

To:			New York State Department of Transportation ENGINEERING INSTRUCTION	EI 04-025
SUPERSEDED BY <u>EI 06-010</u> EFFECTIVE 9/7/06				
Title: REVISED DETECTABLE WARNING SPECIAL SPECIFICATIONS				
Distribution:		Approved:		
☐ Manufacturers (18) ☒ Local Govt. (31) ☒ Agencies (32)	☐ Surveyors (33) ☒ Consultants (34) ☒ Contractors (39) ☐ ()	 Philip J. Clark P.E. Deputy Chief Engineer, Design		<u>06/02/04</u> Date

ADMINISTRATIVE INFORMATION:

- Effective Date: This Engineering Instruction (EI) is effective with projects submitted for the letting of January 13, 2005, but may be implemented earlier at the Region's discretion.
- Superseded Issuances: This issuance supersedes EI 03-025.
- Disposition of Issued Materials: The information provided in this EI will be incorporated into a future revision of the Standard Specifications.

PURPOSE: To issue special specifications for Detectable Warning Surfaces.

TECHNICAL INFORMATION:

- 608.03---91M Surface-Applied Detectable Warning replaces 608.01---91M Surface-Applied Detectable Warning.
- 608.04---91M Embedded Preformed Detectable Warning Units replaces 608.02---91M Embedded Preformed Detectable Warning Units.
- 608.51---24M Stamped Detectable Warning is being reissued with no changes.
- Cost Impact: It is anticipated that there will be no additional cost as a result of this EI.

IMPLEMENTATION:

- For Contracts submitted for the lettings of January 13, 2005, or later, the Approved List will be inserted into contract proposals by DQAB.
- Regions may implement this before the effective date but must include the item in the estimate and the special specification in the PS & E submission.
- Disapproved Specifications: 608.01---91M Surface-Applied Detectable Warning and 608.02---91M Embedded Preformed Detectable Warning Units.
- New Specifications: 608.03---91M Surface-Applied Detectable Warning and 608.04---91M Embedded Preformed Detectable Warning Units are being issued.
- 608.51---24M Stamped Detectable Warning is being reissued without changes.

TRANSMITTED MATERIALS: Special Specifications 608.03---91M Surface-Applied Detectable Warning, 608.04---91M Embedded Preformed Detectable Warning Units and 608.51---24M Stamped Detectable Warning.

DISTRIBUTION: This EI is being issued concurrently with EB 04-025 which issues provisional approved lists for Surface-Applied Detectable Warnings and Embedded Preformed Detectable Warning Units.

CONTACT: Bob Lohse, Landscape Architecture Bureau (518) 457-3528, rlohse@dot.state.ny.us
 Jim Patnaude, Materials Bureau (518) 485-7056, jpatnaude@dot.state.ny.us

ITEM 608.03 91M - SURFACE APPLIED DETECTABLE WARNING UNITS

DESCRIPTION

This work shall consist of furnishing and installing detectable warning surfaces on sidewalk curb ramps and other locations as indicated in the Contract Documents or as directed by the Engineer.

MATERIALS

General Requirements:

The Manufacturer shall supply certification that the detectable warning surface material meets the requirements of these specifications. Detectable warning surface materials shall:

- Meet the requirements of the current Standard Sheet for detectable warnings details.
- Be composed of a mixture of cementitious materials, or plastics, polymeric materials, resins, and pigments.
- Be an approximate visual match to the color specified in the Contract Documents, as determined by the Engineer, and be uniform in color and texture.
- Have a good appearance, free of cracks or other defects.
- Have clean-cut and well-defined edges.
- Adhere to Hot Mix Asphalt (HMA) or portland cement concrete (PCC) surfaces at a minimum air temperature of 16°C (60°F), and a minimum pavement temperature of 21°C (70°F).
- Be weather resistant and durable to normal pedestrian wear and maintenance activities.
- Show no appreciable fading, lifting, or shrinkage.
- Be capable of molding or fitting itself to the contours, breaks, and faults of HMA or PCC surfaces.
- Show no significant tearing, rollback, lifting, or other signs of poor adhesion.
- Have friction characteristics similar to a broomed PCC surface.

Physical Properties:

Standard	Property	Results
ASTM C-501	Wear Resistance	Wear Index: 15
MIL D-3124	Impact Resistance	9 N steel ball dropped twice from 2.4 meters produced no adhesion failure or cracking
ASTM E-96	Water Vap. Transm	100 grams/sq. meter/24 hours
MIL D-3134	Bonding Strength	2.2 MPa shear, 3.4 MPa pull

Pavement Surface Primer, if required:

- Recommended by the manufacturer.
- Conform to Federal, State, and Local regulations for the emission of volatile organic compounds (VOC).

Packaging and Shipment: Shipped and packaged in accordance with commercially accepted

05/26/04

ITEM 608.03 91M – SURFACE APPLIED DETECTABLE WARNING UNITS

standards. Clearly display the name of the product, the name and address of the manufacturer, the quantity of material, the date of manufacture, and the date of expiration or the shelf life, on each container or on the shipping invoice.

Basis of Materials Acceptance:

As listed in the most current Provisionally Approved Product list

OR approved equivalent by the Department:

In order to be approved as equal by the Department:

A. The Contractor shall submit three sets of the following to the Engineer, for distribution to the Materials Bureau and the Regional Landscape Architect and for the Engineer's approval, at least 30 days prior to the proposed installation:

- A minimum 300 mm x 300 mm sample of the Detectable Warning Surface Material.
- All associated product material literature.
- Preparation requirements.
- Equipment required for installation.
- Name(s) of suppliers.

OR

B. The Manufacturer shall demonstrate in writing and provide references that the detectable warning material, and the proposed system for bonding and/or fastening the detectable warnings to the substrate, have been satisfactorily used for roadway, sidewalk curb ramp, path, or exterior floor applications. Further, this use shall have been in locations exposed to high pedestrian traffic, and under weather conditions similar to those experienced in New York State, for a minimum period of five years.

The manufacturer of any product/system provisionally approved under method A or B shall submit to the Engineer a letter from the Materials Bureau indicating that the requirements of this specification have been met. The product must perform to the satisfaction of the Department for a minimum period of one year in order to be listed in this specification.

CONSTRUCTION DETAILS

All detectable warning surfaces shall meet the following requirements:

Prior to the start of work, the Contractor shall install a job-site sample for the approval of the Engineer. The sample size shall be 1.5 meters x 0.6 meters, minimum, and applied at a location selected by the Engineer. As many test areas will be applied as are necessary to achieve a sample area that meets the satisfaction of the Engineer. All subsequent work shall conform to the appearance of the approved sample. The sample shall not be incorporated into the work and will

ITEM 608.03 91M – SURFACE APPLIED DETECTABLE WARNING UNITS

be removed after approval.

Follow all applicable material suppliers and manufacturer's requirements for environmental conditions, surface preparation, installation procedures, curing procedures, and materials compatibility.

As a minimum, surfaces shall be cleaned by the use of mechanical sweepers, power brooming, or hand brooming. Curing compounds or heavier contamination shall be cleaned by abrasive blasting or other means as approved by the Engineer.

METHOD OF MEASUREMENT

Detectable Warning Surface will be measured as the number of square meters, measured to the nearest tenth (0.1) square meter, computed from the payment lines as shown in the Contract Documents.

BASIS OF PAYMENT

The unit price bid shall include all labor, material, and equipment necessary to complete the work, including job site samples. Sidewalk curb ramps and other locations, where detectable warnings will be furnished and installed, will be paid for under the sidewalk or other applicable items in the Contract.

ITEM 608.04 91M - EMBEDDED PREFORMED DETECTABLE WARNING UNITS

DESCRIPTION

This work shall consist of furnishing and installing embedded, preformed detectable warning units on, or adjacent to, sidewalk curb ramps and other locations, as indicated on the plans or elsewhere in the Contract Documents.

MATERIALS

General Requirements:

The Manufacturer shall supply certification that the detectable warning surface material meets the requirements of these specifications. Detectable warning surface materials shall:

- Meet the requirements of the current Standard Sheet for detectable warning details.
- Be composed of a mixture of cementitious material, clay or shale, plastics, polymeric materials, resins, or pigments.
- Be an approximate visual match to the color specified in the Contract Documents, as determined by the Engineer, and be uniform in color and texture.
- Have a good appearance, free of cracks or other defects
- Have clean-cut and well-defined edges.
- Where applicable, adhere to Hot Mix Asphalt (HMA) or portland cement concrete (PCC) surfaces at a minimum air temperature of 16°C (60°F), and a minimum pavement temperature of 21°C (70°F).
- Be weather resistant and durable to normal pedestrian wear and maintenance activities.
- Show no appreciable fading, lifting, or shrinkage.
- Have friction characteristics similar to a broomed PCC surface.

Physical Properties:

Property	Requirement
Compressive Strength, Min., 28 days	55 Mpa Minimum
Freeze-thaw Loss (25 Cycles, one per day, 10% NaCl solution)	1.0 % Maximum

Basis of Materials Acceptance:

As listed in the most current Provisionally Approved Product list **OR** approved equivalent by the Department:

In order to be approved as equal by the Department:

- A. The Contractor shall submit three sets of the following to the Engineer, for distribution to the Materials Bureau and the Regional Landscape Architect and for the Engineer's approval, at least 30 days prior to the proposed installation:
- A minimum 300 mm x 300 mm sample of the Detectable Warning Surface Material.
 - All associated product material literature.
 - Preparation requirements.
 - Equipment required for installation.
 - Name(s) of suppliers.

OR

ITEM 608.04 91M – EMBEDDED PREFORMED DETECTABLE WARNING UNITS

- B. The Manufacturer shall demonstrate in writing and provide references that the detectable warning unit has been satisfactorily used for roadway, sidewalk curb ramp, path, or exterior floor applications. Further, this use shall have been in locations exposed to high pedestrian traffic, and under weather conditions similar to those experienced in New York State, for a minimum period of five years.

The manufacturer of any product/system provisionally approved under method A or B shall submit to the Engineer a letter from the Materials Bureau indicating that the requirements of this specification have been met. The product must perform to the satisfaction of the Department for a minimum period of one year in order to be listed in this specification.

Field evaluation will consist of 1 year in service to determine acceptability to be used for future Department projects.

Field evaluation will not be required for manufacturers of Precast Concrete Pavers (§704-13), who appear on the Departments Approved List or for current NYSDOT Approved precast facilities submitting preformed detectable warning units.

CONSTRUCTION DETAILS

Preformed, embedded detectable warning units may be installed in plastic concrete, installed directly on existing subbase prior to placing concrete, inlaid on prepared concrete surfaces, or as otherwise recommended by the manufacturer or specified in the Contract Documents.

Follow all applicable material supplier's and manufacturer's requirements for environmental conditions, surface preparation, installation procedures, curing procedures, and materials compatibility.

METHOD OF MEASUREMENT

Detectable Warning Surface will be measured as the number of square meters, measured to the nearest tenth (0.1) square meter, computed from the payment lines shown in the Contract Documents.

BASIS OF PAYMENT

The unit price bid shall include all labor, material, and equipment necessary to complete the work, including job site samples. Sidewalk curb ramps and other locations where detectable warnings will be furnished and installed will be paid for under the sidewalk or other applicable items in the Contract.

ITEM 608.51 24M - STAMPED DETECTABLE WARNING

DESCRIPTION

This work shall consist of installing and stamping concrete with detectable warnings on or adjacent to sidewalk curb ramps and other locations, as indicated on the plans or elsewhere in the Contract Documents.

MATERIALS

Meet the requirements of the current Standard Sheet for detectable warnings details.

The material requirements and composition of concrete to be imprinted shall comply with the specifications for Class D concrete as outlined in Section 501 of the Standard Specifications.

The color shall be an approximate visual match to the color specified elsewhere in the Contract Documents, as determined by the Engineer. The color of the constructed detectable warning surfaces shall be uniform over the entire surface. The color shall be incorporated into the concrete surface immediately prior to stamping the detectable warnings, or integrally incorporated throughout the concrete mix. Color admixtures for integrally colored concrete shall meet the requirements of ASTM C979.

Imprinting tools shall be capable of imprinting the surface of the concrete with a uniform and aligned pattern meeting the required dimensions.

CONSTRUCTION DETAILS

Stamped detectable warnings shall be installed during construction of sidewalk curb ramps and other surfaces as specified elsewhere in the Contract Documents.

Apply 608-3.01 with the following modifications:

Prior to the start of work, the Contractor shall show evidence of successful completion of similar installations or provide a job-site sample for the approval of the Engineer. The sample size shall be 1.5 meters x .6 meters, minimum, and constructed at a location selected by the Engineer.

Color-hardening powder, if used to surface color the concrete, shall be applied to the finished concrete using the "dry-shake" method or as recommended by the manufacturer.

If required, as many test panels will be constructed as are necessary to achieve a sample panel that meets the satisfaction of the Engineer. All completed surfaces shall conform to the appearance of the approved sample, to the satisfaction of the Engineer. The sample shall not be incorporated into the work and will be removed after approval.

The Contractor is responsible for removing any material spatters from areas not included in the scope of the work.

The Contractor shall repair any damage that should arise from the installation or the clean-up effort.

ITEM 608.51 24M - STAMPED DETECTABLE WARNING

METHOD OF MEASUREMENT

Detectable Warning Surface will be measured as the number of square meters, measured to the nearest tenth (0.1) square meter, computed from the payment lines as shown on the Contract Documents.

BASIS OF PAYMENT

The unit price bid shall include all labor, materials, including concrete, and equipment necessary to complete the work as called for on the plans, including job site samples. Sidewalk curb ramps and other locations adjacent to detectable warning will be paid for under separate items.