Index 455-060 60" Prestressed Concrete Cylinder Pile

Design Criteria

AASHTO LRFD Bridge Design Specifications; Structures Detailing Manual (SDM); Structures Design Guidelines (SDG)

Design Assumptions and Limitations

Standard piles are designed to have 1000 psi uniform compression after prestress losses without any applied loads.

The piles are designed to have 0.0 psi tension using a load factor of 1.5 times the pile self weight during pick-up, storage and transportation as shown in the "Table of Maximum Pile Pick-Up and Support Lengths" on the standard.

Plan Content Requirements

In the Structures Plans:

Show and label the piles on the Foundation Layout, End Bent, Intermediate Bent, Pier, Footing, Typical Section and other sheets as required.

Complete the following "Data Table" in accordance with SDG 3.5 and SDM 11.4 and include it in the contract plans with the "Foundation Layout" sheets. Modify table and notes as required to accommodate the required number of piles, piers and/or bents and use of Test Piles. When not enough space is available on one plan sheet, continuations of the Data Table and/or separate pile cut-off elevation tables are acceptable. See Introduction I.3 for more information regarding use of Data Tables.

For projects without Test Piles change column heading "TEST PILE LENGTH (ft.)" to "PILE ORDER LENGTH (ft.)".
### PILE DATA TABLE

<table>
<thead>
<tr>
<th>PILE DATA TABLE</th>
<th>DESIGN CRITERIA</th>
<th>PILE CUT-OFF ELEVATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INSTALLATION CRITERIA</strong></td>
<td><strong>FACTORED DESIGN LOAD (tons)</strong></td>
<td><strong>TOWN ELEVATION (feet)</strong></td>
</tr>
<tr>
<td>PYLON RENT NUMBER</td>
<td>FEMALE BEARING RESISTANCE (tons)</td>
<td>TOWN LOAD (tons)</td>
</tr>
<tr>
<td><strong>PILE SIZE</strong> (in.)</td>
<td>MINIMUM UPLIFT RESISTANCE (tons)</td>
<td>TOTAL UPLIFT ELEVATION (Ft)</td>
</tr>
<tr>
<td><strong>REAR BEARING RESISTANCE</strong> (tons)</td>
<td>TEXT LENGTH (Ft)</td>
<td>REQUIRED PROPER ELEVATION (Ft)</td>
</tr>
</tbody>
</table>

**Factorial Design Load = Net Scour Resistance + Draw Drag**

- **UPLIFT RESISTANCE** – The ultimate side friction capacity that must be obtained below the 100 year scour elevation to resist failure of the pile. (Significant only when design requires uplift capacity).
- **TOTAL SCOUR RESISTANCE** – An estimate of the ultimate static side friction resistance provided by the soil from the rear face of the pile.
- **NET SCOUR RESISTANCE** – An estimate of the ultimate static side friction resistance provided by the soil from the rear face of the pile.
- **100-YEAR SCOUR ELEVATION** – The elevation of scour due to the 100 year storm event.

**PILE INSTALLATION NOTES:**

Contractor is responsible for placing all utilities prior to pile installation activities.

Minimum 1,000-ft elevation is required for lateral stability.

When a required jetting elevation is shown, the jet shall be lowered to the elevation and continue to operate at this elevation until the pile driving is complete. If jetting or perforating elevations differ from those shown on the prints, the contractor shall be responsible for determining the required driving resistance.

No jetting will be allowed without the approval of the engineer.

The contractor should not anticipate being allowed to jet piles below the 100 year scour elevation or required jet elevation, whichever is deeper.

All pile driving is to commence at the center of the pile and proceed outward.
<table>
<thead>
<tr>
<th>Item number</th>
<th>Item Description</th>
<th>Unit Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>455-36-AB</td>
<td>Concrete Cylinder Piles, Furnished &amp; Driven (60&quot; Diameter)</td>
<td>LF</td>
</tr>
</tbody>
</table>