GUIDELINES FOR ADMINISTERING WARRANTIES ON ROAD AND BRIDGE CONSTRUCTION CONTRACTS

DECEMBER 2021

MDOT
Michigan Department of Transportation

CONSTRUCTION AND TECHNOLOGY DIVISION

HOW TO USE THESE GUIDELINES

Each of these Warranty Inspection Guidelines, with the associated inspection forms, has been developed for use with one or more special provisions. It is important that the correct guideline and forms are used. Each warranty inspection should begin with a careful review of the project special provisions, the inspection guidelines, and the inspection forms. If you do not find a guide for your specific warranty special provision, contact the Construction and Technology Division at (517) 636-4914 to determine if a new guideline is required.

SPECIAL PROVISION VERSION AND FORMAT

Warranty special provisions may be frequently used special provisions or may be included in proposals as project specific special provisions. Frequently used special provisions for the 2003 Standard Specifications for Construction are indexed with the format 03SP000(X). Each warranty special provision will have a Construction and Technology (C&T) approval date and a Federal Highway Administration (FHWA) approval date. The index code must be considered in establishing the correct guideline and inspection forms for use with a frequently used special provision. With project specific special provisions pay careful attention to the title and the approval dates.

WARRANTY INSPECTION GUIDELINES

Each of these warranty inspection guidelines has been written for use with one or more specific special provision. Each guideline begins by stating the special provisions it applies to and the inspection form(s) to be used. The inspection frequency is stated along with a recommended approach to conducting the inspections. Most of the guidelines only summarize the warranty threshold limits and inspectors are advised to have the applicable project special provisions on hand for all warranty inspections. In case of discrepancy, the special provisions will prevail according to section 104.06 of the standard specifications.

WARRANTY INSPECTION FORMS

Copies of the required inspection forms are included with each guideline. Most of these forms are currently available on the MDOT forms site as fillable forms. Some forms perform the simpler calculations as the inspection data is entered. Inspection forms can be downloaded or printed directly from the MDOT forms site for use in the field. Be sure to check the form number and date in the upper left corner and the special provision index and approval date in the upper right corner to ensure that the correct form is used. The link to the MDOT forms site is under Maps & Publications at www.Michigan.gov/MDOT/

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GENERAL GUIDELINES
FOR
WARRANTIES IN HIGHWAY CONSTRUCTION

These General Guidelines are to be followed when administering warranties for highway and bridge construction contracts. The responsibility and authority for administering warranties rest with the TSC office that conducted the construction administration phase of the project.

There are two types of warranties applied to construction and repair of pavements and bridges. In a materials and workmanship warranty the Contractor is responsible for correcting defects attributable to elements within the contractor's control: the materials supplied and the workmanship during the warranty period. Materials and workmanship warranties each include condition or distress parameters that provide an indication of how well the warranted work is performing. Each parameter includes threshold limits that, if exceeded during the warranty period, trigger the need for corrective action. Similarly, performance warranties contain specific performance parameter thresholds that cannot be exceeded during the warranty period. If the thresholds are exceeded during the warranty period, corrective action must be completed by the Contractor to bring the warranted work back into compliance with the warranty requirements.

Under both materials and workmanship warranties and performance warranties, all required corrective action must be performed by the Contractor at no cost to the owner. The performance parameter or condition parameter thresholds and warranty requirements have evolved since the warranty program was initiated and vary depending on the date the specification was developed; type of warranty; and the application to the construction work. It is important, therefore, to refer to the specific warranty special provision in the contract when administering warranties.

The warranty administration phase, which may be administered by MDOT's staff or under a consultant service contract, should follow the documentation procedures outlined in this manual. These procedures contain inspection forms to organize the field evaluation of condition parameters against threshold values and to report other findings to help in establishing compliance with the warranty provisions. The use of these standardized forms will ensure uniformity in application of the warranty program and allow the Department to measure the effectiveness of the warranty program.

THE WARRANTY PROCESS

The process flow charts on the following pages map the steps involved in the warranty administration process. The warranty begins with the initial acceptance of the warranted work. Administration involves condition inspection or warranty monitoring for compliance; initiation of corrective action; and generation of reports to management, contractors, surety, and contract services. Warranty monitoring has several activities that include scheduling inspections throughout the warranty period, inspection documentation, evaluation of warranty compliance, confirmation of findings, a conflict resolution process, and a method to identify safety issues or significant defects outside of scheduled inspections. If at any time, a safety issue or significant defect is observed or reported prior to a scheduled inspection, the project will be placed on an internal watch list by the warranty managing office and an interim inspection will be initiated.

The confirmation of findings step validates the inspection findings with a joint field review between MDOT and the warranty Contractor. The appeal process involves assembling a conflict resolution team (CRT) to establish concurrence between MDOT and the warranty Contractor regarding warranty compliance issues. This may include additional forensic investigation to determine distress cause and effect along with binding recommendations relative to warranty compliance.

The final phase in the warranty process involves determining either satisfactory warranty compliance or the need for corrective work, followed by inspection and acceptance of the corrective work. The final step of the process is closing out the warranty project through notification of the Contractor, the bonding company and MDOT Bureau of Finance and Administration, Contract Services Division.

RIGHTS AND RESPONSIBILITIES OF THE DEPARTMENT

The TSC office should inform the appropriate county/MDOT maintenance staff about sections of roadway incorporated in a warranty contract. MDOT has the right to perform, or have performed, routine and emergency reactive maintenance during the warranty period. Major planned maintenance projects conducted during a warranty need to be evaluated in terms of possible impact to the ongoing warranty coverage.

If corrective work is required to bring the project back into compliance, MDOT must approve the schedule, materials, and methods of construction repair. If the Contractor is unable to comply with this provision or fails to comply with it to the Department's satisfaction, the Department reserves the right to arrange for the work to be completed at the Contractor's expense. If this action by the Department is required, it will in no way relieve the Contractor from meeting the warranty requirements stated in the project documents.

RIGHTS AND RESPONSIBILITIES OF THE CONTRACTOR

The Contractor must provide a written work plan for any necessary corrective warranty work. A request for a work permit must be submitted through the MDOT Utilities/Permit process or work should be coordinated with the construction office. All corrective warranty work should be completed within the warranty period. Scheduling conflicts may necessitate corrective work being completed outside of the warranty period.

SUPPLEMENTAL PERFORMANCE AND LIEN BONDS AND LIABILITY INSURANCE

In addition to the warranty bond that is in place, if corrective work is necessary on warrantied items, the Contractor must furnish Supplemental Performance and Lien Bonds to the Engineer covering the corrective work. The Engineer is responsible for estimating the amount of bonds required. The amount should be approximately equal to the dollar amount of the corrective work. The Contractor must also have performance and lien bonds and liability insurance in place prior to performing corrective work during the warranty period. The Engineer should contact the Construction Contracts Section (517-335-5826) to verify insurances are in place. The Contractor should not be allowed on-site to perform corrective work during the warranty period until the Supplemental Performance and Lien Bonds are in place and the proper insurances verified.

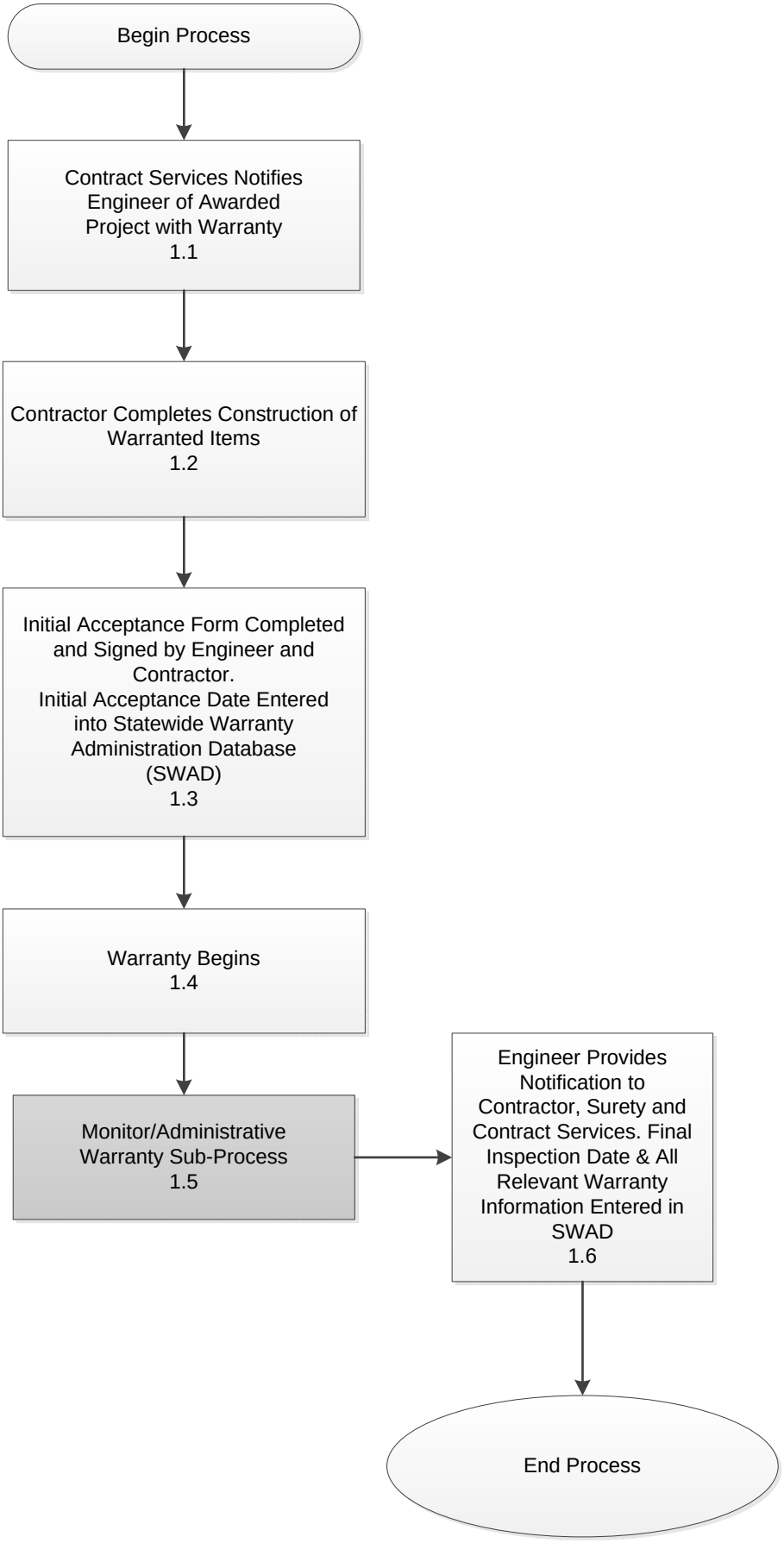
OTHER GUIDELINE CONSIDERATIONS

A statewide warranty administrative database (SWAD) has been developed and should be used to maintain the various information relative to warranty inspections, including all information regarding inspections and any information regarding corrective actions needed or corrective actions performed.

The as-constructed project plans and records should be maintained by the TSC office for the duration of the warranty term. These construction documents may be referred to during a conflict resolution process.

Labor and equipment charges for TSC administered warranties should be made to the current budgeted warranty job number for each region.

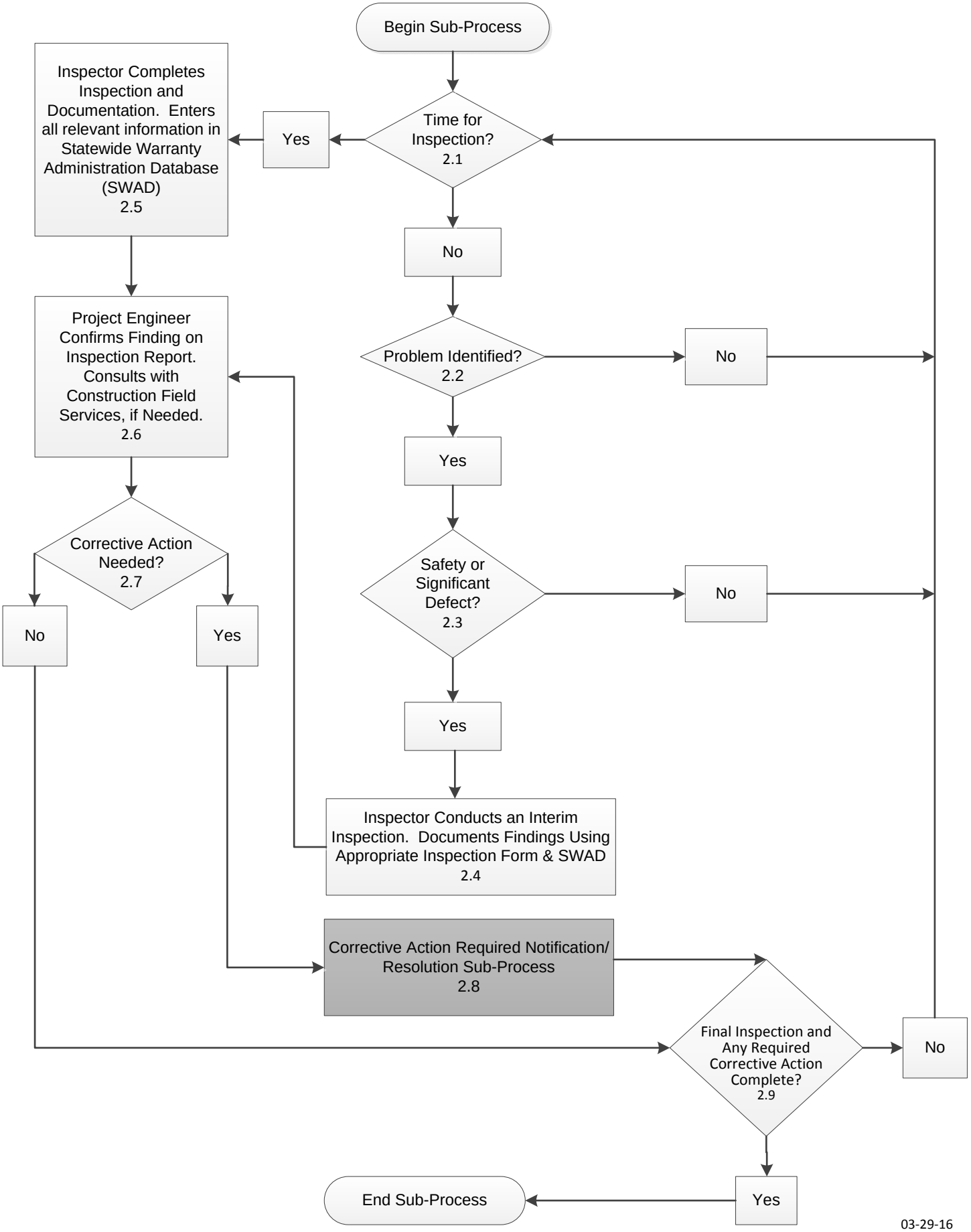
WARRANTY PROCESS



Warranty Process

		Next action	Required Documentation/ Forms	Required SWAD Action	Required ProjectWise Action	Required Notifications	Additional comments
1.1	Contract Services Notifies Engineer of Awarded Project with Warranty	1.2	Email received notifying contract documents are in ProjectWise.	Enter Contract information and check for multiple warranties	Copy Warranty SP and Warranty Bond info to folder 107		Include comments that reference any additional warranties on the project
1.2	Contractor Completes Construction of Warranted Items.	1.3					
1.3	Initial Acceptance Form Completed and Signed by Engineer and Contractor. Initial Acceptance Date Entered into Statewide Warranty Administration Database (SWAD).	1.4	Initial Acceptance (IA) Form	IA Date and any missing warranty specific information entered. This action will auto-generate dates for future inspections and expiration.	IA form put into ProjectWise.	Signed copy sent to Contractor, Surety and Contract Services	IA needs to be entered immediately to ensure 120 day inspections are not missed. Enter comments including any areas that were excluded from the warranty
1.4	Warranty Begins	1.5					Ensure all warranties are for the contract are entered
1.5	Monitor/Administrative Warranty Sub-Process	2.1					
1.6	Engineer Provides Notification to Contractor, Surety and Contract Services. Final Inspection Date & All Relevant Warranty Information Entered in SWAD	End Process	Final inspection Forms and Notification letter	Final inspection Date Entered	Final Inspection forms and notification letter in ProjectWise folder 107	Contractor, Surety, Contract Services notified of acceptance	

MONITOR/ADMINISTRATIVE WARRANTY
Sub-Process



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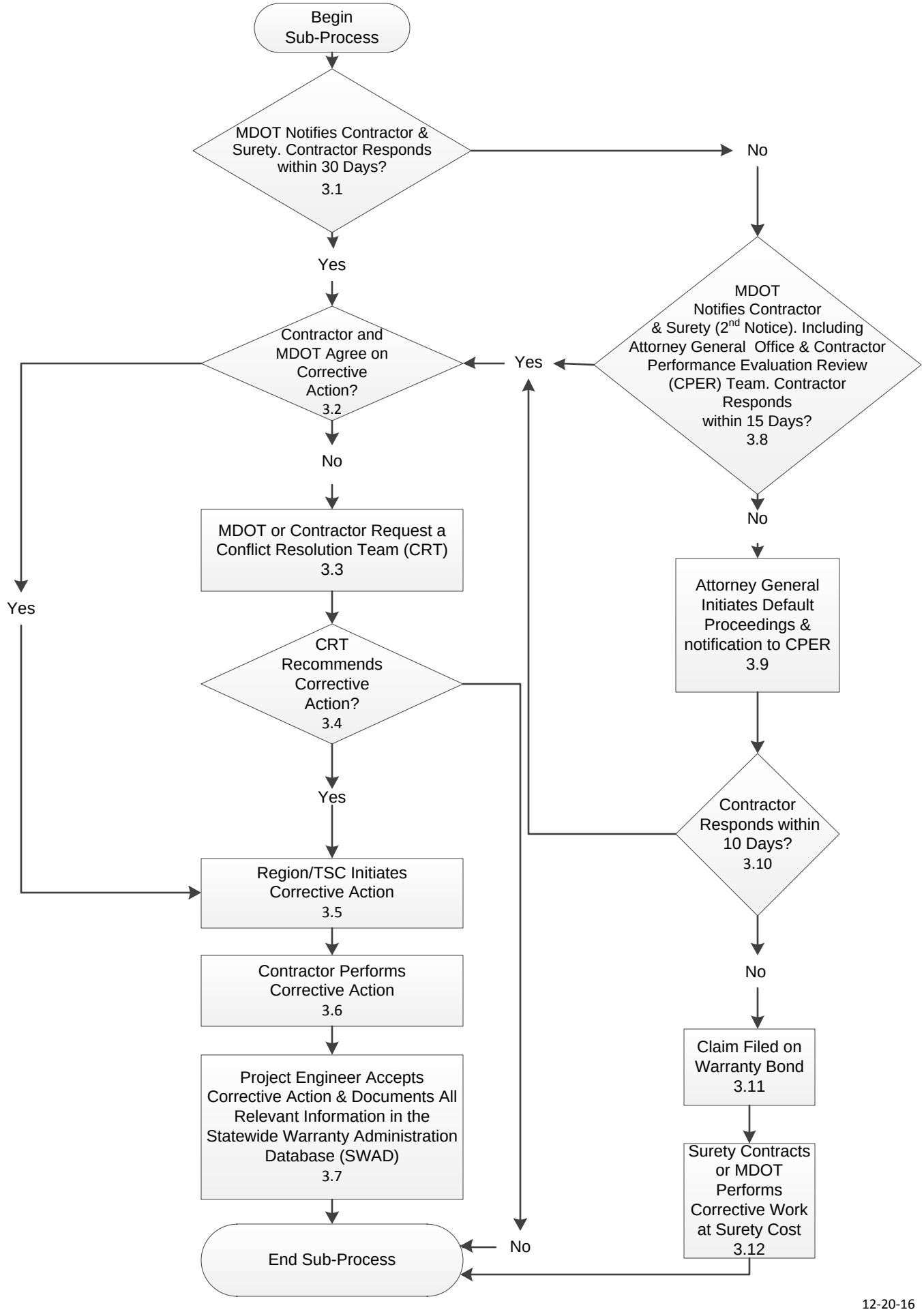
Monitor/Administrative Warranty Sub-Process

		Next action	Required Documentation/ Forms	Required SWAD Action	Required ProjectWise Action	Required Notifications	Additional comments
2.1	Time for Inspection	Yes → 2.5 No → 2.2					
2.2	Problem Identified?	Yes → 2.3 No → 2.1					
2.3	Safety or Significant Defect?	Yes → 2.4 No → 2.1					
2.4	Inspector Conducts an Interim Inspection. Documents Using Appropriate Inspection Form & SWAD	2.6	Interim inspection Form	Add Interim inspection date (if not scheduled) and date completed	Put forms into folder 107	If safety issue exists that needs to be repaired immediately notify contractor and surety	If verbal notification is made follow up with a written notification. Send Certified mail if appropriate.
2.5	Inspector Completes Inspection and Documentation. Enters all relevant information in Statewide Warranty Administration Database (SWAD)	2.6	Interim/Final Inspection Forms	Enter inspection dates and answer if Corrective Action is Required.	Put forms into folder 107		
2.6	Project Engineer Confirms Finding on Inspection Report. Consults with Construction Field Services, if Needed.	2.7		Ensure entry is correct			Contact Statewide System Administrator to justify changes in SWAD entry
2.7	Corrective Action Needed?	Yes → 2.8 No → 2.9					
2.8	Corrective Action Required Notification/Resolution Sub-Process	3.1					
2.9	Final Inspection and any required corrective Action Complete?	Yes → 1.6 No → 2.1					

CORRECTIVE ACTION REQUIRED NOTIFICATION/RESOLUTION SUB-PROCESS



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Corrective Action Required Notification/Resolution Sub-Process

		Next action	Required Documentation/ Forms	Required SWAD Action	Required ProjectWise Action	Required Notifications	Additional comments
3.1	MDOT Notifies Contractor & Surety. Contractor Responds within 30 days?	Yes → 3.2 No → 3.8	Notification letter	Add note into SWAD regarding date letter sent	Place copies of notifications and responses in folder 107	Notify Surety and Contractor	Form Letters are available in ProjectWise. Contractor has 30 to respond to initial notification
3.2	Contractor and MDOT Agree on Corrective Action?	Yes → 3.5 No → 3.3			Place copies of notifications and responses in folder 107		
3.3	MDOT or Contractor Request a Conflict Resolution Team (CRT)	3.4		Click CRT button	Place copies of notifications and responses in folder 107		
3.4	CRT Recommends Corrective Action?	Yes → 3.5 No → 1.6		Enter CRT Completion Date	Place copy of CRT decision in folder 107		Contact Statewide System Administrator if CRT determines no CA required
3.5	Region/TSC Initiates Corrective Action	3.6					Ensure Contractor obtains required permits and bonds
3.6	Contractor Performs Corrective Action	3.7	IDR of corrective work				
3.7	Project Engineer Accepts Corrective Action & Documents All Relevant Information in the Statewide Warranty Administration Database (SWAD)	1.6		Enter Corrective Action complete date and estimated amount			
3.8	MDOT Notifies Contractor & Surety (2nd Notice) Including Attorney General Office. Contractor Responds within 15 days?	Yes → 3.2 No → 3.9	Notification letter	Add note into SWAD regarding date letter sent	Copy of notification in folder 107	2nd notice sent to contractor, surety, AG	Form Letters are available in ProjectWise. Contractor has 15 days to respond to 2nd/Final notification.

3.9	Attorney General Initiates Default Proceedings	3.10	Notification letter	Add note regarding date AG Initiates Default proceedings	Copy of AG notification in folder 107	AG sends default notification to contractor, surety, engineer, and Contract Performance Evaluation Review (CPER) Team	Contractor has 10 days to respond to AG default notification
3.10	Contractor Responds within 10 days?	Yes → 3.2					
		No → 3.11	Contractor response		Place responses in folder 107		
3.11	Claim Filed on Warranty Bond	3.12	Claim letter from AG	Add note regarding status of claim	Copy of AG communication in folder 107		
3.12	Surety Contracts or MDOT Performs Corrective Work at Surety Cost	2.9	IDR of corrective work	Corrective action complete date entered and estimated amount			

WARRANTY INSPECTIONS

There are two types of inspections conducted during the warranty period. The cursory inspection is a simplified inspection to quickly identify segments in the project that may have distresses that exceed threshold values. This cursory inspection normally does not require a lane closure and is conducted from the roadway shoulder estimating distress lengths and widths. The detailed inspection requires direct measuring and reporting of all observed distress in each segment. Traffic control may be required to complete the detailed inspection.

The inspection frequency for the various warranty provisions are specified in the applicable warranty inspection guidelines. The number of inspections is dependent upon the warranty duration. The suggested time frames in the inspection guidelines allows MDOT to notify the Contractor regarding warranty compliance. The inspection should be completed as close to the inspection date as possible. Interim inspections may be delayed if weather makes it difficult to inspect the road or creates an unsafe condition. Final inspections should be completed in a timely manner to ensure that there is enough time to document any thresholds that are exceeded and notify the contractor prior to the expiration of the warranty.

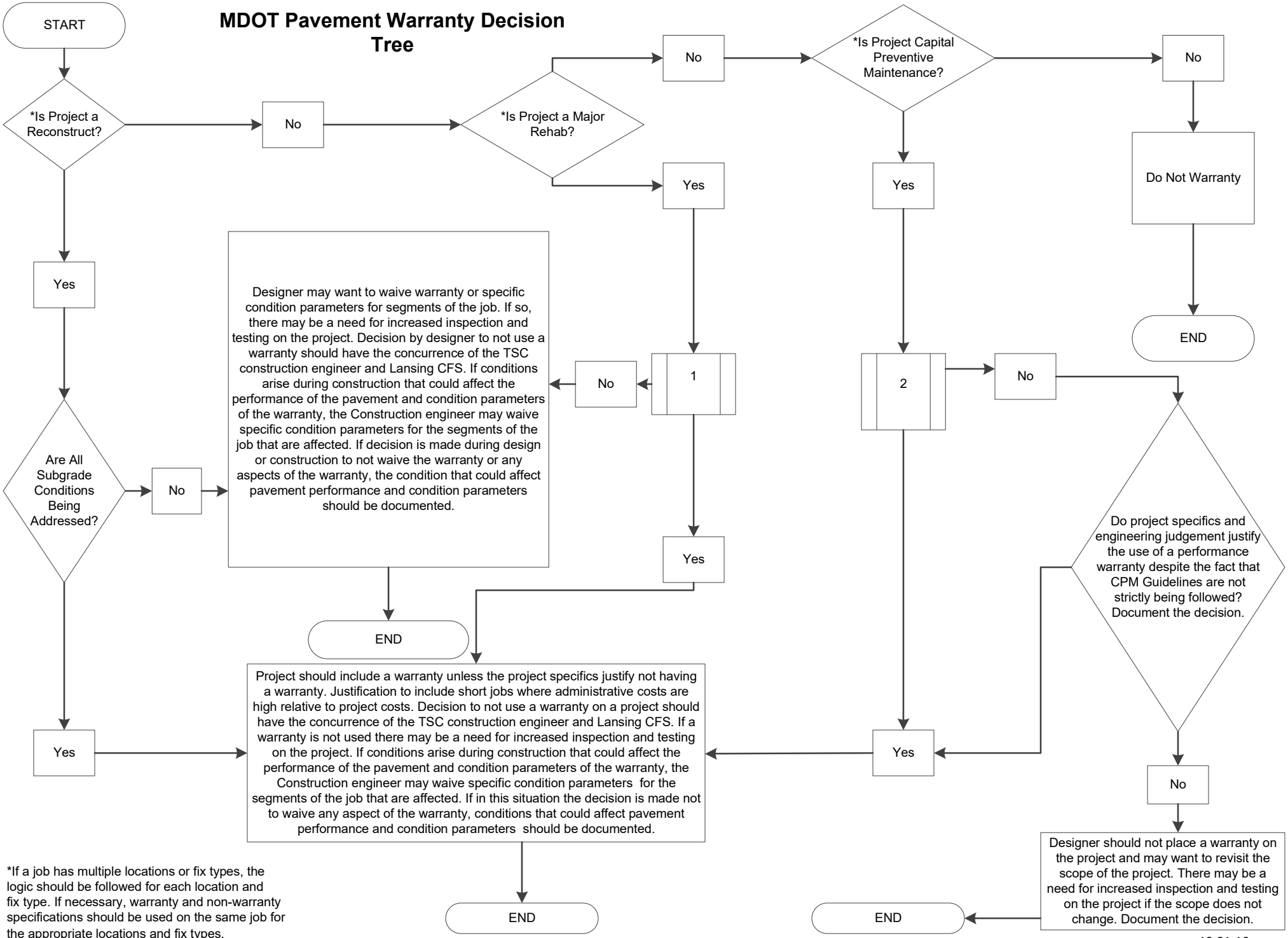
Inspection form distribution is noted on the individual forms. Bureau of Highway Instructional Memorandum 2001-19 also notes required notification for a warranty claim. The completed inspection forms must be included with the notification of a warranty claim.

The designation of lanes during the warranty inspection should be detailed adequately so that it is clear to all involved in the warranty process which lane is being referenced. If necessary, a sketch should be included. It is important to use the same lane numbering designation for all inspections conducted throughout the warranty period.

MDOT PAVEMENT WARRANTY DECISION TREE

Historically, the decision on which MDOT projects included warranties was somewhat black and white. The decision was based mainly on type of fix and commercial ADT. As part of the warranty task force partnership between MDOT, FHWA, and industry; more detailed guidelines have been developed. The guidelines take into account scoping, design, and construction issues associated with different fix types to ensure the right warranty is placed on the right project. The following guidelines, in the form of a decision tree, were approved by the Engineering Operations Committee in December 2006.

MDOT Pavement Warranty Decision Tree



*If a job has multiple locations or fix types, the logic should be followed for each location and fix type. If necessary, warranty and non-warranty specifications should be used on the same job for the appropriate locations and fix types.

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1

FIX TYPE	SCOPING/DESIGN/CONSTRUCTION ISSUE BY FIX TYPE
Repair Existing Pavement and Multiple Course HMA Overlay	Have the appropriate number of joint repairs been completed on rigid and composite pavements? For all pavement types, have the appropriate number of repairs (repair of base failures, depression, voids, loose or deteriorate materials, patched areas with poor adhesion, etc.) been completed? Have existing ruts been removed and the cause of the ruts been addressed? Have existing base, subbase, and subgrade conditions been addressed?
Mill Existing and Multiple Course HMA	Have the appropriate number of joint repairs been completed on rigid and composite pavements? For all pavement types, have the appropriate number of repairs (repair of base failures, depressions, voids, loose or deteriorated materials, patched areas with poor adhesion, etc.) been completed? Have existing ruts been removed and the cause of the ruts been addressed? Have existing base, subbase and subgrade conditions been addressed?
Crush & Shape and Multiple Course HMA Overlay	Do base conditions and staging of the job provide a uniform base to pave over? Have existing base, subbase and subgrade conditions been addressed?
Rubblize and Multiple Course Overlay	Do base conditions and staging of the job allow for uniform base to be paved over? Have any potential wet areas which could affect paving been addressed? Is pavement free of poor sections with excessive patching that can cause patches to break off and get punched down instead of being broken up during rubblization? Have existing base, subbase and subgrade conditions been addressed?
Unbonded Concrete Overlay	Are existing shattered areas repaired? Have existing base, subbase and subgrade conditions been addressed?
6-8" Aggregate lift with multiple course HMA overlay	Have existing base, subbase and subgrade conditions been addressed?

RETURN

2

CPM TREATMENT	EXISTING CONDITIONS
Crack Seal / Flexible Pavement	Is this the first crack treatment applied to the pavement? Is existing surface relatively new? 1-4 years? (Check for existing warranty.)
Crack Seal / Composite Pavement	Is this the first crack treatment applied to the pavement? Is existing surface relatively new? 1-2 years? (Check for existing warranty.)
Surface Seal	Does existing pavement have a good base? Does existing pavement condition fall within CPM guidelines for specified fix?
Functional Enhancements *	Does existing pavement condition fall within CPM guidelines for specified fix?

RETURN

* If the functional enhancement is a One Course Mill and HMA Overlay or a One Course HMA Overlay and project costs are under $2,000,000, do not apply a warranty.

WARRANTY INSPECTION GUIDELINES

HMA CRACK TREATMENT

Use With 03SP505(A) Pavement Performance Warranty for HMA Crack Treatment (Capital Preventive Maintenance)
Author C&T:KPK

Form 1047 CPM - H.M.A. Crack Treatment - Cursory Inspection
Form 1046 CPM - H.M.A. Crack Treatment - Detailed Inspection

These HMA Crack Treatment Warranty Guidelines do not apply to locations treated under stand-alone overband crackfill special provisions.

Inspection Frequency 20 months after Initial Acceptance

Notes

An **evaluation segment** is defined as a 528-foot length of driving lane. 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.

Driving Lane(s) are 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 associated acceleration/deceleration lanes
- The sum of all auxiliary lanes, such as passing lanes and turn lanes.

The **threshold level** is reviewed separately for each crack treatment work type.

A **location** is defined as a continuous section of roadbed (or roadbeds on a divided highway) for which beginning and ending points are defined within the contract documentation.

Working cracks are cracks that experience 1/8 inch or more of horizontal vertical movement as a result of temperature change or traffic loading.

Non-working cracks are cracks that experience less than 1/8 inch of horizontal or vertical movement as a result of temperature change or traffic loading.

Procedure

Perform Warranty Acceptance Inspection.
Based on results of the inspection, recommend the project for either:

1. *Final Acceptance* - No warranty work required; inspection complete
   or
2. *Warranty Work* - Provide the Contractor with results of the inspection indicating areas where warranty work is required.

If conflict resolution process is initiated, then:

Perform Detailed Warranty Acceptance Inspection.
Based on results of the detailed inspection, either:

1. *Warranty Work is Required and Verified* - Provide the Contractor with results of the inspection indicating areas where warranty work is required.

or

2. *Recommend Final Acceptance* - No warranty work required

Condition Parameter Measurement.
Adhesion and/or cohesion are the performance parameters monitored to assess the integrity of the crack treatment. Failure is defined as areas along the sealed or filled crack exhibiting loss of adhesion (loss of crack seal material from the crack reservoir or crack seal pulling away from the sidewalls of the reservoir) or lack of cohesiveness (splitting) within the crack seal material.

Cursory Inspection for HMA Crack Treatment.
The objective of the cursory inspection is to identify evaluation segments of crack treatment failure for each work location and to document the condition prior to warranty expiration. It is recommended that inspectors consider areas that exhibit the highest level of failure when selecting evaluation segments.

All working cracks in traveled lanes are required to be sealed by the Saw/Rout and Seal Method. Non-working cracks in the traveled lanes and in shoulder areas may be filled by either method, although the Overband Crack Fill method is more commonly used for longitudinal joints and shoulder areas. A detailed description that explains how working and non-working cracks are determined within each project location is provided by the Contractor prior to the start of construction as part of the project quality control plan and can be found in the project construction files.

A separate assessment of failure for each crack treatment work type (Saw/Rout and Seal Method and Overband Crack Fill Method) is required.

Once the evaluation segments have been identified, the percent failure is estimated by visual inspection. The percent failure for each evaluation segment is estimated and compared to the failure threshold to determine if warranty work is required. All information is recorded on the HMA Crack Treatment Cursory Inspection form.

Cursory Inspection Procedure. [Form 1047 (07/07)]

1. Lay out 528-foot segments starting at the POB of the project. Number the segments consecutively from the POB to the POE of the project. This original segment layout will be used for all successive reviews of the project throughout the warranty period.

2. Perform a windshield survey of the entire location. Identify areas that exhibit the highest concentration of adhesion and/or cohesion failures for each crack treatment work type within the location.

3. Record the segment and lane numbers for each questionable area.

4. Considering the results of the initial windshield survey, select the segments to be included in the warranty evaluation. A minimum of one segment per lane mile is evaluated for each project location. At least one segment must be evaluated for locations less than one lane mile in length. For a divided highway, a minimum of one segment in each direction per mile is evaluated. Additional segments in excess of the number required may also be evaluated.

5. Estimate and record the percent failure within each segment evaluated. A separate assessment of failure for each crack treatment work type, Saw/Rout Method and/or Overband Crack Fill Method, is required**.**

6. Total the percent failures for all evaluation segments within each crack treatment work type and divide this total percent failure by the total number of evaluation segments to determine the average percent failure for the location.

7. Determine if any of the following threshold conditions is exceeded for either work type:

   a. Failure rate of any one segment is 30 percent or greater

   b. Average failure rate of all segments is 10 percent or greater

   If **any** of the above is true: Warranty Work is Required (within the failure work type)

   If **all** of the above are false: Recommend Final Acceptance

Detailed Inspection.
A more detailed inspection may be required if the Contractor contests the findings of the cursory warranty inspection and requests resolution in accordance with the conflict resolution procedures outlined in the Special Provision for Pavement Performance Warranty for HMA Crack Treatment (Capital Preventive Maintenance). The objective of this inspection is to measure the total length of crack treatment and length of crack treatment failure within the segments evaluated in the cursory inspection. The actual percent failure for each segment and the total percent failure for each crack treatment work type is calculated based on actual measurements. Traffic control will most likely be required to complete the detailed inspection.

Detailed Inspection Procedure. [Form 1046 (07/07)]

1. Prior to starting the inspection, obtain existing lane and/or shoulder width information and note the limits of varying pavement widths to facilitate crack length estimating and measurement operations.

2. Obtain information on evaluation segments from the previous cursory inspection form. Record the appropriate information on the detailed inspection form.

3. Determine the method and approach to be used in obtaining crack length estimates and measurements. Mark the POB and POE for each evaluation segment. Set up traffic control where appropriate.

4. Approximate and/or measure and record the length of seal failure and the total length of cracks treated within each evaluation segment. A separate assessment of failure for each crack treatment work type (Saw/Rout and Seal Method and Overband Crack Fill Method) is required. Crack lengths can be approximated through a combination of methods including direct measurement, crack counts, estimating crack lengths by comparison to lane or shoulder widths and through use of data from the Department's Pavement Management System.

5. Calculate and record the percent failure for each evaluation segment according to the following formula:

   (Length of Failure / Total Length of Cracks) x 100 = Percent Failure

6. Total the percent failures for all evaluation segments within each crack treatment work type and divide this total percent failure by the total number of evaluation segments to determine the average percent failure for the location,

7. Decide if any of the following threshold conditions is exceeded for either work type:

   a. Failure rate of any one evaluation segment is 30 percent or greater

   b. Average failure rate of all evaluation segments is 10 percent or greater

   If **any** of the above is true: Warranty Work is Required and Verified (within the failure work type)

   If **all** of the above are false: Recommend Final Acceptance

Michigan Department of Transportation
1047 (07/07)

CPM - HMA CRACK TREATMENT
CURSORY INSPECTION
FIELD EVALUATION OF WARRANTY PERFORMANCE

FOR USE WITH FUSP 505(A)

INSPECTION DATE

CONTRACTOR	CONTROL SECTION
INSPECTED BY	JOB NUMBER
REVIEWED BY	ROUTE
RESIDENT ENGINEER	INSPECTION LIMITS

SAW/ROUT AND SEAL METHOD

SEGMENT NO.	LANE DESCRIPTION	ESTIMATED PERCENT FAIL-URE (THRESHOLD LIMIT - 30%)	COMMENTS
	WORK TYPE PERCENT FAILURE (SUM)		EXCEEDS THRESHOLD LIMITS
	TOTAL PERCENT FAJILURES / NO. SEGMENTS (THRESHOLD LIMIT - 10%)		☐ YES ☐ NO

OVERBAND CRACK FILL METHOD

SEGMENT NO.	LANE DESCRIPTION	ESTIMATED PERCENT FAIL-URE (THRESHOLD LIMIT = 30%)	COMMENTS
	WORK TYPE PERCENT FAILURE (SUM)		EXCEEDS THRESHOLD LIMITS
	TOTAL PERCENT FAJILURES / NO. SEGMENTS (THRESHOLD LIMIT - 10%)		☐ YES ☐ NO

DISTRIBUTION: Region Office, TSC Manager, Resident Engineer, Warranty Contractor, Surety Company 1,2
1 - Distribution at the end of the warranty period 2 - Distribution when warranty work is required

Clear Form

Note: This is a Sample Form

Clear Form

Michigan Department of Transportation 1046 (07/07)

CPM - HMA CRACK TREATMENT DETAILED INSPECTION

FIELD EVALUATION OF WARRANTY PERFORMANCE

FOR USE WITH FUSP 505(A)

CONTRACTOR	CONTROL SECTION
INSPECTED BY	JOB NUMBER
REVIEWED BY	ROUTE
RESIDENT ENGINEER	INSPECTION LIMITS
	INSPECTION DATE

SAW/ROUT AND SEAL METHOD

SEGMENT NO.	LANE DESCRIPTION	TOTAL LENGTH OF FAILURE (ft)	TOTAL LENGTH OF TREATED CRACKS (ft)	PERCENT FAILURE (THRESHOLD LIMIT = 30%)	COMMENTS
WORK TYPE PERCENT FAILURE (SUM)					EXCEEDS THRESHOLD LIMITS
TOTAL PERCENT FAILURES / NO. OF SEGMENTS (THRESHOLD LIMIT = 10%)					☐ YES ☐ NO

OVERBAND CRACK FILL METHOD

SEGMENT NO.	LANE DESCRIPTION	TOTAL LENGTH OF FAILURE (ft)	TOTAL LENGTH OF TREATED CRACKS (ft)	PERCENT FAILURE (THRESHOLD LIMIT = 30%)	COMMENTS
WORK TYPE PERCENT FAILURE (SUM)					EXCEEDS THRESHOLD LIMITS
TOTAL PERCENT FAILURES / NO. OF SEGMENTS (THRESHOLD LIMIT = 10%)					☐ YES ☐ NO

DISTRIBUTION: Region Office, TSC Manager, Resident Engineer, Warranty Contractor, Surety Company, 1,2

1 - Distribution at the end of the warranty period 2 - Distribution when warranty work is required

Note: This is a Sample Form

WARRANTY INSPECTION GUIDELINES
HMA OVERLAY - CPM

Use With 03SP502 (A, Q, S & T)
Coldmilling + HMA Overlay Warranty and HMA Overlay Warranty (Capital Preventive Maintenance)
Author: C&T:KPK

Form 1184 CPM - HMA Overlay & Coldmilling and HMA Overlay (Cursory Inspection)
Form 1193A-E CPM - HMA Overlay & Coldmilling and HMA Overlay (Detailed Inspection)

Inspection Frequency 32 months after Initial Acceptance

Notes Segments are defined as 528-foot lengths of a driving lane.

The starting point of a segment is the start of any individual distress type.

The threshold level for each distress type is determined separately.

Procedure **Perform Cursory Acceptance Inspection.**
Based on results of the cursory inspection, recommend the project for either:

1. *Final Acceptance* - No warranty work required; Inspection complete
   or
2. *Detailed Inspection* - More detailed inspection and measurements required

Perform Detailed Acceptance Inspection if Required.
Based on results of the detailed inspection, either:

1. *Recommend Final Acceptance* - No warranty work required
   or
2. *Warranty Work is Required and Verified* - Provide the Contractor with results of the inspection indicating areas where warranty work is required.

Condition Parameter Measurement.
Performance parameters will be measured as described for each of the following distress types.

1. **Longitudinal Cracking** - Total linear feet of longitudinal cracks in a segment. Only count cracks that are ***not*** "reflective" from a prior crack or joint. Count all longitudinal cracks that can not be positively identified as "reflective" or are questionable. Each individual crack must exceed 5 feet in length to be included in the total.

2. **De-bonding**- Total longitudinal length, in feet, of de-bonding in a segment. Measure individual de-bonding locations in the longitudinal direction, regardless of the width of the distress location. Potholes are classified as de-bonding.

3. **Raveling** - Total area, in square feet, of raveling in a segment. Measure individual raveling areas and sum the areas for the segment.

4. **Flushing** - Total area, in square feet, of flushing in a segment. Measure individual flushed areas and sum the areas for the segment**.**

5. **Rutting** - The average rut depth, in inches, in a segment. Measure the rut depth in both wheel paths at 65 feet, 200 feet, 330 feet, and 460 feet from the segment POB. Record only the largest (deepest) of the two wheel path measurements at each interval. The average of these four measurements is the average rut depth of the segment.

Cursory Inspection for HMA Overlay.
The purpose of this inspection is to rule out the possibility that warranty work is required. If the "worst segments" of the project appear to be below distress threshold limits, no warranty work is required, and the project can be accepted. If it appears that one or more distress threshold limits may be exceeded, a Detailed Inspection is required.

Cursory Inspection Procedure. [Form 1184 (07/07)]

1. Perform a "windshield" survey of the entire location length. Based solely on visual examination and estimated measurements, approximate the individual distress quantities for the "worst" segment(s) of each distress type and record on the Cursory Inspection Form:

2. Determine if any of the following distress threshold conditions are exceeded. **(*Based on lane width = 12 feet)**

    a. Longitudinal Cracking exceeds 25 percent of the segment length (132 feet within 528 feet *) for **any** 4 segments.

    b. Delamination exceeds 25 percent of the segment length (132 feet within 528 feet *) for **any** 4 segments.

    c. Raveling exceeds 20 percent of the segment length (105.6 feet within 528 feet *) for **any** 2 segments.

    d. Flushing exceeds 5 percent of the segment length (26.4 feet within 528 feet *****) for **any** 2 segments.

    e. Average rut depth exceeds 0.25 inches for **any** 1 segment.

3. If **any** condition above is true:

    a. Perform Detailed Inspection; and
    b. Provide a description of the magnitude and location(s) of the distress condition(s) observed which justify the Detailed Inspection.

4. If **all** conditions above are false, recommend Final Acceptance.

Detailed Inspection for HMA Overlay.
The purpose of this inspection is to accurately measure and document the amount of pavement distress to determine if the project meets the terms of the warranty and to determine what actions, if any, will be required by the Contractor. This inspection provides the documentation the Department needs to enforce the warranty specifications.

Detailed Inspection Procedure. [Forms 1193A-E (07/07)]

1. Determine the worst segments (exceeding threshold limits) for each individual distress type.

2. Document the lane, direction and distance from POB, of each questionable segment identified in Step 1.

3. For each questionable segment, measure and record the amount of each individual distress type and record on the appropriate inspection form.

    a. Longitudinal Cracking - Form 1193A

    b. De-bonding- Form 1193B

    c. Raveling - Form 1193C

    d. Flushing - Form 1193D

    e. Rutting - Form 1193E

4. Determine if any of the threshold limits for longitudinal cracking, de-bonding, raveling or flushing, listed under Cursory Inspection, are exceeded.

5. Evaluate segments where the average rut depth appears to exceed 0.25 inches as follows.

    a. Measure the average rutting at all questionable segments to verify that the threshold was exceeded.

    b. Request pavement cores and analysis for those segments found to exceed the average rutting threshold limits. A minimum of one pavement core must be requested for each contiguous group of segments that exceed the threshold limits. Determine by analysis if those segments were not produced in accordance with the job mix formula (JMF). Both of these conditions must exist to trigger warranty work due to rutting.

6. Warranty work is required at those segments for which any of the threshold limits for longitudinal cracking, delamination, raveling or flushing are exceeded and/or where the average rut depth exceeds 0.25 inches and analysis shows the JMF was not followed. Provide the Contractor with results of the inspection indication segments where warranty work is required.

Michigan Department of Transportation 1184 (02/08)

CPM-HMA OVERLAY & COLDMILL AND HMA OVERLAY

FOR USE WITH FUSP 502 (A, Q, S, T)

(CURSORY INSPECTION)

Field Evaluation of Warranty Performance

Clear Form

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER
INSPECTION LIMITS	

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	ESTIMATED TOTAL LENGTH OF DISTRESS (ft)	COMMENTS
LONGITUDINAL CRACKING/OPEN JOINT			(THRESHOLD LIMIT - 132 FEET)	
LC-1				
LC-2				
LC-3				
LC-4				
LC-5				
DE-BONDING			(THRESHOLD LIMIT - 132 FEET)	
D-1				
D-2				
D-3				
D-4				
D-5				
RAVELING			(THRESHOLD LIMIT - 105.6 FEET)	
RV-1				
RV-2				
RV-3				
FLUSHING			(THRESHOLD LIMIT - 26.4 FEET)	
FL-1				
FL-2				
FL-3				
RUTTING			(THRESHOLD LIMIT - .25 INCH)	
RT-1				
RT-2				

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY[1,2]
1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD
2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

Michigan Department of Transportation
1193A (02/08)

CPM-HMA OVERLAY & COLDMILL AND HMA OVERLAY
(DETAILED INSPECTION)
Field Evaluation of Warranty Performance

FOR USE WITH FUSP 502 (A, Q, S, T)

Clear Form

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER
INSPECTION LIMITS	

LONGITUDINAL CRACKING/OPEN JOINT (THRESHOLD LIMIT - 132 FEET)

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	TOTAL LENGTH OF DISTRESS (ft)	COMMENTS
LC-1				
LC-2				
LC-3				
LC-4				
LC-5				
LC-6				
LC-7				
LC-8				
LC-9				
LC-10				
LC-11				
LC-12				
LC-13				
LC-14				
LC-15				
LC-16				
LC-17				
LC-18				
LC-19				
LC-20				
LC-21				
LC-22				
LC-23				
LC-24				
LC -25				
LC-26				
LC-27				
LC-28				
LC-29				
LC-30				

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY$_{1,2}$

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD
2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

Michigan Department of Transportation
1193B (02/08)

CPM-HMA OVERLAY & COLDMILL AND HMA OVERLAY
(DETAILED INSPECTION)
Field Evaluation of Warranty Performance

FOR USE WITH FUSP 502 (A, Q, S, T)

Clear Form

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER
INSPECTION LIMITS	

DEBONDING (THRESHOLD LIMIT - 132 FEET)

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	TOTAL LENGTH OF DISTRESS (ft)	COMMENTS
D-1				
D-2				
D-3				
D-4				
D-5				
D-6				
D-7				
D-8				
D-9				
D-10				
D-11				
D-12				
D-13				
D-14				
D-15				
D-16				
D-17				
D-18				
D-19				
D-20				
D-21				
D-22				
D-23				
D-24				
D-25				
D-26				
D-27				
D-28				
D-29				
D-30				

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY$_{1,2}$

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD
2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

Michigan Department of Transportation
1193C (02/08)

CPM-HMA OVERLAY & COLDMILL AND HMA OVERLAY
(DETAILED INSPECTION)
Field Evaluation of Warranty Performance

FOR USE WITH FUSP 502 (A, Q, S, T)

Clear Form

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER
INSPECTION LIMITS	

RAVELING (THRESHOLD LIMIT - 105.6 FEET)

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	TOTAL LENGTH OF DISTRESS (ft)	COMMENTS
RV-1				
RV-2				
RV-3				
RV-4				
RV-5				
RV-6				
RV-7				
RV-8				
RV-9				
RV-10				
RV-11				
RV-12				
RV-13				
RV-14				
RV-15				
RV-16				
RV-17				
RV-18				
RV-19				
RV-20				
RV-21				
RV-22				
RV-23				
RV-24				
RV-25				
RV-26				
RV-27				
RV-28				
RV-29				
RV-30				

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY$_{1,2}$

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD
2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

Michigan Department of Transportation
1193D (02/08)

CPM-HMA OVERLAY & COLDMILL AND HMA OVERLAY
(DETAILED INSPECTION)
Field Evaluation of Warranty Performance

FOR USE WITH FUSP 502 (A, Q, S, T)

Clear Form

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER
INSPECTION LIMITS	

FLUSHING (THRESHOLD LIMIT - 26.4 FEET)

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	TOTAL LENGTH OF DISTRESS (ft)	COMMENTS
FL-1				
FL-2				
FL-3				
FL-4				
FL-5				
FL-6				
FL-7				
FL-8				
FL-9				
FL-10				
FL-11				
FL-12				
FL-13				
FL-14				
FL-15				
FL-16				
FL-17				
FL-18				
FL-19				
FL-20				
FL-21				
FL-22				
FL-23				
FL-24				
FL-25				
FL-26				
FL-27				
FL-28				
FL-29				
FL-30				

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY$_{1,2}$

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD
2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

Michigan Department of Transportation
1193E (02/08)

CPM-HMA OVERLAY & COLDMILL AND HMA OVERLAY
(DETAILED INSPECTION)
Field Evaluation of Warranty Performance

FOR USE WITH FUSP 502 (A, Q, S, T)

Clear Form

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER
INSPECTION LIMITS	

RUTTING (THRESHOLD LIMIT - .25 INCH)

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	TOTAL LENGTH OF DISTRESS (ft)	COMMENTS
RT-1				
RT-2				
RT-3				
RT-4				
RT-5				
RT-6				
RT-7				
RT-8				
RT-9				
RT-10				
RT-11				
RT-12				
RT-13				
RT-14				
RT-15				
RT-16				
RT-17				
RT-18				
RT-19				
RT-20				
RT-21				
RT-22				
RT-23				
RT-24				
RT-25				
RT-26				
RT-27				
RT-28				
RT-29				
RT-30				

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY$_{1,2}$
1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD
2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

WARRANTY INSPECTION GUIDELINES
MICRO-SURFACING - CPM

Use With 03SP507(A) Pavement Performance Warranty for Micro-Surfacing (Capital Preventive Maintenance)
Author C&T:KPK

Form 1893 CPM - Microsurfacing (Cursory Inspection)
Form 1894 CPM - Microsurfacing (Detailed Inspection - incl. worksheet)

Inspection Frequency 20 months after Initial Acceptance

Notes Segments are defined as 528 foot lengths of a driving lane.

The threshold level for each distress type is determined separately.

Procedure: **Perform Cursory Inspection.**
Based on results of Cursory Inspection, recommend the project for either:

1. *Final Acceptance* - No warranty work required; inspection complete
   or
2. *Detailed Inspection* - Perform detailed inspection

Perform Detailed Inspection if Required.
Based on results of the detailed inspection, either:

1. *Recommend Final Acceptance* - No warranty work required
   or
2. *Warranty Work is Required and Verified* - Provide the Contractor with results of the inspection indicating areas where warranty work is required.

Condition Parameter Measurement.
Performance parameters shall be measured as described for each distress type.

1. **Debonding -** Total linear feet of debonding in a segment. Measure individual debonding locations in the longitudinal direction, regardless of the width of the distress location, and sum the lengths for each segment. Potholes will be classified as debonding.

2. **Raveling -** Total longitudinal feet of raveling in a segment. Measure individual raveling locations in the longitudinal direction, regardless of the width of the distress location, and sum the lengths for each segment.

3. **Bleeding/Flushing -** Total longitudinal feet of flushing in a segment. Measure individual flushed locations in the longitudinal direction, regardless of the width of the distress location, and sum the lengths for each segment.

4. **Rutting -** Measure the rut depth for each wheel path independently at 65 feet, 200 feet, 330 feet, 460 feet. The average of these four measurements is the average rut depth for the right or left wheel path. Use only the largest (deepest) average rut depth when evaluating the segment with the threshold value.

Cursory Inspection.
The purpose of this inspection is to rule out the possibility that warranty work is required. If the worst segments of the project appear to be below distress threshold limits, no warranty work is required and the project can be accepted. If it appears that one or more distress threshold limits may be exceeded, a Detailed Inspection is required.

Cursory Inspection Procedure. [Form 1893 (07/07)]

1. Perform a windshield survey of the entire project location. Based solely on visual examination and **estimated measurements**, approximate the individual distress quantities for the worst segment(s) of each distress type and record on the Cursory Inspection Form:

2. Determine if any of the following distress threshold conditions exist:

    a. **Any 4 segments combined** - Do any 4 or more segments combined exhibit bleeding/flushing, debonding or raveling in excess of the following combined segment performance parameter threshold limits?

        - Bleeding/Flushing exceeds 5 percent of the segment length (26.4 feet); or
        - Debonding exceeds 5 percent of the segment length (26.4 feet); or
        - Raveling exceeds 8 percent of the segment length (42.2 feet).

    b. **Any 1 segment** - Does any 1 or more segment exhibit bleeding/flushing, debonding, raveling or rutting in excess of the following single segment performance parameter threshold limits?

        - Bleeding/Flushing exceeds 10 percent of the segment length (52.8 feet); or
        - Debonding exceeds 10 percent of the segment length (52.8 feet); or
        - Raveling exceeds 10 percent of the segment length (52.8 feet); or
        - Average rut depth exceeds 1/4 inch (either right or left wheel path) .

3. If **any** condition above is true:

    a. Perform Detailed Inspection; and

    b. Provide a description of the magnitude and location(s) of the distress condition(s) observed which justify the Detailed Inspection.

4. If **all** conditions above are false recommend Final Acceptance.

Detailed Inspection.
The purpose of this inspection is to **accurately measure** and document the amount of pavement distress to determine if the project meets the terms of the warranty and to determine what actions, if any, will be required by the Contractor. This inspection provides the documentation the Department needs to enforce the warranty specifications.

Detailed Inspection Procedure. [Form 1894 (07/07)]

1. Determine the worst 528 foot segments (exceeding threshold limits) for each individual distress type.

2. Document the lane, direction and distance from POB, of each questionable segment identified in step 1

3. For each questionable segment, measure and record the amount of each individual distress type and record on the appropriate inspection form.

    a. Debonding- Form 1894

    b. Raveling - Form 1894

    c. Bleeding/Flushing - Form 1894

    d. Rutting - Form 1894

4. Determine if any of the threshold limits for debonding, raveling, bleeding/ flushing, or rutting listed under Cursory Inspection, are exceeded.

Michigan Department of Transportation 1893 (07/07)

CPM - MICROSURFACING (CURSORY INSPECTION)

FIELD EVALUATION OF WARRANTY PERFORMANCE

FOR USE WITH 03SP 507(A)

Clear Form

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER
INSPECTION LIMITS	

DEBONDING (THRESHOLD LIMIT = 5% OF SEGMENT LENGTH)

SEGMENT NO.	DRIVING LANE DESCRIPTION	LENGTH OF DISTRESS (FT)	DISTRESS EXCEEDS 5% OF SEGMENT LENGTH?	DISTRESS EXCEED 10% OF SEGMENT LENGTH?	COMMENTS
D-1			☐ YES ☐ NO	☐ YES ☐ NO	
D-2			☐ YES ☐ NO	☐ YES ☐ NO	
D-3			☐ YES ☐ NO	☐ YES ☐ NO	
D-4			☐ YES ☐ NO	☐ YES ☐ NO	
D-5			☐ YES ☐ NO	☐ YES ☐ NO	

RAVELING (THRESHOLD LIMIT = 8% OF SEGMENT LENGTH)

			DISTRESS EXCEEDS 8% OF SEGMENT LENGTH?	DISTRESS EXCEED 10% OF SEGMENT LENGTH?	
RV-1			☐ YES ☐ NO	☐ YES ☐ NO	
RV-2			☐ YES ☐ NO	☐ YES ☐ NO	
RV-3			☐ YES ☐ NO	☐ YES ☐ NO	
RV-4			☐ YES ☐ NO	☐ YES ☐ NO	
RV-5			☐ YES ☐ NO	☐ YES ☐ NO	

BLEEDING/FLUSHING (THRESHOLD LIMIT = 5% OF SEGMENT LENGTH)

			DISTRESS EXCEEDS 5% OF SEGMENT LENGTH?	DISTRESS EXCEED 10% OF SEGMENT LENGTH?	
FL-1			☐ YES ☐ NO	☐ YES ☐ NO	
FL-2			☐ YES ☐ NO	☐ YES ☐ NO	
FL-3			☐ YES ☐ NO	☐ YES ☐ NO	
FL-4			☐ YES ☐ NO	☐ YES ☐ NO	
FL-5			☐ YES ☐ NO	☐ YES ☐ NO	

RUTTING (THRESHOLD LIMIT 1/4")

SEGMENT NO.	DRIVING LANE DESCRIPTION	AVERAGE RUT DEPTH FOR LEFT WHEEL PATH (IN)	AVERAGE RUT DEPTH FOR RIGHT WHEEL PATH (IN)	AVERAGE RUT DEPTH EXCEEDS THRESHOLD LIMIT?	COMMENTS
RT-1				☐ YES ☐ NO	
RT-2				☐ YES ☐ NO	

DISTRIBUTION: Region Office, TSC Manager, Resident Engineer, Warranty Contractor, Surety Company$_{1,2}$

1 - Distribution at the end of the warranty period 2 - Distribution when warranty work is required

Note: This is a Sample Form

Clear Form

Michigan Department of Transportation 1894 (7/07)

CPM - MICROSURFACING (WORKSHEET)

FIELD EVALUATION OF WARRANTY PERFORMANCE

FOR USE WITH 03SP 507(A)

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER
INSPECTION LIMITS	

RECORD DISTRESS MEASUREMENTS ON CURSORY OR DETAILED FORMS THEN COME BACK TO THIS TABLE TO DETERMINE IF CORRECTIVE WORK IS REQUIRED.

DETERMINATION OF CORRECTIVE ACTION

	NUMBER OF SEGMENTS EXCEEDING THRESHOLD	NUMBER OF ALLOWABLE SEGMENT FAILURES PER DRIVING LANE	NUMBER OF SEGMENTS WITH DISTRESS EXCEEDING 10% OF LENGTH	NUMBER OF ALLOWABLE SEGMENTS WITH DISTRESS EXCEEDING 10% OF LENGTH	COMMENTS
RAVELING		ANY COMBINATION OF RAVELING/FLUSHING, OR DEBONDING		1	
BLEEDING/FLUSHING				1	
DEBONDING				1	
TOTAL		4			
RUTTING		1			

IS WARRANTY WORK REQUIRED? ☐ YES ☐ NO

DISTRIBUTION: Region Office, TSC Manager, Resident Engineer, Warranty Contractor, Surety Company$_{1,2}$

1 - Distribution at the end of the warranty period 2 - Distribution when warranty work is required

Note: This is a Sample Form

Clear Form

MDOT 1894 (07/07)

CPM - MICROSURFACING (DETAILED INSPECTION)

FIELD EVALUATION OF WARRANTY PERFORMANCE

FOR USE WITH 03SP 507(A)

BLEEDING/FLUSHING THRESHOLD LIMIT = 5% OF SEGMENT LENGTH)

DRIVING LANE DESCRIPTION	SEGMENT NO.	LENGTH OF DISTRESS (FT)	EXCEEDS THRESHOLD LIMITS?	DISTRESS EXCEEDS 10% OF SEGMENT LENGTH?	COMMENTS
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
TOTAL SEGMENTS EXCEEDING THRESHOLD LIMITS			YES NO	YES NO	

DISTRIBUTION: Region Office, TSC Manager, Resident Engineer, Warranty Contractor, Surety Company, 1,2

1 - Distribution at the end of the warranty period 2 - Distribution when warranty work is required

Note: This is a Sample Form

Clear Form

MDOT 1894 (07/07)

CPM - MICROSURFACING (DETAILED INSPECTION)

FIELD EVALUATION OF WARRANTY PERFORMANCE

FOR USE WITH 03SP 507(A)

RAVELING

(THRESHOLD LIMIT = 8% OF SEGMENT LENGTH)

DRIVING LANE DESCRIPTION	SEGMENT NO.	LENGTH OF DISTRESS (FT)	EXCEEDS THRESHOLD LIMITS?	DISTRESS EXCEEDS 10% OF SEGMENT LENGTH?	COMMENTS
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
TOTAL SEGMENTS EXCEEDING THRESHOLD LIMITS					

DISTRIBUTION: Region Office, TSC Manager, Resident Engineer, Warranty Contractor, Surety Company, 1,2

1 - Distribution at the end of the warranty period 2 - Distribution when warranty work is required

Note: This is a Sample Form

Clear Form

MDOT 1894 (07/07)

CPM - MICROSURFACING (DETAILED INSPECTION)

FIELD EVALUATION OF WARRANTY PERFORMANCE

FOR USE WITH 03SP 507(A)

DEBONDING

(THRESHOLD LIMIT = 5% OF SEGMENT LENGTH)

DRIVING LANE DESCRIPTION	SEGMENT NO.	LENGTH OF DISTRESS (FT)	EXCEEDS THRESHOLD LIMITS?	DISTRESS EXCEEDS 10% OF SEGMENT LENGTH?	COMMENTS
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
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			☐ YES ☐ NO	☐ YES ☐ NO	
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			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
TOTAL SEGMENTS EXCEEDING THRESHOLD LIMITS					

DISTRIBUTION: Region Office, TSC Manager, Resident Engineer, Warranty Contractor, Surety Company$_{1,2}$

1 - Distribution at the end of the warranty period 2 - Distribution when warranty work is required

Note: This is a Sample Form

Clear Form

MDOT 1894 (07/07)

CPM - MICROSURFACING (DETAILED INSPECTION)

FIELD EVALUATION OF WARRANTY PERFORMANCE

FOR USE WITH 03SP 507(A)

RUTTING (THRESHOLD LIMIT = 1/4" AVERAGE)

DRIVING LANE DESCRIPTION	SEGMENT NO.	AVERAGE RUT DEPTH IN LEFT WHEEL PATH (IN)	AVERAGE RUT DEPTH IN RIGHT WHEEL PATH (IN)	EXCEEDS THRESHOLD LIMIT?	COMMENTS
				☐ YES ☐ NO	
				☐ YES ☐ NO	
				☐ YES ☐ NO	
				☐ YES ☐ NO	
				☐ YES ☐ NO	
				☐ YES ☐ NO	
				☐ YES ☐ NO	
				☐ YES ☐ NO	
				☐ YES ☐ NO	
				☐ YES ☐ NO	
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				☐ YES ☐ NO	
				☐ YES ☐ NO	
				☐ YES ☐ NO	
				☐ YES ☐ NO	
				☐ YES ☐ NO	
TOTAL SEGMENTS EXCEEDING THRESHOLD LIMITS					

DISTRIBUTION: Region Office, TSC Manager, Resident Engineer, Warranty Contractor, Surety Company, 1,2

1 - Distribution at the end of the warranty period 2 - Distribution when warranty work is required

Note: This is a Sample Form

WARRANTY INSPECTION GUIDELINES
CHIP SEALS - CPM

Use With

03SP508(A)
Pavement Performance Warranty for Single Chip Seals (Capital Preventive Maintenance)
Author: C&T:KPK

03SP508(C)
Pavement Performance Warranty for Double Chip Seals (Capital Preventive Maintenance)
Author: C&T:KPK

Form 1167B Field Evaluation of Warranty Performance Chip Seals - CPM

Inspection Frequency

20 months after Initial Acceptance

Notes

Segments - 528 feet a driving lane.

Driving Lane - Each of the following is considered a separate driving lane:

- Each individual mainline lane.
- The sum of all ramp lanes and associated acceleration/deceleration lanes.
- The sum of all auxiliary lanes, such as passing lanes and turn lanes.

Lay out segments starting at the POB and continuing to the POE of the project. All successive reviews throughout the warranty period will use the same segment lay out.

Condition Parameter Measurement.
Each performance criteria is evaluated separately, and has different threshold limits. **If any threshold limit is exceeded for a segment, warranty work is required.**

1. **Surface Cracking** - Select the worst segment for each 2 miles of driving lane to review in detail for surface cracking. If the final segment of the project is less than 1 mile, this last portion it is not reviewed.

   Within the selected segment(s), log all open cracks and convert to defective cracks as follows.

   a. Log the total length of **longitudinal cracks** for each segment.

      - Each 125 feet of longitudinal cracks equals one defective crack.

   b. Log **transverse cracks** by their individual lengths as either 6 inches to 6 feet in length, or more than 6 feet in length.
      - Any single transverse crack more than 6 feet in length equals one defective crack; **and**

- Five transverse cracks 6 inches to 6 feet in length equals one defective crack.

If the number of defective cracks in the segment equals or exceeds the following threshold values, the segment is considered defective.

CHIP SEAL TREATMENT	PAVEMENT TYPE	NUMBER OF DEFECTIVE CRACKS
Double Chip Seal	Flexible	30
Single Chip Seal	Flexible	25
Double Chip Seal	Composite	30

2. **Loss of Cover Aggregate** - The allowable threshold limit for loss of cover aggregate is 40 percent of the segment length. Measure for all segments where aggregate loss is evident. This measurement is linear and not dependent on area of aggregate loss.

3. **Bleeding/Flushing** - The allowable threshold limit for bleeding or flushing is 40 percent of the segment length. Measure for all segments where bleeding or flushing is evident. This measurement is linear and not dependent on area of bleeding or flushing.

Inspection Procedure. [Form 1167B (07/07)]
Use as many copies of this form as are necessary to record all evaluated segments.

1. Divide the project into segments of 528 feet. Identify each segment, because all subsequent reviews must use the original segment lay out.

2. For each 2 miles of separate driving lane, pick a segment as noted in the Surface Cracking section above. Evaluate each selected segment in detail using the Surface Cracking Worksheet on the second page of Form 1167B. Transfer information to the first page of the form and calculate the average number of cracks per segment. Note on the form whether or not the allowable threshold limit for surface cracking is exceeded.

3. Using the first page of Form 1167B, record each segment where aggregate loss is evident. Measure and record the total length of distress and the percent of segment length affected for each evaluated segment. In the last column note each segment that exceeds the threshold limit for aggregate loss.

4. Using the first page of Form 1167B, record each segment where bleeding/flushing is evident. Measure and record the total length of distress and the percent of segment length affected for each evaluated segment. In the last column note each segment that exceeds the threshold limit for bleeding/flushing.

5. At the bottom of the form, check whether warranty work (corrective action) is required using the following guidelines.

a. Surface Cracking - If the average number of defective cracks per segment exceeds the threshold limit, the Contractor must overband crack fill all cracks on the entire site, including shoulders, if the shoulders are part of the chip seal work.

b. Loss of Cover Aggregate - Corrective Action, full-width across the driving lane or shoulder, will be required for each defective segment.

c. Bleeding/Flushing - Corrective Action, full-width across the driving lane or shoulder, will be required for each defective segment.

Clear Form

Michigan Department of Transportation
1167B (07/07)

FIELD EVALUATION OF WARRANTY PERFORMANCE CHIP SEALS - CPM

FOR: 03SP508(A) & 03SP508(C)

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	DELIVERY ENGINEER
INSPECTION LIMITS	

SURFACE CRACKING - From Surface Cracking Worksheet(s)

TOTAL NUMBER OF SEGMENTS EVALUATED	**ALLOWABLE THRESHOLD (Average per Segment)**
TOTAL NUMBER OF DEFECTIVE CRACKS	SINGLE CHIP SEALS: 25
AVERAGE NUMBER OF CRACKS PER SEGMENT	DOUBLE CHIP SEALS: 30
DOES SEGMENT AVERAGE EXCEED ALLOWABLE THRESHOLD? ☐ YES ☐ NO	

LOSS OF COVER AGGREGATE — **Threshold Limit = Greater than 40% of segment length**

SEGMENT IDENTIFIER: Location and/or Segment Number	TOTAL LENGTH OF DISTRESS	PERCENT OF SEGMENT LENGTH	COMMENTS	EXCEEDS THRESHOLD?
		0.00%		
		0.00%		
		0.00%		
		0.00%		
		0.00%		

BLEEDING/FLUSHING — **Threshold Limit = Greater than 40% of segment length**

SEGMENT IDENTIFIER: Location and/or Segment Number	TOTAL LENGTH OF DISTRESS	PERCENT OF SEGMENT LENGTH	COMMENTS	EXCEEDS THRESHOLD?
		0.00%		
		0.00%		
		0.00%		
		0.00%		
		0.00%		

WARRANTY WORK REQUIRED? ☐ YES ☐ NO

DISTRIBUTION: Region Office, TSC Manager, Resident Engineer, Warranty Contractor, Surety Company, 1,2

1 - Distribution at the end of the warranty period 2 - Distribution when warranty work is required

Note: This is a Sample Form

MDOT 1167B (07/07)

Clear Form

FIELD EVALUATION OF WARRANTY PERFORMANCE - CHIP SEALS - CPM
SURFACE CRACKING WORKSHEET

FOR: 03SP508(A) & 03SP508(C)

SEGMENT IDENTIFIER - LOCATION AND/OR SEGMENT NUMBER		TOTAL # OF CRACKS	TOTAL LENGTH OF CRACKS	DEFECTIVE CRACKS	
Transverse Cracks - Record Number of Cracks Below					
6" to 6'		*(A)*		*(A)/5=*	
6' & over		*(B)*		*(B) =*	
Longitudinal Cracks - Location and/or Segment Number					
Linear Measure:			(C)	*(C)/125'=*	
				TOTAL DEFECTIVE CRACKS	

SEGMENT IDENTIFIER - LOCATION AND/OR SEGMENT NUMBER		TOTAL # OF CRACKS	TOTAL LENGTH OF CRACKS	DEFECTIVE CRACKS	
Transverse Cracks - Record Number of Cracks Below					
6" to 6'		*(A)*		*(A)/5=*	
6' & over		*(B)*		*(B) =*	
Longitudinal Cracks - Location and/or Segment Number					
Linear Measure:			(C)	*(C)/125'=*	
				TOTAL DEFECTIVE CRACKS	

SEGMENT IDENTIFIER - LOCATION AND/OR SEGMENT NUMBER		TOTAL # OF CRACKS	TOTAL LENGTH OF CRACKS	DEFECTIVE CRACKS	
Transverse Cracks - Record Number of Cracks Below					
6" to 6'		*(A)*		*(A)/5=*	
6' & over		*(B)*		*(B) =*	
Longitudinal Cracks - Location and/or Segment Number					
Linear Measure:			(C)	*(C)/125'=*	
				TOTAL DEFECTIVE CRACKS	

SEGMENT IDENTIFIER - LOCATION AND/OR SEGMENT NUMBER		TOTAL # OF CRACKS	TOTAL LENGTH OF CRACKS	DEFECTIVE CRACKS	
Transverse Cracks - Record Number of Cracks Below					
6" to 6'		*(A)*		*(A)/5=*	
6' & over		*(B)*		*(B) =*	
Longitudinal Cracks - Location and/or Segment Number					
Linear Measure:			(C)	*(C)/125'=*	
				TOTAL DEFECTIVE CRACKS	

Note: This is a Sample Form

WARRANTY INSPECTION GUIDELINES

PAVER PLACED SURFACE SEAL - CPM

Use With 03SP507(C) Pavement Performance Warranty for Paver Placed Surface Seal (Capital Preventive Maintenance)
Author C&T: KPK

Form 1948 CPM - Paver Placed Surface Seal (Cursory Inspection)
Form 1949 CPM - Paver Placed Surface Seal (Detailed Inspection - incl. worksheet)

Inspection Frequency 32 months after Initial Acceptance

Notes Segments are defined as 528 foot lengths of a driving lane.

The threshold level for each distress type is determined separately.

Procedure: **Perform Cursory Inspection.**
Based on results of Cursory Inspection, recommend the project for either:

1. *Final Acceptance* - No warranty work required; inspection complete
   or
2. *Detailed Inspection* - Perform detailed inspection

Perform Detailed Inspection if Required.
Based on results of the detailed inspection, either:

1. *Recommend Final Acceptance* - No warranty work required
   or
2. *Warranty Work is Required and Verified* - Provide the Contractor with results of the inspection indicating areas where warranty work is required.

Condition Parameter Measurement.
Performance parameters shall be measured as described for each distress type.

1. **Debonding -** Total linear feet of debonding in a segment. Measure individual debonding locations in the longitudinal direction, regardless of the width of the distress location, and sum the lengths for each segment. Potholes will be classified as debonding.

2. **Raveling -** Total longitudinal feet of raveling in a segment. Measure individual raveling locations in the longitudinal direction, regardless of the width of the distress location, and sum the lengths for each segment.

3. **Bleeding/Flushing -** Total longitudinal feet of flushing in a segment. Measure individual flushed locations in the longitudinal direction, regardless of the width of the distress location, and sum the lengths for each segment.

4. **Rutting -** Measure the rut depth for each wheel path independently at 65 feet, 200 feet, 330 feet and 460 feet. The average of these four measurements is the average rut depth for the right or left wheel path. Use only the largest (deepest) average rut depth when evaluating the segment with the threshold value.

Cursory Inspection.
The purpose of this inspection is to rule out the possibility that warranty work is required. If the worst segments of the project appear to be below distress threshold limits, no warranty work is required and the project can be accepted. If it appears that one or more distress threshold limits may be exceeded, a Detailed Inspection is required.

Cursory Inspection Procedure. [Form 1948 (07/07)]

1. Perform a windshield survey of the entire project location. Based solely on visual examination and **estimated measurements**, approximate the individual distress quantities for the worst segment(s) of each distress type and record on the Cursory Inspection Form:

2. Determine if any of the following distress threshold conditions exist:

    a. **Any 4 segments combined** - Do any 4 or more segments combined exhibit bleeding/flushing, debonding or raveling in excess of the following combined segment performance parameter threshold limits?

        - Bleeding/Flushing exceeds 5 percent of the segment length (26.4 feet); or

        - Debonding exceeds 5 percent of the segment length (26.4 feet); or

        - Raveling exceeds 8 percent of the segment length (42.2 feet).

    b. **Any 1 segment** - Does any 1 or more segment exhibit bleeding/flushing, debonding, raveling or rutting in excess of the following single segment performance parameter threshold limits?

        - Bleeding/Flushing exceeds 10 percent of the segment length (52.8 feet); or

        - Debonding exceeds 10 percent of the segment length (52.8 feet); or

        - Raveling exceeds 10 percent of the segment length (52.8 feet); or

        - Average rut depth exceeds 1/4 inch (either right or left wheel path) .

3. If **any** condition above is true:

    a. Perform Detailed Inspection; and

    b. Provide a description of the magnitude and location(s) of the distress condition(s) observed which justify the Detailed Inspection.

4. If **all** conditions above are false, recommend Final Acceptance.

Detailed Inspection.
The purpose of this inspection is to **accurately measure** and document the amount of pavement distress to determine if the project meets the terms of the warranty and to determine what actions, if any, will be required by the Contractor. This inspection provides the documentation the Department needs to enforce the warranty specifications.

Detailed Inspection Procedure. [Form 1949 (07/07)]

1. Determine the worst 528 foot segments (exceeding threshold limits) for each individual distress type.

2. Document the lane, direction, and distance from POB, of each questionable segment identified in step 1

3. For each questionable segment, measure and record the amount of each individual distress type and record inspection form 1949.

    a. Debonding

    b. Raveling

    c. Bleeding/Flushing

    d. Rutting

4. Determine if any of the threshold limits for debonding, raveling, bleeding/ flushing, or rutting listed under Cursory Inspection, are exceeded.

Michigan Department of Transportation 1948 (07/07)

CPM - PAVER PLACED SURFACE SEAL

(CURSORY INSPECTION)

FIELD EVALUATION OF WARRANTY PERFORMANCE

FOR USE WITH FUSP 507(C)

Clear Form

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER
INSPECTION LIMITS	

DEBONDING (THRESHOLD LIMIT = 5% OF SEGMENT LENGTH)

SEGMENT NO.	DRIVING LANE DESCRIPTION	LENGTH OF DISTRESS (FT)	DISTRESS EXCEEDS 5% OF SEGMENT LENGTH?	DISTRESS EXCEEDS 10% OF SEGMENT LENGTH?	COMMENTS
D-1			☐YES ☐NO	☐YES ☐NO	
D-2			☐YES ☐NO	☐YES ☐NO	
D-3			☐YES ☐NO	☐YES ☐NO	
D-4			☐YES ☐NO	☐YES ☐NO	
D-5			☐YES ☐NO	☐YES ☐NO	

RAVELING (THRESHOLD LIMIT = 8% OF SEGMENT LENGTH)

SEGMENT NO.	DRIVING LANE DESCRIPTION	LENGTH OF DISTRESS (FT)	DISTRESS EXCEEDS 8% OF SEGMENT LENGTH?	DISTRESS EXCEEDS 10% OF SEGMENT LENGTH?	COMMENTS
RV-1			☐YES ☐NO	☐YES ☐NO	
RV-2			☐YES ☐NO	☐YES ☐NO	
RV-3			☐YES ☐NO	☐YES ☐NO	
RV-4			☐YES ☐NO	☐YES ☐NO	
RV-5			☐YES ☐NO	☐YES ☐NO	

BLEEDING/FLUSHING (THRESHOLD LIMIT = 5% OF SEGMENT LENGTH)

SEGMENT NO.	DRIVING LANE DESCRIPTION	LENGTH OF DISTRESS (FT)	DISTRESS EXCEEDS 5% OF SEGMENT LENGTH?	DISTRESS EXCEEDS 10% OF SEGMENT LENGTH	COMMENTS
FL-1			☐YES ☐NO	☐YES ☐NO	
FL-2			☐YES ☐NO	☐YES ☐NO	
FL-3			☐YES ☐NO	☐YES ☐NO	
FL-4			☐YES ☐NO	☐YES ☐NO	
FL-5			☐YES ☐NO	☐YES ☐NO	

RUTTING (THRESHOLD LIMIT - 1/4")

SEGMENT NO.	DRIVING LANE DESCRIPTION	AVERAGE RUT DEPTH FOR LEFT WHEEL PATH (IN)	AERAGE RUT DEPTH FOR RIGHT WHEEL PATH (IN)	AVERAGE RUT DEPTH EXCEEDS THRESHOLD LIMIT?	COMMENTS
RT-1				☐YES ☐NO	
RT-2				☐YES ☐NO	

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY[1,2]

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD
2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

Michigan Department of Transportation 1949 (07/07)

CPM - PAVER PLACED SURFACE SEAL
(DETAILED INSPECTION WORKSHEET)
FIELD EVALUATION OF WARRANTY PERFORMANCE

Clear Form

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER

INSPECTION LIMITS

RECORD DISTRESS MEASUREMENTS ON CURSORY OR DETAILED FORMS THEN COME BACK TO THIS TABLE TO DETERMINE IF CORRECTIVE WORK IS REQUIRED.

DETERMINATION OF CORRECTIVE ACTION

	NUMBER OF SEGEMENTS EXCEEDING THRESHOLD	NUMBER OF ALLOWABLE SEGMENT FAILURES PER DRIVING LANE	NUMBER OF SEGMENTS WITH DISTRESS EXCEEDING 10% OF LENGTH	NUMBER OF ALLOWABLE SEGMENTS WITH DISTRESS EXCEEDING 10% OF LENGTH	COMMENTS
RAVELING		ANY COMBINATION OF RAVELING, BLEEDING/FLUSHING, OR DEBONDING		1	
BLEEDING/ FLUSHING				1	
DEBONDING				1	
TOTAL		4			
RUTTING		1			

IS WARRANTY WORK REQUIRED? ☐ YES ☐ NO

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY$_{1,2}$

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD
2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

MDOT 1949 (07/07)

CPM - PAVER PLACED SURFACE SEAL (DETAILED INSPECTION)

FIELD EVALUATION OF WARRANTY PERFORMANCE

FOR USE WITH FUSP 507(C)

Clear Form

RAVELING (THRESHOLD LIMIT = 8% OF SEGMENT LENGTH)

DRIVING LANE DESCRIPTION	SEGMENT NO.	LENGTH OF DISTRESS (FT)	EXCEEDS THRESHOLD LIMITS?	DISTRESS EXCEEDS 10% OF SEGMENT LENGTH?	COMMENTS
			☐YES ☐NO	☐YES ☐NO	
			☐YES ☐NO	☐YES ☐NO	
			☐YES ☐NO	☐YES ☐NO	
			☐YES ☐NO	☐YES ☐NO	
			☐YES ☐NO	☐YES ☐NO	
			☐YES ☐NO	☐YES ☐NO	
			☐YES ☐NO	☐YES ☐NO	
			☐YES ☐NO	☐YES ☐NO	
			☐YES ☐NO	☐YES ☐NO	
			☐YES ☐NO	☐YES ☐NO	
			☐YES ☐NO	☐YES ☐NO	
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			☐YES ☐NO	☐YES ☐NO	
			☐YES ☐NO	☐YES ☐NO	
			☐YES ☐NO	☐YES ☐NO	
			☐YES ☐NO	☐YES ☐NO	
			☐YES ☐NO	☐YES ☐NO	
			☐YES ☐NO	☐YES ☐NO	
			☐YES ☐NO	☐YES ☐NO	
TOTAL SEGMENTS EXCEEDING THRESHOLD LIMITS					

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY[1,2]

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD
2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

MDOT 1949 (07/07)

CPM - PAVER PLACED SURFACE SEAL (DETAILED INSPECTION)

FIELD EVALUATION OF WARRANTY PERFORMANCE

Clear Form

BLEEDING/FLUSHING (THRESHOLD LIMIT = 5% OF SEGMENT LENGTH)

DRIVING LANE DESCRIPTION	SEGMENT NO.	LENGTH OF DISTRESS (FT)	EXCEEDS THRESHOLD LIMITS?	DISTRESS EXCEEDS 10% OF SEGMENT LENGTH?	COMMENTS
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
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			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
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			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
TOTAL SEGMENTS EXCEEDING THRESHOLD LIMITS					

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY$_{1,2}$

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD

2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

MDOT 1949 (07/07)

CPM - PAVER PLACED SURFACE SEAL (DETAILED INSPECTION)

FIELD EVALUATION OF WARRANTY PERFORMANCE

FOR USE WITH FUSP 507(C)

Clear Form

DEBONDING (THRESHOLD LIMIT = 5% OF SEGMENT LENGTH)

DRIVING LANE DESCRIPTION	SEGMENT NO.	LENGTH OF DISTRESS (FT)	EXCEEDS THRESHOLD LIMITS?	DISTRESS EXCEEDS 10% OF SEGMENT LENGTH?	COMMENTS
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
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			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
TOTAL SEGMENTS EXCEEDING THRESHOLD LIMITS					

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY$_{1,2}$

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD
2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

MDOT 1949 (07/07)

CPM - PAVER PLACED SURFACE SEAL (DETAILED INSPECTION)

FIELD EVALUATION OF WARRANTY PERFORMANCE

FOR USE WITH FUSP 507(C)

Clear Form

RUTTING (THRESHOLD LIMIT = 1/4 AVERAGE)

DRIVING LANE DESCRIPTION	SEGMENT NO.	AVERAGE RUT DEPTH IN LEFT WHEEL PATH (IN)	AVERAGE RUT DEPTH IN RIGHT WHEEL PATH (IN)	EXCEEDS THRESHOLD LIMIT?	COMMENTS
				☐YES ☐NO	
				☐YES ☐NO	
				☐YES ☐NO	
				☐YES ☐NO	
				☐YES ☐NO	
				☐YES ☐NO	
				☐YES ☐NO	
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				☐YES ☐NO	
				☐YES ☐NO	
TOTAL SEGMENTS EXCEEDING THRESHOLD LIMITS					

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY$_{1,2}$

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD
2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

WARRANTY INSPECTION GUIDELINES
HMA ULTRA-THIN OVERLAY - CPM

Use With 03SP507(B) Pavement Performance Warranty for HMA Ultra-Thin Overlay (Capital Preventive Maintenance)
Author C&T:SCB

Form 1947 CPM - HMA Ultra-Thin Overlay (Cursory Inspection)
Form 1946 CPM - HMA Ultra-Thin Overlay (Detailed Inspection - incl. worksheet)

Inspection Frequency 20 months after Initial Acceptance

Notes Segments are defined as 528 foot lengths of a driving lane.

The threshold level for each distress type is determined separately.

Procedure: **Perform Cursory Inspection.**
Based on results of Cursory Inspection, recommend the project for either:

1. *Final Acceptance* - No warranty work required; inspection complete
   or
2. *Detailed Inspection* - Perform detailed inspection

Perform Detailed Inspection if Required.
Based on results of the detailed inspection, either:

1. *Recommend Final Acceptance* - No warranty work required
   or
2. *Warranty Work is Required and Verified* - Provide the Contractor with results of the inspection indicating areas where warranty work is required.

Condition Parameter Measurement.
Performance parameters shall be measured as described for each distress type.

1. **Debonding -** Total linear feet of debonding in a segment. Measure individual debonding locations in the longitudinal direction, regardless of the width of the distress location, and sum the lengths for each segment. Potholes will be classified as debonding.

2. **Raveling -** Total longitudinal feet of raveling in a segment. Measure individual raveling locations in the longitudinal direction, regardless of the width of the distress location, and sum the lengths for each segment.

3. **Bleeding/Flushing -** Total longitudinal feet of flushing in a segment. Measure individual flushed locations in the longitudinal direction, regardless of the width of the distress location, and sum the lengths for each segment.

4. **Rutting -** Measure the rut depth for each wheel path independently at 65 feet, 200 feet, 330 feet, 460 feet. The average of these four measurements is the average rut depth for the right or left wheel path. Use only the largest (deepest) average rut depth when evaluating the segment with the threshold value.

Cursory Inspection.
The purpose of this inspection is to rule out the possibility that warranty work is required. If the worst segments of the project appear to be below distress threshold limits, no warranty work is required and the project can be accepted. If it appears that one or more distress threshold limits may be exceeded, a Detailed Inspection is required.

Cursory Inspection Procedure. [Form 1947 (07/07)]

1. Perform a windshield survey of the entire project location. Based solely on visual examination and **estimated measurements**, approximate the individual distress quantities for the worst segment(s) of each distress type and record on the Cursory Inspection Form:

2. Determine if any of the following distress threshold conditions exist:

    a. **Any 4 segments combined** - Do any 4 or more segments combined exhibit bleeding/flushing, debonding or raveling in excess of the following combined segment performance parameter threshold limits?

        - Bleeding/Flushing exceeds 5 percent of the segment length (26.4 feet); or
        - Debonding exceeds 5 percent of the segment length (26.4 feet); or
        - Raveling exceeds 8 percent of the segment length (42.2 feet).

    b. **Any 1 segment** - Does any 1 or more segment exhibit bleeding/flushing, debonding, raveling or rutting in excess of the following single segment performance parameter threshold limits?

        - Bleeding/Flushing exceeds 10 percent of the segment length (52.8 feet); or
        - Debonding exceeds 10 percent of the segment length (52.8 feet); or
        - Raveling exceeds 10 percent of the segment length (52.8 feet); or
        - Average rut depth exceeds 1/4 inch (either right or left wheel path) .

3. If **any** condition above is true:

    a. Perform Detailed Inspection; and

    b. Provide a description of the magnitude and location(s) of the distress condition(s) observed which justify the Detailed Inspection.

4. If **all** conditions above are false, recommend Final Acceptance.

Detailed Inspection.
The purpose of this inspection is to **accurately measure** and document the amount of pavement distress to determine if the project meets the terms of the warranty and to determine what actions, if any, will be required by the Contractor. This inspection provides the documentation the Department needs to enforce the warranty specifications.

Detailed Inspection Procedure. [Form 1946 (07/07)]

1. Determine the worst 528 foot segments (exceeding threshold limits) for each individual distress type.

2. Document the lane, direction, and distance from POB, of each questionable segment identified in step 1.

3. For each questionable segment, measure and record the amount of each individual distress type and record on inspection form 1946.

    a. Debonding

    b. Raveling

    c. Bleeding/Flushing

    d. Rutting

4. Determine if any of the threshold limits for debonding, raveling, bleeding/ flushing, or rutting listed under Cursory Inspection, are exceeded.

Clear Form

Michigan Department of Transportation 1947 (07/07)

FOR USE WITH 038P 507(B)

CPM-HMA ULTRA-THIN OVERLAY
(CURSORY INSPECTION)
FIELD EVALUATION OF WARRANTY PERFORMANCE

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER
INSPECTION LIMITS	

DEBONDING (THRESHOLD LIMIT = 5% OF SEGMENT LENGTH)

SEGMENT NO.	DRIVING LANE DESCRIPTION	LENGTH OF DISTRESS (FT)	EXCEEDS THRESHOLD LIMITS?	DISTRESS EXCEEDS 10% OF SEGMENT LENGTH?	COMMENTS
D-1			☐YES ☐NO	☐YES ☐NO	
D-2			☐YES ☐NO	☐YES ☐NO	
D-3			☐YES ☐NO	☐YES ☐NO	
D-4			☐YES ☐NO	☐YES ☐NO	
RAVELING			(THRESHOLD LIMIT = 8% OF SEGMENT LENGTH)		
RV-1			☐YES ☐NO	☐YES ☐NO	
RV-2			☐YES ☐NO	☐YES ☐NO	
RV-3			☐YES ☐NO	☐YES ☐NO	
RV-4			☐YES ☐NO	☐YES ☐NO	
RV-5			☐YES ☐NO	☐YES ☐NO	
BLEEDING/FLUSHING			(THRESHOLD LIMIT - 5% OF SEGMENT LENGTH)		
FL-1			☐YES ☐NO	☐YES ☐NO	
FL-2			☐YES ☐NO	☐YES ☐NO	
FL-3			☐YES ☐NO	☐YES ☐NO	
FL-4			☐YES ☐NO	☐YES ☐NO	
FL-5			☐YES ☐NO	☐YES ☐NO	

RUTTING (THRESHOLD LIMIT - 1/4")

SEGMENT NO.	DRIVING LANE DESCRIPTION	AVERAGE RUT DEPTH FOR LEFT WHEEL PATH(IN)	AVERAGE RUT DEPTH FOR RIGHT WHEEL PATH (IN)	AVERAGE RUT DEPTH EXCEEDS THRESHOLD LIMIT?	COMMENTS
RT-1				☐YES ☐NO	
RT-2				☐YES ☐NO	

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY[1,2]

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD
2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

Clear Form

Michigan Department of Transportation 1946 (07/07)

CPM-HMA ULTRA-THIN OVERLAY (WORKSHEET)

Field Evaluation of Warranty Performance

FOR USE WITH 03SP 507(B)

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER
INSPECTION LIMITS	

RECORD DISTRESS MEASUREMENTS ON CURSORY OR DETAILED FORMS THEN COME BACK TO THIS TABLE TO DETERMINE IF CORRECTIVE WORK IS REQUIRED.

DETERMINATION OF CORRECTIVE ACTION

	NUMBER OF SEGMENTS EXCEEDING THRESHOLD	NUMBER OF ALLOWABLE SEGMENT FAILURES PER DRIVING LANE	NUMBER OF SEGMENTS WITH DISTRESS EXCEEDING 10% OF LENGTH	NUMBER OF ALLOWABLE SEGMENTS WITH DISTRESS EXCEEDING 10% OF LENGTH	COMMENTS
RAVELING		ANY COMBINATION OF RAVELING, BLEEDING/FLUSHING, OR DEBONDING		1	
BLEEDING/FLUSHING				1	
DEBONDING				1	
TOTAL		4			
RUTTING		1			

IS WARRANTY WORK REQUIRED? ☐ YES ☐ NO

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY$_{1,2}$
1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD
2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

MDOT 1946 (07/07)

Clear Form

FOR USE WITH 035P 507(A)

CPM-HMA ULTRA-THIN OVERLAY
(DETAILED INSPECTION)

RAVELING (THRESHOLD LIMIT = 8% OF SEGMENT LENGTH)

DRIVING LANE DESCRIPTION	SEGMENT NO.	LENGTH OF DISTRESS (FT)	EXCEEDS THRESHOLD LIMITS?	DISTRESS EXCEEDS 10% OF SEGMENT LENGTH?	COMMENTS
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
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			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
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			☐ YES ☐ NO	☐ YES ☐ NO	
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			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
TOTAL SEGMENTS EXCEEDING THRESHOLD LIMITS					

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY$_{1,2}$

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD
2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

Clear Form

MDOT 1946 (07/07)

CPM-HMA ULTRA-THIN OVERLAY
(DETAILED INSPECTION)

BLEEDING/FLUSHING (THRESHOLD LIMIT = 5% OF SEGMENT LENGTH)

DRIVING LANE DESCRIPTION	SEGMENT NO.	LENGTH OF DISTRESS (FT)	EXCEEDS THRESHOLD LIMITS?	DISTRESS EXCEEDS 10% OF SEGMENT LENGTH?	COMMENTS
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
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			☐ YES ☐ NO	☐ YES ☐ NO	
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			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
TOTAL SEGMENTS EXCEEDING THRESHOLD LIMITS					

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY$_{1,2}$

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD
2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

Clear Form

MDOT 1946 (07/07)

CPM-HMA ULTRA-THIN OVERLAY
(DETAILED INSPECTION)

DEBONDING (THRESHOLD LIMIT = 5% OF SEGMENT LENGTH)

DRIVING LANE DESCRIPTION	SEGMENT NO.	LENGTH OF DISTRESS (FT)	EXCEEDS THRESHOLD LIMITS?	DISTRESS EXCEEDS 10% OF SEGMENT LENGTH?	COMMENTS
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
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			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
			☐ YES ☐ NO	☐ YES ☐ NO	
TOTAL SEGMENTS EXCEEDING THRESHOLD LIMITS					

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY[1,2]

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Note: This is a Sample Form

Clear Form

MDOT 1946 (07/07)

CPM-HMA ULTRA-THIN OVERLAY
(DETAILED INSPECTION)

RUTTING (THRESHOLD LIMIT = 1/4" AVERAGE)

DRIVING LANE DESCRIPTION	SEGMENT NO.	AVERAGE RUT DEPTH IN LEFT WHEEL PATH (IN))	AVERAGE RUT DEPTH IN RIGHT WHEEL PATH (IN)	EXCEEDS THRESHOLD LIMIT?	COMMENTS
				☐ YES ☐ NO	
				☐ YES ☐ NO	
				☐ YES ☐ NO	
				☐ YES ☐ NO	
				☐ YES ☐ NO	
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				☐ YES ☐ NO	
TOTAL SEGMENTS EXCEEDING THRESHOLD LIMIT					

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY[1,2]

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD
2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

WARRANTY INSPECTION GUIDELINES

NEW/RECONSTRUCTED JOINTED PLAIN CONCRETE PAVEMENT (JPCP)

AND

NEW/RECONSTRUCTED JOINTED REINFORCED CONCRETE PAVEMENT(JRCP)

Use With

03SP602(D) Materials & Workmanship Pavement Warranty (New/Reconstructed Jointed Plain Concrete Pavement)
Author: C&T:SCB

Materials & Workmanship Pavement Warranty w/Appendix for New/Reconstructed Jointed Reinforced Concrete Pavement
Author: C&T:SCB

Form 1884 JPCP/JRCP (First Cursory Inspection)
Form 1831 JPCP/JRCP (Second Cursory Inspection - Worst Segments)
Form 1885 JPCP/JRCP (Detail Inspection - Questionable Segments)

Inspection Frequency

Time from Initial Pavement Acceptance	Inspection Requirements
30 months	first cursory inspection
54 months	second cursory inspection
54 months	detailed segment inspection*
*this inspection required only if the pavement condition appears to require warranty repair work due to findings in the second cursory inspection.	

Notes

Pavement Acceptance - Refer to the special provision for either Pavement Acceptance for Jointed Plain Concrete Pavement with Warranty or for Pavement Acceptance for Jointed Reinforced Concrete Pavement with Warranty and Informational Memorandum 2002-23 dated December 13, 2002.

Segment - 528 feet in a specific lane. For the cursory inspection a segment begins at the point where the joint sealant failure or pavement distress begins to appear and extends for 528 feet from that point. For the Final detailed inspection, the entire project is broken down into 528 foot segments from the POB.

Slab - the pavement outlined between consecutive transverse joints and longitudinal joints or a longitudinal joint and the outer pavement edge. Segments consist of one or more slabs.

Driving Lanes - the delineated (with pavement markings or longitudinal joints) portion of the pavement surface used by traffic. Each of the following is considered a Driving Lane.

- Each individual mainline lane.
- The sum of all ramp lanes and associated acceleration/deceleration lanes
- The sum of all auxiliary lanes, such as passing lanes and turn lanes.

Condition Parameters - Each condition parameter has a threshold level applied to each segment and a maximum number of defective segments before corrective action is required. A segment is defective if the threshold level is exceeded.

Longitudinal Joint Designation - All inspections relate to the driving lane as defined in the warranty special provision. For tallying joint sealant failure and pavement distress (spalling), consider the entire perimeter of the slab in all cases. The condition parameter of the full joint associated with the slab being evaluated is considered even though two adjacent slabs may share the same interior longitudinal joint.

Procedure

Perform Cursory Inspection.
The Contractor will not be required to take corrective measures as a result of this first inspection unle ss the Engineer determines emergency repairs are necessary for public safety.

Perform Second Cursory Inspe tion.
Identify the worst segments. If it appears that one or more distress threshold limit may be exceed ed, a Detailed Segment Inspection is required**.**

Perform Detailed Segment Inspection (if required).
Determine whether the Contractor will be required to do warranty repair work.

Condition Parameters Measured.
There are eight condition parameters applied to concrete pavements. Each condition parameter has a threshold level per 528 foot segment before the segment is determined to be defective **and** a maximum number of defective segments for each driving lane before corrective work is required. Some condition parameters also have a threshold level per slab within the segment. In most cases, all it will take is one defective segment per mile for each driving lane before corrections are required.

Refer to the special provision to determine the various segment and/or slab threshold limits and maximum defective segments per driving lane.

1. **Transverse Cracks** must be visible for at least 5 feet to be counted as a crack. A transverse crack is one that does not vary by more than 45 degrees in the transverse direction. It can be either straight or irregular in direction. Count the number of transverse cracks within the segment. Compare the total to the threshold level to determine if the segment is defective. Compare number of defective segments to the maximum number allowed to determine if warranty work is required.

2. **Longitudinal Cracks** must be visible for at least 5 feet to be counted as a crack. A longitudinal crack is one that does not vary more than 45 degrees in the longitudinal

direction. It can exist anywhere within the driving lane. Measure the total length of longitudinal cracks within the segment. Compare the measured length to threshold level to determine if the segment is defective. Compare the number of defective segments to the maximum number allowed to determine if warranty work is required

3. **Map Cracking** is defined as interconnecting or variable spaced cracks in a random orientation and pattern. These can occur anywhere on the surface of the pavement. Mid-slab spalling is considered to result from advanced map cracking. This condition parameter is measured by area since the individual cracks are sometimes hard to see and measure. Measure this condition as it relates to each driving lane. The threshold limit is based on the total affected area per segment **and** the number of defective segments per driving lane.

4. **Spalling** is generally associated with the transverse or longitudinal joint or the pavement edge. It is defined as broken or missing pieces, exceeding two square inches, contiguous with the perimeter slab edges. Measure this condition as it relates to the pavement slab. The threshold limit is based on the total perimeter length of spall per slab **and** a maximum number of slabs per segment that exceed the limit. If this number is exceeded, then the segment is defective. Compare number of defective segments to the maximum number allowed to determine if

   warranty work is required.

5. **Scaling** is defined as visible, exposed, rough surface texture caused by loss of either aggregate or mortar. An example of scaling is “pop out” from clay balls or foreign materials in the slab. Measure the area of this distress and compare to the threshold limit for the slab. The segment threshold limit is based on the total distressed area per slab **and** a maximum number of slabs per segment that exceed the limit. If this number is exceeded, then the segment is defective. Compare number of defective segments to the maximum number allowed to determine if warranty work is required.

6. **Corner Cracking** is generally diagonal near the slab corner, may be of any length, and intersects the transverse and longitudinal pavement joints on the outer edge of slab. Sometimes corner cracks may result in a loss of adjacent material that may look like spalling. Count the number of these cracks in each segment and compare to the threshold limit to determine if the segment is defective. Compare number of defective segments to the maximum number allowed to determine if warranty work is required.

7. **Joint Sealant Failure** for neoprene seals is defined by the following characteristics; twisted rolled seals, poor compression set, surface extrusion or missing seal. In hot poured rubber seals failure is defined as loss of adhesion or cohesion. In either case, the loss of material integrity consisting of either adhesive failure (de-bonding), cohesive failure (material separation) or the complete loss of sealant material will be considered a joint sealant failure. **Neoprene and Hot Poured Rubber seals do not need to be evaluated independently**.

   The total length of seal failure is divided by the total seal length, both longitudinal and transverse, on the perimeter of the slab to determine failure percentage. Compare the failure percentage to the threshold limit for the slab. If the threshold limit is exceeded, the slab is defective. Tally the number of defective slabs in the segment. Compare this number with the threshold limit. If this number is exceeded, then the

segment is defective. Compare number of defective segments to the maximum number allowed to determine if warranty work is required.

Example: A JPCP slab of 12 feet has 48 feet (12x4) of perimeter joint seals. The slab threshold limit is ten percent of this length (4.8 feet). Two slabs in the segment exceeding this amount will result in a defective segment.

8. **Shattered Slabs** typically have a pattern of diagonal or looping cracks which may intersect transverse and longitudinal joints and cracks. The pavement slab is broken into four or more sections by full depth cracks. Generally it will take at least two intersecting cracks in the slab to create this condition. This condition is not allowed in any amount on any portion of the project.

First Cursory Inspection.
Use Form 1884(07/07) JPCP/JRCP First Cursory Inspection

The purpose of this inspection is to determine if the warranted pavement is developing distresses (condition parameters) that could eventually require warranty repairs by the Contractor. The Contractor will not be required to take corrective measures as a result of this first cursory inspection unless the Engineer determines emergency repairs are necessary for public safety. The Engineer can make this determination any time during the warranty period and doesn't have to wait until the first inspection.

Prior to doing the first cursory inspection read the Special Provision for Materials & Workmanship Pavement Warranty. Become familiar with the provisions of the warranty, particularly the condition parameters covered by the warranty. These are detailed in the Appendix of the special provision.

Perform a windshield survey of all warranted pavement. Based solely on visual examination and **estimated measurements**, approximate the individual distress quantities for the worst segments of each distress type. If the contract includes multiple routes, complete a separate form for each route. Inspect all driving lanes. Lengths and areas of surface distresses do not have to be measured during the first inspection.

Use the comment area of the form to describe the type, direction, location and lane where pavement distresses are observed. If necessary attach additional sheets for comments. Distribute the form as required.

Details which should be noted for the first cursory inspection include, but are not limited to, the following:

1. Approximate distress location (i.e. 1 mile north of the POB, or at the intersection of...)

2. The lane, ramp or shoulder where the distress was noted and the associated direction.

3. The distress quantity, in general terms (i.e. minor amounts of longitudinal cracking; every joint has loss of sealant).

4. Areas where temporary maintenance makes it difficult to determine the type of distress, (i.e. presence of cold patching material).

Second Cursory Inspection- Worst Segments.
Use Form 1831 (07/07) JPCP/JRCP Second Cursory Inspection - Worst Segments

The purpose of this inspection is to rule out the possibility that warranty work is required. If the worst segments of the project appear to fall below distress threshold limits, no warranty work is required by the Contractor and the project can be closed out. If it appears that one or more distress threshold limit may be exceeded, conduct a Detailed Segment Inspection.

Prior to conducting the second cursory inspection, read the Special Provision for Materials & Workmanship Pavement Warranty. Become familiar with the provisions of the warranty, particularly the condition parameters covered by the warranty and the threshold levels for each condition parameter. These are detailed in the Appendix of the special provision.

Begin the second cursory inspection with a drive through of all warranted pavement. Inspect all driving lanes including ramps. Once the worst locations have been identified, document the problems and supplement the form with photographs. If the contract includes multiple routes, complete a separate report for each route.

All problem segments must be evaluated in a specific lane. Lay out evaluation segments beginning at the point where the joint sealant failure or pavement distress begins to appear. Reference each segment by direction of travel, road direction, lane and by physical reference such as station or mile point. For this inspection the evaluated segments need not be contiguous or in the same lane or direction. Lengths and areas of surface distresses can be estimated.

After inspecting the areas on the project showing the most distress, evaluate the measurements on the Second Cursory Inspection form to determine if the condition parameter threshold limits are exceeded. If the number of defective segments does not exceed the maximum criteria, the warranty bond can be released and the project closed out.

If distress levels occur above the maximum criteria a Detailed Segment Inspection must be performed to determine if corrective action will be required by the Contractor.

Regardless of the need for a Detailed Segment Inspection, distribute the Second Cursory Inspection Report form as required.

Detailed Segment Inspection- Questionable Segments.
Use Form 1885 (07/07) JPCP/JRCP Detail Inspection - Questionable Segments

The purpose of this inspection is to accurately measure and document the amount of pavement distress and to determine if the Contractor will be required to do warranty repair work. This determination is a two step process requiring an evaluation of the severity of distresses in each segment and the determination of the number of defective segments.

When doing the detailed inspection, evaluate the entire project to determine the number of questionable segments per driving lane. Questionable segments are those which exhibit one or more distresses but which may not exceed the **condition parameters threshold limit** within the segment (may not be a defective segment).

Starting at the POB divide the project into 528 foot segments for each individual mainline lane. For ramps, acceleration, deceleration, and auxiliary lanes, divide the aggregate total into 528 foot segments. Document any segment where any distress is observed giving the segment number, lane or ramp designation, and direction of travel. Repeat this process until all driving lane segments are inspected for the entire project.

Tally the distress quantity measurements; calculate the number of segments where condition parameter threshold limits are exceeded (defective segments). Determine if the allowable number of defective segments has been exceeded triggering the need for warranty work. If distress levels fall below the threshold limits, distribute the inspection form, release the warranty bond and close out the project.

Corrective Action - Send the **Detailed Segment Inspection** report to the Contractor with a transmittal letter summarizing the condition parameters (surface distress) exceeding both the maximum threshold limits and maximum allowable segments as defined in the warranty special provision.

The transmittal letter should cover the following information:

1. The required corrective action to be completed by the Contractor.

2. The date by which the work must be completed.

3. A request for the Contractor's proposed course of action to do the work, including methods, materials and maintaining traffic. This plan should be received a minimum of 10 days prior to starting the work.

4. The need for the Contractor to obtain a permit prior to starting the work

5. The need for the Contractor to supply documentation that insurance required by the original contract is in effect during the warranty repair work period.

6. The 15 calendar day time frame in which to dispute the distresses resulting from materials or workmanship. The dispute must be filed in writing citing specific reasons for the Contractor's position. Indicate the Department will consider the Contractor's position and may elect to initiate the forensic investigation described in the warranty special provision.

Michigan Department
of Transportation
1884 (07/07)

FOR: FUSP 602(I) & 602(D)

FIELD EVALUATION OF WARRANTY PERFORMANCE

JPCP / JRCP (FIRST CURSORY INSPECTION)

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER
INSPECTION LIMITS	

DO ANY OF THE FOLLOWING DISTRESSES APPEAR?

DISTRESS TYPE	YES	NO	COMMENTS
TRANSVERSE CRACKING	☐	☐	
LONGITUDINAL CRACKING	☐	☐	
MAP CRACKING	☐	☐	
SPALLING	☐	☐	
SCALING	☐	☐	
CORNER CRACKING	☐	☐	
JOINT SEAL FAILURE	☐	☐	
SHATTERED SLABS	☐	☐	

GENERAL COMMENTS ON LOCATION AND SEVERITY OF DISTRESSES:

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY[1,2]

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD

2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Clear Form

Note: This is a Sample Form

FIELD EVALUATION OF WARRANTY PERFORMANCE

JPCP / JRCP (SECOND CURSORY INSPECTION - WORST SEGMENTS)

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER
INSPECTION LIMITS	

TRANSVERSE CRACKING (> 5 FEET)

*(THRESHOLD LIMIT JPCP = 1, JRCP = 2)

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	ESTIMATED TOTAL NUMBER OF DISTRESSES	COMMENTS
TC-1				
TC-2				
TC-3				
TC-4				
TC-5				

LONGITUDINAL CRACKING (> 5 FEET)

*(THRESHOLD LIMIT = 5% OF SEGMENT LENGTH)

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	ESTIMATED TOTAL % OF DISTRESS	COMMENTS
LC-1				
LC-2				
LC-3				
LC-4				
LC-5				

MAP CRACKING

*(THRESHOLD LIMIT = 10% OF SEGMENT AREA)

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	ESTIMATED TOTAL % OF DISTRESS	COMMENTS
MC-1				
MC-2				
MC-3				
MC-4				
MC-5				

SPALLING

*(THRESHOLD LIMIT = ≤ 2 SLABS, 10% OF SLAB PERIMETER)

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	ESTIMATED TOTAL NUMBER OF SLABS	COMMENTS
SP-1				
SP-2				
SP-3				
SP-4				
SP-5				

Note: This is a Sample Form

MDOT 1831 (07/07)

SCALING *(THRESHOLD LIMIT = < 1 SLAB, 15% OF SLAB AREA)

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	ESTIMATED TOTAL NUMBER OF SLABS	COMMENTS
SC-1				
SC-2				
SC-3				
SC-4				
SC-5				

CORNER CRACKING *(THRESHOLD LIMIT = 1)

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	ESTIMATED TOTAL NUMBER OF DISTRESSES	COMMENTS
CC-1				
CC-2				
CC-3				
CC-4				
CC-5				

JOINT SEALANT FAILURE *(THRESHOLD LIMIT = < 2 SLABS, 10% OF SLAB PERIMETER)

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	ESTIMATED TOTAL NUMBER OF SLABS	COMMENTS
JSF-1				
JSF-2				
JSF-3				
JSF-4				
JSF-5				

SHATTERED SLABS *(THRESHOLD LIMIT = NONE)

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	ESTIMATED TOTAL NUMBER OF SLABS	COMMENTS
SS-1				
SS-2				
SS-3				
SS-4				
SS-5				

**WARRANTY WORK REQUIRED? ☐ YES ☐ NO

* ENTER THRESHOLD LIMIT HERE FROM MATERIALS AND WORKMANSHIP PAVEMENT WARRANTY APPENDIX

** FOR EACH CONDITION PARAMETER, SUBTRACT THE ALLOWED NUMBER OF DEFECTIVE SEGMENTS FOR THE PROJECT DRIVING LANES FROM THE RECORDED DEFECTIVE SEGMENTS. WARRANTY WORK IS REQUIRED IF THE RESULT IS POSITIVE.

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY[1,2]

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD

2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Clear Form

Note: This is a Sample Form

FIELD EVALUATION OF WARRANTY PERFORMANCE

JPCP / JRCP (DETAIL INSPECTION - QUESTIONABLE SEGMENTS)

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER
INSPECTION LIMITS (DRIVING LANES)	

SCALING (THRESHOLD LIMIT = ≤ 1 SLAB, 15% OF SLAB AREA)

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	ESTIMATED TOTAL NUMBER OF SLABS	COMMENTS
SC-1				
SC-2				
SC-3				
SC-4				
SC-5				
SC-6				
SC-7				
SC-8				
SC-9				
SC-10				
SC-11				
SC-12				
SC-13				
SC-14				
SC-15				
SC-16				
SC-17				
SC-18				
SC-19				
SC-20				
SC-21				
SC-22				
SC-23				
SC-24				
SC-25				
SC-26				
SC-27				

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY[1,2]

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD

2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

FIELD EVALUATION OF WARRANTY PERFORMANCE

JPCP / JRCP (DETAIL INSPECTION - QUESTIONABLE SEGMENTS)

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER
INSPECTION LIMITS (DRIVING LANES)	

SHATTERED SLABS (THRESHOLD LIMIT = NONE)

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	ESTIMATED TOTAL NUMBER OF DEFECTIVE SLABS	COMMENTS
SS-1				
SS-2				
SS-3				
SS-4				
SS-5				
SS-6				
SS-7				
SS-8				
SS-9				
SS-10				
SS-11				
SS-12				
SS-13				
SS-14				
SS-15				
SS-16				
SS-17				
SS-18				
SS-19				
SS-20				
SS-21				
SS-22				
SS-23				
SS-24				
SS-25				
SS-26				
SS-27				

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1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD

2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

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FIELD EVALUATION OF WARRANTY PERFORMANCE

JPCP / JRCP (DETAIL INSPECTION - QUESTIONABLE SEGMENTS)

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER
INSPECTION LIMITS (DRIVING LANES)	

TRANSVERSE CRACKING (> 5 FEET) (THRESHOLD LIMIT JPCP = 1, JRCP = 2)

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	ESTIMATED TOTAL NUMBER OF DISTRESSES	COMMENTS
TC-1				
TC-2				
TC-3				
TC-4				
TC-5				
TC-6				
TC-7				
TC-8				
TC-9				
TC-10				
TC-11				
TC-12				
TC-13				
TC-14				
TC-15				
TC-16				
TC-17				
TC-18				
TC-19				
TC-20				
TC-21				
TC-22				
TC-23				
TC-24				
TC-25				
TC-26				
TC-27				

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY[1,2]

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD

2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

FIELD EVALUATION OF WARRANTY PERFORMANCE

JPCP / JRCP (DETAIL INSPECTION - QUESTIONABLE SEGMENTS)

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER
INSPECTION LIMITS (DRIVING LANES)	

CORNER CRACKING (THRESHOLD LIMIT = 1)

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	ESTIMATED TOTAL NUMBER OF DISTRESSES	COMMENTS
CC-1				
CC-2				
CC-3				
CC-4				
CC-5				
CC-6				
CC-7				
CC-8				
CC-9				
CC-10				
CC-11				
CC-12				
CC-13				
CC-14				
CC-15				
CC-16				
CC-17				
CC-18				
CC-19				
CC-20				
CC-21				
CC-22				
CC-23				
CC-24				
CC-25				
CC-26				
CC-27				

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY[1,2]

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD

2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

FIELD EVALUATION OF WARRANTY PERFORMANCE

JPCP / JRCP (DETAIL INSPECTION - QUESTIONABLE SEGMENTS)

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER
INSPECTION LIMITS (DRIVING LANES)	

JOINT SEALANT FAILURE (THRESHOLD LIMIT = < 2 SLABS, 10% OF SLAB PERIMETER)

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	ESTIMATED TOTAL NUMBER OF DEFECTIVE SLABS	COMMENTS
JSF-1				
JSF-2				
JSF-3				
JSF-4				
JSF-5				
JSF-6				
JSF-7				
JSF-8				
JSF-9				
JSF-10				
JSF-11				
JSF-12				
JSF-13				
JSF-14				
JSF-15				
JSF-16				
JSF-17				
JSF-18				
JSF-19				
JSF-20				
JSF-1				
JSF-1				
JSF-1				
JSF-1				
JSF-1				
JSF-1				
JSF-1				

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY[1,2]

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD

2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

FIELD EVALUATION OF WARRANTY PERFORMANCE

JPCP / JRCP (DETAIL INSPECTION - QUESTIONABLE SEGMENTS)

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER
INSPECTION LIMITS (DRIVING LANES)	

LONGITUDINAL CRACKING (>5 FEET) (THRESHOLD LIMIT = 5% OF SEGMENT LENGTH)

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	TOTAL %OF DISTRESS	COMMENTS
LC-1				
LC-2				
LC-3				
LC-4				
LC-5				
LC-6				
LC-7				
LC-8				
LC-9				
LC-10				
LC-11				
LC-12				
LC-13				
LC-14				
LC-15				
LC-16				
LC-17				
LC-18				
LC-19				
LC-20				
LC-21				
LC-22				
LC-23				
LC-24				
LC-25				
LC-26				
LC-27				

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY[1,2]

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD

2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

FIELD EVALUATION OF WARRANTY PERFORMANCE

JPCP / JRCP (DETAIL INSPECTION - QUESTIONABLE SEGMENTS)

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER
INSPECTION LIMITS (DRIVING LANES)	

MAP CRACKING (THRESHOLD LIMIT = 10% OF SEGMENT AREA)

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	TOTAL % OF DISTRESS	COMMENTS
MP-1				
MP-2				
MP-3				
MP-4				
MP-5				
MP-6				
MP-7				
MP-8				
MP-9				
MP-10				
MP-11				
MP-12				
MP-13				
MP-14				
MP-15				
MP-16				
MP-17				
MP-18				
MP-19				
MP-20				
MP-21				
MP-22				
MP-23				
MP-24				
MP-25				
MP-26				
MP-27				

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY[1,2]

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD

2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Note: This is a Sample Form

FIELD EVALUATION OF WARRANTY PERFORMANCE

JPCP / JRCP (DETAIL INSPECTION - QUESTIONABLE SEGMENTS)

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER

INSPECTION LIMITS (DRIVING LANES)

SPALLING (THRESHOLD LIMIT = ≤ 2 SLABS, 10% OF SLAB PERIMETER)

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	ESTIMATED TOTAL NUMBER OF SLABS	COMMENTS
SP-1				
SP-2				
SP-3				
SP-4				
SP-5				
SP-6				
SP-7				
SP-8				
SP-9				
SP-10				
SP-11				
SP-12				
SP-13				
SP-14				
SP-15				
SP-16				
SP-17				
SP-18				
SP-19				
SP-20				
SP-21				
SP-22				
SP-23				
SP-24				
SP-25				
SP-26				
SP-27				

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY[1,2]

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD

2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Clear Form

Note: This is a Sample Form

WARRANTY INSPECTION GUIDELINES
SUPERPAVE AND HOT MIX ASPHALT

Use With

03SP502 (H) Materials & Workmanship Pavement Warranty
(New/Reconstructed Hot Mix Asphalt Pavement)
Author C&T:SCB

03SP502(I) Materials & Workmanship Pavement Warranty (Multiple Course Hot Mix Asphalt Overlays On Concrete Pavement) (Multiple Course Hot Mix Asphalt Overlays On Composite Pavement) (Multiple Course Hot Mix Asphalt Overlays On Flexible Pavement)
Author C&T:SCB

03SP502(M) Materials & Workmanship Pavement Warranty (HMA Placed on Rubblized Concrete)
Author C&T:SCB

03SP502(N) Materials & Workmanship Pavement Warranty (HMA Placed on Crush & Shaped Base)
Author C&T:SCB

Form 1134 Superpave and Hot Mix Asphalt (First Cursory Inspection)
Form 1134A Superpave and Hot Mix Asphalt (Second Cursory Inspection)
Form 1134C Superpave and Hot Mix Asphalt (Detailed Inspection)

Inspection Frequency

Time from Initial Pavement Acceptance	Inspection Requirements
30 months	first cursory inspection
54 months	second cursory inspection
54 months	detailed segment inspection*
* This inspection required only if the pavement condition appears to require warranty repair work due to findings in the second cursory inspection.	

Notes

Segment - 528 feet in a specific lane or ramp. For the cursory inspection a segment begins at the point where the joint sealant failure or pavement distress begins to appear and extends for 528 feet from that point. For the Final detailed inspection, the entire project is broken down into 528 foot segments from the POB.

Driving Lanes - the delineated (with pavement markings) portion of the pavement surface used by traffic. Each of the following is considered a “Driving Lane”:

- Each individual mainline lane.

- The sum of all ramp lanes and associated acceleration/deceleration lanes.
- The sum of all auxiliary lanes, such as passing lanes and turn lanes.

Procedure: **Perform Cursory Warranty Inspection.**
The Contractor will not be required to take corrective measures as a result of this first inspection unless the Engineer determines emergency repairs are necessary for public safety.

Perform Second Cursory Warranty Inspection.
Identify the worst segments. If it appears that one or more distress threshold limit may be exceeded, a Detailed Inspection is required**.**

Perform Detailed Inspection (if required).
Determine whether the Contractor will be required to do warranty repair work.

Condition Parameters (distress type) Measurement.
Each distress type has a threshold level applied to each segment and a maximum number of defective segments before corrective action is required. A segment is defective if the threshold level is exceeded. The Warranty Special Provision contained in the contract proposal describes the pavement distress covered under the warranty, threshold limits, and the maximum number of segment criteria for each pavement distress.

First Cursory Inspection. [Form 1134 (07/07)]
The purpose of this inspection is to determine if the warranted pavement is developing distresses (condition parameters) that could eventually require warranty repairs by the Contractor. The Contractor will not be required to take corrective measures as a result of this first inspection unless the Engineer determines emergency repairs are necessary for public safety. The Engineer can make this determination any time during the warranty period and doesn't have to wait until the first inspection to make this determination.

Prior to doing the first cursory inspection, read the applicable special provision and become familiar with the provisions of the warranty, particularly the condition parameters (distress types) covered by the warranty.

Perform a windshield survey of the entire location length. Based solely on visual examination and **estimated measurements**, approximate the individual distress quantities for the worst segment(s) of each distress type and record on the Cursory Inspection Form (Form 1134)

If the contract includes multiple routes, complete a separate form for each route. Inspect all driving lanes as defined in the warranty special provision. Lengths and areas of surface distresses do not have to be measured during the first inspection. Use the comment area of the form to describe the type, direction, location and lane where pavement distresses are observed. If necessary attach additional sheets for comments. Distribute the form as required.

Appropriate comments for the first cursory inspection include, but are not limited to, the following:

1. Approximate distress location (i.e. 1 mile north of the POB, or at the intersection of...).

2. The lane, ramp or shoulder where the distress was noted and the associated direction.

3. In general terms describe the distress quantity (i.e. minor amounts of longitudinal cracking, or, every joint has loss of sealant).

4. Areas where temporary maintenance makes it difficult to determine the type of distress, (i.e. presence of cold patching material).

Second Cursory Inspection- Worst Segments. [Form 1134A (07/07)]
The purpose of this inspection is to comply with the monitoring requirements in the Special Provision and to rule out the possibility that warranty work is required. If the worst segments of the project appear to fall below distress threshold limits, no warranty work is required by the Contractor and the project can be closed out. If it appears that one or more distress threshold limit may be exceeded, conduct a Detailed Segment Inspection.

Prior to conducting the second cursory inspection, read the appropriate special provision and become familiar with the provisions of the warranty, particularly the condition parameters (distress types) covered by the warranty and the threshold levels for each condition parameter.

Begin the second cursory inspection of the warranted pavement with a drive-thru inspection. Inspect all driving lanes including ramps. Once the worst locations have been identified, document the problems using Form 1134A and supplement the form with photographs. If the contract includes multiple routes, complete a separate report for each route.

All problem locations must be evaluated in a specific lane for a full segment. The segment should begin at the point where the pavement distress begins to appear. Reference each segment by direction of travel, road direction, lane and physical reference such as station or mile point. The segments need not be contiguous or in the same lane or direction. Lengths and areas of surface distresses can be estimated.

Evaluation of Cursory Inspection Results.
Upon completion of the second cursory inspection tally the distress quantity measurements, and calculate the number of segments where distress threshold limits are exceeded. If distress levels fall below the maximum criteria, distribute the inspection form, release the warranty bond and close out the project.

If distress levels occur above the maximum criteria a **Detailed Inspection** must be preformed to determine if corrective action will be required by the Contractor.

Regardless of whether or not the Detailed Inspection is required, distribute the Second Cursory Inspection report as required.

Detailed Inspection. [Form 1134C (07/07)]
The purpose of this inspection is to accurately measure and document the amount of pavement distress and to determine whether the Contractor will be required to do warranty repair work.

Starting at the POB, divide the project into segments. On the **detailed inspection report** note the segment number, lane designation or ramp, and direction of travel for each segment where any distress is observed. Measure and record the observed distress within the segment. Repeat this process until all lanes and/or ramps are inspected for each segment on the job.

Evaluation of Detailed Inspection Results.
Upon completion of the detailed inspection tally the distress quantity measurements, calculate the number of segments where distress threshold limits are exceeded, and determine whether warranty work will be required. If distress levels fall below the maximum criteria, distribute the inspection form, release the warranty bond and close out the project.

If distress levels occur above the maximum criteria corrective action may be required by the Contractor.

Corrective Action.
Send the **Detailed Inspection** report to the Contractor with a transmittal letter summarizing the types of condition parameters (surface distress) exceeding both the maximum threshold limits and maximum allowable segments as defined in the warranty special provision.

The transmittal letter should cover the following information:

1. The required corrective action to be completed by the Contractor.

2. The date by which the work must be completed.

3. A request for the Contractor's proposed course of action to do the work, including methods, materials and maintaining traffic. This plan should be received a minimum of 10 days prior to starting the work.

4. The need for the Contractor to obtain a permit prior to starting the work

5. The need for the Contractor to supply documentation that insurance required by the original contract is in effect during the warranty repair work period.

6. The 15 calendar day time frame in which to dispute the distresses resulting from materials or workmanship. The dispute must be filed in writing citing specific reasons for the Contractor's position. Indicate the Department will consider the Contractor's position and may elect to initiate the forensic investigation described in the warranty special provision.

Michigan Department
of Transportation
1134 (07/07)

FOR SPECIAL PROVISIONS 502(H), 502(I), 502(M) & 502(N)

FIELD EVALUATION OF WARRANTY PERFORMANCE

SUPERPAVE AND HOT MIX ASPHALT (FIRST CURSORY INSPECTION)

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER
INSPECTION LIMITS	

DO ANY OF THE FOLLOWING DISTRESSES APPEAR?

DISTRESS TYPE	YES	NO	NOT APPLICABLE
LONGITUDINAL CRACKING	☐	☐	☐
DEBONDING	☐	☐	☐
RAVELING	☐	☐	☐
FLUSHING	☐	☐	☐
RUTTING	☐	☐	☐
TRANSVERSE CRACKING	☐	☐	☐
BLOCK CRACKING	☐	☐	☐
ALLIGATOR CRACKING	☐	☐	☐

GENERAL COMMENTS ON LOCATION AND SEVERITY OF DISTRESSES:

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY1,2.

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD

2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Clear Form

Note: This is a Sample Form

SUPERPAVE AND HOT MIX ASPHALT (SECOND CURSORY INSPECTION)

CONTRACTOR	INSPECTION DATE
CONTROL SECTION	INSPECTED BY
JOB NUMBER	REVIEWED BY
ROUTE	RESIDENT ENGINEER
INSPECTION LIMITS	

LONGITUDINAL CRACKING

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	ESTIMATED TOTAL LENGTH OF DISTRESS (feet)	COMMENTS
LC-1				
LC-2				
LC-3				
LC-4				
LC-5				

DE-BONDING

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	ESTIMATED TOTAL LENGTH OF DISTRESS (feet)	COMMENTS
D-1				
D-2				
D-3				
D-4				
D-5				

RAVELING

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	ESTIMATED TOTAL LENGTH OF DISTRESS (feet)	COMMENTS
RV-1				
RV-2				
RV-3				

FLUSHING

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	ESTIMATED TOTAL LENGTH OF DISTRESS (feet)	COMMENTS
FL-1				
FL-2				
FL-3				

RUTTING

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	AVERAGE RUT DEPTH (inches)	COMMENTS
RT-1				
RT-2				

Clear Form

Note: This is a Sample Form

1134A (07/07) FIELD EVALUATION OF WARRANTY PERFORMANCE FOR SPECIAL PROVISIONS 502(H), 502(I), 502(M), & 502(N)

SUPERPAVE AND HOT MIX ASPHALT (SECOND CURSORY INSPECTION)

TRANSVERSE CRACKING

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	ESTIMATED TOTAL LENGTH OF DISTRESS (feet)	COMMENTS
TC-1				
TC-2				
TC-3				

ALLIGATOR CRACKING

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	ESTIMATED TOTAL LENGTH OF DISTRESS (feet)	COMMENTS
AC-1				

BLOCK CRACKING

SEGMENT NO.	LANE DESCRIPTION	DISTANCE FROM POB TO START OF SEGMENT (miles)	ESTIMATED TOTAL LENGTH OF DISTRESS (feet)	COMMENTS
BC-1				

IS WARRANTY WORK REQUIRED? ☐ YES ☐ NO

DISTRIBUTION: REGION OFFICE, TSC MANAGER, RESIDENT ENGINEER, WARRANTY CONTRACTOR, SURETY COMPANY[1,2]

1 - DISTRIBUTION AT THE END OF THE WARRANTY PERIOD

2 - DISTRIBUTION WHEN WARRANTY WORK IS REQUIRED

Clear Form

Note: This is a Sample Form

INSPECTION GUIDELINES

PERFORMANCE WARRANTY ON BRIDGE COATING

Use With 03SP715(A) Warranty on Bridge Coating
Author C&T:EMB

Form 1802 Bridge Coating Warranty Inspection Form

Warranty Period The Bridge coating system is warrantied for a period of two years from the date of final inspection. On projects that extend over more than one year in duration, the warranty period will be two years from the project acceptance date.

Inspection Frequency 20 months after the start of the warranty period.

Procedure The purpose of this inspection is to evaluate the compliance of the coating system in accordance with the performance conditions listed in the special provision. This visual inspection should cover areas representative of the entire structure coating system. Special equipment needed to assist in this inspection are binoculars and digital cameras with zoom capability. Digital pictures should be dated and clearly identified to bridge structure and performance condition shown.

Report Distribution Refer to the form for distribution requirements. Attach the inspection form to the memo informing the Contractor of the compliance or non compliance of the coating system. The contractor's supplemental performance bond will not be terminated unless acceptable compliance to the warranty criteria has been verified or all defective areas identified have been corrected by the Contractor in accordance with the painting specifications.

Refer to BOH IM 2001-19 Notification of Warranty Claim for additional information.

Condition Parameters Measured

1. Visible rust or rust breakthrough, coating blistering, peeling, scaling, or unremoved slivers.
2. Coating applied over dirt, debris, blasting or rust products not removed during blast cleaning.
3. Incomplete coating or coating thickness less than the minimums specified.
4. Damage to the coating system caused by the Contractor while removing scaffolding or performing other work.

Michigan Department of Transportation 1802 (02/07)

BRIDGE COATING WARRANTY
INSPECTION FORM

Clear

DISTRIBUTION: Original - TSC. **COPIES:** Region Office; C & T - Bridge Construction; C & T - Coating System; Contractor; Surety Company. Resident/Project/Delivery Engineer; Contract Services Division - Construction Contract Section.

CONTROL SECTION	JOB NO.	DATE	INSPECTED BY
STRUCTURE NO.	LOCATION		REVIEWED BY

COATING SYSTEM USED (MANUFACTURER)	RESIDENT/PROJECT/DELIVERY ENGINEER
CONTRACTOR NAME	SUBCONTRACTOR
WARRANTY DURATION	WARRANTY EXPIRATION DATE

1. Visible rust or rust breakthrough paint blistering, peeling, scaling, or unremoved slivers. SATISFACTORY: ☐ YES ☐ NO	REMARKS/DESCRIPTION
2. Coating applied over dirt, debris, blasting or rust products not removed during blast cleaning. SATISFACTORY: ☐ YES ☐ NO	REMARKS/DESCRIPTION
3. Incomplete coating or coating thickness less than the minimums specified in the coating specifications. SATISFACTORY: ☐ YES ☐ NO	REMARKS/DESCRIPTION
4. Damage to the coating system caused by the contractor while removing scaffolding or performing other work. SATISFACTORY: ☐ YES ☐ NO	REMARKS/DESCRIPTION

IS WARRANTY REPAIR WORK REQUIRED? ☐ YES ☐ NO

Note: This is a Sample Form