## 701.04 DRIVEN PILES

The Geotechnical Engineer is responsible for recommending when driven piles are to be used, The type of driven pile to be used, the allowable capacity of the pile, the estimated pile tip elevation and any special requirements necessary to drive the piles. When steel piles are used, the corrosive life of the pile will be reported in the Geotechnical Report. The Geotechnical Engineer is also responsible for running the WEAP87 wave equation computer program to determine the driveability of the specified piles and to develop charts or other guidelines to be used by construction personnel to control the pile driving process.

The bridge design group is responsible for ensuring that the allowable axial capacity is not exceeded for any AASHTO Group Loading and that the pile can withstand the applied lateral loads.

## 701.05 BORED PILES

A bored pile foundation consists of excavating a round hole by machine, installing a metal casing or liner, placing a reinforcing cage in the casing or liner and then filling the casing or liner with concrete.

The Geotechnical Engineer is responsible for recommending the minimum diameter of bored pile to be used and providing the necessary information for determining the minimum required embedment below a specified elevation to develop the required axial load. The Geotechnical Engineer is also responsible for determining the soil properties in each layer to be used in analyzing lateral loads and whether slurry methods of construction may be utilized. If necessary, methods of testing the pile after concreting will be specified in the Geotechnical Report.

For the most part, bored piles will include a temporary casing or liner intended to preclude the intrusion of earth into the hole during the boring operation and a permanent casing or liner that will remain in place and not be withdrawn during the concreting process. The temporary casing will be advanced a sufficient depth into rock to provide a seal against water inflow. The temporary casing shall be clean and free of water before the permanent casings or liners, reinforcing steel and concrete are placed.

The bridge design group is responsible for ensuring that the allowable axial capacity is not exceeded for any AASHTO Group Loading and that the shaft can withstand the applied lateral loads.

Unless specified otherwise in the Geotechnical Report, the following minimum criteria should be used in designing bored pile foundations:

1. Bored Piles shall be spaced a minimum of two diameters measured center to center of the holes plus 100mm.

2. Temporary and permanent casings or liners shall be designed to withstand handling stresses, applicable concrete and surrounding soil pressures, and shall be watertight.

3. Vertical reinforcing should be detailed to provide the minimum recommended clearance in AASHTO Article 4.6.6.2.1. In no case shall the clearance between vertical reinforcing be less than 115 millimeters.

4. Reinforcement shall have a clear distance of not less than 50 millimeters from the inside face of the permanent casing or lining.

5. Horizontal ties should be spaced at 150 millimeters minimum.

6. The footing, if applicable, shall be sized to extend a minimum of 200 millimeters from the edge of a bored pile.