**SPP00510 (01-01-21) *(This section requires SP02630.)***

***(Follow all instructions.  If there are no instructions above a subsection, paragraph, sentence or bullet, then include them in the project but make necessary modifications to only include project specific specifications.  Delete specifications that do not apply to the project.  Remove all instructions before preparing the final document.)***

### Section 00510 - Structure Excavation and Backfill

Comply with section 00510 of the Standard Construction Specifications modified as follows:

***(Use the following subsections .80(b-1) and .80(c-1) when structure excavation is paid for on the lump sum basis.)***

**00510.80(b)(1) Structure Excavation (Lump Sum**) - Add the following to the end of this subsection:

The estimated quantity of structure excavation is:

**Location Structure Excavation**

**(Cubic Yard)**

***(Use the following subsection .80(d) when granular wall backfill or structure backfill is paid for on the lump sum basis.)***

**00510.80(d) Granular Wall/Structure Backfill** - Replace this subsection, except for the subsection number and title, with the following:

No measurement of quantities will be made for granular wall backfill or granular structure backfill. The estimated quantity of granular wall backfill, or granular structure backfill is:

**Location Granular Wall/Structure Backfil**l

**(Cubic Yard)**

***(Use the following subsection .90(d) when granular wall backfill or structure backfill is paid for on the lump sum basis)***

**00510.90(d) Granular Wall/Structure Backfill** - Replace this subsection, except for the subsection number and title, with the following:

Granular wall backfill and granular structure backfill will be paid for at the Contract lump sum amount for the items "Granular Wall Backfill" or "Granular Structure Backfill", as applicable.

***(Include the following cofferdam design checklist when required by the Bridge Designer.)***

**COFFERDAM DESIGN CHECKLIST**

**Instructions** - This cofferdam design checklist was developed to facilitate the design, review, and erection of cofferdams to be used for ODOT bridge construction projects, and is acceptable for use on City projects. This checklist is intended to act as a reminder to design or check for specific important aspects of this construction. It is not a substitute for plan and/or design criteria or specification requirements.

The checklist is to be completed and signed by the cofferdam design engineer. Answer every question. Attach to the checklist an explanation of any negative responses.

Submit the Checklist according to section 00510.03.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | **YES** | **NO** | **N/A** |
|  |  |  |  |  |  |  |
| **A.** | **Contract Plans, Specifications, Permits, etc.** | |  |  |  |  |
|  |  |  |  |  |  |  |
|  | 1. | Are the cofferdam plans prepared, stamped and signed by an engineer registered to practice in Oregon? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 2. | Have three copies (five copies if railroad approval is required) of the complete design calculations accompanied the cofferdam drawings submittal? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 3. | Are cofferdam plans in compliance with the requirements of the construction plans general notes? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 4. | Are cofferdam plans in compliance with contract plan structural details? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 5. | Are cofferdam plans in compliance with the requirements of subsection 00150.35? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 6. | Are all existing, adjusted or new utilities in proximity with the proposed cofferdam shown on the cofferdam plans and is projection of these utilities addressed? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 7. | Are clearance requirements satisfied and shown on the cofferdam plans? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
| **B.** | **Loads** | |  |  |  |  |
|  |  |  |  |  |  |  |
|  | 1. | Are the magnitude and location of all loads, equipment and personnel that will be supported by the cofferdam shown noted on the cofferdam plans? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 2. | Are design loads and material properties used to determine design stresses shown for each different cofferdam member shown on the cofferdam plans? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 3. | Is the assumed water elevation for seal design shown on the plans? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 4. | Does the cofferdam design assume water pressure acts on the full height of the cofferdam (from the vent to the bottom of the excavation?) |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 5. | Has percolation into the excavation been addressed? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
| **C.** | **Allowable Stresses** | |  |  |  |  |
|  |  |  |  |  |  |  |
|  | 1. | Have the design loads used for cofferdam design of all members been noted in the design calculations? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 2. | Are the allowable stress and the calculated stress listed in the summary for each different cofferdam member? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
| **D.** | **Timber Construction** | |  |  |  |  |
|  |  |  |  |  |  |  |
|  | 1. | Are timber grades consistent with material to be delivered to the construction site, noted on the cofferdam drawings, and in accompanying calculations for all timber cofferdam material? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 2. | If "rough" lumber is specified for the cofferdam, are the actual lumber dimensions used in the calculations shown? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
| **E.** | **Steel Construction** | |  |  |  |  |
|  |  |  |  |  |  |  |
|  | 1. | Are steel structural shapes and plates identified by ASTM number on the cofferdam plans and in the calculations? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 2. | Have steel beams been checked for bending, shear, web crippling and buckling of the compression flange? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
| **F.** | **Compression Members, Bracing Members and Connections** | | |  |  |  |
|  |  |  |  |  |  |  |
|  | 1. | Has general buckling been evaluated for all compression members? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 2. | Has bracing been provided at all points of assumed support for compression members? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 3. | Is bracing strength and stiffness sufficient for the intended purpose? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 4. | Have all connections been designed and detailed? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Designer's Signature Date

***(Include the following shoring design checklist when required by the Bridge Designer.)***

**SHORING DESIGN CHECKLIST**

**Instructions** - This shoring design checklist was developed to facilitate the design, review, and erection of shoring to be used for ODOT bridge construction projects, and is acceptable for use on City projects. This checklist is intended to act as a reminder to design or check for specific important aspects of this construction. It is not a substitute for plan and/or design criteria or specification requirements.

The checklist is to be completed and signed by the shoring design engineer. Answer every question. Attach to the checklist an explanation of any negative responses.

Submit the checklist according to section 00510.04.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | **YES** | **NO** | **N/A** |
|  |  |  |  |  |  |  |
| **A.** | **Contract Plans, Specifications, Permits, etc.** | |  |  |  |  |
|  |  |  |  |  |  |  |
|  | 1. | Are the shoring plans prepared, stamped, and signed by an engineer registered to practice in Oregon? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 2. | Have three copies (five copies if railroad approval is required) of the complete design calculations accompanied the shoring drawings submittal? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 3. | Are shoring plans in compliance with the requirements of the construction plans general notes? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 4. | Are shoring plans in compliance with contract plan structural details? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 5. | Are shoring plans in compliance with the requirements of subsection 00150.35? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 6. | Are all existing, adjusted or new utilities in proximity with the proposed shoring shown on the shoring plans and is protection of these utilities addressed? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 7. | Are clearance requirements satisfied and shown on the shoring plans? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
| **B.** | **Loads** | |  |  |  |  |
|  |  |  |  |  |  |  |
|  | 1. | Are the magnitude and location of all loads, equipment and personnel that will be supported by the shoring shown or noted on the shoring plans? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 2. | Are design loads and material properties used to determine design stresses shown for each different shoring member shown on the shoring plans? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 3. | Does the shoring design assume water saturated soil pressure acts on the full height of the shoring? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 4. | Has percolation into the excavation been addressed? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
| **C.** | **Allowable Stresses** | |  |  |  |  |
|  |  |  |  |  |  |  |
|  | 1. | Have the design loads used for shoring design of all members been noted in the design calculations? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 2. | Are the allowable stress and the calculated stress listed in the summary for each different shoring member? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
| **D.** | **Timber Construction** | |  |  |  |  |
|  |  |  |  |  |  |  |
|  | 1. | Are timber grades consistent with material to be delivered to the construction site and noted on shoring drawings and in accompanying calculations for all timber shoring material? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 2. | If "rough" lumber is specified for shoring by the shoring designer are the actual lumber dimensions used in calculations shown? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
| **E.** | **Steel Construction** | |  |  |  |  |
|  |  |  |  |  |  |  |
|  | 1. | Are steel structural shapes and plates identified by ASTM number on the shoring plans and in the calculations? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 2. | Have steel beams been checked for bending, shear, web crippling and buckling of the compression flange? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
| **F.** | **Compression Members, Bracing, Members and Connections** | | |  |  |  |
|  |  |  |  |  |  |  |
|  | 1. | Has general buckling been evaluated for all compression members? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 2. | Has bracing been provided at all points of assumed support for compression members? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 3. | Is bracing strength and stiffness sufficient for the intended purpose? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |
|  |  |  |  |  |  |  |
|  | 4. | Have all connections been designed and detailed? |  | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ |

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Designer's Signature Date