

Low Slump Wear Course Placement Checklist

Revised: 2/2016

Pre-Production Tasks –

- Re-read Section 2404 in the spec book (It's only 4 pages!)
- Familiarize yourself with the requirements of Form # TP-21412-04 "Weekly Report of Low Slump Concrete"
- Ask the Contractor for their plan for dust abatement at least 14 calendar days prior to starting work.
- Perform gradations on fine aggregate and course aggregate, send in lab samples.
- Calibrate Concrete-Mobile. See Concrete Manual Section .454 for procedure and Section .761 for calibration worksheet.
- Check out the low slump wearing course video found under the training portion of the bridge construction site www.dot.state.mn.us/bridge/training.html .

Planning the Overlay –

1.) Determine the area to be paved

At least three (3) days prior to the placement conduct a pre-pour meeting with the Contractor to review all of the following,

- Check slopes, transitions, and tapers – mark layout on the deck,
- Review the plans for information,
- Mark out edge lines after shotblasting (over pour at least 6" wider than saw line),
- Limit width of placement to 24' unless otherwise allowed in the Special Provisions,
- Anticipated time and rate of placement (maintain rate of at least 40'/hour),
- How many workers will be performing what tasks? (Mixing concrete, loading mixer, driving concrete buggies, mixing grout, sweeping grout, shoveling concrete, operating finishing machine, operating "10' bull float", floating gutters and curb lines, marking and cutting joints directly above original joints in structural slab and

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approach panels, brooming, tining, spraying cure, covering with pre-wetted burlap, placing soaker hoses, and covering with poly.

2.) Scheduling

- What is the weather forecast? If NWS predicts a daytime temp of at least 80⁰ F, reschedule or begin between midnight and 5:00 AM, then terminate when air temp reaches 80⁰ F (review 2404.3.D for complete temp. restrictions),
- Notify the Engineer at least 24 hours in advance of scheduling a night operation. Provide artificial lighting to ensure quality workmanship and adequate inspection,
- Do not place concrete wearing course if the temperature falls below 40⁰ F.

3.) Check out equipment and supplies

- Finishing machine must be twin screed type - not roller drum,
- Check condition of the paving rails and the rail supports – is it a stable system that will hold true grade?
- Remember – no steel trowels, use only magnesium for finishing. Need to have both a 10' bull float and a 10' straight edge,
- Use only an airless recirculating bypass sprayer with continuous agitation with AMS Membrane Curing Compound,
- Insure there is an adequate amount of pre-wetted burlap and poly for the wet cure (make sure to have enough material to overlap at the seams 12 inches). Ask how they plan on keeping the poly from blowing off, and how they plan on keeping the deck wet for 96 hours,
- Make sure the grout mixer operates, and is clean,
- Ask if they plan of using a carpet drag or a broom before tining, and make sure that both texture and tines meet requirements,
- Find out at the pre-pour meeting how many concrete buggies are needed, and make sure that many are in good working order and that they don't leak oil!
- Check to make sure there are adequate lights if night pour is scheduled.

Deck Preparation -

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1.) Reconstruction (Existing Deck);

- Require scarification (see special provision for removal thickness) leaving a very roughened surface,
- Remove and set new expansion joints to the proper elevation (if required),
- All *oil stains and grease spots need to be removed* by chipping.

2.) New Construction;

- The structural deck should have been roughened during structural deck placement to provide for good adhesion of the overlay by tining or by course brooming.

Note: either of above methods of deck preparation requires that:

- Within 48 hours of placing the concrete wearing course, clean the slab surface and shotblast the entire area that is being overlaid. Shotblast to remove surface film, laitance, fractured concrete particles and other materials that may impede the bond of the concrete wearing course.
- After shotblasting deck, visually inspect the surface and chain drag to detect defective areas. When defects are observed, take conventional corrective actions, such as chipping off loose concrete or oil spots prior to the overlay.
- Locate any hairline cracks in the structural deck surface, and seal them with an approved crack sealer in accordance with 2401.3.I, "Joint and Crack Sealing",
- Insure that crack sealing material has cured according to manufacturer's directions prior to pre-wetting deck surface,
- Mark out edge lines after sandblasting (overpour at least 6" wider then saw line),
- Within 12 hours of placing the concrete wearing course, pre-wet the decks surface, and maintain the saturated surface dry condition for at least 6 hours.

Making the Dry Run –

1.) Paving Rail

- It is the Contractors job to set the rails, and the Inspectors job to accept them,
- Use round pipe rails set in adjustable pods to support finishing machine (square tubes are used to support "match up" side of machine.)

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- Both ends of paving rails must extend beyond ends of pour to ensure smooth transition to and from pavement,
- Use a 40' string-line centered over expansion joint extrusions to ensure required thickness of wear course, proper cover over joint, and a smooth ride.

2.) Finishing Machine

- Always run the finishing machine over the entire length of the pour on dry run,
- Attach filler strip to detect any high spots in the deck during dry run,
- If adjustments must be made to machine height, transition adjustment gradually (try to limit to 1/4 turn on cranks/10 foot rail pipe, no more than 1/2 turn/10 foot of rail),
- Make sure screed extends at least 6" beyond edge of both previously placed and subsequently placed sections,
- Overpour both ends of pour at least 6". No bulkheads are allowed.

During the Placing the Concrete Wear Course –

- Ensure that deck is, and continues to be, clean,
- Locations to be saw cut are laid out? Must be tooled in or saw cut ASAP without raveling the concrete,
- AMS sprayer is ready and burlap is pre-wetted,
- Scrub bonding grout (cement and water mixture) into deck surface and other contact points with broom, and keep it close to the concrete placement, to insure that grout is wet when concrete wearing course covers it. Thin Layer – No Puddles! This operation has to be monitored closely when placement occurs during sunny and windy conditions.
- Use a 10 foot straight edge to check the start, at expansion joints and in gutters to prevent birdbaths. Tolerance anywhere on the deck is 1/8 inch /10 feet,
- Keep an eye on the edge overpour; make sure it extends at least 6" beyond saw-cut line,

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- Keep operations close together. Finishing machine must strike off the concrete within 15 minutes of depositing concrete on the bridge deck; AMS curing compound must be in place within 30 minutes of placing the concrete. See the APL for approved products, penalties for non-compliance and application rate. Needs to look as white as a sheet of paper!
- Take measurements of and record the thickness of the wear course,
- Make sure that the “10 foot bull float” is being used properly, it should overlap previous pass by 50%,
- Wet Cure follows the AMS cure as soon as the concrete can be walked on without damage, place pre-wetted burlap which in turn is covered with poly. Maintain burlap in a wet condition for a minimum of 96 hours per 2404.

Curing Requirements –

- The concrete surface shall be kept continuously wet for an initial curing period of at least 96 hours (includes weekends and holidays),
- No vehicular traffic permitted for the full curing period,
- If daily mean temperature is below 60⁰ F during the 96 hour curing period, extend the cure time before allowing traffic,
- Saw joints as soon as possible without raveling concrete,
- No jackhammers or other impact equipment to remove overpour for 72 hours,
- See Spec Book for rules regarding cold weather concreting temperature and curing requirements.