

ITEM 04607.9909 M -PRECAST CONCRETE NOISE BARRIER SYSTEM, PIER MOUNTED

DESCRIPTION:

This work shall consist of furnishing and erecting a noise barrier wall at the locations and to the elevations indicated on the plans or as ordered by the Engineer.

MATERIALS:

The precast concrete noise barrier shall meet the material requirements of 704-03 Precast Concrete - General with the following modifications and additions:

- A. Precast Concrete: The concrete for precast panels and posts 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.
- B. Cast In Place Concrete: The concrete for cast in place piers and footings shall be Class A meeting the requirements of Section 501 Portland Cement Concrete - General.
- C. Reinforcing Steel: Reinforcing steel used in precast concrete panels and posts shall be epoxy coated.
- D. Coarse Aggregate: The coarse aggregate, used in precast components with an exposed aggregate finish, shall be screened gravel with a size No. 1 gradation. A coarse aggregate gradation meeting the requirements of ASTM C 33, size No. 67 may be used as an alternate to size No. 1. The screened gravel shall be brown in color. Samples, (1-Gallon Each) shall be submitted to the Regional Director for approval prior to the start of production.
- E. Miscellaneous Materials: Caulk shall meet the requirements of Section 705-06. Backer rod shall be polyethylene conforming to ASTM D3204, Type I. Neoprene pads shall meet the requirements of Section 728-01 or 728-02. 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.

DESIGN:

The contractor shall design the precast concrete noise barrier system in accordance with these specifications and the contract drawings. A professional engineer licensed to practice in New York State shall stamp the design calculations and shop drawings.

The design calculations and shop drawings shall be submitted to the Department for review and approval in accordance with procedural directives of the Materials Bureau. No components

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shall be fabricated until design calculations and shop drawings have been approved by the Department.

The noise barrier system design shall include the details for connecting the posts to the footing and for connecting the panels to the posts. The details shall include the sizes of all bolts, nuts, washers, plates, and shapes to be used along with the applicable material specifications for them. The panel to post connection shall be designed to be as inconspicuous as possible.

The design of the noise barrier system components shall conform to the A.A.S.H.T.O. Guide Specifications for the Structural Design of Sound Barriers, 1989.

The minimum design loads for the noise barrier system are given on the plans.

FABRICATION:

The fabrication, curing, and repair requirements for precast components shall meet the requirements of 704-03. Precast Concrete – General, with the following modifications and additions:

- A. Fabrication: Panels shall be full height with no horizontal joints.

One face of the wall panels shall have completely covered, uniform surface of exposed aggregate. The depth of exposure shall be minimum of 40% of the primary size dimension of the coarse aggregate exposed. The depth of exposure shall be measured by laying a straight edge across the plane of the wall faces and measuring back to the concrete matrix. The other face of the wall panels shall have a form liner finish. (See Contract Plans for form liner style required).

Three (3) 610 mm x 610 mm samples of the panel with the proposed surface treatments, including color stain and sealer, shall be submitted to the Regional Director for approval prior to production of the panels. One (1) additional sample panel will be produced with the same manufacturing process, have no color stain or sealer applied to it, and remain at the precast facility. No panels shall be fabricated until written approval of the samples is given. When the samples submitted to the Regional Director are approved, the unstained, unsealed sample, that remained at the plant, will be used by the Department's precast plant inspector to evaluate the visual acceptability of the panels produced for the project. When comparing production units against visual standards, there shall be minimal color and texture variations from the standard, when viewed in good typical lighting at a 6 m distance. When viewed alone, production units shall show no obvious imperfections or evidence of repairs other than minimal color and texture variations when viewed in good typical lighting at a 6 m distance. Final acceptance of the panels will occur at the project.

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The concrete posts shall have a smooth finish.

- B. Repair: The fabricator shall submit, to the Materials Bureau for approval, a procedure for repairing damaged areas in the exposed aggregate and form liner finish. No repairs to the exposed aggregate or form liner finish shall be made until a procedure has been approved.

ACCEPTANCE:

The sampling and testing, shipping and basis of acceptance requirements for precast components shall meet the requirements of 704-03 Precast Concrete - General.

CONSTRUCTION DETAILS:

The construction details from the following subsections shall apply:

Structure Excavation	206-3
Structural Concrete	555-3

Holes for post piers shall be pre-augered, true and plumb as approved by the Engineer In Charge, to the depth and diameter shown on the plans. Precautions shall be taken to protect the holes from collapse. Holes shall contain no free water at the time of concrete placement. Holes shall then be filled with Class A concrete in direct contact with soil, properly consolidated to a point 150 mm below the ground surface.

The Contractor shall lift, place, and secure precast concrete wall units in accordance with manufacturer's instructions and approved Shop Drawings. Follow erection procedures and sequences of erection as recommended by precast concrete wall manufacturer and as acceptable to the Engineer In Charge.

Units having any dimension smaller or larger than required by panel and post tolerances or damaged during installation, will be rejected if the appearance or function of the structure is adversely affected. Repair of damaged exposed surfaces shall be made at the Contractor's expense in accordance with the Manufacturer's recommendations, or at the Engineer's direction.

Posts shall be true and plumb within 13 mm of the total height. Top of posts and panel shall be within 13 mm of the elevations noted on the Plan profiles. The Contractor shall perform any required grading between the posts to provide a continuous and smooth ground line which will meet the tolerances shown on the drawings for the distance between the bottom of the panel and the ground surface.

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METHOD OF MEASUREMENT:

Noise barrier wall will be measured for payment by the number of square meters of barrier satisfactorily completed in accordance with this specification. The number of square meters will be computed using the following payment lines:

Upper payment line shall be set at the top of noise wall elevations shown on the noise barrier profiles or as ordered by the Engineer.

Lower payment lines shall be set at the final grade elevations shown on the noise barrier profiles or as ordered by the Engineer.

Longitudinal payment lines shall be the outer extremities of the wall, measured along the breakpoint lines as shown on the plans or noise barrier profiles.

Only one side of the proposed wall will be measured for payment!

No additional payment will be made for the canted panels.

BASIS OF PAYMENT:

The unit bid price per square meter shall include the cost of furnishing all labor, materials, and equipment necessary to perform the work: Excavation, backfill, hardware (anchor bolts, nuts, washers, etc.), final grading along the noisewall, and the cost incurred in the event of royalties is also included.