



Epoxy Overlay Streetscape Resin Bonded Aggregate

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Epoxy Overlay Streetscape surfacing consisting of a specially formulated thermo-set two-part binder which is topped with a natural stone aggregate.

1.2 RELATED SECTIONS

Specifiers Note: Delete any selections below not relevant to this project; add others as required.

- A. Section 31 22 00 - Grading
- B. Section 03 05 10 - Concrete Color Additive
- C. Section 03 53 00 - Concrete Topping
- D. Section 03 01 40.61 - Resurfacing of Precast Concrete
- E. Section 09 97 23 - Concrete and Masonry Coatings
- F. Section 32 15 00 - Aggregate Surfacing
- G. Section 32 12 33 Flexible Paving Surface Treatments

1.3 REFERENCES

- A. ASTM C136 - Standard Test for Sieve Analysis of Fine and Coarse Aggregates
- B. ASTM D448 - Standard Classification for Sizes of Aggregate for Road and Bridge Construction.

1.4 ACTION SUBMITTALS

- A. Comply with Section 01 33 00.
- B. Product Data: Manufacturer's literature completely describing all components of the Epoxy Overlay Streetscape Resin Bonded Aggregate, including:
 1. Preparation instructions and recommendations.
 2. Installation methods and application procedures.
- C. Samples for Verification:
 1. Submit samples of each of the following:
 - a. Stone type and color.
 - b. Thickness (total cured build)
 - c. Variations of the above if requested.
- D. Certification:
 1. Manufacturer and Installer Qualifications.

1.5 LEED REQUIREMENTS

Specifiers Note: *Sustainability: LEED: Use the following paragraphs when LEED Submittals are required.*

- A. LEED Submittals: In accordance with [LEED] [and] [SECTION 01 35 21 LEED Requirements]
 - a. Submit required letters, calculations, spreadsheets and templates prepared by [Engineer] [Consultant] [Architect] [_____] for submitting to USGBC for Credit Interpretation Requests.
 - b. Submit Project Materials and Cost Data: Provide statement for total cost for building materials used for Project.

Specifiers Note: *Sustainability: LEED v.4*

3. Materials and Resources Credit: MRc Building Product Disclosure and Optimization - Sourcing of Raw materials: Submit product data and certification letter(s) of proposed materials with recycled content.

1.6 QUALITY ASSURANCE

- A. Comply with Section 01 04 00.
- B. Manufacturer: Company specializing in manufacturing Work of this Section with minimum 25 years documented experience.
- C. Applicator: Shall be approved by the manufacturer for the application being applied.
 - 1. The Applicator shall have lead personnel on the project that have been trained by manufacturer within the past 12 months of starting the project.
 - 2. At least one of these trained personnel shall be on site at all times during the application
 - 3. Applicator will have a minimum of 5 completed installations of such type.
 - 4. The applicator should offer a warranty. Contractor shall provide a 5 year warranty on installed Decorative Epoxy Bonded Aggregate Surface. The warranty shall over color fading, substantial wear, chips and cracks in the surface treatment.

Specifiers Note: *Include a mock-up, if the project size and/or complexity of the work require installation to be approved by Landscape Architect.*

- D. Mock Up: Provide a mock-up for evaluation of surface preparation, installation techniques and quality of application.
 - 1. Mockups to be applied to and presented on 24" x 24" x 1/4" hardboard panels unless otherwise requested.
 - 2. Approval of stone aggregate to be provided in writing to the bidding contractor no less than 7 days prior to bid closing.
 - 3. Approved mockups to be held by the owner for future onsite verification.

1.7 DELIVERY, STORAGE, and HANDLING

- A. Comply with Section 01 60 00.
- B. Packaging and Labeling
 - 1. The thermo-set two part 100% epoxy, urethane or MMA binder products shall be packed in standard closed containers.
 - 2. Each container or separately packaged component shall be clearly and durably labeled to indicate the date of manufacture, manufacturer's batch number, quantity, color, component identification and designated name or formula specification number together with special instructions.
- C. Delivery
 - 1. The thermo-set two part 100% epoxy, urethane or MMA binder products shall be accompanied by a delivery ticket containing the following minimum information:
 - a. Product name, batch number, and color.
 - b. Date of manufactured material and name of the manufacturer.
 - 2. The crushed aggregate shall be dried by the manufacturer and shall arrive in 3000 lb super sacks on pallets.
- D. Storage
 - 1. Store the thermo-set two part 100% epoxy, urethane or MMA binder on site in enclosures, out of direct sunlight in a warm, ventilated and dry area at room temperature.
 - 2. The aggregate should be stored in a dry area with no moisture.
- E. Handling
 - 1. Care shall be taken in handling of all products to prevent puncture, inappropriate opening or other action, which may lead to product contamination.
 - 2. No materials that are past the manufacturer's recommended shelf life shall be used without the approval of the manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Crushed Aggregate provided by Kafka Granite, LLC. 550 East Hwy 153, Mosinee, WI 54455 United States of America. Toll Free: (800) 852-7415. Phone: (715) 687-2423. Fax: (715) 687-2395. Website: www.kafkagranite.com. Email: kafka@kafkagranite.com

Kafka Granite does not supply thermo-set two part 100% epoxy, urethane or MMA binder products. Recommended Binder: Pattern Paving Products. 1750 Hwy 160 West, Suite 101-222, Fort Mill, SC 29708 United States of America. Toll Free: (888) 434-8611. Phone: (803) 327-8611. Fax (215) 893-4827. Website: <https://www.patternpaving.com/> or approved equal.

2.2 MATERIALS AND PERFORMANCE

1. Composition: Epoxy Overlay Streetscape consists of a thermo-set part 100% epoxy, urethane or MMA binder and stone aggregate seeded onto the wet binder.
 - a. Hard stones like granite are recommended where high friction is required.
 - b. Blends of various naturally colored crushed stone are available to provide the desired architectural required affect.
2. Thermoset Binder Thickness: Minimum average thickness of the thermoset binder shall be 50 mils (.050 inch) or coverage per gallon of 25 sq ft.
3. Stone Aggregate Size: Aggregate size shall be 1/8 x 18 mesh.
4. Stone Aggregate coverage: Minimum average coverage of stone shall be 1.5 lbs per sq ft per lift of fixed stone (embedded into binder).

2.3 PERFORMANCE CHARACTERISTICS

1. Adhesion to Asphalt: ≥ 180 psi using ASTM D4541
2. Impact Resistance: Minimum of 60 ft lbs using AASHTO M 250-05
3. Tensile Strength: ≥ 400 psi using ASTM D412
4. Sheen: ≥ 1 at 85° using ASTM D523
5. Abrasion Resistance: ≤ 100 mg/1000 cycles using ASTM D4060

2.4 ACCESSORIES

1. Stencil Patterns: Stencils shall be made of paper, a minimum of 14 mils thick.
 - a. All stencils shall arrive on site in unopened packaging in new condition.
 - b. Stencils shall be secured to the substrate on the perimeter of the pattern area using tape.
 - c. Periodically a small amount of tape may be used to secure the stencil to low areas of substrate.
 - d. Pattern and grout-line width shall be approved by the owner prior to tender closing.
2. Stamping Patterns:
 - a. 5/16" cable templates shall be used to stamp and create the desired pattern on the surface of the resin and stone.

PART 3 - EXECUTION

3.1 EXAMINATION

1. Examine areas and conditions under which Work of this Section will be performed.
2. Correct conditions detrimental to timely and proper completion of work.
3. Do not proceed until unsatisfactory conditions are corrected.
4. Lay out work prior to the commencement of installation.

3.2 PREPARATION

1. The surface must be cleaned prior to installation. Broom using mechanical brooming device, or stiff bristle hand broom. Scrape and blow fine sand and debris off of surface. Pressure washing may be necessary to remove bonded debris. Use a non-solvent based degreaser to remove stains. Spray degreaser on stained area and let stand for 15 minutes. Using a stiff broom or brush, agitate the stained area to remove stains and rinse with water. Repeat this procedure on severe stains. Thoroughly rinse the area and let dry for 24 hours.
2. Repair Damaged Asphalt: Damaged and cracked asphalt shall be repaired by heating the damaged area until the asphalt cement is in a liquid state (ensuring asphalt does not exceed 375° F), turning over and mixing in new fresh asphalt if necessary to ensure repair is level with adjacent area. Infrared type heating mechanisms are the recommended heating tool for this procedure.
3. Preparation of New Asphalt: Asphalt mix design shall be specified by a qualified Pavement Engineer and shall be designed for the purpose of the application.

3.3 APPLICATION

1. Atmospheric Conditions: Surfaces should be dry for at least 24 hours prior to applying Epoxy Overlay Streetscape. 45° F is the recommended minimum air and surface temperature. At the time of installation the surface must be dry prior to application.

3.4 INSTALLATION

1. After any pre-existing cracks have been filled and the surface has been thoroughly cleaned and is dry, the binder is to be mixed.
2. When using epoxy, Part A shall be mixed 1 to 1 with part B for a minimum of 3 minutes using a jiffler-type mixing paddle. When using Urethane Part A shall be mixed 2 to 1 with part B for a minimum of 3 minutes using a jiffler-type mixing paddle. When using MMA resin a mix of 2% of BPO hardener to resin shall be used.
3. Working time of the mixed binder is approximately 20 minutes at 70° F. This time increases at cooler temperatures, and decreases at higher temperatures. Aggregate must be seeded onto the binder within this time period to provide maximum stone embedding into the binder.
4. Once mix is created, spread evenly on the surface. The aggregate will be dispersed.
5. Cure time of the binder is approximately 48 hours at 70° F. Time to allow traffic is 3 to 4 hours at 70° F. This time increases at cooler temperatures, and decreases at higher temperatures.

3.5 CLEAN-UP AND PROTECTION

1. Once the epoxy is cured, thoroughly clean all areas where work has occurred. Remove excess stone by mechanical broom or hand broom prior to allowing traffic or at a later more convenient time.

END OF SECTION