

**STATE OF OHIO
DEPARTMENT OF TRANSPORTATION**

SUPPLEMENTAL SPECIFICATION 822

HOT IN-PLACE RECYCLING, INTERMEDIATE COURSE

April 15, 2005

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822.01 General. This work consists of hot in-place recycling (HIR) of the top 2 inches (50 mm) of an asphalt concrete pavement by heating the existing pavement, collecting the material together, adding new material, mixing the materials together, and paving the recycled mix in a continuous process.

822.02 Mix Design and Materials. For each type of existing mix in the pavement surface of the project, perform testing on the top 2 inches (50 mm) of mix to determine:

1. the existing gradation.
2. the required rate of rejuvenator application to the existing asphalt binder to meet the specified Penetration.
3. a final mix with a minimum Marshall Stability (AASHTO T 245) of 1800 pounds (8006 N), unless the Design Designation indicates the current year trucks are less than 1500, then the minimum Marshall Stability is 1200 pounds (5338 N).

Only use materials added during the HIR process that conform to the following minimum requirements:

1. Virgin aggregate conforming to the quality requirements of 703.05.
2. Asphalt rejuvenating agents will be primarily composed of a petroleum resin base.
3. Asphalt binders, if used, will conform to the binder requirements of 702.01.
4. Other modifiers, if used, will be defined in the mix design.

The Engineer will verify the mix design and materials meet the above minimum requirements. At least two weeks before starting production, provide a copy of the mix design to

the District Engineer of Tests. Submit any changes in the mix design during production. Make these submittals to verify the minimum requirements.

822.03 Quality Control Requirements. At least two weeks before starting production, provide a Materials Quality Control Plan to the District Engineer of Tests and the Laboratory.

Include in the Materials Quality Control Plan at least the following tests on material that has gone through the HIR process, for each production day (or night):

Binder Penetration: Perform at least one test per production day to confirm the penetration value of the modified binder is between 40 and 90 Binder Penetration Value (25C, 100 gram, 5 seconds).

Binder Content: Perform at least 2 tests per production day to show the binder content is maintained between ± 0.6 percent of the approved mix design.

Gradation: Perform gradation testing at least twice per production day to determine the gradation of the HIR processed material is within ± 8 percent of the approved mix design for the amount passing the No. 4 (4.75 mm) sieve.

Maximum Specific Gravity (MSG): Perform at least two MSG tests per production day; calculate the average of all the MSG determinations performed each production day; and report this average on the Quality Control Report.

Use personnel who have completed the Level 2 requirements of Supplement 1041.

Record the test results on Form TE-199 and submit to the District Engineer of Tests on the first workday following the day the tested material was produced. If the results of any tests do not meet the minimum requirements for more than two consecutive production days, stop production until the problem is identified and corrected. If directed, provide a new mix design conforming to 822.02 prior to restarting production.

822.04 Equipment. Use self-contained, self-propelled equipment units designed for and capable of a continuous HIR operation. Provide heating units designed to minimize the damage to the asphalt binder.

822.05 Weather Limitations. Conform to the requirements of 401.06, except assure the minimum surface temperature is 50°F (10°C) and the minimum air temperature is 40°F (5°C).

822.06 Construction. Prepare the surface by removing:

1. Cold patch areas determined by the Contractor, to a depth of 3 inches (75 mm) and filling the areas with approved asphalt concrete.
2. Thermoplastic pavement markings.

Notify the Engineer at least 24 hours prior to HIR. If not paving for one week, re-notify the Engineer at least

24 hours prior to resuming HIR.

Heat the existing pavement to allow for loosening of material without excessive fracturing of the aggregate and recycled to a average depth of 2 inches (50 mm) measured behind the screed, with no depth measurement less than 1.5 inches (37.5 mm). Do not exceed a 325°F (163°C) temperature for the recycled mix behind the screed.

822.07 Density Acceptance. Except as follows, apply the requirements of 446.05:

Obtain five cores for each Lot at random locations determined by the Engineer.

Modify 446.05 Table 1 as follows:

Mean of Cores (1)	Pay Factor
92.0% or above	1.00
91.0% to 91.9%	0.94
90.0% to 90.9%	0.88
89.0% to 89.9%	(3)
Less than 89.0%	(2)

Reprocessing the mix using the HIR process is an acceptable method for removal and replacement (See Notes 2 and 3 for 446.05 Table 1).

822.08 Surface Tolerances. Conform to the surface requirements of 401.19 and provide a uniform and consistent surface texture with no segregation or excessive binder.

822.09 Method of Measurement. The Department will measure the number of square yards (square meters) completed and accepted.

822.10 Basis of Payment. The Department will pay for accepted quantities at the contract price as modified in 446.05 as follows:

Item	Unit	Description
822	Square yard (square meter)	Hot In-place Recycling, Intermediate Course

Designer Note

Only specify HIR for constructing an intermediate course