

## **ITEM 08607.9908 M - PRECAST CONCRETE PANEL AND CAP WALL SYSTEM**

### **DESCRIPTION:**

This work shall consist of furnishing and erecting portions of a wall system of the type and size and at the locations indicated on the plans, in accordance with the Special Notes of this Proposal entitled "Appearance of Retaining Wall Finish" and as directed by the Engineer.

The wall system shall consist of steel soldier pile beams and precast concrete panels and caps and other associated members and attachments necessary to fabricate and erect the system.

### **MATERIALS:**

Requirements - Precast concrete panels and caps shall meet the requirements of Section 704-03 except as noted herein.

Concrete - Concrete used for the panels, posts and caps shall have a minimum compressive strength of 42 MPa at 28 days. The manufacturer shall maintain, at the manufacturing site, a copy of the mix design used.

Coarse aggregate used for the exposed aggregate finish shall be a crushed gravel with a Type CA 1 gradation or equal, approved by the Materials Bureau. Details of the test method may be obtained from the Materials Bureau. The final appearance of the wall system shall be in accordance with the Special Notes included in this Proposal.

Caulk and Backer Rod - Caulk shall meet the requirements of Section 705-06. The backer rod shall be polyethylene conforming to ASTM D3204, Type I.

Preformed Seals shall be Williams Panel Seal No. 11 from series 3000 ozone resistant material or approved equal.

Closed Cell Foam – Foam shall meet the requirements of Section 705-08.

Any exposed steel shall be shop painted with three coats of paint to match the color of the adjacent concrete.

Steel bar reinforcement and wire fabric reinforcement shall be epoxy coated meeting the requirements of Section 709-04 and Section 709-08 respectively.

Lifting hooks or devices shall be galvanized or epoxy coated.

Fabrication - The precast concrete panels and caps shall be fabricated to conform to the shape, size, texture and reinforcing details shown on the plans and Special Notes. No units shall be fabricated until an inspection assignment has been made by the Materials Bureau.

Finish - The exposed aggregate side shall have a uniform surface. The depth of the exposure shall be a minimum of 40% of the primary size dimension of the coarse aggregate. The depth shall be measured by laying a straight edge across the plane of the wall face and measuring back to the concrete matrix. Refer to Special Note for additional information.

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Visual Standards - The contractor shall construct a 1.83m by 1.83m sample panel and a 1.52m sample cap for written approval by the Regional Landscape Architect. Each of the surface treatments identified in the plans shall be represented by the samples. Only one surface treatment shall be used per sample face. When multiple surface treatments are called for additional samples will be required. Materials and fabrication techniques used in the samples, including concrete pigment and sealers, shall be the actual materials and techniques used in the construction of the final product. If the samples are rejected by the Landscape Architect, the contractor shall construct additional samples as required to obtain the Landscape Architect's approval. The approved samples shall be made available at the precast plant, for use by the inspector as visual standards, throughout the production of the wall. When surface coatings are to be field applied additional samples, without coatings, shall be prepared and retained at the precast plant for use by the inspector as visual standards. The fabrication of the precast panels and caps shall not begin until written approval of the visual standards has been received by the Materials Bureau.

Visual Evaluations - When comparing production panels and caps against the visual standards there should be minimal color and texture variations, from the standard, when viewed in good typical lighting at a 3m distance. When viewed alone production panels and caps should show no obvious imperfections other than minimal color and texture variations when viewed in good typical lighting at a 6m distance. The manufacturer is responsible for positioning the panels and caps so this evaluation can be made.

Panel Joints - Panel joints shall be tongue and groove with a tight fit. No space of any kind, including those for lifting hooks will be permitted in the finished face. The joint for the exposed aggregate side shall be chamfered as shown on the plans. The horizontal panel joint between adjacent wall sections shall align. Any space shall be sealed to the satisfaction of the Engineer.

Concrete Sealer - A concrete sealer shall be applied to the exposed aggregate side of the panel. The concrete sealer shall be a two component, oil free, non- yellowing aliphatic polyester polyurethane coating. The material shall be approved by the Engineer prior to application.

Curing (Panels and Caps) - If a membrane curing compound is selected as the method of curing it shall be removed by a light sandblast after curing is complete and before the application of the concrete sealer.

Repair (Panels and Caps) - The fabricator shall submit, to the Materials Bureau for approval, a procedure for repairing damaged areas in the exposed aggregate finish. No repair to the exposed aggregate finish shall be made until a procedure has been approved.

### **CONSTRUCTION DETAILS:**

The contractor shall submit shop drawings at least 21 days before fabrication begins.

#### **Panel Installation**

The panels shall be positioned in the slots of the adjacent piles to the elevations shown on the plans, then the panel cap and post cap installed where specified. The contractor shall perform the required grading to provide a continuous and smooth ground line, which will produce no openings between the bottom of the panel and the ground surface. The panels shall be placed on undisturbed soil, rock or fill as noted on the plans. The excavation for the panel installation shall meet the requirements of Section 206 of the Standard Specifications.

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### **METHOD OF MEASUREMENT:**

This work will be measured as the number of square meters of wall satisfactorily completed in accordance with this specification and as approved by the Engineer. The number of square meters shall be computed using the following payment lines:

Upper payment lines shall be set at the elevations or heights as shown on the plans or as ordered by the Engineer.

Lower payment line shall be the bottom elevation of each panel including the portion below finished grade. Steel piles that will be placed below the bottom of wall panels shall not be included in this measurement.

Longitudinal payment lines shall be the outer extremities of the wall.

### **BASIS OF PAYMENT:**

The unit price bid shall include the cost of furnishing all labor, materials, equipment and tools necessary to complete the work with the exception of fabricating and installing steel piles, providing and installing GRES systems and installing rock anchors. Reinforcing steel, excavation, disposal of surplus materials and the cost incurred in the event of royalties shall be included in the unit price of this item. Doors in retaining walls system, sealant, and excavation required to locate existing utility lines shall be paid for under separate items.

Payment for the fabrication and installation of the steel soldier pile beams and its attachments, as well as the GRES systems, shall be included under separate item(s).

The cost for clearing and grubbing shall be paid under its respective item.