

## ORIGINATION FORM

Date: November 22, 2010

Originator: Dean Perkins

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Specification Title: Detectable Warnings on Walking Surfaces

Specification Section, Article, or Subarticle Number: 527

Why does the existing language need to be changed? The changes are required up update the test methods for slip-resistance, wear resistance and adhesion/bond strength.

Summary of the changes: The ASTM tests currently in the Specification apply primarily to ceramic tiles and similar materials to concrete substrates using cement grout. The changes in this revision reflect new Florida tests for applied detectable warning materials (vinyl, rubber, composite, etc.) to concrete sidewalks using adhesives.

Are these changes applicable to all Department jobs? If not, what are the restrictions? These changes would apply to all projects on which detectable warnings are applied to in-place sidewalks and curb ramps.

Will these changes result in an increase or decrease in project costs? If yes, what is the estimated change in costs? These changes should not impact project costs.

With whom have you discussed these changes? The new Florida test methods were developed by the FDOT State Materials Office staff in coordination with Central Office staff in the Product Evaluation Section and the Production Support Office.

What other offices will be impacted by these changes? Roadway Design, Construction and Maintenance offices will use the revised specification.

Are changes needed to the PPM, Design Standards, SDG, CPAM or other manual? These revisions should not require changes to other FDOT documents.

Is a Design Bulletin, Construction Memo, or Estimates Bulletin needed? It is recommended that a Construction Memorandum be issued to advise staff of the revisions to Spec 527.

Contact the State Specifications Office for assistance in completing this form.

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### MEMORANDUM

**DATE:** December 13, 2010

**TO:** Specification Review Distribution List

**FROM:** Rudy Powell, Jr., P.E., State Specifications Engineer

**SUBJECT:** Proposed Specification: **5270000 Detectable Warnings on Walking Surfaces.**

In accordance with Specification Development Procedures, we are sending you a copy of a proposed specification change.

This change was proposed by Dean Perkins of the State Roadway Design Office to reflect new standards for testing for detectable warnings on walking surfaces.

Please share this proposal with others within your responsibility. Review comments are due within four weeks and should be sent to Mail Station 75 or to my attention via email at SP965RP or rudy.powell@dot.state.fl.us. Comments received after **January 10, 2011** may not be considered. Your input is encouraged.

RP/dt  
Attachment

**DETECTABLE WARNINGS ON WALKING SURFACES.**

(REV ~~11/12-22713~~-10)

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* 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	<del>MINIMUM THRESHOLD</del> <i>TEST VALUE</i>
Slip Resistance	<del>ASTM C1028, F609, F1677, F1678, F1679; E303</del> <i>FM 3-C 1028</i>	Dry Coefficient of Friction – 0.8- min. <del>and</del> Wet Coefficient of Friction – 0.65- min. <del>;</del> <del>Or 35 BPN (include recessed areas between truncated domes)</del>
Wear Resistance	<del>ASTM C501</del> <i>FM 5-594</i>	Average <i>Volume Loss: wear depth on dome</i> <del>≤ no more than 0.0360 "cm<sup>3</sup> after 1000 abrasion cycles.</del>
Water Absorption <sup>+</sup> *	ASTM D570	Not to exceed 5%.
Adhesion/Bond Strength**	<del>ASTM C482</del> <i>FM 5-589</i>	<del>No adhesion failure</del> <i>150 psi min. tensile adhesion strength</i>

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