

GENERAL INFORMATION

INTRODUCTION

IT IS PROPOSED TO REPLACE THE EXISTING THREE-SPAN WEST SANDUSKY STREET (CR 88) BRIDGE OVER INTERSTATE 75 IN FINDLAY, OHIO (NO. HAN-75-15.99) WITH A NEW, WIDENED, 170-FOOT-LONG SINGLE-SPAN STRUCTURE. AS PART OF THIS PROJECT, THE EXISTING APPROACH EMBANKMENTS WILL WIDENED AND WILL BE RAISED AS MUCH AS 5 FEET AT THE ABUTMENTS. IN ADDITION, THE EXISTING WEST SANDUSKY STREET AND EMMA STREET PAVEMENT WILL BE RECONSTRUCTED IN THE VICINITY OF THE PROJECT SITE.

GEOLOGY

THE SITE IS LOCATED WITHIN A PORTION OF THE STATE WHICH WAS GLACIATED BY THE WISCONSINAN AND ILLINOIAN GLACIAL ADVANCES. NATURAL SOILS GENERALLY CONSIST OF GROUND MORAINIC GLACIAL TILL CHARACTERIZED BY AN UNSTRATIFIED, UNSORTED MIXTURE OF CLAY, SILT, SAND AND LARGER SIZE PARTICLES. BEDROCK, CONSISTING OF THE TYMOCHTEE DOLOMITE OF SILURIAN AGE, IS LOCATED NEAR ELEVATION 760 (MSL) AT THE PROJECT SITE.

EXPLORATION

DURING THE PERIOD OF FEBRUARY 18 THROUGH MARCH 26, 2002, 24 SOIL BORINGS WERE PERFORMED FOR THIS PROJECT. BORINGS B-101 AND B-106 WERE DRILLED FOR THE PURPOSES OF EXPLORING THE SUBSURFACE CONDITIONS AT THE LOCATION OF THE PROPOSED STRUCTURE AND RANGED IN DEPTH FROM 49.7 TO 51.9 FEET BELOW THE EXISTING GROUND SURFACE. BORINGS R-101 THROUGH R-106 WERE DRILLED THROUGH THE EXISTING ROADWAY PAVEMENT AT LOCATIONS WHERE MINIMAL NEW FILL IS PLANNED AND RANGED IN DEPTH FROM 5.5 TO 20.0 FEET. BORINGS RE-101 THROUGH RE-106, RE-210 THROUGH RE-204, RE-301 THROUGH RE-304 AND TB-101 AND TB-102 WERE DRILLED NEAR THE TOES OF THE EXISTING EMBANKMENTS TO PROVIDE INFORMATION FOR THE DESIGN OF RETAINING WALLS/WIDENED EMBANKMENTS AND RANGED IN DEPTH FROM 15.5 TO 29.5 FEET. STATIONING, DISTANCE FROM CENTERLINE, AND GROUND SURFACE ELEVATIONS AT THE BORING LOCATIONS WERE PROVIDED BY M-E COMPANIES.

THE BORINGS WERE PERFORMED USING EITHER A TRUCK- OR ATV-MOUNTED DRILLING RIG USING EITHER A 3-1/4-INCH I.D. HOLLOW-STEM AUGER OR A 4-1/2-INCH O.D. CONTINUOUS-FLIGHT AUGER TO ADVANCE THE BORINGS BETWEEN SAMPLING ATTEMPTS. AT REGULAR INTERVALS, DISTURBED BUT REPRESENTATIVE SAMPLES WERE OBTAINED BY LOWERING A 2-INCH O.D. SPLIT-BARREL SAMPLER TO THE BOTTOM OF THE BORING AND THEN DRIVING THE SAMPLER INTO THE SOIL WITH BLOWS FROM A 140-POUND HAMMER FREELY FALLING 30 INCHES (STANDARD PENETRATION TEST). IF NO MATERIAL WAS RETAINED IN THE SAMPLER, A 2-1/2-INCH O.D. SPLIT-BARREL SAMPLER WAS USED TO ATTEMPT TO RETRIEVE THE SOIL. UPON ENCOUNTERING APPARENT BEDROCK IN THE MAJORITY OF THE STRUCTURE BORINGS, BETWEEN 5.0 AND 10.0 FEET OF ROCK WAS CORED WITH AN NX CORE BARREL UTILIZING WATER AS THE CIRCULATING FLUID. ALL SAMPLES WERE PRESERVED IN EITHER AIRTIGHT GLASS JARS OR COMPARTMENTED CORE BOXES.

FINDINGS OF THIS INVESTIGATION

BENEATH THE PAVEMENT, THE EXISTING EMBANKMENTS CONSISTED PRINCIPALLY OF STIFF TO HARD BROWN AND GRAY SILTY CLAY (A-6a, A-6b, A-7-6). A FEW ZONES OF GRANULAR SOILS WERE ENCOUNTERED WITHIN THE FILL AND THESE ZONES CONSISTED OF LOOSE FINE TO COARSE SAND CONTAINING VARYING AMOUNTS OF SILT AND CLAY (A-3a, A-2-4).

IN CONTRAST TO THE OTHER BORINGS PERFORMED FOR THE PROJECT, BORING RE-301 (LOCATED NORTH OF THE BRIDGE AT THE TOE OF THE EAST APPROACH EMBANKMENT) ENCOUNTERED A ZONE OF FILL EXTENDING IN DEPTH TO APPROXIMATELY EL. 769.5 (MORE THAN 10 FEET BELOW SURROUNDING GROUND LEVEL). MUCH OF THIS FILL CONSISTED OF VERY-SOFT TO STIFF BROWN MOTTLED WITH DARK-GRAY SILTY CLAY AND CONTAINED POCKETS OF ORGANIC CLAYEY SILT (TOPSOIL) AND MAY BE INDICATIVE OF A PREVIOUSLY BACKFILLED BASEMENT, TRENCH OR PIT.

NATURAL SOILS UNDERLYING THE EMBANKMENTS WERE GENERALLY ENCOUNTERED BETWEEN EL. 780 AND EL. 778. WITHIN A FEW OF THE BORINGS, A RELATIVELY THIN LAYER (ROUGHLY 12-INCHES) OF ORGANIC, OR PARTLY ORGANIC SOIL WAS ENCOUNTERED JUST BELOW THE EXISTING EMBANKMENT FILL. BELOW THIS LAYER, THE BORINGS ENCOUNTERED NATURAL SOILS CONSISTING OF VERY-STIFF TO HARD BROWN MOTTLED WITH GRAY SILTY CLAY (A-6a, A-6b, A-7-6), WHICH CONTAINED A FEW ZONES OF LOOSE TO MEDIUM-DENSE GRAY FINE SAND CONTAINING VARYING AMOUNTS OF CLAY (A-1-b, A-3, A-2-6, A-4a). BENEATH THIS STRATUM, VERY-STIFF TO HARD GRAY CLAYEY SILT (A-4a) CONTAINING MANY SEAMS OF SILT (A-4b) WAS ENCOUNTERED. BEDROCK, CONSISTING OF HARD TO VERY-HARD LIGHT-GRAY DOLOMITE CONTAINING THIN DARK-GRAY SHALE PARTINGS WAS ENCOUNTERED IN 17 OF 24 BORINGS BETWEEN EL. 760.7 AND EL. 758.2.

DURING DRILLING, GROUNDWATER SEEPAGE WAS ENCOUNTERED IN 13 OF THE 24 BORINGS AT DEPTHS BETWEEN 7.0 AND 18.5 FEET BELOW THE GROUND SURFACE. AT THE COMPLETION OF DRILLING, AND PRIOR TO THE INTRODUCTION OF CORING WATER, GROUNDWATER WAS MEASURED AT DEPTHS BETWEEN 5.3 AND 20.0 FEET IN BORINGS RE-101, RE-202, RE-204, RE-301 THROUGH RE-304 AND TB-101 AND TB-102. IT SHOULD BE NOTED THAT ALL OF THESE BORINGS WERE LOCATED AT THE APPROXIMATE NATURAL GROUND SURFACE LEVEL. ALL OTHER BORINGS WERE FOUND TO BE "DRY", MEANING THAT MEASURABLE AMOUNTS OF WATER HAD NOT COLLECTED IN THE BORE HOLE PRIOR TO THE INTRODUCTION OF CORING WATER.

LEGEND FOR PROJECT AVERAGE RESULTS OF TESTS - 38 SAMPLES TESTED

DESCRIPTION	OHIO CLASS.	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LIQUID LIMIT	PLASTICITY INDEX	WATER CONTENT	SAMPLES TESTED
GRAVEL AND/OR STONE FRAGMENTS WITH SAND	A-1-a (0)	61	21	8	--	10	--	--	--	2
GRAVEL AND/OR STONE FRAGMENTS WITH SAND	A-1-b (0)	42	25	23	--	10	--	--	--	1
GRAVEL AND/OR STONE FRAGMENTS WITH SAND	A-2-4 (0)	41	18	12	--	29	27	9	9	2
SANDY SILT	A-4a (4)	7	8	24	37	24	25	8	16	9
SILT AND CLAY	A-6a (7)	8	8	21	34	29	30	13	16	8
SILTY CLAY	A-6b (11)	4	4	17	35	40	38	19	20	8
CLAY	A-7-6 (14)	1	4	15	35	45	44	22	21	8

ROOTMAT AND/OR TOPSOIL = "X" = APPROXIMATE DEPTH	WATER CONTENT NEARLY EQUAL TO OR GREATER THAN LIQUID LIMIT
ASPHALT = "X" = APPROXIMATE DEPTH	INDICATES A NON-PLASTIC MATERIAL WITH A HIGH WATER CONTENT
AGGREGATE BASE = "X" = APPROXIMATE DEPTH	NUMBER OF BLOWS FOR "STANDARD PENETRATION TEST"
SOIL BORING - PLAN VIEW	X = NUMBER OF BLOWS FOR FIRST 6 INCHES
SOIL BORING PLOTTED TO VERTICAL SCALE ONLY	Y = NUMBER OF BLOWS FOR SECOND 6 INCHES
	Z = NUMBER OF BLOWS FOR THIRD 6 INCHES
	FREE WATER LEVEL
	STATIC WATER LEVEL

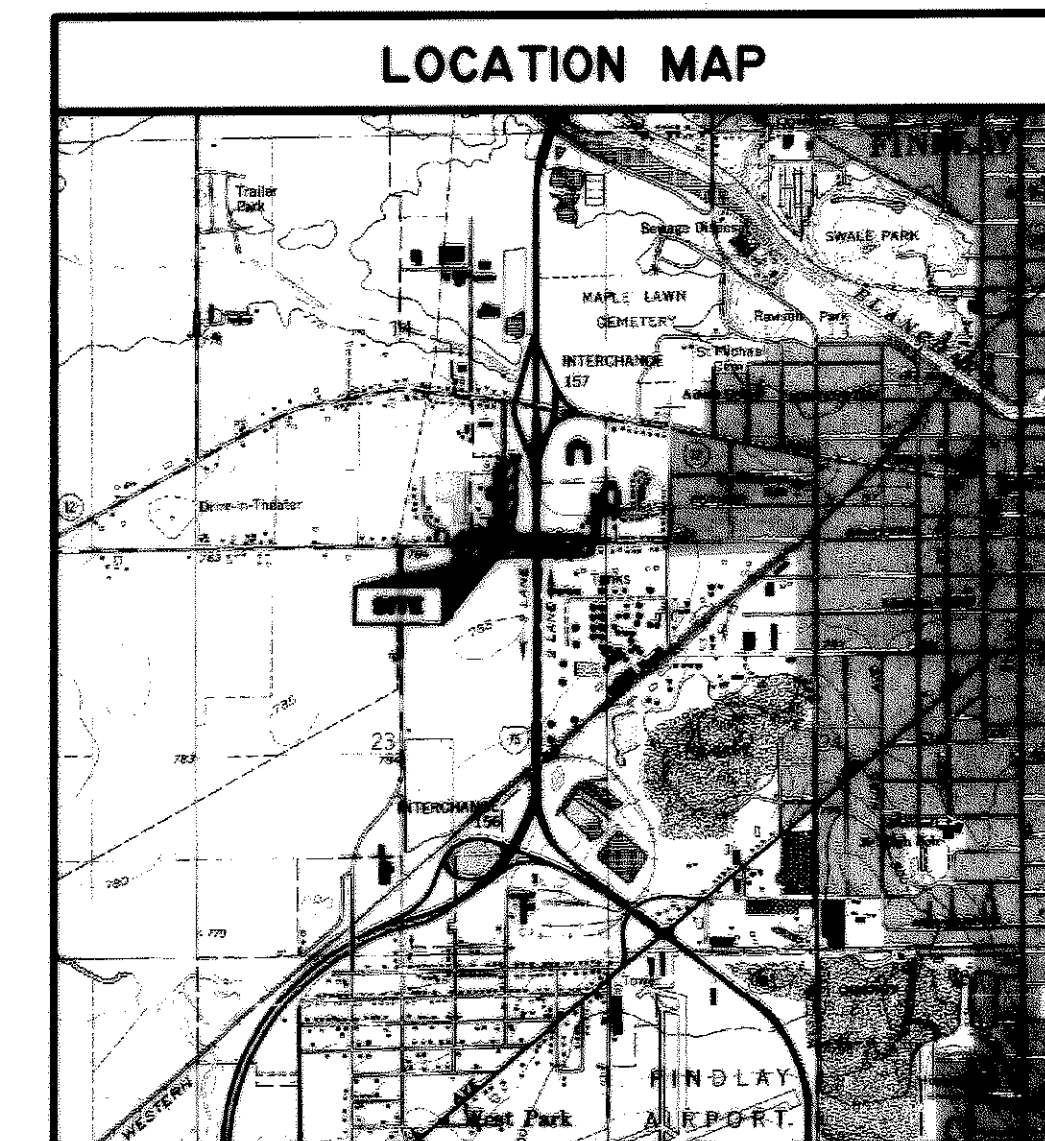
NOTE: NUMERALS ADJACENT TO THE BORINGS IN PROFILE VIEW INDICATE THE NATURAL MOISTURE CONTENT IN PERCENT.

SUMMARY OF SOIL TEST DATA

NOTE: THE LOCATIONS OF THE BORINGS ARE GIVEN WITH RESPECT TO STATIONING ALONG THE PROPOSED CENTERLINE OF WEST SANDUSKY STREET.

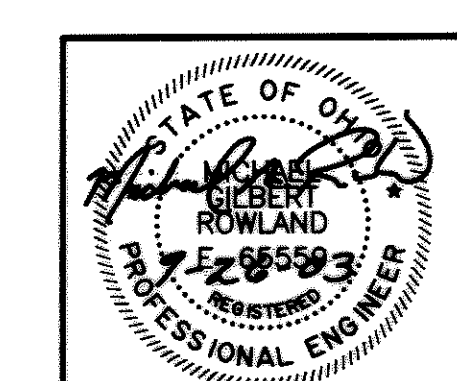
* DENOTES SAMPLE TAKEN AT OR NEAR PROPOSED SUBGRADE.

LOCATION STATION	OFFSET	R	RECOVERED SAMPLE DEPTH (ft.)		% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LIQUID LIMIT	PLASTICITY INDEX	% W.C.	ODOT CLASS
			FROM	TO									
3+61.5	6.6'	R	1.0	1.5	1	3	16	36	44	49	26	22	A-7-6 (16)
			2.5	4.0	0	4	16	36	44	43	23	20	A-7-6 (14)
			4.0	4.8	1	5	18	35	41	38	17	20	A-6b (11)
6+65.9	9.1'	R	1.5	2.1	1	3	17	40	39	37	18	19	A-6b (11)
			3.0	3.4	31	18	17	--	34	--	--	--	Est. A-2-4
			4.5	5.5	1	3	15	36	45	42	21	23	A-7-6 (13)
8+19.4	29.2'	R	3.0	3.9	2	5	18	41	34	--	--	--	Est. A-6b
			4.5	5.5	--	--	--	--	--	39	19	20	Est. A-6b
9+65.9	42.8'	L	8.5	9.4	0	0	62	--	38	--	--	--	Est. A-4a
			1.0	1.7	61	21	7	--	11	--	--	--	Est. A-1-a (0)
10+92.9	319.6'	L	2.5	3.5	1	4	18	39	38	44	20	23	A-7-6 (13)
			4.0	4.8	1	2	15	35	47	42	22	21	A-7-6 (13)
			6.0	7.1	1	0	58	--	41	--	--	--	Est. A-4a
11+01.6	53.0'	R	1.0	1.7	63	21	8	--	8	--	--	--	A-1-a (0)
			2.5	3.3	15	6	16	30	33	37	19	19	A-6b (9)
			4.0	4.5	1	4	15	33	47	44	22	19	A-7-6 (14)
11+15.2	40.2'	L	1.0	2.0	5	5	24	35	31	27	11	13	A-6a (7) *
			2.5	3.5	4	7	21	35	33	29	13	14	A-6a (8)
			4.0	4.8	5	5	18	30	42	40	21	19	A-6b (12)
12+49.4	60.5'	R	1.5	2.1	1	4	17	36	42	42	21	23	A-7-6 (13)
			3.5	4.5	--	--	--	--	--	33	17	20	Est. A-6b
			1.5	2.5	3	6	23	35	33	25	9	13	A-4a (7)
13+45.2	95.0'	L	3.0	3.8	1	4	20	35	40	37	17	21	A-6b (11)
			4.5	5.5	3	4	26	34	33	31	14	17	A-6a (8)
			16.0	16.7	--	--	--	--	--	31	14	17	Est. A-6a
16+15.1	8.7'	L	1.5	2.3	8	7	15	40	30	27	9	16	A-4a (7)
			3.0	3.6	7	9	20	33	31	33	15	19	A-6a (8)
			4.5	5.5	4	8	19	37	32	30	13	18	A-6a (8)
17+49.0	53.7'	R	6.0	7.3	3	10	21	43	23	21	6	21	Est. A-4a
			3.5	4.4	0	3	17	38	42	40	21	20	A-6b (12)
			6.0	6.9	1	7	45	36	11	--	--	19	Est. A-4a
19+23.1	45.4'	L	1.5	2.2	42	25	23	--	10	--	--	--	A-1-b (0)
			3.0	3.8	51	18	7	15	9	27	9	9	A-2-4 (0)
			4.5	5.3	31	18	13	23	15	30	11	15	A-6a (11)
20+50.6	33.0'	R	1.0	2.0	5	5	21	38	31	32	15	18	A-6a (9)
			2.5	3.5	2	4	14	30	50	42	23	19	A-7-6 (14)
			4.0	5.0	23	14	19	27	17	26	10	13	A-4a (2)



RECON - R.L.W. (8/20/01)
 DRILLING - J.E.B./E.R.P. (2/18/02 TO 3/26/02)
 DRAFTING - B.L.R./A.J.S./J.L.P. (3/10/03 TO 3/27/03)

PROJECT INDEX			
STATION FROM	STATION TO	PLAN AND PROFILE VIEW	CUT
		SHEET NUMBER	(MAXIMUM)
WEST SANDUSKY ST.			
10+50	19+50	2 AND 3	0'
			4.5'



BBCM

DRAWN BY A.J.S. REVIEWED BY M.G.R. DATE 3/27/03 CALCULATED CHECKED R.S.W.

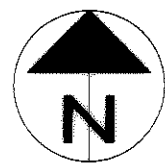
SOIL PROFILE

HAN-75-15.99 HANCOCK COUNTY, OHIO

1/3

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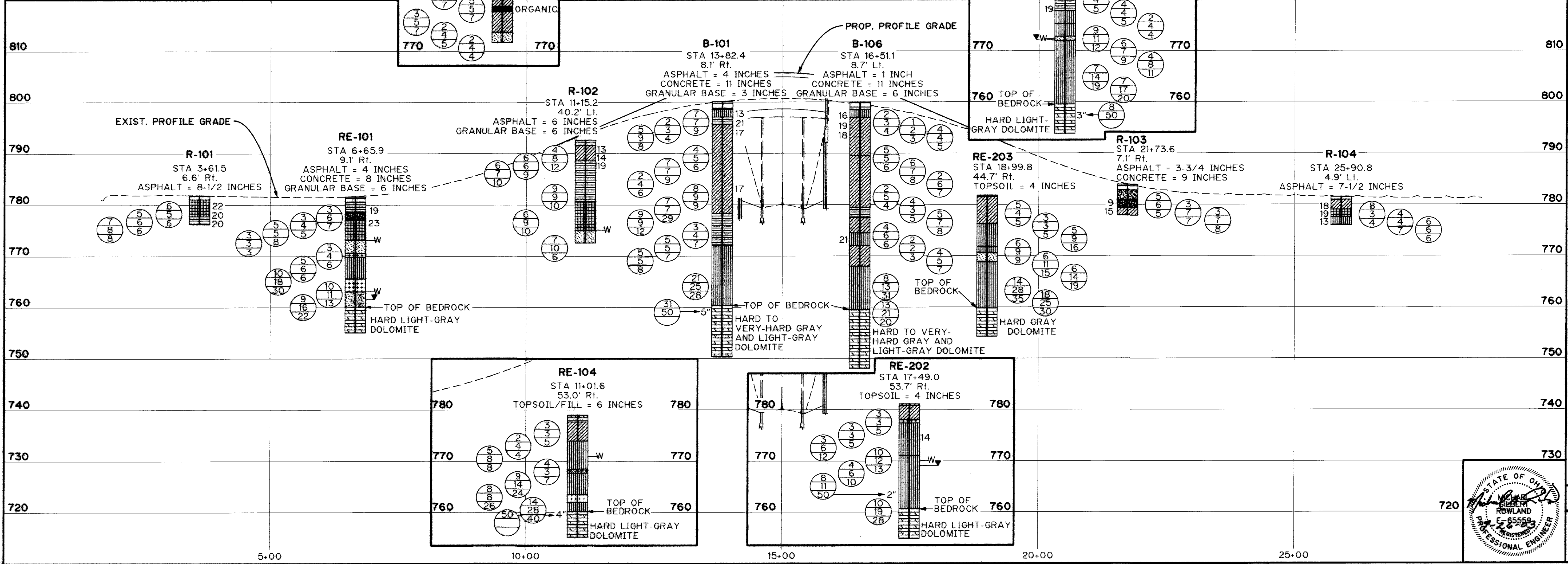
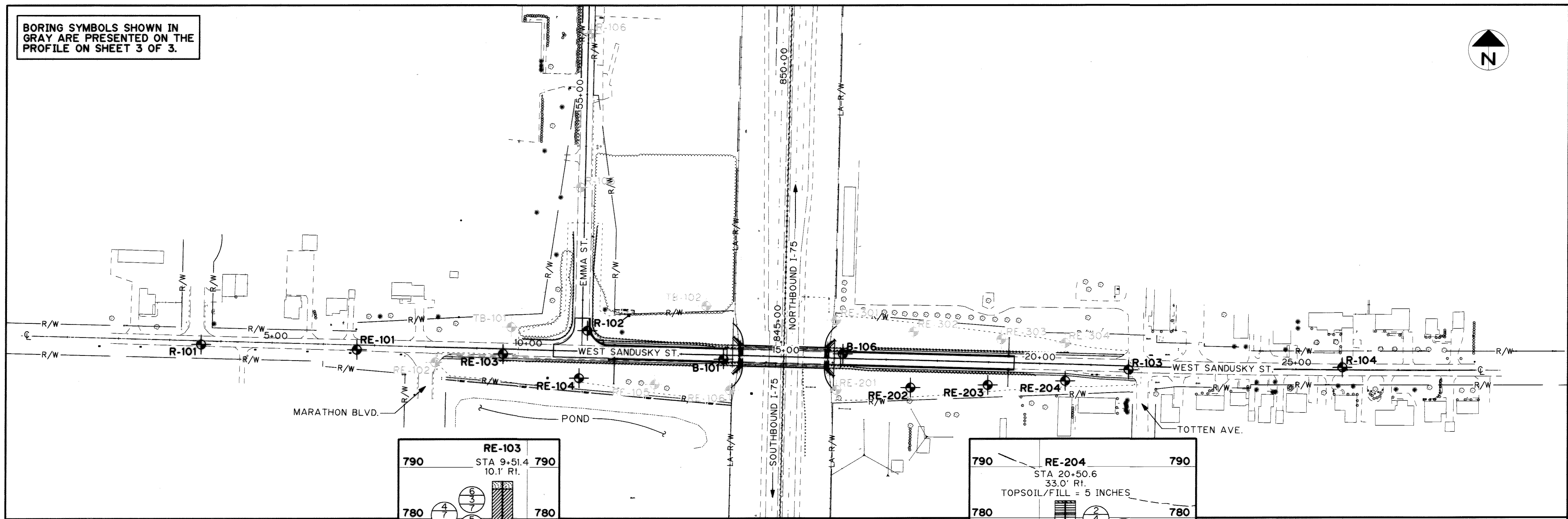
BORING SYMBOLS SHOWN IN GRAY ARE PRESENTED ON THE PROFILE ON SHEET 3 OF 3.



BBCM

0 100 200
HORIZONTAL SCALE
1" = 100'

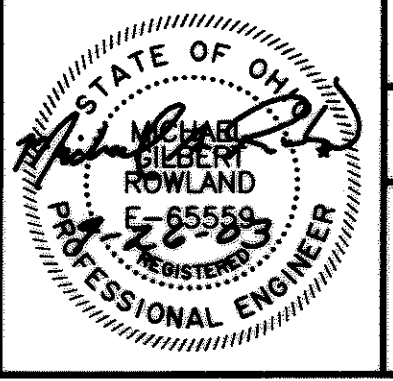
CALCULATED
DATE 3/27/03
REVIEWED BY M.G.R.
DRAWN BY J.L.P.
CHECKED R.S.W.



SOIL PROFILE

HAN-75-15.99

2 / 3



BBCM ENGINEERING, INC. DRAWING NO. ... ROADWAY 011-08091-000020.dgn

BORING SYMBOLS SHOWN IN GRAY ARE PRESENTED ON THE PROFILE ON SHEET 2 OF 3.

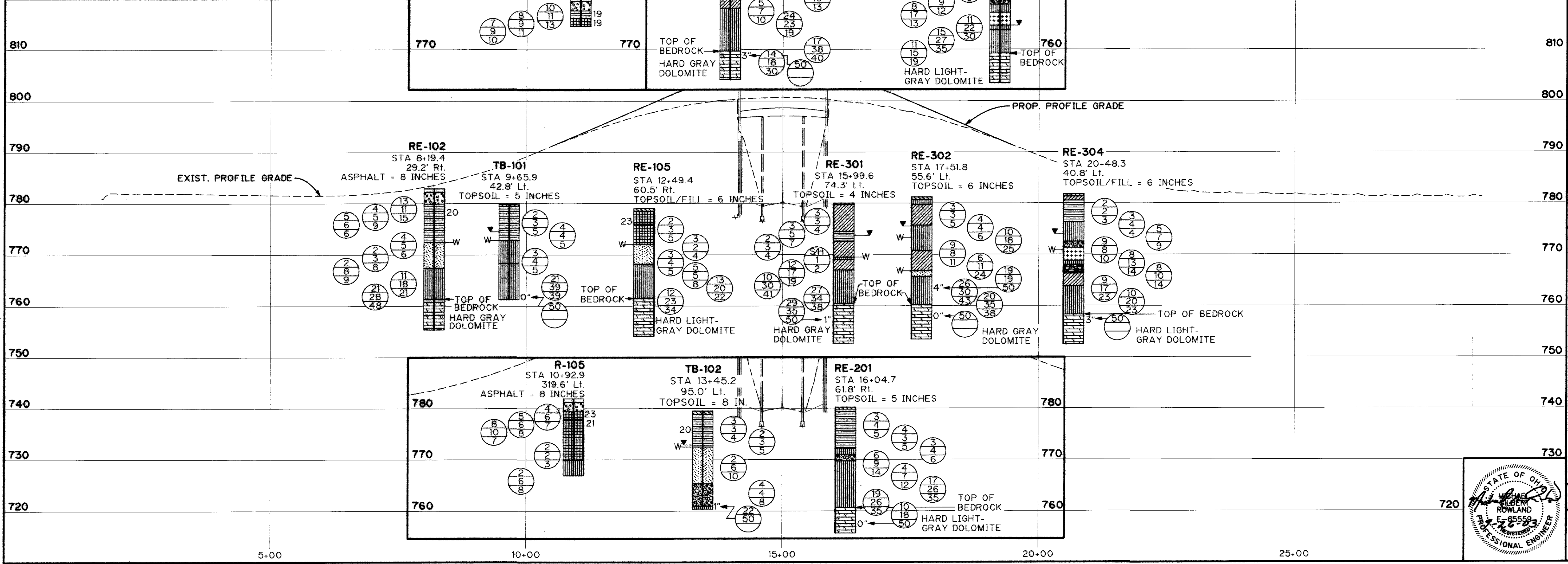
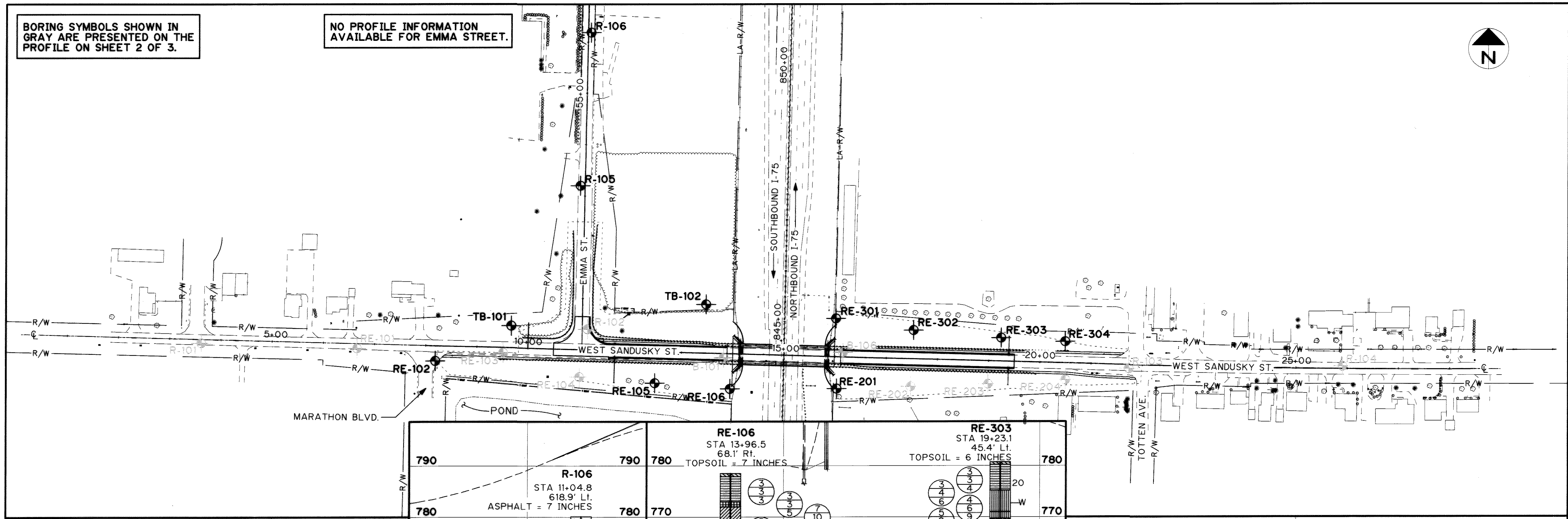
NO PROFILE INFORMATION AVAILABLE FOR EMMA STREET.



BBCM

0 100 200
HORIZONTAL SCALE
1" = 100'

CALCULATED	CHECKED
DATE 3/27/03	R.S.W.
REVIEWED BY M.G.R.	
DRAWN BY J.L.P.	

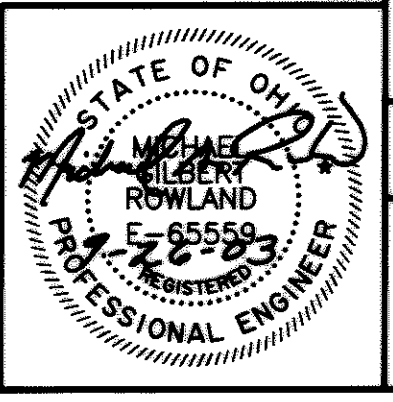


SOIL PROFILE

HAN-75-15.99

3 / 3

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GENERAL INFORMATION

INTRODUCTION

IT IS PROPOSED TO REPLACE THE EXISTING THREE-SPAN WEST SANDUSKY STREET (CR 88) BRIDGE OVER INTERSTATE 75 IN FINDLAY, OHIO (NO. HAN-75-15.99) WITH A NEW 170-FOOT-LONG SINGLE-SPAN STRUCTURE. THE PROPOSED ABUTMENTS WILL INCORPORATE MECHANICALLY-STABILIZED EARTH (MSE) WALLS. AS PART OF THIS PROJECT, THE EXISTING APPROACH EMBANKMENTS WILL BE RAISED APPROXIMATELY 5 FEET AT THE ABUTMENTS.

GEOLOGY OF THE SITE

THE SITE IS LOCATED WITHIN A PORTION OF THE STATE WHICH WAS GLACIATED BY THE WISCONSINAN AND ILLINOIAN GLACIAL ADVANCES. NATURAL SOILS GENERALLY CONSIST OF GROUND MORAINIC GLACIAL TILL CHARACTERIZED BY AN UNSTRATIFIED, UNSORTED MIXTURE OF CLAY, SILT, SAND AND LARGER SIZE PARTICLES. BEDROCK, CONSISTING OF THE TYMOCHEE DOLOMITE OF SILURIAN AGE, IS LOCATED NEAR ELEVATION 760 (MSL) AT THE PROJECT SITE.

EXPLORATION

DURING THE PERIOD OF FEBRUARY 18 THROUGH MARCH 20, 2002, 9 SOIL BORINGS WERE PERFORMED FOR THIS PROJECT IN THE VICINITY OF THE PROPOSED STRUCTURE. BORINGS B-101 THROUGH B-106 (B-103 WAS DELETED) WERE DRILLED FOR THE PURPOSES OF EXPLORING THE SUBSURFACE CONDITIONS AT THE LOCATION OF THE PROPOSED BRIDGE AND RANGED IN DEPTH FROM 33.4 TO 51.9 FEET BELOW THE EXISTING GROUND SURFACE. BORINGS RE-106, RE-201, RE-301 AND TB-102 WERE DRILLED AT THE TOES OF THE EXISTING APPROACH EMBANKMENTS TO INVESTIGATE CONDITIONS FOR FUTURE SLOPE WIDENING/RETAINING WALL CONSTRUCTION AND RANGED IN DEPTH FROM 19.1 TO 27.3 FEET. STATIONING, DISTANCE FROM CENTERLINE, AND GROUND SURFACE ELEVATIONS AT THE BORING LOCATIONS WERE PROVIDED BY M-E COMPANIES.

THE BORINGS WERE PERFORMED BY EITHER A TRUCK- OR ATV-MOUNTED DRILLING RIG USING EITHER A 3-1/4-INCH I.D. HOLLOW-STEM AUGER OR A 4-1/2-INCH O.D. CONTINUOUS-FLIGHT AUGER TO ADVANCE THE BORINGS BETWEEN SAMPLING ATTEMPTS. AT REGULAR INTERVALS, DISTURBED BUT REPRESENTATIVE SAMPLES WERE OBTAINED BY LOWERING A 2-INCH O.D. SPLIT-BARREL SAMPLER TO THE BOTTOM OF THE BORING AND THEN DRIVING THE SAMPLER INTO THE SOIL WITH BLOWS FROM A 140-POUND HAMMER FREELY FALLING 30 INCHES (STANDARD PENETRATION TEST). IF NO MATERIAL WAS RETAINED IN THE SAMPLER, A 2-1/2-INCH O.D. SPLIT-BARREL SAMPLER (2S) WAS USED TO ATTEMPT TO RETRIEVE THE SOIL. UPON ENCOUNTERING APPARENT BEDROCK IN 8 OF THE 9 BORINGS, BETWEEN 5.0 AND 10.0 FEET OF ROCK WAS CORED WITH AN NX CORE BARREL UTILIZING WATER AS THE CIRCULATING FLUID. ALL SAMPLES WERE PRESERVED IN EITHER AIRTIGHT GLASS JARS OR COMPARTMENTED CORE BOXES.

FINDINGS OF THIS INVESTIGATION

BENEATH THE PAVEMENT, THE EXISTING EMBANKMENTS CONSISTED PRINCIPALLY OF STIFF TO HARD BROWN AND GRAY SILTY CLAY (A-6a, A-6b, A-7-6). A FEW ZONES OF GRANULAR SOILS WERE ENCOUNTERED WITHIN THE FILL AND THESE ZONES CONSISTED OF LOOSE FINE TO COARSE SAND CONTAINING VARYING AMOUNTS OF SILT AND CLAY (A-3a, A-2-4).

IN CONTRAST TO THE OTHER BORINGS PERFORMED FOR THE PROJECT, BORING RE-301 (LOCATED NORTH OF THE BRIDGE AT THE TOE OF THE EAST APPROACH EMBANKMENT) ENCOUNTERED A ZONE OF FILL EXTENDING IN DEPTH TO APPROXIMATELY EL. 769.5 (OVER 10 FEET BELOW SURROUNDING GROUND LEVEL). MUCH OF THIS FILL CONSISTED OF VERY-SOFT TO STIFF BROWN MOTTLED WITH DARK GRAY SILTY CLAY AND CONTAINED POCKETS OF ORGANIC CLAYEY SILT (TOPSOIL) AND MAY BE INDICATIVE OF A PREVIOUSLY BACKFILLED BASEMENT, TRENCH OR PIT.

NATURAL SOILS UNDERLYING THE EMBANKMENTS WERE GENERALLY ENCOUNTERED BETWEEN EL. 780 AND EL. 778. WITHIN A FEW OF THE BORINGS, A RELATIVELY THIN LAYER (ROUGHLY 12-INCHES) OF ORGANIC, OR PARTLY ORGANIC SOIL WAS ENCOUNTERED JUST BELOW THE EXISTING EMBANKMENT FILL. BELOW THIS LAYER, THE BORINGS ENCOUNTERED NATURAL SOILS CONSISTING OF VERY-STIFF TO HARD BROWN MOTTLED WITH GRAY SILTY CLAY (A-6a, A-6b, A-7-6), WHICH CONTAINED A FEW ZONES OF LOOSE TO MEDIUM-DENSE GRAY FINE SAND CONTAINING VARYING AMOUNTS OF CLAY (A-1-b, A-3, A-2-6, A-4d). BENEATH THIS STRATUM, VERY-STIFF TO HARD GRAY CLAYEY SILT (A-4d) CONTAINING MANY SEAMS OF SILT (A-4b) WAS ENCOUNTERED.

BEDROCK, CONSISTING OF HARD TO VERY-HARD LIGHT-GRAY DOLOMITE CONTAINING THIN DARK-GRAY SHALE PARTINGS, WAS ENCOUNTERED IN 8 OF THE 9 BORINGS BETWEEN EL. 761.6 AND EL. 759.1. IN GENERAL, THE UPPER 1 TO 2 FEET OF THE BEDROCK APPEARED TO BE MODERATELY TO HIGHLY FRACTURED. BELOW THIS LEVEL, THE BEDROCK EXHIBITED ONLY MINOR FRACTURING, WITH RQD VALUES RANGING FROM 60 TO 93 PERCENT.

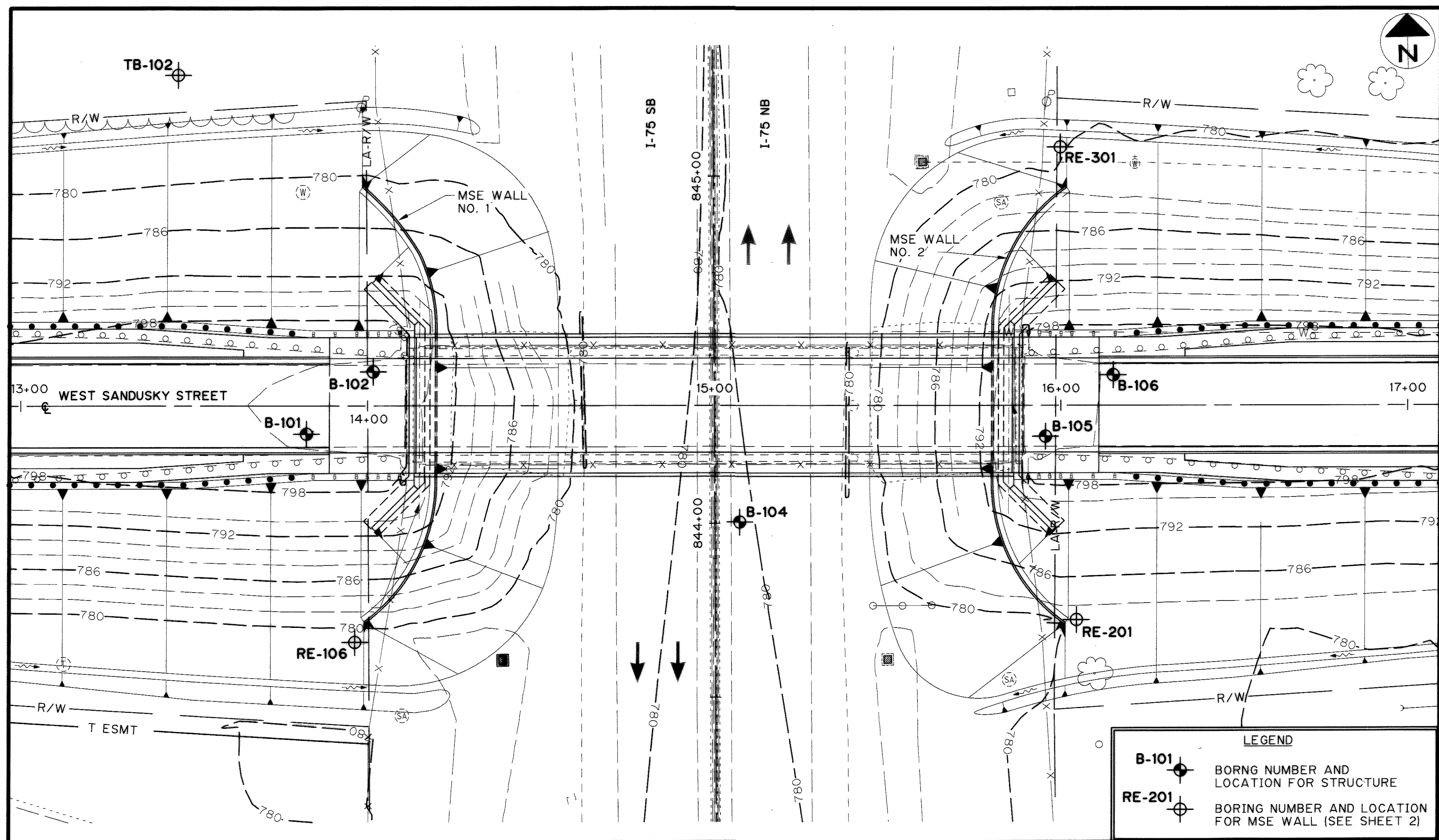
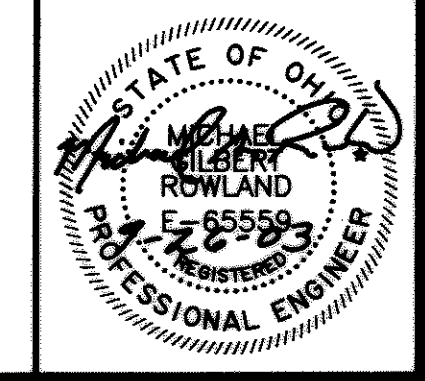
DURING DRILLING, MINOR SEEPAGE WAS ENCOUNTERED IN BORING B-104 AT DEPTHS BETWEEN 10.0 AND 11.0 FEET BELOW THE GROUND SURFACE. GROUNDWATER WAS ENCOUNTERED AT A DEPTH OF 10.5 FEET IN BORING RE-301 AND AT A DEPTH OF 7.0 FEET IN BORING TB-102. AT THE COMPLETION OF DRILLING, AND PRIOR TO THE INTRODUCTION OF CORING WATER, GROUNDWATER WAS MEASURED AT DEPTH OF 6.3 AND 6.6 FEET IN BORINGS RE-301 AND TB-102, RESPECTIVELY. ALL OTHER BORINGS WERE FOUND TO BE "DRY", MEANING THAT MEASURABLE AMOUNTS OF WATER HAD NOT COLLECTED IN THE BORE HOLE PRIOR TO THE INTRODUCTION OF CORING WATER.

SUMMARY OF BEDROCK UNCONFINED COMPRESSIVE STRENGTH (Q_u) RESULTS

STATION & OFFSET	DEPTH (ft)		BEDROCK TYPE	Q _u
	FROM	TO		
14+01.6 9.7' Lt.	51.3	51.8	DOLOMITIC LIMESTONE	16,008 psi
15+07.5 33.7' Rt.	26.8	27.3	DOLOMITIC LIMESTONE	10,756 psi
15+95.6 8.9' Rt.	45.8	46.2	DOLOMITIC LIMESTONE	9,262 psi

NOTE:

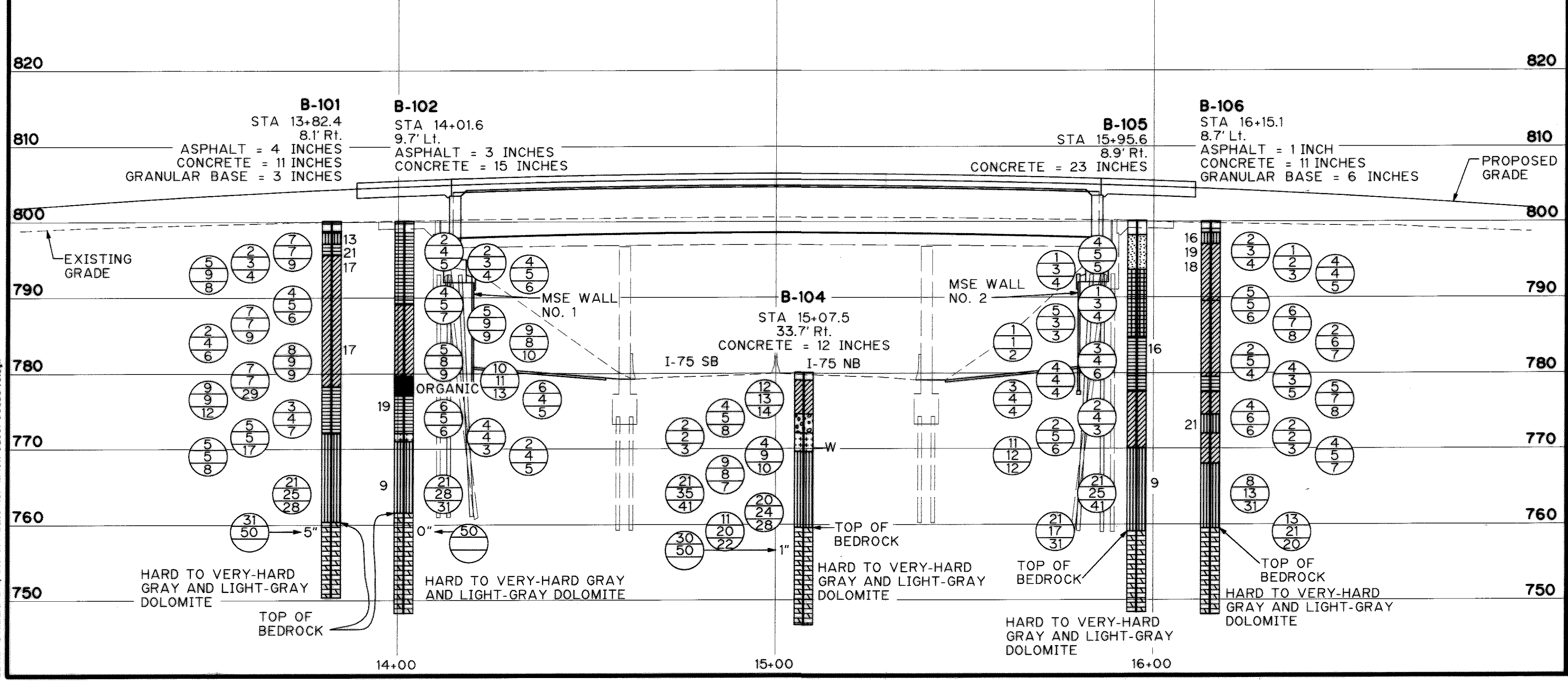
ALL AVAILABLE SOIL AND BEDROCK INFORMATION WHICH CAN BE CONVENIENTLY SHOWN ON THE SOIL PROFILE SHEETS HAS BEEN SO REPORTED. ADDITIONAL SUBSURFACE INVESTIGATIONS, SOIL TESTS, AND BEDROCK BORINGS MAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA IF ANY, MAY BE INSPECTED IN THE DISTRICT 1 DEPUTY DIRECTOR'S OFFICE, THE OFFICE OF GEOTECHNICAL ENGINEERING AT 1600 WEST BROAD STREET, OR THE OFFICE OF STRUCTURAL ENGINEERING AT 1980 WEST BROAD STREET, IN COLUMBUS, OHIO.



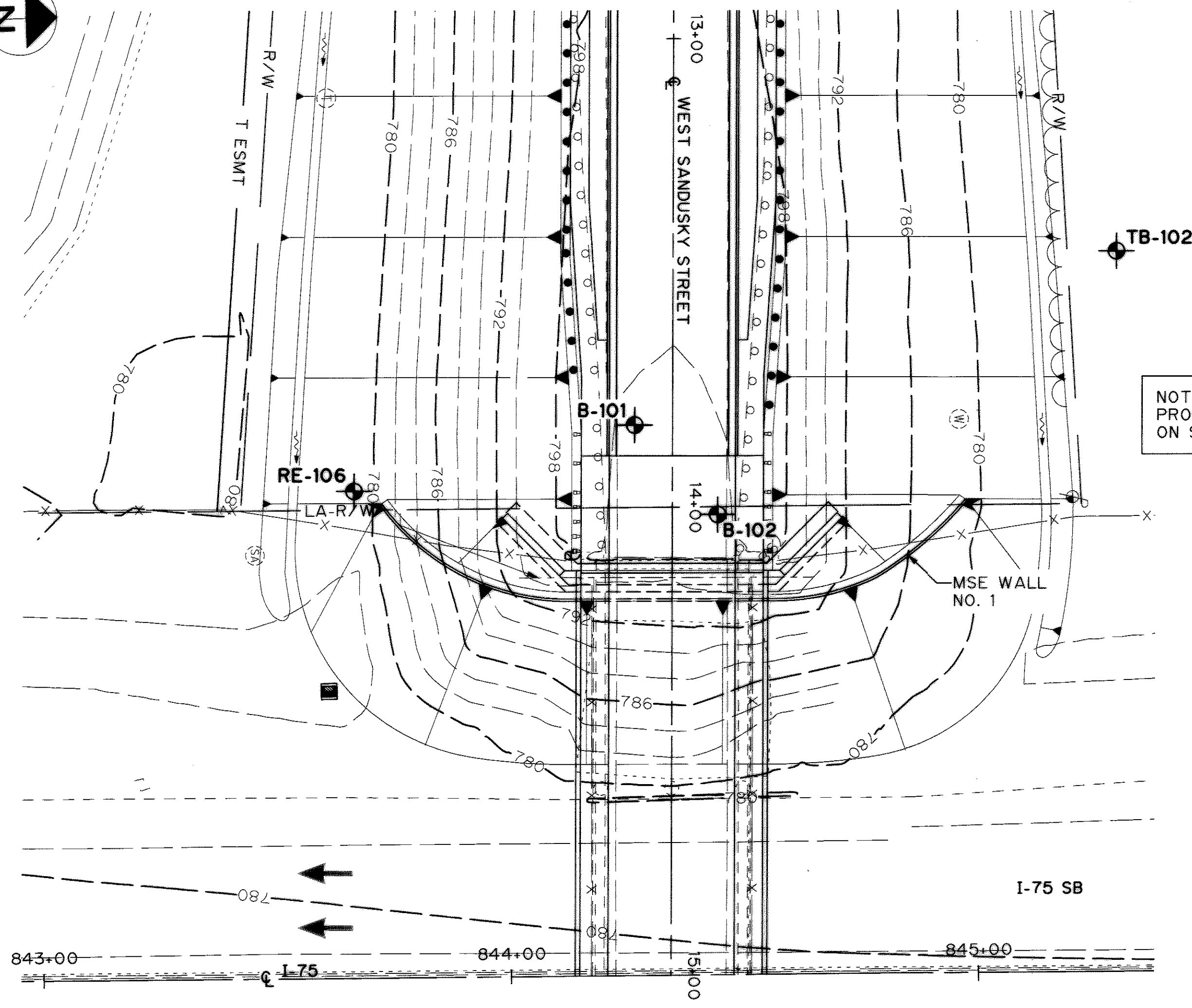
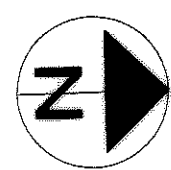
LEGEND

B-101 BORING NUMBER AND LOCATION FOR STRUCTURE

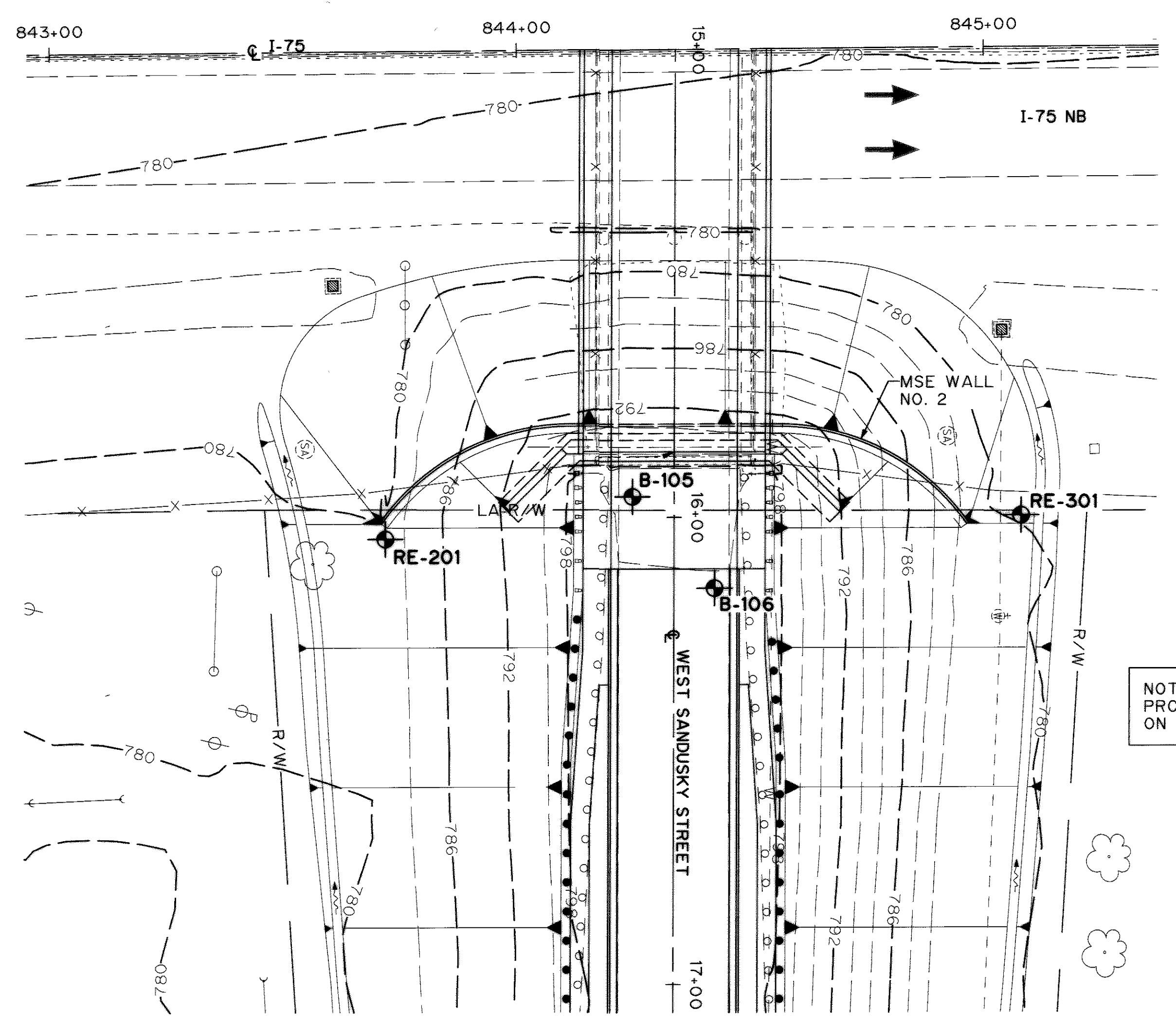
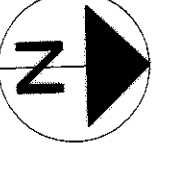
RE-201 BORING NUMBER AND LOCATION FOR MSE WALL (SEE SHEET 2)



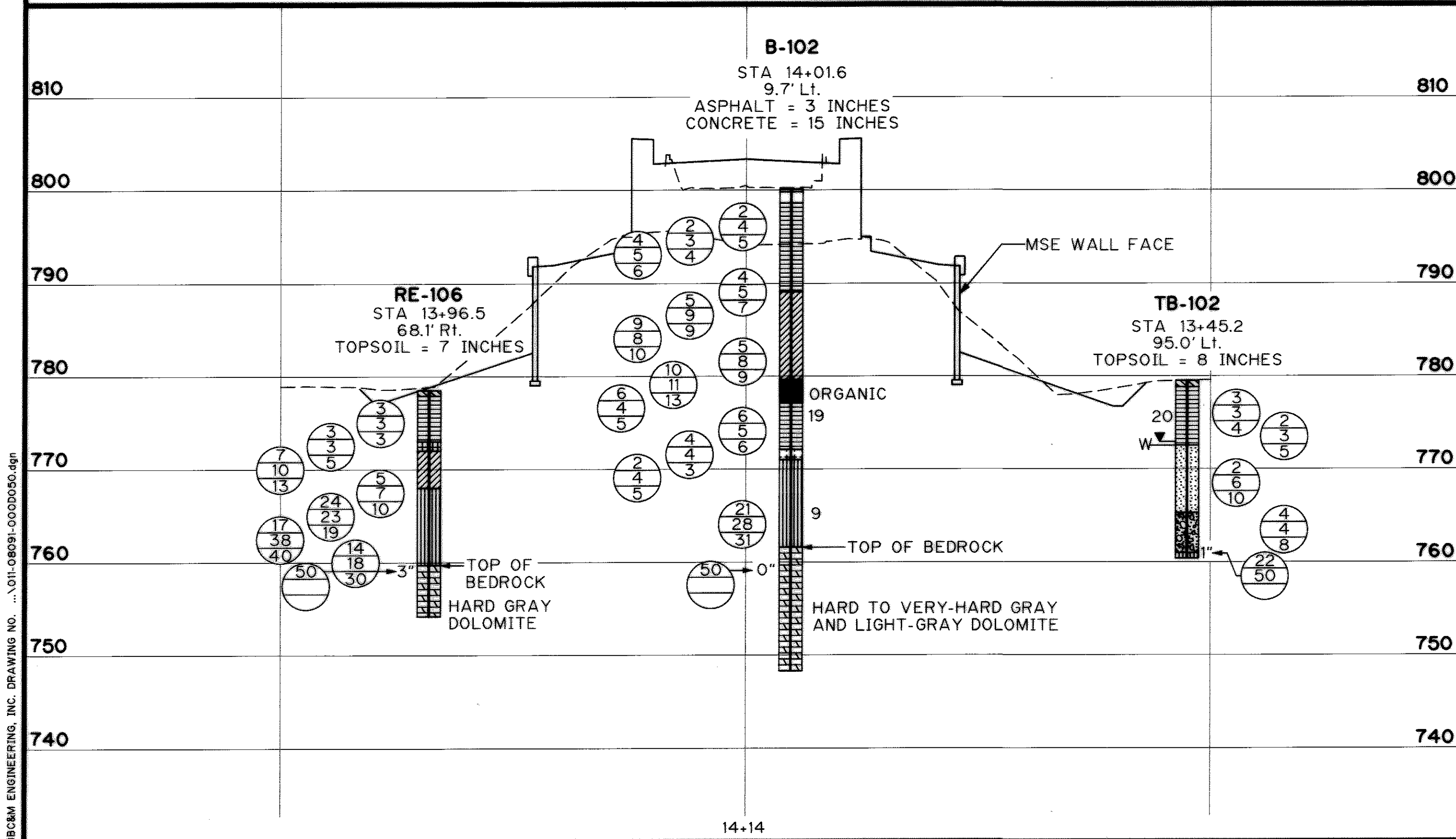
BBCM ENGINEERING, INC. DRAWING NO. ...01-08091-000040.dgn



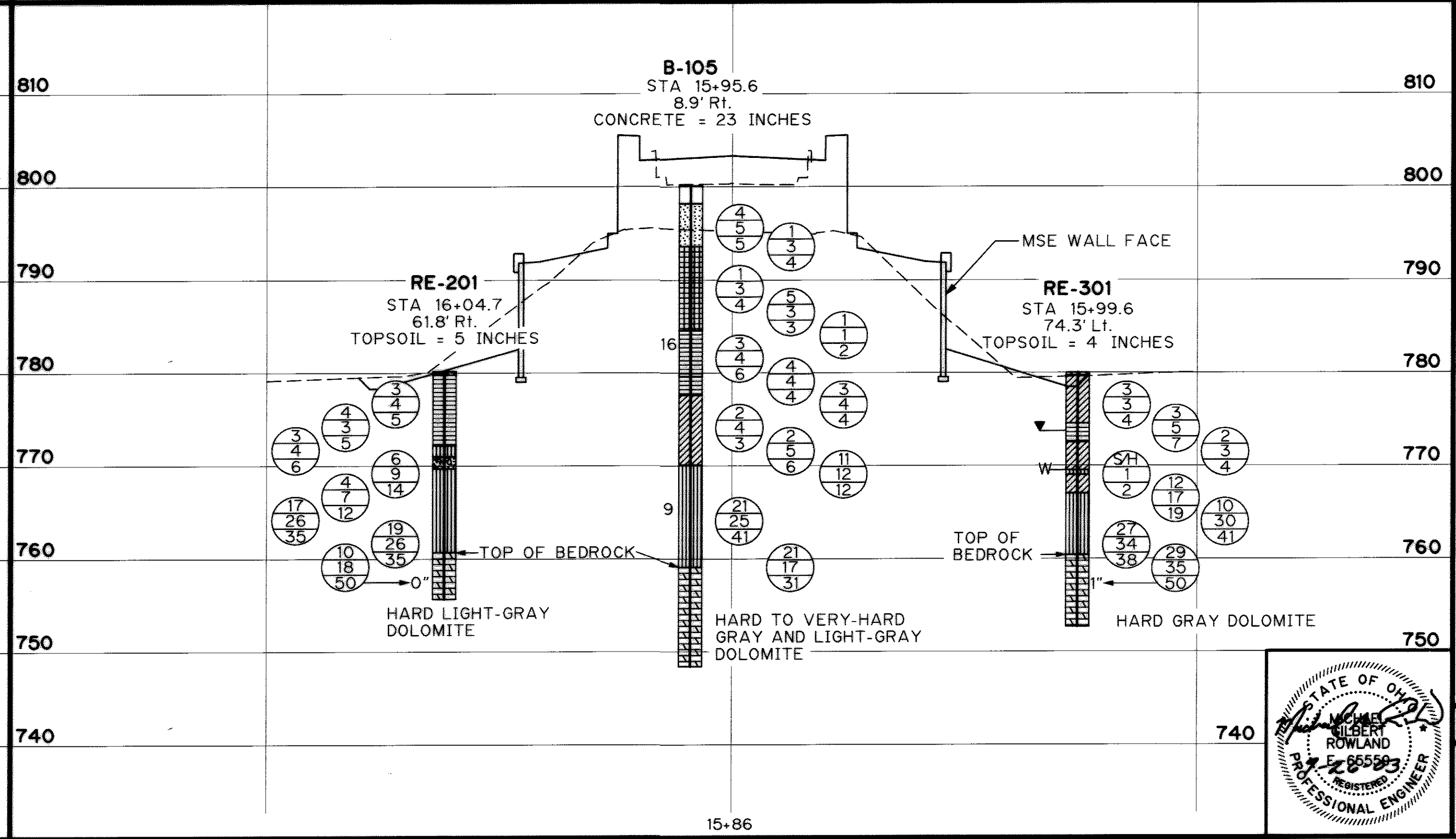
NOTE: BORING B-101
PROFILE VIEW SHOWN
ON SHEET 1/5



NOTE: BORING B-106
PROFILE VIEW SHOWN
ON SHEET 1/5

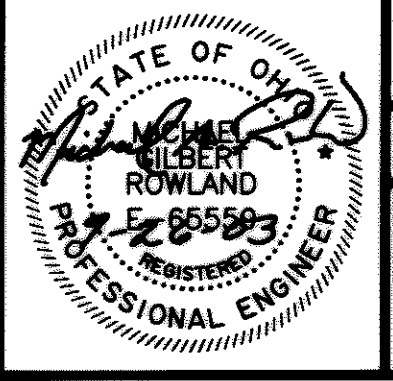


14-14



15-86

BBC&M ENGINEERING, INC. DRAWING NO. ...01-08091-000000.dgn



BBCM

DRAWN BY	REVIEWED BY	DATE	CALCULATED
B.L.R.	M.G.R.	3/27/03	
SCALE		CHECKED BY	R.S.W.
1" = 20' (HORIZ.)			
1" = 10' (VERT.)			

STRUCTURE FOUNDATION INVESTIGATION
HAN-75-1599 WEST SANDUSKY STREET OVER I-75

HAN-75-15.99

BBCM
LOG OF BORING NO. B-101
HAN-75-15.99
HANCOCK COUNTY, OHIO

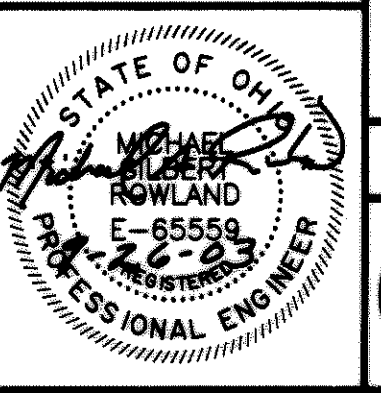
ELEVATION	DEPTH, FEET	SAMPLE NO.	SAMPLES	SAMPLING EFFORT	HAND PENE. TROMETER	MOISTURE CONTENT		PLASTIC LIMIT		AGGREGATE					DESCRIPTION
						%	%	%	%	Agg.	C.S.	F.S.	SILT	CLAY	
799.8	0													0.3 ASPHALT - 4 INCHES	
798.9														1.3 CONCRETE - 11 INCHES	
797.1														1.5 GRANULAR BASE - 3 INCHES	
795.6														FILL: Hard brown and gray clayey silt, some fine to coarse sand, trace fine to coarse gravel. A-4a (7)	
														FILL: Very-stiff brown mottled with gray silty clay, some fine to coarse sand, trace fine gravel. A-6b (11)	
														FILL: Very-stiff to hard brown mottled with gray and dark-gray silty clay, little to some fine to coarse sand, trace fine to coarse gravel. A-6a (8)	
778.3		9A	9/9/12											21.8 Very-stiff to hard brown mottled with gray silty clay, little becoming some fine to coarse sand, trace fine gravel. Est. A-6b	
772.1		10	3/4/7											28.0 Very-stiff to hard gray clayey silt, some fine to coarse sand, little fine to coarse gravel. Est. A-4a	
760.4		14	31/50-5"R											39.7 Hard to very-hard gray and light-gray dolomite, nearly horizontally bedded, 2" to 40" core pieces, few diagonal and vertical fractures, few dark-gray shale partings, upper surface exhibits a greater degree of fracturing. Est. A-4a	
750.4														49.7 - No seepage or groundwater encountered prior to introduction of coring water.	
TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 13+82.4 3" O.D. Split-barrel Sampler 33.7' R.T. of NX Rock Core Barrel Proposed Centerline COMPLETION DEPTH: 49.7' ELEVATION: 800.1 DATE: 2/19/02															

BBCM
LOG OF BORING NO. B-102
HAN-75-15.99
HANCOCK COUNTY, OHIO

ELEVATION	DEPTH, FEET	SAMPLE NO.	SAMPLES	SAMPLING EFFORT	HAND PENE. TROMETER	MOISTURE CONTENT		PLASTIC LIMIT		AGGREGATE					DESCRIPTION
						%	%	%	%	Agg.	C.S.	F.S.	SILT	CLAY	
799.9	0													0.3 ASPHALT - 3 INCHES	
798.6														1.5 CONCRETE - 15 INCHES	
														FILL: Stiff to very-stiff brown mottled with gray and dark-gray silty clay, trace to little fine to coarse sand, trace fine to coarse gravel. Est. A-6b	
789.1														FILL: Very-stiff to hard brown mottled with gray and dark-gray silty clay, little fine to coarse sand, trace fine to coarse gravel. Est. A-6b	
779.6														20.5 Very-stiff dark-gray organic silty clay, trace fine to coarse sand, trace fine gravel. Visual Est. A-6a	
777.1														23.0 Very-stiff to hard brown mottled with gray silty clay, some fine to coarse sand, trace fine gravel, contains few fine sand seams. Est. A-4a	
772.1														28.0 Loose gray silt, little fine sand, trace clay. Est. A-4b	
771.0		12A	2/4/5											29.1 Hard gray clayey silt, some fine to coarse sand, trace fine gravel, contains fine to medium sand seams. Est. A-4a	
761.6														38.5 Hard to very-hard gray and light-gray dolomite, nearly horizontally bedded, 1" to 13" core pieces, few diagonal and vertical fractures, few dark-gray shale partings, upper surface exhibits a greater degree of fracturing. Est. A-4a	
748.3														51.8 - From 51.3' to 51.8': Unconfined Compressive Strength = 16,008 psi. - No seepage or groundwater encountered prior to introduction of coring water.	
TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 14+01.6 3" O.D. Split-barrel Sampler 37' R.T. of NX Rock Core Barrel Proposed Centerline COMPLETION DEPTH: 51.8' ELEVATION: 800.1 DATE: 2/18/02															

BBCM
LOG OF BORING NO. B-104
HAN-75-15.99
HANCOCK COUNTY, OHIO

ELEVATION	DEPTH, FEET	SAMPLE NO.	SAMPLES	SAMPLING EFFORT	HAND PENE. TROMETER	MOISTURE CONTENT		PLASTIC LIMIT		AGGREGATE					DESCRIPTION
						%	%	%	%	Agg.	C.S.	F.S.	SILT	CLAY	
779.1	0													1.0 CONCRETE - 12 INCHES	
774.6														5.5 Very-stiff to hard gray silty clay, little fine to coarse sand, trace fine to coarse gravel, slight diesel fuel odor near bottom of stratum. Est. A-6a	
772.1														8.0 Loose gray fine to coarse sand, trace silt, appears to contain diesel fuel. Est. A-1-a	
769.6														10.5 Medium-dense gray silt, little fine sand, trace clay. Est. A-4b	
759.6														20.5 Hard gray clayey silt, some fine to coarse sand, little fine to coarse gravel. Est. A-4a	
746.7														33.4 - From 26.8' to 27.3': Unconfined Compressive Strength = 10,756 psi. - Encountered seepage from 10.0' to 11.0' prior to introduction of coring water.	
TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 15+07.5 3" O.D. Split-barrel Sampler 33.7' R.T. of NX Rock Core Barrel Proposed Centerline COMPLETION DEPTH: 33.4' ELEVATION: 780.1 DATE: 2/21/02															

**BBCM**
 STRUCTURE FOUNDATION INVESTIGATION
 HAN-75-1599 WEST SANDUSKY STREET OVER I-75

HAN-75-15.99

CALCULATED	CHECKED
DATE	R.S.W.
3/27/03	
REVIEWED BY	
M.G.R.	
DRAWN BY	
A.J.S.	



LOG OF BORING NO. B-105
HAN-75-15.99
HANCOCK COUNTY, OHIO

ELEVATION FEET	DEPTH FEET	SAMPLE NO.	SAMPLING EFFORT	HAND PENE- TRMETER	MOISTURE CONTENT % LIQUID LIMIT PLASTIC LIMIT	COMPLETION DEPTH: 51.7' ELEVATION: 800.1 DATE: 2/22/02						
						Agg.	C.S.	F.	S.	SILT	CLAY	
798.2	0					CONCRETE - 23 INCHES						
793.6	5	1	4/5/5			FILL: Loose gray fine to coarse sand, some fine to coarse gravel, little to some silt, trace clay.						
784.6	15	3	1/3/4	1.5-2.5		6.5 Est. A-3a FILL: Stiff to very-stiff brown mottled with gray silty clay, little fine to coarse sand, trace fine gravel.						
779.6	20	5	1/1/2	1.5-2.0		15.5 Est. A-7-6 FILL: Very-stiff to hard brown mottled with gray silty clay, some fine to coarse sand, trace fine gravel.						
777.6	22	6	3/4/6	3.0-4.0	16 37 19 2 5 19 36 38	20.5 A-6b (11) FILL: Very-stiff dark-gray mottled with brown and gray silty clay, little fine to coarse sand, trace fine gravel, intermixed with organic clayey silt (topsoil).						
770.1	30	9	2/4/3	2.0-2.7		22.5 Est. A-6b Very-stiff to hard brown mottled with gray silty clay, little to some fine to coarse sand, trace fine gravel.						
759.1	40	12	2/12/12	4.5+		30.0 Est. A-6a Hard gray clayey silt, some fine to coarse sand, trace fine to coarse gravel.						
748.4	50	14	21/25/41	4.5+	9 22 12 8 10 20 33 29	41.0 A-4a (5) Hard to very-hard gray and light-gray dolomite, nearly horizontally bedded, 1" to 27" core pieces, few diagonal and vertical fractures, few dark-gray shale partings, contains many fractures between 41.7' and 44.8' - From 45.8' to 46.2': Unconfined Compressive Strength = 9,262 psi.						
	55					51.7 - No seepage or groundwater encountered prior to introduction of coring water.						
WATER LEVEL: 10.5												
WATER NOTE: Before Coring After Coring												
DATE: 2/22/02 2/22/02												



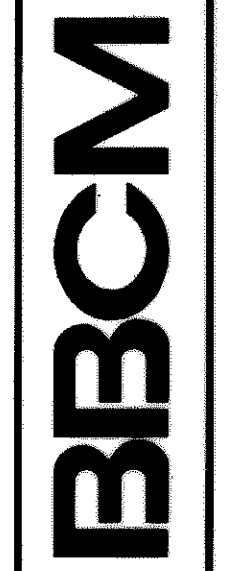
LOG OF BORING NO. B-106
HAN-75-15.99
HANCOCK COUNTY, OHIO

ELEVATION FEET	DEPTH FEET	SAMPLE NO.	SAMPLING EFFORT	HAND PENE- TRMETER	MOISTURE CONTENT % LIQUID LIMIT PLASTIC LIMIT	COMPLETION DEPTH: 51.9' ELEVATION: 900.0 DATE: 2/22 - 2/26/02						
						Agg.	C.S.	F.	S.	SILT	CLAY	
799.0	0					0.1 ASPHALT - 1 INCH						
797.0	2	1	2/3/4	2.0-2.7	16 27 18 8 7 15 40 30	1.0 CONCRETE - 11 INCHES						
789.5	10	3	4/4/5	2.0-2.7	18 30 17 4 8 19 37 32	1.5 GRANULAR BASE - 6 INCHES FILL: Very-stiff brown and gray clayey silt, some fine to coarse sand, trace fine gravel.						
789.5	10	4	5/5/6	2.0-3.0		3.0 A-4a (7) FILL: Very-stiff brown mottled with gray silty clay, some fine to coarse sand, trace fine gravel, few thin layers of organic silty clay.						
779.5	20	5	6/7/8	3.7-4.5+		10.5 A-6a (8) FILL: Very-stiff to hard brown mottled with gray and dark-gray silty clay, little to some fine to coarse sand, trace fine to coarse gravel.						
777.5	22	6	2/6/7	3.7-4.5+		- Few asphalt fragments at 19.0'						
774.5	25	7	2/5/4	4.0-4.5+		20.5 Est. A-6a Hard dark-gray silty clay, little fine to coarse sand, partly organic.						
772.0	28	8	4/3/5	4.5+		22.5 Est. A-6b Very-stiff to hard brown mottled with gray silty clay, little fine to coarse sand, trace fine to coarse gravel.						
768.0	30	9	5/7/8	4.5+		25.5 Est. A-6a Stiff brown clayey silt, some fine to coarse sand, trace fine to coarse gravel, contains fine to medium sand and silt seams.						
759.5	40	11	2/2/3	1.0-1.5	21 25 18	28.0 Est. A-4a Hard brown silty clay, some fine to coarse sand, trace fine gravel, contains fine to coarse sand seams.						
748.1	50	13	4/5/7	4.5+		32.0 Est. A-6a Hard gray clayey silt, some fine to coarse sand, trace fine to coarse gravel, contains many fine sand and silt seams.						
	55					40.5 Est. A-4a Hard to very-hard gray and light-gray dolomite, nearly horizontally bedded, 1" to 15" core pieces, few diagonal and vertical fractures, few dark-gray shale partings, upper surface exhibits a greater degree of fracturing.						
	60					51.9 - No seepage or groundwater encountered prior to introduction of coring water.						
WATER LEVEL: 12.4												
WATER NOTE: Before Coring After Coring												
DATE: 2/26/02 2/26/02												



LOG OF BORING NO. RE-106
HAN-75-15.99
HANCOCK COUNTY, OHIO

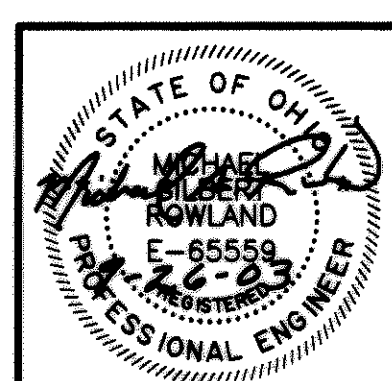
ELEVATION FEET	DEPTH FEET	SAMPLE NO.	SAMPLING EFFORT	HAND PENE- TRMETER	MOISTURE CONTENT % LIQUID LIMIT PLASTIC LIMIT	COMPLETION DEPTH: 24.3' ELEVATION: 778.5 DATE: 3/20/02						
						Agg.	C.S.	F.	S.	SILT	CLAY	
777.9	0					0.6 TOPSOIL / FILL - 7 INCHES						
773.0	5	1	3/3/3	1.5-2.6		FILL: Stiff to very-stiff brown mixed with dark-gray silty clay, little fine to coarse sand, trace fine gravel, few roots and organic matter.						
772.0	6	2	3/3/5	1.6-3.2		5.5 Est. A-6b Hard brown silty clay, little fine to coarse sand, trace fine to coarse gravel.						
768.0	10	3A	7/10/13	4.5+		6.5 Est. A-7-6 Hard gray silty clay, some fine to coarse sand, trace fine to coarse gravel, contains silt seams.						
	10	3B	5/7/10	4.5+		10.5 gravel, contains silt seams. Est. A-6a						
759.7	18	4	24/23/19	4.5+		Hard gray clayey silt, some fine to coarse sand, trace fine to coarse gravel, contains many silt seams.						
754.2	24	5	17/38/40	4.5+		18.8 Est. A-4a Hard gray dolomite, nearly horizontally bedded, 1" to 15" core pieces, few diagonal and vertical fractures, few dark-gray shale partings.						
	25	6	14/18/30	4.5+		24.3 - No seepage encountered prior to introduction of coring water.						
	30	7	50-3"R	4.5+		NX REC 98% RQD 81%						
WATER LEVEL: 10.5												
WATER NOTE: Before Coring												
DATE: 3/20/02												



CALCULATED	CHECKED	R.S.W.
DATE	3/27/03	
REVIEWED BY	M.G.R.	
DRAWN BY	A.J.S.	

STRUCTURE FOUNDATION INVESTIGATION
HAN-75-1599 WEST SANDUSKY STREET OVER I-75

HAN-75-15.99





LOG OF BORING NO. RE-201
HAN-75-15.99
HANCOCK COUNTY, OHIO

ELEVATION	DEPTH, FEET	SAMPLE NO.	SAMPLING EFFORT	HAND PENE. TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	AGG.	C.S.	F.S.	SILT	CLAY	DESCRIPTION
779.8	0	1A	3	1.6-2.2									0.4 TOPSOIL - 5 INCHES
		1B	4	1.5-1.7									Stiff to very-stiff brown mottled with gray silty clay, little fine to coarse sand, trace fine gravel, few fine to coarse sand seams.
	2		4/3	2.8-3.1									
	3		3/4	1.6-3.0									
772.2		4A	6	2.7-4.5+									8.0 Very-stiff to hard gray clayey silt, some fine to coarse sand, trace fine gravel. Est. A-6b
771.0		4B	9										9.2 Medium-dense gray fine to coarse sand, little silt. Est. A-4a
769.7			4	4.5+									10.5 Hard gray clayey silt, some fine to coarse sand, trace fine to coarse gravel, contains few seams of fine to medium sand. Est. A-1-b
	6		17/26	4.5+									
	7		19/26	4.5+									
	8		10/18	4.5+									19.5 Hard light-gray dolomite, nearly horizontally bedded, 1" to 10" core pieces, many horizontal and vertical fractures, few diagonal fractures, few dark-gray shale partings, contains seam of very-soft dark-gray shale at 19.8' to 20.2'. Est. A-4a
760.7			50-0"R										
755.7			NX REC 87%										24.5 - No seepage encountered prior to introduction of coring water.
				ROD 93%									

WATER LEVEL: 3 "Dry"
WATER NOTE: Before Coring
DATE: 3/19/02



LOG OF BORING NO. RE-301
HAN-75-15.99
HANCOCK COUNTY, OHIO

ELEVATION	DEPTH, FEET	SAMPLE NO.	SAMPLING EFFORT	HAND PENE. TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	AGG.	C.S.	F.S.	SILT	CLAY	DESCRIPTION
779.7	0												0.3 TOPSOIL / FILL - 4 INCHES
	1		3/3	2.2-4.2									FILL: Very-stiff to hard brown mixed with gray and dark-gray silty clay, little fine to coarse sand, trace fine to coarse gravel, contains few tile fragments.
774.5	5	2S	3/5	2.6-3.2									5.5 Est. A-6a
772.5		3A	2/3	1.2-1.9									FILL: Medium-stiff to stiff brown mottled with dark-gray silty clay, little fine to coarse sand, trace fine gravel, contains roots. Est. A-6b
	10	3B	1/4	0.8-1.1									7.5 Est. A-6b
769.5		4	S/H	0.25-0.6									FILL: Very-soft to medium-stiff brown mottled with gray and dark-gray silty clay, little fine to coarse sand, trace fine gravel, contains pockets of organic 10.5 clayey silt (topsoil). Est. A-6a
769.0			12/17	3.2-4.5+									10.5 Est. A-6a
767.0			10/30	4.5+									11.0 Medium-dense (est.) gray fine to medium sand, "and" silt. Est. A-4a
	15		27/34	4.5+									11.0 Est. A-4a
	16		29/38	4.5+									13.0 Very-stiff to hard gray silty clay, trace fine to medium sand, interbedded with thin silt seams. Est. A-6a
760.4		2S	38/44	4.5+									13.0 Est. A-6a
	18		29/35	4.5+									19.6 Hard gray clayey silt, some fine to coarse sand, little fine to coarse gravel, contains seams of silt, cobbles. Est. A-4a
	19		50-1"R	4.5+									19.6 Est. A-4a
	20												19.9 Hard gray dolomite, nearly horizontally bedded, 1" to 14" core pieces, many diagonal fractures, few dark-gray shale partings, increased fracturing near surface of stratum. Est. A-4a
752.7													27.3
				NX REC 88%									
				ROD 70%									

WATER LEVEL: 3 6.3
WATER NOTE: Before Coring
DATE: 3/12/02

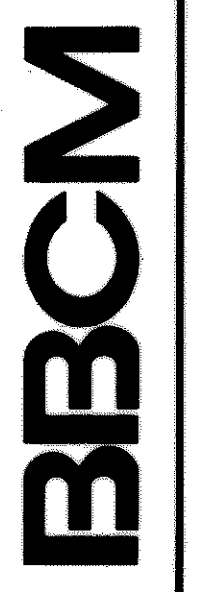
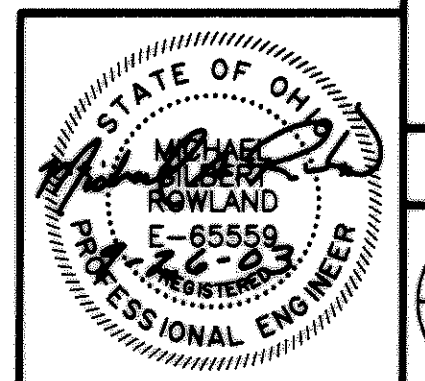


LOG OF BORING NO. TB-102
HAN-75-15.99
HANCOCK COUNTY, OHIO

ELEVATION	DEPTH, FEET	SAMPLE NO.	SAMPLING EFFORT	HAND PENE. TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	AGG.	C.S.	F.S.	SILT	CLAY	DESCRIPTION
778.8	0												0.7 TOPSOIL - 8 INCHES
	1		3/3	1.7-2.9									Stiff to very-stiff brown mottled with gray silty clay, little fine to coarse sand, trace fine gravel, few roots.
	2		2/3	1.1-2.3	20	33	16						7.0 Est. A-6b
772.5			2/6										7.0 Medium-dense gray fine sand, some silt, trace coarse sand, trace clay. Est. A-6b
	3		2/6										
	4	4A	4/4										14.2 Est. A-3a
765.3		4B	4/8										14.2 Medium-dense gray fine to coarse sand, trace silt, many cobbles below 15.5'. Est. A-3a
	15												
761.0													18.5 Est. A-1-b
760.4			22/50	4.5+									18.5 Hard gray clayey silt, little fine to coarse sand, little fine to coarse gravel. Est. A-1-b
	20												19.1 Est. A-4a
	25												- Encountered water at 7.0'. - Encountered auger refusal at 19.1'.

WATER LEVEL: 3 6.6
WATER NOTE:
DATE: 3/11/02

S/H - SAMPLER ADVANCED BY WEIGHT OF DRILL RODS AND HAMMER



STRUCTURE FOUNDATION INVESTIGATION
HAN-75-1599 WEST SANDUSKY STREET OVER I-75

HAN-75-15.99