



Appendix A

- Subsurface Exploration

PROJECT DESCRIPTION

THIS PROJECT CONSISTS OF REPAIRS TO THE BULKHEAD ALONG DOCK 26W AT THE PORT AUTHORITY GENERAL CARGO FACILITY IN CLEVELAND OHIO. THE FULL LENGTH OF THE BULKHEAD WILL BE REPLACED, APPROXIMATELY 680'.

HISTORIC RECORDS

HISTORICAL BORING INFORMATION IS AVAILABLE FOR THIS DOCK FROM THE 1958 SET OF PLANS TITLED "PIER AT WEST 6TH STREET". THERE ARE SEVEN BORINGS IN THIS PLAN, SET, AND THEY ARE LOCATED ALONG THE PERIMETER OF THE DOCK. THEY ARE NOT INCLUDED IN THIS STRUCTURE FOUNDATION EXPLORATION. HOWEVER, IT SHOULD BE NOTED THAT THEY EXTENDED DEEPER THAN THE SIX CURRENT BORINGS AND ENCOUNTERED BEDROCK SURFACE ALONG THE WEST SIDE OF THE DOCK BETWEEN ELEVATIONS 478.18' AND 487.5'.

GEOLOGY

THE PROJECT IS LOCATED ON THE DISSECTED, GLACIATED PORTION OF THE ERIE LAKE PLAIN PHYSIOGRAPHIC REGION. IT IS LOCATED ALONG THE LAKE ERIE SHORE JUST TO THE EAST OF THE CUYAHOGA RIVER. THE SOIL CONSISTS OF EXTREMELY DEEP COHESIVE LACUSTRINE DEPOSITS OVERLAIN BY GRANULAR FILL MATERIAL. BEDROCK CONSISTS OF SHALE OF DEVONIAN AGE.

RECONNAISSANCE

THE PROJECT AREA IS LOCATED IN DOWNTOWN CLEVELAND. THE SITE CONSISTS OF A LOADING DOCK ALONG THE SOUTH SHORE OF LAKE ERIE JUST TO THE EAST OF THE MOUTH OF THE CUYAHOGA RIVER. ABOVE AND BELOW WATER INSPECTIONS OF THE DOCK WERE PERFORMED BY JMT BETWEEN OCTOBER 15, 2018 AND JANUARY 21, 2019. THE BELOW WATER INSPECTION ALONG WITH SONAR REVEALED SIGNIFICANT BREACHES AND SECTION LOSS IN THE BULKHEAD WALL ALONG THE MUDLINE ON THE WEST SIDE OF THE DOCK. THEREFORE, THE DOCK WAS CLOSED TO VESSELS AND HEAVY EQUIPMENT, AND THE PROJECT WAS BEGUN. FURTHER SITE RECONNAISSANCE AND SURVEYING WERE CONDUCTED BY JIM PREVOST OF PE LIMITED IN APRIL 2019.

SUBSURFACE EXPLORATION

THE SUBSURFACE EXPLORATION INCLUDED DRILLING 6 SOIL BORINGS TO 91.5 FEET DEEP BELOW GROUND SURFACE. THE BORINGS WERE DRILLED IN A LINE FROM SOUTH TO NORTH VERY NEAR THE WEST SIDE OF THE DOCK. THE BORINGS WERE DRILLED USING A TRUCK-MOUNTED, CME 55T DRILL RIG WITH 3.25-INCH ID HOLLOW STEM AUGERS. SOIL SAMPLES WERE RECOVERED USING A SPLIT SPOON SAMPLER IN ACCORDANCE WITH THE STANDARD PENETRATION TEST (SPT) [AASHTO T-206]. THEY WERE THEN PLACED IN SEALED JARS. THE AUTOMATIC HAMMER USED FOR THE SPT WAS LAST CALIBRATED NOVEMBER 21, 2017 AND THE AVERAGE DRILL ROD ENERGY RATIO (ER) IS 78%. SAMPLING WAS PERFORMED EVERY 5 FEET EXCEPT FOR INTERVALS CORRESPONDING TO BREACHES IN THE WALL IN WHICH THE SAMPLING WAS CONTINUOUS IN ORDER TO BE ABLE TO SEE A CONTINUOUS SOIL COLUMN AS WELL AS CAPTURE ENOUGH MATERIAL TO PERFORM A CORROSION ANALYSIS.

EXPLORATION FINDINGS

MATERIALS ENCOUNTERED ON THE PROJECT WERE PREDOMINANTLY COMPRISED OF GRANULAR FILL MATERIAL (A-1-a and A-1-b) DOWN TO APPROXIMATE ELEVATION 532.5 FEET, UNDERLAIN BY SILTY CLAY (A-6b) ON THE NORTH (DEADMAN ZONE) END OF THE DOCK; AND COHESIVE AND/OR FINE-GRAINED (A-6a and A-4a) AND GRANULAR (A-1-b, A-2-4, A-1-a, AND A-2-6) FILL MATERIAL DOWN TO APPROXIMATE ELEVATION 545.2 TO 553.2 FEET UNDERLAIN BY COHESIVE SOIL (A-6B, A-6A, AND A-7-6) TO THE SOUTH IN THE TIEROD ONLY ZONE. THE GROUNDWATER LEVEL WAS CONSISTENT AMONGST THE BORINGS BETWEEN ELEVATIONS 571 FEET AND 573 FEET WHICH ROUGHLY COINCIDES WITH THE NEARBY LAKE ERIE POOL ELEVATION. CONSEQUENTLY, MOST OF THE SAMPLES WERE WET EITHER BEING NON-PLASTIC MATERIAL WITH A HIGH MOISTURE CONTENT, OR PLASTIC MATERIAL WITH A MOISTURE CONTENT IN THE UPPER PORTION OF THE PLASTIC RANGE. THE GRANULAR FILL MATERIAL ON THE NORTH END WAS LOOSE IN ITS DEGREE OF COMPACTNESS WITH THE UPPER PORTION BEING MEDIUM DENSE. THE GRANULAR FILL MATERIAL TO THE SOUTH WAS PRIMARILY MEDIUM DENSE IN ITS DEGREE OF COMPACTNESS; AND THE COHESIVE FILL MATERIAL TO THE SOUTH RANGED FROM MEDIUM STIFF TO VERY STIFF IN ITS RELATIVE CONSISTENCY. THE UNDERLYING COHESIVE SOIL ON BOTH THE NORTH END AND TO THE SOUTH INCREASED IN DENSITY WITH INCREASE IN DEPTH UNTIL A STRATUM OF HARD A-6b OR A-6a WAS ENCOUNTERED.

THE FILL MATERIAL ROUTINELY HAD A STRONG PETROLEUM ODOER. IN ADDITION, WOOD, METAL, AND A TRACE OF BRICK FRAGMENTS WERE ENCOUNTERED IN THE FILL. ALSO, IN BORINGS B-003-0-18 AND B-004-0-18, THE FILL MATERIAL WAS SLIGHTLY ORGANIC.

BEDROCK SURFACE WAS NOT ENCOUNTERED IN ANY OF THESE BORINGS. HOWEVER, WE KNOW FROM THE HISTORIC BORINGS (SEE ABOVE) THAT BEDROCK SURFACE IS RELATIVELY FLAT-LYING AND IS LOCATED JUST BELOW THE BOTTOMS OF THESE BORINGS.

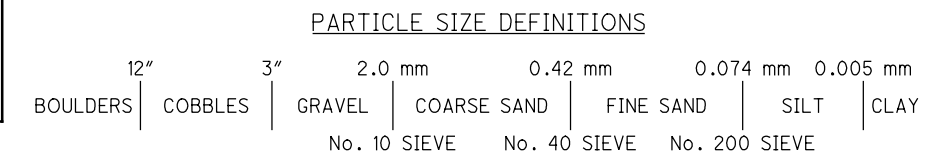
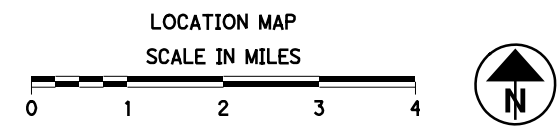
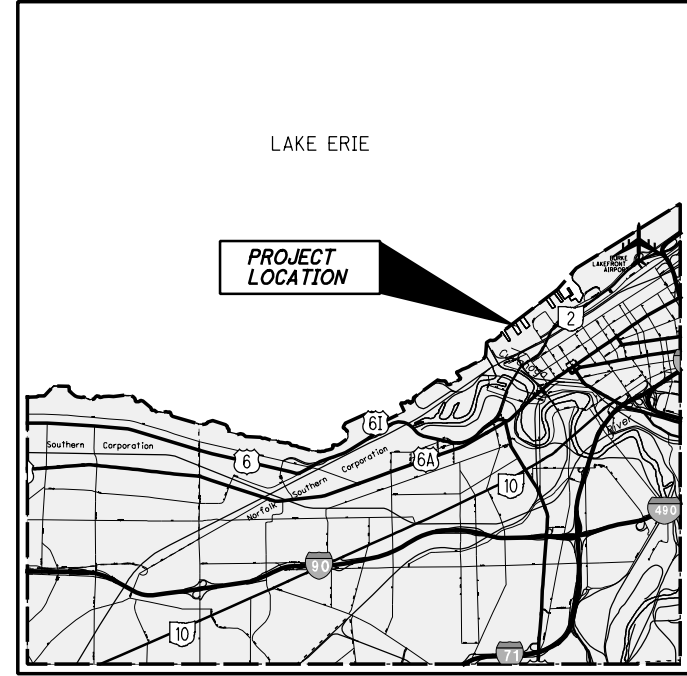
SPECIFICATIONS

THIS GEOTECHNICAL EXPLORATION WAS PERFORMED IN ACCORDANCE WITH THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, OFFICE OF GEOTECHNICAL ENGINEERING, SPECIFICATIONS FOR GEOTECHNICAL EXPLORATIONS, DATED JANUARY 2019.

AVAILABLE INFORMATION

ALL AVAILABLE SOIL AND BEDROCK INFORMATION THAT CAN BE CONVENIENTLY SHOWN ON THE GEOTECHNICAL EXPLORATION SHEETS HAS BEEN SO REPORTED. ADDITIONAL EXPLORATIONS HAVE BEEN MADE TO STUDY THE NEARBY 6TH STREET PIER BOTH IN 1958 AND IN 2019. COPIES OF THIS DATA, MAY BE INSPECTED IN THE CLEVELAND - CUYAHOGA COUNTY PORT AUTHORITY'S OFFICE AT 1100 WEST 9TH STREET IN CLEVELAND OHIO.

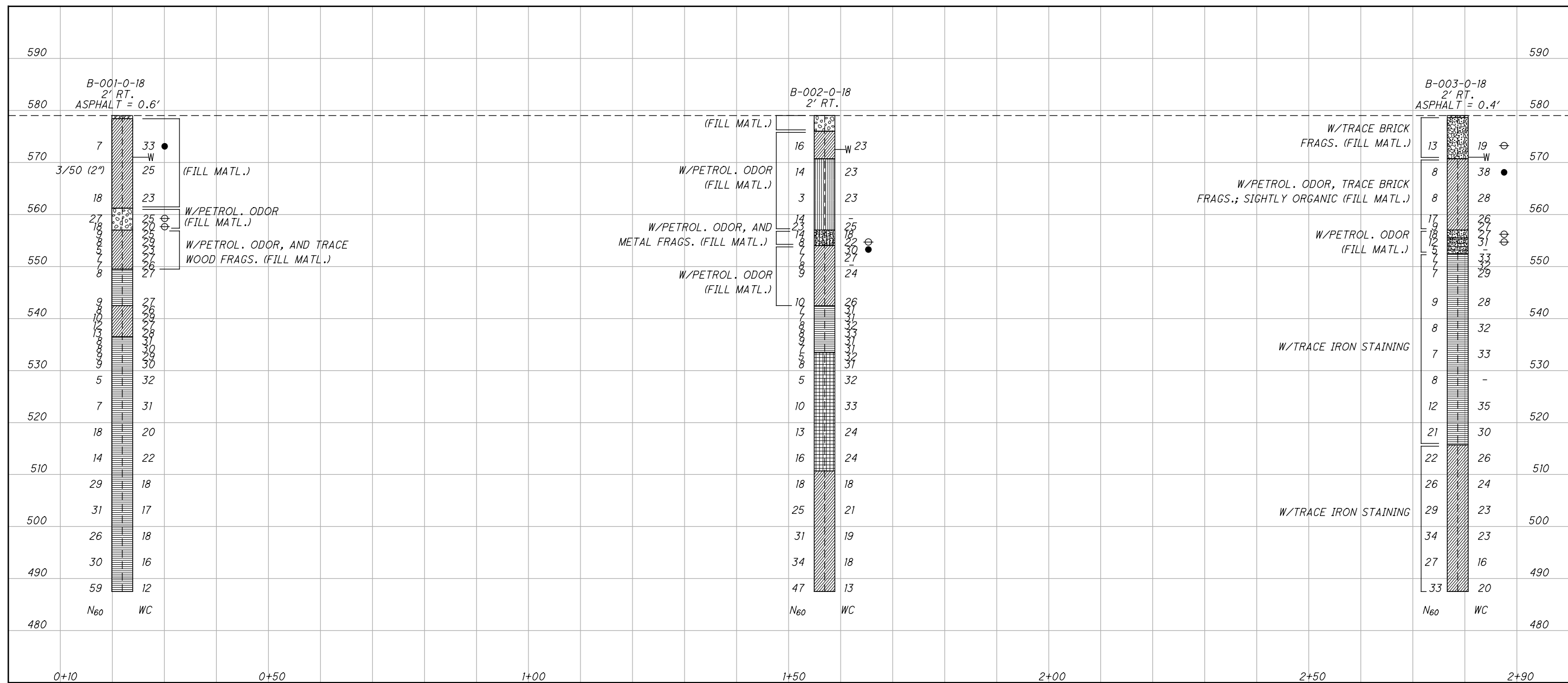
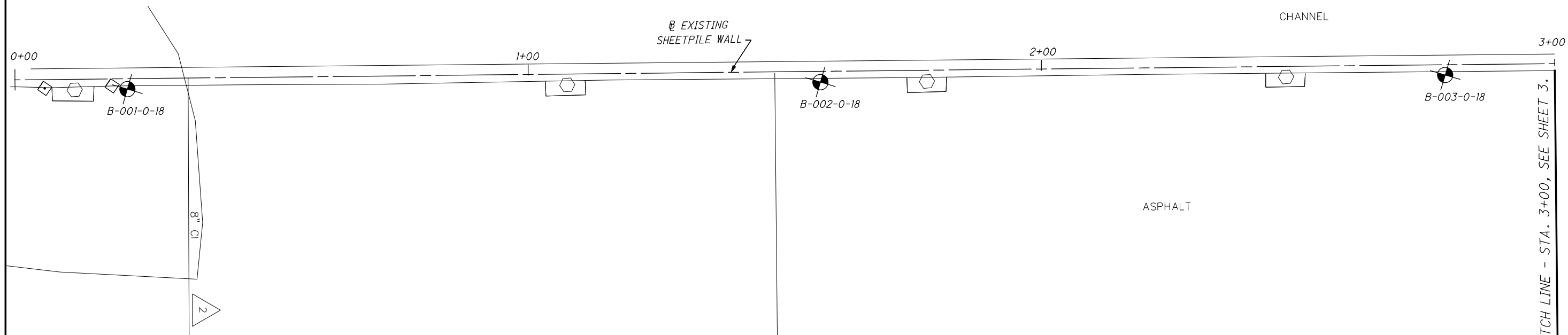
LEGEND		ODOT CLASS	CLASSIFIED MECH./VISUAL	
DESCRIPTION				
	GRAVEL AND/OR STONE FRAGMENTS	A-1-a	3	8
	GRAVEL AND/OR STONE FRAGMENTS WITH SAND	A-1-b	7	13
	GRAVEL AND/OR ST. FRAGS. WITH SAND AND SILT	A-2-4	2	4
	GRAVEL AND/OR ST. FRAGS. W/SAND, SILT & CLAY	A-2-6	0	2
	SANDY SILT	A-4a	2	4
	SILT AND CLAY	A-6a	9	39
	SILTY CLAY	A-6b	6	50
	CLAY	A-7-6	1	5
		TOTAL	30	125
	PAVEMENT OR BASE = X = APPROXIMATE THICKNESS	VISUAL		
	BORING LOCATION - PLAN VIEW.			
	DRIVE SAMPLE BORING PLOTTED TO VERTICAL SCALE ONLY. HORIZONTAL BAR INDICATES A CHANGE IN STRATIGRAPHY.			
	WC INDICATES WATER CONTENT IN PERCENT.			
	W— INDICATES FREE WATER ELEVATION.			
	— INDICATES STATIC WATER ELEVATION.			
	N ₆₀ INDICATES STANDARD PENETRATION RESISTANCE NORMALIZED TO 60% DRILL ROD ENERGY RATIO.			
	● INDICATES A PLASTIC MATERIAL WITH A MOISTURE CONTENT EQUAL TO OR GREATER THAN THE LIQUID LIMIT MINUS 3.			
	⊖ INDICATES A NON-PLASTIC MATERIAL WITH A MOISTURE CONTENT GREATER THAN 25% OR GREATER THAN 19% WITH A WET APPEARANCE.			
	SS INDICATES A SPLIT SPOON SAMPLE.			
	NP INDICATES A NON-PLASTIC SAMPLE.			



RECON. - JEP 4/19
 DRILLING - CA (NEAS INC.) 3/18/19 - 4/2/19
 DRAWN - MRS 6/19
 REVIEWED - SAS 6/19

Q:\2019\1900265_001_Dock_26W_Rehabilitat\CADD\geotechnical\sheets\80986\CO01.dgn 6/5/2019 11:08:51 AM mstouffer

DESIGN AGENCY: JMT
 2800 CORPORATE EXCHANGE DR., STE 240
 COLUMBUS, OH 43231
 (614) 714-0270 FAX (614) 714-0323
 JMT JOB NO. 19-00265-001
STRUCTURE FOUNDATION EXPLORATION DOCK 26W BULKHEAD WALL
 GENERAL CARGO FACILITY DOCK 26W
 1/16



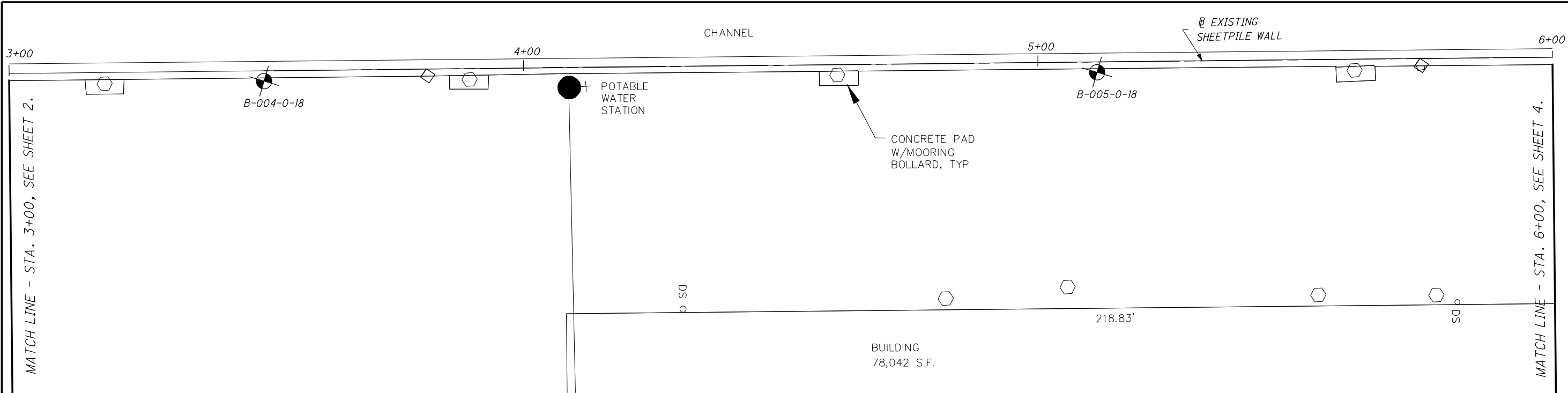
STRUCTURE FOUNDATION EXPLORATION
STA. 0+00 TO STA. 3+00

GENERAL CARGO
FACILITY DOCK 26W

2 / 16

DRAFTED MRS
CHECKED SAS

MATCH LINE - STA. 3+00, SEE SHEET 3.



Station	Soil Description	Depth (ft)	Notes	Station
590				590
580				580
570	W/WOOD. FRAGS. AND TRACE IRON STAINING (FILL MATL.)	13	21 ⊕	570
560	W/PETROL. ODOR; SLIGHTLY ORGANIC (FILL MATL.)	9	32 ●	560
550	W/PETROL. ODOR (FILL MATL.)	4	43 ●	550
540		14	29	540
530		8	32 ●	530
520		14	24	520
510		9	31 ●	510
500		33	17	500
490		33	17	490
480		53	22	480
3+10				5+90

DRAFTED

MRS

CHECKED

SAS

STRUCTURE FOUNDATION EXPLORATION

STA. 3+00 TO STA. 6+00

GENERAL CARGO

FACILITY DOCK 26W

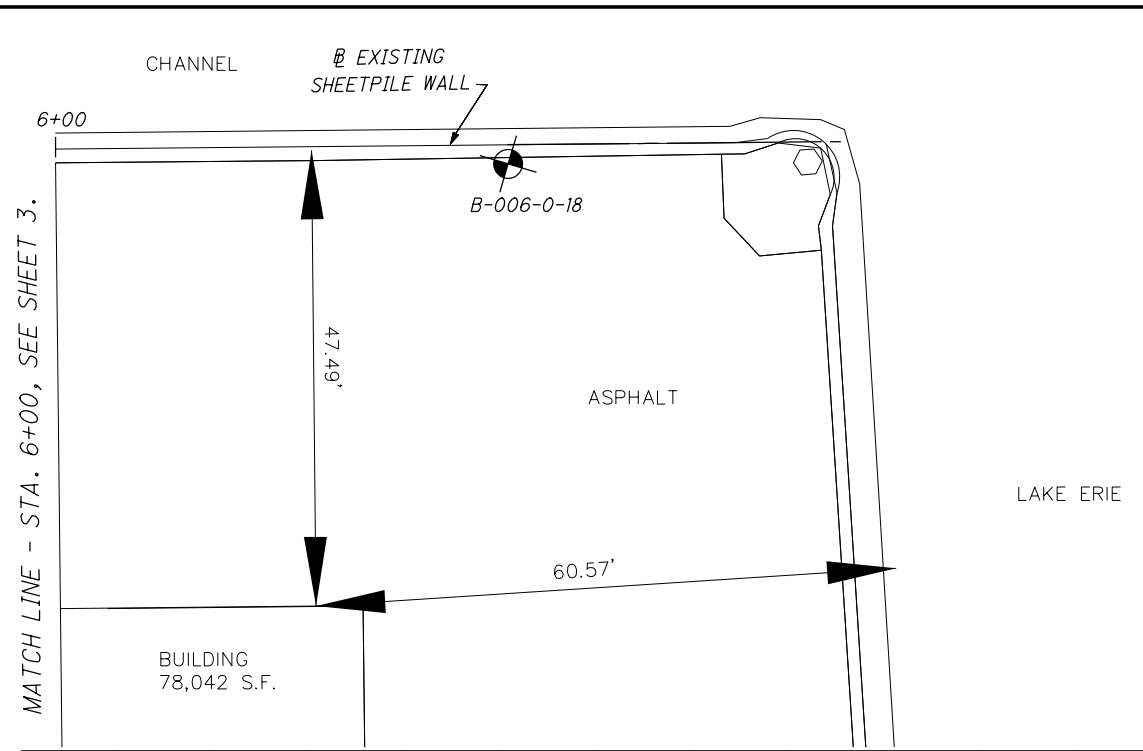
3
/
16

DRAFTED
MRS
CHECKED
SAS

0 5 10 20
HORIZONTAL
SCALE IN FEET

STRUCTURE FOUNDATION EXPLORATION
STA. 6+00 TO STA. 6+80.56

GENERAL CARGO
FACILITY DOCK 26W



PROJECT: DOCK 26 DOCK REHABILITATION		DRILLING FIRM / OPERATOR: NEAS / ASHBAUGH		DRILL RIG: CME 55T		STATION / OFFSET:		EXPLORATION ID													
TYPE: DOCK REHABILITATION		SAMPLING FIRM / LOGGER: NEAS / ASHBAUGH		HAMMER: CME AUTOMATIC		ALIGNMENT:		B-001-0-18													
PID: SFN: 3/28/19		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 11/21/17		ELEVATION: 0.0 (MSL) EOB: 91.5 ft.		PAGE													
START: 3/27/19 END: 3/28/19		SAMPLING METHOD: SPT		ENERGY RATIO (%): 78		COORD: Not Recorded		1 OF 2													
MATERIAL DESCRIPTION AND NOTES		ELEV.	DEPTHS	SPT/ RQD	N ₆₀	REC SAMPLE (%)	HP (tsf)	ID	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (G)	BACK FILL		
7.0" ASPHALT (DRILLERS DESCRIPTION) VERY SOFT TO SOFT, GRAY AND DARK GRAY, SILT AND CLAY, LITTLE TO SOME GRAVEL, LITTLE SAND, WET TO MOIST (FILL)		0.0																			
		-0.6																			
MEDIUM DENSE, GRAY, GRAVEL AND STONE FRAGMENTS SOME SAND, TRACE SILT, TRACE CLAY, CONTAINS A PETROLIFEROUS ODOR, WET (FILL)		-17.8																			
		-22.0																			
SOFT TO MEDIUM STIFF, GRAY AND BLACK, SILT AND CLAY, TRACE TO SOME SAND, TRACE TO LITTLE GRAVEL, CONTAINS A PETROLIFEROUS ODOR, SS-9 CONTAINS TRACE WOOD FRAGMENTS, MOIST TO WET		-29.5																			
MEDIUM STIFF TO STIFF, GRAY AND BLACK, SILTY CLAY, TRACE SAND, TRACE GRAVEL, MOIST																					
MEDIUM STIFF, GRAY, SILT AND CLAY TRACE SAND, TRACE GRAVEL, MOIST		-36.5																			
SOFT TO VERY STIFF, GRAY, SILTY CLAY, TRACE SAND, TRACE GRAVEL, MOIST TO DAMP		-42.5																			

STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT GDT - 5/29/19 10:06 - X:ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\DOCK 26\GINT FILES\DOCK 26.GPJ

PID:	SFN:	PROJECT:	DOCK 26	STATION / OFFSET:	START: 3/27/19										END: 3/28/19			PG 2 OF 2		B-001-0-18						
					GRADATION (%)					ATTERBERG					WC	ODOT CLASS (G)	BACK FILL									
MATERIAL DESCRIPTION AND NOTES				DEPTHS	SPT/ RCD	N ₆₀	REC SAMPLE (%)	HP ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (G)	BACK FILL						
SOFT TO VERY STIFF, GRAY, SILTY CLAY, TRACE SAND, TRACE GRAVEL, MOIST TO DAMP (continued)				-61	4	18	100	SS-23	1.75	-	-	-	-	-	-	-	-	-	20	A-6b (V)	CLAY					
				-62	5	9																		CLAY		
				-63																					CLAY	
				-64																					CLAY	
				-65	5	4	14	100	SS-24	1.75	-	-	-	-	-	-	-	-	-	-	22	A-6b (V)	CLAY			
				-66	4	7																			CLAY	
				-67																						CLAY
				-68																						CLAY
				-69																						CLAY
				-70	8	9	29	100	SS-25	0.50	-	-	-	-	-	-	-	-	-	-	18	A-6b (V)	CLAY			
				-71	9	13																				CLAY
				-72																						CLAY
				-73																						CLAY
				-74																						CLAY
				-75	10	10	31	100	SS-26	1.50	-	-	-	-	-	-	-	-	-	-	17	A-6b (V)	CLAY			
				-76	10	14																				CLAY
				-77																						CLAY
				-78																						CLAY
				-79																						CLAY
				-80	7	9	26	100	SS-27	1.25	-	-	-	-	-	-	-	-	-	-	18	A-6b (V)	CLAY			
				-81	9	11																				CLAY
-82																						CLAY				
-83																						CLAY				
-84																						CLAY				
-85	8	10	30	100	SS-28	2.50	-	-	-	-	-	-	-	-	-	-	16	A-6b (V)	CLAY							
-86	8	13																				CLAY				
-87																						CLAY				
-88																						CLAY				
-89																						CLAY				
-90	11	20	59	100	SS-29	4.00	-	-	-	-	-	-	-	-	-	-	12	A-6b (V)	CLAY							
-91	11	25																				CLAY				
				-91.5	-EOB-																					

STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT GDT - 5/29/19 10:06 - X:ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\DOCK 26\GINT FILES\DOCK 26.GPJ

NOTES: GROUNDWATER ENCOUNTERED AT 8.0' DURING DRILLING. HOLE DID NOT CAVE.
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; POURED 2 BAGS HOLE PLUG; SHOVELED SOIL CUTTINGS



PROJECT: DOCK 26 DOCK REHABILITATION		DRILLING FIRM / OPERATOR: NEAS / ASHBAUGH		DRILL RIG: CME 55T		STATION / OFFSET:		EXPLORATION ID	
TYPE: DOCK REHABILITATION		SAMPLING FIRM / LOGGER: NEAS / ASHBAUGH		HAMMER: CME AUTOMATIC		ALIGNMENT:		B-002-0-18	
PID: SFN:		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 11/21/17		ELEVATION: 0.0 (MSL) EOB:		91.5 ft.	
START: 3/26/19 END: 3/27/19		SAMPLING METHOD: SPT		ENERGY RATIO (%): 78		COORD: Not Recorded		PAGE 1 OF 2	
MATERIAL DESCRIPTION AND NOTES		ELEV.		REC SAMPLE HP		GRADATION (%)		ODOT CLASS (G)	
		0.0		ID (tsf)		GR CS FS SI CL LL PL PI WC		BACK FILL	
		DEPTHS		SPT/ RQD N ₆₀		GR CS FS SI CL LL PL PI WC		BACK FILL	
BROWN, GRAVEL AND STONE FRAGMENTSSOME SAND, TRACE SILT, TRACE CLAY, DAMP, (DRILLERS DESCRIPTION) (FILL)	1								
	2								
	3								
	4								
	5								
	6								
SOFT, GRAY AND DARK GRAY, SILT AND CLAY SOME GRAVEL, SOME SAND, CONTAINS A PETROLIFEROUS ODOR, DAMP (FILL)	7								
	8								
	9								
	10								
	11								
	12								
SOFT, GRAY AND DARK GRAY, SANDY SILT, LITTLE TO SOME GRAVEL, LITTLE CLAY, CONTAINS A PETROLIFEROUS ODOR, WET (FILL)	13								
	14								
	15								
	16								
	17								
	18								
@19.0' TO 20.5': SS-4 SAMPLED FOR ENVIRONMENTAL TESTING, NO WC TEST PERFORMED.	19								
	20								
	21								
	22								
	23								
	24								
LOOSE TO MEDIUM DENSE, GRAY AND BLACK, GRAVEL WITH SAND AND SILT, LITTLE CLAY, CONTAINS A PETROLIFEROUS ODOR, SS-6 CONTAINS METAL FRAGMENTS, WET (FILL)	25								
	26								
	27								
	28								
	29								
	30								
SOFT TO VERY STIFF, GRAY AND BLACK, SILT AND CLAY, TRACE SAND, TRACE GRAVEL, CONTAINS A PETROLIFEROUS ODOR, MOIST	31								
	32								
	33								
	34								
	35								
	36								
VERY SOFT TO MEDIUM STIFF, GRAY, SILTY CLAY, TRACE SAND, TRACE GRAVEL, MOIST	37								
	38								
	39								
	40								
	41								
	42								
MEDIUM STIFF TO STIFF, GRAY, CLAY, SOME SILT, TRACE SAND, TRACE GRAVEL, MOIST	43								
	44								
	45								
	46								
	47								
	48								

STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT GDT - 5/29/19 10:08 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\DOCK 26\GINT FILE\SDOCK 26.PJ



PID:	SFN:	PROJECT:	DOCK 26	STATION / OFFSET:	START: 3/26/19		END: 3/27/19		PG 2 OF 2		B-002-0-18	
					GR	CS	FS	SI	CL	LL		PL
MATERIAL DESCRIPTION AND NOTES		REC SAMPLE ID	HP (tsf)	GRADATION (%)	SPT/RQD	N ₆₀	REC (%)	DEPTH	ELEV.			
MEDIUM STIFF TO STIFF, GRAY, CLAY, SOME SILT, TRACE SAND, TRACE GRAVEL, MOIST (continued)		SS-23	1.50	-	3	13	100	61	-60.0			
					4			62				
MEDIUM STIFF TO VERY STIFF, GRAY, SILT AND CLAY, TRACE SAND, TRACE GRAVEL, MOIST TO DAMP		SS-24	1.25	-	4	16	100	65	-68.3			
					5			66				
					6			67				
					7			68				
								69				
								70				
								71				
								72				
								73				
								74				
						75						
						76						
						77						
						78						
						79						
						80						
						81						
						82						
						83						
						84						
						85						
						86						
						87						
						88						
						89						
						90						
						91						
									-91.5	-EOB		

STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT GDT - 5/29/19 10:06 - X:ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\DOCK 26\GINT FILES\DOCK 26.GPJ

NOTES: GROUNDWATER ENCOUNTERED AT 6.5' DURING DRILLING. HOLE DID NOT CAVE.
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 2 BAGS HOLE PLUG; SHOVELED SOIL CUTTINGS

PROJECT: DOCK 26 DOCK REHABILITATION			DRILLING FIRM / OPERATOR: NEAS / ASHBAUGH		DRILL RIG: CME 55T		STATION / OFFSET:					EXPLORATION ID									
TYPE: DOCK REHABILITATION			SAMPLING FIRM / LOGGER: NEAS / ASHBAUGH		HAMMER: CME AUTOMATIC		ALIGNMENT:					B-003-0-18									
PID: SFN:			DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 11/21/17		ELEVATION: 0.0 (MSL) EOB: 91.5 ft.					PAGE									
START: 3/19/19 END: 3/21/19			SAMPLING METHOD: SPT		ENERGY RATIO (%): 78		COORD: Not Recorded					1 OF 2									
MATERIAL DESCRIPTION AND NOTES			ELEV.	DEPTHS	SPT/ RQD	N ₆₀	REC SAMPLE (%)	HP (tsf)	ID	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (G)	BACK FILL	
5.0" ASPHALT (DRILLERS DESCRIPTION) MEDIUM DENSE, DARK BROWN AND GRAY, GRAVEL WITH SAND, LITTLE SILT, TRACE CLAY, CONTAINS TRACE BRICK FRAGMENTS, WET (FILL)			0.0																		
5.0" ASPHALT (DRILLERS DESCRIPTION) MEDIUM DENSE, DARK BROWN AND GRAY, GRAVEL WITH SAND, LITTLE SILT, TRACE CLAY, CONTAINS TRACE BRICK FRAGMENTS, WET (FILL)			-0.4																		
SOFT TO MEDIUM STIFF, GRAY AND BLACK, SILT AND CLAY, SOME GRAVEL, SOME SAND, CONTAINS A PETROLIFEROUS ODOR AND TRACE BRICK FRAGMENTS, SLIGHTLY ORGANIC, WET TO MOIST (FILL)			-8.3																		
MEDIUM DENSE, GRAY AND BLACK, GRAVEL AND STONE FRAGMENTS WITH SAND, TRACE CLAY, CONTAINS A PETROLIFEROUS ODOR, WET (FILL)			-22.0																		
LOOSE TO MEDIUM DENSE, BROWN WITH BLACK AND GRAY, GRAVEL AND STONE FRAGMENTS WITH SAND, SILT, AND CLAY, CONTAINS A PETROLIFEROUS ODOR, WET (FILL)			-23.5																		
@25.0' TO 26.5': NO RECOVERY			-26.5																		
@25.0' TO 26.5': NO RECOVERY																					
@50.0' TO 51.5': NO RECOVERY																					

STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT GDT - 5/29/19 10:06 - X:ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\DOCK 26\GINT FILES\DOCK 26.GPJ

PID	SFN	PROJECT	DOCK 26	STATION / OFFSET	START: 3/19/19		END: 3/21/19		PG 2 OF 2		B-003-0-18				
					GR	CS	FS	SI	CL	LL		PL	PI		
MATERIAL DESCRIPTION AND NOTES		REC SAMPLE ID	HP (tsf)	GRADATION (%)	ATTERBERG		WC		ODOT CLASS (g)		BACK FILL				
		N ₆₀		GR	CS	FS	SI	CL	LL	PL		PI			
VERY SOFT TO SOFT, GRAY, SILTY CLAY, TRACE SAND, TRACE GRAVEL, CONTAINS TRACE IRON STAINING, MOIST (continued)		4	21	100	SS-17	0.25	-	-	-	-	-	30	A-6b (V)		
		7	9												
STIFF TO VERY STIFF, GRAY SILT AND CLAY TRACE SAND, TRACE GRAVEL, CONTAINS TRACE IRON STAINING, MOIST TO DAMP		5	22	100	SS-18	2.00	-	-	-	-	-	26	A-6a (V)		
		8	9												
		6	26	100	SS-19	1.50	0	1	51	48	33	19	14	24	A-6a (10)
		9	11												
		5	29	100	SS-20	1.50	-	-	-	-	-	-	-	23	A-6a (V)
		9	13												
		8	34	100	SS-21	1.50	-	-	-	-	-	-	-	23	A-6a (V)
		10	16												
		8	27	100	SS-22	2.25	-	-	-	-	-	-	-	16	A-6a (V)
		9	12												
		7	33	100	SS-23	2.00	-	-	-	-	-	-	-	20	A-6a (V)
		12	13												
		91													

STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT GDT - 5/29/19 10:06 - X:ACTIVE PROJECT\ACTIVE SOIL PROJECTS\DOCK 26\GINT FILES\DOCK 26.GPJ

NOTES: GROUNDWATER ENCOUNTERED AT 8.0' DURING DRILLING. HOLE DID NOT CAVE.
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; POURED 1 BAG HOLE PLUG; SHOVELED SOIL CUTTINGS



PROJECT: DOCK 26 DOCK REHABILITATION		DRILLING FIRM / OPERATOR: NEAS / ASHBAUGH		DRILL RIG: CME 55T		STATION / OFFSET:		EXPLORATION ID												
TYPE: DOCK REHABILITATION		SAMPLING FIRM / LOGGER: NEAS / ASHBAUGH		HAMMER: CME AUTOMATIC		ALIGNMENT:		B-004-0-18												
PID: SFN: 3/18/19		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 11/21/17		ELEVATION: 0.0 (MSL) EOB: 91.5 ft.		PAGE												
START: 3/18/19 END: 3/18/19		SAMPLING METHOD: SPT		ENERGY RATIO (%): 78		COORD: Not Recorded		1 OF 2												
MATERIAL DESCRIPTION AND NOTES		ELEV.	DEPTHS	SPT/ RQD	N ₆₀	REC SAMPLE (%)	HP (tsf)	ID	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (G)	BACK FILL	
6.0" ASPHALT (DRILLERS DESCRIPTION) MEDIUM DENSE, DARK GRAY, GRAVEL WITH SAND TRACE TO LITTLE SILT, TRACE CLAY, CONTAINS WOOD FRAGMENTS AND TRACE IRON STAINING, WET TO MOIST (FILL)	0.0																			
	-0.5																			
SOFT, DARK GRAY AND BLACK SILT AND CLAY SOME GRAVEL, LITTLE SAND, CONTAINS A PETROLIFEROUS ODOR, SLIGHTLY ORGANIC, MOIST TO WET (FILL)	-13.3																			
LOOSE TO DENSE, DARK GRAY AND BLACK, GRAVEL AND STONE FRAGMENTS WITH SAND TRACE TO LITTLE SILT, TRACE TO LITTLE CLAY, CONTAINS A PETROLIFEROUS ODOR, MOIST TO WET (FILL)	-20.5																			
@25.0' TO 26.0': SS-8 CHANGES TO VERY DENSE	-29.5																			
@28.0' TO 29.5': SS-10 SAMPLED FOR ENVIRONMENTAL TESTING, NO WC TEST PERFORMED.																				
	SOFT TO VERY STIFF, GRAY AND DARK GRAY, SILT AND CLAY, TRACE TO LITTLE SAND, TRACE GRAVEL, MOIST TO DAMP																			

STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT.GDT - 5/29/19 10:06 - X:ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\DOCK 26\GINT FILES\DOCK 26.GPJ

PID:	SFN:	PROJECT:	DOCK 26	STATION / OFFSET:	START: 3/18/19										END: 3/18/19			PG 2 OF 2			B-004-0-18		
					GRADATION (%)					ATTERBERG					WC			ODOT CLASS (G)					
MATERIAL DESCRIPTION AND NOTES				SPT/ RQD	N ₆₀	REC SAMPLE (%)	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (G)			BACK FILL			
SOFT TO VERY STIFF, GRAY AND DARK GRAY, SILT AND CLAY, TRACE TO LITTLE SAND, TRACE GRAVEL, MOIST TO DAMP (continued)				4	14	100	1.25	-	-	-	-	-	-	-	-	23	A-6a (V)						
				5	6																		
				3	9	100	1.00	-	-	-	-	-	-	-	-	-	-	31	A-6a (V)				
				3	4																		
				5	33	100	2.25	-	-	-	-	-	-	-	-	-	-	17	A-6a (V)				
				5	11																		
				11	14																		
				6	29	100	2.00	-	-	-	-	-	-	-	-	-	-	17	A-6a (V)				
				6	13																		
				7	31	100	1.75	-	-	-	-	-	-	-	-	-	-	18	A-6a (V)				
				7	11																		
				11	13																		
				8	33	100	2.75	-	-	-	-	-	-	-	-	-	-	17	A-6a (V)				
				8	10																		
				10	15																		
				38	53	100	0.50	-	-	-	-	-	-	-	-	-	-	22	A-6a (V)				
				24	17																		
				91																			
				-91.5				-EOB-															

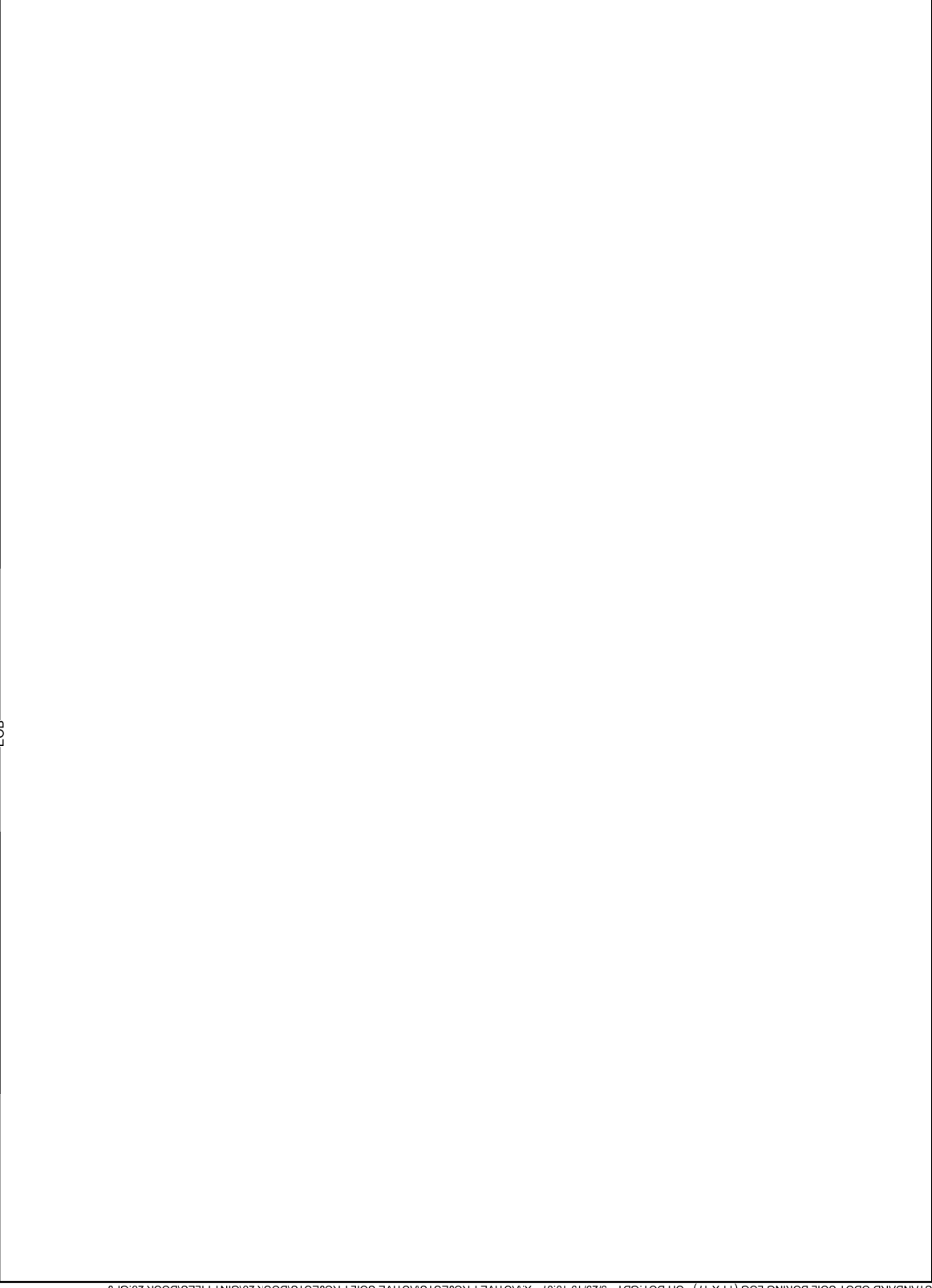
STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT GDT - 5/29/19 10:06 - X:ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\DOCK 26\GINT FILES\DOCK 26.GPJ

NOTES: GROUNDWATER ENCOUNTERED AT 8.0' DURING DRILLING. HOLE DID NOT CAVE.
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; POURED 2 BAGS HOLE PLUG; SHOVELED SOIL CUTTINGS

PROJECT: DOCK 26 DOCK REHABILITATION TYPE: PID: START:	DRILLING FIRM / OPERATOR: SAMPLING FIRM / LOGGER: DRILLING METHOD: SAMPLING METHOD:	DRILL RIG: HAMMER: CALIBRATION DATE: ENERGY RATIO (%):	STATION / OFFSET: ALIGNMENT: ELEVATION: COORD:	EXPLORATION ID B-005-0-18 PAGE 1 OF 2	GRADATION (%)											WC	ODOT CLASS (G)	BACK FILL
					GR	CS	FS	SI	CL	LL	PL	PI	AT	TE	RL			
MATERIAL DESCRIPTION AND NOTES		SPT/ RQD	N ₆₀	REC (%)	HP (tsf)	ID	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (G)	BACK FILL	
ELEV.		DEPTHS																
6.0" ASPHALT (DRILLERS DESCRIPTION) MEDIUM DENSE, BROWN, SANDY SILT, LITTLE GRAVEL, TRACE CLAY, WET (FILL)		4 8 9	22	44	SS-1	-	13	7	42	29	9	NP	NP	NP	22	A-4a (1)		
MEDIUM DENSE TO DENSE, GRAY AND BLACK, GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT, LITTLE CLAY, CONTAINS A PETROLIFEROUS ODOR AND WOOD FRAGMENTS, WET (FILL)		4 6 6	16	67	SS-2	-	-	-	-	-	-	-	-	-	23	A-2-4 (V)		
MEDIUM DENSE TO DENSE, GRAY AND BLACK, GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT, LITTLE CLAY, CONTAINS A PETROLIFEROUS ODOR AND WOOD FRAGMENTS, WET (FILL)		5 8 10	23	78	SS-3	-	39	16	19	15	11	26	19	7	20	A-2-4 (O)		
MEDIUM DENSE TO DENSE, GRAY AND BLACK, GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT, LITTLE CLAY, CONTAINS A PETROLIFEROUS ODOR AND WOOD FRAGMENTS, WET (FILL)		10 20 13	43	67	SS-4	-	-	-	-	-	-	-	-	-	26	A-2-4 (V)		
MEDIUM DENSE TO DENSE, GRAY AND BLACK, GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT, LITTLE CLAY, CONTAINS A PETROLIFEROUS ODOR AND WOOD FRAGMENTS, WET (FILL)		14 16 11	35	11	SS-5	-	-	-	-	-	-	-	-	-	24	A-2-4 (V)		
MEDIUM DENSE TO DENSE, GRAY AND BLACK, GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT, LITTLE CLAY, CONTAINS A PETROLIFEROUS ODOR AND WOOD FRAGMENTS, WET (FILL)		13 11 12	30	33	SS-6	-	11	16	28	23	22	27	18	9	25	A-4a (2)		
MEDIUM DENSE TO DENSE, GRAY AND BLACK, GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT, LITTLE CLAY, CONTAINS A PETROLIFEROUS ODOR AND WOOD FRAGMENTS, WET (FILL)		14 9 10	25	50	SS-7	-	-	-	-	-	-	-	-	-	17	A-1-b (V)		
MEDIUM DENSE TO DENSE, GRAY AND BLACK, GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT, LITTLE CLAY, CONTAINS A PETROLIFEROUS ODOR AND WOOD FRAGMENTS, WET (FILL)		3 5 7	16	33	SS-8	-	48	15	27	7	3	NP	NP	NP	20	A-1-b (O)		
MEDIUM DENSE TO DENSE, GRAY AND BLACK, GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT, LITTLE CLAY, CONTAINS A PETROLIFEROUS ODOR AND WOOD FRAGMENTS, WET (FILL)		3 5 4	12	39	SS-9A SS-9B	0.25	-	-	-	-	-	-	-	-	21 31	A-1-b (V) A-6b (V)		
MEDIUM DENSE TO DENSE, GRAY AND BLACK, GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT, LITTLE CLAY, CONTAINS A PETROLIFEROUS ODOR AND WOOD FRAGMENTS, WET (FILL)		1 2 3	7	78	SS-10	0.50	-	-	-	-	-	-	-	-	28	A-6b (V)		
MEDIUM DENSE TO DENSE, GRAY AND BLACK, GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT, LITTLE CLAY, CONTAINS A PETROLIFEROUS ODOR AND WOOD FRAGMENTS, WET (FILL)		1 3 3	8	100	SS-11	0.50	-	-	-	-	-	-	-	-	-	A-6b (V)		
MEDIUM DENSE TO DENSE, GRAY AND BLACK, GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT, LITTLE CLAY, CONTAINS A PETROLIFEROUS ODOR AND WOOD FRAGMENTS, WET (FILL)		2 3 3	8	100	SS-12	1.50	1	2	3	28	66	39	22	17	27	A-6b (11)		
MEDIUM DENSE TO DENSE, GRAY AND BLACK, GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT, LITTLE CLAY, CONTAINS A PETROLIFEROUS ODOR AND WOOD FRAGMENTS, WET (FILL)		2 3 5	10	100	SS-13	0.25	-	-	-	-	-	-	-	-	30	A-6b (V)		
MEDIUM DENSE TO DENSE, GRAY AND BLACK, GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT, LITTLE CLAY, CONTAINS A PETROLIFEROUS ODOR AND WOOD FRAGMENTS, WET (FILL)		3 3 5	10	100	SS-14	0.75	-	-	-	-	-	-	-	-	30	A-6b (V)		
MEDIUM DENSE TO DENSE, GRAY AND BLACK, GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT, LITTLE CLAY, CONTAINS A PETROLIFEROUS ODOR AND WOOD FRAGMENTS, WET (FILL)		1 1 2	4	100	SS-15	0.50	-	-	-	-	-	-	-	-	33	A-6b (V)		
MEDIUM DENSE TO DENSE, GRAY AND BLACK, GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT, LITTLE CLAY, CONTAINS A PETROLIFEROUS ODOR AND WOOD FRAGMENTS, WET (FILL)		4 4 7	14	100	SS-16	0.50	-	-	-	-	-	-	-	-	32	A-6b (V)		
MEDIUM DENSE TO DENSE, GRAY AND BLACK, GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT, LITTLE CLAY, CONTAINS A PETROLIFEROUS ODOR AND WOOD FRAGMENTS, WET (FILL)		7 8 10	23	100	SS-17	2.50	-	-	-	-	-	-	-	-	16	A-6b (V)		
MEDIUM DENSE TO DENSE, GRAY AND BLACK, GRAVEL AND STONE FRAGMENTS WITH SAND AND SILT, LITTLE CLAY, CONTAINS A PETROLIFEROUS ODOR AND WOOD FRAGMENTS, WET (FILL)		5 7 8	20	100	SS-18	1.75	-	-	-	-	-	-	-	-	17	A-6b (V)		

STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT.GDT - 5/29/19 10:07 - X:ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\DOCK 26\ININT FILES\DOCK 26.GPJ

PID:	SFN:	PROJECT:	DOCK 26	STATION / OFFSET:	START: 3/25/19										END: 3/26/19			PG 2 OF 2		B-005-0-18
					GRADATION (%)					ATTERBERG					WC	ODOT CLASS (G)	BACK FILL			
MATERIAL DESCRIPTION AND NOTES		REC SAMPLE (%)	HP (tsf)	SPT/ROD	N ₆₀	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (G)	BACK FILL				
SOFT TO VERY STIFF, GRAY, SILTY CLAY, TRACE SAND, TRACE GRAVEL, MOIST TO DAMP (continued)		100	2.50	4	23	-	-	-	-	-	-	-	-	-	19	A-6b (V)				
		100	1.50	7	21	-	-	-	-	-	-	-	-	-	20	A-6b (V)				
		100	1.25	6	20	-	-	-	-	-	-	-	-	-	20	A-6b (V)				
		100	1.50	9	30	-	-	-	-	-	-	-	-	-	21	A-6b (V)				
		100	3.00	9	42	-	-	-	-	-	-	-	-	-	17	A-6b (V)				
		100	3.00	8	39	-	-	-	-	-	-	-	-	-	16	A-6b (V)				
		100	1.75	7	44	-	-	-	-	-	-	-	-	-	22	A-6b (V)				



NOTES: GROUNDWATER ENCOUNTERED AT 13.0' DURING DRILLING AND 6.0' AFTER COMPLETION. HOLE DID NOT CAVE.
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; POURED 2 BAGS HOLE PLUG; SHOVELED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT GDT - 5/29/19 10:07 - X:ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\DOCK 26\GINT FILES\DOCK 26.GPJ

PROJECT: DOCK 26 DOCK REHABILITATION			DRILLING FIRM / OPERATOR: NEAS / ASHBAUGH			DRILL RIG: CME 55T			STATION / OFFSET:			EXPLORATION ID								
TYPE: DOCK REHABILITATION			SAMPLING FIRM / LOGGER: NEAS / ASHBAUGH			HAMMER: CME AUTOMATIC			ALIGNMENT:			B-006-0-18								
PID: SFN: 4/2/19			DRILLING METHOD: 3.25" HSA			CALIBRATION DATE: 11/21/17			ELEVATION: 0.0 (MSL) EOB: 91.5 ft.			PAGE								
START: 4/1/19 END: 4/2/19			SPT SAMPLING METHOD: SPT			ENERGY RATIO (%): 78			COORD: Not Recorded			1 OF 2								
MATERIAL DESCRIPTION AND NOTES			ELEV.	DEPTHS	SPT/ RQD	N ₆₀	REC SAMPLE (%)	HP (tsf)	ID	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	BACK FILL
6.0" ASPHALT (DRILLERS DESCRIPTION) LOOSE TO MEDIUM DENSE, BROWN AND GRAY, GRAVEL AND STONE FRAGMENT LITTLE SAND, TRACE SILT, TRACE CLAY, STONE FRAGMENTS ARE LIMESTONE, WET TO DAMP (FILL)			0.0 -0.5	1 2 3 4 5 6 7																
LOOSE TO MEDIUM DENSE, GRAY AND BLACK GRAVEL WITH SAND, TRACE TO LITTLE SILT, TRACE CLAY, CONTAINS A PETROLIFEROUS ODOR, WET (FILL)			-19.0	8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59																
@23.5' TO 28.0', SS-8 TO SS-10 SAMPLED FOR ENVIRONMENTAL TESTING, NO WC TEST PERFORMED.			-28.0																	
LOOSE, GRAY, GRAVEL AND STONE FRAGMENTS LITTLE SAND, TRACE SILT, TRACE CLAY, CONTAINS A PETROLIFEROUS ODOR, DAMP TO MOIST (FILL)			-43.3																	
MEDIUM DENSE, GRAY AND BLACK, GRAVEL WITH SAND, LITTLE SILT, TRACE CLAY, CONTAINS A PETROLIFEROUS ODOR, WET			-46.5																	
SOFT TO VERY STIFF, GRAY, SILTY CLAY, TRACE SAND, TRACE GRAVEL, MOIST TO DAMP																				

STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT GDT - 5/29/19 10:07 - X-ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\DOCK 26\GINT FILES\DOCK 26.GPJ

PID:	SFN:	PROJECT:	DOCK 26	STATION / OFFSET:	START: 4/1/19 END: 4/2/19										PG 2 OF 2	B-006-0-18			
					GRADATION (%)					ATTERBERG									
MATERIAL DESCRIPTION					SPT/	REC SAMPLE	HP	GRADATION (%)					ATTERBERG					ODOT	
AND NOTES					RQD	(%)	(tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	CLASS (G)		
SOFT TO VERY STIFF, GRAY, SILTY CLAY, TRACE SAND, TRACE GRAVEL, MOIST TO DAMP (continued)					DEPTHS	N ₆₀	ID	SS-19	1.00	-	-	-	-	-	-	23	A-6b (V)		
				61	4	14	SS-19	1.00	-	-	-	-	-	-	-	-	-		
				62	4	7													
				63															
				64															
				65															
				66	6	18	SS-20	1.50	-	-	-	-	-	-	-	21	A-6b (V)		
				67	7	7													
				68															
				69															
				70															
				71	7	26	SS-21	1.75	-	-	-	-	-	-	-	17	A-6b (V)		
				72	9	11													
				73															
				74															
				75															
				76	8	31	SS-22	2.00	-	-	-	-	-	-	-	21	A-6b (V)		
				77	10	14													
				78															
				79															
				80															
				81	6	35	SS-23	1.75	-	-	-	-	-	-	-	18	A-6b (V)		
				82	9	18													
				83															
				84															
				85															
				86	10	38	SS-24	2.25	-	-	-	-	-	-	-	17	A-6b (V)		
				87	13	16													
				88															
				89															
				90	9	39	SS-25	1.50	-	-	-	-	-	-	-	20	A-6b (V)		
				91	13	17													
					-91.5													-EOB	

STANDARD ODOT SOIL BORING LOG (11 X 17) - OH DOT GDT - 5/29/19 10:07 - X:ACTIVE PROJECT\ACTIVE SOIL PROJECTS\DOCK 26\GINT FILES\DOCK 26.GPJ

NOTES: GROUNDWATER ENCOUNTERED AT 4.0' DURING DRILLING AND 7.0' 24HRS AFTER DRILLING. HOLE CAVED AT 6.0'.
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED 0.5 BAG ASPHALT PATCH; POURED 2 BAGS HOLE PLUG; SHOVELED SOIL CUTTINGS



Appendix B

- ODOT Classification of Soils Chart



CLASSIFICATION OF SOILS

Ohio Department of Transportation

(The classification of a soil is found by proceeding from top to bottom of the chart.
The first classification that the test data fits is the correct classification.)

SYMBOL	DESCRIPTION	Classification		LL _O /LL x 100*	% Pass #40	% Pass #200	Liquid Limit (LL)	Plastic Index (PI)	Group Index Max.	REMARKS	
		AASHTO	OHIO								
	Gravel and/or Stone Fragments	A-1-a			30 Max.	15 Max.		6 Max.	0	Min. of 50% combined gravel, cobble and boulder sizes	
	Gravel and/or Stone Fragments with Sand	A-1-b			50 Max.	25 Max.		6 Max.	0		
	Fine Sand	A-3			51 Min.	10 Max.	NON-PLASTIC		0		
	Coarse and Fine Sand	--	A-3a			35 Max.		6 Max.	0	Min. of 50% combined coarse and fine sand sizes	
	Gravel and/or Stone Fragments with Sand and Silt	A-2-4				35 Max.	40 Max.	10 Max.	0		
		A-2-5					41 Min.				
	Gravel and/or Stone Fragments with Sand, Silt and Clay	A-2-6				35 Max.	40 Max.	11 Min.	4		
		A-2-7					41 Min.				
	Sandy Silt	A-4	A-4a	75 Min.		36 Min.	40 Max.	10 Max.	8	Less than 50% silt sizes	
	Silt	A-4	A-4b	75 Min.		50 Min.	40 Max.	10 Max.	8	50% or more silt sizes	
	Elastic Silt and Clay	A-5		75 Min.		36 Min.	41 Min.	10 Max.	12		
	Silt and Clay	A-6	A-6a	75 Min.		36 Min.	40 Max.	11 - 15	10		
	Silty Clay	A-6	A-6b	75 Min.		36 Min.	40 Max.	16 Min.	16		
	Elastic Clay	A-7-5		75 Min.		36 Min.	41 Min.	≤ LL-30	20		
	Clay	A-7-6		75 Min.		36 Min.	41 Min.	> LL-30	20		
	Organic Silt	A-8	A-8a	74 Max.		36 Min.				W/o organics would classify as A-4a or A-4b	
	Organic Clay	A-8	A-8b	74 Max.		36 Min.				W/o organics would classify as A-5, A-6a, A-6b, A-7-5 or A-7-6	
MATERIAL CLASSIFIED BY VISUAL INSPECTION											
	Sod and Topsoil		Uncontrolled Fill (Describe)		Bouldery Zone		Peat				
	Pavement or Base										

* Only perform the oven-dried liquid limit test and this calculation if organic material is present in the sample.

Figure 600-1. ODOT Soil Classification Chart



Appendix C

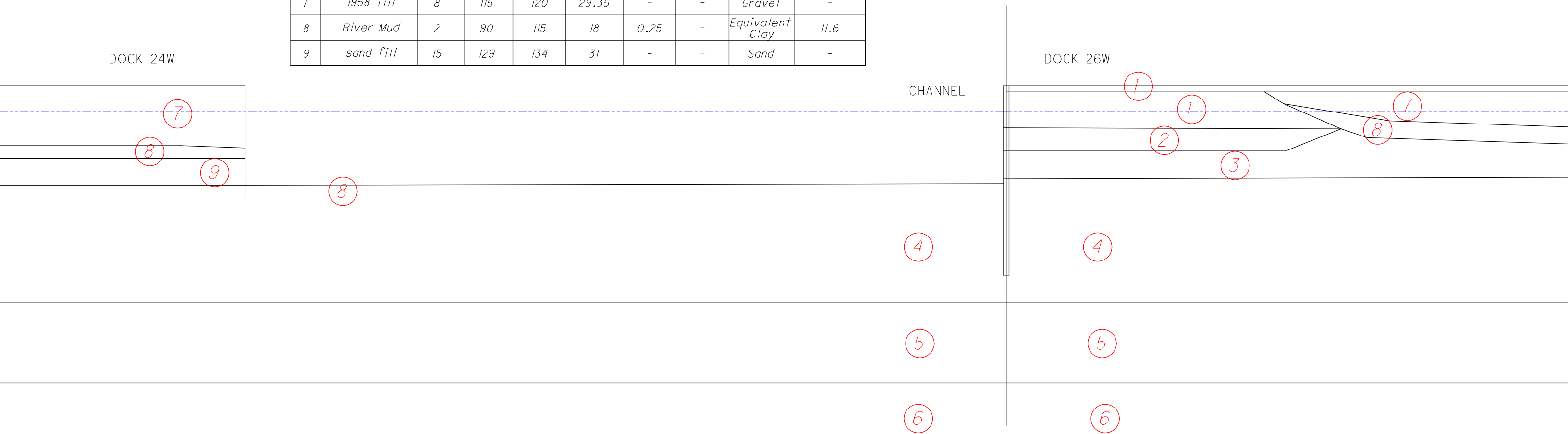
- Cross Sections

No.	SS v.8 Soil Name	N60 Ave.	UW moist (pcf)	UW sat. (pcf)	phi' (deg.)	C (ksf)	ODOT Class	SS v.8 Soil Type	SS v.8 assigned phi' (deg.)
1	med. dense sand fill	13	120	125	30.5	-	A-1-b	Gravel	-
2	silty clay fill	6.5	118	120	21.25	0.815	A-6a	Equivalent Clay	30.8
3	sand and gravel fill	15	129	134	31	-	A-1-b	Gravel	-
4	silty clay	11	130	135	22.85	1.43	A-6a	Equivalent Clay	33.2
5	hard silty clay	35.8	142	145	25	3	A-6a	Equivalent Clay	38.5
6	soft shale	100	148	150	25	3	-	Equivalent Clay	42
7	1958 fill	8	115	120	29.35	-	-	Gravel	-
8	River Mud	2	90	115	18	0.25	-	Equivalent Clay	11.6
9	sand fill	15	129	134	31	-	-	Sand	-

SHORING SUITE GEOMETRY

Sta. 3+50.3

(based on boring B-004-0-18 and the cross sections for stations 3+00 and 4+00)

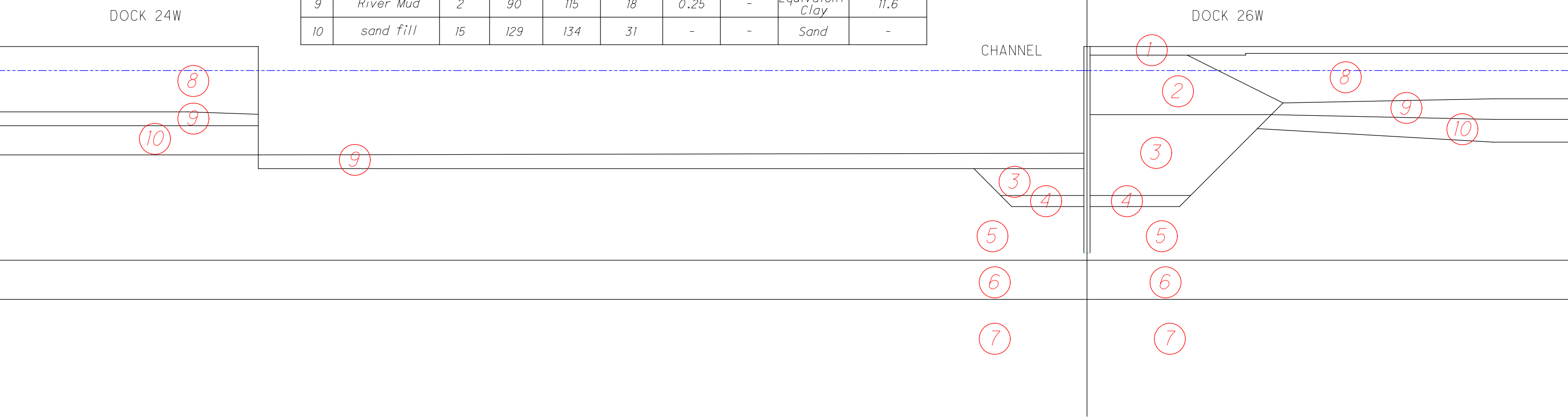


No.	SS v.8 Soil Name	N60 Ave.	UW moist (pcf)	UW sat. (pcf)	phi' (deg.)	C (ksf)	ODOT Class	SS v.8 Soil Type	SS v.8 assigned phi' (deg.)
1	granular fill	29.4	110	120	34	-	A-2-4	Gravel	-
2	gravel fill	14.25	114	127	31	-	A-1-a	Gravel	-
3	loose sand and gravel	7.45	125	130	29.1	-	A-1-a	Gravel	-
4	sand and gravel fill	12	133	138	30.4	-	A-1-b	Gravel	-
5	silty clay	12.67	130	135	23.35	1.665	A-6b	Equivalent Clay	33.9
6	very stiff silty clay	22	135	140	24.95	2.935	A-6b	Equivalent Clay	36.8
7	hard silty clay	35.75	142	145	25	3	A-6b	Equivalent Clay	38.5
8	1958 fill	8	110	120	29.35	-	-	Gravel	-
9	River Mud	2	90	115	18	0.25	-	Equivalent Clay	11.6
10	sand fill	15	129	134	31	-	-	Sand	-

SHORING SUITE GEOMETRY

Sta. 6+34.5

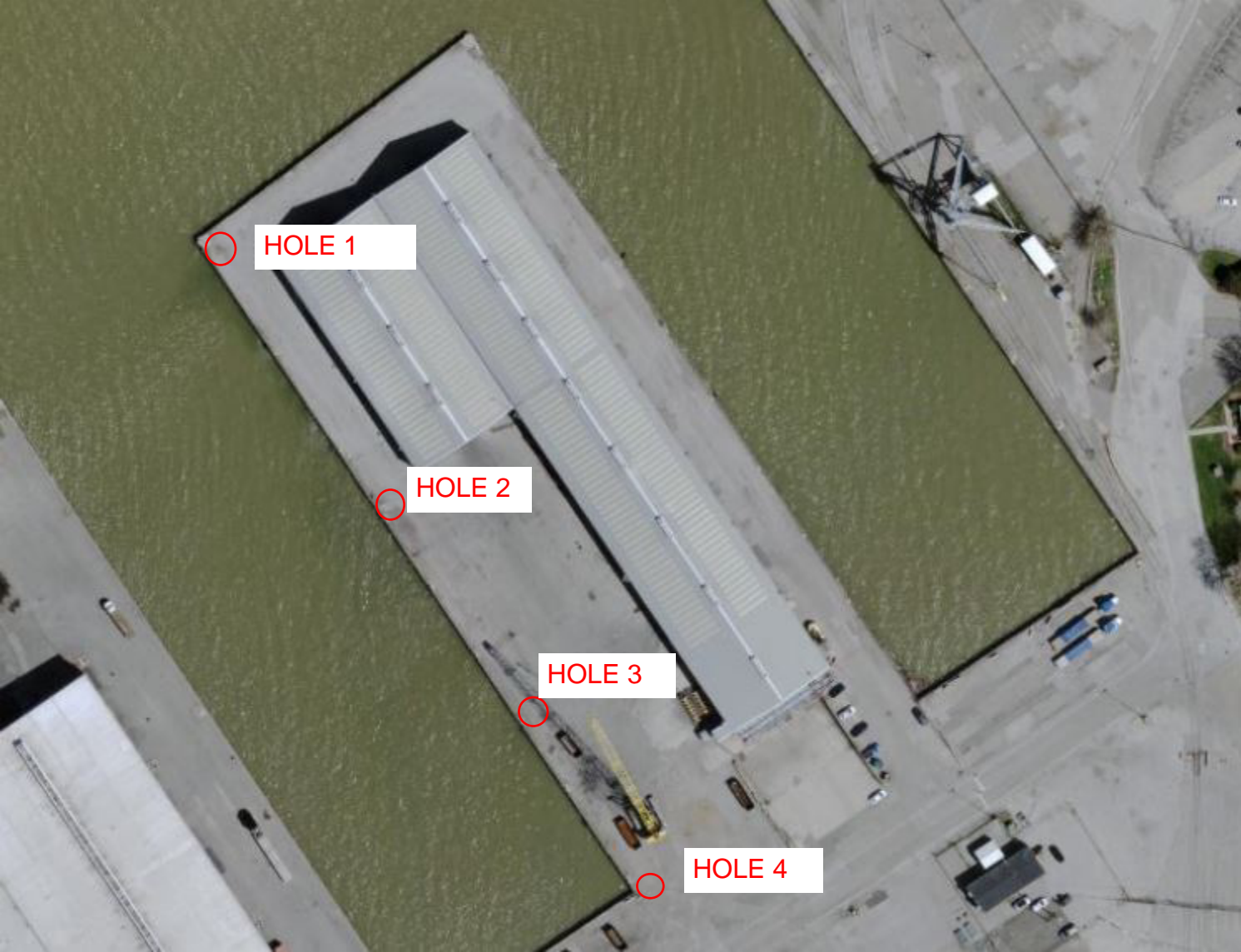
(based on boring B-006-0-18 and the cross section for station 6+00)





Appendix H

- Photographs of Exposed Existing Tie Rods and Waler



HOLE 1

HOLE 2

HOLE 3

HOLE 4



Hole 1



Hole 2 Tie Rod



Hole 2 Waler



Hole 3



Hole 4