

FOR PROJECTS INITIATED
AFTER NOVEMBER 1, 2008

ITEM 361

FULL DEPTH REPAIR OF CONCRETE PAVEMENT

361.1 Description. This item shall consist of repairing deteriorated areas of concrete pavement as herein specified, in conformity with the existing roadway section and as directed by the Engineer.

361.2 Materials. The Contractor shall furnish from a source approved by the Engineer, all concrete, and hot poured rubber joint sealing material. Rubber joint sealing material shall conform to ASTM Designation D6690, titled "Joint Sealant, Hot Poured, for Concrete and Asphalt Pavements". Concrete shall be High Early Strength 7 sack/cy., using a Type I standard brand of Portland cement, or a Type III standard brand of Portland Cement, which shall conform to ASTM Designation C150 and in accordance with Item 360, Concrete Pavement. Proposed concrete curbs shall be poured separately, using 5½ sack/cy. Type I Portland Cement. The Contractor shall furnish all reinforcing steel for replacement purposes, when the Engineer deems the existing steel is not salvageable. All reinforcing steel shall meet ASTM A615, minimum Grade 40 with minimum No. 4 rebar for 7" thick concrete, to replace existing concrete pavement that is 7" thick or less. Thence minimum Grade 40 with minimum No. 5 rebar for 9" thick concrete to replace existing concrete pavement 8" thick to 10" thick. Reinforcing steel shall be in accordance with Item 440, Reinforcing Steel.

The Contractor shall furnish all curing compound. Curing compound shall be in accordance with Item 526, Membrane Curing.

361.3 Construction Methods. When the areas to be repaired are located in an area that is patched, cracked, repaired or overlain with asphaltic concrete, the asphaltic concrete shall be removed over an area greater than that to be repaired, as directed by the Engineer. Where reinforcement is present, the following procedures shall apply. A groove approximately two-inches (2") minimum depth shall be sawed along a line approximately 18" beyond the distressed area unless otherwise indicated on the drawings, except along the longitudinal construction joint if it is a pavement repair boundary. The slab and 6" of underlying base shall be removed. The concrete in the area inside the perimeter of the saw-cut slab shall be carefully broken and removed leaving a clean vertical face, taking care to work around the reinforcing steel so as not

to break the bond in the steel in the adjacent concrete pavement. At the perimeter, the breaking of the existing concrete will be accomplished by only the use of hand tools or lightweight jack hammers as approved by the Engineer. Concrete adjacent to the repair area shall not be spalled or fractured by the removal procedure. Base material shall be removed and replaced with a commercial grade cement stabilized sand base, as per Item 433, and compacted to provide firm, even support to the concrete pavement.

Reinforcing bars that are removed shall be replaced with new bars as per the drawings. The protruding reinforcing steel shall be inspected for damage and carefully straightened. New reinforcing bars shall be placed and firmly supported by approved bar chairs.

Longitudinal Reinforcement. The new bars shall be spliced to the existing protruding bars by lapping a minimum of 18" or lapping and welding as directed by the Engineer.

If three (3) or more adjacent bars are seriously damaged or broken, they shall be replaced by drilling and grouting 30" long, with minimum No. #5 reinforcing bars for 7" thick concrete, and No. 6 reinforcing bars for 9" thick concrete, using an epoxy adhesive, a minimum of 10" horizontally into the existing concrete pavement at 18" on center, each. If less than three (3) adjacent bars are damaged or broken, splicing to broken bars will not be required. The accepted epoxy adhesive shall be in accordance with ASTM C881, Type I, II, IV, and/or V; Grade 3; and depending on the air temperature either Class A & B, or Class C.

In non-reinforced concrete pavement areas, reinforcing shall be placed as per the drawings with a three (3) inch space between end of new bars and face of existing concrete pavement.

For all concrete repair work, the following procedures shall apply. The removed concrete and excavated base shall be disposed of by the Contractor, as directed by the Engineer. Replacement of transverse joints will be required where the failed area necessitates the removal of existing joints. Concrete, used for repair, shall be High Early Strength in accordance with Item 360, Concrete Pavement.

Immediately prior to placing the concrete, the base and each face of existing concrete shall be wetted. Approved hand-manipulated

mechanical vibrators shall be used to insure the proper consolidation of the concrete. The concrete shall be screeded off to the elevation of the adjacent concrete pavement and checked with a straight edge to insure that the riding surface will be satisfactorily repaired. Areas shall also be checked to insure there is adequate slope to provide for free drainage. The concrete shall be finished with a broom finish, as directed by the Engineer. Membrane curing shall be used until the pavement is opened to traffic. Membrane curing shall be in accordance with Item 526, Membrane Curing.

The repaired area may be opened to traffic when the pavement has attained a flexural strength of 500 psi. All test specimens (according to ASTM C78) representing tests for opening to traffic, shall be cured using the same methods and under the same conditions as the concrete represented.

Part of the concrete repair work adjacent to existing concrete curb shall include replacement of grass sod and any backfill material needed behind the concrete curb, and these repairs shall be incidental to the bid item for concrete pavement repair. The Contractor shall locate any existing improvements (waterlines, sprinklers, or landscape appurtenances) to mitigate damages. The Contractor shall be responsible for protecting these appurtenances, in the original condition, and if damaged by his operations, the Contractor shall replace them to the original condition or better, at no expense to Harris County.

361.4 Measurement. Deteriorated areas repaired as prescribed for in this item will be measured by the square yard of surface area of the repaired section, regardless of the depth or type of pavement. Calculation for each patch shall be rounded off to the nearest one-hundredth square yard.

All 6" reinforced concrete curb shall be measured by the linear foot of curb, as replaced, complete in place.

Dowelling, when required as described in this item, shall be measured per each dowel placed.

361.5 Payment. The work performed as prescribed by this item and measured in accordance with the provisions of Measurement above, will be paid for at the unit price bid for "Full Depth Repair of Concrete Pavement",

which price shall be full compensation for sawcutting, and breaking the existing steel reinforced pavement structure and curb, and excavation of the 6-inch thick base, and for removal, loading, hauling and disposal of the broken concrete and base; for furnishing and placing all material including reinforcing steel and joints; for all curing; for placing hot-poured rubber as required in joints; for cement stabilized sand base; for the replacement of grass sod with required backfill; and for all manipulations, labor, equipment, appliances, tools and incidentals necessary to complete the work.

All dowelling performed as prescribed by this item and measured in accordance with the provisions of Measurement above, will be paid for at the unit price bid for "Dowelling", which price shall be full compensation for drilling and grouting, including epoxy adhesive, for furnishing and placing all materials necessary, and for all manipulations, labor, equipment, appliances, tools, and incidentals necessary to complete the work.

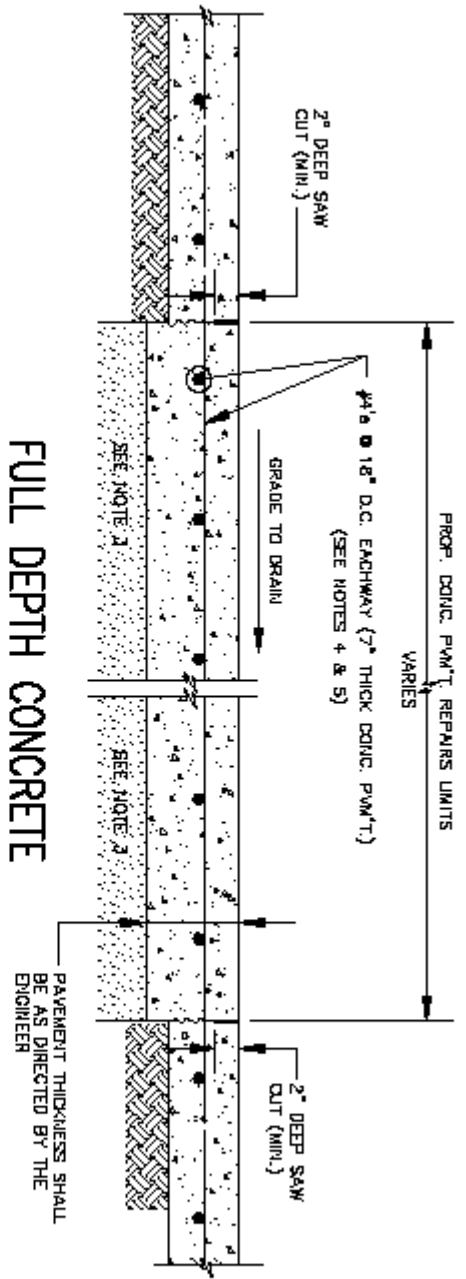
Proposed concrete curb will be paid for at the unit price bid for 6" reinforced concrete curb, which shall include the removal and disposal of the existing curb as needed. The concrete curb is not considered a part of the area measured and paid for as repairing existing concrete pavement.

There are line code(s), description(s), and unit(s) for this item.

END OF ITEM 361

NOTE: THIS SPECIFICATION REQUIRES TWO DRAWINGS

FULL DEPTH CONCRETE PAVEMENT REPAIR



- NOTE:**
1. USE AN APPROVED, COMMERCIAL BRAND, EXTRA STRENGTH CONCRETE AS DIRECTED BY ENGINEER, SAWCUT LIMITS AS DIRECTED BY ENGINEER.
 2. EXISTING CONCRETE VERTICAL FACES SHALL BE CLEANED OF ALL DELERIOUS LOOSE MATERIAL PRIOR TO CONCRETE PLACEMENT.
 3. FOR REPAIR/REPLACE AREAS
 - A. 6" DEPTH BASE SHALL BE REMOVED AND REPLACED WITH CEMENT STABILIZED SAND PER ITEM 4.3.5.
 4. REINFORCEMENT OF SIDEWALKS AND DRIVEWAYS SHALL BE NO. 3 BARS AT 12" SPACING IN EACH DIRECTION PROVIDING 12" LAP WITH EXISTING CONCRETE REINFORCEMENT.
 5. REINFORCEMENT OF 8"-10" THICK CONCRETE PAVEMENT SHALL BE NO. 5 BARS AT 18" SPACING IN EACH DIRECTION. REINFORCEMENT FOR PAVEMENT LESS THAN 8" THICK SHALL BE NO. 4 BARS 18" O.C. EACH WAY.

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H.C.P.L.D. ENGINEERING DIV.	
DESCRIPTION:	FULL DEPTH CONCRETE PAVEMENT REPAIR
DRAWN BY:	RA
APPROVED BY:	RA
DATE:	10/2/08
DWG. NO.:	361-1

