Learning Objectives
Lesson 2

- Recognize the elements contained in a Geotechnical Report
- Review the Project Specific Plans
- Review the Special Provisions
- Identify and describe the sections of a drill log and how this information is used
Learning Objectives

- Identify key inspection elements of the contract documents
- Explain the governing order of contract documents
- Locate plan sheet details related to drilled shafts
- Understand key elements of the ODOT Standard Specifications and Special Provisions for Drilled Shafts.
- Identify key elements of the Drilled Shaft Installation Plan

Geotechnical Report

- All bridge projects have a Geotechnical Report that should be on file with the Project Manager’s Office.
- Geotechnical Reports contain important information that is useful for the design and construction of drilled shaft projects.
- Project Inspectors should read the Geotechnical Report at the start up of construction projects and discuss any questions or concerns with the Geotechnical Engineer. Each ODOT Tech Center has at least one Geotechnical Engineer. Get to know them. They can be a great resource.
# Geotechnical Report Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction</strong></td>
<td>Defines the geotechnical scope of the project.</td>
</tr>
<tr>
<td><strong>Office Study</strong></td>
<td>Research documentation for existing site, bridge, foundation, performance.</td>
</tr>
<tr>
<td><strong>Geologic Exploration (aka Subsurface Investigation)</strong></td>
<td>Summarizes the subsurface conditions encountered including groundwater levels. This information is graphically summarized on the <em>Foundation Data Sheet</em>.</td>
</tr>
<tr>
<td><strong>Hydraulics Information</strong></td>
<td>Summarizes scour information from the Hydraulics Report.</td>
</tr>
<tr>
<td><strong>Seismicity Information</strong></td>
<td>Summarizes seismic information, including liquefaction and lateral spread potential.</td>
</tr>
</tbody>
</table>
Geotechnical Report Components
The Crux of the Matter

- **Foundation Design Recommendations** – Provides the Structural Engineer with the geotechnically-related recommendations for the foundations of structures.

- **Geotechnical Design Recommendations** – Provides the Roadway Engineer with geotechnically-related recommendations for embankments, soil and rock cuts and landslide mitigation.

- **Construction Recommendations** – Identifies anticipated construction challenges such as caving soils, groundwater, obstructions, boulders, and utilities.

**Soil and Rock Identification**
The Drill Log

Geological Data Plan Sheet

- Graphical compilation of the subsurface conditions encountered and information gathered from the subsurface investigation.
- Typically the third sheet in an ODOT bridge set, behind the Plan and Elevation and General Notes sheets.
- Contract document that is the basis of the Contractor’s bid relative to the subsurface conditions, in addition to any Special Provisions in SP00512 in applicable locations.
Drilled Shaft Inspector Training

May 2019

Drilled Shaft Foundation Types

There are two common ways to distinguish drilled shaft types:

1. On the basis of the geotechnical design model (how the subsurface accepts the loading);
2. The groundwater condition during concrete placement.

Drilled Shaft Foundation Types

Geotechnical Design Models

- **End Bearing**: The axial load resistance is based on the capacity of the subsurface conditions at the tip or base of the drilled shaft.

- **Side (Skin) Friction**: The axial load resistance is based on the capacity of the subsurface conditions along the sides (surface area) of the drilled shaft.
End Bearing  
Side (Skin) Friction

Contract Plans Review

*Included in the 11x17 Resource Manual Tab — Plans.*
Key Parts of the Bridge Plans

<table>
<thead>
<tr>
<th>Plan &amp; Elevation</th>
<th>Shows plan and elevation views of the structure and foundations including the location of drilled shafts</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Notes</td>
<td>Concrete strength, construction sequencing,</td>
</tr>
<tr>
<td>Geological Data Plan Sheet</td>
<td>Shows subsurface materials and conditions discovered from the project borings.</td>
</tr>
<tr>
<td>Footing Plan</td>
<td>Shows shaft locations and diameters, location of temporary shoring/cofferdams, project-specific notes.</td>
</tr>
<tr>
<td>Bent Details</td>
<td>Shows shaft diameters, top-of-shaft and shaft tip elevations; shaft and column reinforcement, CSL tubes, concrete clearance, construction joints, permanent casing, minimum rock embedment</td>
</tr>
</tbody>
</table>

Key Parts of Other Plans Sections (Roadway Plan Sheets)

- Check utility locations
- Available right-of-way limits and easements
- Check proximity to other facilities or structures
- Traffic and construction staging plans
- Erosion control plans
Drilled Shaft Specifications Section 512

Special Provisions

- Permanent casing requirements
- Additional equipment and reinforcement length requirements (due to anticipated variations in the soil bearing layer)
- Changes to concrete specifications
- Estimated quantities for concrete and steel

ODOT Drilled Shaft Inspection Checklist

- ODOT Form 734-2625
- Available on ODOT Construction Web page under Construction Forms:
  
  https://www.oregon.gov/ODOT/Forms/2ODOT/7342625.pdf

  Included in Drilled Shaft Inspector Training Notebook – Appendix B.
Drilled Shaft Coordination Meeting

00512.41 Drill Shaft Coordination Meeting

- At least seven calendar days before beginning any shaft construction work

- To discuss:
  - Shaft Installation Plan
  - construction procedures
  - schedules
  - staging
  - personnel
  - equipment and other elements of the plan
  - status of outstanding submittals
Drilled Shaft Coordination Meeting

00512.41 Drill Shaft Coordination Meeting

Representing the Contractor:

- The superintendent
- On-site supervisors
- All supervisors in charge of excavating the shaft, placing the casing, mixing and installing slurry (as applicable), placing the steel reinforcement, and placing the concrete
- Slurry manufacturer’s representative (if used) and the Contractor's employee trained in the use of the slurry

Drilled Shaft Coordination Meeting

00512.41 Drill Shaft Coordination Meeting

Representing the Contracting Agency:

- The Project Manager
- Key inspection personnel
- Professional of Record (POR) or the appointed representatives
Unit Review

- Identify key inspection elements of the contract documents
- Understand the order of precedence for contract documents
- Locate plan sheet details related to drilled shafts
- Understand key elements of the ODOT Standard Specifications and Special Provisions for Drilled Shafts.
- Identify key elements of the Drilled Shaft Installation Plan