

1.0 GENERAL

1.1 Scope

- 1.1.1 The work shall consist of the in-place recycling of an existing pavement by tilling and by furnishing and spreading new aggregate, if necessary, injecting emulsified asphalt, cementitious or lime materials and shaping and compacting the mixture.

2.0 PRODUCTS

2.1 Asphalt Emulsion

- 2.1.1 Asphalt emulsion shall be applied at a rate that will leave residual asphalt content of 5.0% based on dry weight of aggregate or as determined by the laboratory.

3.0 EXECUTION

3.1 Construction

- 3.1.1 The existing aggregate surface shall be pre-pulverized to the full depth to be stabilized to avoid encountering any hard consolidated areas. Any necessary subgrade stabilization or removal/replacement is then to be carried out.
- 3.1.2 The pulverized mix is then re-laid and the surface is shaped to the desired final cross-section prior to using the in-place mixer again. If new aggregates are to be blended with the existing materials to improve gradation, the proper amount of new material is placed on the shaped roadway surface prior to the first mixing pass. The mixer then mixes the aggregate and incorporates the other mix components, leaving the combined mix in the same basic position but loose or "fluffed."
- 3.1.3 When the surface is ready for emulsion, the moisture content of the aggregate should not exceed 3% unless laboratory tests indicate that a higher moisture content will not be harmful when the asphalt emulsion is added. On the other hand, if water is needed it will be metered or properly introduced by water distributor and thoroughly and uniformly mixed with the aggregate. The method to be used will be determined by the Engineer.
- 3.1.4 If any of the liquids tend to run ahead of the rotor assembly on steep grades, or for any other reason, the application rate should be split into two or more mixing operations. After the water, if needed and emulsion have been introduced by mixing, the in-place mixer will make additional passes as necessary to assure complete homogeneous blend of the mix.
The mixer shall "break track" with the proceeding mixing pathways overlapping the joint lines.
- 3.1.5 A typical or normal sequence of operations when water and emulsion are introduced, separately or as specified would be:
 - 1) Pre-pulverize and shape the road surface. However, where unstable subgrade exists, windrow the mix aside and remove/replace the unstable subgrade as necessary prior to shaping the road surface.

- 2) First Pass - Add water through the mixer or any other approved method and mix. This step may not be needed if moisture content of aggregate is within mixing limits.
 - 3) Second Pass - Add emulsified asphalt at a specified rate through the mixer and mix.
 - 4) Third Pass - Overlap the joints of preceding passes and mix without adding materials.
 - 5) Fourth Pass - Final remix if necessary. It must be noted that additional passes may be needed for aeration.
 - 6) Reshape the road surface to prescribed control.
 - 7) Rolling - Compaction should start when the mix has been allowed time to break or is at optimum moisture content. Initial rolling may be initiated with a pneumatic-tired roller (optional).
- 3.1.6 If at any time during compaction, the asphalt mixture exhibits undue rutting or shoving, rolling should be stopped. Compaction should not be attempted until there is a reduction in water content, occurring either naturally or by mechanical aeration. Finished rolling should be done with a steel-wheeled roller.
- 3.1.7 Production rates shall ensure that correct aggregate sizes are achieved and/or recycled base has been adequately mixed.
- 3.1.8 Coating - Field mix coating shall be a minimum of 90% of laboratory coating design.
- 3.1.9 Density - Density in field shall be a minimum 98% of maximum laboratory density based on the dry weight of compacted mixture.
- 3.1.10 Moisture - Aggregate moisture content shall be a maximum of 3% or as determined by the laboratory.
- 3.1.11 After the mixture has been spread and when it will bear the weight of the roller without excess lateral movement, it shall be rolled longitudinally. Rolling shall start at the edges and progress toward the center, overlapping on successive trips by at least one-half width of the roller. The entire surface shall be rolled twice in this manner unless, in the opinion of the Engineer, additional rolling is necessary.
- 3.1.12 Proof-roll the recycled base course with available construction equipment or optional vehicle as approved by the Engineer.
- 3.2 Materials Testing Requirement for Quality Control
- 3.2.1 Field density will be tested using one or more of the following methods as deemed appropriate by the testing agency.
 - .1 Nuclear methods testing for density and moisture content of material compacted in place in accordance with ASTM D6938.
 - .2 Standard test by the sand cone method for density and unit weight of material compacted in place in accordance with ASTM D1556.
- 3.2.2 Perform a minimum of one test per 250 m² per compacted lift. Testing locations to be selected by the testing agency under the direction of the Engineer.