

FIBER REINFORCED POLYMER PATCHING MATERIAL (REV 5-23-22)

The following new Section is added:

SECTION 351 FIBER REINFORCED POLYMER PATCHING MATERIAL

351-1 Description.

Repair spalled areas, cracks, corner breaks, potholes, and joints on concrete pavements using a fiber reinforced polymer patching material, bulking aggregates, and final surface aggregates as specified below. Depth of repair must be a minimum of 1/2 inch and the maximum area of an individual repair shall be 12 square feet. The length of linear crack repair is not limited.

For purposes of this specification, the following definitions apply:

1. Primer – the liquid binding agent which shall be applied to all concrete faces of the prepared concrete repair area prior to placing patching material.
2. Binder – the thermal setting material that is the basis of the patching material, and to which any fillers, fibers, or other components are added.
3. Patching Material – the binder and other additives, mixed together, and in the form that will be applied to the patch, not including bulking aggregate or final surface aggregate.
4. Patching Material Supplier – the source that initially manufactures the binder and patching material.
5. Bulking Aggregate – additional aggregate applied to the patch after the Patching Material has been applied.
6. Final Surface Aggregate – additional aggregate applied to the surface of the finished patch, which will be the final driving pavement surface.

351-2 Materials.

351-2.1 Primer: Use a primer approved by the patching material supplier.

351-2.2 Patching Material: Provide a hot applied patching material consisting of a combination of binder, polymers graded fillers, aggregates, fibers, and resin that once heated, provides an impermeable, voidless solid mass at ambient temperatures. Submit documentation of independent testing showing the product demonstrates the following at the end of a 1-year test: no rutting greater than 1/4 inch, no visible cracking, friction aggregate remaining in-place on the surface, and patching material remaining bonded to the repaired surface.

Use a resin or polymer based patching material which has been formulated by the patching material supplier according to climatic conditions to provide a durable pavement repair with good fluidity at process temperature, low temperature flexibility, and ambient temperature flow resistance.

351-2.3 Bulking Aggregate: Provide single sized bulking aggregate consisting of an aggregate approved by the patching material supplier or a granite coarse aggregate # 57 stone meeting all requirements of Section 901.

351-2.4 Final Surface Aggregate: Provide final surface aggregate consisting of an aggregate approved by the patching material supplier or a granite coarse Aggregate meeting all requirements of 333-2.3.

351-3 Construction.

Place the patching material installation to completely fill the damaged or spalled areas.

Use an applicator approved by the patching material supplier.

Remove all loose and damaged material from the repair area, either by saw cutting around the area and using a jackhammer to remove material or by using a milling/pavement grinding machine. If a jackhammer is used, use a jackhammer approved by the patching material supplier capable of performing the required removal of the existing material without further damaging the surrounding pavement. Use a 30 pound or smaller jackhammer.

For crack repairs, the minimum width of the repair area shall be 2 inches with no minimum length.

Prepare the repair area to ensure a minimum 1/2 inch vertical face of all pavement adjacent to the repair area.

Remove material from the repair area to a depth and width necessary to provide sound pavement that will allow proper seating of the patching material.

Thoroughly clean and dry substrate faces using a hot-compressed air lance.

For both field blended patching materials and pre-blended packaged patching materials, dress the surface of the patch with heated final surface aggregate. The entire surface of the patch area shall be completely covered by final surface aggregate. The final surface aggregate shall be placed within 5 minutes after the surface lift has been leveled and while the patch is still hot.

Sweep the area and remove all debris from the site. Do not allow traffic on the material until the surface has cooled to 150°F.

351-3.1 Field Blended Patching Materials: Do not place patching material when the pavement temperature, within the patch, is less than 40°F, pavement is wet, or rain is imminent.

For concrete pavement, prime the entire excavated area using a primer approved by the patching material supplier to prevent moisture intrusion and aid bonding of patching material to underlying surface. Allow the primer to completely dry before applying the patching material.

Apply the patching material to the repair area. For field-blended material, if the repair area is deeper than 1 inch, add bulking aggregate. Lifts shall be bulked by tamping layers of bulking aggregate into the layer immediately after lift has been placed; add bulking aggregate until the layer cannot accept more bulking aggregate. Place bulking aggregate slowly so that all faces of each bulking aggregate stone are completely surrounded by patching material.

Install additional patching material and bulking aggregate in 1 inch to 2 inch (plus or minus 1/2 inch) lifts until the repair is level with the existing pavement.

Apply a final coat of the heated patching material to level the repair area even with the surrounding pavement. Do not add bulking aggregate to the final surface layer. Final layer should be flush with pavement surface.

351-3.2 Pre-Blended Packaged Patching Materials: Do not place patching material when the pavement temperature, within the patch areas, is less than 40 °F, pavement is wet, or rain is imminent.

For concrete pavement, prime the entire excavated area using a primer approved by the patching material supplier to prevent moisture intrusion and aid bonding of patching

material to underlying surface as well as sides of the patch. Allow the primer to completely dry before applying the patching material.

Mix and heat the patching material on site to the temperature specified by the patching material supplier immediately prior to placement, in a horizontal mixing unit equipped with electronically controlled thermostats. Ensure final surface aggregates are dry and free of any dust.

Apply the patching material to the repair area per patching material supplier's Installation Instructions. If the repair area is deeper than 2 inches, apply the material in maximum 2 inch layers. Do not add bulking aggregate to the final surface layer. Final layer should be flush with pavement surface.

351-4 Method of Measurement.

Payment will be made at the Contract unit price per pound of patching material. Bulking aggregate is incidental and is included in the unit price per pound of patching material. Volume of patching material will be measured in the tank using a calibrated steel or glass rod at the beginning and end of each patching operation. The patching material supplier must supply a signed certification correlating volume to weight of patching material in order to correlate the volume of patching material placed to weight of patching material for payment.

The patching material supplier must also supply a signed calibration certification or literature from the tank manufacturer correlating depth in tank to volume in tank. The volume of patching material used for each pour must be calculated as:

$$V_p = V_i + V_n - V_f, \text{ where}$$

V_p = Volume of patching material placed

V_i = Initial volume of patching material in tank prior to adding new patching material

V_n = Volume of new patching material added to the tank

V_f = Final volume of patching material in tank at the end of the pour

351-5 Basis of Payment.

351-5.1: Price and payment will be full compensation for all work specified in this Section, including all activities associated with surface preparation, mixing, and placing repair material and debris disposal.

351-5.2: Payment: Payment will be made under:

Item No. 916-351- Fiber Reinforced Polymer Patching Material, per pound.