

**STATE OF OHIO
DEPARTMENT OF TRANSPORTATION**

SUPPLEMENTAL SPECIFICATION 842

**CORRECTING ELEVATION OF CONCRETE APPROACH SLABS WITH HIGH
DENSITY POLYURETHANE**

January 19, 2007

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842.01 Description. This work consists of correcting the elevation of concrete approach slabs using high density polyurethane (HDP).

842.02 Materials. Supply a high density polyurethane meeting the properties specified below and verified by certified test data from an independent testing laboratory. At least 24 hours prior to performing work, submit certified test data to the Engineer for approval.

Property	ASTM Test	Required Value
Material Density	D1622 (note 1)	3.0 lbs/ft ³ minimum
Tensile Strength, 1 hour	D1623 (note 1)	40 psi minimum
Compressive Strength, 1 hour	D1621 (note 1)	40 psi minimum
Dimensional Stability, High Temperature, 1 day	D2126	+ 3.3% change @ 158 °F (70 °C), 97 % Relative Humidity
Dimensional Stability, High Temperature, 7 day	D2126	+4.0% change @ 158 °F (70 °C), 97 % Relative Humidity
Dimensional Stability, Low Temperature, 1 day	D2126	-0.35% change @ - 22 °F (-30 °C), Ambient Relative Humidity
Dimensional Stability, Low Temperature, 7 day	D2126	-0.60% change @ -22 °F (-30 °C), Ambient Relative Humidity
Water Absorption	D2842	Less than 2.0% Volume

Note 1: Supply material that will meet a minimum density of at least 50% of the required density value when prepared under a head of water. .

842.03 Manufacturer's Shipping Record. Provide manufacturer batch numbers and shipping invoices. Mark each component container with the following information:

- A. Number of gallons (liters)
- B. Net weight of material
- C. Batch number
- D. Date of production
- E. Effective shelf life of the product
- F. Company name and address
- G. Component trade name as given in the material test data
- H. Material Safety Data Sheets (MSDS)

842.04 Equipment. Submit an inventory of all lifting equipment to the Engineer for review. Provide the following equipment as a minimum:

- A. Pneumatic drill capable of drilling 5/8-inch diameter holes to the depth of the slab.
- B. Truck or trailer mounted pumping unit, with pre-heaters and volumetric controls capable of injecting the HDP between the approach slab and sub-base. The pumping unit must be capable of controlling the rate of approach slab rise and measure the material usage. Verify to the Engineer's satisfaction that each pumping meter provides an accurate recording of the pounds of HDP pumped.
- C. Laser-leveling unit to ensure that the approach slab is raised on an even plane and to the required elevations.

842.05 Construction Plan. Before performing work, prepare and submit a plan to the Engineer that includes the following minimum information:

- A. Existing elevations of the approach slab and adjacent pavement.
- B. Proposed elevations of the approach slab and adjacent pavement.
- C. Injection hole layout
- D. Mapping of existing cracks
- E. Contractor's written standard installation procedures

842.06 Drilling Holes. Locate and drill a series of 5/8-inch holes as necessary to raise the slab. Do not exceed the following limitations:

- A. Holes shall be drilled not less than 12 inches (300 mm) nor more than 18 inches (450 mm) from each edge or joint
- B. Spacing of holes shall not exceed 4 feet (1.2 m) center to center in any direction.

842.07 Raising Slabs. Prior to performing the work, reset volumetric meters on material pumping units to zero. Inject HDP under the slab according to the Contractor's written standard installation procedures.. As the HDP chemically reacts, it expands and hardens, exerting the necessary lifting forces. Control the amount of approach slab rise by regulating the rate of injection of the HDP material. Remove any excessive polyurethane material from the injection area. Record material used from the volumetric meters on material pumping units.

Raise slab to within 3/16 inch (5mm) of the elevations proposed by profile. For section lengths of 50 feet (15 m) or less, use a tight string line or laser level to monitor and verify elevations. For longer sections, use a laser level to monitor and verify elevations.

Unless otherwise accepted by the Engineer control lifting as follows. Do not raise slabs more than 1/2 inch (12 mm) while pumping in any one hole at any one time. No part of a slab shall lead any other part of the slab or any adjacent slab more than 1/2 inch (12 mm) at any time. Keep the entire slab and adjacent slabs in the same plane at all times within 1/2 inch (12 mm) tolerance.

Take precautions to prevent damage to the existing slabs. Stop the operation if cracking occurs during the raising of the slab and inform the Engineer. Alter the operations to prevent additional cracking.

Repair approach slab and pavement areas that do not meet proposed elevations. Repair all areas damaged as a result of the work. Make repairs to the satisfaction of the Engineer.

Do not perform work when the subgrade temperature is below 32 °F (0 °C) or visibly frozen.

842.08 Filling Holes. After the approach slab has been brought to grade, clean holes to the depth of the slab, then fill with non shrink nonmetallic grout conforming to C&MS 705.20

842.09 Method of Measurement. The Department will measure the weight of HDP material pumped.

842.10 Basis of Payment.

The Department will not pay for repairs to areas damaged as a result of the work.

The Department will pay for accepted quantities as follows:

Item	Unit	Description:
842	Pounds (Kilogram)	Correcting Elevation of Concrete Approach Slabs with High Density Polyurethane

Designer notes

Estimate pounds to be used as follows: Volume of approach slab to be raised (height (feet) X plan area (square feet)) X 7#/CF x 120%.

Include

Item 614 Maintenance of Traffic

Item 624 Mobilization