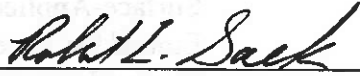


To: SUPERSEDED BY EC 10-027 EFFECTIVE 1/6/11		New York State Department of Transportation ENGINEERING INSTRUCTION	EI 06-010
Title: REVISED SPECIFICATIONS FOR DETECTABLE WARNING UNITS			
Distribution: ☐ Manufacturers (18) ☒ Local Govt. (31) ☒ Agencies (32) ☐ Surveyors (33) ☒ Consultants (34) ☒ Contractors (39) ☐ _____ ()		Approved:  Robert L. Sack, Deputy Chief Engineer, Technical Services 27 APR 06 Date	

ADMINISTRATIVE INFORMATION:

- This Engineering Instruction (EI) is effective beginning with projects submitted for the letting of September 7, 2006.
- This EI supersedes EI 04-025.
- This EI supersedes the Provisional Approved List of Detectable Warning Suppliers issued with Engineering Bulletin (EB) 04-025.
- The shelf notes transmitted by this EI will be incorporated into a future revision of the Standard Specifications.

PURPOSE:

This EI:

- Creates new materials items for detectable warning units.
- Revises Section 608 for construction of detectable warning units.
- Disapproves special specifications used for detectable warning units.

TECHNICAL INFORMATION:

- Design guidance for detectable warnings, issued with EI 04-038, remains current. Additional design guidance is available in Chapter 18 of the Highway Design Manual, Facilities for Pedestrians and Bicycles. Recommended design choices for new construction are Embedded Detectable Warning Units or Stamped Detectable Warnings. Retrofitting or updating adjacent or opposing curb ramps to comply can be achieved using the Surface Applied Detectable Warning Units.
- Standard Specifications §726-01 Surface - Applied Detectable Warning Units and §726-02 Embedded Detectable Warning Units, issued with this EI, outline the material requirements necessary for Detectable Warning units to appear on the Department's Approved List.
- Revised Standard Specification Section 608, SIDEWALKS, DRIVEWAYS AND BICYCLE PATHS to include detectable warning units, which establishes materials and construction details and provides standard pay items.
- There will be no additional cost for these items. Current design practices incorporate detectable warnings when required.

IMPLEMENTATION:

- The Design Quality Assurance Bureau will insert the transmitted shelf notes into contract proposals beginning with projects submitted for the letting of September 7, 2006.

EI 06-010 Page 2 of 2

- The following special specifications are disapproved:

608.03----91M	Surface Applied Detectable Warning Units
608.04----91M	Embedded Preformed Detectable Warning Units
608.51----24M	Stamped Detectable Warning
675.60----10M	Detectable Tactile Warning Surface (Non-Metallic)

- The following new contract pay items are approved:

608.20	Surface-Applied Detectable Warning Units
608.21	Embedded Detectable Warning Units
608.22	Stamped Concrete Detectable Warning Units

TRANSMITTED MATERIALS:

The following shelf notes are attached to this EI:

Revised Section 608	Sidewalks, Driveways and Bicycle Paths
§726-01	Surface-Applied Detectable Warning Units
§726-02	Embedded Detectable Warning Units

BACKGROUND:

A detectable warning unit is a walkway surface treatment detectable by people with vision impairments, to alert them of their approach to streets and hazardous drop-offs. Section 4.29 of the Americans with Disabilities Act Accessibility Guidelines (ADAAG), requires detectable warnings on new and altered sidewalk curb ramps and at other locations. Stamped concrete is also a viable option for producing the required detectable warning pattern where required.

DISTRIBUTION:

The Approved List for Detectable Warning Units is available in pdf format located at http://www.dot.state.ny.us/tech_serv/mat/alme/menu.html

REFERENCES:

1. New York State Department of Transportation (NYSDOT) Metric Standard Sheets,
M608-3R3
M608-5R2
<http://www.dot.state.ny.us/caddinfo/design/stdsheets/stdsht.html>
2. NYSDOT EI 04-038, Design Guidance for Detectable Warnings at Curb Ramps and Other Pedestrian Crossings
<http://www.dot.state.ny.us/cmb/consult/eib/files/ei04038.pdf>

CONTACT:

Direct questions regarding this issuance to Jim Patnaude, Materials Bureau, (518) 485-7056.
jpatnaude@dot.state.ny.us

Make the following changes to the Standard Specifications of January 2, 2002:

Page 6-48, line 4 after "block paving." add:

"Furnish and install detectable warnings on sidewalk curb ramps and other locations as detailed in the contract documents or as directed by the Engineer."

Page 6-48, after line 24, add:

"Surface-applied Detectable Warning Units	726-01
Embedded Detectable Warning Units	726-02"

Page 6-49, after Line 25, add:

"608-2.06 Surface-Applied Detectable Warning Units. Surface-applied detectable warning units shall meet the requirements of Section §726-01 and shall be the color as specified in the Contract Documents to provide the required contrast, light-on-dark or dark-on-light, with the adjacent surface. If no color is specified, the color shall be dark gray Federal Standard 595B #36081 or darker. Setting bed material and/or surface preparation materials for installation of detectable warning units shall be in accordance with the manufacturer's recommendations.

608-2.07 Embedded Detectable Warning Units. Embedded detectable warning units shall meet the requirements of Section §726-02 and shall be the color as specified in the Contract Documents to provide the required contrast, light-on-dark or dark-on-light, with the adjacent surface. If no color is specified, the color shall be dark gray Federal Standard 595B #36081, or darker. Setting bed material and/or surface preparation materials for installation of detectable warning units shall be in accordance with the manufacturer's recommendations.

608-2.08 Stamped Concrete Detectable Warnings. Imprinted or stamped concrete detectable warning units shall comply with the specifications for Class D concrete as outlined in Section 501 *Portland Cement Concrete - General*. The color of the constructed detectable warning shall be uniform over the entire surface. The color shall be an approximate visual match to the color specified in the contract documents. If no color is specified, the color shall be dark gray Federal Standard 595B #36081 or darker. The color shall be incorporated into the concrete surface immediately prior to stamping the detectable warnings, or integrally incorporated throughout the 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."

Page 6-52, after line 18, add:

"608-3.06 Surface-Applied Detectable Warning Units. Surface-applied detectable warning units may be applied to existing curb ramps, formed and bonded to existing curb ramps, or as otherwise directed by the manufacturer or specified in the Contract Documents.

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

608-3.07 Embedded Detectable Warning Units. 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 directed by the manufacturer or specified in the Contract Documents.

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

608-3.08 Stamped Concrete Detectable Warnings. Apply Section 608-3.01 with the following modifications:

Prior to the start of work, the Contractor shall provide a contract-site sample that meets the dimensional requirements of the current Standard Sheet for Detectable Warnings. The sample may be constructed as part of the contract.

Color hardening powder, if used to color the surface of the concrete, shall be applied to the finished concrete in accordance with the manufacturer's recommendations.

If required, construct as many test panels 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."

Page 6-52, after line 34, add:

"608-4.06 Surface-Applied Detectable Warning Units. Surface-applied detectable warning units 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.

608-4.07 Embedded Detectable Warning Units. Embedded Detectable Warning Units 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.

608-4.08 Stamped Concrete Detectable Warnings. Stamped concrete detectable warnings 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."

Page 6-53, after line 16, add:

"608-5.06 Surface-Applied Detectable Warning Units. The unit bid price per square meter shall include all labor, material, and equipment necessary to satisfactorily complete the work, including surface preparation.

608-5.07 Embedded Detectable Warning Units. The unit bid price per square meter shall include all labor, material, and equipment necessary to satisfactorily complete the work, including bedding material. No adjustment shall be made for concrete removed to accommodate embedded units.

608-5.08 Stamped Concrete Detectable Warnings. The unit bid price per square meter shall include all labor, material, and equipment necessary to satisfactorily complete the work, including construction of contract site sample(s)."

Page 6-53, after line 37, add:

"608.20	Surface-Applied Detectable Warning Units	Square Meter
608.21	Embedded Detectable Warning Units	Square Meter

Page 7-256, **delete** line 38 and **replace** with:

“SECTION 726 – DETECTABLE WARNING UNITS

726-01 – SURFACE-APPLIED DETECTABLE WARNING UNITS

SCOPE. This specification covers the material and quality requirements for surface-applied detectable warning units.

MATERIAL REQUIREMENTS. Surface-applied detectable warning units shall conform to the dimensions shown on the current standard sheet for detectable warnings.

Units shall be composed of cementitious materials, steel, iron, plastics, polymeric materials, resins, pigments, or as approved by the Director, Materials Bureau. The units shall be an approximate visual match to the color specified in the Contract Documents. Units shall provide the required contrast (light-on-dark or dark-on-light) with the adjacent curb ramp or other applicable walkway. The units shall be uniform in color and texture, be free of cracks or other defects, and have clean-cut and well-defined edges.

Units shall adhere to hot mix asphalt (HMA) or Portland cement concrete (PCC) surfaces at a minimum air temperature of 16C°, and a minimum surface substrate temperature of 21C°. They shall be weather resistant and durable to normal pedestrian wear and maintenance activities, and show no appreciable fading, lifting, or shrinkage. The units shall be capable of molding or fitting itself to the contours, breaks, and faults of HMA or PCC surfaces, and show no significant tearing, rollback, lifting, or other signs of poor adhesion. The units shall have friction characteristics similar to a broomed PCC surface.

The detectable warning units shall meet the following physical properties:

Standard	Property	Results
ASTM C-501	Wear Resistance	Wear Index: ≥ 15
ASTM C1028	Slip Resistance	Dry Coefficient of friction 0.8 minimum
ASTM E-96	Water Vapor Transmission	100 grams/sq. meter/24 hours
Various	Adhesion/Bonding Strength	See Note*

*Note: Due to the various types of materials available, the Manufacturer shall certify, through independent laboratory testing, that the type of material used for detectable warnings will bond to a prepared surface.

PACKAGING AND SHIPMENT. Preformed, surface-applied, detectable warning units shall be shipped and packaged in accordance with commercially accepted standards. The following information shall 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.

BASIS OF ACCEPTANCE. Acceptance of this material for placement on the Approved List will be based on the manufacturer's certification of compliance with these requirements and in accordance with procedural directives of the Materials Bureau. Contract acceptance will be based on the manufacturer's name appearing on the Department's Approved List.

726-02 – EMBEDDED DETECTABLE WARNING UNITS

SCOPE. This specification covers the material and quality requirements for embedded detectable warning units.

MATERIAL REQUIREMENTS. Embedded detectable warning units shall conform to the dimensions shown on the current standard sheet for detectable warnings.

Units shall be composed of cementitious materials, steel, iron, clay, shale, plastics, polymeric materials, resins, pigments, or as approved by the Director, Materials Bureau. The units shall be an approximate visual match to the color specified in the Contract Documents. Units shall provide the required contrast (light-on-dark or dark-on-light) with the adjacent curb ramp or other applicable walkway. The units shall be uniform in color and texture, be free of cracks or other defects, and have clean-cut and well-defined edges.

Where applicable, the units shall adhere to hot mix asphalt (HMA) or Portland cement concrete (PCC) surfaces at a minimum air temperature of 16C°, and a minimum surface substrate temperature of 21C°. They shall be weather resistant and durable to normal pedestrian wear and maintenance activities, and show no appreciable fading, lifting, or shrinkage. The units shall have friction characteristics similar to a broomed PCC surface.

The detectable warning units shall meet the following physical properties:

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

PACKAGING AND SHIPMENT. Embedded detectable warning units shall be shipped and packaged in accordance with commercially accepted standards. The following information shall 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.

BASIS OF ACCEPTANCE. Acceptance of this material for placement on the Approved List will be based on the manufacturer's certification of compliance with these requirements and in accordance with procedural directives of the Materials Bureau. Contract acceptance will be based on the manufacturer's name appearing on the Department's Approved List."