

**ITEM 04607.990101 M - PRECAST CONCRETE NOISE BARRIER SYSTEM,
EXPOSED AGGREGATE FINISH, PIER MOUNTED**

DESCRIPTION:

This work shall consist of furnishing and erecting a noise barrier wall system 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, caps 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, posts, and caps 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. Sealer Material:

Sealer on all faces of wall panels shall be a transparent, non-glossy 100% acrylic (methyl methacrylate) water based emulsion to protect and waterproof the panels. Material shall be unaffected by atmospheric contaminants from car or industrial exhaust, fuels, and roadway salts and meet the following ASTM standards:

- 1. D-1653 - Maximum Moisture Vapor Transmission of 0.550 mgm/cm²/mm/24 hours.
- 2. C-291 - 60 cycles without deterioration.

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3. E-239 - 800 hour exposure without change in appearance.
- F. 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.

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.

Panels, caps, and posts shall be natural concrete color. Both faces 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.

Three (3) 600 mm x 600 mm samples of the panel with the proposed surface treatments, two including sealer, one without, shall be produced for approval prior to production of the panels. No panels shall be fabricated until written approval of the samples is given. When the samples submitted to the Regional Director are approved, the 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. To be acceptable, the panels produced for the project must be a reasonable visual match to this sample. Final acceptance of the panels will occur at the project subsequent to the satisfactory application of the specified sealer.

The concrete caps and 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 finish. No repairs to the exposed aggregate finish shall be made until a procedure has been approved.

ACCEPTANCE:

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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 Contractor shall submit shop drawings at least 45 days before fabrication begins.

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, 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.

Units having any dimension smaller or larger than required by panel, post and cap 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 15 mm of the total height. Top of posts and panel caps shall be within 15 mm of the elevations noted on the Plan profiles. 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.

Sealing of all panel faces, caps and posts using an approved acrylic sealer shall be performed in the field. Two coats of sealer material shall be provided in accordance with all manufacturer's recommendations.

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METHOD OF MEASUREMENT:

Noise barrier wall erected on land 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 (including posts), 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.

BASIS OF PAYMENT:

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