



Florida Department of Transportation

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ANANTH PRASAD, P.E.
SECRETARY

August 2, 2011

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

Re: Office of Design, Specifications
Section 523
Proposed Specification: 5230000 Patterned Pavement. **REVISED**

Dear Ms. Gourdine:

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

Highlighted changes were made to 523-2 in response to comments from Rafiq Darji. The original request for approval was submitted on July 19, 2011.

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

PATTERNED PAVEMENT.(REV ~~67845-2761062~~-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 at locations and with the color and pattern as specified where indicated in the pPlans. 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 either as an overlay to the roadway pavement surface or imprinted in the 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 installation of overlay products, 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 the finished thickness shall not to exceed 150180 mils. Products requiring removal and replacement of existing pavement or requiring blockouts or trenches below the top of pavement, shall not be used., 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. Variations within a pattern shall comply with ADA requirements.~~

523-2 Materials.

523-2.1 General: Use only patterned pavement products approved for use in vehicular and non-vehicular areas, as appropriate, and listed on the QPL. 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 on ~~with respect to concrete and/or asphalt surfaces.~~
2. Manufacturer's recommendation for applicability of use in ~~with respect to vehicular and/or non-vehicular travel areas.~~
3. Manufacturer's specifications and procedures for materials and installation for each use above. ~~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 ~~S~~scale ~~T~~tire 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 thickness~~ **imprint must maintain a depth must shall be maintained at a minimum** of 50% of the original ~~thickness~~ **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 ~~shall 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 shall must~~ **provide a** field service test installation of ~~each product shall be~~ within a marked crosswalk on a roadway with an ADT of ~~68,000~~ **68,000** 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 ~~shall will~~ be tested *by the manufacturer* 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: Prior to installation, Well in advance of the intended beginning of construction, provide submit pattern and color samples tofor the Engineer's use for confirmation that the product meets the material being proposed for use will meet pattern and color specified in the pPlans-. Do not begin installation until acceptance by the Engineer.

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 ~~product~~*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 *installation on new* 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 or/ 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 *landscaping 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.

PATTERNED PAVEMENT.
(REV 8-2-11)

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

SECTION 523
PATTERNED PAVEMENT.

523-1 Description.

Construct patterned pavement on asphalt or concrete pavement areas at locations and with the color and pattern as specified 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.

For the purpose of this Specification, patterned pavements are defined as surface markings applied either as an overlay to the pavement surface or imprinted in the 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.

For installation of overlay products in areas subject to vehicular traffic, the finished thickness shall not exceed 180 mils. Products requiring removal of pavement or requiring blockouts or trenches below the top of pavement, shall not be used.

Provide the pattern type and color as specified in the plans. Variations within a pattern shall comply with ADA requirements.

523-2 Materials.

523-2.1 General: Use only patterned pavement products approved for use in vehicular and non-vehicular areas, as appropriate, and listed on the QPL. Meet manufacturer's specifications for all patterns, textures, templates, sealers, coatings and coloring materials.

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.

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.

523-2.2 Qualified Products List (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 on concrete or asphalt surfaces.
2. Manufacturer's recommendation for applicability of use in vehicular or non-vehicular travel areas.

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

4. For products proposed for use in vehicular traffic areas, test data 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 scale tire 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, test data 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 ASTM E-303 using the British Pendulum Tester and has a British Pendulum Number (BPN) of at least 40.

523-2.3 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 patterned pavement product meets the following performance measures at the end of three years from opening to traffic:

1. The average thickness shall be a minimum of 50% of the original thickness.
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 shall 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

Manufacturers shall provide a field service test installation of each product within a marked crosswalk on a roadway with an ADT of 6,000 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 shall be tested by the manufacturer in accordance with FM 5-592.

523-3 Construction.

523-3.1 Product Submittals: Prior to installation, submit pattern and color samples to the Engineer for confirmation that the product meets the pattern and color specified in the Plans. Do not begin installation until acceptance by the Engineer.

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 product 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 installation on new asphalt roadways, apply patterned pavement a minimum of 14 days after placement of the adjacent pavement.

Upon completion of the installation, the Engineer will check the area at random locations for geometric accuracy. If any of the chosen areas are found to be deficient, correct the entire patterned area at no additional cost to the Department.

Provide certification that the 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 pavement, completed and accepted. No deduction will be made for areas occupied by landscaping, manholes, inlets, drainage structures, or by any public utility appurtenances within the area.

523-5 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section.

Payment will be made under:

Item No. 523- 1- Patterned Pavement (Vehicular Areas) - per square yard.

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