ITEM 17551.9909 M - DRILLED SHAFT FOUNDATIONS INTO ROCK (PERMANENT CASING)

REASON FOR DISAPPROVAL:

The special specification for drilled shaft foundations has been revised into a new generic special specification. The following item revises this special specification:

Item 17551.9949nn M, Drilled Shafts.
Item 17551.9950nn M, Drilled Shafts (Low Overhead Clearance).
Item 17551.9802 M, Trial Shafts.

ITEM 17551.9909 M - DRILLED SHAFT FOUNDATIONS INTO ROCK (PERMANENT CASING)

DESCRIPTION

Under this work, the Contractor shall furnish the materials and install drilled shaft foundations into rock at the locations shown on the plans or where ordered by the Engineer. Drilled shafts shall use permanent casings and shall be installed and socketed into bedrock to an elevation specified by the D.C.E.S. The drilled shafts shall have dimensions as shown on the plans or as approved by the D.C.E.S.

MATERIALS

A. Concrete

Concrete placed in drilled shaft foundations shall conform to the requirements of Section 501, Portland Cement Concrete-General, except that the concrete shall use Type 2 cement and shall have a minimum slump of 150 mm and a maximum slump of 225 mm. The concrete shall be Class G and shall be placed in accordance with the applicable requirements of Section 555.

B. Permanent Casing

The permanent casing shall be capable of withstanding all installation stresses.

C. Reinforcement

Bar reinforcement shall meet the requirements of Subsection 709-01, Bar Reinforcement Grade 60, or continuously threaded "Uncoated High-Strength Steel Bar for Prestressing Concrete" - ASTM A722.

CONSTRUCTION DETAILS

A. General

The Contractor shall be responsible for the equipment and procedures to satisfactorily install the drilled shaft foundations through obstructions and underlying in-situ soils, and into bedrock.

The Contractor's construction procedure for installing the drilled shafts, including the method to prevent infiltration of material into the rock socket, shall be submitted to the D.C.E.S. for evaluation prior to commencement of the work. The D.C.E.S. will render a decision within 15 working days, measured from the receipt of all pertinent information.

The Contractor shall control his procedures and operations so as to not cause disturbance or settlement to adjacent structures or utilities. If any disturbance occurs, the Contractor shall halt his operations and modify his equipment and/or his procedures so that no further disturbance occurs. He shall repair any damage at this own expense.

B. Location and Elevation

All drilled shaft foundations shall be installed at the locations shown on the plans or where ordered by the Engineer. The elevations shown on the plans for the bottom of each drilled shaft are for estimating purposes only.

ITEM 17551.9909 M - DRILLED SHAFT FOUNDATIONS INTO ROCK (PERMANENT CASING)

C. Bedrock Determination

A Departmental Engineering Geologist shall be notified at least three working days prior to commencement of work. He will determine the top of socket elevation during installation of the drilled shafts. He will communicate this information to the D.C.E.S., who will then inform the Contractor of the required bottom elevation of each drilled shaft. The bottom elevation will be determined by subtracting the required socket depth shown on the plans from the top of socket elevation determined by the Departmental Engineering Geologist.

The Departmental Engineering Geologist will periodically require the Contractor to stop drilling and flush continuously so the geologist can determine the top of rock. The Contractor shall include the costs associated with this requirement in his price bid.

D. Drilling and Excavation

Permanent casings shall be progressed through in-situ soils and all obstructions to the top of bedrock, as determined by the Departmental Engineering Geologist. No blasting or jetting will be permitted.

The Contractor shall drill and clean the sockets so that the minimum socket depths shown in the plans are attained.

E. Steel Reinforcing, Concrete Placement

The steel reinforcement shall be placed and centered in the drilled shaft. Spacers shall be placed at the bottom and along the axial length of the steel reinforcing at spacings not to exceed three meters. Spacers shall be made of a material that is not detrimental to the steel reinforcement or the concrete.

Handling and placing Portland Cement concrete shall conform to the requirements of Sections 555-3.04 and 3.05, Structural Concrete, except that concrete shall be placed by the tremie method.

F. Construction Tolerance

The center of the drilled shaft at 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 actual outside diameter of each casing shall not be less than the diameter shown on the contract plans. Drilled shafts installed outside these tolerances will be rejected.

After all concrete has been placed, the steel reinforcement shall be no more than 150 mm above and no more than 75 mm below plan position.

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 indicated on the plans. Measurement will be taken immediately prior to the filling of the drilled shaft.

BASIS OF PAYMENT

ITEM 17551.9909 M - DRILLED SHAFT FOUNDATIONS INTO ROCK (PERMANENT CASING)

The unit price per linear meter shall include the cost of furnishing all labor, material and any additional equipment necessary to complete the work which is not included in Item 17551.9907, Furnishing Equipment for Installing Drilled Shaft Foundations.