Illinois Department of Transportation
2300 South Dirksen Parkway / Springfield, Illinois / 62764

February 11, 2014

SUBJECT: FAI Route 57/(I-57)
Project ACHSIP-0057(308)
Section HFSC 2014-1
Champaign County
Contract No. 70A52
Item No. 084, February 28, 2014 Letting
Addendum A

NOTICE TO PROSPECTIVE BIDDERS:

Attached is an addendum to the plans or proposal. This addendum involves revised and/or added material.

1. Revised pages 9-15 of Special Provisions

Prime contractors must utilize the enclosed material when preparing their bid and must include any Schedule of Prices changes in their bidding proposal.

Bidders using computer-generated bids are cautioned to reflect any and all Schedule of Prices changes, if involved, into their computer programs.

Very truly yours,

John D. Baranzelli, P.E.
Acting Engineer of Design and Environment

By: Ted B. Walschleger, P. E.
Engineer of Project Management

cc: J. E. Crowe, Region 3, District 5; N. R. Stoner; Matt Mueller, Tim Kell; D. Carl Puzey; Estimates

HM/kf

CRACK FILLING

This work shall be in accordance with applicable Articles of Section 451 and Section 452 of the Standard Specifications except as modified herein.

Transverse cracks greater than ¼" in width and depth shall be cleaned and filled just prior to placement of the High Friction Surface Treatment. The material for the crack filling shall be a sealant approved by the polymer resin manufacturer, which will bond to the specified polymer resin binder. The material in the crack reservoir shall be sealed flush rather than providing an over-sealed or "Band-Aid" type effect. Once the crack filling material in the sealed areas has gelled, the installation of the High Friction Surface Treatment may proceed.

This work will be paid for at the contract unit price per pound for CRACK FILLING which price shall be payment in full for all labor, material, and equipment required to clean and seal the transverse cracks in the pavement.

SPECIAL PROVISION FOR HIGH-FRICTION SURFACE TREATMENT (BMPR/BSE)

Effective: January 1, 2014

Description. This work shall consist of constructing a High-Friction Surface Treatment (HFST) on a hot-mix asphalt or portland cement concrete pavement surface to restore or enhance the skid resistance. The HFST shall be composed of calcined bauxite aggregate bound with a polymeric resin. A list of potential firms, known to IDOT, that can complete HFST work is included in Attachment 1.

RETURN WITH BID (N/A if firm is on Attachment 1)
_____ (firm name)
_____ (firm address
_____ (contact name, telephone & e-mail)

Materials. Materials shall be according to the following requirements.

(a) General. The Contractor shall provide certification for both the polymeric resin binder and aggregate that states the material meets the requirements listed in Tables 1 and 2 at least 60 days prior to construction. Laboratory testing for third party certification shall be performed by an accredited laboratory for properties identified in Tables 1 and 2. The aggregate certification shall reflect that testing was performed within 12 months of the project letting date.

Independent assurance samples of the polymeric resin binder (boxed storage – 1 boxed unit; tank storage – 2 gal (8 L) of each component) and aggregate (two 40-lb (18-kg) bags) shall be submitted to the Bureau of Materials and Physical Research 60 days prior to construction.

Materials shall be stored in a clean, dry environment and in accordance to the manufacturer's recommendations.

Material Safety Data Sheet (MSDS), Product Data Sheet, and other information pertaining to the safe practices for the storage, handling, and disposal of the materials, and to their health hazards shall be obtained from the manufacturer and posted at storage areas. A copy of such information shall be provided to the Engineer.

(b) Polymeric Resin Binder. The polymeric resin binder shall consist of a two part thermosetting polymer resin compound which holds the aggregate firmly in position, and conforms to the requirements of Table 1.

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Table 1 – Polymeric Resin Binder Material Properties Requirements

Property	Test Method	Requirements
Viscosity, Poises	ASTM D 2556	7 - 30
Ultimate Tensile Strength, psi	AASHTO M 235, Class C	2,500 - 5,000
Compressive Strength, psi	ASTM C 579	1,000 min. (3 hours) 5,000 min. (7 days)
Gel Time, minutes	AASHTO M 235, Class C	10 min.
Water Absorption, %	AASHTO M 235	1 max.
Durometer Hardness (Shore D)	ASTM D 2240	60 - 80
Cure Rate (Dry through time), hours	ASTM D 1640, 55 mil wet thickness @ 75 °F	3 max.
Elongation at Break Point, %	AASHTO M 235	30 - 70
Mixing Ratio	Provide manufacturer's recommendations a minimum of 60 days prior to construction.	Per Manufacturer
Adhesion Strength, psi @ 24 hrs	ASTM D 4541	250 min. or 100% substrate failure

(c) Aggregate. The aggregate shall be calcined bauxite that is clean, dry, free from foreign matter, and conforms to the requirements in Table 2. Deliver the calcined bauxite to the construction site in clearly labeled super sacks weighing at least 2,200 lb (1,000 kg). When hand applications are necessary, 55 lb (25 kg) bags of material may be substituted. A list of potential producers/suppliers, known to IDOT, is included in Attachment 2.

RETURN WITH BID (N/A if producer/supplier is on Attachment 2)
_____ (Producer/Supplier name)
_____ (Producer/Supplier address
_____ (contact name, telephone & e-mail)

Table 2 – Aggregate Material Properties Requirements

Property	Test Method	Requirements
Gradation Sieve Designation No. 4 (4.75 mm) No. 6 (3.35 mm) No. 16 (1.18 mm)	AASHTO T 27	 Percent Passing (min.) 100 95.0-100.0 0.0-5.0
Moisture Content, %	AASHTO T 255	0.2 max.
Aluminum Oxide, %	ASTM C 25	87 min.
LA Abrasion Test, %	AASHTO T 96, (D grading)	20 max.

Equipment. Equipment shall be according to the following.

(a) Truck Mounted Application Machine. Use an approved self-propelled truck mounted application machine capable of continuously and thoroughly mixing polymeric resin binder components to the ratio recommended by the polymeric resin manufacturer at a minimum coverage rate of 15 gal/min (57 L/min). The machine shall include an aggregate drop spreader capable of mechanically continuously spreading bauxite aggregate at a minimum rate of 13 lb/sq yd (7 kg/sq m) in varying widths of up to 12 ft (3.6 m), with a minimum height from spreader to pavement surface of 24 in. (600 mm) to achieve proper spread of aggregate.

(b) Portable Shot Blast Equipment. Use approved portable shot blast equipment meeting the requirements of Article 1101.13 to remove curing compound and prepare portland cement concrete surfaces prior to application of the polymeric resin.

(c) Regenerative Air Sweeper (RAS). Use a self-propelled Regenerative Air Sweeper (RAS) with power brooms capable of cleaning the existing pavement and removing loose aggregate without dislodging the bonded HFST aggregate. The vacuum head shall have a minimum width of 6 ft (2 m) and blast re-circulated, filtered air at a minimum rate of 20,000 cu ft/min (565 cu m/min). The RAS must be capable of recycling loose aggregate into clean, uncontaminated, and dry aggregate. The RAS must be capable of being used without water for dust suppression to ensure a dry surface will be maintained.

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CONSTRUCTION REQUIREMENTS.

Qualifications. The Contractor that is placing the HFST shall provide documentation showing HFST or equivalent experience on at least three projects with similar state highway agencies.

Quality Control (QC) Plan. Submit a QC Plan to the District Materials Engineer for approval at least 60 days prior to the placement. The QC Plan shall show proposed methods to control the equipment, materials, mixing, and paving operations to ensure conformance with these Specifications. Discuss the QC Plan requirements at the pre-construction, pre-pave, and progress meetings. The QC Plan shall contain at a minimum the following information.

(a) Key Personnel and contact information.

(b) Polymeric resin production plants, location of plants, personnel qualifications, inspection and record keeping methods, equipment calibration records, and accreditation certificates.

(c) Aggregate production plant locations, personnel qualifications, inspection and record keeping methods, equipment calibration records, and accreditation certificates.

(d) Moisture control methods of aggregate.

(e) List of manufacturer recommendations for storage of material, weather restrictions, curing time, and opening to traffic.

(f) Cleaning and maintenance schedule for truck mounted application machine, including metering and monitoring devices.

(g) Corrective actions that will be taken for unsatisfactory construction practices and deviations from specifications.

(h) A technical expert representative from the polymeric resin manufacturer shall be present at the construction site to train construction personnel prior to placing the HFST and shall remain on the project for the first two days of paving. After the first two days, the representative shall be available during HFST application as necessary.

The QC Plan shall designate a QC Manager, who shall have full authority to institute any action necessary for the successful operation of the QC Plan. The QC Manager shall be on the jobsite at all times during placement of the HFST.

A field technician shall be present at the job site unless otherwise approved in the QC Plan. The field technician shall be responsible for the required field quality control sampling and testing in conformance with the approved quality control plan and contract documents. All sampling shall be performed in the presence of and in locations as directed by the Engineer. Maintain and make available upon request complete records of sampling, testing, actions taken to correct problems, and quality control inspection results. Any deviation from the approved QC Plan shall be cause for immediate suspension of operations.

Weather Restrictions. The polymeric resin binder material shall be applied on dry surfaces (including no condensation moisture from construction vehicles in front of binder application), when the ambient temperature is 55 °F (13 °C) and rising, unless the polymeric resin manufacturer can provide test data to support installations at lower temperatures; and below 105 °F (40 °C), or when the anticipated weather conditions or pavement surface temperature would prevent the proper application of the surface treatment in accordance with the manufacturer's recommendations. Ensure the polymeric resin components are capable of being mixed at lower than ambient temperatures in the event that the components are stored outdoors.

HFST materials shall not be placed when rain is forecast within 24 hours of application.

There shall be no visible moisture present on the surface of the pavement at the time of application of the HFST. A plastic sheet left taped in place for a minimum of two hours, according to ASTM D 4263, shall be used to identify moisture in the pavement.

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Preparation. Perform roadway patching in accordance with Section 442 of the Standard Specifications. Clean and fill all inadequately sealed joints and cracks 1/4 to 1-3/4 in. (6 to 43 mm) wide with a sealant approved by the polymeric resin manufacturer, which will bond to the specified polymeric resin binder. Crack sealing shall be performed in accordance with Section 451 or 452 of the Standard Specifications, except the crack shall be only filled flush with no "band-aid" effect. Where HFST will be applied on either new asphalt or new concrete surface or patches in a project, construct HFST a minimum of 30 days after placement of underlying and adjacent pavement. Completely remove all curing compounds on new portland cement concrete surfaces using shot blasting equipment prior to installation. Remove existing pavement markings in areas to be covered with HFST in accordance with Section 783 of the Standard Specifications. Adequately cover and protect all utilities and existing pavement markings (in areas where markings will be left in place) prior to HFST placement.

Clean existing surfaces with a RAS without dust suppression water, or by other methods approved by the QC Manager and the Engineer prior to application of the polymeric resin. Surfaces may need to be washed with a mild detergent, and then rinsed and dried using a hot compressed air lance. Receiving surfaces must be clean, dry and free of all dust, oil, debris and any other material that might interfere with the bond between the polymeric resin binder material and existing surfaces.

Test Section. Construct a test section (minimum of 200 sq yd (168 sq m)) within the project to demonstrate the truck mounted application machine has been properly calibrated. This test section shall be considered part of the HFST quantity on the project. Correct deficient areas before opening to traffic as directed at no additional cost to the Department. Open the test section to traffic after curing has completed, and no uncovered polymeric resin remains exposed.

Binder Application. Mix the binder components proportionally in accordance with the manufacturer's recommended ratio. Apply the two part polymeric resin base binder by a Truck Mounted Application Machine onto the pavement section to be treated within the temperature range specified in varying widths of up to 12 ft (3.6 m) wide at a uniform application rate of 3.5 sq yd/gal (0.75 sq m/L) with a uniform thickness of 60 mils (1.5 mm) onto the pavement. Do not allow the binder to separate in the mixing lines, cure, dry, chill, set up, or otherwise impair retention bonding of the high friction surfacing aggregate. Ensure that no seams are visible in the middle of the traffic lanes of the finished work after application of the surface aggregate.

Hand application may be used when less than 300 sq yd (250 sq m) will be used in a project. Mix the binder components to the correct proportion within 4 percent by weight using a low speed high torque drill fitted with a helical stirrer. Hand apply the mixed components onto a prepared pavement surface using a serrated edged squeegee resulting in a minimum coverage rate of 3.5 sq yd/gal (0.75 sq m/L) with a uniform thickness of 60 mils (1.5 mm) onto the pavement.

Aggregate Application. Apply the aggregate immediately after placing the polymeric resin binder at a uniform rate of 11-15 lb/sq yd (6-8 kg/sq m). Completely cover the "wet" polymeric resin binder with aggregate to achieve a uniform surface with no exposed polymeric resin remaining visible on the surface. A Truck Mounted Application Machine aggregate drop spreader must be used unless less than 300 sq yd (250 sq m) will be applied in a project, in which case, hand application may be used. Sprinkle or vertically drop the aggregate without splashing the wet polymeric resin film during placement, whether by mechanical or manual means.

Sampling and Testing. During the first day of construction, samples of the polymeric resin binder (boxed storage – one boxed unit; tank storage – 2 gal (8 L) of each component) and aggregate (two 40-lb (18-kg) bags) shall be taken from the materials on the jobsite and submitted to the Bureau of Materials and Physical Research. The Contractor shall supply the sample containers, and sample and label the material under the direct observation of the Engineer.

Curing and Clean Up. Allow the treatment to cure in accordance with polymeric resin manufacturer recommendations. Perform three separate clean up processes by removing the excess aggregate with a RAS on the treated area and adjacent areas. Perform initial clean up before opening to traffic. Excess aggregate can be reused on the following day's installation provided the reclaimed aggregate is clean, uncontaminated and dry. Perform secondary clean up 3 to 5 days after construction. Perform final clean up 3 to 5 weeks after construction.

Field Acceptance Testing. Ensure that the coverage rate of the retained aggregate is 11-15 lb/sq yd (6-8 kg/sq m). Remove and re-apply HFST where any patches of exposed polymeric resin exist, at no additional cost to the Department. The HFST treated area will be tested by the Department within 60 days after construction in accordance with the requirements in Table 3. Remove and replace deficient locations as directed.

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Table 3 – Field Acceptance Testing Requirements

Property	Requirements	Frequency	Test Method
FN40R (Corrected field FN by adding the correction in Table 4)	72 min.	Every 0.1 mile in each lane. By Department	ASTM E 274 (Ribbed tire)
Field Dynamic Friction Value (20 km/hr) (By IDOT) OPTIONAL	0.90 min.	1 per each location, or 1 per every 1,500 lane-feet, whichever is shorter. By Department	ASTM E 1911
Mean Profile Depth (mm) OPTIONAL	1.0 min.	1 per each location, or 1 per every 1,500 lane-feet, whichever is shorter. By Department	ASTM E 2157

Table 4 – HFST Speed Correction Factors for ASTM E 274 Testing Using a Ribbed Tire

Test Speed (mph)	FN Correction	Test Speed (mph)	FN Correction	Test Speed (mph)	FN Correction
20	-9.3	30	-4.8	40	0.0
21	-8.9	31	-4.4	41	0.5
22	-8.4	32	-3.9	42	1.0
23	-8.0	33	-3.4	43	1.5
24	-7.6	34	-2.9	44	2.0
25	-7.1	35	-2.5	45	2.5
26	-6.7	36	-2.0	46	3.1
27	-6.2	37	-1.5	47	3.6
28	-5.8	38	-1.0	48	4.1
29	-5.3	39	-0.5	49	4.6

Method of Measurement. High Friction Surface Treatment will be measured for payment in square yards (sq m). The width for measurement will be the width of the top surface as shown on the plans or directed by the Engineer.

Patches will be measured for payment according to Article 442.10 of the Standard Specifications.

Pavement marking removal will be measured for payment according to Article 783.05 of the Standard Specifications.

Crack/joint sealing will be measured for payment according to Article 451.05 or 452.05 of the Standard Specifications.

Basis of Payment. High Friction Surface Treatment will be paid for at the contract unit price per square yard (square meter) for HIGH FRICTION SURFACE TREATMENT.

Patches will be paid for according to Article 442.11 of the Standard Specifications.

Pavement marking removal will be measured for payment according to Article 783.06 of the Standard Specifications.

Crack/joint sealing will be paid for according to Article 451.06 or 452.06 of the Standard Specifications.

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ATTACHMENT 1

High Friction Surface Treatment Contractors
(Alphabetical Order)

American Civil Constructors West Coast, Inc.
3701 Mallard Drive
Benicia, CA 94510
Attention: Cliff Barber
Office: (707) 746-8028
Mobile: (707) 310-0225

DBI Services
High Friction Surfacing Division /Interstate Road Management Corp
322 Rocky Road
Hazleton, PA 18201
Attention: Richard J. Baker
Office: (804) 213-0335
Cell: (804) 539-5582

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ATTACHMENT 2

Calcined Bauxite Producers/Suppliers
(Alphabetical Order)

CE- Minerals:
Route 2
Newell, WV 26050
Phone: (304) 387-1160
Fax: (304) 387-2205

Global Mineral Corp.
5701 Democracy Blvd. Suite 300
Bethesda, MD 20817
Phone: (301) 571-2449
Fax: (301) 571-9339

Great Lakes Minerals
1200 Port Road
Wurtland, KY 41144
Phone: (606) 833-8383
Fax: (606) 834-1106

Newport Industries:
5201 Blue Lagoon Drive, 8th Floor
Miami, Florida 33126
Phone: (305) 716-4231
Fax: (305) 629-3100

TRAFFIC SIGNAL POST, ALUMINUM, 18 FT

This work shall be in accordance with Sections 875 and 1077 of the Standard Specifications except as modified herein.

The traffic signal post shall be furnished with a pole collar.

This work will be paid for at the contract unit price each for TRAFFIC SIGNAL POST, ALUMINUM, 18 FT. which price shall be payment in full for all labor, material, and equipment required to provide and install the traffic signal post.

RADAR SPEED SIGN

The Contractor shall furnish, install and test a complete radar sign assembly that consists of the following items:

- Variable speed limit display with two 18” full matrix characters and integrated radar sensor.
- Large “YOUR SPEED” MUTCD compliant sign, 4:5 ratio.
- W13-1P Advisory Speed Sign, 24” x 24” MUTCD compliant.
- W1-5L Horizontal Alignment Sign, 36” x 36” MUTCD compliant.
- Solar power system consisting of solar panel (85 watt minimum), mounting rack, pole-mounted battery housing with charge controller, deep-cycle solar battery (Group 27 AGM), wiring, and mounting hardware.
- All software and hardware required for sign programming and configuration.
- All mounting brackets and hardware required for installation.

The radar speed sensor shall be verified by the Department through the use of a radar gun. The Contractor shall calibrate the radar sensor if needed.

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