



Florida Department of Transportation

RICK SCOTT
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

STEPHANIE KOPELOUSOS
SECRETARY

January 12, 2011

Monica Gourdine
Program Operations Engineer
Federal Highway Administration
545 John Knox Road, Suite 200
Tallahassee, Florida 32303

Re: Office of Design, Specifications
Section **527**
Proposed Specification: **5270000 Detectable Warnings on Walking Surfaces.**

Dear Ms. Gourdine:

We are submitting, for your approval, two copies of the above referenced Supplemental Specification.

These changes were proposed by Dean Perkins of the State Roadway Design Office to reflect new standards for testing for detectable warnings on walking surfaces.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via email to SP965RP or rudy.powell@dot.state.fl.us.

If you have any questions relating to this specification change, please call Rudy Powell, State Specifications Engineer at 414-4280.

Sincerely,

Signature on file

Rudy Powell, Jr., P.E.
State Specifications Engineer

RP/dt

Attachment

cc: Gregory Jones, Chief Civil Litigation
Florida Transportation Builders' Assoc.
State Construction Engineer

DETECTABLE WARNINGS ON WALKING SURFACES.(REV ~~11/12-227136212-101~~)

SECTION 527 (Pages 662 – 664) is deleted and the following substituted:

**SECTION 527
DETECTABLE WARNINGS ON WALKING SURFACES****527-1 Description.**

Furnish and install Detectable Warning devices on newly constructed and/or existing concrete or asphalt walking surfaces (curb ramps, sidewalks, shared-use paths, etc.) constructed in accordance with the Design Standards Index No. 304.

527-2 Materials.

527-2.1 Detectable Warning: Provide Detectable Warnings in accordance with the Americans with Disabilities Act ~~Accessibility Guidelines (ADAAG) Section 4.29.2 – Detectable Warnings on Walking Surfaces~~ *Standards for Transportation Facilities, Section 705*. Use Detectable Warnings *consisting* of materials intended for exterior use subject to routine pedestrian traffic and occasional vehicular traffic. Use Detectable Warnings with size and pattern shown in the plans comprised of truncated domes aligned in parallel rows in accordance with *the Design Standards*, Index No. 304 ~~of the Design Standards~~. Do not use detectable warnings with a diagonal pattern.

527-2.1.1 Preformed Materials: Use Detectable Warnings consisting of weather-resistant tiles; *or* pavers *that are cast into concrete*, *or tiles or mats that are surface-applied* ~~adhered~~ to concrete or asphalt ~~substrates~~ *surfaces* ~~and have~~ *with adhesives and* mechanical ~~bond or~~ fasteners; *or* torch-applied preformed thermoplastic. ~~Preformed products may be used only if listed on the Qualified Products List in accordance with 527-2.4.~~

527-2.1.2 Field-Formed Materials: Use Detectable Warnings applied as a secondary application to the substrate. ~~Products applied as a secondary application may be used only if listed on the Qualified Products List in accordance with 527-2.4.~~

527-2.2 Material Properties: Provide Detectable Warnings that meet the following minimum material property requirements when tested in accordance with the indicated Standard appropriate to the material.

PROPERTY	STANDARD	MINIMUM THRESHOLD <i>TEST VALUE</i>
Slip Resistance	ASTM C1028, F609, F1677, F1678, F1679, E303 <i>FM 3-C 1028</i>	Dry Coefficient of Friction – 0.8- min. <i>and</i> Wet Coefficient of Friction – 0.65- min. <i>;</i> Or 35 BPN (include recessed areas between truncated domes)
Wear Resistance	ASTM C501 <i>FM 5-594</i>	Average <i>Volume Loss: wear depth on dome</i> <i>≤ no more than 0.0360 "cm³ after 1000</i> <i>abrasion cycles.</i>
Water Absorption ⁺ *	ASTM D-570	Not to exceed 5%.
Adhesion/Bond Strength**	ASTM C482 <i>FM 5-589</i>	No adhesion failure <i>150 psi min. tensile adhesion strength</i>

PROPERTY	STANDARD	MINIMUM THRESHOLD TEST VALUE
Non-Hazardous Classification	RCRA Subtitle C <i>Submit Material Safety Data Sheet (MSDS)</i>	Non-Hazardous, <i>per RCRA Subtitle C</i>
<p>* Applies only to pavers and tiles consisting of plastic materials. ** <i>Applies only to surface-applied materials.</i></p>		

527-2.3 Color/Contrast: Use safety yellow, brick red or black colored Detectable Warnings on concrete walking surfaces. Use safety yellow colored Detectable Warnings on asphalt walking surfaces. Acceptable Detectable Warnings ~~as listed on the Qualified Products List will~~ *shall* meet the following criteria for a duration of three years.

COLOR	LIGHT REFLECTANCE VALUES (LRV) CAP Y*
Safety Yellow	25 – 45
Brick Red	5 – 15
Black	0 – 5
*When measured with a spectrophotometer	

527-2.4 Qualified Products List: Methods or products used to form Detectable Warnings in wet concrete will not be permitted. Use Detectable Warnings listed on the Department's Qualified Products List (QPL). Manufacturers ~~of Detectable Warnings~~ seeking evaluation of ~~their products for inclusion on the QPL~~ shall submit an application in accordance with Section 6 *and include certified test reports from an independent lab showing the product meets the requirements of this Section and the Design Standards, Index No. 304 Acceptance Criteria and manufacturer's drawings, specifications and procedures for materials and installation, including touch-up and repair.* ~~Manufacturers must demonstrate performance in accordance with the requirements of these Specifications and with the acceptance criteria detailed in Index No. 304 of the Design Standards. Submit Applications that include certified test reports from an independent laboratory that shows the Detectable Warning meets the material properties and all requirements specified herein. Application must include manufacturer's installation drawings that describe detailed quality control requirements for installation including, but not limited to: special materials and/or equipment; recommendations for cleaning/preparing substrate surfaces; bonding method describing thickness, spread rate and/or curing time(s) of grout or adhesive materials; mechanical anchorage; and protection of Detectable Warning materials during set-up/curing period.~~
~~In addition, manufacturer's drawings must provide recommended quality control procedures for touch-up and repair of localized areas of installations, for compliance with the acceptance criteria provided in Index No. 304 of the Design Standards.~~

527-3 Installation Procedures.

527-3.1 Surface Preparation and Installation: Prepare the surface in accordance with the ~~Detectable Warning~~ manufacturer's recommendations. *Use only products and materials appropriate for the surface on which they will be applied.* Install ~~Detectable Warnings~~ in accordance with the manufacturer's instructions, using materials and/or equipment recommended and approved by the ~~Detectable Warning~~ manufacturer. *For surface-applied tiles or mats, use both full coverage adhesives applied over the entire surface and mechanical fasteners.* ~~Ensure~~

~~that all installations are made in accordance with the manufacturer's installation drawings referenced by the QPL.~~

527-4 Method of Measurement.

Detectable Warnings applied to newly constructed walking surfaces will be included in the cost of the walking surface. Detectable Warnings applied to existing walking surfaces will be paid per each location where Detectable Warnings are furnished, installed and accepted.

527-5 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section, including all labor, surface preparation, materials and incidentals necessary to complete the work for Detectable Warnings installed on existing walking surfaces.

Payment will be made under:

Item No. 527- 1- Detectable Warnings on Existing Walking Surfaces - each.

**DETECTABLE WARNINGS ON WALKING SURFACES.
(REV 1-12-11)**

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527-2 Materials.

527-2.1 Detectable Warning: Provide Detectable Warnings in accordance with the Americans with Disabilities Act Standards for Transportation Facilities, Section 705. Use Detectable Warnings consisting of materials intended for exterior use subject to routine pedestrian traffic and occasional vehicular traffic. Use Detectable Warnings with size and pattern shown in the plans comprised of truncated domes aligned in parallel rows in accordance with the Design Standards, Index No. 304. Do not use detectable warnings with a diagonal pattern.

527-2.1.1 Preformed Materials: Use Detectable Warnings consisting of weather-resistant tiles or pavers that are cast into concrete, or tiles or mats that are surface-applied to concrete or asphalt surfaces with adhesives and mechanical fasteners or torch-applied preformed thermoplastic.

527-2.1.2 Field-Formed Materials: Use Detectable Warnings applied as a secondary application to the substrate.

527-2.2 Material Properties: Provide Detectable Warnings that meet the following minimum material property requirements when tested in accordance with the indicated Standard appropriate to the material.

PROPERTY	STANDARD	TEST VALUE
Slip Resistance	FM 3-C 1028	Dry Coefficient of Friction – 0.8 min. Wet Coefficient of Friction – 0.65 min. (include recessed areas between truncated domes)
Wear Resistance	FM 5-594	Average Volume Loss: no more than 0.06 cm ³
Water Absorption*	ASTM D-570	Not to exceed 5%.
Adhesion/Bond Strength**	FM 5-589	150 psi min. tensile adhesion strength
Non-Hazardous Classification	Submit Material Safety Data Sheet (MSDS)	Non-Hazardous, per RCRA Subtitle C

* Applies only to plastic materials.
** Applies only to surface-applied materials.

527-2.3 Color/Contrast: Use safety yellow, brick red or black colored Detectable Warnings on concrete walking surfaces. Use safety yellow colored Detectable Warnings on asphalt walking surfaces. Acceptable Detectable Warnings shall meet the following criteria for a duration of three years.

COLOR	LIGHT REFLECTANCE VALUES (LRV) CAP Y*
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527-3 Installation Procedures.

527-3.1 Surface Preparation and Installation: Prepare the surface in accordance with the manufacturer's recommendations. Use only products and materials appropriate for the surface on which they will be applied. Install in accordance with the manufacturer's instructions, using materials and equipment recommended and approved by the manufacturer. For surface-applied tiles or mats, use adhesives applied over the entire surface and mechanical fasteners.

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