<u>INTRODUCTION</u>

THIS REPORT SUMMARIZES THE PERFORMANCE AND RESULTS OF A SUBSURFACE EXPLORATION AND FOUNDATION ANALYSIS STUDY CONDUCTED IN CONNECTION WITH REPLACEMENT OF AN EXISTING STATE OF OHIO, DEPARTMENT OF TRANSPORTATION BRIDGE NO. LAK-528-5.03 LOCATED ALONG STATE ROUTE 528, IN THE CITY OF MADISON, 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.

DRILLING AND SAMPLING PROGRAM

SOIL THE TEST BORINGS WERE ADVANCED THROUGH THE AREA'S OVERBURDEN SOILS AND UNDERLYING SOFT AND UNDERLYING SOFT BEDROCK 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 SOILS WERE OBTAINED UTILIZING SPLIT SPOON SAMPLING PROCEDURES IN SUBSTANTIAL ACCORDANCE WITH THE REQUIREMENTS OF THE AMERICAN SOCIETY FOR TESTING AND MATERIALS' STANDARD METHOD D-1586.

THE SAMPLES OF THE MATERIALS OBTAINED AS A RESULT OF DRIVE SAMPLING OPERATIONS WERE VISUALLY CLASSIFIED IN THE FIELD AND PLACED IN PROPERLY IDENTIFIED SEALED GLASS SAMPLE JARS TO PREVENT MOISTURE LOSS.

ROCK CORING THROUGH THE AREA'S BEDROCK FORMATION WAS ACCOMPLISHED BY MEANS OF DIAMOND ROCK CORE DRILLING PROCEDURES EMPLOYING Nx SIZE (55mm) DIAMOND CORE BITS WITH ATTACHED DOUBLE WALL ROCK CORE BARRELS. CORING PROCEDURES EMPLOYING Nx SIZE 55mm I.D. DIAMOND CORE BITS WITH ATTACHED DOUBLE WALL ROCK CORE BARRELS. CORING WAS DONE IN SUBSTANTIAL ACCORDANCE WITH THE REQUIREMENTS OF THE AMERICAN SOCIETY FOR TESTING AND MATERIALS STANDARD METHOD D-2113.

RECOVERED BEDROCK CORES WERE PROPERLY IDENTIFIED AND PLACED IN WOODEN CORE BOXES.
THE SUBSURFACE SOIL SAMPLES AND ROCK CORE BOXES WERE TRANSPORTED TO THE SOIL/ROCK MECHANICS LABORATORY
OF PSI FOR TESTING AND EVALUATION.

DESCRIPTION OF FOUNDATION MATERIALS

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

AT BORING LOCATION B-2, THE EXISTING PAVEMENT CONSISTS OF ABOUT 241mm and 152mm OF ASPHALT CONCRETE AND GRAV BASE COURSE, RESPECTIVELY.

UNDERLYING THE BASE COURSE AND/OR SURFACE GRADES AT BORING LOCATIONS B-1 AND B-2, FILL MATERIALS CONSISTING OF GRAVEL AND/OR STONE FRAGMENTS CONTAINING VARIABLE FRACTIONS OF SLAG AND ORGANICS WERE FOUND TO BE PRESENT UP TO A DEPTH OF ABOUT 2.40 AND 2.45 METERS BELOW THE SURFACE GRADES, RESPECTIVELY.

UNDERLYING THE FILL MATERIALS AT BORING LOCATIONS B-1 AND B-2, BROWN/GRAY GRAVEL AND/OR STONE FRAGMENTS WITH SAND WAS FOUND TO BE PRESENT UP TO DEPTHS OF 3.65 AND 4.20 METERS BELOW THE SURFACE GRADES, RESPECTIVELY.
AT BORING LOCATIONS B-1 AND B-2, THE BOTTOMMOST FORMATION CONSISTS OF GRAY WEATHERED SHALE TO SHALE.

GROUNDWATER OBSERVATIONS

DURING THE COURSE OF FIELD DRILLING OPERATIONS, FREE WATER WAS ENCOUNTERED AT A DEPTH OF ABOUT 2.745 AND 3.05 METERS BELOW THE SURFACE GRADES AT BORING LOCATIONS B-1 AND B-2, RESPECTIVELY.
IT SHOULD BE NOTED THAT WATER LEVELS WILL FLUCTUATE IN RESPONSE TO SEASONAL VARIATIONS IN CLIMATE AND PRECIPITATION.

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.

		H.R.B. CLASS	OHIO CLASS	% AGG.	% C.SAND	% F.SAND	SILT	CLAY	<u>LIQUID</u> P	LASTICITY INDEX	WATER SAM CONTENT TE	MPLES STED
000	Gravel and/or Stone Fragments	A-1-A	A-1-a									
	Gravel and/or Stone Fragments with Sand	A-1-B	A-1-b									
	Fine Sand	A-3	A-3									
	Coarse and Fine Sand	A-3	A-3-a									
	Gravel and/or Stone Fragments with Sand and Silt	A-2-4	A-2-4 A-2-5									
CITAL AND THE STATE OF THE STAT	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	A-4b									
	Elasitic Silt and Clay	A-5	A-5									
	Silt and Clay	A-6	A-6a									
	Silty Clay	A-6	A-6b									
	Elastic Clay	A-7-5	A-7-5									
	Clay	A-7-6	A-7-6									
	Shale						VISUAL	CLASSI	FICATION	1		
	Weathered Shale						VISUAL	CLASSI	FICA TION	1		
	Sandstone						VISUAL	CLASSI	FICATION	1		
	Limestone						VISUAL	CLASS/	FICATION	1		
111. II. 11. 11.3	Mudstone						VISUAL	CLASSI	FICATION	1		
1 1 7 V V V V V V V V V V V V V V V V V	Random Fill						VISUAL	CLASSI	FICATION	1		
欧	Various Other Materials						VISUAL	CLASSI	FICATION	1		
	Dolomite						VISUAL	CLASSI	FICATION	1		
	Leached Limestone						VISUAL	CLASSI	FICA TION	1		
	Leached Dolomite						VISUAL	CLASSI	FICATION	1		
	Silts Stone											
<i></i>						1	Water C	ontent of	Soil in Per	rcent		
	Sod and/or Topsoil					•	Water C	ontent ne	arly Equal	to or Gred	iter Than Lie	quid Limi
<u>.</u>	Berm Material					-	Indicates	s a Non-	Plastic Mat	erial with	a High Wate	er Conten
\bigoplus	Press and/or Drive Sample and/or Co	ore Boring—Plan	View						l (Encounte l (Completi			

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.

TLE SHEET

LAK-528-8.10 RIDGE NO: LAK-528-5.03

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CAD FILE: GLAK528 DATE: 11/17/95 OPERATOR: M.A.C. PLOT SCALE: 10:2 (1:200)