BLOMBERG BUILDING

Offsite Destructive Testing Locations

Destruct ID: South AB	Date: August 4th, 2017	TRI Chain of custody completed and mailed	Yes	No
Destruct ID: North BC	Date: August 4th, 2017	TRI Chain of custody completed and mailed	Yes	No
Destruct ID: South CD	Date: August 4th, 2017	TRI Chain of custody completed and mailed	Yes	No
Destruct ID: North DE	Date: August 4th, 2017	TRI Chain of custody completed and mailed	Yes	No
Destruct ID: South EF	Date: August 4th, 2017	TRI Chain of custody completed and mailed	Yes	No
Destruct ID: North FG	Date: August 4th, 2017	TRI Chain of custody completed and mailed	Yes	No
Destruct ID: South GH	Date: August 4th, 2017	TRI Chain of custody completed and mailed	Yes	No

Repairs of Sample Cut outs: (Extrusion Weld) 4-8 PSI for Min time of 10 seconds, Observe for Bubbles.

Repair ID: AB North Sample Cut out	Personnel Performing weld: Brandon	Time: 16:48	Date: 07/08/17	Pass	Fail
Repair ID: BC South Sample Cut out	Personnel Performing weld: Brandon	Time: 11:47	Date: 07/12/17	Pass	Fail
Repair ID: CD North Sample Cut out	Personnel Performing weld: Brandon	Time: 7:30	Date: 07/11/17	Pass	Fail
Repair ID: DE South Sample Cut out	Personnel Performing weld: Brandon	Time: 11:52	Date: 07/12/17	Pass	Fail
Repair ID: EF North Sample Cut out	Personnel Performing weld: Brandon	Time: 7:35	Date: 07/11/17	Pass	Fail
Repair ID: FG south Sample Cut out	Personnel Performing weld: Brandon	Time: 11:58	Date: 07/12/17	Pass	Fail
Repair ID: GH North Sample Cut out	Personnel Performing weld: Brandon	Time: 7:50	Date: 07/11/17	Pass	Fail

Repair ID: AB South Sample Cut Out	Personnel Performing weld: Brandon	Time: 11:35	Date: 07/12/17	Pass	Fail
Repair ID: BC North Sample Cut out	Personnel Performing weld: Brandon	Time: 17:22	Date: 07/08/17	Pass	Fail
Repair ID: CD South Sample Cut out	Personnel Performing weld: Brandon	Time: 11:49	Date: 07/12/17	Pass	Fail
Repair ID: DE North Sample Cut out	Personnel Performing weld: Brandon	Time: 17:30	Date: 07/08/17	Pass	Fail
Repair ID: EF South Sample Cut out	Personnel Performing weld: Brandon	Time: 11:55	Date: 07/12/17	Pass	Fail
Repair ID: FG North Sample Cut out	Personnel Performing weld: Brandon	Time: 7:40	Date: 07/11/17	Pass	Fail

Repairs of Holes in HDPE Liner: (Extrusion Weld Vacuum Test) 4-8 PSI for Min time of 10 seconds, Observe for Bubbles.

Repair ID: AB Hole 1	Personnel Performing weld: Niko	Time: 7:41	Date: 07/09/17	Pass	Fail
Repair ID: AB Hole 2	Personnel Performing weld: Niko	Time: 7:48	Date: 07/09/17	Pass	Fail
Repair ID: AB Hole 3	Personnel Performing weld: Niko	Time: 7:55	Date: 07/09/17	Pass	Fail
Repair ID: AB Hole 4	Personnel Performing weld: Niko	Time: 8:06	Date: 07/09/17	Pass	Fail
Repair ID: AB Hole 5	Personnel Performing weld: Niko	Time: 8:20	Date: 07/09/17	Pass	Fail
Repair ID: BC Hole 1	Personnel Performing weld: Brandon	Time: 8:38	Date: 07/09/17	Pass	Fail
Repair ID: BC Hole 2	Personnel Performing weld: Brandon	Time: 9: 05	Date: 07/09/17	Pass	Fail
Repair ID: BC Hole 3	Personnel Performing weld: Brandon	Time: 9:46	Date: 07/09/17	Pass	Fail
Repair ID: BC Hole 4	Personnel Performing weld: Brandon	Time: 9:58	Date: 07/09/17	Pass	Fail

BLOMBERG BUILDING

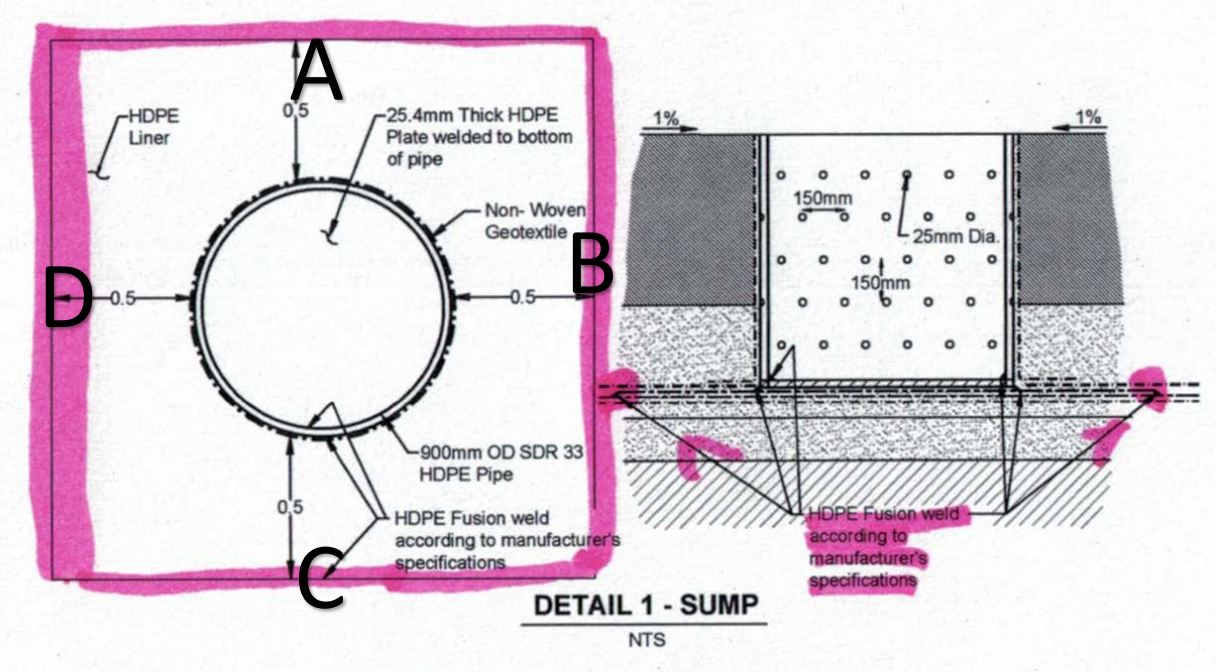
Repair ID: BC Hole 5	Personnel Performing weld: Brandon	Time: 10:32	Date: 07/09/17	Pass	Fail
Repair ID: BC Hole 6	Personnel Performing weld: Brandon	Time: 10:36	Date: 07/09/17	Pass	Fail
Repair ID: EF Hole 1	Personnel Performing weld: Brandon	Time: 11:02	Date: 07/09/17	Pass	Fail
Repair ID: EF Hole 2	Personnel Performing weld: Brandon	Time: 11:19	Date: 07/09/17	Pass	Fail
Repair ID: FG Hole 1	Personnel Performing weld: Brandon	Time: 11:26	Date: 07/09/17	Pass	Fail
Repair ID: FG Hole 2	Personnel Performing weld: Brandon	Time: 11:41	Date: 07/09/17	Pass	Fail
Repair ID: FG Hole 3	Personnel Performing weld: Brandon	Time: 14: 52	Date: 07/09/17	Pass	Fail
Repair ID: GH Hole 1	Personnel Performing weld: Brandon	Time: 15:21	Date: 07/09/17	Pass	Fail
Repair ID: GH Hole 2	Personnel Performing weld: Brandon	Time: 11:57	Date: 07/09/17	Pass	Fail
Repair ID: GH Hole 3	Personnel Performing weld: Brandon	Time: 12: 19	Date: 07/09/17	Pass	Fail
Repair ID: GH Hole 4	Personnel Performing weld: Brandon	Time: 13:25	Date: 07/09/17	Pass	Fail
Repair ID: GH Patch 5	Personnel Performing weld: Brandon	Time: 14:21	Date: 07/09/17	Pass	Fail

Section 3.0 TOP layer of Geotextile

Top Roll: Roll 1	Seam: 1-2	Manufacture date: 4/8/2015	Serial No. 030534037
Top Roll: Roll 2	Seam: 2-3	Manufacture date: 4/8/2015	Serial No. 030534074
Top Roll: Roll 3	Seam: 3-4	Manufacture date: 4/9/2015	Serial No. 030534152
Top Roll: Roll 4	Seam: 4-5	Manufacture date: 11/25/2014	Serial No.030515196
Top Roll: Roll 5	Seam: 5-6	Manufacture date: 11/25/2014	Serial No.030515167
Top Roll: Roll 6	Seam: 6-7	Manufacture date: 08/22/2016	Serial No. FIN24723
Top Roll: Roll 7	Seam: 7-8	Manufacture date: Could not identify	Serial No. Could not identify
Top Roll: Roll 8	Seam: 8-9	Manufacture date: Could not identify	Serial No. Could not identify

Top Roll: Roll 9	Seam: 9-10	Manufacture date: 11/25/2014	Serial No. 030515168
Top Roll: Roll 10	Seam: 10-11	Manufacture date: Could not identify	Serial No. Could not identify
Top Roll: Roll 11	Seam: 11-12	Manufacture date: 4/8/2015	Serial No. 030533989

Section 5.0 SUMP 1 & 2



Extrusion welds from sump base layer to underlying HDPE Liner

Vacuum Box texting (extrusion welding) 4-8 PSI For a min of 10 seconds, observe for bubbles.

Weld ID: Sump A	Person Performing Weld: Niko Blomberg	Time: August 10th, 10:35am	Pass	Fail
Weld ID: Sump B	Person Performing Weld: Niko Blomberg	Time: August 10th, 2:30pm	Pass	Fail

See Pictures in Folder

BLOMBERG BUILDING

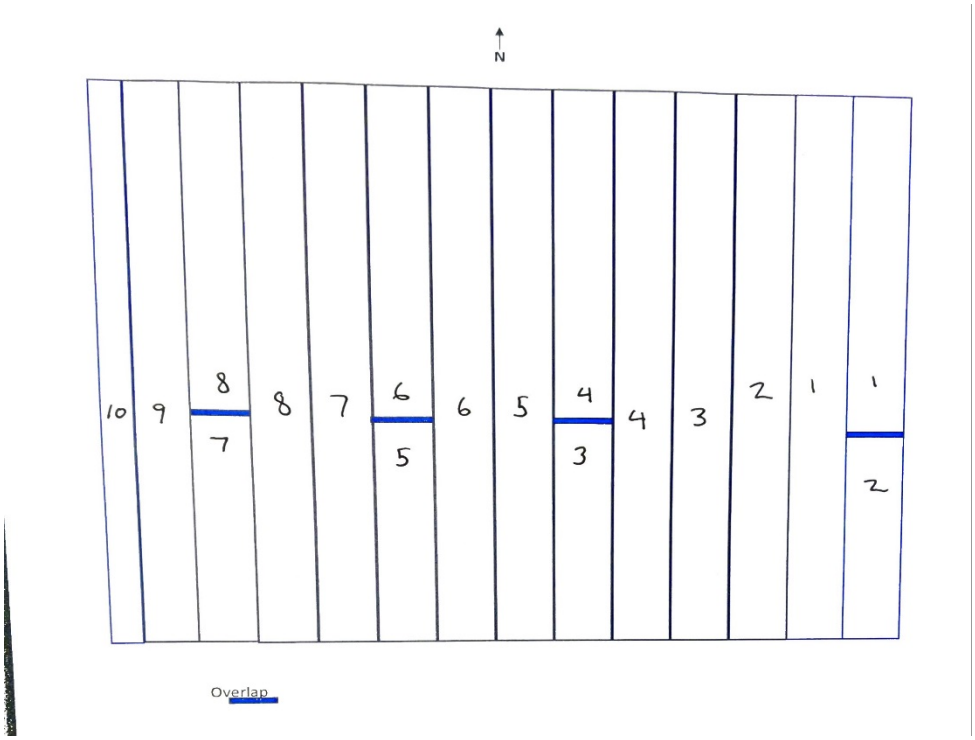
De-Icing Apron

Quality Assurance/Quality Control

Manager/Supervisor: Workers must review and be familiar with seaming Geomembrane and HDPE, Seamer must understand guidelines, testing measures, and equipment used to perform seaming, testing, and repairs.
Company Name: Blomberg Building Group
Site Name: Doris North, Hope Bay
Work area: De-icing containment area
Job/task: HDPE Seam Welding & Sump Installation
Supervisor name: Patrick Frost Signature:

Drawings Referenced: DN-AE-00 - 07

1.0 Base Layer Geotextile



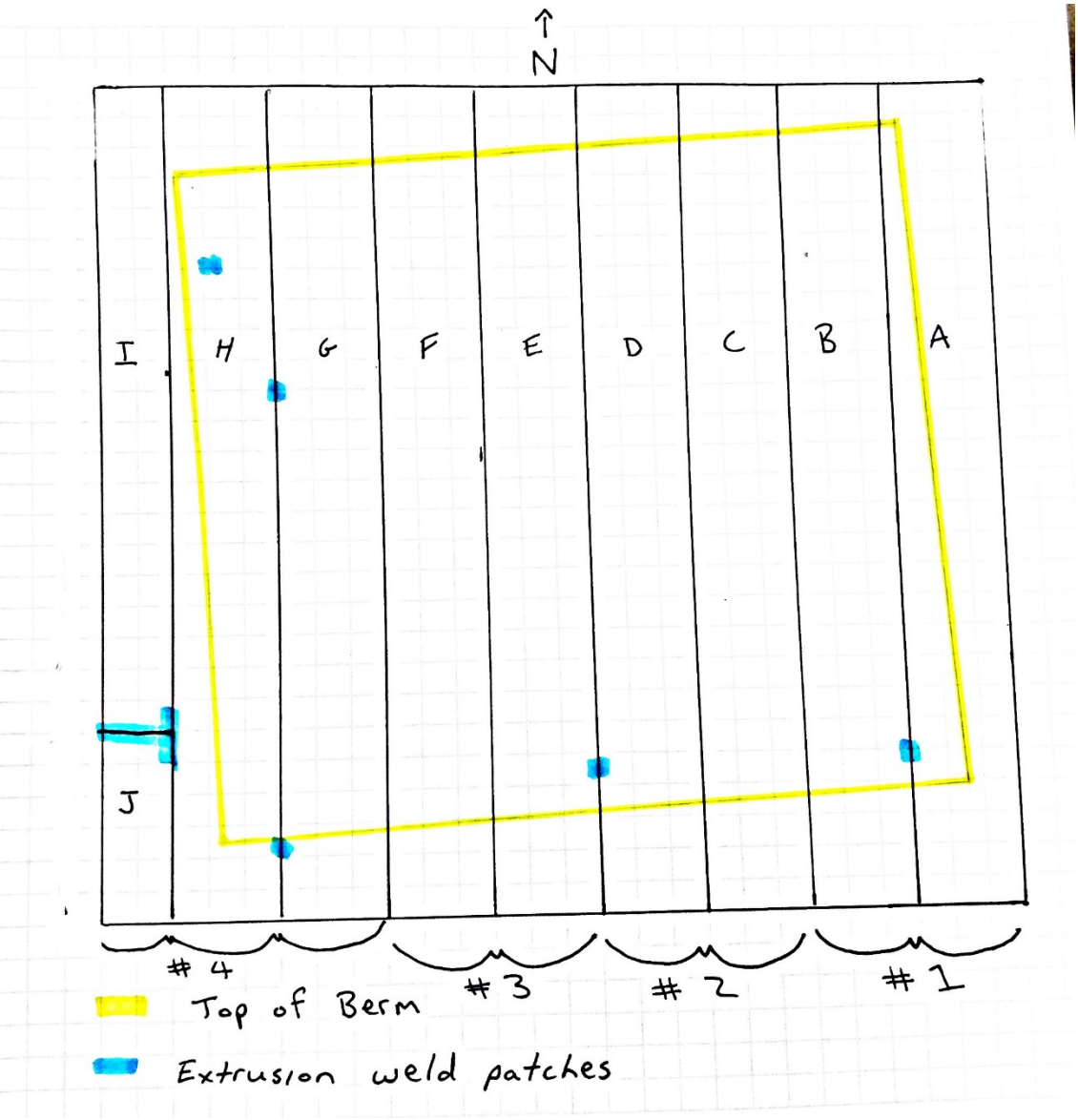
Roll #: 1	Seam ID: 1, 2	Manufacture Date: 17/05/2017	Serial No. 26745Z003103
Roll #: 2	Seam ID: 2, 3	Manufacture Date: 16/05/2017	Serial No. 26745Z001401

BLOMBERG BUILDING

Roll #: 3	Seam ID: 3,5	Manufacture Date: 16/05/2017	Serial No. 26745Z002711
Roll #: 4	Seam ID: 5, 6	Manufacture Date: 16/05/2017	Serial No. 26745Z001371
Roll #: 5	Seam ID: 7, 9	Manufacture Date: 17/05/2017	Serial No. 26745Z003091
Roll #: 6	Seam ID: 8, 9	Manufacture Date: 16/05/2017	Serial No. 26745Z002741
Roll #: 7	Seam ID: 10, 12	Manufacture Date: 28/02/2017	Serial No. 26745Z004911
Roll #: 8	Seam ID: 11, 12	Manufacture Date: 17/05/2017	Serial No. 26745Z002971
Roll #: 9	Seam ID: 13	Manufacture Date: 16/05/2017	Serial No. 26745Z001331
Roll #: 10	Seam ID: N/A	Manufacture Date: 17/05/2017	Serial No.26745Z003271

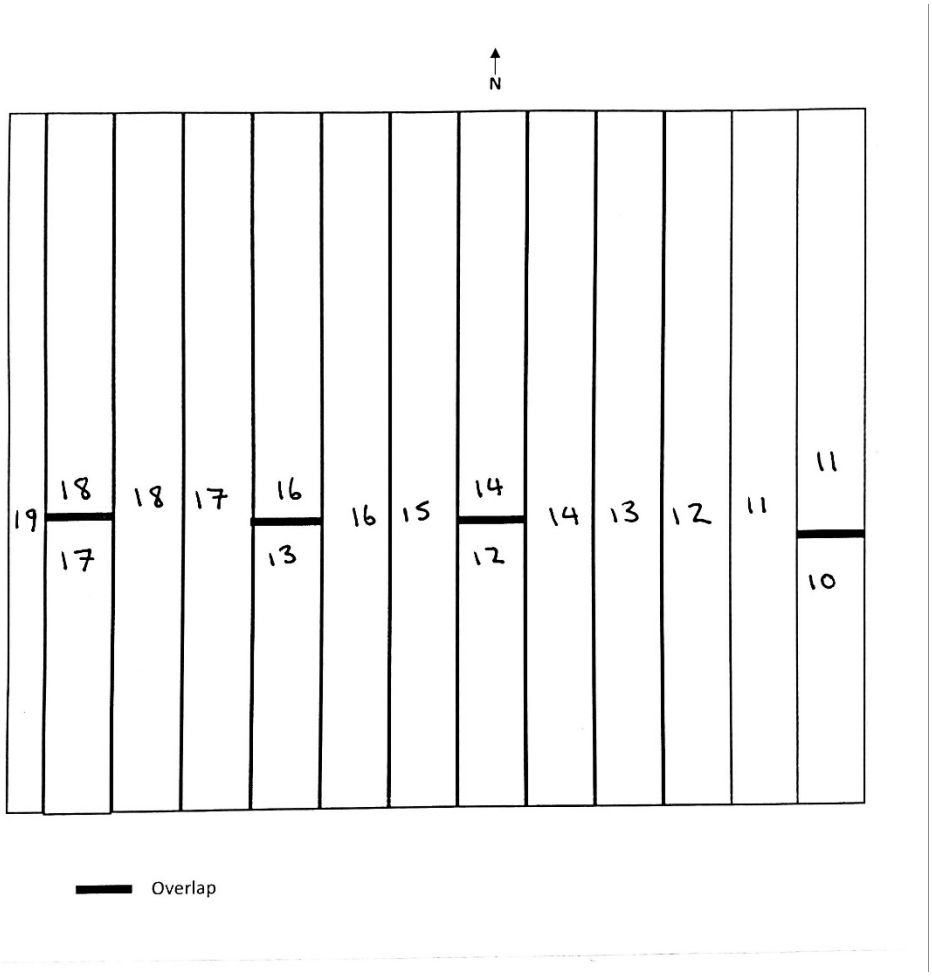
See Pictures In folder

2.0 HDPE Membrane



Roll No. 1: A & B	Serial No. 5-16203	Manufacture date: 20/07/2015	Thickness: 60MIL
Roll No. 2: C & D	Serial No. 1-111557	Manufacture date: 3/01/2014	Thickness: 60MIL
Roll No. 3: E & F	Serial No. 5-16207	Manufacture date: 20/07/2015	Thickness: 60MIL
Roll No. 4: G, H, I, & J	Serial No. 5-16204	Manufacture date: 20/07/2015	Thickness: 60MIL

3.0 Top Layer Geotextile



Roll #: 11	Seam ID: 1,2	Manufacture Date: 16/05/2017	Serial No. 26745Z001231
Roll #: 12	Seam ID: 3, 6	Manufacture Date: 17/05/2017	Serial No. 26745Z002931
Roll #: 13	Seam ID: 4, 9	Manufacture Date: 16/05/2017	Serial No. 26745Z002391
Roll #: 14	Seam ID: 5, 6	Manufacture Date: 16/05/2017	Serial No. 26745Z003251
Roll #: 15	Seam ID: 7	Manufacture Date: 16/05/2017	Serial No. 26745Z003211
Roll #:16	Seam ID: 8, 9	Manufacture Date: 16/05/2017	Serial No. 26745Z002941

Roll #: 17	Seam ID: 10, 12	Manufacture Date: 16/05/2017	Serial No. 26745Z002211
Roll #: 18	Seam ID: 11, 12	Manufacture Date: 16/05/2017	Serial No. 26745Z001541
Roll #: 19	Seam ID: N/A	Manufacture Date: 16/05/2017	Serial No. 26745Z002471

See Pictures In folder

4.0 Sump Installation

*Waiting on perforated sump to arrive to site.

ALL TESTING DOCUMENTATION CAN BE FOUND IN BBG HDPE DE-ICING APRON FOLDER

Non-Destructive Tests

Air Channel Testing (Hot wedge welds) 5 Min Test at 30 PSI, down 2-3 PSI max. Circle Pass or Fail.

Seam ID: A/B	Seam Tester ID: CW617N 200-CWP PN 15	Person performing Test: Jeff	Pressure loss (PSI): 0	Pass	Fail
Seam ID: B/C	Seam Tester ID: CW617N 200-CWP PN 15	Person performing Test: Jeff	Pressure loss (PSI): 2	Pass	Fail
Seam ID: C/D	Seam Tester ID: CW617N 200-CWP PN 15	Person performing Test: Jeff	Pressure loss (PSI): 0	Pass	Fail
Seam ID: D/E	Seam Tester ID: CW617N 200-CWP PN 15	Person performing Test: Jeff	Pressure loss (PSI): 0	Pass	Fail
Seam ID: E/F	Seam Tester ID: CW617N 200-CWP PN 15	Person performing Test: Jeff	Pressure loss (PSI): 0	Pass	Fail
Seam ID: F/G	Seam Tester ID: CW617N 200-CWP PN 15	Person performing Test: Jeff	Pressure loss (PSI): 0	Pass	Fail
Seam ID: G/H	Seam Tester ID: CW617N 200-CWP PN 15	Person performing Test: Jeff	Pressure loss (PSI): 0	Pass	Fail
Seam ID: H/I	Seam Tester ID: CW617N 200-CWP PN 15	Person performing Test: Jeff	Pressure loss (PSI): 0	Pass	Fail
Seam ID: H/J	Seam Tester ID: CW617N 200-CWP PN 15	Person performing Test: Jeff	Pressure loss (PSI): 0	Pass	Fail

Onsite Destructive Testing Locations (Every 450M Min), 5 Peel and 5 shear tests done onsite. 5 Peel and 5 shear tests sent to independent lab. Unit of measurement is pounds per inch (ppi).

E/F South		**1**	**2**	**3**	**4**	**5**	**MEAN**
E	Peel strength (ppi)	136	122	121	124	117	124
	Peel separation %	<5	<5	<5	<5	<5	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel Failure Code	FTB	FTB	FTB	FTB	FTB	
F	Peel strength (ppi)	104	106	106	106	102	104.8

	Peel separation %	<5	<5	<5	<5	<5	
	Shear strength (ppi)	166	162	171	151	162	162.4
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel Failure Code	FTB	FTB	FTB	FTB	FTB	
D/E South		**1**	**2**	**3**	**4**	**5**	**MEAN**
D	Peel strength (ppi)	118	114	117	102	126	115.4
	Peel separation %	<5	<5	<5	<5	<5	
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel Failure Code	FTB	FTB	FTB	FTB	FTB	
E	Peel strength (ppi)	123	119	120	21	113	119.2
	Peel separation %	<5	<5	<5	<5	<5	
	Shear strength (ppi)	169	159	167	160	142	159.4
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel Failure Code	FTB	FTB	FTB	FTB	FTB	

Offsite Destructive Testing Locations

Destruct ID: E/F South	Date: Cut out on the 14th	TRI Chain of custody completed and mailed	Yes	No
Destruct ID: D/E South	Date: Cut out on the 14th	TRI Chain of custody completed and mailed	Yes	No

Repairs of Sample Cut outs: (Extrusion Weld Vacuum Test) 4-8 PSI for Min time of 10 seconds, Observe for Bubbles.

Repair ID: D/E South	Personnel Performing weld: Patrick and Chris	Time: 9:40	Date: 18/12/2017	Pass	Fail
Repair ID: E/F South	Personnel Performing weld: Niko	Time: 3:00	Date: 14/12/2017	Pass	Fail

Repairs of Holes in HDPE Liner: (Extrusion Weld Vacuum Test) 4-8 PSI for Min time of 10 seconds, Observe for Bubbles.

Repair ID: A/B South Berm	Personnel Performing weld: Niko	Time: 2:30	Date: 14/12/2017	Pass	Fail
Repair ID: G/H South Berm	Personnel Performing weld: Patrick and Chris	Time: 10:30	Date: 18/12/2017	Pass	Fail
Repair ID: G/H Mid Seam	Personnel Performing weld: Patrick and Chris	Time: 10:55	Date: 18/12/2017	Pass	Fail
Repair ID: I/H/J West Berm	Personnel Performing weld: Patrick and Chris	Time: 11:30	Date: 18/12/2017	Pass	Fail
Repair ID: H bottom of North Berm	Personnel Performing weld: Chris and Bailey	Time: 12:00	Date: 21/12/2017	Pass	Fail

Attachment 4
QA/QC Data

Attachment 4.3
Doris North Airstrip De-icing Apron QA/QC Data

SHIPPING ADDRESS:
TRI/Environmental, Inc.
A Texas Research International Company
9063 Bee Caves Road, Austin, Texas 78733-6201

GEOSYNTHETIC TESTING LABORATORIES
1-800-880-8378
FAX: 512 263 2558

CHAIN OF CUSTODY/TEST REQUEST FORM - DESTRUCTIVE SEAMS

Page ____ of ____

REPORT RESULTS TO:

Client Contact: Eric Blomberg	**Client Phone/Fax:** 604 841 9858
Client Company: Blomberg building group	**Client Field Phone:/Fax:** 867 988 6882 ext. 134
Project Name: TLR catch basin	**Project Number:** TLR catch basin
Client Mailing Address: 1112 Lenora rd, Bowen Island	**E-mail:** Eric@Blombergbuilding.com
Client City, State, Zip: British colombia, canada, V0N1G1	**Shipped by:** ground **Date:** Jan 17/18

SEND INVOICE TO:

COMPLETE ONLY IF DIFFERENT FROM ABOVE	**Phone:**
Client Contact:	**Fax:**
Client Company:	**Client P.O. #:**
Client Mailing Address:	**E-mail:**
Client City, State, Zip:	**Shipped by:** **Date:**

Geomembrane Seams:

	Sample Identification	Top Panel No.	Bottom Panel No.	Machine Number	Resin Type (ex: HDPE)	Weld Type	Welder (personnel)	Date / Time Sampled
1	TLR-AB South	A	B	PW3627	HDPE	wedge	ZANE	17/08/17
2	TLR-BC North	C	B	"	"	"	"	"
3	TLR-CD South	D	C	"	"	"	"	"
4								
5								
6								
7								
8								
9								
10								

Remarks:

Standard Test Methods: (ASTM D 6392), D 4437, D413, D751) **Please circle requested test procedure**

PLEASE CONTACT TRI WITH QUESTIONS REGARDING APPROPRIATE TEST PROCEDURES

"As-Received" Notes:

TRI Log. Number:
Due Date:

PLEASE AUTHORIZE BY SIGNING AND DATING BELOW:

NAME: Eric Blomberg **SIGNATURE/DATE:**

Date: 2018-01-25

Mail To:
Eric Blomberg
Blomberg Building
1112 Lenora Rd
Bowen Island , BC , V0N 1G1

Bill To:

Blomberg Building

e-mail:eric@blombergbuilding.com

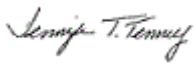
Dear Mr. Blomberg,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**TLR Catch Basin**
TRI Job Reference Number:	**35072**
Material(s) Tested:	(3) Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,



Jennifer Tenney
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: Blomberg Building
Project: TLR Catch Basin

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 35072

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: South-AB | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	119	127	132	115	126	**124**
Peel Incursion (%)	100	30	30	100	40	
Peel Locus Of Failure Code	AD	AD-BRK	AD-BRK	AD	AD-BRK	
Peel NSF Failure Code	NON-FTB	FTB	FTB	NON-FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	128	129	120	122	132	**126**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	168	172	167	167	164	**168**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: North-BC | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	125	127	120	116	124	**122**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	134	140	134	130	134	**134**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	172	175	173	172	170	**172**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: Blomberg Building
Project: TLR Catch Basin

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 35072

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: South-CD | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	65	37	40	43	79	**53**
Peel Incursion (%)	100	100	100	100	100	
Peel Locus Of Failure Code	AD	AD	AD	AD	AD	
Peel NSF Failure Code	NON-FTB	NON-FTB	NON-FTB	NON-FTB	NON-FTB	
Side: B						**Peel B**
Peel Strength (ppi)	114	121	124	126	127	**122**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	174	176	174	172	171	**173**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

Attachment 4.2
Doris North Reagent Pad QA/QC Data

SHIPPING ADDRESS:
TRI/Environmental, Inc.
A Texas Research International Company
9063 Bee Caves Road, Austin, Texas 78733-6201

GEOSYNTHETIC TESTING LABORATORIES
1-800-880-8378
FAX: 512 263 2558

CHAIN OF CUSTODY/TEST REQUEST FORM - DESTRUCTIVE SEAMS

REPORT RESULTS TO:

Client Contact: Eric Blomberg	Client Phone/Fax: 604-841-9858
Client Company: BLOMBERG BUILDING GROUP	Client Field Phone:/Fax:
Project Name: HOPE BAY (TMAC)	Project Number: TLR REAGENT
Client Mailing Address: 1112 Lenora Rd. Bowen Island	E-mail: Eric@blombergbuilding.com
Client City, State, Zip: British Columbia, Canada V0N1G1	Shipped by: Ground Date: July 16/17

SEND INVOICE TO:

COMPLETE ONLY IF DIFFERENT FROM ABOVE	Phone:
Client Contact:	Fax:
Client Company:	Client P.O. #:
Client Mailing Address:	E-mail:
Client City, State, Zip:	Shipped by: Date:

	Geomembrane Seams Sample Identification	Top Panel No.	Bottom Panel No.	Machine Number	Resin Type (ex: HDPE)	Weld Type	Welder (personnel)	Date / Time Sampled
1	Test#1 South AB	B	A	PW36174	Textured HDPE 55	Wedge	Niko B	July 5/17 9:00am
2	Test#2 North BC	C	B	"	"	"	"	July 5/17 6:00pm
3	Test#3 South CD	D	C	"	"	"	"	July 5/17 "
4	Test#4 North DE	E	D	"	"	"	"	July 5/17 "
5	Test#5 South EF	F	E	"	"	"	"	July 5/17 "
6	Test#6 North FG	G	F	"	"	"	"	July 5/17 "
7	Test#7 South GH	H	G	"	"	"	"	July 5/17 "
8								
9								
10								

Remarks:

Standard Test Methods: (ASTM D 6392), D 4437 , D413 , D751) Please circle requested test procedure

PLEASE CONTACT TRI WITH QUESTIONS REGARDING APPROPRIATE TEST PROCEDURES

"As-Received" Notes:

TRI Log. Number:
Due Date:

PLEASE AUTHORIZE BY SIGNING AND DATING BELOW.

NAME: Eric Blomberg SIGNATURE/DATE:

Date: 2017-12-13

Mail To:
Eric Blomberg
Blomberg Building
1112 Lenora Rd
Bowen Island , BC , V0N 1G1

Bill To:

Blomberg Building

e-mail:eric@blombergbuilding.com

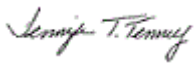
Dear Mr. Blomberg,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**Hope Bay TMAC**
TRI Job Reference Number:	**34389**
Material(s) Tested:	(7) Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

If you have any questions or require any additional information, please call us at 1-800-880-8378.
Sincerely,



Jennifer Tenney
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: Blomberg Building
Project: Hope Bay TMAC

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 34389

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: TEST-1 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	118	120	121	116	117	**118**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	142	141	128	144	140	**139**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	176	178	174	176	174	**176**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: TEST-2 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	132	119	94	119	122	**117**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	113	120	119	117	119	**118**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	178	179	179	181	181	**180**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: Blomberg Building
Project: Hope Bay TMAC

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 34389

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: TEST-3 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	124	124	124	119	125	**123**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	115	129	132	147	117	**128**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	178	178	177	179	181	**179**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: TEST-4 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	124	122	123	123	125	**123**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	123	109	114	137	137	**124**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	176	179	176	178	177	**177**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: Blomberg Building
Project: Hope Bay TMAC

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 34389

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: TEST-5 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	122	130	126	126	129	**127**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	125	119	123	121	117	**121**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	167	174	174	172	173	**172**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: TEST-6 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	138	151	140	150	150	**146**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	128	128	130	100	136	**124**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	164	166	163	162	161	**163**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: Blomberg Building
Project: Hope Bay TMAC

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 34389

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: TEST-7 | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	121	115	127	119	123	**121**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	128	135	119	144	126	**130**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	172	174	175	174	173	**174**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

Attachment 4.3
Doris North Airstrip De-icing Apron QA/QC Data

SHIPPING ADDRESS:
TRI/Environmental, Inc.
A Texas Research International Company
9063 Bee Caves Road, Austin, Texas 78733-6201

GEOSYNTHETIC TESTING LABORATORIES
1-800-880-8378
FAX: 512 263 2558

CHAIN OF CUSTODY/TEST REQUEST FORM - DESTRUCTIVE SEAMS

Page ____ of ____

REPORT RESULTS TO:

Client Contact: Eric Blomberg	**Client Phone/Fax:** 604 841 9858
Client Company: Blomberg Building group	**Client Field Phone:/Fax:** 867 988 6882 ext 134
Project Name: De-icing apron	**Project Number:** De-icing area
Client Mailing Address: 1112 Lenora Rd, Bowen Island	**E-mail:** Eric@Blombergbuilding.com
Client City, State, Zip: British colombia, Canada, V0N1g1	**Shipped by:** Ground **Date:** Jan 17/18

SEND INVOICE TO:

SOMEONE ELSE IF DIFFERENT FROM ABOVE	**Phone:**
Client Contact:	**Fax:**
Client Company:	**Client P.O. #:**
Client Mailing Address:	**E-mail:**
Client City, State, Zip:	**Shipped by:** **Date:**

	Sample Identification	Top Panel No.	Bottom Panel No.	Machine Number	Resin Type (ex: HDPE)	Weld Type	Welder (personnel)	Date / Time Sampled
1	De-icing, North BA	B	A	PW3627	HDPE	Wedge	Niko	12/12/17
2	De-icing, South DE	D	E	"	"	"	Niko	14/12/17
3	De-icing, South EF	E	F	"	"	"	Niko	14/12/17
4								
5								
6								
7								
8								
9								
10								

Remarks:

Standard Test Methods: (ASTM D 6392), D 4437 , D413 , D751) **Please circle requested test procedure**

PLEASE CONTACT TRI WITH QUESTIONS REGARDING APPROPRIATE TEST PROCEDURES

"As-Received" Notes:

TRI Log. Number:
Due Date:

PLEASE AUTHORIZE BY SIGNING AND DATING BELOW

NAME: Eric Blomberg **SIGNATURE/DATE:**

Date: 2018-01-25

Mail To:
Eric Blomberg
Blomberg Building
1112 Lenora Rd
Bowen Island , BC , V0N 1G1

Bill To:

Blomberg Building

e-mail:eric@blombergbuilding.com

Dear Mr. Blomberg,

Thank you for consulting with TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**De Icing Apron**
TRI Job Reference Number:	**35068**
Material(s) Tested:	(3) Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)

Codes:	
AD	Adhesion Failure (100% Peel)
BRK	Break in sheeting away from Seam edge.
SE	Break in sheeting at edge of seam.
AD-BRK	Break in sheeting after some adhesion failure - partial peel.
SIP	Separation in the plane of the sheet (leaving the bond intact).
FTB	Film tearing bond (all non "AD" failures).
NON-FTB	100% peel.

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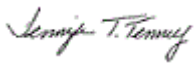
Sincerely,



Jennifer Tenney
Project Manager
Geosynthetic Services Division
http://www.geosyntheticstestinc.com

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: Blomberg Building
Project: De Icing Apron

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 35068

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: North-BA | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	116	125	120	129	123	**123**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	136	111	115	136	132	**126**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	167	165	170	156	168	**165**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	
Sample ID: Sourth-DE | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	117	105	126	104	85	**107**
Peel Incursion (%)	<5	<5	<5	<5	10	
Peel Locus Of Failure Code	SE	SE	SE	SE	AD-BRK	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	130	124	117	120	121	**122**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	163	163	161	161	159	**161**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS
TRI Client: Blomberg Building
Project: De Icing Apron

Material: 60 mil. HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54/882 mod.)
TRI Log#: 35068

	TEST REPLICATE NUMBER					
PARAMETER	1	2	3	4	5	MEAN
Sample ID: Sourth-EF | Weld: Heat Fusion						
Side: A						**Peel A**
Peel Strength (ppi)	132	126	131	125	122	**127**
Peel Incursion (%)	<5	<5	<5	<5	<5	
Peel Locus Of Failure Code	SE	SE	SE	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Side: B						**Peel B**
Peel Strength (ppi)	126	128	88	121	119	**116**
Peel Incursion (%)	<5	<5	5	<5	<5	
Peel Locus Of Failure Code	SE	SE	AD-BRK	SE	SE	
Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB	
Shear						**Shear**
Shear Strength (ppi)	161	162	162	159	158	**160**
Shear Elongation @ Break (%)	>50	>50	>50	>50	>50	