

## **BITUMINOUS PATCHING MATERIAL.**

**(REV 9-20-21)**

SECTION 331. The following new Section is added after Section 330.

### **SECTION 331 BITUMINOUS PATCHING MATERIAL**

#### **331-1 Description.**

Repair spalled areas, raveled areas, cracks, potholes, rumble strips, and/or joints on asphalt pavements using a polymer modified bituminous patching material, bulking aggregates, and final surface aggregates, as specified below. The depth of repair must be a minimum of 1/2 inch and the maximum area of an individual repair shall be 18 square feet. For crack repairs, the minimum width of the repair area is 1-1/2 inches. The length of crack or rumble strip repair is not limited.

For purposes of this specification, the following definitions apply:

1. Binder – the bituminous thermal setting material that is the basis of the patching material, and to which any fillers, fibers, or other components are added.
2. 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.
3. Patching Material Supplier – the source that initially manufactures the binder and patching material.
4. Bulking Aggregate – additional coarse aggregate applied to the patch material for patch lift thicknesses greater than 1 inch.
5. Final Surface Aggregate – additional aggregate applied to the surface of the finished patch, which will be the final driving pavement surface.

#### **331-2 Materials.**

**351-2.1 Patching Material:** Provide a hot applied patching material consisting of a combination of binder, polymers, graded fillers, and aggregates, that once heated, provides an impermeable, durable, solid mass at ambient temperatures. The hot-applied asphalt aggregate-filled mastic will form a resilient, stable, and adhesive compound capable of effectively repairing or alleviating (or both) distresses in pavement, so the ride quality is improved, or the pavement life is extended (or both). Submit documentation of independent field testing from a previous project showing the product demonstrates the following at the end of a one-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 polymer modified, asphalt binder 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.

Meet the following material requirements for the patching material:

Property	Method	Requirement
Color	N/A	Black
Mastic Resilience	ASTM D8260	50% minimum
Effects of Rapid Deformation	ASTM D8260	No cracking, chipping, or separation 8 N-m, -7°C
Crack Bridging	ASTM D8260	3 cycles, -7°C
Mastic Stability	ASTM D8260	40.0 mm maximum, 70°C
Recommended Application Temp.	N/A	340°F to 400°F
Specific Gravity	N/A	1.7 - 2.0

**331-2.2 Bulking Aggregate:** Provide washed and dried single sized bulking aggregate consisting of an aggregate approved by the patching material supplier or a granite coarse aggregate No. 57 stone meeting all requirements of Section 901.

**331-2.3 Final Surface Aggregate:** Provide final surface aggregate consisting of an aggregate approved by the patching material supplier and Engineer. As an alternative, utilize bauxite or granite aggregate consisting of particles 1 - 3 mm in size. Deliver the aggregate to the construction site in clearly labeled containers. The aggregate must be clean, dry, free from foreign matter, and meet the following requirements:

Final Surface Aggregate Requirements		
Property	Method	Requirement
Aggregate Abrasion Value	FM 1-T096	30% Max
Aggregate Gradation	AASHTO T 27	1/4" Sieve Size, Min. 90% Passing
	AASHTO T 27	No. 16 Sieve Size, Max 10% Passing

### 331-3 Construction.

**331-3.1 General:** Remove all loose and damaged material from the repair area. Saw cutting, milling, or grinding is permissible as needed. Perform the required removal of the existing material without further damaging the surrounding pavement. Remove material from the repair area to a depth and width necessary to provide sound pavement that will allow proper seating and adhesion of the patching material.

Use an applicator approved by the patching material supplier.

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

Place the patching material to completely fill the repair area.

**331-3.2 Patching Material and Bulking Aggregate:** The patching material may be either field blended or pre-blended packaged material. For either type of material, do not place the patching material when the existing pavement temperature within the patch area is less than 40°F, is wet, or rain is imminent.

Use a bulking aggregate per the patching material supplier's installation instructions.

Use a horizontal mixing unit equipped with an electronically controlled thermostat to mix the patching material on site. Heat the material to the temperature specified by the material supplier immediately prior to placement.

Apply the patching material to the repair area in accordance with the patching material supplier's installation instructions. If the repair area is deeper than 2 inches, apply the material and bulking aggregate in 1-inch to 2-inch (plus or minus 1/2 inch) lifts.

Lifts shall be bulked by tamping layers of bulking aggregate into the patching material layer immediately after the patching material first layer has been placed. The bulking aggregates must be dry and free of any dust prior to application. 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.

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

**331-3.4 Final Surface Aggregate:** Final surface aggregates must be dry and free of any dust prior to application. For both field blended patching materials and pre-blended packaged patching materials, dress the surface of the patch with heated final surface aggregate. Cover the entire surface of the patch area with final surface aggregate. Place the final surface aggregate within five 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 once the surface has cooled to 150°F or less. Do not allow traffic on the material until the surface has cooled to 150°F and is able to support traffic loading.

#### **331-4 Method of Measurement.**

Payment will be made at the Contract unit price per cubic foot 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 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

#### **331-5 Basis of Payment.**

**331-5.1 General:** Price and payment will be full compensation for all work and materials specified in this Section, including furnishing all labor, materials, equipment, and incidentals necessary to complete the work.

No separate payment will be made for bulking aggregate or final surface aggregate.

**331-5.2 Payment:** Payment will be made under:

Item No. 918-331-	Fiber Reinforced Bituminous Patching Material, per cubic foot.
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