

**SECTION 00504 - CONCRETE DECK SURFACE PREPARATION**

*(Follow all instructions and make all edits with “Track Changes” turned on. If there are no instructions [purple text] above a subsection, paragraph, sentence, or bullet, then include it in the project. Delete all purple text before preparing the final document. All other modifications to this Section will require ODOT Technical Resource and State Specifications Engineer approval.)*

Comply with Section 00504 of the Standard Specifications modified as follows:

**00504.01 Definitions:** Replace this subsection with the following subsection:

**00504.01 Definitions and Acronym:**

**(a) Definitions:**

**Bonded Membrane** - A polymer or spray-on waterproofing membrane system that is fully or partially bonded to the concrete deck.

**Class 1 Preparation** - Deck surface preparation for a membrane or overlay system on an existing bridge deck, where the existing concrete is sound, and minimal concrete removal is required to reach sound concrete.

**Class 2 Preparation** - Deck surface preparation in areas that are determined by the Engineer to have Unsound Concrete that requires concrete removal beyond the limits of Class 1 Preparation.

**Class 3 Preparation** - Deck surface preparation in areas where concrete removal extends through the full thickness of the deck.

**Fabric Membrane** - A rolled or sheet waterproofing membrane system that is installed below or between layers of asphalt Pavement.

**Unsound Concrete** - Delaminated or otherwise deteriorated concrete identified by a deck delamination survey or during surface preparation operations.

**(b) Acronym:**

**ICRI** - International Concrete Repair Institute

**00504.02 Submittals** - Replace this subsection, except for the subsection number and title, with the following:

Submit the type of Equipment that is used for deck preparation to the Engineer for approval at least 21 Calendar Days before the pre-placement conference.

**00504.21(a) Sawing Equipment** - Replace the paragraph that begins “Furnish power-operated diamond grinding...” with the following paragraph:

Provide power-driven concrete saws adequate for sawing joints and for surface texture.

**00504.21(b) Scarifying Equipment** - Replace this subsection, except for the subsection number and title, with the following:

Provide power-operated diamond grinding, micro-milling, or shot blasting scarifying Equipment capable of uniformly removing the existing surface to depths required.

**(1) Diamond Grinding** - Provide power-driven self-propelled machines with the cutting head made up of diamond cutting blades.

**(2) Micro-milling** - Provide cold plane or rotomill grinding machines using carbide cutting tools on a rotary drum. Provide Equipment with tooth spacing of not more than 1/4 inch, capable of leaving a smooth, uniform pattern of striations. Limit machines to a gross operational weight of no more than 35 Tons and a forward speed to 2.5 feet per minute. Operate at a drum speed of at least 120 RPM.

**(3) Shot-blasting** - Provide mono-directional or bi-directional shot blast machines with single or multiple blast wheels that conform to EPA air pollution requirements by containing dust and steel abrasive media and that can prepare concrete surfaces according to *ICRI Technical Guideline No. 310.2R*, to the project specific Concrete Surface Profiles (CSP) profile. Furnish type S-330 or larger diameter shot. If the Equipment is not equipped for simultaneous bi-directional blasting, make separate passes in opposite directions to ensure equal cleaning on all sides of the exposed aggregate.

**00504.21(c) Power-Driven Hand Tools** - Replace the paragraph that begins “Furnish power-driven hand tools ...” with the following paragraph:

Provide power-driven hand tools for removal of Unsound Concrete meeting the following requirements:

**00504.21(d) Hand Tools** - Replace this subsection, except for the subsection number and title, with the following:

Provide hammers and chisels to remove final particles of Unsound Concrete or to achieve the required depth.

**00504.21(e) Air Compressor** - Replace this subsection, except for the subsection number and title, with the following:

Provide air compressors equipped with functioning oil traps. Ensure air used for blow-down of prepared surfaces is free of oil.

**00504.40 General Surface Preparation** - Replace the paragraph that begins “Furnish surface preparation Equipment ...” with the following paragraph:

Provide surface preparation Equipment according to 00504.21. Remove surface concrete by approved hand methods that cannot be reached by power-driven Equipment.

**00504.40(c) Bonded Membrane Removal** - Replace the paragraph that begins “If rutting is present in ...” with the following paragraph:

If rutting is present in the existing concrete deck resulting in additional thickness of Bonded Membrane material, remove all existing Bonded Membrane material with Equipment that can sufficiently remove the material without exceeding 1/4 inch of PCC deck surface removal.

**00504.40(d) Multi-Layer Polymer Concrete Overlay (MPCO) Removal** - Replace the paragraph that begins “If rutting is present in ...” with the following paragraph:

If rutting is present in the existing concrete deck resulting in additional thickness of MPCO material, remove all existing MPCO material with Equipment that can sufficiently remove the material without exceeding 1/4 inch of PCC deck surface removal.

**00504.40(e) Premixed Polymer Concrete (PPC) Removal** - Replace the paragraph that begins “If rutting is present in ...” with the following paragraph:

If rutting is present in the existing concrete deck resulting in additional thickness of PPC material, remove all existing PPC material with Equipment that can sufficiently remove the material without exceeding 1/4 inch of PCC deck surface removal.

**00504.40(f) Structural Overlay Removal** - Replace the paragraph that begins “Remove the existing Structural Overlay to the parent ...” with the following paragraph:

Remove the existing Structural Overlay to the parent deck surface. Use Equipment that can sufficiently remove the overlay without exceeding 1/2 inch of parent deck removal.

**00504.40(g) Sealant Removal** - Replace this subsection with the following subsection:

**00504.40(g) Sealant and Pavement Marking Removal** - Remove all existing crack sealant pavement markers and pavement markings from deck surface by grinding, bush hammering, or other approved method. Do not exceed 1/4 inch of deck surface removal.

**00504.41(b) Class 1 Preparation** – Replace this subsection, except for the subsection number and title, with the following:

- Roughen the existing concrete surface to an exposed aggregate surface texture meeting the following volumetric profiles and ICRI CSP:
  - Polymer overlays (MPCO's and PPC's) and membranes require minimum profile depth of 1/16 inch and CSP 5.
  - Structural cementitious overlays (SCO's and HESC's) require a minimum profile depth of 1/8 inch and CSP 7.
- Determine profile depth according to ASTM E965 (standard volumetric test). Perform four tests per 500 square yards of concrete surface prepared, with a minimum of four tests per Day. Visually verify CSP profile with ICRI CSP chips.
- Protect visible reinforcing steel and reinforcing steel where the Plans show it to be within 1/2 inch of the surface.

- When not in conflict with this Specification, follow surface preparation requirements in ICRI Technical Guideline No. 310.2R.

**00504.42(a) PPC, MPCO, and Membrane Installations** – Replace this subsection with the following:

**00504.42(a) PPC, MPCO, Deck Seal, and Membrane Installations** - Prepare all surfaces that are to be in contact with the membrane, deck seal or overlay, including vertical contact areas, as follows:

- Clean the entire surface by shot-blasting within 24 hours of placing the membrane or overlay.
- Sweep the area magnetically to remove metal residue.
- Blow clean the surfaces with compressed air.
- Immediately after surface preparation is complete cover the prepared deck with clear plastic, overlapping it to prevent contaminants from construction vehicles or other sources from contacting the deck. Maintain the covering until PPC, MPCO, deck seal or membrane installation.
- If the prepared surface becomes contaminated by spills, rain, or other contaminant before placing the membrane or overlay, prepare the surface again according to this Subsection.

**00504.42(b) SCO Overlays** – Replace the bullet that begins “Clean the entire surface by shot-blasting...” with the following bullet:

- Clean the entire surface by shot-blasting. Shot-blasting is not required on final surfaces that were prepared by chipping or jack hammering.

**00504.90 Payment** - Replace the paragraph “No separate or additional payment will be made for sealant removal” with the following:

No separate or additional payment will be made for sealant or pavement marking removal.

Replace the paragraph that begins "Payment will be payment ..." with the following paragraph:

Payment will be payment in full for furnishing and placing all Materials, and for providing all Equipment, labor, and Incidentals necessary to complete the Work as specified.