

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
PAVEMENT PERFORMANCE WARRANTY FOR CHIP SEALS
(Capital Preventive Maintenance)

C&T:KPK

1 of 15

C&T:APPR:JB:JAR:06-24-04
FHWA:APPR:09-03-04

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. 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 provision.

4. Warranted Work - A guarantee that a pavement 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 or other related work.

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 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, excluding any area needing corrective work, to accommodate seasonal limitations or staged construction.

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 when the warranted work is considered satisfactory and a form furnished by the Department is jointly executed by the Department and the Contractor, at the end of the warranty period.

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. However, should the Contractor be unable to comply with this requirement, to the Department's satisfaction and within the time frame required 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 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 when 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 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. The Department and Contractor will share equally in the cost of the forensic investigation.

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 CHIP SEALS**

- A1. Application.** This appendix is applicable for surface treatment performance warranties on chip seals. The work consists of furnishing all materials, equipment and labor necessary for the surface preparation and application of a single chip seal, double chip seal or shoulder chip seal.
- A2. Limits of Warranted Work.** The warranted work includes all chip seal 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% of the warranted work for chip seals.
- A5. Materials.** The materials will meet the following requirements as specified.
- 1. Asphalt Emulsion.** All chip seal asphalt emulsion will conform to Table 1. The emulsified asphalt must conform to certification procedures described in the "MDOT Materials Quality Assurance Manual".
 - 2. Coarse Aggregate.** Coarse aggregates for all chip seals will be tested materials or provided by a prequalified aggregate supplier. All aggregate must meet the gradation and physical requirements in Table 2.
 - a. For chip seal top courses, a CS-2 coarse aggregate shall be used.
 - b. For double chip seal base courses, a CS-1 coarse aggregate shall be used.
 - c. For chip seals on shoulders, a CS-2 coarse aggregate shall be used. The AWI requirement is waived on shoulders.

TABLE 1: Chip Seal Emulsified Asphalt

Emulsion: (a)	Minimum	Maximum	ASTM Method
Viscosity, Saybolt Furol, 50°C, sec	75	400	D 88
Storage Stability, 24 hr, % Difference		1	D 244
Demulsibility, %, 35ml 0.8% Dioctyl Sodium Sulfosuccinate	50		D 244
Particle Charge	Positive		D 244
Sieve Tests, %		0.1	D 244
Distillation Residue, wt.% (b)	68		D 244
Oil in Distillate		3.0	D 244
Emulsion Residue:	Minimum	Maximum	ASTM Method
Penetration, 25°C, 100 g, 5 sec. Dmm	70	100	D 5
Ductility, 25°C, 5cm/min., cm	40		D 113
% Solubility in Trichloroethylene	97.5		D 2042
Ash Content, %		2	D 128
Elastic Recovery, 10°C, %	75		D 6084
Toughness	9.0		D 5801
Tenacity	7.0		D 5801
Dynamic Shear Rheometer, 64°C, G*/Sin delta	Report		D 6373
DSR, 64°C, delta, degrees	Report		D 6373
<p>(a) Samples of emulsified asphalt will be taken in accordance with ASTM D 140. Samples shall be stored at a temperature of not less than 4°C until tested.</p> <p>(b) Residue determination and preparation may use the alternate ASTM D 244 method, "Residue by low-temperature vacuum distillation" so as too not destroy the properties of any polymer modifiers contained therein.</p>			

Table 2: Gradation and Physical Requirements for Chip Seal Aggregates

Sieve Analysis (MTM 109), Total Percent Passing (a)		
Sieve Size	CS-1	CS-2
¾ inch	100	100
½ inch	100	100
⅜ inch	0-25	90-100
No. 4	0-10	0-10
No. 8	0-5	0-5
No. 200 (Loss by Wash)	2.0 maximum	2.0 maximum
Physical Requirements for Coarse Aggregates (CS-1 & CS-2)		
Test	Description	Specification
MTM 102	L.A. Abrasion Resistance	35% maximum (b) 45% maximum (c)
MTM 117	Percent of Crushed Particles	95% minimum
MTM 110	Deleterious Particles in Aggregate	3.5% maximum (d)
ASTM D4791(e)	Flat and Elongated Ratio, 3:1	12.0% maximum
MTM 111 (f)	Aggregate Wear Index (AWI)	260 minimum
(g)	Moisture Content at time of placement	4% maximum
(a) All aggregate shall be washed. (b) Natural aggregate. (c) Iron Blast-Furnace slag aggregate. (d) Includes the sum of shale, silt stone, structurally weak and clay ironstone. (e) As determined for material retained on the No.4 sieve. The ratio between any combination of length, width or thickness. (f) For single chip seal and second course of double chip seal. Does not apply to a shoulder chip seal. (g) As described in MDOT Procedures for Aggregate Inspection.		

A6. Construction.**1. Equipment.**

- A. **Pressure Distributor.** The pressure distributor shall have a computerized application rate and speed control. This control shall have a radar ground sensing device that controls the application rate regardless of ground speed or spray bar width. The pressure distributor shall be capable of maintaining the asphalt emulsion at the specified temperature. The spray bar nozzles shall produce a uniform triple lap application fan spray, and the shutoff shall be instantaneous, with no dripping. Each pressure distributor shall be capable of maintaining the specified application rate within ± 0.015 gal/yd² for each load.
 - B. **Chip Spreader.** The chip spreader shall have a computerized spread control, self-propelled, equipped with pneumatic tires and have a screen to remove oversized material.
 - C. **Compacting Equipment.** A minimum of three self-propelled pneumatic-tired rollers, weighing not less than 8 tons shall be used.
 - D. **Brooms.** Brooming equipment shall be motorized and capable of cleaning the road surface prior to treatment and removing loose particles after treatment. Pick-up sweepers must be used to clean road surfaces in areas adjacent to lawns or roadways with curb and gutter.
 - E. **Pilot Car.** The pilot car shall be equipped with a sign "PILOT CAR - FOLLOW ME" that meets the MDOT Sign Standard G20-4. The sign shall be mounted in a conspicuous position on the rear of the vehicle.
 - F. **Miscellaneous.** All self-propelled equipment shall be equipped with at least one approved, flashing, rotating or oscillating amber light, visible to traffic in all directions. Chip spreaders shall be equipped with one such light on each side of the spreader.
- 2. Pre-Paving Meeting.** A pre-paving meeting between the Engineer and Contractor will be held on-site prior to beginning work. The agenda for this meeting includes:
- A. Review of a work schedule.
 - B. Examine traffic control plan.
 - C. Review equipment calibrations and adjustments.
 - D. Inspect condition of equipment, including transport units.
 - E. Submission of "Design for Intended Yield," containing the aggregate gradation, L.A. Abrasion Resistance, loose unit weight, and application rate of asphalt emulsion and aggregate.
 - F. Discussion of the quality control plan.
 - G. Designation of Contractor's authorized representative.

- 3. Seasonal Limitations.** The chip seal shall be placed when the pavement and ambient temperatures are at or above 55°F. Placement is not permitted if there are air temperatures forecasted below 40°F within 24 hours from the time of work completion. Chip seals will not be applied in foggy or rainy weather. Placement is not permitted when the existing pavement temperature is 130°F or above. Seasonal limitations for placing all chip seals are as follows:
- A. June 1 - August 15 for the Upper Peninsula
 - B. May 15 - September 1 for the Lower Peninsula north of M-46
 - C. May 15 - September 15 for the Lower Peninsula south of M-46
- 4. General Placement Operation.**
- A. The Contractor is responsible for all surface preparation that may affect the performance of the chip seal. All pavements to be treated shall be cleaned with a motorized power broom to remove all loose material. All cracks and other areas not reached by the power broom shall be cleaned using a hand broom. Pick-up sweepers must be used in areas adjacent to lawns or roadways with curb and gutter.
 - B. All vehicles and equipment involved in the chip sealing shall operate as close to each other as practical. The aggregate shall cover the asphalt emulsion within 30 seconds of applications. At no time shall the chip spreader trail the emulsion distributor by more than 150 feet to ensure proper asphalt/aggregate adhesion.
 - C. Longitudinal construction joints shall be located as follows.
 - Single Chip Seal - Longitudinal construction joint must coincide with the painted lane line or at the outside edge of shoulder.
 - Double Chip Seal - Longitudinal construction joint for the first course shall overlap the painted lane line 6 inches and the second course shall coincide with the original lane line location.
 - Shoulder Chip Seal - Place the longitudinal construction joint at the edge of the driving lane or at a location requiring a minimal overlap without extending onto the driving lane.
 - D. The aggregate will be rolled following spreading. A maximum time of 2 minutes will be allowed between the spreading of aggregate and completion of the initial rolling of the aggregate. The rollers will proceed in a longitudinal direction at a speed less than or equal to 5 miles per hour. Each roller will travel over the aggregate three times, with the final pass being in the direction of the chip spreader.
 - E. The Contractor shall use the appropriate sweeping equipment to perform an initial sweeping before opening to traffic to remove excess loose aggregate within the construction traffic control zone. For additional sweeping, the Contractor can use an arrow board, in bar mode, being pulled behind a trailing vehicle. The sweeping shall be sufficient to prevent migration of loose aggregate back onto any part the pavement. A pick-up sweeper shall be used to remove loose aggregate in areas adjacent to lawns, curbs, or intersections.

- F. The Contractor shall post the roadway with "LOOSE GRAVEL" signs, FHWA (W8-7) and a 35 MPH speed plaque mounted below the sign. These signs shall be placed at a maximum of 0.5 mile intervals.
 - G. Prior to beginning the chip seal operation, the Contractor shall protect all utility castings and raised pavement markers using tarpaper or other approved materials. These protective coverings shall be removed prior to sweeping and opening to traffic.
 - H. Traffic shall not be allowed on the new surface until it has cured sufficiently to prevent pickup by vehicle tires. The Contractor shall repair any traffic damage to the new chip seal surface at no additional cost to the contract.
 - I. The work shall be planned such that at the completion of each day's chip seal operation, all lanes are treated to approximately the same point of ending.
5. **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 chip seal, 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 f.8.
- A. **Coarse Aggregate.** The Contractor shall collect one sample each day of production from the project aggregate stockpile, and perform a sieve analysis. This test result shall meet the requirements of Table 2 and be within the quality control tolerances of Table 3 to substantiate the Design for Intended Yield.

Table 3: Quality Control Tolerances

Sieve Size	Tolerance
3/8 inch	- 5.0%
No. 4	+ 5.0%

- B. **Emulsion.** The Contractor shall apply the asphalt emulsion at a temperature between 170 °F and 190 °F.
- C. **Visible Dust.** During normal traffic operations any dust that is a nuisance or slightly impairs visibility is unsatisfactory. The roadway must be wet broomed or lightly fog sealed until the condition is eliminated. In the event dusty conditions cannot be controlled, the Contractor shall precoat the aggregate.

The aggregate shall be coated with 0.75 percent, by mass, of residual asphalt. The precoating may be performed in either a weight-batch type, continuous mixing type, or drum type hot mix plant. Either asphalt binder (PG 64-22) or emulsion (CSS-1h) may be used for precoating.

- D. **Loose Stone.** During normal traffic operations any stone picked off the surface by vehicles is unsatisfactory. The roadway must be broomed or fog sealed until the condition is eliminated.

- E. **Bleeding or Tracking.** During normal traffic operations any bleeding or moderate tracking is unsatisfactory. The roadway must be sanded and swept clean. If surface conditions call for further action, a heated aggregate meeting the physical properties of Table 2, shall be applied, rolled, and broomed.
- F. **Rough Joints.** Transverse or longitudinal construction joints from a chip seal application that creates a bump or poor riding joint is unsatisfactory. The bump shall be removed by grinding the surface and lightly applying a fog seal over the ground area.
- G. **Surface Patterns.** An asymmetric appearance seen in a chip seal surface characterized by longitudinal grooves or ridges in the surface is unsatisfactory. The spray bar and nozzles must be readjusted to eliminate the surface pattern problem.

7. Documentation.

- A. The Contractor shall provide the Engineer a daily report with the following information:
 - Control Section / Project Number / County / Route / Engineer
 - Date / Detailed Weather Information / Pavement Temperature
 - Asphalt Emulsion Application Temperature
 - Beginning and Ending Stations (Placement and Brooming)
 - Design for Intended Yield: A gradation and application rate per course (coarse aggregate and asphalt emulsion)
 - Yield Checks (one per day, minimum)
 - Aggregate Gradation & Moisture Content (one per day, minimum)
 - Length / Width / Total Square Yards
 - Quantity of loose gravel signs with 35 mph speed plaques
 - Signature of Contractor's Authorized Representative
- B. Other required project documentation shall include:
 - Aggregate Certification or Shipment of Tested Stock Report (Form 1900)
 - Asphalt Emulsion: Per current acceptance procedures
 - Bill of lading for coarse aggregates and asphalt emulsion
 - Changes in the Design for Intended Yield

- 8. **Initial Acceptance.** The initial acceptance will not occur until after at least 30 days from the time of placement of the Chip Seal.

- A7. **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
Single Chip Seal, Warranty.....	Square Yard
Double Chip Seal, Warranty	Square Yard
Shoulder Chip Seal, Warranty	Square Yard

Payment for **Single Chip Seal, Warranty** includes all materials, equipment, labor for placement of a single application of asphalt emulsion and coarse aggregate to a pavement

and the accompanying shoulders as specified in the plans. Payment also includes all materials sampling and testing, surface preparation, brooming, and documentation.

Payment for **Double Chip Seal, Warranty** includes all materials, equipment, labor for placement of a double application of asphalt emulsion and coarse aggregate to a pavement and the accompanying shoulders as specified in the plans. Payment also includes all materials sampling and testing, surface preparation, brooming, and documentation.

Payment for **Shoulder Chip Seal, Warranty** includes all materials, equipment, labor for placement of a single application of asphalt emulsion and coarse aggregate to only the shoulders. Payment includes materials sampling and testing, surface preparation, brooming, and documentation.

- A8. Warranty Parameters.** Condition parameters are used to measure the performance of the chip seal 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:

Surface Cracking. The total number of defective cracks within a 528 feet segment.

Transverse Crack. Any open crack that equals or exceeds six feet in length in the individual driving lanes that extends more in the transverse direction than the longitudinal direction.

Longitudinal Crack. Any open crack in the individual driving lanes that extends more in the longitudinal direction than the transverse direction.

Loss of Cover Aggregate. Areas of dislodged and removed aggregate from the chip seal surface caused by the mechanical action of vehicles. Chip seal damage from snow plows will not be considered defective if both the aggregate and asphalt emulsion have been removed from the underlying pavement surface. When asphalt emulsion remains on the surface without aggregate, the chip seal is defective. This parameter applies to all treated areas, including driving lanes and shoulders.

Bleeding/Flushing. Bleeding and flushing is an excessive amount of asphalt binder on the aggregate that changes the acceptable texture of the chip seal surface. Both bleeding and flushing are characterized by a black sheen over the entire surface or at localized areas such as wheel paths. The accumulation of excess asphalt binder on the pavement surface becomes tacky to the touch at high temperatures. This parameter applies to all treated areas, including driving lanes and shoulders.

- A9. Warranty Requirements.** If any of the following performance criteria are not met, warranty work is required.

- 1. Surface Cracking.** Each individual driving lane will be reviewed for measuring and quantifying surface cracking. One segment (528 feet in length) per two miles for each separate driving lane will be randomly chosen to review in detail. One segment will be reviewed for all projects or remaining portions of projects less than 2 miles, but greater than 1 mile. All open cracks will be logged within the chosen segments by crack type. The total length of longitudinal cracks will be logged for each segment. The transverse

cracks will be logged by those between six inches and six feet in length and those equal or exceeding six feet in length. Transverse cracks and longitudinal cracks will be converted to defective cracks by the following;

- A. One transverse crack 6' or greater, in length = one defective crack.
- B. Five transverse cracks between 6" and 6' in length = one defective crack.
- C. A total of 125' of longitudinal crack(s) = one defective crack.

If the number of defective cracks equal or exceed the values in Table 4, the segment is considered defective. Warranty work is required when the average of all segments reviewed exceed the following values in Table 4.

Table 4: Warranty Requirements for Surface Cracking

Chip Seal Treatment	Pavement Type	Number of Defective Cracks
Double Chip Seal	Flexible	30
Single Chip Seal	Flexible	25
Double Chip Seal	Composite	30

Corrective action for this parameter requires the Contractor to overband crack fill all cracks on the entire site, including shoulders if part of the chip seal work.

2. **Loss of Cover Aggregate.** The allowable threshold limit for loss of cover aggregate shall not exceed 40% of the segment length. All segments in the driving lane or shoulder (528 feet in length) will be measured where the aggregate loss is evident. This measurement is linear and not dependent on area of aggregate loss. Corrective action, full-width across the driving lane or shoulder, will be required for each defective segment.
3. **Bleeding/Flushing.** The allowable threshold limit for bleeding or flushing shall not exceed 40% of the segment length. All segments in the driving lane or shoulder (528 feet in length) will be measured where the bleeding or flushing is evident. This measurement is linear and not dependent on area of bleeding or flushing. Corrective action, full-width across the driving lane or shoulder, will be required for each defective segment.

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