

ADDENDUM #1

The following items shall take precedence over the drawings and specifications for the above named project and shall become a part of the contract documents. Where any item called for in the specifications, or indicated on the drawings, is not supplemented hereby, the original requirements shall remain in effect. Where any original item is amended, voided, or superseded hereby, the provisions of such item not specifically amended, voided or superseded shall remain in effect.

General

Item No.

Description

1. Attached is a copy of the official Pre-Bid Sign-In Sheet for the GREENE/BULL STREET SITE IMPROVEMENTS PROJECT.

Drawings

1. Refer to Sheet C5.0:  
  
Revision: Replace detail 5/C5.0 with revised detail reflected on attached 8.5x11 revision sheet.

Specifications

1. Please find attached a copy of specifications section 321223 titled IMPRINTED AGGREGATE REINFORCED PREFORMED THERMOPLASTIC. These specifications shall supersede the specifications titled IMPRINTED ASPHALT included in the original bid documents.

END OF ADDENDUM #1



UNIVERSITY OF SOUTH CAROLINA

USC BULL STREET AND GREENE STREET IMPROVEMENTS / H27-2100

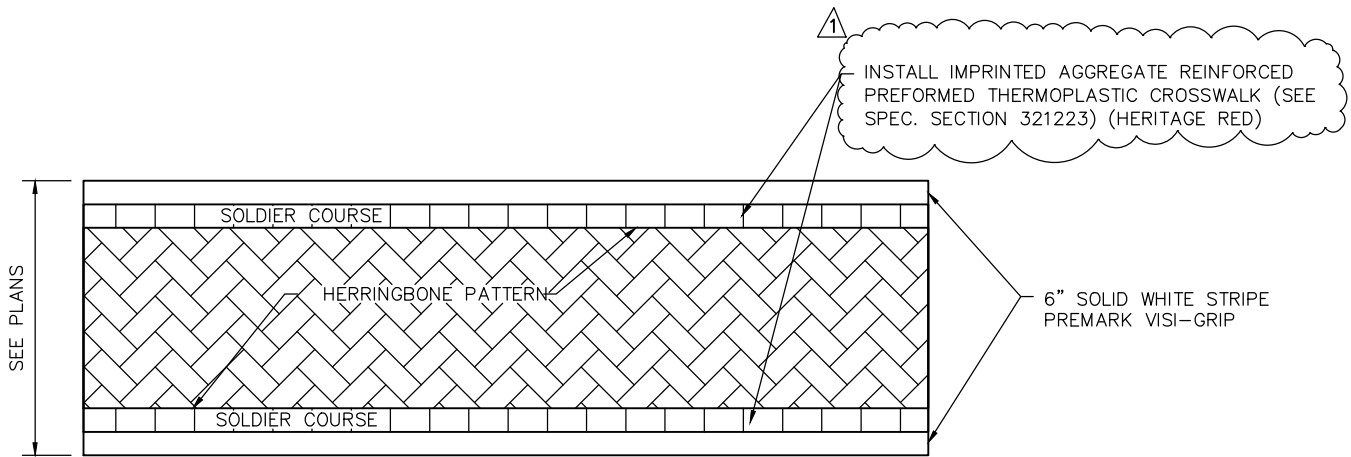
April 1, 2014

SIGN-IN SHEET

10:00 A.M.

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NOTE: COORDINATE CROSSWALK PATTERN AND COLOR WITH OWNER. SUBMIT SHOP DRAWING.

5  
C5.0

## STAMPED ASPHALT CROSSWALK

NOT TO SCALE



PROJECT TITLE:  
UNIVERSITY OF SOUTH CAROLINA  
GREENE / BULL ST. SITE IMPROVEMENTS

COLUMBIA, SC

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REVISION:



PROJECT NO:

12-216

DATE:

04/04/14

ISSUED VIA:

ADDENDUM No. 1

REFERENCE:

DRAWING NO. C5.0

SKETCH NO:

SK-1

SECTION 321223 - IMPRINTED AGGREGATE REINFORCED PREFORMED  
THERMOPLASTIC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes embossing patterns in new asphalt pavement.
- B. Related Requirements:
  - 1. Section 321216 "Asphalt Paving" for new asphalt pavement.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings:
  - 1. Indicate imprinted patterns, colors, and dimensions to adjacent work.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer Certified Applicator Requirement: The system shall be supplied and applied only by an applicator certified by the system manufacturer. The applicator shall provide proof of current certification before commencing work. The Certified Applicator shall follow the system manufacturer's current published application procedures.

- B. **Regulatory Requirements:** Comply with materials, workmanship, and other applicable requirements of street owner for imprinted aggregate reinforced preformed thermoplastic work.
  - 1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.

## 1.7 FIELD CONDITIONS

- A. **Environmental Limitations:** The system must be able to be applied in temperatures down to 45°F (7°C) without any special storage, preheating or treatment of the material before application. The system must be able to be applied to asphalt surfaces without preheating the application surface to a specific temperature.

## PART 2 - PRODUCTS

### 2.1 PREFORMED THERMOPLASTIC MATERIAL

- A. Must be composed of an ester modified rosin impervious to degradation by motor fuels, lubricants, etc. in conjunction with aggregates, pigments, binders, and anti-skid/anti-slip elements. Pigments and anti-skid/anti-slip elements must be uniformly distributed throughout the material. The material conforms to AASHTO designation M249, with the exception of the relevant differences due to the material being supplied in a preformed state, being non-reflective, and potentially being of a color different from white or
- B. **Pigments**
  - 1. **White:** The material shall be manufactured with sufficient titanium dioxide pigment to meet FHWA Docket No. FHWA-99-6190 Table 5 and Table 6 as revised and corrected.
  - 2. **Other Colors:** The pigment system must not contain heavy metals nor any carcinogen, as defined in 29 CFR 1910.1200 in amounts exceeding permissible limits as specified in relevant Federal Regulations.
- C. **Skid Resistance:** The surface of the material shall contain factory applied anti-skid/anti-slip elements with a minimum hardness of 6 (Mohs scale). Upon application the material shall provide a minimum skid resistance value of 60 BPN when tested according to ASTM E 303.
- D. **Slip Resistance:** The surface of the material shall contain factory applied anti-skid/anti-slip elements with a minimum hardness of 6 (Mohs scale). Upon application the material shall provide a minimum static friction of coefficient of 0.6 when tested according to ASTM C 1028 (wet and dry), and a minimum static coefficient of friction of 0.6 when tested according to ASTM D 2047.
- E. **Thickness:** The material must be supplied at a minimum thickness of 150 mil (3.8mm).

- F. **Environmental Resistance:** The material must be resistant to deterioration due to exposure to sunlight, water, salt or adverse weather conditions and impervious to oil and gasoline.
- G. **Storage Life:** The material may be stored for 12 months, if stored indoors and protected from the elements.
- H. **Transverse Lines to Supplement system Application:** Supplied as white, retroreflective preformed thermoplastic line stripe material in 90 mil (2.3 mm) or 125 mil (3.2 mm) thicknesses, material is available in 6 in. (.15m), 8 in. (.20m) or 12 in. (.30m) widths. This preformed thermoplastic material may be supplied and applied by the certified applicator in conjunction with the system, and is available from the system manufacturer. (Consult the manufacturer's published application instructions for the preformed thermoplastic line stripe material selected, for proper application methods.)

## 2.2 SPECIALIZED APPLICATION EQUIPMENT

- A. **Stamping Templates:** A wire rope template is required in the execution of the system. The template is used for imprinting the defined pattern once the preformed thermoplastic has been applied. The wire rope diameter for the imprinting template used for the specified pattern is 3/8 in. (9.5mm). The stamping templates are distributed by the system manufacturer.
  - 1. **Pattern:** Pattern indicated on Drawings.
- B. **Heating Equipment:** The system manufacturer shall distribute reciprocating infrared heating equipment designed specifically to elevate the temperature of the preformed thermoplastic material and asphalt pavement without adversely affecting it. The primary heating unit must employ a bank of propane-fired infrared heaters, mounted on a track device that allows the heater bank to reciprocate back and forth over a designated area, thereby allowing the operator to monitor the temperature of the preformed thermoplastic at all times during the pavement heating process. Retain "Precut Marking Material" Paragraph below only for inlaid, reflectorized, heat-bonded, pavement-marking pattern.
- C. **Sealer:** A two-part epoxy sealer specified and distributed by the system manufacturer must be applied to the substrate prior to material application to ensure proper adhesion, and to provide reinforcement for larger volumes of material
- D. **Aggregate:** Supplemental anti-skid/anti-slip elements to be applied to the surface of the molten thermoplastic as needed, if the factory applied anti-skid/anti-slip elements embed too deeply into the surface of the molten thermoplastic material during the heating process. (Embedded aggregate is exposed upon wear for extended skid resistance.) The aggregate is distributed by the system manufacturer.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. The system must only be applied to a stable, high quality asphalt pavement substrate over a stable base that is free of defects, as per the manufacturer published Substrate Guide. The asphalt pavement surface shall be dry and free from all foreign matter, including but not limited to dirt, dust, de-icing materials, and chemical residue.
- B. Proceed with asphalt imprinting only after unsatisfactory conditions have been corrected.
- C. Verify that utilities, traffic loop detectors, and other items requiring a cut and installation beneath the asphalt surface have been completed and that asphalt surface has been repaired flush with adjacent asphalt prior to beginning installation of imprinted asphalt.

### 3.2 APPLICATION

- A. General: Imprint asphalt according to manufacturer's written instructions, using manufacturer's recommended equipment.
- B. Procedure: The system is applied to asphalt pavement using proprietary reciprocating infrared heating equipment. The material must be able to be applied at ambient and road temperatures down to 45°F (7°C) without any preheating of the pavement to a specific temperature. A two-part epoxy sealer specified by the manufacturer must be applied to the substrate prior to preformed thermoplastic application. Immediately following sealer application, the panels of aggregate reinforced preformed thermoplastic are positioned properly on the asphalt substrate with the aggregate side facing up. The preformed thermoplastic is then heated to the required melting temperature. Additional aggregate may be applied to the preformed thermoplastic surface as needed following the melting process. As the material is cooling, it is imprinted with a stamping template made from 3/8 in. (9.5 mm) flexible wire rope in the required design using a vibratory plate compactor. The preformed thermoplastic material is then allowed to cool thoroughly before being opened to vehicle or pedestrian traffic. Retain "Reheating Asphalt" Paragraph below for imprinting existing asphalt pavement and for reheating new asphalt pavement.
- C. Reheating The system shall not be applied to Portland Cement Concrete.

- 3.3 **PACKAGING:** The preformed thermoplastic material shall be packaged in cardboard cartons with a plastic sheet between each layer of preformed thermoplastic. The cartons in which packed shall be non-returnable and shall not exceed 25 in. (.64m) in length and 25 in. (.64m) in width. The cartons shall be labeled for ease of identification. The weight of the individual carton must not exceed seventy (70) pounds (32 kg). A protective film around the carton must be applied in order to protect the material from rain or premature aging.

END OF SECTION 321223