

VIRGINIA DEPARTMENT OF TRANSPORTATION MANAGEMENT OF GEOTECHNICAL DATA

Stanley L. Hite, P.E.

Assistant State Materials Engineer – Geotechnical Engineering and Structural Materials

Virginia Department of Transportation

Stanley.Hite@VirginiaDOT.org

BACKGROUND

VDOT had a large amount of geotechnical data collected in different formats from different sources, which was not readily or easily available for use. A need to a standardized geotechnical data format was identified. Materials Division worked with the Virginia Transportation Research Council, Old Dominion University, and the Information Technology Division to develop a database for geotechnical data.

The goal was to develop an easy to use, open system, distributed access over the web system.

An internet based Geotechnical Database Management System (GDBMS) framework was designed, developed, and implemented in 2001.

DATA ANALYSIS

Data analysis is based on the same data source used in data management – no replication, no retrofitting of source data. Users input multiple boring site locations. The system can generate a fence diagram by translating selected boring site clusters and executing gINT applications in the GDBMS framework server over the internet.

CURRENT PROJECTS

VDOT has entered data for 2 projects – Woodrow Wilson Bridge in Northern Virginia and the Third Crossing in Hampton Roads. The Third Crossing data was entered in 2002 and the Woodrow Wilson bridge data was entered in 2003.

ISSUES

The database structure had to work with gINT fields. Therefore a consistent soil classification was required by the 9 District offices. Standardization and maintaining consistent data formats is one of the most critical elements for success.

Lab data should be included with the boring data; however, this takes additional resources for data entry.

Resources required to enter historical data has proven to be the most difficult issue to address.

UTILIZATION OF DATABASE

The GDBMS has been used twice since being implemented. The Third Crossing project data is available for use in a design/build project in the Portsmouth area. Proposers can review the borings and determine what additional information they may need to develop their proposals. This should reduce both costs and risks.

VDOT's Structures & Bridge Division has used data from the Woodrow Wilson Bridge project to evaluate pile lengths. The web access has saved time and cost for the analysis.

FUTURE WORK

VDOT would like to develop interfaces for geotechnical analysis software to provide real-time data analysis and design.

VDOT also hopes to add boring data from major projects as they are completed. One such project will be the improvement project for interstate Route I-81 in the western part of Virginia. It is also hoped that lab test results can also be included with the boring data for the projects.

REFERENCES

"Distributed Translative Geotechnical Database Management System" a presentation by Dr. Jae Yoon, Old Dominion University