

## **Section 33 - Cofferdams and Sheet Piling**

### **33.1 General Criteria**

1. When identified by the Designer as a project requirement, the use of Cofferdams shall be scheduled in a project. Cofferdams shall be constructed to protect a foundation and the foundation's construction against damage from a rise in water elevation.
2. The availability of domestically produced hot rolled steel sheet piling is limited. Designation of a PZ section shall only be indicated after the Designer has ascertained its domestic availability.
3. The Designer must determine if the use of a concrete seal will be needed to facilitate a foundation's construction. If this is so determined, then a Permanent Cofferdam system or Permanent Sheet piling system that, utilizes a concrete seal, shall be designed and accordingly detailed on the final plans. The top of the concrete seal shall be detailed to be below the bottom of water elevation and below the proposed bottom elevation of the footing.
4. Sheet piling below the top of seal concrete shall be designated to be left-in-place. (See Guide Sheet Plate 3.13-1 for typical details).

### **33.2 Temporary Cofferdam Installations**

1. According to the provisions of the NJDOT Standard Specifications, the design of Cofferdam systems, that are planned to be temporary installations, shall be submitted as Working Drawings. The Standard Specifications may be referenced for requirements concerning Working Drawing submissions. The final plans shall indicate the required Cofferdam installation limits.
2. When, as part of a temporary condition, a steel sheet piling system is required for dewatering, the Designer shall clearly identify this requirement in the Contract documents.
3. When the need for utilization of steel sheet piling for a Temporary Cofferdam has been determined, the Designer shall provide the following criteria on the plans:
  - Strength or grade of material to be used
  - Minimum Section Modulus
  - Minimum Tip Elevation
  - Horizontal limits of the sheeting in relationship to the footing location(s)
  - Mean high water elevation

This information is to be used by the Contractor for his Working Drawing submission.

### **33.3 Permanent Cofferdam and Permanent Sheet piling Installations**

1. The design of any Cofferdam system that, based on warranting site conditions and engineering judgment, is believed to require a permanent installation, shall be provided in the final contract documents. All required material designations and construction parameters shall be indicated. The NJDOT Standard Specifications can be referred to for correlation of the construction parameters and Payment Provisions.
2. When it is determined that Steel Sheet piling is required for dewatering or to address any structural stability construction issue, the complete design of the

Steel Sheeting system shall be provided in the contract documents. All required material designations and construction parameters; such as, bottom tip elevation shall be indicated. The NJDOT Standard Specifications can be referred to for correlation of the construction parameters and Payment Provisions.

3. Unless otherwise warranted by a project's specific site conditions, the following payment limit provisions shall also be designated on the plans:
  - a. The lower payment limit of sheeting left in place shall be the bottom tip elevation of the sheeting.
  - b. The upper payment limit shall be the top elevation of the seal concrete.
4. The need for provision of a concrete seal shall be evaluated and, if warranted, detailed as part of the Permanent Cofferdam or Permanent Sheeting installation.

### **33.4 Temporary Sheeting**

1. The use of Temporary Sheeting shall be based on conditions where protection of property (embankment control), traffic (stage construction), utilities, construction safety code requirements, etc. is a construction consideration. When a project's construction is governed by such considerations, Temporary Sheeting shall be scheduled in the Contract documents.

The proposed horizontal limits of the Temporary Sheeting shall be detailed in the Plan view of the structure.

2. Ordinarily the design and type of temporary sheeting is the choice of the Contractor. However, it shall be the responsibility of the Designer to review borings and subsurface soil reports so that any adverse subsurface conditions can be identified. In such cases, the Project's Special Provisions shall provide guidance as to type of sheeting that can be used and any driving and pulling directions that must be followed.
3. Payment limits for Temporary Sheeting must be shown in schematic outline on the plans. The following payment limit guidelines may be utilized:
  - Lower Limit: Bottom of excavation
  - Upper Limit: Existing ground line, or 3 feet above existing ground line if additional height is deemed necessary for safety reasons
  - Horizontal Limits: Determined by the Design Engineer based on extent of construction

### **33.5 Material Requirements**

1. Material for steel sheet piling shall conform to AASHTO M202 or AASHTO M270, Grade 50.
2. Sheet piling that is to be used in a marine environment shall conform to AASHTO M270, Grade 50 and be coated with a 16 mil application of coal tar epoxy as per SSPC Paint Specification No. 16.