STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0016

JOHN ELIAS BALDACCI
GOVERNOR

DAVID A. COLE
COMMISSIONER

March 14, 2008
Subject: **Crack Sealing – Statewide By Region**
State Pin Nos. 015961.01, 015961.02, 015961.03
015961.04, 015961.05
Amendment No. 1

Dear Sir/Ms:

Please make the following changes to the Bid Documents:

In the bid book, **REMOVE** the SCHEDULE OF ITEMS dated 080222, five pages total (pages 5 thru 9) and **REPLACE** with the attached new SCHEDULE OF ITEMS, dated 080313 for Regions 1,2,3 and 5, and 080314 for Region 4, five pages total.

In the Bid Book, **REMOVE** the following two Special Provisions: SPECIAL PROVISION, SECTION 424, LOW MODULUS CRACK SEALER (pages 98 – 100) dated January 23, 2007, three pages total and SPECIAL PROVISION, SECTION 424, LOW MODULUS CRACK SEALER, INCLUDING ROUTING (pages 101 – 104) dated January 23, 2007, four pages total.

ADD to the Bid Book the attached two Special Provisions: SPECIAL PROVISION, SECTION 424, LOW MODULUS OR FIBER MODIFIED CRACK SEALER, Dated March 13, 2008, four pages total and SPECIAL PROVISION, SECTION 424, LOW MODULUS OR FIBER MODIFIED CRACK SEALER, INCLUDING ROUTING, dated March 14, 2008, five pages total.

Consider these changes and information prior to submitting your bid on **March 19, 2008**.

Sincerely,
Diane Barnes for
Scott Bickford
Contracts & Specifications Engineer

CONTRACT ID: 015961.01 PROJECT(S): 015961.01

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
	SECTION 0001 PROJECT ITEMS					
0010	424.30 CRACK SEALER, APPLIED	57150.000 LB				
0020	659.10 MOBILIZATION	LUMP	LUMP			
	SECTION 0001 TOTAL					
	TOTAL BID					

CONTRACT ID: 015961.02 PROJECT(S): 015961.02

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
	SECTION 0001 PROJECT ITEMS					
0010	424.30 CRACK SEALER, APPLIED	79560.000 LB				
0020	659.10 MOBILIZATION	LUMP	LUMP			
	SECTION 0001 TOTAL					
	TOTAL BID					

CONTRACT ID: 015961.03 PROJECT(S): 015961.03

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
	SECTION 0001 PROJECT ITEMS					
0010	424.30 CRACK SEALER, APPLIED	32120.000 LB				
0020	659.10 MOBILIZATION	LUMP	LUMP			
	SECTION 0001 TOTAL					
	TOTAL BID					

CONTRACT ID: 015961.04 PROJECT(S): 015961.04

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
	SECTION 0001 PROJECT ITEMS					
0010	424.301 CRACK SEALER, APPLIED INCLUDING ROUTING	127200.000 LB				
0020	659.10 MOBILIZATION	LUMP	LUMP			
	SECTION 0001 TOTAL					
	TOTAL BID					

MAINE DEPARTMENT OF TRANSPORTATION PAGE: 1
DATE: 080313
SCHEDULE OF ITEMS REVISED:

CONTRACT ID: 015961.05 PROJECT(S): 015961.05

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
	SECTION 0001 PROJECT ITEMS					
0010	424.30 CRACK SEALER, APPLIED	100980.000 LB				
0020	659.10 MOBILIZATION	LUMP	LUMP			
	SECTION 0001 TOTAL					
	TOTAL BID					

March 13, 2008
PIN's 15961.01, 15961.02, 15961.03, 15961.05
Regions 1,2,3,5

SPECIAL PROVISION
SECTION 424
LOW MODULUS OR FIBER MODIFIED CRACK SEALER

Description This work shall consist of the furnishing and placement of crack sealing material in the cracks of existing bituminous concrete pavement in accordance with these Special Provisions. Placement shall consist of: 1) crack cleaning and drying, 2) material preparation and application, 3) material finishing and shaping and 4) barrier material and application.

Materials The sealant shall be either one of the following (A or B) and shall be subject to approval by the Resident prior to the start of work.

A) Low Modulus Crack Sealant Material - low modulus crack sealant material shall conform to ASTM D-3405 and the following specification.

Cone Penetration	90 - 150
Flow @ 60°C [140ºF]	< 3.0mm [⅛ in]
Bond, non-immersed	Three 12.7mm [½ in] specimens pass 3 cycles @ 200% extension @ -29°C [-20ºF]
Resilience, %	60 min
Asphalt Compatibility, ASTM D5329	pass*

* There shall be no failure in adhesion, formation of any oily exudates at the interface between the sealant and asphaltic concrete or other deleterious effects on the asphaltic concrete or sealant when tested at 60°C [140ºF].

B) Fiber Reinforced Modified Asphalt compound consisting of:

1. Modified Asphalt Binder - This shall consist of a blend of neat asphalt cement and crumb rubber, which are chemically bonded to produce a modified asphalt binder that complies with all the requirements of AASHTO MP1a for PG 70-34, with a separation less than 5% (AASHTO PP 5-93, Section 8.3). The modified asphalt binder shall not contain any particles of rubber or elastomeric material when tested in accordance with AASHTO T 44. The viscosity shall not exceed 3 Pa·s at 300°F. The dynamic shear of the pressure aging vessel residue shall not exceed 5000 kPa at 7°C. The elastic recovery at 4°C (AASHTO T301) shall be not less than 70%. The modification at a minimum shall consist of 5% crumb rubber from tires. The supplier of the modified asphalt binder shall certify the composition and PG grade of the modified asphalt binder.

2. Asphalt Cement - The high temperature grade (AASHTO MP1a) of the neat asphalt cement shall not exceed PG 58-XX.

3. Crumb Rubber – The modified asphalt binder shall have a crumb rubber content of not less than 5% by weight of neat asphalt cement. The maximum size of the crumb rubber shall be 80 mesh.

4. Chemical Bonding Agent – The chemical bonding agent shall be heat stable and compatible with asphalt and rubber.

5. Fibers - Polyester, fully drawn.

Length	10 mm (max)
Denier	15 dpf (max)
Tenacity	4 gpd (min)
Crimp	none
Color	natural

Fiber Reinforced Modified Asphalt Compound Properties:

Fiber concentration	8% by weight of modified asphalt binder; uniform dispersion of fibers
Elongation	8% at 0°F (max)
Tensile Strength	450 psi at 0°F (min)

Blending of the fibers with the modified asphalt binder shall be in accordance with the recommendations of the manufacturer of the fibers.

The contractor shall provide the Resident or authorized representative with a copy of the material manufacturer's recommendations for the sealant material being provided pertaining to heating, application, and reheating prior to the beginning of operations or the changing of materials.

CONSTRUCTION REQUIREMENTS

Weather Low Modulus Crack Sealer shall not be applied on a wet surface, after sunset or before sunrise, or when the atmospheric temperature is below 10°C [50°F] in a shaded area at the job site, or when weather conditions are otherwise unfavorable to proper construction procedures.

Equipment Equipment used in the performance of the work shall be subject to the Resident's or authorized representative's approval and shall be maintained in a satisfactory working condition at all times.

(a) Air Compressor: Air compressors shall be portable and capable of furnishing not less than 3 m^3 [4 yd^3] of air per minute at not less than 620 kPa [90 psi] pressure at the nozzle. The compressor shall be equipped with traps that will maintain the compressed air free of oil and water.

(b) Sweeper: Manually operated, gas powered air-broom or self-propelled sweeper designed especially for use in cleaning pavements shall be used to remove debris, dirt, and dust from the cracks.

(c) Hot Air Lance: Should operate with propane and compressed air in combination at 1100°C - 1650°C [2000°F - 3000°F], exit air heated at 310 m/s [1000 ft/s]. The lance should draw propane from no smaller than a 45 Kg [100 lb] tank using separate hoses for propane and air draw. The hoses shall be wrapped together with reflectorized wrap to keep them together and to protect workers in low light situations.

(d) Hand Tools: Shall consist of V-shaped squeegee, brooms, shovels, metal bars with chisel shaped ends, and any other tools which may be satisfactorily used to accomplish this work.

(e) Melting Kettle: The unit used to melt the joint sealing compound shall be a double boiler, indirect fired type. The space between inner and outer shells shall be filled with a suitable heat transfer oil or substitute having a flash point of not less than 320°C [608°F]. The kettle shall be equipped with a satisfactory means of agitating and mixing the joint sealer at all times. This may be accomplished by continuous stirring with mechanically operated paddles and/or a continuous circulating gear pump attached to the heating unit. The kettle must be equipped with thermostatic control calibrated between 94°C [200°F] and 290°C [550°F].

(f) Application Wand: The application wand shall apply a controlled flow of material via an insulated or heated hose. The nozzle shall distribute the material as called for in this specification. A pressure regulator shall be provided to regulate pressure at the nozzle. A bypass line into the holding tank is required for use when the nozzle is shut off.

Preparation All cracks greater than 5 mm [¼ in] shall be blown free of loose material, dirt, vegetation, and other debris by high pressure air. Material removed from the crack shall be removed from the pavement surface by means of a power sweeper or appropriate hand tools as required. Cracks showing evidence of vegetation after being blown out shall be additionally cleaned by appropriate hand tools and additionally blown out. All cracks must be blown and heated via the hot air lance 10 minutes prior to the crack being sealed. Distance between the hot air lance and the crack sealing unit should be no more than 15 m [50 ft] to eliminate reinvasion of water, debris, and other incompressibles. All debris, vegetation, and water shall be removed to enhance adhesion of the crack sealing material. THIS WORK SHALL NOT BE DONE IN INCLEMENT WEATHER.

Preparation and Placement of Sealer The crack sealant material shall be heated and applied at the temperature specified by the manufacturer and approved by the Resident or authorized representative. Any material that has been heated above the manufacturer's specification shall not be used. Material that is reheated or held at temperature for an extended period of time may be used as allowed by the manufacturer's specification and approval of the Resident or authorized representative. The Contractor shall provide the Resident or authorized representative with a suitable device for verifying the sealant temperature in the kettle and at the application site.

Any over application or spills are to be removed to the satisfaction of the Resident or authorized representative. Any sealed areas with damaged or contaminated sealer or visible voids are to be removed, prepared and resealed at no additional cost to the Department.

Sealer shall be delivered to the crack while the cracks are still hot from the hot air lance preparation through a pressure hose line and applicator shoe. The shoe width and the sealer overbanding area shall vary from 50 mm - 100 mm [2 in - 4 in] depending on the severity of the cracks. The applicator shall be followed by a V-shaped squeegee to minimize the thickness of the overband. Any loose material on the surface or in the crack, which may contaminate the crack sealer or impede bonding of the sealant to the pavement, is to be removed by hand tools prior to crack filling. No crack filling material shall be applied in a crack that is wet or where frost, snow, or ice is present. The ambient air temperature must be 10°C [50°F] or higher.

Blotter material such as Glenzoil, Black Beauty or an equivalent approved by the Resident shall be provided by the Contractor and shall be applied to the crack sealer to prevent pickup and tracking. Blotter material shall be incidental to item 424.30.

Quality of Work Excess of spilled sealer shall be removed from the pavement by approved methods and discarded. Any quality of work determined to be below normal acceptable standards will not be accepted, and will be corrected and/or replaced as directed by the Resident or authorized representative at no additional cost to the Department.

Method of Measurement Sealant will be measured by the kilogram (pound) of sealant used and include all additions such as crumb rubber, bonding agents, and fibers. The manufacturer's weights of the sealant will be accepted as the basis for measurement.

Basis of Payment. The accepted quantity of Low Modulus Crack Sealer will be paid for at the contract unit price per kilogram [pound] complete in place. This price shall be full compensation for furnishing and placing crack sealer, including cleaning cracks and furnishing and placing barrier materials.

Payment will be made under:

Pay Item	Pay Unit
424.30 Crack Sealer, Applied	Kilogram [Pound]

March 14, 2008
PIN 15961.04
Region 4

SPECIAL PROVISION
SECTION 424
LOW MODULUS OR FIBER MODIFIED CRACK SEALER INCLUDING ROUTING

Description This work shall consist of the furnishing and placement of crack sealing material in the cracks of existing bituminous concrete pavement in accordance with these Special Provisions. Placement shall consist of: 1) crack cleaning and drying, 2) material preparation and application, 3) material finishing and shaping and 4) barrier material and application.

Materials The sealant shall be either one of the following (A or B) and shall be subject to approval by the Resident prior to the start of work.

A) Low Modulus Crack Sealant Material - low modulus crack sealant material shall conform to ASTM D-3405 and the following specification.

Cone Penetration	90 - 150
Flow @ 60°C [140ºF]	< 3.0mm [⅛ in]
Bond, non-immersed	Three 12.7mm [½ in] specimens pass 3 cycles @ 200% extension @ -29°C [-20ºF]
Resilience, %	60 min
Asphalt Compatibility, ASTM D5329	pass*

* There shall be no failure in adhesion, formation of any oily exudates at the interface between the sealant and asphaltic concrete or other deleterious effects on the asphaltic concrete or sealant when tested at 60°C [140ºF].

B) Fiber Reinforced Modified Asphalt compound consisting of:

1. Modified Asphalt Binder - This shall consist of a blend of neat asphalt cement and crumb rubber, which are chemically bonded to produce a modified asphalt binder that complies with all the requirements of AASHTO MP1a for PG 70-34, with a separation less than 5% (AASHTO PP 5-93, Section 8.3). The modified asphalt binder shall not contain any particles of rubber or elastomeric material when tested in accordance with AASHTO T 44. The viscosity shall not exceed 3 Pa·s at 300°F. The dynamic shear of the pressure aging vessel residue shall not exceed 5000 kPa at 7°C. The elastic recovery at 4°C (AASHTO T301) shall be not less than 70%. The modification at a minimum shall consist of 5% crumb rubber from tires. The supplier of the modified asphalt binder shall certify the composition and PG grade of the modified asphalt binder.
2. Asphalt Cement - The high temperature grade (AASHTO MP1a) of the neat asphalt cement shall not exceed PG 58-XX.

3. Crumb Rubber – The modified asphalt binder shall have a crumb rubber content of not less than 5% by weight of neat asphalt cement. The maximum size of the crumb rubber shall be 80 mesh.

4. Chemical Bonding Agent – The chemical bonding agent shall be heat stable and compatible with asphalt and rubber.

5. Fibers - Polyester, fully drawn.

Length	10 mm (max)
Denier	15 dpf (max)
Tenacity	4 gpd (min)
Crimp	none
Color	natural

Fiber Reinforced Modified Asphalt Compound Properties:

Fiber concentration	8% by weight of modified asphalt binder; uniform dispersion of fibers
Elongation	8% at 0°F (max)
Tensile Strength	450 psi at 0°F (min)

Blending of the fibers with the modified asphalt binder shall be in accordance with the recommendations of the manufacturer of the fibers.

The contractor shall provide the Resident or authorized representative with a copy of the material manufacturer's recommendations for the sealant material being provided pertaining to heating, application, and reheating prior to the beginning of operations or the changing of materials.

CONSTRUCTION REQUIREMENTS

Weather Low Modulus Crack Sealer shall not be applied on a wet surface, after sunset or before sunrise, or when the atmospheric temperature is below 10°C [50°F] in a shaded area at the job site, or when weather conditions are otherwise unfavorable to proper construction procedures.

Equipment Equipment used in the performance of the work shall be subject to the Resident's or authorized representative's approval and shall be maintained in a satisfactory working condition at all times.

(a) Air Compressor: Air compressors shall be portable and capable of furnishing not less than 3 m^3 [4 yd^3] of air per minute at not less than 620 kPa [90 psi] pressure at the nozzle. The

compressor shall be equipped with traps that will maintain the compressed air free of oil and water.

(b) Sweeper: Manually operated, gas powered air-broom or self-propelled sweeper designed especially for use in cleaning pavements shall be used to remove debris, dirt, and dust from the cracks.

(c) Hot Air Lance: Should operate with propane and compressed air in combination at 1100°C - 1650°C [2000°F - 3000°F], exit air heated at 310 m/s [1000 ft/s]. The lance should draw propane from no smaller than a 45 Kg [100 lb] tank using separate hoses for propane and air draw. The hoses shall be wrapped together with reflectorized wrap to keep them together and to protect workers in low light situations.

(d) Hand Tools: Shall consist of V-shaped squeegee, brooms, shovels, metal bars with chisel shaped ends, and any other tools which may be satisfactorily used to accomplish this work.

(e) Melting Kettle: The unit used to melt the joint sealing compound shall be a double boiler, indirect fired type. The space between inner and outer shells shall be filled with a suitable heat transfer oil or substitute having a flash point of not less than 320°C [608°F]. The kettle shall be equipped with a satisfactory means of agitating and mixing the joint sealer at all times. This may be accomplished by continuous stirring with mechanically operated paddles and/or a continuous circulating gear pump attached to the heating unit. The kettle must be equipped with thermostatic control calibrated between 94°C [200°F] and 290°C [550°F].

(f) Router: Equipment for preparing cracks shall be a rotary impact type cutter equipped with a carbide bit or a diamond-blade crack saw which will provide a reservoir of specified dimensions.

(g) Application Wand: The application wand shall apply a controlled flow of material via an insulated or heated hose. The nozzle shall distribute the material as called for in this specification. A pressure regulator shall be provided to regulate pressure at the nozzle. A bypass line into the holding tank is required for use when the nozzle is shut off.

Preparation Care must be taken in the preparation of all cracks to receive sealant material. All cracks must be clean, dry and heated to ensure optimal bonding of the sealant material to the existing pavement. All routed cracks shall be filled with sealant in the same workday as directed by the Resident or authorized representative.

Cracks of 5 mm to 20 mm [⅛ in to ¾ in] in width shall be shaped into a square cross section 12 mm to 19 mm [½ in to ¾ in] in width by 12 mm to 19 mm [½ in to ¾ in] in depth using a router or crack saw. The router or saw shall be guided so that the crack lies entirely within the routed channel. Material removed from the crack shall be removed from the pavement surface by means of a power sweeper or appropriate hand tools as required. Cracks greater than 20 mm [¾ in] in width will not require routing, but shall be thoroughly cleaned of foreign material to a depth equal to the width of the crack.

Following crack routing or saw cutting, the entire pavement area shall be cleaned using a power broom or blower device. Special care must be exercised in urban areas to ensure that the pavement area is cleaned after the crack sealing operation and to minimize the creation of dust in the cleaning process. Within 10 minutes prior to the application of the sealer material, all cracks shall be cleared of loose pavement, vegetation, sand, dust and any other debris using the hot air lance. The Distance between the hot air lance and the crack sealing unit shall be no more than 15 M [50 ft] to eliminate reinvasion of water, debris, and other incompressibles. All debris, vegetation, and water shall be removed to enhance adhesion of the crack sealing material. THIS WORK SHALL NOT BE DONE IN INCLEMENT WEATHER.

Preparation and Placement of Sealer The crack sealant material shall be heated and applied at the temperature specified by the manufacturer and approved by the Resident or authorized representative. Any material that has been heated above the manufacturer's specification shall not be used. Material that is reheated or held at temperature for an extended period of time may be used as allowed by the manufacturer's specification and approval of the Resident or authorized representative. The Contractor shall provide the Resident or authorized representative with a suitable device for verifying the sealant temperature in the kettle and at the application site.

All routed cracks shall be filled flush with the pavement surface.

Any over application or spills are to be removed to the satisfaction of the Resident or authorized representative. Any sealed areas with damaged or contaminated sealer or visible voids are to be removed, prepared and resealed at no additional cost to the Department.

Sealer shall be delivered to the crack while the cracks are still hot from the hot air lance preparation and if necessary, followed by a V-shaped squeegee. Any loose material on the surface or in the crack, which may contaminate the crack sealer or impede bonding of the sealant to the pavement, is to be removed by hand tools prior to crack filling. No crack filling material shall be applied in a crack that is wet or where frost, snow, or ice is present. The ambient air temperature must be 10°C [50°F] or higher.

Blotter material such as Glenzoil, Black Beauty or an equivalent approved by the Resident shall be provided by the Contractor and shall be applied to the crack sealer to prevent pickup and tracking. Blotter material shall be incidental to item 424.30.

Quality of Work Excess of spilled sealer shall be removed from the pavement by approved methods and discarded. Any quality of work determined to be below normal acceptable standards will not be accepted, and will be corrected and/or replaced as directed by the Resident or authorized representative at no additional cost to the Department.

Method of Measurement Sealant will be measured by the kilogram (pound) of sealant used and include all additions such as crumb rubber, bonding agents, and fibers. The manufacturer’s weights of the sealant will be accepted as the basis for measurement.

Basis of Payment. The accepted quantity of Crack Sealer will be paid for at the contract unit price per kilogram [pound] complete in place. This price shall be full compensation for furnishing, routing and placing crack sealer, including cleaning cracks and furnishing and placing barrier materials.

Payment will be made under:

Pay Item		Pay Unit
424.301	Crack Sealer, Applied Including Routing	Kilogram [Pound]