

SECTION 02962

IN-PLACE COLD RECYCLED ASPHALTIC BASE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Mill existing asphalt material to required depth and width.
- B. Mix with emulsified asphalt, quick lime slurry, and water if required, place to line and grade and compact.

1.2 RELATED SECTIONS

- A. Section 02745: Asphalt Material

1.3 PAYMENT PROCEDURES

- A. Include all costs for quick lime slurry in the item In-Place Cold Recycled Asphaltic Base.

1.4 REFERENCES

- A. AASHTO T 26: Quality of Water to be Used in Concrete
- B. AASHTO T 166: Bulk Specific Gravity of Compacted Bituminous Mixtures Using Saturated Surface-Dry Specimens
- C. AASHTO T 245: Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus
- D. ASTM C 110: Standard Test Methods for Physical Testing of Quicklime, Hydrated Lime, and Limestone
- E. ASTM C 977: Standard Specification for Quicklime and Hydrated Lime for Soil Stabilization
- F. ASTM D 2950: Test Method for Density of Bituminous Concrete in Place by Nuclear Method

G. UDOT Materials Manual of Instruction

1.5 SUBMITTALS

- A. Submit mix design for ENGINEER'S approval prior to commencing cold recycling operation.
- B. Provide a Manufacturer's Certificate of Compliance for Quick Lime.

1.6 ACCEPTANCE

- A. The Department runs five density tests on each test lot.
 - 1. A test lot is defined as the amount of cold recycled material placed during one full day's production.
 - 2. Each density test consists of the mean of three in-place nuclear wet density tests. ASTM D 2950.
 - 3. Establish the target density by obtaining a sample of loose material from the roadway just ahead of the rolling operation.
 - a. Heat sample in oven at 140 degrees F for two hours maximum.
 - b. Compact mix immediately using standard 50 blow Marshall procedure. AASHTO T 245.
 - c. The target for roadway compaction is 96 percent of the mean of 3 Marshall briquettes for each test lot. AASHTO T 166.
- B. The Engineer verifies the surface with a 10-ft straightedge at selected sites. Correct surface variations in excess of 3/8-inch by removing or adding material.

PART 2 PRODUCTS

2.1 MATERIALS

- A. In-Place Cold Recycled Asphaltic Base gradation:

<u>Sieve Size</u>	<u>Percent Passing</u>
1-1/2 inch	100

- B. Use asphalt emulsion as shown on the plans. Refer to Section 02745.

- C. Use high calcium pebble quick lime (Hot hydrated lime slurry) that has a minimum dry solids content of 35 percent by weight and that is a pumpable suspension of solids in water. Quick lime slurry must conform to ASTM C 977 using test method ASTM C 110.
- D. Use 1.5 percent quick lime by weight of cold recycled base.
- E. Use potable water for the quick lime slurry. AASHTO T 26.

2.2 EQUIPMENT

- A. Use self-propelled equipment with sufficient power, traction and stability to maintain an accurate depth of cut.
- B. Use equipment that will process full depth and lane width in one pass, with screening and crushing capability.
- C. Use a machine capable of mixing the pulverized material, emulsified binding agent, and quick lime slurry to a homogeneous mixture.
- D. Provide lime slurry equipment that accurately proportions quick lime and water, mixes these ingredients to obtain proper slaking, and maintains a uniform, homogenous slurry. Agitate slurry sufficiently to prevent separation while transporting. Add the lime slurry to the pulverized surfacing by a spray bar at the cutting head on the mill. Accurately meter the slurry into the recycled materials.
- E. Use a mixing machine capable of placing the mixed material into a windrow or directly into the hopper of a paver.
- F. Separate machinery may be used for mixing.
- G. Use a positive displacement pump capable of accurately metering the required quantity of additive down to a minimum rate of 4 gallons per minute.
- H. Use a mixing machine that has a meter capable of measuring the flow and total delivery of the additive.
- I. When a pick-up machine is used to feed the paver, it must be capable of picking up the entire windrow.
- J. Use 30-ton minimum pneumatic rollers.

PART 3 EXECUTION

3.1 PREPARATION

- A. Clean or clear away all debris and vegetation within 1 ft of pavement edge.

3.2 RECLAIMED MATERIALS

- A. Mill pavement to required depth and width.
- B. Control dust created by the cutting action.
- C. Crush or screen the reclaimed material to pass a 1-1/2 inch sieve.
- D. Reclaimed material must be free of organic materials, soil, or other foreign substances.

3.3 PLACEMENT

- A. Place the mixed material with a self-propelled asphalt paver.
- B. Adjust emulsion content as pavement conditions change. Repair reclaimed materials when surface ruts or ravels before placement of final wearing surface.
- C. Use watering device to prevent materials from adhering to the tires for breakdown or intermediate rolling.
- D. Add water to milled material as necessary to facilitate uniform mixing.
- E. Continue breakdown rolling until no displacement is noted.
- F. Use steel wheel rollers in static or vibratory mode as required for final rolling.
- G. Wait 72 hours after a rain or confirm that moisture content is less than 1.5 percent before placing flush, tack, or final surfacing on cold recycled material.

3.4 LIMITATIONS

- A. Do not disturb underlying crushed aggregate base.
- B. Do not heat screed.

- C. Do not park roller or leave idle on uncompacted recycled surface.
- D. Perform recycling operations when ambient temperature exceeds 50 degrees F in the shade and pavement temperature exceeds 70 degrees F. Stop recycling operations when weather is foggy or rainy.
- E. Prohibit traffic on compacted recycled material for 2 hours after compacting is completed. Remove all loose aggregates by power brooming before allowing traffic on the compacted recycled material.

END OF SECTION