Index 20654 54" Precast / Post-Tensioned Concrete Cylinder Pile (Rev. 01/16)

Design Criteria

AASHTO LRFD Bridge Design Specifications, 6th Edition; Structures Design Guidelines (SDG); Structures Detailing Manual (SDM)

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>INSTALLATION CRITERIA</th>
<th>DESIGN CRITERIA</th>
<th>PILE CUT-OFF ELEVATIONS</th>
</tr>
</thead>
</table>
| FIERE | PILE SIZE (in.) | NOMINAL MATERIAL RESISTANCE (tonnes) | MINIMUM UPLIFT RESISTANCE (tonnes) | MAX UPLIFT ELEVATION (ft.) | REQUIRED DRILL ELEVATION (ft.) | REQUIRED PLACEMENT ELEVATION (ft.) | FACTORED DESIGN UPLIFT LOAD (tonnes) | FACTORED DESIGN UPLIFT LOAD (tonnes) | DOWN DRILL (tonnes) | TOTAL SCOUR RESISTANCE (tonnes) | NET SCOUR RESISTANCE (tonnes) | 100-YEAR SCOUR ELEVATION (ft.) | COMPRESSION \(
| 1 | PILE 1 | PILE 2 | PILE 3 | PILE 4 | PILE 5 | PILE 6 | PILE 7 |

**Factor Design Load = Net Scour Resistance + Down Drag**

**UPLIFT RESISTANCE** - The ultimate side friction capacity that must be obtained below the 100 year scour elevation to resist uplift of the pile.

**TOTAL SCOUR RESISTANCE** - The ultimate static side friction resistance provided by the unconsolidated soil.

**NET SCOUR RESISTANCE** - An estimate of the ultimate static side friction resistance provided by the soil from the required performed or jetted elevation to the scour elevation.

**100-YEAR SCOUR ELEVATION** - Estimated elevation of scour due to the 100 year storm event.

---

**PILE INSTALLATION NOTES** (Notes Code 7-0031):

Contractor to verify location of all utilities prior to any pile installation activities.

Minimum Tip 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 drilling is completed. Jetting or predrilling elevations differ from those shown in the table, the Engineer shall be responsible for determination of the required driving resistance.

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.

At each bent, pile trimming is to commence at the center of the bent and proceed outward.
## Payment

<table>
<thead>
<tr>
<th>Item number</th>
<th>Item description</th>
<th>Unit Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>455-36-1</td>
<td>Concrete Cylinder Piles Furnished &amp; Driven (54&quot; Diameter)</td>
<td>LF</td>
</tr>
</tbody>
</table>