

## MATERIAL SPECIFICATION

### **514. CAST-IN-PLACE CONCRETE PILES WITH-SHELLS**

#### 1. SCOPE

This specification outlines the quality of piles formed by driving shells to the required bearing, leaving the shells permanently in place, and placing concrete within the shells.

#### 2. GENERAL REQUIREMENTS

The piles may have constant diameter or may be tapered. The diameter of the tapered pile shall increase uniformly from bottom to top. The pile may be stepped increasing in diameter from bottom to top with the diameter changes between steps to be gradual and uniform throughout the total pile length. Unless otherwise specified, the average diameter of each pile shall not be less than eleven (11) inches. The minimum tip diameter of a tapered pile shall be eight inches.

#### 3. SHELL

The shell shall be made of reinforced concrete or steel. It shall have sufficient strength and rigidity to prevent distortion during driving or after driving by soil or water pressures or pressures caused by the driving of adjacent piles. It shall be sufficiently watertight to exclude water during placement of concrete. Driven shells shall be clean and free of water before reinforcing steel and/or concrete is placed.

#### 4. REINFORCEMENT

When internal reinforcement is specified, it shall conform to the details on the drawings and to the requirements of Construction Specification 34.

#### 5. CONCRETE

Concrete shall not be placed in any pile until the driven shell complete with reinforcement in-place has been inspected and approved by the Engineer.

Unless otherwise specified, the concrete: (1) shall conform to the requirements of Construction Specification 31, and shall be Class 4000; (2) shall be placed in each pile in one continuous operation; and, (3) shall be placed and consolidated into the shell in conformance with the requirements of Construction Specification 31.