Specifications for Heater Scarification Asphalt Surface Recycling

Scope
The work covered by this specification consists of furnishing all plant, labor, equipment, and materials in performing all operations by Heater Scarification Asphalt Surface Recycling in complete and strict accordance with these specifications.

Heater Scarification Asphalt Surface Recycling

A. Description
This work shall consist of rehabilitating an asphalt pavement by heating, rejuvenating, scarifying and compacting the existing pavement.

B. Procedure
The entire surface to be rehabilitated shall be cleaned of water, earth and foreign material. All base failures shall be repaired in accordance with local specifications and paid for separately. Rehabilitation work shall be performed only when the air temperature in the shade is at least 45°F and the forecast is for rising temperatures.

Utilizing a one-pass, continuous process, the surface of the existing pavement shall be heated, rejuvenated and scarified to a one inch nominal depth (Note 1) with the surface temperature of the old pavement not to exceed 375°F. Heat shall be applied under an enclosed or shielded hood and shall extend at least four inches beyond the width of scarification on both sides. Scarifying shall be accomplished with pressure scarifiers. The scarifying unit shall be equipped to scarify and move material away from the gutter flags for a depth of 1/2 inch by 4 inches wide. The heating-scarifying operation shall not exceed 30 feet per minute. When a repaving pass is being made adjacent to a previously placed mat, the longitudinal repaving seam shall extend at least two inches into the previously placed mat.

C. Note 1
The depth of scarification will be determined by scraping out and weighing the heated and scarified material from a one square foot area. This weight shall be 75% of the theoretical weight of one square foot by 1” of compacted bituminous surface course. Total equipment length of the pre-heater and heater-scarifier shall not exceed 115 feet.

Compaction shall be accomplished with an 8 to 10-ton steel wheel roller in static mode. The roller shall be equipped with an adequate scraping or cleaning device on each wheel to prevent the accumulation of material on the wheels. When used for the compaction of bituminous mixtures, the roller shall be equipped with a water system, which will keep all wheels uniformly wet to prevent material pickup when required.

D. Method of Measurement
The heat-scarifying process will be measured in place and the area computed in square yards. The asphalt modifier will be measured in gallons. If provided as a payment item, the preparation of the base will be measured in square yards.

E. Basis of Payment
This work will be paid for at the contract unit price per square yard for HEATER-SCARIFYING, and per gallon for ASPHALT MODIFIER. If provided as a pay item, the preparation of the base (exclusive of additional material required) will be paid for at the contract unit price per square yard for PREPARATION OF BASE.

Immediately before the scarifying operation, an approved asphalt modifier shall be applied at the approximate rate of 0.10 gallon per square yard. The engineer may waive or adjust the requirement for the asphalt modifier if the existing pavement condition warrants this action. The surface shall then be leveled by distributing the heated, scarified and treated (HST) material over the width being processed, so as to produce a uniform cross section. The minimum temperature of the HST material after leveling shall be 175°F. The HST material shall be compacted before the temperature of the mix drops below 150°F.
Sample Specification
Emulsified Rejuvenating Seal

<table>
<thead>
<tr>
<th>Test</th>
<th>Test Method</th>
<th>Requirement Minimum</th>
<th>Requirement Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residue from distillation, %&lt;sup&gt;1&lt;/sup&gt;</td>
<td>ASTM D244&lt;sup&gt;1&lt;/sup&gt;</td>
<td>60.0</td>
<td>65.0</td>
</tr>
<tr>
<td>Viscosity, SF @ 25°C, seconds</td>
<td></td>
<td>15</td>
<td>100</td>
</tr>
<tr>
<td>Oil distillate by distillation, %</td>
<td>ASTM D244&lt;sup&gt;1&lt;/sup&gt;</td>
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<td>2.0</td>
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<tr>
<td>Sieve Test, %</td>
<td>ASTM D244&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
<td>0.1</td>
</tr>
<tr>
<td>Storage Stability, 24 hrs, %</td>
<td></td>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>Penetration @ 4°C, 100g, 5s, dmm&lt;sup&gt;2&lt;/sup&gt;</td>
<td>ASTM D5 (modified)</td>
<td>-25%</td>
<td>+25%</td>
</tr>
<tr>
<td>Asphaltenes, %</td>
<td>KDOT Method 1007</td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

<sup>1</sup> Modified ASTM D244 procedure—distillation temperature of 177°C with a 20 minute hold. The ASTM D244 vacuum distillation procedure may be substituted once the maximum oil distillate is satisfied.

<sup>2</sup>The penetration value will be +/- 25% of that value reported in the project design. Example: if the penetration is reported to be 200 dmm, the acceptable range would be 150-250 when testing QC/QA samples.
**Heater Scarification**
**Asphalt Surface Recycling**

**Description**
The work covered by this specification consists of furnishing all plant, labor, equipment, and materials in performing all operations by Heater Scarification Asphalt Surface Recycling in complete and strict accordance with these specifications.

**Application**
Roadways that possess a stable and structurally adequate base are appropriate candidates for this process. The depth and nature of the existing materials must be evaluated prior to construction.

Two machines operating in tandem insure deep heating and softening of the aged pavement.

The recycled material levels the previously deformed surface in preparation for an overlay or seal coat.

Application of rejuvenating agent improves the viscosity of the aged asphalt.

Multiple rows of spring loaded scarifiers penetrate the softened asphalt to the desired depth.
Reference List

Mr. Chris King, P.E.
President
Robinson Engineering, Ltd.
17000 South Park Avenue
South Holland, IL 60473
p. 708.331.6700
e. cking@reltd.com

Mr. Abdul Dahhan, P.E.
Mixtures Control Engineer
Bureau of Materials
Illinois Department of Transportation – District One
201 West Center Court
Schaumburg, IL 60196
p. 847.705.4687
e. dahhanaz@nt.dot.state.il.us

Mr. Mark Fisher
Project Engineer
Hamilton County Highway Department
1700 South 10th Street
Noblesville, IN 46060
p. 317.773.7770
e. Mark.Fisher@hamiltoncounty.in.gov

Mr. Lou Haussmann, P.E.
Baxter & Woodman
8840 West 192nd Street
Mokena, IL 60448
p. 708.478.2090
e. lhaussmann@baxterwoodman.com

Mr. Gerry Peterson
County Engineer
Manistee County
8946 Chippewa Hwy.
Bear Lake, MI 49614
p. 231.889.0000
e. petersonjerry@charter.net

Mr. Mike Lehner
Project Manager II
Department of Transportation
Cobb County
1890 County Services Parkway
Marietta, GA 30008-4014
p. 770.528.3681
e. Mike.Lehner@cobbcounty.org

Mr. Gary Evans, P.E.
Engineering Services Manager
Department of Public Works
Waukesha County
515 W. Moreland Blvd., Room 220
Waukesha, WI 53188
p. 262.548.7740
e. gevans@waukeshacounty.gov

Mr. Sig Vaznelis, P.E.
CEO & President
Morris Engineering Inc.
5100 S. Lincoln (Route 53)
Lisle, IL 60532
p. 630.271.0770 ext. 100
e. sigvaz@ecivil.com

Mr. Chris Dopp, P.E.
City Engineer
City of Battle Creek
150 South Kendall Street
Battle Creek, MI 49015
p. 269.966.3343
e. CJDopp@ci.battle-creek.mi.us

Mr. John Beissel, P.E.
Assistant Superintendent of Highways
Department of Highways
Cook County
69 W. Washington Street
Chicago, IL 60602
p. 312.603.1700
e. john.beissel@cookcountyil.gov

Mr. Wayne H. Sandberg, P.E.
Deputy Director / Assistant County Engineer
Washington County Public Works
Washington County
11660 Myron Road North
Stillwater, MN 55082
p. 651.430.4339
e. Wayne.Sandberg@co.washington.mn.us

Gallagher Asphalt Corporation 18100 S. Indiana Avenue, Thornton, IL 60476  Office 708.877.7160  Fax 708.877.5222  Web www.hotinplacerecycling.com
“This is a No-Brainer”  – Public Works Superintendent

Resurface 13 miles with a budget that only covers 10 miles by recycling your current road surface using our SCARIFY or our Re-HEAT process. Each has a long list of benefits for agencies that need each dollar to go farther.

Gallagher Asphalt Corporation is one of the oldest and largest asphalt producers in Illinois. We’ve been building roads for more than 80 years and recycling them for over 65 years.

<table>
<thead>
<tr>
<th>SIDE-BY-SIDE COMPARISON</th>
<th>Hot inPlace SCARIFY</th>
<th>Hot inPlace Re-HEAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need for Surface Treatment/Overlay</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Materials Added During Process</td>
<td>Asphalt Rejuvenator</td>
<td>Asphalt Rejuvenator</td>
</tr>
<tr>
<td>SYs per Day</td>
<td>4,500</td>
<td>9,000</td>
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<tr>
<td>Pavement Penetration Depth</td>
<td>Up to 2' (Depending on Surface Course Thickness)</td>
<td>Up to 1.5' (Depending on Surface Course Thickness)</td>
</tr>
<tr>
<td>In-Place Mixing Capability</td>
<td>On-board drum mixer</td>
<td>Scarifying Tines &amp; Augers</td>
</tr>
<tr>
<td>Thermal Bond Effect</td>
<td>Moderate – High</td>
<td>Low – Moderate</td>
</tr>
<tr>
<td>Mat Re-Placement</td>
<td>Conventional paving screed</td>
<td>Conventional paving screed</td>
</tr>
<tr>
<td>Compaction Equipment</td>
<td>Double Drum Vibratory Roller</td>
<td>Double Drum Vibratory Roller</td>
</tr>
<tr>
<td>Budgetary Price per SY</td>
<td></td>
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</table>