

## ORIGINATION FORM

**THE INFORMATION BELOW IS TO BE PROVIDED BY THE ORIGINATOR**

Modify Specification \_\_\_\_\_563\_\_\_\_\_.  
Section/File number

New Section \_\_\_\_\_.  
Section number

**Subject:** Anti-Graffiti Coating System

**Origination date:** January 25, 2006

**Originator:** Dale Cook

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**Email address/** dale.cook@dot.state.fl.us

**Userid:**

**Problem statement:** The specified material composition in the current Spec 563 has limited the manufacturer's that can apply for QPL status as follows:

1. Only those using a carbon based polymer material with limited formulations can apply. This was not the intent at the time of the rewrite. Extensive research was done on the existing materials at the time but the way the spec was rewritten, this has eliminated new technology such as siloxane and silicon based materials and more common materials with different formulations.
2. The volatile organic content (VOC) limits required in Spec 563 are 3 to 6 times below that of the official EPA limits for anti-graffiti coatings as defined in 40 CFR Part 59, Subpart D. It appears the limits in Spec 563 were a combination of product and material achievable values and the EPA requirements for structural coatings (as in paint).
3. To date, only one manufacturer has been able to qualify as a sacrificial coating and no manufacturers have qualified as non-sacrificial coatings on the QPL.

In addition, the current specification does not require any graffiti-removal performance based testing.

**Information source:** The Department is prepared to support cleaning of nonsacrificial coatings. The State Maintenance Office has opened pay items for cleaning of graffiti at the District's request.



# Florida Department of Transportation

JEB BUSH  
GOVERNOR

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DENVER J. STUTLER, JR.  
SECRETARY

## MEMORANDUM

**DATE:** March 3, 2006  
**TO:** Specification Review Distribution List  
**FROM:** Duane F. Brautigam, P.E., State Specifications Engineer  
**SUBJECT:** Proposed Specifications Change: 5630000 - Anti-Graffiti Coating System.

In accordance with Specification Development Procedures, we are sending you a copy of a proposed specification change to Section 563.

This change was proposed by Dale Cook of the State Maintenance Office to rewrite this Section due to the limited number of manufacturer's that can apply for QPL status as the specification is currently written.

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 SP965DB or duane.brautigam@dot.state.fl.us. Comments received after March 31, 2006 may not be considered. Your input is encouraged.

DFB/jf

Attachment

COMMENTS:

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Submitted by:

Phone #:

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**ANTI-GRAFFITI COATING SYSTEM.**  
**(REV 3-3-06)**

SECTION 563 (Pages 661-664) is deleted and the following substituted:

**SECTION 563**  
**ANTI-GRAFFITI COATING SYSTEM**

**563-1 Description.**

Apply anti-graffiti coating system ~~of the type specified and~~ to the areas shown in the plans. *Perform the painting in accordance with this Section, using materials meeting the requirements of 975-9.*

~~563-2 Materials:~~

~~**563-2.1 General:** Use compatible anti-graffiti coating system components ~~from the same as recommended by the~~ manufacturer which are currently listed on the Department's Qualified Products List (QPL).~~

~~Ensure all products meet Federal, State, and Local environmental requirements.~~

~~Furnish two copies of the manufacturer's written installation instructions, a list of all materials used in the anti-graffiti coating system, and all material safety data sheets.~~

~~Manufacturer's seeking evaluation of a product by the Department shall meet the requirements of Section 6.~~

~~**563-2.2 Non Sacrificial Base Coat:** Use a clear or pigmented epoxy, urethane, acrylic etc. base coat which meets the following requirements:~~

~~Solids by Volume.....50% minimum~~

~~VOC..... 1.7 lb/gal [214 g/L] maximum~~

~~Pot Life..... 2 1/2 hours at 70°F [21°C] minimum~~

~~Taber Abrasion 1,000 cycles with CS17 wheel Weight Loss in accordance~~

~~with ASTM D 4060 ..... 102 mg maximum~~

~~**563-2.3 Non Sacrificial Finish Coat:** Provide a high or semi gloss non yellowing aliphatic polyurethane, aliphatic urethane or aliphatic acrylic polyurethane coating of the color shown in the plans which, meets following requirements:~~

~~Solids by Volume.....40% minimum~~

~~VOC..... 2.2 lb/gal [264 g/L] maximum~~

~~Pot Life..... 2 1/2 hours at 70°F [21°C] minimum~~

~~Taber Abrasion 1,000 cycles with CS17 wheel Weight Loss in accordance~~

~~with ASTM D 4060 ..... 60.5 mg maximum~~

~~**563-2.4 Sacrificial Finish Coat:** Provide a non yellowing water based resin, cross linked co-polymer, waterborne polymer, etc., sacrificial anti-graffiti coating which, meets following requirements:~~

~~Solids by Volume.....8% minimum~~

~~VOC..... 13 oz/gal [100 g/l] maximum~~

~~Color when cured..... Clear~~

~~**563-2.5 Certification:** Furnish two certified copies of a test report from the manufacturer certifying the anti-graffiti products to be incorporated into the completed project meets the requirements of this Specification. The certified test reports shall be attested to by a person having legal authority to bind the manufacturing company.~~

### 563-3.2 Application.

**563-32.1 General:** Apply ~~either a one or two coat~~ *an anti-graffiti coating or coating* system as specified in the Contract Documents in accordance with manufacturer's recommendations and as specified herein, when the ambient temperature is between 40° and 90°F ~~[4° and 32°C]~~, and the surface temperature is between 50° and 85°F ~~[10° and 29°C]~~ and rising.

Ensure all concrete has cured a minimum of 30 days before applying anti graffiti coating.

Do not apply coating when precipitation is expected within 12 hours of the completion of application or the relative humidity is above 88 percent.

**563-32.2 Protection of Adjacent Surfaces:** Consider wind direction, velocity and geographic location as having a major impact on all cleaning and anti-graffiti coating operations. If conditions are such that material is dispersed to areas where vehicles or other property may be damaged, suspend operations until conditions improve enough to permit work without damage.

Protect all surfaces not intended to be coated, which are adjacent to, or in close proximity to the surfaces to be coated, during the application of anti-graffiti coating. Clean surfaces ~~other than those intended that are~~ to be ~~painted-coated, as per manufacturer's recommendation or~~ until all traces of anti-graffiti coating have been removed and the surface has an acceptable appearance. Use all necessary precautions to prevent materials from cleaning and anti-graffiti coating operations being dispersed outside the work site.

**563-32.3 Surface Preparation:** Prepare all surfaces to be coated in accordance with *560-15 and the manufacturer's recommendation for* the following requirements:

Surface Cleaning Concrete Unit Masonry for Coating ASTM D 4261

or

Surface Cleaning Concrete for Coating .....ASTM D 4258

Testing pH of cleaned concrete surface .....ASTM D 4262

Moisture in concrete .....ASTM D 4263

*When the anti-graffiti coating or coating system is to be applied over an existing coating, conduct a test patch in accordance with 560-15.*

**563-32.4 Base Coat:** ~~Ensure the surface is clean and dry before applying the base coat. Mix base coat according to manufacturer's recommendations before application.~~ Apply the base coat, *if part of the system*, as recommended by the manufacturer.

*Unless otherwise specified by the manufacturer, Ensure ensure* the cured base coat has a minimum dry film thickness of 4.0-8.0 mils ~~[100-200 μm]~~.

**563-32.5 Finish Coat Non Sacrificial and Sacrificial:** When applicable, ensure the base coat surface is clean and cured to a dry hard state *according to the manufacturer's recommendation* before applying the finish coat. ~~Otherwise ensure the prepared surface is clean and dry before applying the finish coat.~~ Mix finish coat and apply in accordance with the manufacturer's recommendations.

Ensure the cured finish coat of the two coat system has a minimum dry film thickness of 2.5-5.0 mils ~~[62-125 μm]~~.

*Apply as many coats as necessary to provide a finish coat which is a uniform continuous film over the entire surface, free of pinholes, runs, sags, or any other deficiencies.*

~~**563-3.6 Finish Coat Sacrificial:** When applicable, ensure the base coat surface is clean and cured to a dry hard state before applying the finish coat. Otherwise ensure the prepared surface is clean and dry before applying the finish coat. Mix finish coat and apply in accordance with the manufacturer's recommendations.~~

~~When using a One Coat System apply as many coats as necessary to provide a finish coat which is a uniform continuous film over the entire surface, free of pinholes, runs or sags.~~

~~**563-3.7 Curing:** Adjust the curing times shown below for variations in temperatures and humidity as recommended by the manufacturer. These times are based on an ambient temperature of 75°F [24°C] at 50 percent relative humidity.~~

<del>Non Sacrificial – Anti Graffiti Coating System</del>	
<del>Base Coat</del>	
<del>Recoat/Topcoat Time</del>	<del>16 hours maximum</del>
<del>Finish Coat</del>	
<del>Curing Time to Touch</del>	<del>8 hours maximum</del>
<del>Curing Time to Dry Hard</del>	<del>7 days maximum</del>

<del>Sacrificial – Anti Graffiti Coating System</del>	
<del>Re-Coat Time</del>	<del>2 hours maximum</del>
<del>Curing Time to Touch</del>	<del>2 hours maximum</del>
<del>Full Cure Time</del>	<del>4 days maximum</del>

~~**563-3.8 Clean Up:** Clean drippings, runs and smudges from the finished work surface as recommended by the anti-graffiti coating manufacturer.~~

**563-3.92.6 Correction of Deficiencies:** Remove all coating identified by the Engineer as damaged or not meeting these Specifications, in accordance with the manufacturer’s recommendations.

Prepare the surface and reapply the coating in accordance with the manufacturer’s recommendations and as specified herein, at no additional cost to the Department.

~~**563-3.102.7 Removal of Graffiti Before Acceptance:** Remove all graffiti from areas receiving anti-graffiti coating, at no additional cost to the Department. Ensure all Federal, State, and Local environmental regulations are met when removing graffiti.~~

~~**563-3.102.7.1 Finish Coat Non Sacrificial:** Meet the manufacturer’s recommendations for removal.~~

~~**563-3.102.7.2 Finish Coat Sacrificial:** Meet the manufacturer’s recommendations for removal. Prepare the surface and reapply the sacrificial coating in accordance with the manufacturer’s recommendations and as specified herein.~~

**563-4.3 Method of Measurement.**

The quantity to be paid for will be the *projected surface* area of anti-graffiti coating, in square feet ~~[square meters]~~, completed and accepted.

**563-5.4 Basis of Payment.**

Price and payment will be full compensation for all work specified in this Section, including furnishing and applying all materials to complete the anti-graffiti coating.

Payment shall be made under:

- Item No. ~~-563-~~ 3- Anti-Graffiti Coating (Sacrificial) per square foot.
- ~~Item No. 2563- 3- Anti Graffiti Coating (Sacrificial) per square meter.~~
- Item No. ~~-563-~~ 4- Anti-Graffiti Coating (Non Sacrificial) per square foot.
- ~~Item No. 2563- 4- Anti Graffiti Coating (Non Sacrificial) per square meter.~~

**Background data:** A preliminary investigation into alternate anti-graffiti materials and formulations has identified that the costs per square foot are comparable to the existing QPL material and they will meet the EPA VOC requirement of 600g/L maximum

In 2000, a FDOT team rewrote the existing Specification 563. The rewrite did not contain any performance criteria for removal of graffiti, but did contain a summary of the formulation requirements for sacrificial and non-sacrificial coatings. The file indicates that the team had a copy of the “Guidelines for Graffiti Removal and Protection Technologies”, Prepared by the Highway Innovative Evaluation Center (HITEC) in 1998, as well as “Anti-Graffiti Systems and Cleaners”, Northeastern Association of State Highway and Transportation Officials Regional Testing Program, June 1997. Both of these documents outlined performance criteria for anti-graffiti coatings and removal of graffiti, but this information was not included in the specification change. In addition, there does not appear to be any record of the team comparing the EPA requirements for anti-graffiti vs. industrial coatings categories for VOC.

The performance of anti-graffiti technology, that is its ability to perform its intended task, is the most important evaluation criteria. Performance requirements of anti-graffiti coatings can be classified into three categories: durability, functionality, and properties. Durability is defined as the ability to remain in place and function as intended. Functionality is defined as capable of preventing the adhesion of graffiti and/or facilitating the removal of graffiti. Other important properties are inherent characteristics of coating materials such as resistance to fluids, color, gloss, and appearance.

**Recommended  
Usage Note:**

563-3

**Desired  
implementation  
date:**

Beginning with the January 2007 letting.