

Suggested Field Considerations

The following field considerations are a guide to the important aspects of applying a bonded wearing course (BWC). The below items should be considered to promote a successful job. Thorough answers to these questions should be determined, as required, before, during, and after construction. The appropriate staff to do this will vary by job type and size, and some topics may need attention from several staff members. The intention is not to form a report, but to highlight important aspects and components of the BWC construction process.

Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your State agency's standards and specifications when using these guidelines.

Sections

- **Preliminary Responsibilities**
- **Pre-seal Inspection Responsibilities**
- **Equipment Inspections**
- **Project Inspection Responsibilities**

Preliminary Responsibilities

Project Review

- Is the project a good candidate for a bonded wearing course?
- What is the depth and extent of any rutting?
- How much and what type of cracking exists?
- Is crack sealing needed?
- Is the pavement surface waterproof?
- How much bleeding or flushing exists?
- Is the pavement raveling or oxidized?
- What is the traffic level?

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- Is the base sound and well drained?
- Is surface water splash-and-spray a problem?
- Is pavement strengthening required?
- Have the project bid/plan quantities been reviewed?

Document Review

- Application specifications
- Mix design information
- Special provisions
- Construction manual
- Traffic control plan (TCP)

Materials Checks

- Have the aggregates been sampled and tested? Do they meet the requirements set forth in the agency's specifications?
- Has the binder for the mix been sampled and tested? Does it meet the requirements set forth in the agency's specifications?
- Is the mix produced by an approved source?
- Has a full mix design been performed for the mixture?
- Has the mix been tested? Is the mix within specification?
- Has the polymer modified asphalt emulsion membrane been sampled and tested? Does it meet the requirements set forth in the agency's specifications?

Pre-Seal Inspection Responsibilities

Weather Requirements

- Have air and surface temperatures been checked at the coolest location on the project?
- Do air and surface temperatures meet agency requirements?
- Is rain expected before or during paving operations?

- Are freezing temperatures expected within 24 hours of the completion of any paving runs?

Determining Application Rates

- Have agency guidelines and requirements been followed?
- Have rut filling and leveling course requirements been calculated as a separate item to properly re-profile the roadway?
- Has a full mix design been done?
- Are emulsion membrane application rates correct for the pavement surface? (More emulsion may be required on roads with porous surfaces and less for those with flush surfaces or Portland cement concrete (PCC) surfaces.)

Surface Preparation

- Is the surface clean and dry? Has it been swept?
- Have areas with oily residue been scrubbed?
- Have all pavement distresses been repaired?
- Has the existing surface been inspected for drainage problems?
- Have all utilities been raised and masked?
- Has project been laid-out to ensure the best possible results?

Equipment Inspections

Broom

- Are the bristles the proper length?
- Can the broom be adjusted vertically to avoid excess pressure?

Application Equipment

- Has the machine been calibrated to accurately spray the correct amount of membrane?
- Are all spray tips clean and free of blockage?
- Is there a double or triple overlap of the spray fans?

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- Is the paving unit clean and operating correctly?
- Are flow gates clear, set at the right height, and functioning properly?
- Are conveyors and augers functioning properly?
- Is the flow system (manual or automatic) operational?
- Are material levels in the auger chamber of the paving unit set correctly?
- Do the screed heaters work?
- Is the screed clean and properly set? Is the angle of attack correct?
- Is the automatic leveling system working and correctly set?
- Is the paver speed correct for the proposed thickness and angle of attack?
- Are the screed strike offs clean and providing a uniform mat?

Rollers

- Are appropriate rollers being used? Do they comply with the requirement set forth in the agency's specifications?

Material Delivery Vehicle

- Do dump trucks or live bottom trailers properly match up with the paving unit?

Calibration of Equipment

- Are all machines properly calibrated?
- Who carried out the calibration?
- Has documentation has been provided?

Project Inspection Responsibilities

Traffic Control

- Do the signs and devices used match the traffic control plan?
- Does the work zone comply with the agency's requirements?
- Are flaggers holding the traffic for reasonable periods of time?
- Are unsafe conditions, if any, promptly reported to a supervisor?
- Are signs removed or covered when they no longer apply?

Emulsion Membrane Application

- Has the emulsion temperature been checked?
- Are high winds expected? Will the expected weather conditions delay the breaking of the emulsion?
- Has emulsion application spray bar been checked for blocked nozzles?
- Has the application rate been checked?
- Is the application even and does it cover the entire pavement?
- Is the application in accordance with relevant agency guidelines?

Lay Down of BWC Gap Graded Mix

- Has a test strip been successfully laid and compacted?
- Is the surface dry (damp is OK)?
- Is the mix temperature correct?
- Is the paving unit progressing at a uniform speed?
- Are the hopper, augers, and screed operating correctly?
- Is the screed set at the correct height?
- Is the mat being tamped uniformly and is the mat a uniform thickness?
- Are height adjustments minimal?
- Are the height adjustments allowed sufficient time to be effective?
- Does the mat look uniform?
- Are edge lines and joint overlaps neat and straight?
- Is the job stopped if problems persist?

Rolling Mix

- Is the surface temperature of the mat correct at the beginning of rolling?
- Is the roller being operated at the correct speed?
- Does the mat look uniform?
- When making transverse joints, are they rolled from the cold side first?
- Are longitudinal joints rolled from the hot side first?
- Are edge lines and joint overlaps neat and straight?
- Is the job stopped if problems persist?

Truck Operation

- Do truck operators avoid driving over the mat?
- Do truck operators allow the paving unit to push the truck?
- Are changeovers of dump trucks smooth, causing no bumping of the paving unit?

Longitudinal Joints

- Are joints matched properly?
- Are joints flat and smooth?
- How far does the end gate of the paving unit overlap the previously placed lane $\frac{1}{2}$ in. max? (If not, excess material should be raked off.)
- Is excessive raking avoided? (Minimal raking of the longitudinal joint should be done.)
- Are longitudinal joints rolled from the hot side of the joint first?
- Are the joints straight and compacted?
- Have you ensured that there are no gaps? (This is very important!)

Transverse Joints

- Are transverse joints avoided and used only at the end of paving or when problems occur in laying?
- Is the mat uniform up to the joint?
- Is excessive raking avoided when forming the joint?
- Is the joint compacted transversely? If there are restrictions, is the joint compacted longitudinally?
- Is the joint tight, well compacted, and close to invisible?

Brooming

- Does brooming occur shortly before placement of the bonded wearing course?

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Clean Up

- Is all loose mix removed from the traveled way?
- Are any spills cleaned up?

Opening the Mix to Traffic

- Does the traffic travel slowly—24 mph or less—over the fresh mat?
- Are reduced speed limit signs used?
- Are all construction-related signs removed when opening to normal traffic?