

729-B-009 CONCRETE FOR PATCHING BRIDGE STRUCTURES

(Revised 04-08-09)

The Standard Specifications are revised as follows:

SECTION 729, BEGIN LINE 1, INSERT AS FOLLOWS:

SECTION 729 – CONCRETE FOR PATCHING BRIDGE STRUCTURES

729.01 Description

This work shall consist of the removal of existing concrete from outside the deck area of a bridge structure and replacing such concrete with new mortar or concrete in accordance with 105.03.

729.02 Materials

Materials shall be in accordance with the following:

10

Concrete, Class A.....	702.02
Epoxy Resin Adhesive	909.11

The cement shall be portland cement type I.

Mortar shall consist of one part portland cement to two parts No. 23 sand.

An epoxy resin adhesive shall be selected from the Department’s list of approved Non-Vapor Barrier Type Bonding Agents.

20

729.03 Construction Requirements

(a) Concrete Removal

Areas of unsound concrete to be removed will be marked by the Engineer. Removal of the unsound concrete shall be performed by handchipping. Handchipping tools may be hand or mechanically driven. Jack hammers shall not be heavier than nominal 45 lb (20.5 kg) class and chipping hammers shall not be heavier than nominal 15 lb (6.8 kg) class. Only chipping hammers shall be used when removing concrete within 1 in. (25 mm) of reinforcement. Mechanically driven tools shall be operated at a maximum angle of 45 degrees from the concrete surface. Power-driven hand tools for removal by hand chipping will be permitted, as set out above.

30

Regardless of the method of removal, the removal operation shall be stopped if it is determined that sound concrete is being removed. Appropriate recalibration or changes in equipment and methods shall be performed prior to resuming the removal operation.

Where the bond between the existing concrete and the reinforcement has been destroyed, the concrete adjacent to the reinforcement shall be removed to a minimum clearance of 1 in. (25 mm) around the entire periphery of the exposed reinforcement. Exposed reinforcing steel shall not be damaged by the removal operation. All damaged reinforcement shall be replaced or repaired as directed.

40

A saw cut shall be made perpendicular to the existing concrete surface at least 1 in. (25 mm) outside the spalled area before the mortar or concrete is placed. The cut shall be a minimum 1 in. (25 mm) deep or to the top of reinforcing steel, whichever is less.

(b) Patching

50 After the concrete removal operation is completed and just prior to placing the patches, all patch areas shall be sandblasted to expose fine and coarse aggregates and to remove unsound concrete or laitance layers from the surface. Exposed reinforcement and the concrete under and around the exposed reinforcement shall be cleaned by sandblasting. The surface shall then be cleaned free of all dust, chips, water, and foreign material to the extent necessary to produce a firm, solid surface for adherence of the new concrete. The final surface shall be free of oil, grease and water. The air lines for sandblasting and air cleaning shall be equipped with oil traps.

60 The surfaces of the prepared cavities and all the exposed reinforcement steel within the cavities shall be coated with an epoxy resin adhesive in accordance with 722.06(a)1 prior to placement of the patching materials.

Cavities of 1/2 in. (13 mm) in depth or greater shall be filled with concrete. Cavities less than 1/2 in. (13 mm) in depth shall be filled with mortar.

Patches shall be finished to closely match the texture and finish of the abutting existing concrete.

Patches shall be cured in accordance with 702.22.

70

729.04 Method of Measurement

This work will be measured by the square foot (square meter). Measurements will be recorded for payment as follows:

(a) Patches greater than 0 and less than or equal to 0.5 ft² (0.05 m²) will be recorded as 0.5 ft² (0.05 m²).

(b) Patches greater than 0.5 ft² (0.05 m²) and less than or equal to 1 ft² (0.1 m²) will be recorded as 1.0 ft² (0.1 m²).

80

(c) Patches greater than 1.0 ft² (0.1 m²) will be recorded as the actual measurement of the patch to the nearest 0.1 ft² (0.01 m²).

729.05 Basis of Payment

This work will be paid for at the contract unit price per square foot (square meter) for concrete, A, patching.

Payment will be made under:

90

Pay Item

Pay Unit Symbol

Concrete, A, Patching SFT (m2)

The areas where the patching exceeds an average of 4 in. (100 mm) in depth will be paid for at a price to be determined by multiplying the contract unit price for concrete, A, patching by the following factors:

- 100 (a) For portions thereof whose average depth is greater than 4 in. (100 mm) but not more than 6 in. (150 mm)1.25
- (b) For portions thereof whose average depth is greater than 6 in. (150 mm) but not more than 8 in. (200 mm)1.50
- (c) For portions thereof whose average depth is greater than 8 in. (200 mm) but not more than 10 in. (250 mm)1.75
- (d) For portions thereof whose average depth is greater than 10 in. (250 mm) but not more than 12 in. (300 mm)2.00
- 110 (e) For all portions thereof whose average depth is greater than 12 in. (300 mm), the work shall be done as extra work. Payment will be made in accordance with 104.03.

The cost of removing the existing concrete, furnishing, hauling, and placing all materials, preparing the surface, and all necessary incidentals shall be included in the cost of concrete, A, patching.

The cost of replacing or repairing damaged reinforcement shall be included in the cost of concrete, A, patching.

120