



**St. Lawrence Testing
& Inspection Co. Ltd.**

P.O. Box 997, Cornwall, ON, Canada K6H 5V1
814 Second Street W., Phone (613) 938-2521
E-mail: slt@ontarioeast.net Fax (613) 938-7395

December 31, 2022

Mr. Robert Dalley
Port of Johnstown
3035 County Rd. 3
Johnstown, ON
K0E 1T0

**RE: Proposed Wall Around Truck Loading Area
Geotechnical Subsurface Investigation
Report No. 22C380**

Dear Mr. Dalley:

In accordance with verbal instructions received from you and your staff, this report is submitted, outlining the results of a geotechnical subsurface investigation carried out at the truck loading area for the grain stored in the nearby bins.

A) DESCRIPTION OF FIELD WORK

Prior to starting the drilling, service locates were done.

The initial drilling took place on December 13, 2022 in midafternoon. When we arrived, we met with your Mr. Kevin Saunders to become aware of private locates in the area.

Boreholes 1 and 2 were put down. At Borehole 1 on the West side of the West wall of the loading area, we hit sampler and auger refusal at 1.93 m.

We then proceeded to Borehole 2 near the North West corner of the loading area. The borehole was advanced by split spoon sampling. Standard Penetration tests were conducted along with the split spoon sampling. The borehole was advanced to 5.9 m and it was dark at this time so we finished for the day.

We resumed drilling on December 21, 2022. Upon arrival on site, we met again with Mr. Kevin Saunders to check for the private locates. There were a number of private locates near the North East area of the truck loading area. We put down 2 boreholes to auger refusal. The boreholes were advanced by split spoon sampling. Standard Penetration tests were conducted along with the split spoon sampling. The recovered samples were placed in glass jars for later detailed lab classification and washed gradation tests. The results are found in the attached borehole logs and gradation data sheets.

B) BOREHOLE LOCATIONS

Following are the borehole locations as recorded on site.

Borehole 1 was on the West side of the loading area, 12.8 m West of the West wall opposite the column between #6 pit and #8 pit.

Borehole 2 was East and North of Borehole 1 close to the North West column for the loading area.

Borehole 3 was 3.0 m West of Borehole 1.

Borehole 4 was 2.1 m West of the East wall of the loading area and 4.0 m North of the North wall of cell #6.

C) STRATIGRAPHY

The stratigraphy based on Boreholes 2, 3 and 4 is somewhat similar. From the high refusal depth at Borehole 1, it is possible that there is a buried concrete structure at this location or a boulder.

The surface in the paved area has 75 mm of asphalt underlain by gravel fill to 0.36 m. Below the gravel fill is a black, moist, loose silty sand fill. The black fill exists at Boreholes 1, 2 and 3, but not at Borehole 4.

Below the black fill is a brown, moist, loose to dense silty sand which was gravelly as well at Borehole 4. At Borehole 2, the silty sand extended to 1.52 m where it became a brown, moist, compact silty sand and gravel. At Borehole 2, the sand and gravel became loose below 2.3 m.

The silty sand was generally grey below 3.0 m at Borehole 2 and grey below 6.0 m at Borehole 3. It was very moist below 3.8 m at Borehole 2, wet below 3.0 m at Borehole 3, and very moist below 3.0 m at Borehole 4.

At Boreholes 2, 3 and 4, there were black zones noted in the lower depths, at 4.8 m at Borehole 2, at 7.9 m at Borehole 3 and at 4.0 m at Borehole 4.

Because Boreholes 3 and 4 were augered deeper, we noted the native silty clay stratum, both at 9.14 m below the surface at both boreholes. Below the silty clay was a grey, moist silty gravelly sand till. This extends from 10.54 to 13.11 m below grade at Borehole 3 and 9.60 to 11.48 m below grade at Borehole 4.

For the specific stratigraphy at all the boreholes, the borehole logs should be referred to.

D) GEOTECHNICAL DISCUSSION

1) General

It is our understanding that it is proposed to enclose the truck loading area with new walls. We assumed while on site during the initial drilling that we could provide a footing design to support the walls. After reviewing the data from Boreholes 2, 3 and 4, we came to the conclusion that a piled foundation would be needed. This is because of the loose nature of the soil at and below the footing level and the presence of black soil at deeper depths. In addition, it is not known what type of foundations support the existing structure.

2) Piling Foundations

Prior to starting the piling structural design for the wall, an excavator should be brought on site to dig several test pits to note the design of the foundations for the columns supporting the existing structure. This will provide data to note how far the piles can be driven away from the existing structure.

The piles to support the wall should be 10 inch diameter concrete filled steel pipe piles, a minimum ½ inch thick and driven to refusal on the bedrock. The capacity of the driven piles on the bedrock is 100 imperial tons. Refusal is noted when driving the piles using a 6000 lb hammer and dropped 5 feet results in a maximum driving depth of ½ of an inch with 5 blows over 3 consecutive runs. This data is provided in imperial units since piling firms normally work with imperial units.

The expected driving depth is 13.1 m in the South Centre area and 11.5 m in the North East area, as noted at Borehole 3 and Borehole 4.

It is assumed that there will be a concrete foundation wall built over the pile caps in order to support the wall.

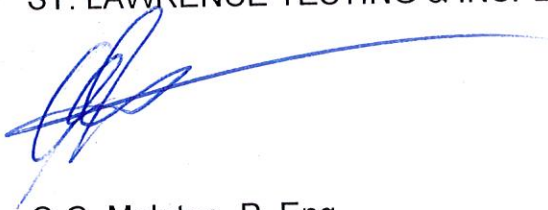
E) CONSTRUCTION CONTROL

It is recommended that our firm be brought back to the site to supervise the excavation to note the foundations of the existing columns.

During the pile driving, it will be a requirement of this report that our firm be engaged to inspect the pile driving on a full time basis. This is to ensure that we certify that each pile was driven to refusal and record the depth of each driven pile.

Respectfully submitted,

ST. LAWRENCE TESTING & INSPECTION CO. LTD.



G.G. McIntee, P. Eng.

GGM:mm



Attachments



REPORT NO. 22C380

CLIENT Port of Johnstown
Grain Elevator Truck Loading Tower

BOREHOLE NO. 2

LOCATION Grain Elevator Truck Loading Tower
 DATE OF BORING December 13, 2022 DATE OF WL READING December 13, 2022

CASING HF Auger

DATUM _____

SOIL PROFILE				SAMPLES				LABORATORY TESTS PERFORMED	LAB	TEST	RESULTS
DEPTH ELEVATION	DEPTH	SOIL DESCRIPTION	STRAT. PLOT	WATER CONDITIONS	CONDITION	TYPE	NUMBER		RECOVERY	N - VALUE	WATER CONTENT & ATTERBERG LIMITS. WP W WL
0		Silty Sand Fill Black, moist, loose								DYNAMIC PENETRATION TEST BLOWS PER FOOT. . . K . . . 0 20 40 60 80	
1	.76	Silty Sand Brown, moist, dense, possibly due to frost				SS	1	65	34		
2	1.52	Sand & Gravel Brown, moist, silty, compact becoming loose below 2.3 m				SS	2	30	11		
3											
4	3.05	Silty Sand Grey, moist, loose, becoming very moist below 3.8 m and black below 4.8 m and wet below 5.3 m. Possible wood below 4.8 m				SS	4	30	3		
					3.8						
5						SS	5	50	2		
						SS	6	40	9		
						SS	7	50	4		
6	5.94	Termination of borehole								APPENDIX	



REPORT NO. 22C380

CLIENT Port of Johnstown
 LOCATION Grain Elevator Truck Loading Tower

BOREHOLE NO. 3

DATE OF BORING December 21, 2022 DATE OF WL READING December 21, 2022

CASING HF Auger

DATUM _____

SOIL PROFILE				SAMPLES				LABORATORY TESTS PERFORMED	LAB	TEST	RESULTS
DEPTH	ELEVATION	DEPTH	SOIL DESCRIPTION	STRAT. PLOT	WATER CONDITIONS	CONDITION	TYPE				
0			75 mm Asphalt Gravel Fill								
.36			Silty Sand Fill Black, moist, loose								
1											
1.60			Silty Sand Brown, moist, loose, becoming wet and very loose below 3.0 m and grey below 6.0 m								
2											
3											
4											
5											

DYNAMIC PENETRATION TEST BLOWS PER FOOT. . . K . . .										
WATER CONTENT & ATTERBERG LIMITS.		WP		W		WL				

3.0
▼
||

APPENDIX



St. Lawrence Testing & Inspection Co. Ltd.

OFFICE BOREHOLE RECORD

REPORT NO. 22C380

CLIENT Port of Johnstown

BOREHOLE NO. 4

LOCATION Grain Elevator Truck Loading Tower

CASING HF Auger

DATE OF BORING December 21, 2022

DATE OF WL READING December 21, 2022

DATUM _____

SOIL PROFILE				SAMPLES				LABORATORY TESTS PERFORMED	LAB	TEST	RESULTS			
DEPTH ELEVATION	DEPTH	SOIL DESCRIPTION	STRAT. PLOT	WATER CONDITIONS	CONDITION	TYPE	NUMBER		RECOVERY	N - VALUE	WATER CONTENT & ATTERBERG LIMITS.			
											WP	W	WL	
DYNAMIC PENETRATION TEST BLOWS PER FOOT. . . K . . .														
0		Gravel Fill								0	20	40	60	80
1	.82	Silty Sand Brown, moist, gravelly, compact, becoming very moist and loose below 3.0 m and with a black zone below 4.0 m and brown below 4.5 m				SS	1	25	23					
2						SS	2	50	27					
3						SS	3	35	8					
4						SS	4	20	3					
5						SS	5	40	2					
						SS	6	50	4					
APPENDIX														



REPORT NO. 22C380

BOREHOLE NO. 4

CASING HF Auger

CLIENT Port of Johnstown
Grain Elevator Truck Loading Tower

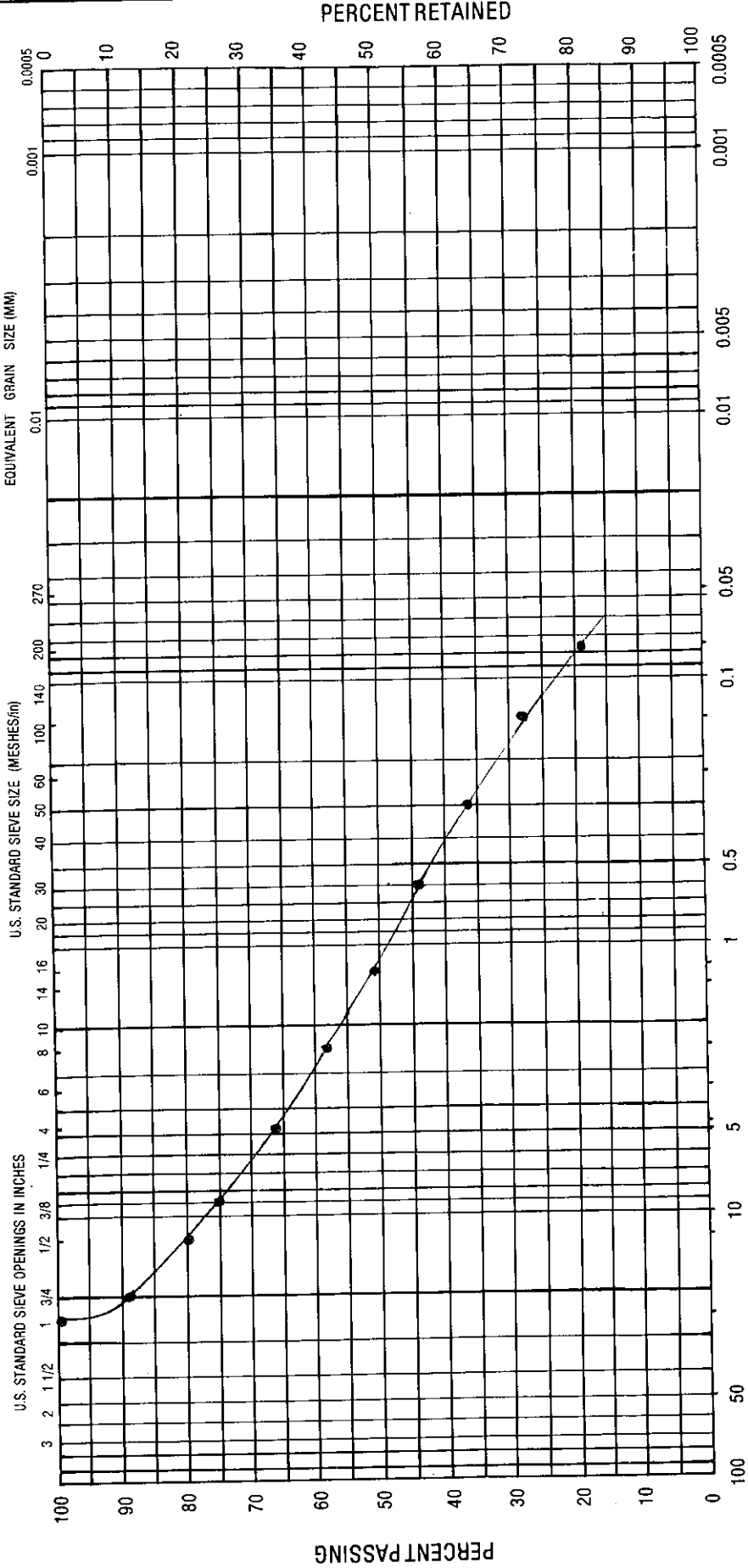
LOCATION _____ DATE OF WL READING December 21, 2022

DATE OF BORING December 21, 2022 DATUM _____

SOIL PROFILE				SAMPLES				LABORATORY TESTS PERFORMED	LAB	TEST	RESULTS				
DEPTH	ELEVATION	DEPTH	SOIL DESCRIPTION	STRAT. PLOT	WATER CONDITIONS	CONDITION	TYPE		NUMBER	RECOVERY	N - VALUE	WATER CONTENT & ATTERBERG LIMITS.			
											WP	W	WL		
											DYNAMIC PENETRATION TEST BLOWS PER FOOT. . K . . .				
											0	20	40	60	80
6			<u>Silty Sand</u> Brown, moist, loose, becoming black below 7.6 m and brown below 8.0 m with some clay				X	SS	7	100	4				
7															
8							X	SS	8	100	6				
9															
9.14			<u>Silty Clay</u> Grey, moist, hard				X	SS	9	25	18				
10															
9.60			<u>Silty Sand Till</u> Grey, moist, gravelly, very dense				X	SS	10	100	72				
11															
11.48			Auger refusal on assumed bedrock												
12															
											APPENDIX				



GRAVEL		FINE GRAVEL		SAND			SILT		CLAY	
				Coarse	Medium	Fine	Very Fine			



GRAVEL		SAND			SILT		CLAY	
Coarse	Fine	Coarse	Medium	Fine				

UNIFIED CLASSIFICATION (ASTM D 2487)

BOREHOLE No. 2

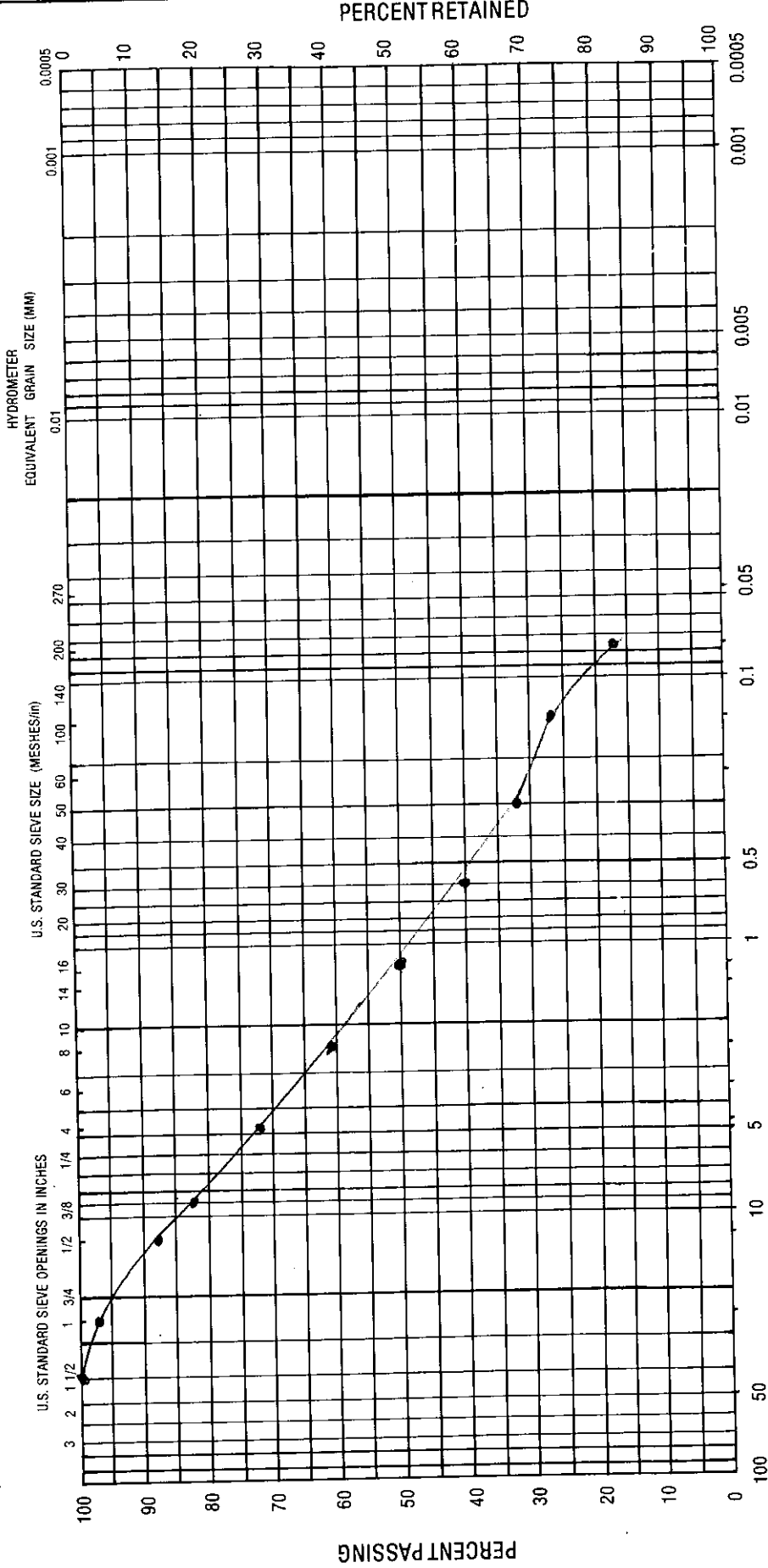
SAMPLE No. 2

DEPTH 1.5 to 2.1 m

DESCRIPTION Silty sand and gravel



GRAVEL		FINE GRAVEL			SAND			SILT			CLAY		



GRAVEL		SAND			SILT			CLAY		

UNIFIED CLASSIFICATION (ASTM D 2487)

BOREHOLE No. 4 SAMPLE No. 2 DEPTH 1.5 to 2.1 m DESCRIPTION Silty sand and gravel