

TECHNICIAN'S CHECKLIST
SECTION 700
CONCRETE PAVEMENTS AND SHOULDERS

PROJECT: _____
 REVIEW DATE: _____

TECHNICIAN: _____
 REVIEWER: _____

ACTION	YES	NO	N/A	COMMENTS
General				
Study Specifications, plans, and Special Provisions.				
Review Contractor's Process Control Plan.				
Before the start of paving operations obtain slump cones, air test meters, rulers, pencils, necessary forms, etc., which are required for the job, and make sure that all testing equipment is in good working condition.				
Verify that the producer's personnel hold the necessary certifications. <ul style="list-style-type: none"> • Batch Plant Operator (Batch Plant Certified, PCCP Certified) • Producer's Laboratory Technician (PCCP Lab Certified) • Producer's Roadway Foreman (PCCP Roadway Certified) 				
Record in diary all conversations, observations, spot checks made, and work performed.				
Plant Operations Checklist				
Become familiar with the producer's concrete batching and mixing equipment.				
Verify that the Plant, Scales, etc. have been checked and approved by the Materials and Tests Unit.				
Obtain samples of the cementitious materials (cement, flyash, blast furnace slag, etc.) at the beginning of the project and each load from a railroad car or every fourth truck tanker thereafter, to determine the origin and to assure that cement does not already contain air-entraining agent.				
When new materials arrive, compare the material sources to the approved Concrete Mix Design.				
Observe the batch plant technician weigh at least one load from each lot. Verify that the batch weights are within the acceptable tolerances.				
Check air-entraining dispenser at least once each morning and once each afternoon.				
Check cold feed bins and piles and assure that there is no contamination or inter-mingling of the aggregates.				
Verify that stockpiles are spaced or separated to prevent inter-mingling of the aggregates. Other items to check for in stockpiles are as follows: <ul style="list-style-type: none"> • The stockpiled area should be cleaned of vegetation, well drained, and covered with a layer of aggregate. • The material, when handled by clam bucket or conveyer belt, should not be allowed to drop free for any appreciable distance. • Avoid inclusion of foreign material when cleaning up stockpile. • Avoid use of tractor vehicles on large aggregate stockpiles. • Maintain space between stockpiles and in limited areas use bulkheads. 				

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Verify that no concrete remains in the trucks after dumping and is washed clean for the next load of concrete.				
Make periodic checks during the day of the entire plant to see that it is functioning properly. Principal points to be observed: <ul style="list-style-type: none"> • Mixing blades not worn down more than 10 percent • Water system tested • Mixing time • Valves checked for leakage • Mixer checked frequently for buildup of concrete around blades • Air-entraining dispenser checked, all piping clean and air vent open • Size of batch, speed of rotation, and mixing cycle in compliance with Specifications • Time from batching of concrete to placement shall not exceed the Specification requirements. • Specific requirements for batch plant and truck mixer inspection 				
Ensure that a signed Batch Ticket (M&T Form 903) or approved delivery ticket is being sent to the Roadway Technician on the roadway for each load being batched.				
Check trucks periodically to see that beds are clean and that no excess concrete is stuck in the bed. If so, bed should be washed before loading of the next load of concrete.				
Roadway Inspection Checklist				
Check the producer's paving equipment and understand the function of each piece of equipment.				
Check paving equipment for proper adjustment (lane width, depth, etc).				
Become familiar with the paving sequence of the project and review field controls for line and grade.				
Become familiar with the Producer's and/or Contractor's concrete paving equipment and understand the function of each piece of equipment. Check paving equipment for proper adjustment and compliance with the Standard Specifications. (If help is needed with this please contact the Pavement Construction Section.)				
Verify that the Producer and/or Contractor has a Inertial profiler & competent Operator for the profiler.				
When dowel bars and tie bars arrive on the project contact the M&T Section Specialist for field verification.				
Check the dowel bars for size, length, welding, and spacing (if using dowel baskets). The dowel baskets should be accompanied by a M&T Form 913 (Epoxy Coating Certificate) and a Type 1 Certified Mill Test Report with Wax coating verified.				
Check the placement of dowel bars in bridge approaches. Dowel bars should be parallel with the traffic flow and have approved expansion caps for the dowel bars.				

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Check the vibration equipment and, if furnished, verify vibration monitors are operating correctly. Computerized vibration monitors are required on slipform pavers per the 2006 Standard Specifications.				
Verify that the Contractor is prepared for inclement weather (rain, hot or cold weather conditions) and has material on hand at the paving train.				
Verify the stringline is set sufficiently in advance of the concrete paving to avoid delays.				
Take appropriate tests as required by the Minimum Sampling Guide.				
Verify that an automatically controlled grading and paving machine was used to establish the following items before paving begins: <ul style="list-style-type: none"> • Asphalt pavements for conformity to line, grade, and typical sections, and record results. Advise Contractor of any areas needing correction. • Be familiar with any grade adjustments made by Engineer. • Discuss any necessity for grade adjustment with Engineer. • If grade adjustments are made, advise other Technicians. • Check line and grade at structures carefully for smooth transitions. • Do not permit hauling equipment on the asphalt base course except as may be allowed by the Specifications. 				
When the Fixed Form Paving Method is being used, verify the following: <ul style="list-style-type: none"> • Forms are clean and oiled. • Forms are set sufficiently in advance of paving to allow inspection. • Forms are uniformly supported and tamped. • Locks are securely fastened. • Pins are securely locked in stake pockets. • Correct distance from centerline or offset hubs. • Correct width between forms. • Forms on each side at correct elevation. • True to smooth line and grade checked by eyeing in top of form. • Removal prior to 12 hours after concrete placed not permitted. • Damage to edge of slab and honeycomb repaired immediately and before curing compound is applied. • Proper curing of edges when forms are removed. • Proper grade to match bridge approach at least 160 feet from the approach. • Marks should be made for transverse joint locations for correct sawing location on the dowel baskets. Confirm that joint locations are marked at the same location as the dowel baskets. • Check that the base material is maintained in a dampened condition ahead of the concrete placement. 				

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<p>When paving with ready-mix trucks the Roadway Technician should check for items, which could cause problems with the placing of the PCC pavement. Some items to be checked are:</p> <ul style="list-style-type: none"> • Check drum revolutions per minute several times daily and record in diary. • Water discharge calibrated and valves checked daily for leakage. • Check inside mixer drum for worn blades or built up concrete. • Check mixing time for compliance with Specifications and record in diary. • Water should not be necessary when concrete is used for PCC pavements. Mixes should be well tested before using the mixes on the roadway. • If mix is not of proportion by visual inspection, advise Plant Technician and check for reason. 				
<p>When placing PCC pavement the roadway Technician should check for items, which could cause problems with the placing of the PCC pavement. Some items to be checked are:</p> <ul style="list-style-type: none"> • Check subgrade with a string line. Record results of stringline check on 50-foot intervals. • Check the forms to see that they are thoroughly oiled. • Ensure the base course is dampened when placing concrete. However, no free water or ponding should be present at placement. • Verify the concrete is spreading easily without segregation giving even spreading and uniform strikeoff. • Check the Dowels, tie bars, and joint assemblies to assure that all are according to plans and Specifications. If the steel is not correct, call the M&T Section Specialist. • Verify the concrete placement operation did not dislocate the dowel bars or dowel bar assemblies (A metal detector could be helpful). • Verify the speed of the paving train equipment is matching the slowest part of the paving operation. Stopping should be minimized to alleviate bumps. • Check that the concrete pavement is maintained at a uniform consistency. • Perform slump tests and air entrainment tests at the required frequency as per the Minimum Sampling Guide, Construction and Inspection of Portland Cement Concrete Pavement Manual, and the Engineer. Keep Plant Technician informed of any changes or problems that may arise. • Assist the Plant Technician in making test beams, if possible. 				

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<p>When placing PCC pavement the roadway Technician should check spreading and vibrating items. Some spreading and vibrating items to be checked are:</p> <ul style="list-style-type: none"> • Check to see that the paver is not over or under loaded and that concrete is rolling and not sliding in front of the screed. • Assure the use of minimum adequate vibration. • The Contractor should check vibrators at the beginning of each day's operation. Ask the Contractor to verify vibrator operation in conformity to Standard Specifications. • Check the mortar depth on surface with the index finger. If the mortar is more than 1/8 inch in depth, it may be due to over • Check the concrete in front of screeds for the rolling affect ("Uniform head"). If this is not occurring, check the air and slump and notify the Plant Technician if air or slump is out. 				
<p>When observing PCC pavement, the roadway Technician should check the following finishing items:</p> <ul style="list-style-type: none"> • Check top of slab with a stringline and rule using uniform sized blocks set on top of forms several times daily for cross section. • Make sure hand operated 10 foot straightedges remove any discrepancies and bull float men remove straightedge marks. • Assure the Final surface is finished with a burlap drag according to the Standard Specification requirements and is uniform in appearance. The Burlap drag should be raised when not in use. • Assure transverse grooves are uniform and of correct depth and width. 				

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<p>Ensure that the curing is started as soon as possible while surface is moist. Immediately after the finishing operations have been completed and the surface water has disappeared, cure all surfaces of the pavement as soon as possible.</p> <ul style="list-style-type: none"> • Do not expose newly placed concrete pavement for more than 30 minutes before being covered on all exposed surfaces with curing compound. The 30 minutes may vary because of temperature and / or season. • Membrane curing compound and other curing methods should be discussed and approved prior to use. The curing method used should be in accordance with Specification requirements. • Ensure that the top and sides of slab are uniformly covered with curing compound, polyethylene film, or thoroughly wet burlap. • Ensure the correct type of membrane curing compound is being used and that it has been pretested by the Materials and Tests Unit. If the compound is not pretested, submit a sample to the Materials and Tests Unit. • Ensure the application machine is equipped with an agitator (compressed air or mechanical) and pump. • Check for clean nozzles and uniform coverage of the slab, top and sides. Check for rate of coverage required by Standard Specifications (both mechanical and hand operated when used). 				
<p>When Observing Joint construction, study the plans, Standard Specifications, Special Provisions, the Construction Manual, and the <u>Construction and Inspection of Portland Cement Concrete Pavement Manual</u> for all types and construct accordingly.</p>				
<p>The Engineer or his representative when the initial or final cuts are made or when the joints are being filled with sealant shall observe the joint construction.</p>				
<p>At least 20% of all joints should be measured for depth and noted for both the initial and final cuts.</p>				
<p>Joints must be thoroughly clean and dry before sealing.</p>				
<p>If necessary, the Engineer may request to have a representative of the silicone sealant manufacturer present on the project during sealing operations.</p>				
<p>When paving adjacent to an existing slab, cover the transverse joint opening and crack of the existing slab with tape or other approved material to prevent intrusion of grout into the joint opening and crack.</p>				
<p>When the slip form paving method is used, all applicable checks previously discussed above apply and in addition:</p> <ul style="list-style-type: none"> • Ensure that adequate quantity of protective material is available including side forms or boards of proper dimension for temporary use. • Check the stringline or wireline for horizontal control periodically by eye. 				

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<p>Cont...</p> <ul style="list-style-type: none"> • Make sure that the M&T Section Specialist prior to use have checked dowel baskets and that the baskets are wax coated. • Make sure that dowels are properly welded after they have been anchored (no loose bars). • Check that the base material is maintained in a dampened condition ahead of the concrete placement. • Observe the straightedge operations and bull float operations to see that the surface is flat and true. • Make sure hand operated 10 foot straightedges remove any discrepancies and bull float men remove straightedge marks. • Assure the Final surface is finished with a burlap drag and is uniform in appearance. The Burlap drag should be raised when not in use and should be used in a longitudinal direction. • Assure transverse grooves are uniform and of correct depth and width. 				
<p>44) Lastly, maintain the Technician's Daily Diary that includes hours, equipment, concrete temperatures, air content, slump, stations paved, width, weather, air temperatures, and problems encountered. Complete the M&T Form 252 R. Retrieve the 253 L & P and attach the 253 to the Technician's Daily Diary.</p> <p>Maturity:</p> <p>a) Contact the Construction Unit – Pavement Construction Section – for assistance when doing the Maturity Method. The NCDOT test method is available by contacting the Pavement Construction Section at 919-707-2400.</p> <p>b) Verify that the Contractor has approved Maturity equipment and has a Maturity curve established in accordance with the Standard Specifications.</p> <p>c) The Engineer or his representative will verify 10% of all verification tests done by the Contractor.</p>				