FHWA REGION	STATE	PROJECT	DATE
	OHIO	BRIDGE EXTENSION, LAK-90-26.87 S.R. 528 OVER I-90	1-27-94

LAKE COUNTY
LAK-90-26.87
ADDITIONAL SOIL INFORMATION

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.

GENERAL INFORMATION

INTRODUCTION

THIS REPORT SUMMARIZES THE RESULTS OF THE SUBSURFACE EXPLORATION CONDUCTED IN CONNECTION WITH WIDENING OF AN EXISTING STATE OF OHIO, DEPARTMENT OF TRANSPORTATION BRIDGE No. LAK-90-26.87 ALONG STATE ROUTE 528 OVER I-90, IN 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 BEDROCK IS DEVONIAN OR MISSISSIPPIAN IN AGE, AND CONSISTS PRIMARILY OF SHALES AND SANDSTONES. THE OVERBURDEN SOILS ARE GLACIAL IN ORIGIN, INVOLVING GROUND MORRAINE DEPOSITS IN THE SOUTH AND LAKE DEPOSITS IN THE NORTH. THE DRIFT IS OF WISCONSINIAN AGE.

EXPLORATION

STRUCTURAL TEST BORINGS WERE ADVANCED BY ROTARY-DRIVE DRILLING PROCEDURES EMPLOYING 6.0-INCH O.D., 3.25-INCH I.D. HOLLOW STEM CONTINUOUS FLIGHT AUGERS. REPRESENTATIVE SAMPLES OF THE AREA'S VARIOUS SUBSURFACE FORMATIONS WERE TAKEN BY MEANS OF A TWO (2)-INCH O.D. SPLIT SPOON SAMPLING DEVICE, DRIVEN BY A 140-POUND HAMMER, FREE FALLING THROUGH A DISTANCE OF THIRTY (30) INCHES. IN ADDITION TO THE DRIVE SAMPLES "UNDISTURBED" SAMPLES WERE ACQUIRED BY STANDARD THIN WALLED SHELBY TUBE SAMPLING DEVICES HYDRAULICALLY PRESSED INTO THE SUBSOIL.

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 LIMITS DETERMINATIONS AND UNCONFINED COMPRESSIVE STRENGTH TESTS WERE PERFORMED IN ACCORDANCE WITH APPLICABLE ASTM STANDARD METHODS.

DESCRIPTION OF SUBSURFACE MATERIALS

THE RESULTS OF THE FIELD DRILLING OPERATIONS HAVE BEEN DETAILED ON THE TEST BORING LOGS AND CAN BE SUMMARIZED AS FOLLOWS:

AT TEST BORING LOCATIONS B-2, B-3 AND B-4, THE SITE AREAS ARE COVERED WITH TOPSOIL OF ABOUT THREE (3) INCHES IN THICKNESS.

AT TEST BORING LOCATIONS B-1 AND B-5, THE ASPHALT CONCRETE SURFACE COURSE OF ABOUT TEN (10) AND SIX (6) INCHES IN THICKNESS, RESPECTIVELY, WAS FOUND TO BE PRESENT. UNDERLYING ASPHALT CONCRETE, THE SAND AND GRAVEL BASE COURSE OF ABOUT SIX (6) AND SEVEN (7) INCHES IN THICKNESS WAS ENCOUNTERED.

UNDERLYING THE BASE COURSE AND/OR TOPSOIL COVER AT BORING LOCATIONS B-1, B-2 AND B-5, FILL MATERIALS CONSISTING OF BLACK-BROWN SAND AND/OR SILT AND/OR SLAG CONTAINING VARIABLE FRACTIONS OF ROCK FRAGMENTS, SAND, ORGANICS AND GRAVEL WERE INDICATED UP TO DEPTHS OF ABOUT TWO (2), EIGHT (8) AND TWENTY (20) FEET BELOW THE SURFACE GRADES, RESPECTIVELY.

UNDERLYING THE FILL MATERIALS AND/OR TOPSOIL AT BORING LOCATIONS, BROWN/GRAY SILTY CLAY AND/OR SILT AND/OR SANDY SILT CONTAINING VARIABLE FRACTIONS OF SAND AND ROCK FRAGMENTS WERE EVIDENCED UP TO DEPTHS OF BETWEEN FORTY-ONE AND ONE-HALF (41 1/2) AND SIXTY-THREE (63) FEET BELOW THE SURFACE GRADES.

UNDERLYING THE SILTY CLAY AND/OR SILT, GRAY SAND CONTAINING VARIABLE FRACTIONS OF CLAY, AND ROCK FRAGMENTS WAS FOUND TO BE PRESENT UP TO DEPTHS OF ABOUT FORTY-EIGHT AND ONE-HALF (48 1/2) AND SIXTY-NINE AND ONE-HALF (69 1/2) FEET BELOW THE SURFACE GRADES AT BORING LOCATIONS B-3 AND B-1, RESPECTIVELY.

UNDERLYING THE SAND AND/OR SILT, GRAY SILT CONTAINING VARIABLE FRACTIONS OF ROCK FRAGMENTS AND WEATHERED SHALE WAS ENCOUNTERED UP TO THE TERMINAL DEPTH OF BORINGS B-1 AND B-5 AND UP TO DEPTHS OF ABOUT FIFTY-EIGHT (58), FIFTY-ONE AND ONE-HALF (51 1/2) AND FIFTY-THREE (53) FEET BELOW THE SURFACE GRADES AT LOCATIONS B-2, B-3 AND B-4, RESPECTIVELY.

AT BORING LOCATIONS B-2, B-3 AND B-4, THE BOTTOMMOST FORMATION CONSISTS OF GRAY WEATHERED SHALE AND/OR SHALE.

THE SUBSURFACE GRANULAR MATERIALS EXHIBITED MEDIUM TO DENSE RELATIVE DENSITY STATES WHILE THE COHESIVE MATERIALS EXHIBITED STIFF TO HARD STRUCTURAL STATES. CONSISTENCIES OF THE SUBSURFACE MATERIALS WERE FOUND TO RANGE FROM MOIST TO SATURATED.

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	A-1-a									
Gravel and/or Stone Fragments with Sand	A-1-B	A-1-b	35	34	24	7	--	NP	NP	11	1
Fine Sand	A-3	A-3									
Coarse and Fine Sand	A-3	A-3a									
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	33	10	18	25	14	--	--	12	1
Silt	A-4	A-4b	5	6	5	58	26	25	9	16	6
Elasitic Silt and Clay											
Silt and Clay	A-6	A-6a									
Silty Clay	A-6	A-6b	2	3	5	43	47	32	16	20	2
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								

- 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

- ● Water Content nearly Equal to or Greater Than Liquid Limit
- ⊖ Indicates a Non-Plastic Material with a High Water Content
- ▽ Free Water Level (Water Encountered)
- ▼ Static Water Level (at Completion)
- X-Y-Z Number of Blows for "STANDARD PENETRATION" Test.
  X=Number of Blows for First 6 inches
  Y=Number of Blows for Second 6 inches
  Z=Number of Blows for Third 6 inches

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SOILS PLAN AND PROFILE
TITLE SHEET

LAK-90-26.87

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