

Reference BOH IM 2009-04 for updates

DATE: December 13, 2002

TO: Region Engineers/Administrators
Associate Region Engineers for Delivery/Operation
Region Construction Engineers
TSC Managers
Delivery/Resident/Project Engineers
Region Materials Engineers
Region Materials Supervisors
Region Maintenance Engineers

FROM: Larry E. Tibbits
Chief Operations Officer

John C. Friend
Engineer of Delivery

SUBJECT: Bureau of Highway Instructional Memorandum 2002-23
Contract Administration and Oversight Guidelines for
Projects Containing Warranty Work
(Supersedes Bureau of Highway Instructional Memorandum 1999-8)

This document is intended to give guidance to all offices with projects that contain the boilerplate language for warranties covering materials and workmanship.

Note that a warranty on any work item in the contract does not relieve the contractor from compliance with the provisions of the contract. In addition, oversight of the contractor's quality control remains an MDOT responsibility through quality assurance procedures. All projects constructed under any warranty provision must adhere to the same quality standards that past MDOT projects have met. Acceptance of work items that are not constructed in accordance with traditional MDOT standards must never be allowed, regardless of whether the project has warranty provisions.

All quality control responsibilities for these projects have been delegated to the contractor's work force through various special provisions contained within the project proposal. However, the responsibility for quality assurance of the constructed work (both material and workmanship) cannot be delegated, and remains the responsibility of the department.

The five year warranties on rehabilitation and reconstruction projects are best described as materials and workmanship warranties. This means the contractor is responsible for all materials and workmanship compliance with specifications. The department is responsible for the integrity of design and field conditions encountered. The warranty

only pertains to problems related to materials supplied or workmanship that is shown to not be in compliance with the contract requirements. The contractor is also responsible for the mix design and related issues on Capital Preventative Maintenance (CPM) warranties. In addition to the above, these guidelines also cover the use of bridge warranties and their application to current projects.

Warranties on CPM projects are performance warranties assigning total performance responsibility to the contractor, except where noted in the special provision.

In addition to becoming familiar with the specific special provisions for warranty work and documentation of construction items and contractor quality control (CQC) for pavement warranty, the following are guidelines for contract administration and oversight for warranty work at the project level.

PRE-CONSTRUCTION MEETING

In General for all Projects With Warranties

In the course of the normal pre-construction meeting, issues related to the warranted work items and the contractor's quality control responsibility should be discussed as applicable. The project's CQC special provision should be discussed at the meeting. Requirements for documentation of the warranted items should be reviewed. At a minimum, the contractor needs to complete the Contractor's Daily Report (Attachment A) on a daily basis and submit it within 24 hours of preparation. To fulfill the specification requirements for measurement and payment (109.01), the engineer may utilize the contractor's submitted measurements if sufficient assurance checks for accuracy are made.

CPM Projects

For CPM projects with performance warranties, the CQC special provision should be discussed. The contractor's method for determining random core locations should be provided, discussed, and approved at the meeting. It should be emphasized that there are no bituminous quality initiatives specified on CPM projects with HMA pavement warranties.

For CPM chip seal warranty projects, the contractor is to provide asphalt emulsion and coarse aggregate unit prices at the pre-construction meeting. The contractor has a right to change the application rate of the emulsion and aggregate depending on field conditions; price adjustments are made to reflect the actual material usage.

If the contractor does not choose to use the typical crack reservoir detail provided in the contract documents for CPM bituminous crack treatment warranty projects, they are to submit their proposed changes to the engineer at the pre-construction meeting. This is so the engineer can verify that the crack reservoir used during construction is in accordance with the detail.

For all other CPM performance warranty projects, the contractor's methods for quality control needs to be provided, discussed and approved at the meeting, and as a condition to start work.

PRE-PAVING ON-SITE MEETING

In General for all Projects With Warranties

An on-site meeting prior to the start of the warranty work is necessary. The items to be reviewed at the on-site meeting include the contractor's detailed work schedule, paving plan, the CQC plan, the contractor's Daily Report, associated documentation, and their submittal to the project office. Suggested participants in the on-site meeting are those individuals involved in the performance of work on the projects, as well as those involved in the quality control and quality assurance of the project, and the preparation and submittal of the project's paperwork.

CQC Plan

Review of the contractor's CQC plan is the primary basis for this meeting. The CQC plan should address all of the procedures and documentation required by the various warranty provisions in the contract. CQC discussions should center on what happens when deficiencies related to construction procedures and/or workmanship are encountered during performance of warranty work. The resident engineer and staff must be assured that sufficient safeguards are incorporated into the CQC plan that will: 1) minimize construction-related workmanship deficiencies, and 2) assure that the contractor will take the necessary steps to immediately correct the ongoing work up to and including removal of the deficient warranted item.

Various scenarios should be discussed with the contractor to "test" the quality control plan and to reassure MDOT project personnel that the contractor will react to the warranty portion of the project in the same manner as MDOT would if we had been inspecting the project. The on-site meeting should be held enough in advance of the warranty work items so that adjustments to and approval of the CQC plan can take place. Refer to the attached Guidelines for Quality Control Plan Review by MDOT (Attachment D) when determining the acceptability of the CQC plan.

Contractor's Daily Report/Inspector's Daily Report Worksheet

The Documentation of Construction Items contract provision requires the contractor to submit a Contractor's Daily Report (refer to Attachment A for all projects except CPM crack treatment, which requires the completion of Attachment B for the daily report). To facilitate prompt payment to the contractor and more accurate data entry by MDOT office personnel, the contractor should be asked to prepare an Inspector's Daily Report Worksheet (Attachment C) in addition to the Contractor's Daily Report. Instructions as to the preparation of the Inspector's Daily Report Worksheet and its submittal should be given at the on-site meeting.

CPM Projects

For CPM microsurfacing and chip seal warranty projects, the contractor will calibrate and adjust the equipment settings prior to production. The calibration and equipment settings should be documented and given to the engineer at the on-site meeting, or prior to the start of production.

INSPECTION AND DOCUMENTATION BY THE CONTRACTOR AND MDOT**In General for all Projects With Warranties**

- The contractor's responsibilities include complying with all specification and plan requirements, and following their approved CQC Plan.
- X MDOT's responsibility is to assure that the contractor is meeting all contract requirements for the warrantied work.
- X Per Subsection 104.01 of the *Standard Specifications for Construction*, the authority of the engineer is maintained for projects with warrantied work items.
- X MDOT must provide oversight on warranty projects to the extent necessary to assure contract requirements are met. This is MDOT's quality assurance responsibility and can not be delegated to the contractor.
- X The level and frequency of MDOT oversight may vary based on the project size, experience level of the contractor, and the confidence the project staff has in the contractor's work. Please refer to the attached checklists for quality assurance by MDOT. These are intended to be the minimum checks and comfort levels necessary for adequate assurance. In effect, a spot checking approach should be used to assure that the contractor is in compliance with plans and specifications.
- X MDOT should visit the site daily (as a suggested minimum) to assure that the contractor is performing work according to the specifications and to spot check pay quantities.
- X In the event that the contractor's operations are determined to be deficient as a result of the quality assurance inspection in any area of the production sequence, it is MDOT's responsibility to immediately notify the contractor of the deficiency and seek corrective action.
- X Continuing production of work that does not conform with the project proposal, specifications, or contractor's Quality Control Plan on any warranty project is not acceptable and must be corrected at no additional cost paid to the contractor. Additional deficiencies must be met with more rigid actions on the part of the engineer up to and including project shut down.
- X Continuing deficiencies discovered relative to the CQC Plan and the actual job site performance of the contractor's inspection forces is also a contract violation and should be treated and corrected as any production related deficiency. Continuing

violations of the CQC Plan should result in a progressive course of action by the engineer including: warning, stop work, higher quality assurance level with back charge to the contract, and an evaluation of "unsatisfactory" on a interim contractor evaluation.

- X Falsifying records for the purpose of satisfying the warranty requirements is a federal violation and must be reported immediately to FHWA.

CPM Projects

For CPM projects that include both cold-milling and bituminous paving with warranty, it is important to understand that the warranty does not apply to the cold-milling item of work. Therefore, MDOT is responsible for inspecting the cold-milling operation, and its oversight is crucial to controlling the bituminous quantities. This is typical for any non-warranted item of work combined with warranty items on all projects.

For CPM HMA paving warranty projects, Form 1911 (Job Mix Formula - HMA Field Communication) is not required. For all of these projects, the department will measure the initial Ride Quality Index (RQI) before work starts. Due to the volume of CPM HMA warranty projects, the engineer should drive the project upon completion of the paving to evaluate the ride quality. If the project rides well with no apparent roughness, then no RQI will be measured. If the project "feels" rough enough to warrant measurement, the engineer should contact the Construction and Technology Support Area (517-322-5711) to schedule an RQI measurement of the final surface.

For Five Year Materials and Workmanship HMA Warranty Projects

Quality Control/Quality Assurance Testing

The contractor is responsible for meeting all requirements of the contract for furnishing and placing Superpave/Marshall HMA (with sampling behind the paver). The contractor's responsibilities are identical to those for non-warranted HMA pavement projects.

The traveling mix inspector's responsibilities are to prepare and distribute the Job Mix Formula (JMF), coordinate and attend pre-production meetings, and approve changes to the JMF. MDOT must have a qualified technician performing sampling and acceptance testing of the HMA mixtures.

At the paving site, a MDOT technician or department representative is to lay out the density core locations and take possession of the cores for further testing. MDOT will also take HMA mixture samples from behind the paver.

The engineer is responsible for quality assurance verification testing, reviewing the contractor test results, and determining acceptance and payment.

On-Site Paving Inspection

The contractor's responsibilities for on-site inspection include all requirements of Section 501 of the *Standard Specifications for Construction* and all special provisions, supplemental specifications, and plan requirements.

The engineer is responsible for assuring that the contractor is meeting all contract requirements for all contract items, including the warranted items.

The engineer should make regular site visits during the contractor's HMA paving operations. Several construction activities should be monitored at the time of the site visit. Refer to Attachment E (MDOT Checklist for HMA Paving with Warranty) for the list of activities. The contractor must be in compliance with the contract as measured by the checklist. The engineer should also use the Special Provision for Acceptance of HMA Pavement.

Documentation

The contractor is responsible for documenting the warranted item of work according to the Special Provision for Documentation of HMA Construction Items. As discussed previously, the Contractor's Daily Reports/Inspector's Daily Report Worksheets shall be prepared and submitted daily. In addition, the contractor should record the mixture temperature at the paving site. The contractor is also responsible for providing all materials testing documentation and the recording of the same on the contractor's Daily Report.

The engineer is responsible for the timely review of the contractor's Daily Reports/Inspector's Daily Report Worksheets. Errors and omissions to these reports should be brought to the attention of the contractor. The engineer is responsible for documenting the quality assurance testing at the plant according to the contract special provision. The engineer must also document the random selection and location of pavement cores. An example field core worksheet is contained in Division 5 of the *Construction Manual*.

Regular field checks made by the engineer of the on-site paving operations of the contractor should be documented. Attachment E (MDOT Checklist for HMA Paving With Warranty) identifies important items to observe during the paving operation that need to be documented. The engineer may elect to use a modified version of the checklist. Deficiencies noted during the periodic field checks should be communicated to the contractor.

For Five Year Materials and Workmanship JPCP or JRCP Warranty Projects

Quality Assurance/Quality Control (QA/QC) Testing

The contractor is responsible for meeting all requirements of the contract. In addition to the QA/QC requirements for non-warranted projects, which are identical to warranted projects, the contractor must also include a level of quality control that addresses all workmanship processes related to the warranted items

The engineer is responsible for performance of quality assurance testing in accordance

with the contract and the *Standard Specifications for Construction*. In addition, the engineer must assure that the agreed-upon workmanship process for the warranted items are being followed by the contractor.

On-Site Paving Inspection

The contractor's responsibilities for on-site inspection include all requirements of Section 602 of the *Standard Specifications for Construction* and all special provisions, supplemental specifications, and plan requirements.

The engineer is responsible for assuring that the contractor is meeting all contract requirements for all contract items of work, including warranted items.

The engineer should make regular site visits during the contractor's concrete paving operations. Several construction activities should be monitored at the time of the site visit. Refer to Attachment F (MDOT Checklist for Concrete Paving With Warranty) for the list of activities. Compliance with the contract as measured by the checklist is required. The Special Provision for Pavement Acceptance of (jointed plain or jointed reinforced) Concrete Pavement will be used by the engineer

Documentation

The contractor is responsible for documenting the warranted item of work according to the Special Provision for Documentation of Concrete Construction Items. As discussed previously, contractor's Daily Reports/Inspector's Daily Report Worksheets should be prepared and submitted on a daily basis. The contractor is also responsible for providing all materials testing documentation and the recording of the same on the daily reports.

The engineer is responsible for the timely review of the contractor's Daily Reports/Inspector's Daily Report Worksheets. Errors and omissions to these reports should be brought to the attention of the contractor.

Daily field checks made by the engineer of the on-site paving operations of the contractor should be documented. Attachment F (MDOT Checklist for Concrete Paving With Warranty) identifies important items to observe during the paving operation that should be documented. The engineer may elect to use a modified version of the checklist. Deficiencies noted during the regular field checks should be communicated to the contractor.

For Bridge Warranty Projects

Items of warranted bridge work will follow the normal procedures and require inspection by MDOT and either certification or testing, and proper documentation.

WARRANTIED AND NON-WARRANTIED ITEMS ON THE SAME PROJECT

Warranty projects will contain both warranted and non-warrantied contract items. Items of work that are not warranted will require full inspection and documentation by MDOT. The contractor is responsible for completing and submitting the contractor's Daily

Report/Inspector's Daily Report Worksheet for the warrantied item of work only.

INITIAL ACCEPTANCE FOR WARRANTIED PROJECTS

At the completion of construction of the warrantied work, the engineer and the contractor will review the work for compliance with the contract. If the work is deemed by the engineer to not be in compliance, the contractor is required to remedy all deficiencies in materials and/or workmanship. Any photos, videos, etc., in the engineer's possession that document non-compliance with the contract should be shared with the contractor at this point. When the work is in compliance, the form entitled Initial Acceptance of Warranty Work Approval that is a part of the contract provisions for the warranty of HMA (or concrete) construction items (or Attachment G, Initial Acceptance for Preventive Maintenance Warranty for CPM warranty projects) should be used to document initial acceptance.

A portion of a project may be initially accepted at the discretion of the engineer. Such partial acceptance requests should be submitted in writing by the contractor and approved by the engineer prior to the start of any work on the segment. If such initial acceptance is granted, the warranty period will begin at the time of acceptance only if the section is continuously opened to traffic. This agreement must be documented in writing to avoid later claims to the contrary.

On projects with multiple job numbers or with several segments of the project initially accepted at different times, the bottom box of the Initial Acceptance For Warranty Form should not be filled in until the very last job or the very last segment on the project is in compliance and has received initial acceptance. The last job's or segment's date accepted should match the acceptance date in the bottom box. When the bottom box is completed, it is the contractor's responsibility to submit a copy of the form to the surety company and the engineer's responsibility to submit a copy of the form to Contract Services Division, Payments Unit. At this point in time, the warranty bond begins. The warranty bond expires at the end of the designated warranty period. The warranty bond is a part of the project's financial files and moves to general files for storage with the final estimate documents from Contract Services.

On these projects with multiple job numbers and/or multiple segments with different initial acceptance dates, the designated warranty period begins on the date the job and/or segment is initially accepted, even though the warranty bond itself does not begin until the last job and/or segment on the project is initially accepted. Because of this, it is possible to have the warranty period for a job and/or segment expire before the warranty bond expires. The engineer should not ask for corrective work on a job and/or segment where the warranty period has expired.

The engineer should be sure that all test results, certifications, and documentation are received for the warranted item of work before making initial acceptance. This documents that all warranty work was performed in accordance with the contract requirements.

INITIAL ACCEPTANCE FOR WARRANTIED BRIDGE PROJECTS

See the special provision in the proposal for the acceptance date requirements.

FINAL ESTIMATE/FINAL ACCEPTANCE OF THE PROJECT:

For warranty projects the final estimate should be submitted and final acceptance documented as the warranty requirement does not delay the project finaling process.

Chief Operations Officer

Engineer of Delivery

Subject Index: Warranty Work
BOHTS:C/T:JTL:kab

cc: C & T Support Area Staff
Real Estate Support Area, M. DeLong
Design Support Area, M. VanPortFleet
Maintenance Support Area, C. Roberts
Traffic & Safety Support Area, J. Culp
C & T Support Area, J. Culp
T. Anderson
J. Friend

OEO - S. El Ahmad
C. Rademacher
V. Blaxton
G. Moore
K. Reincke
MRBA
MAPA
MCPA

MCA
MAA

CRAM
MRPA
ACEC
MPA

A
U
C

Equipment/Number							
Preparer's Name		Preparer's Signature		Report Date		Day	Report No.

SKETCHES, COMPUTATIONS, REMARKS, ETC.

TRAFFIC CONTROL DEVICES AND PLACEMENT
(Include modifications, staging, and lines checked)

YIELD CALCULATIONS						
Load	Station-Station	Length	W	Area	Net Weight	Yield
DAILY TOTALS						

UNUSUAL CONDITIONS, ACCIDENTS OR INCIDENTS

**INSPECTION DAILY REPORT CHECKLIST
HMA Crack Treatment**

Control Section _____ Job No. _____ Work Site _____
 Pay Item Reviewed: _____
 Pay Item Code No.: _____

Items Traced:	I.D.R./C.D.R.#			
	Date:			
	Quantity Posted:			
	Inspector:			

	Yes	No	Yes	No	Yes	No
Proper Project Identification	___	___	___	___	___	___
Report is Dated	___	___	___	___	___	___
Air Temperature						
weather in a.m. and p.m.	___	___	___	___	___	___
Contractor Listed	___	___	___	___	___	___
Work Force Listed	___	___	___	___	___	___
Equipment Listed	___	___	___	___	___	___
Beginning and ending locations for the day, to include lane and direction	___	___	___	___	___	___
Amount of materials used for the day, including lot number	___	___	___	___	___	___
Traffic control typically used, number of traffic control moves, and checks conducted on the traffic control	___	___	___	___	___	___
Unique or different situations on the project	___	___	___	___	___	___
Inspector's/Contractor's Signature	___	___	___	___	___	___
Project Engineer's Signature	___	___	___	___	___	___
Pay Item						
Coding and Description	___	___	___	___	___	___
Stationing/Location	___	___	___	___	___	___
Measurements & Sketches	___	___	___	___	___	___
Quantities & Computations	___	___	___	___	___	___
Computations Checked	___	___	___	___	___	___
Properly Posted to CPRKS	___	___	___	___	___	___
IDR Recommended for Acceptance	___	___	___	___	___	___
(Other Required Forms?)						
_____	___	___	___	___	___	___
_____	___	___	___	___	___	___

Comment/Deficiencies:

Reviewer: _____ Date: _____

Please see MDOT forms 1122C.pdf and 1122C-2.pdf

1. **The contractor is responsible for all plan specification, special provision and quality control requirements related to warranted contract items.**

- < Quality is the same as all non-warranted projects
- < MDOT is responsible for Acceptance Testing per CQC and QA/QC specifications
- < The contractor is responsible for all incentive calculations
- < MDOT is responsible for QA
- < Contractor is responsible for measurement of all warranted contract items and related off site inspections (i.e., plant)

1. **On site inspection**

- < The contractor is responsible for all Section 502 (HMA) or 602 (concrete) requirements in the Standard Specifications
- < Refer to Modification of Section 502 or Section 602 and the Authority of the Engineer in 104.01
- < Engineer may utilize contractor’s measurements if sufficient assurance checks are performed on the quantity determinations to assure compliance with 109.01.
- < The materials and work should be inspected by the engineer often enough to reasonably assure that the contractor is performing work in accordance with the CQC plan and that the contractor’s materials and workmanship comply with the contract requirements.
- < Contractor’s QC plan should include a proposed inspection sequence with proposed check frequencies included. An example of the proposed checks are included, but not limited to the following:

SPEC. #	DESCRIPTION	INSPECTION	FREQUENCY
601.03.A	NRMCA Certified Batching Plants	certification, ticketing system, automatic controls check	Weekly
601.03.B	Non-NRMCA Certified Batching Plants	weighing and batching equipment, bins and hoppers, scales, automatic controls, dispensers, water measuring equip.	Daily
601.03.D	Furnishing and Handling Aggregates	stockpiles	Daily
		coarse aggregate moisture content	Daily
	Furnishing and Handling Cement, GGBFS, Slag	weatherproof bins	Daily
		change in source of material	Daily
601.03.E	Mixing Concrete	communication, batch sizes/capacity, mix time	Daily
		elapsed time	Daily

GUIDELINES FOR QUALITY CONTROL PLAN REVIEW BY M•DOT

3. **The contractor must utilize the plan and show commitment to it.**
4. **The plan must stress quality and commitment to job control.**
5. **The plan must give assurance that the contractor will perform work in accordance with the Specifications.**
6. ***Typical Acceptable CQC Plan for The Inspection Work (relates to concrete paving but is adaptable for HMA paving as well)***
 - < Organizational Chart Submitted
 - S Include lines of authority; and duties and responsibilities
 - S May be a “combined” chart to also comply with the QA/QC specifications
 - S The CQCSM(Contractor Quality Control System Manager) must be identified per specification
 - < List contract items covered under the CQC Plan (i.e.; all pavement warranty items)
 - < List of items the Quality Control Inspector checks before paving/before trucks arrive/when concrete arrives
 - < Include example of the Contractor’s Daily Report identifying:
 - S Equipment used
 - S Mix design
 - S Paving schedule; start and stop times, pour locations and types
 - S Dowels
 - S Tie bars
 - S Texturing
 - S Tining
 - S Curing
 - S Transverse and longitudinal saw cut time and types
 - S Type of seal for transverse and longitudinal joints
 - < List type of supplemental forms used to document the following:
 - S Materials handling
 - S Paving inspection (see below)
 - S Joint inspection (see below)
 - S Truck delivery times and tests
 - S Interim cylinder breaks
 - S Interim beam breaks

GUIDELINES FOR QUALITY CONTROL PLAN REVIEW BY M•DOT

- < **Paving Inspection Forms.** Typical items addressed:
- S Inspector and date locations
- S Weather
- S Subbase (OGDC) Condition
- S String line
- S Forms
 - ┆ Grade/Locked/Perpendicular/Supported/Line
 - S Equipment
 - ┆ Pour width
 - ┆ Cure/texture machine (including spacing, alignment, spray pattern)
 - ┆ Batch trucks (check for cleanliness)
 - S Dowel baskets
 - ┆ Check dowel size, alignment, layout, level, height, secured, assembly, spacing for expansion joints, felt size, and caps in proper position.
 - S Dowel bar inserter equipment interim checks during paving
 - S Tie bars
 - ┆ Horizontal spacing for all types
 - S Edge slump
 - S Crown
 - S Alignment of slab
 - S Vertical face
 - S Tining
 - S Texture of surface
 - S Curing; type/coverage/uniformity
 - S Concrete placement method
 - S Computed yield
 - S Comments on above items

- **Joint Inspection Report.** Typical items addressed:
- < Date/Inspector/weather
- < Sawing
 - X Relief cut (approximate time after placement)
 - X Transverse (depth/width/alignment, raveling/spalling)
 - X Longitudinal (depth/width/alignment, raveling/spalling)
 - S Widening cut
 - ┆ Transverse (depth/width/alignment/cleanliness/sand blast)
 - ┆ Longitudinal (depth/width/alignment/cleanliness/sand blast)
 - S Sealing
 - ┆ Transverse Contraction (neoprene size/adhesive/adherence/per specs)
 - ┆ Expansion (form size/sealant/thickness)
 - ┆ Longitudinal (sealant/properly placed)
 - S Comments on above items

- **Report of placement of concrete.**
- < Weather/date/location/inspector
- < Information including truck number/batch

GUIDELINES FOR QUALITY CONTROL PLAN REVIEW BY M•DOT

time/start/empty/slump/temperature/air/number of cylinders

- **Report of concrete strengths (cylinder or beam) for interim open-to-traffic.**
 - < Includes slump/air/temperature/air placed/mix design
 - < ½/3/7/28 day strengths

- **Report of concrete tests.** Addressed in the QA/QC requirements for concrete.

- **Prework coordination.**
 - < Nature of work, methods, contract requirements, submittals, preparatory steps

- **Test procedures.** (As needed to fulfill the QA/QC for Concrete Spec and the CQC Specification.)
 - < If ASTM C__ type tests for concrete
 - < Acceptance testing to be performed by MDOT per requirements
 - < Frequencies
 - < Also, other tests for joint steel/epoxy/hot pour/neoprene/cure/etc.

- **Noting and reporting of deficiencies and noncompliance with the CQC requirements.**
 - < CQCSM immediately notified
 - < Investigates and produces written descriptions
 - < Log of deficiency
 - < If portions of pavement cannot be brought back into conformance, then a recommended corrective action is made.
 - < If confirmed, then notice to MDOT Engineer, with recommendation of action to be taken
 - < Approval by MDOT Engineer to take action before start
 - < CQCSM to supervise inspection of corrective work
 - < If corrective work acceptable, deficiency is closed out.
 - S No invalidation of warranty occurs.

- **Record keeping and documentation.** For CQC portion only (Minimum).
 - < File system; including approvals of submittals, methods, inspection and test reports, deficient work corrections, test procedures, changes and modifications, material storage, records, quality verification, meeting minutes, contractor IDRs, acceptance of work completed, qualifications of inspectors

- **Submittal review and schedule.**
 - < Time frame for review, log, fix, and transmit of all required submittals and test reports, including subcontractors

**GUIDELINES FOR QUALITY CONTROL PLAN REVIEW BY
M•DOT**

- **Audit procedures.**
 - < Time that checks are made on all CQC documents, subcontractors, and material suppliers utilizing a proposed checklist to review all CQC inspection of workmanship and all material CQC records for adequacy and accuracy.
- **Qualifying personnel.** Description and proof of qualification
- **Quality control technicians** and their previous experience.

Attachment D

GUIDELINES FOR QUALITY CONTROL PLAN REVIEW BY M•DOT

Page 6

Attachment E
**MDOT QA REVIEW DOCUMENTATION CHECKLIST
 FOR HMA PAVING WITH WARRANTY**

Note: Work this checklist with footnotes on back of checklist.

C.S./JOB NUMBER _____ **DATE** _____

DELIVERY ENGINEER _____

CONTRACTOR _____

LOCATION _____

	Satisfactory	Less Than Satisfactory	N/A
Traffic Control of the Work in Progress ¹	G	G	G
Proper Use of Traffic Control Devices to Protect Shoulders	G	G	G
Proper Use of Temporary and Permanent Pavement Markings	G	G	G
Bond Coat Application (clean pavement cured and broken)	G	G	G
Edge Alignment (within plan width +/- 1" stringline)	G	G	G
Grade & Slope Requirements	G	G	G
Automatic Grade Referencing (30' ski and slope control)	G	G	G
Longitudinal Joint (Tapered or Vertical & Slope Control) ² (Density weighted roller)	G	G	G
Constant Head of Material ³ (continual paving, mid auger shaft)	G	G	G
Joint Lines to Correspond with Lanelines	G	G	G
Rubber Tire Rollers Only Used When Specified (skirted to within 3" of ground)	G	G	G
Assure the Existing Pavement is Clear and Dry	G	G	G
Transverse Construction Joints ⁴	G	G	G
Watch for Indications of Flushing, Segregation, and Contamination That Could Affect the Warranty Requirements	G	G	G
Watch for Signs of Over Compaction (Breaking Stone) That Could Affect the warranty requirements	G	G	G
Assure the Contractor Following the Approved CQC Plan ⁵	G	G	G
Removal of any Final Roller Marks	G	G	G
Contractor Keeping Hopper Minimum of Half Full	G	G	G
Visual Mat Uniformity	G	G	G
Compliance with Provision for Pavement Acceptance ⁶	G	G	G
Contractor has Shown the Ability and Provided Documentation that all Measurements have been Taken According to Section 109 of the Standard Specifications	G	G	G

COMMENTS:

MDOT Signature

FOOTNOTES FROM FRONT

1. Check handling of ramp traffic, flagging operation(s), staging requirements.
2. The vertical joint requires bumping; check that the roller matches the width of tapered joint; prohibit use of fuel oil for release agent.
3. Be sure augers running 90 percent of time; that augers and tunnels are extended when paving additional width; and that paving speed is coordinated with plant production.
4. Assure night joints and startup joints are constructed according to specifications.
5. Be sure Contractor is correcting unsatisfactory materials and workmanship; monitor the Contractor's method of performing yield checks, and make sure they are performing yield checks for determination of pay quantities.
6. The Special Provision for Acceptance of HMA Pavement is included in the proposal. This should be used to check for visual distress in **each** course of paving.

**MDOT CHECKLIST
FOR CONCRETE PAVING WITH WARRANTY**
Note: Work this checklist with footnotes on back of checklist.

C.S./JOB NUMBER _____ DATE _____

DELIVERY ENGINEER _____

CONTRACTOR _____

LOCATION _____

	Satisfactory	Less Than Satisfactory	N/A
Traffic Control of the Work in Progress ¹	G	G	G
Proper Use of Traffic Control Devices to Protect Shoulders	G	G	G
Proper Use of Temporary and Permanent Pavement Markings	G	G	G
OGDC Condition	G	G	G
Forms ² /String line/Track line	G	G	G
Materials at Plant and Site	G	G	G
Equipment (Spreader, Paver, Cure, Texture, Batch Trucks)	G	G	G
Consolidating, Finishing, Straight-edging and Floating	G	G	G
Dowel Baskets ³	G	G	G
Dowel Bar Inserter (DBI) ⁴	G	G	G
Steel Reinforcing Mesh	G	G	G
Tie Bars (Depth, Construction and Contraction Horizontal/Vertical Spacing)	G	G	G
Edge Slump; Vertical Face; Edging	G	G	G
Crown (Straight-edge) and Slab Alignment	G	G	G
Surface Texture, Burlap, Tining (Depth, Width, Spacing)	G	G	G
Stationing Numbers	G	G	G
Curing (Timely, Uniform, Coverage)	G	G	G
Concrete Delivery Placement Method, Minimal Segregation ⁵	G	G	G
Relief Cuts (Transverse and Longitudinal) ⁶	G	G	G
Transverse and Longitudinal Joints (Contraction and Expansion, Final Sawing) ⁷	G	G	G
Joint Seals (All Types) ⁸	G	G	G
Concrete and Load Reports ⁹	G	G	G
Concrete Strength Reports For Interim Opening ¹⁰	G	G	G
Assure the Contractor Following the Approved CQC Plan (Correcting Unsatisfactory Materials and Workmanship)	G	G	G
Contractor has Shown the Ability and Provided Documentation that All Measurements have been Taken According to 109 of Standard Specifications	G	G	G
Compliance with Pavement Acceptance Provisions	G	G	G

COMMENTS: _____

MDOT Signature

FOOTNOTES FROM FRONT

1. Check handling of ramp traffic, flagging operation(s), staging requirements.
2. Check grade of forms and whether they are locked and perpendicular.
3. Check dowel size, alignment, layout, level, height, secured, assembly, spacing for expansion joints: felt size, caps in proper position.
4. Check performance per specifications, test sections per specifications, and wet checks per specifications.
5. For minimal segregation, check spreader, material transfer device, direct placement, voids and/or cold joints, proper consolidation, proper head of material at screeds, minimal use of finish water, proper night and end header installation.
6. Check for depth, width, alignment, raveling, spalling.
7. Widening cut (transverse and longitudinal) (check for depth; width; alignment; raveling; spalling).
8. Contraction joints (neoprene size; adequate adhesive; side adhesive) Expansion Joints (felt size, check for voids, sealant type, and thickness).
9. Record truck number, batch/discharge time, slump, air, number of cylinders.
10. Check mix design, age, beams/cylinders, strength, weather.
11. Quality Assurance Inspection Frequencies:

**MICHIGAN DEPARTMENT OF TRANSPORTATION
INITIAL ACCEPTANCE
FOR
PREVENTIVE MAINTENANCE WARRANTY**

CONTRACT ID:
CONTRACT SECTION: _____ **JOB NUMBER:**
SURETY NAME:
SURETY ADDRESS:
CONTRACTOR NAME:
CONTRACTOR ADDRESS:

IDENTIFY EACH JOB NUMBER, LOCATION AND WORK SEPARATELY

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

INITIAL ACCEPTANCE OF WARRANTY WORK APPROVAL

CONTRACTOR'S SIGNATURE:
ENGINEER'S SIGNATURE:
ACCEPTANCE DATE:

cc: Surety Company, Financial Services - Payments