

# **ODOT - LAK-90-23.42**

## **Bridge Replacement**

### **Lake County, Ohio**

#### **Project Description**

Pro Geotech, Inc. (PGI) was retained by Richland Engineering Limited (REL) to provide geotechnical engineering services for the design and construction of the Ohio Department of Transportation LAK-90-23.42 Project. Project plan called for replacement of the existing Bridges LAK-90-23.42 Left and Right over the Grand River. Existing left and right bridges were five-span structures with total length of 870 feet. The height from the river level to the bridge deck was approximately 150 feet. The project also included a limited section of I-90 roadway improvement, which starts approximately 3400 feet west of the bridge and ends approximately 4800 feet east of the bridge. PGI developed and implemented a subsurface investigation program in accordance with applicable ODOT specifications. Accessibility for the rig to drill the borings on the middle of the west abutment slope was difficult due to steep angle. PGI used a crane to lower the drill rig to the middle of the slope from the bridge deck. A total of 34 test borings; 17 structural and 17 roadway test borings were advanced to evaluate the subsurface conditions at the site. The bridge and roadway test borings were advanced to approximate depths ranging from 24 to 109 feet and 8.6 to 10.0 feet, respectively below the existing ground surface. All test borings were advanced in accordance with the ODOT Specifications for Subsurface Investigations. Numerous soil and rock core samples were obtained for testing purposes. The groundwater conditions were monitored during and upon completion of the drilling operations. Dilatometer tests were also performed on two test borings to determine the in-situ modulus of the mass rock.

The laboratory testing program consisted of Moisture Content Determination, Particle-Size Analysis, Liquid Limit, Plastic Limit and Plasticity Index Determination, Unconfined Compressive Strength of Rock Core Specimens, Slake Durability Tests on Rock Core Samples, and classifying the rock and soils in accordance with the ODOT Soil Classification System. PGI prepared a detailed geotechnical engineering report which included typed drilling logs, laboratory test results, recommendations and discussions pertaining to spread, drilled pier, and driven pile foundations, pavement design parameters, and preparation of Geotechnical Design Check List. The pressure versus injected volume curve was constructed using software to determine the Dilatometer rock modulus at each depth. The computer generated output curve from "Probex Companion" was included in the report. In addition, we prepared structure foundation exploration sheets in accordance with ODOT guidelines.

#### **Client:**

ODOT District 12  
c/o Richland Engineering Ltd  
29 North Park Street  
Mansfield, OH 44902-1769

#### **Contact:**

Mr. Dean A. Palmer PE  
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#### **Performance Period:**

March 2002 to June 2004

#### **Project Costs:**

\$101,000 (Fee)

#### **PGI's Role:**

Geotechnical Exploration  
Dilatometer Test on Rock



Pro Geotech, Inc.