	BETA 5	31.5	543.9	506.6	37.3	475.1	7.9%	7.3%	92.7%	YES	92.0%	5,000	5	25,000
10/8/08	W - 045	BETA 6	31.6	543.2	532.5	10.7	500.9	2.1%	2.1%	97.9%	YES	93.0%	5,000	6	30,000
10/10/08	W - 046	BETA 7	31.5	542.2	510.6	31.6	479.1	6.6%	6.2%	93.8%	YES	93.1%	5,000	7	35,000
10/10/08	W - 047	BETA 8	31.5	539.3	472.5	66.8	441.0	15.1%	13.2%	86.8%	YES	92.3%	5,000	8	40,000
10/10/08	W - 048	BETA 9	31.5	540.7	485.2	55.5	453.7	12.2%	10.9%	89.1%	YES	91.9%	5,000	9	45,000
10/10/08	W - 049	BETA 10	31.5	540.0	480.7	59.3	449.2	13.2%	11.7%	88.3%	YES	91.6%	5,000	10	50,000
10/10/08	W - 050	BETA 11	31.5	539.9	477.9	62.0	446.4	13.9%	12.2%	87.8%	YES	91.2%	5,000	11	55,000
10/10/08	W - 051	BETA 12	31.5	564.5	537.2	27.3	505.7	5.4%	5.1%	94.9%	YES	91.5%	5,000	12	60,000
10/11/08	W - 052	BETA 13	31.5	538.3	513.1	25.2	481.6	5.2%	5.0%	95.0%	YES	91.8%	5,000	13	65,000
10/11/08	W - 053	BETA 14	31.5	550.9	516.6	34.3	485.1	7.1%	6.6%	93.4%	YES	91.9%	5,000	14	70,000
10/11/08	W - 054	BETA 15	31.5	537.8	472.4	65.4	440.9	14.8%	12.9%	87.1%	YES	91.6%	5,000	15	75,000
10/11/08	W - 055	BETA 16	31.5	560.7	504.4	56.3	472.9	11.9%	10.6%	89.4%	YES	91.5%	5,000	16	80,000
10/15/08	W - 056	BETA 17	31.5	549.2	479.6	69.6	448.1	15.5%	13.4%	86.6%	YES	91.2%	5,000	17	85,000
10/15/08	W - 057	BETA 18	31.5	534.5	464.6	69.9	433.1	16.1%	13.9%	86.1%	YES	90.9%	5,000	18	90,000
10/15/08	W - 058	BETA 19	31.5	535.5	487.9	47.6	456.4	10.4%	9.4%	90.6%	YES	90.9%	5,000	19	95,000
10/15/08	W - 059	BETA 20	31.5	538.4	486.7	51.7	455.2	11.4%	10.2%	89.8%	YES	90.8%	5,000	20	100,000
10/15/08	W - 060	BETA 21	31.5	542.7	503.2	39.5	471.7	8.4%	7.7%	92.3%	YES	90.9%	5,000	21	105,000
10/18/08	W - 061	HP3-6	31.5	561.6	507.6	54.0	476.1	11.3%	10.2%	89.8%	YES	90.8%	5,000	22	110,000
10/18/08	W - 062	HP3-5	31.5	550.6	507.2	43.4	475.7	9.1%	8.4%	91.6%	YES	90.9%	5,000	23	115,000
10/18/08	W - 063	HP3-4	31.5	555.5	494.4	61.1	462.9	13.2%	11.7%	88.3%	YES	90.8%	5,000	24	120,000
10/18/08	W - 064	HP3-3	31.5	558.5	507.8	50.7	476.3	10.6%	9.6%	90.4%	YES	90.8%	5,000	25	125,000
10/18/08	W - 065	HP3-2	31.5	552.9	503.0	49.9	471.5	10.6%	9.6%	90.4%	YES	90.7%	5,000	26	130,000
10/18/08	W - 066	HP3-1	31.5	538.5	491.5	47.0	460.0	10.2%	9.3%	90.7%	YES	90.7%	5,000	27	135,000
10/29/08	W - 067	ISP-1	31.5	546.3	504.2	42.1	472.7	8.9%	8.2%	91.8%	YES	90.8%	5,000	28	140,000
10/29/08	W - 068	ISP-2	31.5	553.2	511.1	42.1	479.6	8.8%	8.1%	91.9%	YES	90.8%	5,000	29	145,000
10/29/08	W - 069	ISP-3	31.5	554.5	498.3	56.2	466.8	12.0%	10.7%	89.3%	YES	90.8%	5,000	30	150,000
11/5/08	W - 070	HP3-7	31.5	533.2	471.5	61.7	440.0	14.0%	12.3%	87.7%	YES	90.7%	5,000	31	155,000
11/5/08	W - 071	HP3-8	31.5	544.2	484.3	59.9	452.8	13.2%	11.7%	88.3%	YES	90.6%	5,000	32	160,000
11/5/08	W - 072	HP3-9	31.5	561.0	510.1	50.9	478.6	10.6%	9.6%	90.4%	YES	90.6%	5,000	33	165,000
11/5/08	W - 073	HP3-10	31.5	556.3	502.3	54.0	470.8	11.5%	10.3%	89.7%	YES	90.6%	5,000	34	170,000
11/5/08	W - 074	HP3-11	31.5	537.8	483.7	54.1	452.2	12.0%	10.7%	89.3%	YES	90.5%	5,000	35	175,000
11/8/08	W - 075	HP3-12	31.5	568.7	524.9	43.8	493.4	8.9%	8.2%	91.8%	YES	90.6%	5,000	36	180,000
11/8/08	W - 076	HP3-13	31.5	576.5	533.3	43.2	501.8	8.6%	7.9%	92.1%	YES	90.6%	5,000	37	185,000
11/8/08	W - 077	HP3-14	31.5	562.5	525.8	36.7	494.3	7.4%	6.9%	93.1%	YES	90.7%	5,000	38	190,000
11/8/08	W - 078	HP3-15	31.5	532.5	500.7	31.8	469.2	6.8%	6.3%	93.7%	YES	90.7%	5,000	39	195,000
11/8/08	W - 079	HP3-16	31.5	620.4	562.0	58.4	530.5	11.0%	9.9%	90.1%	YES	90.7%	5,000	40	200,000
11/12/08	W - 080	PUA4-1	31.5	613.7	545.3	68.4	513.8	13.3%	11.7%	88.3%	YES	90.7%	5,000	41	205,000
11/12/08	W - 081	PUA4-2	31.5	534.5	479.1	55.4	447.6	12.4%	11.0%	89.0%	YES	90.6%	5,000	42	210,000
11/12/08	W - 082	PUA4-3	31.5	579.1	527.6	51.5	496.1	10.4%	9.4%	90.6%	YES	90.6%	5,000	43	215,000

Summary of Percent Solids Analysis
 Processed Eastside Sludge
 BRC CAMU
 Henderson, Nevada



INPUT						CALCULATED						QUANTITIES			
Date	Sample ID	Sample Location	Mass of dish, M _{dish}	Mass of total (wet) sample + dish, M _t	Mass of dry sample + dish, M _{d+dish}	Mass of water, M _w	Mass of dry soil, M _d	Water Content, (M _w /M _d) x 100%	Percent Water, M _w /(M _t -M _{dish}) x 100%	Percent Solids, (M _t -M _{dish} -M _w)/(M _t -M _{dish}) x 100%	Pass	Running Percent Solids Average	Represented Quantity (CY)	Count	Total Represented Quantity (CY)
			(g)	(g)	(g)	(g)	(g)	(g)	%	%					
11/19/08	W - 083	PUB3-1	31.5	560.8	506.3	54.5	474.8	11.5%	10.3%	89.7%	YES	90.6%	5,000	44	220,000
11/19/08	W - 084	PUB3-2	31.5	545.8	492.2	53.6	460.7	11.6%	10.4%	89.6%	YES	90.6%	5,000	45	225,000
11/19/08	W - 085	PUB3-3	31.5	605.2	544.9	60.3	513.4	11.7%	10.5%	89.5%	YES	90.6%	5,000	46	230,000
11/23/08	W - 086	PUB4-1	31.5	899.6	854.6	45.0	823.1	5.5%	5.2%	94.8%	YES	90.7%	5,000	47	235,000
11/23/08	W - 087	PUB4-2	31.5	920.1	789.0	131.1	757.5	17.3%	14.8%	85.2%	YES	90.5%	5,000	48	240,000
11/23/08	W - 088	PUB4-3	31.5	948.8	828.0	120.8	796.5	15.2%	13.2%	86.8%	YES	90.5%	5,000	49	245,000
12/11/08	W - 089	PUA7	31.5	602.6	530.5	72.1	499.0	14.4%	12.6%	87.4%	YES	90.4%	5,000	50	250,000
12/11/08	W - 090	PUA8	31.5	607.2	525.1	82.1	493.6	16.6%	14.3%	85.7%	YES	90.3%	5,000	51	255,000
12/11/08	W - 091	PUA9	31.5	604.4	537.6	66.8	506.1	13.2%	11.7%	88.3%	YES	90.3%	5,000	52	260,000
12/22/08	W - 092	PUA5	32.0	530.7	453.1	77.6	421.1	18.4%	15.6%	84.4%	YES	90.2%	5,000	53	265,000
12/22/08	W - 093	PUA6	31.8	527.5	463.0	64.5	431.2	15.0%	13.0%	87.0%	YES	90.1%	5,000	54	270,000
12/22/08	W - 094	HP2-1	32.1	575.5	513.6	61.9	481.5	12.9%	11.4%	88.6%	YES	90.1%	5,000	55	275,000
12/22/08	W - 095	HP2-2	31.8	547.7	484.4	63.3	452.6	14.0%	12.3%	87.7%	YES	90.0%	5,000	56	280,000
12/22/08	W - 096	HP2-3	32.1	522.6	465.2	57.4	433.1	13.3%	11.7%	88.3%	YES	90.0%	5,000	57	285,000
12/24/08	W - 097	HP2-4	32.7	550.0	501.3	48.7	468.6	10.4%	9.4%	90.6%	YES	90.0%	5,000	58	290,000
12/24/08	W - 098	HP2-5	31.8	536.8	459.5	77.3	427.7	18.1%	15.3%	84.7%	YES	89.9%	5,000	59	295,000
12/24/08	W - 099	HP2-6	32.0	561.2	490.9	70.3	458.9	15.3%	13.3%	86.7%	YES	89.9%	5,000	60	300,000
12/31/08	W - 100	PUC3-1	31.8	533.5	452.1	81.4	420.3	19.4%	16.2%	83.8%	YES	89.8%	5,000	61	305,000
12/31/08	W - 101	PUC3-2	31.8	553.2	483.7	69.5	451.9	15.4%	13.3%	86.7%	YES	89.7%	5,000	62	310,000
12/31/08	W - 102	PUC4-1	31.8	562.9	497.0	65.9	465.2	14.2%	12.4%	87.6%	YES	89.7%	5,000	63	315,000
12/31/08	W - 103	PUC4-2	31.6	534.5	452.8	81.7	421.2	19.4%	16.2%	83.8%	YES	89.6%	5,000	64	320,000
1/16/09	W - 104	SW4-1	31.8	578.7	528.0	50.7	496.2	10.2%	9.3%	90.7%	YES	89.6%	5,000	65	325,000
1/16/09	W - 105	PUD3-1	31.8	541.7	407.4	134.3	375.6	35.8%	26.3%	73.7%	NO	89.4%	-	65	325,000
1/16/09	W - 106	PUD3-2	31.8	530.4	401.7	128.7	369.9	34.8%	25.8%	74.2%	NO	89.1%	-	65	325,000
1/16/09	W - 107	PUD3-3	31.6	553.1	516.3	36.8	484.7	7.6%	7.1%	92.9%	YES	89.2%	5,000	66	330,000
1/19/09	W - 108	PUD3-4 (PUD3-1A)	31.6	541.4	432.4	109.0	400.8	27.2%	21.4%	78.6%	NO	89.0%	-	66	330,000
1/19/09	W - 109	PUD3-5 (PUD3-2A)	31.9	531.4	414.1	117.3	382.2	30.7%	23.5%	76.5%	NO	88.9%	-	66	330,000
1/19/09	W - 110	PUD3-6 (PUD3-3A)	31.8	584.3	534.7	49.6	502.9	9.9%	9.0%	91.0%	YES	88.9%	5,000	67	335,000
1/19/09	W - 111	PUB5-1	31.4	543.2	488.8	54.4	457.4	11.9%	10.6%	89.4%	YES	88.9%	5,000	68	340,000
1/21/09	W - 112	PUD3-7 (PUD3-1B)	31.8	524.3	431.5	92.8	399.7	23.2%	18.8%	81.2%	NO	88.8%	-	68	340,000
1/21/09	W - 113	PUD3-8 (PUD3-2B)	31.9	538.5	409.5	129.0	377.6	34.2%	25.5%	74.5%	NO	88.6%	-	68	340,000
1/21/09	W - 114	PUD3-9 (PUD3-3B)	32	579.5	436.8	142.7	404.8	35.3%	26.1%	73.9%	NO	88.4%	-	68	340,000
1/21/09	W - 115	PUB4-1	31.7	581.3	536.8	44.5	505.1	8.8%	8.1%	91.9%	YES	88.5%	5,000	69	345,000
1/21/09	W - 116	PUB4-2	32.1	599.8	552.6	47.2	520.5	9.1%	8.3%	91.7%	YES	88.5%	5,000	70	350,000
1/21/09	W - 117	PUB4-3	31.9	564.1	525.9	38.2	494.0	7.7%	7.2%	92.8%	YES	88.6%	5,000	71	355,000
1/22/09	W - 118	PUB4-4	32.1	535.0	487.8	47.2	455.7	10.4%	9.4%	90.6%	YES	88.6%	5,000	72	360,000
1/22/09	W - 119	PUB4-5	31.7	572.5	532.1	40.4	500.4	8.1%	7.5%	92.5%	YES	88.6%	5,000	73	365,000
1/29/09	W - 120	PUD3-10 (PUD3-1C)	31.8	537.0	505.9	31.1	474.1	6.6%	6.2%	93.8%	YES	88.7%	5,000	74	370,000
1/29/09	W - 121	PUD3-11 (PUD3-2C)	32	533.8	456.3	77.5	424.3	18.3%	15.4%	84.6%	YES	88.6%	5,000	75	375,000
1/29/09	W - 122	PUD3-12 (PUD3-3C)	31.9	540.0	468.4	71.6	436.5	16.4%	14.1%	85.9%	YES	88.6%	5,000	76	380,000
1/31/09	W - 123	PUB6-1	32	563.9	476.9	87.0	444.9	19.6%	16.4%	83.6%	YES	88.5%	5,000	77	385,000
1/31/09	W - 124	BETA-22	31.8	559.3	506.5	52.8	474.7	11.1%	10.0%	90.0%	YES	88.6%	5,000	78	390,000
1/31/09	W - 125	BETA-23	31.8	546.2	511.0	35.2	479.2	7.3%	6.8%	93.2%	YES	88.6%	5,000	79	395,000

Summary of Percent Solids Analysis
 Processed Eastside Sludge
 BRC CAMU
 Henderson, Nevada



INPUT						CALCULATED						QUANTITIES			
Date	Sample ID	Sample Location	Mass of dish, M _{dish}	Mass of total (wet) sample + dish, M _t	Mass of dry sample + dish, M _{d+dish}	Mass of water, M _w	Mass of dry soil, M _d	Water Content, (M _w /M _d) x 100%	Percent Water, M _w /(M _t -M _{dish}) x 100%	Percent Solids, (M _t -M _{dish} -M _w)/(M _t -M _{dish}) x 100%	Pass	Running Percent Solids Average	Represented Quantity (CY)	Count	Total Represented Quantity (CY)
			(g)	(g)	(g)	(g)	(g)	(g)	%	%					
1/31/09	W - 126	BETA-24	31.7	549.8	499.4	50.4	467.7	10.8%	9.7%	90.3%	YES	88.6%	5,000	80	400,000
2/6/09	W - 127	BETA-25	31.9	540.6	492.3	48.3	460.4	10.5%	9.5%	90.5%	YES	88.7%	5,000	81	405,000
2/6/09	W - 128	BETA-26	31.8	553.2	515.2	38.0	483.4	7.9%	7.3%	92.7%	YES	88.7%	5,000	82	410,000
2/6/09	W - 129	BETA-27	31.7	552.5	515.7	36.8	484.0	7.6%	7.1%	92.9%	YES	88.8%	5,000	83	415,000
2/14/09	W - 130	BETA-28	31.8	581.2	528.8	52.4	497.0	10.5%	9.5%	90.5%	YES	88.8%	5,000	84	420,000
2/14/09	W - 131	BETA-29	31.8	585.1	523.6	61.5	491.8	12.5%	11.1%	88.9%	YES	88.8%	5,000	85	425,000
2/14/09	W - 132	BETA-30	31.9	587.2	545.5	41.7	513.6	8.1%	7.5%	92.5%	YES	88.8%	5,000	86	430,000
2/20/09	W - 133	BETA-31	31.8	547.4	519.7	27.7	487.9	5.7%	5.4%	94.6%	YES	88.9%	5,000	87	435,000
2/20/09	W - 134	BETA-32	31.7	535.1	498.1	37.0	466.4	7.9%	7.4%	92.6%	YES	88.9%	5,000	88	440,000
2/20/09	W - 135	BETA-33	31.9	534.9	456.3	78.6	424.4	18.5%	15.6%	84.4%	YES	88.9%	5,000	89	445,000
2/20/09	W - 136	PUB7-1	31.9	546.3	471.0	75.3	439.1	17.1%	14.6%	85.4%	YES	88.8%	5,000	90	450,000
2/20/09	W - 137	PUB7-2	31.7	539.4	489.2	50.2	457.5	11.0%	9.9%	90.1%	YES	88.8%	5,000	91	455,000
2/20/09	W - 138	PUB7-3	31.8	548.1	480.1	68.0	448.3	15.2%	13.2%	86.8%	YES	88.8%	5,000	92	460,000
2/21/09	W - 139	BETA-34	31.8	535.3	462.9	72.4	431.1	16.8%	14.4%	85.6%	YES	88.8%	5,000	93	465,000
2/21/09	W - 140	BETA-35	31.7	565.0	534.9	30.1	503.2	6.0%	5.6%	94.4%	YES	88.8%	5,000	94	470,000
2/21/09	W - 141	BETA-36	32	535.3	482.2	53.1	450.2	11.8%	10.6%	89.4%	YES	88.9%	5,000	95	475,000
2/21/09	W - 142	BETA-37	32.6	552.0	501.6	50.4	469.0	10.7%	9.7%	90.3%	YES	88.9%	5,000	96	480,000
2/21/09	W - 143	BETA-38	31.6	562.7	516.6	46.1	485.0	9.5%	8.7%	91.3%	YES	88.9%	5,000	97	485,000
3/3/09	W - 144	PUB8-1	32.2	553.8	503.7	50.1	471.5	10.6%	9.6%	90.4%	YES	88.9%	5,000	98	490,000
3/5/09	W - 145	BETA-39	31.9	524.1	516.9	7.2	485.0	1.5%	1.5%	98.5%	YES	89.0%	5,000	99	495,000
3/5/09	W - 146	BETA-40	31.9	548.0	539.8	8.2	507.9	1.6%	1.6%	98.4%	YES	89.1%	5,000	100	500,000
3/5/09	W - 147	BETA-41	31.9	564.4	546.4	18.0	514.5	3.5%	3.4%	96.6%	YES	89.2%	5,000	101	505,000
3/5/09	W - 148	BETA-42	31.8	560.0	528.9	31.1	497.1	6.3%	5.9%	94.1%	YES	89.2%	5,000	102	510,000
3/5/09	W - 149	BETA-43	31.8	552.6	515.6	37.0	483.8	7.6%	7.1%	92.9%	YES	89.2%	5,000	103	515,000
3/7/09	W - 150	SW2-1	32.1	579.8	523.1	56.7	491.0	11.5%	10.4%	89.6%	YES	89.2%	5,000	104	520,000
3/7/09	W - 151	SW2-2	31.8	539.7	485.9	53.8	454.1	11.8%	10.6%	89.4%	YES	89.2%	5,000	105	525,000
3/20/09	W - 152	ST2-1	31.9	564.2	517.0	47.2	485.1	9.7%	8.9%	91.1%	YES	89.3%	5,000	106	530,000
3/20/09	W - 153	ST5-1	31.9	556.8	498.2	58.6	466.3	12.6%	11.2%	88.8%	YES	89.2%	5,000	107	535,000
3/20/09	W - 154	SW2-3	31.9	575.6	507.0	68.6	475.1	14.4%	12.6%	87.4%	YES	89.2%	5,000	108	540,000
4/2/09	W - 155	HP5-1	31.7	591.0	538.3	52.7	506.6	10.4%	9.4%	90.6%	YES	89.2%	5,000	109	545,000
4/2/09	W - 156	HP5-2	31.8	564.7	525.0	39.7	493.2	8.0%	7.4%	92.6%	YES	89.3%	5,000	110	550,000
4/2/09	W - 157	SW2-4	31.8	544.3	480.6	63.7	448.8	14.2%	12.4%	87.6%	YES	89.3%	5,000	111	555,000
4/2/09	W - 158	SW2-5	31.8	567.3	516.7	50.6	484.9	10.4%	9.4%	90.6%	YES	89.3%	5,000	112	560,000
4/2/09	W - 159	SW2-6	31.8	588.7	538.1	50.6	506.3	10.0%	9.1%	90.9%	YES	89.3%	5,000	113	565,000
4/3/09	W - 160	CRT1-1	31.8	578.9	491.0	87.9	459.2	19.1%	16.1%	83.9%	YES	89.2%	5,000	114	570,000
4/3/09	W - 161	CRT2-1	31.9	560.0	518.3	41.7	486.4	8.6%	7.9%	92.1%	YES	89.3%	5,000	115	575,000
4/3/09	W - 162	CRT2-2	31.7	583.8	534.7	49.1	503.0	9.8%	8.9%	91.1%	YES	89.3%	5,000	116	580,000
4/3/09	W - 163	CRT3-2	31.9	578.7	539.8	38.9	507.9	7.7%	7.1%	92.9%	YES	89.3%	5,000	117	585,000
5/5/09	W - 164	WST3-1	32.1	578.9	506.4	72.5	474.3	15.3%	13.3%	86.7%	YES	89.3%	5,000	118	590,000
5/5/09	W - 165	WST4-1	31.7	573.6	523.6	50.0	491.9	10.2%	9.2%	90.8%	YES	89.3%	5,000	119	595,000
6/6/09	W - 166	PUC5-1	31.8	559.9	476.4	83.5	444.6	18.8%	15.8%	84.2%	YES	89.3%	5,000	120	600,000
6/6/09	W - 167	PUC6-1	31.8	596.2	492.5	103.7	460.7	22.5%	18.4%	81.6%	NO	89.2%	-	120	600,000
6/7/09	W - 168	HP4-1	32.3	594.5	539.7	54.8	507.4	10.8%	9.7%	90.3%	YES	89.2%	5,000	121	605,000

Summary of Percent Solids Analysis
 Processed Eastside Sludge
 BRC CAMU
 Henderson, Nevada



INPUT						CALCULATED						QUANTITIES			
Date	Sample ID	Sample Location	Mass of dish, M_{dish}	Mass of total (wet) sample + dish, M_t	Mass of dry sample + dish, M_{d+dish}	Mass of water, M_w	Mass of dry soil, M_d	Water Content, $(M_w/M_d) \times 100\%$	Percent Water, $M_w/(M_t - M_{dish}) \times 100\%$	Percent Solids, $(M_t - M_{dish} - M_w)/(M_t - M_{dish}) \times 100\%$	Pass	Running Percent Solids Average	Represented Quantity (CY)	Count	Total Represented Quantity (CY)
			(g)	(g)	(g)	(g)	(g)	(g)	%	%					
6/8/09	W - 169	HP4-2	31.9	614.5	537.5	77.0	505.6	15.2%	13.2%	86.8%	YES	89.2%	5,000	122	610,000
6/8/09	W - 170	PUC6-2(PUC6-1A)	32	682.9	614.5	68.4	582.5	11.7%	10.5%	89.5%	YES	89.2%	5,000	123	615,000
6/8/09	W - 171	HP4-3	31.7	602.6	563.9	38.7	532.2	7.3%	6.8%	93.2%	YES	89.2%	5,000	124	620,000
6/10/09	W - 172	SW2-7	32.4	673.6	623.1	50.5	590.7	8.5%	7.9%	92.1%	YES	89.2%	5,000	125	625,000
6/10/09	W - 173	HP3-7	31.4	653.5	600.2	53.3	568.8	9.4%	8.6%	91.4%	YES	89.3%	5,000	126	630,000
6/10/09	W - 174	HP3-8	31.9	633.2	568.6	64.6	536.7	12.0%	10.7%	89.3%	YES	89.3%	5,000	127	635,000
6/10/09	W - 175	SW2-8	32.2	723.7	663.1	60.6	630.9	9.6%	8.8%	91.2%	YES	89.3%	5,000	128	640,000
6/12/09	W - 176	HP2-7	32.4	607.0	523.3	83.7	490.9	17.1%	14.6%	85.4%	YES	89.2%	5,000	129	645,000
6/12/09	W - 177	CRT3-3	31.9	636.9	601.9	35.0	570.0	6.1%	5.8%	94.2%	YES	89.3%	5,000	130	650,000
6/12/09	W - 178	PUC7-1	31.8	569.6	484.8	84.8	453.0	18.7%	15.8%	84.2%	YES	89.2%	5,000	131	655,000
6/14/09	W - 179	SW4-2	32.4	628.4	556.1	72.3	523.7	13.8%	12.1%	87.9%	YES	89.2%	5,000	132	660,000
6/14/09	W - 180	WST2-1	31.9	684.3	657.2	27.1	625.3	4.3%	4.2%	95.8%	YES	89.3%	5,000	133	665,000
6/14/09	W - 181	WST2-2	32.1	657.2	623.9	33.3	591.8	5.6%	5.3%	94.7%	YES	89.3%	5,000	134	670,000
6/14/09	W - 182	WST2-3	31.9	764.1	722.3	41.8	690.4	6.1%	5.7%	94.3%	YES	89.4%	5,000	135	675,000
6/14/09	W - 183	WST5-1	32	654.1	575.8	78.3	543.8	14.4%	12.6%	87.4%	YES	89.3%	5,000	136	680,000
6/14/09	W - 184	WST5-2	31.4	672.5	591.2	81.3	559.8	14.5%	12.7%	87.3%	YES	89.3%	5,000	137	685,000
6/21/09	W - 185	HP3-9	31.3	713.5	670.9	42.6	639.6	6.7%	6.2%	93.8%	YES	89.4%	5,000	138	690,000
6/21/09	W - 186	HP3-10	31.9	719.3	684.0	35.3	652.1	5.4%	5.1%	94.9%	YES	89.4%	5,000	139	695,000
6/21/09	W - 187	WST3-2	32.6	745.2	642.3	102.9	609.7	16.9%	14.4%	85.6%	YES	89.4%	5,000	140	700,000
6/21/09	W - 188	WST3-3	31.4	701.3	566.1	135.2	534.7	25.3%	20.2%	79.8%	NO	89.3%	-	140	700,000
6/24/09	W - 189	PUC8-1	31.8	751.7	702.3	49.4	670.5	7.4%	6.9%	93.1%	YES	89.3%	5,000	141	705,000
6/24/09	W - 190	WST4-2	32.1	621.3	572.1	49.2	540.0	9.1%	8.4%	91.6%	YES	89.3%	5,000	142	710,000
6/24/09	W - 191	WST4-3	31.8	659.9	602.9	57.0	571.1	10.0%	9.1%	90.9%	YES	89.4%	5,000	143	715,000
6/24/09	W - 192	WST3-4(WST3-3A)	32	622.8	534.6	88.2	502.6	17.5%	14.9%	85.1%	YES	89.3%	5,000	144	720,000
7/1/09	W - 193	HP5-3	32.2	658.4	624.2	34.2	592.0	5.8%	5.5%	94.5%	YES	89.4%	5,000	145	725,000
7/1/09	W - 194	HP5-4	31.4	609.6	560.2	49.4	528.8	9.3%	8.5%	91.5%	YES	89.4%	5,000	146	730,000
7/1/09	W - 195	HP3-21	31.6	542.1	486.8	55.3	455.2	12.1%	10.8%	89.2%	YES	89.4%	5,000	147	735,000
7/1/09	W - 196	HP3-22	31.5	617.3	566.1	51.2	534.6	9.6%	8.7%	91.3%	YES	89.4%	5,000	148	740,000
7/1/09	W - 197	SW2-9	31.7	603.3	560.2	43.1	528.5	8.2%	7.5%	92.5%	YES	89.4%	5,000	149	745,000
7/3/09	W - 198	PUD7-1	31.9	614.3	547.3	67.0	515.4	13.0%	11.5%	88.5%	YES	89.4%	5,000	150	750,000
7/3/09	W - 199	PUD8-1	32	583.6	492.1	91.5	460.1	19.9%	16.6%	83.4%	YES	89.4%	5,000	151	755,000
7/11/09	W - 200	HP3-23	32.1	640.3	601.2	39.1	569.1	6.9%	6.4%	93.6%	YES	89.4%	5,000	152	760,000
7/11/09	W - 201	HP3-24	31.7	565.8	515.6	50.2	483.9	10.4%	9.4%	90.6%	YES	89.4%	5,000	153	765,000
7/11/09	W - 202	CRT3-4	32	562.6	521.1	41.5	489.1	8.5%	7.8%	92.2%	YES	89.4%	5,000	154	770,000
7/11/09	W - 203	CRT3-5	32.1	677.9	629.3	48.6	597.2	8.1%	7.5%	92.5%	YES	89.4%	5,000	155	775,000
7/11/09	W - 204	CRT2-3	32	575.1	505.6	69.5	473.6	14.7%	12.8%	87.2%	YES	89.4%	5,000	156	780,000
7/11/09	W - 205	CRT2-4	31.8	561.5	496.3	65.2	464.5	14.0%	12.3%	87.7%	YES	89.4%	5,000	157	785,000
7/18/09	W - 206	SC1-1	32	564.5	489.2	75.3	457.2	16.5%	14.1%	85.9%	YES	89.4%	5,000	158	790,000
7/18/09	W - 207	SC1-2	32.1	601.3	522.1	79.2	490.0	16.2%	13.9%	86.1%	YES	89.4%	5,000	159	795,000
7/18/09	W - 208	WST2-4	31.9	574.3	496.2	78.1	464.3	16.8%	14.4%	85.6%	YES	89.3%	5,000	160	800,000
7/18/09	W - 209	SW10-1	31.8	581.6	503.4	78.2	471.6	16.6%	14.2%	85.8%	YES	89.3%	5,000	161	805,000
7/29/09	W - 210	HP5-5	31.6	547.5	509.1	38.4	477.5	8.0%	7.4%	92.6%	YES	89.3%	5,000	162	810,000
7/29/09	W - 211	HP5-6	31.8	548.9	512.3	36.6	480.5	7.6%	7.1%	92.9%	YES	89.4%	5,000	163	815,000

Summary of Percent Solids Analysis
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 Henderson, Nevada



INPUT						CALCULATED						QUANTITIES			
Date	Sample ID	Sample Location	Mass of dish, M _{dish}	Mass of total (wet) sample + dish, M _t	Mass of dry sample + dish, M _{d+dish}	Mass of water, M _w	Mass of dry soil, M _d	Water Content, (M _w /M _d) x 100%	Percent Water, M _w /(M _t -M _{dish}) x 100%	Percent Solids, (M _t -M _{dish} -M _w)/(M _t -M _{dish}) x 100%	Pass	Running Percent Solids Average	Represented Quantity (CY)	Count	Total Represented Quantity (CY)
			(g)	(g)	(g)	(g)	(g)	(g)	%	%					
7/29/09	W - 212	SW9-1	32.2	552.6	473.9	78.7	441.7	17.8%	15.1%	84.9%	YES	89.3%	5,000	164	820,000
7/29/09	W - 213	SW5-1	31.8	559.3	487.7	71.6	455.9	15.7%	13.6%	86.4%	YES	89.3%	5,000	165	825,000
8/1/09	W - 214	HP3-23	31.6	552.1	497.4	54.7	465.8	11.7%	10.5%	89.5%	YES	89.3%	5,000	166	830,000
8/1/09	W - 215	HP3-24	32	547.6	495.6	52.0	463.6	11.2%	10.1%	89.9%	YES	89.3%	5,000	167	835,000
8/2/09	W - 216	PUG6-1	31.6	570.6	507.7	62.9	476.1	13.2%	11.7%	88.3%	YES	89.3%	5,000	168	840,000
8/2/09	W - 217	PUG6-2	32.3	546.2	509.6	36.6	477.3	7.7%	7.1%	92.9%	YES	89.3%	5,000	169	845,000
8/2/09	W - 218	PUF5-1	32.2	629.9	554.2	75.7	522.0	14.5%	12.7%	87.3%	YES	89.3%	5,000	170	850,000
8/2/09	W - 219	PUF5-2	32	553.3	502.6	50.7	470.6	10.8%	9.7%	90.3%	YES	89.3%	5,000	171	855,000
8/2/09	W - 220	PUF6-1	31.6	550.5	481.6	68.9	450.0	15.3%	13.3%	86.7%	YES	89.3%	5,000	172	860,000
8/2/09	W - 221	PUF6-2	31.8	558.9	496.9	62.0	465.1	13.3%	11.8%	88.2%	YES	89.3%	5,000	173	865,000
8/4/09	W - 222	SW3-1	32.5	592.3	512.1	80.2	479.6	16.7%	14.3%	85.7%	YES	89.3%	5,000	174	870,000
8/4/09	W - 223	SW3-2	32.1	552.7	507.3	45.4	475.2	9.6%	8.7%	91.3%	YES	89.3%	5,000	175	875,000
8/4/09	W - 224	SW2-7	31.8	594.5	552.0	42.5	520.2	8.2%	7.6%	92.4%	YES	89.3%	5,000	176	880,000
8/4/09	W - 225	SW2-8	31.7	544.1	463.1	81.0	431.4	18.8%	15.8%	84.2%	YES	89.3%	5,000	177	885,000
8/8/09	W - 226	PUE4-1	32.1	548.3	509.6	38.7	477.5	8.1%	7.5%	92.5%	YES	89.3%	5,000	178	890,000
8/8/09	W - 227	PUE4-2	32	550.2	509.0	41.2	477.0	8.6%	8.0%	92.0%	YES	89.3%	5,000	179	895,000
8/8/09	W - 228	PUE5-1	31.9	552.3	520.8	31.5	488.9	6.4%	6.1%	93.9%	YES	89.3%	5,000	180	900,000
8/8/09	W - 229	PUE5-2	31.7	551.3	512.3	39.0	480.6	8.1%	7.5%	92.5%	YES	89.4%	5,000	181	905,000
8/8/09	W - 230	WST3-5	31.8	550.8	469.1	81.7	437.3	18.7%	15.7%	84.3%	YES	89.3%	5,000	182	910,000
8/8/09	W - 231	WST4-4	31.8	551.2	471.7	79.5	439.9	18.1%	15.3%	84.7%	YES	89.3%	5,000	183	915,000
8/10/09	W - 232	WST5-3	32.5	550.3	460.7	89.6	428.2	20.9%	17.3%	82.7%	NO	89.3%	-	183	915,000
8/10/09	W - 233	WST5-4	32	550.4	511.7	38.7	479.7	8.1%	7.5%	92.5%	YES	89.3%	5,000	184	920,000
8/10/09	W - 234	WST5-5	33.4	550.7	442.7	108.0	409.3	26.4%	20.9%	79.1%	NO	89.2%	-	184	920,000
8/13/09	W - 235	SC1-3	32.5	550.1	501.1	49.0	468.6	10.5%	9.5%	90.5%	YES	89.3%	5,000	185	925,000
8/13/09	W - 236	SC1-4	32	550.4	517.3	33.1	485.3	6.8%	6.4%	93.6%	YES	89.3%	5,000	186	930,000
8/13/09	W - 237	CTR2-5	32.6	550.0	511.8	38.2	479.2	8.0%	7.4%	92.6%	YES	89.3%	5,000	187	935,000
8/13/09	W - 238	CTR2-6	31.7	549.7	510.9	38.8	479.2	8.1%	7.5%	92.5%	YES	89.3%	5,000	188	940,000
8/13/09	W - 239	WST5-6(WST5-3A)	32	551.4	485.1	66.3	453.1	14.6%	12.8%	87.2%	YES	89.3%	5,000	189	945,000
8/13/09	W - 240	WST5-7(WST5-5A)	32	549.3	497.2	52.1	465.2	11.2%	10.1%	89.9%	YES	89.3%	5,000	190	950,000
8/27/09	W - 241	WST7-1	31.7	573.7	537.2	36.5	505.5	7.2%	6.7%	93.3%	YES	89.3%	5,000	191	955,000
8/27/09	W - 242	CTR3-6	32.1	578.8	553.2	25.6	521.1	4.9%	4.7%	95.3%	YES	89.3%	5,000	192	960,000
8/27/09	W - 243	CTR3-7	31.9	545.7	520.7	25.0	488.8	5.1%	4.9%	95.1%	YES	89.4%	5,000	193	965,000
8/27/09	W - 244	SW7-1	31.8	550.4	519.4	31.0	487.6	6.4%	6.0%	94.0%	YES	89.4%	5,000	194	970,000
8/27/09	W - 245	SW4-3	31.2	538.4	503.7	34.7	472.5	7.3%	6.8%	93.2%	YES	89.4%	5,000	195	975,000
8/27/09	W - 246	SW4-4	32	544.6	514.6	30.0	482.6	6.2%	5.9%	94.1%	YES	89.4%	5,000	196	980,000
9/5/09	W - 247	PUC5-2	32.2	732.3	619.1	113.2	586.9	19.3%	16.2%	83.8%	YES	89.4%	5,000	197	985,000
9/5/09	W - 248	PUC6-3	31.6	624.6	525.4	99.2	493.8	20.1%	16.7%	83.3%	YES	89.4%	5,000	198	990,000
9/5/09	W - 249	PUC7-2	31.8	663.1	557.2	105.9	525.4	20.2%	16.8%	83.2%	YES	89.4%	5,000	199	995,000
9/5/09	W - 250	WST5-6	31.9	743.6	633.0	110.6	601.1	18.4%	15.5%	84.5%	YES	89.3%	5,000	200	1,000,000
9/5/09	W - 251	WST5-7	31.9	747.0	629.8	117.2	597.9	19.6%	16.4%	83.6%	YES	89.3%	5,000	201	1,005,000
9/11/09	W - 252	WST5-8	31.8	752.2	610.7	141.5	578.9	24.4%	19.6%	80.4%	NO	89.3%	-	201	1,005,000
9/11/09	W - 253	WST5-9	32.4	654.9	594.3	60.6	561.9	10.8%	9.7%	90.3%	YES	89.3%	5,000	202	1,010,000
9/11/09	W - 254	WST5-10	31.8	620.5	554.5	66.0	522.7	12.6%	11.2%	88.8%	YES	89.3%	5,000	203	1,015,000

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INPUT						CALCULATED						QUANTITIES			
Date	Sample ID	Sample Location	Mass of dish, M _{dish}	Mass of total (wet) sample + dish, M _t	Mass of dry sample + dish, M _{d+dish}	Mass of water, M _w	Mass of dry soil, M _d	Water Content, (M _w /M _d) x 100%	Percent Water, M _w /(M _t -M _{dish}) x 100%	Percent Solids, (M _t -M _{dish} -M _w)/(M _t -M _{dish}) x 100%	Pass	Running Percent Solids Average	Represented Quantity (CY)	Count	Total Represented Quantity (CY)
			(g)	(g)	(g)	(g)	(g)	(g)	%	%					
9/11/09	W - 255	WST5-11	31.9	597.5	475.7	121.8	443.8	27.4%	21.5%	78.5%	NO	89.2%	-	203	1,015,000
9/11/09	W - 256	WST5-12	31.7	746.2	649.0	97.2	617.3	15.7%	13.6%	86.4%	YES	89.2%	5,000	204	1,020,000
9/11/09	W - 257	WST5-13	31.9	664.7	584.5	80.2	552.6	14.5%	12.7%	87.3%	YES	89.2%	5,000	205	1,025,000
9/18/09	W - 258	WST5-14(WST5-8A)	32.2	550.2	505.2	45.0	473.0	9.5%	8.7%	91.3%	YES	89.2%	5,000	206	1,030,000
9/18/09	W - 259	WST5-15(WST5-11A)	31.6	550.0	452.3	97.7	420.7	23.2%	18.8%	81.2%	NO	89.2%	-	206	1,030,000
9/18/09	W - 260	PUD9-1	31.7	550.7	428.8	121.9	397.1	30.7%	23.5%	76.5%	NO	89.1%	-	206	1,030,000
9/24/09	W - 261	WST5-16(WST5-11B)	31.8	543.5	466.1	77.4	434.3	17.8%	15.1%	84.9%	YES	89.1%	5,000	207	1,035,000
9/24/09	W - 262	WST4-5	32	543.2	491.5	51.7	459.5	11.3%	10.1%	89.9%	YES	89.1%	5,000	208	1,040,000
9/24/09	W - 263	PUD7-2	32.1	540.1	427.5	112.6	395.4	28.5%	22.2%	77.8%	NO	89.0%	-	208	1,040,000
9/24/09	W - 264	PUC8-1	31.8	546.7	495.4	51.3	463.6	11.1%	10.0%	90.0%	YES	89.0%	5,000	209	1,045,000
9/24/09	W - 265	PUB9-1	32.5	545.5	495.3	50.2	462.8	10.8%	9.8%	90.2%	YES	89.1%	5,000	210	1,050,000
9/24/09	W - 266	PUC5-3	31.7	541.0	420.5	120.5	388.8	31.0%	23.7%	76.3%	NO	89.0%	-	210	1,050,000
9/24/09	W - 267	PUC6-4	32	542.0	506.0	36.0	474.0	7.6%	7.1%	92.9%	YES	89.0%	5,000	211	1,055,000
9/24/09	W - 268	PUC7-3	31.7	542.3	448.8	93.5	417.1	22.4%	18.3%	81.7%	NO	89.0%	-	211	1,055,000
9/26/09	W - 269	SW4-5	31.9	544.2	457.5	86.7	425.6	20.4%	16.9%	83.1%	YES	89.0%	5,000	212	1,060,000
9/26/09	W - 270	WST3-6	31.7	555.4	504.2	51.2	472.5	10.8%	9.8%	90.2%	YES	89.0%	5,000	213	1,065,000
9/26/09	W - 271	PUD9-2(PUD9-1A)	31.7	580.9	513.2	67.7	481.5	14.1%	12.3%	87.7%	YES	89.0%	5,000	214	1,070,000
9/26/09	W - 272	PUD7-3(PUD7-2A)	31.8	543.1	458.5	84.6	426.7	19.8%	16.5%	83.5%	YES	88.9%	5,000	215	1,075,000
9/26/09	W - 273	PUC7-4(PUC7-3A)	34.1	534.3	411.5	122.8	377.4	32.5%	24.6%	75.4%	NO	88.9%	-	215	1,075,000
9/26/09	W - 274	PUC5-4(PUC5-3A)	31.7	543.8	457.8	86.0	426.1	20.2%	16.8%	83.2%	YES	88.9%	5,000	216	1,080,000
9/28/09	W - 275	SC1-3	13.8	541.5	464.2	77.3	450.4	17.2%	14.6%	85.4%	YES	88.8%	5,000	217	1,085,000
9/28/09	W - 276	SC1-4	13.5	536.6	447.7	88.9	434.2	20.5%	17.0%	83.0%	YES	88.8%	5,000	218	1,090,000
9/28/09	W - 277	PUE6-1	13.7	539.5	455.3	84.2	441.6	19.1%	16.0%	84.0%	YES	88.8%	5,000	219	1,095,000
9/28/09	W - 278	PUE7-1	13.5	530.4	449.7	80.7	436.2	18.5%	15.6%	84.4%	YES	88.8%	5,000	220	1,100,000
9/28/09	W - 279	SW7-2	13.6	530.5	476.7	53.8	463.1	11.6%	10.4%	89.6%	YES	88.8%	5,000	221	1,105,000
9/30/09	W - 280	PUC7-5(PUC7-3B)	13.7	534.3	401.7	132.6	388.0	34.2%	25.5%	74.5%	NO	88.7%	-	221	1,105,000
9/30/09	W - 281	WST2-5	13.6	537.0	476.9	60.1	463.3	13.0%	11.5%	88.5%	YES	88.7%	5,000	222	1,110,000
10/8/09	W - 282	WST5-17 east	13.6	541.1	487.4	53.7	473.8	11.3%	10.2%	89.8%	YES	88.7%	5,000	223	1,115,000
10/8/09	W - 283	WST5-18 west	13.6	542.6	469.0	73.6	455.4	16.2%	13.9%	86.1%	YES	88.7%	5,000	224	1,120,000
10/8/09	W - 284	PUC7-6(PUC7-3C)	13.8	543.6	424.8	118.8	411.0	28.9%	22.4%	77.6%	NO	88.7%	-	224	1,120,000
10/8/09	W - 285	PUD8-2	13.7	547.2	427.5	119.7	413.8	28.9%	22.4%	77.6%	NO	88.6%	-	224	1,120,000
10/10/09	W - 286	WST4-6	13.8	539.0	508.7	30.3	494.9	6.1%	5.8%	94.2%	YES	88.6%	5,000	225	1,125,000
10/12/09	W - 287	PUA10-1	13.7	539.0	498.0	41.0	484.3	8.5%	7.8%	92.2%	YES	88.7%	5,000	226	1,130,000
10/19/09	W - 288	PUC7-7(PUC7-3D)	13.6	542.0	466.2	75.8	452.6	16.7%	14.3%	85.7%	YES	88.6%	5,000	227	1,135,000
10/19/09	W - 289	PUD8-3(PUD8-2A)	13.8	536.2	463.9	72.3	450.1	16.1%	13.8%	86.2%	YES	88.6%	5,000	228	1,140,000
10/19/09	W - 290	PUB9-2	13.6	532.6	480.5	52.1	466.9	11.2%	10.0%	90.0%	YES	88.6%	5,000	229	1,145,000

APPENDIX C-2

Particle Size Analysis, Atterberg Limits, Soil
Classification, and Modified Proctor Test Results



Excel Geotechnical Testing, Inc.
"Excellence in Testing"

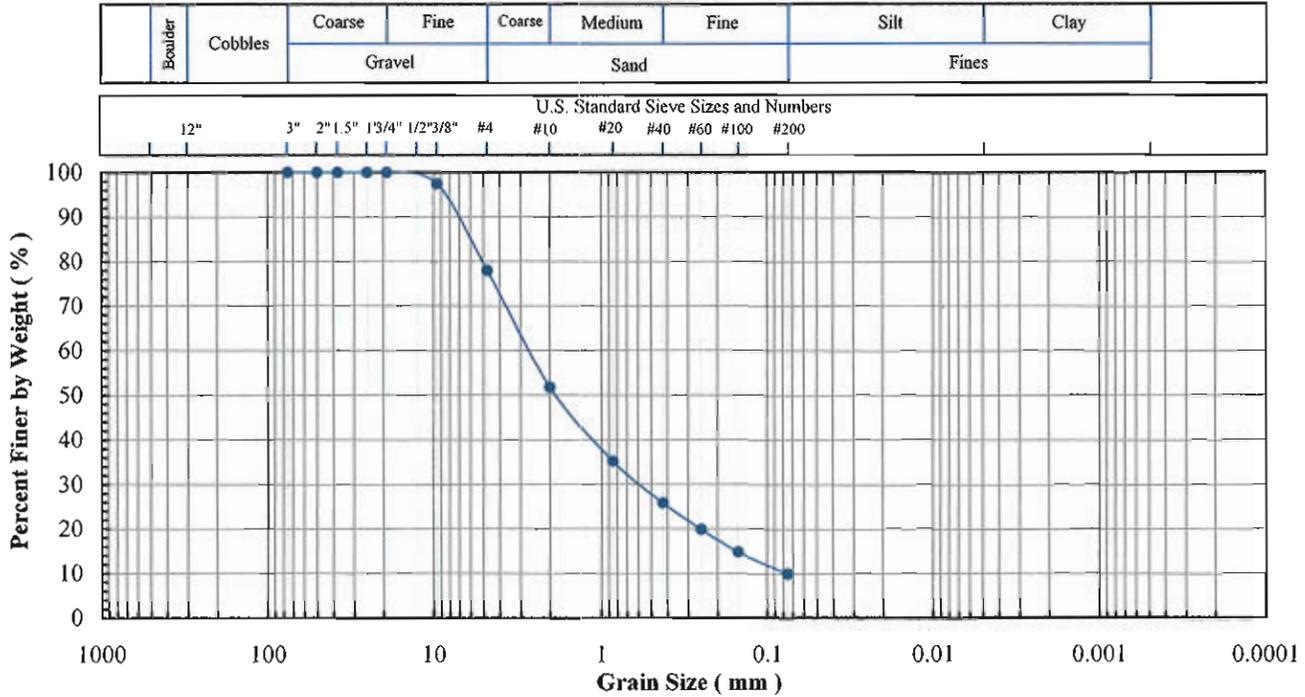
941 Forrest Street, Roswell, Georgia 30075
 Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name: BRC - CAMU
Project No: 327
Client Sample ID: IC-01
Lab Sample No: F136

ASTM D 2216, D 1140,
 D 422, D 854, C136

SOIL INDEX PROPERTIES

Moisture Content, Grain Size, Atterberg
 Limits, Classification



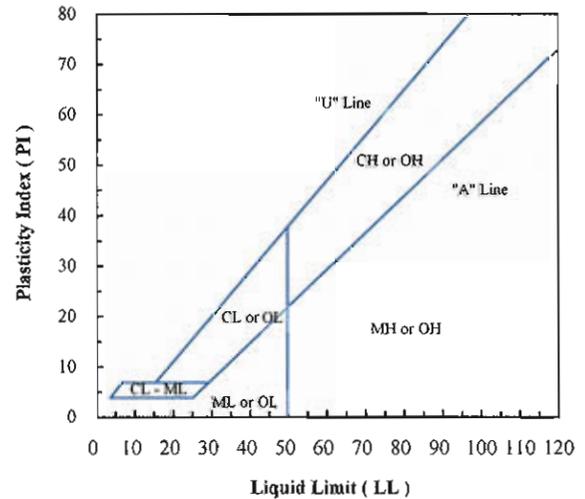
Sieve No.	Size (mm)	% Finer
3"	75	100.0
2"	50	100.0
1.5"	37.5	100.0
1"	25	100.0
3/4"	19	100.0
3/8"	9.5	97.4
#4	4.75	78.0
#10	2.00	51.8
#20	0.850	35.2
#40	0.425	25.8
#60	0.250	19.9
#100	0.150	14.8
#200	0.075	10.0

Hydrometer Particle Diameter (mm)	% Finer

Gravel (%):	22.0
Sand (%):	68.0
Fines (%):	10.0
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	
Coeff. Curv. (Cc):	

Specific Gravity (-):	
-----------------------	--



Client Sample ID.	Lab Sample No.	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits			Engineering Classification
				LL (-)	PL (-)	PI (-)	
IC-01	F136	5.7	10.0	NP	NP	NP	SM - Silty sand with gravel

Note(s):

Engineering classification is based on the assumption that the fines are either ML or MH.

Sample contained some hard soil particles which could not be broken down utilizing ASTM standard procedural effort.



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"Excellence in Testing"

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 Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name: BRCC - CAMU

Project No: 327

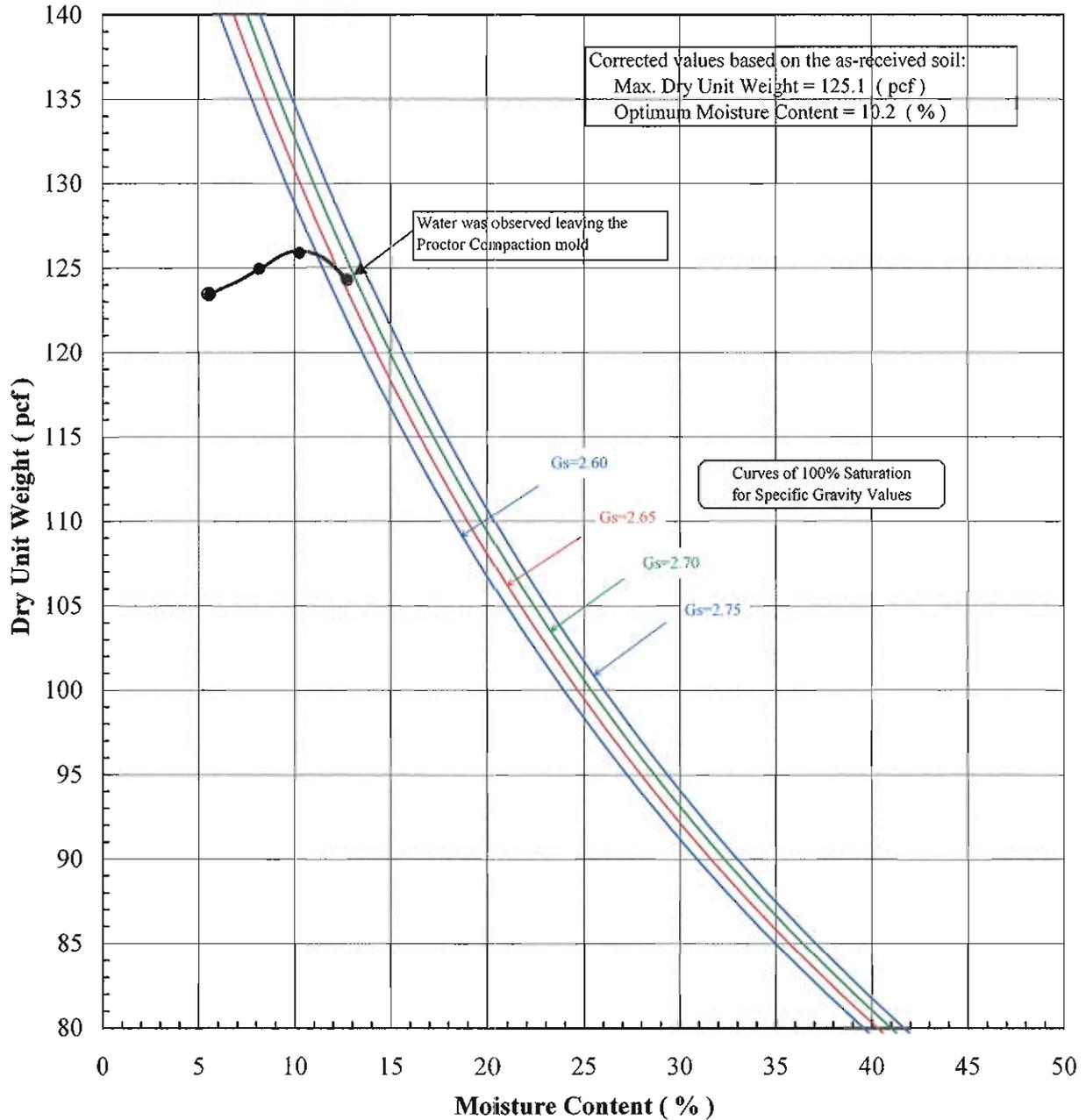
Client Sample ID: IC-01

Lab Sample No: F136

ASTM D 1557

COMPACTION MOISTURE-DENSITY RELATIONSHIP

Modified - Method B



Client/Site Sample ID.	Lab Sample No:	Maximum Dry Unit Weight (pcf)	Optimum Moisture Content (%)	Remarks
IC-01	F136	125.1	10.2	

Note(s):

Only particles smaller than 1.0 in. were used.

An assumed specific gravity of 2.70 was used for oversize-particles-fraction correction (i.e., particles larger than 1.0 in.)



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Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name: BRCC - CAMU

Project No: 327

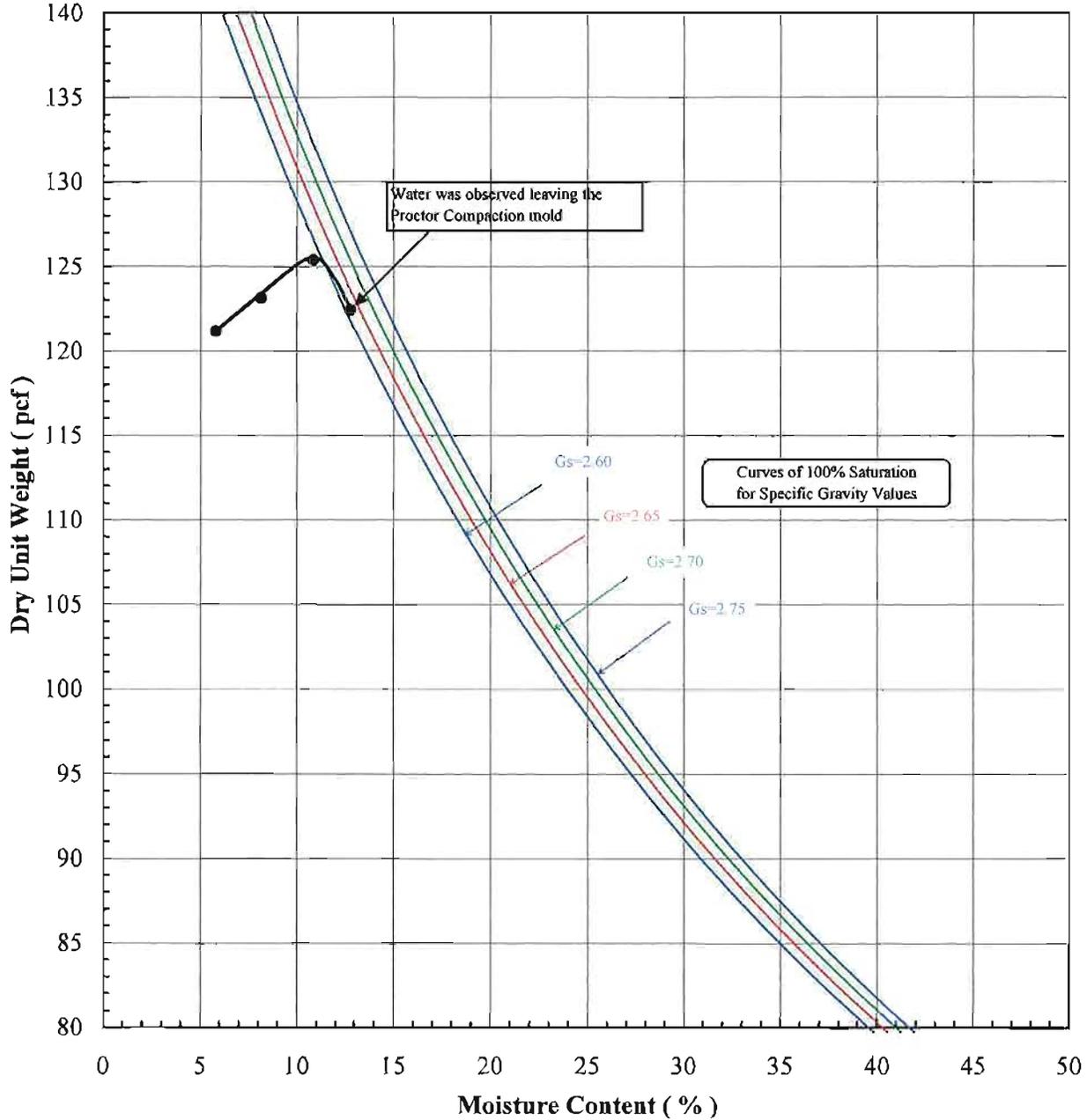
Client Sample ID: IC-02

Lab Sample No: H065

ASTM D 1557

COMPACTION MOISTURE-DENSITY RELATIONSHIP

Modified - Method B



Client/Site Sample ID.	Lab Sample No:	Maximum Dry Unit Weight (pcf)	Optimum Moisture Content (%)	Remarks
IC-02	H065	125.6	10.8	

Note(s):



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Project Name: BRC - CAMU

Project No: 327

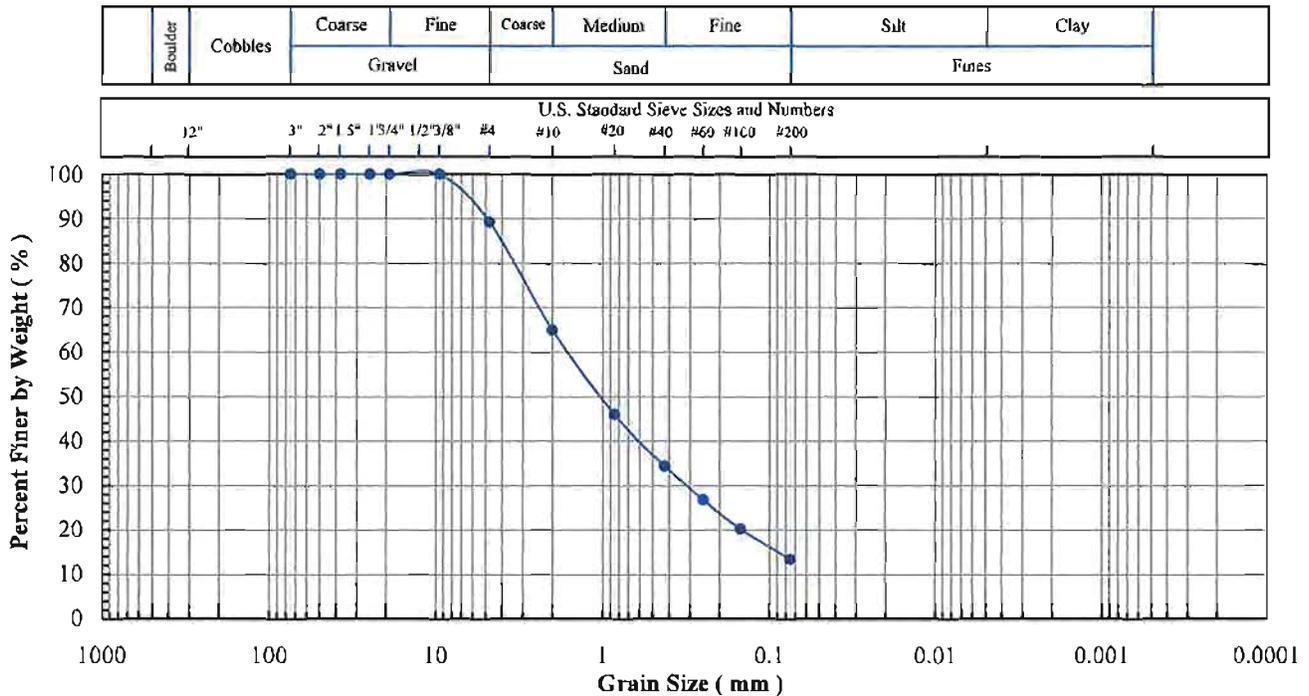
Client Sample ID: IC-02

Lab Sample No: H065

ASTM D 2116, D 1140,
D 422, D 854, C 136

SOIL INDEX PROPERTIES

Moisture Content, Grain Size, Atterberg
Limits, Classification



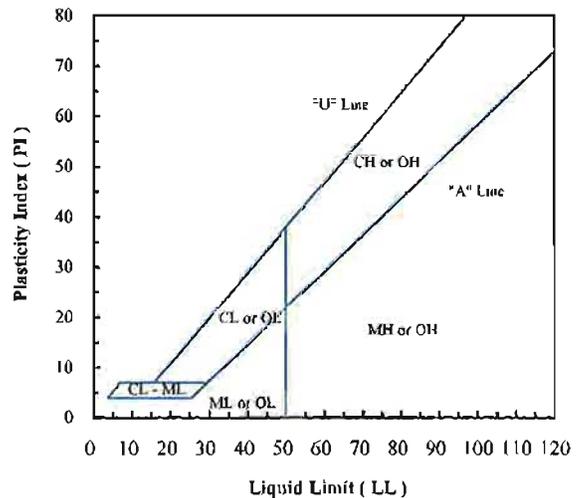
Sieve No.	Size (mm)	% Finer
3"	75	100.0
2"	50	100.0
1.5"	37.5	100.0
1"	25	100.0
3/4"	19	100.0
3/8"	9.5	100.0
#4	4.75	89.3
#10	2.00	65.0
#20	0.850	46.1
#40	0.425	34.5
#60	0.250	26.9
#100	0.150	20.3
#200	0.075	13.5

Hydrometer Particle Diameter (mm)	% Finer

Gravel (%):	10.7
Sand (%):	75.8
Fines (%):	13.5
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	
Coeff. Curv. (Cc):	

Specific Gravity (-):	
-----------------------	--



Client Sample ID:	Lab Sample No:	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits			Engineering Classification
				LL (-)	PL (-)	PI (-)	
IC-02	H065	8.4	13.5	NP	NP	NP	SM - Silty sand

Note(s):

Engineering classification is based on the assumption that the fines are either ML or MH.

Sample contained some hard soil particles which could not be broken down utilizing ASTM standard procedural effort



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"Excellence in Testing"

941 Forrest Street, Roswell, Georgia 30075
 Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name: BRC - CAMU
 Project No: 327
 Client Sample ID: CS-07
 Lab Sample No: K040

ASTM D 1216, D 1140,
 D 422, D 854, C136

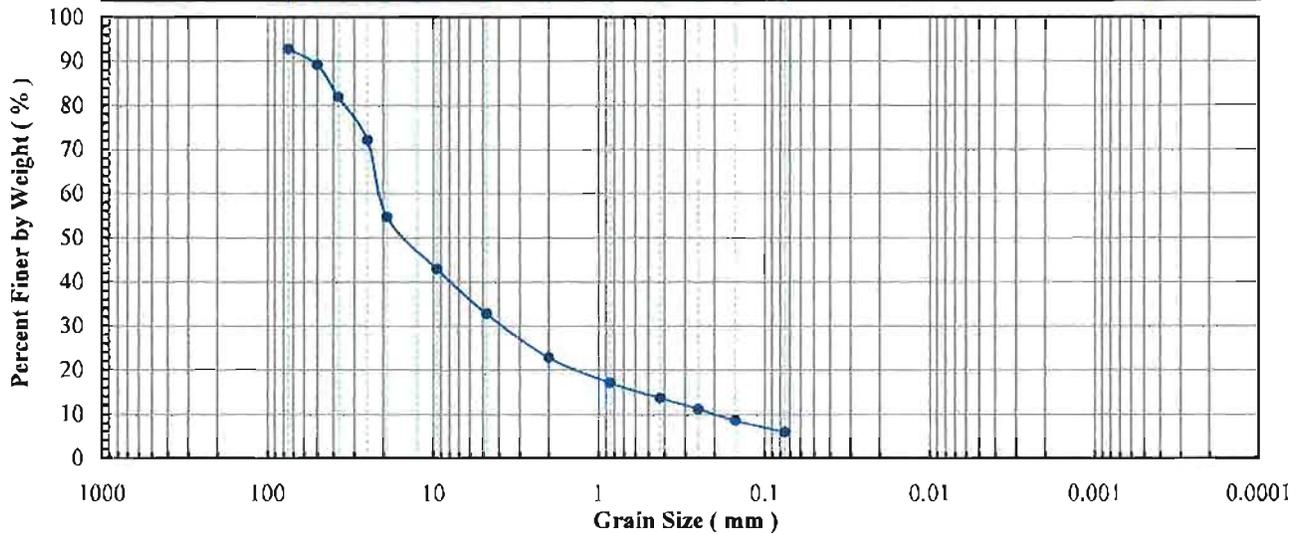
SOIL INDEX PROPERTIES

Moisture Content, Grain Size, Atterberg
 Limits, Classification

Boulder	Cobbles	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
		Gravel		Sand				

12"	3"	2"	1.5"	1 3/4"	1 1/2"	3/8"	#4	#10	#20	#40	#60	#100	#200
-----	----	----	------	--------	--------	------	----	-----	-----	-----	-----	------	------

U.S. Standard Sieve Sizes and Numbers



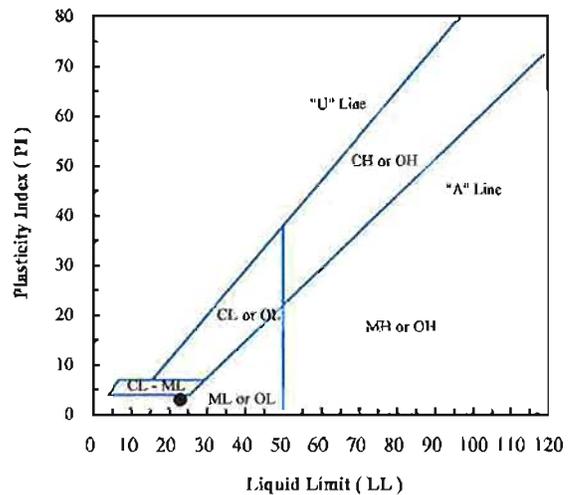
Sieve No.	Size (mm)	% Finer
3"	75	92.9
2"	50	89.3
1.5"	37.5	82.0
1"	25	72.2
3/4"	19	54.8
3/8"	9.5	43.0
#4	4.75	32.9
#10	2.00	23.0
#20	0.850	17.2
#40	0.425	13.8
#60	0.250	11.3
#100	0.150	8.7
#200	0.075	6.0

Hydrometer Particle Diameter (mm)	% Finer

Gravel (%):	67.1
Sand (%):	26.9
Fines (%):	6.0
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	105.1
Coeff. Curv. (Cc):	3.8

Specific Gravity (-):	
-----------------------	--



Client Sample ID	Lab Sample No.	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits			Engineering Classification
				LL (-)	PL (-)	PI (-)	
CS-07	K040	3.1	6.0	23	20	3	GP-GM - Poorly graded gravel with silt and sand

Note(s):



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941 Forrest Street, Roswell, Georgia 30075
 Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name: BRCC - CAMU

Project No: 327

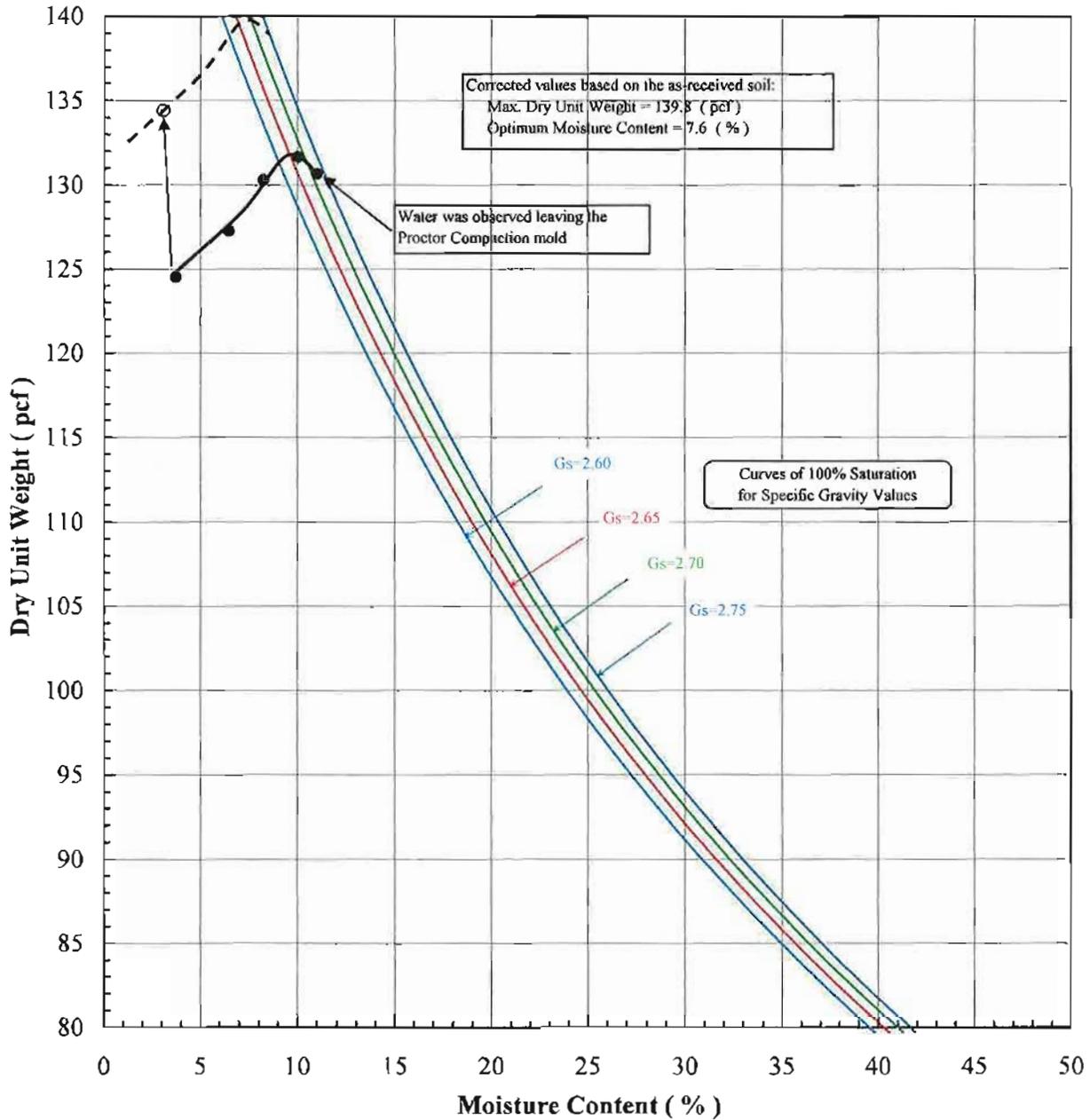
Client Sample ID CS-07

Lab Sample No: K040

ASTM D 1557

COMPACTION MOISTURE-DENSITY RELATIONSHIP

Modified - Method B



Client/Site Sample ID.	Lab Sample No:	Maximum Dry Unit Weight (pcf)	Optimum Moisture Content (%)	Remarks
CS-07	K040	131.8	9.9	

Note(s):

Only particles smaller than 1.0 in were used.

An assumed specific gravity of 2.70 was used for oversize-particles-fraction correction (i.e., particles larger than 1.0 in.)



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"Excellence in Testing"

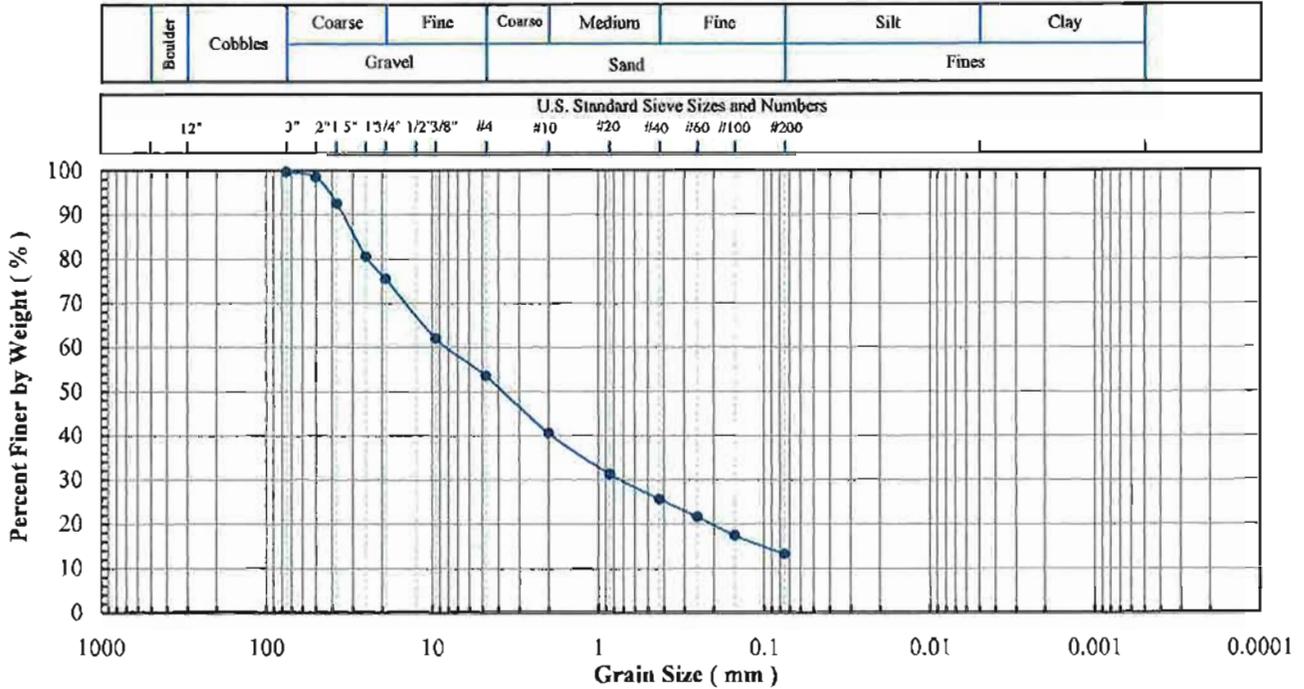
941 Forrest Street, Roswell, Georgia 30075
 Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name: BRC - CAMU
 Project No: 327
 Client Sample ID: CS-08
 Lab Sample No: L092

ASTM D 2216, D 1140,
 D 422, D 854, C136

SOIL INDEX PROPERTIES

Moisture Content, Grain Size, Atterberg
 Limits, Classification



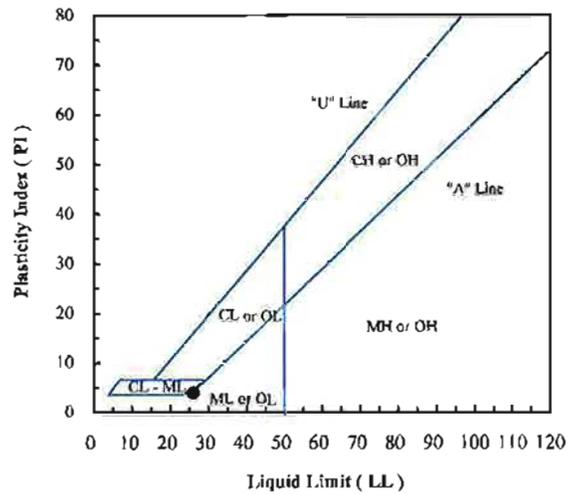
Sieve No.	Size (mm)	% Finer
3"	75	99.7
2"	50	98.6
1.5"	37.5	92.6
1"	25	80.6
3/4"	19	75.6
3/8"	9.5	62.1
#4	4.75	53.6
#10	2.00	40.6
#20	0.850	31.4
#40	0.425	25.7
#60	0.250	21.7
#100	0.150	17.5
#200	0.075	13.3

Hydrometer Particle Diameter (mm)	% Finer

Gravel (%):	46.4
Sand (%):	40.3
Fines (%):	13.3
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	
Coeff. Curv. (Cc):	

Specific Gravity (-):



Client Sample ID.	Lab Sample No.	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits			Engineering Classification
				LL (-)	PL (-)	PI (-)	
CS-08	L092	4.8	13.3	26	22	4	GC-GM - Silty, clayey gravel with sand

Note(s):
 Engineering classification is based on the assumption that the fines are either ML or MH.



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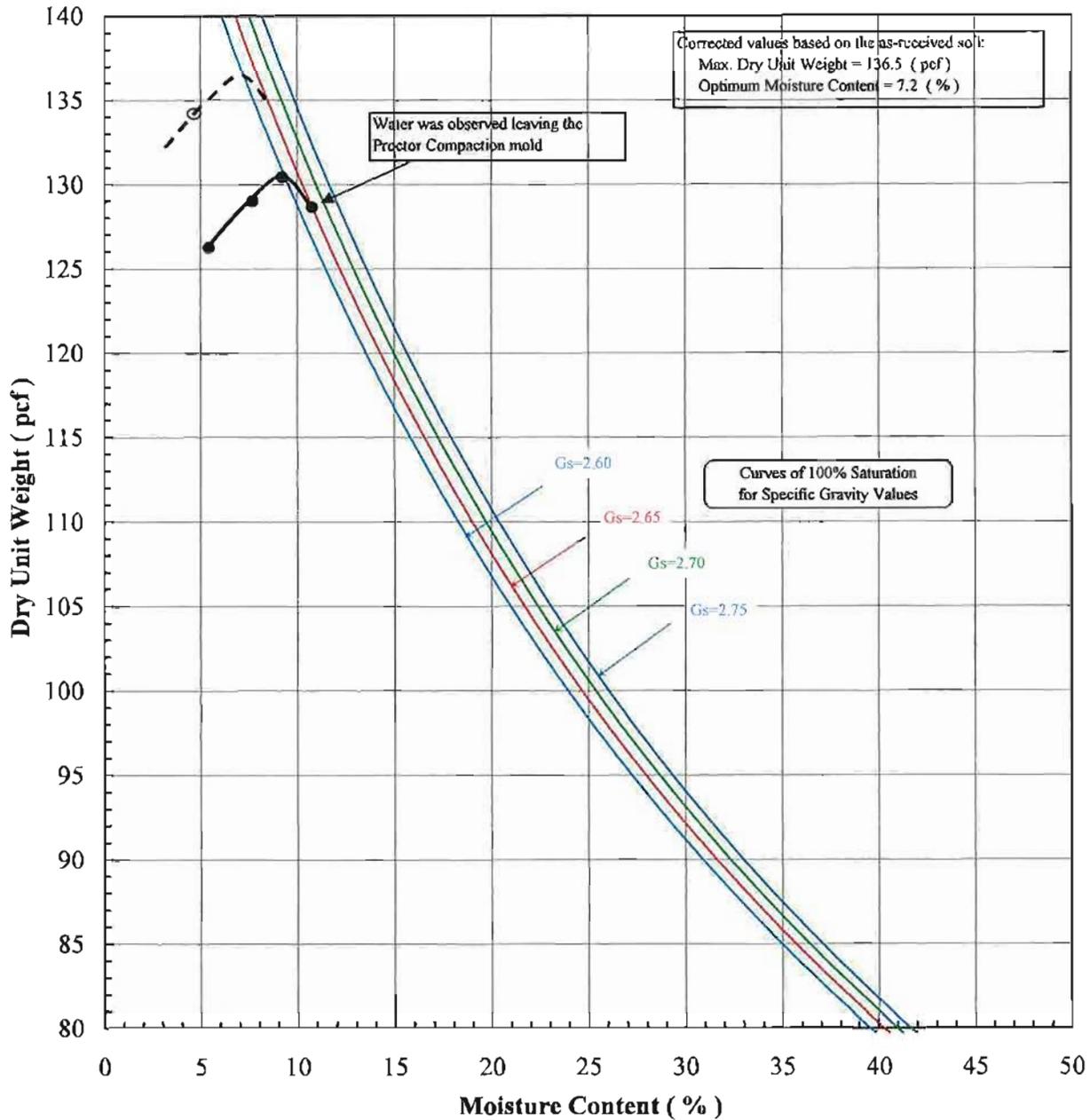
941 Forrest Street, Roswell, Georgia 30075
 Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name: BRCC - CAMU
 Project No: 327
 Client Sample ID: CS-08
 Lab Sample No: L092

ASTM D 1557

COMPACTION MOISTURE-DENSITY RELATIONSHIP

Modified - Method B



Client/Site Sample ID.	Lab Sample No:	Maximum Dry Unit Weight (pcf)	Optimum Moisture Content (%)	Remarks
CS-08	L092	130.6	9.1	

Note(s):



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Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name: BRC - CAMU

Project No: 327

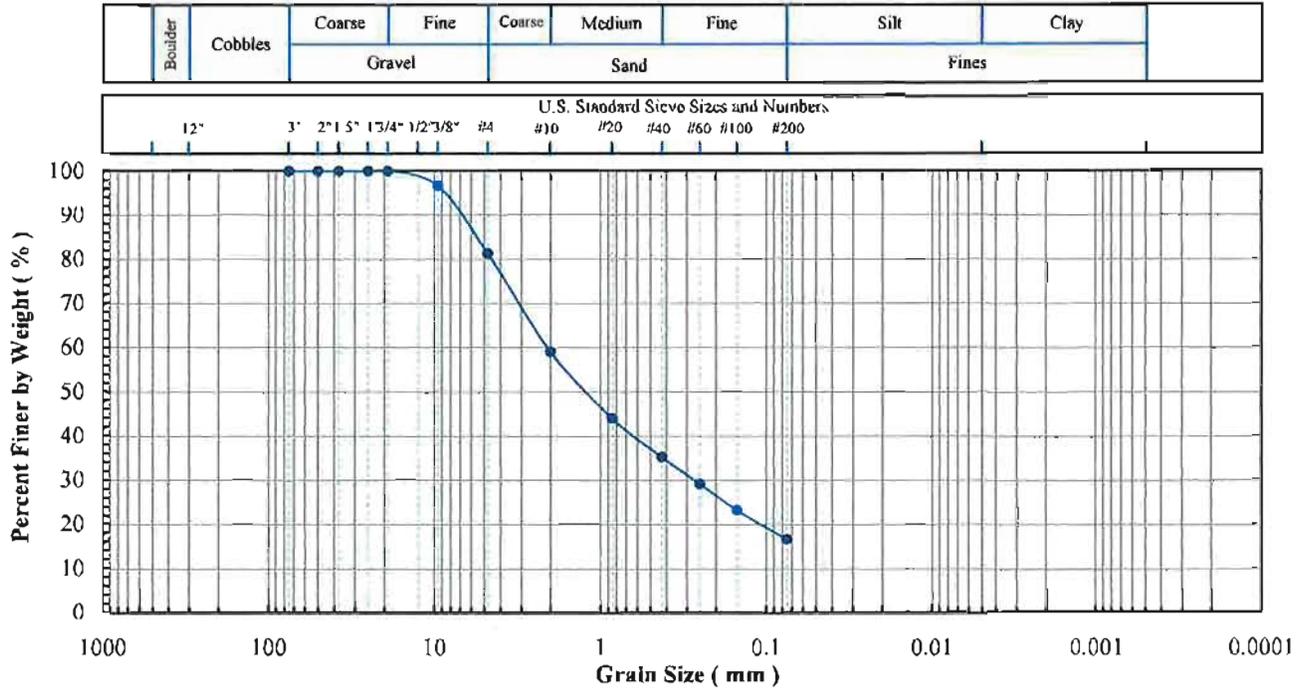
Client Sample ID: CS-09

Lab Sample No: K030

ASTM D 2316, D 1140,
D 422, D 854, C136

SOIL INDEX PROPERTIES

Moisture Content, Grain Size, Atterberg
Limits, Classification



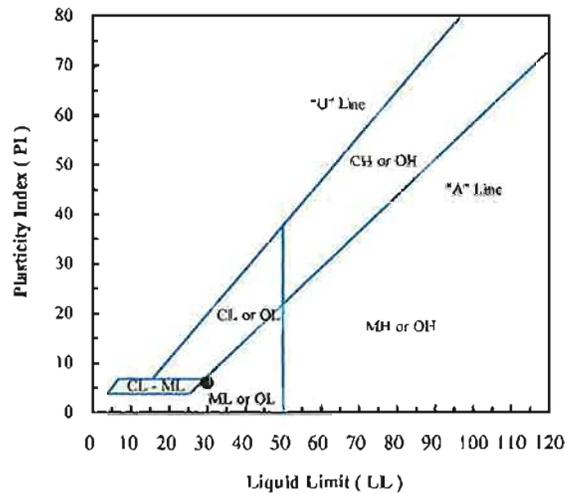
Sieve No.	Size (mm)	% Finer
3"	75	100.0
2"	50	100.0
1.5"	37.5	100.0
1"	25	100.0
3/4"	19	100.0
3/8"	9.5	96.7
#4	4.75	81.3
#10	2.00	59.1
#20	0.850	44.1
#40	0.425	35.3
#60	0.250	29.3
#100	0.150	23.3
#200	0.075	16.8

Hydrometer Particle Diameter (mm)	% Finer

Gravel (%):	18.7
Sand (%):	64.5
Fines (%):	16.8
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	
Coeff. Curv. (Cc):	

Specific Gravity (-):	
-----------------------	--



Client Sample ID.	Lab Sample No.	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits			Engineering Classification
				LL (-)	PL (-)	PI (-)	
CS-09	K030	8.1	16.8	30	24	6	SM - Silty sand with gravel

Note(s):

Engineering classification is based on the assumption that the fines are either ML or MH.



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Project Name: BRCC - CAMU

Project No: 327

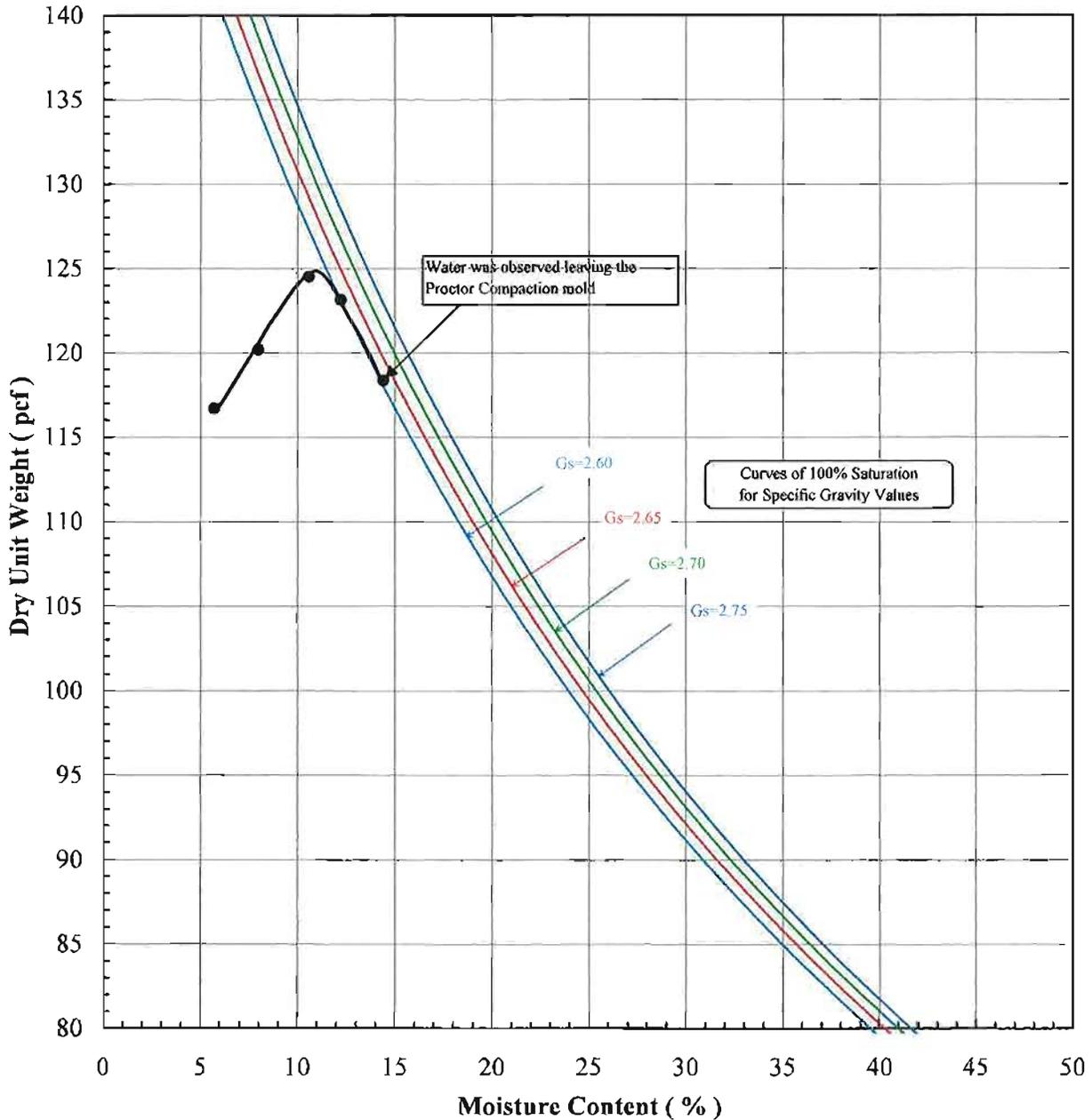
Client Sample ID CS-09

Lab Sample No: K030

ASTM D 1557

COMPACTION MOISTURE-DENSITY RELATIONSHIP

Modified - Method B



Client/Site Sample ID.	Lab Sample No:	Maximum Dry Unit Weight (pcf)	Optimum Moisture Content (%)	Remarks
CS-09	K030	124.8	10.9	

Note(s):



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Project Name: BRC - CAMU

Project No: 327

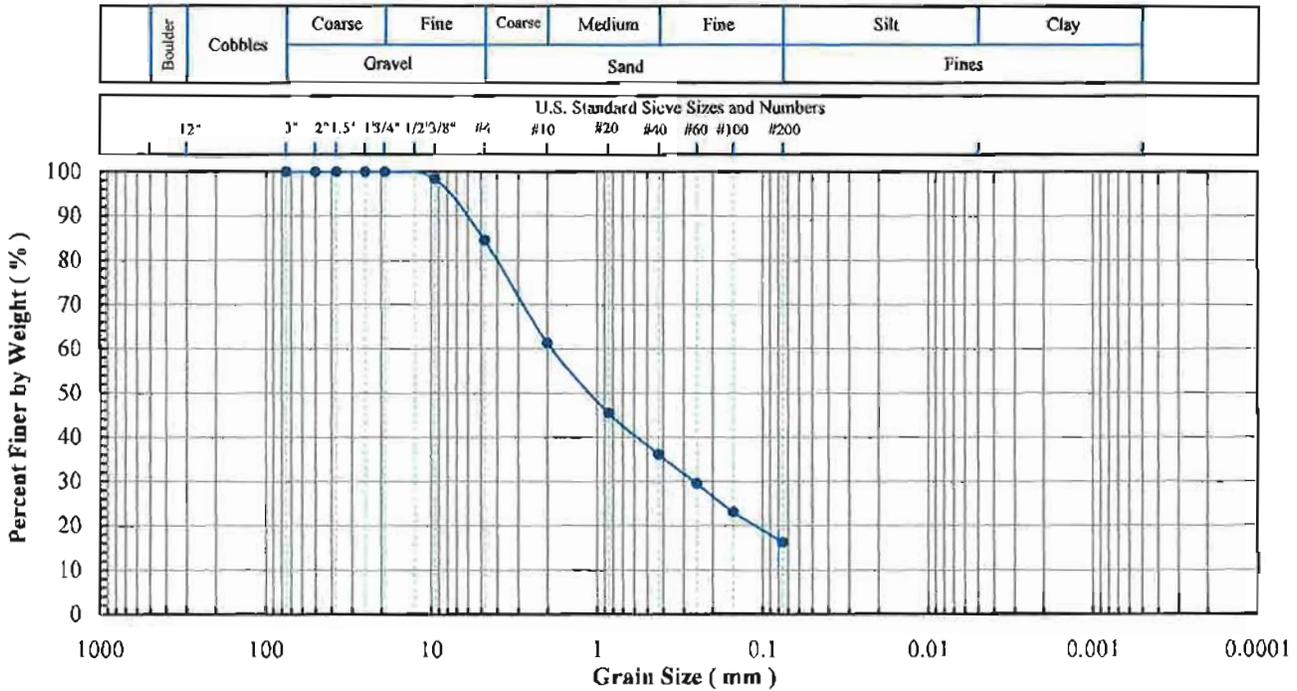
Client Sample ID: CS-10

Lab Sample No: K039

ASTM D 2216, D 1140,
D 423, D 954, C136

SOIL INDEX PROPERTIES

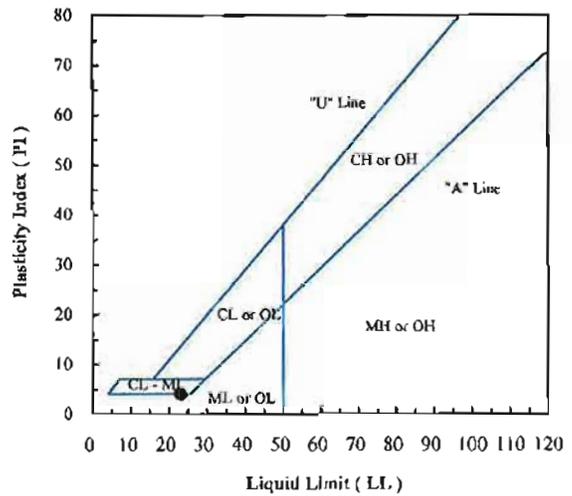
Moisture Content, Grain Size, Atterberg
Limits, Classification



Sieve No.	Size (mm)	% Finer
3"	75	100.0
2"	50	100.0
1.5"	37.5	100.0
1"	25	100.0
3/4"	19	100.0
3/8"	9.5	98.4
#4	4.75	84.6
#10	2.00	61.4
#20	0.850	45.5
#40	0.425	36.2
#60	0.250	29.6
#100	0.150	23.1
#200	0.075	16.3

Hydrometer Particle Diameter (mm)	% Finer

Gravel (%):	15.4
Sand (%):	68.3
Fines (%):	16.3
Silt (%):	
Clay (%):	



Coeff. Unif. (Cu):	
Coeff. Curv. (Cc):	

Client Sample ID.	Lab Sample No.	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits			Engineering Classification
				LL (-)	PL (-)	PI (-)	
CS-10	K039	8.0	16.3	23	19	4	SC-SM - Silty, clayey sand with gravel

Note(s):

Engineering classification is based on the assumption that the fines are either ML or MH



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Project Name: BRCC - CAMU

Project No: 327

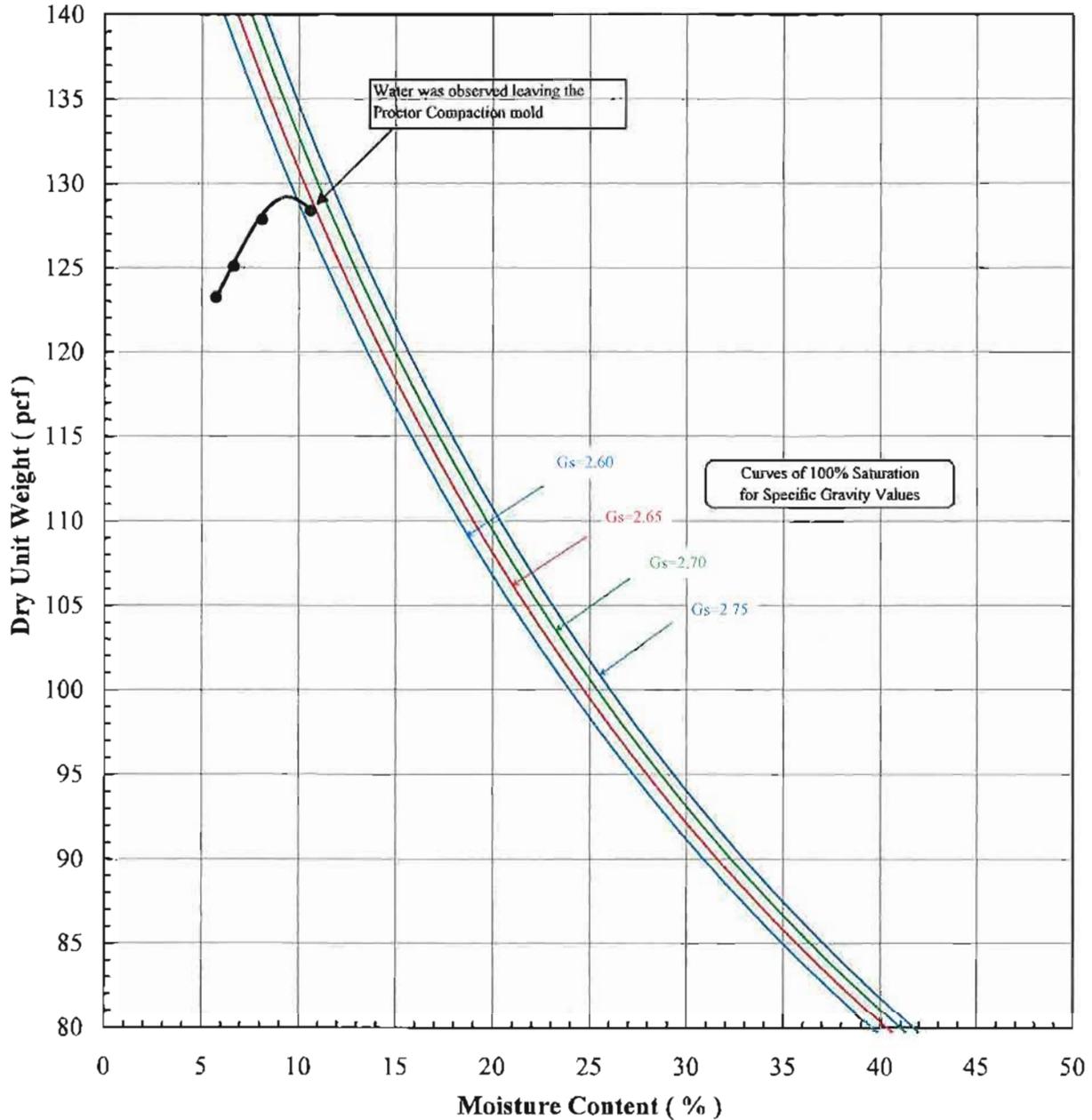
Client Sample ID CS-10

Lab Sample No: K039

ASTM D 1557

COMPACTION MOISTURE-DENSITY RELATIONSHIP

Modified - Method B



Client/Site Sample ID.	Lab Sample No:	Maximum Dry Unit Weight (pcf)	Optimum Moisture Content (%)	Remarks
CS-10	K039	129.2	9.4	

Note(s)

APPENDIX C-3

Field Nuclear Density/Moisture Test Results

Field Nuclear Moisture/Density Test Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Proctor Type: ASTM D 1557	Percent Compaction: 90	Lift Thickness (Compacted - Loose): 12 - 12	Moisture Range: -9 - 0
----------------------------------	-------------------------------	--	-------------------------------

Soil Type: 1 EF	Gauge Type: 3440	Correction Factor: 0
Series: 1 Interim Cover	Gauge Serial No: 28051	

ID	Location	Date	Probe Depth	Lift No.	Lab			Field						QA ID	Retest No	Retest Result
					Sample No	OMC (%)	Max Dry Unit Wt (PCF)	Field MC	Correct MC	Wet Unit Wt (PCF)	Dry Unit Wt (PCF)	Percent Compact (%)	Result			
1-001	H-3-4 PHIIIA	10/2/2009	8	1	IC-01	10.2	125.1	6.3		126.6	119.1	95.2	P	SI		
1-002	H-3-3 PHIIIA	10/2/2009	8	1	IC-01	10.2	125.1	4.8		122.4	116.8	93.4	P	SI		
1-003	G-3-3 PHIIIA	10/2/2009	8	1	IC-01	10.2	125.1	3.6		127.9	123.5	98.7	P	SI		
1-004	C-4-3 PHIIIA	10/6/2009	8	1	IC-01	10.2	125.1	5.4		124.2	117.8	94.2	P	SI		
1-005	C-4-2 PHIIIA	10/6/2009	8	1	IC-01	10.2	125.1	6.3		125.9	118.4	94.7	P	SI		
1-006	E-4-3 PHIIIA	10/6/2009	8	1	IC-01	10.2	125.1	4.2		124	119	95.1	P	SI		
1-007	F-4-1 PHIIIA	10/6/2009	8	1	IC-01	10.2	125.1	4.9		121.3	115.6	92.4	P	SI		
1-008	F-3-3 PHIIIA	10/6/2009	8	1	IC-01	10.2	125.1	4.3		128.3	123	98.3	P	SI		
1-009	E-3-3 PHIIIA	10/6/2009	8	1	IC-01	10.2	125.1	4.5		127.1	121.6	97.2	P	SI		
1-010	F-3-2 PHIIIA	10/8/2009	8	1	IC-01	10.2	125.1	7		125.2	117	93.5	P	SI		
1-011	E-2-3 PHIIIA	10/8/2009	8	1	IC-01	10.2	125.1	7.1		124.6	116.3	93	P	SI		
1-012	D-3-1 PHIIIA	10/8/2009	8	1	IC-01	10.2	125.1	7.8		126.5	117.4	93.8	P	SI		
1-013	A-3-1 PHIIIA	10/10/2009	4	1	IC-01	10.2	125.1	7.4		129.9	121	96.7	P	SI		
1-014	B-3-4 PHIIIA	10/10/2009	4	1	IC-01	10.2	125.1	8.4		132.9	122.6	98	P	SI		
1-015	B-5-1 PHIIIA	10/10/2009	8	1	IC-01	10.2	125.1	8.4		125.4	115.7	92.5	P	SI		

Field Nuclear Moisture/Density Test Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Proctor Type: ASTM D 1557	Percent Compaction: 90	Lift Thickness (Compacted - Loose): 12 - 12	Moisture Range: -9 - 0
----------------------------------	-------------------------------	--	-------------------------------

Soil Type: 1 EF	Gauge Type: 3440	Correction Factor: 0
Series: 1 Interim Cover	Gauge Serial No: 28051	

ID	Location	Date	Probe Depth	Lift No.	Lab			Field					QA ID	Retest No	Retest Result
					Sample No	OMC (%)	Max Dry Unit Wt (PCF)	Field MC	Correct MC	Wet Unit Wt (PCF)	Dry Unit Wt (PCF)	Percent Compact (%)			
1-016	C-2-1 PHIIIA	10/14/2009	8	1	IC-01	10.2	125.1	7.7		128.8	119.6	95.6	P	SI	
1-017	B-2-1 PHIIIA	10/14/2009	8	1	IC-01	10.2	125.1	6.5		128.2	120.4	96.2	P	SI	
1-018	H-7-4 PHII	10/26/2009	8	1	IC-02	10.8	125.6	6.4		126.9	119.3	95	P	SI	
1-019	H-8-1 PHII	10/26/2009	8	1	IC-02	10.8	125.6	5.7		128.5	121.6	96.8	P	SI	
1-020	G-8-2 PHII	10/26/2009	8	1	IC-02	10.8	125.6	5.9		125.2	118.2	94.1	P	SI	
1-021	F-7-4 PHII	10/26/2009	8	1	IC-02	10.8	125.6	5		125.7	119.7	95.3	P	SI	
1-022	F-8-3 PHII	10/26/2009	8	1	IC-02	10.8	125.6	6		122.3	115.4	91.9	P	SI	
1-023	E-8-3 PHII	10/26/2009	8	1	IC-02	10.8	125.6	4.9		127	121.1	96.4	P	SI	
1-024	D-8-2 PHII	10/26/2009	8	1	IC-02	10.8	125.6	4.3		126.5	121.3	96.6	P	SI	
1-025	C-8-4 PHII	10/26/2009	8	1	IC-02	10.8	125.6	6.5		124.8	117.2	93.3	P	SI	
1-026	H-7-1 PHII	10/26/2009	4	1	IC-02	10.8	125.6	6		130	122.6	97.6	P	SI	
1-027	F-7-2 PHII	10/26/2009	4	1	IC-02	10.8	125.6	7.4		131.9	122.8	97.8	P	SI	
1-028	E-7-3 PHII	10/26/2009	4	1	IC-02	10.8	125.6	6.8		127.1	119	94.8	P	SI	
1-029	C-8-3 PHII	11/4/2009	8	1	IC-02	10.8	125.6	3.5		119.9	115.9	92.2	P	SI	
1-030	B-8-1 PHII	11/4/2009	8	1	IC-02	10.8	125.6	3		124.9	121.3	96.6	P	SI	

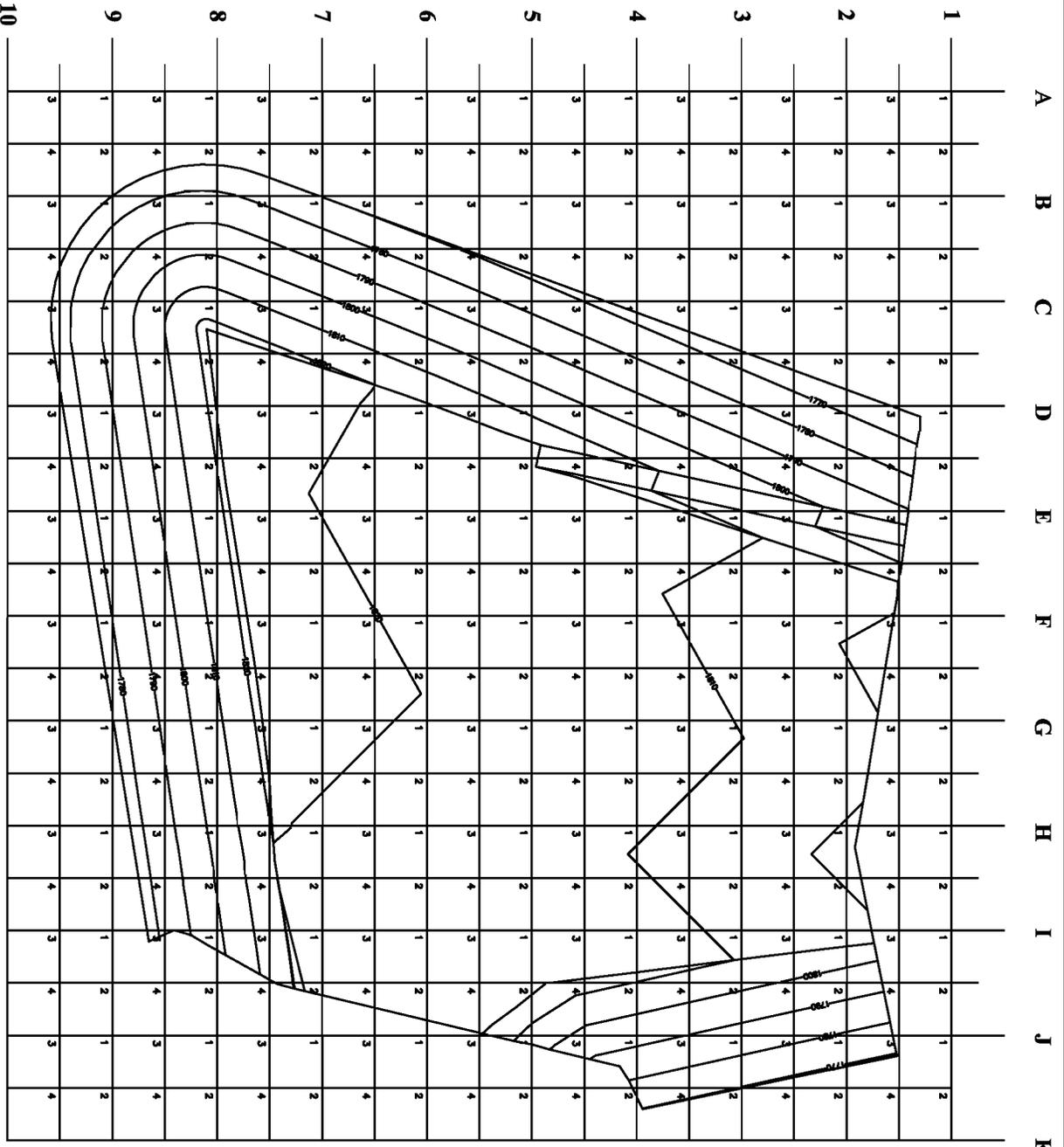
Field Nuclear Moisture/Density Test Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Proctor Type: ASTM D 1557	Percent Compaction: 90	Lift Thickness (Compacted - Loose): 12 - 12	Moisture Range: -9 - 0
----------------------------------	-------------------------------	--	-------------------------------

Soil Type: 1 EF	Guage Type: 3440	Correction Factor: 0
Series: 1 Interim Cover	Guage Serial No: 28051	

ID	Location	Date	Probe Depth	Lift No.	Lab			Field						QA ID	Retest No	Retest Result
					Sample No	OMC (%)	Max Dry Unit Wt (PCF)	Field MC	Correct MC	Wet Unit Wt (PCF)	Dry Unit Wt (PCF)	Percent Compact (%)	Result			
1-031	B-7-4 PHII	11/4/2009	8	1	IC-02	10.8	125.6	5.4		127.4	120.9	96.2	P	SI		
1-032	B-6-4 PHII	11/4/2009	8	1	IC-02	10.8	125.6	4		122.6	117.9	93.9	P	SI		
1-033	B-5-4 PHII	11/4/2009	8	1	IC-02	10.8	125.6	5.6		128.9	122.1	97.2	P	SI		
1-034	C-5-4 PHII	11/4/2009	8	1	IC-02	10.8	125.6	5.6		129.5	122.6	97.6	P	SI		
1-035	D-6-3 PHII	11/4/2009	8	1	IC-02	10.8	125.6	5.2		129.3	122.9	97.9	P	SI		
1-036	D-6-1 PHII	11/4/2009	8	1	IC-02	10.8	125.6	5.2		125	118.8	94.6	P	SI		



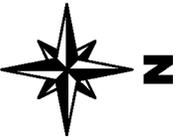
FINAL INTERIM COVER TECHNICAL DATA

NO.	BY	LIFT	DATE	DESCRIPTION
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1		1		
1		1		
1		1		
1		1		
1		1		

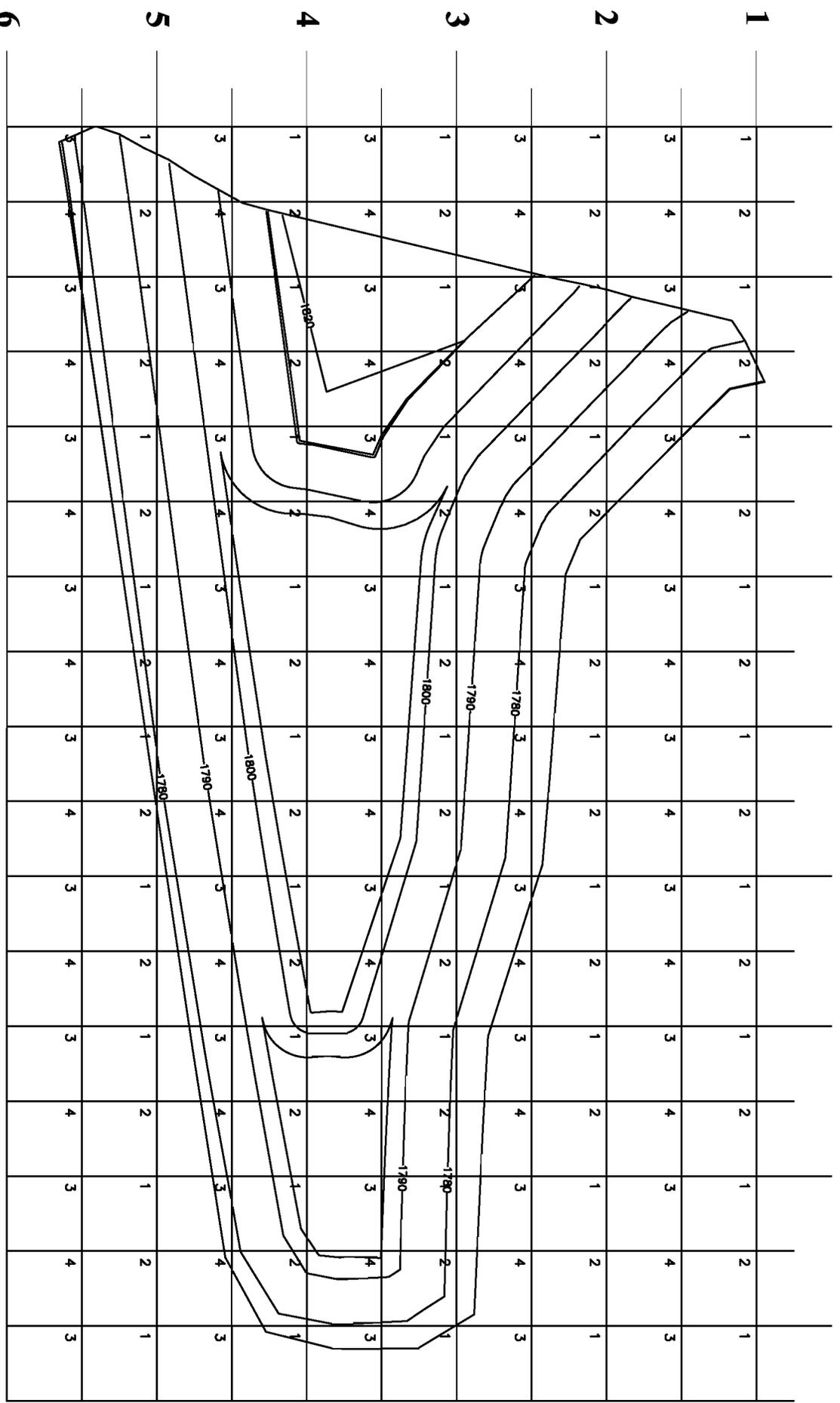
CAMU CLOSURE PHASE II

LEGEND	
	DENSITY TEST
	LIMITS OF PLACEMENT
	COMPACTED AREA

APPROXIMATE t^* = 584, 438
 MINIMUM TESTS REQUIRED = 43



A B C D E F G H I



FINAL INTERIM COVER TECHNICAL DATA

NO.	BY	LIFT	DATE	DESCRIPTION
1		1		
1		1		
1		1		
1		1		
1		1		
1		1		

CAMU CLOSURE PHASE III A

LEGEND	
	DENSITY TEST
	LIMITS OF PLACEMENT
	COMPACTED AREA

APPROXIMATE t^* = 203,173
 MINIMUM TESTS REQUIRED = 15



APPENDIX C-4
Sand Cone Test Results

FIELD SAND CONE DENSITY TEST

PROJECT: Basic Remediation
 LOCATION: Henderson, Nevada PROJECT NO.: SC0313 TASK NO.: 09
 DESCRIPTION: Northwest Detention Basin DATE: 14 Day September month 2009 year

SPECIFICATION REQUIREMENTS:

MATERIAL TYPE: FILL SUBGRADE SUBBASE CLAY OTHER: Engineered Fill
 % COMPACTION: 90 MOISTURE CONTENT RANGE: - 4 to + 4 of OPT.
 TEST LOCATION: 20' E of SDMH 4 #8 TEST NO.: SC-15

FIELD TEST DATA - ASTM D 1556					QA ID: _____		
A	BULK UNIT WT. OF SAND ¹	(pcf)	81.36	H	WT. OF WET SOIL & TARE FROM HOLE	(lbs)	12.22
B	INITIAL WT. OF SAND & JAR	(lbs)	14.52	I	TARE NUMBER		
C	FINAL WT. OF SAND & JAR	(lbs)	4.54	J	WT. OF TARE	(lbs)	0.60
D	WT. OF SAND IN FUNNEL & HOLE (=B-C)	(lbs)	9.98	K	WT OF WET SOIL FROM HOLE (=H-J)	(lbs)	11.62
E	WT. OF SAND IN FUNNEL ²	(lbs)	3.01	L	WET UNIT WT. (=K/G)	(pcf)	135.6
F	WT. OF SAND IN HOLE (=D-E)	(lbs)	6.97	M	DRY UNIT WT. (=L/[1+(U/100)])	(pcf)	125.1
G	VOLUME OF HOLE (=F/A)	(ft ³)	0.08567	N	PERCENT COMPACTION (=M/V)	(%)	97.7

NOTES

- (1) USE CALIBRATION FORM
- (2) THE WEIGHT OF SAND IN FUNNEL (E) IS OBTAINED BY WEIGHING THE SAND, A MINIMUM OF THREE TIMES, IN THE APPARATUS BEFORE AND AFTER THE APPARATUS HAS BEEN TURNED OVER ON THE BASE PLATE ALONG A FLAT SURFACE WITH THE SAND BEING EXPENDED.

FIELD MOISTURE CONTENT - ASTM D 2216					QA ID: _____		
O	TARE NUMBER			S	WT. OF WATER (=Q-R)	(g)	172.0
P	WT. OF TARE	(g)	415.0	T	WT. OF DRY SOIL (=R-P)	(g)	2044.0
Q	WT. OF WET SOIL & TARE	(g)	2631.0	U	MOISTURE CONTENT (=S/T)x100	(%)	8.4
R	WT. OF DRY SOIL & TARE	(g)	2459.0				

PROCTOR TEST DATA

MAXIMUM DRY UNIT WT. [V]: 128.0 (pcf) OPTIMUM MOISTURE CONTENT: 9.6 (%)

COMPARISON WITH NUCLEAR MOISTURE/DENSITY GAUGE - ASTM D 6938					QA ID: _____		
W	FIELD DENSITY TEST (FDT) NUMBER		3	Z	FDT DRY UNIT WT.	(pcf)	124.9
X	FDT WET UNIT WT.	(pcf)	133.9	AA	DELTA DRY UNIT WT. (=M-Z)		0.2
Y	FDT MOISTURE CONTENT	(%)	7.2	BB	DELTA MOISTURE CONTENT (=U-Y)		1.2

COMMENTS

FIELD SAND CONE DENSITY TEST

PROJECT: Basic Remediation
 LOCATION: Henderson, Nevada PROJECT NO.: SC0313 TASK NO.: 09
 DESCRIPTION: CAMU Closure DATE: 26 day October month 2009 year

SPECIFICATION REQUIREMENTS:

MATERIAL TYPE: FILL SUBGRADE SUBBASE CLAY OTHER: silty sand ??
 % COMPACTION: 90 MOISTURE CONTENT RANGE: - 4 to + 0 of OPT.
 TEST LOCATION: F-7-2 TEST NO.: SC-16

FIELD TEST DATA - ASTM D 1556					QA ID: _____		
A	BULK UNIT WT. OF SAND ¹	(pcf)	81.36	H	WT. OF WET SOIL & TARE FROM HOLE	(lbs)	9.72
B	INITIAL WT. OF SAND & JAR	(lbs)	14.06	I	TARE NUMBER		
C	FINAL WT. OF SAND & JAR	(lbs)	5.50	J	WT. OF TARE	(lbs)	0.60
D	WT. OF SAND IN FUNNEL & HOLE (=B-C)	(lbs)	8.56	K	WT OF WET SOIL FROM HOLE (=H-J)	(lbs)	9.12
E	WT. OF SAND IN FUNNEL ²	(lbs)	3.01	L	WET UNIT WT. (=K/G)	(pcf)	133.7
F	WT. OF SAND IN HOLE (=D-E)	(lbs)	5.55	M	DRY UNIT WT. (=L/[1+(U/100)])	(pcf)	122.6
G	VOLUME OF HOLE (=F/A)	(ft ³)	0.06822	N	PERCENT COMPACTION (=M/V)	(%)	97.6

NOTES

- (1) USE CALIBRATION FORM
- (2) THE WEIGHT OF SAND IN FUNNEL (E) IS OBTAINED BY WEIGHING THE SAND, A MINIMUM OF THREE TIMES, IN THE APPARATUS BEFORE AND AFTER THE APPARATUS HAS BEEN TURNED OVER ON THE BASE PLATE ALONG A FLAT SURFACE WITH THE SAND BEING EXPENDED.

FIELD MOISTURE CONTENT - ASTM D 2216					QA ID: _____		
O	TARE NUMBER			S	WT. OF WATER (=Q-R)	(g)	125
P	WT. OF TARE	(g)	415.0	T	WT. OF DRY SOIL (=R-P)	(g)	1380
Q	WT. OF WET SOIL & TARE	(g)	1920	U	MOISTURE CONTENT (= [S/T]x100)	(%)	9.1
R	WT. OF DRY SOIL & TARE	(g)	1795				

PROCTOR TEST DATA

MAXIMUM DRY UNIT WT. [V]: 125.6 (pcf) OPTIMUM MOISTURE CONTENT: 10.8 (%)

COMPARISON WITH NUCLEAR MOISTURE/DENSITY GAUGE - ASTM D 6938					QA ID: _____		
W	FIELD DENSITY TEST (FDT) NUMBER		1-027	Z	FDT DRY UNIT WT.	(pcf)	122.8
X	FDT WET UNIT WT.	(pcf)	131.9	AA	DELTA DRY UNIT WT. (=M-Z)		-0.2
Y	FDT MOISTURE CONTENT	(%)	7.4	BB	DELTA MOISTURE CONTENT (=U-Y)		1.7

COMMENTS

FIELD SAND CONE DENSITY TEST

PROJECT: Basic Remediation
 LOCATION: Henderson, Nevada PROJECT NO.: SC0313 TASK NO.: 09
 DESCRIPTION: CAMU Closure Phase II DATE: 04 day November month 2009 year

SPECIFICATION REQUIREMENTS:

MATERIAL TYPE: FILL SUBGRADE SUBBASE CLAY OTHER: _____
 % COMPACTION: 90 MOISTURE CONTENT RANGE: - 9 to + 0 of OPT.
 TEST LOCATION: D-6-3 TEST NO.: SC-17

FIELD TEST DATA - ASTM D 1556					QA ID: <u>GM</u>	
A	BULK UNIT WT. OF SAND ¹	(pcf)	81.36	H	WT. OF WET SOIL & TARE FROM HOLE	(lbs) 7.06
B	INITIAL WT. OF SAND & JAR	(lbs)	14.06	I	TARE NUMBER	
C	FINAL WT. OF SAND & JAR	(lbs)	6.64	J	WT. OF TARE	(lbs) 0.06
D	WT. OF SAND IN FUNNEL & HOLE (=B-C)	(lbs)	7.42	K	WT OF WET SOIL FROM HOLE (=H-J)	(lbs) 7.00
E	WT. OF SAND IN FUNNEL ²	(lbs)	3.01	L	WET UNIT WT. (=K/G)	(pcf) 129.1
F	WT. OF SAND IN HOLE (=D-E)	(lbs)	4.41	M	DRY UNIT WT. (=L/[1+(U/100)])	(pcf) 119.5
G	VOLUME OF HOLE (=F/A)	(ft ³)	0.05420	N	PERCENT COMPACTION (=M/V)	(%) 95.2

NOTES

- (1) USE CALIBRATION FORM
- (2) THE WEIGHT OF SAND IN FUNNEL (E) IS OBTAINED BY WEIGHING THE SAND, A MINIMUM OF THREE TIMES, IN THE APPARATUS BEFORE AND AFTER THE APPARATUS HAS BEEN TURNED OVER ON THE BASE PLATE ALONG A FLAT SURFACE WITH THE SAND BEING EXPENDED.

FIELD MOISTURE CONTENT - ASTM D 2216					QA ID: _____	
O	TARE NUMBER			S	WT. OF WATER (=Q-R)	(g) 120
P	WT. OF TARE	(g)	415.0	T	WT. OF DRY SOIL (=R-P)	(g) 1495
Q	WT. OF WET SOIL & TARE	(g)	2030	U	MOISTURE CONTENT (= [S/T]x100)	(%) 8.0
R	WT. OF DRY SOIL & TARE	(g)	1910			

PROCTOR TEST DATA EF-05

MAXIMUM DRY UNIT WT. [V]: 125.6 (pcf) OPTIMUM MOISTURE CONTENT: 10.8 (%)

COMPARISON WITH NUCLEAR MOISTURE/DENSITY GAUGE - ASTM D 6938					QA ID: <u>GM</u>	
W	FIELD DENSITY TEST (FDT) NUMBER		1-035	Z	FDT DRY UNIT WT.	(pcf) 122.8
X	FDT WET UNIT WT.	(pcf)	129.3	AA	DELTA DRY UNIT WT. (=M-Z)	-3.3
Y	FDT MOISTURE CONTENT	(%)	5.2	BB	DELTA MOISTURE CONTENT (=U-Y)	2.8

COMMENTS

APPENDIX C-5

Moisture Content Test Results

LABORATORY DETERMINATION OF MOISTURE CONTENT OF SOIL

(ASTM D 2216/D4643)

PROJECT: BRC CAMU

LOCATION: Phase IIIA

PROJECT NO.: SC0313

TASK NO.: 09-03

DESCRIPTION: Final Cover

DATE: 11 day 1 month 2010 year

MATERIAL TYPE: 1" & 6" minus

OVEN METHOD (ASTM D2216):

Recommended Mass of Moist Sample Weight

QA ID: CL

100% PASSING THE NO. 10 (2-mm) SIEVE	20 grams
100% PASSING THE NO. 4 (4.75-mm) SIEVE	100 grams
100% PASSING THE NO. 3/8-in. (9.5-mm) SIEVE	500 grams
100% PASSING THE NO 3/4-in. (19-mm) SIEVE	2.5 kilograms

A	SAMPLE NUMBER:	1	2	3	4
B	TARE NUMBER.:	A	B	C	D
C	WT. OF TARE	32.0	32.0	32.0	32.0
D	WT. OF WET SOIL & TARE	3456.0	3610.0	3290.0	3370.0
E	WT. OF DRY SOIL & TARE	3215.0	3367.0	3095.0	3142.0
F	WT. OF WATER = D-E	241.0	243.0	195.0	228.0
G	WT. OF DRY SOIL = E-C	3183.0	3335.0	3063.0	3110.0
H	MOISTURE CONTENT = (F/G) * 100 %	7.6	7.3	6.4	7.3
I	NUCLEAR DENSITY GAUGE READING:				
J	DELTA MOISTURE = H-I %	7.6	7.3	6.4	7.3
K	FDT NUMBER				

Sample 1 - CS-09, screen 1-inch minus has an optimum moisture content of 10.9

Sample 2 - CS-09, screen 1-inch minus has an optimum moisture content of 10.9

Sample 3 - CS-07, screen 6-inch minus has an optimum moisture content of 9.9

Sample 4 - CS-07, screen 6-inch minus has an optimum moisture content of 9.9

LABORATORY DETERMINATION OF MOISTURE CONTENT OF SOIL

(ASTM D 2216/D4643)

PROJECT: BRC CAMU

LOCATION: Phase II

PROJECT NO.: SC0313

TASK NO.: 09-03

DESCRIPTION: Final Cover

DATE: 8 day 12 month 2009 year

MATERIAL TYPE: 1" & 6" minus

OVEN METHOD (ASTM D2216):

Recommended Mass of Moist Sample Weight

QA ID: CL

100% PASSING THE NO. 10 (2-mm) SIEVE	20 grams
100% PASSING THE NO. 4 (4.75-mm) SIEVE	100 grams
100% PASSING THE NO. 3/8-in. (9.5-mm) SIEVE	500 grams
100% PASSING THE NO 3/4-in. (19-mm) SIEVE	2.5 kilograms

A	SAMPLE NUMBER:	5	6	7	8
B	TARE NUMBER.:	A	B	A	B
C	WT. OF TARE	13.6	13.7	31.8	32.0
D	WT. OF WET SOIL & TARE	548.4	538.5	2570.0	2735.0
E	WT. OF DRY SOIL & TARE	511.9	497.7	2411.0	2587.0
F	WT. OF WATER = D-E	36.5	40.8	159.0	148.0
G	WT. OF DRY SOIL = E-C	498.3	484.0	2379.2	2555.0
H	MOISTURE CONTENT = (F/G) * 100 %	7.3	8.4	6.7	5.8
I	NUCLEAR DENSITY GAUGE READING:				
J	DELTA MOISTURE = H-I %	7.3	8.4	6.7	5.8
K	FDT NUMBER				

Sample 5 - CS-10, screen 1-inch minus has an optimum moisture content of 9.4

Sample 6 - CS-10, screen 1-inch minus has an optimum moisture content of 9.4

Sample 7 - CS-08, screen 6-inch minus has an optimum moisture content of 9.1

Sample 8 - CS-08, screen 6-inch minus has an optimum moisture content of 9.1

LABORATORY DETERMINATION OF MOISTURE CONTENT OF SOIL

(ASTM D 2216/D4643)

PROJECT: BRC CAMU

LOCATION: Phase II

PROJECT NO.: SC0313

TASK NO.: 09-03

DESCRIPTION: Final Cover

DATE: 5 day 3 month 2010 year

MATERIAL TYPE: 1" & 6" minus

OVEN METHOD (ASTM D2216):

Recommended Mass of Moist Sample Weight

QA ID: VH

100% PASSING THE NO. 10 (2-mm) SIEVE	20 grams
100% PASSING THE NO. 4 (4.75-mm) SIEVE	100 grams
100% PASSING THE NO. 3/8-in. (9.5-mm) SIEVE	500 grams
100% PASSING THE NO 3/4-in. (19-mm) SIEVE	2.5 kilograms

A	SAMPLE NUMBER:	9			
B	TARE NUMBER.:	A			
C	WT. OF TARE	415.0			
D	WT. OF WET SOIL & TARE	2500.0			
E	WT. OF DRY SOIL & TARE	2355.0			
F	WT. OF WATER = D-E	145.0			
G	WT. OF DRY SOIL = E-C	1940.0			
H	MOISTURE CONTENT = (F/G) * 100 %	7.5			
I	NUCLEAR DENSITY GAUGE READING:				
J	DELTA MOISTURE = H-I %	7.5			
K	FDT NUMBER				

Sample 8 - CS-09, screen 6-inch minus has an optimum moisture content of 9.1

APPENDIX C-6
Triaxial Shear Test Results

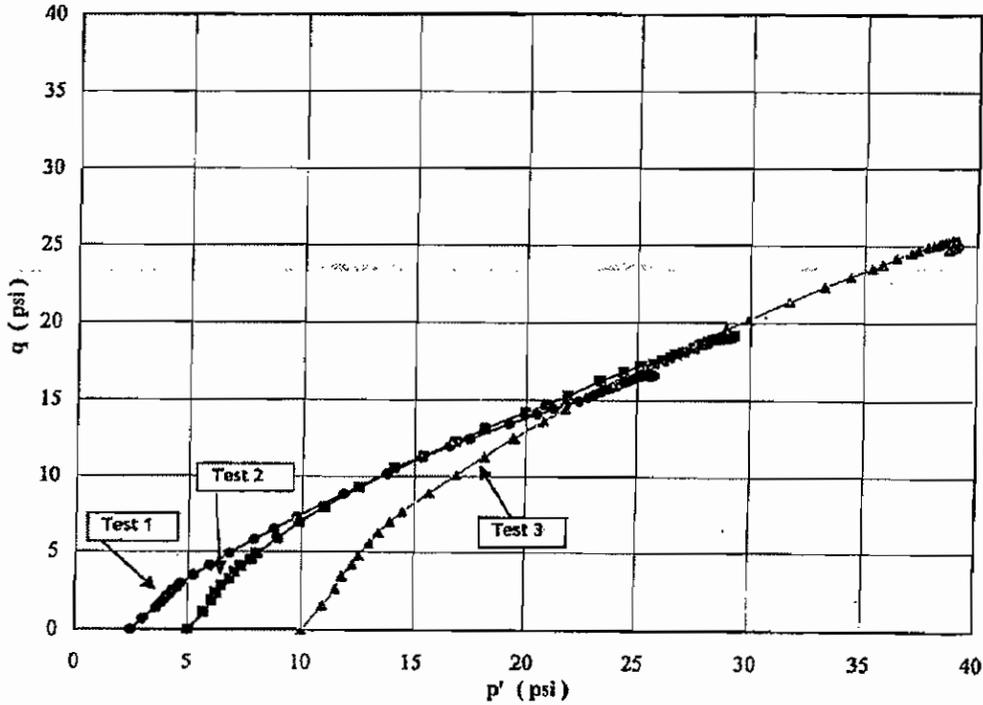


Excel Geotechnical Testing, Inc.
 "Excellence in Testing"
 941 Forrest Street, Roswell, Georgia 30075
 Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name: BRC - CAMU
 Project No: 327
 Site Sample ID: F-04
 Lab Sample No: I022

ASTM D 4767

**CONSOLIDATED-UNDRAINED (CU) TRIAXIAL TEST
 WITH PORE PRESSURE MEASUREMENTS**



Test Specimen No.	Initial Conditions							Strain Rate (%/min)	Specimen Quality Bad to Good (1 to 10)
	Height (in.)	Diameter (in.)	Moisture Content (%)	Dry Unit Weight (pcf)	B Parameter (-)	u_i (psi)	σ'_c (psi)		
1	6.02	2.86	9.6	114.3	0.95	70.0	2.5	0.133	6
2	6.01	2.85	9.7	115.1	0.95	70.0	5.0	0.133	5
3	6.00	2.86	9.8	114.6	0.95	70.0	10.0	0.133	6



Specimen No. 1



Specimen No. 2



Specimen No. 3

Notes:

u_i = Initial pore pressure, (psi)
 σ'_c = Consolidation pressure, (psi)



Excel Geotechnical Testing, Inc.

"Excellence in Testing"

941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name: BRC - CAMU

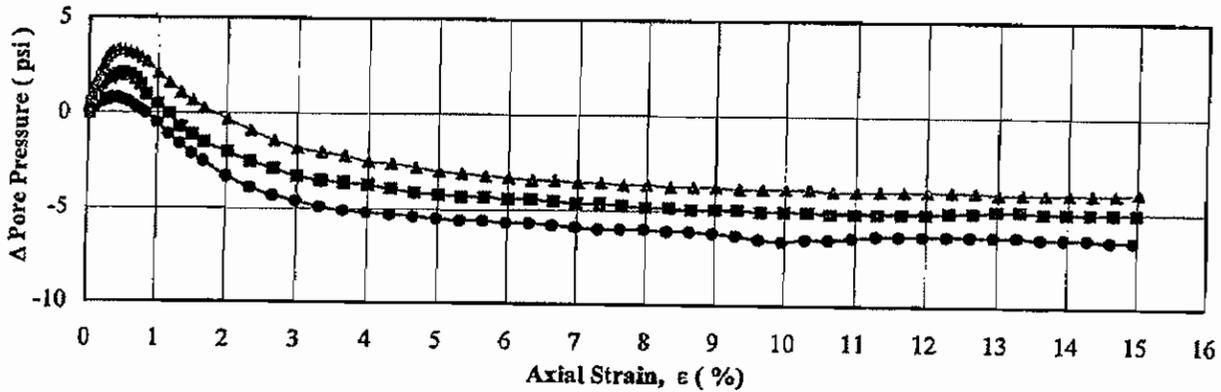
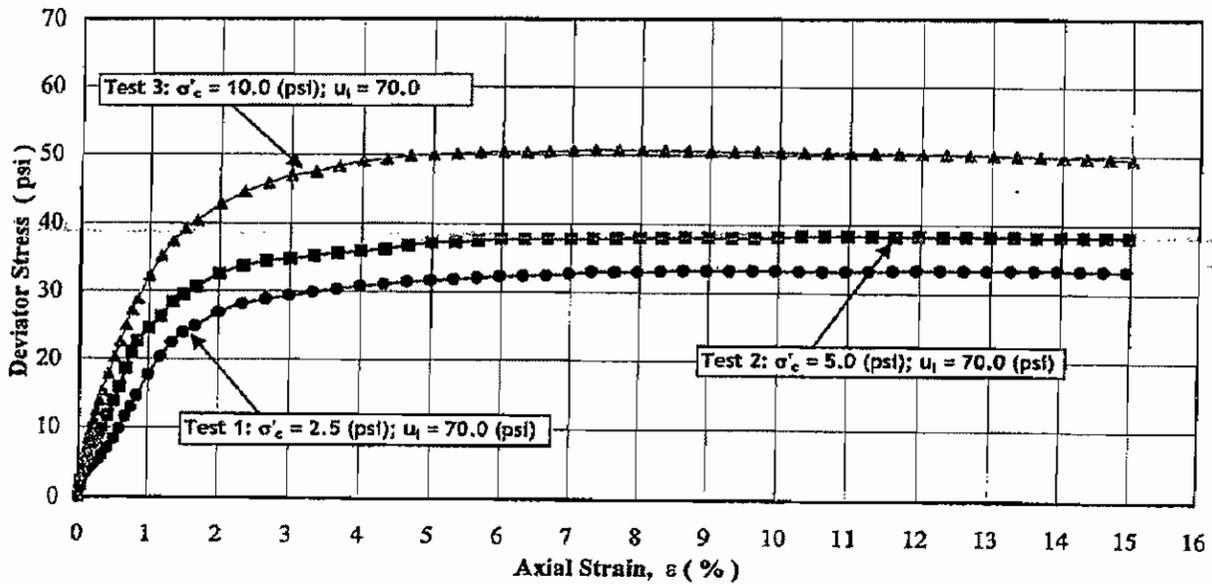
Project No: 327

Site Sample ID: F-04

Lab Sample No: I022

ASTM D 4767

**CONSOLIDATED-UNDRAINED (CU) TRIAXIAL TEST
WITH PORE PRESSURE MEASUREMENTS**



Test Specimen No.	Maximum Strength				
	$\sigma'_1 - \sigma'_3$ (psi)	σ'_1 (psi)	σ'_3 (psi)	u (psi)	ϵ_a (%)
1	33.3	42.3	9.0	63.5	14.9
2	38.3	48.3	10.0	65.0	15.0
3	50.8	64.4	13.6	66.4	7.7

Test Specimen No.	Strength at App. 15% Axial Strain				
	$\sigma'_1 - \sigma'_3$ (psi)	σ'_1 (psi)	σ'_3 (psi)	u (psi)	ϵ_a (%)
1	33.3	42.3	9.0	63.5	14.9
2	38.3	48.3	10.0	65.0	15.0
3	49.5	63.4	13.9	66.1	15.0

Notes:

σ'_c = Consolidation pressure, (psi)

σ'_1 = Effective axial stress, (psi)

u = Pore pressure, (psi)

u_1 = Initial pore pressure, (psi)

σ'_3 = Effective radial stress (confining pressure), (psi)

ϵ_a = Axial strain, (%)

$\sigma'_1 - \sigma'_3$ = Deviator stress, (psi)

**BRC CAMU
C-U TRIAXIAL TEST RESULTS
SAMPLE F-04**

A	B	C	D	E			F	G	H	I
				Consolidation Pressure	Initial Pore Pressure	Deviator Stress				
Test Specimen No.	σ _c (psi)	μ _i (psi)	σ' ₁ - σ' ₃ (psi)	σ' ₁ (psi)	σ' ₃ (psi)	Δμ (psi)	μ (psi)	ε _a %	φ	
1	2.5	70	33.3	42.3	9	-6.5	63.5	14.9	40	
2	5.0	70	38.3	48.3	10	-5	65	15	41	
3	10	70	50.8	64.4	13.6	-3.6	66.4	7.7	41	

A	B	C	D	E			F	G	H	I
				Consolidation Pressure	Initial Pore Pressure	Deviator Stress				
Test Specimen No.	σ _c (psi)	μ _i (psi)	σ' ₁ - σ' ₃ (psi)	σ' ₁ (psi)	σ' ₃ (psi)	Δμ (psi)	μ (psi)	ε _a %	φ	
1	2.5	70	27	30	3	-0.5	69.5	2	55	
2	5.0	70	32.5	39	6.5	-1.5	68.5	2	46	
3	10	70	42.5	55.5	13	-3	67	2	38	

Notes:

- Yellow box indicates user input required.
- Maximum Strength values provided in lab report. Values are not calculated in this spreadsheet.
- Plot columns E and F to obtain friction angle and cohesion values.

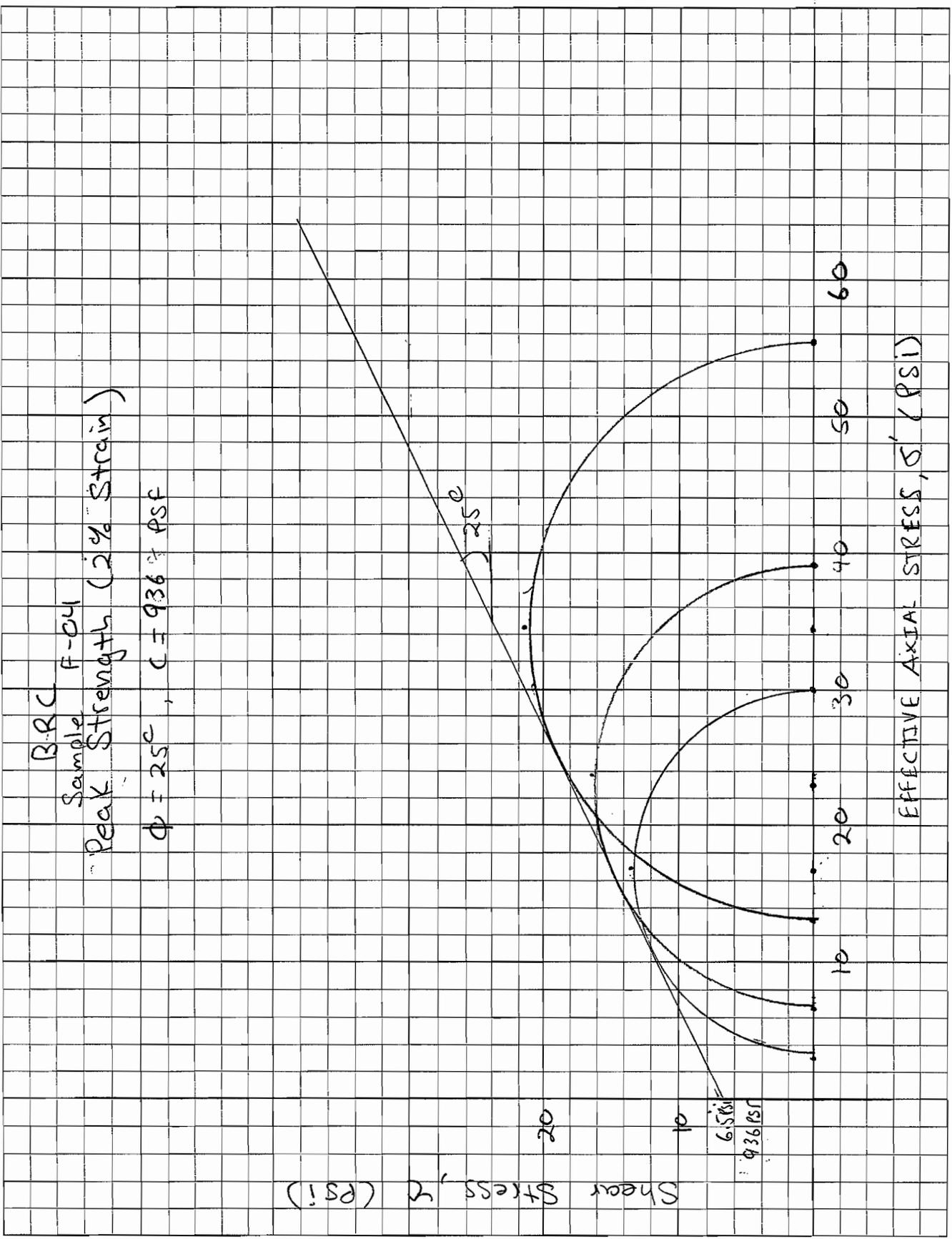
Written by: K. Botelho

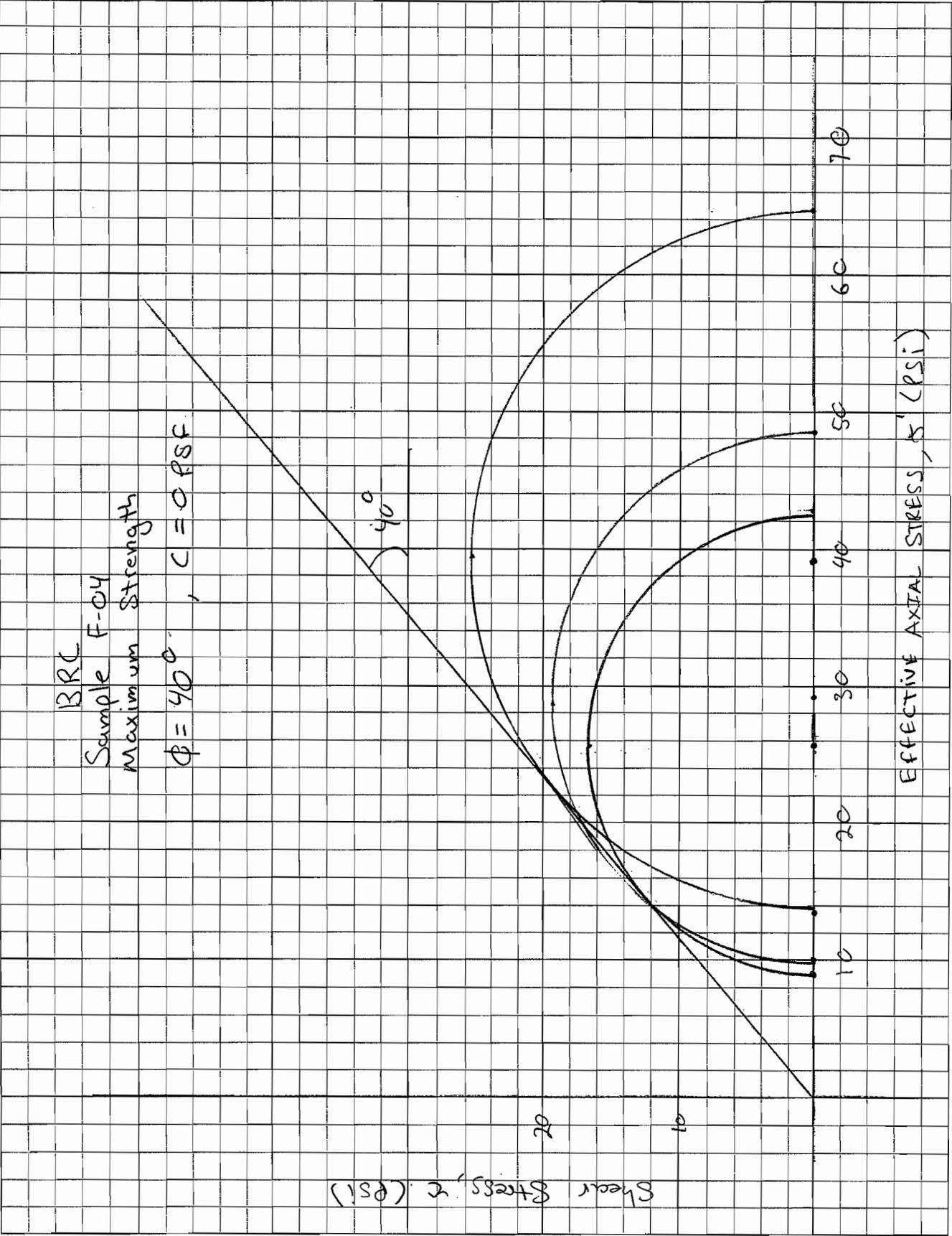
Date: 12/11/09

Reviewed by: SF

Date: 12/11/09

Client: BRC
 Project: BRC CAMU
 Project/Proposal No. SCC313
 Task No.







Excel Geotechnical Testing, Inc.

"Excellence in Testing"

941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name: BRC - CAMU

Project No: 327

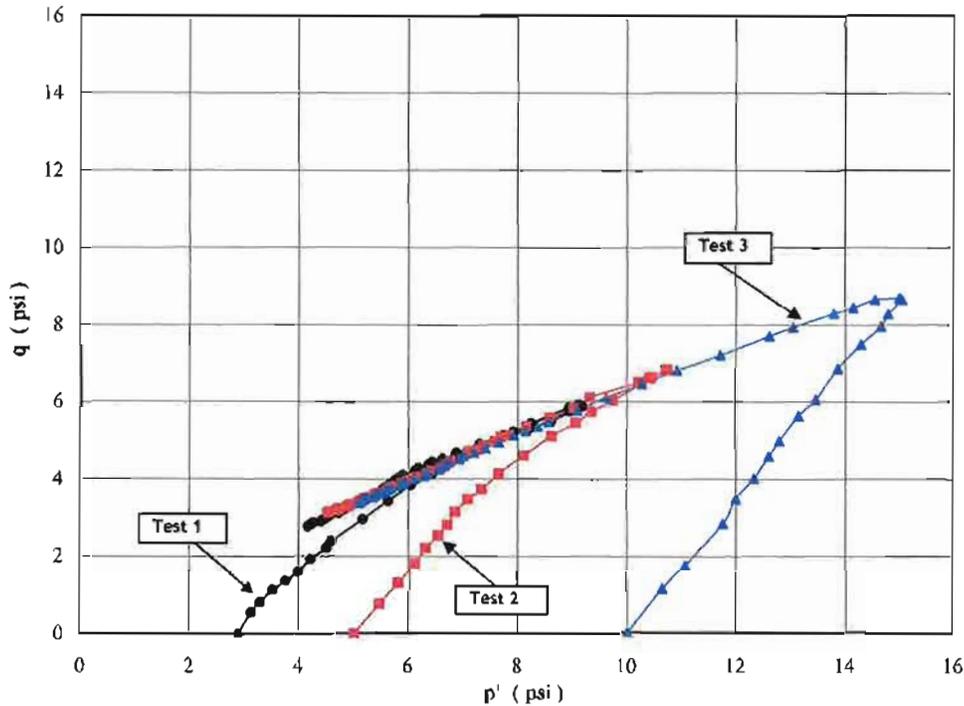
Site Sample ID: CS-09

Lab Sample No: K030

ASTM D 4767

**CONSOLIDATED-UNDRAINED (CU) TRIAXIAL TEST
WITH PORE PRESSURE MEASUREMENTS**

Figure 2



Test Specimen No.	Initial Conditions							Strain Rate (% / min)	Specimen Quality Bad to Good (1 to 10)
	Height (in.)	Diameter (in.)	Moisture Content (%)	Dry Unit Weight (pcf)	B Parameter (-)	u_0 (psi)	σ'_c (psi)		
1	6.00	2.83	11.0	109.1	0.96	70.0	2.9	0.133	7
2	6.00	2.83	11.0	108.7	0.95	70.0	5.0	0.150	7
3	6.00	2.83	10.8	109.2	0.95	70.0	10.0	0.133	7



Specimen No 1



Specimen No 2



Specimen No 3

Notes.

u_0 = Initial pore pressure, (psi)

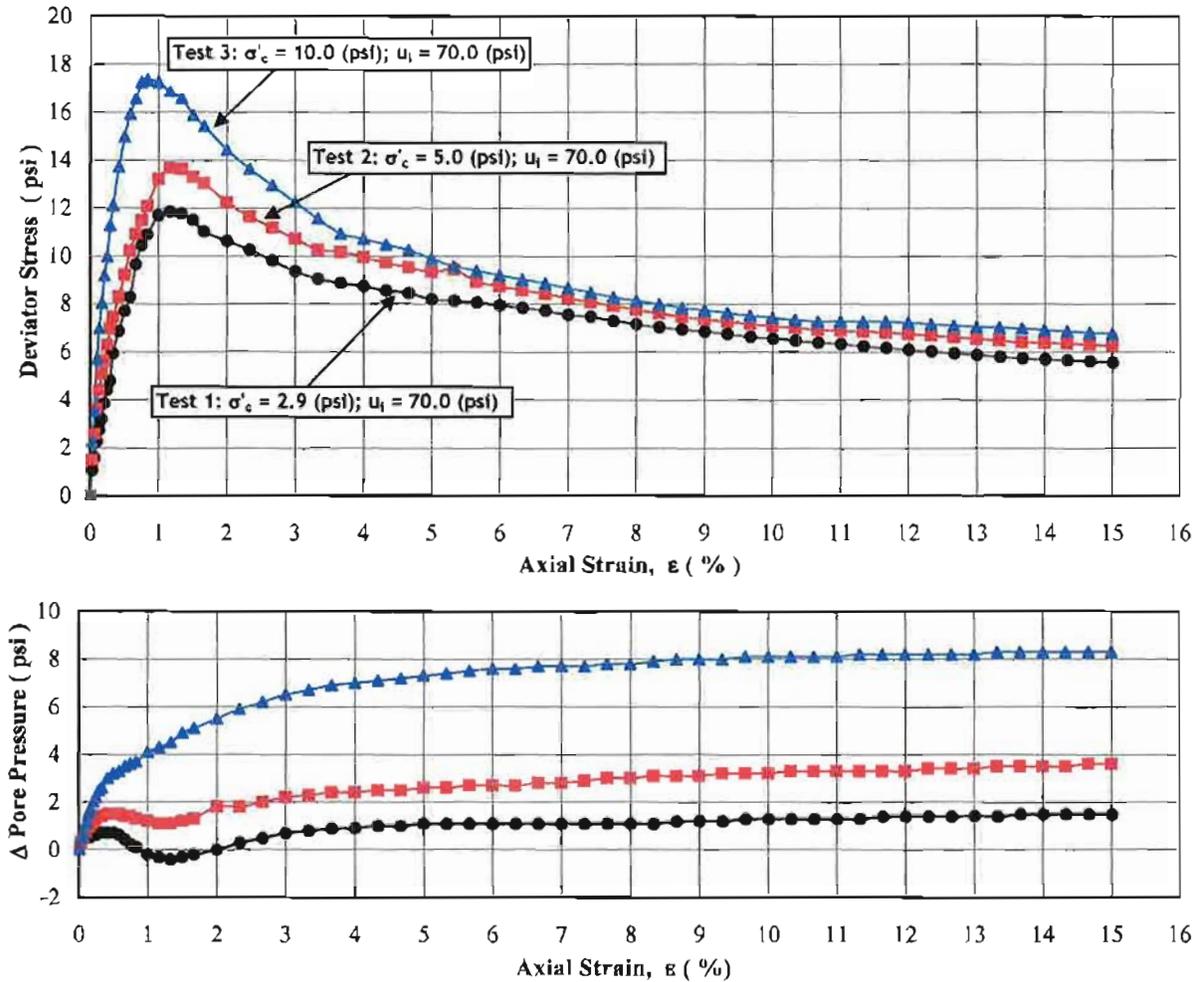
σ'_c = Consolidation pressure, (psi)



ASTM D 4767

**CONSOLIDATED-UNDRAINED (CU) TRIAXIAL TEST
 WITH PORE PRESSURE MEASUREMENTS**

Figure 1



Test Specimen No	Maximum Strength				
	$\sigma'_1 - \sigma'_3$	σ'_1	σ'_3	u	ϵ_a
	(psi)	(psi)	(psi)	(psi)	(%)
1	12.0	15.3	3.3	69.6	1.3
2	13.4	17.3	3.9	71.1	1.3
3	17.4	23.7	6.3	73.7	0.8

Test Specimen No.	Strength at App 15% Axial Strain				
	$\sigma'_1 - \sigma'_3$	σ'_1	σ'_3	u	ϵ_a
	(psi)	(psi)	(psi)	(psi)	(%)
1	5.5	6.9	1.4	71.5	15.0
2	6.3	7.7	1.4	73.6	15.0
3	6.8	8.5	1.7	78.3	15.0

Notes:

σ'_c = Consolidation pressure, (psi)

σ'_1 = Effective axial stress, (psi)

u = Pore pressure, (psi)

u_i = Initial pore pressure, (psi)

σ'_3 = Effective radial stress (confining pressure), (psi)

ϵ_c = Axial strain, (%)

$\sigma'_1 - \sigma'_3$ = Deviator stress, (psi)

Written by: K. Botelho

Date: 23, 11, 09
DD MM YY

Reviewed by: S.F.L.

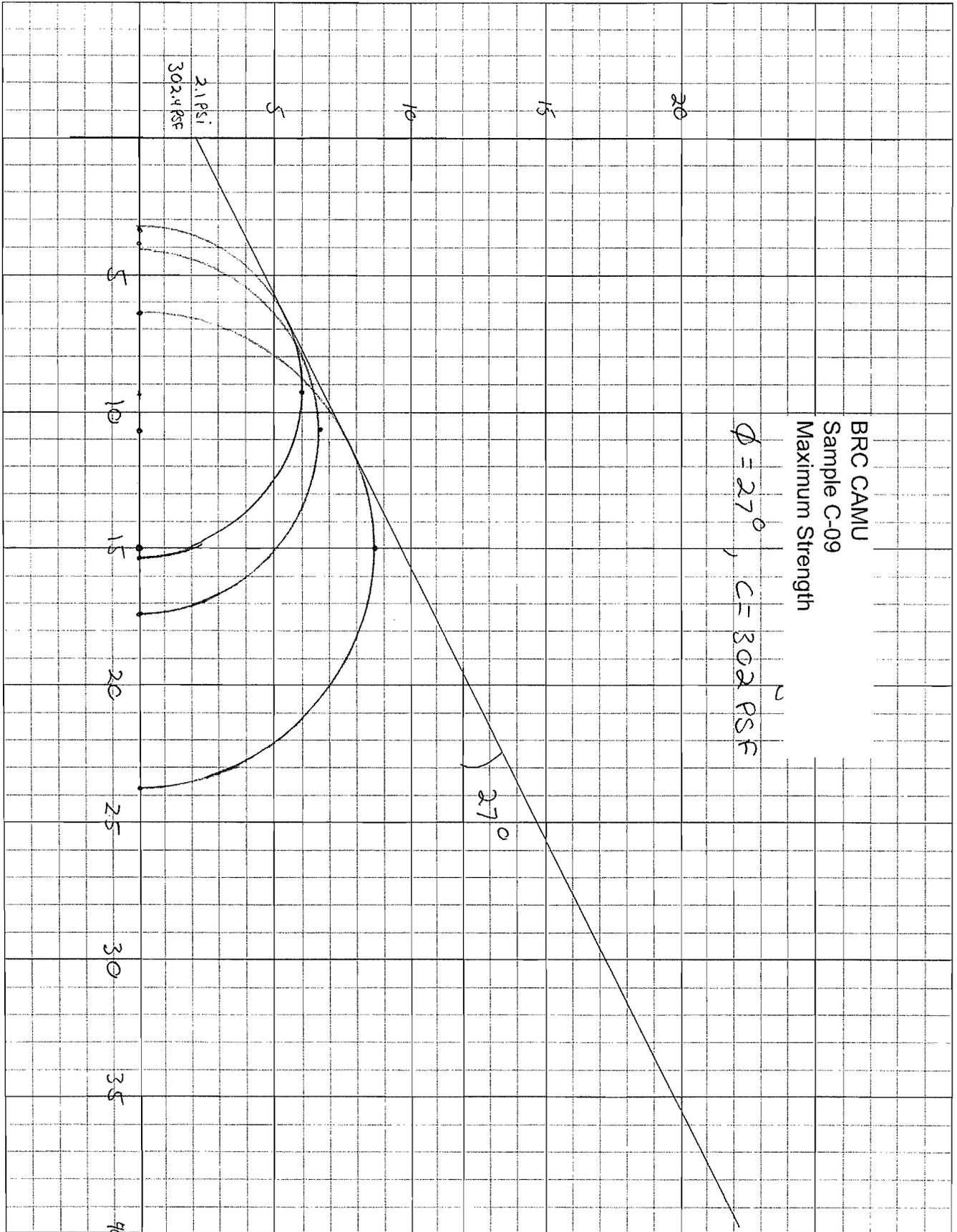
Date: 23, 11, 09
DD MM YY

Client: BRC

Project: CAMU

Project/Proposal No. SC0313

Task No. 10



Written by: K. Botelho

Date: 23/11/09
DD MM YY

Reviewed by: S. Fitz

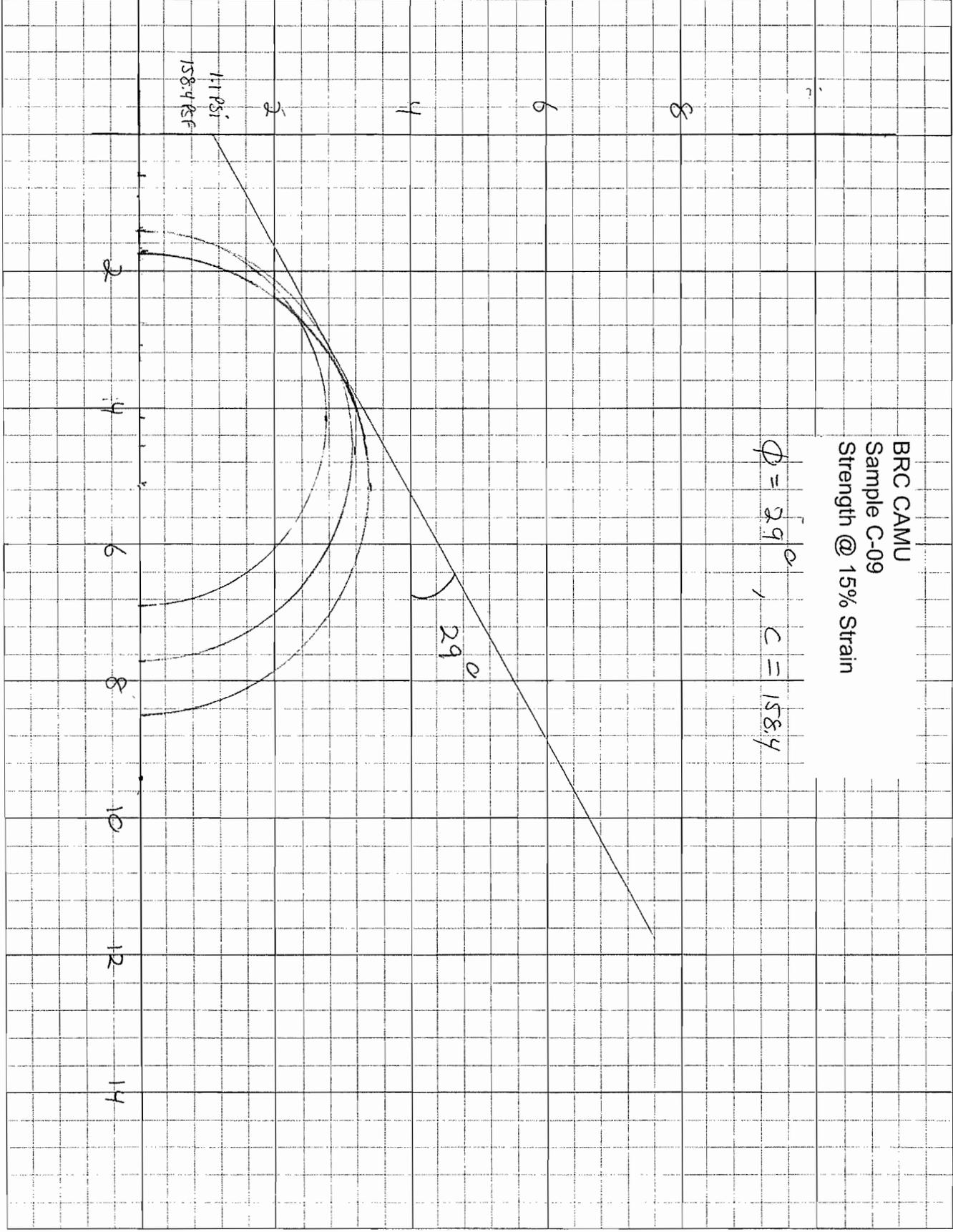
Date: 23/11/09
DD MM YY

Client: BRC

Project: CAMU

Project/Proposal No. SC0313

Task No. 10



APPENDIX D
Geosynthetic Clay Liner

APPENDIX D-1
Material Inventory Logs

Summary of GCL Inventory, MQA/MQC, and Conformance Test Data

BRC CAMU

Henderson, Nevada

GCL Lot No.	GCL Roll No.	Clay lot No.	Area (SF)	Manufacturer Quality Control Testing					CQA Conformance Testing				Approved	
				Bentonite Content	Bentonite Swell Index ²	Bentonite Fluid Loss ²	Index Flux	Moisture Content	Mass per unit area	Moisture Content	Index Flux	Cover Interface Shear		
				0.75	24.0	18.0	1.00E-08	25% (30%)	0.75	30	1.00E-08	20		
				lb/sq. ft	minimum mL/2g	maximum mL	maximum m ² /m ² -2	maximum %	lb/sq. ft	percent maximum	m ² /m ² -2	degrees		
				1/50,000 ^b	NS	NS	1/200,000 ^b	1/100,000 ^b	1/100,000 ^b	NS	1/400,000 ^b	1/400,000 ^b		
200849LO	00013004	101708B	2,900		25.0	14.8							31	Y
200910LO	00001142	021009D	2,900	0.93	27.0	15.2	5.42E-09	26.2						Y
200910LO	00001143	021009D	2,900		27.0	15.2			1	23	3.3E-09			Y
200910LO	00001144	021009D	2,900		27.0	15.2								Y
200910LO	00001145	021009D	2,900		27.0	15.2								Y
200910LO	00001146	021009D	2,900		27.0	15.2								Y
200910LO	00001147	021009D	2,900		27.0	15.2								Y
200910LO	00001149	021009D	2,900		27.0	15.2								Y
200910LO	00001150	021009D	2,900		27.0	15.2								Y
200910LO	00001151	021009D	2,900		27.0	15.2								Y
200910LO	00001152	021009D	2,900		27.0	15.2								Y
200910LO	00001153	021009D	2,900		27.0	15.2								Y
200910LO	00001154	021009D	2,900		27.0	15.2								Y
200910LO	00001155	021009D	2,900	0.92	27.0	15.2		29.7						Y
200910LO	00001156	021109B	2,900		27.0	14.2							27	Y
200910LO	00001157	021109B	2,900		27.0	14.2								Y
200910LO	00001158	021109B	2,900		27.0	14.2								Y
200910LO	00001159	021109B	2,900		27.0	14.2								Y
200910LO	00001160	021109B	2,900		27.0	14.2								Y
200910LO	00001161	021109B	2,900		27.0	14.2								Y
200910LO	00001162	021109B	2,900		27.0	14.2								Y
200910LO	00001163	021109B	2,900		27.0	14.2								Y
200910LO	00001164	021109B	2,900		27.0	14.2								Y
200910LO	00001165	021109B	2,900		27.0	14.2								Y
200910LO	00001166	021109B	2,900		27.0	14.2								Y
200910LO	00001167	021109B	2,900		27.0	14.2								Y
200910LO	00001168	021109B	2,900	0.86	27.0	14.2		26.8						Y
200910LO	00001169	021109B	2,900		27.0	14.2								Y
200910LO	00001170	021109B	2,900		27.0	14.2								Y
200910LO	00001171	021109C	2,900		26.0	15.0								Y
200910LO	00001172	021109C	2,900		26.0	15.0								Y
200910LO	00001173	021109C	2,900		26.0	15.0								Y
200910LO	00001174	021109C	2,900		26.0	15.0								Y
200910LO	00001175	021109C	2,900		26.0	15.0								Y
200910LO	00001176	021109C	2,900		26.0	15.0								Y
200910LO	00001177	021109C	2,900		26.0	15.0			0.96	23.4				Y
200910LO	00001178	021109C	2,900		26.0	15.0								Y
200910LO	00001179	021109C	2,900		26.0	15.0								Y
200910LO	00001180	021109C	2,900		26.0	15.0								Y
200910LO	00001181	021109C	2,900	0.93	26.0	15.0		25.5						Y
200910LO	00001182	021109C	2,900		26.0	15.0								Y
200910LO	00001183	021109C	2,900		26.0	15.0								Y
200910LO	00001184	021109C	2,900		26.0	15.0								Y
200910LO	00001185	021109C	2,900		26.0	15.0								Y
200910LO	00001186	021109C	2,900		26.0	15.0								Y
200910LO	00001187	021109C	2,900		26.0	15.0								Y
200910LO	00001188	021109C	2,900		26.0	15.0								Y
200910LO	00001189	021109C	2,900		26.0	15.0								Y
200910LO	00001190	021109C	2,900		26.0	15.0								Y
200910LO	00001191	021109C	2,900		26.0	15.0								Y
200910LO	00001192	021109C	2,900		26.0	15.0								Y
200910LO	00001193	021109C	2,900		26.0	15.0								Y

Summary of GCL Inventory, MQA/MQC, and Conformance Test Data

BRC CAMU

Henderson, Nevada

GCL Lot No.	GCL Roll No.	Clay lot No.	Area (SF)	Manufacturer Quality Control Testing					CQA Conformance Testing				Approved	
				Bentonite Content	Bentonite Swell Index ²	Bentonite Fluid Loss ²	Index Flux	Moisture Content	Mass per unit area	Moisture Content	Index Flux	Cover Interface Shear		
				0.75	24.0	18.0	1.00E-08	25% (30%)	0.75	30	1.00E-08	20		
				lb/sq. ft	minimum	maximum	maximum	maximum	lb/sq. ft	percent	m ² /m ² -2	degrees		
				1/50,000 ^b	mL/2g	mL	m ² /m ² -2	%	1/100,000 ^b	NS	1/400,000 ^b	1/400,000 ^b		
200910LO	00001194	021109C	2,900	0.93	26.0	15.0		24.8						Y
200910LO	00001195	021109C	2,900		26.0	15.0								Y
200910LO	00001196	021109C	2,900		26.0	15.0								Y
200910LO	00001197	021109C	2,900		26.0	15.0								Y
200910LO	00001198	021109C	2,900		26.0	15.0								Y
200910LO	00001199	021109C	2,900		26.0	15.0								Y
200910LO	00001200	021109C	2,900		26.0	15.0								Y
200910LO	00001201	021209A	2,900		25.0	15.4								Y
200910LO	00001202	021209A	2,900		25.0	15.4								Y
200910LO	00001203	021209A	2,900		25.0	15.4								Y
200910LO	00001204	021209A	2,900		25.0	15.4								Y
200910LO	00001205	021209A	2,900		25.0	15.4								Y
200910LO	00001206	021209A	2,900		25.0	15.4								Y
200910LO	00001207	021209A	2,900	0.86	25.0	15.4	8.14E-09	24.7						Y
200910LO	00001208	021209A	2,900		25.0	15.4								Y
200910LO	00001209	021209A	2,900		25.0	15.4								Y
200910LO	00001210	021209A	2,900		25.0	15.4								Y
200910LO	00001211	021209A	2,900		25.0	15.4			0.91	22.6				Y
200910LO	00001212	021209A	2,900		25.0	15.4								Y
200910LO	00001213	021209A	2,900		25.0	15.4								Y
200910LO	00001214	021209A	2,900		25.0	15.4								Y
200910LO	00001215	021209A	2,900		25.0	15.4								Y
200910LO	00001216	021209A	2,900		25.0	15.4								Y
200910LO	00001217	021209A	2,900		25.0	15.4								Y
200910LO	00001218	021209A	2,900		25.0	15.4								Y
200910LO	00001219	021209A	2,900		25.0	15.4								Y
200910LO	00001220	021209A	2,900	0.90	25.0	15.4		24.1						Y
200910LO	00001221	021209A	2,900		25.0	15.4								Y
200910LO	00001222	021209A	2,900		25.0	15.4								Y
200910LO	00001223	021209A	2,900		25.0	15.4								Y
200910LO	00001224	021209B	2,900	0.90	27.0	14.8		25.1						Y
200910LO	00001225	021209B	2,900		27.0	14.8								Y
200910LO	00001226	021209B	2,900		27.0	14.8								Y
200910LO	00001227	021209B	2,900		27.0	14.8								Y
200910LO	00001228	021209B	2,900		27.0	14.8								Y
200910LO	00001229	021209B	2,900		27.0	14.8								Y
200910LO	00001230	021209B	2,900		27.0	14.8								Y
200910LO	00001231	021209B	2,900		27.0	14.8								Y
200910LO	00001232	021209B	2,900		27.0	14.8								Y
200910LO	00001233	021209B	2,900		27.0	14.8								Y
200910LO	00001234	021209B	2,900		27.0	14.8								Y
200910LO	00001235	021209B	2,900		27.0	14.8								Y
200910LO	00001236	021209B	2,900		27.0	14.8								Y
200910LO	00001237	021209B	2,900	0.89	27.0	14.8		25.1						Y
200910LO	00001238	021209B	2,900		27.0	14.8								Y
200910LO	00001239	021209B	2,900		27.0	14.8								Y
200910LO	00001240	021209B	2,900		27.0	14.8								Y
200910LO	00001241	021209B	2,900		27.0	14.8								Y
200910LO	00001242	021209B	2,900		27.0	14.8								Y
200910LO	00001243	021209B	2,900		27.0	14.8								Y
200910LO	00001244	021209B	2,900		27.0	14.8								Y
200910LO	00001245	021209B	2,900		27.0	14.8			0.93	21.9				Y

Summary of GCL Inventory, MQA/MQC, and Conformance Test Data

BRC CAMU

Henderson, Nevada

GCL Lot No.	GCL Roll No.	Clay lot No.	Area (SF)	Manufacturer Quality Control Testing					CQA Conformance Testing				Approved	
				Bentonite Content	Bentonite Swell Index ²	Bentonite Fluid Loss ²	Index Flux	Moisture Content	Mass per unit area	Moisture Content	Index Flux	Cover Interface Shear		
				0.75	24.0	18.0	1.00E-08	25% (30%)	0.75	30	1.00E-08	20		
				lb/sq. ft	minimum mL/2g	maximum mL	maximum m ² /m ² -2	maximum %	lb/sq. ft	percent maximum	m ² /m ² -2	degrees		
				1/50,000 ^b	NS	NS	1/200,000 ^b	1/100,000 ^b	1/100,000 ^b	NS	1/400,000 ^b	1/400,000 ^b		
200910LO	00001298	021609A	2,900		27.0	14.8								Y
200910LO	00001299	021609A	2,900		27.0	14.8								Y
200910LO	00001300	021609A	2,900		27.0	14.8								Y
200910LO	00001301	021609A	2,900		27.0	14.8								Y
200910LO	00001302	021609A	2,900	1.00	27.0	14.8		24.4						Y
200910LO	00001303	021609A	2,900		27.0	14.8								Y
200910LO	00001304	021609A	2,900		27.0	14.8								Y
200910LO	00001305	021609A	2,900		27.0	14.8								Y
200910LO	00001306	021609A	2,900		27.0	14.8								Y
200910LO	00001307	021609A	2,900		27.0	14.8								Y
200910LO	00001308	021609A	2,900		27.0	14.8								Y
200910LO	00001309	021609A	2,900		27.0	14.8								Y
200910LO	00001310	021609A	2,900		27.0	14.8								Y
200910LO	00001311	021609A	2,900		27.0	14.8								Y
200910LO	00001312	021609A	2,900		27.0	14.8								Y
200910LO	00001313	021609A	2,900		27.0	14.8		0.97	22.4					Y
200910LO	00001314	021709A	2,900		26.0	15.0								Y
200910LO	00001315	021709A	2,900	0.95	26.0	15.0		26.8						Y
200910LO	00001316	021709A	2,900		26.0	15.0								Y
200910LO	00001317	021709A	2,900		26.0	15.0								Y
200910LO	00001318	021709A	2,900		26.0	15.0								Y
200910LO	00001319	021709A	2,900		26.0	15.0								Y
200910LO	00001320	021709A	2,900		26.0	15.0								Y
200910LO	00001321	021709A	2,900		26.0	15.0								Y
200910LO	00001322	021709A	2,900		26.0	15.0								Y
200910LO	00001323	021709A	2,900		26.0	15.0								Y
200910LO	00001324	021709A	2,900		26.0	15.0								Y
200910LO	00001325	021709A	2,900		26.0	15.0								Y
200910LO	00001326	021709A	2,900		26.0	15.0								Y
200910LO	00001327	021709A	2,900		26.0	15.0								Y
200910LO	00001328	021709A	2,900	0.89	26.0	15.0		27.3						Y
200910LO	00001329	021709A	2,900		26.0	15.0								Y
200910LO	00001330	021709A	2,900		26.0	15.0								Y
200910LO	00001331	021709A	2,900		26.0	15.0								Y
200910LO	00001332	021709A	2,900		26.0	15.0								Y
200910LO	00001333	021709A	2,900		26.0	15.0								Y
200910LO	00001334	021709A	2,900		26.0	15.0								Y
200910LO	00001335	021709A	2,900		26.0	15.0								Y
200910LO	00001336	021709A	2,900		26.0	15.0								Y
200910LO	00001337	021709A	2,900		26.0	15.0								Y
200910LO	00001338	021709A	2,900		26.0	15.0								Y
200910LO	00001339	021709A	2,900		26.0	15.0								Y
200910LO	00001340	021709A	2,900		26.0	15.0								Y
200910LO	00001341	021709A	2,900	0.91	26.0	15.0		27.0						Y
200910LO	00001342	021709A	2,900		26.0	15.0								Y
200910LO	00001343	021709A	2,900		26.0	15.0								Y
200910LO	00001344	021709A	2,900		26.0	15.0								Y
200910LO	00001345	021809A	2,900		25.0	13.0								Y
200910LO	00001346	021809A	2,900		25.0	13.0								Y
200910LO	00001347	021809A	2,900		25.0	13.0		0.85	25.1					Y
200910LO	00001348	021809A	2,900		25.0	13.0	6.00E-09							Y
200910LO	00001349	021809A	2,900		25.0	13.0								Y

Summary of GCL Inventory, MQA/MQC, and Conformance Test Data

BRC CAMU

Henderson, Nevada

GCL Lot No.	GCL Roll No.	Clay lot No.	Area (SF)	Manufacturer Quality Control Testing					CQA Conformance Testing				Approved	
				Bentonite Content	Bentonite Swell Index ²	Bentonite Fluid Loss ²	Index Flux	Moisture Content	Mass per unit area	Moisture Content	Index Flux	Cover Interface Shear		
				0.75	24.0	18.0	1.00E-08	25% (30%)	0.75	30	1.00E-08	20		
				lb/sq. ft	minimum mL/2g	maximum mL	maximum m ² /m ² -2	maximum %	lb/sq. ft	percent maximum	m ² /m ² -2	degrees		
				1/50,000 ^b	NS	NS	1/200,000 ^b	1/100,000 ^b	1/100,000 ^b	NS	1/400,000 ^b	1/400,000 ^b		
200910LO	00001350	021809A	2,900		25.0	13.0								Y
200910LO	00001351	021809A	2,900		25.0	13.0								Y
200910LO	00001352	021809A	2,900		25.0	13.0								Y
200910LO	00001353	021809A	2,900		25.0	13.0								Y
200910LO	00001354	021809A	2,900	0.91	25.0	13.0		26.3						Y
200910LO	00001355	021809A	2,900		25.0	13.0								Y
200910LO	00001356	021809A	2,900		25.0	13.0								Y
200910LO	00001357	021809A	2,900		25.0	13.0								Y
200910LO	00001358	021809A	2,900		25.0	13.0								Y
200910LO	00001359	021809A	2,900		25.0	13.0								Y
200910LO	00001360	021809A	2,900		25.0	13.0								Y
200910LO	00001361	021809A	2,900		25.0	13.0								Y
200910LO	00001362	021809A	2,900		25.0	13.0								Y
200910LO	00001363	021809A	2,900		25.0	13.0								Y
200910LO	00001364	021809A	2,900		25.0	13.0								Y
200910LO	00001365	021809A	2,900		25.0	13.0								Y
200910LO	00001366	021809A	2,900		25.0	13.0								Y
200910LO	00001367	021809A	2,900	0.90	25.0	13.0		26.7						Y
200910LO	00001368	021809A	2,900		25.0	13.0								Y
200910LO	00001369	021809A	2,900		25.0	13.0								Y
200910LO	00001370	021809A	2,900		25.0	13.0								Y
200910LO	00001371	021809A	2,900		25.0	13.0								Y
200910LO	00001372	021809A	2,900		25.0	13.0								Y
200910LO	00001373	021809A	2,900		25.0	13.0								Y
200910LO	00001374	021809A	2,900		25.0	13.0								Y
200910LO	00001375	021809B	2,900		24.0	13.0								Y
200910LO	00001376	021809B	2,900		24.0	13.0								Y
200910LO	00001377	021809B	2,900		24.0	13.0								Y
200910LO	00001378	021809B	2,900		24.0	13.0								Y
200910LO	00001379	021809B	2,900		24.0	13.0								Y
200910LO	00001380	021809B	2,900	0.82	24.0	13.0		25.6						Y
200910LO	00001381	021809B	2,900		24.0	13.0			1.01	22.8				Y
200910LO	00001382	021809B	2,900		24.0	13.0								Y
200910LO	00001383	021809B	2,900		24.0	13.0								Y
200910LO	00001384	021809B	2,900		24.0	13.0								Y
200910LO	00001385	021809B	2,900		24.0	13.0								Y
200910LO	00001386	021809B	2,900		24.0	13.0								Y
200910LO	00001387	021809B	2,900		24.0	13.0								Y
200910LO	00001388	021809B	2,900		24.0	13.0								Y
200910LO	00001389	021809B	2,900		24.0	13.0								Y
200910LO	00001390	021809B	2,900		24.0	13.0								Y
200910LO	00001391	021809B	2,900		24.0	13.0								Y
200910LO	00001392	021809B	2,900		24.0	13.0								Y
200910LO	00001393	021809B	2,900	0.87	24.0	13.0	3.43E-09	25.5						Y
200910LO	00001394	021809B	2,900		24.0	13.0								Y
200910LO	00001395	021809B	2,900		24.0	13.0								Y
200910LO	00001396	021809B	2,900		24.0	13.0								Y
200910LO	00001397	021809B	2,900		24.0	13.0								Y
200910LO	00001398	021809B	2,900		24.0	13.0								Y
200910LO	00001399	021809B	2,900		24.0	13.0								Y
200910LO	00001400	021809B	2,900		24.0	13.0								Y
200910LO	00001401	021809B	2,900		24.0	13.0								Y

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GCL Lot No.	GCL Roll No.	Clay lot No.	Area (SF)	Manufacturer Quality Control Testing					CQA Conformance Testing				Approved	
				Bentonite Content	Bentonite Swell Index ²	Bentonite Fluid Loss ²	Index Flux	Moisture Content	Mass per unit area	Moisture Content	Index Flux	Cover Interface Shear		
				0.75	24.0	18.0	1.00E-08	25% (30%)	0.75	30	1.00E-08	20		
				lb/sq. ft	minimum mL/2g	maximum mL	maximum m ² /m ² -2	maximum %	lb/sq. ft	percent maximum	m ² /m ² -2	degrees		
				1/50,000 ^b	NS	NS	1/200,000 ^b	1/100,000 ^b	1/100,000 ^b	NS	1/400,000 ^b	1/400,000 ^b		
200910LO	00001402	021809B	2,900		24.0	13.0								Y
200910LO	00001403	021809B	2,900		24.0	13.0								Y
200910LO	00001404	021809B	2,900		24.0	13.0								Y
200910LO	00001405	021809B	2,900		24.0	13.0								Y
200910LO	00001406	021809B	2,900	0.98	24.0	13.0		25.6						Y
200910LO	00001407	021809B	2,900		24.0	13.0								Y
200910LO	00001408	021809B	2,900		24.0	13.0								Y
200910LO	00001409	021909A	2,900		27.0	13.0								Y
200910LO	00001410	021909A	2,900		27.0	13.0								Y
200910LO	00001411	021909A	2,900		27.0	13.0								Y
200910LO	00001412	021909A	2,900	0.87	27.0	13.0		28.1						Y
200910LO	00001413	021909A	2,900		27.0	13.0								Y
200910LO	00001414	021909A	2,900		27.0	13.0								Y
200910LO	00001415	021909A	2,900		27.0	13.0			0.96	24.7	3.7E-09			Y
200910LO	00001416	021909A	2,900		27.0	13.0								Y
200910LO	00001417	021909A	2,900		27.0	13.0								Y
200910LO	00001418	021909A	2,900		27.0	13.0								Y
200910LO	00001419	021909A	2,900		27.0	13.0								Y
200910LO	00001420	021909A	2,900		27.0	13.0								Y
200910LO	00001421	021909A	2,900		27.0	13.0								Y
200910LO	00001422	021909A	2,900		27.0	13.0								Y
200910LO	00001423	021909A	2,900		27.0	13.0								Y
200910LO	00001424	021909A	2,900		27.0	13.0								Y
200910LO	00001425	021909A	2,900	0.84	27.0	13.0		28.5						Y
200910LO	00001426	021909A	2,900		27.0	13.0								Y
200910LO	00001427	021909A	2,900		27.0	13.0								Y
200910LO	00001428	021909A	2,900		27.0	13.0								Y
200910LO	00001429	021909A	2,900		27.0	13.0								Y
200910LO	00001430	021909A	2,900	0.88	27.0	13.0		29.5						Y
200910LO	00001431	021909A	2,900		27.0	13.0								Y
200910LO	00001432	021909A	2,900		27.0	13.0								Y
200910LO	00001433	021909A	2,900		27.0	13.0								Y
200910LO	00001434	021909A	2,900		27.0	13.0							27	Y
200910LO	00001435	021909A	2,900		27.0	13.0								Y
200910LO	00001436	021909A	2,900		27.0	13.0								Y
200910LO	00001437	021909A	2,900		27.0	13.0								Y
200910LO	00001438	021909A	2,900		27.0	13.0								Y
200910LO	00001439	021909A	2,900		27.0	13.0								Y
200910LO	00001440	021909A	2,900		27.0	13.0								Y
200910LO	00001441	021909A	2,900		27.0	13.0								Y
200910LO	00001442	021909B	2,900		24.0	14.8								Y
200910LO	00001443	021909B	2,900	0.96	24.0	14.8		25.9						Y
200910LO	00001444	021909B	2,900		24.0	14.8								Y
200910LO	00001445	021909B	2,900		24.0	14.8								Y
200910LO	00001446	021909B	2,900		24.0	14.8								Y
200910LO	00001447	021909B	2,900		24.0	14.8								Y
200910LO	00001448	021909B	2,900		24.0	14.8								Y
200910LO	00001449	021909B	2,900		24.0	14.8			0.88	25.2				Y
200910LO	00001450	021909B	2,900		24.0	14.8								Y
200910LO	00001451	021909B	2,900		24.0	14.8								Y
200910LO	00001452	021909B	2,900		24.0	14.8								Y
200910LO	00001453	021909B	2,900		24.0	14.8								Y

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				Bentonite Content	Bentonite Swell Index ²	Bentonite Fluid Loss ⁷	Index Flux	Moisture Content	Mass per unit area	Moisture Content	Index Flux	Cover Interface Shear	
				0.75	24.0	18.0	1.00E-08	25% (30%)	0.75	30	1.00E-08	20	
				lb/sq. ft	minimum mL/2g	maximum mL	maximum m ² /m ² -2	maximum %	lb/sq. ft	percent maximum	m ² /m ² -2	degrees	
				1/50,000 ⁶	NS	NS	1/200,000 ⁶	1/100,000 ⁶	1/100,000 ⁶	NS	1/400,000 ⁶	1/400,000 ⁶	
200910LO	00001454	021909B	2,900		24.0	14.8							Y
200910LO	00001455	021909B	2,900		24.0	14.8							Y
200910LO	00001456	021909B	2,900	0.95	24.0	14.8		26.3					Y
200910LO	00001457	021909B	2,900		24.0	14.8							Y
200910LO	00001458	021909B	2,900		24.0	14.8							Y
200910LO	00001459	021909B	2,900		24.0	14.8							Y
200910LO	00001460	021909B	2,900		24.0	14.8							Y
200910LO	00001461	021909B	2,900		24.0	14.8							Y
200910LO	00001462	021909B	2,900		24.0	14.8							Y
200910LO	00001463	021909B	2,900		24.0	14.8							Y
200910LO	00001464	021909B	2,900		24.0	14.8							Y
200910LO	00001465	021909B	2,900		24.0	14.8							Y
200910LO	00001466	021909B	2,900		24.0	14.8							Y
200910LO	00001467	021909B	2,900		24.0	14.8							Y
200910LO	00001468	021909B	2,900		24.0	14.8							Y
200910LO	00001469	021909B	2,900	0.97	24.0	14.8		24.7					Y
200910LO	00001470	021909B	2,900		24.0	14.8							Y
200910LO	00001471	021909B	2,900		24.0	14.8							Y
200910LO	00001472	021909B	2,900		24.0	14.8							Y
200910LO	00001473	021909B	2,900		24.0	14.8							Y
200910LO	00001474	021909B	2,900		24.0	14.8							Y
200910LO	00001475	021909B	2,900		24.0	14.8							Y
200910LO	00001476	022009A	2,900		24.0	14.6							Y
200910LO	00001477	022009A	2,900		24.0	14.6							Y
200910LO	00001478	022009A	2,900		24.0	14.6							Y
200910LO	00001479	022009A	2,900		24.0	14.6							Y
200917LO	00002420	042109B	2,900		26.0	17.0							Y
200917LO	00002421	042109B	2,900		26.0	17.0							Y
200917LO	00002422	042109B	2,900		26.0	17.0							Y
200917LO	00002423	042109B	2,900		26.0	17.0							Y
200917LO	00002424	042109B	2,900		26.0	17.0							Y
200917LO	00002425	042109B	2,900		26.0	17.0							Y
200917LO	00002426	042109B	2,900		26.0	17.0							Y
200917LO	00002427	042109B	2,900		26.0	17.0							Y
200917LO	00002428	042109B	2,900		26.0	17.0							Y
200917LO	00002429	042109B	2,900		26.0	17.0		0.92	22.5	3.1E-09			Y
200917LO	00002430	042109B	2,900		26.0	17.0							Y
200917LO	00002431	042109B	2,900		26.0	17.0		24.1					Y
200917LO	00002432	042109B	2,900		26.0	17.0						37	Y
200917LO	00002433	042109B	2,900		26.0	17.0							Y
200917LO	00002434	042109C	2,900		28.0	17.0							Y
200917LO	00002435	042109C	2,900		28.0	17.0							Y
200917LO	00002436	042109C	2,900		28.0	17.0	6.56E-09						Y
200917LO	00002437	042109C	2,900		28.0	17.0							Y
200917LO	00002438	042109C	2,900		28.0	17.0							Y
200917LO	00002439	042109C	2,900		28.0	17.0							Y
200917LO	00002440	042109C	2,900		28.0	17.0							Y
200917LO	00002441	042109C	2,900		28.0	17.0							Y
200917LO	00002442	042109C	2,900		28.0	17.0							Y
200917LO	00002443	042109C	2,900		28.0	17.0		24.9					Y
200917LO	00002444	042109C	2,900		28.0	17.0							Y
200917LO	00002445	042109C	2,900		28.0	17.0							Y

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GCL Lot No.	GCL Roll No.	Clay lot No.	Area (SF)	Manufacturer Quality Control Testing					CQA Conformance Testing				Approved	
				Bentonite Content	Bentonite Swell Index ²	Bentonite Fluid Loss ²	Index Flux	Moisture Content	Mass per unit area	Moisture Content	Index Flux	Cover Interface Shear		
				0.75	24.0	18.0	1.00E-08	25% (30%)	0.75	30	1.00E-08	20		
				lb/sq. ft	minimum mL/2g	maximum mL	maximum m ² /m ² -2	maximum %	lb/sq. ft	percent maximum	m ² /m ² -2	degrees		
				1/50,000 ^b	NS	NS	1/200,000 ^b	1/100,000 ^b	1/100,000 ^b	NS	1/400,000 ^b	1/400,000 ^b		
200922LO	00003151	051509A	2,900		26.0	14.8								Y
200922LO	00003152	051509A	2,900		26.0	14.8								Y
200922LO	00003153	051509A	2,900		26.0	14.8								Y
200922LO	00003154	051509B	2,900		25.0	14.8								Y
200922LO	00003155	051509B	2,900		25.0	14.8								Y
200922LO	00003156	051509B	2,900		25.0	14.8								Y
200922LO	00003157	051509B	2,900		25.0	14.8								Y
200922LO	00003158	051509B	2,900		25.0	14.8								Y
200922LO	00003159	051509B	2,900		25.0	14.8								Y
200922LO	00003160	051509B	2,900		25.0	14.8								Y
200922LO	00003161	051509B	2,900		25.0	14.8		0.84	24.3					Y
200922LO	00003162	051509B	2,900		25.0	14.8								Y
200922LO	00003163	051509B	2,900		25.0	14.8								Y
200922LO	00003164	051509B	2,900	0.84	25.0	14.8	27.2							Y
200922LO	00003165	051509B	2,900		25.0	14.8								Y
200922LO	00003166	051509B	2,900		25.0	14.8								Y
200922LO	00003167	051509B	2,900		25.0	14.8								Y
200922LO	00003168	051509B	2,900		25.0	14.8								Y
200922LO	00003169	051509B	2,900		25.0	14.8								Y
200922LO	00003170	051509B	2,900		25.0	14.8								Y
200922LO	00003171	051509B	2,900		25.0	14.8								Y
200922LO	00003172	051509B	2,900		25.0	14.8								Y
200922LO	00003173	051509B	2,900		25.0	14.8								Y
200922LO	00003174	051509B	2,900		25.0	14.8								Y
200922LO	00003175	051509B	2,900		25.0	14.8								Y
200922LO	00003176	051509B	2,900		25.0	14.8								Y
200922LO	00003177	051509B	2,900	0.95	25.0	14.8	24.9							Y
200922LO	00003178	051509B	2,900		25.0	14.8								Y
200922LO	00003179	051509B	2,900		25.0	14.8								Y
200922LO	00003180	051509B	2,900		25.0	14.8								Y
200922LO	00003181	051509B	2,900		25.0	14.8								Y
200922LO	00003182	051509B	2,900		25.0	14.8								Y
200922LO	00003183	051509B	2,900		25.0	14.8								Y
200922LO	00003184	051509C	2,900		27.0	15.6								Y
200922LO	00003185	051509C	2,900		27.0	15.6								Y
200922LO	00003186	051509C	2,900		27.0	15.6								Y
200922LO	00003187	051509C	2,900		27.0	15.6								Y
200922LO	00003188	051509C	2,900		27.0	15.6								Y
200922LO	00003189	051509C	2,900		27.0	15.6								Y
200922LO	00003190	051509C	2,900	0.93	27.0	15.6	9.12E-09	24.6						Y
200922LO	00003191	051509C	2,900		27.0	15.6								Y
200922LO	00003192	051509C	2,900		27.0	15.6								Y
200922LO	00003193	051509C	2,900		27.0	15.6								Y
200922LO	00003194	051509C	2,900		27.0	15.6								Y
200922LO	00003195	051509C	2,900		27.0	15.6		0.96	23.1					Y
200922LO	00003196	051509C	2,900		27.0	15.6								Y
200922LO	00003197	051509C	2,900		27.0	15.6								Y
200922LO	00003198	051509C	2,900		27.0	15.6								Y
200922LO	00003199	051509C	2,900		27.0	15.6								Y
200922LO	00003200	051509C	2,900		27.0	15.6								Y
200922LO	00003201	051509C	2,900		27.0	15.6								Y
200922LO	00003202	051509C	2,900		27.0	15.6								Y

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GCL Lot No.	GCL Roll No.	Clay lot No.	Area (SF)	Manufacturer Quality Control Testing					CQA Conformance Testing				Approved	
				Bentonite Content	Bentonite Swell Index ²	Bentonite Fluid Loss ²	Index Flux	Moisture Content	Mass per unit area	Moisture Content	Index Flux	Cover Interface Shear		
				0.75	24.0	18.0	1.00E-08	25% (30%)	0.75	30	1.00E-08	20		
				lb/sq. ft	minimum	maximum	maximum	maximum	lb/sq. ft	percent	m ² /m ² -2	degrees		
				1/50,000 ^b	mL/2g	mL	m ² /m ² -2	%	1/100,000 ^b	NS	1/400,000 ^b	1/400,000 ^b		
200922LO	00003203	051509C	2,900	0.86	27.0	15.6		26.1						Y
200922LO	00003204	051509C	2,900		27.0	15.6								Y
200922LO	00003205	051509C	2,900		27.0	15.6								Y
200922LO	00003207	051809C	2,900	0.87	26.0	14.6		26.6						Y
200922LO	00003208	051809C	2,900		26.0	14.6								Y
200922LO	00003209	051809C	2,900		26.0	14.6								Y
200922LO	00003210	051809C	2,900		26.0	14.6								Y
200922LO	00003211	051809C	2,900		26.0	14.6								Y
200922LO	00003212	051809C	2,900		26.0	14.6								Y
200922LO	00003213	051809C	2,900		26.0	14.6								Y
200922LO	00003214	051809C	2,900		26.0	14.6								Y
200922LO	00003216	051909A	2,900	0.97	25.0	15.8		23.3						Y
200922LO	00003217	051909A	2,900		25.0	15.8								Y
200923LO	00003497	052109C	2,900		26.0	16.4								Y
200923LO	00003498	052109C	2,900	0.87	26.0	16.4	8.71E-09	26.9						Y
200923LO	00003499	052109C	2,900		26.0	16.4			0.90	23.3				Y
200923LO	00003500	052109C	2,900		26.0	16.4								Y
200923LO	00003501	052109C	2,900		26.0	16.4								Y
200923LO	00003502	052109C	2,900		26.0	16.4								Y
200923LO	00003503	052109C	2,900		26.0	16.4								Y
200923LO	00003504	052109C	2,900		26.0	16.4								Y
200923LO	00003505	052109C	2,900		26.0	16.4								Y
200923LO	00003506	052109C	2,900		26.0	16.4								Y
200923LO	00003507	052209A	2,900		25.0	16.8								Y
200923LO	00003508	052209A	2,900		25.0	16.8								Y
200923LO	00003509	052209A	2,900		25.0	16.8								Y
200923LO	00003510	052209A	2,900		25.0	16.8								Y
200923LO	00003511	052209A	2,900	0.83	25.0	16.8		26.0						Y
200923LO	00003512	052209A	2,900		25.0	16.8								Y
200923LO	00003513	052209A	2,900		25.0	16.8								Y
200923LO	00003514	052209A	2,900		25.0	16.8								Y
200923LO	00003515	052209A	2,900		25.0	16.8								Y
200923LO	00003516	052209A	2,900		25.0	16.8								Y
200923LO	00003517	052209A	2,900		25.0	16.8								Y
200923LO	00003518	052209A	2,900		25.0	16.8								Y
200923LO	00003519	052209A	2,900		25.0	16.8								Y
200923LO	00003520	052209A	2,900		25.0	16.8								Y
200923LO	00003521	052209A	2,900		25.0	16.8								Y
200923LO	00003522	052209A	2,900		25.0	16.8								Y
200923LO	00003523	052209A	2,900		25.0	16.8								Y
200923LO	00003524	052209A	2,900	0.89	25.0	16.8		25.0						Y
200923LO	00003525	052209A	2,900		25.0	16.8								Y
200923LO	00003526	052209A	2,900		25.0	16.8								Y
200923LO	00003527	052209A	2,900		25.0	16.8								Y
200923LO	00003528	052209A	2,900		25.0	16.8								Y
200923LO	00003529	052209A	2,900		25.0	16.8								Y
200923LO	00003530	052209A	2,900		25.0	16.8								Y
200923LO	00003531	052209A	2,900		25.0	16.8								Y
200923LO	00003532	052209A	2,900		25.0	16.8								Y
200923LO	00003533	052209A	2,900		25.0	16.8			0.90	24.4	2.9E-09			Y
200923LO	00003534	052209A	2,900		25.0	16.8								Y
200923LO	00003535	052209A	2,900		25.0	16.8								Y

Summary of GCL Inventory, MQA/MQC, and Conformance Test Data

BRC CAMU

Henderson, Nevada

GCL Lot No.	GCL Roll No.	Clay lot No.	Area (SF)	Manufacturer Quality Control Testing					CQA Conformance Testing				Approved	
				Bentonite Content	Bentonite Swell Index ²	Bentonite Fluid Loss ²	Index Flux	Moisture Content	Mass per unit area	Moisture Content	Index Flux	Cover Interface Shear		
				0.75	24.0	18.0	1.00E-08	25% (30%)	0.75	30	1.00E-08	20		
				lb/sq. ft	minimum	maximum	maximum	maximum	lb/sq. ft	percent	m ² /m ² -2	degrees		
				1/50,000 ^b	mL/2g	mL	m ² /m ² -2	%	1/100,000 ^b	NS	m ² /m ² -2	1/400,000 ^b		
200923LO	00003588	052209C	2,900		24.0	17.4								Y
200923LO	00003589	052209C	2,900		24.0	17.4								Y
200923LO	00003590	052209D	2,900		24.0	15.8								Y
200923LO	00003591	052209D	2,900		24.0	15.8								Y
200923LO	00003592	052209D	2,900		24.0	15.8								Y
200923LO	00003593	052209D	2,900		24.0	15.8								Y
200923LO	00003594	052209D	2,900		24.0	15.8								Y
200923LO	00003595	052209D	2,900		24.0	15.8								Y
200923LO	00003596	052209D	2,900		24.0	15.8								Y
200923LO	00003597	052209D	2,900		24.0	15.8								Y
200923LO	00003598	052209D	2,900		24.0	15.8								Y
200923LO	00003599	052209D	2,900	0.81	24.0	15.8		27.2						Y
200923LO	00003600	052209D	2,900		24.0	15.8								Y
200923LO	00003601	052209D	2,900		24.0	15.8								Y
200923LO	00003602	052209D	2,900		24.0	15.8								Y
200923LO	00003603	052209D	2,900		24.0	15.8								Y
200923LO	00003604	052209D	2,900		24.0	15.8								Y
200923LO	00003605	052209D	2,900		24.0	15.8								Y
200923LO	00003606	052209D	2,900	0.89	24.0	15.8		26.5						Y
200923LO	00003607	052209D	2,900		24.0	15.8		0.86	23.8					Y
200923LO	00003608	052209D	2,900		24.0	15.8								Y
200923LO	00003609	052209D	2,900		24.0	15.8								Y
200923LO	00003610	052209D	2,900		24.0	15.8								Y
200923LO	00003611	052209D	2,900		24.0	15.8								Y
200923LO	00003612	052209D	2,900		24.0	15.8								Y
200923LO	00003613	052209D	2,900		24.0	15.8								Y
200923LO	00003614	052209D	2,900		24.0	15.8								Y
200923LO	00003615	052209D	2,900		24.0	15.8								Y
200923LO	00003616	052209D	2,900		24.0	15.8								Y
200923LO	00003617	052209D	2,900		24.0	15.8								Y
200923LO	00003618	052209D	2,900		24.0	15.8								Y
200923LO	00003619	052209D	2,900	0.86	24.0	15.8		25.1						Y
200923LO	00003620	052209E	2,900		25.0	17.2								Y
200923LO	00003621	052209E	2,900		25.0	17.2								Y
200923LO	00003622	052209E	2,900		25.0	17.2								Y
200923LO	00003623	052209E	2,900		25.0	17.2								Y
200923LO	00003624	052209E	2,900		25.0	17.2								Y
200923LO	00003625	052209E	2,900		25.0	17.2								Y
200923LO	00003626	052209E	2,900		25.0	17.2								Y
200923LO	00003627	052209E	2,900		25.0	17.2								Y
200923LO	00003628	052209E	2,900		25.0	17.2	7.71E-09							Y
200923LO	00003629	052209E	2,900		25.0	17.2								Y
200923LO	00003630	052209E	2,900		25.0	17.2								Y
200923LO	00003631	052209E	2,900		25.0	17.2								Y
200923LO	00003632	052209E	2,900	0.85	25.0	17.2		25.6						Y
200923LO	00003633	052209E	2,900		25.0	17.2								Y
200923LO	00003634	052209E	2,900		25.0	17.2								Y
200923LO	00003635	052209E	2,900		25.0	17.2		0.91	22.8					Y
200923LO	00003636	052209E	2,900		25.0	17.2								Y
200923LO	00003637	052209E	2,900		25.0	17.2								Y
200923LO	00003638	052209E	2,900		25.0	17.2								Y
200923LO	00003639	052209E	2,900		25.0	17.2								Y

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BRC CAMU

Henderson, Nevada

GCL Lot No.	GCL Roll No.	Clay lot No.	Area (SF)	Manufacturer Quality Control Testing					CQA Conformance Testing				Approved	
				Bentonite Content	Bentonite Swell Index ²	Bentonite Fluid Loss ²	Index Flux	Moisture Content	Mass per unit area	Moisture Content	Index Flux	Cover Interface Shear		
				0.75	24.0	18.0	1.00E-08	25% (30%)	0.75	30	1.00E-08	20		
				lb/sq. ft	minimum	maximum	maximum	maximum	lb/sq. ft	percent	m ² /m ² -2	degrees		
				1/50,000 ^b	mL/2g	mL	m ² /m ² -2	%	1/100,000 ^b	NS	m ² /m ² -2	1/400,000 ^b		
200923LO	00003640	052209E	2,900		25.0	17.2								Y
200923LO	00003641	052209E	2,900		25.0	17.2								Y
200923LO	00003642	052209E	2,900		25.0	17.2								Y
200923LO	00003643	052209E	2,900		25.0	17.2								Y
200923LO	00003644	052209E	2,900		25.0	17.2								Y
200923LO	00003645	052209E	2,900	0.99	25.0	17.2		24.3						Y
200923LO	00003646	052209E	2,900		25.0	17.2								Y
200923LO	00003647	052209E	2,900		25.0	17.2								Y
200923LO	00003648	052209E	2,900		25.0	17.2								Y
200923LO	00003649	052209E	2,900		25.0	17.2								Y
200923LO	00003650	052609A	2,900		24.0	15.8								Y
200923LO	00003651	052609A	2,900		24.0	15.8								Y
200923LO	00003652	052609A	2,900		24.0	15.8								Y
200923LO	00003653	052609A	2,900		24.0	15.8								Y
200923LO	00003654	052609A	2,900		24.0	15.8								Y
200923LO	00003655	052609A	2,900		24.0	15.8								Y
200923LO	00003656	052609A	2,900		24.0	15.8								Y
200923LO	00003658	052609B	2,900	0.89	25.0	17.2		27.2						Y
200923LO	00003659	052609B	2,900		25.0	17.2								Y
200923LO	00003660	052609B	2,900		25.0	17.2								Y
200923LO	00003661	052609B	2,900		25.0	17.2								Y
200923LO	00003662	052609B	2,900		25.0	17.2								Y
200923LO	00003663	052609B	2,900		25.0	17.2								Y
200923LO	00003664	052609B	2,900		25.0	17.2								Y
200923LO	00003665	052609B	2,900		25.0	17.2								Y
200923LO	00003666	052609B	2,900		25.0	17.2								Y
200923LO	00003667	052609B	2,900		25.0	17.2								Y
200923LO	00003668	052609B	2,900		25.0	17.2								Y
200923LO	00003669	052609B	2,900		25.0	17.2		1.01	22.9	2.90E-09				Y
200923LO	00003670	052609B	2,900		25.0	17.2								Y
200923LO	00003671	052609B	2,900	0.89	25.0	17.2		26.4						Y
200923LO	00003672	052609B	2,900		25.0	17.2								Y
200923LO	00003673	052609B	2,900		25.0	17.2								Y
200923LO	00003674	052609B	2,900		25.0	17.2								Y
200923LO	00003675	052609B	2,900		25.0	17.2								Y
200923LO	00003676	052609B	2,900		25.0	17.2								Y
200923LO	00003677	052609B	2,900		25.0	17.2								Y
200923LO	00003678	052609B	2,900		25.0	17.2								Y
200923LO	00003679	052609B	2,900		25.0	17.2								Y
200923LO	00003680	052609B	2,900		25.0	17.2								Y
200923LO	00003681	052609B	2,900		25.0	17.2								Y
200923LO	00003682	052609B	2,900		25.0	17.2								Y
200923LO	00003683	052609B	2,900		25.0	17.2								Y
200923LO	00003684	052609B	2,900	0.90	25.0	17.2		25.2						Y
200923LO	00003685	052609B	2,900		25.0	17.2								Y
200923LO	00003686	052609B	2,900		25.0	17.2								Y
200923LO	00003687	052609B	2,900		25.0	17.2								Y
200923LO	00003688	052609C	2,900		25.0	15.6								Y
200923LO	00003689	052609C	2,900		25.0	15.6								Y
200923LO	00003690	052609C	2,900		25.0	15.6								Y
200923LO	00003691	052609C	2,900		25.0	15.6								Y
200923LO	00003692	052609C	2,900		25.0	15.6								Y

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BRC CAMU

Henderson, Nevada

GCL Lot No.	GCL Roll No.	Clay lot No.	Area (SF)	Manufacturer Quality Control Testing					CQA Conformance Testing				Approved	
				Bentonite Content	Bentonite Swell Index ²	Bentonite Fluid Loss ²	Index Flux	Moisture Content	Mass per unit area	Moisture Content	Index Flux	Cover Interface Shear		
				0.75	24.0	18.0	1.00E-08	25% (30%)	0.75	30	1.00E-08	20		
				lb/sq. ft	minimum	maximum	maximum	maximum	lb/sq. ft	percent	m ² /m ² -2	degrees		
				1/50,000 ^b	mL/2g	mL	m ² /m ² -2	%	1/100,000 ^b	NS	m ² /m ² -2	1/400,000 ^b		
200923LO	00003693	052609C	2,900		25.0	15.6								Y
200923LO	00003694	052609C	2,900		25.0	15.6								Y
200923LO	00003695	052609C	2,900		25.0	15.6								Y
200923LO	00003696	052609C	2,900		25.0	15.6	5.57E-09							Y
200923LO	00003697	052609C	2,900	0.85	25.0	15.6		26.2						Y
200923LO	00003698	052609C	2,900		25.0	15.6								Y
200923LO	00003699	052609C	2,900		25.0	15.6								Y
200923LO	00003700	052609C	2,900		25.0	15.6								Y
200923LO	00003701	052609C	2,900		25.0	15.6								Y
200923LO	00003702	052609C	2,900		25.0	15.6								Y
200923LO	00003703	052609C	2,900		25.0	15.6			0.87	22.9				Y
200923LO	00003704	052609C	2,900		25.0	15.6								Y
200923LO	00003705	052609C	2,900		25.0	15.6								Y
200923LO	00003706	052609C	2,900		25.0	15.6								Y
200923LO	00003707	052609C	2,900	0.83	25.0	15.6		25.9						Y
200923LO	00003708	052609C	2,900		25.0	15.6								Y
200923LO	00003709	052609C	2,900		25.0	15.6								Y
200923LO	00003710	052609C	2,900		25.0	15.6								Y
200923LO	00003711	052609C	2,900		25.0	15.6								Y
200923LO	00003712	052609C	2,900		25.0	15.6								Y
200923LO	00003713	052609C	2,900		25.0	15.6								Y
200923LO	00003714	052609C	2,900		25.0	15.6								Y
200923LO	00003715	052609C	2,900		25.0	15.6								Y
200923LO	00003716	052609C	2,900		25.0	15.6								Y
200923LO	00003717	052609C	2,900		25.0	15.6								Y
200923LO	00003718	052609C	2,900		25.0	15.6								Y
200923LO	00003719	052609C	2,900		25.0	15.6								Y
200923LO	00003720	052609C	2,900	0.88	25.0	15.6		26.8						Y
200923LO	00003721	052609C	2,900		25.0	15.6								Y
200923LO	00003722	052609C	2,900		25.0	15.6								Y
200923LO	00003723	052709A	2,900		25.0	15.0								Y
200923LO	00003724	052709A	2,900		25.0	15.0								Y
200923LO	00003725	052709A	2,900		25.0	15.0								Y
200923LO	00003726	052709A	2,900		25.0	15.0								Y
200923LO	00003727	052709A	2,900		25.0	15.0								Y
200923LO	00003728	052709A	2,900		25.0	15.0								Y
200923LO	00003729	052709A	2,900		25.0	15.0								Y
200923LO	00003730	052709A	2,900		25.0	15.0								Y
200923LO	00003731	052709A	2,900		25.0	15.0								Y
200923LO	00003732	052709A	2,900		25.0	15.0								Y
200923LO	00003733	052709A	2,900	0.86	25.0	15.0		27.6						Y
200923LO	00003734	052709A	2,900		25.0	15.0								Y
200923LO	00003735	052709A	2,900		25.0	15.0								Y
200923LO	00003736	052709A	2,900		25.0	15.0								Y
200923LO	00003737	052709A	2,900		25.0	15.0			0.90	23.7				Y
200923LO	00003738	052709A	2,900		25.0	15.0								Y
200923LO	00003739	052709A	2,900		25.0	15.0								Y
200923LO	00003740	052709A	2,900		25.0	15.0								Y
200923LO	00003741	052709A	2,900		25.0	15.0								Y
200923LO	00003742	052709A	2,900		25.0	15.0								Y
200923LO	00003743	052709A	2,900		25.0	15.0								Y
200923LO	00003744	052709A	2,900		25.0	15.0								Y

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				Bentonite Content	Bentonite Swell Index ²	Bentonite Fluid Loss ²	Index Flux	Moisture Content	Mass per unit area	Moisture Content	Index Flux	Cover Interface Shear		
				0.75	24.0	18.0	1.00E-08	25% (30%)	0.75	30	1.00E-08	20		
				lb/sq. ft	minimum mL/2g	maximum mL	maximum m ² /m ² -2	maximum %	lb/sq. ft	percent maximum	m ² /m ² -2	degrees		
				1/50,000 ^b	NS	NS	1/200,000 ^b	1/100,000 ^b	1/100,000 ^b	NS	1/400,000 ^b	1/400,000 ^b		
200923LO	00003745	052709A	2,900		25.0	15.0							Y	
200923LO	00003746	052709A	2,900	0.92	25.0	15.0		24.7					Y	
200923LO	00003747	052709A	2,900		25.0	15.0							Y	
200923LO	00003748	052709A	2,900		25.0	15.0							Y	
200923LO	00003749	052709A	2,900		25.0	15.0							Y	
200923LO	00003750	052709A	2,900		25.0	15.0							Y	
200923LO	00003751	052709B	2,900		24.0	15.0							Y	
200923LO	00003752	052709B	2,900		24.0	15.0							Y	
200923LO	00003753	052709B	2,900		24.0	15.0							Y	
200923LO	00003754	052709B	2,900		24.0	15.0							Y	
200923LO	00003755	052709B	2,900		24.0	15.0							Y	
200923LO	00003756	052709B	2,900		24.0	15.0							Y	
200923LO	00003757	052709B	2,900		24.0	15.0							Y	
200923LO	00003758	052709B	2,900		24.0	15.0							Y	
200923LO	00003759	052709B	2,900	0.92	24.0	15.0		26.0					Y	
200923LO	00003760	052709B	2,900		24.0	15.0							Y	
200923LO	00003761	052709B	2,900		24.0	15.0							Y	
200923LO	00003762	052709B	2,900		24.0	15.0							Y	
200923LO	00003763	052709B	2,900		24.0	15.0							Y	
200923LO	00003764	052709B	2,900		24.0	15.0							Y	
200923LO	00003765	052709B	2,900		24.0	15.0							Y	
200923LO	00003766	052709B	2,900		24.0	15.0							Y	
Cover Manufactured Area (SF):				2,476,600	56	854	854	14	67	26	26	8	6	
					44,225	2,900	2,900	176,900	36,964	95,254	95,254	309,575	412,767	

Note:

NS - Not Specified

TNR - Test Not Received

1- Lot rolls not designated for the project were tested for conformance by manufacturer, reported values are averages of lot values, see MQA data submittals

APPENDIX D-2
CQA Conformance Results



GCL TEST RESULTS

TRI Client: Geosyntec Consultants
Project: Camu Landwell Basic Remediation - Henderson, NV

Material: Bentomat DN GCL
Sample Identification: 1143
TRI Log #: E2325-08-06

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.)														
Bentonite mass/unit area (lbs/ft ²)	0.92	0.97	0.99	1.00	1.11							1.00	0.07	0.75 min
Moisture Content (%)	21.9	20.7	23.6	23.6	22.5							22.5	1.2	30 max
Index Flux (ASTM D 5887)														
Index Flux (m ³ /m ² /sec)												3.3E-09		1.0E-8 max
Hydraulic Conductivity (cm/sec)												3.3E-09		

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



GCL TEST RESULTS
TRI Client: Geosyntec Consultants
Project: Camu Landwell Basic Remediation - Henderson, NV

Material: Bentomat DN GCL
Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.)
TRI Log #: E2325-08-06

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Sample Identification: 1177														
Bentonite mass/unit area (lbs/ft ²)	1.15	0.90	0.91	0.94	0.90							0.96	0.11	0.75 min
Moisture Content (%)	22.9	21.4	24.3	24.5	23.8							23.4	1.3	30 max
Sample Identification: 1211														
Bentonite mass/unit area (lbs/ft ²)	0.91	1.00	0.89	0.88	0.90							0.91	0.05	0.75 min
Moisture Content (%)	21.0	19.9	24.3	22.8	25.0							22.6	2.2	30 max
Sample Identification: 1245														
Bentonite mass/unit area (lbs/ft ²)	0.92	0.92	0.91	0.93	0.99							0.93	0.03	0.75 min
Moisture Content (%)	21.0	20.8	22.4	22.9	22.3							21.9	0.9	30 max

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GCL TEST RESULTS

TRI Client: Geosyntec Consultants
Project: Camu Landwell Basic Remediation - Henderson, NV

Material: Bentomat DN GCL
Sample Identification: 1279
TRI Log #: E2325-08-06

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.)														
Bentonite mass/unit area (lbs/ft ²)	0.84	0.89	0.96	0.96	1.02							0.93	0.07	0.75 min
Moisture Content (%)	22.8	21.8	24.6	23.9	24.7							23.5	1.3	30 max
Index Flux (ASTM D 5887)														
Index Flux (m ³ /m ² /sec)	3.6E-09											3.6E-09		1.0E-8 max
Hydraulic Conductivity (cm/sec)	3.5E-09											3.5E-09		

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



GCL TEST RESULTS

TRI Client: Geosyntec Consultants
Project: Gamu Landwell Basic Remediation - Henderson, NV

Material: Bentomat DN GCL
Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.)
TRI Log #: E2325-09-01

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Sample Identification: 1313														
Bentonite mass/unit area (lbs/ft ²)	0.96	0.93	0.96	0.98	1.01							0.97	0.03	0.75 min
Moisture Content (%)	23.6	22.5	21.4	23.9	20.4							22.4	1.5	30 max
Sample Identification: 1347														
Bentonite mass/unit area (lbs/ft ²)	0.80	0.88	0.87	0.83	0.86							0.85	0.03	0.75 min
Moisture Content (%)	25.1	25.5	25.8	24.9	24.1							25.1	0.6	30 max
Sample Identification: 1381														
Bentonite mass/unit area (lbs/ft ²)	1.05	1.04	1.06	1.00	0.90							1.01	0.07	0.75 min
Moisture Content (%)	22.1	21.9	23.4	23.3	23.2							22.8	0.7	30 max

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



GCL TEST RESULTS

TRI Client: Geosyntec Consultants
Project: Camu Landwell Basic Remediation - Henderson, NV

Material: Bentomat DN GCL
Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.)
TRI Log #: E2325-40-08

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Sample Identification: 3667														
Bentonite mass/unit area (lbs/ft ²)	0.98	0.97	0.90	0.92	1.03							0.98	0.05	0.75 min
Moisture Content (%)	22.5	21.9	23.4	23.9	22.4							22.8	0.8	30 max
Sample Identification: 3807														
Bentonite mass/unit area (lbs/ft ²)	0.84	0.96	0.81	0.87	0.82							0.86	0.06	0.75 min
Moisture Content (%)	23.2	22.6	24.4	24.5	24.5							23.8	0.9	30 max
Sample Identification: 3635														
Bentonite mass/unit area (lbs/ft ²)	0.90	1.03	0.83	0.87	0.93							0.91	0.08	0.75 min
Moisture Content (%)	22.7	21.8	23.5	23.7	22.5							22.8	0.8	30 max

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GCL TEST RESULTS

TRI Client: Geosyntec Consultants
Project: Camu Landwell Basic Remediation - Henderson, NV

Material: Bentomat DN GCL
Sample Identification: 3499
TRI Log #: E2325-40-06

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.)														
Bentonite mass/unit area (lbs/ft ²)	0.90	0.95	0.86	0.88	0.90							0.90	0.03	0.75 min
Moisture Content (%)	23.8	22.8	23.7	24.6	21.6							23.3	1.2	30 max

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



GCL TEST RESULTS

TRI Client: Geosyntec Consultants
Project: Camu Landwell Basic Remediation - Henderson, NV

Material: Bentomat DN GCL
Sample Identification: 3533
TRI Log #: E2325-40-06

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.)														
Bentonite mass/unit area (lbs/ft ²)	0.82	0.97	0.88	0.93	0.91							0.90	0.06	0.75 min
Moisture Content (%)	23.7	23.8	25.7	24.8	24.3							24.4	0.9	30 max
Index Flux (ASTM D 5887)														
Index Flux (m ³ /m ² /sec)	2.9E-09										2.9E-09		1.0E-8 max	
Hydraulic Conductivity (cm/sec)	2.9E-09										2.9E-09			

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



GCL TEST RESULTS

TRI Client: Geosyntec Consultants
Project: Camu Landwell Basic Remediation - Henderson, NV

Material: Bentomat DN GCL
Sample Identification: 3127
TRI Log #: E2325-36-10

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Bentonite - Mass/Unit Area (ASTM D 5893, result @ 0% M.C.)														
Bentonite mass/unit area (lbs/ft ²)	1.00	1.06	0.87	1.08	0.98							1.00	0.08	0.75 min
Moisture Content (%)	23.8	24.4	24.8	23.6	22.2							23.8	1.0	30 max
Index Flux (ASTM D 5887)														
Index Flux (m ³ /m ² /sec)	3.1E-09											3.1E-09		1.0E-8 max
Hydraulic Conductivity (cm/sec)	3.3E-09											3.3E-09		

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



GCL TEST RESULTS

TRI Client: Geosyntec Consultants
Project: Camu Landwall Basic Remediation - Henderson, NV

Material: Bentomat DN GCL
Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.)
TRI Log #: E2325-36-10

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Sample Identification: 3161														
Bentonite mass/unit area (lbs/ft ²)	0.87	0.83	0.90	0.78	0.82							0.84	0.05	0.75 min
Moisture Content (%)	23.2	25.2	25.0	25.5	22.7							24.3	1.3	30 max
Sample Identification: 3195														
Bentonite mass/unit area (lbs/ft ²)	1.03	1.07	0.84	0.88	0.98							0.98	0.10	0.75 min
Moisture Content (%)	24.1	22.7	23.2	23.7	21.9							23.1	0.9	30 max

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



GCL TEST RESULTS

TRI Client: Geosyntec Consultants
Project: Camu Landwell Basic Remediation - Henderson, NV

Material: Bentomat DN GCL
Sample Identification: 1415
TRI Log #: E2326-09-09

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.)														
Bentonite mass/unit area (lbs/ft ²)	0.92	1.08	1.01	0.81	0.99							0.96	0.10	0.75 min
Molsture Content (%)	25.3	23.9	24.7	26.0	23.8							24.7	0.9	30 max
Index Flux (ASTM D 5887)														
Index Flux (m ³ /m ² /sec)	3.7E-09										3.7E-09		1.0E-8 max	
Hydraulic Conductivity (cm/sec)	3.6E-09										3.6E-09			

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



GCL TEST RESULTS

TRI Client: Geosyntec Consultants
Project: Camu Landwell Basic Remediation - Henderson, NV

Material: Bentomat DN GCL
Sample Identification: 1449
TRI Log #: E2325-09-09

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.)														
Bentonite mass/unit area (lbs/ft ²)	0.84	0.91	0.85	0.89	0.92						0.88	0.04	0.75 min	
Moisture Content (%)	25.0	22.9	25.8	25.9	26.4						25.2	1.4	30 max	

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



GCL TEST RESULTS

TRI Client: Geosyntec Consultants
Project: Camu Landwell Basic Remediation - Henderson, NV

Material: Bentomat DN GCL
Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.)
TRI Log #: E2325-24-04

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Sample Identification: 2361														
Bentonite mass/unit area (lbs/ft ²)	0.85	0.89	0.93	0.82	0.87							0.87	0.04	0.75 min
Moisture Content (%)	22.4	21.0	22.1	23.5	21.1							22.0	1.0	30 max
Sample Identification: 2395														
Bentonite mass/unit area (lbs/ft ²)	0.97	0.91	0.82	0.73	0.86							0.86	0.09	0.75 min
Moisture Content (%)	23.0	22.0	25.7	24.6	25.8							24.2	1.7	30 max

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GCL TEST RESULTS

TRI Client: Geosyntec Consultants
Project: Camu Landwell Basic Remediation - Henderson, NV

Material: Bentomat DN GCL
Sample Identification: 2429
TRI Log #: E2325-24-04

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.)														
Bentonite mass/unit area (lbs/ft ²)	0.91	0.89	0.92	0.93	0.97							0.92	0.03	0.75 min
Moisture Content (%)	22.2	21.2	23.4	23.5	22.1							22.5	1.0	30 max
Index Flux (ASTM D 5887)														
Index Flux (m ³ /m ² /sec)	3.1E-09											3.1E-09		1.0E-8 max
Hydraulic Conductivity (cm/sec)	3.0E-09											3.0E-09		

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APPENDIX D-3
Sub-grade Acceptance Form



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company
 875 West Warm Springs Road
 Henderson, NV 89011
 TEL#: (702)-568-2888 FAX#: (702)-567-0475
 ATTENTION: Lee C. Farris, P.E.

DATE: 10/19/09
 JOB NAME: BRC EASTSIDE COMMON AREAS
 SOIL REMEDIATION PROJECT
 TRANSMITTAL NUMBER: 335
 ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	10/19/09			Submittal 02772-001FF - Subgrade Acceptance Certificates - Phase IIIA Final Closure (Panels 1-60)	RC

ACTION (*)

AR - AS REQUESTED	FA - FOR APPROVAL
F - FILE	RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE
 COPY TO: Ranajit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10/13/09

PROJECT NUMBER: 07-11-1271

TIME: 09:30

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications.

Area Being Accepted: Phase IIIA

From PANEL # (21)
TO PANEL # (14)

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: Dan Street

TITLE: Site Manager

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MELUAE M. UACON

TITLE: FIELD SUPERVISOR

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Chris White

TITLE: ASSISTANT CM

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10/14/09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications.

Area Being Accepted: Phase IIIA

From PANEL # (15)
TO PANEL # 28

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: D-Stt

TITLE: Site Manager

SIGNATURE: D-Stt

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CAMPBELL

TITLE: RESIDENT ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Chris White

TITLE: ASSISTANT CM

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10/15/09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications.

Area Being Accepted: Phase IIIA

FROM PANEL # 29
TO PANEL # 75

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: STUART IRWIN

TITLE: ENGINEERING TECH

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARSON

TITLE: FIELD ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Chris G. [Signature]

TITLE: Assistant CM

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10/16/09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications.

Area Being Accepted: Phase IIIA

FROM PANEL # 46
TO PANEL # 60

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: STUART IRWIN

TITLE: ENGR. TECH

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: WALTER CHUSA

TITLE: FIELD SUPERVISOR

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Richard Labiniere

TITLE: CONST MANAGER

SIGNATURE: [Signature]



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Subgrade Acceptance Certificates - Phase 3A Closure (Panels 1-60)
Submittal Number:	02772-001FF
Specification Section:	Section 02772, Part 3.02, Subpart A
Drawing Number (s):	NA
Page Number:	02772-6
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	10/19/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



699 South Friendswood Drive
Suite 101
Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
ATTENTION: Lee C. Farris, P.E.

DATE: 10/22/09
JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
TRANSMITTAL NUMBER: 339
ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	10/22/09			Submittal 02772-001GG - Subgrade Acceptance Certificates - Phase IIIA Final Closure (Panels 61-101)	RC

ACTION (*)

AR - AS REQUESTED	FA - FOR APPROVAL
F - FILE	RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE
 COPY TO: Ranajit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10-19-09

PROJECT NUMBER: 07-11-1271

TIME: 07:50

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications.

Area Being Accepted: Phase IIIA

From PANEL # (61)
TO PANEL # (66)

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: Shant Irwin

TITLE: Engineering Technician

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARSON

TITLE: FIELD OVERSEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Christina

TITLE: Assistant Chem

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10-20-09

PROJECT NUMBER: 07-11-1271

TIME: 08:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications.

Area Being Accepted: Phase IIIA

From PANEL # 67
TO PANEL # 81

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRAN

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: Heart Irwin

TITLE: Engineering Technician

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARLSON

TITLE: FIBER ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Chris White

TITLE: Assistant CM

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10/21/09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications.

Area Being Accepted: Phase IIIA

From PANEL # 82
TO PANEL # 96

ESI REPRESENTATIVE:

NAME: ISMAEL BUTTAN

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: Shart twin

TITLE: Engineering Technician

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARLSON

TITLE: FIELD ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Chris White

TITLE: ASSISTANT CHEF

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU Closure

DATE: 10-22-09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications.

Area Being Accepted: Phase IIIA

From PANEL # 97
TO PANEL # 101

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: Stuart Irwin

TITLE: Engineering Technician

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARSON

TITLE: FIELD ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Chris White

TITLE: Assistant Chem

SIGNATURE: [Signature]



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Subgrade Acceptance Certificates - Phase 3A Closure (Panels 61-101)
Submittal Number:	02772-001GG
Specification Section:	Section 02772, Part 3.02, Subpart A
Drawing Number (s):	NA
Page Number:	02772-6
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	10/22/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
 ATTENTION: Lee C. Farris, P.E.

DATE: 11/13/09
 JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
 TRANSMITTAL NUMBER: 349
 ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	11/13/09			Submittal 02772-001HH - Subgrade Acceptance Certificates - Phase IIIA Final Closure (Panels 102-140)	RC

ACTION (*)

AR - AS REQUESTED	FA - FOR APPROVAL
F - FILE	RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE
 COPY TO: Ranjit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU CLOSURE

DATE: 11/10/09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications.

Area Being Accepted: **PHASE IIIA**

From PANEL # 102
TO PANEL # 117

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: Dan Street

TITLE: CQA Site Manager

SIGNATURE: Dan Street

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CALDWELL

TITLE: FIELD ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Chris White

TITLE: Assistant CM

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU CLOSURE

DATE: 11/11/09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project's specifications.

Area Being Accepted: **PHASE IIIA**

From PANEL # 118
TO PANEL # 132

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRAN

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: CAMON LIDDELL

TITLE: SET

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARLSON

TITLE: FIELD ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Chris White

TITLE: Assistant CM

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU CLOSURE

DATE: 11-12-09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this prc. **PHASE IIIA** 15.

Area Being Accepted: **PHASE IIIA**

FROM PANEL # 133
TO PANEL # 140

ESI REPRESENTATIVE:

NAME: ISRAEL BUITRAN

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: CAMON LIDDELL

TITLE: SET

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARLSON

TITLE: FIELD ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: CHRIS WITZ

TITLE: ASSISTANT CM

SIGNATURE: [Signature]



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Subgrade Acceptance Certificates - Phase 3A Closure (Panels102-140)
Submittal Number:	02772-001HH
Specification Section:	Section 02772, Part 3.02, Subpart A
Drawing Number (s):	NA
Page Number:	02772-6
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	11/13/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company
 875 West Warm Springs Road
 Henderson, NV 89011
 TEL#: (702)-568-2888 FAX#: (702)-567-0475
 ATTENTION: Lee C. Farris, P.E.

DATE: 11/18/09
 JOB NAME: BRC EASTSIDE COMMON AREAS
 SOIL REMEDIATION PROJECT
 TRANSMITTAL NUMBER: 351
 ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	11/18/09			Submittal 02772-001III - Subgrade Acceptance Certificates - Phase IIIA Final Closure (Panels 141-154)	RC

ACTION (*)

AR - AS REQUESTED	FA - FOR APPROVAL
F - FILE	RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE
 COPY TO: Ranajit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU CLOSURE

DATE: 11/13/09

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this pro **PHASE IIIA** 15.

Area Being Accepted: **PHASE IIIA**

FROM PANEL # 141
TO PANEL # 147

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: CAMON LIDDELL

TITLE: SET

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARLSON

TITLE: FIELD ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: CHRIS OLSTE

TITLE: ASSISTANT CM

SIGNATURE: [Signature]

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

SUBGRADE ACCEPTANCE

PROJECT NAME: CAMU CLOSURE

DATE: 11/16/07

PROJECT NUMBER: 07-11-1271

TIME: 07:00

OWNER: BASIC REMEDIATION COMPANY

LOCATION: HENDERSON, NEVADA

I, undersigned a duly appointed representative of Environmental Specialties International, Inc., have visually observed the soil subgrade surface described below, and found it to be an acceptable surface on which to install geomembrane.

The certification is based on observations of the subgrade only. No subterranean inspections or tests have been performed by Environmental Specialties International, Inc. and ESI makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Environmental Specialties International, Inc. accepts no responsibility for conformance of the subgrade to this project **PHASE IIIA**.

Area Being Accepted: **PHASE IIIA**

From PANEL # 148
TO PANEL # 154

ESI REPRESENTATIVE:

NAME: ISMAEL BUITRON

TITLE: SUPERINTENDENT

SIGNATURE: [Signature]

OWNERS REPRESENTATIVE:

NAME: CAMON LIDDELL

TITLE: SET

SIGNATURE: [Signature]

ENTACT REPRESENTATIVE:

NAME: MICHAEL M. CARLSON

TITLE: FIELD ENGINEER

SIGNATURE: [Signature]

SUBMITTED TO WESTON SOLUTIONS

NAME: Richard Lambinger

TITLE: Construction Manager

SIGNATURE: [Signature]



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Subgrade Acceptance Certificates - Phase 3A Closure (Panels141-154)
Submittal Number:	02772-0011I
Specification Section:	Section 02772, Part 3.02, Subpart A
Drawing Number (s):	NA
Page Number:	02772-6
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	11/18/2009

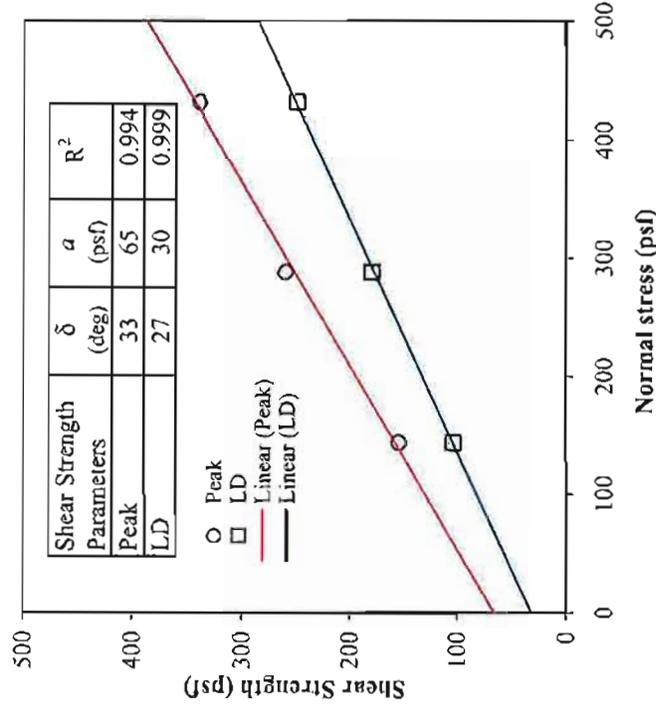
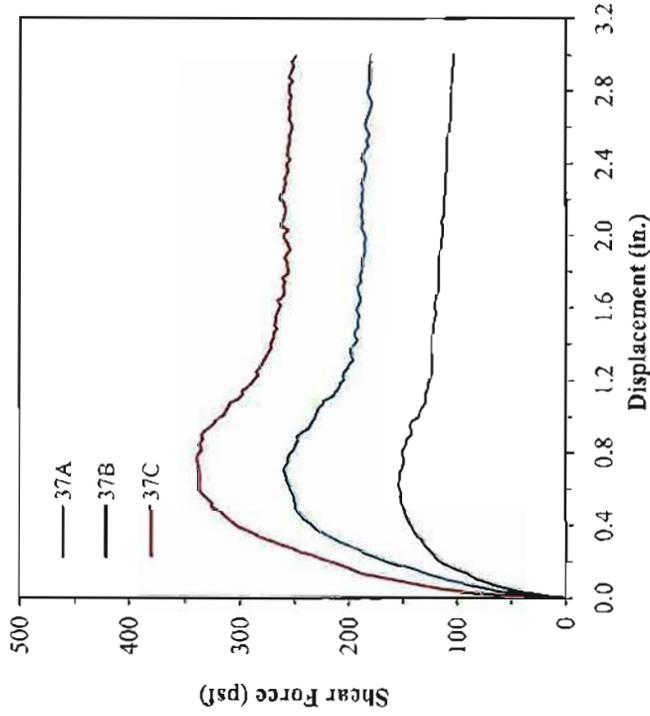
By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.

APPENDIX D-4

Interface Shear Strength Test Results

**GEOSYNTEC CONSULTANTS - BRC EASTSIDE REMEDIATION
INTERFACE DIRECT SHEAR TESTING (ASTM D 5321)**

Upper Shear Box: Cover soil lightly compacted/
Agru 60-mil Microspike HDPE geomembrane # 944117 clamped to upper shear box with short spike (dull) side down/
Hydrated Bentomat DN GCL (Lot #200910LO/Roll #1156) clamped to lower shear box with black geotextile side down/
Lower Shear Box: Subgrade soil compacted to approximately 90% of max modified Proctor density at optimum moisture content



Test No.	Shear Box Size (in. x in.)	Normal Stress (psf)	Shear Rate (in./min)	GCL Soaking		Consolidation ⁽¹⁾		Subgrade Soil		Cover Soil		GCL		Shear Stress		Failure Mode
				Stress (psf)	Time (hour)	Stress (psf)	Time (hour)	γ_d (pcf)	ω_i (%)	ω_f (%)	γ_d (pcf)	ω_i (%)	ω_f (%)	ω_1 (%)	ω_f (%)	
37A	12 x 12	144	0.04	240	48	144	24	114.0	8.8	-	-	-	144.4	154	103	(2)
37B	12 x 12	288	0.04	240	48	288	24	114.3	8.5	-	-	-	137.2	259	179	(2)
37C	12 x 12	432	0.04	240	48	432	24	114.6	8.2	-	-	-	127.2	339	248	(2)

NOTES:

- (1) Consolidation of entire sandwich.
- (2) Shear failure occurred at the interface between the short-spike side of geomembrane and white geotextile side of GCL.

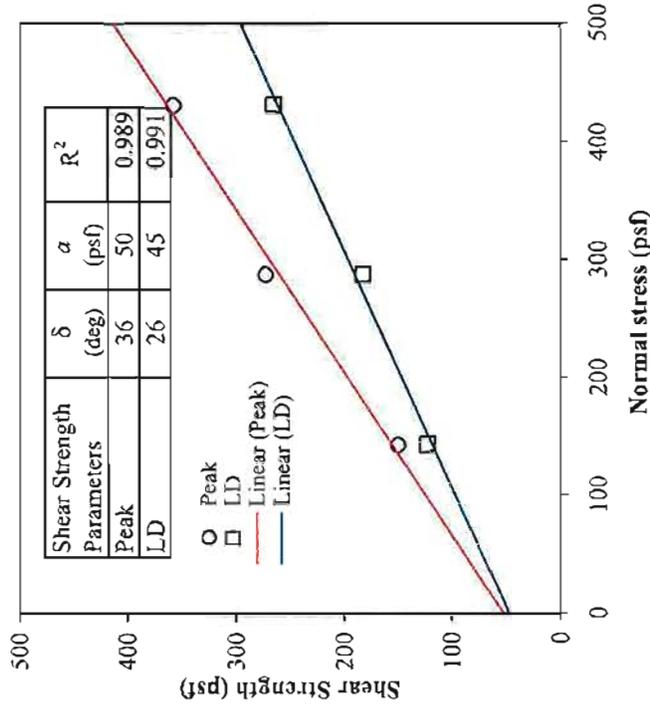
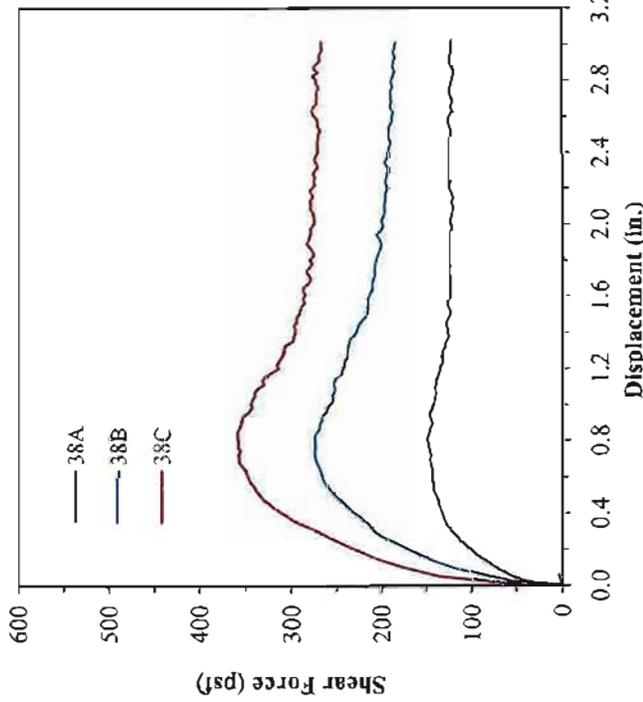
DATE OF REPORT: 3/21/2009
 FIGURE NO. C-37
 PROJECT NO. SG18021
 DOCUMENT NO.
 FILE NO.



SGI TESTING SERVICES, LLC

GEOSYNTEC CONSULTANTS - BRC EASTSIDE REMEDIATION INTERFACE DIRECT SHEAR TESTING (ASTM D 5321)

Upper Shear Box: Cover soil lightly compacted/
 Agru 60-mil Microspike HDPE geomembrane # 950222 clamped to upper shear box with short spike (dull) side down/
 Hydrated Bentomat DN GCL (Lot #200910LO/Roll #1295) clamped to lower shear box with black geotextile side down/
Lower Shear Box: Subgrade soil compacted to approximately 90% of max modified Proctor density at optimum moisture content



Test No.	Shear Box Size (in. x in.)	Normal Stress (psf)	Shear Rate (in./min)	GCL Soaking		Consolidation ⁽¹⁾		Subgrade Soil			Cover Soil			GCL		Shear Stress		Failure Mode
				Stress (psf)	Time (hour)	Stress (psf)	Time (hour)	γ_d (pcf)	ω_s (%)	ω_r (%)	γ_d (pcf)	ω_s (%)	ω_r (%)	τ_p (psf)	τ_{LD} (psf)	ω_s (%)	ω_r (%)	
38A	12 x 12	144	0.04	240	48	144	24	114.8	8.0	-	-	-	-	-	144.1	149	122	(2)
38B	12 x 12	288	0.04	240	48	288	24	115.0	7.8	-	-	-	-	-	124.1	272	182	(2)
38C	12 x 12	432	0.04	240	48	432	24	114.5	8.3	-	-	-	-	-	117.2	357	265	(2)

NOTES:
 (1) Consolidation of entire sandwich.
 (2) Shear failure occurred at the interface between the short-spike side of geomembrane and white geotextile side of GCL.

DATE OF REPORT: 3/21/2009
 FIGURE NO. C-38
 PROJECT NO. SGI8021
 DOCUMENT NO.
 FILE NO.



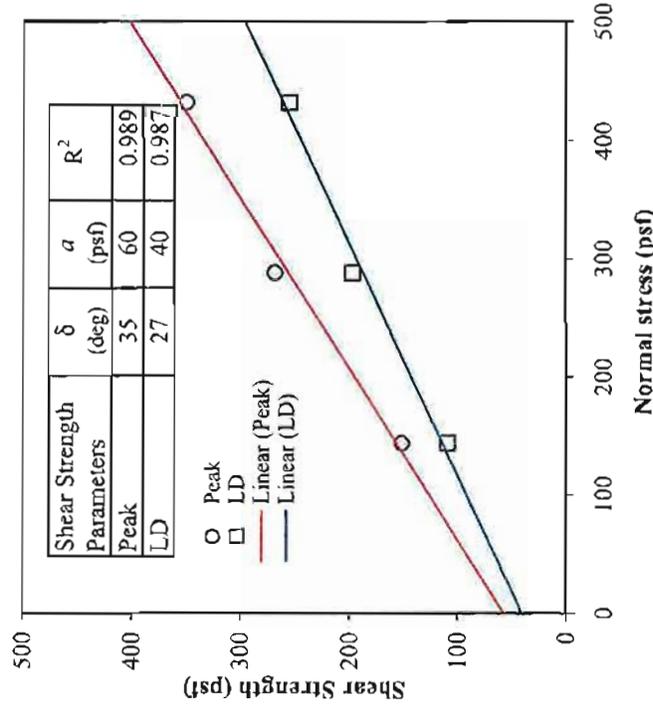
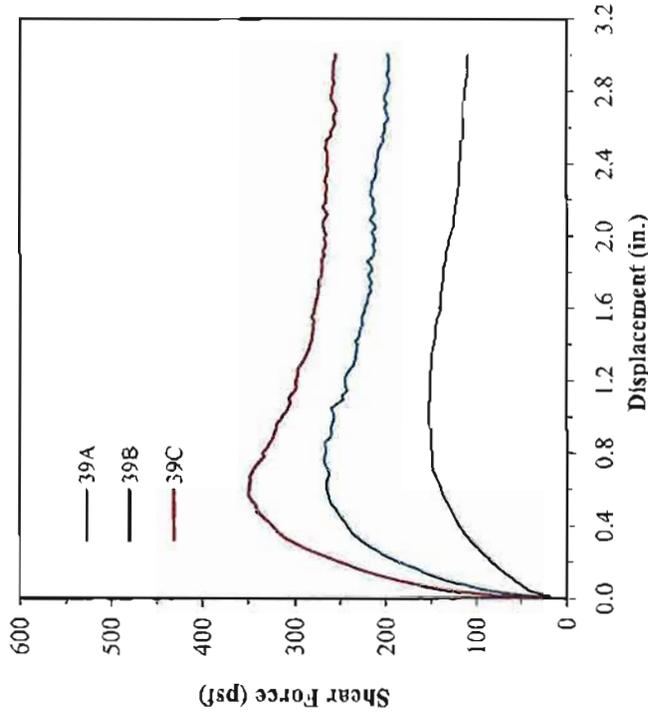
SGI TESTING SERVICES, LLC

**GEOSYNTEC CONSULTANTS - BRC EASTSIDE REMEDIATION
INTERFACE DIRECT SHEAR TESTING (ASTM D 5321)**

Upper Shear Box: Cover soil lightly compacted/

Agru 60-mil Microspike HDPE geomembrane # 950464 clamped to upper shear box with short spike (dull) side down/
Hydrated Bentomat DN GCL (Lot #200910LO/Roll #1434) clamped to lower shear box with black geotextile side down/

Lower Shear Box: Subgrade soil compacted to approximately 90% of max modified Proctor density at optimum moisture content



Test No.	Shear Box Size (in. x in.)	Normal Stress (psf)	Shear Rate (in./min)	GCL Soaking		Consolidation ¹⁾		Subgrade Soil		Cover Soil		GCL		Shear Stress		Failure Mode
				Stress (psf)	Time (hour)	Stress (psf)	Time (hour)	γ_d (pcf)	ω_i (%)	ω_r (%)	ω_l (%)	ω_i (%)	ω_l (%)	τ_p (psf)	τ_{LD} (psf)	
39A	12 x 12	144	0.04	240	48	144	24	115.1	7.7	-	-	145.2	151	109	(2)	
39B	12 x 12	288	0.04	240	48	288	24	114.7	8.1	-	-	128.9	268	197	(2)	
39C	12 x 12	432	0.04	240	48	432	24	114.2	8.6	-	-	119.5	349	255	(2)	

NOTES:

- (1) Consolidation of entire sandwich.
- (2) Shear failure occurred at the interface between the short-spike side of geomembrane and white geotextile side of GCL.

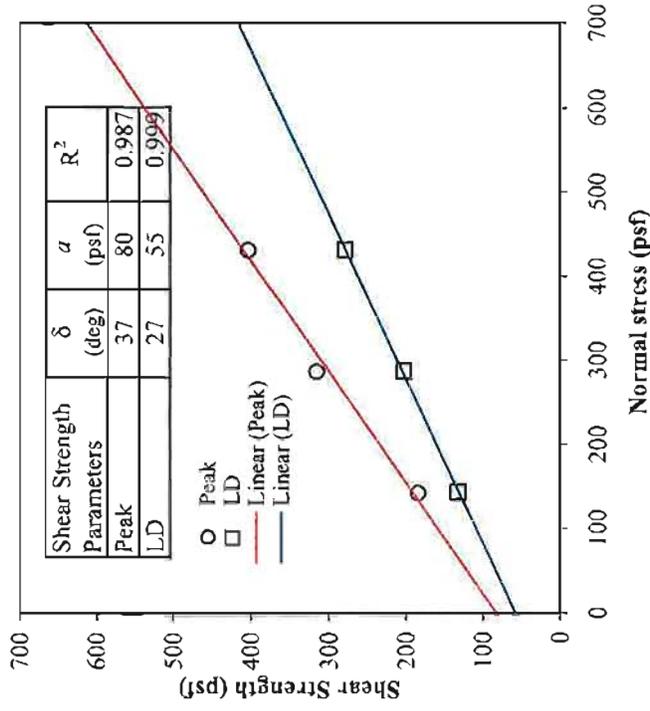
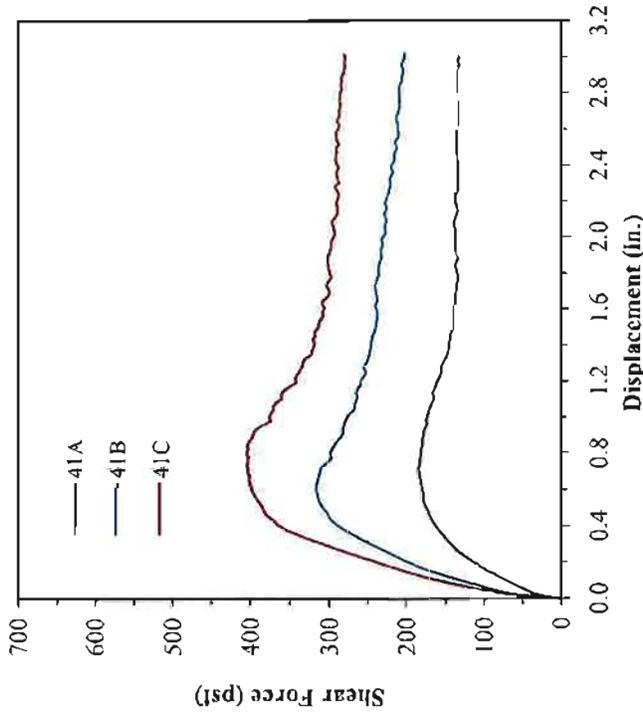
DATE OF REPORT: 3/21/2009
 FIGURE NO. C-39
 PROJECT NO. SGI8021
 DOCUMENT NO.
 FILE NO.



SGI TESTING SERVICES, LLC

**GEOSYNTEC CONSULTANTS - BRC EASTSIDE REMEDIATION
INTERFACE DIRECT SHEAR TESTING (ASTM D 5321)**

Upper Shear Box: Cover soil lightly compacted/
Agu 60-mil Microspike HDPE geomembrane # 943621 clamped to upper shear box with short spike (dull) side down/
Hydrated Bentomat DN GCL (Lot #200917LO/Roll #2432) clamped to lower shear box with black geotextile side down/
Lower Shear Box: Subgrade soil compacted to approximately 90% of max modified Proctor density at optimum moisture content



Test No.	Shear Box Size (in. x in.)	Normal Stress (psf)	Shear Rate (in./min)	GCL Soaking		Consolidation ⁽¹⁾		Subgrade Soil			Cover Soil			GCL		Shear Stress		Failure Mode
				Stress (psf)	Time (hour)	Stress (psf)	Time (hour)	γ_d (pcf)	ω_L (%)	ω_H (%)	γ_d (pcf)	ω_L (%)	ω_H (%)	τ_p (psf)	τ_{LD} (psf)			
41A	12 x 12	144	0.04	240	48	144	24	113.7	9.1	-	-	-	146.2	184	132	-	(2)	
41B	12 x 12	288	0.04	240	48	288	24	114.0	8.8	-	-	-	127.9	315	202	-	(2)	
41C	12 x 12	432	0.04	240	48	432	24	114.8	8.0	-	-	-	122.0	402	279	-	(2)	

NOTES:

- (1) Consolidation of entire sandwich.
- (2) Shear failure occurred at the interface between the short-spike side of geomembrane and white geotextile side of GCL.

DATE OF REPORT: 5/8/2009

FIGURE NO. C-41

PROJECT NO. SG18021

DOCUMENT NO.

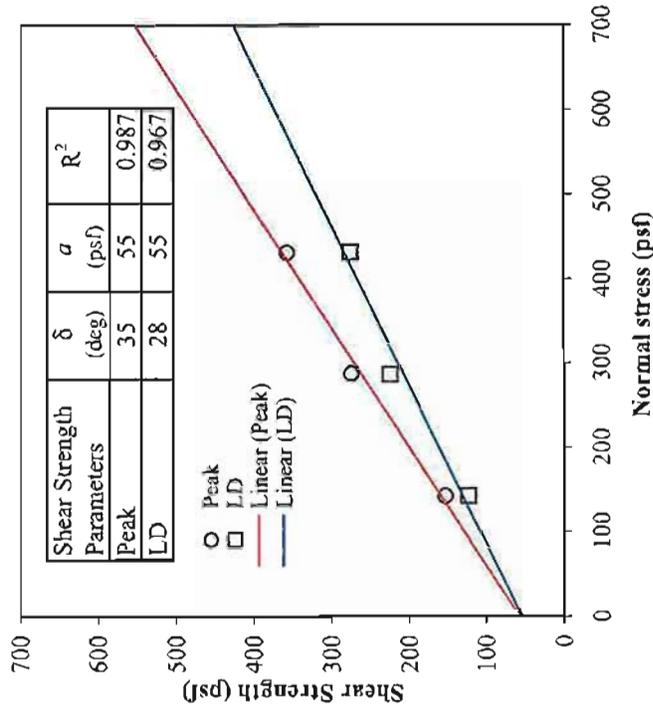
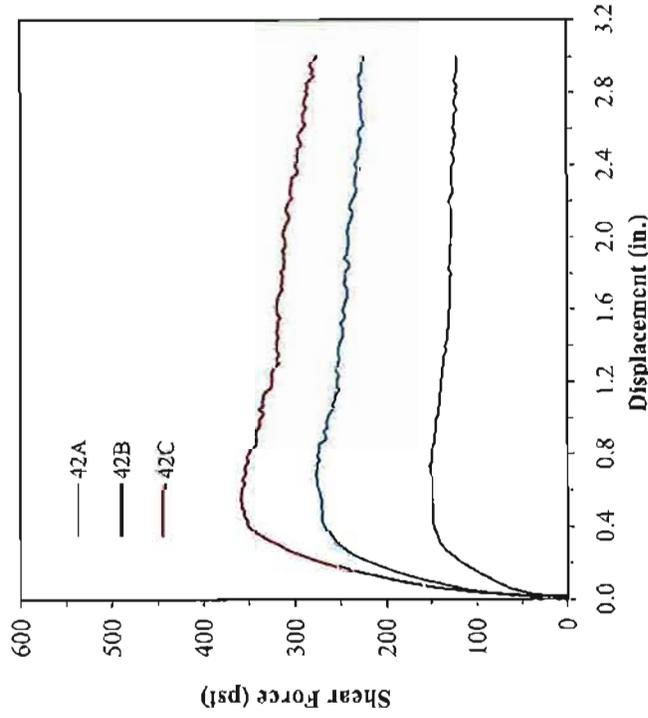
FILE NO.



SGI TESTING SERVICES, LLC

GEOSYNTEC CONSULTANTS - BRC EASTSIDE REMEDIATION INTERFACE DIRECT SHEAR TESTING (ASTM D 5321)

Upper Shear Box: Cover soil lightly compacted/
Agru 60-mil Microspike HDPE geomembrane # 951586 clamped to upper shear box with short spike (dull) side down/
Hydrated Bentomat DN GCL (Lot #200917LO/Roll #2569) clamped to lower shear box with black geotextile side down/
Lower Shear Box: Subgrade soil compacted to approximately 90% of max modified Proctor density at optimum moisture content



Test No.	Shear Box Size (in. x in.)	Normal Stress (psf)	Shear Rate (in./min)	GCL Soaking		Consolidation ⁽¹⁾			Subgrade Soil			Cover Soil			GCL		Shear Stress		Failure Mode
				Stress (psf)	Time (hour)	Stress (psf)	Time (hour)	γ_d (pcf)	ω_f (%)	ω_r (%)	γ_d (pcf)	ω_f (%)	ω_r (%)	ω_f (%)	ω_r (%)	τ_p (psf)	τ_{LD} (psf)		
42A	12 x 12	144	0.04	240	48	144	24	114.3	8.5	-	-	-	-	-	154.1	152	122	(2)	
42B	12 x 12	288	0.04	240	48	288	24	114.6	8.2	-	-	-	-	-	143.0	274	223	(2)	
42C	12 x 12	432	0.04	240	48	432	24	115.2	7.6	-	-	-	-	-	124.2	356	275	(2)	

NOTES:

- (1) Consolidation of entire sandwich.
- (2) Shear failure occurred at the interface between the short-spike side of geomembrane and white geotextile side of GCL.

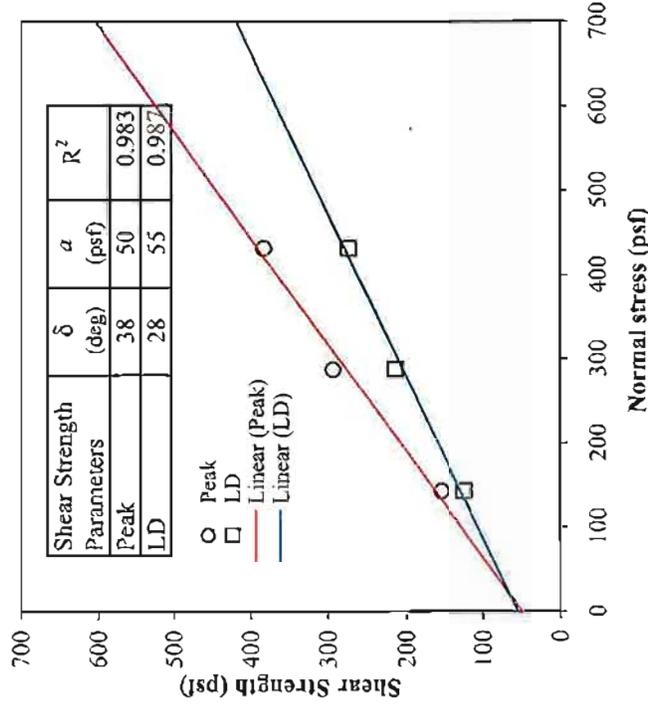
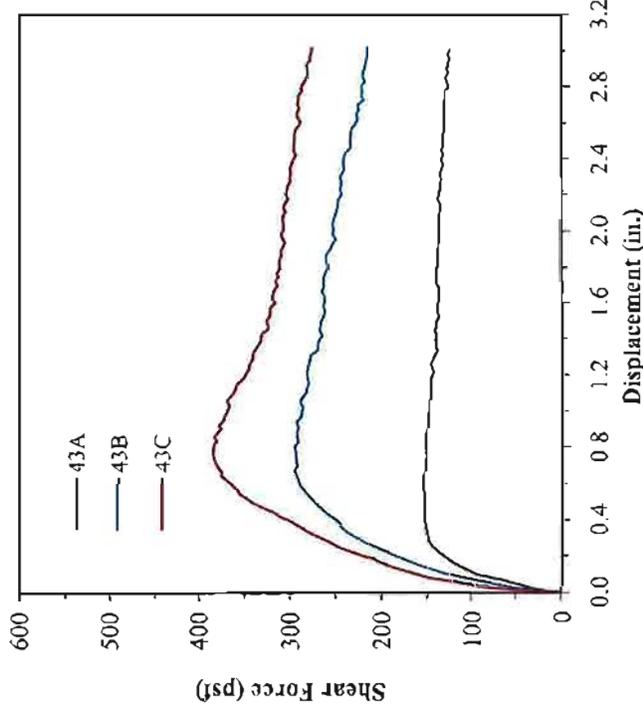
DATE OF REPORT: 5/15/2009
FIGURE NO. C-42
PROJECT NO. SG18021
DOCUMENT NO.
FILE NO.



SGI TESTING SERVICES, LLC

**GEOSYNTEC CONSULTANTS - BRC EASTSIDE REMEDIATION
INTERFACE DIRECT SHEAR TESTING (ASTM D 5321)**

Upper Shear Box: Cover soil lightly compacted/
Agu 60-mil Microspike HDPE geomembrane # 951728 clamped to upper shear box with short spike (dull) side down/
Hydrated Bentomat DN GCL (Lot #200922LO/Roll #31140) clamped to lower shear box with black geotextile side down/
Lower Shear Box: Subgrade soil compacted to approximately 90% of max modified Proctor density at optimum moisture content



Test No.	Shear Box Size (in. x in.)	Normal Stress (psf)	Shear Rate (in./min)	GCL Soaking		Consolidation ⁽¹⁾			Subgrade Soil			Cover Soil			GCL		Shear Stress		Failure Mode
				Stress (psf)	Time (hour)	Stress (psf)	Time (hour)	γ_d (pcf)	ω_s (%)	ω_r (%)	γ_d (pcf)	ω_s (%)	ω_r (%)	τ_p (psf)	τ_{LD} (psf)				
43A	12 x 12	144	0.04	240	48	144	24	114.8	8.0	-	-	-	-	160.6	154	124	(2)		
43B	12 x 12	288	0.04	240	48	288	24	115.1	7.7	-	-	-	-	132.2	294	214	(2)		
43C	12 x 12	432	0.04	240	48	432	24	113.9	8.9	-	-	-	-	120.5	382	274	(2)		

NOTES:

- (1) Consolidation of entire sandwich.
- (2) Shear failure occurred at the interface between the short-spike side of geomembrane and white geotextile side of GCL.

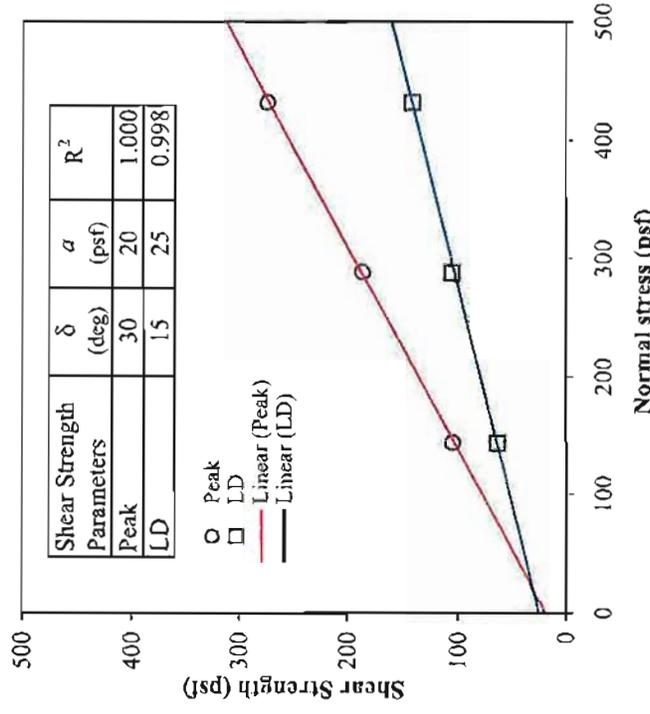
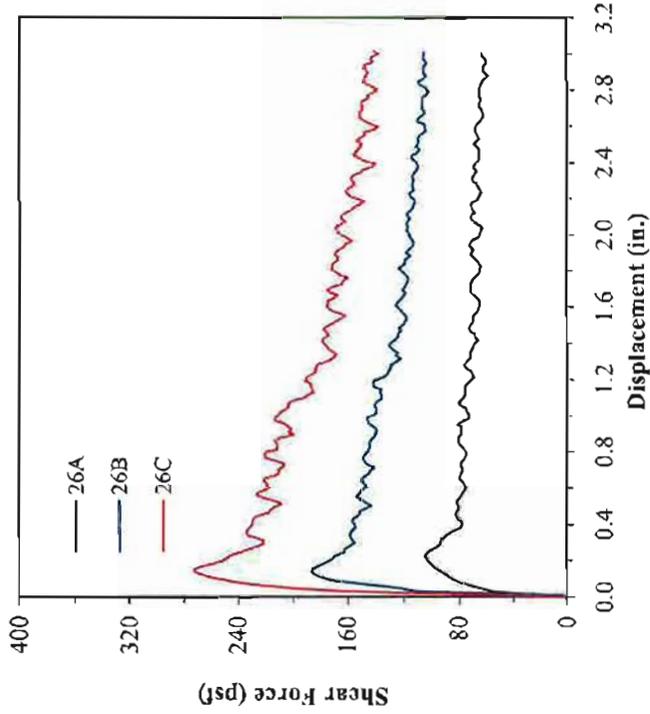
DATE OF REPORT: 6/11/2009
 FIGURE NO. C-43
 PROJECT NO. SGI8021
 DOCUMENT NO.
 FILE NO.



SGI TESTING SERVICES, LLC

**GEOSYNTEC CONSULTANTS - BRC EASTSIDE REMEDIATION
INTERFACE DIRECT SHEAR TESTING (ASTM D 5321)**

Upper Shear Box: Cover soil lightly compacted at as-received moisture content
 SKAPS TN-270-2-6 geocomposite # 269710710 clamped to upper shear box/
 Agru 60-mil Microspike HDPE geomembrane # 944117 clamped to lower shear box with long spike side up
Lower Shear Box: Subgrade soil compacted to approximately 90% of max modified Proctor density at optimum moisture content



Test No.	Shear Box Size (in. x in.)	Normal Stress (psf)	Shear Rate (in./min)	GCL Soaking		Consolidation		Subgrade Soil			Cover Soil			GCL		Shear Stress		Failure Mode
				Stress (psf)	Time (hour)	Stress (psf)	Time (hour)	γ_d (pcf)	ω_i (%)	ω_r (%)	γ_d (pcf)	ω_i (%)	ω_r (%)	ω_i (%)	ω_r (%)	τ_p (psf)	τ_{LD} (psf)	
26A	12 x 12	144	0.04			115.4	7.5	7.1	-	-	-	-	-	104	63	(1)		
26B	12 x 12	288	0.04			114.7	8.1	7.8	-	-	-	-	-	186	105	(1)		
26C	12 x 12	432	0.04			114.9	7.9	7.8	-	-	-	-	-	273	141	(1)		

NOTES:
 (1) Shear failure occurred at the interface between the geocomposite and long spike side of Microspike geomembrane.

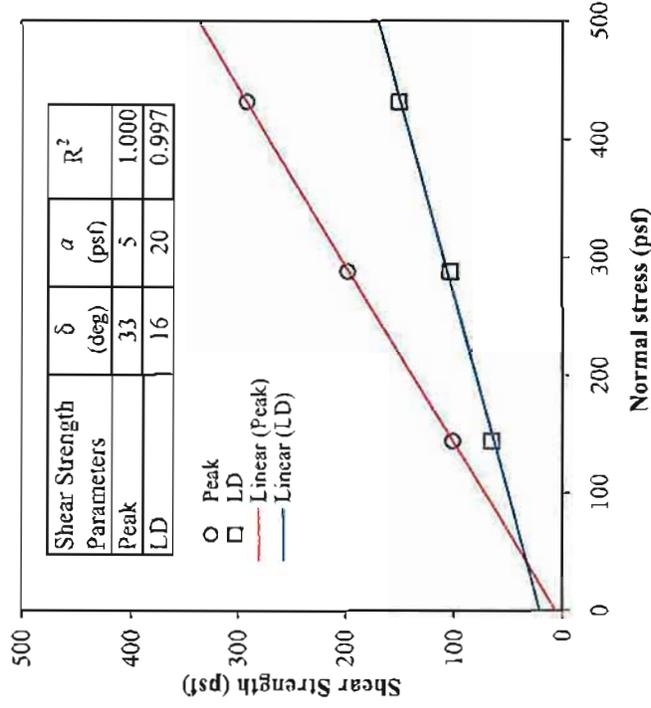
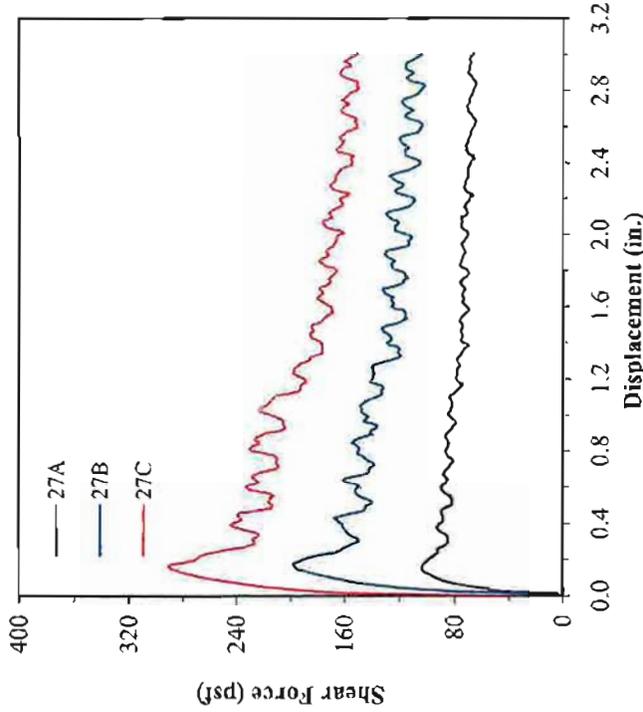
DATE OF REPORT: 1/16/2009
 FIGURE NO. C-26
 PROJECT NO. SGI8021
 DOCUMENT NO.
 FILE NO.



SGI TESTING SERVICES, LLC

**GEOSYNTEC CONSULTANTS - BRC EASTSIDE REMEDIATION
INTERFACE DIRECT SHEAR TESTING (ASTM D 5321)**

Upper Shear Box: Cover soil lightly compacted at as-received moisture content
 SKAPS TN-270-2-6 geocomposite # 269710835 clamped to upper shear box
Lower Shear Box: Subgrade soil compacted to approximately 90% of max modified Proctor density at optimum moisture content



Test No.	Shear Box Size (in. x in.)	Normal Stress (psf)	Shear Rate (in./min.)	GCL Soaking		Consolidation		Subgrade Soil		Cover Soil		GCL		Shear Stress		Failure Mode
				Stress (psf)	Time (hour)	Stress (psf)	Time (hour)	γ_d (pcf)	ω_i (%)	ω_f (%)	γ_d (pcf)	ω_i (%)	ω_f (%)	ω_i (%)	ω_f (%)	
27A	12 x 12	144	0.04			114.3	8.5	8.2	-	-	-	-	-	101	65	(1)
27B	12 x 12	288	0.04			114.8	8.0	7.4	-	-	-	-	-	197	103	(1)
27C	12 x 12	432	0.04			115.4	7.5	7.2	-	-	-	-	-	291	150	(1)

NOTES:
 (1) Shear failure occurred at the interface between the geocomposite and long spike side of Microspike geomembrane.

DATE OF REPORT: 1/16/2009
 FIGURE NO. C-27
 PROJECT NO. SGI8021
 DOCUMENT NO.
 FILE NO.

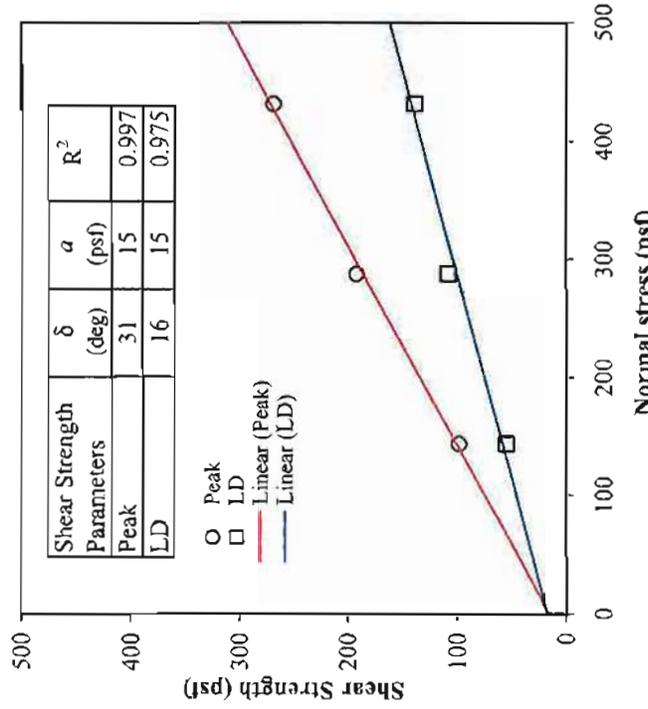
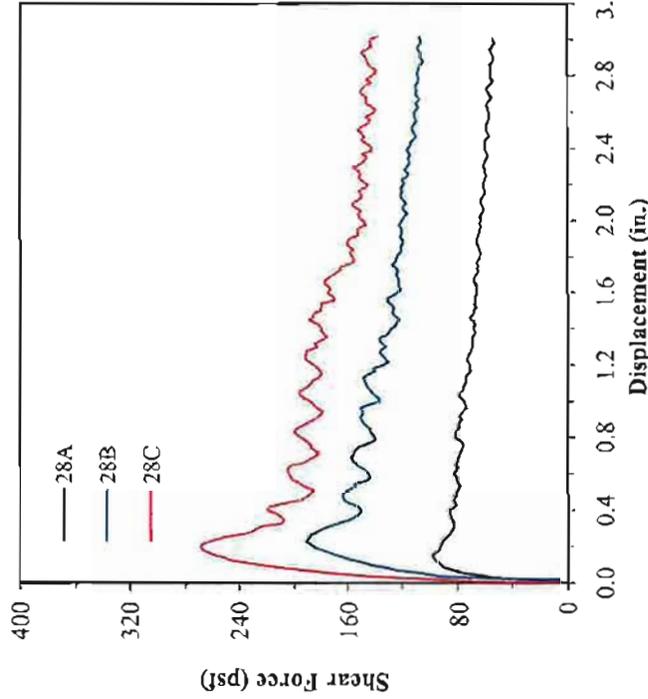


GEOSYNTEC CONSULTANTS - BRC EASTSIDE REMEDIATION INTERFACE DIRECT SHEAR TESTING (ASTM D 5321)

Upper Shear Box: Cover soil lightly compacted at as-received moisture content
SKAPS TN-270-2-6 geocomposite # 269710977 clamped to upper shear box/

Agru 60-mil Microspike HDPE geomembrane # 950464 clamped to lower shear box with long spike side up

Lower Shear Box: Subgrade soil compacted to approximately 90% of max modified Proctor density at optimum moisture content



Test No.	Shear Box Size (in. x in.)	Normal Stress (psf)	Shear Rate (in./min)	GCL Soaking		Consolidation		Subgrade Soil			Cover Soil			GCL		Shear Stress		Failure Mode
				Stress (psf)	Time (hour)	Stress (psf)	Time (hour)	γ_d (pcf)	ω_i (%)	ω_f (%)	γ_d (pcf)	ω_i (%)	ω_f (%)	α_i (%)	α_f (%)	τ_p (psf)	τ_{LD} (psf)	
28A	12 x 12	144	0.04			114.7	8.1	7.4	-	-	-	-	-	98	55	(1)		
28B	12 x 12	288	0.04			115.2	7.6	7.1	-	-	-	-	-	191	108	(1)		
28C	12 x 12	432	0.04			114.1	8.7	8.3	-	-	-	-	-	268	138	(1)		

NOTES:

(1) Shear failure occurred at the interface between the geocomposite and long spike side of Microspike geomembrane.

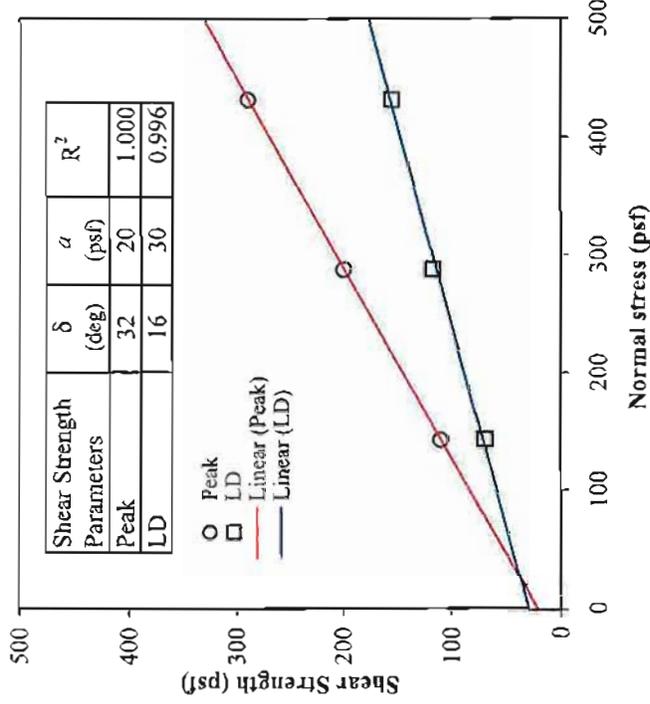
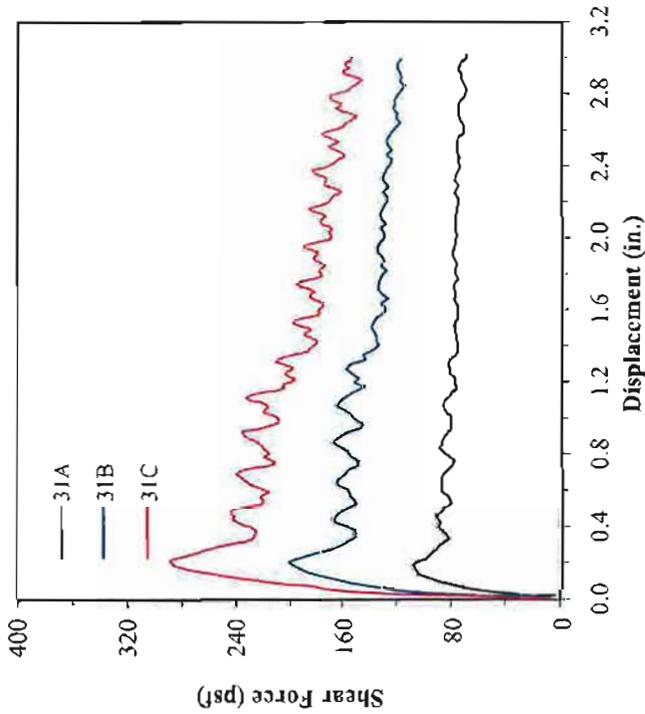
DATE OF REPORT: 1/16/2009
 FIGURE NO. C-28
 PROJECT NO. SGI8021
 DOCUMENT NO.
 FILE NO.



SGI TESTING SERVICES, LLC

**GEOSYNTEC CONSULTANTS - BRC EASTSIDE REMEDIATION
INTERFACE DIRECT SHEAR TESTING (ASTM D 5321)**

Upper Shear Box: Cover soil lightly compacted at as-received moisture content
 SKAPS TN-270-2-6 geocomposite # 269711403 clamped to upper shear box/
 Agru 60-mil Microspike HDPE geomembrane # 943621 clamped to lower shear box with long spike side up
Lower Shear Box: Subgrade soil compacted to approximately 90% of max modified Proctor density at optimum moisture content



Test No.	Shear Box Size (in. x in.)	Normal Stress (psf)	Shear Rate (in./min.)	GCL Soaking		Consolidation		Subgrade Soil		Cover Soil		GCL		Shear Stress		Failure Mode
				Stress (psf)	Time (hour)	Stress (psf)	Time (hour)	γ_d (pcf)	ω_i (%)	ω_t (%)	γ_d (pcf)	ω_i (%)	ω_t (%)	ω_i (%)	ω_t (%)	
31A	12 x 12	144	0.04			115.1	7.7	7.3	-	-	-	-	-	109	69	(1)
31B	12 x 12	288	0.04			114.3	8.5	8.4	-	-	-	-	-	199	116	(1)
31C	12 x 12	432	0.04			114.0	8.8	8.3	-	-	-	-	-	288	154	(1)

NOTES:
 (1) Shear failure occurred at the interface between the geocomposite and long spike side of Microspike geomembrane.

DATE OF REPORT: 2/1/2009
 FIGURE NO. C-31
 PROJECT NO. SGI8021
 DOCUMENT NO.
 FILE NO.

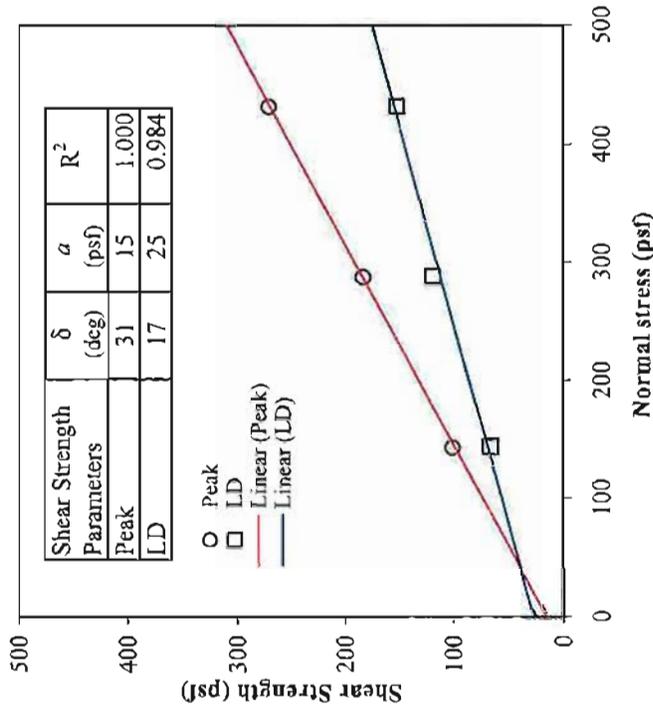
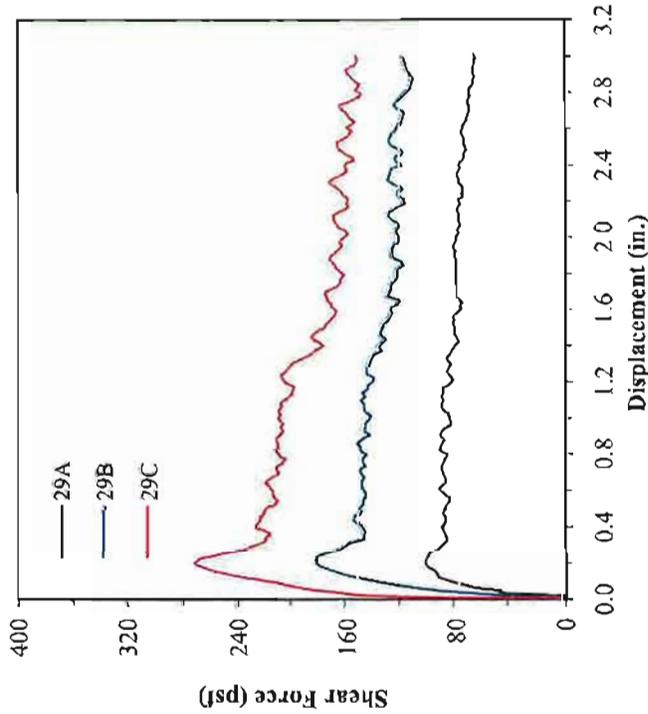


GEOSYNTEC CONSULTANTS - BRC EASTSIDE REMEDIATION INTERFACE DIRECT SHEAR TESTING (ASTM D 5321)

Upper Shear Box: Cover soil lightly compacted at as-received moisture content
SKAPS TN-270-2-6 geocomposite # 269711119 clamped to upper shear box

Agru 60-mil Microspike HDPE geomembrane # 944239 clamped to lower shear box with long spike side up

Lower Shear Box: Subgrade soil compacted to approximately 90% of max modified Proctor density at optimum moisture content



Test No.	Shear Box Size (in. x in.)	Normal Stress (psf)	Shear Rate (in./min)	GCL Soaking		Consolidation		Subgrade Soil		Cover Soil		GCL		Shear Stress		Failure Mode
				Stress (psf)	Time (hour)	Stress (psf)	Time (hour)	γ_d (pcf)	ω_i (%)	ω_f (%)	ω_i (%)	ω_f (%)	ω_i (%)	ω_f (%)	τ_p (psf)	
29A	12 x 12	144	0.04			115.1	7.7	7.5	-	-	-	-	-	100	66	(1)
29B	12 x 12	288	0.04			114.7	8.1	8.0	-	-	-	-	-	183	118	(1)
29C	12 x 12	432	0.04			114.6	8.2	7.6	-	-	-	-	-	270	152	(1)

NOTES:

(1) Shear failure occurred at the interface between the geocomposite and long spike side of Microspike geomembrane.

DATE OF REPORT: 2/1/2009

FIGURE NO. C-29

PROJECT NO. SG18021

DOCUMENT NO.

FILE NO.



SGI TESTING SERVICES, LLC

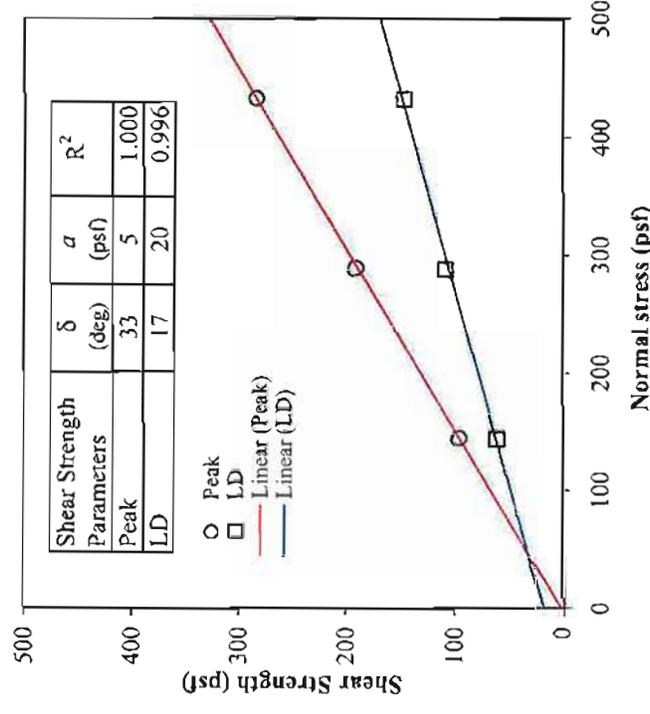
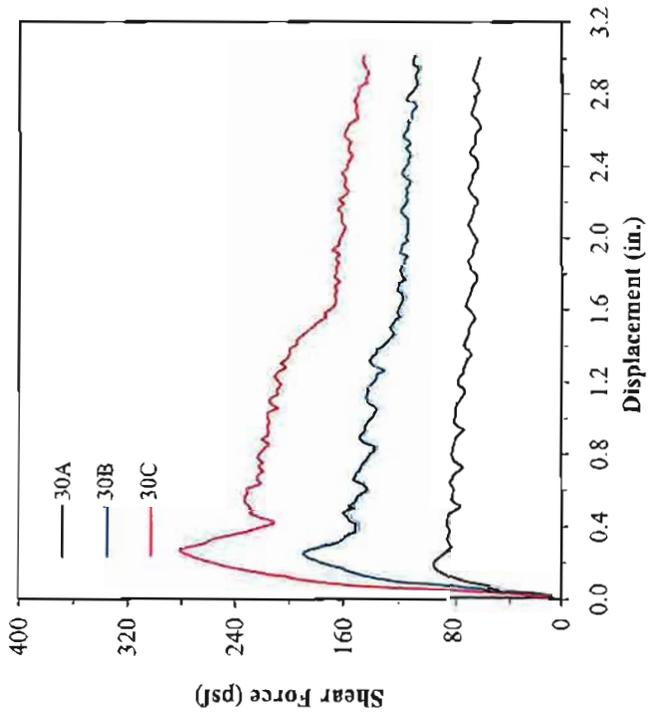
GEOSYNTEC CONSULTANTS - BRC EASTSIDE REMEDIATION INTERFACE DIRECT SHEAR TESTING (ASTM D 5321)

Upper Shear Box: Cover soil lightly compacted at as-received moisture content

SKAPS TN-270-2-6 geocomposite # 269711261 clamped to upper shear box

Agru 60-mil Microspike HDPE geomembrane # 951728 clamped to lower shear box with long spike side up

Lower Shear Box: Subgrade soil compacted to approximately 90% of max modified Proctor density at optimum moisture content



Test No.	Shear Box Size (in. x in.)	Normal Stress (psf)	Shear Rate (in./min)	GCL Soaking		Consolidation		Subgrade Soil		Cover Soil		GCL		Shear Stress		Failure Mode
				Stress (psf)	Time (hour)	Stress (psf)	Time (hour)	γ_d (pcf)	ω_i (%)	ω_f (%)	ω_i (%)	ω_f (%)	ω_i (%)	ω_f (%)	τ_p (psf)	
30A	12 x 12	144	0.04			114.3	8.5	8.0	-	-	-	-	96	61	(1)	
30B	12 x 12	288	0.04			114.9	7.9	7.6	-	-	-	-	191	109	(1)	
30C	12 x 12	432	0.04			115.1	7.7	7.3	-	-	-	-	283	147	(1)	

NOTES:

(1) Shear failure occurred at the interface between the geocomposite and long spike side of Microspike geomembrane.

DATE OF REPORT: 2/1/2009
 FIGURE NO. C-30
 PROJECT NO. SGI8021
 DOCUMENT NO.
 FILE NO.



APPENDIX E

60-mil HDPE Geomembrane

APPENDIX E-1
Material Inventory Logs

APPENDIX E-2
CQA Conformance Results



GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 943731.08
TRI Log #: E2320-47-06

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5994)													
Thickness (mils)	61	64	66	68	66	64	64	62	69	64	65	2	60 avg
											61	<< min	54 min
Density (ASTM D 1505)													
Density (g/cm3)	0.944	0.945	0.945								0.945	0.001	0.940 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.34	2.34									2.34	0.00	2 - 3%
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	1	1	1	1								8 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1								2 Cat 3
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)													
MD Yield Strength (ppi)	166	162	163	167	161						164	3	126 min
TD Yield Strength (ppi)	179	178	175	182	179						179	3	126 min
MD Break Strength (ppi)	178	162	207	181	173						180	17	90 min
TD Break Strength (ppi)	123	179	190	125	189						161	34	90 min
MD Yield Elongation (%)	22	22	22	21	21						22	1	12 min
TD Yield Elongation (%)	17	17	17	17	17						17	0	12 min
MD Break Elongation (%)	408	381	459	459	421						426	34	100 min
TD Break Elongation (%)	51	520	571	354	554						410	218	100 min
MD Machine Direction	TD Transverse Direction												

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 943742.08
TRI Log #: E2320-47-06

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5994)													
Thickness (mils)	65	67	65	66	64	65	64	68	65	67	66	1	60 avg
											64	<< min	54 min
Density (ASTM D 1505)													
Density (g/cm3)	0.942	0.942	0.942								0.942	0.000	0.940 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.28	2.30									2.29	0.01	2 - 3%
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	1	1	1	1								8 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1								2 Cat 3
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)													
MD Yield Strength (ppi)	174	171	174	169	173						172	2	126 min
TD Yield Strength (ppi)	181	180	176	172	186						179	5	126 min
MD Break Strength (ppi)	175	172	190	141	179						171	18	90 min
TD Break Strength (ppi)	128	127	176	161	134						145	22	90 min
MD Yield Elongation (%)	21	21	21	21	21						21	0	12 min
TD Yield Elongation (%)	19	17	17	17	17						17	1	12 min
MD Break Elongation (%)	444	414	451	320	449						416	55	100 min
TD Break Elongation (%)	115	226	506	455	364						333	162	100 min
MD Machine Direction	TD Transverse Direction												

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 944106.08
TRI Log #: E2320-49-04

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5994)													
Thickness (mils)	66	67	64	64	64	70	72	66	70	64	67	3	60 avg
											64	<< min	54 min
Density (ASTM D 1505)													
Density (g/cm3)	0.944	0.944	0.944								0.944	0.000	0.940 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.30	2.31									2.31	0.01	2 - 3%
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	1	1	1	1								8 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1								2 Cat 3
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)													
MD Yield Strength (ppi)	181	176	182	172	174						177	4	126 min
TD Yield Strength (ppi)	194	190	175	190	191						188	7	126 min
MD Break Strength (ppi)	177	187	216	187	178						189	16	90 min
TD Break Strength (ppi)	153	194	197	179	134						171	27	90 min
MD Yield Elongation (%)	22	22	22	22	22						22	0	12 min
TD Yield Elongation (%)	16	16	21	16	16						17	2	12 min
MD Break Elongation (%)	385	429	456	424	414						422	26	100 min
TD Break Elongation (%)	416	531	464	478	106						399	169	100 min
MD Machine Direction	TD Transverse Direction												

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GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 944117.08
TRI Log #: E2320-49-04

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5994)													
Thickness (mils)	65	67	69	65	65	64	64	66	68	65	66	2	60 avg
											64	<< min	54 min
Density (ASTM D 1505)													
Density (g/cm3)	0.945	0.945	0.945								0.945	0.000	0.940 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.22	2.24									2.23	0.01	2 - 3%
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	1	1	1	1								8 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1								2 Cat 3
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)													
MD Yield Strength (ppi)	150	157	160	160	158						157	4	126 min
TD Yield Strength (ppi)	173	177	171	188	179						178	7	126 min
MD Break Strength (ppi)	175	174	177	191	174						178	7	90 min
TD Break Strength (ppi)	190	169	171	173	178						176	8	90 min
MD Yield Elongation (%)	22	22	22	22	22						22	0	12 min
TD Yield Elongation (%)	21	21	21	21	21						21	0	12 min
MD Break Elongation (%)	455	454	409	464	418						440	25	100 min
TD Break Elongation (%)	449	449	449	449	449						449	0	100 min
MD Machine Direction	TD Transverse Direction												

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 944228.08
TRI Log #: E2320-49-04

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5994)													
Thickness (mils)	67	63	64	64	72	64	65	64	73	64	66	4	60 avg
											63	<< min	54 min
Density (ASTM D 1505)													
Density (g/cm3)	0.944	0.944	0.945								0.944	0.001	0.940 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.35	2.29									2.32	0.04	2 - 3%
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	1	1	1	1								8 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1								2 Cat 3
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)													
MD Yield Strength (ppi)	174	176	175	169	173						173	3	126 min
TD Yield Strength (ppi)	168	174	174	173	177						173	3	126 min
MD Break Strength (ppi)	197	178	192	185	186						188	7	90 min
TD Break Strength (ppi)	151	166	172	176	125						158	21	90 min
MD Yield Elongation (%)	19	19	19	19	19						19	0	12 min
TD Yield Elongation (%)	15	15	15	15	15						15	0	12 min
MD Break Elongation (%)	446	419	446	443	445						440	12	100 min
TD Break Elongation (%)	413	470	486	524	306						440	85	100 min
MD Machine Direction	TD Transverse Direction												

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GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 944231.08
TRI Log #: E2320-80-05

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Thickness (ASTM D 5994)														
Thickness (mils)	66	62	67	65	63	67	66	66	66	66	63	65	2	60 avg
												62	<< min	54 min
Density (ASTM D 1505)														
Density (g/cm3)	0.943	0.943	0.943									0.943	0.000	0.940 min
Carbon Black Content (ASTM D 1603, mod.)														
% Carbon Black	2.18	2.17										2.18	0.01	2 - 3%
Carbon Black Dispersion (ASTM D 5596)														
Rating - 1st field view	1	1	1	1	1									8 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1									2 Cat 3
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)														
MD Yield Strength (ppi)	178	173	171	173	173							174	3	126 min
TD Yield Strength (ppi)	177	180	186	178	181							180	4	126 min
MD Break Strength (ppi)	189	177	194	174	179							183	9	90 min
TD Break Strength (ppi)	195	188	188	180	193							189	6	90 min
MD Yield Elongation (%)	21	21	21	21	21							21	0	12 min
TD Yield Elongation (%)	17	17	17	17	17							17	0	12 min
MD Break Elongation (%)	451	426	439	414	420							430	15	100 min
TD Break Elongation (%)	536	515	543	500	549							529	20	100 min
MD Machine Direction	TD Transverse Direction													

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GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 944238.08
TRI Log #: E2320-51-04

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5994)													
Thickness (mils)	63	64	65	64	68	67	66	66	69	69	66	2	60 avg
											63	<< min	54 min
Density (ASTM D 1505)													
Density (g/cm3)	0.944	0.944	0.944								0.944	0.000	0.940 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.17	2.19									2.18	0.01	2 - 3%
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	1	1	2	1								8 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1								2 Cat 3
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)													
MD Yield Strength (ppi)	166	165	170	175	162						168	5	126 min
TD Yield Strength (ppi)	166	180	176	177	185						177	7	126 min
MD Break Strength (ppi)	169	168	190	144	175						169	17	90 min
TD Break Strength (ppi)	166	180	182	174	188						178	8	90 min
MD Yield Elongation (%)	20	20	20	20	20						20	0	12 min
TD Yield Elongation (%)	19	17	17	17	17						17	1	12 min
MD Break Elongation (%)	405	399	450	349	439						408	40	100 min
TD Break Elongation (%)	469	514	541	493	521						508	28	100 min
MD Machine Direction	TD Transverse Direction												

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GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 944349.08
TRI Log #: E2320-51-04

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5994)													
Thickness (mils)	62	65	64	64	63	65	65	66	67	66	65	1	60 avg
											62	<< min	54 min
Density (ASTM D 1505)													
Density (g/cm3)	0.943	0.943	0.943								0.943	0.000	0.940 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.21	2.23									2.22	0.01	2 - 3%
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	2	1	1	1	1								8 Cat 1, 2
Rating - 2nd field view	1	1	1	2	1								2 Cat 3
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)													
MD Yield Strength (ppi)	155	159	160	163	166						161	4	126 min
TD Yield Strength (ppi)	174	174	175	171	179						175	3	126 min
MD Break Strength (ppi)	199	143	160	176	187						173	22	90 min
TD Break Strength (ppi)	179	191	196	177	179						184	9	90 min
MD Yield Elongation (%)	22	22	22	22	22						22	0	12 min
TD Yield Elongation (%)	17	17	17	17	15						17	1	12 min
MD Break Elongation (%)	509	325	371	453	420						416	71	100 min
TD Break Elongation (%)	479	574	576	515	516						532	42	100 min
MD Machine Direction	TD Transverse Direction												

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GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 950222.08
TRI Log #: E2324-06-01

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5994)													
Thickness (mils)	66	60	62	63	63	61	62	58	66	64	63	3	60 avg
											58	<< min	54 min
Density (ASTM D 1505)													
Density (g/cm3)	0.943	0.943	0.944								0.943	0.001	0.940 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.30	2.30									2.30	0.00	2 - 3%
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	1	1	1	1								8 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1								2 Cat 3
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)													
MD Yield Strength (ppi)	148	155	155	157	160						155	4	126 min
TD Yield Strength (ppi)	166	163	168	170	176						169	5	126 min
MD Break Strength (ppi)	165	168	181	161	179						171	9	90 min
TD Break Strength (ppi)	177	176	159	164	121						159	23	90 min
MD Yield Elongation (%)	21	21	21	21	21						21	0	12 min
TD Yield Elongation (%)	17	17	17	17	17						17	0	12 min
MD Break Elongation (%)	453	459	499	400	456						453	35	100 min
TD Break Elongation (%)	550	561	479	490	231						462	134	100 min
MD Machine Direction	TD Transverse Direction												

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GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 950232.08
TRI Log #: E2324-06-01

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Thickness (ASTM D 5994)														
Thickness (mils)	64	65	64	63	65	60	64	65	62	63	64	60	2	60 avg 54 min
Density (ASTM D 1505)														
Density (g/cm3)	0.944	0.944	0.944										0.000	0.940 min
Carbon Black Content (ASTM D 1603, mod.)														
% Carbon Black	2.46	2.46											0.00	2 - 3%
Carbon Black Dispersion (ASTM D 5596)														
Rating - 1st field view	1	1	1	1	1									8 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1									2 Cat 3
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)														
MD Yield Strength (ppi)	158	156	154	156	159								2	126 min
TD Yield Strength (ppi)	172	168	164	170	167								3	126 min
MD Break Strength (ppi)	195	181	131	168	166								24	90 min
TD Break Strength (ppi)	179	173	166	181	183								7	90 min
MD Yield Elongation (%)	22	22	22	22	22								0	12 min
TD Yield Elongation (%)	17	19	19	18	18								1	12 min
MD Break Elongation (%)	471	508	306	463	406								78	100 min
TD Break Elongation (%)	550	539	535	576	561								17	100 min
MD Machine Direction	TD Transverse Direction													

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GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 950343.08
TRI Log #: E2324-06-01

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Thickness (ASTM D 5994)														
Thickness (mils)	68	64	66	67	67	62	64	67	65	66	66	62	2	60 avg
													<< min	54 min
Density (ASTM D 1505)														
Density (g/cm3)	0.942	0.942	0.942									0.942	0.000	0.940 min
Carbon Black Content (ASTM D 1603, mod.)														
% Carbon Black	2.11	2.13										2.12	0.01	2 - 3%
Carbon Black Dispersion (ASTM D 5596)														
Rating - 1st field view	1	1	1	1	1									8 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1									2 Cat 3
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)														
MD Yield Strength (ppi)	169	166	167	171	169							168	2	126 min
TD Yield Strength (ppi)	170	172	174	178	180							175	4	126 min
MD Break Strength (ppi)	196	178	185	177	178							183	8	90 min
TD Break Strength (ppi)	202	171	140	208	193							183	28	90 min
MD Yield Elongation (%)	22	22	22	22	22							22	0	12 min
TD Yield Elongation (%)	19	19	19	19	19							19	0	12 min
MD Break Elongation (%)	496	469	485	466	463							476	14	100 min
TD Break Elongation (%)	603	479	418	624	568							538	87	100 min
MD Machine Direction	TD Transverse Direction													

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GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 950353.08
TRI Log #: E2324-07-05

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5994)													
Thickness (mils)	62	62	62	61	61	62	66	68	62	65	63	2	60 avg
											61	<< min	54 min
Density (ASTM D 1505)													
Density (g/cm3)	0.944	0.944	0.944								0.944	0.000	0.940 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.20	2.19									2.20	0.01	2 - 3%
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	1	1	1	1								8 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1								2 Cat 3
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)													
MD Yield Strength (ppi)	158	156	158	158	169						160	5	126 min
TD Yield Strength (ppi)	175	167	163	172	177						171	6	126 min
MD Break Strength (ppi)	206	180	179	174	172						182	14	90 min
TD Break Strength (ppi)	190	155	191	195	185						183	16	90 min
MD Yield Elongation (%)	21	21	21	21	21						21	0	12 min
TD Yield Elongation (%)	15	17	19	17	18						17	1	12 min
MD Break Elongation (%)	481	505	491	446	420						469	35	100 min
TD Break Elongation (%)	588	474	590	586	530						554	51	100 min
MD Machine Direction	TD Transverse Direction												

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GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 950464.08
TRI Log #: E2324-07-05

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5994)													
Thickness (mils)	63	62	61	63	64	65	63	60	61	64	63	2	60 avg
												<< min	54 min
Density (ASTM D 1505)													
Density (g/cm3)	0.943	0.943	0.943									0.000	0.940 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.27	2.23										0.03	2 - 3%
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	2	1	1	1								8 Cat 1, 2
Rating - 2nd field view	1	1	1	1	2								2 Cat 3
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)													
MD Yield Strength (ppi)	150	149	151	150	150							1	126 min
TD Yield Strength (ppi)	164	166	169	167	166							2	126 min
MD Break Strength (ppi)	177	160	182	165	165							9	90 min
TD Break Strength (ppi)	171	176	138	158	123							22	90 min
MD Yield Elongation (%)	20	20	20	20	20							0	12 min
TD Yield Elongation (%)	17	17	19	17	17							1	12 min
MD Break Elongation (%)	465	419	494	433	446							29	100 min
TD Break Elongation (%)	534	551	406	484	329							93	100 min
MD Machine Direction	TD Transverse Direction												

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GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 951352.08
TRI Log #: E2324-18-04

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Thickness (ASTM D 5994)														
Thickness (mils)	64	65	64	65	67	65	64	65	63	64	65	63	1	60 avg
													<< min	54 min
Density (ASTM D 1505)														
Density (g/cm3)	0.942	0.942	0.942										0.000	0.940 min
Carbon Black Content (ASTM D 1603, mod.)														
% Carbon Black	2.29	2.30											0.01	2 - 3%
Carbon Black Dispersion (ASTM D 5596)														
Rating - 1st field view	1	1	1	1	1									8 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1									2 Cat 3
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)														
MD Yield Strength (ppi)	170	163	169	164	166								3	126 min
TD Yield Strength (ppi)	187	177	175	172	183								6	126 min
MD Break Strength (ppi)	219	171	197	193	177								19	90 min
TD Break Strength (ppi)	211	150	164	199	180								25	90 min
MD Yield Elongation (%)	21	21	21	21	21								0	12 min
TD Yield Elongation (%)	17	17	17	17	17								0	12 min
MD Break Elongation (%)	479	428	493	481	441								28	100 min
TD Break Elongation (%)	623	413	480	588	523								84	100 min
MD Machine Direction	TD Transverse Direction													

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GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 951364.08
TRI Log #: E2324-18-04

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5994)													
Thickness (mils)	64	63	65	68	68	67	65	68	69	64	66	2	60 avg
											63	<< min	54 min
Density (ASTM D 1505)													
Density (g/cm3)	0.942	0.942	0.942								0.942	0.000	0.940 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.32	2.29									2.31	0.02	2 - 3%
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	1	1	1	1								8 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1								2 Cat 3
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)													
MD Yield Strength (ppi)	172	174	171	172	173						172	1	126 min
TD Yield Strength (ppi)	186	188	184	186	178						184	4	126 min
MD Break Strength (ppi)	188	196	171	178	179						182	10	90 min
TD Break Strength (ppi)	181	133	130	176	134						151	25	90 min
MD Yield Elongation (%)	22	22	22	22	22						22	0	12 min
TD Yield Elongation (%)	17	17	17	17	17						17	0	12 min
MD Break Elongation (%)	465	501	429	448	434						455	29	100 min
TD Break Elongation (%)	490	85	208	491	306						316	178	100 min
MD Machine Direction	TD Transverse Direction												

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GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 951475.08
TRI Log #: E2324-18-04

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5994)													
Thickness (mils)	65	68	65	66	65	65	69	66	68	67	66	2	60 avg
											65	<< min	54 min
Density (ASTM D 1505)													
Density (g/cm3)	0.942	0.942	0.941								0.942	0.001	0.940 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.25	2.25									2.25	0.00	2 - 3%
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	1	1	1	1								8 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1								2 Cat 3
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)													
MD Yield Strength (ppi)	169	164	167	168	167						167	2	126 min
TD Yield Strength (ppi)	189	187	181	181	180						184	4	126 min
MD Break Strength (ppi)	187	194	190	181	190						188	5	90 min
TD Break Strength (ppi)	210	157	161	141	209						176	32	90 min
MD Yield Elongation (%)	21	21	21	21	21						21	0	12 min
TD Yield Elongation (%)	17	17	19	17	19						18	1	12 min
MD Break Elongation (%)	439	504	490	474	449						471	27	100 min
TD Break Elongation (%)	600	443	450	408	624						505	99	100 min
MD Machine Direction	TD Transverse Direction												

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GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 951586.08
TRI Log #: E2324-18-04

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Thickness (ASTM D 5994)														
Thickness (mils)	66	67	67	67	67	66	67	67	68	66	67	66	1	60 avg
													<< min	54 min
Density (ASTM D 1505)														
Density (g/cm3)	0.942	0.942	0.942										0.000	0.940 min
Carbon Black Content (ASTM D 1603, mod.)														
% Carbon Black	2.19	2.21											0.01	2 - 3%
Carbon Black Dispersion (ASTM D 5596)														
Rating - 1st field view	1	1	1	1	1									8 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1									2 Cat 3
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)														
MD Yield Strength (ppi)	164	170	174	171	170								4	126 min
TD Yield Strength (ppi)	175	176	189	186	186								6	126 min
MD Break Strength (ppi)	166	212	196	220	188								21	90 min
TD Break Strength (ppi)	199	173	131	172	170								24	90 min
MD Yield Elongation (%)	21	21	21	21	21								0	12 min
TD Yield Elongation (%)	19	19	17	17	17								1	12 min
MD Break Elongation (%)	434	501	478	518	491								32	100 min
TD Break Elongation (%)	595	499	354	494	483								86	100 min
MD Machine Direction	TD Transverse Direction													

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GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 951596.08
TRI Log #: E2324-19-05

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.		
	1	2	3	4	5	6	7	8	9	10					
Thickness (ASTM D 5994)															
Thickness (mils)	62	68	66	66	66	67	69	68	69	67	67	62	2	60 avg	
													<< min	54 min	
Density (ASTM D 1505)															
Density (g/cm3)	0.941	0.941	0.941									0.941	0.000	0.940 min	
Carbon Black Content (ASTM D 1603, mod.)															
% Carbon Black	2.16	2.21										2.19	0.04	2 - 3%	
Carbon Black Dispersion (ASTM D 5596)															
Rating - 1st field view	1	1	1	1	1									8 Cat 1, 2	
Rating - 2nd field view	1	1	1	1	1									2 Cat 3	
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)															
MD Yield Strength (ppi)	188	190	187	189	186							188	2	126 min	
TD Yield Strength (ppi)	209	207	198	199	210							205	6	126 min	
MD Break Strength (ppi)	184	198	207	197	186							194	9	90 min	
TD Break Strength (ppi)	144	202	177	186	205							183	25	90 min	
MD Yield Elongation (%)	19	19	19	19	19							19	0	12 min	
TD Yield Elongation (%)	17	17	17	17	17							17	0	12 min	
MD Break Elongation (%)	393	425	474	429	421							428	29	100 min	
TD Break Elongation (%)	324	536	483	509	549							480	91	100 min	
MD Machine Direction	TD Transverse Direction														

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GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 951607.08
TRI Log #: E2324-19-05

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5994)													
Thickness (mils)	62	66	61	67	66	66	63	69	64	64	65	2	60 avg
											61	<< min	54 min
Density (ASTM D 1505)													
Density (g/cm3)	0.942	0.942	0.942								0.942	0.000	0.940 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.18	2.21									2.20	0.02	2 - 3%
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	1	1	1	1								8 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1								2 Cat 3
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)													
MD Yield Strength (ppi)	177	168	168	166	175						171	5	126 min
TD Yield Strength (ppi)	191	183	177	187	179						183	6	126 min
MD Break Strength (ppi)	207	181	163	177	185						183	16	90 min
TD Break Strength (ppi)	197	123	181	186	180						173	29	90 min
MD Yield Elongation (%)	20	20	20	20	20						20	0	12 min
TD Yield Elongation (%)	15	15	15	15	15						15	0	12 min
MD Break Elongation (%)	464	430	374	440	456						433	36	100 min
TD Break Elongation (%)	591	351	560	568	535						521	97	100 min
MD Machine Direction	TD Transverse Direction												

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GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 951617.08
TRI Log #: E2324-19-05

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Thickness (ASTM D 5994)														
Thickness (mils)	63	62	64	62	63	64	63	65	64	67	64	62	1	60 avg
												64	<< min	54 min
Density (ASTM D 1505)														
Density (g/cm3)	0.942	0.943	0.943									0.943	0.001	0.940 min
Carbon Black Content (ASTM D 1603, mod.)														
% Carbon Black	2.21	2.19										2.20	0.01	2 - 3%
Carbon Black Dispersion (ASTM D 5596)														
Rating - 1st field view	1	1	1	1	1									8 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1									2 Cat 3
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)														
MD Yield Strength (ppi)	164	165	161	163	161							163	2	126 min
TD Yield Strength (ppi)	168	169	178	177	178							174	5	126 min
MD Break Strength (ppi)	181	197	177	191	189							187	8	90 min
TD Break Strength (ppi)	141	157	174	196	172							168	21	90 min
MD Yield Elongation (%)	20	20	20	20	20							20	0	12 min
TD Yield Elongation (%)	17	17	17	17	17							17	0	12 min
MD Break Elongation (%)	438	481	441	471	471							461	20	100 min
TD Break Elongation (%)	411	448	499	606	506							494	74	100 min
MD Machine Direction	TD Transverse Direction													

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GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 951728.08
TRI Log #: E2324-19-05

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5994)													
Thickness (mils)	65	65	64	67	65	63	63	67	66	64	65 63	1 << min	60 avg 54 min
Density (ASTM D 1505)													
Density (g/cm3)	0.942	0.942	0.942								0.942	0.000	0.940 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.29	2.24									2.27	0.04	2 - 3%
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	1	1	1	1								8 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1								2 Cat 3
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)													
MD Yield Strength (ppi)	175	165	168	170	169						169	4	126 min
TD Yield Strength (ppi)	191	182	182	186	188						186	4	126 min
MD Break Strength (ppi)	207	168	171	179	193						184	16	90 min
TD Break Strength (ppi)	204	145	128	157	131						153	31	90 min
MD Yield Elongation (%)	19	19	19	19	19						19	0	12 min
TD Yield Elongation (%)	17	17	17	17	17						17	0	12 min
MD Break Elongation (%)	498	400	400	458	481						447	45	100 min
TD Break Elongation (%)	583	444	330	429	396						436	93	100 min
MD Machine Direction	TD Transverse Direction												

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GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 951739.08
TRI Log #: E2324-19-05

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5994)													
Thickness (mils)	62	64	66	60	66	62	66	66	65	68	65	2	60 avg
											60	<< min	54 min
Density (ASTM D 1505)													
Density (g/cm3)	0.942	0.942	0.942								0.942	0.000	0.940 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.25	2.26									2.26	0.01	2 - 3%
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	1	1	1	1								8 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1								2 Cat 3
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)													
MD Yield Strength (ppi)	161	174	166	163	160						165	6	126 min
TD Yield Strength (ppi)	193	187	176	179	177						182	7	126 min
MD Break Strength (ppi)	218	177	167	172	168						180	21	90 min
TD Break Strength (ppi)	187	182	177	135	180						172	21	90 min
MD Yield Elongation (%)	21	21	21	21	21						21	0	12 min
TD Yield Elongation (%)	15	15	17	17	17						16	1	12 min
MD Break Elongation (%)	468	415	408	440	421						430	24	100 min
TD Break Elongation (%)	496	560	530	413	541						508	58	100 min
MD Machine Direction	TD Transverse Direction												

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GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 952101.08
TRI Log #: E2324-19-05

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.		
	1	2	3	4	5	6	7	8	9	10					
Thickness (ASTM D 5994)															
Thickness (mils)	65	62	63	63	65	63	63	66	64	66	64	62	1	60 avg	
													<< min	54 min	
Density (ASTM D 1505)															
Density (g/cm3)	0.942	0.942	0.942									0.942	0.000	0.940 min	
Carbon Black Content (ASTM D 1603, mod.)															
% Carbon Black	2.20	2.22										2.21	0.01	2 - 3%	
Carbon Black Dispersion (ASTM D 5596)															
Rating - 1st field view	1	1	1	1	1									8 Cat 1, 2	
Rating - 2nd field view	1	1	1	1	1									2 Cat 3	
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)															
MD Yield Strength (ppi)	156	157	161	165	165							161	4	126 min	
TD Yield Strength (ppi)	177	175	177	180	188							179	5	126 min	
MD Break Strength (ppi)	190	189	189	194	174							187	8	90 min	
TD Break Strength (ppi)	126	192	182	200	182							176	29	90 min	
MD Yield Elongation (%)	21	21	21	21	21							21	0	12 min	
TD Yield Elongation (%)	17	17	17	17	17							17	0	12 min	
MD Break Elongation (%)	450	484	466	461	426							458	21	100 min	
TD Break Elongation (%)	381	568	526	573	518							513	78	100 min	
MD Machine Direction	TD Transverse Direction														

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GEOMEMBRANE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC Camu - Base Liner

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 952112.08
TRI Log #: E2324-25-06

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Thickness (ASTM D 5994)														
Thickness (mils)	64	67	65	65	64	65	64	63	65	65	65	63	1	60 avg
													<< min	54 min
Density (ASTM D 1505)														
Density (g/cm3)	0.940	0.941	0.941										0.001	0.940 min
Carbon Black Content (ASTM D 1603, mod.)														
% Carbon Black	2.19	2.17											0.01	2 - 3%
Carbon Black Dispersion (ASTM D 5596)														
Rating - 1st field view	1	1	1	1	1									8 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1									2 Cat 3
Tensile Properties (ASTM D 638/GRI GM 13, 2 ipm strain rate, Type IV specimen - HDPE)														
MD Yield Strength (ppi)	165	165	169	167	168								2	126 min
TD Yield Strength (ppi)	184	176	191	189	182								6	126 min
MD Break Strength (ppi)	187	220	156	172	196								24	90 min
TD Break Strength (ppi)	180	181	128	181	179								23	90 min
MD Yield Elongation (%)	22	24	22	22	22								1	12 min
TD Yield Elongation (%)	17	17	17	17	17								0	12 min
MD Break Elongation (%)	439	480	358	426	436								44	100 min
TD Break Elongation (%)	500	520	330	508	518								81	100 min
MD Machine Direction	TD Transverse Direction													

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APPENDIX E-3
Trial Seam Logs

APPENDIX E-3A

Fusion Weld

Trial Seam Log - Fusion

Project: <u>CAMU Closure Phase II & IIIA</u>	ProjNo: <u>SC0313</u>	TaskNo: <u>09/03</u>
Location: <u>Henderson, NV</u>		
Description: <u>Geomembrane Liner System</u>		
Tensiometer Description: Demtech		

Material Type	gml : 1	Peel Inside:	91 ppi	Shear:	120 ppi
		Peel Outside:	91 ppi		

Trial Seam No	Date	Time	Mach ID	Oper ID	Mat Desc	Fusion		Test Results					QA ID
						Wedge • Celsius	Speed ft./Min	Peel In	Peel Out	Shear	Unit ppi/psi	Result	
1-001	10/13/2009	10:20	1210	EB	S/S	850	5.0	131	129	174	ppi	P	SI
1-002	10/13/2009	10:23	1210	EB	T/T	850	4.0	129	127	158	ppi	P	SI
1-003	10/13/2009	10:40	1210	EB	S/T	850	4.0	129	124	162	ppi	P	SI
1-004	10/13/2009	13:40	1210	EB	S/S	850	5.0	116	118	162	ppi	P	SI
1-005	10/13/2009	13:45	1210	EB	S/T	850	4.0	115	119	153	ppi	P	SI
1-006	10/13/2009	13:47	1209	IS	S/S	850	5.0	121	114	153	ppi	P	SI
1-007	10/13/2009	13:50	1209	IS	T/T	850	4.0	117	131	150	ppi	P	SI
1-008	10/14/2009	8:20	1209	JC	S/S	850	5.0	132	132	192	ppi	P	SI
1-009	10/14/2009	8:30	1210	EB	S/S	850	5.0	139	132	191	ppi	P	SI
1-010	10/14/2009	9:22	1209	JC	T/T	850	4.0	132	121	173	ppi	P	SI
1-011	10/14/2009	13:06	1209	JC	S/S	850	5.0	122	125	161	ppi	P	SI
1-012	10/14/2009	13:00	1210	EB	S/S	850	5.0	123	121	159	ppi	P	SI
1-013	10/14/2009	13:10	1210	EB	T/T	850	4.0	120	114	157	ppi	P	SI
1-014	10/14/2009	14:40	1210	EB	S/T	850	4.0	125	117	151	ppi	P	SI
1-015	10/14/2009	14:42	1209	JC	S/T	850	4.0	121	116	152	ppi	P	SI
1-016	10/14/2009	13:10	1209	JC	T/T	850	4.0	122	115	151	ppi	P	SI
1-017	10/15/2009	8:30	1210	EB	S/T	850	4.0	118	111	152	ppi	P	SI
1-018	10/15/2009	8:35	1210	EB	S/S	850	5.0	111	110	153	ppi	P	SI
1-019	10/15/2009	8:35	1209	JC	S/S	850	5.0	122	133	152	ppi	P	SI
1-020	10/15/2009	8:40	1209	JC	T/T	850	4.0	120	115	150	ppi	P	SI
1-021	10/15/2009	8:37	1210	EB	T/T	850	4.0	116	115	151	ppi	P	SI
1-022	10/15/2009	13:10	1209	JC	S/S	850	5.0	112	115	150	ppi	P	SI
1-023	10/15/2009	13:10	1210	EB	S/S	850	5.5	118	119	151	ppi	P	SI
1-024	10/15/2009	13:20	1210	EB	T/T	850	4.0	107	109	146	ppi	P	SI
1-025	10/16/2009	8:04	1209	JC	S/S	850	5.0	125	114	165	ppi	P	SI
1-026	10/16/2009	8:06	1209	JC	T/T	850	4.0	132	127	156	ppi	P	SI
1-027	10/16/2009	8:00	1210	EB	S/S	850	5.5	125	130	164	ppi	P	SI
1-028	10/16/2009	7:55	1210	EB	T/T	850	4.0	127	124	163	ppi	P	SI
1-029	10/16/2009	8:05	1210	EB	S/T	850	4.0	135	124	156	ppi	P	SI
1-030	10/16/2009	9:40	20831	JC	S/S	850	5.0	123	118	153	ppi	P	SI
1-031	10/16/2009	10:45	20831	JC	T/T	850	4.0	120	116	150	ppi	P	SI
1-032	10/16/2009	13:00	1210	EB	S/S	850	5.5	116	124	153	ppi	P	SI
1-033	10/16/2009	13:05	1210	EB	T/T	850	4.0	118	121	156	ppi	P	SI
1-034	10/16/2009	13:08	20831	JC	S/S	850	5.0	129	116	151	ppi	P	SI

Trial Seam Log - Fusion

Project: <u>CAMU Closure Phase II & IIIA</u>	ProjNo: <u>SC0313</u>	TaskNo: <u>09/03</u>
Location: <u>Henderson, NV</u>		
Description: <u>Geomembrane Liner System</u>		
Tensiometer Description: Demtech		

Material Type	gml : 1	Peel Inside:	91 ppi	Shear:	120 ppi
		Peel Outside:	91 ppi		

Trial Seam No	Date	Time	Mach ID	Oper ID	Mat Desc	Fusion		Test Results					QA ID
						Wedge • Celsius	Speed ft./Min	Peel In	Peel Out	Shear	Unit ppi/psi	Result	
1-035	10/16/2009	13:12	20831	JC	T/T	850	4.0	115	116	151	ppi	P	SI
1-036	10/19/2009	7:55	20831	JC	S/S	850	5.0	126	127	160	ppi	P	SI
1-037	10/19/2009	8:00	20831	JC	T/T	850	4.0	130	139	158	ppi	P	SI
1-038	10/19/2009	8:07	1210	EB	S/S	850	5.5	123	128	163	ppi	P	SI
1-039	10/19/2009	8:05	1210	EB	T/T	850	4.0	127	109	165	ppi	P	SI
1-040	10/19/2009	8:00	1210	EB	S/T	850	4.0	122	124	158	ppi	P	SI
1-041	10/20/2009	8:00	20831	JC	S/S	850	5.0	133	129	195	ppi	P	SI
1-042	10/20/2009	7:55	20831	JC	T/T	850	4.0	141	119	166	ppi	P	SI
1-043	10/20/2009	8:00	1210	EB	S/T	850	4.0	135	127	177	ppi	P	SI
1-044	10/20/2009	7:30	1210	EB	S/S	850	5.5	121	130	178	ppi	P	SI
1-045	10/20/2009	7:40	1210	EB	T/T	850	4.0	132	139	196	ppi	P	SI
1-046	10/20/2009	13:00	1210	EB	S/S	850	5.5	118	124	159	ppi	P	SI
1-047	10/20/2009	13:05	20831	JC	S/S	850	5.0	127	122	156	ppi	P	SI
1-048	10/20/2009	13:05	1210	EB	T/T	850	4.0	119	129	158	ppi	P	SI
1-049	10/20/2009	13:10	20831	JC	S/T	850	4.0	127	114	152	ppi	P	SI
1-050	10/21/2009	8:02	1210	EB	S/S	850	5.5	137	133	165	ppi	P	SI
1-051	10/21/2009	8:05	1210	EB	T/T	850	4.0	123	123	162	ppi	P	SI
1-052	10/21/2009	8:00	20831	JC	S/S	850	5.0	133	134	182	ppi	P	SI
1-053	10/21/2009	8:05	20831	JC	T/T	850	4.0	126	120	163	ppi	P	SI
1-054	10/21/2009	8:10	20831	JC	S/T	850	4.0	131	124	168	ppi	P	SI
1-055	10/21/2009	8:10	1210	EB	S/T	850	4.0	141	127	178	ppi	P	SI
1-056	10/21/2009	13:00	20831	JC	S/S	850	5.0	124	124	162	ppi	P	SI
1-057	10/21/2009	13:02	20831	JC	T/T	850	4.0	121	120	151	ppi	P	SI
1-058	10/21/2009	13:00	1210	EB	S/S	850	5.5	114	124	156	ppi	P	SI
1-059	10/21/2009	13:05	1210	EB	S/T	850	4.0	132	125	165	ppi	P	SI
1-060	10/21/2009	13:10	1210	EB	T/T	850	4.0	123	119	165	ppi	P	SI
1-061	10/21/2009	13:08	20831	JC	S/T	850	4.0	121	118	156	ppi	P	SI
1-062	10/22/2009	7:30	1210	EB	S/S	850	5.0	125	125	180	ppi	P	SI
1-063	10/22/2009	7:35	1210	EB	T/T	850	4.0	133	136	176	ppi	P	SI
1-064	10/22/2009	7:30	20831	JC	S/S	850	5.0	134	131	174	ppi	P	SI
1-065	10/22/2009	7:35	20831	JC	T/T	850	4.0	137	138	177	ppi	P	SI
1-066	10/22/2009	9:00	1210	EB	S/T	850	4.0	124	122	154	ppi	P	SI
1-067	11/10/2009	7:30	1210	EB	S/S	850	5.5	126	125	173	ppi	P	CL
1-068	11/10/2009	7:43	1209	JC	S/S	850	5.0	138	132	180	ppi	P	CL

Trial Seam Log - Fusion

Project: <u>CAMU Closure Phase II & IIIA</u>	ProjNo: <u>SC0313</u>	TaskNo: <u>09/03</u>
Location: <u>Henderson, NV</u>		
Description: <u>Geomembrane Liner System</u>		
Tensiometer Description: Demtech		

Material Type	gml : 1	Peel Inside:	91 ppi	Shear:	120 ppi
		Peel Outside:	91 ppi		

Trial Seam No	Date	Time	Mach ID	Oper ID	Mat Desc	Fusion		Test Results					QA ID
						Wedge • Celsius	Speed ft./Min	Peel In	Peel Out	Shear	Unit ppi/psi	Result	
1-069	11/10/2009	12:40	1210	EB	S/S	850	5.5	120	126	158	ppi	P	CL
1-070	11/10/2009	12:45	1209	JC	S/S	850	5.0	125	127	159	ppi	P	CL
1-071	11/11/2009	7:30	1210	EB	S/S	850	5.5	126	132	186	ppi	P	SI
1-072	11/11/2009	7:20	1209	JC	S/S	850	5.0	126	134	184	ppi	P	SI
1-073	11/11/2009	12:52	1209	JC	S/S	850	5.0	117	117	160	ppi	P	SI
1-074	11/11/2009	12:45	1210	EB	S/S	850	5.5	139	133	180	ppi	P	SI
1-075	11/11/2009	12:50	1209	JC	S/T	850	4.0	115	124	162	ppi	P	SI
1-076	11/11/2009	12:55	1210	EB	S/T	850	4.0	133	132	163	ppi	P	SI
1-077	11/11/2009	12:50	1210	EB	T/T	850	4.0	134	133	158	ppi	P	SI
1-078	11/12/2009	7:05	1210	EB	S/S	850	5.5	145	147	196	ppi	P	CL
1-079	11/12/2009	7:10	1210	EB	S/T	850	4.0	149	144	188	ppi	P	CL
1-080	11/12/2009	7:15	1210	EB	T/T	850	4.0	131	150	184	ppi	P	CL
1-081	11/12/2009	7:08	20831	JC	S/S	850	5.0	145	148	194	ppi	P	CL
1-082	11/12/2009	7:10	20831	JC	S/T	850	4.0	131	126	174	ppi	P	CL
1-083	11/12/2009	7:12	20831	JC	T/T	850	4.0	143	120	171	ppi	P	CL
1-084	11/12/2009	13:14	20831	JC	S/T	850	4.0	126	134	163	ppi	P	CL
1-085	11/12/2009	13:30	20831	JC	T/T	850	4.0	139	135	175	ppi	P	CL
1-086	11/12/2009	13:15	1210	EB	T/T	850	4.0	128	126	168	ppi	P	CL
1-087	11/12/2009	13:20	1210	EB	S/T	850	4.0	125	125	166	ppi	P	CL
1-088	11/13/2009	7:25	20831	JC	S/T	850	4.0	131	136	185	ppi	P	CL
1-089	11/13/2009	7:30	20831	JC	S/S	850	5.0	141	135	199	ppi	P	CL
1-090	11/13/2009	7:32	20831	JC	T/T	850	4.0	142	142	189	ppi	P	CL
1-091	11/13/2009	7:20	1210	EB	S/T	850	4.0	148	139	190	ppi	P	CL
1-092	11/13/2009	7:25	1210	EB	T/T	850	4.0	142	142	191	ppi	P	CL
1-093	11/13/2009	7:30	1210	EB	S/S	850	5.5	127	130	187	ppi	P	CL
1-094	11/16/2009	7:27	20831	JC	S/S	850	5.0	137	139	214	ppi	P	CL
1-095	11/16/2009	7:30	1210	EB	S/S	850	5.5	140	151	206	ppi	P	CL

APPENDIX E-3B

Extrusion Weld

Trial Seam Log - Extrusion

Project: <u>CAMU Closure Phase II & IIIA</u>	ProjNo: <u>SC0313</u>	TaskNo: <u>09/03</u>
Location: <u>Henderson, NV</u>		
Description: <u>Geomembrane Liner System</u>		
Tensiometer Description: Demtech		

Material Type	gml : 1	Peel: 78 ppi	Shear: 120 ppi
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Trial Seam No	Date	Time	Mach ID	Oper ID	Mat Desc	Extrusion		Test Results				Retest No	QA ID
						Pre heat • Celsius	Barrel • Celsius	Peel	Shear	Unit ppi/psi	Result P/F		
1-001	10/17/2009	7:30	513	IS	T/T	500	550	132	185	ppi	P		SI
1-002	10/17/2009	7:35	14	EB	T/T	350	500	123	193	ppi	P		SI
1-003	10/17/2009	13:00	14	EB	T/T	350	500	116	149	ppi	P		SI
1-004	10/17/2009	13:02	513	IS	T/T	500	550	120	146	ppi	P		SI
1-005	10/19/2009	7:20	513	IS	T/T	500	550	111	159	ppi	P		SI
1-006	10/19/2009	12:03	513	IS	T/T	500	500	121	151	ppi	P		SI
1-007	10/19/2009	12:20	14	EB	T/T	350	500	125	151	ppi	P		SI
1-008	10/21/2009	7:30	513	IS	T/T	500	500	127	174	ppi	P		SI
1-009	10/21/2009	13:00	513	IS	T/T	500	500	126	153	ppi	P		SI
1-010	10/22/2009	8:30	513	IS	T/T	500	500	122	158	ppi	P		SI
1-011	10/22/2009	10:00	14	EB	T/T	300	300	119	151	ppi	P		SI
1-012	10/22/2009	13:00	14	EB	T/T	300	500	127	147	ppi	P		SI
1-013	10/22/2009	13:02	513	IS	T/T	500	500	126	152	ppi	P		SI
1-014	10/23/2009	7:20	513	IS	T/T	500	500	134	161	ppi	P		SI
1-015	11/13/2009	12:30	13	EB	T/T	350	500	127	175	ppi	P		CL
1-016	11/13/2009	12:30	513	IS	T/T	500	500	149	157	ppi	P		CL
1-017	11/14/2009	7:30	513	IS	T/T	500	500	141	197	ppi	P		CL
1-018	11/14/2009	7:20	13	BRS	T/T	550	500	138	170	ppi	P		CL
1-019	11/16/2009	10:00	513	IS	T/T	500	500	148	163	ppi	P		CL
1-020	11/16/2009	13:00	513	IS	T/T	500	500	129	155	ppi	P		CL
1-021	11/17/2009	7:30	513	IS	T/T	500	500	139	181	ppi	P		CL

APPENDIX E-4
Panel Placement Logs

Panel Placement Log

Project: CAMU Closure Phase II & IIIA
Location: Henderson, NV
Description: Geomembrane Liner System

Primary / Secondary: Primary		Series: 1		Material Type: gml			
<i>Panel</i>	<i>Batch-Roll</i>	<i>Date</i>	<i>Time</i>	<i>Placement/Location/Comments</i>	<i>Width (ft.)</i>	<i>Length (ft.)</i>	<i>QA ID</i>
1	951623-08	10/13/2009	10:10	S SLOPE PHASE IIIA	22	74	SI
2	951623-08	10/13/2009	10:15	E OF & ADJ TO P-1	11	76	SI
3	951623-08	10/13/2009	10:50	E OF & ADJ TO P-2	10	68	SI
4	951623-08	10/13/2009	10:55	E OF & ADJ TO P-3	11	76	SI
5	951623-08	10/13/2009	11:25	N OF & ADJ TO P-4	8	16	SI
6	951623-08	10/13/2009	11:30	N OF & ADJ TO P-4	22	41	SI
7	951623-08	10/13/2009	11:35	N OF & ADJ TO P-6	22	70	SI
8	951737-08	10/13/2009	14:35	N OF & ADJ TO P-7	14	70	SI
9	951737-08	10/13/2009	14:40	N OF & ADJ TO P-8	16	66	SI
10	951737-08	10/13/2009	15:05	N OF & ADJ TO P-9	22	56	SI
11	951737-08	10/13/2009	15:10	N OF & ADJ TO P-10	11	34	SI
12	951737-08	10/13/2009	15:15	W OF & ADJ TO P-13	22	98	SI
13	951737-08	10/13/2009	15:40	W OF & ADJ TO P-14	22	54	SI
14	951737-08	10/13/2009	15:45	W OF & ADJ TO P-11	11	36	SI
15	951731-08	10/14/2009	8:10	W OF & ADJ TO P-12	22	98	SI
16	951731-08	10/14/2009	8:15	W OF & ADJ TO P-15	22	98	SI
17	951731-08	10/14/2009	8:20	W OF & ADJ TO P-16	22	100	SI
18	951731-08	10/14/2009	9:00	W OF & ADJ TO P-17	22	92	SI
19	951735-08	10/14/2009	9:15	W OF & ADJ TO P-17	22	8	SI
20	951735-08	10/14/2009	9:20	W OF & ADJ TO P-18	22	87	SI
21	951735-08	10/14/2009	10:10	W OF & ADJ TO P-1	22	82	SI
22	951735-08	10/14/2009	10:15	W OF & ADJ TO P-21	22	86	SI
23	951735-08	10/14/2009	11:20	W OF & ADJ TO P-22	22	88	SI
24	951729-08	10/14/2009	13:15	W OF & ADJ TO P-23	22	88	SI
25	951729-08	10/14/2009	13:30	W OF & ADJ TO P-24	22	60	SI
26	951729-08	10/14/2009	14:30	N OF & ADJ TO P-27	22	48	SI
27	951729-08	10/14/2009	14:35	S OF & ADJ TO P-26	11	42	SI
28	951729-08	10/14/2009	14:45	S OF & ADJ TO P-27	11	42	SI
29	951729-08	10/15/2009	8:10	W OF & ADJ TO P-28	22	70	SI
30	951740-08	10/15/2009	8:15	N OF & ADJ TO P-26	10	44	SI
31	951740-08	10/15/2009	8:20	N OF & ADJ TO P-30	10	42	SI

Panel Placement Log

Project: CAMU Closure Phase II & IIIA
Location: Henderson, NV
Description: Geomembrane Liner System

Primary / Secondary: Primary		Series: 1		Material Type: gml			
<i>Panel</i>	<i>Batch-Roll</i>	<i>Date</i>	<i>Time</i>	<i>Placement/Location/Comments</i>	<i>Width (ft.)</i>	<i>Length (ft.)</i>	<i>QA ID</i>
32	951740-08	10/15/2009	8:25	W OF & ADJ TO P-31	8	42	SI
33	951740-08	10/15/2009	8:30	W OF & ADJ TO P-20	15	70	SI
34	951740-08	10/15/2009	8:35	W OF & ADJ TO P-33	22	120	SI
35	951740-08	10/15/2009	8:40	W OF & ADJ TO P-29	22	100	SI
36	951627-08	10/15/2009	9:50	W OF & ADJ TO P-35	22	104	SI
37	951627-08	10/15/2009	9:55	W OF & ADJ TO P-36	22	108	SI
38	951627-08	10/15/2009	13:05	W OF & ADJ TO P-37	22	112	SI
39	951738-08	10/15/2009	13:15	W OF & ADJ TO P-38	22	116	SI
40	951738-08	10/15/2009	13:25	W OF & ADJ TO P-39	22	120	SI
41	951738-08	10/15/2009	14:25	W OF & ADJ TO P-40	22	124	SI
42	951730-08	10/15/2009	14:35	W OF & ADJ TO P-41	22	128	SI
43	951730-08	10/15/2009	14:45	W OF & ADJ TO P-42	22	132	SI
44	951730-08	10/15/2009	14:55	W OF & ADJ TO P-43	22	136	SI
45	951732-08	10/15/2009	15:15	W OF & ADJ TO P-44	22	140	SI
46	951732-08	10/16/2009	8:15	W OF & ADJ TO P-34	22	124	SI
47	951732-08	10/16/2009	8:25	W OF & ADJ TO P-46	22	134	SI
48	951742-08	10/16/2009	8:35	W OF & ADJ TO P-47	22	138	SI
49	951742-08	10/16/2009	8:45	W OF & ADJ TO P-48	22	144	SI
50	951742-08	10/16/2009	9:45	W OF & ADJ TO P-45	22	122	SI
51	951627-08	10/16/2009	9:55	W OF & ADJ TO P-45	22	24	SI
52	951733-08	10/16/2009	11:05	W OF & ADJ TO P-49	6	60	SI
53	951733-08	10/16/2009	11:10	W OF & ADJ TO P-49	22	103	SI
54	951733-08	10/16/2009	11:20	W OF & ADJ TO P-53	22	146	SI
55	951733-08	10/16/2009	13:40	W OF & ADJ TO P-54	22	114	SI
56	951627-08	10/16/2009	13:50	W OF & ADJ TO P-54	22	34	SI
57	951741-08	10/16/2009	14:00	W OF & ADJ TO P-55	22	146	SI
58	951741-08	10/16/2009	14:25	W OF & ADJ TO P-57	22	146	SI
59	951741-08	10/16/2009	14:35	W OF & ADJ TO P-58	22	110	SI
60	951729-08	10/16/2009	14:45	W OF & ADJ TO P-58	22	38	SI
61	951736-08	10/19/2009	8:00	W OF & ADJ TO P-59	22	148	SI
62	951736-08	10/19/2009	8:05	W OF & ADJ TO P-61	22	148	SI

Panel Placement Log

Project: CAMU Closure Phase II & IIIA
Location: Henderson, NV
Description: Geomembrane Liner System

Primary / Secondary: Primary		Series: 1		Material Type: gml			
<i>Panel</i>	<i>Batch-Roll</i>	<i>Date</i>	<i>Time</i>	<i>Placement/Location/Comments</i>	<i>Width (ft.)</i>	<i>Length (ft.)</i>	<i>QA ID</i>
63	951736-08	10/19/2009	8:10	W OF & ADJ TO P-50	22	96	SI
64	951739-08	10/19/2009	9:05	W OF & ADJ TO P-51	22	54	SI
65	951739-08	10/19/2009	9:10	W OF & ADJ TO P-63	22	150	SI
66	951739-08	10/19/2009	9:15	W OF & ADJ TO P-62	22	148	SI
67	951734-08	10/20/2009	8:30	W OF & ADJ TO P-65	22	100	SI
68	951734-08	10/20/2009	8:35	W OF & ADJ TO P-67	22	88	SI
69	951734-08	10/20/2009	8:45	N OF & ADJ TO P-70	22	80	SI
70	951734-08	10/20/2009	9:10	N OF & ADJ TO P-71	22	80	SI
71	952103-08	10/20/2009	9:20	N OF & ADJ TO P-72	11	62	SI
72	952103-08	10/20/2009	9:25	N OF & ADJ TO P-73	11	72	SI
73	952103-08	10/20/2009	9:35	E OF & ADJ TO P-74	11	60	SI
74	952103-08	10/20/2009	9:40	W OF & ADJ TO P-68	22	113	SI
75	951625-08	10/20/2009	13:15	W OF & ADJ TO P-74	22	202	SI
76	951625-08	10/20/2009	13:25	W OF & ADJ TO P-75	22	202	SI
77	951624-08	10/20/2009	14:00	W OF & ADJ TO P-76	22	202	SI
78	951624-08	10/20/2009	14:05	W OF & ADJ TO P-77	22	202	SI
79	951626-08	10/20/2009	14:45	W OF & ADJ TO P-78	22	202	SI
80	951626-08	10/20/2009	14:55	W OF & ADJ TO P-79	22	202	SI
81	951622-08	10/20/2009	15:30	W OF & ADJ TO P-80	22	202	SI
82	952103-08	10/21/2009	8:05	N OF & ADJ TO P-69	22	42	SI
83	951739-08	10/21/2009	8:10	N OF & ADJ TO P-82	9	14	SI
84	951746-08	10/21/2009	8:15	N OF & ADJ TO P-82	11	64	SI
85	951746-08	10/21/2009	8:20	N OF & ADJ TO P-84	22	100	SI
86	951746-08	10/21/2009	8:35	W OF & ADJ TO P-85	22	166	SI
87	951746-08	10/21/2009	8:45	N OF & ADJ TO P-83	11	46	SI
88	951745-08	10/21/2009	13:15	W OF & ADJ TO P-86	4	80	SI
89	951745-08	10/21/2009	13:25	W OF & ADJ TO P-88	18	186	SI
90	951621-08	10/21/2009	13:35	W OF & ADJ TO P-89	22	196	SI
91	951622-08	10/21/2009	14:15	W OF & ADJ TO P-90	4	76	SI
92	951745-08	10/21/2009	14:25	W OF & ADJ TO P-90	12	60	SI
93	951621-08	10/21/2009	14:30	W OF & ADJ TO P-92	22	35	SI

Panel Placement Log

Project: CAMU Closure Phase II & IIIA Location: Henderson, NV Description: Geomembrane Liner System

Primary / Secondary: Primary		Series: 1		Material Type: gml			
<i>Panel</i>	<i>Batch-Roll</i>	<i>Date</i>	<i>Time</i>	<i>Placement/Location/Comments</i>	<i>Width (ft.)</i>	<i>Length (ft.)</i>	<i>QA ID</i>
94	951622-08	10/21/2009	14:35	W OF & ADJ TO P-91	22	204	SI
95	951745-08	10/21/2009	15:15	W OF & ADJ TO P-93	22	76	SI
96	951621-08	10/21/2009	15:25	W OF & ADJ TO P-94	22	168	SI
97	952103-08	10/22/2009	8:10	W OF & ADJ TO P-95	22	19	SI
98	951747-08	10/22/2009	8:10	W OF & ADJ TO P-96	22	200	SI
99	951747-08	10/22/2009	8:10	W OF & ADJ TO P-98	22	188	SI
100	951748-08	10/22/2009	8:10	W OF & ADJ TO P-99	22	159	SI
101	951745-08	10/22/2009	8:10	W OF & ADJ TO P-69	9	24	SI
102	952102-08	11/10/2009	7:40	W OF & ADJ TO P-81	22	202	SI
103	952102-08	11/10/2009	7:45	W OF & ADJ TO P-102	22	202	SI
104	951743-08	11/10/2009	8:40	W OF & ADJ TO P-103	22	202	SI
105	951743-08	11/10/2009	8:45	W OF & ADJ TO P-104	22	202	SI
106	952104-08	11/10/2009	8:55	W OF & ADJ TO P-105	22	202	SI
107	952104-08	11/10/2009	9:01	W OF & ADJ TO P-106	22	202	SI
108	951744-08	11/10/2009	9:55	W OF & ADJ TO P-107	22	202	SI
109	951744-08	11/10/2009	10:00	W OF & ADJ TO P-108	22	202	SI
110	952109-08	11/10/2009	10:45	W OF & ADJ TO P-109	22	202	SI
111	952109-08	11/10/2009	10:55	W OF & ADJ TO P-110	22	202	SI
112	952116-08	11/10/2009	13:00	W OF & ADJ TO P-111	22	202	SI
113	952116-08	11/10/2009	13:15	W OF & ADJ TO P-112	22	202	SI
114	952106-08	11/10/2009	13:50	W OF & ADJ TO P-113	22	202	SI
115	952106-08	11/10/2009	13:55	W OF & ADJ TO P-114	22	202	SI
116	952112-08	11/10/2009	14:25	W OF & ADJ TO P-115	22	202	SI
117	952112-08	11/10/2009	14:30	W OF & ADJ TO P-116	22	202	SI
118	952108-08	11/11/2009	7:35	W OF & ADJ TO P-117	22	202	CL
119	952108-08	11/11/2009	7:40	W OF & ADJ TO P-118	22	202	CL
120	952101-08	11/11/2009	8:00	W OF & ADJ TO P-119	22	202	CL
121	952101-08	11/11/2009	8:15	W OF & ADJ TO P-120	22	202	CL
122	952107-08	11/11/2009	8:45	W OF & ADJ TO P-121	22	202	CL
123	952107-08	11/11/2009	8:54	W OF & ADJ TO P-122	22	202	CL
124	952111-08	11/11/2009	9:25	W OF & ADJ TO P-123	22	202	CL

Panel Placement Log

Project: CAMU Closure Phase II & IIIA
Location: Henderson, NV
Description: Geomembrane Liner System

Primary / Secondary: Primary		Series: 1		Material Type: gml			
<i>Panel</i>	<i>Batch-Roll</i>	<i>Date</i>	<i>Time</i>	<i>Placement/Location/Comments</i>	<i>Width (ft.)</i>	<i>Length (ft.)</i>	<i>QA ID</i>
125	952111-08	11/11/2009	9:30	W OF & ADJ TO P-124	22	202	CL
126	952115-08	11/11/2009	10:05	W OF & ADJ TO P-125	22	196	CL
127	952115-08	11/11/2009	10:20	W OF & ADJ TO P-126	22	182	CL
128	951748-08	11/11/2009	11:00	W OF & ADJ TO P-127	22	166	CL
129	952114-08	11/11/2009	14:38	W OF & ADJ TO P-128	22	118	CL
130	952114-08	11/11/2009	14:55	W OF & ADJ TO P-129	11	78	CL
131	952114-08	11/11/2009	15:10	W OF & ADJ TO P-130	11	164	CL
132	952114-08	11/11/2009	15:30	W OF & ADJ TO P-131	11	166	CL
133	952105-08	11/12/2009	9:00	W OF & ADJ TO P-132	11	168	CL
134	952105-08	11/12/2009	9:38	W OF & ADJ TO P-133	11	168	CL
135	952105-08	11/12/2009	10:35	W OF & ADJ TO P-134	11	170	CL
136	952105-08	11/12/2009	11:15	N OF & ADJ TO P-135	11	170	CL
137	952110-08	11/12/2009	14:10	N OF & ADJ TO P-136	11	170	CL
138	952110-08	11/12/2009	14:25	N OF & ADJ TO P-137	11	170	CL
139	952110-08	11/12/2009	15:45	N OF & ADJ TO P-138	11	170	CL
140	952110-08	11/12/2009	16:20	N OF & ADJ TO P-139	11	170	CL
141	951506-08	11/13/2009	7:05	N OF & ADJ TO P-140	11	174	CL
142	951748-08	11/13/2009	8:45	N OF & ADJ TO P-141	5	30	CL
143	952113-08	11/13/2009	8:55	N OF & ADJ TO P-142	22	67	CL
144	952113-08	11/13/2009	9:00	N OF & ADJ TO P-143	22	136	CL
145	951506-08	11/13/2009	9:10	N OF & ADJ TO P-144	22	176	CL
146	952113-08	11/13/2009	9:45	N OF & ADJ TO P-145	22	187	CL
147	951615-08	11/13/2009	10:00	N OF & ADJ TO P-146	22	198	CL
148	951615-08	11/16/2009	7:30	N OF & ADJ TO P-147	22	202	CL
149	951618-08	11/16/2009	7:35	N OF & ADJ TO P-148	22	202	CL
150	951618-08	11/16/2009	7:50	N OF & ADJ TO P-149	22	202	CL
151	951500-08	11/16/2009	8:25	N OF & ADJ TO P-150	22	202	CL
152	951500-08	11/16/2009	8:35	N OF & ADJ TO P-151	22	202	CL
153	951616-08	11/16/2009	8:45	N OF & ADJ TO P-152	22	202	CL
154	951616-08	11/16/2009	9:10	N OF & ADJ TO P-153	22	202	CL
Number of Panels: 154		Approx. Area (sq. ft.)		395524			

APPENDIX E-5
Production Seam Logs

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/13/2009	10:25	1210	EB	850	5.0	F	1-001-002-000-074	74	SI	0-74	30/30	BRS	P	AT	SI
10/13/2009	11:05	1210	EB	850	4.0	F	1-002-003-000-068	68	SI	0-68	30/30	BRS	P	AT	SI
10/13/2009	11:25	1210	EB	850	4.0	F	1-003-004-000-070	70	SI	0-70	30/30	BRS	P	AT	SI
10/13/2009	11:43	1210	EB	850	5.0	F	1-006-007-000-066	66	SI	0-66	30/30	BRS	P	AT	SI
10/13/2009	11:46	1210	EB	850	4.0	F	1-004-007-000-008	8	SI	0-8	30/30	BRS	P	AT	SI
10/13/2009	11:56	1210	EB	850	5.0	F	1-005-006-000-016	16	SI	0-16	30/30	BRS	P	AT	SI
10/13/2009	12:00	1210	EB	850	4.0	F	1-004-006-000-052	52	SI	0-52	30/30	BRS	P	AT	SI
10/13/2009	12:13	1210	EB	850	4.0	F	1-004-005-000-016	16	SI	0-16	30/30	BRS	P	AT	SI
10/13/2009	14:46	1210	EB	850	5.0	F	1-007-008-000-070	70	SI	0-70	30/30	BRS	P	AT	SI
10/13/2009	15:00	1210	EB	850	4.0	F	1-008-009-000-068	68	SI	0-68	30/30	BRS	P	AT	SI
10/13/2009	15:16	1210	EB	850	4.0	F	1-008-010-000-005	5	SI	0-5	PATCH&VT	N/A	N/A	N/A	SI
10/13/2009	15:16	1210	EB	850	4.0	F	1-009-010-000-072	72	SI	0-72	30/30	BRS	P	AT	SI
10/13/2009	15:28	1209	IS	850	5.0	F	1-010-011-000-034	34	SI	0-34	30/30	BRS	P	AT	SI
10/13/2009	15:52	1210	EB	850	5.0	F	1-012-013-000-070	70	SI	0-70	30/30	BRS	P	AT	SI
10/13/2009	15:55	1209	IS	850	5.0	F	1-013-014-000-036	36	SI	0-36	30/30	BRS	P	AT	SI
10/13/2009	16:13	1209	IS	850	4.0	F	1-001-012-000-010	10	SI	0-10	30/30	BRS	P	AT	SI

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/13/2009	16:17	1209	IS	850	4.0	F	1-007-012-000-018	18	SI	0-18	30/30	BRS	P	AT	SI
10/13/2009	16:20	1209	IS	850	4.0	F	1-008-012-000-006	6	SI	0-6	30/30	BRS	P	AT	SI
10/13/2009	16:21	1209	IS	850	4.0	F	1-010-012-000-005	5	SI	0-5	30/30	BRS	P	AT	SI
10/13/2009	16:22	1209	IS	850	4.0	F	1-010-013-000-040	40	SI	0-40	30/30	BRS	P	AT	SI
10/13/2009	16:27	1209	IS	850	4.0	F	1-011-014-000-038	38	SI	0-38	30/30	BRS	P	AT	SI
10/14/2009	8:30	1209	JC	850	5.0	F	1-012-015-000-098	98	SI	0-98	30/30	BRS	P	AT	SI
10/14/2009	8:35	1210	EB	850	5.0	F	1-015-016-000-098	98	SI	0-98	30/30	BRS	P	AT	SI
10/14/2009	8:50	1209	JC	850	5.0	F	1-016-017-000-100	100	SI	0-100	30/30	BRS	P	AT	SI
10/14/2009	9:25	1209	JC	850	4.0	F	1-018-019-000-022	22	SI	0-22	30/30	BRS	P	AT	SI
10/14/2009	9:32	1210	EB	850	5.0	F	1-017-019-000-008	8	SI	0-8	30/30	BRS	P	AT	SI
10/14/2009	9:33	1210	EB	850	5.0	F	1-017-018-000-092	92	SI	0-92	30/30	BRS	P	AT	SI
10/14/2009	9:40	1209	JC	850	5.0	F	1-019-020-000-008	8	SI	0-8	30/30	BRS	P	AT	SI
10/14/2009	9:42	1209	JC	850	5.0	F	1-018-020-000-092	92	SI	0-92	30/30	BRS	P	AT	SI
10/14/2009	10:23	1210	EB	850	5.0	F	1-001-021-000-078	78	SI	0-78	30/30	BRS	P	AT	SI
10/14/2009	10:50	1209	JC	850	5.0	F	1-021-022-000-082	82	SI	0-82	30/30	BRS	P	AT	SI
10/14/2009	11:25	1210	EB	850	5.0	F	1-022-023-000-086	86	SI	0-86	30/30	BRS	P	AT	SI

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/14/2009	13:36	1209	JC	850	5.0	F	1-023-024-000-088	88	SI	0-88	30/30	BRS	P	AT	SI
10/14/2009	13:39	1210	EB	850	5.0	F	1-024-025-000-068	68	SI	0-68	30/30	BRS	P	AT	SI
10/14/2009	13:56	1209	JC	850	4.0	F	1-020-024-000-010	10	SI	0-10	30/30	BRS	P	AT	SI
10/14/2009	13:58	1209	JC	850	4.0	F	1-019-024-000-010	10	SI	0-10	30/30	BRS	P	AT	SI
10/14/2009	14:00	1209	JC	850	4.0	F	1-019-023-000-012	12	SI	0-12	30/30	BRS	P	AT	SI
10/14/2009	14:03	1209	JC	850	4.0	F	1-017-023-000-010	10	SI	0-10	30/30	BRS	P	AT	SI
10/14/2009	14:05	1209	JC	850	4.0	F	1-017-022-000-012	12	SI	0-12	30/30	BRS	P	AT	SI
10/14/2009	14:07	1209	JC	850	4.0	F	1-016-022-000-010	10	SI	0-10	30/30	BRS	P	AT	SI
10/14/2009	14:09	1209	JC	850	4.0	F	1-016-021-000-012	12	SI	0-12	30/30	BRS	P	AT	SI
10/14/2009	14:11	1209	JC	850	4.0	F	1-015-021-000-010	10	SI	0-10	30/30	BRS	P	AT	SI
10/14/2009	14:13	1209	JC	850	4.0	F	1-001-015-000-012	12	SI	0-12	30/30	BRS	P	AT	SI
10/14/2009	14:48	1209	JC	850	4.0	F	1-027-028-000-042	42	SI	0-42	30/30	BRS	P	AT	SI
10/14/2009	15:05	1209	JC	850	4.0	F	1-026-027-000-042	42	SI	0-42	30/30	BRS	P	AT	SI
10/15/2009	8:44	1210	EB	850	4.0	F	1-028-029-000-038	38	SI	0-38	30/30	BRS	P	AT	SI
10/15/2009	8:47	1209	JC	850	5.0	F	1-025-029-000-052	52	SI	0-52	30/30	BRS	P	AT	SI
10/15/2009	9:02	1209	JC	850	5.0	F	1-020-033-000-070	70	SI	0-70	30/30	BRS	P	AT	SI

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/15/2009	9:24	1210	EB	850	4.0	F	1-031-032-000-042	42	SI	0-42	30/30	BRS	P	AT	SI
10/15/2009	9:35	1210	EB	850	4.0	F	1-030-031-000-042	42	SI	0-42	30/30	BRS	P	AT	SI
10/15/2009	9:47	1210	EB	850	4.0	F	1-032-034-000-042	42	SI	0-42	30/30	BRS	P	AT	SI
10/15/2009	9:50	1209	JC	850	4.0	F	1-026-030-000-044	44	SI	0-44	30/30	BRS	P	AT	SI
10/15/2009	9:54	1210	EB	850	4.0	F	1-033-034-000-064	64	SI	0-64	30/30	BRS	P	AT	SI
10/15/2009	10:00	1209	JC	850	4.0	F	1-032-033-000-015	15	SI	0-15	30/30	BRS	P	AT	SI
10/15/2009	10:04	1209	JC	850	4.0	F	1-031-033-000-008	8	SI	0-8	30/30	BRS	P	AT	SI
10/15/2009	10:06	1209	JC	850	4.0	F	1-020-031-000-013	13	SI	0-13	30/30	BRS	P	AT	SI
10/15/2009	10:09	1209	JC	850	4.0	F	1-020-030-000-020	20	SI	0-20	30/30	BRS	P	AT	SI
10/15/2009	10:12	1209	JC	850	4.0	F	1-020-026-000-004	4	SI	0-4	PATCH&VT	N/A	N/A	N/A	SI
10/15/2009	10:13	1209	JC	850	4.0	F	1-024-026-000-013	13	SI	0-13	30/30	BRS	P	AT	SI
10/15/2009	10:15	1209	JC	850	4.0	F	1-024-027-000-016	16	SI	0-16	30/30	BRS	P	AT	SI
10/15/2009	10:18	1209	JC	850	4.0	F	1-025-027-000-006	6	SI	0-6	30/30	BRS	P	AT	SI
10/15/2009	10:20	1209	JC	850	4.0	F	1-025-028-000-021	21	SI	0-21	30/30	BRS	P	AT	SI
10/15/2009	10:41	1209	JC	850	5.0	F	1-029-035-000-088	88	SI	0-88	30/30	BRS	P	AT	SI
10/15/2009	11:07	1210	EB	850	5.0	F	1-035-036-000-100	100	SI	0-100	30/30	BRS	P	AT	SI

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/15/2009	11:12	1209	JC	850	5.0	F	1-036-037-000-104	104	SI	0-104	30/30	BRS	P	AT	SI
10/15/2009	13:34	1210	EB	850	5.5	F	1-037-038-000-108	108	SI	0-108	30/30	BRS	P	AT	SI
10/15/2009	13:45	1209	JC	850	5.0	F	1-038-039-000-112	112	SI	0-112	30/30	BRS	P	AT	SI
10/15/2009	13:55	1210	EB	850	5.5	F	1-039-040-000-116	116	SI	0-116	30/30	BRS	P	AT	SI
10/15/2009	14:36	1209	JC	850	5.0	F	1-040-041-000-120	120	SI	0-120	30/30	BRS	P	AT	SI
10/15/2009	14:51	1210	EB	850	5.5	F	1-041-042-000-124	124	SI	0-124	30/30	BRS	P	AT	SI
10/15/2009	15:14	1209	JC	850	5.0	F	1-042-043-000-128	128	SI	0-128	30/30	BRS	P	AT	SI
10/15/2009	15:40	1210	EB	850	5.5	F	1-043-044-000-132	132	SI	0-132	30/30	BRS	P	AT	SI
10/15/2009	15:47	1209	JC	850	5.0	F	1-044-045-000-136	136	SI	0-136	30/30	BRS	P	AT	SI
10/16/2009	8:32	1209	JC	850	5.0	F	1-034-046-000-120	120	SI	0-120	30/30	BRS	P	AT	SI
10/16/2009	8:45	1210	EB	850	5.5	F	1-046-047-000-124	124	SI	0-124	30/30	BRS	P	AT	SI
10/16/2009	9:02	1209	JC	850	5.0	F	1-047-048-000-134	134	SI	0-134	30/30	BRS	P	AT	SI
10/16/2009	9:08	1210	EB	850	5.5	F	1-048-049-000-138	138	SI	0-138	30/30	BRS	P	AT	SI
10/16/2009	10:02	20831	JC	850	4.0	F	1-050-051-000-022	22	SI	0-22	30/30	BRS	P	AT	SI
10/16/2009	10:03	1210	EB	850	5.5	F	1-045-051-000-020	20	SI	0-20	30/30	BRS	P	AT	SI
10/16/2009	10:07	1210	EB	850	5.5	F	1-045-050-000-122	122	SI	0-122	30/30	BRS	P	AT	SI

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/16/2009	11:20	20831	JC	850	5.0	F	1-052-053-000-060	60	SI	0-60	30/30	BRS	P	AT	SI
10/16/2009	11:27	1210	EB	850	4.5	F	1-049-053-000-084	84	SI	0-84	30/30	BRS	P	AT	SI
10/16/2009	11:35	20831	JC	850	5.0	F	1-053-054-000-146	146	SI	0-146	30/30	BRS	P	AT	SI
10/16/2009	11:42	1210	EB	850	4.5	F	1-049-052-000-060	60	SI	0-60	30/30	BRS	P	AT	SI
10/16/2009	14:00	20831	JC	850	4.0	F	1-055-056-000-022	22	SI	0-22	30/30	BRS	P	AT	SI
10/16/2009	14:03	1210	EB	850	5.5	F	1-054-056-000-034	34	SI	0-34	30/30	BRS	P	AT	SI
10/16/2009	14:08	1210	EB	850	5.5	F	1-054-055-000-114	114	SI	0-114	30/30	BRS	P	AT	SI
10/16/2009	14:12	20831	JC	850	5.0	F	1-056-057-000-034	34	SI	0-34	30/30	BRS	P	AT	SI
10/16/2009	14:17	20831	JC	850	5.0	F	1-055-057-000-110	110	SI	0-110	30/30	BRS	P	AT	SI
10/16/2009	14:57	1210	EB	850	5.5	F	1-057-058-000-146	146	SI	0-146	30/30	BRS	P	AT	SI
10/16/2009	15:15	20831	JC	850	4.0	F	1-059-060-000-022	22	SI	0-22	30/30	BRS	P	AT	SI
10/16/2009	15:19	1210	EB	850	5.5	F	1-058-060-000-038	38	SI	0-38	30/30	BRS	P	AT	SI
10/16/2009	15:25	20831	JC	850	4.0	F	1-045-060-000-006	6	SI	0-6	30/30	BRS	P	AT	SI
10/16/2009	15:25	1210	EB	850	5.5	F	1-058-059-000-110	110	SI	0-110	30/30	BRS	P	AT	SI
10/16/2009	15:27	20831	JC	850	4.0	F	1-044-060-000-016	16	SI	0-16	30/30	BRS	P	AT	SI
10/16/2009	15:31	20831	JC	850	4.0	F	1-044-058-000-007	7	SI	0-7	30/30	BRS	P	AT	SI

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/16/2009	15:34	20831	JC	850	4.0	F	1-043-058-000-016	16	SI	0-16	30/30	BRS	P	AT	SI
10/16/2009	15:37	20831	JC	850	4.0	F	1-043-057-000-007	7	SI	0-7	30/30	BRS	P	AT	SI
10/16/2009	15:39	20831	JC	850	4.0	F	1-042-057-000-015	15	SI	0-15	30/30	BRS	P	AT	SI
10/16/2009	15:43	20831	JC	850	4.0	F	1-042-056-000-008	8	SI	0-8	30/30	BRS	P	AT	SI
10/16/2009	15:45	20831	JC	850	4.0	F	1-041-056-000-015	15	SI	0-15	30/30	BRS	P	AT	SI
10/16/2009	15:47	20831	JC	850	4.0	F	1-041-054-000-008	8	SI	0-8	30/30	BRS	P	AT	SI
10/16/2009	15:48	20831	JC	850	4.0	F	1-040-054-000-014	14	SI	0-14	30/30	BRS	P	AT	SI
10/16/2009	15:50	20831	JC	850	4.0	F	1-040-053-000-008	8	SI	0-8	30/30	BRS	P	AT	SI
10/16/2009	15:52	20831	JC	850	4.0	F	1-039-049-000-022	22	SI	0-22	30/30	BRS	P	AT	SI
10/16/2009	15:56	20831	JC	850	4.0	F	1-038-048-000-023	23	SI	0-23	30/30	BRS	P	AT	SI
10/16/2009	16:00	20831	JC	850	4.0	F	1-037-047-000-023	23	SI	0-23	30/30	BRS	P	AT	SI
10/16/2009	16:04	20831	JC	850	4.0	F	1-036-046-000-005	5	SI	0-5	30/30	BRS	P	AT	SI
10/16/2009	16:05	20831	JC	850	4.0	F	1-036-046-000-017	17	SI	0-17	30/30	BRS	P	AT	SI
10/16/2009	16:08	20831	JC	850	4.0	F	1-034-035-000-020	20	SI	0-20	30/30	BRS	P	AT	SI
10/17/2009	7:54	513	IS	550	500	E	1-050-TN25-000-020	20	SI	0-20	5 psi	LL	P	VT	GM
10/17/2009	8:00	513	IS	550	500	E	1-050-TN24-000-002	2	SI	0-2	5 psi	LL	P	VT	GM

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/17/2009	8:01	513	IS	550	500	E	1-045-TN24-000-020	20	SI	0-20	5 psi	LL	P	VT	GM
10/17/2009	8:08	513	IS	550	500	E	1-045-TN23-000-002	2	SI	0-2	5 psi	LL	P	VT	GM
10/17/2009	8:09	513	IS	550	500	E	1-044-TN23-000-020	20	SI	0-20	5 psi	LL	P	VT	GM
10/17/2009	8:17	513	IS	550	500	E	1-044-TN22-000-002	2	SI	0-2	5 psi	LL	P	VT	GM
10/17/2009	8:18	513	IS	550	500	E	1-043-TN22-000-021	21	SI	0-21	5 psi	LL	P	VT	GM
10/17/2009	8:27	513	IS	550	500	E	1-043-TN20-000-001	1	SI	0-1	5 psi	LL	P	VT	GM
10/17/2009	8:28	513	IS	550	500	E	1-042-TN20-000-021	21	SI	0-21	5 psi	LL	P	VT	GM
10/17/2009	8:46	513	IS	550	500	E	1-041-TN19-000-022	22	SI	0-22	5 psi	LL	P	VT	GM
10/17/2009	8:46	513	IS	550	500	E	1-042-TN19-000-001	1	SI	0-1	5 psi	LL	P	VT	GM
10/17/2009	8:58	513	IS	550	500	E	1-040-TN18-000-022	22	SI	0-22	5 psi	LL	P	VT	GM
10/17/2009	9:24	513	IS	550	500	E	1-039-TN14-000-022	22	SI	0-22	5 psi	LL	P	VT	GM
10/17/2009	9:39	513	IS	550	500	E	1-038-TN13-000-023	23	SI	0-23	5 psi	LL	P	VT	GM
10/17/2009	9:50	513	IS	550	500	E	1-037-TN12-000-023	23	SI	0-23	5 psi	LL	P	VT	GM
10/17/2009	10:10	513	IS	550	500	E	1-036-TN10-000-022	22	SI	0-22	5 psi	LL	P	VT	GM
10/17/2009	10:17	513	IS	550	500	E	1-035-TN9-000-023	23	SI	0-23	5 psi	LL	P	VT	GM
10/17/2009	10:30	513	IS	550	500	E	1-029-TN8-000-023	23	SI	0-23	5 psi	LL	P	VT	GM

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/17/2009	10:54	513	IS	550	500	E	1-025-TN6-000-023	23	SI	0-23	5 psi	LL	P	VT	GM
10/17/2009	11:01	513	IS	550	500	E	1-024-TN5-000-023	23	SI	0-23	5 psi	LL	P	VT	GM
10/17/2009	11:16	513	IS	550	500	E	1-023-TN4-000-023	23	SI	0-23	5 psi	LL	P	VT	GM
10/17/2009	11:27	513	IS	550	500	E	1-022-TN3-000-023	23	SI	0-23	5 psi	LL	P	VT	GM
10/17/2009	11:40	513	IS	550	500	E	1-021-TN2-000-023	23	SI	0-23	5 psi	LL	P	VT	GM
10/17/2009	13:23	513	IS	550	500	E	1-001-TN1-000-023	23	SI	0-23	5 psi	LL	P	VT	GM
10/17/2009	13:34	513	IS	550	500	E	1-002-TN15-000-022	22	SI	0-22	5 psi	LL	P	VT	GM
10/17/2009	13:51	14	EB	500	350	E	1-026-034-000-006	6	SI	0-6	5 psi	LL	P	VT	CL
10/17/2009	14:04	513	IS	550	500	E	1-003-TN15-000-001	1	SI	0-1	5 psi	LL	P	VT	GM
10/17/2009	14:05	513	IS	550	500	E	1-003-TN16-000-019	19	SI	0-19	5 psi	LL	P	VT	GM
10/17/2009	14:07	14	EB	500	350	E	1-026-029-000-006	6	SI	0-6	5 psi	LL	P	VT	CL
10/17/2009	14:10	14	EB	500	350	E	1-026-035-000-011	11	SI	0-11	5 psi	LL	P	VT	CL
10/17/2009	14:12	513	IS	550	500	E	1-004-TN16-000-001	1	SI	0-1	5 psi	LL	P	VT	GM
10/17/2009	14:13	513	IS	550	500	E	1-004-TN17-000-020	20	SI	0-20	5 psi	LL	P	VT	GM
10/17/2009	14:22	513	IS	550	500	E	1-004-TN100-000-001	1	SI	0-1	5 psi	LL	P	VT	GM
10/17/2009	14:23	513	IS	550	500	E	1-005-TN100-000-008	8	SI	0-8	5 psi	LL	P	VT	GM

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/17/2009	14:25	513	IS	550	500	E	1-006-TN100-000-010	10	SI	0-10	5 psi	LL	P	VT	GM
10/17/2009	14:27	513	IS	550	500	E	1-006-TN97-000-014	14	SI	0-14	5 psi	LL	P	VT	GM
10/17/2009	14:35	513	IS	550	500	E	1-007-TN97-000-009	9	SI	0-9	5 psi	LL	P	VT	GM
10/17/2009	14:39	513	IS	550	500	E	1-007-TN98-000-014	14	SI	0-14	5 psi	LL	P	VT	GM
10/17/2009	14:45	513	IS	550	500	E	1-008-TN98-000-009	9	SI	0-9	5 psi	LL	P	VT	GM
10/17/2009	14:49	513	IS	550	500	E	1-008-TN99-000-014	14	SI	0-14	5 psi	LL	P	VT	GM
10/17/2009	15:02	513	IS	550	500	E	1-009-TN99-000-008	8	SI	0-8	5 psi	LL	P	VT	GM
10/17/2009	15:08	513	IS	550	500	E	1-009-TN101-000-008	8	SI	0-8	5 psi	LL	P	VT	GM
10/17/2009	15:14	513	IS	550	500	E	1-010-TN101-000-009	9	SI	0-9	5 psi	LL	P	VT	GM
10/17/2009	15:17	513	IS	550	500	E	1-010-TN102-000-014	14	SI	0-14	5 psi	LL	P	VT	GM
10/17/2009	15:22	513	IS	550	500	E	1-011-TN102-000-006	6	SI	0-6	5 psi	LL	P	VT	GM
10/17/2009	15:24	513	IS	550	500	E	1-011-TN103-000-016	16	SI	0-16	5 psi	LL	P	VT	GM
10/17/2009	15:30	513	IS	550	500	E	1-014-TN103-000-002	2	SI	0-2	5 psi	LL	P	VT	GM
10/17/2009	15:31	513	IS	550	500	E	1-014-TN96-000-016	16	SI	0-16	5 psi	LL	P	VT	GM
10/17/2009	15:36	513	IS	550	500	E	1-013-TN96-000-006	6	SI	0-6	5 psi	LL	P	VT	GM
10/19/2009	7:32	513	IS	500	500	E	1-013-TN95-000-016	16	SI	0-16	5 psi	LL	P	VT	GM

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/19/2009	7:45	513	IS	500	500	E	1-012-TN95-000-007	7	SI	0-7	5 psi	LL	P	VT	GM
10/19/2009	7:50	513	IS	500	500	E	1-012-TN94-000-016	16	SI	0-16	5 psi	LL	P	VT	GM
10/19/2009	7:58	513	IS	500	500	E	1-015-TN94-000-007	7	SI	0-7	5 psi	LL	P	VT	GM
10/19/2009	8:04	513	IS	500	500	E	1-015-TN93-000-017	17	SI	0-17	5 psi	LL	P	VT	GM
10/19/2009	8:10	513	IS	500	500	E	1-016-TN93-000-007	7	SI	0-7	5 psi	LL	P	VT	GM
10/19/2009	8:14	513	IS	500	500	E	1-016-TN92-000-017	17	SI	0-17	5 psi	LL	P	VT	GM
10/19/2009	8:15	20831	JC	850	5.0	F	1-060-061-000-038	38	SI	0-38	30/30	BRS	P	AT	SI
10/19/2009	8:20	513	IS	500	500	E	1-017-TN92-000-006	6	SI	0-6	5 psi	LL	P	VT	GM
10/19/2009	8:20	20831	JC	850	5.0	F	1-059-061-000-110	110	SI	0-110	30/30	BRS	P	AT	SI
10/19/2009	8:22	513	IS	500	500	E	1-017-TN91-000-017	17	SI	0-17	5 psi	LL	P	VT	GM
10/19/2009	8:30	513	IS	500	500	E	1-018-TN91-000-006	6	SI	0-6	5 psi	LL	P	VT	GM
10/19/2009	8:30	1210	EB	850	5.5	F	1-061-062-000-150	150	SI	0-150	30/30	BRS	P	AT	SI
10/19/2009	8:33	513	IS	500	500	E	1-018-TN89-000-017	17	SI	0-17	5 psi	LL	P	VT	GM
10/19/2009	8:39	513	IS	500	500	E	1-020-TN89-000-007	7	SI	0-7	5 psi	LL	P	VT	GM
10/19/2009	8:43	513	IS	500	500	E	1-020-TN88-000-017	17	SI	0-17	5 psi	LL	P	VT	GM
10/19/2009	8:50	513	IS	500	500	E	1-033-TN88-000-006	6	SI	0-6	5 psi	LL	P	VT	GM

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/19/2009	8:53	513	IS	500	500	E	1-033-TN82-000-001	1	SI	0-1	5 psi	LL	P	VT	GM
10/19/2009	8:53	513	IS	500	500	E	1-034-TN82-000-019	19	SI	0-19	5 psi	LL	P	VT	GM
10/19/2009	9:02	513	IS	500	500	E	1-034-TN83-000-004	4	SI	0-4	5 psi	LL	P	VT	GM
10/19/2009	9:14	513	IS	500	500	E	1-046-TN83-000-019	19	SI	0-19	5 psi	LL	P	VT	GM
10/19/2009	9:20	513	IS	500	500	E	1-046-TN84-000-005	5	SI	0-5	5 psi	LL	P	VT	GM
10/19/2009	9:22	513	IS	500	500	E	1-047-TN84-000-019	19	SI	0-19	5 psi	LL	P	VT	GM
10/19/2009	9:26	513	IS	500	500	E	1-047-TN85-000-005	5	SI	0-5	5 psi	LL	P	VT	GM
10/19/2009	9:26	20831	JC	850	4.0	F	1-063-064-000-022	22	SI	0-22	30/30	BRS	P	AT	SI
10/19/2009	9:27	1210	EB	850	5.5	F	1-051-064-000-026	26	SI	0-26	30/30	BRS	P	AT	SI
10/19/2009	9:28	513	IS	500	500	E	1-048-TN85-000-018	18	SI	0-18	5 psi	LL	P	VT	GM
10/19/2009	9:31	1210	EB	850	5.5	F	1-050-064-000-026	26	SI	0-26	30/30	BRS	P	AT	SI
10/19/2009	9:36	1210	EB	850	5.5	F	1-050-063-000-096	96	SI	0-96	30/30	BRS	P	AT	SI
10/19/2009	9:40	20831	JC	850	5.0	F	1-064-065-000-054	54	SI	0-54	30/30	BRS	P	AT	SI
10/19/2009	9:50	20831	JC	850	5.0	F	1-063-065-000-096	96	SI	0-96	30/30	BRS	P	AT	SI
10/19/2009	9:57	513	IS	500	500	E	1-048-TN86-000-005	5	SI	0-5	5 psi	LL	P	VT	GM
10/19/2009	9:59	513	IS	500	500	E	1-049-TN86-000-018	18	SI	0-18	5 psi	LL	P	VT	GM

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/19/2009	10:05	513	IS	500	500	E	1-049-TN87-000-005	5	SI	0-5	5 psi	LL	P	VT	GM
10/19/2009	10:08	513	IS	500	500	E	1-052-TN87-000-011	11	SI	0-11	5 psi	LL	P	VT	GM
10/19/2009	10:12	513	IS	500	500	E	1-053-TN87-000-007	7	SI	0-7	5 psi	LL	P	VT	GM
10/19/2009	10:15	513	IS	500	500	E	1-053-TN65-000-016	16	SI	0-16	5 psi	LL	P	VT	GM
10/19/2009	10:22	513	IS	500	500	E	1-054-TN65-000-007	7	SI	0-7	5 psi	LL	P	VT	GM
10/19/2009	10:22	1210	EB	850	5.5	F	1-062-066-000-148	148	SI	0-148	30/30	BRS	P	AT	SI
10/19/2009	10:26	513	IS	500	500	E	1-054-TN66-000-016	16	SI	0-16	5 psi	LL	P	VT	GM
10/19/2009	10:50	513	IS	500	500	E	1-055-TN66-000-007	7	SI	0-7	5 psi	LL	P	VT	GM
10/19/2009	10:53	513	IS	500	500	E	1-055-TN68-000-016	16	SI	0-16	5 psi	LL	P	VT	GM
10/19/2009	11:02	513	IS	500	500	E	1-057-TN68-000-007	7	SI	0-7	5 psi	LL	P	VT	GM
10/19/2009	12:18	513	IS	500	500	E	1-057-TN69-000-016	16	SI	0-16	5 psi	LL	P	VT	GM
10/19/2009	12:30	513	IS	500	500	E	1-058-TN69-000-006	6	SI	0-6	5 psi	LL	P	VT	GM
10/19/2009	12:33	513	IS	500	500	E	1-058-TN71-000-017	17	SI	0-17	5 psi	LL	P	VT	GM
10/19/2009	12:40	513	IS	500	500	E	1-059-TN71-000-006	6	SI	0-6	5 psi	LL	P	VT	GM
10/19/2009	12:45	513	IS	500	500	E	1-059-TN72-000-017	17	SI	0-17	5 psi	LL	P	VT	GM
10/19/2009	13:10	513	IS	500	500	E	1-061-TN72-000-007	7	SI	0-7	5 psi	LL	P	VT	GM

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/19/2009	13:14	513	IS	500	500	E	1-061-TN73-000-017	17	SI	0-17	5 psi	LL	P	VT	GM
10/19/2009	13:30	513	IS	500	500	E	1-062-TN73-000-007	7	SI	0-7	5 psi	LL	P	VT	GM
10/19/2009	13:35	513	IS	500	500	E	1-062-TN75-000-017	17	SI	0-17	5 psi	LL	P	VT	GM
10/19/2009	14:10	513	IS	500	500	E	1-066-TN75-000-006	6	SI	0-6	5 psi	LL	P	VT	GM
10/19/2009	14:13	513	IS	500	500	E	1-066-TN76-000-016	16	SI	0-16	5 psi	LL	P	VT	GM
10/20/2009	8:25	20831	JC	850	4.0	F	1-065-066-000-006	6	SI	0-6	30/30	BRS	P	AT	SI
10/20/2009	8:26	20831	JC	850	4.0	F	1-064-066-000-017	17	SI	0-17	30/30	BRS	P	AT	SI
10/20/2009	8:30	20831	JC	850	4.0	F	1-062-064-000-006	6	SI	0-6	30/30	BRS	P	AT	SI
10/20/2009	8:32	20831	JC	850	4.0	F	1-051-062-000-017	17	SI	0-17	30/30	BRS	P	AT	SI
10/20/2009	8:36	20831	JC	850	4.0	F	1-051-061-000-006	6	SI	0-6	30/30	BRS	P	AT	SI
10/20/2009	8:38	20831	JC	850	4.0	F	1-045-061-000-016	16	SI	0-6	30/30	BRS	P	AT	SI
10/20/2009	8:55	20831	JC	850	5.0	F	1-067-068-000-088	88	SI	0-88	30/30	BRS	P	AT	SI
10/20/2009	8:56	1210	EB	850	5.5	F	1-065-067-000-100	100	SI	0-100	30/30	BRS	P	AT	SI
10/20/2009	9:27	20831	JC	850	5.0	F	1-069-070-000-080	80	SI	0-80	30/30	BRS	P	AT	SI
10/20/2009	9:50	1210	EB	850	5.5	F	1-068-074-000-082	82	SI	0-82	30/30	BRS	P	AT	SI
10/20/2009	9:50	20831	JC	850	5.0	F	1-070-074-000-016	16	SI	0-16	30/30	BRS	P	AT	SI

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/20/2009	10:15	1210	EB	850	4.0	F	1-073-074-000-060	60	SI	0-60	30/30	BRS	P	AT	SI
10/20/2009	10:32	1210	EB	850	4.0	F	1-072-073-000-060	60	SI	0-60	30/30	BRS	P	AT	SI
10/20/2009	10:48	1210	EB	850	4.0	F	1-071-072-000-072	72	SI	0-72	30/30	BRS	P	AT	SI
10/20/2009	11:10	20831	JC	850	4.0	F	1-070-071-000-062	62	SI	0-62	30/30	BRS	P	AT	SI
10/20/2009	11:15	1210	EB	850	4.0	F	1-065-069-000-020	20	SI	0-20	30/30	BRS	P	AT	SI
10/20/2009	11:20	1210	EB	850	4.0	F	1-065-070-000-017	17	SI	0-17	30/30	BRS	P	AT	SI
10/20/2009	11:24	1210	EB	850	4.0	F	1-065-071-000-020	20	SI	0-20	30/30	BRS	P	AT	SI
10/20/2009	11:25	20831	JC	850	4.0	F	1-067-071-000-004	4	SI	0-4	PATCH&VT	N/A	N/A	N/A	SI
10/20/2009	11:26	20831	JC	850	4.0	F	1-067-072-000-021	21	SI	0-21	30/30	BRS	P	AT	SI
10/20/2009	11:31	20831	JC	850	4.0	F	1-068-073-000-023	23	SI	0-23	30/30	BRS	P	AT	SI
10/20/2009	13:37	20831	JC	850	5.0	F	1-070-075-000-015	15	SI	0-15	30/30	BRS	P	AT	SI
10/20/2009	13:39	20831	JC	850	5.0	F	1-074-075-000-146	146	SI	0-146	30/30	BRS	P	AT	SI
10/20/2009	13:40	1210	EB	850	5.0	F	1-075-076-000-202	202	SI	0-202	30/30	BRS	P	AT	SI
10/20/2009	14:14	20831	JC	850	5.0	F	1-076-077-000-202	202	SI	0-202	30/30	BRS	P	AT	SI
10/20/2009	14:25	1210	EB	850	5.0	F	1-077-078-000-202	202	SI	0-202	30/30	BRS	P	AT	SI
10/20/2009	15:10	20831	JC	850	5.0	F	1-078-079-000-202	202	SI	0-202	30/30	BRS	P	AT	SI

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/20/2009	15:38	1210	EB	850	5.0	F	1-079-080-000-202	202	SI	0-202	30/30	BRS	P	AT	SI
10/20/2009	16:08	20831	JC	850	5.0	F	1-080-081-000-202	202	SI	0-202	30/30	BRS	P	AT	SI
10/21/2009	8:40	20831	JC	850	5.0	F	1-085-086-000-154	154	SI	0-154	30/30	BRS	P	AT	SI
10/21/2009	8:49	1210	EB	850	4.0	F	1-084-085-000-064	64	SI	0-64	30/30	BRS	P	AT	SI
10/21/2009	9:07	1210	EB	850	5.5	F	1-085-087-000-046	46	SI	0-46	30/30	BRS	P	AT	SI
10/21/2009	9:18	1210	EB	850	4.0	F	1-082-084-000-058	58	SI	0-58	30/30	BRS	P	AT	SI
10/21/2009	9:22	20831	JC	850	5.0	F	1-069-086-000-015	15	SI	0-15	30/30	BRS	P	AT	SI
10/21/2009	9:26	20831	JC	850	5.0	F	1-069-082-000-070	70	SI	0-70	30/30	BRS	P	AT	SI
10/21/2009	9:34	1210	EB	850	4.0	F	1-082-083-000-014	14	SI	0-14	30/30	BRS	P	AT	SI
10/21/2009	9:42	20831	JC	850	4.0	F	1-066-083-000-009	9	SI	0-9	30/30	BRS	P	AT	SI
10/21/2009	9:42	1210	EB	850	4.0	F	1-066-087-000-052	52	SI	0-52	30/30	BRS	P	AT	SI
10/21/2009	9:45	20831	JC	850	4.0	F	1-066-082-000-022	22	SI	0-22	30/30	BRS	P	AT	SI
10/21/2009	9:50	20831	JC	850	4.0	F	1-066-069-000-004	4	SI	0-4	PATCH&VT	N/A	N/A	N/A	SI
10/21/2009	9:53	20831	JC	850	4.0	F	1-083-084-000-012	12	SI	0-12	30/30	BRS	P	AT	SI
10/21/2009	9:54	1210	EB	850	4.0	F	1-066-085-000-052	52	SI	0-52	30/30	BRS	P	AT	SI
10/21/2009	10:00	20831	JC	850	4.0	F	1-084-087-000-022	22	SI	0-22	30/30	BRS	P	AT	SI

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/21/2009	10:03	1210	EB	850	4.0	F	1-066-086-000-010	10	SI	0-10	30/30	BRS	P	AT	SI
10/21/2009	13:30	20831	JC	850	4.0	F	1-086-088-000-080	80	SI	0-80	30/30	BRS	P	AT	SI
10/21/2009	13:30	1210	EB	850	5.5	F	1-088-089-000-068	68	SI	0-68	30/30	BRS	P	AT	SI
10/21/2009	13:46	20831	JC	850	4.0	F	1-086-089-000-090	90	SI	0-90	30/30	BRS	P	AT	SI
10/21/2009	13:56	1210	EB	850	5.5	F	1-089-090-000-182	182	SI	0-182	30/30	BRS	P	AT	SI
10/21/2009	14:40	20831	JC	850	5.0	F	1-090-091-000-076	76	SI	0-76	30/30	BRS	P	AT	SI
10/21/2009	14:45	1210	EB	850	4.0	F	1-091-094-000-076	76	SI	0-76	30/30	BRS	P	AT	SI
10/21/2009	15:00	1210	EB	850	5.5	F	1-090-094-000-086	86	SI	0-86	30/30	BRS	P	AT	SI
10/21/2009	15:10	20831	JC	850	4.0	F	1-093-094-000-022	22	SI	0-22	30/30	BRS	P	AT	SI
10/21/2009	15:50	20831	JC	850	4.0	F	1-095-096-000-022	22	SI	0-22	30/30	BRS	P	AT	SI
10/21/2009	15:57	20831	JC	850	5.0	F	1-093-095-000-050	50	SI	0-50	30/30	BRS	P	AT	SI
10/21/2009	15:58	1210	EB	850	5.5	F	1-092-093-000-020	20	SI	0-20	30/30	BRS	P	AT	SI
10/21/2009	16:04	1210	EB	850	5.5	F	1-092-094-000-038	38	SI	0-38	30/30	BRS	P	AT	SI
10/21/2009	16:04	20831	JC	850	5.0	F	1-094-095-000-035	35	SI	0-35	30/30	BRS	P	AT	SI
10/21/2009	16:09	20831	JC	850	5.0	F	1-094-096-000-168	168	SI	0-168	30/30	BRS	P	AT	SI
10/21/2009	16:14	1210	EB	850	4.0	F	1-090-092-000-036	36	SI	0-36	30/30	BRS	P	AT	SI

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/21/2009	16:29	1210	EB	850	4.0	F	1-080-095-000-008	8	SI	0-8	30/30	BRS	P	AT	SI
10/21/2009	16:31	1210	EB	850	4.0	F	1-080-093-000-010	10	SI	0-10	30/30	BRS	P	AT	SI
10/21/2009	16:33	1210	EB	850	4.0	F	1-079-093-000-022	22	SI	0-22	30/30	BRS	P	AT	SI
10/21/2009	16:38	1210	EB	850	4.0	F	1-078-093-000-005	5	SI	0-5	30/30	BRS	P	AT	SI
10/21/2009	16:39	1210	EB	850	4.0	F	1-078-092-000-017	17	SI	0-17	30/30	BRS	P	AT	SI
10/21/2009	16:43	1210	EB	850	4.0	F	1-077-092-000-002	2	SI	0-2	30/30	BRS	P	AT	SI
10/21/2009	16:44	1210	EB	850	4.0	F	1-077-090-000-020	20	SI	0-20	30/30	BRS	P	AT	SI
10/21/2009	16:48	1210	EB	850	4.0	F	1-076-090-000-014	14	SI	0-14	30/30	BRS	P	AT	SI
10/21/2009	16:51	1210	EB	850	4.0	F	1-076-089-000-008	8	SI	0-8	30/30	BRS	P	AT	SI
10/21/2009	16:53	1210	EB	850	4.0	F	1-075-089-000-023	23	SI	0-23	30/30	BRS	P	AT	SI
10/22/2009	7:50	20831	JC	850	5.0	F	1-095-097-000-034	34	SI	0-34	30/30	BRS	P	AT	SI
10/22/2009	7:55	1210	EB	850	4.0	F	1-097-098-000-022	22	SI	0-22	30/30	BRS	P	AT	SI
10/22/2009	8:04	20831	JC	850	5.0	F	1-095-098-000-030	30	SI	0-30	30/30	BRS	P	AT	SI
10/22/2009	8:05	1210	EB	850	5.0	F	1-097-099-000-004	4	SI	0-4	30/30	BRS	P	AT	SI
10/22/2009	8:06	1210	EB	850	5.0	F	1-098-099-000-200	200	SI	0-200	30/30	BRS	P	AT	SI
10/22/2009	8:10	20831	JC	850	5.0	F	1-096-098-000-168	168	SI	0-168	30/30	BRS	P	AT	SI

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/22/2009	8:45	20831	JC	850	5.0	F	1-099-100-000-172	172	SI	0-172	30/30	BRS	P	AT	SI
10/22/2009	8:53	1210	EB	850	4.0	F	1-075-101-000-024	24	SI	0-24	30/30	BRS	P	AT	SI
10/22/2009	9:09	1210	EB	850	4.0	F	1-075-088-000-015	15	SI	0-15	30/30	BRS	P	AT	SI
10/22/2009	9:20	1210	EB	850	4.0	F	1-086-101-000-010	10	SI	0-10	30/30	BRS	P	AT	SI
10/22/2009	9:22	1210	EB	850	4.0	F	1-069-101-000-020	20	SI	0-20	30/30	BRS	P	AT	SI
10/22/2009	9:47	513	IS	500	500	E	1-081-TN43-000-014	14	GM	0-14	5 psi	LL	P	VT	GM
10/22/2009	9:56	513	IS	500	500	E	1-080-TN42-000-020	20	GM	0-20	5 psi	LL	P	VT	GM
10/22/2009	9:56	513	IS	500	500	E	1-081-TN42-000-002	2	GM	0-2	5 psi	LL	P	VT	GM
10/22/2009	10:03	513	IS	500	500	E	1-079-TN40-000-020	20	GM	0-20	5 psi	LL	P	VT	GM
10/22/2009	10:03	513	IS	500	500	E	1-080-TN40-000-002	2	GM	0-2	5 psi	LL	P	VT	GM
10/22/2009	10:10	513	IS	500	500	E	1-078-TN39-000-020	20	GM	0-20	5 psi	LL	P	VT	GM
10/22/2009	10:10	513	IS	500	500	E	1-079-TN39-000-002	2	GM	0-2	5 psi	LL	P	VT	GM
10/22/2009	10:18	513	IS	500	500	E	1-077-TN37-000-020	20	GM	0-20	5 psi	LL	P	VT	GM
10/22/2009	10:18	513	IS	500	500	E	1-078-TN37-000-002	2	GM	0-2	5 psi	LL	P	VT	GM
10/22/2009	10:30	513	IS	500	500	E	1-076-TN36-000-021	21	GM	0-21	5 psi	LL	P	VT	GM
10/22/2009	10:30	513	IS	500	500	E	1-077-TN36-000-002	2	GM	0-2	5 psi	LL	P	VT	GM

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/22/2009	10:50	513	IS	500	500	E	1-075-TN34-000-020	20	GM	0-20	5 psi	LL	P	VT	GM
10/22/2009	10:50	513	IS	500	500	E	1-076-TN34-000-002	2	GM	0-2	5 psi	LL	P	VT	GM
10/22/2009	10:58	513	IS	500	500	E	1-074-TN33-000-020	20	GM	0-20	5 psi	LL	P	VT	GM
10/22/2009	10:58	513	IS	500	500	E	1-075-TN33-000-002	2	GM	0-2	5 psi	LL	P	VT	GM
10/22/2009	11:07	513	IS	500	500	E	1-068-TN31-000-020	20	GM	0-20	5 psi	LL	P	VT	GM
10/22/2009	11:07	513	IS	500	500	E	1-074-TN31-000-002	2	GM	0-2	5 psi	LL	P	VT	GM
10/22/2009	11:20	513	IS	500	500	E	1-067-TN30-000-020	20	GM	0-20	5 psi	LL	P	VT	GM
10/22/2009	11:20	513	IS	500	500	E	1-068-TN30-000-002	2	GM	0-2	5 psi	LL	P	VT	GM
10/22/2009	11:35	513	IS	500	500	E	1-067-TN28-000-002	2	GM	0-2	5 psi	LL	P	VT	GM
10/22/2009	11:36	513	IS	500	500	E	1-065-TN28-000-020	20	GM	0-20	5 psi	LL	P	VT	GM
10/22/2009	11:42	513	IS	500	500	E	1-063-TN27-000-020	20	GM	0-20	5 psi	LL	P	VT	GM
10/22/2009	11:42	513	IS	500	500	E	1-065-TN27-000-002	2	GM	0-2	5 psi	LL	P	VT	GM
10/22/2009	11:50	513	IS	500	500	E	1-063-TN25-000-002	2	GM	0-2	5 psi	LL	P	VT	GM
10/22/2009	14:04	513	IS	500	500	E	1-086-TN76-000-004	4	GM	0-4	5 psi	LL	P	VT	GM
10/22/2009	14:05	513	IS	500	500	E	1-086-TN53-000-015	15	GM	0-15	5 psi	LL	P	VT	GM
10/22/2009	14:09	513	IS	500	500	E	1-089-TN53-000-003	3	GM	0-3	5 psi	LL	P	VT	GM

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/22/2009	14:10	513	IS	500	500	E	1-089-TN52-000-008	8	GM	0-8	5 psi	LL	P	VT	GM
10/22/2009	14:12	513	IS	500	500	E	1-090-TN52-000-014	14	GM	0-14	5 psi	LL	P	VT	GM
10/22/2009	14:17	513	IS	500	500	E	1-094-TN54-000-022	22	GM	0-22	5 psi	LL	P	VT	GM
10/22/2009	14:22	513	IS	500	500	E	1-096-TN56-000-022	22	GM	0-22	5 psi	LL	P	VT	GM
10/22/2009	14:30	513	IS	500	500	E	1-098-TN57-000-022	22	GM	0-22	5 psi	LL	P	VT	GM
10/22/2009	14:38	513	IS	500	500	E	1-099-TN58-000-023	23	GM	0-23	5 psi	LL	P	VT	GM
10/22/2009	14:42	513	IS	500	500	E	1-100-TN60-000-023	23	GM	0-23	5 psi	LL	P	VT	GM
11/10/2009	8:03	1209	JC	850	5.0	F	1-081-102-000-202	202	SI	0-202	30/30	BRS	P	AT	SI
11/10/2009	8:06	1210	EB	850	5.5	F	1-102-103-000-202	202	SI	0-202	30/30	BRS	P	AT	SI
11/10/2009	8:42	1209	JC	850	5.0	F	1-103-104-000-202	202	SI	0-202	30/30	BRS	P	AT	SI
11/10/2009	8:45	1210	EB	850	5.5	F	1-104-105-000-202	202	SI	0-202	30/29	BRS	P	AT	SI
11/10/2009	9:14	1209	JC	850	5.0	F	1-105-106-000-202	202	SI	0-202	30/30	BRS	P	AT	SI
11/10/2009	9:20	1210	EB	850	5.5	F	1-106-107-000-202	202	SI	0-202	30/30	BRS	P	AT	SI
11/10/2009	10:00	1209	JC	850	5.0	F	1-107-108-000-202	202	SI	0-202	30/30	BRS	P	AT	SI
11/10/2009	10:05	1210	EB	850	5.5	F	1-108-109-000-202	202	SI	0-202	30/30	BRS	P	AT	SI
11/10/2009	10:52	1209	JC	850	5.0	F	1-109-110-000-202	202	SI	0-202	30/30	BRS	P	AT	SI

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
11/10/2009	10:55	1210	EB	850	5.5	F	1-110-111-000-202	202	SI	0-202	30/30	BRS	P	AT	SI
11/10/2009	13:14	1210	EB	850	5.5	F	1-112-113-000-202	202	SI	0-202	30/30	BRS	P	AT	SI
11/10/2009	13:15	1209	JC	850	5.0	F	1-111-112-000-202	202	SI	0-202	30/30	BRS	P	AT	SI
11/10/2009	13:54	1209	JC	850	5.0	F	1-113-114-000-202	202	SI	0-202	30/30	BRS	P	AT	SI
11/10/2009	14:00	1210	EB	850	5.5	F	1-114-115-000-202	202	SI	0-202	30/30	BRS	P	AT	SI
11/10/2009	14:30	1209	JC	850	5.0	F	1-115-116-000-202	202	SI	0-202	30/30	BRS	P	AT	SI
11/10/2009	14:40	1210	EB	850	5.5	F	1-116-117-000-202	202	SI	0-202	30/30	BRS	P	AT	SI
11/11/2009	7:36	1209	JC	850	5.0	F	1-117-118-000-202	202	SI	0-202	30/30	BRS	P	AT	CL
11/11/2009	7:37	1210	EB	850	5.5	F	1-118-119-000-202	202	SI	0-202	30/30	BRS	P	AT	CL
11/11/2009	8:14	1209	JC	850	5.0	F	1-119-120-000-202	202	SI	0-202	30/30	BRS	P	AT	CL
11/11/2009	8:20	1210	EB	850	5.5	F	1-120-121-000-202	202	SI	0-202	30/30	BRS	P	AT	CL
11/11/2009	8:56	1209	JC	850	5.0	F	1-121-122-000-202	202	SI	0-202	30/30	BRS	P	AT	CL
11/11/2009	9:00	1210	EB	850	5.5	F	1-122-123-000-202	202	SI	0-202	30/30	BRS	P	AT	CL
11/11/2009	9:34	1209	JC	850	5.0	F	1-123-124-000-202	202	SI	0-202	30/30	BRS	P	AT	CL
11/11/2009	9:37	1210	EB	850	5.5	F	1-124-125-000-202	202	SI	0-202	30/30	BRS	P	AT	CL
11/11/2009	10:19	1209	JC	850	5.0	F	1-125-126-000-202	202	SI	0-202	30/30	BRS	P	AT	CL

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
11/11/2009	10:25	1210	EB	850	5.5	F	1-126-127-000-190	190	SI	0-190	30/30	BRS	P	AT	CL
11/11/2009	11:07	1209	JC	850	5.0	F	1-127-128-000-174	174	SI	0-174	30/30	BRS	P	AT	CL
11/11/2009	14:50	1209	JC	850	5.0	F	1-128-129-000-158	158	SI	0-158	30/30	BRS	P	AT	CL
11/11/2009	14:58	1210	EB	850	5.5	F	1-129-130-000-078	78	SI	0-78	30/30	BRS	P	AT	CL
11/11/2009	15:15	1210	EB	850	4.0	F	1-129-131-000-084	84	SI	0-84	30/30	BRS	P	AT	CL
11/11/2009	15:30	1209	JC	850	4.0	F	1-131-132-000-166	166	SI	0-166	30/30	BRS	P	AT	CL
11/11/2009	15:31	1210	EB	850	4.0	F	1-130-131-000-080	80	SI	0-80	30/30	BRS	P	AT	CL
11/12/2009	9:12	20831	JC	850	4.0	F	1-132-133-000-168	168	CL	0-168	30/30	BRS	P	AT	SI
11/12/2009	9:44	1210	EB	850	4.0	F	1-133-134-000-168	168	CL	0-168	30/30	BRS	P	AT	SI
11/12/2009	10:42	20831	JC	850	4.0	F	1-134-135-008-170	162	CL	0-162	30/30	BRS	P	AT	SI
11/12/2009	10:43	20831	JC	850	4.0	F	1-134-135-000-008	8	CL	0-8	30/30	BRS	P	AT	SI
11/12/2009	11:34	1210	EB	850	4.0	F	1-135-136-000-170	170	CL	0-170	30/30	BRS	P	AT	SI
11/12/2009	14:32	20831	JC	850	4.0	F	1-136-137-000-170	170	CL	0-170	30/30	BRS	P	AT	SI
11/12/2009	15:14	20831	JC	850	4.0	F	1-137-138-000-170	170	CL	0-170	30/30	BRS	P	AT	SI
11/12/2009	15:54	20831	JC	850	4.0	F	1-138-139-000-170	170	CL	0-170	30/30	BRS	P	AT	SI
11/12/2009	16:24	1210	EB	850	4.0	F	1-139-140-000-170	170	CL	0-170	30/30	BRS	P	AT	SI

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
11/13/2009	7:38	20831	JC	850	4.0	F	1-140-141-000-174	174	CL	0-174	30/30	BRS	P	AT	SI
11/13/2009	9:08	1210	EB	850	5.5	F	1-143-144-000-104	104	CL	0-104	30/30	BRS	P	AT	SI
11/13/2009	9:11	20831	JC	850	5.0	F	1-144-145-000-168	168	CL	0-168	30/30	BRS	P	AT	SI
11/13/2009	9:27	1210	EB	850	5.5	F	1-142-143-000-030	30	CL	0-30	30/30	BRS	P	AT	SI
11/13/2009	9:38	1210	EB	850	4.0	F	1-141-142-000-030	30	CL	0-30	30/30	BRS	P	AT	SI
11/13/2009	9:44	1210	EB	850	4.0	F	1-141-143-000-074	74	CL	0-74	30/30	BRS	P	AT	SI
11/13/2009	9:53	20831	JC	850	5.0	F	1-145-146-000-184	184	CL	0-184	30/30	BRS	P	AT	SI
11/13/2009	10:00	1210	EB	850	4.0	F	1-141-144-000-068	68	CL	0-68	30/30	BRS	P	AT	SI
11/13/2009	10:16	1210	EB	850	5.5	F	1-146-147-000-190	190	CL	0-190	30/30	BRS	P	AT	SI
11/13/2009	10:30	20831	JC	850	4.0	F	1-126-147-000-018	18	CL	0-18	30/30	BRS	P	AT	SI
11/13/2009	10:33	20831	JC	850	4.0	F	1-127-147-000-005	5	CL	0-5	PATCH&VT	N/A	N/A	N/A	SI
11/13/2009	10:34	20831	JC	850	4.0	F	1-127-146-000-021	21	CL	0-21	30/30	BRS	P	AT	SI
11/13/2009	10:38	20831	JC	850	4.0	F	1-128-146-000-003	3	CL	0-3	PATCH&VT	N/A	N/A	N/A	SI
11/13/2009	10:39	20831	JC	850	4.0	F	1-128-145-000-024	24	CL	0-24	30/30	BRS	P	AT	SI
11/13/2009	12:50	513	IS	500	500	E	1-116-TN24-000-019	19	SI	0-19	5 psi	LL	P	VT	SI
11/13/2009	12:56	513	IS	500	500	E	1-115-TN23-000-019	19	SI	0-19	5 psi	LL	P	VT	SI

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
11/13/2009	12:56	513	IS	500	500	E	1-115-TN24-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/13/2009	13:02	513	IS	500	500	E	1-114-TN22-000-019	19	SI	0-19	5 psi	LL	P	VT	SI
11/13/2009	13:02	513	IS	500	500	E	1-114-TN23-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/13/2009	13:07	513	IS	500	500	E	1-113-TN21-000-019	19	SI	0-19	5 psi	LL	P	VT	SI
11/13/2009	13:07	513	IS	500	500	E	1-113-TN22-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/13/2009	13:14	513	IS	500	500	E	1-112-TN21-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/13/2009	13:15	513	IS	500	500	E	1-112-TN20-000-019	19	SI	0-19	5 psi	LL	P	VT	SI
11/13/2009	13:26	513	IS	500	500	E	1-111-TN14-000-019	19	SI	0-19	5 psi	LL	P	VT	SI
11/13/2009	13:26	513	IS	500	500	E	1-111-TN20-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/13/2009	13:33	513	IS	500	500	E	1-110-TN14-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/13/2009	13:33	513	IS	500	500	E	1-110-TN15-000-019	19	SI	0-19	5 psi	LL	P	VT	SI
11/13/2009	13:40	513	IS	500	500	E	1-109-TN15-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/13/2009	13:40	513	IS	500	500	E	1-109-TN16-000-019	19	SI	0-19	5 psi	LL	P	VT	SI
11/13/2009	14:00	513	IS	500	500	E	1-108-TN16-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/13/2009	14:00	513	IS	500	500	E	1-108-TN17-000-019	19	SI	0-19	5 psi	LL	P	VT	SI
11/13/2009	14:06	513	IS	500	500	E	1-107-TN17-000-003	3	SI	0-3	5 psi	LL	P	VT	SI

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
11/13/2009	14:06	513	IS	500	500	E	1-107-TN18-000-019	19	SI	0-19	5 psi	LL	P	VT	SI
11/13/2009	14:15	513	IS	500	500	E	1-106-TN18-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/13/2009	14:16	513	IS	500	500	E	1-106-TN12-000-008	8	SI	0-8	5 psi	LL	P	VT	SI
11/13/2009	14:18	513	IS	500	500	E	1-106-TN50-000-009	9	SI	0-9	5 psi	LL	P	VT	SI
11/13/2009	14:21	513	IS	500	500	E	1-106-TN49-000-001	1	SI	0-1	5 psi	LL	P	VT	SI
11/13/2009	14:22	513	IS	500	500	E	1-105-TN49-000-020	20	SI	0-20	5 psi	LL	P	VT	SI
11/13/2009	14:39	513	IS	500	500	E	1-105-TN48-000-001	1	SI	0-1	5 psi	LL	P	VT	SI
11/13/2009	14:40	513	IS	500	500	E	1-104-TN48-000-020	20	SI	0-20	5 psi	LL	P	VT	SI
11/13/2009	14:44	513	IS	500	500	E	1-103-TN46-000-020	20	SI	0-20	5 psi	LL	P	VT	SI
11/13/2009	14:44	513	IS	500	500	E	1-104-TN46-000-002	2	SI	0-2	5 psi	LL	P	VT	SI
11/13/2009	15:14	513	IS	500	500	E	1-103-TN45-000-002	2	SI	0-2	5 psi	LL	P	VT	SI
11/13/2009	15:15	513	IS	500	500	E	1-102-TN45-000-020	20	SI	0-20	5 psi	LL	P	VT	SI
11/13/2009	15:22	513	IS	500	500	E	1-102-TN43-000-002	2	SI	0-2	5 psi	LL	P	VT	SI
11/13/2009	15:23	513	IS	500	500	E	1-081-TN43-000-006	6	SI	0-6	5 psi	LL	P	VT	SI
11/14/2009	8:05	513	IS	500	500	E	1-136-TN45-000-016	16	SI	0-16	5 psi	LL	P	VT	SI
11/14/2009	8:11	513	IS	500	500	E	1-136-TN42-000-006	6	SI	0-6	5 psi	LL	P	VT	SI

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
11/14/2009	8:13	513	IS	500	500	E	1-135-TN42-000-016	16	SI	0-16	5 psi	LL	P	VT	SI
11/14/2009	8:16	513	IS	500	500	E	1-135-TN43-000-006	6	SI	0-6	5 psi	LL	P	VT	SI
11/14/2009	8:18	513	IS	500	500	E	1-134-TN43-000-018	18	SI	0-18	5 psi	LL	P	VT	SI
11/14/2009	8:23	513	IS	500	500	E	1-134-TN44-000-006	6	SI	0-6	5 psi	LL	P	VT	SI
11/14/2009	8:27	513	IS	500	500	E	1-133-TN44-000-013	13	SI	0-13	5 psi	LL	P	VT	SI
11/14/2009	8:30	513	IS	500	500	E	1-133-TN39-000-009	9	SI	0-9	5 psi	LL	P	VT	SI
11/14/2009	8:32	513	IS	500	500	E	1-132-TN39-000-013	13	SI	0-13	5 psi	LL	P	VT	SI
11/14/2009	8:38	513	IS	500	500	E	1-132-TN40-000-008	8	SI	0-8	5 psi	LL	P	VT	SI
11/14/2009	8:40	513	IS	500	500	E	1-131-TN40-000-014	14	SI	0-14	5 psi	LL	P	VT	SI
11/14/2009	8:45	513	IS	500	500	E	1-131-TN41-000-007	7	SI	0-7	5 psi	LL	P	VT	SI
11/14/2009	8:47	513	IS	500	500	E	1-130-TN41-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/14/2009	8:48	513	IS	500	500	E	1-130-TN38-000-018	18	SI	0-18	5 psi	LL	P	VT	SI
11/14/2009	8:53	513	IS	500	500	E	1-129-TN38-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/14/2009	8:54	513	IS	500	500	E	1-129-TN37-000-019	19	SI	0-19	5 psi	LL	P	VT	SI
11/14/2009	9:01	513	IS	500	500	E	1-128-TN37-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/14/2009	9:02	513	IS	500	500	E	1-128-TN36-000-019	19	SI	0-19	5 psi	LL	P	VT	SI

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
11/14/2009	9:05	13	BRS	500	500	E	1-147-TN114-000-005	5	SI	0-5	5 psi	LL	P	VT	SI
11/14/2009	9:07	13	BRS	500	500	E	1-147-TN49-000-009	9	SI	0-9	5 psi	LL	P	VT	SI
11/14/2009	9:08	513	IS	500	500	E	1-127-TN36-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/14/2009	9:09	513	IS	500	500	E	1-127-TN35-000-019	19	SI	0-19	5 psi	LL	P	VT	SI
11/14/2009	9:10	13	BRS	500	500	E	1-146-TN49-000-014	14	SI	0-14	5 psi	LL	P	VT	SI
11/14/2009	9:15	13	BRS	500	500	E	1-146-TN50-000-010	10	SI	0-10	5 psi	LL	P	VT	SI
11/14/2009	9:25	513	IS	500	500	E	1-126-TN35-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/14/2009	9:27	513	IS	500	500	E	1-126-TN34-000-020	20	SI	0-20	5 psi	LL	P	VT	SI
11/14/2009	9:29	13	BRS	500	500	E	1-145-TN50-000-013	13	SI	0-13	5 psi	LL	P	VT	SI
11/14/2009	9:34	513	IS	500	500	E	1-125-TN34-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/14/2009	9:34	13	BRS	500	500	E	1-145-TN51-000-010	10	SI	0-10	5 psi	LL	P	VT	SI
11/14/2009	9:35	513	IS	500	500	E	1-125-TN33-000-020	20	SI	0-20	5 psi	LLR	P	VT	SI
11/14/2009	9:38	13	BRS	500	500	E	1-144-TN51-000-013	13	SI	0-13	5 psi	LL	P	VT	SI
11/14/2009	9:40	513	IS	500	500	E	1-124-TN33-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/14/2009	9:41	513	IS	500	500	E	1-124-TN32-000-020	20	SI	0-20	5 psi	LL	P	VT	SI
11/14/2009	9:44	13	BRS	500	500	E	1-144-TN52-000-010	10	SI	0-10	5 psi	LL	P	VT	SI

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
11/14/2009	9:48	13	BRS	500	500	E	1-143-TN52-000-013	13	SI	0-13	5 psi	LL	P	VT	SI
11/14/2009	9:53	13	BRS	500	500	E	1-143-TN53-000-010	10	SI	0-10	5 psi	LL	P	VT	SI
11/14/2009	9:55	513	IS	500	500	E	1-123-TN32-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/14/2009	9:56	513	IS	500	500	E	1-123-TN31-000-020	20	SI	0-20	5 psi	LL	P	VT	SI
11/14/2009	9:57	13	BRS	500	500	E	1-142-TN53-000-010	10	SI	0-10	5 psi	LL	P	VT	SI
11/14/2009	10:00	513	IS	500	500	E	1-122-TN31-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/14/2009	10:00	13	BRS	500	500	E	1-141-TN53-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/14/2009	10:01	513	IS	500	500	E	1-122-TN30-000-020	20	SI	0-20	5 psi	LL	P	VT	SI
11/14/2009	10:01	13	BRS	500	500	E	1-141-TN101-000-019	19	SI	0-19	5 psi	LL	P	VT	SI
11/14/2009	10:09	513	IS	500	500	E	1-121-TN30-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/14/2009	10:10	513	IS	500	500	E	1-121-TN29-000-020	20	SI	0-20	5 psi	LL	P	VT	SI
11/14/2009	10:25	513	IS	500	500	E	1-120-TN29-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/14/2009	10:25	13	BRS	500	500	E	1-140-TN101-000-004	4	SI	0-4	5 psi	LL	P	VT	SI
11/14/2009	10:26	513	IS	500	500	E	1-120-TN28-000-020	20	SI	0-20	5 psi	LL	P	VT	SI
11/14/2009	10:26	13	BRS	500	500	E	1-140-TN102-000-016	16	SI	0-16	5 psi	LL	P	VT	SI
11/14/2009	10:31	513	IS	500	500	E	1-119-TN28-000-003	3	SI	0-3	5 psi	LL	P	VT	SI

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
11/14/2009	10:32	513	IS	500	500	E	1-119-TN27-000-020	20	SI	0-20	5 psi	LL	P	VT	SI
11/14/2009	10:32	13	BRS	500	500	E	1-139-TN46-000-017	17	SI	0-17	5 psi	LL	P	VT	SI
11/14/2009	10:32	13	BRS	500	500	E	1-140-TN46-000-002	2	SI	0-2	5 psi	LL	P	VT	SI
11/14/2009	10:36	513	IS	500	500	E	1-118-TN27-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/14/2009	10:37	513	IS	500	500	E	1-118-TN26-000-020	20	SI	0-20	5 psi	LL	P	VT	SI
11/14/2009	10:37	13	BRS	500	500	E	1-139-TN47-000-004	4	SI	0-4	5 psi	LL	P	VT	SI
11/14/2009	10:47	513	IS	500	500	E	1-117-TN26-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/14/2009	10:48	513	IS	500	500	E	1-117-TN25-000-020	20	SI	0-20	5 psi	LL	P	VT	SI
11/14/2009	10:50	13	BRS	500	500	E	1-138-TN47-000-018	18	SI	0-18	5 psi	LL	P	VT	SI
11/14/2009	10:51	513	IS	500	500	E	1-116-TN25-000-003	3	SI	0-3	5 psi	LL	P	VT	SI
11/14/2009	10:54	13	BRS	500	500	E	1-138-TN48-000-004	4	SI	0-4	5 psi	LL	P	VT	SI
11/14/2009	10:55	13	BRS	500	500	E	1-137-TN48-000-016	16	SI	0-16	5 psi	LL	P	VT	SI
11/14/2009	11:00	13	BRS	500	500	E	1-137-TN45-000-006	6	SI	0-6	5 psi	LL	P	VT	SI
11/16/2009	7:34	20831	JC	850	5.0	F	1-147-148-000-202	202	CL	0-202	30/30	BRS	P	AT	CL
11/16/2009	7:45	1210	EB	850	5.5	F	1-148-149-000-202	202	CL	0-202	30/30	BRS	P	AT	CL
11/16/2009	8:08	20831	JC	850	5.0	F	1-149-150-000-202	202	CL	0-202	30/30	BRS	P	AT	CL

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
11/16/2009	8:32	1210	EB	850	5.5	F	1-150-151-000-202	202	CL	0-202	30/30	BRS	P	AT	CL
11/16/2009	8:40	20831	JC	850	5.0	F	1-151-152-000-202	202	CL	0-202	30/30	BRS	P	AT	CL
11/16/2009	9:14	1210	EB	850	5.5	F	1-152-153-000-202	202	CL	0-202	30/30	BRS	P	AT	CL
11/16/2009	9:20	20831	JC	850	5.0	F	1-153-154-000-202	202	CL	0-202	30/30	BRS	P	AT	CL
11/16/2009	11:03	513	IS	500	500	E	1-154-TN122-000-012	12	CL	0-12	5 psi	LL	P	VT	CL
11/16/2009	11:06	513	IS	500	500	E	1-154-TN121-000-008	8	CL	0-8	5 psi	LL	P	VT	CL
11/16/2009	11:09	513	IS	500	500	E	1-153-TN121-000-014	14	CL	0-14	5 psi	LL	P	VT	CL
11/16/2009	11:13	513	IS	500	500	E	1-153-TN120-000-008	8	CL	0-8	5 psi	LL	P	VT	CL
11/16/2009	11:16	513	IS	500	500	E	1-152-TN120-000-014	14	CL	0-14	5 psi	LL	P	VT	CL
11/16/2009	11:20	513	IS	500	500	E	1-152-TN119-000-008	8	CL	0-8	5 psi	LL	P	VT	CL
11/16/2009	11:25	513	IS	500	500	E	1-151-TN119-000-014	14	CL	0-14	5 psi	LL	P	VT	CL
11/16/2009	11:30	513	IS	500	500	E	1-151-TN118-000-009	9	CL	0-09	5 psi	LL	P	VT	CL
11/16/2009	11:35	513	IS	500	500	E	1-150-TN118-000-014	14	CL	0-14	5 psi	LL	P	VT	CL
11/16/2009	11:37	513	IS	500	500	E	1-150-TN116-000-009	9	CL	0-9	5 psi	LL	P	VT	CL
11/16/2009	13:10	513	IS	500	500	E	1-149-TN115-000-009	9	CL	0-9	5 psi	LL	P	VT	CL
11/16/2009	13:13	513	IS	500	500	E	1-148-TN115-000-013	13	CL	0-13	5 psi	LL	P	VT	CL

Production Seam Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313
Location: Henderson, NV	TaskNo: 09/03
Description: Geomembrane Liner System	

Material Type gml : 1	Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi loss	Vacuum Box: 5 psi for 10 sec.
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Primary / Secondary: Primary	Series: 1
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Production Seam							Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Temp.	Speed	Ext/Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
11/16/2009	13:17	513	IS	500	500	E	1-148-TN114-000-009	9	CL	0-9	5 psi	LL	P	VT	CL
11/16/2009	13:20	513	IS	500	500	E	1-147-TN114-000-008	8	CL	0-8	5 psi	LL	P	VT	CL
11/17/2009	9:57	513	IS	500	500	E	1-149-TN116-000-003	3	CL	0-3	5 psi	LL	P	VT	CL
11/17/2009	10:10	513	IS	500	500	E	1-149-TN116-007-013	6	CL	7-13	5 psi	LL	P	VT	CL

Total Length Fusion: 20868

Total Length Extrusion: 2760

Comments:

APPENDIX E-6
Repair Summary Logs

Repair Summary Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313	TaskNo: 09/03
Location: Henderson, NV		
Description: <u>Geomembrane Liner System</u>		
Installer: <u>ESI</u>		

Primary / Secondary: Primary	Series: 1
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Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID

10/17/2009	1-001	1-008	E	42-43		6 N		5	2	0	513	IS	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-002		E	40-41-TN18-19				3	2	0	513	IS	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-003		E	39-40-TN14-18				3	2	0	513	IS	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-004		E	38-39-TN13-14				2	2	0	513	IS	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-005		E	37-38-TN12-13				2	2	0	513	IS	SI	10/22/2009	LL	P	VT	GM
10/19/2009	1-006	1-007	E	37-38		21 N		5	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-007	1-001	E	1-2		7 N		5	2	0	513	IS	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-008	1-002	E	8-9		8 E		5	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-009	1-003	E	10-11		5 E		5	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-010	1-004	E	12-15		5 N		5	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-011	1-005	E	19-20-24		3 E		8	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-012	1-006	E	22-23		27 N		5	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-013		E	10-11-13-14				3	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-014		E	10-12-13				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-015		E	8-9-10-12				5	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-016		E	7-8-12				3	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM

Repair Summary Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313	TaskNo: 09/03
Location: Henderson, NV		
Description: <u>Geomembrane Liner System</u>		
Installer: <u>ESI</u>		

Primary / Secondary: Primary	Series: 1
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Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID

10/17/2009	1-017		E	1-2-3-4-7-12				7	7	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-018		E	1-12-15				4	4	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-019		E	1-15-21				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-020		E	15-16-21				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-021		E	16-21-22				2	2		14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-022		E	16-17-22				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-023		E	17-22-23				3	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-024		E	17-19-23				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-025		E	17-18-19				3	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-026		E	19-23-24				3	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-027		E	18-19-20				3	3	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-028		E	20-24-26-30				5	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-029		E	20-30-31				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-030		E	20-31-33				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-031		E	31-32-33				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-032		E	32-33-34				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM

Repair Summary Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313	TaskNo: 09/03
Location: Henderson, NV		
Description: <u>Geomembrane Liner System</u>		
Installer: <u>ESI</u>		

Primary / Secondary: Primary	Series: 1
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Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID

10/17/2009	1-033		E	24-26-27				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-034		E	24-25-27				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-035		E	25-27-28				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-036		E	25-28-29				5	3	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-037		E	26-30-31-32-34				5	4	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-038		E	26-34-35				3	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-039		E	26-27-28-29				4	3	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-040		E	26-29-35				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-041	1-013	E	34-35		10 E		5	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-042		E	34-35-36-46				3	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-043		E	36-46		5 E		2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-044		E	36-37-46-47				3	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-045		E	37-38-47-48				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-046		E	38-39-48-49				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-047		E	39-40-49-53				3	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-048		E	40-53-54				3	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM

Repair Summary Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313	TaskNo: 09/03
Location: Henderson, NV		
Description: <u>Geomembrane Liner System</u>		
Installer: <u>ESI</u>		

Primary / Secondary: Primary	Series: 1
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Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID

10/17/2009	1-049		E	40-41-54				3	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-050		E	41-54-56				3	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-051		E	41-42-56				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-052		E		1-008	2 W	10 N	2	2	0	513	IS	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-053		E	8-9-TN99				4	3	0	513	IS	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-054		E	9-10-TN99-101				8	2	0	513	IS	SI	10/22/2009	LL	P	VT	GM
10/19/2009	1-055		E	12-13-TN95				3	2	0	513	IS	SI	10/22/2009	LL	P	VT	GM
10/19/2009	1-056		E	34-46-TN83				4	2	0	513	IS	SI	10/22/2009	LL	P	VT	GM
10/19/2009	1-057	1-009	E	47-48		5 S		5	2	0	513	IS	SI	10/23/2009	LL	P	VT	GM
10/19/2009	1-058		E	54-55-TN66				3	2	0	513	IS	SI	10/23/2009	LL	P	VT	GM
10/19/2009	1-059	1-012	E	58-59		5 S		5	2	0	513	IS	SI	10/23/2009	LL	P	VT	GM
10/21/2009	1-060	1-016	E	54-TN66		6 E		5	2	0	513	IS	SI	10/23/2009	LL	P	VT	GM
10/19/2009	1-061	1-015	E	41-42		5 S		5	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/19/2009	1-062		E	42-56-57				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/19/2009	1-063		E	42-43-57				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/19/2009	1-064		E	43-57-58				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM

Repair Summary Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313	TaskNo: 09/03
Location: Henderson, NV		
Description: <u>Geomembrane Liner System</u>		
Installer: <u>ESI</u>		

Primary / Secondary: Primary	Series: 1
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Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID

10/19/2009	1-065		E	43-44-58				3	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/19/2009	1-066		E	44-58-60				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/19/2009	1-067		E	44-45-60				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/19/2009	1-068		E	45-50-51				2	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/19/2009	1-069	1-011	E	50-51		11 E		5	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/19/2009	1-070		E	59-60-61				2	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/19/2009	1-071		E	58-59-60				2	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/19/2009	1-072		E	55-56-57				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/19/2009	1-073		E	54-55-56				2	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-074	1-010	E	48-49		10 N		5	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/19/2009	1-075		E	57-58-TN69				3	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/21/2009	1-076	1-018	E	62-66		63 S		5	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/21/2009	1-077	1-017	E	59-61		5 S		5	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/21/2009	1-078		E	4-5-6				2	2	0	513	IS	SI	10/22/2009	LL	P	VT	GM
10/21/2009	1-079	1-014	E	2-TN15		5 W		5	2	0	513	IS	SI	10/22/2009	LL	P	VT	GM
10/21/2009	1-080		E	TN15		5 W		7	2	0	513	IS	SI	10/22/2009	LL	P	VT	GM

Repair Summary Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313	TaskNo: 09/03
Location: Henderson, NV		
Description: <u>Geomembrane Liner System</u>		
Installer: <u>ESI</u>		

Primary / Secondary: Primary	Series: 1
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Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID

10/17/2009	1-081		E	4-6-7				3	2	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/17/2009	1-082		E	49-52-53				3	2	0	14	EB	SI	10/23/2009	LL	P	VT	GM
10/22/2009	1-083	1-021	E	79-80		10 N		5	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-084		E	78-79-TN39-40				5	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/21/2009	1-085		E		1-032	10 N	3 E	2	2	0	513	IS	SI	10/22/2009	LL	P	VT	GM
10/22/2009	1-086		E	45-60-61				3	3	0	14	EB	SI	10/22/2009	LL	P	VT	GM
10/22/2009	1-087		E	45-51-61				2	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-088		E	51-61-62				2	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-089		E	51-62-64				4	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-090		E	62-64-66				2	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-091	1-020	E	64-66		5E		5	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-092		E	64-65-66				2	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-093		E	65-66-69-82				6	5	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-094		E	66-82-83				3	3	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-095		E	66-83-84-87				8	5	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-096		E	82-83-84				4	3	0	14	EB	SI	10/24/2009	LL	P	VT	GM

Repair Summary Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313	TaskNo: 09/03
Location: Henderson, NV		
Description: <u>Geomembrane Liner System</u>		
Installer: <u>ESI</u>		

Primary / Secondary: Primary	Series: 1
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Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID

10/22/2009	1-097		E	76-77-TN36-37				2	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-098		E		1-077	4 N	20 E	2	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-099		E		1-077	12 N	20 E	2	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-100	1-019	E	68-74		15 N		5	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-101	1-026	E	75-89		10 E		5	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-102	1-028	E	89-R101		10 E		4	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-103		E	66-86-TN76				3	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-104		E	66-85-86				3	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-105		E	66-85-87				3	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-106		E	86-88-89				5	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-107	1-025	E	94-96		10 S		5	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-108	1-024	E	89-90		65 N		5	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-109		E	75-88-89				4	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-110		E	75-86-88-101				4	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-111		E	69-86-101				2	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-112		E	69-82-84-85-86				5	4	0	14	EB	SI	10/24/2009	LL	P	VT	GM

Repair Summary Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313	TaskNo: 09/03
Location: Henderson, NV		
Description: <u>Geomembrane Liner System</u>		
Installer: <u>ESI</u>		

Primary / Secondary: Primary	Series: 1
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Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID

10/22/2009	1-113		E	69-70-75-101				5	3	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-114		E	70-74-75				2	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-115		E	70-71-72-73-74				6	4	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-116	1-022	E	80-81		105 S		6	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-117		E	68-73-74				3	3	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-118		E	67-68-72-73				4	3	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-119		E	65-67-71-72				7	3	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-120		E	65-70-71				2	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-121		E	65-69-70				2	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-122		E	50-51-64				2	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-123		E	50-63-64				2	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-124		E	63-64-65				2	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-125	1-023	E	86-88		35 N		5	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-126		E	90-91-92-94				13	10	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/21/2009	1-127		E	94-95-96				2	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-128		E	95-96-98				2	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM

Repair Summary Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313	TaskNo: 09/03
Location: Henderson, NV		
Description: <u>Geomembrane Liner System</u>		
Installer: <u>ESI</u>		

Primary / Secondary: Primary	Series: 1
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Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID

10/22/2009	1-129		E	95-97-98				2	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-130		E	93-94-95				2	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-131		E	92-93-94				2	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-132		E	75-76-89				2	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-133		E	76-89-90				2	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-134		E	76-77-90				2	2	0	14	EB	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-135		E	77-78-90-92				4	3	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-136		E	78-92-93				2	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-137		E	78-79-93				2	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-138		E	79-80-93				2	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-139		E	80-93-95				2	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-140		E	97-98-99				2	2	0	513	IS	SI	10/24/2009	LL	P	VT	GM
10/22/2009	1-141		E	84-85-87				3	3	0	14	EB	SI	10/24/2009	LL	P	VT	SI
10/21/2009	1-142		E	TN99		5 N		7	3	0	513	IS	SI	10/22/2009	LL	P	VT	SI
10/22/2009	1-143		E	90-91-94				15	2	0	513	IS	SI	10/24/2009	LL	P	VT	SI
10/22/2009	1-144		E	64-65		10 S		4	2	0	14	EB	SI	10/24/2009	LL	P	VT	SI

Repair Summary Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313	TaskNo: 09/03
Location: Henderson, NV		
Description: <u>Geomembrane Liner System</u>		
Installer: <u>ESI</u>		

Primary / Secondary: Primary	Series: 1
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Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID

10/23/2009	1-145	1-027	E	74-TN33		15 E		6	2	0	513	IS	SI	10/24/2009	LL	P	VT	SI
11/13/2009	1-146	1-029	E	103-104		10 N		5	2	0	13	EB	CL	11/14/2009	LL	P	VT	CL
11/13/2009	1-147	1-030	E	104-105		10 N		5	2	0	13	EB	CL	11/14/2009	LL	P	VT	CL
11/13/2009	1-148	1-031	E	109-110		86 N		5	2	0	13	EB	CL	11/14/2009	LL	P	VT	CL
11/13/2009	1-149	1-032	E	110-111		86 N		5	2	0	13	EB	CL	11/14/2009	LL	P	VT	CL
11/13/2009	1-150	1-033	E	113-114		10 N		5	2	0	13	EB	CL	11/14/2009	LL	P	VT	CL
11/13/2009	1-151	1-034	E	114-115		10 N		5	2	0	13	EB	CL	11/14/2009	LL	P	VT	CL
11/13/2009	1-152	1-035	E	119-120		104 N		5	2	0	13	EB	CL	11/14/2009	LL	P	VT	CL
11/13/2009	1-153	1-036	E	120-121		104 N		5	2	0	13	EB	CL	11/14/2009	LL	P	VT	CL
11/14/2009	1-154		E	128-134-139-145				11	4	0	13	BRS	CL	11/14/2009	LL	P	VT	CL
11/13/2009	1-155	1-037	E	123-124		10 N		5	2	0	13	EB	CL	11/14/2009	LL	P	VT	CL
11/13/2009	1-156	1-038	E	126-127		23 S		5	2	0	13	EB	CL	11/14/2009	LL	P	VT	CL
11/13/2009	1-157	1-039	E	128-129		25 S		5	2	0	13	EB	CL	11/14/2009	LL	P	VT	CL
11/13/2009	1-158	1-040	E	130-131		25 S		5	2	0	13	EB	CL	11/14/2009	LL	P	VT	CL
11/13/2009	1-159	1-041	E	134-135		20 N		5	2	0	13	EB	CL	11/14/2009	LL	P	VT	CL
11/13/2009	1-160	1-042	E	137-138		55 W		5	2	0	13	EB	CL	11/14/2009	LL	P	VT	CL

Repair Summary Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313	TaskNo: 09/03
Location: Henderson, NV		
Description: <u>Geomembrane Liner System</u>		
Installer: <u>ESI</u>		

Primary / Secondary: Primary	Series: 1
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Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID

11/13/2009	1-161	1-043	E	139-140		66 W		5	2	0	13	EB	CL	11/14/2009	LL	P	VT	CL
11/13/2009	1-162	1-044	E	128-145		10 S		5	2	0	13	EB	CL	11/14/2009	LL	P	VT	CL
11/13/2009	1-163	1-045	E	146-147		20 W		5	2	0	13	EB	CL	11/14/2009	LL	P	VT	CL
11/13/2009	1-164	1-046	E	113-TN21		10 W		5	2	0	513	IS	CL	11/14/2009	LL	P	VT	CL
11/13/2009	1-165		E	127-128-145-146				5	2	0	13	EB	CL	11/14/2009	LL	P	VT	CL
11/13/2009	1-166		E	102-TN45		8 W		2	2	0	513	IS	SI	11/14/2009	LL	P	VT	CL
11/13/2009	1-167		E	81-102-TN43				2	2	0	513	IS	SI	11/14/2009	LL	P	VT	CL
11/13/2009	1-168		E		1-102	5 E	5 N	2	2	0	513	IS	SI	11/14/2009	LL	P	VT	CL
11/13/2009	1-169		E	126-127-146-147				8	2	0	13	EB	CL	11/14/2009	LL	P	VT	CL
11/14/2009	1-170		E	134-135		5 S		3	2	0	13	BRS	CL	11/14/2009	LL	P	VT	CL
11/14/2009	1-171		E	141-143-144				3	2	0	13	BRS	CL	11/14/2009	LL	P	VT	CL
11/14/2009	1-172		E		1-144	7 E	10 N	2	2	0	13	BRS	CL	11/14/2009	LL	P	VT	CL
11/14/2009	1-173		E	144-TN51		2 N		2	2	0	13	BRS	CL	11/14/2009	LL	P	VT	CL
11/14/2009	1-174	1-047	E	145-TN51		3 S		5	2	0	13	BRS	CL	11/14/2009	LL	P	VT	CL
11/14/2009	1-175	1-048	E	131-TN40		7 E		5	2	0	513	IS	CL	11/14/2009	LL	P	VT	CL
11/14/2009	1-176		E	141-142-143				3	2	0	13	BRS	CL	11/14/2009	LL	P	VT	CL

Repair Summary Log

Project: CAMU Closure Phase II & IIIA	ProjNo: SC0313	TaskNo: 09/03
Location: Henderson, NV		
Description: <u>Geomembrane Liner System</u>		
Installer: <u>ESI</u>		

Primary / Secondary: Primary	Series: 1
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Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID

11/14/2009	1-177		E	136-137-TN45				12	3	0	13	BRS	CL	11/14/2009	LL	P	VT	CL
11/14/2009	1-178		E	134-135-TN43				6	3	0	513	IS	CL	11/14/2009	LL	P	VT	CL
11/14/2009	1-179		E	129-130-131				3	2	0	13	BRS	CL	11/14/2009	LL	P	VT	CL
11/16/2009	1-180	1-049	E	149-150		20 W		5	2	0	513	IS	CL	11/16/2009	LL	P	VT	CL
11/16/2009	1-181	1-050	E	152-153		20 W		5	2	0	513	IS	CL	11/16/2009	LL	P	VT	CL
11/16/2009	1-182	1-051	E	153-154		20 E		5	2	0	513	IS	CL	11/16/2009	LL	P	VT	CL
11/16/2009	1-183		E		1-149	5 E	10 N	2	2	0	513	IS	CL	11/16/2009	LL	P	VT	CL
11/17/2009	1-184		E	149-TN116		6 S	2 N	4	4	0	513	IS	CL	11/17/2009	LL	P	VT	CL

APPENDIX E-7

Destructive Test Logs and Laboratory Test Results

Destructive Test Log

Project: CAMU Closure Phase II & IIIA
Location: Henderson, NV
Description: Geomembrane Liner System

Test Reqs:	Fusion:	Peel Inside: <u>91</u>	Peel Outside: <u>91</u>	Shear: <u>120</u>
	Extrusion:	Peel: <u>78</u>	Shear: <u>120</u>	

Primary / Secondary: Primary	Series: 1	MaterialType: 1
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Sample Data								Test Data						Re test	Re test	
Samp No	Weld Type	Track Type	Location		Mach ID	Oper ID	Date Samp		Peel		Shear	Unit ppi/psi	Result (P/F)	QA ID	1	2
			Seam	Dist. (ft.)					Inside	Outside						
1-001	F	2	1-001-002	7 N	1210	EB	10/13/2009	Lab	136	137	181	ppi	P	DS	-	-
								Field	128	126	169	ppi	P	SI		
1-002	F	2	1-008-009	8 E	1210	EB	10/13/2009	Lab	124	119	178	ppi	P	DS	-	-
								Field	141	136	181	ppi	P	SI		
1-003	F	2	1-010-011	5 E	1209	IS	10/13/2009	Lab	136	124	177	ppi	P	DS	-	-
								Field	124	136	173	ppi	P	SI		
1-004	F	2	1-012-015	5 N	1209	JC	10/14/2009	Lab	136	117	173	ppi	P	DS	-	-
								Field	123	123	173	ppi	P	SI		
1-005	F	2	1-019-024	3 E	1209	JC	10/14/2009	Lab	125	135	164	ppi	P	DS	-	-
								Field	123	119	159	ppi	P	SI		
1-006	F	2	1-022-023	27 N	1210	EB	10/14/2009	Lab	136	137	180	ppi	P	DS	-	-
								Field	125	115	169	ppi	P	SI		
1-007	F	2	1-037-038	21 N	1210	EB	10/15/2009	Lab	138	128	182	ppi	P	DS	-	-
								Field	114	122	156	ppi	P	SI		
1-008	F	2	1-042-043	6 N	1209	JC	10/15/2009	Lab	142	126	182	ppi	P	DS	-	-
								Field	125	118	162	ppi	P	SI		
1-009	F	2	1-047-048	5 S	1209	JC	10/16/2009	Lab	145	118	179	ppi	P	DS	-	-
								Field	115	116	151	ppi	P	SI		
1-010	F	2	1-048-049	10 N	1210	EB	10/16/2009	Lab	125	128	184	ppi	P	DS	-	-
								Field	122	114	155	ppi	P	SI		

Destructive Test Log

Project: CAMU Closure Phase II & IIIA
Location: Henderson, NV
Description: Geomembrane Liner System

Test Reqs:	Fusion:	Peel Inside: <u>91</u>	Peel Outside: <u>91</u>	Shear: <u>120</u>
	Extrusion:	Peel: <u>78</u>	Shear: <u>120</u>	

Primary / Secondary: Primary	Series: 1	MaterialType: 1
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Sample Data								Test Data						Re test	Re test	
Samp No	Weld Type	Track Type	Location		Mach ID	Oper ID	Date Samp	Lab	Peel		Shear	Unit ppi/psi	Result (P/F)	QA ID	1	2
			Seam	Dist. (ft.)					Inside	Outside						
1-011	F	2	1-050-051	11 E	20831	JC	10/16/2009	Lab	127	155	177	ppi	P	DS	-	-
								Field	138	118	152	ppi	P	SI		
1-012	F	2	1-058-059	5 S	1210	EB	10/16/2009	Lab	125	129	186	ppi	P	DS	-	-
								Field	117	116	152	ppi	P	SI		
1-013	F	2	1-034-035	10 E	20831	JC	10/16/2009	Lab	116	155	173	ppi	P	DS	-	-
								Field	141	124	149	ppi	P	SI		
1-014	E	1	1-002-TN15	17 E	513	IS	10/17/2009	Lab	149	-	166	ppi	P	DS	-	-
								Field	129	-	159	ppi	P	SI		
1-015	F	2	1-041-042	5 S	1210	EB	10/15/2009	Lab	122	123	182	ppi	P	DS	-	-
								Field	125	122	155	ppi	P	SI		
1-016	E	1	1-054-TN66	6 E	513	IS	10/19/2009	Lab	142	-	165	ppi	P	DS	-	-
								Field	121	-	152	ppi	P	SI		
1-017	F	2	1-059-061	5 S	20831	JC	10/19/2009	Lab	143	132	178	ppi	P	DS	-	-
								Field	135	138	200	ppi	P	SI		
1-018	F	2	1-062-066	63 S	1210	EB	10/19/2009	Lab	122	138	176	ppi	P	DS	-	-
								Field	150	133	188	ppi	P	SI		
1-019	F	2	1-068-074	15 N	1210	EB	10/20/2009	Lab	121	134	169	ppi	P	DS	-	-
								Field	117	119	159	ppi	P	SI		
1-020	F	2	1-064-066	5 E	20831	JC	10/20/2009	Lab	133	146	172	ppi	P	DS	-	-
								Field	140	136	161	ppi	P	SI		

Destructive Test Log

Project: CAMU Closure Phase II & IIIA
Location: Henderson, NV
Description: Geomembrane Liner System

Test Reqs:	Fusion:	Peel Inside: <u>91</u>	Peel Outside: <u>91</u>	Shear: <u>120</u>
	Extrusion:	Peel: <u>78</u>	Shear: <u>120</u>	

Primary / Secondary: Primary	Series: 1	MaterialType: 1
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Sample Data								Test Data						Re test	Re test	
Samp No	Weld Type	Track Type	Location		Mach ID	Oper ID	Date Samp	Peel		Shear	Unit ppi/psi	Result (P/F)	QA ID	1	2	
			Seam	Dist. (ft.)				Inside	Outside							
1-021	F	2	1-079-080	10 N	1210	EB	10/20/2009	Lab	151	136	175	ppi	P	DS	-	-
								Field	121	127	157	ppi	P	SI		
1-022	F	2	1-080-081	105 S	20831	JC	10/20/2009	Lab	134	136	177	ppi	P	DS	-	-
								Field	126	122	158	ppi	P	SI		
1-023	F	2	1-086-088	35 N	20831	JC	10/21/2009	Lab	121	130	173	ppi	P	DS	-	-
								Field	121	120	158	ppi	P	SI		
1-024	F	2	1-089-090	65 N	1210	EB	10/21/2009	Lab	122	132	183	ppi	P	DS	-	-
								Field	129	120	154	ppi	P	SI		
1-025	F	2	1-094-096	10 S	20831	JC	10/21/2009	Lab	129	137	175	ppi	P	DS	-	-
								Field	121	128	160	ppi	P	SI		
1-026	F	2	1-075-089	10 E	1210	EB	10/21/2009	Lab	131	152	174	ppi	P	DS	-	-
								Field	133	119	160	ppi	P	SI		
1-027	E	1	1-074-TN33	15 E	513	IS	10/22/2009	Lab	141	-	159	ppi	P	DS	-	-
								Field	125	-	151	ppi	P	SI		
1-028	E	1	1-089-R101	10 E	14	EB	10/22/2009	Lab	146	-	166	ppi	P	DS	-	-
								Field	135	-	156	ppi	P	SI		
1-029	F	2	1-103-104	10 N	1209	JC	11/10/2009	Lab	136	118	186	ppi	P	DS	-	-
								Field	128	129	163	ppi	P	CL		
1-030	F	2	1-104-105	10 N	1210	EB	11/10/2009	Lab	141	131	183	ppi	P	DS	-	-
								Field	126	125	168	ppi	P	CL		

Destructive Test Log

Project: CAMU Closure Phase II & IIIA
Location: Henderson, NV
Description: Geomembrane Liner System

Test Reqs:	Fusion:	Peel Inside: <u>91</u>	Peel Outside: <u>91</u>	Shear: <u>120</u>
	Extrusion:	Peel: <u>78</u>	Shear: <u>120</u>	

Primary / Secondary: Primary	Series: 1	MaterialType: 1
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Sample Data								Test Data						Re test	Re test	
Samp No	Weld Type	Track Type	Location		Mach ID	Oper ID	Date Samp		Peel		Shear	Unit ppi/psi	Result (P/F)	QA ID	1	2
			Seam	Dist. (ft.)					Inside	Outside						
1-031	F	2	1-109-110	86 N	1209	JC	11/10/2009	Lab	136	116	180	ppi	P	DS	-	-
								Field	122	127	159	ppi	P	CL		
1-032	F	2	1-110-111	86 N	1210	EB	11/10/2009	Lab	147	123	183	ppi	P	DS	-	-
								Field	118	131	158	ppi	P	CL		
1-033	F	2	1-113-114	10 N	1209	JC	11/10/2009	Lab	135	127	180	ppi	P	DS	-	-
								Field	126	131	188	ppi	P	CL		
1-034	F	2	1-114-115	10 N	1210	EB	11/10/2009	Lab	132	125	180	ppi	P	DS	-	-
								Field	135	130	184	ppi	P	CL		
1-035	F	2	1-119-120	104 N	1209	JC	11/11/2009	Lab	126	122	180	ppi	P	DS	-	-
								Field	116	130	176	ppi	P	CL		
1-036	F	2	1-120-121	104 N	1210	EB	11/11/2009	Lab	122	131	180	ppi	P	DS	-	-
								Field	132	122	165	ppi	P	CL		
1-037	F	2	1-123-124	10 N	1209	JC	11/11/2009	Lab	128	122	178	ppi	P	DS	-	-
								Field	126	124	169	ppi	P	CL		
1-038	F	2	1-126-127	23 S	1210	EB	11/11/2009	Lab	128	136	183	ppi	P	DS	-	-
								Field	133	126	164	ppi	P	CL		
1-039	F	2	1-128-129	25 S	1209	JC	11/11/2009	Lab	136	125	188	ppi	P	DS	-	-
								Field	136	132	180	ppi	P	CL		
1-040	F	2	1-130-131	25 S	1210	EB	11/11/2009	Lab	146	137	192	ppi	P	DS	-	-
								Field	145	137	181	ppi	P	CL		

Destructive Test Log

Project: CAMU Closure Phase II & IIIA
Location: Henderson, NV
Description: Geomembrane Liner System

Test Reqs:	Fusion:	Peel Inside: <u>91</u>	Peel Outside: <u>91</u>	Shear: <u>120</u>
	Extrusion:	Peel: <u>78</u>	Shear: <u>120</u>	

Primary / Secondary: Primary	Series: 1	MaterialType: 1
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Sample Data								Test Data						Re test	Re test	
Samp No	Weld Type	Track Type	Location		Mach ID	Oper ID	Date Samp	Lab	Peel		Shear	Unit ppi/psi	Result (P/F)	QA ID	1	2
			Seam	Dist. (ft.)					Inside	Outside						
1-041	F	2	1-134-135	20 N	20831	JC	11/12/2009	Lab	134	132	179	ppi	P	DS	-	-
								Field	145	134	188	ppi	P	CL		
1-042	F	2	1-137-138	55 W	20831	JC	11/12/2009	Lab	129	141	187	ppi	P	DS	-	-
								Field	140	138	201	ppi	P	CL		
1-043	F	2	1-139-140	66 W	1210	EB	11/12/2009	Lab	136	143	197	ppi	P	DS	-	-
								Field	153	148	188	ppi	P	CL		
1-044	F	2	1-128-145	10 S	20831	JC	11/13/2009	Lab	114	150	187	ppi	P	DS	-	-
								Field	144	126	168	ppi	P	CL		
1-045	F	2	1-146-147	20 W	1210	EB	11/13/2009	Lab	126	142	185	ppi	P	DS	-	-
								Field	131	126	177	ppi	P	CL		
1-046	E	1	1-113-TN21	10 W	513	IS	11/13/2009	Lab	166	-	169	ppi	P	DS	-	-
								Field	169	-	198	ppi	P	CL		
1-047	E	1	1-145-TN51	3 S	13	BRS	11/14/2009	Lab	144	-	166	ppi	P	DS	-	-
								Field	124	-	170	ppi	P	CL		
1-048	E	1	1-131-TN40	7 E	513	IS	11/14/2009	Lab	143	-	169	ppi	P	DS	-	-
								Field	135	-	176	ppi	P	CL		
1-049	F	2	1-149-150	20 W	20831	JC	11/16/2009	Lab	138	141	183	ppi	P	-	-	-
								Field	130	145	175	ppi	P	CL		
1-050	F	2	1-152-153	20 W	1210	EB	11/16/2009	Lab	131	129	184	ppi	P	-	-	-
								Field	124	126	171	ppi	P	CL		

Destructive Test Log

Project: CAMU Closure Phase II & IIIA
 Location: Henderson, NV
 Description: Geomembrane Liner System

Test Reqs: Fusion: Peel Inside: 91 Peel Outside: 91 Shear: 120
 Extrusion: Peel: 78 Shear: 120

Primary / Secondary: Primary Series: 1 MaterialType: 1

Sample Data							Test Data					Re test	Re test		
Samp No	Weld Type	Track Type	Location		Mach ID	Oper ID	Date Samp	Peel		Shear	Unit ppi/psi	Result (P/F)	QA ID	1	2
			Seam	Dist. (ft.)				Inside	Outside						
1-051	F	2	1-153-154	20 E	20831	JC	11/16/2009	Lab	130	124	177	ppi	P	-	-
								Field	135	129	164	ppi	P	CL	

Comments:



October 19, 2009

Mail To:

Attn: Mr. Dan Street
Geosyntec Consultants
 110 W. Warm Springs Road
 Henderson, NV 89011

E-mail: dstreet@geosyntec.com
 CC E-mail: rflynn@geosyntec.com
 CC E-mail: jcox@geosyntec.com

Bill To:

Attn: Ms. Becky Flynn
Geosyntec Consultants
 10875 Rancho Bernardo Rd., Suite 200
 San Diego, CA 92127

Project # : SC0313

Dear Mr. Street:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project: **BRC - Camu, Phase IV**

TRI Job Reference Number: E2334-50-06

Material(s) Tested: 8 Heat Fusion Weld Seam(s)

Test(s) Requested: SAME DAY Peel and Shear
 (ASTM D 6392/GRI GM19/D 4437/NSF 54)

Codes

AD	Adhesion failure (100% Peel)
BRK	Break in sheeting away from Seam edge
SE	Break in sheeting at edge of seam
AD-BRK	Break in sheeting after some adhesion failure - partial peel
SIP	Separation in the plane of the sheet (leaving the bond intact)
FTB	Film tearing bond (all non "AD" failures)
NON-FTB	100% peel

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Jennifer Tenney
 Project Manager
 Geosynthetic Services Division
www.GeosyntheticTesting.com



DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Phase IV

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-50-06

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-1						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	136	132	131	124	157	Peel A 136 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	134	144	142	132	132	Peel B 137 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	182	181	179	180	181	Shear 181 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-2						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	116	117	126	129	131	Peel A 124 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	137	107	120	119	113	Peel B 119 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	183	175	177	178	176	Shear 178 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Phase IV

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-50-06

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-3						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	152	137	127	138	124	Peel A 136 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	125	126	123	121	124	Peel B 124 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	178	177	179	179	174	Shear 177 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-4						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	151	124	118	138	147	Peel A 136 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	125	110	116	111	121	Peel B 117 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	177	174	173	169	173	Shear 173 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Phase IV

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-50-06

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-5						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	131	124	119	107	143	Peel A 125 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	120	124	140	146	143	Peel B 135 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	165	163	163	161	168	Shear 164 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-6						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	121	137	136	138	147	Peel A 136 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	135	139	137	139	135	Peel B 137 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	181	179	183	178	181	Shear 180 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Phase IV

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-50-06

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-7						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	124	126	157	155	129	Peel A 138 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	133	124	127	130	127	Peel B 128 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	183	183	180	181	181	Shear 182 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-8						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	144	144	142	139	142	Peel A 142 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	126	128	126	121	127	Peel B 126 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	182	181	182	182	181	Shear 182 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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October 20, 2009

Mail To:

Attn: Mr. Dan Street
Geosyntec Consultants
 110 W. Warm Springs Road
 Henderson, NV 89011

E-mail: dstreet@geosyntec.com
 CC E-mail: rflynn@geosyntec.com
 CC E-mail: jcox@geosyntec.com

Bill To:

Attn: Ms. Becky Flynn
Geosyntec Consultants
 10875 Rancho Bernardo Rd., Suite 200
 San Diego, CA 92127

Project # : SC0313

Dear Mr. Street:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project: **BRC - Camu, Phase IV**

TRI Job Reference Number: E2334-52-04

Material(s) Tested: 6 Heat Fusion Weld Seam(s)
 2 Single Extrusion Weld Seam(s)

Test(s) Requested: SAME DAY Peel and Shear
 (ASTM D 6392/GRI GM19/D 4437/NSF 54)

Codes	
AD	Adhesion failure (100% Peel)
BRK	Break in sheeting away from Seam edge
SE	Break in sheeting at edge of seam
AD-BRK	Break in sheeting after some adhesion failure - partial peel
SIP	Separation in the plane of the sheet (leaving the bond intact)
FTB	Film tearing bond (all non "AD" failures)
NON-FTB	100% peel

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Jennifer Tenney
 Project Manager
 Geosynthetic Services Division
www.GeosyntheticTesting.com



DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Phase IV

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-52-04

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-9						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	146	149	136	149	145	Peel A 145 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	113	116	116	126	120	Peel B 118 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	181	178	175	182	178	Shear 179 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-10						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	130	134	117	125	121	Peel A 125 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	128	122	134	129	127	Peel B 128 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	186	180	186	182	185	Shear 184 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Phase IV

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-52-04

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-11						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	131	130	126	118	128	Peel A 127 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	159	158	158	143	157	Peel B 155 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	176	176	174	174	184	Shear 177 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-12						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	124	130	122	127	123	Peel A 125 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	129	123	128	134	129	Peel B 129 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	186	184	186	186	186	Shear 186 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Phase IV

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-52-04

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-13						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	120	120	116	112	113	Peel A 116 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	146	160	153	156	162	Peel B 155 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	171	175	169	171	180	Shear 173 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-14						
Weld:	Single Extrusion						
	Peel Strength (ppi)	138	161	142	138	166	Peel 149 78 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	167	165	164	165	168	Shear 166 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Phase IV

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-52-04

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-15						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	142	115	121	116	117	Peel A 122 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	123	121	129	119	122	Peel B 123 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	184	186	180	178	181	Shear 182 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-16						
Weld:	Single Extrusion						
	Peel Strength (ppi)	141	139	159	151	122	Peel 142 78 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	174	165	159	164	162	Shear 165 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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October 23, 2009

Mail To:

Attn: Mr. Dan Street
Geosyntec Consultants
 110 W. Warm Springs Road
 Henderson, NV 89011

E-mail: dstreet@geosyntec.com
 CC E-mail: rflynn@geosyntec.com
 CC E-mail: jcox@geosyntec.com

Bill To:

Attn: Ms. Becky Flynn
Geosyntec Consultants
 10875 Rancho Bernardo Rd., Suite 200
 San Diego, CA 92127

Project # : SC0313

Dear Mr. Street:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project: **BRC - Camu, Phase IV**

TRI Job Reference Number: E2334-58-10

Material(s) Tested: 10 Heat Fusion Weld Seam(s)
 2 Single Extrusion Weld Seam(s)

Test(s) Requested: SAME DAY Peel and Shear
 (ASTM D 6392/GRI GM19/D 4437/NSF 54)

Codes

AD	Adhesion failure (100% Peel)
BRK	Break in sheeting away from Seam edge
SE	Break in sheeting at edge of seam
AD-BRK	Break in sheeting after some adhesion failure - partial peel
SIP	Separation in the plane of the sheet (leaving the bond intact)
FTB	Film tearing bond (all non "AD" failures)
NON-FTB	100% peel

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Jennifer Tenney
 Project Manager
 Geosynthetic Services Division
www.GeosyntheticTesting.com



DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Phase IV

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-58-10

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-17						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	138	138	134	160	146	Peel A 143 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	144	124	127	132	132	Peel B 132 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	178	181	174	175	182	Shear 178 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-18						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	124	119	121	127	120	Peel A 122 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	131	140	135	147	137	Peel B 138 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	175	176	173	178	180	Shear 176 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Phase IV

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-58-10

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-19						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	124	118	118	122	123	Peel A 121 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	137	138	133	126	137	Peel B 134 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	176	167	172	163	166	Shear 169 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-20						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	134	132	133	131	134	Peel A 133 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	145	143	154	139	149	Peel B 146 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	175	176	171	170	168	Shear 172 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Phase IV

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-58-10

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-21						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	155	137	147	159	155	Peel A 151 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	135	129	133	130	154	Peel B 136 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	182	181	176	171	164	Shear 175 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-22						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	147	140	131	126	127	Peel A 134 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	138	142	133	138	130	Peel B 136 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	173	184	177	176	173	Shear 177 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Phase IV

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-58-10

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-23						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	120	122	121	123	118	Peel A 121 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	117	125	130	150	127	Peel B 130 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	175	177	170	169	175	Shear 173 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-24						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	121	119	124	123	122	Peel A 122 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	133	129	130	135	132	Peel B 132 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	187	183	177	181	189	Shear 183 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Phase IV

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-58-10

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-25						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	127	132	132	127	127	Peel A 129 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	145	144	138	136	124	Peel B 137 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	178	180	175	165	175	Shear 175 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-26						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	127	138	125	130	137	Peel A 131 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	150	154	152	151	155	Peel B 152 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	178	172	172	175	174	Shear 174 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Phase IV

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-58-10

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-27						
Weld:	Single Extrusion						
Peel Strength (ppi)	148	133	123	153	148	141	78 min
Peel Incursion (%)	<10	<10	<10	<10	<10		
Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
Shear Strength (ppi)	163	157	165	156	155	159	120 min
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	DS-28						
Weld:	Single Extrusion						
Peel Strength (ppi)	148	145	153	134	148	146	78 min
Peel Incursion (%)	<10	<10	<10	<10	<10		
Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
Shear Strength (ppi)	161	170	163	172	163	166	120 min
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

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November 12, 2009

Mail To:

Attn: Mr. Dan Street
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110 W. Warm Springs Road
Henderson, NV 89011

E-mail: dstreet@geosyntec.com
CC E-mail: rflynn@geosyntec.com
CC E-mail: jcox@geosyntec.com

Bill To:

Attn: Ms. Becky Flynn
Geosyntec Consultants
10875 Rancho Bernardo Rd., Suite 200
San Diego, CA 92127

Project # : SC0313-19-03

Dear Mr. Street:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	BRC - Camu, Closure
TRI Job Reference Number:	E2334-84-07
Material(s) Tested:	10 Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

Codes

AD	Adhesion failure (100% Peel)
BRK	Break in sheeting away from Seam edge
SE	Break in sheeting at edge of seam
AD-BRK	Break in sheeting after some adhesion failure - partial peel
SIP	Separation in the plane of the sheet (leaving the bond intact)
FTB	Film tearing bond (all non "AD" failures)
NON-FTB	100% peel

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Jennifer Tenney
Project Manager
Geosynthetic Services Division
www.GeosyntheticTesting.com



DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Closure

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-84-07

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-29						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	136	159	121	140	124	Peel A 136 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	112	134	121	107	116	Peel B 118 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	193	181	187	186	184	Shear 186 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-30						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	153	156	153	121	122	Peel A 141 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	127	127	135	133	131	Peel B 131 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	190	180	181	181	181	Shear 183 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Closure

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-84-07

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-31						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	130	146	135	136	132	Peel A 136 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	112	111	117	118	124	Peel B 116 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	180	181	180	179	179	Shear 180 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-32						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	123	173	151	144	142	Peel A 147 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	123	126	122	124	119	Peel B 123 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	190	178	184	183	180	Shear 183 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Closure

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-84-07

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-33						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	135	136	133	136	134	Peel A 135 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	129	126	124	126	131	Peel B 127 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	180	184	182	178	177	Shear 180 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-34						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	131	138	134	132	124	Peel A 132 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	131	123	124	123	124	Peel B 125 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	190	175	179	175	179	Shear 180 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Closure

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-84-07

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-35						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	144	124	118	121	122	Peel A 126 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	127	118	123	124	117	Peel B 122 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	180	180	179	184	177	Shear 180 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-36						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	122	120	123	104	139	Peel A 122 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	126	135	127	131	135	Peel B 131 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	189	178	176	179	177	Shear 180 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Closure

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-84-07

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-37						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	127	126	133	126	129	Peel A 128 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	120	126	122	119	123	Peel B 122 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	180	180	178	177	178	Shear 179 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-38						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	123	123	121	129	146	Peel A 128 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	137	134	134	144	133	Peel B 136 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	186	189	179	182	180	Shear 183 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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November 16, 2009

Mail To:

Attn: Mr. Dan Street
Geosyntec Consultants
110 W. Warm Springs Road
Henderson, NV 89011

E-mail: dstreet@geosyntec.com
CC E-mail: rflynn@geosyntec.com
CC E-mail: jcox@geosyntec.com

Bill To:

Attn: Ms. Becky Flynn
Geosyntec Consultants
10875 Rancho Bernardo Rd., Suite 200
San Diego, CA 92127

Project # : SC0313-19-03

Dear Mr. Street:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	BRC - Camu, Closure
TRI Job Reference Number:	E2334-89-04
Material(s) Tested:	7 Heat Fusion Weld Seam(s) 3 Single Extrusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

Codes

AD	Adhesion failure (100% Peel)
BRK	Break in sheeting away from Seam edge
SE	Break in sheeting at edge of seam
AD-BRK	Break in sheeting after some adhesion failure - partial peel
SIP	Separation in the plane of the sheet (leaving the bond intact)
FTB	Film tearing bond (all non "AD" failures)
NON-FTB	100% peel

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Melissa Hunter
Project Manager
Geosynthetic Services Division
www.GeosyntheticTesting.com



DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Closure

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-89-04

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-39						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	132	136	136	141	133	Peel A 136 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	124	124	127	122	126	Peel B 125 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	189	188	193	182	188	Shear 188 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-40						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	143	149	150	142	148	Peel A 146 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	147	138	133	132	135	Peel B 137 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	194	192	193	192	191	Shear 192 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Closure

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-89-04

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-41						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	127	135	131	138	138	Peel A 134 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	139	122	140	127	134	Peel B 132 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	180	181	179	182	175	Shear 179 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-42						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	132	125	133	122	134	Peel A 129 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	146	141	142	139	139	Peel B 141 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	190	187	186	184	189	Shear 187 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Closure

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-89-04

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-43						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	135	140	137	138	132	Peel A 136 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	129	142	151	140	152	Peel B 143 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	200	199	197	197	192	Shear 197 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-44						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	115	113	115	117	112	Peel A 114 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	151	146	151	154	147	Peel B 150 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	185	191	184	191	183	Shear 187 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Closure

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-89-04

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-45						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	123	130	123	132	123	Peel A 126 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	137	130	145	150	147	Peel B 142 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	189	184	186	186	182	Shear 185 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-46						
Weld:	Single Extrusion						
	Peel Strength (ppi)	164	166	166	168	166	Peel 166 78 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	170	167	167	168	171	Shear 169 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

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DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Closure

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-89-04

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-47						
Weld:	Single Extrusion						
Peel Strength (ppi)	139	141	150	146	142	144	78 min
Peel Incursion (%)	<10	<10	<10	<10	<10		
Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
Shear Strength (ppi)	163	169	164	167	165	166	120 min
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	DS-48						
Weld:	Single Extrusion						
Peel Strength (ppi)	136	141	148	143	148	143	78 min
Peel Incursion (%)	<10	<10	<10	<10	<10		
Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
Shear Strength (ppi)	168	169	171	166	170	169	120 min
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



November 17, 2009

Mail To:

Attn: Mr. Dan Street
Geosyntec Consultants
110 W. Warm Springs Road
Henderson, NV 89011

E-mail: dstreet@geosyntec.com
CC E-mail: rflynn@geosyntec.com
CC E-mail: jcox@geosyntec.com

Bill To:

Attn: Ms. Becky Flynn
Geosyntec Consultants
10875 Rancho Bernardo Rd., Suite 200
San Diego, CA 92127

Project # : SC0313-19-03

Dear Mr. Street:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	BRC - Camu, Closure
TRI Job Reference Number:	E2334-91-09
Material(s) Tested:	3 Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

Codes

AD	Adhesion failure (100% Peel)
BRK	Break in sheeting away from Seam edge
SE	Break in sheeting at edge of seam
AD-BRK	Break in sheeting after some adhesion failure - partial peel
SIP	Separation in the plane of the sheet (leaving the bond intact)
FTB	Film tearing bond (all non "AD" failures)
NON-FTB	100% peel

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Jennifer Tenney
Project Manager
Geosynthetic Services Division
www.GeosyntheticTesting.com



DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Closure

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-91-09

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-49						
Weld:	Heat Fusion						
Side A	Peel A						
	Peel Strength (ppi)	134	135	146	135	138	91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel B						
	Peel Strength (ppi)	142	134	148	142	141	91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear						
	Shear Strength (ppi)	178	182	186	182	189	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID:	DS-50						
Weld:	Heat Fusion						
Side A	Peel A						
	Peel Strength (ppi)	124	115	145	123	146	91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel B						
	Peel Strength (ppi)	133	136	128	127	122	91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear						
	Shear Strength (ppi)	183	178	187	185	187	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Geosyntec Consultants

Project: BRC - Camu, Closure

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-91-09

PARAMETER	TEST REPLICATE NUMBER					MEAN	PROJECT SPEC.
	1	2	3	4	5		
Sample ID:	DS-51						
Weld:	Heat Fusion						
Side A	Peel Strength (ppi)	130	127	122	132	139	Peel A 130 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side B	Peel Strength (ppi)	131	117	120	125	125	Peel B 124 91 min
	Peel Incursion (%)	<10	<10	<10	<10	<10	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
	Shear Strength (ppi)	176	177	181	174	176	Shear 177 120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

APPENDIX F

Geocomposite

APPENDIX F-1
Material Inventory Logs

Summary of Cover 270-2-6 Geocomposite Inventory, MQC Data, and Conformance Testing
 BRC CAMU
 Henderson, NV

Geosyntec Consultants

Geocomposite	Geonet	Manufacturer Quality Control Testing														CQA			Approved										
		Geocomposite	Geocomposite	Geonet	Geonet Nominal	Geonet	Geotextile		Geotextile	Geotextile	Geotextile	Geotextile	Geotextile	Geotextile	Geotextile	Geocomposite	Geocomposite	Geocomposite											
		Peel Strength	Transmissivity	Specific Gravity	Thickness	Carbon Black	Mass per Unit Area	AOS	Permittivity	Grab Strength	Puncture Strength	Mullen Burst	Trapezoidal Tear	A-Peel Strength	B-Peel Strength	Transmissivity	Material meets requirements of Technical Specifications												
		Minimum	Minimum	minimum	Minimum		Minimum	Minimum	Minimum	Minimum																			
		1.0	9.20E-05	0.935	200	2-3	6.0	70.00	0.5	130.0	40.0	210.0	40.0	500	500	9.20E-05													
lb/ft ²	m ² /s		mil	%	(oz/yd ²)	US SIEVE		lb	lb	psi	lb	gm/in	gm/in	(m ² /s)															
1 per 100,000	1 per 100,000	1 per 100,000	1 per 100,000	1 per 100,000	1 per 100,000	1/100,000 ft ²	1 per 200,000	1 per 200,000	1 per 200,000																				
269710550	269710550-N			0.9552	264	2.39																	1,344	1,371	2.11E-03	Y			
269710560	269710560-N	1.64	6.64E-04	0.9552	258	2.63	6.39	6.31	70	70	1.82	1.82	164	160	97	95	340	338	77	74						Y			
269710573	269710573-N			0.9552																							Y		
269710574	269710574-N			0.9552																							Y		
269710575	269710575-N			0.9552																							Y		
269710576	269710576-N			0.9552																							Y		
269710577	269710577-N			0.9552																							Y		
269710578	269710578-N			0.9552																							Y		
269710579	269710579-N			0.9552																							Y		
269710580	269710580-N			0.9552	260	2.60																					Y		
269710581	269710581-N			0.9552																							Y		
269710582	269710582-N			0.9552																							Y		
269710583	269710583-N			0.9552																							Y		
269710584	269710584-N			0.9552																							Y		
269710585	269710585-N			0.9552																							Y		
269710586	269710586-N			0.9552																							Y		
269710587	269710587-N			0.9552																							Y		
269710588	269710588-N			0.9552																							Y		
269710589	269710589-N			0.9552																							Y		
269710590	269710590-N			0.9552	267	2.35																					Y		
269710591	269710591-N			0.9552																							Y		
269710592	269710592-N			0.9552																							Y		
269710593	269710593-N			0.9552																							Y		
269710594	269710594-N			0.9552																							Y		
269710595	269710595-N	1.37	6.43E-04	0.9552			6.31	6.63	70	70	1.82	1.82	160	166	95	97	338	340	74	77						Y			
269710596	269710596-N			0.9552																							Y		
269710597	269710597-N			0.9552																							Y		
269710598	269710598-N			0.9552																							Y		
269710599	269710599-N			0.9552																							Y		
269710600	269710600-N			0.9552	262	2.73																					Y		
269710601	269710601-N			0.9552																							Y		
269710602	269710602-N			0.9552																							Y		
269710603	269710603-N			0.9552																							Y		
269710604	269710604-N			0.9552																							Y		
269710605	269710605-N			0.9552																							Y		
269710606	269710606-N			0.9552																							Y		
269710607	269710607-N			0.9552																							Y		
269710608	269710608-N			0.9552																							Y		
269710609	269710609-N			0.9552																							Y		
269710610	269710610-N			0.9552	269	2.43																					Y		
269710611	269710611-N			0.9552																							Y		
269710612	269710612-N			0.9552																							Y		
269710613	269710613-N			0.9552																							Y		
269710614	269710614-N			0.9552																							Y		
269710615	269710615-N			0.9552																							Y		
269710616	269710616-N			0.9552																							Y		
269710617	269710617-N			0.9552																							Y		
269710618	269710618-N			0.9552																							Y		
269710619	269710619-N			0.9552																							Y		
269710620	269710620-N			0.9552	259	2.59																					Y		
269710621	269710621-N			0.9552																							Y		
269710622	269710622-N			0.9552																							Y		
269710623	269710623-N			0.9552																							Y		
269710624	269710624-N			0.9552																							Y		
269710625	269710625-N			0.9552																							Y		
269710626	269710626-N			0.9552																							Y		
269710627	269710627-N			0.9552																							Y		
269710628	269710628-N			0.9552																							Y		
269710629	269710629-N			0.9552																							Y		
269710630	269710630-N	1.58	6.59E-04	0.9552	265	2.32	6.35	6.41	70	70	1.82	1.82	165	163	95	100	337	333	80	73						1,393	783	2.07E-03	Y
269710631	269710631-N			0.9552																								Y	
269710632	269710632-N			0.9552																								Y	

Geocomposite	Geonet	Manufacturer Quality Control Testing												CQA			Approved					
		Geocomposite	Geocomposite	Geonet	Geonet Nominal	Geonet	Geotextile	Geotextile	Geotextile	Geotextile	Geotextile	Geotextile	Geotextile	Geocomposite	Geocomposite	Geocomposite						
		Peel Strength	Transmissivity	Specific Gravity	Thickness	Carbon Black	Mass per Unit Area	AOS	Permittivity	Grab Strength	Puncture Strength	Mullen Burst	Trapezoidal Tear	A-Peel Strength	B-Peel Strength	Transmissivity						
		Minimum	Minimum	minimum	Minimum		Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum						
		1.0	9.20E-05	0.935	200	2-3	6.0	70.00	0.5	130.0	40.0	210.0	40.0	500	500	9.20E-05						
lb/ft ²	m ² /s		mil	%	(oz/yd ²)	US SIEVE		lb	lb	psi	lb	gm/in	gm/in	(m ² /s)								
1 per 100,000	1 per 100,000	1 per 100,000	1 per 100,000	1 per 100,000	1 per 100,000	1/100,000 ft ²	1 per 200,000	1 per 200,000	1 per 200,000													
269710633	269710633-N			0.9552																	Y	
269710634	269710634-N			0.9552																		Y
269710635	269710635-N			0.9552																		Y
269710636	269710636-N			0.9552																		Y
269710637	269710637-N			0.9552																		Y
269710638	269710638-N			0.9552																		Y
269710639	269710639-N			0.9552																		Y
269710640	269710640-N			0.9552	256	2.74																Y
269710641	269710641-N			0.9552																		Y
269710642	269710642-N			0.9552																		Y
269710643	269710643-N			0.9552																		Y
269710644	269710644-N			0.9552																		Y
269710645	269710645-N			0.9552																		Y
269710646	269710646-N			0.9552																		Y
269710647	269710647-N			0.9552																		Y
269710648	269710648-N			0.9552																		Y
269710649	269710649-N			0.9552																		Y
269710650	269710650-N			0.9542	266	2.41																Y
269710651	269710651-N			0.9542																		Y
269710652	269710652-N			0.9542																		Y
269710653	269710653-N			0.9542																		Y
269710654	269710654-N			0.9542																		Y
269710655	269710655-N			0.9542																		Y
269710656	269710656-N			0.9542																		Y
269710657	269710657-N			0.9542																		Y
269710658	269710658-N			0.9542																		Y
269710659	269710659-N			0.9542																		Y
269710660	269710660-N			0.9542	261	2.66																Y
269710661	269710661-N			0.9542																		Y
269710662	269710662-N			0.9542																		Y
269710663	269710663-N			0.9542																		Y
269710664	269710664-N			0.9542																		Y
269710665	269710665-N	1.43	6.29E-04	0.9542			6.41	6.27	70	70	1.82	1.76	163	161	100	98	333	334	80	83	Y	
269710666	269710666-N			0.9542																		Y
269710667	269710667-N			0.9542																		Y
269710668	269710668-N			0.9542																		Y
269710669	269710669-N			0.9542																		Y
269710670	269710670-N			0.9542	264	2.34																Y
269710671	269710671-N			0.9542																		Y
269710672	269710672-N			0.9542																		Y
269710673	269710673-N			0.9542																		Y
269710674	269710674-N			0.9542																		Y
269710675	269710675-N			0.9542																		Y
269710676	269710676-N			0.9542																		Y
269710677	269710677-N			0.9542																		Y
269710678	269710678-N			0.9542																		Y
269710679	269710679-N			0.9542																		Y
269710680	269710680-N			0.9542	258	2.76																Y
269710681	269710681-N			0.9542																		Y
269710682	269710682-N			0.9542																		Y
269710683	269710683-N			0.9542																		Y
269710684	269710684-N			0.9542																		Y
269710685	269710685-N			0.9542																		Y
269710686	269710686-N			0.9542																		Y
269710687	269710687-N			0.9542																		Y
269710688	269710688-N			0.9542																		Y
269710689	269710689-N			0.9542																		Y
269710690	269710690-N			0.9542	263	2.46																Y
269710691	269710691-N			0.9542																		Y
269710692	269710692-N			0.9542																		Y
269710693	269710693-N			0.9542																		Y
269710694	269710694-N			0.9542																		Y

Geocomposite	Geonet	Manufacturer Quality Control Testing												CQA			Approved						
		Geocomposite	Geocomposite	Geonet	Geonet Nominal	Geonet	Geotextile	Geotextile	Geotextile	Geotextile	Geotextile	Geotextile	Geotextile	Geocomposite	Geocomposite	Geocomposite							
		Peel Strength	Transmissivity	Specific Gravity	Thickness	Carbon Black	Mass per Unit Area	AOS	Permittivity	Grab Strength	Puncture Strength	Mullen Burst	Trapezoidal Tear	A-Peel Strength	B-Peel Strength	Transmissivity							
		Minimum	Minimum	minimum	Minimum		Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum							
		1.0	9.20E-05	0.935	200	2-3	6.0	70.00	0.5	130.0	40.0	210.0	40.0	500	500	9.20E-05							
lb/ft ²	m ² /s		mil	%	(oz/yd ²)	US SIEVE		lb	lb	psi	lb	gm/in	gm/in	(m ² /s)									
1 per 100,000	1 per 100,000	1 per 100,000	1 per 100,000	1 per 100,000	1 per 100,000	1/100,000 ft ²	1 per 200,000	1 per 200,000	1 per 200,000														
269711005	269711005-N			0.9554																		Y	
269711006	269711006-N			0.9554																			Y
269711007	269711007-N			0.9554																			Y
269711008	269711008-N			0.9554																			Y
269711009	269711009-N			0.9554																			Y
269711010	269711010-N			0.9554	261	2.65																	Y
269711011	269711011-N			0.9554																			Y
269711012	269711012-N			0.9554																			Y
269711013	269711013-N			0.9554																			Y
269711014	269711014-N			0.9554																			Y
269711015	269711015-N	1.63	6.31E-04	0.9557			6.57	6.64	70	70	1.82	1.82	162	164	96	100	336	331	79	72		Y	
269711016	269711016-N			0.9557																			Y
269711017	269711017-N			0.9557																			Y
269711018	269711018-N			0.9557																			Y
269711019	269711019-N			0.9557																			Y
269711020	269711020-N			0.9557	259	2.44																	Y
269711021	269711021-N			0.9557																			Y
269711022	269711022-N			0.9557																			Y
269711023	269711023-N			0.9557																			Y
269711024	269711024-N			0.9557																			Y
269711025	269711025-N			0.9557																			Y
269711026	269711026-N			0.9557																			Y
269711027	269711027-N			0.9557																			Y
269711028	269711028-N			0.9557																			Y
269711029	269711029-N			0.9557																			Y
269711030	269711030-N			0.9557	263	2.61																	Y
269711031	269711031-N			0.9557																			Y
269711032	269711032-N			0.9557																			Y
269711033	269711033-N			0.9557																			Y
269711034	269711034-N			0.9557																			Y
269711035	269711035-N			0.9557																			Y
269711036	269711036-N			0.9557																			Y
269711037	269711037-N			0.9557																			Y
269711038	269711038-N			0.9557																			Y
269711039	269711039-N			0.9557																			Y
269711040	269711040-N			0.9557	257	2.47																	Y
269711041	269711041-N			0.9557																			Y
269711042	269711042-N			0.9557																			Y
269711043	269711043-N			0.9557																			Y
269711044	269711044-N			0.9557																			Y
269711045	269711045-N			0.9557																			Y
269711046	269711046-N			0.9557																			Y
269711047	269711047-N			0.9557																			Y
269711048	269711048-N			0.9557																			Y
269711049	269711049-N			0.9557																			Y
269711050	269711050-N	1.33	6.54E-04	0.9552	265	2.58	6.41	6.25	70	70	1.79	1.82	168	161	97	98	332	339	70	77		Y	
269711051	269711051-N			0.9552																			Y
269711052	269711052-N			0.9552																			Y
269711053	269711053-N			0.9552																			Y
269711054	269711054-N			0.9552																			Y
269711055	269711055-N			0.9552																			Y
269711056	269711056-N			0.9552																			Y
269711057	269711057-N			0.9552																			Y
269711058	269711058-N			0.9552																			Y
269711059	269711059-N			0.9552																			Y
269711060	269711060-N			0.9552	260	2.50																	Y
269711061	269711061-N			0.9552																			Y
269711062	269711062-N			0.9552																			Y
269711063	269711063-N			0.9552																			Y
269711064	269711064-N			0.9552																			Y
269711065	269711065-N			0.9552																			Y
269711066	269711066-N			0.9552																			Y

Geocomposite	Geonet	Manufacturer Quality Control Testing												CQA			Approved							
		Geocomposite	Geocomposite	Geonet	Geonet Nominal	Geonet	Geotextile	Geotextile	Geotextile	Geotextile	Geotextile	Geotextile	Geotextile	Geocomposite	Geocomposite	Geocomposite								
		Peel Strength	Transmissivity	Specific Gravity	Thickness	Carbon Black	Mass per Unit Area	AOS	Permittivity	Grab Strength	Puncture Strength	Mullen Burst	Trapezoidal Tear	A-Peel Strength	B-Peel Strength	Transmissivity								
		Minimum	Minimum	minimum	Minimum	2-3	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum								
		1.0	9.20E-05	0.935	200	2-3	6.0	70.00	0.5	130.0	40.0	210.0	40.0	500	500	9.20E-05								
lb/ft ²	m ² /s		mil	%	(oz/yd ²)	US SIEVE		lb	lb	psi	lb	gm/in	gm/in	(m ² /s)										
1 per 100,000	1 per 100,000	1 per 100,000	1 per 100,000	1 per 100,000	1 per 100,000	1/100,000 ft ²	1 per 200,000	1 per 200,000	1 per 200,000															
269711067	269711067-N			0.9552																		Y		
269711068	269711068-N			0.9552																			Y	
269711069	269711069-N			0.9552																			Y	
269711070	269711070-N			0.9552	268	2.55																	Y	
269711071	269711071-N			0.9552																			Y	
269711072	269711072-N			0.9552																			Y	
269711073	269711073-N			0.9552																			Y	
269711074	269711074-N			0.9552																			Y	
269711075	269711075-N			0.9552																			Y	
269711076	269711076-N			0.9552																			Y	
269711077	269711077-N			0.9552																			Y	
269711078	269711078-N			0.9552																			Y	
269711079	269711079-N			0.9552																			Y	
269711080	269711080-N			0.9552	262	2.52																	Y	
269711081	269711081-N			0.9552																			Y	
269711082	269711082-N			0.9552																			Y	
269711083	269711083-N			0.9552																			Y	
269711084	269711084-N			0.9552																			Y	
269711085	269711085-N	1.47	6.35E-04	0.9560			6.28	6.54	70	70	1.79	1.79	165	160	95	97	334	332	75	70			Y	
269711086	269711086-N			0.9560																				Y
269711087	269711087-N			0.9560																				Y
269711088	269711088-N			0.9560																				Y
269711089	269711089-N			0.9560																				Y
269711090	269711090-N			0.9560	264	2.62																		Y
269711091	269711091-N			0.9560																				Y
269711092	269711092-N			0.9560																				Y
269711093	269711093-N			0.9560																				Y
269711094	269711094-N			0.9560																				Y
269711095	269711095-N			0.9560																				Y
269711096	269711096-N			0.9560																				Y
269711097	269711097-N			0.9560																				Y
269711098	269711098-N			0.9560																				Y
269711099	269711099-N			0.9560																				Y
269711100	269711100-N			0.9560	260	2.26																		Y
269711101	269711101-N			0.9560																				Y
269711102	269711102-N			0.9560																				Y
269711103	269711103-N			0.9560																				Y
269711104	269711104-N			0.9560																				Y
269711105	269711105-N			0.9560																				Y
269711106	269711106-N			0.9560																				Y
269711107	269711107-N			0.9560																				Y
269711108	269711108-N			0.9560																				Y
269711109	269711109-N			0.9560																				Y
269711110	269711110-N			0.9560	267	2.59																		Y
269711111	269711111-N			0.9560																				Y
269711112	269711112-N			0.9560																				Y
269711113	269711113-N			0.9560																				Y
269711114	269711114-N			0.9560																				Y
269711115	269711115-N			0.9560																				Y
269711116	269711116-N			0.9560																				Y
269711117	269711117-N			0.9560																				Y
269711118	269711118-N			0.9560																				Y
269711119	269711119-N			0.9560																				Y
269711120	269711120-N	1.24	6.51E-04	0.9555	257	2.30	6.41	6.60	70	70	1.79	1.79	168	167	97	95	332	334	70	75			Y	
269711121	269711121-N			0.9555																				Y
269711122	269711122-N			0.9555																				Y
269711123	269711123-N			0.9555																				Y
269711124	269711124-N			0.9555																				Y
269711125	269711125-N			0.9555																				Y
269711126	269711126-N			0.9555																				Y
269711127	269711127-N			0.9555																				Y
269711128	269711128-N			0.9555																				Y

Geocomposite	Geonet	Manufacturer Quality Control Testing												CQA			Approved								
		Geocomposite	Geocomposite	Geonet	Geonet Nominal	Geonet	Geotextile	Geotextile	Geotextile	Geotextile	Geotextile	Geotextile	Geotextile	Geocomposite	Geocomposite	Geocomposite									
		Peel Strength	Transmissivity	Specific Gravity	Thickness	Carbon Black	Mass per Unit Area	AOS	Permittivity	Grab Strength	Puncture Strength	Mullen Burst	Trapezoidal Tear	A-Peel Strength	B-Peel Strength	Transmissivity									
		Minimum	Minimum	minimum	Minimum		Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum									
		1.0	9.20E-05	0.935	200	2-3	6.0	70.00	0.5	130.0	40.0	210.0	40.0	500	500	9.20E-05									
lb/ft ²	m ² /s		mil	%	(oz/yd ²)	US SIEVE		lb	lb	psi	lb	gm/in	gm/in	(m ² /s)											
1 per 100,000	1 per 100,000	1 per 100,000	1 per 100,000	1 per 100,000	1 per 100,000	1/100,000 ft ²	1 per 200,000	1 per 200,000	1 per 200,000																
269711191	269711191-N			0.9553																		Y			
269711192	269711192-N			0.9553																			Y		
269711193	269711193-N			0.9553																			Y		
269711194	269711194-N			0.9553																			Y		
269711195	269711195-N			0.9553																			Y		
269711196	269711196-N			0.9553																			Y		
269711197	269711197-N			0.9553																			Y		
269711198	269711198-N			0.9553																			Y		
269711199	269711199-N			0.9553																			Y		
269711200	269711200-N			0.9553	259	2.43																	Y		
269711201	269711201-N			0.9553																			Y		
269711202	269711202-N			0.9553																			Y		
269711203	269711203-N			0.9553																			Y		
269711204	269711204-N			0.9553																			Y		
269711205	269711205-N			0.9553																			Y		
269711206	269711206-N			0.9553																			Y		
269711207	269711207-N			0.9553																			Y		
269711208	269711208-N			0.9553																			Y		
269711209	269711209-N			0.9553																			Y		
269711210	269711210-N			0.9553	264	2.71																	Y		
269711211	269711211-N			0.9553																			Y		
269711212	269711212-N			0.9553																			Y		
269711213	269711213-N			0.9553																			Y		
269711214	269711214-N			0.9553																			Y		
269711215	269711215-N			0.9553																			Y		
269711216	269711216-N			0.9553																			Y		
269711217	269711217-N			0.9553																			Y		
269711218	269711218-N			0.9553																			Y		
269711219	269711219-N			0.9553																			Y		
269711220	269711220-N			0.9553	262	2.49																	Y		
269711221	269711221-N			0.9553																		2,361	1,925	1.91E-03	Y
269711222	269711222-N			0.9553																				Y	
269711223	269711223-N			0.9553																				Y	
269711224	269711224-N			0.9553																				Y	
269711225	269711225-N	1.71	6.44E-04	0.9561			6.22	6.44	70	70	1.79	1.75	169	170	96	95	340	331	73	71				Y	
269711226	269711226-N			0.9561																				Y	
269711227	269711227-N			0.9561																				Y	
269711228	269711228-N			0.9561																				Y	
269711229	269711229-N			0.9561																				Y	
269711230	269711230-N			0.9561	268	2.77																		Y	
269711231	269711231-N			0.9561																				Y	
269711232	269711232-N			0.9561																				Y	
269711233	269711233-N			0.9561																				Y	
269711234	269711234-N			0.9561																				Y	
269711235	269711235-N			0.9561																				Y	
269711236	269711236-N			0.9561																				Y	
269711237	269711237-N			0.9561																				Y	
269711238	269711238-N			0.9561																				Y	
269711239	269711239-N			0.9561																				Y	
269711240	269711240-N			0.9561	259	2.52																		Y	
269711241	269711241-N			0.9561																				Y	
269711242	269711242-N			0.9561																				Y	
269711243	269711243-N			0.9561																				Y	
269711244	269711244-N			0.9561																				Y	
269711245	269711245-N			0.9561																				Y	
269711246	269711246-N			0.9561																				Y	
269711247	269711247-N			0.9561																				Y	
269711248	269711248-N			0.9561																				Y	
269711249	269711249-N			0.9561																				Y	
269711250	269711250-N			0.9561	266	2.70																		Y	
269711251	269711251-N			0.9561																				Y	
269711252	269711252-N			0.9561																				Y	

Summary of Cover 270-2-6 Geocomposite Inventory, MQC Data, and Conformance Testing
 BRC CAMU
 Henderson, NV

Geocomposite		Manufacturer Quality Control Testing												CQA			Approved
Geocomposite	Geonet	Geocomposite	Geocomposite	Geonet	Geonet Nominal	Geonet	Geotextile	Geocomposite	Geocomposite	Geocomposite	Material meets requirements of Technical Specifications						
Roll No.	Roll No.	Peel Strength	Transmissivity	Specific Gravity	Thickness	Carbon Black	Mass per Unit Area	AOS	Permittivity	Grab Strength	Puncture Strength	Mullen Burst	Trapezoidal Tear	A-Peel Strength	B-Peel Strength	Transmissivity	
		Minimum	Minimum	minimum	Minimum		Minimum	Minimum	Minimum	Minimum							
		1.0	9.20E-05	0.935	200	2-3	6.0	70.00	0.5	130.0	40.0	210.0	40.0	500	500	9.20E-05	
		lb/ft ²	m ² /s		mils	%	(oz/yd ²)	US SIEVE		lb	lb	psi	lb	gm/in	gm/in	(m ² /s)	
1 per 100,000	1 per 100,000	1 per 100,000	1 per 100,000	1 per 100,000	1 per 100,000	1/100,000 ft ²	1 per 200,000	1 per 200,000	1 per 200,000								
269711439	269711439-N			0.9538													Y
269711440	269711440-N			0.9538	261	2.34											Y
269711441	269711441-N			0.9538													Y
269711442	269711442-N			0.9538													Y
269711443	269711443-N			0.9538													Y
269711444	269711444-N			0.9538													Y
269711445	269711445-N			0.9538													Y
269711446	269711446-N			0.9538													Y
269711447	269711447-N			0.9538													Y
No. Rolls	Geocomposite Area:	26	26	877	88	88	52	52	52	52	52	52	52	13	13	13	
877	2,543,300	97,819	97,819	2,900	28,901	28,901	97,819	97,819	97,819	97,819	97,819	97,819	97,819	195,638	195,638	195,638	

APPENDIX F-2
CQA Conformance Test Results



GEOCOMPOSITE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC CAMU

Material: SKAPS TN270-2-6 Double Sided Geocomposite
Sample Identification: 269710550
TRI Log #: E2310-52-10

PARAMETER	TEST REPLICATE NUMBER					MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5			
Hydraulic Transmissivity (ASTM D 4716)								
Direction Tested: Machine Direction								
Normal Load (psf):	300							
Hydraulic Gradient:	0.1							
Test Length (in)	12							
Test Width (in)	12							
Plate / Cover Soil / Sample / Microspike Geomembrane / Plate								
Seat Time (hours)	Specimen 1							
Volume (cc)	688	645	588					
Time (s)	9.43	8.90	8.09					
0.25 Flow Rate (GPM/ft width)	1.16	1.15	1.15			1.15	0.00	
Transmissivity (m ² /s)	2.39E-03	2.38E-03	2.38E-03			2.39E-03	8.01E-06	
Test Temp (C)	20.0							
Temp. Corr. Factor	1.000							
Volume (cc)	600	568	608					
Time (s)	8.50	8.28	8.54					
1 Flow Rate (GPM/ft width)	1.12	1.09	1.13			1.11	0.02	
Transmissivity (m ² /s)	2.32E-03	2.25E-03	2.34E-03			2.30E-03	4.45E-05	
Test Temp (C)	20.0							
Temp. Corr. Factor	1.000							
Volume (cc)	530	521	527					
Time (s)	8.25	8.12	8.18					
24 Flow Rate (GPM/ft width)	1.02	1.02	1.02			1.02	0.00	
Transmissivity (m ² /s)	2.11E-03	2.11E-03	2.11E-03			2.11E-03	4.42E-06	5.0E-4 min
Test Temp (C)	20.0							
Temp. Corr. Factor	1.000							
Peel Strength (ASTM D 413, mod.)								
A - MD Average Peel Strength (ppi)	5.4	4.0	1.5	2.4	1.5	3.0	1.7	
A - MD Average Peel Strength (g/in)	2452	1816	681	1090	681	1344	774	500 min
B - MD Average Peel Strength (ppi)	3.8	2.7	2.5	2.1	4.0	3.0	0.8	
B - MD Average Peel Strength (g/in)	1725	1226	1135	953	1816	1371	379	500 min
Note: A and B represent a randomly assigned top and bottom of the sample								
MD Machine Direction	TD Transverse Direction							

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



GEOCOMPOSITE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC CAMU

Material: SKAPS TN270-2-6 Double Sided Geocomposite
Sample Identification: 269710630
TRI Log #: E2310-52-10

PARAMETER	TEST REPLICATE NUMBER					MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5			
Hydraulic Transmissivity (ASTM D 4716)								
Direction Tested: Machine Direction								
Normal Load (psf):	300							
Hydraulic Gradient:	0.1							
Test Length (in)	12							
Test Width (in)	12							
Plate / Cover Soil / Sample / Microspike Geomembrane / Plate								
Seat Time (hours)	Specimen 1							
Volume (cc)	672	667	667					
Time (s)	8.15	8.06	8.12					
0.25 Flow Rate (GPM/ft width)	1.31	1.31	1.30			1.31	0.00	
Transmissivity (m ² /s)	2.71E-03	2.72E-03	2.69E-03			2.71E-03	1.00E-05	
Test Temp (C)	20.0							
Temp. Corr. Factor	1.000							
Volume (cc)	606	602	628					
Time (s)	8.34	8.15	8.34					
1 Flow Rate (GPM/ft width)	1.15	1.17	1.19			1.17	0.02	
Transmissivity (m ² /s)	2.38E-03	2.42E-03	2.47E-03			2.43E-03	4.33E-05	
Test Temp (C)	20.0							
Temp. Corr. Factor	1.000							
Volume (cc)	641	631	635					
Time (s)	10.18	10.00	10.06					
24 Flow Rate (GPM/ft width)	1.00	1.00	1.00			1.00	0.00	
Transmissivity (m ² /s)	2.07E-03	2.07E-03	2.07E-03			2.07E-03	2.75E-06 5.0E-4 min	
Test Temp (C)	20.0							
Temp. Corr. Factor	1.000							
Peel Strength (ASTM D 413, mod.)								
A - MD Average Peel Strength (ppi)	5.1	0.6	1.7	8.0	1.7	3.4	3.1	
A - MD Average Peel Strength (g/in)	2315	272	772	3632	772	1553	1393	500 min
B - MD Average Peel Strength (ppi)	3.6	1.1	0.6	4.7	3.1	2.6	1.7	
B - MD Average Peel Strength (g/in)	1634	499	272	2134	1407	1189	783	500 min
Note: A and B represent a randomly assigned top and bottom of the sample								
MD Machine Direction	TD Transverse Direction							

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GEOCOMPOSITE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC CAMU

Material: SKAPS TN270-2-6 Double Sided Geocomposite
Sample Identification: 269710709
TRI Log #: E2310-52-10

PARAMETER	TEST REPLICATE NUMBER					MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5			
Hydraulic Transmissivity (ASTM D 4716)								
Direction Tested: Machine Direction								
Normal Load (psf):	300							
Hydraulic Gradient:	0.1							
Test Length (in)	12							
Test Width (in)	12							
Plate / Cover Soil / Sample / Microspike Geomembrane / Plate								
Seat Time (hours)	Specimen 1							
Volume (cc)	601	609	634					
Time (s)	8.00	8.25	8.56					
0.25 Flow Rate (GPM/ft width)	1.19	1.17	1.17			1.18	0.01	
Transmissivity (m ² /s)	2.46E-03	2.42E-03	2.43E-03			2.44E-03	2.28E-05	
Test Temp (C)	20.0							
Temp. Corr. Factor	1.000							
Volume (cc)	602	602	603					
Time (s)	8.34	8.35	8.35					
1 Flow Rate (GPM/ft width)	1.14	1.14	1.14			1.14	0.00	
Transmissivity (m ² /s)	2.37E-03	2.37E-03	2.37E-03			2.37E-03	2.03E-06	
Test Temp (C)	20.0							
Temp. Corr. Factor	1.000							
Volume (cc)	583	583	579					
Time (s)	10.12	10.10	10.03					
24 Flow Rate (GPM/ft width)	0.91	0.92	0.92			0.91	0.00	
Transmissivity (m ² /s)	1.89E-03	1.89E-03	1.89E-03			1.89E-03	2.20E-06 5.0E-4 min	
Test Temp (C)	20.0							
Temp. Corr. Factor	1.000							
Peel Strength (ASTM D 413, mod.)								
A - MD Average Peel Strength (ppi)	2.0	4.6	1.6	0.9	3.1	2.4	1.4	
A - MD Average Peel Strength (g/in)	908	2088	726	409	1407	1108	657	500 min
B - MD Average Peel Strength (ppi)	5.6	3.0	0.8	0.9	2.2	2.5	2.0	
B - MD Average Peel Strength (g/in)	2542	1362	363	409	999	1135	891	500 min
Note: A and B represent a randomly assigned top and bottom of the sample								
MD Machine Direction	TD Transverse Direction							

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December 22, 2008

Mail To:

Mr. Greg Corcoran
Geosyntec Consultants
10875 Rancho Bernardo Road, Suite 200
San Diego, CA 92078

Bill To:

<= Same

email: gcorcoran@geosyntec.com
cc email: rflynn@geosyntec.com - Rebecca Flynn, Geosyntec
cc email: jcox@geosyntec.com - Jim Cox, Geosyntec

Dear Mr. Corcoran:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project: **BRC CAMU**

TRI Job Reference Number: E2324-03-06

Material(s) Tested: 6 SKAPS TN270-2-6 Double Sided Geocomposite(s)

Test(s) Requested: Transmissivity (ASTM D 4716) - GC
Peel Strength (ASTM D 413,mod.) - GC

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

A handwritten signature in black ink that reads 'M Patel'.

Dr. Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
www.GeosyntheticTesting.com

cc: Sam R. Allen, Vice President and Division Manager



GEOCOMPOSITE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC CAMU

Material: SKAPS TN270-2-6 Double Sided Geocomposite
Sample Identification: 269710793
TRI Log #: E2324-03-06

PARAMETER	TEST REPLICATE NUMBER						MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6			

Hydraulic Transmissivity (ASTM D 4716)

Direction Tested: Machine Direction

Normal Load (psf):	300
Hydraulic Gradient:	0.1
Test Length (in)	12
Test Width (in)	12

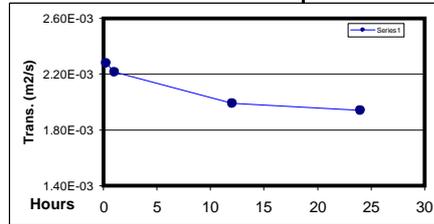
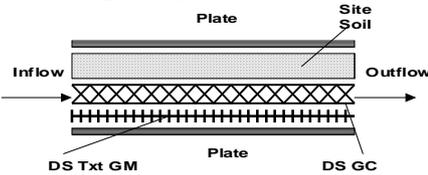


Plate / Cover Soil / Sample / Agru 60 mil Microspike HDPE Geomembrane / Plate

Seat Time (hours)

Specimen	1	2	3	4	5	6	MEAN	STD. DEV.	PROJ. SPEC.
0.25	693	701	698	9.96	10.09	10.04	1.10	0.00	
	1.10	1.10	1.10	2.28E-03	2.28E-03	2.28E-03	2.28E-03	1.70E-06	
	20.0			1.000					
1	680	677	681	10.10	10.01	10.07	1.07	0.00	
	1.07	1.07	1.07	2.21E-03	2.22E-03	2.22E-03	2.22E-03	5.74E-06	
	20.0			1.000					
12	609	613	607	10.09	10.07	10.01	0.96	0.00	
	0.96	0.96	0.96	1.98E-03	2.00E-03	1.99E-03	1.99E-03	8.49E-06	
	20.0			1.000					
24	593	597	596	10.05	10.09	10.05	0.94	0.00	
	0.94	0.94	0.94	1.94E-03	1.94E-03	1.95E-03	1.94E-03	4.90E-06	5.0E-4 min
	20.0			1.000					

Peel Strength (ASTM D 413, mod.)

A - MD Average Peel Strength (ppi)	5.1	3.8	2.6	5.7	4.1	4.3	1.2	
A - MD Average Peel Strength (g/in)	2315	1725	1180	2588	1861	1934	545	500 min
B - MD Average Peel Strength (ppi)	3.9	1.8	2.3	5.0	1.4	2.9	1.5	
B - MD Average Peel Strength (g/in)	1771	817	1044	2270	636	1308	690	500 min

Note: A and B represent a randomly assigned top and bottom of the sample

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC CAMU

Material: SKAPS TN270-2-6 Double Sided Geocomposite
Sample Identification: 269710869
TRI Log #: E2324-03-06

PARAMETER	TEST REPLICATE NUMBER					MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5			
Hydraulic Transmissivity (ASTM D 4716)								
Direction Tested: Machine Direction								
Normal Load (psf):	300							
Hydraulic Gradient:	0.1							
Test Length (in)	12							
Test Width (in)	12							
Plate / Cover Soil / Sample / Agru 60 mil Microspike HDPE Geomembrane / Plate								
Seat Time (hours)	Specimen 1							
0.25	Volume (cc)	905	904	898				
	Time (s)	8.09	8.09	8.06				
	Flow Rate (GPM/ft width)	1.77	1.77	1.77		1.77	0.00	
	Transmissivity (m ² /s)	3.67E-03	3.67E-03	3.66E-03		3.66E-03	7.67E-06	
	Test Temp (C)	20.0						
	Temp. Corr. Factor	1.000						
1	Volume (cc)	820	841	831				
	Time (s)	7.96	8.15	8.07				
	Flow Rate (GPM/ft width)	1.63	1.64	1.63		1.63	0.00	
	Transmissivity (m ² /s)	3.38E-03	3.39E-03	3.38E-03		3.38E-03	3.77E-06	
	Test Temp (C)	20.0						
	Temp. Corr. Factor	1.000						
12	Volume (cc)	764	769	771				
	Time (s)	7.96	8.03	8.00				
	Flow Rate (GPM/ft width)	1.52	1.52	1.53		1.52	0.00	
	Transmissivity (m ² /s)	3.15E-03	3.14E-03	3.16E-03		3.15E-03	1.01E-05	
	Test Temp (C)	20.0						
	Temp. Corr. Factor	1.000						
24	Volume (cc)	760	762	760				
	Time (s)	7.98	8.01	8.00				
	Flow Rate (GPM/ft width)	1.51	1.51	1.51		1.51	0.00	
	Transmissivity (m ² /s)	3.12E-03	3.12E-03	3.12E-03		3.12E-03	3.91E-06	5.0E-4 min
	Test Temp (C)	20.0						
	Temp. Corr. Factor	1.000						
Peel Strength (ASTM D 413, mod.)								
A - MD Average Peel Strength (ppi)	4.2	3.7	2.7	3.7	3.4	3.5	0.6	
A - MD Average Peel Strength (g/in)	1907	1680	1226	1680	1544	1607	250	500 min
B - MD Average Peel Strength (ppi)	3.5	0.7	1.9	4.3	5.1	3.1	1.8	
B - MD Average Peel Strength (g/in)	1589	318	863	1952	2315	1407	812	500 min
Note: A and B represent a randomly assigned top and bottom of the sample								
MD Machine Direction	TD Transverse Direction							

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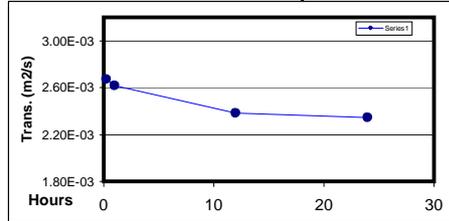


GEOCOMPOSITE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC CAMU

Material: SKAPS TN270-2-6 Double Sided Geocomposite
Sample Identification: 269710955
TRI Log #: E2324-03-06

PARAMETER	TEST REPLICATE NUMBER					MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5			
Hydraulic Transmissivity (ASTM D 4716)								
Direction Tested: Machine Direction								
Normal Load (psf):	300							
Hydraulic Gradient:	0.1							
Test Length (in)	12							
Test Width (in)	12							
Plate / Cover Soil / Sample / Agru 60 mil Microspike HDPE Geomembrane / Plate								
Seat Time (hours)	Specimen 1							
0.25	Volume (cc)	822	818	812				
	Time (s)	10.12	10.06	9.96				
	Flow Rate (GPM/ft width)	1.29	1.29	1.29		1.29	0.00	
	Transmissivity (m ² /s)	2.66E-03	2.67E-03	2.67E-03		2.67E-03	5.08E-06	
	Test Temp (C)	20.0						
	Temp. Corr. Factor	1.000						
1	Volume (cc)	799	792	800				
	Time (s)	9.95	10.02	10.00				
	Flow Rate (GPM/ft width)	1.27	1.25	1.27		1.26	0.01	
	Transmissivity (m ² /s)	2.63E-03	2.59E-03	2.62E-03		2.62E-03	2.16E-05	
	Test Temp (C)	20.0						
	Temp. Corr. Factor	1.000						
12	Volume (cc)	725	730	731				
	Time (s)	10.00	10.04	10.03				
	Flow Rate (GPM/ft width)	1.15	1.15	1.16		1.15	0.00	
	Transmissivity (m ² /s)	2.38E-03	2.39E-03	2.39E-03		2.39E-03	6.27E-06	
	Test Temp (C)	20.0						
	Temp. Corr. Factor	1.000						
24	Volume (cc)	715	715	713				
	Time (s)	10.01	10.00	9.96				
	Flow Rate (GPM/ft width)	1.13	1.13	1.13		1.13	0.00	
	Transmissivity (m ² /s)	2.34E-03	2.35E-03	2.35E-03		2.35E-03	2.59E-06	5.0E-4 min
	Test Temp (C)	20.0						
	Temp. Corr. Factor	1.000						
Peel Strength (ASTM D 413, mod.)								
A - MD Average Peel Strength (ppi)	6.8	1.5	2.3	1.0	6.3	3.6	2.8	
A - MD Average Peel Strength (g/in)	3087	681	1044	454	2860	1625	1251	500 min
B - MD Average Peel Strength (ppi)	4.5	4.2	2.1	4.5	5.3	4.1	1.2	
B - MD Average Peel Strength (g/in)	2043	1907	953	2043	2406	1870	545	500 min
Note: A and B represent a randomly assigned top and bottom of the sample								
MD Machine Direction	TD Transverse Direction							



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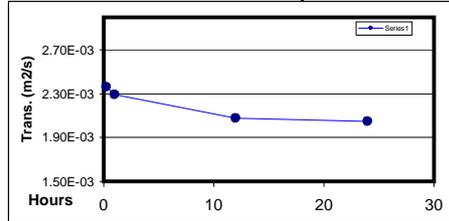


GEOCOMPOSITE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC CAMU

Material: SKAPS TN270-2-6 Double Sided Geocomposite
Sample Identification: 269711081
Test Log #: E2324-03-06

PARAMETER	TEST REPLICATE NUMBER					MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5			
Hydraulic Transmissivity (ASTM D 4716)								
Direction Tested: Machine Direction								
Normal Load (psf):	300							
Hydraulic Gradient:	0.1							
Test Length (in)	12							
Test Width (in)	12							
Plate / Cover Soil / Sample / Agru 60 mil Microspike HDPE Geomembrane / Plate								
Seat Time (hours)	Specimen 1							
	722	726	728					
	10.06	10.11	10.06					
0.25	1.14	1.14	1.15			1.14	0.01	
	2.35E-03	2.36E-03	2.37E-03			2.36E-03	1.09E-05	
	20.0							
	1.000							
	705	699	701					
	10.09	10.01	10.01					
1	1.11	1.11	1.11			1.11	0.00	
	2.29E-03	2.29E-03	2.30E-03			2.29E-03	3.46E-06	
	20.0							
	1.000							
	640	640	644					
	10.09	10.09	10.16					
12	1.01	1.01	1.00			1.01	0.00	
	2.08E-03	2.08E-03	2.08E-03			2.08E-03	8.20E-07	
	20.0							
	1.000							
	624	629	631					
	10.01	10.08	10.09					
24	0.99	0.99	0.99			0.99	0.00	
	2.05E-03	2.05E-03	2.05E-03			2.05E-03	3.35E-06	5.0E-4 min
	20.0							
	1.000							
Peel Strength (ASTM D 413, mod.)								
A - MD Average Peel Strength (ppi)	6.2	5.3	5.8	3.8	3.7	5.0	1.2	
A - MD Average Peel Strength (g/in)	2815	2406	2633	1725	1680	2252	522	500 min
B - MD Average Peel Strength (ppi)	3.0	4.9	2.3	2.5	3.2	3.2	1.0	
B - MD Average Peel Strength (g/in)	1362	2225	1044	1135	1453	1444	467	500 min
Note: A and B represent a randomly assigned top and bottom of the sample								
MD Machine Direction	TD Transverse Direction							



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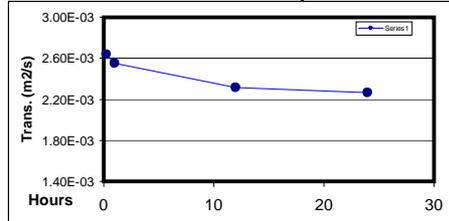


GEOCOMPOSITE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC CAMU

Material: SKAPS TN270-2-6 Double Sided Geocomposite
Sample Identification: 269711174
TRI Log #: E2324-03-06

PARAMETER	TEST REPLICATE NUMBER					MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5			
Hydraulic Transmissivity (ASTM D 4716)								
Direction Tested: Machine Direction								
Normal Load (psf):	300							
Hydraulic Gradient:	0.1							
Test Length (in)	12							
Test Width (in)	12							
Plate / Cover Soil / Sample / Agru 60 mil Microspike HDPE Geomembrane / Plate								
Seat Time (hours)	Specimen 1							
	650	647	649					
0.25	8.09	8.01	8.09			1.28	0.00	
Flow Rate (GPM/ft width)	1.27	1.28	1.27			2.64E-03	9.50E-06	
Transmissivity (m ² /s)	2.64E-03	2.65E-03	2.63E-03					
Test Temp (C)	20.0							
Temp. Corr. Factor	1.000							
	627	622	623			1.23	0.00	
1	8.07	8.01	8.00			2.55E-03	3.87E-06	
Flow Rate (GPM/ft width)	1.23	1.23	1.23					
Transmissivity (m ² /s)	2.55E-03	2.55E-03	2.55E-03					
Test Temp (C)	20.0							
Temp. Corr. Factor	1.000							
	570	564	571			1.12	0.00	
12	8.07	8.01	8.09			2.31E-03	3.78E-06	
Flow Rate (GPM/ft width)	1.12	1.12	1.12					
Transmissivity (m ² /s)	2.32E-03	2.31E-03	2.32E-03					
Test Temp (C)	20.0							
Temp. Corr. Factor	1.000							
	552	559	550			1.09	0.01	5.0E-4 min
24	8.01	8.05	8.00			2.26E-03	1.18E-05	
Flow Rate (GPM/ft width)	1.09	1.10	1.09					
Transmissivity (m ² /s)	2.26E-03	2.28E-03	2.26E-03					
Test Temp (C)	20.0							
Temp. Corr. Factor	1.000							
Peel Strength (ASTM D 413, mod.)								
A - MD Average Peel Strength (ppi)	3.0	2.9	3.6	3.0	2.9	3.1	0.3	
A - MD Average Peel Strength (g/in)	1362	1317	1634	1362	1317	1398	134	500 min
B - MD Average Peel Strength (ppi)	1.5	4.5	2.7	3.1	1.9	2.7	1.2	
B - MD Average Peel Strength (g/in)	681	2043	1226	1407	863	1244	531	500 min
Note: A and B represent a randomly assigned top and bottom of the sample								
MD Machine Direction	TD Transverse Direction							



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GEOCOMPOSITE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC CAMU

Material: SKAPS TN270-2-6 Double Sided Geocomposite
Sample Identification: 269711221
TRI Log #: E2324-03-07

PARAMETER	TEST REPLICATE NUMBER					MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5			

Hydraulic Transmissivity (ASTM D 4716)

Direction Tested: Machine Direction
Normal Load (psf): 300
Hydraulic Gradient: 0.1
Test Length (in): 12
Test Width (in): 12

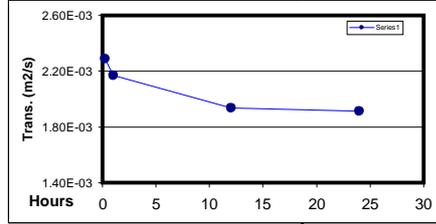
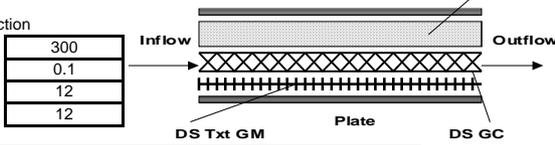


Plate / Cover Soil / Sample / Agru 60 mil Microspike HDPE Geomembrane / Plate

Seat Time (hours)	Specimen	1	2	3	MEAN	STD. DEV.	PROJ. SPEC.
0.25	Volume (cc)	697	707	703			
	Time (s)	10.01	10.13	10.09			
	Flow Rate (GPM/ft width)	1.10	1.11	1.10	1.10	0.00	
	Transmissivity (m ² /s)	2.28E-03	2.29E-03	2.29E-03	2.29E-03	2.76E-06	
	Test Temp (C)	20.0					
	Temp. Corr. Factor	1.000					
1	Volume (cc)	667	660	660			
	Time (s)	10.11	10.00	9.96			
	Flow Rate (GPM/ft width)	1.05	1.05	1.05	1.05	0.00	
	Transmissivity (m ² /s)	2.16E-03	2.17E-03	2.17E-03	2.17E-03	5.28E-06	
	Test Temp (C)	20.0					
	Temp. Corr. Factor	1.000					
12	Volume (cc)	593	586	599			
	Time (s)	10.06	9.98	10.11			
	Flow Rate (GPM/ft width)	0.93	0.93	0.94	0.93	0.00	
	Transmissivity (m ² /s)	1.93E-03	1.93E-03	1.94E-03	1.93E-03	8.74E-06	
	Test Temp (C)	20.0					
	Temp. Corr. Factor	1.000					
24	Volume (cc)	590	586	586			
	Time (s)	10.09	10.06	10.05			
	Flow Rate (GPM/ft width)	0.93	0.92	0.92	0.92	0.00	
	Transmissivity (m ² /s)	1.92E-03	1.91E-03	1.91E-03	1.91E-03	3.80E-06	5.0E-4 min
	Test Temp (C)	20.0					
	Temp. Corr. Factor	1.000					

Peel Strength (ASTM D 413, mod.)

A - MD Average Peel Strength (ppi)	4.3	4.7	5.5	7.1	4.4	5.2	1.2	
A - MD Average Peel Strength (g/in)	1952	2134	2497	3223	1998	2361	528	500 min
B - MD Average Peel Strength (ppi)	3.5	4.1	3.7	5.1	4.8	4.2	0.7	
B - MD Average Peel Strength (g/in)	1589	1861	1680	2315	2179	1925	314	500 min

Note: A and B represent a randomly assigned top and bottom of the sample

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC CAMU

Material: SKAPS TN270-2-6 Double Sided Geocomposite
Sample Identification: 269711298
TRI Log #: E2324-03-07

PARAMETER	TEST REPLICATE NUMBER					MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5			

Hydraulic Transmissivity (ASTM D 4716)

Direction Tested: Machine Direction
Normal Load (psf): 300
Hydraulic Gradient: 0.1
Test Length (in): 12
Test Width (in): 12

300
0.1
12
12

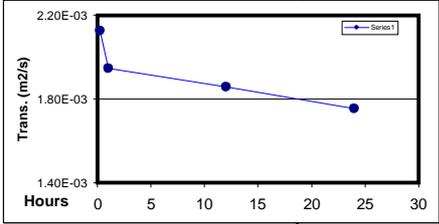
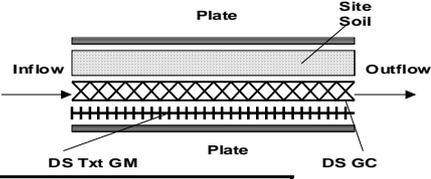


Plate / Cover Soil / Sample / Agru 60 mil Microspike HDPE Geomembrane / Plate

Seat Time (hours)	Specimen	1	2	3	MEAN	STD. DEV.	PROJ. SPEC.
0.25	Volume (cc)	653	652	646			
	Time (s)	10.09	10.01	10.01			
	Flow Rate (GPM/ft width)	1.03	1.03	1.02	1.03	0.00	
	Transmissivity (m ² /s)	2.12E-03	2.14E-03	2.12E-03	2.13E-03	1.01E-05	
	Test Temp (C)	20.0					
	Temp. Corr. Factor	1.000					
1	Volume (cc)	595	599	589			
	Time (s)	9.98	10.03	10.04			
	Flow Rate (GPM/ft width)	0.95	0.95	0.93	0.94	0.01	
	Transmissivity (m ² /s)	1.96E-03	1.96E-03	1.92E-03	1.95E-03	1.91E-05	
	Test Temp (C)	20.0					
	Temp. Corr. Factor	1.000					
12	Volume (cc)	564	571	569			
	Time (s)	9.98	10.07	10.03			
	Flow Rate (GPM/ft width)	0.90	0.90	0.90	0.90	0.00	
	Transmissivity (m ² /s)	1.85E-03	1.86E-03	1.86E-03	1.86E-03	3.88E-06	
	Test Temp (C)	20.0					
	Temp. Corr. Factor	1.000					
24	Volume (cc)	540	536	534			
	Time (s)	10.09	10.01	10.00			
	Flow Rate (GPM/ft width)	0.85	0.85	0.85	0.85	0.00	
	Transmissivity (m ² /s)	1.76E-03	1.76E-03	1.75E-03	1.75E-03	2.55E-06	5.0E-4 min
	Test Temp (C)	20.0					
	Temp. Corr. Factor	1.000					

Peel Strength (ASTM D 413, mod.)

A - MD Average Peel Strength (ppi)	5.0	2.6	5.9	3.2	3.6	4.1	1.4	
A - MD Average Peel Strength (g/in)	2270	1180	2679	1453	1634	1843	616	500 min
B - MD Average Peel Strength (ppi)	5.5	3.1	5.5	3.8	3.5	4.3	1.1	
B - MD Average Peel Strength (g/in)	2497	1407	2497	1725	1589	1943	518	500 min

Note: A and B represent a randomly assigned top and bottom of the sample

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC CAMU

Material: SKAPS TN270-2-6 Double Sided Geocomposite
Sample Identification: 269711362
TRI Log #: E2324-03-07

PARAMETER	TEST REPLICATE NUMBER					MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5			

Hydraulic Transmissivity (ASTM D 4716)

Direction Tested: Machine Direction
Normal Load (psf): 300
Hydraulic Gradient: 0.1
Test Length (in): 12
Test Width (in): 12

300
0.1
12
12

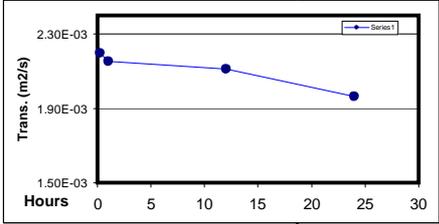
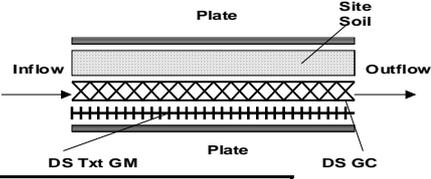


Plate / Cover Soil / Sample / Agru 60 mil Microspike HDPE Geomembrane / Plate

Seat Time (hours)	Specimen	1	2	3	MEAN	STD. DEV.	PROJ. SPEC.
0.25	Volume (cc)	670	672	677			
	Time (s)	10.01	10.01	10.11			
	Flow Rate (GPM/ft width)	1.06	1.06	1.06	1.06	0.00	
	Transmissivity (m^2/s)	2.20E-03	2.20E-03	2.20E-03	2.20E-03	3.53E-06	
	Test Temp (C)	20.0					
	Temp. Corr. Factor	1.000					
1	Volume (cc)	665	662	660			
	Time (s)	10.11	10.09	10.09			
	Flow Rate (GPM/ft width)	1.04	1.04	1.04	1.04	0.00	
	Transmissivity (m^2/s)	2.16E-03	2.15E-03	2.15E-03	2.15E-03	6.00E-06	
	Test Temp (C)	20.0					
	Temp. Corr. Factor	1.000					
12	Volume (cc)	646	650	649			
	Time (s)	10.06	10.09	10.06			
	Flow Rate (GPM/ft width)	1.02	1.02	1.02	1.02	0.00	
	Transmissivity (m^2/s)	2.11E-03	2.11E-03	2.12E-03	2.11E-03	5.01E-06	
	Test Temp (C)	20.0					
	Temp. Corr. Factor	1.000					
24	Volume (cc)	597	600	601			
	Time (s)	9.98	10.03	10.05			
	Flow Rate (GPM/ft width)	0.95	0.95	0.95	0.95	0.00	
	Transmissivity (m^2/s)	1.96E-03	1.96E-03	1.96E-03	1.96E-03	3.62E-07	5.0E-4 min
	Test Temp (C)	20.0					
	Temp. Corr. Factor	1.000					

Peel Strength (ASTM D 413, mod.)

A - MD Average Peel Strength (ppi)	4.4	5.5	3.4	3.2	2.3	3.8	1.2	
A - MD Average Peel Strength (g/in)	1998	2497	1544	1453	1044	1707	557	500 min
B - MD Average Peel Strength (ppi)	5.3	4.4	5.6	2.8	4.5	4.5	1.1	
B - MD Average Peel Strength (g/in)	2406	1998	2542	1271	2043	2052	495	500 min

Note: A and B represent a randomly assigned top and bottom of the sample

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS

TRI Client: Geosyntec Consultants
Project: BRC CAMU

Material: SKAPS TN270-2-6 Double Sided Geocomposite
Sample Identification: 269711432
TRI Log #: E2324-03-07

PARAMETER	TEST REPLICATE NUMBER					MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5			

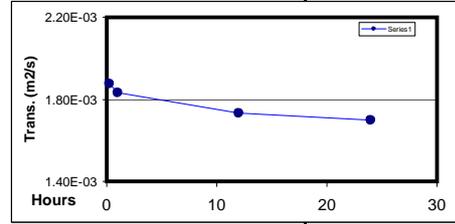
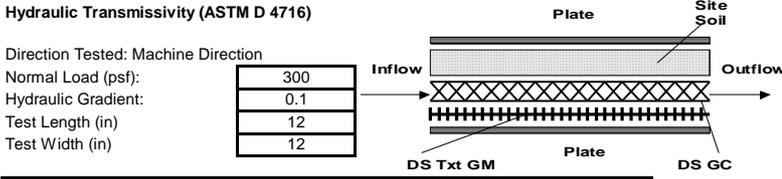


Plate / Cover Soil / Sample / Agru 60 mil Microspike HDPE Geomembrane / Plate

Seat Time (hours)	Specimen	1	2	3	4	5	MEAN	STD. DEV.	PROJ. SPEC.	
0.25	Volume (cc)	575	580	577						
	Time (s)	10.09	10.09	10.09						
	Flow Rate (GPM/ft width)	0.90	0.91	0.91			0.91	0.00		
	Transmissivity (m ² /s)	1.87E-03	1.89E-03	1.88E-03			1.88E-03	8.18E-06		
	Test Temp (C)	20.0								
	Temp. Corr. Factor	1.000								
1	Volume (cc)	555	558	558						
	Time (s)	9.95	9.98	9.98						
	Flow Rate (GPM/ft width)	0.88	0.89	0.89			0.89	0.00		
	Transmissivity (m ² /s)	1.83E-03	1.83E-03	1.83E-03			1.83E-03	2.52E-06		
	Test Temp (C)	20.0								
	Temp. Corr. Factor	1.000								
12	Volume (cc)	532	530	528						
	Time (s)	10.06	10.05	10.00						
	Flow Rate (GPM/ft width)	0.84	0.84	0.84			0.84	0.00		
	Transmissivity (m ² /s)	1.73E-03	1.73E-03	1.73E-03			1.73E-03	2.41E-06		
	Test Temp (C)	20.0								
	Temp. Corr. Factor	1.000								
24	Volume (cc)	523	521	520						
	Time (s)	10.09	10.09	10.05						
	Flow Rate (GPM/ft width)	0.82	0.82	0.82			0.82	0.00		
	Transmissivity (m ² /s)	1.70E-03	1.69E-03	1.70E-03			1.70E-03	3.25E-06	5.0E-4 min	
	Test Temp (C)	20.0								
	Temp. Corr. Factor	1.000								

Peel Strength (ASTM D 413, mod.)									
A - MD Average Peel Strength (ppi)	3.5	4.9	2.3	3.6	5.1				
A - MD Average Peel Strength (g/in)	1589	2225	1044	1634	2315				
B - MD Average Peel Strength (ppi)	2.7	6.3	4.8	4.8	3.3				
B - MD Average Peel Strength (g/in)	1226	2860	2179	2179	1498				
						3.9	1.1		
						1762	520	500 min	
						4.4	1.4		
						1989	643	500 min	

Note: A and B represent a randomly assigned top and bottom of the sample

MD Machine Direction TD Transverse Direction

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APPENDIX G

Concrete

APPENDIX G-1

Delivery Tickets and Slump Test Results



SILVER STATE MATERIALS

A CALPORTLAND Company

4005 Dean Martin Drive
Las Vegas, Nevada 89103
Office: 893-6557
Dispatch: 650-5000

H- 253922

CUSTOMER	DATE AND TIME DUE ON JOB	CONTROL NUMBER
JENSEN PRECAST	04/17/09 11:30	50385
JOB ADDRESS	CUSTOMER P.O.	ORDER: 73
EASTGATE BOULDER HWY & WARM SPRINGS HENDERSON, NV WARM SPRINGS EAST TO BOULDER HWY MEET CREW ON WARM SPRINGS		

7.5 ENVIRO FEE
1 SHORT LOAD CHRG

Use of environmental wash out system required

ARRIVE JOB	FINISH UNLOAD
------------	---------------

MIX NUMBER	MIX DESCRIPTION	SLUMP	LEFT JOB	RETURNED TO PLANT		
40	SF232 4500 PSI	3	7.50	11:10:55		
PLANT	TRUCK NUMBER	LOAD NUMBER	QUANTITY THIS LOAD	DELIVERED	ORDERED	TIME LOADED
	100	1	7.50 CY	7.50	7.50	11:10:55

THIS CONCRETE IS DESIGNED IN ACCORDANCE TO AMERICAN CONCRETE INSTITUTE STANDARDS ANY WATER ADDED TO THIS DESIGN WILL BE AT PURCHASER'S RISK ADDING WATER WILL ADVERSELY AFFECT CONCRETE

CAUTION!

Cement powder of freshly mixed concrete, grout or mortar may cause skin injury. Avoid contact with skin and wash exposed skin areas promptly with water. If any cement powder or mixture gets into the eyes, rinse immediately and repeatedly with water and get prompt medical attention. Keep children away from cement powder and all freshly mixed cement products.

In the event of delivery beyond curb line, this company will not assume liability for damage to sidewalk, driveway, utility lines, meters, septic systems or any other property. Materials hereby sold become property of purchaser at point of origin. The purchaser shall in no event accept deliveries of materials not in accord with the agreement of the parties; but such materials shall be refused by the purchaser and returned to the seller with a written statement of the reason for the refusal thereof. No cancellation accepted after concrete has been loaded in carrier's trucks at our plant.

CONCRETE	7.50
SALES TAX	
TICKET TOTAL	
BALANCE	XXXXXXXXXX
STANDING TIME	
INVOICE TOTAL	

WATER ADDED AT CUSTOMER'S REQUEST _____ GAL.	SLUMP PLACED <input checked="" type="checkbox"/> X	RECEIVED IN GOOD CONDITION BY: CUSTOMER SIGNATURE
--	--	---

BATCH NO

	Actual	Target		Actual	Target
3/4 rock	11 ABA3 1334	Lb 13340	AGA3	34 ABA2 3980	Lb 4020
SAND	21 ABA1 6100	Lb 6100	AGA1	61 CMA1 4140	Lb 4120
FLYASH	62 CMA3H 57	Lb 550		67 WTA1 159	Gal 159
WATER REDUCE	42 WDAW 75	Oz 248			

-4.00 Gal/CuYd

BATCH NO

W/C Ratio .0.397

Handwritten notes: 1234, 37, 44



SILVER STATE MATERIALS

A CALPORTLAND Company

4005 Dean Martin Drive

Las Vegas, Nevada 89103

Office: 893-6557

Dispatch: 650-5000

H-253976

7.5

CUSTOMER JENSEN PRECAST	DATE AND TIME DUE ON JOB 04/20/09 12:45	CONTROL NUMBER 50637
JOB ADDRESS EASTGATE BOULDER HWY & WARM SPRINGS HENDERSON, NV WARM SPRINGS EAST TO BOULDER HWY MEET CREW ON WARM SPRINGS	CUSTOMER P.O.	ORDER: 86

6.5 ENVIRO FEE
1 SHORT LOAD CHARG

Use of environmental wash out system required

MIX NUMBER	MIX DESCRIPTION	SLUMP	ARRIVE JOB 12.50	FINISH UNLOAD 12.50		
	SF232 4500 PSI	3	LEFT JOB	RETURNED TO PLANT		
PLANT	TRUCK NUMBER	LOAD NUMBER	QUANTITY THIS LOAD	DELIVERED	ORDERED	TIME LOADED
40	075	1	6.50 CY	6.50	6.50	12:31:37

THIS CONCRETE IS DESIGNED IN ACCORDANCE TO AMERICAN CONCRETE INSTITUTE STANDARDS ANY WATER ADDED TO THIS DESIGN WILL BE AT PURCHASER'S RISK ADDING WATER WILL ADVERSELY AFFECT CONCRETE

CAUTION!

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CONCRETE	6.50	
SALES TAX		
TICKET TOTAL		
BALANCE	XXXXXXXXXX	
STANDING TIME		
INVOICE TOTAL		

WATER ADDED AT CUSTOMER'S REQUEST <u>7</u> GAL.	SLUMP PLACED <u>4</u>	X <u>MH</u> RECEIVED IN GOOD CONDITION BY: CUSTOMER SIGNATURE
---	--------------------------	--

BATCH NO 1

Actual Target				Actual Target					
3/4 rock	11 ABA3	11560 Lb	11560 ABA3	0.1 %	SAND1	34 ABA2	3500 Lb	3500 ABA2	4.5 %
SAND2	31 ABA1	5300 Lb	5320 ABA1	5.0 %	TYPE V CNT	61 CMA1	3570 Lb	3580	
FLYASH	62 CMA3H	520 Lb	480		WATER	67 WTA1	144 Gal	144	
WATER REDUCE	42 ADA2	212 Oz	215						

BATCH NO

W/C_Ratio 0.397



GEOSYNTEC CONSULTANTS

CONCRETE PLACEMENT FORM

Start Again

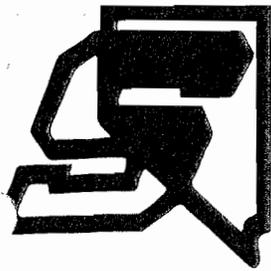
PROJECT: BRC/CANU PROJECT NO.: 50013 TASK NO.: 09 03
 LOCATION: SDMH #1, SDMH #2, SDMH #3, SDHW #1 month 08 year 2009
 DESCRIPTION: TEAM AGAIN, MANHOLE BASE (STREET) AND STORM DRAIN HEADWALL #1 day 12

DESIGN MIX DATA: DESIGN MIX NO.: SF232 SLUMP RANGE (in.): 3" to 3" AIR CONTENT (%): ENRAPPED
 COMPRESSION STRENGTH: 3000 (psi) AT 28 (days)

FIELD AND LABORATORY: UNION STATE MATERIALS CONCRETE SUPPLIER: G.E.V. TESTING LABORATORY: G.E.V.

TRUCK NO.	TICKET NO.	SIZE OF LOAD (yds)	LOAD BATCHED	TIME		FINISH PLACEMENT	LOCATION	TEMPERATURE		WATER ADDED (gal)	ASTM C 143 SLUMP (in.)	ASTM C 173 AIR CONTENT (%)	PASS/FAIL	QA ID	NO. OF CYLINDERS
				BEGIN PLACEMENT	END PLACEMENT			AMBIENT of	ASTM C 1064 CONCRETE of						
1	6983	5.5	6:40:52	7:40	8:17			99	88	0	3	—	P	SDMH 3	4
2	6982	4.5	7:50:23	9:03	9:22			100	87	0	3	—	P	SDMH 1	—
3	6981	6.0	9:21:58	9:47	10:39			102	—	18	—	—	**	SDMH 1	—
4	6984	6.0	11:09:21	11:39	12:00				89	0	3	—	P	SDMH 2	—

LOCATION NOTES: * 36 gal allowable. ** Visual OK.
COA PLAN = 7, 19, 28, 28. (8, 19, 216, 919, 919)
1000 #2 APPROX SDHW #1



SILVER STATE MATERIALS

A CALPORTLAND Company

4005 Dean Martin Drive
 Las Vegas, Nevada 89103
 Office: 893-6557
 Dispatch: 650-5000

H- 257447

CUSTOMER JENSEN PRECAST	DATE AND TIME DUE ON JOB 08/12/09 11:30	CONTROL NUMBER 69584
JOB ADDRESS EASTGATE-EAST SIDE LANDFILL BOULDER HWY & WARM SPRINGS HENDERSON, NV WARM SPRINGS EAST TO BOULDER HWY MEET CREW ON WARM SPRINGS	CUSTOMER P.O.	ORDER # 42

6 ENVIRO FEE
 1 SHORT LOAD CHARGE

Use of environmental wash out system required

MIX NUMBER	MIX DESCRIPTION	SLUMP	ARRIVE JOB	FINISH UNLOAD		
40	SF232 4500 PSI	4	LEFT JOB	RETURNED TO PLANT		
PLANT	TRUCK NUMBER	LOAD NUMBER	QUANTITY THIS LOAD	DELIVERED	ORDERED	TIME LOADED
40	075	4	6.00 CY	22.00	22.00	11:09:21

THIS CONCRETE IS DESIGNED IN ACCORDANCE TO AMERICAN CONCRETE INSTITUTE STANDARDS ANY WATER ADDED TO THIS DESIGN WILL BE AT PURCHASER'S RISK ADDING WATER WILL ADVERSELY AFFECT CONCRETE

CAUTION!

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CONCRETE	6.00	
SALES TAX		
TICKET-TOTAL		
BALANCE	XXXXXXXX	
STANDING TIME		
INVOICE TOTAL		

WATER ADDED AT CUSTOMER'S REQUEST _____ GAL.	SLUMP PLACED	X
RECEIVED IN GOOD CONDITION BY: CUSTOMER SIGNATURE		

BATCH NO 1

	Actual	Target		Actual	Target
3/4 rock	11 ABA4 10720 Lb	10500	ABA4	34 ASAE 3140 Lb	3150
SAND	31 ABA1 4080 Lb	4900	ABA1	61 CHA1 3200 Lb	3300
FLYASH	62 CHA2 430 Lb	440		67 WTA1 147 Gal	147
Type A.	45 ADA4 72 Oz	72			

BATCH NO



SILVER STATE MATERIALS

A CALPORTLAND Company

4005 Dean Martin Drive
Las Vegas, Nevada 89103
Office: 893-6557
Dispatch: 650-5000

H- 257435

CUSTOMER JENSEN PRECAST	DATE AND TIME DUE ON JOB 05/12/09 09:22	CONTROL NUMBER 69951
JOB ADDRESS EASTGATE-EAST SIDE LANDFILL BOULDER HWY & WARM SPRINGS HENDERSON, NV WARM SPRINGS EAST TO BOULDER HWY MEET CREW ON WARM SPRINGS	CUSTOMER P.O.	ORDER: 42

- 6 ENVIRO FEE
- 1 SHORT LOAD CHARG

Use of environmental wash out system required

MIX NUMBER SF232 4500 PSI	MIX DESCRIPTION	SLUMP 3	ARRIVE JOB 0730	FINISH UNLOAD
PLANT 40	TRUCK NUMBER 076	LOAD NUMBER 3	LEFT JOB	RETURNED TO PLANT
QUANTITY THIS LOAD 6.00 CY	DELIVERED 16.00	ORDERED 16.00	TIME LOADED 09:11:58	

THIS CONCRETE IS DESIGNED IN ACCORDANCE TO AMERICAN CONCRETE INSTITUTE STANDARDS. ANY WATER ADDED TO THIS DESIGN WILL BE AT PURCHASER'S RISK. ADDING WATER WILL ADVERSELY AFFECT CONCRETE.

CAUTION!

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CONCRETE	6.00
SALES TAX	
TICKET TOTAL	
BALANCE	XXXXXXXXXX
STANDING TIME	
INVOICE TOTAL	

WATER ADDED AT CUSTOMER'S REQUEST 4+5+5 GAL. SLUMP PLACED 3 X RECEIVED IN GOOD CONDITION BY: CUSTOMER SIGNATURE

EIA TOTAL

BATCH NO 1

	Actual	Target		Actual	Target
3/4 rock	11 ABA4 10700 Lb	10500 ABA4	0.3 %	SAND1	34 ABA2 3160 Lb 3160 ABA2 2.8 %
SAND2	31 ABA1 4840 Lb	4900 ABA1	3.3 %	TYPE V CNT	61 CNA1 3310 Lb 3300
FLYASH	62 CNA3 440 Lb	440		WATER	67 WTA1 135 Gal 135
Type A.	49 ABA4 72 Oz	72			

BATCH NO

W/C_Ratio 0.372



CALPORTLAND™

4005 DEAN MARTIN DRIVE • LAS VEGAS, NEVADA 89103
OFFICE: 893-6557 • DISPATCH: 650-5000

CUSTOMER JENSEN PRECAST	DATE AND TIME DUE ON JOB 08/12/09 08:30	CONTROL NUMBER 69921
JOB ADDRESS EASTGATE--EAST SIDE LANDFILL BOULDER HWY & WARM SPRINGS HENDERSON, NV WARM SPRINGS EAST TO BOULDER HWY MEET CREW ON WARM SPRINGS	CUSTOMER P.O.	ORDER: 42

- 4.5 ENVIRO FEE
- 1 SHORT LOAD CHARG

Use of environmental wash out system required

MIX NUMBER	MIX DESCRIPTION	SLUMP	ARRIVE JOB	FINISH UNLOAD		
SF23E 4500 PSI		3	845			
LEFT JOB	RETURNED TO PLANT					
PLANT	TRUCK NUMBER	LOAD NUMBER	QUANTITY THIS LOAD	DELIVERED	ORDERED	TIME LOADED
40	142	2	4.50 CY	10.00	10.00	07:50:23

THIS CONCRETE IS DESIGNED IN ACCORDANCE TO AMERICAN CONCRETE INSTITUTE STANDARDS
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ADDING WATER WILL ADVERSELY AFFECT CONCRETE

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CONCRETE	4.50	
SALES TAX		
TICKET TOTAL		
BALANCE	XXXXXXXXXX	
STANDING TIME		
INVOICE TOTAL		

WATER ADDED AT CUSTOMER'S REQUEST	TOTAL GAL	SLUMP PLACED	X	RECEIVED IN GOOD CONDITION BY: CUSTOMER SIGNATURE
	3	3		

BATCH NO	Actual	Target	Actual	Target
3/4 ROCK	11 ABAH 8331 Lb	7992	ABAE	1.3 %
C SAND	31 ABA3H 3791 Lb	3735	SAND	34 ABA6 2355 Lb
FLY ASH	62 CHA1 321 Lb	329	TYPE V CNT	61 CHA2 2496 Lb
TYPE A	42 ABAE 46 Oz	60	WATER	67 WTA1 1054 Lb

BATCH NO

W/C_Ratio 0.450



S- 54U144

CALPORTLAND™

4005 DEAN MARTIN DRIVE • LAS VEGAS, NEVADA 89103
OFFICE: 893-6557 • DISPATCH: 650-5000

CUSTOMER JENSEN PRECAST	DATE AND TIME DUE ON JOB 08/12/09 07:00	CONTROL NUMBER 69883
JOB ADDRESS ERSTGATE-EAST SIDE LANDFILL BOULDER HWY & WARM SPRINGS HENDERSON, NV WARM SPRINGS EAST TO BOULDER HWY MEET CREW ON WARM SPRINGS	CUSTOMER P.O.	ORDER: 42

5.5 ENVIRO FEE
1 SHORT LOAD CHRG

Use of environmental wash out system required

MIX NUMBER	MIX DESCRIPTION	SLUMP	ARRIVE JOB 727	FINISH UNLOAD		
40	SF232 4500 PSI	3	LEFT JOB	RETURNED TO PLANT		
PLANT	TRUCK NUMBER	LOAD NUMBER	QUANTITY THIS LOAD	DELIVERED	ORDERED	TIME LOADED
	40	306	5.50 CY	5.50	10.00	06:40:52

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CONCRETE	5.50	
SALES TAX		
TICKET TOTAL		
BALANCE	XXXXXXXXXX	
STANDING TIME		
INVOICE TOTAL		

WATER ADDED AT CUSTOMER'S REQUEST	7 GAL	SLUMP PLACED	X	RECEIVED IN GOOD CONDITION BY: CUSTOMER SIGNATURE
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BATCH NO 1

	Actual	Target		Actual	Target
CON SAND-1	34 AGA2H 3650 Lb	3546	AGA2	32 AGA1	3850 Lb
SG7 coarse	12 AGA3 10100 Lb	10049	AGA3	61 CMA1	3020 Lb
FLY ASH	62 CMA2	390 Lb		62 WTA1	1042 Lb
TYPE A...	49 ADA3H	72 Oz			

BATCH NO

0.77 x 0.99 2.613
2.63

W/C Ratio 0.402



Converse Consultants

Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

RECEIVED FROM
MIKE CARLSON
8/12/09 - Stuart

MIX IS TO BE USED
ONSITE FOR ALL
ADJUSTMENTS.

CONCRETE MIX DESIGN: SF232

Supplier : Silver State Materials
Strength @ 28 Days : 4500 PSI
Cement Sk : 6.50
Cementitious Matl Sk : 6.63
Soluble Sulfates : N/A
Slump : 4" ± 1"

Project : N/A
Application : N/A
Nom Size Agg : 3/4"
Entrapped Air % : 1.2
W/C : 0.45
FA % : 10 1.2 : 1 Ratio

SOURCE OF MATERIALS

Cement (ASTM C150 Type V) : C.P.C
Fly Ash (ASTM C618 Type F) : Headwaters Resources - Navajo
Sand (Washed Sand) : Construx, Eldorado
Coarse Agg (3/4" - #67) : Las Vegas Paving , Apex Pit

AGGREGATE PHYSICAL PROPERTIES

Sieve Size	Washed Sand	3/4" - #67	Specification (CCPW- D Modified)					
			Combined	(Hi)	(Lo)			
2"	100.0	100.0	0.0	0.0	100	100	100	
1 1/2"	100.0	100.0	0.0	0.0	100	100	100	
1"	100.0	100.0	0.0	0.0	100	100	100	
3/4"	100.0	90.0	0.0	0.0	94	100	80	
1/2"	100.0	52.0	0.0	0.0	73			
3/8"	100.0	28.0	0.0	0.0	59	74	46	
#4	100.0	4.0	0.0	0.0	45	54	34	
#8	84.0	1.0	0.0	0.0	37	50	24	
#16	53.0	0.0	0.0	0.0	23	38	17	
#30	31.0	0.0	0.0	0.0	13	29	10	
#50	16.0	0.0	0.0	0.0	7	19	5	
#100	6.0	0.0	0.0	0.0	3	9	2	
#200	1.4	0.5	0.0	0.0	0.9	5	0	
Bulk Specific Grav, SSD:	2.57	2.67	0	0				
Absorption %:	3.8	0.8	0	0				
Aggregate Ratio %:	43.00%	57.00%	0.00%	0.00%	100.00%			

BATCH WEIGHTS FOR ONE CUBIC YARD (SSD)

	Solid Volume	Weight (lbs)	Volume (ft3)	
Cement (ASTM C150 Type V) :		550	2.80	
Fly Ash (ASTM C618 Type F) :		73	0.50	
Water :		280	4.49	
% Entrapped Air :			0.32	
Sand (Washed Sand) :	43.00%	1,302	8.12	
Coarse Agg (3/4" - #67) :	57.00%	1,794	10.77	
Coarse Agg 2:	0.00%	0	0.00	
Coarse Agg 3:	0.00%	0	0.00	
Total:		3,999	27.00	Theoretical Unit Weight : 148.11 PCF

Admixtures and or comments:

Type A Water Reducer: as per manufacturer's recommendations.

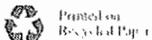
Stacey M. F. [Signature]

Submitted By
8/12/08
Date



Converse Consultants

731 Pilot Road, Suite H, Las Vegas, Nevada 89110-4429



Telephone: (702) 269-8336 ♦ Facsimile: (702) 269-8353 ♦ e-mail: lasvegas@converseconsultants.com



SILVER STATE MATERIALS

A CALPORTLAND Company

4005 Dean Martin Drive
 Las Vegas, Nevada 89103
 Office: 893-6557
 Dispatch: 650-5000

H- [257916]

CUSTOMER	DATE AND TIME DUE ON JOB	CONTROL NUMBER
ROSS CO CONSTRUCTION INC	08/25/09 09:30	72363

JOB ADDRESS	CUSTOMER P.O.
EAST SIDE LAND FILL BOULDER HWY & WARM SPRINGS HENDERSON, NV WARM SPRINGS WEST B-4 BOULDER HWY ON RT	ORDER: 18

272 WATER TEMPERED
 8 ENVIRO FEE

8 TEMPERED WATER S

1 SHORT LOAD CHARG
 Use of environmental wash out system required

MIX NUMBER	MIX DESCRIPTION	SLUMP	LEFT JOB	RETURNED TO PLANT		
40	SF232 4500 PSI	4				
PLANT	TRUCK NUMBER	LOAD NUMBER	QUANTITY THIS LOAD	DELIVERED	ORDERED	TIME LOADED
	075	1	8.00 CY	8.00	8.00	09/11:52

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CONCRETE	8.00
SALES TAX	
TICKET TOTAL	
BALANCE	XXXXXXXXXX
STANDING TIME	
INVOICE TOTAL	

WATER ADDED AT CUSTOMER'S REQUEST _____ GAL.	SLUMP PLACED	X	RECEIVED IN GOOD CONDITION BY: CUSTOMER SIGNATURE
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BATCH NO 1

-3.00 Gal/CuYd

	Actual	Target		Actual	Target
3/4 rock	11 ABA4 14160 Lb	14240	ABA4	34 ABA2H 4340 Lb	4220
SAND2	31 ABA1 6620 Lb	6640	ABA1	61 CMA1 4400 Lb	4400
FLYASH	62 CMA3 590 Lb	500	TEMPERED	68 WTA2 191 Gal	191
Type A.	49 ADA4 96 Oz	96			

BATCH NO

W/C_Ratio 0.415



H- 257961

SILVER STATE MATERIALS

A CALPORTLAND Company

4005 Dean Martin Drive
 Las Vegas, Nevada 89103
 Office: 893-6557
 Dispatch: 650-5000

CUSTOMER DANIELS CONCRETE&CONSTRUCTION LL	DATE AND TIME DUE ON JOB 08/26/09 09:30	CONTROL NUMBER 72590
JOB ADDRESS LANDFILL WARMSPRINGS & BOULDER HENDERSON, NV WARM SPRINGS EAST TO BOULDER HWY MEET CREW ON WARM SPRINGS AT CONST ENTRANCE	CUSTOMER P.O. 6074	ORDER: 43

- 3.5 ENVIRO FEE
- 1 SHORT LOAD CHARG

Use of environmental wash out system required

MIX NUMBER	MIX DESCRIPTION	SLUMP	ARRIVE JOB	FINISH UNLOAD		
	SF232 4500 PSI	3				
PLANT	TRUCK NUMBER	LOAD NUMBER	QUANTITY THIS LOAD	DELIVERED	ORDERED	TIME LOADED
40	075	1	3.50 CY	3.50	3.50	08:49:59

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CONCRETE	3.50		
SALES TAX			
TICKET TOTAL			
BALANCE	XXXXXXXXXX		
STANDING TIME			
INVOICE TOTAL			

WATER ADDED AT CUSTOMER'S REQUEST, <u>5</u> GAL.	SLUMP PLACED	X
RECEIVED IN GOOD CONDITION BY: CUSTOMER SIGNATURE		

BATCH NO 1

-6.00 Gal/CuYd

	Actual	Target		Actual	Target		
3/4 rock	11 ABA4 6200 Lb	6250 ABA4	0.7 %	SAND1	34 ABA2 1840 Lb	1840 ABA2	2.8 %
SAND2	31 ABA1 2900 Lb	2900 ABA1	5.1 %	TYPE V CMT	61 CMA2 1910 Lb	1920	
FLYASH	62 CMA3H 280 Lb	260		WATER	67 WTA1 70 Gal	70	
Type A.	49 ADA4 40 Oz	42					

BATCH NO

W/C_Ratio 0.374



7150 PLACID STREET
 LAS VEGAS, NEVADA 89119
 702.365.1001

CONCRETE COMPRESSION TEST RESULTS

JOB NAME BRC/CAMU JOB NO. GEOSYNTEL # S00313-09-05
 CLIENT GEOSYNTEL CONSULTANTS
 ADDRESS 110 W. WARM SPRINGS RD SAMPLE NO. EPB 111B (SET), 8/24/09
 SAMPLE DATE Wed 8/26/09 (Henderson Area) PERMIT NO. _____

STRUCTURE 3 ELECTRICAL PANEL BODIES IN PH. 111B, II, AND I.
 LOCATION OF SAMPLE PHASE 111B ELECTRICAL PANEL BODIE

GENERAL CONTRACTOR	<u>ENTACT</u>	MIX #	<u>SF232</u>
CONCRETE CONTRACTOR		TRUCK #	<u>75</u>
CONCRETE SUPPLIER	<u>SILVER STATE MAT'LS</u>	TICKET #	<u>H-25796</u>
WEATHER	<u>CLEAR, HOT</u>	WATER ADDED	<u>5</u> gal.
28 DAY STRENGTH	<u>3000</u> PSI	SLUMP	<u>3</u> in.
TEST METHOD	ASTM C 39 _____	MIX TEMP	<u>83</u> °F
	ASTM C 173 _____	AIR TEMP	<u>92</u> °F
	ASTM C138 _____	AIR CONTENT	<u>N/A</u>
	Other _____	UNIT WEIGHT	<u>N/A</u>
PROJECT MANAGER	_____		
TECHNICIAN	_____		
REVIEWED BY	_____		

7
1A
2B
2B

SAMPLE NO.	DIAMETER (IN)	X-SECT AREA, (SQ IN)	DATE RECVD	DATE TESTED	AGE OF SPECIMEN (DAYS)	TOTAL LOAD (LBS)	UNIT LOAD (PSI)	TYPE OF FAILURE
1			8/27/09	9/2	7			
2				9/9	14			
3				9/23	28			
4				9/23	28			

1=CONE 2=CONE AND SPLIT 3=CONE AND SHEAR 4=SHEAR 5= COLUMNAR

REMARKS/DEFECTS ONE SET OF FOUR 6"X12"



SILVER STATE MATERIALS

A CALPORTLAND Company

4005 Dean Martin Drive
 Las Vegas, Nevada 89103
 Office: 893-6557
 Dispatch: 650-5000

H- 258266

Arrive ~ 9:25

Stop pay ~ 10:12

2 of 3 dslst

CUSTOMER	DATE AND TIME DUE ON JOB	CONTROL NUMBER
ROSS CO CONSTRUCTION INC	09/04/09 08:47	74243
JOB ADDRESS	CUSTOMER P.O.	ORDER: 22

EAST SIDE LAND FILL
 BOULDER HWY & WARM SPRINGS
 HENDERSON, NV
 WARM SPRINGS WEST B-4 BOULDER HWY ON RT

85 WATER TEMPERED
 2.5 ENVIRO FEE
 2.5 TEMPERED WATER S
 Use of environmental wash out system required

MIX NUMBER	MIX DESCRIPTION	SLUMP	ARRIVE JOB	FINISH UNLOAD		
40	SF232 4500 PSI	2				
PLANT	TRUCK NUMBER	LOAD NUMBER	QUANTITY THIS LOAD	DELIVERED	ORDERED	TIME LOADED
	40	313	2.50 CY	12.50	12.50	08:32:43

THIS CONCRETE IS DESIGNED IN ACCORDANCE TO
 AMERICAN CONCRETE INSTITUTE STANDARDS
 ANY WATER ADDED TO THIS DESIGN WILL BE AT PURCHASER'S RISK
 ADDING WATER WILL ADVERSELY AFFECT CONCRETE

CAUTION!

Cement powder of freshly mixed concrete, grout or mortar may cause skin injury. Avoid contact with skin and wash exposed skin areas promptly with water. If any cement powder or mixture gets into the eyes, rinse immediately and repeatedly with water and get prompt medical attention. Keep children away from cement powder and all freshly mixed cement products.

In the event of delivery beyond curb line, this company will not assume liability for damage to sidewalk, driveway, utility lines, meters, septic systems or any other property. Materials hereby sold become property of purchaser at point of origin. The purchaser shall in no event accept deliveries of materials not in accord with the agreement of the parties, but such materials shall be refused by the purchaser and returned to the seller with a written statement of the reason for the refusal thereof. No cancellation accepted after concrete has been loaded in carrier's trucks at our plant.

CONCRETE	2.50
SALES TAX	
TICKET TOTAL	
BALANCE	XXXXXXXXXX
STANDING TIME	
INVOICE TOTAL	

WATER ADDED AT CUSTOMER'S REQUEST <u>~5</u> GAL.	SLUMP PLACED	X	RECEIVED IN GOOD CONDITION BY: CUSTOMER SIGNATURE
--	--------------	---	---

BATCH NO 1	Actual	Target	Actual	Target
3/4 rock	11 ABA4 4420 Lb	4400 ABA4	0.7 %	SAND1
SAND2	31 ABA1 2040 Lb	2050 ABA1	4.5 %	TYPE V CNT
FLYASH	62 CRA3H 230 Lb	100		TEMPERED
Type A..	49 ADA4 32 Oz	35		

-5.00 Gal/CuYd

BATCH NO

W/C_Ratio 0.376



SILVER STATE MATERIALS

A CALPORTLAND Company

4005 Dean Martin Drive
Las Vegas, Nevada 89103
Office: 893-6557
Dispatch: 650-5000

H- 258256

Am 7:16

x5 gal

7:20 2 knot pour
3 of 3 ds. H.

CUSTOMER ROSS CD CONSTRUCTION INC	DATE AND TIME DUE ON JOB 09/04/09 07:00	CONTROL NUMBER 74173
--------------------------------------	--	-------------------------

JOB ADDRESS EAST SIDE LAND FILL BOULDER HWY & WARM SPRINGS HENDERSON, NV WARM SPRINGS WEST B-4 BOULDER HWY ON RT	CUSTOMER P.O.	ORDER: 22
--	---------------	-----------

340 WATER TEMPERED
10 ENVIRO FEE
10 TEMPERED WATER S
Use of environmental wash out system required

MIX NUMBER	MIX DESCRIPTION SF232 4500 PSI	SLUMP 2	LEFT JOB	RETURNED TO PLANT		
PLANT	TRUCK NUMBER 40 289	LOAD NUMBER 1	QUANTITY THIS LOAD 10.00 CY	DELIVERED 10:00	ORDERED 10:00	TIME LOADED 06:43:09

THIS CONCRETE IS DESIGNED IN ACCORDANCE TO AMERICAN CONCRETE INSTITUTE STANDARDS ANY WATER ADDED TO THIS DESIGN WILL BE AT PURCHASER'S RISK ADDING WATER WILL ADVERSELY AFFECT CONCRETE

CAUTION!

Cement powder of freshly mixed concrete, grout or mortar may cause skin injury. Avoid contact with skin and wash exposed skin areas promptly with water. If any cement powder or mixture gets into the eyes, rinse immediately and repeatedly with water and get prompt medical attention. Keep children away from cement powder and all freshly mixed cement products.

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CONCRETE	10.00
SALES TAX	
TICKET TOTAL	
BALANCE	XXXXXXXXXX
STANDING TIME	
INVOICE TOTAL	

NO WATER ADDED BEFORE POUR START. WATER ADDED AT CUSTOMER'S REQUEST _____ GAL. UNKNOWN AMOUNT OF WATER BATCH NO 1	SLUMP PLACED X	RECEIVED IN GOOD CONDITION BY: CUSTOMER SIGNATURE
--	-------------------	---

	Actual	Target		Actual	Target
3/4 rock	11 ABA4 17920 Lb	17600	AGA4	34 ABA2 5220 Lb	5200
SAND2	31 ABA1 8220 Lb	8250	AGA1	61 CMA1 5450 Lb	5500
FLYASH	62 CMA3 730 Lb	730		68 WTA2 234 Gal	234
Type A.	49 ADA4 136 Oz	140			

BATCH NO

W/C_Ratio 0.416



SILVER STATE MATERIALS

A CALPORTLAND Company

4005 Dean Martin Drive
Las Vegas, Nevada 89103
Office: 893-6557
Dispatch: 650-5000

H- 258392

Start and 11:42 12:10

2nd 1st

CUSTOMER DANIELS CONCRETE&CONSTRUCTION LL	DATE AND TIME DUE ON JOB 09/09/09 11:30	CONTROL NUMBER 74860
JOB ADDRESS LANDFILL WARMSPRINGS & BOULDER HENDERSON, NV WARM SPRINGS EAST TO BOULDER HWY MEET CREW ON WARMSPRINGS AT CONST ENTRANCE	CUSTOMER P.O. 6074	ORDER: 56

- 1.5 ENVIRD FEE
- 1 SHORT LOAD CHRG

Use of environmental wash out system required

MIX NUMBER SF232 4500 PSI	MIX DESCRIPTION	SLUMP 4	ARRIVE JOB 11:30	FINISH UNLOAD	RETURNED TO PLANT	
PLANT 40	TRUCK NUMBER 058	LOAD NUMBER 1	QUANTITY THIS LOAD 1.50 CY	DELIVERED 1.50	ORDERED 1.50	TIME LOADED 11:09:05

THIS CONCRETE IS DESIGNED IN ACCORDANCE TO AMERICAN CONCRETE INSTITUTE STANDARDS ANY WATER ADDED TO THIS DESIGN WILL BE AT PURCHASER'S RISK ADDING WATER WILL ADVERSELY AFFECT CONCRETE

CAUTION!

Cement powder of freshly mixed concrete, grout or mortar may cause skin injury. Avoid contact with skin and wash exposed skin areas promptly with water. If any cement powder or mixture gets into the eyes, rinse immediately and repeatedly with water and get prompt medical attention. Keep children away from cement powder and all freshly mixed cement products.

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CONCRETE	1.50	
SALES TAX		
TICKET TOTAL		
BALANCE	XXXXXXXXXX	
STANDING TIME		
INVOICE TOTAL		

WATER ADDED AT CUSTOMER'S REQUEST 0 GAL. SLUMP PLACED X

RECEIVED IN GOOD CONDITION BY: CUSTOMER SIGNATURE

BATCH NO 1

	Actual	Target		Actual	Target
3/4 rock	11 AGA4 2660 Lb	2600	AGA4	0.7 %	SAND1
SAND2	31 AGA1 1260 Lb	1240	AGA1	5.0 %	TYPE V CNT
FLYASH	62 CHR3 100 Lb	110			WATER
Type A.	49 ADA4 24 Oz	21			

BATCH NO

W/C_Ratio 0.108

TUES 10/27/09



CONCRETE PLACEMENT FORM

PROJECT: BAC / CAMU
 LOCATION: PHASE #1, #2, #3, #4, AND #5
 DESCRIPTION: CCRS ANCHOR WALLS
 PROJECT NO.: SC0313 TASK NO.: 09 09
 DATE: 27 day 10 month 2009 year

DESIGN MIX DATA: DESIGN MIX NO.: SF-232
 AMBIENT SLUMP RANGE (in.): (4" ± 1") 3 to 5" *
 FINISH PLACEMENT: 28 (days) SLUMP RANGE (in.): N/A ENTIRE

FIELD AND LABORATORY: CAL PORTLAND (SUPERSTATE) TESTING LABORATORY: AM71-Sunbelt
 CONCRETE SUPPLIER: PHANT #40

TRUCK NO.	TICKET NO.	SIZE OF LOAD (yd3)	LOAD BATCHED	TIME	TEMPERATURE			TESTING				
					AMBIENT of	ASTM C 1064 of	WATER ADDED (gal)	ASTM C 143 SLUMP (in.)	ASTM C 173 AIR CONTENT (%)	PASS/FAIL	QA ID	NO. OF CYLINDERS
001	343669	7.5	7:19:52	8:10	68	70	0	2 1/2	N/A	P	SF	4
012	343678	7.5	8:34:29	9:27	63		0	VIABLE	N/A	N/A	SF	0
<p>FRESH CONCRETE WITHIN THE FORMS AND FOOTINGS WAS CONSOLIDATED WITH A "SPONGER" VIBRATORY CONCRETE CONSOLIDATOR. FORMS AND REINFORCEMENT SHOWN DURING PLACEMENT.</p>												

LOCATION NOTES: * PER SPEC # 03400, 1.06.A.1, SLUMP < 3" AUTHORIZED BY THE CONSTRUCTION MANAGER.
 LOAD #1 (TRUCK 001) FILLED CCRS ANCHOR WALLS @ PH IIIB AND PH I.
 LOAD #2 (TRUCK 312) FILLED CCRS ANCHOR WALLS @ PH II AND PH IV.

BREAK SCHEDULE
 (7) on 11/3/09
 (14) on 11/19/09
 (2-228) on 11/24/09



S-070010

CALPORTLAND™

4005 DEAN MARTIN DRIVE • LAS VEGAS, NEVADA 89103
OFFICE: 893-6557 • DISPATCH: 650-5000

CUSTOMER ROSS CO CONSTRUCTION INC	DATE AND TIME DUE ON JOB 10/27/09 09:30	CONTROL NUMBER 03342
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JOB ADDRESS EAST SIDE LAND FILL BOULDER HWY & WARM SPRINGS HENDERSON, NV WARM SPRINGS WEST B-4 BOULDER HWY ON RT	CUSTOMER P.O.	ORDER: 36
--	---------------	-----------

- 7.5 ENVIRO FEE
- 1 SHORT LOAD CHRG

Use of environmental wash out system required

930

MIX NUMBER	MIX DESCRIPTION	SLUMP	ARRIVE JOB	FINISH UNLOAD
BF232	4500 PSI	4		
			LEFT JOB	RETURNED TO PLANT

PLANT	TRUCK NUMBER	LOAD NUMBER	QUANTITY THIS LOAD	DELIVERED	ORDERED	TIME LOADED
40	312	2	7.50 CY	15.00	15.00	00:34:29

THIS CONCRETE IS DESIGNED IN ACCORDANCE TO
AMERICAN CONCRETE INSTITUTE STANDARDS
ANY WATER ADDED TO THIS DESIGN WILL BE AT PURCHASER'S RISK
ADDING WATER WILL ADVERSELY AFFECT CONCRETE

CAUTION!

Cement powder of freshly mixed concrete, grout or mortar may cause skin injury. Avoid contact with skin and wash exposed skin areas promptly with water. If any cement powder or mixture gets into the eyes, rinse immediately and repeatedly with water and get prompt medical attention. Keep children away from cement powder and all freshly mixed cement products.

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CONCRETE	7.50	934
SALES TAX		1004
TICKET TOTAL		
BALANCE	XXXXXXXXXX	
STANDING TIME		
INVOICE TOTAL		

WATER ADDED AT CUSTOMER'S REQUEST _____ GAL.	SLUMP PLACED	X	RECEIVED IN GOOD CONDITION BY: CUSTOMER SIGNATURE
--	--------------	---	---

BATCH NO 1

	Actual	Target		Actual	Target		
CON SAND-1	34 ABA2 7200 Lb	7274 ABA2	2.2 %	CON SAND-2	32 ABA1 2650 Lb	2675 ABA1	4.0 %
#67 coarse	12 ABA3 13950 Lb	13703 ABA3	1.5 %	TYPE V CMT	61 CMA1 4140 Lb	4125	
FLY ASH	62 CMA3 540 Lb	544		WATER ONE	67 WTA1 1526 Lb	1532	
POZZ 80	42 ADA2L 140 Oz	143					

BATCH NO

W/C_Ratio 0.426

953

S-343669



CALPORTLAND™

4005 DEAN MARTIN DRIVE • LAS VEGAS, NEVADA 89103
OFFICE: 893-6557 • DISPATCH: 650-5000

CUSTOMER ROSS CD CONSTRUCTION INC	DATE AND TIME DUE ON JOB 10/27/09 08:00	CONTROL NUMBER 83308
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JOB ADDRESS EAST SIDE LAND FILL BOULDER HWY & WARM SPRINGS HENDERSON, NV WARM SPRINGS WEST B-4 BOULDER HWY ON RT	CUSTOMER P.O.	ORDER: 36
--	---------------	-----------

- 7.5 ENVIRO FEE
- 1 SHORT LOAD CHRG

Use of environmental wash out system required

MIX NUMBER SF232	MIX DESCRIPTION 4500 PSI	SLUMP 4	ARRIVE JOB 8:00	FINISH UNLOAD
PLANT 40	TRUCK NUMBER 081	LOAD NUMBER 1	QUANTITY THIS LOAD 7.50 CY	DELIVERED 7.50
			ORDERED 15.00	TIME LOADED 07:19:52

THIS CONCRETE IS DESIGNED IN ACCORDANCE TO AMERICAN CONCRETE INSTITUTE STANDARDS
ANY WATER ADDED TO THIS DESIGN WILL BE AT PURCHASER'S RISK
~~ADDING WATER WILL ADVERSELY AFFECT CONCRETE~~

CAUTION!

Cement powder of freshly mixed concrete, grout or mortar may cause skin injury. Avoid contact with skin and wash exposed skin areas promptly with water. If any cement powder or mixture gets into the eyes, rinse immediately and repeatedly with water and get prompt medical attention. Keep children away from cement powder and all freshly mixed cement products.

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CONCRETE	7.50	<i>8100</i> <i>FEINTS</i>
SALES TAX		
TICKET TOTAL		
BALANCE	XXXXXXXXXX	
STANDING TIME		
INVOICE TOTAL		

WATER ADDED AT CUSTOMER'S REQUEST _____ GAL.	SLUMP PLACED	X	RECEIVED IN GOOD CONDITION BY: CUSTOMER SIGNATURE
--	--------------	---	---

BATCH NO 1		Actual		Target				Actual		Target	
CON SAND-1	34	AGA2	7300 Lb	7274	AGA2	2.2 %	CON SAND-2	32	AGA1H	2750 Lb	2675
#57 coarse	12	AGA3	13000 Lb	13703	AGA3	1.5 %	TYPE V CNT	61	CMA1	4160 Lb	4125
FLY ASH	62	CMA3H	590 Lb	544			WATER ONE	67	WTA1	1522 Lb	1532
POZZ 80	42	ADA2H	144 Oz	143							

BATCH NO

W/C_Ratio 0.420

APPENDIX G-2
Compression Test Results



7150 Placid Street
 Las Vegas, Nevada 89119
 702.365.1001

CONCRETE COMPRESSION TEST RESULTS

JOB NAME BRC JOB # 20092524V1
 CLIENT Geosyntec
 ADDRESS N/A REPORT # 1
 SAMPLE DATE 4/17/2009 PERMIT # N/A

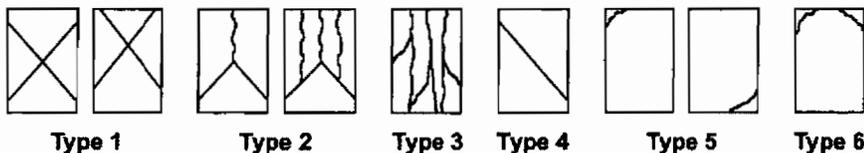
STRUCTURE Storm Water Manholes 5,6,7
 LOCATION OF SAMPLE N/A

GENERAL CONTRACTOR	<u>N/A</u>	MIX #	<u>N/A</u>
CONCRETE CONTRACTOR	<u>N/A</u>	TRUCK #	<u>N/A</u>
CONCRETE SUPPLIER	<u>N/A</u>	TICKET #	<u>N/A</u>
WEATHER	<u>Warm/Clear</u>	WATER	
28 DAY STRENGTH	<u>3000 psi</u>	ADDED	<u>N/A gal.</u>
TEST METHOD	ASTM C 39 ___ ASTM C 1064 ___ ASTM C 173 ___ ASTM C 143 ___ ASTM C 138 ___ OTHER ___	SLUMP	<u>N/A in.</u>
PROJECT MANAGER	<u>R. Cook</u>	MIX TEMP	<u>N/A °F</u>
TECHNICIAN	<u>Client</u>	AIR TEMP	<u>N/A °F</u>
REVIEWED BY		AIR CONTENT	<u>N/A %</u>
		UNIT WEIGHT	<u>N/A pcf</u>

SAMPLE NO.	DIAMETER (IN)	X-SECT AREA (SQ IN)	DATE RECD	DATE TESTED	AGE OF SPECIMEN (DAYS)	TOTAL LOAD (LBS)	UNIT LOAD (PSI)	TYPE OF FRACTURE
16996-A	6.00	28.27	4/20/2009	4/24/2009	7	104270	3690	2
16996-B	6.00	28.27	4/20/2009	5/1/2009	14	136620	4830	2
16996-C	6.00	28.27	4/20/2009	5/8/2009	21	134300	4750	3
16996-D	6.00	28.27	4/20/2009	5/15/2009	28	144090	5100	2

REMARKS/DEFECTS _____

TYPES OF FRACTURE





7150 Placid Street
 Las Vegas, Nevada 89119
 702.365.1001

CONCRETE COMPRESSION TEST RESULTS

JOB NAME BRC JOB # 20092524V1
 CLIENT Geosyntec
 ADDRESS N/A REPORT # 2
 SAMPLE DATE 4/20/2009 PERMIT # N/A

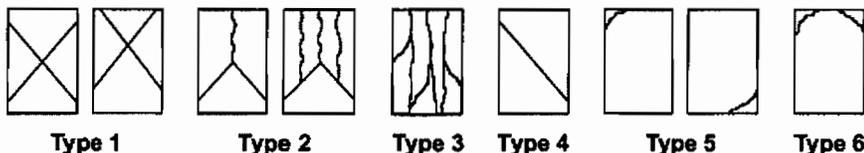
STRUCTURE N/A
 LOCATION OF SAMPLE N/A

GENERAL CONTRACTOR	<u>N/A</u>	MIX #	<u>N/A</u>
CONCRETE CONTRACTOR	<u>N/A</u>	TRUCK #	<u>N/A</u>
CONCRETE SUPPLIER	<u>N/A</u>	TICKET #	<u>N/A</u>
WEATHER	<u>Warm/Clear</u>	WATER	
28 DAY STRENGTH	<u>3000 psi</u>	ADDED	<u>N/A gal.</u>
TEST METHOD	ASTM C 39 ___ ASTM C 1064 ___ ASTM C 173 ___ ASTM C 143 ___ ASTM C 138 ___ OTHER <u>ASTM C31</u>	SLUMP	<u>N/A in.</u>
PROJECT MANAGER	<u>R. Cook</u>	MIX TEMP	<u>N/A °F</u>
TECHNICIAN	<u>Client</u>	AIR TEMP	<u>N/A °F</u>
REVIEWED BY		AIR CONTENT	<u>N/A %</u>
		UNIT WEIGHT	<u>N/A pcf</u>

SAMPLE NO.	DIAMETER (IN)	X-SECT AREA (SQ IN)	DATE RECVD	DATE TESTED	AGE OF SPECIMEN (DAYS)	TOTAL LOAD (LBS)	UNIT LOAD (PSI)	TYPE OF FRACTURE
17008-A	6.00	28.27	4/21/2009	4/27/2009	7	93550	3310	2
17008-B	6.00	28.27	4/21/2009	5/4/2009	14	138930	4910	2
17008-C	6.00	28.27	4/21/2009	5/11/2009	21	139640	4940	2
17008-D	6.00	28.27	4/21/2009	5/18/2009	28	162990	5760	2

REMARKS/DEFECTS _____

TYPES OF FRACTURE





7150 Placid Street
 Las Vegas, Nevada 89119
 702.365.1001

CONCRETE COMPRESSION TEST RESULTS

JOB NAME BRC JOB # 20092524V1
 CLIENT Geosyntec
 ADDRESS N/A REPORT # 3
 SAMPLE DATE 4/21/2009 PERMIT # N/A

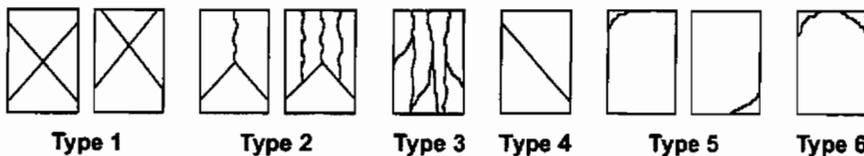
STRUCTURE N/A
 LOCATION OF SAMPLE N/A

GENERAL CONTRACTOR	<u>N/A</u>	MIX #	<u>N/A</u>
CONCRETE CONTRACTOR	<u>N/A</u>	TRUCK #	<u>N/A</u>
CONCRETE SUPPLIER	<u>N/A</u>	TICKET #	<u>N/A</u>
WEATHER	<u>Warm/Clear</u>	WATER	
28 DAY STRENGTH	<u>3000 psi</u>	ADDED	<u>N/A gal.</u>
TEST METHOD	ASTM C 39 <input type="checkbox"/> ASTM C 1064 <input type="checkbox"/> ASTM C 173 <input type="checkbox"/> ASTM C 143 <input type="checkbox"/> ASTM C 138 <input type="checkbox"/> OTHER <u>ASTM C31</u>	SLUMP	<u>N/A in.</u>
PROJECT MANAGER	<u>R. Cook</u>	MIX TEMP	<u>N/A °F</u>
TECHNICIAN	<u>Client</u>	AIR TEMP	<u>N/A °F</u>
REVIEWED BY		AIR CONTENT	<u>N/A %</u>
		UNIT WEIGHT	<u>N/A pcf</u>

SAMPLE NO.	DIAMETER (IN)	X-SECT AREA (SQ IN)	DATE RECVD	DATE TESTED	AGE OF SPECIMEN (DAYS)	TOTAL LOAD (LBS)	UNIT LOAD (PSI)	TYPE OF FRACTURE
17009-A	6.00	28.27	4/22/2009	4/28/2009	7	105590	3730	2
17009-B	6.00	28.27	4/22/2009	5/5/2009	14	125370	4430	2
17009-C	6.00	28.27	4/22/2009	5/12/2009	21	136910	4840	2
17009-D	6.00	28.27	4/22/2009	5/19/2009	28	146000	5160	2

REMARKS/DEFECTS _____

TYPES OF FRACTURE





7150 Placid Street
 Las Vegas, Nevada 89119
 702.365.1001

CONCRETE COMPRESSION TEST RESULTS

JOB NAME BRC JOB # 20092524V1
 CLIENT Geosyntec
 ADDRESS N/A REPORT # 4
 SAMPLE DATE 4/23/2009 PERMIT # N/A

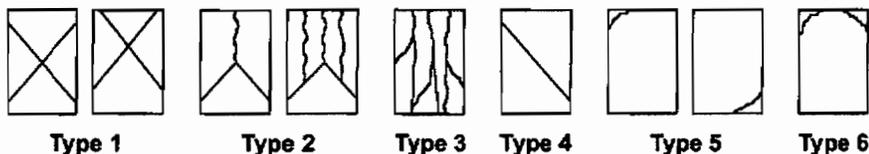
STRUCTURE N/A
 LOCATION OF SAMPLE N/A

GENERAL CONTRACTOR	<u>N/A</u>	MIX #	<u>N/A</u>
CONCRETE CONTRACTOR	<u>N/A</u>	TRUCK #	<u>N/A</u>
CONCRETE SUPPLIER	<u>N/A</u>	TICKET #	<u>N/A</u>
WEATHER	<u>Warm/Clear</u>	WATER	
28 DAY STRENGTH	<u>3000 psi</u>	ADDED	<u>N/A gal.</u>
TEST METHOD	ASTM C 39 <input type="checkbox"/> ASTM C 1064 <input type="checkbox"/>	SLUMP	<u>N/A in.</u>
	ASTM C 173 <input type="checkbox"/> ASTM C 143 <input type="checkbox"/>	MIX TEMP	<u>N/A °F</u>
	ASTM C 138 <input type="checkbox"/> OTHER <u>ASTM C31</u>	AIR TEMP	<u>N/A °F</u>
PROJECT MANAGER	<u>R. Cook</u>	AIR CONTENT	<u>N/A %</u>
TECHNICIAN	<u>Client</u>	UNIT WEIGHT	<u>N/A pcf</u>
REVIEWED BY			

SAMPLE NO.	DIAMETER (IN)	X-SECT AREA (SQ IN)	DATE RECD	DATE TESTED	AGE OF SPECIMEN (DAYS)	TOTAL LOAD (LBS)	UNIT LOAD (PSI)	TYPE OF FRACTURE
17015-A	6.00	28.27	4/24/2009	5/1/2009	8	87590	3100	3
17015-B	6.00	28.27	4/24/2009	5/7/2009	14	92970	3290	2
17015-C	6.00	28.27	4/24/2009	5/14/2009	21	109470	3870	2
17015-D	6.00	28.27	4/24/2009	5/21/2009	28	117510	4160	2

REMARKS/DEFECTS _____

TYPES OF FRACTURE





7150 Placid Street
Las Vegas, Nevada 89119
702.365.1001

CONCRETE COMPRESSION TEST RESULTS

JOB NAME BRC/CAMU JOB # 20092601C1
 CLIENT Geosyntec Consultants
 ADDRESS 110 S. Warm Springs Rd. REPORT # 6
 SAMPLE DATE 8/12/2009 PERMIT # N/A

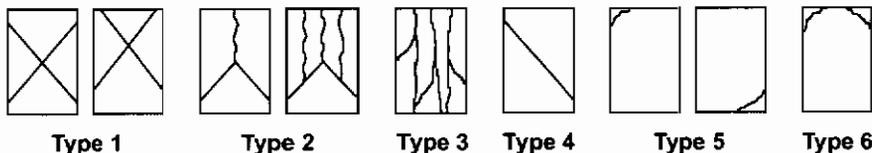
STRUCTURE N/A
 LOCATION OF SAMPLE SDMH# 3

GENERAL CONTRACTOR	<u>Entact</u>	MIX #	<u>SF232</u>
CONCRETE CONTRACTOR	<u>Jenson Precast</u>	TRUCK #	<u>1</u>
CONCRETE SUPPLIER	<u>Silver State Materials</u>	TICKET #	<u>69883</u>
WEATHER	<u>Clear/Hot</u>	WATER	
28 DAY STRENGTH	<u>3000 psi</u>	ADDED	<u>0 gal.</u>
TEST METHOD	ASTM C 39 <input checked="" type="checkbox"/> ASTM C 1064 <input checked="" type="checkbox"/> ASTM C 173 <input type="checkbox"/> ASTM C 143 <input checked="" type="checkbox"/> ASTM C 138 <input type="checkbox"/> OTHER <u>ASTM C31</u>	SLUMP	<u>3 in.</u>
PROJECT MANAGER	<u>P. Simpsons, P.E</u>	MIX TEMP	<u>88 °F</u>
TECHNICIAN	<u>Client</u>	AIR TEMP	<u>99 °F</u>
REVIEWED BY	<u>PES</u>	AIR CONTENT	<u>N/A %</u>
		UNIT WEIGHT	<u>N/A pcf</u>

SAMPLE NO.	DIAMETER (IN)	X-SECT AREA (SQ IN)	DATE RECVD	DATE TESTED	AGE OF SPECIMEN (DAYS)	TOTAL LOAD (LBS)	UNIT LOAD (PSI)	TYPE OF FRACTURE
17257-A	6.00	28.27	8/13/2009	8/19/2009	7	100260	3550	2
17257-B	6.00	28.27	8/13/2009	8/26/2009	14	130460	4610	3
17257-C	6.00	28.27	8/13/2009	9/9/2009	28	143100	5060	2
17257-D	6.00	28.27	8/13/2009	9/9/2009	28	146440	5180	2

REMARKS/DEFECTS Sampled by client. Slump and temperature data from client

TYPES OF FRACTURE





7150 Placid Street
Las Vegas, Nevada 89119
702.365.1001

CONCRETE COMPRESSION TEST RESULTS

JOB NAME BRC/CAMU **JOB #** 20092601C1
CLIENT Geosyntec Consultants
ADDRESS 110 S. Warm Springs Rd. **REPORT #** 7
SAMPLE DATE 8/25/2009 **PERMIT #** N/A

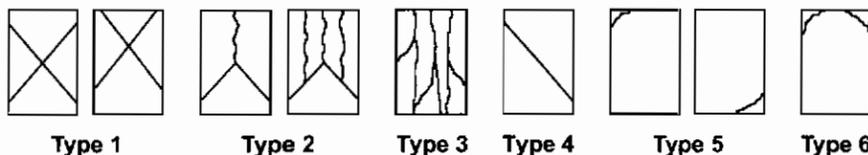
STRUCTURE Storm Drain Headwall #3
LOCATION OF SAMPLE Storm Drain Headwall #3

GENERAL CONTRACTOR <u>Entact</u>	MIX # <u>SF232</u>
CONCRETE CONTRACTOR <u>Jenson Precast</u>	TRUCK # <u>75</u>
CONCRETE SUPPLIER <u>Silver State Materials</u>	TICKET # <u>257916</u>
WEATHER <u>Clear/Hot, Light Breeze</u>	WATER
28 DAY STRENGTH <u>3000 psi</u>	ADDED <u>0 gal.</u>
TEST METHOD <u>ASTM C 39</u> <input type="checkbox"/> <u>ASTM C 1064</u> <input type="checkbox"/>	SLUMP <u>3 in.</u>
<u>ASTM C 173</u> <input type="checkbox"/> <u>ASTM C 143</u> <input type="checkbox"/>	MIX TEMP <u>80 °F</u>
<u>ASTM C 138</u> <input type="checkbox"/> <u>OTHER</u> <u>ASTM C31</u> <input type="checkbox"/>	AIR TEMP <u>98 °F</u>
PROJECT MANAGER <u>P. Simpsons, P.E</u>	AIR CONTENT <u>N/A %</u>
TECHNICIAN <u>Client</u>	UNIT WEIGHT <u>N/A pcf</u>
REVIEWED BY <u><i>PES</i></u>	

SAMPLE NO.	DIAMETER (IN)	X-SECT AREA (SQ IN)	DATE RECVD	DATE TESTED	AGE OF SPECIMEN (DAYS)	TOTAL LOAD (LBS)	UNIT LOAD (PSI)	TYPE OF FRACTURE
17306-A	6.00	28.27	8/26/2009	9/1/2009	7	114280	4040	2
17306-B	6.00	28.27	8/26/2009	9/8/2009	14	140310	4960	3
17306-C	6.00	28.27	8/26/2009	9/22/2009	28	158100	5590	2
17306-D	6.00	28.27	8/26/2009	9/22/2009	28	157810	5580	3

REMARKS/DEFECTS Sampled by client. Slump and temperature data from client

TYPES OF FRACTURE





7150 Placid Street
Las Vegas, Nevada 89119
702.365.1001

CONCRETE COMPRESSION TEST RESULTS

JOB NAME BRC/CAMU JOB # 20092601C1
 CLIENT Geosyntec Consultants
 ADDRESS 110 S. Warm Springs Rd. REPORT # 8
 SAMPLE DATE 8/26/2009 PERMIT # N/A

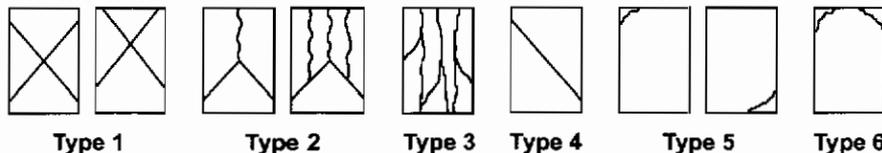
STRUCTURE Electrical Panel Bases
 LOCATION OF SAMPLE Phase 111B Electrical panel Base

GENERAL CONTRACTOR	<u>Entact</u>	MIX #	<u>SF232</u>
CONCRETE CONTRACTOR	<u>Jenson Precast</u>	TRUCK #	<u>75</u>
CONCRETE SUPPLIER	<u>Silver State Materials</u>	TICKET #	<u>H-257961</u>
WEATHER	<u>Clear/Hot</u>	WATER	
28 DAY STRENGTH	<u>3000 psi</u>	ADDED	<u>5 gal.</u>
TEST METHOD	ASTM C 39 ___ ASTM C 1064 ___ ASTM C 173 ___ ASTM C 143 ___ ASTM C 138 ___ OTHER <u>ASTM C 31</u>	SLUMP	<u>3 in.</u>
PROJECT MANAGER	<u>P. Simpson, P.E</u>	MIX TEMP	<u>83 °F</u>
TECHNICIAN	<u>Client</u>	AIR TEMP	<u>92 °F</u>
REVIEWED BY	<u>PES</u>	AIR CONTENT	<u>N/A %</u>
		UNIT WEIGHT	<u>N/A pcf</u>

SAMPLE NO.	DIAMETER (IN)	X-SECT AREA (SQ IN)	DATE RECVD	DATE TESTED	AGE OF SPECIMEN (DAYS)	TOTAL LOAD (LBS)	UNIT LOAD (PSI)	TYPE OF FRACTURE
17312-A	6.00	28.27	8/28/2009	9/2/2009	7	126070	4460	2
17312-B	6.00	28.27	8/28/2009	9/9/2009	14	140370	4960	2
17312-C	6.00	28.27	8/28/2009	9/23/2009	28	158150	5590	3
17312-D	6.00	28.27	8/28/2009	9/23/2009	28	156490	5530	3

REMARKS/DEFECTS Sampled by client. Slump and temperature data from client

TYPES OF FRACTURE



APPENDIX H

Construction Record Drawings



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company
 875 West Warm Springs Road
 Henderson, NV 89011
 TEL#: (702)-568-2888 FAX#: (702)-567-0475
 ATTENTION: Lee C. Farris, P.E.

DATE: 10/12/09
 JOB NAME: BRC EASTSIDE COMMON AREAS
 SOIL REMEDIATION PROJECT
 TRANSMITTAL NUMBER: 331
 ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	10/12/09			Submittal 02200-002FF - Phase IIIA Final Waste Surface As-Built	RC

ACTION (*)

AR - AS REQUESTED	FA - FOR APPROVAL
F - FILE	RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE

COPY TO: Ranajit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....



10/12/2009

Attn: Erik Gehringer, Project Manager
ENTACT Environmental Services, LLC
699 South Friendswood Drive
Friendswood, TX. 77546

Re: Corrective Action Management Unit (CAMU), Phase IIIA – Final Waste As-Built

Mr. Gehringer,

Absolute Boundary & Control Solutions (ABCS) recently collected survey data within CAMU Phase IIIA to determine if said area was constructed in a fashion consistent with the Final Waste Design and coordinates provided by ENTACT. The attached Report reflects the results of this effort.

It should be noted that this report encompasses all of Phase IIIA but is being provided in advance of a complete and final report which will be prepared in accordance with the Project Technical Specifications and provided at a later date.

If you have any questions or if we can be of further assistance do not hesitate to call.

Sincerely,

Craig A. Givant, PLS
President

(702) 953-7452
(702) 839-9750 fax

CAMU PHASE IIIA – Final Waste As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
33000	23227	16822.5744	14142.8175	1817.27	1817.265	-0.02	-0.02	0.01	As-Built
33014	23226	16883.287	14154.488	1816.196	1816.170	0.04	-0.08	0.03	As-Built
33013	23225	16948.424	14167.008	1815.627	1815.587	-0.04	-0.07	0.04	As-Built
33012	23224	16991.921	14175.369	1815.403	1815.388	0.00	0.02	0.02	As-Built
33011	23223	17020.897	14182.743	1814.899	1814.869	0.02	-0.02	0.03	As-Built
33010	23222	16992.432	14207.372	1816.184	1816.113	-0.02	-0.01	0.07	As-Built
33009	23221	16958.945	14238.489	1816.950	1816.940	-0.10	-0.08	0.01	As-Built
33008	23220	16916.513	14281.018	1817.307	1817.270	-0.06	-0.01	0.04	As-Built
33007	23219	16899.595	14305.320	1817.495	1817.453	0.00	0.09	0.04	As-Built
33006	23218	16893.951	14318.190	1817.606	1817.560	-0.02	0.03	0.05	As-Built
33005	23217	16873.746	14314.326	1817.463	1817.438	-0.08	-0.03	0.03	As-Built
33029	23216	16855.434	14310.823	1817.334	1817.330	0.03	0.03	0.00	As-Built
33004	23215	16845.750	14308.971	1817.617	1817.616	0.00	-0.07	0.00	As-Built
33003	23230	16840.865	14272.213	1817.622	1817.565	-0.01	0.06	0.06	As-Built
33002	23229	16835.561	14234.605	1817.524	1817.453	0.04	0.01	0.07	As-Built
33001	23228	16828.561	14184.971	1817.395	1817.346	-0.04	-0.04	0.05	As-Built
33028	23231	16863.311	14276.773	1817.000	1816.983	-0.01	-0.02	0.02	As-Built
33027	23232	16886.854	14222.604	1816.472	1816.431	-0.01	-0.04	0.04	As-Built
33026	23233	16907.909	14174.161	1816.000	1815.960	0.05	-0.07	0.04	As-Built
33015	23177	16793.015	14317.056	1799.834	1799.784	-0.07	-0.02	0.05	As-Built
33025	23214	16798.595	14332.940	1800.000	1799.969	0.01	0.01	0.03	As-Built
33016	23213	16808.623	14345.348	1800.301	1800.276	-0.03	0.03	0.02	As-Built

CAMU PHASE IIIA – Final Waste As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
33017	23212	16831.760	14356.771	1801.000	1800.956	0.03	-0.03	0.04	As-Built
33018	23211	16846.914	14357.708	1801.457	1801.421	0.04	0.02	0.04	As-Built
33019	23210	16865.137	14359.903	1802.000	1801.980	-0.06	-0.06	0.02	As-Built
33020	23209	16884.064	14365.586	1801.433	1801.416	-0.03	0.03	0.02	As-Built
33021	23208	16898.405	14367.872	1801.000	1800.973	0.06	-0.07	0.03	As-Built
33022	23207	16915.513	14364.974	1800.481	1800.458	-0.03	0.00	0.02	As-Built
33023	23206	16931.339	14355.604	1800.000	1799.954	0.04	-0.04	0.05	As-Built
33024	23178	16943.410	14339.688	1799.631	1799.577	-0.06	0.03	0.05	As-Built
33036	23179	16928.024	14376.213	1800.098	1800.077	0.01	-0.02	0.02	As-Built
33037	23180	16926.220	14385.540	1800.153	1800.144	0.01	0.01	0.01	As-Built
33038	23181	16922.031	14440.079	1800.288	1800.268	-0.01	0.02	0.02	As-Built
33039	23182	16918.258	14490.400	1800.410	1800.386	-0.01	0.00	0.02	As-Built
33040	23183	16915.129	14532.451	1800.511	1800.477	-0.02	0.03	0.03	As-Built
33041	23184	16911.966	14574.627	1800.614	1800.589	0.01	-0.02	0.03	As-Built
33042	23185	16899.325	14612.421	1801.000	1800.992	-0.06	0.04	0.01	As-Built
33043	23186	16887.185	14648.706	1801.370	1801.344	-0.01	0.00	0.03	As-Built
33044	23168	16875.139	14684.693	1801.738	1801.719	-0.04	0.01	0.02	As-Built
33045	23167	16873.301	14689.926	1801.802	1801.735	0.01	0.05	0.07	As-Built
33046	23163	16855.329	14690.324	1801.654	1801.616	0.01	-0.01	0.04	As-Built
33047	23164	16853.381	14690.353	1801.589	1801.534	0.03	0.08	0.05	As-Built
33048	23165	16852.772	14688.720	1801.562	1801.486	-0.01	0.00	0.08	As-Built
33049	23171	16842.540	14632.467	1801.265	1801.253	0.01	-0.05	0.01	As-Built
33050	23172	16833.418	14581.070	1801.000	1800.983	-0.05	0.04	0.02	As-Built

CAMU PHASE IIIA – Final Waste As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
33051	23173	16825.012	14531.481	1800.756	1800.708	-0.05	-0.05	0.05	As-Built
33052	23174	16816.811	14478.673	1800.519	1800.464	-0.02	0.00	0.06	As-Built
33053	23175	16807.403	14415.573	1800.248	1800.201	-0.01	0.00	0.05	As-Built
33054	23176	16800.469	14368.132	1800.048	1800.037	-0.03	-0.03	0.01	As-Built
33030	23191	16865.279	14408.315	1802.000	1801.968	-0.02	0.06	0.03	As-Built
33031	23190	16865.651	14473.072	1802.000	1801.983	-0.02	0.05	0.02	As-Built
33032	23189	16865.964	14527.530	1802.000	1801.970	0.00	-0.01	0.03	As-Built
33033	23188	16866.246	14576.606	1802.000	1801.991	0.00	-0.05	0.01	As-Built
33034	23187	16866.548	14629.218	1802.000	1801.935	-0.03	0.00	0.07	As-Built
33035	23166	16866.897	14689.861	1802.000	1801.989	-0.02	0.04	0.01	As-Built
33055	23114	16820.705	14694.127	1790.755	1790.732	0.03	0.01	0.02	As-Built
33056	23159	16830.475	14712.386	1791.000	1790.930	0.04	-0.05	0.07	As-Built
33057	23158	16842.663	14719.197	1791.350	1791.288	0.04	-0.05	0.06	As-Built
33058	23157	16855.095	14720.120	1791.723	1791.679	0.01	0.03	0.04	As-Built
33059	23156	16864.290	14719.361	1792.000	1791.938	0.00	-0.03	0.06	As-Built
33060	23155	16874.192	14720.125	1791.707	1791.627	-0.02	-0.01	0.08	As-Built
33062	23153	16896.785	14712.147	1791.000	1790.954	-0.02	0.01	0.05	As-Built
33063	23152	16902.994	14704.459	1790.789	1790.763	0.04	-0.07	0.03	As-Built
33064	23151	16907.005	14694.339	1790.640	1790.590	0.00	-0.01	0.05	As-Built
33065	23154	16887.023	14718.280	1791.314	1791.291	0.02	-0.03	0.02	As-Built
33066	23148	16905.465	14715.149	1790.743	1790.711	0.07	-0.02	0.03	As-Built
33067	23147	16903.623	14749.039	1790.892	1790.875	0.02	-0.01	0.02	As-Built
33068	23144	16901.584	14792.362	1791.073	1791.018	0.03	0.00	0.06	As-Built

CAMU PHASE IIIA – Final Waste As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
33069	23143	16900.350	14822.322	1791.193	1791.144	-0.01	0.01	0.05	As-Built
33070	23134	16899.115	14854.083	1791.321	1791.277	0.00	0.00	0.04	As-Built
33071	23127	16876.679	14853.148	1792.000	1791.980	0.02	0.05	0.02	As-Built
33072	23126	16858.461	14852.325	1791.453	1791.445	0.07	0.00	0.01	As-Built
33073	23119	16846.691	14834.963	1791.141	1791.126	0.00	-0.04	0.02	As-Built
33074	23118	16840.845	14803.785	1791.052	1791.020	-0.01	-0.01	0.03	As-Built
33075	23117	16834.980	14772.500	1790.964	1790.943	0.03	0.00	0.02	As-Built
33076	23116	16828.169	14736.171	1790.861	1790.788	-0.02	-0.04	0.07	As-Built
33077	23160	16868.525	14764.862	1792.000	1791.970	0.05	0.02	0.03	As-Built
33078	23161	16871.312	14795.025	1792.000	1791.947	0.06	0.01	0.05	As-Built
33079	23162	16874.421	14828.460	1792.000	1791.954	0.03	0.01	0.05	As-Built

I, Craig A. Givant, a Professional Land Surveyor registered in the State of Nevada, certify (as defined by Nevada Revised Statutes 625.403) that:

1. This report and any Land Surveying Practices (N.R.S. 625.040) on which it is based were performed directly by me or under my responsible charge (N.R.S. 625.080) in accordance with the Standards and Practices Governing Land Surveyors in the State of Nevada as defined by any applicable sections of the Nevada Revised Statutes (N.R.S.) or the Nevada Administrative Code (N.A.C.).
2. By affixing my official seal and signature below I am confirming that I am a Registered Land Surveyor in the State of Nevada and thereby satisfy the requirements of Section 01050, Part 1.03, Subpart A or the Project Technical Specifications.



SURVEY DATA

As required by the project specification Absolute Boundary & Control Solutions (ABCS) utilized field survey methods which resulted in precisions equal to or better than the following:

Horizontal Coordinates: $\pm 1.0'$ (One Foot)

Vertical Coordinates: $\pm 0.10'$ (One Tenth of a Foot)

1. Coordinate Printout of the reduced (measured) coordinates from the Field Collection Efforts.

Point No.	Northing	Easting	Elevation	Description
23095	14153.98	16738.68	1789.03	mid
23096	14195.86	16746.64	1789.79	mid
23097	14244.92	16758.29	1791.52	mid
23098	14282.59	16763.14	1791.42	mid
23099	14320.75	16765.81	1790.62	mid
23100	14372.10	16770.98	1790.10	mid
23101	14419.87	16776.00	1789.66	mid
23102	14483.01	16784.24	1789.54	mid
23103	14536.59	16793.38	1790.11	mid
23104	14586.72	16798.39	1789.16	mid
23105	14638.24	16806.58	1789.09	mid
23106	14695.47	16812.79	1788.03	mid
23107	14737.87	16818.56	1787.56	mid
23108	14774.45	16824.52	1787.36	mid
23109	14806.87	16823.79	1785.22	mid
23114	16820.68	14694.12	1790.73	1st Toe
23115	16825.25	14705.34	1790.95	1st Toe
23116	16828.19	14736.21	1790.79	1st Top
23117	16834.95	14772.50	1790.94	1st Top
23118	16840.86	14803.80	1791.02	1st Top
23119	16846.69	14835.00	1791.13	1st Top
23120	14841.82	16828.64	1784.76	mid
23125	14875.95	16842.36	1782.70	mid
23126	16858.39	14852.33	1791.45	1st Top
23127	16876.66	14853.10	1791.98	1st crown
23128	14879.84	16872.49	1783.11	mid
23133	14876.06	16900.19	1783.98	mid

Point No.	Northing	Easting	Elevation	Description
23134	16899.12	14854.08	1791.28	1st Top
23135	14878.36	16909.36	1782.99	mid
23136	14866.32	16918.99	1784.50	mid
23137	14854.72	16923.99	1782.99	mid
23142	14823.02	16926.45	1782.47	mid
23143	16900.36	14822.32	1791.14	1st Top
23144	16901.56	14792.37	1791.02	1st Top
23145	14792.93	16922.08	1784.19	mid
23146	14749.96	16924.17	1783.98	mid
23147	16903.61	14749.05	1790.88	1st Top
23148	16905.40	14715.17	1790.71	1st Top
23149	14716.03	16926.08	1783.81	mid
23150	14698.46	16928.09	1783.47	mid
23151	16907.01	14694.35	1790.59	1st Toe
23152	16902.96	14704.53	1790.76	1st Toe
23153	16896.80	14712.14	1790.95	1st Toe
23154	16887.00	14718.31	1791.29	1st Toe
23155	16874.21	14720.13	1791.63	1st Toe
23156	16864.29	14719.39	1791.94	1st Toe-crown
23157	16855.09	14720.09	1791.68	1st Toe
23158	16842.62	14719.24	1791.29	1st Toe
23159	16830.43	14712.43	1790.93	1st Toe
23160	16868.48	14764.84	1791.97	1st crown
23161	16871.26	14795.01	1791.95	1st crown
23162	16874.39	14828.45	1791.95	1st crown
23163	16855.32	14690.33	1801.62	2nd Top
23164	16853.35	14690.28	1801.53	2nd Top
23165	16852.78	14688.72	1801.49	2nd Top
23166	16866.92	14689.83	1801.99	2nd Crown
23167	16873.29	14689.88	1801.74	2nd Top
23168	16875.18	14684.68	1801.72	2nd Top
23171	16842.53	14632.52	1801.25	2nd Top
23172	16833.47	14581.03	1800.98	2nd Top
23173	16825.06	14531.53	1800.71	2nd Top
23174	16816.83	14478.67	1800.46	2nd Top
23175	16807.42	14415.57	1800.20	2nd Top
23176	16800.50	14368.16	1800.04	2nd Top
23177	16793.08	14317.07	1799.78	3rd Toe
23178	16943.47	14339.66	1799.58	3rd Toe
23179	16928.02	14376.24	1800.08	2nd Top

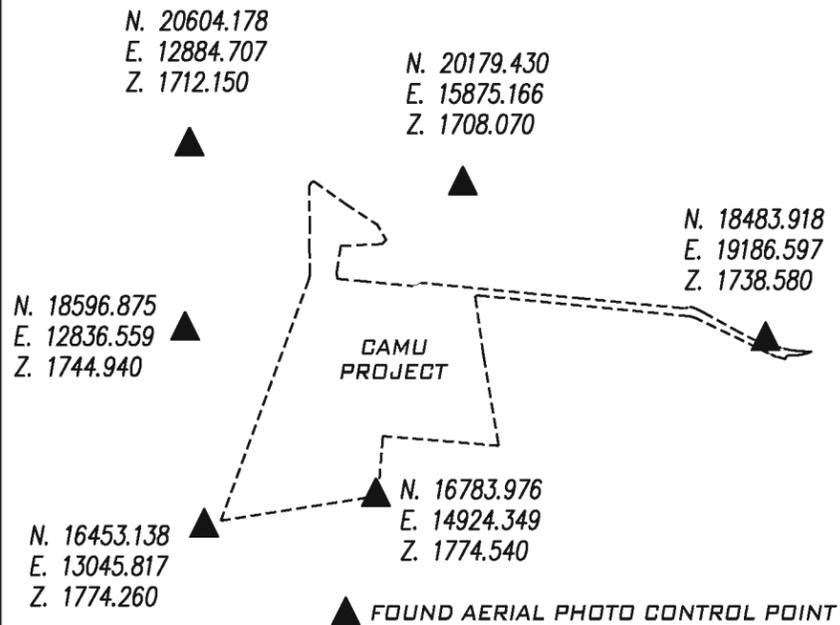
Point No.	Northing	Easting	Elevation	Description
23180	16926.21	14385.53	1800.14	2nd Top
23181	16922.05	14440.06	1800.27	2nd Top
23182	16918.27	14490.40	1800.39	2nd Top
23183	16915.15	14532.42	1800.48	2nd Top
23184	16911.95	14574.64	1800.59	2nd Top
23185	16899.39	14612.38	1800.99	2nd Top
23186	16887.19	14648.71	1801.34	2nd Top
23187	16866.58	14629.22	1801.94	2nd Crown
23188	16866.25	14576.66	1801.99	2nd Crown
23189	16865.97	14527.54	1801.97	2nd Crown
23190	16865.67	14473.03	1801.98	2nd Crown
23191	16865.30	14408.25	1801.97	2nd Crown
23192	14358.14	16987.01	1783.84	mid
23193	14387.92	16977.93	1783.01	mid
23194	14391.98	16977.30	1782.98	mid
23195	14443.41	16971.38	1783.78	mid
23196	14493.71	16967.13	1784.09	mid
23197	14535.89	16966.80	1783.24	mid
23198	14583.77	16961.97	1783.74	mid
23199	14627.26	16948.24	1783.92	mid
23200	14664.26	16938.68	1783.43	mid
23206	16931.30	14355.64	1799.95	3rd Toe
23207	16915.54	14364.97	1800.46	3rd Toe
23208	16898.34	14367.94	1800.97	3rd Toe
23209	16884.10	14365.55	1801.42	3rd Toe
23210	16865.20	14359.97	1801.98	3rd Toe-crown
23211	16846.87	14357.69	1801.42	3rd Toe
23212	16831.73	14356.80	1800.96	3rd Toe
23213	16808.65	14345.32	1800.28	3rd Toe
23214	16798.59	14332.93	1799.97	3rd Toe
23215	16845.75	14309.04	1817.62	3rd Top
23216	16855.41	14310.79	1817.33	3rd FL
23217	16873.82	14314.36	1817.44	3rd Top
23218	16893.97	14318.16	1817.56	3rd Top
23219	16899.59	14305.23	1817.45	3rd Top
23220	16916.58	14281.03	1817.27	3rd Top
23221	16959.04	14238.57	1816.94	3rd Top
23222	16992.45	14207.38	1816.11	3rd Top
23223	17020.88	14182.76	1814.87	3rd Top
23224	16991.92	14175.35	1815.39	3rd Top

Point No.	Northing	Easting	Elevation	Description
23225	16948.46	14167.08	1815.59	3rd Top
23226	16883.25	14154.56	1816.17	3rd Top
23227	16822.60	14142.84	1817.27	3rd Top
23228	16828.60	14185.01	1817.35	3rd Top
23229	16835.53	14234.60	1817.45	3rd Top
23230	16840.88	14272.16	1817.57	3rd Top
23231	16863.32	14276.79	1816.98	3rd FL
23232	16886.87	14222.64	1816.43	3rd FL
23233	16907.86	14174.23	1815.96	3rd FL
23234	14300.95	16940.84	1806.85	mid
23235	14346.96	16996.87	1782.76	mid
23236	14314.34	17035.71	1780.93	mid
23237	14274.05	16994.93	1800.07	mid
23238	14244.60	17030.39	1798.37	mid
23239	14282.37	17068.92	1780.42	mid
23240	14260.41	17099.72	1778.17	mid
23241	17118.88	14279.40	1769.20	toe-1
23243	14220.48	17059.16	1797.02	mid
23408	16704.82	14201.46	1775.78	933117
23409	16712.12	14251.04	1775.98	933116
23410	16723.03	14326.41	1776.28	933114
23411	16730.39	14377.43	1776.53	933113
23412	16737.35	14425.01	1776.66	933112
23413	16746.52	14488.05	1776.98	933111
23414	16754.53	14542.75	1777.05	933110
23415	16769.71	14644.30	1776.63	933108
23416	16778.14	14701.03	1776.47	933107
23420	17005.49	14538.46	1770.43	933088
23421	17012.71	14446.09	1769.97	933086
23422	17060.13	14338.47	1769.52	933082
23423	17092.58	14305.65	1769.40	933081
23430	16827.04	14898.18	1774.46	733102
23431	16868.05	14908.28	1773.57	733101
23432	16922.14	14908.50	1772.74	733099
23433	16954.62	14887.98	1772.45	733098
23434	16956.69	14855.69	1772.10	733097
23435	16958.55	14823.88	1771.71	733096
23436	16959.96	14794.07	1771.57	733095
23437	16962.13	14751.60	1771.32	733094
23438	16964.14	14717.79	1771.11	733093

Point No.	Northing	Easting	Elevation	Description
23439	16901.88	14908.88	1773.04	733100
23440	16801.81	14852.04	1775.33	733103
23441	16795.42	14811.91	1775.63	733104
23442	16790.49	14780.48	1775.89	733105
23443	16784.76	14743.94	1776.17	733106
23444	16762.08	14592.53	1776.85	733109
23446	16698.68	14159.21	1775.59	733118
23448	16964.84	14705.56	1771.14	733092
23449	16974.47	14675.09	1770.98	733091
23450	16985.98	14638.77	1770.79	733090
23451	17001.11	14590.95	1770.55	733089
23452	17008.80	14496.46	1770.19	733087
23453	17016.67	14396.96	1769.88	733085
23454	17027.34	14371.86	1769.74	733083
23455	17025.95	14374.72	1769.71	733084
23456	17118.98	14279.48	1769.14	733080

PROJECT CONTROL

1" = 2000'



▲ FOUND AERIAL PHOTO CONTROL POINT

BENCHMARK

CLARK COUNTY BENCHMARK (6C22 2E4), BEING A RIVET AND SQUARE ALUMINUM PLATE IN A CONCRETE CENTERLINE ISLAND, 4' WEST OF THE NOSE IN THE MIDDLE OF SUNSET ROAD, WEST SIDE OF THE INTERSECTION OF BOULDER HIGHWAY AND SUNSET ROAD.

PUBLISHED ELEVATION - 505.816 METERS = 1659.50 FEET
NAVD 1988 DATUM - PUBLISHED (2003)

BASIS OF BEARINGS

SOUTH 85°36'52" WEST, BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND CC-GIS W51", AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

COORDINATE SYSTEM

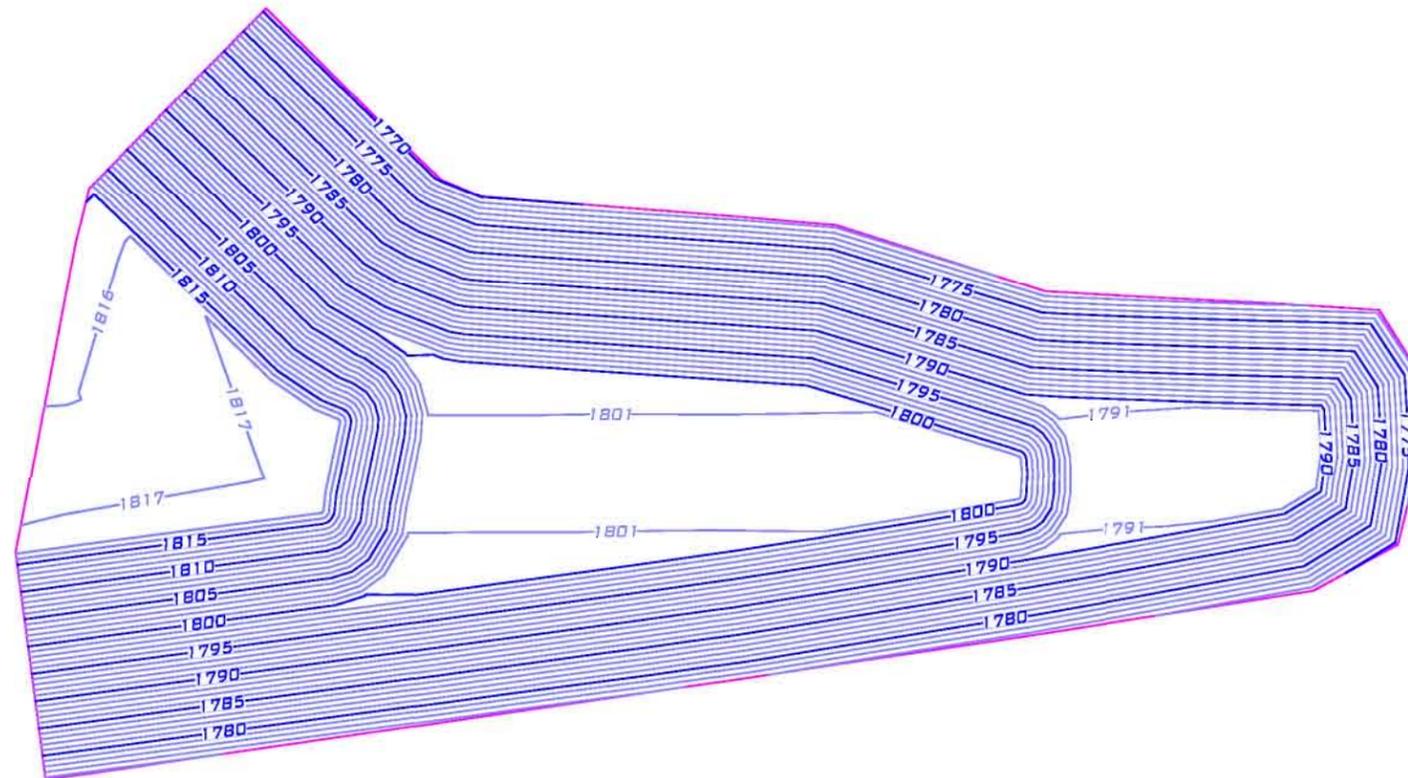
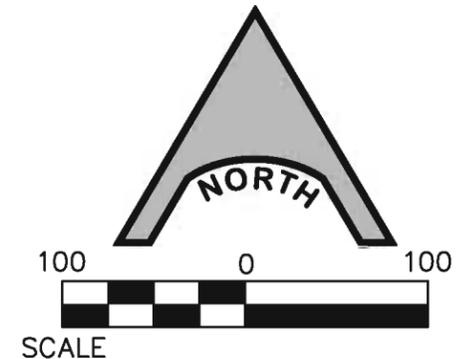
THE COORDINATE SYSTEM AND ASSOCIATED BEARING ROTATION INFORMATION WAS ESTABLISHED AND PROVIDED BY PBS&J.

LINE LEGEND

- MAJOR CONTOUR
- MINOR CONTOUR
- SURVEY LIMITS

SURFACE DETAILS

THE SURFACE SHOWN BELOW WAS GENERATED BASED UPON AS-BUILT DATA COLLECTED BY ABSOLUTE BOUNDARY & CONTROL SOLUTIONS. IT REPRESENTS THE FINAL CAMU PHASE IIIA WASTE PLACEMENT.



NO.	REVISION	DATE
△		
△		
△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)

PHASE IIIA FINAL WASTE AS-BUILT

FIELD SURVEY DATE: JULY THRU OCTOBER, 2009
FIELD CREW: G.G., M.G., T.G.

PROJECT # 2008.06.23.01



ABSOLUTE BOUNDARY & CONTROL SOLUTIONS

6440 SKY POINT DRIVE
SUITE 140 - PMB 321
LAS VEGAS, NV. 89131
(702) 953-7452
(702) 987-5943 FAX
WWW.AB-CS.COM

Date: October 12, 2009
Drawn: C. Givant
Checked: C. Givant
Task: 2009.10.08.01

Sheet No. 1 of 1



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Phase IIIA Final Waste Surface As-Built
Submittal Number:	02200-002FF
Specification Section:	Section 02200, Part 3.14
Drawing Number (s):	15
Page Number:	02200-10
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	10/12/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



699 South Friendswood Drive
Suite 101
Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
ATTENTION: Lee C. Farris, P.E.

DATE: 10/12/09
JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
TRANSMITTAL NUMBER: 332
ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	10/12/09			Submittal 02200-002GG - Phase IIIA Final Interim Cover As-Built - A	RC

ACTION (*)

AR - AS REQUESTED	FA - FOR APPROVAL
F - FILE	RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE

COPY TO: Ranajit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....



10/12/2009

Attn: Erik Gehringer, Project Manager
ENTACT Environmental Services, LLC
699 South Friendswood Drive
Friendswood, TX. 77546

Re: Corrective Action Management Unit (CAMU), Phase IIIA – Partial Interim Cover As-Built

Mr. Gehringer,

Absolute Boundary & Control Solutions (ABCS) recently collected survey data within CAMU Phase IIIA to determine if said area was constructed in a fashion consistent with the Interim Cover Design and coordinates provided by ENTACT. The attached Report reflects the results of this effort.

It should be noted that this report encompasses Tier 1 (Lower Tier) Only and is being provided solely to reflect those positions that have been As-built as of 10/12/2009. Upon completion of the Phase IIIA Interim Cover efforts, ABCS will prepare and provide a final report for the entire area.

If you have any questions or if we can be of further assistance do not hesitate to call.

Sincerely,

Craig A. Givant, PLS
President

(702) 953-7452
(702) 839-9750 fax

CAMU PHASE IIIA – Partial Interim Cover As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
10055	510055	16820.55	14694.17	1791.76	1791.67	0.07	-0.02	0.09	As-Built
10056	510056	16830.37	14712.51	1792.00	1792.03	0.00	0.01	-0.03	As-Built
10057	510057	16842.62	14719.35	1792.35	1792.36	0.04	-0.03	-0.01	As-Built
10058	510058	16855.10	14720.28	1792.72	1792.80	0.06	-0.01	-0.07	As-Built
10059	510059	16864.32	14719.52	1793.00	1793.03	0.02	0.08	-0.03	As-Built
10060	510060	16874.19	14720.29	1792.71	1792.79	-0.05	0.02	-0.08	As-Built
10062	510062	16896.78	14712.37	1792.00	1792.03	0.02	-0.06	-0.02	As-Built
10063	510063	16903.14	14704.54	1791.79	1791.76	0.10	-0.02	0.03	As-Built
10064	510064	16907.16	14694.39	1791.64	1791.63	0.01	0.10	0.01	As-Built
10065	510065	16887.06	14718.44	1792.31	1792.34	0.06	-0.06	-0.02	As-Built
10066	510066	16905.63	14715.17	1791.74	1791.66	0.07	0.08	0.08	As-Built
10067	510067	16903.78	14749.05	1791.89	1791.93	0.12	0.00	-0.04	As-Built
10068	510068	16901.74	14792.39	1792.07	1792.04	0.36	-0.01	0.03	As-Built
10069	510069	16900.51	14822.34	1792.19	1792.17	0.20	-0.13	0.02	As-Built
10070	510070	16899.27	14854.25	1792.32	1792.37	0.07	0.01	-0.05	As-Built
10071	510071	16876.75	14853.31	1793.00	1792.98	-0.02	0.06	0.02	As-Built
10072	510072	16858.37	14852.48	1792.45	1792.41	0.07	0.04	0.04	As-Built
10073	510073	16846.54	14835.03	1792.14	1792.13	-0.09	-0.04	0.01	As-Built
10074	510074	16840.69	14803.83	1792.05	1792.02	-0.01	0.06	0.03	As-Built
10075	510075	16834.82	14772.52	1791.96	1791.92	-0.09	-0.06	0.04	As-Built
10076	510076	16828.01	14736.22	1791.86	1791.89	0.03	0.07	-0.03	As-Built
10077	510077	16868.52	14764.86	1793.00	1793.02	-0.06	0.05	-0.02	As-Built

CAMU PHASE IIIA – Partial Interim Cover As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
10078	510078	16871.31	14795.03	1793.00	1793.01	0.01	-0.03	-0.01	As-Built
10079	510079	16874.42	14828.46	1793.00	1793.02	0.08	-0.07	-0.02	As-Built

I, Craig A. Givant, a Professional Land Surveyor registered in the State of Nevada, certify (as defined by Nevada Revised Statutes 625.403) that:

1. This report and any Land Surveying Practices (N.R.S. 625.040) on which it is based were performed directly by me or under my responsible charge (N.R.S. 625.080) in accordance with the Standards and Practices Governing Land Surveyors in the State of Nevada as defined by any applicable sections of the Nevada Revised Statutes (N.R.S.) or the Nevada Administrative Code (N.A.C.).
2. By affixing my official seal and signature below I am confirming that I am a Registered Land Surveyor in the State of Nevada and thereby satisfy the requirements of Section 01050, Part 1.03, Subpart A or the Project Technical Specifications.



SURVEY DATA

As required by the project specification Absolute Boundary & Control Solutions (ABCS) utilized field survey methods which resulted in precisions equal to or better than the following:

Horizontal Coordinates: $\pm 1.0'$ (One Foot)

Vertical Coordinates: $\pm 0.10'$ (One Tenth of a Foot)

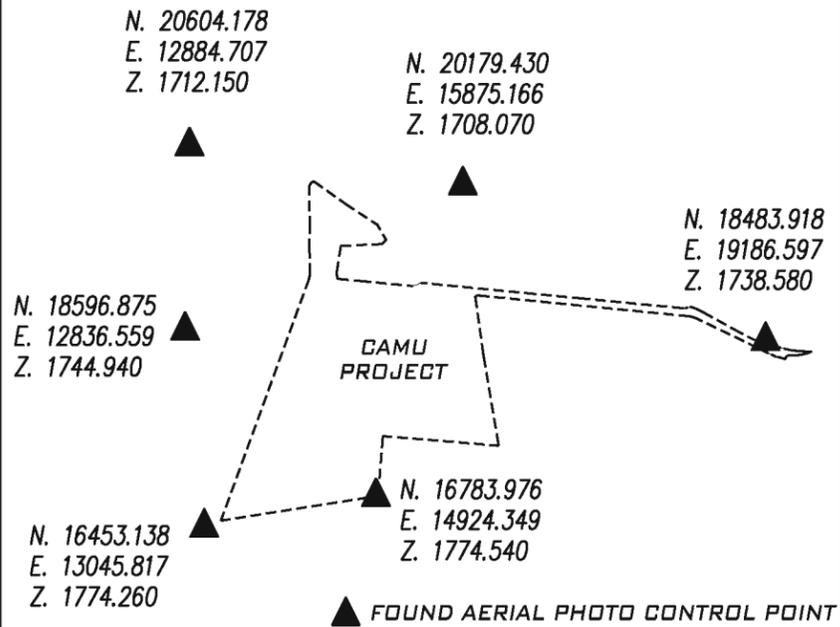
1. Coordinate Printout of the reduced (measured) coordinates from the Field Collection Efforts.

Point No.	Northing	Easting	Elevation	Description
84003	16776.82	14701.30	1777.05	810107
84004	16783.51	14744.22	1776.84	810106
84005	16788.89	14780.93	1776.59	810105
84006	16793.52	14812.47	1776.36	810104
84007	16800.38	14852.55	1776.03	810103
84008	16805.78	14869.81	1776.04	ic-toe
84009	16816.03	14888.20	1775.50	ic-toe
84010	16826.20	14899.51	1775.10	810102
84011	16836.69	14905.10	1775.03	ic-toe
84012	16867.86	14909.78	1774.28	810101
84013	16901.94	14911.12	1773.72	810100
84014	16922.64	14910.10	1773.31	810099
84015	16957.01	14889.38	1772.90	810098
84016	16958.46	14855.68	1772.65	810097
84017	16960.04	14823.91	1772.33	810096
84018	16961.39	14794.11	1772.12	810095
84019	16963.61	14751.63	1771.87	810094
84020	16965.51	14717.84	1771.81	810093
84021	16967.03	14705.96	1771.82	810092
510055	16820.48	14694.19	1791.67	10055
510056	16830.37	14712.50	1792.03	10056
510057	16842.57	14719.38	1792.36	10057
510058	16855.05	14720.30	1792.80	10058
510059	16864.30	14719.44	1793.03	10059
510060	16874.25	14720.26	1792.79	10060
510062	16896.75	14712.43	1792.03	10062
510063	16903.04	14704.56	1791.76	10063
510064	16907.15	14694.30	1791.63	10064

Point No.	Northing	Easting	Elevation	Description
510065	16887.00	14718.50	1792.34	10065
510066	16905.55	14715.09	1791.66	10066
510067	16903.67	14749.06	1791.93	10067
510068	16901.38	14792.40	1792.04	10068
510069	16900.31	14822.47	1792.17	10069
510070	16899.20	14854.24	1792.37	10070
510071	16876.77	14853.25	1792.98	10071
510072	16858.30	14852.44	1792.41	10072
510073	16846.63	14835.06	1792.13	10073
510074	16840.70	14803.77	1792.02	10074
510075	16834.91	14772.57	1791.92	10075
510076	16827.98	14736.14	1791.89	10076
510077	16868.59	14764.81	1793.02	10077
510078	16871.30	14795.06	1793.01	10078
510079	16874.34	14828.53	1793.02	10079

PROJECT CONTROL

1" = 2000'



BENCHMARK

CLARK COUNTY BENCHMARK (6C22 2E4), BEING A RIVET AND SQUARE ALUMINUM PLATE IN A CONCRETE CENTERLINE ISLAND, 4' WEST OF THE NOSE IN THE MIDDLE OF SUNSET ROAD, WEST SIDE OF THE INTERSECTION OF BOULDER HIGHWAY AND SUNSET ROAD.

PUBLISHED ELEVATION - 505.816 METERS = 1659.50 FEET
NAVD 1988 DATUM - PUBLISHED (2003)

BASIS OF BEARINGS

SOUTH 85°36'52" WEST, BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 84B" AND CC-GIS W51", AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

COORDINATE SYSTEM

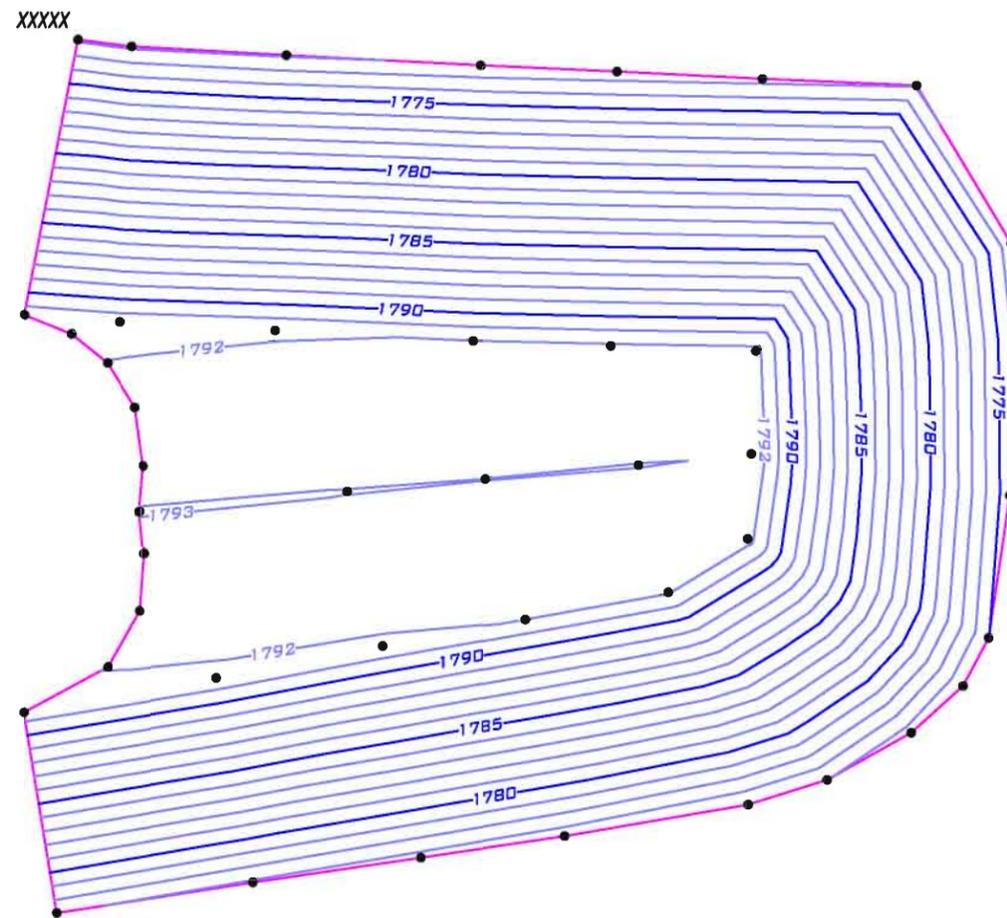
THE COORDINATE SYSTEM AND ASSOCIATED BEARING ROTATION INFORMATION WAS ESTABLISHED AND PROVIDED BY PBS&J.

LINE LEGEND

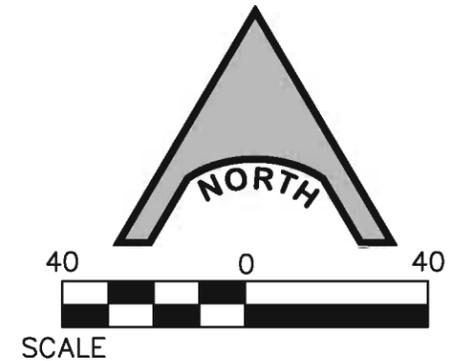
- MAJOR CONTOUR
- MINOR CONTOUR
- SURVEY LIMITS

SURFACE DETAILS

THE SURFACE SHOWN BELOW WAS GENERATED BASED UPON AS-BUILT DATA COLLECTED BY ABSOLUTE BOUNDARY & CONTROL SOLUTIONS. IT REPRESENTS THE LOWEST OF THE THREE TIERS WHICH COMPRISES THE PHASE IIIA INTERIM CLOSURE DESIGN.



AS-BUILT MEASUREMENT LOCATION
(SEE ATTACHED REPORT)



NO.	REVISION	DATE
△		
△		
△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)

PHASE IIIA PARTIAL INTERIM COVER AS-BUILT

FIELD SURVEY DATE: 10-1-2009 & 10-9-2009
FIELD CREW: C.G. & T.G.

PROJECT # 2008.06.23.01



ABSOLUTE BOUNDARY & CONTROL SOLUTIONS

6440 SKY POINT DRIVE
SUITE 140 - PMB 321
LAS VEGAS, NV. 89131
(702) 953-7452
(702) 987-5943 FAX
WWW.AB-CS.COM

Date: October 12, 2009
Drawn: C. Givant
Checked: C. Givant
Task: 2009.10.01.01

Sheet No. 1 of 1



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Phase IIIA Final Interim Cover As-Built - A
Submittal Number:	02200-002GG
Specification Section:	Section 02200, Part 3.14
Drawing Number (s):	15
Page Number:	02200-10
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	10/12/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



699 South Friendswood Drive
Suite 101
Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
ATTENTION: Lee C. Farris, P.E.

DATE: 10/14/09
JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
TRANSMITTAL NUMBER: 333
ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:

SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	10/14/09			Submittal 02200-002HH - Phase IIIA Final Interim Cover As-Built - B	RC

ACTION (*)

AR - AS REQUESTED	FA - FOR APPROVAL
F - FILE	RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE
 COPY TO: Ranajit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....



10/14/2009

Attn: Erik Gehringer, Project Manager
ENTACT Environmental Services, LLC
699 South Friendswood Drive
Friendswood, TX. 77546

Re: Corrective Action Management Unit (CAMU), Phase IIIA – Partial Interim Cover As-Built

Mr. Gehringer,

Absolute Boundary & Control Solutions (ABCS) recently collected survey data within CAMU Phase IIIA to determine if said area was constructed in a fashion consistent with the Interim Cover Design and coordinates provided by ENTACT. The attached Report reflects the results of this effort.

It should be noted that this report encompasses a portion of Tier 2 (Middle Tier) Only and is being provided solely to reflect those positions that have been As-built as of 10/13/2009 and not previously reported. Upon completion of the Phase IIIA Interim Cover efforts, ABCS will prepare and provide a final report for the entire area.

If you have any questions or if we can be of further assistance do not hesitate to call.

Sincerely,

Craig A. Givant, PLS
President

(702) 953-7452
(702) 839-9750 fax

2009.10.01.01B

CAMU PHASE IIIA – Partial Interim Cover As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
10030	510030	16865.28	14408.31	1803.00	1802.95	0.04	-0.03	0.05	As-Built
10031	510031	16865.65	14473.07	1803.00	1802.97	-0.05	0.10	0.03	As-Built
10032	510032	16865.96	14527.53	1803.00	1802.99	0.02	0.13	0.01	As-Built
10033	510033	16866.25	14576.61	1803.00	1802.96	-0.07	0.01	0.04	As-Built
10034	510034	16866.55	14629.22	1803.00	1803.00	-0.08	0.04	0.00	As-Built
10035	510035	16866.90	14689.86	1803.00	1802.98	0.00	0.07	0.02	As-Built
10037	510037	16926.38	14385.58	1801.15	1801.23	-0.04	0.10	-0.08	As-Built
10038	510038	16922.19	14440.10	1801.29	1801.24	0.05	0.03	0.05	As-Built
10039	510039	16918.42	14490.41	1801.41	1801.39	0.00	0.14	0.02	As-Built
10040	510040	16915.29	14532.47	1801.51	1801.47	0.05	0.06	0.04	As-Built
10041	510041	16912.13	14574.66	1801.61	1801.56	0.00	-0.03	0.06	As-Built
10042	510042	16899.42	14612.64	1802.00	1802.04	-0.05	0.02	-0.04	As-Built
10043	510043	16887.34	14648.75	1802.37	1802.31	-0.04	0.08	0.06	As-Built
10044	510044	16875.29	14684.75	1802.74	1802.66	-0.05	-0.02	0.07	As-Built
10045	510045	16873.38	14690.07	1802.80	1802.83	-0.01	0.04	-0.03	As-Built
10046	510046	16855.34	14690.49	1802.65	1802.65	-0.07	0.03	0.01	As-Built
10047	510047	16853.30	14690.50	1802.59	1802.56	-0.02	0.01	0.03	As-Built
10048	510048	16852.61	14688.74	1802.56	1802.60	0.00	0.12	-0.03	As-Built
10049	510049	16842.38	14632.51	1802.26	1802.28	0.05	0.07	-0.01	As-Built
10050	510050	16833.26	14581.10	1802.00	1802.00	-0.10	0.12	0.00	As-Built
10051	510051	16824.85	14531.52	1801.76	1801.73	0.03	0.03	0.03	As-Built
10052	510052	16816.65	14478.71	1801.52	1801.55	-0.08	0.11	-0.03	As-Built

CAMU PHASE IIIA – Partial Interim Cover As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
10053	510053	16807.24	14415.61	1801.25	1801.23	-0.07	0.07	0.02	As-Built
10054	510054	16800.31	14368.18	1801.05	1801.06	-0.03	0.04	-0.01	As-Built

I, Craig A. Givant, a Professional Land Surveyor registered in the State of Nevada, certify (as defined by Nevada Revised Statutes 625.403) that:

1. This report and any Land Surveying Practices (N.R.S. 625.040) on which it is based were performed directly by me or under my responsible charge (N.R.S. 625.080) in accordance with the Standards and Practices Governing Land Surveyors in the State of Nevada as defined by any applicable sections of the Nevada Revised Statutes (N.R.S.) or the Nevada Administrative Code (N.A.C.).
2. By affixing my official seal and signature below I am confirming that I am a Registered Land Surveyor in the State of Nevada and thereby satisfy the requirements of Section 01050, Part 1.03, Subpart A or the Project Technical Specifications.



SURVEY DATA

As required by the project specification Absolute Boundary & Control Solutions (ABCS) utilized field survey methods which resulted in precisions equal to or better than the following:

Horizontal Coordinates: $\pm 1.0'$ (One Foot)

Vertical Coordinates: $\pm 0.10'$ (One Tenth of a Foot)

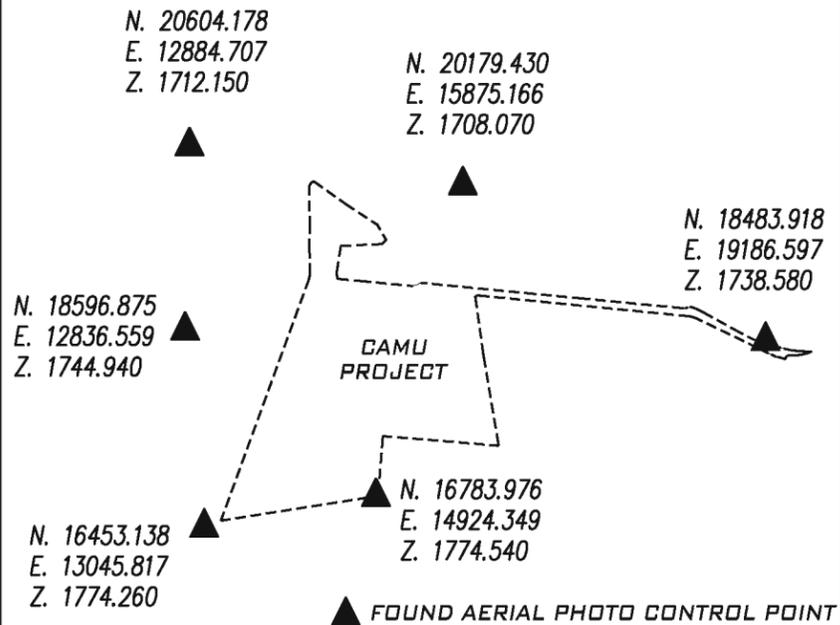
1. Coordinate Printout of the reduced (measured) coordinates from the Field Collection Efforts.

Point No.	Northing	Easting	Elevation	Description
84001	16760.71	14592.88	1777.44	810109
84002	16768.36	14644.51	1777.33	810108
84024	16975.59	14675.52	1771.70	810091
84025	17006.74	14538.54	1770.89	810088
84026	17017.82	14397.37	1770.32	810085
84027	17014.17	14446.25	1770.58	810086
84028	17010.00	14496.60	1770.70	810087
84029	17002.28	14591.27	1771.13	810089
84030	16987.09	14639.28	1771.40	810090
84036	16729.14	14377.61	1776.91	810113
84037	16736.08	14425.27	1777.30	810112
84038	16744.94	14488.16	1777.58	810111
84039	16752.87	14542.99	1777.76	810110
510030	16865.24	14408.34	1802.95	10030
510031	16865.70	14472.98	1802.97	10031
510032	16865.94	14527.40	1802.99	10032
510033	16866.32	14576.59	1802.96	10033
510034	16866.63	14629.18	1803.00	10034
510035	16866.90	14689.79	1802.98	10035
510037	16926.42	14385.48	1801.23	10037
510038	16922.14	14440.07	1801.24	10038
510039	16918.42	14490.28	1801.39	10039
510040	16915.24	14532.41	1801.47	10040
510041	16912.13	14574.68	1801.56	10041
510042	16899.47	14612.62	1802.04	10042
510043	16887.38	14648.66	1802.31	10043
510044	16875.35	14684.77	1802.66	10044

Point No.	Northing	Easting	Elevation	Description
510045	16873.38	14690.04	1802.83	10045
510046	16855.40	14690.46	1802.65	10046
510047	16853.32	14690.49	1802.56	10047
510048	16852.61	14688.63	1802.60	10048
510049	16842.33	14632.44	1802.28	10049
510050	16833.36	14580.98	1802.00	10050
510051	16824.82	14531.49	1801.73	10051
510052	16816.73	14478.60	1801.55	10052
510053	16807.31	14415.54	1801.23	10053
510054	16800.34	14368.13	1801.06	10054

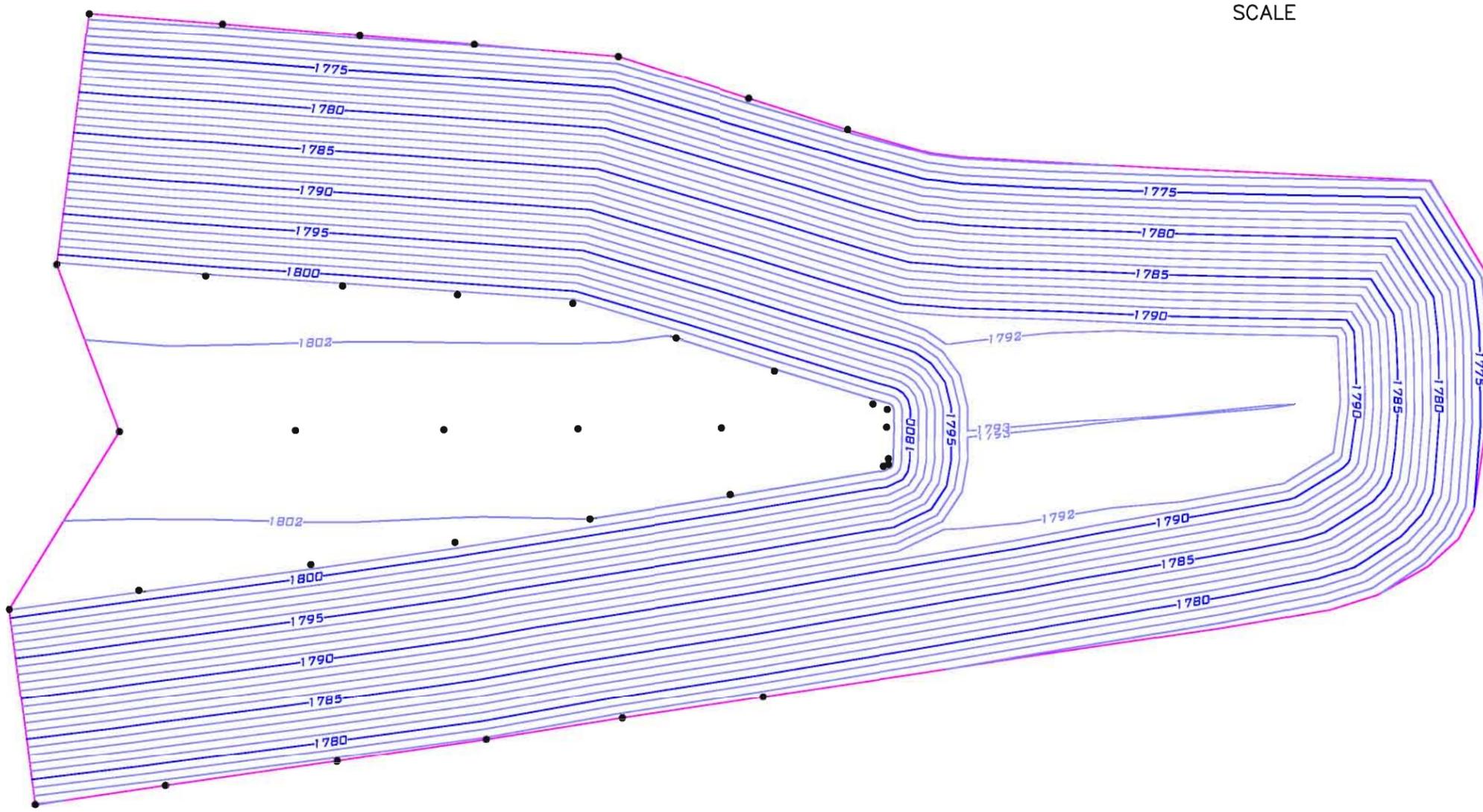
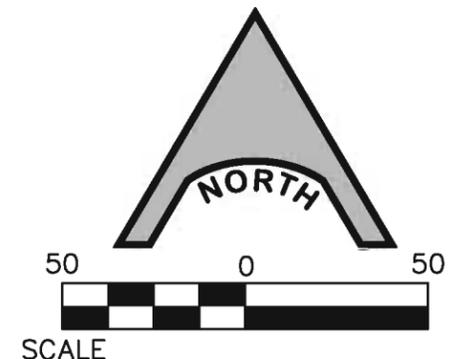
PROJECT CONTROL

1" = 2000'



SURFACE DETAILS

THE SURFACE SHOWN BELOW WAS GENERATED BASED UPON AS-BUILT DATA COLLECTED BY ABSOLUTE BOUNDARY & CONTROL SOLUTIONS. IT REPRESENTS THE EASTERN PORTION OF THE MIDDLE TIER OF THE PHASE IIIA INTERIM CLOSURE DESIGN.



BENCHMARK

CLARK COUNTY BENCHMARK (6C22 2E4), BEING A RIVET AND SQUARE ALUMINUM PLATE IN A CONCRETE CENTERLINE ISLAND, 4' WEST OF THE NOSE IN THE MIDDLE OF SUNSET ROAD, WEST SIDE OF THE INTERSECTION OF BOULDER HIGHWAY AND SUNSET ROAD.

PUBLISHED ELEVATION - 505.816 METERS = 1659.50 FEET
NAVD 1988 DATUM - PUBLISHED (2003)

BASIS OF BEARINGS

SOUTH 85°36'52" WEST, BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND CC-GIS W51", AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

COORDINATE SYSTEM

THE COORDINATE SYSTEM AND ASSOCIATED BEARING ROTATION INFORMATION WAS ESTABLISHED AND PROVIDED BY PBS&J.

LINE LEGEND

- MAJOR CONTOUR
- MINOR CONTOUR
- SURVEY LIMITS

NO.	REVISION	DATE
△		
△		
△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)

PHASE IIIA PARTIAL INTERIM COVER AS-BUILT

FIELD SURVEY DATE: 10-9-2009 & 10-13-09
FIELD CREW: C.G. & T.G.

PROJECT # 2008.06.23.01



ABSOLUTE BOUNDARY & CONTROL SOLUTIONS

6440 SKY POINT DRIVE
SUITE 140 - PMB 321
LAS VEGAS, NV. 89131
(702) 953-7452
(702) 987-5943 FAX
WWW.AB-CS.COM

Date: October 14, 2009
Drawn: C. Givant
Checked: C. Givant
Task: 2009.10.01.01-B

Sheet No. 1 of 1



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Phase IIIA Final Interim Cover As-Built - B
Submittal Number:	02200-002HH
Specification Section:	Section 02200, Part 3.14
Drawing Number (s):	15
Page Number:	02200-10
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	10/14/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company
 875 West Warm Springs Road
 Henderson, NV 89011
 TEL#: (702)-568-2888 FAX#: (702)-567-0475
 ATTENTION: Lee C. Farris, P.E.

DATE: 10/19/09
 JOB NAME: BRC EASTSIDE COMMON AREAS
 SOIL REMEDIATION PROJECT
 TRANSMITTAL NUMBER: 334
 ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	10/19/09			Submittal 02200-002II - Phase IIIA Final Interim Cover As-Built - C	RC

ACTION (*)

AR - AS REQUESTED	FA - FOR APPROVAL
F - FILE	RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE

COPY TO: Ranajit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....



10/19/2009

Attn: Erik Gehringer, Project Manager
ENTACT Environmental Services, LLC
699 South Friendswood Drive
Friendswood, TX. 77546

Re: Corrective Action Management Unit (CAMU), Phase IIIA – Partial Interim Cover As-Built

Mr. Gehringer,

Absolute Boundary & Control Solutions (ABCS) recently collected survey data within CAMU Phase IIIA to determine if said area was constructed in a fashion consistent with the Interim Cover Design and coordinates provided by ENTACT. The attached Report reflects the results of this effort.

It should be noted that this report encompasses a portion of Tier 2 (Middle Tier) and ALL of Tier 3 (Upper Tier) and is being provided solely to reflect those positions that have been As-built as of 10/19/2009. This report along with the two (2) reports previously provided encompass the entire Phase IIIA Area and a final report reflecting all data will be prepared and provided as soon as possible.

If you have any questions or if we can be of further assistance do not hesitate to call.

Sincerely,

Craig A. Givant, PLS
President

(702) 953-7452
(702) 839-9750 fax

CAMU PHASE IIIA – Partial Interim Cover As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
10000	510000	16822.42	14142.86	1818.27	1818.19	-0.04	0.09	0.08	As-Built
10001	510001	16828.40	14185.01	1818.40	1818.31	-0.02	-0.03	0.09	As-Built
10002	510002	16835.40	14234.62	1818.52	1818.53	0.03	0.06	0.00	As-Built
10003	510003	16840.71	14272.26	1818.62	1818.60	0.10	0.10	0.02	As-Built
10004	510004	16845.60	14309.11	1818.62	1818.55	0.00	-0.01	0.07	As-Built
10005	510005	16873.74	14314.49	1818.46	1818.42	-0.05	-0.01	0.04	As-Built
10006	510006	16894.05	14318.37	1818.61	1818.54	-0.07	0.01	0.06	As-Built
10007	510007	16899.74	14305.39	1818.49	1818.45	0.00	0.07	0.05	As-Built
10008	510008	16916.63	14281.13	1818.31	1818.22	-0.05	-0.11	0.09	As-Built
10009	510009	16959.06	14238.61	1817.95	1817.90	0.04	0.06	0.06	As-Built
10010	510010	16992.55	14207.49	1817.18	1817.10	0.01	0.08	0.08	As-Built
10011	510011	17020.98	14182.87	1815.90	1815.83	-0.01	0.14	0.07	As-Built
10012	510012	16991.92	14175.37	1816.38	1816.38	-0.01	0.05	0.01	As-Built
10013	510013	16948.42	14167.01	1816.69	1816.61	-0.14	0.05	0.08	As-Built
10014	510014	16883.27	14154.57	1817.20	1817.20	0.02	0.03	0.00	As-Built
10015	510015	16792.85	14317.08	1800.83	1800.85	-0.07	0.09	-0.01	As-Built
10016	510016	16808.55	14345.50	1801.30	1801.23	0.02	0.37	0.07	As-Built
10017	510017	16831.74	14356.93	1802.00	1802.02	-0.08	0.13	-0.01	As-Built
10018	510018	16846.91	14357.87	1802.46	1802.50	0.01	0.07	-0.04	As-Built
10019	510019	16865.10	14360.06	1803.00	1802.98	-0.02	0.11	0.02	As-Built
10020	510020	16884.08	14365.76	1802.43	1802.44	-0.13	-0.01	0.00	As-Built
10021	510021	16898.40	14368.03	1802.00	1802.07	-0.01	0.06	-0.07	As-Built

CAMU PHASE IIIA – Partial Interim Cover As-Built

10022	510022	16915.57	14365.13	1801.48	1801.55	0.00	0.05	-0.07	As-Built
10023	510023	16931.42	14355.75	1801.00	1800.93	-0.04	0.02	0.07	As-Built
10024	510024	16943.56	14339.76	1800.63	1800.56	-0.01	-0.02	0.07	As-Built
10025	510025	16798.45	14333.02	1801.00	1800.96	-0.03	0.02	0.04	As-Built
10026	510026	16907.91	14174.16	1817.00	1816.91	0.02	0.04	0.09	As-Built
10027	510027	16886.85	14222.60	1817.47	1817.43	-0.01	0.11	0.04	As-Built
10028	510028	16863.31	14276.77	1818.00	1817.98	-0.10	0.03	0.02	As-Built
10029	510029	16855.42	14310.98	1818.33	1818.26	-0.01	0.04	0.07	As-Built
10036	510036	16928.18	14376.25	1801.10	1801.09	-0.02	0.03	0.01	As-Built

I, Craig A. Givant, a Professional Land Surveyor registered in the State of Nevada, certify (as defined by Nevada Revised Statutes 625.403) that:

1. This report and any Land Surveying Practices (N.R.S. 625.040) on which it is based were performed directly by me or under my responsible charge (N.R.S. 625.080) in accordance with the Standards and Practices Governing Land Surveyors in the State of Nevada as defined by any applicable sections of the Nevada Revised Statutes (N.R.S.) or the Nevada Administrative Code (N.A.C.).
2. By affixing my official seal and signature below I am confirming that I am a Registered Land Surveyor in the State of Nevada and thereby satisfy the requirements of Section 01050, Part 1.03, Subpart A or the Project Technical Specifications.



SURVEY DATA

As required by the project specification Absolute Boundary & Control Solutions (ABCS) utilized field survey methods which resulted in precisions equal to or better than the following:

Horizontal Coordinates: $\pm 1.0'$ (One Foot)

Vertical Coordinates: $\pm 0.10'$ (One Tenth of a Foot)

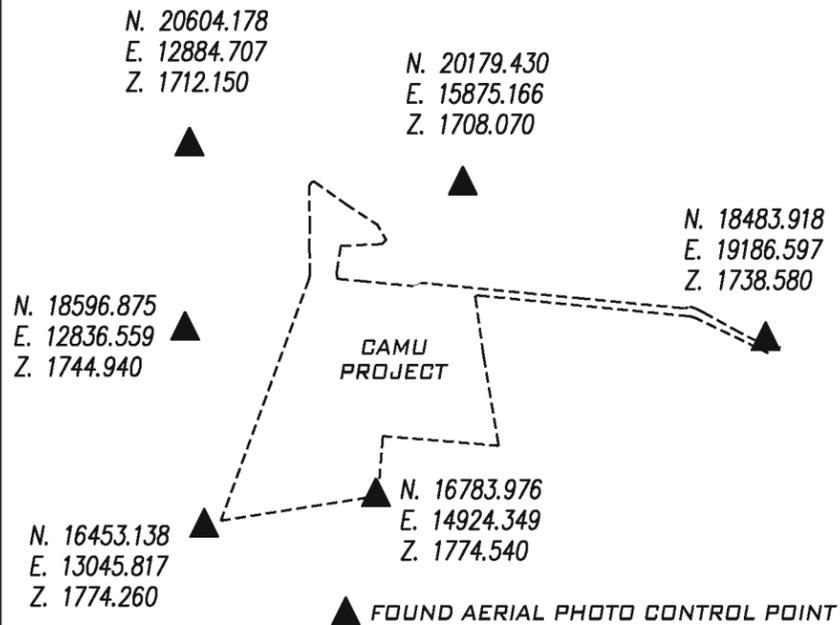
1. Coordinate Printout of the reduced (measured) coordinates from the Field Collection Efforts.

Point No.	Northing	Easting	Elevation	Description
84031	16697.01	14159.37	1776.41	810118
84032	16703.31	14201.75	1776.41	810117
84033	16710.80	14251.30	1776.59	810116
84034	16716.12	14288.90	1776.66	810115
84035	16721.46	14326.87	1776.82	810114
84042	17027.20	14375.29	1770.40	710084
84043	17060.93	14339.48	1770.16	710082
84045	17028.29	14372.61	1770.35	710083
84046	17093.47	14306.57	1769.97	710081
84047	17119.95	14280.40	1769.89	710080
510000	16822.46	14142.78	1818.19	10000
510001	16828.42	14185.05	1818.31	10001
510002	16835.37	14234.56	1818.53	10002
510003	16840.61	14272.15	1818.60	10003
510004	16845.61	14309.12	1818.55	10004
510005	16873.78	14314.50	1818.42	10005
510006	16894.12	14318.37	1818.54	10006
510007	16899.74	14305.32	1818.45	10007
510008	16916.69	14281.24	1818.22	10008
510009	16959.02	14238.55	1817.90	10009
510010	16992.53	14207.40	1817.10	10010
510011	17020.99	14182.74	1815.83	10011
510012	16991.94	14175.32	1816.38	10012
510013	16948.56	14166.96	1816.61	10013
510014	16883.25	14154.54	1817.20	10014
510015	16792.92	14316.99	1800.85	10015
510016	16808.53	14345.13	1801.23	10016
510017	16831.82	14356.80	1802.02	10017

Point No.	Northing	Easting	Elevation	Description
510018	16846.90	14357.80	1802.50	10018
510019	16865.12	14359.95	1802.98	10019
510020	16884.21	14365.77	1802.44	10020
510021	16898.42	14367.98	1802.07	10021
510022	16915.57	14365.08	1801.55	10022
510023	16931.46	14355.73	1800.93	10023
510024	16943.56	14339.78	1800.56	10024
510025	16798.48	14333.00	1800.96	10025
510026	16907.89	14174.12	1816.91	10026
510027	16886.86	14222.50	1817.43	10027
510028	16863.41	14276.74	1817.98	10028
510029	16855.42	14310.95	1818.26	10029
510036	16928.20	14376.22	1801.09	10036

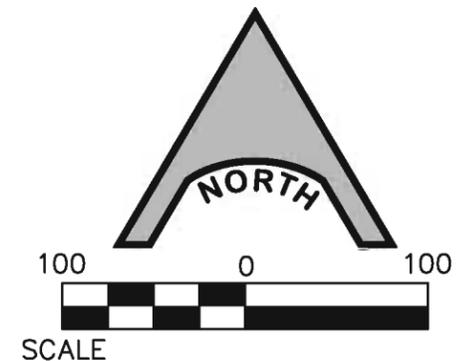
PROJECT CONTROL

1" = 2000'



SURFACE DETAILS

THE SURFACE SHOWN BELOW WAS GENERATED BASED UPON AS-BUILT DATA COLLECTED BY ABSOLUTE BOUNDARY & CONTROL SOLUTIONS. IT REPRESENTS THE REMAINING LOCATIONS NOT PREVIOUSLY REPORTED PURSUANT TO THE PHASE IIIA INTERIM CLOSURE VERIFICATION.



BENCHMARK

CLARK COUNTY BENCHMARK (6C22 2E4), BEING A RIVET AND SQUARE ALUMINUM PLATE IN A CONCRETE CENTERLINE ISLAND, 4' WEST OF THE NOSE IN THE MIDDLE OF SUNSET ROAD, WEST SIDE OF THE INTERSECTION OF BOULDER HIGHWAY AND SUNSET ROAD.

PUBLISHED ELEVATION - 505.816 METERS = 1659.50 FEET
 NAVD 1988 DATUM - PUBLISHED (2003)

BASIS OF BEARINGS

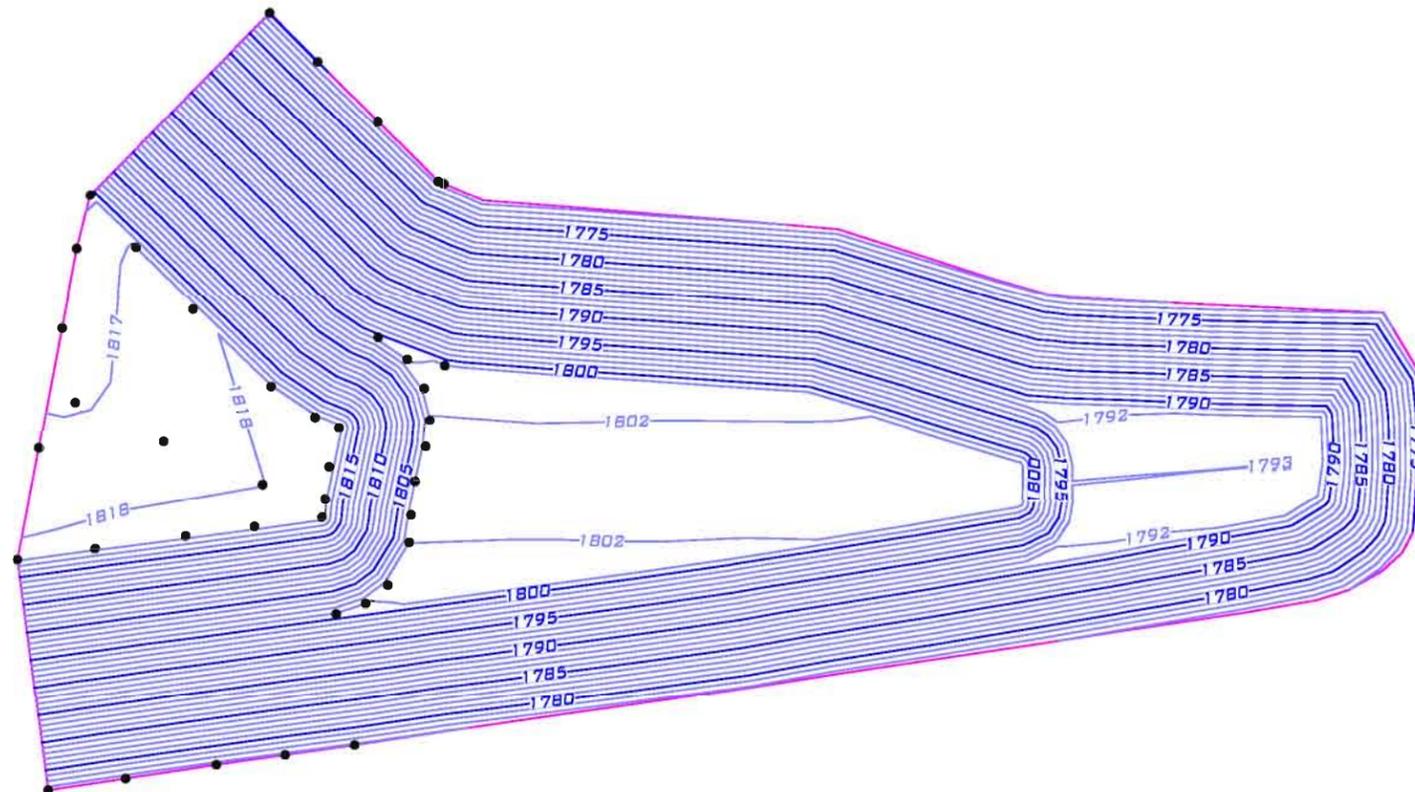
SOUTH 85°36'52" WEST, BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND CC-GIS W51", AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

COORDINATE SYSTEM

THE COORDINATE SYSTEM AND ASSOCIATED BEARING ROTATION INFORMATION WAS ESTABLISHED AND PROVIDED BY PBS&J.

LINE LEGEND

- MAJOR CONTOUR
- MINOR CONTOUR
- SURVEY LIMITS



NO.	REVISION	DATE
△		
△		
△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)

PHASE IIIA PARTIAL INTERIM COVER AS-BUILT

FIELD SURVEY DATE: 10/19/2009
 FIELD CREW: C.G. & M.G.

PROJECT # 2008.06.23.01



ABSOLUTE BOUNDARY & CONTROL SOLUTIONS

6440 SKY POINT DRIVE
 SUITE 140 - PMB 321
 LAS VEGAS, NV. 89131
 (702) 953-7452
 (702) 987-5943 FAX
 WWW.AB-CS.COM

Date: October 19, 2009
 Drawn: C. Givant
 Checked: C. Givant
 Task: 2009.10.01.01-C

Sheet No. 1 of 1



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Phase IIIA Final Interim Cover As-Built - C
Submittal Number:	02200-002II
Specification Section:	Section 02200, Part 3.14
Drawing Number (s):	15
Page Number:	02200-10
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	10/19/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
 ATTENTION: Lee C. Farris, P.E.

DATE: 11/9/09
 JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
 TRANSMITTAL NUMBER: 345
 ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	11/9/09			Submittal 02200-002KK - Phase II Interim Closure Interim Cover As-Built -A	RC

ACTION (*)

AR - AS REQUESTED	FA - FOR APPROVAL
F - FILE	RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE
 COPY TO: Ranajit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....



11/9/2009

Attn: Erik Gehringer, Project Manager
ENTACT Environmental Services, LLC
699 South Friendswood Drive
Friendswood, TX. 77546

Re: Corrective Action Management Unit (CAMU), Phase II – Partial Interim Cover As-Built

Mr. Gehringer,

Absolute Boundary & Control Solutions (ABCS) recently collected survey data within CAMU Phase II to determine if said area was constructed in a fashion consistent with the Interim Closure Design and coordinates provided by ENTACT. The attached Report reflects the results of this effort.

It should be noted that this report covers ONLY that area of Phase II along the South and Southwest portions and is being provided solely to reflect those positions that have been As-built as of 11/5/2009. A final report reflecting all of Phase II will be prepared and provided in the future.

If you have any questions or if we can be of further assistance do not hesitate to call.

Sincerely,

Craig A. Givant, PLS
President

(702) 953-7452
(702) 839-9750 fax

CAMU PHASE II – Partial Interim Cover As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
10530	510530	16812.89	14080.21	1818.08	1818.12	0.06	-0.02	-0.04	As-Built
10531	510531	16805.32	14034.00	1817.84	1817.87	0.02	0.02	-0.02	As-Built
10532	510532	16801.51	13982.14	1819.13	1819.12	-0.08	0.05	0.01	As-Built
10533	510533	16794.86	13912.39	1820.35	1820.37	0.02	-0.01	-0.02	As-Built
10534	510534	16787.98	13859.92	1820.66	1820.64	0.01	-0.01	0.02	As-Built
10535	510535	16779.73	13805.82	1820.59	1820.52	-0.02	0.02	0.06	As-Built
10536	510536	16770.29	13746.76	1820.37	1820.36	-0.08	0.03	0.01	As-Built
10537	510537	16760.21	13684.21	1820.11	1820.07	-0.01	0.05	0.03	As-Built
10538	510538	16752.26	13626.06	1820.34	1820.31	0.05	0.11	0.02	As-Built
10539	510539	16745.65	13571.87	1820.81	1820.76	-0.07	0.03	0.05	As-Built
10540	510540	16740.31	13527.25	1821.23	1821.18	0.04	-0.03	0.06	As-Built
10541	510541	16810.51	13550.78	1819.98	1819.90	0.00	0.11	0.08	As-Built
10542	510542	16856.53	13565.88	1819.00	1818.97	0.03	0.11	0.03	As-Built
10543	510543	16912.27	13584.22	1817.79	1817.80	-0.08	0.13	-0.01	As-Built
10544	510544	16986.00	13610.99	1816.63	1816.63	-0.03	0.08	0.00	As-Built
10567	510567	16804.60	14024.38	1817.65	1817.67	-0.02	-0.01	-0.02	As-Built
10568	510568	16756.64	13659.27	1820.04	1820.00	-0.12	0.00	0.05	As-Built
10652	510652	16951.26	13662.83	1816.20	1816.23	0.07	0.01	-0.03	As-Built
10653	510653	16902.83	13647.48	1817.01	1816.99	0.03	0.02	0.03	As-Built
10654	510654	16854.40	13632.14	1818.26	1818.24	0.16	0.04	0.03	As-Built
10655	510655	16805.97	13616.79	1819.43	1819.34	-0.02	0.13	0.09	As-Built
10656	510656	16798.23	13672.10	1819.00	1818.95	-0.02	0.09	0.05	As-Built
10657	510657	16847.39	13686.16	1817.70	1817.68	-0.07	0.05	0.02	As-Built

CAMU PHASE II – Partial Interim Cover As-Built

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
10688	510688	16880.52	13819.39	1819.06	1819.09	0.03	0.04	-0.04	As-Built
10689	510689	16837.53	13762.13	1819.24	1819.15	-0.02	0.08	0.09	As-Built
10690	510690	16830.95	13812.88	1819.81	1819.76	0.03	0.08	0.05	As-Built
10691	510691	16824.55	13862.20	1820.23	1820.17	0.02	0.02	0.06	As-Built
10692	510692	16874.42	13866.40	1819.54	1819.51	0.06	-0.05	0.03	As-Built
10715	510715	16867.53	13919.51	1818.91	1818.82	-0.23	0.11	0.09	As-Built
10716	510716	16817.94	13913.08	1819.98	1819.92	-0.06	0.04	0.06	As-Built
10717	510717	16861.35	13967.14	1817.72	1817.66	-0.04	0.19	0.06	As-Built
10735	510735	16853.57	14027.10	1816.23	1816.24	-0.05	-0.01	0.00	As-Built
10736	510736	16826.71	14027.10	1817.00	1816.95	0.05	0.14	0.05	As-Built
10737	510737	16843.56	14104.18	1817.50	1817.49	0.01	0.09	0.01	As-Built
10738	510738	16894.35	14101.34	1816.54	1816.50	-0.06	0.07	0.05	As-Built

I, Craig A. Givant, a Professional Land Surveyor registered in the State of Nevada, certify (as defined by Nevada Revised Statutes 625.403) that:

1. This report and any Land Surveying Practices (N.R.S. 625.040) on which it is based were performed directly by me or under my responsible charge (N.R.S. 625.080) in accordance with the Standards and Practices Governing Land Surveyors in the State of Nevada as defined by any applicable sections of the Nevada Revised Statutes (N.R.S.) or the Nevada Administrative Code (N.A.C.).
2. By affixing my official seal and signature below I am confirming that I am a Registered Land Surveyor in the State of Nevada and thereby satisfy the requirements of Section 01050, Part 1.03, Subpart A or the Project Technical Specifications.



SURVEY DATA

As required by the project specification Absolute Boundary & Control Solutions (ABCS) utilized field survey methods which resulted in precisions equal to or better than the following:

Horizontal Coordinates: $\pm 1.0'$ (One Foot)

Vertical Coordinates: $\pm 0.10'$ (One Tenth of a Foot)

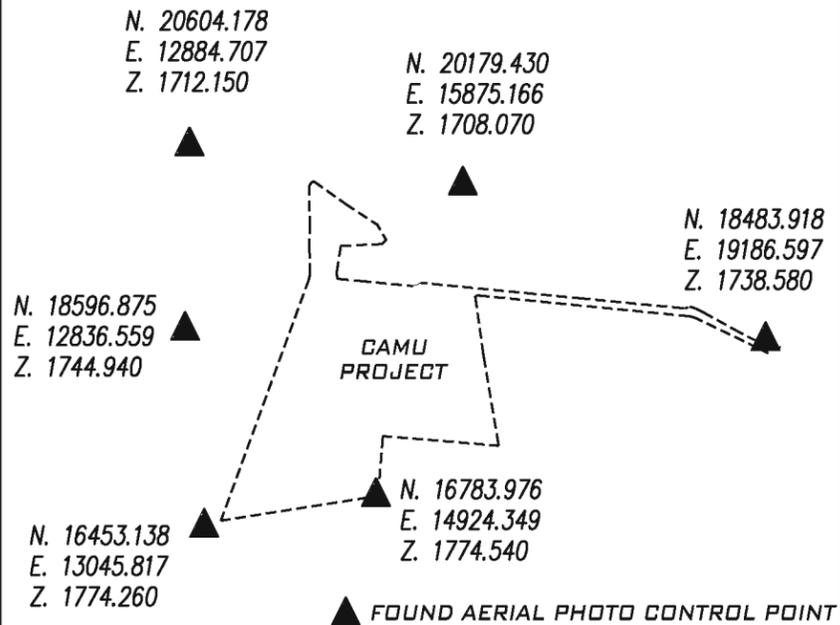
1. Coordinate Printout of the reduced (measured) coordinates from the Field Collection Efforts.

Point No.	Northing	Easting	Elevation	Description
84048	16933.20	14120.04	1816.22	160036
84049	16904.04	14027.09	1814.87	110734
84050	16889.65	13867.83	1819.30	1100506
84051	16864.41	13691.01	1817.21	1100507
84052	16875.58	13767.51	1818.21	1100511
84053	16901.00	13960.71	1816.74	139
84054	16857.89	13645.81	1817.99	1100502
84055	16899.50	13660.32	1816.84	1100509
84056	16962.27	13682.09	1815.55	1100501
510530	16812.84	14080.23	1818.12	10530
510531	16805.30	14033.99	1817.87	10531
510532	16801.60	13982.09	1819.12	10532
510533	16794.85	13912.40	1820.37	10533
510534	16787.97	13859.94	1820.64	10534
510535	16779.76	13805.80	1820.52	10535
510536	16770.38	13746.73	1820.36	10536
510537	16760.22	13684.16	1820.07	10537
510538	16752.21	13625.95	1820.31	10538
510539	16745.72	13571.84	1820.76	10539
510540	16740.27	13527.28	1821.18	10540
510541	16810.52	13550.67	1819.90	10541
510542	16856.50	13565.77	1818.97	10542
510543	16912.35	13584.09	1817.80	10543
510544	16986.03	13610.91	1816.63	10544
510567	16804.63	14024.39	1817.67	10567
510568	16756.77	13659.27	1820.00	10568
510652	16951.19	13662.82	1816.23	10652
510653	16902.80	13647.47	1816.99	10653
510654	16854.24	13632.10	1818.24	10654

Point No.	Northing	Easting	Elevation	Description
510655	16805.99	13616.67	1819.34	10655
510656	16798.25	13672.01	1818.95	10656
510657	16847.46	13686.11	1817.68	10657
510688	16880.49	13819.35	1819.09	10688
510689	16837.56	13762.06	1819.15	10689
510690	16830.91	13812.80	1819.76	10690
510691	16824.53	13862.19	1820.17	10691
510692	16874.36	13866.45	1819.51	10692
510715	16867.76	13919.41	1818.82	10715
510716	16818.01	13913.04	1819.92	10716
510717	16861.38	13966.95	1817.66	10717
510735	16853.61	14027.10	1816.24	10735
510736	16826.65	14026.95	1816.95	10736
510737	16843.55	14104.09	1817.49	10737
510738	16894.42	14101.27	1816.50	10738
1084025	16706.82	13379.54	1771.68	110514
1084026	16653.80	13404.06	1772.17	110515
1084027	16674.25	13392.30	1771.96	INT-TOE
1084028	16626.23	13431.15	1772.49	110516
1084029	16641.05	13415.07	1772.26	INT-TOE
1084030	16614.32	13449.17	1772.61	INT-TOE
1084031	16607.32	13464.88	1773.01	110517
1084032	16601.91	13482.63	1773.04	INT-TOE
1084033	16598.93	13501.91	1773.26	110528
1084034	16597.31	13526.91	1773.63	INT-TOE
1084035	16598.62	13539.08	1773.72	110529
1084036	16606.40	13594.50	1773.94	110518
1084037	16615.53	13648.25	1774.11	110519
1084038	16624.87	13706.15	1774.47	110520
1084039	16634.74	13768.74	1774.60	110521
1084040	16644.40	13827.83	1774.90	110522
1084041	16652.95	13881.90	1775.07	110523
1084042	16661.42	13933.98	1775.27	110524
1084043	16672.73	14003.06	1775.51	110525
1084044	16681.24	14054.24	1775.76	110526
1084045	16688.32	14100.49	1775.94	110527
1084047	16938.55	14148.90	1816.48	110750

PROJECT CONTROL

1" = 2000'



BENCHMARK

CLARK COUNTY BENCHMARK (6C22 2E4), BEING A RIVET AND SQUARE ALUMINUM PLATE IN A CONCRETE CENTERLINE ISLAND, 4' WEST OF THE NOSE IN THE MIDDLE OF SUNSET ROAD, WEST SIDE OF THE INTERSECTION OF BOULDER HIGHWAY AND SUNSET ROAD.

PUBLISHED ELEVATION - 505.816 METERS = 1659.50 FEET
 NAVD 1988 DATUM - PUBLISHED (2003)

BASIS OF BEARINGS

SOUTH 85°36'52" WEST, BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND CC-GIS W51", AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

COORDINATE SYSTEM

THE COORDINATE SYSTEM AND ASSOCIATED BEARING ROTATION INFORMATION WAS ESTABLISHED AND PROVIDED BY PBS&J.

LINE LEGEND

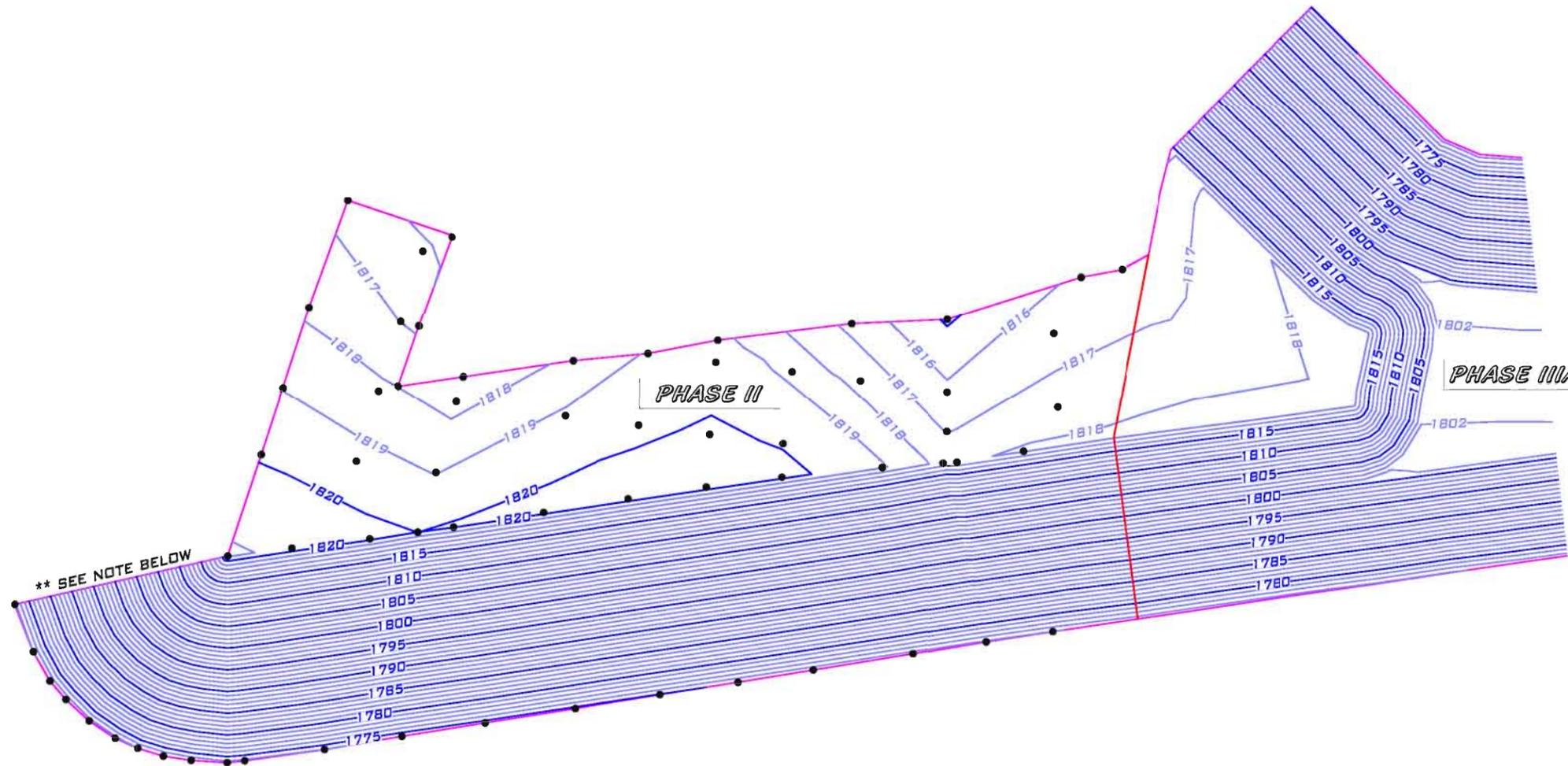
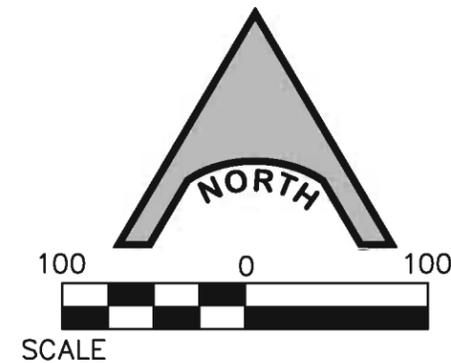
- MAJOR CONTOUR
- MINOR CONTOUR
- SURFACE LIMITS
- EXTENT OF DATA PREVIOUSLY REPORTED FOR PHASE IIIA

SURFACE DETAILS

THE SURFACE SHOWN BELOW WAS GENERATED BASED UPON AS-BUILT DATA COLLECTED BY ABSOLUTE BOUNDARY & CONTROL SOLUTIONS AS OF 11/6/2009. IT REPRESENTS A PORTION OF THE INTERIM COVER SOIL PLACEMENT WITHIN PHASE II PURSUANT TO THE PHASE II INTERIM CLOSURE DESIGN VERIFICATION AS WELL AS HOW THIS SURFACE TIES-IN TO THE PHASE IIIA INTERIM COVER WHICH WAS PREVIOUSLY REPORTED.

LEGEND

- AS-BUILT MEASUREMENT LOCATION PER THIS REPORT (SEE ATTACHED REPORT)



** VERIFICATION AND AS-BUILT EFFORTS ALONG THE TOE IN THIS AREA WERE ONGOING AS OF 11/9/2009. FOLLOWING COMPLETION OF THESE EFFORTS, THIS ADDITIONAL DATA WILL BE ADDED TO THIS REPORT AS AN AMENDMENT.

NO.	REVISION	DATE
△		
△		
△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)

PHASE II PARTIAL INTERIM COVER AS-BUILT

FIELD SURVEY DATE: 11/05/2009 & 11/06/2009
 FIELD CREW: C.G., M.G. & T.G.

PROJECT # 2008.06.23.01

ABSOLUTE BOUNDARY & CONTROL SOLUTIONS

6440 SKY POINT DRIVE
 SUITE 140 - PMB 321
 LAS VEGAS, NV. 89131
 (702) 953-7452
 (702) 987-5943 FAX
 WWW.AB-CS.COM

Date:	November 9, 2009
Drawn:	C. Givant
Checked:	C. Givant
Task:	2009.11.05.01-A
Sheet No.	1 of 1



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Phase II Interim Closure Interim Cover As-Built -A
Submittal Number:	02200-002KK
Specification Section:	Section 02200, Part 3.14
Drawing Number (s):	15
Page Number:	02200-10
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	11/9/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



699 South Friendswood Drive
Suite 101
Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
ATTENTION: Lee C. Farris, P.E.

DATE: 11/11/09
JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
TRANSMITTAL NUMBER: 348
ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	11/11/09			Submittal 02200-002LL - Phase II Interim Closure Interim Cover As-Built -B	RC

ACTION (*)

AR - AS REQUESTED	FA - FOR APPROVAL
F - FILE	RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE
 COPY TO: Ranajit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....



11/11/2009

Attn: Erik Gehringer, Project Manager
ENTACT Environmental Services, LLC
699 South Friendswood Drive
Friendswood, TX. 77546

AMENDMENT - Added additional toe As-Built Data along southwest and west.

Re: Corrective Action Management Unit (CAMU), Phase II – Partial Interim Cover As-Built

Mr. Gehringer,

Absolute Boundary & Control Solutions (ABCS) recently collected survey data within CAMU Phase II to determine if said area was constructed in a fashion consistent with the Interim Closure Design and coordinates provided by ENTACT. The attached Report reflects the results of this effort.

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If you have any questions or if we can be of further assistance do not hesitate to call.

Sincerely,

Craig A. Givant, PLS
President

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CAMU PHASE II – Partial Interim Cover As-Built

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10530	510530	16812.89	14080.21	1818.08	1818.12	0.06	-0.02	-0.04	As-Built
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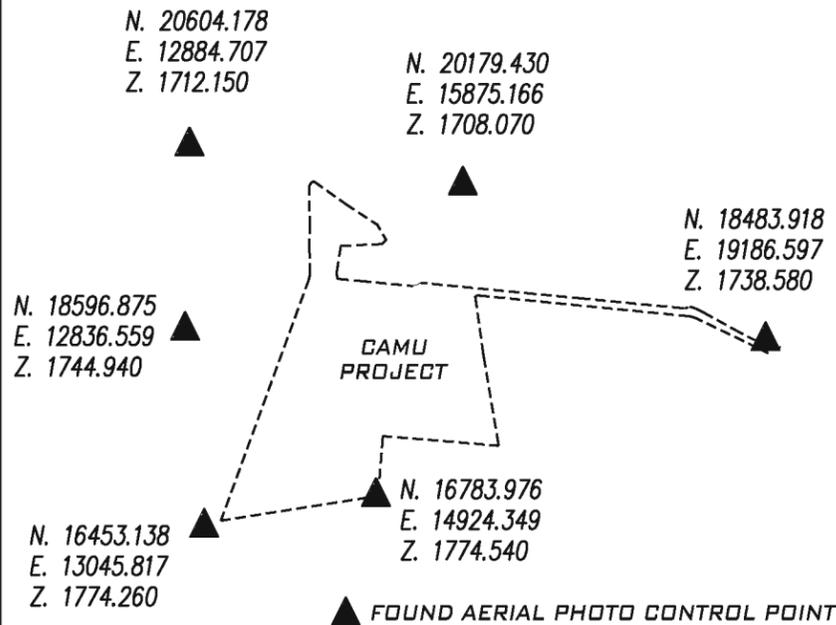
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510533	16794.85	13912.40	1820.37	10533
510534	16787.97	13859.94	1820.64	10534
510535	16779.76	13805.80	1820.52	10535
510536	16770.38	13746.73	1820.36	10536
510537	16760.22	13684.16	1820.07	10537
510538	16752.21	13625.95	1820.31	10538
510539	16745.72	13571.84	1820.76	10539
510540	16740.27	13527.28	1821.18	10540
510541	16810.52	13550.67	1819.90	10541
510542	16856.50	13565.77	1818.97	10542
510543	16912.35	13584.09	1817.80	10543
510544	16986.03	13610.91	1816.63	10544
510567	16804.63	14024.39	1817.67	10567
510568	16756.77	13659.27	1820.00	10568
510652	16951.19	13662.82	1816.23	10652
510653	16902.80	13647.47	1816.99	10653
510654	16854.24	13632.10	1818.24	10654

Point No.	Northing	Easting	Elevation	Description
510655	16805.99	13616.67	1819.34	10655
510656	16798.25	13672.01	1818.95	10656
510657	16847.46	13686.11	1817.68	10657
510688	16880.49	13819.35	1819.09	10688
510689	16837.56	13762.06	1819.15	10689
510690	16830.91	13812.80	1819.76	10690
510691	16824.53	13862.19	1820.17	10691
510692	16874.36	13866.45	1819.51	10692
510715	16867.76	13919.41	1818.82	10715
510716	16818.01	13913.04	1819.92	10716
510717	16861.38	13966.95	1817.66	10717
510735	16853.61	14027.10	1816.24	10735
510736	16826.65	14026.95	1816.95	10736
510737	16843.55	14104.09	1817.49	10737
510738	16894.42	14101.27	1816.50	10738
1084025	16706.82	13379.54	1771.68	110514
1084026	16653.80	13404.06	1772.17	110515
1084027	16674.25	13392.30	1771.96	INT-TOE
1084028	16626.23	13431.15	1772.49	110516
1084029	16641.05	13415.07	1772.26	INT-TOE
1084030	16614.32	13449.17	1772.61	INT-TOE
1084031	16607.32	13464.88	1773.01	110517
1084032	16601.91	13482.63	1773.04	INT-TOE
1084033	16598.93	13501.91	1773.26	110528
1084034	16597.31	13526.91	1773.63	INT-TOE
1084035	16598.62	13539.08	1773.72	110529
1084036	16606.40	13594.50	1773.94	110518
1084037	16615.53	13648.25	1774.11	110519
1084038	16624.87	13706.15	1774.47	110520
1084039	16634.74	13768.74	1774.60	110521
1084040	16644.40	13827.83	1774.90	110522
1084041	16652.95	13881.90	1775.07	110523
1084042	16661.42	13933.98	1775.27	110524
1084043	16672.73	14003.06	1775.51	110525
1084044	16681.24	14054.24	1775.76	110526
1084045	16688.32	14100.49	1775.94	110527
1084047	16938.55	14148.90	1816.48	110750
1084058	16727.17	13376.28	1771.47	ASB-TOE
1084059	16745.92	13376.19	1771.28	110513
1084060	16766.68	13378.07	1771.07	ASB-TOE

Point No.	Northing	Easting	Elevation	Description
1084061	16789.60	13384.22	1770.84	110512
1084062	16821.24	13395.59	1770.52	ASB-TOE
1084063	16861.57	13410.42	1770.24	110511
1084064	16906.34	13427.56	1769.65	110510
1084065	16965.09	13448.73	1769.13	110509
1084066	17035.31	13474.42	1768.31	110508

PROJECT CONTROL

1" = 2000'



BENCHMARK

CLARK COUNTY BENCHMARK (6C22 2E4), BEING A RIVET AND SQUARE ALUMINUM PLATE IN A CONCRETE CENTERLINE ISLAND, 4' WEST OF THE NOSE IN THE MIDDLE OF SUNSET ROAD, WEST SIDE OF THE INTERSECTION OF BOULDER HIGHWAY AND SUNSET ROAD.

PUBLISHED ELEVATION - 505.816 METERS = 1659.50 FEET
 NAVD 1988 DATUM - PUBLISHED (2003)

BASIS OF BEARINGS

SOUTH 85°36'52" WEST, BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND "CC-GIS W51", AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

COORDINATE SYSTEM

THE COORDINATE SYSTEM AND ASSOCIATED BEARING ROTATION INFORMATION WAS ESTABLISHED AND PROVIDED BY PBS&J.

LINE LEGEND

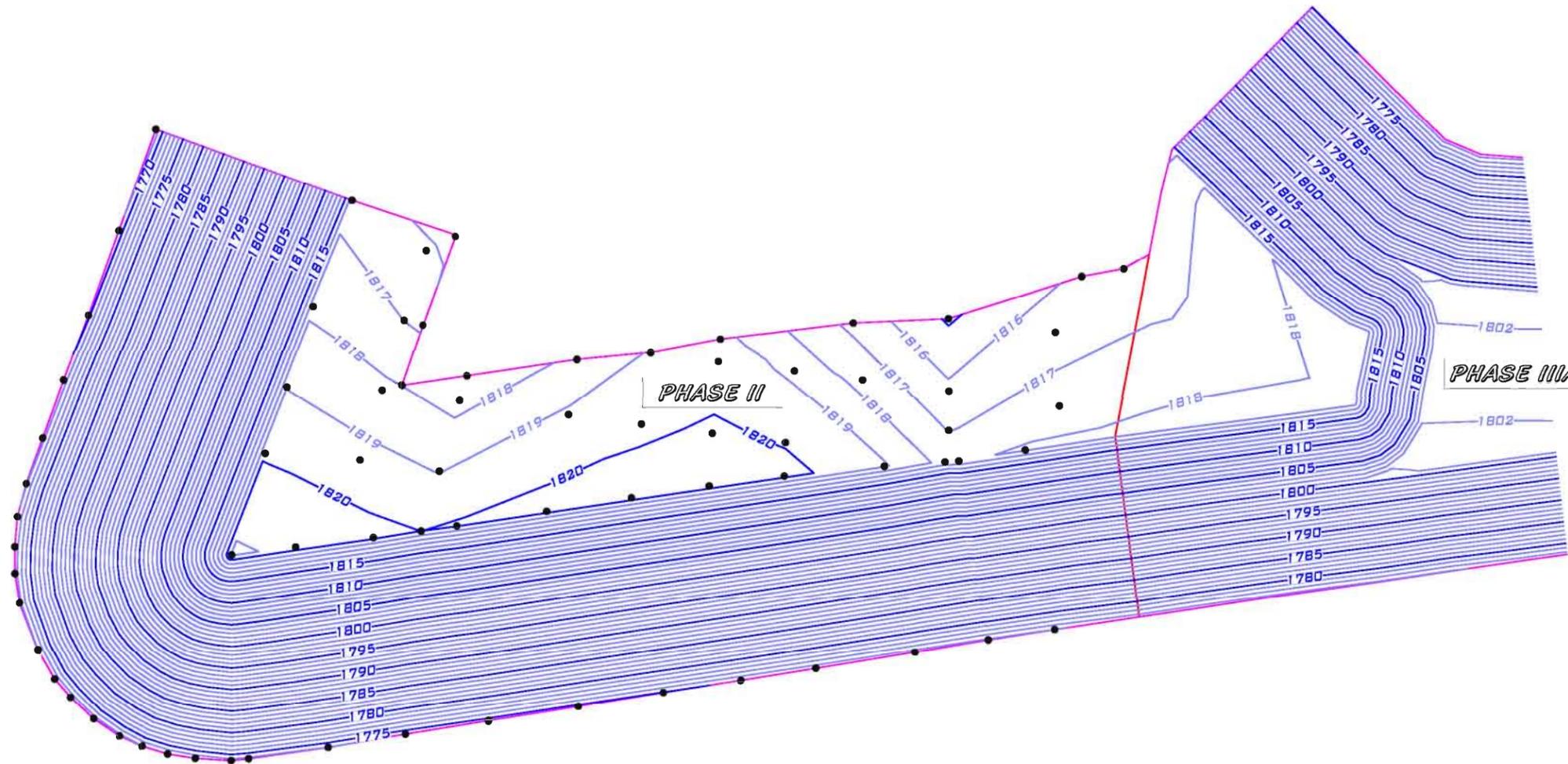
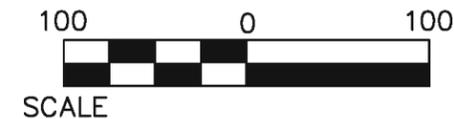
- MAJOR CONTOUR
- MINOR CONTOUR
- SURFACE LIMITS
- EXTENT OF DATA PREVIOUSLY REPORTED FOR PHASE IIIA

SURFACE DETAILS

THE SURFACE SHOWN BELOW WAS GENERATED BASED UPON AS-BUILT DATA COLLECTED BY ABSOLUTE BOUNDARY & CONTROL SOLUTIONS AS OF 11/6/2009. IT REPRESENTS A PORTION OF THE INTERIM COVER SOIL PLACEMENT WITHIN PHASE II PURSUANT TO THE PHASE II INTERIM CLOSURE DESIGN VERIFICATION AS WELL AS HOW THIS SURFACE TIES-IN TO THE PHASE IIIA INTERIM COVER WHICH WAS PREVIOUSLY REPORTED.

LEGEND

- AS-BUILT MEASUREMENT LOCATION PER THIS REPORT (SEE ATTACHED REPORT)



NO.	REVISION	DATE
1	ADDED ADDITIONAL TOE AS-BUILT LOCATIONS	11/11/09
2		
3		
4		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)

PHASE II PARTIAL INTERIM COVER AS-BUILT

FIELD SURVEY DATE: 11/05/2009 & 11/06/2009
 FIELD CREW: C.G., M.G. & T.G.

PROJECT # 2008.06.23.01



ABSOLUTE BOUNDARY & CONTROL SOLUTIONS

6440 SKY POINT DRIVE
 SUITE 140 - PMB 321
 LAS VEGAS, NV. 89131
 (702) 953-7452
 (702) 987-5943 FAX
 WWW.AB-CS.COM

Date: November 9, 2009
 Drawn: C. Givant
 Checked: C. Givant
 Task: 2009.11.05.01-A

Sheet No. 1 of 1



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	TBD
Submittal Summary:	Phase II Interim Closure Interim Cover As-Built - B
Submittal Number:	02200-002LL
Specification Section:	Section 02200, Part 3.14
Drawing Number (s):	15
Page Number:	02200-10
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	11/11/2009

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
 ATTENTION: Lee C. Farris, P.E.

DATE: 1/22/10
 JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
 TRANSMITTAL NUMBER: 368
 ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	1/22/10			Submittal 02200-002PP-Phase II Interim & Phase IIIA Final Closure Areas - Final HDPE Liner & 4-inch CPE As-Builts	RC

ACTION (*)

AR - AS REQUESTED

FA - FOR APPROVAL

F - FILE

RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE

COPY TO: Ranajit Sahu, Lee Farris

BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....

**CORRECTIVE ACTION MANAGEMENT UNIT
(CAMU – PHASE II INTERIM & PHASE IIIA
CLOSURE HDPE LINER AS-BUILT)
HENDERSON, NV**

Prepared for:



ENTACT Environmental Services, LLC
699 South Friendswood Dr.
Suite 101
Friendswood, TX. 77546
(281) 996-9892

Prepared by:



Absolute Boundary & Control Solutions
6440 Sky Point Drive
Suite 140 – PMB 321
Las Vegas, NV 89131
(702) 953-7452

January 4, 2010



01/04/2010

Attn: Erik Gehringer, Project Manager
ENTACT Environmental Services, LLC
699 South Friendswood Drive
Friendswood, TX. 77546

Re: Corrective Action Management Unit (CAMU) – Phase II Interim & Phase IIIA Closure HDPE Liner
As-built

Mr. Gehringer,

This report outlines the results of a Field Survey performed on the Corrective Action Management Unit (CAMU) project and was completed to depict the As-Built information with regard to the HDPE Closure Liner within a portion of Phase II and all of Phase IIIA. The intent of said report is to provide information such as but not limited to, Data, Calculations, Drawings, Tables, Charts, Electronic Files and other required media to satisfy the Submittal Requirements as outlined in Section 01050 of the Project Technical Specifications, Dated May, 2008.

Absolute Boundary & Control Solutions (ABCS) is pleased you have chosen us to complete these services, and assures you that every attempt has been made to prepare same in a fashion meeting or exceeding the Project Specifications. If however after your review you determine that revisions, clarifications or other modifications are needed, please do not hesitate to bring them to our attention.

In closing, thank you again for the opportunity to serve ENTACT. If you have any questions, comments or concerns, please do not hesitate to contact me.

Sincerely,

Craig A. Givant, PLS
President

(702) 953-7452
(702) 839-9750 fax

CERTIFICATION PAGE

CAMU – PHASE II INTERIM & PHASE IIIA CLOSURE
HPDE LINER AS-BUILT
HENDERSON, NV

I, Craig A. Givant, a Professional Land Surveyor registered in the State of Nevada, certify (as defined by Nevada Revised Statutes 625.403) that:

1. This report and any Land Surveying Practices (N.R.S. 625.040) on which it is based were performed directly by me or under my responsible charge (N.R.S. 625.080) in accordance with the Standards and Practices Governing Land Surveyors in the State of Nevada as defined by any applicable sections of the Nevada Revised Statutes (N.R.S.) or the Nevada Administrative Code (N.A.C.).
2. By affixing my official seal and signature below I am confirming that I am a Registered Land Surveyor in the State of Nevada and thereby satisfy the requirements of Section 01050, Part 1.03, Subpart A or the Project Technical Specifications.

Craig A. Givant, PLS
PLS 14348



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FIELD NOTES

All Field Data pertaining to the determination of the location of the As-Built Information was collected electronically. Pertinent parameters required to be input into the software and which were obtained by means of human interaction, were verified as correct by performing field checks. These field checks and their resultant accuracies can be viewed within the Electronic Field Notes (Raw Data). The following Raw Data files were used while acquiring the As-Built information. These files have not been printed for inclusion in this report however a Portable Document File (PDF) of each raw data printout is included electronically on the attached Compact Disk (CD). It should be noted that the contents of these Raw Data files may not pertain solely to the report herein presented and may include additional data from other “tasks” performed on the same day.

1. 2009-10-20 (PHII IC+PH IIIA Closure Liner ASB)-MC.dc – Consisting of 271 Pages

SURVEY DATA

Field Survey Methods were employed that resulted in the following precisions:

Horizontal Coordinates: $\pm 1.0'$ (One Foot)

Vertical Coordinates: $\pm 0.10'$ (One Tenth of a Foot)

The Following documents are attached hereto:

1. Coordinate Printout of the reduced (measured) coordinates from the Field Collection Efforts.

1. Coordinate Printout of the reduced (measured) coordinates from the Field Collection Efforts.

Point No.	Northing	Easting	Elevation	Description
75000	18136.75	14603.63	1749.82	6-29-09prechk
75001	18081.08	14491.55	1750.20	top-ps
75002	18081.88	14491.53	1750.28	r-ps
75003	18083.80	14491.02	1750.02	r-ps
75004	18083.25	14491.00	1750.17	top-mat-ps
75005	18083.30	14502.34	1750.28	top-mat-ps
75006	18081.21	14502.20	1750.28	top-ps
75007	18080.35	14524.54	1750.19	top-ps
75008	18083.21	14524.51	1750.18	top-mat-ps
75009	18082.74	14547.02	1750.28	top-mat-ps
75010	18080.00	14546.95	1750.30	top-ps
75011	18079.80	14569.42	1750.61	top-ps
75012	18082.27	14569.41	1750.51	top-mat-ps
75013	18082.36	14591.86	1750.59	top-mat-ps
75014	18079.67	14591.90	1750.55	top-ps
75015	18078.99	14614.26	1750.63	top-ps
75016	18082.08	14614.20	1750.63	top-mat-ps
75017	18081.60	14636.84	1750.80	top-mat-ps
75018	18079.12	14636.72	1750.71	top-ps
75019	18078.34	14659.08	1750.83	top-ps
75020	18081.06	14659.03	1750.86	top-mat-ps
75021	18080.11	14681.71	1751.12	top-mat-scrap
75022	18077.30	14681.61	1751.09	top-scrap
75023	18051.27	14681.04	1738.68	toe-scrap
75024	18065.86	14669.10	1745.06	p-26
75025	18052.08	14658.43	1738.67	toe-ps
75026	18067.60	14647.45	1745.17	p-24
75027	18053.35	14636.03	1738.53	toe-ps
75028	18066.87	14625.95	1744.56	p-22
75029	18053.39	14613.70	1738.53	toe-ps
75030	18066.18	14604.80	1743.98	p-21
75031	18053.63	14591.26	1738.31	toe-ps
75032	18067.30	14581.85	1744.40	p-18
75033	18053.64	14568.90	1738.36	toe-ps
75034	18067.81	14558.30	1744.57	p-17
75035	18053.99	14546.42	1738.41	toe-ps

Point No.	Northing	Easting	Elevation	Description
75036	18068.37	14537.18	1744.71	p-16
75037	18054.38	14523.99	1738.41	toe-ps
75038	18068.51	14513.32	1744.87	p-15
75039	18068.53	14495.43	1744.91	p-19
75040	18054.91	14501.54	1738.56	toe-ps
75041	18055.14	14490.24	1738.73	toe-ps
75042	18039.24	14490.28	1739.03	r-14-ps
75043	18038.66	14489.34	1739.10	r-14-ps
75044	18036.61	14490.24	1739.17	r-14-ps
75045	18007.78	14489.90	1739.89	r-23-ps
75046	18006.88	14489.00	1739.86	r-23-ps
75047	18005.94	14489.88	1739.95	r-23-ps
75048	18003.43	14489.91	1740.00	r-24-ps
75049	18002.68	14490.86	1739.98	r-24-ps
75050	18001.71	14489.91	1740.01	r-24-ps
75051	18002.59	14492.90	1739.94	r-25-ps
75052	18002.46	14498.37	1740.09	r-25-ps
75053	18002.47	14499.74	1740.11	r-26-ps
75054	18003.36	14500.81	1740.12	r-26-ps
75055	18001.54	14500.66	1740.19	r-26-ps
75056	17972.10	14489.65	1740.70	r-22-ps
75057	17971.26	14488.83	1740.77	r-22-ps
75058	17970.22	14489.61	1740.78	r-22-ps
75059	17940.50	14489.48	1741.79	r-21-ps
75060	17939.59	14488.71	1741.83	r-21-ps
75061	17938.53	14489.43	1741.88	r-21-ps
75062	17917.26	14489.32	1742.57	r-20-ps
75063	17915.57	14490.15	1742.64	r-20-ps
75064	17912.65	14488.50	1742.69	r-20-ps
75065	17899.82	14489.23	1743.00	r-20-ps
75066	17911.79	14494.59	1742.70	p-06
75067	17923.65	14494.43	1742.30	p-20
75068	17915.05	14498.01	1742.57	r-41-ps
75069	17913.82	14498.75	1742.65	r-41-ps
75070	17915.91	14499.44	1742.59	r-41-ps
75071	17914.80	14500.12	1742.64	r-41-ps
75072	17906.90	14509.59	1742.95	p-05
75073	17898.61	14528.98	1743.31	p-01
75074	17913.03	14520.45	1742.86	r-30-ps
75075	17911.92	14521.16	1742.89	r-30-ps

Point No.	Northing	Easting	Elevation	Description
75076	17914.15	14521.77	1742.80	r-30-ps
75077	17912.94	14522.71	1742.87	r-30-ps
75078	17912.60	14526.02	1742.85	ds-17/r-31-ps
75079	17911.95	14532.59	1742.90	ds-17/r-31-ps
75080	17910.88	14531.37	1742.93	ds-21/r-42-s
75081	17911.38	14526.32	1742.89	ds-21/r-42-s
75082	17911.13	14543.03	1742.80	r-32-ps
75083	17910.13	14543.72	1742.88	r-32-ps
75084	17911.96	14544.29	1742.82	r-32-ps
75085	17910.94	14545.33	1742.85	r-32-ps
75086	17896.88	14552.36	1743.28	p-02
75087	17909.08	14565.47	1742.82	r-33-ps
75088	17908.17	14566.01	1742.85	r-33-ps
75089	17909.84	14566.68	1742.79	r-33-ps
75090	17908.88	14567.77	1742.83	r-33-ps
75091	17927.67	14566.88	1742.29	ds-13/r-27-ps
75092	17933.20	14566.97	1742.04	ds-13/r-27-ps
75093	17896.06	14576.79	1743.20	p-03
75094	17907.14	14586.98	1742.83	r-34-ps
75095	17906.06	14588.10	1742.88	r-34-ps
75096	17908.07	14589.11	1742.77	r-34-ps
75097	17906.84	14590.56	1742.84	r-34-ps
75098	17898.63	14599.46	1743.13	p-04
75099	17905.04	14609.52	1742.93	r-35-ps
75100	17903.87	14610.37	1743.01	r-35-ps
75101	17905.66	14611.57	1742.98	r-35-ps
75102	17904.72	14612.52	1743.02	r-35-ps
75103	17896.23	14621.06	1743.30	p-07
75104	17964.09	14623.36	1741.26	p-23
75105	17971.09	14612.46	1741.08	r-38-ps
75106	17971.87	14613.34	1741.04	r-38-ps
75107	17972.67	14612.43	1741.04	r-38-ps
75108	17978.43	14612.41	1740.87	ds-15/r-28-ps
75109	17983.78	14612.54	1740.72	ds-15/r-28-ps
75110	17971.46	14633.90	1741.09	r-39-ps
75111	17972.46	14634.89	1741.08	r-39-ps
75112	17970.48	14634.93	1741.11	r-39-ps
75113	17916.98	14633.95	1742.65	ds-16/r-29-ps
75114	17911.76	14633.89	1742.88	ds-16/r-29-ps
75115	17903.02	14631.97	1743.16	r-36-ps

Point No.	Northing	Easting	Elevation	Description
75116	17901.99	14632.74	1743.18	r-36-ps
75117	17903.69	14633.78	1743.10	r-36-ps
75118	17902.82	14634.74	1743.18	r-36-ps
75119	17892.11	14642.47	1743.53	p-08
75120	17900.93	14654.27	1743.13	r-37-ps
75121	17899.93	14654.97	1743.16	r-37-ps
75122	17901.70	14656.19	1743.12	r-37-ps
75123	17900.63	14657.32	1743.15	r-37-ps
75124	17888.49	14664.37	1743.51	p-09
75125	18018.27	14668.59	1739.90	p-25
75126	18027.71	14658.04	1739.65	r-40-ps
75127	18028.71	14658.92	1739.64	r-40-ps
75128	18029.53	14658.01	1739.60	r-40-ps
75129	18028.63	14680.63	1739.54	scrap-ps
75130	17898.18	14677.50	1743.20	scrap-ps
75131	17888.13	14686.79	1743.50	p-10
75132	17888.34	14707.75	1743.61	p-11
75133	17896.29	14699.64	1743.33	scrap-ps
75134	17894.14	14722.16	1743.52	scrap-ps
75135	17883.99	14731.24	1743.90	p-12
75136	17882.39	14755.45	1744.14	p-13
75137	17891.99	14744.25	1743.67	scrap-ps
75138	17900.10	14744.76	1743.46	scrap-ps
75139	17896.05	14767.37	1743.66	scrap-ps
75140	17882.85	14775.03	1744.07	p-14
75141	17893.57	14789.51	1743.74	scrap-ps
75142	17877.87	14798.23	1744.20	p-27
75143	17890.89	14811.86	1743.81	scrap-ps
75144	17874.29	14821.89	1744.36	p-28
75145	17889.62	14834.22	1743.95	scrap-ps
75146	17871.05	14843.39	1744.56	p-29
75147	17885.66	14856.46	1744.12	scrap-ps
75148	17867.13	14865.67	1744.75	p-30
75149	17884.05	14878.57	1744.21	scrap-ps
75150	17890.83	14901.70	1743.90	scrap-edge
75151	17866.04	14888.72	1744.75	p-31
75152	17788.53	14805.16	1746.90	ds-19/r-ps
75153	17783.39	14804.88	1747.19	ds-19/r-ps
75154	17518.46	14879.20	1754.62	toe-ps-scrap
75155	17508.35	14865.68	1760.00	p-31

Point No.	Northing	Easting	Elevation	Description
75156	17520.71	14856.86	1754.68	toe-ps
75157	17509.35	14845.22	1760.19	p-30
75158	17521.76	14834.39	1754.84	toe-ps
75159	17510.37	14822.51	1760.26	p-29
75160	17523.92	14812.17	1754.78	toe-ps
75161	17513.28	14798.61	1759.82	p-28
75162	17525.33	14789.75	1754.59	toe-ps
75163	17515.30	14778.90	1759.63	p-27
75164	17527.51	14767.48	1754.49	toe-ps
75165	17591.42	14771.17	1752.46	ds-18/r-ps
75166	17596.15	14771.43	1752.34	ds-18/r-ps
75167	17600.42	14749.29	1752.21	ds-12/r-18-ps
75168	17594.66	14748.92	1752.40	ds-12/r-18-ps
75169	17686.49	14821.74	1749.95	ds-20/r-ps
75170	17691.54	14822.08	1749.70	ds-20/r-ps
75171	17516.74	14755.68	1759.64	p-14
75172	17518.17	14733.12	1759.56	p-13
75173	17529.09	14745.01	1754.35	toe-ps
75174	17530.99	14722.63	1754.35	toe-ps
75175	17597.49	14726.54	1752.34	ds-11/r-17-ps
75176	17602.83	14726.86	1752.20	ds-11/r-17-ps
75177	17597.85	14681.47	1752.23	ds-09/r-15-ps
75178	17591.35	14681.22	1752.48	ds-09/r-15-ps
75179	17524.32	14699.71	1757.88	ds-10/r-16-ps
75180	17519.53	14699.39	1760.15	ds-10/r-16-ps
75181	17519.44	14710.87	1759.86	p-12
75182	17532.64	14700.18	1754.21	toe-ps
75183	17520.17	14687.96	1760.20	p-11
75184	17534.33	14677.77	1754.19	toe-ps
75185	17521.43	14664.03	1760.44	p-10
75186	17535.91	14655.38	1754.14	toe-ps
75187	17522.27	14642.93	1760.37	p-09
75188	17537.80	14632.95	1754.02	toe-ps
75189	17524.48	14621.68	1760.02	p-08
75190	17539.43	14610.56	1753.90	toe-ps
75191	17596.51	14614.13	1752.25	ds-07/r-12-ps
75192	17602.13	14614.39	1752.01	ds-07/r-12-ps
75193	17526.88	14598.35	1759.79	p-07
75194	17541.16	14588.23	1753.75	toe-ps
75195	17527.87	14575.09	1760.06	p-04

Point No.	Northing	Easting	Elevation	Description
75196	17542.66	14565.80	1753.78	toe-ps
75197	17706.99	14575.92	1748.88	ds-03/r-08-ps
75198	17711.66	14576.20	1748.71	ds-03/r-08-ps
75199	17793.65	14648.42	1746.36	ds-08/r-13-ps
75200	17799.20	14648.68	1746.19	ds-08/r-13-ps
75201	17855.08	14607.20	1744.49	ds-05/r-11-ps
75202	17860.33	14607.54	1744.34	ds-05/r-11-ps
75203	17656.47	14550.57	1750.37	ds-02/r-07-ps
75204	17651.61	14550.27	1750.48	ds-02/r-07-ps
75205	17606.88	14525.18	1752.06	ds-01/r-05-ps
75206	17601.81	14524.86	1752.20	ds-01/r-05-ps
75207	17752.14	14511.32	1747.35	ds-04/r-06-ps
75208	17758.05	14511.69	1747.19	ds-04/r-06-ps
75209	17523.13	14484.66	1766.92	r-01-ps
75210	17522.67	14482.43	1767.18	r-01-s
75211	17520.23	14482.99	1765.76	r-01-s
75212	17518.93	14485.65	1765.81	r-01-s
75213	17522.33	14486.19	1766.90	r-01-s
75214	17522.37	14484.53	1767.16	top-ps
75215	17520.53	14483.81	1767.05	top-mat-ps
75216	17517.05	14497.03	1767.17	top-mat-ps
75217	17519.74	14497.21	1767.01	top-ps
75218	17517.90	14519.53	1766.99	top-ps
75219	17515.17	14519.32	1767.09	top-mat-ps
75220	17513.74	14541.76	1766.73	top-mat-ps
75221	17516.44	14541.92	1766.88	top-ps
75222	17515.15	14564.48	1766.93	top-ps
75223	17512.59	14564.31	1767.02	top-mat-ps
75224	17511.04	14586.62	1766.78	top-mat-ps
75225	17513.84	14586.77	1766.75	top-ps
75226	17512.02	14586.71	1766.85	r-ps
75227	17509.91	14586.37	1764.86	r-ps
75228	17512.13	14609.17	1766.68	top-ps
75229	17509.75	14608.91	1766.90	top-mat-ps
75230	17508.35	14631.45	1766.75	top-mat-ps
75231	17510.70	14631.49	1766.67	top-ps
75232	17509.43	14653.96	1766.30	top-ps
75233	17506.85	14653.92	1766.42	top-mat-ps
75234	17505.35	14676.34	1766.53	top-mat-ps
75235	17508.36	14676.45	1766.57	top-ps

Point No.	Northing	Easting	Elevation	Description
75236	17506.88	14698.86	1766.25	top-ps
75237	17504.29	14698.68	1766.28	top-mat-ps
75238	17502.66	14721.07	1766.28	top-mat-ps
75239	17505.68	14721.28	1766.25	top-ps
75240	17504.51	14743.70	1766.06	top-ps
75241	17501.60	14743.44	1766.08	top-mat-ps
75242	17500.08	14765.89	1766.02	top-mat-ps
75243	17503.14	14766.06	1765.85	top-ps
75244	17501.40	14788.52	1765.86	top-ps
75245	17498.86	14788.39	1765.89	top-mat-ps
75246	17497.44	14810.59	1765.83	top-mat-ps
75247	17500.04	14810.66	1765.76	top-ps
75248	17498.74	14833.08	1765.72	top-ps
75249	17495.91	14832.95	1765.74	top-mat-ps
75250	17494.73	14855.34	1765.69	top-mat-ps
75251	17497.33	14855.43	1765.53	top-ps
75252	17495.75	14877.80	1765.63	top-ps-scrap
75253	17493.27	14877.60	1765.67	top-ps-scrap
75254	17588.90	14490.64	1752.24	ps-angle pt.
75255	17615.02	14490.63	1751.71	r-03-ps
75256	17614.99	14490.26	1751.73	r-03-ps
75257	17617.14	14490.73	1751.66	r-03-ps
75258	17637.82	14490.59	1751.13	r-04-ps
75259	17639.13	14489.50	1751.13	r-04-ps
75260	17639.97	14490.55	1751.06	r-04-ps
75261	17766.71	14489.93	1746.99	r-09-ps
75262	17772.37	14489.94	1746.84	r-09-ps
75263	17772.35	14490.12	1746.83	r-09-ps
75264	17808.89	14489.63	1745.81	r-10-ps
75265	17814.93	14489.46	1745.66	r-10-ps
75266	17814.98	14489.72	1745.66	r-10-ps
75267	17848.90	14489.47	1744.64	ds-06/r-19-ps
75268	17854.03	14489.53	1744.54	ds-06/r-19-ps
75269	18082.76	14491.70	1750.35	r-43
75270	18136.76	14603.61	1749.80	6-29-09postchk
75271	17654.20	15298.73	1751.06	7-2-09prechk
75272	17883.14	14883.87	1744.25	r-68-ps
75273	17884.02	14882.91	1744.21	r-68-ps
75274	17882.69	14878.54	1744.28	r-68-ps
75275	17883.74	14877.95	1744.22	r-68-ps

Point No.	Northing	Easting	Elevation	Description
75276	17885.23	14860.99	1744.10	r-67-ps
75277	17885.98	14860.18	1744.12	r-67-ps
75278	17884.76	14856.16	1744.10	r-67-ps
75279	17885.75	14855.33	1744.08	r-67-ps
75280	17887.71	14838.48	1743.95	r-66-ps
75281	17888.68	14837.81	1743.89	r-66-ps
75282	17887.20	14833.97	1743.92	r-66-ps
75283	17888.27	14833.32	1743.87	r-66-ps
75284	17899.99	14817.31	1743.45	ds-26/r-65-ps
75285	17905.09	14818.59	1743.33	ds-26/r-65-ps
75286	17890.21	14816.27	1743.79	r-64-ps
75287	17891.13	14815.28	1743.76	r-64-ps
75288	17889.70	14811.64	1743.82	r-64-ps
75289	17890.82	14811.01	1743.77	r-64-ps
75290	17892.52	14793.41	1743.74	r-63-ps
75291	17893.55	14792.66	1743.72	r-63-ps
75292	17893.65	14791.76	1743.74	r-63-ps
75293	17892.09	14789.37	1743.77	r-63-ps
75294	17893.06	14788.49	1743.73	r-63-ps
75295	17895.27	14770.32	1743.67	r-60-ps
75296	17896.09	14769.46	1743.64	r-60-ps
75297	17894.65	14767.01	1743.70	r-60-ps
75298	17895.85	14766.43	1743.64	r-60-ps
75299	17897.67	14747.90	1743.52	r-59-ps
75300	17898.50	14747.03	1743.45	r-59-ps
75301	17897.08	14746.11	1743.53	r-59-ps
75302	17893.10	14744.37	1743.59	r-53-ps
75303	17891.23	14744.20	1743.65	r-53-ps
75304	17892.30	14743.05	1743.61	r-53-ps
75305	17894.14	14724.71	1743.49	r-54-ps
75306	17895.37	14723.96	1743.49	r-54-ps
75307	17895.42	14723.30	1743.47	r-54-ps
75308	17893.16	14721.95	1743.50	r-54-ps
75309	17894.46	14721.00	1743.49	r-54-ps
75310	17896.18	14701.83	1743.31	r-52-ps
75311	17897.16	14700.83	1743.32	r-52-ps
75312	17895.28	14699.66	1743.38	r-52-ps
75313	17896.33	14698.80	1743.32	r-52-ps
75314	17898.39	14679.49	1743.19	r-51-ps
75315	17900.41	14678.60	1743.15	r-51-ps

Point No.	Northing	Easting	Elevation	Description
75316	17898.82	14676.44	1743.16	r-51-ps
75317	17893.25	14677.17	1743.34	r-51-ps
75318	17920.27	14678.93	1742.65	ds-22/r-55-ps
75319	17925.88	14679.02	1742.51	ds-22/r-55-ps
75320	17921.58	14701.38	1742.65	ds-23/r-50-ps
75321	17915.87	14701.21	1742.83	ds-23/r-50-ps
75322	17921.85	14772.69	1742.93	ds-24/r-61-ps
75323	17916.07	14771.92	1743.14	ds-24/r-61-ps
75324	17504.69	14721.16	1766.32	r-57-ps
75325	17503.00	14720.91	1766.31	r-57-ps
75326	17501.23	14765.98	1766.01	r-58-ps
75327	17499.77	14765.63	1765.80	r-58-ps
75328	17500.98	14777.11	1765.93	r-84
75329	17945.44	14798.04	1742.06	ds-25/r-62-ps
75330	17951.62	14798.85	1741.89	ds-25/r-62-ps
75331	18063.14	14692.50	1744.28	p-32
75332	18062.50	14703.63	1744.42	r-49-ps
75333	18055.54	14703.40	1740.87	r-49-ps
75334	18050.44	14703.45	1738.65	toe-ps
75335	18065.00	14713.42	1745.74	p-33
75336	18049.23	14725.78	1738.93	toe-ps
75337	18063.52	14735.62	1745.88	p-34
75338	18046.39	14743.48	1739.16	toe-ps
75339	18060.38	14756.38	1745.70	p-35
75340	18042.55	14765.58	1739.44	toe-ps
75341	18057.45	14777.37	1746.16	p-36
75342	18038.24	14787.59	1739.32	toe-ps
75343	18051.88	14800.80	1746.29	p-37
75344	18033.82	14809.57	1739.40	toe-ps
75345	18047.13	14819.25	1746.15	p-38
75346	18030.66	14825.41	1739.88	toe-ps
75347	18046.34	14837.36	1747.76	p-39
75348	18008.09	14852.79	1740.12	p-40
75349	18026.08	14850.49	1739.48	p-45
75350	18023.50	14847.73	1739.58	r-69-ps
75351	18022.38	14846.53	1739.65	r-69-ps
75352	18024.54	14847.06	1739.63	r-69-ps
75353	18022.00	14854.69	1739.62	r-71-ps
75354	18022.88	14855.28	1739.57	r-71-ps
75355	18021.38	14857.40	1739.65	r-71-ps

Point No.	Northing	Easting	Elevation	Description
75356	18027.36	14847.67	1739.55	toe-ps
75357	18028.33	14852.75	1739.71	toe-ps
75358	18044.91	14855.52	1746.07	p-42
75359	18017.17	14868.37	1739.79	r-72-ps
75360	18018.85	14867.77	1739.74	r-72-ps
75361	18020.12	14868.79	1739.66	r-72-ps
75362	18035.95	14872.81	1739.13	r-73-ps
75363	18039.58	14872.33	1739.50	r-73-ps
75364	18039.42	14873.92	1739.33	r-73-ps
75365	18058.45	14870.15	1747.23	p-43
75366	18053.40	14888.54	1747.07	p-41
75367	18035.16	14895.81	1739.37	toe-ps
75368	18030.01	14917.75	1739.63	toe-ps
75369	18026.40	14937.56	1739.72	toe-scrap
75370	18047.88	14909.03	1746.67	p-46
75371	18044.00	14930.39	1747.09	p-47
75372	17685.96	14866.55	1749.96	r-78-ps
75373	17683.74	14866.48	1750.06	r-78-ps
75374	17592.43	14809.24	1752.39	r-85
75375	17504.07	14890.14	1761.09	p-48
75376	17518.24	14901.66	1754.98	toe-ps
75377	17503.66	14911.94	1760.56	p-49
75378	17516.13	14923.96	1755.26	toe-ps
75379	17502.60	14933.47	1760.83	p-50
75380	17514.65	14946.38	1755.14	toe-ps
75381	17500.14	14955.85	1761.24	p-51
75382	17512.92	14968.49	1755.35	toe-ps
75383	17499.40	14975.15	1760.99	p-52
75384	17509.60	14990.85	1755.44	toe-ps-scrap
75385	17488.82	14989.60	1765.05	top-ps-scrap
75386	17486.60	14989.49	1765.02	top-mat-ps-scrap
75387	17487.84	14967.04	1765.32	top-mat-ps
75388	17490.15	14967.31	1765.32	top-ps
75389	17491.68	14944.95	1765.25	top-ps
75390	17489.32	14944.89	1765.27	top-mat-ps
75391	17490.75	14922.43	1765.22	top-mat-ps
75392	17493.23	14922.54	1765.27	top-ps
75393	17494.44	14900.05	1765.43	top-ps
75394	17493.02	14899.97	1765.47	top-mat-ps
75395	17494.23	14877.64	1765.82	r-ps

Point No.	Northing	Easting	Elevation	Description
75396	17492.90	14877.29	1765.50	r-ps
75397	17585.12	14883.19	1752.89	ds-27/r-79-ps
75398	17590.52	14883.48	1752.74	ds-27/r-79-ps
75399	17583.10	14905.47	1752.99	ds-28/r-80-ps
75400	17588.65	14905.82	1752.86	ds-28/r-80-ps
75401	17680.93	14933.67	1750.21	ds-29/r-81-ps
75402	17686.31	14933.99	1750.04	ds-29/r-81-ps
75403	17678.70	14956.11	1750.34	ds-30/r-82-ps
75404	17684.10	14956.32	1750.09	ds-30/r-82-ps
75405	17776.11	14984.26	1747.34	ds-31/r-83-ps
75406	17782.16	14984.61	1747.15	ds-31/r-83-ps
75407	17884.49	15013.55	1744.29	scrap-ps
75408	17885.38	14990.87	1744.17	scrap-ps
75409	17886.62	14968.57	1744.14	scrap-ps
75410	17888.32	14946.25	1743.99	scrap-ps
75411	17889.47	14924.06	1743.98	scrap-ps
75412	17891.90	14908.07	1743.91	scrap-ps
75413	17881.44	14900.93	1744.30	r-ps
75414	18052.18	14946.66	1752.59	top-ps-scrap
75415	18054.87	14947.11	1752.54	top-mat-ps-scrap
75416	18059.71	14924.74	1752.48	top-mat-ps
75417	18057.27	14924.25	1752.40	top-ps
75418	18062.38	14902.71	1752.57	top-ps
75419	18064.84	14902.88	1752.57	top-mat-ps
75420	18064.59	14902.93	1752.60	r-77-ps
75421	18062.75	14902.83	1752.59	r-77-ps
75422	18067.33	14881.09	1752.45	top-ps
75423	18070.45	14881.92	1752.40	top-mat-ps
75424	18074.89	14859.86	1752.40	top-mat-ps
75425	18074.05	14855.11	1752.51	top-mat-ps
75426	18072.30	14855.94	1752.34	top-ps
75427	18072.08	14859.26	1752.40	top-ps
75428	18073.61	14857.43	1752.41	p-44
75429	18072.69	14855.64	1752.40	r-75-ps
75430	18074.29	14855.11	1752.42	r-75-ps
75431	18069.32	14857.55	1751.48	r-74-ps
75432	18069.58	14858.57	1751.45	r-74-ps
75433	18067.52	14858.53	1750.88	r-74-ps
75434	18053.61	14847.86	1751.99	r-76-ps
75435	18057.24	14845.66	1751.95	r-76-ps

Point No.	Northing	Easting	Elevation	Description
75436	18056.41	14846.74	1752.42	top-mat-ps
75437	18054.98	14847.64	1752.52	top-ps
75438	18057.83	14832.36	1752.42	top-ps
75439	18060.15	14833.02	1752.25	top-mat-ps
75440	18064.07	14813.28	1752.38	top-mat-ps
75441	18061.69	14813.01	1752.33	top-ps
75442	18066.69	14791.07	1752.31	top-ps
75443	18069.19	14791.31	1752.42	top-mat-ps
75444	18073.77	14769.51	1752.08	top-mat-ps
75445	18071.62	14769.31	1752.13	top-ps
75446	18073.97	14746.93	1751.68	top-ps
75447	18075.71	14747.12	1751.73	top-mat-ps
75448	18077.46	14726.16	1751.58	top-mat-ps
75449	18075.01	14726.16	1751.43	top-ps
75450	18076.66	14703.72	1751.07	top-ps
75451	18078.93	14703.77	1751.11	top-mat-ps
75452	18078.46	14681.51	1751.05	r-48-ps
75453	18080.00	14681.25	1751.12	r-48-ps
75454	17654.19	15298.73	1751.03	7-2-09postchk
75455	18036.35	14849.59	1743.27	R-70-PS
75456	18033.34	14849.10	1741.79	R-70-PS
75457	18033.38	14850.36	1741.82	R-70-PS
75458	17654.17	15298.69	1751.10	CP443-POSTCHK-7-3-09
75459	18028.51	14679.78	1739.56	r-56-ps
75460	18027.66	14680.64	1739.60	r-56-ps
75461	18029.34	14680.65	1739.52	r-56-ps
75462	17654.18	15298.71	1751.11	7-7-09prechk
75463	17488.35	14989.57	1765.19	r-91-ps
75464	17486.29	14989.38	1765.07	r-91-ps
75465	17486.18	14989.42	1765.03	top-mat-ps
75466	17489.12	14989.72	1765.11	top-ps
75467	17487.68	15012.18	1764.91	top-ps
75468	17484.75	15012.04	1764.89	top-mat-ps
75469	17483.45	15034.42	1764.94	top-mat-ps
75470	17486.07	15034.53	1764.93	top-ps
75471	17482.38	15048.48	1764.90	r-92
75472	17488.47	15048.85	1763.44	r-93
75473	17494.65	15048.98	1760.35	r-94
75474	17484.46	15057.10	1764.87	top-ps
75475	17482.02	15056.91	1764.99	top-mat-ps

Point No.	Northing	Easting	Elevation	Description
75476	17480.82	15079.12	1764.79	top-mat-ps
75477	17482.97	15079.32	1764.67	top-ps
75478	17481.52	15101.78	1764.64	top-ps
75479	17479.38	15101.58	1764.76	top-mat-ps
75480	17477.82	15124.02	1764.57	top-mat-ps
75481	17480.24	15124.20	1764.59	top-ps
75482	17478.38	15146.57	1764.49	top-ps
75483	17476.20	15146.48	1764.52	top-mat-ps
75484	17474.77	15168.65	1764.22	top-mat-ps
75485	17477.03	15168.80	1764.27	top-ps
75486	17475.18	15191.05	1764.21	top-ps
75487	17473.55	15190.95	1764.26	top-mat-ps
75488	17471.74	15213.00	1764.21	top-mat-ps
75489	17473.50	15213.12	1764.11	top-ps
75490	17472.09	15235.61	1764.10	top-ps
75491	17469.90	15235.48	1764.14	top-mat-ps
75492	17468.47	15257.65	1764.03	top-mat-ps
75493	17470.83	15257.79	1764.02	top-ps
75494	17469.17	15280.58	1763.94	top-ps
75495	17466.92	15280.35	1763.94	top-mat-ps
75496	17466.64	15289.17	1763.80	top-mat-ps-scrap
75497	17469.07	15288.87	1763.80	top-ps-scrap
75498	17485.15	15288.89	1756.15	toe-ps-scrap
75499	17485.06	15281.23	1756.22	toe-ps
75500	17479.75	15269.41	1759.47	p-65
75501	17487.07	15258.75	1756.40	toe-ps
75502	17480.72	15246.83	1759.74	p-64
75503	17489.35	15236.36	1756.09	toe-ps
75504	17482.06	15225.94	1760.04	p-63
75505	17491.79	15213.90	1756.06	toe-ps
75506	17484.66	15200.77	1759.81	p-62
75507	17492.63	15191.82	1755.97	toe-ps
75508	17484.30	15180.93	1760.51	p-61
75509	17495.06	15169.64	1755.99	toe-ps
75510	17486.80	15156.61	1760.29	p-60
75511	17496.36	15147.37	1755.91	toe-ps
75512	17488.68	15135.87	1760.25	p-59
75513	17498.76	15125.00	1755.74	toe-ps
75514	17490.36	15112.56	1760.20	p-58
75515	17500.46	15102.70	1755.56	toe-ps

Point No.	Northing	Easting	Elevation	Description
75516	17491.71	15090.91	1760.10	p-57
75517	17502.58	15080.35	1755.42	toe-ps
75518	17493.33	15067.98	1760.27	p-56
75519	17504.41	15058.11	1755.49	toe-ps
75520	17496.19	15046.12	1759.75	p-55
75521	17506.10	15035.63	1755.44	toe-ps
75522	17496.56	15022.58	1760.50	p-54
75523	17508.06	15013.25	1755.33	toe-ps
75524	17498.15	15001.85	1760.50	p-53
75525	17581.73	14995.03	1753.26	ds-32/r-87-ps
75526	17586.73	14995.43	1753.16	ds-32/r-87-ps
75527	17572.47	15017.01	1753.49	ds-33/r-88-ps
75528	17577.59	15017.34	1753.36	ds-33/r-88-ps
75529	17571.06	15129.53	1753.92	ds-36/r-95-ps
75530	17576.80	15129.82	1753.73	ds-36/r-95-ps
75531	17568.03	15151.79	1753.92	ds-37/r-96-ps
75532	17573.45	15152.15	1753.78	ds-37/r-96-ps
75533	17667.80	15067.81	1750.91	ds-35/r-90-ps
75534	17673.37	15068.22	1750.72	ds-35/r-90-ps
75535	17672.01	15045.67	1750.65	ds-34/r-89-ps
75536	17677.54	15046.01	1750.46	ds-34/r-89-ps
75537	17882.55	15013.27	1744.36	scrap-ps
75538	17880.38	15035.68	1744.43	scrap-ps
75539	17879.00	15057.82	1744.49	scrap-ps
75540	17878.58	15080.42	1744.54	scrap-ps
75541	17877.28	15102.62	1744.70	scrap-ps
75542	17876.36	15125.14	1744.80	scrap-ps
75543	17874.97	15147.38	1744.82	scrap-ps
75544	17873.94	15169.87	1744.82	scrap-ps
75545	17872.47	15192.36	1744.86	scrap-ps
75546	17872.43	15214.33	1744.98	scrap-ps
75547	17868.19	15236.57	1745.11	scrap-ps
75548	17867.10	15258.87	1745.08	scrap-ps
75549	17867.51	15281.36	1745.02	scrap-ps
75550	17868.84	15289.25	1744.98	scrap-ps
75551	17594.52	15288.52	1753.00	scrap-ps
75552	17477.39	15285.05	1759.92	p-66
75553	17654.16	15298.74	1751.05	7-7-09postchk
75554	17654.18	15298.73	1751.03	7-8-09prechk
75555	17574.08	15219.44	1753.58	ds-38/r-97-ps

Point No.	Northing	Easting	Elevation	Description
75556	17568.22	15219.02	1753.78	ds-38/r-97-ps
75557	17812.99	15255.93	1746.49	ds-39/r-98-ps
75558	17818.75	15256.24	1746.37	ds-39/r-98-ps
75559	18013.91	14879.68	1739.99	ds-41/r-107-s
75560	18015.27	14874.03	1739.93	ds-41/r-107-s
75561	18008.39	14912.48	1740.18	r-100+101-ps
75562	18005.95	14911.73	1740.26	r-100+101-ps
75563	18000.88	14933.50	1740.44	r-100-ps
75564	18003.65	14934.22	1740.41	r-100-ps
75565	18011.51	14889.80	1740.10	r-101+102-ps
75566	18014.13	14890.43	1740.00	r-101+102-ps
75567	18016.76	14868.00	1739.92	r-102+103-ps
75568	18019.40	14868.66	1739.82	r-102+103-ps
75569	18022.92	14855.12	1739.70	r-103-ps
75570	18024.60	14848.38	1739.66	r-103-s
75571	18021.93	14847.80	1739.75	r-103-s
75572	18021.41	14846.27	1739.83	r-106-ps
75573	18031.91	14848.74	1741.05	r-106-ps
75574	18019.94	14867.39	1739.73	r-104-s
75575	18019.29	14870.05	1739.79	r-104-s
75576	18039.06	14874.94	1739.81	r-104+105-s
75577	18039.72	14872.19	1739.83	r-104+105-ps
75578	18044.19	14875.04	1741.27	r-105-ps
75579	17654.17	15298.70	1751.12	7-8-09postchk
75580	17654.19	15298.70	1751.11	7-10-09PRECHK
75581	17864.31	15288.83	1745.11	scrap-ps
75582	17866.96	15246.24	1745.22	ds-48/r-125-ps
75583	17868.13	15244.05	1745.18	ds-48/r-125-ps
75584	17866.39	15236.28	1745.27	ds-48/r-125-ps
75585	17867.49	15234.75	1745.22	ds-48/r-125-ps
75586	17886.03	15206.22	1744.50	r-174-ps
75587	17887.79	15205.55	1744.41	r-174-ps
75588	17888.75	15206.88	1744.42	r-174-ps
75589	17888.29	15184.03	1744.34	r-173-ps
75590	17892.09	15186.00	1744.22	r-173-ps
75591	17893.33	15184.98	1744.15	r-173-ps
75592	17878.98	15192.78	1744.69	p-86
75593	17878.43	15234.61	1744.87	p-91
75594	17892.70	15255.94	1744.24	p-89
75595	17904.00	15244.05	1743.86	r-177-ps

Point No.	Northing	Easting	Elevation	Description
75596	17904.41	15266.53	1743.79	r-178-ps
75597	17904.16	15256.34	1743.83	ds-49/r-126-ps
75598	17904.00	15251.15	1743.84	ds-49/r-126-ps
75599	17940.93	15243.92	1742.86	r-176-ps
75600	17941.19	15232.89	1742.88	r-175-ps
75601	17697.38	15181.93	1749.90	r-114-ps
75602	17702.35	15182.26	1749.77	r-114-ps
75603	17472.50	15202.44	1764.27	r-160
75604	17474.36	15202.54	1764.22	r-160
75605	17474.61	15197.96	1764.25	r-160
75606	17473.03	15197.89	1764.33	r-160
75607	17472.25	15214.10	1764.19	r-161
75608	17473.29	15212.96	1764.16	r-116-ps
75609	17475.19	15213.31	1763.67	r-116-ps
75610	17494.77	15214.18	1756.11	r-113-ps
75611	17497.36	15214.43	1756.00	r-113-ps
75612	17497.37	15216.09	1755.97	r-113
75613	17495.12	15216.44	1756.01	r-113
75614	17494.26	15210.78	1756.05	r-113
75615	17496.63	15210.45	1756.00	r-113
75616	17513.72	15183.92	1755.51	r-112
75617	17513.79	15180.45	1755.53	r-112
75618	17516.36	15180.45	1755.44	r-112
75619	17516.22	15184.03	1755.45	r-112
75620	17864.81	15280.99	1745.21	r-159-ps
75621	17865.68	15266.47	1745.18	r-158-ps
75622	17866.12	15258.67	1745.15	r-157-ps
75623	17868.42	15221.61	1745.20	r-156-ps
75624	17868.79	15214.96	1745.18	r-155-ps
75625	17867.94	15213.93	1745.21	r-155-ps
75626	17868.96	15212.95	1745.17	r-155-ps
75627	17869.64	15202.30	1745.06	r-154-ps
75628	17870.14	15193.22	1745.00	r-153-ps
75629	17869.06	15191.90	1745.03	r-153-ps
75630	17870.23	15191.08	1745.00	r-153-ps
75631	17870.98	15180.96	1745.02	r-152-ps
75632	17872.07	15180.10	1745.01	r-152-ps
75633	17871.22	15178.80	1745.01	r-152-ps
75634	17871.68	15170.96	1744.99	r-151-ps
75635	17870.66	15169.59	1744.99	r-151-ps

Point No.	Northing	Easting	Elevation	Description
75636	17871.69	15168.59	1744.96	r-151-ps
75637	17872.38	15158.14	1744.94	r-150-ps
75638	17873.60	15157.33	1744.90	r-150-ps
75639	17872.49	15156.04	1744.94	r-150-ps
75640	17873.08	15148.56	1744.94	r-149-ps
75641	17872.11	15147.39	1744.96	r-149-ps
75642	17873.21	15146.43	1744.94	r-149-ps
75643	17936.16	15172.10	1742.89	ds-46/r-123
75644	17941.72	15173.40	1742.64	ds-46/r-123
75645	17879.69	15135.75	1744.78	r-148-ps
75646	17878.77	15134.68	1744.78	r-148-ps
75647	17874.05	15133.54	1744.96	r-148-ps
75648	17873.98	15135.49	1744.93	r-148-ps
75649	17874.58	15126.08	1744.97	r-147-ps
75650	17873.72	15125.04	1744.99	r-147-ps
75651	17874.69	15124.06	1744.94	r-147-ps
75652	17878.20	15120.42	1744.77	p-85
75653	17883.32	15114.90	1744.55	r-172-ps
75654	17884.45	15113.85	1744.52	r-172-ps
75655	17882.33	15113.48	1744.60	r-172-ps
75656	17876.39	15112.01	1744.84	r-146-ps
75657	17875.38	15112.86	1744.94	r-146-ps
75658	17875.58	15110.76	1744.86	r-146-ps
75659	17876.00	15103.44	1744.79	r-145-ps
75660	17875.11	15102.42	1744.82	r-145-ps
75661	17876.16	15101.42	1744.77	r-145-ps
75662	17876.75	15090.02	1744.73	r-144-ps
75663	17877.70	15089.14	1744.68	r-144-ps
75664	17876.91	15087.97	1744.69	r-144-ps
75665	17877.32	15081.36	1744.68	r-143-ps
75666	17876.30	15080.09	1744.64	r-143-ps
75667	17877.42	15079.29	1744.63	r-143-ps
75668	17897.42	15081.14	1743.89	p-77
75669	17697.15	15284.46	1749.94	r-179
75670	17688.19	15283.33	1750.25	r-180
75671	17666.69	15283.14	1750.91	r-181
75672	17924.96	15105.49	1743.17	r-171
75673	17918.06	15098.86	1743.43	r-170-ps
75674	17917.30	15097.59	1743.49	r-170-ps
75675	17915.95	15098.36	1743.53	r-170-ps

Point No.	Northing	Easting	Elevation	Description
75676	17921.76	15079.24	1743.42	r-169-ps
75677	17921.43	15076.43	1743.40	r-169-ps
75678	17923.33	15076.93	1743.33	r-169-ps
75679	17878.03	15067.31	1744.63	r-142-ps
75680	17879.20	15066.46	1744.57	r-142-ps
75681	17878.22	15065.30	1744.60	r-142-ps
75682	17878.51	15058.92	1744.59	r-141-ps
75683	17877.38	15057.83	1744.59	r-141-ps
75684	17878.72	15056.87	1744.56	r-141-ps
75685	17879.58	15044.50	1744.52	r-140-ps
75686	17880.77	15043.65	1744.47	r-140-ps
75687	17879.83	15042.53	1744.51	r-140-ps
75688	17880.25	15036.63	1744.51	r-139-ps
75689	17879.23	15035.50	1744.55	r-139-ps
75690	17880.43	15034.57	1744.51	r-139-ps
75691	17914.23	15040.95	1743.51	p-74
75692	17915.86	15052.05	1743.50	r-168-ps
75693	17917.12	15051.52	1743.48	r-168-ps
75694	17917.94	15052.48	1743.44	r-168-ps
75695	17921.76	15031.23	1743.37	r-167-ps
75696	17921.15	15030.08	1743.33	r-167-ps
75697	17923.04	15030.54	1743.30	r-167-ps
75698	17948.84	15059.88	1742.42	ds-45/r-122-ps
75699	17954.36	15061.16	1742.29	ds-45/r-122-ps
75700	17984.56	15045.33	1741.43	ds-44/r-121-ps
75701	17990.06	15046.65	1741.19	ds-44/r-121-ps
75702	17971.65	15042.28	1741.96	r-165-ps
75703	17970.89	15041.20	1741.94	r-165-ps
75704	17969.80	15041.79	1742.03	r-165-ps
75705	17975.81	15021.14	1741.74	r-164-ps
75706	17976.86	15020.41	1741.72	r-164-ps
75707	17974.93	15019.98	1741.79	r-164-ps
75708	17967.72	15027.15	1741.95	p-72
75709	17882.39	15020.86	1744.48	r-138-ps
75710	17881.30	15021.71	1744.53	r-138-ps
75711	17881.53	15019.69	1744.50	r-138-ps
75712	17881.85	15014.19	1744.49	r-137-ps
75713	17880.94	15013.05	1744.46	r-137-ps
75714	17882.02	15012.18	1744.48	r-137-ps
75715	17882.94	14999.03	1744.39	r-136-ps

Point No.	Northing	Easting	Elevation	Description
75716	17884.03	14998.11	1744.34	r-136-ps
75717	17883.10	14996.78	1744.38	r-136-ps
75718	17883.46	14992.26	1744.34	r-135-ps
75719	17882.53	14990.80	1744.36	r-135-ps
75720	17883.60	14989.82	1744.32	r-135-ps
75721	17884.48	14976.36	1744.27	r-134-ps
75722	17885.51	14975.39	1744.20	r-134-ps
75723	17884.65	14974.06	1744.30	r-134-ps
75724	17884.98	14969.62	1744.28	r-133-ps
75725	17884.10	14968.45	1744.21	r-133-ps
75726	17885.15	14967.49	1744.24	r-133-ps
75727	17893.52	14966.30	1743.87	p-69
75728	17918.28	14983.19	1743.18	r-163-ps
75729	17920.21	14983.73	1743.18	r-163-ps
75730	17919.47	14982.55	1743.14	r-163-ps
75731	17924.26	14962.48	1742.97	r-162-ps
75732	17925.30	14961.74	1742.95	r-162-ps
75733	17923.34	14961.26	1743.00	r-162-ps
75734	17886.94	14952.58	1744.11	r-132-ps
75735	17886.01	14953.46	1744.17	r-132-ps
75736	17886.23	14951.44	1744.18	r-132-ps
75737	17886.56	14947.23	1744.14	r-131-ps
75738	17885.58	14946.13	1744.23	r-131-ps
75739	17886.64	14945.18	1744.12	r-131-ps
75740	17887.55	14930.88	1744.11	r-130-ps
75741	17888.55	14930.06	1744.04	r-130-ps
75742	17887.70	14928.84	1744.09	r-130-ps
75743	17887.93	14925.33	1744.13	r-129-ps
75744	17887.02	14923.96	1744.09	r-129-ps
75745	17888.16	14923.36	1744.14	r-129-ps
75746	17889.01	14908.16	1744.02	r-128-ps
75747	17889.88	14907.32	1743.99	r-128-ps
75748	17888.82	14906.02	1744.00	r-128-ps
75749	17882.52	14901.21	1744.22	r-127-ps
75750	17881.56	14898.83	1744.32	r-127-ps
75751	17878.53	14901.04	1744.36	r-127-ps
75752	17876.92	14905.33	1744.48	r-127
75753	17879.90	14906.82	1744.39	r-127
75754	17909.46	14934.92	1743.35	ds-42/r-120-ps
75755	17915.02	14936.27	1743.20	ds-42/r-120-ps

Point No.	Northing	Easting	Elevation	Description
75756	17913.28	14912.69	1743.22	ds-43/r-119-ps
75757	17918.29	14913.98	1743.10	ds-43/r-119-ps
75758	18000.85	14933.50	1740.51	r-118-ps
75759	18004.41	14934.51	1740.46	r-118-ps
75760	18026.45	14939.80	1739.95	toe-ps
75761	18052.27	14945.88	1752.62	r-166-ps
75762	18054.19	14946.24	1752.64	r-166-ps
75763	18055.24	14946.48	1752.43	top-mat-ps
75764	18052.37	14945.95	1752.62	top-ps
75765	18039.01	14952.31	1746.58	p-67
75766	18021.38	14961.79	1739.94	toe-ps
75767	18034.42	14976.73	1747.05	p-68
75768	18016.66	14983.84	1740.22	toe-ps
75769	18028.82	14997.99	1746.96	p-70
75770	18011.75	15005.85	1740.36	toe-ps
75771	18024.08	15019.11	1747.27	p-71
75772	18006.57	15027.66	1740.61	toe-ps
75773	18019.39	15041.89	1747.91	p-73
75774	18001.64	15049.57	1740.64	toe-ps
75775	18014.71	15065.64	1748.25	p-75
75776	17997.01	15071.36	1740.83	toe-ps
75777	18007.68	15086.61	1747.11	p-76
75778	17992.26	15093.28	1740.95	toe-ps
75779	18003.80	15107.20	1747.58	p-78
75780	17987.55	15115.39	1741.16	toe-ps
75781	17999.75	15129.28	1748.18	p-79
75782	17982.82	15137.28	1741.40	toe-ps
75783	17994.18	15152.74	1748.02	p-80
75784	17978.39	15159.16	1741.47	toe-ps
75785	17989.71	15173.38	1747.88	p-81
75786	17973.16	15180.88	1741.62	toe-ps
75787	17984.61	15197.28	1747.96	p-82
75788	17968.16	15202.73	1741.76	toe-ps
75789	17980.79	15217.20	1748.47	p-83
75790	17963.29	15224.52	1742.17	toe-ps
75791	17961.61	15235.46	1742.27	toe-ps
75792	17960.94	15244.06	1742.20	toe-ps
75793	17975.44	15232.44	1747.70	p-84
75794	17975.83	15240.86	1748.47	p-90
75795	17976.10	15256.40	1748.53	p-88

Point No.	Northing	Easting	Elevation	Description
75796	17961.45	15266.43	1742.06	toe-ps
75797	17975.83	15275.31	1748.08	p-87
75798	17963.53	15288.90	1742.04	toe-scrap
75799	17988.70	15289.24	1754.10	top-scrap
75800	17991.10	15289.20	1754.03	top-mat-scrap
75801	17990.44	15266.60	1754.06	top-mat-ps
75802	17987.71	15266.73	1754.03	top-ps
75803	17986.92	15244.27	1754.05	top-ps
75804	17987.43	15239.02	1754.03	top-ps
75805	17988.77	15230.74	1753.90	top-ps
75806	17993.87	15208.85	1753.84	top-ps
75807	17998.50	15186.99	1753.69	top-ps
75808	18003.49	15165.14	1753.71	top-ps
75809	18008.09	15143.28	1753.57	top-ps
75810	18013.08	15121.34	1753.59	top-ps
75811	18018.20	15099.42	1753.46	top-ps
75812	18022.97	15077.43	1753.36	top-ps
75813	18028.49	15055.66	1753.35	top-ps
75814	18033.14	15033.66	1753.32	top-ps
75815	18037.97	15011.71	1753.21	top-ps
75816	18042.95	14989.84	1753.09	top-ps
75817	18047.75	14968.02	1752.61	top-ps
75818	18050.00	14968.62	1752.69	top-mat-ps
75819	18045.27	14990.49	1753.08	top-mat-ps
75820	18039.88	15012.25	1753.20	top-mat-ps
75821	18035.40	15034.19	1753.27	top-mat-ps
75822	18030.37	15056.11	1753.35	top-mat-ps
75823	18025.18	15078.01	1753.45	top-mat-ps
75824	18020.69	15100.18	1753.54	top-mat-ps
75825	18015.50	15122.01	1753.53	top-mat-ps
75826	18010.86	15143.97	1753.54	top-mat-ps
75827	18006.30	15165.88	1753.66	top-mat-ps
75828	18001.01	15187.70	1753.64	top-mat-ps
75829	17996.39	15209.57	1753.76	top-mat-ps
75830	17991.63	15231.43	1753.86	top-mat-ps
75831	17989.99	15239.45	1754.00	top-mat-ps
75832	17989.54	15244.39	1754.12	top-mat-ps
75833	17654.17	15298.74	1751.10	7-10-09postchk
75834	17654.19	15298.77	1751.10	7-10-09prechk
75835	17864.79	15282.07	1745.18	r-ps

Point No.	Northing	Easting	Elevation	Description
75836	17863.85	15280.96	1745.18	r-ps
75837	17864.89	15279.98	1745.17	r-ps
75838	17865.69	15267.46	1745.19	r-ps
75839	17866.74	15266.46	1745.17	r-ps
75840	17865.81	15265.35	1745.19	r-ps
75841	17866.08	15259.76	1745.20	r-ps
75842	17865.21	15258.59	1745.19	r-ps
75843	17866.21	15257.63	1745.18	r-ps
75844	17868.34	15222.64	1745.21	r-ps
75845	17869.39	15221.54	1745.18	r-ps
75846	17868.52	15220.57	1745.24	r-ps
75847	17869.56	15203.55	1745.15	r-ps
75848	17870.55	15202.50	1745.08	r-ps
75849	17869.75	15201.48	1745.13	r-ps
75850	17654.19	15298.76	1751.05	7-10-09postchk
75851	17903.19	15266.45	1743.90	r-178-ps
75852	17905.54	15266.48	1743.85	r-178-ps
75853	17904.38	15265.38	1743.89	r-178-ps
75854	17904.07	15245.26	1743.85	r-177-ps
75855	17905.01	15244.06	1743.82	r-177-ps
75856	17902.77	15244.03	1743.88	r-177-ps
75857	17654.11	15298.69	1751.07	#NAME?
75858	18025.21	14549.60	1739.61	r-185-s
75859	18023.98	14550.58	1739.65	r-185-s
75860	18020.31	14550.53	1739.78	r-185-s
75861	18019.58	14549.52	1739.79	r-185-s
75862	18019.71	14546.04	1739.80	r-185-ps
75863	18025.32	14546.13	1739.64	r-185-ps
75864	18024.03	14541.11	1739.67	r-185-s
75865	18021.08	14540.61	1739.75	r-185-s
75866	18022.39	14540.19	1739.72	r-185-s
75867	17939.95	15243.89	1742.89	r-176-ps
75868	17942.21	15243.90	1742.79	r-176-ps
75869	17941.11	15242.75	1742.85	r-176-ps
75870	17941.21	15234.04	1742.86	r-175-ps
75871	17942.43	15233.01	1742.83	r-175-ps
75872	17940.25	15232.58	1742.90	r-175-ps
75873	17987.51	15239.05	1754.03	r-184-ps
75874	17987.24	15244.23	1754.11	r-184-ps
75875	17987.81	15246.39	1754.10	r-184-s

Point No.	Northing	Easting	Elevation	Description
75876	17989.21	15247.14	1754.10	r-184-s
75877	17992.11	15247.23	1752.00	r-184-s
75878	17988.55	15237.90	1754.06	r-184-s
75879	17990.59	15237.94	1753.97	r-184-s
75880	17992.73	15238.17	1751.93	r-184-s
75881	18022.08	15088.93	1753.46	r-183
75882	18000.19	15095.21	1744.53	r-182-ps
75883	17995.95	15094.12	1742.53	r-182-ps
75884	17654.10	15298.67	1751.08	cp-443-postchk-7-11-09
76000	17558.83	14492.98	1753.08	r-02-ps
76001	17558.92	14491.49	1753.06	r-02-s
76002	17557.78	14490.63	1753.09	r-02-s
76003	17555.03	14490.16	1753.19	r-02-s
76004	17558.64	14495.41	1753.06	r-02-s
76005	17557.36	14496.34	1753.07	r-02-s
76006	17551.49	14495.67	1753.34	r-02-s
76007	17550.17	14494.32	1753.68	r-02-s
76008	17550.34	14493.12	1753.76	r-02-s
76009	17551.51	14490.21	1753.55	r-02-s
76010	17550.56	14491.05	1753.73	r-02-s
76011	17549.79	14490.77	1753.98	r-02-s
76012	17548.30	14488.85	1754.67	r-02-s
76013	17546.95	14489.91	1755.02	r-02-s
76014	17542.34	14488.36	1757.57	r-02-s
76015	17541.99	14489.85	1757.52	r-02-s
76016	17545.11	14491.34	1755.94	r-02-ps
76017	17558.82	14493.04	1753.13	intlost-chk
76018	17654.24	15298.71	1751.07	7-9-09prechk
76019	17810.62	15278.16	1746.52	ds-40/r-99-ps
76020	17816.56	15278.50	1746.35	ds-40/r-99-ps
76021	17702.32	15182.26	1749.74	r-114-ps
76022	17697.41	15181.95	1749.85	r-114-ps
76023	17514.83	15182.17	1755.47	r-112
76024	17517.41	15159.13	1755.41	r-111
76025	17515.41	14981.34	1755.24	r-109
76026	17637.34	15068.59	1751.73	r-110
76027	18026.24	14939.70	1739.96	toe-ps
76028	18052.42	14945.97	1752.62	top-ps
76029	18055.01	14946.54	1752.53	top-mat-ps

DRAWINGS

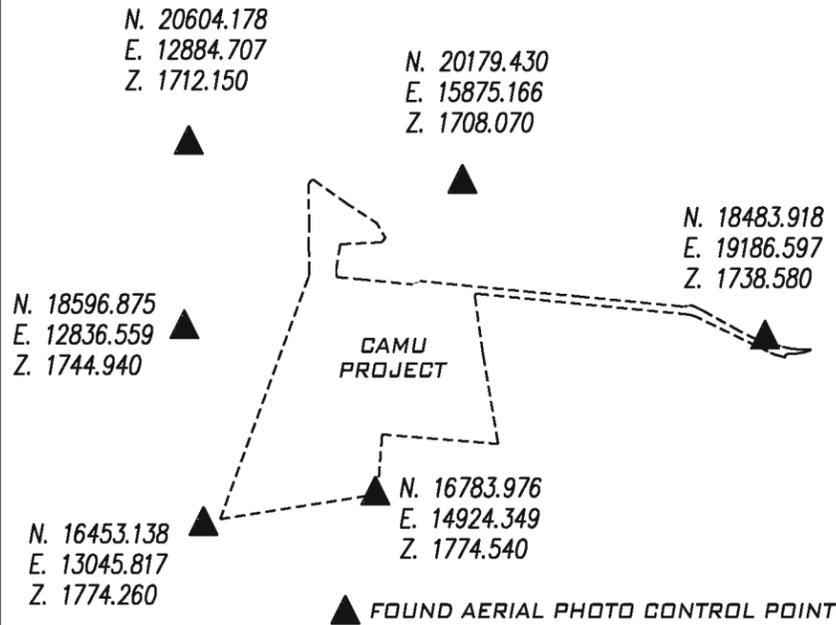
The following Measurement Drawings, Topographic Survey Drawings and/or Cross-Section Drawings are attached.

1. **Final Phase II Interim & Phase IIIA Closure – HDPE Liner As-Built survey dated 12-10-2009.**

This drawing (Consisting of Three (3) Sheets) depicts the as-built information with regard to the installation of the Closure liner within a Portion of Phase II and all of Phase. It also contains information regarding the control network utilized and other pertinent survey data. Due to the scale at which this drawing was prepared, the intended correlation representation may not be entirely clear. In ALL cases the Survey Data herein provided takes precedence over any graphical representation(s).

PROJECT CONTROL

1" = 2000'



BENCHMARK

CLARK COUNTY BENCHMARK (6C22 2E4), BEING A RIVET AND SQUARE ALUMINUM PLATE IN A CONCRETE CENTERLINE ISLAND, 4' WEST OF THE NOSE IN THE MIDDLE OF SUNSET ROAD, WEST SIDE OF THE INTERSECTION OF BOULDER HIGHWAY AND SUNSET ROAD.

PUBLISHED ELEVATION - 505.816 METERS = 1659.50 FEET
 NAVD 1988 DATUM - PUBLISHED (2003)

BASIS OF BEARINGS

SOUTH 85°36'52" WEST, BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND "CC-GIS W51", AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

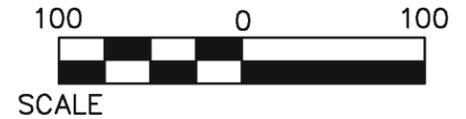
COORDINATE SYSTEM

THE COORDINATE SYSTEM AND ASSOCIATED BEARING ROTATION INFORMATION WAS ESTABLISHED AND PROVIDED BY PBS&J.

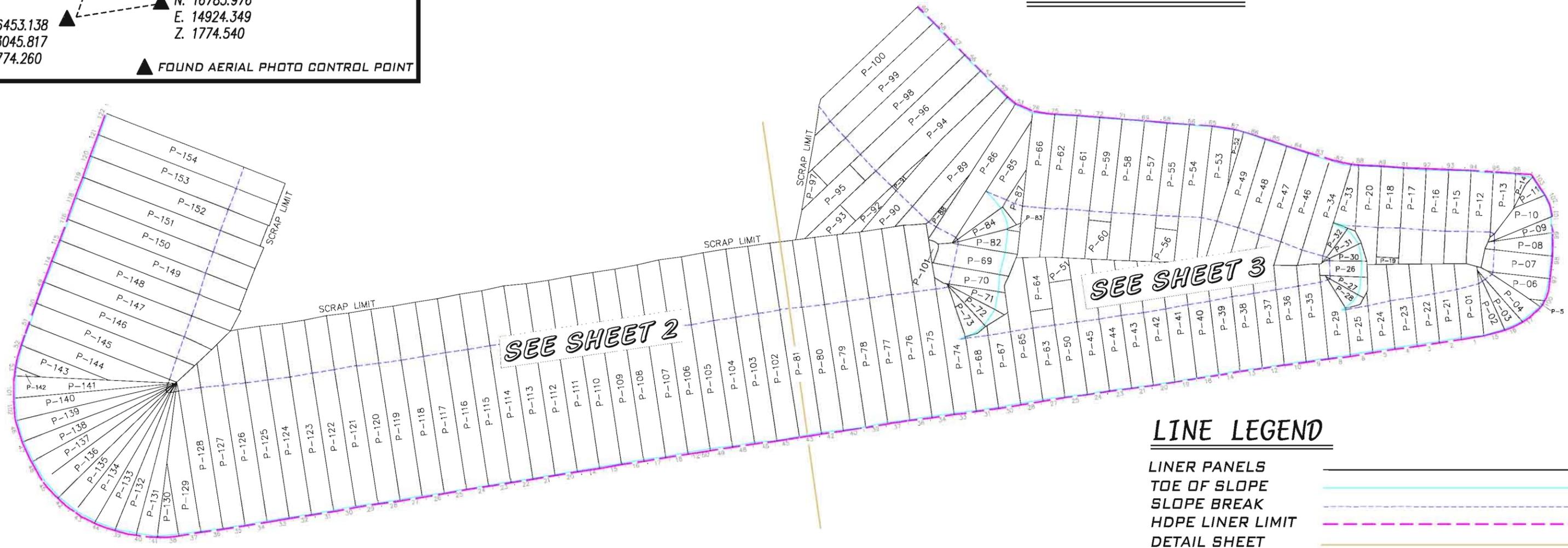
3 DIMENSIONAL SURFACE AREA

DURING FIELD COLLECTION (AS-BUILT) ACTIVITIES THE GEOMEMBRANE LINER AS DEPICTED HEREON WAS LOCATED IN BOTH HORIZONTAL AND VERTICAL PLANES. THE RESULTING 3 DIMENSIONAL COORDINATES WERE USED TO GENERATE A TRIANGULATED IRREGULAR NETWORK (TIN) AND SUBSEQUENTLY A DIGITAL TERRAIN MODEL (DTM) SURFACE. THE STATISTICS OF THIS DTM SURFACE WERE QUERIED IN AUTOCAD CIVIL 3D VERSION 2009 AND THE FOLLOWING 3D SURFACE AREA WAS DETERMINED:

FINAL GEOMEMBRANE 3D SURFACE AREA: 397,653 SQUARE FEET



KEY MAP



LINE LEGEND

- LINER PANELS
- TOE OF SLOPE
- SLOPE BREAK
- HDPE LINER LIMIT
- DETAIL SHEET

NO.	REVISION	DATE
△		
△		
△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)
FINAL PHASE II INTERIM & PHASE IIIA
CLOSURE HDPE LINER AS-BUILT

FIELD SURVEY DATES: NOVEMBER 2009
 FIELD CREW: C.G / M.C. / T.G.

JOB # 2008-06-23-01



ABSOLUTE BOUNDARY & CONTROL SOLUTIONS

6440 SKY POINT DRIVE
 SUITE 140 - PMB 321
 LAS VEGAS, NV. 89131
 (702) 953-7452
 (702) 987-5943 FAX
 WWW.AB-CS.COM

Date: December 10, 2009
 Drawn: C. Givant
 Checked: C. Givant
 Task: 2009-12-09-01

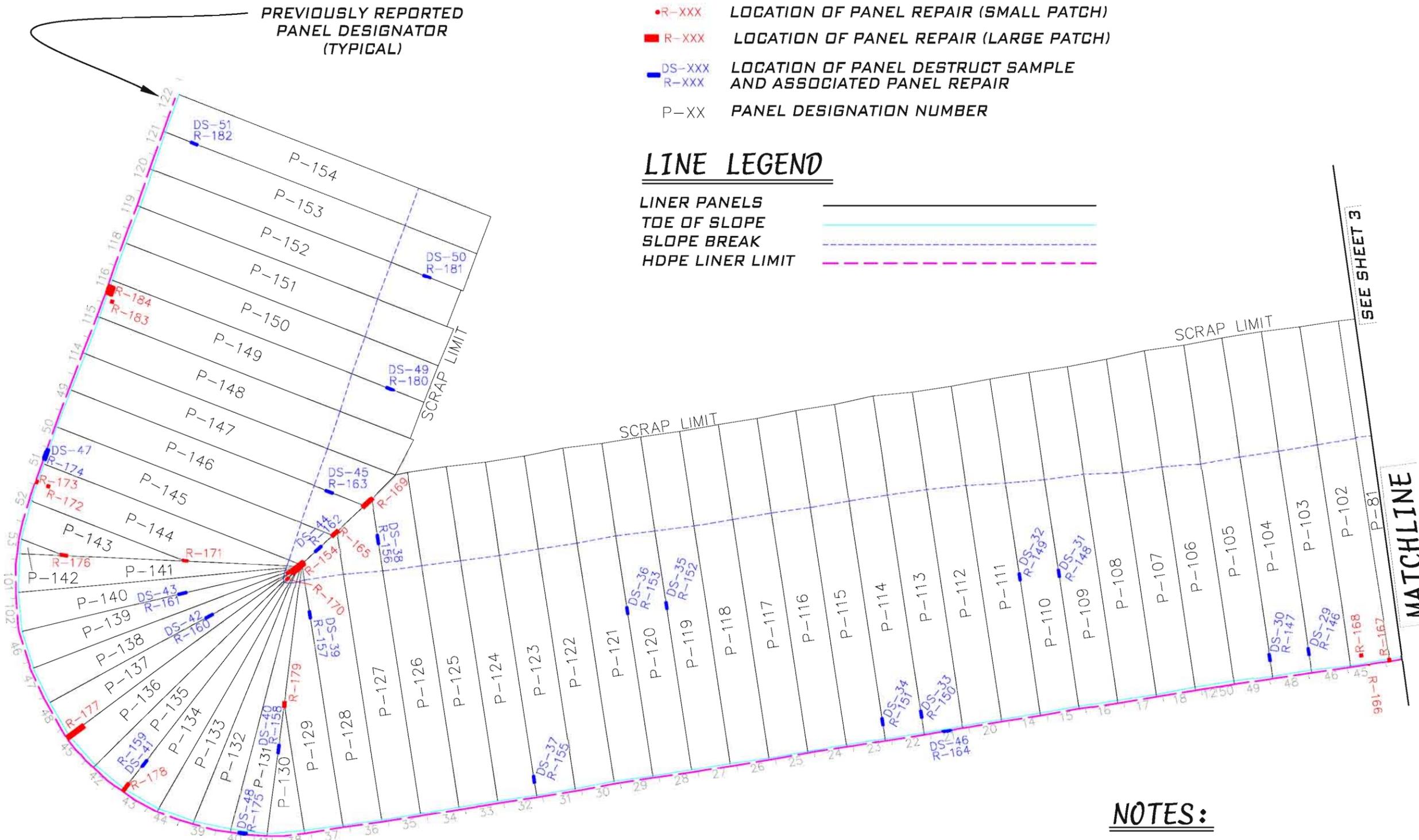
Sheet No. 1 of 3

SYMBOL LEGEND

- R-XXX LOCATION OF PANEL REPAIR (SMALL PATCH)
- R-XXX LOCATION OF PANEL REPAIR (LARGE PATCH)
- DS-XXX
■R-XXX LOCATION OF PANEL DESTRUCT SAMPLE AND ASSOCIATED PANEL REPAIR
- P-XX PANEL DESIGNATION NUMBER

LINE LEGEND

- LINER PANELS
- TOE OF SLOPE
- SLOPE BREAK
- HDPE LINER LIMIT



NOTES:

1) LARGE PANEL REPAIRS HAVE BEEN DEPICTED TO REPRESENT ACTUAL SIZE AND SHAPE

NO.	REVISION	DATE
△		
△		
△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)
FINAL PHASE II INTERIM & PHASE IIIA
CLOSURE HDPE LINER AS-BUILT

FIELD SURVEY DATES: NOVEMBER 2009
 FIELD CREW: C.G / M.C. / T.G.

JOB # 2008-06-23-01



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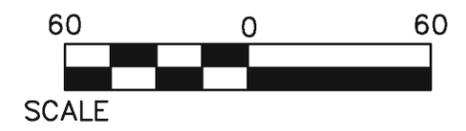
Date: December 10, 2009
 Drawn: C. Givant
 Checked: C. Givant
 Task: 2009-12-09-01

Sheet No. 2 of 3

PREVIOUSLY REPORTED
PANEL DESIGNATOR
(TYPICAL)

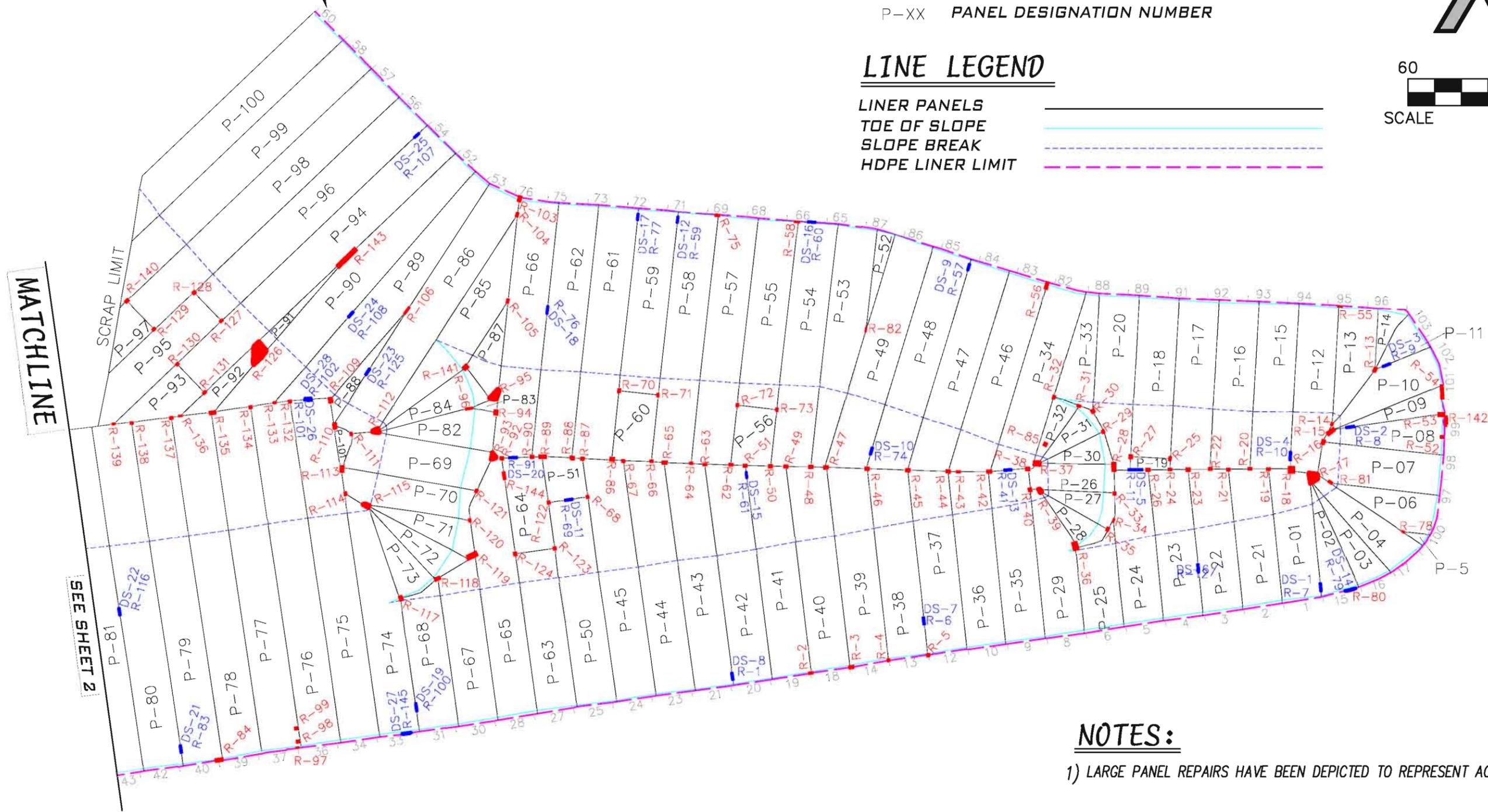
SYMBOL LEGEND

- R-XXX LOCATION OF PANEL REPAIR (SMALL PATCH)
- R-XXX LOCATION OF PANEL REPAIR (LARGE PATCH)
- DS-XXX LOCATION OF PANEL DESTRUCT SAMPLE AND ASSOCIATED PANEL REPAIR
- R-XXX
- P-XX PANEL DESIGNATION NUMBER



LINE LEGEND

- LINER PANELS _____
- TOE OF SLOPE _____
- SLOPE BREAK _____
- HDPE LINER LIMIT _____



NOTES:

1) LARGE PANEL REPAIRS HAVE BEEN DEPICTED TO REPRESENT ACTUAL SIZE AND SHAPE

NO.	REVISION	DATE
△		
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△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)
FINAL PHASE II INTERIM & PHASE IIIA
CLOSURE HDPE LINER AS-BUILT

FIELD SURVEY DATES: NOVEMBER 2009
FIELD CREW: C.G / M.C. / T.G.

JOB # 2008-06-23-01



ABSOLUTE BOUNDARY & CONTROL SOLUTIONS
6440 SKY POINT DRIVE
SUITE 140 - PMB 321
LAS VEGAS, NV. 89131
(702) 953-7452
(702) 987-5943 FAX
WWW.AB-CS.COM

Date: December 10, 2009
Drawn: C. Givant
Checked: C. Givant
Task: 2009-12-09-01

Sheet No. 3 of 3

ELECTRONIC FILES

The Compact Disk (CD) included in the pocket at the end of this report contains the following Directories and Files:

PDF Files (.pdf)

1. Report - (Phase II Interim & Phase IIIA Closure – HDPE Liner As-Built)
2. (Field Notes) - 2009-10-20 (PHII IC+PH IIIA Closure Liner ASB)

CAD Files (.dwg)

1. 2009-12-10 (Phase IIIA & II - IC Area HDPE Liner ASB)
2. 2009-12-10 (Phase IIIA & II - IC Area HDPE Liner ASB) - 2007

Coordinate Files (.csv)

The following files are Comma Separated Value Files in the following format:

Point Name,Northing,Easting,Elevation,Description

1. II Interim & IIIA Closure - Liner ASB

Raw Data Files (.dc)

The following files are Trimble Data Collector (.DC) files that contain the Raw Field Data.

1. 2009-10-20 (PHII IC+PH IIIA Closure Liner ASB)-MC

**CORRECTIVE ACTION MANAGEMENT UNIT
(CAMU – PHASE II)
CPE PIPE AS-BUILT as of 11/21/2009
HENDERSON, NV**

Prepared for:



ENTACT Environmental Services, LLC
699 South Friendswood Dr.
Suite 101
Friendswood, TX. 77546
(281) 996-9892

Prepared by:



Absolute Boundary & Control Solutions
6440 Sky Point Drive
Suite 140 – PMB 321
Las Vegas, NV 89131
(702) 953-7452

January 21, 2010



01/21/2010

Attn: Erik Gehringer, Project Manager
ENTACT Environmental Services, LLC
699 South Friendswood Drive
Friendswood, TX. 77546

Re: Corrective Action Management Unit (CAMU) – Phase II, CPE Pipe As-built as of 11/21/2009

Mr. Gehringer,

This report outlines the results of a Field Survey performed on the Corrective Action Management Unit (CAMU) project and was completed to depict the CPE Pipe elevations within Phase II. The intent of said report is to provide information such as but not limited to, Data, Calculations, Drawings, Tables, Charts, Electronic Files and other required media to satisfy the Submittal Requirements as outlined in Section 01050 of the Project Technical Specifications, Dated May, 2008.

Absolute Boundary & Control Solutions (ABCS) is pleased you have chosen us to complete these services, and assures you that every attempt has been made to prepare same in a fashion meeting or exceeding the Project Specifications. If however after your review you determine that revisions, clarifications or other modifications are needed, please do not hesitate to bring them to our attention.

In closing, thank you again for the opportunity to serve ENTACT. If you have any questions, comments or concerns, please do not hesitate to contact me.

Sincerely,

Craig A. Givant, PLS
President

(702) 953-7452
(702) 839-9750 fax

CERTIFICATION PAGE

CAMU – PHASE II
CPE PIPE AS-BUILT as of 11/21/2009
HENDERSON, NV

I, Craig A. Givant, a Professional Land Surveyor registered in the State of Nevada, certify (as defined by Nevada Revised Statutes 625.403) that:

1. This report and any Land Surveying Practices (N.R.S. 625.040) on which it is based were performed directly by me or under my responsible charge (N.R.S. 625.080) in accordance with the Standards and Practices Governing Land Surveyors in the State of Nevada as defined by any applicable sections of the Nevada Revised Statutes (N.R.S.) or the Nevada Administrative Code (N.A.C.).
2. By affixing my official seal and signature below I am confirming that I am a Registered Land Surveyor in the State of Nevada and thereby satisfy the requirements of Section 01050, Part 1.03, Subpart A or the Project Technical Specifications.

Craig A. Givant, PLS
PLS 14348



TABLE OF CONTENTS

Field Notes	Page 5
Survey Data	Page 6
Drawings	Page 8
Electronic Files	Page 10

FIELD NOTES

All Field Data pertaining to the determination and location of the As-Built information was collected electronically. Pertinent parameters required to be input into the software and which were obtained by means of human interaction, were verified as correct by performing field checks. These field checks and their resultant accuracies can be viewed within the Electronic Field Notes (Raw Data). The following Raw Data files were used while acquiring the As-Built information. These files have not been printed for inclusion in this report however a Portable Document File (PDF) of each raw data printout is included electronically on the attached Compact Disk (CD). It should be noted that the contents of these Raw Data files may not pertain solely to the report herein presented and may include additional data from other “tasks” performed on the same day.

1. 2009-11-21 (4-inch CPE As-Built)-MC

SURVEY DATA

Field Survey Methods were employed that resulted in the following precisions:

Horizontal Coordinates: $\pm 1.0'$ (One Foot)

Vertical Coordinates: $\pm 0.10'$ (One Tenth of a Foot)

The Following documents are attached hereto:

1. Coordinate Printout of the reduced (measured) coordinates from the Field Collection Efforts.

1. Coordinate Printout of the reduced (measured) coordinates from the Field Collection Efforts.

Pt. No.	Northing	Easting	Elevation	Description
164	16758.562	13659.75	1820.511	4-INCH CPE-T.O.P.
165	16774.027	13664.544	1820.231	4-INCH CPE-T.O.P.
166	16813.544	13676.606	1819.163	4-INCH CPE-T.O.P.
167	16869.109	14027.493	1816.351	4-INCH CPE-T.O.P.
168	16826.644	14027.182	1817.511	4-INCH CPE-T.O.P.
169	16806.552	14024.611	1818.156	4-INCH CPE-T.O.P.

DRAWINGS

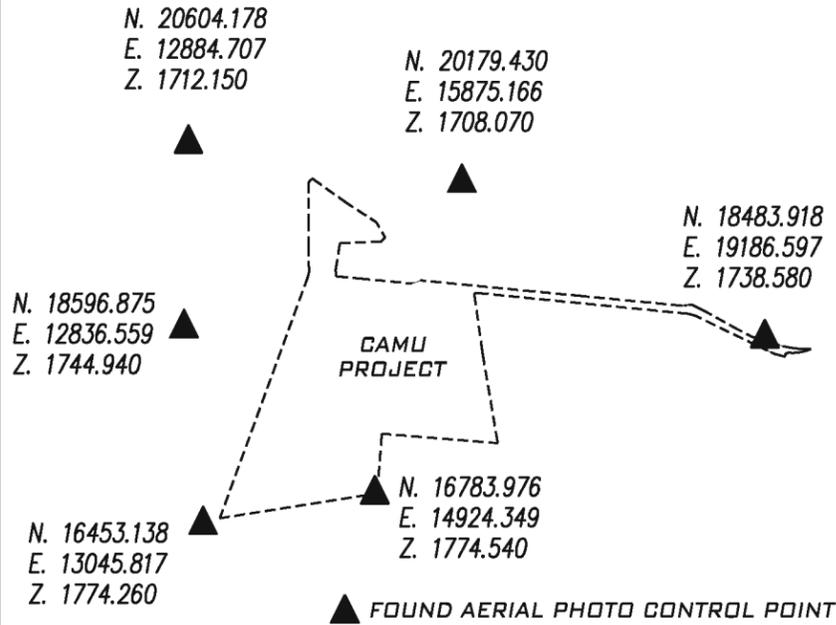
The following Measurement Drawings, Topographic Survey Drawings and/or Cross-Section Drawings are attached.

1. **As-Built - Phase II – CPE Pipe as of 11/21/2009, dated 01-21-2010.**

This drawing depicts the as-built elevations of the flow-line of the CPE pipe(s) within Phase II as of 11/21/2009. It also contains information regarding the control network utilized and other pertinent survey data. Due to the scale at which this drawing was prepared, the intended correlation representation may not be entirely clear. In ALL cases the Survey Data herein provided takes precedence over any graphical representation(s).

PROJECT CONTROL

1" = 2000'



SURFACE NOTE

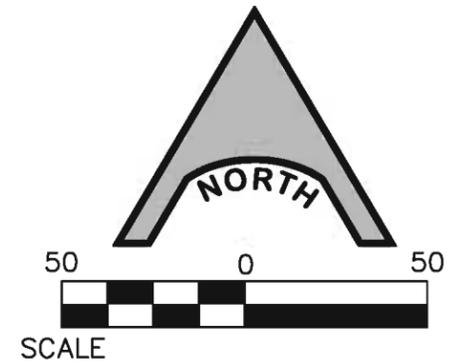
THE SURFACE DEPICTED HEREON REPRESENTS THE INTERIM COVER SOIL AS REPORTED IN THAT CERTAIN REPORT PREPARED BY ABSOLUTE BOUNDARY & CONTROL SOLUTIONS UNDER TASK NO: 2009.11.05.01-B

SYMBOLS LEGEND

•XX.X FLOWLINE GRADE 4" SLOTTED PIPE

NOTES:

1) ALL ELEVATIONS SHOWN ARE TO THE PIPE FLOW-LINE AND HAVE BEEN REDUCED BY 1800' FOR CLARITY. ADD (+1800.00) TO OBTAIN ACTUAL ELEVATIONS.



BENCHMARK

CLARK COUNTY BENCHMARK (6C22 2E4), BEING A RIVET AND SQUARE ALUMINUM PLATE IN A CONCRETE CENTERLINE ISLAND, 4' WEST OF THE NOSE IN THE MIDDLE OF SUNSET ROAD, WEST SIDE OF THE INTERSECTION OF BOULDER HIGHWAY AND SUNSET ROAD.

PUBLISHED ELEVATION - 505.816 METERS = 1659.50 FEET
 NAVD 1988 DATUM - PUBLISHED (2003)

BASIS OF BEARINGS

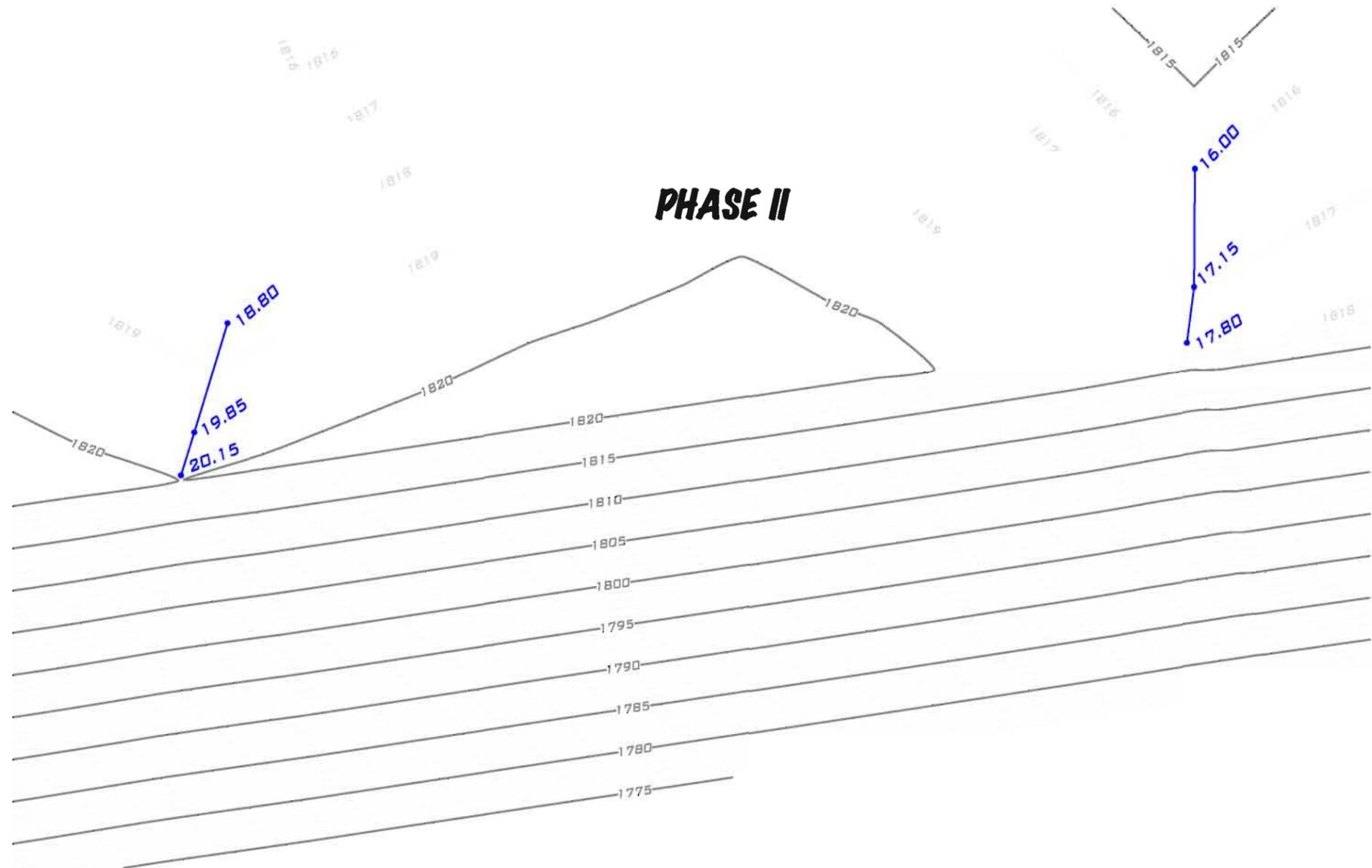
SOUTH 85°36'52" WEST, BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND CC-GIS W51", AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

COORDINATE SYSTEM

THE COORDINATE SYSTEM AND ASSOCIATED BEARING ROTATION INFORMATION WAS ESTABLISHED AND PROVIDED BY PBS&J.

LINE LEGEND

- MAJOR (5') CONTOUR _____
- MINOR (1') CONTOUR _____
- 4" SLOTTED PIPE _____



NO.	REVISION	DATE
△		
△		
△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)

AS-BUILT

PHASE II - CPE PIPE AS OF 11/21/2009

FIELD SURVEY DATE: 11-21-2009
 FIELD CREW: C.G. / M.C.

JOB # 2008-06-23-01

ABSOLUTE BOUNDARY & CONTROL SOLUTIONS

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 (702) 953-7452
 (702) 987-5943 FAX
 WWW.AB-CS.COM

Date:	January 21, 2010
Drawn:	C. Givant
Checked:	C. Givant
Task:	2010.01.18.01-A
Sheet No.	1 of 1

ELECTRONIC FILES

The Compact Disk (CD) included in the pocket at the end of this report contains the following Directories and Files:

PDF Files (.pdf)

1. 2010-01-18.01-A (Phase II CPE Pipe ASB)
2. (Field Notes) - 2009-11-21 (4-inch CPE As-Built)

CAD Files (.dwg)

1. 2010.01.21 (CPE ASB)
2. 2010.01.21 (CPE ASB) - 2007

Coordinate Files (.csv)

The following files are Comma Separated Value Files in the following format:

Point Name,Northing,Easting,Elevation,Description

1. 4 Inch CPE ASB

Raw Data Files (.dc)

The following files are Trimble Data Collector (.DC) files that contain the Raw Field Data.

1. 2009-11-21 (4-inch CPE As-Built)-MC



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	6389
Submittal Summary:	Phase II Interim & Phase IIIA Final Closure Areas - Final HDPE Liner & 4-inch CPE As-Builts
Submittal Number:	02200-002PP
Specification Section:	Section 02200, Part 3.14
Drawing Number (s):	15
Page Number:	02200-10
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	1/22/2010

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.



699 South Friendswood Drive
 Suite 101
 Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
 ATTENTION: Lee C. Farris, P.E.

DATE: 1/22/10
 JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
 TRANSMITTAL NUMBER: 368
 ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	1/22/10			Submittal 02200-002PP-Phase II Interim & Phase IIIA Final Closure Areas - Final HDPE Liner & 4-inch CPE As-Builts	RC

ACTION (*)

AR - AS REQUESTED

FA - FOR APPROVAL

F - FILE

RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE

COPY TO: Ranajit Sahu, Lee Farris

BY: Michael M. Carlson (630)-330-8237

If enclosures are not as noted, please notify us at once.....

**CORRECTIVE ACTION MANAGEMENT UNIT
(CAMU – PHASE II INTERIM & PHASE IIIA
CLOSURE HDPE LINER AS-BUILT)
HENDERSON, NV**

Prepared for:



ENTACT Environmental Services, LLC
699 South Friendswood Dr.
Suite 101
Friendswood, TX. 77546
(281) 996-9892

Prepared by:



Absolute Boundary & Control Solutions
6440 Sky Point Drive
Suite 140 – PMB 321
Las Vegas, NV 89131
(702) 953-7452

January 4, 2010



01/04/2010

Attn: Erik Gehringer, Project Manager
ENTACT Environmental Services, LLC
699 South Friendswood Drive
Friendswood, TX. 77546

Re: Corrective Action Management Unit (CAMU) – Phase II Interim & Phase IIIA Closure HDPE Liner
As-built

Mr. Gehringer,

This report outlines the results of a Field Survey performed on the Corrective Action Management Unit (CAMU) project and was completed to depict the As-Built information with regard to the HDPE Closure Liner within a portion of Phase II and all of Phase IIIA. The intent of said report is to provide information such as but not limited to, Data, Calculations, Drawings, Tables, Charts, Electronic Files and other required media to satisfy the Submittal Requirements as outlined in Section 01050 of the Project Technical Specifications, Dated May, 2008.

Absolute Boundary & Control Solutions (ABCS) is pleased you have chosen us to complete these services, and assures you that every attempt has been made to prepare same in a fashion meeting or exceeding the Project Specifications. If however after your review you determine that revisions, clarifications or other modifications are needed, please do not hesitate to bring them to our attention.

In closing, thank you again for the opportunity to serve ENTACT. If you have any questions, comments or concerns, please do not hesitate to contact me.

Sincerely,

Craig A. Givant, PLS
President

(702) 953-7452
(702) 839-9750 fax

CERTIFICATION PAGE

CAMU – PHASE II INTERIM & PHASE IIIA CLOSURE
HPDE LINER AS-BUILT
HENDERSON, NV

I, Craig A. Givant, a Professional Land Surveyor registered in the State of Nevada, certify (as defined by Nevada Revised Statutes 625.403) that:

1. This report and any Land Surveying Practices (N.R.S. 625.040) on which it is based were performed directly by me or under my responsible charge (N.R.S. 625.080) in accordance with the Standards and Practices Governing Land Surveyors in the State of Nevada as defined by any applicable sections of the Nevada Revised Statutes (N.R.S.) or the Nevada Administrative Code (N.A.C.).
2. By affixing my official seal and signature below I am confirming that I am a Registered Land Surveyor in the State of Nevada and thereby satisfy the requirements of Section 01050, Part 1.03, Subpart A or the Project Technical Specifications.

Craig A. Givant, PLS
PLS 14348



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FIELD NOTES

All Field Data pertaining to the determination of the location of the As-Built Information was collected electronically. Pertinent parameters required to be input into the software and which were obtained by means of human interaction, were verified as correct by performing field checks. These field checks and their resultant accuracies can be viewed within the Electronic Field Notes (Raw Data). The following Raw Data files were used while acquiring the As-Built information. These files have not been printed for inclusion in this report however a Portable Document File (PDF) of each raw data printout is included electronically on the attached Compact Disk (CD). It should be noted that the contents of these Raw Data files may not pertain solely to the report herein presented and may include additional data from other “tasks” performed on the same day.

1. 2009-10-20 (PHII IC+PH IIIA Closure Liner ASB)-MC.dc – Consisting of 271 Pages

SURVEY DATA

Field Survey Methods were employed that resulted in the following precisions:

Horizontal Coordinates: $\pm 1.0'$ (One Foot)

Vertical Coordinates: $\pm 0.10'$ (One Tenth of a Foot)

The Following documents are attached hereto:

1. Coordinate Printout of the reduced (measured) coordinates from the Field Collection Efforts.

1. Coordinate Printout of the reduced (measured) coordinates from the Field Collection Efforts.

Point No.	Northing	Easting	Elevation	Description
75000	18136.75	14603.63	1749.82	6-29-09prechk
75001	18081.08	14491.55	1750.20	top-ps
75002	18081.88	14491.53	1750.28	r-ps
75003	18083.80	14491.02	1750.02	r-ps
75004	18083.25	14491.00	1750.17	top-mat-ps
75005	18083.30	14502.34	1750.28	top-mat-ps
75006	18081.21	14502.20	1750.28	top-ps
75007	18080.35	14524.54	1750.19	top-ps
75008	18083.21	14524.51	1750.18	top-mat-ps
75009	18082.74	14547.02	1750.28	top-mat-ps
75010	18080.00	14546.95	1750.30	top-ps
75011	18079.80	14569.42	1750.61	top-ps
75012	18082.27	14569.41	1750.51	top-mat-ps
75013	18082.36	14591.86	1750.59	top-mat-ps
75014	18079.67	14591.90	1750.55	top-ps
75015	18078.99	14614.26	1750.63	top-ps
75016	18082.08	14614.20	1750.63	top-mat-ps
75017	18081.60	14636.84	1750.80	top-mat-ps
75018	18079.12	14636.72	1750.71	top-ps
75019	18078.34	14659.08	1750.83	top-ps
75020	18081.06	14659.03	1750.86	top-mat-ps
75021	18080.11	14681.71	1751.12	top-mat-scrap
75022	18077.30	14681.61	1751.09	top-scrap
75023	18051.27	14681.04	1738.68	toe-scrap
75024	18065.86	14669.10	1745.06	p-26
75025	18052.08	14658.43	1738.67	toe-ps
75026	18067.60	14647.45	1745.17	p-24
75027	18053.35	14636.03	1738.53	toe-ps
75028	18066.87	14625.95	1744.56	p-22
75029	18053.39	14613.70	1738.53	toe-ps
75030	18066.18	14604.80	1743.98	p-21
75031	18053.63	14591.26	1738.31	toe-ps
75032	18067.30	14581.85	1744.40	p-18
75033	18053.64	14568.90	1738.36	toe-ps
75034	18067.81	14558.30	1744.57	p-17
75035	18053.99	14546.42	1738.41	toe-ps

Point No.	Northing	Easting	Elevation	Description
75036	18068.37	14537.18	1744.71	p-16
75037	18054.38	14523.99	1738.41	toe-ps
75038	18068.51	14513.32	1744.87	p-15
75039	18068.53	14495.43	1744.91	p-19
75040	18054.91	14501.54	1738.56	toe-ps
75041	18055.14	14490.24	1738.73	toe-ps
75042	18039.24	14490.28	1739.03	r-14-ps
75043	18038.66	14489.34	1739.10	r-14-ps
75044	18036.61	14490.24	1739.17	r-14-ps
75045	18007.78	14489.90	1739.89	r-23-ps
75046	18006.88	14489.00	1739.86	r-23-ps
75047	18005.94	14489.88	1739.95	r-23-ps
75048	18003.43	14489.91	1740.00	r-24-ps
75049	18002.68	14490.86	1739.98	r-24-ps
75050	18001.71	14489.91	1740.01	r-24-ps
75051	18002.59	14492.90	1739.94	r-25-ps
75052	18002.46	14498.37	1740.09	r-25-ps
75053	18002.47	14499.74	1740.11	r-26-ps
75054	18003.36	14500.81	1740.12	r-26-ps
75055	18001.54	14500.66	1740.19	r-26-ps
75056	17972.10	14489.65	1740.70	r-22-ps
75057	17971.26	14488.83	1740.77	r-22-ps
75058	17970.22	14489.61	1740.78	r-22-ps
75059	17940.50	14489.48	1741.79	r-21-ps
75060	17939.59	14488.71	1741.83	r-21-ps
75061	17938.53	14489.43	1741.88	r-21-ps
75062	17917.26	14489.32	1742.57	r-20-ps
75063	17915.57	14490.15	1742.64	r-20-ps
75064	17912.65	14488.50	1742.69	r-20-ps
75065	17899.82	14489.23	1743.00	r-20-ps
75066	17911.79	14494.59	1742.70	p-06
75067	17923.65	14494.43	1742.30	p-20
75068	17915.05	14498.01	1742.57	r-41-ps
75069	17913.82	14498.75	1742.65	r-41-ps
75070	17915.91	14499.44	1742.59	r-41-ps
75071	17914.80	14500.12	1742.64	r-41-ps
75072	17906.90	14509.59	1742.95	p-05
75073	17898.61	14528.98	1743.31	p-01
75074	17913.03	14520.45	1742.86	r-30-ps
75075	17911.92	14521.16	1742.89	r-30-ps

Point No.	Northing	Easting	Elevation	Description
75076	17914.15	14521.77	1742.80	r-30-ps
75077	17912.94	14522.71	1742.87	r-30-ps
75078	17912.60	14526.02	1742.85	ds-17/r-31-ps
75079	17911.95	14532.59	1742.90	ds-17/r-31-ps
75080	17910.88	14531.37	1742.93	ds-21/r-42-s
75081	17911.38	14526.32	1742.89	ds-21/r-42-s
75082	17911.13	14543.03	1742.80	r-32-ps
75083	17910.13	14543.72	1742.88	r-32-ps
75084	17911.96	14544.29	1742.82	r-32-ps
75085	17910.94	14545.33	1742.85	r-32-ps
75086	17896.88	14552.36	1743.28	p-02
75087	17909.08	14565.47	1742.82	r-33-ps
75088	17908.17	14566.01	1742.85	r-33-ps
75089	17909.84	14566.68	1742.79	r-33-ps
75090	17908.88	14567.77	1742.83	r-33-ps
75091	17927.67	14566.88	1742.29	ds-13/r-27-ps
75092	17933.20	14566.97	1742.04	ds-13/r-27-ps
75093	17896.06	14576.79	1743.20	p-03
75094	17907.14	14586.98	1742.83	r-34-ps
75095	17906.06	14588.10	1742.88	r-34-ps
75096	17908.07	14589.11	1742.77	r-34-ps
75097	17906.84	14590.56	1742.84	r-34-ps
75098	17898.63	14599.46	1743.13	p-04
75099	17905.04	14609.52	1742.93	r-35-ps
75100	17903.87	14610.37	1743.01	r-35-ps
75101	17905.66	14611.57	1742.98	r-35-ps
75102	17904.72	14612.52	1743.02	r-35-ps
75103	17896.23	14621.06	1743.30	p-07
75104	17964.09	14623.36	1741.26	p-23
75105	17971.09	14612.46	1741.08	r-38-ps
75106	17971.87	14613.34	1741.04	r-38-ps
75107	17972.67	14612.43	1741.04	r-38-ps
75108	17978.43	14612.41	1740.87	ds-15/r-28-ps
75109	17983.78	14612.54	1740.72	ds-15/r-28-ps
75110	17971.46	14633.90	1741.09	r-39-ps
75111	17972.46	14634.89	1741.08	r-39-ps
75112	17970.48	14634.93	1741.11	r-39-ps
75113	17916.98	14633.95	1742.65	ds-16/r-29-ps
75114	17911.76	14633.89	1742.88	ds-16/r-29-ps
75115	17903.02	14631.97	1743.16	r-36-ps

Point No.	Northing	Easting	Elevation	Description
75116	17901.99	14632.74	1743.18	r-36-ps
75117	17903.69	14633.78	1743.10	r-36-ps
75118	17902.82	14634.74	1743.18	r-36-ps
75119	17892.11	14642.47	1743.53	p-08
75120	17900.93	14654.27	1743.13	r-37-ps
75121	17899.93	14654.97	1743.16	r-37-ps
75122	17901.70	14656.19	1743.12	r-37-ps
75123	17900.63	14657.32	1743.15	r-37-ps
75124	17888.49	14664.37	1743.51	p-09
75125	18018.27	14668.59	1739.90	p-25
75126	18027.71	14658.04	1739.65	r-40-ps
75127	18028.71	14658.92	1739.64	r-40-ps
75128	18029.53	14658.01	1739.60	r-40-ps
75129	18028.63	14680.63	1739.54	scrap-ps
75130	17898.18	14677.50	1743.20	scrap-ps
75131	17888.13	14686.79	1743.50	p-10
75132	17888.34	14707.75	1743.61	p-11
75133	17896.29	14699.64	1743.33	scrap-ps
75134	17894.14	14722.16	1743.52	scrap-ps
75135	17883.99	14731.24	1743.90	p-12
75136	17882.39	14755.45	1744.14	p-13
75137	17891.99	14744.25	1743.67	scrap-ps
75138	17900.10	14744.76	1743.46	scrap-ps
75139	17896.05	14767.37	1743.66	scrap-ps
75140	17882.85	14775.03	1744.07	p-14
75141	17893.57	14789.51	1743.74	scrap-ps
75142	17877.87	14798.23	1744.20	p-27
75143	17890.89	14811.86	1743.81	scrap-ps
75144	17874.29	14821.89	1744.36	p-28
75145	17889.62	14834.22	1743.95	scrap-ps
75146	17871.05	14843.39	1744.56	p-29
75147	17885.66	14856.46	1744.12	scrap-ps
75148	17867.13	14865.67	1744.75	p-30
75149	17884.05	14878.57	1744.21	scrap-ps
75150	17890.83	14901.70	1743.90	scrap-edge
75151	17866.04	14888.72	1744.75	p-31
75152	17788.53	14805.16	1746.90	ds-19/r-ps
75153	17783.39	14804.88	1747.19	ds-19/r-ps
75154	17518.46	14879.20	1754.62	toe-ps-scrap
75155	17508.35	14865.68	1760.00	p-31

Point No.	Northing	Easting	Elevation	Description
75156	17520.71	14856.86	1754.68	toe-ps
75157	17509.35	14845.22	1760.19	p-30
75158	17521.76	14834.39	1754.84	toe-ps
75159	17510.37	14822.51	1760.26	p-29
75160	17523.92	14812.17	1754.78	toe-ps
75161	17513.28	14798.61	1759.82	p-28
75162	17525.33	14789.75	1754.59	toe-ps
75163	17515.30	14778.90	1759.63	p-27
75164	17527.51	14767.48	1754.49	toe-ps
75165	17591.42	14771.17	1752.46	ds-18/r-ps
75166	17596.15	14771.43	1752.34	ds-18/r-ps
75167	17600.42	14749.29	1752.21	ds-12/r-18-ps
75168	17594.66	14748.92	1752.40	ds-12/r-18-ps
75169	17686.49	14821.74	1749.95	ds-20/r-ps
75170	17691.54	14822.08	1749.70	ds-20/r-ps
75171	17516.74	14755.68	1759.64	p-14
75172	17518.17	14733.12	1759.56	p-13
75173	17529.09	14745.01	1754.35	toe-ps
75174	17530.99	14722.63	1754.35	toe-ps
75175	17597.49	14726.54	1752.34	ds-11/r-17-ps
75176	17602.83	14726.86	1752.20	ds-11/r-17-ps
75177	17597.85	14681.47	1752.23	ds-09/r-15-ps
75178	17591.35	14681.22	1752.48	ds-09/r-15-ps
75179	17524.32	14699.71	1757.88	ds-10/r-16-ps
75180	17519.53	14699.39	1760.15	ds-10/r-16-ps
75181	17519.44	14710.87	1759.86	p-12
75182	17532.64	14700.18	1754.21	toe-ps
75183	17520.17	14687.96	1760.20	p-11
75184	17534.33	14677.77	1754.19	toe-ps
75185	17521.43	14664.03	1760.44	p-10
75186	17535.91	14655.38	1754.14	toe-ps
75187	17522.27	14642.93	1760.37	p-09
75188	17537.80	14632.95	1754.02	toe-ps
75189	17524.48	14621.68	1760.02	p-08
75190	17539.43	14610.56	1753.90	toe-ps
75191	17596.51	14614.13	1752.25	ds-07/r-12-ps
75192	17602.13	14614.39	1752.01	ds-07/r-12-ps
75193	17526.88	14598.35	1759.79	p-07
75194	17541.16	14588.23	1753.75	toe-ps
75195	17527.87	14575.09	1760.06	p-04

Point No.	Northing	Easting	Elevation	Description
75196	17542.66	14565.80	1753.78	toe-ps
75197	17706.99	14575.92	1748.88	ds-03/r-08-ps
75198	17711.66	14576.20	1748.71	ds-03/r-08-ps
75199	17793.65	14648.42	1746.36	ds-08/r-13-ps
75200	17799.20	14648.68	1746.19	ds-08/r-13-ps
75201	17855.08	14607.20	1744.49	ds-05/r-11-ps
75202	17860.33	14607.54	1744.34	ds-05/r-11-ps
75203	17656.47	14550.57	1750.37	ds-02/r-07-ps
75204	17651.61	14550.27	1750.48	ds-02/r-07-ps
75205	17606.88	14525.18	1752.06	ds-01/r-05-ps
75206	17601.81	14524.86	1752.20	ds-01/r-05-ps
75207	17752.14	14511.32	1747.35	ds-04/r-06-ps
75208	17758.05	14511.69	1747.19	ds-04/r-06-ps
75209	17523.13	14484.66	1766.92	r-01-ps
75210	17522.67	14482.43	1767.18	r-01-s
75211	17520.23	14482.99	1765.76	r-01-s
75212	17518.93	14485.65	1765.81	r-01-s
75213	17522.33	14486.19	1766.90	r-01-s
75214	17522.37	14484.53	1767.16	top-ps
75215	17520.53	14483.81	1767.05	top-mat-ps
75216	17517.05	14497.03	1767.17	top-mat-ps
75217	17519.74	14497.21	1767.01	top-ps
75218	17517.90	14519.53	1766.99	top-ps
75219	17515.17	14519.32	1767.09	top-mat-ps
75220	17513.74	14541.76	1766.73	top-mat-ps
75221	17516.44	14541.92	1766.88	top-ps
75222	17515.15	14564.48	1766.93	top-ps
75223	17512.59	14564.31	1767.02	top-mat-ps
75224	17511.04	14586.62	1766.78	top-mat-ps
75225	17513.84	14586.77	1766.75	top-ps
75226	17512.02	14586.71	1766.85	r-ps
75227	17509.91	14586.37	1764.86	r-ps
75228	17512.13	14609.17	1766.68	top-ps
75229	17509.75	14608.91	1766.90	top-mat-ps
75230	17508.35	14631.45	1766.75	top-mat-ps
75231	17510.70	14631.49	1766.67	top-ps
75232	17509.43	14653.96	1766.30	top-ps
75233	17506.85	14653.92	1766.42	top-mat-ps
75234	17505.35	14676.34	1766.53	top-mat-ps
75235	17508.36	14676.45	1766.57	top-ps

Point No.	Northing	Easting	Elevation	Description
75236	17506.88	14698.86	1766.25	top-ps
75237	17504.29	14698.68	1766.28	top-mat-ps
75238	17502.66	14721.07	1766.28	top-mat-ps
75239	17505.68	14721.28	1766.25	top-ps
75240	17504.51	14743.70	1766.06	top-ps
75241	17501.60	14743.44	1766.08	top-mat-ps
75242	17500.08	14765.89	1766.02	top-mat-ps
75243	17503.14	14766.06	1765.85	top-ps
75244	17501.40	14788.52	1765.86	top-ps
75245	17498.86	14788.39	1765.89	top-mat-ps
75246	17497.44	14810.59	1765.83	top-mat-ps
75247	17500.04	14810.66	1765.76	top-ps
75248	17498.74	14833.08	1765.72	top-ps
75249	17495.91	14832.95	1765.74	top-mat-ps
75250	17494.73	14855.34	1765.69	top-mat-ps
75251	17497.33	14855.43	1765.53	top-ps
75252	17495.75	14877.80	1765.63	top-ps-scrap
75253	17493.27	14877.60	1765.67	top-ps-scrap
75254	17588.90	14490.64	1752.24	ps-angle pt.
75255	17615.02	14490.63	1751.71	r-03-ps
75256	17614.99	14490.26	1751.73	r-03-ps
75257	17617.14	14490.73	1751.66	r-03-ps
75258	17637.82	14490.59	1751.13	r-04-ps
75259	17639.13	14489.50	1751.13	r-04-ps
75260	17639.97	14490.55	1751.06	r-04-ps
75261	17766.71	14489.93	1746.99	r-09-ps
75262	17772.37	14489.94	1746.84	r-09-ps
75263	17772.35	14490.12	1746.83	r-09-ps
75264	17808.89	14489.63	1745.81	r-10-ps
75265	17814.93	14489.46	1745.66	r-10-ps
75266	17814.98	14489.72	1745.66	r-10-ps
75267	17848.90	14489.47	1744.64	ds-06/r-19-ps
75268	17854.03	14489.53	1744.54	ds-06/r-19-ps
75269	18082.76	14491.70	1750.35	r-43
75270	18136.76	14603.61	1749.80	6-29-09postchk
75271	17654.20	15298.73	1751.06	7-2-09prechk
75272	17883.14	14883.87	1744.25	r-68-ps
75273	17884.02	14882.91	1744.21	r-68-ps
75274	17882.69	14878.54	1744.28	r-68-ps
75275	17883.74	14877.95	1744.22	r-68-ps

Point No.	Northing	Easting	Elevation	Description
75276	17885.23	14860.99	1744.10	r-67-ps
75277	17885.98	14860.18	1744.12	r-67-ps
75278	17884.76	14856.16	1744.10	r-67-ps
75279	17885.75	14855.33	1744.08	r-67-ps
75280	17887.71	14838.48	1743.95	r-66-ps
75281	17888.68	14837.81	1743.89	r-66-ps
75282	17887.20	14833.97	1743.92	r-66-ps
75283	17888.27	14833.32	1743.87	r-66-ps
75284	17899.99	14817.31	1743.45	ds-26/r-65-ps
75285	17905.09	14818.59	1743.33	ds-26/r-65-ps
75286	17890.21	14816.27	1743.79	r-64-ps
75287	17891.13	14815.28	1743.76	r-64-ps
75288	17889.70	14811.64	1743.82	r-64-ps
75289	17890.82	14811.01	1743.77	r-64-ps
75290	17892.52	14793.41	1743.74	r-63-ps
75291	17893.55	14792.66	1743.72	r-63-ps
75292	17893.65	14791.76	1743.74	r-63-ps
75293	17892.09	14789.37	1743.77	r-63-ps
75294	17893.06	14788.49	1743.73	r-63-ps
75295	17895.27	14770.32	1743.67	r-60-ps
75296	17896.09	14769.46	1743.64	r-60-ps
75297	17894.65	14767.01	1743.70	r-60-ps
75298	17895.85	14766.43	1743.64	r-60-ps
75299	17897.67	14747.90	1743.52	r-59-ps
75300	17898.50	14747.03	1743.45	r-59-ps
75301	17897.08	14746.11	1743.53	r-59-ps
75302	17893.10	14744.37	1743.59	r-53-ps
75303	17891.23	14744.20	1743.65	r-53-ps
75304	17892.30	14743.05	1743.61	r-53-ps
75305	17894.14	14724.71	1743.49	r-54-ps
75306	17895.37	14723.96	1743.49	r-54-ps
75307	17895.42	14723.30	1743.47	r-54-ps
75308	17893.16	14721.95	1743.50	r-54-ps
75309	17894.46	14721.00	1743.49	r-54-ps
75310	17896.18	14701.83	1743.31	r-52-ps
75311	17897.16	14700.83	1743.32	r-52-ps
75312	17895.28	14699.66	1743.38	r-52-ps
75313	17896.33	14698.80	1743.32	r-52-ps
75314	17898.39	14679.49	1743.19	r-51-ps
75315	17900.41	14678.60	1743.15	r-51-ps

Point No.	Northing	Easting	Elevation	Description
75316	17898.82	14676.44	1743.16	r-51-ps
75317	17893.25	14677.17	1743.34	r-51-ps
75318	17920.27	14678.93	1742.65	ds-22/r-55-ps
75319	17925.88	14679.02	1742.51	ds-22/r-55-ps
75320	17921.58	14701.38	1742.65	ds-23/r-50-ps
75321	17915.87	14701.21	1742.83	ds-23/r-50-ps
75322	17921.85	14772.69	1742.93	ds-24/r-61-ps
75323	17916.07	14771.92	1743.14	ds-24/r-61-ps
75324	17504.69	14721.16	1766.32	r-57-ps
75325	17503.00	14720.91	1766.31	r-57-ps
75326	17501.23	14765.98	1766.01	r-58-ps
75327	17499.77	14765.63	1765.80	r-58-ps
75328	17500.98	14777.11	1765.93	r-84
75329	17945.44	14798.04	1742.06	ds-25/r-62-ps
75330	17951.62	14798.85	1741.89	ds-25/r-62-ps
75331	18063.14	14692.50	1744.28	p-32
75332	18062.50	14703.63	1744.42	r-49-ps
75333	18055.54	14703.40	1740.87	r-49-ps
75334	18050.44	14703.45	1738.65	toe-ps
75335	18065.00	14713.42	1745.74	p-33
75336	18049.23	14725.78	1738.93	toe-ps
75337	18063.52	14735.62	1745.88	p-34
75338	18046.39	14743.48	1739.16	toe-ps
75339	18060.38	14756.38	1745.70	p-35
75340	18042.55	14765.58	1739.44	toe-ps
75341	18057.45	14777.37	1746.16	p-36
75342	18038.24	14787.59	1739.32	toe-ps
75343	18051.88	14800.80	1746.29	p-37
75344	18033.82	14809.57	1739.40	toe-ps
75345	18047.13	14819.25	1746.15	p-38
75346	18030.66	14825.41	1739.88	toe-ps
75347	18046.34	14837.36	1747.76	p-39
75348	18008.09	14852.79	1740.12	p-40
75349	18026.08	14850.49	1739.48	p-45
75350	18023.50	14847.73	1739.58	r-69-ps
75351	18022.38	14846.53	1739.65	r-69-ps
75352	18024.54	14847.06	1739.63	r-69-ps
75353	18022.00	14854.69	1739.62	r-71-ps
75354	18022.88	14855.28	1739.57	r-71-ps
75355	18021.38	14857.40	1739.65	r-71-ps

Point No.	Northing	Easting	Elevation	Description
75356	18027.36	14847.67	1739.55	toe-ps
75357	18028.33	14852.75	1739.71	toe-ps
75358	18044.91	14855.52	1746.07	p-42
75359	18017.17	14868.37	1739.79	r-72-ps
75360	18018.85	14867.77	1739.74	r-72-ps
75361	18020.12	14868.79	1739.66	r-72-ps
75362	18035.95	14872.81	1739.13	r-73-ps
75363	18039.58	14872.33	1739.50	r-73-ps
75364	18039.42	14873.92	1739.33	r-73-ps
75365	18058.45	14870.15	1747.23	p-43
75366	18053.40	14888.54	1747.07	p-41
75367	18035.16	14895.81	1739.37	toe-ps
75368	18030.01	14917.75	1739.63	toe-ps
75369	18026.40	14937.56	1739.72	toe-scrap
75370	18047.88	14909.03	1746.67	p-46
75371	18044.00	14930.39	1747.09	p-47
75372	17685.96	14866.55	1749.96	r-78-ps
75373	17683.74	14866.48	1750.06	r-78-ps
75374	17592.43	14809.24	1752.39	r-85
75375	17504.07	14890.14	1761.09	p-48
75376	17518.24	14901.66	1754.98	toe-ps
75377	17503.66	14911.94	1760.56	p-49
75378	17516.13	14923.96	1755.26	toe-ps
75379	17502.60	14933.47	1760.83	p-50
75380	17514.65	14946.38	1755.14	toe-ps
75381	17500.14	14955.85	1761.24	p-51
75382	17512.92	14968.49	1755.35	toe-ps
75383	17499.40	14975.15	1760.99	p-52
75384	17509.60	14990.85	1755.44	toe-ps-scrap
75385	17488.82	14989.60	1765.05	top-ps-scrap
75386	17486.60	14989.49	1765.02	top-mat-ps-scrap
75387	17487.84	14967.04	1765.32	top-mat-ps
75388	17490.15	14967.31	1765.32	top-ps
75389	17491.68	14944.95	1765.25	top-ps
75390	17489.32	14944.89	1765.27	top-mat-ps
75391	17490.75	14922.43	1765.22	top-mat-ps
75392	17493.23	14922.54	1765.27	top-ps
75393	17494.44	14900.05	1765.43	top-ps
75394	17493.02	14899.97	1765.47	top-mat-ps
75395	17494.23	14877.64	1765.82	r-ps

Point No.	Northing	Easting	Elevation	Description
75396	17492.90	14877.29	1765.50	r-ps
75397	17585.12	14883.19	1752.89	ds-27/r-79-ps
75398	17590.52	14883.48	1752.74	ds-27/r-79-ps
75399	17583.10	14905.47	1752.99	ds-28/r-80-ps
75400	17588.65	14905.82	1752.86	ds-28/r-80-ps
75401	17680.93	14933.67	1750.21	ds-29/r-81-ps
75402	17686.31	14933.99	1750.04	ds-29/r-81-ps
75403	17678.70	14956.11	1750.34	ds-30/r-82-ps
75404	17684.10	14956.32	1750.09	ds-30/r-82-ps
75405	17776.11	14984.26	1747.34	ds-31/r-83-ps
75406	17782.16	14984.61	1747.15	ds-31/r-83-ps
75407	17884.49	15013.55	1744.29	scrap-ps
75408	17885.38	14990.87	1744.17	scrap-ps
75409	17886.62	14968.57	1744.14	scrap-ps
75410	17888.32	14946.25	1743.99	scrap-ps
75411	17889.47	14924.06	1743.98	scrap-ps
75412	17891.90	14908.07	1743.91	scrap-ps
75413	17881.44	14900.93	1744.30	r-ps
75414	18052.18	14946.66	1752.59	top-ps-scrap
75415	18054.87	14947.11	1752.54	top-mat-ps-scrap
75416	18059.71	14924.74	1752.48	top-mat-ps
75417	18057.27	14924.25	1752.40	top-ps
75418	18062.38	14902.71	1752.57	top-ps
75419	18064.84	14902.88	1752.57	top-mat-ps
75420	18064.59	14902.93	1752.60	r-77-ps
75421	18062.75	14902.83	1752.59	r-77-ps
75422	18067.33	14881.09	1752.45	top-ps
75423	18070.45	14881.92	1752.40	top-mat-ps
75424	18074.89	14859.86	1752.40	top-mat-ps
75425	18074.05	14855.11	1752.51	top-mat-ps
75426	18072.30	14855.94	1752.34	top-ps
75427	18072.08	14859.26	1752.40	top-ps
75428	18073.61	14857.43	1752.41	p-44
75429	18072.69	14855.64	1752.40	r-75-ps
75430	18074.29	14855.11	1752.42	r-75-ps
75431	18069.32	14857.55	1751.48	r-74-ps
75432	18069.58	14858.57	1751.45	r-74-ps
75433	18067.52	14858.53	1750.88	r-74-ps
75434	18053.61	14847.86	1751.99	r-76-ps
75435	18057.24	14845.66	1751.95	r-76-ps

Point No.	Northing	Easting	Elevation	Description
75436	18056.41	14846.74	1752.42	top-mat-ps
75437	18054.98	14847.64	1752.52	top-ps
75438	18057.83	14832.36	1752.42	top-ps
75439	18060.15	14833.02	1752.25	top-mat-ps
75440	18064.07	14813.28	1752.38	top-mat-ps
75441	18061.69	14813.01	1752.33	top-ps
75442	18066.69	14791.07	1752.31	top-ps
75443	18069.19	14791.31	1752.42	top-mat-ps
75444	18073.77	14769.51	1752.08	top-mat-ps
75445	18071.62	14769.31	1752.13	top-ps
75446	18073.97	14746.93	1751.68	top-ps
75447	18075.71	14747.12	1751.73	top-mat-ps
75448	18077.46	14726.16	1751.58	top-mat-ps
75449	18075.01	14726.16	1751.43	top-ps
75450	18076.66	14703.72	1751.07	top-ps
75451	18078.93	14703.77	1751.11	top-mat-ps
75452	18078.46	14681.51	1751.05	r-48-ps
75453	18080.00	14681.25	1751.12	r-48-ps
75454	17654.19	15298.73	1751.03	7-2-09postchk
75455	18036.35	14849.59	1743.27	R-70-PS
75456	18033.34	14849.10	1741.79	R-70-PS
75457	18033.38	14850.36	1741.82	R-70-PS
75458	17654.17	15298.69	1751.10	CP443-POSTCHK-7-3-09
75459	18028.51	14679.78	1739.56	r-56-ps
75460	18027.66	14680.64	1739.60	r-56-ps
75461	18029.34	14680.65	1739.52	r-56-ps
75462	17654.18	15298.71	1751.11	7-7-09prechk
75463	17488.35	14989.57	1765.19	r-91-ps
75464	17486.29	14989.38	1765.07	r-91-ps
75465	17486.18	14989.42	1765.03	top-mat-ps
75466	17489.12	14989.72	1765.11	top-ps
75467	17487.68	15012.18	1764.91	top-ps
75468	17484.75	15012.04	1764.89	top-mat-ps
75469	17483.45	15034.42	1764.94	top-mat-ps
75470	17486.07	15034.53	1764.93	top-ps
75471	17482.38	15048.48	1764.90	r-92
75472	17488.47	15048.85	1763.44	r-93
75473	17494.65	15048.98	1760.35	r-94
75474	17484.46	15057.10	1764.87	top-ps
75475	17482.02	15056.91	1764.99	top-mat-ps

Point No.	Northing	Easting	Elevation	Description
75476	17480.82	15079.12	1764.79	top-mat-ps
75477	17482.97	15079.32	1764.67	top-ps
75478	17481.52	15101.78	1764.64	top-ps
75479	17479.38	15101.58	1764.76	top-mat-ps
75480	17477.82	15124.02	1764.57	top-mat-ps
75481	17480.24	15124.20	1764.59	top-ps
75482	17478.38	15146.57	1764.49	top-ps
75483	17476.20	15146.48	1764.52	top-mat-ps
75484	17474.77	15168.65	1764.22	top-mat-ps
75485	17477.03	15168.80	1764.27	top-ps
75486	17475.18	15191.05	1764.21	top-ps
75487	17473.55	15190.95	1764.26	top-mat-ps
75488	17471.74	15213.00	1764.21	top-mat-ps
75489	17473.50	15213.12	1764.11	top-ps
75490	17472.09	15235.61	1764.10	top-ps
75491	17469.90	15235.48	1764.14	top-mat-ps
75492	17468.47	15257.65	1764.03	top-mat-ps
75493	17470.83	15257.79	1764.02	top-ps
75494	17469.17	15280.58	1763.94	top-ps
75495	17466.92	15280.35	1763.94	top-mat-ps
75496	17466.64	15289.17	1763.80	top-mat-ps-scrap
75497	17469.07	15288.87	1763.80	top-ps-scrap
75498	17485.15	15288.89	1756.15	toe-ps-scrap
75499	17485.06	15281.23	1756.22	toe-ps
75500	17479.75	15269.41	1759.47	p-65
75501	17487.07	15258.75	1756.40	toe-ps
75502	17480.72	15246.83	1759.74	p-64
75503	17489.35	15236.36	1756.09	toe-ps
75504	17482.06	15225.94	1760.04	p-63
75505	17491.79	15213.90	1756.06	toe-ps
75506	17484.66	15200.77	1759.81	p-62
75507	17492.63	15191.82	1755.97	toe-ps
75508	17484.30	15180.93	1760.51	p-61
75509	17495.06	15169.64	1755.99	toe-ps
75510	17486.80	15156.61	1760.29	p-60
75511	17496.36	15147.37	1755.91	toe-ps
75512	17488.68	15135.87	1760.25	p-59
75513	17498.76	15125.00	1755.74	toe-ps
75514	17490.36	15112.56	1760.20	p-58
75515	17500.46	15102.70	1755.56	toe-ps

Point No.	Northing	Easting	Elevation	Description
75516	17491.71	15090.91	1760.10	p-57
75517	17502.58	15080.35	1755.42	toe-ps
75518	17493.33	15067.98	1760.27	p-56
75519	17504.41	15058.11	1755.49	toe-ps
75520	17496.19	15046.12	1759.75	p-55
75521	17506.10	15035.63	1755.44	toe-ps
75522	17496.56	15022.58	1760.50	p-54
75523	17508.06	15013.25	1755.33	toe-ps
75524	17498.15	15001.85	1760.50	p-53
75525	17581.73	14995.03	1753.26	ds-32/r-87-ps
75526	17586.73	14995.43	1753.16	ds-32/r-87-ps
75527	17572.47	15017.01	1753.49	ds-33/r-88-ps
75528	17577.59	15017.34	1753.36	ds-33/r-88-ps
75529	17571.06	15129.53	1753.92	ds-36/r-95-ps
75530	17576.80	15129.82	1753.73	ds-36/r-95-ps
75531	17568.03	15151.79	1753.92	ds-37/r-96-ps
75532	17573.45	15152.15	1753.78	ds-37/r-96-ps
75533	17667.80	15067.81	1750.91	ds-35/r-90-ps
75534	17673.37	15068.22	1750.72	ds-35/r-90-ps
75535	17672.01	15045.67	1750.65	ds-34/r-89-ps
75536	17677.54	15046.01	1750.46	ds-34/r-89-ps
75537	17882.55	15013.27	1744.36	scrap-ps
75538	17880.38	15035.68	1744.43	scrap-ps
75539	17879.00	15057.82	1744.49	scrap-ps
75540	17878.58	15080.42	1744.54	scrap-ps
75541	17877.28	15102.62	1744.70	scrap-ps
75542	17876.36	15125.14	1744.80	scrap-ps
75543	17874.97	15147.38	1744.82	scrap-ps
75544	17873.94	15169.87	1744.82	scrap-ps
75545	17872.47	15192.36	1744.86	scrap-ps
75546	17872.43	15214.33	1744.98	scrap-ps
75547	17868.19	15236.57	1745.11	scrap-ps
75548	17867.10	15258.87	1745.08	scrap-ps
75549	17867.51	15281.36	1745.02	scrap-ps
75550	17868.84	15289.25	1744.98	scrap-ps
75551	17594.52	15288.52	1753.00	scrap-ps
75552	17477.39	15285.05	1759.92	p-66
75553	17654.16	15298.74	1751.05	7-7-09postchk
75554	17654.18	15298.73	1751.03	7-8-09prechk
75555	17574.08	15219.44	1753.58	ds-38/r-97-ps

Point No.	Northing	Easting	Elevation	Description
75556	17568.22	15219.02	1753.78	ds-38/r-97-ps
75557	17812.99	15255.93	1746.49	ds-39/r-98-ps
75558	17818.75	15256.24	1746.37	ds-39/r-98-ps
75559	18013.91	14879.68	1739.99	ds-41/r-107-s
75560	18015.27	14874.03	1739.93	ds-41/r-107-s
75561	18008.39	14912.48	1740.18	r-100+101-ps
75562	18005.95	14911.73	1740.26	r-100+101-ps
75563	18000.88	14933.50	1740.44	r-100-ps
75564	18003.65	14934.22	1740.41	r-100-ps
75565	18011.51	14889.80	1740.10	r-101+102-ps
75566	18014.13	14890.43	1740.00	r-101+102-ps
75567	18016.76	14868.00	1739.92	r-102+103-ps
75568	18019.40	14868.66	1739.82	r-102+103-ps
75569	18022.92	14855.12	1739.70	r-103-ps
75570	18024.60	14848.38	1739.66	r-103-s
75571	18021.93	14847.80	1739.75	r-103-s
75572	18021.41	14846.27	1739.83	r-106-ps
75573	18031.91	14848.74	1741.05	r-106-ps
75574	18019.94	14867.39	1739.73	r-104-s
75575	18019.29	14870.05	1739.79	r-104-s
75576	18039.06	14874.94	1739.81	r-104+105-s
75577	18039.72	14872.19	1739.83	r-104+105-ps
75578	18044.19	14875.04	1741.27	r-105-ps
75579	17654.17	15298.70	1751.12	7-8-09postchk
75580	17654.19	15298.70	1751.11	7-10-09PRECHK
75581	17864.31	15288.83	1745.11	scrap-ps
75582	17866.96	15246.24	1745.22	ds-48/r-125-ps
75583	17868.13	15244.05	1745.18	ds-48/r-125-ps
75584	17866.39	15236.28	1745.27	ds-48/r-125-ps
75585	17867.49	15234.75	1745.22	ds-48/r-125-ps
75586	17886.03	15206.22	1744.50	r-174-ps
75587	17887.79	15205.55	1744.41	r-174-ps
75588	17888.75	15206.88	1744.42	r-174-ps
75589	17888.29	15184.03	1744.34	r-173-ps
75590	17892.09	15186.00	1744.22	r-173-ps
75591	17893.33	15184.98	1744.15	r-173-ps
75592	17878.98	15192.78	1744.69	p-86
75593	17878.43	15234.61	1744.87	p-91
75594	17892.70	15255.94	1744.24	p-89
75595	17904.00	15244.05	1743.86	r-177-ps

Point No.	Northing	Easting	Elevation	Description
75596	17904.41	15266.53	1743.79	r-178-ps
75597	17904.16	15256.34	1743.83	ds-49/r-126-ps
75598	17904.00	15251.15	1743.84	ds-49/r-126-ps
75599	17940.93	15243.92	1742.86	r-176-ps
75600	17941.19	15232.89	1742.88	r-175-ps
75601	17697.38	15181.93	1749.90	r-114-ps
75602	17702.35	15182.26	1749.77	r-114-ps
75603	17472.50	15202.44	1764.27	r-160
75604	17474.36	15202.54	1764.22	r-160
75605	17474.61	15197.96	1764.25	r-160
75606	17473.03	15197.89	1764.33	r-160
75607	17472.25	15214.10	1764.19	r-161
75608	17473.29	15212.96	1764.16	r-116-ps
75609	17475.19	15213.31	1763.67	r-116-ps
75610	17494.77	15214.18	1756.11	r-113-ps
75611	17497.36	15214.43	1756.00	r-113-ps
75612	17497.37	15216.09	1755.97	r-113
75613	17495.12	15216.44	1756.01	r-113
75614	17494.26	15210.78	1756.05	r-113
75615	17496.63	15210.45	1756.00	r-113
75616	17513.72	15183.92	1755.51	r-112
75617	17513.79	15180.45	1755.53	r-112
75618	17516.36	15180.45	1755.44	r-112
75619	17516.22	15184.03	1755.45	r-112
75620	17864.81	15280.99	1745.21	r-159-ps
75621	17865.68	15266.47	1745.18	r-158-ps
75622	17866.12	15258.67	1745.15	r-157-ps
75623	17868.42	15221.61	1745.20	r-156-ps
75624	17868.79	15214.96	1745.18	r-155-ps
75625	17867.94	15213.93	1745.21	r-155-ps
75626	17868.96	15212.95	1745.17	r-155-ps
75627	17869.64	15202.30	1745.06	r-154-ps
75628	17870.14	15193.22	1745.00	r-153-ps
75629	17869.06	15191.90	1745.03	r-153-ps
75630	17870.23	15191.08	1745.00	r-153-ps
75631	17870.98	15180.96	1745.02	r-152-ps
75632	17872.07	15180.10	1745.01	r-152-ps
75633	17871.22	15178.80	1745.01	r-152-ps
75634	17871.68	15170.96	1744.99	r-151-ps
75635	17870.66	15169.59	1744.99	r-151-ps

Point No.	Northing	Easting	Elevation	Description
75636	17871.69	15168.59	1744.96	r-151-ps
75637	17872.38	15158.14	1744.94	r-150-ps
75638	17873.60	15157.33	1744.90	r-150-ps
75639	17872.49	15156.04	1744.94	r-150-ps
75640	17873.08	15148.56	1744.94	r-149-ps
75641	17872.11	15147.39	1744.96	r-149-ps
75642	17873.21	15146.43	1744.94	r-149-ps
75643	17936.16	15172.10	1742.89	ds-46/r-123
75644	17941.72	15173.40	1742.64	ds-46/r-123
75645	17879.69	15135.75	1744.78	r-148-ps
75646	17878.77	15134.68	1744.78	r-148-ps
75647	17874.05	15133.54	1744.96	r-148-ps
75648	17873.98	15135.49	1744.93	r-148-ps
75649	17874.58	15126.08	1744.97	r-147-ps
75650	17873.72	15125.04	1744.99	r-147-ps
75651	17874.69	15124.06	1744.94	r-147-ps
75652	17878.20	15120.42	1744.77	p-85
75653	17883.32	15114.90	1744.55	r-172-ps
75654	17884.45	15113.85	1744.52	r-172-ps
75655	17882.33	15113.48	1744.60	r-172-ps
75656	17876.39	15112.01	1744.84	r-146-ps
75657	17875.38	15112.86	1744.94	r-146-ps
75658	17875.58	15110.76	1744.86	r-146-ps
75659	17876.00	15103.44	1744.79	r-145-ps
75660	17875.11	15102.42	1744.82	r-145-ps
75661	17876.16	15101.42	1744.77	r-145-ps
75662	17876.75	15090.02	1744.73	r-144-ps
75663	17877.70	15089.14	1744.68	r-144-ps
75664	17876.91	15087.97	1744.69	r-144-ps
75665	17877.32	15081.36	1744.68	r-143-ps
75666	17876.30	15080.09	1744.64	r-143-ps
75667	17877.42	15079.29	1744.63	r-143-ps
75668	17897.42	15081.14	1743.89	p-77
75669	17697.15	15284.46	1749.94	r-179
75670	17688.19	15283.33	1750.25	r-180
75671	17666.69	15283.14	1750.91	r-181
75672	17924.96	15105.49	1743.17	r-171
75673	17918.06	15098.86	1743.43	r-170-ps
75674	17917.30	15097.59	1743.49	r-170-ps
75675	17915.95	15098.36	1743.53	r-170-ps

Point No.	Northing	Easting	Elevation	Description
75676	17921.76	15079.24	1743.42	r-169-ps
75677	17921.43	15076.43	1743.40	r-169-ps
75678	17923.33	15076.93	1743.33	r-169-ps
75679	17878.03	15067.31	1744.63	r-142-ps
75680	17879.20	15066.46	1744.57	r-142-ps
75681	17878.22	15065.30	1744.60	r-142-ps
75682	17878.51	15058.92	1744.59	r-141-ps
75683	17877.38	15057.83	1744.59	r-141-ps
75684	17878.72	15056.87	1744.56	r-141-ps
75685	17879.58	15044.50	1744.52	r-140-ps
75686	17880.77	15043.65	1744.47	r-140-ps
75687	17879.83	15042.53	1744.51	r-140-ps
75688	17880.25	15036.63	1744.51	r-139-ps
75689	17879.23	15035.50	1744.55	r-139-ps
75690	17880.43	15034.57	1744.51	r-139-ps
75691	17914.23	15040.95	1743.51	p-74
75692	17915.86	15052.05	1743.50	r-168-ps
75693	17917.12	15051.52	1743.48	r-168-ps
75694	17917.94	15052.48	1743.44	r-168-ps
75695	17921.76	15031.23	1743.37	r-167-ps
75696	17921.15	15030.08	1743.33	r-167-ps
75697	17923.04	15030.54	1743.30	r-167-ps
75698	17948.84	15059.88	1742.42	ds-45/r-122-ps
75699	17954.36	15061.16	1742.29	ds-45/r-122-ps
75700	17984.56	15045.33	1741.43	ds-44/r-121-ps
75701	17990.06	15046.65	1741.19	ds-44/r-121-ps
75702	17971.65	15042.28	1741.96	r-165-ps
75703	17970.89	15041.20	1741.94	r-165-ps
75704	17969.80	15041.79	1742.03	r-165-ps
75705	17975.81	15021.14	1741.74	r-164-ps
75706	17976.86	15020.41	1741.72	r-164-ps
75707	17974.93	15019.98	1741.79	r-164-ps
75708	17967.72	15027.15	1741.95	p-72
75709	17882.39	15020.86	1744.48	r-138-ps
75710	17881.30	15021.71	1744.53	r-138-ps
75711	17881.53	15019.69	1744.50	r-138-ps
75712	17881.85	15014.19	1744.49	r-137-ps
75713	17880.94	15013.05	1744.46	r-137-ps
75714	17882.02	15012.18	1744.48	r-137-ps
75715	17882.94	14999.03	1744.39	r-136-ps

Point No.	Northing	Easting	Elevation	Description
75716	17884.03	14998.11	1744.34	r-136-ps
75717	17883.10	14996.78	1744.38	r-136-ps
75718	17883.46	14992.26	1744.34	r-135-ps
75719	17882.53	14990.80	1744.36	r-135-ps
75720	17883.60	14989.82	1744.32	r-135-ps
75721	17884.48	14976.36	1744.27	r-134-ps
75722	17885.51	14975.39	1744.20	r-134-ps
75723	17884.65	14974.06	1744.30	r-134-ps
75724	17884.98	14969.62	1744.28	r-133-ps
75725	17884.10	14968.45	1744.21	r-133-ps
75726	17885.15	14967.49	1744.24	r-133-ps
75727	17893.52	14966.30	1743.87	p-69
75728	17918.28	14983.19	1743.18	r-163-ps
75729	17920.21	14983.73	1743.18	r-163-ps
75730	17919.47	14982.55	1743.14	r-163-ps
75731	17924.26	14962.48	1742.97	r-162-ps
75732	17925.30	14961.74	1742.95	r-162-ps
75733	17923.34	14961.26	1743.00	r-162-ps
75734	17886.94	14952.58	1744.11	r-132-ps
75735	17886.01	14953.46	1744.17	r-132-ps
75736	17886.23	14951.44	1744.18	r-132-ps
75737	17886.56	14947.23	1744.14	r-131-ps
75738	17885.58	14946.13	1744.23	r-131-ps
75739	17886.64	14945.18	1744.12	r-131-ps
75740	17887.55	14930.88	1744.11	r-130-ps
75741	17888.55	14930.06	1744.04	r-130-ps
75742	17887.70	14928.84	1744.09	r-130-ps
75743	17887.93	14925.33	1744.13	r-129-ps
75744	17887.02	14923.96	1744.09	r-129-ps
75745	17888.16	14923.36	1744.14	r-129-ps
75746	17889.01	14908.16	1744.02	r-128-ps
75747	17889.88	14907.32	1743.99	r-128-ps
75748	17888.82	14906.02	1744.00	r-128-ps
75749	17882.52	14901.21	1744.22	r-127-ps
75750	17881.56	14898.83	1744.32	r-127-ps
75751	17878.53	14901.04	1744.36	r-127-ps
75752	17876.92	14905.33	1744.48	r-127
75753	17879.90	14906.82	1744.39	r-127
75754	17909.46	14934.92	1743.35	ds-42/r-120-ps
75755	17915.02	14936.27	1743.20	ds-42/r-120-ps

Point No.	Northing	Easting	Elevation	Description
75756	17913.28	14912.69	1743.22	ds-43/r-119-ps
75757	17918.29	14913.98	1743.10	ds-43/r-119-ps
75758	18000.85	14933.50	1740.51	r-118-ps
75759	18004.41	14934.51	1740.46	r-118-ps
75760	18026.45	14939.80	1739.95	toe-ps
75761	18052.27	14945.88	1752.62	r-166-ps
75762	18054.19	14946.24	1752.64	r-166-ps
75763	18055.24	14946.48	1752.43	top-mat-ps
75764	18052.37	14945.95	1752.62	top-ps
75765	18039.01	14952.31	1746.58	p-67
75766	18021.38	14961.79	1739.94	toe-ps
75767	18034.42	14976.73	1747.05	p-68
75768	18016.66	14983.84	1740.22	toe-ps
75769	18028.82	14997.99	1746.96	p-70
75770	18011.75	15005.85	1740.36	toe-ps
75771	18024.08	15019.11	1747.27	p-71
75772	18006.57	15027.66	1740.61	toe-ps
75773	18019.39	15041.89	1747.91	p-73
75774	18001.64	15049.57	1740.64	toe-ps
75775	18014.71	15065.64	1748.25	p-75
75776	17997.01	15071.36	1740.83	toe-ps
75777	18007.68	15086.61	1747.11	p-76
75778	17992.26	15093.28	1740.95	toe-ps
75779	18003.80	15107.20	1747.58	p-78
75780	17987.55	15115.39	1741.16	toe-ps
75781	17999.75	15129.28	1748.18	p-79
75782	17982.82	15137.28	1741.40	toe-ps
75783	17994.18	15152.74	1748.02	p-80
75784	17978.39	15159.16	1741.47	toe-ps
75785	17989.71	15173.38	1747.88	p-81
75786	17973.16	15180.88	1741.62	toe-ps
75787	17984.61	15197.28	1747.96	p-82
75788	17968.16	15202.73	1741.76	toe-ps
75789	17980.79	15217.20	1748.47	p-83
75790	17963.29	15224.52	1742.17	toe-ps
75791	17961.61	15235.46	1742.27	toe-ps
75792	17960.94	15244.06	1742.20	toe-ps
75793	17975.44	15232.44	1747.70	p-84
75794	17975.83	15240.86	1748.47	p-90
75795	17976.10	15256.40	1748.53	p-88

Point No.	Northing	Easting	Elevation	Description
75796	17961.45	15266.43	1742.06	toe-ps
75797	17975.83	15275.31	1748.08	p-87
75798	17963.53	15288.90	1742.04	toe-scrap
75799	17988.70	15289.24	1754.10	top-scrap
75800	17991.10	15289.20	1754.03	top-mat-scrap
75801	17990.44	15266.60	1754.06	top-mat-ps
75802	17987.71	15266.73	1754.03	top-ps
75803	17986.92	15244.27	1754.05	top-ps
75804	17987.43	15239.02	1754.03	top-ps
75805	17988.77	15230.74	1753.90	top-ps
75806	17993.87	15208.85	1753.84	top-ps
75807	17998.50	15186.99	1753.69	top-ps
75808	18003.49	15165.14	1753.71	top-ps
75809	18008.09	15143.28	1753.57	top-ps
75810	18013.08	15121.34	1753.59	top-ps
75811	18018.20	15099.42	1753.46	top-ps
75812	18022.97	15077.43	1753.36	top-ps
75813	18028.49	15055.66	1753.35	top-ps
75814	18033.14	15033.66	1753.32	top-ps
75815	18037.97	15011.71	1753.21	top-ps
75816	18042.95	14989.84	1753.09	top-ps
75817	18047.75	14968.02	1752.61	top-ps
75818	18050.00	14968.62	1752.69	top-mat-ps
75819	18045.27	14990.49	1753.08	top-mat-ps
75820	18039.88	15012.25	1753.20	top-mat-ps
75821	18035.40	15034.19	1753.27	top-mat-ps
75822	18030.37	15056.11	1753.35	top-mat-ps
75823	18025.18	15078.01	1753.45	top-mat-ps
75824	18020.69	15100.18	1753.54	top-mat-ps
75825	18015.50	15122.01	1753.53	top-mat-ps
75826	18010.86	15143.97	1753.54	top-mat-ps
75827	18006.30	15165.88	1753.66	top-mat-ps
75828	18001.01	15187.70	1753.64	top-mat-ps
75829	17996.39	15209.57	1753.76	top-mat-ps
75830	17991.63	15231.43	1753.86	top-mat-ps
75831	17989.99	15239.45	1754.00	top-mat-ps
75832	17989.54	15244.39	1754.12	top-mat-ps
75833	17654.17	15298.74	1751.10	7-10-09postchk
75834	17654.19	15298.77	1751.10	7-10-09prechk
75835	17864.79	15282.07	1745.18	r-ps

Point No.	Northing	Easting	Elevation	Description
75836	17863.85	15280.96	1745.18	r-ps
75837	17864.89	15279.98	1745.17	r-ps
75838	17865.69	15267.46	1745.19	r-ps
75839	17866.74	15266.46	1745.17	r-ps
75840	17865.81	15265.35	1745.19	r-ps
75841	17866.08	15259.76	1745.20	r-ps
75842	17865.21	15258.59	1745.19	r-ps
75843	17866.21	15257.63	1745.18	r-ps
75844	17868.34	15222.64	1745.21	r-ps
75845	17869.39	15221.54	1745.18	r-ps
75846	17868.52	15220.57	1745.24	r-ps
75847	17869.56	15203.55	1745.15	r-ps
75848	17870.55	15202.50	1745.08	r-ps
75849	17869.75	15201.48	1745.13	r-ps
75850	17654.19	15298.76	1751.05	7-10-09postchk
75851	17903.19	15266.45	1743.90	r-178-ps
75852	17905.54	15266.48	1743.85	r-178-ps
75853	17904.38	15265.38	1743.89	r-178-ps
75854	17904.07	15245.26	1743.85	r-177-ps
75855	17905.01	15244.06	1743.82	r-177-ps
75856	17902.77	15244.03	1743.88	r-177-ps
75857	17654.11	15298.69	1751.07	#NAME?
75858	18025.21	14549.60	1739.61	r-185-s
75859	18023.98	14550.58	1739.65	r-185-s
75860	18020.31	14550.53	1739.78	r-185-s
75861	18019.58	14549.52	1739.79	r-185-s
75862	18019.71	14546.04	1739.80	r-185-ps
75863	18025.32	14546.13	1739.64	r-185-ps
75864	18024.03	14541.11	1739.67	r-185-s
75865	18021.08	14540.61	1739.75	r-185-s
75866	18022.39	14540.19	1739.72	r-185-s
75867	17939.95	15243.89	1742.89	r-176-ps
75868	17942.21	15243.90	1742.79	r-176-ps
75869	17941.11	15242.75	1742.85	r-176-ps
75870	17941.21	15234.04	1742.86	r-175-ps
75871	17942.43	15233.01	1742.83	r-175-ps
75872	17940.25	15232.58	1742.90	r-175-ps
75873	17987.51	15239.05	1754.03	r-184-ps
75874	17987.24	15244.23	1754.11	r-184-ps
75875	17987.81	15246.39	1754.10	r-184-s

Point No.	Northing	Easting	Elevation	Description
75876	17989.21	15247.14	1754.10	r-184-s
75877	17992.11	15247.23	1752.00	r-184-s
75878	17988.55	15237.90	1754.06	r-184-s
75879	17990.59	15237.94	1753.97	r-184-s
75880	17992.73	15238.17	1751.93	r-184-s
75881	18022.08	15088.93	1753.46	r-183
75882	18000.19	15095.21	1744.53	r-182-ps
75883	17995.95	15094.12	1742.53	r-182-ps
75884	17654.10	15298.67	1751.08	cp-443-postchk-7-11-09
76000	17558.83	14492.98	1753.08	r-02-ps
76001	17558.92	14491.49	1753.06	r-02-s
76002	17557.78	14490.63	1753.09	r-02-s
76003	17555.03	14490.16	1753.19	r-02-s
76004	17558.64	14495.41	1753.06	r-02-s
76005	17557.36	14496.34	1753.07	r-02-s
76006	17551.49	14495.67	1753.34	r-02-s
76007	17550.17	14494.32	1753.68	r-02-s
76008	17550.34	14493.12	1753.76	r-02-s
76009	17551.51	14490.21	1753.55	r-02-s
76010	17550.56	14491.05	1753.73	r-02-s
76011	17549.79	14490.77	1753.98	r-02-s
76012	17548.30	14488.85	1754.67	r-02-s
76013	17546.95	14489.91	1755.02	r-02-s
76014	17542.34	14488.36	1757.57	r-02-s
76015	17541.99	14489.85	1757.52	r-02-s
76016	17545.11	14491.34	1755.94	r-02-ps
76017	17558.82	14493.04	1753.13	intlost-chk
76018	17654.24	15298.71	1751.07	7-9-09prechk
76019	17810.62	15278.16	1746.52	ds-40/r-99-ps
76020	17816.56	15278.50	1746.35	ds-40/r-99-ps
76021	17702.32	15182.26	1749.74	r-114-ps
76022	17697.41	15181.95	1749.85	r-114-ps
76023	17514.83	15182.17	1755.47	r-112
76024	17517.41	15159.13	1755.41	r-111
76025	17515.41	14981.34	1755.24	r-109
76026	17637.34	15068.59	1751.73	r-110
76027	18026.24	14939.70	1739.96	toe-ps
76028	18052.42	14945.97	1752.62	top-ps
76029	18055.01	14946.54	1752.53	top-mat-ps

DRAWINGS

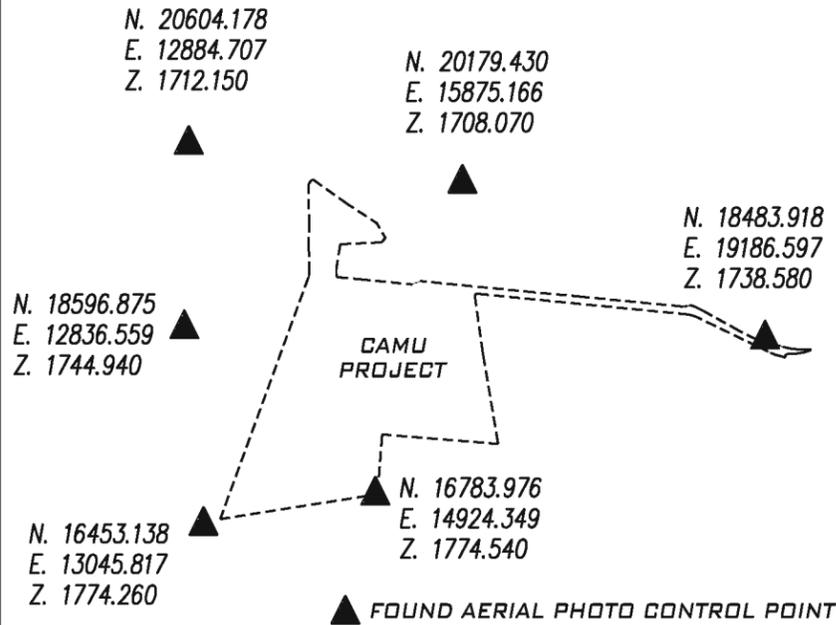
The following Measurement Drawings, Topographic Survey Drawings and/or Cross-Section Drawings are attached.

1. **Final Phase II Interim & Phase IIIA Closure – HDPE Liner As-Built survey dated 12-10-2009.**

This drawing (Consisting of Three (3) Sheets) depicts the as-built information with regard to the installation of the Closure liner within a Portion of Phase II and all of Phase. It also contains information regarding the control network utilized and other pertinent survey data. Due to the scale at which this drawing was prepared, the intended correlation representation may not be entirely clear. In ALL cases the Survey Data herein provided takes precedence over any graphical representation(s).

PROJECT CONTROL

1" = 2000'



BENCHMARK

CLARK COUNTY BENCHMARK (6C22 2E4), BEING A RIVET AND SQUARE ALUMINUM PLATE IN A CONCRETE CENTERLINE ISLAND, 4' WEST OF THE NOSE IN THE MIDDLE OF SUNSET ROAD, WEST SIDE OF THE INTERSECTION OF BOULDER HIGHWAY AND SUNSET ROAD.

PUBLISHED ELEVATION - 505.816 METERS = 1659.50 FEET
NAVD 1988 DATUM - PUBLISHED (2003)

BASIS OF BEARINGS

SOUTH 85°36'52" WEST, BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND "CC-GIS W51", AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

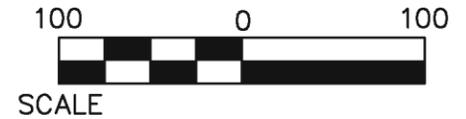
COORDINATE SYSTEM

THE COORDINATE SYSTEM AND ASSOCIATED BEARING ROTATION INFORMATION WAS ESTABLISHED AND PROVIDED BY PBS&J.

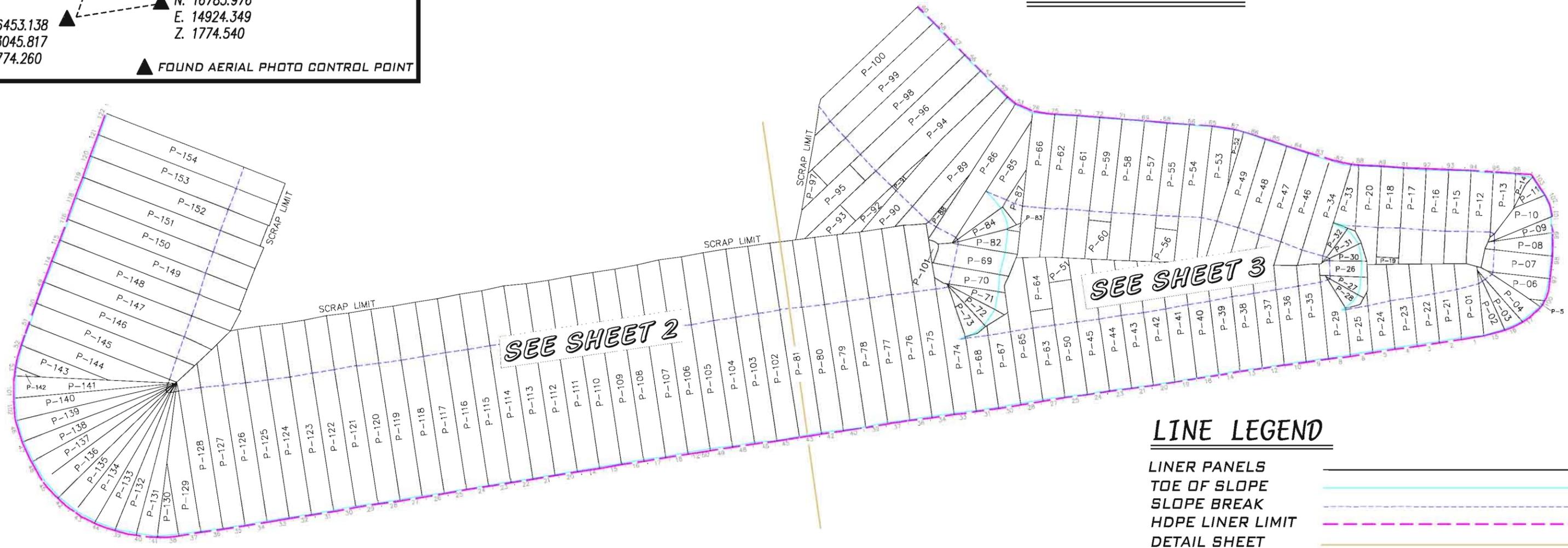
3 DIMENSIONAL SURFACE AREA

DURING FIELD COLLECTION (AS-BUILT) ACTIVITIES THE GEOMEMBRANE LINER AS DEPICTED HEREON WAS LOCATED IN BOTH HORIZONTAL AND VERTICAL PLANES. THE RESULTING 3 DIMENSIONAL COORDINATES WERE USED TO GENERATE A TRIANGULATED IRREGULAR NETWORK (TIN) AND SUBSEQUENTLY A DIGITAL TERRAIN MODEL (DTM) SURFACE. THE STATISTICS OF THIS DTM SURFACE WERE QUERIED IN AUTOCAD CIVIL 3D VERSION 2009 AND THE FOLLOWING 3D SURFACE AREA WAS DETERMINED:

FINAL GEOMEMBRANE 3D SURFACE AREA: 397,653 SQUARE FEET



KEY MAP



LINE LEGEND

- LINER PANELS
- TOE OF SLOPE
- SLOPE BREAK
- HDPE LINER LIMIT
- DETAIL SHEET

NO.	REVISION	DATE
△		
△		
△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)
FINAL PHASE II INTERIM & PHASE IIIA
CLOSURE HDPE LINER AS-BUILT

FIELD SURVEY DATES: NOVEMBER 2009
FIELD CREW: C.G / M.C. / T.G.

JOB # 2008-06-23-01



ABSOLUTE BOUNDARY & CONTROL SOLUTIONS

6440 SKY POINT DRIVE
SUITE 140 - PMB 321
LAS VEGAS, NV. 89131
(702) 953-7452
(702) 987-5943 FAX
WWW.AB-CS.COM

Date: December 10, 2009
Drawn: C. Givant
Checked: C. Givant
Task: 2009-12-09-01

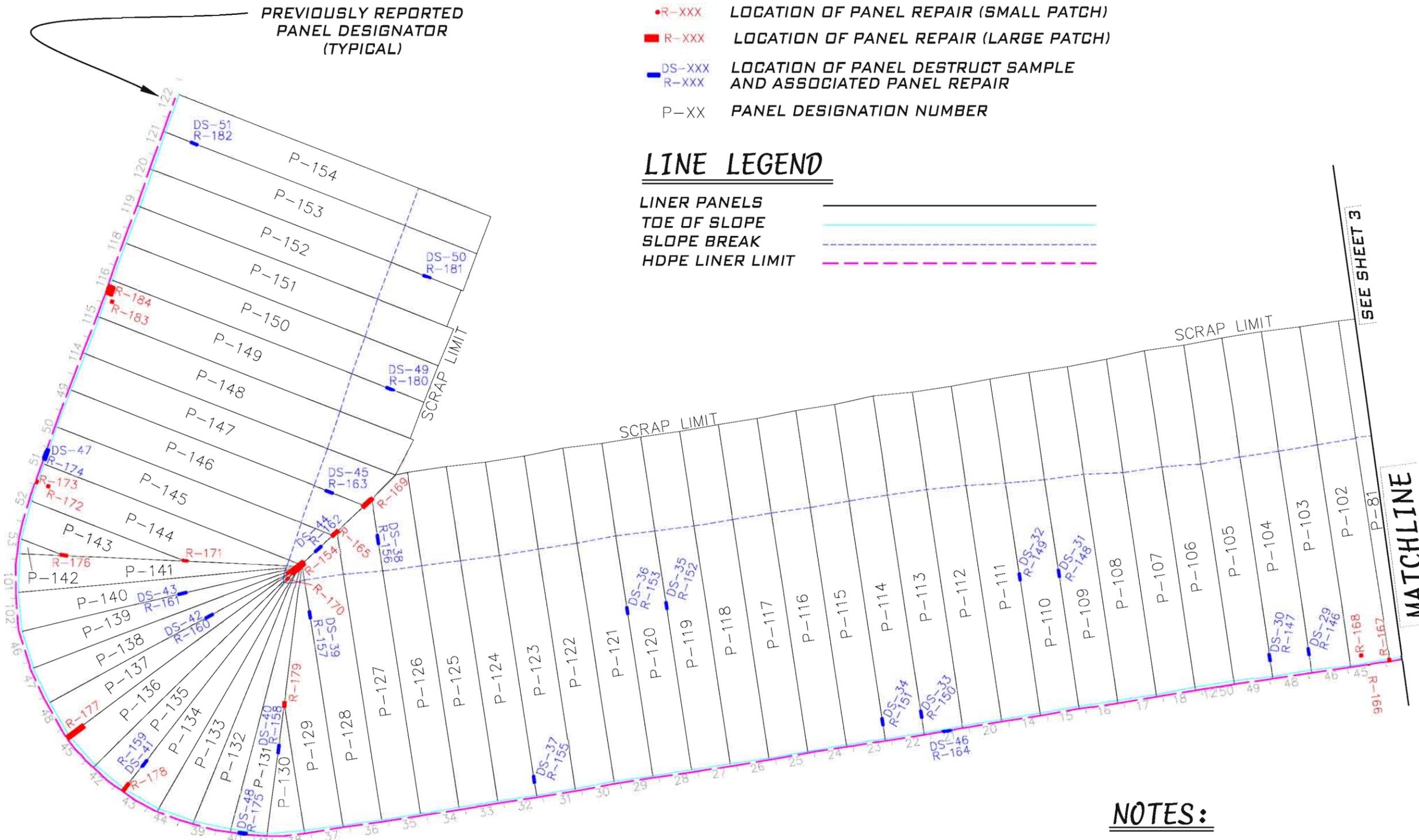
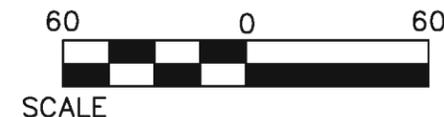
Sheet No. 1 of 3

SYMBOL LEGEND

- R-XXX LOCATION OF PANEL REPAIR (SMALL PATCH)
- R-XXX LOCATION OF PANEL REPAIR (LARGE PATCH)
- DS-XXX
■R-XXX LOCATION OF PANEL DESTRUCT SAMPLE AND ASSOCIATED PANEL REPAIR
- P-XX PANEL DESIGNATION NUMBER

LINE LEGEND

- LINER PANELS
- TOE OF SLOPE
- SLOPE BREAK
- HDPE LINER LIMIT



NOTES:

- 1) LARGE PANEL REPAIRS HAVE BEEN DEPICTED TO REPRESENT ACTUAL SIZE AND SHAPE

NO.	REVISION	DATE
△		
△		
△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)
FINAL PHASE II INTERIM & PHASE IIIA
CLOSURE HDPE LINER AS-BUILT

FIELD SURVEY DATES: NOVEMBER 2009
 FIELD CREW: C.G / M.C. / T.G. JOB # 2008-06-23-01



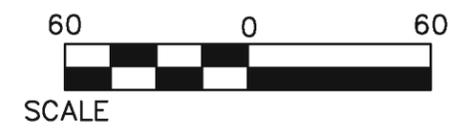
ABSOLUTE BOUNDARY & CONTROL SOLUTIONS
 6440 SKY POINT DRIVE
 SUITE 140 - PMB 321
 LAS VEGAS, NV. 89131
 (702) 953-7452
 (702) 987-5943 FAX
 WWW.AB-CS.COM

Date: December 10, 2009
 Drawn: C. Givant
 Checked: C. Givant
 Task: 2009-12-09-01

PREVIOUSLY REPORTED
PANEL DESIGNATOR
(TYPICAL)

SYMBOL LEGEND

- R-XXX LOCATION OF PANEL REPAIR (SMALL PATCH)
- R-XXX LOCATION OF PANEL REPAIR (LARGE PATCH)
- DS-XXX LOCATION OF PANEL DESTRUCT SAMPLE AND ASSOCIATED PANEL REPAIR
- R-XXX
- P-XX PANEL DESIGNATION NUMBER

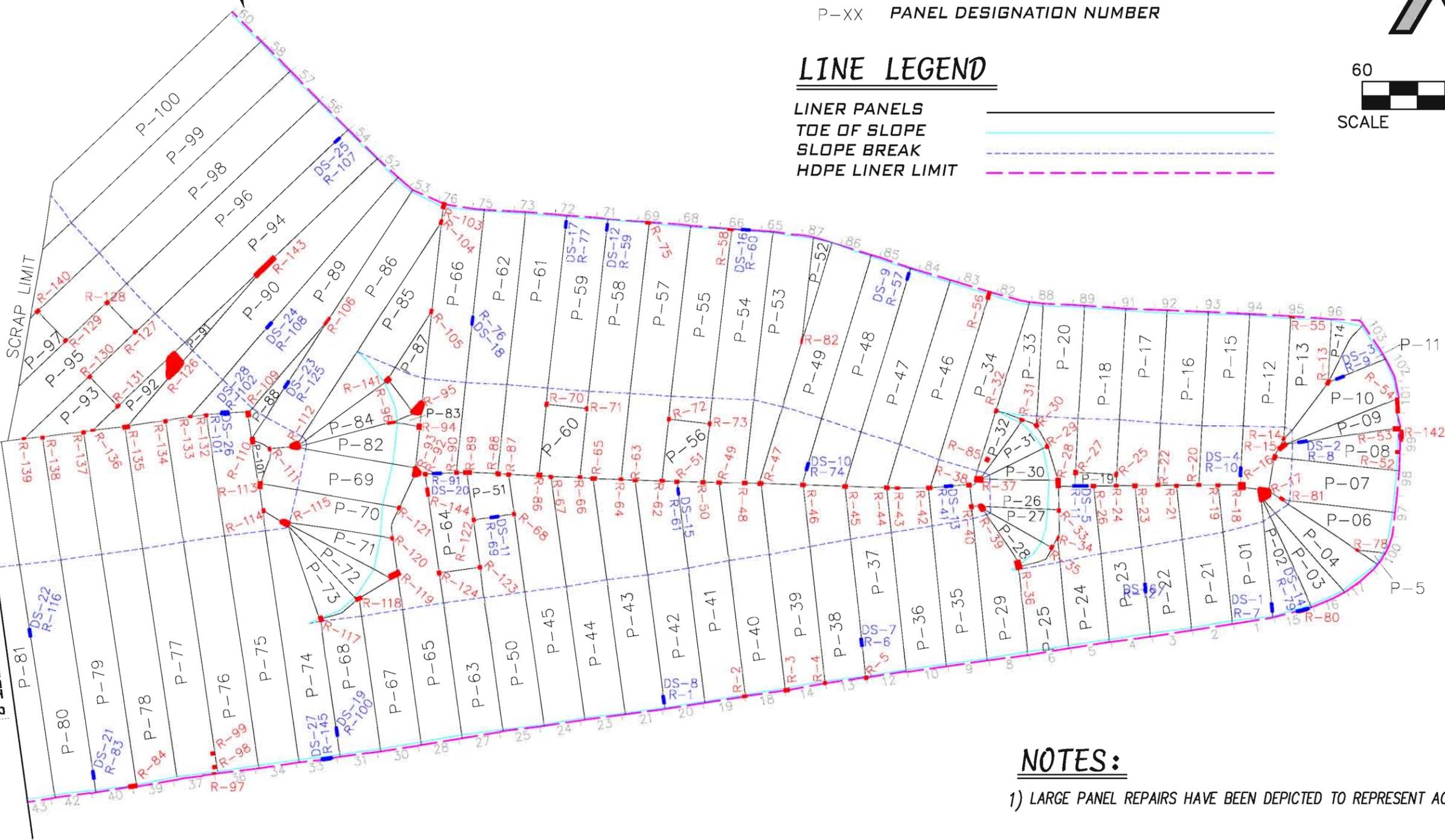


LINE LEGEND

- LINER PANELS _____
- TOE OF SLOPE _____
- SLOPE BREAK _____
- HDPE LINER LIMIT _____

MATCHLINE

SEE SHEET 2



NOTES:

1) LARGE PANEL REPAIRS HAVE BEEN DEPICTED TO REPRESENT ACTUAL SIZE AND SHAPE

NO.	REVISION	DATE
△		
△		
△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)
FINAL PHASE II INTERIM & PHASE IIIA
CLOSURE HDPE LINER AS-BUILT

FIELD SURVEY DATES: NOVEMBER 2009
FIELD CREW: C.G / M.C. / T.G.

JOB # 2008-06-23-01



ABSOLUTE BOUNDARY & CONTROL SOLUTIONS
6440 SKY POINT DRIVE
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LAS VEGAS, NV. 89131
(702) 953-7452
(702) 987-5943 FAX
WWW.AB-CS.COM

Date: December 10, 2009
Drawn: C. Givant
Checked: C. Givant
Task: 2009-12-09-01

ELECTRONIC FILES

The Compact Disk (CD) included in the pocket at the end of this report contains the following Directories and Files:

PDF Files (.pdf)

1. Report - (Phase II Interim & Phase IIIA Closure – HDPE Liner As-Built)
2. (Field Notes) - 2009-10-20 (PHII IC+PH IIIA Closure Liner ASB)

CAD Files (.dwg)

1. 2009-12-10 (Phase IIIA & II - IC Area HDPE Liner ASB)
2. 2009-12-10 (Phase IIIA & II - IC Area HDPE Liner ASB) - 2007

Coordinate Files (.csv)

The following files are Comma Separated Value Files in the following format:

Point Name,Northing,Easting,Elevation,Description

1. II Interim & IIIA Closure - Liner ASB

Raw Data Files (.dc)

The following files are Trimble Data Collector (.DC) files that contain the Raw Field Data.

1. 2009-10-20 (PHII IC+PH IIIA Closure Liner ASB)-MC

**CORRECTIVE ACTION MANAGEMENT UNIT
(CAMU – PHASE II)
CPE PIPE AS-BUILT as of 11/21/2009
HENDERSON, NV**

Prepared for:



ENTACT Environmental Services, LLC
699 South Friendswood Dr.
Suite 101
Friendswood, TX. 77546
(281) 996-9892

Prepared by:



Absolute Boundary & Control Solutions
6440 Sky Point Drive
Suite 140 – PMB 321
Las Vegas, NV 89131
(702) 953-7452

January 21, 2010



01/21/2010

Attn: Erik Gehringer, Project Manager
ENTACT Environmental Services, LLC
699 South Friendswood Drive
Friendswood, TX. 77546

Re: Corrective Action Management Unit (CAMU) – Phase II, CPE Pipe As-built as of 11/21/2009

Mr. Gehringer,

This report outlines the results of a Field Survey performed on the Corrective Action Management Unit (CAMU) project and was completed to depict the CPE Pipe elevations within Phase II. The intent of said report is to provide information such as but not limited to, Data, Calculations, Drawings, Tables, Charts, Electronic Files and other required media to satisfy the Submittal Requirements as outlined in Section 01050 of the Project Technical Specifications, Dated May, 2008.

Absolute Boundary & Control Solutions (ABCS) is pleased you have chosen us to complete these services, and assures you that every attempt has been made to prepare same in a fashion meeting or exceeding the Project Specifications. If however after your review you determine that revisions, clarifications or other modifications are needed, please do not hesitate to bring them to our attention.

In closing, thank you again for the opportunity to serve ENTACT. If you have any questions, comments or concerns, please do not hesitate to contact me.

Sincerely,

Craig A. Givant, PLS
President

(702) 953-7452
(702) 839-9750 fax

CERTIFICATION PAGE

CAMU – PHASE II
CPE PIPE AS-BUILT as of 11/21/2009
HENDERSON, NV

I, Craig A. Givant, a Professional Land Surveyor registered in the State of Nevada, certify (as defined by Nevada Revised Statutes 625.403) that:

1. This report and any Land Surveying Practices (N.R.S. 625.040) on which it is based were performed directly by me or under my responsible charge (N.R.S. 625.080) in accordance with the Standards and Practices Governing Land Surveyors in the State of Nevada as defined by any applicable sections of the Nevada Revised Statutes (N.R.S.) or the Nevada Administrative Code (N.A.C.).
2. By affixing my official seal and signature below I am confirming that I am a Registered Land Surveyor in the State of Nevada and thereby satisfy the requirements of Section 01050, Part 1.03, Subpart A or the Project Technical Specifications.

Craig A. Givant, PLS
PLS 14348



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Field Notes	Page 5
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Drawings	Page 8
Electronic Files	Page 10

FIELD NOTES

All Field Data pertaining to the determination and location of the As-Built information was collected electronically. Pertinent parameters required to be input into the software and which were obtained by means of human interaction, were verified as correct by performing field checks. These field checks and their resultant accuracies can be viewed within the Electronic Field Notes (Raw Data). The following Raw Data files were used while acquiring the As-Built information. These files have not been printed for inclusion in this report however a Portable Document File (PDF) of each raw data printout is included electronically on the attached Compact Disk (CD). It should be noted that the contents of these Raw Data files may not pertain solely to the report herein presented and may include additional data from other “tasks” performed on the same day.

1. 2009-11-21 (4-inch CPE As-Built)-MC

SURVEY DATA

Field Survey Methods were employed that resulted in the following precisions:

Horizontal Coordinates: $\pm 1.0'$ (One Foot)

Vertical Coordinates: $\pm 0.10'$ (One Tenth of a Foot)

The Following documents are attached hereto:

1. Coordinate Printout of the reduced (measured) coordinates from the Field Collection Efforts.

1. Coordinate Printout of the reduced (measured) coordinates from the Field Collection Efforts.

Pt. No.	Northing	Easting	Elevation	Description
164	16758.562	13659.75	1820.511	4-INCH CPE-T.O.P.
165	16774.027	13664.544	1820.231	4-INCH CPE-T.O.P.
166	16813.544	13676.606	1819.163	4-INCH CPE-T.O.P.
167	16869.109	14027.493	1816.351	4-INCH CPE-T.O.P.
168	16826.644	14027.182	1817.511	4-INCH CPE-T.O.P.
169	16806.552	14024.611	1818.156	4-INCH CPE-T.O.P.

DRAWINGS

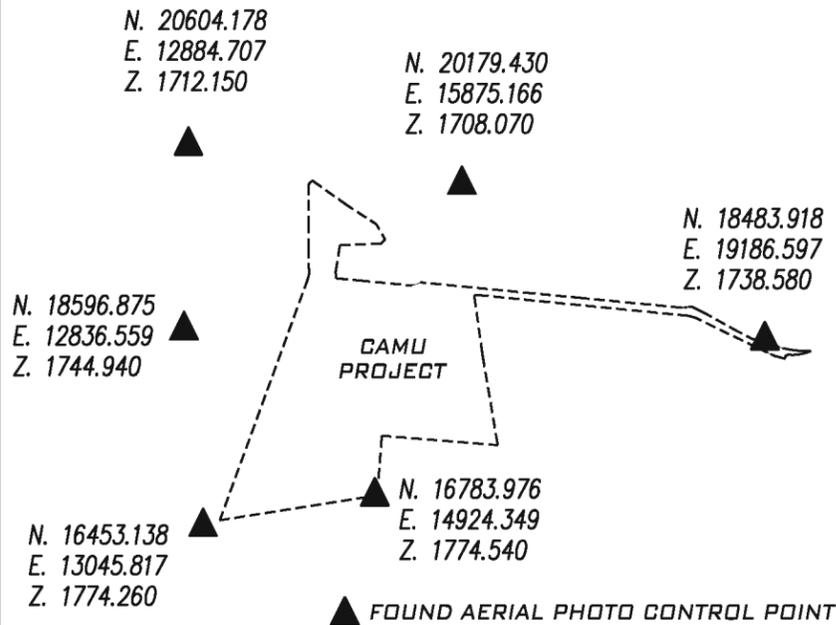
The following Measurement Drawings, Topographic Survey Drawings and/or Cross-Section Drawings are attached.

1. **As-Built - Phase II – CPE Pipe as of 11/21/2009, dated 01-21-2010.**

This drawing depicts the as-built elevations of the flow-line of the CPE pipe(s) within Phase II as of 11/21/2009. It also contains information regarding the control network utilized and other pertinent survey data. Due to the scale at which this drawing was prepared, the intended correlation representation may not be entirely clear. In ALL cases the Survey Data herein provided takes precedence over any graphical representation(s).

PROJECT CONTROL

1" = 2000'



SURFACE NOTE

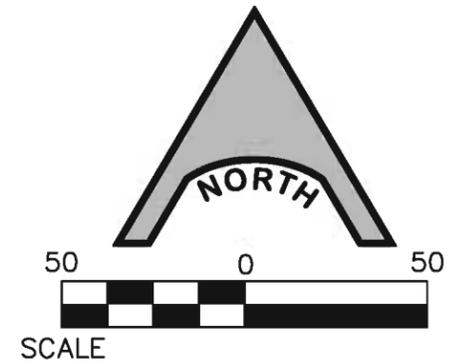
THE SURFACE DEPICTED HEREON REPRESENTS THE INTERIM COVER SOIL AS REPORTED IN THAT CERTAIN REPORT PREPARED BY ABSOLUTE BOUNDARY & CONTROL SOLUTIONS UNDER TASK NO: 2009.11.05.01-B

SYMBOLS LEGEND

•XX.X FLOWLINE GRADE 4" SLOTTED PIPE

NOTES:

1) ALL ELEVATIONS SHOWN ARE TO THE PIPE FLOW-LINE AND HAVE BEEN REDUCED BY 1800' FOR CLARITY. ADD (+1800.00) TO OBTAIN ACTUAL ELEVATIONS.



BENCHMARK

CLARK COUNTY BENCHMARK (6C22 2E4), BEING A RIVET AND SQUARE ALUMINUM PLATE IN A CONCRETE CENTERLINE ISLAND, 4' WEST OF THE NOSE IN THE MIDDLE OF SUNSET ROAD, WEST SIDE OF THE INTERSECTION OF BOULDER HIGHWAY AND SUNSET ROAD.

PUBLISHED ELEVATION - 505.816 METERS = 1659.50 FEET
NAVD 1988 DATUM - PUBLISHED (2003)

BASIS OF BEARINGS

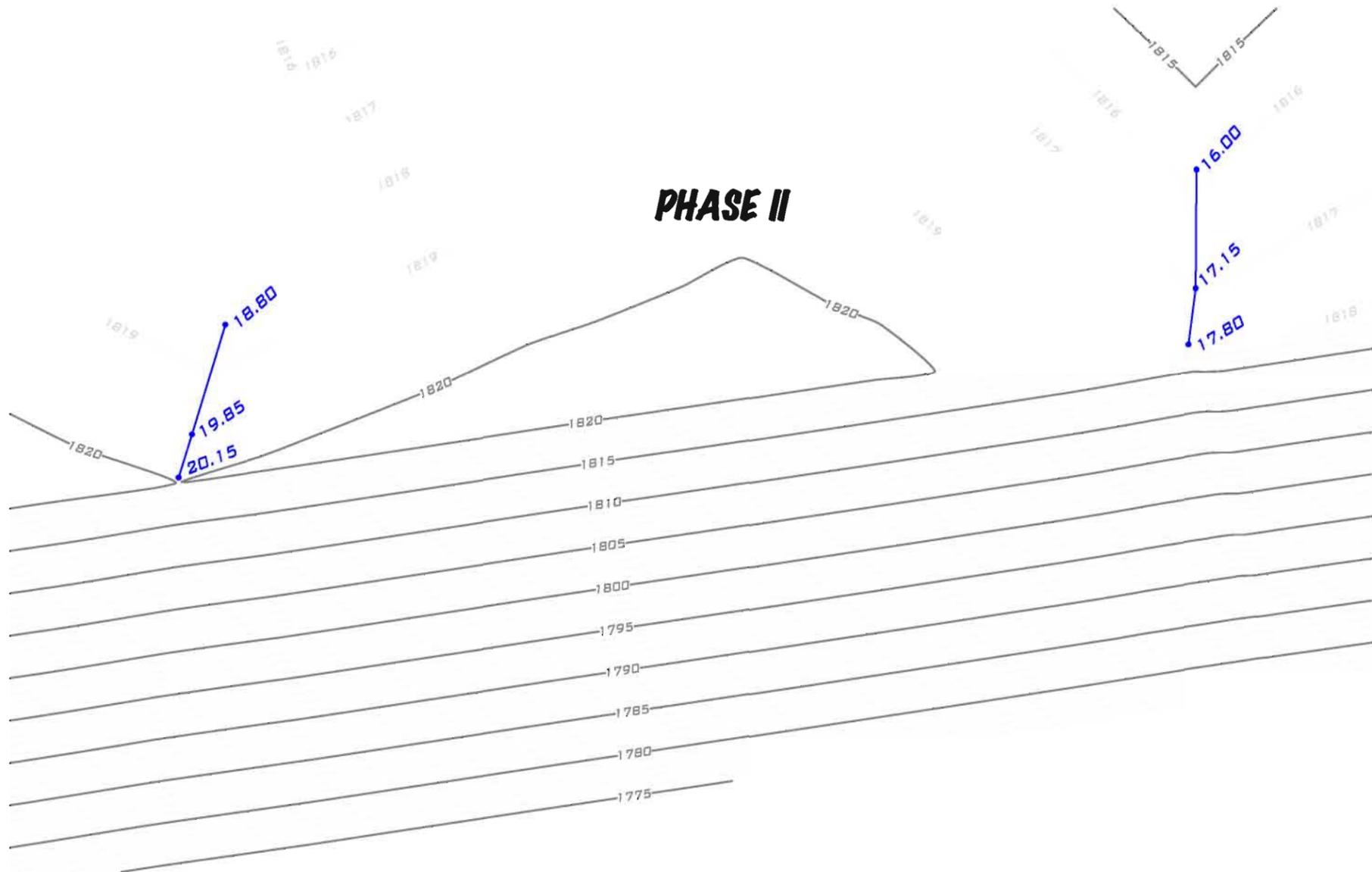
SOUTH 85°36'52" WEST, BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND CC-GIS W51", AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

COORDINATE SYSTEM

THE COORDINATE SYSTEM AND ASSOCIATED BEARING ROTATION INFORMATION WAS ESTABLISHED AND PROVIDED BY PBS&J.

LINE LEGEND

- MAJOR (5') CONTOUR _____
- MINOR (1') CONTOUR _____
- 4" SLOTTED PIPE _____



NO.	REVISION	DATE
△		
△		
△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)
AS-BUILT
PHASE II - CPE PIPE AS OF 11/21/2009

FIELD SURVEY DATE: 11-21-2009
 FIELD CREW: C.G. / M.C.

JOB # 2008-06-23-01

ABSOLUTE BOUNDARY & CONTROL SOLUTIONS
 6440 SKY POINT DRIVE
 SUITE 140 - PMB 321
 LAS VEGAS, NV. 89131
 (702) 953-7452
 (702) 987-5943 FAX
 WWW.AB-CS.COM

Date:	January 21, 2010
Drawn:	C. Givant
Checked:	C. Givant
Task:	2010.01.18.01-A
Sheet No.	1 of 1

ELECTRONIC FILES

The Compact Disk (CD) included in the pocket at the end of this report contains the following Directories and Files:

PDF Files (.pdf)

1. 2010-01-18.01-A (Phase II CPE Pipe ASB)
2. (Field Notes) - 2009-11-21 (4-inch CPE As-Built)

CAD Files (.dwg)

1. 2010.01.21 (CPE ASB)
2. 2010.01.21 (CPE ASB) - 2007

Coordinate Files (.csv)

The following files are Comma Separated Value Files in the following format:

Point Name,Northing,Easting,Elevation,Description

1. 4 Inch CPE ASB

Raw Data Files (.dc)

The following files are Trimble Data Collector (.DC) files that contain the Raw Field Data.

1. 2009-11-21 (4-inch CPE As-Built)-MC



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	6389
Submittal Summary:	Phase II Interim & Phase IIIA Final Closure Areas - Final HDPE Liner & 4-inch CPE As-Builts
Submittal Number:	02200-002PP
Specification Section:	Section 02200, Part 3.14
Drawing Number (s):	15
Page Number:	02200-10
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	1/22/2010

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.

**CORRECTIVE ACTION MANAGEMENT UNIT
(CAMU – CLOSURE I)
FINAL COVERSOIL SYSTEM
AS-BUILT & VOLUME REPORT
HENDERSON, NV**

Prepared for:



ENTACT Environmental Services, LLC

699 South Friendswood Dr.
Suite 101
Friendswood, TX. 77546
(281) 996-9892

Prepared by:



Absolute Boundary & Control Solutions

6440 Sky Point Drive
Suite 140 – PMB 321
Las Vegas, NV 89131
(702) 953-7452

April 20, 2010



4/20/10

Attn: Erik Gehringer, Project Manager
ENTACT Environmental Services, LLC
699 South Friendswood Drive
Friendswood, TX. 77546

Re: CAMU – Closure I – Final Coversoil System As-Built & Volume

Mr. Gehringer,

This report outlines the results of the Final Coversoil System As-Built Survey which was accomplished within the Closure I area of the Corrective Action Management Unit (CAMU) project.

The intent of said report is to provide information such as but not limited to, Data, Calculations, Drawings, Tables, Charts, Electronic Files and other required media to satisfy the Submittal Requirements as outlined in Section 01050 of the Project Technical Specifications, Dated May, 2008.

Absolute Boundary & Control Solutions (ABCS) is pleased you have chosen us to complete these services, and assures you that every attempt has been made to prepare same in a fashion meeting or exceeding the Project Specifications. If however after your review you determine that revisions, clarifications or other modifications are needed, please do not hesitate to bring them to our attention.

In closing, thank you again for the opportunity to serve ENTACT. If you have any questions, comments or concerns, please do not hesitate to contact me.

Sincerely,

Craig A. Givant, PLS
President

(702) 953-7452
(702) 839-9750 fax

CERTIFICATION PAGE

CAMU – CLOSURE I AREA
FINAL COVERSOIL SYSTEM
AS-BUILT & VOLUME REPORT
HENDERSON, NV

I, Craig A. Givant, a Professional Land Surveyor registered in the State of Nevada, certify (as defined by Nevada Revised Statutes 625.403) that:

1. This report and any Land Surveying Practices (N.R.S. 625.040) on which it is based were performed directly by me or under my responsible charge (N.R.S. 625.080) in accordance with the Standards and Practices Governing Land Surveyors in the State of Nevada as defined by any applicable sections of the Nevada Revised Statutes (N.R.S.) or the Nevada Administrative Code (N.A.C.).
2. By affixing my official seal and signature below I am confirming that I am a Registered Land Surveyor in the State of Nevada and thereby satisfy the requirements of Section 01050, Part 1.03, Subpart A or the Project Technical Specifications.

Craig A. Givant, PLS
PLS 14348



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FIELD NOTES

Closure I – Final Coversoil System As-Built

The surface shown on the attached drawing as "Surface 2" represents the Final Coversoil System As-Built conditions within the Closure I area of the CAMU pursuant to the respective Final Coversoil Design verification. This surface was generated from the following new survey data collected by Absolute Boundary & Control Solutions (ABCS).

New Survey Data

1. 2010-03-19 (Finished Grade Verification) - CAG
2. 2010-4-5 (Final Cover As-Built Toes)-MV
3. 2010-4-19 (Closure I Remaining ASB Shots@FG)-MC

All New Survey Data necessary to determine the location and elevation of the above referenced Surface was collected electronically by Absolute Boundary & Control Solutions (ABCS).

Pertinent parameters required to be input into the software and which were obtained by means of human interaction, were verified as correct by performing field checks. These field checks and their resultant accuracies can be viewed within the Electronic Field Notes (Raw Data). The above referenced Raw Data files were used while acquiring the As-Built information. These files have not been printed for inclusion in this report however a Portable Document File (PDF) of each raw data printout is included electronically on the attached Compact Disk (CD). It should be noted that the contents of these Raw Data files may not pertain solely to the report herein presented and may include additional data from other "tasks" performed on the same day or outdated data which was reacquired at a later date. In all cases the coordinate listing appearing herein was used to generate the reported surface(s).

Phase I, II, IIIA, IIIB & IV – Final Interim Closure Interim Cover As-Built

The surface shown on the attached drawing as "Surface 1" represents the Final Interim Closure Interim Cover Surface within Phases I, II, IIIA, IIIB & IV. This surface was compiled and/or supplemented as follows:

Prior Reports

1. Surface shown on the Final Interim Closure Interim Cover As-built report prepared by ABCS under Task No: 2010.02.15.01-E.

The above referenced Surface was raised (+.0625') to account for the thickness of the Geosynthetic Materials and then further supplemented with the following:

Prior Reports

2. Surface shown as Surface 1 on the previously provided Waste Placement Survey report prepared by ABCS under Task No: 2010.03.05.01.

The above referenced surface represents the final Phase I, II, IIIA, IIIB, IV & V Basin Sub-grade surface which was also raised (+.0625') to account for the placement of Geosynthetic Materials. Data from this surface was added to Item 1 above in order to extend the surface and thereby insure that the volume of Final Coversoil that was placed was accurately calculated along the edges of the placement area(s) which fell outside the Final Interim Closure Interim Cover Surface (item 1).

New Survey Data

NONE

SURVEY DATA

As required by the project specification Absolute Boundary & Control Solutions (ABCS) utilized field survey methods which resulted in precisions equal to or better than the following:

Horizontal Coordinates: $\pm 1.0'$ (One Foot)

Vertical Coordinates: $\pm 0.10'$ (One Tenth of a Foot)

1. Coordinate Printout of the reduced (measured) coordinates from the Field Collection Efforts.

Point No.	Northing	Easting	Elevation	Description
1000	16913.99	13427.05	1771.07	20544-20541-LINE DUE TO ANCHOR WALL
1001	16914.99	13424.70	1769.79	20545-20540-LINE DUE TO ANCHOR WALL
520000	16822.53	14142.86	1820.18	20000
520001	16828.81	14185.07	1820.34	20001
520002	16835.72	14234.69	1820.47	20002
520003	16840.84	14272.31	1820.54	20003
520004	16845.47	14309.15	1820.56	20004
520005	16873.66	14314.49	1820.39	20005
520006	16894.37	14318.72	1820.56	20006
520007	16900.24	14305.67	1820.55	20007
520008	16916.66	14281.34	1820.31	20008
520009	16959.15	14238.83	1819.92	20009
520010	16992.68	14207.52	1819.12	20010
520011	17021.23	14182.87	1817.96	20011
520012	16991.91	14175.28	1818.35	20012
520013	16948.71	14167.02	1818.65	20013
520014	16883.23	14154.52	1819.12	20014
520015	16792.92	14317.25	1802.79	20015
520016	16808.17	14345.81	1803.30	20016
520017	16831.80	14357.31	1804.00	20017
520018	16846.89	14358.11	1804.48	20018
520019	16864.91	14360.31	1804.94	20019
520020	16884.06	14366.09	1804.41	20020
520021	16898.43	14368.29	1803.95	20021
520022	16915.68	14365.42	1803.47	20022
520023	16931.43	14356.22	1803.08	20023
520024	16943.76	14340.02	1802.67	20024
520025	16798.48	14333.74	1802.99	20025

Point No.	Northing	Easting	Elevation	Description
520026	16907.84	14174.07	1818.94	20026
520027	16886.88	14222.64	1819.48	20027
520028	16863.32	14276.72	1819.98	20028
520029	16855.13	14311.18	1820.34	20029
520030	16865.28	14408.33	1804.92	20030
520031	16865.68	14472.98	1804.91	20031
520032	16866.12	14527.58	1804.94	20032
520033	16866.16	14576.54	1805.00	20033
520034	16866.61	14629.19	1805.04	20034
520035	16866.85	14689.73	1805.06	20035
520036	16928.47	14376.36	1803.06	20036
520037	16926.57	14385.61	1803.11	20037
520038	16922.67	14440.16	1803.31	20038
520039	16918.73	14490.46	1803.41	20039
520040	16915.69	14532.52	1803.48	20040
520041	16912.18	14574.77	1803.54	20041
520042	16899.89	14612.58	1803.98	20042
520043	16887.65	14648.98	1804.31	20043
520044	16875.48	14684.86	1804.75	20044
520045	16873.51	14690.45	1804.77	20045
520046	16855.46	14690.40	1804.59	20046
520047	16853.17	14690.84	1804.60	20047
520048	16852.42	14688.96	1804.59	20048
520049	16842.12	14632.78	1804.19	20049
520050	16833.26	14581.20	1803.92	20050
520051	16824.48	14531.70	1803.70	20051
520052	16816.64	14478.88	1803.45	20052
520053	16806.99	14415.53	1803.23	20053
520054	16800.05	14368.09	1803.04	20054
520055	16820.44	14694.21	1793.69	20055
520056	16830.10	14712.81	1793.98	20056
520057	16842.53	14719.61	1794.40	20057
520058	16855.12	14720.65	1794.67	20058
520059	16864.22	14719.81	1795.02	20059
520060	16874.16	14720.61	1794.66	20060
520062	16897.09	14712.48	1794.06	20062
520063	16903.48	14704.65	1793.77	20063
520064	16907.72	14694.44	1793.66	20064
520065	16887.31	14718.77	1794.29	20065
520066	16906.19	14715.04	1793.69	20066

Point No.	Northing	Easting	Elevation	Description
520067	16904.22	14749.15	1793.90	20067
520068	16902.03	14792.29	1794.02	20068
520069	16900.88	14822.22	1794.20	20069
520070	16899.64	14854.44	1794.27	20070
520071	16876.72	14853.44	1794.99	20071
520072	16858.38	14852.75	1794.43	20072
520073	16846.36	14834.97	1794.10	20073
520074	16840.60	14803.77	1793.98	20074
520075	16834.49	14772.78	1793.89	20075
520076	16827.88	14736.41	1793.80	20076
520077	16868.39	14764.80	1795.04	20077
520078	16871.18	14794.94	1795.04	20078
520079	16874.53	14828.45	1794.97	20079
520543	16856.56	13565.87	1820.99	20543
520548	16810.69	13550.72	1821.98	20548
520549	16739.83	13526.92	1823.20	20549
520566	16745.59	13572.11	1822.77	20566
520571	16752.02	13626.02	1822.29	20571
520572	16760.00	13684.09	1822.04	20572
520577	16770.12	13746.68	1822.32	20577
520578	16779.62	13806.00	1822.56	20578
520583	16788.06	13859.90	1822.71	20583
520584	16794.75	13912.49	1822.27	20584
520589	16801.74	13982.28	1821.00	20589
520590	16804.77	14024.21	1819.63	20590
520595	16812.62	14080.71	1819.99	20595
520621	16843.60	14104.30	1819.51	20621
520622	16826.69	14027.02	1819.08	20622
520623	16853.73	14027.08	1818.33	20623
520640	16861.23	13967.19	1819.80	20640
520641	16817.93	13913.21	1821.99	20641
520664	16824.54	13862.06	1822.25	20664
520665	16830.96	13812.78	1821.78	20665
520685	16798.38	13672.04	1821.04	20685
520712	16756.06	13658.94	1821.91	20712
3020119	16695.23	14159.93	1777.64	20119
3020121	16701.32	14202.13	1777.79	20121
3020123	16708.51	14251.71	1777.87	20123
3020125	16714.00	14289.36	1778.02	20125
3020127	16719.52	14326.95	1778.21	20127

Point No.	Northing	Easting	Elevation	Description
3020129	16726.84	14377.98	1778.38	20129
3020133	16742.95	14488.73	1778.80	20133
3020135	16751.03	14543.58	1779.09	20135
3020137	16758.41	14593.35	1778.86	20137
3020139	16766.15	14645.00	1778.69	20139
3020141	16774.59	14701.74	1778.33	20141
3020143	16781.14	14744.46	1778.06	20143
3020145	16786.86	14781.20	1777.91	20145
3020147	16791.86	14812.35	1777.70	20147
3020149	16798.30	14853.37	1777.28	20149
3020151	16824.61	14901.52	1776.33	20151
3020153	16867.53	14912.26	1775.64	20153
3020157	16923.26	14912.40	1774.65	20157
3020159	16959.16	14890.66	1774.19	20159
3020161	16960.79	14855.97	1773.89	20161
3020163	16962.37	14824.21	1773.71	20163
3020165	16963.70	14794.15	1773.47	20165
3020167	16965.80	14751.68	1773.30	20167
3020169	16967.80	14718.11	1773.19	20169
3020171	16968.46	14706.19	1773.09	20171
3020173	16977.92	14676.34	1772.94	20173
3020175	16989.30	14640.05	1772.70	20175
3020177	17004.67	14591.61	1772.51	20177
3020179	17009.12	14538.61	1772.35	20179
3020181	17012.37	14497.40	1772.10	20181
3020183	17016.34	14446.39	1771.98	20183
3020185	17020.18	14397.86	1771.83	20185
3020187	17030.33	14373.86	1771.75	20187
3020189	17062.46	14341.22	1771.49	20189
3020191	17095.07	14308.37	1771.38	20191
3020193	17121.53	14282.06	1771.18	20193
3020195	16947.92	14898.71	1774.33	20195
3020197	16903.10	14913.59	1775.04	20197
3020199	16889.94	14913.46	1775.20	20199
3020201	16850.98	14910.41	1775.91	20201
3020203	16838.57	14907.93	1776.11	20203
3020205	16818.23	14896.51	1776.41	20205
3020207	16805.55	14875.54	1776.85	20207
3020210	16800.72	14862.49	1777.22	20210
3020540	16966.59	13443.54	1769.35	20540

Point No.	Northing	Easting	Elevation	Description
3020541	16965.34	13445.97	1770.54	20541
3020542	16915.29	13584.88	1819.72	20542
3020546	16863.25	13405.68	1770.26	20546
3020547	16862.04	13408.08	1771.53	20547
3020550	16790.43	13381.87	1772.24	20550
3020551	16791.32	13379.28	1770.90	20551
3020558	16623.85	13429.51	1773.90	20558
3020559	16621.48	13427.98	1772.71	20559
3020560	16601.60	13463.05	1773.07	20560
3020561	16604.26	13464.12	1774.32	20561
3020562	16594.98	13500.53	1774.60	20562
3020563	16592.35	13500.22	1773.46	20563
3020564	16592.74	13538.41	1773.83	20564
3020565	16595.38	13538.14	1774.97	20565
3020567	16604.61	13594.75	1775.21	20567
3020570	16613.26	13648.45	1775.51	20570
3020573	16622.67	13706.41	1775.75	20573
3020576	16632.70	13769.59	1776.04	20576
3020579	16642.10	13828.22	1776.32	20579
3020582	16650.86	13882.39	1776.52	20582
3020585	16659.14	13934.33	1776.71	20585
3020588	16670.50	14003.45	1776.88	20588
3020591	16678.52	14054.81	1777.06	20591
3020594	16686.19	14101.35	1777.31	20594
3021907	16601.96	13595.19	1774.36	21907
3021908	16610.73	13648.88	1774.48	21908
3021909	16620.00	13706.91	1774.83	21909
3021910	16629.95	13769.48	1775.00	21910
3021911	16639.65	13828.61	1775.18	21911
3021912	16648.29	13882.73	1775.40	21912
3021913	16656.65	13935.02	1775.70	21913
3021914	16667.71	14003.84	1776.01	21914
3021915	16676.08	14055.23	1776.12	21915
3021916	16683.50	14101.56	1776.39	21916
3021917	16692.56	14160.36	1776.56	21917
3021918	16698.71	14202.88	1776.66	21918
3021919	16705.97	14252.30	1776.93	21919
3021920	16711.45	14289.85	1777.09	21920
3021921	16716.87	14327.54	1777.28	21921
3021922	16724.43	14378.83	1777.55	21922

Point No.	Northing	Easting	Elevation	Description
3021923	16731.26	14426.63	1777.86	21923
3021924	16740.46	14489.39	1778.18	21924
3021925	16748.53	14544.50	1778.45	21925
3021926	16755.92	14594.20	1778.20	21926
3021927	16763.63	14645.87	1777.88	21927
3021928	16772.06	14702.40	1777.46	21928
3021929	16778.61	14744.90	1777.18	21929
3021930	16784.44	14781.71	1776.91	21930
3021931	16789.38	14813.05	1776.69	21931
3021932	16795.66	14854.21	1776.33	21932
3021933	16798.16	14863.38	1776.28	21933
3021934	16802.85	14876.75	1776.02	21934
3021935	16816.29	14898.37	1775.44	21935
3021936	16822.86	14903.82	1775.36	21936
3021937	16837.55	14910.48	1775.17	21937
3021938	16850.50	14913.08	1774.87	21938
3021939	16867.01	14914.97	1774.63	21939
3021940	16890.00	14916.09	1774.19	21940
3021941	16903.22	14916.21	1773.92	21941
3021942	16924.03	14915.07	1773.66	21942
3021943	16949.39	14900.86	1773.41	21943
3021944	16961.78	14892.20	1773.05	21944
3021945	16963.40	14855.98	1772.85	21945
3021946	16964.96	14824.15	1772.67	21946
3021947	16966.20	14794.17	1772.43	21947
3021948	16968.27	14752.86	1772.26	21948
3021949	16968.50	14752.04	1772.15	21949
3021950	16970.39	14718.15	1772.12	21950
3021951	16970.99	14706.55	1772.02	21951
3021952	16980.43	14677.03	1771.95	21952
3021953	16991.86	14641.01	1771.75	21953
3021954	17007.20	14592.16	1771.51	21954
3021955	17011.87	14538.55	1771.35	21955
3021956	17015.01	14497.74	1771.22	21956
3021957	17018.96	14446.80	1771.04	21957
3021958	17022.84	14398.54	1770.79	21958
3021959	17032.51	14375.45	1770.73	21959
3021960	17064.18	14343.24	1770.54	21960
3021961	17096.89	14310.24	1770.30	21961
3021962	17123.30	14283.98	1770.25	21962

Point No.	Northing	Easting	Elevation	Description
3021972	16596.28	13543.17	1775.08	21972
3021973	16593.56	13543.38	1773.85	21973
3021976	16598.45	13482.11	1774.57	21976
3021977	16612.23	13447.00	1774.15	21977
3021978	16634.54	13416.83	1773.76	21978
3021979	16663.97	13393.39	1773.35	21979
3021980	16680.69	13384.64	1773.17	21980
3021981	16698.28	13378.20	1773.01	21981
3021982	16716.74	13374.00	1772.83	21982
3021983	16735.45	13372.30	1772.65	21983
3021984	16754.15	13373.14	1772.56	21984
3021985	16772.87	13376.18	1772.32	21985
3021986	16593.97	13519.35	1774.94	21986
3021999	16648.48	13404.02	1773.54	21999
3022000	16773.42	13373.52	1771.04	22000
3022001	16754.58	13370.29	1771.15	22001
3022002	16735.33	13369.68	1771.45	22002
3022003	16716.24	13371.36	1771.62	22003
3022004	16697.58	13375.53	1771.81	22004
3022005	16679.46	13382.13	1771.99	22005
3022006	16662.45	13391.00	1772.17	22006
3022007	16646.85	13402.05	1772.35	22007
3022008	16632.58	13415.00	1772.46	22008
3022009	16609.75	13445.77	1772.83	22009
3022010	16595.75	13481.27	1773.27	22010
3022011	16591.34	13519.45	1773.63	22011

CAMU (Closure I) - Final Coversoil System As-Built vs. Design Comparison

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
20000	520000	16822.09	14142.91	1820.27	1820.18	-0.44	0.04	0.09	As-Built
20001	520001	16828.08	14185.06	1820.40	1820.34	-0.72	0.00	0.06	As-Built
20002	520002	16835.09	14234.73	1820.52	1820.47	-0.63	0.05	0.05	As-Built
20003	520003	16840.38	14272.29	1820.62	1820.54	-0.46	-0.02	0.08	As-Built
20004	520004	16845.31	14309.38	1820.62	1820.56	-0.15	0.23	0.06	As-Built
20005	520005	16873.65	14314.80	1820.46	1820.39	-0.02	0.31	0.08	As-Built
20006	520006	16894.24	14318.74	1820.61	1820.56	-0.12	0.03	0.05	As-Built
20007	520007	16900.04	14305.52	1820.49	1820.55	-0.20	-0.15	-0.06	As-Built
20008	520008	16916.85	14281.38	1820.31	1820.31	0.19	0.03	0.00	As-Built
20009	520009	16959.23	14238.90	1819.95	1819.92	0.08	0.06	0.03	As-Built
20010	520010	16992.75	14207.74	1819.18	1819.12	0.07	0.22	0.06	As-Built
20011	520011	17021.21	14183.12	1817.99	1817.96	-0.02	0.25	0.03	As-Built
20012	520012	16991.92	14175.37	1818.38	1818.35	0.01	0.09	0.03	As-Built
20013	520013	16948.42	14167.01	1818.68	1818.65	-0.29	-0.01	0.03	As-Built
20014	520014	16883.29	14154.49	1819.21	1819.12	0.06	-0.04	0.09	As-Built
20015	520015	16792.54	14317.15	1802.83	1802.79	-0.38	-0.11	0.04	As-Built
20016	520016	16808.30	14345.71	1803.30	1803.30	0.13	-0.10	0.00	As-Built
20017	520017	16831.75	14357.26	1804.00	1804.00	-0.04	-0.04	0.00	As-Built
20018	520018	16846.93	14358.20	1804.46	1804.48	0.05	0.09	-0.03	As-Built
20019	520019	16865.00	14360.37	1805.00	1804.94	0.10	0.06	0.06	As-Built
20020	520020	16884.04	14366.09	1804.43	1804.41	-0.02	0.00	0.02	As-Built
20021	520021	16898.40	14368.36	1804.00	1803.95	-0.03	0.07	0.05	As-Built

CAMU (Closure I) - Final Coversoil System As-Built vs. Design Comparison

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
20022	520022	16915.68	14365.43	1803.48	1803.47	0.00	0.02	0.01	As-Built
20023	520023	16931.34	14356.25	1803.01	1803.08	-0.08	0.03	-0.07	As-Built
20024	520024	16943.84	14339.92	1802.63	1802.67	0.08	-0.10	-0.03	As-Built
20025	520025	16798.56	14333.86	1803.01	1802.99	0.08	0.12	0.02	As-Built
20026	520026	16907.91	14174.16	1819.00	1818.94	0.07	0.09	0.06	As-Built
20027	520027	16886.85	14222.60	1819.47	1819.48	-0.02	-0.04	-0.01	As-Built
20028	520028	16863.31	14276.77	1820.00	1819.98	-0.01	0.05	0.02	As-Built
20029	520029	16855.34	14311.30	1820.33	1820.34	0.21	0.13	-0.01	As-Built
20030	520030	16865.28	14408.31	1805.00	1804.92	0.00	-0.01	0.08	As-Built
20031	520031	16865.65	14473.07	1805.00	1804.91	-0.03	0.09	0.09	As-Built
20032	520032	16865.96	14527.53	1805.00	1804.94	-0.15	-0.05	0.06	As-Built
20033	520033	16866.25	14576.61	1805.00	1805.00	0.09	0.06	0.00	As-Built
20034	520034	16866.55	14629.22	1805.00	1805.04	-0.06	0.03	-0.04	As-Built
20035	520035	16866.90	14689.86	1805.00	1805.06	0.05	0.13	-0.06	As-Built
20036	520036	16928.49	14376.35	1803.10	1803.06	0.02	-0.01	0.03	As-Built
20037	520037	16926.71	14385.53	1803.15	1803.11	0.15	-0.08	0.05	As-Built
20038	520038	16922.52	14440.11	1803.29	1803.31	-0.15	-0.05	-0.02	As-Built
20039	520039	16918.75	14490.42	1803.41	1803.41	0.01	-0.04	0.01	As-Built
20040	520040	16915.61	14532.54	1803.51	1803.48	-0.07	0.02	0.03	As-Built
20041	520041	16912.45	14574.72	1803.61	1803.54	0.27	-0.05	0.07	As-Built
20042	520042	16899.79	14612.58	1804.00	1803.98	-0.10	-0.01	0.02	As-Built
20043	520043	16887.64	14648.88	1804.37	1804.31	-0.01	-0.11	0.06	As-Built
20044	520044	16875.58	14684.90	1804.74	1804.75	0.10	0.04	-0.02	As-Built

CAMU (Closure I) - Final Coversoil System As-Built vs. Design Comparison

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
20045	520045	16873.60	14690.32	1804.80	1804.77	0.09	-0.13	0.03	As-Built
20046	520046	16855.36	14690.81	1804.65	1804.59	-0.10	0.41	0.06	As-Built
20047	520047	16853.15	14690.79	1804.59	1804.60	-0.02	-0.06	-0.02	As-Built
20048	520048	16852.29	14688.79	1804.56	1804.59	-0.13	-0.17	-0.02	As-Built
20049	520049	16842.06	14632.53	1804.26	1804.19	-0.06	-0.24	0.07	As-Built
20050	520050	16832.94	14581.15	1804.00	1803.92	-0.32	-0.04	0.08	As-Built
20051	520051	16824.53	14531.58	1803.76	1803.70	0.05	-0.12	0.06	As-Built
20052	520052	16816.34	14478.79	1803.52	1803.45	-0.31	-0.09	0.07	As-Built
20053	520053	16806.91	14415.60	1803.25	1803.23	-0.08	0.07	0.02	As-Built
20054	520054	16799.98	14368.17	1803.05	1803.04	-0.07	0.08	0.01	As-Built
20055	520055	16820.23	14694.25	1793.76	1793.69	-0.20	0.04	0.07	As-Built
20056	520056	16830.16	14712.76	1794.00	1793.98	0.06	-0.05	0.02	As-Built
20057	520057	16842.54	14719.67	1794.35	1794.40	0.00	0.06	-0.05	As-Built
20058	520058	16855.12	14720.61	1794.72	1794.67	0.00	-0.05	0.05	As-Built
20059	520059	16864.29	14719.85	1795.00	1795.02	0.07	0.04	-0.02	As-Built
20060	520060	16874.21	14720.61	1794.71	1794.66	0.05	0.01	0.04	As-Built
20062	520062	16897.09	14712.53	1794.00	1794.06	0.00	0.04	-0.06	As-Built
20063	520063	16903.42	14704.69	1793.79	1793.77	-0.06	0.04	0.02	As-Built
20064	520064	16907.47	14694.50	1793.64	1793.66	-0.26	0.06	-0.02	As-Built
20065	520065	16887.24	14718.72	1794.31	1794.29	-0.07	-0.06	0.03	As-Built
20066	520066	16905.95	14715.18	1793.74	1793.69	-0.24	0.15	0.05	As-Built
20067	520067	16904.11	14749.11	1793.89	1793.90	-0.12	-0.04	-0.01	As-Built
20068	520068	16902.07	14792.37	1794.07	1794.02	0.04	0.08	0.06	As-Built

CAMU (Closure I) - Final Coversoil System As-Built vs. Design Comparison

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
20069	520069	16900.84	14822.36	1794.19	1794.20	-0.05	0.14	-0.01	As-Built
20070	520070	16899.58	14854.59	1794.32	1794.27	-0.06	0.15	0.05	As-Built
20071	520071	16876.68	14853.15	1795.00	1794.99	-0.04	-0.29	0.01	As-Built
20072	520072	16858.19	14852.79	1794.45	1794.43	-0.19	0.03	0.02	As-Built
20073	520073	16846.23	14835.15	1794.14	1794.10	-0.13	0.18	0.04	As-Built
20074	520074	16840.37	14803.90	1794.05	1793.98	-0.23	0.13	0.07	As-Built
20075	520075	16834.51	14772.65	1793.96	1793.89	0.02	-0.13	0.07	As-Built
20076	520076	16827.70	14736.31	1793.86	1793.80	-0.19	-0.10	0.07	As-Built
20077	520077	16868.48	14764.87	1795.00	1795.04	0.09	0.08	-0.04	As-Built
20078	520078	16871.29	14795.03	1795.00	1795.04	0.10	0.08	-0.04	As-Built
20079	520079	16874.40	14828.46	1795.00	1794.97	-0.13	0.01	0.03	As-Built
20542	3020542	16915.36	13584.91	1819.65	1819.72	0.08	0.03	-0.07	As-Built
20543	520543	16856.69	13565.58	1821.00	1820.99	0.13	-0.28	0.01	As-Built
20548	520548	16810.68	13550.50	1822.00	1821.98	-0.01	-0.22	0.02	As-Built
20549	520549	16739.93	13526.79	1823.24	1823.20	0.10	-0.13	0.05	As-Built
20566	520566	16745.32	13571.89	1822.81	1822.77	-0.26	-0.22	0.04	As-Built
20571	520571	16751.93	13626.09	1822.34	1822.29	-0.08	0.07	0.04	As-Built
20572	520572	16759.88	13684.19	1822.11	1822.04	-0.13	0.10	0.06	As-Built
20577	520577	16769.96	13746.76	1822.37	1822.32	-0.16	0.08	0.05	As-Built
20578	520578	16779.41	13805.83	1822.59	1822.56	-0.21	-0.17	0.02	As-Built
20583	520583	16787.63	13859.86	1822.78	1822.71	-0.44	-0.04	0.06	As-Built
20584	520584	16794.54	13912.47	1822.35	1822.27	-0.20	-0.02	0.08	As-Built
20589	520589	16801.18	13981.99	1821.03	1821.00	-0.56	-0.28	0.04	As-Built

CAMU (Closure I) - Final Coversoil System As-Built vs. Design Comparison

Design Point Number	As-Built Point Number	Design Northing	Design Easting	Design Elevation	As-built Elevation	Delta Northing	Delta Easting	Delta Elevation	Notes
20590	520590	16804.27	14024.32	1819.72	1819.63	-0.50	0.11	0.09	As-Built
20595	520595	16812.58	14080.30	1820.08	1819.99	-0.04	-0.42	0.08	As-Built
20621	520621	16843.56	14104.18	1819.49	1819.51	-0.04	-0.12	-0.02	As-Built
20622	520622	16826.71	14027.10	1819.00	1819.08	0.01	0.07	-0.08	As-Built
20623	520623	16853.57	14027.10	1818.23	1818.33	-0.16	0.01	-0.09	As-Built
20640	520640	16861.35	13967.14	1819.72	1819.80	0.12	-0.05	-0.08	As-Built
20641	520641	16817.94	13913.08	1821.98	1821.99	0.02	-0.13	-0.02	As-Built
20664	520664	16824.55	13862.20	1822.23	1822.25	0.01	0.14	-0.01	As-Built
20665	520665	16830.95	13812.88	1821.81	1821.78	-0.02	0.11	0.03	As-Built
20685	520685	16798.23	13672.10	1821.00	1821.04	-0.15	0.07	-0.04	As-Built
20712	520712	16756.29	13659.08	1821.98	1821.91	0.23	0.14	0.07	As-Built

DRAWINGS

The following Measurement Drawings, Topographic Survey Drawings and/or Cross-Section Drawings are attached.

1. **CAMU – Closure I Final Coversoil System As-Built, dated 4/20/2010.**

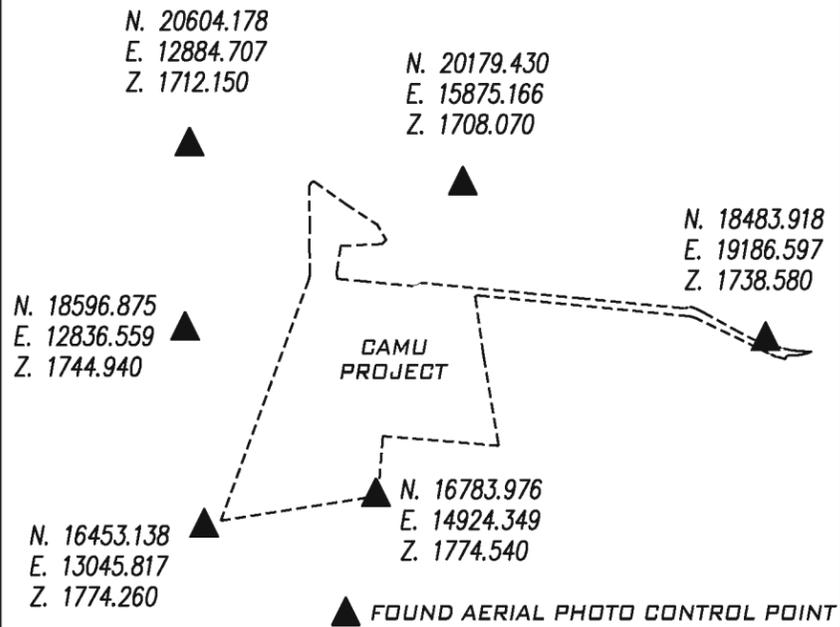
This drawing depicts the Final Coversoil System As-Built Conditions within the Closure I Area of the CAMU. It also contains information regarding the control network utilized and other pertinent survey data. Due to the scale at which this drawing was prepared, the intended correlation representation may not be entirely clear. In ALL cases the Survey Data herein provided takes precedence over any graphical representation(s).

2. **CAMU – Closure I Final Coversoil System Volume, dated 4/20/2010.**

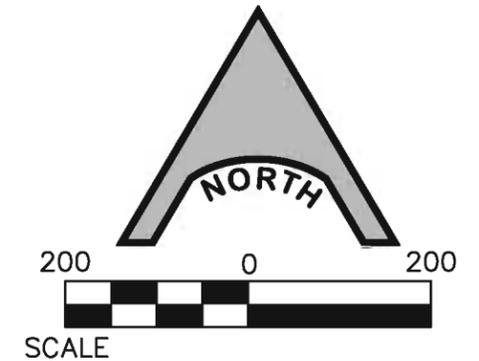
This drawing depicts the Final Coversoil System As-Built Conditions within the Closure I Area of the CAMU and a clipped portion of the Final Interim Closure Interim Cover Conditions within Phases I, II, IIIA, IIIB & IV (as modified – See Page 6 of this report). Also depicted is a volumetric comparison between these two (2) surfaces.

PROJECT CONTROL

1" = 2000'



CLOSURE I FINAL COVERSOIL SYSTEM AS-BUILT



BENCHMARK

CLARK COUNTY BENCHMARK (6C22 2E4), BEING A RIVET AND SQUARE ALUMINUM PLATE IN A CONCRETE CENTERLINE ISLAND, 4' WEST OF THE NOSE IN THE MIDDLE OF SUNSET ROAD, WEST SIDE OF THE INTERSECTION OF BOULDER HIGHWAY AND SUNSET ROAD.

PUBLISHED ELEVATION - 505.816 METERS = 1659.50 FEET
 NAVD 1988 DATUM - PUBLISHED (2003)

BASIS OF BEARINGS

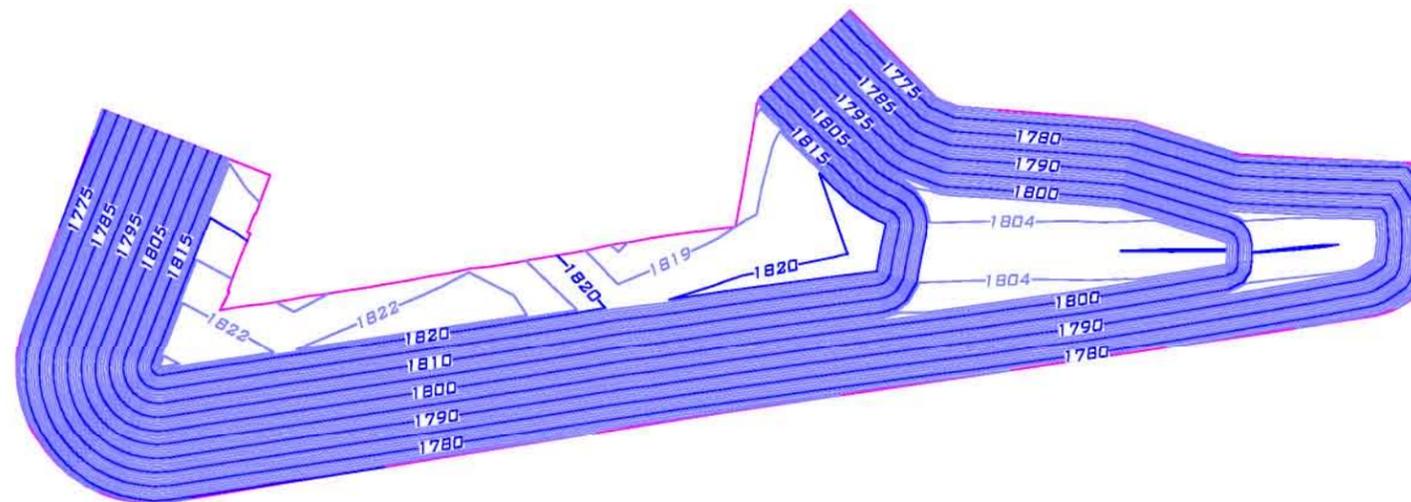
SOUTH 85°36'52" WEST, BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND CC-GIS W51", AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

COORDINATE SYSTEM

THE COORDINATE SYSTEM AND ASSOCIATED BEARING ROTATION INFORMATION WAS ESTABLISHED AND PROVIDED BY PBS&J.

LINE LEGEND

- MAJOR CONTOUR
- MINOR CONTOUR
- SURFACE LIMITS



SURFACE DETAILS

THE SURFACE DEPICTED AS SURFACE HEREON WAS GENERATED BASED UPON AS-BUILT DATA COLLECTED BY ABSOLUTE BOUNDARY & CONTROL SOLUTIONS PURSUANT TO FINAL COVERSOIL VERIFICATION. DEPICTED IS A SPECIFIC PORTION OF THE TOP DECK AS WELL AS THOSE AREAS WHERE THE GRAVEL MULCH HAD BEEN PLACED ON THE SIDE SLOPES AS OF 4/19/2010. THIS AREA IS ALSO KNOWN AS "CLOSURE I" AND IS IDENTICAL TO SURFACE 2 AS SHOWN ON SHEET 2 OF THIS REPORT.

NO.	REVISION	DATE
△		
△		
△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)

FINAL COVERSOIL SYSTEM
CLOSURE I - AS-BUILT & VOLUME

FIELD SURVEY DATE: VARIOUS THRU 4/19/2010
 FIELD CREW: G.G., M.G., M.V.

PROJECT # 2008.06.23.01

ABSOLUTE BOUNDARY & CONTROL SOLUTIONS
 6440 SKY POINT DRIVE
 SUITE 140 - PMB 321
 LAS VEGAS, NV. 89131
 (702) 953-7452
 (702) 987-5943 FAX
 WWW.AB-CS.COM

Date:	April 20, 2010
Drawn:	C. Givant
Checked:	C. Givant
Task:	2010.03.19.01-E
Sheet No.	1 of 2

ELECTRONIC FILES

The Compact Disk (CD) included in the pocket at the end of this report contains the following Directories and Files:

PDF Files (.pdf)

The following files are adobe Portable Document Files which can be viewed using a readily available free version of Adobe Acrobat Reader.

1. (Report) – Closure I - Final Coversoil System ASB & Volume
2. (Field Notes) - 2010-03-19 (Finished Grade Verification)
3. (Field Notes) - 2010-4-5 (Final Cover As-Built Toes)
4. (Field Notes) - 2010-4-19 (Closure I Remaining ASB Shots@FG)

CAD Files (.dwg)

The following files are AutoCAD Drawing files created in Civil 3D 2009. Filenames proceeded by “2007” have been exported or “saved down” to a version 2007 drawing file.

1. 2010-04-19 (Closure I - FG ASB & Volume) - 2007
2. 2010-04-19 (Closure I - FG ASB & Volume)

Coordinate Files (.csv)

The following files are Comma Separated Value Files in the following format:

Point Name, Northing, Easting, Elevation, Description

1. Closure I As-Built Locations

Raw Data Files (.dc)

The following files are Trimble Data Collector (.DC) files that contain the Raw Field Data.

1. 2010-03-19 (Finished Grade Verification) – CAG
2. 2010-4-5 (Final Cover As-Built Toes)-MV
3. 2010-4-19 (Closure I Remaining ASB Shots@FG)-MC



699 South Friendswood Drive
Suite 101
Friendswood, Texas 77546

TO: Basic Remediation Company
875 West Warm Springs Road
Henderson, NV 89011
TEL#: (702)-568-2888 FAX#: (702)-567-0475
ATTENTION: Lee C. Farris, P.E.

DATE: 2/16/10
JOB NAME: BRC EASTSIDE COMMON AREAS
SOIL REMEDIATION PROJECT
TRANSMITTAL NUMBER: 375
ENTACT PROJECT NUMBER: E-7207

WE ARE SENDING YOU ATTACHED UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:
 SHOP DRAWINGS PRINTS PLANS SAMPLES SPECIFICATIONS
 CERTIFICATES REPORTS TECHNICAL DATA FORMS COPY OF LETTER
 CHANGE ORDER SUBMITTALS RFI

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
6	2/16/10			Submittal 03410-003 - Storm Drain Record Drawings	RC

ACTION (*)

AR - AS REQUESTED FA - FOR APPROVAL
F - FILE RC - REVIEW & COMMENT

COMMENTS: Hard copies will be delivered to BRC this afternoon.

SENT VIA:

E-MAIL MAIL OVERNIGHT HAND DELIVERY FACSIMILE
 COPY Ranajit Sahu, Lee Farris BY: Michael M. Carlson (630)-330-8237
 TO: _____

If enclosures are not as noted, please notify us at once.....

**CORRECTIVE ACTION MANAGEMENT UNIT
(CAMU) – STORM DRAIN
FINAL AS-BUILT
HENDERSON, NV**

Prepared for:



ENTACT Environmental Services, LLC
699 South Friendswood Dr.
Suite 101
Friendswood, TX. 77546
(281) 996-9892

Prepared by:



Absolute Boundary & Control Solutions
6440 Sky Point Drive
Suite 140 – PMB 321
Las Vegas, NV 89131
(702) 953-7452

February 14, 2010



2/15/10

Attn: Erik Gehringer, Project Manager
ENTACT Environmental Services, LLC
699 South Friendswood Drive
Friendswood, TX. 77546

Re: CAMU – Storm Drain – FINAL As-Built

Mr. Gehringer,

This report outlines the results of an as-built survey performed on the Storm Drain and its various appurtenances constructed within the Corrective Action Management Unit (CAMU).

The intent of said report is to provide information such as but not limited to, Data, Calculations, Drawings, Tables, Charts, Electronic Files and other required media to satisfy the Submittal Requirements as outlined in Section 01050 of the Project Technical Specifications, Dated May, 2008.

Absolute Boundary & Control Solutions (ABCS) is pleased you have chosen us to complete these services, and assures you that every attempt has been made to prepare same in a fashion meeting or exceeding the Project Specifications. If however after your review you determine that revisions, clarifications or other modifications are needed, please do not hesitate to bring them to our attention.

In closing, thank you again for the opportunity to serve ENTACT. If you have any questions, comments or concerns, please do not hesitate to contact me.

Sincerely,

Craig A. Givant, PLS
President

(702) 953-7452
(702) 839-9750 fax

CERTIFICATION PAGE

CAMU – STORM DRAIN
FINAL AS-BUILT
HENDERSON, NV

I, Craig A. Givant, a Professional Land Surveyor registered in the State of Nevada, certify (as defined by Nevada Revised Statutes 625.403) that:

1. This report and any Land Surveying Practices (N.R.S. 625.040) on which it is based were performed directly by me or under my responsible charge (N.R.S. 625.080) in accordance with the Standards and Practices Governing Land Surveyors in the State of Nevada as defined by any applicable sections of the Nevada Revised Statutes (N.R.S.) or the Nevada Administrative Code (N.A.C.).
2. By affixing my official seal and signature below I am confirming that I am a Registered Land Surveyor in the State of Nevada and thereby satisfy the requirements of Section 01050, Part 1.03, Subpart A or the Project Technical Specifications.

Craig A. Givant, PLS
PLS 14348

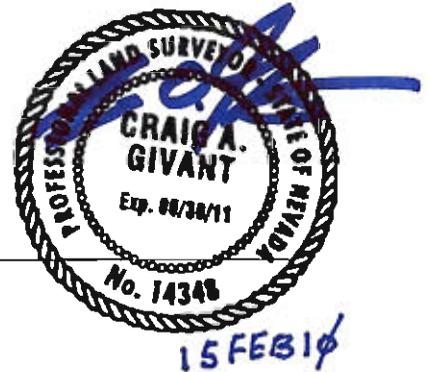


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FIELD NOTES

The elevations of the installed RCP were measured at each manhole and headwall location using Differential Leveling survey methods prior forming the Concrete Box Structures. Copies of the corresponding field notes have been scanned to PDF format and are included on the Compact Disk (CD) in the back of this report. The following Field Note Copies are included:

1. (Field Notes) - 2009-04-14 (Storm Drain Pipe)
2. (Field Notes) - 2009-08-04 (Storm Drain Pipe)

The lineal feet installed RCP was measured using a Global Positioning System (GPS) Receiver and was shot at the Top of Pipe before construction of the Concrete Box Structures. Since this data was collected electronically as Raw Data, pertinent parameters required to be input into the software and which were obtained by means of human interaction, were verified as correct by performing field checks. These field checks and their resultant accuracies can be viewed within the Electronic Field Notes (Raw Data). The following data files were utilized and they are included on the CD in the back of this report.

1. 2009-4-14 (SD ASB MH#s 4-7+SDHW2)-TG+MC
2. 2009-8-4 (MHs 1-3 ASB)-TG

The Manhole Rim positions and elevations were measured using Conventional surveying methods (Electronic Total Station). Since this data was collected electronically as Raw Data, pertinent parameters required to be input into the software and which were obtained by means of human interaction, were verified as correct by performing field checks. These field checks and their resultant accuracies can be viewed within the Electronic Field Notes (Raw Data). The following data files were utilized and they are included on the CD in the back of this report.

1. 2009-09-16 (Storm Drain ASB) - CAG

Raw Data files (.dc) have not been printed for inclusion in this report however a Portable Document File (PDF) of each raw data printout is included electronically on the attached Compact Disk (CD). It should be noted that the contents of these Raw Data files may not pertain solely to the report herein presented and may include additional data from other “tasks” performed on the same day.

SURVEY DATA

As required by the project specification Absolute Boundary & Control Solutions (ABCS) utilized field survey methods which resulted in precisions equal to or better than the following:

Horizontal Coordinates: $\pm 1.0'$ (One Foot)

Vertical Coordinates: $\pm 0.10'$ (One Tenth of a Foot)

The following coordinates were collected electronically as outlined in the Field Notes Section of this report and were utilized to prepare the attached drawing(s):

Point No.	Northing	Easting	Elevation	Description
60000	18099.84	14903.04	1742.64	STA-15+54.27-TP
60001	18100.29	14898.98	1742.83	STA-15+50.27-TP
60002	18132.02	14917.05	1749.63	CP-424-CHK
60003	18024.50	15291.37	1744.73	STA-22+50.31-TP
60004	18023.82	15287.83	1744.73	STA-22+46.31-TP
60005	18101.46	15465.73	1745.87	STA-24+40.62-TP
60006	18102.39	15469.33	1745.87	STA-24+44.62-TP
60007	18113.92	15809.81	1747.78	STA-27+85.1-TP
60008	18114.61	15813.35	1747.05	STA-27+89.1-TP
60009	18134.16	15899.59	1747.82	ASB-INV-IN-TP OF SDHW2
83000	18136.82	14603.60	1749.83	8-4-09prechk
83001	18112.25	14604.97	1741.24	SDMH3-OUT-15+55.89
83002	18112.32	14608.90	1741.08	SDMH3-IN-15+59.89
83003	18112.26	14224.20	1738.99	SDMH2-IN-11+74.66
83004	18113.45	14221.12	1739.14	SDMH2-OUT-11+70.66
83005	18157.67	14173.10	1738.50	SDMH1-IN-11+05.7
83006	18160.63	14170.75	1738.64	SDMH1-OUT-11+01.7
83007	18136.81	14603.58	1749.83	8-4-09postchk
83008	18177.67	14261.09	1752.91	8-11-09PRECHK
83009	18257.47	14136.06	1733.93	SDHW1-OUT-10+00
83010	18177.67	14261.14	1752.93	8-11-09POSTCHK
300000	19123.46	14353.67	1738.12	CP430
300001	18956.75	14189.10	1725.31	EDGE OUT
300002	18957.30	14187.63	1726.25	EDGE OUT
300003	18963.48	14171.68	1731.26	EDGE OUT
300004	18963.93	14171.26	1731.31	EDGE OUT
300005	18979.99	14186.16	1731.37	EDGE OUT
300006	18979.53	14186.61	1731.35	EDGE OUT

Point No.	Northing	Easting	Elevation	Description
300007	18964.13	14194.09	1726.15	EDGE OUT
300008	18962.97	14194.70	1725.33	EDGE OUT
300009	18962.53	14194.22	1725.30	EDGE IN
300010	18963.68	14193.85	1725.98	EDGE IN
300011	18979.20	14186.20	1731.37	EDGE IN
300012	18963.86	14171.90	1731.28	EDGE IN
300013	18957.82	14187.78	1726.23	EDGE IN
300014	18957.34	14189.46	1725.34	EDGE IN
300015	18957.36	14189.53	1725.32	EDGE FLOOR
300016	18968.71	14176.83	1724.74	EDGE FLOOR
300017	18974.14	14181.85	1724.68	EDGE FLOOR
300018	18962.48	14194.22	1725.32	EDGE FLOOR
300019	18960.12	14192.11	1725.30	EDGE FLOOR
300020	18963.02	14183.27	1725.05	EDGE FLOOR
300021	18968.16	14187.91	1725.00	EDGE FLOOR
300022	18971.37	14179.17	1724.66	EDGE FLOOR
300023	18971.52	14179.31	1725.19	FL 60IN PIPE
300024	18988.81	14131.19	1731.71	CP432
300025	18985.49	14128.87	1731.78	CONC COR
300026	18992.25	14131.33	1731.64	CONC COR
300027	18989.82	14138.78	1731.62	CONC COR
300028	18982.84	14136.28	1731.73	CONC COR
300029	18988.69	14133.97	1731.65	RIM N
300030	18986.72	14133.21	1731.70	RIM S
300031	18988.06	14132.46	1731.69	RIM W
300032	18987.40	14134.47	1731.68	RIM E
300033	18987.75	14133.52	1731.69	RIM CTR
300034	18259.83	14143.34	1738.60	TOP COR HW
300035	18259.34	14143.53	1738.62	TOP COR HW
300036	18254.91	14128.82	1738.64	TOP COR HW
300037	18254.36	14129.01	1738.67	TOP COR HW
300038	18260.50	14143.07	1732.71	COR LEDGE
300039	18255.35	14128.75	1732.78	COR LEDGE
300040	18258.10	14135.86	1732.76	EDGE LEDGE
300041	18257.32	14136.02	1733.98	FL PIPE REPAIR
300042	18177.67	14261.04	1752.90	CP426
300043	18159.07	14171.92	1745.50	SDMH1 RIM EAST
300044	18159.76	14170.64	1745.51	SDMH1 RIM NORTH
300045	18158.59	14169.92	1745.53	SDMH1 RIM WEST
300046	18157.73	14170.90	1745.52	SDMH1 RIM SOUTH

Point No.	Northing	Easting	Elevation	Description
300047	18158.75	14170.94	1745.48	SDMH1 CTR
300048	18112.93	14222.48	1746.06	SDMH2 RIM NORTH
300049	18110.86	14222.31	1746.10	SDMH2 RIM SOUTH
300050	18111.91	14221.35	1746.08	SDMH2 RIM WEST
300051	18111.56	14223.42	1746.08	SDMH2 RIM EAST
300052	18111.87	14222.39	1746.05	SDMH2 RIM CTR
300053	18112.20	14606.67	1747.73	SSMH3 RIM NORTH
300054	18110.18	14606.89	1747.73	SSMH3 RIM SOUTH
300055	18111.03	14605.74	1747.76	SSMH3 RIM WEST
300056	18111.23	14607.84	1747.73	SSMH3 RIM EAST
300057	18097.98	14900.53	1749.50	SDMH4 RIM SOUTH
300058	18099.96	14900.99	1749.46	SDMH4 RIM NORTH
300059	18098.85	14901.71	1749.48	SDMH4 RIM EAST
300060	18099.22	14899.65	1749.48	SDMH4 RIM WEST
300061	18098.98	14900.69	1749.44	SDMH4 CTR
300062	18021.37	15289.36	1750.80	SDMH5 RIM SOUTH
300063	18022.59	15288.42	1750.80	SDMH5 RIM WEST
300064	18022.14	15290.49	1750.78	SDMH5 RIM EAST
300065	18023.43	15289.36	1750.79	SDMH5 RIM NORTH
300066	18022.41	15289.49	1750.75	SDMH5 RIM CTR
300067	18102.20	15467.31	1749.95	SDMH6 RIM SOUTH
300068	18103.11	15466.23	1749.98	SDMH6 RIM WEST
300069	18103.38	15468.30	1749.98	SDMH6 RIM EAST
300070	18104.25	15467.16	1749.99	SDMH6 RIM NORTH
300071	18103.27	15467.25	1749.93	SDMH6 RIM CTR
300072	18173.89	16128.87	1746.70	CP428
300073	18134.46	15899.92	1744.45	SDHW2 FL
300074	18127.06	15901.29	1748.55	CONC COR
300075	18126.86	15900.81	1748.56	CONC COR
300076	18141.70	15897.48	1748.55	CONC COR
300077	18141.79	15897.94	1748.53	CONC COR
300078	18111.91	15811.17	1749.04	SDMH7 RIM SOUTH
300079	18114.03	15811.07	1748.96	SDMH7 RIM NORTH
300080	18113.04	15810.01	1749.02	SDMH7 RIM WEST
300081	18113.02	15812.10	1748.98	SDMH7 RIM EAST

DRAWINGS

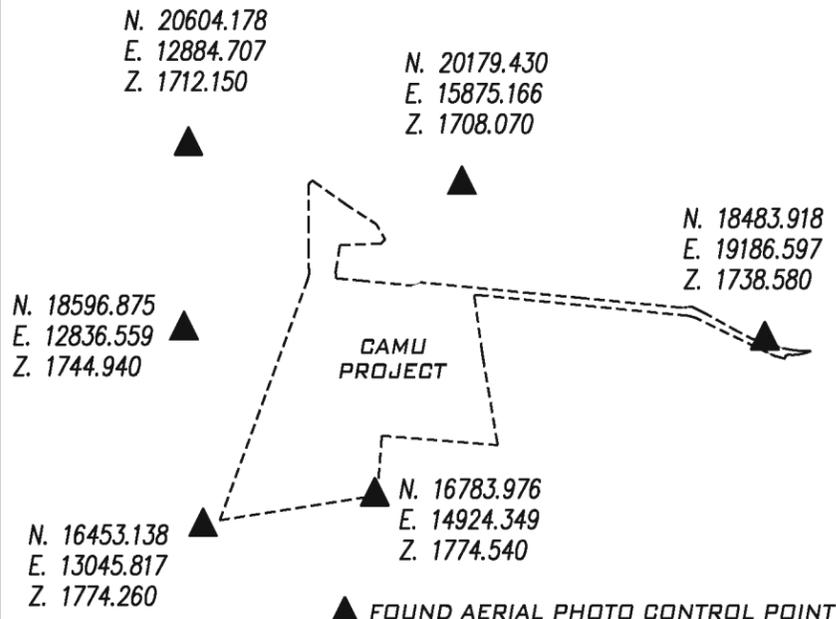
The following Measurement Drawings, Topographic Survey Drawings and/or Cross-Section Drawings are attached.

1. **CAMU – Storm Drain As-built, dated February 15, 2010**

This drawing (consisting of 3 sheets) depicts the as-built elevations of the Storm Drain RCP, the Lineal Feet of installed pipe, the rim elevation of each manhole and headwall and the stack-out details for each manhole. A detail (cross section) of the concrete channel and trash rack area is also included. It also contains information regarding the control network utilized, and other pertinent survey data. Due to the scale at which this drawing was prepared, the intended correlation representation may not be entirely clear. In ALL cases the Survey Data herein provided takes precedence over any graphical representation(s).

PROJECT CONTROL

1" = 2000'



BENCHMARK

CLARK COUNTY BENCHMARK (6C22 2E4), BEING A RIVET AND SQUARE ALUMINUM PLATE IN A CONCRETE CENTERLINE ISLAND, 4' WEST OF THE NOSE IN THE MIDDLE OF SUNSET ROAD, WEST SIDE OF THE INTERSECTION OF BOULDER HIGHWAY AND SUNSET ROAD.

PUBLISHED ELEVATION - 505.816 METERS = 1659.50 FEET
NAVD 1988 DATUM - PUBLISHED (2003)

BASIS OF BEARINGS

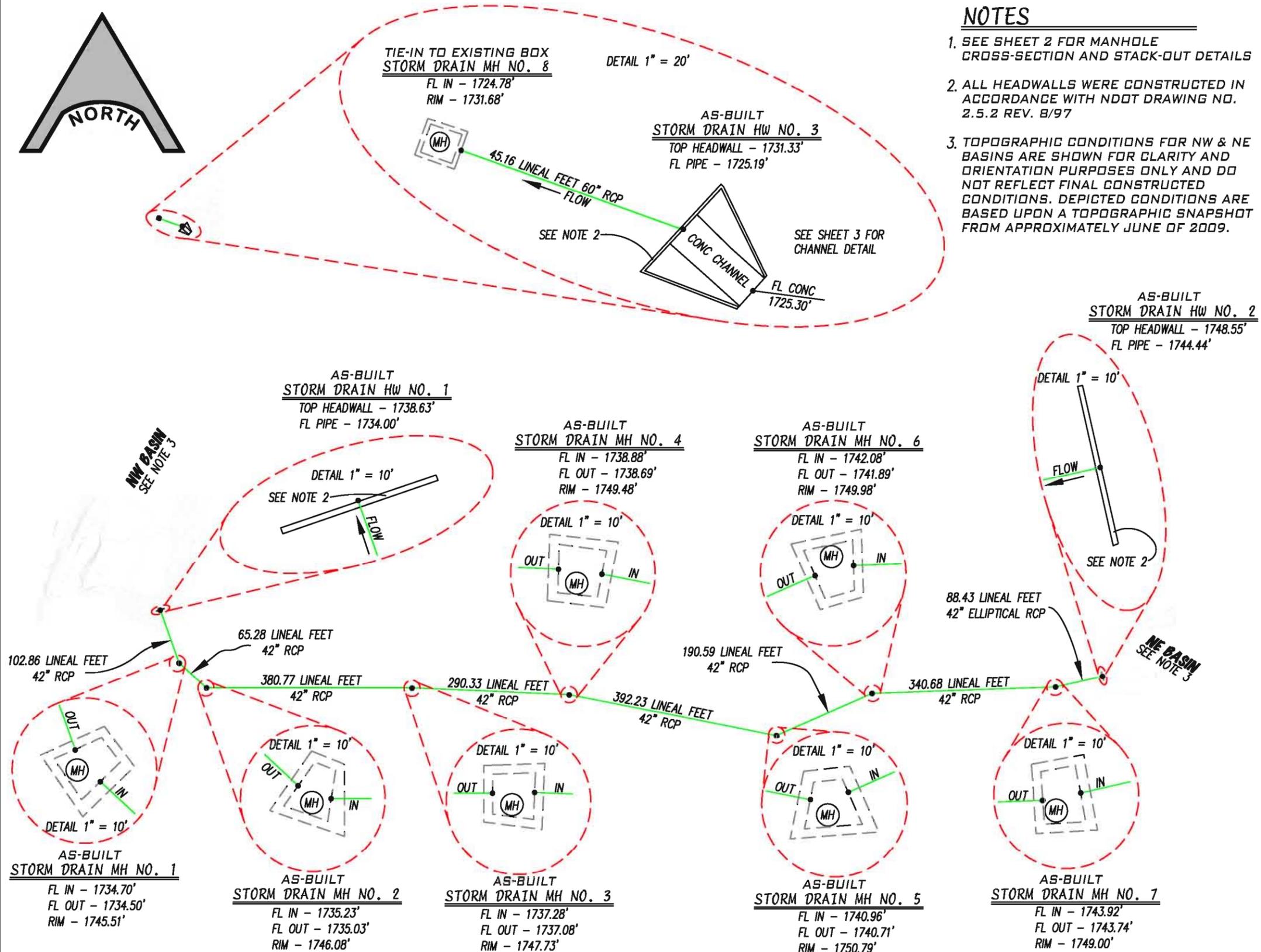
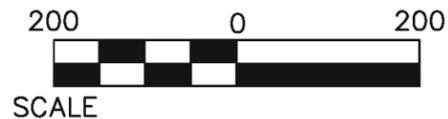
SOUTH 85°36'52" WEST, BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND "CC-GIS W51", AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

COORDINATE SYSTEM

THE COORDINATE SYSTEM AND ASSOCIATED BEARING ROTATION INFORMATION WAS ESTABLISHED AND PROVIDED BY PBS&J.

LINE LEGEND

CONCRETE STORM DRAIN BOX
RCP STORM DRAIN PIPE
DETAIL AREA



NOTES

- SEE SHEET 2 FOR MANHOLE CROSS-SECTION AND STACK-OUT DETAILS
- ALL HEADWALLS WERE CONSTRUCTED IN ACCORDANCE WITH NDOT DRAWING NO. 2.5.2 REV. 8/97
- TOPOGRAPHIC CONDITIONS FOR NW & NE BASINS ARE SHOWN FOR CLARITY AND ORIENTATION PURPOSES ONLY AND DO NOT REFLECT FINAL CONSTRUCTED CONDITIONS. DEPICTED CONDITIONS ARE BASED UPON A TOPOGRAPHIC SNAPSHOT FROM APPROXIMATELY JUNE OF 2009.

NO.	REVISION	DATE
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CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU) STORM DRAIN AS-BUILT PIPE RUNS, BOX CONFIGURATIONS AND HEADWALLS (PLAN VIEW)

FIELD SURVEY DATE: MULTIPLE
FIELD CREW: C.G. / M.C. / T.G.

JOB # 2008-06-23-01



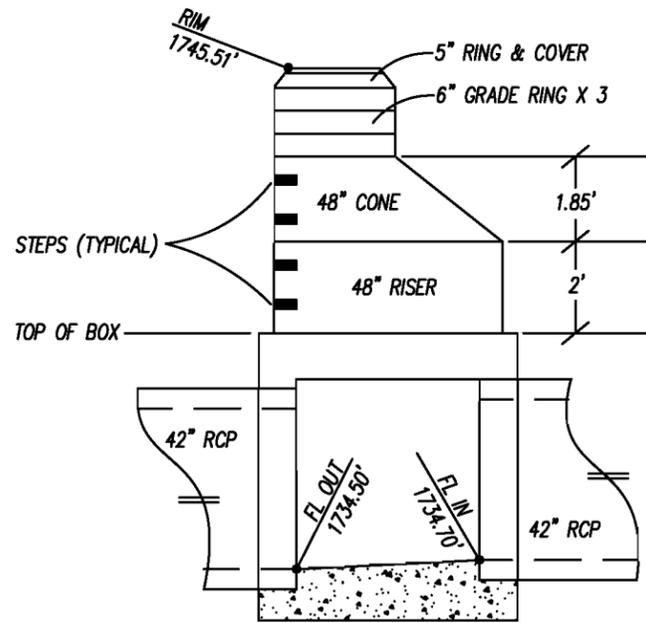
ABSOLUTE BOUNDARY & CONTROL SOLUTIONS

6440 SKY POINT DRIVE
SUITE 140 - PMB 321
LAS VEGAS, NV. 89131
(702) 953-7452
(702) 987-5943 FAX
WWW.AB-CS.COM

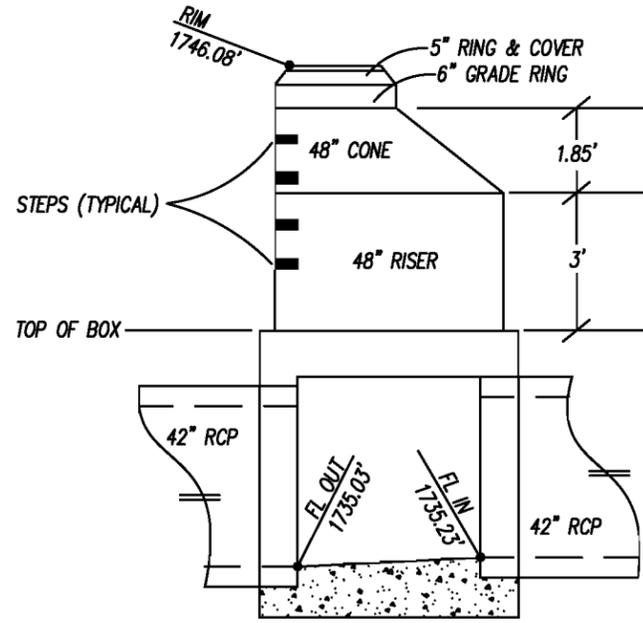
Date: February 15, 2010
Drawn: C. Givant
Checked: C. Givant
Task: 2009.09.16.01

Sheet No. 1 of 3

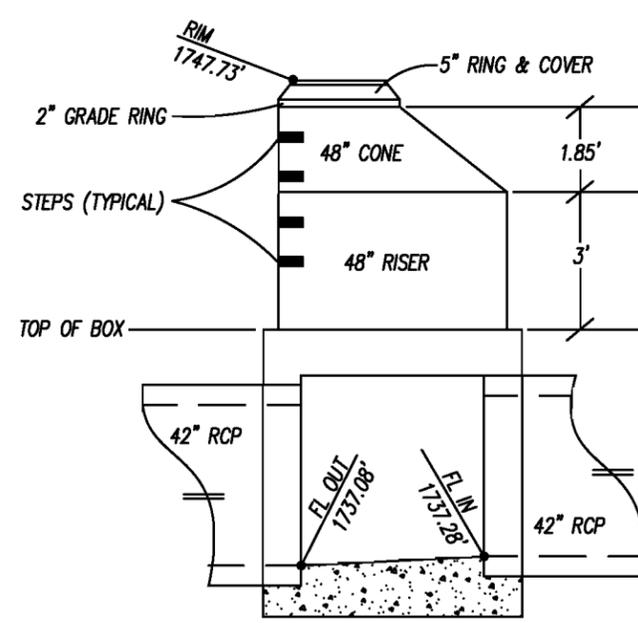
AS-BUILT
STORM DRAIN MH NO. 1
DETAIL 1" = 4'



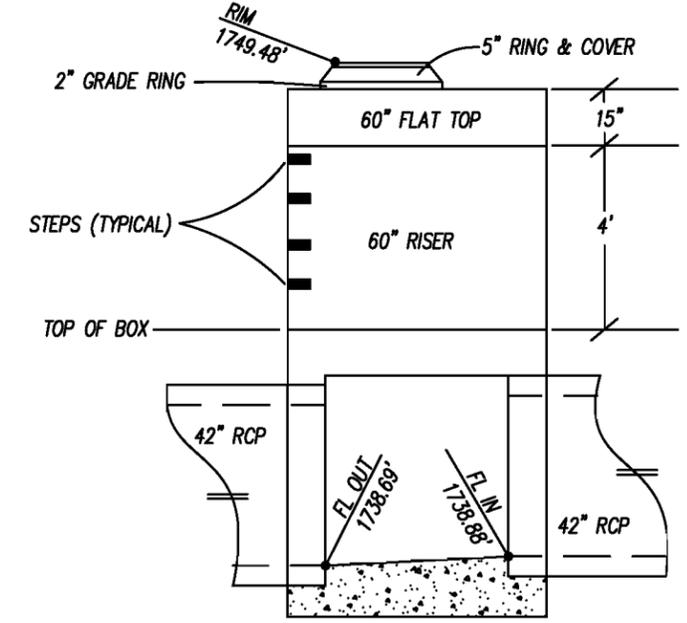
AS-BUILT
STORM DRAIN MH NO. 2
DETAIL 1" = 4'



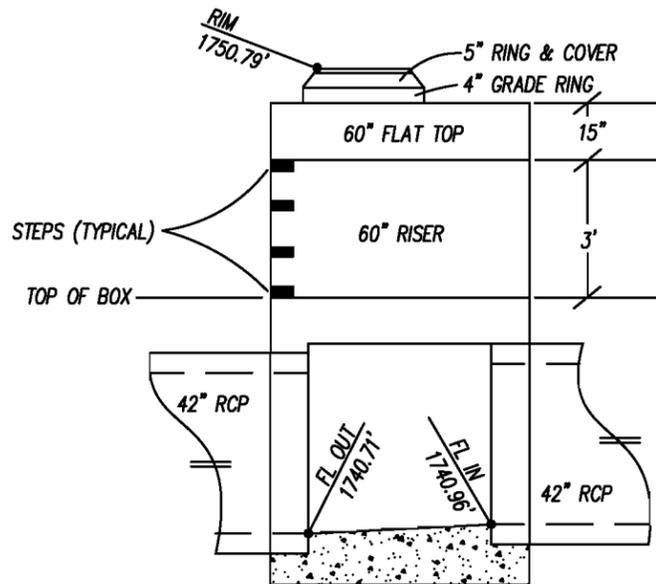
AS-BUILT
STORM DRAIN MH NO. 3
DETAIL 1" = 4'



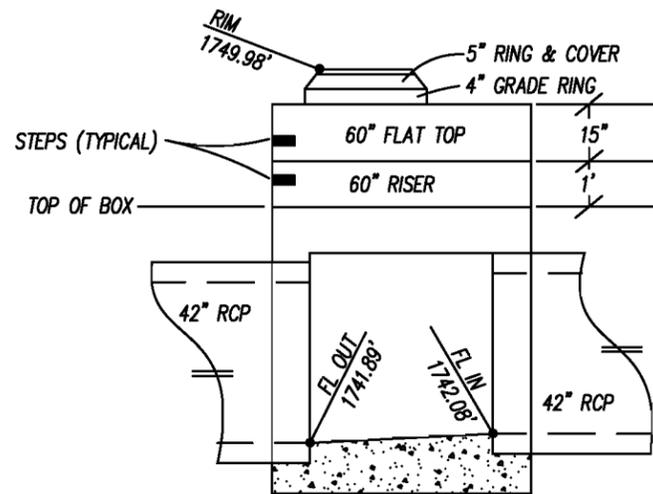
AS-BUILT
STORM DRAIN MH NO. 4
DETAIL 1" = 4'



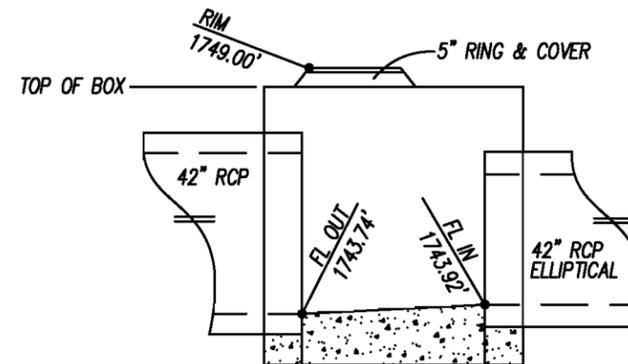
AS-BUILT
STORM DRAIN MH NO. 5
DETAIL 1" = 4'



AS-BUILT
STORM DRAIN MH NO. 6
DETAIL 1" = 4'



AS-BUILT
STORM DRAIN MH NO. 7
DETAIL 1" = 4'



NOTES

1. FOR CLARITY STACK-OUT DETAIL CROSS SECTIONS HAVE NOT BEEN DRAWN PERPENDICULAR TO PIPE FLOW LINE.
2. ALL MANHOLES WERE CONSTRUCTED IN ACCORDANCE WITH CLARK COUNTY UNIFORM STANDARD DRAWING NO. 406 - TYPE III MANHOLE ENGINEERING SPECIFICATIONS.
3. FIELD MODIFICATIONS FROM DESIGN DRAWINGS AS APPROVED BY BRC WERE AS FOLLOWS:
 - A. SDMH #2 BOX ORIENTATION WAS SHIFTED APPROXIMATELY 1' EAST TO ACCOMMODATE CONSTRUCTION
 - B. SDHW #2 WAS SHIFTED APPROXIMATELY 0.7' WEST TO ACCOMMODATE CONSTRUCTION
 - C. THE RIM ELEVATION OF SDMH #7 WAS RAISED 0.6' TO ACCOMMODATE A STANDARD 5" RING AND COVER.

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CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)
STORM DRAIN AS-BUILT
MANHOLE STACK-OUT DEALS
(CROSS-SECTION)

FIELD SURVEY DATE: MULTIPLE
FIELD CREW: C.G. / M.G. / T.G.

JOB # 2008-06-23-01

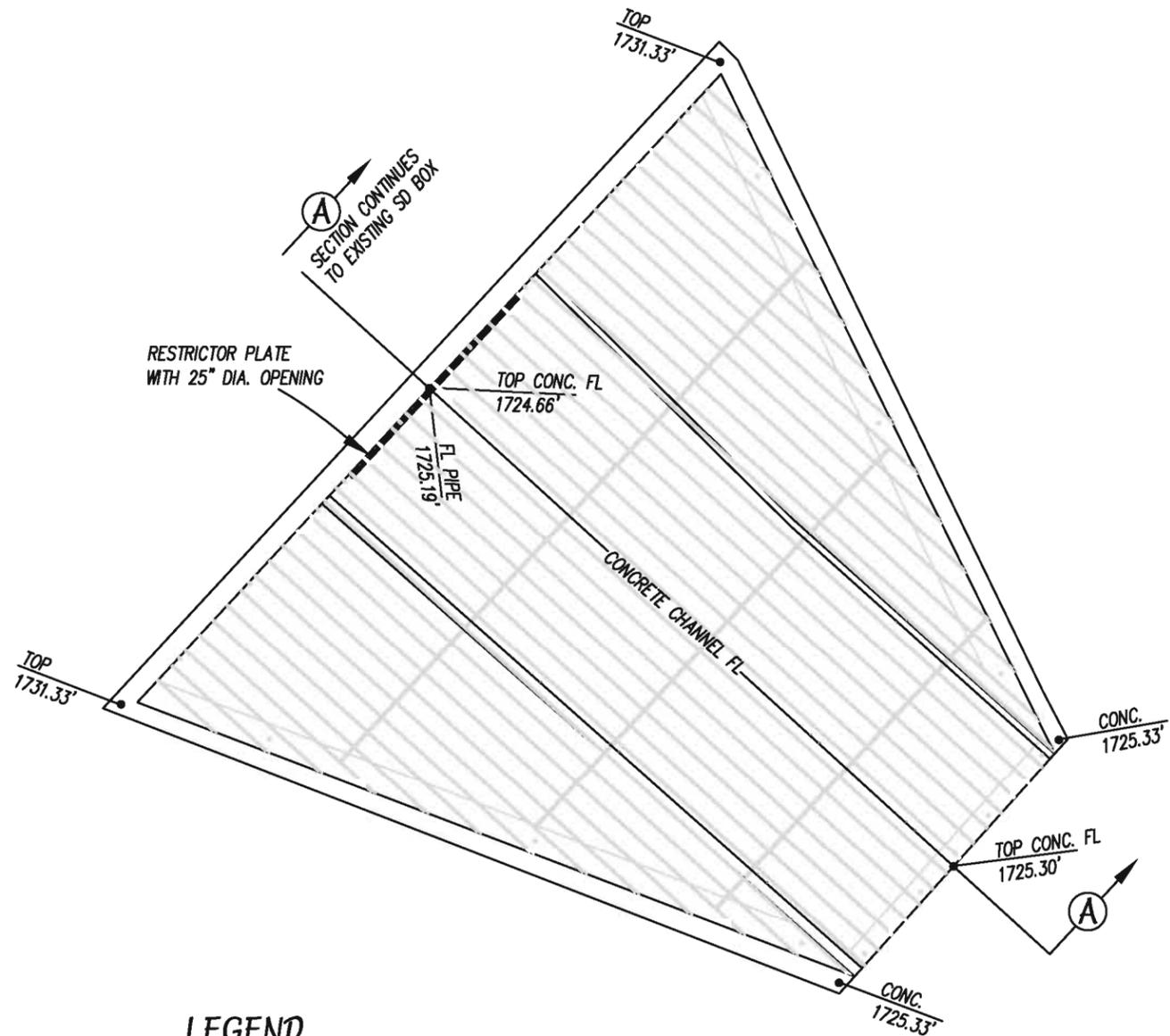


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WWW.AB-CS.COM

Date: February 15, 2010
Drawn: C. Givant
Checked: C. Givant
Task: 2009.09.16.01

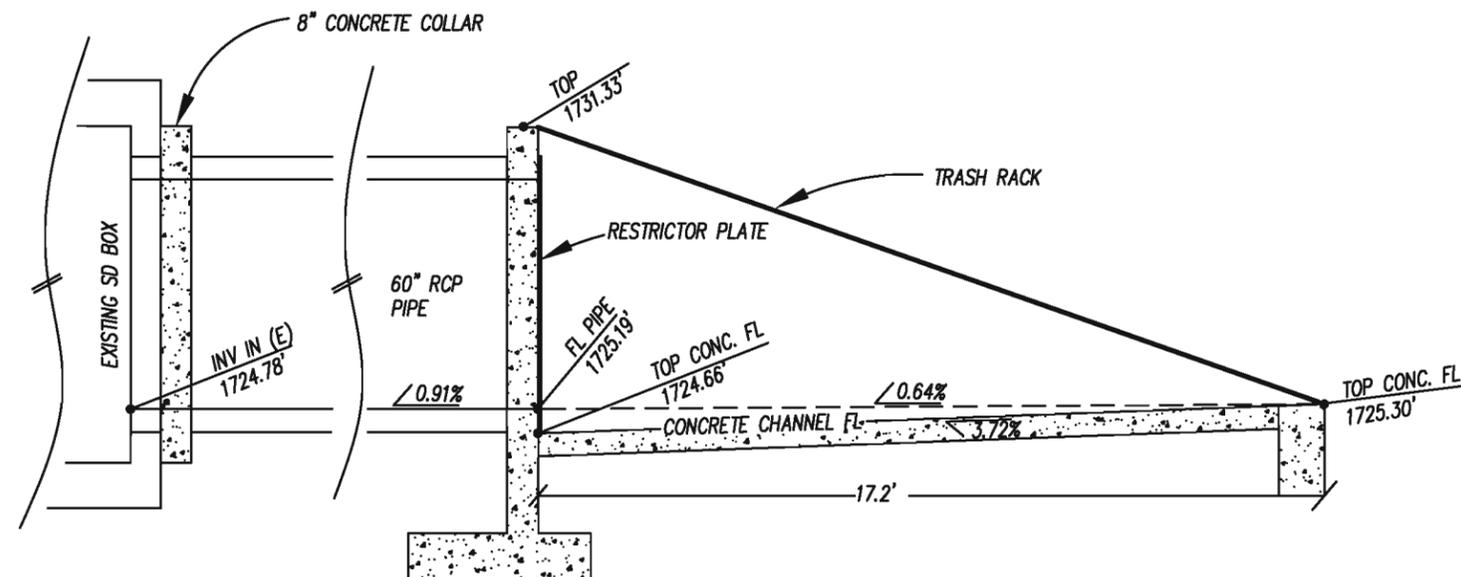
AS-BUILT
CHANNEL (PLAN VIEW)
DETAIL 1" = 4'



LEGEND

- TRASH RACK STEEL PLATE (AS-BUILT)
- TRASH RACK STIFFENER (AS-BUILT)
- ANCHOR BOLT LOCATION (AS-BUILT)

AS-BUILT
CHANNEL (SECTION A-A)
DETAIL 1" = 4'



NOTES

1. 60" HEADWALL CONSTRUCTED IN ACCORDANCE WITH NDOT DRAWING NO. 2.5.2 REV. 8/97
2. GALVANIZED STEEL TRASH RACK & RESTRICTOR PLATE MANUFACTURED/INSTALLED IN ACCORDANCE WITH DRAWING D2 OF THE PBS&J EASTSIDE LANDFILL IMPROVEMENT PLANS REV 8/12/09

NO.	REVISION	DATE
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△		
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CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)
STORM DRAIN AS-BUILT
HEADWALL # 3, CONCRETE CHANNEL
& TRASH RACK DETAILS

FIELD SURVEY DATE: MULTIPLE
FIELD CREW: C.G. / M.C. / T.G.

JOB # 2008-06-23-01



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Date: February 15, 2010
Drawn: C. Givant
Checked: C. Givant
Task: 2009.09.16.01

Sheet No. 3 of 3

ELECTRONIC FILES

The Compact Disk (CD) included in the pocket at the end of this report contains the following Directories and Files:

PDF Files (.pdf)

The following files are adobe Portable Document Files which can be viewed using a readily available free version of Adobe Acrobat Reader.

1. (Report) - CAMU Storm Drain As-Built
2. (Field Notes) - 2009-04-14 (Storm Drain Pipe)
3. (Field Notes) - 2009-4-14 (SD ASB MH#s 4-7+SDHW2)
4. (Field Notes) - 2009-08-04 (Storm Drain Pipe)
5. (Field Notes) - 2009-8-4 (MHs 1-3 ASB)
6. (Field Notes) - 2009-09-16 (Storm Drain ASB)

CAD Files (.dwg)

The following files are AutoCAD Drawing files created in Civil 3D 2009. Filenames proceeded by “2007” have been exported or “saved down” to a version 2007 drawing file.

1. 2010-02-15 (SD ASB) - 2007
2. 2010-02-15 (SD ASB)

Coordinate Files (.csv)

The following files are Comma Separated Value Files in the following format:

Point Name, Northing, Easting, Elevation, Description

1. 2010-02-15 (SD ASB)

Raw Data Files (.dc)

The following files are Trimble Data Collector (.DC) files that contain the Raw Field Data.

1. 2009-4-14 (SD ASB MH#s 4-7+SDHW2)-TG+MC
2. 2009-8-4 (MHs 1-3 ASB)-TG
3. 2009-09-16 (Storm Drain ASB) - CAG



Contractor's Stamp

Contractor Name:	Entact Environmental Services, LLC
Project Name (Number):	BRC Eastside Common Areas Soils Remediation Project (E-7207)
Contract Number:	6389
Submittal Summary:	Storm Drain Record Drawings
Submittal Number:	03410-003
Specification Section:	Section 03410, Part 1.04, Subpart C
Drawing Number (s):	NA
Page Number:	03410-3
Signed:	 Michael M. Carlson - Field Engineer
Previous Submittal Date (s):	
Date Submitted:	2/16/2010

By this submittal, I hereby represent that I have reviewed this submittal, verified the products, determined and evaluated field measurements and construction criteria possible at the time of this submittal, and coordinated the information within this submittal with respect to the requirements of the Work and the Contract Documents.

APPENDIX I

Warranties



<input checked="" type="checkbox"/> No Exception Taken	<input type="checkbox"/> Correct As Noted
<input type="checkbox"/> Revise And Resubmit	<input type="checkbox"/> Submit Specified Item
<input type="checkbox"/> Rejected	
The review of these drawings is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the contractor from compliance with the project plans and specifications nor departures therefrom, nor shall they relieve the contractor from responsibility for all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing the work in a safe manner.	
Checked By: <i>[Signature]</i>	Date: <i>12/15/09</i>
BPC Initials: <i>[Signature]</i>	
BASIC REMEDIATION COMPANY	

7943 Pecue Lane, Suite A. Baton Rouge, LA 70809

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.
ONE-YEAR INSTALLATION
LIMITED WARRANTY
FOR GEOSYNTHETIC MATERIAL INSTALLATION ONLY

Project: Landwell/Basic Remediation Restoration Project-CAMU Closure (Phase 3A & Phase 2 Interim)

Subject to the terms and conditions set forth below, ESI warrants to Basic Remediation Company that the installation of HDPE membrane liner, geosynthetic clay liner (GCL) and geocomposite sold to Basic Remediation Company pursuant to project number 07-11-1271 at the above referenced Project was performed in a good and workmanlike manner for a period of one year from the date upon which installation was completed.

The Warranty does not cover any damage to the HDPE liner, GCL or geocomposite material, or defects in the HDPE liner, GCL or geocomposite material found to have been a result of misuse, abuse or conditions existing after installation including, but not limited to, malicious mischief; vandalism; sabotage; fire; acts of God; acts of the public enemy; acts of war or public rebellion; severe weather conditions of all types; damage due to any of the following: ice, wind, subsidence, chemicals harmful to the liner, GCL or geocomposite, machinery, foreign objects or animals. The HDPE liner, GCL and geocomposite material will be warranted by the manufacturer only, not Environmental Specialties International, Inc.

In the event circumstances are found to exist which Basic Remediation Company believes may give rise to a claim under the Warranty, the following procedure shall be followed:

- a. Basic Remediation Company shall give ESI written notice of the facts and circumstances of said claim within 10 days of becoming aware of said facts and circumstances. Said notice shall be sent by registered or certified mail, return receipt requested, postage prepaid, addressed to Kevin Simms, ESI 7943 Pecue Lane, Suite A, Baton Rouge, LA 70809. The words "WARRANTY CLAIM" shall be clearly marked on the face of the envelope in the lower right hand corner. Said notice shall contain, at a minimum, the name and address of the owner, the name and address of the installation, the date upon which the installation was completed and the facts known to Basic Remediation Company upon which the claim is based. Failure to provide ESI with timely notice of the claim shall void the Warranty.



TEL: (225) 291-2700 FAX: (225) 291-2788 URL: www.ESILiners.com

- b. Within twenty days after receipt of the notice described in paragraph a, above, ESI shall inspect the allegedly defective HDPE liner, GCL and geocomposite. Basic Remediation Company shall pay the expenses incurred by ESI in making the inspection, including current per diem rates for personnel involved in making the inspection, in the event ESI determines that the claim is not covered by the Warranty.
- c. BASIC REMEDIATION COMPANY SHALL NOT REPAIR, REMOVE, ALTER, OR DISTURB ANY HDPE LINER, GCL OR GEOCOMPOSITE NOR SHALL BASIC REMEDIATION COMPANY ALLOW ANYONE ELSE TO REPAIR, REPLACE, REMOVE, ALTER, OR DISTURB ANY HDPE LINER, GCL OR GEOCOMPOSITE PRIOR TO SUCH INSPECTION PROVIDED; HOWEVER, THAT BASIC REMEDIATION COMPANY MAY TAKE EMERGENCY ACTION NECESSARY TO PREVENT DAMAGE TO PERSONS, PROPERTY OR THE ENVIRONMENT. A FAILURE TO STRICTLY COMPLY WITH THIS PARAGRAPH SHALL VOID THE WARRANTY.
- d. If it is determined that the claim is covered by the Warranty, ESI shall either repair or replace so much of the HDPE liner, GCL and geocomposite as is defective. THE REMEDIES PROVIDED HEREIN ARE THE EXCLUSIVE REMEDIES AVAILABLE UNDER THE WARRANTY. Any determination as to whether the claim is covered by the Warranty or what constitutes the appropriate method of remedying a defect will be made by ESI after consultation with Basic Remediation Company.
- e. Basic Remediation Company agrees that it shall provide ESI with clean, dry and unobstructed access to the damaged or defective HDPE liner, GCL and geocomposite in order for ESI to perform the inspections and repairs, which may be required pursuant to the Warranty. ESI shall not be liable for any costs relating to providing access to the HDPE liner, GCL and geocomposite.

THE REMEDIES PROVIDED TO BASIC REMEDIATION COMPANY HEREIN ARE THE EXCLUSIVE REMEDIES AVAILABLE UNDER THE WARRANTY AND ARE INTENDED FOR THE SOLE BENEFIT OF BASIC REMEDIATION COMPANY. NEITHER THE WARRANTY NOR ANY RIGHTS HEREUNDER SHALL BE ASSIGNABLE. ESI SHALL HAVE NO LIABILITY UNDER THE WARRANTY TO THIRD PARTIES OR STRANGERS TO THIS AGREEMENT. THE WARRANTY SET FORTH ABOVE IS THE ONLY WARRANTY APPLICABLE TO THE HDPE LINER, GCL AND GEOCOMPOSITE AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY OR FITNESS

FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL ESI BE LIABLE IN CONTRACT, TORT OR OTHERWISE FOR ANY DIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES FOR, RESULTING FROM, OR IN CONNECTION WITH, THE USE OF THE HDPE LINER, GCL OR GEOCOMPOSITE. IN THE EVENT THE EXCLUSIVE REMEDY PROVIDED HEREIN FAILS IN ITS ESSENTIAL PURPOSE, AND IN THAT EVENT ONLY, BASIC REMEDIATION COMPANY SHALL BE ENTITLED TO RETURN OF THE PURCHASE PRICE FOR SO MUCH OF THE MATERIAL AS ESI DETERMINES TO HAVE VIOLATED THE WARRANTY PROVIDED HEREIN.

Except for the warranty set forth above, no representation or warranty made by any sales or other representative of ESI, or any other person, concerning the HDPE liner, GCL or geocomposite shall be binding upon ESI.

This warranty shall not be effective until full payment has been made to ESI. Any waiver of the terms and conditions of the Warranty shall be in writing signed by ESI. The failure to insist upon strict compliance with any of the terms and conditions contained herein shall not act as a waiver of strict compliance with all of the remaining terms and conditions of the Warranty and shall not act as a waiver as to any of the terms and conditions of the Warranty as to future claims under the Warranty.

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.

By:
Kevin Simms, Vice-President

Date: November 20, 2009

Acceptance: The foregoing Warranty is hereby duly accepted and shall become a binding Warranty upon approval.

Accepted by:

Approved by:

I have read and agree to the terms and conditions of the Warranty.

BY: [Handwritten Signature]
TITLE: Vice-President
DATE: 12/17/09

BY: (Kevin Simms)
TITLE: Vice-President ESI
DATE:



LIMITED MATERIAL WARRANTY

REQUESTED BY: Environmental Specialties, Inc.
PROJECT: Landwell/Basic Remediation Restoration Project
CAMU Closure (Phase 3A & Phase 2 Interim)

TYPE MATERIAL: 60 mil HDPE Microspike®
LOCATION: Henderson, NV

The company, referred to herein as AGRU AMERICA, warrants that AGRU AMERICA liners will correspond to the specifications as indicated in AGRU AMERICA technical records, catalogs, guidelines and test certificates at the time when sold.

AGRU AMERICA warrants that the material is faultless and resistant for a period of twenty (20) years, prorated from the point of time sold when properly installed, covered and used for: Pond, Exposed.

AGRU AMERICA's liability under this warranty is not applicable when damage is caused by:

- Natural phenomena such as thunderstorms, floods, earthquakes, act's of war or other acts of God;
- Chemicals which are not suitable for HDPE liners according to chemical resistance guides or from experience.

Further, AGRU AMERICA is not liable for damages due to the misapplication, incorrect installation, and damages resulting from any kind of inadequate handling. In the event that any defects are noticed in the liner, AGRU AMERICA must be notified in writing within thirty (30) days.

AGRU AMERICA shall be given an opportunity to ascertain the cause of damages. AGRU AMERICA reserves the right to decide how damages will be settled.

Under no circumstances will AGRU AMERICA assume liability for consequential damages due to defective liner or incorrect installation. AGRU AMERICA will not be responsible for failures arising from incorrect welding of seams in the installation.

Further, AGRU AMERICA's warranty will be void in the event that the buyer performs repairs or makes alterations without the express approval of AGRU AMERICA in writing. AGRU AMERICA's maximum liability under this warranty will not exceed the purchase price of liner and will only be in force when payment has been made in full and further claims regardless of the legal suppositions are not applicable.

This warranty is only valid on condition that the generally approved technical standards and in particular the guidelines for the installation of the liner are followed and only after full bank funding of this project.

For AGRU AMERICA, Inc.

A handwritten signature in black ink that reads 'Paul W. Barker' followed by a circled 'V' or similar mark.

Authorized Official

(Date)

Paul W. Barker, Vice President – (11/20/09)