a. Description. This work consists of preparing pavement surfaces and applying retroreflectorized white and yellow two-component, modified urethane pavement markings including lines, legends, symbols, crosswalks and stop bars. Complete this work according to this special provision, the plans, the standard specifications, and as directed by the Engineer.

b. Materials. Select a modified urethane pavement marking material from the Qualified Products List (QPL) (811.03D7). Use standard glass beads as called for in section 920 of the Standard Specifications for Construction, except as modified by this special provision. Ensure all materials are shipped to the job site in sturdy containers marked in accordance with section 920 of the Standard Specifications for Construction, and the contract.

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

1. Recessed Markings. For recessed 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 system approved by the Engineer. The large glass beads must meet all Federal specifications for a Type 4 designation glass bead. Follow the modified urethane manufacturer’s recommendations for type, gradation, and loading rates with these systems. Apply modified urethane at a thickness of 17 to 20 mils.

2. Non-Recessed Markings. For non-recessed markings, use standard glass beads or an alternate approved by the Engineer. Follow the modified urethane manufacturer's recommendations for type, gradation, and loading rates of glass beads. Apply modified urethane at a thickness of 17 to 20 mils.

c. Construction.

1. Temperature Limitations. Follow the temperature limitations recommended by the modified urethane Manufacturer. Measure and record the temperature before the start of each day of marking operation and at any other time deemed necessary by the Manufacturer or the Engineer.

2. Surface Preparation. Surface preparation requirements are dependent on surface conditions. Subsections A through D below apply to the application of recessed lines, non-recessed lines and special makings, as noted:
A. New Hot Mix Asphalt (HMA). For the purpose of this special provision, the Department defines new HMA pavement as having no oil drips, residue, debris, or temporary or permanent markings. Prepare the surface as follows:

(1) For non-recessed lines and special markings, scarify the proposed marking area using non-milling grinding teeth or shot blasting.

(2) For recessed lines, prepare pavement recess as specified in the FUSP 12SP811(F); to be paid for separately as Recessing Pavement Markings, __.

B. New Portland Cement Concrete (PCC). For the purpose of this special provision, the Department defines new PCC pavement as having no oil drips, residue, debris, or temporary or permanent markings. Prepare the surface as follows:

(1) For non-recessed lines and special markings, remove curing compound in accordance with the subsection 811.03.C of the Standard Specifications for Construction; to be paid for separately per subsection 811.04.

(2) For recessed lines, prepare pavement recess as specified in the FUSP 12SP811(F); to be paid for separately as Recessing Pavement Markings, __.

C. Existing HMA or PCC Surface. For the purpose of this special provision, the Department defines existing HMA or PCC pavement as having oil drips, residue, and debris, but no temporary or permanent markings. Prepare the surface as follows:

(1) For non-recessed lines and special markings, scarify the proposed marking area using non-milling grinding teeth or shot blasting.

(2) For recessed lines, prepare pavement recess as specified in the FUSP 12SP811(F); to be paid for separately as Recessing Pavement Markings, __.

D. Existing HMA or PCC Surface With Existing Non-Modified Urethane Marking. For the purpose of this special provision, the Department defines existing HMA or PCC pavement with existing non-modified urethane marking as having oil drips, residue, and debris, and existing non-modified urethane markings. Prepare the surface as follows:

(1) For non-recessed lines and special markings, scarify the proposed marking area using non-milling grinding teeth or shot blast. Occasionally an existing modified urethane marking may require complete removal. When the Engineer determines that complete removal is required, complete the removal in accordance with the Standard Specifications for Construction; to be paid for as Rem of Spec Mrkg per subsection 811.04 or Pavt Mrkg, Longit, __, Rem per subsection 812.04 of the Standard Specification for Construction.

(2) For recessed lines, prepare pavement recess as specified in the FUSP 12SP811(F); to be paid for separately as Recessing Pavement Markings, __.

When pavement surface preparation is complete, power broom the pavement surface; then use compressed air to remove residue and debris.
Control 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 when cleaning HMA or PCC pavements. If joint sealers are damaged the Contractor must repair or replace, as directed by the Engineer, at the Contractor expense.

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.

3. Placement. Place modified urethane materials and beads according to this special provision and the modified urethane manufacturer’s requirements.

d. Measurement and Payment. The completed work, as described, will be measured and paid for at contract unit price using the following pay items:

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

The Engineer will measure and pay for removing curing compound or existing pavement markings separately as described in section c. Construction, of this special provision.