

**REPAIR OF BRIDGE DECKS AND APPROACH PAVEMENT  
WITH LATEX MODIFIED CONCRETE**

**(10-12-01)**

**1.0 DESCRIPTION**

This work consists of repairing existing bridge decks and approach pavement by removing existing asphalt overlay and loose, deteriorated or contaminated concrete and resurfacing with latex modified concrete overlayment course together with other work necessary to restore structural integrity to the deck in accordance with this provision, applicable parts of the Standard Specifications, and the dimensions, lines and grades shown on the plans or established by the Engineer.

**2.0 EQUIPMENT**

Use the following Surface Preparation Equipment:

- Sawing equipment capable of sawing concrete to the specified depth.
- Scarifying equipment that is a power-operated, mechanical scarifier or grinder capable of removing at least 1/4 inch (6 mm) for each pass.
- Sandblasting equipment capable of removing rust scale from reinforcing steel, or removing small chips of concrete partially loosened by the scarifying or chipping operation, and of removing rehydrated dust left from scarification.
- Power driven hand tools for removal of unsound concrete are required that meet the following requirements:
  - Pneumatic hammers weighing a nominal 35 lb (16 kg) or less.
  - Pneumatic hammer chisel-type bits that do not exceed the diameter of the shaft in width.
- Hand tools such as hammers and chisels for removal of final particles of unsound concrete.
- Vibratory screed for overlays, except as noted herein.

**3.0 CONSTRUCTION METHODS**

Remove all existing asphalt overlays and all loose, disintegrated, unsound or contaminated concrete from the bridge deck and approach pavement in accordance with the following surface preparation classifications:

- A. Class IA Surface Preparation: Scarify and remove portland cement concrete from the concrete approach pavement to the depth shown on the plans to permit the construction of a 1¼ inch (32 mm) minimum depth overlay on the approach pavement to the limits shown on the plans. Transversely saw the existing concrete pavement to create a square construction joint for the overlay. Remove concrete in front of the sawed joint with power driven hand tools. Dispose of removed concrete and thoroughly clean the exposed scarified pavement surface.

- B. Class IB Surface Preparation: Scarify, or use other acceptable means, to remove all asphalt overlay from the existing bridge deck and, if applicable, the concrete approach pavement. Limits for this removal are the same as for Class I and, when applicable, Class IA Surface Preparation. Perform this work as a separate operation prior to the Class I or IA Surface Preparation and make sure the concrete surface is not removed.
- C. Class I Surface Preparation: Scarify and remove the entire concrete surface of the deck to a uniform depth of 1/2 inch (13 mm), remove and dispose concrete, and thoroughly clean the scarified surface. Perform Class I Surface Preparation before Class II or Class III. In areas where reinforcing steel is located in the 1/2 inch (13 mm) depth to be scarified, use another method with the Engineer's approval.
- D. Class II Surface Preparation (Partial Depth): Remove by chipping with hand tools all loose, unsound and contaminated deck concrete and in areas where reinforcing steel is exposed, by scarifying to an average depth of approximately one-half the deck thickness, but no less than 3/4 inch (19 mm) below the top mat of steel. Dispose of the removed concrete, clean, repair or replace rusted or loose reinforcing steel, and thoroughly clean the newly exposed surface.

When chipping, be careful not to cut, stretch, or damage any exposed reinforcing steel.

In overhangs, removing concrete areas of less than 0.60 ft<sup>2</sup>/ft (0.2 m<sup>2</sup>/m) length of bridge without overhang support is permitted unless the Engineer directs otherwise. For concrete areas greater than 0.60 ft<sup>2</sup>/ft (0.2 m<sup>2</sup>/m) length of bridge, approval of the overhang support is required.

Refill areas where concrete was removed with Class AA concrete up to the bottom of the proposed concrete overlay in accordance with Section 420 of the Standard Specifications. Any of the methods for curing Class AA concrete as stated in the Standard Specifications are permitted except the membrane curing compound method.

Provide a raked finish to the surface of the Class AA concrete. Place the overlay course only after the Class AA concrete has attained 2500 psi (17.2 MPa) as measured by an approved, non-destructive test method.

Refilling the areas from which concrete has been removed with latex modified concrete during the Class I repair is permitted if any of the following conditions are met:

- The reinforcing steel cover is 1½ inches (38 mm) or less.
- The area being repaired is less than 1 yd<sup>2</sup> (1 m<sup>2</sup>).
- The Engineer directs the fill.

- E. Class III Surface Preparation (Full Depth): Remove full depth all loose, unsound and contaminated deck concrete. Thoroughly clean the routed out area and dispose of concrete removed. Clean, repair, or replace reinforcing bars and fill the areas from which unsound concrete has been removed with Class AA concrete up to the bottom of the proposed concrete overlay.

Clean or replace reinforcing bars and place Class AA concrete in accordance with the methods described under Class II Surface Preparation.

Provide a raked finish to the surface of the Class AA concrete. Place the overlay course only after the Class AA concrete has attained 2500 psi (17.2 MPa) as measured by an approved non-destructive test method.

For areas of less than 3 ft<sup>2</sup> (0.3 m<sup>2</sup>), suspending forms from existing reinforcing steel using wire ties is permitted. For larger areas, support forms by blocking from the beam flanges.

Submit for approval detailed plans for Class III Surface Preparation. Detail how waste and debris is kept from falling below. When Class III repairs adjacent to the rail are necessary, support the rail in a manner approved by the Engineer. The entire cost of the above work will be included in the unit price bid for Class III Surface Preparation.

F. General

After scarification, the Engineer locates and marks structural cracks. Remove all concrete within 2 inches (50 mm) each side of the crack by chipping to a minimum depth of 3/4 inch (19 mm). When reinforcing steel is exposed, chip to a minimum depth of 3/4 inch (19 mm) below the top mat of steel. Remove, chip, and dispose of the concrete, clean, repair, or replace reinforcing bars, and place Class AA concrete in accordance with the methods described under Class II or III Surface Preparation.

When concrete is removed under Class II or III Surface Preparation, provide 90° corners and vertical sides.

The Engineer determines the areas where concrete is to be removed under Class II or Class III Surface Preparation and inspects for delaminations by sounding with a chain drag.

Thoroughly clean exposed reinforcing steel by sandblasting. Remove bar sections that have lost 25% or more of their original section dimension and weld new, same-size bars in their place. Maintain 1½ inches (38 mm) cover of Class AA concrete over the reinforcing steel.

Provide a minimum overlay thickness of 1¼ inches (32 mm) and a final surface that is approximately 3/4 inch (19 mm) higher than the original surface. Prior to placing the overlay, attach a 1¼ inch (32 mm) filler block to the bottom of the screed and pass it over the area to be repaired to check the thickness. Remove all concrete that the block does not clear.

Keep areas where unsound concrete has been removed free of slurry produced from wet sawing or scarifying by planning the work so that this slurry drains away from the completed area of preparation. Remove all slurry from prepared areas before placing any overlay. Sandblast the edge of previously placed lanes of overlayment. If necessary, use detergent followed by sand and air blasting to remove rust, oil, or other foreign materials detrimental to achieving bond.

#### **4.0 METHOD OF MEASUREMENT**

Class IA, Class IB, Class I, Class II and Class III Surface Preparation will be measured in square yards (square meters) for the appropriate areas so prepared as directed by the Engineer. Measurement for the appropriate class of surface preparation will be made prior to the placement of the overlayment concrete. Class II or Class III Surface Preparation will be measured for payment in addition to Class I Surface Preparation.

#### **5.0 BASIS OF PAYMENT**

Surface preparation of bridge decks and approach pavement will be paid for at the respective contract unit price per square yard (square meter) for the specified class of surface preparation, which price will be full compensation for deck preparation, removal and disposal of unsound and contaminated concrete, cleaning, repairing or replacing of reinforcing steel, placement of all Class AA concrete, and for furnishing all materials, labor, tools, equipment and incidentals necessary to complete the work.

Payment will be made under:

Class I Surface Preparation .....	Square Yard (Square Meter)
Class IA Surface Preparation .....	Square Yard (Square Meter)
Class IB Surface Preparation .....	Square Yard (Square Meter)
Class II Surface Preparation .....	Square Yard (Square Meter)
Class III Surface Preparation .....	Square Yard (Square Meter)