

Introduction

This collection of abstracts of publications discussing the use of geotechnical baseline reports is the second of a new type of report from the Center for Geotechnical Practice and Research (CGPR), presenting a review of literature on an aspect of geotechnical engineering. The objective of this collection of abstracts is to provide an overview of the use of geotechnical baseline reports.

A review of the use of geotechnical baseline reports was requested by the members of the CGPR at the 2009 annual meeting. Originally developed for tunneling projects, geotechnical baseline reports are now also used for other types of geotechnical engineering projects. Publications addressing their application to tunneling projects and to other types of projects are organized in two lists that follow this introduction. Publications that address both tunneling and non-tunneling projects are included in both of the lists.

Geotechnical baseline reports were first developed through the work of the Underground Technology Research Council of the American Society of Civil Engineers, under the leadership of Randall Essex. That work resulted in development of two reports that have become widely known as the "Yellow Book" and the "Gold Book" (Technical Committee on Geotechnical Reports of the Underground Technology Research Council, 1997 and 2007).

The report "Geotechnical Baseline Reports for Construction: Guidelines and Practices" published in 1997 is known as the "Yellow Book." The second report "Geotechnical Baseline Reports for Construction: Suggested Guidelines" published in 2007 is known as the "Gold Book" These reports are considered the bibles for use of geotechnical baseline reports in geotechnical engineering. Both are based on feedback from industry forums conducted between 1993 and 1996, and between 2004 and 2006. The 1997 report was written to address the use of geotechnical baseline reports in tunneling and deep shaft construction. The 2007 report was developed to address the increased application of geotechnical baseline reports to other types of subsurface construction and design-build construction.

Randall Essex kindly agreed to provide his view of the value of geotechnical baseline reports, and their role in geotechnical engineering practice. He summarized his views as follows:

"The need to overcome variable and often unsuitable site conditions in Civil Engineering can be a daunting task. Overcoming the geotechnical challenges is critical, but an otherwise elegant design may transform into a construction nightmare if the contractual challenges are not overcome as well. Underground construction magnifies these challenges.

Through decades of experience, and more than our fair share of trial and error, the U.S. underground industry has evolved the application of Geotechnical Baseline Reports (GBRs) in underground construction contracting. A GBR is a concise report that describes the subsurface conditions anticipated to be encountered during construction, and explains how the anticipated conditions have influenced project planning and design.

At the heart of the contracting approach is that the owner and contractor share specific risks associated with the ground conditions expressed in the GBR – the contractor carries the risks for anticipated site conditions, and the owner carries the risks for unanticipated site conditions.

GBRs were initially developed for application to tunnels and shafts. Today owners and engineers are expanding the application of GBRs to other projects such as deep foundations and braced excavations, roadway projects, cut and cover pipelines, and dam rehabilitation projects.

This anthology of abstracts captures a number of important works that have helped advance GBR development over the last several decades. As the use of GBRs expands across North America and around the world, it is hoped that practitioners will step forward and document their experiences with GBRs, both good and bad. Only through a sharing of knowledge and experience will the preparation of GBRs for subsurface works improve.

Randall J. Essex
December 13, 2009”

The publications summarized in this report were collected, reviewed and excerpted in two phases: A preliminary set of references was collected using online databases available at Virginia Tech. About a third of the references contained in this collection were located through those databases. The remaining references were found by examining the lists of references from those publications.

The abstracts section of this report contains material taken verbatim from the references that were located. In cases where publications include sections called “Abstract,” those are included verbatim. In cases where a publication did not include a section called “Abstract,” selected sections from introductions, conclusions, summaries, recommendations, and the text of the report were included verbatim. In each case the selected material is approximately one page in length, respecting fair use copyright principles.