

January 1, 2015

SPECIAL PROVISION

REGARDING

DRILLED CAISSONS

DESCRIPTION

DEFINITIONS OF ROCK AND OBSTRUCTIONS: For pay purposes (Item No. 204-02.2X Drilled Caisson Rock (Description) L.F.), the “top of rock” is defined as the elevation at which natural material is penetrated with a rock auger at a hole advancement rate of less than 6 inches after 15 minutes of continuous drilling at full power. This definition excludes man-made materials, such as concrete, steel, timber, etc. Any man-made material that significantly limits excavation advancement will be classified as an “obstruction”. The presence of an obstruction for pay purposes must be verified by the Engineer or his representative using the aforementioned top of rock penetration resistance definition. Removal of obstruction(s) will be paid at twice the unit price bid for Item No. 204-02.2X Drilled Caisson Rock (Description) L.F. for the extent of the obstruction. Material removed above the top of rock or top of obstruction elevations will be considered payable under Item No. 204-02.1X Drilled Caisson Earth (Description) L.F.

Relative to ensuring that the design intent is realized, the “top of the rock socket” will be defined as that elevation where the full diameter of the shaft penetrates rock. Therefore, the tip elevation will be determined by extending the shaft below the top of the rock socket to at least the minimum penetration into rock shown on the plans. Upon inspection of the socket walls (before inner rock socket casing is placed) and/or below the excavation base by the Engineer, the shaft may need to be extended as directed by the Engineer.

EXCAVATIONS: The Contractor shall perform the excavations required for the drilled shafts to the dimensions and elevations shown on the plans or otherwise required by the Engineer, including any miscellaneous grading or excavation to install the drilled shafts. The base of the shaft excavations shall be shaped to a level plane within a tolerance of 1 vertical to 12 horizontal.

The drilled shaft excavations shall be advanced with a drill rig of adequate capacity. The drill rig shall be capable of drilling through soil and non-soil including rock and boulders. Blasting will not be allowed to advance the excavation. The drill rig shall be capable of drilling to sufficient depth to obtain the required rock socket shown in the plans. Drilling below the estimated tip elevations shown on the plans may be required to achieve adequate bearing.

DRY CONSTRUCTION: Precautions should be taken to drill and place concrete under relatively dry conditions. No more than 3” of standing water may be permitted in the drilled caisson excavation immediately prior to pouring concrete. It may be necessary to utilize a temporary steel casing to support the walls of the shaft. Cost of the casing to be included in the price bid for Item Nos. 204-02.1X and 204-02.2X. This procedure will also reduce the potential for an inflow of water during the drilling and cleaning operations. If dry conditions cannot be achieved, the Contractor shall notify the Engineer before proceeding.

SELECTION OF CASING: The Contractor shall select the casing to be used. A casing with sufficient strength to safely resist all imposed loads, including those from the soil and ground water, shall be used. The Contractor must insure the stability of casing during all drilled shaft operations.

DRILLED SHAFT ALIGNMENT: Maximum permissible deviation from the actual center of the drilled shaft from design location (line and grade) shall be three (3) inches. The maximum permissible deviation from plumb shall not exceed two (2%) percent, which may be considered equivalent to two and one half (2-1/2") inches for the first ten (10) feet and two and one half (2-1/2") inches for each additional ten (10) feet of depth.

SOIL STABILITY / CAVING: Areas of the rock socket containing voids shall be stabilized as part of the drilled hole preparation. If caving occurs during any drilled shaft procedure, the Engineer shall be informed immediately. If caving occurs during concrete placement, the drilled shaft shall be cleaned of all concrete immediately (before the concrete takes its set) and the integrity of the excavation reestablished.

WORKMANSHIP: The bottom of the excavation shall be cleaned of loose material, using either a bucket auger or other technique approved by the Engineer. All loose material shall be cleaned from the shaft prior to placing reinforcing steel and concrete. Accumulation of loose soils, muck, etc. at the bottom of the excavation shall not be allowed. The hole shall be checked after the completion of drilling and immediately before concrete placement to determine the accumulation of sediment. If determined necessary by the Engineer, the bottom of the shaft shall receive additional cleaning. Placement of concrete for the drilled shaft shall be completed the same day that the excavation is completed. If not, the excavation shall be reinspected, and cleaned as necessary, before concrete placement.

TEMPORARY CASING EXTRACTION: During simultaneous concrete placing and casing removal operations, sufficient concrete should be maintained inside the casing to offset the hydrostatic head of the groundwater outside the casing and prevent the intrusion of soil and groundwater into the drilled shaft. Casing extraction must be done such that the concrete will fill the entire shaft area upon removal of the casing. Casing extraction will not be allowed unless the concrete within the casing is plastic and workable. Temporary casing not extracted, because the concrete is not in conformance with the above-mentioned "plastic" state, shall remain in the excavation. Any portion of a temporary casing extending above ground that could not be removed when the concrete was within the above-mentioned "plastic" state shall be removed above the ground line after the concrete has cured. Casing left within the limits of the rock socket causing the total length of uncased rock socket to be less than the plans minimum shall be reason for the drilled shaft to be rejected. The cost of casing, including casing that remains in the excavation, shall be included in the unit price bid for Item Nos. 204-02.1X and 204-02.2X.

PLACEMENT OF CONCRETE: Concrete shall be placed as soon as possible after all excavation of each drilled shaft has been completed. If the concrete is not placed the same day that excavation of the drilled shaft is completed, the drilled shaft shall be recleaned by the Contractor and inspected by the Engineer the same day the concrete is placed. Placement of concrete shall be continuous over the entire length of the shaft. Cold joints will not be allowed within a drilled shaft. The top of the concrete placement shall end at the elevation shown in these plans for each shaft. Free fall placement of concrete shall be permitted if water can be removed from the shaft as mentioned earlier under DRY CONSTRUCTION.

DISPOSAL: The Contractor shall be responsible for disposal of all material removed, including soil, rock, rejected drilled shafts, water, concrete, drilling fluid, etc. The cost of disposal shall be included in the price bid for other items.