

ITEM 11607.9201 M - CONCRETE NOISE BARRIER WITH ARCHITECTURAL FINISH (ON GRADE)

ITEM 11607.9202 M - CONCRETE NOISE BARRIER WITH ARCHITECTURAL FINISH (ON STRUCTURE)

ITEM 11607.9203 M - ENVIRONMENTAL SHIELD ON STRUCTURE WITH ARCHITECTURAL FINISH

Reason for DisApproval:

- 1) There is no reference to Materials Precast QC/QA procedures in section 704-03.
- 2) Stain manufacturer is out of business
- 3) Other conflicts with 704-03.

Spec is DisApproved
by Materials Bureau

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DESCRIPTION

This work shall consist of furnishing and erecting concrete noise barriers with architectural finish at the locations and to the elevations shown on the Contract plans, as directed by the Engineer, and as herein specified.

MATERIALS

Concrete shall meet the requirements of Subsection 501-2 with the following additions:

1. Concrete for precast panels and posts shall have a minimum compressive strength of 35 Mpa at 28 days after casting and shall have an air content of $7\% \pm 2\%$. Panels shall be designed and constructed in accordance with the NYSDOT "Prestressed Concrete Construction Manual" (PCCM).
2. Bar reinforcement shall meet the requirements of Subsection 709-01, Grade 60.
3. Wire fabric mesh shall meet the requirements of Subsection 709-2.
4. Neoprene pads shall meet the requirements of either Subsection 728-01 or 728-02.
5. Structural steel for clip angles and miscellaneous attachment hardware shall be ASTM A36 meeting the requirements of Subsection 715-01. All structural steel shall be hot dipped galvanized in accordance with Subsection 719-01, Type I.
6. Bolts, nuts and washers shall conform to ASTM A325 Subsection 715-14. All bolts, nuts and washers shall be galvanized in accordance with Subsection 719-01, Type II.
7. Spacer shims shall be horseshoe shaped and constructed of a multi polymer plastic suitable for shimming.
8. Pigment admixture for integrally colored concrete shall meet the requirements of ASTM C979. The color of the pigment will be subject to approval by the Engineer and shall closely match the color of the acrylic stain. The Contractor shall supply to the Engineer color chips or color samples produced by the pigment manufacturer prior to pouring precast concrete panels and posts.

Acrylic stain for precast concrete panels and posts shall be as follows:

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- A. General The color stain shall be standard grade Geotone Stain as manufactured by G.C.S. Coating, Inc., Monaca, PA 15061 or an equivalent product approved by the materials Bureau.

The color stain shall be a 100% acrylic, water repellent stain which provides a uniform tint to the concrete surface, and is resistant to fading or damage due to ultraviolet light, salts and acids caused by automobile emissions.

If an alternate stain product is proposed, the Contractor shall submit to the Engineer, two 100 ml (minimum) samples of the proposed product to the materials bureau for testing.

The samples shall be of a color acceptable to the Engineer. Accompanying the samples submitted shall be two sets each of the manufacturer's application instructions and product safety data sheets. Samples shall be received by the Materials Bureau at least 60 days prior to the intended use of the product.

- B. Color The color of the stain used will be as specified on the plans. The Contractor shall supply to the Engineer color chips or color samples produced by the stain manufacturer before any staining work is begun.
- C. Basis of Acceptance The stain product used will be accepted based on the manufacturer's certificate or label identifying the product supplied as being standard grade Geotone Stain produced G.C.S Inc., after the color has been approved by the Engineer.

In the case of an alternate stain product, the product will be accepted based on a written statement from the Materials Bureau describing an alternate stain product which has been tested and approved for use under this specification, plus the manufacturer's certificate or label identifying the product supplied as being the alternate stain product which has been tested and approved by the Materials Bureau, after the color has been approved by the Engineer.

Fabrication of Precast Concrete Panels and Posts

Precast concrete panels and posts shall conform to the shapes and sizes shown on the Contract plans. The requirements of Section 500 of the PCCM shall apply except as follows:

- A. Sections 525.1, 525.2, 530.2, 540, 560.4 and 585.2 shall not apply.
- B. Panels shall be cast vertically so that architectural finish form liner can be applied on either or both faces of the panel as shown on the contract plans.

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Alternatively, the contractor may elect to cast the panels horizontally with a form liner on the bottom of the form using a stamping process to obtain the desired form liner surface on the top.

C. Exposed surfaces of precast concrete posts shall have a smooth finish

D. Exposed concrete surfaces for precast concrete panels shall have an architecturally patterned surface as shown on the Contract Plans. No form release agents shall be used on surfaces to be coated with acrylic stain. The form liners for the patterns shall:

1. Produce the pattern required by the plans.
2. Be composed of a material(s) that will not bond to the concrete.
3. Be attachable to standard plywood or steel concrete forms, such that no distortion or stray markings occur within the concrete surfaces.

Special care shall be taken after installation to ensure that all form liner surfaces are thoroughly cleaned of all stray material of any nature. No concrete shall be placed prior to the Engineer's inspection and approval of form liner surfaces.

After removal of forms, the Engineer will inspect architecturally patterned concrete surfaces. All such surfaces which do not exhibit the required architectural patterns shall be repaired in a manner satisfactory to the Engineer at no cost to the State. The repair shall match the concrete surface. Concrete repair material, if used, shall meet the requirements of 701-04.

Panels which are deemed by the Engineer not to be repairable will be rejected.

E. The dimensions of the concrete panels and posts shall be as shown on the plans with the following permissible tolerances:

1. Width: ± 6.25 mm
2. Length: ± 6.25 mm
3. Height: 6.25 mm

Sample Panels

The Contractor shall construct two 1.83 m x 1.83 m sample panels for approval by the Engineer to demonstrate the construction techniques. Each side of the two sample panels shall have a different one of the proposed form liners. Materials used in the sample panels including concrete pigment shall be the actual materials to be used in the construction of the final product. If the samples are rejected by the Engineer, the Contractor shall construct additional sample panels as required until Engineer's approval is granted.

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Repair (Panel and Posts)

Panels and posts that contain minor defects caused by manufacture or mishandling may be repaired if so approved by the Engineer. Minor defects are defined as small holes (less than 25 mm in diameter) or spalls (less than 13 square centimeters) that do not penetrate deeper than the steel reinforcement. Repairs shall be made using a concrete repair material conforming to the requirements of Subsection 701-04 and have a color similar to that of the unit. The repair shall be finished to the correct shape and cured. All repairs must be made to the satisfaction of the Engineer.

Panels and posts having honeycombing, cracks, or spalls larger than those previously defined are not acceptable for repair and will be rejected.

Basis of Acceptance

The materials for this item will be accepted for shipment based upon the Inspector's mark.

CONSTRUCTION DETAILS

Acrylic stain on precast concrete posts and panels shall be shop applied as follows:

- A. General The concrete surface to be stained shall be clean, dry, fully cured and free from any material which might inhibit the acceptance of color stain. All repairs to the concrete surface shall be performed prior to the application of the stain.
- B. Surface Preparation After the concrete surface has been fully cured, the Contractor shall clean the surface of all dust and soil by water washing or other method approved by the Engineer. Prior to cleaning the concrete surface, the Contractor shall remove loose scale or laitance from the concrete surface by wire brushing or other method approved by the Engineer.
- C. Equipment The stain shall be applied to the concrete surface using airless spray equipment. Roller or brush application will not be permitted.
- D. Application The concrete surface shall be completely dry before application begins. The stain shall be applied in at least two separate coats according to the limitations and provisions of the manufacturer's technical data sheets and product application instructions.

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The Contractor shall exercise due care to protect structures and installations adjacent to the work area from overspray. The Engineer will terminate spraying at any time if he determines that satisfactory results in either spray application or overspray protection are not being met.

- E. Any coated areas damaged during shipment or installation shall be touched up in the field in accordance with the manufacturer's recommendations and to the satisfaction of the Engineer.

Construction details of Subsection 206-3, Structure Excavation shall apply.

Holes for post footings for concrete noise barriers installed on grade shall be pre-augered, true and plumb as approved by the engineer, to the depth and diameter shown on the Contract Plans. Precautions shall be taken to protect the holes from collapse. Holes shall contain no free water at the time of concrete placement. Concrete posts shall be centered in the holes, which shall then be filled with Class A concrete in direct contact with the soil, properly consolidated. Posts shall be true and plumb. Post footings shall cure a minimum of five days prior to setting any panels.

Panels shall be assembled as shown on the Contract Plans.

Neoprene Pads shall be placed between panels as shown on the Contract Plans. The neoprene pads shall form a continuous contact area between the adjacent concrete surfaces for the full length of joints.

METHOD OF MEASUREMENT

This work will be measured as the number of square meters of each panel furnished and installed in accordance with the Contract plans and this specification. The number of square meters will be computed as the number of square meters of wall panel surface. Only one face of panel will be measured. No separate measurement will be made for posts.

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BASIS OF PAYMENT

The unit price bid per square meter shall include the cost of furnishing all labor, material, and equipment necessary to complete the work, including all required excavations, concrete work, pigmentation and staining of concrete, and form liners.

Noise barriers and Environmental shields are eligible for partial payment in accordance with Subsection 109-04.

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