

**STATE OF OHIO
DEPARTMENT OF TRANSPORTATION**

SUPPLEMENTAL SPECIFICATION 886

HOT IN-PLACE RECYCLING WITH WARRANTY

April 18, 2003

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886.01 General. This work shall consist of hot in-place recycling (HIR) of the top 2 inches (50 mm) of an asphalt concrete pavement in accordance with these specifications and details shown on the plan or established by the Engineer and warrant it for 3 years. 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.

886.02 Maintenance Bond. When the successful Bidder provides the Department with the performance and payment bonds specified in 103.05, the successful Bidder shall also furnish a maintenance bond for a 3 year period in an amount equal to 75 percent of the contact amount.

The Surety that underwrites the maintenance bond is required to have an A.M. Best rating of "A -" or better. The cost of the maintenance bond shall be included 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 issuance of a final C-85 shall occur 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 issuance of a partial C-85 shall occur 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. No more than one C-85 will be written 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 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 from the issuance of Form C-85.

The Contractor shall maintain the liability insurance specified in 107.12, insuring against

Contractor or Contractor authorized operations negligently performed during the warranty period. This insurance shall be in effect throughout the warranty period. A copy of the Certificate of Insurance shall be sent to the District each year.

886.03 Warranty Item Coverage. Warranty items and Remedial Actions are specified in Table A. The warranty applies only to the areas which were recycled using HIR. 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.

Meeting the minimum requirements and guidelines of this specification are not to be construed 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 only guarantees the accuracy of this information 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, testing must be performed 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).

Materials added during the HIR process shall meet the following minimum requirements:

- A. Virgin aggregate shall meet or exceed the quality requirements of 703.05.
- B. Asphalt rejuvenating agents shall be primarily composed of a petroleum resin base.
- C. Asphalt binders, if used, shall meet or exceed the binder requirements of SS 908.
- D. Other modifiers, if used, shall be defined in the mix design.

The Laboratory shall verify that the mix design and materials meet the above minimum requirements. A minimum of two weeks before the start of production, the Contractor shall provide copies of the Materials Quality Control Plan and mix design to the District Engineer of Tests and Laboratory. During production, any changes in the mix design shall also be submitted. These submittals are for the verification of the above minimum requirements.

At a minimum the Materials Quality Control Plan shall include measuring the

Penetration Value (25C, 100 gram, 5 seconds) of the binder after it has gone through the HIR process. Results of these tests shall be submitted to the District Engineer of Tests on the workday following the production day of the material represented by the report.

Equipment. Equipment used for HIR shall be self-contained, self-propelled units designed for this purpose and capable of a continuous in-place operation. Heating units shall be designed as to minimize the damage to the asphalt binder.

Construction. Surface preparation shall include the removal of:

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.

The Contractor shall notify the Engineer a minimum of 24 hours prior to HIR. If the Contractor does not pave for one week, the Engineer shall be notified a minimum of 24 hours prior to resuming HIR.

The existing pavement shall be heated to allow for loosening of material without excessive fracturing of the aggregate and recycled 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). The temperature of the recycled mix behind the screed shall not exceed 325F (163C).

The finished pavement shall meet the following tolerances:

1. The surface shall meet the surface requirements of 401.19 and have a uniform and consistent surface texture with no segregation or excessive asphalt cement.
2. The modified binder shall have a Penetration Value between 40 to 90.

886.05 Annual Review Process. The project shall be divided into 1 mile (1600 m) Sections. The width of each Section will be the width of a single lane. Each Section shall 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). The DRT shall 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 pick at least two Segments in each Section to review, but may review the entire Section. Within 15 days after the completion of the review, the results will be issued in writing to the Contractor.

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. This 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.

The Contractor's construction traffic control for performing any work required or allowed by this specification during the warranty period shall be in accordance with current Department policy, the Ohio Manual of Uniform Traffic Control Devices for Streets and Highways, and subject to Department approval of the time the work will be performed. Any major change in Department construction traffic control policy will be considered a changed condition.

Asphalt concrete used for Remedial Action work or replacement of sampled areas (See Table A Note 3) shall be approved by the Engineer. 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. For Remedial Action work, the Engineer may approve alternatives to the extent or type of specified Remedial Action. The Engineer may consider using HIR for Remedial Action.

Any pavement markings or raised pavement markers (RPM) removed or damaged while performing a Remedial Action shall be replaced with pavement markings or RPMs equal to or better than the original products at the Contractor's cost.

All Remedial Actions shall be performed on or before September 30. If an appeal process goes to step 3, the District may revise the date for the completion of the Remedial Action for the appealed item. Prior to performing a Remedial Action, the Contractor shall submit a Remedial Action plan to the Engineer for approval. This plan shall state when and how the Remedial Action will be done, what material will be used, and how traffic will be controlled while the Contractor is performing the Remedial Action.

Emergency work, repairing pavement distresses which are hazardous to the traveling public, will be performed by the Department. 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 fault of the Contractor. If the DCE determines the distress is the fault of the Contractor, the cost of this emergency work, no matter who does the emergency work, including construction traffic control, will be paid by the Contractor. The Contractor is not responsible for pavement damage beyond the Contractor's control (i.e., car fire, oil spill, etc.). The Contractor may appeal the DCE's determination in accordance with 886.07.

886.07 Appeal Process. The Contractor may appeal a finding of the DRT. Any appeal shall be submitted to the DCE, in writing, within 15 days after the written results of the DRT are given to the Contractor. 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 the Contractor's appeal. 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 the Contractor disagrees with the DCE's determination, the Contractor may appeal the determination using Step 3 of the Dispute Resolution and Administrative Claim process.

886.08 Method of Measurement. HIR, including surface preparation, will be paid for by the number of square yards (square meters) completed and accepted.

886.09 Basis of Payment. 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)	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) An area of multiple patches is calculated as the width of the lane times the length of the patched area. These 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 fault.

(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, the Contractor shall cut a 1 foot (0.3 m) by 4 foot (1.2 m) 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. Cost of this slab removal and replacement, including construction traffic control, is paid by the Contractor, unless it is determined the rutting is not the Contractor's fault. Slabs shall be removed 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.