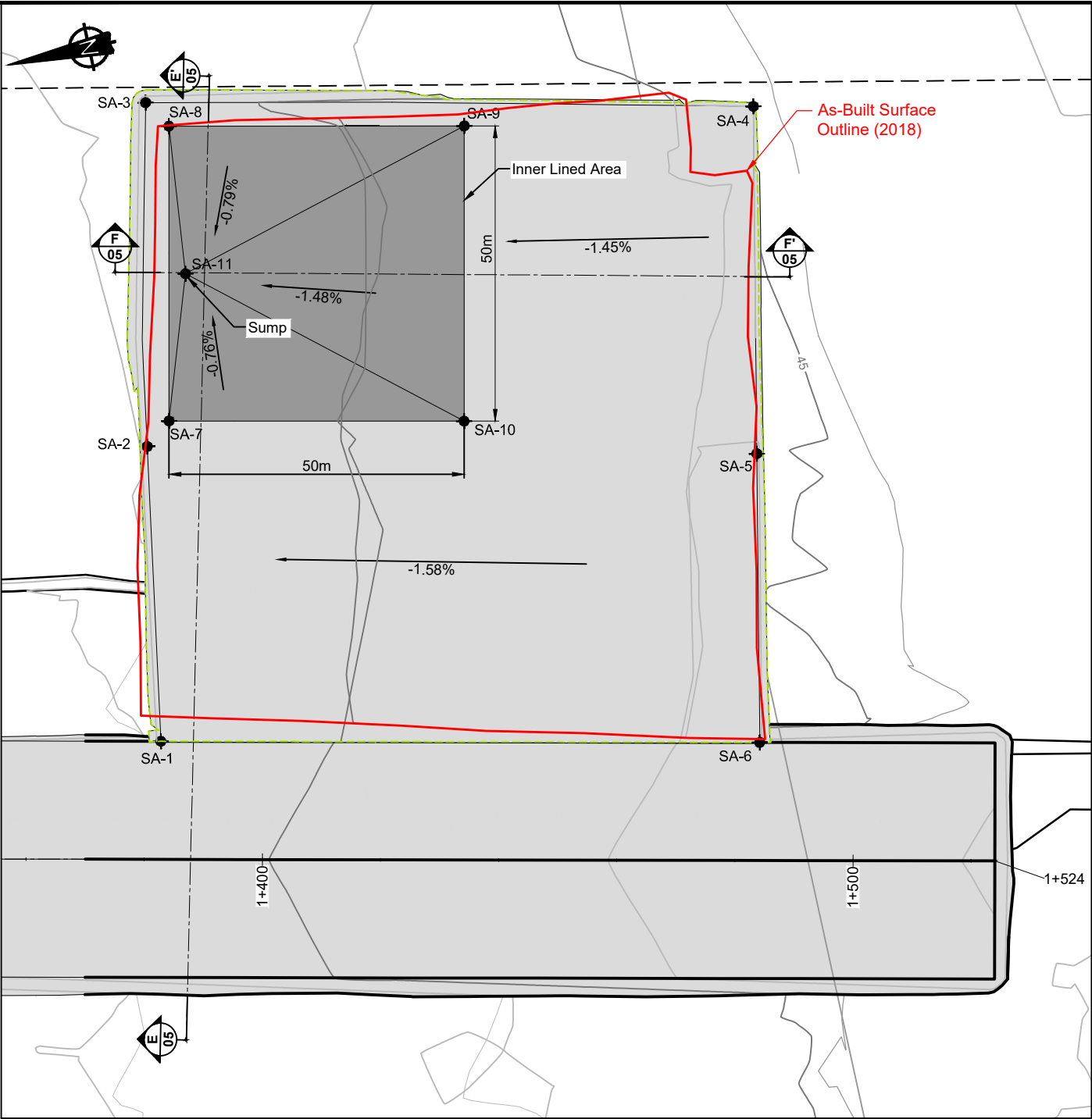




AIRSTRIp EXPANSION
SOUTH APRON FINAL LAYOUT

0 5 10 15 20 25
Scale in Metres

SOUTH APRON FINAL LAYOUT STAKEOUT POINTS:

ID	Northing (m)	Easting (m)	Elevation (m)
SA-1	7,561,102.67	432,824.17	44.47
SA-2	7,561,094.24	432,873.46	44.66
SA-3	7,561,082.03	432,930.39	44.73
SA-4	7,560,981.66	432,907.72	46.00
SA-5	7,560,993.69	432,850.11	46.19
SA-6	7,561,003.68	432,802.26	46.24
SA-7	7,561,089.71	432,876.87	44.67
SA-8	7,561,079.03	432,925.64	44.67
SA-9	7,561,030.18	432,914.97	45.25
SA-10	7,561,040.91	432,866.14	45.25
SA-11	7,561,081.64	432,900.64	44.55

PLAN VIEW

- Proposed Airstrip Expansion
- Lease Boundary
- Stakeout Point
- 0+000

Chainage
- Existing Roads and Infrastructure
- Lakes, Ponds or Permanent Water Bodies

AB	AS-BUILT	CH	EMR	10Sep18
1	SOUTH APRON UPDATES	MMM	EMR	7Oct16
0	SOUTH APRON UPDATES	MMM	EMR	4Oct16
NO.	DESCRIPTION	CHK'D	APP'D	DATE



DESIGN:	-	DRAWN:	VJG	REVIEWED:	CH
CHECKED:	CH	APPROVED:	EMR	DATE:	Sep. 10, 2018



DORIS NORTH PROJECT

Airstrip Expansion

DRAWING TITLE:
Airstrip Expansion South Apron
Final Layout and Stakeout Points

DRAWING NO. DN-AE-07	SHEET 8 OF 8	REVISION NO. AB
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Z:\01 SITE\Slipway Bay\ACA\2018 Drawings\As-Built\02 South Apron\1CT022.005.300_ND-AE-07_AB.dwg

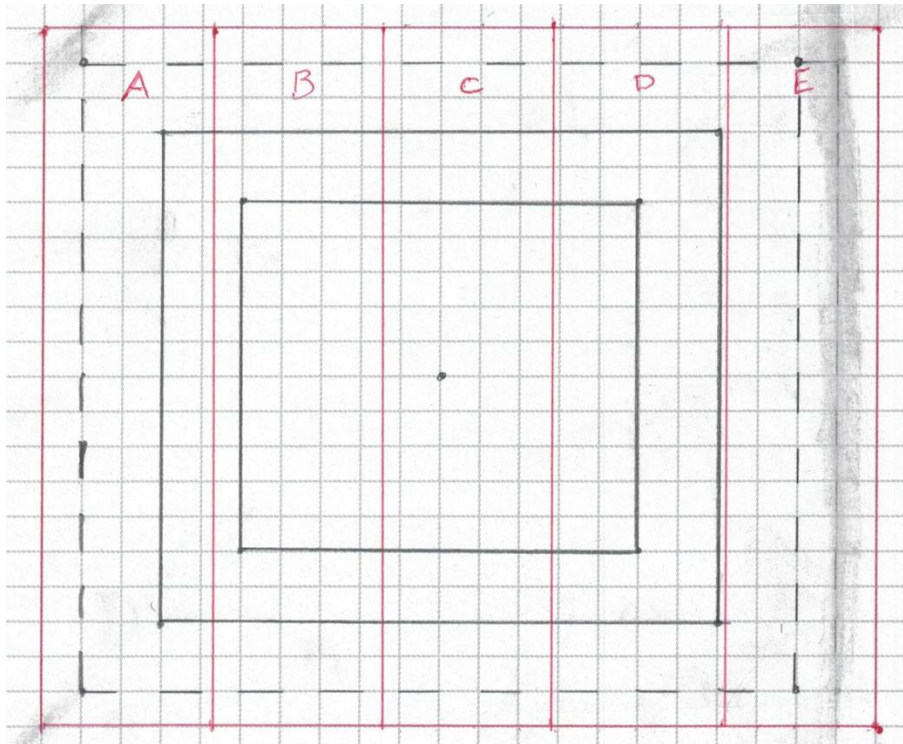
Tailings Catch Basin

Quality Assurance/Quality Control

Manager/Supervisor: Workers must review and be familiar with seaming Geomembrane processes, Seamer must understand guidelines, testing measures, and equipment used to preform seaming, testing and repairs.	
Company Name: Blomberg Building Group	
Site Name: Doris North, Hope bay	
Work area: TLR Tailings Catch Basin	
Job/task: HDPE Seam Welding	
Supervisor name: Eric Blomberg	Signature:

Preparation of tailings catch basin were done by NUNA Contacting, reference Drawings TCB-DN-02 for Earthworks and Geomembrane Layouts. Drawings Below are Rough Fits for Geotextile and HDPE Geomembrane.

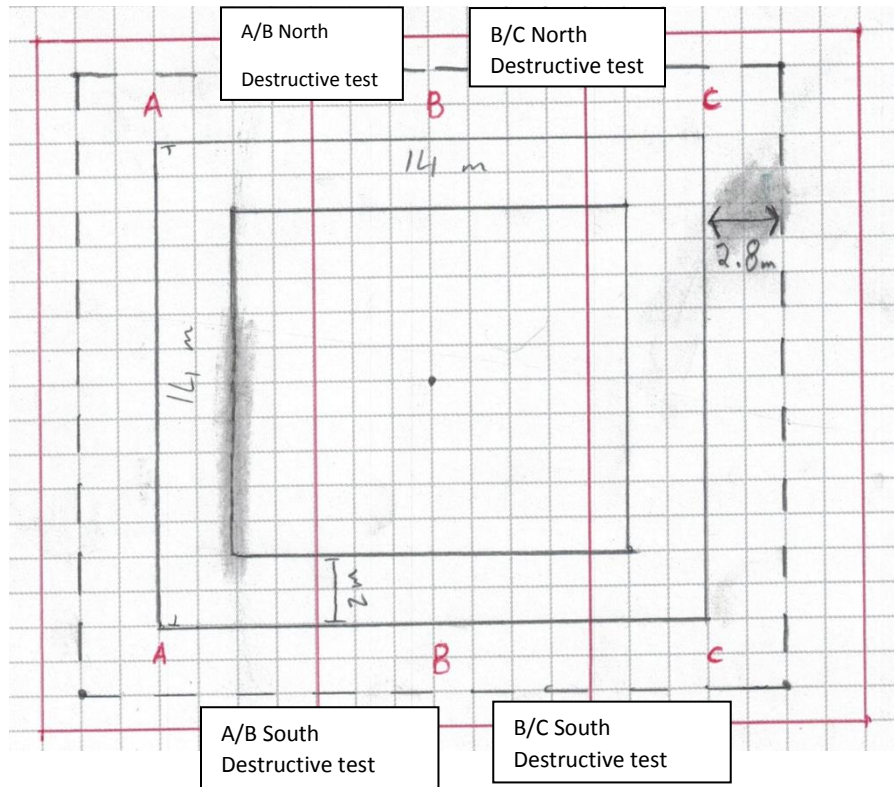
Section 1.0 Geo textile





Roll # Panel: A	Seam: A-B	Manufacture date: 2016-08-22	Serial No. Q34U00481
Roll # Panel: B	Seam: B-C	Manufacture date: 2015-04-08	Serial No. 030534037
Roll # Panel: C	Seam: C-D	Manufacture date: 2015-11-25	Serial No.030515196
Roll # Panel: D	Seam: D-E	Manufacture date: 2015-04-08	Serial No.030534074
Roll # Panel: E	Seam: E-F	Manufacture date: 2015-04-08	Serial No. 030533989

Section 2.0 HDPE



Roll #1: Panel: A,B,C Type:	Type: Textured SS HDPE	Serial No. 1-93602	Date Manufactured: No Roll Tag	Thickness: 60 mils
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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: Panel AB	Seam Tester ID: Manometer	Time: August 16 th , 9:45am	Pressure loss: 0	Pass	Fail
Seam ID: Panel BC	Seam Tester ID: Manometer	Time: August 16 th , 10:20am	Pressure loss: 0	Pass	Fail
Seam ID: Panel BC	Seam Tester ID: Manometer	Time: August 16 th , 10:31am	Pressure loss: 0	Pass	Fail



Destructive tests

Onsite Destructive Testing Locations (Every 500 Ft Min), 5 Peel and 5 shear tests done onsite. 5 Peel and 5 shear tests sent to independent lab.

Destruct ID: North AB	Seam ID: Panel AB	Welder ID: PW3627	TEST 1
Destruct ID: South BC	Seam ID: Panel BC	Welder ID: PW3627	TEST 2
North CD	Seam ID: Panel CD	Welder ID: PW3627	Test 3

Onsite Destructive Test Results

A/B North		1	2	3	4	5
A	Peel strength (ppi)	131	116	125	113	98
	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
B	Peel strength (ppi)	100	119	101	110	107
	Peel separation %	<5	<5	<5	<5	<5
	Shear strength (ppi)	167	173	170	164	161
	Peel Locus of Failure Code	SE	SE	SE	SE	SE
	Peel Failure Code	FTB	FTB	FTB	FTB	FTB
B/C South		1	2	3	4	5
B	Peel strength (ppi)	98	106	113	108	109
	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
C	Peel strength (ppi)	125	141	115	127	122
	Peel separation %	<5	<5	<5	<5	<5
	Shear strength (ppi)	171	169	175	165	174
	Peel Locus of Failure Code	SE	SE	SE	SE	SE
	Peel Failure Code	FTB	FTB	FTB	FTB	FTB
C/D North		1	2	3	4	5
C	Peel strength (ppi)	116	122	96	96	108
	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
D	Peel strength (ppi)	127	114	111	121	105
	Peel separation %	<5	<5	<5	<5	<5
	Shear strength (ppi)	116	123	170	178	173
	Peel Locus of Failure Code	SE	SE	SE	SE	SE
	Peel Failure Code	FTB	FTB	FTB	FTB	FTB

Offsite Destructive Testing Locations

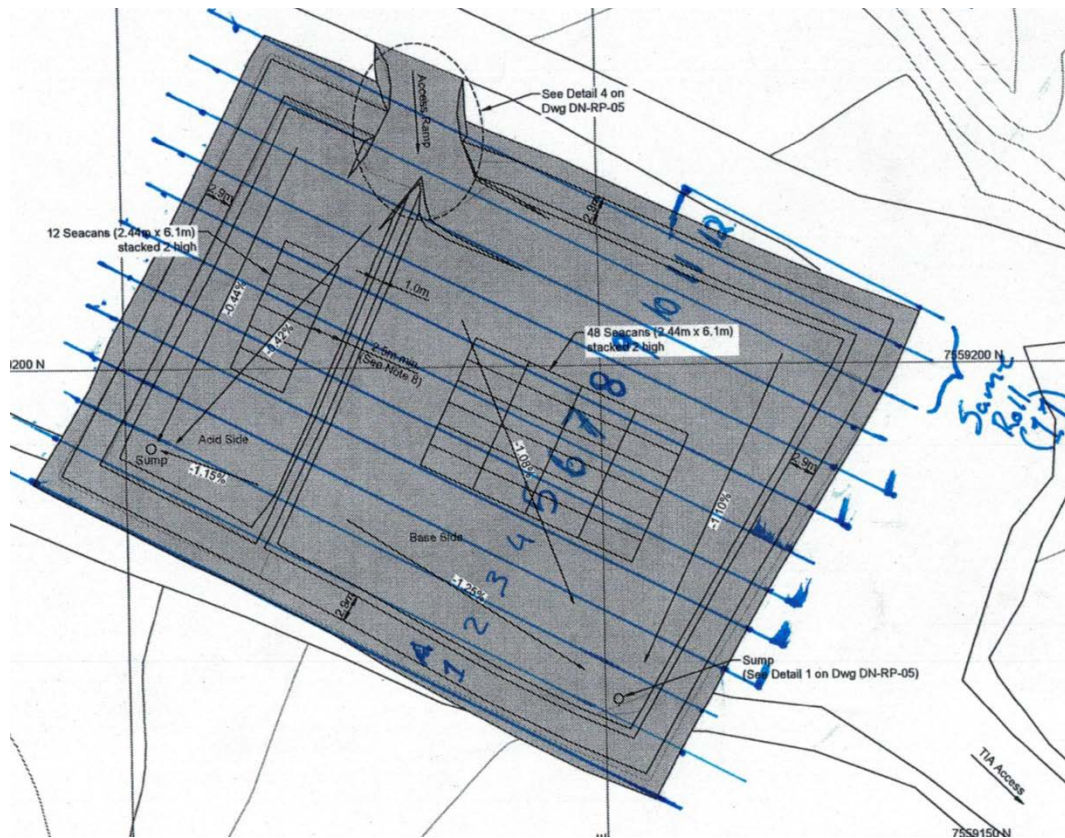
Destruct ID: South AB	Date: January 12 th , 2018	TRI Chain of custody completed and mailed	Yes	No
Destruct ID: North BC	Date: January 12 th , 2018	TRI Chain of custody completed and mailed	Yes	No
Destruct ID: North CD	Date: January 12 th , 2018	TRI Chain of custody completed and mailed	Yes	No

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

Samples were taken from material hanging on the backside of the berm. They are in a position that will never be required to hold any fluids.

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

Repair ID: Patch 1 BC	Personnel Preforming weld: Zane Miller	Time: 10:41am	Date: 08/17/17	Pass	Fail
Repair ID: Patch 2 BC	Personnel Preforming weld: Zane Miller	Time: 10:55am	Date: 08/17/17	Pass	Fail
Repair ID: Patch 3CD	Personnel Preforming weld: Zane Miller	Time: 11:21am	Date: 08/17/17	Pass	Fail
Extrusion Weld 1	Personnel Preforming weld: Zane Miller	Time: 11:45am	Date: 08/17/17	Pass	Fail
Extrusion Weld 2	Personnel Preforming weld: Zane Miller	Time: 1:23pm	Date: 08/17/17	Pass	Fail



Bottom Roll: Roll # 1	Seam: 1-2	Manufacture date: 4/9/15	Serial No. 030534115
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Bottom Roll: Roll # 2	Seam: 2-3	Manufacture date: 4/8/15	Serial No. 030534054
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Bottom Roll: Roll # 3	Seam: 3-4	Manufacture date: 4/8/15	Serial No. 030533990
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Bottom Roll: Roll # 4	Seam: 4-5	Manufacture date: 4/9/15	Serial No. 030534151
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Bottom Roll: Roll # 5	Seam: 5-6	Manufacture date: 4/9/15	Serial No. 030534158
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Bottom Roll: Roll # 6	Seam: 6-7	Manufacture date: 4/8/15	Serial No. 030533996
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Bottom Roll: Roll # 7	Seam: 7-8	Manufacture date: 08/22/16	Serial No. Q34U00271
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Bottom Roll: Roll # 8	Seam: 8-9	Manufacture date: 4/8/15	Serial No. 030534036
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Bottom Roll: Roll # 9	Seam: 9-10	Manufacture date: Couldn't Identify	Serial No. Q50J00361
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Bottom Roll: Roll # 10	Seam: 10-11	Manufacture date: 4/9/15	Serial No. 030534171
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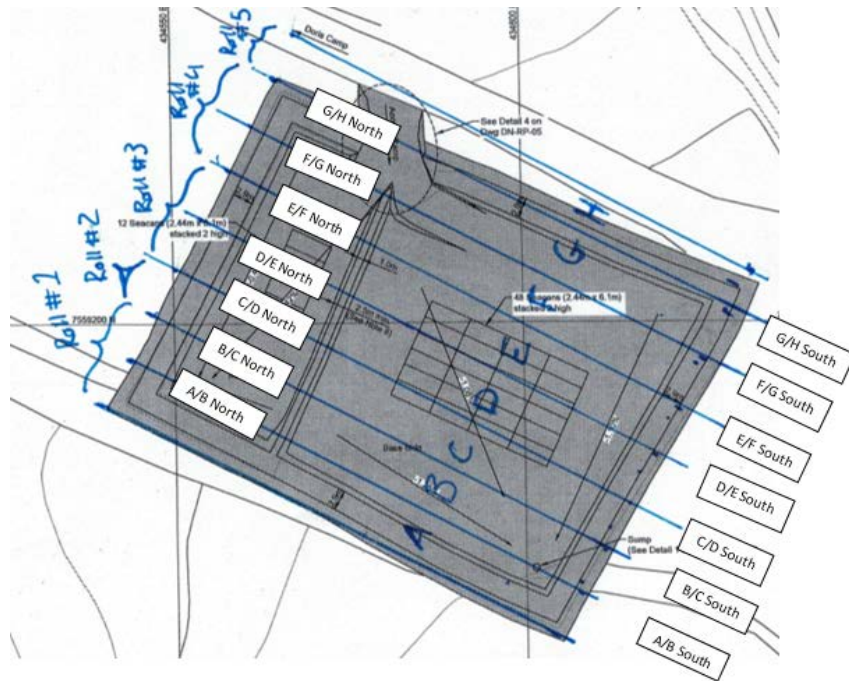




Bottom Roll: Roll # 11	Seam: 11-12	Manufacture date: 11/8/14	Serial No. 030513199
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Section 2.0 HDPE membrane



Roll #1: A & B Type: Textured SS HDPE	Serial No. 1-93634	Date Manufactured: No Roll Tag	Thickness 60 mils
Roll #2: C Type: Textured SS HDPE	Serial No. 1-93635	Date Manufactured: No Roll Tag	Thickness: 60 mils
Roll #3: D & E Type: Textured SS HDPE	Serial No. 1-93592	Date Manufactured: No Roll Tag	Thickness: 60 mils
Roll #4: F & G Type: Textured SS HDPE	Serial No. 1-93594	Date Manufactured: 7/13/2011	Thickness: 60 mils
Roll #5: H Type: Textured SS HDPE	Serial No. 1-93602	Date Manufactured: No Roll Tag	Thickness: 60 mils



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: Panel AB	Seam Tester ID:	Time: 9:25	Pressure loss (PSI): 0	Pass	Fail
Seam ID: Panel BC	Seam Tester ID:	Time: 10:05	Pressure loss (PSI): 0	Pass	Fail
Seam ID: Panel CD	Seam Tester ID:	Time: 10:35	Pressure loss (PSI): 0	Pass	Fail
Seam ID: Panel DE	Seam Tester ID:	Time: 11:03	Pressure loss (PSI): 2	Pass	Fail
Seam ID: Panel EF	Seam Tester ID:	Time: 11:28	Pressure loss (PSI): 0	Pass	Fail
Seam ID: Panel FG	Seam Tester ID:	Time: 11: 35	Pressure loss (PSI): 1	Pass	Fail
Seam ID: Panel GH	Seam Tester ID:	Time: 11:55	Pressure loss (PSI): 0	Pass	Fail

Onsite Destructive Testing Locations (Every 500 Ft Min), 5 Peel and 5 shear tests done onsite.
5 Peel and 5 shear tests sent to independent lab.

Destruct ID: North AB	Seam ID: Panel AB	Welder ID: PW3627	TEST 1
Destruct ID: South BC	Seam ID: Panel BC	Welder ID: PW3627	TEST 2
Destruct ID: North CD	Seam ID: Panel CD	Welder ID: PW3627	TEST 3
Destruct ID: South DE	Seam ID: Panel DE	Welder ID: PW3627	TEST 4
Destruct ID: North EF	Seam ID: Panel EF	Welder ID: PW3627	TEST 5
Destruct ID: South FG	Seam ID: Panel FG	Welder ID: PW3627	TEST 6
Destruct ID: North GH	Seam ID: Panel GH	Welder ID: PW3627	TEST 7

Onsite Destructive Test Results

A/B North		1	2	3	4	5	MEAN
A	Peel strength (ppi)	122	109	104	117	99	110.2
	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	
B	Peel strength (ppi)	79	118	100	119	119	107
	Peel separation %	<5	<5	<5	<5	<5	
	Shear strength (ppi)	167	164	160	161	161	162.6
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel Failure Code	FTB	FTB	FTB	FTB	FTB	
B/C South		1	2	3	4	5	MEAN
B	Peel strength (ppi)	119	141	148	144	146	139.6
	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	
C	Peel strength (ppi)	116	114	112	121	105	113.6
	Peel separation %	<5	<5	<5	<5	<5	
	Shear strength (ppi)	167	167	175	170	165	168.8
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel Failure Code	FTB	FTB	FTB	FTB	FTB	
C/D North		1	2	3	4	5	MEAN
C	Peel strength (ppi)	124	121	127	121	118	122.2
	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	
D	Peel strength (ppi)	126	127	131	124	130	127.6
	Peel separation %	<5	<5	<5	<5	<5	
	Shear strength (ppi)	173	168	164	162	165	166.4
	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)	128	115	139	136	136	130.8
	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)	108	116	114	111	114	112.6
	Peel separation %	<5	<5	<5	<5	<5	
	Shear strength (ppi)	164	159	157	165	168	162.6
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel Failure Code	FTB	FTB	FTB	FTB	FTB	

E/F North		1	2	3	4	5	MEAN
E	Peel strength (ppi)	122	126	126	117	120	122.2
	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)	120	125	110	125	113	118.6
	Peel separation %	<5	<5	<5	<5	<5	
	Shear strength (ppi)	179	171	181	178	175	176.8
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel Failure Code	FTB	FTB	FTB	FTB	FTB	
F/G South		1	2	3	4	5	MEAN
F	Peel strength (ppi)	131	108	117	130	112	119.6
	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	
G	Peel strength (ppi)	147	133	144	131	134	137.8
	Peel separation %	<5	<5	<5	<5	<5	
	Shear strength (ppi)	176	165	179	167	176	172.6
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel Failure Code	FTB	FTB	FTB	FTB	FTB	
G/H North		1	2	3	4	5	MEAN
G	Peel strength (ppi)	125	122	126	96	104	114.6
	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	
H	Peel strength (ppi)	140	108	139	123	138	129.6
	Peel separation %	<5	<5	<5	<5	<5	
	Shear strength (ppi)	171	159	174	171	174	169.8
	Peel Locus of Failure Code	SE	SE	SE	SE	SE	
	Peel Failure Code	FTB	FTB	FTB	FTB	FTB	



Offsite Destructive Testing Locations

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



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

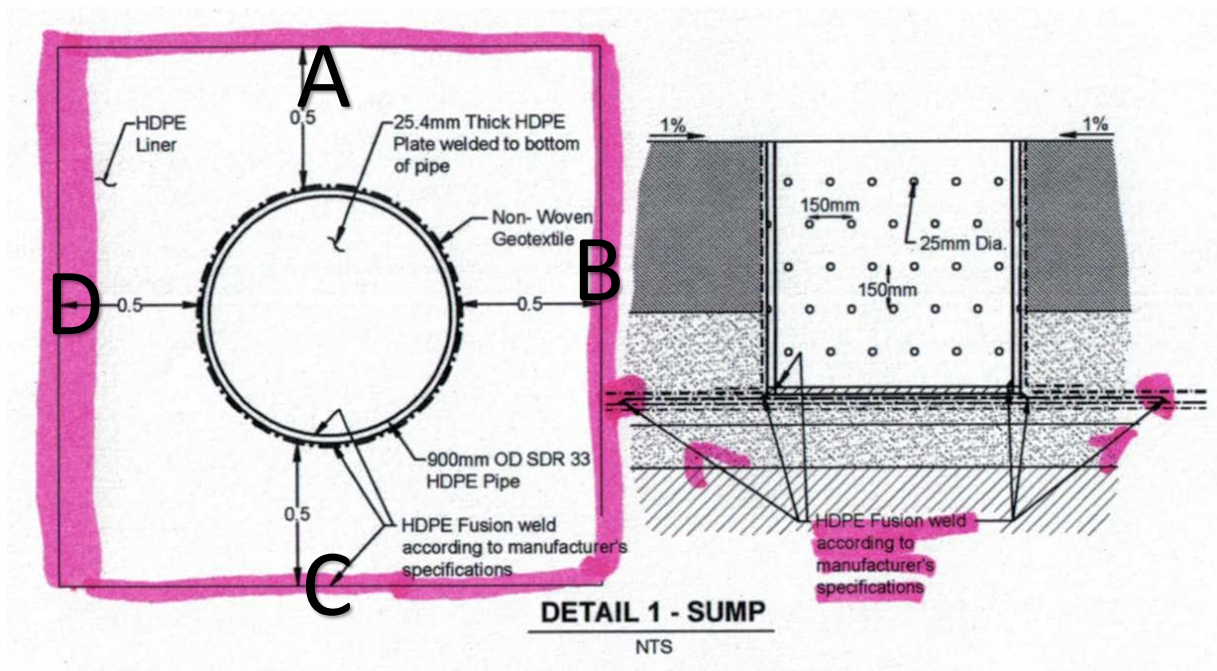


Section 3.0 TOP layer of Geotextile

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

See Pictures in Folder



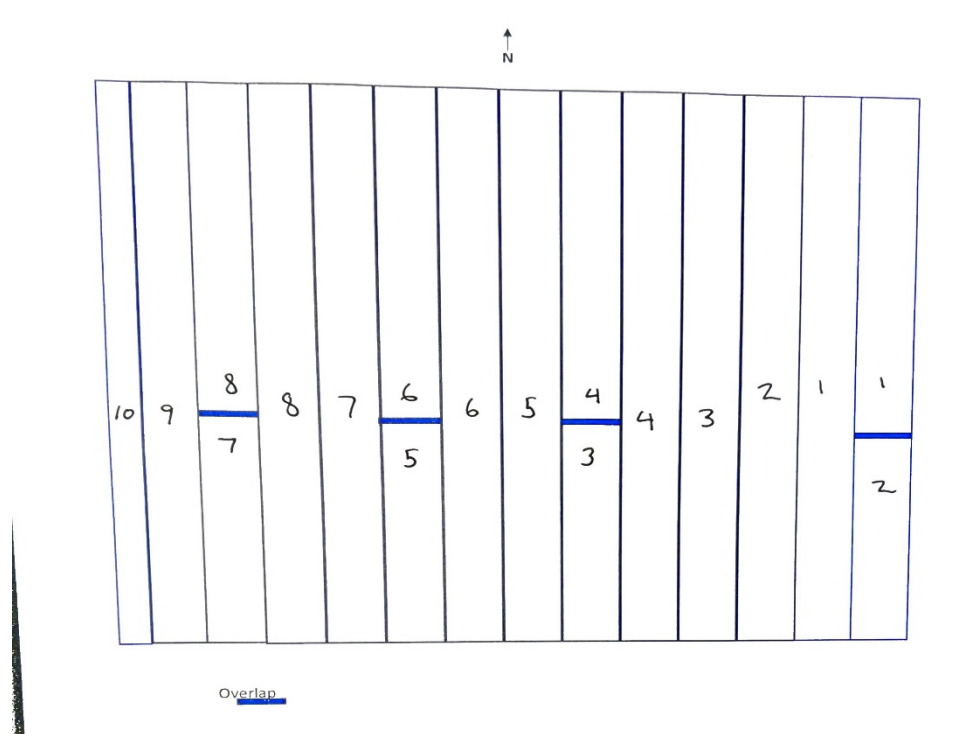
De-Icing Apron

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



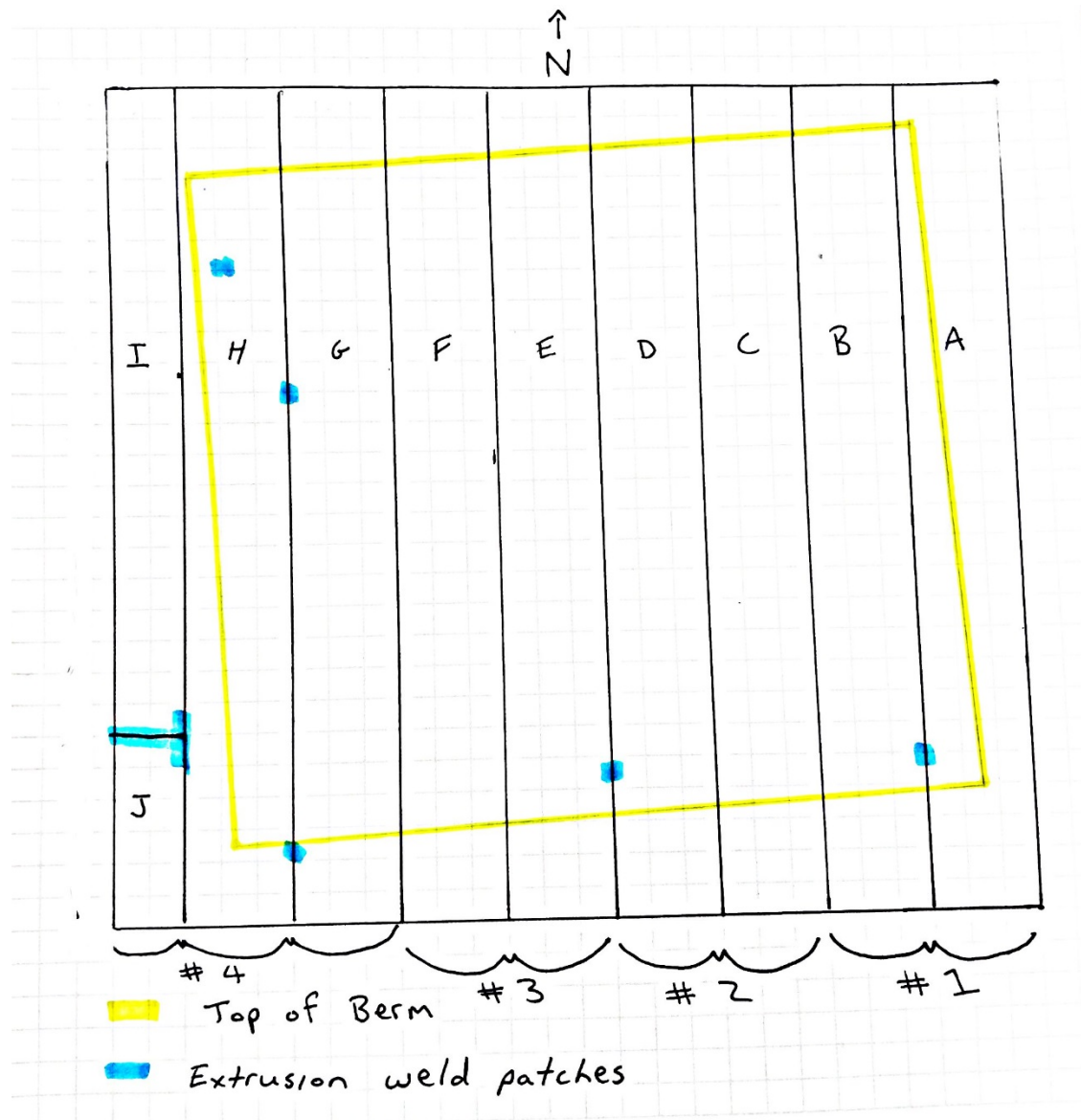
Roll #: 1	Seam ID: 1, 2	Manufacture Date: 17/05/2017	Serial No. 26745Z003103
Roll #: 2	Seam ID: 2, 3	Manufacture Date: 16/05/2017	Serial No. 26745Z001401



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

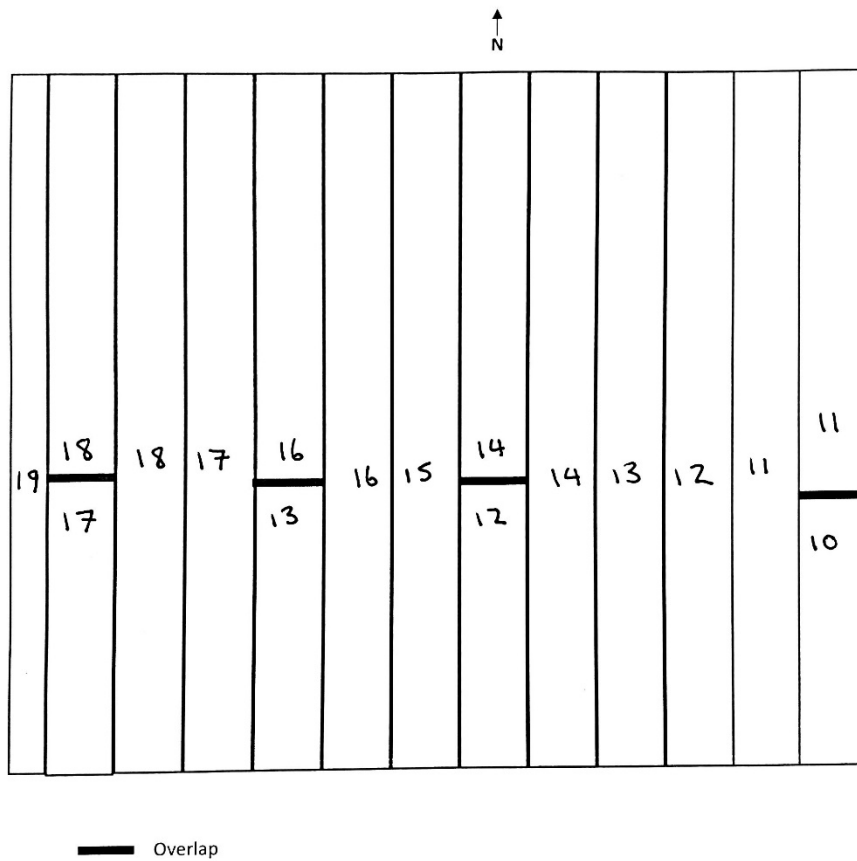
See Pictures In folder

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

Client Contact: Eric BlombergClient Company: Blomberg building groupProject Name: TLR catch basinClient Mailing Address: 112 Lenora rd, Bowen IslandClient City, State, Zip: British Columbia, Canada, V0N1G1Client Phone/Fax: 604 841 9858Client Field Phone/Fax: 867 988 6882 ext. 134Project Number: TLR catch basinE-mail: Eric@Blombergbuilding.comShipped by: groundDate: Jan 17/18**COMPLETE ONLY IF DIFFERENT FROM ABOVE**

Client Contact:

Client Company:

Client Mailing Address:

Client City, State, Zip:

Phone:

Fax:

Client P.O. #:

E-mail:

Shipped by:

Date:

Geomembrane Seams**Sample Identification**Top Panel
No.Bottom Panel
No.Machine
NumberResin Type
(ex: HDPE)

Weld Type

Welder
(personnel)

Date / Time Sampled

1 TLR-AB SouthABPW3627HDPEwedgeZANE17/08/172 TLR-BC NorthCB"""""3 TLR-CD SouthDC"""""

4

5

6

7

8

9

10

Remarks:

Standard Test Methods: ASTM D 6392, D 4437, D 413, D 751. Please circle requested test procedure

PLEASE CONTACT TRI WITH QUESTIONS REGARDING APPROPRIATE TEST PROCEDURES

"As-Received" Notes:

TRI Log. Number:

Due Date:

PLEASE AUTHORIZED SIGNING AND DATING BELOW

NAME:

Eric Blomberg

SIGNATURE/DATE:

[Signature]



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

PARAMETER	TEST REPLICATE NUMBER					MEAN
	1	2	3	4	5	
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	

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

TRI ENVIRONMENTAL, INC.

9063 BEE CAVES RD. - AUSTIN, TX 78733 - USA | PH: 800.880.TEST OR 512.263.2101



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

PARAMETER	TEST REPLICATE NUMBER					MEAN
	1	2	3	4	5	
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	

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TRI ENVIRONMENTAL, INC.

9063 BEE CAVES RD. - AUSTIN, TX 78733 - USA | PH: 800.880.TEST OR 512.263.2101

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

Page ____ of ____

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

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		Top Panel No.	Bottom Panel No.	Machine Number	Resin Type (ex: HDPE)	Weld Type	Welder (personnel)	Date / Time Sampled
Sample Identification								
1	Test#1 South AB	B	A	PW3627	Textured HDPE SS	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, D 413, D 751) 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

PARAMETER	TEST REPLICATE NUMBER					MEAN
	1	2	3	4	5	
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	

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

TRI ENVIRONMENTAL, INC.

9063 BEE CAVES RD. - AUSTIN, TX 78733 - USA | PH: 800.880.TEST OR 512.263.2101



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

PARAMETER	TEST REPLICATE NUMBER					MEAN
	1	2	3	4	5	
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	

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TRI ENVIRONMENTAL, INC.

9063 BEE CAVES RD. - AUSTIN, TX 78733 - USA | PH: 800.880.TEST OR 512.263.2101



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

PARAMETER	TEST REPLICATE NUMBER					MEAN
	1	2	3	4	5	
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	

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



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

PARAMETER	TEST REPLICATE NUMBER					MEAN
	1	2	3	4	5	
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	

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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	Client Contact: Eric Blomberg	Client Phone/Fax: 664 841 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 Columbia, Canada, V0N1G1	Shipped by: Ground Date: Jun 12/18

SENDING TO	DO NOT FILL IN 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, D 413, D 751) Please circle requested test procedure

PLEASE CONTACT TRI WITH QUESTIONS REGARDING APPROPRIATE TEST PROCEDURES

"As-Received" Notes:

TRI Log. Number:
Due Date:

RELEASE AUTHORIZED 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.

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: 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	

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TRI ENVIRONMENTAL, INC.

9063 BEE CAVES RD. - AUSTIN, TX 78733 - USA | PH: 800.880.TEST OR 512.263.2101



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

PARAMETER	TEST REPLICATE NUMBER					MEAN
	1	2	3	4	5	
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	

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