a. **Description.** Prepare pavement surfaces and apply reflectorized white and yellow two-component, 100 percent solids polyurea pavement markings, including lines, legends, symbols, crosswalks, and stop lines. Complete this work according to this special provision, project plans, the Standard Specifications for Construction, and as directed by the Engineer.

b. **Materials.** Select polyurea pavement marking material from the Qualified Products List (QPL) and use standard glass beads as called for in section 920 of the Standard Specifications for Construction except as noted in this provision.

   1. For recessed longitudinal markings. Use a double drop system of large and standard glass beads, a double drop system of ceramic elements and standard glass beads or an alternate approved by the Engineer. The large glass beads have to meet all Federal specifications for a Type 4 designation glass bead. Follow the polyurea manufacturer’s recommendations for type, gradation, and loading rates with these systems.

   2. For non-recessed longitudinal markings. Use standard glass beads or an alternate approved by the Engineer. Follow the polyurea manufacturer’s recommendations for type, gradation, and loading rates of glass beads.

   3. For special markings. Follow the polyurea manufacturer’s recommendations for type, gradation, and loading rates of standard glass beads.

The material must be shipped to the job site in sturdy containers plainly marked with the manufacturer’s name and address, the color of the material, date of manufacture and batch number.

Provide certification to the Engineer from the polyurea manufacturer documenting the Contractor’s qualifications to place the polyurea in a manner acceptable to the polyurea manufacturer and in compliance with the provisions of this specification. Provide technical data from the polyurea manufacturer regarding material type and application rate to the Engineer prior to starting work.

c. **Construction.**

   1. Placement. Place polyurea materials and beads according to this specification and the polyurea manufacturer’s requirements.

   2. Surface Preparation. Surface preparation requirements are dependent on surface conditions. Preparation applies to both special makings and longitudinal markings.
A. New hot mix asphalt (HMA). “New” HMA that has been open to traffic for 10 days or less and has no oil drips, residue, debris, or temporary or permanent markings. Preparation required – Clean marking area with compressed air.

B. New Portland cement concrete (PCC). “New” PCC has no oil drips, residue, and debris, temporary or permanent markings. Preparation required - Remove curing compound; to be paid for separately as Removing Curing Compound.

C. Existing HMA or PCC surface. There may be oil drip areas and/or debris, but no existing markings. Preparation required - Scarify the proposed marking area using non-milling grinding teeth or shot blasting.

D. Existing HMA or PCC surface with existing non-polyurea marking. There may be oil drips and debris. There will be an existing non-polyurea marking. Preparation required - Completely remove non-polyurea markings; to be paid for as Removal of Special Markings or Removal of Longitudinal Lines.

E. Existing surface with existing polyurea marking, HMA or PCC. There may be oil drip areas and/or debris. There will be an existing polyurea marking. Preparation required:

1. If markings are replaced every 2 years and there are no visible oil drip areas or visible chipping/spalling of the existing marking: Clean marking area with compressed air.

2. If markings are replaced every 2 years and there are visible oil drip areas, chipping and/or spalling of the existing marking: Scarify the proposed marking area using non-milling grinding teeth or shot blast.

3. If markings are replaced every 4 years: Complete removal is required. When complete removal is required, it will be paid for as Removal of Special Markings or Removal of Longitudinal Lines.

Conduct grinding, scarifying, sandblasting, shot blasting, or other operations in such a manner that the finished pavement surface is not damaged and does not exhibit a pattern that will mislead or misdirect the motorist. Use vacuum-type equipment or equivalent to collect and contain debris generated by this operation.

When surface preparation is complete, broom the pavement surface, and follow with compressed air cleaning to remove all residue and debris resulting from the preparation work. Control and minimize airborne dust and similar debris generated by surface preparation and cleanup to prevent a hazard to motor vehicle operation or nuisance to adjacent property.

Do not damage transverse and longitudinal joint sealers on HMA and PCC surfaces when performing removal and cleaning work.

3. Temperature Limitations. The ambient air temperature and the pavement surface temperature where the polyurea is to be placed must be at least 40 degrees F and rising during marking operations. Measure and record the pavement surface temperature and air
temperature at the start of each day of marking operation and at any other time deemed necessary by the Engineer.

4. Application rates. The Engineer may check application rates by comparing tallies of materials used to the length of lines placed.

The Engineer may also check application rates at any time using a pre-weighed sheet specifically placed for test purposes for both special markings and longitudinal lines. Drop-on glass beads are not applied for this test.

5. Dry Time. The material must be track-free in less than 10 minutes.

d. Delayed Acceptance. Final acceptance of completed applications of polyurea will be delayed 60 days. During this time, inspections of the markings will be conducted at the Department’s discretion. Markings with less than 90 percent of the original application remaining will be considered to have failed and must be replaced. However, pavement markings that have been damaged by snowplowing operations will not be considered as having failed.

A minimum of 90 percent of the deficient marking must be removed. All costs associated with this replacement work, including traffic control to complete the work, will be borne by the Contractor.

e. Measurement and Payment. The completed work as described will be measured and paid for at contract unit prices using the following contract items (pay items):

<table>
<thead>
<tr>
<th>Contract Item (Pay Item)</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pavt Mrkg, Polyurea, (symbol)</td>
<td>Each</td>
</tr>
<tr>
<td>Pavt Mrkg, Polyurea, (legend)</td>
<td>Each</td>
</tr>
<tr>
<td>Pavt Mrkg, Polyurea, ___ inch, Crosswalk</td>
<td>Foot</td>
</tr>
<tr>
<td>Pavt Mrkg, Polyurea, ___ inch, Stop Bar</td>
<td>Foot</td>
</tr>
<tr>
<td>Pavt Mrkg, Polyurea, ___ inch, Cross Hatching (color)</td>
<td>Foot</td>
</tr>
<tr>
<td>Pavt Mrkg, Polyurea, ___ inch, (color)</td>
<td>Foot</td>
</tr>
</tbody>
</table>

The contract unit price for each of these items includes all labor, material, equipment, and traffic control. Payment also includes the costs associated with corrective action as described in subsection (d) of this special provision. Removing curing compound or existing pavement markings will be paid for separately as described in subsection c.2 of this special provision.