

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 840A-4924				
Midnight Sun Drilling		Geotech Permafrost Drilling, km 461.3 LHS		PROJECT NO: 552-202105-0104-1-4				
MARL M4CT		Coordinates: Z7W N7434230.4m E447690.2m		ELEVATION: 703m				
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input checked="" type="checkbox"/> DCPT <input type="checkbox"/> AUGER <input checked="" type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE						
ELEV. (m)	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>PLASTIC M.C LIQUID</p> <p>0 20 40 60 80 100</p> </div> <div style="width: 45%;"> <p>★ Percent Fines ★</p> <p>◆ Percent Sand ◆</p> <p>■ Percent Gravel ■</p> <p>0 20 40 60 80 100</p> </div> </div>		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
702.5	10	10	10	1	GM		1	SILTY GRAVEL with SAND -Dark brown, compact, moist, angular -1.3m Embankment
701.5	40	40	40	2	SM		2	SILTY SAND with GRAVEL -Dark brown, firm, moist, fibrous organics -Grinding drilling to smooth -Frozen, 5% clear ice inclusions, (Vx)
700.5	40	40	40	3	GM		3	-Ice lens -White, cloudy, 200mm SILTY GRAVEL with SAND -Dark brown, frozen, angular -50% Ice inclusions, (Vr)
699.5	40	40	40	4	SM		4	SILTY SAND with GRAVEL -Dark brown, stiff, frozen, angular -(Nbn)
698.5	40	40	40	5	SM		5	-loose, not frozen, moist
697.5	40	40	40	6	GM		6	SILTY GRAVEL with SAND -Dark brown, frozen, loose, angular -(Nf)
696.5							7	END of HOLE
695.5							8	



SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 840A-4927				
Midnight Sun Drilling		Geotech Permafrost Drilling, km 460.0		PROJECT NO: 552-202105-0104-1-4				
MARL M4CT		Coordinates: Z7W N7433157.9m E447130.1m		ELEVATION: 700.4m				
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input checked="" type="checkbox"/> DCPT <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE						
ELEV. (m)	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>PLASTIC M.C LIQUID</p> <p>0 20 40 60 80 100</p> </div> <div style="text-align: center;"> <p>★ Percent Fines ★</p> <p>◆ Percent Sand ◆</p> <p>■ Percent Gravel ■</p> <p>0 20 40 60 80 100</p> </div> </div>		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	700							
699						-No sample on auger -Grinding in cobbles	1	
698						SILTY GRAVEL with SAND -Dark brown, compact, moist, angular	2	
697						SILT with SAND -Dark brown, hard, well bonded, 5% ice crystals (Vx)	3	
696						SILTY GRAVEL with SAND -Dark brown, compact, friable -No visible ice crystals (Nf)	4	
695						-Not frozen -Moist, compact	5	
694						END of HOLE -Free water -Refusal	6	
693							7	
692							8	

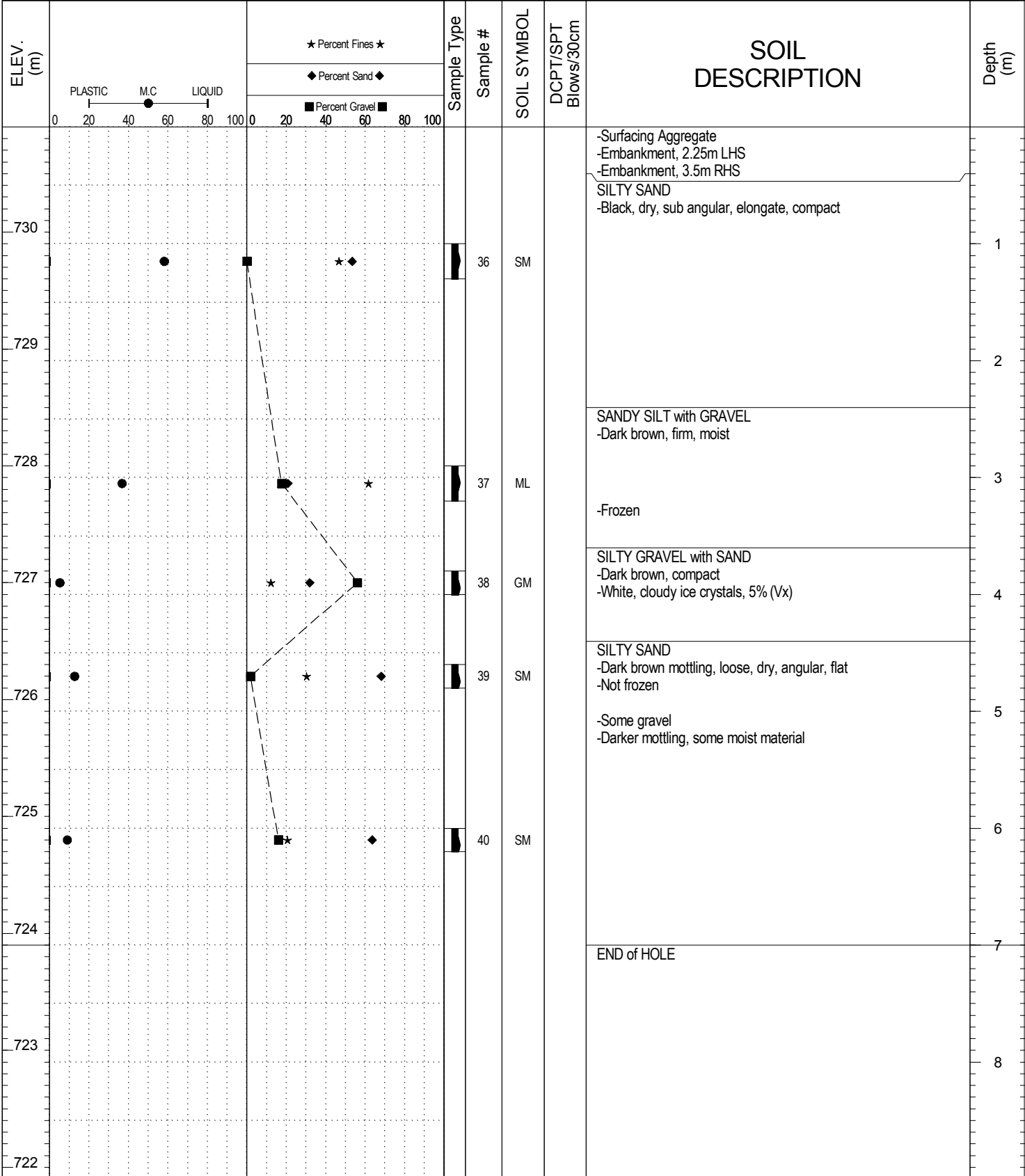


SUBSURFACE EXPLORATION AND TEST REPORT Dempster Highway SOURCE/TP#: 840A-4933

Midnight Sun Drilling Geotech Permafrost Drilling, km 410.0 PROJECT NO: 552-202105-0104-1-4

MARL M4CT Coordinates: Z7W N7387750.8m E442777.2m ELEVATION: 730.9m

SAMPLE TYPE UNDISTURBED DCPT AUGER BULK SPT CORE



SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 840A-4934				
Midnight Sun Drilling		Geotech Permafrost Drilling, km 381.6		PROJECT NO: 552-202105-0104-1-4				
MARL M4CT		Coordinates: Z7W N7371207.4m E426680.5m		ELEVATION: 447.5m				
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input checked="" type="checkbox"/> DCPT		<input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE				
ELEV. (m)	PLASTIC M.C LIQUID 0 20 40 60 80 100	★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■	Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
447							-Surfacing Aggregate -4m Embankment RHS, 6-7m Embankment LHS -Grinding, cobble fill -No sample on auger	1
446								2
445								3
444							-Smoother out	
443.5				41	SM		-SILTY SAND -Dark grey, dry, dense	4
443							-Drill heaving	5
442								6
441.5				42	ML		-SANDY SILT -Dark grey, dry, hard	7
440.5							-Very hard drilling, heaving	
439.5				43	SM		SILTY SAND with GRAVEL -Brown, very dense, dry	8
439							END of HOLE	



SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 840A-4935								
Midnight Sun Drilling		Geotech Permafrost Drilling, km 380.7		PROJECT NO: 552-202105-0104-1-4								
MARL M4CT		Coordinates: Z7W N7370749.6m E425879.3m		ELEVATION: 408m								
SAMPLE TYPE		UNDISTURBED		DCPT								
		AUGER		BULK								
		SPT		CORE								
ELEV. (m)	PLASTIC	M.C	LIQUID	★ Percent Fines ★	◆ Percent Sand ◆	■ Percent Gravel ■	Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
407.5								44	SM		Surfacing Aggregate -3.5m Embankment RHS, 1.5M Embankment LHS	1
407.0											SILTY SAND with GRAVEL -Brown, dry -Grinding in cobbly fill	
406.5											SANDY SILT -Grey, firm, dry	
406.0												2
405.5								45	OL		SANDY ORGANIC SILT -Black, soft, frozen -5% White cloudy ice crystals (Vx)	3
405.0								46	ML		SANDY SILT -Dark brown, very stiff -20% Random ice formations (Vr)	
404.5												4
404.0								47	ML		SILT with SAND -Dark grey, hard -15% Granular ice (Vx)	
403.5								48	ML		-25-30% Ice	5
403.0												6
402.5								49	OL		-ORGANIC SILT with SAND -Dark brown, subangular -No Visible ice, bonded, frozen (Nbn)	
402.0												7
401.5											END of HOLE	
401.0												8
400.5												
400.0												
399.5												
399.0												



SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 840A-4936				
Midnight Sun Drilling		Geotech Permafrost Drilling, km 378.1		PROJECT NO: 552-202105-0104-1-4				
MARL M4CT		Coordinates: Z7W N7370650.7m E423788.3m		ELEVATION: 375.1m				
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input checked="" type="checkbox"/> DCPT		<input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input type="checkbox"/> SPT <input type="checkbox"/> CORE				
ELEV. (m)	PLASTIC M.C LIQUID 0 20 40 60 80 100		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	0 20 40 60 80 100		0 20 40 60 80 100					
375							Surfacing Aggregate	
							WELL-GRADED SAND	
							-Dark brown, compact, dry	
							-Some grinding	1
374							SILT	
							-Dark brown, moist, firm	2
373								
372								
371							SILTY SAND	
							-Dark brown, dense	
							-25% Random Ice formations, white, clear-cloudy	4
							-Dark grey, very dense	
							-Decomposing organics	
							-No visible ice, bonded, (Nbe)	5
370							SILTY SAND with GRAVEL	
							-Dark brown, very dense, subangular	
							-(Nbn)	6
369								
368							END of HOLE	7
367								8



SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 840A-4937									
Midnight Sun Drilling		Geotech Permafrost Drilling, km 376.1		PROJECT NO: 552-202105-0104-1-4									
MARL M4CT		Coordinates: Z7W N7368687.5m E423548.7m		ELEVATION: 482.2m									
SAMPLE TYPE		UNDISTURBED		DCPT									
		AUGER		BULK									
		SPT		CORE									
ELEV. (m)	PLASTIC	M.C	LIQUID	Percent Fines	Percent Sand	Percent Gravel	Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)	
	0	20	40	60	80	100	0	20	40	60	80	100	
482											Surfacing Aggregate -4.5-5m Embankment LHS, 7m embankment RHS		
											SILTY SAND with GRAVEL -Black, moist, compact, subrounded -Drill heaving. -Refusal, moved forward -Refusal, moved forward -Smooth to 0.75m	1	
480									54	SM		2	
479												3	
478												4	
477									55	ML		5	
476									56	OL	PEAT with ICE -Black-brown, frozen, stiff -Woody organics -15% Ice (Vx)	6	
475											Ice Lens, 0.5m	7	
474									57	SM	PEAT with ICE -Brown, hard -Fibrous organics -15% ice (Vx)	8	
											END of HOLE		



SUBSURFACE EXPLORATION AND TEST REPORT Dempster Highway SOURCE/TP#: 840A-4938

Midnight Sun Drilling Geotech Permafrost Drilling, km 372.6 PROJECT NO: 552-202105-0104-1-4

MARL M4CT Coordinates: Z7W N7365530.9m E423880.1m ELEVATION: 617.9m

SAMPLE TYPE UNDISTURBED DCPT AUGER BULK SPT CORE

ELEV. (m)	PLASTICITY INDEX		PERCENT FINES		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	PL	LI	★	◆						
617									Surfacing Aggregate -5-6m Embankment LHS, 2m embankment RHS SILTY SAND with GRAVEL -Black, dry, compact	1
616	20	80	40	40	DCPT	58	SM		-Loose	2
615					DCPT	59	PT		PEAT -Woody, brown, moist, soft	3
614					DCPT	60	PT		Frozen, hard -30-40% Random ice inclusions (Vr)	4
613										5
612										6
611										7
610									END of HOLE	8
609										

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 840A-4939						
Midnight Sun Drilling		Geotech Permafrost Drilling, km 372.3		PROJECT NO: 552-202105-0104-1-4						
MARL M4CT		Coordinates: Z7W N7365210.6m E423994.3m		ELEVATION: 618.3m						
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input checked="" type="checkbox"/> DCPT		<input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE						
ELEV. (m)	PLASTIC M.C LIQUID 0 20 40 60 80 100		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	0 20 40 60 80 100		0 20 40 60 80 100							
618									Surfacing Aggregate POORLY GRADED SAND	1
617										
616						60a	OL		SANDY ORGANIC SILT -Brown, wet, stiff -Fibrous organics	2
615						61	ML		SANDY SILT with Gravel -Dark grey, very stiff -Frozen (Nbn)	3
614						62	ML		<5% Ice crystals (Vx) -Black, stiff	4
613						63	SM		SILTY SAND with GRAVEL -Dark brown, very dense, subangular -Grinding drilling	5
612									SILT -Stratified ice, 5cm alternating (Vs)	6
611									ICE -Cloudy, discoloured, hard	7
610									END of HOLE	8



SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 840A-4940					
Midnight Sun Drilling		Geotech Permafrost Drilling, km 367.2		PROJECT NO: 552-202105-0104-1-4					
MARL M4CT		Coordinates: Z7W N7360768.1m E422398.3m		ELEVATION: 774.5m					
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input checked="" type="checkbox"/> DCPT <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE							
ELEV. (m)		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
774								Surfacing Aggregate -1.25m Embankment LHS, 2.0m embankment RHS WELL GRADED SAND with GRAVEL -Brown, dense, dry, subangular to subrounded	1
773								ORGANIC SILT with SAND -Dark grey, firm, moist, decomposing organics	2
772					64	OL			
771					65	ML		SILT with SAND -Dark grey, firm, dry -Frozen stiff (Nbn)	3
770								-Very hard till	4
769									5
768								END of HOLE -Refusal	6
767									7
766									8



SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4928						
Midnight Sun Drilling		Geotech Permafrost Drilling, km 440.0		PROJECT NO: 552-202105-0104-1-4						
MARL M4CT		Coordinates: Z7W N7416985.7m E441312m		ELEVATION: 552.6m						
SAMPLE TYPE	UNDISTURBED	DCPT	AUGER	BULK	SPT	CORE				
ELEV. (m) 552 551 550 549 548 547 546 545 544	PLASTIC M.C LIQUID 0 20 40 60 80 100		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		Sample Type Sample # SOIL SYMBOL DCPT/SPT Blows/30cm	SOIL DESCRIPTION Surfacing Aggregate -1.7m Embankment LHS, 1.0m embankment RHS SILTY SAND with GRAVEL -Black, compact, dry PEAT -Dark brown, soft, moist -Fibrous organics -Black, frozen, stiff -5% Icy inclusions, cloudy white crystals (Vx) PEAT with ICE - 20% Random ice inclusions (Vr) SANDY SILT -Black, stiff -5% ice crystals (Vx) END of HOLE -Refusal	Depth (m) 1 2 3 4 5 6 7 8			
	552		★	◆				■	19	SM
	551								20	PT
	550	●	★	◆				■	21	OL
	549		>>	★				◆	22	ML
	548	●		★				◆	23	ML



SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4929				
Midnight Sun Drilling		Geotech Permafrost Drilling, km 414.9		PROJECT NO: 552-202105-0104-1-4				
MARL M4CT		Coordinates: Z7W N7392454.5m E441367m		ELEVATION: 652.1m				
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input type="checkbox"/> DCPT <input type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE						
ELEV. (m)	PLASTIC M.C LIQUID 0 20 40 60 80 100		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■							
652							Surfacing Aggregate -3.6-4.2m Embankment LHS, 3-3.5m Embankment RHS	
651							WELL-GRADED GRAVEL with SAND -Black, moist, compact, angular	1
650							-Grinding in cobbles	2
649	●			24	GM		SILTY GRAVEL with SAND -Wet, dense	3
648							-No Grinding	4
647				25	GM		SILTY GRAVEL with SAND -Black, dense, angular -Fresh fracture faces and drilling conditions suggest pulverized cobbles	5
646							END of HOLE -Refusal	6
645								7
644								8

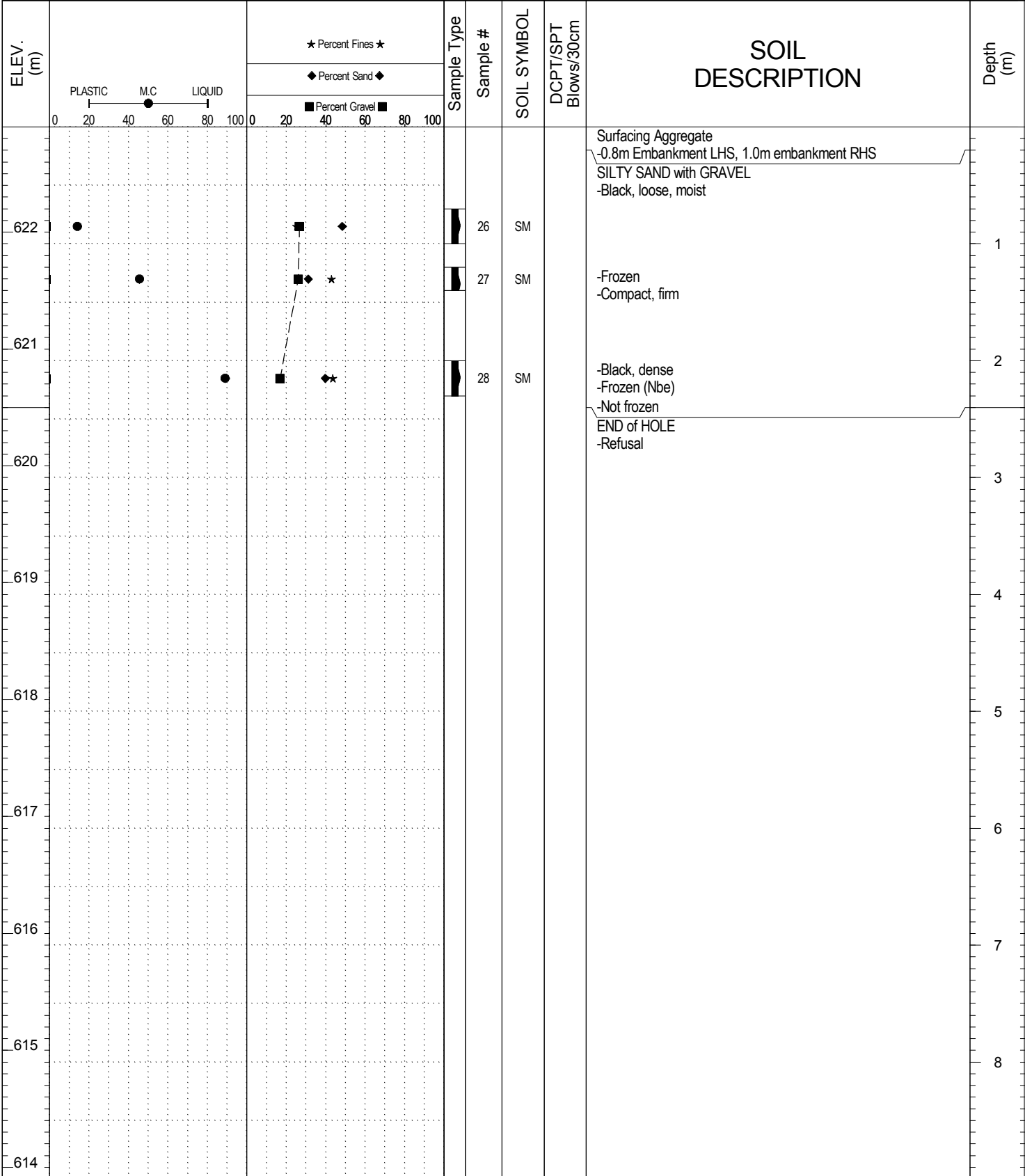


SUBSURFACE EXPLORATION AND TEST REPORT Dempster Highway SOURCE/TP#: 841-4930

Midnight Sun Drilling Geotech Permafrost Drilling, km 453.3 PROJECT NO: 552-202105-0104-1-4

MARL M4CT Coordinates: Z7W N7426622.8m E446165.6m ELEVATION: 622.9m

SAMPLE TYPE UNDISTURBED DCPT AUGER BULK SPT CORE



SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4931							
Midnight Sun Drilling		Geotech Permafrost Drilling, km 459.3		PROJECT NO: 552-202105-0104-1-4							
MARL M4CT		Coordinates: Z7W N7432349.8m E447033.4m		ELEVATION: 747.6m							
SAMPLE TYPE	<input type="checkbox"/> UNDISTURBED	<input type="checkbox"/> DCPT	<input type="checkbox"/> AUGER	<input type="checkbox"/> BULK	<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> CORE					
ELEV. (m)	PLASTIC M.C LIQUID 0 20 40 60 80 100		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■	Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)		
	0	20								40	60
747								Surfacing Aggregate -2.3m Embankment LHS, 1.7m Embankment RHS SILTY GRAVEL with SAND -Black, compact, moist -Grinding	1		
746					29	GM			2		
745					30	SM		SILTY SAND with GRAVEL -Fibrous organics -Brown, loose			
744					31	ML		SANDY SILT with ICE -Black, hard, well bound -20% Ice inclusions (Vx)	3		
					32	SM		WELL-GRADED GRAVEL with SAND -Dark brown, dense -Well bound (Nbe)	4		
743								END of HOLE -Refusal	4		
742									5		
741									6		
740									7		
739									8		



SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4932						
Midnight Sun Drilling		Geotech Permafrost Drilling, km 421.3		PROJECT NO: 552-202105-0104-1-4						
MARL M4CT		Coordinates: Z7W N7398620.3m E440033.7m		ELEVATION: 656.1m						
SAMPLE TYPE		UNDISTURBED	DCPT	AUGER	BULK	SPT	CORE			
ELEV. (m)	PLASTIC M.C LIQUID 0 20 40 60 80 100		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	0 20 40 60 80 100		0 20 40 60 80 100							
656									Surfacing Aggregate	
655						33	GP-GM		POORLY GRADED GRAVEL with SILT and SAND -Black, compact, moist	1
654						34	SM		SILTY SAND with GRAVEL -Brown, very dense, moist -Fibrous organics	2
653						35	OL		ORGANIC SILT with ICE -Brown, Hard -20% Random ice inclusions (Vr), cloudy white	3
652									ICE with ORGANIC SILT -80% ice, 20% Dark brown silt	
651									ICE -Clear, some discolouration, no inclusions, hard	4
650										5
649										6
648									END of HOLE	7
										8



SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4941					
Midnight Sun Drilling		Geotech Permafrost Drilling, km 351.9 LHS		PROJECT NO: 552-202105-0104-1-4					
MARL M4CT		Coordinates: Z7W N7349473.3m E417921m		ELEVATION: 748.3m					
SAMPLE TYPE		UNDISTURBED	DCPT	AUGER	BULK	SPT	CORE		
ELEV. (m)		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
		0 20 40 60 80 100							
748								Surfacing Aggregate -2m Embankment LHS, 7-8m Embankment RHS WELL-GRADED GRAVEL with SILT -Brown, compact, dry, subrounded -Grinding, cobbles	1
747								SILTY SAND with GRAVEL -Black, loose, dry -decomposed organics -Smooth drilling	2
746					66	SM		ORGANIC SILT with SAND -Black, dry, very stiff -Fibrous	3
745					67	ML		SILT with SAND -Brown -Frozen (Nbn)	4
744					68a	ML		SANDY SILT with GRAVEL -5% ice crystals (Vx)	5
743					68	ML		WELL-GRADED SAND with GRAVEL -Black, dense, angular, flat -Frozen, fissile (Nf)	6
742					69	SW		END of HOLE	7
741									8
740									



SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4942						
Midnight Sun Drilling		Geotech Permafrost Drilling, km 351.6		PROJECT NO: 552-202105-0104-1-4						
MARL M4CT		Coordinates: Z7W N7349352.7m E417725.1m		ELEVATION: 748.3m						
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input checked="" type="checkbox"/> DCPT		<input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE						
ELEV. (m)	PLASTIC M.C LIQUID 0 20 40 60 80 100		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	0 20 40 60 80 100		0 20 40 60 80 100							
748									Surfacing Aggregate -2.25m Embankment LHS, 14m Embankment RHS WELL-GRADED GRAVEL with SILT and SAND -Brown, compact, dry -Grinding	
747									ORGANIC SILT -Black, soft, dry	1
746	●		■	★ ◆	■	70	SM			2
745									ORGANIC SILT with GRAVEL -Black, very stiff, rare ice crystal (Vx) -Very tight drilling	3
744										4
743		●	■	◆ ★	■	72	ML		SILT -Black-grey, very stiff -frozen, bonded (Nbn)	5
742	●		■	◆	■	73	PT		PEAT with ICE -Brown, very stiff -Woody -15% Ice (Vx)	6
741										7
740										8
									SILTY SAND with GRAVEL -Brown, very dense, angular -5% Ice crystals (Vx)	
									END of HOLE	



SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4943						
Midnight Sun Drilling		Geotech Permafrost Drilling, km 245.0 S		PROJECT NO: 552-202105-0104-1-4						
MARL M4CT		Coordinates: Z7W N7291511.6m E362900.2m		ELEVATION: 550.4m						
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input type="checkbox"/> DCPT <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE								
ELEV. (m)	PLASTIC M.C LIQUID 0 20 40 60 80 100		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)		
	0	20	40	60					80	100
550			★	◆	■		75	GP-GM	Surfacing Aggregate -1.75m Embankment LHS, 1.25m Embankment RHS POORLY GRADED GRAVEL with SILT and SAND -Brown, compact, dry, subrounded	1
549									-Grinding	
548							76	GP-GM	-Fairly smooth	2
547							77	GP-GM	SILTY GRAVEL -Dark brown, dense, wet, rounded -Grinding	3
546									POORLY GRADED SAND and SILT -Seasonal banding of sand and silt -Dark grey, wet, stiff silt, loose sand	4
545							78	SP		5
544							79	SP	-Some mottling, dry patches	6
543									END of HOLE	7
542										8



SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4944					
Midnight Sun Drilling		Geotech Permafrost Drilling, km 245.0 N		PROJECT NO: 552-202105-0104-1-4					
MARL M4CT		Coordinates: Z7W N7291517.8m E362918.7m		ELEVATION: 551.7m					
SAMPLE TYPE		UNDISTURBED		DCPT					
		AUGER		BULK					
		SPT		CORE					
ELEV. (m)	PLASTIC M.C LIQUID 0 20 40 60 80 100		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)	
	0	20	40	60					80
551			★	◆	■	80	GW-GM	WELL-GRADED GRAVEL with SILT and SAND -Dark grey, dry, compact, subrounded-rounded -Grinding	1
550									2
549			★	◆	■	81	GM	SILTY GRAVEL with SAND -Dark brown, wet, very dense, rounded - subrounded	3
548								WELL-GRADED GRAVEL with SAND -dense	4
547						82	GM		5
546			■	★	◆	83	SM	SILTY SAND with GRAVEL -Layered poorly graded sand and silt (SP, ML) -Some mottling of dry material in saturated material -Dark grey, very stiff	6
545									7
544								END of HOLE	8
543									

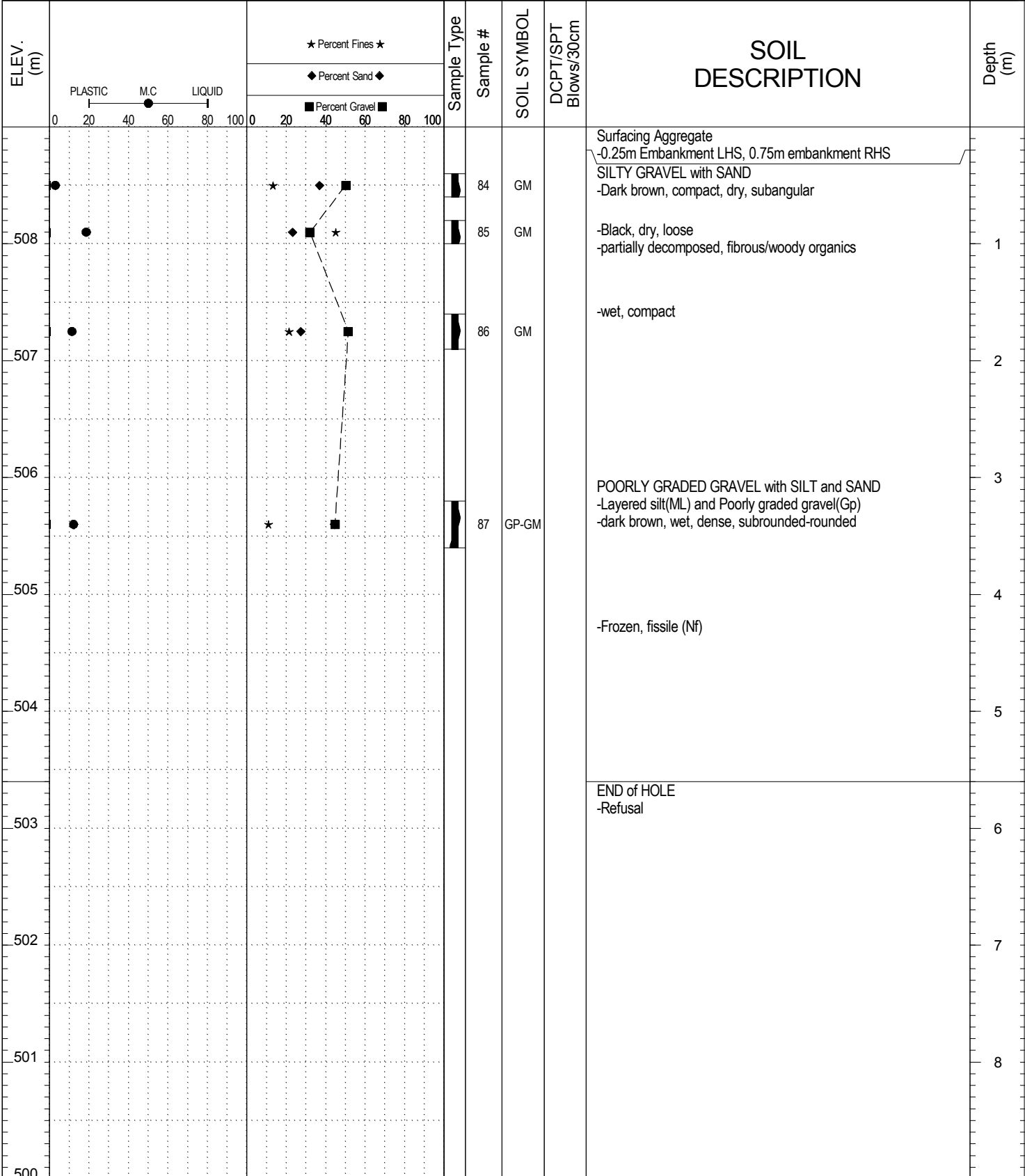


SUBSURFACE EXPLORATION AND TEST REPORT Dempster Highway SOURCE/TP#: 841-4945

Midnight Sun Drilling Geotech Permafrost Drilling, km 237.0 LHS PROJECT NO: 552-202105-0104-1-4

MARL M4CT Coordinates: Z7W N7287099.8m E356579.2m ELEVATION: 509m

SAMPLE TYPE UNDISTURBED DCPT AUGER BULK SPT CORE



Highways and Public Works
Transportation Engineering Branch

LOGGED BY: R.Stilwell

COMPILED BY: g.kennedy

REVIEWED BY: R.Stilwell

Termination Depth: 5.6m

Complete: 9/30/2014 11:24:00 AM

Pit #: n/a

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4946				
Midnight Sun Drilling		Geotech Permafrost Drilling, km 237.0 LHS		PROJECT NO: 552-202105-0104-1-4				
MARL M4CT		Coordinates: Z7W N7206278.3m E345397.6m		ELEVATION: 511.4m				
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input checked="" type="checkbox"/> DCPT <input type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE						
ELEV. (m)	★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	PLASTIC M.C LIQUID 0 20 40 60 80 100							
511							Surfacing Aggregate -0.25m Embankment, LHS WELL-GRADED GRAVEL with SILT -Dark brown, compact, dry, subrounded	
510							PEAT -Black, partially decomposed, fibrous/woody -Dry, soft	1
509							SILTY GRAVEL -Black, wet, stiff -Grinding	2
508				88			POORLY GRADED GRAVEL with SILT -Layered silt and poorly graded gravel -Dark brown, wet, dense, subrounded-rounded	3
507							-Frozen, fissile (Nf) -Very hard drilling, very dense	4
506	●	★ ■ ◆		89	SM		-END of HOLE -Refusal	5
505								6
504								7
503								8



SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4947				
Midnight Sun Drilling		Geotech Permafrost Drilling, 129.0 S		PROJECT NO: 552-202105-0104-1-4				
MARL M4CT		Coordinates: Z7W N7206278.3m E345397.6m		ELEVATION: 511.4m				
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input checked="" type="checkbox"/> DCPT		<input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE				
ELEV. (m)	PLASTIC M.C LIQUID 0 20 40 60 80 100	★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■	Sample Type	Sample #	SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
511				90	GM		Surfacing Aggregate -1.5m Embankment LHS, 2.0m Embankment RHS SILTY GRAVEL with SAND -Brown, compact, dry	1
510							-Wet	2
509				91	PT		PEAT -Brown, soft, moist, fibrous	
508				92	SM		SILTY SAND with GRAVEL -Black, compact, starting to freeze (boundary zone) -Fibrous organics -Nbn	3
508				93	SM		-Dark brown, very dense, rounded -Frozen, fissile (Nf)	4
507				94	SM		-Layered sand and gravel -Very hard drilling, well bonded -sample melting in drilling	5
506							END of HOLE -Refusal	6
505								7
504								8
503								



SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4948			
Midnight Sun Drilling		Geotech Permafrost Drilling, 129.0 N		PROJECT NO: 552-202105-0104-1-4			
MARL M4CT		Coordinates: Z7W N7206282.4m E345393.8m		ELEVATION: 935.7m			
SAMPLE TYPE	<input type="checkbox"/> UNDISTURBED	<input type="checkbox"/> DCPT	<input checked="" type="checkbox"/> AUGER	<input type="checkbox"/> BULK	<input checked="" type="checkbox"/> SPT	<input type="checkbox"/> CORE	
ELEV. (m)		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
		Sample Type	Sample #				
935						POORLY GRADED GRAVEL with SAND -Brown, compact, dry	1
934							2
933				95	SM	SILTY SAND -Black, moist, compact, organics	3
932				96	SM	-Dense, Frozen (Nbn)	4
				97	SM	SILTY SAND with GRAVEL -Dark brown, very dense	5
931						END of HOLE -Refusal	6
930							7
929							8
928							
927							
				LOGGED BY: R.Stilwell		Termination Depth: 4.3m	
				COMPILED BY: g.kennedy		Complete: 9/30/2014 1:45:00 PM	
				REVIEWED BY: R.Stilwell		Pit #: n/a	
						Page 1 of 1	

SUBSURFACE EXPLORATION AND TEST REPORT		Dempster Highway		SOURCE/TP#: 841-4949				
Midnight Sun Drilling		Geotech Permafrost Drilling, km 82.2 RHS		PROJECT NO: 552-202105-0104-1-4				
MARL M4CT		Coordinates: Z7W N7166413.2m E343095.7m		ELEVATION: 1297.4m				
SAMPLE TYPE		<input type="checkbox"/> UNDISTURBED <input checked="" type="checkbox"/> DCPT <input checked="" type="checkbox"/> AUGER <input type="checkbox"/> BULK <input checked="" type="checkbox"/> SPT <input type="checkbox"/> CORE						
ELEV. (m)	PLASTIC M.C LIQUID 0 20 40 60 80 100		★ Percent Fines ★ ◆ Percent Sand ◆ ■ Percent Gravel ■		SOIL SYMBOL	DCPT/SPT Blows/30cm	SOIL DESCRIPTION	Depth (m)
	0	20	40	60				
1297			★	◆	SM		SILTY SAND with GRAVEL -Brown, compact, moist -2m Embankment RHS, steep valley on LHS	1
1296					SM		-Loose, -Grinding, v.hard drilling to v. easy -Refusal at 2.1m and 1.5m -Lots of cobbles, poorly packed matrix	2
1295							-Dark brown, compact	3
1294			★	◆	SM			4
1293								
1292			■	◆	SM		-Dark grey, dense -Drilling action smooths out	5
1291							-Brown, v.dense, wet, subangular to subrounded	6
1290			★	◆	SM		-Frozen, bonded, excess ice (Nbe) -Sample mostly melted in drilling -Grinding - Bouncing	7
1289							END of HOLE	8

