

**STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION 812**

GROUT SUBSEALING OF EXISTING CONCRETE PAVEMENT

April 15, 2005

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812.01 Description. This work consists of drilling holes in portland cement concrete pavement; pumping a portland cement/fly ash grout through those holes to fill voids under the pavement;; and filling the drilled holes with mortar.

812.02 Materials. Furnish materials conforming to:

Portland cement	701.04.
Fly Ash.....	701.13
High range water reducing admixture, Type F	705.12
Water.....	Potable

Use the following mix design for the subsealing grout:

Cement	94 lbs (42.6 kg)
Fly ash	210 lbs (95 kg)
HRWR	12 oz (355 ml)
Water	to achieve required fluidity.

If ambient temperature is below 55 °F(13 °C), use an accelerator acceptable to the Engineer.

Measure fluidity of the grout slurry according to the Corps of Engineers Flow Cone Method, ORD-C 79-77. Time of efflux for cement/fly ash grouts shall range from 16 to 25 seconds. Furnish a flow cone for this test and perform a minimum of three tests per day, or per shift. Perform more tests if the Engineer determines additional tests are needed. Make adjustments to the grout mixture during the subsealing operation to meet flow requirements.

Submit a mix design of the materials and additives to be used. Include physical and chemical analyses and specific gravity of the fly ash, and test data of the grout slurry's 1-day, 3-day, and 7-day compressive strengths, flow cone times, and time of initial set. Have the tests run by an approved

laboratory regularly inspected by the Cement and Concrete Reference Laboratory. Ensure the 7-day strength exceeds 400 psi (2.8 MPa) when measured according to AASHTO T 106.

812.03 Equipment. Use a positive displacement cement injection pump and mixing equipment that is capable of providing a thoroughly mixed and homogenous mixture.

Use rock drills or other devices capable of drilling the grout injection holes through the pavement and base material. Provide equipment in good condition and not heavier than 60 pounds (27 kg). Only use downfeed pressure, whether by hand or mechanical means, that does not damage the bottom portion of the slab.

Provide equipment capable of detecting the pavement lifting near the hole being grouted. Ensure the devices will make lift measurements from a stable reference point and are acceptable to the Engineer.

Provide all necessary hoses; valves; valve manifolds; positive cut-off; bypass provisions to control pressure and volume; pressure gauges with gauge protectors; and expanding packers or hose for positive seal during grout injection.

812.04 Drilling Holes. Drill one hole in the approach side of joints or cracks selected by the Engineer. Locate the hole 1-1/2 feet (0.5 m) from the fissure and 6 feet (2 m) from the centerline. On the leave side of the same joints or cracks, drill two holes located 3 feet (one meter) from the fissure and 3 feet (one meter) from the pavement edge and centerline. When full depth repairs were made under previous contracts, drill two approach panel holes and two leave panel holes, 1-1/2 feet (0.5 m) from the rigid replacements and 3 feet (one meter) from the pavement edge and centerline. Do not grout any full depth repairs made under this contract.

Drill holes no greater than 2-1/2 inches (65 mm) in diameter. Drill holes vertically, round, and to a depth sufficient to penetrate through any stabilized base. Do not penetrate into a granular subbase more than 1 to 2 inches (25 to 50 mm). Wash or blow out the holes, if necessary, to obtain thorough distribution of the injected grout.

812.05 Subsealing. Grout one hole at a time using an expanding rubber packer or hose on the nozzle connected to the discharge of the grout pump. When grout appears at any longitudinal or transverse crack or adjacent holes, or when the monitoring device indicates slab movement of 3/16-inch (4.5 mm), stop grouting. Immediately, after the nozzle is removed, temporarily seal the grout hole with a round tapered wooden plug. Leave the plug in place until the grout in the hole is not disturbed by adjacent grouting.

Do not raise the pavement more than 1/4-inch (6 mm)..

Fill the holes flush with the surface of the pavement with a stiff mortar consisting of one part portland cement to three parts of fine aggregate. Trowel the surface and apply curing membrane conforming to 705.07.

Do not grout when ambient temperatures are below 35 °F (2 °C) or if the subgrade or base course material is frozen.

Do not use grout more than one hour old.

The Engineer will determine if continued grout injection at any specific location is no longer practical.

812.06 Opening to Traffic. Do not permit traffic grouted slabs for at least 2 hours after grouting or the initial set time provided in 812.02, unless otherwise approved.

812.07 Method of Measurement. The Department will measure the number of Tons (metric tons) of portland cement used in the work.

The contract unit price paid for Tons (metric tons) of portland cement will include drilling and filling grout holes; full compensation for furnishing all labor, materials, tools, equipment and incidentals; and, for doing all work involved in grout subsealing of existing concrete pavement, in place, complete and accepted.

812.08 Basis of Payment. The Department will pay for accepted quantities at the contract price. Payment is full compensation for all labor, materials, tools, equipment, incidentals, and drilling and filling grout holes.

The Department will not pay for any subsealing at any subject location where the ¼” (6 mm) slab lift tolerance was exceeded

Item	Unit	Description
812	Ton (Metric ton)	Portland Cement Grout