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**Revision of Section 202  
Removal of Asphalt Mat (Planing) (Special)**

**Revise Section 202 of the Standard Specifications for this project to include the following:**

**Description**

This work consists of removing all asphalt material and removing the waterproofing membrane from the surface of the concrete bridge deck and approach slabs.

This work also consists of removing the top 1/2 inch of the concrete bridge deck and installing secondary containment for effluent and falling debris below the work. ♠

**Construction Requirements**

Remove all asphalt material and waterproofing membrane (if present) from the surface of the bridge deck and approach slabs. The surface shall be relatively smooth upon completion of removal operations. Remove and ground smooth jagged or broken edges or otherwise unsmooth areas. ▲

The Contractor is responsible for cleaning and maintaining the deck before and during new surface treatment placement. ▲

Before beginning removal operations, the Contractor shall submit a removal plan for approval. This plan shall include as a minimum:

- (1) Methods of removal including confined areas that are unreachable with large equipment.
- (2) The type and number of all equipment to be used. If cold milling is used to remove the final 1/2 inch of asphalt, provide appropriate information to demonstrate the equipment complies with the requirements of this specification.
- (3) The width, location, and phasing of removal passes along with the proposed schedule for these passes.

Remove the existing asphalt by cold milling to within 1/2 inch of the concrete deck. Then, remove the remaining 1/2 inch of asphalt and any existing membrane by any one or combinations of the following three methods: ▲

- (1) Scraping with a loader equipped with a smooth-edged bucket (no teeth). ▲
- (2) Diamond grinding. ▲
- (3) Cold milling with equipment that has the capabilities and features as described below. ▲

(a) Cold milling equipment must be able to:

1. Remove concrete to a depth of 1/4 inch.
2. Provide a surface relief no greater than 1/4 inch.
3. Provide a 5/32-inch grade tolerance.

(b) Cold milling equipment must have the following features:

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1. three or four riding tracks.
2. An automatic grade control system with electronic averaging has three sensors on each equipment side.
3. A conveyor system that leaves no debris on the bridge.
4. A drum that operates in an up-milling direction.
5. Bullet tooth tools with tungsten carbide steel cutting tips.
6. A maximum tool spacing of 1/4 inch.
7. A maximum operating track pair or set (axle) weight of 47,000 pounds, or as equivalent to the Tandem Axle Group as shown on the Colorado Bridge Weight Limit Map, White (10 feet less than or equal to d less than or equal to 12 feet, with d the spacing between axle groups) ♦
8. A maximum track unit weight of 5,875 pounds per foot. ♦
9. New tooth tools at the start of the job.

(c) For all cold milling operations, the Contractor shall:

1. Saw cut the outline of the asphalt surfacing to be removed to a depth of 1/2 inch.
2. Provide personnel on each side of the milling drum to monitor milling activities. Maintain constant radio communication with the operator during milling activities.
3. Verify the depth of the asphalt surfacing:
  - Every 50 feet at one location on each shoulder.
  - In the traveled way.
  - As shown in the plans. ▲

The Contractor's Engineer shall rate the bridge or complete a comparative analysis for the proposed milling machine, using the Colorado Bridge Weight Limit Map, if:

- The proposed milling machine exceeds the maximum operating one-track weight or maximum track-weight per foot; or
- It does not conform to the configuration assumptions used in determining weight limit assumptions.

The Contractor shall provide a stamped, certified letter and the accompanying rating or analysis for the Engineer's review. ♦

Use a small-width rotomill two-foot head maximum) and low-impact hand tools in confined areas where access is difficult for the primary removal equipment.

In the transverse direction, extend removal to the face of the barriers. The removal depth near the face of the barriers shall be consistent with the remainder of the bridge deck.

Hydrodemolition and pressure jetting will not be permitted for removal operations. ▲

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After cold milling is complete, the Contractor shall ensure that the coarse aggregate remaining at the removal depth is firmly embedded and removed if not. ▲

The Contractor shall prepare the bridge deck surface for placement of the new overlay. Remove all construction debris, wearing surface material, and residual materials from the scarification process from the bridge deck. ▲

To remove the final 1/2 inch of asphalt, if cold milling is used, the Contractor shall furnish a documented history of successfully performing cold milling on bridge decks with similar equipment to that described. The documentation shall include three projects within the past five years, the equipment used, and specifics regarding the bridges. ▲

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**Mechanical Scarification.** Before scarification, verify the depth of the rebar in the field. Scarify the original bridge deck concrete surface to a depth as specified on the contract plans (1/2 inch minimum). Hand chip areas adjacent to the curb, bridge drains, scuppers, joints, or other locations inaccessible to the milling machine. For decks with an existing wearing surface, remove all wearing surface material in conjunction with the milling of the decks. ♠

If mechanical milling results in exposing the reinforcing steel, stop the operation immediately and adjust the depth of removal. Repair or replace any damaged or dislodged reinforcing steel due to Contractor negligence during the operation, at the Contractor's expense.

The Contractor shall take necessary precautions to protect the expansion devices, barriers, and drains from damage. Repair all damage to the bridge expansion devices, barriers, drains, or any other property of CDOT resulting from removal operations at the Contractor's expense without time extension and per Engineer's approval.

The Contractor shall take precautions to protect the bridge deck from damage that would not ordinarily occur with these removal methods, including damage to deck reinforcing and post-tensioning. Repair any damage resulting from removal operations at the Contractor's expense without time extension and per Engineer's approval.

The Contractor shall protect live traffic and waterways below from any falling debris in work areas.

After completing of each day's work, vertical edges greater than 3/4 inch in height caused by planing shall be:

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Longitudinal edges - Taper parallel to the direction of traffic to not less than a 3:1 (horizontal: vertical) slope.

Transverse edges - Taper perpendicular to the direction of traffic to not less than a 50:1 (horizontal: vertical) slope. ▲

Complete all removal operations parallel to the travel lanes unless otherwise directed by the Engineer.

**Method of Measurement**

Removal of Asphalt Mat (Planing) (Special) will be measured by the actual quantity completed to the required depth and accepted, by the square yard.

**Basis of Payment**

The accepted quantities of Removal of Asphalt Mat (Planing) (Special) will be paid for at the contract unit price.

Payment will be made under:

Pay Item	Pay Unit
Removal of Asphalt Mat (Planing) (Special)	Square Yard

Payment for Removal of Asphalt Mat (Planing) (Special) will be total compensation for all labor, materials, tools, equipment, and incidentals required to remove the asphalt and any waterproofing membrane [and top 1/2 inch of bridge deck] as designated in the plans, specified in these special provisions, and directed by the Engineer.

Asphalt depth verification will not be measured and paid for separately; include it in the work.

Methods to prevent debris from falling from the structure, methods to protect the traveling public using the structure, adjacent to the structure, and from airborne debris will not be paid for separately; include it in the work.

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**Instructions to Designers (delete instructions and symbols from final draft):**

Use this project special provision when removing asphalt and membrane (if present) from structures down to the bare deck.

Use for removing asphalt, membrane, and top 1/2 inch of deck for Hydrodemolition applications.

▲ Use sentence/paragraph if hydrodemolition is not to be performed.

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- ◆ Use sentence/paragraph if hydrodemolition is to be performed.
  
- ◆ The equivalent track pair weight and track unit weight is intended to conservatively approximate the milling machine to the Weight Limit Map Tandem Axle and meant to take care of some of the milling machines that are proposed. The Contractor will have to provide a rating or comparative analysis if his milling machine is heavier. The designer should anticipate being contacted about this. The values shown assumes the structure is a White structure, assumes the spacing between front and back track loads is greater than 10 feet and less than 12 feet and the track length on the deck is approximately 4 feet. If the bridge structure is rated a different color, adjust this description, load, and the track unit weight appropriately.  $\text{Track Unit Weight} = \text{Allowable Axle Group Load} \div 2 \text{ tracks} \div 4\text{-foot track length on deck}$ . The axle weight is appropriate for bridge restrictions whereas the track unit weight is more appropriate for evaluating overhang conditions.

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**Permanent Changes to Project Dated Special Provisions**

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<u>Date</u>	<u>Author</u>	<u>Description of Change</u>
1/14/19	BPM Cons.	Initial Website Issue
11.1.2021	M. Kayen	Revisions to grammar, format as per CDOT Style Guide (4.22.21)
04.06.2023	M. Kayen	Revisions to make spec online accessibility-compliant. 5.22.23 Additional accessibility work.