

~~Just prior to placing joint sealant, the joint shall be blown free of sand and water with compressed air. The compressor shall be equipped with an approved oil and water trap. The joint shall be dry before sealing. Prepared joints shall be sealed within 24 hours. Joints which have become contaminated or dirty before sealing shall be recleaned as directed by the engineer. In areas where the shoulder has separated more than 1/2-inch (13 mm) from the pavement edge, backer material shall be placed in the joint prior to sealing.~~

~~Sealing materials shall be hot poured sealant complying with Subsection 1005.02(a) installed in accordance with the sealant manufacturer's recommendations. The sealed joint shall remain closed to traffic until, in the engineer's opinion, the sealant has satisfactorily cured to tack free.~~

~~**602.13 REMOVAL OF EXISTING SHOULDER UNDERDRAIN SYSTEMS.** This work consists of removing the existing shoulder underdrain system including outfall and backfilling the trench as required by the plan details and the following requirements.~~

~~The contractor shall remove the existing cap along the pavement edge and at the outfall locations, geotextile fabric, pipe, fittings, aggregate and other incidentals associated with the shoulder underdrain system to the satisfaction of the engineer. Particular attention shall be placed on removal of the geotextile fabric adjacent to the pavement edges to ensure all fabric is removed.~~

~~The contractor shall remove the concrete headwall and rodent screen. The outfall pipe shall be abandoned by plugging and backfilling to the satisfaction of the engineer.~~

~~The trench left after removal of the shoulder underdrain system shall be backfilled as required to accommodate installation of the new shoulder underdrain system. No more trench shall be opened than can be backfilled in the same day.~~

**602.14 UNDERSEALING OR SLABJACKING PAVEMENT.** This work consists of drilling holes in concrete pavement and pumping fly ash/cement slurry under the pavement to fill cavities (undersealing) or to raise the elevation of the pavement slabs (slabjacking).

**(a) Materials:**

**(1) Portland Cement:** Cement shall be Type I complying with Section 1001.

**(2) Water:** Water shall comply with Subsection 1018.01.

**(3) Fly Ash:** Fly ash shall comply with Subsection 1018.15.

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**(4) Powdered Ammonium Lignin Sulphonate:** Powdered ammonium lignin sulphonate may be used as a fluidifier and water-reducing agent.

**(b) Equipment.** Equipment shall include the following.

**(1) Air Compressors and Drills:** Air compressors shall be equipped with air-lift pneumatic drills capable of drilling the required holes.

**(2) Mixer:** Mixer shall be a high speed (800 to 2000 rpm) colloidal mixer, or as approved, capable of thoroughly mixing slurry ingredients.

**(3) Roller:** The roller shall be a pneumatic-tire vehicle capable of exerting a single-axle load of 9 tons (8 Mg).

**(c) Proportioning and Consistency:**

**(1) Proportioning:** The slurry shall consist of one part portland cement and three parts fly ash by volume and water sufficient to meet the consistency requirements of Heading (2). When directed or approved, powdered ammonium lignin sulphonate shall be added at the rate of 0.5 to 1.5 percent by weight (mass) of cement.

**(2) Consistency:** The slurry shall be of such consistency that the efflux time from the flow cone, when tested in accordance with DOTD TR 633, is 12 to 18 seconds for undersealing, and 15 to 26 seconds for slabjacking.

**(d) Construction Requirements:**

**(1) General:** Holes of approximately 1 1/2 inches (40 mm) in diameter shall be drilled through pavement at locations specified on the plans or as directed. Drills shall be rotated to avoid cracking pavement and shall be held as nearly perpendicular as possible to pavement surfaces. Holes shall be cleaned with compressed air under pressure prior to undersealing. Holes which cannot be satisfactorily used shall be filled with slurry and new holes drilled. No more holes shall be drilled than can be used during a day's operations.

After holes are drilled, a pipe connected to the discharge hose of the pressure pump shall be lowered into the hole. Discharge end of the pipe shall not extend below the bottom of pavement.

When stooling of slurry occurs, additional holes shall be provided in the slab as directed. A more fluid slurry shall be pumped through these new holes to fill voids between stools.

When back pressure forces slurry out of the hole onto the slab after withdrawal of discharge pipe, the hole shall be temporarily plugged until the slurry has set. After completion of pumping in a hole, the discharge pipe or plug shall be removed and the hole filled with slurry.

Drainage structures shall be kept clean of slurry mixture. The contractor

shall monitor all drainage structures within the areas being pumped. When the pumping operation is forcing the slurry into a drainage structure, the contractor shall discontinue pumping operations and immediately clean the drainage structure of slurry mixture.

When directed, undersealed or slabjacked pavements shall be proof rolled with the specified roller; however, proof rolling shall not be conducted until at least 24 hours after completion of undersealing at no direct pay. When such proof rolling indicates that cavities exist beneath the slab, such cavities shall be filled as directed at no direct pay.

Pavement and shoulder surfaces shall be kept free of slurry mixture during undersealing operations.

Pumping operations shall be discontinued at least 1 hour before opening the pavement to traffic.

**(2) Undersealing:** Pumping of slurry into a hole shall continue until all voids beneath the pavement are filled. Lifting of the slab or slurry flowing out of an adjacent hole, through pavement joints or cracks, or out of the shoulder-pavement joint shall be sufficient evidence that all cavities are filled within range of the hole being pumped. Pumping pressures over 200 psi (1400 kPa) will not be permitted. When pressures cause pavement lifting, a lower pumping pressure shall be used. Lifting of the slab as a result of pumping shall not exceed 1/8 inch (3 mm). The contractor shall monitor the slab lifting by approved methods at all times during undersealing. Any pumping operation that causes voids to form under the pavement in the immediate area shall be terminated. The sequence of pumping from hole to hole shall be as directed.

**(3) Slabjacking:** Pumping operations for slabjacking shall be conducted in an approved manner and sequence. The contractor shall monitor the slab lifting at all times during pumping operations. Pumping shall continue until pavement slabs have been raised to the required grade within a tolerance of  $\pm 1/8$  inch ( $\pm 3$  mm).

~~**602.15 DOWEL BAR RETROFIT.** This work consists of installing plastic coated 1 1/2 inch (38 mm) diameter by 18 inch (450 mm) long plain round dowel bars into slots cut across and through existing concrete pavement transverse joints. The existing portland cement concrete pavement shall be removed from the slots and the dowel bars shall be retrofitted across the pavement joints. The voids surrounding the dowel bars shall be filled with a concrete patching material. The transverse joints shall be sawed and sealed as required in the plans. All work shall conform to the plan details, and the following requirements.~~