

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
**PAVEMENT PERFORMANCE WARRANTY FOR HMA CRACK TREATMENT
(Capital Preventive Maintenance)**

C&T:KPK

1 of 14

C&T:APPR:JFS:CJB:07-27-06
FHWA:APPR:08-15-06

a. Description. The pavement performance warranty shall consist of satisfying the warranty requirements of the work contained in the appendix. This special provision establishes the common terms and definitions applied to the pavement requiring warranted work. The pavement performance warranty assures and protects the Department from specific defects found in the pavement.

b. Definitions.

1. Acceptance Date of Warranted Work - The date when the warranted work is complete, has been determined by the Department to be in compliance with the contract specifications and is continuously open to traffic. This is the date of initial acceptance and constitutes the start date for the warranty period. There may be more than one acceptance date of warranted work for a project.
2. Warranty Bond - A surety which guarantees that the warranty requirements will be met.
3. Driving Lane(s) - The delineated pavement surface used by traffic. Each of the following is considered a separate driving lane.
 - Each individual mainline lane
 - The sum of all ramp lanes and the associated acceleration/deceleration lanes
 - The sum of all auxiliary lanes, such as passing lanes and turn lanes

Approaches and driveways are not considered driving lanes for the purpose of this special provision.

4. Warranted Work - Work that is guaranteed that will not exceed the specified thresholds of the performance criteria during the warranty period.
5. Warranty Work - If the thresholds are exceeded during the warranty period, corrective action will be completed by the Contractor to bring the warranted work back into compliance for release of the warranty. All costs will be borne by the Contractor including traffic control, mobilization, pavement marking and/or other related work.

c. Initial Acceptance. The Department and the Contractor will jointly review all completed warranted work, or a portion thereof, as determined by the Department. If the work does not meet contract requirements, the Contractor shall make all necessary corrections, at their expense, prior

to initial acceptance. Initial acceptance will occur as soon as the Department determines that all contract requirements have been met for the warranted work. The date on which initial acceptance occurs is termed the Acceptance Date of Warranted Work.

Initial acceptance will be documented and executed jointly by the Department and the Contractor on a form furnished by the Department. A copy of the form will be sent to the Contractor's warranty bond surety agent, by the Department. Neither the initial acceptance nor any prior inspection, acceptance, or approval by the Department diminishes the Contractor's responsibility under this warranty.

The Department may accept the work and begin the warranty period to accommodate seasonal limitations or staged construction, excluding any area needing corrective work.

d. Warranty Bond. The Contractor shall furnish a single term warranty bond of the amount stipulated in the appendix prior to contract award. The effective starting date of the warranty bond shall be the Acceptance Date of Warranted Work. The warranty bond will be released at the end of the warranty period, or after all warranty work has been satisfactorily completed, whichever is latest.

e. Rights and Responsibilities of the Department. The Department:

1. Reserves the right to approve the time, traffic control and methods for performing any warranty work by permit through the Region utilities and permit process.
2. Reserves the right to approve the schedule proposed by the Contractor to perform warranty work.
3. Reserves the right to approve all materials and specifications used in warranty work.
4. Reserves the right to determine if warranty work performed by the Contractor meets the contract specifications.
5. Reserves the right to perform, or have performed, routine maintenance during the warranty period, which routine maintenance will not diminish the Contractor's responsibility under the warranty.
6. Reserves the right, if the Contractor is unable, to make immediate emergency repairs to the pavement to prevent an unsafe road condition caused by defective warranted work as determined by the Department. The Department will attempt to notify the Contractor that action is required to address an unsafe condition. The Department will record the time and date of the attempts for Contractor notification. However, should the Contractor be unable to comply with this requirement, to the Department's satisfaction and within the required time frame specified by the Department, the Department will perform, or have performed any emergency repairs deemed necessary. Any such emergency repairs undertaken will not relieve the Contractor from meeting the warranty requirements of this Special Provision. Any costs associated with such emergency repairs will be paid by the Contractor.

7. Is responsible for monitoring the pavement throughout the warranty period and will provide the Contractor any written reports of the surface condition and/or maintenance activities related to pavement performance when requested.
8. Is responsible for notifying the Contractor, in writing, of any corrective action required to meet the warranty requirements.

f. Rights and Responsibilities of the Contractor. The Contractor:

1. Shall warrant to the Department that the warranted work will be free of defects as measured by the performance parameters and specified threshold values for each. The warranty bond shall be described on a form furnished by the Department. The completed form shall be submitted to the Department prior to award of contract.
2. Is responsible for performing all warranty work including, but not limited to, maintaining traffic and restoring all associated pavement features, at the Contractor's expense.
3. Is responsible for performing all temporary or emergency repairs, resulting from being in non-compliance with the warranty requirements, using Department approved materials and methods.
4. Shall notify the Department and submit a written course of action for performing the needed warranty work, ten calendar days prior to commencement of said warranty work, except in the case of emergency repairs as detailed in this special provision. The submittal must propose a schedule for performing the warranty work and the materials and methods to be used.
5. Shall follow a Department approved maintaining traffic plan when performing warranty work. All warranty work shall be performed under permit issued by the Region Utilities and Permits Engineer. The permit fee and an individual permit performance bond shall not be required. The permit insurance requirements, however, shall apply.
6. Shall furnish to the Department, in addition to the regular performance and lien bond for the contract, supplemental performance and lien bonds covering any warranty work being performed. These supplemental bonds shall be furnished prior to beginning any warranty work, using Department approved forms. These supplemental bonds shall be in the amount required by the Department to cover the costs of warranty work.
7. Shall complete all warranty work required by this special provision and prior to conclusion of the warranty period, or as otherwise agreed to by the Department.
8. Shall be liable during the warranty period in the same manner as Contractors currently are liable for their construction related activities with the Department pursuant to the Standard Specifications for Construction, including, but not limited to subsections 103.06, 107.10 and 107.11. This liability shall arise and continue only during the period when the Contractor is performing warranty work. This liability is in addition to the Contractor performing and/or paying for any required warranty work, and shall include liability for injuries and/or damages and any expenses resulting therefrom which are not attributable to normal wear and tear of

traffic and weather, but are due to non-compliant materials, faulty workmanship, and to the operations of the Contractor as set forth more fully in subsections 103.06, 107.10 and 107.11 of the Standard Specifications for Construction.

g. Evaluation Method. The Department will conduct pavement evaluations by dividing the project into segments. Each individual driving lane will be divided into segments of 528 feet for measuring and quantifying the condition parameters. Evaluation may include use of both the Department's Pavement Management System and/or field pavement condition reviews. This evaluation may be waived in emergency situations.

The beginning point for laying out segments will be the Point of Beginning (POB) of the project. Segments will be laid out consecutively to the Point of Ending (POE) of the project. The original segmentation of the project will be used for all successive reviews throughout the warranty period.

h. Warranty Requirements. Warranty work will be required when the following two criteria are both met as a result of a failure to meet the performance parameters.

Criteria 1 -The threshold limit for a performance parameter is exceeded, and

Criteria 2 - The maximum allowable number of defective segments is exceeded for one or more performance parameters for a driving lane, unless otherwise noted in the appendices.

Specific threshold limits and segment limits are covered in the appendices.

During the warranty period, the Contractor will not be held responsible for pavement distresses that are caused by factors beyond his control and unrelated to design decisions made by the Contractor, pavement construction or materials. These include, but are not limited to: chemical and fuel spills, vehicle fires, snow plowing, and any testing by the Department, such as coring. Other factors considered to be beyond the control of the Contractor, which may contribute to pavement distress will be considered by the Engineer on a case by case basis upon receipt of a written request from the Contractor.

i. Conflict Resolution Team. The sole responsibility of the Conflict Resolution Team (CRT) is to provide a decision on disputes between the Department and the Contractor regarding application or fulfillment of the warranty requirements. The CRT will consist of five members:

1. Two members selected and compensated by the Department.
2. Two members selected and compensated by the Contractor.
3. One member mutually selected by the Department and the Contractor. Compensation for the third party member will be equally shared by the Department and the Contractor.

If a dispute arises on the application or fulfillment of the terms of this warranty, either party may serve written notice that appointment of a CRT is required.

At least three members of the CRT must vote in favor of a motion to make a decision. If agreement cannot be reached, the CRT may decide to conduct a forensic investigation. The CRT

will determine the scope of work and select the party to conduct the investigation. All costs related to the forensic investigation will be shared proportionally between the Contractor and the Department based on the determined cause of the condition.

j. Emergency Repairs. If the Department determines that emergency repairs are necessary for public safety, the Department or its agent may take repair action. Emergency repairs will be authorized by the Engineer.

Prior to emergency repairs, the Department will document the basis for the emergency action. In addition, the Department will preserve evidence of the defective condition.

k. Non-Extension of Contract. This special provision shall not be construed as extending or otherwise affecting the claim process and statute of limitation applicable to this Contract.

l. Measurement and Payment. All costs, including engineering and maintaining traffic costs, associated with meeting the requirements of this special provision are considered to be included in the contract unit prices for the warranted work regardless of when such costs are incurred throughout the warranty period. These costs include but are not limited to, all materials, labor and equipment necessary to complete required warranty work.

**PAVEMENT PERFORMANCE WARRANTY APPENDIX
FOR HMA CRACK TREATMENT**

A1. Application. This appendix is applicable for surface treatment performance warranties on hot-mixed-asphalt (HMA) crack treatment. The work consists of furnishing all labor, equipment, and materials necessary to treat cracks in HMA surfaces using the following operations.

- 1. Saw/Rout and Seal.** This operation consists of sawing or routing a reservoir at the crack of an existing HMA surface, cleaning the sawn surface, and placing sealant into the reservoir to prevent the intrusion of water into the pavement structure.
- 2. Overband.** This operation consists of cleaning the crack in an existing HMA surface and placing material into and over the crack to eliminate water infiltration.

A2. Limits of Warranted Work. The warranted work includes all HMA crack treatment applications on driving lanes and shoulders within the project limits unless otherwise indicated on the proposal.

A3. Warranty Period. The length of warranty will be two years from the Acceptance Date of Warranted Work.

A4. Amount of Warranty Bond. The Contractor will supply a warranty bond equal to 100 percent of the warranted work for HMA crack treatment.

A5. Materials. Delete subsection 505.02 Materials of the Standard Specifications for Construction and replaced with the following.

1. The Contractor will select the material from one of the following alternatives.

Alternate #1: A field blended liquid mixture.

Penetration grade asphalt cement	85 - 100 dmm
Rubber-R-Road Product #R-570	5% by weight
Polyester fibers	5% by weight

Alternate #2: A plant blended liquid mixture of a polymer modified asphalt cement and polyester fibers in the following proportions. The polyester fibers are field blended.

Polyester fibers	0.5 - 1.0% by weight
Polymer Modified Asphalt Cement	Remainder by weight

Alternate #3: Asphalt Rubber Plus, Type 2.
A product from Crafc0, Inc.

2. Materials Acceptance Criteria.

- A. **Penetration Grade Asphalt Cement** – A General Certification from an approved manufacturer is required for this material.

- B. **Rubber-Road (Product #R-570)** – This material will be treated as a Qualified Product for the purpose of project documentation.
- C. **Polyester Fibers** – A General Certification is required for this material. The polyester Fibers shall meet the following requirements:

Length	6.4 mm ± 0.05 mm
Crimps, (ASTM D-3937)	None
Tensile Strength, (ASTM D-2256)*	480 Mpa minimum
Denier, (ASTM D-1577)*	3.0 to 6.0
Specific Gravity	1.32 to 1.40
Melting Temperature	245 °C minimum
Ignition Temperature	540 °C minimum

*This data must be obtained prior to cutting the fibers.

- D. **Polymer Modified Asphalt Cement.** A General Certification from an approved manufacturer is required for this material. The Polymer Modified Asphalt Cement shall meet the following requirements.

Test		
R&B Softening Point, °C	80 min	ASTM D-36
Elastic Recovery, 25 °C, 10cm pull	85% min	AASHTO T301
Ductility, 25 °C, 5cm/min, cm	40 min	ASTM D-113
Force Ductility, 25 °C, 30-40 cm	8.0 lbs/in ² min	AASHTO T300

- E. **Prepackaged Material Certification.** This material will be treated as a Qualified Product for the purpose of project documentation.

A6. Construction.

1. Application.

- A. All working cracks will be treated using a cut reservoir with sealant placed flush to 1/8 inch below the pavement surface. The walls of the finished reservoir shall be vertical and the reservoir bottom shall be flat. As a minimum, the reservoir shall contain a volume of 7.5 in³/ft. The width and depth of the reservoir shall be as close to a 1:1 ratio as possible. The material shall meet the requirement of subsection 914.04 of the Standard Specifications for Construction. Hot-poured joint sealant shall be from the Department's designated tested stock.
- B. The Contractor may treat non-working cracks with material placed in an overband configuration consistent with Section 505 of the Standard Specifications for Construction.
- C. Treat all visible cracks in the surfaced area of the roadbed. The shoulders or portions thereof, are included unless otherwise indicated on the proposal due to a

high concentration of cracks.

2. **Quality Control.** The following measures shall be taken by the Contractor to maintain quality control and uniformity. If a condition is identified that causes an unsatisfactory crack treatment, all production work shall stop and corrective action must immediately be taken. The Contractor shall perform the corrective action at no additional cost to the contract. The quality control measures will be effective until work is accepted per A5.6.

- A. The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with current Department procedures contained in, but not limited to, the MDOT Construction Manual and the MDOT Quality Assurance Procedures Manual. The quality control system shall detail plans, procedures, and organization necessary to produce a crack seal that complies with the contract requirements. A Contractor Quality Control (CQC) plan shall be the means by which the Contractor ensures that the warranty related treatment complies with the requirements of the contract. The controls shall be adequate to cover all crack treatment operations. A copy of the plan will be submitted to the Engineer for approval at the pre-construction meeting. The Contractor will comply with the approved plan throughout the project and the Engineer shall be allowed access to all work in progress for the purpose of Assurance review and testing.

As a minimum, the quality control plan will address the following items.

- A detailed description that explains how working and non-working cracks will be determined by field crews. A project with multiple pavement sections will be separately detailed.
 - The sealant materials and equipment to be used on the project. The sealant materials shall be heated, handled, and applied according to the manufacturer's guidelines. Guidelines shall be provided to the Engineer upon request.
 - The reservoir configuration for the saw/rout and seal operation. The walls of the finished reservoir shall be vertical and the reservoir bottom shall be flat. As a minimum, the reservoir shall contain a volume of 7.5 in³/ft. The width and depth of the reservoir should be as close to a 1:1 ratio as possible.
 - The procedures for crack cleaning.
 - The replacement criteria for the cutting tool (i.e. diamond saw blade or carbide routing tip).
 - The controls that will be implemented by the Contractor to ensure that flying dust and debris are not directed toward adjacent traveled lanes, pedestrians, parked vehicles, or buildings.
 - Proposed procedure for monitoring initial acceptance requirements.
- B. If there are adverse environmental conditions, the contractor will provide the Engineer an action plan that clearly demonstrates how the crack sealing operation will be adjusted for the actual environmental conditions.
- C. The Contractor shall apply a sufficient amount of detackifying solution, if needed, to protect the uncured crack treatment material from tracking.

3. **Pre-Construction Meeting.** A pre-construction meeting will be held prior to beginning the work to discuss the following:
 - A. The Contractor's detailed work schedule.
 - B. The traffic control plan.
 - C. The Contractor's Quality Control Plan.
 - D. Required project documentation.
 - E. The Contractor will designate an authorized Contractor's Authorized Representative.
4. **Required Project Documentation.** The Contractor shall provide the Engineer with a written report on a daily basis containing the following information;
 - A. Control section, job number, and route.
 - B. Date, air temperature (°F), weather conditions in a.m. and p.m.
 - C. Beginning and ending locations of work completed for the day's operations, to include lane and direction.
 - D. Amount of materials used for the day, including lot number.
 - E. Traffic control typical used, number of traffic control moves, and checks on the traffic control conducted.
 - F. Unique or different situations on the project.
 - G. Documentation will contain the signature of Contractor or the Contractor's Authorized Representative.
5. **Protecting the Work.** Delete subsection 505.03.H Protecting the Work of the Standard Specifications for Construction and replace with the following.

The Contractor must allow the material to cool sufficiently before opening to traffic. Blotting materials such as sand, aggregate, sawdust, or paper is prohibited. Any damage by traffic to the treated pavement areas shall be repaired by the Contractor at no additional expense to the Department. If the existing pavement markings are obliterated as a result of the crack treatment work, temporary pavement markings shall be placed before the roadway is opened to traffic at the Contractor's expense.
6. **Initial Acceptance.** At the construction completion of the HMA Crack Treatment, or a portion as determined by the Department, the Department and Contractor will review the crack treatment for compliance with the contract and the project specifications. If the crack treatment is determined by the Department to not be in compliance, then the Contractor shall repair and make good at its own expense any and all defects. The

Department and the Contractor will document and execute the initial acceptance on a form furnished by the department when the crack treatment is determined by the Department to be in compliance. This date is then the Acceptance Date of Construction. A copy of initial acceptance shall be sent to the Contractor's Warranty Bond surety agent by the Department.

The Department may accept the HMA Crack Treatment and begin the warranty period, excluding any area needing corrective work, due to seasonal limitations.

- A7. Measurement and Payment.** Delete subsection 505.04 Measurement and Payment of the Standard Specifications for Construction. This subsection is replaced by the following.

The completed work as measured will be paid for at the contract unit price for the following contract item (pay item):

Contract Item (Pay Item)	Pay Unit
HMA Crack Treatment Roadbed, Warranty	Roadbed Mile
HMA Crack Treatment Ramp, Warranty	Roadbed Mile

Payment for **HMA Crack Treatment Roadbed, Warranty** includes all materials, equipment, labor for preparing, filling and sealing the cracks and complying with all requirements including the warranty, for full coverage as specified in the plans. **HMA Crack Treatment Roadbed, Warranty** will be measured along the roadway centerline and will include the traffic lanes, the paved shoulders, and all auxiliary lanes (including ramps until the 2' gore point). For a divided highway, the roadbed will be measured separately in each direction.

Payment for **HMA Crack Treatment Ramp, Warranty** includes all materials, equipment, labor for preparing, filling and sealing the cracks and complying with all requirements including the warranty, for full coverage as specified in the plans. **HMA Crack Treatment Ramp, Warranty** will be measured along the ramp centerline beginning at the 2 foot gore point.

- A8. Warranty Parameters.** Condition parameters are used to measure the performance of the HMA Crack Treatment during the warranty period. Each condition parameter has a threshold level applied to each segment and defines the number of defective segments allowed before corrective action (warranty work) is required.

Definitions:

Abrasion. The wearing away of treatment material by tire friction or snowplow scraping.

Adhesion. The bonding of a material to crack sidewalls and the pavement surface.

Cohesion. The resistance of a material to internal rupture.

Overband. A type of finish in which material is allowed to completely cover prepared cracks by extending onto the pavement surface.

Non-Working Cracks. Cracks that experience relatively little horizontal or vertical movement as a result of temperature change or traffic loading. As a general rule, movement less than 1/8 inch.

Reservoir. A uniform rectangular channel resulting from crack sawing operations.

Treatment Failure. The degree to which a treatment is not performing its function. This includes areas along the sealed or filled crack exhibiting loss of adhesion or cohesion or pull-out of material. Sealant materials displaying abrasion are not performing, unless there is a definable upheaval in the pavement profile along crack edges that allows snowplow scraping to wear away material.

Working Cracks. Cracks that experience considerable horizontal or vertical movement as a result of temperature change or traffic loading. In general, movement greater than, or equal to 1/8 inch.

- A9. Warranty Requirements.** If any of the following minimum performance criteria are not met, warranty work is required. The warranty work shall be performed prior to conclusion of the warranty period or within such other time frame as agreed to by the Department and the Contractor, unless safety concerns dictate otherwise.

One segment (528 feet in length) per one roadbed mile will be selected to review in detail. One driving lane will be reviewed for measuring the performance of the crack treatment. One segment will be reviewed for any projects or remaining portions of a project less than 1 mile, but greater than 2 segments (1056 feet).

A separate measurement and calculation of treatment failure will be made for material placed in a saw and seal configuration and material placed in an overband configuration. The measurement will define the amount of failure as a percentage of the total length of cracks in the segment by the following formula:

- 1. Single Segment Failure.** The allowable threshold limit for material failure shall not exceed 30 percent of any one segment.

Corrective action for this parameter requires the Contractor to reseal the entire deficient segment plus all other deficient segments that exceed 30 percent failure within that mile, including shoulders unless the shoulders, or portions thereof, were exempted in the proposal from treatment due to a high concentration of cracks.

- 2. Multiple Segment Failure.** The allowable threshold limit for material failure shall not exceed 10 percent of all segment evaluated.

Corrective action for this parameter requires the Contractor to reseal the entire project location, including shoulders unless the shoulders, or portions thereof, were exempted in the proposal from treatment due to a high concentration of cracks.

3. **Catastrophic Failure.** If at any time during the warranty period, 30 percent of the cracks treated as part of this contract fail, the Contractor will correct all failures as soon as weather conditions permit.

This Appendix shall not be construed as extending or otherwise affecting the claim process and statute of limitation applicable to the Contract.

**MICHIGAN DEPARTMENT OF TRANSPORTATION
INITIAL ACCEPTANCE FOR PAVEMENT WARRANTY**

CONTRACT ID: _____

CONTRACT SECTION: _____ JOB NUMBER: _____

SURETY NAME: _____

SURETY ADDRESS: _____

CONTRACTOR NAME: _____

CONTRACTOR ADDRESS: _____

IDENTIFY EACH JOB NUMBER, LOCATION AND WORK SEPARATELY

JOB NUMBER	ROUTE NUMBER	CONTROL SECTION	WORK TYPE	DATE ACCEPTED	PROJECT ENGINEER

INITIAL ACCEPTANCE OF WARRANTY WORK APPROVAL

CONTRACTOR'S SIGNATURE: _____

ENGINEER'S SIGNATURE: _____

ACCEPTANCE DATE: _____

cc: Surety Company, Financial Services - Payments

**MICHIGAN DEPARTMENT OF TRANSPORTATION
PAVEMENT WARRANTY BOND**

Bond Number _____

KNOWN ALL MEN BY THESE PRESENTS:

That we, _____ (hereinafter called the "Principal"), and _____, a corporation duly organized under the laws of the State of _____ and duly licensed to transact business in the State of Michigan (hereinafter called "Surety"), are held and firmly bound unto the Michigan Department of Transportation (hereinafter called the "Obligee"), in the sum of _____ Dollars (\$), for the payment of which sum well and truly to be made, we, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the said Principal has heretofore entered into a contract with the Michigan Department of Transportation dated _____ under Contract ID _____ and;

WHEREAS, the said Principal is required to guarantee the _____ installed under said contract, against specific pavement defects which may develop during the period(s) of _____ years beginning the date(s) of the Acceptance Date of Construction by the Obligee.

In no event shall losses paid under this bond aggregate more than the amount of the bond.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if said Principal shall faithfully carry out and perform the said guarantee, and shall, on due notice, repair and make good at its own expense any and all specific pavement defects in the said work which may develop during the period specified above or shall pay over, make good and reimburse to the said Obligee all loss and damage which said Obligee may sustain by reason of failure or default of said Principal so to do, then this obligation shall be null and void; otherwise shall remain in full force and effect.

PROVIDED HOWEVER, that in the event of any default on the part of said Principal, a written statement of the particular facts showing such default and the date thereof shall be delivered to the Surety by registered mail, within thirty (30) days after the Obligee or his representative shall learn of such default and that no claim, suit or action by reason of any default of the Principal shall be brought hereunder after the expiration of thirty (30) days from the end of the warranty period as herein set forth.

Signed this _____ day of _____, _____.

Contractor

By _____

Surety

By _____

Attorney-In-Fact