

NOVEMBER 5, 2018

REHABILITATION OF BRIDGE NO. 00255
I-395 OVER ROUTE 85

FEDERAL AID PROJECT NO. 0395(011)
STATE PROJECT NO. 152-158
TOWN OF WATERFORD

ADDENDUM NO. 2

This Addendum addresses the following questions and answers contained on the “CT DOT QUESTIONS AND ANSWERS WEBSITE FOR ADVERTISED CONSTRUCTION PROJECTS”:

Question and Answer Nos. 3, 4, 5, 7, 8, 9, 10 and 11.

SPECIAL PROVISIONS

NEW SPECIAL PROVISION

The following Special Provision is hereby added to the Contract:

- **ITEM NO. 0819002A – PENETRATING SEALER PROTECTIVE COMPOUND**

REVISED SPECIAL PROVISIONS

The following Special Provisions are hereby deleted in their entirety and replaced with the attached like-named Special Provisions:

- **ITEM NO. 0601107A – HIGH EARLY STRENGTH CONCRETE**
- **ITEM NO. 0601323A – MODIFY CONCRETE BEARING PAD**

CONTRACT ITEMS

NEW CONTRACT ITEM

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>	<u>QUANTITY</u>
<u>0819002A</u>	<u>PENETRATING SEALER PROTECTIVE COMPOUND</u>	<u>SY</u>	<u>795</u>

REVISED CONTRACT ITEMS

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>ORIGINAL QUANTITY</u>	<u>REVISED QUANTITY</u>
<u>0406172A</u>	<u>HMA S0.375</u>	<u>225 TON</u>	<u>1,510 TON</u>
<u>0406600</u>	<u>MATERIAL TRANSFER VEHICLE</u>	<u>1,600 TON</u>	<u>2,350 TON</u>

PLANS

NEW PLANS

The following Plan Sheets are hereby added to the Contract:

DRAWING NO. S-19A (SHEET NO. 04.19.A2)

HIGHWAY STANDARD DRAWING (HW-821_02B)

REVISED PLANS

The following Plan Sheets are hereby deleted and replaced with the like-numbered Plan Sheets:

DRAWING NO. REV-1 (SHEET NO. 02.01.A2)

DRAWING NO. TYP-01 (SHEET NO. 03.07.A2)

DRAWING NO. MDS-03 (SHEET NO. 03.12.A2)

DRAWING NO. S-02 (SHEET NO. 04.02.A2)

DRAWING NO. S-05 (SHEET NO. 04.05.A2)

DRAWING NO. S-07 (SHEET NO. 04.07.A2)

DRAWING NO. S-08 (SHEET NO. 04.08.A2)

DRAWING NO. S-10 (SHEET NO. 04.10.A2)

DRAWING NO. S-11 (SHEET NO. 04.11.A2)

DRAWING NO. S-19 (SHEET NO. 04.19.A2)

The Bid Proposal Form has been revised to reflect these changes.

The Detailed Estimate Sheets do not reflect these changes.

There will be no change in the number of calendar days due to this Addendum.

The foregoing is hereby made a part of the contract.

ITEM 0601107A – HIGH EARLY STRENGTH CONCRETE

Work under this item shall conform to Section 6.01 Concrete for Structures as supplemented and amended herein to provide for High Early Strength Concrete.

6.01.01 – Description: Add the following

High early strength concrete may be used to accelerate the construction of the bridge. The goal of this work is:

- Meet the required compressive strength (both interim and final) in an accelerated manner.
- Reduce the cure time for the concrete
- Provide durable (low permeability) concrete
- Provide low shrinkage properties to reduce cracking in the field

The Contractor shall develop a high early strength concrete mix design for use in the longitudinal closure pours, and cast-in-place deck along skewed ends.

6.01.02 – Materials: Add the following:

The high early strength concrete shall conform to the requirements of M.03.01 and the following criteria:

1. Portland cement shall be Type II, IIA or III conforming to AASHTO M85 or M240, as appropriate.
2. All cement used in the manufacture of the members shall be the same brand, type and color, unless otherwise permitted.
3. Use Portland cement conforming to AASHTO M85 with compatible admixtures and air entraining agent.
4. Water-cementitious material ratio shall not exceed 0.4 by weight, including water in the admixture solution and based on saturated surface dry condition of aggregates.
5. Use a maximum size coarse aggregate of $\frac{3}{4}$ ".
6. The amount of entrained air shall be 6.0 +/- 1.5%.
7. High early strength concrete shall achieve a minimum 28-day compressive strength of 6000 psi.
8. The early strength characteristics of the concrete shall be commensurate with the intended construction procedure that is developed by the Contractor in the Assembly Plan.
9. A shrinkage reducing admixture shall be added to the concrete mix according to the manufacturer's recommendation such that there will be no cracks at 14 days in the sample tested in AASHTO T334 (see below). A shrinkage reducing admixture shall be tested by an approved testing lab and meet the requirements of ASTM C494-10 Type S, except that in Table 1 length change shall be measured as: Length Change (percent of control) shall be a minimum of 35% less than that of the control. Table 1 Length Change (increase over control) shall not apply. Shrinkage reducing admixtures shall not contain expansive metallic materials.
10. The maximum allowable total chloride content in concrete shall not exceed 0.1% by

weight of cement.

Mix Design Requirements

Concrete shall be controlled, mixed, and handled as specified in the pertinent portions of Section 6.01 Concrete for Structures, Supplemental Specifications and as indicated below:

The Contractor shall design and submit for approval the proportions and test results for a concrete mix which shall attain the minimum final design compressive strength and the early compressive strength as defined by the approved Assembly Plan and consistent with the approved Quality Control Plan.

The concrete mix design shall have a rapid chloride ion permeability of 2000 Coulombs at not more than 28 days using AASHTO T 277 and the air entrainment shall be targeted at a value of 6.5 percent +/-1.5 percent. Contractor may opt to take multiple tests prior to 28 days which will be considered accepted once the target value of 2,000 coulombs is reached. Testing shall be in accordance with AASHTO T 119 and T 152. Multiple samples should be tested using the intended curing methods in order to establish the required cure times for the mix.

Should a change in sources of material be made, a new mix design shall be established and approved prior to incorporating the new material. When unsatisfactory results or other conditions make it necessary, the Department will require a new mix design.

The concrete mix design shall be submitted to the Department for review and approval. The Department shall be notified at least 48 hours prior to the test batching and shall be present to witness the testing.

All tests necessary to demonstrate the adequacy of the concrete mix shall be performed by the Contractor, witnessed by the Department, including, but not limited to: slump, air content, temperature, initial set and final set (AASHTO T197). Compressive strength tests shall be determined on field cured cylinders (6" X 12" cylinders) at 9 hours, 12 hours, 15 hours, 18 hours, 24 hours, 30 hours, 36 hours, 42 hours, 2 days and 3 days, and standard cured cylinders at 7 days and 28 days. Additionally, a confined shrinkage test as outlined in the AASHTO T334 - Practice for Estimating the Crack Tendency of Concrete shall be performed by an AASHTO accredited laboratory. The results of these tests (documenting zero cracks at 14 days) shall be submitted to the Department.

Field Trial Placement

In addition, a trial placement shall be done a minimum of (90) ninety days before the intended date of the initial closure pour placement. The Contractor will be required to demonstrate proper mix design, batching, placement, finishing and curing of the high early strength concrete. The trial placement shall simulate the actual job conditions in all respects including plant conditions, transit equipment, travel conditions, admixtures, forming, the use of bonding compounds, restraint of adjacent concrete, placement equipment, and personnel.

The trial shall also demonstrate the ability of the concrete to accept the installation of the

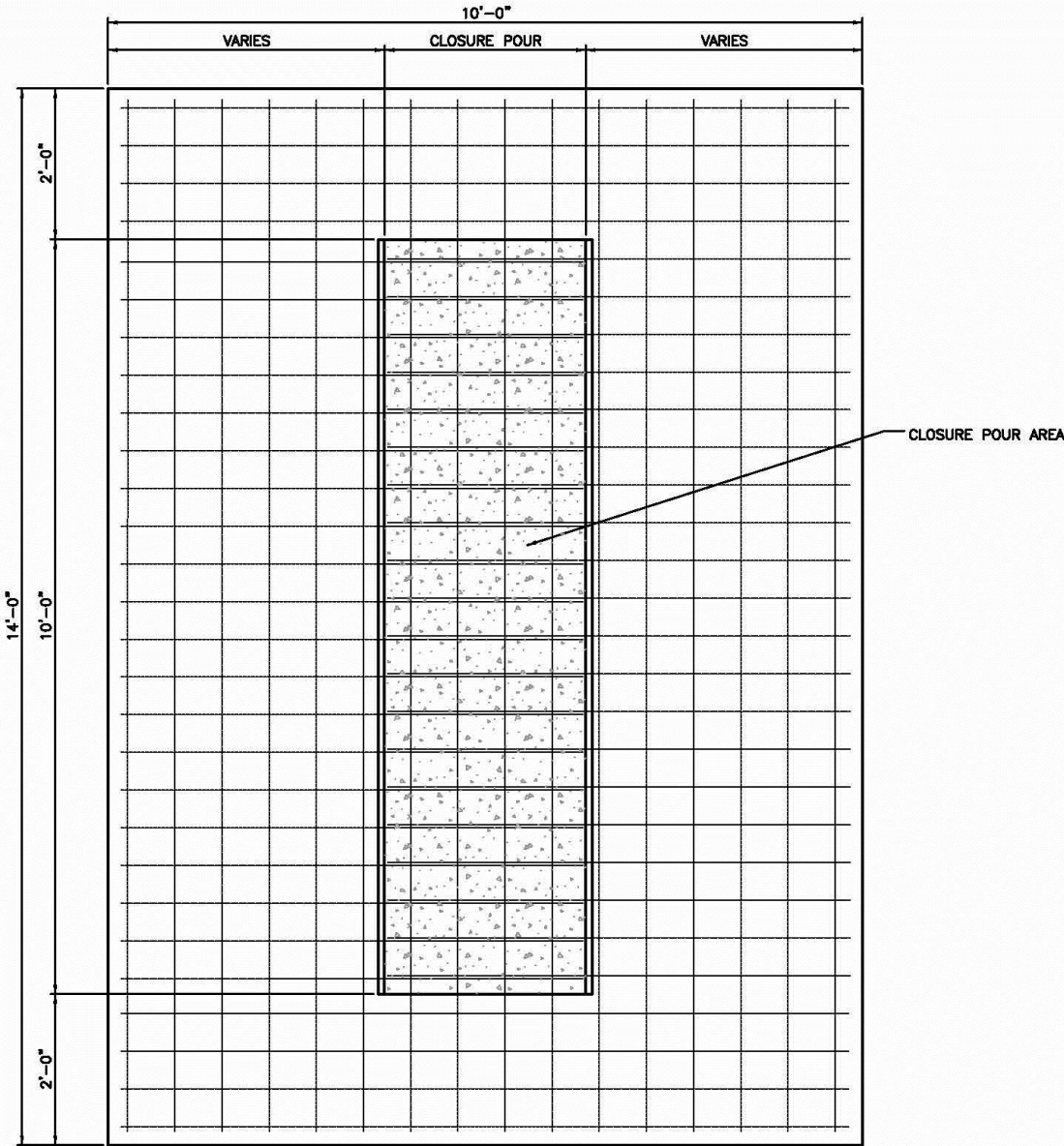
membrane waterproofing system that is to be used. A representative portion of the trial concrete shall be coated with the membrane waterproofing in accordance with the specifications for the waterproofing. The timing of the installation of the waterproofing on the trial concrete shall be commensurate with the intended construction procedure and schedule that is developed by the Contractor. The Contractor shall demonstrate that the waterproofing meets all the requirements of the specifications.

The details for the trial placement configuration are shown in Figure 1. Acceptance criteria for the trial placement shall be as follows:

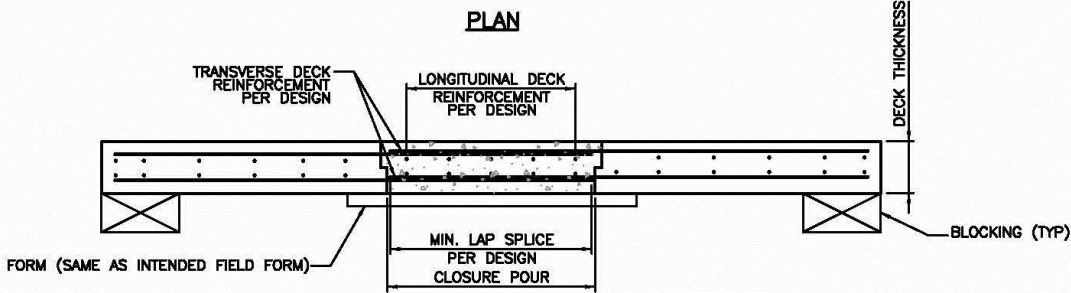
- The trial placement concrete shall not exhibit cracking or separation from the test panel in excess of 0.016 inches wide
- There shall be no more than one transverse crack in excess of 0.010 inches wide in the 10 foot long pour.
- The evaluation of the trial placement shall take place 14 days after placement.

If the trial placement fails these criteria, the Contractor will be required to submit a corrective action plan on how repairs of these crack sizes will be performed. The Department may require the Contractor to conduct more trial batches and trial placements. The costs of trial batches, trial placements and the removal of trial placement concrete from the job site is incidental to the work and will not be measured for payment. The requirement for multiple test placements shall not be cause for a time extension.

The final accepted trial placement testing shall be used to establish the final acceptance testing protocol for the field placements.



PLAN



TYPICAL SECTION

FIGURE 1 - TRIAL PLACEMENT TEST SET-UP

6.01.03 Construction Methods: Add the following:

The Contractor shall engage an AASHTO accredited laboratory to provide testing facilities which are qualified laboratories under the NETTCP program to perform all Quality Control field testing. All personnel performing tests shall be qualified NETTCP Concrete Technicians and certified ACI Laboratory and Concrete Strength Technicians. Anytime the Contractor moves the laboratory, all associated equipment shall be recalibrated. This requirement is intended to minimize the movement of test cylinders.

The Contractor is required to perform initial set and final set tests (AASHTO T197) in addition to slump, air content and temperature on concrete from each concrete truck used in the placing of this High Early Strength Concrete. Field cured cylinders (6" X 12" cylinders) will be made from the first and last concrete trucks. A set of three (3) field- cured cylinders shall be made for each informational test associated with early structural loading. The Contractor is advised to fabricate adequate sets of cylinders to allow multiple tests to verify field concrete strength. The Department shall be allowed to witness the test and comment on all the tests performed by the Contractor. The Contractor shall not open the roadway to traffic until the final strength has been met and when the Department has directed that the roadway can be opened to traffic.

All testing and equipment shall conform to AASHTO T-22, and the making and curing of concrete cylinders shall conform to AASHTO T23. All costs associated with the on-site mobile testing facilities, personnel and field testing, equipment calibration and verification to demonstrate the field concrete strength shall be incidental to the work.

Acceptance tests will be performed by the Department on standard cured cylinders at 7 days and 28 days. Cylinder breaks at 3 days and 7 days must be at least 10% above the approved trial batch results. The Contractor will be notified of any verification tests that do not meet these requirements and will be required to develop a contingency corrective action plan in case final strength is not achieved. Concrete will be accepted and traffic shall be allowed on the concrete only if the 28-day strength requirement of 4000 psi. is achieved.

Curing Methods

The concrete curing methods shall be developed by the Contractor as part of the Quality Control Plan. The curing methods used in the production placements shall be the same as the curing methods used for the trial placement.

High Early Strength Concrete Crack Inspection

The Contractor shall inspect the finished high early strength concrete surface for cracks. Inspection of the deck for cracking shall be completed prior to the preparation of the deck for placement of the membrane waterproofing system.

The Contractor shall document the location and frequency of cracks on the closure pours (number of cracks per square foot). Cracks greater than 0.016 inches in width shall be

repaired as required by the membrane waterproofing manufacturer

Basis of Payment: Add the following

The work completed under this Item will be paid for at the contract price per actual number of cubic yards of high early strength concrete that is measured complete in place. Payment under this Item includes full compensation for all testing and approval of the mix design.

<u>Pay Item</u>	<u>Pay Unit</u>
High Early Strength Concrete	C.Y.

ITEM #0601323A - MODIFY CONCRETE BEARING PAD

Description: Work under this item shall consist of modifying a concrete bearing pad to accommodate a new elastomeric bearing assembly at the proposed elevations. This includes cutting/removal of existing pedestal concrete and cutting rebars, roughening of existing concrete and furnishing and placing new grout to the elevations shown in the contract plans. The Contractor shall perform work as indicated on the plans, in accordance with these specifications and as directed by the Engineer.

Materials: The materials shall conform to the following requirements:

1. Non shrink grout shall conform to Article M.03.05
2. The Contractor shall submit to the Engineer a grout mix design for approval which will provide a 28 days strength of 4000 psi. The Contractor shall further provide a certificate stating that the mix submitted meets requirements.

In lieu of a Contractor designed grout mix, the Contractor may at no additional cost to the State, submit for approval one of the following bagged repair mortars:

Emaco T415 Rapid Strength Repair Mortar

Manufactured by: BASF Building Systems
889 Valley Park Drive
Shakopee, MN 55379

Emaco T430 Rapid Strength Repair Mortar

Manufactured by: BASF Building Systems
889 Valley Park Drive
Shakopee, MN 55379

Rapid Set DOT Repair Mortar

Manufactured by: CTS Cement Manufacturing Corporation
11065 Knott Avenue, Suite A
Cypress, CA 90630

Five Star Structural Concrete V/O

Manufactured by: Five Star Products Inc.
750 Commerce Drive
Fairfield, CT 06825

All materials shall be approved by the Engineer before use.

Construction Methods: Before construction, the Contractor shall submit shop drawings to the Engineer for review in accordance with Article 1.05.02. Additionally, the Contractor shall verify existing elevations and determine the thickness of the new grout pads based on as-built elevations and the desired proposed elevations shown in the contract plans. The field measurements and the thicknesses of the new/modified concrete pads shall be shown in the shop drawings.

These drawing shall include but not be limited to the following:

1. Material lists.
2. Material designations.
3. Method of removal of existing concrete and cutting rebar

Specifications and recommendations for the aforementioned may be obtained from the manufacturer of the chemical anchor material.

The surface on which the new grout is to be placed shall be intentionally roughened to a depth of 1/4" and wetted. There shall be no standing water on the surface. Mixing, placing, curing and finishing of the grout shall be in accordance with Article 6.01.03.

The Contractor, as directed by the Engineer, shall take adequate precautions to prevent any materials from dropping to the areas below which may result in damage to any existing construction, traffic or to adjoining property. Should any damage occur as a result of the Contractor's operations, the Contractor shall repair and/or replace any such damage to the satisfaction of the Engineer at no cost to the State.

Method of Measurement: This work will be measured for payment by the number of modified concrete bearing pads constructed and accepted by the Engineer.

Basis of Payment: This work will be paid for at the contract unit price each for "Modify Concrete Bearing Pad", complete in place, which price shall include removal of existing concrete, cutting of existing rebars, furnishing and placing grout or bagged mortar, debris shield, access and all materials, equipment, tools and labor incidental thereto.

Pay Item
Modify Concrete Bearing Pad

Pay Unit
EA.

ITEM #0819002A - PENETRATING SEALER PROTECTIVE COMPOUND

Description: Work under this item shall consist of cleaning concrete surfaces of dirt, dust and debris, and furnishing and applying a clear, penetrating sealer as noted in this specification and as directed by the Engineer, to provide a hydrophobic barrier against the intrusion of moisture. This work also includes furnishing, installing and removing platforms, scaffolding, ladders and other means of access as well as shields, as required, to protect adjacent areas from overspray. The Contractor shall apply penetrating sealer protective compound to locations described here within or as directed by the engineer. Penetrating sealer shall be applied to both new, patched, and existing concrete surfaces. Penetrating sealer shall not be applied to concrete surfaces that have been previously treated with coatings or curing compounds that would hinder penetration of the sealer into the concrete. Penetrating sealer will not be required on pre-cast and cast-in-place concrete highway median barrier.

Materials: The penetrating sealer shall be a single component, 100% silane or silane siloxane from the list of materials below. The material shall be selected in anticipation of the expected ambient and surface temperature at the time of installation.

The following products may be used when ambient and surface temperatures are 40°F and above:

SIL-ACT ATS-100 (Silane)
Advanced Chemical Technologies, Inc.
9608 North Robinson Ave.
Oklahoma City, OK 73114
405-843-2585
www.advchemtech.com

Armor SX 5000 EXT-100 or SX 5000 WB (Silane Siloxane)
Foundation Armor, LLC.
472 Amherst St. STE 14
Nashua, NH 03063
866-306-0246
www.foundationarmor.com

Aquinil Plus 100 (Silane)
ChemMasters
300 Edwards Street
Madison, OH 44057
440-428-2105, 800-486-7866
www.chemmasters.net/Aquanil100.php

The following product may be used when ambient and surface temperatures are 20°F and above:

Certi-Vex Penseal 244 100% (Silane)

Vexcon Chemicals

7240 State Road

Philadelphia, PA 19135

888-839-2661

www.Vexcon.com

Construction Methods:

Submittals: The Contractor shall submit to the Engineer Safety Data Sheets (SDS) and product literature for the selected product. The literature shall include written instructions how to apply the product to vertical and horizontal surfaces, and where required, overhead surfaces.

The Contractor shall submit to the Engineer, in accordance with Article 1.05.02, written procedures for cleaning the concrete surfaces. The submittal shall include proposed equipment and materials and shall address how adjacent traffic and other areas shall be protected from dust, debris and overspray during the cleaning and application processes. Where the sealer is to be applied to parapets before pavement is placed, the submittal shall address protecting the deck and curb to which membrane waterproofing will be applied. Should the membrane already be present, the submittal shall address protecting the membrane. It shall also indicate how vegetation shall be protected from overspray. The submittal shall address the conditions under which work may proceed, including wind speed, temperature and precipitation. It shall also include procedures to be followed to protect the work should unfavorable weather conditions occur before the product has been absorbed.

The Contractor shall inspect the surfaces to be sealed to identify surface cleaning needs before submitting the procedures. The Contractor shall identify conditions that need repair or surfaces that may require special attention or cleaning procedures. Such observations shall be addressed in the written procedures.

Locations: Penetrating sealer protective compound shall be applied on parapets, median barrier, west abutment and adjacent cheek walls and wingwall stems, and pier.

Limits of Application: Limits of application for concrete parapets shall be the roadway facing surfaces (inside face), parapet ends and top surfaces. Sealer shall be applied starting at top edge of waterproofing membrane or top of milled bituminous if deck is not exposed, whichever is lower. Sealer shall not be applied to surfaces that are to receive a waterproofing membrane and these areas shall be adequately masked off if the sealer is applied before the membrane.

Limits for abutment, pier, cheek walls, and wingwalls stems shall be vertical surfaces starting at final adjacent grade and continuing full height of the structure. Only vertical surfaces facing traffic or are considered leading and trailing ends are to be coated unless directed otherwise by the Engineer. The side of the pier facing the commuter lot in addition to the east abutment shall not be coated.

Surface Preparation: Concrete surfaces to which penetrating sealer will be applied shall be dry, clean and free of grease, oil and other surface contaminants. New concrete and newly placed repair concrete shall be allowed to cure for at least 28 days before applying sealer. After rain or water cleaning, allow existing concrete surfaces to dry for at least 8 hours before applying sealer. Dry surfaces may be cleaned by sweeping with brushes or brooms, and blowing clean with oil-free, compressed air. The Contractor shall take care not to damage the concrete surface finish during cleaning operations. Care shall be taken so that cleaning methods do not damage joint sealant or other components of the structure.

Application: Application of the sealer can only begin after the Engineer evaluates the concrete surfaces for cleanliness and moisture, and determines that conditions are appropriate for application.

The sealer shall saturate the concrete surface with a rate of application of 200 square feet per gallon of sealer. The dispersion shall run six to eight inches down a vertical surface from the spray pattern. The maximum run-down is 12 inches. The Contractor shall monitor and record the number of square feet per gallon of sealer used to verify that the required application rate is being met. Additional sealer may be needed if surfaces are porous, rough or textured.

The Engineer will inspect the concrete surface during application and after the sealer has had adequate time to penetrate. As a test, water sprayed from a bottle on the sealed surface shall bead up and not be absorbed. Should water be absorbed into the concrete at a test area, additional areas shall be tested to determine which areas should receive additional application of sealer. The Contractor shall apply additional sealer to the identified areas until absorption of water is prevented.

Method of Measurement: This work will be measured for payment by the actual number of square yards of concrete surface, coated completely and accepted, within the limits designated by the Engineer. The area will be measured once, regardless of the number of applications required. Bevels, rustications and other out of plane surface irregularities will not be directly measured for payment, but shall be coated as part of the work.

Basis of Payment: This work will be paid for at the Contract unit price per square yard for "Penetrating Sealer Protective Compound," complete, which price shall include all equipment tools, labor and materials, incidental thereto, including the preparation of the concrete surfaces and proper disposal of debris.

Pay Item	Pay Unit
Penetrating Sealer Protective Compound	s.y.