Item 721
Fiber Reinforced Polymer Patching Material

1. DESCRIPTION
Repair spalled areas, potholes, and joints on concrete and asphalt pavements using a fiber reinforced polymer patching material, bulking aggregates, and finishing aggregates as specified below.

2. DEFINITIONS
For the purposes of this specification, the following definitions apply:
- **Binder.** The thermal setting material that is the basis of the patching material, and to which any fillers, fibers, or other components are added.
- **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.
- **Bulking Aggregate.** Additional aggregate mixed with the patching material when using for repairs deeper than 1 in.
- **Finishing Aggregate.** Additional aggregate applied to the patch after the patching material has been applied.

3. MATERIALS
Provide a hot-applied patching material consisting of a combination of binder, polymers, graded fillers, aggregates, fibers, and rubber that once heated provides an impermeable, voidless solid mass at ambient temperatures. Formulate the patching material according to climatic conditions to provide a durable pavement repair with good fluidity at process temperature, low temperature flexibility, and ambient temperature flow resistance.

The binder may be liquid asphalt or polymer based, unless otherwise shown on the plans, and may be provided separately or premixed with the other components of the patching material. The patching material must meet the requirements of Table 1.

<table>
<thead>
<tr>
<th>Property</th>
<th>Test Method</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resilience</td>
<td>Tex-547-C</td>
<td>50% minimum</td>
</tr>
<tr>
<td>Tensile Strain to Failure</td>
<td>Tex-548-C</td>
<td>20% minimum</td>
</tr>
<tr>
<td>Tensile Stress at Failure</td>
<td>Tex-548-C</td>
<td>50 psi minimum</td>
</tr>
<tr>
<td>Cone Flow</td>
<td>Tex-549-C</td>
<td>12% maximum (asphalt based)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4% maximum (polymer based)</td>
</tr>
<tr>
<td>Flexibility</td>
<td>Tex-550-C</td>
<td>pass¹</td>
</tr>
<tr>
<td>Settlement</td>
<td>Tex-551-C</td>
<td>3 mm, maximum</td>
</tr>
</tbody>
</table>

¹. No evidence of cracking of the sample.

3.1. **Sampling and Testing.** Provide material that has been preapproved by the Department in accordance with Tex-545-C. Submit blended samples of patching material for preapproval or field evaluation.

3.2. **Bulking Aggregate.** Provide single-sized bulking aggregate consisting of a crushed, double-washed, and dried Type A Grade 1 aggregate in accordance with Item 302, “Aggregates for Surface Treatments,” or equivalent.
Note—Patching material may be supplied with the bulking aggregate premixed, when shown on the plans. The Engineer may sample the material to determine the percentage by weight of bulking aggregate included.

3.3. Final Surface Aggregate. Provide final surface aggregate consisting of a crushed, double-washed, and dried Type A Grade 5 aggregate in accordance with Item 302, "Aggregates for Surface Treatments."

4. WORK METHODS

Install the patching material to fill the damaged or spalled areas as shown on the plans, with adjustments to the depth and width of the repairs as directed.

Use an applicator certified by the material manufacturer.

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 a milling machine, as approved. 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.

- Use an approved jackhammer capable of performing the required removal of the existing material without further damaging the surrounding pavement. Use a jackhammer no larger than 30 pounds unless otherwise approved.
- Operate the milling machine in the longitudinal direction to provide a tapered edge in the direction of travel.

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

Prime the area for concrete pavement using a primer determined by the manufacturer to prevent moisture intrusion.

Mix and heat the patching material on site in a horizontal mixing unit equipped with electronically controlled thermostats. Heat the bulking and final surface aggregates until dry and free of dust, using a vented barrel mixer or other approved method to 300°F.

Apply patching material to the repair area. If the repair area is deeper than 1 in., add bulking aggregate at a rate of 15%-30% by volume as directed. Install patching material in lifts to ensure uniform application for materials with the bulking aggregate premixed.

Install additional patching material and bulking aggregate in 1-in. lifts until the repair is level with the existing pavement.

Apply a final coat of the heated patching material to level the repair area.

Dress the surface of the patch with heated surface aggregate. Perform this operation while the patch is still hot.

Sweep the area and remove all debris from the site. Ensure the material has cooled where it does not permanently deform under pressure, as recommended by the manufacturer or as directed, before opening to traffic.

5. MEASUREMENT

This Item will be measured by the pound of patching material installed. If the bulking aggregate is supplied premixed with the patching material, discount the gross weight of material by the weight percentage of bulking aggregate included.
6. PAYMENT

The work performed and materials furnished in accordance with the Item and measured as provided under “Measurement” will be paid for at the unit price bid for “Fiber Reinforced Polymer Patching Material.” This price is full compensation for furnishing materials, including bulking and final surface aggregates, patching material binder, and primer; heating and mixing; removal and disposal of existing pavement material; placing and finishing; labor, equipment, tools, and incidentals.