

ITEM 08607.9906 M - PRECAST CONCRETE NOISE BARRIER WALL SYSTEM

DESCRIPTION:

This work shall consist of furnishing and erecting a noise barrier wall system of the type and size and at the locations indicated on the plans and as directed by the Engineer.

The noise barrier wall system consists of posts, caps, panels, caissons and all other associated members and attachments necessary to fabricate and erect the system. The necessary excavation, backfilling and grading are also included.

MATERIALS:

Requirements:

Precast concrete noise barrier panels, posts, 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 35 MPa at 28 days. The manufacturer shall maintain, at the manufacturing site, a copy of the mix design used. Concrete for the cast-in-place caissons shall be Class A concrete conforming to the requirements of Section 501.

Coarse aggregate used for the exposed aggregate finish shall be No. 1 Size, uncrushed, screened gravel as approved by the Materials Bureau. Details of the test method(s) may be obtained from the Materials Bureau.

Caulk, Backer Rod and Pads:

Caulk shall meet the requirements of Section 705-06. The backer rod shall be polyethylene conforming to ASTM D3204, Type I. Neoprene pads shall meet the requirements of Section 728-01 or 728-02.

Structural Steel:

Steel base plates shall meet the requirements of Section 715-01, and be galvanized in accordance with Section 719-01, Type II.

Anchor bolts shall meet the requirements of Section 723-60 and be galvanized in accordance with Section 719-01, Type II. Nuts and washers shall be galvanized ASTM A449.

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

The vertical post rebar shall be threaded upset end and shall meet the requirements of Section 709-01. The threads shall meet ANSI B1.1. 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.

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Grout:

Anchor bolt grout shall meet the requirements of Section 701-07. Grout material used between the baseplate and the footing shall meet the requirements of Section 701-05.

Integrally Colored Concrete:

The color for the panel, cap, and post shall be as indicated in the contract documents. The exact quantity of pigment to be added shall be determined based on the preparation, examination, and the approval of the sample panels, posts and caps.

Form Liners:

Form liners shall be of the elastomeric type. The liner may be factory bonded or field laminated following the manufacturer's recommendations and instructions. The number of uses per form liner shall not exceed the manufacturer's recommendations. A high quality form release oil, compatible with the form liner material and integral color shall be used.

Custom form liners will be required in order to obtain the desired finish and specified panel widths and lengths. The form liner shall produce a repeatable, matching pattern such that the finished wall will have a continuous natural looking and matching a seamless pattern.

Fabrication:

Components of the precast concrete noise barrier wall system shall be fabricated to conform to the shape, size, texture and reinforcing details shown on the plans.

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 course 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.

The form liner side shall have a random ashlar stone pattern similar to Greenstreak No. 330, Dayton Superior 1507 or an approved equal.

The concrete cap shall have a smooth finish. The posts shall have a wood like finish similar to Burke Form Liner Bg 213, Fitzgerald Form Liner Pattern 16927, or Scofield 830 or an approved equal.

When the design calls for a base plate to be attached to the bottom of the post, cast the post concrete directly against the base plate. When threaded reinforcing steel is used to attach a base plate to a post, coat the exposed portion of the threaded bar and the nut with galvanized repair material appearing on the Department's Approved List.

The fabricator shall submit, to the Materials Bureau for approval, a procedure for repairing damaged areas in the exposed aggregate finish. No repairs to the exposed aggregate finish shall be made until a procedure has been approved.

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Visual Standards:

The contractor shall construct a 1.83m by 1.83m sample panel, a 1.52m sample cap and a 1.83m sample post for written approval by the Regional Landscape Architect.

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.

Concrete Sealer:

A concrete sealer shall be applied to both sides of the panel. The concrete sealer shall be a penetrating type protective sealer appearing on the Department's Approved Lists. The material shall be approved by the Engineer prior to application. The concrete sealer shall be applied as soon as possible in accordance with the manufacture's recommendations but not for a minimum of 14 days after curing is complete.

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.

CONSTRUCTION DETAILS:

The contractor shall submit the Fabricator Standard drawings at least 21 days before fabrication begins.

The contractor shall employ either of the two following methods for the post installation.

Post Installation Method 1:

The holes for the post footing shall be pre-excavated, true and plumb. Precast footings will not be permitted. Precautions shall be taken to protect the holes from collapse prior to the installation of the form work. Holes shall contain no free standing water at the time of the concrete placement. The reinforcement cage shall be placed and the holes filled with Class A concrete in direct contact with the form work. A seven day curing period will be required.

The contractor shall employ an approved jig method to set the base plate anchor bolts to assure proper post centerline to centerline spacing and plumb. The base plate shall be connected to the post and then the post and plate set on the footing, tightened in place and checked for plumb. After the post is set in its final position, the space between the base plate and the footing shall be filled with grout as shown on the plans. The raised panel seat if required shall then be poured.

Post Installation Method 2:

The concrete H piles shall be set in the pre-excavated holes and temporarily secured to assure proper line, grade and plumb prior to backfilling with concrete. The bracing shall remain in place for seven days after the footing concrete has been placed. No free standing water shall be present at the time of the concrete placement. The footing reinforcement shall be as shown on the plans. The raised panel seat if required shall be poured after the post footing concrete has cured.

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Panel Installation:

The panels shall be positioned in the slots of the adjacent posts, then the panel cap and post cap installed. 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.

METHOD OF MEASUREMENT:

This work will be measured as the total number of square meters of the noise wall system measured from the top to the bottom of the panel and from the center to center of the post. No payment will be made for the post cap or panel cap.

BASIS OF PAYMENT:

The unit price bid per square meter of the noise barrier wall system shall include the cost of all labor, materials and equipment necessary to complete the work. Excavation, backfill, disposal of surplus material, final grading along the wall, posts, caps, footings, attachment hardware and the concrete sealer shall be included in the cost of this item. The cost for clearing and grubbing will be paid under its respective item.

This specification is
DisApproved