

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
**PAVEMENT PERFORMANCE WARRANTY FOR HMA ULTRA-THIN OVERLAY
(Capital Preventive Maintenance)**

C&T:SCB

1 of 13

C&T:APPR:GMM:JAR:09-29-03
FHWA:APPR:10-15-03

a. Description. The pavement performance warranty shall consist of satisfying the warranty requirements of the work contained in the appendices. 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. Initial Acceptance - The date when the warranted work is complete and has been determined by the Department to be in compliance with the contract specifications and is continuously open to traffic. This is the start date for the warranty period. There may be more than one initial acceptance for a project.
2. Warranty Bond - A bond issued by a surety which guarantees that the warranty requirements will be met.
3. Warranty Lane(s) - The portion of the pavement considered warranted work. Each of the following is considered a separate warranty lane:
 - Each individual mainline lane and adjacent shoulder
 - 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 warranty lanes for the purpose of this provision.

4. Warranted Work - Work that is guaranteed to meet the warranty requirements throughout the warranty period.
5. Warranty Work - Corrective action taken by the Contractor to bring the warranted work into contract compliance.

c. Initial Acceptance. The Department and the Contractor shall 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 its expense, prior to initial acceptance. The date on which initial acceptance occurs is termed the Acceptance Date of Warranted Work and is to be documented in accordance with subparagraph b.1. of this special provision.

A copy of the Initial Acceptance for Pavement Warranty 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 any portion of 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, in an 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 later.

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.
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, 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.

g. Evaluation Method. The Department will conduct pavement evaluations by dividing the project into segments. Each individual warranty 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:

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

Criterion 2 - The maximum allowable number of defective segments is exceeded for one or more performance parameters for a warranty 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 pre-existing conditions and by factors beyond his control. 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 ULTRA-THIN OVERLAY

- A1. Application.** This appendix is applicable for surface treatment performance warranties on Low, Medium, and High Volume HMA Ultra-Thin Overlay. Section 501 of the Standard Specifications for Construction remains in effect except as noted in this special provision.
- A2. Limits of Warranted Work.** The warranted work includes all HMA Ultra-Thin Overlay applications on warranty lanes 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% of the warranted work for HMA Ultra-Thin Overlay.
- A5. Construction.**
1. Materials. The HMA and materials shall meet the following requirements:
 - a. Bond Coat. The bond coat material will be an emulsified asphalt conforming to the requirements of Section 904 of the Standard Specifications for Construction, Type SS-1h.
 - b. HMA Ultra-Thin Overlay. The Ultra Thin HMA Overlay shall be composed of a mixture of aggregate, asphalt binder, and if required, mineral filler, as listed in Table 1.

Table 1 - HMA Ultra-Thin Overlay Mixture Requirements

Parameter	Low Volume Comm. ADT <380	Medium Volume Comm. ADT 380 - 3400	High Volume Comm. ADT >3400
Marshall Air Voids %	4.5	4.5	5.0
VMA % (min.) <small>based on Gsb</small>	15.5	15.5	15.5
Fines/Binder % Max.	1.2	1.4	1.4
Flow (0.01 in.)	8-16	8-16	8-16
Stability Min. (lbs)	1200		

- c. Aggregate Gradation and Physical Properties. The combined gradation of the aggregate portion of the mixture, including the mineral filler, shall be within the limits of Table 2. The physical properties of the combined aggregates shall meet the criteria of Table 3.

Table 2 - HMA Ultra-Thin Overlay Aggregate Gradation

Sieve Size	Total Passing Percent by Weight
½ inch	100
3/8 inch	99-100
No. 4	75-95
No. 8	55-75
No. 30	25-45
No. 200	3-8

Table 3 - HMA Ultra-Thin Overlay Aggregate Physical Requirements

Parameter	Low Volume Comm. ADT <380	Medium Volume Comm. ADT 380 - 3400	High Volume Comm. ADT >3400
Percent Crush (min.)	50%	75%	95%
Angularity Index (MTM 118) (min.)	2.5	3.0	4.0
L.A abrasion loss (max.)	40	35	35
Aggregate Wear Index (AWI)	(a)	(a)	(a)
a. AWI of 220 is required for projects with less than or equal to 2000 ADT, projects with ADT greater than 2000 the minimum AWI requirement is 260.			

In addition, the sum of the shale, siltstone, ochre, coal, clay-ironstone and particles which are structurally weak or are found to be non-durable in service shall not exceed 8.0 percent.

- d. Performance Graded (PG) Asphalt Binder. Binder selection is based on present day two-way commercial ADT as listed in Table 4. The PG binder shall meet all the requirements in Section 904 of the Standard Specifications for Construction.

Table 4 - Asphalt Binder Selection for HMA Ultra-Thin Overlay

Low Volume Comm. ADT <380	Medium Volume Comm. ADT 380-3400	High Volume Comm. ADT >3400
PG 64 -22 *	PG 64 -28P	PG 70-22P
* Use a PG58-28 asphalt binder in the Superior Region.		

2. Construction.

- a. Bond Coat Application. The bond coat material will be applied to completely cover the prepared surface at a rate of 0.11 - 0.15 gal/yd².
 - b. Mixture Application Rate. The target application rate shall be 83 lb/yd².
 - c. Density. Thoroughly compact the mixture immediately after placement.
 - d. Mix Design. The Contractor shall submit to the Engineer a complete mix design according to the Procedures Manual for Mix Design Processing following the Express Marshall Mix Design Procedures prior to the start of production.
3. Quality Control (QC). The Contractor shall provide and follow a QC plan for the Ultra Thin HMA Overlay that will maintain adequate QC for production and construction processes applicable to this specifications and the contract documents. For QC purposes, the Contractor is allowed to take informational cores for density and application rates. The Engineer shall be provided a copy of the QC plan for review, prior to mix production and placement. The elements of the QC plan shall be as listed in Section 503 of the Standard Specifications for Construction.
 4. Ride Quality. Prior to construction, the Department will determine the ride quality of the pavement surface in terms of the Michigan Ride Quality Index (RQI). The plots of the original roadway profiles will be retained by the Department. Shoulder work is exempt from ride quality measures.

The ride quality of the pavement shall not diminish after the application of HMA Ultra-Thin Overlay. The finished pavement surface may be accepted (Initial Acceptance) without measuring the new roadway profile if, in the opinion of the Engineer, the final quality of the ride is at least as good as that of the original pavement prior to construction.

When the ride quality appears to have diminished after HMA Ultra-Thin Overlay, the ride quality shall be corrected by the Contractor. If a dispute arises based on a diminished ride quality, the Department will then re-measure the pavement profile and compare the RQI values for the finished pavement surface to the original RQI values for the pavement documented prior to construction. Any reductions in the ride quality shall be corrected by the Contractor, as directed by the Engineer, so as to produce a finished pavement surface with an RQI at least as good as that of the original pavement documented prior to construction.

- A6. Measurement and Payment.** The completed work as measured will be paid for at the contract unit price for the following contract item:

Contact Item (Pay Item)	Pay Unit
HMA, Ultra-Thin, Low Volume, Warranty	Square Yard
HMA, Ultra-Thin, Medium Volume, Warranty	Square Yard
HMA, Ultra-Thin, High Volume, Warranty	Square Yard

Payment for HMA, Ultra-Thin, Low, Medium and High Volume, Warranty includes all materials, equipment, labor for preparing the surface, placing temporary pavement markings, placing the HMA Ultra-Thin Overlay mixture and complying with all requirements including the warranty. The placement includes placement of a single course of mixture for full width coverage as specified in the plans.

- A7. Condition Parameters.** Condition parameters are used to measure the performance of the HMA Ultra-Thin Overlay treatment during the warranty period. Each condition parameter has a threshold level applied to each segment of each warranty lane and a maximum number of defective segments allowed before corrective action (warranty work) is required. Shoulders are included in the segments when designated as warranted work.

Definitions

Rutting - Longitudinal surface depressions in the wheel path of a HMA pavement caused by inadequate compaction or plastic movement of the asphalt mixture.

Raveling - Surface disintegration, due to the loss of aggregate material, that occurs over an area or in a continuous longitudinal strip. Wear caused by snowplow abrasion is not considered raveling.

Bleeding/Flushing - The accumulation of excess asphalt binder on the pavement surface that creates a shiny, reflective condition and becomes tacky to the touch at high temperatures.

Debonding - A physical separation of two Bituminous layers. De-bonding will be visually identified as shoving, or the loss of the surface course. Surface potholes, regardless of depth, will be classified as de-bonding.

- A8. Warranty Requirements.** The following lists the allowable threshold limit for each condition parameter within each segment and the maximum number of allowable segments within a warranty lane during the warranty period. If the threshold is exceeded for a condition parameter, for more than the maximum number of allowable segments, warranty work is required.

The deficient segments for surface distress may or may not be contiguous to necessitate corrective action. The maximum allowable number of deficient segments for each condition parameter applies to each warranty lane in each travel direction. Each warranty lane shall be evaluated independent of adjacent warranty lanes. Any pavement surface requiring removal/replacement to correct deficiencies, for any condition parameter, shall be replaced full-width across the warranty lane.

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.

Maximum Deficient Segments per Warranty Lane

- 4 Segments - A combination of one or more surface deficiencies exceeding the allowable threshold limit for rutting, raveling, bleeding/flushing, and debonding.
- 1 Segment - Rutting exceeding the allowable threshold limit.
- 1 Segment - Any single surface deficiency for raveling, bleeding/flushing, and debonding, exceeding 10 percent of the segment length.

Threshold Limits and Corrective Action

1. Rutting - A single measure of rut depth shall not exceed 1/4 inch for any 528 feet (0.1 mile) segment during the first 120 days after initial project acceptance. Rut depths that average in excess of 1/4 inch are deficient. The average rut depth will be defined by 5 measurements at 100 foot intervals in the segment as determined by the Engineer.

Pavement segments where the original pavement rut depth exceeds 1/2 inch are excluded from the warranty for rutting threshold level. The Contractor will define locations where rutting exceeds 1/2 inch and provide the information to the Engineer. Work shall not begin until the Engineer has verified and accepted the Contractor's list of warranty exceptions. Any subsequent rutting caused from movement of the underlying pavement layers is excluded from the warranty.

The measurement will be done using a straight rigid device that is a minimum of 7 feet long and of sufficient stiffness that it will not deflect from its own weight, or a wire under sufficient tension to prevent sag when extended 7 feet. Measurements will be taken by placing this "straightedge" across the pavement surface perpendicular to the direction of travel. The straightedge shall contact the surface on at least two bearing points with one located on either side of the rut. The straightedge is properly located when sliding the straightedge along its axis does not change the location of the contact points. Rut depth is then measured at the point of greatest perpendicular distance from the bottom of the straightedge to the pavement surface.

The Contractor shall reapply the Ultra-Thin Overlay treatment on segments that have a rutting deficiency. The Engineer may accept alternative corrective measures, based on unique conditions. The corrective action shall be placed on the full lane width.

2. Raveling - The threshold limit for raveling is 8% of the segment length.

Corrective action for this parameter requires the Contractor to reapply HMA Ultra-Thin Overlay to the deficient portion of the segment, including shoulders if part of the HMA Ultra-Thin Overlay work. The Engineer may accept alternative corrective measures, based on unique conditions. The corrective action shall be placed on the full lane width.

3. Bleeding/Flushing - The threshold limit for bleeding or flushing is 5% of the segment length.

Corrective action for this parameter requires the Contractor to either reapply HMA Ultra-Thin Overlay, diamond grind, or remove and replace the HMA Ultra-Thin Overlay treatment on the deficient portion of the segment, including shoulders if part of the HMA Ultra-Thin Overlay work. Removal and replacement shall be placed on the full lane width. The Engineer may accept alternative corrective measures, based on unique conditions.

4. Debonding - The threshold limit for debonding is 5% of the segment length.

Corrective action for this parameter requires the Contractor to either reapply HMA Ultra-Thin Overlay or remove and replace the HMA Ultra-Thin Overlay on the deficient portion of the segment, including shoulders if part of the HMA Ultra-Thin Overlay work. The Engineer may accept alternative corrective measures, based on unique conditions. The corrective action shall be placed on the full lane width.

**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: _____

**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 Warranted Work 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