

**ITEM 519 PATCHING CONCRETE STRUCTURES**

**519.01 Description**

**519.02 Materials**

**519.03 Removal of Disintegrated Concrete**

**519.04 Preparation of Surface**

**519.05 Placing of Reinforcing Steel**

**519.06 Placing, Finishing, and Curing of Concrete**

**519.07 Method of Measurement**

**519.08 Basis of Payment**

**519.01 Description.** This work consists of removing all loose and disintegrated concrete; preparing the surface; furnishing and placing reinforcing steel including welded steel wire fabric, dowels, and expansion bolts; placing forms; and placing concrete patches, including curing of same.

**519.02 Materials.** Furnish materials conforming to:

Concrete, Class S* .....	499, 511
Dowels .....	709.01, 709.03, or 709.05
Reinforcing steel .....	509
Welded steel wire fabric.....	709.10 or 709.12

\* For aggregate for superstructure, conform to 703.02 and use No. 57 or 8 size.

**519.03 Removal of Disintegrated Concrete.** Remove all loose and disintegrated concrete from the areas to be repaired in such a manner and to such an extent as to expose a sound concrete surface. Provide patches at least 4 inches (100 mm) deep, except on top horizontal surfaces, provide patches at least 3 inches (75 mm) deep. Remove sound concrete (beneath the disintegrated concrete) for a depth of not less than 1/4 inch (6 mm) and not more than 1 inch (25 mm), provided that the above minimum depth of patch is maintained. Make square or, preferably, slightly undercut shoulders having a depth of not less than the specified minimum depth of the patch at the edges of all patches.

Only use pneumatic or hand tools that give results satisfactory to the Engineer in the removal of the disintegrated concrete and in preparing and shaping the areas to be patched.

If working around reinforcing steel, avoid damaging or debonding the reinforcing steel, or shattering the concrete, beyond the area to be patched.

Adequately support reinforcement that is loose, and tie it back into place. Replace reinforcement damaged during removing concrete.

**519.04 Preparation of Surface.** After removing all disintegrated and loose concrete, properly shape the area to be patched, and install dowels or expansion bolts as necessary to hold the wire fabric to be used in the patch. Thoroughly clean the surface of the area to be patched and all exposed reinforcing steel of all dirt, dust, or other foreign materials with water, air under pressure, or any other method that produces satisfactory results. Thoroughly drench the surface with clean water. Before placing the concrete, allow the surface to dry to a damp condition.

**519.05 Placing of Reinforcing Steel.** The City will not require reinforcement for patches on top horizontal surfaces. Reinforce patches on other surfaces with welded

steel wire fabric either 2 × 2 inch (50 × 50 mm) using wire size number W 0.9, or 3 × 3 inch (75 × 75 mm) using wire size number W 1.4. Cover the entire area of the patch with the fabric, and place and hold the fabric approximately 1 inch (25 mm) from the completed exposed surface of the patch. Securely fasten the fabric to the reinforcing steel in the original structure exposed in removing the disintegrated concrete. If no reinforcing steel is exposed or it is not practical to fasten the fabric to exposed steel, install dowels or expansion bolts at a distance not to exceed 18-inch (0.5 m) centers in both directions, and fasten the fabric to these dowels or bolts.

**519.06 Placing, Finishing, and Curing of Concrete.** Place and finish Class S concrete according to Items 499 and 511.

Remove the forms within 24 hours after placing the concrete, and finish all exposed surfaces by rubbing to match the surrounding concrete. Apply membrane curing according to 511.17, Method B, immediately after rubbing the surfaces.

After curing and before final acceptance, sound all patched areas. Remove and replace all unsound or visibly cracked areas.

**519.07 Method of Measurement.** The City will measure Patching Concrete Structures by the number of square feet (square meters) of the exposed surfaces of all completed patches, irrespective of the depth or thickness of the patch. If a patch includes corners or edges of members such as beams, curbs, and columns, the City will measure all of the exposed surfaces. If a patch extends completely through a member of a slab, the City will measure both exposed surfaces.

**519.08 Basis of Payment.** The City will pay for accepted quantities at the contract price as follows:

The City will not pay for replacing reinforcement damaged during concrete removal.

The City will not pay for removing and replacing of patched areas that are unsound or visibly cracked.

<b>Item</b>	<b>Unit</b>	<b>Description</b>
519	Square Foot (Square Meter)	Patching Concrete Structures