

**STATE OF OHIO
DEPARTMENT OF TRANSPORTATION**

**SUPPLEMENTAL SPECIFICATION 886
HOT IN-PLACE RECYCLING WITH WARRANTY**

April 18, 2008

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886.01 General. This work consists of hot in-place recycling (HIR) of the top 2 inches (50 mm) of asphalt concrete pavement in accordance with these specifications and details shown on the plan or established by the Engineer. HIR involves heating the existing pavement, collecting the material together, adding new material, mixing the materials together, and paving the recycled mix in a continuous process. Warrant the HIR for three years.

886.02 Maintenance Bond. Furnish a maintenance bond for a three year period in an amount equal to 75 percent of the total amount bid for Item 886 with the performance and payment bonds specified in 103.05.

Ensure the Surety that underwrites the maintenance bond has an A.M. Best rating of "A-" or better. Include the cost of the maintenance bond in the pay item for the premium for the contract performance and payment bonds.

The effective date of the maintenance bond is the date the Department's Form C-85 is issued for the pavement. The Department will issue a final C-85 within 30 days after all of the pavement items, including all safety items, are completed and accepted and the pavement is open to traffic. The Department will issue a partial C-85 within 30 days after the pavement is completed and accepted, and all safety items are in place to allow the pavement to be safely open to traffic during the winter months from December 1 to April 30. The Department will issue no more than one C-85 each calendar year except with approval of the Director.

After the final or partial Form C-85 is issued, the Department will notify the Surety. After the final Form C-85 is issued, the Department will also establish all final quantities for the project and the project will be finalized using standard procedures. The maintenance bond expires three years after the issuance of Form C-85.

Maintain the liability insurance specified in 107.12, insuring against Contractor or Contractor

authorized operations negligently performed during the warranty period. Ensure the insurance is in effect throughout the warranty period. Send a copy of the Certificate of Insurance to the District each year.

886.03 Warranty Item Coverage. Warranty items and Remedial Actions are specified in Table A. The warranty applies to all Item 886. The warranty does not apply to structural problems below the pavement recycled as part of this project, provided the structural problem is not the fault of the Contractor. The Threshold Levels are based on the 0.1 mile (160 m) Segments described in 886.04.

Do not construe meeting the minimum requirements and guidelines of this specification as a warranty, expressed or implied, as to the materials properties and workmanship efforts required to meet the performance criteria set forth in Table A.

The Design Designation in the plan is an indication of the level of traffic expected on this project and is based on data the Department has taken in the past using best practice projections into the future and can be used to approximate the expected yearly trucks. The Department guarantees the accuracy of this information only as it pertains to the past.

886.04 Mix Design, Materials, Equipment and Construction.

Mix design, Materials. For each type of existing mix in the pavement surface of the project, perform testing to determine:

- A. the gradation.
- B. the required rate of application for proper rejuvenation of the existing asphalt binder to meet the specified Penetration.
- C. 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 shall be 1200 pounds (5338 N).

Meet the following minimum requirements for materials added during the HIR process:

- A. Meet or exceed the quality requirements of 703.05 for virgin aggregate.
- B. Ensure asphalt rejuvenating agents are composed primarily of a petroleum resin base.
- C. Meet or exceed the binder requirements of 702.01 for asphalt binders, if used.
- D. Define any other modifiers, if used, in the mix design.

The Laboratory will verify that the mix design and materials meet the above minimum requirements. Provide copies of the Materials Quality Control Plan and mix design to the District Engineer of Tests and Laboratory a minimum of two weeks before the start of

production. Submit any changes to the mix design during production. These submittals are for the verification of the above minimum requirements.

At a minimum, include in the Materials Quality Control Plan measuring the Penetration Value (25 °C, 100 gram, 5 seconds) of the binder after it has gone through the HIR process. Submit results of these tests to the District Engineer of Tests on the workday following the production day of the material represented by the report.

Equipment. Furnish self-contained, self-propelled units designed for HIR and capable of a continuous in-place operation. Furnish heating units designed to minimize the damage to the asphalt binder.

Construction. Prepare the surface by removing:

- A. Cold patch areas to a depth of 3 inches (75 mm) and filling the areas with approved asphalt concrete as directed by the Engineer.
- B. Thermoplastic pavement markings.

Notify the Engineer a minimum of 24 hours prior to HIR. If paving is suspended for one week or more, notify the Engineer a minimum of 24 hours prior to resuming HIR.

Heat the existing pavement to allow for loosening of material without excessive fracturing of the aggregate and recycle in-place 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 325 °F (163 °C) in the recycled mix behind the screed.

Ensure the finished pavement meets the following tolerances:

- 1. Meet the surface requirements of 401.19 and provide a uniform and consistent surface texture with no segregation or excessive asphalt cement.
- 2. Ensure the modified binder has a Penetration Value between 40 to 90.

886.05 Annual Review Process. The project will be divided into 1 mile (1600 m) Sections. The width of each Section will be the width of a single lane. Each Section will be divided into 0.1 mile (160 m) Segments.

Each year, between March 1 and April 30, the project will be reviewed by a District Review Team (DRT). This date period may be revised by mutual agreement of the Department and Contractor. The DRT will notify the Contractor of the scheduled review. The Contractor or any other interested party may attend the annual review, for observation only. Any comments by the Contractor or other interested party will be recorded by the DRT. The DRT will select at least two Segments in each Section to review, but may review the entire Section. The Department will issue the results in writing to the Contractor within 15 days after completion of the review.

The District Deputy Director may waive this yearly review for all or part of the project based on the results of a preliminary review by a member of the DRT. Any such waiver will be in writing to the Contractor.

886.06 Remedial Actions. The intent of this contract is for the Contractor to provide a maintenance free pavement. The Contractor may perform routine maintenance during the warranty period, but this routine maintenance is limited to repairs authorized by the Department.

Provide construction traffic control for performing any work required or allowed by this specification during the warranty period in accordance with current Department policy and the Ohio Manual of Uniform Traffic Control Devices for Streets and Highways. Obtain Department approval for when the work will be performed. Any major change in Department construction traffic control policy from the time of bid will be considered a changed condition.

Supply all materials, equipment, and labor to perform Remedial Actions at no additional cost to the Department. Obtain approval of the Engineer for asphalt concrete used for Remedial Action work or replacement of sampled areas (See Table A Note 3). The Engineer will take into account the Department's design criteria for the pavement type. The depth of a repair area may be increased by the Engineer to allow for the size of aggregate in the asphalt concrete. The Engineer may approve alternatives to the extent or type of specified Remedial Action. The Engineer may consider using HIR for Remedial Action.

Replace pavement markings or raised pavement markers (RPM) removed or obliterated while performing a Remedial Action with pavement markings or RPMs equal to or better than the original products at no cost to the Department.

Perform all Remedial Actions on or before September 30. If an appeal process goes to Step 3, the District may revise the date for completion of the Remedial Action for the appealed item. Prior to performing a Remedial Action, submit a Remedial Action plan to the Engineer for approval. State in the plan when and how the Remedial Action will be done, what material will be used, and how traffic will be controlled. Warrant Remedial Action work for the remainder of the warranty period.

The Department will perform emergency work, repairing pavement distresses which are hazardous to the traveling public. If the emergency work is extensive, the Department may authorize the Contractor to do the repairs. The District Construction Engineer (DCE) will determine if the distress is or is not the responsibility of the Contractor. If the DCE determines the distress is the responsibility of the Contractor, the cost, including construction traffic control, of emergency work performed by the Department will be charged to the Contractor. If the DCE determines the distress is not the responsibility of the Contractor, The Department will pay for Contractor performed repairs according to 109.05. The Contractor is not responsible for pavement damage beyond the Contractor's control (i.e., car fire, oil spill, etc.). The DCE's determination may be appealed in accordance with 886.07.

886.07 Appeal Process. Findings of the DRT may be appealed. Submit any appeal to the DCE, in writing, within 15 days after receipt of the written results of the DRT. If the results

include Rutting beyond the Threshold Level, the submission time limit is changed to 15 days after removing the slabs (See Table A Note 3) for a dispute over Rutting only.

The DCE will evaluate appeals. This evaluation will include reviewing the disputed area in the field and consulting with the Office of Construction Administration. The evaluation may also include reviewing test data, obtaining samples, or interviewing Department (District or Central Office) or Contractor employees. The DCE's determination will be issued in writing to the Contractor within 45 days after the DCE receives the appeal.

If in disagreement with the DCE's determination, appeal the determination using Step 3 of Proposal Note 109 Dispute Resolution and Administrative Claim Process.

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

886.09 Basis of Payment. The Department will not pay for materials, equipment, or labor required to perform Remedial Actions or routine maintenance. Payment for accepted quantities will be made at the contract price for:

Item	Unit	Description
886	Square Yard (Square Meter)	Hot in-place recycling with warranty

TABLE A – WARRANTY ITEMS AND REMEDIAL ACTIONS

Distress Type	Threshold Level (per Segment) (allowable distress levels)	Remedial Action
Disintegrated Area (1)	None	(4)
Flushing	125 square feet (12 m ²)	(5)
Previous Patching (2)	300 square feet (28 m ²)	(6)
Rutting (3)	0.25 inch (6 mm)	(4)

(1) This includes all types of disintegration, including, but not limited to, mix delamination, potholes, and raveling. This includes any type of disintegration that occurs at a joint or crack.

(2) Previous patches consist of Remedial Actions made by the Contractor or patches made by the Department in distressed areas that have been determined to be the Contractor’s responsibility. An area of multiple patches is calculated as the width of the lane times the length of the patched area.

(3) Measure the wheel path with a 4 foot (1.2 m) straight edge at 6 locations in a Segment. If one measurement exceeds the Threshold Level, the entire Segment will be measured at 50 foot (15 m) intervals for each wheel path. Remedial Action is required if six or more measurements exceed the Threshold Level.

To determine the depth of the distressed area, cut a 1 foot (0.3 m) longitudinal by 4 foot (1.2 m) transverse slab to a depth necessary to determine the depth of the distress at a maximum of three locations determined by the DRT. The slabs shall be retained for possible use in any appeal process. If it is determined the rutting is not the responsibility of the Contractor, the cost of slab removal and replacement, including construction traffic control, will be paid by the Department according to 109.05. Remove the slabs within 30 days after receiving the results of the yearly review.

(4) Remove and replace the distressed area to the depth needed to repair the area.

(5) Remove and replace the lane width of the distressed area to a depth of 1.50 inches (38 mm).

(6) Remove and replace the surface in this Segment’s lane to a minimum depth of 1.5 inches (38 mm), from the end of the first down station Segment with no patches to the beginning of the first up station Segment with no patches.

Designer Note: Defined hot in-place recycling; no pay item changes.