



JOHN ELIAS BALDACCI
GOVERNOR

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION
AUGUSTA, MAINE

04333-0016

February 6, 2009

Subject: **Microsurfacing I-95**
Federal Project Nos. IM-1594(700)E &
IM-1595(500)E
State Pin Nos. 015947.00 & 015955.00
Amendment No. 2

DAVID A. COLE
COMMISSIONER

Dear Sir/Ms:

Make the following changes to the Bid Documents:

In the Bid Book, **REMOVE** "Construction Notes" on page 23 (1 page, undated, IM-1594(700)E) and **REPLACE** with the new attached "Construction Notes" (1 page, undated IM-1594(700)E).

In the Bid Book, **REMOVE** "Construction Notes" on page 26 (1 page, undated, IM-1595(500)E) and **REPLACE** with the new attached "Construction Notes" (1 page, dated February 6, 2009, IM-1595(500)E).

In the Bid Book, (pages 49 thru 56), **REMOVE** "SPECIAL PROVISION, SECTION 462, MICROSURFACING", 8 pages dated January 20, 2009 and **REPLACE** with the new attached, "SPECIAL PROVISION, SECTION 462, MICROSURFACING", 8 pages dated February 6, 2009.

The following question has been received:

Question: There is conflicting information regarding submission of the DBE Utilization form on your website. One place states that it must be submitted by 4:30PM on the day of bid opening and another page states that it must be submitted with the Bid Package or submitted by Fax. Please clarify.

Response: Incorrect information was posted on the web regarding submission of DBE Utilization forms. The errors have been corrected. DBE Utilization forms must be submitted with your bid. If you are submitting an electronic bid, the DBE Utilization form may be faxed to 207-624-3431.

Consider these changes and information prior to submitting your bid on February 11, 2009.

Sincerely,

Scott Bickford
Contracts & Specifications Engineer



PRINTED ON RECYCLED PAPER

Construction Notes

Item 403.102 HMA for special areas

This item is to be used to fill potholes identified by the Resident prior to crack-sealing.

424.3331 Low Modulus Crack Seal Applied

30,000 lbs. estimated for mainline and shoulders.

Item 462.03 Micro-surfacing – Rut, Scratch and Surface Course

Mainline (travel way) 89,000 sy

Item 462.04 Micro-surfacing – Scratch and Surface Course

Mainline (passing lane)	89,000 sy
Exit 187 on ramp	3,000 sy
Exit 191 off ramp	3,400 sy
Exit 191 on ramp	2,600 sy
Exit 193 off ramp	3,200 sy
Exit 193 on ramp	3,200 sy
Exit 197 off ramp	2,500 sy
Exit 197 on ramp	3,850 sy
Exit 199 off ramp	3,000 sy

TOTAL 113,750 sy

The above quantities are estimates only. Items 462.03 and 462.04 may be used in either lane as directed by the Department.

Crack sealing will be required to be completed a minimum 7 calendar days prior to placing micro-surfacing.

The micro-surfacing on the mainline shall be placed between the rumble strip areas located on the left and right shoulders for an estimated width of 25 feet (12 travel lane plus 6 inches over the shoulder break). Shoulder edges shall be tooled to create a taper and minimize edge height.

The micro-surfacing on the ramps shall cover the travel lane plus an additional foot onto the right and left shoulder for an average width of 18 feet. All acceleration, deceleration and transfer lanes shall be microsurfaced as directed. Shoulder edges shall be tooled to create a taper and minimize edge height.

Construction Notes

Item 403.102 HMA for special areas

This item is to be used to fill potholes identified by the Resident prior to crack-sealing.

424.3331 Low Modulus Crack Seal Applied

40,000 lbs. estimated for mainline and shoulders.

Item 462.03 Micro-surfacing – Rut, Scratch and Surface Course

Mainline (travel way) 111,000 sy

Item 462.04 Micro-surfacing – Scratch and Surface Course

Mainline (passing lane) 111,000 sy
Rest Area off ramp 100 sy

The above quantities are estimates only. Items 462.03 and 462.04 may be used in either lane as directed by the Department.

Crack sealing will be required to be completed a minimum 7 calendar days prior to placing micro-surfacing.

The micro-surfacing on the mainline shall be placed between the rumble strip areas located on the left and right shoulders for an estimated width of 25 feet (12 travel lane plus 6 inches over the shoulder break). Shoulder edges shall be tooled to create a taper and minimize edge height.

The microsurfacing on the ramps shall cover the travel lane plus an additional foot onto the right and left shoulder for an average width of 18 feet. All acceleration, deceleration and transfer lanes shall be microsurfaced as directed. Shoulder edges shall be tooled to create a taper and minimize edge height.

SPECIAL PROVISION
SECTION 462
MICROSURFACING

Description This item consists of the supply, production, and placement of polymer modified Microsurface wearing course. All work shall be in accordance with this specification and the requirements of Section 106 – Quality.

Materials All materials shall be supplied by the Contractor.

Polymer Modified Emulsified Asphalt (Binder) The binder shall be quick set polymer modified cationic type CSS-1H emulsion or approved equivalent. Emulsified asphalt and polymer modified asphalt shall be homogeneous after mixing and show no signs of separation within 14 days of delivery. The addition of polymers or other additives after the manufacture of the emulsified asphalt shall not be permitted. The binder shall conform to the requirements indicated in Table 1.

Table 1 Binder Requirements

Test	Property	Requirements
ASTM D244	Residue by Distillation % by Mass (Test Temperature should be less than 138°C [280°F])	62% min.
Tests on Residue		
ASTM D36	Softening Point	57°C [135°F] min
ASTM D5	Penetration at (25°C [75°F], 100 g [3.5 oz], 5s) 0.1 mm [0.004 in]	40 - 90
ASTM D2170	Kinematic Viscosity at 135°C [275°F]	650 mm ² [1 in ²]/s min.

Aggregates The aggregates shall consist of 100% crushed ledge product or other approved material by the Department and shall conform to the gradation requirements as indicated in Table 2.

Table 2

ASTM Sieve Size	Percent Passing	Tolerance Limits
9.5 mm [$\frac{3}{8}$ in]	100	± 5 %
4.75 mm [# 4]	85 – 95	± 5 %
2.36 mm [# 8]	55 - 80	± 5 %
1.18 mm [# 16]	35 - 60	± 5 %
600 µm [# 30]	20 - 35	± 5 %
300 µm [# 50]	15 - 25	± 4 %
150 µm [# 100]	5 - 15	± 3 %
75 µm [# 200]	5 - 12	± 2 %

Aggregates

Aggregates used shall be from an approved source and shall meet the requirements of section 703.07 for 3.0 to < 10 million ESALs except the changes or additions made by 1 through 7.

1. Aggregates shall have a maximum LA Abrasion (AASHTO T96) of 35 %.
2. Absorption by AAHSTO T 84 shall be less than 3.0% for fine aggregate blends.
3. Absorption by AAHSTO T 85 shall be less than 3.0% for coarse aggregate blends.
4. It shall have a minimum sand equivalent of 45, (AASHTO T 176), and the fine aggregate shall be 100% crushed.
5. 95 % of the aggregate shall have at least a single face crushed and 85% shall have 2 or more crushed.
6. Percent by weight of Flat and Elongated particles shall be (5:1 ratio) with 10% maximum.
7. Soundness (AASHTO T 104-94) Magnesium Sulfate 18% maximum or Sodium Sulfate 12 % maximum.

The Contractor shall provide test results the Department for all materials to utilized in the completion of the work. Contractor test results shall be submitted 7 days prior to start of the work.

Once the gradation for the mix design has been submitted, the stockpile must be maintained within the tolerance shown on Table 2 and still remain within the gradation band.

Mineral Filler Mineral filler shall be non-air entrained portland cement, hydrated lime, or approved equivalent and shall be free of lumps.

Water The Contractor shall use potable water, free of harmful salts and contaminants.

Polymer Modifier The Contractor shall supply polymer modifier consisting of a minimum of 3% polymer solids by mass of the asphalt residue. The polymer solids, along with special quick setting emulsifier agents, shall be incorporated into the emulsified asphalt at the colloid mill.

Additives Additives, when required, shall be supplied by the Contractor. Additives may be added to the emulsion mix during construction to provide control of the quick-set properties and increase of adhesion, only if they have been included as part of the mix design. Additives must be compatible with the other components of the microsurfacing.

Mix Design The Contractor shall be responsible to designate the mix proportions and prepare the job mix formula. All component materials used in the mix design shall be representative of the material proposed for use by the Contractor. The final mix design shall conform to the requirements listed in Table 3.

Table 3 Microsurfacing Mix Properties

Test	Property	Requirements	
ISSA TB-139	Wet Cohesion		
		At 30 minutes min. (set)	12 kg-cm [10 ft-lb] min
		At 60 minutes min. (traffic)	20 kg-cm [17 ft-lb] min.
ISSA TB-109	Excess Asphalt by LWT Sand Adhesion	538 g/m ² [0.11 lb/ft ²] max.	
ISSA TB-1 14	Wet Stripping	Pass (90% min.)	
ISSA TB-100	Wet Track Abrasion Loss		
		One Hour Soak	538 g/m ² [0.11 lb/ft ²]
		Six Day Soak	807 g/m ² [0.165 lb/ft ²]
ISSA TB-147A	Lateral Displacement	5% max.	
	Specific Gravity after 1000 cycles of 57 kg [125 lb]	2.10 max.	
ISSA TB-144	Classification Compatibility (AAA, BAA)	11 grade points min.	
ISSA TB-1 13	Mix Time at 25°C [75°F]	Controllable to 120 s min	

ISSA is the International Slurry Surfacing Association

Submittals The Contractor shall submit the final mix design, the results aggregate tests, and the tests outlined in Table 3, at least 7 days in advance of placing any material. The Contractor shall submit to the Resident, at the beginning of each working day, a written summary of the total quantity and distribution rate of microsurfacing placed the previous day which shall include a list of the quantities used for aggregate, emulsion, mineral filler, and additive(s).

CONSTRUCTION

General The Contractor shall perform the work as directed in the Contract Documents or as directed by the Resident. Microsurfacing shall consist of a rut, scratch coat, and surface application or a scratch coat and surface application. The Contractor shall calibrate the proportioning devices, to the satisfaction of the Resident, prior to beginning any placement of microsurfacing. The Resident shall be notified at least 24 hours prior to the calibration. A copy of the results of the calibration shall be submitted to the Resident prior to the commencement of any microsurfacing operation. Over the duration of the project, the proportioning devices shall be recalibrated, to the satisfaction of the Resident, should any of the following occur: after every 2000 Mg [2200 ton] of placement, a change in the source of aggregate, a mechanical failure to the application system or proportioning devices.

Equipment Equipment required shall be designed and operated to produce an end product complying with the requirements of this specification. The Contractor shall maintain all equipment in satisfactory working condition. Rotary power brooms shall be capable of cleaning gravel, sand, dirt, and other debris from bituminous surfaces. Mixing equipment shall be specifically designed and manufactured to lay microsurfacing.

The material shall be mixed by an automatic, sequenced, self-propelled microsurfacing mixing machine. The equipment shall be a continuous flow mixing unit, capable of accurately proportioning and delivering the aggregate, emulsified asphalt, mineral filler, control setting additive, and water to a revolving multi-blade double shaft mixer and discharging the mixed product on a continuous flow basis. The machine shall have sufficient storage capacity to maintain an adequate supply of materials to the proportioning controls. Individual volume or weight controls

for proportioning each material to be added to the mix shall be provided and properly marked. These proportioning devices are usually revolution counters or similar devices and are used in material calibration and determining the material output at any time.

A 3 m [10 ft] metal or wood straight edge that may be used for checking surface deviations shall be provided. The mixture shall be spread uniformly by means of a conventional augered surface spreader box attached to the mixing machine. The spreading machine shall be equipped with paddles to agitate and spread the material evenly throughout the box. A front seal shall be provided to ensure no loss of the mixture at the pavement contact point. The rear seal shall act as final strike-off and shall be adjustable. The spreader box and rear strike-off shall be so designed and operated that a uniform consistency is achieved to produce a free flow of material to the rear strike-off. The spreader box shall have suitable means provided to maneuver the box to compensate for variations in the pavement geometry. A string line or other device must be provided to ensure the longitudinal edges are straight and meet the existing pavement edge unless otherwise directed by the Resident.

Stockpiling The Contractor shall construct stockpiles at sites of their own choosing. Such sites shall be arranged for and shall be the responsibility of the Contractor in all respects. Stockpiles shall be placed on a level, well drained base, in such a manner so as to prevent contamination and ensure maximum recovery of the stockpiled material. Throughout the duration of the project, there shall be sufficient aggregate in stockpile to cover three days' production. If different sources of aggregate are to be used, separate stockpiles for each source are to be maintained.

PLACEMENT OF MICROSURFACING

General The Contractor shall successfully demonstrate the ability to produce and place microsurfacing by placement of a trial area 100 m [325 ft] in length and one lane in width, at the commencement of the microsurfacing operation and prior to full production.

Weather and Seasonal Limitations – All work shall be in accordance with Division 400 – Pavements; Section 401 – Hot Mix Asphalt Pavement, subsection 401.06 Weather and Seasonal Limitations, with the exception of the following revision;

The minimum pavement surface temperature for application of the tack coat and placement of the wearing course is 60° F.

The microsurfacing shall not be applied if the pavement temperature is 60°F, or the air temperature is below 60°F. The mixture shall not be applied when weather conditions prolong opening to traffic.

Preparation of Existing Surface The Contractor shall thoroughly clean the area to be microsurfaced all objectionable material. All surfaces shall have a tack coat applied prior to placing any microsurface course. The tack coat shall be a RS-1 grade emulsified asphalt and conform to the requirements of Section 409 – Bituminous Tack Coat, Section 702 – Bituminous Material, and all applicable sections of the contract.

The area to be microsurfaced shall be thoroughly cleaned of all vegetation, loose material, sand, dirt, and other debris. Dried mud or other foreign matter which cannot be removed with the rotary power broom shall be removed by an approved method.

The area to be microsurfaced shall have all existing cracks cleaned and sealed with an approved crack seal material. Foreign materials, such as vegetation, which cannot be removed from the cracks with compressed air shall be removed by an approved method.

Manholes, valve gates, catch basin inlets, bridge expansion joints, and other structures shall be protected from the microsurfacing. Material that becomes adhered to such structures shall be removed to the satisfaction of the Resident prior to opening to traffic.

Quality Control - Quality control testing shall be the responsibility of the Contractor throughout the project duration, including the production of the aggregates, the polymer modified asphalt emulsion, and the placement of the final product. The Contractor shall operate in accordance with the approved Quality Control Plan (QCP) to assure a product meeting the contract requirements. The QCP shall meet the requirements of Section 106.6 – Acceptance, and this Section. The Contractor shall not begin paving operations until the Department approves the QCP in writing.

Prior to placing any microsurface, the Department and the Contractor shall hold a Pre-paving conference to discuss the microsurface schedule, source of mix, type and amount of equipment to be used, sequence of paving pattern, rate of microsurface, random sampling, project lots and sublots and traffic control. All field and plant supervisors including the responsible onsite paving supervisor shall attend this meeting.

The QCP shall address items that affect the quality of the Microsurface, but not limited to, the following:

- a. JMF(s)
- b. Stockpile Management
- c. Make and type of spreader(s)
- d. Name of Quality Control Technicians(s).
- e. Testing Plan
- f. Laydown operations including longitudinal joint construction, procedures for avoiding paving in inclement weather, methods to ensure that segregation is minimized.
- g. Examples of Quality Control forms including a daily plant report and a daily paving report
- h. Name and responsibilities of the Responsible onsite Paving Supervisor
- i. A note detailing when production will be halted due to QC testing results, and corrective action to be taken.

The Contractor shall sample, test, and evaluate the microsurface mixture in accordance with the following minimum frequencies:

TABLE 2 : MINIMUM QUALITY CONTROL FREQUENCIES

Test or Action	Frequency	Test Method
Gradation	1 per 30,000 S.Y. / 1 per day	AASHTO T27 and T11

The Contractor shall provide the Resident with a copy of all quality control test results daily. Quality assurance testing may be conducted by the State and the results of these tests shall be made available to the Contractor, upon request, but shall not be considered to relieve the Contractor of or replace the specified quality control testing.

Application Using a Mechanical Spreader The mixture shall be spread to fill minor cracks and shallow potholes and leave a uniform surface. The application shall consist of a scratch coat and a surface coat with a combined minimum rate of application of 14 kg/m² [25 lb/yd²] under item 462.04. Existing ruts shall be filled by a separate application of microsurface material with a rut filling spreader box prior to applying the scratch coat. Following the rut filling, the application shall consist of a scratch coat and a surface coat with a combined minimum rate of application of 14 kg/m² [25 lb/yd²] under item 462.04

For both types of application, a sufficient amount of mixture shall be carried in all parts of the spreader box at all times, so that complete coverage is obtained. Water used to spray the spreader box to facilitate spreading shall not harm the mix. No lumping, balling, or unmixed aggregate shall be permitted in the finished surface. Any oversized aggregate or foreign materials shall be screened from the aggregate prior to delivery to the mixing machine.

Handwork In restricted areas where hand spreading is necessary, slight adjustments to the mix formula may be used to retard the setting time. The mixture shall be poured into a small windrow along one edge of the surface to be covered and spread uniformly with suitable hand tools.

Joints The longitudinal and transverse joints shall be neat in appearance and uniform. No excessive build-up, uncovered areas, non-homogeneous mixture, or unsightly appearance will be permitted on joints. The longitudinal joints in the scratch coat shall be constructed as a butt joint. The longitudinal joints in the surface course shall be placed on lane lines with less than 100 mm [4 in] overlap on adjacent passes, except where pavement width varies. Surface irregularities between the adjacent passes shall be no more than 6 mm [¼ in] difference in elevation, as measured with a 3 m [10 ft] straight edge. Transverse joints shall be constructed such that the surface irregularities across the joint shall be no more than 6 mm [¼ in] difference in elevation, as measured with a 3 m straight edge [10 ft].

Requirements for Finished Surface The finished micro-surfacing shall have a uniform texture and be free from visible signs of surface defects. Surface defects, as determined by the Resident, will be cause for rejection of the microsurfacing. Such defects shall include, but not limited to those items noted in Table 4. The warranty period shall apply to both the initial placement and repairs.

Table 4 Finished Surface Defects

Tear marks in any 12 m ² [15 yd ²] per lane exceeding a) four or more marks \geq 12 mm [½ in] wide and \geq 100 mm [4 in] long, or b) any marks \geq 25 mm [1 in] wide and \geq 25 mm [1 in] long
Bleeding and flushing exceeding 2% in any 100 m ² [120 yd ²] area.
Bleeding and/or flushing at joints
Longitudinal ripples (raking) and/or wash-boarding (chatter) of 5 mm [¼ in] or more in depth as measured with a 3 m [10 ft] straight edge.
Total areas exhibiting raking and chatter exceeding 2% in any 100 m ² [120 yd ²] area.
Total areas exhibiting loss of surface (debonding/delamination/ potholing) exceeding 2% in any 100 m ² [120 yd ²] area.

The edges of the microsurfacing for surface application shall be uniform, with neat appearance along the roadway centerline, lane lines, shoulder, pavement edge, and curb lines. Edges are to have a maximum 50 mm [2 in] horizontal variance in any 30 m [100 ft] section. Any 400 m [1300 ft] lane segment that has repairs or defects exceeding 5% of the area shall require a re-application of microsurfacing over the entire segment. All work required for reconstruction of unacceptable areas shall be at the Contractor's own expense. Any part of completed microsurfacing ejected for surface defects shall be repaired within 20 days from the time the Contractor receives notification of rejection, but in no case later than August 31st of the current year. If the 20-day period extends past August 31st of the current year, the Contractor shall complete the repairs between June 1st and June 15th of the following year.

Clean Up Microsurfacing shall be removed from all unwanted areas as directed by the Resident. The Contractor shall, on a daily basis, remove any debris from the work site. The finished product shall be swept clean to remove all loose stone to the satisfaction of the Department.

Guarantee All work shall be in accordance with this specification and the requirements of Section 106 – Quality. Corrections to defects caused by poor workmanship, incomplete materials, improper design or application rates, inadequate traffic control, or failure to practice proven microsurfacing procedures shall be the responsibility of the Contractor. Poor stone retention, flushing, and bleeding of the surface shall be considered as material failure. The Department shall determine the areas that shall be re-treated. Re-treatment shall be carried out promptly and efficiently as directed by the Resident. The Contractor, for a period of one year after completion of the re-treatment, shall guarantee the re-treatment executed under the terms of this contract against failure and defects as noted above. For the purpose of this item and at the discretion of the Resident, failure of intermittent areas that constitute 40% or more of the area treated or retreated on any individual project shall be deemed a complete failure, and the Contractor shall be required to redo the entire work under this item.

Acceptance Material acceptance shall be in accordance with Section 401.203 - Testing Method C. The Lot size will be the entire production for the project. Sublot sizes shall be 30,000 square yards for gradation properties, with unanticipated over-runs of up to 1650 square yards rolled into the last sublot. The minimum number of sublots per Lot for gradation properties shall be 4.

TABLE 4: ACCEPTANCE CRITERIA

PROPERTIES	POINT OF SAMPLING	TEST METHOD
Gradation	Stockpile	AASHTO T27

TABLE 7: METHOD C ACCEPTANCE LIMITS

Property	USL and LSL
Passing 4.75 mm and larger sieves	Target +/-7%
Passing 2.36 mm to 1.18 mm sieves	Target +/-4%
Passing 0.60 mm	Target +/-3%
Passing 0.30 mm to 0.075 mm sieve	Target +/-2%

Pay Adjustment The Department will sample, test, and evaluate microsurfacing in accordance with Section 106 - Quality and Section 401.20 - Acceptance, of Division 400 – Pavements. The Department will use the sieve sizes listed in this specification for the type of mixture represented in the JMF.

Gradation The Department will determine a pay factor using Table 7: Method C Acceptance Limits. The Department will calculate the price adjustment for Mixture Properties as follows:

$$PA = (\% \text{ Passing Nom. Max PF-1.0})(Q)(P)X0.05 + (\% \text{ passing 2.36 mm PF-1.0})(Q)(P)X0.05 + (\% \text{ passing 0.30 mm PF-1.0})(Q)(P)X0.05 + (\% \text{ passing 0.075 mm PF-1.0})(Q)(P)X0.10$$

Measurement for Payment The quantity to be measured for payment shall be the number of square meters [square yards] of microsurfacing supplied, produces, and placed in accordance with this specification.

Basis of Payment The unit price for this item shall be full compensation for designing, producing, testing, and placing the Rut, Scratch, and Surface course ; supplying and placing bituminous tack coat; cleaning the pavement; guaranteeing the product for the time specified; and repairing any defects as described in Table 4.

Payment will be made under

<u>Pay Item</u>	<u>Pay Unit</u>
462.03 Microsurfacing – Rut, Scratch and Surface Course	Square Yard
462.04 Microsurfacing - Scratch and Surface Course	Square Yard