

**ITEM 10607.9969 M - FURNISH AND INSTALL NOISE BARRIER POSTS AND PANELS ON EXISTING CONCRETE FOOTINGS**

**DESCRIPTION**

This work shall consist of furnishing and erecting noise barriers of the type and size, and at the locations shown on the plans or as directed by the Engineer, on existing concrete footings.

All noise barriers shall consist of posts, panels, base plates, anchor bolts and all other associated members and attachments necessary to fabricate and erect sound abatement structures.

**MATERIALS**

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

A. Concrete for Posts and Panels

Concrete for precast panels and posts shall have a minimum compressive strength of 35 MPa at 28 days after casting. Concrete for panels and posts shall have an integral color pigment.

B. Structural Steel

Steel shall meet the requirements of Subsection 564-2 & 715-01.

1. Steel base plates for the post and panel shall be fabricated from ASTM A572 M steel and galvanized per subsection 719-01, Type II.
2. Anchor bolts shall be galvanized ASTM A449 M conforming to Subsection 723-60. Nuts and washers shall be galvanized ASTM A449 M. Headless bolts shall be galvanized ASTM A307 M, hot dipped in accordance with Subsection 719-01, Type II.

C. Integral Color and Anti-Graffiti Coating

1. Integral Color

The precast concrete wall panels shall be integrally colored using a pigment coloring system meeting the requirements of ASTM C979. Pigment for integrally coloring concrete shall be a chemically pure material pigment, manufactured by a company with proven color mixes capable of producing approved custom colors complying with all environmental

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codes and ordinances and as approved by the Engineer. The admixture color shall produce a color conforming to the Federal Standard 595 B. The color shall be as indicated on the plans.

2. Anti-graffiti Coating

Exposed noise panels and concrete posts shall receive an anti-graffiti coating where indicated on the plans and applied prior to the erection of the noise barrier. The anti-graffiti coating shall be a two component, oil-free, non-yellowing, aliphatic, polyester polyurethane coating. The material shall be approved by the Engineer prior to its application.

D. Form liners

Form liners shall be of elastomeric type of the patterns indicated on plans. 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 recommendation.

E. Backer Rod and Joint Sealer

The elastomeric sealant shall be polysulfide or polyurethane conforming to the requirements of Subsection 705-06.

The Backer Rod shall be polyethylene foam, conforming to ASTM D3204, Type I, as manufactured by; Dow Corning Corporation, Midland, Michigan; W.R. Meadows, Inc., Elgin, Illinois; Nomaco, Inc., Ansonia, Connecticut; Sonneborn Building Products, Division Contech, Minneapolis, Minnesota; Woodmont Products, Inc., Huntingdon Valley, PA; or approved equal.

F. Miscellaneous

The materials listed below shall conform to the following subsections:

Concrete Grouting Material	701-05
Epoxy Polysulfide Grout	721-03
Neoprene Pads	728-01 or 728-02

Additional materials required specifically for use with structural concrete items shall meet the requirements of Subsections 556-2.01 and 556-2.02.

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Fabrication (Concrete Panels and Posts)

The noise barrier shall meet the fabrication curing and repair requirements of 704-03 Precast Concrete - General with the following modifications and additions.

A. General

Panels and posts shall be fabricated to conform to the shapes, sizes, textures, and colors shown on the plans and duplicate, as close as possible, the pattern and colors of the existing noise barrier being extended within the project limits. The reinforcement shall be as shown on the plans.

Six (6) complete sets of working drawings for the precast concrete panels and posts shall be submitted to the Materials Bureau for approval. The processing, approval, and transmittal of working drawings will be in accordance with procedural directives of the Materials Bureau.

The manufacturer shall produce panels and posts that are uniform in appearance. The units shall be cast in steel forms with elastomeric form liners of specified textures.

The panels and concrete posts shall have a surface texture treatment on both the highway and residential sides as shown on the plans. The panel fabricator shall stipulate on the shop drawings the method he intends to use to achieve the above stated surface treatments. A 600 mm x 600 mm x 100 mm sample of the panel with the integral color and with all proposed surface treatments shall be submitted to the Engineer for color approval prior to production of the sample noise barrier panels. The panel manufacturer shall then construct, at his plant or at a location determined by the Engineer, an acceptable sample noise barrier wall consisting of three posts and two panels (One with and one without the anti-graffiti coating). The wall shall be a minimum of 5.5 meters high and shall be the same size and configuration as the noise barriers on the actual project. These test posts and panels will be used to determine the acceptability of the various surface treatments, color, and quality of construction of both the roadway and residential sides of the noise barrier. If test sections are found to be unacceptable, the panel manufacturer shall make additional samples until an

acceptable product is produced. Any additional posts and panels will be made at the Contractor's expense.

No panels for the actual noise barrier shall be fabricated until written approval of the sample noise barrier is given. Once these posts and panels have been approved, they

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shall be retained and used as the standards to determine acceptability of production posts and panels. The panels may be used on the project at the end of precasting operations when released by the Engineer.

**B. Integrally Colored Concrete**

The exact quantity of pigment to be added shall be determined based on the preparation, examination and approval of the 600 mm x 600 mm x 100 mm test panel or panels to produce the color in the materials Subsection C.1 of this specification.

The tint used for all the concrete in the posts and panels shall be from the same manufacturer.

A high quality form release oil, compatible with the integral color shall be used.

**C. Acceptance**

The sampling and testing, shipping and basis of acceptance for precast concrete noise barrier shall be in accordance with the requirements of 704-03 Precast Concrete - General.

**CONSTRUCTION DETAILS**

The Contractor is responsible for inspecting and verifying footing locations/elevations and required panel dimensions prior to fabrication. In addition, the Contractor shall notify the Engineer of any footing damage or deficiencies identified during the inspection. Posts shall be set true and plumb. The Contractor shall drill and grout anchor bolts into the existing concrete footings using an approved jig method to set post plate anchor bolts to assure proper center line to center line spacing and plumbness of posts. Anchor bolts shall be installed in accordance with the requirements of subsections 586-2 and 586-3 of the Standard Specifications. The spacing tolerance between center to center of footing shall not exceed the dimension shown on contract drawing NBD-1. The Contractor is responsible for adjusting the panel widths, as required, to meet the center to center tolerance. The cost of fabricating variable width panels to meet existing conditions are included in the cost of the item.

The panels shall be positioned in the slots of adjacent posts. Polyethylene rod and neoprene pads shall be placed as shown on the plans. After the posts are set in their final, truly vertical, position the space between the base plate and the top of the footing shall be filled with grout meeting the requirements of Section 701-05, Concrete Grouting Material. The requirements of Subsection 568-3.02 shall apply.

The Contractor shall have a company representative from the noise barrier manufacturer present at the site as ordered by the Engineer during erection of the noise wall posts and panels

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to provide technical assistance. The representative must be on site during the first 3 days of noise barrier erection.

The Contractor shall perform any required grading between the posts to provide a continuous and smooth ground line which will produce no openings between the bottom of the panel and the ground surface.

All minor defect repairs and repair procedures require approval by the Engineer.

**METHOD OF MEASUREMENT**

Furnishing and Installing Noise Barrier Posts and Panels on Existing Concrete Footings will be measured by the total number of square meters of the noise barrier measured from the top to the bottom of the wall panel and from center to center of post. Only one side of the barrier will be measured for payment.

**BASIS OF PAYMENT**

The unit price bid per square meter of Furnishing and Installing Noise Barrier Posts and Panels on Existing Concrete Footings shall include the cost of all labor, materials and equipment necessary to perform the work except that the grading will be paid for under the appropriate item. Structural steel (including reinforcing, anchor bolts, base plates, washers and nuts), drilling and grouting, for the purpose of payment, will be classified as part of the Noise Barrier System and will not be paid for under any other item. No additional payment will be made for the required samples or minor defect repairs.

Any damage to the existing concrete footings as a result of the contractor's operations will be repaired to the satisfaction of the Engineer, or replaced, at no additional cost to the State.