

ORIGINATION FORM

Date: April 28, 2011

Originator: Duane Brautigam

Contact Information: (850) 414-4130

Specification Title: Patterned Pavement

Specification Section, Article, or Subarticle Number: 523

Why does the existing language need to be changed? There has been much confusion about the applicability of various types of products to installations on asphalt and concrete areas, subject to vehicular and non-vehicular traffic.

Summary of the changes: This modification provides clarification on the type of products applicable for use on asphalt and concrete roadways in areas subject to vehicular and non-vehicular traffic. It also clarifies submittal and testing requirements for consideration of products for review, potential approval and listing on the Qualified Products List.

Are these changes applicable to all Department jobs? Yes, no restrictions.
If not, what are the restrictions?

Will these changes result in an increase or decrease in project costs? No, probably not.
If yes, what is the estimated change in costs?

With whom have you discussed these changes? Over the past several years, this subject has been discussed in various forums within FDOT Design, Construction and Maintenance communities; by the District Design Engineers; in M-Team meetings; and in other forums, including a Manufacturer/Vendor summit. Most recently, it was studied by a cross functional team including input from: Jim Mills, David O'Hagan, Manny Uwaibi and Bruce Dietrich of Roadway Design; Charles Holzschuher and Hyung Lee of the State Materials Office; Dale Cook of Maintenance; Mark Wilson of Traffic Operations; Paul Gentry, Barry Smith and Karen Byram of Product Evaluation; Rudy Powell, Andy Harper and Duane Brautigam, Specifications & Estimates. The recommendations and related studies from that team were presented to the M-Team and represent the basis for this proposed modification.

What other offices will be impacted by these changes? Design, Construction and Maintenance will all be affected, with indirect impact to Traffic Operations and the Local Agency Program and others.

Are changes needed to the PPM, Design Standards, SDG, CPAM or other manual?

Potentially, changes to the PPM may be made as a follow up. These changes have already been drafted in detail.

Is a Design Bulletin, Construction Memo, or Estimates Bulletin needed? Yes, since a new pay item is being established for installations in non-vehicular traffic areas.



Florida Department of Transportation

RICK SCOTT
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

ANANTH PRASAD, P.E.
SECRETARY

MEMORANDUM

DATE: May 12, 2011

TO: Specification Review Distribution List

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

SUBJECT: Proposed Specification: **5230000 Patterned Pavement.**

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

This change was proposed by Duane Brautigam of the State Specifications and Estimates Office to clarify the applicability of products for use on asphalt and concrete surfaces subject to vehicular and non-vehicular traffic. The language also clarifies manufacturer submittal and testing requirements and documentation necessary for evaluation for inclusion on the Qualified Products List (QPL).

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 e-mail at SP965RP or rudy.powell@dot.state.fl.us. Comments received after **June 9, 2011** may not be considered. Your input is encouraged.

RP/dt
Attachment

PATTERNED PAVEMENT.

(REV ~~45-276-11~~)

SECTION 523 (Pages 655 – 657) is deleted and the following substituted:

SECTION 523 PATTERNED/~~TEXTURED~~ PAVEMENT.

523-1 Description.

~~Apply a~~Construct patterned ~~and/or textured treatment to pavement on~~ asphalt or concrete, pavement areas where indicated in the plans. Use products listed on the Qualified Products List (QPL), as approved for use in areas subject to vehicular traffic or non-vehicular traffic, respectively, as specified herein. Install products in accordance with manufacturer's recommendations. ~~Applications include the following:~~

- ~~1. Imprinting patterns into existing or new pavement and covering with a colored coating of surface marking materials.~~
- ~~2. Imprinting patterns into existing or new pavement and inlaying the imprint with preformed thermoplastic material.~~
- ~~3. Colored, preprinted, preformed texturized thermoplastic material that is applied over existing pavement.~~
- ~~4. Colored thermoplastic coating material that can be imprinted and texturized during or after application to existing pavement.~~

~~For the purpose of this Specification, patterned pavements are defined as visible surface markings or palpable imprinted markings applied as an overlay to the roadway pavement surface. Vehicular traffic areas are defined as those subject to vehicles within the traveled way, shoulders and auxiliary lanes. Non-vehicular travel areas include medians, islands, curb extensions, sidewalks, borders, plazas and other areas typically subject to foot traffic only and where vehicles do not travel.~~

~~For applications installation in areas subject to vehicular traffic, the Department will only consider products applied as an overlay to the top of pavement, with a finished thickness not to exceed 150 mils. Products requiring removal and replacement of existing pavement or requiring blockouts or trenches below the top of pavement, meet the requirements of Section 350 for cement concrete pavement; the requirements of Section 334 surface will not be considered for Superpave asphalt or Section 337 for FC 9.5 and FC 12.5 asphalt approval in vehicular travel areas.~~

~~For the purpose of this Specification, are defined as visible surface markings; imprinted textures are defined as palpable surface markings.~~

~~Use~~Provide the location, pattern/~~texture~~ type (brick, stone, etc.), and coating~~and~~ color as specified in the plans. Joint openings shall not exceed 1/2 inch in width.

523-2 Materials.

523-2.1 General: Meet manufacturer's specifications for all patterns, textures, templates, sealers, coatings and coloring materials. Use only material that is delivered to the job site in sealed containers bearing the manufacturer's original labels including lot number and expiration date (if applicable).

Material coatings used to achieve the pattern and color shall produce an adherent, weather resistant, skid resistant, wear resistant surface under service conditions. Color shall be integral and consistent throughout the installation. The composition of materials is intended to be left to the discretion of the manufacturer. However, the Department reserves the right to deny consideration of materials based on its own experience in similar service applications.

Materials shall be characterized as non-hazardous as defined by Resource Conservation and Recovery Act (RCRA), Subpart C, Table 1 of 40 CFR 261.24 "Toxicity Characteristic". Materials shall not exude fumes which are hazardous, toxic or detrimental to persons or property.

523-2.12 Qualified Products List (QPL): Use only patterned/~~textured~~ pavement products *approved for use in vehicular and non-vehicular areas, as appropriate, and listed on the QPL. Manufacturers seeking evaluation of their product shall submit an application in accordance with Section 6 along with the following documentation:*

1. Manufacturer's recommendations for applicability of use with respect to concrete and/or asphalt surfaces.

2. Manufacturer's recommendation for applicability of use with respect to vehicular and/or non-vehicular travel areas.

3. Manufacturer's specifications and procedures for materials and installation for each applicability recommendation above.

4. For products proposed for use in vehicular traffic areas, the manufacturer's laboratory test data from an independent laboratory verifying the material meets the requirements of this Section including verification that the product, installed in accordance with the manufacturer's specifications and procedures, has been tested in accordance with either

- a. ASTM E-274, Skid Resistance of Paved Surfaces using a standard ribbed full Sscale Ftire at a speed of 40 mph (FN40R), and has a minimum FN40R value of 35, or*

- b. ASTM E-1911, Measuring Paved Surface Frictional Properties Using the Dynamic Friction Tester (DFT), at a speed of 40 mph (DFT40), and has a minimum DFT40 value of 40.*

5. For products proposed for use in non-vehicular traffic areas, manufacturer's laboratory test data from an independent laboratory verifying the material meets the requirements of this Section, including verification that the patterned pavement product, installed in accordance with the manufacturer's specifications and procedures, has been tested in accordance with ASTM E-303 using the British Pendulum Tester and has a British Pendulum Number (BPN) of at least 40.

~~Meet manufacturer's specifications for all pattern/texture templates, coating and coloring materials. Use only material that is delivered to the job site in sealed containers bearing the manufacturer's original labels.~~

~~Material coatings used to achieve the pattern/texture and/or color shall produce an adherent, weather resistant, skid resistant surface capable of resisting deformation to traffic. Surface marking materials must meet the requirements of this Specification and Section 971 with the following exceptions:~~

~~1. Color and reflectivity requirements do not apply. Surfaces shall not be made retroreflective.~~

~~2. Requirements for minimum set to bear traffic time, do not apply. Do not open to traffic until the coating material has sufficiently dried or cured and is ready to withstand traffic.~~

~~3. For thermoplastic materials, the requirements for alkyd-based materials only in 971-5.1 and minimum binder content of 971-5.2, do not apply.~~

~~4. For thermoplastic materials, the indentation resistance requirements and minimum flashpoint requirements of 971-5.5, do not apply.~~

~~Manufacturers seeking approval of their product for inclusion on the QPL must submit an application in accordance with Section 6 along with the following documentation:~~

~~1. Manufacturer's specifications and procedures for materials and installation.~~

~~2. Manufacturer's Laboratory test data from an independent laboratory verifying the material meets the requirements of this Section.~~

~~3. Test data from an independent source verifying that the patterned/textured pavement installed in accordance with the manufacturer's specifications and procedures has been tested in accordance with either the ASTM E-274, Skid Resistance of Paved Surfaces using a standard ribbed full Scale Tire at a speed of 40 mph (FN40R), and has a minimum FN40R value of 35, or ASTM E-1911, Measuring Paved Surface Frictional Properties Using the Dynamic Friction Tester, at a speed of 40 mph (DFT40), and has a minimum DFT40 value of 40.~~

523-2.23 Performance Requirements: for Products in Vehicular Travel Areas: *In addition to the submittal requirements of 523-2.2, QPL approval will be contingent on a field service test demonstrating that the ~~imprinted texture and coating materials meet~~ **patterned pavement product meets** the following performance measures at the end of three years from opening to traffic:*

1. The *average* imprint ~~must maintain a~~ depth *must be maintained at a minimum* of 50% of the original installed depth ~~and width~~.

2. Wearing of the material coating shall not expose more than 15% of the underlying surface area *as measured within the traveled way*.

3. Friction performance of patterned/textured pavement materials must meet or exceed one of the following test method values:

(a) FN40R value of 35 in accordance with ASTM E-274; or,

(b) DFT40 value of 40 in accordance with ASTM E-1911

~~The~~ *Manufacturers must provide a* field service test installation ~~shall be~~ within a marked crosswalk on a roadway with an ADT of 8,000 to 12,000 vehicles per day per lane, *on a site* approved by the Department. The test installation shall be a minimum six feet wide and extend from pavement edge to pavement edge across all traffic lanes and shoulder pavement at the crosswalk location. The test installation will be tested in accordance with FM 5-592.

523-2.34 Submittal Requirements for Products in Non-Vehicular Travel Areas: *QPL approval will be contingent on the following:*

1. *Manufacturer's certification conforming to the requirements of Section- 6, confirming that the patterned pavement product meets the requirements of this Section for the applications identified in 523-2.2.*

523-3 Construction.

~~523-3.1 Surface Protection: Protect treated surfaces from traffic and environmental effects until the area is completely coated/imprinted, and any coatings have dried or cured according to the manufacturer's instructions.~~

523-3.1 Product Submittals: Well in advance of the intended beginning of construction, provide pattern and color samples for the Engineer's use for confirmation that the material being proposed for use will meet pattern and color specified in the plans.

523-3.2 Pavement Cuts: Complete all utility, traffic loop detector, and other items requiring a cut and installation under the finished surface, prior to pattern installation.

~~523-3.2 Surface Protection: Protect treated surfaces from traffic and environmental effects until the product is completely installed, including drying and curing according to the manufacturer's instructions.~~

523-3.3 Installation Acceptance: For asphalt roadways, apply patterned/~~textured~~ pavement a minimum of 14 days after placement of the adjacent pavement.

For any continuous or abutting areas, color materials must be from the same lot/batch.

Upon completion of the installation, the Engineer will check the area at random locations for geometric accuracy, ~~as specified in the plans.~~ If any of the chosen areas ~~have an imprint width and depth that is less than the manufacturer's specifications~~ *are found to be deficient*, correct the entire ~~textured~~ *patterned* area, at no additional cost to the Department.

~~Supply the specified pattern and color samples for the Engineer's use to visually determine that the material matches the color specified in the plans. For any continuous or abutting areas, i.e. all treated areas of an intersection, color materials must be from the same lot/batch.~~

Provide certification that the ~~textured~~ *patterned* pavement was installed in accordance with the manufacturer's requirements.

523-4 Method of Measurement.

The quantity to be paid will be the plan quantity in square yards of patterned/~~textured~~ pavement, completed and accepted. No deduction will be made for ~~the area(s) occupied by ornamental trees within the asphalt area, or any other~~ areas occupied by *ornamental trees*, manholes, inlets, drainage structures, or by any public utility appurtenances within the area. ~~Asphalt or concrete materials placed prior to treatment will be paid separately under the appropriate pay items. Milling required for the placement of patterned/textured pavement will be included in the cost of the patterned/textured pavement.~~

523-5 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section. Surface materials, including colors, sealers, and/or resins, shall be included for payment under this Section.

Payment will be made under:

Item No. 523- 1- Patterned/~~Textured~~ Pavement (*Vehicular Areas*) - per square yard.

Item No. 523- 2- Patterned Pavement (Non-Vehicular Areas) – per square yard

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

Rudy Powell 850-414-42820 rudy.powell@dot.state.fl.us

Frances Thomas 850-414-4101 frances.thomas@dot.state.fl.us

Debbie Toole 850-414-4114 deborah.toole@dot.state.fl.us

Andy Harper 850-414-4127 clifton.harper@dot.state.fl.us