

ITEM 584.55----25 - PARTIAL DEPTH REMOVAL OF STRUCTURAL SLAB AND REPLACEMENT WITH RAPID HARDENING CONCRETE

1. DESCRIPTION:

1.01 This work shall consist of the partial depth removal and disposal of unsound structural concrete from the existing structural slab and its replacement with rapid setting concrete as indicated on the contract plans, or where ordered by the Engineer.

A. **Unsound structural concrete.** This term shall be understood to mean concrete comprised of cement, sand and aggregate which are no longer firmly bonded together.

B. **Partial Depth.** This term shall mean all locations where removal is performed to an average depth of less than or equal to one half the overall nominal depth of the structural slab.

Where the average depth of removal at each repair location of the structural slab exceeds more than half the nominal overall depth, the Contractor will be required to remove the structural slab at that location to full depth, A.O.B.E. Payment for full depth removal shall be made under the appropriate Item.

1.02 Materials removed as part of this work shall be transported from the work site and disposed of by the Contractor, unless otherwise indicated on the Contract Plans or directed by the Engineer.

Exposure of Existing Reinforcement

A. **Definitions.**

1. **Bar Mat.** That combination of transverse and longitudinal reinforcing steel placed with the structural slab to absorb stresses. Structural slabs generally contain two bar mats; an upper mat and a lower mat.

2. **Upper Mat.** The bar mat closest to the existing top surface of the structural slab. Only the upper mat is relevant to this work.

B. The work shall consist of structural concrete removal from the periphery of any exposed upper reinforcing bars to provide a minimum clearance of 1 inch between the reinforcing bar surface and the remaining concrete surface. In addition, the Engineer may order the removal of other concrete. (Refer to Subsection 579-3.02A, B, C, and F.)

2. MATERIALS:

2.01 All provisions of Subsection 555-2 Materials shall apply; Rapid Hardening Concrete Repair Material conforming to §701-09 shall be used. Two (2) copies of the repair materials details shall be supplied to the Engineer at least ten (10) days prior to the intended use of the product.

2.02 All aggregates used in the rapid hardening material mix shall be as recommended by the manufacturer.

3. CONSTRUCTION DETAILS:

3.01 The provisions of §555-3 Construction Details shall apply.

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3. CONSTRUCTION DETAILS: (cont'd)

- 3.02 Before starting work on this item, the Contractor shall submit to the Engineer for approval, a plan showing his proposed method, equipment and sequence for the removal work. No blasting or dynamiting will be permitted. The requirements of §580-3 of the Standard Specifications shall apply. The Contractor shall provide adequate protection, approved by the Engineer, at the bridge site to completely preclude any possibility of material dropping from the bridge onto highways, residences, railroads, rivers, or any other objects below.
- 3.03 **Repair Determinations:** All repair locations will be determined by the Engineer prior to the commencement of the removals. The Engineer shall be allotted one working day per span or portion thereof being worked on for his inspection. The Engineer shall sound the area to be repaired by examining the top and bottom of the deck visually and then by chain drag. Areas then determined to be unsound, shall be clearly marked.
- 3.04 **Removal of Unsound Concrete:** The existing concrete shall be sawcut to a minimum depth of 1 inch unless noted otherwise on the drawings to obtain a straight (keyed) joint between the existing concrete and the new material. Special care shall be taken to insure that reinforcing steel to remain is not damaged by the sawblade. All unsound concrete shall be removed to a sound surface as determined by the Engineer. Care shall be taken while removing the unsound concrete so as not to damage materials that are to remain in place such as reinforcing steel and shear connectors. Material which is damaged shall be repaired or replaced in a manner satisfactory to the Engineer at the expense of the Contractor. Exposed reinforcement remaining in place shall be cleaned in accordance with the requirements of Subsection 556-3.01 of the Standard Specifications. Exposed shear connectors that remain in place shall be cleaned in a manner satisfactory to the Engineer. Upon completion of unsound concrete removal, the sound concrete surfaces shall be air-blown or vacuum cleaned. Air blowing may be used on vertical or overhead surfaces. Vacuum cleaning will be required for all other surfaces.
- 3.05 **Preparation and Placement:** Immediately prior to the placement of new concrete, existing concrete surfaces shall be abraded, cleaned and made saturated surface dry as per Contract Plans.
- 3.06 **Curing:** If recommended by the manufacturer, apply a manufacturer approved spray curing compound immediately after the concrete placement. The remaining curing procedure shall be in conformance with manufacturer recommendations.
- 3.07 Test cylinders and/or cubes as directed by the Engineer shall be prepared and the average of any three (3) break tests shall meet the requirements of Subsection 701-09 of the New York Standard Specifications. Failure of the cylinder breaks to meet the minimum compressive strengths will result in the removal and replacement of the repaired areas by the Contractor at no additional cost to the Authority.

4. METHOD OF MEASUREMENT:

- 4.01 Measurement shall be made as the number of square feet of structural slab repaired. No additional measure shall be included for areas of greater than average thickness.

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5. BASIS OF PAYMENT:

- 5.01 The unit price bid per square foot shall include the cost of furnishing all labor, materials, and equipment necessary to satisfactorily complete the work.
- 5.02 Replacement of deteriorated reinforcement shall be paid for under its appropriate pay item as shown on the plans. Reinforcement requiring replacement due to damage from the Contractor's operations shall be replaced at no cost to the Authority.