

**CONSTRUCTION INSPECTOR'S CHECKLIST  
FOR  
DRILLED SHAFTS**

While its use is not required, this checklist has been prepared to provide the field inspector a summary of easy-to-read step-by-step requirements relative to the proper construction of Drilled Shafts (Section 516 of the Standard Specifications). The following questions are based on information found in the Standard Specifications, Guide Bridge Special Provision No. 86 "Drilled Shafts", Project Procedures Guide, Construction Manual, and Drilled Shaft Foundation Construction Inspection Class Reference Guide.

Have you checked the Special Provisions, Supplemental Specifications and plans to see if any modifications have been made to the requirements listed herein? \_\_\_\_\_

**1) Prior to Construction**

- a) When specified for the construction item, has the Contractor submitted a Drilled Shaft Installation Plan (Form BBS 133)? \_\_\_\_\_
- b) Has the Drilled Shaft Installation Plan been approved? \_\_\_\_\_
- c) Has an agenda been prepared, and is a drilled shaft pre-drill meeting been scheduled? \_\_\_\_\_
- d) Does the Contractor have an approved concrete mix design? \_\_\_\_\_
- e) Is the concrete mix design nominal maximum aggregate size appropriate for the rebar spacing, and for the clear distance between the rebar and permanent casing or shaft wall? \_\_\_\_\_
- f) Has a trial batch to determine slump retention been scheduled if temporary casing or the Slurry Method of construction will be used? \_\_\_\_\_
- g) Will the rate of concrete placement be adequate for the slump retention time period? \_\_\_\_\_

**2) Equipment and Casing**

- a) Does the Contractor have the proper equipment for inspection of the shafts such as lighting? \_\_\_\_\_
- b) Does the Contractor have all the equipment/tools listed in the Drilled Shaft Installation Plan for excavation and cleaning of the shaft? \_\_\_\_\_
- c) If the Contractor will construct the shaft using a slurry, is the proper equipment for testing density, viscosity, pH, and sand content on site? \_\_\_\_\_
- d) Does the contractor have the proper slurry mixing equipment to construct the shaft? \_\_\_\_\_

- e) Is a desander required, and does the Contractor have it on site and operational? \_\_\_\_\_
- f) Is the tremie or pump pipe steel, clean, smooth, and the connections watertight? \_\_\_\_\_
- g) Is the tremie pipe a minimum diameter of 10 inches? \_\_\_\_\_
- h) Is the pump pipe a minimum diameter of 4 inches? \_\_\_\_\_
- i) If a drop chute will be used, will the free fall of concrete be no more than 60 feet for conventional concrete and 30 feet for self-consolidating concrete? \_\_\_\_\_
- j) Is casing the correct diameter, thickness, and length per Article 1006.05(d) and plans? \_\_\_\_\_
- k) Is the temporary casing interior free from concrete? \_\_\_\_\_

### 3) **Shaft Excavation & Cleaning**

- a) Are you completing the Drilled Shaft Excavation and Inspection Record (Form BBS 134)? \_\_\_\_\_
- b) Have procedures been discussed with the Contractor in the event obstructions or differing site conditions are encountered? \_\_\_\_\_
- c) Is the shaft being constructed within 3 in. of the plan station and offset at the top of the shaft? \_\_\_\_\_
- d) Is there a benchmark to locate shaft elevations? \_\_\_\_\_
- e) Is the top of shaft elevation no more than 1 in. above and no more than 3 in. below the plan elevation? \_\_\_\_\_
- f) Is the shaft diameter correct? \_\_\_\_\_
- g) Is the slurry level being maintained a minimum of 5 feet above the height required to prevent caving of the shaft? \_\_\_\_\_
- h) Is slurry testing being performed during excavation, and the sample obtained within 2 feet of the bottom and at mid-height of the shaft excavation? \_\_\_\_\_
- i) If belling is required, does the bell size and geometry match the plans? \_\_\_\_\_
- j) Does the vertical plumbness of the shaft not exceed 1.5%? \_\_\_\_\_
- k) Is the shaft of proper plan depth when in soil? \_\_\_\_\_

- l) Is the shaft of proper depth below top of rock encounter? \_\_\_\_\_
- m) If the top of rock elevation differs from that shown on the plans by more than 10% of the length of the drilled shaft above the rock, has the design engineer been notified? \_\_\_\_\_
- n) If terminated in soil, does the shaft bottom have a maximum of 1 ½ inches of sediment or debris? \_\_\_\_\_
- o) If terminated in rock, does the shaft bottom have a maximum ½ inch of sediment or debris? \_\_\_\_\_
- p) If bellling is required, are the remaining spoils being back-bladed to the bell periphery with a 1 foot over-sized bucket? \_\_\_\_\_
- q) Is the Contractor reaming the sides of the shaft because they have been slickened by auger trimmings? \_\_\_\_\_
- r) Is the Contractor reaming the sides of the shaft because the sidewall has softened, swelled, or has a buildup of slurry cake? \_\_\_\_\_

#### 4) **Reinforcing Cage**

- a) Does the grade of steel shown on the plans match the mill certificate? \_\_\_\_\_
- b) Does the rebar number, sizes, spacing, lengths, and clearances match the plans? \_\_\_\_\_
- c) Is the rebar tied at the intersection frequency specified in Section 508? \_\_\_\_\_
- d) Was the rebar lapped or mechanically spliced in accordance with contract documents? \_\_\_\_\_
- e) If applicable, is cross bracing being installed to prevent rebar cage deformation during lifting? \_\_\_\_\_
- f) Does the rebar cage diameter match the plans and the rebar cage length meet field drilled conditions? \_\_\_\_\_
- g) Are plastic chairs or clearance boots being used to provide concrete cover between the base of the drilled shaft and the rebar cage? \_\_\_\_\_
- h) Is the Contractor using non-corrosive rolling spacers for the rebar cage? \_\_\_\_\_
- i) Are the rolling spacers no greater than 10 feet apart along the length of the rebar cage, and within 2 feet of both the top and bottom of the shaft? \_\_\_\_\_

- j) Is there one rolling spacer for each 1.0 foot of shaft diameter present around the perimeter of the rebar cage, with a minimum of 4 spacers at each level? \_\_\_\_\_
- k) Is the center of the rebar cage within 1.5 inch of plan station and offset at the top of the shaft? \_\_\_\_\_
- l) Is the rebar cage plumb and does not exceed 0.83% (or 0.1 inch per foot of depth)? \_\_\_\_\_
- m) Is the top of the rebar cage no more than 1 inch above no more than 3 inches below the plan elevation? \_\_\_\_\_
- n) Is the rebar cage free from mud and debris when placed in the hole? \_\_\_\_\_
- o) Is the rebar cage free from deformation after placement in the hole? \_\_\_\_\_
- p) If applicable, have access tubes for Cross-hole Sonic Logging (CSL) testing been installed at the proper spacing and maintained in straight alignment for the full length of the shaft? \_\_\_\_\_
- q) If applicable, have the access tubes for CSL testing been filled with water to prevent debonding during concrete heat of hydration? \_\_\_\_\_
- r) Recommendation Only: Is the rebar cage secured from settling and from floating during concrete placement? \_\_\_\_\_

### 5) Concreting Operations

- a) Are you completing the Drilled Shaft Concrete Placement Log (Form BBS 135)? \_\_\_\_\_
- b) Is concrete placement beginning within 1 hour of shaft cleaning and inspection? \_\_\_\_\_
- c) Prior to concrete placement, has the slurry been tested 1 hour before concrete placement and the sample obtained within 2 feet of the base excavation? \_\_\_\_\_
- d) At the time the temporary casing is being broken loose, is the head pressure inside the casing a minimum of 1.25 times the head pressure outside the casing (but in no case shall the concrete be less than 5 feet from the bottom of the casing)? \_\_\_\_\_
- e) At the time of temporary casing removal, is the slump a minimum of 6 inches? \_\_\_\_\_
- f) Is the minimum embedment being maintained as the temporary casing is pulled? \_\_\_\_\_
- g) For tremie or concrete pump placement, is the discharge end of the steel pipe being embedded in the concrete a minimum of 10 feet throughout concrete placement when displacing water or slurry? \_\_\_\_\_

- h) Is tremie or pumped concrete placement occurring without interruption? \_\_\_\_\_
- i) For Free Fall Placement, is the rate of water infiltration into the shaft excavation less than 12 in. per hour, and is there less than 3 inches of standing water in the base of the shaft at the time of concrete placement? \_\_\_\_\_
- j) For Free Fall Placement, is the flow of concrete directed down the center of the shaft to avoid rebar? \_\_\_\_\_
- k) For Free Fall Placement, is the top 10 feet of concrete in the shaft being vibrated? \_\_\_\_\_
- l) For the Slurry Method of construction, is the slump a minimum of 6 inches for all concrete placed at the end of the pour? \_\_\_\_\_
- m) Is the Contractor over pouring the shaft until 18 inches of good quality, uncontaminated concrete is expelled at the top? \_\_\_\_\_
- n) Are temperature, slump, air content, and strength tests being performed as required? \_\_\_\_\_
- o) Recommended Only: Is slump retention being monitored during the pour, and is a strength test being performed after all contaminated concrete is expelled? \_\_\_\_\_

**6) Post Installation**

- a) Is the concrete being cured and protected according to Article 1020.13? \_\_\_\_\_
- b) If applicable, have access tubes for CSL testing been checked for water no more than one hour after completion of concrete placement? \_\_\_\_\_
- c) If removable forms are used has the concrete reached a minimum compressive strength of 2,500 psi, and cured for a minimum of 72 hours before the forms are removed? \_\_\_\_\_
- d) Is all casing removed to the proper elevation? \_\_\_\_\_
- e) Has the contractor performed any required non-destructive testing? \_\_\_\_\_
- f) Have you documented the pay items? \_\_\_\_\_