



**Department of  
Design and  
Construction**

**SPECIFICATION  
BULLETIN**

**SB  
21-004**

**Title: DETECTABLE WARNING UNITS**

Prepared:

12/23/2021

Richard Jones, P.E. CWI, CDT  
Executive Director, Specifications

Date

Approved:

12/23/2021

How Sheen Pau, P.E.  
Assistant Commissioner – Infrastructure Design

Date

**APPLICABILITY:**

- This Specification Bulletin (SB) is effective for projects advertised on or after 1/3/2022.

**SUPERSEDEANCE:**

- This SB supersedes the following SBs: **SB 17-011 - DETECTABLE WARNING TILE COLOR**

**ATTACHMENTS:**

- Attachment 1: Section 4.13 DWS – Detectable Warning Surface (4 pages)

**REVISIONS TO THE NEW YORK CITY DEPARTMENT OF TRANSPORTATION  
STANDARD HIGHWAY SPECIFICATIONS VOLUME 1 OF 2, DATED 8/1/15:**

All references contained below are to the New York City Department of Transportation Standard Highway Specifications, Dated August 1, 2015. Said Standard Highway Specifications are hereby revised as follows:

- Refer** to Page 230, Section 4.13 DE – Embedded Preformed Detectable Warning Units and Page 232, Section 4.13 DSA – Surface Applied Detectable Warning Units;  
**Replace** the Sections with the attached new Section 4.13 DWS – Detectable Warning Surface.

*Note: Revised paragraphs vs. Section 4.13 DE are marked with a bar in the right margin.*

## SECTION 4.13 DWS – Detectable Warning Surface

**4.13DWS.1. DESCRIPTION.** This work will consist of furnishing and installing detectable warning surface as indicated on the plans or elsewhere in the Contract Documents. The sidewalk surface as specified in the Contract Drawings must be finished with a detectable warning surface as specified herein.

### **4.13DWS.2. MATERIALS.**

A. GENERAL REQUIREMENTS: The Contractor must supply the Manufacturer's certification that the detectable warning surface material meets the requirements of these specifications, at least 30 calendar days prior to proposed installation. The detectable warning surface material must:

- 1) Meet the dimensional details and other requirements as noted on the New York City Department of Transportation's Standard Details of Construction Standard Drawing No. H-1011.
- 2) Be composed of cementitious material, steel, iron, clay, shale, plastics, polymeric materials, resins, pigments, or as approved by the Engineer.
- 3) Color must contrast visually with adjacent walking surfaces (either light-on-dark or dark-on-light per the US Department of Justice (DOJ) ADA Standards for Accessible Design, Section 705.1.3) as approved by the Engineer, and shall be as follows:
  - a) The following sidewalk materials, or those that are visually approximate, must utilize detectable warning surfaces that are an approximate visual match to the Red color of SAE Standard AMS-STD-595 #31350:
    - i) Unpigmented concrete per **Section 4.13**
    - ii) Unpigmented concrete with silicon carbide surface treatment per **Section 4.13**
  - b) The following sidewalk materials, or those that are visually approximate, must utilize detectable warning surfaces that are an approximate visual match to the Bright White of SAE Standard AMS-STD-595 #27925:
    - i) "Commercial Grey" pigmented concrete per **Section 4.13**
    - ii) "Commercial Grey" pigmented concrete with silicon carbide surface treatment per **Section 4.13**
    - iii) "Granite" pigmented concrete per **Section 4.13**
    - iv) Stony Creek pink granite
    - v) Virginia Mist granite, including the Waterstorm, Thermal, and Split finishes
    - vi) Red brick pavers
    - vii) Black asphalt
- 4) Be uniform in color and texture.
- 5) Have a good appearance, free of cracks or other defects.
- 6) Have clean-cut and well-defined edges.
- 7) Be weather resistant and durable to normal pedestrian wear and maintenance activities.
- 8) Show no appreciable fading, lifting, or shrinkage.
- 9) Have friction characteristics similar to a broomed Portland cement concrete sidewalk surface as determined by the Engineer.

- 10) Setting bed material and/or surface preparation materials for installation of detectable warning units must be in accordance with the manufacturer's recommendations.
- 11) Adhere to granite slabs, hot mix asphalt (HMA), or Portland cement concrete surfaces, as applicable.

B. PHYSICAL PROPERTIES:

<u>PROPERTY</u>	<u>REQUIREMENTS</u>
Compressive Strength, Min., 28 days	8 ksi (55 Mpa) Min
Freeze-thaw Loss (25 Cycles, one per day, 10% NaCl solution)	1.0% Max

C. PACKAGING AND SHIPMENT: detectable warning surface must be shipped in accordance with commercially accepted standards. The following information must be marked on each package or on the shipping invoice: the name of the product, the name and address of the manufacturer, and the quantity of material.

D. BASIS OF MATERIALS ACCEPTANCE: Acceptance of materials will be based upon it being listed in the most current New York State Department of Transportation's Approved List of Detectable Warning Units.

**4.13DWS.3. CONSTRUCTION DETAILS.**

A. PLASTIC CONCRETE INSTALLATIONS

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. The thickness of concrete sidewalk below the embedded detectable warning units is four (4") or seven (7") inches, as specified in the Contract Documents; the total thickness of sidewalk from the top of the embedded detectable warning units to the base of the concrete sidewalk must be the specified concrete thickness plus the thickness of the embedded detectable warning units. The concrete transition from the detectable warning surface location to adjoining concrete sidewalk must not be sloped greater than 50% (1:1).

Detectable warning units must not bridge between two concrete elements (i.e., not installed over the joint between a curb and sidewalk slab). Detectable warning units must be installed per manufacturer's written recommendations. Substrate edge conditions must be per manufacturer's written recommendation.

The Contractor will be required to follow all applicable manufacturer's requirements for environmental conditions, surface preparations, installation procedures, curing procedures, and materials compatibility.

Immediately prior to setting each warning unit in place, the installer must mortar the bottom of each unit to ensure that full contact is made with the setting bed after each unit is set firmly and evenly bedded to the required grade and pitch, and brought to an even surface across joints. After the first unit is set in place and periodically thereafter as directed by the Engineer, to verify the Contractor's method of work, warning units shall be lifted immediately after setting in place to verify that full contact is being made with the setting bed. Any gaps must be filled with additional wet bedding mixture, as may be required, and the work method adjusted, as approved by the Engineer, to prevent the occurrence of voids.

Preformed detectable warning units (excluding their raised truncated domes) must be set flush with a top surface elevation tolerance of 1/16" between adjacent units but not more than  $\pm 1/32$ " at perimeters between pavers and adjacent curb or sidewalk surfaces.

## B. SURFACE INSTALLATIONS

Surface applied detectable warning units may be applied to existing curb ramps, formed and bonded to existing granite slabs, Hot Mix Asphalt (HMA) or Portland cement concrete (PCC) surfaces, or as otherwise directed by the manufacturer or specified in the Contract Documents.

Detectable warning units must not bridge between two concrete elements (i.e., not installed over the joint between a curb and sidewalk slab).

The Contractor must follow all applicable manufacturer's requirements for environmental conditions, surface preparation, installation procedures, curing procedures, and materials compatibility.

Prior to the start of work, the Contractor must show evidence of successful completion of similar installations and provide a job site sample for the approval of the Engineer. The sample size must be five (5') feet x two (2') feet, minimum, and applied at a location selected by the Engineer. All subsequent work shall conform to the appearance of the approved sample. The sample must not be incorporated into the work and shall be removed when ordered by the Engineer.

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

At a minimum, surfaces must be cleaned using 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.

Differences in elevation between adjacent surfaces of sidewalk, curb and the detectable warning surface must not be more than 3/32" at the perimeters.

For temporary installation, the surface beneath the detectable warning surface must be repaired to the satisfaction of the Engineer. Any metal anchors must be removed or recessed at least 1-1/2" below the surface and anchor holes must be filled with mortar. Any mastic or adhesive must be removed.

### **4.13DWS.4. MEASUREMENT.**

The quantity of Embedded Preformed Detectable Warning Units, Embedded Preformed Radial Detectable Warning Units, and Surface Applied Detectable Warning Units to be measured for payment will be the number of square feet, measured to the nearest tenth (0.1) of a square foot, installed to the satisfaction of the Engineer.

The quantity of Surface Applied Detectable Warning Units (temporary) to be measured for payment will be the number of square feet, measured to the nearest tenth (0.1) of a square foot, installed, maintained, and removed to the satisfaction of the Engineer.

**4.13DWS.5. PRICE TO COVER.** The unit price bid per square foot must include all labor, material, equipment, insurance, and incidentals necessary to complete the work, including but not limited to bedding material, job site sample(s), repairs, surface preparation, restoration of substrate surface, and clean up.

Payment for items Embedded Preformed Detectable Warning Units and Embedded Preformed Radial Detectable Warning Units will be in addition to payment for the concrete sidewalk pavement item on which the preformed detectable warning unit is installed.

Additionally, no adjustment in payment will be made for concrete removed to accommodate embedded units.

*Payment will be made under:*

Item No.	Item	Pay Unit
4.13 DE	EMBEDDED PREFORMED DETECTABLE WARNING UNITS	S.F.
4.13 DER	EMBEDDED PREFORMED RADIAL DETECTABLE WARNING UNITS	S.F.
4.13 DSA	SURFACE APPLIED DETECTABLE WARNING UNITS	S.F.
4.13 DSAT	SURFACE APPLIED DETECTABLE WARNING UNITS (TEMPORARY)	S.F.