Project: Marine Geotechnical Investigation
Location: St. John's, NL
Client: Public Works Government Services Canada
Drilling Supervisor: David Howlett

Log of Geotech Borehole: BH1A

Project No: 390
Date: January 3 - 5, 2007

Depth below Ground Surface (m)	Geologic Description	Elevation (m)	Sample Type	Sample No.	"N" Value	Recovery (%)	RQD (%)
0	Ground Surface	1.35					
	Fill and Boulders	-1.24	SS	1	50	0	
	SPT: 50 for 0.00 m (Refusal) No Sample Recovery SS1: "N" Value = 50, Recovery = 0%						
	Alternating gray and red sandstone boulders	-3.07					
	SPT: 3 / 6 / 9 / 5 No Sample Recovery	-3.68	SS	2	15	0	
	Alternating gray and red sandstone boulders	-4.62					
	SPT: 5 / 2 / 6 / 8 No Sample Recovery	-5.23	SS	3	8	0	
	Alternating gray and red sandstone boulders	-6.12					
	SPT: 5 / 3 / 6 / 4 No Sample Recovery	-6.73	SS	4	9	0	

Standard Penetration Test "N" Value per 300 mm (20 40 60 80)

Fracflow Consultants Inc.
154 Major's Path
St. John's, NL A1A 5A1
Phone: (709) 739-7270
Fax: (709) 753-5101

Drilling Method: NW/NQ Casing/Coring
Driller: NES Ltd.
Datum: Geodetic
Sheet: 1 of 3

Project: Marine Geotechnical Investigation
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Depth below Ground Surface (m)	Geologic Description	Elevation (m)	Sample Type	Sample No.	"N" Value	Recovery (%)	RQD (%)
	Alternating gray and red sandstone boulders	-7.67					
	SPT: 2 / 2 / 12 / 6 No Sample Recovery	-8.28	SS	5	14	0	
	Alternating gray and red sandstone boulders	-9.18					
	SPT: 4 / 5 / 7 / 6 No Sample Recovery	-9.79	SS	6	12	0	
	Alternating gray and red sandstone boulders	-10.5					
	SPT: 50 for 0.05 m (Refusal) No Sample Recovery SS7: "N" Value = 50, Recovery = 0%		SS	7	50	0	
	Alternating gray and red sandstone boulders	-12.2					
	SPT: 7 / 12 / 13 / 36 CFEM; Sand and Gravel, some Silt and/or Clay	-12.8	SS	8	25	38	
	Alternating gray and red sandstone boulders	-13.5					
	SPT: 6 / 50 for 0.10 m (Refusal) No Sample Recovery	-13.8	SS	9	50	0	
			RC	—		77	62
			RC	—		100	26

Standard Penetration Test "N" Value per 300 mm (20 40 60 80)

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Sheet: 2 of 3

Project: Marine Geotechnical Investigation
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Log of Geotech Borehole: BH1A

Project No: 390
Date: January 3 - 5, 2007

Depth below Ground Surface (m)	Geologic Description	Elevation (m)	Sample Type	Sample No.	"N" Value	Recovery (%)	RQD (%)
53			RC	—		100	28
	Bedrock: Light gray sandstone		RC	—		98	70
			RC	—		84	45
		-17.3					
	End of Borehole						

Standard Penetration Test "N" Value per 300 mm (20 40 60 80)

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Drilling Method: NW/NQ Casing/Coring
Driller: NES Ltd.
Datum: Geodetic
Sheet: 3 of 3

Project: Marine Geotechnical Investigation
Location: St. John's, NL
Client: Public Works Government Services Canada
Drilling Supervisor: David Howlett

Log of Geotech Borehole: BH2

Project No: 390
Date: November 28, 2006

Depth below LNT (m)	Geologic Description	Elevation (m)	Sample Type	Sample No.	"N" Value	Recovery (%)	RQD (%)
0	0 m LNT	0					

Standard Penetration Test "N" Value per 300 mm (20 40 60 80)

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St. John's, NL A1A 5A1
Phone: (709) 739-7270
Fax: (709) 753-5101

Drilling Method: NW/NQ Casing/Coring
Driller: NES Ltd.
Datum: 0 m LNT
Sheet: 1 of 4

Project: Marine Geotechnical Investigation
Location: St. John's, NL
Client: Public Works Government Services Canada
Drilling Supervisor: David Howlett

Log of Geotech Borehole: BH2

Project No: 390
Date: November 28, 2006

Depth below LNT (m)	Geologic Description	Elevation (m)	Sample Type	Sample No.	"N" Value	Recovery (%)	RQD (%)

Standard Penetration Test "N" Value per 300 mm (20 40 60 80)

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Phone: (709) 739-7270
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Drilling Method: NW/NQ Casing/Coring
Driller: NES Ltd.
Datum: 0 m LNT
Sheet: 2 of 4

Project: Marine Geotechnical Investigation
Location: St. John's, NL
Client: Public Works Government Services Canada
Drilling Supervisor: David Howlett

Log of Geotech Borehole: BH2

Project No: 390
Date: November 28, 2006

Depth below LNT (m)	Geologic Description	Elevation (m)	Sample Type	Sample No.	"N" Value	Recovery (%)	RQD (%)
	Harbour Bottom (20.79 m)	-20.8					
	Spoon sank 1.48 m into soft sediments	-22.3					
	SPT: 2 / 1 / 1 / 2 CFEM: Gravelly Sand, some Silt and/or Clay	-22.9	SS	1	2	96	
	Drill rods sank 1.48 m						

Standard Penetration Test "N" Value per 300 mm (20 40 60 80)

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Drilling Method: NW/NQ Casing/Coring
Driller: NES Ltd.
Datum: 0 m LNT
Sheet: 3 of 3

Project: Marine Geotechnical Investigation
Location: St. John's, NL
Client: Public Works Government Services Canada
Drilling Supervisor: David Howlett

Log of Geotech Borehole: BH2

Project No: 390
Date: November 28, 2006

Depth below LNT (m)	Geologic Description	Elevation (m)	Sample Type	Sample No.	"N" Value	Recovery (%)	RQD (%)
		-24.4					
	SPT: 18 / 9 / 5 / 3 CFEM: Sand, some Silt and/or Clay, trace Gravel	-25	SS	2	14	19	
	Gray broken sandstone or boulders	-26.1					
	SPT 4 / 3 / 7 / 9 CFEM: Sand, trace Silt and/or Clay	-26.7	SS	3	10	67	
	End of Borehole						
	* Hole terminated due to wind and tide conditions.						

Standard Penetration Test "N" Value per 300 mm (20 40 60 80)

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Drilling Method: NW/NQ Casing/Coring
Driller: NES Ltd.
Datum: 0 m LNT
Sheet: 4 of 4

Project: Marine Geotechnical Investigation
Location: St. John's, NL
Client: Public Works Government Services Canada
Drilling Supervisor: David Howlett

Log of Geotech Borehole: BH3A

Project No: 390
Date: January 5 - 6, 2007

Depth below Ground Surface (m)	Geologic Description	Elevation (m)	Sample Type	Sample No.	"N" Value	Recovery (%)	RQD (%)
0	Ground Surface	1.03					
	Fill and Boulders Gray boulders or rock fill	-3.24					
	SPT: 9 / 6 / 7 / 7 No Sample Recovery	-3.85	SS	1	13	0	
	Gray boulders	-4.76					
	SPT: 6 / 5 / 4 / 5 No Sample Recovery	-5.37	SS	2	9	0	
	Gray boulders	-6.29					
	SPT: 8 / 3 / 3 / 5 No Sample Recovery	-6.9	SS	3	6	0	

Standard Penetration Test "N" Value per 300 mm (20 40 60 80)

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Sheet: 1 of 3

Public Works and Government Services Canada / Travaux Publics et Services gouvernementaux Canada

PROVINCE OF NEWFOUNDLAND
PERMIT HOLDER
This Permit Allows
AFN ENGINEERING INC.
To practice Professional Engineering in Newfoundland and Labrador, Permit No. as issued by APEGNL F0292 which is valid for the year 2019

STAMP
REGISTERED PROFESSIONAL ENGINEER
NEIL C. HUNT
SIGNATURE
1/7/19
DATE
NEWFOUNDLAND & LABRADOR

revisions		date
E	ISSUED FOR TENDER	1/7/19
D	RE-ISSUED FOR 99% REVIEW	12/19/18
C	ISSUED FOR 99% REVIEW	11/6/18
B	ISSUED FOR 66% REVIEW	10/19/18
A	ISSUED FOR REVIEW	8/17/18

project / projet
HARBOUR DEVELOPMENT
PROSSER ROCK, NL

drawing / dessin
BOREHOLE LOGS

designed / conçu: N.H.
date: JANUARY 7, 2019
drawn / dessiné: P.H.
date: JANUARY 7, 2019
approved / approuvé: N.H.
date: JANUARY 7, 2019
Tender / Soumission
PWGSC Project Manager / Administrateur de projets TPSGC
project number / no. du projet: R.100138.001
drawing no. / no. du dessin: C19

PWGSC B1 (2004)
E-DRM/GDD-E: 552877