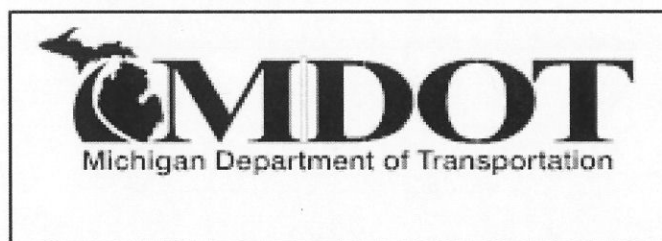


2012

**STANDARD
SPECIFICATIONS
FOR
CONSTRUCTION**

WITH ERRATA INCORPORATED



INFORMATION ONLY

Section 718. DRILLED SHAFTS

718.01. Description. This work consists of providing and constructing drilled shaft foundations.

718.02. Materials. Provide materials in accordance with the following:

Concrete, Grade S2, T	701
Steel Reinforcement.....	905
Casing	919 906

Provide steel reinforcement meeting the yield strength shown on the plans.

Provide Concrete, Grade S2 in dry conditions and Concrete, Grade T in under-water conditions for Drilled Shafts. Modify slump for site conditions as follows:

- A. From 6 inches to 8 inches for conditions except concrete placement under water or under drilling slurry,
- B. From 7 inches to 9 inches for concrete placed under water or under drilling slurry.

718.03. Construction. Review available soil boring logs from subsurface investigations. If, during construction, actual subsurface conditions differ substantially from those reported on the boring logs, notify the Engineer in writing within 48 hours of determining the discrepancy.

The complete geotechnical report, outlining the subsurface exploration conducted during the design phase, is available for review before bidding. The Department does not intend for boring log data as representation or warranties of continuity. The Department is not responsible for interpretations or conclusions drawn by the Contractor.

The Contractor may perform additional soil test borings and other exploratory procedures at no additional cost to the Department.

A. Drilled Shaft Installation Plan. Submit an installation plan, for the Engineer's approval, 21 calendar days before beginning drilled shaft installation. Provide detailed information on the following:

1. Proposed equipment, including cranes, drills, augers, core barrels, bailing buckets, final cleaning equipment, slurry pumps, tremies or concrete pumps, and casing;
2. The construction sequence;
3. Shaft excavation methods, including proposed excavation methods through supporting and caving soil layers;
4. Methods to mix, circulate, and de-sand slurry;
5. Methods to clean shaft excavation;
6. Reinforcement placement, including support and centering methods;
7. Concrete placement, including free fall, tremie, or concrete pumping procedures;

2. **Obstructions.** Remove surface and subsurface obstructions in the length of excavation at drilled shaft locations. Obstructions may include old concrete foundations, abandoned utilities, or boulders. Use special procedures, tools, or both if unable to advance excavation using augers fitted with soil or rock teeth, drilling buckets, or under-reaming tools. Special procedures and tools include:

- a. Chisels,
- b. Boulder breakers,
- c. Core barrels,
- d. Air tools,
- e. Hand excavation,
- f. Temporary casing, and
- g. Enlarging the hole diameter.

G. **Placing Steel Reinforcement.** Place steel reinforcement in accordance with subsection 706.03.E.

Assemble the reinforcing steel cage, and place immediately after excavation inspection and immediately before concrete placement. If concrete is not placed immediately after the cage installation, the Engineer may direct removal of the cage before placing the concrete to verify the integrity of the excavated area and ensure removal of loose or soft material from the bottom of the excavation.

Construct the cage of longitudinal bars and lateral reinforcement consisting of spiral reinforcement, lateral ties, or horizontal bands. If overhead obstacles prevent placing the cage as a single unit, connect individual segments with couplers or by lapping steel, as approved by the Engineer. Provide a fully assembled steel reinforcement cage for inspection two working days before to the start of construction.

Tie and support the reinforcing steel to meet the required tolerances. Tie spacers at quarter points around the cage perimeter and space at intervals no greater than 5 feet along the length of the cage. If the size of the longitudinal reinforcing steel equals or exceeds a diameter of 1 inch, the Contractor may increase the minimum distance between spacing devices to 10 feet.

Use spacers to ensure a minimum annular space of 3 inches between the outside of the cage and the side of the excavation or casing. Use at least one spacer per 30 inches of the outside circumference of the cage. Place at least three spacers at each level of the cage.

Use non-corrosive spacers. The Contractor may use round plastic spacers. Do not use concrete blocks, wood blocks, or metal chairs on the sides of the shaft. The Contractor may use concrete blocks on the bottom of the shaft to maintain cover.

Support or hold down the cage to control vertical displacement during concrete placement or casing extraction. Use support, concentric with the cage to prevent the steel from racking and