STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATION 841
SOLUBLE REACTIVE SILICATE (SRS) CONCRETE TREATMENT

June 15, 1999

841.01 Description: This item shall consist of the necessary labor, materials and equipment to prepare and treat portland cement concrete surfaces with a reactive silicate sealer meeting these specifications.

841.02 Materials: The treatment will be a blend of Na/K/Fl_xSiO_x (sodium, potassium, fluoro or other silicate), surfactants, polymers, and stabilizers capable of thoroughly saturating and sealing concrete. The treatment system shall meet the following performance requirements:

1. Scaling Resistance - Treated concrete shall pass ASTM C 672, Scaling Resistance test with a rating of 'No Scaling' after 100 cycles (non-air entrained concrete) as compared to "Severe Scaling' on untreated concrete.

2. Absorption - The absorption of treated concrete under total immersion shall not exceed 1.0 percent after 48 hours or 2.0 percent after 50 days (ASTM C 642, non-air entrained concrete). Concrete should be proportioned and mixed in accordance with ASTM C 672.

3. Skid resistance - The skid resistance of treated concrete pavement shall not reduce by more than 10% as compared to the same untreated pavement. ASTM E 274 using ASTM E 501 ribbed tire at 40 mph (64 kph), five test average.

4. Performance test - Proof of crack sealing capability. AASHTO T 259 modified. The standard T 259 Resistance of Concrete to Chloride Ion Penetration shall be modified as follows:

The concrete mix for the specimens shall meet the requirements of Section

2.3

In addition to the requirements of Section 3.1 the specimens shall be intentionally broken so the samples will have full depth cracks.

The dams used in Section 3.2 shall be installed around the perimeter of the re-assembled, cracked, concrete specimens. The dams shall be caulked around the perimeter to assure only the crack or the concrete will allow water to pass. After assembly the crack width shall be measured at three locations and the crack width reported as part of this test.

Section 3.4's required ponding of the dammed specimens shall be performed until the 3 percent sodium chloride solution comes through the cracks. The time required for the solution to appear through the cracks shall be recorded. The solution shall be removed from the specimens and the specimens re-dried as per Section 3.3. After drying, the specimen's top surface shall have the manufacturer's soluble reactive silicate (SRS) concrete treatment applied at the manufacturer's recommended rate of application. Record and report the rate of application. The dammed specimens with applied SRS shall be air dried for 7 days. After the 7 day drying period, the dammed specimens shall re-ponded with the 3 percent sodium chloride solution. The ponding test shall end when the solution comes through the specimen's cracks or a minimum of 14 days. The times shall be recorded. The SRS passes if the time of the second ponding divided by the time of the first ponding is a value of 2 or more.

Sections 3.5, 3,6, 4.1,4.2 and 5.1 shall not apply.

The silicate treatment material selected by the Contractor shall be submitted to the Engineer for approval 30 days before application. The submittal shall include certified test data from an independent test laboratory and the application rate at which it was tested.

The material shall be delivered pre-mixed and ready to use. Mixing / agitation shall be according to the manufacturer's recommended procedures.

The material shall be stored in tightly sealed containers in a dry location and as recommended by the manufacturer.

841.03 Equipment. Application equipment shall be that which is recommended by the manufacturer. The spray equipment, tanks, hoses, brooms, rollers, coaters, squeegees, etc., shall be thoroughly clean, free of foreign matter, oil residue and water prior to applying the treatment.

841.04 Cleaning and Surface Preparation. Surfaces which are to be treated shall meet the approved product's requirements for surface condition. Sealing shall not be done until

all concrete repairs have been completed and cured. The Contractor shall furnish the Engineer with written instructions for surface preparation requirements and a representative of the manufacturer should be present to assure the surface condition meets their requirements.

At a minimum, the surface shall be thoroughly cleaned to remove dust, dirt, oil, wax, curing components, efflorescence, latence, coatings and other foreign materials. The use of chemicals and other cleaning compounds to facilitate the removal of these foreign materials shall be approved by the manufacturer or its representative before use. The treatment shall be applied within 48 hours following surface preparation.

Cleaning equipment shall be fitted with suitable traps, filters, drip pans and other devices to prevent oil and other foreign material from being deposited on the surface.

841.05 Test Application. Prior to final application, the Contractor shall treat a measured test coverage area on horizontal and vertical surfaces of the different components of the structure to be treated for the purpose of demonstrating the desired physical and visual effect of an application or of obtaining a visual illustration of the absorption necessary to achieve the specified coverage rate. In the latter case, the applicator shall use at least ½ gallon (2 liter) of treatment following the manufacturer's recommended method of application for the total of the test surfaces. Horizontal test surfaces shall be located on the deck and on the safety curb or sidewalk, and vertical test surfaces shall be located on an abutment parapet and pier face so that the different textures are displayed.

841.06 Application. The concrete treatment shall be applied to concrete surfaces as designated on the plans. The SRS will be applied by thoroughly saturating the concrete surfaces at an application rate greater than shown in approved certified test data.

The concrete surface temperature will be above 35 °F (2 °C).

The treatment shall be spread from puddles to dry areas.

If the applicator is unable to complete the entire application continuously, the location where the application was stopped shall be noted and clearly marked.

841.07 Protection of Adjoining Surfaces and the Public. When applying a treatment, the Contractor shall protect by masking off or by other means adjoining surfaces of the structure which are not to be sealed. The Contractor shall also make provision to protect the public when treating the fascia of a bridge and/or portions of the underside of the deck of a bridge that spans an area used by the public.

Asphalt and mastic type surfaces shall be protected from spillage and heavy overspray. Joint sealants, traffic paints and asphalt overlays may be applied to the treated surfaces 48 hours after the treatment has been applied. Adjoining and nearby surfaces of aluminum or glass shall be covered where there is a possibility of the treatment being deposited on

the surfaces.

Protect plants and vegetation from overspray by covering with drop cloths. Precautions shall be followed as indicated on the manufacturer's MSDS.

841.08 Opening to Traffic. Traffic may be allowed on a deck only after a treated area does not track.

841.09 Method of Measurement. The quantity shall be the actual area in square yards (square meters) of surfaces treated and shall include surface preparation, material, and application costs.

841.10 Basis of Payment. Payment for completed work will be made at the contract prices for:

ITEM	UNIT	DESCRIPTION
841	Square meter (square yard)	Treating of concrete surfaces with SRS