801.03.02 Geotechnical Section

The Geotechnical Section is responsible for investigating the site, drilling exploratory holes as required, determining the external stability of the site and determining the material properties of the existing soil and backfill. The Geotechnical Section will also recommend soil strength parameters and groundwater elevations for computing design lateral earth pressure. They are also responsible for determining the maximum safe slopes allowed during excavation.

The Geotechnical Section also is responsible for determining the type of foundation required to support the wall loads, the allowable bearing pressure of the soil and the minimum required depths of the foundation units. This Section determines the soil properties to be used in determining the lateral loads to be applied to the wall and determines the amount of settlement, differential settlement and the time rate of settlement for walls on compressible foundation soils.

The Geotechnical Section prepares appropriate Special Provisions for construction of the retaining walls and monitors construction of the foundation elements, assisting the resident engineer as requested concerning geotechnical issues. The Section works closely with the Bridge Design Section on any structural design changes needed during construction because of changed site conditions.

801.03.03 Bridge Design Section

The Bridge Design Section is responsible for the design of the structural elements of the wall, the length of the wall and for producing the required construction plans, when requested by others, for any non-proprietary wall requiring structural analysis. The Bridge Design Section is also responsible for determining whether shoring will be required during construction based on the acceptable limits of excavation provided by Roadway Design and the safe excavation slopes provided by Geotechnical. The Bridge Design Section also selects walls which will handle differential settlement, when present, and provides details for drainage on plans. Appurtenant traffic and/or pedestrian rails will also be designed and detailed by the Bridge Design Section. This Section works with the Geotechnical Section on required structural design changes during construction because of changed site conditions.

801.04 PROPRIETARY RETAINING WALLS

When a proprietary retaining wall is chosen as an acceptable alternate, the special provisions will specify the pre-approved wall systems which are acceptable for the particular application and site. The proprietary wall type is to be chosen from a pre-approved list of wall types. The contractor will be required to identify the alternate in his bid, with bid shopping after the award of the contract not allowed.

The Roadway Design Section will prepare plans showing the location and extent of the walls and the profile along the top of the wall and the soil profile along the front face of the wall. The plans should also show any restrictions regarding excavation which may exist and requirements for appurtenant features such as traffic barrier, handrail or other attachments. Blockouts for lighting, signing, utilities and drainage structures will also be detailed on the plans or identified to be included with the proprietary plan submittals.

The Geotechnical Section will prepare special provisions containing the design criteria to be used in evaluating the proprietary wall. As a minimum the following should be included:

1. The minimum factor of safety against overturning
2. The minimum factor of safety against sliding
3. Maximum coefficient of friction against sliding
4. Phi angle of the backfill
5. Allowable bearing pressure
6. Minimum design life
7. Water table level
8. Elevation of footing bottom
9. Maximum tolerable deflection