

884 - CONCRETE PATCHING

884.1 DESCRIPTION

This work shall consist of partial depth patching of spalls, potholes, or other surface distress in Portland concrete curb and gutters, inlet tops and concrete barrier. The patch area shall be prepared by removing the damaged or disintegrated concrete from the area indicated and patched with approved patching materials in accordance with this specification.

884.2 MATERIALS

a. Patching Mixtures

The following patching material shall be used:

(1) Accelerated Strength Portland Cement Concrete Mixtures

The accelerated strength shall be obtained by using Type I or Type III Portland cement and/or an accelerator to obtain a minimum strength of 3,000 psi in 24 hours. The plastic concrete shall have an air content of 6 1/2 plus/minus 1 1/2%. The recommended slumps shall be 1 to 3 inches at time of placing unless a high range water reducing system is used.

(2) Rapid Setting Patching Materials

Rapid setting patching materials shall be a minimum compressive strength of 3,000 psi in 24 hours and complies with section 1700 of the Standard Specifications.

884.3 CONSTRUCTION REQUIREMENTS

a. Preparation of Partial Depth Patch Area

The minimum patch size for partial depth patches is 4 inches by 10 inches. Delineate the limits of partial depth patches a minimum of 2 inches beyond the area of deteriorated pavement. If areas defined for partial patch are less than 12 inches apart, include the areas into a single patch.

Partial depth patches shall be constructed at locations shown on the plans or as directed by the Engineer. A saw cut shall be made around the perimeter of the patch area to provide a vertical face at the edge and sufficient depth to provide integrity to the patch. The saw cut shall have a minimum depth of 1 inch.

Concrete within the patch area shall be broken out to a minimum depth as shown on the plans with pneumatic tools and until sound and clean concrete is exposed. The maximum size pneumatic hammer shall be 30 lb. It is the intent of this specification that proper size tools be used which will not fracture the concrete below that needed to reach sound and clean concrete.

After the deteriorated pavement is removed to the saw or mill depth, use a steel-faced hammer or steel chain drag to check for unsound concrete below this depth. If unsound concrete is detected, the limits of the patching will be determined by the Engineer.

The exposed faces of the concrete shall be thoroughly cleaned of all foreign material, curing compound, sealant adhesive, paint, rust, loose particles, dust, traces of asphaltic concrete and other contaminants before patching. This work shall be done by using a high-pressure air jet or other acceptable methods. Sandblast cavities of partial depth patches to expose aggregate and mortar.

b. Placing Patch Material

(1) Accelerated Portland Cement Concrete Patch Mixtures

Prior to placing the accelerated strength Portland cement concrete (21 MPa in 24 hours) patch mixtures, an epoxy prime coat shall be applied in a thin coating and scrubbed into the surface with a stiff bristled brush and placement of the concrete should be delayed until the epoxy becomes tacky. Epoxy prime coat shall be compatible to the existing concrete. Where the epoxy prime coat has lost its tack but not become hard, a second coat of epoxy must be applied immediately prior to placement of concrete. Should the epoxy have cured hard, the first coat must be roughened with light sandblasting and a second coat of epoxy applied to concrete placement.

The patch mixture shall be placed and consolidated to eliminate essentially all voids at the interface of the patch and existing concrete.

Accelerated PCC patches should not be placed when the air or pavement temperature is below 40 degrees F. At air temperatures below 60 degrees F, a longer cure period may be required. If the air temperature is above 90 degrees F when the concrete patch is placed, apply the curing materials before the undue loss of moisture occurs.

All high steel partial patches shall be finished to the cross-section of the existing curb. All low steel partial patches shall be finished to the cross-section of the milled pavement. The patch shall be textured with a stiff bristled brush or to conform to that on the existing curb. Curing procedures shall conform to those used for normal concrete paving.

(2) Rapid Set Patch Material

Rapid set patch materials shall be installed in accordance with the manufacturer's written instructions. The preparation of the repair area surface shall be as outlined under accelerated PCC patch material except where written instructions specify otherwise. The method of bonding, placing and curing shall be as recommended. The time period recommended before opening to traffic shall be observed.

c. Joints

Contractor to install hot joint sealing compound according to section 1501 of the Standard Specifications.

d. Traffic Control

Traffic shall not be permitted on normal-set concrete patches for at least 24 hours. Traffic shall not be permitted on rapid-set concrete patches for at least 4 hours. At ambient temperatures below 60°F, longer waiting periods may be required by the Engineer.

884.4 MEASUREMENT AND PAYMENT

Concrete patching shall be paid for at the contract unit price bid per square foot of "Partial Depth Patching", "Full Depth Patching" and per linear foot of "Concrete Barrier Patching".

This price shall be full compensation for furnishing all materials, and for all preparation and application of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.