

## **ITEM 05551.9898 M - DRILLED SHAFT (PERMANENT CASING)**

### **DESCRIPTION:**

Under this work, the Contractor shall furnish the materials and install drilled shafts to the elevations and at the locations shown on the plans. Each drilled shaft shall use a permanent steel casing and have dimensions as shown on the plans. The work shall include the furnishing of all equipment at the work site for installing the drilled shafts as shown on the plans

### **MATERIALS:**

#### **Permanent Casing**

Permanent steel casings shall meet the requirements as indicated on the plans and shall be capable of withstanding all installation stresses.

### **CONSTRUCTION DETAILS:**

A. **General** The Contractor shall be responsible for the equipment and procedures to satisfactorily install the drilled shafts through the in-situ soil and rock.

The Contractor's construction procedure for installing the drilled shafts, splicing of casing, and welding shall be submitted to the Engineer for evaluation and approval prior to commencement of work. The Engineer will render a decision within 15 working days, measured from the receipt of all pertinent information.

B. **Location and Elevation** All drilled shafts shall be installed to the elevations and at the locations shown on the plans.

C. **Construction Tolerance** The center of a drilled shaft at the cutoff elevation shall not vary from the plan location by more than 75 mm. The drilled shaft shall not vary from the vertical or the specified batter by more than 20 mm per meter, measured from the top of the casing. The Contractor shall provide, for the Engineer's approval, a method by which the Contractor will verify that the vertical tolerance has been satisfied. The actual outside diameter of each permanent steel casing shall not be less than the diameter shown on the contract plans.

D. **Drilling and Excavation** The Contractor shall progress the permanent steel casings to the elevation shown on the plans. The casings shall be progressed in a manner that does not cause disturbance or settlement to the surrounding ground surface or adjacent structures. If any disturbance occurs, the Contractor shall halt his operations and modify his equipment and/or his procedures so that no further disturbance occurs. The Contractor shall repair any damage at his own expense.

The drilled shafts shall be excavated to the bottom of socket elevation shown on the plans. The drilled shafts shall be cleaned to the satisfaction of the Engineer. Excavated material shall be removed from the site or used in a manner acceptable to the Engineer.

E. **Equipment** Prior to delivering any equipment to the site, submit the proposed type of equipment for drilled shaft installation to the Engineer for review.

The equipment shall be capable of installing drilled shafts with lengths 20% greater than those shown on the plans. Provide equipment capable of progressing holes through rock and soils at the site, which may include miscellaneous fill, boulders, timber, and other obstructions. Remove all equipment from the site

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deemed unsatisfactory by the Engineer and replace it with satisfactory equipment at no additional cost to the State.

**METHOD OF MEASUREMENT:**

The quantity to be paid for under this item shall be the number of linear meters of drilled shafts furnished, installed, and accepted. Measurement shall be made along the center of the drilled shaft below the cutoff elevation to the design elevation shown on the plans or as changed in writing by the Engineer.

**BASIS OF PAYMENT:**

.The unit price per linear meter bid shall include the cost of furnishing all labor, material, and equipment necessary to complete the work, including all required drilling and the permanent casing.

The unit price per linear meter bid includes the cost of furnishing all labor, materials, and equipment necessary for transporting, erecting, maintaining, making any ordered equipment replacement, dismantling, and removing all installing equipment.

Payment will be made as follows: Fifty (50%) percent of the Engineer's estimate amount will be authorized for payment when the equipment for installing drilled shafts is furnished and the installation of drilled shafts has commenced. The final quantity paid based on the final field measurement, less the initial quantity amount paid, will be authorized for payment when the work of installing the drilled shafts is completed and all equipment for installing the drilled shaft has been removed from the project site.