

GEOTECHNICAL REPORT

193 Kennebec Street Portland, Maine

Prepared for:

Northland Enterprises

Prepared by:

Summit Geoengineering Services 145 Lisbon St. Lewiston, Maine

> Project #15001 January 2015



January 27, 2015 Summit #15001

Brad Fries Northland Enterprises 17 South Street, Unit 3 Portland, Maine 04101

Reference: Geotechnical Investigation, Commercial Development 193 Kennebec Street, Portland, Maine

Dear Mr. Fries;

We have completed the geotechnical investigation for the construction of new additions to the existing buildings at the site referenced above. Our scope of service included six borings and one test pit conducted on the site and this geotechnical report summarizing our findings and providing geotechnical recommendations for the construction of a new continuous frost wall foundation, construction of footings for new interior and exterior column supports, and re-use of both building slabs.

Our scope of services for this project did not include an environmental site assessment or further investigation for the presence or absence of hazardous or toxic material on, below, or around the site. Any statements in this report, or on the soil boring logs, regarding odors or unusual and suspicious conditions observed are for informational purposes and are not intended to constitute an environmental assessment.

1.0 Project and Site Description

The site is located at 193 Kennebec St. in Portland, Maine, in between the split of Marginal Way and Kennebec St. off of Forest Ave. There are two existing buildings on the site. The first is a 1 ½ story brick wall structure with a footprint of 4,545 square feet and finished floor elevation of 11.0 feet located at the northern portion of the site. The second, currently a Century Tire warehouse, is a CMU bearing wall structure located in the southern portion of the site with a footprint of 11,783 square feet and finish floor elevation of approximately 11.5 feet. Both structures are assumed to have been constructed with conventional frost wall on continuous spread footing foundations. The remaining area of the existing site is paved drive and parking. The existing grade at the site slopes downwards gently in a northern direction.

The project consists of the construction of single story additions to and renovations of the existing buildings at the site. The eastern sections of the Century Tire building in the southern portion of the site will be demolished and replaced with parking, leaving 4,430 square feet of

existing building. The finished floor elevation of the remaining building will be raised to an elevation of 12.5 feet. The eastern wall of the remaining building will be demolished and replaced with a new wall supported by columns on isolated footings. There is an existing interior wall parallel to the newly proposed eastern wall which will be demolished. This building is titled "Building A" on the Test Boring Location Plan in Appendix A.

The existing building in the north portion of the site will be demolished except for the southern and eastern walls. New columns will be constructed throughout the new building footprint and a new frost wall will be constructed on the north, east, and west sides of the building beyond the extent of the existing building. Finish floor elevation of the slab will be raised to 12 feet. This new building is titled "Building B" on the Test Boring Location Plan in Appendix A.

2.0 <u>Explorations</u>

Summit Geoengineering Services (SGS) observed the subsurface conditions at the site with the drilling of 6 test borings on July 1, 2014 and a test pit excavated on January 21, 2015. All borings were drilled using a 2 1/2" hollow stem auger with split spoon samples collected continuously in the fill layer and at 5 foot intervals below the fill layer. Standard Penetration Testing (SPT) was conducted in general accordance with *ASTM D1586* to collect blow counts during the advancement of the split spoon sampler. The test pit was excavated to 7' below ground surface, where the presence of groundwater inhibited further observation of the subsurface. The test pit was excavated to a depth of 6.5 feet by Colex, LLC under contract to SGS.

Borings B-1 and B-2 were drilled inside the existing Century Tire building and were advanced to 11.5' and 9.5' below existing finished floor elevation, respectively. Borings B-3 and B-4 were drilled in the parking lot between the two existing buildings. Borings B-5 and B-6 were drilled on the southern end of the existing parking lot, near the site entrance from Kennebec Street. Borings B-3 through B-6 were advanced to 22' below ground surface. Refusal was not encountered during any of the borings at the site.

Locations of borings were based on the proposed project at the time of the exploration, which was different than the current proposed concept. Boring locations were marked prior to the day of drilling by taping from the existing building. The location of each boring and test pit can be found on the Test Boring Location Plan in Appendix A. A copy of the boring logs can be found in Appendix B.

3.0 <u>Subsurface Conditions</u>

<u>3.1 Soil</u>

The soil conditions at the site generally consist of *fill* overlying *stiff clay* overlying *soft silty clay*. In borings B-5 and B-6, a dense gravelly *sand* layer was encountered above the soft clay.

The *fill* encountered at the site consists of brown gravelly sand to dark brown silty sand to black and white coal ash mixed with sand and silt. Wood fibers, organics, and brick fragments were

present in some of the collected samples of fill and evident in the excavated test pit. Thickness of fill ranges from 4 feet in the southern end of the parking lot (Boring B-5) to 10.8 feet within the existing Century Tire building (Boring B-1).

From visual inspection, the fill generally contained approximately 70% mineral soil and 30% ash content by weight. Ash content appeared to be lower in the fill below locations of existing buildings. A summary of the collected SPT-N blow counts in the fill are presented below. Generally the higher the mineral soil content the higher the SPT-N values.

	SPT-N BLOW COUNT											
Fill Material	Min	Max	Average									
Sand & Silt	8	18	14									
Sand & Silt with Ash	2	14	9									
Ash with Sand & Silt	WH	9	4									
Ash	2	2	2									

WH = Weight of Hammer

The *stiff clay* is described as black clayey silt to gray silty clay. The soil is wet, ranges from soft to firm, and contains a trace of black organic streaking in the location of Boring B-3. Pocket penetrometer measurements (an approximation of the unconfined compressive strength) ranges from 0.30 tsf to 2.25 tsf. Thickness of the layer ranges from 5 to 12 feet. The soil classifies as ML or CL in accordance with the Unified Soil Classification System

A pocket of *sand* was encountered below the fill and stiff clay layers in Borings B-5 and B-6. The sand is described as gray medium to coarse sand with gravel and trace silt. This layer was wet and ranges from compact to dense. The thickness of this layer is approximately 6 feet. The soil classifies as SP or SW in accordance with the Unified Soil Classification System.

The *soft clay* layer is described as gray, wet, very soft silty clay. The surface of this layer was encountered from approximately 20 feet to 14 feet below ground surface (elevation -9 feet to -3 feet). This soil classifies as CL in accordance with the Unified Soil Classification System.

3.2 Groundwater

Groundwater at the site ranged from 6.5 feet to 5.4 feet below existing ground surface (elevation 4.8 feet to 6.1 feet).

3.3 Bedrock

Bedrock was not encountered at the site.

4.0 <u>Foundation, Column, and Slab Layout Concepts</u>

4.1 Building A

We understand that the proposed renovations to Building A will involve the following:

- Demolition of the longer portion of the current "L" shaped Century Tire building, totaling 7,353 square feet.
- Removal of the eastern exterior wall and entire foundation. This wall will be replaced with a glass storefront supported by columns on isolated exterior footings
- Removal of the interior wall parallel to the eastern wall. The existing interior columns along this wall will remain.
- Raising the finish floor elevation of the entire building slab to 12.5 feet. The existing slab elevation on the eastern portion of the building (which is currently separated from the western portion of the building by the interior wall to be removed) is 11.5 feet and the existing slab elevation of the western portion of the building is 12.0 feet.

4.2 Building B

We understand that the proposed renovations to Building B will involve the following:

- Removing the existing walls on the northern portion of the building facing Marginal Way, and the wall running north-south which connects them.
- Keeping the east, west, and southern walls in place and construct new building walls supported by frost walls on conventional spread footings on the north, east, and west sides of the building beyond the extent of the existing building walls.
- Raising the finish floor elevation to 12.0 feet. The existing slab (at elevation 10.96 feet) will be kept in place.
- Constructing three rows of columns running north-south supported on isolated footings. This includes interior and exterior columns.

5.0 <u>Evaluation</u>

The primary geotechnical issues at the site include the following:

- Potential for excessive total and differential settlement of constructed columns footings and new frost wall footings. Based on existing and proposed grades, the interior and exterior footings will be supported by fill which contains varying amounts of compressible coal ash and miscellaneous non-mineral material underlain by soft silty clay.
- Re-use of the existing floor slabs to support the new slabs for both the remaining portion of the Century Tire building (titled "Building A") and the proposed expansion of the northern building (titled "Building B"). Some cracking and deterioration was observed in the east portion of the existing Century Tire ("Building A") slab.
- Existing slabs and foundations obstructing excavations for proposed column locations.

6.0 Foundation Design Recommendations

6.1 Allowable Bearing Pressure

Based on existing and proposed grades and finished floor slab elevations, the footings for the newly constructed interior and exterior columns for both Building A and Building B renovations will be supported by existing fill. The new spread footings for the expansion of Building B will also be founded on this fill. We recommend that all column footings and spread footings be proportioned with an allowable bearing capacity of 1,500 pounds per square foot (psf). Total settlement for the net allowable bearing pressure is estimated to be less than 1 inch. Differential settlement is estimated at less than a deflection of 1/300 (δ/L , deflection divided by span length). The bearing pressure and associated settlement are based on the following:

- The base of all column and strip footings (interior and exterior) are constructed on a minimum of 12 inches of ³/₄ inch crushed stone overlying a woven geotextile fabric.
- Exposed existing fill on which the geotextile fabric will be placed is compacted with a minimum of 4 passes in each perpendicular direction with a walk-behind plate compactor.
- Exterior perimeter perforated underdrains are constructed continuously at the base of the spread footings.

The geotextile should consist of a woven material, such as Mirafi HP570 (or approved equivalent). It should extend a minimum of ½ the footing width beyond the edges of isolated column footings in all directions and a minimum of the footing width beyond the edges of the footings for continuous spread footings.

Details for the construction of exterior and interior column footings and spread footings are included in Appendix C.

6.2 Frost Protection

Based on a 10-year design Air Freezing Index of 1,200 degree days for Portland, the recommended minimum frost protection depth is 4 feet. In order to provide a cushion between the bottom of the footing and the silty clay and the wet ash soil and to keep the excavations above groundwater, we recommend that the bottom of the exterior footing be constructed at a depth of 3 feet on a 12 inch layer of ³/₄ inch crushed stone. Since the crushed stone is considered a non-frost-susceptible soil, this will provide a minimum 4 foot frost protection depth. We recommend that the exterior foundations be backfilled with Foundation Backfill (FB) to protect against the potentially damaging effects of frost heave. The portion of FB passing the 3 inch sieve opening should meet the gradation requirements presented in the table below.

FOUNDATION BACKFILL (FB)								
Sieve Size	Percent finer							
3 inch	100							
¹ / ₄ inch	25 to 100							
No. 40	0 to 50							
No. 200	0 to 7							
	(2014) T T							

⁽Maine DOT 703.06 (2014), Type E)

FB should be placed in lifts no greater than 12" and compacted to a minimum of 95% of its maximum dry density determining in accordance with ASTM D1557, Modified Proctor Density. Maximum particle size should be limited to 6"

The inside of foundation walls and interior column footings should be backfilled with Structural Fill (SF, see Section 6.3).

6.3 Slab-on-grade

We understand that the existing slabs for Building A and Building B will remain in place and the new slabs for each building be constructed on top. We also understand that the proposed finish floor elevation (FFE) for Building A and Building B is 12.5 feet and 12 feet, respectively. From visual inspection, the quality of the existing slab in the east portion of Building A is fair to poor. The existing slab for Building B and the west potion of Building A are in fair to good condition. Recommendations for construction of the new slabs are proposed below. All soil placed between the existing and new slabs should consist of Structural Fill (SF). The portion of SF passing the 3 inch sieve should meet the gradation requirement presented in the table below.

STRUCTURAL FILL									
Sieve Size	Percent finer								
¹ / ₂ inch	45 to 70								
¹ / ₄ inch	30 to 55								
No. 40	0 to 20								
No. 200	0 to 6.0								

Reference :	MDOT Specification	703.06 (2014),	, Type A
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Maximum particle size should be limited to 4 inches.

<u>6.3.1 Building A</u>

The eastern portion of the existing slab in Building A is approximately 6 inches below the existing slab in the western portion. Structural Fill (SF) should be placed on top of the eastern portion of the existing slab to match the elevation of the existing slab in the western portion. This layer should be placed in one lift. Placed SF should be compacted with a minimum of four passes in each of two perpendicular directions with a 5 ton vibratory roller.

The new slab will be constructed on SF in the east portion of the building and directly on the existing slab in the west portion. We recommend a construction joint be placed at the location where the SF butts the existing slab.

6.3.2 Building B

In the portion of the proposed Building B footprint with no existing slab, SF should be used to raise the grade. After removing the pavement and any exposed debris, the soil should be proofrolled. Proofrolling should consist of making a minimum of four passes in each of two perpendicular directions with a 5 ton vibratory roller. SF can be placed in a single lift and should be compacted to 95% of its optimum dry density in accordance with ASTM D1557.

In the portion of the proposed Building B footprint where the existing slab will remain, SF should be placed on top and compacted with a minimum of four passes in each of two perpendicular directions with a 5 ton vibratory roller. The new slab can be constructed directly on top of the SF.

6.4 Groundwater Considerations

We do not expect that groundwater will be an issue during construction of the building foundations. However, if groundwater seepage into footing excavations becomes significant, SGS should be notified so we can provide de-watering recommendations.

Perimeter underdrains should consist of 4 inch rigid perforated PVC surrounded by a minimum of 6 inches of ³/₄" crushed stone wrapped in filter fabric to prevent clogging from the migration of the fine soil particles in the foundation backfill soils. The underdrain pipe should be outlet to a location where it will be free flowing. Where exposed at the ground surface, the ends of pipes should be screened or otherwise protected from entry and nesting of wildlife to prevent clogging.

In order to reduce the potential for surface water to infiltrate the Foundation Backfill used to backfill the foundation excavations, we recommend the exterior grades where possible should slope away from the perimeter of the foundation at a minimum slope of 1%.

6.5 Seismic Design

The subgrade profile at the site is categorized as Site Class D "stiff soil profile" in accordance with the 2009 International Building Code.

SEISMIC DESIGN COEFFICIE	INTS
Seismic Coefficient	Site Class D
Short period spectral response (S_S)	0.315
1 second spectral response (S_1)	0.077
Maximum factored spectral response (S_{MS})	0.488
1 second factored spectral response (S_{M1})	0.185
Design short period spectral response (S_{DS})	0.325
Design 1 second spectral response (S _{D1})	0.123

7.0 <u>Construction and Earthwork Considerations</u>

Interior column footings should be constructed as shallow as possible below new finish floor elevation on top of a 12 inch minimum thick layer of ³/₄" crushed stone overlying woven geotextile fabric. The total depth of the footing and crushed stone layer will be a minimum of 3 feet. The geotextile should consist of a woven material such as Mirafi HP570 (or approved equivalent). Geotextile and crushed stone should be extended in all directions beyond the footing edges as shown in Appendix C. Exposed existing fill on which the geotextile will be placed should be compacted with a minimum of four passes with a walk-behind plate compactor.

Existing slabs will need to be removed in locations of newly constructed interior column footings. Any gaps in the soil caused by undermining of existing slabs or sloughing of material from the face of excavations made for interior column footings should be filled with flowable fill or chinked with SF (See gradation table in Section 6.3).

We recommend that the entire existing foundation for the eastern wall of Building A be removed and replaced with isolated column footings. Any exposed fill surface which will bear footings should be compacted with a minimum of four passes with a walk-behind plate compactor.

It is expected that there will be excess fill. This material should be used as fill in non-structural areas of the site, if possible. Fill which is removed from the site should be disposed of in accordance with pertinent protocols and regulations.

8.0 <u>Closure</u>

Our recommendations are based on professional judgment and generally accepted principles of geotechnical engineering. Although unanticipated at this site, some changes in subsurface conditions from those presented in this report may occur. Should soil conditions differ materially from those described in this report or should the building configuration or renovations change, Summit should be notified so that we can re-evaluate our recommendations.

We recommend that a qualified geotechnical consultant be retained to monitor and test soil materials used during construction and confirm that soil conditions and construction methods are consistent with this report. SGS will perform 2 to 3 site visits during foundation construction to address the Special Inspections listed in items #1 and #2 of Table 1704.7 in the 2009 International Building Code.

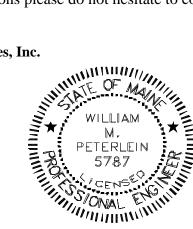
We appreciate the opportunity to provide geotechnical engineering services on this phase of the project. If there are any questions please do not hesitate to contact us.

Sincerely,

Summit Geoengineering Services, Inc.

Matten Hardeson

Mathew Hardison, EI Geotechnical Engineer

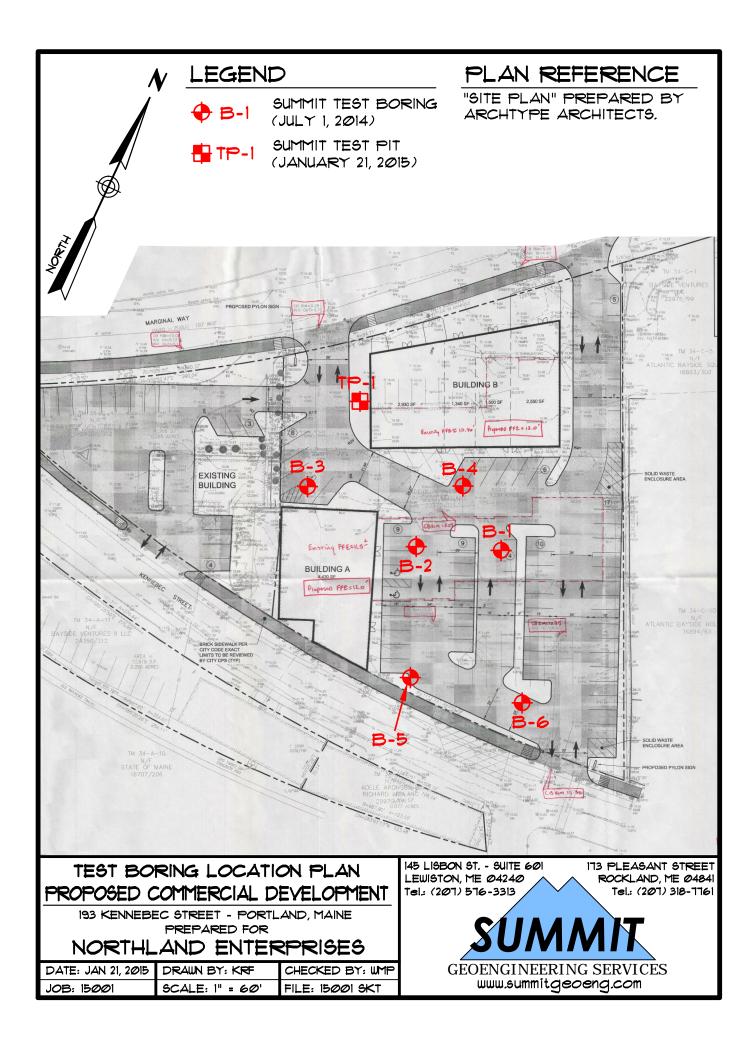


Wither MRtule

William M. Peterlein, PE Principal Geotechnical Engineer

APPENDIX A

TEST BORING LOCATION PLAN



APPENDIX B

TEST PIT LOG AND BORING LOGS

		\wedge				S	OIL BORI	NG LOG	Boring #:	B-1		
		CILLA	AAIT			Project:	Proposed Add		Project #:	14066		
		JUM	MIK			Location:	193 Kennebec		Sheet:	1 of 1		
		GÉOENGINEERI	NG SERVICES			City, State:	Portland, Mair		Chkd by:	1011		
Drilling C	<u>`</u> 0'	Summit Geoen	aineerina Ser	vices		Boring Elevation		-				
Driller:		C. Coolidge, P.	<u> </u>	VILES		Boring Elevation: Reference:						
Summit S		B. Peterlein, P.				Date started:	7/1/2014	Date Completed:	7/1/2014			
				AMPLER		Date Starteu.	//1/2014	ESTIMATED GROUND				
Vehicle:	ILLING	METHOD Tracked	Length:	24" SS		Date	Depth	Elevation		eference		
Model:	A M 6	S Power Probe		24 33 2"OD/1.5"	חז	7/1/2014	5.4 ft	Lievation	After casing remov			
Method:		w Stem Auger		140 lb	ID	7/1/2014	5.4 IL			di		
Hammer		Auto	Method:	ASTM D15	86							
Depth	Style:	Auto	rictiou.	ASIADIS	00		SAMP		Geological/	Geological		
(ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀		DESCRIP		Test Data	Stratum		
(11.)	NO.	Fell/Rec (III)	Deptil (It)	010005/0	• •60		DESCRIP		Test Data	Stratum		
1						Concrete 8", poo	or condition			CONCRETE FLOOR		
1-												
2	C 1	24/0	1 [to 2 [0		Brown gravelly S	SAND, trace silt	, moist, compact, SP				
2_	S-1	24/8	1.5 to 3.5	9 8		Obstruction at 2	7' (6" Brick)					
2				8			U DIICK)					
3_				10		6" Brown silby C	NID trace are	vel moist compact				
4	S-2	24/12	3.5 to 5.5	9		o brown silty SA	uace grav	vel, moist, compact				
4-	5-2	27/12	2.2 10 2.2	9 4		1						
5				4			AND mixed wit	h black and white coal				
<u>э</u> _				4		ash, damp, soft						
6	S-3	24/12	5.5 to 7.5	4		1						
0	5-5	27/12	5.5 10 7.5	3		Same as above	red and black	hard ash particles, mois	+	FILL		
7				2		to wet, loose (no						
· -				2		to wet, 1005e (11						
8	S-4	24/12	7.5 to 9.5	1								
°_	51	21/12	7.5 to 5.5	1								
9				1		Black coal ASH,	wet, very loose	2				
· -				1								
10	S-5	24/2	9.5 to 11.5	1		Black rock in tin	of spoon wate	er in spoon with ash				
10_	55	21/2	5.5 to 11.5	1		Didek rock in up	or spoon, wate					
11				1		•						
				2		•						
12							End of Boring	1 at 11 5'				
12_							End of Bornig	, ut 11.5				
13												
14												
- ` -												
15												
						1						
16						1						
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17						1						
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18						1						
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19						1						
20]						
21												
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22]						
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Granula	ar Soils	Cohesiv	e Soils	% Compo	osition	NOTES:	PP = Pocket Per	e Content	Soil Moisture Condition			
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D]	Dry: S = 0%					
	V. Loose	<2	V. soft			Image: Bedrock Joints LL = Liquid Limit, PI = Plastic Index Dry: S = 0° Bedrock Joints Humid: S = 1 to						
5-10	Loose	2-4	Soft	< 5% T	race					Damp: S = 26 to 50%		
	Compact	5-8	Firm	5-15%						Moist: S = 51 to 75%		
31-50	Dense	9-15	Stiff	15-30%	Some					Wet: S = 76 to 99%		
	V. Dense	16-30	V. Stiff	> 30%								
		>30	Hard			Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches						
								d = < No 4 and >No 200,				

		\sim				S	OIL BORI	NG LOG	Boring #:	B-2
		STIAA	AAIT			Project:	Proposed Add	ition	Project #:	14066
		30/1				Location:	193 Kennebec		Sheet:	1 of 1
		GEOENGINEERI	NG SERVICES			City, State:	Portland, Mair		Chkd by:	
Drilling C	ò:	Summit Geoen	aineerina Ser	vices		Boring Elevation				
Driller:		C. Coolidge, P.	0			Reference:	-			
Summit S	Staff:	B. Peterlein, P.	 E.			Date started:	7/1/2014	Date Completed:	7/1/2014	
		METHOD		AMPLER			,,_,_,_,	ESTIMATED GROUND W		
Vehicle:		Tracked	Length:	24" SS		Date	Depth		ference	
Model:	AMG	S Power Probe		2"OD/1.5"	ID	7/1/2014	5.5 ft	Elevation	Observed in sample	
Method:		w Stem Auger		140 lb		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	51511			
Hammer		Auto	Method:	ASTM D15	86					
Depth	, -						SAMP	LE	Geological/	Geological
(ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀		DESCRIP		Test Data	Stratum
()			(
1						8" Concrete, ver	y poor conditio	n		CONCRETE FLOOR
- 1	S-1	24/12	1 to 3	7						
2	51	2 1/ 12	105	8		Brown SAND min	ed with hrick	and black and white coal		
				6				' to 2.8', dry, compact		
3				12		,		, a.,, compace		
<u> </u>	S-2	24/12	3 to 5	12		1_				
4	52	- 1/ 12	5.05	8		Same as above				
I '-				6		+			-	
5				4		SAND mixed wit	h black and wh	ite coal ash, damp, loose		
–	S-3	24/12	5 to 7	4		1				FILL
6		, ==		3		M/		alak la		
ľ -				2		White coal ASH	mixed with san	a, wet, loose		
7				2						
-	S-4	24/12	7 to 9	1						
8				1						
-				1		Same as above,	very loose			
9				1						
-						Enc	l of Boring at 9	' (Hole caved)		
10							-			
_										
11										
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12										
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Granula Blows/ft		Cohesiv		% Comp						Soil Moisture Condition
Blows/ft.		Blows/ft.	Consistency	ASTM D	240/					Dry: $S = 0\%$
	V. Loose	<2	V. soft	. =0/ =						Humid: $S = 1$ to 25%
5-10	Loose	2-4	Soft	< 5% T						Damp: $S = 26$ to 50%
	Compact	5-8	Firm	5-15%					Moist: $S = 51$ to 75%	
31-50	Dense	9-15 16-20	Stiff	15-30%						
>50	V. Dense		V. Stiff	> 30%	VVILII					
		>30	Hard			Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = $<$ No 4 and >No 200, Silt/Clay = $<$ No 200				
				1			unu - NU 4, 3dfl	u – < 110 + anu 2110 200, Sli	icy Ciay - < NU 200	1

Drilling Co: Driller: Summit Staf	GEO	SUM	AALT					Boring #:					
Driller: Summit Staf	GEO	JUIVI				Project:	Proposed Addit	ion	Project #:	14066			
Driller: Summit Staf	GEO		IVIII				193 Kennebec		Sheet:	1 of 1			
Driller: Summit Staf		DENGINEERI	NG SERVICES				Portland, Maine		Chkd by:				
Driller: Summit Staf	Sui	mmit Geoen	gineering Ser	vices		Boring Elevation:							
Summit Staf		Coolidge, P.		-		Reference:							
						Date started:							
DRILL	LING MET			AMPLER				ESTIMATED GROUND W					
Vehicle:			Length:	24" SS		Date	Depth	Elevation		eference			
Model:		ower Probe		2"0D/1.5"	ID	7/1/2014	6.2 ft		After casing remova				
Method:	Hollow S	Stem Auger		140 lb									
Hammer Sty			Method:	ASTM D15	86								
Depth							SAMPL	E	Geological/	Geological			
(ft.) N	No. Pe	en/Rec (in)	Depth (ft)	blows/6"	N ₆₀		DESCRIPT	TION	Test Data	Stratum			
						3" Pavement				PAVEMENT			
1 S	S-1	24/8	0.5 to 2.5	3									
				7		Dark brown silty	SAND mixed w	ith black ash, bricks, dry,					
2				4		compact							
				6									
3 S	S-2	24/18	2.5 to 4.5	3									
				2		Black and white A	SH mixed with	sand, moist, very loose					
4				2									
									FILL				
5						4							
	S-3	24/2	5 to 7	WH		4							
6				WH		White ASH mixed	with silt and s	and, wet, very loose					
∣ ⊢				WH									
7				WH		4							
						-							
8													
						4							
9						4							
						-							
10	<u> </u>	24/12	10 + 10	34/11		-							
	S-4	24/12	10 to 12	WH									
11				WH WH			with trace bla	ck organics, wet, very					
10		1		WH WH	1	soft, ML							
12				٧٧H		4							
13						1							
						1							
14						4							
· · · · · ·						1							
15						1							
	S-5	24/24	15 to 17	1		1				GLACIAL MARINE			
16		- 1/ - 7	10 (0 17	2		1							
				2		Olive gray silty Cl	AY, wet, soft,	CL	PP = 1.0 tsf				
17				1		1							
"+-						1							
18						1							
						1							
19						1							
+-						1							
20]							
5	S-6	24/24	20 to 22	WH]]				
21				WH		Graviellty CLAV	Not yory coff	CI					
				WH		Gray silty CLAY, v	vet, very sort,						
22				1									
Granular So	Soils	Cohesive	e Soils	% Compo	osition					Soil Moisture Condition			
Blows/ft. De	ensity	Blows/ft.	Consistency	ASTM D	2487					Dry: S = 0%			
0-4 V.L	Loose	<2	V. soft			Bedrock Joints				Humid: $S = 1$ to 25%			
5-10 Lo	oose	2-4	Soft	< 5% T	race	Shallow = 0 to 35 degrees				Damp: S = 26 to 50%			
11-30 Con	mpact	5-8	Firm	5-15%	Little	Dipping = 35 to 55 degrees				Moist: S = 51 to 75%			
31-50 De	Dense	9-15	Stiff	15-30%	Some	Steep = 55 to 90 degrees				Wet: S = 76 to 99%			
>50 V. E	Dense	16-30	V. Stiff	> 30%	With					Saturated: S = 100%			
		>30	Hard			Boulders = diamete	r > 12 inches, C	obbles = diameter < 12 inch	es and > 3 inches				
				1		Gravel = < 3 inch a	1						

1		\wedge				SOIL BORI	NG LOG	Boring #:	B-4			
		CIINA	AALT			Project: Proposed Addi	ition	Project #:	14066			
		SUIVI	IVIII			Location: 193 Kennebec		Sheet:	1 of 1			
		GEOENGINEERI	NG SERVICES			City, State: Portland, Main		Chkd by:				
Drilling Co:).	Summit Geoer	aineerina Ser	vices		Boring Elevation:	-					
Driller:		C. Coolidge, P.	0 0			Reference:						
Summit Sta		B. Peterlein, P.				Date started: 7/1/2014	Date Completed:	7/1/2014				
		METHOD		AMPLER			ESTIMATED GROUND W					
Vehicle:		Tracked	Length:	24" SS		Date Depth	Elevation		eference			
Model:	AM	S Power Probe		2"OD/1.5"	ID	7/1/2014 5.5 ft	Liovation	After casing remova				
Method:		w Stem Auger		140 lb								
Hammer S		Auto	Method:	ASTM D15	86							
Depth	,					SAMP	LE	Geological/	Geological			
(ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀	DESCRIP		Test Data	Stratum			
. ,		~ /				3" Pavement			PAVEMENT			
1	S-1	24/18	0.5 to 2.5	6								
	01	21/10	0.0 10 2.0	5		Brown gravelly SAND, trace silt	, dry, loose, SP					
2				3				-1				
-+				3		Black SILT mixed with wood fib	ers and organics, moist,					
3	S-2	24/18	2.5 to 4.5	5		loose						
	. –			4		SAND mixed with gray and blac	k coal ash, loose					
4				2		White and black coal ASH mixed		-1				
				3		loose	<i>الم</i>					
5												
	S-3	24/18	5 to 7	2		1						
6				1		Samo as above			FILL			
				1		Same as above						
7				1								
8												
						Casing pushed easily from 8 to	10'					
9						busing pushed casily norm of to						
10												
	S-4	24/18	10 to 12	1		Same as above						
11				WH								
				WH		Dark gray silty CLAY, wet, very	soft, CL					
12				1								
13												
14												
14								- 1				
15												
15	S-5	24/24	15 to 17	1								
16	ა-ე	24/24	10 10 17	2				PP = 1.2 tsf				
10				3		Gray silty CLAY, damp to wet, f	ïrm, CL		GLACIAL MARINE			
17				2				PP = 0.6 tsf				
''+				<u> </u>								
18				1								
́+				1								
19				1								
+				1								
20				İ		1						
	S-6	24/12	20 to 22	WH		1						
21				WH			0					
				WH		Gray silty CLAY, wet, very soft,	UL					
22				WH								
†						End of Borin	ig at 22'					
Granular	Soils	Cohesiv	e Soils	% Comp	osition	NOTES: PP = Pocket Per	netrometer, MC = Moisture C	ontent	Soil Moisture Condition			
Blows/ft. D	Density	Blows/ft.	Consistency	ASTM D	2487	-	t, PI = Plastic Index		Dry: S = 0%			
0-4 V.	/. Loose	<2	V. soft			Bedrock Joints			Humid: S = 1 to 25%			
5-10	Loose	2-4	Soft	< 5% 1		Shallow = 0 to 35 degrees		Damp: S = 26 to 50%				
11-30 Co	compact	5-8	Firm	5-15%	Little	Dipping = 35 to 55 degrees		Moist: S = 51 to 75%				
31-50	Dense	9-15	Stiff	15-30%		Steep = 55 to 90 degrees			Wet: S = 76 to 99%			
		16-30	V. Stiff	> 30%	With			Saturated: S = 100%				
	. Dense	10-30										
	. Dense	>30	Hard			Boulders = diameter > 12 inches, C Gravel = < 3 inch and > No 4, San						

14			\sim				S	SOIL BORI	NG LOG	Boring #:	B-5			
Locality Locality Locality Description 1 of 1 Drilling Could by: Child by: Child by: Child by: Drilling Coulding, P.E. Boring Elevation: Portland, Maine Child by: Summit Staff: B. Peterlein, P.E. Date startel: 7/1/2014 Date Completed: 7/1/2014 Summit Staff: B. Peterlein, P.E. Date startel: 7/1/2014 Date Completed: 7/1/2014 Method: Tracked Length: ACM MERK Could by: Could b			STINA	AA IT			Project:	Proposed Add	ition	Project #:	14066			
CONCERNING SERVICES Chr.y. State: Portland, Maine Child by: Difiling Co:: Sumit Generalized Services Boing [Level sin]: A state of the			30/VI											
Drilling Co: Summit Secongripeering Services Boring Evador: Summit Staff: B. Peterlein, P.E. Date started: 7/1/2014 Date Completed: 7/1/2014 Summit Staff: B. Peterlein, P.E. Date started: 7/1/2014 Date Completed: 7/1/2014 Wehlde: AKT OWNERHOO SAMPLE Date Completed: 7/1/2014 After casing removal Wehlde: AKT OWNERHOW Sampti Staff: Biok Staff: After casing removal Edention Method: AKT OWNERC (in) Depth Tracked Length Hammer: 100 b Sampti Staff: Biok ASH Sampti Staff: Biok ASH Sampti Staff: Biok ASH mixed with silt, dry, hard, little white ash in seams Sampti Staff: FILL Sampti Staff: FILL FILL FILL FILL FILL FILL Sampti Staff: Sampti Staff: FILL Sampti Staff: Sampti Staff: Sampti Staff: Sampti Staff: Sampti Staff: FILL Sampti Staff: Sampti Staff: <td></td> <td></td> <td>GEOENGINEERI</td> <td>NG SERVICES</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>			GEOENGINEERI	NG SERVICES										
Drille: C. Coolidge, P.E. Reference: United State: Receteries, P.E. Date states: 7/1/2014 Date Completed: 7/1/2014 United State: Receteries, P.E. Date states: 7/1/2014 Date Completed: 7/1/2014 Vehicle: Tracked Length: 24' SS Date and the Depth Elsevation Reference: Model: AMS Power Probe Dameter: 2' OO/1.5'TD 7/1/2014 6.4 ft After casing removal Harmer Syte: Auto: Method: KASTN D1506 SAMPLE Geological/ Geological/ 1 5:1 24/12 0.5 to 2.5 6 S' Pavement Test Data Stratum 2 - - 5 2 Back ASH mixed with silty and, moist, loose FILL 3 5.2 24/12 2.5 to 7.5 2 Back ASH mixed with silt, dry, hard, little white ash in FILL 4 - - 2 - Back ASH mixed with silt, dry, hard, little white ash in FILL 10 - - -	Drillina C	ò:	Summit Geoen	aineerina Ser	vices									
Summit Staff: B. Peterlein, P.E. Date started: 7/1/2014 Date Completed: 7/1/2014 Vehicle: Tracked Length: 24'S.S. Date Depth Elevation No WATES Deth Reference Method: MS Power Pobe Dimeter: 120017 7/1/2014 6.4 ft After casing removal Method: MS Power Pobe Dimeter: 120017 7/1/2014 6.4 ft After casing removal Method: MS Power Pobe Dimeter: 120017 7/1/2014 6.4 ft After casing removal Immer Style: Mato Method: ASS ND 1586 Sample Geological/ Geological/ Geological/ Geological/ Stratum 1 51 24/12 0.5 to 2.5 6 Black ASH mixed with silly sand, moist, loose FILL 3 52 24/12 2.5 to 4.5 2 Black ASH mixed with silly dry, hard, little white ash in seams FILL 4 3 3 52 24/12 5 to 7 4 5 53 24/12 5 to 7 4 5 5														
BRULING METHOD SAMPLER ESTUATED GROUND WATER PETH White: Tracked Length: 24'SS Tobe Depth Elevation After casing removal Model: AMS Power Probe Darketter: 2'OOL15''D 7/1/21/4 6.4 ft Elevation After casing removal Method: Holk Stem Auger Harminer: 40 lb 2 After casing removal Stantum (ft.) No. Perkmet (in) Depth Depth Stantum Stantum Stantum 1 5-1 24/12 0.5 to 2.5 6 Black ASH mixed with silly sand, moist, loose FILL 2 - - 5 - Black ASH mixed with silly sand, moist, loose FILL 4 - 3 Seame - - - - 4 - - 2 - <								7/1/2014	Date Completed:	7/1/2014				
Vehicle: Tracked Length: 24' SS Date Depth Elevation Reference Method: AND Method: 2001:710 7/1/2014 6.4 ft After casing removal Method: AND Method: AND Method: ATTACK After casing removal Immer: Style: Anto Perfection Same Same Geological Geological Geological Geological Same Same Same PAVEMENT 1 5.1 24/12 0.5 to 2.5 6 Back ASH mixed with silly sand, moist, loose PAVEMENT PAVEMENT 2 - - - - - Back ASH mixed with silly sand, moist, loose FILL 3 -							Duce Startear	7,1,2011						
Model: AMS Power Prob Dameter: 20D/L STD 7/L/2014 6.4 ft After casing removal Hammer Syle: Auto Method: Holdwise Method: Holdwise							Date		oference					
Method: Note: Note: Note: Note: SAMPLE Geological/ Fill 2 -<		A 14												
Hammer Style: Auto Method: SATM D1386 STM D1386 Geological/ Test Data Geological/ Stratum 1 51 24/12 0.5 to 2.5 6 4 PAVEMENT Peol/Rec (in) Pepth (ft) blows/6* No. Peol/Rec (in) Pepth (ft) blows/6* No. PAVEMENT Peological/ Test Data PAVEMENT 2 - - 4 - 5 - PAVEMENT PAVEMENT 3 5-2 24/12 2.5 to 3.5 2 Block ASH mixed with silt, dry, hard, little white ash in seams FILL 4 - 2 - 4 - - - 5 - - - 2 -						IU	//1/2014	0.4 11		Arter casing remova	1			
Depth rest Data SAMPLE Geological/ Test Data Geological/ Stratum Fill 1 5-1 24/12 2.5 to 4.5 2 Black ASH mixed with silty and, moist, loose Fill. Fill. 4 - - 2 Dark gray sandy SILT, little to trace clay, wet, loose, ML Fill. 6 - - - - - - - 10 - - - - - - - - 11 - - - - - - - - - - - - - - - - - -			0			86								
(t). No. Per/Rec (in) Depth (t) blows/6* No. DESCRIPTION Test Data Stratum 1 5-1 24/12 0.5 to 2.5 6 3* Pavement: PAVEMENT 2 - - 4 3* Pavement: PAVEMENT PAVEMENT 3 5-2 24/12 2.5 to 4.5 2 Black ASH mixed with silty sand, moist, loose Fill. 4 - - 2 - - - - 5 - - - 2 -<		Style.	Auto	Methou.	ASTRIDIS	000		CAMP		Coological/	Coologian			
Image: Set in the set of the set			D (D (:)			N								
1 5:1 24/12 0.5 to 2.5 6 6 2 - - 4 - 5 3 5:2 24/12 2.5 to 7.5 2 - Hack ASH mixed with silty sand, moist, loose FILL 4 - - 4 - - - FILL 5 - - 4 -	(π.)	NO.	Pen/Rec (In)	Depth (ft)	DIOWS/6"	IN ₆₀		DESCRIP	IION	Test Data				
1 4 5 2 4							3" Pavement				PAVEMENT			
2 Image: Constraint of the set of the	1	S-1	24/12	0.5 to 2.5										
2 3 5-2 24/12 2.5 to 4.5 2 4 -							Black ASH mixed	d with silty sand	t moist loose					
3 5-2 24/12 2.5 to 4.5 2 4 -	2						Diacity torr mixed	a when sincy such						
3 5-2 24/12 2.5 0.4.5 2 4 3 3 seams 5 5.4 2 Black ASH mixed with silt, dry, hard, little white ash in seams 6 5.3 24/12 5 to 7 4 6 - 2 - - 7 - 6 6 - - 7 - 6 6 - - - 9 - - - - - - - 10 -											FTU			
4 3 seams 5 5.3 24/12 5 to 7 4 6 2 5 5 24/12 5 to 7 4 6 2 2 0 Dark gray sandy SILT, little to trace clay, wet, loose, ML 7 7 6 6 6 6 6 6 7 6 6 6 6 6 6 9 6 6 6 6 6 6 10 5.4 24/18 10 to 12 15 6 7 6 11 10 15 7 6 7 6 7 6 12 7 7 1 7 7 1 1 6 15 15 1<	3	S-2	24/12	2.5 to 4.5										
S 24/12 5 to 7 4 6 -								d with silt, dry,	hard, little white ash in					
5 2 2 7 4 6 2 3 2 3	4						seams							
6 5 24/12 5 to 7 4 0 2 0					2									
6 2 Dark gray sandy SILT, little to trace clay, wet, loose, ML 7 6 6 8 1 1 9 1 1 54 24/18 10 to 12 15 11 54 24/18 10 to 12 15 12 7 7 15 15 13 10 15 7 13 14 15 7 1 16 15 55 24/24 15 to 17 1 1 16 2 2 1 1 1 19 2 2 1 1 1 19 1 1 1 1 1 19 1 1 1 1 1 12 1 1 1 1 1 19 1 1 1 1 1 1 2 1 1 1 1 1	5													
7 2 Dark gray sandy SLL1, little to trace clay, wet, loose, ML 8 - - 6 9 - - - - 10 - - - - - 10 - - - - - - 10 - - - - - - - 11 - <td> 7</td> <td>S-3</td> <td>24/12</td> <td>5 to 7</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	7	S-3	24/12	5 to 7										
7	6						Dark gray candy	STIT little to t	trace clay wet loose MI					
8 9 10 11 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Dark yray Sanuy</td> <td>SILT, IILLE LO I</td> <td>liace clay, wet, loose, ML</td> <td></td> <td></td>							Dark yray Sanuy	SILT, IILLE LO I	liace clay, wet, loose, ML					
9 Image: Construct of the second	7				6									
9 Image: Construct of the second														
Image: second	8													
Image: second														
S-4 24/18 10 to 12 15 11 9	9													
S-4 24/18 10 to 12 15 11 9														
11 Image: Construct of the solits of the	10													
Interpretation Instruction Gray gravely SAND, trace sint, wet, compact, SP 12 13 7 13 13 14 14 14 14 15 16 17 16 2 17 18 17 18 19 14 14 14 19 16 2 14 14 19 18 16 16 16 18 16 16 16 16 19 18 16 16 16 19 16 16 16 16 10 17 16 16 16 10 16 16 16 16 19 16 16 16 16 10 16 16 16 16 10 16 16 16 16 10 16 16 16 16 10 16 <		S-4	24/18	10 to 12	15									
12 15 7 13 7 11 13 7 11 14 11 11 15 11 11 16 11 11 16 11 11 16 11 11 17 11 11 18 11 11 19 11 11 10 11 11 18 11 11 19 11 11 10 11 11 11 11 11 18 11 11 19 11 11 10 11 11 11 11 11 12 11 11 13 11 11 14 11 11 15 11 11 16 11 11 17 11 11 18 11 11 19 11 11	11				9				wat assumed CD					
13 Image: Construct of the second					15		Gray gravelly SA	and, trace sit,	wet, compact, SP					
14 Image: Consistency of the consistency of	12				7									
14 Image: Consistency of the consistency of														
14	13													
15											GLACIAL MARINE			
S-5 24/24 15 to 17 1 PP = 2.25 tsf 16 2 2 3 3 3 3 3 3 3 4 1 9 1<	14													
S-5 24/24 15 to 17 1 PP = 2.25 tsf 16 2 2 3 3 3 3 3 3 3 4 1 9 1<														
16 2 Consistency ASTM D2487 16 2 Consistency ASTM D2487 17 2 Consistency ASTM D2487 18 2 Consistency ASTM D2487 19 20 Consistency ASTM D2487 20 20 Consistency ASTM D2487 21 20 Consistency ASTM D2487 22 2 V. soft Consistency 21 2 Consistency ASTM D2487 22 2 V. soft Consistency 23 2 V. soft Consistency 24 25 V. soft Consistency 25 2 V. soft Consistency 26 2 V. soft Consistency 25 2 V. soft Consistency 26 2 V. soft Consistency 27 2 2 Consistency Consistency 26 2 10 10 10 10 27 2 10 10 1	15													
16 2 Consistency ASTM D2487 16 2 Consistency ASTM D2487 17 2 Consistency ASTM D2487 18 2 Consistency ASTM D2487 19 20 Consistency ASTM D2487 20 20 Consistency ASTM D2487 21 20 Consistency ASTM D2487 22 2 V. soft Consistency 21 2 Consistency ASTM D2487 22 2 V. soft Consistency 23 2 V. soft Consistency 24 25 V. soft Consistency 25 2 V. soft Consistency 26 2 V. soft Consistency 25 2 V. soft Consistency 26 2 V. soft Consistency 27 2 2 Consistency Consistency 26 2 10 10 10 10 27 2 10 10 1	∎ 1	S-5	24/24	15 to 17	1		T							
Image: Construct of the second seco	16				2		Grow either CLASS	wat caft C		PP = 2.25 tsf				
17 2 18 2 18 2 19 20 20 20 5-6 24/24 20 20 20 20 20 20 20 20 20 20 21 20 22 20 23 20 24 21 25 24/24 20 20 21 20 22 20 24 21 25 24/24 26 20 27 20 28 20 29 20 20 20 21 20 22 20 23 30 24 20 25 30 26 30 27 30 30 30 300 30 300 30 300 30	∎ 1						Gray sity CLAY,	wei, soft, CL						
19	17				2		1			PP = 0.8 tsr				
19	∎ 1						1							
19	18						1							
20 S-6 24/24 20 to 22 WH 21 S-6 24/24 20 to 22 WH 21 WH Same as above, very soft Same as above, very soft 22 WH End of Boring at 22' Same as above, very soft Granular Soils Cohesive Soils % Composition NOTES: PP = Pocket Penetrometer, MC = Moisture Content Soil Moisture Content Blows/ft. Density Blows/ft. Consistency ASTM D2487 LL = Liquid Limit, PI = Plastic Index Dry: S = 0% 0-4 V. Loose <2							1							
20 S-6 24/24 20 to 22 WH 21 S-6 24/24 20 to 22 WH 21 WH Same as above, very soft Same as above, very soft 22 WH End of Boring at 22' Same as above, very soft Granular Soils Cohesive Soils % Composition NOTES: PP = Pocket Penetrometer, MC = Moisture Content Soil Moisture Content Blows/ft. Density Blows/ft. Consistency ASTM D2487 LL = Liquid Limit, PI = Plastic Index Dry: S = 0% 0-4 V. Loose <2	19						1							
S-6 24/24 20 to 22 WH WH 21 WH WH Same as above, very soft Same as above, very soft 22 WH WH End of Boring at 22' Same as above, very soft Granular Soils Cohesive Soils % Composition NOTES: PP = Pocket Penetrometer, MC = Moisture Content Soil Moisture Content Blows/ft. Density Blows/ft. Consistency ASTM D2487 LL = Liquid Limit, PI = Plastic Index Dry: S = 0% 0-4 V. Loose <2	1]							
21 WH Same as above, very soft 22 WH Same as above, very soft 22 WH End of Boring at 22' Granular Soils Cohesive Soils % Composition Blows/ft. Consistency ASTM D2487 0-4 V. Loose <2	20						1							
21 WH Same as above, very soft 22 WH Same as above, very soft 22 WH End of Boring at 22' Granular Soils Cohesive Soils % Composition Blows/ft. Consistency ASTM D2487 0-4 V. Loose <2		S-6	24/24	20 to 22	WH		1							
22 WH Same as above, very sort 22 WH 22 WH Granular Soils Cohesive Soils Blows/ft. Consistency ASTM D2487 0-4 V. Loose <2	21				WH		Cama as abay	ver coo						
22 Image: WH WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: WH Image: Granular Soils Cohesive Soils % Composition NOTES: PP = Pocket Penetrometer, MC = Moisture Content Soil Moisture Content Blows/ft. Density Blows/ft. Consistency ASTM D2487 Image: WH Image: WH Image: UH V. Loose <2	∎ ^{−†}				WH		same as above,	very soft						
Granular Soils Cohesive Soils % Composition NOTES: PP = Pocket Penetrometer, MC = Moisture Content Soil Moisture Content Blows/ft. Density Blows/ft. Consistency ASTM D2487 LL = Liquid Limit, PI = Plastic Index Dry: S = 0% 0-4 V. Loose <2	22						1							
Granular Soils Cohesive Soils % Composition NOTES: PP = Pocket Penetrometer, MC = Moisture Content Soil Moisture Cont Blows/ft. Density Blows/ft. Consistency ASTM D2487 LL = Liquid Limit, PI = Plastic Index Dry: S = 0% 0-4 V. Loose <2								End of Borin	a at 22'					
Blows/ft. Density Blows/ft. Consistency ASTM D2487 LL = Liquid Limit, PI = Plastic Index Dry: S = 0% 0-4 V. Loose <2							1		. -					
Blows/ft. Density Blows/ft. Consistency ASTM D2487 LL = Liquid Limit, PI = Plastic Index Dry: S = 0% 0-4 V. Loose <2	Granula	r Soils	Cohesiv	e Soils	% Comp	osition	NOTES:	Soil Moisture Condition						
0-4 V. Loose <2 V. soft Bedrock Joints Humid: S = 1 to					-		······································				Dry: $S = 0\%$			
	-			,							Humid: $S = 1$ to 25%			
1 J 2 10 LUUSE 2 T JUL N J 70 LIGLE LOUGIOW = U 10 30 DEGLEEN LUUSE 2 D 20	5-10	Loose	2-4	Soft	< 5% 7	Trace	Shallow = 0 to 35 degrees				Damp: $S = 26$ to 50%			
								-		Moist: $S = 51$ to 75%				
											Wet: $S = 76 \text{ to } 99\%$			
							Steep = 55 to 90 degrees				Saturated: $S = 100\%$			
	2.50				- 5070		Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches							
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200			200	nuru				-						

		\sim				S	OIL BORI	NG LOG	Boring #:	B-6	
		CILAA	AAIT			Project:	Proposed Add	ition	Project #:	14066	
		30/1				Location:	193 Kennebec		Sheet:	1 of 1	
		GEOENGINEERI	NG SERVICES			City, State:	Portland, Main		Chkd by:		
Drilling C	٥.	Summit Geoen	aineerina Ser	vices		Boring Elevation:					
Driller:		C. Coolidge, P.		vices		Reference:	•				
Summit S		B. Peterlein, P.				Date started:	7/1/2014	Date Completed:	7/1/2014		
		METHOD		AMPLER		Dute Startear	,,1,2011	ESTIMATED GROUN			
Vehicle:		Tracked	Length:	24" SS		Date Depth Elevation				eference	
Model:	A 1.4	S Power Probe		24 33 2"OD/1.5"		7/1/2014	6.5 ft	Lievation	After casing remov		
Method:		w Stem Auger		140 lb	ID	//1/2014	0.5 IL			di	
Hammer		Auto	Method:	ASTM D15	96						
	Style.	Auto	Methou.	ASTRIDIS	80		CAMP		Coological/	Coologiaal	
Depth		D (D ())			N	_	SAMP		Geological/	Geological	
(ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀	DESCRIPTION			Test Data	Stratum	
						2-1/2" Pavemen	t			PAVEMENT	
1	S-1	24/20	0.5 to 2.5	5							
				9			dy SILT, trace	gravel and clay, brick			
2				6		pieces, ML					
				5		L					
3	S-2	24/18	2.5 to 4.5	4		1					
				3		White ASH mive	d with silt and	sand, moist, loose			
4				2							
				2		1				FILL	
5											
	S-3	24/18	5 to 7	1							
6				1		Same as above,	wet very loos				
				WH		Same as above,		-			
7				1							
8											
9											
10											
_	S-4	24/12	10 to 12	27							
11				28			CAND				
_				10		Gray medium to	coarse SAND,	wet, dense, SP or SW			
12				6							
_											
13											
14											
						t					
15											
	S-5	24/24	15 to 17	WH]				GLACIAL MARINE	
16				WH			wat was C	CL			
				WH		Gray silty CLAY,	wei, very soft,	UL			
17				1		1					
						1					
18						1					
						1					
19						1					
						1					
20						1					
	S-6	24/24	20 to 22	WH		1					
21		.,		WH		1					
				WH		Same as above					
22				WH		1					
							End of Borin	a at 22'			
						1		3 31 22			
Granula	ar Soile	Cohesiv	e Soils	% Comp	nsition	n NOTES: PP = Pocket Penetrometer, MC = Moisture Content			ire Content	Soil Moisture Condition	
Blows/ft.		Blows/ft.	Consistency	ASTM D						Dry: $S = 0\%$	
	V. Loose	<2	V. soft	ASTMUD	∠רט/					Humid: $S = 1$ to 25%	
				< F0/ T	-	Bedrock Joints					
5-10	Loose	2-4	Soft	< 5% T		Shallow = 0 to 35 degrees			Damp: $S = 26 \text{ to } 50\%$		
	Compact	5-8	Firm	5-15%		Dipping = 35 to 55 degrees			Moist: $S = 51$ to 75%		
31-50	Dense	9-15	Stiff	15-30%					Wet: $S = 76 \text{ to } 99\%$		
>50	V. Dense	16-30	V. Stiff	> 30%	With				Saturated: S = 100%		
		>30	Hard			Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches					
						Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200					

	~~		TEST PIT LO	OG	Test Pit #	TP-1
	CILLANAN	Project:	Proposed Commen	rcial Devel.	Project #:	15001
	SUIVIIVIII		193 Kennebec St.		Groundwater:	6' depth
	GEOENGINEERING SERVICES		Portland, ME			
Contrac			urface Elevation:	10.5 ft. +/-		
Equipm		Reference		tury Tire Cor	ncept 3" by FS'	Г (12/31/14)
	Staff: M. Hardison, E.I.	Date:	1/21/2015	Weather:	15° Sunny	
Depth		DESCR	RIPTION			
(ft)	ENGINEERING				GENERAL	
	5.5" Pavement. 2" HMA course over 3.5" Macad	am surface		PAVEM	ENT	
1						
2	Dlack condu SILT, little groupland ash, according	al brials				
	Black sandy SILT, little gravel and ash, occasion and glass fragments, moist	al offick	slight petroleum o	dor		
3	und grubb hughlends, moise					
4					FIL	L
	Same as above, black and white ash, damp		moderate petroleu	m odor		
5						
	Large wood piece at 5.5'					
6						
	White ASH, some black ash, little silt, occasiona	l brick	groundwater seepa	age rapid at 6	1	
7	fragments, glass pieces and wood pieces, wet					
	End of Test Pit at 6.8', bottom of test pit subm	nerged				
8						
9						
10						
11						
12						
12						
13						
14						
15						
16						
17						

APPENDIX C

CONSTRUCTION DETAILS

