

PROJECT SPECIAL PROVISIONS

ROADWAY

SHOULDER RECONSTRUCTION PER SHOULDER MILE:

(1-18-00) (Rev 11-16-10)

R1 R07 B Rev

Description

The Contractor shall place ABC(M) along the completed edge of pavement and construct shoulders as shown on the sketch map and/or as directed by the Engineer. The area shall be backfilled and compacted to the satisfaction of the Engineer.

Materials

The ABC(M) shall meet the requirements of Section 1005 in the NCDOT 2012 Standard Specifications for Roads and Structures.

Construction Methods

Perform shoulder reconstruction in the following order: scarify the existing shoulder to provide the proper bond; add the ABC(M) to the shoulder; and compact the reconstructed shoulder to the satisfaction of the Engineer.

Measurement and Payment

Shoulder Reconstruction will be measured and paid for as the actual number of miles of shoulders that have been reconstructed. Measurement will be made along the surface of each shoulder to the nearest 0.01 of a mile. Such price will include disposing of any excess material in an approved disposal site and for all labor, tools, equipment, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Shoulder Reconstruction	Shoulder Mile

SHOULDER WEDGE:

(9-20-11) (Rev. 1-17-12)

610

R6 R03

Revise the *2012 Standard Specifications* as follows:

Page 6-26, Article 610-8, add the following after line 43:

Attach a device, mounted on screed of paving equipment, capable of constructing a shoulder wedge with an angle of not more than 30 degrees along the outside edge of the roadway, measured from the horizontal plane in place after final compaction on the final surface course. Use an approved mechanical device or a device provided by the Department which will form the asphalt mixture to produce a wedge with uniform texture, shape and density while automatically adjusting to varying heights. If the device is provided by the Department, then the Contractor shall return the device to the Engineer after completion of all shoulder wedge construction.

Payment for use of this device will be incidental to the other pay items in the contract.

ASPHALT BINDER CONTENT OF ASPHALT PLANT MIXES:

(11-21-00) (Rev. 7-19-11)

609

R6 R15

The approximate asphalt binder content of the asphalt concrete plant mixtures used on this project will be as follows:

Asphalt Concrete Base Course	Type B 25.0__	4.4%
Asphalt Concrete Intermediate Course	Type I 19.0__	4.8%
Asphalt Concrete Surface Course	Type S 4.75A	6.8%
Asphalt Concrete Surface Course	Type SF 9.5A	6.7%
Asphalt Concrete Surface Course	Type S 9.5__	6.0%
Asphalt Concrete Surface Course	Type S 12.5__	5.5%

The actual asphalt binder content will be established during construction by the Engineer within the limits established in the *2012 Standard Specifications*.

PRICE ADJUSTMENT - ASPHALT BINDER FOR PLANT MIX:

(11-21-00)

620

R6 R25

Price adjustments for asphalt binder for plant mix will be made in accordance with Section 620 of the *2012 Standard Specifications*.

The base price index for asphalt binder for plant mix is \$ **634.29** per ton.

This base price index represents an average of F.O.B. selling prices of asphalt binder at supplier's terminals on **April 1, 2012**.

FINAL SURFACE TESTING NOT REQUIRED:

(5-18-04) (Rev. 5-15-12)

610

R6 R45

Final surface testing is not required on this project.

ASPHALT CONCRETE SURFACE COURSE COMPACTION:

(7-1-95)

R6 R49

Compact the asphalt surface course on this project in accordance with Subarticle 610-9 of the *2012 Standard Specifications* and the following provision:

Perform the first rolling with a steel wheel roller followed by rolling with a self-propelled pneumatic tired roller with the final rolling by a steel wheel roller.

WEDGE COURSE:

(7-1-95)

R6 R52 (Rev.)

Place a wedge course at locations ahead of the paving operation as required by the Engineer. **Materials used during this process have been added to Surface, Intermediate or Base quantities. No wedging pay item will be used.**

RESURFACING EXISTING BRIDGES:

(7-1-95)

R6 R61B

The Contractor's attention is directed to the fact that he will be required to mill and 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.

The Contractor's attention is directed to the fact that Bridge Numbers 638 and 647, Map 1; Bridge Numbers 633, 635 and 649, Map 2; Bridge Numbers 634 and 636, Map 3; and Bridge Number 24, Map 7 will not be resurfaced. Bridge Number 145, Map 8 will be milled 1½" and then resurfaced.

PAVING INTERSECTIONS, DRIVEWAYS, AND MAILBOX TURNOUTS:

(7-1-95)

610

R6 R73

Surface all unpaved intersections back from the edge of the pavement on the mainline of the project at least 50 feet, or as directed by the Engineer. The base material for all intersections to be surfaced will be prepared for surfacing by State Forces. Place pavement in the intersections of the same material and thickness as being used on the mainline.

Surface all paved intersections back to the ends of the radii, or as directed by the Engineer. In addition, the Contractor will be required to resurface all driveway and mailbox turnouts as directed by the Engineer.

PATCHING EXISTING PAVEMENT:

(1-15-02) (Rev.11-29-10)

610

R6 R88

Description

The Contractor's attention is directed to the fact that there are areas of existing pavement on this project that will require repair prior to resurfacing. Patch the areas that, in the opinion of the Engineer, need repairing. The areas to be patched will be delineated by the Engineer prior to the Contractor performing repairs.

Materials

The patching consists of Asphalt Concrete Base Course, Asphalt Concrete Intermediate Course, Asphalt Concrete Surface Course, or a combination of base, binder and surface course.

Construction Methods

Remove existing pavement at locations directed by the Engineer in accordance with Section 250 of the *2012 Standard Specifications*.

Place Asphalt Concrete Base Course, in lifts not exceeding 5.5 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. If patched pavement is to be open to traffic for more than 48 hours prior to overlay, use Asphalt Surface Course in the top 1.25 inches of the patch.

Schedule operations so that all areas where pavement has been removed will be repaired on the same day of the pavement removal and all lanes of traffic restored.

Measurement and Payment

Patching Existing Pavement will be measured and paid as the actual number of tons of asphalt plant mix complete in place that 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. The above price and payment will be full compensation for all work covered by this provision, including but not limited to removal and disposal of all types of pavement; furnishing and applying tack coat; furnishing, placing, and compacting of asphalt plant mix; furnishing of asphalt binder for the asphalt plant mix; and furnishing scales.

Patching Existing Pavement will be considered a minor item. In the event that the item of Patching Existing Pavement overruns the original bid quantity by more than 100 percent, the provisions of Article 104-5 of the *2012 Standard Specifications* pertaining to revised contract unit price for overrunning minor items will not apply to this item. Any provisions included in the contract that provides 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.

Payment will be made under:

Pay Item	Pay Unit
Patching Existing Pavement	Ton

SEALING EXISTING PAVEMENT CRACKS:

(3-22-12)

SPI 6-8

Description

The work consists of sealing existing longitudinal and transverse pavement cracks with Sealant Type 2, PS/AR (hot-poured rubber asphalt) at locations as directed by the Engineer. The Contractor will not be required to seal the existing edge joints.

Materials

Use Sealant Type 2, PS/AR (hot-poured rubber asphalt) in accordance with Article 1028-2 of the *2012 Standard Specifications*.

Construction Methods

Install the sealant so that it forms a complete watertight bond with a high degree of elasticity, with maximum flexibility and longevity under extreme temperature ranges.

Use an HCA (hot compressed air) lance at all times to blast out any vegetation, dirt, dampness and loose materials from the cracks.

Use a concentrated hot air jet that is at least 3000°F in temperature and that has an air jet force of not less than 3000 feet per second of blasting.

Force open asphalt cracks, cleaned warm and dry, and make ready for the application of the preheated sealant for maximum crack sealability.

Preheat the sealant to correct temperature, using the air jacketed flow method to prevent the burning of the modified rubber in the sealant. Perform this by means of a trailer mounted 190 gallon safety tested crack sealant preheater melter kettle, with a horizontally mounted full sweep double paddle agitator.

Apply sealant in the prepared cracks at a temperature range of 370°F minimum and 420°F maximum, using the pressure screed shoe to completely fill the crack, leaving a sealed 2" overband. Excessive overbanding or waste of sealant materials will not be tolerated.

Do not apply the PS/AR sealant when the surface temperature of the pavement is below 32°F.

Seal all cracks with a minimum of 1/8" depth of sealant installed.

After the crack has been sealed, promptly remove surplus sealer on the pavement. Do not permit traffic over the sealed cracks without approval by the Engineer.

The sealant shall be packaged in polyethylene bags and placed in boxes, which weigh approximately 60 pounds. The sealant may be packed in 60 pound boxes containing 2 polyethylene bags of sealant which weigh approximately 30 pounds each. Boxes of sealant are to be palletized for shipment. The pallets are to be protected with a weatherproof covering. The Contractor is responsible for storage.

Measurement and Payment

Sealing Existing Pavement Cracks will be measured and paid as the actual pounds of material that has satisfactorily been used to seal pavement cracks in the designated highway. Any material that has been spilled, used in excessive overbanding, wasted, misapplied, or unsatisfactorily used in any way will be deducted in determining quantities for payment. The Engineer will determine the quantity, if any, to be deducted. The Engineer's decision on the quantity to be deducted will be final and binding. The above price and payment will be full compensation for all work required to seal the pavement cracks including, but not limited to, furnishing, hauling, loading and unloading, and storage of all sealant materials; cleaning and preparation of cracks to be sealed; application of sealant material in the prepared cracks; any clean-up; and any incidentals necessary to satisfactorily complete the work.

Payment will be made under:

Pay Item	Pay Unit
Sealing Existing Pavement Cracks	Pound

MICRO-SURFACING (Square Yard Measurement):

7-1-95) (Rev. 11-20-07)

SPI 7-2

Description

This specification covers the materials, equipment, construction and application procedures for rut filling and/or surfacing of existing paved surfaces in accordance with the contract. The micro-surfacing system shall be a mixture of cationic latex modified asphalt emulsion, mineral aggregate, mineral filler, water and other additives, properly proportioned, mixed and spread on the paved surface in accordance with this specification and as directed by the Engineer.

Materials

- (A) **Latex modified emulsified asphalt** The emulsified asphalt shall be a cationic type CSS-1h and shall conform to the requirements specified of AASHTO M208 and ASTM 2397. It shall show no separation after mixing. The cement mixing test is waived for the latex modified CSS-1h.
- (B) **Mineral aggregate** The mineral aggregate used shall be compatible with the latex modified emulsified asphalt and can produce a good skid resistant surface. The aggregate shall meet requirements in Section 1012-1 of the *Standard Specifications*.
- (C) **Mineral filler** Mineral filler shall be any recognized brand of non-airentrained portland cement that is free of lumps. It may be accepted upon visual inspection.
- (D) **Water** The water shall be potable and shall be free of harmful soluble salts in accordance with Section 1024-4 of the *Standard Specifications*.
- (E) **Latex modifier** A latex based modifier, certified from an approved source, along with special emulsifiers shall be milled into the asphalt emulsion by an approved emulsion manufacturer. The latex modified emulsified asphalt shall be so formulated that when the paving mixture is applied at a thickness of 1" it will cure sufficiently so that rolling traffic can be allowed back on the pavement in one hour with no damage to the surface.
- (F) **Other additives** The additives are any other materials that are added to the emulsion mix or to any of the component materials to provide the specified properties. The additives shall be supplied by the emulsion manufacturer to provide control of the set time in the field.

Mix Design

- (A) The Contractor shall submit a mix design certified by the latex modified emulsion manufacturer and present certified test results for the Engineer's approval. Compatibility of the aggregate and latex modified CSS-1h shall be certified by the emulsion manufacturer. The job mix formula shall provide a minimum Marshall stability of 1,800 pounds and a flow of 6 to 16 units when tested according to modified ASTM procedures. Aggregate used in the job mix formula shall be of the material proposed by the Contractor for use on the project.

- (B) **Composition of Mixture** The Engineer shall approve the mix design and all micro-surfacing materials and methods prior to use and shall designate the proportions to be used within the following limits.

	Type B	Type C	Rutfilling
Mineral aggregate (#/sy dry wt.)	10-30	18-35	30-60
% Emulsified asphalt (Residual)	6.5-8.5	5.0-7.5	4.5-6.5
% Mineral filler	As required to provide the specific properties.		
Latex based modified	As required to provide the specific properties.		
Additive	As required to provide the specific properties.		

- (C) The gradation of the aggregate shall be in accordance with the following:

Screen Size	Type B (% passing)	Type C (% passing)	Rutfilling
3/8"	100	100	100
#4	90-100	70-90	70-90
#8	65-90	45-70	45-70
#16	45-70	32-54	32-54
#30	30-50	23-38	23-38
#50	18-33	16-29	16-29
#100	10-21	9-20	9-20
#200	5-15	5-15	5-15

The mineral aggregate shall be weighed by means of scale approved by the Engineer before delivery to the job site. Emulsified asphalt shall be weighed by means of approved scales or be measured by volume.

Precautions shall be taken to insure that stockpiles do not become contaminated.

- (D) **Sampling Requirement** Samples for gradation will be taken from aggregate stockpiles designated by the Contractor for use. Samples for asphalt content shall be taken from the completed mix. Samples of aggregate and filler will be taken at the job site. The frequency of sampling and testing will be established by the Engineer based upon the Department's current acceptance program. The asphalt content will be determined by AASHTO T-164 modified.

Equipment

- (A) The material shall be mixed by a self-propelled truck mounted or continuous type micro-surfacing mixing machine which shall be a continuous flow mixing unit able to accurately deliver and proportion the aggregate, latex modified emulsion, mineral filler, water and additive to a revolving multi-blade dual mixer and discharge the mixed product on a continuous flow basis. The machine shall have sufficient storage capacity for aggregate, emulsified asphalt, mineral filler, water, and additive to maintain an adequate supply to the proportioning controls.

Individual volume or weight controls for proportioning each material to be added to the mix shall be provided. Each material control device shall be calibrated and properly marked.

The aggregate feed to the mixer shall be equipped with a revolution counter or similar device so the amount of aggregate used may be determined at any time.

The emulsion pump shall be a positive displacement type and shall be equipped with a revolution counter or similar device so that the amount of emulsion used may be determined at any time.

The mixing machine shall be equipped with a water pressure system and nozzle type spray bar to provide a water spray immediately ahead of and outside the spreader box.

The mixing machine shall be equipped with an approved fines feeder that shall provide a uniform feed of properly proportioned amounts of the specified mineral filler.

- (B) **Spreading Equipment** The paving mixture shall be spread uniformly by means of a mechanical type squeeze box attached to the mixer, equipped with paddles to agitate and spread the materials throughout the box. These paddles shall be designed and operated so all the freshly mixed material will be kept stirred-up and moving. A front seal shall be provided to insure no loss of the mixture at the road contact surface. Rutfilling equipment will require adjustable steel strike-off plates. The rear seal shall act as a final strike-off and shall be adjustable. The spreader shall be maintained to prevent the loss of the paving mixture in surfacing superelevated curves. 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 without causing skips, lumps, or tears in the finished surface.

Construction Methods

- (A) **Weather and Seasonal Limitations** No material shall be placed between October 15 and March 16. The material shall be placed only when the surface is dry and the atmospheric temperature is at least 45°F. and rising and there is no chance of temperatures below 32°F. within 24 hours from the time the material is applied.
- (B) **Surface Preparation** Immediately prior to applying the paving mixture the surface shall be thoroughly cleaned of all vegetation, loose materials, dirt, mud, and other objectionable materials and prewetted if required. Water used in prewetting the surface shall be applied at a rate to dampen the entire surface without any free flowing water ahead of the spreader box.
- (C) **Application** The mixture shall be spread to fill minor cracks, minor surface irregularities, and shallow potholes and leave a uniform high-skid resistant application of aggregate and asphalt on the surface. Approved squeegees shall be used to spread the mixture in areas inaccessible to the spreader box and other areas hand spreading may be required.

A sufficient amount of surface sealer shall be carried to all parts of the spreader box at all times so that complete coverage is obtained. Water may be sprayed into the spreader box to facilitate spreading without harming 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.

In restricted areas where hand spreading is necessary slight adjustments to the mix formula may be required to slow setting time. The paving mixture shall be poured into a small windrow along one edge of the surface to be covered. The mixture then shall be spread uniformly by a hand squeegee or lute.

The seam where two passes join shall be neat in appearance and uniform.

All excess material shall be removed from ends of each run immediately on surface course.

- (D) Curing** Adequate means shall be provided to protect the micro-surfacing from damage by traffic until the mixture has cured sufficiently so that it will not adhere to or be picked up by the tire of vehicles. Any damage done by traffic to the micro-surfacing shall be repaired by the Contractor.

Measurement and Payment

Latex Modified Micro-Surfacing () placed and accepted as specified herein, will be measured along the top surface of the completed work. Payment will be made at the contract unit price per square yard for the type specified. Such price and payment will be full compensation for all materials, labor, tools, and incidentals necessary to complete the work.

The unit price shown in the contract shall be full compensation for all materials including modifiers and additives, labor, tools, equipment, and all other incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Latex Modified Micro-Surfacing Type "B"	Square Yard
Latex Modified Micro-Surfacing Type "C"	Square Yard
Latex Modified Micro-Surfacing Rutfilling	Square Yard

INCIDENTAL MILLING AT BRIDGE ENDS

At bridges that are not to be resurfaced, the bridge approaches are to be milled in accordance with the detail shown in the Typical Sections. Also any bridge that is to be milled and then resurfaced, the bridge approaches should be milled in accordance with the detail shown in the Typical Sections. Both of these types of milling is considered incidental to the paving items and no direct payment will be made for this milling.

MATERIALS:
(2-21-12) (Rev. 5-15-12)

1005, 1081

R10 R01

Revise the 2012 Standard Specifications as follows:

Page 10-23, Table 1005-1, AGGREGATE GRADATION-COARSE AGGREGATE, replace with the following:

Std. Size #	Percentage of Total by Weight Passing													Remarks
	2"	1 1/2"	1"	3/4"	1/2"	3/8"	#4	#8	#10	#16	#40	#200		
4	100	90-100	20-55	0-15	-	0-5	-	-	-	-	-	A	Asphalt Plant Mix	
467M	100	95-100	-	35-70	-	0-30	0-5	-	-	-	-	A	Asphalt Plant Mix	
5	-	100	90-100	20-55	0-10	0-5	-	-	-	-	-	A	AST, Sediment Control Stone	
57	-	100	95-100	-	25-60	-	0-10	0-5	-	-	-	A	AST, Str. Concrete, Shoulder Drain, Sediment Control Stone	
57M	-	100	95-100	-	25-45	-	0-10	0-5	-	-	-	A	AST, Concrete Pavement	
6M	-	-	100	90-100	20-55	0-20	0-8	-	-	-	-	A	AST	
67	-	-	100	90-100	-	20-55	0-10	0-5	-	-	-	A	AST, Str. Concrete, Asphalt Plant Mix	
78M	-	-	-	100	98-100	75-100	20-45	0-15	-	-	-	A	Asphalt Plant Mix, AST, Str. Cong, Weep Hole Drains	
14M	-	-	-	-	-	35-70	5-20	0-8	-	-	-	A	Asphalt Plant Mix, AST, Weep Hole Drains, Str. Concrete	
9	-	-	-	-	-	85-100	10-40	0-10	-	-	-	A	AST	
ABC	-	100	75-97	-	55-80	35-55	25-45	14-30	4-12 ^b	-	-	-	Aggregate Base Course, Aggregate Stabilization	
ABC (M)	-	100	75-100	-	45-79	20-40	0-25	-	-	-	-	0-12 ^b	Maintenance Stabilization	
Lightweight C	-	-	-	-	100	80-100	5-40	0-20	-	0-10	-	0-2.5	AST	

- A. See Subarticle 1005-4(A).
- B. See Subarticle 1005-4(B).
- C. For Lightweight Aggregate used in Structural Concrete, see Subarticle 1014-2(E)(6).

Page 10-162, Subarticle 1081-1(A) Classifications, lines 4-7, delete the second and third sentences of the description for Type 3A.

Page 10-162, Subarticle 1081-1(B) Requirements, lines 26-30, replace the second paragraph with the following:

For epoxy resin systems used for embedding dowel bars, threaded rods, rebar, anchor bolts and other fixtures in hardened concrete, the manufacturer shall submit test results showing that the bonding system will obtain 125% of the specified required yield strength of the fixture. Furnish certification that, for the particular bolt grade, diameter and embedment depth required, the anchor system will not fail by adhesive failure and that there is no movement of the anchor bolt. For certification and anchorage, use 3,000 psi as the minimum Portland cement concrete compressive strength used in this test. Use adhesives that meet Section 1081.

List the properties of the adhesive on the container and include density, minimum and maximum temperature application, setting time, shelf life, pot life, shear strength and compressive strength.

Page 10-169, Subarticle 1081-3(G) Anchor Bolt Adhesives, delete this subarticle.