

PROJECT SPECIAL PROVISIONS
ROADWAY

1-15-02

RR01

PRICE ADJUSTMENT - ASPHALT BINDER FOR PLANT MIX:

11-21-00

Price adjustments for asphalt binder for plant mix will be made in accordance with Section 620 of the Standard Specifications as modified herein.

The base price index for asphalt binder for plant mix is \$219.17 per ton.

This base price index represents an average of F.O.B. selling prices of asphalt binder at supplier's terminals on October 1, 2005.

RR19

REMOVAL OF EXISTING CONCRETE PAVEMENT SLABS:

7-1-95

Description:

The work covered by these provisions consists of removing existing concrete pavement slabs or partial slabs in accordance with the detail in the plans at locations as directed by the Engineer. The slab removal shall be performed in a manner to minimize damage to the adjacent slabs and underlying base material.

Construction:

The extent of slab removal shall be as directed by the Engineer, but in no case shall the minimum length of partial slabs, measured parallel to the centerline be less than 10 feet. Also with a partial slab removal, a minimum length of 10 feet of the existing slab shall be retained, otherwise the entire slab shall be removed.

The slab or partial slab to be removed shall be sawed full depth on its sides adjacent to existing slabs, including existing transverse and longitudinal joints where applicable. When necessary to prevent shoulder damage, an additional cut shall be made in the adjacent shoulder joint. The defective slab shall be removed in a minimum of three (3) sections, with the middle section removed first in a manner to minimize damage of the adjacent slabs.

All existing unitube material, existing joint material, and debris shall be removed from the existing transverse and longitudinal joints which are exposed by the slab removal before the slab is replaced. All loose underlying base material, earth material and/or subseal grout shall be undercut to sound well compacted base. This material will be considered undercut excavation.

The Contractor shall place Asphalt Concrete Base Course, Type B25.0C in undercut areas. 10" concrete pavement shall be placed in areas where the slab was removed.

The Contractor may develop and submit an alternate method of slab removal for approval by the Engineer which satisfactorily avoids damage to the adjacent slabs and underlying base material.

Method of Measurement:

The quantity of pavement removal, full slab or partial slab, will be the actual number of square yards removed and disposed of. The quantity will be determined by actual surface measurement of pavement prior to its removal.

Basis of Pavement

The quantity of pavement removal measured as provided above will be paid for at the contract unit price per square yard for "Removal & Repair 10" Concrete Pavement Slabs", which price and payment will be considered full compensation for removing the concrete pavement and replacing with 10" Portland Cement Concrete Pavement (with Dowels).

The B25.0C will be a plant mix material, measured and weighed on a certified platform scales or other certified weighing devices. Payment will be made under contract price for Asphalt Plant Mix, Pavement Repair. Standard Specifications Section 654.

Undercut excavation will be measured and paid for in accordance with Section 225 of the Standard Specifications.

The price and payment will be full compensation for all work covered by this provision for furnishing all labor, materials, tools, equipment, sawing, removal of loose underlying base material and/or subseal grout, and satisfactory disposal of the concrete and any underlying base material or subseal grout as directed.

Payment will be made under"

<u>Pay Item</u>	<u>Pay Unit</u>
Remove & Repair 10" Concrete Pavement Slabs.....	Sq. Yard
Undercut Excavation.....	Cubic Yard
Asphalt Plant Mix, Pavement Repair.....	Ton

CONCRETE MIX REQUIREMENTS FOR REPLACEMENT OF 10" CONCRETE SLABS:

The Contractor shall furnish a Portland Cement Concrete mix design that is capable of attaining a compressive strength of at least 3,000 psi in 24 hours.

This mix design should be accompanied with test results from at least four 4" x 8" or 6" x 12" cylinders that show this requirement can be met. The Contractor should refer to Section 1000 of the Standard Specifications for details of Portland Cement Concrete Production and Delivery.

Traffic will not be allowed on the repairs until the concrete has reached a compressive strength of at least 3,000 psi. The minimum strength should be reached no later than 24 hours after placement.

If after 36 hours the concrete has not reached the 3,000 psi requirement, acceptance will be made in accordance with Section 105-3 of the Standard Specifications.

CONCRETE REPAIR USING FIBRESCREED:

The Contractor shall prepare and clean the failing concrete and place the Fibrescreed in the areas designated by the Engineer and in accordance with proper Fibrescreed placement as described by the manufacturer.

The crack and spall repair shall be a Fibrescreed for pavement repairs in concrete pavements. The crack repair/pavement restorations shall meet the requirements of this Special Provision.

All materials shall be delivered unopened in their original containers bearing the manufacturer's label, specifying date of manufacture, batch number, trade name brand, and quantity.

Sufficient material to perform the entire crack or spall repair application shall be in storage at the site or at the Contractors facility prior to any field preparation, so that there shall be no delay in procuring the material for each days application.

Stored materials may be inspected prior to their use and shall meet the requirements of these Special Provisions at the time of use.

Any material which is rejected because of failure to meet the required tests or that has been damaged so as to cause rejections, shall be immediately replaced by the Contractor at no additional cost to the Department.

Each shipment of Fibrescreed shall be accompanied by Material Safety Data Sheets (MSDS) and a Certificate of Compliance certifying that the materials conform to the requirements of these Special Provisions.

Fibrescreed Materials Requirements

All materials shall meet the specifications as approved by the Engineer prior to use. Material Data:

Specific Gravity	1.8
Application Temperature (degrees)	180 c to 200 c
Application Thickness	10 mm plus
Curing Time	10 - 40 minutes
Shelf Life	unlimited
Flash Point	230 degrees c

The Fibrescreed shall be the following approved product:

Fibrescreed RC 100 A Flexible Asphalt and Concrete Repair Material

Construction Requirements for Fibrescreed

The Contractor shall prepare areas by removing any loose debris using a pavement breaker, by using a mechanical planer or as directed by the Engineer. When using a planer, the surface is milled out to a width and depth as directed by the Engineer. The recess is then cleaned and dried using hot compressed air to thoroughly prepare the surface, removing all debris and loose material. Fibrescreed compound is immediately poured or screeded to fill the recess and overlap the edges. While the compound is still molten, a preheated high P.S.V. aggregate is applied and then compacted to ensure that the finished repair is flush with the surrounding surface.

When repairing pot holes from 2" deep to full depth, that are not adjacent to or spanning e & p joints or cracks, Contractor will include 1/2 - 1" washed aggregate at the rate of no more than 50% of volume as directed by the Engineer. Then complete repair as previously stated.

Basis of Payment

The quantity of material to be paid for shall be the quantity actually used. Payment shall be full compensation for all labor, tools, equipment, and incidentals necessary for the completion of the work. Payment shall be made as follows:

"Fibrescreed Concrete Repair Lbs"

ASPHALT PLANT MIX, PAVEMENT REPAIR (B25.0C):

Description:

The Contractor's attention is directed to the fact that Asphalt Plant Mix, Pavement Repair in this contract is for areas under existing concrete slabs that the sub-grade is unsuitable and needs to be undercut. The Contractor can then place the 10" concrete slab on this new pavement structure.

Repair only the areas that, in the opinion of the Engineer, need repairing. The areas to be repaired with asphalt will be delineated by the Engineer prior to the Contractor pouring concrete.

Construction Methods:

The Asphalt Plant Mix Pavement Repairs consists of Asphalt Concrete Base Course, Type (B25.0C).

Place Asphalt Concrete Base Course, in lifts not exceeding 5 1/2 inches. Utilize compaction equipment suitable for compacting patches as small as 3.5 feet by 6 feet on each lift. Use an approved compaction pattern to achieve proper compaction.

Method of Measurement:

The quantity of Asphalt Plant Mix, Pavement Repair paid for will be the actual number of tons of asphalt plant mix, complete in place, which has been used to make completed and accepted repairs. The asphalt plant mixed material will be measured by being weighed in trucks on certified platform scales or other certified weighing devices.

Basis of Payment:

The quantity of pavement repair, measured as provided above, will be paid for at the contract unit price per ton for "Asphalt Plant Mix, Pavement Repair".

The above price and payment will be full compensation for all work covered by this provision, including but not limited to furnishing and applying tack coat; furnishing, placing, and compacting of asphalt plant mix; furnishing of asphalt binder for the asphalt plant mix; and finishing scales.

Any provisions included in the contract in the form of project special provisions or in any other form which provide for adjustments in compensation due to variations in the price of asphalt binder will not be applicable to payment for the work covered by this provision.

The item of "Asphalt Plant Mix, Pavement Repair" will be considered to be a minor item. In the event that the item of "Asphalt Plant Mix, Pavement Repair" overruns the original bid quantity by more than 100 percent, the provisions of Article 104-5 pertaining to revised contract unit price for overrunning minor items will not apply to this item.

Payment will be made under:

Asphalt Plant Mix, Pavement Repair.....Ton

ULTRA-THIN BONDED WEARING COURSE:

11-01-2004

DESCRIPTION:

The work covered by this specification consists of the production and placement of an Ultra-thin Bonded Wearing Course (UBWC) and shall include the application of a warm Polymer-Modified Emulsion Membrane (PMEM) followed immediately with an Ultra-thin Bonded Wearing Course hot mix asphalt overlay. The polymer-modified emulsion membrane shall be spray applied immediately prior to the application of the hot mix asphalt overlay so as to produce a homogeneous wearing surface that can be opened to traffic immediately after rolling and upon sufficient cooling.

MATERIALS:

AGGREGATE:

A. General Requirements For Aggregate:

All aggregates, both coarse and fine, shall meet the applicable requirements of Section 1005 and Section 1012 of the Standard Specifications, except as modified herein.

Aggregates produced from crystalline limestone, crystalline-dolomitic limestone, or marble shall not be used in the production of Ultra-thin Bonded Wearing Course. Reclaimed asphalt pavement materials shall not be used in the production of Ultra-thin Bonded Wearing Course.

Reclaimed asphalt shingle material, up to 6% by weight of total mix, may be used, subject to approval by the Engineer. Documentation that the asphalt binder grade meets the requirements may be required.

B. Coarse Aggregate:

Coarse aggregates used shall be from approved sources and shall meet the requirements of Table 1005-1 of the Standard Specifications, except as modified herein or unless otherwise approved by the Engineer.

Coarse aggregates, such as crushed gravel, limestone, dolomite, sandstone, granite, chert, traprock, ore tailings, slag, or other similar materials, or blends of two or more of the above may be acceptable. When coarse aggregates for these mixes are from more than one source or of more than one type of material, they shall be proportioned and blended to provide a uniform mixture, subject to approval by the Engineer. The coarse aggregates selected should be those typically used for high performance surfaces. Coarse aggregates should meet the skid resistance criteria as set forth by the Department and have a history of successful use in surface mixes for the intended traffic level.

Coarse aggregate material retained above the No. 4 sieve shall be from approved sources and shall meet the requirements listed in Table 1 below.

<u>TABLE 1 - COARSE AGGREGATE – PROPERTIES</u>		
Tests	Method	Limit
Los Angeles abrasion value, % loss	AASHTO T 96	35 max
Soundness, % loss, Sodium Sulfate	AASHTO T 104	15 max
Flat & Elongated Ratio, 5:1, + No 4 (4.75 mm)	ASTM D 4791	10 % max
% Crushed, single face	ASTM D 5821	100 min
% Crushed, two or more mechanically crushed faces	ASTM D 5821	85 min
Micro-Deval, % loss	AASHTO TP 58-02	18 max

C. Fine Aggregate:

The fine aggregate passing the No. 4 sieve shall be from approved sources and shall meet the requirements of Table 2 below.

<u>TABLE 2 - FINE AGGREGATE – PROPERTIES</u>		
Tests	Method	Limit
Sand Equivalent	AASHTO T 176	45 min
Uncompacted Void Content	AASHTO T 304	40 min

D. Mineral Filler:

When needed, hydrated lime, certain classes of fly ash, baghouse fines and Type 1 Portland Cement are acceptable as mineral filler. Mineral filler shall conform to the requirements of AASHTO M 17.

POLYMER-MODIFIED EMULSION MEMBRANE:

The Polymer-Modified Emulsion Membrane shall be a styrene-butadiene block co-polymer (SBS) modified asphalt emulsion. The purpose of the membrane is to form a water impermeable seal at the existing pavement surface and to bond the new hot mix to the existing surface. Polymer modification of the base asphalt shall be completed prior to emulsification. The emulsion shall be smooth and homogeneous and conform to the following requirements:

<u>Test On Emulsion</u>	<u>Method</u>	<u>Min.</u>	<u>Max.</u>
Viscosity @ 77°F, SSF	AASHTO T 59	20	100
Sieve Test, %	AASHTO T 59		0.1
24-Hour Storage Stability, % ⁽¹⁾	AASHTO T 59		1
Residue from Distillation @ 400°F, % ⁽²⁾	AASHTO T 59	63	
Oil portion from distillation ml of oil per 100 g emulsion			2
Demulsibility 35 ml, 0.02 N CaCl ₂ or 35 ml, 0.8 % dioctyl sodium sulfosuccinate	AASHTO T 59	60	
<u>Test On Residue From Distillation</u>			
Solubility in TCE, % ⁽³⁾	AASHTO T 44	97.5	
Elastic Recovery, 50°F, 20 cm elongation % ⁽⁴⁾	AASHTO T 301	60	
Penetration @ 77°F, 100 g, 5 sec, dmm	AASHTO T 49	60	150

- (1) After standing undisturbed for 24 hours, the surface shall show no white, milky colored substance, but shall be a smooth homogeneous color throughout.
- (2) AASHTO T-59 with modifications to include a 400°F ± 10°F maximum temperature to be held for a period of 15 minutes.
- (3) ASTM D 5546, Test Method for Solubility of Polymer-Modified Asphalt Materials in 1,1,1-Trichloroethane may be substituted where polymers block the filter in Method D 2042.
- (4) ASTM D 6084, Standard Test Method for Elastic Recovery of Bituminous Materials by Ductilometer with exception that the elongation is 20 cm and the test temperature is 50°F.

ASPHALT BINDER FOR PLANT MIX, GRADE PG 70-28:

Asphalt binder shall conform to the requirements of Section 620 and Section 1020 of the Standard Specification except as modified herein. The asphalt binder shall be a polymer modified Performance Graded PG 70-28, conforming to the requirements of AASHTO M 320 and as specified below, unless otherwise approved by the engineer. The asphalt binder shall be compatible with the PMEM and existing pavement. Modification to the binder shall be done with SBS, SB, or SBR polymer. Air blown asphalt is not permitted. Modification, testing, and certification of the asphalt binder shall be performed prior to delivery to the asphalt plant. Actual test results will be available to the Engineer prior to use.

In addition to the requirements of AASHTO M 320, the PG 70-28 asphalt binder shall meet the following criteria:

<u>Test on Binder</u>	<u>Method</u>		
Separation of Polymer, %	ASTM D5892	Report	10
 <u>Tests On Residue From RTFO Test</u>			
Elastic Recovery, %	ASTM D 6084	Minimum	60

ANTI-STRIP ADDITIVE:

Anti-strip Additive shall meet the requirements of Articles 1020-8 or Article 1012-1(E) and shall be used in accordance with Article 620-3 of the Standard Specifications.

COMPOSITION OF MIX:

The ultra-thin bonded wearing course shall be composed of a mixture of coarse and fine aggregate, asphalt binder, mineral filler, and other additives when required. The several aggregate fractions shall be sized, uniformly graded, and combined in such proportions that the resulting mixture meets the grading and physical requirements of TABLE 3 of these specifications for the specified mix type. The mix design and optimum asphalt content shall be performed in accordance with the "Ultra-thin Bonded Wearing Course Mix Design Guidelines" on file with the Department's Materials & Test Unit. Copies are available upon request. Materials which will not produce a mixture within the mix design criteria required by these specifications will be rejected, unless otherwise approved by the Engineer.

At least 10 days prior to start of asphalt mix production, the Contractor shall submit in writing a mix design and proposed job mix formula (JMF) targets for each required mix type and combination of aggregates to the Engineer for review and approval. The mix design and proposed job mix formula targets shall be submitted on forms and in a format approved by the Department and applicable requirements of Article 610-3 of the Standard Specifications.

The job mix formula target values will be established within the mix design criteria specified in TABLE 3 for the particular type mixture to be produced. The formula for each mixture will indicate the blend percentage of each aggregate fraction to be used, a single percentage of combined aggregate passing each required sieve size, the percentage and grade of asphalt binder (by weight of total mixture) to be incorporated into the mixture, the percentage of anti-strip additive to be added to the asphalt binder, and the temperature at which the mixture is to be discharged from the plant.

The Contractor shall have on hand at the asphalt plant the approved mix design and job mix formula issued by the Department, prior to beginning the work.

The job mix formula for each mixture shall remain in effect until modified in writing by the Engineer, provided the results of QMS tests performed on material currently being produced conform with specification requirements.

Should a change in sources of aggregate materials to be made, a new mix design and job mix formula will be required before the new mixture is produced.

When unsatisfactory results or other conditions make it necessary, the Engineer may establish a new job mix formula.

The Contractor shall determine and certify compatibility of all asphalt emulsion, asphalt binder, and aggregate components.

TABLE 3 – MIXTURE DESIGN CRITERIA				
Gradation Design Criteria (% Passing by Weight)				
SIEVES		1/2 in. Type A	3/8 in. Type B	1/4Type C
ASTM	mm			
3/4 inch	19.0	100		
1/2 inch	12.5	85 - 100	100	
3/8 inch	9.5	60 - 80	85 - 100	100
#4	4.75	28 - 38	28 - 42	40 - 55
#8	2.36	19 - 32	19 - 32	22 - 32
#16	1.18	15 - 23	15 - 23	15 - 25
#30	0.600	10 - 18	10 - 18	10 - 18
#50	0.300	8 - 13	8 - 13	8 - 13
#100	0.150	6 - 10	6 - 10	6 - 10
#200	0.075	4.0 - 7.0	4.0 - 7.0	4.0 - 7.0
MIX DESIGN CRITERIA				
Asphalt Content, %		4.6 - 5.6	4.6 - 5.8	5.0 – 5.8
Draindown Test, AASHTO T 305		0.1% max		
Moisture Sensitivity, AASHTO T 283*		80% min		
Application Rate, lb/ yd ²		90	70	50
Approximate Application Depth, in. (mm)		3/4 (19)	5/8 (16)	1/2(12.5)
Asphalt PG Grade, AASHTO M 320		PG 70-28	PG 70-28	PG 70-28

NOTE: *Specimens for T-283 testing are to be compacted using the Superpave gyratory compactor. The mixtures are to be compacted using 100 gyrations to achieve specimens approximately 95 mm in height. Mixture and compaction temperatures as recommended by the binder supplier.

CONSTRUCTION DETAILS:

A. Equipment:

The contractor shall use a paver designed and built for the purpose of applying Ultra-thin Bonded Wearing Course and approved by the Department. The paver shall be a self-priming paving machine capable of spraying the Polymer-Modified Emulsion Membrane, applying the hot asphalt concrete overlay and screeding the surface of the mat to the required profile and cross-section in one pass at any rate between 30 to 92 ft/minute (10-30 m/minute). The paving machine shall incorporate a receiving hopper, feed conveyor, storage tank for Polymer-Modified

Emulsion Membrane material, Polymer-Modified Emulsion Membrane emulsion single variable-width spray bar and a variable width, heated, vibratory-tamping bar screed. The screed shall have the ability to be crowned at the center both positively and negatively and have vertically and horizontally adjustable extensions to accommodate the desired pavement profile and widths. The sprayer system shall be capable of accurately and continuously monitoring the rate of spray and providing a uniform application across the entire width to be overlaid.

Compaction of the wearing course shall be performed with a steel double drum asphalt roller(s) with a minimum weight of 10 tons. Roller(s) shall be well maintained, in reliable operating condition and be equipped with functioning water system and scrapers to prevent adhesion of the fresh mix onto the roller drums. Adequate roller units shall be supplied so the compaction will be accomplished promptly following the placement of the material.

Requests for approval of equipment shall be made to the State Pavement Construction Engineer or his Representative prior to the start of any work. All other required equipment and tools shall be approved by the Engineer. All equipment and tools shall be maintained in satisfactory working condition at all times.

B. Surface Preparation:

The following items will be performed prior to the commencement of paving operations and paid for under the appropriate item numbers when included in the contract.

1. Manhole covers, drains, grates catch basins and other such utility structures shall be protected and covered with plastic or building felt prior to paving and also shall be clearly referenced for location and adjustment after paving.
2. Thermoplastic traffic markings symbols, characters, or other markings greater than $\frac{1}{4}$ inch in thickness on the existing pavement shall be removed.
3. Pavement cracks and joints greater than $\frac{1}{4}$ inch (6.3 mm) wide shall be cleaned and completely filled, leaving no more than a 2 inch overband and no thicker than $\frac{1}{4}$ inch over the existing pavement. The sealant will be applied per manufacturer's recommendation and approved by the Engineer.
4. Surface irregularities greater than 1" (25 mm) deep shall be filled with a material approved by the Engineer.
5. The entire pavement surface to be overlaid shall be thoroughly cleaned, giving specific attention to accumulated mud and debris. Pressurized water and/or vacuum systems may be required to ensure a clean surface.

C. Application of Ultra-thin Bonded Wearing Course:

Ultra-thin Bonded Wearing Course shall not be placed between October 31 and April 1. The pavement surface temperature shall be not less than 50°F (10°C) at the time of placement. The Ultra-thin Bonded Wearing Course shall not be placed on a wet pavement. A damp pavement surface is acceptable for placement if it is free of standing water and favorable weather conditions are expected to follow.

The Ultra-thin Bonded Wearing Course mixture shall be applied at the rate per square yard as shown in TABLE 3 for the mix type shown in the plans or typical sections, or as directed by the Engineer.

The Polymer-Modified Emulsion Membrane shall be sprayed at a temperature of 140 - 180°F (60-80°C). The sprayer system shall accurately and continuously monitor the rate of spray and provide a uniform application across the entire width to be overlaid. The rate of application (typically 0.15 to 0.25 gal/yd²) shall be determined by the mix design and current pavement condition for the specified project. The rate of application shall be approved by the Engineer prior to beginning work.

No wheel or other part of the paving machine shall come in contact with the Polymer-Modified Emulsion Membrane before the hot mix asphalt concrete wearing course is applied. The application of the HMA shall follow the spray of the Polymer-Modified Emulsion Membrane by no more than 3 seconds.

The hot asphalt concrete wearing course shall be placed over the full width of the polymer-modified emulsion membrane. The hot mix asphalt concrete shall be applied at a temperature of 300 - 330°F (150-165°C) or as approved by the engineer and shall be spread over the polymer-modified emulsion membrane immediately after the application of the membrane. The temperature of the mix at the asphalt plant shall be within ±15°F (±8°C) of the JMF temperature. The temperature of the mix immediately prior to discharge from the hauling vehicle shall be within +15°F (+8°C) to -25°F (-14°C) of the JMF temperature.

Note:

Because of the minimal depth of the hot mix asphalt concrete being placed, it may be damaged if opened to traffic too quickly. Therefore, the new pavement shall not be opened to traffic until the rolling operation is complete and the material has cooled sufficiently to resist damage. The cooling time will be brief due to the minimal depth of the mat.

D. Compaction:

Compaction of the wearing course shall consist of a minimum of two passes with a steel double drum asphalt roller before the material temperature has fallen below 185°F (85°C). At no time shall the roller or rollers be allowed to remain stationary on the freshly placed asphalt concrete. Compaction shall immediately follow the placement of Ultra-thin Bonded Wearing Course. A release agent (added to the water system) may be required to prevent adhesion of the fresh mix to the roller drum and wheels. Compaction shall be done in the static mode.

QUALITY MANAGEMENT SYSTEM FOR ASPHALT PAVEMENTS:

The Ultrathin Hot Mix Asphalt shall be produced in accordance with the applicable provisions of Section 609 of the Project Special Provisions titled "QMS for ASPHALT PAVEMENTS: (OGAFC, PADC, and ULTRATHIN VERSION)" included herein.

METHOD OF MEASUREMENT:

The quantity of Ultra-thin Hot Mix Asphalt, Type_____ to be paid for will be the actual number of tons of mixture which has been incorporated into the completed and accepted work. The hot mix asphalt pavement will be measured by being weighed in trucks on certified platform scales or other certified weighing devices.

The quantity of Application of Ultra-thin Hot Mix Asphalt to be paid for will be the actual number of square yards of mixture placement which has been completed and accepted. In measuring this quantity, the length will be the actual length constructed, measured along the surface. The width will be the width required by the plans or directed by the Engineer.

The quantity of "Asphalt Binder for Plant Mix, Grade PG 70-28" will be measured in accordance with Section 620-4 of the Standard Specification.

BASIS OF PAYMENT:

The quantity of ultrathin hot mix asphalt, measured as provided above, will be paid for at the contract unit price per ton for "Ultrathin Hot Mix Asphalt, Type ____".

The above price and payment shall include but not be limited to all labor, materials and equipment necessary to produce and deliver the mix, including binder and non-strip additive (if necessary). The unit price bid per ton for Ultrathin Hot Mix Asphalt shall include the asphalt binder. There will be no adjustment of payments due the Contractor due to asphalt binder base price fluctuation.

The quantity of application of ultrathin hot mix asphalt, measured as provided above, will be paid for at the contract unit price per square yard for "Application of Ultrathin Hot Mix Asphalt".

The above prices and payments shall include but not be limited to all traffic control, labor, materials, including the polymer modified asphalt emulsion, equipment necessary to produce and deliver the mix, including anti-strip additive (if necessary), equipment necessary to apply and compact the mix, and maintaining the ultrathin bonded wearing course until final acceptance of the project.

Providing QMS for asphalt pavements will be in accordance with the project special provision entitled "QMS for ASPHALT PAVEMENTS: (OGAFC, PADDC, and ULTRATHIN VERSION)" included elsewhere in this provision form.

Payment will be made under :

Ultrathin Hot Mix Asphalt, Type A.....	Ton
Ultrathin Hot Mix Asphalt, Type B	Ton
Ultrathin Hot Mix Asphalt, Type C	Ton
Application of Ultrathin Hot Mix Asphalt.....	Square Yard

QUALITY MANAGEMENT SYSTEM FOR ASPHALT PAVEMENTS: 2-22-00
(OGAFC, PADC, AND ULTRATHIN HMA VERSION)

609-1 DESCRIPTION

The work covered by this provision consists of the production and construction of Open Graded Asphalt Friction Course, Permeable Asphalt Drainage Course, and/or Ultrathin Hot Mix Asphalt Concrete Wearing Surface, in accordance with a quality management system as described in these specifications. All provisions of Division 6 of the Standard Specifications, except as modified herein, shall apply.

609-2 DESCRIPTION OF RESPONSIBILITIES

(A) Quality Control:

The Contractor shall provide and conduct a quality control program. A quality control program is defined as all activities, including mix design when applicable, process control inspection, sampling and testing, and necessary adjustments in the process that are related to production of a pavement which meets all requirements of the specifications.

(B) Quality Assurance:

The Department will conduct a quality assurance program. A quality assurance program is defined as all activities, including inspection, sampling, and testing related to determining that the quality of the completed pavement conforms to specification requirements.

609-3 MIX DESIGN/JOB MIX FORMULA REQUIREMENTS

All applicable provisions of Article 610-3 of the Standard Specifications, except as modified below, shall apply.

At least 10 days prior to start of asphalt mix production, the Contractor shall submit in writing a mix design and proposed job mix formula (JMF) for Open Graded Asphalt Friction Course and/or Ultrathin Hot Mix Asphalt Concrete Wearing Course to the Engineer for review and approval. A mix design is not required for Permeable Asphalt Drainage Course; however, a JMF will be required. All mix designs shall be performed and documented in accordance with the most current accepted policies and procedures for the design of the applicable mix. The Department's Materials and Tests Unit may be contacted for these procedures. The mix design(s) shall meet all design requirements prescribed in the contract project special provisions. The JMF will be established and issued by the Engineer upon approval of the mix design.

609-4 FIELD VERIFICATION OF MIXTURE AND JOB MIX FORMULA ADJUSTMENTS

The Contractor shall conduct field verification of the mix at each plant within 7 calendar days prior to beginning production of each new mix. In addition anytime more than a 30 calendar day lapse in quality control testing of any mix has occurred and planned daily production is 80 tons (metric tons) or more, mix verification shall be performed. In addition to the required sampling and testing, all preliminary checks and plant calibrations shall be performed.

Field verification testing shall consist of a minimum of one (1) set of samples tested according to "Required Sampling and Testing" specified in Subarticle 609-5(D). The mix verification sample shall be obtained and split in accordance with current procedures in the HMA/QMS Manual. Normal plant production may begin once all field verification test results have been completed and the mix has been satisfactorily verified by the Contractor's Level II Technician as meeting all applicable individual test control limits as specified in Subarticle 609-5(G), except that the drain down test must meet the requirement for the applicable mix type as specified in the project special provisions. Records of these calibrations and mix verification tests shall be retained by the Contractor and shall be furnished to the Engineer for review and approval within one working day after beginning production of the mix.

If the Contractor and/or the Engineer determine from results of quality control tests conducted during mix verification and/or normal production that adjustments to the JMF are necessary to achieve specified mix properties, adjustments to the JMF may be made within tolerances permitted by specifications for the mix type being produced.

All JMF adjustments will be approved by the Engineer and documented in writing.

Failure by the Contractor to fully comply with the above mix verification requirements shall result in immediate production stoppage by the Engineer. Normal production shall not resume until all mix verification sampling and testing, calibrations, and plant inspections have been performed and approved by the Engineer.

609-5 CONTRACTOR'S QUALITY CONTROL SYSTEM

(A) Personnel Requirements:

The Contractor shall provide at least one certified Asphalt Technician Level I at all times at each plant site used during production of material for the project. A plant operator who is a certified Level I Technician may be utilized to meet this requirement during daily production of less than 80 tons (metric ton). Any absence of the Level I Technician must be pre-approved by the appropriate QA Supervisor. All sampling, testing, data analysis and data posting shall be performed or directly supervised by a certified QMS asphalt technician. The Contractor shall have a certified Asphalt Technician Level II readily available to make any necessary adjustments.

The Contractor shall provide at least one certified QMS Roadway Technician with each paving operation at all times during the placement of asphalt. This person shall be responsible for and directly supervise all roadway paving operations and quality control processes. Certification shall be in accordance with the Department's Asphalt Technician Certification Program.

An organizational chart, including names, telephone numbers and current certification numbers, of all those responsible for the quality control program shall be posted in the Contractor's laboratory while asphalt paving work is in progress.

(B) Field Laboratory Requirements:

The Contractor shall furnish and maintain a Department certified laboratory at the plant site. The laboratory shall include a minimum of 320 square feet (30 square meters) of floor space (exclusive of toilet facilities), equipment, and supplies for performing Contractor quality control testing. Convenient telephone and fax machine access for QMS personnel shall be provided by the Contractor at the plant site.

The laboratory testing equipment shall meet the requirements of the test methods herein identified in Subarticle 609-5(D) "Required Sampling and Testing."

Laboratory equipment furnished by the Contractor or his representative shall be properly calibrated and maintained. The Engineer shall be allowed to inspect measuring and testing devices to confirm both calibration and condition. If at any time the Engineer determines that the equipment is not operating properly or is not within the limits of dimensions or calibration described in the applicable test method, the Engineer may stop production until corrective action is taken. The Contractor shall maintain a record of calibration results at the laboratory.

(C) Quality Control Plan

The Contractor will not be required to submit a written quality control plan to the Department; however, the Contractor shall perform quality control activities required by these specifications and accepted asphalt industry quality control practices and procedures.

(D) Required Sampling and Testing:

The Contractor's Quality Control process shall include, at a minimum but not be limited to, the sampling and testing of all parameters outlined in these provisions using test methods, and frequencies as specified herein. The Contractor shall obtain randomly selected samples in accordance with the latest edition of the Department's "HMA/QMS Manual" except as outlined below for OGAF C Types J-1, J-1 Modified and J-2 Modified. All samples taken shall be logged on forms provided by the Engineer.

All mix samples taken shall be 25 lbs. and must be split and retained in accordance with these procedures, except OGAF C mix samples which shall be a minimum of 1500-2000 gram samples each for QC, QA and retained samples. OGAF C QC samples will be tested immediately. QA and retained samples of OGAF C will be placed in lubricated gill cans and stored for possible testing in accordance with the procedures established below.

The untested split portion of the Contractor's mix samples and tested TSR specimens shall be retained for 5 calendar days at the plant site commencing the day the samples are tested. Permission for disposal may be given by Quality Assurance personnel prior to this maximum storage period. The split portion of the Contractor's mix verification sample(s) shall be retained until either procured by or disposal permission is given by QA personnel. All retained samples shall be stored in a dry and protected location.

The Contractor shall maintain minimum test frequencies as specified below. All tests shall be completed within 24 hours of the time the sample was taken unless otherwise specified within these provisions. Should the specified tests not be completed within the required time frame, production will cease at that point until such time the tests are completed.

The Contractor may utilize innovative equipment or techniques not addressed by these specifications to produce and/or monitor the production of the mix, subject to approval by the Engineer.

Should the Contractor's testing frequency fail to meet the minimum frequency requirements as specified below, all mix without the specified test representation shall be considered unsatisfactory. If the Engineer allows the mix to remain in place, payment will be made at 50 percent of the contract unit bid price for the mixture.

QUALITY CONTROL MINIMUM SAMPLING AND TESTING SCHEDULE

Asphalt Mixture - From Truck at Plant (AASHTO T-168)

- A. Asphalt Binder Content, % (Contractor may select any option below)
 - 1. Extraction (AASHTO T-164)
 - 2. Ignition Furnace (NCDOT Procedure)
 - 3. OTHER: Contractor may request to use other means of checking AC Content subject to approval by the Engineer
- B. Aggregate Gradation, Recovered Aggregate from Mix Sample (AASHTO T-30 and T-11) (Shall be graded on all sieves specified on the job mix formula.)

The above testing program shall be conducted for each job mix formula at each plant at a minimum frequency of once per each 500 tons (metric tons) of actual production.

The tests will be conducted at the random locations for materials that are actually produced that day. If production is discontinued and the random sample location for a partially completed increment has not been reached, the tonnage for the partially completed increment shall be carried forward to the next day's production. When total production for three (3) consecutive work days is less than 500 tons (metric tons) a minimum of one sample shall be taken. This sample shall represent the tonnage for those three (3) days. A new 500 ton (metric ton) increment(s) will begin the following work day. All random sample locations, within the above specified increments, will be determined in accordance with the latest edition of the Department's HMA/QMS Manual.

In addition to the above sampling and testing program, the following tests shall be conducted as indicated:

1. Aggregate Stockpile Gradations* (AASHTO T-11 and T-27)
(sampled from the stockpiles or cold feed system at beginning of production & weekly thereafter)
2. Combined Aggregate Moisture Content (AASHTO T-255)(Drum Plant Only)
(sampled from stockpiles or cold feed system a minimum of once daily)
3. Retained Tensile Strength (TSR) - (AASHTO T 283 Modified)

TSR only required for Ultrathin Hot Mix Asphalt Concrete Wearing Course.

Option 1: Mix sampled from truck at plant, tested, and results furnished to the Engineer within the first 7 working days of production of each new mix design. From the above sample QC prepares an additional set of specimens and submits these within 5 calendar days to the QA lab for testing.

Option 2: Mix sampled from the truck at the plant with one set of specimens prepared by the Contractor and tested jointly by QA and QC at a mutually agreed upon lab site. In this case the specimens must be tested on either a recording test press or a test press that maintains the peak load readings after the specimen has broken.

Additional TSR testing, in accordance with the above procedures, required when a change is made in anti-strip additive source or dosage and when deemed necessary by the Engineer. TSR testing not required for mix verification, but may be performed at that time.

5. NCAT Asphalt Drain Down Test Procedure (Copy of procedure may be obtained from the M & T Asphalt Design Engineer.)
Drain Down Test not required for Permeable Asphalt Drainage Course. Mix sampled from truck at plant within the first day's production and weekly thereafter.

*In lieu of aggregate stockpile gradations, the Contractor may furnish gradation quality control data conducted by the aggregate producer, which is representative of the Contractor's current stockpiles.

(E) Documentation (Records):

The Contractor shall document all observations, records of inspection, samples taken, adjustments to the mix, and test results on a daily basis. Results of observations and records of inspection shall be noted as they occur in a permanent field record. Adjustment to mix production and test results shall be recorded on forms provided by the Engineer.

All such records shall be made available to the Engineer, upon request, at any time during project construction. All QC records and forms shall be completed and distributed in accordance with the most current edition of the Department's "HMA/QMS Manual". At the end of the project, a copy of the control charts (with the moving average shown in red) shall be provided to the Engineer in a neat and orderly manner. The QC testing forms shall be maintained by the Contractor for 90 calendar days after project completion.

Failure to maintain QC records and forms as required, or to provide these records and forms to the Engineer upon request, may result in production stoppage until the problem is resolved.

Falsification of test results, documentation of observations, records of inspection, adjustments to the process, discarding of samples and/or test results, or any other deliberate misrepresentation of the facts will result in the revocation of the applicable person's QMS certification. There will be no pay for all tonnage represented by the falsified test(s) results or documentation. The Engineer will determine acceptability of the mix in question. If mix represented by the falsified results is determined not to be acceptable, it shall be removed and replaced with mix which complies with the Specifications.

(F) Documentation (Control Charts):

Standardized control charts furnished by the Department shall be maintained by the Contractor at the field laboratory. All test results obtained by the Contractor shall be recorded on control charts the same day tests are conducted.

Results of quality assurance tests performed by the Engineer will be posted on the Contractor's control charts as data becomes available.

The following data shall be recorded on standardized control charts:

1. Aggregate Gradation Tests
 - A. 1/2"(12.5mm)(Type P57 Only)
 - B. 3/8"(9.75mm)(Excluding Type P57)
 - C. No. 4 (4.75 mm)
 - D. No. 8 (2.36 mm)
 - E. No. 200 (0.075 mm) Sieves
2. Asphalt Binder Content, %

Both the individual test value and the moving average of the last four (4) data points will be plotted on each chart. The Contractor's test data will be shown in black and the moving average in red. The Engineer's assurance data will be plotted in blue. The warning control limits shall be drawn with a dash green line, the JMF control limits with a dash blue line, and individual test limits with a dash red line. Once a moving average has been established for a given JMF, the moving average shall be continuous with the following exceptions. A new moving average shall be re-established when a change in the asphalt cement percentage or aggregate blend is made in the JMF or when the Contractor elects or is required to stop production after one or two moving average values, respectively, fall outside the warning limits as outlined in Subarticle 609-5(I). In addition, if the Contractor fails to stop production after two consecutive moving averages exceed

the warning limits, but does stop production at a subsequent time, a new moving average shall be re-established beginning at the actual production stop point. The moving averages for all other mix properties shall also be re-established. Moving averages will not be re-established when production stoppage occurs due to an individual test result exceeding the Specification requirements.

All individual test results shall be part of the plant quality control record and shall be included in moving average calculations with the following exception. When the Contractor’s testing data has been proven incorrect, the correct data as determined by the Engineer shall be used in lieu of the Contractor’s data to determine the appropriate pay factor in accordance with Subarticle 609-5(I). In this case, only the data in question shall be replaced.

G. Control Limits:

The following shall be considered control limits for mix production. Control limits for the JMF and warning limits are based on a moving average of the last four (4) data points. All control limits will be applied to data given on the current JMF.

<u>Mix Property</u>	<u>Control Limits, %</u>		
	<u>Warning</u>	<u>JMF</u>	<u>Individual Test</u>
½"(12.5mm)Sieve (<u>Type P57 Only</u>)	+/-5.0	+/-6.0	+/-7.0
3/8"(9.5mm) Sieve (<u>Excluding Type P57</u>)	+/-4.0	+/-5.0	+/-6.0
No. 4 (4.75mm)Sieve	+/-4.0	+/-5.0	+/-6.0
No. 8 (2.36 mm) Sieve	+/-3.0	+/-4.0	+/-5.0
No. 200 (0.075 mm) Sieve	+/-1.2	+/-1.6	+/-2.0
Asphalt Binder Content	+/-0.3	+/-0.4	+/-0.5

(H) Warning Bands:

Warning bands are defined as the area between the Warning limits and JMF limits.

(I) Corrective Action:

All corrective actions are based upon initial test results and shall be taken immediately upon obtaining those results.

When an individual test result for a mix control criteria exceeds both the individual test control limits and the applicable specification design limits, or when two consecutive field test TSR values fail to meet the minimum specification requirement, production of that mix shall cease immediately. Normal production of the mix in question shall not resume until approval is given by the Engineer.

Acceptance of all mix failing to meet the individual test control limits or minimum TSR requirements as described above will be determined in accordance with Article 105-3. In addition, any mix which is obviously unacceptable will be rejected for use in the work.

Failure to stop production and make adjustments when required due to an individual test not meeting the specified requirements shall subject all mix from the stop point tonnage to the point when the next individual test is back on or within the warning limits, or to the tonnage point when production is actually stopped, whichever occurs first, to be considered unacceptable.

Failure to stop production when required due to two consecutive TSR tests failing to meet the specification requirement shall subject all mix from the stop point tonnage to the point when the next TSR test meets or exceeds the specification requirement, or to the tonnage point when production is actually stopped, whichever occurs first, to be considered unacceptable.

In either case, this material shall be removed and replaced with materials which comply with the specifications unless otherwise approved by the Engineer.

When the moving average values trend either upward or downward toward the warning limits, the Contractor shall consider taking corrective action. The corrective action, if any, shall be documented. The Contractor shall immediately notify the Engineer whenever moving average values exceed the warning limits.

If two consecutive moving average values for any one of the mix control criteria fall outside the warning limits, the Contractor shall cease production of that mix and make adjustments. The Contractor may elect to stop production after only one moving average value falls outside the warning limits. In either case, a new moving average shall not be determined until the fourth test after the elective or mandatory stop in production. Normal production of the mix in question shall not be resumed until approved by the Engineer.

If the process adjustment improves the property in question such that the moving average after four additional tests is on or within the warning limits, the Contractor may continue production with no reduction in payment.

If the adjustment does not improve the property in question such that the moving average after four additional individual tests stays in the warning bands, the mix shall be considered not to be within reasonably close conformity, but reasonably acceptable. Reduced payment for the mix in question will be applied starting from the plant sample tonnage at the stop point to the sample tonnage when the moving average is on or within the warning limits in accordance with the following table.

Payment for Mix Produced in the Warning Bands

<u>Mix Property</u>	Pay Factor Percent Bid Price for Mix**
1/2"(12.5mm)Sieve (Type P57 Only)	90
3/8" (9.5mm) (Excluding Type P57)	90
No. 4 (4.75mm)	90
No. 8 (2.36mm)	90
No. 200 (0.075mm)	90
Asphalt Binder Content	85

**** The minimum single pay factor will apply.**

If the adjustment does not improve the property in question such that the moving average after four additional tests exceeds the JMF control limits, the mix shall be considered not to be within reasonably close conformity with specifications. If the Engineer determines the mix is reasonably acceptable based on test data and an inspection of the completed pavement and allows it to remain in place, the mix will be accepted in accordance with Article 105-3.

If the mix is determined to be unacceptable, the mix shall be removed and replaced with materials which comply with the specifications. In either case, the adjustment or removal, respectively, for the mix in question will be applied starting from the plant sample tonnage at the stop point to the sample tonnage when the moving average is on or within the warning limits. In addition, any mix which is obviously unacceptable will be rejected for use in the work.

Failure to stop production and make adjustments as described above due to two consecutive moving average values falling outside the warning limits shall subject all mix produced from the stop point tonnage to the tonnage point when the moving average is back on or within the warning limits, or to the tonnage point when production is actually stopped, whichever occurs first, to be considered unacceptable. This material shall be removed and replaced with materials which comply with the specifications unless otherwise approved by the Engineer.

609-6 QUALITY ASSURANCE

Quality assurance will be accomplished in the following ways:

1. by conducting assurance testing of split samples obtained by the Contractor at a frequency equal to or greater than 10% of the frequency required of the Contractor;
2. by periodically observing tests performed by the Contractor;
3. by monitoring required control charts exhibiting test results of control parameters;
4. by directing the Contractor to take additional samples at any time and any location during production (in lieu of the next scheduled random sample) and;
5. by conducting verification sampling and testing on samples taken independently of the Contractor's quality control samples; and
6. by any combination of the above

In all cases, the Engineer's quality assurance and verification testing will be independent of the Contractor's tests. The Department's quality assurance program will be conducted by a certified QMS technician(s).

The Engineer will conduct assurance tests on split samples taken by the Contractor for quality control testing. These samples may be the regular quality control samples or a sample selected by the Engineer from any location in the process. The frequency will be equal to or greater than 10% of that required of the Contractor as stated in Subarticle 609-5(D), "Required Sampling and Testing". The Engineer may select any or all split samples for assurance testing. Results of quality assurance tests will be provided to the Contractor within 3 working days after the sample has been obtained, except for verification TSR test results which will be provided within 7 calendar days.

Differences between the Contractor's and the Department's split sample test results will be considered acceptable if within the following limits:

<u>Mix Property</u>	<u>Acceptable Limits of Precision</u>
1/2"(12.5mm)Sieve (Type P57 Only)	±7.0 %
3/8"(9.5mm)Sieve (Excluding Type P57)	±6.0 %
No. 4 (4.75 mm) Sieve	±5.0 %
No. 8 (2.36 mm) Sieve	±5.0 %
No. 200 (0.075 mm) Sieve	±2.0 %
Asphalt Binder Content	±0.5 %
TSR (Ultrathin HMA Only)	±15.0 %

In the event comparison test results are outside the above acceptable limits of precision, or the quality assurance test results are either outside the individual test control limits or fail to meet Specification requirements, the Engineer will immediately investigate the reason for the difference.

If the potential for a pavement failure is present, the Engineer may suspend production, wholly or in part, in accordance with Article 108-7 while the investigation is in progress. The Engineer's investigation may include but not limited to:

1. Joint testing of any remaining split samples,
2. Review and observation of the QC Technician's sampling and testing procedures,
3. QC equipment, and
4. Comparison of split sample test results on mix currently being produced.

If reasons for the difference cannot be determined, payment for the mix in question will be determined in accordance with Article 105-3.

The Engineer will periodically witness the sampling and testing being performed by the Contractor. If the Engineer observes that the sampling and quality control tests are not being performed in accordance with the applicable test procedures, the Engineer may stop production until corrective action is taken. The Engineer will promptly notify the Contractor of observed deficiencies, both verbally and in writing. The Engineer will document all witnessed samples and tests.

The Engineer will obtain verification samples for testing independent of the Contractor's quality control process. These samples will be split for testing by the Engineer and the Contractor.

609-7 ACCEPTANCE

The Engineer will base final acceptance of the mix on the results of random testing made on split samples during the assurance process and validation of the Contractor's quality control process as outlined in Subarticle 609-5(I) and Article 609-6.

609-8 COMPENSATION

The production and construction of all asphalt mixtures and pavements shall be performed in accordance with these provisions. There will be no direct payment for this work. Payment at the contract unit prices for the various asphalt items will be full compensation for all work covered by this provision.

RESURFACING EXISTING BRIDGES:

7-1-95

The Contractor's attention is directed to the fact that he will be required to resurface the bridges on this project if directed by the Engineer.

Place the surface so as to follow a grade line set by the Engineer with the minimum thickness as shown on the sketch herein or as directed by the Engineer. State Forces will make all necessary repairs to the bridge floors prior to the time that the Contractor places the proposed surfacing. Give the Engineer at least 15 days notice prior to the expected time to begin operations so that State Forces will have sufficient time to complete their work.

At all bridges which are not to be resurfaced, taper out the proposed resurfacing layer adjacent to the bridges to insure a proper tie-in with the bridge surface.

RR61

JOINT AND CRACK SEALING:

Material

The crack sealant used should be a single component asphalt rubber sealant, which meets or exceeds specification requirements ASTM D 3405-94 "Joint Sealants, Hot-Poured For Concrete and Asphalt Pavements." The sealant should contain a minimum of 18%- recycled rubber by weight of asphalt components and be supplied in solid form.

Pavement Cleaning

All cracks must be cleaned using a Hot Air Lance System. This shall consist of a heated air stream at a minimum of 2000 degrees F, with a minimum air velocity of 2000 FPS. Cracks should be free from dust, moisture and other contaminants before the sealant is applied. Under no circumstances should sealant be applied when the pavement is wet.

Melting

Asphalt Rubber Sealant must be melted in a jacketed double boiler type melting unit which is equipped with both agitation and recirculation systems. The temperature of the heat transfer oil in the melting unit should not exceed 525 degrees F when melting the sealant. Prior to applying the sealant, it should be heated to a temperature between the recommended pour temperature of 380°F and the safe temperature of 410°F.

Application

The asphalt rubber sealant should be applied using a pressure feed melter application unit. After the crack is appropriately cleaned the sealant should be applied to a slightly overfilled condition and then leveled with a sealing shoe (not a squeegee) in a one to three inch wide band across the crack with an overlap beyond the crack edges. Ideally, the pavement surface temperature should be between 40°F and 75°F. If the pavement temperature rises above 75°F, a spray material that does not alter the properties (beside the tack) of the sealant should be used to remove the surface tack. Traffic (vehicular and foot) must be kept off the product while it is still in the molten state.

Safety

The Contractor shall follow all North Carolina Department of Labor Division of Occupational Safety and Health requirements on personal protective equipment required for the crack sealing work activity.

Basis of Payment

The quantity of material to be paid for shall be the quantity actually used. Payment shall be full compensation for all labor, tools, equipment, and incidentals necessary for the completion of the work.

Payment shall be made as follows:

“Sealing Existing Pavement Cracks and Joints”.....Lbs”

AGGREGATE PRODUCTION:

11-20-01

Provide aggregate from a producer who utilizes the new Aggregate Quality Control/Quality Assurance Program which is in effect at the time of shipment.

No price adjustment is allowed to contractors or producers who utilize the new program. Participation in the new program does not relieve the producer of the responsibility of complying with all requirements of the Standard Specifications. Copies of this procedure are available upon request from the Materials and Test Unit.

RR109

DRUMS:

07-16-02

Revise the 2002 Standard Specifications as follows:

Page 10-195, Subarticle 1089-5(C)

Delete the first (1st) sentence of the first (1st) paragraph and insert the following:

“Provide a minimum of three orange and two white alternating horizontal circumferential stripes covering the entire outside with each drum.”

RR116

PORTABLE CONCRETE BARRIER:

11-19-02

Portable Concrete Barrier used on this project must meet one of the following:

- NC Approved NCHRP 350 Portable Concrete Barrier (design can be found at <http://www.doh.dot.state.nc.us/preconstruct/traffic/congestion/TC/> or can be obtained by calling the Traffic Control Section at (919) 250-4159)
- Other NCHRP 350 Portable Concrete Barrier as approved by the Engineer and the Traffic Control Section
- NC Approved NCHRP 230 Portable Concrete Barrier in Roadway Standard Drawing 1170.01 manufactured before October 1, 2002

RR117

REMOVAL OF EXISTING PAVEMENT MARKERS:

7-1-95

The Contractor’s attention is directed to the fact that there are snowplowable pavement markers on this project.

Remove and dispose of these markers prior to the paving operation.

No direct payment will be made for this work, as it will be incidental to the placing of the new **Snowplowable Raised Pavement Markers**. This will be full compensation for this work.

RR118

PAVEMENT MARKING GENERAL REQUIREMENTS:

07-16-02

Revise the 2002 Standard Specifications as follows:

Page 12-10, Subarticle 1205-3(J)

Delete the first (1st) sentence of the first (1st) paragraph and insert the following:

“Have at least one member of every pavement marking crew working on a project certified through the NCDOT Pavement Marking Technician Certification Process. For more information contact the Traffic Control, Marking and Delineation Section of the North Carolina Department of Transportation at 919-250-4151 or <http://www.doh.dot.state.nc.us/preconstruct/traffic/congestion/TC/>”

RR119