Section 2426. Structural Concrete Repair

2426.01 DESCRIPTION.

A. Repair spalled or deteriorated structural concrete as specified in the contract documents. This work may include the installation of concrete anchors, reinforcing bars, or wire mesh.

1. Shallow Repair.

a. Repair that:

- Is 3/4 inch to 1 1/2 inch (20 mm to 40 mm) in depth,
- Is placed against sound concrete, and
- Requires a bonding grout, but does not use forms to support the patching material.

b. Forms may be needed in areas of shallow repair where the patching material can not support itself. In these areas bonding grout will not be required.

2. Regular Repair.

a. Repair that:

- Is a minimum depth of 1 1/2 inch (20 mm), or 3/4 inch (40 mm) behind an unbonded reinforcing bar, and
- Is placed against sound concrete.

b. Forms are used, but bonding grout is not required.

B. The Engineer will outline the areas to be repaired.

2426.02 MATERIALS.

A. Use materials meeting the appropriate requirements of Division 41.

B. Mix proportions are as follows:

1. Bonding Grout.
Use equal parts by weight (mass) of Type I cement and sand with enough water to form a slurry with a consistency such that it can be applied with a stiff brush in a thin even coating that will not run or puddle.

2. Concrete.

a. Shallow Repair.

Table 2426.02-1: Proportions

Materials	by weight (mass)
Type I Portland cement	4 parts
Concrete sand (Section 4110)	5 parts
Coarse aggregate (Article 4115.05)	5 parts
Add enough water to the mixture to form a consistency that will permit placement and consolidation by hand compaction without slumping.	

b. Regular Repair.
Furnish Class O concrete. Use 3 inches (75 mm) as the target slump, with a variation not to exceed ± 1 inch (25 mm).

2426.03 CONSTRUCTION.

A. Equipment.
Use equipment that meets the requirements of Article 2413.03, A, 2, to prepare the repair area.

B. Surface Preparation.

1. Remove all loose, disintegrated, and unsound concrete from the repair areas. Outline all repairs with a 3/4 inch (20 mm) deep saw cut. Concrete anchors and wire mesh may be

required, as shown in the contract documents. Overhead repairs may require special procedures, as proposed by the Contractor and approved by the Engineer.

2. After removal of loose, unsound concrete, sandblast the repair area and follow with an air blast with oil free air so the substratum is sound, clean and free of all contaminants. Exercise extreme care in concrete removal so that prestressed strands are not damaged. The substrate must be dry prior to concrete placement or bonding grout application, if required.

3. Sandblast exposed reinforcement to remove all rust. Remove and replace damaged or badly corroded reinforcing bars, as directed by the Engineer.

C. Placement Procedure.

1. **Shallow Repair.**
   a. **Bonding Grout.**
   Apply bonding grout to the properly cleaned, dry surface of the old concrete with a stiff bristle brush. Do not prewet the concrete surface before placing grout.
   b. **Repair Concrete.**
   Place and compact repair concrete before the grout dries. If the grout dries prior to concrete placement, remove the grout by sandblasting and reapply. Strike off and finish the repair concrete to the correct lines.

2. **Regular Repair.**
   a. Place concrete according to Article 2403.03, C.
   b. When repairing a vertical face, place the patch in heights not to exceed 4 feet (1.2 m). Provide access ports at 4 foot (1.2 m) intervals in the forms for placement and vibration. Remove forms according to Article 2403.03, M.

D. Curing.
Apply white pigmented curing compound to the concrete immediately following concrete finishing or immediately after removing forms, if used. Apply curing compound according to Article 2403.03, E, except use an application rate of 100 square feet per gallon (2.5 m^2/L).

2426.04 METHOD OF MEASUREMENT.
The Engineer will determine the square feet (square meters) of Concrete Repair by measuring the surface dimensions of the area repaired to the nearest 0.1 foot (0.1 m). Distinction will not be made between shallow repair and regular repair.

2426.05 BASIS OF PAYMENT.

A. Payment for the number of square feet (square meters) of Concrete Repair completed, measured as provided above, will be the contract unit price per square foot (square meter).

B. Payment is full compensation for:
- Removal of excess concrete from the project,
- Furnishing all materials and equipment, including concrete anchors, wire mesh, and reinforcing bars, if required.
- Sandblasting exposed reinforcement,
- Removing and replacing damaged reinforcing bars,
- Forms, and
- Labor necessary to complete the work according to the contract documents.