

**Honeywell**

**PARSONS**

301 Plainfield Road  
Syracuse, New York 13212

**FINAL REPORT  
CONSTRUCTION  
QUALITY  
ASSURANCE**

**SEDIMENT  
MANAGEMENT  
AREA BASINS  
ONONDAGA LAKE  
BOTTOM  
SUBSITE  
REMEDIAL DESIGN  
CAMILLUS, NEW  
YORK**

**Geosyntec**  
consultants

engineers | scientists | innovators

July 2012  
(Revision 0)

August 2012  
(Revision 1)

**Honeywell**

**PARSONS**

**Honeywell International Inc.**  
301 Plainfield Road, Suite 330  
Syracuse, New York 13212

**Parsons Corporation**  
301 Plainfield Road, Suite 350  
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**CONSTRUCTION QUALITY ASSURANCE (CQA)  
FINAL REPORT  
SEDIMENT MANAGEMENT SYSTEM BASINS  
CONSOLIDATION AREA ONONDAGA LAKE BOTTOM  
SUBSITE REMEDIAL DESIGN  
Onondaga County, Town of Camillus, New York**

*Prepared by*  
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Acton, Massachusetts 01720  
1255 Roberts Boulevard, Suite 200  
Kennesaw, Georgia 30144

Project Number GJ4706B

July 2012 (Revision 0)  
August 2012 (Revision 1)



*Prepared for*

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**ONONDAGA LAKE  
SEDIMENT MANAGEMENT SYSTEM  
BASIN CONSTRUCTION  
CONSTRUCTION QUALITY ASSURANCE (CQA)  
FINAL REPORT  
ONONDAGA COUNTY,  
TOWN OF CAMILLUS, NEW YORK**

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## **EXECUTIVE SUMMARY**

Honeywell International Inc. (Honeywell) entered into a Consent Decree (United States District Court, Northern District of New York, 2007) (89-CV-815) with the New York State Department of Environmental Conservation (NYSDEC) to implement the selected remedy for Onondaga Lake as outlined in the Record of Decision (ROD) issued on 1 July 2005. Under the agreement, Honeywell is required to construct a sediment consolidation area (SCA) over Wastebed 13, located in the Town of Camillus, New York. The SCA is being constructed to accept sediments dredged from nearby Onondaga Lake.

The SCA is being developed in several phases of construction, dependent of the area needed; they are numbered one through three. This Construction Quality Assurance (CQA) Final Report presents a summary of the Sediment Management System (SMS) basin construction activities for the Onondaga Lake SCA. The activities discussed in this report include: (i) a portion of earthwork (i.e., gravel placement) (ii) installation of geosynthetics (i.e., geotextile, geonet composite, and geomembrane liners); and (iii) installation of pipe. As appendices to the report, quality assurance/quality control (QA/QC) documentation is provided.

This report provides certification by an engineer, registered in the State of New York, that the area was constructed in accordance with the approved plans and specifications, and modifications approved by the Designer and NYSDEC. The test requirements for each of the major components of the lining system are summarized on the tables that follow.

TABLE 1  
Geosynthetic Laboratory Testing Summary  
Honeywell / Parsons  
Sediment Management System  
Camillus, NY

DESCRIPTION	TEST STANDARD	PROJECT SPECIFICATIONS	UNITS	MQC TEST FREQUENCY	MQC UNIT	QA TEST FREQUENCY	QA UNIT	MQC No. of TESTS REQUIRED <sup>(1)</sup>	QA No. of TESTS REQUIRED <sup>(1)</sup>	MQC No. of TESTS PERFORMED (failures)	QA No. of TESTS PERFORMED (failures)
<b>A. Geomembrane (reference Part 4/Table A-4 of CQA Plan &amp; Section 02070 of Specifications)</b>											
Estimated area of less than:	1,602,870	sft to cover:	5.31	acres based on	138	rolls (each 23 by 505-ft)					
a. Thickness	ASTM D5994	MARV 60	mil	50,000	SF	250,000	SF	33	7	138	7
b. Asperity Height	ASTM D7466	MARV 10	mil	50,000	SF	NR	-	33	-	138	-
c. Tensile Properties	ASTM D6693			50,000	SF	250,000	SF	33	7	40	7
Strength at Break	-Type IV	≥ 90	lb/in								
Elongation at Break		100	%								
Strength at Yield		≥ 126	lb/in								
Elongation at Yield		100	%								
d. Density/Specific Gravity (Reference RFI No. 19)	ASTM D792A / D1505	≥ 0.940 (sheet) 0.93 (resin)	g/cm <sup>3</sup>	50,000	SF	250,000	SF	33	7	40	7
e. Melt Flow	ASTM D1238E	≤ 1.0	g/10 min	certify	-	-	-	-	-	40	7
f. Carbon Black Content (Reference RFI No. 13)	ASTM D1603/4218	2 to 3	%	50,000	SF	250,000	SF	33	7	40	7
g. Carbon Black Dispersion	ASTM D5596	9 out of 10-Cat 1, 2	Cat.	50,000	SF	250,000	SF	33	7	40	7
h. Tear Resistance	ASTM D1004C	≥ 42	lb	50,000	SF	250,000	SF	33	7	40	7
i. Puncture Resistance	ASTM D4833	≥ 90	lb	NA	SF	250,000	SF	-	7	5	7
j. Oxidative Induction Time	ASTM D3895	MARV 100	min	batch	-	NR	-	4	-	40	-
k. Stress Crack Resistance	ASTM D5397	≥ 300 (on smooth edges)	hrs	batch	-	NR	-	4	-	Certified 1500 hrs	-
l. Seam Destructive Tests <sup>(2)</sup>	ASTM D6392	fusion peel - 91 extrusion peel - 78 fus./ext. shear - 120	ppi	NA	-	500	LF	-	59	-	67 (2)
m. Field Conditions	-	weld 40 - 104 degrees wind 0 to 20 mph	F	-	-	-	-	-	-	-	-
n. Non-Destructive Tests	-	5 psi-Vacuum 25-30 (±3) psi-Air	20-secs 5min	every seam	-	-	-	-	-	-	-
<b>B. Geonet Composite (reference Geocomposite Leakage Collection Layer/Table A-6 &amp; Section 02735 of Specifications)</b>											
Estimated area of less than:	319,710	sft; assuming a total of	137	rolls (typical 14' by 168') less one rejected roll							
<i>Geonet Component</i>											
a. Thickness	ASTM D5199	≥ 200	mil	90,000	SF	250,000	SF	4	2	15	4
b. Density/Specific Gravity	ASTM D1505	≥ 0.935	g/cm <sup>3</sup>	90,000	SF	250,000	SF	4	2	15	4
c. Carbon Black Content	ASTM D1603/4218	2 to 3	%	90,000	SF	-		4	-	15	-
d. Polymer	-	95% PE	-			-		-	-		
<i>Geotextile Component</i>											
e. Mass Per Unit Area	ASTM D5261	≥ 8	oz/yd <sup>2</sup>	90,000	SF	250,000	SF	4	2	15	2
f. Permittivity	ASTM D4491	≥ 0.9	sec-1	90,000	SF	-		4	-	5	-
g. Tear Strength	ASTM D4533	≥ 75	lb	90,000	SF	250,000	SF	4	2	5	2
h. Grab Tensile	ASTM D4632	≥ 180	lb	90,000	SF	-		4	-	5	-
i. Puncture Resistance (Reference RFI No. 20)	ASTM D4833	≥ 130	lb	90,000	SF	-		4	-	5	-
j. Apparent Opening Size	ASTM D4751	O <sub>95</sub> ≤ 0.21	mm	90,000	SF	250,000	SF	4	2	5	2
<i>Finished Product</i>											
k. Transmissivity	ASTM D 4716	≥ 2E-3	m <sup>2</sup> /s	90,000	SF	250,000	SF	4	2	5	4 (1)
l. Peel Strength (Reference RFI No. 20)	ASTM F 904 mod./7005	≥ 0.5	lb/in	90,000	SF	-		4	-	15	-
<b>C. Nonwoven Geotextile Cushion (reference Part 4/Table A-5 of CQA Plan &amp; Section 02074 of Specifications)</b>											
Estimated area of less than:	1,201,500	sft, a total of	267	rolls - typically 15' by 198'							
a. Mass Per Unit Area	ASTM D5261	≥ 24	oz/yd <sup>2</sup>	90,000	SF	250,000	SF	14	5	27	5
b. Grab Strength	ASTM D4632	≥ 230	lb	90,000	SF	250,000	SF	14	5	27	5
c. Puncture Resistance (Reference RFI No. 18)	ASTM D4833	≥ 250	psf	90,000	SF	250,000	SF	14	5	27	5
d. Trapezoidal Tear Strength	ASTM D4533	≥ 95	lb	90,000	SF	250,000	SF	14	5	27	5
e. UV Resistance	ASTM D4355	≥ 70	%	batch	-	certify	-	-	-	Cert.	Cert.
f. Seaming (Reference RFI No. 18)	ASTM D6193	single thermal weld	-	visual	-	visual					

Notes:

(1) Based upon the testing frequency presented in the Project Documents. Material quantities provided by . Actual quantities may vary.  
Area of both basins is assumed to be: 5.31 acres or 231,413 sft

MARV- Min. Average Value; NA-Not Applicable; NP-Not Provided; NR-Not Required



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## **1. INTRODUCTION**

### **1.1 Overview**

This final report summarizes the Construction Quality Assurance (CQA) activities performed by Geosyntec Consultants (Geosyntec) of Acton, Massachusetts and Kennesaw, Georgia during construction of the Sediment Management System (SMS) basins at the Honeywell International Inc. (Honeywell) Onondaga Lake Sediment Consolidation Area (SCA) in Camillus, Onondaga County, New York. Honeywell entered into a Consent Decree (CD) (United States District Court, Northern District of New York, 2007) (89-CV-815) with the New York State Department of Environmental Conservation (NYSDEC) to implement the selected remedy for Onondaga Lake as outlined in the Record of Decision (ROD) issued on 1 July 2005. The following documents are appended to the CD: ROD, Explanation of Significant Differences (ESD), Statement of Work (SOW), and Environmental Easement and can be referenced for additional information.

The CQA activities performed by Geosyntec included monitoring of: (i) a portion of earthwork (i.e., surface preparation and gravel placement); (ii) installation of geosynthetics (i.e., geotextile, geonet composite, and geomembrane liners); and (iii) installation of pipe. The CQA activities were performed to confirm construction materials and procedures that were monitored were in compliance with the Subpart 360 Regulations, as required by NYSDEC Solid Waste Management.

This report was prepared for Mr. Larry Somer of Honeywell by Mr. Marcus Fountain, Mr. Erik Miller, Ms. Nicole Caruso, Mr. Douglas Hamilton, and Mr. David Williams, and was reviewed by Mr. David Bonnett, P.E., all of Geosyntec.

### **1.2 Report Organization**

This final report is organized as described below:

- A description of the project is provided in Section 2.
- A summary description of the CQA program is presented in Section 3.
- A description of the CQA monitoring and testing activities performed during the earthwork portion of the project is provided in Section 4.

- A description of the CQA monitoring and testing activities performed during the geosynthetics installation is provided in Section 5.
- A description of the CQA monitoring performed during pipe installation is provided in Section 6.
- A summary of the observations resulting from the CQA monitoring and testing activities performed by Geosyntec and a certification statement signed and sealed by a professional engineer registered in the State of New York are presented in Section 7.

Documentation and record drawings presenting the results of the CQA monitoring and testing activities performed by Geosyntec are contained in the appendices to this report. Construction quality control (QC) information provided by Parsons is also presented for completeness.



## 2. PROJECT DESCRIPTION

The Onondaga Lake is a 4.6 square mile (approximately 3,000 acre) lake located in central New York State, immediately northwest of the City of Syracuse. Honeywell is currently working on a sediment removal and lake remediation project to restore the lake. Parsons of Syracuse, New York and Geosyntec are members of the team assisting Honeywell in this effort. The remediation of the Onondaga Lake bottom is on the New York State Registry of Inactive Hazardous Waste Sites and is part of the Onondaga Lake National Priorities List site. As specified in the ROD [NYSDEC and USEPA, 2005], the major components of the remedy include construction of a hydraulic control system (consisting of a hydraulic barrier wall and a groundwater collection system); hydraulic dredging of contaminated sediments on the lakeside of the barrier wall; pumping of the dredge material to a sediment containment area (i.e., SCA); placing of the sediments within geotextile tubes for the purpose of dewatering in the SCA; and the collection and treatment of the decanted water through an on-site treatment facility.

The SCA is located on Wastebed 13, which encompasses approximately 163 acres. It is bordered to the north by Ninemile Creek and the CSX Railroad tracks; to the west by an Onondaga County Garage property and a former gravel excavation owned by Honeywell; and to the east and south by Wastebeds 12 and 14, respectively. The SCA has been designed to provide long-term containment of the dredged sediment. The SCA has been designed to hold up to the ROD specified volume of 2,653,000 cubic yards (cyd) of dredged sediment. To manage the water from the SCA, two basins exist east and west of Phase I. These basins are considered part of the sediment management system (SMS) for the SCA. Four 24-in diameter conveyance pipes connect each of the basins to the SCA.

The east basin, approximately 4 acres, is rectangular in shape with a sump located in the southwest corner of the basin. The west basin is a triangular shape and covers approximately 2.4 acres. The sump is located in the southeast corner.

The SMS basins incorporate a double liner system that meets the requirements established in the New York State approved “*Onondaga Lake Sediment Management Design*”, dated September 2011. The double liner system consists of the following components (from top to bottom):

- 60-mil thick textured high density polyethylene (HDPE) geomembrane primary liner;
- geonet composite drainage layer;
- 60-mil thick textured HDPE geomembrane secondary liner; and
- existing subgrade of Solvay waste with varying thickness of engineered fill along the perimeter.

Within the sump areas, 24-in diameter secondary risers were installed and surrounded by gravel drainage material, having a minimum permeability of 10 cm/sec. A 24 oz/syd non-woven needle-punched geotextile was installed above and below the gravel. Parsons modified the location of the risers, moving the secondary to the original primary riser location. Additionally, the primary riser and designed laterals in the primary sump areas were not installed; see Request For Information (RFI) No. 26 for details.

The original design and construction drawings were prepared by Geosyntec and Parsons. Parsons performed construction of the majority of the perimeter earthwork prior to Geosyntec's involvement with the SMS basins. The geosynthetics installer for the project was Chenango Contracting (Chenango or installer), of Johnson City, New York. The surveyor retained by Parsons for the project was Thew Associates (Thew) of Canton, New York. Thew performed initial site control setup and occasionally verified elevations. Parsons surveyed the existing conditions and prepared certified record drawings. Parsons used global positioning system (GPS) based survey equipment to accomplish this task. Geosyntec provided the construction quality assurance (CQA) monitoring, testing, and documentation. A list of personnel involved in construction of the SMS basins is included in Section 3.2 of this report.

A list of the key construction activities and associated dates are provided below:

- Geosyntec arrived on site to observe initial earthwork construction associated with Phase I on 3 May 2011 and started monitoring of the SMS basins on 17 October 2011.
- The SMS geomembrane installation commenced on the following dates:

- Secondary liner on 31 October 2011 and 8 November 2011 for the east and west basins, respectively; and
- Primary liner on 28 March 2012 and 5 April 2012 for the east and west basins, respectively.
- Construction of the basins was substantially complete on 14 June 2012 with the backfilling of the anchor trenches.

Work to complete Phase I and Phase II was re-started in 2012 along with completing the SMS basin installation. The majority of this Final Report pertains to the geosynthetics construction that started in 2011 and was finished in 2012. Due to the nature of the construction, activities overlapped between projects. Some information that is presented in the appendices also relates to Phase II (e.g., geosynthetic material inventory). The appendices to this report provide information collected in 2011 along with specific information regarding work performed in 2012 to complete construction of the SMS basins. For instance, in Appendix B, only the 2012 weekly reports are presented; the 2011 weekly reports were included in the Phase I report, dated 24 May 2012, while the remainder of 2012 weekly reports will be presented in the Phase II construction report.

### **3. CONSTRUCTION QUALITY ASSURANCE PROGRAM**

#### **3.1 Scope of Services**

##### **3.1.1 Overview**

The scope of CQA monitoring, testing, and documentation services performed by Geosyntec during SMS construction included review of documents, field CQA operations, and preparation of this Final Report and record drawings. These are described in the following subsections.

##### **3.1.2 Review of Documents**

As previously noted, this final report summarizes the CQA activities performed by Geosyntec during SMS construction. The CQA activities conducted by Geosyntec were intended to satisfy the requirements of the following documents:

- Permit Drawings entitled “*Sediment Consolidation Area Design, Camillus, New York*”, dated September 2011, prepared by Parsons and Geosyntec;
- “*Construction Quality Assurance Plan, Onondaga Lake Sediment Consolidation Area (SCA) Final Design*” including a Geocomposite Leakage Collection Layer insert, prepared by Geosyntec, dated April 2011; and
- Specifications entitled “*Onondaga Lake Sediment Consolidation Area (SCA) Final Design Submittal*”, prepared by Parsons and Geosyntec, dated April 2011.

Geosyntec reviewed the above documents for familiarity prior to the commencement of on-site CQA activities. During construction, clarifications of the project specifications and drawings were typically requested in the form of Request for Information (RFI). Changes to the design documents were handled through Construction Field Change Forms (FCF). The RFIs and FCFs were issued by the contractor with responses by the Designer. The FCF were also signed by the Owner and the NYSDEC. The design changes were typically reviewed routinely during weekly progress meetings. Copies of the RFIs and FCFs are provided in Appendix B.



A major change to the CQC and CQA testing program included the following:

- FCF No. 5: “in lieu of using the number of CQC samples, CQA sample frequency will be tied to the delivered volumes such that the test frequency shall become: volume of soil delivered to the site divided by CQC test frequency and divided by ten”.

Reference to the various RFIs and FCFs are provided throughout the report in the various related sections as well as in the material table found in the executive summary.

All of the above documents will be collectively referred to as the CQA Plan in this final report.

### **3.1.3 Field CQA Operations**

The following activities were performed as part of Geosyntec’s on-site CQA services:

- attending daily health and safety meetings;
- attending weekly progress meetings;
- maintaining photographic documentation of the construction;
- summarizing construction and CQA activities in weekly field reports;
- documenting construction progress and CQA activities in daily field reports;
- collecting samples of soils and geosynthetics; and
- coordinating geomembrane as-built surveys.

#### *Earthwork:*

- visually monitoring site preparation;
- collecting samples of soils considered for use as gravel drainage layer for testing at an off-site geotechnical laboratory;

- reviewing and evaluating geotechnical laboratory test results for compliance with the requirements of the CQA Plan;
- visual monitoring of placement and grading of the gravel drainage material in the secondary sump areas; and
- selectively monitoring pipe installation.

*Geosynthetics:*

- monitoring and tracking the inventory of geosynthetic materials delivered to the site;
- collecting geosynthetic conformance samples in-plant or from delivered rolls and forwarding samples to an off-site geosynthetics testing laboratory;
- collecting and reviewing geosynthetic manufacturers' certification documents (through contractor's submittals) and geosynthetic laboratory conformance test results for compliance with the requirements of the CQA Plan;
- monitoring installation of geosynthetic materials, including trial seaming, destructive and nondestructive sampling, and repair operations; and
- selective monitoring of the anchorage of the geosynthetics in the perimeter anchor trenches.

During construction activities involving monitoring and/or testing, the observations made and results obtained by Geosyntec CQA personnel were compared to the CQA Plan. The construction manager, and/or the appropriate contractor were notified of deficiencies in construction practices and/or materials so the contractor or installer could implement the appropriate corrective actions. The corrective actions were monitored and/or tested by CQA personnel for compliance with the CQA Plan.

### **3.1.4 Final Report and Record Drawings**

Record drawings and this Final CQA Report were prepared as the final task of the CQA program. During construction, CQA documentation of on-site activities was maintained by CQA personnel in Daily Field Reports (DFRs) and summarized in weekly reports.

In addition, quality control (QC) certificates for the geosynthetic materials and as-built drawings were provided to Geosyntec for review. The weekly reports are included in the appendices to this report. CQA personnel also documented the results of on-site and off-site geotechnical testing conducted as part of the CQA program. Descriptions of the construction activities and the CQA documentation are presented in this Final CQA Report which contains the report text, summary tables, and Appendices A through K.

### **3.2 Personnel**

#### **3.2.1 Project Personnel**

Senior personnel or representatives for the firms involved in the project are as follows:

##### Honeywell International Inc. (Owner)

- Larry Somer

##### New York State Department of Environmental Conservation (Regulatory Agency)

- Tom Annal
- Jim Christopher
- Bob Edwards
- Donald Hesler
- Timothy Larson
- William Zeppetelli

##### Parsons and Geosyntec (Designer)

- Paul Blue
- Laura Brussel
- Xiaodong Huang
- David Steele
- John Beech
- Ramachandran Kulasingam
- Joseph Sura
- Ming Zu

##### Geosyntec (CQA Consultant)

- Brett Banquer
- David Bonnett
- John (Billy) Carruth
- Nicole Caruso
- Marcus Fountain
- Douglas Hamilton
- Erik Miller
- David Williams

Parsons (Earthwork Contractor)

- Michael Dobson
- Adam Dorn
- Josh Hawley
- Dhana Hillenbrand
- Xiaodong Huang
- Bill Moon
- Ron Prohaska
- Ken Sommerfield
- David Steele
- Al Steinhoff
- Sean Sullivan
- Scott Swift

Thew Associates (Surveyor)

- Michael Merithew

GeoTesting Express (Off-site Geotechnical Laboratory)

- Mark Dobday
- Joe Tomei

SGI Testing Services, Inc. (Off-site Geotechnical Laboratory)

- Zehong Yuan

Chenango Contracting (Installer, Senior Personnel Only)

- Carl Burdick
- Martin Bystrak
- Matt Bilodeau
- Charlie Parks
- Khamson Phouthavong
- Vong Soumphonphakyd

## **4. CONSTRUCTION QUALITY ASSURANCE - EARTHWORK**

### **4.1 Overview**

As described in Section 3.1 of this report, several administrative activities were routinely performed by CQA personnel throughout the duration of construction. Many of these administrative activities were related to documenting overall construction status and progress. Other activities presented under general CQA services included monitoring of the related components and facilities for the construction project. Photographs of the construction were obtained on a regular basis and select photographs are presented in Appendix A. CQA personnel summarized the daily construction and CQA activities in weekly field reports. Weekly field reports are presented in Appendix B. It is noted that no CQA testing of the soil is provided in this report. Results pertaining to the gravel material can be found in the Phase I report and the future Phase II report.

The contractor was responsible to perform general civil site work for the project. The work included site preparation (dewatering, pre-loading future sump areas, excavating, relocating Solvay waste onsite, preparing subgrade, including clearing and grubbing); provision of imported fills; and survey control associated with earthworks and as-built drawings. Details regarding subgrade preparation are documented in RFI No. 8.

The perimeter berms were constructed using engineered fill material, placed and compacted initially in an approximately 14-in thick (loose) bridge lift (that was not required to be tested) and subsequent 7 to 10-in thick (loose) lifts. It is noted that perimeter berms were constructed prior to Geosyntec's involvement with the project. It is our understanding that a third party laboratory tested the material under the direction of the contractor (field test results, referred to as quality control (QC) tests, were included in Appendix E of the SCA Phase I report).

Gravel was used only within the sump areas. After installation of the secondary sideslope riser, gravel was placed around the base of the pipe. Additional detail of the pipe installation is presented in Section 6. It is noted in 2010, gravel was used to pre-load the basin sumps and that similar material was used in construction of the SCA, referred to as gravel drainage layer. The majority of the gravel material was received from Riccelli Syracuse Sand & Gravel, 489 County Rt 85, Granby, New York, referred to as the Granby source.

#### **4.2 Field Monitoring and Testing**

CQA personnel observed these earthwork construction activities and tested the soil materials to confirm that the material properties conformed to the CQA Plan. Geotechnical testing was performed during construction. The CQA laboratory testing was performed by GeoTesting Express (GTX) in Acton, Massachusetts. The contractor was responsible for obtaining and testing QC samples. The geotechnical QC samples were tested by Atlantic Testing Laboratories Inc. (ATL) in Syracuse, New York or P-W Laboratories, Inc. (PW) in East Syracuse, New York. The contractor also obtained samples for analytical testing at each source on a minimum frequency of one representative composite sample per 2,500 cyd. This was done internally by Parsons to ensure samples met the NYSDEC Subpart 375, Table 375-6.8(b). The results were included in Appendix C of the SCA Phase I report.

The geotechnical tests were performed to confirm that the following requirements were met.

- The material used in construction of the gravel drainage layer was classified as GW or GP according to the USCS when evaluated in accordance with ASTM D2487; had a nominal particle size of 4-in diameter, maximum of five percent and three percent passing the No. 4 and No. 200 sieves, respectively when tested in accordance with ASTM C136/D422 (reference RFI No. 17 for maximum diameter acceptance); and the hydraulic conductivity requirement was 10 cm/s or greater when evaluated in general accordance with ASTM D2434. (Note that the test method was modified by the testing laboratories due to the ‘oversized’ particles contained in the gravel.)

CQA personnel periodically monitored the placement of the gravel drainage material within the sump areas. The screened and washed gravel was placed in the sump area using a Kobelco SK260 long reach excavator. During placement of the gravel drainage layer, CQA personnel periodically monitored the contractor's activities to assure that the risk of damage to the underlying geosynthetics was minimized.

The tracking of gravel volumes was conducted as part of the SCA construction. As such, the laboratory test results for the gravel drainage material are presented in the SCA reports. Specifically the 2011 results are available in Appendix D of the Phase I report. The 2012 results will be provided in the SCA Phase II report.

### **4.3 Soil Anchorage of Geosynthetics**

Geosyntec CQA personnel periodically monitored the method of anchorage for the geosynthetic material around the basin perimeter. Parsons requested a change be implemented to the SMS anchor trenches during construction as a result of the installation occurring over two construction seasons (reference FCF No. 2). The change involved the termination of the geonet composite layer and the backfilling of the anchor trench. Details of the anchoring are discussed below.

As required by the CQA Plan, a permanent anchor trench was constructed around the perimeter of the SMS basins. The construction sequence of the perimeter anchor trench was as follows:

- a 2-ft deep by 2-ft wide (minimum) trench was excavated approximately 1-ft from the crest of slope of perimeter berm;
- the secondary geomembrane was subsequently placed in and across the bottom of the anchor trench and temporarily ballasted with sandbags;
- an approximate 12-in thick lift of low-permeability material was placed and compacted in the anchor trenches located along the side of the basin shared with the SCA;
- the geonet composite was terminated at the crest of the berm;
- the primary geomembrane was subsequently placed in and across the bottom of the anchor trench and ballasted with sandbags; and
- lifts of engineered fill were placed and compacted.

The anchor trench backfill was compacted using various means including the bucket of a CAT 305.5 mini-excavator and a vibratory plate tamp.



## 5. CONSTRUCTION QUALITY ASSURANCE - GEOSYNTHETICS

### 5.1 General

The following types of geosynthetic materials were deployed as part of the SMS basins:

- 60-mil thick textured HDPE geomembrane liner was installed over the subgrade (i.e., secondary) as well as above the geonet composite drainage layer (i.e., primary);
- geonet composite drainage was installed over the secondary geomembrane; and
- non-woven geotextile cushion was installed over the geomembrane liner in the base of the sump areas.

Geosyntec CQA personnel monitored installation of geosynthetic components of the SMS basins. Field and laboratory tests were conducted to assure that the material properties were in compliance with construction documents and that prescribed installation procedures were followed. The specific geosynthetic monitoring and testing activities are described in the following subsections.

Periodically during construction, temperatures fell below 40 degrees Fahrenheit (°F) and occasionally were below 32°F. As indicated in Geosynthetic Research Institute (GRI) Test Method GM9 – *Cold Weather Seaming Geomembranes*, the installation and seaming procedures were modified to take into consideration the colder temperatures (e.g., slower welding speeds) and increased moisture (e.g., panel edges were dried). However the installer did not use nor require moveable enclosures. The installer would typically conduct his production welding well after sunrise and well before sunset. Trial welds were used to confirm a welder's ability to seam in the actual field conditions.

After installation, water was observed to have accumulated on top of the geomembrane in low areas. When this occurred, the installer would use various methods to remove water including blowers and suction trucks.

## **5.2 CQA of Geomembrane**

### **5.2.1 Conformance Testing and Documentation**

Initially a textured geomembrane was installed directly over the subgrade in the SMS basins. The initial geomembrane liner, HDT-60, was supplied by GSE Lining Technology, LLC (GSE) of Houston, Texas. Details of the 147 rolls, totaling 1,719,900 ft<sup>2</sup> in area was presented in the Phase I Construction Completion Report.

For the majority of the SMS basins (including the primary liner installed over the geonet composite drainage layer) and for Phase II construction, AgruAmerica, Micro Spike<sup>®</sup> of Georgetown, South Carolina was used. A total of 138 rolls were produced for the project, totaling 1,602,870 ft<sup>2</sup> in area. A total of 132 rolls were delivered, totaling 1,533,180 ft<sup>2</sup> in area. Geomembrane conformance samples were taken from the 60-mil thick HDPE textured geomembrane rolls used to construct the lining system in the manufacturer's plant. A total of seven (7) conformance samples were obtained. The sample frequency of one sample per 228,981 ft<sup>2</sup> of produced material or 219,025 ft<sup>2</sup> of delivered geomembrane exceeds the minimum acceptable sample frequency of one sample per 250,000 ft<sup>2</sup> required by the CQA Plan.

The conformance test results for the 60-mil liner and the manufacturer's QC certificates were reviewed by CQA personnel and were found to be in compliance with the CQA Plan. The conformance tests indicated the material meets the CQA Plan requirements. The geomembrane manufacturer's QC documentation, including resin and geomembrane certifications, is presented in Appendix C. The conformance test results are presented in Appendix D.

### **5.2.2 Field Monitoring Activities**

#### ***5.2.2.1 Delivery and On-Site Storage***

Upon delivery to the site, geomembrane rolls were stored in an area located to the southeast of the construction area. The rolls were typically transported by a Caterpillar 330 excavator (initial rolls only), Caterpillar 287 compact track loader, and/or Gehl 258 or Skytrak telehandler. CQA personnel periodically monitored the installer's delivery, unloading, and storage procedures to ensure that the material was handled in an appropriate manner. The CQA personnel also compared the roll numbers of the

geomembrane rolls delivered to the manufacturer's bill of lading and maintained an inventory of delivered materials.

Prior to deployment of the secondary geomembrane, the installer signed certificates of acceptance of the subgrade surface, which are presented in Appendix E. The geomembrane rolls were lifted using a spreader bar attached to a tracked dozer or telehandler. A dozer assisted with deployment of the secondary liner. A cable was tethered to a compact loader to assist with deployment of the primary liner.

To minimize contact with the Solvay waste, the installer deployed roofing felt under edges of panels of the secondary liner.

CQA personnel monitored the deployment of geomembrane panels. During deployment, the CQA personnel checked for the following:

- manufacturing defects;
- damage that may have occurred during shipment, storage, and handling; and
- damage resulting from installation activities, including damage as a consequence of panel placement, seaming operations, or weather.

If materials were observed to be damaged or deficient, the installer was notified and the damaged materials were either discarded or repaired. CQA personnel observed and documented the repair locations to verify compliance with the CQA Plan. Details of the geomembrane panel placement were recorded by CQA personnel on panel placement logs, which are presented in Appendix F.

#### ***5.2.2.2 Trial Seams***

Prior to production seaming, the installer prepared geomembrane trial seams for each technician using each piece of seaming equipment. Typically, either a Demtech Services Inc., a Concord Geotech Services, LLC, or a Pro-Wedge welder was used. Additional trial seams were prepared every four to five hours, or less during cold weather seaming. CQA personnel evaluated the trial seams as follows:

- trial seam samples in the beginning of the day were typically 15-ft long for fusion and 3 ft long for extrusion and over 12 in. wide;

- trial seams were welded under similar conditions as for seaming;
- test strips were cut from the trial seams at random locations across each trial-seam weld using a manual die press; each strip was 1 in. wide and 6 in. long; and
- test strips were tested for seam strength using a calibrated field tensiometer; two of the weld test strips were tested two in peel and two were tested in shear using a calibrated field tensiometer - the passing criteria for the tests were as follows:
  - Fusion
    - *Peel tests* - a minimum bonded seam strength of 91 lb/in -(Film Tear Bond) FTB; and
    - *Shear test* - a minimum bonded seam strength of 120 lb/in.
  - Extrusion
    - *Peel test* - a minimum bonded seam strength of 78 lb/in - (Film Tear Bond) FTB; and
    - *Shear test* - a minimum bonded seam strength of 120 lb/in.

A total of 184 trial seams were observed by CQA personnel during SMS basin construction; 118 trial seams were made using double-track fusion (i.e., hot wedge) welders and 66 were made using extrusion welders. All of the trial welds meet the criteria above.

Trial seam samples were not archived. Details of the trial seams, including the calibration certificates for the tensiometers and the trial seam test results, are presented in Appendix G.

### **5.2.2.3 Production Seams**

Geomembrane production seaming operations were monitored by CQA personnel. The majority of the geomembrane production seams were fabricated using double-track fusion welders. Seam repairs were made using hand-held extrusion welders. Rub

sheets were periodically used during production seaming to provide a clean surface to weld over. During or after fabrication, the geomembrane seams were visually examined for workmanship and continuity. Geomembrane seaming logs are presented in Appendix H.

### **5.2.3 Nondestructive Testing**

#### ***5.2.3.1 Scope***

Nondestructive testing of geomembrane was periodically monitored by CQA personnel. A spark test was conducted on pipe boots. Geomembrane seams were nondestructively tested for continuity by the installer using the air pressure procedure for double-track fusion seams and the vacuum-box test procedure for extrusion-welded seams. Failed air-pressure test seams, if applicable, were capped and then retested using vacuum-box test methods after determining the failed seam length. Leaks identified using the vacuum-box method were repaired and retested as described in Section 5.2.5.

#### ***5.2.3.2 Air Pressure Testing***

Accessible double-track fusion seams were nondestructively tested using the air pressure test. The procedure used by the installer for air pressure testing was as follows:

- visually observe the integrity of the annulus of the section of seam being tested and isolating the section by sealing the ends using heat and pressure;
- insert the needle of a pressure test apparatus into the annulus at one end of the seam;
- inflate the annulus to a gauge pressure of a minimum 25 - 30 psi with an air pump and maintain the gauge pressure for at least five minutes;
- if the pressure loss exceeded 3-psi, or if the pressure did not stabilize, the faulty area was repaired in accordance with Section 5.3.5 of this report; and
- confirm airflow through the entire annulus by releasing the air from the seam at the opposite end from where the needle was inserted.

Nondestructive test results are presented with the production seam logs in Appendix H.

#### ***5.2.3.3 Vacuum-Box Testing***

The vacuum-box was used by the installer to nondestructively test extrusion seams and repairs. The procedure used by the installer for vacuum testing was as follows:

- wet a strip of seam with a soapy solution;
- place the vacuum-box assembly over the wetted area, close the bleed valve and open the vacuum valve;
- force the box onto the sheet until 5-psi vacuum is observed;
- examine the seam through the viewing window for a period of 20 seconds (when observed by CQA personnel) to allow for observance for the occurrence of air bubbles;
- remove the assembly and continue the process over the entire seam with a typical 3-in wide overlap; and
- record the location of any leaks.

If nondestructive testing indicated repairs were necessary, repairs were made in accordance with procedures presented in Section 5.2.5 of this report and vacuum testing was repeated. Vacuum test results are presented with the production seam logs and repair summary logs in Appendices H and J, respectively.

#### ***5.2.3.4 Spark Testing***

Geomembrane boots were welded around pipe penetrations (e.g., four discharge pipes connecting the SCA and the secondary riser pipe). A spark test was used to nondestructively test extrusion seams used to fabricate the pipe boots. The spark test requires a continuous copper wiring to be extrusion welded into the seam. An electric current is applied while a probe is passed next to the seam. Any seam discontinuity is detected by the generation of a spark passing between the wire and the probe. When a spark was observed, repairs were made and the seam re-tested. After being non-

destructively tested, three stainless steel straps with neoprene gaskets were installed and the ends of the pipe penetration were sealed using a silicone sealant.

## **5.2.4 Destructive Seam Sample Testing**

### ***5.2.4.1 Scope***

In accordance with the CQA Plan, CQA personnel identified and collected geomembrane seam samples for destructive testing. The samples were tested in the field prior to being forwarded to the independent laboratory, GTX.

During SMS basin construction, 67 geomembrane seam samples were taken initially from approximately 29,098 linear ft of seams constructed. The breakdown between basins and liners was:

- East Basin: total of 39 samples, 19 from the secondary liner and 20 from the primary liner.
- West Basin: total of 28 samples; 14 from the secondary liner as well as the primary liner.

This corresponds to an approximate sample frequency of one per 434 linear ft of seam. This frequency meets the minimum acceptable sample frequency of one per 500 linear ft of production seams, as required by the CQA Plan. Prior to the removal of the full seam sample, four geomembrane test strips were taken by the installer from either end of the destructive sample. Two strips were peel-tested and two strips were tested in shear in the field. If the samples exhibited passing results, the adjacent destructive seam sample was shipped to the laboratory for testing.

For a destructive seam sample to be considered as passing, the seam strength criteria, which are described in Section 5.2.2.2, had to be met.

### ***5.2.4.2 Sampling Procedures***

At each destructive seam sample location, a test sample measuring approximately 12 in. across the seam and 42 in. along the seam was obtained. The sample was divided into three pieces and distributed to: (i) the geosynthetics laboratory for testing, (ii) the installer, and (iii) for an on-site archive.



#### **5.2.4.3 Test Results**

Off-site laboratory testing of geomembrane seam samples was performed in accordance with the CQA Plan. At the testing laboratory (i.e., GTX), 1-in wide test specimens were removed from the destructive seam sample using a die press. On a calibrated tensiometer, five test specimens were peel-tested for adhesion strength. For fusion seams, peel tests were performed on both the inside and outside tracks. Additionally, five specimens were tested for shear strength. The seam strength acceptance/rejection criteria described in Section 5.2.2.2 (for trial welds) were used to evaluate the destructive seam samples.

For the SMS basins, a total of 67 destruct sample locations were selected. During testing operations, all samples were observed to pass field-testing, while two samples, DS 3-007 obtained from east basin primary and DS 4-010 obtained from west basin secondary, failed laboratory testing. In the case of failed samples, additional test strips were taken from the seam at locations approximately 10 ft from each side of the failing sample location. If the additional test strips had passing results, a full destructive seam sample was taken. If the samples did not pass, test strips were obtained at another location approximately 10 ft further from the failure, repeating until passing samples were obtained and the failing area was localized. Once the bounds of the failing seam were determined, the entire seam length between the passing samples was repaired by the procedures described in the following subsection. The destructive seam test results are presented in Appendix I.

#### **5.2.5 Geomembrane Repairs**

The repair procedures presented in this subsection were used by the installer to patch holes and tears, spot-extrude impact damage or other minor scratches. In the cases where patches or caps were used to repair the damaged geomembrane (i.e., small holes, tears, or on seams which failed nondestructive or destructive testing), an approximately 12-in wide capping strip was used.

During the repair or panel tie-in operations, the following procedures were implemented:

- technicians and seaming equipment used were required to pass trial welds;

- patches or caps extended at least 6-in beyond the edge of the defect and all corners were rounded; and
- repairs were vacuum tested and visually observed for continuity.

Seam and panel repair logs are presented in Appendix I. Complete panel layout drawings illustrating the location of seam and panel repairs for the secondary and primary liners are shown in the record drawings in Appendix K.

### **5.3 CQA of Geonet Composite**

#### **5.3.1 Conformance Testing and Documentation**

As part of the leak detection system, a geonet composite was installed between the geomembrane liners. The geonet composite, Transnet 300-2-8, was supplied by Skaps Industries, Inc. (Skaps) of Commerce, Georgia. A total of 137 geonet composite rolls were produced for the project consisting of 322,090 ft<sup>2</sup> of material. Initially, two conformance samples were obtained; however, one roll, No. 45391010022, was rejected as a result of a failing transmissivity test, ASTM D4716. Two additional samples were taken from before and after the rejected rolls (i.e., roll nos. 45391010021 and 45391010023). Therefore the total area of geonet composite accepted was 319,710 ft<sup>2</sup>. The sampling frequency of one sample per 159,855 ft<sup>2</sup> of material exceeds the minimum acceptable sample frequency of one per 250,000 ft<sup>2</sup> required by the CQA Plan. The conformance samples were forwarded to GTX for testing. The conformance test results and the manufacturer's quality control (QC) letters and certificates were reviewed by CQA personnel and were found to be in compliance with the CQA Plan. The delivered rejected roll was removed from the site by the installer and was not used in construction. The manufacturer's QC documentation and the results of the conformance tests are presented in Appendices C and D, respectively.

#### **5.3.2 Field Monitoring Activities**

##### ***5.3.2.1 Delivery and On-Site Storage***

Upon delivery to the site, geonet composite rolls were stored in an area located west of the construction area. The geonet composite rolls were typically transported on site by a Gehl 258 or Skytrak telehandler. CQA personnel periodically monitored the delivery,

unloading, storage procedures to ensure the material was handled in an appropriate manner.

#### ***5.3.2.2 Deployment***

CQA personnel monitored the deployment of the geonet composite for manufacturing defects, damage that may have occurred during shipment, storage, or handling, and damage resulting from installation activities. If the materials were observed to be damaged, the installer was notified and the damaged materials were either discarded or repaired. CQA personnel observed repair locations to verify conformance with the CQA Plan. CQA personnel periodically monitored the deployment of the geonet composite, as well as its condition after installation, to confirm that the installer took measures to:

- securely anchor the geonet composite in the anchor trench or ballast it with sand bags;
- unroll the geonet composite down the slope in a manner that kept the panel in sufficient tension to avoid excessive wrinkling;
- avoid entrapment of dust, stones, or other objects that would damage or clog the geonet composite;
- avoid damaging the underlying geomembrane during deployment;
- secure the geonet composite panels with nylon fasteners, installed on a maximum 5-ft spacing laterally and at 1-ft spacing on end seams; and
- overlap and continuously sew the upper geotextile edges.

Observed holes in the geotextile portion of the composite were repaired by placing a patch of non-woven geotextile over the hole, and extended at least one foot beyond the edge of the hole. These patches were continuously thermally bonded to the undamaged portion of the geocomposite. This method was also used along the tie-ins, as well as along trimmed panels. Observed holes or tears in the geonet portion of the composite were repaired by placing a patch of the same material over or under the hole or tear, at least 2-ft beyond the edges of the hole or tear. These patches were secured using nylon

fasteners, followed by thermal bonding of the uppermost geotextile of the patch to the undamaged geocomposite panel.

## **5.4 CQA of Geotextile**

### **5.4.1 Conformance Testing and Documentation**

A non-woven geotextile was used as a cushion between the gravel drainage layer and geomembrane liner in the sump area. The non-woven geotextile, GE-240 was manufactured by Skaps of Commerce, Georgia. The needle-punched, non-woven geotextile has a nominal weight per unit area of 24-oz/yd<sup>2</sup>. The majority of the material was used in the SCA construction.

During construction, CQA personnel obtained five conformance samples from the 267 rolls delivered; totaling 1,201,500 ft<sup>2</sup> in area. The sampling frequency of one sample per 240,300 ft<sup>2</sup> of material exceeds the minimum acceptable sample frequency of one per 250,000 ft<sup>2</sup> required by the CQA Plan.

The manufacturer's quality control (QC) letters and certificates and the results of the conformance tests are presented in Appendices E and F, respectively.

### **5.4.2 Field Monitoring Activities**

#### ***5.4.2.1 Delivery and On-Site Storage***

Upon delivery to the site, geotextile rolls were typically stored in an area located south of the construction area. The geotextile rolls were transported on site by a Gehl 258 or Skytrak telehandler. CQA personnel periodically monitored the delivery, unloading, and storage procedures to ensure that the material was handled in an appropriate manner. An inventory of delivered rolls was maintained by CQA personnel.

#### ***5.4.2.2 Deployment and Seaming***

The non-woven geotextile was manually unrolled over the geonet composite or drainage aggregate within the basin sump areas. CQA personnel monitored the deployment of the non-woven geotextile rolls for manufacturing defects, damage that may have occurred during shipment, storage, and handling, and damage resulting from installation activities. If materials were observed to be damaged, the installer was

notified and the damaged materials were either discarded or repaired. CQA personnel observed repair locations to verify conformance with the requirements of the CQA Plan.

After deployment of the geotextile, CQA personnel observed that the installer overlapped geotextile panels a minimum of 4 to 6-in then used a wedge welder to seam the panels together.

## **6. PIPE INSTALLATION**

### **6.1 Overview**

Within the each basin, a sump area was constructed (as previously mentioned the area was preloaded with a minimum of 5-ft of gravel in 2010). The base of the sumps is 25-ft by 33.5-ft which is graded into the 2.5 horizontal (H) : 1 vertical (V) perimeter sideslope. The main component of the sump de-watering system is a 24-in diameter polyethylene (PE) standard dimension ration (SDR) – 17 pipe. The pipe has 8 rows of 1 in. diameter perforations on 0.5-in centers in the base of the sump. Per RFI No. 26, only the secondary riser was installed.

### **6.2 Sump Construction**

The pipe was supplied by the pipe manufacturer, Chevron Phillips Chemical Company, LP (DriscoPlex) PW4100 of Plano, Texas. CQA personnel verified the proper size and spacing of the perforations by visual observation of the pipe during installation. No conformance testing of the pipe was required by the CQA Plan. The bills of laden were presented in Appendix F of the SCA Phase I Final Report.

The pipe, when delivered to the site, was stockpiled in an area located south of the construction area. The pipe was typically transported from the stockpile to the construction area by an excavator.

Pipe sections were joined using butt-fusion or electro-fusion welding techniques. CQA personnel periodically monitored the installation of the various components of the de-watering system to ensure that industry-accepted procedures were used by the installer for butt-fusing and electro-fusing the pipes. It was noted that the initial angle welded on the secondary riser pipe needed to be re-fabricated to better match the 2.5H:1V sideslope.

## 7. SUMMARY AND CONCLUSIONS

Observation of the construction of the Sediment Management System basins at the Onondaga Lake Sediment Consolidation Area was performed by Geosyntec during the period of 17 October 2011 to 14 June 2012. During this time, CQA personnel monitored the installation of the following components:

- earthwork (gravel around secondary riser pipe in sump areas);
- geosynthetics (installation of geomembrane liner, geonet composite and geotextile); and
- pipe installation (installation of secondary sideslope riser pipes).

During construction of the above components, CQA personnel verified that conformance and CQA testing were performed on the construction materials at the frequencies required in the CQA Plan (as defined in Section 3.1.2 of this report), and that materials meeting the CQA Plan requirements were used. CQA personnel also verified that conditions or materials identified as not conforming to the CQA Plan were replaced, repaired, and/or retested, as described in this report.

The results of the CQA activities undertaken by Geosyntec as described in this report indicate that Sediment Management System basins of the Onondaga Lake Sediment Consolidation Area were constructed in accordance with the drawings and Specifications, as modified through RFIs and FCFs.



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Marcus Fountain  
CQA Manager



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David J. Bonnett, P.E.  
CQA Engineer-of-Record  
New York PE #89889



I, David J. Bonnett, certify that I am currently a New York State Registered Professional Engineer, who had primary responsibility to ensure implementation of the subject construction program, and that I certify that the Remedial Design Plans and Specifications were implemented and that construction activities were completed in substantial conformance with the approved NYSDEC approved Remedial Design and Specifications including modifications approved by the Designer and/or NYSDEC.

# APPENDIX A

## Photographic Documentation



PROJECT NAME: Onondaga Lake Sediment Management System (SMS) Basins

PROJECT NO.: GJ4706B

CLIENT.: Honeywell

FILE NAME: Photolog.pptx



**Photograph 1:** Secondary layer panels of 60-mil thick HDPE geomembrane were deployed from rolls using a dozer. Roofing Felt was placed under edges of panels to minimize contact with the Solvay waste.



**Photograph 2:** Deployed panels were manually positioned to set panel overlap.

PROJECT NAME: Onondaga Lake Sediment Management System (SMS) Basins

PROJECT NO.: GJ4706B

CLIENT.: Honeywell

FILE NAME: Photolog.pptx



**Photograph 3:** Seams between adjacent panels were constructed using fusion welders. Welder operators cleaned the geomembrane along the overlap prior to seaming.



**Photograph 4:** Fusion welded seams were non-destructively tested using the air pressure method.



PROJECT NAME: Onondaga Lake Sediment Management System (SMS) Basins

PROJECT NO.: GJ4706B

CLIENT.: Honeywell

FILE NAME: Photolog.pptx



**Photograph 5:** Repairs to the geomembrane were heat bonded to the underlying material and the edges of the repair were abraded using an electric grinder.



**Photograph 6:** Repairs to the geomembrane were extrusion welded.

PROJECT NAME: Onondaga Lake Sediment Management System (SMS) Basins

PROJECT NO.: GJ4706B

CLIENT.: Honeywell

FILE NAME: Photolog.pptx



**Photograph 7:** Extrusion welds were non-destructively tested using the vacuum test method.



**Photograph 8:** Four 24-in dia. pipes penetrated the primary and secondary layers (secondary shown) of the liner system in each basin. Boots were constructed in the field and installed over the penetrations.



PROJECT NAME: Onondaga Lake Sediment Management System (SMS) Basins

PROJECT NO.: GJ4706B

CLIENT.: Honeywell

FILE NAME: Photolog.pptx



**Photograph 9:** The completed boots were non-destructively tested using the spark test method.



**Photograph 10:** Geocomposite was deployed over the secondary geomembrane layer.

PROJECT NAME: Onondaga Lake Sediment Management System (SMS) Basins

PROJECT NO.: GJ4706B

CLIENT.: Honeywell

FILE NAME: Photolog.pptx



**Photograph 11:** The net component of adjacent geocomposite panels were connected using plastic ties.



**Photograph 12:** The upper geotextile component of adjacent geocomposite panels was continuously sewn.



PROJECT NAME: Onondaga Lake Sediment Management System (SMS) Basins

PROJECT NO.: GJ4706B

CLIENT.: Honeywell

FILE NAME: Photolog.pptx



**Photograph 13:** A side-slope riser was installed within the sump of each basin between the primary and secondary layers as part of the leak detection system.



**Photograph 14:** Drainage gravel was placed over the riser pipe within the sump area as ballast and collection layer.

PROJECT NAME: Onondaga Lake Sediment Management System (SMS) Basins

PROJECT NO.: GJ4706B

CLIENT.: Honeywell

FILE NAME: Photolog.pptx



**Photograph 15:** A view of the riser structure upon completion of the Drainage Gravel placement.



**Photograph 16:** Panels of the primary geomembrane layer were deployed from rolls suspended by a telehandler equipped with a spreader bar.

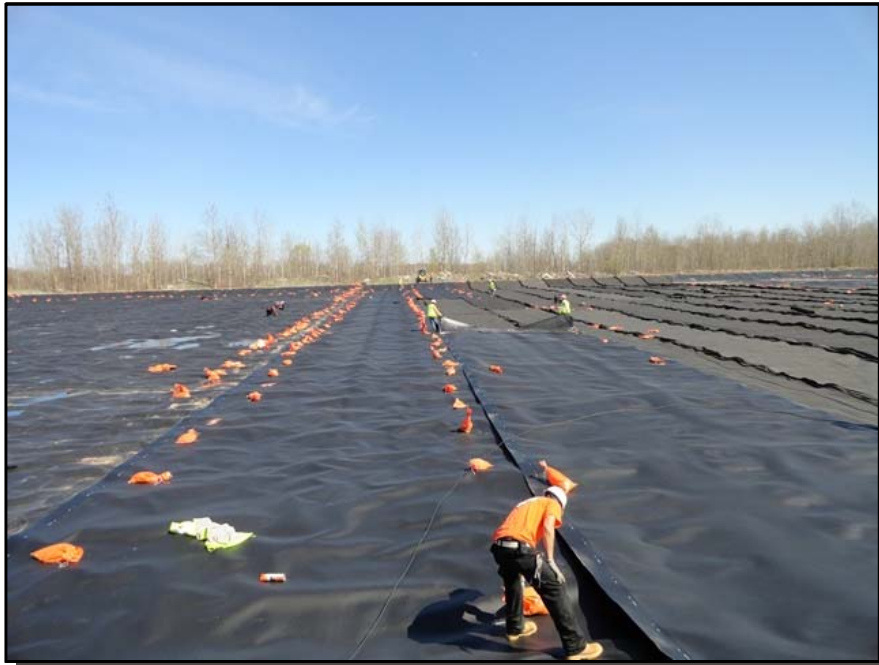


PROJECT NAME: Onondaga Lake Sediment Management System (SMS) Basins

PROJECT NO.: GJ4706B

CLIENT.: Honeywell

FILE NAME: Photolog.pptx



**Photograph 17:** A compact loader equipped with a cable winch, positioned opposite the telehandler, was used to pull panels across the basin.



**Photograph 18:** The steps of seaming and repairing geomembrane outlined for the secondary layer were then implemented on the primary layer. A view of a completed basin sump is shown above.

PROJECT NAME: Onondaga Lake Sediment Management System (SMS) Basins

PROJECT NO.: GJ4706B

CLIENT.: Honeywell

FILE NAME: Photolog.pptx



**Photograph 19:** A view of the completed geosynthetics prior to backfilling of the anchor trench.



**Photograph 20:** The primary geomembrane was temporarily folded to facilitate installation of a LP soil plug in the anchor trench between the primary and secondary layers.

PROJECT NAME: Onondaga Lake Sediment Management System (SMS) Basins

PROJECT NO.: GJ4706B

CLIENT.: Honeywell

FILE NAME: Photolog.pptx



**Photograph 21:** The primary liner was then placed into the anchor trench and backfilling of the trench was completed.



**Photograph 22:** Boots were installed where the side-slope riser of the leak detection system penetrates the primary liner.



## APPENDIX B

### Field Reports and Correspondence

- Request For Information
- Field Change Forms
- Weekly Field Reports

## Request For Information

**TITLE:** East and West Basins Subgrade**DATE:** 7/1/2011**PROJECT:** HW SCA CONSTRUCTION**JOB:** 446199

**TO:** Attn: John (Jay) Beech  
GEOSYNTEC CONSULTANTS  
1255 Roberts Boulevard NW  
Suite 200  
Kennesaw, GEORGIA 30144  
Phone: 678-202-9500 Fax: 404-267-1102

**STARTED:****COMPLETED:****REQUIRED:** 7/12/2011**WORK****IMPACT:** Unknown**SCHEDULE****IMPACT:** Unknown**COST****IMPACT:** Unknown**QUESTION:**

What is the final decision/deatil for the SCA East and West Basin subgrade preparation and liner system?

**PROPOSED SOLUTION:****ANSWER:**

(1) According to an email by David Steele of Parsons dated 7/5/2011 sent to Ramachandran Kulasingam, Jay Beech and Laura Brussel, David Steele was collecting information related to RFI-00008 and RFI-0009. As of 12 July 2011, no further communication has taken place.

(2) Geosyntec notes that we have received these RFI's and will work with Parsons going forward in crafting an official response to the addressed questions.

**UPDATED ANSWER:**

Geosyntec (with approval from NYSDEC and Parsons design team), has determined that the Basin Liner System will be in accordance with the details shown on drawing number 444853-201-C-008 and that the geomembrane may be placed directly on solvay waste in accordance with direction from Dave Steele and NYSDEC PER DARCY JONES, PARSONS EMAIL DATED: 27 Jul 11

Geosyntec confirms that the first three details (1/8, 2/8, and 3/8) showing the proposed liner system for the basin on drawing number 444853-201-C-008 (attached) are still good from a design standpoint. Geosyntec is okay with stripping the vegetative mat and placing the geomembrane, as proposed. Consistent with the SCA low permeability soil layer specifications, visible rock particles at the subgrade surface with a maximum dimension larger than one inch should be removed before placing the geomebrane.

I have copied the Engineer-of-Record Jay Beech and he is good with the above. The attached email from Tim Larson of NYSDEC was forwarded to me by you, and seems to indicate that NYSDEC is good with the proposed geomembrane placement method. I would assume Laura Brussel would confirm that Parsons design team's approval. PER R. KULA KULASINGAM, GEOSYNTEC EMAIL DATED 27 Jul 11

**Requested By:** PARSONS**Date:** 7/1/2011**Signed:** \_\_\_\_\_

Darcy Jones

**TITLE:** East and West Basins Subgrade**DATE:** 7/1/2011**PROJECT:** HW SCA CONSTRUCTION**JOB:** 446199**TO:** Attn: John (Jay) Beech  
GEOSYNTEC CONSULTANTS  
1255 Roberts Boulevard NW  
Suite 200  
Kennesaw, GEORGIA 30144  
Phone: 678-202-9500 Fax: 404-267-1102**STARTED:****COMPLETED:****REQUIRED:** 7/12/2011**WORK****IMPACT:** Unknown**SCHEDULE****IMPACT:** Unknown**COST****IMPACT:** Unknown

FYI, placing the SCA basins liner directly on the Solvay Waste is acceptable and needs to be consistent with Dave's attached email. Please contact me if you have any questions relating to this issue.

Thank you,

Tim PER TIM LARSON, DEC EMAIL DATED 26 Jul 11

We can comply with the requirements below with the following clarifications:

a) The slope of the basin liner subgrade will be as indicated on the design drawings. This slope, which is less than 2%, uses berms and the existing topography of Wastebed 13 to provide for the necessary temporary storage capacity.

b) It is not feasible to perform compaction and compaction testing on this subgrade. The subgrade will be cleared to meet the requirements described in the email below and graded to be smooth and uniform. A foundation analysis was performed and the subgrade, without compaction, was found to have sufficient structural integrity to support the loads and stresses on the liner imposed when the basin is in operation. The geomembrane installation subcontractor will inspect the subgrade and certify that it is acceptable for geomembrane installation.

Dave PER DAVID STEELE, PARSONS EMAIL DATED: 11 Jul 11

**COMPLETED****Requested By:** PARSONS**Date:** 7/1/2011**Signed:** \_\_\_\_\_

Darcy Jones

**TITLE:** ASTM D4218 Testing**DATE:** 7/22/2011**PROJECT:** HW SCA CONSTRUCTION**JOB:** 446199

**TO:** Attn: John (Jay) Beech  
GEOSYNTEC CONSULTANTS  
1255 Roberts Boulevard NW  
Suite 200  
Kennesaw, GEORGIA 30144  
Phone: 678-202-9500 Fax: 404-267-1102

**STARTED:****COMPLETED:****REQUIRED:** 7/29/2011**WORK****IMPACT:** Unknown**SCHEDULE****IMPACT:** Unknown**COST****IMPACT:** Unknown**QUESTION:**

Specification 02740 states HDPE Geomembrane Liner to be tested per ASTM D4218 for carbon black content. GSE manufacturer tested per ASTM D1603. As testing per ASTM D1603 also meets the required testing criteria Parsons requests that ASTM D1603 be used in place of ASTM D4218.  
Drawings 444853-101-C-009 through 444853-101-C-012

**PROPOSED SOLUTION:**

Parsons proposes substituting ASTM D1603, which also meets specified requirements, for ASTM D4218.

**ANSWER:**

Proposed solution is acceptable.

**COMPLETED****Requested By:** PARSONS**Date:** 7/22/2011

**Signed:** \_\_\_\_\_  
Michael Dobson



**COMPLETED****TITLE:** Gravel Drainage Grain Size**DATE:** 12/8/2011**PROJECT:** HW SCA CONSTRUCTION**JOB:** 446199**TO:** Attn: John (Jay) Beech  
GEOSYNTEC CONSULTANTS**STARTED:**

1255 Roberts Boulevard NW

**COMPLETED:**

Suite 200

**REQUIRED:** 12/15/2011

Kennesaw, GEORGIA 30144

Phone: 678-202-9500 Fax: 404-267-1102

**E-MAILED**  
15 Dec 11**WORK  
IMPACT:****SCHEDULE  
IMPACT:****COST  
IMPACT:****QUESTION:**

Regarding Gravel Drainage Layer (Specification Section 02300-2.01.B and see FCF#1)

(i) To confirm the tested material properties of the gravel meets the intent of the project. The results from construction quality assurance (CQA) testing, specifically the grain size analysis (ASTM D422) tests, indicate oversized material was retained on the 4-in diameter sieve. See summary attached for detail.

(ii) To confirm the removal procedure to be used in the field to remove marginal material observed during gravel placement.

**PROPOSED SOLUTION:**

(i) The material with oversized material meets the intent of the specification. The Contractor should avoid dumping gravel directly on the lining system using a maximum drop of less than 3-ft.

(ii) During gravel placement operations, accumulation of fines has been observed. These areas have been delineated using high visibility sand bags. It appears fines become concentrated in high traffic areas (e.g., off access roads) or can become accumulated by the washing of fines through precipitation. These areas of concentrated fines will require removal.

Small low ground pressure equipment should be used to remove observed accumulated fines. The equipment bucket should be a straight edge with plastic, flexible rubber or similar material to avoid excessively sharp edges. The removal work should be coordinated with CQA personnel and a spotter should be present during removal activities to ensure no damage occurs to the existing lining system.

**ANSWER:**

(i) The material with oversized material meets the intent of the specification. The Contractor should avoid dumping gravel directly on the lining system using a drop of less than 3-ft.

(ii) During gravel placement operations, accumulation of fines has been observed. These areas have been delineated using high visibility sand bags. It appears fines become concentrated in high traffic areas (e.g., off access roads) or can become accumulated by the washing of fines through precipitation. These areas of concentrated fines will require removal.

Small low ground pressure equipment should be used to remove observed accumulated fines. The equipment bucket should be a straight edge with plastic, flexible rubber or similar material to avoid excessively sharp edges. The removal work should be coordinated with CQA personnel and a spotter should be present during removal activities to ensure no damage occurs to the existing lining system.

**TITLE:** Modify Geotex Cushion Punct Streng**DATE:** 4/24/2012**PROJECT:** HW SCA CONSTRUCTION**JOB:** 446199

**TO:** Attn: John (Jay) Beech  
GEOSYNTEC CONSULTANTS  
1255 Roberts Boulevard NW  
Suite 200  
Kennesaw, GEORGIA 30144  
Phone: 678-202-9500 Fax: 404-267-1102

**STARTED:****COMPLETED:****REQUIRED:** 5/1/2012**RFI SUBJECT:** SCA Specification Section 02710 – Geotextile Cushion

(i) Reference Table 2710-1: Request to modify geotextile cushion puncture strength (ASTM D4833) from 5,000 psf to 250 lb.

(ii) Reference Part 3.02 and 303, which indicates geotextile seams shall be overlapped or seamed. Patches will extend a minimum one foot beyond damaged area and sewn into place

**Requested By:** GEOSYNTEC CONSULTANTS**Date:** 4/24/2012**Signed:** \_\_\_\_\_

David Bonnett

**ANSWER:**

(i) During the design, geotextile performance tests were performed and a 24 oz/syd material was chosen. The 24 oz/syd puncture strength of 250 pounds is acceptable per GRI-GT12(a).

(ii) Heat bonding of geotextile overlaps and patches is acceptable. The Contractor shall take care to avoid disturbing repairs during gravel placement.

**CLOSED****Answered By:** GEOSYNTEC CONSULTANTS**Date:** 5/1/2012**Signed:** \_\_\_\_\_

John (Jay) Beech

**TITLE:** Test Substitution**DATE:** 4/24/2012**PROJECT:** HW SCA CONSTRUCTION**JOB:** 446199

**TO:** Attn: John (Jay) Beech  
GEOSYNTEC CONSULTANTS  
1255 Roberts Boulevard NW  
Suite 200  
Kennesaw, GEORGIA 30144  
Phone: 678-202-9500 Fax: 404-267-1102

**STARTED:****COMPLETED:****REQUIRED:** 5/1/2012

RFI SUBJECT: SCA Specification Section 07240 - Geomembrane

Request change to the specification for Geomembrane (Section 020740) to allow substitution of the test method ASTM D792 used for QC testing of the material for sheet density/specific gravity in place of ASTM D1505 specified.

**Requested By:** GEOSYNTEC CONSULTANTS**Date:** 4/24/2012

**Signed:** \_\_\_\_\_  
David Bonnett

**ANSWER:**

The proposed changes are acceptable.

Density provides an indication of a material's molecular structure and degree of crystallinity. It can be measured using a water displacement method or in a gradient column. ASTM D792 (Method B) and ASTM D1505 are considered equal and are industry standards, as discussed in GRI GM-13.

**CLOSED****Answered By:** GEOSYNTEC CONSULTANTS**Date:** 5/1/2012

**Signed:** \_\_\_\_\_  
John (Jay) Beech

**TITLE:** Modify Geotex Componet Punct Streng**DATE:** 4/24/2012**PROJECT:** HW SCA CONSTRUCTION**JOB:** 446199

**TO:** Attn: John (Jay) Beech  
GEOSYNTEC CONSULTANTS  
1255 Roberts Boulevard NW  
Suite 200  
Kennesaw, GEORGIA 30144  
Phone: 678-202-9500 Fax: 404-267-1102

**STARTED:****COMPLETED:****REQUIRED:** 5/1/2012

RFI SUBJECT: SCA Specification Section 02735 – Geonet Composite

Reference Table 02735-1:

Request to modify geotextile component puncture strength (ASTM D4833) from 3,000 psf to 130 lb.

Request to allow the use of ASTM D7005 in lieu of ASTM F904 for ply adhesion of the geocomposite.

**Requested By:** GEOSYNTEC CONSULTANTS**Date:** 4/24/2012**Signed:** \_\_\_\_\_

David Bonnett

**ANSWER:**

Specification Section 02735 – Geocomposite Leakage Collection Layer, dated 23 May 2011, and the associated CQA Plan insert shall be used for the geonet composite layer.

For the 8 oz/syd nonwoven geotextile heat bonded to the geonet, replacing the 3,000 psf equivalent with 130 pounds is acceptable, as it exceeds the puncture strength recommendation for 10 oz/syd discussed in GRI GT12(a).

The use of ASTM D7005 – Standard Test Method for Determining Bond Strength (Ply Adhesion) of Geocomposites as a substitute for ASTM F904 is acceptable as it is specific to the material.

**CLOSED****Answered By:** GEOSYNTEC CONSULTANTS**Date:** 5/1/2012**Signed:** \_\_\_\_\_

John (Jay) Beech

**REQUEST FOR INFORMATION (RFI) RESPONSE**

<b>TO:</b>	David Steele / Dhana Hillenbrand	<b>Date:</b> 1 May 2012	<b>Job No.:</b> GJ4706
<b>ADDRESS:</b>	Parsons	Sediment Consolidation Area (SCA)	
	522 Gerelock Road	Sediment Management System (SMS)	
	Syracuse, NY	Camillus, NY	

<b>RFI No.:</b> SCA-RFI-0020	<b>Revision No.:</b> 0	<b>Date of RFI:</b> 24 April 2012
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**RFI SUBJECT:** SCA Specification Section 02735 – Geonet Composite

Reference Table 02735-1:

Request to modify geotextile component puncture strength (ASTM D4833) from 3,000 psf to 130 lb.

Request to allow the use of ASTM D7005 in lieu of ASTM F904 for ply adhesion of the geocomposite.

**PROPOSED RESPONSE:**

Specification Section 02735 – Geocomposite Leakage Collection Layer, dated 23 May 2011, and the associated CQA Plan insert shall be used for the geonet composite layer.

For the 8 oz/syd nonwoven geotextile heat bonded to the geonet, replacing the 3,000 psf equivalent with 130 pounds is acceptable, as it exceeds the puncture strength recommendation for 10 oz/syd discussed in GRI GT12(a).

The use of ASTM D7005 – *Standard Test Method for Determining Bond Strength (Ply Adhesion) of Geocomposites* as a substitute for ASTM F904 is acceptable as it is specific to the material.



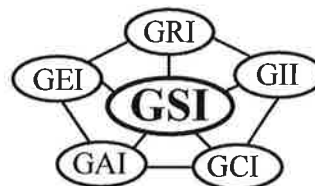

<b>Prepared by</b>	<b>Date</b>	<b>Engineer-of-Record</b>	<b>Date</b>
Name: Joseph Sura	1 May 2012	Name: Jay Beech, P.E.	1 May 2012

<b>Distribution:</b>	<input checked="" type="checkbox"/> M. Fountain, Geosyntec	<input checked="" type="checkbox"/> Joe Sura, Geosyntec	<input checked="" type="checkbox"/> Ramachandran Kulasingam, Geosyntec
	<input checked="" type="checkbox"/> David Bonnett, Geosyntec		

Attachments:  
GRI-GT12(a)

## ***Geosynthetic Institute***

475 Kedron Avenue  
Folsom, PA 19033-1208 USA  
TEL (610) 522-8440  
FAX (610) 522-8441



Original: February 18, 2002

### **GRI Test Method GT12(a)\* - ASTM Version**

Standard Specification for

#### **“Test Methods and Properties for Nonwoven Geotextiles Used as Protection (or Cushioning) Materials”**

This specification was developed by the Geosynthetic Research Institute (GRI) with the cooperation of the member organizations for general use by the public. It is completely optional in this regard and can be superseded by other existing or new specifications on the subject matter in whole or in part. Neither GRI, the Geosynthetic Institute, nor any of its related institutes, warrant or indemnifies any materials produced according to this specification either at this time or in the future.

#### **1. Scope**

- 1.1 This specification covers nonwoven geotextile test properties for subsequent use as protection (or cushioning) materials.

Note 1: The typical use will be as a protective covering or underlayment of a geomembrane against puncture or tear due to rock, stones, concrete or other hard surfaces and/or objects.

- 1.2 This specification sets forth a set of physical, mechanical and endurance properties that must be met, or exceeded by the geotextile being manufactured.

- 1.3 In the context of quality systems and management, this specification represents a manufacturing quality control (MQC) document.

Note 2: Manufacturing quality control represents those actions taken by a manufacturer to assure that a product represents the stated objective and properties set forth in the specification.

- 1.4 This standard specification is intended to assure good quality and performance of fabrics used as geotextile protection materials but is possibly not adequate for the complete specification in a specific situation. Additional tests, or more restrictive

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\*This GRI standard is developed by the Geosynthetic Research Institute through consultation and review by the member organizations. This specification will be reviewed at least every 2-years, or on an as-required basis. In this regard it is subject to change at any time. The most recent revision date is the effective version.

values for the tests indicated, may be necessary under conditions of a particular application.

- 1.5 This standard specification does not address installation practices or design guidance. Both of these items are addressed in the literature dealing with this particular application.

## 2. Referenced Documents

### 2.1 ASTM Standards

- D 4354 Practice for Sampling of Geosynthetics for Testing
- D 4355 Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)
- D 4533 Test Method for Trapezoidal Tearing Strength of Geotextiles
- D 4632 Test Method for Grab Breaking Load and Elongation of Geotextiles
- D 4759 Practice for Determining the Specification Conformance of Geosynthetics
- D 4833 Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products
- D 4873 Guide for Identification, Storage and Handling of Geotextiles
- D 5261 Test Method for Measuring Mass per Unit Area of Geotextiles
- D 5494 Test Method for the Determination of Pyramid Puncture Resistance of Unprotected and Protected Geomembranes
- D 6241 Test Method for Static Puncture Strength of Geotextiles and Geotextile Related Product Using a 50-mm Probe

### 2.2 AASHTO Specification

M288-00 Geotextile Specification for Highway Applications

## 3. Definitions

- 3.1 Formulation - The mixture of a unique combination of ingredients identified by type, properties and quantity. For nonwoven geotextiles, a formulation is defined as the exact percentages and types of resin(s), additives and/or carbon black.
- 3.2 Manufacturing Quality Control (MQC) - A planned system of inspections that is used to directly monitor and control the manufacture of a material which is factory originated. MQC is normally performed by the manufacturer of geosynthetic materials and is necessary to ensure minimum (or maximum) specified values in the manufactured product. MQC refers to measures taken by the manufacturer to determine compliance with the requirements for materials and workmanship as stated in certification documents and contract specifications [ref. EPA/600/R-93/182].

Note 3: This particular specification for nonwoven protection geotextiles falls under the concept of MQC.

- 3.3 Minimum Average Roll Value (MARV) – For geosynthetics, a manufacturing quality control tool used to allow manufacturers to establish published values such that the user/purchaser will have a 97.7% confidence that the property in question will meet published values. For normally distributed data, “MARV” is calculated as the typical value minus two (2) standard deviations from documented quality control test results for a defined population from one specific test method associated with one specific property.
4. Material Classification and Formulation
- 4.1 This specification covers geotextiles used as protection (or cushioning) materials.
- 4.2 The type of resins are usually polypropylene, polyester or polyethylene, but other resins are also possible in this regard.
- 4.3 The type of geotextile style is designated as a nonwoven since research has shown these fabrics to be most effective in the typical applications toward which this specification is directed. While needle-punched nonwovens are usually used, heat bonded and resin dipped manufacturing styles (or others) can also be considered.
5. Specification Requirements
- 5.1 The geotextiles for use as protection (or cushioning) materials shall conform to Table 1. The table is given in English units and in SI (Metric) units. The conversion from English to SI units is “soft”.
- 5.2 Since there are a number of geotextile puncture test methods available, Table 2 is provided. Either of these tests can be considered to be an alternative test replacing ASTM D4833 in Table 1. The decision to make such a replacement must be agreed upon by the parties involved. The table is given in English units and in SI (Metric) units. The conversion from English to SI units is “soft”.
- 5.3 The required values for all properties in Tables 1 and 2 are to be minimum average roll values (MARV) except UV resistance which is a minimum value.
6. Workmanship and Appearance
- 6.1 The finished geotextile shall have good appearance qualities. It shall be free from such defects that would affect the specific properties of the geotextile, or its proper functioning.
- 6.2 General manufacturing procedures shall be performed in accordance with the manufacturer’s internal quality control guide and/or documents.



## 7. MQC Sampling, Testing, and Acceptance

- 7.1 Geotextiles shall be subject to sampling and testing to verify conformance with this specification. Sampling shall be in accordance with the most current modification of ASTM Standard D 4354, using the section titled, "Procedure for Sampling for Purchaser's Specification Conformance Testing." In the absence of purchaser's testing, verification may be based on manufacturer's certifications as a result of testing by the manufacturer of quality assurance samples obtained using the procedure for Sampling for Manufacturer's Quality Assurance (MQA) Testing. A lot size shall be considered to be the shipment quantity of the given product or a truckload of the given product, whichever is smaller.
- 7.2 Testing shall be performed in accordance with the method referenced in this specification for the indicated application. The number of specimens to test per sample is specified by each test method. Geotextile product acceptance shall be based on ASTM D4759. Product acceptance is determined by comparing the average test results of all specimens within a given sample to the specification MARV. Refer to ASTM D 4759 for more details regarding geotextile acceptance procedures.

## 8. MQC Retest and Rejection

- 8.1 If the results of any test do not conform to the requirements of this specification, retesting to determine conformance or rejection should be done in accordance with the manufacturing protocol as set forth in the manufacturer's quality manual.

## 9. Shipment and Storage

- 9.1 Geotextile labeling, shipment, and storage shall follow ASTM D 4873. Product labels shall clearly show the manufacturer or supplier name, style, and roll number. Each shipping document shall include a notation certifying that the material is in accordance with the manufacturer's certificate.
- 9.2 Each geotextile roll shall be wrapped with a material that will protect the geotextile, including the ends of the roll, from damage due to shipment, water, sunlight and contaminants. The protective wrapping shall be maintained during periods of shipment and storage.
- 9.3 During storage, geotextile rolls shall be elevated off the ground and adequately covered to protect them from the following: site construction damage, precipitation, extended ultraviolet radiation including sunlight, chemicals that are strong acids or strong bases, flames including welding sparks, temperatures in excess of 160°F (71°C), and any other environmental condition that may damage the property values of the geotextile.

10. Certification

- 10.1 The contractor shall provide to the engineer a certificate stating the name of the manufacturer, product name, style number, chemical composition of the filaments or yarns, and other pertinent information to fully describe the geotextile.
- 10.2 The manufacturer is responsible for establishing and maintaining a quality control program to assure compliance with the requirements of the specification. Documentation describing the quality control program shall be made available upon request.
- 10.3 The manufacturer's certificate shall state that the finished geotextile meets MARV requirements of the specification as evaluated under the manufacturer's quality control program. A person having legal authority to bind the manufacturer shall attest to the certificate.
- 10.4 Either mislabeling or misrepresentation of materials shall be reason to reject those geotextile products.

<b>USA Units</b>
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Table 1(a) – Required Properties, Test Methods and Values for Geotextiles Used as Geomembrane Protection (or Cushioning) Materials

Property <sup>(1)</sup>	Test Method ASTM	Unit	Mass/Unit Area (oz/yd <sup>2</sup> )					
Mass per unit area	D5261	oz/yd <sup>2</sup>	10	12	16	24	32	60
Grab tensile strength	D4632	lb	230	300	370	450	500	630
Grab tensile elongation	D4632	%	50	50	50	50	50	50
Trap. tear strength	D4533	lb	95	115	145	200	215	290
Puncture (pin) strength	D4833	lb	120	140	170	250	300	390
UV resistance <sup>(2)</sup>	D4355	%	70	70	70	70	70	70

Notes:

- (1) All values are MARV except UV resistance; it is a minimum value.
- (2) Evaluation to be on 2.0 inch strip tensile specimens after 500 hours exposure.

Table 2(a) – Alternative Puncture Test Methods to be Considered in Place of Pin Puncture, ASTM D4833, in Table 1(a)

Property <sup>(1)</sup>	Test Method ASTM	Unit	Mass/Unit Area (oz/yd <sup>2</sup> )					
Mass per unit area	D5261	oz/yd <sup>2</sup>	10	12	16	24	32	60
Puncture (pyramid) strength	D5494	lb	300	320	410	440	510	760
Puncture (CBR) strength	D6241	lb	700	800	900	1100	1700	2400
Puncture (CBR) elongation	D6241	in.	1.5	1.5	1.5	1.5	1.5	1.5

- (1) All values are MARV

<b>S.I. (Metric) Units</b>
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Table 1(b) – Required Properties, Test Methods and Values for Geotextiles Used as Geomembrane Protection (or Cushioning) Materials

Property <sup>(1)</sup>	Test Method ASTM	Unit	Mass/Unit Area (g/m <sup>2</sup> )					
Mass per unit area	D5261	g/m <sup>2</sup>	340	406	542	812	1080	2000
Grab tensile strength	D4632	kN	1.02	1.33	1.64	2.00	2.25	2.80
Grab tensile elongation	D4632	%	50	50	50	50	50	50
Trap. tear strength	D4533	kN	0.42	0.51	0.64	0.89	0.96	1.27
Puncture (pin) strength	D4833	kN	0.53	0.62	0.75	1.11	1.33	1.71
UV resistance <sup>(2)</sup>	D4355	%	70	70	70	70	70	70

Notes:

(3) All values are MARV except UV resistance; it is a minimum value.

(4) Evaluation to be on 50 mm strip tensile specimens after 500 hours exposure.

Table 2(b) – Alternative Puncture Test Methods to be Considered in Place of Pin Puncture, ASTM D4833, in Table 1(b)

Property <sup>(1)</sup>	Test Method ASTM	Unit	Mass/Unit Area (g/m <sup>2</sup> )					
Mass per unit area	D5261	g/m <sup>2</sup>	340	406	542	812	1080	2000
Puncture (pyramid) strength	D5494	kN	1.33	1.42	1.82	1.96	2.27	3.37
Puncture (CBR) strength	D6241	kN	3.11	3.56	4.00	4.90	7.56	10.60
Puncture (CBR) elongation	D6241	mm	38	38	38	38	38	38

(1) All values are MARV

# PARSONS

301 Plainfield Road  
Suite 350  
Syracuse, NY 13212

Phone: 315-552-9736  
Fax: 315-451-9570

## REQUEST FOR INFORMATION

No. 00026

**TITLE:** Secondary Riser Pipes

**DATE:** 5/31/2012

**PROJECT:** HW OL SEDIMENT MANAGEMENT

**JOB:** 446345

**TO:** Attn: John "Jay" Beech  
Geosyntec Consultants

**STARTED:**

**COMPLETED:**

**REQUIRED:** 6/7/2012

- 1) In order to facilitate construction, it is proposed to install the Secondary Riser Pipes in the East and West Basins on the edge of the sump that is closest to the SCA. See attached figure 1.
- 2) Basin design drawings show gravel and perforated piping in the sumps on top of the primary liner. In order to prevent the potential for clogging of the gravel during operations, the perforated piping and gravel will not be installed at the start of operations. Perforated piping will be available on site and gravel will be readily available for installation if needed.

**Requested By:** PARSONS

**Date:** 5/31/2012

**Signed:** \_\_\_\_\_  
David Steele

### ANSWER:

- 1) The relocation is considered acceptable. All other associated design features will need to be relocated and constructed as well. Clearance and conflicts with other site features have not been checked and should be verified prior to relocation of the pipe.
- 2) The gravel weight on top of the primary liner in the basin sumps was considered in the settlement analyses to prevent grade reversal and facilitate flow from the SCA perimeter channels into the basin sumps. The basin sumps have been preloaded prior to excavation and are below the elevation of the surrounding ground. The gravel also was considered in the slope stability analyses and provided a buttressing effect. Slope stability was reevaluated without the gravel and indicates that calculated factor of safety values still meet the targets selected for the temporary basins. Therefore, it is considered acceptable to not install the perforated piping and gravel at the start of operations. However, it is noted that if grade reversal is observed or stability concerns are identified (either visually or based on inclinometers), the perforated piping, gravel and any other measures needed should be installed to restore the conditions per the original design and address any grade reversal.

**CLOSED**

**Answered By:** Geosyntec Consultants

**Date:** 6/20/2012

**Signed:** \_\_\_\_\_  
John "Jay" Beech

NOT BE USED FOR CONSTRUCTION. THE INFORMATION IS FOR INFORMATIONAL PURPOSES ONLY. THE INFORMATION IS NOT TO BE USED FOR CONSTRUCTION. THE INFORMATION IS NOT TO BE USED FOR CONSTRUCTION. THE INFORMATION IS NOT TO BE USED FOR CONSTRUCTION.



1 DETAIL  
WEST SUMP TOP OF SECONDARY LINER  
SCALE: 1" = 10'

2 DETAIL  
EAST SUMP TOP OF SECONDARY LINER  
SCALE: 1" = 10'

NOTE:  
1. THE SUMP GRADES SHOWN ON THIS DRAWING ARE FOR THE SECONDARY LINER AND GEOSYNTHETIC LEAK COLLECTION LAYER.

Geosyntec<sup>®</sup>  
consultants  
1205 ROBERTS ROAD, SUITE 200  
ROBERTS, GEORGIA 30084 USA  
PHONE: 478.282.8800

ISSUED FOR CONSTRUCTION	SEPT 2011	JOS	RE	JFB
DATE	DESCRIPTION	DATE	DATE	DATE
10/1/2011	ISSUED FOR CONSTRUCTION	10/1/2011	10/1/2011	10/1/2011
10/1/2011	ISSUED FOR CONSTRUCTION	10/1/2011	10/1/2011	10/1/2011
10/1/2011	ISSUED FOR CONSTRUCTION	10/1/2011	10/1/2011	10/1/2011

**PARSONS**  
COMMERCIAL TECHNOLOGY GROUP

301 PLAINFIELD ROAD  
SYRACUSE, NY 13212  
(315) 451-9560

**Honeywell**  
ONONDAGA LAKE SEDIMENT  
MANAGEMENT DESIGN  
CAMILLUS, NEW YORK

TOP OF SECONDARY  
LINER PLAN FOR SUMPS

SCALE: 1" = 20'  
(IF PRINTED ON 25x34 SHEET)  
444853-201-C-005

## Field Change Forms

**SEDIMENT MANAGEMENT SYSTEM CONSTRUCTION  
CAMILLUS, NEW YORK**

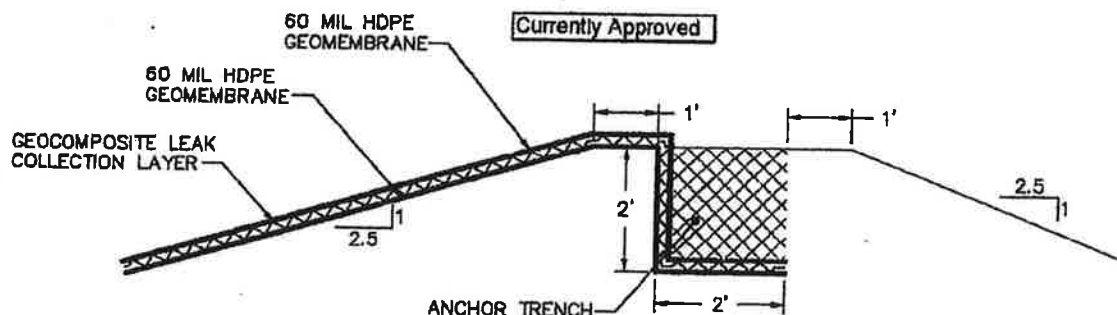
**FIELD CHANGE FORM # 2**

Page 1 of 4

Project Number:	446345	Date: 28 March 2012
Construction Manager:	Ken Sommerfield	
Contractor:	Parsons	

You are hereby authorized and instructed to complete the following modifications to the approved Final Design:

The currently approved design of the SCA basin liner system is to install the geocomposite and geomembrane into the anchor trench and terminate them at the same location (see Fig 1).



3  
8

**DETAIL  
ANCHOR TRENCH**  
SCALE: 1" = 2'  
DATE: 03/28/12

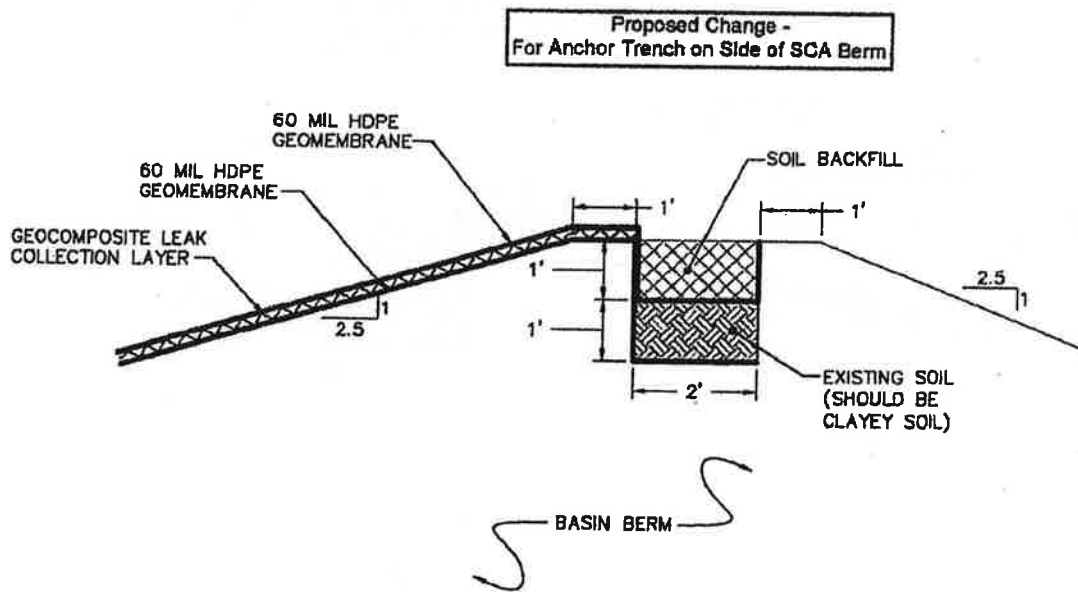
**Figure 1**



# FIELD CHANGE FORM # 2

Page 2 of 4

The proposed revision to this detail would terminate the geocomposite before entering the anchor trench to address the request from NYSDEC to modify the permitted detail (Fig 1) to minimize the potential for wicking of water from the anchor trench to the interstitial space between the geomembrane layers. For the portion of the berm that is also an SCA berm, the two layers of textured geomembrane would be separated by a 1' soil layer (see Fig 2).



3A  
8

## DETAIL

**PROPOSED REVISION TO ANCHOR TRENCH  
FOR ANCHOR TRENCH ON SIDE OF SCA BERM**

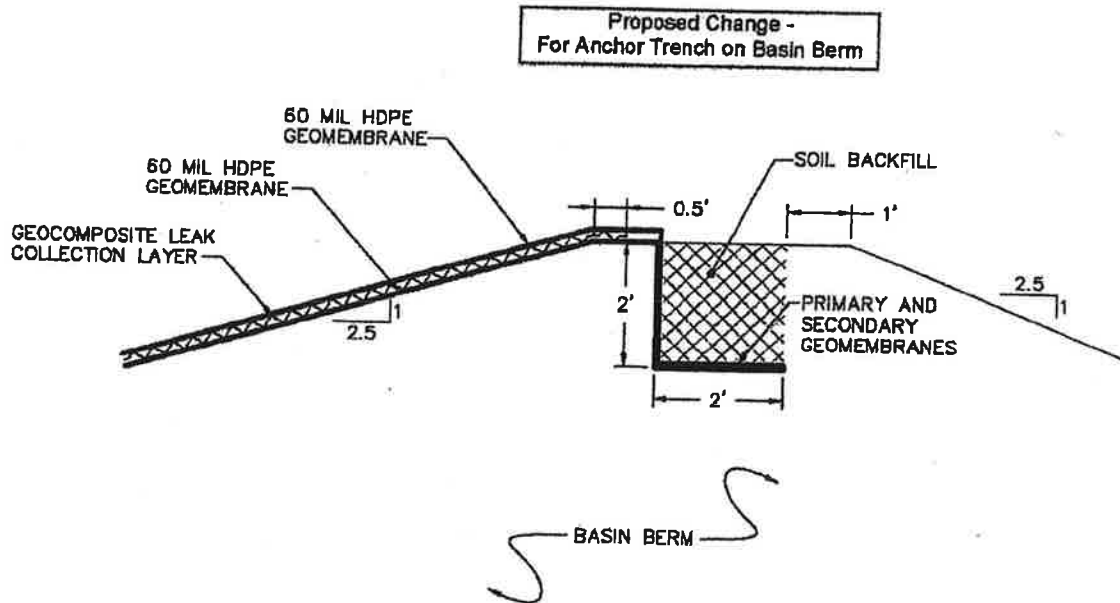
SCALE: 1" = 2'

**Figure 2**

# FIELD CHANGE FORM # 2

Page 3 of 4

For the portion of the berm that is only the basin berm, the two layers of geomembrane would be placed in the anchor trench without a separating soil layer. The separating soil layer is not needed in these basin-only berms because they are narrower than the basin/SCA berms and have even less surface area through which precipitation may potentially infiltrate and wick up in between the two geomembrane layers (see Fig 3).



3B  
8

## DETAIL

PROPOSED REVISION TO ANCHOR TRENCH  
FOR ANCHOR TRENCH ON BASIN BERM

SCALE: 1" = 2'  
DATE: 08/08/10

Figure 3

FIELD CHANGE FORM # 2

Page 4 of 4

APPROVALS:

**Design Engineer**

Name: Jay Beech

Signature:

*J. Beech*

Date: 5 April 2012

**Contractor Representative**

Name:

*David Steele*

Signature:

*David Steele*

Date:

*4/23/12*

**Owner**

Name:

*Larry M. Somer*

Signature:

*L. M. Somer*

Date:

*4/20/12*

**NYSDEC Representative**

Name:

*TIMOTHY J. LARSON*

Signature:

*[Signature]*

Date:

*4/26/12*

**SCA CONSTRUCTION  
CAMILLUS, NEW YORK**

**FIELD CHANGE FORM # 5**

Page 1 of 1

Project Number:	444853	Date: 14 October 2011
Construction Manager:	Ken Sommerfield	
Contractor:	Parsons	

You are hereby authorized and instructed to complete the following modifications to the approved Final Design:

The Earthwork Specifications Sections 02200/02250/02300 Part 1.05 D set the minimum construction quality control (CQC) soil sample testing frequency. The Construction Quality Assurance (CQA) Plan Table A-1 requires that conformance samples be collected typically 1 test per 10 CQC tests. It is proposed that the CQA sampling frequency for soils be modified. In lieu of using the number of CQC samples, CQA sample frequency will be tied to delivered volumes such that the test frequency shall become:

- Volume of soil delivered to the site divided by CQC test frequency (presented in Spec Part 1.05.D for each material type) and divided by ten.

This change is proposed so that CQA personnel can track material deliveries and sample as the appropriate quantities are reached, rather than on number of CQC samples (the number of which can be related to additional factors beyond material delivery quantities, including borrow investigations).

**APPROVALS:**

**Design Engineer**

Name:	J.F. BEERT
Signature:	J.F. Beert
Date:	14 Oct 2011

**Contractor Representative**

Name:	David Steele
Signature:	David Steele
Date:	17 Oct 11

**Owner**

Name:	Larry M. Sower
Signature:	Larry Sower
Date:	10/17/11

**NYSDEC Representative**

Name:	Timothy J. Larson
Signature:	Timothy J. Larson
Date:	10/31/11

# Weekly Field Reports



## WEEKLY FIELD REPORT

PROJECT: Onondaga Lake Bottom Subsite Construction  
LOCATION: Camillus, NY PROJECT NO.: GJ4706B TASK NO.: 200/300  
DESCRIPTION: Sediment Consolidation Area (SCA) – Phase I/Phase II/SMS WEEK ENDING: April 1, 2012

This report is written for the period of 26 March through 01 April 2012. Geosyntec was on-site 5 days (181 days total to date) to provide CQA services during construction of the SCA. Temperatures generally ranged from a low of 21°F to a high of 64°F during the hours worked. A total of approximately 0.11 inches of rain were recorded between 28-29 March. Representatives of Geosyntec, Chenango Contractors, and Parsons were on-site throughout the week. A weekly construction meeting was held on Monday, 26 March. A visit to the Riccelli Enterprises quarry in Granby was conducted 30 March. An outline of work performed over this period is outlined below.

### ***SAFETY:***

- Safety meetings were held daily with no incidents being reported.

### ***EARTHWORK:***

- Parsons continued to dewater the East and West Basins.
- Parsons graded and compacted the existing Low Permeability (LP) soil at the eastern and western portions of Phase IIB.
- LP soil was hauled by trucks to site from the Marcellus Pit this week totaling approximately 5,848 cyd.
- Between 21-23 March, Parsons hauled and placed 3,336 cyd of LP soil along the northern portion of Phase II prior to Geosyntec mobilizing to site.
- LP soil was placed at the western portion of Phase IIB placed this week.
- Engineered Fill was placed at the western portion of the south perimeter berm. Geosyntec performed three field density testing (FDT) on Engineered Fill. The tests met the project requirements for relative compaction and moisture content.
- Parsons resumed placement of screened and washed Drainage Gravel material for the Phase IA sump from the Granby Pit. Operations were halted to investigate increase of fines content.
- Received volume of Drainage Gravel screened and hauled to date from Parsons. Three loads were calculated to be approximately 35 tons/load. Total to date in 2012 is estimated to be 105 tons, or 70 lcy the delivered material was placed in Phase I toward the Phase IA sump.

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## WEEKLY FIELD REPORT

PROJECT: Onondaga Lake Bottom Subsite Construction  
LOCATION: Camillus, NY PROJECT NO.: GJ4706B TASK NO.: 200/300  
DESCRIPTION: Sediment Consolidation Area (SCA) – Phase I/Phase II/SMS WEEK ENDING: April 1, 2012

- Geosyntec obtained and shipped one sample of Low Permeability soil (LP-103) and one sample of Drainage Gravel (DG-013) for CQA testing.

### **GEOSYNTHETICS:**

- Chenango worked three days this week in the East Basin installing double-sided geocomposite over secondary geomembrane and started installation of the primary geomembrane.
- Chenango successfully completed three passing extrusion trial seams and seven passing fusion trial seams prior to seaming and repair work this week.
- Chenango performed repairs and non-destructive testing of extrusion repairs on secondary (anchor trench only) and on primary geomembrane at the East Basin.
- Chenango installed approximately 142,900 sft of double-sided geocomposite and installed approximately 121,500 sft of primary geomembrane at the East Basin.
- Approximately 5,840 lf of production seams were welded. Non-destructive testing of fusion seams was started. Eight destructive samples were marked to date by Geosyntec for removal and testing.

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## WEEKLY FIELD REPORT

PROJECT: Onondaga Lake Bottom Subsite Construction  
LOCATION: Camillus, NY PROJECT NO.: GJ4706B TASK NO.: 200  
DESCRIPTION: Sediment Consolidation Area (SCA) – Phase I/Phase II WEEK ENDING: April 8, 2012

This report is written for the period of 02 through 06 April 2012. Geosyntec was on-site 5 days (186 days total to date) to provide CQA services during construction of the SCA and geosynthetic deployment in the Sediment Management System (SMS). Temperatures generally ranged from a low of 25° F to a high of 53° F during the hours worked. Approximately 0.5-in of rainfall was recorded this week. Representatives of Geosyntec, Chenango, and Parsons were on-site throughout the week. A weekly construction meeting was held on Monday. An outline of work performed over this period is outlined below.

### ***SAFETY:***

- Safety meetings were held daily with no incidents being reported.

### ***EARTHWORK:***

- Parsons continued to dewater the East and West Basins.
- Engineered Fill was placed and compacted along the western portion of the south perimeter berm. Field Density Testing (EF-004 to EF-006) was conducted on Engineered Fill by Geosyntec this week. All three FDT met the project requirements for relative compaction and moisture content.
- Parsons graded, moisture conditioned, and compacted Low Permeability (LP) soil material in west end of Phase II, lift 2 over existing LP layer. In addition Parsons placed LP soil at the northeast area of Phase II. Approximately 7,098 LCY of LP soil was hauled from the Marcellus Pit, placed, and compacted in Phase II.
- Approximately 1,538 LCY of Drainage Gravel material was hauled from the Granby Pit and stockpiled on site this week.
- Geosyntec obtained and shipped one sample of Low Permeability soil (LP-103) and one sample of Drainage Gravel (DG-013) last week for CQA conformance testing. Results are pending.
- Geosyntec obtained samples for Interface testing of materials in Phase II; Geotextile (GT-012), Geomembrane (GM-011) Low Permeability Clay (LP-104) and Drainage Gravel (DG-014). Results are pending.

### ***GEOSYNTHETICS:***

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## WEEKLY FIELD REPORT

PROJECT: Onondaga Lake Bottom Subsite Construction  
LOCATION: Camillus, NY PROJECT NO.: GJ4706B TASK NO.: 200  
DESCRIPTION: Sediment Consolidation Area (SCA) – Phase I/Phase II WEEK ENDING: April 8, 2012

- Chenango worked five days this week in the East and West Basins installing double-sided geocomposite over secondary geomembrane and started installation of the primary geomembrane.
- Chenango successfully completed nine passing extrusion trial seams and seventeen passing fusion trial seams prior to seaming and repair work this week.
- Chenango performed repairs and non-destructive testing of extrusion welded repairs on primary geomembrane at the East and West Basins.
- Chenango installed approximately 186,150 sf. of double-sided geocomposite in the East and West Basins.
- Chenango installed approximately 109,400 sf. of primary geomembrane at the West Basin.
- Chenango installed approximately 50,000 sf. of primary geomembrane at the East Basin.
- Approximately 4,360 lf. of production seams were welded. Non-destructive testing of fusion seams was completed.
- Thirteen destructive samples (DS 3-001 to DS 3-013) were obtained and shipped to GeoTesting Express (GTX) for testing. All destructive tests passed with the exception of DS 3-007. Additional destructive samples (DS 3-007A and DS 3-007B) were collected to delineate the failing area. DS 3-007B also failed to meet the project requirements. Geosyntec and Chenango will continue to delineate the failing area.
- Ten destructive samples (DS 5-001 through DS 5-010) were marked on the primary geomembrane deployed in the West Basin and are pending field testing before being forwarded to GTX.

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## WEEKLY FIELD REPORT

PROJECT: Onondaga Lake Bottom Subsite Construction

LOCATION: Camillus, NY PROJECT NO.: GJ4706B TASK NO.: 200

DESCRIPTION: Sediment Consolidation Area (SCA) – Phase I/Phase II WEEK ENDING: April 15, 2012

This report is written for the period of 9 April through 13 April 2012. Geosyntec was on-site 5 days (191 days total to date) to provide CQA services during construction of the SCA. Temperatures generally ranged from a low of 39° F to a high of 61° F during the hours worked. Less than 0.1 inch of rain was recorded this week. Representatives of Geosyntec, Chenango Contractors and Parsons were on-site throughout the week. A weekly construction meeting was held on Monday. An outline of work performed over this period is outlined below.

### ***SAFETY:***

- Safety meetings were held daily with no incidents being reported.

### ***EARTHWORK:***

- Approximately 5,117 LCY of Low Permeability (LP) soil was transported to the site from the Marcellus borrow source this week.
- Parsons graded, moisture conditioned, and compacted P soil material in Phase II.
- Approximately 922 LCY of Drainage Gravel material was transported to the site from the Granby borrow source this week. The material was stockpiled adjacent to Phase I.
- No Engineered Fill was placed this week.
- Field Density Testing (5-001 to 5-037) was conducted on placed LP soil material this week. Four of the 37 tests failed to meet the requirements of the layer. Three of the four failures were retested and met the project requirements. The retest of one failure is pending.
- Geosyntec obtained three samples of LP soil (LP-105 through LP-108) for CQA testing. Results for these samples are pending.
- Parsons placed Drainage Gravel in the Phase IA sump. Material was placed 8-in thick in the floor of the sump and 12-in thick over the side slopes of the sump. Completion of the Drainage Gravel in the Phase IA sump is pending installation of other components.

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## WEEKLY FIELD REPORT

PROJECT: Onondaga Lake Bottom Subsite Construction

LOCATION: Camillus, NY PROJECT NO.: GJ4706B TASK NO.: 200

DESCRIPTION: Sediment Consolidation Area (SCA) – Phase I/Phase II WEEK ENDING: April 15, 2012

### ***GEOSYNTHETICS:***

- Chenango worked five days this week in the East and West Basins installing primary geomembrane and 24 oz/sy non-woven geotextile.
- Chenango successfully completed seven (7) passing extrusion trial seams and 28 passing fusion trial seams prior to seaming and repair work this week.
- Chenango performed repairs and non-destructive testing of extrusion welded repairs on primary geomembrane at the East and West Basins.
- Chenango installed approximately 30,000 sf. of primary geomembrane in the West Basin.
- Chenango installed approximately 70,000 sf. of primary geomembrane in the East Basin.
- Approximately 5,130 lf. of production seams were welded. Non-destructive testing of fusion seams was completed.
- One destructive samples (DS-007B1) was removed and shipped to GeoTesting Express for testing, Destructive sample DS-007B1 met the project requirements.
- Seven additional destructive samples are marked on primary geomembrane deployed in the East Basin, but have not been removed as of yet.
- Approximately 16,200 sf. of 24 oz/sy non-woven geotextile was installed in the East and West Basins.
- THG Geophysics conducted a leak location survey of the geomembrane in Phase I. No leaks have been identified to date. The leak location survey is incomplete and has been postponed until a significant rain event occurs in lieu of using a water truck to provide adequate moisture.

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## WEEKLY FIELD REPORT

PROJECT: Onondaga Lake Bottom Subsite Construction

LOCATION: Camillus, NY PROJECT NO.: GJ4706B TASK NO.: 200

DESCRIPTION: Sediment Consolidation Area (SCA) – Phase I/Phase II WEEK ENDING: April 22, 2012

This report is written for the period of 16 April through 20 April 2012. Geosyntec was on-site 5 days (196 days total to date) to provide CQA services during construction of the SCA. Temperatures generally ranged from a low of 33° F to a high of 84° F during the hours worked. No rainfall was recorded during the week. Representatives of Geosyntec, Chenango Contractors, and Parsons were on-site throughout the week. A weekly construction meeting was held on Monday. An outline of work performed over this period is outlined below.

### ***SAFETY:***

- Safety meetings were held daily. No incidents were reported.

### ***EARTHWORK:***

- Parsons graded, moisture conditioned, and compacted low-permeability (LP) soil in Phase II.
- Approximately 6,133 LCY of LP soil was imported from the Marcellus Pit this week. Material was transported, placed, and compacted in Phase II, western end of cell.
- Benching of the LP layer occurred along the Phase I and II tie-in.
- Field density tests (FDTs) 5-038 to 5-058 were conducted on the LP soil layer in Phase II for lifts requiring 90 percent of maximum dry density and  $\pm 3$  percent of optimum moisture, as determined by ASTM D698. Three of these tests failed to meet the minimum project requirements and are pending retest.
- FDTs 6-001 to 6-038 were conducted on the LP soil layer final lift in Phase II. All of these tests meet or exceed the minimum project requirements.
- Geosyntec obtained 11 samples of LP soil material (LP-109 through LP-119) for CQA testing. Results are pending. Geosyntec also obtained 4 thin-walled (i.e., Shelby) tube samples (ST-029 through ST-032). Results of samples ST-029 through ST-031 meet or exceed the project's permeability requirements. Results for sample ST-032 are pending.
- No Engineered Fill was placed this week.
- Parsons placed Drainage Gravel in the Phase IB sump. Material was placed approximately 8-in thick in the sump floor and 12-in thick along the side slopes of the sump. Parsons plans to complete placement of the Drainage Gravel in the floor of the sump in Phase IA and IB upon completion of piping installation.
- Approximately 970 LCY of Drainage Gravel material was imported from the Granby Pit and stockpiled on-site this week.

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## WEEKLY FIELD REPORT

PROJECT: Onondaga Lake Bottom Subsite Construction

LOCATION: Camillus, NY PROJECT NO.: GJ4706B TASK NO.: 200

DESCRIPTION: Sediment Consolidation Area (SCA) – Phase I/Phase II WEEK ENDING: April 22, 2012

### ***GEOSYNTHETICS:***

- Chenango worked five days this week performing detail work (e.g., pipe boot penetrations, repairs, non-destructive testing, etc.) on the primary liner system in the East and West Basins.
- Chenango successfully completed twelve passing extrusion trial seams prior to extrusion welding repair work this week.
- Eleven destructive samples (DS 3-013 through 3-020 and DS 5-011 through DS 5-014) were obtained and shipped to GeoTesting Express for testing. All destructive samples achieved the minimum project requirements.
- Approximately 545,905 sf. of 60-mil thick HDPE geomembrane was delivered and inventoried during the week.

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## WEEKLY FIELD REPORT

PROJECT: Onondaga Lake Bottom Subsite Construction

LOCATION: Camillus, NY PROJECT NO.: GJ4706B TASK NO.: 200

DESCRIPTION: Sediment Consolidation Area (SCA) – Phase I/Phase II WEEK ENDING: April 29, 2012

This report is written for the period of 23 through 29 April 2012. Geosyntec was on-site 6 days (202 days total to date) to provide CQA services during construction of the SCA. Temperatures generally ranged from a low of 29° F to a high of 59° F during the hours worked. Approximately 1.36 inches of rainfall was recorded this week. Representatives of Geosyntec and Parsons were on-site throughout the week. A weekly construction meeting was held on Monday. An outline of work performed over this period is outlined below.

### ***SAFETY:***

- Safety meetings were held daily with no incidents being reported.

### ***EARTHWORK:***

- Approximately 117 LCY of Drainage Gravel material (+4 inches) were hauled from the Granby Pit for placement in Phase IA sump this week. Two of the loads received were rejected due to excessive fines content.
- Engineered Fill was placed in the West Basin along the western anchor trench this week.
- Test results were received for Low Permeability soil samples LP-106 through LP-108 and ST-032 from GeoTesting Express. These samples meet the minimum project specifications.
- Parsons placed an additional 4 inches of Drainage Gravel in the Phase IA sump floor, for a total thickness of 12 inches.
- Parsons fused segments of 12-in diameter SDR-11 perforated HDPE pipe and connected the segments to the risers in Phase IA and IB sumps.

### ***GEOSYNTHETICS:***

- No activities were conducted by Chenango crew this week and
- Approximately 569,135 SF of 60-mil thick HDPE geomembrane was delivered and inventoried this week.

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## WEEKLY FIELD REPORT

PROJECT: Onondaga Lake Bottom Subsite Construction

LOCATION: Camillus, NY PROJECT NO.: GJ4706B TASK NO.: 200

DESCRIPTION: Sediment Consolidation Area (SCA) – Phase I/Phase II WEEK ENDING: May 5, 2012

This report is written for the period of 30 April through 4 May 2012. Geosyntec was on-site five (5) days (207 days total to date) to provide CQA services during construction in the SCA. Temperatures generally ranged from a low of 29° F to a high of 81° F during the hours worked. Approximately 1 inch of rainfall was recorded this week. Representatives of Geosyntec and Parsons were on-site throughout the week. A weekly construction meeting was held on Monday. An outline of work performed over this period is outlined below.

### ***SAFETY:***

- Safety meetings were held daily with no incidents being reported.

### ***EARTHWORK:***

- Approximately 550 LCY of Low Permeability (LP) soil was imported this week from the Marcellus borrow source. Material was placed along the southern berm at the western end of Phase II and in the northwest corner of Phase II.
- Approximately 1,341 LCY of 4-inch maximum particle size Drainage Gravel was imported from the Granby borrow source and stockpiled on site. Parsons placed an additional 4 inches of Drainage Gravel (<4-inch) material in the Phase IB sump floor for a total of 12 inch thick layer.
- Approximately 1,079 LCY of Drainage Gravel material (4<12 inch) was imported from the Granby borrow source and placed in the Phase IA and IB sumps this week.
- Engineered Fill was placed in the East and West Basin anchor trenches this week, however, backfilling has not been completed.
- Parsons completed installation of 12-in diameter SDR-11 perforated HDPE lateral pipes and connection to the risers within the Phase IB sump.
- Parsons exposed and removed plywood placed along the southern limits of Phase I at former ramp locations.

### ***GEOSYNTHETICS:***

- No activities were conducted by Chenango (CCI) this week due to wet conditions.
- Parsons crew exposed the geomembrane in an area approximately 10 feet square within Phase IB where an electrical leak location survey indicated a potential hole in the 60-mil thick HDPE geomembrane. CCI will vacuum test the extrusion welded patch located at the indicated area to determine location of the hole and make appropriate repair.

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## WEEKLY FIELD REPORT

PROJECT: Onondaga Lake Bottom Subsite Construction

LOCATION: Camillus, NY PROJECT NO.: GJ4706B TASK NO.: 200

DESCRIPTION: Sediment Consolidation Area (SCA) – Phase I/Phase II WEEK ENDING: May 13, 2012

This report is written for the period of 7 through 11 May 2012. Geosyntec was on-site 5 days (212 days total to date) to provide CQA services during construction of the SCA. Temperatures generally ranged from a low of 42° F to a high of 71° F during the hours worked. Approximately 1.65 inches of rainfall were recorded this week. Representatives of Geosyntec and Parsons were on-site throughout the week. A weekly construction meeting was held on Monday. An outline of work performed over this period is provided below.

### ***SAFETY:***

- Safety meetings were held daily. No incidents were reported.

### ***EARTHWORK:***

- Approximately 1,733 LCY of Low Permeability (LP) soil were imported this week from the Marcellus borrow source. The imported material was placed in Phase II as it was received onsite. Importation efforts were delayed Tuesday through Friday due to wet site conditions. Lifts 2 and lift 3 were placed in Grids H through J this week.
- Geosyntec conducted a total of 41 FDTs on compacted LP soil in Phase II this week. Nine of the FDTs failed to achieve satisfactory results due to low moisture content. Geosyntec obtained LP soil samples LP-120 thru LP-127 for moisture content analysis and LP-128 and LP-129 for conformance testing.
- Approximately 289 LCY of 4 inch maximum diameter particle size Drainage Gravel were imported from the Granby borrow source this week and stockpiled on-site.
- Parsons crew used a compact loader with a flip screen attachment to process areas of excessive fines within the Drainage Gravel in the Phase I area.
- Parsons stockpiled material rejected during screening operations along the northern limits of Phase I for future use. Parsons has proposed the material as an alternate fill material for the construction of the Phase I/Phase III temporary berm.
- Parsons continued to pump stormwater from Phase IA and IB sumps.
- Parsons placed Engineered Fill in the West Basin anchor trench.
- Parsons crew pumped stormwater from the East Basin trapped between the primary and secondary geomembrane in the East Basin sump area. The four culverts require banding and caulking.

### ***GEOSYNTHETICS:***

- No Geosynthetics activities were conducted this week due to wet site conditions.

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## WEEKLY FIELD REPORT

PROJECT: Onondaga Lake Bottom Subsite Construction

LOCATION: Camillus, NY PROJECT NO.: GJ4706B TASK NO.: 200

DESCRIPTION: Sediment Consolidation Area (SCA) – Phase I/Phase II WEEK ENDING: May 20, 2012

This report is written for the period of 14 through 18 May 2012. Geosyntec was on-site 5 days (217 days total to date) to provide CQA services during construction of the SCA. Temperatures generally ranged from a low of 44° F to a high of 74° F during the hours worked. Approximately 0.01 inches of rainfall was recorded this week. Representatives of Geosyntec, Chenango, and Parsons were on-site throughout the week. THG Geophysics on-site 14-16 May to conduct electrical leak location survey. A weekly construction meeting was held on Monday. An outline of work performed over this period is outlined below.

### ***SAFETY:***

- Safety meetings were held daily with no incidents being reported.

### ***EARTHWORK:***

- Approximately 9,817 LCY of Low Permeability (LP) soil were imported this week from the Marcellus borrow source. Parsons continued placement of LP soil within Phase II and also performed moisture conditioning and compaction of material placed previously. Parsons prepared the surface of the LP soil layer for geosynthetics in Grids E through I.
- Geosyntec conducted field density tests (FDTs) on compacted LP soil in Phase II. A total of 60 FDTs were performed this week, two of which failed to meet the minimum project requirements for moisture and/or compaction.
- Geosyntec obtained Shelby Tube samples ST-033 to ST-037 for CQA testing. Results were received for ST-033 to ST-035, which indicated acceptable values.
- Approximately 454 LCY of 4-in dia. Drainage Gravel was imported and stockpiled on site.
- Parsons crew stockpiled fill material along the northern limits of Phase I to be used in construction of Phase I containment berm.
- Parsons continued to use the flip screen attachment to remove excess fines from Drainage Gravel in Phase I.
- Parsons crew investigated four areas in Phase I for possible leaks in the geomembrane based on THG survey. Holes were located in each of the areas of the geomembrane within Phase I.

### ***GEOSYNTHETICS:***

- Chenango worked four days this week in Phase II installing geomembrane and worked one day on repairs in the East Basin.

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## WEEKLY FIELD REPORT

PROJECT: Onondaga Lake Bottom Subsite Construction

LOCATION: Camillus, NY PROJECT NO.: GJ4706B TASK NO.: 200

DESCRIPTION: Sediment Consolidation Area (SCA) – Phase I/Phase II WEEK ENDING: May 20, 2012

- Chenango successfully completed six passing extrusion trial seams and forty four passing fusion trial seams prior to seaming and repair work this week.
- Chenango performed repairs and non-destructive testing of extrusion welded repairs on primary geomembrane at the East Basin and Phase II.
- Chenango installed approximately 354,900 square feet of primary geomembrane in Phase II.
- Approximately 16,787 linear feet of production seams were welded. Non-destructive testing of fusion seams was started but not completed.
- Eleven destructive samples (DS-6-001 to 6-009 and 6-012 to 6-013) were removed and shipped to GeoTesting Express for testing. Thirty three destructive samples to date were marked on primary geomembrane deployed in Phase II, but all samples have not been removed or field tested yet.
- (THG Geophysics crew completed leak testing on the geomembrane liner system in Phase I; four leaks were detected to date that are scheduled to be repaired by Chenango next week.

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## WEEKLY FIELD REPORT

PROJECT: Onondaga Lake Bottom Subsite Construction

LOCATION: Camillus, NY PROJECT NO.: GJ4706B TASK NO.: 200

DESCRIPTION: Sediment Consolidation Area (SCA) – Phase I/Phase II WEEK ENDING: May 27, 2012

This report is written for the period of 21 through 27 May 2012. Geosyntec was on-site five days (222 days total to date) to provide CQA services during construction of the SCA. Temperatures generally ranged from a low of 54° F to a high of 86° F during the hours worked. 0.01 inches of rainfall was recorded this week, however, production was unaffected. Representatives of Geosyntec, Chenango, and Parsons were on-site throughout the week. A weekly construction meeting was held on Monday. An outline of work performed over this period is outlined below.

### ***SAFETY:***

- Safety meetings were held daily with no incidents being reported.

### ***EARTHWORK:***

- Approximately 12,167 LCY of Low Permeability (LP) soil was imported this week from the Marcellus borrow source. Parsons continued placement of LP soil within Phase II. Parsons also conducted moisture conditioning and compaction of material placed previously.
- Geosyntec conducted a total of 65 Field Density Tests (FDTs) on compacted LP soil this week. One FDT failed to meet project requirements initially, but passed upon retest.
- Geosyntec obtained Shelby Tube samples ST-038 to ST-044 for testing. Results were received for ST-036 to ST-042, which indicated the samples met the minimum project requirements for permeability.
- Approximately 1,382 LCY of Drainage Gravel (4 inch maximum particle size) were imported from the Granby borrow source and stockpiled on site.
- Removal of the eastern end of the existing haul road in Phase II was progressed.
- Areas within Phase I requiring additional remediation of the Drainage Gravel were identified. Geosyntec informed Parsons of the areas requiring additional work.
- Parsons crew stockpiled fill material along the northern limits of Phase I to be used in construction of the Phase I/III temporary berm.
- Parsons prepared the surface of the LP soil layer for geosynthetics in Grids J through L.

### ***GEOSYNTHETICS:***

- Chenango progressed installation of the 60-mil thick HDPE geomembrane and 24-oz/sy non-woven geotextile within Phase II.

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## WEEKLY FIELD REPORT

PROJECT: Onondaga Lake Bottom Subsite Construction

LOCATION: Camillus, NY PROJECT NO.: GJ4706B TASK NO.: 200

DESCRIPTION: Sediment Consolidation Area (SCA) – Phase I/Phase II WEEK ENDING: May 27, 2012

- Chenango successfully complete ten passing extrusion trial seams and seventeen passing fusion trial seams prior to seaming and repair work this week.
- Chenango performed repairs and non-destructive testing on extrusion welds on repairs to geomembrane in Phase II.
- Chenango installed approximately 193,000 sf of geomembrane and 242,600 sf of 24 oz Geotextile in Phase II.
- Approximately 9,200 lf of production seams were constructed. Non-destructive testing of fusion seams is on-going.
- A total of 54 destructive sample locations have been marked on the primary geomembrane deployed in Phase II. A total of 32 destructive samples (DS-6-010 to 6-011 and 6-014 to 6-040 and DS-6-050 to DS-6-052) were removed and shipped to GeoTesting Express for laboratory testing. DS-6-034 failed to meet the minimum project requirements in the laboratory. Isolation of the failing area is pending.

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## APPENDIX C

### Manufacturer's Quality Control Documentation

- Geomembrane
- Geotextile
- Geonet Composite



# Geomembrane

## Material Inventory

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

SMS

<b>Material Type:</b> gml : 6	<b>Manufacturer:</b> Agru America	<b>Product Type:</b> Microspike HD 60-mil
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Inventory					Q.A. Conformance				Q.C. Documents			
Inv Date	Batch-Roll	Width (ft.)	Length (ft.)	QA ID	Date	Samp No	Result	QAID	Date Rec	Date Ckk	Result	QAID

### Accepted Rolls

11/15/2011	7110583-443557-11	23	505	DW	11/4/2011	GM-09	P	DB	11/3/2011	11/3/2011	P	DB
11/15/2011	7110583-443558-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	7110583-443559-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	7110583-443560-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/15/2011	7110583-443561-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	7110583-443562-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	7110583-443563-11	23	505	DW	4/3/2012	GM-11		DW	11/3/2011	11/3/2011	P	DB
11/15/2011	7110583-443565-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/15/2011	7110583-443566-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/15/2011	7110583-443567-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/15/2011	7110583-443568-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	7110583-443569-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	7110583-443570-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	7110583-443673-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/15/2011	7110583-443674-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/15/2011	7110583-443675-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	7110583-443676-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	7110583-443677-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	7110583-443678-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	7110583-443679-11	23	505	DW					11/3/2011	11/3/2011	P	DB
4/23/2012	7120199-311449-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311450-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311451-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311452-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311453-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311454-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311455-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311556-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH

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## Material Inventory

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	
SMS	

Material Type: <u>gml : 6</u>	Manufacturer: <u>Agru America</u>	Product Type: <u>Microspike HD 60-mil</u>
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Inventory					Q.A. Conformance				Q.C. Documents			
Inv Date	Batch-Roll	Width (ft.)	Length (ft.)	QA ID	Date	Samp No	Result	QAID	Date Rec	Date Ckk	Result	QAID
4/23/2012	7120199-311557-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311558-12	23	505	DWH	3/29/2012	GM-13	P	DB	4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311559-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311560-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311561-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311562-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311563-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311564-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311565-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311566-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311567-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311568-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311569-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311670-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311671-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311672-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311673-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311674-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311675-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311676-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311677-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311678-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311679-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311680-12	23	505	DWH	3/29/2012	GM-14	P	DB	4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311681-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311682-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311683-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311784-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311785-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH



## Material Inventory

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Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	
SMS	

Material Type: <u>gml : 6</u>	Manufacturer: <u>Agru America</u>	Product Type: <u>Microspike HD 60-mil</u>
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Inventory					Q.A. Conformance				Q.C. Documents			
Inv Date	Batch-Roll	Width (ft.)	Length (ft.)	QA ID	Date	Samp No	Result	QAID	Date Rec	Date Ckk	Result	QAID
4/23/2012	7120199-311786-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120199-311787-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120200-311330-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120200-311331-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120200-311332-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120200-311333-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120200-311334-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120200-311335-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120200-311336-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120200-311337-12	23	505	DWH	3/29/2012	GM-12	P	DB	4/27/2012	4/27/2012	P	DWH
4/23/2012	7120200-311338-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120200-311339-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120200-311340-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120200-311341-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120200-311442-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120200-311443-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120200-311444-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120200-311445-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120200-311446-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120200-311447-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	7120200-311448-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-311788-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-311789-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-311790-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-311791-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	8110773-311792-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-311793-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-311794-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-311795-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH

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## Material Inventory

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Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	
<b>SMS</b>	

Material Type: <u>gml : 6</u>	Manufacturer: <u>Agru America</u>	Product Type: <u>Microspike HD 60-mil</u>
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Inventory					Q.A. Conformance				Q.C. Documents			
Inv Date	Batch-Roll	Width (ft.)	Length (ft.)	QA ID	Date	Samp No	Result	QAID	Date Rec	Date Ckk	Result	QAID
4/23/2012	8110773-311796-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-312101-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-312102-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-312103-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-312104-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-312105-12	23	505	DWH	4/18/2012	GM-15	P	DWH	4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-312106-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-312107-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-312108-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-312109-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-312110-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-312111-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-312112-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-312113-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-312114-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-312115-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-312116-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	8110773-312217-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	8110773-312218-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	8110773-312219-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	8110773-312220-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-312221-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-312222-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	8110773-312223-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	8110773-312224-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	8110773-312225-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	8110773-312226-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	8110773-312227-12	23	505	DWH	4/18/2012	GM-16	P	DWH	4/27/2012	4/27/2012	P	DWH
4/24/2012	8110773-312228-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH

## Material Inventory

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Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	
<b>SMS</b>	

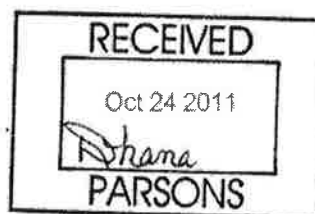
Material Type: <u>gml : 6</u>	Manufacturer: <u>Agru America</u>	Product Type: <u>Microspike HD 60-mil</u>
-------------------------------	-----------------------------------	---

Inventory					Q.A. Conformance				Q.C. Documents			
Inv Date	Batch-Roll	Width (ft.)	Length (ft.)	QA ID	Date	Samp No	Result	QAID	Date Rec	Date Ckk	Result	QAID
4/23/2012	8110773-312229-12	23	505	DWH					4/27/2012	4/27/2012	P	DWH
11/14/2011	8210664-443682-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/15/2011	8210664-443683-11	23	505	DW	11/4/2011	GM-10	P	DB	11/3/2011	11/3/2011	P	DB
11/14/2011	8210664-443784-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	8210664-443785-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	8210664-443786-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	8210664-443787-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	8210664-443788-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/15/2011	8210664-443789-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	8210664-443790-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	8210664-443791-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	8210664-443792-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	8210664-443793-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	8210664-443796-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	8210664-443797-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	8210664-444101-11	23	505	DW					11/3/2011	11/3/2011	P	DB
11/14/2011	8210664-444102-11	23	505	DW					11/3/2011	11/3/2011	P	DB

Average Roll Width(ft.): <b>23</b>	Average Roll Length(ft.): <b>505</b>
Total Number of Rolls: <b>132</b>	Cumulative Area(sq.ft.): <b>1533180</b>
Total Number of Conformance Tests: <b>8</b>	

Comments: 7110583-443563-11:used for Interface Friction testing

# High Density Polyethylene Micro Spike® Liner



## Product Data

Property	Test Method	Values				
Thickness, nominal (mm)		30 (.75)	40 (1.0)	60 (1.5)	80 (2.0)	100 (2.5)
Thickness (min. ave.), mil (mm)	ASTM D5994*	29 (.71)	38 (.95)	57 (1.43)	76 (1.90)	95 (2.38)
Thickness (lowest indiv. for 8 of 10 spec.), mil (mm)	ASTM D5994*	27 (.68)	36 (.90)	54 (1.35)	72 (1.80)	90 (2.25)
Thickness (lowest indiv. for 1 of 10 spec.), mil (mm)	ASTM D5994*	26 (.64)	34 (.85)	51 (1.28)	68 (1.70)	85 (2.13)
*The thickness values may be changed due to project specifications (i.e., absolute minimum thickness)						
Asperity Height (min. ave.), mil (mm)	ASTM D7466	16 (.41)	16 (.41)	16 (.41)	16 (.41)	16 (.41)
Density, g/cc, minimum	ASTM D792, Method B	0.94	0.94	0.94	0.94	0.94
Tensile Properties (ave. both directions)	ASTM D6693, Type IV					
Strength @ Yield (min. ave.), lb/in width (N/mm)	2 in/minute	66 (11.6)	88 (15.4)	132 (23.1)	176 (30.8)	220 (38.5)
Elongation @ Yield (min. ave.), % (GL=1.3in)	5 specimens in each direction	13	13	13	13	13
Strength @ Break (min. ave.), lb/in width (N/mm)		66 (11.6)	88 (15.4)	132 (23.1)	176 (30.8)	220 (38.5)
Elongation @ Break (min. ave.), % (GL=2.0in)		350	350	350	350	350
Tear Resistance (min. ave.), lbs. (N)	ASTM D1004	23 (102)	30 (133)	45 (200)	60 (267)	72 (320)
Puncture Resistance (min. ave.), lbs. (N)	ASTM D4833	60 (267)	90 (400)	120 (534)	150 (667)	180 (801)
Carbon Black Content (range in %)	ASTM D4218	2 - 3	2 - 3	2 - 3	2 - 3	2 - 3
Carbon Black Dispersion (Category)	ASTM D5596	Only near spherical agglomerates for 10 views: 9 views in Cat. 1 or 2 and 1 view in Cat. 3				
Stress Crack Resistance (Single Point NCTL), hours	ASTM D5397, Appendix	300	300	300	300	300
Oxidative Induction Time, minutes	ASTM D3895, 200°C, 1 atm O <sub>2</sub>	≥100	≥100	≥100	≥100	≥100
Melt Flow Index, g/10 minutes	ASTM D1238, 190°C, 2.16kg	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0
Oven Aging	ASTM D5721	80	80	80	80	80
with HP OIT, (% retained after 90 days)	ASTM D5885, 150°C, 500psi O <sub>2</sub>					
UV Resistance	GRI GM11	20hr. Cycle @ 75°C/4 hr. dark condensation @ 60°C				
with HP OIT, (% retained after 1600 hours)	ASTM D5885, 150°C, 500psi O <sub>2</sub>	50	50	50	50	50

These product specifications meet or exceed GRI's GM13

## Supply Information (Standard Roll Dimensions)

Thickness		Width		Length		Area (approx.)		Weight (average)*	
mil	mm	ft	m	ft	m	ft <sup>2</sup>	m <sup>2</sup>	lbs	kg
30	.75	23	7	930	283.17	21,300	1,984	3,900	1,770
40	1.0	23	7	710	216.41	16,330	1,514.87	3,900	1,770
60	1.5	23	7	505	153.53	11,615	1,078	3,900	1,770
80	2.0	23	7	385	117.35	8,855	821	3,900	1,770
100	2.5	23	7	310	94.49	7,130	661	3,900	1,770

### Notes:

All rolls are supplied with two slings. All rolls are wound on a 6 inch core. Special lengths are available on request. All roll lengths and widths have a tolerance of ±1%.

\*The weight values may change due to project specifications (i.e. absolute minimum thickness or special roll lengths) or shipping requirements (i.e. international containerized shipments).

All information, recommendations and suggestions appearing in this literature concerning the use of our products are based upon tests and data believed to be reliable; however, it is the users responsibility to determine the suitability for their own use of the products described herein. Since the actual use by others is beyond our control, no guarantee or warranty of any kind, expressed or implied, is made by Agru/America as to the effects of such use or the results to be obtained, nor does Agru/America assume any liability in connection herewith. Any statement made herein may not be absolutely complete since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations. Nothing herein is to be construed as permission or as a recommendation to infringe any patent.

500 Garrison Road, Georgetown, South Carolina 29440

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800-373-2478

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www.agruamerica.com

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## *Geosynthetic Institute*

475 Kedron Avenue  
Folsom, PA 19033-1208 USA  
TEL (610) 522-8440  
FAX (610) 522-8441



June 7, 2010

Mr. Grant Palmer  
Laboratory Director  
Agru-America Inc.  
500 Garrison Road  
Georgetown, SC 29440

Re: GAI-LAP Accreditation

Dear Grant:

The Geosynthetic Institute (GSI) is pleased to acknowledge Agru-America Inc. on its repertoire of Geosynthetic Accreditation Institute's-Laboratory Accreditation Program (GAI-LAP) accredited tests. This letter should serve as notification that Agru-America Inc. located in Georgetown, SC is currently accredited for the following twenty test methods until June 30, 2011.

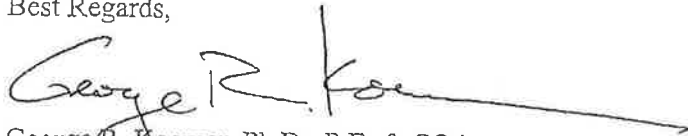
1. ASTM D792 Test Method for Specific Gravity (Relative Density) and Density of Plastics by Displacement
2. ASTM D1004 Test Method for Initial Tear Resistance of Plastic Film and Sheeting
3. ASTM D1204 Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature
4. ASTM D1238 Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer
5. ASTM D1693 Test Method for Environmental Stress-Cracking of Ethylene Plastics
6. ASTM D3895 Test Methods for Oxidative-Induction Time of Polyolefins by Differential Scanning Calorimetry
7. ASTM D4218 Test Method for Carbon Black Content in Polyethylene Compounds by the Muffle-Furnace Technique
8. ASTM D4716 Test Method for Determining the (In-Plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head
9. ASTM D4833 Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products



10. ASTM D5035 Test Method for Breaking Strength and Elongation of Textile Fabrics (Strip Method)
11. ASTM D5199 Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes
12. ASTM D5261 Test Method for Measuring Mass per Unit Area of Geotextiles
13. ASTM D5397 Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes using Notched Constant Tension Load Test
14. ASTM D5596 Test Methods for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics
15. ASTM D5994 Test Method for Measuring the Core Thickness of Textured Geomembranes
16. ASTM D6693 Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes
17. ASTM D7005 Test Method for Determining the Bond Strength (Ply Adhesion) of Geocomposites
18. ASTM D7179 Test Method for Determining the Geonet Breaking Force
19. FTM STD. No. 101c (method 2065), Puncture Resistance and Elongation Test (1/8 in. radius probe)
20. ASTM D7466 Test Method for Measuring the Asperity Height of Textured Geomembranes

A certificate to this affect has been enclosed, signed and sealed. Any questions regarding your accreditation should be directed to George or Robert Koerner at (610) 522-8440. Once again congratulation and thank you for participating in the GAI-LAP.

Best Regards,



George R. Koerner, Ph.D., P.E. & CQA  
Director Designate GSI

Accreditation #:  
GAI-LAP - 26 - 97  
TEL (610) 522-8440

Geosynthetic Institute  
457 Kedron Avenue  
Folsom, PA 19033


## AGRU America Inc.

*is granted accreditation  
for designated geosynthetic test methods in accordance with the  
Geosynthetic Accreditation Institute - Laboratory Accreditation  
(GAI-LAP), as published in its annual directory.*

*This accreditation is valid until June 30, 2011.*

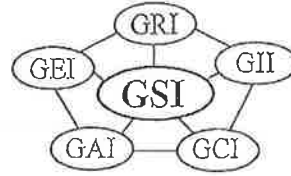
  
Robert M. Koerner, Ph.D., P.E.  
Director



  
George R. Koerner, Ph.D., P.E. & CQA  
Auditor

## *Geosynthetic Institute*

475 Kedron Avenue  
Folsom, PA 19033-1208 USA  
TEL (610) 522-8440  
FAX (610) 522-8441



February 18, 2010

Mr. Chris Adams  
Agru America  
2000 East Newlands Drive  
Fernley, NV 89408

Re: GAI-LAP

Dear Chris:


The Geosynthetic Institute (GSI) is pleased to acknowledge Agru-America Inc. on its repertoire of Geosynthetic Accreditation Institute's-Laboratory Accreditation Program (GAI-LAP) accredited tests. This letter should serve as notification that Agru-America Inc. located in Fernley, Nevada is currently accredited for the following fourteen test methods until June 30, 2011.

1. ASTM D792 Test Method for Specific Gravity (Relative Density) and Density of Plastics by Displacement
2. ASTM D1004 Test Method for Initial Tear Resistance of Plastic Film and Sheeting
3. ASTM D1204 Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature
4. ASTM D1238 Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer (2.16 kg and 190 degree Celsius)
5. ASTM D3895 Test Method for Oxidative-Induction Time of Polyolefins by Differential Scanning Calorimetry
6. ASTM D4218 Test Method for Carbon Black Content in Polyethylene Compounds by the Muffle-Furnace Technique
7. ASTM D4833 Test Method for Index Puncture of Geotextiles, Geomembranes and Related Products
8. ASTM D5199 Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes
9. ASTM D5397 Test Method for NCTL Stress Crack Appendix "A"
10. ASTM D5596 Test Method for Dispersion
11. ASTM D5994 Test Method for Core Thickness

12. ASTM D6693 Standard of Method for Determining Tensile Properties of Nonreinforced Polyethylene and nonreinforced Flexible Polypropylene Type IV die with cross head movement
13. ASTM D7466 Test Method for Measuring the Asperity Height of Textured Geomembranes
14. FTM 101C Test Method 2065 for Puncture

A certificate to this affect has been enclosed, signed and sealed. Any questions regarding your accreditation should be directed to George or Robert Koerner at (610) 522-8440. Once again congratulation and thank you for participating in the GAI-LAP.

Best Regards,



George R. Koerner, Ph.D., P.E. & CQA  
Director Designate GSI


Accreditation #  
GAI-LAP-64-10  
TEL (610) 522-8440


Geosynthetic Institute  
457 Kedron Avenue  
Folsom, PA 19033

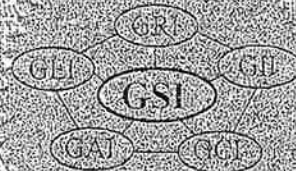
# AGRU America, Inc. (Fernley NV)

is granted accreditation  
for designated geosynthetic test methods in accordance with the  
Geosynthetic Accreditation Institute - Laboratory Accreditation  
(GAI-LAP), as published in its annual directory.

*This accreditation is valid until June 30, 2011.*

  
Robert M. Koerner, Ph.D., P.E.  
Director

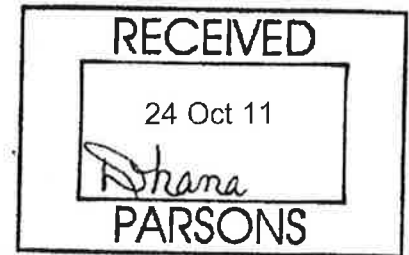
  
George R. Koerner, Ph.D., P.E. & CQA  
Auditor







Technology in Plastics



### Chenango Contracting, Inc.

Chenango Contracting, Inc. (Chenango) is a well established lining installation company within the Geosynthetic Industry. Chenango is one of the largest installers of Agru America, Inc.'s products and one of our top installers in the United States.

Agru America, Inc. has worked successfully with Chenango over the years on multiple projects. Chenango is familiar with approved installation procedures and we have recognized them as one of our top-tier "Priority Installers".

Agru America, Inc. does not warrant or guarantee the work of any Approved Installer. Approved installers are independent contractors that provide specific installation services and do not act as agents or representatives of Agru America, Inc.

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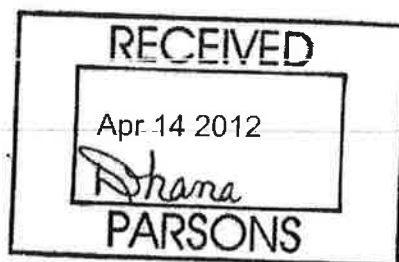
Paul W. Barker  
Technical Director  
Agru America, Inc.

Date: February 1, 2008

Syracuse, NY

138 rolls 60 HD micro (505)

English Dimensions				check weld rod qty (if ordered)			wgt	resin lot #
roll #	wid	len	area					
443557 .11	23	505	11,615.0	60HD micro	138tot	1	3898	2ft conf 7110583
443558 .11	23	505	11,615.0	60HD micro	138tot	2	3894	7110583
443559 .11	23	505	11,615.0	60HD micro	138tot	3	3894	7110583
443560 .11	23	505	11,615.0	60HD micro	138tot	4	3892	7110583
443561 .11	23	505	11,615.0	60HD micro	138tot	5	3894	7110583
443562 .11	23	505	11,615.0	60HD micro	138tot	6	3892	7110583
443563 .11	23	505	11,615.0	60HD micro	138tot	7	3894	7110583
443565 .11	23	505	11,615.0	60HD micro	138tot	8	3896	7110583
443566 .11	23	505	11,615.0	60HD micro	138tot	9	3892	7110583
443567 .11	23	505	11,615.0	60HD micro	138tot	10	3900	7110583
443568 .11	23	505	11,615.0	60HD micro	138tot	11	3804	7110583
443569 .11	23	505	11,615.0	60HD micro	138tot	12	3804	7110583
443670 .11	23	505	11,615.0	60HD micro	138tot	13	3802	7110583
443673 .11	23	505	11,615.0	60HD micro	138tot	14	3797	7110583
443674 .11	23	505	11,615.0	60HD micro	138tot	15	3794	7110583
443675 .11	23	505	11,615.0	60HD micro	138tot	16	3796	7110583
443676 .11	23	505	11,615.0	60HD micro	138tot	17	3800	7110583
443677 .11	23	505	11,615.0	60HD micro	138tot	18	3796	7110583
443678 .11	23	505	11,615.0	60HD micro	138tot	19	3794	7110583
443679 .11	23	505	11,615.0	60HD micro	138tot	20	3796	7110583
443682 .11	23	505	11,615.0	60HD micro	138tot	21	3908	8210664
443683 .11	23	505	11,615.0	60HD micro	138tot	22	3914	2ft conf 8210664
443784 .11	23	505	11,615.0	60HD micro	138tot	23	3916	8210664
443785 .11	23	505	11,615.0	60HD micro	138tot	24	3920	8210664
443786 .11	23	505	11,615.0	60HD micro	138tot	25	3916	8210664
443787 .11	23	505	11,615.0	60HD micro	138tot	26	3920	8210664
443788 .11	23	505	11,615.0	60HD micro	138tot	27	3922	8210664
443789 .11	23	505	11,615.0	60HD micro	138tot	28	3920	8210664
443790 .11	23	505	11,615.0	60HD micro	138tot	29	3910	8210664
443791 .11	23	505	11,615.0	60HD micro	138tot	30	3946	8210664
443792 .11	23	505	11,615.0	60HD micro	138tot	31	3940	8210664
443793 .11	23	505	11,615.0	60HD micro	138tot	32	3788	8210664
443796 .11	23	505	11,615.0	60HD micro	138tot	33	3788	8210664
443797 .11	23	505	11,615.0	60HD micro	138tot	34	3788	8210664
444101 .11	23	505	11,615.0	60HD micro	138tot	35		8210664
444102 .11	23	505	11,615.0	60HD micro	138tot	36		8210664



Syracuse, NY

138 rolls 60 HD micro (505)

English Dimensions								wgt	resin lot #
roll #	wid	len	area	check weld rod qty (if ordered)					
311330 .12	23	505	11,615.0	60HD	micro	138tot	37	3882	7120200
311331 .12	23	505	11,615.0	60HD	micro	138tot	38	3946	7120200
311332 .12	23	505	11,615.0	60HD	micro	138tot	39	3875	7120200
311333 .12	23	505	11,615.0	60HD	micro	138tot	40	3852	7120200
311334 .12	23	505	11,615.0	60HD	micro	138tot	41	3837	7120200
311335 .12	23	505	11,615.0	60HD	micro	138tot	42	3828	7120200
311336 .12	23	505	11,615.0	60HD	micro	138tot	43	3838	7120200
311337 .12	23	505	11,615.0	60HD	micro	138tot	44	3823	2ft conf 7120200
311338 .12	23	505	11,615.0	60HD	micro	138tot	45	3833	7120200
311339 .12	23	505	11,615.0	60HD	micro	138tot	46	3843	7120200
311340 .12	23	505	11,615.0	60HD	micro	138tot	47	3925	7120200
311341 .12	23	505	11,615.0	60HD	micro	138tot	48	3927	7120200
311442 .12	23	505	11,615.0	60HD	micro	138tot	49	3929	7120200
311443 .12	23	505	11,615.0	60HD	micro	138tot	50	3919	7120200
311444 .12	23	505	11,615.0	60HD	micro	138tot	51	3923	7120200
311445 .12	23	505	11,615.0	60HD	micro	138tot	52	3934	7120200
311446 .12	23	505	11,615.0	60HD	micro	138tot	53	3938	7120200
311447 .12	23	505	11,615.0	60HD	micro	138tot	54	3943	7120200
311448 .12	23	505	11,615.0	60HD	micro	138tot	55	3921	7120200
311449 .12	23	505	11,615.0	60HD	micro	138tot	56	3911	7120199
311450 .12	23	505	11,615.0	60HD	micro	138tot	57	3894	7120199
311451 .12	23	505	11,615.0	60HD	micro	138tot	58	3897	7120199
311452 .12	23	505	11,615.0	60HD	micro	138tot	59	3889	7120199
311453 .12	23	505	11,615.0	60HD	micro	138tot	60	3887	7120199
311454 .12	23	505	11,615.0	60HD	micro	138tot	61	3884	7120199
311455 .12	23	505	11,615.0	60HD	micro	138tot	62	3896	7120199
311556 .12	23	505	11,615.0	60HD	micro	138tot	63	3897	7120199
311557 .12	23	505	11,615.0	60HD	micro	138tot	64	3858	7120199
311558 .12	23	505	11,615.0	60HD	micro	138tot	65	3832	2ft conf 7120199
311559 .12	23	505	11,615.0	60HD	micro	138tot	66	3866	7120199
311560 .12	23	505	11,615.0	60HD	micro	138tot	67	3840	7120199
311561 .12	23	505	11,615.0	60HD	micro	138tot	68	3908	7120199
311562 .12	23	505	11,615.0	60HD	micro	138tot	69	3901	7120199
311563 .12	23	505	11,615.0	60HD	micro	138tot	70	3904	7120199
311564 .12	23	505	11,615.0	60HD	micro	138tot	71	3905	7120199
311565 .12	23	505	11,615.0	60HD	micro	138tot	72	3910	7120199
311566 .12	23	505	11,615.0	60HD	micro	138tot	73	3904	7120199
311567 .12	23	505	11,615.0	60HD	micro	138tot	74	3904	7120199
311568 .12	23	505	11,615.0	60HD	micro	138tot	75	3915	7120199
311569 .12	23	505	11,615.0	60HD	micro	138tot	76	3920	7120199
311670 .12	23	505	11,615.0	60HD	micro	138tot	77	3918	7120199
311671 .12	23	505	11,615.0	60HD	micro	138tot	78	3277	7120199
311672 .12	23	505	11,615.0	60HD	micro	138tot	79	3922	7120199
311673 .12	23	505	11,615.0	60HD	micro	138tot	80	3926	7120199
311674 .12	23	505	11,615.0	60HD	micro	138tot	81	3934	7120199
311675 .12	23	505	11,615.0	60HD	micro	138tot	82	3947	7120199
311676 .12	23	505	11,615.0	60HD	micro	138tot	83	3912	7120199
311677 .12	23	505	11,615.0	60HD	micro	138tot	84	3911	7120199
311678 .12	23	505	11,615.0	60HD	micro	138tot	85	3907	7120199
311679 .12	23	505	11,615.0	60HD	micro	138tot	86	3908	7120199
311680 .12	23	505	11,615.0	60HD	micro	138tot	87	3904	2ft conf 7120199
311681 .12	23	505	11,615.0	60HD	micro	138tot	88	3918	7120199
311682 .12	23	505	11,615.0	60HD	micro	138tot	89	3910	7120199
311683 .12	23	505	11,615.0	60HD	micro	138tot	90	3912	7120199
311784 .12	23	505	11,615.0	60HD	micro	138tot	91	3910	7120199
311785 .12	23	505	11,615.0	60HD	micro	138tot	92	3911	7120199
311786 .12	23	505	11,615.0	60HD	micro	138tot	93	3918	7120199
311787 .12	23	505	11,615.0	60HD	micro	138tot	94	4055	certs 7120199
311788 .12	23	505	11,615.0	60HD	micro	138tot	95	3956	8110773
311789 .12	23	505	11,615.0	60HD	micro	138tot	96	3897	8110773
311790 .12	23	505	11,615.0	60HD	micro	138tot	97	3923	8110773
311791 .12	23	505	11,615.0	60HD	micro	138tot	98	3924	8110773
311792 .12	23	505	11,615.0	60HD	micro	138tot	99	3911	8110773
311793 .12	23	505	11,615.0	60HD	micro	138tot	100	3842	8110773
311794 .12	23	505	11,615.0	60HD	micro	138tot	101	3836	8110773
311795 .12	23	505	11,615.0	60HD	micro	138tot	102	3855	8110773



Syracuse, NY

138 rolls 60 HD micro (505)

English Dimensions								wgt	resin lot #
roll #	wid	len	area	check weld rod qty (if ordered)					
311796 .12	23	505	11,615.0	60HD	micro	138tot	103	3856	8110773
312101 .12	23	505	11,615.0	60HD	micro	138tot	104	3851	8110773
312102 .12	23	505	11,615.0	60HD	micro	138tot	105	3929	8110773
312103 .12	23	505	11,615.0	60HD	micro	138tot	106	4001	8110773
312104 .12	23	505	11,615.0	60HD	micro	138tot	107	4011	8110773
312105 .12	23	505	11,615.0	60HD	micro	138tot	108	3912	2ft conf 8110773
312106 .12	23	505	11,615.0	60HD	micro	138tot	109	3814	8110773
312107 .12	23	505	11,615.0	60HD	micro	138tot	110	3870	8110773
312108 .12	23	505	11,615.0	60HD	micro	138tot	111	3865	8110773
312109 .12	23	505	11,615.0	60HD	micro	138tot	112	3859	8110773
312110 .12	23	505	11,615.0	60HD	micro	138tot	113	3855	8110773
312111 .12	23	505	11,615.0	60HD	micro	138tot	114	3852	8110773
312112 .12	23	505	11,615.0	60HD	micro	138tot	115	3854	8110773
312113 .12	23	505	11,615.0	60HD	micro	138tot	116	3855	8110773
312114 .12	23	505	11,615.0	60HD	micro	138tot	117	3867	8110773
312115 .12	23	505	11,615.0	60HD	micro	138tot	118	3871	8110773
312216 .12	23	505	11,615.0	60HD	micro	138tot	119	3864	8110773
312217 .12	23	505	11,615.0	60HD	micro	138tot	120	3862	8110773
312218 .12	23	505	11,615.0	60HD	micro	138tot	121	3864	8110773
312219 .12	23	505	11,615.0	60HD	micro	138tot	122	3852	8110773
312220 .12	23	505	11,615.0	60HD	micro	138tot	123	3865	8110773
312221 .12	23	505	11,615.0	60HD	micro	138tot	124	3875	8110773
312222 .12	23	505	11,615.0	60HD	micro	138tot	125	3876	8110773
312223 .12	23	505	11,615.0	60HD	micro	138tot	126	3865	8110773
312224 .12	23	505	11,615.0	60HD	micro	138tot	127	3857	8110773
312225 .12	23	505	11,615.0	60HD	micro	138tot	128	3848	8110773
312226 .12	23	505	11,615.0	60HD	micro	138tot	129	3858	8110773
312227 .12	23	505	11,615.0	60HD	micro	138tot	130	3830	2ft conf 8110773
312228 .12	23	505	11,615.0	60HD	micro	138tot	131	3850	8110773
312229 .12	23	505	11,615.0	60HD	micro	138tot	132	3856	8110773
312330 .12	23	505	11,615.0	60HD	micro	138tot	133		8110773
312331 .12	23	505	11,615.0	60HD	micro	138tot	134		8110773
312332 .12	23	505	11,615.0	60HD	micro	138tot	135		8110773
312333 .12	23	505	11,615.0	60HD	micro	138tot	136		8110773
312334 .12	23	505	11,615.0	60HD	micro	138tot	137		8110773
312335 .12	23	505	11,615.0	60HD	micro	138tot	138		8110773



**Honeywell Sediment Consolid.**  
**Syracuse, NY**

Agru America will certify that the resin used to manufacture this material meets the requirements of Specification Section 02740

*Paul Barker* (signature)

---

Paul W. Barker  
Technical Director

Date: April 14, 2012



**Honeywell Sediment Consolid.**  
**Syracuse, NY**

Agru America will certify that the Geomembrane produced for this project will be from new, first-quality polyethylene resin. No reclaimed polymer shall be added to the resin. The use of polymer recycled through the manufacturing process is permitted but shall not exceed 10% by weight of total polymer weight.

*Paul Barker* (signature)

---

Paul W. Barker  
Technical Director

Date: April 14, 2012



**Honeywell Sediment Consolid.**  
**Syracuse, NY**

Agru America, Inc. certifies that for this project we will test to ASTM D5397- Standard Test Method for evaluation of stress crack resistance of polyolefin geomembranes using notched constant tensile load test.

---

Paul W. Barker  
Technical Director

Date: April 14, 2012



**Honeywell Sediment Consolid.**  
**Syracuse, NY**

The properties of the welding rod (extrudate) supplied for this project will meet requirements set forth in these specifications.

Paul Barker / VD

Paul W. Barker  
Technical Director

Date: April 14, 2012



CoA Date: 07/28/2011

## Certificate of Analysis

Shipped To: AGRU AMERICA INC  
500 GARRISON RD  
GEORGETOWN SC 29440  
USA

Recipient: PALMER  
Fax:

Delivery #: 88305479  
PO #: 5844  
Weight: 194700 LB  
Ship Date: 07/28/2011  
Package: BULK  
Mode: Hopper Car  
Car #: CEFX053841  
Seal No: 260555

Product:  
MARLEX POLYETHYLENE K307 BULK

Lot Number: 7110583

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.27	g/10mi
HLMI Flow Rate	ASTM D1238	22	g/10mi
Density	D1505 or D4883	0.937	g/cm3
Pellet Count	P02.08.03	24	pel/g
Production Date		05/03/2011	

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 +1-832-813-4806



# quality certificate

ROLL # **443557-11**Lot #: **7110583**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994 ✓	MIN:	1.49 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified) ✓	MAX:	1.67 mm	66 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466: 27/37 mil	AVE:	1.58 mm	62 mil ✓	OIT(Standard) ASTM D3895 minutes	186 ✓	TEST RESULTS
TOP / 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	%	2.42 ✓
ASTM D4218 ✓			

Carbon Black Dispersion	Category		10 in Cat 1 ✓
ASTM D5596 ✓			

Tensile Strength	<u>Average</u> Strength @ Yield	28 N/mm (kN/m)	161 ppi ✓	2,511 ✓	2,550 ✓
ASTM D6693 ✓				2,581 psi	
ASTM D638 (Modified)	<u>Average</u> Strength @ Break	34 N/mm (kN/m)	197 ppi ✓	3,334 ✓	2,992 ✓
( 2 inches / minute )				3,163 psi	

Elongation ASTM D6693 ✓	<u>Average</u> Elongation @ Yield	%		16.11	13.96
ASTM D638 (Modified)				15.03 ✓	
( 2 inches / minute )	<u>Average</u> Elongation @ Break	%		483.4	586.5
Lo = 1.3" Yield				519.5 ✓	
Lo = 2.0" Break					

Dimensional Stability	Average Dimensional change	%	-0.33
ASTM D1204 (Modified)			

Tear Resistance	<u>Average</u> Tear Resistance	258.7 N	58.150 lbs ✓
ASTM D1004 (Modified) ✓			

Puncture Resistance	Average Peak Load	412.5 N	92.742 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	608.8 N	136.86 lbs ✓
ASTM D4833 (Modified) ✓			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS ✓
ASTM D5397 ✓			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-28-11**Signature:   
Quality Control Department60HDMC FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **443558-11**

Lot #: **7110583**

Liner Type: **MICROSPIKE™ HDPE**

Measurement	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994 ✓ (Modified)	MIN: 1.52 mm	60 mil	Length.....	153.926 m	505.0 feet
	MAX: 1.74 mm	69 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466: 27/37 mil	AVE: 1.59 mm	63 mil	OIT(Standard) ASTM D3895 minutes	186	TEST RESULTS
TOP / BOTTOM					
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		%		2.40 ✓
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 (kN/m)	158 ppi	2,529 psi	3,430 ✓ 2,628 ✓ 3,226 ✓ 3,109 ✓
	Average Strength @ Break	35 N/mm (kN/m)	198 ppi	3,169 psi	17.96 ✓ 14.11 ✓
Elongation ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		16.04 ✓	478.8 ✓ 571.0 ✓
	Average Elongation @ Break	%		524.9 ✓	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.33	
Tear Resistance ASTM D1004 (Modified) ✓	Average Tear Resistance	262.6 N		59.038 lbs ✓	57.981 ✓ 60.095 ✓
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	454.0 N		102.07 lbs	
Puncture Resistance ASTM D4833 (Modified) ✓	Average Peak Load	648.2 N		145.72 lbs ✓	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397 ✓	pass / fail @ 30%	300 hrs		PASS ✓	

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-28-11**

Signature: *[Signature]*  
Quality Control Department

60HDmle.FRM  
REV 03  
12/23/05





# quality certificate

ROLL # **443559-11**Lot #: **7110583**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.77 mm	70 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	27/37 mil	AVE:	1.59 mm	63 mil		
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	186

**TEST RESULTS**

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	%	2.40
ASTM D4218			

Carbon Black Dispersion	Category	10 in Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	28 N/mm (kN/m)	158 ppi	2,430	
ASTM D6693				2,628	
ASTM D638 (Modified)				2,529	psi
( 2 inches / minute )	Average Strength @ Break	35 N/mm (kN/m)	198 ppi	3,228	
				3,109	

Elongation ASTM D6693	Average Elongation @ Yield	%	17.96	
ASTM D638 (Modified)			14.11	
( 2 inches / minute )			16.04	
Lo = 1.3" Yield			478.8	
Lo = 2.0" Break	Average Elongation @ Break	%	571.0	
			524.9	

Dimensional Stability	Average Dimensional change	%	-0.33
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	262.6 N	57.981	
ASTM D1004 (Modified)			60.095	
			59.038	lbs

Puncture Resistance	Average Peak Load	454.0 N	102.07	lbs
FTMS 101 Method 2065 (Modified)				

Puncture Resistance	Average Peak Load	648.2 N	145.72	lbs
ASTM D4833 (Modified)				

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-28-11**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **443560-11**Lot #: **7110583**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.43 mm	56 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.69 mm	67 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: 27/35 mil AVE: 1.56 mm 61 mil  
TOP / BOTTOM OIT(Standard) ASTM D3895 minutes 186 **TEST RESULTS**

Specific Gravity ASTM D792	Density		g/cc		.946
MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g		g/10 min		.27
Carbon Black Content ASTM D4218	Range		%		2.40
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 (kN/m)	155 ppi	2,430 2,628 2,529	psi
	Average Strength @ Break	34 N/mm (kN/m)	195 ppi	3,228 3,109 3,169	psi
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		17.96 14.11 16.04	
	Average Elongation @ Break	%		478.8 571.0 524.9	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			-0.33
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	262.6 N		57.981 60.095 59.038	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	454.0 N			102.07 lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	648.2 N			145.72 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			<b>CERTIFIED</b>
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			<b>PASS</b>

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-28-11**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **443561-11**Lot #: **7110583**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.47 mm	58 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.69 mm	67 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	28/34 mil	AVE:	1.57 mm	62 mil		
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	186

**TEST RESULTS**

Specific Gravity ASTM D792	Density		g/cc		.946
MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g		g/10 min		.27
Carbon Black Content ASTM D4218	Range		%		2.40
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 (kN/m)	156 ppi	2,529 psi
	Average Strength @ Break	34	N/mm (kN/m)	196 ppi	3,169 psi
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		16.04
	Average Elongation @ Break		%		524.9
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.33
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	262.6	N		59.038 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	454.0	N		102.07 lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	648.2	N		145.72 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs		CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300	hrs		PASS

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-28-11**Signature:   
Quality Control Department

60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **443562-11**Lot #: **7110583**Liner Type: **MICROSPIKE™ HDPE**

Measurement	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994 ✓ (Modified)	MIN: 1.52 mm	60 mil	Length.....	153.926 m	505.0 feet
	MAX: 1.78 mm	70 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466: 25/35 mil ✓ TOP / BOTTOM	AVE: 1.62 mm	64 mil ✓	OIT(Standard) ASTM D3895 minutes	186	

**TEST RESULTS**

Specific Gravity ASTM D792 ✓	Density	g/cc	.946 ✓
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MFI ASTM D1238 ✓ COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	.27 ✓
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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 )	<u>Average</u> Strength @ Yield	31 N/mm (kN/m)	175 psi	2,750 psi
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	<u>Average</u> Strength @ Break	39 N/mm (kN/m)	222 psi	3,479 psi
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Elongation ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	<u>Average</u> Elongation @ Yield	%		16.33 ✓
	<u>Average</u> Elongation @ Break	%		523.6 ✓

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.33
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Tear Resistance ASTM D1004 (Modified) ✓	<u>Average</u> Tear Resistance	257.3 N	57.837 lbs ✓
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	424.8 N	95.506 lbs
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Puncture Resistance ASTM D4833 (Modified) ✓	Average Peak Load	606.9 N	136.45 lbs ✓
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397 ✓	pass / fail @ 30%	300 hrs	PASS ✓
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-28-11**Signature:   
Quality Control Department60HDMic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **443563-11**Lot #: **7110583**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.48 mm	58 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.67 mm	66 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	28/37 mil	AVE:	1.57 mm	62 mil	TEST RESULTS	
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	186
Specific Gravity	Density					.946
ASTM D792						
MFI ASTM D1238	Melt Flow Index 190°C /2160 g					.27
COND. E						
GRADE:	K307					
Carbon Black Content	Range					2.46
ASTM D4218						
Carbon Black Dispersion	Category					10 in Cat 1
ASTM D5596						
Tensile Strength	Average Strength @ Yield	30 N/mm (kN/m)	170 ppi			2,616
ASTM D6693						2,883
ASTM D638 (Modified)						2,750
( 2 inches / minute )						psi
	Average Strength @ Break	38 N/mm (kN/m)	215 ppi			3,789
						3,169
Elongation ASTM D6693	Average Elongation @ Yield	%				18.66
ASTM D638 (Modified)						13.99
( 2 inches / minute )						16.33
Lo = 1.3" Yield						499.0
Lo = 2.0" Break	Average Elongation @ Break	%				548.2
						523.6
Dimensional Stability	Average Dimensional change	%				-0.33
ASTM D1204 (Modified)						
Tear Resistance	Average Tear Resistance	257.3 N				57.381
ASTM D1004 (Modified)						58.292
						57.837
Puncture Resistance	Average Peak Load	424.8 N				95.506
FTMS 101 Method 2065 (Modified)						lbs
Puncture Resistance	Average Peak Load	606.9 N				136.45
ASTM D4833 (Modified)						lbs
ESCR	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED
ASTM D1693						
Notched Constant Tensile Load	pass / fail @ 30%	300 hrs				PASS
ASTM D5397						

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-28-11**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **443565-11**Lot #: **7110583**Liner Type: **MICROSPIKE™ HDPE**Measurement  
ASTM D5994  
(Modified)

	METRIC	ENGLISH
MIN:	1.54 mm	61 mil
MAX:	1.66 mm	65 mil

Thickness.....	1.5 mm	60 mil
Length.....	153.926 m	505.0 feet
Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: **27/30** mil  
TOP / BOTTOMAVE: **1.60** mm **63** milOIT(Standard) ASTM D3895 minutes **186****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

%

**2.46**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 (kN/m)**173** ppi**2,616**  
**2,883****2,750** psi

Average Strength @ Break

**38** N/mm (kN/m)**219** ppi**3,789**  
**3,169****3,479** psiElongation ASTM D6693  
ASTM D638 (Modified)  
( 2 inches / minute )  
Lo = 1.3" Yield  
Lo = 2.0" Break

Average Elongation @ Yield

%

**18.66**  
**13.99****16.33**

Average Elongation @ Break

%

**499.0**  
**548.2****523.6**Dimensional Stability  
ASTM D1204 (Modified)

Average Dimensional change

%

**-0.33**Tear Resistance  
ASTM D1004 (Modified)

Average Tear Resistance

**257.3** N**57.381**  
**58.292****57.837** lbsPuncture Resistance  
FTMS 101 Method 2065 (Modified)

Average Peak Load

**424.8** N**95.506** lbsPuncture Resistance  
ASTM D4833 (Modified)

Average Peak Load

**606.9** N**136.45** lbsESCR  
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

**CERTIFIED**Notched Constant Tensile Load  
ASTM D5397

pass / fail @ 30%

300 hrs

**PASS**Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**Date: **10-28-11**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **443566-11**Lot #: **7110583**Liner Type: **MICROSPIKE™ HDPE**Measurement  
ASTM D5994 ✓  
(Modified) ✓MIN: **1.50** mm **59** mil  
MAX: **1.67** mm **66** milThickness..... **1.5** mm **60** mil  
Length..... **153.926** m **505.0** feet  
Width..... **7.01** m **23.0** feetAsperity ASTM D7466: **26/34** mil AVE: **1.58** mm **62** ✓ mil  
TOP / BOTTOMOIT(Standard) ASTM D3895 ✓ minutes **186** **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 %

**2.45** ✓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 (kN/m)**166** ppi ✓**2,586** ✓  
**2,764** ✓  
**2,675** psiAverage Strength @ Break**39** N/mm (kN/m)**220** ppi ✓**3,834** ✓  
**3,287** ✓  
**3,536** psiElongation ASTM D6693 ✓  
ASTM D638 (Modified)  
( 2 inches / minute )  
Lo = 1.3" Yield  
Lo = 2.0" BreakAverage Elongation @ Yield

%

**18.12** ✓Average Elongation @ Break

%

**504.5** ✓  
**568.4** ✓  
**537.0** ✓Dimensional Stability  
ASTM D1204 (Modified)

Average Dimensional change

%

**-0.33**Tear Resistance  
ASTM D1004 (Modified) ✓Average Tear Resistance**256.0** N**57.412** ✓  
**57.716** ✓  
**57.564** lbs ✓Puncture Resistance  
FTMS 101 Method 2065 (Modified)

Average Peak Load

**443.7** N**99.756** lbsPuncture Resistance  
ASTM D4833 (Modified) ✓

Average Peak Load

**644.5** N**144.89** lbs ✓ESCR  
ASTM D1693

Minimum Hrs w/o Failures

**1500** hrs**CERTIFIED**Notched Constant Tensile Load  
ASTM D5397 ✓

pass / fail @ 30%

**300** hrs**PASS** ✓Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**Date: **10-29-11**Signature: *[Signature]*  
Quality Control Department60HDmic FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **443567-11**Lot #: **7110583**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.48 mm	58 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.74 mm	69 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	26/31 mil	AVE:	1.60 mm	63 mil		
TOP / BOTTOM						

OIT(Standard) ASTM D3895 minutes **186**

## TEST RESULTS

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: <b>K307</b>			

Carbon Black Content	Range	%	2.45
ASTM D4218			

Carbon Black Dispersion	Category	10 in Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	30 N/mm (kN/m)	169 ppi	2,586	2,764	2,675 psi
ASTM D6693						
ASTM D638 (Modified)					3,834	3,237
( 2 inches / minute )						

Average Strength @ Break	39 N/mm (kN/m)	223 ppi	3,536 psi
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Elongation ASTM D6693	Average Elongation @ Yield	%	21.06	15.18	18.12
ASTM D638 (Modified)					
( 2 inches / minute )					
Lo = 1.3" Yield				504.5	569.4
Lo = 2.0" Break	Average Elongation @ Break	%	537.0		

Dimensional Stability	Average Dimensional change	%	-0.33
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	256.0 N	57.412	57.716	57.564 lbs
ASTM D1004 (Modified)					

Puncture Resistance	Average Peak Load	443.7 N	99.756 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	644.5 N	144.89 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-29-11**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05





# quality certificate

ROLL # **443568-11**

Lot #: **7110583**

Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.47 mm	58 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.76 mm	69 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: 28/35 mil  
TOP / BOTTOM

AVE: 1.58 mm 62 mil

OIT(Standard) ASTM D3895 minutes 186

TEST  
RESULTS

Specific Gravity ASTM D792	Density	g/cc	.947
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MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	.27
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Carbon Black Content ASTM D4218	Range	%	2.45
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Carbon Black Dispersion 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 (kN/m)	166 ppi	2,586 2,764 2,675 psi
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Average Strength @ Break	39 N/mm (kN/m)	220 ppi	3,834 3,237 3,536 psi
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Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	21.06 15.18 18.12
Average Elongation @ Break	%	504.5 569.4 537.0	

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.33
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Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	256.0 N	57.412 57.716 57.564 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	443.7 N	99.756 lbs
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Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	644.5 N	144.89 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	PASS
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-29-11**

Signature: *[Signature]*  
Quality Control Department

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12/23/05



# quality certificate

ROLL # **443569-11**

Lot #: **7110583**

Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.46 mm	57 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.75 mm	69 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	27/36 mil	AVE:	1.55 mm 61 mil	OIT(Standard) ASTM D3895	minutes	186
TOP / BOTTOM						
Specific Gravity	Density					.947
ASTM D792						
MFI ASTM D1238	Melt Flow Index 190°C /2160 g					.27
COND. E						
GRADE:	K307					
Carbon Black Content	Range					2.45
ASTM D4218						
Carbon Black Dispersion	Category					10 in Cat 1
ASTM D5596						
Tensile Strength	Average Strength @ Yield	29 N/mm (kN/m)	163 ppi			2,586
ASTM D6693						2,764
ASTM D638 (Modified)	Average Strength @ Break	38 N/mm (kN/m)	216 ppi			2,675 psi
( 2 inches / minute )						3,834
						3,237
						3,536 psi
Elongation ASTM D6693	Average Elongation @ Yield	%				21.06
ASTM D638 (Modified)						15.18
( 2 inches / minute )	Average Elongation @ Break	%				18.12
Lo = 1.3" Yield						504.5
Lo = 2.0" Break						569.4
						537.0
Dimensional Stability	Average Dimensional change	%				-0.33
ASTM D1204 (Modified)						
Tear Resistance	Average Tear Resistance	256.0 N				57.412
ASTM D1004 (Modified)						57.716
						57.564 lbs
Puncture Resistance	Average Peak Load	443.7 N				99.756 lbs
FTMS 101 Method 2065 (Modified)						
Puncture Resistance	Average Peak Load	644.5 N				144.89 lbs
ASTM D4833 (Modified)						
ESCR	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED
ASTM D1693						
Notched Constant Tensile Load	pass / fail @ 30%	300 hrs				PASS
ASTM D5397						

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-29-11**  
Signature: *[Signature]*  
Quality Control Department

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REV 03  
12/23/05



# quality certificate

ROLL # **443670-11**Lot #: **7110583**Liner Type: **MICROSPIKE™ HDPE**

Measurement	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994 ✓ (Modified)	MIN: 1.49 mm	59 mil	Length.....	153.926 m	505.0 feet
	MAX: 1.65 mm	65 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466: 27/36 mil	AVE: 1.57 mm	62 ✓ mil	OIT(Standard) ASTM D3895 minutes	186 ✓	TEST RESULTS

Specific Gravity ASTM D792 ✓	Density	g/cc	.945 ✓
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MFI ASTM D1238 ✓ COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	.27 ✓
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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 )	<u>Average</u> Strength @ Yield	27 N/mm (kN/m)	155 ppi	2,510 psi
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	<u>Average</u> Strength @ Break	35 N/mm (kN/m)	197 ppi	3,195 psi
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Elongation ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	<u>Average</u> Elongation @ Yield	%	16.17 ✓
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	<u>Average</u> Elongation @ Break	%	541.0 ✓
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.33
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Tear Resistance ASTM D1004 (Modified) ✓	<u>Average</u> Tear Resistance	247.4 N	55.621 lbs ✓
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	402.6 N	90.510 lbs
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Puncture Resistance ASTM D4833 (Modified) ✓	Average Peak Load	641.6 N	144.23 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	PASS ✓
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-29-11**Signature:   
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12/23/05



# quality certificate

ROLL # **443673-11**

Lot #: **7110583**

Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.39 mm	55 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.64 mm	65 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: **26/35** mil AVE: **1.52 mm 60 mil** OIT(Standard) ASTM D3895 minutes **186** **TEST RESULTS**  
TOP / BOTTOM

Specific Gravity ASTM D792	Density	g/cc	<b>.945</b>
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MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	<b>.27</b>
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Carbon Black Content ASTM D4218	Range	%	<b>2.46</b>
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Carbon Black Dispersion ASTM D5596	Category		<b>10 in Cat 1</b>
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Tensile Strength ASTM D6693	Average Strength @ Yield	<b>26</b> N/mm (kN/m)	<b>150</b> ppi	<b>2,510</b> psi
ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Break	<b>33</b> N/mm (kN/m)	<b>191</b> ppi	<b>3,195</b> psi

Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield	Average Elongation @ Yield	%	<b>16.17</b>
Lo = 2.0" Break	Average Elongation @ Break	%	<b>541.0</b>

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	<b>-0.33</b>
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Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	<b>247.4</b> N	<b>55.621</b> lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	<b>402.6</b> N	<b>90.510</b> lbs
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Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	<b>641.6</b> N	<b>144.23</b> lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	<b>CERTIFIED</b>
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	<b>PASS</b>
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-29-11**

Signature:   
Quality Control Department

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12/23/05

ROLL # **443674-11**Lot #: **7110583**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994 ✓ (Modified)	MIN:	1.39 mm	55 mil	Length.....	153.926 m	505.0 feet
	MAX:	1.67 mm	66 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466: 26/33 mil ✓ TOP / BOTTOM	AVE:	1.52 mm	60 mil ✓	OIT(Standard) ASTM D3895 minutes ✓	186	

**TEST RESULTS**

Specific Gravity ASTM D792 ✓	Density	g/cc	.947 ✓
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MFI ASTM D1238 ✓ COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	.27 ✓
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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 )	<u>Average</u> Strength @ Yield	27 N/mm (kN/m)	152 ppi ✓ 2,545 psi ✓ 2,560 psi ✓
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	<u>Average</u> Strength @ Break	34 N/mm (kN/m)	191 ppi ✓ 3,199 psi ✓ 3,257 psi ✓ 3,110 psi ✓
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Elongation ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	<u>Average</u> Elongation @ Yield	%	17.06 ✓ 15.78 16.34
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	<u>Average</u> Elongation @ Break	%	539.9 ✓ 490.1 589.7
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-0.33
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Tear Resistance ASTM D1004 (Modified) ✓	<u>Average</u> Tear Resistance	257.5 N	57.902 lbs ✓ 58.010 lbs ✓ 57.793 lbs ✓
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	423.5 N	95.220 lbs
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Puncture Resistance ASTM D4833 (Modified) ✓	Average Peak Load	659.4 N	148.24 lbs ✓
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397 ✓	pass / fail @ 30%	300 hrs	PASS ✓
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-29-11**Signature:   
Quality Control Department60HDmic FRM  
REV 03  
12/23/05



# quality certificate

ROLL #

**443675-11**

Lot #:

**7110583**Liner Type: **MICROSPIKE™ HDPE**

## Measurement

ASTM D5994

(Modified)

MIN:

METRIC

ENGLISH

Thickness..... 1.5 mm 60 mil

Length..... 153.926 m 505.0 feet

Width..... 7.01 m; 23.0 feet

MAX:

1.67 mm

66

mil

AVE:

1.55 mm

61

mil

Asperity ASTM D7466: 26/33 mil  
TOP / BOTTOM

OIT(Standard) ASTM D3895 minutes 186

TEST  
RESULTSSpecific 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

%

2.46

Carbon Black Dispersion  
ASTM D5596

Category

10 in Cat 1

Tensile Strength  
ASTM D6693ASTM D638 (Modified)  
( 2 inches / minute )

Average Strength @ Yield

27 N/mm (kN/m)

155 ppi

2,529  
2,560

2,545 psi

Average Strength @ Break

34 N/mm (kN/m)

195 ppi

3,287  
3,110

3,199 psi

Elongation ASTM D6693  
ASTM D638 (Modified)  
( 2 inches / minute )

Lo = 1.3" Yield

Lo = 2.0" Break

Average Elongation @ Yield

%

18.78  
15.34

17.06

Average Elongation @ Break

%

490.1  
589.7

539.9

Dimensional Stability  
ASTM D1204 (Modified)

Average Dimensional change

%

-0.33

Tear Resistance

ASTM D1004 (Modified)

Average Tear Resistance

257.5 N

58.010

57.793

57.902 lbs

Puncture Resistance

FTMS 101 Method 2065 (Modified)

Average Peak Load

423.5 N

95.220 lbs

Puncture Resistance

ASTM D4833 (Modified)

Average Peak Load

659.4 N

148.24 lbs

ESCR

ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

CERTIFIED

Notched Constant Tensile Load  
ASTM D5397

pass / fail @ 30%

300 hrs

PASS

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date:

**10-29-11**

Signature

Quality Control Department

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# quality certificate

ROLL # **443677-11**Lot #: **7110583**Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)	MIN:	METRIC <b>1.49</b> mm	ENGLISH <b>59</b> mil	Thickness.....	<b>1.5</b> mm	<b>60</b> mil
				Length.....	<b>153.926</b> m	<b>505.0</b> feet
	MAX:	<b>1.74</b> mm	<b>69</b> mil	Width.....	<b>7.01</b> m;	<b>23.0</b> feet
Asperity ASTM D7466: TOP / BOTTOM	<b>26/31</b> mil	AVE:	<b>1.58</b> mm <b>62</b> mil	OIT(Standard) ASTM D3895	minutes	<b>186</b>
Specific Gravity ASTM D792	Density			g/cc		<b>.947</b>
MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g			g/10 min		<b>.27</b>
Carbon Black Content ASTM D4218	Range			%		<b>2.46</b>
Carbon Black Dispersion ASTM D5596	Category					<b>10 in Cat 1</b>
Tensile Strength ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Yield	<b>28</b> N/mm (kN/m)		<b>158</b> ppi		<b>2,545</b> psi
	Average Strength @ Break	<b>35</b> N/mm (kN/m)		<b>199</b> ppi		<b>3,199</b> psi
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%				<b>17.06</b>
	Average Elongation @ Break	%				<b>539.9</b>
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				<b>-0.33</b>
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	<b>257.5</b> N				<b>57.902</b> lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	<b>423.5</b> N				<b>95.220</b> lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	<b>659.4</b> N				<b>148.24</b> lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				<b>CERTIFIED</b>
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				<b>PASS</b>

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-29-11**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05





# quality certificate

ROLL # **443678-11**

Lot #: **7110583**

Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994 ✓ (Modified)	MIN:	1.50 mm	59 mil	Length.....	153.926 m	505.0 feet
	MAX:	1.64 mm	65 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466: ✓ TOP / BOTTOM	27/38 mil	AVE: 1.56 mm	61 mil ✓	OIT(Standard) ASTM D3895 minutes	186	

## TEST RESULTS

Specific Gravity ASTM D792 ✓	Density	g/cc	.945 ✓
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MFI ASTM D1238 ✓ COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	.27 ✓
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Carbon Black Content ASTM D4218 ✓	Range	%	2.53 ✓
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Carbon Black Dispersion ASTM D5596 ✓	Category		10 in Cat 1 ✓
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Tensile Strength ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute )	<u>Average</u> Strength @ Yield	29 N/mm (kN/m)	164 ppi	2,674 psi ✓
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	<u>Average</u> Strength @ Break	35 N/mm (kN/m)	202 ppi	3,287 psi ✓
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Elongation ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	<u>Average</u> Elongation @ Yield	%		17.04 ✓
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	<u>Average</u> Elongation @ Break	%		517.8 ✓
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.33
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Tear Resistance ASTM D1004 (Modified) ✓	<u>Average</u> Tear Resistance	252.2 N		56.697 lbs ✓
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	375.7 N		84.466 lbs
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Puncture Resistance ASTM D4833 (Modified) ✓	Average Peak Load	609.6 N		137.05 lbs ✓
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED
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Notched Constant Tensile Load ASTM D5397 ✓	pass / fail @ 30%	300 hrs		PASS ✓
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-30-11**  
Signature: *[Signature]*  
Quality Control Department

60HDmic FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **443679-11**Lot #: **7110583**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.48 mm	58 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.66 mm	65 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	25/36 mil	AVE:	1.56 mm	61 mil		
TOP / BOTTOM						

OIT(Standard) ASTM D3895 minutes **186**

## TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		<b>.945</b>
MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g		g/10 min		<b>.27</b>
Carbon Black Content ASTM D4218	Range		%		<b>2.53</b>
Carbon Black Dispersion ASTM D5596	Category				<b>10 in Cat 1</b>
Tensile Strength ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Yield	<b>29</b> N/mm (kN/m)		<b>164</b> psi	<b>2,674</b> psi
	Average Strength @ Break	<b>35</b> N/mm (kN/m)		<b>202</b> psi	<b>3,287</b> psi
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%			<b>17.04</b>
	Average Elongation @ Break	%			<b>517.8</b>
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			<b>-0.33</b>
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	<b>252.2</b> N			<b>56.697</b> lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	<b>375.7</b> N			<b>84.466</b> lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	<b>609.6</b> N			<b>137.05</b> lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			<b>CERTIFIED</b>
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			<b>PASS</b>

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-30-11**Signature:   
Quality Control Department

60HDmic.FRM  
REV 03  
12/23/05



CoA Date: 07/30/2011

## Certificate of Analysis

Shipped To: AGRU AMERICA INC  
500 GARRISON RD  
GEORGETOWN SC 29440  
USA

Recipient: PALMER  
Fax:

Delivery #: 88305989  
PO #: 5844  
Weight: 185800 LB  
Ship Date: 07/30/2011  
Package: BULK  
Mode: Hopper Car  
Car #: PSPX002613  
Seal No: 270868

Product:  
MARLEX POLYETHYLENE K307 BULK

Lot Number: 8210664

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.28	g/10mi
HLMI Flow Rate	ASTM D1238	22	g/10mi
Density	D1505 or D4883	0.937	g/cm3
Pellet Count	P02.08.03	26	pel/g
Production Date		05/29/2011	

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 +1-832-813-4806

ROLL # **443682-11**Lot #: **8210664**Liner Type: **MICROSPIKE™ HDPE**Measurement  
ASTM D5994 ✓  
(Modified)MIN: **1.51** mm **59** mil  
MAX: **1.67** mm **66** milAsperity ASTM D7466: **26/33** mil  
TOP / BOTTOMMETRIC ENGLISH  
AVE: **1.57** mm **62** ✓ milThickness..... **1.5** mm **60** mil  
Length..... **153.926** m **505.0** feet  
Width..... **7.01** m; **23.0** feetOIT(Standard) ASTM D3895 minutes **190** ✓  
**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 **.28** ✓Carbon Black Content  
ASTM D4218 ✓Range % **2.48** ✓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 (kN/m) **166** ppi **2,689** psi ✓  
2,693 ✓  
2,704 ✓Average Strength @ Break **35** N/mm (kN/m) **200** ppi **3,239** psi ✓  
3,336 ✓  
3,142 ✓Elongation ASTM D6693 ✓  
ASTM D638 (Modified)  
( 2 inches / minute )  
Lo = 1.3" Yield  
Lo = 2.0" BreakAverage Elongation @ Yield % **17.35** ✓  
19.55  
15.15Average Elongation @ Break % **529.4** ✓  
489.1  
569.7Dimensional Stability  
ASTM D1204 (Modified)Average Dimensional change % **-0.39**Tear Resistance  
ASTM D1004 (Modified) ✓Average Tear Resistance **268.8** N **60.441** lbs ✓  
60.625 ✓  
60.257 ✓Puncture Resistance  
FTMS 101 Method 2065 (Modified)Average Peak Load **445.8** N **100.22** lbsPuncture Resistance  
ASTM D4833 (Modified) ✓Average Peak Load **669.3** N **150.48** lbs ✓ESCR  
ASTM D1693Minimum Hrs w/o Failures **1500** hrs **CERTIFIED**Notched Constant Tensile Load  
ASTM D5397 ✓pass / fail @ 30% **300** hrs **PASS** ✓Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**Date: **10-30-11**Signature: *[Signature]*  
Quality Control Department60HDMic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **443683-11**Lot #: **8210664**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.48 mm	58 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.67 mm	66 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: 25/34 mil	AVE:	1.57 mm	62 mil	OIT(Standard) ASTM D3895 minutes	190	TEST RESULTS
TOP / BOTTOM						

Specific Gravity	Density	g/cc	.945
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.28
COND. E			
GRADE: K307			

Carbon Black Content	Range	%	2.48
ASTM D4218			

Carbon Black Dispersion	Category	10 in Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	29 N/mm (kN/m)	166 ppi	2,593	2,784
ASTM D6693				2,689	psi
ASTM D638 (Modified)				3,336	
( 2 inches / minute )				3,142	

Average Strength @ Break	35 N/mm (kN/m)	200 ppi	3,239	psi
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Elongation ASTM D6693	Average Elongation @ Yield	%	17.35
ASTM D638 (Modified)			
( 2 inches / minute )			
Lo = 1.3" Yield			489.1
Lo = 2.0" Break	Average Elongation @ Break	%	529.4

Dimensional Stability	Average Dimensional change	%	-0.39
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	268.8 N	60.625	60.257
ASTM D1004 (Modified)			60.441	lbs

Puncture Resistance	Average Peak Load	445.8 N	100.22	lbs
FTMS 101 Method 2065 (Modified)				

Puncture Resistance	Average Peak Load	669.3 N	150.48	lbs
ASTM D4833 (Modified)				

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-30-11**  
Signature: *[Signature]*  
Quality Control Department

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REV 03  
12/23/05



# quality certificate

ROLL # **443784-11**Lot #: **8210664**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.46 mm	57 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.70 mm	67 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	25/32 mil	AVE:	1.57 mm	62 mil		
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	190

**TEST RESULTS**

Specific Gravity ASTM D792	Density					<b>.945</b>
MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g					<b>.28</b>
Carbon Black Content ASTM D4218	Range					<b>2.47</b>
Carbon Black Dispersion ASTM D5596	Category					<b>10 in Cat 1</b>
Tensile Strength ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Yield	<b>29</b> N/mm (kN/m)		<b>166</b> ppi		<b>2,689</b> psi
	Average Strength @ Break	<b>35</b> N/mm (kN/m)		<b>200</b> ppi		<b>3,239</b> psi
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%				<b>17.35</b>
	Average Elongation @ Break	%				<b>529.4</b>
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				<b>-0.39</b>
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	<b>268.8</b> N				<b>60.441</b> lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	<b>445.8</b> N				<b>100.22</b> lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	<b>669.3</b> N				<b>150.48</b> lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				<b>CERTIFIED</b>
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				<b>PASS</b>

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-30-11**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **443785-11**Lot #: **8210664**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.48 mm	58 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.69 mm	67 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	25/35 mil	AVE:	1.58 mm	62 mil		
TOP / BOTTOM						

OIT(Standard) ASTM D3895 minutes **190**

**TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	<b>.945</b>
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MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	<b>.28</b>
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Carbon Black Content ASTM D4218	Range	%	<b>2.47</b>
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Carbon Black Dispersion ASTM D5596	Category		<b>10 in Cat 1</b>
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Tensile Strength ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Yield	29 N/mm (kN/m)	167 ppi	2,593 2,784 2,689 psi
	Average Strength @ Break	35 N/mm (kN/m)	201 ppi	3,336 3,142 3,239 psi

Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		19.56 15.15 17.35
	Average Elongation @ Break	%		489.1 569.7 529.4

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		<b>-0.39</b>
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Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	268.8 N		60.625 60.257 60.441 lbs
--	-------------------------	---------	--	--------------------------------

Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	445.8 N		100.22 lbs
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Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	669.3 N		150.48 lbs
--	-------------------	---------	--	------------

ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		<b>CERTIFIED</b>
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		<b>PASS</b>
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-30-11**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **443786-11**

Lot #: **8210664**

Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 ✓ (Modified)	MIN:	METRIC <b>1.43</b> mm	ENGLISH <b>56</b> mil	Thickness.....	<b>1.5</b> mm	<b>60</b> mil
	MAX:	<b>1.65</b> mm	<b>65</b> mil	Length.....	<b>153.926</b> m	<b>505.0</b> feet
Asperity ASTM D7466: ✓ TOP / BOTTOM	AVE:	<b>1.56</b> mm	<b>61</b> mil ✓	Width.....	<b>7.01</b> m	<b>23.0</b> feet
Specific Gravity ASTM D792 ✓	Density			g/cc		<b>.948</b> ✓
MFI ASTM D1238 ✓ COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g			g/10 min		<b>.28</b> ✓
Carbon Black Content ASTM D4218 ✓	Range			%		<b>2.48</b> ✓
Carbon Black Dispersion ASTM D5596 ✓	Category					<b>10 in Cat 1</b> ✓
Tensile Strength ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute )	<u>Average</u> Strength @ Yield	<b>29</b> N/mm (kN/m)		<b>168</b> ppi	<b>2,742</b> psi	<b>2,652</b> ✓ <b>2,502</b> ✓
	<u>Average</u> Strength @ Break	<b>38</b> N/mm (kN/m)		<b>219</b> ppi	<b>3,572</b> psi	<b>3,848</b> ✓ <b>3,256</b> ✓
Elongation ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	<u>Average</u> Elongation @ Yield	%				<b>16.81</b> ✓ <b>18.63</b> ✓ <b>14.98</b> ✓
	<u>Average</u> Elongation @ Break	%				<b>542.1</b> ✓ <b>492.2</b> ✓ <b>691.9</b> ✓
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				<b>-0.39</b> ✓
Tear Resistance ASTM D1004 (Modified) ✓	<u>Average</u> Tear Resistance	<b>272.9</b> N				<b>61.973</b> ✓ <b>60.739</b> ✓ <b>61.356</b> lbs ✓
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	<b>471.9</b> N				<b>106.08</b> lbs
Puncture Resistance ASTM D4833 (Modified) ✓	Average Peak Load	<b>672.4</b> N				<b>151.16</b> lbs ✓
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				<b>CERTIFIED</b>
Notched Constant Tensile Load ASTM D5397 ✓	pass / fail @ 30%	300 hrs				<b>PASS</b> ✓

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-30-11**

Signature:   
Quality Control Department

60HDMic FRM  
REV 03  
12/23/05





# quality certificate

ROLL # **443787-11**Lot #: **8210664**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.46 mm	57 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.66 mm	65 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	25/36 mil	AVE:	1.55 mm	61 mil		
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	190

**TEST RESULTS**

Specific Gravity ASTM D792	Density					.948
MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g					.28
Carbon Black Content ASTM D4218	Range					2.48
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 (kN/m)	167 ppi			2,682 2,802 2,742 psi
	Average Strength @ Break	38 N/mm (kN/m)	218 ppi			3,848 3,295 3,572 psi
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%				18.63 14.99 16.81
	Average Elongation @ Break	%				492.2 591.9 542.1
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				-0.39
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	272.9 N				61.973 60.739 61.356 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	471.9 N				106.08 lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	672.4 N				151.16 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				PASS

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-30-11**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL #

**443788-11**

Lot #:

**8210664**Liner Type: **MICROSPIKE™ HDPE**

Measurement

ASTM D5994

(Modified)

MIN:

METRIC

ENGLISH

**1.50** mm **59** mil

MAX:

**1.68** mm **66** mil

Thickness.....

**1.5** mm**60** mil

Length.....

**153.926** m**505.0** feet

Width.....

**7.01** m;**23.0** feet

Asperity ASTM D7466:

**28/38** mil

AVE:

**1.57** mm**62** mil

TOP / BOTTOM

OIT(Standard) ASTM D3895 minutes **190**

TEST

RESULTS

Specific Gravity

ASTM D792

Density

g/cc

**.948**

MFI ASTM D1238

COND. E

GRADE:

**K307**

Melt Flow Index 190°C /2160 g

g/10 min

**.28**

Carbon Black Content

ASTM D4218

Range

%

**2.48**

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 (kN/m)**169** psi**2,682****2,802****2,742** psi**3,848****3,295**

Average Strength @ Break

**39** N/mm (kN/m)**221** psi**3,572** psi**18.63****14.99**

Elongation ASTM D6693

ASTM D638 (Modified)

( 2 inches / minute )

Lo = 1.3" Yield

Lo = 2.0" Break

Average Elongation @ Yield

%

**16.81**

Average Elongation @ Break

%

**492.2****591.9****542.1**

Dimensional Stability

ASTM D1204 (Modified)

Average Dimensional change

%

**-0.39**

Tear Resistance

ASTM D1004 (Modified)

Average Tear Resistance

**272.9** N**61.973****60.739****61.356** lbs

Puncture Resistance

FTMS 101 Method 2065 (Modified)

Average Peak Load

**471.9** N**106.08** lbs

Puncture Resistance

ASTM D4833 (Modified)

Average Peak Load

**672.4** N**151.16** lbs

ESCR

ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

**CERTIFIED**

Notched Constant Tensile Load

ASTM D5397

pass / fail @ 30%

300 hrs

**PASS**Customer: **Chenango Contracting, Inc.**PO: **2276 Honeywell Sediment Consolidation**Destination **Syracuse, NY**Date: **10-30-11**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **443789-11**Lot #: **8210664**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.49 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.70 mm	67 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: 25/37 mil	AVE:	1.59 mm	63 mil	OIT(Standard) ASTM D3895 minutes	190	TEST RESULTS
TOP / BOTTOM						

Specific Gravity	Density	g/cc	.948
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.28
COND. E			
GRADE: K307			

Carbon Black Content	Range	%	2.48
ASTM D4218			

Carbon Black Dispersion	Category	10 in Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	30 N/mm (kN/m)	172 ppi	2,682	
ASTM D6693				2,802	
ASTM D638 (Modified)	Average Strength @ Break	39 N/mm (kN/m)	224 ppi	2,742	psi
( 2 inches / minute )				3,848	
				3,295	

Elongation ASTM D6693	Average Elongation @ Yield	%	16.81
ASTM D638 (Modified)			
( 2 inches / minute )	Average Elongation @ Break	%	542.1
Lo = 1.3" Yield			
Lo = 2.0" Break			

Dimensional Stability	Average Dimensional change	%	-0.39
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	272.9 N	61.356 lbs
ASTM D1004 (Modified)			

Puncture Resistance	Average Peak Load	471.9 N	106.08 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	672.4 N	151.16 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 -hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-30-11**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **443790-11**

Lot #: **8210664**

Liner Type: **MICROSPIKE™ HDPE**

Measurement  
ASTM D5994 ✓  
(Modified)

METRIC ENGLISH  
MIN: 1.49 mm 59 mil  
MAX: 1.67 mm 66 mil  
AVE: 1.60 mm 63 mil ✓

Thickness..... 1.5 mm 60 mil  
Length..... 153.926 m 505.0 feet  
Width..... 7.01 m; 23.0 feet

Asperity ASTM D7466: 26/33 mil  
TOP / BOTTOM

OIT(Standard) ASTM D3895 minutes 190 ✓  
**TEST RESULTS**

Specific Gravity  
ASTM D792 ✓

Density g/cc .948 ✓

MFI ASTM D1238 ✓  
COND. E  
GRADE: **K307**

Melt Flow Index 190°C /2160 g g/10 min .28 ✓

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 32 N/mm (kN/m) 183 ppi 2,903 psi ✓

Average Strength @ Break 39 N/mm (kN/m) 221 ppi 3,512 psi ✓

Elongation ASTM D6693 ✓  
ASTM D638 (Modified)  
( 2 inches / minute )  
Lo = 1.3" Yield  
Lo = 2.0" Break

Average Elongation @ Yield % 17.60 ✓

Average Elongation @ Break % 507.0 ✓

Dimensional Stability  
ASTM D1204 (Modified)

Average Dimensional change % -0.39

Tear Resistance  
ASTM D1004 (Modified) ✓

Average Tear Resistance 266.5 N 59.921 lbs ✓

Puncture Resistance  
FTMS 101 Method 2065 (Modified)

Average Peak Load 437.5 N 98.370 lbs

Puncture Resistance  
ASTM D4833 (Modified) ✓

Average Peak Load 635.9 N 142.96 lbs ✓

ESCR  
ASTM D1693

Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**

Notched Constant Tensile Load  
ASTM D5397 ✓

pass / fail @ 30% 300 hrs **PASS** ✓

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-30-11**

Signature: *[Signature]*  
Quality Control Department

60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **443791-11**Lot #: **8210664**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.55 mm	61 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.67 mm	66 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	23/34 mil	AVE:	1.63 mm	64 mil	TEST RESULTS	
TOP / BOTTOM				OTT(Standard) ASTM D3895	minutes	190

Specific Gravity	Density	g/cc	.948
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.28
COND. E			
GRADE: K307			

Carbon Black Content	Range	%	2.29
ASTM D4218			

Carbon Black Dispersion	Category	10 in Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	33 N/mm (kN/m)	186 ppi	2,797	
ASTM D6693				3,008	
ASTM D638 (Modified)				2,903	psi
( 2 inches / minute )	Average Strength @ Break	39 N/mm (kN/m)	225 ppi	3,742	
				3,282	
				3,512	psi

Elongation ASTM D6693	Average Elongation @ Yield	%	20.44
ASTM D638 (Modified)			14.75
( 2 inches / minute )			17.60
Lo = 1.3" Yield	Average Elongation @ Break	%	482.2
Lo = 2.0" Break			531.8
			507.0

Dimensional Stability	Average Dimensional change	%	-0.39
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	266.5 N	61.032
ASTM D1004 (Modified)			58.811
			59.921 lbs

Puncture Resistance	Average Peak Load	437.5 N	98.370 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	635.9 N	142.96 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-30-11**  
Signature: *[Signature]*  
Quality Control Department

60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **443792-11**Lot #: **8210664**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.57 mm	62 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.82 mm	72 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	22/30 mil	AVE:	1.67 mm	66 mil		
TOP / BOTTOM						

OIT(Standard) ASTM D3895 minutes **190**

## TEST RESULTS

Specific Gravity ASTM D792	Density				<b>.948</b>
MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g				<b>.28</b>
Carbon Black Content ASTM D4218	Range				<b>2.29</b>
Carbon Black Dispersion ASTM D5596	Category				<b>10 in Cat 1</b>
Tensile Strength ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Yield	<b>33</b> N/mm (kN/m)	<b>191</b> psi		<b>2,903</b> psi
	Average Strength @ Break	<b>40</b> N/mm (kN/m)	<b>231</b> psi		<b>3,512</b> psi
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%			<b>17.60</b>
	Average Elongation @ Break	%			<b>507.0</b>
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			<b>-0.39</b>
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	<b>266.5</b> N			<b>59.921</b> lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	<b>437.5</b> N			<b>98.370</b> lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	<b>635.9</b> N			<b>142.96</b> lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			<b>CERTIFIED</b>
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			<b>PASS</b>

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-30-11**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **443793-11**Lot #: **8210664**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.76 mm	69 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	24/30 mil	AVE:	1.65 mm	65 mil		
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	190

**TEST RESULTS**

Specific Gravity ASTM D792	Density					.948
MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g					.28
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	33 N/mm (kN/m)	189 ppi			2,797 3,008 2,903 psi
	Average Strength @ Break	40 N/mm (kN/m)	228 ppi			3,742 3,282 3,512 psi
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%				20.44 14.75 17.60
	Average Elongation @ Break	%				482.2 531.8 507.0
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				-0.39
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	266.5 N				61.032 58.811 59.921 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	437.5 N				98.370 lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	635.9 N				142.96 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				PASS

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-30-11**Signature:   
Quality Control Department60HDmic.FRM  
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12/23/05

ROLL # **443796-11**Lot #: **8210664**Liner Type: **MICROSPIKE™ HDPE**Measurement  
ASTM D5994 ✓  
(Modified)

	METRIC	ENGLISH
MIN:	1.38 mm	54 mil
MAX:	1.64 mm	65 mil
AVE:	1.52 mm	60 mil ✓

Thickness.....	1.5 mm	60 mil
Length.....	153.926 m	505.0 feet
Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: **26/33** mil  
TOP / BOTTOMOIT(Standard) ASTM D3895 minutes **190** ✓  
**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 **.28** ✓Carbon Black Content  
ASTM D4218 ✓Range % **2.42** ✓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 (kN/m) **160** ppi **2,675** psi ✓  
2,500 ✓  
2,800 ✓Average Strength @ Break **35** N/mm (kN/m) **197** ppi **3,298** psi ✓  
3,371 ✓  
3,224 ✓Elongation ASTM D6693 ✓  
ASTM D638 (Modified)  
(2 inches / minute)  
Lo = 1.3" Yield  
Lo = 2.0" BreakAverage Elongation @ Yield % **15.38** ✓  
17.76  
12.99Average Elongation @ Break % **528.8** ✓  
468.4  
589.3Dimensional Stability  
ASTM D1204 (Modified)Average Dimensional change % **-0.39**Tear Resistance  
ASTM D1004 (Modified) ✓Average Tear Resistance **268.9** N **60.447** lbs ✓  
61.226 ✓  
59.867 ✓Puncture Resistance  
FTMS 101 Method 2065 (Modified)Average Peak Load **410.4** N **92.277** lbsPuncture Resistance  
ASTM D4833 (Modified) ✓Average Peak Load **605.3** N **136.07** lbs ✓ESCR  
ASTM D1693Minimum Hrs w/o Failures **1500** hrs **CERTIFIED**Notched Constant Tensile Load  
ASTM D5397 ✓pass / fail @ 30% **300** hrs **PASS** ✓Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**Date: **10-30-11**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05





# quality certificate

ROLL # **443797-11**Lot #: **8210664**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.42 mm	56 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.64 mm	65 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	26/35 mil	AVE:	1.52 mm	60 mil		
				OIT(Standard) ASTM D3895	minutes	190
				TEST RESULTS		

Specific Gravity	Density	g/cc	.946
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.28
COND. E			
GRADE:	K307		

Carbon Black Content	Range	%	2.42
ASTM D4218			

Carbon Black Dispersion	Category	10 in Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	28 N/mm (kN/m)	160 ppi	2,550	
ASTM D6693				2,800	
ASTM D638 (Modified)				2,675	psi
( 2 inches / minute )				3,371	
				3,224	

Average Strength @ Break	35 N/mm (kN/m)	197 ppi	3,298	psi
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Elongation ASTM D6693	Average Elongation @ Yield	%	17.76
ASTM D638 (Modified)			12.99
( 2 inches / minute )			15.38
Lo = 1.3" Yield			468.4
Lo = 2.0" Break	Average Elongation @ Break	%	589.3
			528.8

Dimensional Stability	Average Dimensional change	%	-0.39
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	268.9 N	61.226
ASTM D1004 (Modified)			59.667
			60.447
			lbs

Puncture Resistance	Average Peak Load	410.4 N	92.277
FTMS 101 Method 2065 (Modified)			lbs

Puncture Resistance	Average Peak Load	605.3 N	136.07
ASTM D4833 (Modified)			lbs

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-30-11**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **444101-11**Lot #: **8210664**Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 ✓ (Modified)	MIN:	METRIC 1.43 mm	ENGLISH 56 mil	Thickness.....	1.5 mm	60 mil
	MAX:	1.65 mm	65 mil	Length.....	153.926 m	505.0 feet
Asperity ASTM D7466: 25/35 mil TOP / BOTTOM	AVE:	1.54 mm	61 mil ✓	Width.....	7.01 m	23.0 feet
				OIT(Standard) ASTM D3895 minutes	190	TEST RESULTS
Specific Gravity ASTM D792 ✓	Density					.946 ✓
MFI ASTM D1238 ✓ COND. E GRADE: K307	Melt Flow Index 190°C /2160 g					.28 ✓
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	29 N/mm (kN/m)		165 ppi		2,716 psi ✓ 2,643 ✓ 2,768 ✓
	Average Strength @ Break	35 N/mm (kN/m)		201 ppi		3,312 psi ✓ 3,438 ✓ 3,240 ✓
Elongation ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%				17.03 ✓ 19.20 14.77
	Average Elongation @ Break	%				538.3 ✓ 487.8 588.7
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				-0.39
Tear Resistance ASTM D1004 (Modified) ✓	Average Tear Resistance	259.4 N				58.323 lbs ✓ 59.268 ✓ 67.358 ✓
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	456.9 N				102.71 lbs
Puncture Resistance ASTM D4833 (Modified) ✓	Average Peak Load	630.1 N				141.65 lbs ✓
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED
Notched Constant Tensile Load ASTM D5397 ✓	pass / fail @ 30%	300 hrs				PASS ✓

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-31-11**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **444102-11**Lot #: **8210664**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994 ✓ (Modified)	MIN:	1.39 mm	55 mil	Length.....	153.926 m	505.0 feet
	MAX:	1.66 mm	65 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466: 26/34 mil ✓ TOP / BOTTOM	AVE:	1.52 mm	60 mil ✓			

OIT(Standard) ASTM D3895 minutes **190** **TEST RESULTS**

Specific Gravity ASTM D792 ✓	Density	g/cc	<b>.946</b> ✓
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MFI ASTM D1238 ✓ COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	<b>.28</b> ✓
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Carbon Black Content ASTM D4218 ✓	Range	%	<b>2.30</b> ✓
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Carbon Black Dispersion ASTM D5596 ✓	Category		<b>10 in Cat 1</b> ✓
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Tensile Strength ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute )	<u>Average</u> Strength @ Yield	28 N/mm (kN/m)	163 ppi	2,716 psi
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	<u>Average</u> Strength @ Break	35 N/mm (kN/m)	198 ppi	3,312 psi
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Elongation ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	<u>Average</u> Elongation @ Yield	%		17.03 ✓
	<u>Average</u> Elongation @ Break	%		538.3 ✓

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.39
--	----------------------------	---	--	-------

Tear Resistance ASTM D1004 (Modified) ✓	<u>Average</u> Tear Resistance	259.4 N		58.323 lbs ✓
--	--------------------------------	---------	--	--------------

Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	456.9 N		102.71 lbs
--	-------------------	---------	--	------------

Puncture Resistance ASTM D4833 (Modified) ✓	Average Peak Load	630.1 N		141.65 lbs ✓
--	-------------------	---------	--	--------------

ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		<b>CERTIFIED</b>
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Notched Constant Tensile Load ASTM D5397 ✓	pass / fail @ 30%	300 hrs		<b>PASS</b> ✓
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **10-31-11**Signature:   
Quality Control Department60HDMic.FRM  
REV 03  
12/23/05



CoA Date: 02/22/2012

## Certificate of Analysis

Shipped To: AGRU AMERICA INC  
500 GARRISON RD  
GEORGETOWN SC 29440  
USA

Recipient: PALMER  
Fax:

Delivery #: 88417741  
PO #: 006413  
Weight: 193300 LB  
Ship Date: 02/22/2012  
Package: BULK  
Mode: Hopper Car  
Car #: CHVX896092  
Seal No: 282624

Product:  
MARLEX POLYETHYLENE K307 BULK

Lot Number: 7120200

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.25	g/10mi
HLMI Flow Rate	ASTM D1238	22	g/10mi
Density	D1505 or D4883	0.937	g/cm3
Pellet Count	P02.08.03	26	pel/g
Production Date		02/13/2012	

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 +1-832-813-4806



# quality certificate

ROLL # **311330-12**

Lot #: **7120200**

Liner Type: **MICROSPIKE™ HDPE**

Measurement  
ASTM D5994 ✓  
(Modified)

METRIC ENGLISH  
MIN: 1.45 mm 57 mil  
MAX: 1.61 mm 63 mil  
AVE: 1.53 mm 60 ✓ mil

Thickness..... 1.5 mm 60 mil  
Length..... 153.926 m 505.0 feet  
Width..... 7.01 m; 23.0 feet

Asperity ASTM D7466: 36/31 mil  
TOP / BOTTOM

OIT(Standard) ASTM D3895 minutes 167 ✓  
**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

%

2.21 ✓

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 (kN/m)

153 ✓ ppi

2,456 ✓

2,608 ✓

2,532 psi

3,124 ✓

Average Strength @ Break

33 N/mm (kN/m)

188 ✓ ppi

3,102 ✓

3,113 psi

17.25

14.86

16.06 ✓

Elongation ASTM D6693 ✓  
ASTM D638 (Modified)  
( 2 inches / minute )  
Lo = 1.3" Yield  
Lo = 2.0" Break

Average Elongation @ Yield

%

458.6

375.5

517.6 ✓

Average Elongation @ Break

%

Dimensional Stability  
ASTM D1204 (Modified)

Average Dimensional change

%

-.45

Tear Resistance  
ASTM D1004 (Modified) ✓

Average Tear Resistance

267.8 N

60.943 ✓

59.450 ✓

60.217 lbs ✓

Puncture Resistance  
FTMS 101 Method 2065 (Modified)

Average Peak Load

410.2 N

92.224 lbs

Puncture Resistance  
ASTM D4833 (Modified) ✓

Average Peak Load

612.7 N

137.74 lbs ✓

ESCR  
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

**CERTIFIED**

Notched Constant Tensile Load  
ASTM D5397 ✓

pass / fail @ 30%

300 hrs

**PASS** ✓

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/14/2012**

Signature: *[Signature]*  
Quality Control Department

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REV 03  
12/23/05



# quality certificate

ROLL # **311331-12**Lot #: **7120200**Liner Type: **MICROSPIKE™ HDPE**Measurement  
ASTM D5994 ✓  
(Modified)

	METRIC	ENGLISH
MIN:	1.52 mm	60 mil
MAX:	1.69 mm	67 mil
AVE:	1.59 mm	63 mil

Thickness.....	1.5 mm	60 mil
Length.....	153.926 m	505.0 feet
Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: 37/32 mil  
TOP / BOTTOMOIT(Standard) ASTM D3895 minutes 167 ✓  
**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

%

2.27 ✓

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 (kN/m)

153 ppi ✓

2,371 ✓  
2,524 ✓  
2,446 psi

Average Strength @ Break

34 N/mm (kN/m)

192 ppi ✓

3,193 ✓  
2,936 ✓  
3,065 psiElongation ASTM D6693 ✓  
ASTM D638 (Modified)  
( 2 inches / minute )  
Lo = 1.3" Yield  
Lo = 2.0" Break

Average Elongation @ Yield

%

16.91 ✓  
16.27 ✓  
16.09 ✓

Average Elongation @ Break

%

452.4 ✓  
628.3 ✓  
490.4 ✓Dimensional Stability  
ASTM D1204 (Modified)

Average Dimensional change

%

-.45

Tear Resistance  
ASTM D1004 (Modified) ✓

Average Tear Resistance

247.7 N

57.784 ✓  
53.588 ✓  
55.686 lbs ✓Puncture Resistance  
FTMS 101 Method 2065 (Modified)

Average Peak Load

462.1 N

103.89 lbs

Puncture Resistance  
ASTM D4833 (Modified) ✓

Average Peak Load

635.4 N

142.85 lbs ✓

ESCR  
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

CERTIFIED

Notched Constant Tensile Load  
ASTM D5397 ✓

pass / fail @ 30%

300 hrs

PASS ✓

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**Date: **3/14/2012**Signature: *[Signature]*  
Quality Control Department60HDMic.FRM  
REV 03  
12/23/05



ROLL # **311333-12**Lot #: **7120200**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	<b>1.5 mm</b>	<b>60 mil</b>
ASTM D5994	MIN:	<b>1.47 mm</b>	<b>58 mil</b>	Length.....	<b>153.926 m</b>	<b>505.0 feet</b>
(Modified)	MAX:	<b>1.67 mm</b>	<b>66 mil</b>	Width.....	<b>7.01 m</b>	<b>23.0 feet</b>

Asperity ASTM D7466:	<b>36/32 mil</b>	AVE:	<b>1.55 mm</b>	<b>61 mil</b>	OIT(Standard) ASTM D3895 minutes	<b>167</b>	<b>TEST RESULTS</b>
TOP / BOTTOM							

Specific Gravity	Density	g/cc	<b>.945</b>
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	<b>.25</b>
COND. E			
GRADE: <b>K307</b>			

Carbon Black Content	Range	%	<b>2.27</b>
ASTM D4218			

Carbon Black Dispersion	Category	<b>10 In Cat 1</b>
ASTM D5596		

Tensile Strength	Average Strength @ Yield	<b>26 N/mm (kN/m)</b>	<b>149 ppi</b>	<b>2,371</b>
ASTM D6693				<b>2,521</b>
ASTM D638 (Modified)				<b>2,446 psi</b>
( 2 inches / minute )	Average Strength @ Break	<b>33 N/mm (kN/m)</b>	<b>187 ppi</b>	<b>3,193</b>
				<b>2,936</b>
				<b>3,065 psi</b>

Elongation ASTM D6693	Average Elongation @ Yield	%	<b>16.91</b>
ASTM D638 (Modified)			<b>15.27</b>
( 2 inches / minute )			<b>16.09</b>
Lo = 1.3" Yield			<b>452.4</b>
Lo = 2.0" Break	Average Elongation @ Break	%	<b>528.3</b>
			<b>490.4</b>

Dimensional Stability	Average Dimensional change	%	<b>-.45</b>
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	<b>247.7 N</b>	<b>57.784</b>
ASTM D1004 (Modified)			<b>53.588</b>
			<b>55.686 lbs</b>

Puncture Resistance	Average Peak Load	<b>462.1 N</b>	<b>103.89 lbs</b>
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	<b>635.4 N</b>	<b>142.85 lbs</b>
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	<b>1500 hrs</b>	<b>CERTIFIED</b>
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	<b>300 hrs</b>	<b>PASS</b>
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
 PO: **2276 Honeywell Sediment Consolidation**  
 Destination **Syracuse, NY**

Date: **3/14/2012**Signature: *[Signature]*  
Quality Control Department60HDMic.FRM  
REV 03  
12/23/05





# quality certificate

ROLL # **311334-12**Lot #: **7120200**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.47 mm	58 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	36/32 mil	AVE:	1.54 mm	61 mil		
TOP / BOTTOM					OIT(Standard) ASTM D3895 minutes	167

**TEST RESULTS**

Specific Gravity ASTM D792	Density		g/cc		.945
MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g		g/10 min		.25
Carbon Black Content ASTM D4218	Range		%		2.27
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 (kN/m)	148 ppi	2,371 2,521 2,446 psi
	Average Strength @ Break	33	N/mm (kN/m)	186 ppi	3,193 2,936 3,065 psi
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		16.91 15.27 16.09
	Average Elongation @ Break		%		452.4 528.3 490.4
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-.45
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	247.7	N		57.784 53.588 55.686 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	462.1	N		103.89 lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	635.4	N		142.85 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			PASS

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/14/2012**Signature:   
Quality Control Department

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# quality certificate

ROLL # **311335-12**

Lot #: **7120200**

Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 ✓ (Modified)	MIN:	METRIC 1.47 mm	ENGLISH 58 mil	Thickness.....	1.5 mm	60 mil
Asperity ASTM D7466: 35/34 mil ✓ TOP / BOTTOM	MAX:	1.61 mm	63 mil	Length.....	153.926 m	505.0 feet
	AVE:	1.55 mm	61 ✓ mil	Width.....	7.01 m	23.0 feet
Specific Gravity ASTM D792 ✓	Density			g/cc		
MFI ASTM D1238 ✓ COND. E GRADE: K307	Melt Flow Index 190°C /2160 g			g/10 min		
Carbon Black Content ASTM D4218 ✓	Range			%		
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 (kN/m)	160 ppi ✓	2,481 ✓ 2,751 ✓ 2,616 psi		
	Average Strength @ Break	32 N/mm (kN/m)	185 ppi ✓	3,129 ✓ 2,944 ✓ 3,037 psi		
Elongation ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		20.20 ✓ 14.64 ✓ 17.42 ✓		
	Average Elongation @ Break	%		441.1 ✓ 544.0 ✓ 492.6 ✓		
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%		
Tear Resistance ASTM D1004 (Modified) ✓	Average Tear Resistance	250.6 N		57.969 ✓ 54.689 ✓ 56.329 lbs ✓		
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	386.8 N		86.965 lbs		
Puncture Resistance ASTM D4833 (Modified) ✓	Average Peak Load	561.3 N		126.18 lbs ✓		
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED			
Notched Constant Tensile Load ASTM D5397 ✓	pass / fail @ 30%	300 hrs	PASS ✓			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/14/2012**

Signature: *[Signature]*  
Quality Control Department

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12/23/05



# quality certificate

ROLL # **311336-12**Lot #: **7120200**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.47 mm	58 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.66 mm	65 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: 35/34 mil	AVE:	1.54 mm	61 mil	OIT(Standard) ASTM D3895 minutes	167	TEST RESULTS
TOP / 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	%	2.35
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	28 N/mm (kN/m)	159 psi	2,481
ASTM D6693				2,751
ASTM D638 (Modified)				2,616 psi
( 2 inches / minute )				3,129

Average Strength @ Break	32 N/mm (kN/m)	184 psi	2,944
			3,037 psi

Elongation ASTM D6693	Average Elongation @ Yield	%	20.20
ASTM D638 (Modified)			14.64
( 2 inches / minute )			17.42
Lo = 1.3" Yield			441.1
Lo = 2.0" Break	Average Elongation @ Break	%	544.0

			492.6
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Dimensional Stability	Average Dimensional change	%	-.45
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	250.6 N	57.969
ASTM D1004 (Modified)			54.689
			56.329 lbs

Puncture Resistance	Average Peak Load	386.8 N	86.965 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	561.3 N	126.18 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/14/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311337-12**

Lot #: **7120200**

Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.45 mm	57 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.64 mm	65 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	36/33 mil	AVE:	1.53 mm	60 mil		
TOP / BOTTOM					OIT(Standard) ASTM D3895 minutes	167

## TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		.947
MFI ASTM D1238 COND. E GRADE: <b>K307</b>	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	28	N/mm (kN/m)	158	psi
	Average Strength @ Break	32	N/mm (kN/m)	183	psi
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		
	Average Elongation @ Break		%		
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	250.6	N		
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	386.8	N		
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	561.3	N		
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs		
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300	hrs		

Customer: **Chenango Contracting, Inc.**  
 PO: **2276 Honeywell Sediment Consolidation**  
 Destination **Syracuse, NY**

Date: **3/14/2012**

Signature: *[Signature]*  
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# quality certificate

ROLL # **311338-12**Lot #: **7120200**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.46 mm	57 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.59 mm	63 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: 36/35 mil  
TOP / BOTTOM

AVE: 1.53 mm 60 mil

OIT(Standard) ASTM D3895 minutes 167  
**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 (kN/m)	158 psi	2,481 2,751 2,616 3,129	psi
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Average Strength @ Break	32 N/mm (kN/m)	183 psi	2,944 3,037	psi
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Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	20.20 14.64 17.42 441.1 544.0
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Average Elongation @ Break	%	492.6
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-45
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Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	250.6 N	57.969 54.689 56.329	lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	386.8 N	86.965	lbs
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Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	561.3 N	126.18	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	PASS
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**Date: **3/14/2012**Signature:   
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# quality certificate

ROLL # **311339-12**

Lot #: **7120200**

Liner Type: **MICROSPIKE™ HDPE**

Measurement	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994 ✓ (Modified)	MIN: 1.47 mm	58 mil	Length.....	153.926 m	505.0 feet
Asperity ASTM D7466: 34/32 mil ✓ TOP / BOTTOM	MAX: 1.55 mm	61 mil	Width.....	7.01 m	23.0 feet
	AVE: 1.52 mm	60 mil ✓	OIT(Standard) ASTM D3895 minutes ✓	167	<b>TEST RESULTS</b>
Specific Gravity ASTM D792 ✓	Density				.945 ✓
MFI ASTM D1238 ✓ COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g				.25 ✓
Carbon Black Content ASTM D4218 ✓	Range				2.38 ✓
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 (kN/m)	151 psi ✓	2,434 ✓ 2,624 ✓ 2,529 psi	3,196 ✓ 2,563 ✓ 2,890 psi
	Average Strength @ Break	30 N/mm (kN/m)	173 psi ✓	20.98 17.08 19.03 ✓	445.3 440.7 443.0 ✓
Elongation ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%			
	Average Elongation @ Break	%			
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			-45 55.973 ✓ 56.198 ✓ 56.086 lbs ✓
Tear Resistance ASTM D1004 (Modified) ✓	Average Tear Resistance	249.5 N			
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	399.2 N			89.74 lbs
Puncture Resistance ASTM D4833 (Modified) ✓	Average Peak Load	562.8 N			126.53 lbs ✓
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			<b>CERTIFIED</b>
Notched Constant Tensile Load ASTM D5397 ✓	pass / fail @ 30%	300 hrs			<b>PASS</b> ✓

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/14/2012**  
Signature: *[Signature]*  
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12/23/05



# quality certificate

ROLL # **311340-12**Lot #: **7120200**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.45 mm	57 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.69 mm	67 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	37/32 mil	AVE:	1.57 mm	62 mil		
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	167

**TEST RESULTS**

Specific Gravity	Density	g/cc	.945
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	27 N/mm (kN/m)	156 ppi	2,434
ASTM D6693				2,624
ASTM D638 (Modified)				2,529 psi
( 2 inches / minute )				3,196
	Average Strength @ Break	31 N/mm (kN/m)	179 ppi	2,583

Elongation ASTM D6693	Average Elongation @ Yield	%	20.98
ASTM D638 (Modified)			17.08
( 2 inches / minute )			19.03
Lo = 1.3" Yield			445.3
Lo = 2.0" Break	Average Elongation @ Break	%	440.7

Dimensional Stability	Average Dimensional change	%	-45
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	249.5 N	55.973
ASTM D1004 (Modified)			56.198

Puncture Resistance	Average Peak Load	399.2 N	89.74 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	562.8 N	126.53 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/14/2012**  
Signature: *[Signature]*  
Quality Control Department

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# quality certificate

ROLL # **311341-12**Lot #: **7120200**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.48 mm	58 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.70 mm	67 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	33/34 mil	AVE:	1.57 mm	62 mil		
TOP / BOTTOM						

OIT(Standard) ASTM D3895 minutes **167** **TEST RESULTS**

Specific Gravity	Density	g/cc	.945
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.25
COND. E			
GRADE: <b>K307</b>			

Carbon Black Content	Range	%	2.38
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	27 N/mm (kN/m)	156 ppi	2,434	
ASTM D6693				2,624	
ASTM D638 (Modified)				2,529	psi
( 2 inches / minute )				3,196	
	Average Strength @ Break	31 N/mm (kN/m)	179 ppi	2,583	
				2,890	psi

Elongation ASTM D6693	Average Elongation @ Yield	%	20.98
ASTM D638 (Modified)			17.08
( 2 inches / minute )			19.03
Lo = 1.3" Yield			445.3
Lo = 2.0" Break	Average Elongation @ Break	%	440.7
			443.0

Dimensional Stability	Average Dimensional change	%	-45
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	249.5 N	55.973
ASTM D1004 (Modified)			56.198
			56.086 lbs

Puncture Resistance	Average Peak Load	399.2 N	89.74 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	562.8 N	126.53 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/14/2012**  
Signature: *[Signature]*  
Quality Control Department

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12/23/05





# quality certificate

ROLL # **311442-12**Lot #: **7120200**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.68 mm	66 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: 33/32 mil	AVE:	1.58 mm	62 mil	OIT(Standard) ASTM D3895 minutes	167	TEST RESULTS
TOP / BOTTOM						

Specific Gravity	Density	g/cc	.945
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 (kN/m)	157 psi	2,434
ASTM D6693				2,624
ASTM D638 (Modified)				2,529
( 2 inches / minute )				3,196
	Average Strength @ Break	31 N/mm (kN/m)	180 psi	2,583
				2,890

Elongation ASTM D6693	Average Elongation @ Yield	%	20.98
ASTM D638 (Modified)			17.08
( 2 inches / minute )			19.03
Lo = 1.3" Yield			445.3
Lo = 2.0" Break	Average Elongation @ Break	%	440.7
			443.0

Dimensional Stability	Average Dimensional change	%	-45
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	249.5 N	55.973
ASTM D1004 (Modified)			56.198
			56.086 lbs

Puncture Resistance	Average Peak Load	399.2 N	89.74 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	562.8 N	126.53 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/15/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



ROLL #

**311443-12**

Lot #:

**7120200**Liner Type: **MICROSPIKE™ HDPE**

## Measurement

ASTM D5994 ✓  
(Modified)

MIN:

METRIC

ENGLISH

1.49 mm 59 mil

MAX:

1.69 mm 67 mil

Thickness..... 1.5 mm 60 mil

Length..... 153.926 m 505.0 feet

Width..... 7.01 m 23.0 feet

Asperity ASTM D7466: 37/32 mil  
TOP / BOTTOM

AVE:

1.60 mm 63 mil

OIT(Standard) ASTM D3895 minutes 167

**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

%

2.28 ✓

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 (kN/m)

166 ppi ✓

2,558 ✓  
2,790 ✓  
2,638 psiAverage Strength @ Break

35 N/mm (kN/m)

200 ppi ✓

3,214 ✓  
3,144 ✓  
3,179 psiElongation ASTM D6693 ✓  
ASTM D638 (Modified)  
( 2 inches / minute )  
Lo = 1.3" Yield  
Lo = 2.0" BreakAverage Elongation @ Yield

%

19.48  
15.13  
17.31 ✓Average Elongation @ Break

%

455.5  
567.8  
511.7 ✓Dimensional Stability  
ASTM D1204 (Modified)

Average Dimensional change

%

-.45

Tear Resistance  
ASTM D1004 (Modified) ✓Average Tear Resistance

250.5 N

57.945 ✓  
54.681 ✓  
56.313 lbs ✓Puncture Resistance  
FTMS 101 Method 2065 (Modified)

Average Peak Load

387.3 N

87.08 lbs

Puncture Resistance  
ASTM D4833 (Modified) ✓

Average Peak Load

598.2 N

134.48 lbs ✓

ESCR  
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

**CERTIFIED**Notched Constant Tensile Load  
ASTM D5397 ✓

pass / fail @ 30%

300 hrs

**PASS** ✓Customer: **Chenango Contracting, Inc.**PO: **2276 Honeywell Sediment Consolidation**Destination **Syracuse, NY**Date: **3/15/2012**Signature: *[Signature]*  
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311444-12**Lot #: **7120200**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.49 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.66 mm	65 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:	33/33 mil	AVE:	1.57 mm	62 mil	OIT(Standard) ASTM D3895	minutes	167	TEST RESULTS
TOP / 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	%	2.28
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	29 N/mm (kN/m)	163 ppi	2,558	
ASTM D6693				2,718	
ASTM D638 (Modified)				2,638	psi
( 2 inches / minute )				3,214	

Average Strength @ Break	34 N/mm (kN/m)	196 ppi	3,144	
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Elongation ASTM D6693	Average Elongation @ Yield	%	19.48
ASTM D638 (Modified)			15.13
( 2 inches / minute )			17.31
Lo = 1.3" Yield			455.5
Lo = 2.0" Break	Average Elongation @ Break	%	567.8

Dimensional Stability	Average Dimensional change	%	511.7
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	250.5 N	57.945
ASTM D1004 (Modified)			54.681

Puncture Resistance	Average Peak Load	387.3 N	56.313 lbs
FTMS 101 Method 2065 (Modified)			87.08 lbs

Puncture Resistance	Average Peak Load	598.2 N	134.48 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/15/2012**Signature:   
Quality Control Department60HDMc.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311445-12**Lot #: **7120200**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.66 mm	65 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: 34/33 mil	AVE:	1.57 mm	62 mil	OIT(Standard) ASTM D3895 minutes	167	TEST RESULTS
TOP / 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	%	2.28
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	29 N/mm (kN/m)	163 ppi	2,558
ASTM D6693				2,718
ASTM D638 (Modified)				2,638 psi
( 2 inches / minute )	Average Strength @ Break	34 N/mm (kN/m)	196 ppi	3,214
				3,144
				3,179 psi

Elongation ASTM D6693	Average Elongation @ Yield	%	19.48
ASTM D638 (Modified)			15.13
( 2 inches / minute )			17.31
Lo = 1.3" Yield			455.5
Lo = 2.0" Break	Average Elongation @ Break	%	567.8
			511.7

Dimensional Stability	Average Dimensional change	%	-45
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	250.5 N	57.945
ASTM D1004 (Modified)			54.681
			56.313 lbs

Puncture Resistance	Average Peak Load	387.3 N	87.08 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	598.2 N	134.48 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/15/2012**Signature:   
Quality Control Department60HDMic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311446-12**Lot #: **7120200**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.65 mm	65 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: 37/31 mil AVE: 1.58 mm 62 mil  
TOP / BOTTOMOIT(Standard) ASTM D3895 minutes 167 **TEST RESULTS**

Specific Gravity	Density	g/cc	
ASTM D792			.946

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	
COND. E			.25
GRADE: K307			

Carbon Black Content	Range	%	
ASTM D4218			2.28

Carbon Black Dispersion	Category		
ASTM D5596			10 In Cat 1

Tensile Strength	Average Strength @ Yield	29 N/mm (kN/m)	164 ppi	2,558	
ASTM D6693				2,718	
ASTM D638 (Modified)				2,638	psi
( 2 inches / minute )				3,214	

Average Strength @ Break	35 N/mm (kN/m)	198 ppi	3,144	
			3,179	psi

Elongation ASTM D6693	Average Elongation @ Yield	%	19.48	
ASTM D638 (Modified)			15.13	
( 2 inches / minute )			17.31	

Lo = 1.3" Yield	Average Elongation @ Break	%	455.5	
Lo = 2.0" Break			567.8	
			511.7	

Dimensional Stability	Average Dimensional change	%		
ASTM D1204 (Modified)				-.45

Tear Resistance	Average Tear Resistance	250.5 N		57.945	
ASTM D1004 (Modified)				54.681	
				56.313	lbs

Puncture Resistance	Average Peak Load	387.3 N			
FTMS 101 Method 2065 (Modified)				87.08	lbs

Puncture Resistance	Average Peak Load	598.2 N			
ASTM D4833 (Modified)				134.48	lbs

ESCR	Minimum Hrs w/o Failures	1500 hrs			
ASTM D1693					CERTIFIED

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs			
ASTM D5397					PASS

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**Date: **3/15/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311447-12**

Lot #: **7120200**

Liner Type: **MICROSPIKE™ HDPE**

Measurement	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994 ✓ (Modified)	MIN: 1.44 mm	57 mil	Length.....	153.926 m	505.0 feet
	MAX: 1.60 mm	63 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466: ✓ TOP / BOTTOM	36/32 mil	AVE: 1.56 mm	61 mil	OIT(Standard) ASTM D3895 minutes	167

## 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	%	2.31 ✓
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Carbon Black Dispersion 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 (kN/m)	154 ppi	2,439 ✓ 2,572 ✓ 2,506 psi
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Average Strength @ Break	31 N/mm (kN/m)	178 ppi	2,706 ✓ 2,900 psi
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Elongation ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	20.64 ✓ 15.14 ✓ 17.89 ✓
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Average Elongation @ Break	%	450.0 ✓ 483.1 ✓ 466.6 ✓
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.45
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Tear Resistance ASTM D1004 (Modified) ✓	Average Tear Resistance	266.2 N	61.540 ✓ 58.145 ✓ 59.843 lbs ✓
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	415.2 N	93.335 lbs
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Puncture Resistance ASTM D4833 (Modified) ✓	Average Peak Load	577.9 N	129.92 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	PASS ✓
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/15/2012**

Signature: *[Signature]*  
Quality Control Department

60HDmc.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311448-12**Lot #: **7120200**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.67 mm	66 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	37/32 mil	AVE:	1.57 mm	62 mil		
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	167

**TEST RESULTS**

Specific Gravity ASTM D792	Density		g/cc			.946
MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g		g/10 min			.25
Carbon Black Content ASTM D4218	Range		%			2.31
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 (kN/m)	155	ppi	2,439 2,572 2,506 psi
	Average Strength @ Break	31	N/mm (kN/m)	179	ppi	3,093 2,706 2,900 psi
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			20.64 15.14 17.89
	Average Elongation @ Break		%			450.0 483.1 466.6
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-.45
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	266.2	N			61.540 58.145 59.843 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	415.2	N			93.335 lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	577.9	N			129.92 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300	hrs			PASS

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/15/2012**Signature:   
Quality Control Department

60HDmic.FRM  
REV 03  
12/23/05



CoA Date: 02/22/2012

## Certificate of Analysis

Shipped To: AGRU AMERICA INC  
500 GARRISON RD  
GEORGETOWN SC 29440  
USA

Recipient: PALMER  
Fax:

Delivery #: 88417742  
PO #: 006413  
Weight: 194400 LB  
Ship Date: 02/22/2012  
Package: BULK  
Mode: Hopper Car  
Car #: CHVX896605  
Seal No: 282623

Product:  
MARLEX POLYETHYLENE K307 BULK

Lot Number: 7120199

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.25	g/10mi
HLMI Flow Rate	ASTM D1238	21	g/10mi
Density	D1505 or D4883	0.938	g/cm3
Pellet Count	P02.08.03	26	pel/g
Production Date		02/12/2012	

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 +1-832-813-4806





# quality certificate

ROLL # **311449-12**Lot #: **7120199**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.44 mm	57 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.70 mm	67 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:	35/32 mil	AVE:	1.57 mm	62 mil	OIT(Standard) ASTM D3895	minutes	180	TEST RESULTS
TOP / BOTTOM								

Specific Gravity	Density	g/cc	.945
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.25
COND. E			
GRADE:	K307		

Carbon Black Content	Range	%	2.31
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	27 N/mm (kN/m)	155 ppi	2,439	
ASTM D6693				2,572	
ASTM D638 (Modified)	Average Strength @ Break	31 N/mm (kN/m)	179 ppi	2,506	psi
( 2 inches / minute )				3,093	

Elongation ASTM D6693	Average Elongation @ Yield	%	20.64
ASTM D638 (Modified)			15.14
( 2 inches / minute )	Average Elongation @ Break	%	17.89
Lo = 1.3" Yield			450.0
Lo = 2.0" Break			483.1

Dimensional Stability	Average Dimensional change	%	466.6
ASTM D1204 (Modified)			-55

Tear Resistance	Average Tear Resistance	266.2 N	61.540
ASTM D1004 (Modified)			58.145

Puncture Resistance	Average Peak Load	415.2 N	59.843 lbs
FTMS 101 Method 2065 (Modified)			93.335 lbs

Puncture Resistance	Average Peak Load	577.9 N	129.92 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/15/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311450-12**

Lot #: **7120199**

Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.48 mm	58 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.69 mm	67 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	36/32 mil	AVE:	1.60 mm 63 mil	TEST RESULTS		
TOP / BOTTOM				OIT(Standard) ASTM D3895 minutes 180		

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	%		2.31	
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 (kN/m)	158 ppi	2,439 2,572 2,506 3,093	psi
	Average Strength @ Break	32 N/mm (kN/m)	183 ppi	2,706 2,900	psi
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		20.64 15.14 17.89	
	Average Elongation @ Break	%		450.0 483.1 466.6	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-.55	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	266.2 N		61.540 58.145	lbs
				59.843	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	415.2 N		93.335 lbs	
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	577.9 N		129.92 lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED		
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	PASS		

Customer: **Chenango Contracting, Inc.**  
 PO: **2276 Honeywell Sediment Consolidation**  
 Destination **Syracuse, NY**

Date: **3/15/2012**  
 Signature: *[Signature]*  
 Quality Control Department  
 60HDmic.FRM  
 REV 03  
 12/23/05



ROLL #

311451-12

Lot #:

7120199

Liner Type: MICROSPIKE™ HDPE

Measurement

ASTM D5994 ✓

(Modified)

MIN:

METRIC

ENGLISH

1.50 mm 59 mil

MAX:

1.69 mm 67 mil

AVE:

1.56 mm 61 mil

Thickness..... 1.5 mm 60 mil  
Length..... 153.926 m 505.0 feet  
Width..... 7.01 m 23.0 feet

Asperity ASTM D7466: 36/32 mil

TOP / BOTTOM

AVE:

1.56 mm 61 mil

OIT(Standard) ASTM D3895 minutes

180

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

%

2.16 ✓

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 (kN/m)

160 ppi ✓

2,670 ✓

2,741 ✓

2,610 psi

3,177 ✓

Average Strength @ Break

32 N/mm (kN/m)

183 ppi ✓

2,787 ✓

2,982 psi

20.26

15.10

Elongation ASTM D6693 ✓  
ASTM D638 (Modified)  
( 2 inches / minute )  
Lo = 1.3" Yield  
Lo = 2.0" Break

Average Elongation @ Yield

%

17.68 ✓

460.6

512.4

Average Elongation @ Break

%

486.5 ✓

Dimensional Stability  
ASTM D1204 (Modified)

Average Dimensional change

%

-.55

Tear Resistance  
ASTM D1004 (Modified) ✓

Average Tear Resistance

270.0 N

62.591 ✓

55.806 ✓

60.699 lbs ✓

Puncture Resistance  
FTMS 101 Method 2065 (Modified)

Average Peak Load

407.5 N

91.606 lbs

Puncture Resistance  
ASTM D4833 (Modified) ✓

Average Peak Load

559.9 N

125.88 lbs ✓

ESCR  
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

CERTIFIED

Notched Constant Tensile Load  
ASTM D5397 ✓

pass / fail @ 30%

300 hrs

PASS ✓

Customer: Chenango Contracting, Inc.  
PO: 2276 Honeywell Sediment Consolidation  
Destination Syracuse, NY

Date: 3/15/2012

Signature: [Signature]  
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL #

**311452-12**

Lot #:

**7120199**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.48 mm	58 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	29/32 mil	AVE:	1.56 mm	61 mil	TEST RESULTS	
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	180

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	%	2.16
ASTM D4218			
Carbon Black Dispersion	Category		10 In Cat 1
ASTM D5596			
Tensile Strength	Average Strength @ Yield	28 N/mm (kN/m)	160 ppi
ASTM D6693			2,478
ASTM D638 (Modified)			2,741
( 2 inches / minute )	Average Strength @ Break	32 N/mm (kN/m)	183 ppi
			2,610 psi
			3,177
			2,787
			2,982 psi
Elongation ASTM D6693	Average Elongation @ Yield	%	20.25
ASTM D638 (Modified)			15.10
( 2 inches / minute )			17.68
Lo = 1.3" Yield	Average Elongation @ Break	%	460.6
Lo = 2.0" Break			512.4
			486.5
Dimensional Stability	Average Dimensional change	%	-.55
ASTM D1204 (Modified)			
Tear Resistance	Average Tear Resistance	270.0 N	62.591
ASTM D1004 (Modified)			58.806
			60.699 lbs
Puncture Resistance	Average Peak Load	407.5 N	91.606 lbs
FTMS 101 Method 2065 (Modified)			
Puncture Resistance	Average Peak Load	559.9 N	125.88 lbs
ASTM D4833 (Modified)			
ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			
Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/15/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311453-12**Lot #: **7120199**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.49 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.68 mm	66 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: **36/32** mil  
TOP / BOTTOMAVE: **1.58** mm **62** milOIT(Standard) ASTM D3895 minutes **180** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	<b>.946</b>
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MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	<b>.25</b>
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Carbon Black Content ASTM D4218	Range	%	<b>2.16</b>
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Carbon Black Dispersion ASTM D5596	Category	<b>10 In Cat 1</b>
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Tensile Strength ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Yield	28 N/mm (kN/m)	162 ppi	2,478 2,741 2,610 psi
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Average Strength @ Break	32 N/mm (kN/m)	185 ppi	2,787 2,982 psi
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Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield	Average Elongation @ Yield	%	20.25 15.10 17.68
Lo = 2.0" Break	Average Elongation @ Break	%	460.6 512.4 486.5

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	<b>-55</b>
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Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	270.0 N	62.591 58.806 60.699 lbs
--	-------------------------	---------	--------------------------------

Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	407.5 N	91.606 lbs
--	-------------------	---------	------------

Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	559.9 N	125.88 lbs
--	-------------------	---------	------------

ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	<b>CERTIFIED</b>
--------------------	--------------------------	----------	------------------

Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	<b>PASS</b>
---	-------------------	---------	-------------

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/15/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL #

**311454-12**

Lot #:

**7120199**

Liner Type: MICROSPIKE™ HDPE

Measurement  
ASTM D5994  
(Modified)

MIN:

METRIC  
**1.49** mmENGLISH  
**59** mil

MAX:

**1.69** mm**67** mil

Thickness.....

**1.5** mm    **60** mil

Length.....

**153.926** m    **505.0** feet

Width.....

**7.01** m;    **23.0** feetAsperity ASTM D7466: **37/32** mil  
TOP / BOTTOM

AVE:

**1.57** mm**62** milOIT(Standard) ASTM D3895 minutes **180****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

%

**2.16**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 (kN/m)**161** psi

2,478

2,741

**2,610** psi

3,177

Average Strength @ Break

**32** N/mm (kN/m)**184** psi

2,787

**2,982** psi

20.25

Elongation ASTM D6693  
ASTM D638 (Modified)  
( 2 inches / minute )  
Lo = 1.3" Yield  
Lo = 2.0" Break

Average Elongation @ Yield

%

15.10

**17.68**

460.6

512.4

Average Elongation @ Break

%

**486.5**Dimensional Stability  
ASTM D1204 (Modified)

Average Dimensional change

%

**-.55**Tear Resistance  
ASTM D1004 (Modified)

Average Tear Resistance

**270.0** N

62.591

58.806

**60.699** lbsPuncture Resistance  
FTMS 101 Method 2065 (Modified)

Average Peak Load

**407.5** N**91.606** lbsPuncture Resistance  
ASTM D4833 (Modified)

Average Peak Load

**559.9** N**125.88** lbsESCR  
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

**CERTIFIED**Notched Constant Tensile Load  
ASTM D5397

pass / fail @ 30%

300 hrs

**PASS**Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**Date: **3/15/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311455-12**Lot #: **7120199**Liner Type: **MICROSPIKE™ HDPE**Measurement  
ASTM D5994 ✓  
(Modified)METRIC ENGLISH  
MIN: 1.56 mm 61 mil  
MAX: 1.76 mm 69 milThickness..... 1.5 mm 60 mil  
Length..... 153.926 m 505.0 feet  
Width..... 7.01 m; 23.0 feetAsperity ASTM D7466: 37/31 mil  
TOP / BOTTOM

AVE: 1.64 mm 65 ✓ mil

OIT(Standard) ASTM D3895 minutes 180 ✓  
**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

%

2.26 ✓

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 (kN/m)

162 ppi ✓

2.437 ✓  
2.579 ✓  
2,508 psi

Average Strength @ Break

32 N/mm (kN/m)

182 ppi ✓

2.465 ✓  
2,815 psiElongation ASTM D6693 ✓  
ASTM D638 (Modified)  
( 2 inches / minute )  
Lo = 1.3" Yield  
Lo = 2.0" Break

Average Elongation @ Yield

%

19.13  
16.89  
17.51 ✓

Average Elongation @ Break

%

465.3  
489.1  
447.7 ✓Dimensional Stability  
ASTM D1204 (Modified)

Average Dimensional change

%

-.55

Tear Resistance  
ASTM D1004 (Modified) ✓

Average Tear Resistance

256.7 N

59.683 ✓  
55.718 ✓

57.701 lbs ✓

Puncture Resistance  
FTMS 101 Method 2065 (Modified)

Average Peak Load

450.0 N

101.15 lbs

Puncture Resistance  
ASTM D4833 (Modified) ✓

Average Peak Load

603.9 N

135.76 lbs ✓

ESCR  
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

**CERTIFIED**Notched Constant Tensile Load  
ASTM D5397 ✓

pass / fail @ 30%

300 hrs

**PASS** ✓Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**Date: **3/15/2012**Signature:   
Quality Control Department60HDm1c.FRM  
REV 03  
12/23/05



# quality certificate

ROLL #

**311556-12**

Lot #:

**7120199**Liner Type: **MICROSPIKE™ HDPE**

Measurement

ASTM D5994

(Modified)

MIN:

METRIC

ENGLISH

1.44 mm 57 mil

MAX:

1.62 mm 64 mil

Thickness.....

1.5 mm

60 mil

Length.....

153.926 m

505.0 feet

Width.....

7.01 m;

23.0 feet

Asperity ASTM D7466:

37/32 mil

AVE:

1.55 mm 61 mil

OIT(Standard) ASTM D3895 minutes

180

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

%

2.26

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 (kN/m)

153 ppi

2,437

2,579

2,508 psi

3,164

Average Strength @ Break

30 N/mm (kN/m)

172 ppi

2,465

2,815 psi

19.13

Elongation ASTM D6693

ASTM D638 (Modified)

( 2 inches / minute )

Lo = 1.3" Yield

Lo = 2.0" Break

Average Elongation @ Yield

%

15.89

17.51

465.3

430.1

Average Elongation @ Break

%

447.7

Dimensional Stability

ASTM D1204 (Modified)

Average Dimensional change

%

-55

Tear Resistance

ASTM D1004 (Modified)

Average Tear Resistance

256.7 N

59.683

55.718

57.701 lbs

Puncture Resistance

FTMS 101 Method 2065 (Modified)

Average Peak Load

450.0 N

101.15 lbs

Puncture Resistance

ASTM D4833 (Modified)

Average Peak Load

603.9 N

135.76 lbs

ESCR

ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

CERTIFIED

Notched Constant Tensile Load

ASTM D5397

pass / fail @ 30%

300 hrs

PASS

Customer: **Chenango Contracting, Inc.**PO: **2276 Honeywell Sediment Consolidation**Destination **Syracuse, NY**Date: **3/16/2012**Signature: 

Quality Control Department

60HDmic.FRM  
REV 03  
12/23/05





# quality certificate

ROLL # **311557-12**

Lot #: **7120199**

Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.51 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.65 mm	65 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:	38/33 mil	AVE:	1.58 mm	62 mil	OIT(Standard) ASTM D3895	minutes	180	<b>TEST RESULTS</b>
TOP / BOTTOM								

Specific Gravity	Density	g/cc	<b>.946</b>
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	<b>.25</b>
COND. E			
GRADE:	<b>K307</b>		

Carbon Black Content	Range	%	<b>2.26</b>
ASTM D4218			

Carbon Black Dispersion	Category	<b>10 In Cat 1</b>
ASTM D5596		

Tensile Strength	Average Strength @ Yield	27 N/mm (kN/m)	156 ppi	2,437	
ASTM D6693				2,579	
ASTM D638 (Modified)				2,508	psi
( 2 inches / minute )				3,164	

Average Strength @ Break	31 N/mm (kN/m)	175 ppi	2,465	
			2,815	psi

Elongation ASTM D6693	Average Elongation @ Yield	%	19.13
ASTM D638 (Modified)			15.89
( 2 inches / minute )			17.51
Lo = 1.3" Yield			465.3
Lo = 2.0" Break	Average Elongation @ Break	%	430.1
			447.7

Dimensional Stability	Average Dimensional change	%	<b>-.55</b>
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	256.7 N	59.683
ASTM D1004 (Modified)			55.718
			57.701 lbs

Puncture Resistance	Average Peak Load	450.0 N	101.15 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	603.9 N	135.76 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	<b>CERTIFIED</b>
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	<b>PASS</b>
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
 PO: **2276 Honeywell Sediment Consolidation**  
 Destination **Syracuse, NY**

Date: **3/16/2012**

Signature: *[Signature]*  
 Quality Control Department

60HDmic.FRM  
 REV 03  
 12/23/05



# quality certificate

ROLL # **311558-12** Lot #: **7120199** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.51 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	37/31 mil	AVE:	1.56 mm	61 mil		
TOP / BOTTOM						
				OIT(Standard) ASTM D3895	minutes	180
				<b>TEST RESULTS</b>		

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	%	2.26
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	27 N/mm (kN/m)	154 ppi	2,437	
ASTM D6693				2,579	
ASTM D638 (Modified)				2,508	psi
( 2 inches / minute )				3,164	
	Average Strength @ Break	30 N/mm (kN/m)	173 ppi	2,465	
				2,815	psi

Elongation ASTM D6693	Average Elongation @ Yield	%	19.13
ASTM D638 (Modified)			15.89
( 2 inches / minute )			17.51
Lo = 1.3" Yield			465.3
Lo = 2.0" Break	Average Elongation @ Break	%	430.1
			447.7

Dimensional Stability	Average Dimensional change	%	-.55
ASTM D1204 (Modified)			

Tear Resistance			59.683
ASTM D1004 (Modified)	Average Tear Resistance	256.7 N	55.718
			57.701 lbs

Puncture Resistance	Average Peak Load	450.0 N	101.15 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	603.9 N	135.76 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/16/2012**

Signature:   
Quality Control Department

60HDmic.FRM  
REV 03  
12/23/05



ROLL #

311559-12

Lot #:

7120199

Liner Type: MICROSPIKE™ HDPE

Measurement  
ASTM D5994 ✓  
(Modified)

MIN:

METRIC 1.51 mm ENGLISH 59 mil

MAX:

1.62 mm 64 mil

Asperity ASTM D7466: 36/33 mil  
TOP / BOTTOM

AVE:

1.56 mm 61 mil

Thickness..... 1.5 mm 60 mil  
Length..... 153.926 m 505.0 feet  
Width..... 7.01 m 23.0 feetOIT(Standard) ASTM D3895 minutes 180 ✓  
TEST RESULTSSpecific 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

%

2.35 ✓

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 (kN/m)

160 ppi

2,620 ✓  
2,653 ✓  
2,605 psi

Average Strength @ Break

31 N/mm (kN/m)

175 ppi

2,416 ✓  
2,497 ✓  
2,857 psiElongation ASTM D6693 ✓  
ASTM D638 (Modified)  
( 2 inches / minute )  
Lo = 1.3" Yield  
Lo = 2.0" Break

Average Elongation @ Yield

%

18.05  
15.26  
16.95 ✓

Average Elongation @ Break

%

458.7  
450.8  
455.3 ✓Dimensional Stability  
ASTM D1204 (Modified)

Average Dimensional change

%

-.55

Tear Resistance  
ASTM D1004 (Modified) ✓

Average Tear Resistance

247.9 N

57.487 ✓

53.959 ✓

55.723 lbs ✓

Puncture Resistance  
FTMS 101 Method 2065 (Modified)

Average Peak Load

417.7 N

93.901 lbs

Puncture Resistance  
ASTM D4833 (Modified) ✓

Average Peak Load

584.3 N

131.35 lbs ✓

ESCR  
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

CERTIFIED

Notched Constant Tensile Load  
ASTM D5397 ✓

pass / fail @ 30%

300 hrs

PASS ✓

Customer: Chenango Contracting, Inc.  
PO: 2276 Honeywell Sediment Consolidation  
Destination Syracuse, NY

Date: 3/16/2012

Signature:   
Quality Control Department80HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311560-12**Lot #: **7120199**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.46 mm	57 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.58 mm	62 mil	Width.....	7.01 m;	23.0 feet
Asperity ASTM D7466:	38/36 mil	AVE:	1.52 mm	60 mil	TEST RESULTS	
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	180
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		%		2.35
ASTM D4218						
Carbon Black Dispersion		Category				10 In Cat 1
ASTM D5596						
Tensile Strength		Average Strength @ Yield	27	N/mm (kN/m)	156 ppi	2,526 2,683 2,605 psi
ASTM D6693						
ASTM D638 (Modified)		Average Strength @ Break	30	N/mm (kN/m)	171 ppi	3,116 2,897 2,857 psi
( 2 inches / minute )						
Elongation ASTM D6693		Average Elongation @ Yield		%		18.65 15.25 16.95
ASTM D638 (Modified)						
( 2 inches / minute )		Average Elongation @ Break		%		459.7 450.8 455.3
Lo = 1.3" Yield						
Lo = 2.0" Break						
Dimensional Stability		Average Dimensional change		%		-.55
ASTM D1204 (Modified)						
Tear Resistance		Average Tear Resistance	247.9	N		57.487 53.959 55.723 lbs
ASTM D1004 (Modified)						
Puncture Resistance		Average Peak Load	417.7	N		93.901 lbs
FTMS 101 Method 2065 (Modified)						
Puncture Resistance		Average Peak Load	584.3	N		131.35 lbs
ASTM D4833 (Modified)						
ESCR		Minimum Hrs w/o Failures	1500	hrs		CERTIFIED
ASTM D1693						
Notched Constant Tensile Load		pass / fail @ 30%	300	hrs		PASS
ASTM D5397						

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/16/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311561-12**Lot #: **7120199**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.46 mm	57 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.58 mm	62 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: **36/33** mil  
TOP / BOTTOMAVE: **1.52** mm **60** milOIT(Standard) ASTM D3895 minutes **180****TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	<b>.946</b>
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MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	<b>.25</b>
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Carbon Black Content ASTM D4218	Range	%	<b>2.35</b>
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Carbon Black Dispersion ASTM D5596	Category	<b>10 In Cat 1</b>
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Tensile Strength ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Yield	<b>27</b> N/mm (kN/m)	<b>156</b> ppi	2,526 2,683 <b>2,605</b> psi
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Average Strength @ Break	<b>30</b> N/mm (kN/m)	<b>171</b> ppi	2,597 <b>2,857</b> psi
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Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	18.65 15.25 <b>16.95</b>
Average Elongation @ Break	%		459.7 450.8 <b>455.3</b>

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	<b>-.55</b>
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Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	<b>247.9</b> N	57.487 53.959 <b>55.723</b> lbs
--	-------------------------	----------------	---------------------------------------

Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	<b>417.7</b> N	<b>93.901</b> lbs
--	-------------------	----------------	-------------------

Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	<b>584.3</b> N	<b>131.35</b> lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	<b>CERTIFIED</b>
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	<b>PASS</b>
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/16/2012**Signature:   
Quality Control Department60HDMic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311562-12** Lot #: **7120199** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.51 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: **36/34** mil AVE: **1.57 mm 62 mil** OIT(Standard) ASTM D3895 minutes **180** **TEST RESULTS**  
TOP / BOTTOM

Specific Gravity	Density	g/cc	<b>.946</b>
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	<b>.25</b>
COND. E			
GRADE: <b>K307</b>			

Carbon Black Content	Range	%	<b>2.35</b>
ASTM D4218			

Carbon Black Dispersion	Category	<b>10 In Cat 1</b>
ASTM D5596		

Tensile Strength	Average Strength @ Yield	28 N/mm (kN/m)	161 ppi	2,526	
ASTM D6693				2,683	
ASTM D638 (Modified)				2,605	psi
( 2 inches / minute )				3,116	
	Average Strength @ Break	31 N/mm (kN/m)	177 ppi	2,597	
				2,857	psi

Elongation ASTM D6693	Average Elongation @ Yield	%	18.65
ASTM D638 (Modified)			15.25
( 2 inches / minute )			16.95
Lo = 1.3" Yield			459.7
Lo = 2.0" Break	Average Elongation @ Break	%	450.8
			455.3

Dimensional Stability	Average Dimensional change	%	<b>-.55</b>
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	247.9 N	55.723 lbs
ASTM D1004 (Modified)			

Puncture Resistance	Average Peak Load	417.7 N	93.901 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	584.3 N	131.35 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	<b>CERTIFIED</b>
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	<b>PASS</b>
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/16/2012**

Signature: *[Signature]*  
Quality Control Department

60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311563-12**

Lot #: **7120199**

Liner Type: **MICROSPIKE™ HDPE**

Measurement  
ASTM D5994 ✓  
(Modified) ✓  
Asperity ASTM D7466: 35/38 mil AVE: 1.54 mm 61 ✓  
TOP / BOTTOM

METRIC ENGLISH  
MIN: 1.50 mm 59 mil  
MAX: 1.59 mm 63 mil  
AVE: 1.54 mm 61 mil

Thickness..... 1.5 mm 60 mil  
Length..... 153.926 m 505.0 feet  
Width..... 7.01 m; 23.0 feet

OIT(Standard) ASTM D3895 minutes 180 ✓  
**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 % 2.32 ✓

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 (kN/m) 165 ppi 2,723 psi ✓  
Average Strength @ Break 32 N/mm (kN/m) 181 ppi 2,993 psi ✓

Elongation ASTM D6693 ✓  
ASTM D638 (Modified)  
( 2 inches / minute )  
Lo = 1.3" Yield  
Lo = 2.0" Break  
Average Elongation @ Yield % 17.08 ✓  
Average Elongation @ Break % 485.2 ✓

Dimensional Stability  
ASTM D1204 (Modified)  
Average Dimensional change % -.55

Tear Resistance  
ASTM D1004 (Modified) ✓  
Average Tear Resistance 264.0 N 59.349 lbs ✓

Puncture Resistance  
FTMS 101 Method 2065 (Modified)  
Average Peak Load 430.8 N 96.85 lbs

Puncture Resistance  
ASTM D4833 (Modified) ✓  
Average Peak Load 591.1 N 132.88 lbs ✓

ESCR  
ASTM D1693  
Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**

Notched Constant Tensile Load  
ASTM D5397 ✓  
pass / fail @ 30% 300 hrs **PASS** ✓

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/16/2012**

Signature: *[Signature]*  
Quality Control Department

60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311564-12** Lot #: **7120199** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.46 mm	57 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.65 mm	65 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	36/36 mil	AVE:	1.56 mm	61 mil		
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	180

## TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc	.946
MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	.25
Carbon Black Content ASTM D4218	Range	%	2.32
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 (kN/m)	167 ppi
	Average Strength @ Break	32 N/mm (kN/m)	184 ppi
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	
	Average Elongation @ Break	%	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	264.0 N	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	430.8 N	
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	591.1 N	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/16/2012**

Signature: *[Signature]*  
Quality Control Department

60HDmic.FRM  
REV 03  
12/23/05





# quality certificate

ROLL # **311565-12**

Lot #: **7120199**

Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.65 mm	65 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	35/38 mil	AVE:	1.57 mm	62 mil		
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	180

**TEST RESULTS**

Specific Gravity ASTM D792	Density					.946
MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g					.25
Carbon Black Content ASTM D4218	Range					2.32
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 (kN/m)	168 ppi			2,677 2,769 2,723 psi
	Average Strength @ Break	32 N/mm (kN/m)	185 ppi			3,083 2,903 2,993 psi
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%				18.97 15.18 17.08
	Average Elongation @ Break	%				443.5 526.8 485.2
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				-.55
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	264.0 N				60.161 58.536 59.349 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	430.8 N				96.85 lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	591.1 N				132.88 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				PASS

Customer: **Chenango Contracting, Inc.**  
 PO: **2276 Honeywell Sediment Consolidation**  
 Destination **Syracuse, NY**

Date: **3/16/2012**  
 Signature: *[Signature]*  
 Quality Control Department

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 REV 03  
 12/23/05



# quality certificate

ROLL # **311566-12** Lot #: **7120199** Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.51 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.64 mm	65 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: 37/35 mil AVE: 1.57 mm 62 mil  
TOP / BOTTOM OIT(Standard) ASTM D3895 minutes 180 **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.946
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MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	.25
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Carbon Black Content ASTM D4218	Range	%	2.32
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
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Tensile Strength ASTM D6693	Average Strength @ Yield	29 N/mm (kN/m)	168 ppi	2,677 2,769 2,723 psi
ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Break	32 N/mm (kN/m)	185 ppi	3,083 2,903 2,993 psi

Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield	Average Elongation @ Yield	%	18.97 15.18 17.08
Lo = 2.0" Break	Average Elongation @ Break	%	443.5 526.8 485.2

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-55
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Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	264.0 N	60.161 58.536 59.349 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	430.8 N	96.85 lbs
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Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	591.1 N	132.88 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	<b>CERTIFIED</b>
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	<b>PASS</b>
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/16/2012**  
Signature: *[Signature]*  
Quality Control Department  
60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311567-12**Lot #: **7120199**Liner Type: **MICROSPIKE™ HDPE**

Measurement	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994 ✓ (Modified)	MIN: 1.51 mm	59 mil	Length.....	153.926 m	505.0 feet
	MAX: 1.63 mm	64 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466: 35/32 mil	AVE: 1.57 mm	62 mil ✓	OIT(Standard) ASTM D3895 minutes	180	TEST RESULTS

Specific Gravity ASTM D792 ✓	Density	g/cc	.947 ✓
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MFI ASTM D1238 ✓ COND. E GRADE: <b>K307</b>	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	27 N/mm (kN/m)	155 psi ✓ 2,517 ✓ 2,494 ✓ 2,506 psi
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	Average Strength @ Break	33 N/mm (kN/m)	190 psi ✓ 2,924 ✓ 3,081 psi
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Elongation ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	15.49 15.73 17.61 ✓
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	Average Elongation @ Break	%	458.2 537.6 497.9 ✓
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-55
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Tear Resistance ASTM D1004 (Modified) ✓	Average Tear Resistance	248.6 N	57.276 ✓ 54.501 ✓ 55.889 lbs ✓
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	454.3 N	102.14 lbs
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Puncture Resistance ASTM D4833 (Modified) ✓	Average Peak Load	606.0 N	136.23 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	PASS ✓
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/16/2012**Signature:   
Quality Control Department60H0mic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311568-12**Lot #: **7120199**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.67 mm	66 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: 36/32 mil	AVE:	1.61 mm	63 mil	OIT(Standard) ASTM D3895 minutes	180	TEST RESULTS
TOP / 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	%	2.35
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	28 N/mm (kN/m)	159 ppi	2,517	
ASTM D6693				2,494	
ASTM D638 (Modified)				2,506	psi
( 2 inches / minute )				3,237	
	Average Strength @ Break	34 N/mm (kN/m)	195 ppi	2,924	
				3,081	psi

Elongation ASTM D6693	Average Elongation @ Yield	%	19.49
ASTM D638 (Modified)			15.73
( 2 inches / minute )			17.61
Lo = 1.3" Yield			458.2
Lo = 2.0" Break	Average Elongation @ Break	%	537.6
			497.9

Dimensional Stability	Average Dimensional change	%	-55
ASTM D1204 (Modified)			

Tear Resistance			57.276
ASTM D1004 (Modified)			54.501
	Average Tear Resistance	248.6 N	55.889 lbs

Puncture Resistance	Average Peak Load	454.3 N	102.14 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	606.0 N	136.23 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/16/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311569-12**

Lot #: **7120199**

Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.53 mm	60 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.70 mm	67 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:	38/32 mil	AVE:	1.59 mm	63 mil	OIT(Standard) ASTM D3895	minutes	180	TEST RESULTS
TOP / 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:	<b>K307</b>		

Carbon Black Content	Range	%	2.35
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	27 N/mm (kN/m)	157 psi	2,517	
ASTM D6693				2,494	
ASTM D638 (Modified)				2,506	psi
( 2 inches / minute )				3,237	
	Average Strength @ Break	34 N/mm (kN/m)	193 psi	2,924	
				3,081	psi

Elongation ASTM D6693	Average Elongation @ Yield	%	19.49
ASTM D638 (Modified)			15.73
( 2 inches / minute )			17.61
Lo = 1.3" Yield			458.2
Lo = 2.0" Break	Average Elongation @ Break	%	537.6
			497.9

Dimensional Stability	Average Dimensional change	%	-55
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	248.6 N	55.889 lbs
ASTM D1004 (Modified)			

Puncture Resistance	Average Peak Load	454.3 N	102.14 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	606.0 N	136.23 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
 PO: **2276 Honeywell Sediment Consolidation**  
 Destination **Syracuse, NY**

Date: **3/16/2012**  
 Signature: *[Signature]*  
 Quality Control Department  
 60HDmic.FRM  
 REV 03  
 12/23/05



# quality certificate

ROLL # **311670-12**Lot #: **7120199**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.58 mm	62 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.65 mm	65 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: <b>38/31</b> mil	AVE:	1.58 mm	62 mil	OIT(Standard) ASTM D3895 minutes	180	<b>TEST RESULTS</b>
TOP / 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: <b>K307</b>			

Carbon Black Content	Range	%	2.35
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	27 N/mm (kN/m)	156 ppi	2,517
ASTM D6693				2,494
ASTM D638 (Modified)				2,506 psi
( 2 inches / minute )				3,237

Average Strength @ Break	34 N/mm (kN/m)	192 ppi	3,081 psi
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Elongation ASTM D6693	Average Elongation @ Yield	%	19.49
ASTM D638 (Modified)			15.73
( 2 inches / minute )			17.61
Lo = 1.3" Yield			458.2
Lo = 2.0" Break	Average Elongation @ Break	%	537.6

Dimensional Stability	Average Dimensional change	%	497.9
ASTM D1204 (Modified)			-55

Tear Resistance	Average Tear Resistance	248.6 N	57.276
ASTM D1004 (Modified)			54.501

Puncture Resistance	Average Peak Load	454.3 N	55.889 lbs
FTMS 101 Method 2065 (Modified)			102.14 lbs

Puncture Resistance	Average Peak Load	606.0 N	136.23 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/17/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL #

**311671-12**

Lot #:

**7120199**Liner Type: **MICROSPIKE™ HDPE**Measurement  
ASTM D5994 ✓  
(Modified)

MIN:

METRIC ENGLISH  
**1.47** mm **58** mil

MAX:

**1.69** mm **67** milThickness..... **1.5** mm **60** mil  
Length..... **153.926** m **505.0** feet  
Width..... **7.01** m **23.0** feetAsperity ASTM D7466: **38/31** mil  
TOP / BOTTOM

AVE:

**1.59** mm **63** ✓ milOIT(Standard) ASTM D3895 ✓ minutes **180** **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

%

**2.46** ✓Carbon Black Dispersion  
ASTM D5596 ✓

Category

**10 In Cat 1** ✓Tensile Strength  
ASTM D6693 ✓  
ASTM D638 (Modified)  
(2 inches / minute)Average Strength @ Yield**32** N/mm (kN/m)**181** psi ✓**2,766** ✓  
**2,969** ✓  
**2,885** psiAverage Strength @ Break**38** N/mm (kN/m)**215** psi ✓**3,440** ✓  
**3,431** ✓  
**3,436** psiElongation ASTM D6693 ✓  
ASTM D638 (Modified)  
(2 inches / minute)  
Lo = 1.3" Yield  
Lo = 2.0" BreakAverage Elongation @ Yield

%

**19.28**  
**14.70**  
**16.99** ✓Average Elongation @ Break

%

**471.5**  
**567.8**  
**519.7** ✓Dimensional Stability  
ASTM D1204 (Modified)

Average Dimensional change

%

**-0.55**Tear Resistance  
ASTM D1004 (Modified) ✓Average Tear Resistance**264.9** N**61,927** ✓  
**57,199** ✓  
**59,563** lbs ✓Puncture Resistance  
FTMS 101 Method 2065 (Modified)

Average Peak Load

**456.0** N**102.51** lbsPuncture Resistance  
ASTM D4833 (Modified) ✓

Average Peak Load

**605.5** N**136.12** lbs ✓ESCR  
ASTM D1693

Minimum Hrs w/o Failures

**1500** hrs**CERTIFIED**Notched Constant Tensile Load  
ASTM D5397 ✓

pass / fail @ 30%

**300** hrs**PASS** ✓Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**Date: **3/17/2012**Signature:   
Quality Control Department60HDmhc.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311672-12**Lot #: **7120199**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.45 mm	57 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	38/32 mil	AVE:	1.56 mm	61 mil		
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	180
						<b>TEST RESULTS</b>

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	%	2.46
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	31 N/mm (kN/m)	177 ppi	2,786
ASTM D6693				2,983
ASTM D638 (Modified)				2,885 psi
( 2 inches / minute )				3,440

Average Strength @ Break	37 N/mm (kN/m)	211 ppi	3,431
			3,436 psi

Elongation ASTM D6693	Average Elongation @ Yield	%	19.28
ASTM D638 (Modified)			14.70
( 2 inches / minute )			16.99
Lo = 1.3" Yield			471.5
Lo = 2.0" Break	Average Elongation @ Break	%	567.8

Dimensional Stability	Average Dimensional change	%	-55
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	264.9 N	61.927
ASTM D1004 (Modified)			57.199
			59.563 lbs

Puncture Resistance	Average Peak Load	456.0 N	102.51 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	605.5 N	136.12 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/17/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05





# quality certificate

ROLL # **311673-12**

Lot #: **7120199**

Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.68 mm	66 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	36/31 mil	AVE:	1.60 mm	63 mil		
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	180

## TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc			.947
MFI ASTM D1238 COND. E GRADE: <b>K307</b>	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	32	N/mm (kN/m)	182	ppi	2,786 2,983 2,885 psi
	Average Strength @ Break	38	N/mm (kN/m)	216	ppi	3,440 3,431 3,436 psi
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			19.28 14.70 16.99
	Average Elongation @ Break		%			471.5 567.8 519.7
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-.55
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	264.9	N			61.927 57.199 59.563 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	456.0	N			102.51 lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	605.5	N			136.12 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300	hrs			PASS

Customer: **Chenango Contracting, Inc.**  
 PO: **2276 Honeywell Sediment Consolidation**  
 Destination **Syracuse, NY**

Date: **3/17/2012**

Signature: *[Signature]*  
 Quality Control Department

60HDmic.FRM  
 REV 03  
 12/23/05



# quality certificate

ROLL #

**311674-12**

Lot #:

**7120199**Liner Type: **MICROSPIKE™ HDPE**

Measurement

ASTM D5994

(Modified)

MIN:

METRIC

ENGLISH

1.47 mm 58 mil

MAX:

1.57 mm 62 mil

Thickness.....

1.5 mm

60 mil

Length.....

153.926 m

505.0 feet

Width.....

7.01 m

23.0 feet

Asperity ASTM D7466:

37/34 mil

AVE:

1.52 mm

60 mil

TOP / BOTTOM

OIT(Standard) ASTM D3895 minutes

180

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

%

2.46

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 (kN/m)

173 ppi

2,786

2,983

2,885 psi

3,440

3,431

Average Strength @ Break

36 N/mm (kN/m)

206 ppi

3,436 psi

19.28

14.70

Elongation ASTM D6693

ASTM D638 (Modified)

( 2 inches / minute )

Lo = 1.3" Yield

Lo = 2.0" Break

Average Elongation @ Yield

%

16.99

471.5

567.8

Average Elongation @ Break

%

519.7

Dimensional Stability

ASTM D1204 (Modified)

Average Dimensional change

%

-.55

Tear Resistance

ASTM D1004 (Modified)

Average Tear Resistance

264.9 N

61.927

57.199

59.563 lbs

Puncture Resistance

FTMS 101 Method 2065 (Modified)

Average Peak Load

456.0 N

102.51 lbs

Puncture Resistance

ASTM D4833 (Modified)

Average Peak Load

605.5 N

136.12 lbs

ESCR

ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

CERTIFIED

Notched Constant Tensile Load

ASTM D5397

pass / fail @ 30%

300 hrs

PASS

Customer: **Chenango Contracting, Inc.**PO: **2276 Honeywell Sediment Consolidation**Destination **Syracuse, NY**

Date:

3/17/2012

Signature

Quality Control Department

60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL #

**311675-12**

Lot #:

**7120199**Liner Type: **MICROSPIKE™ HDPE**Measurement  
ASTM D5994 ✓  
(Modified)

MIN:

METRIC ENGLISH  
**1.54** mm **61** mil

MAX:

**1.69** mm **67** milAsperity ASTM D7466: **36/32** mil  
TOP / BOTTOM

AVE:

**1.61** mm **63** milThickness..... **1.5** mm **60** mil  
Length..... **153.926** m **505.0** feet  
Width..... **7.01** m; **23.0** feetOIT(Standard) ASTM D3895 minutes **180** **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

%

**2.28** ✓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 (kN/m)**163** ppi ✓**2,508** ✓  
**2,544** ✓  
**2,576** psi ✓  
**3,053** ✓Average Strength @ Break**32** N/mm (kN/m)**184** ppi ✓**2,766** ✓  
**2,910** psi ✓  
**19.51**  
**14.97**  
**17.24** ✓  
**458.0**  
**526.5**  
**492.3** ✓Elongation ASTM D6693 ✓  
ASTM D638 (Modified)  
( 2 inches / minute )  
Lo = 1.3" Yield  
Lo = 2.0" BreakAverage Elongation @ Yield

%

Average Elongation @ Break

%

Dimensional Stability  
ASTM D1204 (Modified)

Average Dimensional change

%

**-.55**Tear Resistance  
ASTM D1004 (Modified) ✓Average Tear Resistance**269.9** N**61.488** ✓  
**59.389** ✓  
**60.688** lbs ✓Puncture Resistance  
FTMS 101 Method 2065 (Modified)

Average Peak Load

**462.0** N**103.85** lbsPuncture Resistance  
ASTM D4833 (Modified) ✓

Average Peak Load

**619.2** N**139.20** lbs ✓ESCR  
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

**CERTIFIED**Notched Constant Tensile Load  
ASTM D5397 ✓

pass / fail @ 30%

300 hrs

**PASS** ✓Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**Date: **3/17/2012**Signature: *[Signature]*  
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311676-12**Lot #: **7120199**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.49 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: **36/36** mil AVE: **1.57 mm 62 mil** OIT(Standard) ASTM D3895 minutes **180** **TEST RESULTS**  
TOP / BOTTOM

Specific Gravity ASTM D792	Density	g/cc	<b>.945</b>
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MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	<b>.25</b>
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Carbon Black Content ASTM D4218	Range	%	<b>2.28</b>
------------------------------------	-------	---	-------------

Carbon Black Dispersion ASTM D5596	Category	<b>10 In Cat 1</b>
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Tensile Strength ASTM D6693	Average Strength @ Yield	28 N/mm (kN/m)	159 ppi	2,508 2,644 <b>2,576</b> psi
ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Break	31 N/mm (kN/m)	180 ppi	3,053 2,766 <b>2,910</b> psi

Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield	Average Elongation @ Yield	%	19.51 14.97 <b>17.24</b>
Lo = 2.0" Break	Average Elongation @ Break	%	458.0 526.5 <b>492.3</b>

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	<b>-55</b>
--	----------------------------	---	------------

Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	269.9 N	61.486 59.889 <b>60.688</b> lbs
--	-------------------------	---------	---------------------------------------

Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	462.0 N	<b>103.85</b> lbs
--	-------------------	---------	-------------------

Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	619.2 N	<b>139.20</b> lbs
--	-------------------	---------	-------------------

ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	<b>CERTIFIED</b>
--------------------	--------------------------	----------	------------------

Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	<b>PASS</b>
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/17/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311677-12**Lot #: **7120199**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.68 mm	66 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:	36/34 mil	AVE:	1.57 mm	62 mil	OIT(Standard) ASTM D3895	minutes	180	TEST RESULTS
TOP / BOTTOM								

Specific Gravity	Density	g/cc	.945
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.25
COND. E			
GRADE: K307			

Carbon Black Content	Range	%	2.28
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	28 N/mm (kN/m)	159 ppi	2,508	
ASTM D6693				2,644	
ASTM D638 (Modified)				2,576	psi
( 2 inches / minute )				3,053	
	Average Strength @ Break	31 N/mm (kN/m)	180 ppi	2,766	
				2,910	psi

Elongation ASTM D6693	Average Elongation @ Yield	%	19.51
ASTM D638 (Modified)			14.97
( 2 inches / minute )			17.24
Lo = 1.3" Yield			458.0
Lo = 2.0" Break	Average Elongation @ Break	%	526.5
			492.3

Dimensional Stability	Average Dimensional change	%	-.55
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	269.9 N	60.688 lbs
ASTM D1004 (Modified)			

Puncture Resistance	Average Peak Load	462.0 N	103.85 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	619.2 N	139.20 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/17/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311678-12**Lot #: **7120199**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.59 mm	63 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	36/34 mil	AVE:	1.56 mm 61 mil	OIT(Standard) ASTM D3895	minutes	180
TOP / BOTTOM						<b>TEST RESULTS</b>

Specific Gravity	Density					
ASTM D792				g/cc		.945
MFI ASTM D1238						
COND. E	Melt Flow Index 190°C /2160 g			g/10 min		.25
GRADE: <b>K307</b>						
Carbon Black Content	Range			%		2.28
ASTM D4218						
Carbon Black Dispersion	Category					10 In Cat 1
ASTM D5596						
Tensile Strength	Average Strength @ Yield	28	N/mm (kN/m)	158	ppi	2,508
ASTM D6693						2,644
ASTM D638 (Modified)						2,576
( 2 inches / minute )	Average Strength @ Break	31	N/mm (kN/m)	179	ppi	3,053
						2,766
Elongation ASTM D6693	Average Elongation @ Yield		%			2,910
ASTM D638 (Modified)						19.51
( 2 inches / minute )						14.97
Lo = 1.3" Yield	Average Elongation @ Break		%			17.24
Lo = 2.0" Break						458.0
						526.5
Dimensional Stability	Average Dimensional change		%			492.3
ASTM D1204 (Modified)						
Tear Resistance	Average Tear Resistance	269.9	N			61.486
ASTM D1004 (Modified)						59.889
						60.688
Puncture Resistance	Average Peak Load	462.0	N			103.85
FTMS 101 Method 2065 (Modified)						lbs
Puncture Resistance	Average Peak Load	619.2	N			139.20
ASTM D4833 (Modified)						lbs
ESCR	Minimum Hrs w/o Failures	1500	hrs			CERTIFIED
ASTM D1693						
Notched Constant Tensile Load	pass / fail @ 30%	300	hrs			PASS
ASTM D5397						

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date:..... **3/17/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311679-12**Lot #: **7120199**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994✓ (Modified)	MIN:	1.50 mm	59 mil	Length.....	153.926 m	505.0 feet
	MAX:	1.63 mm	64 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: 37/35 mil AVE: 1.58 mm 62✓ mil  
TOP / BOTTOMOIT(Standard) ASTM D3895 minutes 180✓  
**TEST RESULTS**Specific Gravity  
ASTM D792✓ Density g/cc .946✓MFI ASTM D1238✓  
COND. E Melt Flow Index 190°C /2160 g g/10 min .25✓  
GRADE: K307Carbon 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 29 N/mm (kN/m) 163 ppi 2,625✓  
2,609✓  
2,617 psi  
3,124✓Average Strength @ Break 33 N/mm (kN/m) 188 ppi 2,933✓  
3,029 psiElongation ASTM D6693✓  
ASTM D638 (Modified)  
( 2 inches / minute )  
Lo = 1.3" Yield  
Lo = 2.0" Break  
Average Elongation @ Yield % 19.65✓  
15.14✓  
17.35✓  
447.3  
539.3

Average Elongation @ Break % 493.3✓

Dimensional Stability  
ASTM D1204 (Modified) Average Dimensional change % -.55Tear Resistance  
ASTM D1004 (Modified)✓  
Average Tear Resistance 274.2 N 62.043✓  
61.236✓  
61.641 lbs✓Puncture Resistance  
FTMS 101 Method 2065 (Modified) Average Peak Load 431.8 N 97.08 lbsPuncture Resistance  
ASTM D4833 (Modified)✓ Average Peak Load 609.9 N 137.12 lbs✓ESCR  
ASTM D1693 Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**Notched Constant Tensile Load  
ASTM D5397✓ pass / fail @ 30% 300 hrs **PASS**✓Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**Date: **3/17/2012**Signature: *[Signature]*  
Quality Control Department60HDMic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311680-12**Lot # **7120199**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.68 mm	66 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: 36/35 mil	AVE:	1.58 mm	62 mil	OIT(Standard) ASTM D3895 minutes	180	<b>TEST RESULTS</b>
TOP / 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	%	2.30
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	29 N/mm (kN/m)	163 ppi	2,625
ASTM D6693				2,609
ASTM D638 (Modified)				2,617 psi
( 2 inches / minute )	Average Strength @ Break	33 N/mm (kN/m)	188 ppi	3,124
				2,933
				3,029 psi

Elongation ASTM D6693	Average Elongation @ Yield	%	19.55
ASTM D638 (Modified)			15.14
( 2 inches / minute )			17.35
Lo = 1.3" Yield	Average Elongation @ Break	%	447.3
Lo = 2.0" Break			539.3
			493.3

Dimensional Stability	Average Dimensional change	%	-.55
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	274.2 N	62.043
ASTM D1004 (Modified)			61.238
			61.641 lbs

Puncture Resistance	Average Peak Load	431.8 N	97.08 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	609.9 N	137.12 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/17/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05





# quality certificate

ROLL # **311681-12**Lot #: **7120199**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.72 mm	68 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	36/33 mil	AVE:	1.63 mm	64 mil		
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	180

**TEST RESULTS**

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: <b>K307</b>			

Carbon Black Content	Range	%	2.30
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	29 N/mm (kN/m)	168 ppi	2,625
ASTM D6693				2,609
ASTM D638 (Modified)				2,617 psi
( 2 inches / minute )				3,124
	Average Strength @ Break	34 N/mm (kN/m)	194 ppi	2,933
				3,029 psi

Elongation ASTM D6693	Average Elongation @ Yield	%	19.55
ASTM D638 (Modified)			15.14
( 2 inches / minute )			17.35
Lo = 1.3" Yield			447.3
Lo = 2.0" Break	Average Elongation @ Break	%	539.3
			493.3

Dimensional Stability	Average Dimensional change	%	-.55
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	274.2 N	62.043
ASTM D1004 (Modified)			61.238
			61.641 lbs

Puncture Resistance	Average Peak Load	431.8 N	97.08 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	609.9 N	137.12 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/17/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311682-12**Lot #: **7120199**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.48 mm	58 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.65 mm	65 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	36/36 mil	AVE:	1.58 mm	62 mil		
TOP / BOTTOM						

OIT(Standard) ASTM D3895 minutes **180**

**TEST RESULTS**

Specific Gravity ASTM D792	Density		g/cc		<b>.946</b>
MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g		g/10 min		<b>.25</b>
Carbon Black Content ASTM D4218	Range		%		<b>2.30</b>
Carbon Black Dispersion ASTM D5596	Category				<b>10 In Cat 1</b>
Tensile Strength ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Yield	<b>29</b> N/mm (kN/m)		<b>163</b> psi	<b>2,617</b> psi
	Average Strength @ Break	<b>33</b> N/mm (kN/m)		<b>188</b> psi	<b>3,029</b> psi
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%			<b>17.35</b>
	Average Elongation @ Break	%			<b>493.3</b>
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			<b>-55</b>
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	<b>274.2</b> N			<b>61.641</b> lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	<b>431.8</b> N			<b>97.08</b> lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	<b>609.9</b> N			<b>137.12</b> lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			<b>CERTIFIED</b>
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			<b>PASS</b>

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/17/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL #

**311683-12**

Lot #:

**7120199**Liner Type: **MICROSPIKE™ HDPE**Measurement  
ASTM D5994 ✓  
(Modified)

MIN:

METRIC 1.49 mm ENGLISH 59 mil

MAX:

1.60 mm 63 mil

Asperity ASTM D7466: 36/32 mil  
TOP / BOTTOM

AVE:

1.54 mm 61 mil

Thickness..... 1.5 mm 60 mil  
Length..... 153.926 m 505.0 feet  
Width..... 7.01 m 23.0 feetOIT(Standard) ASTM D3895 minutes 180  
**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

%

2.29 ✓

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 (kN/m)

169 ppi ✓

2.694 ✓  
2.867 ✓  
2.781 psi  
3.179 ✓

Average Strength @ Break

31 N/mm (kN/m)

178 ppi ✓

2.890 ✓  
2.935 psi  
18.09Elongation ASTM D6693 ✓  
ASTM D638 (Modified)  
( 2 inches / minute )  
Lo = 1.3" Yield  
Lo = 2.0" Break

Average Elongation @ Yield

%

14.86 ✓  
16.48 ✓  
442.0

Average Elongation @ Break

%

449.2  
445.6 ✓Dimensional Stability  
ASTM D1204 (Modified)

Average Dimensional change

%

-.55

Tear Resistance  
ASTM D1004 (Modified) ✓

Average Tear Resistance

266.8 N

60.150 ✓  
59.902 ✓  
59.976 lbs ✓Puncture Resistance  
FTMS 101 Method 2065 (Modified)

Average Peak Load

420.2 N

94.469 lbs

Puncture Resistance  
ASTM D4833 (Modified) ✓

Average Peak Load

582.8 N

131.02 lbs ✓

ESCR  
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

**CERTIFIED**Notched Constant Tensile Load  
ASTM D5397 ✓

pass / fail @ 30%

300 hrs

**PASS** ✓Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**Date: **3/17/2012**Signature: *[Signature]*  
Quality Control Department60HDmic FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311784-12**Lot #: **7120199**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.48 mm	58 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.64 mm	65 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466: 36/31 mil AVE: 1.56 mm 61 mil				OIT(Standard) ASTM D3895 minutes 180		
TOP / BOTTOM				TEST RESULTS		

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	%	2.29
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	30 N/mm (kN/m)	171 ppi	2,694
ASTM D6693				2,867
ASTM D638 (Modified)				2,781 psi
( 2 inches / minute )				3,179

Average Strength @ Break	32 N/mm (kN/m)	180 ppi	2,690
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Elongation ASTM D6693	Average Elongation @ Yield	%	18.09
ASTM D638 (Modified)			14.86
( 2 inches / minute )			16.48
Lo = 1.3" Yield			442.0
Lo = 2.0" Break	Average Elongation @ Break	%	449.2

Dimensional Stability	Average Dimensional change	%	-55
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	266.8 N	60.150
ASTM D1004 (Modified)			59.802

Puncture Resistance	Average Peak Load	420.2 N	59.976 lbs
FTMS 101 Method 2065 (Modified)			94.469 lbs

Puncture Resistance	Average Peak Load	582.8 N	131.02 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/18/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL #

**311785-12**

Lot #:

**7120199**Liner Type: **MICROSPIKE™ HDPE**

Measurement

ASTM D5994

(Modified)

MIN:

METRIC

ENGLISH

1.52 mm 60 mil

MAX:

1.68 mm 66 mil

Thickness.....

1.5 mm

60 mil

Length.....

153.926 m

505.0 feet

Width.....

7.01 m

23.0 feet

Asperity ASTM D7466:

36/33 mil

AVE:

1.57 mm 62 mil

TOP / BOTTOM

OIT(Standard) ASTM D3895 minutes 180

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

%

2.29

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 (kN/m)

172 ppi

2,694

2,867

2,781 psi

3,179

Average Strength @ Break

32 N/mm (kN/m)

181 ppi

2,690

2,935 psi

18.09

Elongation ASTM D6693

ASTM D638 (Modified)

( 2 inches / minute )

Average Elongation @ Yield

%

14.86

16.48

Lo = 1.3" Yield

442.0

Lo = 2.0" Break

Average Elongation @ Break

%

449.2

445.6

Dimensional Stability

ASTM D1204 (Modified)

Average Dimensional change

%

-.55

Tear Resistance

ASTM D1004 (Modified)

Average Tear Resistance

266.8 N

60.150

59.802

59.976 lbs

Puncture Resistance

FTMS 101 Method 2065 (Modified)

Average Peak Load

420.2 N

94.469 lbs

Puncture Resistance

ASTM D4833 (Modified)

Average Peak Load

582.8 N

131.02 lbs

ESCR

ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

CERTIFIED

Notched Constant Tensile Load

ASTM D5397

pass / fail @ 30%

300 hrs

PASS

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/18/2012**

Signature:   
Quality Control Department

60HDMic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311786-12**Lot #: **7120199**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.46 mm	57 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	36/33 mil	AVE:	1.57 mm	62 mil	TEST RESULTS	
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	180

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	%	2.29
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	30 N/mm (kN/m)	172 ppi	2,694	
ASTM D6693				2,867	
ASTM D638 (Modified)				2,781	psi
( 2 inches / minute )	Average Strength @ Break	32 N/mm (kN/m)	181 ppi	3,179	
				2,690	
				2,935	psi

Elongation ASTM D6693	Average Elongation @ Yield	%	18.09
ASTM D638 (Modified)			14.86
( 2 inches / minute )			16.48
Lo = 1.3" Yield	Average Elongation @ Break	%	442.0
Lo = 2.0" Break			449.2
			445.6

Dimensional Stability	Average Dimensional change	%	-.55
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	266.8 N	60.150
ASTM D1004 (Modified)			59.802
			59.976 lbs

Puncture Resistance	Average Peak Load	420.2 N	94.469 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	582.8 N	131.02 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/18/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311787-12**Lot #: **7120199**Liner Type: **MICROSPIKE™ HDPE**Measurement  
ASTM D5994 ✓  
(Modified)MIN:  
MAX:METRIC ENGLISH  
1.54 mm 61 mil  
1.67 mm 66 milThickness..... 1.5 mm 60 mil  
Length..... 153.926 m 505.0 feet  
Width..... 7.01 m 23.0 feetAsperity ASTM D7466: 36/34 mil  
TOP / BOTTOM

AVE:

1.58 mm 62 mil

OIT(Standard) ASTM D3895 minutes 180  
TEST RESULTSSpecific 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

%

2.33 ✓

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 (kN/m)

163 ppi ✓

2,539 ✓  
2,688 ✓  
2,614 psi  
3,249 ✓

Average Strength @ Break

34 N/mm (kN/m)

193 ppi ✓

2,945 ✓  
3,097 psi  
20.42  
14.46Elongation ASTM D6693 ✓  
ASTM D638 (Modified)  
( 2 inches / minute )  
Lo = 1.3" Yield  
Lo = 2.0" Break

Average Elongation @ Yield

%

17.44 ✓

Average Elongation @ Break

%

429.1  
544.5  
486.8 ✓Dimensional Stability  
ASTM D1204 (Modified)

Average Dimensional change

%

-.55

Tear Resistance  
ASTM D1004 (Modified) ✓

Average Tear Resistance

255.5 N

57.351 ✓  
57.523 ✓  
57.437 lbs ✓Puncture Resistance  
FTMS 101 Method 2065 (Modified)

Average Peak Load

426.9 N

95.985 lbs

Puncture Resistance  
ASTM D4833 (Modified) ✓

Average Peak Load

600.7 N

135.04 lbs ✓

ESCR  
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

CERTIFIED

Notched Constant Tensile Load  
ASTM D5397 ✓

pass / fail @ 30%

300 hrs

PASS ✓

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**Date: **3/18/2012**Signature *[Signature]*  
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



CoA Date: 10/31/2011

## Certificate of Analysis

Shipped To: AGRU AMERICA:RAINS  
MILEPOST SH317  
RAINS SC 29589  
USA

Recipient: PALMER  
Fax:

Delivery #: 88357558  
PO #: 5847  
Weight: 179200 LB  
Ship Date: 10/31/2011  
Package: BULK  
Mode: Hopper Car  
Car #: PSPX002559  
Seal No: 265824

Product:  
MARLEX POLYETHYLENE K307 BULK

Lot Number: 8110773

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.29	g/10mi
HLMI Flow Rate	ASTM D1238	22	g/10mi
Density	D1505 or D4883	0.937	g/cm3
Pellet Count	P02.08.03	27	pel/g
Production Date		07/01/2011	

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 +1-832-813-4806





# quality certificate

ROLL # **311788-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.56 mm	61 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.68 mm	66 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: 37/34 mil  
TOP / BOTTOM

AVE: 1.60 mm 63 mil

OIT(Standard) ASTM D3895 minutes 184

**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	.29
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Carbon Black Content ASTM D4218	Range	%	2.33
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Carbon Black Dispersion 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 (kN/m)	165 ppi	2,539 2,688 2,614 3,249 2,945 3,097 psi
	Average Strength @ Break	34 N/mm (kN/m)	195 ppi	20.42 14.46 17.44 429.1 544.5 486.8

Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	17.44
	Average Elongation @ Break	%	486.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.44
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Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	255.5 N	57.351 57.523 57.437 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	426.9 N	95.985 lbs
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Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	600.7 N	135.04 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	PASS
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/18/2012**Signature: *[Signature]*  
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311789-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.66 mm	65 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	37/34 mil	AVE:	1.57 mm	62 mil		
TOP / BOTTOM						

OIT(Standard) ASTM D3895 minutes **184**

## TEST RESULTS

Specific Gravity ASTM D792	Density		g/cc		<b>.946</b>
MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g		g/10 min		<b>.29</b>
Carbon Black Content ASTM D4218	Range		%		<b>2.33</b>
Carbon Black Dispersion ASTM D5596	Category				<b>10 In Cat 1</b>
Tensile Strength ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Yield	<b>28</b> N/mm (kN/m)		<b>162</b> psi	<b>2,614</b> psi
	Average Strength @ Break	<b>34</b> N/mm (kN/m)		<b>191</b> psi	<b>3,097</b> psi
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%			<b>17.44</b>
	Average Elongation @ Break	%			<b>486.8</b>
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			<b>-.44</b>
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	<b>255.5</b> N			<b>57.437</b> lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	<b>426.9</b> N			<b>95.985</b> lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	<b>600.7</b> N			<b>135.04</b> lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			<b>CERTIFIED</b>
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			<b>PASS</b>

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/18/2012**Signature:   
Quality Control Department60HDmic FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311790-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.49 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.65 mm	65 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	37/36 mil	AVE:	1.58 mm	62 mil		
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	184

**TEST RESULTS**

Specific Gravity ASTM D792	Density		g/cc			.946
MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g		g/10 min			.29
Carbon Black Content ASTM D4218	Range		%			2.33
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 (kN/m)	163	ppi	2,539 2,688 2,614 psi
	Average Strength @ Break	34	N/mm (kN/m)	193	ppi	3,249 2,945 3,097 psi
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			20.42 14.46 17.44
	Average Elongation @ Break		%			429.1 544.5 486.8
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-.44
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	255.5	N			57.351 57.523 57.437 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	426.9	N			95.985 lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	600.7	N			135.04 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300	hrs			PASS

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/18/2012**Signature:   
Quality Control Department

60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311791-12**

Lot #: **8110773**

Liner Type: **MICROSPIKE™ HDPE**

Measurement	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994 ✓ (Modified)	MIN: 1.49 mm	59 mil	Length.....	153.926 m	505.0 feet
	MAX: 1.60 mm	63 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466: ✓ TOP / BOTTOM	37/35 mil AVE: 1.55 mm	61✓ mil	OIT(Standard) ASTM D3895 ✓	minutes 184	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		.29 ✓
Carbon Black Content ASTM D4218 ✓	Range		%		2.28 ✓
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 (kN/m)	163 ppi	2,688 ✓ 2,738 ✓ 2,663 psi	3,060 ✓ 3,067 ✓ 3,064 psi
	Average Strength @ Break	33 N/mm (kN/m)	187 ppi	19.07 ✓ 15.79 ✓ 17.43 ✓	445.7 ✓ 551.5 ✓ 498.6 ✓
Elongation ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%			
	Average Elongation @ Break	%			
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			-44 ✓ 80.226 ✓ 80.316 ✓ 60.271 lbs ✓
Tear Resistance ASTM D1004 (Modified) ✓	Average Tear Resistance	268.1 N			
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	432.5 N			97.228 lbs
Puncture Resistance ASTM D4833 (Modified) ✓	Average Peak Load	597.3 N			134.27 lbs ✓
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397 ✓	pass / fail @ 30%	300 hrs			PASS ✓

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/18/2012**  
Signature: *[Signature]*  
Quality Control Department  
80HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311791-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.49 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	37/35 mil	AVE:	1.55 mm	61 mil		
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	184

**TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	.29
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Carbon Black Content ASTM D4218	Range	%	2.28
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Carbon Black Dispersion ASTM D5596	Category	10 In Cat 1
---------------------------------------	----------	-------------

Tensile Strength ASTM D6693	Average Strength @ Yield	28 N/mm (kN/m)	163 ppi	2,588 2,738 2,663 psi
ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Break	33 N/mm (kN/m)	187 ppi	3,060 3,067 3,064 psi

Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute )	Average Elongation @ Yield	%	19.07 15.79 17.43
Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	445.7 551.5 498.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-44
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Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	268.1 N	60.226 60.316 60.271 lbs
--	-------------------------	---------	--------------------------------

Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	432.5 N	97.228 lbs
--	-------------------	---------	------------

Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	597.3 N	134.27 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	PASS
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/18/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311792-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.51 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.66 mm	65 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	37/35 mil	AVE:	1.59 mm	63 mil		
TOP / BOTTOM						

OIT(Standard) ASTM D3895 minutes **184**

**TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	<b>.945</b>
-------------------------------	---------	------	-------------

MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	<b>.29</b>
---	-------------------------------	----------	------------

Carbon Black Content ASTM D4218	Range	%	<b>2.28</b>
------------------------------------	-------	---	-------------

Carbon Black Dispersion ASTM D5596	Category	<b>10 In Cat 1</b>
---------------------------------------	----------	--------------------

Tensile Strength ASTM D6693	Average Strength @ Yield	29 N/mm (kN/m)	167 ppi	2,588 2,738 2,663 psi
ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Break	34 N/mm (kN/m)	192 ppi	3,060 3,067 3,064 psi

Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute )	Average Elongation @ Yield	%	19.07 15.79 17.43
Lo = 1.3" Yield			445.7
Lo = 2.0" Break	Average Elongation @ Break	%	551.5 498.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	<b>-.44</b>
--	----------------------------	---	-------------

Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	268.1 N	60.226 60.316 60.271 lbs
--	-------------------------	---------	--------------------------------

Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	432.5 N	97.228 lbs
--	-------------------	---------	------------

Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	597.3 N	134.27 lbs
--	-------------------	---------	------------

ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	<b>CERTIFIED</b>
--------------------	--------------------------	----------	------------------

Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	<b>PASS</b>
---	-------------------	---------	-------------

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/18/2012**Signature:   
Quality Control Department60HDMic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311793-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.45 mm	57 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: **37/36 mil**  
TOP / BOTTOMAVE: **1.54 mm 61 mil**OIT(Standard) ASTM D3895 minutes **184****TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	<b>.945</b>
-------------------------------	---------	------	-------------

MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	<b>.29</b>
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Carbon Black Content ASTM D4218	Range	%	<b>2.28</b>
------------------------------------	-------	---	-------------

Carbon Black Dispersion ASTM D5596	Category	<b>10 In Cat 1</b>
---------------------------------------	----------	--------------------

Tensile Strength ASTM D6693	Average Strength @ Yield	28 N/mm (kN/m)	161 ppi	2,588 2,738 2,663 psi
ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Break	33 N/mm (kN/m)	186 ppi	3,060 3,067 3,064 psi

Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield	Average Elongation @ Yield	%	19.07 15.79 17.43
Lo = 2.0" Break	Average Elongation @ Break	%	445.7 551.5 498.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	<b>-.44</b>
--	----------------------------	---	-------------

Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	268.1 N	60.226 60.316 60.271 lbs
--	-------------------------	---------	--------------------------------

Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	432.5 N	97.228 lbs
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Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	597.3 N	134.27 lbs
--	-------------------	---------	------------

ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	<b>CERTIFIED</b>
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	<b>PASS</b>
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/18/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311794-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.45 mm	57 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.65 mm	65 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	36/32 mil	AVE:	1.55 mm	61 mil	TEST RESULTS	
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	184

Specific Gravity	Density	g/cc	.945
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.29
COND. E			
GRADE:	K307		

Carbon Black Content	Range	%	2.28
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	28 N/mm (kN/m)	163 ppi	2,588	
ASTM D6693				2,738	
ASTM D638 (Modified)				2,663	psi
( 2 inches / minute )				3,060	
	Average Strength @ Break	33 N/mm (kN/m)	187 ppi	3,067	
				3,064	psi

Elongation ASTM D6693	Average Elongation @ Yield	%	19.07
ASTM D638 (Modified)			15.79
( 2 inches / minute )			17.43
Lo = 1.3" Yield			445.7
Lo = 2.0" Break	Average Elongation @ Break	%	551.5
			498.6

Dimensional Stability	Average Dimensional change	%	-44
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	268.1 N	60.226
ASTM D1004 (Modified)			60.316
			60.271 lbs

Puncture Resistance	Average Peak Load	432.5 N	97.228 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	597.3 N	134.27 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/19/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05





ROLL #

311795-12

Lot #:

8110773

Liner Type: MICROSPIKE™ HDPE

Measurement  
ASTM D5994 ✓  
(Modified)

MIN:

METRIC 1.52 mm ENGLISH 60 mil

MAX:

1.62 mm 64 mil

Asperity ASTM D7466: 37/33 mil  
TOP / BOTTOM

AVE:

1.57 mm 62 mil

Thickness..... 1.5 mm 60 mil  
Length..... 153.926 m 505.0 feet  
Width..... 7.01 m 23.0 feetOIT(Standard) ASTM D3895 minutes 184 ✓  
TEST RESULTSSpecific Gravity  
ASTM D792 ✓

Density

g/cc

.945 ✓

MFI ASTM D1238 ✓  
COND. E  
GRADE: K307

Melt Flow Index 190°C /2160 g

g/10 min

.29 ✓

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

27 N/mm (kN/m)

157 ppi ✓

2,423 ✓  
2,651 ✓  
2,537 psi  
3,181 ✓

Average Strength @ Break

33 N/mm (kN/m)

190 ppi ✓

2,977 ✓  
3,079 psi  
20.84Elongation ASTM D6693 ✓  
ASTM D638 (Modified)  
( 2 inches / minute )  
Lo = 1.3" Yield  
Lo = 2.0" Break

Average Elongation @ Yield

%

18.02 ✓  
15.20

Average Elongation @ Break

%

448.4  
547.1  
497.8 ✓Dimensional Stability  
ASTM D1204 (Modified)

Average Dimensional change

%

-.44

Tear Resistance  
ASTM D1004 (Modified) ✓

Average Tear Resistance

252.4 N

58.031 ✓  
55.447 ✓  
56.739 lbs ✓Puncture Resistance  
FTMS 101 Method 2065 (Modified)

Average Peak Load

411.2 N

92.457 lbs

Puncture Resistance  
ASTM D4833 (Modified) ✓

Average Peak Load

591.5 N

132.98 lbs ✓

ESCR  
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

CERTIFIED

Notched Constant Tensile Load  
ASTM D5397 ✓

pass / fail @ 30%

300 hrs

PASS ✓

Customer: Chenango Contracting, Inc.  
PO: 2276 Honeywell Sediment Consolidation  
Destination Syracuse, NY

Date: 3/19/2012

Signature: [Signature]  
Quality Control Department50HDmic FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **311796-12**

Lot #: **8110773**

Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.44 mm	57 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.59 mm	63 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	37/34 mil	AVE:	1.52 mm	60 mil		
TOP / BOTTOM						

OIT(Standard) ASTM D3895 minutes **184** **TEST RESULTS**

Specific Gravity ASTM D792	Density		g/cc		<b>.945</b>
MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g		g/10 min		<b>.29</b>
Carbon Black Content ASTM D4218	Range		%		<b>2.26</b>
Carbon Black Dispersion ASTM D5596	Category				<b>10 In Cat 1</b>
Tensile Strength ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Yield	<b>27</b>	N/mm (kN/m)	<b>152</b> psi	<b>2,537</b> psi
	Average Strength @ Break	<b>32</b>	N/mm (kN/m)	<b>184</b> psi	<b>3,079</b> psi
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		<b>18.02</b>
	Average Elongation @ Break		%		<b>497.8</b>
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		<b>-.44</b>
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	<b>252.4</b>	N		<b>56.739</b> lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	<b>411.2</b>	N		<b>92.457</b> lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	<b>591.5</b>	N		<b>132.98</b> lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs		<b>CERTIFIED</b>
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300	hrs		<b>PASS</b>

Customer: **Chenango Contracting, Inc.**  
 PO: **2276 Honeywell Sediment Consolidation**  
 Destination **Syracuse, NY**

Date: **3/19/2012**

Signature:   
 Quality Control Department

60HDmic.FRM  
 REV 03  
 12/23/05



# quality certificate

ROLL # **312101-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.49 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	35/33 mil	AVE:	1.54 mm	61 mil		
TOP / BOTTOM						

OIT(Standard) ASTM D3895 minutes **184**

**TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	<b>.945</b>
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MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	<b>.29</b>
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Carbon Black Content ASTM D4218	Range	%	<b>2.26</b>
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Carbon Black Dispersion ASTM D5596	Category		<b>10 In Cat 1</b>
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Tensile Strength ASTM D6693	Average Strength @ Yield	27 N/mm (kN/m)	154 ppi	2,423 2,651 2,537 psi
ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Break	33 N/mm (kN/m)	187 ppi	3,181 2,977 3,079 psi

Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute )	Average Elongation @ Yield	%	20.84 15.20 18.02
Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	448.4 547.1 497.8

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	<b>-44</b>
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Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	252.4 N	58.031 55.447 56.739 lbs
--	-------------------------	---------	--------------------------------

Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	411.2 N	92.457 lbs
--	-------------------	---------	------------

Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	591.5 N	132.98 lbs
--	-------------------	---------	------------

ESCR ASIM D1693	Minimum Hrs w/o Failures	1500 hrs	<b>CERTIFIED</b>
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	<b>PASS</b>
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/19/2012**Signature:   
Quality Control Department60HDMic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **312102-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**Measurement  
ASTM D5994  
(Modified)MIN:  
MAX:

METRIC	ENGLISH
1.44 mm	57 mil
1.64 mm	65 mil
1.54 mm	61 mil

Thickness.....	1.5 mm	60 mil
Length.....	153.926 m	505.0 feet
Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:  
TOP / BOTTOM**35/33** mil

AVE:

**1.54 mm 61 mil**OIT(Standard) ASTM D3895 minutes **184****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

**.29**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

**27** N/mm (kN/m)**154** ppi

2,423
2,651
2,537 psi
3,181
2,977
3,079 psi

Average Strength @ Break

**33** N/mm (kN/m)**187** ppiElongation ASTM D6693  
ASTM D638 (Modified)  
( 2 inches / minute )  
Lo = 1.3" Yield  
Lo = 2.0" Break

Average Elongation @ Yield

%

20.84
15.20
18.02
448.4
547.1
497.8

Average Elongation @ Break

%

Dimensional Stability  
ASTM D1204 (Modified)

Average Dimensional change

%

**-.44**Tear Resistance  
ASTM D1004 (Modified)

Average Tear Resistance

**252.4** N

58.031
55.447
56.739 lbs

Puncture Resistance  
FTMS 101 Method 2065 (Modified)

Average Peak Load

**411.2** N**92.457** lbsPuncture Resistance  
ASTM D4833 (Modified)

Average Peak Load

**591.5** N**132.98** lbsESCR  
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

**CERTIFIED**Notched Constant Tensile Load  
ASTM D5397

pass / fail @ 30%

300 hrs

**PASS**Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**Date: **3/19/2012**Signature:   
Quality Control Department60HDMic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL #

**312103-12**

Lot #:

**8110773**Liner Type: **MICROSPIKE™ HDPE**Measurement  
ASTM D5994 ✓  
(Modified)

MIN:

METRIC  
**1.51** mm**59**

mil

MAX:

**1.62** mm**64**

mil

Asperity ASTM D7466: ✓  
TOP / BOTTOM**36/35** mil

AVE:

**1.56** mm**61** ✓

mil

Thickness..... **1.5** mm **60** mil  
Length..... **153.926** m **505.0** feet  
Width..... **7.01** m; **23.0** feetOIT(Standard) ASTM D3895 ✓ minutes **184** **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

**.29** ✓Carbon Black Content  
ASTM D4218 ✓

Range

%

**2.27** ✓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 (kN/m)**162** psi ✓**2,510** ✓**3,762** ✓**2,631** psi**3,220** ✓Average Strength @ Break**33** N/mm (kN/m)**188** psi ✓**2,505** ✓**3,064** psi**19.02****14.37**Elongation ASTM D6693 ✓  
ASTM D638 (Modified)  
( 2 inches / minute )  
Lo = 1.3" Yield  
Lo = 2.0" BreakAverage Elongation @ Yield

%

**17.00** ✓**459.6****531.5**Average Elongation @ Break

%

**495.6** ✓Dimensional Stability  
ASTM D1204 (Modified)

Average Dimensional change

%

**-.44**Tear Resistance  
ASTM D1004 (Modified) ✓

Average Tear Resistance

**257.2** N**57.873** ✓**57.767** ✓**57.815** lbs ✓Puncture Resistance  
FTMS 101 Method 2065 (Modified)

Average Peak Load

**422.6** N**95.001** lbsPuncture Resistance  
ASTM D4833 (Modified) ✓

Average Peak Load

**579.1** N**130.19** lbs ✓ESCR  
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

**CERTIFIED**Notched Constant Tensile Load  
ASTM D5397 ✓

pass / fail @ 30%

300 hrs

**PASS** ✓Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**Date: **3/19/2012**Signature: *[Signature]*  
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL #

**312104-12**

Lot #:

**8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.51 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.73 mm	68 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	37/33 mil	AVE:	1.62 mm	64 mil		
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	184

**TEST RESULTS**

Specific Gravity ASTM D792	Density		g/cc		.945
MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g		g/10 min		.29
Carbon Black Content ASTM D4218	Range		%		2.27
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 (kN/m)	168 ppi	2,510 2,752 2,631 psi 3,220
	Average Strength @ Break	34	N/mm (kN/m)	195 ppi	2,908 3,064 psi 19.63
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%		14.37 17.00 459.6 531.5
	Average Elongation @ Break		%		495.6
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-.44
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	257.2	N		57.873 57.757 57.815 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	422.6	N		95.001 lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	579.1	N		130.19 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs		CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300	hrs		PASS

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/19/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **312105-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.54 mm	61 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.70 mm	67 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	37/33 mil	AVE:	1.62 mm	64 mil		
TOP / BOTTOM						

OIT(Standard) ASTM D3895 minutes **184**

**TEST RESULTS**

Specific Gravity ASTM D792	Density		g/cc			<b>.945</b>
MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g		g/10 min			<b>.29</b>
Carbon Black Content ASTM D4218	Range		%			<b>2.27</b>
Carbon Black Dispersion ASTM D5596	Category					<b>10 In Cat 1</b>
Tensile Strength ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Yield	<b>29</b>	N/mm (kN/m)	<b>168</b>	ppi	2,510 2,752 <b>2,631</b> psi
	Average Strength @ Break	<b>34</b>	N/mm (kN/m)	<b>195</b>	ppi	3,220 2,908 <b>3,064</b> psi
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			19.63 14.37 <b>17.00</b>
	Average Elongation @ Break		%			459.6 531.5 <b>495.6</b>
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			<b>-.44</b>
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	<b>257.2</b>	N			57.873 57.757 <b>57.815</b> lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	<b>422.6</b>	N			<b>95.001</b> lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	<b>579.1</b>	N			<b>130.19</b> lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs			<b>CERTIFIED</b>
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300	hrs			<b>PASS</b>

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/19/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **312106-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.48 mm	58 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: **36/35 mil**  
TOP / BOTTOMAVE: **1.54 mm 61 mil**OIT(Standard) ASTM D3895 minutes **184****TEST RESULTS**

Specific Gravity	Density	g/cc	
ASTM D792			<b>.945</b>

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	
COND. E			<b>.29</b>
GRADE: <b>K307</b>			

Carbon Black Content	Range	%	
ASTM D4218			<b>2.27</b>

Carbon Black Dispersion	Category		
ASTM D5596			<b>10 In Cat 1</b>

Tensile Strength	Average Strength @ Yield	28 N/mm (kN/m)	160 ppi	
ASTM D6693				2,510
ASTM D638 (Modified)				2,752
( 2 inches / minute )				2,631 psi
	Average Strength @ Break	33 N/mm (kN/m)	186 ppi	3,220
				2,908
				3,064 psi

Elongation ASTM D6693	Average Elongation @ Yield	%	
ASTM D638 (Modified)			19.63
( 2 inches / minute )			14.37
Lo = 1.3" Yield			17.00
Lo = 2.0" Break	Average Elongation @ Break	%	459.6
			531.5
			495.6

Dimensional Stability	Average Dimensional change	%	
ASTM D1204 (Modified)			<b>-44</b>

Tear Resistance	Average Tear Resistance	257.2 N	
ASTM D1004 (Modified)			57.873
			57.757
			57.815 lbs

Puncture Resistance	Average Peak Load	422.6 N	
FTMS 101 Method 2065 (Modified)			95.001 lbs

Puncture Resistance	Average Peak Load	579.1 N	
ASTM D4833 (Modified)			130.19 lbs

ESCR	Minimum Hrs w/o Failures	1500 hrs	
ASTM D1693			<b>CERTIFIED</b>

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	
ASTM D5397			<b>PASS</b>

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/19/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05





# quality certificate

ROLL # **312107-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**Measurement  
ASTM D5994 ✓  
(Modified)MIN: **1.49** mm **59** mil  
MAX: **1.62** mm **64** milMETRIC ENGLISH  
AVE: **1.58** mm **62** ✓ milThickness..... **1.5** mm **60** mil  
Length..... **153.926** m **505.0** feet  
Width..... **7.01** m; **23.0** feetAsperity ASTM D7466: **37/35** mil  
TOP / BOTTOMOIT(Standard) ASTM D3895 minutes **184** **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

**.29** ✓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

27 N/mm (kN/m)

**155** ppi ✓**2,405** ✓  
**2,565** ✓  
**2,486** psi  
**3,179** ✓Average Strength @ Break

32 N/mm (kN/m)

**181** ppi ✓**2,647** ✓  
**2,913** psiElongation ASTM D6693 ✓  
ASTM D638 (Modified)  
( 2 inches / minute )  
Lo = 1.3" Yield  
Lo = 2.0" BreakAverage Elongation @ Yield

%

**19.78**  
**14.79**  
**17.29** ✓Average Elongation @ Break

%

**470.9**  
**517.0**  
**494.0** ✓Dimensional Stability  
ASTM D1204 (Modified)

Average Dimensional change

%

**-44**Tear Resistance  
ASTM D1004 (Modified) ✓Average Tear Resistance**264.4** N**60.474** ✓  
**58.430** ✓  
**59.452** lbs ✓Puncture Resistance  
FTMS 101 Method 2065 (Modified)

Average Peak Load

**433.2** N**97.389** lbsPuncture Resistance  
ASTM D4833 (Modified) ✓

Average Peak Load

**606.3** N**136.29** lbs ✓ESCR  
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

**CERTIFIED**Notched Constant Tensile Load  
ASTM D5397 ✓

pass / fail @ 30%

300 hrs

**PASS** ✓Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**Date: **3/19/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **312108-12**

Lot #: **8110773**

Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.51 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	36/35 mil	AVE:	1.56 mm 61 mil	OIT(Standard) ASTM D3895 minutes 184		
TOP / BOTTOM				TEST RESULTS		

Specific Gravity	Density	g/cc	.945
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.29
COND. E			
GRADE: K307			

Carbon Black Content	Range	%	2.29
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	27 N/mm (kN/m)	153 ppi	2,406	psi
ASTM D6693				2,565	
ASTM D638 (Modified)				3,179	
( 2 inches / minute )	Average Strength @ Break	31 N/mm (kN/m)	179 ppi	2,647	
				2,913	psi

Elongation ASTM D6693	Average Elongation @ Yield	%	19.78
ASTM D638 (Modified)			14.79
( 2 inches / minute )			17.29
Lo = 1.3" Yield			470.9
Lo = 2.0" Break	Average Elongation @ Break	%	517.0
			494.0

Dimensional Stability	Average Dimensional change	%	-44
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	264.4 N	59.452 lbs
ASTM D1004 (Modified)			

Puncture Resistance	Average Peak Load	433.2 N	97.389 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	606.3 N	136.29 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/19/2012**  
Signature: *[Signature]*  
Quality Control Department  
60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **312109-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.47 mm	58 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:	35/36 mil	AVE:	1.55 mm	61 mil	OIT(Standard) ASTM D3895	minutes	184	TEST RESULTS
					TOP / BOTTOM			

Specific Gravity	Density	g/cc	.945
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.29
COND. E			
GRADE:	K307		

Carbon Black Content	Range	%	2.29
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	27 N/mm (kN/m)	152 ppi	2,406	
ASTM D6693				2,565	
ASTM D638 (Modified)				2,486	psi
( 2 inches / minute )				3,179	
	Average Strength @ Break	31 N/mm (kN/m)	178 ppi	2,647	
				2,913	psi

Elongation ASTM D6693	Average Elongation @ Yield	%	19.78
ASTM D638 (Modified)			14.79
( 2 inches / minute )			17.29
Lo = 1.3" Yield			470.9
Lo = 2.0" Break	Average Elongation @ Break	%	517.0
			494.0

Dimensional Stability	Average Dimensional change	%	-44
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	264.4 N	60.474
ASTM D1004 (Modified)			58.430
			59.452 lbs

Puncture Resistance	Average Peak Load	433.2 N	97.389 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	606.3 N	136.29 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/19/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **312110-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.59 mm	63 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466: 37/36 mil AVE: 1.54 mm 61 mil				OIT(Standard) ASTM D3895 minutes 184		
TOP / BOTTOM				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	.29
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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	26 N/mm (kN/m)	151 ppi	2,406 2,565 2,486 psi
	Average Strength @ Break	31 N/mm (kN/m)	177 ppi	3,179 2,647 2,913 psi

Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	19.78 14.79 17.29
	Average Elongation @ Break	%	470.9 517.0 494.0

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-44
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Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	264.4 N	60.474 58.430 59.452 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	433.2 N	97.389 lbs
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Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	606.3 N	136.29 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	PASS
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/19/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **312111-12**

Lot #: **8110773**

Liner Type: **MICROSPIKE™ HDPE**

Measurement	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994 ✓ (Modified)	MIN: 1.47 mm	58 mil	Length.....	153.926 m	505.0 feet
	MAX: 1.62 mm	64 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466: 38/36 mil	AVE: 1.53 mm	60 mil ✓			
TOP / BOTTOM	OIT(Standard) ASTM D3895 minutes			184 ✓	<b>TEST RESULTS</b>

Specific Gravity ASTM D792 ✓	Density	g/cc	.944 ✓
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MFI ASTM D1238 ✓ COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	.29 ✓
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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 (kN/m)	158 ppi ✓ 2,631 psi
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Average Strength @ Break	34 N/mm (kN/m)	192 ppi ✓ 3,186 psi
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Elongation ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	16.95 ✓
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Average Elongation @ Break	%	521.1 ✓
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Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.44
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Tear Resistance ASTM D1004 (Modified) ✓	Average Tear Resistance	260.4 N	58.548 lbs ✓
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	421.7 N	94.814 lbs
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Puncture Resistance ASTM D4833 (Modified) ✓	Average Peak Load	591.0 N	132.85 lbs ✓
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	<b>CERTIFIED</b>
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Notched Constant Tensile Load ASTM D5397 ✓	pass / fail @ 30%	300 hrs	<b>PASS</b> ✓
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/19/2012**

Signature: *[Signature]*  
Quality Control Department

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# quality certificate

ROLL # **312113-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.67 mm	66 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	35/32 mil	AVE:	1.60 mm 63 mil	TEST RESULTS		
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	184

Specific Gravity	Density	g/cc	.944
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.29
COND. E			
GRADE:	K307		

Carbon Black Content	Range	%	2.30
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	29 N/mm (kN/m)	166 ppi	2,520	
ASTM D6693				2,742	
ASTM D638 (Modified)				2,631	psi
( 2 inches / minute )	Average Strength @ Break	35 N/mm (kN/m)	201 ppi	3,190	
				3,182	
				3,186	psi

Elongation ASTM D6693	Average Elongation @ Yield	%	18.68
ASTM D638 (Modified)			15.22
( 2 inches / minute )			16.95
Lo = 1.3" Yield	Average Elongation @ Break	%	473.5
Lo = 2.0" Break			568.6
			521.1

Dimensional Stability	Average Dimensional change	%	-44
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	260.4 N	58.531
ASTM D1004 (Modified)			58.565
			58.548 lbs

Puncture Resistance	Average Peak Load	421.7 N	94.814 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	591.0 N	132.85 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/19/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **312114-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.47 mm	58 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: **37/34** mil  
TOP / BOTTOMAVE: **1.54 mm 61 mil**OIT(Standard) ASTM D3895 minutes **184** **TEST RESULTS**

Specific Gravity	Density	g/cc	
ASTM D792			<b>.944</b>

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	
COND. E			<b>.29</b>
GRADE: <b>K307</b>			

Carbon Black Content	Range	%	
ASTM D4218			<b>2.30</b>

Carbon Black Dispersion	Category		
ASTM D5596			<b>10 In Cat 1</b>

Tensile Strength	Average Strength @ Yield	28 N/mm (kN/m)	160 ppi	2,520	
ASTM D6693				2,742	
ASTM D638 (Modified)				2,631	psi
( 2 inches / minute )				3,190	

Average Strength @ Break	34 N/mm (kN/m)	193 ppi	3,182	
			3,186	psi

Elongation ASTM D6693	Average Elongation @ Yield	%	18.68	
ASTM D638 (Modified)			15.22	
( 2 inches / minute )			16.95	
Lo = 1.3" Yield			473.5	
Lo = 2.0" Break	Average Elongation @ Break	%	568.6	
			521.1	

Dimensional Stability	Average Dimensional change	%	
ASTM D1204 (Modified)			<b>-.44</b>

Tear Resistance	Average Tear Resistance	260.4 N	58.531	
ASTM D1004 (Modified)			58.565	
			58.548	lbs

Puncture Resistance	Average Peak Load	421.7 N	94.814	lbs
FTMS 101 Method 2065 (Modified)				

Puncture Resistance	Average Peak Load	591.0 N	132.85	lbs
ASTM D4833 (Modified)				

ESCR	Minimum Hrs w/o Failures	1500 hrs	
ASTM D1693			<b>CERTIFIED</b>

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	
ASTM D5397			<b>PASS</b>

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/19/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **312115-12**

Lot #: **8110773**

Liner Type: **MICROSPIKE™ HDPE**

Measurement	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994 ✓ (Modified)	MIN: 1.46 mm	57 mil	Length.....	153.926 m	505.0 feet
	MAX: 1.62 mm	64 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466: 36/36 mil ✓ TOP / BOTTOM	AVE: 1.53 mm	60 mil ✓	OIT(Standard) ASTM D3895 minutes ✓	184	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		.29 ✓
Carbon Black Content ASTM D4218 ✓	Range		%		2.32 ✓
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 (kN/m)	146 ppi ✓	2,415 ✓ 2,440 ✓ 2,428 psi 3,067 ✓	
	Average Strength @ Break	31 N/mm (kN/m)	177 ppi ✓	2,812 ✓ 2,940 psi 19.08 18.41	
Elongation ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		19.05 ✓ 491.8 482.8	
	Average Elongation @ Break	%		477.3 ✓	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-44	
Tear Resistance ASTM D1004 (Modified) ✓	Average Tear Resistance	249.0 N		56.927 ✓ 55.016 ✓ 55.972 lbs ✓	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	417.1 N		93.771 lbs	
Puncture Resistance ASTM D4833 (Modified) ✓	Average Peak Load	594.8 N		133.72 lbs ✓	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397 ✓	pass / fail @ 30%	300 hrs		PASS ✓	

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/19/2012**

Signature:   
Quality Control Department

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REV 03  
12/23/05





# quality certificate

ROLL # **312216-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.48 mm	58 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.66 mm	65 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: **33/33** mil AVE: **1.56** mm **61** mil  
TOP / BOTTOMOIT(Standard) ASTM D3895 minutes **184** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	<b>.947</b>
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MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	<b>.29</b>
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Carbon Black Content ASTM D4218	Range	%	<b>2.32</b>
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Carbon Black Dispersion ASTM D5596	Category	<b>10 In Cat 1</b>
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Tensile Strength ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Yield	<b>26</b> N/mm (kN/m)	<b>149</b> psi	2,415 2,440 <b>2,428</b> psi
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Average Strength @ Break	<b>32</b> N/mm (kN/m)	<b>181</b> psi	2,812 <b>2,940</b> psi
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Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%	19.68 18.41 <b>19.05</b>
Average Elongation @ Break	%	491.8 462.8 <b>477.3</b>	

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	<b>-.44</b>
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Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	<b>249.0</b> N	56.927 55.016 <b>55.972</b> lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	<b>417.1</b> N	<b>93.771</b> lbs
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Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	<b>594.8</b> N	<b>133.72</b> lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	<b>CERTIFIED</b>
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	<b>PASS</b>
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**Date: **3/20/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **312217-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.48 mm	58 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.66 mm	65 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:	37/34 mil	AVE:	1.55 mm	61 mil	OIT(Standard) ASTM D3895 minutes	184	TEST RESULTS
TOP / BOTTOM							

Specific Gravity	Density	g/cc	.947
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.29
COND. E			
GRADE: K307			

Carbon Black Content	Range	%	2.32
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	26 N/mm (kN/m)	148 ppi	2,415
ASTM D6693				2,440
ASTM D638 (Modified)				2,428 psi
( 2 inches / minute )	Average Strength @ Break	31 N/mm (kN/m)	179 ppi	3,067
				2,812
				2,940 psi

Elongation ASTM D6693	Average Elongation @ Yield	%	19.68
ASTM D638 (Modified)			18.41
( 2 inches / minute )			19.05
Lo = 1.3" Yield	Average Elongation @ Break	%	491.8
Lo = 2.0" Break			462.8
			477.3

Dimensional Stability	Average Dimensional change	%	-44
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	249.0 N	56.927
ASTM D1004 (Modified)			55.016
			55.972 lbs

Puncture Resistance	Average Peak Load	417.1 N	93.771 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	594.8 N	133.72 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/20/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03:  
12/23/05



# quality certificate

ROLL # **312218-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.49 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.61 mm	63 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: 36/33 mil	AVE:	1.55 mm	61 mil	OIT(Standard) ASTM D3895 minutes	184	TEST RESULTS
TOP / BOTTOM						

Specific Gravity	Density	g/cc	.947
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.29
COND. E			
GRADE: K307			

Carbon Black Content	Range	%	2.32
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	26 N/mm (kN/m)	148 ppi	2,415	
ASTM D6693				2,440	
ASTM D638 (Modified)				2,428	psi
( 2 inches / minute )				3,067	

Average Strength @ Break	31 N/mm (kN/m)	179 ppi	2,812	
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Elongation ASTM D6693	Average Elongation @ Yield	%	19.68
ASTM D638 (Modified)			18.41
( 2 inches / minute )			19.05
Lo = 1.3" Yield			491.8
Lo = 2.0" Break	Average Elongation @ Break	%	462.8

477.3

Dimensional Stability	Average Dimensional change	%	-.44
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	249.0 N	56.927
ASTM D1004 (Modified)			55.016
			55.972 lbs

Puncture Resistance	Average Peak Load	417.1 N	93.771 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	594.8 N	133.72 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/20/2012**Signature:   
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# quality certificate

ROLL # **312219-12**

Lot #: **8110773**

Liner Type: **MICROSPIKE™ HDPE**

Measurement	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994 ✓ (Modified)	MIN: 1.45 mm	57 mil	Length.....	153.926 m	505.0 feet
	MAX: 1.64 mm	65 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466: ✓ TOP / BOTTOM	AVE: 1.55 mm	61 mil ✓	OIT(Standard) ASTM D3895 ✓	minutes	184

## TEST RESULTS

Specific Gravity ASTM D792 ✓	Density	g/cc	.948 ✓
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MFI ASTM D1238 ✓ COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	.29 ✓
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Carbon Black Content ASTM D4218 ✓	Range	%	2.36 ✓
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Carbon Black Dispersion 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 (kN/m)	159 ppi. ✓ 2,516 ✓ 2,702 ✓ 2,609 psi ✓ 3,091 ✓
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Elongation ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Strength @ Break	33 N/mm (kN/m)	189 ppi ✓ 3,104 ✓ 3,098 psi ✓ 17.72 14.88
	Average Elongation @ Yield	%	16.31 ✓ 457.4 567.3
	Average Elongation @ Break	%	512.3 ✓

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-44 64.974 ✓ 52.568 ✓
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Tear Resistance ASTM D1004 (Modified) ✓	Average Tear Resistance	239.2 N	53.771 lbs ✓
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	435.1 N	97.812 lbs
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Puncture Resistance ASTM D4833 (Modified) ✓	Average Peak Load	583.5 N	131.18 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	PASS ✓
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/20/2012**

Signature: *[Signature]*  
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# quality certificate

ROLL # **312220-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.46 mm	57 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.67 mm	66 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	37/32 mil	AVE:	1.56 mm	61 mil		
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	184

**TEST RESULTS**

Specific Gravity ASTM D792	Density						.948
MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g						.29
Carbon Black Content ASTM D4218	Range						2.36
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 (kN/m)	160	ppi		2,516 2,702 2,609 psi
	Average Strength @ Break	33	N/mm (kN/m)	190	ppi		3,091 3,104 3,098 psi
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%				17.72 14.89 16.31
	Average Elongation @ Break		%				457.4 567.3 512.3
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%				-.44
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	239.2	N				54.974 52.568 53.771 lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	435.1	N				97.812 lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	583.5	N				131.18 lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs				CERTIFIED
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300	hrs				PASS

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PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

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# quality certificate

ROLL # **312221-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.49 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.68 mm	66 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: 37/33 mil	AVE:	1.58 mm	62 mil	OIT(Standard) ASTM D3895 minutes	184	TEST RESULTS
TOP / BOTTOM						

Specific Gravity	Density	g/cc	.948
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.29
COND. E			
GRADE: K307			

Carbon Black Content	Range	%	2.36
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	28 N/mm (kN/m)	162 ppi	2,516
ASTM D6693				2,702
ASTM D638 (Modified)	Average Strength @ Break	34 N/mm (kN/m)	193 ppi	2,609 psi
( 2 inches / minute )				3,091
				3,104
				3,098 psi

Elongation ASTM D6693	Average Elongation @ Yield	%	17.72
ASTM D638 (Modified)			14.89
( 2 inches / minute )			16.31
Lo = 1.3" Yield			457.4
Lo = 2.0" Break	Average Elongation @ Break	%	567.3
			512.3

Dimensional Stability	Average Dimensional change	%	-.44
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	239.2 N	54.974
ASTM D1004 (Modified)			52.568
			53.771 lbs

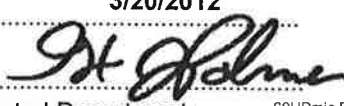
Puncture Resistance	Average Peak Load	435.1 N	97.812 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	583.5 N	131.18 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
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# quality certificate

ROLL # **312222-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.51 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.70 mm	67 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: 37/32 mil AVE: 1.61 mm 63 mil  
TOP / BOTTOMOIT(Standard) ASTM D3895 minutes **184** **TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	<b>.948</b>
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MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	<b>.29</b>
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Carbon Black Content ASTM D4218	Range	%	<b>2.36</b>
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Carbon Black Dispersion ASTM D5596	Category	<b>10 In Cat 1</b>
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Tensile Strength ASTM D6693	Average Strength @ Yield	29 N/mm (kN/m)	165 ppi	2,516 2,702 2,609 psi
ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Break	34 N/mm (kN/m)	196 ppi	3,091 3,104 3,098 psi

Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute )	Average Elongation @ Yield	%	17.72 14.89 16.31
Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	457.4 567.3 512.3

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	<b>-.44</b>
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Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	239.2 N	54.974 52.568 53.771 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	435.1 N	97.812 lbs
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Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	583.5 N	131.18 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	<b>CERTIFIED</b>
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	<b>PASS</b>
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Customer: **Chenango Contracting, Inc.**  
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Destination **Syracuse, NY**

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# quality certificate

ROLL # **312223-12**

Lot #: **8110773**

Liner Type: **MICROSPIKE™ HDPE**

Measurement	METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994 ✓ (Modified)	MIN: 1.48 mm	58 mil	Length.....	153.926 m	505.0 feet
	MAX: 1.62 mm	64 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466: 36/32 mil ✓ TOP / BOTTOM	AVE: 1.56 mm	61 mil ✓	OIT(Standard) ASTM D3895 minutes ✓	184	TEST RESULTS
Specific Gravity ASTM D792 ✓	Density		g/cc		.944 ✓
MFI ASTM D1238 ✓ COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g		g/10 min		.29 ✓
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 (kN/m)	157 psi ✓	2,493 ✓ 2,634 ✓ 2,564 psi	
	Average Strength @ Break	32 N/mm (kN/m)	185 psi ✓	3,232 ✓ 2,803 ✓ 3,018 psi	
Elongation ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		18.82 16.11 17.47 ✓	
	Average Elongation @ Break	%		491.5 495.7 493.6 ✓	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-44	
Tear Resistance ASTM D1004 (Modified) ✓	Average Tear Resistance	241.6 N		56.284 ✓ 52.327 ✓ 54.305 lbs ✓	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	419.0 N		94.191 lbs	
Puncture Resistance ASTM D4833 (Modified) ✓	Average Peak Load	614.5 N		138.14 lbs ✓	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397 ✓	pass / fail @ 30%	300 hrs		PASS ✓	

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
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# quality certificate

ROLL # **312224-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.52 mm	60 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.68 mm	66 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	37/32 mil	AVE:	1.58 mm	62 mil		
TOP / BOTTOM				OIT(Standard) ASTM D3895	minutes	184

**TEST RESULTS**

Specific Gravity	Density	g/cc	.944
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.29
COND. E			
GRADE: <b>K307</b>			

Carbon Black Content	Range	%	2.19
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	28 N/mm (kN/m)	159 ppi	2,493
ASTM D6693				2,634
ASTM D638 (Modified)				2,564 psi
( 2 inches / minute )				3,232
	Average Strength @ Break	33 N/mm (kN/m)	188 ppi	2,803
				3,018 psi

Elongation ASTM D6693	Average Elongation @ Yield	%	18.82
ASTM D638 (Modified)			16.11
( 2 inches / minute )			17.47
Lo = 1.3" Yield			491.5
Lo = 2.0" Break	Average Elongation @ Break	%	495.7
			493.6

Dimensional Stability	Average Dimensional change	%	-.44
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	241.6 N	56.284
ASTM D1004 (Modified)			52.327
			54.305 lbs

Puncture Resistance	Average Peak Load	419.0 N	94.191 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	614.5 N	138.14 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
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Destination **Syracuse, NY**

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# quality certificate

ROLL # **312225-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.48 mm	58 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.70 mm	67 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466:	35/32 mil	AVE:	1.57 mm	62 mil	OIT(Standard) ASTM D3895 minutes	184	TEST RESULTS
TOP / BOTTOM							

Specific Gravity	Density	g/cc	.944
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.29
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	28 N/mm (kN/m)	158 ppi	2,493
ASTM D6693				2,634
ASTM D638 (Modified)				2,564 psi
( 2 inches / minute )	Average Strength @ Break	33 N/mm (kN/m)	187 ppi	3,232
				2,803
				3,018 psi

Elongation ASTM D6693	Average Elongation @ Yield	%	18.82
ASTM D638 (Modified)			16.11
( 2 inches / minute )			17.47
Lo = 1.3" Yield			491.5
Lo = 2.0" Break	Average Elongation @ Break	%	495.7
			493.6

Dimensional Stability	Average Dimensional change	%	-44
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	241.6 N	56.284
ASTM D1004 (Modified)			52.327
			54.305 lbs

Puncture Resistance	Average Peak Load	419.0 N	94.191 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	614.5 N	138.14 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/20/2012**  
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# quality certificate

ROLL # **312226-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.49 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.66 mm	65 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: **36/33** mil  
TOP / BOTTOMAVE: **1.57** mm **62** milOIT(Standard) ASTM D3895 minutes **184****TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	<b>.944</b>
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MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	<b>.29</b>
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Carbon Black Content ASTM D4218	Range	%	<b>2.19</b>
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Carbon Black Dispersion ASTM D5596	Category	<b>10 In Cat 1</b>
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Tensile Strength ASTM D6693	Average Strength @ Yield	28 N/mm (kN/m)	158 ppi	2,493 2,634 2,564 psi
ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Break	33 N/mm (kN/m)	187 ppi	3,232 2,803 3,018 psi

Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute )	Average Elongation @ Yield	%	18.82 16.11 17.47
Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%	491.5 495.7 493.6

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	<b>-.44</b>
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Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	241.6 N	56.284 52.327 54.305 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	419.0 N	94.191 lbs
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Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	614.5 N	138.14 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	<b>CERTIFIED</b>
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	<b>PASS</b>
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

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# quality certificate

ROLL # **312227-12**

Lot #: **8110773**

Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994 ✓ (Modified)	MIN:	1.49 mm	59 mil	Length.....	153.926 m	505.0 feet
	MAX:	1.69 mm	67 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466: ✓ TOP / BOTTOM	36/33 mil	AVE:	1.55 mm 61 ✓ mil	OIT(Standard) ASTM D3895 ✓	minutes	184
						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		.29 ✓
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	27	N/mm (kN/m)	156 psi ✓	2,492 ✓ 2,608 ✓ 2,550 psi 3,123 ✓ 2,976 ✓ 3,050 psi	
	Average Strength @ Break	33	N/mm (kN/m)	186 psi ✓	18.80 ✓ 14.51 ✓ 16.66 ✓ 443.8 ✓ 509.8 ✓ 506.8 ✓	
Elongation ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield		%			
	Average Elongation @ Break		%			
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-44
Tear Resistance ASTM D1004 (Modified) ✓	Average Tear Resistance	250.3	N		57.395 ✓ 55.160 ✓ 56.280 lbs ✓	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	405.0	N		91.063 lbs	
Puncture Resistance ASTM D4833 (Modified) ✓	Average Peak Load	605.1	N		136.04 lbs ✓	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397 ✓	pass / fail @ 30%	300	hrs			PASS ✓

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/20/2012**

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# quality certificate

ROLL # **312228-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.49 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.63 mm	64 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: 37/35 mil	AVE:	1.56 mm	61 mil	OIT(Standard) ASTM D3895 minutes	184	TEST RESULTS
TOP / BOTTOM						

Specific Gravity	Density	g/cc	.945
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.29
COND. E			
GRADE: K307			

Carbon Black Content	Range	%	2.26
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	27 N/mm (kN/m)	157 psi	2,492
ASTM D6693				2,608
ASTM D638 (Modified)				2,550
( 2 inches / minute )				3,123
	Average Strength @ Break	33 N/mm (kN/m)	187 psi	2,976
				3,050

Elongation ASTM D6693	Average Elongation @ Yield	%	18.80
ASTM D638 (Modified)			14.51
( 2 inches / minute )			16.66
Lo = 1.3" Yield			443.8
Lo = 2.0" Break	Average Elongation @ Break	%	569.8
			506.8

Dimensional Stability	Average Dimensional change	%	-.44
ASTM D1204 (Modified)			

Tear Resistance	Average Tear Resistance	250.3 N	57.399
ASTM D1004 (Modified)			55.160
			56.280 lbs

Puncture Resistance	Average Peak Load	405.0 N	91.063 lbs
FTMS 101 Method 2065 (Modified)			

Puncture Resistance	Average Peak Load	605.1 N	136.04 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/20/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05




# quality certificate

ROLL # **312229-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.49 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.67 mm	66 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	36/34 mil	AVE:	1.57 mm 62 mil	OIT(Standard) ASTM D3895	minutes	184
TOP / BOTTOM						<b>TEST RESULTS</b>

Specific Gravity	Density					<b>.945</b>
ASTM D792						
MFI ASTM D1238	Melt Flow Index 190°C /2160 g					<b>.29</b>
COND. E						
GRADE: <b>K307</b>						
Carbon Black Content	Range					<b>2.26</b>
ASTM D4218						
Carbon Black Dispersion	Category					<b>10 In Cat 1</b>
ASTM D5596						
Tensile Strength	Average Strength @ Yield	<b>28</b> N/mm (kN/m)	<b>158</b> psi			<b>2,492</b>
ASTM D6693						<b>2,608</b>
ASTM D638 (Modified)						<b>2,550</b> psi
( 2 inches / minute )						<b>3,123</b>
	Average Strength @ Break	<b>33</b> N/mm (kN/m)	<b>188</b> psi			<b>2,976</b>
						<b>3,050</b> psi
Elongation ASTM D6693	Average Elongation @ Yield	%				<b>18.80</b>
ASTM D638 (Modified)						<b>14.51</b>
( 2 inches / minute )						<b>16.66</b>
Lo = 1.3" Yield						<b>443.8</b>
Lo = 2.0" Break	Average Elongation @ Break	%				<b>569.8</b>
						<b>506.8</b>
Dimensional Stability	Average Dimensional change	%				<b>-.44</b>
ASTM D1204 (Modified)						
Tear Resistance	Average Tear Resistance	<b>250.3</b> N				<b>57.399</b>
ASTM D1004 (Modified)						<b>55.160</b>
						<b>56.280</b> lbs
Puncture Resistance	Average Peak Load	<b>405.0</b> N				<b>91.063</b> lbs
FTMS 101 Method 2065 (Modified)						
Puncture Resistance	Average Peak Load	<b>605.1</b> N				<b>136.04</b> lbs
ASTM D4833 (Modified)						
ESCR	Minimum Hrs w/o Failures	1500 hrs				<b>CERTIFIED</b>
ASTM D1693						
Notched Constant Tensile Load	pass / fail @ 30%	300 hrs				<b>PASS</b>
ASTM D5397						

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/21/2012**  
Signature:   
Quality Control Department

60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **312330-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.42 mm	56 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.60 mm	63 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: 36/33 mil	AVE:	1.54 mm	61 mil	OIT(Standard) ASTM D3895 minutes	184	TEST RESULTS
TOP / BOTTOM						

Specific Gravity	Density	g/cc	.945
ASTM D792			

MFI ASTM D1238	Melt Flow Index 190°C /2160 g	g/10 min	.29
COND. E			
GRADE: K307			

Carbon Black Content	Range	%	2.26
ASTM D4218			

Carbon Black Dispersion	Category	10 In Cat 1
ASTM D5596		

Tensile Strength	Average Strength @ Yield	27 N/mm (kN/m)	155 ppi	2,492	
ASTM D6693				2,608	
ASTM D638 (Modified)				2,550	psi
( 2 inches / minute )				3,123	

Average Strength @ Break	32 N/mm (kN/m)	185 ppi	2,976	
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Elongation ASTM D6693	Average Elongation @ Yield	%	18.80
ASTM D638 (Modified)			14.51
( 2 inches / minute )			16.66
Lo = 1.3" Yield			443.8
Lo = 2.0" Break	Average Elongation @ Break	%	569.8

Dimensional Stability	Average Dimensional change	%	506.8
ASTM D1204 (Modified)			-44

Tear Resistance	Average Tear Resistance	250.3 N	57.399
ASTM D1004 (Modified)			55.160

Puncture Resistance	Average Peak Load	405.0 N	56.280 lbs
FTMS 101 Method 2065 (Modified)			91.063 lbs

Puncture Resistance	Average Peak Load	605.1 N	136.04 lbs
ASTM D4833 (Modified)			

ESCR	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
ASTM D1693			

Notched Constant Tensile Load	pass / fail @ 30%	300 hrs	PASS
ASTM D5397			

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/21/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **312331-12**

Lot #: **8110773**

Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994 ✓ (Modified)	METRIC MIN: <b>1.47</b> mm MAX: <b>1.58</b> mm AVE: <b>1.53</b> mm	ENGLISH 58 mil 62 mil 60 ✓ mil	Thickness..... <b>1.5</b> mm Length..... <b>153.926</b> m Width..... <b>7.01</b> m	60 mil 505.0 feet 23.0 feet
Asperity ASTM D7466: <b>36/34</b> mil TOP / BOTTOM			OIT(Standard) ASTM D3895 minutes <b>184</b>	TEST RESULTS
Specific Gravity ASTM D792 ✓	Density		g/cc	<b>.945</b> ✓
MFI ASTM D1238 ✓ COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g		g/10 min	<b>.29</b> ✓
Carbon Black Content ASTM D4218 ✓	Range		%	<b>2.38</b> ✓
Carbon Black Dispersion ASTM D5596 ✓	Category			<b>10 In Cat 1</b> ✓
Tensile Strength ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute )	<u>Average</u> Strength @ Yield	<b>27</b> N/mm (kN/m)	<b>156</b> ppi	<b>2,584</b> psi ✓ 2,493 ✓ 2,575 ✓ 3,274 ✓ 2,766 ✓
	<u>Average</u> Strength @ Break	<b>32</b> N/mm (kN/m)	<b>182</b> ppi	<b>3,030</b> psi ✓ 18,400 ✓ 14,930 ✓
Elongation ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	<u>Average</u> Elongation @ Yield	%		<b>16.31</b> ✓ 459.8 ✓ 502.3 ✓
	<u>Average</u> Elongation @ Break	%		<b>481.1</b> ✓
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		<b>-.44</b> ✓ 57.648 ✓ 58.768 ✓
Tear Resistance ASTM D1004 (Modified) ✓	<u>Average</u> Tear Resistance	<b>258.9</b> N		<b>58.208</b> lbs ✓
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	<b>411.0</b> N		<b>92.39</b> lbs
Puncture Resistance ASTM D4833 (Modified) ✓	Average Peak Load	<b>597.7</b> N		<b>134.38</b> lbs ✓
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		<b>CERTIFIED</b>
Notched Constant Tensile Load ASTM D5397 ✓	pass / fail @ 30%	300 hrs		<b>PASS</b> ✓

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/21/2012**

Signature:   
Quality Control Department

60HDmic.FRM  
REV 03  
12/23/05





# quality certificate

ROLL # **312332-12**

Lot #: **8110773**

Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.49 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.67 mm	66 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	35/34 mil	AVE:	1.57 mm	62 mil		
TOP / BOTTOM						
				OIT(Standard) ASTM D3895	minutes	184

## TEST RESULTS

Specific Gravity ASTM D792	Density	g/cc		<b>.945</b>
MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min		<b>.29</b>
Carbon Black Content ASTM D4218	Range	%		<b>2.38</b>
Carbon Black Dispersion ASTM D5596	Category			<b>10 In Cat 1</b>
Tensile Strength ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Yield	28 N/mm (kN/m)	160 ppi	2,493 2,675 <b>2,584</b> psi
	Average Strength @ Break	33 N/mm (kN/m)	187 ppi	3,274 2,785 <b>3,030</b> psi
Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		18.49 14.13 <b>16.31</b>
	Average Elongation @ Break	%		459.8 502.3 <b>481.1</b>
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		<b>-44</b>
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	258.9 N		57.648 58.768 <b>58.208</b> lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	411.0 N		<b>92.39</b> lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	597.7 N		<b>134.38</b> lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		<b>CERTIFIED</b>
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		<b>PASS</b>

Customer: **Chenango Contracting, Inc.**  
 PO: **2276 Honeywell Sediment Consolidation**  
 Destination **Syracuse, NY**

Date: **3/21/2012**

Signature: *[Signature]*  
 Quality Control Department

60HDmic.FRM  
 REV 03  
 12/23/05



# quality certificate

ROLL # **312333-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.50 mm	59 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.62 mm	64 mil	Width.....	7.01 m	23.0 feet

Asperity ASTM D7466: **34/33** mil  
TOP / BOTTOMAVE: **1.55 mm 61 mil**OIT(Standard) ASTM D3895 minutes **184****TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	<b>.945</b>
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MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	<b>.29</b>
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Carbon Black Content ASTM D4218	Range	%	<b>2.38</b>
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Carbon Black Dispersion ASTM D5596	Category	<b>10 In Cat 1</b>
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Tensile Strength ASTM D6693	Average Strength @ Yield	<b>28</b> N/mm (kN/m)	<b>158</b> ppi	<b>2,584</b> psi
ASTM D638 (Modified)				<b>3,274</b>
( 2 inches / minute )	Average Strength @ Break	<b>32</b> N/mm (kN/m)	<b>185</b> ppi	<b>3,030</b> psi

Elongation ASTM D6693	Average Elongation @ Yield	%	<b>18.49</b>
ASTM D638 (Modified)			<b>14.13</b>
( 2 inches / minute )			<b>16.31</b>
Lo = 1.3" Yield			<b>459.8</b>
Lo = 2.0" Break	Average Elongation @ Break	%	<b>502.3</b>

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	<b>-44</b>
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Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	<b>258.9</b> N	<b>58.208</b> lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	<b>411.0</b> N	<b>92.39</b> lbs
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Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	<b>597.7</b> N	<b>134.38</b> lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	<b>CERTIFIED</b>
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	<b>PASS</b>
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/21/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **312334-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.5 mm	60 mil
ASTM D5994	MIN:	1.44 mm	57 mil	Length.....	153.926 m	505.0 feet
(Modified)	MAX:	1.64 mm	65 mil	Width.....	7.01 m	23.0 feet
Asperity ASTM D7466:	36/32 mil	AVE:	1.55 mm	61 mil		
TOP / BOTTOM					OIT(Standard) ASTM D3895 minutes	184

**TEST RESULTS**

Specific Gravity ASTM D792	Density	g/cc	.945
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MFI ASTM D1238 COND. E GRADE: <b>K307</b>	Melt Flow Index 190°C /2160 g	g/10 min	.29
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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	Average Strength @ Yield	28 N/mm (kN/m)	158 ppi	2,493 2,675 2,584 psi
ASTM D638 (Modified) ( 2 inches / minute )	Average Strength @ Break	32 N/mm (kN/m)	185 ppi	3,274 2,785 3,030 psi

Elongation ASTM D6693 ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield	Average Elongation @ Yield	%	18.49 14.13 16.31
Lo = 2.0" Break	Average Elongation @ Break	%	459.8 502.3 481.1

Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%	-.44
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Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	258.9 N	57.648 58.768 58.208 lbs
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Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	411.0 N	92.39 lbs
--	-------------------	---------	-----------

Puncture Resistance ASTM D4833 (Modified)	Average Peak Load	597.7 N	134.38 lbs
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ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs	CERTIFIED
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Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs	PASS
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Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/21/2012**Signature:   
Quality Control Department60HDmic.FRM  
REV 03  
12/23/05



# quality certificate

ROLL # **312335-12**Lot #: **8110773**Liner Type: **MICROSPIKE™ HDPE**

Measurement ASTM D5994✓ (Modified)	MIN:	METRIC 1.51 mm	ENGLISH 59 mil	Thickness.....	1.5 mm	60 mil
	MAX:	1.62 mm	64 mil	Length.....	153.926 m	505.0 feet
Asperity ASTM D7466: 36/32 mil	AVE:	1.58 mm	62✓ mil	Width.....	7.01 m;	23.0 feet
TOP / BOTTOM				OIT(Standard) ASTM D3895 minutes	184	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		.29 ✓
Carbon Black Content ASTM D4218 ✓	Range			%		2.32✓
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 (kN/m)	163 ppi ✓	2,553 ✓ 2,666 ✓ 2,620 psi 3,160 ✓ 2,994 ✓ 3,087 psi		
	Average Strength @ Break	34 N/mm (kN/m)	192 ppi ✓	16.92 15.08 17.00 ✓ 466.9 542.9 504.9 ✓		
Elongation ASTM D6693 ✓ ASTM D638 (Modified) ( 2 inches / minute ) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%				
	Average Elongation @ Break	%				
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-44		
Tear Resistance ASTM D1004 (Modified) ✓	Average Tear Resistance	247.6 N		57.194 ✓ 54.125 ✓ 55.660 lbs ✓		
Puncture Resistance FTMS 101 Method 2065 (Modified)	Average Peak Load	431.6 N		97.029 lbs		
Puncture Resistance ASTM D4833 (Modified) ✓	Average Peak Load	586.1 N		131.76 lbs ✓		
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED		
Notched Constant Tensile Load ASTM D5397 ✓	pass / fail @ 30%	300 hrs		PASS ✓		

Customer: **Chenango Contracting, Inc.**  
PO: **2276 Honeywell Sediment Consolidation**  
Destination **Syracuse, NY**

Date: **3/21/2012**Signature:   
Quality Control Department60HDMic.FRM  
REV 03  
12/23/05

# TRAIGHT BILL OF LADING - SHORT FORM - ORIGINAL - NOT NEGOTIABLE

AMT OF CARRIER

TRUCK

*McKenzie*

CARRIER'S NO.

DATE

11/11/2011

B/L NO.

031647

CEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below which said carrier (the word carrier understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to the carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time intervening in all or in part, that every service to be performed hereunder, shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classification, (2) in all or in part, this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. The carrier hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

FROM: SHIPPER

(ORIGIN)



AGRU/AMERICA, INC.  
500 GARRISON ROAD  
GEORGETOWN, SOUTH CAROLINA 29440  
(843) 546-0600

TO:

CONSIGNEE

HONEYWELL SEDIMENT CONSOLID  
522 GEAR LOCK ROAD  
SYRACUSE, NY USA  
RON 716-564-7033

STREET

DESTINATION

ZIP

DELIVERING CARRIER

*McKenzie*

ROUTE

VEHICLE NUMBER

NO. PACKAGES	+ HM	KIND OF PACKAGE, DESCRIPTION OF ARTICLES SPECIAL MARKS AND EXCEPTIONS	*WEIGHT (SUBJECT TO CORR.)	CLASS OR RATE	✓	CHARGES (FOR CARRIER USE ONLY)
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139,380

HD DBL MICRO 60MIL 23FT

~~45,996~~

Item Key

Roll Number

Quantity

L-HD-MSDS-60-23

443559-11

11,615

L-HD-MSDS-60-23

443563-11

11,615

L-HD-MSDS-60-23

443569-11

11,615

L-HD-MSDS-60-23

443670-11

11,615

L-HD-MSDS-60-23

443673-11

11,615

L-HD-MSDS-60-23

443676-11

11,615

L-HD-MSDS-60-23

443677-11

11,615

L-HD-MSDS-60-23

443682-11

11,615

L-HD-MSDS-60-23

443788-11

11,615

L-HD-MSDS-60-23

443790-11

11,615

L-HD-MSDS-60-23

443792-11

11,615

L-HD-MSDS-60-23

443796-11

11,615

Total Weight: 45,996 LB

Total Units:

Order No.: 17645 Order Date: 09/30/11 Request Date: 10/28/11

Location: GTOWN P.O. No.: 2276

*David Williams 12/11/11*  
*Michael Johnson*

EMIT C.O.D. TO:



AGRU/AMERICA, INC.  
500 GARRISON ROAD  
GEORGETOWN, SOUTH CAROLINA 29440  
(843) 546-0600

C.O.D. Amt \$

C.O.D. FEE

☒ Prepaid  
☐ Collect \$

If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state the weight of the property is "carrier's or shipper's weight".

NOTE: Where the rate is dependant on value, shippers are required to state specifically in writing the agreed or declared value of the property.  
The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:  
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

TOTAL CHARGES \$

Freight charges are PREPAID unless marked collect. ☐ Collect ☒ if charges are collect.

Shipper's imprint in lieu of stamp; not a part of bill of lading approved by the Interstate Commerce Commission.

\$ per

(Signature of Consignor)

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation, according to the applicable regulations of the Department of Transportation.

Shipper, Per

Agent, Per

Page 1 of 1

+ MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIAL AS DEFINED IN TITLE 49 OF FEDERAL REGULATIONS.

When transporting hazardous materials include the technical or chemical name for n.o.s. (not otherwise specified) or generic description of material with appropriate UN or NA number as defined in US DOT Emergency Response Communication Standard (HM-126C). Provide emergency response phone number in case of incident or accident.



Date :

11-11-11

BOL # :

Document # :

17645

Customer :

Destination :

Syracuse, NY

1	443559-11	Y	N	Y	N	Y	N			
2	443563-11	Y	N	Y	N	Y	N			
3	443569-11	Y	N	Y	N	Y	N			
4	443670-11	Y	N	Y	N	Y	N			
5	443673-11	Y	N	Y	N	Y	N			
6	443676-11	Y	N	Y	N	Y	N			
7	443677-11	Y	N	Y	N	Y	N			
8	443682-11	Y	N	Y	N	Y	N			
9	443788-11	Y	N	Y	N	Y	N			
10	443790-11	Y	N	Y	N	Y	N			
11	443792-11	Y	N	Y	N	Y	N			
12	443796-11	Y	N	Y	N	Y	N			
13		Y	N	Y	N	Y	N			
14		Y	N	Y	N	Y	N			
15		Y	N	Y	N	Y	N			
16		Y	N	Y	N	Y	N			
17		Y	N	Y	N	Y	N			
18		Y	N	Y	N	Y	N			
19		Y	N	Y	N	Y	N			
20		Y	N	Y	N	Y	N			

External Visual Check : Clean Roll; Damage (Holes, Tears); Telescoping; Liner Defects (Voids, Bug Marks, etc.); Legible markings on roll

Strap Check : 6 foot spacing; Check for wear, cuts

Core Check : Check for cracks, defects

Weld Rod Check (if necessary) : Secure Load; Lot # on BOL; Check type

Comments : Note comments for ANY &amp; ALL "No" entries on form

CHECK OFF ON ALL FIELDS - INSPECTOR VERIFIES ALL COMMENTS

Digital photo taken of  
shipment ?

yes

no

SHIPFORM  
REV 01

Inspector :

Jew

Inspector :


Jew




# TRAIGHT BILL OF LADING - SHORT FORM - ORIGINAL - NOT NEGOTIABLE

NAME OF CARRIER <b>TRUCK</b>	CARRIER'S NO.	DATE <b>11/11/2011</b>	B/L NO. <b>031647</b>
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RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to the nearest place on its route to said destination, and as to each party at any time intervening between the date of issue of this bill of lading and the date of delivery, that every service to be performed hereunder, shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date of issue of this bill of lading, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. The carrier hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are agreed to by the shipper and accepted for himself and his assigns.

<b>FROM:</b> SHIPPER (ORIGIN) 	<b>AGRU/AMERICA, INC.</b> 500 GARRISON ROAD GEORGETOWN, SOUTH CAROLINA 29440 (843) 546-0600 EMERGENCY RESPONSE PHONE NO.	<b>TO:</b> CONSIGNEE STREET DESTINATION ZIP	<b>HONEYWELL SEDIMENT CONSOLID</b> <b>522 GEAR LOCK ROAD</b> <b>SYRACUSE, NY USA</b> <b>RON 716-564-7033</b>
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LIVERING CARRIER		ROUTE		VEHICLE NUMBER			
NO. PACKAGES	+ HM	KIND OF PACKAGE, DESCRIPTION OF ARTICLES SPECIAL MARKS AND EXCEPTIONS		*WEIGHT (SUBJECT TO CORR.)	CLASS OR RATE	✓	CHARGES (FOR CARRIER USE ONLY)
139,380		HD DBL MICRO 60MIL 23FT		45,996			
		Item Key	Roll Number	Quantity			
		L-HD-MSDS-60-23	443560-11	11,615			
		L-HD-MSDS-60-23	443562-11	11,615			
		L-HD-MSDS-60-23	443678-11	11,615			
		L-HD-MSDS-60-23	443679-11	11,615			
		L-HD-MSDS-60-23	443784-11	11,615			
		L-HD-MSDS-60-23	443785-11	11,615			
		L-HD-MSDS-60-23	443786-11	11,615			
		L-HD-MSDS-60-23	443787-11	11,615			
		L-HD-MSDS-60-23	443793-11	11,615			
		L-HD-MSDS-60-23	443797-11	11,615			
		L-HD-MSDS-60-23	444101-11	11,615			
		L-HD-MSDS-60-23	444102-11	11,615			
		Total Weight: 45,996 LB					
		Total Units: 12 rolls					
		Order No.: 17645 Order Date: 09/30/11 Request Date: 10/28/11					
		Location: GTOWN P.O. No.: 2276					
		4435623541					
		46216					
		Daifur... ok 12 rolls 60mil 11/14/11					
		Michael Brown					

<b>WIT C.O.D. TO:</b>  <b>AGRU/AMERICA, INC.</b> 500 GARRISON ROAD GEORGETOWN, SOUTH CAROLINA 29440 (843) 546-0600	<b>C.O.D. Amt \$</b>	<b>C.O.D. FEE</b> <input checked="" type="checkbox"/> Prepaid <input type="checkbox"/> Collect \$
The shipper moves between two ports by a carrier by air, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight". In print in lieu of stamp; not a part of bill of lading issued by the Interstate Commerce Commission.	NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding \$ _____ per _____ (Signature of Consignor)	<b>TOTAL CHARGES \$</b> Freight charges are PREPAID unless marked collect. <input type="checkbox"/> Check L. if charges are Collect

I hereby certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation, according to the applicable regulations of the Department of Transportation.



Date :

11-11-11

BOL #:

Document #:

B17645

Customer :

Destination :

Syracuse, NY

1	443560-11	Y	N	Y	N	Y	N	Y	N
2	443562-11	Y	N	Y	N	Y	N	Y	N
3	443678-11	Y	N	Y	N	Y	N	Y	N
4	443679-11	Y	N	Y	N	Y	N	Y	N
5	443784-11	Y	N	Y	N	Y	N	Y	N
6	443785-11	Y	N	Y	N	Y	N	Y	N
7	443787-11	Y	N	Y	N	Y	N	Y	N
8	443793-11	Y	N	Y	N	Y	N	Y	N
9	443797-11	Y	N	Y	N	Y	N	Y	N
10	444101-11	Y	N	Y	N	Y	N	Y	N
11	444102-11	Y	N	Y	N	Y	N	Y	N
12	443786-11	Y	N	Y	N	Y	N	Y	N
13		Y	N	Y	N	Y	N	Y	N
14		Y	N	Y	N	Y	N	Y	N
15		Y	N	Y	N	Y	N	Y	N
16		Y	N	Y	N	Y	N	Y	N
17		Y	N	Y	N	Y	N	Y	N
18		Y	N	Y	N	Y	N	Y	N
19		Y	N	Y	N	Y	N	Y	N
20		Y	N	Y	N	Y	N	Y	N

External Visual Check : Clean Roll; Damage (Holes, Tears); Telescoping; Linner Defects (Voids, Bug Marks, etc.); Legible markings on roll

Strip Check : 6 foot spacing; Check for wear, cuts

Core Check : Check for cracks, defects

Weld Rod Check (if necessary) : Secure Load; Lot # on BOL; Check type

Comments : Note comments for ANY &amp; ALL "No" entries on form

CHECK OFF ON ALL FIELDS - INSPECTOR VERIFIES ALL COMMENTS

SHIPREL FORM  
REV 01

Inspector :

JCW

Loader :

Digital photo taken of  
shipment ?

yes

no

JCW



**TRAIGHT BILL OF LADING - SHORT FORM - ORIGINAL - NOT NEGOTIABLE**

B/L NO.

NAME OF CARRIER

TRUCK

# 298308 #1611

CARRIER'S NO.

DATE 11/11/2011

031634

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to the consignee at the place of delivery at said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in the property, that every service to be performed hereunder, shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date of issue of this bill of lading, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. The carrier certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are agreed to by the shipper and accepted for himself and his assigns.

FROM: SHIPPER

(ORIGIN)



AGRU/AMERICA, INC.  
 500 GARRISON ROAD  
 GEORGETOWN, SOUTH CAROLINA 29440  
 (843) 546-0600

EMERGENCY RESPONSE PHONE NO.

TO:

CONSIGNEE

HONEYWELL SEDIMENT CONSOLID  
 522 GEAR LOCK ROAD  
 SYRACUSE, NY USA  
 RON 716-564-7033

STREET

DESTINATION

ZIP

DELIVERING CARRIER

107L

ROUTE

VEHICLE NUMBER

NO. PACKAGES	+ HM	KIND OF PACKAGE, DESCRIPTION OF ARTICLES SPECIAL MARKS AND EXCEPTIONS	*WEIGHT (SUBJECT TO CORR.)	CLASS OR RATE	✓	CHARGES (FOR CARRIER USE ONLY)
139,380		HD DBL MICRO 60MIL 23FT	45,996			
		Item Key Roll Number Quantity				
		L-HD-MSDS-60-23 443557-11 + 11,615				
		L-HD-MSDS-60-23 443558-11 + 11,615				
		L-HD-MSDS-60-23 443561-11 + 11,615				
		L-HD-MSDS-60-23 443565-11 + 11,615				
		L-HD-MSDS-60-23 443566-11 + 11,615				
		L-HD-MSDS-60-23 443567-11 + 11,615				
		L-HD-MSDS-60-23 443568-11 + 11,615				
		L-HD-MSDS-60-23 443674-11 + 11,615				
		L-HD-MSDS-60-23 443675-11 + 11,615				
		L-HD-MSDS-60-23 443683-11 + 11,615				
		L-HD-MSDS-60-23 443789-11 + 11,615				
		L-HD-MSDS-60-23 443791-11 + 11,615				
		Total Weight: 45,996 LB				
		Total Units: 12 rolls				
		Order No.: 17645 Order Date: 09/30/11 Request Date: 10/28/11				
		Location: GTOWN P.O. No.: 2276				
		11/15/11 12 roll above etc David Williams (Geosyntec)				
		Michael Johnson				
		x 1st load today				

EMIT C.O.D. TO:



AGRU/AMERICA, INC.  
 500 GARRISON ROAD  
 GEORGETOWN, SOUTH CAROLINA 29440  
 (843) 546-0600

C.O.D. Amt \$

C.O.D. FEE

☒ Prepaid  
☐ Collect \$

If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight".

NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.  
 The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:  
 The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

TOTAL CHARGES \$

Freight charges are PREPAID unless marked collect. ☐ Check, if charges are Coll

Shipper's imprint in lieu of stamp; not a part of bill of lading provided by the Interstate Commerce Commission.

\$ per

(Signature of Consignor)

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation, according to the applicable regulations of the Department of Transportation.



Date :

11-11-11

BOL # :

Document # :

17645

Customer :

Destination :

Syracuse, NY

1	443557-11	Y	N	Y	N	Y	N	Y	N
2	443558-11	Y	N	Y	N	Y	N	Y	N
3	443560-11	Y	N	Y	N	Y	N	Y	N
4	443565-11	Y	N	Y	N	Y	N	Y	N
5	443566-11	Y	N	Y	N	Y	N	Y	N
6	443568-11	Y	N	Y	N	Y	N	Y	N
7	443674-11	Y	N	Y	N	Y	N	Y	N
8	443675-11	Y	N	Y	N	Y	N	Y	N
9	443683-11	Y	N	Y	N	Y	N	Y	N
10	443667-11	Y	N	Y	N	Y	N	Y	N
11	443789-11	Y	N	Y	N	Y	N	Y	N
12	443791-11	Y	N	Y	N	Y	N	Y	N
13		Y	N	Y	N	Y	N	Y	N
14		Y	N	Y	N	Y	N	Y	N
15		Y	N	Y	N	Y	N	Y	N
16		Y	N	Y	N	Y	N	Y	N
17		Y	N	Y	N	Y	N	Y	N
18		Y	N	Y	N	Y	N	Y	N
19		Y	N	Y	N	Y	N	Y	N
20		Y	N	Y	N	Y	N	Y	N

External Visual Check : Clean Roll; Damage (Holes, Tears); Telescoping; Liner Defects (Voids, Bug Marks, etc.); Legible markings on roll

Strap Check : 6' foot spacing; Check for wear, cuts

Core Check : Check for cracks, defects

Weld Rod Check (If necessary) : Secure Load; Lot # on BOL; Check type

Comments : Note comments for ANY &amp; ALL "No" entries on form

CHECK OFF ON ALL FIELDS - INSPECTOR VERIFIES ALL COMMENTS

SHIPREL.FRM  
REV 01  
7/2004

Inspector :

JCW

Loader :

JCW

Digital photo taken of  
shipment ?

yes

no

# Geotextile



## Material Inventory

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	
SMS	

Material Type: oz GT : 7	Manufacturer: SKAPS	Product Type: GE240
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Inventory					Q.A. Conformance				Q.C. Documents			
Inv Date	Batch-Roll	Width (ft.)	Length (ft.)	QA ID	Date	Samp No	Result	QAID	Date Rec	Date Ckk	Result	QAID

### Accepted Rolls

4/23/2012	22388-001	15	300	DWH	1/2/2012	GT-13	P	DB	4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-002	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-003	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-004	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-005	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-006	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-007	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-008	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-009	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-010	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-011	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-012	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-013	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-014	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-015	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-016	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-017	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-018	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-019	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-020	15	300	DWH	1/2/2012	GT-14	P	DB	4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-021	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-022	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-023	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-024	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-025	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-026	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-027	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-028	15	300	DWH					4/27/2012	4/27/2012	P	DWH

## Material Inventory

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u> Location: <u>Camillus, New York</u> Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u> <div style="text-align: right; margin-top: -20px;">SMS</div>	ProjNo: <u>GJ4706</u> TaskNo: <u>07</u>
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Material Type: oz GT : 7					Manufacturer: SKAPS				Product Type: GE240			
Inventory					Q.A. Conformance				Q.C. Documents			
Inv Date	Batch-Roll	Width (ft.)	Length (ft.)	QA ID	Date	Samp No	Result	QAID	Date Rec	Date Ckk	Result	QAID
4/23/2012	22388-029	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-030	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-031	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-032	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-033	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-034	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-035	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-036	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-037	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-038	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-039	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-040	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-041	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-042	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-043	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-044	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-045	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-046	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-047	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-048	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-049	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-050	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-051	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-052	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-053	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-054	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-055	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-056	15	300	DWH	1/2/2012	GT-15	P	DB	4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-057	15	300	DWH					4/27/2012	4/27/2012	P	DWH



## Material Inventory

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	
SMS	

Material Type: <u>oz GT : 7</u>	Manufacturer: <u>SKAPS</u>	Product Type: <u>GE240</u>
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Inventory					Q.A. Conformance				Q.C. Documents			
Inv Date	Batch-Roll	Width (ft.)	Length (ft.)	QA ID	Date	Samp No	Result	QAID	Date Rec	Date Ckk	Result	QAID
4/23/2012	22388-058	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-059	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-060	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-061	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-062	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-063	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-064	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-065	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-066	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-067	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-068	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-069	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-070	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-071	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/23/2012	22388-072	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-073	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-074	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-075	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-076	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-077	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-078	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-079	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-080	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-081	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-082	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-083	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-084	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-085	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-086	15	300	DWH					4/27/2012	4/27/2012	P	DWH



## Material Inventory

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u> <div style="text-align: center;">SMS</div>	

Material Type: oz GT : 7					Manufacturer: SKAPS				Product Type: GE240			
Inventory					Q.A. Conformance				Q.C. Documents			
Inv Date	Batch-Roll	Width (ft.)	Length (ft.)	QA ID	Date	Samp No	Result	QAID	Date Rec	Date Ckk	Result	QAID
4/24/2012	22388-087	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-088	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-089	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-090	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-091	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-092	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-093	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-094	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-095	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-096	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-097	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-098	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-099	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/24/2012	22388-100	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-101	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-102	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-103	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-104	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-105	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-106	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-107	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-108	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-109	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-110	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-111	15	300	DWH	1/2/2012	GT-16	P	DB	4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-112	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-113	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-114	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-115	15	300	DWH					4/27/2012	4/27/2012	P	DWH





## Material Inventory

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

SMS

Material Type: <u>oz GT : 7</u>	Manufacturer: <u>SKAPS</u>	Product Type: <u>GE240</u>
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Inventory					Q.A. Conformance				Q.C. Documents			
Inv Date	Batch-Roll	Width (ft.)	Length (ft.)	QA ID	Date	Samp No	Result	QAID	Date Rec	Date Ckk	Result	QAID
4/25/2012	22388-116	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-117	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-118	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-119	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-120	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-121	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-122	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-123	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-124	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-125	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-126	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-127	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-128	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-129	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-130	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-131	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-132	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-133	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-134	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-135	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-136	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-137	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-138	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-139	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-140	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-141	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-142	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-143	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-144	15	300	DWH					4/27/2012	4/27/2012	P	DWH





## Material Inventory

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u> Location: <u>Camillus, New York</u> Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u> <div style="text-align: center; margin-top: 10px;">SMS</div>	ProjNo: <u>GJ4706</u> TaskNo: <u>07</u>
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Material Type: <u>oz GT : 7</u>	Manufacturer: <u>SKAPS</u>	Product Type: <u>GE240</u>
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Inventory					Q.A. Conformance				Q.C. Documents			
Inv Date	Batch-Roll	Width (ft.)	Length (ft.)	QA ID	Date	Samp No	Result	QAID	Date Rec	Date Ckk	Result	QAID
4/25/2012	22388-145	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-146	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-147	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-148	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-149	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-150	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-151	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-152	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-153	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-154	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-155	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-156	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-157	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-158	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-159	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-160	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-161	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-162	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-163	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-164	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-165	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-166	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-167	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-168	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-169	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-170	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-171	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-172	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-173	15	300	DWH					4/27/2012	4/27/2012	P	DWH

## Material Inventory

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

*SMS*

Material Type: oz GT : 7	Manufacturer: SKAPS	Product Type: GE240
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Inventory					Q.A. Conformance				Q.C. Documents			
Inv Date	Batch-Roll	Width (ft.)	Length (ft.)	QA ID	Date	Samp No	Result	QAID	Date Rec	Date Ckk	Result	QAID
4/25/2012	22388-174	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-175	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-176	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-177	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-178	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-179	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-180	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-181	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-182	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-183	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-184	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-185	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-186	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-187	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-188	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-189	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-190	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-191	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-192	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-193	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-194	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-195	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-196	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-197	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-198	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-199	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/25/2012	22388-200	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-201	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-202	15	300	DWH					4/27/2012	4/27/2012	P	DWH

# Geosyntec<sup>®</sup>

consultants

## Material Inventory

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

SMS

Material Type: oz GT : 7					Manufacturer: SKAPS				Product Type: GE240			
Inventory					Q.A. Conformance				Q.C. Documents			
Inv Date	Batch-Roll	Width (ft.)	Length (ft.)	QA ID	Date	Samp No	Result	QAID	Date Rec	Date Ckk	Result	QAID
4/26/2012	22388-203	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-204	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-205	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-206	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-207	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-208	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-209	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-210	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-211	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-212	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-213	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-214	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-215	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-216	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-217	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-218	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-219	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-220	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-221	15	300	DWH	1/2/2012	GT-17	P	DB	4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-222	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-223	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-224	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-225	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-226	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-227	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-228	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-229	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-230	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-231	15	300	DWH					4/27/2012	4/27/2012	P	DWH



## Material Inventory

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u> <div style="text-align: center;">SMS</div>	

Material Type: oz GT : 7	Manufacturer: SKAPS	Product Type: GE240
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Inventory					Q.A. Conformance				Q.C. Documents			
Inv Date	Batch-Roll	Width (ft.)	Length (ft.)	QA ID	Date	Samp No	Result	QAID	Date Rec	Date Ckk	Result	QAID
4/26/2012	22388-232	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-233	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-234	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-235	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-236	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-237	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-238	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-239	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-240	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-241	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-242	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-243	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-244	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-245	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-246	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-247	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-248	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-249	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/26/2012	22388-250	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/27/2012	22388-251	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/27/2012	22388-252	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/27/2012	22388-253	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/27/2012	22388-254	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/27/2012	22388-255	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/27/2012	22388-256	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/27/2012	22388-257	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/27/2012	22388-258	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/27/2012	22388-259	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/27/2012	22388-260	15	300	DWH					4/27/2012	4/27/2012	P	DWH

## Material Inventory

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>						ProjNo: <u>GJ4706</u>			
Location: <u>Camillus, New York</u>						TaskNo: <u>07</u>			
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>						SMS			
<b>Material Type:</b> oz GT : 7						<b>Manufacturer:</b> SKAPS		<b>Product Type:</b> GE240	

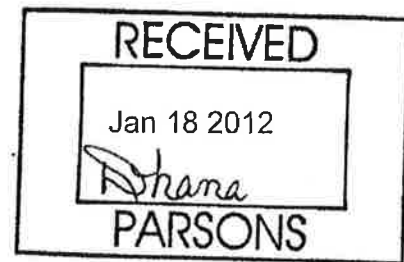
Inventory					Q.A. Conformance				Q.C. Documents			
Inv Date	Batch-Roll	Width (ft.)	Length (ft.)	QA ID	Date	Samp No	Result	QAID	Date Rec	Date Ckk	Result	QAID
4/27/2012	22388-261	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/27/2012	22388-262	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/27/2012	22388-263	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/27/2012	22388-264	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/27/2012	22388-265	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/27/2012	22388-266	15	300	DWH					4/27/2012	4/27/2012	P	DWH
4/27/2012	22388-267	15	300	DWH					4/27/2012	4/27/2012	P	DWH

<b>Average Roll Width(ft.): 15</b>		<b>Average Roll Length(ft.): 300</b>	
<b>Total Number of Rolls: 267</b>		<b>Cumulative Area(sq.ft.): 1201500</b>	
<b>Total Number of Conformance Tests: 5</b>			

Comments:



18th January 2012



**To whom it may concern**

Re: Needle Detection facilities

This letter is in reference to the SKAPS Industries geotextile GE240 and GE180 proposed for shipment to Chenango Constructions for Honeywell Sediment Consolidation.. SKAPS Industries maintains strict quality control over its products using the best and latest testing equipment and techniques.

Metal detectors are placed on the production line to detect needles and other contaminants. Routine checks are performed continuously throughout the manufacturing process. If needles are detected the line is shut down and the needles are located and removed. Additionally, line inspectors are always monitoring the material for defects.

Please feel free to contact us if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Anurag Shah", with a double underline at the end.

Anurag Shah

Skaps Industries



SKAPS Industries  
335 Athena Drive,  
Athens, GA 30606  
Phone: 706-354-3700, 706-354-3737  
www.skaps.com

<input type="checkbox"/>	NO EXCEPTIONS
<input type="checkbox"/>	EXCEPTIONS AS NOTED
<input type="checkbox"/>	PROCEED WITH WORK
<input type="checkbox"/>	RESUBMIT
<input type="checkbox"/>	SUBMIT CERTIFIED PRINTS
PARSONS	
CLIENT/JOB NO.	446199
CONTRACT	
BY	DATE
ACTION TAKEN HEREON DOES NOT SUPERSEDE REQUIREMENTS OF APPLICABLE DESIGN DRAWINGS, SPECIFICATIONS, ORDERS, CODES OR REGULATIONS, OR RELIEVE THE CONTRACTOR OR SUPPLIER FROM RESPONSIBILITY FOR ERRORS OR OMISSIONS.	

Date: 3/20/2012

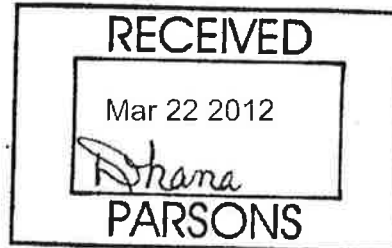
**RE: UV Stability test for GE Nonwoven Geotextile**

**Customer: Chenango Contracting**

**Project: Honeywell SCA**

**Product: 24 Oz nonwoven geotextile.**

To whom It May Concern:



This letter is to certify that SKAPS Industry periodically sends samples for UV testing at third party laboratory. All SKAPS geotextiles are manufactured from same fiber formulations (manufactured on same set of fiber production lines) on same set of nonwoven production lines. SKAPS does not perform project specific UV testing since fiber formulation stays same for every manufactured nonwoven needle punched geotextile.

Regards.

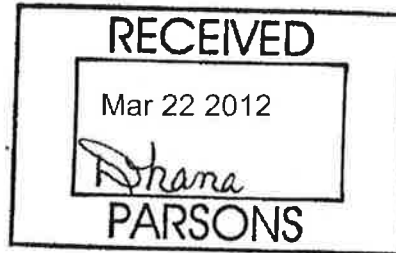
**ANURAG SHAH**  
QUALITY CONTROL MANAGER



SKAPS Industries (Nonwoven Division)  
335, Athena Drive  
Athens, GA 30601 (U.S.A.)  
Phone (706) 354-3700 Fax (706) 354-3737  
E-mail: info@skaps.com

Sales Office:  
Engineered Synthetic Product Inc.  
Phone: (770)564-1857  
Fax: (770)564-1818

**January 26, 2012**  
**Chenango Contracting**  
29 Arbutus Road  
Johnson City, NY 13790  
Ref : Honeywell Sediment Control  
**PO : 2279**



<input type="checkbox"/>	NO EXCEPTIONS
<input type="checkbox"/>	EXCEPTIONS AS NOTED
<input type="checkbox"/>	PROCEED WITH WORK
<input type="checkbox"/>	RESUBMIT
<input type="checkbox"/>	SUBMIT CERTIFIED PRINTS
PARSONS	
CLIENT/JOB NO. <u>446199</u>	
CONTRACT	
BY	DATE
ACTION TAKEN HEREON DOES NOT SUPERSEDE REQUIREMENTS OF APPLICABLE DESIGN DRAWINGS, SPECIFICATIONS, ORDERS, CODES OR REGULATIONS, OR RELIEVE THE CONTRACTOR OR SUPPLIER FROM RESPONSIBILITY FOR ERRORS OR OMISSIONS.	

Dear Sir/Madam:

This is to certify that SKAPS GE240 is a high quality needle-punched nonwoven geotextile made of 100% polypropylene staple fibers, randomly networked to form a high strength dimensionally stable fabric. SKAPS GE240 resists ultraviolet deterioration, rotting, biological degradation. The fabric is inert to commonly encountered soil chemicals. Polypropylene is stable within a pH range of 2 to 13. SKAPS GE240 conforms to the property values listed below:

PROPERTY	TEST METHOD	UNITS	M.A.R.V. Minimum Average Roll Value
Weight	ASTM D 5261	oz/sy (g/m <sup>2</sup> )	24.00 (814)
Grab Tensile	ASTM D 4632	lbs (kN)	230 (1.02)
Grab Elongation	ASTM D 4632	%	50
Trapezoidal Tear	ASTM D 4533	lbs (kN)	95 (0.42)
Puncture Resistance	ASTM D 4833	lbs (kN)	250 (1.11)
UV Resistance	ASTM D 4355	%/hrs	70/500

**Notes:**

\* At the time of manufacturing. Handling may change these properties.

**ANURAG SHAH**  
QUALITY CONTROL MANAGER

[www.skaps.com](http://www.skaps.com)

[www.espgeosynthetics.com](http://www.espgeosynthetics.com)



**Product : GE240-15**

ROLL # ASTM METHOD UNITS TARGET	WEIGHT D5261 oz/sq yd 24.00	MD TENSILE D4632 lbs. 230	MD ELONG D4632 % 50	XMD TENSILE D4632 lbs 230	XMD ELONG D4632 % 50	MD TRAP D4533 lbs. 95	XMD TRAP D4533 lbs 95	PUNCTURE D4833 lbs. 250
22388.001	26.30	603	66	695	76	170	181	285
22388.002	26.30	603	66	695	76	170	181	285
22388.003	26.30	603	66	695	76	170	181	285
22388.004	26.30	603	66	695	76	170	181	285
22388.005	25.59	559	61	631	74	170	181	285
22388.006	25.59	559	61	631	74	170	181	285
22388.007	25.59	559	61	631	74	170	181	285
22388.008	25.59	559	61	631	74	170	181	285
22388.009	25.59	559	61	631	74	170	181	285
22388.010	26.41	612	69	652	79	165	175	282
22388.011	26.41	612	69	652	79	165	175	282
22388.012	26.41	612	69	652	79	165	175	282
22388.013	26.41	612	69	652	79	165	175	282
22388.014	26.41	612	69	652	79	165	175	282
22388.015	25.93	584	64	625	71	165	175	282
22388.016	25.93	584	64	625	71	165	175	282
22388.017	25.93	584	64	625	71	165	175	282
22388.018	25.93	584	64	625	71	165	175	282
22388.019	25.93	584	64	625	71	165	175	282
22388.020	26.48	645	67	690	75	168	184	290
22388.021	26.48	645	67	690	75	168	184	290
22388.022	26.48	645	67	690	75	168	184	290
22388.023	26.48	645	67	690	75	168	184	290
22388.024	26.48	645	67	690	75	168	184	290
22388.025	25.71	570	60	613	73	168	184	290
22388.026	25.71	570	60	613	73	168	184	290
22388.027	25.71	570	60	613	73	168	184	290
22388.028	25.71	570	60	613	73	168	184	290
22388.029	25.71	570	60	613	73	168	184	290
22388.030	26.57	635	70	661	77	161	178	275
22388.031	26.57	635	70	661	77	161	178	275
22388.032	26.57	635	70	661	77	161	178	275
22388.033	26.57	635	70	661	77	161	178	275

\*All values are MARV.

**Product : GE240-15**

ROLL # ASTM METHOD UNITS TARGET	WEIGHT D5261 oz/sq yd 24.00	MD TENSILE D4632 lbs. 230	MD ELONG D4632 % 50	XMD TENSILE D4632 lbs 230	XMD ELONG D4632 % 50	MD TRAP D4533 lbs. 95	XMD TRAP D4533 lbs 95	PUNCTURE D4833 lbs. 250
22388.034	26.57	635	70	661	77	161	178	275
22388.035	25.79	557	62	645	74	161	178	275
22388.036	25.79	557	62	645	74	161	178	275
22388.037	25.79	557	62	645	74	161	178	275
22388.038	25.79	557	62	645	74	161	178	275
22388.039	25.79	557	62	645	74	161	178	275
22388.040	26.69	627	68	671	80	175	180	283
22388.041	26.69	627	68	671	80	175	180	283
22388.042	26.69	627	68	671	80	175	180	283
22388.043	26.69	627	68	671	80	175	180	283
22388.044	26.69	627	68	671	80	175	180	283
22388.045	25.86	581	64	615	71	175	180	283
22388.046	25.86	581	64	615	71	175	180	283
22388.047	25.86	581	64	615	71	175	180	283
22388.048	25.86	581	64	615	71	175	180	283
22388.049	25.86	581	64	615	71	175	180	283
22388.050	26.55	600	66	699	76	167	177	279
22388.051	26.55	600	66	699	76	167	177	279
22388.052	26.55	600	66	699	76	167	177	279
22388.053	26.55	600	66	699	76	167	177	279
22388.054	26.55	600	66	699	76	167	177	279
22388.055	25.91	568	61	602	74	167	177	279
22388.056	25.91	568	61	602	74	167	177	279
22388.057	25.91	568	61	602	74	167	177	279
22388.058	25.91	568	61	602	74	167	177	279
22388.059	25.91	568	61	602	74	167	177	279
22388.060	27.00	617	69	688	79	171	185	287
22388.061	27.00	617	69	688	79	171	185	287
22388.062	27.00	617	69	688	79	171	185	287
22388.063	27.00	617	69	688	79	171	185	287
22388.064	27.00	617	69	688	79	171	185	287
22388.065	25.50	556	63	612	72	171	185	287
22388.066	25.50	556	63	612	72	171	185	287

\*All values are MARV.

**Product : GE240-15**

ROLL # ASTM METHOD UNITS TARGET	WEIGHT D5261 oz/sq yd 24.00	MD TENSILE D4632 lbs. 230	MD ELONG D4632 % 50	XMD TENSILE D4632 lbs 230	XMD ELONG D4632 % 50	MD TRAP D4533 lbs. 95	XMD TRAP D4533 lbs 95	PUNCTURE D4833 lbs. 250
22388.067	25.50	556	63	612	72	171	185	287
22388.068	25.50	556	63	612	72	171	185	287
22388.069	25.50	556	63	612	72	171	185	287
22388.070	26.59	626	67	644	75	160	179	276
22388.071	26.59	626	67	644	75	160	179	276
22388.072	26.59	626	67	644	75	160	179	276
22388.073	26.59	626	67	644	75	160	179	276
22388.074	26.59	626	67	644	75	160	179	276
22388.075	25.87	596	60	626	70	160	179	276
22388.076	25.87	596	60	626	70	160	179	276
22388.077	25.87	596	60	626	70	160	179	276
22388.078	25.87	596	60	626	70	160	179	276
22388.079	25.87	596	60	626	70	160	179	276
22388.080	26.25	601	70	700	80	174	183	284
22388.081	26.25	601	70	700	80	174	183	284
22388.082	26.25	601	70	700	80	174	183	284
22388.083	26.25	601	70	700	80	174	183	284
22388.084	26.25	601	70	700	80	174	183	284
22388.085	25.94	579	65	619	74	174	183	284
22388.086	25.94	579	65	619	74	174	183	284
22388.087	25.94	579	65	619	74	174	183	284
22388.088	25.94	579	65	619	74	174	183	284
22388.089	25.94	579	65	619	74	174	183	284
22388.090	26.75	613	68	673	77	164	176	281
22388.091	26.75	613	68	673	77	164	176	281
22388.092	26.75	613	68	673	77	164	176	281
22388.093	26.75	613	68	673	77	164	176	281
22388.094	26.75	613	68	673	77	164	176	281
22388.095	25.72	555	62	610	72	164	176	281
22388.096	25.72	555	62	610	72	164	176	281
22388.097	25.72	555	62	610	72	164	176	281
22388.098	25.72	555	62	610	72	164	176	281
22388.099	25.72	555	62	610	72	164	176	281

\*All values are MARV.

**Product : GE240-15**

ROLL # ASTM METHOD UNITS TARGET	WEIGHT D5261 oz/sq yd 24.00	MD TENSILE D4632 lbs. 230	MD ELONG D4632 % 50	XMD TENSILE D4632 lbs 230	XMD ELONG D4632 % 50	MD TRAP D4533 lbs. 95	XMD TRAP D4533 lbs 95	PUNCTURE D4833 lbs. 250
22388.100	26.88	607	65	691	75	169	180	288
22388.101	26.88	607	65	691	75	169	180	288
22388.102	26.88	607	65	691	75	169	180	288
22388.103	26.88	607	65	691	75	169	180	288
22388.104	26.88	607	65	691	75	169	180	288
22388.105	25.95	566	60	627	70	169	180	288
22388.106	25.95	566	60	627	70	169	180	288
22388.107	25.95	566	60	627	70	169	180	288
22388.108	25.95	566	60	627	70	169	180	288
22388.109	25.95	566	60	627	70	169	180	288
22388.110	26.96	643	69	674	78	162	178	277
22388.111	26.96	643	69	674	78	162	178	277
22388.112	26.96	643	69	674	78	162	178	277
22388.113	26.96	643	69	674	78	162	178	277
22388.114	26.96	643	69	674	78	162	178	277
22388.115	25.88	599	64	649	73	162	178	277
22388.116	25.88	599	64	649	73	162	178	277
22388.117	25.88	599	64	649	73	162	178	277
22388.118	25.88	599	64	649	73	162	178	277
22388.119	25.88	599	64	649	73	162	178	277
22388.120	26.33	602	66	689	76	172	184	286
22388.121	26.33	602	66	689	76	172	184	286
22388.122	26.33	602	66	689	76	172	184	286
22388.123	26.33	602	66	689	76	172	184	286
22388.124	26.33	602	66	689	76	172	184	286
22388.125	25.74	578	61	609	71	172	184	286
22388.126	25.74	578	61	609	71	172	184	286
22388.127	25.74	578	61	609	71	172	184	286
22388.128	25.74	578	61	609	71	172	184	286
22388.129	25.74	578	61	609	71	172	184	286
22388.130	26.98	625	68	678	80	167	175	280
22388.131	26.98	625	68	678	80	167	175	280
22388.132	26.98	625	68	678	80	167	175	280

\*All values are MARV.

**Product : GE240-15**

ROLL # ASTM METHOD UNITS TARGET	WEIGHT D5261 oz/sq yd 24.00	MD TENSILE D4632 lbs. 230	MD ELONG D4632 % 50	XMD TENSILE D4632 lbs 230	XMD ELONG D4632 % 50	MD TRAP D4533 lbs. 95	XMD TRAP D4533 lbs 95	PUNCTURE D4833 lbs. 250
22388.133	26.98	625	68	678	80	167	175	280
22388.134	26.98	625	68	678	80	167	175	280
22388.135	25.96	565	65	646	75	167	175	280
22388.136	25.96	565	65	646	75	167	175	280
22388.137	25.96	565	65	646	75	167	175	280
22388.138	25.96	565	65	646	75	167	175	280
22388.139	25.96	565	65	646	75	167	175	280
22388.140	26.56	605	70	698	77	175	182	289
22388.141	26.56	605	70	698	77	175	182	289
22388.142	26.56	605	70	698	77	175	182	289
22388.143	26.56	605	70	698	77	175	182	289
22388.144	26.56	605	70	698	77	175	182	289
22388.145	25.82	553	63	630	70	175	182	289
22388.146	25.82	553	63	630	70	175	182	289
22388.147	25.82	553	63	630	70	175	182	289
22388.148	25.82	553	63	630	70	175	182	289
22388.149	25.82	553	63	630	70	175	182	289
22388.150	26.31	623	68	682	79	163	180	276
22388.151	26.31	623	68	682	79	163	180	276
22388.152	26.31	623	68	682	79	163	180	276
22388.153	26.31	623	68	682	79	163	180	276
22388.154	26.31	623	68	682	79	163	180	276
22388.155	25.89	562	60	606	73	163	180	276
22388.156	25.89	562	60	606	73	163	180	276
22388.157	25.89	562	60	606	73	163	180	276
22388.158	25.89	562	60	606	73	163	180	276
22388.159	25.89	562	60	606	73	163	180	276
22388.160	26.92	633	65	693	75	168	185	287
22388.161	26.92	633	65	693	75	168	185	287
22388.162	26.92	633	65	693	75	168	185	287
22388.163	26.92	633	65	693	75	168	185	287
22388.164	26.92	633	65	693	75	168	185	287
22388.165	25.97	577	62	614	71	168	185	287

\*All values are MARV.

**Product : GE240-15**

ROLL # ASTM METHOD UNITS TARGET	WEIGHT D5261 oz/sq yd 24.00	MD TENSILE D4632 lbs. 230	MD ELONG D4632 % 50	XMD TENSILE D4632 lbs 230	XMD ELONG D4632 % 50	MD TRAP D4533 lbs. 95	XMD TRAP D4533 lbs 95	PUNCTURE D4833 lbs. 250
22388.166	25.97	577	62	614	71	168	185	287
22388.167	25.97	577	62	614	71	168	185	287
22388.168	25.97	577	62	614	71	168	185	287
22388.169	25.97	577	62	614	71	168	185	287
22388.170	26.83	606	69	679	80	160	177	279
22388.171	26.83	606	69	679	80	160	177	279
22388.172	26.83	606	69	679	80	160	177	279
22388.173	26.83	606	69	679	80	160	177	279
22388.174	26.83	606	69	679	80	160	177	279
22388.175	25.56	571	60	601	74	160	177	279
22388.176	25.56	571	60	601	74	160	177	279
22388.177	25.56	571	60	601	74	160	177	279
22388.178	25.56	571	60	601	74	160	177	279
22388.179	25.56	571	60	601	74	160	177	279
22388.180	26.99	620	65	684	76	173	181	283
22388.181	26.99	620	65	684	76	173	181	283
22388.182	26.99	620	65	684	76	173	181	283
22388.183	26.99	620	65	684	76	173	181	283
22388.184	26.99	620	65	684	76	173	181	283
22388.185	25.83	552	63	611	72	173	181	283
22388.186	25.83	552	63	611	72	173	181	283
22388.187	25.83	552	63	611	72	173	181	283
22388.188	25.83	552	63	611	72	173	181	283
22388.189	25.83	552	63	611	72	173	181	283
22388.190	26.26	611	68	692	79	166	179	281
22388.191	26.26	611	68	692	79	166	179	281
22388.192	26.26	611	68	692	79	166	179	281
22388.193	26.26	611	68	692	79	166	179	281
22388.194	26.26	611	68	692	79	166	179	281
22388.195	25.90	561	61	604	75	166	179	281
22388.196	25.90	561	61	604	75	166	179	281
22388.197	25.90	561	61	604	75	166	179	281
22388.198	25.90	561	61	604	75	166	179	281

\*All values are MARV.

**Product : GE240-15**

ROLL # ASTM METHOD UNITS TARGET	WEIGHT D5261 oz/sq yd 24.00	MD TENSILE D4632 lbs. 230	MD ELONG D4632 % 50	XMD TENSILE D4632 lbs 230	XMD ELONG D4632 % 50	MD TRAP D4533 lbs. 95	XMD TRAP D4533 lbs 95	PUNCTURE D4833 lbs. 250
22388.199	25.90	561	61	604	75	166	179	281
22388.200	26.93	634	66	686	77	170	183	290
22388.201	26.93	634	66	686	77	170	183	290
22388.202	26.93	634	66	686	77	170	183	290
22388.203	26.93	634	66	686	77	170	183	290
22388.204	26.93	634	66	686	77	170	183	290
22388.205	25.60	572	64	633	73	170	183	290
22388.206	25.60	572	64	633	73	170	183	290
22388.207	25.60	572	64	633	73	170	183	290
22388.208	25.60	572	64	633	73	170	183	290
22388.209	25.60	572	64	633	73	170	183	290
22388.210	26.37	608	70	653	75	161	176	275
22388.211	26.37	608	70	653	75	161	176	275
22388.212	26.37	608	70	653	75	161	176	275
22388.213	26.37	608	70	653	75	161	176	275
22388.214	26.37	608	70	653	75	161	176	275
22388.215	25.84	550	62	603	70	161	176	275
22388.216	25.84	550	62	603	70	161	176	275
22388.217	25.84	550	62	603	70	161	176	275
22388.218	25.84	550	62	603	70	161	176	275
22388.219	25.84	550	62	603	70	161	176	275
22388.220	26.47	650	67	665	78	174	180	284
22388.221	26.47	650	67	665	78	174	180	284
22388.222	26.47	650	67	665	78	174	180	284
22388.223	26.47	650	67	665	78	174	180	284
22388.224	26.47	650	67	665	78	174	180	284
22388.225	25.61	574	60	621	74	174	180	284
22388.226	25.61	574	60	621	74	174	180	284
22388.227	25.61	574	60	621	74	174	180	284
22388.228	25.61	574	60	621	74	174	180	284
22388.229	25.61	574	60	621	74	174	180	284
22388.230	26.66	641	65	694	76	165	178	280
22388.231	26.66	641	65	694	76	165	178	280

\*All values are MARV.

**Product : GE240-15**

ROLL # ASTM METHOD UNITS TARGET	WEIGHT D5261 oz/sq yd 24.00	MD TENSILE D4632 lbs. 230	MD ELONG D4632 % 50	XMD TENSILE D4632 lbs 230	XMD ELONG D4632 % 50	MD TRAP D4533 lbs. 95	XMD TRAP D4533 lbs 95	PUNCTURE D4833 lbs. 250
22388.232	26.66	641	65	694	76	165	178	280
22388.233	26.66	641	65	694	76	165	178	280
22388.234	26.66	641	65	694	76	165	178	280
22388.235	25.92	580	63	648	71	165	178	280
22388.236	25.92	580	63	648	71	165	178	280
22388.237	25.92	580	63	648	71	165	178	280
22388.238	25.92	580	63	648	71	165	178	280
22388.239	25.92	580	63	648	71	165	178	280
22388.240	26.94	631	69	677	80	169	184	288
22388.241	26.94	631	69	677	80	169	184	288
22388.242	26.94	631	69	677	80	169	184	288
22388.243	26.94	631	69	677	80	169	184	288
22388.244	26.94	631	69	677	80	169	184	288
22388.245	26.24	560	61	618	73	169	184	288
22388.246	26.24	560	61	618	73	169	184	288
22388.247	26.24	560	61	618	73	169	184	288
22388.248	26.24	560	61	618	73	169	184	288
22388.249	26.24	560	61	618	73	169	184	288
22388.250	26.53	622	66	666	75	162	175	278
22388.251	26.53	622	66	666	75	162	175	278
22388.252	26.53	622	66	666	75	162	175	278
22388.253	26.53	622	66	666	75	162	175	278
22388.254	26.53	622	66	666	75	162	175	278
22388.255	25.85	576	64	608	70	162	175	278
22388.256	25.85	576	64	608	70	162	175	278
22388.257	25.85	576	64	608	70	162	175	278
22388.258	25.85	576	64	608	70	162	175	278
22388.259	25.85	576	64	608	70	162	175	278
22388.260	26.44	649	70	685	78	172	181	283
22388.261	26.44	649	70	685	78	172	181	283
22388.262	26.44	649	70	685	78	172	181	283
22388.263	26.44	649	70	685	78	172	181	283
22388.264	26.44	649	70	685	78	172	181	283

\*All values are MARV.



**Product : GE240-15**

ROLL # ASTM METHOD	WEIGHT D5261	MD TENSILE D4632	MD ELONG D4632	XMD TENSILE D4632	XMD ELONG D4632	MD TRAP D4533	XMD TRAP D4533	PUNCTURE D4833
UNITS	oz/sq yd	lbs.	%	lbs	%	lbs.	lbs	lbs.
TARGET	24.00	230	50	230	50	95	95	250
22388.265	25.51	551	60	600	72	172	181	283
22388.266	25.51	551	60	600	72	172	181	283
22388.267	25.51	551	60	600	72	172	181	283

\*All values are MARV.

# Geonet Composite



## Material Inventory

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

Material Type: <u>gdl : 5</u>	Manufacturer: <u>SKAPS</u>	Product Type: <u>Transnet 300-2-8</u>
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Inventory					Q.A. Conformance				Q.C. Documents			
Inv Date	Batch-Roll	Width (ft.)	Length (ft.)	QA ID	Date	Samp No	Result	QAID	Date Rec	Date Ckk	Result	QAID

### Accepted Rolls

11/14/2011	45391010001	14	165	DW					11/4/2011	11/4/2011	P	DB
11/14/2011	45391010002	14	170	DW								
11/14/2011	45391010003	14	170	DW								
11/14/2011	45391010004	14	170	DW								
11/14/2011	45391010005	14	170	DW								
11/14/2011	45391010006	14	180	DW								
11/14/2011	45391010007	14	170	DW								
11/14/2011	45391010008	14	170	DW								
11/14/2011	45391010009	14	170	DW								
11/14/2011	45391010010	14	170	DW					11/4/2011	11/4/2011	P	DB
11/14/2011	45391010011	14	170	DW								
11/14/2011	45391010012	14	170	DW								
11/14/2011	45391010013	14	170	DW								
11/14/2011	45391010014	14	170	DW								
11/14/2011	45391010015	14	115	DW								
11/14/2011	45391010016	14	170	DW								
11/14/2011	45391010017	14	170	DW								
11/14/2011	45391010018	14	170	DW								
11/14/2011	45391010019	14	170	DW								
11/14/2011	45391010020	14	170	DW					11/4/2011	11/4/2011	P	DB
11/14/2011	45391010021	14	170	DW	11/8/2011	GD-03	P	DB				
11/14/2011	45391010023	14	170	DW	11/8/2011	GD-04	P	DB				
11/14/2011	45391010024	14	160	DW								
11/14/2011	45391010025	14	170	DW								
11/14/2011	45391010026	14	170	DW								
11/14/2011	45391010027	14	170	DW								
11/17/2011	45391010028	14	170	DW								
11/17/2011	45391010029	14	170	DW								



## Material Inventory

Project: Onondaga Lake Sediment Consolidation Area ( SCA )  
 Location: Camillus, New York  
 Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

ProjNo: GJ4706  
 TaskNo: 07

Material Type: gdl : 5

Manufacturer: SKAPS

Product Type: Transnet 300-2-8

Inventory					Q.A. Conformance				Q.C. Documents			
Inv Date	Batch-Roll	Width (ft.)	Length (ft.)	QA ID	Date	Samp No	Result	QAID	Date Rec	Date Ckk	Result	QAID
11/17/2011	45391010030	14	170	DW					11/4/2011	11/4/2011	P	DB
11/17/2011	45391010031	14	170	DW								
11/17/2011	45391010032	14	170	DW								
11/17/2011	45391010033	14	170	DW								
11/17/2011	45391010034	14	170	DW								
11/17/2011	45391010035	14	170	DW								
11/17/2011	45391010036	14	170	DW								
11/17/2011	45391010037	14	170	DW								
11/17/2011	45391010038	14	170	DW								
11/17/2011	45391010039	14	170	DW								
11/14/2011	45391010040	14	170	DW					11/4/2011	11/4/2011	P	DB
11/14/2011	45391010041	14	180	DW								
11/14/2011	45391010042	14	190	DW								
11/14/2011	45391010043	14	180	DW								
11/14/2011	45391010044	14	200	DW								
11/14/2011	45391010045	14	180	DW								
11/14/2011	45391010046	14	180	DW								
11/14/2011	45391010047	14	180	DW								
11/14/2011	45391010048	14	180	DW								
11/14/2011	45391010049	14	180	DW								
11/14/2011	45391010050	14	180	DW					11/4/2011	11/4/2011	P	DB
11/14/2011	45391010051	14	180	DW								
11/14/2011	45391010052	14	180	DW								
11/14/2011	45391010053	14	180	DW								
11/14/2011	45391010054	14	180	DW								
11/14/2011	45391010055	14	180	DW								
11/14/2011	45391010056	14	180	DW								
11/14/2011	45391010057	14	180	DW								
11/14/2011	45391010058	14	180	DW								

## Material Inventory

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

<b>Material Type:</b> gdl : 5	<b>Manufacturer:</b> SKAPS	<b>Product Type:</b> Transnet 300-2-8
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Inventory					Q.A. Conformance				Q.C. Documents			
Inv Date	Batch-Roll	Width (ft.)	Length (ft.)	QA ID	Date	Samp No	Result	QAID	Date Rec	Date Ckk	Result	QAID
11/14/2011	45391010059	14	180	DW								
11/14/2011	45391010060	14	180	DW					11/4/2011	11/4/2011	P	DB
11/14/2011	45391010061	14	180	DW								
11/14/2011	45391010062	14	180	DW								
11/14/2011	45391010063	14	180	DW								
11/14/2011	45391010064	14	180	DW								
11/14/2011	45391010065	14	180	DW								
11/14/2011	45391010066	14	180	DW								
11/16/2011	45391010067	14	180	DW								
11/16/2011	45391010068	14	180	DW								
11/16/2011	45391010069	14	180	DW								
11/16/2011	45391010070	14	180	DW					11/4/2011	11/4/2011	P	DB
11/16/2011	45391010071	14	130	DW								
11/16/2011	45391010072	14	180	DW								
11/16/2011	45391010073	14	180	DW								
11/16/2011	45391010074	14	180	DW								
11/16/2011	45391010075	14	180	DW								
11/16/2011	45391010076	14	180	DW								
11/16/2011	45391010077	14	180	DW								
11/16/2011	45391010078	14	180	DW								
11/16/2011	45391010079	14	180	DW								
11/16/2011	45391010080	14	180	DW					11/4/2011	11/4/2011	P	DB
11/16/2011	45391010081	14	150	DW								
11/16/2011	45391010082	14	180	DW								
11/16/2011	45391010083	14	180	DW								
11/16/2011	45391010084	14	180	DW								
11/16/2011	45391010085	14	180	DW								
11/16/2011	45391010086	14	180	DW								
11/16/2011	45391010087	14	180	DW								



## Material Inventory

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

<b>Material Type:</b> gdl : 5	<b>Manufacturer:</b> SKAPS	<b>Product Type:</b> Transnet 300-2-8
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Inventory					Q.A. Conformance				Q.C. Documents			
Inv Date	Batch-Roll	Width (ft.)	Length (ft.)	QA ID	Date	Samp No	Result	QAID	Date Rec	Date Ckk	Result	QAID

11/16/2011	45391010088	14	180	DW								
11/16/2011	45391010089	14	180	DW								
11/16/2011	45391010090	14	180	DW					11/4/2011	11/4/2011	P	DB
11/17/2011	45391010091	14	180	DW								
11/16/2011	45391010092	14	200	DW								
11/16/2011	45391010093	14	180	DW								
11/16/2011	45391010094	14	180	DW								
11/17/2011	45391010095	14	180	DW								
11/16/2011	45391010096	14	160	DW								
11/16/2011	45391010097	14	160	DW								
11/16/2011	45391010098	14	160	DW								
11/16/2011	45391010099	14	160	DW								
11/16/2011	45391010100	14	160	DW					11/4/2011	11/4/2011	P	DB
11/16/2011	45391010101	14	160	DW								
11/16/2011	45391010102	14	160	DW								
11/16/2011	45391010103	14	160	DW								
11/16/2011	45391010104	14	160	DW								
11/16/2011	45391010105	14	160	DW								
11/16/2011	45391010106	14	160	DW								
11/16/2011	45391010107	14	160	DW								
11/16/2011	45391010108	14	160	DW								
11/16/2011	45391010109	14	160	DW								
11/16/2011	45391010110	14	160	DW					11/4/2011	11/4/2011	P	DB
11/16/2011	45391010111	14	160	DW								
11/16/2011	45391010112	14	160	DW								
11/16/2011	45391010113	14	160	DW								
11/16/2011	45391010114	14	160	DW								
11/16/2011	45391010115	14	160	DW								
11/16/2011	45391010116	14	160	DW								



## Material Inventory

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

Material Type: <u>gdl : 5</u>	Manufacturer: <u>SKAPS</u>	Product Type: <u>Transnet 300-2-8</u>
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Inventory					Q.A. Conformance				Q.C. Documents			
Inv Date	Batch-Roll	Width (ft.)	Length (ft.)	QA ID	Date	Samp No	Result	QAID	Date Rec	Date Ckk	Result	QAID
11/16/2011	45391010117	14	160	DW								
11/16/2011	45391010118	14	160	DW								
11/16/2011	45391010119	14	160	DW								
11/16/2011	45391010120	14	160	DW					11/4/2011	11/4/2011	P	DB
11/16/2011	45391010121	14	160	DW								
11/16/2011	45391010122	14	160	DW								
11/17/2011	45391010123	14	160	DW								
11/17/2011	45391010124	14	160	DW								
11/17/2011	45391010125	14	160	DW								
11/17/2011	45391010126	14	160	DW								
11/16/2011	45391010127	14	70	DW								
11/16/2011	453910101271	14	65	DW								
11/17/2011	45391010128	14	105	DW								
11/17/2011	453910101281	14	115	DW								
11/17/2011	45391010129	14	160	DW								
11/17/2011	45391010130	14	160	DW	10/26/2011	GD-02	P	DB	11/4/2011	11/4/2011	P	DB
11/17/2011	45391010131	14.5	150	DW								
11/17/2011	45391010132	14.5	150	DW								
11/17/2011	45391010133	14	140	DW								
11/17/2011	45391010134	14.5	150	DW								
11/17/2011	45391010135	14.5	150	DW								

Average Roll Width(ft.): <b>14</b>	Average Roll Length(ft.): <b>168</b>
Total Number of Rolls: <b>136</b>	Cumulative Area(sq.ft.): <b>319710</b>
Total Number of Conformance Tests: <b>4</b>	

### Rejected Rolls

11/14/2011	45391010022	14	170	DW	10/26/2011	GD-01	F	DB				
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## Material Inventory

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

Material Type: <u>gdl : 5</u>	Manufacturer: <u>SKAPS</u>	Product Type: <u>Transnet 300-2-8</u>
-------------------------------	----------------------------	---------------------------------------

Inventory					Q.A. Conformance				Q.C. Documents			
Inv Date	Batch-Roll	Width (ft.)	Length (ft.)	QA ID	Date	Samp No	Result	QAID	Date Rec	Date Ckk	Result	QAID

Average Roll Width(ft.): <u>14</u>	Average Roll Length(ft.): <u>170</u>
Total Number of Rolls: <u>1</u>	Cumulative Area(sq.ft.): <u>2380</u>
Total Number of Conformance Tests: <u>4</u>	

Comments:



# ENGINEERED SYNTHETIC PRODUCTS, INC.

212 North Way  
Birmingham, AL 35242  
Phone (205)981-1900

## DRAINAGE PRODUCT DESCRIPTION SHEET Honeywell Sediment Consolidation, Syracuse, NY TRANSNET 300-2-8

Transnet 300-2-8 is a superior quality drainage media made by extruding two sets of HDPE strands together to form a diamond shaped net. The net is then heat laminated to an 8 ounce non-woven fabric on each side. This three dimensional structure provides excellent planar liquid flow. The Transnet 300-2-8 conforms to the physical property values listed below:

NET PROPERTY	TEST METHOD	UNITS	MINIMUM AVERAGE ROLL VALUE
Thickness	ASTM D-5199	mils	275
Density of Polymer	ASTM D-1505	g/cm <sup>2</sup>	0.94
Carbon Black	ASTM D-1603	%	2-3
Transmissivity (composite)	ASTM D-4716	m <sup>2</sup> /sec	2 x 10 <sup>-3</sup> *
Ply Adhesion (composite)	ASTM D-7005	lbs/in	0.5

\*Transmissivity of the geocomposite measured using water at 20 Degrees C with a gradient of 0.1, under a confining pressure of 3,000 psf, between steel plates after a 15 minute seating time. Values may vary based on dimension of the transmissivity specimen and specific laboratory.

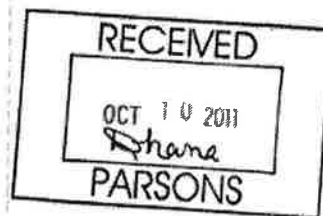
### STYLE GE180

GE180 is a superior quality, nonwoven geotextile produced by needlepunching together 100% polypropylene staple fibers in a random network to form a high strength dimensionally stable fabric. The polypropylene fibers are specially formulated to resist ultraviolet light deterioration, and are inert to commonly encountered soil chemicals. The fabric will not mildew, is non-biodegradable, and is resistant to damage from insects and rodents. Polypropylene is stable within a ph range of 2 to 13. GE180 conforms to the physical property values below:

FABRIC PROPERTY	TEST METHOD	UNITS	MINIMUM AVERAGE ROLL VALUE
Weight	ASTM D-5261	oz/yd <sup>2</sup>	8
Grab Tensile	ASTM D-4632	lbs	180
Grab Tensile Elongation	ASTM D-4632	%	50
Trap Tear	ASTM D-4533	lbs	75
Puncture Strength	ASTM D-4833	lbs	130
Permittivity*	ASTM D-4491	sec <sup>-1</sup>	0.9
AOS	ASTM D-4751	US Sieve (mm)	80 (0.18)

\*At time of manufacturing. Handling may change these properties.

To the best of our knowledge the information contained herein is accurate. However, ESP, Inc. cannot anticipate all conditions under which ESP's product information and our products, or the products of other manufacturers in combination with our products, may be used. We accept no responsibility for results obtained by the application of this information or the safety or suitability of our products either alone or in combination with other products. Final determination of the suitability of any information or material for the use contemplated, of its manner of use, and whether the suggested use infringes any patents is the sole responsibility of the user.





18th January 2012

**To whom it may concern**

Re: Needle Detection facilities

This letter is in reference to the SKAPS Industries geotextile GE240 and GE180 proposed for shipment to Chenango Constructions for Honeywell Sediment Consolidation.. SKAPS Industries maintains strict quality control over its products using the best and latest testing equipment and techniques.

Metal detectors are placed on the production line to detect needles and other contaminants. Routine checks are performed continuously throughout the manufacturing process. If needles are detected the line is shut down and the needles are located and removed. Additionally, line inspectors are always monitoring the material for defects.

Please feel free to contact us if you have any questions.

Sincerely,

Anurag Shah

Skaps Industries



SKAPS Industries  
571 Industrial Parkway  
Commerce, GA 30529  
Phone: 706-336-7000, 706-336-7007  
[www.skaps.com](http://www.skaps.com)

**Date:** January 18, 2012

**To**

Carl Burdick  
Chenango Contracting, Inc.  
29 Arbutus Road  
Johnson City, NY 13790

**Sub:** ASTM D7005 Vs ASTM F904

**Ref:** Honeywell Sediment Consolidation, NY

The ASTM F904 "Standard Test for Comparison of Bond Strength or Ply Adhesion of Similar Laminates Made from Flexible Materials".

The ASTM D7005 "Standard Test for Determining the Bond Strength or Ply Adhesion of Geocomposites". The focus is on geotextiles bonded to geonets or other types of drainage cores. This test includes geocomposites of geotextiles thermally bonded to geogrids or geonets. The ASTM D7005 test is specifically developed for drainage geocomposite and approved by the ASTM Geosynthetics Committee D35.

In conclusion the ASTM D7005 is specifically developed for geocomposites and is the most applicable and reliable test for geocomposites.

Regards,

A handwritten signature in black ink, appearing to read 'Nilay Patel', written over a horizontal line.

Nilay Patel  
Quality Assurance Manager



January 20, 2012  
Chenango Contraction, Inc.  
29 Arbutus Road  
Johnson City, NY 13790

**Ref. : Honeywell Sediment Consolidation, NY**  
**Customer P.O. # 2279**  
**Product : TN 300-2-8**

We certify that the TN 300-2-8 drainage geocomposite, meets the project requirements as stated in the specifications. The properties listed in this section are:

Property	Test Method	Unit	Required Value	Qualifier
<b>Geonet<sup>3</sup></b>				
Mass per Unit Area	ASTM D 5261	lbs/ft <sup>2</sup>	0.197	Minimum
Thickness	ASTM D 5199	mil	275	Minimum
Carbon Black	ASTM D 4218	%	2.0 - 3.0	Range
Melt Flow	ASTM D 1238 <sup>2</sup>	g/10 min	1.0	Maximum
Density	ASTM D 1505	g/cm <sup>3</sup>	0.94	Minimum
<b>Composite</b>				
Ply Adhesion	ASTM D 7005	lb/in	0.5	MARV <sup>5</sup>
Transmissivity <sup>1</sup>	ASTM D 4716	m <sup>2</sup> /sec	2.0 x 10 <sup>-3</sup>	MARV
<b>Geotextile<sup>3 &amp; 4</sup></b>				
Fabric Weight	ASTM D 5261	oz/yd <sup>2</sup>	8.0	MARV
Grab Strength	ASTM D 4632	lbs	180	MARV
Tear Strength	ASTM D 4533	lbs	75	MARV
Puncture Resistance	ASTM D 4833	lbs	130	MARV
Permittivity	ASTM D 4491	sec <sup>-1</sup>	0.90	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  $21 \pm 2$  °C ( $70 \pm 4$  °F) with a gradient of 0.1 and a confining pressure of 3,000 psf between steel plates after 15 minutes.
- 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 :** TN 300-2-8

**Project :** Honeywell Sediment Consolidation, NY

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 <sup>2</sup> /sec)
			Side A	Side B	Minimum	Average	
1	45391010001	45391010001 - N	4539.030	4539.027	1.61 ✓	2.42 ✓	2.55 x 10 <sup>-3</sup> ✓
2	45391010002	45391010002 - N	4539.030	4539.027			
3	45391010003	45391010003 - N	4539.030	4539.027			
4	45391010004	45391010004 - N	4539.030	4539.027			
5	45391010005	45391010005 - N	4539.030	4539.027			
6	45391010006	45391010006 - N	4539.030	4539.027			
7	45391010007	45391010007 - N	4539.034	4539.022			
8	45391010008	45391010008 - N	4539.034	4539.022			
9	45391010009	45391010009 - N	4539.034	4539.022			
10	45391010010	45391010010 - N	4539.034	4539.022	1.45 ✓	2.69 ✓	
11	45391010011	45391010011 - N	4539.034	4539.022			
12	45391010012	45391010012 - N	4539.034	4539.022			
13	45391010013	45391010013 - N	4539.028	4539.037			
14	45391010014	45391010014 - N	4539.028	4539.037			
15	45391010015	45391010015 - N	4539.028	4539.037			
16	45391010016	45391010016 - N	4539.028	4539.037			
17	45391010017	45391010017 - N	4539.028	4539.037			
18	45391010018	45391010018 - N	4539.028	4539.037			
19	45391010019	45391010019 - N	4539.016	4539.023			
20	45391010020	45391010020 - N	4539.016	4539.023	1.52 ✓	2.36 ✓	
21	45391010021	45391010021 - N	4539.016	4539.023			
22	45391010022	45391010022 - N	4539.016	4539.023	FAILED CONFORMANCE DO NOT SHIP		
23	45391010023	45391010023 - N	4539.016	4539.023			
24	45391010024	45391010024 - N	4539.016	4539.023			
25	45391010025	45391010025 - N	4539.031	4539.043			
26	45391010026	45391010026 - N	4539.031	4539.043			
27	45391010027	45391010027 - N	4539.031	4539.043			



**Product :** TN 300-2-8  
**Project :** Honeywell Sediment Consolidation, NY

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 <sup>2</sup> )	Thickness (mils)	Carbon Black (%)	Transmissivity (m <sup>2</sup> /sec)
45391010001 - N	ECUX887436	0.9527 ✓	0.413	336 ✓	2.52 ✓	
45391010002 - N	ECUX887436	0.9527				
45391010003 - N	ECUX887436	0.9527				
45391010004 - N	ECUX887436	0.9527				
45391010005 - N	ECUX887436	0.9527				
45391010006 - N	ECUX887436	0.9527				
45391010007 - N	ECUX887436	0.9527				
45391010008 - N	ECUX887436	0.9527				
45391010009 - N	ECUX887436	0.9527				
45391010010 - N	ECUX887436	0.9527 ✓	0.421	331 ✓	2.55 ✓	
45391010011 - N	ECUX887436	0.9527				
45391010012 - N	ECUX887436	0.9527				
45391010013 - N	ECUX887436	0.9527				
45391010014 - N	ECUX887436	0.9527				
45391010015 - N	ECUX887436	0.9527				
45391010016 - N	ECUX887436	0.9527				
45391010017 - N	ECUX887436	0.9527				
45391010018 - N	ECUX887436	0.9527				
45391010019 - N	ECUX887436	0.9527				
45391010020 - N	ECUX887436	0.9527 ✓	0.410	334 ✓	2.23 ✓	
45391010021 - N	ECUX887436	0.9527				
45391010022 - N	ECUX887436	0.9527	FAILED CONFORMANCE SAMPLING DO NOT SHIP			
45391010023 - N	ECUX887436	0.9527				
45391010024 - N	ECUX887436	0.9527				
45391010025 - N	ECUX887436	0.9527				
45391010026 - N	ECUX887436	0.9527				
45391010027 - N	ECUX887436	0.9527				



**Product : TN 300-2-8**

**Project : Honeywell Sediment Consolidation, NY**

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 <sup>2</sup> /sec)
			Side A	Side B	Minimum	Average	
28	45391010028	45391010028 - N	4539.031	4539.043			
29	45391010029	45391010029 - N	4539.031	4539.043			
30	45391010030	45391010030 - N	4539.031	4539.043	1.49 ✓	2.33 ✓	
31	45391010031	45391010031 - N	4539.041	4539.010			
32	45391010032	45391010032 - N	4539.041	4539.010			
33	45391010033	45391010033 - N	4539.041	4539.010			
34	45391010034	45391010034 - N	4539.041	4539.010			
35	45391010035	45391010035 - N	4539.041	4539.010			2.44 x 10 <sup>-3</sup> ✓
36	45391010036	45391010036 - N	4539.041	4539.010			
37	45391010037	45391010037 - N	4539.006	4539.005			
38	45391010038	45391010038 - N	4539.006	4539.005			
39	45391010039	45391010039 - N	4539.006	4539.005			
40	45391010040	45391010040 - N	4539.006	4539.005	1.42 ✓	2.67 ✓	
41	45391010041	45391010041 - N	4539.006	4539.005			
42	45391010042	45391010042 - N	4539.006	4539.005			
43	45391010043	45391010043 - N	4539.008	4539.019			
44	45391010044	45391010044 - N	4539.008	4539.019			
45	45391010045	45391010045 - N	4539.008	4539.019			
46	45391010046	45391010046 - N	4539.008	4539.019			
47	45391010047	45391010047 - N	4539.008	4539.019			
48	45391010048	45391010048 - N	4539.008	4539.019			
49	45391010049	45391010049 - N	4539.025	4539.017			
50	45391010050	45391010050 - N	4539.025	4539.017	1.55 ✓	2.65 ✓	
51	45391010051	45391010051 - N	4539.025	4539.017			
52	45391010052	45391010052 - N	4539.025	4539.017			
53	45391010053	45391010053 - N	4539.025	4539.017			
54	45391010054	45391010054 - N	4539.025	4539.017			



**Product :** TN 300-2-8  
**Project :** Honeywell Sediment Consolidation, NY

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 <sup>2</sup> )	Thickness (mils)	Carbon Black (%)	Transmissivity (m <sup>2</sup> /sec)
45391010028 - N	ECUX887436	0.9527				
45391010029 - N	ECUX887436	0.9527				
45391010030 - N	ECUX887436	0.9527 ✓	0.414	338 ✓	2.28 ✓	
45391010031 - N	ECUX887436	0.9527				
45391010032 - N	ECUX887436	0.9527				
45391010033 - N	ECUX887436	0.9527				
45391010034 - N	ECUX887436	0.9527				
45391010035 - N	ECUX887436	0.9527				
45391010036 - N	ECUX887436	0.9527				
45391010037 - N	ECUX887436	0.9527				
45391010038 - N	ECUX887436	0.9527				
45391010039 - N	ECUX887436	0.9527				
45391010040 - N	ECUX887436	0.9527 ✓	0.420	335 ✓	2.31 ✓	
45391010041 - N	ECUX887436	0.9527				
45391010042 - N	ECUX887436	0.9527				
45391010043 - N	ECUX887436	0.9527				
45391010044 - N	ECUX887436	0.9527				
45391010045 - N	ECUX887436	0.9527				
45391010046 - N	ECUX887436	0.9527				
45391010047 - N	ECUX887436	0.9527				
45391010048 - N	ECUX887436	0.9527				
45391010049 - N	ECUX887436	0.9527				
45391010050 - N	ECUX887436	0.9527 ✓	0.417	332 ✓	2.30 ✓	
45391010051 - N	ECUX887436	0.9527				
45391010052 - N	ECUX887436	0.9527				
45391010053 - N	ECUX887436	0.9527				
45391010054 - N	ECUX887436	0.9527				





**Product : TN 300-2-8**

**Project : Honeywell Sediment Consolidation, NY**

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 <sup>2</sup> /sec)
			Side A	Side B	Minimum	Average	
55	45391010055	45391010055 - N	4539.018	4539.013			
56	45391010056	45391010056 - N	4539.018	4539.013			
57	45391010057	45391010057 - N	4539.018	4539.013			
58	45391010058	45391010058 - N	4539.018	4539.013			
59	45391010059	45391010059 - N	4539.018	4539.013			
60	45391010060	45391010060 - N	4539.018	4539.013	1.48 ✓	2.16 ✓	
61	45391010061	45391010061 - N	4539.040	4539.011			
62	45391010062	45391010062 - N	4539.040	4539.011			
63	45391010063	45391010063 - N	4539.040	4539.011			
64	45391010064	45391010064 - N	4539.040	4539.011			
65	45391010065	45391010065 - N	4539.040	4539.011			
66	45391010066	45391010066 - N	4539.040	4539.011			
67	45391010067	45391010067 - N	4539.044	4539.020			
68	45391010068	45391010068 - N	4539.044	4539.020			
69	45391010069	45391010069 - N	4539.044	4539.020			
70	45391010070	45391010070 - N	4539.044	4539.020	1.51 ✓	2.44 ✓	2.26 x 10 <sup>-3</sup> ✓
71	45391010071	45391010071 - N	4539.044	4539.020			
72	45391010072	45391010072 - N	4539.044	4539.020			
73	45391010073	45391010073 - N	4539.045	4539.036			
74	45391010074	45391010074 - N	4539.045	4539.036			
75	45391010075	45391010075 - N	4539.045	4539.036			
76	45391010076	45391010076 - N	4539.045	4539.036			
77	45391010077	45391010077 - N	4539.045	4539.036			
78	45391010078	45391010078 - N	4539.045	4539.036			
79	45391010079	45391010079 - N	4539.014	4539.029			
80	45391010080	45391010080 - N	4539.014	4539.029	1.65 ✓	2.57 ✓	
81	45391010081	45391010081 - N	4539.014	4539.029			



**Product :** TN 300-2-8  
**Project :** Honeywell Sediment Consolidation, NY

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 <sup>2</sup> )	Thickness (mils)	Carbon Black (%)	Transmissivity (m <sup>2</sup> /sec)
45391010055 - N	ECUX887436	0.9527				
45391010056 - N	ECUX887436	0.9527				
45391010057 - N	ECUX887436	0.9527				
45391010058 - N	ECUX887436	0.9527				
45391010059 - N	ECUX887436	0.9527				
45391010060 - N	ECUX887436	0.9527 ✓	0.418	337 ✓	2.42 ✓	
45391010061 - N	ECUX887436	0.9527				
45391010062 - N	ECUX887436	0.9527				
45391010063 - N	ECUX887436	0.9527				
45391010064 - N	ECUX887436	0.9527				
45391010065 - N	ECUX887436	0.9527				
45391010066 - N	ECUX887436	0.9527				
45391010067 - N	ECUX887436	0.9527				
45391010068 - N	ECUX887436	0.9527				
45391010069 - N	ECUX887436	0.9527 ✓				
45391010070 - N	ECUX887436	0.9527 ✓	0.421	333 ✓	2.40 ✓	
45391010071 - N	ECUX887436	0.9527				
45391010072 - N	ECUX887436	0.9527				
45391010073 - N	ECUX887436	0.9527				
45391010074 - N	ECUX887436	0.9527				
45391010075 - N	ECUX887436	0.9527				
45391010076 - N	ECUX887436	0.9527				
45391010077 - N	ECUX887436	0.9527				
45391010078 - N	ECUX887436	0.9527				
45391010079 - N	ECUX887436	0.9527				
45391010080 - N	ECUX887436	0.9527 ✓	0.416	330 ✓	2.46 ✓	
45391010081 - N	ECUX887436	0.9527				



**Product : TN 300-2-8**

**Project : Honeywell Sediment Consolidation, NY**

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 <sup>2</sup> /sec)
			Side A	Side B	Minimum	Average	
82	45391010082	45391010082 - N	4539.014	4539.029			
83	45391010083	45391010083 - N	4539.014	4539.029			
84	45391010084	45391010084 - N	4539.014	4539.029			
85	45391010085	45391010085 - N	4539.021	4539.012			
86	45391010086	45391010086 - N	4539.021	4539.012			
87	45391010087	45391010087 - N	4539.021	4539.012			
88	45391010088	45391010088 - N	4539.021	4539.012			
89	45391010089	45391010089 - N	4539.021	4539.012			
90	45391010090	45391010090 - N	4539.021	4539.012	1.44 ✓	2.43 ✓	
91	45391010091	45391010091 - N	4539.047	4539.033			
92	45391010092	45391010092 - N	4539.047	4539.033			
93	45391010093	45391010093 - N	4539.047	4539.033			
94	45391010094	45391010094 - N	4539.047	4539.033			
95	45391010095	45391010095 - N	4539.047	4539.033			
96	45391010096	45391010096 - N	4539.047	4539.033			
97	45391010097	45391010097 - N	4539.002	4539.035			
98	45391010098	45391010098 - N	4539.002	4539.035			
99	45391010099	45391010099 - N	4539.002	4539.035			
100	45391010100	45391010100 - N	4539.002	4539.035	1.47 ✓	2.47 ✓	
101	45391010101	45391010101 - N	4539.002	4539.035			
102	45391010102	45391010102 - N	4539.002	4539.035			
103	45391010103	45391010103 - N	4539.024	4539.007			
104	45391010104	45391010104 - N	4539.024	4539.007			
105	45391010105	45391010105 - N	4539.024	4539.007			2.31 x 10 <sup>-3</sup> ✓
106	45391010106	45391010106 - N	4539.024	4539.007			
107	45391010107	45391010107 - N	4539.024	4539.007			
108	45391010108	45391010108 - N	4539.024	4539.007			



**Product :** TN 300-2-8  
**Project :** Honeywell Sediment Consolidation, NY

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 <sup>2</sup> )	Thickness (mils)	Carbon Black (%)	Transmissivity (m <sup>2</sup> /sec)
45391010082 - N	ECUX887436	0.9527				
45391010083 - N	ECUX887436	0.9527				
45391010084 - N	ECUX887436	0.9527				
45391010085 - N	ECUX887436	0.9527				
45391010086 - N	ECUX887436	0.9527				
45391010087 - N	ECUX887436	0.9527				
45391010088 - N	ECUX887436	0.9527				
45391010089 - N	ECUX887436	0.9527				
45391010090 - N	ECUX887436	0.9527 ✓	0.419	335 ✓	2.25 ✓	
45391010091 - N	ECUX887436	0.9527				
45391010092 - N	ECUX887436	0.9527				
45391010093 - N	ECUX887436	0.9527				
45391010094 - N	ECUX887436	0.9527				
45391010095 - N	ECUX887436	0.9527				
45391010096 - N	ECUX887436	0.9527				
45391010097 - N	ECUX887436	0.9527				
45391010098 - N	ECUX887436	0.9527				
45391010099 - N	ECUX887436	0.9527				
45391010100 - N	ECUX887436	0.9527 ✓	0.422	331 ✓	2.43 ✓	
45391010101 - N	ECUX887436	0.9527				
45391010102 - N	ECUX887436	0.9527				
45391010103 - N	ECUX887436	0.9527				
45391010104 - N	ECUX887436	0.9527				
45391010105 - N	ECUX887436	0.9527				
45391010106 - N	ECUX887436	0.9527				
45391010107 - N	ECUX887436	0.9527				
45391010108 - N	ECUX887436	0.9527				



**Product : TN 300-2-8**

**Project : Honeywell Sediment Consolidation, NY**

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 <sup>2</sup> /sec)
			Side A	Side B	Minimum	Average	
109	45391010109	45391010109 - N	4539.046	4539.042			
110	45391010110	45391010110 - N	4539.046	4539.042	1.59 ✓	2.04 ✓	
111	45391010111	45391010111 - N	4539.046	4539.042			
112	45391010112	45391010112 - N	4539.046	4539.042			
113	45391010113	45391010113 - N	4539.046	4539.042			
114	45391010114	45391010114 - N	4539.046	4539.042			
115	45391010115	45391010115 - N	4539.015	4539.039			
116	45391010116	45391010116 - N	4539.015	4539.039			
117	45391010117	45391010117 - N	4539.015	4539.039			
118	45391010118	45391010118 - N	4539.015	4539.039			
119	45391010119	45391010119 - N	4539.015	4539.039			
120	45391010120	45391010120 - N	4539.015	4539.039	1.54 ✓	2.63 ✓	
121	45391010121	45391010121 - N	4539.001	4539.003			
122	45391010122	45391010122 - N	4539.001	4539.003			
123	45391010123	45391010123 - N	4539.001	4539.003			
124	45391010124	45391010124 - N	4539.001	4539.003			
125	45391010125	45391010125 - N	4539.001	4539.003			
126	45391010126	45391010126 - N	4539.001	4539.003			
127	45391010127	45391010127 - N	4539.032	4539.004			
128	45391010128	45391010128 - N	4539.032	4539.004			
129	45391010129	45391010129 - N	4539.032	4539.004			
130	45391010130	45391010130 - N	4539.032	4539.004	1.64 ✓	1.99 ✓	
131	45391010131	45391010131 - N	4539.032	4539.004			
132	45391010132	45391010132 - N	4539.032	4539.004			
133	45391010133	45391010133 - N	4539.009	4539.026			
134	45391010134	45391010134 - N	4539.009	4539.026			
135	45391010135	45391010135 - N	4539.009	4539.026			



**Product :** TN 300-2-8  
**Project :** Honeywell Sediment Consolidation, NY

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 <sup>2</sup> )	Thickness (mils)	Carbon Black (%)	Transmissivity (m <sup>2</sup> /sec)
45391010109 - N	ECUX887436	0.9527				
45391010110 - N	ECUX887436	0.9527 ✓	0.415	336 ✓	2.64 ✓	
45391010111 - N	ECUX887436	0.9527				
45391010112 - N	ECUX887436	0.9527				
45391010113 - N	ECUX887436	0.9527				
45391010114 - N	ECUX887436	0.9527				
45391010115 - N	ECUX887436	0.9527				
45391010116 - N	ECUX887436	0.9527				
45391010117 - N	ECUX887436	0.9527				
45391010118 - N	ECUX887436	0.9527				
45391010119 - N	ECUX887436	0.9527 ✓				
45391010120 - N	ECUX887436	0.9527 ✓	0.412	332 ✓	2.56 ✓	
45391010121 - N	ECUX887436	0.9527				
45391010122 - N	ECUX887436	0.9527				
45391010123 - N	ECUX887436	0.9527				
45391010124 - N	ECUX887436	0.9527				
45391010125 - N	ECUX887436	0.9527				
45391010126 - N	ECUX887436	0.9527				
45391010127 - N	ECUX887436	0.9527				
45391010128 - N	ECUX887436	0.9527				
45391010129 - N	ECUX887436	0.9527 ✓				
45391010130 - N	ECUX887436	0.9527 ✓	0.420	334 ✓	2.23 ✓	
45391010131 - N	ECUX887436	0.9527				
45391010132 - N	ECUX887436	0.9527				
45391010133 - N	ECUX887436	0.9527				
45391010134 - N	ECUX887436	0.9527				
45391010135 - N	ECUX887436	0.9527				



**Product : TN 300-2-8**

**Project : Honeywell Sediment Consolidation, NY**

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 <sup>2</sup> /sec)
			Side A	Side B	Minimum	Average	
136	45391010136	45391010136 - N	4539.009	4539.026			
137	45391010137	45391010137 - N	4539.009	4539.026			
138	45391010138	45391010138 - N	4539.009	4539.026			
139	45391010139	45391010139 - N	4539.048	4539.038			
140	45391010140	45391010140 - N	4539.048	4539.038	1.57 ✓	2.19 ✓	2.8 × 10 <sup>-3</sup> ✓



**Product :** TN 300-2-8  
**Project :** Honeywell Sediment Consolidation, NY

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 <sup>2</sup> )	Thickness (mils)	Carbon Black (%)	Transmissivity (m <sup>2</sup> /sec)
45391010136 - N	ECUX887436	0.9527				
45391010137 - N	ECUX887436	0.9527				
45391010138 - N	ECUX887436	0.9527				
45391010139 - N	ECUX887436	0.9527				
45391010140 - N	ECUX887436	0.9527 ✓	0.414	337 ✓	2.50 ✓	



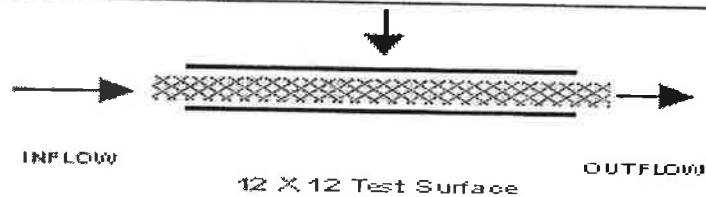


# ASTM D 4716

**Client:** Chenango Contraction, Inc.  
**Project:** Honeywell Sediment Consolidation, NY  
**Product:** TN 300-2-8

**Job #** 4539

## Test Configuration:



## Test Information:

**Boundary Conditions:** Steel Plate  
Geocomposite  
Steel Plate

**Normal Load:** 3000

**Gradient:** 0.1

**Seating Time:** 15 minutes ✓

**Flow Direction:** MD

## Test Results:

Roll No.	Pressure, psf	Gradient	Transmissivity, m <sup>2</sup> /sec
45391010001	3000 ✓	0.1 ✓	15 minutes
45391010035			2.55 x 10 <sup>-3</sup> ✓
45391010070			2.44 x 10 <sup>-3</sup> ✓
45391010105			2.26 x 10 <sup>-3</sup> ✓
45391010140			2.31 x 10 <sup>-3</sup> ✓
			2.8 x 10 <sup>-3</sup> ✓



## POLYETHYLENE RESIN CERTIFICATION

**Customer Name :** Chenango Contraction, Inc.  
**Project Name :** Honeywell Sediment Consolidation, NY  
**Geocomposite Manufacturer :** SKAPS Industries  
**Geocomposite Production Plant :** Commerce, GA  
**Geocomposite Brand Name :** TN 300-2-8

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*
Marco Polo International	Chevron, TX	HDPE	ECUX887436	Density	ASTM D1505	gm / cc	0.9470 ✓	0.9475 ✓
				Melt flow Index	ASTM D1238 <sup>(a)</sup>	gm / 10 min	0.25	0.25

(a) Condition 190/2.16

\* Data from SKAPS Quality Control



**Product :** TN 300-2-8  
**Project :** Honeywell Sediment Consolidation, NY

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.	XMD TENSILE lbs.	MD TRAP lbs.	XMD TRAP lbs.	PUNCTURE lbs.	AOS us sieve	PERM-ITY sec <sup>-1</sup>
45391010001	4539.030	8.48 ✓	228 ✓	236 ✓	96 ✓	118 ✓	135 ✓	80 ✓	1.34 ✓
	4539.027	8.27 ✓	226 ✓	237 ✓	102 ✓	114 ✓	140 ✓	80 ✓	1.34 ✓
45391010035	4539.041	8.52 ✓	227 ✓	239 ✓	100 ✓	110 ✓	137 ✓	80 ✓	1.34 ✓
	4539.010	8.46 ✓	226 ✓	245 ✓	96 ✓	111 ✓	136 ✓	80 ✓	1.34 ✓
45391010070	4539.044	8.52 ✓	227 ✓	239 ✓	100 ✓	110 ✓	137 ✓	80 ✓	1.34 ✓
	4539.020	8.45 ✓	230 ✓	240 ✓	102 ✓	114 ✓	140 ✓	80 ✓	1.34 ✓
45391010105	4539.024	8.45 ✓	230 ✓	240 ✓	102 ✓	114 ✓	140 ✓	80 ✓	1.34 ✓
	4539.007	8.53 ✓	234 ✓	241 ✓	104 ✓	117 ✓	132 ✓	80 ✓	1.34 ✓
45391010140	4539.048	8.27 ✓	229 ✓	245 ✓	100 ✓	110 ✓	137 ✓	80 ✓	1.34 ✓
	4539.038	8.31 ✓	233 ✓	243 ✓	96 ✓	118 ✓	135 ✓	80 ✓	1.34 ✓



# SKAPS Industries

571 Industrial Parkway  
Commerce, GA 30529  
Ph: 706-336-7000 Fax: 706-336-7007

## STRAIGHT BILL OF LADING ORIGINAL-NOT NEGOTIABLE

Bill of Lading #: C00000070  
Ship Date: 11/12/11  
Sales Order #: C000005  
Customer Name: Chenango Contracting, Inc.  
Cust. P.O. #: 2279  
Ship Via: Flatbed  
Delivery Terms: Plant / PPA  
Container #:  
Seal #:

### SHIP-TO:

Project: Honeywell Sediment Consolidation, NY  
Address: 522 Gearlock Road  
City, State, Zip: Camillus, NY, 13031  
Contact: Ron  
Phone: 716-564-7033

Product Code: TN300-2-8

No	Roll #	Sq. Ft.
1	0045391010040	2,380.00
2	0045391010041	2,520.00
3	0045391010042	2,660.00
4	0045391010043	2,520.00
5	0045391010044	2,800.00
6	0045391010045	2,520.00
7	0045391010046	2,520.00
8	0045391010047	2,520.00
9	0045391010048	2,520.00
10	0045391010049	2,520.00
11	0045391010050	2,520.00
12	0045391010051	2,520.00
13	0045391010052	2,520.00
14	0045391010053	2,520.00
15	0045391010054	2,520.00
16	0045391010055	2,520.00
17	0045391010056	2,520.00
18	0045391010057	2,520.00
19	0045391010058	2,520.00
20	0045391010059	2,520.00
21	0045391010060	2,520.00
22	0045391010061	2,520.00
23	0045391010062	2,520.00
24	0045391010063	2,520.00
25	0045391010064	2,520.00
26	0045391010065	2,520.00
27	0045391010066	2,520.00

Total Rolls: 27  
Total Sq Feet: 68,320.00  
Total Weight (lbs): 86,480.00

Bags of Ties: 2

Driver sign below if you have received above mentioned items:

Driver's Sign: *Michael D. Brown*

SIGN HERE FOR SHIPPER: *Julio Rodriguez*

SHIPPER ADDRESS:

571 INDUSTRIAL PKWY.  
COMMERCE, GA 30529

ATTN RECEIVER: Please sign below if you have received the items mentioned on the BOL and any discrepancies must be reported to SKAPS Industries within 7 days of receipt of goods.

Receiver Print Name

Receiver's Signature

Receive Date

Receiver's Company Name

### Driver Requirements:

- 1) For Monday delivery driver must call on Friday.
- 2) Driver must call 706-336-7000 when unloaded.
- 3) Driver must call and advise of any delay in transit.
- 4) A copy of this bill-of-lading must accompany freight invoice, failure to do this will result in delayed payments.

Delivery Timings: 7:30 am to 3:30 pm

Driver's Name: *Tim Sprague*

Driver's Sign: *[Signature]*

Driver's Cell Phone #: *207 944-9833*

Trucking Co.: *HARTT TRAN*

Trucking Co. Phone #: *207 942-1106*

Broker: *Cheetah*

Date: 11/12/11

Truck Departure Time: *940*

### Comments:

Driver please call 24 hours prior to delivery

*Daryl Wilton 27 roll ok 11/14/11*

### CARRIER MUST COLLECT THE FREIGHT FROM THE BROKER ONLY

Received at Commerce, GA from SKAPS Industries the property described above, in apparent good order except as noted (contents and condition of packages unknown), marked, consigned, and destined as indicated above, which said Carrier (the word "Carrier" being understood throughout this Shipping Order as meaning the person or corporation in possession of the property) agrees to carry to the place of delivery at said destination. It is mutually agreed as to each Carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any of said property, that every service performed here under shall be subject to either: (a) if the shipper noted herein is SKAPS Industries as indicated by the designation of the "Shipper" to be SKAPS Industries, then the Shipper and Carrier are subject to the terms and conditions contained in the Contract for truck Transportation existing between the parties or (b) if the Shipper noted herein is not SKAPS Industries then SKAPS Industries is acting solely as the agent for the denoted Shipper, and thus every aspect of the service to be performed here under between the Shipper and the Carrier shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Official Southern, Western, and Illinois Freight Classifications in effect on the date hereof, if this is a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. When acting in the capacity of an agent for a Shipper in placing the material in transit on behalf of a Shipper, SKAPS Industries accepts no liability for loss of cargo, damage to containers, or any other consequences occurring during transportation. Carrier having agreed that the transportation arrangement was initiated by the Shipper and not by SKAPS Industries Subject to the above terms and conditions as to which party is the Shipper, Shipper hereby certifies that he is familiar with the terms and conditions that govern the transportation of this shipment, and the said terms and conditions are hereby agreed and accepted for himself and his assigns.







## STRAIGHT BILL OF LADING ORIGINAL-NOT NEGOTIABLE

## SKAPS Industries

571 Industrial Parkway  
Commerce, GA 30529  
Ph: 706-336-7000 Fax: 706-336-7007

Bill of Lading #: C00000083

Ship Date: 11/14/11

Sales Order #: C000005

Customer Name: Chenango Contracting, Inc.

Cust. P.O. #: 2279

Ship Via: Flatbed

Delivery Terms: Plant / PPA

Container #:

Seal #:

## SHIP-TO:

Project: Honeywell Sediment Consolidation, NY  
Address: 522 Gearlock Road  
City, State, Zip: Camillus, NY, 13031  
Contact: Ron  
Phone: 716-564-7033

## Product Code: TN300-2-8

No	Roll #	Sq. Ft.
1	0045391010067	2,520.00
2	0045391010068	2,520.00
3	0045391010069	2,520.00
4	0045391010070	2,520.00
5	0045391010071	1,820.00
6	0045391010072	2,520.00
7	0045391010073	2,520.00
8	0045391010074	2,520.00
9	0045391010075	2,520.00
10	0045391010076	2,520.00
11	0045391010077	2,520.00
12	0045391010078	2,520.00
13	0045391010079	2,520.00
14	0045391010080	2,520.00
15	0045391010081	2,100.00
16	0045391010082	2,520.00
17	0045391010083	2,520.00
18	0045391010084	2,520.00
19	0045391010085	2,520.00
20	0045391010086	2,520.00
21	0045391010087	2,520.00
22	0045391010088	2,520.00
23	0045391010089	2,520.00
24	0045391010090	2,520.00
25	0045391010092	2,800.00
26	0045391010093	2,520.00
27	0045391010094	2,520.00
28	0045391010127	980.00
29	00453910101271	910.00

Total Rolls: 29  
Total Sq Feet: 69,090.00  
Total Weight (lbs): 38,355.00

Bags of Ties: 2

Driver sign below if you have received above  
mentioned items:

Driver's Sign: \_\_\_\_\_

SIGN HERE FOR SHIPPER: \_\_\_\_\_

SHIPPER ADDRESS: 571 INDUSTRIAL PKWY,  
COMMERCE, GA 30529

ATTN RECEIVER: Please sign below if you have received the  
items mentioned on the BOL and any discrepancies must be  
reported to SKAPS Industries within 7 days of receipt of goods.

Receiver Print Name \_\_\_\_\_

Receiver's Signature \_\_\_\_\_

Receive Date \_\_\_\_\_

Receiver's Company Name \_\_\_\_\_

## Driver Requirements:

- 1) For Monday delivery driver must call on Friday.
- 2) Driver must call 706-336-7000 when unloaded.
- 3) Driver must call and advise of any delay in transit.
- 4) A copy of this bill-of-lading must accompany freight invoice, failure to do this will result in delayed payments.

Delivery Timings: 7:30 am to 3:30 pm

Driver's Name: \_\_\_\_\_

Driver's Sign: \_\_\_\_\_

Driver's Cell Phone #: \_\_\_\_\_

Trucking Co.: \_\_\_\_\_

Trucking Co. Phone #: \_\_\_\_\_

Broker: Landstar

Date: 11/14/11

Truck Departure Time: \_\_\_\_\_

## Comments:

Driver please call 24 hours prior to delivery

11/15/11 29 rolls Dail William OK  
Michael Robson

## CARRIER MUST COLLECT THE FREIGHT FROM THE BROKER ONLY

Received at Commerce, GA from SKAPS Industries the property described above, in apparent good order except as noted (contents and condition of packages unknown), marked, consigned, and destined as indicated above, which said Carrier (the word "Carrier" being understood throughout this Shipping Order as meaning the person or corporation in possession of the property) agrees to carry to the place of delivery at said destination. It is mutually agreed as to each Carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any of said property, that every service performed here under shall be subject to either: (a) if the shipper noted herein is SKAPS Industries as indicated by the designation of the "Shipper" to be SKAPS Industries, then the Shipper and Carrier are subject to the terms and conditions contained in the Contract for truck Transportation existing between the parties or (b) if the Shipper noted herein is not SKAPS Industries then SKAPS Industries is acting solely as the agent for the denoted Shipper, and thus every aspect of the service to be performed here under between the Shipper and the Carrier shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Official Southern, Western, and Illinois Freight Classifications in effect on the date hereof, if this is a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. When acting in the capacity of an agent for a Shipper in placing the material in transit on behalf of a Shipper, SKAPS Industries accepts no liability for loss of cargo, damage to containers, or any other consequences occurring during transportation. Carrier having agreed that the transportation arrangement was initiated by the Shipper and not by SKAPS Industries Subject to the above terms and conditions as to which party is the Shipper, Shipper hereby certifies that he is familiar with the terms and conditions that govern the transportation of this shipment, and the said terms and conditions are hereby agreed and accepted for himself and his assigns.

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## STRAIGHT BILL OF LADING ORIGINAL-NOT NEGOTIABLE

## SKAPS Industries

571 Industrial Parkway  
Commerce, GA 30529  
Ph: 7060-336-7000 Fax: 706-336-7007

Bill of Lading #: C00000088  
Ship Date: 11/15/11  
Sales Order #: C000005  
Customer Name: Chenango Contracting, Inc.  
Cust. P.O. #: 2279  
Ship Via: Flatbed  
Delivery Terms: Plant / PPA  
Container #:  
Seal #:

## SHIP-TO:

Project: Honeywell Sediment Consolidation, NY  
Address: 522 Gearlock Road  
City, State, Zip: Camillus, NY, 13031  
Contact: Ron  
Phone: 716-564-7033

## Product Code: TN300-2-8

No	Roll #	Sq. Ft.	
1	0045391010028	2,380.00	-170
2	0045391010029	2,380.00	-170
3	0045391010030	2,380.00	-170
4	0045391010031	2,380.00	-170
5	0045391010032	2,380.00	-170
6	0045391010033	2,380.00	-170
7	0045391010034	2,380.00	-170
8	0045391010035	2,380.00	-170
9	0045391010036	2,380.00	
10	0045391010037	2,380.00	
11	0045391010038	2,380.00	-170
12	0045391010039	2,380.00	-170
13	0045391010091	2,520.00	-180
14	0045391010095	2,520.00	-180
15	0045391010123	2,240.00	-160
16	0045391010124	2,240.00	-160
17	0045391010125	2,240.00	-160
18	0045391010126	2,240.00	-160
19	0045391010128	1,470.00	-115 105
20	00453910101281	1,610.00	-160
21	0045391010129	2,240.00	
22	0045391010130	2,240.00	
23	0045391010131	2,175.00	-150
24	0045391010132	2,175.00	-150
25	0045391010133	1,960.00	-140
26	0045391010134	2,175.00	-150
27	0045391010135	2,175.00	-150

Total Rolls: 27  
Total Sq Feet: 60,780.00  
Total Weight (lbs): 31,840.00

Bags of Ties: 2

Driver sign below if you have received above mentioned items:

Driver's Sign: SIGN HERE FOR SHIPPER: 

SHIPPER ADDRESS: 571 INDUSTRIAL PKWY.  
COMMERCE, GA 30529

ATTN RECEIVER: Please sign below if you have received the items mentioned on the BOL and any discrepancies must be reported to SKAPS Industries within 7 days of receipt of goods.

Receiver Print Name

Receiver's Signature

Receive Date

Receiver's Company Name

## Driver Requirements:

- 1) For Monday delivery driver must call on Friday.
- 2) Driver must call 706-336-7000 when unloaded.
- 3) Driver must call and advise of any delay in transit.
- 4) A copy of this bill-of-lading must accompany freight invoice, failure to do this will result in delayed payments.

Delivery Timings: 7:30 am to 3:30 pm

Driver's Name: M. Ossindetkov

Driver's Sign: 

Driver's Cell Phone #: 706 498 4424

Trucking Co.: SFARH

Trucking Co. Phone #:

Broker: Load Pro

Date: 11/15/11

Truck Departure Time:

## Comments:

Driver please call 24 hours prior to delivery

11/17/11 Dan Williams OK 27 roll  
Michael Dobson

## CARRIER MUST COLLECT THE FREIGHT FROM THE BROKER ONLY

Received at Commerce, GA from SKAPS Industries the property described above, in apparent good order except as noted (contents and condition of packages unknown), marked, consigned, and destined as indicated above, which said Carrier (the word "Carrier" being understood throughout this Shipping Order as meaning the person or corporation in possession of the property) agrees to carry to the place of delivery at said destination. It is mutually agreed as to each Carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any of said property, that every service performed here under shall be subject to either: (a) if the shipper noted herein is SKAPS Industries as indicated by the designation of the "Shipper" to be SKAPS Industries, then the Shipper and Carrier are subject to the terms and conditions contained in the Contract for truck Transportation existing between the parties or (b) if the Shipper noted herein is not SKAPS Industries then SKAPS Industries is acting solely as the agent for the denoted Shipper, and thus every aspect of the service to be performed here under between the Shipper and the Carrier shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Official Southern, Western, and Illinois Freight Classifications in effect on the date hereof, if this is a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. When acting in the capacity of an agent for a Shipper in placing the material in transit on behalf of a Shipper, SKAPS Industries accepts no liability for loss of cargo, damage to containers, or any other consequences occurring during transportation. Carrier having agreed that the transportation arrangement was initiated by the Shipper and not by SKAPS Industries Subject to the above terms and conditions as to which party is the Shipper, Shipper hereby certifies that he is familiar with the terms and conditions that govern the transportation of this shipment, and the said terms and conditions are hereby agreed and accepted for himself and his assigns.

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## APPENDIX D

### Geosynthetic Conformance Test Results

- Geomembrane
- Geotextile
- Geonet Composite

# Geomembrane



Client:	Parson Engineering		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	cwd
Test Date:	11/07/11	Checked By:	bfs
Sample ID:	Roll #443557 (GM-9)		
Sample Description:	Black, 60 mil textured HDPE geomembrane		

## Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	Pressure:	2.0 oz
Presser Foot:	cone point	Loading Time:	5 seconds
Specimen Size:	2-Inch-diameter		

Measurement Number	Thickness, mils
1	71.4
2	75.7
3	65.5
4	70.5
5	67.2
6	72.4
7	70.0
8	69.6
9	65.8
10	68.0
Average	69.6
Standard Deviation	2.98
Coefficient of Variation, %	4.28

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	ad
Test Date:	11/07/11	Checked By:	bfs
Sample ID:	Roll #443557 (GM-9)		
Description:	Black, 60 mil textured HDPE geomembrane		

## Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes by ASTM D 6693

Testing Machine:	Instron 1123	Testing Speed:	2.0 in./min.
Grip Separation:	2.5 in.	Grips:	ATS pneumatic
Temperature, °F:	66.2 - 73.4	Die Type:	IV

Direction	Specimen Number	Thickness, mil	YIELD			BREAK		
			Tensile Strength,		Elongation,	Tensile Strength,		Elongation,
			ppi	psi	%	ppi	psi	%
Machine	1	62.9	164	2601	19	205	3259	435
	2	60.5	163	2691	18	203	3348	507
	3	65.8	165	2505	15	282	4283	491
	4	64.5	165	2561	21	237	3677	476
	5	67.5	171	2528	22	249	3689	488
	Average	64.2	165	2577	19	235	3651	479
	Standard Deviation	2.69	3.09	73.06	2.7	33.0	402.2	27.2
Cross Machine	1	60.0	182	3033	14	208	3477	600
	2	65.8	176	2668	18	179	2723	523
	3	64.7	172	2666	15	195	3010	582
	4	66.4	176	2653	15	196	2959	577
	5	66.5	184	2770	13	188	2824	529
	Average	64.7	178	2758	15	193	2999	562
	Standard Deviation	2.73	4.87	161.0	1.9	10.8	290.1	34.2

Comments: yield gauge length = 1.3 in.  
break gauge length = 2.0 in.  
ppi = pounds per inch  
psi = pounds per square inch

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parson Engineering		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	bfs
Test Date:	11/07/11	Checked By:	jdt
Sample ID:	Roll #443557 (GM-9)		
Description:	Black, 60 mil textured HDPE geomembrane		

**Initial Tear Resistance of Plastic Film and Sheeting  
by ASTM D 1004**  
constant rate of extension (CRE) tensile testing machine

Specimen Number	Machine Direction		Cross Machine Direction	
	Thickness, mil	Tear Resistance, lb	Thickness, mil	Tear Resistance, lb
1	67.7	64	69.2	65
2	63.3	60	67.4	62
3	69.0	64	73.4	61
4	72.8	63	68.1	57
5	68.8	58	69.2	57
6	70.6	59	68.8	61
7	66.6	56	67.2	58
8	68.2	64	65.1	56
9	70.1	61	70.8	62
10	72.5	64	69.0	58
Average	68.9	61	68.8	60
Standard Deviation	2.82	2.8	2.21	3.0

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: ad
Test Date:	11/04/11	Checked By: bfs
Sample ID:	Roll #443557 (GM-9)	
Description:	Black, 60 mil textured HDPE geomembrane	

## Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	149
2	133
3	160
4	160
5	148
Average	150
Standard Deviation	11.2
Coefficient of Variation, %	7.44

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parson Engineering
Project:	Geosynthetic Testing
Project Location:	Syracuse, NY
GTX Project No.:	10596
Test Date:	11/07/11
Tested By:	bfs
Checked By:	jdt

## Density of Plastics by the Density-Gradient Technique by ASTM D 1505

Sample ID	Spec. #	Density, g/cm <sup>3</sup>
Roll #443557 (GM-9) Black, 60 mil textured HDPE geomembrane	1	0.9416
	2	0.9411
	3	0.9408
	AVG.	0.9412

Sample ID	Spec. #	Density, g/cm <sup>3</sup>
Roll #443683 (GM-10) Black, 60 mil textured HDPE geomembrane	1	0.9418
	2	0.9420
	3	0.9419
	AVG.	0.9419

Comments:

23°C

Temperature:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parson Engineering	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: ad
Test Date:	11/06/11	Checked By: bfs

## Carbon Black in Olefin Plastics by ASTM D 1603

Sample ID	Specimen Number	Carbon Black, %
Roll #443557 (GM-9) Black, 60 mil textured HDPE geomembrane	1	2.41
	2	2.42
	Average	2.42

Sample ID	Specimen Number	Carbon Black, %
Roll #443683 (GM-10) Black, 60 mil textured HDPE geomembrane	1	2.56
	2	2.50
	Average	2.53

--	--	--

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parson Engineering	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: bfs
Test Date:	11/04/11	Checked By: jdt

## Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics by ASTM D 5596

Sample ID	Specimen Number	Category Rating Random Field of View	
		R <sub>1</sub>	R <sub>2</sub>
Roll #443557 (GM-9) Black, 60 mil textured HDPE geomembrane	1	1	1
	2	1	1
	3	1	1
	4	1	1
	5	1	1
	Average	1	1
	Lowest Quality Observed	1	1

Sample ID	Specimen Number	Category Rating Random Field of View	
		R <sub>1</sub>	R <sub>2</sub>
Roll #443683 (GM-10) Black, 60 mil textured HDPE geomembrane	1	1	1
	2	1	1
	3	1	1
	4	1	1
	5	1	1
	Average	1	1
	Lowest Quality Observed	1	1

Comments: Method of preparation: Microtome

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parson Engineering		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	cwd
Test Date:	11/07/11	Checked By:	bfs
Sample ID:	Roll #443683 (GM-10)		
Sample Description:	Black, 60 mil textured HDPE geomembrane		

## Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	Pressure:	2.0 oz
Presser Foot:	cone point	Loading Time:	5 seconds
Specimen Size:	2-inch-diameter		

Measurement Number	Thickness, mils
1	66.0
2	66.8
3	67.5
4	67.8
5	74.0
6	70.2
7	71.7
8	70.9
9	66.6
10	64.9
Average	68.6
Standard Deviation	2.76
Coefficient of Variation, %	4.03

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	ad
Test Date:	11/07/11	Checked By:	bfs
Sample ID:	Roll #443683 (GM-10)		
Description:	Black, 60 mil textured HDPE geomembrane		

## Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes by ASTM D 6693

Testing Machine:	Instron 1123	Testing Speed:	2.0 in./min.
Grip Separation:	2.5 in.	Grips:	ATS pneumatic
Temperature, °F:	66.2 - 73.4	Die Type:	IV

Direction	Specimen Number	Thickness, mil	YIELD			BREAK		
			Tensile Strength,		Elongation,	Tensile Strength,		Elongation,
			ppi	psi	%	ppi	psi	%
Machine	1	63.3	163	2581	21	240	3796	486
	2	62.1	163	2628	18	218	3504	461
	3	68.0	156	2301	17	211	3104	444
	4	65.5	169	2574	19	211	3225	435
	5	63.6	160	2522	15	210	3300	488
	Average	64.5	162	2521	18	218	3386	463
	Standard Deviation	2.31	4.45	128.8	2.2	12.8	271.3	24.0
Cross Machine	1	63.3	182	2869	14	194	3070	581
	2	61.0	181	2972	13	207	3390	598
	3	71.4	179	2500	13	189	2650	534
	4	68.0	169	2492	14	178	2611	525
	5	66.6	172	2585	18	180	2704	572
	Average	66.1	177	2684	14	190	2885	562
	Standard Deviation	4.06	5.50	222.2	2.1	11.8	336.1	31.3

Comments: yield gauge length = 1.3 in.  
break gauge length = 2.0 in.  
ppi = pounds per inch  
psi = pounds per square inch

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parson Engineering		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	bfs
Test Date:	11/07/11	Checked By:	jdt
Sample ID:	Roll #443683 (GM-10)		
Description:	Black, 60 mil textured HDPE geomembrane		

**Initial Tear Resistance of Plastic Film and Sheeting  
by ASTM D 1004  
constant rate of extension (CRE) tensile testing machine**

Specimen Number	Machine Direction		Cross Machine Direction	
	Thickness, mil	Tear Resistance, lb	Thickness, mil	Tear Resistance, lb
1	67.4	64	72.2	56
2	68.9	59	68.8	62
3	65.9	57	65.1	66
4	65.7	57	68.1	55
5	67.1	63	71.1	58
6	71.2	64	75.1	56
7	66.6	62	64.2	63
8	71.1	64	75.3	62
9	72.6	63	71.2	54
10	68.2	54	68.5	59
Average	68.5	61	70.0	59
Standard Deviation	2.43	3.7	3.76	4.0

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: ad
Test Date:	11/04/11	Checked By: bfs
Sample ID:	Roll #443683 (GM-10)	
Description:	Black, 60 mil textured HDPE geomembrane	

## Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	152
2	146
3	142
4	143
5	141
Average	145
Standard Deviation	4.19
Coefficient of Variation, %	2.90

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

See Interface Shear Testing  
Results for Sample GM-11



Client:	Parsons Engineering		
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2		
Project Location:	Syracuse, NY		
GTX #:	11644	Tested By:	ad
Test Date:	03/27/12	Checked By:	bfs
Sample ID:	Roll #311337-12		
Sample Description:	Black, microspike 60 mil HDPE geomembrane <i>GM-12</i>		

## Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	Pressure:	2.0 oz
Presser Foot:	cone point	Loading Time:	5 seconds
Specimen Size:	2-inch-diameter		

Measurement Number	Thickness, mils
1	69.4
2	69.6
3	67.9
4	68.7
5	66.4
6	66.3
7	65.9
8	65.6
9	61.8
10	62.4
Average	66.4
Standard Deviation	2.55
Coefficient of Variation, %	3.84

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2		
Project Location:	Syracuse, NY		
GTX #:	11644	Tested By:	ad
Test Date:	03/27/12	Checked By:	bfs
Sample ID:	Roll #311337-12		
Description:	Black, microspike 60 mil HDPE geomembrane		GM-12

## Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes by ASTM D 6693

Testing Machine:	Instron 1123	Testing Speed:	2.0 in./min.
Grip Separation:	2.5 in.	Grips:	ATS pneumatic
Temperature, °F:	66.2 - 73.4	Die Type:	IV

Direction	Specimen Number	Thickness, mil	YIELD			BREAK		
			Tensile Strength,		Elongation,	Tensile Strength,		Elongation,
			ppi	psi	%	ppi	psi	%
Machine	1	67.4	159	2358	19	176	2611	414
	2	67.7	158	2336	17	193	2845	419
	3	62.0	151	2437	21	191	3090	423
	4	65.5	158	2412	18	181	2759	421
	5	66.6	165	2481	15	184	2766	415
	Average	65.8	158	2405	18	185	2814	418
	Standard Deviation	2.33	5.00	58.71	2.2	7.08	175.9	3.85
Cross Machine	1	66.1	172	2605	15	171	2584	505
	2	67.6	167	2477	13	172	2546	503
	3	63.9	162	2543	14	166	2593	510
	4	63.5	164	2580	13	162	2556	506
	5	65.0	166	2547	13	178	2731	543
	Average	65.2	166	2551	14	170	2602	513
	Standard Deviation	1.68	3.82	48.28	0.9	5.91	74.60	16.7

Comments: yield gauge length = 1.3 in.  
break gauge length = 2.0 in.  
ppi = pounds per inch  
psi = pounds per square inch

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parsons Engineering		
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2		
Project Location:	Syracuse, NY		
GTX #:	11644	Tested By:	ad
Test Date:	03/28/12	Checked By:	bfs
Sample ID:	Roll #311337-12		
Description:	Black, microspike 60 mil HDPE geomembrane <i>GM-12</i>		

**Initial Tear Resistance of Plastic Film and Sheeting**  
**by ASTM D 1004**  
 constant rate of extension (CRE) tensile testing machine

Specimen Number	Machine Direction		Cross Machine Direction	
	Thickness, mil	Tear Resistance, lb	Thickness, mil	Tear Resistance, lb
1	67.8	61	67.4	61
2	67.3	64	66.4	58
3	66.9	64	66.8	62
4	67.2	61	66.9	62
5	66.7	61	68.6	58
6	69.7	65	69.5	62
7	68.4	60	65.9	57
8	62.8	58	63.8	56
9	64.7	59	62.3	53
10	61.8	56	64.3	56
Average	66.3	61	66.2	58
Standard Deviation	2.48	3.0	2.21	3.0

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2		
Project Location:	Syracuse, NY		
GTX #:	11644	Tested By:	ad
Test Date:	03/30/12	Checked By:	bfs
Sample ID:	Roll #311337-12		GM-12
Description:	Black, microspike 60 mil HDPE geomembrane		

## Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	138
2	137
3	150
4	141
5	136
Average	140
Standard Deviation	5.91
Coefficient of Variation, %	4.21

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering
Project:	Onondaga Lake Sediment Consolidation Area - Phase 2
Project Location:	Syracuse, NY
GTX Project No.:	11644
Test Date:	03/29/12
Tested By:	ad
Checked By:	bfs

### Density of Plastics by the Density-Gradient Technique by ASTM D 1505

Sample ID	Spec. #	Density, g/cm <sup>3</sup>
Roll #311337-12 <i>GM-12</i> Black, microspike 60 mil HDPE geomembrane	1	0.9417
	2	0.9419
	3	0.9419
	AVG.	0.9418
Sample ID	Spec. #	Density, g/cm <sup>3</sup>
Roll #311558-12 <i>GM-13</i> Black, microspike 60 mil HDPE geomembrane	1	0.9427
	2	0.9427
	3	0.9427
	AVG.	0.9427
Sample ID	Spec. #	Density, g/cm <sup>3</sup>
Roll #311680-12 <i>GM-14</i> Black, microspike 60 mil HDPE geomembrane	1	0.9430
	2	0.9432
	3	0.9433
	AVG.	0.9432

Comments: Temperature: 23° C

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering	
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2	
Project Location:	Syracuse, NY	
GTX #:	11644	Tested By: ad
Test Date:	03/28/12	Checked By: bfs

## Carbon Black in Olefin Plastics by ASTM D 1603

Sample ID	Specimen Number	Carbon Black, %
Roll #311337-12 <i>GM-12</i> Black, microspike 60 mil HDPE geomembrane	1	2.28
	2	2.24
	Average	2.26

Sample ID	Specimen Number	Carbon Black, %
Roll #311558-12 <i>GM-13</i> Black, microspike 60 mil HDPE geomembrane	1	2.33
	2	2.30
	Average	2.32

Sample ID	Specimen Number	Carbon Black, %
Roll #311680-12 <i>GM-14</i> Black, microspike 60 mil HDPE geomembrane	1	2.32
	2	2.29
	Average	2.31

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2		
Project Location:	Syracuse, NY		
GTX #:	11644	Tested By:	ad
Test Date:	03/27/12	Checked By:	bfs
Sample ID:	Roll #311558-12		GM-13
Sample Description:	Black, microspike 60 mil HDPE geomembrane		

## Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	Pressure:	2.0 oz
Presser Foot:	cone point	Loading Time:	5 seconds
Specimen Size:	2-inch-diameter		

Measurement Number	Thickness, mils
1	67.3
2	74.1
3	70.0
4	69.1
5	66.0
6	65.4
7	60.4
8	64.4
9	63.0
10	63.6
Average	66.3
Standard Deviation	3.75
Coefficient of Variation, %	5.66

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2		
Project Location:	Syracuse, NY		
GTX #:	11644	Tested By:	ad
Test Date:	03/27/12	Checked By:	bfs
Sample ID:	Roll #311558-12		GM-13
Description:	Black, microspike 60 mil HDPE geomembrane		

## Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes by ASTM D 6693

Testing Machine:	Instron 1123	Testing Speed:	2.0 in./min.
Grip Separation:	2.5 in.	Grips:	ATS pneumatic
Temperature, °F:	66.2 - 73.4	Die Type:	IV

Direction	Specimen Number	Thickness, mil	YIELD			BREAK		
			Tensile Strength,		Elongation,	Tensile Strength,		Elongation,
			ppi	psi	%	ppi	psi	%
Machine	1	70.7	168	2374	18	207	2922	461
	2	71.9	170	2364	18	206	2868	465
	3	69.4	168	2417	15	185	2670	466
	4	65.7	152	2316	19	204	3107	436
	5	63.8	146	2291	17	196	3072	430
	Average	68.3	161	2352	17	200	2928	452
	Standard Deviation	3.45	10.9	49.60	1.5	9.09	175.4	17.2
Cross Machine	1	59.9	164	2738	14	169	2817	529
	2	68.5	177	2590	13	183	2669	526
	3	65.0	179	2757	17	177	2722	494
	4	69.3	179	2578	13	214	3083	608
	5	64.4	167	2594	17	190	2956	593
	Average	65.4	173	2651	15	186	2849	550
	Standard Deviation	3.74	7.16	88.25	2.0	17.2	170.4	48.4

Comments: yield gauge length = 1.3 in.  
break gauge length = 2.0 in.  
ppi = pounds per inch  
psi = pounds per square inch

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2		
Project Location:	Syracuse, NY		
GTX #:	11644	Tested By:	ad
Test Date:	03/28/12	Checked By:	bfs
Sample ID:	Roll #311558-12		
Description:	Black, microspike 60 mil HDPE geomembrane <i>GM-13</i>		

**Initial Tear Resistance of Plastic Film and Sheeting**  
**by ASTM D 1004**  
 constant rate of extension (CRE) tensile testing machine

Specimen Number	Machine Direction		Cross Machine Direction	
	Thickness, mil	Tear Resistance, lb	Thickness, mil	Tear Resistance, lb
1	64.2	60	62.8	59
2	66.3	58	62.5	58
3	64.0	61	66.6	60
4	65.0	60	65.9	59
5	65.9	58	65.1	56
6	66.0	61	64.2	60
7	70.1	64	70.0	62
8	70.0	64	71.2	65
9	69.9	60	67.5	62
10	69.5	67	66.1	58
Average	67.1	61	66.2	60
Standard Deviation	2.51	2.7	2.84	2.5

Comments:

NOTES: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2		
Project Location:	Syracuse, NY		
GTX #:	11644	Tested By:	ad
Test Date:	03/30/12	Checked By:	bfs
Sample ID:	Roll #311558-12		
Description:	Black, microspike 60 mil HDPE geomembrane <i>GM-13</i>		

## Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	152
2	146
3	143
4	147
5	136
Average	145
Standard Deviation	5.99
Coefficient of Variation, %	4.13

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parsons Engineering		
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2		
Project Location:	Syracuse, NY		
GTX #:	11644	Tested By:	ad
Test Date:	03/27/12	Checked By:	bfs
Sample ID:	Roll #311680-12		GM-14
Sample Description:	Black, microspike 60 mil HDPE geomembrane		

## Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	Pressure:	2.0 oz
Presser Foot:	cone point	Loading Time:	5 seconds
Specimen Size:	2-inch-diameter		

Measurement Number	Thickness, mils
1	69.3
2	67.6
3	66.5
4	64.9
5	69.6
6	71.0
7	69.1
8	69.0
9	66.6
10	64.2
Average	67.8
Standard Deviation	2.09
Coefficient of Variation, %	3.08

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2		
Project Location:	Syracuse, NY		
GTX #:	11644	Tested By:	ad
Test Date:	03/27/12	Checked By:	bfs
Sample ID:	Roll #311680-12		GM-14
Description:	Black, microspike 60 mil HDPE geomembrane		

## Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes by ASTM D 6693

Testing Machine:	Instron 1123	Testing Speed:	2.0 in./min.
Grip Separation:	2.5 in.	Grips:	ATS pneumatic
Temperature, °F:	66.2 - 73.4	Die Type:	IV

Direction	Specimen Number	Thickness, mil	YIELD			BREAK		
			Tensile Strength,		Elongation,	Tensile Strength,		Elongation,
			ppi	psi	%	ppi	psi	%
Machine	1	67.7	171	2527	19	196	2889	426
	2	68.0	171	2515	17	206	3027	421
	3	72.4	181	2497	18	200	2757	420
	4	68.0	164	2419	21	191	2804	408
	5	69.5	167	2398	18	194	2797	407
	Average	69.1	171	2471	19	197	2855	416
	Standard Deviation	1.97	6.25	58.48	1.5	5.73	107.7	8.44
Cross Machine	1	71.4	170	2385	13	184	2583	549
	2	71.6	182	2546	13	176	2463	481
	3	70.3	183	2603	17	186	2645	508
	4	68.9	175	2541	17	170	2476	494
	5	69.9	180	2579	15	173	2479	486
	Average	70.4	178	2531	15	178	2529	504
	Standard Deviation	1.13	5.40	85.28	2.0	6.82	80.82	27.4

Comments: yield gauge length = 1.3 in.  
break gauge length = 2.0 in.  
ppi = pounds per inch  
psi = pounds per square inch

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2		
Project Location:	Syracuse, NY		
GTX #:	11644	Tested By:	ad
Test Date:	03/28/12	Checked By:	bfs
Sample ID:	Roll #311680-12		
Description:	Black, microspike 60 mil HDPE geomembrane <i>GM-14</i>		

**Initial Tear Resistance of Plastic Film and Sheeting**  
**by ASTM D 1004**  
 constant rate of extension (CRE) tensile testing machine

Specimen Number	Machine Direction		Cross Machine Direction	
	Thickness, mil	Tear Resistance, lb	Thickness, mil	Tear Resistance, lb
1	68.9	67	66.5	65
2	69.5	64	67.7	63
3	66.8	65	63.3	65
4	71.8	65	65.1	60
5	70.5	67	69.5	66
6	70.3	67	68.0	68
7	69.5	69	68.5	68
8	67.0	63	64.8	63
9	64.3	63	68.2	62
10	68.6	62	72.0	65
Average	68.7	65	67.3	65
Standard Deviation	2.18	2.2	2.53	2.6

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2		
Project Location:	Syracuse, NY		
GTX #:	11644	Tested By:	ad
Test Date:	03/30/12	Checked By:	bfs
Sample ID:	Roll #311680-12		GM-14
Description:	Black, microspike 60 mil HDPE geomembrane		

## Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	151
2	154
3	158
4	151
5	148
Average	153
Standard Deviation	4.01
Coefficient of Variation, %	2.63

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering	
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2	
Project Location:	Syracuse, NY	
GTX #:	11644	Tested By: bfs
Test Date:	03/28/12	Checked By: jdt

## Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics by ASTM D 5596

Sample ID	Specimen Number	Category Rating Random Field of View	
		R <sub>f</sub> 1	R <sub>f</sub> 2
Roll #311337-12 <i>GM-12</i> Black, microspike 60 mil HDPE geomembrane	1	1	1
	2	1	1
	3	1	1
	4	1	1
	5	1	1
	Average	1	1
	Lowest Quality Observed	1	1

Sample ID	Specimen Number	Category Rating Random Field of View	
		R <sub>f</sub> 1	R <sub>f</sub> 2
Roll #311558-12 <i>GM-13</i> Black, microspike 60 mil HDPE geomembrane	1	1	1
	2	1	1
	3	1	1
	4	1	1
	5	1	1
	Average	1	1
	Lowest Quality Observed	1	1

Sample ID	Specimen Number	Category Rating Random Field of View	
		R <sub>f</sub> 1	R <sub>f</sub> 2
Roll #311680-12 <i>GM-14</i> Black, microspike 60 mil HDPE geomembrane	1	1	1
	2	1	1
	3	1	1
	4	1	1
	5	1	1
	Average	1	1
	Lowest Quality Observed	1	1

Comments: Method of preparation: Microtome

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2		
Project Location:	Syracuse, NY		
GTX #:	11644	Tested By:	ad
Test Date:	04/16/12	Checked By:	bfs
Sample ID:	Roll #312105-12		
Sample Description:	Black, microspike 60 mil HDPE geomembrane		

GM-15

## Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	Pressure:	2.0 oz
Presser Foot:	cone point	Loading Time:	5 seconds
Specimen Size:	2-inch-diameter		

Measurement Number	Thickness, mils
1	65.6
2	66.4
3	68.5
4	66.8
5	67.4
6	69.2
7	68.1
8	68.3
9	67.3
10	64.7
Average	67.2
Standard Deviation	1.33
Coefficient of Variation, %	1.97

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2		
Project Location:	Syracuse, NY		
GTX #:	11644	Tested By:	ad
Test Date:	04/17/12	Checked By:	bfs
Sample ID:	Roll #312105-12		
Description:	Black, microspike 60 mil HDPE geomembrane		

GM-15

## Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes by ASTM D 6693

Testing Machine:	Instron 1123	Testing Speed:	2.0 in./min.
Grip Separation:	2.5 in.	Grips:	ATS pneumatic
Temperature, °F:	66.2 - 73.4	Die Type:	IV

Direction	Specimen Number	Thickness, mil	YIELD			BREAK		
			Tensile Strength,		Elongation,	Tensile Strength,		Elongation,
			ppl	psi	%	ppl	psi	%
Machine	1	64.8	151	2326	17	194	3001	443
	2	65.2	156	2398	18	193	2953	420
	3	69.0	163	2368	17	191	2773	468
	4	68.8	164	2392	18	198	2881	489
	5	65.4	153	2346	17	188	2872	425
	Average	66.6	158	2366	17	193	2896	449
	Standard Deviation	2.07	6.08	30.42	0.5	3.85	86.6	29.21
Cross Machine	1	67.5	172	2545	14	186	2756	548
	2	66.3	166	2505	13	186	2806	555
	3	66.5	177	2658	15	182	2732	522
	4	60.9	174	2863	13	191	3137	564
	5	66.7	177	2662	13	187	2812	544
	Average	65.6	173	2646	14	186	2849	547
	Standard Deviation	2.67	4.59	139.16	0.9	3.30	164.68	15.7

Comments: yield gauge length = 1.3 in.  
break gauge length = 2.0 in.  
ppl = pounds per inch  
psi = pounds per square inch

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2		
Project Location:	Syracuse, NY		
GTX #:	11644	Tested By:	ad
Test Date:	04/17/12	Checked By:	bfs
Sample ID:	Roll #312105-12		
Description:	Black, microspike 60 mil HDPE geomembrane		

GM-15

**Initial Tear Resistance of Plastic Film and Sheeting**  
**by ASTM D 1004**  
 constant rate of extension (CRE) tensile testing machine

Specimen Number	Machine Direction		Cross Machine Direction	
	Thickness, mil	Tear Resistance, lb	Thickness, mil	Tear Resistance, lb
1	63.7	64	65.7	63
2	62.7	62	65.0	59
3	64.9	62	66.4	59
4	67.6	60	65.9	59
5	63.8	60	68.9	58
6	66.1	64	69.5	66
7	66.6	64	67.2	61
8	69.7	66	66.5	58
9	64.1	58	65.2	60
10	65.7	58	61.3	57
Average	65.5	62	66.2	60
Standard Deviation	2.11	2.8	2.26	2.5

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parsons Engineering	
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2	
Project Location:	Syracuse, NY	
GTX #:	11644	Tested By: ad
Test Date:	04/16/12	Checked By: bfs
Sample ID:	Roll #312105-12	
Description:	Black, microspike 60 mil HDPE geomembrane	

GM-15

## Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	137
2	149
3	149
4	148
5	145
Average	146
Standard Deviation	5.03
Coefficient of Variation, %	3.46

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering	
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2	
Project Location:	Syracuse, NY	
GTX #:	11644	Tested By: bfs
Test Date:	04/18/12	Checked By: gtt

## Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics by ASTM D 5596

Sample ID	Specimen Number	Category Rating Random Field of View	
		R <sub>f</sub> 1	R <sub>f</sub> 2
Roll #312105-12 Black, microspike 60 mil HDPE geomembrane	1	1	1
	2	1	1
	3	1	1
	4	1	1
	5	1	1
	Average	1	1
	Lowest Quality Observed	1	1

Sample ID	Specimen Number	Category Rating Random Field of View	
		R <sub>f</sub> 1	R <sub>f</sub> 2
Roll #312227-12 Black, microspike 60 mil HDPE geomembrane	1	1	1
	2	1	1
	3	1	1
	4	1	1
	5	1	1
	Average	1	1
	Lowest Quality Observed	1	1

Comments: Method of preparation: Microtome

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering	
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2	
Project Location:	Syracuse, NY	
GTX #:	11644	Tested By: ad
Test Date:	04/18/12	Checked By: bfs

## Carbon Black in Olefin Plastics by ASTM D 1603

Sample ID	Specimen Number	Carbon Black, %
Roll #312105-12 Black, microspike 60 mil HDPE geomembrane	1	2.25
	2	2.26
	Average	2.25

Sample ID	Specimen Number	Carbon Black, %
Roll #312227-12 Black, microspike 60 mil HDPE geomembrane	1	2.29
	2	2.28
	Average	2.28

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering
Project:	Onondaga Lake Sediment Consolidation Area - Phase 2
Project Location:	Syracuse, NY
GTX Project No.:	11644
Test Date:	04/18/12
Tested By:	bfs
Checked By:	gtt

## Density of Plastics by the Density-Gradient Technique by ASTM D 1505

Sample ID	Spec. #	Density, g/cm <sup>3</sup>
Roll #312105-12 Black, microspike 60 mil HDPE geomembrane	1	0.9417
	2	0.9417
	3	0.9418
	AVG.	0.9418
Sample ID	Spec. #	Density, g/cm <sup>3</sup>
Roll #312227-12 Black, microspike 60 mil HDPE geomembrane	1	0.9420
	2	0.9421
	3	0.9419
	AVG.	0.9420

Comments:                      Temperature: 23° C

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. Geo Testing Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2		
Project Location:	Syracuse, NY		
GTX #:	11644	Tested By:	ad
Test Date:	04/16/12	Checked By:	bfs
Sample ID:	Roll #312227-12		
Sample Description:	Black, microspike 60 mil HDPE geomembrane		

61-16

## Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	Pressure:	2.0 oz
Presser Foot:	cone point	Loading Time:	5 seconds
Specimen Size:	2-inch-diameter		

Measurement Number	Thickness, mils
1	65.3
2	67.0
3	67.6
4	66.0
5	67.5
6	66.6
7	65.0
8	65.8
9	67.2
10	66.1
Average	66.4
Standard Deviation	0.85
Coefficient of Variation, %	1.28

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2		
Project Location:	Syracuse, NY		
GTX #:	11644	Tested By:	ad
Test Date:	04/17/12	Checked By:	bfs
Sample ID:	Roll #312227-12		
Description:	Black, microspike 60 mil HDPE geomembrane		

GM-16

## Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes by ASTM D 6693

Testing Machine: Instron 1123	Testing Speed: 2.0 in./min.
Grip Separation: 2.5 in.	Grips: ATS pneumatic
Temperature, °F: 66.2 - 73.4	Die Type: IV

Direction	Specimen Number	Thickness, mil	YIELD			BREAK		
			Tensile Strength,		Elongation,	Tensile Strength,		Elongation,
			ppi	psi	%	ppi	psi	%
Machine	1	65.2	156	2396	18	193	2963	423
	2	63.5	155	2441	18	185	2913	424
	3	65.9	152	2308	17	190	2887	440
	4	66.8	152	2277	17	185	2767	420
	5	68.8	159	2317	18	204	2967	462
	Average	66.0	155	2348	18	191	2899	434
	Standard Deviation	1.96	3.11	68.12	0.5	7.94	81.1	17.58
Cross Machine	1	67.2	169	2517	17	169	2515	516
	2	60.5	169	2787	13	174	2869	522
	3	68.0	167	2453	13	168	2469	533
	4	67.0	166	2474	13	170	2537	528
	5	69.8	169	2427	13	175	2508	547
	Average	66.5	168	2532	14	171	2580	529
	Standard Deviation	3.52	1.59	146.62	1.8	3.06	163.77	11.8

Comments: yield gauge length = 1.3 in.  
break gauge length = 2.0 in.  
ppi = pounds per inch  
psi = pounds per square inch

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2		
Project Location:	Syracuse, NY		
GTX #:	11644	Tested By:	ad
Test Date:	04/17/12	Checked By:	bfs
Sample ID:	Roll #312227-12		
Description:	Black, microspike 60 mil HDPE geomembrane		

GN-16

<p align="center"> <b>Initial Tear Resistance of Plastic Film and Sheeting</b>  <b>by ASTM D 1004</b>          constant rate of extension (CRE) tensile testing machine       </p>
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Specimen Number	Machine Direction		Cross Machine Direction	
	Thickness, mil	Tear Resistance, lb	Thickness, mil	Tear Resistance, lb
1	65.7	63	65.3	62
2	68.7	63	66.1	60
3	66.0	60	67.0	58
4	65.0	61	64.0	56
5	66.1	60	67.9	58
6	67.6	62	69.8	64
7	66.9	58	66.8	61
8	65.7	60	67.7	62
9	67.5	58	69.5	60
10	66.4	57	69.3	60
Average	66.5	60	67.3	60
Standard Deviation	1.13	2.1	1.89	2.3

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Onondaga Lake Sediment Consolidation Area - Phase 2		
Project Location:	Syracuse, NY		
GTX #:	11644	Tested By:	ad
Test Date:	04/16/12	Checked By:	bfs
Sample ID:	Roll #312227-12		
Description:	Black, microsplike 60 mil HDPE geomembrane		

6M-16

## Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	141
2	148
3	149
4	142
5	144
Average	145
Standard Deviation	3.49
Coefficient of Variation, %	2.41

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



# Geotextile

See Interface Shear Testing  
Results for Sample GT-012



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	bfs
Test Date:	02/01/12	Checked By:	jdt
Sample ID:	Roll #22388.1 ( <del>GT-007</del> ) <b>GT-013</b>		
Sample Description:	Black, nonwoven geotextile		

## Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	1 in	Grips:	Curtis "Geo" Grip
Condition:	dry		

Specimen Number	Maximum Tear Strength, lb	
	Machine Direction	Cross Machine Direction
1	164	246
2	170	254
3	207	224
4	210	200
5	222	220
6	206	236
7	198	277
8	191	264
9	182	222
10	294	283
Average	205	243
Standard Deviation	36.4	26.9
Coefficient of Variation, %	17.8	11.1

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	bfs
Test Date:	02/01/12	Checked By:	jdt
Sample ID:	Roll #22388.1 (GT-007) <b>GT-013</b>		
Description:	Black, nonwoven geotextile		

## Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	3 in	Grips:	Curtis "Geo" Grip
Maximum Obtainable Load:	2500 lb	Padding:	---
		Condition:	dry

Specimen Number	Machine Direction		Cross Machine Direction	
	Maximum Breaking Strength, lb	Apparent Breaking Elongation, %	Maximum Breaking Strength, lb	Apparent Breaking Elongation, %
1	598	142	637	133
2	621	133	783	130
3	576	121	620	125
4	598	125	650	134
5	616	122	632	135
6	632	128	591	127
7	547	134	640	124
8	621	127	672	127
9	595	124	789	138
10	664	127	716	124
Average	607	128	673	130
Standard Deviation	31.9	6.40	67.9	5.03
Coefficient of Variation, %	5.26	4.98	10.1	3.88

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	ad
Test Date:	02/02/12	Checked By:	bfs
Sample ID:	Roll #22388.1 (GT-007) <b>GT-013</b>		
Description:	Black, nonwoven geotextile		

## Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	333
2	328
3	359
4	402
5	338
6	292
7	367
8	302
9	336
10	330
11	298
12	350
13	400
14	345
15	316
Average	340
Standard Deviation	32.9
Coefficient of Variation, %	9.69

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: bfs
Test Date:	01/02/12	Checked By: jdt
Sample ID:	Roll #22388.1 (GT-007) <i>GT-013</i>	
Description:	Black, nonwoven geotextile	

## Mass Per Unit Area of Geotextiles by ASTM D 5261

Specimen Number	Mass Per Unit Area, oz/yd <sup>2</sup>	Mass Per Unit Area, g/m <sup>2</sup>
1	26.3	893
2	25.4	863
3	25.2	855
4	23.9	811
5	25.7	870
Average	25.3	858
Standard Deviation	0.89	30.2

Comments: Specimen Size, in: 4 inch x 8 inch

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	bfs
Test Date:	02/01/12	Checked By:	jdt
Sample ID:	Roll #22388.20 <del>(GT-008)</del> <b>GT-014</b>		
Description:	Black, nonwoven geotextile		

## Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	3 in	Grips:	Curtis "Geo" Grip
Maximum Obtainable Load:	2500 lb	Padding:	---
		Condition:	dry

Specimen Number	Machine Direction		Cross Machine Direction	
	Maximum Breaking Strength, lb	Apparent Breaking Elongation, %	Maximum Breaking Strength, lb	Apparent Breaking Elongation, %
1	542	140	682	124
2	604	128	703	131
3	551	129	691	120
4	593	120	714	119
5	564	124	618	124
6	560	117	686	134
7	572	121	737	115
8	669	133	645	116
9	641	128	702	115
10	615	122	617	124
Average	591	126	679	122
Standard Deviation	41.4	6.86	40.2	6.53
Coefficient of Variation, %	7.01	5.44	5.92	5.34

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: bfs
Test Date:	02/01/12	Checked By: jdt
Sample ID:	Roll #22388.20 (GT-008) <i>GT-014</i>	
Sample Description:	Black, nonwoven geotextile	

## Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	1 in	Grips:	Curtis "Geo" Grip
Condition:	dry		

Specimen Number	Maximum Tear Strength, lb	
	Machine Direction	Cross Machine Direction
1	193	242
2	195	300
3	195	271
4	190	256
5	189	253
6	179	314
7	180	279
8	200	259
9	172	258
10	179	256
Average	187	269
Standard Deviation	9.15	22.6
Coefficient of Variation, %	4.89	8.42

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parsons Engineering Science	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: ad
Test Date:	02/02/12	Checked By: bfs
Sample ID:	Roll #22388.20 <del>(GT-008)</del> GT-014	
Description:	Black, nonwoven geotextile	

**Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833**

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	317
2	328
3	339
4	343
5	361
6	335
7	296
8	335
9	314
10	340
11	296
12	346
13	256
14	323
15	316
Average	323
Standard Deviation	25.8
Coefficient of Variation, %	7.98

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: bfs
Test Date:	01/02/12	Checked By: jdt
Sample ID:	Roll #22388.20 (GT-008) <i>GT-014</i>	
Description:	Black, nonwoven geotextile	

## Mass Per Unit Area of Geotextiles by ASTM D 5261

Specimen Number	Mass Per Unit Area, oz/yd <sup>2</sup>	Mass Per Unit Area, g/m <sup>2</sup>
1	24.6	835
2	27.9	947
3	25.2	855
4	26.6	902
5	25.1	851
Average	25.9	878
Standard Deviation	1.36	46.1

Comments: Specimen Size, in: 4 inch x 8 inch

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: bfs
Test Date:	02/01/12	Checked By: jdt
Sample ID:	Roll #22388.56 (GT-009) <i>GT-015</i>	
Sample Description:	Black, nonwoven geotextile	

## Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	1 in	Grips:	Curtis "Geo" Grip
Condition:	dry		

Specimen Number	Maximum Tear Strength, lb	
	Machine Direction	Cross Machine Direction
1	203	334
2	205	241
3	209	241
4	187	249
5	211	290
6	204	249
7	229	258
8	213	244
9	246	290
10	245	251
Average	215	265
Standard Deviation	19.0	30.6
Coefficient of Variation, %	8.82	11.6

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	bfs
Test Date:	02/01/12	Checked By:	jdt
Sample ID:	Roll #22388.56 (GT-009) <i>GT-015</i>		
Description:	Black, nonwoven geotextile		

## Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	3 in	Grips:	Curtis "Geo" Grip
Maximum Obtainable Load:	2500 lb	Padding:	---
		Condition:	dry

Specimen Number	Machine Direction		Cross Machine Direction	
	Maximum Breaking Strength, lb	Apparent Breaking Elongation, %	Maximum Breaking Strength, lb	Apparent Breaking Elongation, %
1	643	120	587	144
2	551	120	682	129
3	586	111	636	124
4	544	123	578	144
5	603	122	605	124
6	534	116	615	148
7	531	117	668	125
8	564	124	598	117
9	552	124	631	124
10	574	120	626	130
Average	568	120	622	131
Standard Deviation	34.7	4.08	33.6	10.6
Coefficient of Variation, %	6.11	3.41	5.40	8.10

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	ad
Test Date:	02/02/12	Checked By:	bfs
Sample ID:	Roll #22388.56 (GT-009) <i>GT-015</i>		
Description:	Black, nonwoven geotextile		

## Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	334
2	359
3	332
4	294
5	373
6	348
7	399
8	336
9	313
10	326
11	339
12	309
13	315
14	375
15	350
Average	340
Standard Deviation	28.1
Coefficient of Variation, %	8.26

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: bfs
Test Date:	01/02/12	Checked By: jdt
Sample ID:	Roll #22388.56 (GT-009) <i>GT-015</i>	
Description:	Black, nonwoven geotextile	

## Mass Per Unit Area of Geotextiles by ASTM D 5261

Specimen Number	Mass Per Unit Area, oz/yd <sup>2</sup>	Mass Per Unit Area, g/m <sup>2</sup>
1	26.0	881
2	23.9	810
3	24.0	813
4	23.7	804
5	23.5	796
Average	24.2	821
Standard Deviation	1.00	34.0

Comments: Specimen Size, in: 4 inch x 8 inch

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: bfs
Test Date:	02/01/12	Checked By: jdt
Sample ID:	Roll #22388.111 (GT-010) <i>GT-016</i>	
Sample Description:	Black, nonwoven geotextile	

## Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	1 in	Grips:	Curtis "Geo" Grip
Condition:	dry		

Specimen Number	Maximum Tear Strength, lb	
	Machine Direction	Cross Machine Direction
1	185	322
2	186	303
3	192	296
4	180	273
5	178	298
6	193	303
7	167	335
8	179	366
9	213	362
10	211	334
Average	188	319
Standard Deviation	14.5	30.1
Coefficient of Variation, %	7.70	9.44

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	bfs
Test Date:	02/01/12	Checked By:	jdt
Sample ID:	Roll #22388.111 <del>(GT-010)</del> <b>GT-016</b>		
Description:	Black, nonwoven geotextile		

## Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	3 in	Grips:	Curtis "Geo" Grip
Maximum Obtainable Load:	2500 lb	Padding:	---
		Condition:	dry

Specimen Number	Machine Direction		Cross Machine Direction	
	Maximum Breaking Strength, lb	Apparent Breaking Elongation, %	Maximum Breaking Strength, lb	Apparent Breaking Elongation, %
1	646	124	691	117
2	614	127	747	120
3	604	126	670	117
4	590	127	697	117
5	538	124	626	127
6	560	130	636	134
7	618	128	734	123
8	587	127	727	123
9	606	127	650	120
10	640	131	660	117
Average	600	127	684	122
Standard Deviation	33.4	2.23	42.2	5.54
Coefficient of Variation, %	5.57	1.76	6.18	4.56

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	ad
Test Date:	02/02/12	Checked By:	bfs
Sample ID:	Roll #22388.111 (GT-016) <i>GT-016</i>		
Description:	Black, nonwoven geotextile		

## Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	378
2	292
3	324
4	337
5	397
6	339
7	338
8	328
9	317
10	306
11	363
12	406
13	312
14	363
15	288
Average	339
Standard Deviation	35.9
Coefficient of Variation, %	10.6

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: bfs
Test Date:	01/02/12	Checked By: jdt
Sample ID:	Roll #22388.111 (GT-010) <i>GT-016</i>	
Description:	Black, nonwoven geotextile	

## Mass Per Unit Area of Geotextiles by ASTM D 5261

Specimen Number	Mass Per Unit Area, oz/yd <sup>2</sup>	Mass Per Unit Area, g/m <sup>2</sup>
1	27.0	915
2	27.9	946
3	26.5	898
4	24.9	845
5	27.6	934
Average	26.8	907
Standard Deviation	1.17	39.5

Comments: Specimen Size, in: 4 inch x 8 inch

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: bfs
Test Date:	02/01/12	Checked By: jdt
Sample ID:	Roll #22388.221 <del>(GT-011)</del> <b>GT-017</b>	
Sample Description:	Black, nonwoven geotextile	

## Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	1 in	Grips:	Curtis "Geo" Grip
Condition:	dry		

Specimen Number	Maximum Tear Strength, lb	
	Machine Direction	Cross Machine Direction
1	186	284
2	205	229
3	200	251
4	218	253
5	233	247
6	162	258
7	231	250
8	183	259
9	234	299
10	197	242
Average	205	257
Standard Deviation	24.3	20.3
Coefficient of Variation, %	11.8	7.91

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	bfs
Test Date:	02/01/12	Checked By:	jdt
Sample ID:	Roll #22388.121 (GT-011) <i>GT-017</i>		
Description:	Black, nonwoven geotextile		

## Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	3 in	Grips:	Curtis "Geo" Grip
Maximum Obtainable Load:	2500 lb	Padding:	---
		Condition:	dry

Specimen Number	Machine Direction		Cross Machine Direction	
	Maximum Breaking Strength, lb	Apparent Breaking Elongation, %	Maximum Breaking Strength, lb	Apparent Breaking Elongation, %
1	587	127	686	137
2	586	127	664	130
3	542	117	606	124
4	553	134	663	120
5	550	119	555	116
6	549	130	770	120
7	581	123	668	130
8	503	129	592	144
9	556	123	551	130
10	463	117	637	126
Average	547	125	639	128
Standard Deviation	38.6	5.78	66.2	8.43
Coefficient of Variation, %	7.06	4.64	10.4	6.60

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	ad
Test Date:	02/02/12	Checked By:	bfs
Sample ID:	Roll #22388.221 (GT-011) <i>GT-017</i>		
Description:	Black, nonwoven geotextile		

## Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	377
2	308
3	286
4	316
5	320
6	313
7	338
8	403
9	360
10	404
11	502
12	373
13	350
14	358
15	292
Average	353
Standard Deviation	55.4
Coefficient of Variation, %	15.7

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: bfs
Test Date:	01/02/12	Checked By: jdt
Sample ID:	Roll #22388.221 <del>GT-017</del> <b>GT-017</b>	
Description:	Black, nonwoven geotextile	

## Mass Per Unit Area of Geotextiles by ASTM D 5261

Specimen Number	Mass Per Unit Area, oz/yd <sup>2</sup>	Mass Per Unit Area, g/m <sup>2</sup>
1	24.8	841
2	24.9	843
3	23.5	796
4	24.0	813
5	23.7	804
Average	24.2	819
Standard Deviation	0.63	21.5

Comments: Specimen Size, in: 4 inch x 8 inch

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

# Geonet Composite



Client:	Parsons Engineering
Project:	Geosynthetic Testing
Project Location:	Syracuse, NY
GTX Project No.:	10596
Test Date:	11/02/11
Tested By:	bfs
Checked By:	jdt

## Density of Plastics by the Density-Gradient Technique by ASTM D 1505

GD-1

Sample ID	Spec. #	Density, g/cm <sup>3</sup>
Roll #45391010022 (net portion only)	1	0.9504
Black, biplanar geocomposite	2	0.9504
	3	0.9507
	AVG.	0.9505

✓  
0.935

GD-2

Sample ID	Spec. #	Density, g/cm <sup>3</sup>
Roll #45391010130 (net portion only)	1	0.9528
Black, biplanar geocomposite	2	0.9525
	3	0.9524
	AVG.	0.9526

✓

Comments:

Temperature: 23°C

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parsons Engineering
Project:	Geosynthetic Testing
Project Location:	Syracuse, NY
GTX Project No.:	10596
Test Date:	11/14/11
Tested By:	bfs
Checked By:	jdt

## Density of Plastics by the Density-Gradient Technique by ASTM D 1505

GD-3

Sample ID	Spec. #	Density, g/cm <sup>3</sup>
Roll #45391010021 (net portion only)	1	0.9542
Black, biplanar geocomposite	2	0.9543
	3	0.9543
	AVG.	0.9543

✓  
0.935GD-4

Sample ID	Spec. #	Density, g/cm <sup>3</sup>
Roll #45391010023 (net portion only)	1	0.9544
Black, biplanar geocomposite	2	0.9545
	3	0.9544
	AVG.	0.9544

Comments:

Temperature: 23°C

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX Project No.:	10596	Tested By:	ad
Test Date:	11/01/11	Checked By:	bfs
Sample ID:	Roll #45391010022	C-0-1	
Description:	Black, biplanar geocomposite		

## Hydraulic Transmissivity - ASTM D 4716

Specimen Length, in:	12
Specimen Width, in:	12
Boundary Conditions	(bottom to top): steel plate/geocomposite/soil/steel plate
Direction of Flow:	Machine Direction
Effluent Water Temperature, °C:	18.9

Normal Compressive Stress, psf	Seating Time, hours	Hydraulic Gradient	Transmissivity, m <sup>2</sup> /sec	Unit Flow	
				gal/min/ft	gal/hr/ft
3000	0.25	0.1	1.1E-03	0.5	32
3000	0.25	0.1	1.1E-03	0.5	32
3000	0.25	0.1	1.1E-03	0.5	32
Average			1.1E-03	0.5	32

Notes:

Roll removed from site

$< 2 \times 10^{-3} \text{ m}^2/\text{s}$

Fail

See

#45391010021

#45391010023

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	bfs
Test Date:	11/02/11	Checked By:	jdt
Sample ID:	Roll #45391010022 (Net portion only)		GD-1
Sample Description:	Black, bi-planar geocomposite		

## Nominal Thickness of Geotextiles and Geomembranes by ASTM D 5199

Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	Pressure:	63-65 g
Presser Foot:	0.25 in. diameter	Loading Time:	5 seconds

Measurement Number	Thickness, mils
1	377
2	374
3	367
4	359
5	361
6	383
7	383
8	399
9	399
10	394
11	390
12	373
13	378
14	374
15	371
16	382
17	380
18	371
19	377
20	379
Average	379 ✓
Standard Deviation	10.6
Coefficient of Variation, %	2.81

Comments:

> 200 mils

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	ad
Test Date:	11/01/11	Checked By:	bfs
Sample ID:	Roll #45391010022 (geotextile portion only) G-0-1		
Description:	Black, bi-planar geocomposite		

## Apparent Opening Size of a Geotextile by ASTM D 4751

Specimen Number	Specimen Mass, g (before/after treating)	Bead Size		Passing, %	Size for 5% Passing, mm
		Sieve Number (U.S. Standard Size)	Diameter, mm		
1	30.21/30.18	120-140	0.106	10.3	0.113
		80-100	0.120	0.18	
2	32.19/32.17	170-200	0.075	8.0	0.088
		120-140	0.106	0.68	
3	31.54/31.5	120-140	0.106	24.1	0.117
		80-100	0.120	0.80	
4	29.23/29.19	120-140	0.106	78.5	0.119
		80-100	0.120	1.60	
5	34.15/34.1	120-140	0.106	11.46	0.114
		80-100	0.120	0.12	

Average AOS = $O_{95}$ :	0.110 $\leq 0.21$	Average Sieve Number:	100
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Comments: Shaker Type - CE Tyler Ro-Tap seive shaker Model SS-8R

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: ad
Test Date:	10/31/11	Checked By: bfs
Sample ID:	Roll #45391010022 (textile portion only) GQ-1	
Sample Description:	Black, bi-planar geocomposite	

## Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	1 in	Grips:	Curtis "Geo" Grip
Condition:	dry		

Specimen Number	Maximum Tear Strength, lb	
	Machine Direction	Cross Machine Direction
1	135	150
2	116	145
3	96.9	129
4	102	195
5	113	164
6	90.7	144
7	121	130
8	154	146
9	157	151
10	146	169
Average	123	152 ✓
Standard Deviation	23.8	19.6
Coefficient of Variation, %	19.4	12.9

>75

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: bfs
Test Date:	10/31/11	Checked By: jdt
Sample ID:	Roll #45391010022 (textile portion only) GQ-1	
Description:	Black, bi-planar geocomposite	

## Mass Per Unit Area of Geotextiles by ASTM D 5261

Specimen Number	Mass Per Unit Area, oz/yd <sup>2</sup>	Mass Per Unit Area, g/m <sup>2</sup>
1	10.6	360
2	11.0	374
3	10.7	364
4	10.7	364
5	10.4	352
Average	10.7 > 8	363
Standard Deviation	0.23	7.85

Comments: Specimen Size, In: 4 inch x 8 inch

✓

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	ad
Test Date:	11/01/11	Checked By:	bfs
Sample ID:	Roll #45391010130 (textile portion only)		EO-2
Description:	Black, bi-planar geocomposite		

## Apparent Opening Size of a Geotextile by ASTM D 4751

Specimen Number	Specimen Mass, g (before/after treating)	Bead Size		Passing, %	Size for 5% Passing, mm
		Sieve Number (U.S. Standard Size)	Diameter, mm		
1	32.16/32.11	120-140	0.106	70.1	0.119
		80-100	0.120	0.30	
2	30/29.93	120-140	0.106	10.1	0.113
		80-100	0.120	0.10	
3	30.79/30.75	120-140	0.106	20.8	0.117
		80-100	0.120	0.28	
4	32.54/32.5	120-140	0.106	5.1	0.106
		80-100	0.120	0.02	
5	32.29/32.25	120-140	0.106	7.44	0.111
		80-100	0.120	0.20	

Average AOS = $O_{95}$ :	0.113 $\leq 0.2$ mm	Average Sieve Number:	100
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Comments: Shaker Type - CE Tyler Ro-Tap seive shaker Model SS-8R

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: ad
Test Date:	10/31/11	Checked By: bfs
Sample ID:	Roll #45391010130 (textile portion only) <i>602</i>	
Sample Description:	Black, bi-planar geocomposite	

## Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	1 in	Grips:	Curtis "Geo" Grip
Condition:	dry		

Specimen Number	Maximum Tear Strength, lb	
	Machine Direction	Cross Machine Direction
1	120	128
2	148	148
3	141	154
4	107	179
5	143	165
6	142	130
7	137	195
8	118	155
9	136	140
10	107	123
Average	130	152 ✓
Standard Deviation	15.2	23.0
Coefficient of Variation, %	11.7	15.2

> 75

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parsons Engineering		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	bfs
Test Date:	11/02/11	Checked By:	jdt
Sample ID:	Roll #45391010130 (Net portion only)		60-2
Sample Description:	Black, bi-planar geocomposite		

## Nominal Thickness of Geotextiles and Geomembranes by ASTM D 5199

Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	Pressure:	63-65 g
Presser Foot:	0.25 in. diameter	Loading Time:	5 seconds

Measurement Number	Thickness, mils
1	379
2	382
3	371
4	370
5	355
6	372
7	362
8	352
9	356
10	377
11	360
12	361
13	359
14	367
15	366
16	378
17	376
18	365
19	372
20	353
Average	367 ✓
Standard Deviation	9.11
Coefficient of Variation, %	2.48

Comments:

> 200 mil

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: bfs
Test Date:	10/31/11	Checked By: jdt
Sample ID:	Roll #45391010130 (textile portion only) 602	
Description:	Black, bi-planar geocomposite	

## Mass Per Unit Area of Geotextiles by ASTM D 5261

Specimen Number	Mass Per Unit Area, oz/yd <sup>2</sup>	Mass Per Unit Area, g/m <sup>2</sup>
1	11.6	394
2	11.6	392
3	11.1	375
4	11.2	381
5	11.4	388
Average	11.4 > 8	386
Standard Deviation	0.23	7.7

Comments: Specimen Size, In: 4 inch x 8 inch

✓

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering	
Project:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX Project No.:	10596	Tested By: ad
Test Date:	11/01/11	Checked By: bfs
Sample ID:	Roll #45391010130	69-2
Description:	Black, biplanar geocomposite	

## Hydraulic Transmissivity - ASTM D 4716

Specimen Length, in:	12
Specimen Width, in:	12
Boundary Conditions	(bottom to top): steel plate/geocomposite/soil/steel plate
Direction of Flow:	Machine Direction
Effluent Water Temperature, °C:	18.9

Normal Compressive Stress, psf	Seating Time, hours	Hydraulic Gradient	Transmissivity, m <sup>2</sup> /sec	Unit Flow	
				gal/min/ft	gal/hr/ft
3000	0.25	0.1	3.1E-03	1.5	88
3000	0.25	0.1	3.1E-03	1.5	88
3000	0.25	0.1	3.1E-03	1.5	88
Average			3.1E-03	1.5	88

Notes:

$> 2 \times 10^{-3} \text{ m}^2/\text{s}$

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	bfs
Test Date:	11/10/11	Checked By:	jdt
Sample ID:	Roll #45391010021 (net portion only)		GO-3
Sample Description:	Black, bi-planar geocomposite		

## Nominal Thickness of Geotextiles and Geomembranes by ASTM D 5199

Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	Pressure:	63-65 g
Presser Foot:	0.25 in. diameter	Loading Time:	5 seconds

Measurement Number	Thickness, mils
1	371
2	377
3	361
4	371
5	375
6	364
7	396
8	368
9	367
10	373
11	370
12	368
13	371
14	382
15	365
16	370
17	369
18	370
19	371
20	370
Average	371 ✓
Standard Deviation	7.11
Coefficient of Variation, %	1.91

Comments:

> 200

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering	
Project:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX Project No.:	10596	Tested By: ad
Test Date:	11/09/11	Checked By: bfs
Sample ID:	Roll #45391010021	60-3
Description:	Black, biplanar geocomposite	

## Hydraulic Transmissivity - ASTM D 4716

Specimen Length, in:	12
Specimen Width, in:	12
Boundary Conditions	(bottom to top): steel plate/geocomposite/soil/steel plate
Direction of Flow:	Machine Direction
Effluent Water Temperature, °C:	18.8

Normal Compressive Stress, psf	Seating Time, hours	Hydraulic Gradient	Transmissivity, m <sup>2</sup> /sec	Unit Flow	
				gal/min/ft	gal/hr/ft
3000	0.25	0.1	2.2E-03	1.0	61
3000	0.25	0.1	2.2E-03	1.0	61
3000	0.25	0.1	2.2E-03	1.0	61
Average			2.2E-03	1.0	61

Notes:

$> 2 \times 10^{-3} \text{ m}^2/\text{s}$

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	bfs
Test Date:	11/10/11	Checked By:	jdt
Sample ID:	Roll #45391010023 (net portion only) <i>CD-4</i>		
Sample Description:	Black, bi-planar geocomposite		

## Nominal Thickness of Geotextiles and Geomembranes by ASTM D 5199

Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	Pressure:	63-65 g
Presser Foot:	0.25 in. diameter	Loading Time:	5 seconds

Measurement Number	Thickness, mils
1	393
2	372
3	367
4	370
5	390
6	375
7	373
8	374
9	373
10	392
11	386
12	381
13	374
14	369
15	369
16	371
17	378
18	367
19	371
20	373
Average	376 ~
Standard Deviation	7.91
Coefficient of Variation, %	2.10

Comments:

*200*

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering	
Project:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX Project No.:	10596	Tested By: ad
Test Date:	11/09/11	Checked By: bfs
Sample ID:	Roll #45391010023	60-4
Description:	Black, biplanar geocomposite	

## Hydraulic Transmissivity - ASTM D 4716

Specimen Length, in:	12
Specimen Width, in:	12
Boundary Conditions	(bottom to top): steel plate/geocomposite/soil/steel plate
Direction of Flow:	Machine Direction
Effluent Water Temperature, °C:	18.4

Normal Compressive Stress, psf	Seating Time, hours	Hydraulic Gradient	Transmissivity, m <sup>2</sup> /sec	Unit Flow	
				gal/min/ft	gal/hr/ft
3000	0.25	0.1	2.3E-03	1.1	64
3000	0.25	0.1	2.3E-03	1.1	64
3000	0.25	0.1	2.3E-03	1.1	64
Average			2.3E-03	1.1	64

Notes:

$7.2 \times 10^{-3} \text{ m}^2/\text{s}$

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

## APPENDIX E

### Installer's Certificate of Acceptance of Subgrade Surface

- East Basin
- West Basin



# CERTIFICATE OF ACCEPTANCE SUBGRADE SURFACE

**INSTALLER**

**NAME:** Chenango Contracting

**ADDRESS:** 29 Arbutus Road  
Johnson City, NY 13790

**INSTALLER AUTHORIZED REPRESENTATIVE:** Charlie Parks

PROJECT	
NAME:	SCA Phase I (East Basin)
LOCATION:	522 Gerelock Road Camillus, NY 13209
OWNER:	Honeywell / Parsons

I, The undersigned, duly authorized representative of Chenango Contractors  
do hereby accept the surface on which the geosynthetics will be installed and shall be responsible for  
maintaining the suitability of this surface, in accordance with the project specifications. (i.e., The contractor  
shall not install the geosynthetics until the subgrade surface is acceptable. Installation of the  
geosynthetics will be considered acceptance of the subgrade.)

PRIMARY: ☐ SECONDARY: ☒ OTHER: \_\_\_\_\_

[illegible]

# CERTIFICATE OF ACCEPTANCE SUBGRADE SURFACE

INSTALLER	
NAME:	Chenango Contracting
ADDRESS:	29 Arbutus Road
	Johnson City, NY 13790
INSTALLER AUTHORIZED REPRESENTATIVE: Charlie Parks	

PROJECT	
NAME:	SCA Phase I (West Basin)
LOCATION:	522 Gerelock Road
	Camillus, NY 13209
OWNER:	Honeywell / Parsons

I, The undersigned, duly authorized representative of Chenango Contractors  
do hereby accept the surface on which the geosynthetics will be installed and shall be responsible for  
maintaining the suitability of this surface, in accordance with the project specifications. (i.e., The contractor  
shall not install the geosynthetics until the subgrade surface is acceptable. Installation of the  
geosynthetics will be considered acceptance of the subgrade.)

PRIMARY: ☐ SECONDARY: ☒ OTHER: \_\_\_\_\_

[illegible]

## APPENDIX F

### Geomembrane Panel Placement Monitoring Logs

- East Basin
- West Basin

## East Basin

- Primary
- Secondary

Primary



## Panel Placement Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

Primary / Secondary: Primary				Series: 3	Material Type: gml		
Panel	Batch-Roll	Date	Time	Placement/Location/Comments	Width (ft.)	Length (ft.)	QA ID
1	7110583-443557-11	3/28/2012	8:30	East Basin	22.5	293	DWH
2	7110583-443557-11	3/28/2012	8:45	East Basin	22.5	190	DWH
3	7110583-443569-11	3/28/2012	9:00	East Basin	22.5	106	DWH
4	7110583-443569-11	3/28/2012	9:55	East Basin	22.5	28.5	DWH
5	7110583-443569-11	3/28/2012	10:00	East Basin	22.5	29	DWH
6	7110583-443569-11	3/28/2012	10:05	East Basin	22.5	29.5	DWH
7	7110583-443569-11	3/28/2012	10:10	East Basin	22.5	30	DWH
8	7110583-443569-11	3/28/2012	10:11	East Basin	22.5	30.5	DWH
9	7110583-443569-11	3/28/2012	10:12	East Basin	22.5	31	DWH
10	7110583-443569-11	3/28/2012	10:16	East Basin	22.5	31	DWH
11	7110583-443569-11	3/28/2012	10:19	East Basin	22.5	31.5	DWH
12	7110583-443569-11	3/28/2012	10:22	East Basin	22.5	32	DWH
13	7110583-443569-11	3/28/2012	10:25	East Basin	22.5	33	DWH
14	7110583-443569-11	3/28/2012	10:27	East Basin	22.5	34	DWH
15	8210664-443792-11	3/28/2012	10:55	East Basin	22.5	16	DWH
16	8210664-443792-11	3/28/2012	11:00	East Basin	22.5	23	DWH
17	8210664-443792-11	3/28/2012	11:02	East Basin	4	14	DWH
18	8210664-443792-11	3/28/2012	12:44	East Basin	22.5	299	DWH
19	8210664-443792-11	3/28/2012	13:00	East Basin	22.5	114.5	DWH
20	7110583-443676-11	3/28/2012	13:18	East Basin	22.5	186	DWH
21	7110583-443676-11	3/28/2012	13:44	East Basin	22.5	303	DWH
22	8210664-443683-11	3/28/2012	14:12	East Basin	22.5	306.5	DWH
23	8210664-443683-11	3/28/2012	14:50	East Basin	22.5	192	DWH
24	7110583-443559-11	3/28/2012	15:01	East Basin	22.5	116	DWH
25	7110583-443559-11	3/28/2012	15:37	East Basin	22.5	309.5	DWH
26	7110583-443559-11	3/28/2012	15:43	East Basin	22.5	62	DWH
27	7110583-443673-11	3/28/2012	16:00	East Basin	22.5	250	DWH
28	7110583-443673-11	3/28/2012	16:20	East Basin	22.5	248	DWH
29	8210664-443682-11	3/28/2012	16:45	East Basin	22.5	65	DWH
30	8210664-443682-11	4/2/2012	13:16	East Basin	22.5	314	DWH
31	8210664-443682-11	4/2/2012	13:30	East Basin	22.5	111.5	DWH

Panel Placement Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

Primary / Secondary: Primary				Series: 3	Material Type: gml		
Panel	Batch-Roll	Date	Time	Placement/Location/Comments	Width (ft.)	Length (ft.)	QA ID
32	7110583-443677-11	4/2/2012	13:46	East Basin	22.5	204	DWH
33	7110583-443677-11	4/2/2012	14:00	East Basin	22.5	277	DWH
34	7110583-443562-11	4/2/2012	14:17	East Basin	22.5	39	DWH
35	7110583-443562-11	4/2/2012	14:27	East Basin	22.5	320	DWH
36	7110583-443562-11	4/2/2012	14:50	East Basin	22.5	126	DWH
37	7110583-443679-11	4/2/2012	15:00	East Basin	22.5	196	DWH
38	7110583-443679-11	4/2/2012	15:15	East Basin	22.5	288	DWH
39	7110583-443563-11	4/2/2012	15:20	East Basin	22.5	34	DWH
40	7110583-443678-11	4/12/2012	8:05	East Basin	22.5	273.5	DWH
41	8210664-443790-11	4/12/2012	8:35	East Basin	22.5	53.5	DWH
42	8210664-443790-11	4/12/2012	9:35	East Basin	22.5	329	DWH
43	8210664-443790-11	4/12/2012	9:45	East Basin	22.5	100	DWH
44	8210664-443787-11	4/12/2012	10:00	East Basin	22.5	230	DWH
45	8210664-443787-11	4/12/2012	10:15	East Basin	22.5	271	DWH
46	7110583-443570-11	4/12/2012	10:24	East Basin	22.5	62	DWH
47	7110583-443570-11	4/12/2012	10:40	East Basin	22.5	239	DWH
48	7110583-443570-11	4/12/2012	11:06	East Basin	22.5	54.5	DWH
49	7110583-443570-11	4/12/2012	11:10	East Basin	22.5	54	DWH
50	7110583-443570-11	4/12/2012	11:14	East Basin	22.5	37	DWH
51	7110583-443570-11	4/12/2012	11:20	East Basin	22.5	37	DWH
52	8210664-443786-11	4/12/2012	11:36	East Basin	22.5	54.5	DWH
53	8210664-443786-11	4/12/2012	11:40	East Basin	22.5	55.5	DWH
54	8210664-443786-11	4/12/2012	12:40	East Basin	22.5	54	DWH
55	8210664-443786-11	4/12/2012	12:43	East Basin	22.5	48	DWH
56	8210664-443786-11	4/12/2012	12:51	East Basin	22.5	27	DWH
57	8210664-443786-11	4/12/2012	12:53	East Basin	22.5	20	DWH
58	8210664-443786-11	4/12/2012	12:56	East Basin	22.5	28	DWH
59	8210664-443786-11	4/12/2012	12:58	East Basin	22.5	22	DWH
60	8210664-443786-11	4/12/2012	13:00	East Basin	22.5	21	DWH
61	8210664-443786-11	4/12/2012	14:04	East Basin	22.5	45	DWH
62	8210664-443786-11	4/12/2012	14:07	East Basin	22.5	33	DWH



## Panel Placement Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>					ProjNo: <u>GJ4706</u>		
Location: <u>Camillus, New York</u>					TaskNo: <u>07</u>		
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>							
Primary / Secondary: Primary				Series: 3	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	8210664-443786-11	4/12/2012	14:12	East Basin	22.5	26	DWH
64	8210664-443786-11	4/12/2012	14:15	East Basin	22.5	22	DWH
65	8210664-443797-11	4/12/2012	14:20	East Basin	22.5	98	DWH
66	8210664-443797-11	4/12/2012	14:29	East Basin	22.5	21	DWH
67	8210664-443797-11	4/12/2012	14:47	East Basin	22.5	26	DWH
68	8210664-443797-11	4/12/2012	14:50	East Basin	22.5	10	DWH
69	8210664-443797-11	4/12/2012	14:34	East Basin	22.5	36	DWH
70	8210664-443797-11	4/12/2012	14:57	East Basin	22.5	28.5	DWH
71	8210664-443797-11	4/12/2012	15:01	East Basin	14	27	DWH
Number of Panels: 71				Approx. Area (sq. ft).		174696.5	



Secondary



## Panel Placement Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

Primary / Secondary: Secondary				Series: 2	Material Type: gml		
Panel	Batch-Roll	Date	Time	Placement/Location/Comments	Width (ft.)	Length (ft.)	QA ID
1	8201499-102158789	10/31/2011	9:20	East Basin	22	323	DWH
2	8201499-102158789	10/31/2011	9:35	East Basin	22	175	DWH
3	8201507-102158904	10/31/2011	9:43	East Basin	22	146.5	DWH
4	8201507-102158904	10/31/2011	9:50	East Basin	22	319.5	DWH
5	8201507-102158904	10/31/2011	10:05	East Basin	22	35.5	DWH
6	8201499-102158811	10/31/2011	10:44	East Basin	22	283.5	DWH
7	8201499-102158811	10/31/2011	10:56	East Basin	22	224.5	DWH
8	8201500-102158839	10/31/2011	11:28	East Basin	22	92	DWH
9	8201500-102158839	10/31/2011	11:56	East Basin	22	313.5	DWH
10	8201500-102158839	10/31/2011	15:06	East Basin	22	86	DWH
11	8201499-102158798	10/31/2011	15:30	East Basin	22	226.5	DWH
12	8201499-102158798	11/1/2011	8:25	East Basin	22	276	DWH
13	8201500-102158813	11/1/2011	8:35	East Basin	22	35	DWH
14	8201500-102158813	11/1/2011	8:48	East Basin	22	309.5	DWH
15	8201500-102158813	11/1/2011	8:58	East Basin	22	150.5	DWH
16	8201499-102158775	11/1/2011	9:10	East Basin	22	156.5	DWH
17	8201499-102158775	11/1/2011	9:42	East Basin	22	305	DWH
18	8201499-102158775	11/1/2011	9:50	East Basin	22	32	DWH
19	8201499-102158780	11/1/2011	10:01	East Basin	22	273	DWH
20	8201499-102158780	11/1/2011	10:15	East Basin	22	233	DWH
21	8201507-102158890	11/1/2011	10:25	East Basin	22	70	DWH
22	8201507-102158890	11/1/2011	10:35	East Basin	22	300	DWH
23	8201507-102158890	11/1/2011	10:45	East Basin	22	113	DWH
24	8201500-102158854	11/1/2011	10:58	East Basin	22	185	DWH
25	8201500-102158854	11/1/2011	11:17	East Basin	22	295	DWH
26	8201494-102158626	11/1/2011	13:00	East Basin	22	292	DWH
27	8201494-102158626	11/1/2011	13:08	East Basin	22	216	DWH
28	8201507-102158883	11/1/2011	13:20	East Basin	22	41.5	DWH
29	8201507-102158883	11/1/2011	13:25	East Basin	22	40.5	DWH
30	8201507-102158883	11/1/2011	13:30	East Basin	22	31	DWH
31	8201500-102158852	11/1/2011	13:40	East Basin	22	31	DWH

## Panel Placement Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

Primary / Secondary: Secondary				Series: 2	Material Type: gml		
Panel	Batch-Roll	Date	Time	Placement/Location/Comments	Width (ft.)	Length (ft.)	QA ID
32	8201500-102158852	11/1/2011	13:45	East Basin	22	26	DWH
33	8201500-102158852	11/1/2011	13:48	East Basin	22	24.5	DWH
34	8201500-102158852	11/1/2011	13:54	East Basin	22	24	DWH
35	8201507-102158900	11/1/2011	14:07	East Basin	22	24	DWH
36	8201507-102158900	11/1/2011	14:10	East Basin	22	23.5	DWH
37	8201507-102158900	11/1/2011	14:13	East Basin	22	23	DWH
38	8201507-102158900	11/1/2011	14:18	East Basin	22	23.5	DWH
39	8201507-102158885	11/1/2011	14:32	East Basin	22	24	DWH
40	8201507-102158885	11/1/2011	14:36	East Basin	22	24.5	DWH
41	8201507-102158885	11/1/2011	14:42	East Basin	22	25	DWH
42	8201500-102158815	11/1/2011	15:15	East Basin	22	325	DWH
43	8201500-102158815	11/1/2011	15:42	East Basin	22	179	DWH
44	8201507-102158905	11/2/2011	9:23	East Basin	22	148.5	DWH
45	8201507-102158905	11/2/2011	9:45	East Basin	22	328	DWH
46	8201507-102158896	11/2/2011	10:16	East Basin	22	143	DWH
47	8201507-102158896	11/2/2011	10:36	East Basin	22	23.5	DWH
48	8201507-102158896	11/2/2011	10:38	East Basin	22	26	DWH
49	8201507-102158896	11/2/2011	10:40	East Basin	22	33.5	DWH
50	8201507-102158896	11/2/2011	10:42	East Basin	22	44.5	DWH
51	8201507-102158896	11/2/2011	10:44	East Basin	22	26	DWH
52	8201507-102158896	11/2/2011	10:46	East Basin	22	27	DWH
53	8201500-102158863	11/2/2011	10:57	East Basin	22	23	DWH
54	8201500-102158863	11/2/2011	11:00	East Basin	22	52	DWH
55	8201500-102158863	11/2/2011	11:01	East Basin	22	52	DWH
56	8201507-102158901	11/2/2011	11:05	East Basin	22	51.5	DWH
57	8201507-102158901	11/2/2011	11:07	East Basin	22	51.5	DWH
58	8201494-102158630	11/2/2011	11:25	East Basin	22	33	DWH
59	8201494-102158630	11/2/2011	11:41	East Basin	22	113	DWH
60	8201494-102158630	11/2/2011	11:42	East Basin	22	10.5	DWH
61	8201494-102158630	11/2/2011	11:44	East Basin	22	10.5	DWH
62	8201494-102158630	11/2/2011	11:46	East Basin	22	21	DWH



## Panel Placement Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>					ProjNo: <u>GJ4706</u>		
Location: <u>Camillus, New York</u>					TaskNo: <u>07</u>		
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>							
Primary / Secondary: Secondary				Series: 2		Material Type: gml	
Panel	Batch-Roll	Date	Time	Placement/Location/Comments	Width (ft.)	Length (ft.)	QA ID
63	8201494-102158630	11/2/2011	12:40	East Basin	22	45	DWH
64	8201494-102158630	11/2/2011	12:45	East Basin	22	29.5	DWH
65	8201494-102158630	11/2/2011	12:50	East Basin	22	30.5	DWH
66	8201494-102158630	11/2/2011	12:55	East Basin	22	22	DWH
67	8201494-102158630	11/2/2011	13:00	East Basin	22	20	DWH
68	8201494-102158630	11/2/2011	13:02	East Basin	22	6	DWH
Number of Panels: 68				Approx. Area (sq. ft).		170016	

## West Basin

- Primary
- Secondary

Primary



## Panel Placement Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

Primary / Secondary: Primary				Series: 5	Material Type: gml		
Panel	Batch-Roll	Date	Time	Placement/Location/Comments	Width (ft.)	Length (ft.)	QA ID
1	7110583-443563-11	4/5/2012	8:35	Wast Basin	22.5	363	DWH
2	7110583-443563-11	4/5/2012	8:50	Wast Basin	22.5	40	DWH
3	7110583-443563-11	4/5/2012	8:53	Wast Basin	22.5	30.5	DWH
4	8210664-443785-11	4/5/2012	9:01	Wast Basin	22.5	259.5	DWH
5	8210664-443785-11	4/5/2012	9:15	Wast Basin	22.5	235.5	DWH
6	8210664-444101-11	4/5/2012	9:25	Wast Basin	22.5	236.5	DWH
7	8210664-444101-11	4/5/2012	9:25	Wast Basin	22.5	31.5	DWH
8	8210664-444101-11	4/5/2012	9:38	Wast Basin	22.5	174.5	DWH
9	8210664-444101-11	4/5/2012	9:45	Wast Basin	22.5	23	DWH
10	7110583-443558-11	4/5/2012	9:58	Wast Basin	22.5	151	DWH
11	7110583-443558-11	4/5/2012	10:07	Wast Basin	22.5	140	DWH
12	7110583-443558-11	4/5/2012	10:10	Wast Basin	22.5	26	DWH
13	7110583-443558-11	4/5/2012	10:15	Wast Basin	22.5	78.5	DWH
14	7110583-443558-11	4/5/2012	10:17	Wast Basin	9	6	DWH
15	7110583-443558-11	4/5/2012	10:23	Wast Basin	22.5	69.5	DWH
16	7110583-443560-11	4/5/2012	10:27	Wast Basin	22.5	44.5	DWH
17	7110583-443560-11	4/5/2012	10:30	Wast Basin	22.5	28	DWH
18	7110583-443560-11	4/5/2012	10:32	Wast Basin	22.5	9.5	DWH
19	7110583-443560-11	4/5/2012	10:35	Wast Basin	22.5	6	DWH
20	7110583-443560-11	4/5/2012	10:27	Wast Basin	22.5	23.5	DWH
21	7110583-443560-11	4/5/2012	10:43	Wast Basin	22.5	27	DWH
22	7110583-443560-11	4/5/2012	10:46	Wast Basin	22.5	29	DWH
23	7110583-443560-11	4/5/2012	10:50	Wast Basin	22.5	30	DWH
24	7110583-443560-11	4/5/2012	10:58	Wast Basin	22.5	31	DWH
25	7110583-443560-11	4/5/2012	11:12	Wast Basin	22.5	31	DWH
26	7110583-443560-11	4/5/2012	11:14	Wast Basin	22.5	31	DWH
27	7110583-443560-11	4/5/2012	11:18	Wast Basin	22.5	31.5	DWH
28	7110583-443560-11	4/5/2012	11:21	Wast Basin	22.5	32.5	DWH
29	7110583-443560-11	4/5/2012	11:24	Wast Basin	22.5	34	DWH
30	7110583-443560-11	4/5/2012	11:27	Wast Basin	22.5	35	DWH
31	8210664-444102-11	4/5/2012	12:40	Wast Basin	22.5	34.5	DWH

## Panel Placement Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

Primary / Secondary: Primary				Series: 5	Material Type: gml		
Panel	Batch-Roll	Date	Time	Placement/Location/Comments	Width (ft.)	Length (ft.)	QA ID
32	8210664-444102-11	4/5/2012	12:45	West Basin	22.5	34.5	DWH
33	8210664-444102-11	4/5/2012	12:48	West Basin	22.5	35.5	DWH
34	8210664-444102-11	4/5/2012	12:52	West Basin	22.5	35.5	DWH
35	8210664-444102-11	4/5/2012	12:55	West Basin	22.5	34	DWH
36	8210664-444102-11	4/5/2012	12:58	West Basin	22.5	32	DWH
37	8210664-444102-11	4/5/2012	13:02	West Basin	22.5	22	DWH
38	8210664-444102-11	4/5/2012	13:05	West Basin	11	13.5	DWH
39	8210664-444102-11	4/5/2012	13:10	West Basin	22.5	223.5	DWH
40	7110583-443567-11	4/5/2012	13:23	West Basin	22.5	135	DWH
41	7110583-443567-11	4/5/2012	13:37	West Basin	22.5	314	DWH
42	7110583-443567-11	4/5/2012	13:40	West Basin	22.5	18	DWH
43	7110583-443565-11	4/5/2012	14:00	West Basin	22.5	277.5	DWH
44	7110583-443565-11	4/5/2012	14:20	West Basin	22.5	202.5	DWH
45	7110583-443678-11	4/5/2012	14:30	West Basin	22.5	74	DWH
46	7110583-443678-11	4/5/2012	14:40	West Basin	22.5	24.5	DWH
47	7110583-443678-11	4/5/2012	14:43	West Basin	11	19	DWH
48	7110583-443678-11	4/5/2012	14:46	West Basin	22.5	31	DWH
49	7110583-443678-11	4/5/2012	14:50	West Basin	22.5	31	DWH
50	7110583-443678-11	4/5/2012	14:55	West Basin	22.5	31	DWH
51	8210664-443797-11	4/13/2012	8:12	West Basin	22.5	150	DWH
52	8210664-443797-11	4/13/2012	8:15	West Basin	22.5	47	DWH
53	8210664-443789-11	4/13/2012	8:42	West Basin	22.5	36	DWH
54	8210664-443789-11	4/13/2012	8:46	West Basin	22.5	39	DWH
55	8210664-443789-11	4/13/2012	8:49	West Basin	22.5	30.5	DWH
56	8210664-443789-11	4/13/2012	8:52	West Basin	22.5	52	DWH
57	8210664-443789-11	4/13/2012	9:00	West Basin	22.5	42.5	DWH
58	8210664-443789-11	4/13/2012	9:04	West Basin	22.5	67.5	DWH
59	8210664-443789-11	4/13/2012	9:07	West Basin	4.5	31	DWH
60	8210664-443789-11	4/13/2012	9:08	West Basin	22.5	72	DWH
61	8210664-443789-11	4/13/2012	9:11	West Basin	22.5	74.5	DWH
62	7110583-443568-11	4/13/2012	11:00	West Basin	22.5	58	DWH



## Panel Placement Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>					ProjNo: <u>GJ4706</u>		
Location: <u>Camillus, New York</u>					TaskNo: <u>07</u>		
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>							
Primary / Secondary: Primary				Series: 5		Material Type: gml	
Panel	Batch-Roll	Date	Time	Placement/Location/Comments	Width (ft.)	Length (ft.)	QA ID
63	7110583-443568-11	4/13/2012	11:06	West Basin	22.5	50.5	DWH
64	7110583-443568-11	4/13/2012	11:10	West Basin	22.5	31.5	DWH
65	7110583-443568-11	4/13/2012	11:12	West Basin	4.5	18	DWH
66	7110583-443568-11	4/13/2012	11:15	West Basin	22.5	57	DWH
67	7110583-443568-11	4/13/2012	11:23	West Basin	22.5	44.5	DWH
68	7110583-443568-11	4/13/2012	11:26	West Basin	22.5	34	DWH
69	7110583-443568-11	4/13/2012	11:30	West Basin	22.5	30	DWH
70	7110583-443568-11	4/13/2012	11:40	West Basin	22.5	20	DWH
71	7110583-443568-11	4/13/2012	11:42	West Basin	22.5	25	DWH
72	7110583-443568-11	4/13/2012	11:46	West Basin	22.5	37	DWH
73	7110583-443568-11	4/13/2012	12:50	West Basin	22.5	26.5	DWH
74	7110583-443568-11	4/13/2012	13:01	West Basin	7	16	DWH
75	7110583-443568-11	4/13/2012	13:05	West Basin	4	41.5	DWH
Number of Panels:		75		Approx. Area (sq. ft).		111103.75	

Secondary



## Panel Placement Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

Primary / Secondary: Secondary			Series: 4		Material Type: gml		
Panel	Batch-Roll	Date	Time	Placement/Location/Comments	Width (ft.)	Length (ft.)	QA ID
1	8201500-102158814	11/8/2011	9:40	West Basin	22	282	DWH
2	8201500-102158814	11/8/2011	9:57	West Basin	22	219	DWH
3	8201500-102158871	11/8/2011	10:08	West Basin	22	77	DWH
4	8201500-102158871	11/8/2011	10:20	West Basin	22	310	DWH
5	8201500-102158871	11/8/2011	10:55	West Basin	22	101	DWH
6	8201499-102158810	11/8/2011	11:10	West Basin	22	221	DWH
7	8201499-102158810	11/8/2011	11:25	West Basin	22	288	DWH
8	8201507-102158893	11/8/2011	11:30	West Basin	22	40	DWH
9	8201507-102158893	11/8/2011	11:45	West Basin	22	296.5	DWH
10	8201507-102158893	11/8/2011	12:54	West Basin	22	150	DWH
11	8201500-102158838	11/8/2011	13:00	West Basin	22	123.5	DWH
12	8201500-102158838	11/8/2011	13:13	West Basin	22	244.5	DWH
13	8201500-102158838	11/8/2011	13:20	West Basin	22	104	DWH
14	8201499-102158812	11/8/2011	13:26	West Basin	22	113	DWH
15	8201499-102158812	11/8/2011	13:36	West Basin	22	180.5	DWH
16	8201499-102158812	11/8/2011	13:47	West Basin	22	146.5	DWH
17	8201499-102158812	11/8/2011	13:50	West Basin	22	29.5	DWH
18	8201507-102158892	11/8/2011	13:55	West Basin	22	87.5	DWH
19	8201507-102158892	11/8/2011	14:00	West Basin	22	86.5	DWH
20	8201507-102158892	11/8/2011	14:04	West Basin	22	59	DWH
21	8201507-102158892	11/8/2011	14:06	West Basin	22	34.5	DWH
22	8201507-102158892	11/8/2011	14:07	West Basin	22	11	DWH
23	8201507-102158892	11/8/2011	14:35	West Basin	22	25.5	DWH
24	8201507-102158892	11/8/2011	14:38	West Basin	22	22	DWH
25	8201507-102158892	11/8/2011	14:40	West Basin	22	9.5	DWH
26	8201507-102158892	11/8/2011	14:45	West Basin	22	26.5	DWH
27	8201507-102158892	11/8/2011	14:48	West Basin	22	26.5	DWH
28	8201507-102158879	11/8/2011	14:53	West Basin	22	27	DWH
29	8201507-102158879	11/8/2011	15:00	West Basin	22	28	DWH
30	8201507-102158879	11/8/2011	15:05	West Basin	22	28	DWH
31	8201500-102158859	11/9/2011	7:35	West Basin	22	30	DWH

## Panel Placement Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

Primary / Secondary: Secondary			Series: 4		Material Type: gml		
Panel	Batch-Roll	Date	Time	Placement/Location/Comments	Width (ft.)	Length (ft.)	QA ID
32	8201500-102158859	11/9/2011	7:39	West Basin	22	32	DWH
33	8201500-102158859	11/9/2011	7:43	West Basin	22	31.5	DWH
34	8201507-102158902	11/9/2011	7:55	West Basin	22	30.5	DWH
35	8201507-102158902	11/9/2011	7:58	West Basin	22	29.5	DWH
36	8201507-102158902	11/9/2011	8:02	West Basin	22	28.5	DWH
37	8201507-102158879	11/9/2011	8:08	West Basin	22	28.5	DWH
38	8201500-102158853	11/9/2011	8:21	West Basin	22	29.5	DWH
39	8201500-102158853	11/9/2011	8:26	West Basin	22	30.5	DWH
40	8201500-102158853	11/9/2011	8:34	West Basin	22	31.5	DWH
41	8201507-102158895	11/9/2011	8:47	West Basin	22	24	DWH
42	8201507-102158895	11/9/2011	8:50	West Basin	22	34	DWH
43	8201507-102158895	11/9/2011	8:55	West Basin	22	22	DWH
44	8201507-102158895	11/9/2011	9:00	West Basin	22	7	DWH
45	8201507-102158895	11/9/2011	9:02	West Basin	22	8	DWH
46	8201507-102158887	11/9/2011	9:09	West Basin	22	30	DWH
47	8201507-102158887	11/9/2011	9:15	West Basin	22	30	DWH
48	8201507-102158878	11/9/2011	9:20	West Basin	22	30	DWH
49	8201499-102158782	11/9/2011	10:00	West Basin	22	39.5	DWH
50	8201499-102158782	11/9/2011	10:15	West Basin	22	172	DWH
51	8201499-102158782	11/9/2011	10:51	West Basin	22	238	DWH
52	8201500-102158872	11/9/2011	10:52	West Basin	22	36.5	DWH
53	8201500-102158872	11/9/2011	10:53	West Basin	11	16	DWH
54	8201500-102158872	11/9/2011	10:58	West Basin	22	47	DWH
55	8201500-102158872	11/9/2011	11:02	West Basin	22	23	DWH
56	8201500-102158872	11/9/2011	11:06	West Basin	22	11	DWH
57	8201500-102158872	11/9/2011	11:08	West Basin	22	11	DWH
58	8201500-102158872	11/9/2011	11:12	West Basin	22	34	DWH
59	8201500-102158872	11/9/2011	11:14	West Basin	21	11.5	DWH
60	8201500-102158872	11/9/2011	11:16	West Basin	19	4	DWH
61	8201500-102158872	11/9/2011	11:25	West Basin	22	38.5	DWH
62	8201500-102158872	11/9/2011	11:27	West Basin	22	8	DWH

## Panel Placement Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>					ProjNo: <u>GJ4706</u>		
Location: <u>Camillus, New York</u>					TaskNo: <u>07</u>		
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>							
Primary / Secondary: Secondary				Series: 4		Material Type: gml	
Panel	Batch-Roll	Date	Time	Placement/Location/Comments	Width (ft.)	Length (ft.)	QA ID
63	8201500-102158872	11/9/2011	13:15	West Basin	22	49	DWH
64	8201500-102158872	11/9/2011	13:20	West Basin	22	50.5	DWH
65	8201500-102158872	11/9/2011	13:25	West Basin	22	49	DWH
66	8201494-102158634	11/9/2011	13:41	West Basin	22	44.5	DWH
67	8201494-102158634	11/9/2011	13:48	West Basin	22	29.5	DWH
68	8201494-102158634	11/9/2011	13:53	West Basin	22	28.5	DWH
69	8201494-102158634	11/9/2011	13:58	West Basin	22	28	DWH
70	8201507-102158884	11/9/2011	14:14	West Basin	22	20.5	DWH
71	8201507-102158884	11/9/2011	14:15	West Basin	22	5	DWH
72	8201507-102158884	11/9/2011	14:18	West Basin	22	30	DWH
73	8201507-102158884	11/9/2011	14:23	West Basin	22	29.5	DWH
74	8201507-102158884	11/9/2011	14:29	West Basin	22	24	DWH
75	8201507-102158884	11/9/2011	14:30	West Basin	22	4	DWH
76	8201507-102158884	11/9/2011	14:32	West Basin	22	5.5	DWH
Number of Panels: 76				Approx. Area (sq. ft). 109184.5			

## APPENDIX G

### Geomembrane Trial Seam Logs

- Calibration of Field Tensiometer
- Fusion
- Extrusion

## Calibration of Field Tensiometer



CalSource, Inc.  
1005 West Fayette St  
Suite 4D  
Syracuse, NY 13204  
866-895-8648  
calsource.com

## CERTIFICATE OF CALIBRATION

ISSUED TO	EQUIPMENT INFORMATION
<p style="text-align: center;">CHENANGO CONTRACTING 29 ARBUTUS ROAD JOHNSON CITY NY 13790</p> <p>CUSTOMER PO NUMBER:      MIKE-021312</p>	<p>ASSET NUMBER                      NAL-0802</p> <p>MANUFACTURER    PLASTIC WELDING TECHNOLOGIES</p> <p>MODEL NUMBER                      AL-0102</p> <p>DESCRIPTION                      DYNAMOMETER</p> <p>SERIAL NUMBER                      NAL-0802</p>
TEST RESULTS	
<p>CERTIFICATE NUMBER              308845</p> <p>AS RECEIVED                      IN TOLERANCE</p> <p>AS RETURNED                      PASS</p> <p>LAB TEMPERATURE              68.0 F</p> <p>LAB HUMIDITY                      39.5 %</p>	<p>PROCEDURE                      33K6-4-1756-1</p> <p>INTERVAL                      12 MONTHS</p> <p>CALIBRATION DATE              3/16/2012</p> <p>CALIBRATION DUE DATE          3/16/2013</p> <p>TECHNICIAN                      BREANNE M WENDT</p>
COMMENTS	

## CALIBRATION STANDARDS

ASSET NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DESCRIPTION	CAL DATE	CAL DUE
CAL-00056	RICE LAKE WEIGHING	N/A	125E THRU 125U	WEIGHT SET	4/19/2011	4/19/2012
CAL-00162	OMEGA	ITHX-SD	1280668	TEMP/RH LOGGER	9/15/2011	9/15/2012
CAL-00178	CDI	2000-303-0	260	50LB WEIGHT HANGER	3/29/2011	3/29/2012

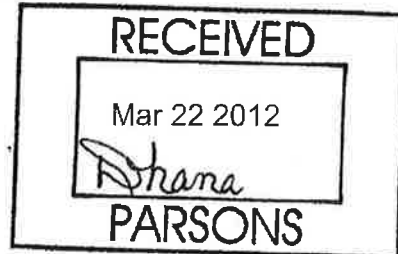
CalSource certifies this instrument to have been calibrated using standards with accuracies traceable to the National Institute of Standards and Technology, derived from natural physical constants, derived from ratio measurements, or compared to consensus standards. CalSource's calibration system complies to the requirements of ISO-9001, ISO/IEC 17025, ISO/TS 16949, ANSI/NCSL Z540-1-1994 and MIL-STD-45662A Unless otherwise indicated, the Test Uncertainty Ratio (TUR) for each calibrated parameter is at least 4:1. The results contained are valid only for the unit listed above.

<input type="checkbox"/>	NO EXCEPTIONS
<input type="checkbox"/>	EXCEPTIONS AS NOTED
<input type="checkbox"/>	PROCEED WITH WORK
<input type="checkbox"/>	RESUBMIT
<input type="checkbox"/>	SUBMIT CERTIFIED PRINTS
<p style="text-align: center;">PARSONS</p> <p>CLIENT/JOB NO. <u>446199</u></p> <p>CONTRACT _____</p> <p>BY _____ DATE _____</p>	
<p>ACTION TAKEN HEREON DOES NOT SUPERSEDE REQUIREMENTS OF APPLICABLE DESIGN DRAWINGS, SPECIFICATIONS, ORDERS, CODES OR REGULATIONS, OR RELIEVE THE CONTRACTOR OR SUPPLIER FROM RESPONSIBILITY FOR ERRORS OR OMISSIONS.</p>	

CERTIFIED BY

*Breanne M Wendt*  
BREANNE M WENDT

3/16/2012







## Tensiometer

ID Number NAL-0802  
Certificate Number 308845  
Technician Breanne M Wendt  
Date March 16, 2012

### Force(lbs.):

Range:	0-500 lbs.	Accuracy +/- 1% of ind.
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Nominal	Minimum	As Found	As Left	Maximum
50	50	50		51
150	149	151		152
250	248	250		253
350	347	348		354
450	445	448		455

### Notes:

Out of Tolerance Readings Highlighted  
All Transferred Values Reviewed for Accuracy  
Unless otherwise stated, As Left = As Found

# Fusion

## Trial Seam Log - Fusion

Project:	<u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>				
Location:	<u>Camillus, New York</u>	ProjNo:	<u>GJ4706</u>	TaskNo:	<u>07</u>
Description:	<u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>				
Tensiometer Description: NAL-0802					
Material Type	gml : 2	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	
100	10/31/2011	9:00	W-39	VS	S/S	750	8.5	146-140	138-133	247-226	PPI	P	DWH
101	10/31/2011	9:05	W-39	VS	T/T	750	7.5	136-140	131-131	213-218	PPI	P	DWH
102	10/31/2011	9:20	W-2	KP	S/S	365	8.5	156-153	126-139	232-235	PPI	P	DWH
103	10/31/2011	9:50	W-8	TS	S/S	380	7	117-113	124-119	224-219	PPI	P	DWH
104	10/31/2011	13:05	W-8	TS	S/S	380	7	132-136	137-124	209-224	PPI	P	DWH
105	10/31/2011	13:06	W-39	VS	S/S	750	8.5	141-142	135-139	210-212	PPI	P	DWH
106	10/31/2011	13:10	W-39	VS	T/T	750	7.5	146-150	139-137	210-190	PPI	P	DWH
107	10/31/2011	13:10	W-2	KP	S/S	365	8.5	144-132	165-140	241-227	PPI	P	DWH
108	10/31/2011	15:00	W-8	TS	T/T	380	6.5	136-156	154-139	197-195	ppi	P	DWH
109	11/1/2011	8:20	W-8	TS	S/S	380	7	138-135	138-143	234-226	PPI	P	DWH
110	11/1/2011	8:25	W-2	KP	S/S	365	7	136-154	133-143	239-239	PPI	P	DWH
111	11/1/2011	8:30	W-39	VS	S/S	750	8	151-154	138-155	232-236	PPI	P	DWH
112	11/1/2011	8:35	W-39	VS	T/T	750	7	144-142	127-119	228-236	PPI	P	DWH
113	11/1/2011	13:00	W-8	TS	S/S	380	7	117-126	124-111	195-197	PPI	P	DWH
114	11/1/2011	13:05	W-8	TS	T/T	380	6.5	133-142	132-126	189-194	PPI	P	DWH
115	11/1/2011	13:10	W-2	KP	S/S	365	7	134-132	135-138	205-208	PPI	P	DWH
116	11/1/2011	13:15	W-39	VS	S/S	750	8	117-119	150-134	203-199	PPI	P	DWH
117	11/1/2011	13:20	W-39	VS	S/T	750	7	116-113	134-141	173-203	PPI	P	DWH
118	11/1/2011	13:25	W-39	VS	T/T	750	7.0	114-111	128-132	188-202	PPI	P	DWH
119	11/2/2011	8:05	W-2	KP	S/S	365	7	157-141	136-146	247-231	PPI	P	DWH
120	11/2/2011	8:10	W-8	TS	S/S	380	7.5	135-145	115-126	214-211	PPI	P	DWH
121	11/2/2011	8:12	W-8	TS	T/T	380	6.5	132-137	149-130	212-204	PPI	P	DWH
122	11/2/2011	8:20	W-39	VS	S/S	750	8	133-141	130-130	233-231	PPI	P	DWH
123	11/2/2011	8:25	W-39	VS	S/T	750	7	146-135	148-156	222-216	PPI	P	DWH
124	11/2/2011	13:00	W-8	TS	S/S	380	7.5	118-119	123-123	196-200	PPI	P	DWH
125	11/2/2011	13:02	W-8	TS	T/T	380	6.5	141-133	124-130	180-182	PPI	P	DWH
126	11/2/2011	13:20	W-39	VS	S/S	750	8	125-123	127-127	201-200	PPI	P	DWH
127	11/2/2011	13:25	W-39	VS	S/T	750	7	166-153	145-150	193-200	PPI	P	DWH
128	11/2/2011	14:00	W-2	TS	S/S	380	7.5	137-149	137-135	211-214	PPI	P	DWH
129	11/2/2011	14:02	W-2	TS	T/T	380	6.5	139-140	133-136	181-185	PPI	P	DWH
130	11/8/2011	8:20	W-39	VS	S/S	750	8.5	129-136	125-103	205-191	PPI	P	DWH
131	11/8/2011	8:21	W-39	VS	T/T	750	7	153-145	154-143	201-209	PPI	P	DWH
132	11/8/2011	8:25	W-2	KP	S/S	375	8	149-139	144-121	219-219	PPI	P	DWH
133	11/8/2011	10:10	W-8	TS	S/S	380	7.5	118-116	119-126	182-182	PPI	P	DWH

## Trial Seam Log - Fusion

Project:	<u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>		
Location:	<u>Camillus, New York</u>	ProjNo:	<u>GJ4706</u>
Description:	<u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>		
Tensiometer Description: NAL-0802			

Material Type	gml : 2	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	
134	11/8/2011	10:12	W-8	TS	T/T	380	6.5	133-141	150-144	178-178	PPI	P	DWH
135	11/8/2011	12:30	W-2	KP	S/S	375	8	113-118	118-125	209-205	PPI	P	DWH
136	11/8/2011	13:40	W-39	VS	S/S	750	8.5	121-120	121-104	184-180	PPI	P	DWH
137	11/8/2011	13:45	W-39	VS	T/T	750	7	125-129	134-142	172-173	PPI	P	DWH
138	11/8/2011	14:10	W-8	TS	S/S	380	7.5	118-132	116-112	176-176	PPI	P	DWH
139	11/8/2011	14:15	W-8	TS	T/T	380	6.5	117-117	130-118	168-168	PPI	P	DWH
140	11/9/2011	7:30	W-8	TS	S/S	380	8	130-139	121-138	205-207	PPI	P	DWH
141	11/9/2011	7:32	W-8	TS	T/T	380	7	135-138	136-133	186-195	PPI	P	DWH
142	11/9/2011	7:35	W-39	VS	S/S	750	8.5	114-127	130-145	193-215	PPI	P	DWH
143	11/9/2011	7:38	W-39	VS	T/T	750	7	170-170	139-150	206-194	PPI	P	DWH
144	11/9/2011	7:38	W-2	KP	S/S	375	8	138-141	126-143	207-211	PPI	P	DWH
145	11/9/2011	13:00	W-39	VS	S/S	750	8.5	129-125	139-135	191-186	PPI	P	DWH
146	11/9/2011	13:01	W-39	VS	T/T	750	7	126-134	143-152	186-188	PPI	P	DWH
147	11/9/2011	13:02	W-2	KP	S/S	375	7	114-128	125-131	196-196	PPI	P	DWH
148	11/9/2011	13:10	W-8	TS	S/S	380	8	107-113	125-115	177-180	PPI	P	DWH
149	11/9/2011	13:15	W-8	TS	T/T	380	7	99-106	109-117	159-166	PPI	P	DWH
150	12/20/2011	9:20	W-2	TS	S/S	380	7	138-163	138-165	223-234	ppi	p	AR
151	12/20/2011	13:00	W-2	TS	S/S	380	6.8	149-143	142-136	190-197	ppi	p	AR
152	12/22/2011	9:00	W-2	TS	S/S	385	7	158-157	164-150	240-243	ppi	p	AR

## Trial Seam Log - Fusion

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>		ProjNo: <u>GJ4706</u>		TaskNo: <u>07</u>	
Location: <u>Camillus, New York</u>					
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>					
Tensiometer Description: <u>NAL-0802</u>					
Material Type	gml : 6	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	
153	3/28/2012	8:45	W-9	VS	S/S	365	7	136-138	141-134	234-235	PPI	P	DWH
154	3/28/2012	8:45	W-9	VS	T/T	365	6.5	127-139	133-146	200-218	PPI	P	DWH
155	3/28/2012	9:00	W-5	AS	S/S	365	7	135-148	135-123	219-218	PPI	P	DWH
156	3/28/2012	9:00	W-5	AS	T/T	365	6	141-134	154-134	214-229	PPI	P	DWH
157	3/28/2012	10:00	W-10	TS	S/S	370	7	114-100	102-109	188-188	PPI	P	DWH
158	3/28/2012	10:00	W-10	TS	T/T	370	6	157-133	151-136	191-183	PPI	P	DWH
159	3/28/2012	13:20	W-9	VS	S/S	365	7	118-118	114-113	185-190	PPI	P	DWH
160	3/28/2012	13:20	W-9	VS	T/T	365	6.5	155-148	131-138	187-182	PPI	P	DWH
161	3/28/2012	14:00	W-5	AS	S/S	365	7	114-134	117-135	207-210	PPI	P	DWH
162	3/28/2012	14:00	W-5	AS	T/T	365	6	127-121	150-143	178-197	PPI	P	DWH
163	3/28/2012	15:00	W-10	TS	S/S	370	7	121-131	124-135	192-196	PPI	P	DWH
164	3/28/2012	15:00	W-10	TS	T/T	370	6	145-139	142-141	200-200	PPI	P	DWH
165	3/30/2012	13:25	W-9	VS	S/S	365	7	135-120	125-124	211-206	PPI	P	DWH
166	3/30/2012	13:25	W-9	VS	T/T	365	6	150-149	133-146	218-209	PPI	P	DWH
167	3/30/2012	13:40	W-10	TS	S/S	370	7	126-131	121-126	214-210	PPI	P	DWH
168	3/30/2012	13:40	W-10	TS	T/T	370	6	113-123	113-140	173-173	PPI	P	DWH
169	3/30/2012	13:40	W-5	AS	S/S	365	7	131-151	128-157	214-215	PPI	P	DWH
170	3/30/2012	13:40	W-5	AS	T/T	365	6	153-117	141-133	204-202	PPI	P	DWH
171	3/30/2012	13:45	W-11	KC	S/S	375	7	117-118	137-109	185-201	PPI	P	DWH
172	3/30/2012	13:45	W-11	KC	T/T	375	6.5	112-111	156-133	195-195	PPI	P	DWH
173	4/5/2012	8:45	W-9	VS	S/S	365	7	128-130	121-139	226-227	PPI	P	DWH
174	4/5/2012	8:45	W-9	VS	T/T	365	6	151-148	139-154	221-232	PPI	P	DWH
175	4/5/2012	8:50	W-10	TS	S/S	370	7	128-148	141-139	219-217	PPI	P	DWH
176	4/5/2012	8:50	W-10	TS	T/T	370	6	115-137	126-123	232-229	PPI	P	DWH
177	4/5/2012	9:00	W-11	VC	S/S	375	8.5	140-142	158-157	211-223	PPI	P	DWH
178	4/5/2012	9:00	W-11	VC	T/T	375	6.5	128-118	118-123	229-225	PPI	P	DWH
179	4/5/2012	10:30	W-9	VS	S/S	365	7	141-119	91-101	200-202	PPI	P	DWH
180	4/5/2012	10:30	W-10	TS	S/S	370	7	143-145	117-142	205-201	PPI	P	DWH
181	4/5/2012	10:30	W-11	VC	S/S	375	8.5	140-154	147-138	200-201	PPI	P	DWH
182	4/5/2012	11:45	W-5	AS	S/S	365	7	155-137	154-156	248-236	PPI	P	DWH
183	4/5/2012	11:45	W-5	AS	T/T	365	6	140-140	142-133	243-240	PPI	P	DWH
184	4/5/2012	12:40	W-10	TS	S/S	370	7	113-118	123-127	206-204	PPI	P	DWH
185	4/5/2012	12:40	W-10	TS	T/T	370	6	126-130	116-127	206-205	PPI	P	DWH
186	4/5/2012	12:45	W-9	VS	S/S	365	7	139-125	128-130	223-218	PPI	P	DWH

## Trial Seam Log - Fusion

Project: Onondaga Lake Sediment Consolidation Area ( SCA )	ProjNo: GJ4706	TaskNo: 07
Location: Camillus, New York		
Description: Construction Quality Assurance for Onondaga SCA Phase I Cell		
Tensiometer Description: NAL-0802		
Material Type gml : 6	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	
187	4/5/2012	12:45	W-9	VS	T/T	365	6	118-150	117-132	210-205	PPI	P	DWH
188	4/5/2012	12:55	W-11	VC	S/S	375	8.5	127-128	128-118	212-212	PPI	P	DWH
189	4/5/2012	12:55	W-11	VC	T/T	375	6.5	153-155	120-132	206-212	PPI	P	DWH
190	4/12/2012	8:25	W-10	TS	T/T	370	6	97-126	125-152	167-177	PPI	P	DWH
191	4/12/2012	8:35	W-5	AS	S/S	365	7	127-126	109-117	202-200	PPI	P	DWH
192	4/12/2012	8:35	W-5	AS	T/T	365	6	152-121	145-143	201-164	PPI	P	DWH
193	4/12/2012	9:00	W-9	VS	S/S	365	7	117-106	108-109	203-195	PPI	P	DWH
194	4/12/2012	9:00	W-9	VS	T/T	365	6	163-160	182-162	210-201	PPI	P	DWH
195	4/12/2012	10:10	W-11	TS	S/S	375	7	110-107	114-113	195-200	PPI	P	DWH
196	4/12/2012	10:10	W-11	TS	T/T	375	6	129-119	131-133	163-166	PPI	P	DWH
197	4/12/2012	12:10	W-9	VS	S/S	365	7	112-113	118-119	173-171	PPI	P	DWH
198	4/12/2012	12:10	W-9	VS	T/T	365	6	125-133	151-129	165-168	PPI	P	DWH
199	4/12/2012	12:44	W-5	AS	S/S	365	7	112-117	102-130	165-182	PPI	P	DWH
200	4/12/2012	12:44	W-5	AS	T/T	365	6	105-128	120-124	180-178	PPI	P	DWH
201	4/12/2012	12:44	W-5	AS	S/T	365	6	129-98	118-98	182-179	PPI	P	DWH
202	4/12/2012	14:10	W-11	TS	S/S	375	7	102-91	103-104	147-148	PPI	P	DWH
203	4/13/2012	8:50	W-9	VS	S/S	365	7	131-131	131-146	199-208	PPI	P	DWH
204	4/13/2012	8:50	W-9	VS	T/T	365	7	132-151	136-147	192-198	PPI	P	DWH
205	4/13/2012	8:50	W-5	AS	S/S	365	7	126-119	105-107	186-181	PPI	P	DWH
206	4/13/2012	8:50	W-5	AS	T/T	365	6	136-117	146-128	173-160	PPI	P	DWH
207	4/13/2012	8:50	W-5	AS	S/T	365	6	100-130	112-135	182-192	PPI	P	DWH
208	4/13/2012	9:10	W-14	TS	S/S	370	7	106-105	108-112	203-207	PPI	P	DWH
209	4/13/2012	9:10	W-14	TS	T/T	370	6	132-138	164-139	187-200	PPI	P	DWH
210	4/13/2012	10:30	W-9	VS	S/T	365	6.5	128-124	118-116	179-176	PPI	P	DWH
211	4/13/2012	13:10	W-14	TS	S/S	370	7	105-128	107-120	160-166	PPI	P	DWH
212	4/13/2012	13:10	W-14	TS	T/T	370	6	102-114	116-116	140-141	PPI	P	DWH
213	4/13/2012	13:15	W-5	AS	S/S	365	7	125-113	106-130	176-178	PPI	P	DWH
214	4/13/2012	13:15	W-5	AS	T/T	365	6	112-135	116-142	146-151	PPI	P	DWH
215	4/13/2012	13:15	W-5	AS	S/T	365	6	98-119	121-130	172-185	PPI	P	DWH
216	4/13/2012	13:35	W-9	VS	S/S	365	7	118-125	114-123	180-189	PPI	P	DWH
217	4/13/2012	13:35	W-9	VS	T/T	365	6	138-121	141-119	191-182	PPI	P	DWH

## Extrusion

## Trial Seam Log - Extrusion

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>													
Location: <u>Camillus, New York</u>							ProjNo: <u>GJ4706</u>				TaskNo: <u>07</u>		
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>													
Tensiometer Description: <u>NAL-0802</u>													
Material Type		gml : 2		Peel:		78 ppi		Shear:		120 ppi			
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		
052	11/2/2011	14:15	MX-5	LV	T/T	500	500	152-150	186-186	PPI	P		DWH
053	11/3/2011	8:30	MX-8	VS	T/T	500	500	137-138	204-213	PPI	P		DWH
054	11/3/2011	8:45	MX-5	LV	T/T	500	500	119-121	204-210	PPI	P		DWH
055	11/3/2011	12:45	MX-5	LV	T/T	500	500	141-148	180-205	PPI	P		DWH
056	11/3/2011	12:45	MX-8	VS	T/T	500	500	132-129	177-173	PPI	P		DWH
057	11/4/2011	8:30	MX-8	VS	T/T	535	500	147-144	215-225	PPI	P		DWH
058	11/7/2011	8:00	MX-8	VS	T/T	535	500	149-162	230-208	PPI	P		DWH
059	11/7/2011	12:45	MX-8	VS	T/T	535	500	130-143	200-196	PPI	P		DWH
060	11/9/2011	15:40	MX-14	CP	T/T	465	500	137-130	225-218	PPI	P		DWH
061	11/10/2011	8:00	MX-5	LV	T/T	500	500	145-130	203-201	PPI	P		DWH
062	11/10/2011	8:00	MX-8	VS	T/T	535	500	140-142	210-189	PPI	P		DWH
063	11/10/2011	12:45	MX-8	VS	T/T	535	500	136-151	200-204	PPI	P		DWH
064	11/10/2011	12:50	MX-5	LV	T/T	500	500	111-124	204-184	PPI	P		DWH
065	11/11/2011	8:00	MX-8	VS	T/T	535	500	131-135	216-224	PPI	P		DWH
066	11/11/2011	8:00	MX-5	KP	T/T	550	500	129-151	210-218	PPI	P		DWH
067	11/14/2011	8:00	MX-8	VS	T/T	535	500	125-131	206-201	PPI	P		DWH
068	11/14/2011	8:00	MX-5	KP	T/T	535	500	139-143	202-203	PPI	P		DWH
069	11/15/2011	8:00	MX-8	VS	T/T	535	500	131-141	205-207	PPI	P		DWH
070	11/15/2011	8:30	MX-5	KP	T/T	535	500	138-135	215-210	PPI	P		DWH
071	11/15/2011	12:40	MX-5	KP	T/T	535	500	187-167	176-205	PPI	P		DWH
072	11/15/2011	13:45	MX-8	VS	T/T	535	500	110-138	187-210	PPI	P		DWH
073	11/22/2011	9:00	MX-5	KP	T/T	500	500	152-152	230-232	PPI	P		DWH
074	12/13/2011	14:00	MX-8	LV	T/T	500	500	90-83	217-219	PPI	P		DWH
075	12/14/2011	9:30	MX-8	LV	T/T	500	500	109-101	215-214	PPI	P		DWH
076	12/20/2011	9:15	MX-14	VC	T/T	550	525	109-140	216-218	PPI	P		AR
077	12/20/2011	12:45	MX-14	VC	T/T	550	525	142-140	220-219	PPI	P		AR
078	12/20/2011	13:00	MX-8	VS	T/T	550	550	150-142	221-218	PPI	P		AR
079	12/22/2011	9:05	MX-19	MB	T/T	425	525	114-140	221-204	PPI	P		AR
080	12/22/2011	9:00	MX-8	VS	T/T	550	535	113-131	212-194	PPI	P		AR
081	12/22/2011	13:00	MX-19	MB	T/T	550	525	120-106	190-205	PPI	P		AR
082	12/22/2011	13:00	MX-8	VS	T/T	550	535	108-118	200-210	PPI	P		AR
083	3/27/2012	8:00	MX-16	KC	T/T	550	550	135-115	245-252	PPI	P		DWH



## Trial Seam Log - Extrusion

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>													
Location: <u>Camillus, New York</u>						ProjNo: <u>GJ4706</u>				TaskNo: <u>07</u>			
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>													
Tensiometer Description: NAL-0802													
Material Type      gml : 6                                      Peel:      78 ppi                                      Shear:      120 ppi													
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		
084	3/28/2012	13:35	MX-16	CP	T/T	450	495	145-132	168-171	PPI	P		DWH
085	3/30/2012	8:15	MX-16	VS	T/T	500	500	128-140	189-190	PPI	P		DWH
086	4/2/2012	8:30	MX-16	VS	T/T	500	500	155-154	189-216	PPI	P		DWH
087	4/2/2012	10:30	MX-16	VS	T/T	500	500	119-124	198-196	PPI	P		DWH
088	4/2/2012	12:45	MX-16	VS	T/T	500	500	142-131	185-191	PPI	P		DWH
089	4/3/2012	8:30	MX-16	VS	T/T	500	500	138-146	224-214	PPI	P		DWH
090	4/3/2012	10:00	MX-16	VS	T/T	500	500	119-121	178-191	PPI	P		DWH
091	4/3/2012	12:45	MX-16	VS	T/T	500	500	135-128	187-190	PPI	P		DWH
092	4/4/2012	9:42	MX-16	VS	T/T	500	500	147-142	203-207	PPI	P		DWH
093	4/6/2012	9:10	MX-16	VS	T/T	500	500	151-163	212-210	PPI	P		DWH
094	4/6/2012	13:40	MX-16	VS	T/T	500	500	140-136	181-176	PPI	P		DWH
095	4/9/2012	8:15	MX-16	VS	T/T	500	500	140-133	212-216	PPI	P		DWH
096	4/9/2012	10:30	MX-16	VS	T/T	500	500	150-137	191-198	PPI	P		DWH
097	4/9/2012	12:45	MX-16	VS	T/T	500	500	138-151	196-192	PPI	P		DWH
098	4/10/2012	8:30	MX-16	VS	T/T	500	500	158-165	220-209	PPI	P		DWH
099	4/10/2012	12:40	MX-16	VS	T/T	500	500	149-140	221-204	PPI	P		DWH
100	4/13/2012	9:20	MX-12	VC	T/T	500	500	126-129	188-196	PPI	P		DWH
101	4/13/2012	13:30	MX-18	VC	T/T	475	500	128-130	196-186	PPI	P		DWH
102	4/16/2012	8:00	MX-16	VS	T/T	500	500	134-122	171-178	PPI	P		DWH
103	4/16/2012	9:00	MX-18	LV	T/T	475	500	120-118	171-173	PPI	P		DWH
104	4/16/2012	13:00	MX-18	LV	T/T	475	500	130-131	156-162	PPI	P		DWH
105	4/16/2012	14:45	MX-16	BTK	T/T	500	450	135-123	137-138	PPI	P		DWH
106	4/17/2012	8:00	MX-18	LV	T/T	500	500	128-163	192-189	PPI	P		DWH
107	4/17/2012	12:50	MX-18	LV	T/T	500	500	115-158	141-182	PPI	P		DWH
108	4/18/2012	8:05	MX-18	LV	T/T	500	500	112-136	230-230	PPI	P		DWH
109	4/18/2012	8:05	MX-16	VS	T/T	500	500	134-147	201-196	PPI	P		DWH
110	4/18/2012	12:40	MX-16	VS	T/T	500	500	136-147	168-178	PPI	P		DWH
111	4/18/2012	12:45	MX-18	LV	T/T	500	500	120-135	208-209	PPI	P		DWH
112	4/19/2012	8:10	MX-16	VS	T/T	500	500	134-139	209-223	PPI	P		DWH
113	5/16/2012	13:20	MX-16	VC	T/T	425	475	115-119	174-169	PPI	P		DWH
114	5/17/2012	8:20	MX-16	VC	T/T	475	500	123-122	161-164	PPI	P		DWH
115	5/17/2012	9:30	MX-18	CAP	T/T	475	475	142-141	168-168	PPI	P		DWH
116	5/17/2012	12:40	MX-18	CAP	T/T	475	475	128-140	164-169	PPI	P		DWH
117	5/17/2012	12:50	MX-16	VC	T/T	475	500	130-124	165-168	PPI	P		DWH

## APPENDIX H

### Geomembrane Production Seam and Non-Destructive Test Logs

- East Basin
- West Basin

## East Basin

- Primary
- Secondary

Primary



## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>					ProjNo: <u>GJ4706</u>				
Location: <u>Camillus, New York</u>					TaskNo: <u>07</u>				
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>									

Material Type	gml : 6	Specifications:	Seam Pressure: <u>25-30 PSI 3 lb loss</u>	Vacuum Box: <u>5 PSI 20 Sec</u>
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Primary / Secondary: Primary		Series: 3	
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Production Seam					Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Ext/ Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
3/28/2012	9:15	W-9	VS	F	3-002-003-0-22.5	22.5	DWH	0-22.5	30-29	MAB	P	AT OK	DWH
3/28/2012	9:25	W-9	VS	F	3-001-003-0-105	105	DWH	0-105	30-30	MAB	P	AT OK	DWH
3/28/2012	10:04	W-5	AS	F	3-004-005-0-27	27	DWH	0-27	30-28	MAB	P	AT OK	DWH
3/28/2012	10:06	W-9	VS	F	3-001-002-0-193	193	DWH	0-193	30-30	MAB	P	AT OK	DWH
3/28/2012	10:19	W-5	AS	F	3-005-006-29-0	29	DWH	0-29	30-30	MAB	P	AT OK	DWH
3/28/2012	10:25	W-10	TS	F	3-008-009-32-0	32	DWH	0-32	30-29	MAB	P	AT OK	DWH
3/28/2012	10:30	W-5	AS	F	3-006-007-32-0	32	DWH	0-322	30-29	MAB	P	AT OK	DWH
3/28/2012	10:37	W-10	TS	F	3-009-010-32-0	32	DWH	0-32	30-30	MAB	P	AT OK	DWH
3/28/2012	10:40	W-5	AS	F	3-007-008-32-0	32	DWH	0-32	30-29	MAB	P	AT OK	DWH
3/28/2012	10:45	W-9	VS	F	3-013-014-36-0	36	DWH	0-36	30-29	MAB	P	AT OK	DWH
3/28/2012	10:50	W-10	TS	F	3-010-011-33-0	33	DWH	0-33	30-30	MAB	P	AT OK	DWH
3/28/2012	10:55	W-5	AS	F	3-011-012-34-0	34	DWH	0-34	30-27	MAB	P	AT OK	DWH
3/28/2012	11:00	W-10	TS	F	3-012-013-34-0	34	DWH	0-34	30-30	MAB	P	AT OK	DWH
3/28/2012	11:10	W-9	VS	F	3-001-016-32-0	32	DWH	0-32	30-30	MAB	P	AT OK	DWH
3/28/2012	11:25	W-9	VS	F	3-016-017-12-0	12	DWH	0-12	30-30	MAB	P	AT OK	DWH
3/28/2012	11:35	W-9	VS	F	3-015-017-0-4	4	DWH	0-4	CAPPED	AS	P	VT OK	DWH

**Production Seam Log**

Project: Onondaga Lake Sediment Consolidation Area ( SCA )

Location: Camillus, New York

Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

ProjNo: GJ4706

TaskNo: 07

Material Type

gml : 6

Specifications:

Seam Pressure: 25-30 PSI 3 lb loss

Vacuum Box: 5 PSI 20 Sec

Primary / Secondary: Primary

Series: 3

Production Seam					Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Ext/ Fus:	SeamNo Series-Seam1-Seam2-Begin-End	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
3/28/2012	11:37	W-9	VS	F	3-015-016-26-0	26	DWH	26-0	30-27	MAB	P	AT OK	DWH
3/28/2012	11:38	W-5	AS	F	3-001-014-22-0	22	DWH	0-22	30-29	MAB	P	AT OK	DWH
3/28/2012	12:30	W-5	AS	F	3-001-013-23-0	23	DWH	0-23	30-30	MAB	P	AT OK	DWH
3/28/2012	12:40	W-5	AS	F	3-001-012-23-0	23	DWH	0-23	30-27	MAB	P	AT OK	DWH
3/28/2012	12:40	W-10	TS	F	3-002-018-192-0	192	DWH	0-192	30-30	MAB	P	AT OK	DWH
3/28/2012	12:50	W-5	AS	F	3-001-011-23-0	23	DWH	23-0	30-30	MAB	P	AT OK	DWH
3/28/2012	13:02	W-5	AS	F	3-001-010-22-0	22	DWH	0-22	30-28	MAB	P	AT OK	DWH
3/28/2012	13:20	W-5	AS	F	3-001-008-23-0	23	DWH	0-23	30-29	MAB	P	AT OK	DWH
3/28/2012	13:20	W-10	TS	F	3-003-018-106-0	106	DWH	0-106	30-30	MAB	P	AT OK	DWH
3/28/2012	13:25	W-5	AS	F	3-001-007-23-0	23	DWH	0-23	30-30	MAB	P	AT OK	DWH
3/28/2012	13:30	W-5	AS	F	3-001-006-23-0	23	DWH	0-23	30-30	MAB	P	AT OK	DWH
3/28/2012	13:30	W-9	VS	F	3-019-020-0-22	22	DWH	0-22	30-28	MAB	P	AT OK	DWH
3/28/2012	13:34	W-5	AS	F	3-001-005-22-0	22	DWH	0-22	30-30	MAB	P	AT OK	DWH
3/28/2012	13:36	W-9	VS	F	3-018-019-112-0	112	DWH	0-112	30-30	MAB	P	AT OK	DWH
3/28/2012	13:41	W-5	AS	F	3-001-004-22-0	22	DWH	0-22	30-29	MAB	P	AT OK	DWH
3/28/2012	13:48	W-5	AS	F	3-001-009-23-0	23	DWH	0-23	30-30	MAB	P	AT OK	DWH



## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u> Location: <u>Camillus, New York</u> Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	ProjNo: <u>GJ4706</u> TaskNo: <u>07</u>
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Material Type	gml : 6	Specifications:	Seam Pressure: <u>25-30 PSI 3 lb loss</u>	Vacuum Box: <u>5 PSI 20 Sec</u>
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Primary / Secondary: Primary	Series: 3
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Production Seam					Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Ext/ Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
3/28/2012	13:51	W-9	VS	F	3-018-020-0-188	188	DWH	0-188	30-30	MAB	P	AT OK	DWH
3/28/2012	14:05	W-10	TS	F	3-019-021-114-0	114	DWH	0-114	30-29	MAB	P	AT OK	DWH
3/28/2012	14:30	W-10	TS	F	3-020-021-186-0	186	DWH	0-186	30-30	MAB	P	AT OK	DWH
3/28/2012	14:30	W-10	TS	F	3-021-022-300-0	300	DWH	0-300	30-30	MAB	P	AT OK	DWH
3/28/2012	14:53	W-5	AS	F	3-022-023-187-0	187	DWH	0-187	30-30	MAB	P	AT OK	DWH
3/28/2012	15:07	W-10	TS	F	3-023-024-0-22	22	DWH	0-22	30-30	MAB	P	AT OK	DWH
3/28/2012	15:22	W-5	AS	F	3-022-024-116-0	116	DWH	0-116	30-30	MAB	P	AT OK	DWH
3/28/2012	15:35	W-10	TS	F	3-023-025-192-0	192	DWH	0-192	30-30	MAB	P	AT OK	DWH
3/28/2012	15:45	W-5	AS	F	3-004-015-28-0	28	DWH	0-28	30-29	MAB	P	AT OK	DWH
3/28/2012	15:59	W-5	AS	F	3-001-015-7-0	7	DWH	0-7	30-30	MAB	P	AT OK	DWH
3/28/2012	16:00	W-10	TS	F	3-024-025-116-0	116	DWH	0-116	30-30	MAB	P	AT OK	DWH
3/28/2012	16:00	W-9	VS	F	3-025-026-58-0	58	DWH	0-58	30-30	MAB	P	AT OK	DWH
3/28/2012	16:10	W-9	VS	F	3-026-027-0-22.5	22.5	DWH	0-22.5	30-27	MAB	P	AT OK	DWH
3/28/2012	16:25	W-9	VS	F	3-025-027-250-0	250	DWH	0-250	30-30	MAB	P	AT OK	DWH
3/28/2012	16:34	W-5	AS	F	3-026-028-63-0	63	DWH	0-63	30-29	MAB	P	AT OK	DWH
3/28/2012	16:45	W-5	AS	F	3-027-028-185-0	185	DWH	0-185	30-29	MAB	P	AT OK	DWH

## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

Material Type	gml : 6	Specifications:	Seam Pressure: <u>25-30 PSI 3 lb loss</u>	Vacuum Box: <u>5 PSI 20 Sec</u>
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Primary / Secondary:	Primary	Series:	3
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Production Seam					Location			Nondestructive Test					
Date	Time	Mach. IL	Oper. ID	Ext/ Fus:	SeamNo Series-Seam1-Seam2-Begin-End	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
3/28/2012	16:45	W-10	TS	F	3-028-029-0-22	22	DWH	0-22	30-29	MAB	P	AT OK	DWH
3/28/2012	17:00	W-10	TS	F	3-027-029-65-0	65	DWH	0-65	30-30	MAB	P	AT OK	DWH
3/30/2012	13:45	W-9	VS	F	3-028-030-248-0	248	DWH	0-248	30-30	AS	P	AT OK	DWH
3/30/2012	14:11	W-10	TS	F	3-031-032-0-22.5	22.5	DWH	0-22.5	30-30	AS	P	AT OK	DWH
3/30/2012	14:16	W-9	VS	F	3-029-030-65-0	65	DWH	0-65	30-30	AS	P	AT OK	DWH
3/30/2012	14:25	W-10	TS	F	3-030-031-108-0	108	DWH	0-108	30-29	AS	P	AT OK	DWH
3/30/2012	14:30	W-5	AS	F	3-033-034-0-22.5	22.5	DWH	0-22.5	30-28	AS	P	AT OK	DWH
3/30/2012	14:32	W-11	KC	F	3-031-033-109-0	109	DWH	0-109	30-30	AS	P	AT OK	DWH
3/30/2012	14:45	W-10	TS	F	3-030-032-205-0	205	DWH	0-205	30-30	AS	P	AT OK	DWH
3/30/2012	14:45	W-5	AS	F	3-033-035-278-0	278	DWH	0-278	30-30	AS	P	AT OK	DWH
3/30/2012	14:50	W-11	KC	F	3-032-033-164-0	164	DWH	0-164	30-30	AS	P	AT OK	DWH
3/30/2012	15:00	W-9	VS	F	3-035-036-122-0	122	DWH	0-122	30-30	AS	P	AT OK	DWH
3/30/2012	15:15	W-11	KC	F	3-032-034-40-0	40	DWH	0-40	30-30	AS	P	AT OK	DWH
3/30/2012	15:15	W-9	VS	F	3-036-037-0-22.5	22.5	DWH	22.5	30-30	AS	P	AT OK	DWH
3/30/2012	15:20	W-10	TS	F	3-036-038-122-0	122	DWH	0-122	30-30	AS	P	AT OK	DWH
3/30/2012	15:21	W-9	VS	F	3-035-037-196-0	196	DWH	0-196	30-30	AS	P	AT OK	DWH



## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

Material Type	gml : 6	Specifications:	Seam Pressure: <u>25-30 PSI 3 lb loss</u>	Vacuum Box: <u>5 PSI 20 Sec</u>
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Primary / Secondary:	Primary	Series:	3
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Production Seam					Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Ext/ Fus:	SeamNo Series-Seam1-Seam2-Begin-End	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
3/30/2012	15:27	W-5	AS	F	3-034-035-40-0	40	DWH	0-40	30-30	AS	P	AT OK	DWH
3/30/2012	15:30	W-11	KC	F	3-037-038-159-0	159	DWH	0-159	30-30	AS	P	AT OK	DWH
3/30/2012	15:35	W-11	KC	F	3-037-039-37-0	37	DWH	0-37	30-30	AS	P	AT OK	DWH
3/30/2012	15:40	W-5	AS	F	3-038-039-0-22.5	22.5	DWH	0-22.5	30-28	AS	P	AT OK	DWH
4/12/2012	8:46	W-10	TS	F	3-040-041-0-22.5	22.5	DWH	0-22.5	30-30	AS	P	AT OK	DWH
4/12/2012	9:15	W-5	AS	F	3-038-040-266-0	266	DWH	0-266	30-30	AS	P	AT OK	DWH
4/12/2012	9:45	W-9	VS	F	3-040-042-274-0	274	DWH	0-274	30-30	AS	P	AT OK	DWH
4/12/2012	10:00	W-5	AS	F	3-038-041-20-0	20	DWH	0-20	30-30	AS	P	AT OK	DWH
4/12/2012	10:03	W-5	AS	F	3-039-041-34-0	34	DWH	0-34	30-30	AS	P	AT OK	DWH
4/12/2012	10:19	W-5	AS	F	3-042-043-103-0	103	DWH	0-103	30-27	AS	P	AT OK	DWH
4/12/2012	10:20	W-9	VS	F	3-041-042-54-0	54	DWH	0-54	30-30	AS	P	AT OK	DWH
4/12/2012	10:20	W-11	TS	F	3-043-044-0-22.5	22.5	DWH	0-22.5	30-27	AS	P	AT OK	DWH
4/12/2012	10:24	W-9	VS	F	3-048-049-0-54	54	DWH	0-54	30-27	AS	P	AT OK	DWH
4/12/2012	10:35	W-9	VS	F	3-045-046-0-22.5	22.5	DWH	0-22.5	30-30	AS	P	AT OK	DWH
4/12/2012	10:38	W-5	AS	F	3-042-044-227-0	227	DWH	0-227	30-29	AS	P	AT OK	DWH
4/12/2012	10:40	W-11	TS	F	3-043-045-105-0	105	DWH	0-105	30-29	AS	P	AT OK	DWH

**Production Seam Log**

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>					ProjNo: <u>GJ4706</u>								
Location: <u>Camillus, New York</u>					TaskNo: <u>07</u>								
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>													
Material Type      gml : 6      Specifications:      Seam Pressure: <u>25-30 PSI 3 lb loss</u> Vacuum Box: <u>5 PSI 20 Sec</u>													
Primary / Secondary:    Primary      Series: 3													
Production Seam					Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Ext/ Fus:	SeamNo Series-Seam1-Seam2-Begin-End	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
4/12/2012	10:45	W-9	VS	F	3-045-047-243-0	243	DWH	0-243	30-30	AS	P	AT OK	DWH
4/12/2012	10:55	W-11	TS	F	3-044-045-163-0	163	DWH	0-163	30-30	AS	P	AT OK	DWH
4/12/2012	11:20	W-11	TS	F	3-044-046-62-0	62	DWH	0-62	30-30	AS	P	AT OK	DWH
4/12/2012	11:34	W-9	VS	F	3-050-051-0-22.5	22.5	DWH	0-22.5	30-30	AS	P	AT OK	DWH
4/12/2012	11:35	W-5	AS	F	3-049-050-0-36	36	DWH	0-36	30-30	AS	P	AT OK	DWH
4/12/2012	11:40	W-5	AS	F	3-049-051-0-18	18	DWH	0-18	30-30	AS	P	AT OK	DWH
4/12/2012	11:45	W-11	TS	F	3-050-052-0-38	38	DWH	0-38	30-30	AS	P	AT OK	DWH
4/12/2012	11:45	W-9	VS	F	3-052-053-0-55	55	DWH	0-55	30-30	AS	P	AT OK	DWH
4/12/2012	11:50	W-11	TS	F	3-051-052-0-16	16	DWH	0-16	30-28	AS	P	AT OK	DWH
4/12/2012	12:45	W-11	TS	F	3-053-054-0-52	52	DWH	0-52	30-30	AS	P	AT OK	DWH
4/12/2012	13:05	W-11	TS	F	3-054-055-0-52	52	DWH	0-52	30-30	AS	P	AT OK	DWH
4/12/2012	13:10	W-9	VS	F	3-056-057-0-34	34	DWH	0-34	30-30	AS	P	AT OK	DWH
4/12/2012	13:12	W-5	AS	F	3-056-058-0-34	34	DWH	0-34	30-30	AS	P	AT OK	DWH
4/12/2012	13:20	W-11	TS	F	3-058-059-0-22.5	22.5	DWH	0-22.5	30-29	AS	P	AT OK	DWH
4/12/2012	13:22	W-5	AS	F	3-055-057-0-23	23	DWH	0-23	30-30	AS	P	AT OK	DWH
4/12/2012	13:25	W-5	AS	F	3-055-056-0-21	21	DWH	0-21	30-28	AS	P	AT OK	DWH

Friday, June 22, 2012

## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u> Location: <u>Camillus, New York</u> Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	ProjNo: <u>GJ4706</u> TaskNo: <u>07</u>
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Material Type	gml : 6	Specifications:	Seam Pressure: <u>25-30 PSI 3 lb loss</u>	Vacuum Box: <u>5 PSI 20 Sec</u>
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Primary / Secondary: Primary	Series: 3
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Production Seam					Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Ext/ Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
4/12/2012	13:25	W-11	TS	F	3-059-060-0-16	16	DWH	0-16	30-30	AS	P	AT OK	DWH
4/12/2012	13:35	W-11	TS	F	3-047-060-0-19	19	DWH	0-19	30-30	AS	P	AT OK	DWH
4/12/2012	13:38	W-5	AS	F	3-047-048-21-0	21	DWH	0-21	30-30	AS	P	AT OK	DWH
4/12/2012	13:42	W-5	AS	F	3-047-049-23-0	23	DWH	0-23	30-30	AS	P	AT OK	DWH
4/12/2012	13:47	W-5	AS	F	3-047-051-23-0	23	DWH	0-23	30-29	AS	P	AT OK	DWH
4/12/2012	13:51	W-5	AS	F	3-047-052-22-0	22	DWH	0-22	30-30	AS	P	AT OK	DWH
4/12/2012	13:55	W-5	AS	F	3-047-053-23-0	23	DWH	0-23	30-27	AS	P	AT OK	DWH
4/12/2012	13:59	W-5	AS	F	3-047-054-22-0	22	DWH	0-22	30-30	AS	P	AT OK	DWH
4/12/2012	14:03	W-5	AS	F	3-047-055-23-0	23	DWH	0-23	30-30	AS	P	AT OK	DWH
4/12/2012	14:07	W-5	AS	F	3-047-056-14-0	14	DWH	0-14	30-30	AS	P	AT OK	DWH
4/12/2012	14:10	W-9	VS	F	3-046-061-0-58	58	DWH	0-58	30-29	AS	P	AT OK	DWH
4/12/2012	14:11	W-5	AS	F	3-047-058-25-0	25	DWH	0-25	30-30	AS	P	AT OK	DWH
4/12/2012	14:13	W-5	AS	F	3-047-059-25-0	25	DWH	0-25	30-30	AS	P	AT OK	DWH
4/12/2012	14:20	W-11	TS	F	3-062-064-0-22.5	22.5	DWH	0-22.5	30-30	AS	P	AT OK	DWH
4/12/2012	14:32	W-5	AS	F	3-063-065-0-26	26	DWH	0-26	30-30	AS	P	AT OK	DWH
4/12/2012	14:40	W-9	VS	F	3-061-065-0-45	45	DWH	0-45	30-30	VC	P	AT OK	DWH

## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

Material Type	gml : 6	Specifications:	Seam Pressure: <u>25-30 PSI 3 lb loss</u>	Vacuum Box: <u>5 PSI 20 Sec</u>
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Primary / Secondary:     Primary					Series:   3									
Production Seam					Location			Nondestructive Test						
Date	Time	Mach. ID	Oper. ID	Ext/ Fus:	SeamNo Series-Seam1-Seam2-Begin-End	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID	
4/12/2012	14:43	W-5	AS	F	3-065-066-0-35	35	DWH	0-35	30-29	VC	P	AT OK	DWH	
4/12/2012	14:49	W-11	TS	F	3-063-064-0-32	32	DWH	0-32	30-30	AS	P	AT OK	DWH	
4/12/2012	14:52	W-11	TS	F	3-062-065-0-31	31	DWH	0-31	30-30	AS	P	AT OK	DWH	
4/12/2012	14:55	W-5	AS	F	3-067-068-0-16	16	DWH	0-16	30-30	VC	P	AT OK	DWH	
4/12/2012	14:59	W-11	TS	F	3-061-062-0-23	23	DWH	0-23	30-30	VC	P	AT OK	DWH	
4/12/2012	15:05	W-9	VS	F	3-067-069-36-0	36	DWH	0-36	30-29	AS	P	AT OK	DWH	
4/12/2012	15:09	W-9	VS	F	3-069-070-0-31	31	DWH	0-31	30-30	AS	P	AT OK	DWH	
4/12/2012	15:14	W-5	AS	F	3-066-068-0-20	20	DWH	0-20	30-29	VC	P	AT OK	DWH	
4/12/2012	15:18	W-5	AS	F	3-066-067-0-16	16	DWH	0-16	30-30	VC	P	AT OK	DWH	
4/12/2012	15:20	W-9	VS	F	3-065-071-0-33	33	DWH	0-33	30-30	AS	P	AT OK	DWH	
4/12/2012	15:21	W-5	AS	F	3-065-067-0-13	13	DWH	0-13	30-30	VC	P	AT OK	DWH	
4/12/2012	15:25	W-5	AS	F	3-065-069-0-25	25	DWH	0-25	30-29	VC	P	AT OK	DWH	
4/12/2012	15:30	W-9	VS	F	3-048-071-0-33	33	DWH	0-33	30-27	AS	P	AT OK	DWH	
4/12/2012	15:32	W-5	AS	F	3-070-071-0-36	36	DWH	0-36	30-30	AS	P	AT OK	DWH	
4/12/2012	15:36	W-9	VS	F	3-048-065-0-22	22	DWH	0-22	30-30	AS	P	AT OK	DWH	
4/12/2012	15:40	W-5	AS	F	3-045-064-0-20	20	DWH	0-20	30-30	AS	P	AT OK	DWH	

**Production Seam Log**

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u> Location: <u>Camillus, New York</u> Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	ProjNo: <u>GJ4706</u> TaskNo: <u>07</u>
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Material Type	gml : 6	Specifications:	Seam Pressure: <u>25-30 PSI 3 lb loss</u>	Vacuum Box: <u>5 PSI 20 Sec</u>
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Primary / Secondary: Primary	Series: 3
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Production Seam					Location			Nondestructive Test					
<i>Date</i>	<i>Time</i>	<i>Mach. ID</i>	<i>Oper. ID</i>	<i>Ext/ Fus:</i>	<i>SeamNo</i> <small>Series-Seam1-Seam2-Begin-End</small>	<i>Length</i> <small>(ft.)</small>	<i>QA ID</i>	<i>Location</i>	<i>Detail</i>	<i>Oper.</i>	<i>Result</i>	<i>Action</i>	<i>QA ID</i>
4/12/2012	15:40	W-9	VS	F	3-047-063-0-21	21	DWH	0-21	30-30	AS	P	AT OK	DWH
4/12/2012	15:45	W-5	AS	F	3-045-062-0-8	8	DWH	0-8	30-28	AS	P	AT OK	DWH
4/12/2012	15:47	W-5	AS	F	3-046-062-0-17	17	DWH	0-17	30-28	AS	P	AT OK	DWH

Total Length Fusion: 8473

Total Length Extrusion: 0

Comments:

Secondary



## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>								ProjNo: <u>GJ4706</u>					
Location: <u>Camillus, New York</u>								TaskNo: <u>07</u>					
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>													

Material Type	gml : 2	Specifications:	Seam Pressure: <u>25-30 PSI 3 lb loss</u>	Vacuum Box: <u>5 PSI 20 Sec</u>
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Primary / Secondary:	Secondary	Series:	2
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Production Seam					Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Ext/ Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/31/2011	9:50	W-39	VS	F	2-002-003-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
10/31/2011	10:05	W-39	VS	F	2-001-002-176-0	176	DWH	0-176	30-30	BH	P	AT OK	DWH
10/31/2011	10:35	W-39	VS	F	2-001-003-147-0	147	DWH	0-147	30-30	BH	P	AT OK	DWH
10/31/2011	10:35	W-8	TS	F	2-002-004-174-0	174	DWH	0-174	30-30	BH	P	AT OK	DWH
10/31/2011	10:40	W-2	KP	F	2-004-005-36-0	36	DWH	0-36	30-30	BH	P	AT OK	DWH
10/31/2011	10:53	W-2	KP	F	2-004-006-283-273	10	DWH	273-283	30-30	BH	P	AT OK	DWH
10/31/2011	11:25	W-39	VS	F	2-005-006-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
10/31/2011	11:31	W-8	TS	F	2-003-004-146-0	146	DWH	0-146	30-27	BH	P	AT OK	DWH
10/31/2011	13:33	W-2	KP	F	2-004-006-273-165	108	DWH	165-273	30-30	BH	P	AT OK	DWH
10/31/2011	13:45	W-8	TS	F	2-005-007-35-0	35	DWH	0-35	30-30	BH	P	AT OK	DWH
10/31/2011	13:48	W-8	TS	F	2-006-007-191-0	191	DWH	0-191	30-30	BH	P	AT OK	DWH
10/31/2011	13:55	W-39	VS	F	2-007-008-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
10/31/2011	14:05	W-2	KP	F	2-004-006-165-152	13	DWH	152-165	CAPPED	BH	P	VT OK	DWH
10/31/2011	14:08	W-2	KP	F	2-004-006-152-0	152	DWH	0-152	30-27	BH	P	AT OK	DWH
10/31/2011	14:20	W-8	TS	F	2-006-008-93-0	93	DWH	0-93	30-30	BH	P	AT OK	DWH
10/31/2011	14:42	W-39	VS	F	2-007-009-223-0	223	DWH	0-223	30-30	BH	P	AT OK	DWH

## Production Seam Log

Project: Onondaga Lake Sediment Consolidation Area ( SCA )

Location: Camillus, New York

Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

ProjNo: GJ4706

TaskNo: 07

Material Type

gml : 2

Specifications:

Seam Pressure: 25-30 PSI 3 lb loss

Vacuum Box: 5 PSI 20 Sec

Primary / Secondary: Secondary

Series: 2

Production Seam					Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Ext/ Fus:	SeamNo Series-Seam1-Seam2-Begin-End	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
10/31/2011	15:15	W-8	TS	F	2-010-011-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
10/31/2011	15:20	W-39	VS	F	2-008-009-91-0	91	DWH	0-91	30-30	BH	P	AT OK	DWH
10/31/2011	15:40	W-8	TS	F	2-009-010-87-0	87	DWH	0-87	30-30	BH	P	AT OK	DWH
10/31/2011	15:45	W-39	VS	F	2-009-011-140-0	140	DWH	0-140	30-30	BH	P	AT OK	DWH
10/31/2011	15:50	W-8	TS	F	2-009-011-226-140	86	DWH	140-226	30-30	BH	P	AT OK	DWH
11/1/2011	8:50	W-2	KP	F	2-013-014-34-0	34	DWH	0-34	30-30	BH	P	AT OK	DWH
11/1/2011	8:55	W-2	KP	F	2-012-014-276-0	276	DWH	0-276	30-30	BH	P	AT OK	DWH
11/1/2011	9:00	W-39	VS	F	2-012-013-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/1/2011	9:06	W-8	TS	F	2-010-013-37-0	37	DWH	0-37	30-30	BH	P	AT OK	DWH
11/1/2011	9:10	W-8	TS	F	2-010-012-48-0	48	DWH	0-48	30-30	BH	P	AT OK	DWH
11/1/2011	9:10	W-39	VS	F	2-014-015-151-0	151	DWH	0-151	30-30	BH	P	AT OK	DWH
11/1/2011	9:20	W-8	TS	F	2-011-012-227-0	227	DWH	0-227	30-30	BH	P	AT OK	DWH
11/1/2011	9:34	W-39	VS	F	2-015-016-0-22	22	DWH	0-22	30-28	BH	P	AT OK	DWH
11/1/2011	9:40	W-39	VS	F	2-014-016-157-0	157	DWH	0-157	30-30	BH	P	AT OK	DWH
11/1/2011	10:07	W-8	TS	F	2-015-017-153-0	153	DWH	0-153	30-30	BH	P	AT OK	DWH
11/1/2011	10:18	W-39	VS	F	2-018-019-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH





## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>								ProjNo: <u>GJ4706</u>					
Location: <u>Camillus, New York</u>								TaskNo: <u>07</u>					
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>													
Material Type		gml : 2		Specifications:		Seam Pressure: <u>25-30 PSI 3 lb loss</u>		Vacuum Box: <u>5 PSI 20 Sec</u>					
Primary / Secondary:    Secondary				Series: 2									
Production Seam					Location			Nondestructive Test					
<i>Date</i>	<i>Time</i>	<i>Mach. ID</i>	<i>Oper. ID</i>	<i>Ext/ Fus:</i>	<i>Seam/No</i> Series-Seam1-Seam2-Begin-End	<i>Length</i> (ft.)	<i>QA ID</i>	<i>Location</i>	<i>Detail</i>	<i>Oper.</i>	<i>Result</i>	<i>Action</i>	<i>QA ID</i>
11/1/2011	10:23	W-2	KP	F	2-017-018-32-0	32	DWH	0-32	30-30	BH	P	AT OK	DWH
11/1/2011	10:30	W-2	KP	F	2-017-019-273-0	273	DWH	0-273	30-30	BH	P	AT OK	DWH
11/1/2011	10:30	W-39	VS	F	2-018-020-32-0	32	DWH	0-32	30-30	BH	P	AT OK	DWH
11/1/2011	10:34	W-8	TS	F	2-016-017-156-0	156	DWH	0-156	30-30	BH	P	AT OK	DWH
11/1/2011	10:35	W-39	VS	F	2-019-020-201-0	201	DWH	0-201	30-30	BH	P	AT OK	DWH
11/1/2011	11:09	W-39	VS	F	2-020-021-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/1/2011	11:10	W-8	TS	F	2-020-022-232-0	232	DWH	0-232	30-30	BH	P	AT OK	DWH
11/1/2011	11:12	W-39	VS	F	2-019-021-72-0	72	DWH	0-72	30-30	BH	P	AT OK	DWH
11/1/2011	11:20	W-2	KP	F	2-022-023-113-0	113	DWH	0-113	30-30	BH	P	AT OK	DWH
11/1/2011	11:32	W-2	KP	F	2-022-024-186-0	186	DWH	0-186	30-30	BH	P	AT OK	DWH
11/1/2011	11:35	W-39	VS	F	2-023-024-0-22	22	DWH	0-22	30-29	BH	P	AT OK	DWH
11/1/2011	11:45	W-8	TS	F	2-021-022-69-0	69	DWH	0-69	30-30	BH	P	AT OK	DWH0
11/1/2011	11:45	W-39	VS	F	2-023-025-110-0	110	DWH	0-110	30-28	BH	P	AT OK	DWH
11/1/2011	12:00	W-39	VS	F	2-024-025-185-0	185	DWH	0-185	30-30	BH	P	AT OK	DWH
11/1/2011	13:35	W-8	TS	F	2-025-026-293-0	293	DWH	0-293	30-28	BH	P	AT OK	DWH
11/1/2011	13:40	W-2	KP	F	2-026-027-217-0	217	DWH	0-217	30-29	BH	P	AT OK	DWH

## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>								ProjNo: <u>GJ4706</u>							
Location: <u>Camillus, New York</u>								TaskNo: <u>07</u>							
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>															
Material Type		gml : 2		Specifications:		Seam Pressure: <u>25-30 PSI 3 lb loss</u>				Vacuum Box: <u>5 PSI 20 Sec</u>					
Primary / Secondary:				Secondary				Series: 2							
Production Seam					Location			Nondestructive Test							
<i>Date</i>	<i>Time</i>	<i>Mach. ID</i>	<i>Oper. ID</i>	<i>Ext/ Fus:</i>	<i>SeamNo</i> Series-Seam1-Seam2-Begin-End	<i>Length</i> (ft.)	<i>QA ID</i>	<i>Location</i>	<i>Detail</i>	<i>Oper.</i>	<i>Result</i>	<i>Action</i>	<i>QA ID</i>		
11/1/2011	13:55	W-39	VS	F	2-028-029-0-41	41	DWH	0-41	30-28	BH	P	AT OK	DWH		
11/1/2011	14:04	W-39	VS	F	2-030-031-31-0	31	DWH	0-31	30-30	BH	P	AT OK	DWH		
11/1/2011	14:13	W-2	KP	F	2-032-033-25-0	25	DWH	0-25	30-30	BH	P	AT OK	DWH		
11/1/2011	14:20	W-2	KP	F	2-033-034-24-0	24	DWH	0-24	30-30	BH	P	AT OK	DWH		
11/1/2011	14:22	W-8	TS	F	2-036-037-23-0	23	DWH	0-23	30-27	BH	P	AT OK	DWH		
11/1/2011	14:25	W-8	VS	F	2-029-030-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH		
11/1/2011	14:27	W-39	VS	F	2-029-031-0-22	22	DWH	0-22	30-29	BH	P	AT OK	DWH		
11/1/2011	14:27	W-2	KP	F	2-034-035-24-0	24	DWH	0-24	30-30	BH	P	AT OK	DWH		
11/1/2011	14:30	W-8	TS	F	2-037-038-23-0	23	DWH	0-23	30-30	BH	P	AT OK	DWH		
11/1/2011	14:34	W-2	KP	F	2-035-036-24-0	24	DWH	0-24	30-30	BH	P	AT OK	DWH		
11/1/2011	14:35	W-39	VS	F	2-026-028-23-0	23	DWH	0-23	30-28	BH	P	AT OK	DWH		
11/1/2011	14:37	W-8	TS	F	2-038-039-24-0	24	DWH	24-0	30-30	BH	P	AT OK	DWH		
11/1/2011	14:39	W-39	VS	F	2-026-029-20-0	20	DWH	0-20	30-30	BH	P	AT OK	DWH		
11/1/2011	14:42	W-39	VS	F	2-026-030-31-0	31	DWH	0-31	30-28	BH	P	AT OK	DWH		
11/1/2011	14:51	W-2	KP	F	2-039-040-24-0	24	DWH	0-24	30-30	BH	P	AT OK	DWH		
11/1/2011	14:55	W-39	VS	F	2-027-028-20-0	20	DWH	0-20	30-28	BH	P	AT OK	DWH		



## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>					ProjNo: <u>GJ4706</u>				
Location: <u>Camillus, New York</u>					TaskNo: <u>07</u>				
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>									

Material Type	gml : 2	Specifications:	Seam Pressure: <u>25-30 PSI 3 lb loss</u>	Vacuum Box: <u>5 PSI 20 Sec</u>
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Primary / Secondary:	Secondary	Series:	2
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Production Seam					Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Ext/ Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
11/1/2011	14:57	W-8	TS	F	2-040-041-25-0	25	DWH	0-25	30-30	BH	P	AT OK	DWH
11/1/2011	15:00	W-39	VS	F	2-028-032-24-0	24	DWH	0-24	30-30	BH	P	AT OK	DWH
11/1/2011	15:20	W-39	VS	F	2-027-041-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/1/2011	15:22	W-39	VS	F	2-027-040-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/1/2011	15:25	W-39	VS	F	2-027-039-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/1/2011	15:29	W-39	VS	F	2-027-038-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/1/2011	15:32	W-39	VS	F	2-027-037-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/1/2011	15:36	W-39	VS	F	2-027-036-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/1/2011	15:40	W-39	VS	F	2-027-035-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/1/2011	15:43	W-39	VS	F	2-027-034-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/1/2011	15:44	W-2	KP	F	2-042-043-179-0	179	DWH	0-179	30-30	BH	P	AT OK	DWH
11/1/2011	15:45	W-39	VS	F	2-027-033-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/1/2011	15:50	W-39	VS	F	2-027-032-0-22	22	DWH	0-22	30-27	BH	P	AT OK	DWH
11/1/2011	16:00	W-8	TS	F	2-001-042-323-152	171	DWH	152-323	30-29	BH	P	AT OK	DWH
11/1/2011	16:20	W-39	VS	F	2-001-042-152-0	152	DWH	0-152	30-28	BH	P	AT OK	DWH
11/2/2011	9:33	W-2	KP	F	2-042-044-150-0	150	DWH	0-150	30-30	BH	P	AT OK	DWH

## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>								ProjNo: <u>GJ4706</u>							
Location: <u>Camillus, New York</u>								TaskNo: <u>07</u>							
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>															
Material Type		gml : 2		Specifications:		Seam Pressure: <u>25-30 PSI 3 lb loss</u>				Vacuum Box: <u>5 PSI 20 Sec</u>					
Primary / Secondary:				Secor dary				Series: 2							
Production Seam					Location			Nondestructive Test							
<i>Date</i>	<i>Time</i>	<i>Mach. ID</i>	<i>Oper. ID</i>	<i>Ext/ Fus:</i>	<i>SeamNo</i> Series-Seam1-Seam2-Begin-End	<i>Length</i> (ft.)	<i>QA ID</i>	<i>Location</i>	<i>Detail</i>	<i>Oper.</i>	<i>Result</i>	<i>Action</i>	<i>QA ID</i>		
11/2/2011	9:35	W-8	TS	F	2-043-044-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH		
11/2/2011	10:00	W-8	TS	F	2-043-045-180-0	180	DWH	0-180	30-30	BH	P	AT OK	DWH		
11/2/2011	10:20	W-39	VS	F	2-045-046-250-0	250	DWH	0-250	30-30	BH	P	AT OK	DWH		
11/2/2011	10:26	W-8	TS	F	2-044-045-148-0	148	DWH	0-148	30-30	BH	P	AT OK	DWH		
11/2/2011	10:43	W-2	KP	F	2-047-048-24-0	24	DWH	0-24	30-30	BH	P	AT OK	DWH		
11/2/2011	10:50	W-2	KP	F	2-048-049-28-0	28	DWH	0-28	30-30	BH	P	AT OK	DWH		
11/2/2011	11:00	W-2	KP	F	2-049-050-0-41	41	DWH	0-41	30-30	BH	P	AT OK	DWH		
11/2/2011	11:00	W-8	TS	F	2-050-051-0-48	48	DWH	0-48	30-30	BH	P	AT OK	DWH		
11/2/2011	11:09	W-39	VS	F	2-054-055-0-52	52	DWH	0-52	30-28	BH	P	AT OK	DWH		
11/2/2011	11:13	W-8	TS	F	2-052-053-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH		
11/2/2011	11:15	W-39	KP	F	2-052-054-0-27	27	DWH	0-27	30-30	BH	P	AT OK	DWH		
11/2/2011	11:20	W-2	KP	F	2-053-054-0-25	25	DWH	0-25	30-30	BH	P	AT OK	DWH		
11/2/2011	11:20	W-39	VS	F	2-055-056-0-52	52	DWH	0-52	30-30	BH	P	AT OK	DWH		
11/2/2011	11:30	W-2	KP	F	2-056-057-51-0	51	DWH	0-51	30-30	BH	P	AT OK	DWH		
11/2/2011	11:31	W-8	TS	F	2-051-052-0-27	27	DWH	0-27	30-30	BH	P	AT OK	DWH		
11/2/2011	11:35	W-8	TS	F	2-051-053-0-24	24	DWH	0-24	30-30	BH	P	AT OK	DWH		



## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>					ProjNo: <u>GJ4706</u>				
Location: <u>Camillus, New York</u>					TaskNo: <u>07</u>				
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>									

Material Type	gml : 2	Specifications:	Seam Pressure: <u>25-30 PSI 3 lb loss</u>	Vacuum Box: <u>5 PSI 20 Sec</u>
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Primary / Secondary:	Secondary	Series:	2
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Production Seam					Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Ext/ Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
11/2/2011	13:28	W-8	TS	F	2-060-061-29-0	29	DWH	0-29	CAPPED	BH	P	VT OK	DWH
11/2/2011	14:00	W-39	VS	F	2-057-058-0-36	36	DWH	0-36	30-30	BH	P	AT OK	DWH
11/2/2011	14:00	W-2	TS	F	2-059-060-20-0	20	DWH	0-20	30-29	BH	P	AT OK	DWH
11/2/2011	14:10	W-39	VS	F	2-046-060-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/2/2011	14:12	W-39	VS	F	2-058-064-30-0	30	DWH	0-30	30-28	BH	P	AT OK	DWH
11/2/2011	14:20	W-2	TS	F	2-059-064-0-22	22	DWH	0-22	30-27	BH	P	AT OK	DWH
11/2/2011	14:22	W-2	TS	F	2-058-059-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/2/2011	14:30	W-2	TS	F	2-064-065-29-0	29	DWH	0-29	30-30	BH	P	AT OK	DWH
11/2/2011	14:32	W-39	VS	F	2-057-059-0-16	16	DWH	0-16	30-30	BH	P	AT OK	DWH
11/2/2011	14:35	W-39	VS	F	2-046-059-0-26	26	DWH	0-26	30-30	BH	P	AT OK	DWH
11/2/2011	14:39	W-39	VS	F	2-046-057-0-22	22	DWH	0-22	30-29	BH	P	AT OK	DWH
11/2/2011	14:42	W-39	VS	F	2-046-056-0-22	22	DWH	0-22	30-28	BH	P	AT OK	DWH
11/2/2011	14:45	W-39	VS	F	2-046-055-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/2/2011	14:49	W-39	VS	F	2-046-054-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/2/2011	14:50	W-2	TS	F	2-065-066-32-0	32	DWH	0-32	30-30	BH	P	AT OK	DWH
11/2/2011	14:52	W-39	VS	F	2-046-053-0-22	22	DWH	0-22	30-29	BH	P	AT OK	DWH

## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>								ProjNo: <u>GJ4706</u>					
Location: <u>Camillus, New York</u>								TaskNo: <u>07</u>					
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>													
Material Type		gml : 2		Specifications:		Seam Pressure: <u>25-30 PSI 3 lb loss</u>		Vacuum Box: <u>5 PSI 20 Sec</u>					
Primary / Secondary:    Secondary				Series: 2									
Production Seam					Location			Nondestructive Test					
<i>Date</i>	<i>Time</i>	<i>Mach. ID</i>	<i>Oper. ID</i>	<i>Ext/ Fus:</i>	<i>SeamNo</i> Series-Seam1-Seam2-Begin-End	<i>Length</i> (ft.)	<i>QA ID</i>	<i>Location</i>	<i>Detail</i>	<i>Oper.</i>	<i>Result</i>	<i>Action</i>	<i>QA ID</i>
11/2/2011	14:56	W-39	VS	F	2-046-050-0-25	25	DWH	0-25	30-30	BH	P	AT OK	DWH
11/2/2011	14:59	W-39	VS	F	2-046-049-0-27	27	DWH	0-27	30-30	BH	P	AT OK	DWH
11/2/2011	15:05	W-39	VS	F	2-046-048-0-20	20	DWH	0-20	30-30	BH	P	AT OK	DWH
11/2/2011	15:10	W-39	VS	F	2-046-047-0-45	45	DWH	0-45	30-30	BH	P	AT OK	DWH
11/2/2011	15:10	W-2	TS	F	2-059-067-37-0	37	DWH	0-37	30-30	BH	P	AT OK	DWH
11/2/2011	15:33	W-39	VS	F	2-061-062-24-0	24	DWH	0-24	30-30	BH	P	AT OK	DWH
11/2/2011	15:35	W-39	VS	F	2-059-062-21-0	21	DWH	0-21	30-30	BH	P	AT OK	DWH
11/2/2011	15:40	W-2	TS	F	2-066-067-21-0	21	DWH	0-21	30-30	BH	P	AT OK	DWH
11/2/2011	15:42	W-2	TS	F	2-067-068-23-0	23	DWH	0-23	30-30	BH	P	AT OK	DWH
11/2/2011	15:45	W-39	VS	F	2-059-063-37-0	37	DWH	0-37	30-30	BH	P	AT OK	DWH
11/2/2011	15:45	W-2	TS	F	2-066-068-12-0	12	DWH	0-12	30-30	BH	P	AT OK	DWH
11/2/2011	15:55	W-39	VS	F	2-045-063-0-36	36	DWH	0-36	30-30	BH	P	AT OK	DWH
11/2/2011	16:05	W-39	VS	F	2-045-062-48-62	14	DWH	48-62	30-30	BH	P	AT OK	DWH
11/2/2011	16:06	W-39	VS	F	2-045-061-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/2/2011	16:10	W-2	TS	F	2-059-066-0-8	8	DWH	0-8	30-27	BH	P	AT OK	DWH
11/2/2011	16:12	W-2	TS	F	2-059-065-0-21	21	DWH	0-22	30-30	BH	P	AT OK	DWH



## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>					ProjNo: <u>GJ4706</u>								
Location: <u>Camillus, New York</u>					TaskNo: <u>07</u>								
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>													
Material Type    gml : 2    Specifications:    Seam Pressure: <u>25-30 PSI 3 lb loss</u> Vacuum Box: <u>5 PSI 20 Sec</u>													
Primary / Secondary:    Secondary					Series: 2								
Production Seam					Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Ext/ Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
11/2/2011	16:15	W-39	VS	F	2-062-063-21-0	21	DWH	0-21	30-30	BH	P	AT OK	DWH
Total Length Fusion: 8511					Total Length Extrusion: 0								
Comments:													

## West Basin

- Primary
- Secondary



Primary



## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>								ProjNo: <u>GJ4706</u>					
Location: <u>Camillus, New York</u>								TaskNo: <u>07</u>					
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>													
Material Type		gml : 6		Specifications:		Seam Pressure: <u>25-30 PSI 3 lb loss</u>				Vacuum Box: <u>5 PSI 20 Sec</u>			
Primary / Secondary: Primary								Series: 5					

Production Seam					Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Ext/ Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
4/5/2012	9:10	W-9	VS	F	5-001-004-0-254	254	DWH	0-254	30-30	AS	P	AT OK	DWH
4/5/2012	9:30	W-10	TS	F	5-004-005-0-235	235	DWH	0-235	30-28	AS	P	AT OK	DWH
4/5/2012	9:36	W-11	VC	F	5-005-006-0-236	236	DWH	0-236	30-30	AS	P	AT OK	DWH
4/5/2012	9:46	W-9	VS	F	5-002-004-0-22.5	22.5	DWH	0-22.5	30-28	AS	P	AT OK	DWH
4/5/2012	10:03	W-10	TS	F	5-003-004-0-25	25	DWH	0-25	30-30	AS	P	AT OK	DWH
4/5/2012	10:07	W-10	TS	F	5-002-003-0-15	15	DWH	0-15	30-29	AS	P	AT OK	DWH
4/5/2012	10:07	W-11	VC	F	5-003-006-0-14	14	DWH	0-14	CAPPED	AS	P	VT OK	DWH
4/5/2012	10:07	W-9	VS	F	5-006-008-0-177	177	DWH	0-177	30-30	AS	P	AT OK	DWH
4/5/2012	10:13	W-11	VC	F	5-007-008-0-22.5	22.5	DWH	0-22.5	30-30	AS	P	AT OK	DWH
4/5/2012	10:20	W-10	TS	F	5-003-005-0-22.5	22.5	DWH	0-22.5	30-29	AS	P	AT OK	DWH
4/5/2012	10:20	W-9	VS	F	5-006-007-0-53	53	DWH	0-53	30-29	AS	P	AT OK	DWH
4/5/2012	10:22	W-11	VC	F	5-012-013-0-22.5	22.5	DWH	0-22.5	30-30	AS	P	AT OK	DWH
4/5/2012	10:25	W-10	TS	F	5-022-023-0-30	30	DWH	0-30	30-30	AS	P	AT OK	DWH
4/5/2012	10:31	W-10	TS	F	5-010-011-0-150	150	DWH	0-150	30-30	AS	P	AT OK	DWH
4/5/2012	10:33	W-5	VC	F	5-011-013-0-76	76	DWH	0-76	30-30	AS	P	AT OK	DWH
4/5/2012	10:45	W-9	VS	F	5-008-010-0-150	150	DWH	0-150	30-30	AS	P	AT OK	DWH

## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>								ProjNo: <u>GJ4706</u>					
Location: <u>Camillus, New York</u>								TaskNo: <u>07</u>					
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>													
Material Type		gml : 6		Specifications:		Seam Pressure: <u>25-30 PSI 3 lb loss</u>		Vacuum Box: <u>5 PSI 20 Sec</u>					
Primary / Secondary: Primary				Series: 5									
Production Seam					Location			Nondestructive Test					
<i>Date</i>	<i>Time</i>	<i>Mach. ID</i>	<i>Oper. ID</i>	<i>Ext/ Fus:</i>	<i>SeamNo</i> Series-Seam1-Seam2-Begin-End	<i>Length</i> (ft.)	<i>QA ID</i>	<i>Location</i>	<i>Detail</i>	<i>Oper.</i>	<i>Result</i>	<i>Action</i>	<i>QA ID</i>
4/5/2012	10:50	W-10	TS	F	5-009-010-0-22.5	22.5	DWH	0-22.5	30-30	AS	P	AT OK	DWH
4/5/2012	10:50	W-11	VC	F	5-011-012-0-50	50	DWH	0-50	30-30	AS	P	AT OK	DWH
4/5/2012	10:50	W-11	VC	F	5-014-015-0-10	10	DWH	0-10	30-30	AS	P	AT OK	DWH
4/5/2012	10:54	W-11	VC	F	5-013-015-0-75	75	DWH	0-75	30-30	AS	P	AT OK	DWH
4/5/2012	11:00	W-10	TS	F	5-009-011-0-5	5	DWH	0-5	30-28	AS	P	AT OK	DWH
4/5/2012	11:05	W-9	VS	F	5-008-009-0-25	25	DWH	0-25	30-28	AS	P	AT OK	DWH
4/5/2012	11:08	W-11	VC	F	5-016-017-0-39	39	DWH	0-39	30-30	AS	P	AT OK	DWH
4/5/2012	11:10	W-10	TS	F	5-015-016-0-63	63	DWH	0-63	30-30	AS	P	AT OK	DWH
4/5/2012	11:14	W-11	VC	F	5-017-018-0-20	20	DWH	0-20	30-29	AS	P	AT OK	DWH
4/5/2012	11:17	W-9	VS	F	5-024-025-0-30	30	DWH	0-30	30-30	AS	P	AT OK	DWH
4/5/2012	11:20	W-11	VC	F	5-013-014-0-3	3	DWH	0-3	CAPPED	AS	P	AT OK	DWH
4/5/2012	11:21	W-11	VC	F	5-012-014-78-88	10	DWH	78-88	30-30	AS	P	AT OK	DWH
4/5/2012	11:25	W-9	VS	F	5-025-026-0-30	30	DWH	0-30	30-30	AS	P	AT OK	DWH
4/5/2012	11:26	W-9	VS	F	5-026-027-0-30	30	DWH	0-30	30-30	AS	P	AT OK	DWH
4/5/2012	11:28	W-9	VS	F	5-007-009-0-19	19	DWH	0-19	30-29	AS	P	AT OK	DWH
4/5/2012	11:29	W-11	VC	F	5-020-021-0-24	24	DWH	0-24	30-30	AS	P	AT OK	DWH

## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>					ProjNo: <u>GJ4706</u>								
Location: <u>Camillus, New York</u>					TaskNo: <u>07</u>								
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>													
Material Type      gml : 6      Specifications:      Seam Pressure: <u>25-30 PSI 3 lb loss</u> Vacuum Box: <u>5 PSI 20 Sec</u>													
Primary / Secondary:    Primary      Series: 5													
Production Seam					Location			Nondestructive Test					
<i>Date</i>	<i>Time</i>	<i>Mach. ID</i>	<i>Oper. ID</i>	<i>Ext/ Fus:</i>	<i>SeamNo</i> Series-Seam1-Seam2-Begin-End	<i>Length</i> (ft.)	<i>QA ID</i>	<i>Location</i>	<i>Detail</i>	<i>Oper.</i>	<i>Result</i>	<i>Action</i>	<i>QA ID</i>
4/5/2012	11:35	W-10	TS	F	5-023-024-0-30	30	DWH	0-30	30-30	AS	P	AT OK	DWH
4/5/2012	11:36	W-11	VC	F	5-021-022-0-29	29	DWH	0-29	30-30	AS	P	AT OK	DWH
4/5/2012	11:42	W-5	AS	F	5-028-029-0-35	35	DWH	0-35	30-30	AS	P	AT OK	DWH
4/5/2012	11:45	W-9	VS	F	5-027-028-0-31	31	DWH	0-31	30-30	AS	P	AT OK	DWH
4/5/2012	11:50	W-11	VC	F	5-019-020-0-15	15	DWH	0-15	30-29	AS	P	AT OK	DWH
4/5/2012	12:51	W-5	AS	F	5-029-030-0-35	35	DWH	0-35	30-30	AS	P	AT OK	DWH
4/5/2012	13:00	W-5	AS	F	5-030-031-0-36	36	DWH	0-36	30-29	AS	P	AT OK	DWH
4/5/2012	13:09	W-5	AS	F	5-031-032-0-35	35	DWH	0-35	30-30	AS	P	AT OK	DWH
4/5/2012	13:18	W-5	AS	F	5-032-033-0-36	36	DWH	0-36	30-30	AS	P	AT OK	DWH
4/5/2012	13:28	W-5	AS	F	5-033-034-0-37	37	DWH	0-37	30-28	AS	P	AT OK	DWH
4/5/2012	13:30	W-10	TS	F	5-014-024-0-9	9	DWH	0-9	30-30	AS	P	AT OK	DWH
4/5/2012	13:30	W-5	VS	F	5-039-040-0-22.5	22.5	DWH	0-22.5	30-29	AS	P	AT OK	DWH
4/5/2012	13:31	W-11	VC	F	5-018-019-0-25	25	DWH	0-25	30-30	AS	P	AT OK	DWH
4/5/2012	13:33	W-10	TS	F	5-012-024-0-15	15	DWH	0-15	30-30	AS	P	AT OK	DWH
4/5/2012	13:34	W-10	TS	F	5-012-025-0-22	22	DWH	0-22	30-30	AS	P	AT OK	DWH
4/5/2012	13:35	W-11	VC	F	5-017-020-0-20	20	DWH	0-20	30-30	AS	P	AT OK	DWH

## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

Material Type	gml : 6	Specifications:	Seam Pressure: <u>25-30 PSI 3 lb loss</u>	Vacuum Box: <u>5 PSI 20 Sec</u>
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Primary / Secondary:	Primary	Series:	5
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Production Seam					Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Ext/ Fus:	SeamNo Series-Seam1-Seam2-Begin-End	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
4/5/2012	13:36	W-10	TS	F	5-012-026-0-6	6	DWH	0-6	30-30	AS	P	AT OK	DWH
4/5/2012	13:38	W-10	TS	F	5-011-026-0-18	18	DWH	0-18	30-30	AS	P	AT OK	DWH
4/5/2012	13:38	W-11	VC	F	5-017-021-0-10	10	DWH	0-10	30-30	AS	P	AT OK	DWH
4/5/2012	13:40	W-10	TS	F	5-011-027-0-22	22	DWH	0-22	30-29	AS	P	AT OK	DWH
4/5/2012	13:41	W-9	VS	F	5-001-040-0-134	134	DWH	0-134	30-28	AS	P	AT OK	DWH
4/5/2012	13:42	W-10	TS	F	5-009-028-0-23	23	DWH	0-23	30-27	AS	P	AT OK	DWH
4/5/2012	13:42	W-11	VC	F	5-016-021-0-13	13	DWH	0-13	CAPPED	AS	P	VT OK	DWH
4/5/2012	13:44	W-10	TS	F	5-009-029-0-19	19	DWH	0-19	30-30	AS	P	AT OK	DWH
4/5/2012	13:45	W-11	VC	F	5-016-022-0-21	21	DWH	0-21	30-30	AS	P	AT OK	DWH
4/5/2012	13:45	W-5	AS	F	5-040-041-0-134	134	DWH	0-134	30-30	AS	P	AT OK	DWH
4/5/2012	13:46	W-10	TS	F	5-007-030-0-23	23	DWH	0-23	30-29	AS	P	AT OK	DWH
4/5/2012	13:48	W-10	TS	F	5-007-031-0-11	11	DWH	0-11	30-30	AS	P	AT OK	DWH
4/5/2012	13:49	W-11	VC	F	5-015-023-0-16	16	DWH	0-16	30-30	AS	P	AT OK	DWH
4/5/2012	13:50	W-10	TS	F	5-006-031-0-11	11	DWH	0-11	30-30	AS	P	AT OK	DWH
4/5/2012	13:50	W-11	VC	F	5-014-023-0-6	6	DWH	0-6	30-30	AS	P	AT OK	DWH
4/5/2012	13:52	W-10	TS	F	5-006-032-0-27	27	DWH	0-27	30-30	AS	P	AT OK	DWH



## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

Material Type	gml : 6	Specifications:	Seam Pressure: <u>25-30 PSI 3 lb loss</u>	Vacuum Box: <u>5 PSI 20 Sec</u>
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Primary / Secondary:    Primary					Series:   5									
Production Seam					Location			Nondestructive Test						
Date	Time	Mach. ID	Oper. ID	Ext/ Fus:	SeamNo Series-Seam1-Seam2-Begin-End	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID	
4/5/2012	13:54	W-10	TS	F	5-003-033-0-19	19	DWH	0-19	30-30	AS	P	AT OK	DWH	
4/5/2012	13:56	W-10	TS	F	5-003-034-0-19	19	DWH	0-19	30-29	AS	P	AT OK	DWH	
4/5/2012	13:58	W-10	TS	F	5-002-035-0-23	23	DWH	0-23	30-30	AS	P	AT OK	DWH	
4/5/2012	13:58	W-5	AS	F	5-039-041-0-186	186	DWH	0-186	30-30	AS	P	AT OK	DWH	
4/5/2012	14:00	W-9	VS	F	5-001-039-0-229	229	DWH	0-229	30-30	AS	P	AT OK	DWH	
4/5/2012	14:00	W-10	TS	F	5-002-036-0-19	19	DWH	0-19	30-30	AS	P	AT OK	DWH	
4/5/2012	14:00	W-5	AS	F	5-042-044-0-13	13	DWH	0-13	30-30	AS	P	AT OK	DWH	
4/5/2012	14:02	W-10	TS	F	5-001-037-0-23	23	DWH	0-23	30-30	AS	P	AT OK	DWH	
4/5/2012	14:04	W-10	TS	F	5-001-038-0-18	18	DWH	0-18	30-30	AS	P	AT OK	DWH	
4/5/2012	14:15	W-10	TS	F	5-034-035-0-34	34	DWH	0-34	30-30	AS	P	AT OK	DWH	
4/5/2012	14:22	W-10	TS	F	5-035-036-0-33	33	DWH	0-33	30-29	AS	P	AT OK	DWH	
4/5/2012	14:28	W-11	VC	F	5-036-037-0-31	31	DWH	0-31	30-28	AS	P	AT OK	DWH	
4/5/2012	14:33	W-11	VC	F	5-037-038-0-8	8	DWH	0-8	30-29	AS	P	AT OK	DWH	
4/5/2012	14:40	W-9	VS	F	5-041-043-0-270	270	DWH	0-270	30-30	AS	P	AT OK	DWH	
4/5/2012	14:41	W-11	VC	F	5-039-046-0-18	18	DWH	0-18	30-28	AS	P	AT OK	DWH	
4/5/2012	14:41	W-5	AS	F	5-042-043-0-22	22	DWH	0-22	30-29	AS	P	AT OK	DWH	

Friday, June 22, 2012

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## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

Material Type	gml : 6	Specifications:	Seam Pressure: <u>25-30 PSI 3 lb loss</u>	Vacuum Box: <u>5 PSI 20 Sec</u>
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Primary / Secondary: Primary					Series: 5								
Production Seam					Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Ext/ Fus:	SeamNo Series-Seam1-Seam2-Begin-End	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
4/5/2012	14:46	W-11	VC	F	5-046-047-0-18	18	DWH	0-18	30-27	AS	P	AT OK	DWH
4/5/2012	14:47	W-11	VC	F	5-039-047-0-20	20	DWH	0-20	30-29	AS	P	AT OK	DWH
4/5/2012	14:47	W-5	AS	F	5-044-045-0-22.5	22.5	DWH	0-22.5	30-30	AS	P	AT OK	DWH
4/5/2012	14:52	W-11	VC	F	5-046-048-0-30	30	DWH	0-30	30-30	AS	P	AT OK	DWH
4/5/2012	14:56	W-5	AS	F	5-043-045-0-74	74	DWH	0-74	30-30	AS	P	AT OK	DWH
4/5/2012	14:57	W-11	VC	F	5-041-042-0-31	31	DWH	0-31	30-30	AS	P	AT OK	DWH
4/5/2012	14:58	W-11	VC	F	5-041-048-0-13	13	DWH	0-13	30-28	AS	P	AT OK	DWH
4/5/2012	15:00	W-11	VC	F	5-042-048-0-9	9	DWH	0-9	30-28	AS	P	AT OK	DWH
4/5/2012	15:00	W-5	AS	F	5-043-044-0-203	203	DWH	0-203	30-28	AS	P	AT OK	DWH
4/5/2012	15:01	W-11	VC	F	5-048-049-0-31	31	DWH	0-31	30-30	AS	P	AT OK	DWH
4/5/2012	15:03	W-11	VC	F	5-042-049-0-20	20	DWH	0-20	30-28	AS	P	AT OK	DWH
4/5/2012	15:05	W-11	VC	F	5-044-049-0-3	3	DWH	0-3	30-28	AS	P	AT OK	DWH
4/5/2012	15:09	W-11	VC	F	5-049-050-0-33	33	DWH	0-33	30-28	AS	P	AT OK	DWH
4/5/2012	15:10	W-11	VC	F	5-041-046-0-17	17	DWH	0-17	30-30	AS	P	AT OK	DWH
4/5/2012	15:11	W-11	VC	F	5-044-050-0-20	20	DWH	0-20	30-30	AS	P	AT OK	DWH
4/5/2012	21:40	W-9	VS	F	5-001-002-0-62	62	DWH	0-62	30-30	AS	P	AT OK	DWH

**Production Seam Log**

Project: <u>Onondaga Lake Sediment Consolidation Area (SCA)</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

Material Type	gml : 6	Specifications:	Seam Pressure: <u>25-30 PSI 3 lb loss</u>	Vacuum Box: <u>5 PSI 20 Sec</u>
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Primary / Secondary:	Primary	Series:	5
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Production Seam					Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Ext/ Fus:	SeamNo Series-Seam1-Seam2-Begin-End	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
4/13/2012	9:05	W-9	VS	F	5-044-051-0-30	30	DWH	0-30	30-30	AS	P	AT OK	DWH
4/13/2012	9:16	W-5	AS	F	5-044-051-30-172	142	DWH	30-172	30-30	AS	P	AT OK	DWH
4/13/2012	9:36	W-14	TS	F	5-060-061-74-0	74	DWH	0-74	30-30	AS	P	AT OK	DWH
4/13/2012	9:41	W-5	AS	F	5-050-053-28-0	28	DWH	0-28	30-29	AS	P	AT OK	DWH
4/13/2012	9:50	W-9	VS	F	5-052-056-52-0	52	DWH	0-52	30-30	AS	P	AT OK	DWH
4/13/2012	9:50	W-14	TS	F	5-058-060-70-0	70	DWH	0-70	30-30	AS	P	AT OK	DWH
4/13/2012	9:53	W-5	AS	F	5-053-054-36-0	36	DWH	0-36	30-28	AS	P	AT OK	DWH
4/13/2012	10:00	W-9	VS	F	5-056-057-57-0	57	DWH	0-57	30-30	AS	P	AT OK	DWH
4/13/2012	10:08	W-5	AS	F	5-054-055-32-0	32	DWH	0-32	30-30	AS	P	AT OK	DWH
4/13/2012	10:10	W-14	TS	F	5-057-059-32-0	32	DWH	0-32	30-29	AS	P	AT OK	DWH
4/13/2012	10:15	W-9	VS	F	5-052-054-13-0	13	DWH	0-13	30-30	AS	P	AT OK	DWH
4/13/2012	10:16	W-9	VS	F	5-052-055-29-0	29	DWH	0-29	30-30	AS	P	AT OK	DWH
4/13/2012	10:25	W-14	TS	F	5-057-058-33-0	33	DWH	0-33	30-30	AS	P	AT OK	DWH
4/13/2012	10:27	W-5	AS	F	5-051-053-0-21	21	DWH	0-21	30-30	AS	P	AT OK	DWH
4/13/2012	10:29	W-14	TS	F	5-058-059-32-0	32	DWH	0-32	30-30	AS	P	AT OK	DWH
4/13/2012	10:31	W-5	AS	F	5-051-054-0-15	15	DWH	0-15	30-30	AS	P	AT OK	DWH



## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>		ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>		TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>		

Material Type	gml : 6	Specifications:	Seam Pressure: <u>25-30 PSI 3 lb loss</u>	Vacuum Box: <u>5 PSI 20 Sec</u>
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Primary / Secondary: Primary					Series: 5				
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Production Seam					Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Ext/ Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
4/13/2012	10:35	W-9	VS	F	5-051-052-0-24	24	DWH	0-24	30-30	AS	P	AT OK	DWH
4/13/2012	10:40	W-9	VS	F	5-051-056-0-24	24	DWH	0-24	30-30	AS	P	AT OK	DWH
4/13/2012	10:45	W-9	VS	F	5-051-057-0-12	12	DWH	0-12	30-30	AS	P	AT OK	DWH
4/13/2012	10:48	W-9	VS	F	5-051-058-0-24	24	DWH	0-24	30-30	AS	P	AT OK	DWH
4/13/2012	10:54	W-9	VS	F	5-051-060-0-22	22	DWH	0-22	30-30	AS	P	AT OK	DWH
4/13/2012	10:59	W-9	VS	F	5-051-061-0-22	22	DWH	0-22	30-30	AS	P	AT OK	DWH
4/13/2012	11:07	W-5	AS	F	5-045-062-0-54	54	DWH	0-54	30-30	AS	P	AT OK	DWH
4/13/2012	11:10	W-14	TS	F	5-063-064-45-0	45	DWH	0-45	30-30	AS	P	AT OK	DWH
4/13/2012	11:15	W-9	VS	F	5-062-063-0-30	30	DWH	0-30	30-30	AS	P	AT OK	DWH
4/13/2012	11:17	W-5	AS	F	5-062-063-30-56	26	DWH	30-56	30-30	BTK	P	AT OK	DWH
4/13/2012	11:20	W-14	TS	F	5-064-065-18-0	18	DWH	0-18	30-30	AS	P	AT OK	DWH
4/13/2012	11:26	W-9	VS	F	5-066-067-57-0	57	DWH	0-57	30-29	BTK	P	AT OK	DWH
4/13/2012	11:33	W-5	AS	F	5-063-068-0-44	44	DWH	0-44	30-30	BTK	P	AT OK	DWH
4/13/2012	13:06	W-9	VS	F	5-067-072-0-32	32	DWH	0-32	30-30	AS	P	AT OK	DWH
4/13/2012	13:15	W-9	VS	F	5-066-073-39-0	39	DWH	0-39	30-27	AS	P	AT OK	DWH
4/13/2012	13:22	W-9	VS	F	5-063-071-0-25	25	DWH	0-25	30-30	BTK	P	AT OK	DWH

**Production Seam Log**

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

Material Type	gml : 6	Specifications:	Seam Pressure: <u>25-30 PSI 3 lb loss</u>	Vacuum Box: <u>5 PSI 20 Sec</u>
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Primary / Secondary:    Primary					Series: 5									
Production Seam					Location			Nondestructive Test						
<i>Date</i>	<i>Time</i>	<i>Mach. ID</i>	<i>Oper. ID</i>	<i>Ext/ Fus:</i>	<i>SeamNo</i> Series-Seam1-Seam2-Begin-End	<i>Length</i> (ft.)	<i>QA ID</i>	<i>Location</i>	<i>Detail</i>	<i>Oper.</i>	<i>Result</i>	<i>Action</i>	<i>QA ID</i>	
4/13/2012	13:30	W-14	TS	F	5-063-067-0-10	10	DWH	0-10	30-29	BTK	P	AT OK	DWH	
4/13/2012	13:30	W-9	VS	F	5-069-070-0-20	20	DWH	0-20	30-30	BTK	P	AT OK	DWH	
4/13/2012	13:30	W-14	TS	F	5-073-074-0-16	16	DWH	0-16	30-30	AS	P	AT OK	DWH	
4/13/2012	13:34	W-14	TS	F	5-063-066-0-25	25	DWH	0-25	30-28	BTK	P	AT OK	DWH	
4/13/2012	13:41	W-14	TS	F	5-064-066-0-10	10	DWH	0-10	30-30	AS	P	AT OK	DWH	
4/13/2012	13:45	W-9	VS	F	5-072-075-0-32	32	DWH	0-32	30-30	BTK	P	AT OK	DWH	
4/13/2012	13:50	W-14	TS	F	5-064-073-24-0	24	DWH	0-24	30-30	AS	P	AT OK	DWH	
4/13/2012	13:55	W-14	TS	F	5-065-074-18-0	18	DWH	0-18	30-30	AS	P	AT OK	DWH	
4/13/2012	13:56	W-5	AS	F	5-062-069-0-23	23	DWH	0-23	30-30	BTK	P	AT OK	DWH	
4/13/2012	14:01	W-5	AS	F	5-063-069-0-28	28	DWH	0-28	30-30	BTK	P	AT OK	DWH	
4/13/2012	14:05	W-14	TS	F	5-067-068-0-25	25	DWH	0-25	30-29	BTK	P	AT OK	DWH	
4/13/2012	14:06	W-5	AS	F	5-070-071-0-30	30	DWH	0-30	30-30	BTK	P	AT OK	DWH	
4/13/2012	14:13	W-14	TS	F	5-068-075-0-4	4	DWH	0-4	CAPPED	AS	P	VT OK	DWH	
4/13/2012	14:24	W-5	AS	F	5-061-063-17-0	17	DWH	0-17	30-30	AS	P	AT OK	DWH	
4/13/2012	14:29	W-5	AS	F	5-061-068-8-0	8	DWH	0-8	30-30	AS	P	AT OK	DWH	
4/13/2012	14:31	W-5	AS	F	5-061-075-42-0	42	DWH	0-42	30-30	AS	P	AT OK	DWH	

## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>		ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>		TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>		
Material Type	gml : 6	Specifications: Seam Pressure: <u>25-30 PSI 3 lb loss</u> Vacuum Box: <u>5 PSI 20 Sec</u>

Primary / Secondary:    Primary					Series:   5								
Production Seam					Location			Nondestructive Test					
<i>Date</i>	<i>Time</i>	<i>Mach. ID</i>	<i>Oper. ID</i>	<i>Ext/ Fus:</i>	<i>SeamNo</i> Series-Seam1-Seam2-Begin-End	<i>Length</i> (ft.)	<i>QA ID</i>	<i>Location</i>	<i>Detail</i>	<i>Oper.</i>	<i>Result</i>	<i>Action</i>	<i>QA ID</i>
4/13/2012	14:32	W-14	TS	F	5-068-072-0-24	24	DWH	0-24	30-30	AS	P	AT OK	DWH
4/13/2012	14:40	W-9	VS	F	5-045-069-0-23	23	DWH	0-23	30-30	AS	P	AT OK	DWH
4/13/2012	14:44	W-9	VS	F	5-044-070-0-27	27	DWH	0-27	30-30	AS	P	AT OK	DWH
4/13/2012	14:45	W-9	VS	F	5-051-071-0-22.5	22.5	DWH	0-22.5	30-30	AS	P	AT OK	DWH
4/13/2012	14:50	W-9	VS	F	5-051-063-0-13	13	DWH	0-13	30-30	AS	P	AT OK	DWH

Total Length Fusion: 6094

Total Length Extrusion: 0

Comments:

Secondary

## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>								ProjNo: <u>GJ4706</u>						
Location: <u>Camillus, New York</u>								TaskNo: <u>07</u>						
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>														
Material Type		gml : 2		Specifications:		Seam Pressure: <u>25-30 PSI 3 lb loss</u>			Vacuum Box: <u>5 PSI 20 Sec</u>					
Primary / Secondary:    Secondary					Series: 4									
Production Seam					Location			Nondestructive Test						
<i>Date</i>	<i>Time</i>	<i>Mach. ID</i>	<i>Oper. ID</i>	<i>Ext/ Fus:</i>	<i>Seam/No</i> Series-Seam1-Seam2-Begin-End	<i>Length</i> (ft.)	<i>QA ID</i>	<i>Location</i>	<i>Detail</i>	<i>Oper.</i>	<i>Result</i>	<i>Action</i>	<i>QA ID</i>	
11/8/2011	10:03	W-39	VS	F	4-001-002-0-220	220	DWH	0-220	30-30	BH	P	AT OK	DWH	
11/8/2011	10:25	W-2	KP	F	4-002-004-0-220	220	DWH	0-220	30-30	BH	P	AT OK	DWH	
11/8/2011	10:36	W-39	VS	F	4-002-003-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH	
11/8/2011	10:40	W-39	VS	F	4-001-003-0-65	65	DWH	0-65	30-30	BH	P	AT OK	DWH	
11/8/2011	11:00	W-2	KP	F	4-003-004-0-80	80	DWH	0-80	30-30	BH	P	AT OK	DWH	
11/8/2011	11:10	W-39	VS	F	4-005-006-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH	
11/8/2011	11:12	W-8	TS	F	4-004-006-0-221	221	DWH	0-221	30-30	BH	P	AT OK	DWH	
11/8/2011	11:35	W-2	KP	F	4-006-007-0-221	221	DWH	0-221	30-30	BH	P	AT OK	DWH	
11/8/2011	11:46	W-8	TS	F	4-004-005-0-89	89	DWH	0-89	30-30	BH	P	AT OK	DWH	
11/8/2011	11:48	W-39	VS	F	4-007-009-0-290	290	DWH	0-290	30-30	BH	P	AT OK	DWH	
11/8/2011	12:01	W-2	KP	F	4-005-007-0-64	64	DWH	0-64	30-30	BH	P	AT OK	DWH	
11/8/2011	12:02	W-8	TS	F	4-007-008-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH	
11/8/2011	12:10	W-2	KP	F	4-005-008-0-40	40	DWH	0-40	30-28	BH	P	AT OK	DWH	
11/8/2011	12:29	W-39	VS	F	4-008-009-0-10	10	DWH	0-10	30-30	BH	P	AT OK	DWH	
11/8/2011	13:05	W-8	TS	F	4-010-011-0-22	22	DWH	0-22	30-29	BH	P	AT OK	DWH	
11/8/2011	13:25	W-8	TS	F	4-009-011-0-124	124	DWH	0-124	30-30	BH	P	AT OK	DWH	

## Production Seam Log

Project: Onondaga Lake Sediment Consolidation Area ( SCA )

Location: Camillus, New York

Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

ProjNo: GJ4706

TaskNo: 07

Material Type

gml : 2

Specifications:

Seam Pressure: 25-30 PSI 3 lb loss

Vacuum Box: 5 PSI 20 Sec

Primary / Secondary: Secondary

Series: 4

Production Seam					Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Ext/ Fus:	SeamNo Series-Seam1-Seam2-Begin-End	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
11/8/2011	13:30	W-2	KP	F	4-011-012-0-123	123	DWH	0-123	30-30	BH	P	AT OK	DWH
11/8/2011	13:41	W-8	TS	F	4-009-010-0-166	166	DWH	0-166	30-30	BH	P	AT OK	DWH
11/8/2011	13:50	W-2	KP	F	4-010-012-0-132	132	DWH	0-132	30-30	BH	P	AT OK	DWH
11/8/2011	14:00	W-39	VS	F	4-013-014-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/8/2011	14:06	W-39	VS	F	4-012-014-0-114	114	DWH	0-114	30-30	BH	P	AT OK	DWH
11/8/2011	14:16	W-8	TS	F	4-014-015-0-112	112	DWH	0-112	30-30	BH	P	AT OK	DWH
11/8/2011	14:16	W-2	KP	F	4-015-016-0-165	165	DWH	0-165	30-30	BH	P	AT OK	DWH
11/8/2011	14:20	W-39	VS	F	4-012-013-0-121	121	DWH	0-121	30-30	BH	P	AT OK	DWH
11/8/2011	14:36	W-8	TS	F	4-013-015-0-93	93	DWH	0-93	30-30	BH	P	AT OK	DWH
11/8/2011	14:47	W-39	VS	F	4-016-018-0-90	90	DWH	0-90	30-30	BH	P	AT OK	DWH
11/8/2011	14:50	W-2	KP	F	4-018-019-0-90	90	DWH	0-90	30-30	BH	P	AT OK	DWH
11/8/2011	14:55	W-39	VS	F	4-016-017-0-45	45	DWH	0-45	30-30	BH	P	AT OK	DWH
11/8/2011	14:55	W-8	TS	F	4-017-018-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/8/2011	15:03	W-2	KP	F	4-017-019-0-10	10	DWH	0-10	30-30	BH	P	AT OK	DWH
11/8/2011	15:07	W-2	KP	F	4-024-025-25-0	25	DWH	0-25	30-28	BH	P	AT OK	DWH
11/8/2011	15:10	W-8	TS	F	4-019-020-0-75	75	DWH	0-75	30-30	BH	P	AT OK	DWH

## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>								ProjNo: <u>GJ4706</u>					
Location: <u>Camillus, New York</u>								TaskNo: <u>07</u>					
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>													
Material Type		gml : 2		Specifications:		Seam Pressure: <u>25-30 PSI 3 lb loss</u>		Vacuum Box: <u>5 PSI 20 Sec</u>					
Primary / Secondary: Secondary				Series: 4									
Production Seam					Location			Nondestructive Test					
<i>Date</i>	<i>Time</i>	<i>Mach. ID</i>	<i>Oper. ID</i>	<i>Ext/ Fus:</i>	<i>SeamNo</i> Series-Seam1-Seam2-Begin-End	<i>Length</i> (ft.)	<i>QA ID</i>	<i>Location</i>	<i>Detail</i>	<i>Oper.</i>	<i>Result</i>	<i>Action</i>	<i>QA ID</i>
11/8/2011	15:10	W-39	VS	F	4-027-028-25-0	25	DWH	0-25	30-30	BH	P	AT OK	DWH
11/8/2011	15:14	W-2	KP	F	4-023-024-25-0	25	DWH	0-25	30-28	BH	P	AT OK	DWH
11/8/2011	15:16	W-39	VS	F	4-028-029-25-0	25	DWH	0-25	30-30	BH	P	AT OK	DWH
11/8/2011	15:25	W-8	TS	F	4-020-021-0-50	50	DWH	0-50	30-28	BH	P	AT OK	DWH
11/8/2011	15:26	W-2	KP	F	4-023-026-25-0	25	DWH	0-25	30-30	BH	P	AT OK	DWH
11/8/2011	15:26	W-39	VS	F	4-029-030-25-0	25	DWH	0-25	30-30	BH	P	AT OK	DWH
11/8/2011	15:36	W-8	TS	F	4-021-022-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/8/2011	15:36	W-2	KP	F	4-026-027-25-0	25	DWH	0-25	30-30	BH	P	AT OK	DWH
11/8/2011	15:45	W-39	VS	F	4-022-025-0-24	24	DWH	0-24	30-30	BH	P	AT OK	DWH
11/8/2011	15:50	W-39	VS	F	4-022-024-0-4	4	DWH	0-4	CAPPED	LV	P	VT OK	DWH
11/8/2011	15:51	W-39	VS	F	4-021-024-0-18	18	DWH	0-18	30-30	BH	P	AT OK	DWH
11/8/2011	15:56	W-39	VS	F	4-021-023-0-15	15	DWH	0-15	30-30	BH	P	AT OK	DWH
11/8/2011	15:58	W-39	VS	F	4-020-023-0-5	5	DWH	0-5	30-30	BH	P	AT OK	DWH
11/8/2011	15:59	W-39	VS	F	4-020-026-0-24	24	DWH	0-24	30-30	BH	P	AT OK	DWH
11/8/2011	16:02	W-39	VS	F	4-020-027-0-4	4	DWH	0-4	CAPPED	LV	P	VT OK	DWH
11/8/2011	16:03	W-39	VS	F	4-019-027-0-18	18	DWH	0-18	30-30	BH	P	AT OK	DWH

## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>								ProjNo: <u>GJ4706</u>					
Location: <u>Camillus, New York</u>								TaskNo: <u>07</u>					
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>													
Material Type      gml : 2      Specifications:      Seam Pressure: <u>25-30 PSI 3 lb loss</u> Vacuum Box: <u>5 PSI 20 Sec</u>													
Primary / Secondary:      Secondary      Series: 4													
Production Seam					Location			Nondestructive Test					
<i>Date</i>	<i>Time</i>	<i>Mach. ID</i>	<i>Oper. ID</i>	<i>Ext/ Fus:</i>	<i>SeamNo</i> Series-Seam1-Seam2-Begin-End	<i>Length</i> (ft.)	<i>QA ID</i>	<i>Location</i>	<i>Detail</i>	<i>Oper.</i>	<i>Result</i>	<i>Action</i>	<i>QA ID</i>
11/8/2011	16:07	W-39	VS	F	4-019-028-0-19	19	DWH	0-19	30-30	BH	P	AT OK	DWH
11/8/2011	16:09	W-39	VS	F	4-017-028-0-4	4	DWH	0-4	CAPPED	LV	P	VT OK	DWH
11/8/2011	16:09	W-39	VS	F	4-017-029-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/8/2011	16:15	W-39	VS	F	4-017-030-0-11	11	DWH	0-11	30-27	BH	P	AT OK	DWH
11/8/2011	16:19	W-39	VS	F	4-016-030-0-11	11	DWH	0-11	30-28	BH	P	AT OK	DWH
11/9/2011	8:25	W-2	KP	F	4-033-034-32-0	32	DWH	0-32	30-30	BH	P	AT OK	DWH
11/9/2011	8:30	W-8	TS	F	4-030-031-28-0	28	DWH	0-28	30-30	BH	P	AT OK	DWH
11/9/2011	8:30	W-39	VS	F	4-036-037-27-0	27	DWH	0-27	30-30	BH	P	AT OK	DWH
11/9/2011	8:33	W-8	TS	F	4-031-032-31-0	31	DWH	0-31	30-30	BH	P	AT OK	DWH
11/9/2011	8:37	W-2	KP	F	4-034-035-32-0	32	DWH	0-32	30-30	BH	P	AT OK	DWH
11/9/2011	8:40	W-39	VS	F	4-037-038-28-0	28	DWH	0-28	30-30	BH	P	AT OK	DWH
11/9/2011	8:45	W-8	TS	F	4-032-033-32-0	32	DWH	0-32	30-30	BH	P	AT OK	DWH
11/9/2011	9:01	W-2	KP	F	4-038-039-28-0	28	DWH	0-28	30-30	BH	P	AT OK	DWH
11/9/2011	9:10	W-8	TS	F	4-043-044-14-0	14	DWH	0-14	30-30	BH	P	AT OK	DWH
11/9/2011	9:13	W-2	KP	F	4-039-040-31-0	31	DWH	0-31	30-30	BH	P	AT OK	DWH
11/9/2011	9:30	W-8	TS	F	4-042-043-20-0	20	DWH	0-20	30-30	BH	P	AT OK	DWH



## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>					ProjNo: <u>GJ4706</u>								
Location: <u>Camillus, New York</u>					TaskNo: <u>07</u>								
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>													
Material Type		gml : 2		Specifications:		Seam Pressure: <u>25-30 PSI 3 lb loss</u>		Vacuum Box: <u>5 PSI 20 Sec</u>					
Primary / Secondary: Secondary				Series: 4									
Production Seam					Location			Nondestructive Test					
<i>Date</i>	<i>Time</i>	<i>Mach. ID</i>	<i>Oper. ID</i>	<i>Ext/ Fus:</i>	<i>SeamNo</i> Series-Seam1-Seam2-Begin-End	<i>Length</i> (ft.)	<i>QA ID</i>	<i>Location</i>	<i>Detail</i>	<i>Oper.</i>	<i>Result</i>	<i>Action</i>	<i>QA ID</i>
11/9/2011	9:33	W-2	KP	F	4-040-041-31-0	31	DWH	0-31	30-30	BH	P	AT OK	DWH
11/9/2011	9:33	W-8	TS	F	4-042-044-14-0	14	DWH	0-14	30-30	BH	P	AT OK	DWH
11/9/2011	9:44	W-39	VS	F	4-041-045-16-0	16	DWH	0-16	30-28	BH	P	AT OK	DWH
11/9/2011	9:45	W-2	KP	F	4-047-048-31-0	31	DWH	0-31	30-30	BH	P	AT OK	DWH
11/9/2011	9:48	W-2	KP	F	4-035-036-32-0	32	DWH	0-32	30-30	BH	P	AT OK	DWH
11/9/2011	9:50	W-8	TS	F	4-043-046-31-0	31	DWH	0-31	30-30	BH	P	AT OK	DWH
11/9/2011	9:51	W-2	KP	F	4-046-047-31-0	31	DWH	0-31	30-30	BH	P	AT OK	DWH
11/9/2011	9:55	W-39	VS	F	4-041-042-19-0	19	DWH	0-19	30-27	BH	P	AT OK	DWH
11/9/2011	9:57	W-39	VS	F	4-042-045-19-0	19	DWH	0-19	30-29	BH	P	AT OK	DWH
11/9/2011	10:20	W-39	VS	F	4-001-050-0-182	182	DWH	0-182	30-30	BH	P	AT OK	DWH
11/9/2011	10:45	W-8	TS	F	4-001-049-30-0	30	DWH	0-30	30-30	BH	P	AT OK	DWH
11/9/2011	11:00	W-8	TS	F	4-001-053-0-11	11	DWH	0-11	CAPPED	LV	P	VT OK	DWH
11/9/2011	11:00	W-2	KP	F	4-054-061-47-0	47	DWH	0-47	30-29	BH	P	AT OK	DWH
11/9/2011	11:05	W-8	TS	F	4-049-051-30-0	30	DWH	0-30	30-30	BH	P	AT OK	DWH
11/9/2011	11:12	W-39	VS	F	4-056-057-30-0	30	DWH	0-30	30-30	BH	P	AT OK	DWH
11/9/2011	11:15	W-8	TS	F	4-053-055-0-23	23	DWH	0-23	30-30	BH	P	AT OK	DWH

## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

Material Type	gml : 2	Specifications:	Seam Pressure: <u>25-30 PSI 3 lb loss</u>	Vacuum Box: <u>5 PSI 20 Sec</u>
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Primary / Secondary:	Secondary	Series: 4
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Production Seam					Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Ext/ Fus:	SeamNo Series-Seam1-Seam2-Begin-End	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
11/9/2011	11:20	W-2	KP	F	4-051-052-49-0	49	DWH	0-49	CAPPED	LV	P	VT OK	DWH
11/9/2011	11:21	W-39	VS	F	4-055-056-0-23	23	DWH	0-23	30-30	BH	P	AT OK	DWH
11/9/2011	11:22	W-39	VS	F	4-051-057-0-27	27	DWH	0-27	30-30	BH	P	AT OK	DWH
11/9/2011	11:30	W-8	TS	F	4-049-053-0-28	28	DWH	0-28	30-30	BH	P	AT OK	DWH
11/9/2011	11:35	W-2	KP	F	4-058-059-24-0	24	DWH	0-24	30-30	BH	P	AT OK	DWH
11/9/2011	11:40	W-39	VS	F	4-051-062-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/9/2011	11:50	W-2	KP	F	4-054-058-49-0	49	DWH	0-49	30-30	BH	P	AT OK	DWH
11/9/2011	13:15	W-39	VS	F	4-061-062-0-28	28	DWH	0-28	30-30	BH	P	AT OK	DWH
11/9/2011	13:25	W-39	VS	F	4-062-063-0-18	18	DWH	0-18	30-27	BH	P	AT OK	DWH
11/9/2011	13:27	W-39	VS	F	4-061-063-30-0	30	DWH	0-30	30-29	BH	P	AT OK	DWH
11/9/2011	13:33	W-2	KP	F	4-063-064-50-0	50	DWH	0-50	30-30	BH	P	AT OK	DWH
11/9/2011	13:36	W-8	TS	F	4-052-058-32-0	32	DWH	0-32	30-30	BH	P	AT OK	DWH
11/9/2011	13:40	W-39	VS	F	4-064-065-51-0	51	DWH	0-51	30-30	BH	P	AT OK	DWH
11/9/2011	13:41	W-8	TS	F	4-052-059-24-19	5	DWH	19-24	CAPPED	LV	P	VT OK	DWH
11/9/2011	13:50	W-2	KP	F	4-065-066-48-0	48	DWH	0-48	30-30	BH	P	AT OK	DWH
11/9/2011	13:55	W-8	TS	F	4-059-060-19-0	19	DWH	0-19	30-30	BH	P	AT OK	DWH

## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>					ProjNo: <u>GJ4706</u>								
Location: <u>Camillus, New York</u>					TaskNo: <u>07</u>								
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>													
Material Type		gml : 2		Specifications:		Seam Pressure: <u>25-30 PSI 3 lb loss</u>		Vacuum Box: <u>5 PSI 20 Sec</u>					
Primary / Secondary:    Secondary					Series: 4								
Production Seam					Location			Nondestructive Test					
<i>Date</i>	<i>Time</i>	<i>Mach. ID</i>	<i>Oper. ID</i>	<i>Ext/ Fus:</i>	<i>SeamNo</i> Series-Seam1-Seam2-Begin-End	<i>Length</i> (ft.)	<i>QA ID</i>	<i>Location</i>	<i>Detail</i>	<i>Oper.</i>	<i>Result</i>	<i>Action</i>	<i>QA ID</i>
11/9/2011	14:00	W-39	VS	F	4-048-067-31-0	31	DWH	0-31	30-30	BH	P	AT OK	DWH
11/9/2011	14:05	W-39	VS	F	4-067-068-30-0	30	DWH	0-30	30-30	BH	P	AT OK	DWH
11/9/2011	14:10	W-8	TS	F	4-052-060-19-0	19	DWH	0-19	30-30	BH	P	AT OK	DWH
11/9/2011	14:15	W-39	VS	F	4-068-069-30-0	30	DWH	0-30	30-27	BH	P	AT OK	DWH
11/9/2011	14:25	W-39	VS	F	4-070-071-11-0	11	DWH	0-11	30-28	BH	P	AT OK	DWH
11/9/2011	14:25	W-2	KP	F	4-070-072-30-0	30	DWH	0-30	30-30	BH	P	AT OK	DWH
11/9/2011	14:35	W-2	KP	F	4-072-073-30-0	30	DWH	0-30	30-30	BH	P	AT OK	DWH
11/9/2011	14:36	W-8	TS	F	4-051-054-0-26	26	DWH	0-26	30-30	BH	P	AT OK	DWH
11/9/2011	14:36	W-39	VS	F	4-069-070-16-0	16	DWH	0-16	30-30	BH	P	AT OK	DWH
11/9/2011	14:38	W-39	VS	F	4-069-071-11-0	11	DWH	0-11	30-30	BH	P	AT OK	DWH
11/9/2011	14:40	W-2	KP	F	4-074-075-8-0	8	DWH	0-8	30-30	BH	P	AT OK	DWH
11/9/2011	14:48	W-39	VS	F	4-066-074-30-0	30	DWH	0-30	30-30	BH	P	AT OK	DWH
11/9/2011	14:50	W-8	TS	F	4-051-055-0-31	31	DWH	0-31	30-30	BH	P	AT OK	DWH
11/9/2011	14:50	W-39	VS	F	4-074-076-12-0	12	DWH	0-12	30-30	BH	P	AT OK	DWH
11/9/2011	14:55	W-8	TS	F	4-073-075-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/9/2011	15:00	W-2	KP	F	4-073-074-29-0	29	DWH	0-29	30-30	BH	P	AT OK	DWH

## Production Seam Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>								ProjNo: <u>GJ4706</u>							
Location: <u>Camillus, New York</u>								TaskNo: <u>07</u>							
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>															
Material Type		gml : 2		Specifications:		Seam Pressure: <u>25-30 PSI 3 lb loss</u>				Vacuum Box: <u>5 PSI 20 Sec</u>					
Primary / Secondary:    Secondary				Series: 4											
Production Seam					Location			Nondestructive Test							
<i>Date</i>	<i>Time</i>	<i>Mach. ID</i>	<i>Oper. ID</i>	<i>Ext/ Fus:</i>	<i>SeamNo</i> Series-Seam1-Seam2-Begin-End	<i>Length</i> (ft.)	<i>QA ID</i>	<i>Location</i>	<i>Detail</i>	<i>Oper.</i>	<i>Result</i>	<i>Action</i>	<i>QA ID</i>		
11/9/2011	15:10	W-8	TS	F	4-001-055-0-22	22	DWH	0-22	30-29	BH	P	AT OK	DWH		
11/9/2011	15:10	W-39	VS	F	4-066-076-12-0	12	DWH	0-22	30-27	BH	P	AT OK	DWH		
11/9/2011	15:12	W-8	TS	F	4-001-056-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH		
11/9/2011	15:24	W-8	TS	F	4-050-057-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH		
11/9/2011	15:30	W-39	VS	F	4-016-031-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH		
11/9/2011	15:35	W-39	VS	F	4-016-032-0-5	5	DWH	0-5	30-30	BH	P	AT OK	DWH		
11/9/2011	15:36	W-39	VS	F	4-015-032-0-17	17	DWH	0-17	30-30	BH	P	AT OK	DWH		
11/9/2011	15:40	W-39	VS	F	4-015-033-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH		
11/9/2011	15:44	W-39	VS	F	4-015-034-0-4	4	DWH	0-4	CAPPED	LV	P	VT OK	DWH		
11/9/2011	15:45	W-39	VS	F	4-013-034-0-18	18	DWH	0-18	CAPPED	LV	P	VT OK	DWH		
11/9/2011	15:45	W-8	TS	F	4-051-065-0-21	21	DWH	0-21	30-30	BH	P	AT OK	DWH		
11/9/2011	15:47	W-8	TS	F	4-051-064-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH		
11/9/2011	15:48	W-39	VS	F	4-013-035-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH		
11/9/2011	15:49	W-8	TS	F	4-051-063-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH		
11/9/2011	15:52	W-39	VS	F	4-012-036-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH		
11/9/2011	15:58	W-39	VS	F	4-012-037-0-14	14	DWH	0-14	30-30	BH	P	AT OK	DWH		

## Production Seam Log

Project: Onondaga Lake Sediment Consolidation Area ( SCA )

Location: Camillus, New York

Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

ProjNo: GJ4706

TaskNo: 07

Material Type

gml : 2

Specifications:

Seam Pressure: 25-30 PSI 3 lb loss

Vacuum Box: 5 PSI 20 Sec

Primary / Secondary:

Secondary

Series: 4

Production Seam					Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Ext/ Fus:	SeamNo Series-Seam1-Seam2-Begin-End	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
11/9/2011	16:00	W-39	VS	F	4-010-037-0-8	8	DWH	0-8	30-30	BH	P	AT OK	DWH
11/9/2011	16:08	W-39	VS	F	4-010-038-0-22	22	DWH	0-22	30-28	BH	P	AT OK	DWH
11/9/2011	16:15	W-39	VS	F	4-010-039-0-6	6	DWH	0-6	CAPPED	LV	P	VT OK	DWH
11/9/2011	16:15	W-8	TS	F	4-051-075-0-23	23	DWH	0-23	30-30	BH	P	AT OK	DWH
11/9/2011	16:16	W-39	VS	F	4-009-039-0-15	15	DWH	0-15	30-30	BH	P	AT OK	DWH
11/9/2011	16:17	W-8	TS	F	4-051-074-0-12	12	DWH	0-12	30-27	BH	P	AT OK	DWH
11/9/2011	16:19	W-39	VS	F	4-009-040-0-12	12	DWH	0-12	30-30	BH	P	AT OK	DWH
11/9/2011	16:19	W-8	TS	F	4-051-066-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/9/2011	16:21	W-39	VS	F	4-008-040-209-226	17	DWH	209-226	30-30	BH	P	AT OK	DWH
11/9/2011	16:24	W-39	VS	F	4-008-041-0-9	9	DWH	0-9	30-30	BH	P	AT OK	DWH
11/9/2011	16:28	W-39	VS	F	4-008-042-0-15	15	DWH	0-15	30-30	BH	P	AT OK	DWH
11/9/2011	16:29	W-39	VS	F	4-005-042-0-6	6	DWH	0-6	30-27	BH	P	AT OK	DWH
11/9/2011	16:30	W-39	VS	F	4-005-043-0-10	10	DWH	0-10	30-28	BH	P	AT OK	DWH
11/9/2011	16:34	W-39	VS	F	4-005-046-0-9	9	DWH	0-9	CAPPED	LV	P	VT OK	DWH
11/9/2011	16:35	W-39	VS	F	4-004-046-0-16	16	DWH	0-16	30-30	BH	P	AT OK	DWH
11/9/2011	16:35	W-8	TS	F	4-051-070-0-12	12	DWH	0-12	30-30	BH	P	AT OK	DWH

**Production Seam Log**

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>					ProjNo: <u>GJ4706</u>				
Location: <u>Camillus, New York</u>					TaskNo: <u>07</u>				
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>									

Material Type	gml : 2	Specifications:	Seam Pressure: <u>25-30 PSI 3 lb loss</u>	Vacuum Box: <u>5 PSI 20 Sec</u>
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Primary / Secondary:	Secondary	Series:	4
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Production Seam					Location			Nondestructive Test					
Date	Time	Mach. ID	Oper. ID	Ext/ Fus:	SeamNo <small>Series-Seam1-Seam2-Begin-End</small>	Length (ft.)	QA ID	Location	Detail	Oper.	Result	Action	QA ID
11/9/2011	16:37	W-8	TS	F	4-051-072-0-22	22	DWH	0-22	30-30	BH	P	AT OK	DWH
11/9/2011	16:38	W-39	VS	F	4-004-047-0-9	9	DWH	0-9	30-30	BH	P	AT OK	DWH
11/9/2011	16:39	W-39	VS	F	4-003-047-0-12	12	DWH	0-12	30-30	BH	P	AT OK	DWH
11/9/2011	16:40	W-39	VS	F	4-003-048-0-15	15	DWH	0-15	30-30	BH	P	AT OK	DWH
11/9/2011	16:42	W-39	VS	F	4-001-048-0-7	7	DWH	0-7	30-29	BH	P	AT OK	DWH
11/9/2011	16:44	W-39	VS	F	4-001-067-0-19	19	DWH	0-19	30-30	BH	P	AT OK	DWH
11/9/2011	16:49	W-39	VS	F	4-050-067-0-3	3	DWH	0-3	CAPPED	LV	P	VT OK	DWH
11/9/2011	16:50	W-39	VS	F	4-050-068-0-24	24	DWH	0-24	30-27	BH	P	AT OK	DWH
11/9/2011	16:52	W-8	TS	F	4-051-069-0-18	18	DWH	0-18	30-28	BH	P	AT OK	DWH
11/9/2011	16:56	W-8	TS	F	4-050-069-0-4	4	DWH	0-4	CAPPED	LV	P	VT OK	DWH
11/9/2011	22:48	W-2	KP	f	4-050-051-0-164	164	DWH	0-164	30-30	BH	p	AT OK	DWH

Total Length Fusion: 6087

Total Length Extrusion: 0

Comments:

## APPENDIX I

### Geomembrane Destructive Seam Test Logs and Laboratory Test Results

- East Basin
- West Basin

## East Basin

- Primary
- Secondary



Primary

## Destructive Test Log

Project: <u>Onondaga Lake Sediment Consolidation Area (SCA)</u>												ProjNo: <u>GJ4706</u>			
Location: <u>Camillus, New York</u>												TaskNo: <u>07</u>			
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>															
<b>SMS East Basin</b>															

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: <u>Primary</u>	Series: <u>3</u>	MaterialType: <u>6</u>
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Sample Data								Test Data					Re test 1	Re test 2		
Samp No	Weld Type	Track Type	Location		Mach ID	Oper ID	Date Samp	Peel		Shear	Unit ppi/psi	Result (P/F)			QA ID	
			Seam	Dist. (ft.)				Inside	Outside							
3-001	F	D	1-2	140 W	W-9	VS	3/28/2012	Lab	113	139	172	PPI	P	DWH	-	-
								Field	145	116	213	PPI	P	DWH		
3-002	F	D	9-10	15 S	W-10	TS	3/28/2012	Lab	114	119	164	PPI	P	DWH	-	-
								Field	135	114	187	PPI	P	DWH		
3-003	F	D	1-9	4 E	W-5	AS	3/28/2012	Lab	139	133	157	PPI	P	DWH	-	-
								Field	133	123	189	PPI	P	DWH		
3-004	F	D	19-20	6 N	W-9	VS	3/28/2012	Lab	134	142	164	PPI	P	DWH	-	-
								Field	134	130	189	PPI	P	DWH		
3-005	F	D	23-22	16 E	W-5	AS	3/28/2012	Lab	122	119	174	PPI	P	DWH	-	-
								Field	108	133	180	PPI	P	DWH		
3-006	F	D	24-25	90 E	W-10	TS	3/28/2012	Lab	124	129	174	PPI	P	DWH	-	-
								Field	126	126	199	PPI	P	DWH		
3-007	E	S	20-Patch	181 E	MX-16	VS	3/28/2012	Lab	93	-	157	PPI	F	DWH	3-007A	3-007B
								Field	91	-	166	PPI	P	DWH		
3-007A	E	S	24-Patch	94 E	MX-16	VS	4/4/2012	Lab	115	-	166	PPI	P	DWH	-	-
								Field	108	-	183	PPI	P	DWH		
3-007B	E	S	19-Patch	4 N	MX-16	VS	4/4/2012	Lab	110	-	161	PPI	F	DWH	3-007B1	-
								Field	112	-	190	PPI	P	DWH		
3-007B1	E	S	18 Patch	5 N	MX-16	VS	4/9/2012	Lab	110	-	172	PPI	P	DWH	-	-
								Field	110	-	140	PPI	P	DWH		
3-008	F	D	27-28	179 E	W-5	AS	3/28/2012	Lab	123	124	172	PPI	P	DWH	-	-
								Field	125	117	161	PPI	P	DWH		

## Destructive Test Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>										ProjNo: <u>GJ4706</u>	
Location: <u>Camillus, New York</u>										TaskNo: <u>07</u>	
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>											

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: <u>Primary</u>	Series: <u>3</u>	MaterialType: <u>6</u>
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Sample Data							Test Data					Re test 1	Re test 2			
Samp No	Weld Type	Track Type	Location		Mach ID	Oper ID	Date Samp	Peel		Shear	Unit ppi/psi			Result (P/F)	QA ID	
			Seam	Dist. (ft.)				Inside	Outside							
3-009	F	D	29-30	48 E	W-9	VS	4/2/2012	Lab	112	125	166	PPI	P	DWH	-	-
								Field	115	121	108	PPI	P	DWH		
3-010	F	D	30-32	109 E	W-10	TS	4/2/2012	Lab	125	135	171	PPI	P	DWH	-	-
								Field	142	140	207	PPI	P	DWH		
3-011	F	D	32-33	110 E	W-11	KC	4/2/2012	Lab	117	125	168	PPI	P	DWH	-	-
								Field	146	114	198	PPI	P	DWH		
3-012	F	D	33-35	164 E	W-5	AS	4/2/2012	Lab	126	130	168	PPI	P	DWH	-	-
								Field	142	124	202	PPI	P	DWH		
3-013	F	D	36-38	65 E	W-10	TS	4/2/2012	Lab	137	115	166	PPI	P	DWH	-	-
								Field	111	123	203	PPI	P	DWH		
3-014	F	D	38-40	8 E	W-5	AS	4/13/2012	Lab	128	120	165	PPI	P	DWH	-	-
								Field	108	106	140	PPI	P	DWH		
3-015	F	D	40-42	53 E	W-9	VS	4/13/2012	Lab	116	127	169	PPI	P	DWH	-	-
								Field	104	105	143	PPI	P	DWH		
3-016	F	D	42-44	165 E	W-5	AS	4/13/2012	Lab	140	134	176	PPI	P	DWH	-	-
								Field	113	117	152	PPI	P	DWH		
3-017	F	D	43-45	188 E	W-11	TS	4/13/2012	Lab	111	114	176	PPI	P	DWH	-	-
								Field	103	104	152	PPI	P	DWH		
3-018	F	D	47-54	6 W	W-5	AS	4/13/2012	Lab	130	113	171	PPI	P	DWH	-	-
								Field	100	118	147	PPI	P	DWH		
3-019	F	D	53-54	27 N	W-11	TS	4/13/2012	Lab	119	121	177	PPI	P	DWH	-	-
								Field	114	111	152	PPI	P	DWH		

## Destructive Test Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>	

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: <u>Primary</u>	Series: <u>3</u>	MaterialType: <u>6</u>
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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							
3-020	F	D	50-51	8 W	W-9	VS	4/13/2012	Lab	161	158	170	PPI	P	DWH	-	-
								Field	123	126	153	PPI	P	DWH		

Comments:



Client:	Parsons Engineering Science		
Project Name:	Onondaga SCA Phase I II		
Project Location:	Camillus, NY		
Installer:	---		
GTX #:	11670		
Test Date:	04/03/12		
Tested By:	ad	Report #:	1
Checked By:	jdt	Page:	1 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-3-001	Machine ID:	W-9
Seam ID:	001/002	Welder ID:	VS
		Date Sampled:	03/28/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	111	---	SE1	146	---	SE1	171	>50%	upper
2	110	---	SE1	126	---	SE1	169	>50%	upper
3	1117	---	SE1	144	---	SE1	174	>50%	upper
4	113	---	SE1	142	---	SE1	171	>50%	upper
5	115	---	SE1	137	---	SE1	175	>50%	both
Average	313	---	---	139	---	---	172	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Onondaga SCA Phase I II		
Project Location:	Camillus, NY		
Installer:	---		
GTX #:	11670		
Test Date:	04/03/12		
Tested By:	ad	Report #:	1
Checked By:	jdt	Page:	2 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-3-002	Machine ID:	W-10
Seam ID:	009/010	Welder ID:	TS
		Date Sampled:	03/28/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	118	---	SE1	126	---	SE1	164	>50%	upper
2	109	---	SE1	125	---	SE1	160	>50%	upper
3	111	---	SE1	115	---	SE1	164	>50%	upper
4	114	---	SE1	114	---	SE1	163	>50%	upper
5	117	---	SE1	113	---	SE1	168	>50%	upper
Average	114	---	---	119	---	---	164	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science
Project Name:	Onondaga SCA Phase I II
Project Location:	Camillus, NY
Installer:	---
GTX #:	11670
Test Date:	04/03/12
Tested By:	ad
Checked By:	jdt
Report #:	1
Page:	3 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-3-003	Machine ID:	W-5
Seam ID:	001/009	Welder ID:	AS
		Date Sampled:	03/28/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	141	---	SE1	140	---	SE1	154	>50%	upper
2	142	---	SE1	123	---	SE1	157	>50%	upper
3	137	---	SE1	144	---	SE1	155	>50%	upper
4	141	---	SE1	137	---	SE1	157	>50%	upper
5	135	---	SE1	123	---	SE1	163	>50%	upper
Average	139	---	---	133	---	---	157	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Onondaga SCA Phase I II		
Project Location:	Camillus, NY		
Installer:	---		
GTX #:	11670		
Test Date:	04/03/12		
Tested By:	ad	Report #:	1
Checked By:	jdt	Page:	4 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-3-004	Machine ID:	W-9
Seam ID:	019/020	Welder ID:	VS
		Date Sampled:	03/28/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	132	---	SE1	143	---	SE1	167	>50%	upper
2	130	---	SE1	135	---	SE1	158	>50%	upper
3	133	---	SE1	140	---	SE1	167	>50%	upper
4	133	---	SE1	150	---	SE1	161	>50%	upper
5	141	---	SE1	142	---	SE1	166	>50%	upper
Average	134	---	---	142	---	---	164	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parsons Engineering Science		
Project Name:	Onondaga SCA Phase I II		
Project Location:	Camillus, NY		
Installer:	---		
GTX #:	11670		
Test Date:	04/03/12		
Tested By:	ad	Report #:	1
Checked By:	jdt	Page:	5 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-3-005	Machine ID:	W-5
Seam ID:	022/024	Welder ID:	AS
		Date Sampled:	03/28/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	128	---	SE1	123	---	SE1	174	>50%	lower
2	117	---	SE1	119	---	SE1	172	>50%	both
3	126	---	SE1	120	---	SE1	177	>50%	lower
4	119	---	SE1	117	---	SE1	171	>50%	lower
5	118	---	SE1	116	---	SE1	176	>50%	lower
Average	122	---	---	119	---	---	174	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

**Notes:** These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science
Project Name:	Onondaga SCA Phase I II
Project Location:	Camillus, NY
Installer:	---
GTX #:	11670
Test Date:	04/03/12
Tested By:	ad
Checked By:	jdt
Report #:	1
Page:	6 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-3-006	Machine ID:	W-10
Seam ID:	024/025	Welder ID:	TS
		Date Sampled:	03/28/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	126	---	SE1	127	---	SE1	177	>50%	both
2	122	---	SE1	123	---	SE1	173	>50%	upper
3	129	---	SE1	126	---	SE1	175	>50%	upper
4	127	---	SE1	130	---	SE1	170	>50%	upper
5	117	---	SE1	140	---	SE1	174	>50%	upper
Average	124	---	---	129	---	---	174	---	---

Comments: Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science
Project Name:	Onondaga SCA Phase I II
Project Location:	Camillus, NY
Installer:	---
GTX #:	11670
Test Date:	04/03/12
Tested By:	ad
Checked By:	jdt
Report #:	1
Page:	7 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Fillet Extrusion Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-3-007	Machine ID:	16
Seam ID:	020/PATCH	Welder ID:	MX
		Date Sampled:	03/30/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type			
1	73	---	AD-WLD	---	---	---	145	<50%	AD-WLD
2	84	---	AD-WLD	---	---	---	142	<50%	AD-WLD
3	96	---	AD-WLD	---	---	---	158	<50%	AD-WLD
4	113	---	SE1	---	---	---	169	>50%	upper
5	100	---	SE1	---	---	---	171	>50%	upper
Average	93	---	---	---	---	---	157	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Onondaga SCA Phase I & II		
Project Location:	Camillus, NY		
Installer:	---		
GTX #:	11670		
Test Date:	04/05/12		
Tested By:	ad	Report #:	2
Checked By:	jdt	Page:	1 of 2

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Fillet Extrusion Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-3-007A	Machine ID:	16
Seam ID:	024/PATCH	Welder ID:	MX
		Date Sampled:	---

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	96	---	SE3	---	---	---	168	>50%	upper
2	118	---	SE3	---	---	---	164	>50%	upper
3	133	---	SE3	---	---	---	166	>50%	upper
4	122	---	SE3	---	---	---	165	>50%	upper
5	108	---	SE3	---	---	---	169	>50%	upper
Average	115	---	---	---	---	---	166	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.

Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Onondaga SCA Phase I & II		
Project Location:	Camillus, NY		
Installer:	---		
GTX #:	11670		
Test Date:	04/05/12		
Tested By:	ad	Report #:	2
Checked By:	jdt	Page:	2 of 2

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Fillet Extrusion Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-3-007B	Machine ID:	16
Seam ID:	014/PATCH	Welder ID:	MX
		Date Sampled:	---

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	126	---	SE3	---	---	---	174	>50%	upper
2	115	---	SE3	---	---	---	172	>50%	upper
3	109	---	AD-WLD	---	---	---	114	<50%	AD-WLD
4	81	---	AD-WLD	---	---	---	171	>50%	upper
5	116	---	SE3	---	---	---	173	>50%	upper
Average	110	---	---	---	---	---	161	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.

Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science
Project Name:	Onondaga SCA Phase I II
Project Location:	Camillus, NY
Installer:	---
GTX #:	11670
Test Date:	04/03/12
Tested By:	ad
Checked By:	jdt
Report #:	1
Page:	8 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-3-008	Machine ID:	W-5
Seam ID:	027/028	Welder ID:	AS
		Date Sampled:	03/30/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	126	---	SE1	122	---	SE1	174	>50%	upper
2	112	---	SE1	128	---	SE1	171	>50%	upper
3	128	---	SE1	121	---	SE1	173	>50%	upper
4	114	---	SE1	129	---	SE1	170	>50%	upper
5	133	---	SE1	121	---	SE1	172	>50%	upper
Average	123	---	---	124	---	---	172	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

**Notes:** These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parsons Engineering Science
Project Name:	Onondaga SCA Phase I II
Project Location:	Camillus, NY
Installer:	---
GTX #:	11670
Test Date:	04/03/12
Tested By:	ad
Checked By:	jdt
Report #:	1
Page:	9 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-3-009	Machine ID:	W-9
Seam ID:	029/030	Welder ID:	VS
		Date Sampled:	04/02/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./In	Elongation, %	Rupture Mode
1	114	---	SE1	126	---	SE1	167	>50%	upper
2	117	---	SE1	123	---	SE1	165	>50%	upper
3	110	---	SE1	119	---	SE1	167	>50%	upper
4	112	---	SE1	133	---	SE1	164	>50%	upper
5	105	---	SE1	126	---	SE1	166	>50%	upper
Average	112	---	---	125	---	---	166	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Onondaga SCA Phase I II		
Project Location:	Camillus, NY		
Installer:	---		
GTX #:	11670		
Test Date:	04/03/12		
Tested By:	ad	Report #:	1
Checked By:	jdt	Page:	10 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-3-010	Machine ID:	W-10
Seam ID:	030/032	Welder ID:	TS
		Date Sampled:	04/02/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	127	---	SE1	131	---	SE1	172	>50%	both
2	128	---	SE1	134	---	SE1	170	>50%	upper
3	122	---	SE1	141	---	SE1	172	>50%	both
4	123	---	SE1	137	---	SE1	168	>50%	both
5	123	---	SE1	133	---	SE1	173	>50%	lower
Average	125	---	---	135	---	---	171	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

**Notes:** These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parsons Engineering Science
Project Name:	Onondaga SCA Phase I II
Project Location:	Camillus, NY
Installer:	---
GTX #:	11670
Test Date:	04/03/12
Tested By:	ad
Checked By:	jdt
Report #:	1
Page:	11 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-3-011	Machine ID:	W-11
Seam ID:	032/033	Welder ID:	KC
		Date Sampled:	04/02/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type			
1	116	---	SE1	125	---	SE1	169	>50%	upper
2	113	---	SE1	122	---	SE1	166	>50%	upper
3	116	---	SE1	122	---	SE1	169	>50%	upper
4	124	---	SE1	123	---	SE1	165	>50%	upper
5	118	---	SE1	133	---	SE1	168	>50%	upper
Average	117	---	---	125	---	---	168	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.

Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Onondaga SCA Phase I II		
Project Location:	Camillus, NY		
Installer:	---		
GTX #:	11670		
Test Date:	04/03/12		
Tested By:	ad	Report #:	1
Checked By:	jdt	Page:	12 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-3-012	Machine ID:	W-5
Seam ID:	033/035	Welder ID:	AS
		Date Sampled:	04/02/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	131	---	SE1	126	---	SE1	169	>50%	upper
2	124	---	SE1	131	---	SE1	167	>50%	upper
3	126	---	SE1	129	---	SE1	170	>50%	upper
4	120	---	SE1	133	---	SE1	166	>50%	upper
5	131	---	SE1	132	---	SE1	171	>50%	upper
Average	126	---	---	130	---	---	168	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

**Notes:** These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science
Project Name:	Onondaga SCA Phase I II
Project Location:	Camillus, NY
Installer:	---
GTX #:	11670
Test Date:	04/03/12
Tested By:	ad
Checked By:	jdt
Report #:	1
Page:	13 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-3-013	Machine ID:	W-10
Seam ID:	036/038	Welder ID:	TS
		Date Sampled:	04/02/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	140	---	SE1	117	---	SE1	166	>50%	upper
2	134	---	SE1	111	---	SE1	164	>50%	upper
3	141	---	SE1	114	---	SE1	167	>50%	upper
4	137	---	SE1	116	---	SE1	164	>50%	upper
5	132	---	SE1	116	---	SE1	167	>50%	upper
Average	137	---	---	115	---	---	166	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Onondaga SCA Phase I II		
Project Location:	Camillus, NY		
Installer:	---		
GTX #:	11670		
Test Date:	04/17/12		
Tested By:	ad	Report #:	5
Checked By:	bfs	Page:	1 of 7

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-3-014	Machine ID:	W-5
Seam ID:	034/OLD	Welder ID:	AS
		Date Sampled:	04/13/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	141	---	SE1	117	---	SE1	167	>50%	upper
2	137	---	SE1	133	---	SE1	166	>50%	upper
3	116	---	SE1	129	---	SE1	166	>50%	upper
4	125	---	SE1	129	---	SE1	161	>50%	upper
5	122	---	SE1	135	---	SE1	163	>50%	upper
Average	128	---	---	129	---	---	165	---	---

Comments: Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.

Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Onondaga SCA Phase I II		
Project Location:	Camillus, NY		
Installer:	---		
GTX #:	11670		
Test Date:	04/17/12		
Tested By:	ad	Report #:	5
Checked By:	bfs	Page:	2 of 7

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-3-015	Machine ID:	W-9
Seam ID:	040/042	Welder ID:	VS
		Date Sampled:	04/13/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	116	---	SE1	122	---	SE1	171	>50%	upper
2	113	---	SE1	127	---	SE1	166	>50%	upper
3	116	---	SE1	132	---	SE1	170	>50%	upper
4	118	---	SE1	129	---	SE1	168	>50%	upper
5	115	---	SE1	125	---	SE1	171	>50%	upper
Average	116	---	---	127	---	---	169	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Onondaga SCA Phase I II		
Project Location:	Camillus, NY		
Installer:	---		
GTX #:	11670		
Test Date:	04/17/12		
Tested By:	ad	Report #:	5
Checked By:	bfs	Page:	3 of 7

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-3-016	Machine ID:	W-5
Seam ID:	042/044	Welder ID:	AS
		Date Sampled:	04/13/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	141	---	SE1	135	---	SE1	177	>50%	both
2	127	---	SE1	116	---	SE1	175	>50%	upper
3	143	---	SE1	144	---	SE1	177	>50%	both
4	145	---	SE1	139	---	SE1	172	>50%	lower
5	144	---	SE1	134	---	SE1	178	>50%	lower
Average	140	---	---	134	---	---	176	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parsons Engineering Science
Project Name:	Onondaga SCA Phase I II
Project Location:	Camillus, NY
Installer:	---
GTX #:	11670
Test Date:	04/17/12
Tested By:	ad
Checked By:	bfs
Report #:	5
Page:	4 of 7

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-3-017	Machine ID:	W-11
Seam ID:	043/046	Welder ID:	TS
		Date Sampled:	04/13/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	110	---	SE1	117	---	SE1	177	>50%	lower
2	106	---	SE1	114	---	SE1	175	>50%	both
3	113	---	SE1	117	---	SE1	177	>50%	lower
4	112	---	SE1	113	---	SE1	173	>50%	lower
5	113	---	SE1	110	---	SE1	177	>50%	lower
Average	111	---	---	114	---	---	176	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Onondaga SCA Phase I II		
Project Location:	Camillus, NY		
Installer:	---		
GTX #:	11670		
Test Date:	04/17/12		
Tested By:	ad	Report #:	5
Checked By:	bfs	Page:	5 of 7

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-3-018	Machine ID:	W-5
Seam ID:	047/054	Welder ID:	AS
		Date Sampled:	04/13/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	132	---	SE1	106	---	SE1	170	>50%	both
2	134	---	SE1	111	---	SE1	171	>50%	lower
3	121	---	SE1	113	---	SE1	172	>50%	lower
4	132	---	SE1	129	---	SE1	169	>50%	lower
5	131	---	SE1	104	---	SE1	172	>50%	lower
Average	130	---	---	113	---	---	171	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

**Notes:** These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parsons Engineering Science
Project Name:	Onondaga SCA Phase I II
Project Location:	Camillus, NY
Installer:	---
GTX #:	11670
Test Date:	04/17/12
Tested By:	ad
Checked By:	bfs
Report #:	5
Page:	6 of 7

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-3-019	Machine ID:	W-11
Seam ID:	053/054	Welder ID:	TS
		Date Sampled:	04/13/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	119	---	SE1	126	---	SE1	178	>50%	lower
2	118	---	SE1	124	---	SE1	177	>50%	both
3	122	---	SE1	122	---	SE1	179	>50%	both
4	117	---	SE1	114	---	SE1	173	>50%	lower
5	117	---	SE1	120	---	SE1	177	>50%	both
Average	119	---	---	121	---	---	177	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Onondaga SCA Phase I II		
Project Location:	Camillus, NY		
Installer:	---		
GTX #:	11670		
Test Date:	04/17/12		
Tested By:	ad	Report #:	5
Checked By:	bfs	Page:	7 of 7

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-3-020	Machine ID:	W-9
Seam ID:	050/051	Welder ID:	VS
		Date Sampled:	04/13/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	159	---	SE1	162	---	SE1	169	>50%	both
2	162	---	SE1	161	---	SE1	170	>50%	both
3	165	---	SE1	165	---	SE1	170	>50%	both
4	164	---	SE1	151	---	SE1	168	>50%	both
5	156	---	SE1	149	---	SE1	172	>50%	both
Average	161	---	---	158	---	---	170	---	---

Comments: Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Secondary

## Destructive Test Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>
Location: <u>Camillus, New York</u>	TaskNo: <u>07</u>
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u> <u>SMS East Basin</u>	

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: <u>Secondary</u>	Series: <u>2</u>	MaterialType: <u>2</u>
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Sample Data								Test Data							Re test 1	Re test 2
Samp No	Weld Type	Track Type	Location		Mach ID	Oper ID	Date Samp	Peel		Shear	Unit ppi/psi	Result (P/F)	QA ID			
			Seam	Dist. (ft.)				Inside	Outside							
2-001	F	D	1-2	147 E	W-39	VS	11/2/2011	Lab	149	162	186	PPI	P	DWH	-	-
								Field	140	176	203	PPI	P	DWH		
2-002	F	D	4-6	240 E	W-2	KP	11/2/2011	Lab	127	139	187	PPI	P	DWH	-	-
								Field	144	150	209	PPI	P	DWH		
2-003	F	D	7-9	29 E	W-39	VS	11/2/2011	Lab	138	147	187	PPI	P	DWH	-	-
								Field	132	131	205	PPI	P	DWH		
2-004	F	D	9-10	20 E	W-8	TS	11/2/2011	Lab	141	136	190	PPI	P	DWH	-	-
								Field	167	131	212	PPI	P	DWH		
2-005	F	D	11-12	20 E	W-8	TS	11/2/2011	Lab	142	137	186	PPI	P	DWH	-	-
								Field	154	146	216	PPI	P	DWH		
2-006	F	D	12-14	62 E	W-2	KP	11/2/2011	Lab	151	145	187	PPI	P	DWH	-	-
								Field	153	140	210	PPI	P	DWH		
2-007	F	D	14-16	100 E	W-39	VS	11/2/2011	Lab	145	141	188	PPI	P	DWH	-	-
								Field	141	145	210	PPI	P	DWH		
2-008	F	D	16-17	140 E	W-8	TS	11/2/2011	Lab	140	139	184	PPI	P	DWH	-	-
								Field	137	152	213	PPI	P	DWH		
2-009	F	D	17-19	189 E	W-2	KP	11/2/2011	Lab	137	133	183	PPI	P	DWH	-	-
								Field	137	137	199	PPI	P	DWH		
2-010	F	D	19-20	162 E	W-39	VS	11/2/2011	Lab	140	141	185	PPI	P	DWH	-	-
								Field	155	130	209	PPI	P	DWH		
2-011	F	D	22-23	87 E	W-2	KP	11/2/2011	Lab	132	135	184	PPI	P	DWH	-	-
								Field	148	138	189	PPI	P	DWH		

## Destructive Test Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>										ProjNo: <u>GJ4706</u>	
Location: <u>Camillus, New York</u>										TaskNo: <u>07</u>	
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>											

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: <u>Secondary</u>	Series: <u>2</u>	MaterialType: <u>2</u>
---------------------------------------	------------------	------------------------

Sample Data								Test Data						Re test 1	Re test 2	
Samp No	Weld Type	Track Type	Location		Mach ID	Oper ID	Date Samp	Peel		Shear	Unit ppi/psi	Result (P/F)	QA ID			
			Seam	Dist. (ft.)				Inside	Outside							
2-012	F	D	25-26	219 E	W-8	TS	11/2/2011	Lab	136	152	194	PPI	P	DWH	-	-
								Field	167	130	209	PPI	P	DWH		
2-013	F	D	27-37	10 E	W-39	VS	11/2/2011	Lab	149	152	183	PPI	P	DWH	-	-
								Field	148	146	190	PPI	P	DWH		
2-014	F	D	1-42	74 E	W-39	VS	11/3/2011	Lab	135	128	182	PPI	P	DWH	-	-
								Field	127	142	198	PPI	P	DWH		
2-015	F	D	42-43	20 E	W-2	KP	11/3/2011	Lab	132	144	189	PPI	P	DWH	-	-
								Field	146	133	196	PPI	P	DWH		
2-016	F	D	43-45	69 E	W-8	TS	11/3/2011	Lab	143	142	186	PPI	P	DWH	-	-
								Field	137	130	192	PPI	P	DWH		
2-017	F	D	45-46	171 E	W-39	VS	11/3/2011	Lab	157	136	189	PPI	P	DWH	-	-
								Field	151	151	201	PPI	P	DWH		
2-018	F	D	53-54	12 N	W-2	KP	11/3/2011	Lab	129	146	185	PPI	P	DWH	-	-
								Field	139	127	207	PPI	P	DWH		
2-019	F	D	46-55	10 E	W-39	VS	11/3/2011	Lab	140	135	182	PPI	P	DWH	-	-
								Field	131	131	194	PPI	P	DWH		

Comments:



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/03/11		
Tested By:	ad	Report #:	18
Checked By:	bfs	Page:	1 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-2-001	Machine ID:	W39
Seam ID:	1/2	Welder ID:	VS
		Date Sampled:	11/01/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	143	---	SE1	160	---	SE1	185	>50%	upper
2	137	---	SE1	160	---	SE1	182	>50%	upper
3	156	---	SE1	162	---	SE1	187	>50%	upper
4	144	---	SE1	165	---	SE1	185	>50%	upper
5	162	---	SE1	162	---	SE1	190	>50%	upper
Average	149	---	---	162	---	---	186	---	---

Comments: Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/03/11		
Tested By:	ad	Report #:	18
Checked By:	bfs	Page:	2 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-2-002	Machine ID:	W239
Seam ID:	4/6	Welder ID:	KP
		Date Sampled:	11/01/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	129	---	SE1	140	---	SE1	186	>50%	both
2	127	---	SE1	136	---	SE1	188	>50%	upper
3	126	---	SE1	139	---	SE1	189	>50%	upper
4	128	---	SE1	138	---	SE1	184	>50%	upper
5	126	---	SE1	142	---	SE1	189	>50%	upper
Average	127	---	---	139	---	---	187	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.

Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/03/11		
Tested By:	ad	Report #:	18
Checked By:	bfs	Page:	3 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-2-003	Machine ID:	W39
Seam ID:	7/9	Welder ID:	VS
		Date Sampled:	11/01/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	135	---	SE1	155	---	SE1	187	>50%	upper
2	132	---	SE1	158	---	SE1	184	>50%	upper
3	138	---	SE1	167	---	SE1	188	>50%	upper
4	144	---	SE1	129	---	SE1	185	>50%	upper
5	141	---	SE1	128	---	SE1	192	>50%	upper
Average	138	---	---	147	---	---	187	---	---

Comments: Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/03/11		
Tested By:	ad	Report #:	18
Checked By:	bfs	Page:	4 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-2-004	Machine ID:	W-8
Seam ID:	9/10	Welder ID:	TS
		Date Sampled:	11/01/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	142	---	SE1	134	---	SE1	190	>50%	upper
2	144	---	SE1	132	---	SE1	188	>50%	upper
3	141	---	SE1	142	---	SE1	192	>50%	upper
4	138	---	SE1	141	---	SE1	187	>50%	both
5	142	---	SE1	131	---	SE1	192	>50%	lower
Average	141	---	---	136	---	---	190	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.

Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/03/11		
Tested By:	ad	Report #:	18
Checked By:	bfs	Page:	5 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-2-005	Machine ID:	W-8
Seam ID:	11/12	Welder ID:	TS
		Date Sampled:	11/01/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	149	---	SE1	142	---	SE1	184	>50%	lower
2	142	---	SE1	134	---	SE1	187	>50%	lower
3	130	---	SE1	131	---	SE1	189	>50%	lower
4	143	---	SE1	139	---	SE1	184	>50%	lower
5	144	---	SE1	137	---	SE1	189	>50%	lower
Average	142	---	---	137	---	---	186	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/03/11		
Tested By:	ad	Report #:	18
Checked By:	bfs	Page:	6 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-2-006	Machine ID:	W2
Seam ID:	12/14	Welder ID:	KP
		Date Sampled:	11/01/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	160	---	SE1	141	---	SE1	187	>50%	lower
2	160	---	SE1	139	---	SE1	186	>50%	lower
3	142	---	SE1	141	---	SE1	189	>50%	lower
4	143	---	SE1	153	---	SE1	183	>50%	lower
5	152	---	SE1	150	---	SE1	188	>50%	lower
Average	151	---	---	145	---	---	187	---	---

Comments: Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/03/11		
Tested By:	ad	Report #:	18
Checked By:	bfs	Page:	7 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-2-007	Machine ID:	W39
Seam ID:	14/16	Welder ID:	VS
		Date Sampled:	11/01/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	144	---	SE1	140	---	SE1	185	>50%	lower
2	144	---	SE1	138	---	SE1	188	>50%	lower
3	148	---	SE1	137	---	SE1	191	>50%	lower
4	144	---	SE1	132	---	SE1	186	>50%	lower
5	146	---	SE1	159	---	SE1	189	>50%	lower
Average	145	---	---	141	---	---	188	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.

Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/03/11		
Tested By:	ad	Report #:	18
Checked By:	bfs	Page:	8 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-2-008	Machine ID:	W-8
Seam ID:	16/17	Welder ID:	TS
		Date Sampled:	11/01/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	145	---	SE1	140	---	SE1	185	>50%	lower
2	138	---	SE1	141	---	SE1	183	>50%	lower
3	139	---	SE1	137	---	SE1	185	>50%	lower
4	140	---	SE1	140	---	SE1	181	>50%	lower
5	139	---	SE1	139	---	SE1	184	>50%	lower
Average	140	---	---	139	---	---	184	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.

Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/03/11		Report #: 18
Tested By:	ad		Page: 9 of 13
Checked By:	bfs		

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-2-009	Machine ID:	W-2
Seam ID:	17/19	Welder ID:	KP
		Date Sampled:	11/01/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	138	---	SE1	133	---	SE1	184	>50%	lower
2	136	---	SE1	131	---	SE1	183	>50%	lower
3	138	---	SE1	138	---	SE1	184	>50%	lower
4	136	---	SE1	132	---	SE1	180	>50%	lower
5	136	---	SE1	132	---	SE1	183	>50%	lower
Average	137	---	---	133	---	---	183	---	---

Comments: Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/03/11		
Tested By:	ad	Report #:	18
Checked By:	bfs	Page:	10 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-2-010	Machine ID:	W39
Seam ID:	19/20	Welder ID:	VS
		Date Sampled:	11/01/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	139	---	SE1	144	---	SE1	183	> 50%	lower
2	138	---	SE1	139	---	SE1	186	> 50%	lower
3	143	---	SE1	142	---	SE1	187	> 50%	lower
4	145	---	SE1	140	---	SE1	182	> 50%	lower
5	137	---	SE1	139	---	SE1	186	> 50%	lower
Average	140	---	---	141	---	---	185	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.

Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parsons Engineering Science
Project Name:	Geosynthetic Testing
Project Location:	Syracuse, NY
Installer:	---
GTX #:	10596
Test Date:	11/03/11
Tested By:	ad
Checked By:	bfs
Report #:	18
Page:	11 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in
Sample ID:	DS-2-01.1	Machine ID:	W-2
Seam ID:	22/23	Welder ID:	KP
		Date Sampled:	11/01/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	146	---	SE1	135	---	SE1	186	>50%	lower
2	138	---	SE1	131	---	SE1	184	>50%	lower
3	126	---	SE1	139	---	SE1	186	>50%	lower
4	125	---	SE1	138	---	SE1	181	>50%	lower
5	124	---	SE1	132	---	SE1	185	>50%	lower
Average	132	---	---	135	---	---	184	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/03/11		
Tested By:	ad	Report #:	18
Checked By:	bfs	Page:	12 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-2-012	Machine ID:	W-8
Seam ID:	25/26	Welder ID:	TS
		Date Sampled:	11/01/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	157	---	SE1	142	---	SE1	193	>50%	lower
2	129	---	SE1	156	---	SE1	194	>50%	upper
3	131	---	SE1	154	---	SE1	196	>50%	upper
4	130	---	SE1	151	---	SE1	192	>50%	upper
5	131	---	SE1	155	---	SE1	195	>50%	upper
Average	136	---	---	152	---	---	194	---	---

Comments: Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/03/11		
Tested By:	ad	Report #:	18
Checked By:	bfs	Page:	13 of 13

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-2-013	Machine ID:	W39-8
Seam ID:	27/37	Welder ID:	VTS
		Date Sampled:	11/01/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	151	---	SE1	151	---	SE1	183	>50%	upper
2	148	---	SE1	149	---	SE1	183	>50%	upper
3	152	---	SE1	155	---	SE1	185	>50%	both
4	154	---	SE1	150	---	SE1	181	>50%	both
5	141	---	SE1	153	---	SE1	184	>50%	both
Average	149	---	---	152	---	---	183	---	---

### Comments:

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.

Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/04/11		
Tested By:	ad	Report #:	16
Checked By:	bfs/njh	Page:	1 of 6

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-2-14	Machine ID:	W-8
Seam ID:	1/42	Welder ID:	TS
		Date Sampled:	11/02/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	138	---	SE1	129	---	SE1	182	>50%	both
2	130	---	SE1	126	---	SE1	183	>50%	upper
3	136	---	SE1	128	---	SE1	183	>50%	both
4	134	---	SE1	131	---	SE1	180	>50%	upper
5	136	---	SE1	128	---	SE1	184	>50%	both
Average	135	---	---	128	---	---	182	---	---

Comments: Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/04/11		
Tested By:	ad	Report #:	16
Checked By:	bfs/njh	Page:	2 of 6

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-2-15	Machine ID:	W-2
Seam ID:	42/43	Welder ID:	KP
		Date Sampled:	11/03/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	131	---	SE1	147	---	SE1	184	>50%	lower
2	131	---	SE1	143	---	SE1	189	<50%	BRK
3	137	---	SE1	138	---	SE1	192	>50%	lower
4	131	---	SE1	145	---	SE1	187	>50%	lower
5	131	---	SE1	149	---	SE1	191	>50%	lower
Average	132	---	---	144	---	---	189	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.

Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/04/11		
Tested By:	ad	Report #:	16
Checked By:	bfs/njh	Page:	3 of 6

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-2-16	Machine ID:	W-8
Seam ID:	43/45	Welder ID:	TS
		Date Sampled:	11/03/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	145	---	SE1	139	---	SE1	183	>50%	lower
2	144	---	SE1	147	---	SE1	187	>50%	lower
3	144	---	SE1	147	---	SE1	187	>50%	lower
4	140	---	SE1	138	---	SE1	183	>50%	lower
5	141	---	SE1	140	---	SE1	188	>50%	lower
Average	143	---	---	142	---	---	186	---	---

Comments: Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/04/11		
Tested By:	ad	Report #:	16
Checked By:	bfs/njh	Page:	4 of 6

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-2-17	Machine ID:	W-39
Seam ID:	45/46	Welder ID:	VS
		Date Sampled:	11/03/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	143	---	SE1	126	---	SE1	186	>50%	lower
2	156	---	SE1	125	---	SE1	190	>50%	both
3	163	---	SE1	148	---	SE1	192	>50%	both
4	164	---	SE1	141	---	SE1	186	>50%	lower
5	159	---	SE1	142	---	SE1	191	>50%	lower
Average	157	---	---	136	---	---	189	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/04/11		
Tested By:	ad	Report #:	16
Checked By:	bfs/njh	Page:	5 of 6

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-2-18	Machine ID:	W-2
Seam ID:	53/54	Welder ID:	KP
		Date Sampled:	11/03/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	137	---	SE1	141	---	SE1	184	>50%	lower
2	127	---	SE1	141	---	SE1	185	>50%	lower
3	131	---	SE1	149	---	SE1	187	>50%	lower
4	125	---	SE1	152	---	SE1	184	>50%	lower
5	124	---	SE1	147	---	SE1	188	>50%	lower
Average	129	---	---	146	---	---	185	---	---

Comments: Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/04/11		
Tested By:	ad	Report #:	16
Checked By:	bfs/njh	Page:	6 of 6

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-2-19	Machine ID:	W-39
Seam ID:	46/55	Welder ID:	VS
		Date Sampled:	11/03/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	133	---	SE1	136	---	SE1	181	>50%	lower
2	146	---	SE1	136	---	SE1	184	>50%	lower
3	140	---	SE1	127	---	SE1	183	>50%	both
4	137	---	SE1	139	---	SE1	177	>50%	both
5	141	---	SE1	139	---	SE1	184	>50%	lower
Average	140	---	---	135	---	---	182	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.

Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



## West Basin

- Primary
- Secondary

Primary

## Destructive Test Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>										ProjNo: <u>GJ4706</u>	
Location: <u>Camillus, New York</u>										TaskNo: <u>07</u>	
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>											
<b>SMS WEST BASIN</b>											
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: <u>Primary</u>				Series: <u>5</u>				MaterialType: <u>6</u>			

Sample Data								Test Data						Re test 1	Re test 2	
Samp No	Weld Type	Track Type	Location		Mach ID	Oper ID	Date Samp	Peel		Shear	Unit ppi/psi	Result (P/F)	QA ID			
			Seam	Dist. (ft.)				Inside	Outside							
5-001	F	D	43-45	13 W	W-5	AS	4/6/2012	Lab	125	118	169	PPI	P	DWH	-	-
								Field	122	118	202	PPI	P	DWH		
5-002	F	D	41-43	50 W	W-9	VS	4/6/2012	Lab	129	134	173	PPI	P	DWH	-	-
								Field	140	128	205	PPI	P	DWH		
5-003	F	D	4-5	74 W	W-10	TS	4/6/2012	Lab	134	127	178	PPI	P	DWH	-	-
								Field	126	147	201	PPI	P	DWH		
5-004	F	D	5-6	106 W	W-11	VC	4/6/2012	Lab	130	133	171	PPI	P	DWH	-	-
								Field	128	131	210	PPI	P	DWH		
5-005	F	D	8-10	32 W	W-9	VS	4/6/2012	Lab	126	133	168	PPI	P	DWH	-	-
								Field	125	143	200	PPI	P	DWH		
5-006	F	D	3-5	105 N	W-10	TS	4/6/2012	Lab	144	133	174	PPI	P	DWH	-	-
								Field	164	159	204	PPI	P	DWH		
5-007	F	D	46-48	22 NE	W-11	VC	4/6/2012	Lab	136	131	162	PPI	P	DWH	-	-
								Field	132	127	191	PPI	P	DWH		
5-008	F	D	33-34	24 S	W-5	AS	4/6/2012	Lab	122	138	163	PPI	P	DWH	-	-
								Field	118	134	189	PPI	P	DWH		
5-009	F	D	27-28	16 NW	W-9	VS	4/6/2012	Lab	133	127	169	PPI	P	DWH	-	-
								Field	122	138	202	PPI	P	DWH		
5-010	F	D	11-26	10 W	W-10	TS	4/6/2012	Lab	145	145	168	PPI	P	DWH	-	-
								Field	155	120	198	PPI	P	DWH		
5-011	F	D	44-51	112 E	W-5	AS	4/16/2012	Lab	114	120	166	PPI	P	DWH	-	-
								Field	124	123	176	PPI	P	DWH		

## Destructive Test Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>										ProjNo: <u>GJ4706</u>			
Location: <u>Camillus, New York</u>										TaskNo: <u>07</u>			
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>													

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: <u>Primary</u>	Series: <u>5</u>	MaterialType: <u>6</u>
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Sample Data								Test Data						Re test 1	Re test 2	
Samp No	Weld Type	Track Type	Location		Mach ID	Oper ID	Date Samp	Peel		Shear	Unit ppi/psi	Result (P/F)	QA ID			
			Seam	Dist. (ft.)				Inside	Outside							
5-012	F	D	51-57	4 E	W-9	VS	4/16/2012	Lab	140	129	172	PPI	P	DWH	-	-
								Field	118	140	174	PPI	P	DWH		
5-013	F	D	58-60	34 N	W-14	TS	4/16/2012	Lab	145	123	165	PPI	P	DWH	-	-
								Field	130	117	173	PPI	P	DWH		
5-014	F	D	52-56	38 N	W-9	VS	4/16/2012	Lab	122	125	169	PPI	P	DWH	-	-
								Field	112	116	183	PPI	P	DWH		

Comments:



Client:	Parsons Engineering Science		
Project Name:	Onondaga SCA Phase I & II		
Project Location:	Camillus, NY		
Installer:	---		
GTX #:	11670		
Test Date:	04/10/12		
Tested By:	ad	Report #:	3
Checked By:	jdt	Page:	1 of 10

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-5-001	Machine ID:	5
Seam ID:	43/45	Welder ID:	AS
		Date Sampled:	04/06/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	127	---	SE1	117	---	SE1	170	>50%	lower
2	120	---	SE1	126	---	SE1	168	>50%	lower
3	126	---	SE1	118	---	SE1	171	>50%	lower
4	132	---	SE1	112	---	SE1	166	>50%	lower
5	122	---	SE1	120	---	SE1	169	>50%	lower
Average	125	---	---	---	---	---	169	---	---

Comments: Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Onondaga SCA Phase I & II		
Project Location:	Camillus, NY		
Installer:	---		
GTX #:	11670		
Test Date:	04/10/12		
Tested By:	ad	Report #:	3
Checked By:	jdt	Page:	2 of 10

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-5-002	Machine ID:	9
Seam ID:	41/43	Welder ID:	VS
		Date Sampled:	04/06/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	130	---	SE1	128	---	SE1	173	>50%	lower
2	117	---	SE1	131	---	SE1	174	>50%	upper
3	144	---	SE1	142	---	SE1	176	>50%	both
4	125	---	SE1	128	---	SE1	170	>50%	lower
5	131	---	SE1	141	---	SE1	173	>50%	lower
Average	129	---	---	134	---	---	173	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science
Project Name:	Onondaga SCA Phase I & II
Project Location:	Camillus, NY
Installer:	---
GTX #:	11670
Test Date:	04/10/12
Tested By:	ad
Checked By:	jdt
Report #:	3
Page:	3 of 10

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-5-003	Machine ID:	10
Seam ID:	4/5	Welder ID:	TS
		Date Sampled:	04/06/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./In	Elongation, %	Rupture Mode
1	130	---	SE1	116	---	SE1	178	>50%	both
2	125	---	SE1	127	---	SE1	176	>50%	both
3	144	---	SE1	137	---	SE1	179	>50%	lower
4	144	---	SE1	120	---	SE1	175	>50%	lower
5	127	---	SE1	135	---	SE1	181	>50%	lower
Average	134	---	---	163.5	---	---	178	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science
Project Name:	Onondaga SCA Phase I & II
Project Location:	Camillus, NY
Installer:	---
GTX #:	11670
Test Date:	04/10/12
Tested By:	ad
Checked By:	jdt
Report #:	3
Page:	4 of 10

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-5-004	Machine ID:	11
Seam ID:	5/6	Welder ID:	VC
		Date Sampled:	04/06/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type			
1	122	---	SE1	138	---	SE1	170	>50%	both
2	130	---	SE1	129	---	SE1	170	>50%	upper
3	135	---	SE1	137	---	SE1	173	>50%	upper
4	129	---	SE1	127	---	SE1	169	>50%	upper
5	132	---	SE1	135	---	SE1	173	>50%	upper
Average	130	---	---	133	---	---	171	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.

Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parsons Engineering Science
Project Name:	Onondaga SCA Phase I & II
Project Location:	Camillus, NY
Installer:	---
GTX #:	11670
Test Date:	04/10/12
Tested By:	ad
Checked By:	jdt
Report #:	3
Page:	5 of 10

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-5-005	Machine ID:	9
Seam ID:	8/10	Welder ID:	VS
		Date Sampled:	04/06/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	120	---	SE1	140	---	SE1	171	>50%	lower
2	117	---	SE1	133	---	SE1	168	>50%	lower
3	127	---	SE1	139	---	SE1	168	>50%	lower
4	136	---	SE1	132	---	SE1	165	>50%	lower
5	130	---	SE1	125	---	SE1	166	>50%	lower
Average	126	---	---	136.6	---	---	168	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science
Project Name:	Onondaga SCA Phase I & II
Project Location:	Camillus, NY
Installer:	---
GTX #:	11670
Test Date:	04/10/12
Tested By:	ad
Checked By:	jdt
Report #:	3
Page:	6 of 10

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-5-006	Machine ID:	10
Seam ID:	3/5	Welder ID:	TS
		Date Sampled:	04/06/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type			
1	141	---	SE1	153	---	SE1	174	>50%	upper
2	153	---	SE1	153	---	SE1	170	>50%	upper
3	139	---	SE1	148	---	SE1	176	>50%	upper
4	144	---	SE1	153	---	SE1	173	>50%	upper
5	143	---	SE1	161	---	SE1	177	>50%	upper
Average	144	---	---	166.8	---	---	174	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science
Project Name:	Onondaga SCA Phase I & II
Project Location:	Camillus, NY
Installer:	---
GTX #:	11670
Test Date:	04/10/12
Tested By:	ad
Checked By:	jdt
Report #:	3
Page:	7 of 10

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-5-007	Machine ID:	11
Seam ID:	46/48	Welder ID:	VC
		Date Sampled:	04/06/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	134	---	SE1	149	---	SE1	162	>50%	upper
2	133	---	SE1	122	---	SE1	160	>50%	upper
3	139	---	SE1	138	---	SE1	163	>50%	upper
4	137	---	SE1	127	---	SE1	160	>50%	upper
5	136	---	SE1	119	---	SE1	163	>50%	upper
Average	136	---	---	131	---	---	162	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Onondaga SCA Phase I & II		
Project Location:	Camillus, NY		
Installer:	---		
GTX #:	11670		
Test Date:	04/10/12		
Tested By:	ad	Report #:	4
Checked By:	jdt	Page:	1 of 1

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Fillet Extrusion Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-5-007B1	Machine ID:	16
Seam ID:	18/PATCH	Welder ID:	VS
		Date Sampled:	04/10/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type			
1	96	---	SE3	---	---	---	173	>50%	lower
2	106	---	SE3	---	---	---	170	>50%	lower
3	133	---	SE3	---	---	---	171	>50%	lower
4	116	---	SE3	---	---	---	171	>50%	lower
5	102	---	SE3	---	---	---	175	>50%	lower
Average	110	---	---	---	---	---	172	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Onondaga SCA Phase I & II		
Project Location:	Camillus, NY		
Installer:	---		
GTX #:	11670		
Test Date:	04/10/12		
Tested By:	ad	Report #:	3
Checked By:	jdt	Page:	8 of 10

**Integrity of Nonreinforced Geomembrane Seams Produced  
Using Thermo-Fusion Methods by ASTM D 6392  
peel & shear destructive test**

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-5-008	Machine ID:	5
Seam ID:	33/34	Welder ID:	AS
		Date Sampled:	04/06/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	122	---	SE1	143	---	SE1	165	>50%	lower
2	131	---	SE1	133	---	SE1	162	>50%	lower
3	122	---	SE1	141	---	SE1	162	>50%	lower
4	117	---	SE1	141	---	SE1	162	>50%	lower
5	117	---	SE1	136	---	SE1	165	>50%	lower
Average	122	---	---	138	---	---	163	---	---

Comments: Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) Interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science
Project Name:	Onondaga SCA Phase I & II
Project Location:	Camillus, NY
Installer:	---
GTX #:	11670
Test Date:	04/10/12
Tested By:	ad
Checked By:	jdt
Report #:	3
Page:	9 of 10

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-5-009	Machine ID:	9
Seam ID:	27/28	Welder ID:	VS
		Date Sampled:	04/06/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	140	---	SE1	132	---	SE1	171	>50%	upper
2	124	---	SE1	133	---	SE1	168	>50%	upper
3	134	---	SE1	138	---	SE1	168	>50%	upper
4	136	---	SE1	118	---	SE1	166	>50%	upper
5	133	---	SE1	118	---	SE1	170	>50%	upper
Average	133	---	---	116 $\frac{54}{5}$	---	---	169	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parsons Engineering Science		
Project Name:	Onondaga SCA Phase I & II		
Project Location:	Camillus, NY		
Installer:	---		
GTX #:	11670		
Test Date:	04/10/12		
Tested By:	ad	Report #:	3
Checked By:	jdt	Page:	10 of 10

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-5-010	Machine ID:	10
Seam ID:	11/26	Welder ID:	TS
		Date Sampled:	04/06/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	146	---	SE1	145	---	SE1	172	>50%	lower
2	146	---	SE1	144	---	SE1	169	>50%	lower
3	148	---	SE1	162	---	SE1	167	>50%	lower
4	143	---	SE1	151	---	SE1	163	>50%	lower
5	140	---	SE1	143	---	SE1	169	>50%	lower
Average	145	---	---	145	---	---	168	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Onondaga SCA Phase I II		
Project Location:	Camillus, NY		
Installer:	---		
GTX #:	11670		
Test Date:	04/18/12		
Tested By:	ad	Report #:	6
Checked By:	bfs	Page:	1 of 4

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-5-011	Machine ID:	W-5
Seam ID:	44/51	Welder ID:	AS
		Date Sampled:	04/16/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	111	---	SE1	127	---	SE1	168	>50%	upper
2	111	---	SE1	114	---	SE1	163	>50%	upper
3	114	---	SE1	128	---	SE1	165	>50%	upper
4	110	---	SE1	113	---	SE1	164	>50%	upper
5	125	---	SE1	116	---	SE1	168	>50%	upper
Average	114	---	---	120	---	---	166	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.

Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parsons Engineering Science
Project Name:	Onondaga SCA Phase I II
Project Location:	Camillus, NY
Installer:	---
GTX #:	11670
Test Date:	04/18/12
Tested By:	ad
Checked By:	bfs
Report #:	6
Page:	2 of 4

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-5-012	Machine ID:	W-9
Seam ID:	51/57	Welder ID:	VS
		Date Sampled:	04/16/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type			
1	139	---	SE1	144	---	SE1	174	>50%	upper
2	138	---	SE1	140	---	SE1	169	>50%	upper
3	141	---	SE1	122	---	SE1	174	>50%	upper
4	141	---	SE1	117	---	SE1	170	>50%	upper
5	143	---	SE1	122	---	SE1	174	>50%	upper
Average	140	---	---	129	---	---	172	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.

Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

**Notes:** These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Onondaga SCA Phase I II		
Project Location:	Camillus, NY		
Installer:	---		
GTX #:	11670		
Test Date:	04/18/12		
Tested By:	ad	Report #:	6
Checked By:	bfs	Page:	3 of 4

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-5-013	Machine ID:	W-14
Seam ID:	58/60	Welder ID:	TS
		Date Sampled:	04/16/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	144	---	SE1	118	---	SE1	170	>50%	lower
2	141	---	SE1	114	---	SE1	164	>50%	upper
3	154	---	SE1	133	---	SE1	164	>50%	lower
4	143	---	SE1	129	---	SE1	161	>50%	lower
5	143	---	SE1	123	---	SE1	165	>50%	lower
Average	145	---	---	123	---	---	165	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science	
Project Name:	Onondaga SCA Phase I II	
Project Location:	Camillus, NY	
Installer:	---	
GTX #:	11670	
Test Date:	04/18/12	
Tested By:	ad	Report #: 6
Checked By:	bfs	Page: 4 of 4

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil AGRU microspike HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil AGRU microspike HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-5-014	Machine ID:	W-9
Seam ID:	52/56	Welder ID:	VS
		Date Sampled:	04/16/12

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	135	---	SE1	125	---	SE1	172	>50%	lower
2	132	---	SE1	126	---	SE1	168	>50%	lower
3	115	---	SE1	132	---	SE1	168	>50%	lower
4	120	---	SE1	124	---	SE1	165	>50%	lower
5	109	---	SE1	121	---	SE1	170	>50%	lower
Average	122	---	---	125	---	---	169	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

**Notes:** These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Secondary

## Destructive Test Log

Project: <u>Onondaga Lake Sediment Consolidation Area (SCA)</u>										ProjNo: <u>GJ4706</u>	
Location: <u>Camillus, New York</u>										TaskNo: <u>07</u>	
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u> <u>SMS West Basin</u>											

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:	Secondary	Series: 4	MaterialType: 2
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Sample Data								Test Data						Re test 1	Re test 2	
Samp No	Weld Type	Track Type	Location		Mach ID	Oper ID	Date Samp	Peel		Shear	Unit ppi/psi	Result (P/F)	QA ID			
			Seam	Dist. (ft.)				Inside	Outside							
4-001	F	D	1-2	103 W	W-39	VS	11/8/2011	Lab	142	137	187	ppi	P	DWH	-	-
								Field	124	138	199	PPI	P	DWH		
4-002	F	D	4-6	181 W	W-8	TS	11/8/2011	Lab	142	145	205	ppi	P	DWH	-	-
								Field	134	144	213	PPI	P	DWH		
4-003	F	D	6-7	135 W	W-2	KP	11/8/2011	Lab	150	139	196	ppi	P	DWH	-	-
								Field	134	133	215	PPI	P	DWH		
4-004	F	D	11-12	46 W	W-2	KP	11/8/2011	Lab	142	143	197	ppi	P	DWH	-	-
								Field	154	133	206	PPI	P	DWH		
4-005	F	D	12-13	12 W	W-39	VS	11/8/2011	Lab	146	120	201	ppi	P	DWH	-	-
								Field	151	121	204	PPI	P	DWH		
4-006	F	D	14-15	52 W	W-8	TS	11/8/2011	Lab	145	152	198	ppi	P	DWH	-	-
								Field	139	153	216	PPI	P	DWH		
4-007	F	D	26-27	14 SE	W-2	KP	11/9/2011	Lab	132	143	182	ppi	P	DWH	-	-
								Field	151	145	211	PPI	P	DWH		
4-008	F	D	19-28	5 SW	W-39	VS	11/9/2011	Lab	151	146	176	ppi	P	DWH	-	-
								Field	122	144	199	PPI	P	DWH		
4-009	F	D	35-36	21 SE	W-2	KP	11/9/2011	Lab	146	133	196	ppi	P	DWH	-	-
								Field	143	137	205	PPI	P	DWH		
4-010	F	D	9-40	5 S	W-39	VS	11/9/2011	Lab	148	152	183	ppi	F	DWH	4-010 A	4-010 B
								Field	156	144	199	PPI	P	DWH		
4-010 A	F	D	8-40	12 W	W-39	VS	11/17/2011	Lab	151	144	185	ppi	P	DWH	-	-
								Field	156	158	229	PPI	P	DWH		

## Destructive Test Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>										ProjNo: <u>GJ4706</u>	
Location: <u>Camillus, New York</u>										TaskNo: <u>07</u>	
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>											

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: <u>Secondary</u>	Series: <u>4</u>	MaterialType: <u>2</u>
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Sample Data								Test Data						Re test 1	Re test 2	
Samp No	Weld Type	Track Type	Location		Mach ID	Oper ID	Date Samp	Peel		Shear	Unit ppi/psi	Result (P/F)	QA ID			
			Seam	Dist. (ft.)				Inside	Outside							
4-010 B	F	D	9-39	8 E	W-39	VS	11/17/2011	Lab	143	146	180	ppi	P	DWH	-	-
								Field	161*	159	223	PPI	P	DWH		
4-011	F	D	43-46	23 E	W-8	TS	11/9/2011	Lab	138	137	191	ppi	P	DWH	-	-
								Field	141	124	207	PPI	P	DWH		
4-012	F	D	48-67	15 E	W-39	VS	11/9/2011	Lab	144	143	186	ppi	P	DWH	-	-
								Field	146	152	219	PPI	P	DWH		
4-013	F	D	65-66	19 N	W-2	KP	11/9/2011	Lab	140	145	190	ppi	P	DWH	-	-
								Field	142	137	213	PPI	P	DWH		
4-014	F	D	51-65	12 W	W-8	TS	11/9/2012	Lab	146	144	185	ppi	P	DWH	-	-
								Field	150	145	208	PPI	P	DWH		

Comments:



Client:	Parsons Engineering Science
Project Name:	Geosynthetic Testing
Project Location:	Syracuse, NY
Installer:	---
GTX #:	10596
Test Date:	11/16/11
Tested By:	bfs
Checked By:	jdt
Report #:	20
Page:	1 of 14

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-4-1 <i>West Sediment</i>	Machine ID:	W-39
Seam ID:	1/2 <i>207 lines</i>	Welder ID:	VS
		Date Sampled:	11/08/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	148	---	SE1	132	---	SE1	186	>50%	upper
2	143	---	SE1	149	---	SE1	189	>50%	upper
3	144	---	SE1	132	---	SE1	191	>50%	upper
4	136	---	SE1	132	---	SE1	184	>50%	upper
5	138	---	SE1	142	---	SE1	188	>50%	upper
Average	142	---	---	137	---	---	187	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/16/11		
Tested By:	bfs	Report #:	20
Checked By:	jdt	Page:	2 of 14

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-4-2	Machine ID:	W-8
Seam ID:	4/6	Welder ID:	TS
		Date Sampled:	11/08/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	136	---	SE1	143	---	SE1	206	>50%	lower
2	130	---	SE1	145	---	SE1	201	>50%	lower
3	141	---	SE1	152	---	SE1	207	>50%	lower
4	148	---	SE1	145	---	SE1	201	>50%	lower
5	155	---	SE1	139	---	SE1	207	>50%	lower
Average	142	---	---	145	---	---	205	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/16/11		
Tested By:	bfs	Report #:	20
Checked By:	jdt	Page:	3 of 14

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-4-3	Machine ID:	W-2
Seam ID:	6/7	Welder ID:	KP
		Date Sampled:	11/08/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	147	---	SE1	142	---	SE1	195	>50%	lower
2	152	---	SE1	138	---	SE1	196	>50%	lower
3	160	---	SE1	137	---	SE1	198	>50%	lower
4	150	---	SE1	139	---	SE1	193	>50%	lower
5	143	---	SE1	139	---	SE1	197	>50%	lower
Average	150	---	---	139	---	---	196	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.

Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/16/11		
Tested By:	bfs	Report #:	20
Checked By:	jdt	Page:	4 of 14

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-4-4	Machine ID:	W-2
Seam ID:	11/12	Welder ID:	KP
		Date Sampled:	11/08/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	132	---	SE1	132	---	SE1	200	>50%	upper
2	133	---	SE1	149	---	SE1	196	>50%	BRK
3	139	---	SE1	146	---	SE1	199	>50%	upper
4	145	---	SE1	144	---	SE1	194	>50%	upper
5	160	---	SE1	142	---	SE1	198	>50%	upper
Average	142	---	---	143	---	---	197	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/16/11		
Tested By:	bfs	Report #:	20
Checked By:	jdt	Page:	5 of 14

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-4-5	Machine ID:	W-39
Seam ID:	12/13	Welder ID:	VS
		Date Sampled:	11/08/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	149	---	SE1	121	---	SE1	200	>50%	upper
2	143	---	SE1	117	---	SE1	203	>50%	upper
3	147	---	SE1	119	---	SE1	202	>50%	lower
4	144	---	SE1	121	---	SE1	198	>50%	upper
5	146	---	SE1	119	---	SE1	203	>50%	upper
Average	146	---	---	120	---	---	201	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/16/11		
Tested By:	bfs	Report #:	20
Checked By:	idt	Page:	6 of 14

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-4-6	Machine ID:	W-8
Seam ID:	14/15	Welder ID:	TS
		Date Sampled:	11/08/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	135	---	SE1	152	---	SE1	198	>50%	lower
2	143	---	SE1	147	---	SE1	193	>50%	lower
3	148	---	SE1	155	---	SE1	200	>50%	lower
4	153	---	SE1	155	---	SE1	195	>50%	lower
5	148	---	SE1	149	---	SE1	207	>50%	lower
Average	145	---	---	152	---	---	198	---	---

Comments: Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/16/11		
Tested By:	bfs	Report #:	20
Checked By:	jdt	Page:	7 of 14

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-4-7	Machine ID:	W-2
Seam ID:	26/27	Welder ID:	KP
		Date Sampled:	11/09/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	136	---	SE1	144	---	SE1	182	>50%	upper
2	129	---	SE1	147	---	SE1	182	>50%	upper
3	133	---	SE1	144	---	SE1	184	>50%	upper
4	129	---	SE1	142	---	SE1	180	>50%	upper
5	134	---	SE1	137	---	SE1	184	>50%	upper
Average	132	---	---	143	---	---	182	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.

Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/16/11		
Tested By:	bfs	Report #:	20
Checked By:	jdt	Page:	8 of 14

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-4-8	Machine ID:	W-39
Seam ID:	19/28	Welder ID:	VS
		Date Sampled:	11/08/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	156	---	SE1	150	---	SE1	173	>50%	lower
2	152	---	SE1	139	---	SE1	178	>50%	lower
3	151	---	SE1	144	---	SE1	178	>50%	lower
4	144	---	SE1	141	---	SE1	172	>50%	lower
5	152	---	SE1	154	---	SE1	176	>50%	lower
Average	151	---	---	146	---	---	176	---	---

Comments: Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.

Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/16/11		
Tested By:	bfs	Report #:	20
Checked By:	idt	Page:	9 of 14

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-4-9	Machine ID:	W-2
Seam ID:	35/36	Welder ID:	KP
		Date Sampled:	11/10/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	145	---	SE1	137	---	SE1	194	>50%	upper
2	145	---	SE1	133	---	SE1	195	>50%	upper
3	147	---	SE1	131	---	SE1	200	>50%	lower
4	147	---	SE1	131	---	SE1	194	>50%	upper
5	147	---	SE1	134	---	SE1	198	>50%	upper
Average	146	---	---	133	---	---	196	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.

Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/16/11		
Tested By:	bfs	Report #:	20
Checked By:	jdt	Page:	10 of 14

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-4-10	Machine ID:	W-39
Seam ID:	9/40	Welder ID:	VS
		Date Sampled:	11/10/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	155	---	SE1	156	---	SE1	184	>50%	upper
2	145	100%	AD	156	---	SE1	184	>50%	upper
3	163	---	SE1	145	---	SE1	182	>50%	lower
4	142	---	SE1	140	---	SE1	182	>50%	lower
5	136	50%	AD-BRK	165	---	SE1	182	>50%	upper
Average	148	---	---	152	---	---	183	---	---

Comments: Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.





Client:	Parsons Engineering Science
Project Name:	Geosynthetic Testing
Project Location:	Syracuse, NY
Installer:	---
GTX #:	10596
Test Date:	11/18/11
Tested By:	bfs
Checked By:	jdt
Report #:	21
Page:	1 of 2

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-4-10A	Machine ID:	W-39
Seam ID:	8/40	Welder ID:	VS
		Date Sampled:	11/17/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	160	---	SE1	154	---	SE1	183	>50%	lower
2	157	---	SE1	143	---	SE1	187	>50%	both
3	147	---	SE1	140	---	SE1	187	>50%	upper
4	142	---	SE1	146	---	SE1	184	>50%	both
5	149	---	SE1	135	---	SE1	183	>50%	upper
Average	151	---	---	144	---	---	185	---	---

Comments: Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/18/11		
Tested By:	bfs	Report #:	21
Checked By:	idt	Page:	2 of 2

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-4-10B	Machine ID:	W-39
Seam ID:	9/39	Welder ID:	VS
		Date Sampled:	11/17/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	138	---	SE1	144	---	SE1	180	>50%	lower
2	135	---	SE1	144	---	SE1	179	>50%	upper
3	138	---	SE1	144	---	SE1	183	>50%	lower
4	161	---	SE1	150	---	SE1	176	>50%	upper
5	143	---	SE1	148	---	SE1	182	>50%	upper
Average	143	---	---	146	---	---	180	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.

Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/16/11		
Tested By:	bfs	Report #:	20
Checked By:	jdt	Page:	11 of 14

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-4-11	Machine ID:	W-8
Seam ID:	43/46	Welder ID:	TS
		Date Sampled:	11/10/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	139	---	SE1	134	---	SE1	191	>50%	upper
2	142	---	SE1	136	---	SE1	189	>50%	lower
3	133	---	SE1	125	---	SE1	190	>50%	upper
4	136	---	SE1	150	---	SE1	190	>50%	upper
5	137	---	SE1	144	---	SE1	194	>50%	upper
Average	138	---	---	137	---	---	191	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/16/11		
Tested By:	bfs	Report #:	20
Checked By:	jdt	Page:	12 of 14

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-4-12	Machine ID:	W-39
Seam ID:	48/67	Welder ID:	VS
		Date Sampled:	11/10/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	146	---	SE1	122	---	SE1	186	>50%	upper
2	139	---	SE1	145	---	SE1	185	>50%	upper
3	141	---	SE1	149	---	SE1	190	>50%	upper
4	144	---	SE1	147	---	SE1	185	>50%	upper
5	148	---	SE1	153	---	SE1	187	>50%	lower
Average	144	---	---	143	---	---	186	---	---

Comments: Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.

Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/16/11		
Tested By:	bfs	Report #:	20
Checked By:	jdt	Page:	13 of 14

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-4-13	Machine ID:	W-2
Seam ID:	65/66	Welder ID:	KP
		Date Sampled:	11/10/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	138	---	SE1	137	---	SE1	192	>50%	lower
2	142	---	SE1	143	---	SE1	188	>50%	lower
3	145	---	SE1	147	---	SE1	192	>50%	lower
4	133	---	SE1	150	---	SE1	188	>50%	lower
5	140	---	SE1	146	---	SE1	192	>50%	lower
Average	140	---	---	145	---	---	190	---	---

**Comments:**

Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.  
Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.



Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
Installer:	---		
GTX #:	10596		
Test Date:	11/16/11		
Tested By:	bfs	Report #:	20
Checked By:	jdt	Page:	14 of 14

## Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods by ASTM D 6392 peel & shear destructive test

Upper Geomembrane:	60 mil textured HDPE	Testing Machine:	Instron 1123
Lower Geomembrane:	60 mil textured HDPE	Testing Speed:	2 in/min
Seaming Method:	Dual Hot Wedge Weld	Grips:	ATS pneumatic
		Specimen Size:	1 in x 8 in

Sample ID:	DS-4-14	Machine ID:	W-8
Seam ID:	51/65	Welder ID:	TS
		Date Sampled:	11/10/11

Specimen Number	Peel Strength						Shear Strength		
	Weld A			Weld B					
	lb./in	Seam Separation, %	Failure Type	lb./in	Seam Separation, %	Failure Type	lb./in	Elongation, %	Rupture Mode
1	146	---	SE1	147	---	SE1	181	> 50%	upper
2	145	---	SE1	139	---	SE1	190	> 50%	upper
3	144	---	SE1	142	---	SE1	182	> 50%	upper
4	147	---	SE1	151	---	SE1	184	> 50%	upper
5	151	---	SE1	139	---	SE1	188	> 50%	upper
Average	146	---	---	144	---	---	185	---	---

**Comments:** Estimate of seam separation visually determined based upon area of separated bond to the nearest 5%.

Shear test halted for HDPE and LMDPE materials once specimen has elongated 50%.

Shear test halted for PVC, fPP, LLDPE, VFPE and VLDPE once specimen has elongated past machine capacity.

Rupture mode for specimens with >50% elongation (HDPE and LMDPE) or > machine capacity (PVC, fPP, LLDPE, VFPE and VLDPE) interpreted as occurring in the membrane that exhibits yielding.

**Notes:** These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

## APPENDIX J

### Geomembrane Repair Summary Logs

- East Basin
- West Basin

## East Basin

- Primary
- Secondary



Primary

## Repair Summary Log

Project: Onondaga Lake Sediment Consolidation Area ( SCA )

Location: Camillus, New York

Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

ProjNo: GJ4706

TaskNo: 07

Primary / Secondary: Primary

Series: 3

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
3/30/2012	3-001		C	15-16-17		0-4		4	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
3/30/2012	3-002		P	4-15		1 S		2	1		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
3/28/2012	3-003		P	1-15-16		AT T		3	1		MX-16	CAP	DWH	4/4/2012	AS	P	VT OK	DWH
3/28/2012	3-004		P	1-4-15		AT T		2	2		MX-16	CAP	DWH	4/4/2012	AS	P	VT OK	DWH
3/28/2012	3-005		P	1-4-5		AT T		2	2		MX-16	CAP	DWH	4/4/2012	AS	P	VT OK	DWH
3/28/2012	3-006		P	1-5-6		AT T		3	2		MX-16	CAP	DWH	4/4/2012	AS	P	VT OK	DWH
3/28/2012	3-007		P	1-6		6 E		2	1		MX-16	CAP	DWH	4/4/2012	AS	P	VT OK	DWH
3/28/2012	3-008		P	1-6-7		AT T		2	1		MX-16	CAP	DWH	4/4/2012	AS	P	VT OK	DWH
3/28/2012	3-009		P	1-7		9 E		3	1		MX-16	CAP	DWH	4/4/2012	AS	P	VT OK	DWH
3/28/2012	3-010		P	1-7-8		AT T		3	1		MX-16	CAP	DWH	4/4/2012	AS	P	VT OK	DWH
3/28/2012	3-011		P	1-8		6 E		3	1		MX-16	CAP	DWH	4/4/2012	AS	P	VT OK	DWH
3/28/2012	3-012		P	1-8-9		AT T		2	1		MX-16	CAP	DWH	4/4/2012	AS	P	VT OK	DWH
3/30/2012	3-013	3-003	P	1-9		4 E		5	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
3/28/2012	3-014		P	1-9		13 E		2	1		MX-16	CAP	DWH	4/4/2012	AS	P	VT OK	DWH
3/28/2012	3-015		P	1-9-10		AT T		11	2		MX-16	CAP	DWH	4/4/2012	AS	P	VT OK	DWH
3/28/2012	3-016		P	1-10-11		AT T		2	1		MX-16	CAP	DWH	4/4/2012	AS	P	VT OK	DWH



## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>	TaskNo: <u>07</u>
Location: <u>Camillus, New York</u>		
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>		

Primary / Secondary: Primary				Series: 3														
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
3/28/2012	3-017		P	1-11-12		AT T		2	2		MX-16	CAP	DWH	4/4/2012	AS	P	VT OK	DWH
3/28/2012	3-018		P	1-12		16 E		2	1		MX-16	CAP	DWH	4/4/2012	AS	P	VT OK	DWH
3/28/2012	3-019		P	1-12-13		AT T		2	2		MX-16	CAP	DWH	4/4/2012	AS	P	VT OK	DWH
3/28/2012	3-020		P	1-13		10 E		10	2		MX-16	CAP	DWH	4/4/2012	AS	P	VT OK	DWH
3/28/2012	3-021		P	1-13-14		AT T		9	2		MX-16	CAP	DWH	4/4/2012	AS	P	VT OK	DWH
3/28/2012	3-022		S	14-AT		287-290		3	3		MX-16	CAP	DWH	4/4/2012	AS	P	VT OK	DWH
3/30/2012	3-023		S	18-AT		1 E		22.5	1		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/2/2012	3-024		S	29-AT		1 E		22.5	1		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
3/30/2012	3-025	3-002	P	9-10		15 S		5	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
3/30/2012	3-026		P	8-9		5 S		4	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
3/28/2012	3-027		P	1-2-3		AT T		2	1		MX-16	CAP	DWH	4/4/2012	AS	P	VT OK	DWH
3/30/2012	3-028	3-001	P	1-2		150 W		5	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
3/28/2012	3-029		P	2-3-18		AT T		1	1		MX-16	CAP	DWH	4/4/2012	AS	P	VT OK	DWH
3/28/2012	3-030		P	18-19-20		AT T		2	2		MX-16	CAP	DWH	4/4/2012	AS	P	VT OK	DWH
4/2/2012	3-031		P	18-19		111 E		18	1		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
3/30/2012	3-032	3-004	P	19-20		6 N		5	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH

## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>	TaskNo: <u>07</u>
Location: <u>Camillus, New York</u>		
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>		

Primary / Secondary: Primary				Series: 3														
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
3/30/2012	3-033		P	19-20-21		AT T		5	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
3/30/2012	3-034		C	22-24		93 E		6	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
3/30/2012	3-035	3-005	P	22-23		17 E		5	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/2/2012	3-036		P	21-22-23		187 E		22.5	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
3/30/2012	3-037	3-006	P	24-25		90 E		5	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
3/30/2012	3-038		P	23-24-25		AT T		3	1		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
3/30/2012	3-039		P	22-23-24		AT T		2	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/2/2012	3-040		P	23-25		189 E		11	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
3/30/2012	3-041		P	25-26-27		AT T		3	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
3/30/2012	3-042	3-007	P	20-Patch		182 E		5	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
3/30/2012	3-043		P	27-28-29		AT T		2	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
3/30/2012	3-044		P	26-27-28		AT T		2	1		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
3/30/2012	3-045		S	28-AT		51 E		22.5	1		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/2/2012	3-046		P	25-26		188 E		10	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/2/2012	3-047		P	19-21		113 E		1	1		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/2/2012	3-048		P	2-18		189 E		2	1		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH

## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>	TaskNo: <u>07</u>
Location: <u>Camillus, New York</u>		
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>		

Primary / Secondary: Primary				Series: 3														
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
4/2/2012	3-049		P	12-13		1 S		1	1		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/2/2012	3-050		P	9-10		1 S		1	1		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/2/2012	3-051		S	24-AT		1 E		22.5	1		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
3/30/2012	3-052	3-008	P	27-28		179 E		5	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/3/2012	3-053		P	28-29-30		AT T		4	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/2/2012	3-054		P	30-31		108 E		10	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/3/2012	3-055		P	31-33		109 E		10	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/3/2012	3-056		P	30-31-32		AT T		2	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/3/2012	3-057		P	32-33-34		AT T		2	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/3/2012	3-058		P	31-32-33		AT T		2	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/2/2012	3-059		P	33-35		273 E		16	1		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/3/2012	3-060		P	33-34-35		AT T		3	1		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/3/2012	3-061		S	35-AT		322 E		22.5	1		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/3/2012	3-062		P	35-36-37		AT T		4	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/2/2012	3-063		P	37-38-39		AT T		4	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/3/2012	3-064		P	36-37-38		AT T		5	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH

## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>	TaskNo: <u>07</u>
Location: <u>Camillus, New York</u>		
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>		

Primary / Secondary: Primary

Series: 3

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
4/3/2012	3-065	3-009	P	28-30		48 E		5	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/3/2012	3-066	3-010	P	30-32		109 E		5	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/3/2012	3-067	3-011	P	32-33		110 E		5	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/3/2012	3-068	3-012	P	33-35		164 E		5	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/3/2012	3-069	3-013	P	36-38		65 E		5	2		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/16/2012	3-070		C	19-20-21		AT T		9	3		MX-16	VS	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-071	3-007B	P	19-Patch		4 N		5	2		MX-16	VS	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-072		C	19-20		4 N		6	4		MX-16	VS	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-073	3-007B1	P	18-Patch		5 N		5	2		MX-16	VS	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-074	3-007A	P	24-Patch		94 E		5	2		MX-16	VS	DWH	4/17/2012	BTK	P	VT OK	DWH
4/13/2012	3-075		P	65-66-67		AT T		1	1		MX-18	VC	DWH	4/13/2012	VC	P	VT OK	DWH
4/13/2012	3-076		P	65-67-69		AT T		2	1		MX-18	VC	DWH	4/13/2012	VC	P	VT OK	DWH
4/13/2012	3-077		P	65-69-70-71		AT T		3	1		MX-18	VC	DWH	4/13/2012	VC	P	VT OK	DWH
4/13/2012	3-078		P	62-63-64-65		AT T		2	2		MX-18	VC	DWH	4/13/2012	VC	P	VT OK	DWH
4/13/2012	3-079		P	63-64		28 SW		1	1		MX-18	VC	DWH	4/13/2012	VC	P	VT OK	DWH
4/13/2012	3-080		P	61-62-65		AT T		2	2		MX-18	VC	DWH	4/13/2012	VC	P	VT OK	DWH

## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>	TaskNo: <u>07</u>
Location: <u>Camillus, New York</u>		
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>		

Primary / Secondary:    Primary				Series:    3														
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
4/16/2012	3-081		P	38-39-41		AT T		3	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-082		P	38-40-41		AT T		3	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-083	3-014	P	38-40		8 E		5	2		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-084	3-015	P	40-42		53 E		5	2		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-085		P	40-41-42		AT T		2	2		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-086		P	41-42		19 E		3	2		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-087		P	42-44		19 E		2	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-088		B		42	21 E	3 N	9	4		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-089		B	42-44		21 E		9	4		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-090		B		44	21 E	6 S	9	4		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/17/2012	3-091		B		44	21 E	10 S	9	4		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-092		P		44	30 E	6 S	1	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/17/2012	3-093	3-016	P	42-44		170 E		5	3		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/17/2012	3-094		P	42-43-44		AT T		7	2		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/17/2012	3-095		P	42-43		130 E		1	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/17/2012	3-096	3-017	P	43-45		188 E		5	2		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH

## Repair Summary Log

Project: Onondaga Lake Sediment Consolidation Area ( SCA )

Location: Camillus, New York

ProjNo: GJ4706

TaskNo: 07

Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

Primary / Secondary: Primary

Series: 3

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
4/17/2012	3-097		P	43-44-45		AT T		1	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-098		P	44-45-46		AT T		1	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-099		P	44-46		16 E		3	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-100		P	46-61-62		AT T		4	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-101		P	45-46-62		AT T		3	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-102		P	45-62-64		AT T		1	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-103		P	45-47-63-64		AT T		7	2		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/17/2012	3-104		P	59-60		1 N		2	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/17/2012	3-105		P	47-59-60		AT T		2	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-106		P	47-58-59		AT T		3	1		MX-16	BTK	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-107		P	47-56-58		AT T		2	1		MX-16	BTK	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-108		P	47-55-56		AT T		3	1		MX-16	BTK	DWH	4/17/2012	BTK	P	VT OK	DWH
4/3/2012	3-109		S	36-AT		124 E		13	1		MX-16	VS	DWH	4/4/2012	AS	P	VT OK	DWH
4/16/2012	3-110		P	55-56		10 N		3	2		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-111		P	55-56-57		AT T		3	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-112		P	55-57		1 N		1	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH



## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>	TaskNo: <u>07</u>
Location: <u>Camillus, New York</u>		
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>		

Primary / Secondary: Primary

Series: 3

Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder LD.		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
4/16/2012	3-113		P	53-54		1 N		2	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-114		P	54-55		18 N		4	2		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-115		P	47-54-55		AT T		3	2		MX-16	BTK	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-116	3-018	P	47-54		6 W		5	2		MX-16	BTK	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-117		P	47-53-54		AT T		1	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-118	3-019	P	53-54		26 N		5	2		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-119		P	47-52-53		AT T		1	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-120		P		52	37 N	7 E	1	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-121		P		52	44 N	7 E	1	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-122		P		52	52 N	7 E	1	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-123		P	47-51-52		AT T		2	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/17/2012	3-124		P	50-51-52		AT T		6	2		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-125	3-020	P	50-51		14 E		5	2		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-126		P	49-50-51		AT T		2	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-127		P	49-50		1 N		1	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-128		P	47-49-51		AT T		1	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH

## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>	TaskNo: <u>07</u>
Location: <u>Camillus, New York</u>		
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>		

Primary / Secondary: Primary				Series: 3														
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
4/16/2012	3-129		P	47-48-49		AT T		2	2		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-130		P	47-48-63-65		AT T		3	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-131		P	48-65-71		AT T		2	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-132		P	70-71		19 N		2	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
5/14/2012	3-133		B		67	1 N	5 W	6	4		MX-16	AS	DWH	6/14/2012	BS	p	VT OK	DWH
4/17/2012	3-134		P	66-67-68		AT T		1	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/17/2012	3-135		P	66-68		13 E		2	1		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/17/2012	3-136		P	66-68		1-7		7	2		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH
4/16/2012	3-137		P	40-42		268 E		2	2		MX-18	LV	DWH	4/17/2012	BTK	P	VT OK	DWH

Secondary

## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>																		
Location: <u>Camillus, New York</u>																		
ProjNo: <u>GJ4706</u>																		
TaskNo: <u>07</u>																		
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>																		
Primary / Secondary:      Secondary																		
Series: 2																		
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
11/3/2011	2-001		P	29-30-31		AT T		2	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-002		P	26-29-30		AT T		3	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-003		P	26-28-29		AT T		3	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-004		P	26-27-28		AT T		5	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-005		P	27-28-32		AT T		3	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-006		P	27-32-33		AT T		3	2		MX-5	LV	DWH	11/15/2011	BH	P	VT OK	DWH
11/3/2011	2-007		P	27-33		4 W		4	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-008		P	27-33-34		AT T		2	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-009		P	27-34-35		AT T		2	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-010		P	27-35-36		AT T		2	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-011		P	27-36-37		AT T		2	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-012	2-013	P	27-37		10 E		5	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-013		P	27-37-38		AT T		2	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-014		P	27-38-39		AT T		2	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-015		P	27-39-40		AT T		2	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-016		P	27-40-41		AT T		2	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH

## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>																		
Location: <u>Camillus, New York</u>																		
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>																		
Primary / Secondary:    Secondary																		
Series: 2																		
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
11/3/2011	2-017		P	27-41		19 E		2	1		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-018		P	26-27		216 E		1	1		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-019	2-012	P	25-26		219 E		5	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-020		P	23-24-25		AT T		3	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-021		P	23-25		110 E		1	1		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-022		P	22-23		114 E		1	1		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-023	2-011	P	22-23		87 E		5	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-024		P	22-23-24		AT T		3	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-025		P	22-24		22 E		4	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-026		P	20-21-22		AT T		2	1		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-027		P	18-19-20		AT T		2	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-028	2-010	P	19-20		162 E		5	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-029		P	20-21		6 N		2	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-030		P	19-20-21		AT T		4	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-031		P	17-19		19 E		6	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-032	2-009	P	17-19		189 E		5	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH

## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>																				
Location: <u>Camillus, New York</u>																		ProjNo: <u>GJ4706</u>	TaskNo: <u>07</u>	
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>																				
Primary / Secondary:    Secondary																			Series: 2	
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		
11/4/2011	2-033		P	17-18-19		AT T		3	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH		
11/3/2011	2-034		P	17-18		33 E		8	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH		
11/3/2011	2-035		P	15-16		150 E		2	1		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH		
11/3/2011	2-036		P	15-16-17		AT T		2	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH		
11/3/2011	2-037	2-008	P	16-17		140 E		5	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH		
11/3/2011	2-038	2-007	P	14-16		100 E		5	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH		
11/3/2011	2-039		P	14-15-16		AT T		3	1		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH		
11/3/2011	2-040		P	12-13-14		AT T		2	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH		
11/3/2011	2-041	2-006	P	12-14		62 E		5	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH		
11/3/2011	2-042		P	12-14		5 E		3	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH		
11/4/2011	2-043		P	11-12		5 E		2	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH		
11/4/2011	2-044	2-005	P	11-12		20 E		5	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH		
11/3/2011	2-045		P	10-11-12		AT T		2	1		MX-5	LV	DWH	11/15/2011	TS	P	VT OK	DWH		
11/3/2011	2-046		P	10-12-13		AT T		2	1		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH		
11/3/2011	2-047		P	9-10		84 E		2	1		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH		
11/3/2011	2-048	2-004	P	9-10		20 E		5	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH		

## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>																		
Location: <u>Camillus, New York</u>																		
ProjNo: <u>GJ4706</u>																		
TaskNo: <u>07</u>																		
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>																		
Primary / Secondary:    Secondary																		
Series: 2																		
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
11/3/2011	2-049		P	9-10-11		AT T		3	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/4/2011	2-050		P	9-11		145 E		3	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/4/2011	2-051		P	7-8-9		AT T		2	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/4/2011	2-052	2-003	P	7-9		29 E		5	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/4/2011	2-053		P	7-9		207 E		3	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/4/2011	2-054		P	5-7		3 E		3	1		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/4/2011	2-055		P	5-6-7		AT T		2	2		MX-8	VS	DWH	11/4/2011	BH	P	VT OK	DWH
11/4/2011	2-056		P	6-7-8		AT T		6	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-057		C	4-6		162 E		19	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/4/2011	2-058	2-002	P	4-6		240 E		5	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/4/2011	2-059		P	4-6		271 E		3	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/4/2011	2-060		P	4-5-6		AT T		9	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-061		P	2-3-4		AT T		3	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-062		P	1-2-3		AT T		3	1		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/4/2011	2-063	2-001	P	1-2		147 E		5	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/4/2011	2-064		P	1-42		323 E		1	1		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH

## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u> Location: <u>Camillus, New York</u> Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>																		
ProjNo: <u>GJ4706</u> TaskNo: <u>07</u>																		
Primary / Secondary:    Secondary      Series: 2																		
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
11/3/2011	2-065		P	1-42		152 E		5	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/4/2011	2-066		P	1-42		97 E		3	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/4/2011	2-067		P	1-42		30 E		8	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/7/2011	2-068		B		42	24 E	8 N	6	4		MX-8	VS	DWH	11/7/2011	KP	P	VT OK	DWH
11/7/2011	2-069		B		42	24 E	3 N	6	4		MX-8	VS	DWH	11/7/2011	KP	P	VT OK	DWH
11/7/2011	2-070		B	42-44		24 E		6	4		MX-8	VS	DWH	11/7/2011	KP	P	VT OK	DWH
11/7/2011	2-071		B		44	24 E	5 S	6	4		MX-8	VS	DWH	11/7/2011	KP	P	VT OK	DWH
11/3/2011	2-072		P	42-43-44		AT T		6	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/4/2011	2-073		P	42-43		177 E		2	1		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-074		P	43-44-45		AT T		3	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-075		P		18	20 E	10 S	2	2		MX-5	LV	DWH	11/7/2011	BH	P	VT OK	DWH
11/4/2011	2-076	2-014	P	1-42		74 E		5	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-077	2-015	P	42-43		20 E		5	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-078	2-016	P	43-45		69 E		5	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/4/2011	2-079	2-017	P	45-46		171 E		4	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-080	2-018	P	53-54		12 N		5	2		MX-8	VS	DWH	11/4/2011	BH	P	VT OK	DWH



## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u> Location: <u>Camillus, New York</u> Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>																		
ProjNo: <u>GJ4706</u> TaskNo: <u>07</u>																		
Primary / Secondary:    Secondary      Series: 2																		
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
11/3/2011	2-081	2-019	P	46-55		10 E		5	2		MX-8	VS	DWH	11/4/2011	BH	P	VT OK	DWH
11/3/2011	2-082		P	45-63		1 E		1	1		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-083		P	45-62-63		AT T		3	2		MX-8	VS	DWH	11/3/2011	BH	P	VT OK	DWH
11/3/2011	2-084		P	45-61-62		AT T		2	1		MX-8	VS	DWH	11/3/2011	BH	P	VT OK	DWH
11/4/2011	2-085		C	60-61		0-27		27	2		MX-8	VS	DWH	11/3/2011	BH	P	VT OK	DWH
11/3/2011	2-086		C	46-60		0-12		12	2		MX-8	VS	DWH	11/3/2011	BH	P	VT OK	DWH
11/3/2011	2-087		P	46-47-48		AT T		3	1		MX-8	VS	DWH	11/4/2011	BH	P	VT OK	DWH
11/3/2011	2-088		P	46-48-49		AT T		3	3		MX-8	VS	DWH	11/4/2011	BH	P	VT OK	DWH
11/3/2011	2-089		P	46-49-50		AT T		7	2		MX-8	VS	DWH	11/4/2011	BH	P	VT OK	DWH
11/3/2011	2-090		P	46-50-51-53		AT T		3	2		MX-8	VS	DWH	11/4/2011	BH	P	VT OK	DWH
11/3/2011	2-091		P	50-51		45 SE		6	3		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/3/2011	2-092		P	51-52-53		AT T		3	2		MX-8	VS	DWH	11/4/2011	BH	P	VT OK	DWH
11/3/2011	2-093		P	52-53-54		AT T		2	2		MX-8	VS	DWH	11/4/2011	BH	P	VT OK	DWH
11/3/2011	2-094		P	46-53-54		AT T		2	1		MX-8	VS	DWH	11/4/2011	BH	P	VT OK	DWH
11/3/2011	2-095		P	46-54-55		AT T		2	1		MX-8	VS	DWH	11/4/2011	BH	P	VT OK	DWH
11/3/2011	2-096		P	46-55-56		AT T		2	2		MX-8	VS	DWH	11/4/2011	BH	P	VT OK	DWH

## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u> Location: <u>Camillus, New York</u> Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>																		
ProjNo: <u>GJ4706</u> TaskNo: <u>07</u>																		
Primary / Secondary:    Secondary      Series: 2																		
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
11/3/2011	2-097		P	55-56		7 N		14	2		MX-8	VS	DWH	11/4/2011	BH	P	VT OK	DWH
11/3/2011	2-098		P	46-56-57		AT T		2	2		MX-8	VS	DWH	11/4/2011	BH	P	VT OK	DWH
11/3/2011	2-099		P	46-57-59		AT T		2	1		MX-8	VS	DWH	11/4/2011	BH	P	VT OK	DWH
11/3/2011	2-100		P	57-58-59		AT T		4	2		MX-8	VS	DWH	11/4/2011	BH	P	VT OK	DWH
11/4/2011	2-101		P	46-59-60		AT T		3	3		MX-8	VS	DWH	11/4/2011	BH	P	VT OK	DWH
11/4/2011	2-102		P	58-59-64		AT T		3	2		MX-8	VS	DWH	11/4/2011	BH	P	VT OK	DWH
11/3/2011	2-103		P	59-60-61-62		AT T		5	2		MX-8	VS	DWH	11/3/2011	BH	P	VT OK	DWH
11/3/2011	2-104		P	59-64-65		AT T		4	3		MX-8	VS	DWH	11/3/2011	BH	P	VT OK	DWH
11/3/2011	2-105		P	59-65-66		AT T		3	2		MX-8	VS	DWH	11/3/2011	BH	P	VT OK	DWH
11/3/2011	2-106		P	59-66-67		AT T		6	2		MX-8	VS	DWH	11/3/2011	BH	P	VT OK	DWH
11/3/2011	2-107		P	59-62-63		AT T		4	2		MX-8	VS	DWH	11/3/2011	BH	P	VT OK	DWH
11/3/2011	2-108		P	62-63		21 S		2	1		MX-8	VS	DWH	11/3/2011	BH	P	VT OK	DWH
11/3/2011	2-109		P	62-63		6 S		2	1		MX-8	VS	DWH	11/3/2011	BH	P	VT OK	DWH
11/3/2011	2-110		P	66-67-68		AT T		3	2		MX-8	VS	DWH	11/4/2011	BH	P	VT OK	DWH
11/3/2011	2-111		P	67-68		1 E		5	2		MX-8	VS	DWH	11/7/2011	BH	P	VT OK	DWH
11/4/2011	2-112		P	45-46		240 E		8	2		MX-8	VS	DWH	11/15/2011	TS	P	VT OK	DWH

## West Basin

- Primary
- Secondary

Primary

## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u> Location: <u>Camillus, New York</u> Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>																		
ProjNo: <u>GJ4706</u> TaskNo: <u>07</u>																		
Primary / Secondary: <u>Primary</u> Series: <u>5</u>																		
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
4/6/2012	5-001		P	18-19		1 W		1	1		MX-16	VS	DWH	4/9/2012	AS	P	VT OK	DWH
4/6/2012	5-002		P	17-18-19-20		AT T		6	2		MX-16	VS	DWH	4/9/2012	AS	P	VT OK	DWH
4/6/2012	5-003		P	17-20-21		AT T		2	2		MX-16	VS	DWH	4/9/2012	AS	P	VT OK	DWH
4/6/2012	5-004		C	16-17-21-22		AT T		15	2		MX-16	VS	DWH	4/9/2012	AS	P	VT OK	DWH
4/6/2012	5-005		P	15-16-22-23		AT T		5	2		MX-16	VS	DWH	4/9/2012	AS	P	VT OK	DWH
4/6/2012	5-006		P	14-15-23		AT T		3	2		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/6/2012	5-007		C	12-13-14-15		AT T		5	2		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/6/2012	5-008		P	14-23-24		AT T		2	2		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/6/2012	5-009		P	12-14-24		AT T		3	2		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/6/2012	5-010		P	12-24-25		AT T		3	2		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/6/2012	5-011		P	12-25-26		AT T		3	2		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/6/2012	5-012		P	11-12-26		AT T		3	3		MX-16	VS	DWH	4/9/2012	AS	P	VT OK	DWH
4/6/2012	5-013		P	11-26-27		AT T		5	2		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/6/2012	5-014		P	9-10-11		AT T		2	2		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/6/2012	5-015		P	9-11-27-28		AT T		5	3		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/6/2012	5-016		P	9-28-29		AT T		2	2		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH

## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u> Location: <u>Camillus, New York</u> Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>																		
ProjNo: <u>GJ4706</u> TaskNo: <u>07</u>																		
Primary / Secondary:    Primary      Series: 5																		
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
4/9/2012	5-017		P	7-9-29-30		AT T		5	2		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/9/2012	5-018		P	7-30		9 SW		1	1		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/9/2012	5-019		P	7-30-31		AT T		2	2		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/9/2012	5-020		P	6-7-31		AT T		2	1		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/9/2012	5-021		P	6-31-32		AT T		3	2		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/9/2012	5-022		C	3-5-6-33		AT T		15	2		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/9/2012	5-023		P	6-32-33		AT T		3	1		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/9/2012	5-024		P	3-33-34		AT T		2	1		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/9/2012	5-025		P	2-3-34-35		AT T		11	2		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/9/2012	5-026		P	2-35-36		AT T		2	1		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/9/2012	5-027		P	1-2-36-37		AT T		6	2		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/9/2012	5-028		P	1-37		19 W		3	2		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/9/2012	5-029		P	1-37-38		AT T		1	1		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/9/2012	5-030		P	1-38		1 E		2	1		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/9/2012	5-031		P	13-15		1 W		1	1		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/9/2012	5-032		P	11-13		1 W		1	1		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH



consultants

## Repair Summary Log

Project: Onondaga Lake Sediment Consolidation Area (SCA)

Location: Camillus, New York

ProjNo: GJ4706

TaskNo: 07

Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

Primary / Secondary: Primary

Series: 5

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
4/9/2012	5-033		P	6-8		1 W		1	1		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH
4/9/2012	5-034		P	5-6		1 W		1	1		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH
4/6/2012	5-035		P	11-12-13		AT T		2	2		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH
4/6/2012	5-036		P		12	25 W	2 N	2	1		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/6/2012	5-037	5-010	P	11-26		10 W		5	2		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/6/2012	5-038		P	11-27		13 SW		2	1		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/6/2012	5-039	5-009	P	27-28		16 NW		5	2		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/6/2012	5-040		P	8-9-10		AT T		2	1		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/9/2012	5-041		P	7-8-9		AT T		2	1		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/6/2012	5-042		P	6-7-8		AT T		2	2		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/9/2012	5-043	5-006	P	3-5		10 S		5	2		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/9/2012	5-044		P	3-4-5		AT T		4	2		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/9/2012	5-045	5-008	P	33-34		24 SE		5	2		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/9/2012	5-046		P	2-3-4		AT T		2	1		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/9/2012	5-047		P	1-2-4		AT T		2	1		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH
4/9/2012	5-048		P	36-37		1 S		3	1		MX-16	VS	DWH	4/9/2012	BTK	P	VT OK	DWH

Friday, June 22, 2012

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## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u> Location: <u>Camillus, New York</u> Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>																		
ProjNo: <u>GJ4706</u> TaskNo: <u>07</u>																		
Primary / Secondary: <u>Primary</u> Series: <u>5</u>																		
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
4/9/2012	5-049		P	39-46-47		AT T		3	1		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH
4/9/2012	5-050		P	39-41-46		AT T		2	2		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH
4/9/2012	5-051	5-007	P	46-48		22 NE		5	2		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH
4/9/2012	5-052		P	41-46-48		AT T		6	2		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH
4/9/2012	5-053		P	41-42-48		AT T		3	1		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH
4/9/2012	5-054		P	42-48-49		AT T		2	1		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH
4/9/2012	5-055		P	42-44-49		AT T		3	2		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH
4/9/2012	5-056		P	44-49-50		AT T		6	2		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH
4/9/2012	5-057		P	42-43-44		AT T		2	1		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH
4/9/2012	5-058		P	41-42-43		AT T		2	1		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH
4/9/2012	5-059		P	1-39-40		AT T		2	1		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH
4/9/2012	5-060		P	39-40-41		AT T		2	1		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH
4/6/2012	5-061	5-005	P	8-10		34 W		5	2		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH
4/9/2012	5-062	5-004	P	5-6		107 W		5	2		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH
4/9/2012	5-063	5-003	P	4-5		74 W		5	2		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH
4/9/2012	5-064	5-002	P	41-43		50 W		5	2		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH



## Repair Summary Log

Project: <u>Onondaga Lake Sedi nent Consolidation Area ( SCA )</u>																		
Location: <u>Camillus, New York</u>																		
ProjNo: <u>GJ4706</u>																		
TaskNo: <u>07</u>																		
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>																		
Primary / Secondary:    Primary																		
Series: 5																		
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
4/9/2012	5-065	5-001	P	43-45		15 W		5	2		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH
4/9/2012	5-066		P	43-44-45		AT T		3	2		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH
4/9/2012	5-067		P	43-44		117 W		3	1		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH
4/9/2012	5-068		P	43-45		1 W		1	1		MX-16	VS	DWH	4/10/2012	BTK	P	VT OK	DWH
4/18/2012	5-069		P	45-62-69		AT T		5	2		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-070		P	44-45-69-70		AT T		5	2		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-071		P	44-51-70-71		AT T		6	3		MX-16	VS	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-072		P	44-51		27 W		9	2		MX-16	VS	DWH	4/18/2012	AS	P	VT OK	DWH
5/17/2012	5-073	5-011	P	44-51		112 W		5	2		MX-16	VS	DWH	4/18/2012	AS	P	VT OK	DWH
4/17/2012	5-074		P	44-50-51-53		AT T		12	3		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/17/2012	5-075		P	51-53-54		AT T		2	2		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/17/2012	5-076		P	51-52-54		AT T		5	2		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/17/2012	5-077		P	52-54-55		AT T		2	2		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-078		P	52-55		19 N		2	1		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-079	5-014	P	52-56		38 N		5	2		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/17/2012	5-080		P	51-52-56		AT T		3	2		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH

**Repair Summary Log**

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>																		
Location: <u>Camillus, New York</u>				ProjNo: <u>GJ4706</u>						TaskNo: <u>07</u>								
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>																		
Primary / Secondary:    Primary																		
Series: 5																		
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
4/17/2012	5-081		P	51-56-57		AT T		2	1		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/17/2012	5-082	5-012	P	51-57		4 E		5	2		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/17/2012	5-083		P	51-57-58		AT T		3	1		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-084		P	57-58-59		AT T		6	2		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-085	5-013	P	58-60		34 N		5	2		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-086		P	51-58-60		AT T		3	1		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-087		P	51-60-61		AT T		3	2		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-088		P	51-61-63		AT T		4	3		MX-16	VS	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-089		P	51-63-71		AT T		6	4		MX-16	VS	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-090		P	61-63-68		AT T		3	1		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-091		C	61-68-72-75		AT T		8	3		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-092		C	61-72-75		13 N		11	3		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-093		S	75-AT		1 N		4	1		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-094		P	67-68-72		AT T		6	4		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/19/2012	5-095		B		62	30 W	6 N	18	4		MX-16	VS	DWH	4/20/2012	VS	P	VT OK	DWH
4/19/2012	5-096		B		62	30 W	3 N	18	4		MX-16	VS	DWH	4/20/2012	VS	P	VT OK	DWH



consultants

## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>																		
Location: <u>Camillus, New York</u>				ProjNo: <u>GJ4706</u>						TaskNo: <u>07</u>								
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>																		
Primary / Secondary:    Primary																		
Series: 5																		
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
4/19/2012	5-097		B	62-63		30 W		18	4		MX-16	VS	DWH	4/20/2012	VS	P	VT OK	DWH
4/19/2012	5-098		B		63	30 W	3 N	18	4		MX-16	VS	DWH	4/20/2012	VS	P	VT OK	DWH
4/18/2012	5-099		P	64-65-73-74		AT T		2	2		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-100		P	66-73		1 N		1	1		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-101		P		55	19 SW	2 SE	1	1		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-102		P	51-71		9 S		3	1		MX-16	VS	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-103		P	64-66-73		AT T		4	2		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-104		P	63-69-70-71		AT T		6	3		MX-18	LV	DWH	4/18/2012	AS	P	VT OK	DWH
4/13/2012	5-105		P	63-69		12 W		3	1		MX-18	VC	DWH	4/18/2012	AS	P	VT OK	DWH
4/13/2012	5-106		P	63-69		8 W		2	1		MX-18	VC	DWH	4/18/2012	AS	P	VT OK	DWH
4/13/2012	5-107		P	62-63-69		AT T		2	1		MX-18	VC	DWH	4/18/2012	AS	P	VT OK	DWH
4/13/2012	5-108		P	63-66		12 W		2	1		MX-18	VC	DWH	4/18/2012	AS	P	VT OK	DWH
4/13/2012	5-109		P	63-66-67		AT T		1	1		MX-18	VC	DWH	4/18/2012	AS	P	VT OK	DWH
4/13/2012	5-110		P	63-67-68		AT T		4	2		MX-18	VC	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-111		P	63-66		10 N		3	2		MX-16	VS	DWH	4/18/2012	AS	P	VT OK	DWH
4/18/2012	5-112		P	63-64-66		AT T		3	2		MX-16	VS	DWH	4/18/2012	AS	P	VT OK	DWH

Friday, June 22, 2012

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**Repair Summary Log**

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u> Location: <u>Camillus, New York</u> ProjNo: <u>GJ4706</u> TaskNo: <u>07</u> Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>																		
Primary / Secondary:    Primary										Series: 5								
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
4/20/2012	5-113		B		66	3 N	6 W	7	4		MX-16	VS	DWH	4/20/2012	VS	P	VT OK	DWH

## Secondary

## Repair Summary Log

Project: Onondaga Lake Sediment Consolidation Area ( SCA )

Location: Camillus, New York

Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

ProjNo: GJ4706

TaskNo: 07

Primary / Secondary:    Secondary

Series: 4

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
11/15/2011	4-001		P	58-59		1 N		1	1		MX-8	VS	DWH	11/15/2011	LV	P	VT OK	DWH
11/10/2011	4-002		P	52-58-59-60		AT T		6	4		MX-5	LV	DWH	11/14/2011	KP	P	VT OK	DWH
11/10/2011	4-003		C	51-52		0-49		49	2		MX-5	LV	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-004		P	49-51		1 W		1	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-005		P	49-51		25 W		1	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-006		B		51	28 W	4 S	13	4		MX-8	VS	DWH	11/15/2011	KP	p	VT OK	DWH
11/14/2011	4-007		B	49-51		28 W		13	4		MX-8	VS	DWH	11/15/2011	KP	p	VT OK	DWH
11/14/2011	4-008		B		49	28 W	5 N	13	4		MX-8	VS	DWH	11/15/2011	KP	p	VT OK	DWH
11/14/2011	4-009		B		49	28 W	10 N	13	4		MX-8	VS	DWH	11/15/2011	KP	p	VT OK	DWH
11/10/2011	4-010		P	54-61		17 N		4	2		MX-5	LV	DWH	11/15/2011	LV	P	VT OK	DWH
11/10/2011	4-011		P	54-61		27 N		4	2		MX-5	LV	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-012		P	51-62-63		AT T		5	2		MX-5	LV	DWH	11/14/2011	KP	P	VT OK	DWH
11/10/2011	4-013		P	61-62-63		AT T		3	2		MX-5	LV	DWH	11/14/2011	KP	P	VT OK	DWH
11/10/2011	4-014		P	51-63-64		AT T		2	1		MX-5	LV	DWH	11/14/2011	KP	P	VT OK	DWH
11/10/2011	4-015		P	51-64-65		AT T		4	2		MX-5	LV	DWH	11/14/2011	KP	P	VT OK	DWH
11/15/2011	4-016	4-014	P	51-65		12 W		5	2		MX-8	VS	DWH	11/15/2011	LV	P	VT OK	DWH



## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>	TaskNo: <u>07</u>
Location: <u>Camillus, New York</u>		
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>		

Primary / Secondary:    Secondary

Series: 4

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
11/10/2011	4-017		F	51-65-66		AT T		3	3		MX-5	LV	DWH	11/14/2011	KP	P	VT OK	DWH
11/10/2011	4-018	4-013	F	65-66		34 N		6	2		MX-5	LV	DWH	11/14/2011	KP	P	VT OK	DWH
11/15/2011	4-019	4-013	F	65-66		19 N		5	2		MX-8	VS	DWH	11/15/2011	LV	P	VT OK	DWH
11/10/2011	4-020		F	66-74-76		AT T		2	2		MX-5	LV	DWH	11/14/2011	KP	P	VT OK	DWH
11/10/2011	4-021		F	51-66-74		AT T		2	1		MX-5	LV	DWH	11/14/2011	KP	P	VT OK	DWH
11/10/2011	4-022		F	51-74-75		AT T		3	1		MX-5	LV	DWH	11/14/2011	KP	P	VT OK	DWH
11/10/2011	4-023		F	73-74-75		AT T		3	2		MX-5	LV	DWH	11/14/2011	KP	P	VT OK	DWH
11/10/2011	4-024		F	73-75		8 W		2	1		MX-5	LV	DWH	11/14/2011	KP	P	VT OK	DWH
11/10/2011	4-025		F	51-72-73-75		AT T		7	3		MX-5	LV	DWH	11/14/2011	KP	P	VT OK	DWH
11/10/2011	4-026		F	51-70-72		AT T		4	2		MX-5	LV	DWH	11/15/2011	LV	P	VT OK	DWH
11/10/2011	4-027		F	51-69-70		AT T		5	2		MX-5	LV	DWH	11/14/2011	KP	P	VT OK	DWH
11/10/2011	4-028		F	69-70-71		AT T		1	1		MX-5	LV	DWH	11/15/2011	LV	P	VT OK	DWH
11/11/2011	4-029		C	50-51-68-69		AT T		15	2		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/11/2011	4-030		F	1-50-67-68		AT T		4	2		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/10/2011	4-031		F	50-51		58 W		3	1		MX-5	LV	DWH	11/14/2011	KP	P	VT OK	DWH
11/10/2011	4-032		F	50-51-57		AT T		3	2		MX-5	LV	DWH	11/14/2011	KP	P	VT OK	DWH

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## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>																		
Location: <u>Camillus, New York</u>					ProjNo: <u>GJ4706</u>					TaskNo: <u>07</u>								
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>																		
Primary / Secondary:    Secondary																		
Series: 4																		
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
11/10/2011	4-033		P	1-50-56-57		AT T		16	2		MX-5	LV	DWH	11/14/2011	KP	P	VT OK	DWH
11/10/2011	4-034		P	1-55-56		AT T		2	2		MX-5	LV	DWH	11/14/2011	KP	P	VT OK	DWH
11/10/2011	4-035		C	1-49-53-55		AT T		29	2		MX-5	LV	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-036		P	1-49		2 W		2	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/10/2011	4-037		P		1	95 W	5 S	1	1		MX-5	LV	DWH	11/15/2011	LV	P	VT OK	DWH
11/15/2011	4-038	4-001	P	1-2		103 W		5	2		MX-8	VS	DWH	11/15/2011	LV	P	VT OK	DWH
11/11/2011	4-039		P	1-2-3		AT T		2	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/11/2011	4-040		P	1-67-48		AT T		2	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/11/2011	4-041		P	1-3-48		AT T		2	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/15/2011	4-042	4-012	P	48-67		15 E		5	2		MX-8	VS	DWH	11/15/2011	LV	P	VT OK	DWH
11/11/2011	4-043		P	3-47-48		AT T		2	2		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/11/2011	4-044		P	3-4-47		AT T		2	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/11/2011	4-045		P	4-46-47		AT T		2	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/11/2011	4-046		P	2-3-4		AT T		2	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/15/2011	4-047	4-002	P	4-6		181 W		5	2		MX-8	VS	DWH	11/15/2011	LV	P	VT OK	DWH
11/14/2011	4-048		P	4-5-6		AT T		2	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH



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## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>	TaskNo: <u>07</u>
Location: <u>Camillus, New York</u>		
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>		

Primary / Secondary:    Secondary

Series: 4

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
11/11/2011	4-049		F	4-5-43-46		AT T		8	2		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/15/2011	4-050	4-011	F	43-46		23 E		5	2		MX-8	VS	DWH	11/15/2011	LV	P	VT OK	DWH
11/14/2011	4-051		F	42-43-44		AT T		2	2		MX-8	VS	DWH	11/14/2011	KP	P	VT OK	DWH
11/11/2011	4-052		F	5-42-43		AT T		2	2		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/11/2011	4-053		F	5-8-42		AT T		1	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-054		F	5-8		14 E		4	2		MX-8	VS	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-055		F	5-8		26 E		4	2		MX-5	VS	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-056		F	5-7-8		AT T		2	1		MX-8	VS	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-057		F	5-6-7		AT T		3	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/15/2011	4-058	4-003	F	6-7		135 W		5	2		MX-8	VS	DWH	11/15/2011	LV	P	VT OK	DWH
11/14/2011	4-059		F	6-7		1 W		1	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-060		F	7-9		1 W		2	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-061		F	7-8-9		AT T		2	2		MX-8	VS	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-062		F	8-9-40		AT T		1	1		MX-8	VS	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-063		F	8-40-41		AT T		2	1		MX-8	VS	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-064		F	8-41-42		AT T		2	2		MX-8	VS	DWH	11/14/2011	KP	P	VT OK	DWH

Tuesday, July 03, 2012

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## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>	TaskNo: <u>07</u>
Location: <u>Camillus, New York</u>		
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>		

Primary / Secondary: Secondary

Series: 4

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
11/14/2011	4-065		P	41-42-45		AT T		3	2		MX-8	VS	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-066		P	39-40		3 SE		4	2		MX-8	VS	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-067	4-010	P	9-40		5 S		5	2		MX-8	VS	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-068		P	9-39-40		AT T		1	1		MX-8	VS	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-069		C	9-10-38-39		AT T		9	9		MX-8	VS	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-070		P	38-39		18 SE		1	1		MX-8	VS	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-071		P	10-37-38		AT T		3	2		MX-8	VS	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-072		P	37-38		18 S		3	1		MX-8	VS	DWH	11/14/2011	KP	P	VT OK	DWH
11/11/2011	4-073		P	9-10-11		AT T		2	2		MX-8	VS	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-074		P	11-12		1 W		2	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/15/2011	4-075	4-004	P	11-12		46 W		5	2		MX-8	VS	DWH	11/15/2011	LV	P	VT OK	DWH
11/11/2011	4-076		P	10-11-12		AT T		2	1		MX-8	VS	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-077		P	10-12-37		AT T		2	2		MX-8	VS	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-078		P	12-36-37		AT T		2	2		MX-8	VS	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-079	4-009	P	35-36		21 SE		5	2		MX-5	KP	DWH	11/15/2011	LV	P	VT OK	DWH
11/15/2011	4-080		P	12-13-35-36		AT T		4	2		MX-5	KP	DWH	11/15/2011	LV	P	VT OK	DWH



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## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>	TaskNo: <u>07</u>
Location: <u>Camillus, New York</u>		
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>		

Primary / Secondary: Secondary

Series: 4

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
11/15/2011	4-081	4-005	P	12-13		12 W		5	2		MX-8	VS	DWH	11/15/2011	LV	P	VT OK	DWH
11/11/2011	4-082		P	12-13-14		AT T		2	2		MX-8	VS	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-083		P	12-14		1 W		2	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/15/2011	4-084	4-006	P	14-15		52 W		5	2		MX-8	VS	DWH	11/15/2011	LV	P	VT OK	DWH
11/11/2011	4-085		P	13-14-15		AT T		3	2		MX-8	VS	DWH	11/14/2011	KP	P	VT OK	DWH
11/15/2011	4-086		P	13-34-35		AT T		2	2		MX-5	KP	DWH	11/15/2011	LV	P	VT OK	DWH
11/15/2011	4-087		P	13-15-33-34		AT T		7	2	*	MX-5	KP	DWH	11/15/2011	LV	P	VT OK	DWH
11/15/2011	4-088		P	15-32-33		AT T		3	2		MX-5	KP	DWH	11/15/2011	LV	P	VT OK	DWH
11/15/2011	4-089		P	15-16-32		AT T		2	1		MX-5	KP	DWH	11/15/2011	LV	P	VT OK	DWH
11/15/2011	4-090		P	16-31-32		AT T		2	1		MX-5	KP	DWH	11/15/2011	LV	P	VT OK	DWH
11/14/2011	4-091		P	15-16		1 W		3	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-092		P		18	58 W	10 N	1	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-093		P		18	66 W	10 N	1	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-094		P		18	73 W	10 N	1	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-095		P		18	80 W	10 N	1	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-096		P	16-17-18		AT T		3	2		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH

Tuesday, July 03, 2012

Page 6 of 8

**Repair Summary Log**

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>	TaskNo: <u>07</u>
Location: <u>Camillus, New York</u>		
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>		

Primary / Secondary: Secondary

Series: 4

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
11/15/2011	4-097		P	16-30-31		AT T		3	2		MX-5	KP	DWH	11/15/2011	LV	P	VT OK	DWH
11/15/2011	4-098		P	16-17-30		AT T		3	2		MX-5	KP	DWH	11/15/2011	LV	P	VT OK	DWH
11/15/2011	4-099		P	17-29-30		AT T		3	2		MX-5	KP	DWH	11/15/2011	LV	P	VT OK	DWH
11/15/2011	4-100		C	17-19-28-29		AT T		5	2		MX-5	KP	DWH	11/15/2011	LV	P	VT OK	DWH
11/14/2011	4-101		P	17-18-19		AT T		2	2		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/15/2011	4-102	4-008	P	19-28		5 SW		5	2		MX-5	KP	DWH	11/15/2011	LV	P	VT OK	DWH
11/15/2011	4-103		P	19-27-28		AT T		1	1		MX-5	KP	DWH	11/15/2011	LV	P	VT OK	DWH
11/14/2011	4-104		P	19-20		1 W		2	2		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/15/2011	4-105		C	19-20-26-27		AT T		4	2		MX-5	KP	DWH	11/15/2011	LV	P	VT OK	DWH
11/15/2011	4-106	4-007	P	26-27		14 SE		5	2		MX-5	KP	DWH	11/15/2011	LV	P	VT OK	DWH
11/15/2011	4-107		P	20-23-26		AT T		2	2		MX-5	KP	DWH	11/15/2011	LV	P	VT OK	DWH
11/15/2011	4-108		P	20-21-23		AT T		3	2		MX-5	KP	DWH	11/15/2011	LV	P	VT OK	DWH
11/14/2011	4-109		P	20-21		1 W		1	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-110		P	22-25		3 W		6	2		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/15/2011	4-111		C	21-22-24-25		AT T		6	2		MX-5	KP	DWH	11/15/2011	LV	P	VT OK	DWH
11/15/2011	4-112		P	21-23-24		AT T		3	2		MX-5	KP	DWH	11/15/2011	LV	P	VT OK	DWH

## Repair Summary Log

Project: <u>Onondaga Lake Sediment Consolidation Area ( SCA )</u>	ProjNo: <u>GJ4706</u>	TaskNo: <u>07</u>
Location: <u>Camillus, New York</u>		
Description: <u>Construction Quality Assurance for Onondaga SCA Phase I Cell</u>		

Primary / Secondary:    Secondary

Series: 4

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
11/14/2011	4-113		P		7	225 W	6 S	2	2		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-114		P	37-38		23 S		2	1		MX-8	VS	DWH	11/14/2011	KP	P	VT OK	DWH
11/14/2011	4-115		P	9-11		1 W		1	1		MX-5	KP	DWH	11/14/2011	KP	P	VT OK	DWH
11/15/2011	4-116		P	59-60		1 N		1	1		MX-8	VS	DWH	11/15/2011	KP	P	VT OK	DWH
11/22/2011	4-117	4-010 A	P	8-40		12 W		5	2		MX-5	KP	DWH	11/22/2011	BH	P	VT OK	DWH
11/22/2011	4-118		C	8-9-39-40		91-225 W		34	2		MX-5	KP	DWH	11/22/2011	BH	P	VT OK	DWH
11/22/2011	4-119	4-010 B	P	9-39		8 E		5	2		MX-5	KP	DWH	11/22/2011	BH	P	VT OK	DWH
11/10/2011	4-120		P	49-51-53-55		AT T		4	2		MX-5	LV	DWH	11/10/2011	MAB	P	VT OK	DWH
11/10/2011	4-121		P	51-55-56-57		AT T		5	2		MX-5	LV	DWH	11/10/2011	MAB	P	VT OK	DWH
11/10/2011	4-122		P	51-54-61-62		AT T		5	2		MX-5	LV	DWH	11/10/2011	MAB	P	VT OK	DWH

## APPENDIX K

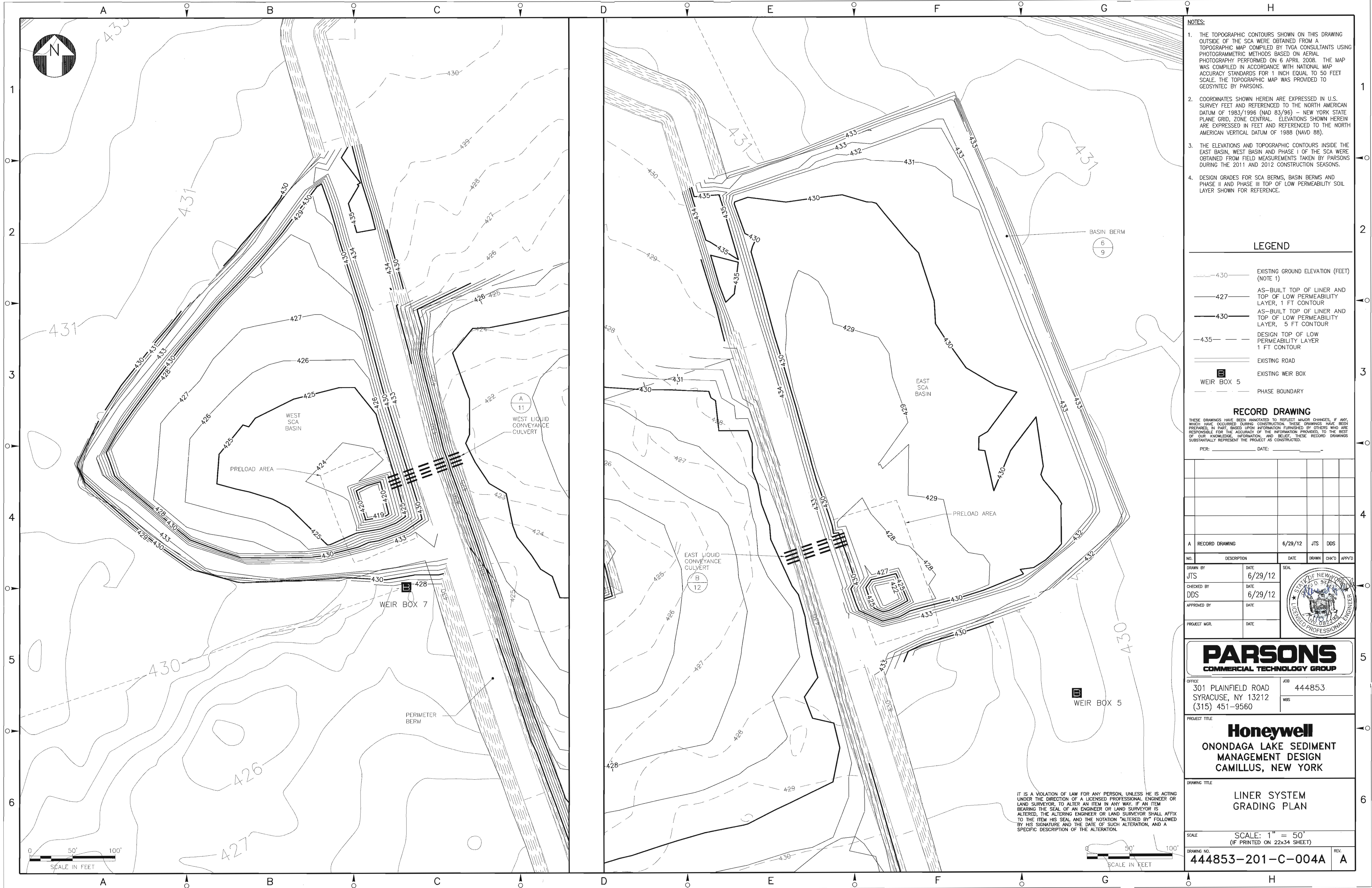
### Record Drawings

- Contractor's Record Drawing
- Geomembrane Panel Layout and Seam Repair/Destructive Sample Location Drawings

# Contractor's Record Drawings



NOTICE: THESE DRAWINGS, THE PROPERTY OF HONEYWELL, IS FURNISHED SUBJECT TO RETURN AND THE CONDITION THAT THE INFORMATION AND TECHNOLOGY FURNISHED HEREIN SHALL NOT BE DISCLOSED OR USED AND THE DRAWING SHALL NOT BE REPRODUCED OR COPIED IN WHOLE OR IN PART EXCEPT AS PREVIOUSLY AUTHORIZED IN WRITING. ANY PERSON WHO MAY RECEIVE OR OBSERVE THIS DESIGN WILL BE HELD STRICTLY LIABLE FOR ANY VIOLATION WHETHER WILLFUL OR NEGLIGENT.



- NOTES:
1. THE TOPOGRAPHIC CONTOURS SHOWN ON THIS DRAWING OUTSIDE OF THE SCA WERE OBTAINED FROM A TOPOGRAPHIC MAP COMPILED BY TVGA CONSULTANTS USING PHOTOGRAMMETRIC METHODS BASED ON AERIAL PHOTOGRAPHY PERFORMED ON 6 APRIL 2008. THE MAP WAS COMPILED IN ACCORDANCE WITH NATIONAL MAP ACCURACY STANDARDS FOR 1 INCH EQUAL TO 50 FEET SCALE. THE TOPOGRAPHIC MAP WAS PROVIDED TO GEOSYNTEC BY PARSONS.
  2. COORDINATES SHOWN HEREIN ARE EXPRESSED IN U.S. SURVEY FEET AND REFERENCED TO THE NORTH AMERICAN DATUM OF 1983/1996 (NAD 83/96) - NEW YORK STATE PLANE GRID, ZONE CENTRAL. ELEVATIONS SHOWN HEREIN ARE EXPRESSED IN FEET AND REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
  3. THE ELEVATIONS AND TOPOGRAPHIC CONTOURS INSIDE THE EAST BASIN, WEST BASIN AND PHASE I OF THE SCA WERE OBTAINED FROM FIELD MEASUREMENTS TAKEN BY PARSONS DURING THE 2011 AND 2012 CONSTRUCTION SEASONS.
  4. DESIGN GRADES FOR SCA BERMS, BASIN BERMS AND PHASE II AND PHASE III TOP OF LOW PERMEABILITY SOIL LAYER SHOWN FOR REFERENCE.

LEGEND

— 430 —	EXISTING GROUND ELEVATION (FEET) (NOTE 1)
— 427 —	AS-BUILT TOP OF LINER AND TOP OF LOW PERMEABILITY LAYER, 1 FT CONTOUR
— 430 —	AS-BUILT TOP OF LINER AND TOP OF LOW PERMEABILITY LAYER, 5 FT CONTOUR
— 435 —	DESIGN TOP OF LOW PERMEABILITY LAYER 1 FT CONTOUR
— —	EXISTING ROAD
— —	EXISTING WEIR BOX
WEIR BOX 5	
— —	PHASE BOUNDARY

RECORD DRAWING

THESE DRAWINGS HAVE BEEN ANNOTATED TO REFLECT MAJOR CHANGES, IF ANY, WHICH HAVE OCCURRED DURING CONSTRUCTION. THESE DRAWINGS HAVE BEEN PREPARED, IN PART, BASED UPON INFORMATION FURNISHED BY OTHERS WHO ARE RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION PROVIDED TO THE BEST OF OUR KNOWLEDGE, INFORMATION, AND BELIEF. THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

PER: \_\_\_\_\_ DATE: \_\_\_\_\_

A	RECORD DRAWING	6/29/12	JTS	DDS	
NO.	DESCRIPTION	DATE	DRAWN	CHK'D	APPR'D
DRAWN BY	JTS	DATE	6/29/12	SEAL	
CHECKED BY	DDS	DATE	6/29/12		
APPROVED BY		DATE			
PROJECT MGR.		DATE			

**PARSONS**  
COMMERCIAL TECHNOLOGY GROUP

OFFICE: 301 PLAINFIELD ROAD  
SYRACUSE, NY 13212  
(315) 451-9560

JOB: 444853.  
WBS:

PROJECT TITLE

**Honeywell**  
ONONDAGA LAKE SEDIMENT  
MANAGEMENT DESIGN  
CAMILLUS, NEW YORK

DRAWING TITLE

**LINER SYSTEM  
GRADING PLAN**

SCALE: 1" = 50'  
(IF PRINTED ON 22x34 SHEET)

DRAWING NO. 444853-201-C-004A

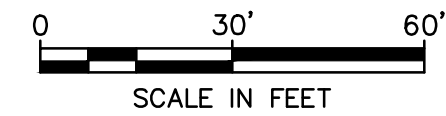
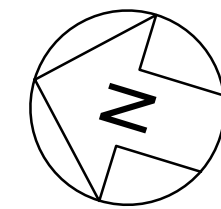
REV. A

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR IS ALTERED, THE ALTERING ENGINEER OR LAND SURVEYOR SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.



Geomembrane Panel Layout and Seam  
Repair/Destructive Sample Location Drawings

T:\PROJECTS\CADD\ONONDAGA LAKE\DWG\SEDMANYSYS.EAST - WEST BASIN.AS-BUILT-PRIMARY



## LEGEND

	PIPE PENETRATION
	GEOMEMBRANE PANEL
	PATCH REPAIR
	DESTRUCTIVE SAMPLE (PASS)
	DESTRUCTIVE SAMPLE (FAIL)
	CAPPED SEAM
	LINER SEAM
	ANCHOR TRENCH
	SKIRT REPAIR

### NOTES:

- PANEL LOCATIONS BASED ON FIELD SURVEYS CONDUCTED BY PARSONS FIELD PERSONNEL USING GLOBAL POSITION SYSTEM (GPS) DURING THE INSTALLATION. PANELS ARE SHOWN AS MEASURED BY THE SURVEY (I.E. TWO DIMENSIONS).
- PASSING DESTRUCTIVE SEAM SAMPLE DP-4 IS LOCATED ON A FUSION BUTT SEAM. DESTRUCTIVE SEAM SAMPLE DP-7 FAILED ON A NEARBY EXTRUSION WELD REPAIR AS DID DP-7B LOCATED ON THE DP-4 REPAIR. THE FAILING EXTRUSION WELD WAS CAPPED BETWEEN PASSING SAMPLES DP-7A AND DP-7B1.

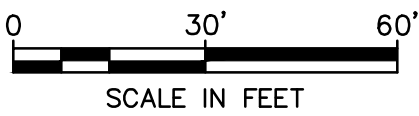
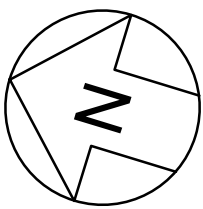
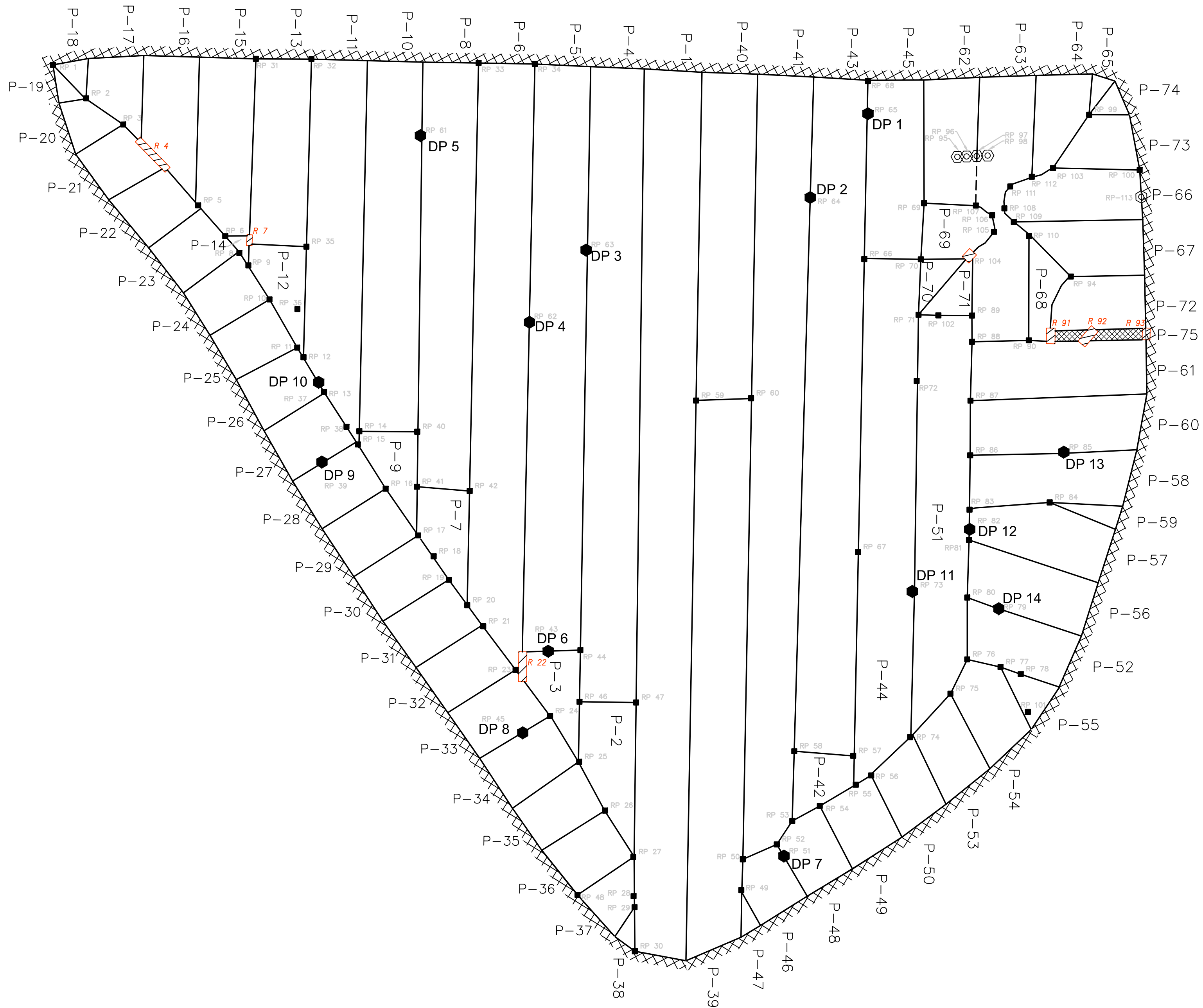
## EAST BASIN PRIMARY GEOMEMBRANE PANEL DRAWING ONONDAGA LAKE SEDIMENT CONSOLIDATION AREA, SEDIMENT MANAGEMENT SYSTEM CAMILLUS, NEW YORK

**Geosyntec**  
consultants

ACTON, MA

DATE:	2012 JULY	SCALE:	AS SHOWN
PROJECT NO.	GJ4706B	FILE NO.	
DOCUMENT NO.		FIGURE NO.	1 of 4

T:\PROJECTS\CADD\ONONDAGA LAKE\SW\SEDMAN\SYS.EAST - WEST BASIN\AS-BUILT\_PRIMARY



LEGEND

	PIPE PENETRATION
	GEOMEMBRANE PANEL
	PATCH REPAIR
	DESTRUCTIVE SAMPLE (PASS)
	DESTRUCTIVE SAMPLE (FAIL)
	CAPPED SEAM
	LINER SEAM
	ANCHOR TRENCH
	SKIRT REPAIR

NOTES:  
1. PANEL LOCATIONS BASED ON FIELD SURVEYS CONDUCTED BY PARSONS FIELD PERSONNEL USING GLOBAL POSITION SYSTEM (GPS) DURING THE INSTALLATION. PANELS ARE SHOWN AS MEASURED BY THE SURVEY (I.E. TWO DIMENSIONS).

WEST BASIN PRIMARY  
GEOMEMBRANE PANEL DRAWING  
ONONDAGA LAKE SEDIMENT CONSOLIDATION  
AREA, SEDIMENT MANAGEMENT SYSTEM  
CAMILLUS, NEW YORK

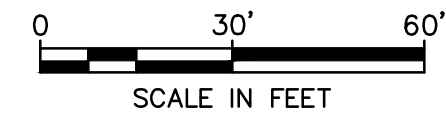
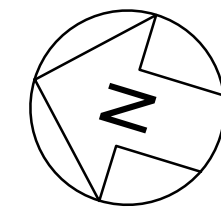
Geosyntec  
consultants

ACTON, MA

DATE:	2012 JULY	SCALE:	AS SHOWN
PROJECT NO.	GJ4706B	FILE NO.	
DOCUMENT NO.		FIGURE NO.	2 of 4



T:\PROJECTS\_CADD\01 ONONDAGA LAKE\DWG\SEDMANYS\1.EAST - WEST BASIN\AS-BUILT-SECONDARY



# LEGEND

	PIPE PENETRATION
	GEOMEMBRANE PANEL
	PATCH REPAIR
	DESTRUCTIVE SAMPLE (PASS)
	DESTRUCTIVE SAMPLE (FAIL)
	CAPPED SEAM
	LINER SEAM
	ANCHOR TRENCH
	SKIRT REPAIR

NOTES:  
1. PANEL LOCATIONS BASED ON FIELD SURVEYS CONDUCTED BY PARSONS FIELD PERSONNEL USING GLOBAL POSITION SYSTEM (GPS) DURING THE INSTALLATION. PANELS ARE SHOWN AS MEASURED BY THE SURVEY (I.E. TWO DIMENSIONS).

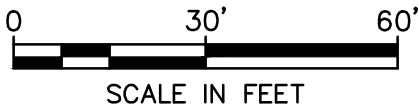
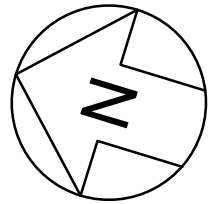
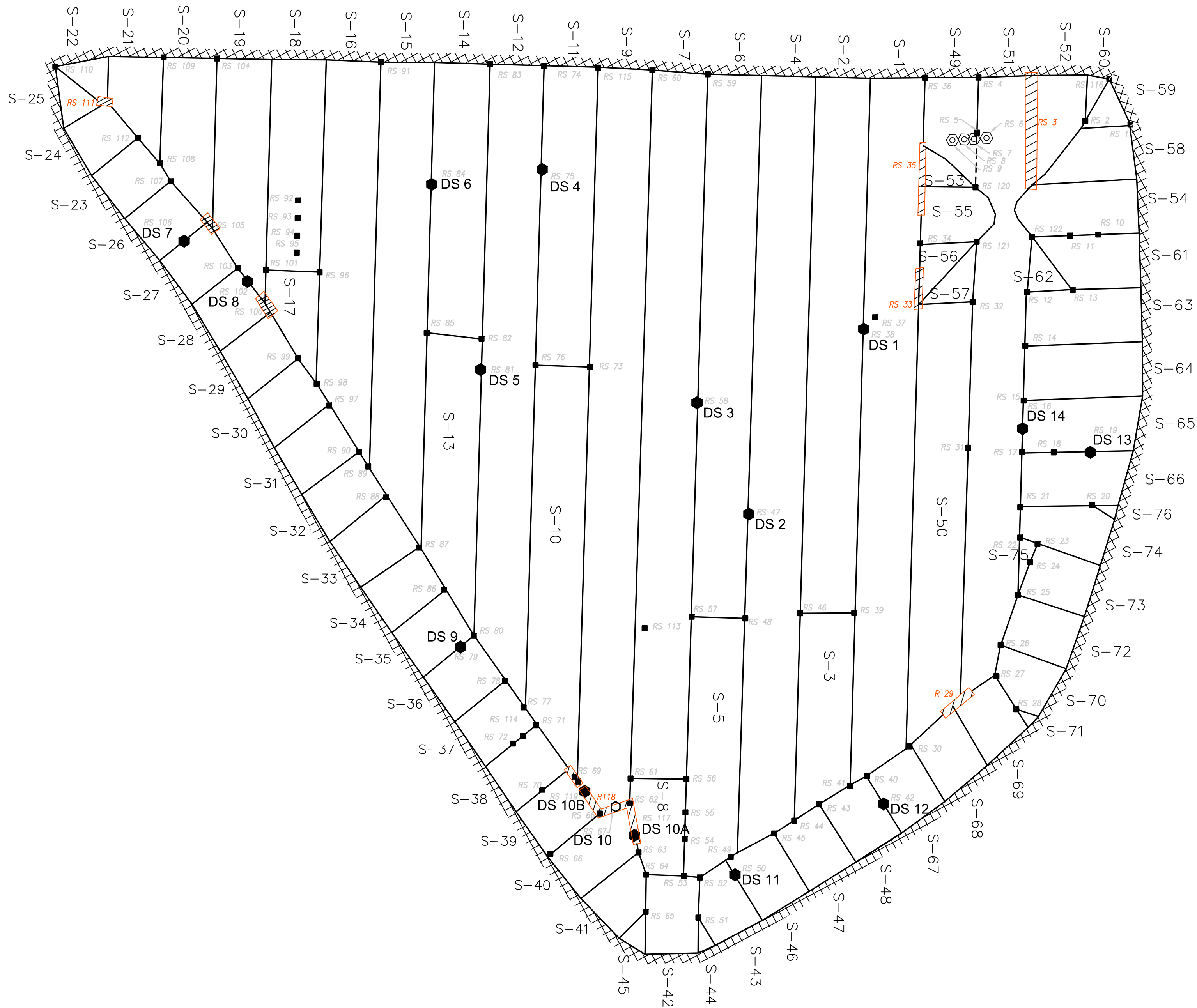
## EAST BASIN SECONDARY GEOMEMBRANE PANEL DRAWING ONONDAGA LAKE SEDIMENT CONSOLIDATION AREA, SEDIMENT MANAGEMENT SYSTEM CAMILLUS, NEW YORK

Geosyntec  
consultants

ACTON, MA

DATE:	2012 JULY	SCALE:	AS SHOWN
PROJECT NO.	GJ4706B	FILE NO.	
DOCUMENT NO.		FIGURE NO.	3 of 4

T:\PROJECTS\2400\ONONDAGA LAKE\SW\SEDMAN\SYS.EAST - WEST BASIN.AS-BUILT-SECONDARY



### LEGEND

	PIPE PENETRATION
	GEOMEMBRANE PANEL
	PATCH REPAIR
	DESTRUCTIVE SAMPLE (PASS)
	DESTRUCTIVE SAMPLE (FAIL)
	CAPPED SEAM
	LINER SEAM
	ANCHOR TRENCH
	SKIRT REPAIR

- NOTES:
- PANEL LOCATIONS BASED ON FIELD SURVEYS CONDUCTED BY PARSONS FIELD PERSONNEL USING GLOBAL POSITION SYSTEM (GPS) DURING THE INSTALLATION. PANELS ARE SHOWN AS MEASURED BY THE SURVEY (I.E. TWO DIMENSIONS).

## WEST BASIN SECONDARY GEOMEMBRANE PANEL DRAWING ONONDAGA LAKE SEDIMENT CONSOLIDATION AREA, SEDIMENT MANAGEMENT SYSTEM CAMILLUS, NEW YORK

**Geosyntec**  
consultants

ACTON, MA

DATE:	2012 JULY	SCALE:	AS SHOWN
PROJECT NO.	GJ4706B	FILE NO.	
DOCUMENT NO.		FIGURE NO.	4 of 4