

**WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DESIGN DIRECTIVE**

**DD-409
GEOTECHNICAL INSPECTOR**
November 28, 2006

This Design Directive will give guidance and instruction on the duties of the Geotechnical Inspector who is assigned to oversee the work of the Core Boring Contractor. For the purposes of this Design Directive, the Geotechnical Inspector will be considered an employee of or a subcontractor to a Consultant Designer, who has awarded and is administering the Core Boring Contract for any design project. However, these provisions apply equally well to core boring projects performed by the Division of Highways' drilling crews. In addition, these provisions apply to firms providing Geotechnical Analyses and Reports under the Statewide Drilling Contract to either the Division's In-House designers or any District designer.

Attachment

10. General

The Geotechnical Inspector should be an employee of the firm that a Consultant Designer has contracted with to do the Geotechnical Analyses and Report for a particular design project; or an employee of a firm that the Division of Highways has requested to develop a Geotechnical Report for either its In-House or District designers. In the case where bids for drilling services are solicited, the firm producing the Geotechnical Analyses and Report cannot be the same firm that has been awarded and is performing the actual Core Boring Contract, as has been stipulated in Design Directive (DD) 401 "Procedure for Core Boring Contracts". This will not be the case where drilling services are provided under the Statewide Drilling Contract. Furthermore, there are situations where the Consultant Designer produces the Geotechnical Analyses and Report itself for a project, so this DD will apply to that person employed by the Consultant Designer who has been assigned as the Geotechnical Inspector.

In Section 101 "Definition of Terms" of the Core Boring Contract Documents, the "Engineer" is defined as "...the Consulting Engineer awarding the Contract or his duly authorized representative; or the West Virginia Division of Highways (WVDOH) when the Division awards the Contract." The Geotechnical Inspector is usually the Engineer's field representative. Hereinafter in this document, the term "Engineer" will refer to the entity administering the Core Boring Contract, whether it is a Consultant Designer or the WVDOH.

20. Qualifications of the Geotechnical Inspector

For Consultant-designed projects, the name(s), qualifications, and resume(s) of the Engineer's proposed Geotechnical Inspector(s) are to be provided in the Consultant's proposal to the WVDOH for approval before Notice to Proceed for the design work is given. Approval will be given by the Division's Geotechnical Project Manager assigned to the project.

The Geotechnical Inspector must demonstrate experience in soils and rock description, Rock Hardness and Compressive Strength Index (HCSI), Rock Quality Designation (RQD), and methods for obtaining and testing field samples. These qualifications shall be described in the proposed Geotechnical Inspector's resume to be submitted with the Consultant's proposal as given in the above paragraph.

30. Duties of the Geotechnical Inspector

In Section 101 "Definition of Terms", of the Core Boring Contract Documents, the "Engineer" is defined as "the Consulting Engineer awarding the Contract or his duly authorized representative; or the WVDOH when the Division awards the Contract." The Geotechnical Inspector is the Engineer's field representative, and therefore has authority to enforce all of the Core Boring Contract Document's provisions concerning the work being performed.

The Geotechnical Inspector shall communicate with the Geotechnical Engineer, the WVDOH roadway and/or structural Project Managers, and the WVDOH geotechnical Project Managers as the conditions encountered require.

In addition to enforcing the provisions of the Core Boring Contract, with particular attention being paid to but not limited to Section 105.1 “Authority of the Engineer”, and Section 200 “Operational Details”, the Geotechnical Inspector has other duties, hereinafter described:

- A. Photograph all structure borings. Color photographs of the structure borings will be required in the Geotechnical Reports designated by the Division’s Project Manager. The remaining Reports may have black-and-white photographs. Photographs of roadway borings are not required unless otherwise stipulated.
- B. Geotechnical Inspectors are responsible for obtaining representative samples in adequate numbers to comply with LRFD and roadway design specifications, or as stipulated in the Core Boring Contract Documents. As a guide a minimum of three (3) unconfined compressive strength samples should be obtained within the influence of the foundation for each substructure unit.
- C. For all bridges over waterways, a scour analysis will be required. The D_{50} and D_{84} sizes of the stream bed material are to be determined. For streams with gravel or a finer bed material a bag sample as specified in the Core Boring Contract Documents of the stream bed material shall be obtained for a sieve analysis. For boulder and cobble bed streams, the D_{50} and D_{84} sizes may be determined by performing a “riffle pebble count”. See the “Definitions” in Section 40 below.

40. Definitions

- A. D_{50} size – the diameter at which 50% of the particles are at that size or smaller. This value is used as an indicator for livebed or clearwater scour, and channel classification.
- B. D_{84} size – The diameter at which 84% of the particles are at that size or smaller. This value is for determining roughness coefficients and calculating sediment competence.
- C. Riffle pebble count – a method of characterizing the stream bed material at the project location. Measure the **intermediate axis** of 100 particles at evenly spaced intervals across the wetted width of the stream cross section. For small streams, particles may be taken along more than one cross section as long as the values represent the area of interest for the project. Percent finer is determined by number of particles rather than by weight. The intermediate axis of a particle is defined as the middle dimension of the three measured axes of a particle. The intermediate axis is measured because it represents the maximum sieve size that a particle would pass.