

Resin Bonded Stone Surfacing

DESCRIPTION. Under this work, the Contractor shall furnish and apply a resin bonded stone surface containing an epoxy binder to bind gravel and aggregates together in accordance with patterns as specified on provided Work Orders or Plans, or as ordered by the Engineer and in conformance with these specifications. The locations are generally asphalt, or less often concrete, roadbed converted into pedestrian space or sidewalk.

Resin bonded stone surfacing shall consist of:

- A two-part resin bonded treatment containing epoxy binder to bind gravel and aggregates together.
- Resin applied to the surface and loose aggregates are scattered onto the surface before the resin sets.
- An aggregate mix approved by Engineer for color and sharpness, that may include recycled material, and that will generally contain three stones: white quartz, granite and buff colored aggregate or approved equal.
- The epoxy shall be covered with 1mm to 3mm sized aggregates.
- The stones must be natural and un-dyed without a coating and give a beige overall appearance. The stone should have sharp edges for better adhesion to the two-part epoxy.

MATERIALS. The resin bonded stone surfacing shall be capable of application on new and existing asphalt and Portland cement concrete surfaces, and shall:

- Be VOC compliant and lead chromate free.
- Not contain 0.1% or more of any chemical listed by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or regulated by the US Occupational Safety and Health Administration (OSHA) as a carcinogen.
- Conform to current Federal, State and Local air pollution regulations, including those for the control (emission) of volatile organic compounds (VOC).
- Be packaged and stored in accordance with the manufacturer's instructions and requirements for shelf life and storage conditions in original unopened containers. Shipping documents and containers shall have identification numbers or batch dates for confirmation of when products were manufactured, clearly labeled as to the type material and the ratio of the components to be mixed by volume as well as showing resin or hardener components, brand name, name of manufacturer, lot or batch number, temperature range for storage, expiration date and the quantity contained. Include any special instructions regarding mixing and the Material Safety Data Sheets. This information shall be made available for inspection at any time.
- Be colored with a beige overall appearance as specified on provided Work Orders or Plans. The color shall be approved by the Engineer prior to the material purchase by the Contractor.
- Incorporate aggregates approved by the manufacturer for compatibility and handling in compliance with manufacturer recommendations – providing a surface friction level equivalent or better than existing pavement.
- Follow the Federal, State and City environmental disposal regulations for unused resin bonded stone surfacing materials, tarps, tapes and garbage.
- Present a marking whose color and chemical resistance will not degrade under normal exposure to weather, street sweeping/plowing, calcium chloride, sodium chloride, automotive or food oils and automotive fuels.

Resin Bonded Stone Surfacing

- Use color pigments that remain stable under exposure to ultra violet light, and if possible, have a positive rating on the LEED Solar Reflectance Index.

APPROVED MATERIALS. Products appearing on the list below with a Manufacturer's certification that the product meets the requirements of this specification, or a Product approved equal as determined by the Engineer, are deemed acceptable for use:

Safe-T- Grip by Epoplex
1000 East Park Avenue, Maple Shade, NJ 08052
800-822-6920
www.epoplex.com

High Friction Surface Treatment by Ruby Lake Glass, LLC
493 State Route 28
Richfield Springs, NY 13439
607-435-8158
www.rubylakeglass.com

Addastone by Chameleon Ways
PO BOX 387
Center Valley, PA 18034
877-426-5687
www.chameleonways.com

CONSTRUCTION DETAILS.

General. The resin bonded stone surface shall be installed as shown on the Contract or Work Order Documents or as ordered by the Engineer.

Before any surface installation work is begun, a schedule of operations shall be submitted for the approval of the Engineer and his/her authorized representative. At least five (5) days prior to starting application, the Contractor shall provide the Engineer with the beige color and manufacturer's written instructions for use. These instructions shall include, but not be limited to, material mixing ratios and application temperatures.

When applied under traffic, the Contractor shall provide all necessary flags, markers, signs, etc. in accordance with the MUTCD to maintain and protect traffic including pedestrians and bicyclists, and to protect marking operations and the markings until thoroughly set.

The Contractor shall be responsible for removing, to the satisfaction of the Engineer, all tracking marks, spilled resin bonded material applied in unauthorized areas.

Atmospheric Conditions. Resin bonded stone surface shall only be applied during conditions of dry weather and on dry pavement surfaces. At the time of installation the pavement surface temperature shall be at or above manufacturer recommendations.

Surface Preparation. The Contractor shall clean the pavement and existing materials to the satisfaction of the Engineer. At the time of application, all pavement surfaces shall be free of pavement markings, oil, dirt, dust, grease and similar foreign materials.

Resin Bonded Stone Surfacing

Application Equipment. Equipment for the placement resin bonded materials shall be approved by the Engineer prior to the start of work.

Application. Resin bonded stone surface shall be placed at the friction, thickness, and pattern designated by the Contract Documents. The installation shall not begin until applicable surface preparation work is completed and approved by the Engineer, and the atmospheric conditions and pavement surface temperature are acceptable to the Engineer.

Masking tape or similar should be removed as material gels, but before it cures and be properly disposed.

Defective Results. Resin bonded material, which after installation and curing is determined by the Engineer to be defective and not in conformance with this specification, shall be repaired. Repair of defective resin bonded installation shall be the responsibility of the Contractor and shall be performed to the satisfaction of the Engineer as follows:

1. Insufficient aggregate coverage and coefficient of friction:

Repair Method. Repair shall be made by reapplying the resin bonded over the cleaned surface in accordance with the requirements with 1mm to 3mm approved aggregates.

2. Uncured or discolored resin bonded material or insufficient bond (to pavement surface)

Repair Method. The defective location shall be completely removed and cleaned to the underlying pavement surface to the satisfaction of the Engineer.

After surface preparation work is complete, repair shall be made by reapplying epoxy , followed by colored aggregate in accordance with the requirements of this specification.

Other defects not noted above, but determined by the Engineer to need repair, shall be repaired or replaced as directed by and to the satisfaction of the Engineer.

All work in conjunction with the repair or replacement of defective resin bonded installation shall be performed at the Contractor's expense.

Personal Protective Equipment. Follow all exposure, respiratory and personal protective equipment controls, handling and safety precautions and spill and disposal procedures as identified by safety data sheets (SDS), labels and other manufacturer's recommendations for the products used.

WORK ZONE TRAFFIC CONTROL (WZTC). The Contractor is responsible for ensuring appropriate WZTC in compliance with the MUTCD appropriate for the dry time of the selected material applied. The Contractor is responsible to ensure adequate WZTC to prevent those walking, skating, bicycling, and driving from coming into contact with applied material that is still capable of being tracked. The Contractor shall be liable for such tracking and property damage should it occur.

METHOD OF MEASUREMENT. The quantity for payment, in square feet of resin bonded aggregate shall be computed within the payment lines shown on the plans, Work Order, or as otherwise ordered in writing by the Engineer.

BASIS OF PAYMENT. The accepted quantities resin bonded stone surface will be paid for at the contract unit price, which shall include the cost of furnishing all labor, materials and equipment to satisfactorily complete the work. The cost of removal of concrete curing compounds and existing pavement markings will be paid under separate items and are not included in this item.

Resin Bonded Stone Surfacing

Payment will be made under:

Item

Resin bonded stone surface

Pay Unit

Square Foot