

ITEM 502.6035--25 - RAISING AND/OR UNDERSEALING CONCRETE SLABS

1. DESCRIPTION:

- 1.01 This work shall consist of Raising and/or Undersealing Concrete Slabs by an approved method using an expanding, water blown high-density polyurethane material by drilling holes through the existing Portland Cement Concrete (PCC) Pavement and asphalt concrete overlays on PCC slabs, filling voids beneath the roadway and raising existing slabs to grade in accordance with the Contract Documents and as directed by the Engineer.

2. MATERIALS:

- 2.01 The material used for Raising and/or Undersealing Concrete Slabs shall be a high-density polyurethane material, such as Uretek 486 or equivalent, as approved by the Engineer. The material shall be hydro-insensitive in its component reaction so that the injected product is not significantly compromised by soil moisture or free water under the pavement. The material shall have a minimum free rise density of 48 kilograms per cubic meter, as measured by ASTM 1622, and a minimum compressive strength of 275 kPa, as measured by ASTM 1621.

3. CONSTRUCTION DETAILS:

- 3.01 **Weather Limitations:** Underseal the pavement when the air temperature is 2°C and rising, or warmer, and when the surface temperature of the area to be undersealed is 2°C or warmer, and when the subbase course and subgrade are not frozen. Undersealing will not be allowed when the subbase course and subgrade contains an abnormal amount of moisture from recent rainfall, as evidenced by standing water on the pavement or in the joints or cracks, as determined by the Engineer.
- 3.02 **Equipment:** The following list of lifting and/or undersealing equipment shall be considered the minimum amount of equipment to perform the work:
- A. A pneumatic or electric drill capable of drilling 16 mm diameter holes.
 - B. A pumping unit capable of injecting the polyurethane material between the concrete pavement and base and capable of controlling the rate of rise of the pavement.
 - C. A laser leveling unit capable of accurately measuring 0.02 mm to ensure that the concrete pavement is raised to an even plane or to the required elevation.
- 3.03 **Preparation:** The Contractor shall prepare a profile of each area to determine the extent of the concrete pavement that requires vertical adjustment (raising and undersealing), or to fill cavities (undersealing).
- 3.04 **Drilling and Injecting:** A series of 16 mm diameter holes shall be drilled at approximately 6' – 6" intervals maximum through the concrete in the area to be raised or undersealed. The exact location and spacing of the holes shall be determined by the Contractor and be approved by the Engineer. Holes will be drilled vertical and round to a depth of 375 to 450 mm (or deeper if subgrade conditions require) below the pavement surface.

A high-density polyurethane formulation shall be injected under the slab. The pumping unit shall control the amount of rise by regulating the rate of injection of the polyurethane material. Pressure and temperature control devices will be used to assure and maintain proper temperature and proportionate mixing of polyurethane component materials.

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3. CONSTRUCTION DETAILS: (cont'd)

3.04 Drilling and Injecting: (cont'd)

Prevent excessive loss of undersealing material through cracks, joints, and other drilled holes or back pressure. When the nozzle is removed from the hole, any excessive polyurethane material shall be removed from the area and the hole sealed with an approved cementitious grout. Excess polyurethane shall be removed from the roadway and the project right-of-way before restoring normal traffic.

3.05 Grade Control: The finished concrete slab shall conform to the grade and cross section of the slab prior to settlement. Final elevations shall be within a tolerance of ± 6 mm of the required grades. The Engineer will check the treated area to confirm that the pavement has been realigned properly to facilitate drainage.

The Contractor shall be responsible for any pavement blowouts, cracking, excessive lifting, or uneven pavement that results from raising of the pavement. Any damage to the pavement occurring prior to final acceptance shall be repaired by the Contractor as directed by the Engineer at no expense to the State.

3.06 Set-Time: The high-density polyurethane formulation used shall set and obtain 90 percent of its ultimate compressive strength within 15 minutes after final injection. The compressive strength shall be in accordance with the manufacturer's recommendations.

3.07 Opening to Traffic: The Contractor shall not open the undersealed pavement to traffic until a minimum of 15 minutes after the final injection of material.

4. METHOD OF MEASUREMENT:

4.01 This work shall be measured as the number of square meters of Raising and/or Undersealing Concrete Slabs satisfactorily repaired.

5. BASIS OF PAYMENT:

5.01 The unit price bid per square meter shall include the cost of furnishing all labor, materials and equipment necessary to satisfactorily complete the work.