GENERAL INFORMATION

INTRODUCTION

THIS REPORT SUMMARIZES THE PERFORMANCE AND RESULTS OF A SUBSURFACE EXPLORATION AND SOIL PAVEMENT EVALUATION, REQUISITE TO THE DESIGN OF PAVEMENT STRUCTURES, CONDUCTED IN CONNECTION WITH THE IMPROVEMENTS ALONG S.R. 615 (CENTER STREET) FROM KINGSWOOD DRIVE TO S.R. 84 (JOHNNY CAKE RIDGE ROAD) IN KIRTLAND HILLS / MENTOR, LAKE COUNTY, OHIO.

SITE GEOLOGY

LAKE COUNTY OCCUPIES PARTS OF TWO PHYSIOGRAPHIC PROVINCES: THE GLACIATED ALLEGHENY PLATEAU OF THE APPALACHIAN PLATEAUS PROVINCE IN THE SOUTH AND THE EASTERN LAKE SECTION OF THE CENTRAL LOWLAND PROVINCE IN THE NORTH. THE LINE BETWEEN THE TWO PROVINCES IS THE PORTAGE ENSCARPMENT WHICH CROSSES THE COUNTY ROUGHLY IN A NORTHEAST SOUTHWEST LINE.

EXPLORATION

STRUCTURAL TEST BORINGS WERE ADVANCED BY ROTARY-DRIVE DRILLING PROCEDURES EMPLOYING 150mm O.D., 80mm I.D. HOLLOW STEM CONTINUOUS FLIGHT AUGERS. REPRESENTATIVE SAMPLES OF THE AREA'S VARIOUS SUBSURFACE FORMATIONS WERE TAKEN BY MEANS OF A 52mm O.D. SPLIT SPOON SAMPLING DEVICE, DRIVEN BY A 0.625 Km HAMMER, FREE FALLING THROUGH A DISTANCE OF 750mm.

THE SUBSURFACE SOIL SAMPLES WERE PLACED IN GLASS SAMPLE JARS AND WERE TRANPORTED TO THE SOIL MECHANICS LABORATORY OF PSI FOR TESTING AND EVALUATION.

IN THE LABORATORY, REPRESENTATIVE SAMPLES OF THE SUBSURFACE SOILS WERE CLASSIFIED IN ACCORDANCE WITH THE OHIO DEPARTMENT OF TRANSPORTATION TESTING LABORATORY CLASSIFICATION OF SOILS PROCEDURES. PARTICLE SIZE ANALYSIS AND ATTERBERG LIMIT DETERMINATIONS WERE PERFORMED IN ACCORDANCE WITH APPLICABLE ASTM STANDARD METHODS.

DESCRIPTION OF FOUNDATION MATERIALS

THE EXISTING ROAD SURFACE, AT TEST BORINGS B-1, AND B-5 THRU B-17, IS COVERED WITH ASPHALT CONCRETE WHICH RANGES FROM APPROXIMATELY THREE (3) TO SIXTEEN (16) INCHES IN THICKNESS. THE SURFACE GRADES, AT BORING LOCATIONS B-2, B-3 AND B-4 IS COVERED WITH TOPSOIL OF ABOUT SIX (6) TO TWELVE (12) INCHES IN THICKNESS. THE ASPHALT CONCRETE, AT TEST BORINGS B-1, B-5 THRU B-12, B-14 AND B-16 IS UNDERLAIN BY A SAND AND GRAVEL BASE WHICH RANGES FROM SIX (6) TO EIGHTEEN (18) INCHES IN THICKNESS. THE ASPHALT CONCRETE AT TEST BORINGS B-13, B-15 AND B-17, IS UNDERLAIN BY CONCRETE WHICH HAS AN APPROXIMATE THICKNESS OF ABOUT SIX (6) TO EIGHT AND ONE-HALF (8-1/2) INCHES. A DEPOSIT OF MISCELLANEOUS FILL CONSISTING OF CLAYEY SILT, SANDY SILT, AND/OR SAND CONTAINING VARYING DEGREES OF ROCK FRAGMENTS OCCURS BENEATH THE BASE COURSE MATERIAL OR CONCRETE, AT BORINGS B-7, B-8, B-11, AND B-13 THRU B-17. THE FILL EXTEND TO DEPTHS RANGING FROM APPROXIMATELY THREE (3) TO EIGHT (8) FEET BELOW THE EXISTING SURFACE GRADES. THE NATURAL MOISTURE CONTENT OF THE FILL MATERIAL RANGES FROM NINE (9) TO TWENTY-SIX (26) PERCENT. THE FILL MATERIAL IS UNDERLAIN BY NATURAL GLACIAL DEPOSITS CONSISTING OF CLAYEY SILT, SAND, GRAVEL, SANDY SILT, AND SILT AND CLAY CONTAINING VARYING DEGREES OF ROCK FRAGMENTS. THE NATURAL SOILS EXTEND TO BORING TERMINATION THROUGHOUT THE SITE. THE GRANULAR NATURAL SOILS HAVE A MOISTURE CONTENT WHICH RANGES FROM SEVEN (7) TO THIRTY (30) PERCENT AND EXHIBIT A LOOSE TO DENSE RELATIVE DENSITY BASED ON THE STANDARD PENETRATION TESTS. THE COHESIVE NATURAL SOILS HAVE A NATURAL MOISTURE CONTENT RANGING FROM NINE (9) TO TWENTY-TWO (22) PERCENT AND A SOFT TO VERY STIFF CONSISTENCY, BASED ON THE STANDARD PENETRATION TESTS.

NOTE:

INFORMATION SHOWN ON THIS PROFILE SHEET WAS OBTAINED SOLELY FOR USE IN ESTABLISHING DESIGN CONTROLS FOR THE PROJECT THE STATE OF OHIO DOES NOT GUARANTEE THE ACCURACY OF THIS DATA, AND IT IS NOT TO BE CONSTRUED AS A PART OF THE PLAN GOVERNING CONSTRUCTION OF THIS PROJECT.

LEGEND OF MATERIAL CLASSIFICATION AND AVERAGE TEST RESULTS

	H.R.B. CLASS	OHIO CLASS	% AGG.	% C.SAND	% F.SAND	% SILT	% CLAY	LIQUID LIMIT	PLASTICITY INDEX	WATER CONTENT	SAMPLES TESTED
Gravel and/or Stone Fragments	A-1-A(0)	A-1-a	55	25	15	5	0	--	--	8	1
Gravel and/or Stone Fragments with Sand	A-1-B	A-1-b	38	38	18	6	0	--	--	14	3
Fine Sand	A-3	A-3	1	7	87	5	0	--	--	30	1
Coarse and Fine Sand	A-3	A-3-a	6	27	54	13	0	--	--	22	2
Gravel and/or Stone Fragments with Sand and Silt	A-2-4	A-2-4 A-2-5									
Gravel and/or Stone Fragments with Sand, Silt and Clay	A-2-6	A-2-6 A-2-7									
Sandy Silt	A-4	A-4a									
Silt	A-4(8)	A-4b	2	3	7	85	3	25	10	21	2
Elasitic Silt and Clay	A-5	A-5									
Silt and Clay	A-6(9)	A-6a	10	4	9	47	30	25	11	17	1
Silty Clay	A-6	A-6b									
Elastic Clay	A-7-5	A-7-5									
Clay	A-7-6	A-7-6									
Shale						VISUAL CLASSIFICATION					
Weathered Shale						VISUAL CLASSIFICATION					
Sandstone						VISUAL CLASSIFICATION					
Limestone						VISUAL CLASSIFICATION					
Mudstone						VISUAL CLASSIFICATION					
Random Fill						VISUAL CLASSIFICATION					
Various Other Materials						VISUAL CLASSIFICATION					
Dolomite						VISUAL CLASSIFICATION					
Leached Limestone						VISUAL CLASSIFICATION					
Leached Dolomite						VISUAL CLASSIFICATION					
Silts Stone											

Sod and/or Topsoil

Berm Material

Press and/or Drive Sample and/or Core Boring-Plan View

Press and/or Drive Sample and/or Core Boring Plotted to Vertical Scale Only

1 Water Content of Soil in Percent

● Water Content nearly Equal to or Greater Than Liquid Limit

Indicates a Non-Plastic Material with a High Water Content

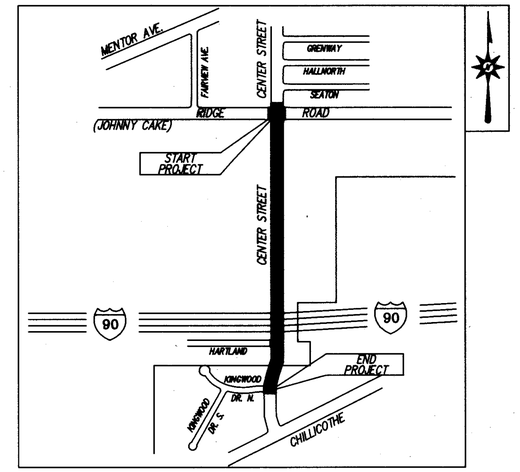
Static Water Level (Encountered)

Static Water Level (Completion)

X-Y-Z Number of Blows for "STANDARD PENETRATION" Test.

X=Number of Blows for First 153mm
Y=Number of Blows for Second 153mm
Z=Number of Blows for Third 153mm

ALL AVAILABLE SOIL AND BEDROCK INFORMATION WHICH CAN BE CONVENIENTLY SHOWN ON THE SOIL PROFILE FOUNDATION INVESTIGATION SHEETS HAS BEEN SO REPORTED. ADDITIONAL SUBSURFACE INVESTIGATION, 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 DEPUTY DIRECTOR'S OFFICE, THE BUREAU OF TESTS AT 1600 WEST BROAD STREET, THE PAVEMENT AND SOILS SECTION OF THE BUREAU OF LOCATION AND DESIGN OR IN THE BRIDGE BUREAU AT 25 SOUTH FRONT STREET, COLUMBUS, OHIO.



SITE MAP
(NOT TO SCALE)

SUMMARY OF SOIL TEST DATA

STATION & OFFSET	SAMPLE NUMBER	% AGG.	% C.SAND	% F.SAND	% SILT	% CLAY	LIQUID LIMIT	PLASTICITY INDEX	WATER CONTENT	SHTL CLASS
9+62.86, 18.85 ft LT	2	0	2	5	90	3	27	9	21	A-4b
17+57.95, 19.26 ft LT	2	55	25	15	5	0	--	--	8	A-1-a
21+26.04, 25.79 ft LT	2	45	38	14	3	0	--	--	19	A-1-b
36+33.40, 5.59 ft LT	2	5	5	8	80	2	22	10	20	A-4b (Fill)
44+38.28, 3.58 ft LT	2	10	4	9	47	30	25	11	17	A-6a
52+16.82, 4.31 ft LT	2	48	29	17	6	0	--	--	14	A-1-b (Fill)
60+21.29, 4.33 ft LT	2	5	28	54	13	0	--	--	26	A-3a (Fill)
68+23.12, 3.53 ft LT	2	7	26	54	13	0	--	--	17	A-3a (Fill)
76+25.06, 5.43 ft LT	2	22	47	23	8	0	--	--	9	A-1-b (Fill)
76+25.06, 5.43 ft LT	4	1	7	87	5	0	--	--	30	A-3

Geotechnical & Environmental Services & Engineering
Soil Mechanics Laboratory
Bridge, Foundation, Pavement, Materials
Phone: (216) 831-6131 Fax: (216) 831-1188

SCALE : NONE | REVIEWED: | CHECKED: | DRAWN BY : ADL
DATE : 11/05/97 | AV | REVISED :

TITLE SHEET

SR 615 / I-90

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