

**ITEM 24608.50 M - DETECTABLE WARNING SURFACE**

**DESCRIPTION**

This work shall consist of furnishing and installing a detectable warning surface on sidewalk curb ramps or other locations as indicated on the plans or elsewhere in the contract documents. The detectable warning surface shall meet the dimensional details and other requirements as noted on the standard sheet and elsewhere in the contract documents.

**MATERIALS**

All detectable warning systems shall meet the following color and friction and requirements:

- The color of the detectable warning surface shall be dark gray, Munsell Book Notation BG-PB 3/5; dark brown, Munsell Book Notation 10YR 3/2; dark red, Munsell Book Notation 10R 3/6; or dark green, Munsell Book Notation 2.5G 3/6 as specified elsewhere in the Contract Documents. The color of the constructed detectable warning surfaces shall be uniform over the entire surface and shall be an approximate visual match to the color specified elsewhere in the Contract Documents as determined by the Engineer.
- The friction characteristics of completed detectable warning surfaces shall be approximately the same as the adjoining sidewalk or sidewalk curb ramp surfaces as determined by the Engineer.

The Contractor may elect to use any of the following detectable warning systems:

- 1. Stamped detectable warning systems.** Stamped detectable warning systems must be capable of uniformly providing the Department’s standard detectable warning pattern on sidewalk curb ramps and other surfaces constructed of the Department’s standard class of concrete for sidewalks. The color specified elsewhere in the Contract Documents shall be uniformly incorporated throughout the concrete mix, or incorporated into the concrete surface immediately prior to stamping the detectable warnings.
- 2. Surface applied detectable warning systems.** For surface applied detectable warning systems, the Manufacturer shall submit certified test results indicating compliance with the following requirements to the Director, Materials Bureau and the Engineer, at least 30 calendar days prior to proposed installation:

<b><u>STANDARD</u></b>	<b><u>PROPERTY</u></b>	<b><u>RESULTS</u></b>
ASTM-C-501 MIL-D-3124	Wear Resistance Impact Resistance	Wear Index: 25 9 N steel ball dropped twice from

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		2.4 meters produced no adhesion failure or cracking
ASTM E-96	Water Vap. Transm.	100 grams/sq. meter/24 hours
ASTM C-109	Compressive Strength	41 MPa average
ASTM D-C190	Tensile Strength	3 MPa
MIL D-3134	Bonding Strength	2.2 MPa shear, 3.4 MPa pull
ASTM C-293	Flexural Strength	13.0 MPa minimum
ASTM E-162	Fire Resistance	Flame spread index 0 Smoke deposited 1 mg.

Manufacturers of surface applied detectable warning systems shall certify that their materials comply with the volatile organic compound (VOC) requirements of the NYS Department of Environmental Conservation regulation 6NYCRR, Part 205, "Architectural Surface Coatings."

The detectable warning system shall be capable of providing the Department's standard detectable warning surface on sidewalk curb ramps and other surfaces constructed of the Department's standard class of concrete for sidewalks.

The color specified elsewhere in the Contract Documents shall be homogeneous throughout the thickness of the surface material.

- 3. Precast Portland cement concrete detectable warning systems.** Precast Portland cement concrete detectable warning systems shall be manufactured in accordance with the applicable materials specifications in Section 608 of the Standard Specifications.

The precast Portland cement detectable warning system shall be capable of providing the Department's standard detectable warning surface on sidewalk curb ramps and other applicable locations.

The color specified elsewhere in the Contract Documents shall be incorporated into the concrete during the precasting process.

**CONSTRUCTION DETAILS**

All detectable warning systems shall meet the following requirements:

Prior to the start of work, the Contractor shall show evidence of successful completion of similar installations and 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.

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As many test panels will be constructed as are necessary to achieve a sample panel that meets the satisfaction of the Engineer. All work 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 when ordered by the Engineer.

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

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.

Detectable warning systems selected by the Contractor shall meet the following construction details:

1. **Stamped detectable warning systems.** Stamped detectable warning systems shall be installed during construction of sidewalk curb ramps and other surfaces as specified elsewhere in the Contract Documents.
2. **Surface applied detectable warning systems.** The Contractor shall submit three copies of literature describing 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:
  - The Detectable Warning Surface Material
  - All associated materials
  - Preparation requirements
  - Equipment required
  - Name(s) of suppliers
  - Name(s) of subcontractor(s)

In addition, a minimum 300 mm x 300 mm sample of the Detectable Warning Surface Material shall be submitted to the Engineer for the Engineer's approval.

The Manufacturer shall demonstrate in writing and by providing references that the surface applied detectable warning surface material and the proposed system for bonding the detectable warnings to the substrate, if applicable, have been satisfactorily used for roadway, sidewalk curb ramp, path or exterior floor applications in high pedestrian use

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locations, under weather conditions similar to those experienced in New York State, for a minimum period of five years.

Installers of surface applied detectable warning systems shall be approved by the detectable warning surface material manufacturer. In no case shall the Contractor permit the use of any method, or application of any materials, by untrained personnel or non-approved installers of surface applied detectable warning systems. If a surface applied detectable warning system is used, the surface material manufacturer's certification of compliance with this requirement shall be provided to the Engineer.

- 3. Precast Portland cement concrete detectable warning systems.** Precast Portland cement concrete detectable warning systems shall be installed in accordance with the applicable construction details specified in Section 608 of the Standard Specifications.

**METHOD OF MEASUREMENT**

Detectable Warning Surface will be measured as the number of square meters, measured to the nearest tenth square meter, computed from the payment lines as shown on the standard sheet, or as directed by the Engineer.

**BASIS OF PAYMENT**

The unit price bid shall include all labor, material and equipment necessary to complete the work, including job site sample(s), repairs and clean-up.

Sidewalk curb ramps and other locations where detectable warnings will be furnished and installed will be paid for under the sidewalk or other applicable paving items in the Contract.