PROJECT SPECIAL PROVISIONS

ROADWAY

COMPREHENSIVE GRADING:

Comprehensive grading on this project involves the work associated with the pipe replacements on either side of SR1122 consisting of, but not limited to, regrading of roadway ditches and shall be performed in accordance with Section 226 of the Standard Specifications except delete all references to Section 230, Borrow Excavation.

Payment will be made under:

Grading.....Lump Sum

SHOULDER RECONSTRUCTION:

(1-18-00) (Rev. 6-19-07) R1 R07A

Description

The work covered by this provision consists of reconstructing earth shoulders in accordance with the *Roadway Standard Drawing Nos. 560.01 and 560.02,* from the edge of pavement to the existing shoulder point as directed by the Engineer. Perform this work immediately after the resurfacing operations are completed as directed by the Engineer.

Materials

On any map that contains widening, use all suitable material generated from the widening operation to construct the shoulder. Furnish any other earth material necessary for the construction of the shoulders. Provide earth material meeting the approval of the Engineer. No testing will be necessary.

Construction Methods

Perform shoulder reconstruction in the following order: scarify the existing shoulder to provide the proper bond; add the earth material to the shoulder; and compact the reconstructed shoulder to the satisfaction of the Engineer.

The Contractor shall dispose of any excess material generated by the shoulder reconstruction in an approved disposal site.

Measurement and Payment

Shoulder Reconstruction will be measured and paid for as the actual number of shoulder miles that have been constructed. Measurement will be made along the edge of each shoulder.

Measurement will be made to the nearest 0.01 of a mile. Such price and payment will be full compensation for furnishing earth material, hauling, placing, compaction, and all incidentals necessary to complete construction of the shoulders.

Incidental Stone Base will be measured and paid for as provided in Article 545-6 of the *Standard Specifications.*

Seeding and Mulching will be measured and paid for as provided elsewhere in this contract.

Payment will be made under:

Pay Item	**Pay Unit**
Shoulder Reconstruction	Shoulder Mile

FINAL ACCEPTANCE AND FOURTEEN DAY OBSERVATION PERIOD:
(7-1-95) R1 R13

Upon completion of construction as shown on each map, a 14 day observation period is required before acceptance. During the 14-day period, warrant the resurfaced area against failure.

No payment will be made for replacing failed pavement, as the cost of it will be considered incidental to the work initially paid for under the various items in the contract.

Completion and final acceptance of the project is contingent upon successful completion of the Observation Period. The observation period will be considered a part of the work required to be completed by the final completion date specified herein.

CONSTRUCTION SEQUENCE:
(7-1-95) R1 R34

Pave each section of roadway begun in a continuous operation. Do not begin work on another section of roadway unless satisfactory progress is being made toward completion of intersections and all other required incidental work by satisfactorily furnishing additional paving equipment and personnel, except for milling and patching operations.

PIPE TESTING:
4-17-07 R3 R33

Revise the *2006 Standard Specifications* as follows:

Page 3-3, Article 300-6, add the following:

The Department reserves the right to perform forensic testing on any installed pipe.

INCIDENTAL STONE BASE:
(7-1-95) (Rev.7-18-06) R5 R28

Description

Place incidental stone base on driveways, mailboxes, etc. immediately after paving and do not have the paving operations exceed stone base placement by more than one week without written permission of the Engineer.

Materials and Construction

Provide and place incidental stone base in accordance with the requirements of Section 545 of the *2006 Standard Specifications*.

Measurement and Payment

Incidental Stone Base will be measured and paid for in accordance with Article 545-6 of the *2006 Standard Specifications*.

ASPHALT PAVEMENTS - SUPERPAVE:
(7-18-06) (Rev 12-18-07) R6 R01

Revise the *2006 Standard Specifications* as follows:

Page 6-2, Article 600-9 Measurement and Payment, delete the second paragraph.

Page 6-12, Subarticle 609-5(C)2, Required Sampling and Testing Frequencies, first partial paragraph at the top of the page, delete last sentence and add the following:

If the Engineer allows the mix to remain in place, payment will be made in accordance with Article 105-3.

Page 6-12, Subarticle 609-5(C)2, QUALITY CONTROL MINIMUM SAMPLING AND TESTING SCHEDULE

First paragraph, delete and replace with the following.

Sample and test the completed mixture from each mix design per plant per year at the following minimum frequency during mix production:

Second paragraph, delete the fourth sentence, and replace with the following

When daily production of each mix design exceeds 100 tons and a regularly scheduled full test series random sample location for that mix design does not occur during that day's production, perform at least one partial test series consisting of Items A and B in the schedule below.

Page 6-12, Subarticle 609-5(C)2(c) Maximum Specific Gravity, add after (AASHTO T 209):

or ASTM D 2041

Page 6-13, last line and on page and Page 6-14, Subarticle 609-5(C)(2)(e) Retained Tensile Strength, add a heading before the first paragraph as follows:

(i) Option 1

Insert the following immediately after the first paragraph:

(ii) Option 2

Mix sampled from truck at plant with one set of specimens prepared by the Contractor and then tested jointly by QA and QC at a mutually agreed upon lab site within the first 7 calendar days after beginning production of each new mix design.

Second paragraph, delete the and replace with the following:

Test all TSR specimens required by either option noted above on either a recording test press or a test press that maintains the peak load reading after the specimen has broken.

Subarticle 609-5(C)(3) Control Charts, delete the second sentence of the first paragraph and replace with the following:

For mix incorporated into the project, record full test series data from all regularly scheduled random samples or directed samples that replace regularly scheduled random samples, on control charts the same day the test results are obtained.

Page 6-15, Subarticle 609-5(C)(3) Control Charts, first paragraph on this page, delete the last sentence and substitute the following:

Denote the moving average control limits with a dash green line and the individual test limits with a dash red line.

Subarticle 609-5(C)(3)(a), (b) and (c), replace (a) (b) and (c) with the following:

(a) A change in the binder percentage, aggregate blend, or G_{mm} is made on the JMF, or,

(b) When the Contractor elects to stop or is required to stop production after one or two moving average values, respectively, fall outside the moving average limits as outlined in subarticle 609-5(C)6 or,

(c) If failure to stop production after two consecutive moving averages exceed the moving average limits occurs, but production does stop at a subsequent time, re-establish a new moving average beginning at the actual production stop point.

Subarticle 609-5(C)(4) Control Limits, replace the first paragraph and the CONTROL LIMITS Table on page 6-16 with the following.

The following are established as control limits for mix production. Apply the individual limits to the individual test results. Control limits for the moving average limits are based on a moving average of the last 4 data points. Apply all control limits to the applicable target source.

CONTROL LIMITS

Mix Control Criteria	Target Source	Moving Average Limit	Individual Limit
2.36 mm Sieve	JMF	±4.0 %	±8.0 %
0.075mm Sieve	JMF	±1.5 %	±2.5 %
Binder Content	JMF	±0.3 %	±0.7 %
VTM @ N_{des}	JMF	±1.0 %	±2.0 %
VMA @ N_{des}	Min. Spec. Limit	-0.5%	-1.0%
$P_{0.075}$/ P_{be} Ratio	1.0	±0.4	±0.8
$\%G_{mm}$ @ N_{ini}	Max. Spec. Limit	N/A	+2.0%
TSR	Min. Spec. Limit	N/A	- 15%

Page 6-16, Subarticle 609-5(C)(5) Warning Bands, delete this subarticle in its entirety.

Pages 6-16 through 6-19, Subarticle 609-5(C)(6), delete the word "warning" and substitute the words "moving average".

Page 6-16, Subarticle 609-5(C)(6) Corrective Actions, first paragraph, first sentence, delete and replace with the following:

Immediately notify the Engineer when moving averages exceed the moving average limits.

Page 6-17, third full paragraph, delete and replace with the following:

Failure to stop production when required due to an individual mix test not meeting the specified requirements will subject all mix from the stop point tonnage to the point when the next individual test is back on or within the moving average limits, or to the tonnage point when production is actually stopped, whichever occurs first, to being considered unacceptable.

Sixth full paragraph, delete the first, second, and third sentence and replace with the following:

Immediately notify the Engineer when any moving average value exceeds the moving average limit. If two consecutive moving average values for any one of the mix control criteria fall outside the moving average limits, cease production of that mix, immediately notify the Engineer of the stoppage, and make adjustments. The Contractor may elect to

stop production after only one moving average value falls outside the moving average limits.

Page 6-18, Subarticle 609-5(C)(6) Corrective Actions second full paragraph, delete and replace with the following:

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

Page 6-18, delete the third and fourth full paragraphs, including the Table for Payment for Mix Produced in the Warning Bands and substitute the following:

If the adjustment does not improve the property in question such that the moving average after four additional individual tests is outside the moving average limits, the mix will be evaluated for acceptance in accordance with Article 105-3. Reduced payment for or removal of 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 moving average limits. In addition, any mix that is obviously unacceptable will be rejected for use in the work.

Page 6-19, First paragraph, delete and replace with the following:

Failure to stop production and make adjustments when required due to two consecutive moving average values falling outside the moving average limits will subject all mix produced from the stop point tonnage to the tonnage point when the moving average is back on or within the moving average limits or to the tonnage point when production is actually stopped, whichever occurs first, to being considered unacceptable. Remove this material and replaced with materials which comply with the Specifications at no additional costs to the Department, unless otherwise approved. Payment will be made for the actual quantities of materials required to replace the removed quantities, not to exceed the original amounts.

Page 6-20, Subarticle 609-5(D)(1) General, delete the third full paragraph, and replace with the following:

Perform the sampling and testing at the minimum test frequencies as specified above. Should the density testing frequency fail to meet the minimum frequency as specified above, all mix without the required density test representation will be considered unsatisfactory. If the Engineer allows the mix to remain in place, payment will be made in accordance with Article 105-3.

Page 6-23, Subarticle 609-5(D)(5) Limited Production Procedure, delete the first paragraph including (a), (b), (c) and substitute the following:

Proceed on limited production when, for the same mix type and on the same contract, one of the following conditions occur (except as noted in the first paragraph below).

(a) Two consecutive failing lots, except on resurfacing*
(b) Three consecutive failing lots on resurfacing*
(c) Two consecutive failing nuclear control strips.

* Resurfacing is defined as the first new uniform layer placed on an existing pavement.

Page 6-28, Subarticle 610-3(A) Mix Design-General, fourth paragraph, third sentence:

Substitute 20% for 15%

Fifth paragraph, first, second and third sentences:

Substitute 20% for 15%

Page 6-28, Subarticle 610-3(A) Mix Design-General, add the following as the fourth paragraph:

Reclaimed Asphalt Pavement (RAP) or Reclaimed Asphalt Shingles (RAS) may be incorporated into asphalt plant mixes in accordance with Article 1012-1 and the following applicable requirements.

Page 6-35, Table 610-3 delete and replace with the following:

TABLE 610-3
ASPHALT PLACEMENT- MINIMUM TEMPERATURE REQUIREMENTS

Asphalt Concrete Mix Type	Minimum Air Temperature	Minimum Surface Temperature
ACBC, Type B 25.0B, C, B 37.5C	35°F	35°F
ACIC, Type I 19.0B, C, D	35°F	35°F
ACSC, Type S 4.75A, SF 9.5A, S 9.5B	40°F	50°F*
ACSC, Type S 9.5C, S 12.5C	45°F	50°F
ACSC, Type S 9.5D, S 12.5D	50°F	50°F

* 35°F if surface is soil or aggregate base for secondary road construction.

Page 6-44, Article 610-8 Spreading and Finishing, third full paragraph, replace the first sentence with the following:

Use the 30 foot minimum length mobile grade reference system or the non-contacting laser or sonar type ski *with at least four referencing stations mounted on the paver at a minimum length of 24 feet* to control the longitudinal profile when placing the initial lanes and all adjacent lanes of all layers, including resurfacing and asphalt in-lays, unless otherwise specified or approved.

Page 6-50, Article 610-13 Density Acceptance, delete the second paragraph and replace with the following:

As an exception, when the first layer of mix is a surface course and is being placed directly on an unprimed aggregate or soil base, the layer will be included in the "Other" construction category.

Page 6-53, Article 620-4 Measurement and Payment, sixth paragraph, delete the last sentence.

Page 6-54, Article 620-4 Measurement and Payment, add the following pay item:

Pay Item	**Pay Unit**
Asphalt Binder for Plant Mix, Grade PG 70-28	Ton

Page 6-69, Table 660-1 Material Application Rates and Temperatures, add the following:

Type of Coat	**Grade of Asphalt**	**Asphalt Rate gal/yd^2**	**Application Temperature ^oF**	**Aggregate Size**	**Aggregate Rate lb./sq. yd. Total**
Sand Seal	CRS-2 or CRS-2P	0.22-0.30	150-175	Blotting Sand	12-15

Page 6-75, Subarticle 660-9(B), add the following as sub-item (5)

(5) Sand Seal

Place the fully required amount of asphalt material in one application and immediately cover with the seal coat aggregate. Uniformly spread the fully required amount of aggregate in one application and correct all non-uniform areas prior to rolling.

Immediately after the aggregate has been uniformly spread, perform rolling.

When directed, broom excess aggregate material from the surface of the seal coat.

When the sand seal is to be constructed for temporary sealing purposes only and will not be used by traffic, other grades of asphalt material meeting the requirements of Articles 1020-6 and 1020-7 may be used in lieu of the grade of asphalt required by Table 660-1 when approved.

Page 6-76, Article 661-1 Description, add the following as the 2nd paragraph:

Provide and conduct the quality control and required testing for acceptance of the UBWC in accordance with "Quality Management System for Asphalt Pavements (OGAFC, PADL, and Ultra-Thin HMA Version)", included in the contract.

Page 6-80, Subarticle 661-3(A) Equipment, add the following as the first paragraph:

Use asphalt mixing plants in accordance with Article 610-5.

Page 10-41, Table 1012-1, delete the last row of entries for OGAFC and add the following:

Mix Type	Course Aggregate Angularity [b] ASTM D5821	Fine Aggregate Angularity % Minimum AASHTO T304 Method A	Sand Equivalent % Minimum AASHTO T176	Flat & Elongated 5:1 Ratio % Maximum ASTM D4791 Section 8.4
S 9.5 D	100/100	45	50	10
OGAFC	100/100	N/A	N/A	10
UBWC	100/85	40	45	10

Delete Note (c) under the Table 1012-1 and replace with the following:

(c) Does not apply to Mix Types SF 9.5A and S 9.5B.

Page 10-43 through 10-45, Subarticle 1012-1(G), delete this in its entirety and replace with the following:

(G) Reclaimed Asphalt Pavement (RAP)

(1) Mix Design RAP

Incorporate RAP from stockpiles or other sources that have been tested for uniformity of gradation and binder content prior to use in an asphalt mix design. Use reclaimed asphalt pavement that meets all requirements specified for *one of* the following *two* classifications.

(a) Millings

Existing reclaimed asphalt pavement (RAP) that is removed from its original location by a milling process as specified in Section 607. Millings should be such that it has a uniform gradation and binder content and all materials will pass a 2" sieve prior to introduction into the plant mixer unit.

(b) Processed RAP

RAP that is processed in some manner (possibly by crushing and/or use of a blending method) to produce a uniform gradation and binder content in the RAP prior to use in a recycled mix. Process RAP so that all materials have a uniform gradation and binder content and will pass a 2" sieve prior to introduction into the plant mixer unit.

(2) Mix Production RAP

During mix production use RAP that meets the criteria for one of the following categories:

(a) Mix Design RAP

RAP contained in the mix design stockpiles as described above may be used in all applicable JMFs. These stockpiles have been pretested: however, they are subject to required QC/QA testing in accordance with Subarticle 609-5(C)(2).

(b) New Source RAP

New Source RAP is defined as any acceptable material which was not included in the stockpile or other source when samples were taken for mix design purposes. Process new source RAP so that all materials have a uniform gradation and binder content and will pass a 2" sieve prior to introduction into the plant mixer unit.

After a stockpile of processed RAP or millings has been sampled and mix designs made from these samples, do not add new source RAP to the original stockpile without prior field testing to insure gradation and binder uniformity. Sample and test new source RAP before blending with the existing stockpile.

Store new source RAP in a separate stockpile until the material can be sampled and tested for comparison with the original recycled mix design data. New source RAP may also be placed against the existing stockpile in a linear manner provided it is sampled for mix design conformity prior to its use in the recycled mix.

Unprocessed RAP is asphalt material that was not milled and/or has not been processed to obtain a uniform gradation and binder content and is not representative of the RAP used during the applicable mix design. Unprocessed RAP shall not be incorporated into any JMFs prior to processing. Different sources of unprocessed RAP may be stockpiled together provided it is generally free of contamination and will be processed prior to use in a recycled mix. RAP contamination in the form of excessive dirt, debris, clean stone, concrete, etc. will not be allowed. Incidental amounts of dirt, concrete, and clean stone may be acceptable. Unprocessed RAP may be processed and then classified as a new source RAP as described above.

Field approval of new source RAP will be based on Table 1012-2 below and volumetric mix properties on the mix with the new source RAP included. Provided the Table 1012-2 tolerances are met,

volumetric properties of the new mix will then be performed. If all volumetric mix properties meet the mix design criteria for that mix type, the new source RAP may continue to be used.

If the gradation, binder content, or any of the volumetric mix properties are not within the allowable tolerances of Table 1012-2, do not use the new source RAP unless approved by the Engineer. The Contractor may elect to either not use the stockpile, to request an adjustment to the JMF, or to redesign the mix.

TABLE 1012-2
NEW SOURCE RAP GRADATION and BINDER TOLERANCES
(Apply Tolerances to Mix Design Data)

Mix Type	0-20% RAP			20^{+}-25 % RAP			25^{+} % RAP		
Sieve (mm)	Base	Inter.	Surf.	Base	Inter.	Surf.	Base	Inter.	Surf.
P_b %		± 0.7%			± 0.4%			± 0.3%	
25.0	±10	-	-	±7	-	-	±5	-	-
19.0	±10	±10	-	±7	±7	-	±5	±5	-
12.5	-	±10	±6	-	±7	±3	-	±5	±2
9.5	-	-	±8	-	-	±5	-	-	±4
4.75	±10	-	±10	±7	-	±7	±5	-	±5
2.36	±8	±8	±8	±5	±5	±5	±4	±4	±4
1.18	±8	±8	±8	±5	±5	±5	±4	±4	±4
0.300	±8	±8	±8	±5	±5	±5	±4	±4	±4
0.150	-	-	±8	-	-	±5	-	-	±4
0.075	±4	±4	±4	±2	±2	±2	±1.5	±1.5	±1.5

ASPHALT BINDER CONTENT OF ASPHALT PLANT MIXES:

(1-1-02) 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 __	4.3 %
Asphalt Concrete Intermediate Course	Type I 19.0 __	4.7 %
Asphalt Concrete Surface Course	Type S 4.75A	7.0 %
Asphalt Concrete Surface Course	Type SF 9.5A	6.5 %
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 *2006 Standard Specifications.*

ASPHALT PLANT MIXTURES:

(7-1-95) R6 R20

Place asphalt concrete base course material in trench sections with asphalt pavement spreaders made for the purpose or with other equipment approved by the Engineer.

ASPHALT INTERLAYER REINFORCING SYSTEM:

(3-10-08) SPI

Description

Furnish and install an asphalt interlayer reinforcement system at locations shown on the plans.

Materials

High strength open fiberglass mesh grid, with a grid size of 1 in by 1 in, custom knitted in a stable construction and coated with an elastomeric coating and self-adhesive glue.

Furnish with each shipment a Type 3 Certification in accordance with Article 106-3 certifying that the paving mat is a fiberglass / polyester material meeting the requirements shown:

Physical Properties of
ASPHALT INTERLAYER REINFORCEMENT STSTEM

Property	Test Method	Units	Value
Tensile strength component strand strength	ASTM D6637	kN/m (lb/in)	560 (100)
Elongation at break	ASTM D6637	Percent	< 5
Melting Point	ASTM D276	°C (°F)	>218 (>425)
Mass/Unit Area	ASTM D5261	G/SM (oz/yd^2)	370 (11)

General Requirements

PRE-CONSTRUCTION MEETING

Prior to construction of interlayer reinforcement system, conduct a meeting at the site with the materials supplier, the installer, and the Contractor to review the preparation and installation requirements.

Notify the Owner and the Engineer at least 3 days in advance of the time of the meeting.

DELIVERY, STORAGE, AND HANDLING

Store products in manufacturer's unopened packaging until ready for installation.

Store in a dry, covered location that is free of dust dirt and moisture. Prevent excessive mud, fluid concrete, asphalt, or other deleterious materials from coming in contact with reinforcement mesh materials.

Store at temperatures above minus 20 degrees F (minus 29 degrees C).

PROJECT CONDITIONS

Do not place mesh reinforcement when the surface is wet, or contaminated with oil, soil or excessive dust.

Do not place asphalt during wet or freezing weather that prevents conformance with specified requirements.

PREPARATION

Do not begin GlassGrid interlayer system until existing pavement condition has been evaluated and all repairs have been completed.

Seal cracks between 1/8 inch (3 mm) and 1/4 inch (6 mm) with a crack filler in accordance with Section 657 of the Standard Specifications. Repair wider cracks using a method that provides a level surface. All holes shall be filled with hot asphalt and compacted level with adjacent surfaces.

Surfaces shall be mechanically cleaned by sweeping and vacuuming and be free of oil, vegetation, sand, dirt, water, gravel and other contaminants prior to placement of interlayer reinforcing.

If subgrade preparation is the responsibility of others, notify Engineer of unsatisfactory preparation. Do not begin work until unsatisfactory conditions have been rectified.

TACK COAT

Tack coat shall be a material approved by the interlayer reinforcement manufacturer. Acceptable tack coat materials include hot AC 20-5TR, cationic emulsion CRS-2P, or trackless tack emulsion NTSS-1HM.

Do not dilute emulsified asphalts at the terminal or in the field.

Provide a certificate of compliance with the product specifications immediately prior to use.

Prepare surfaces as specified prior to application.

Unless otherwise recommended by the manufacturer, apply tack coat at the rate of 0.02 to 0.05 gallons per square yard of surface area. The rate should be specified by the Engineer, but could vary depending on the installation or surface conditions.

Protect adjacent surfaces and prevent spattering of tack coat when placed adjacent to curbs, gutter, structures and other adjacent surfaces. Clean any surfaces where it has been contaminated by the tack coat.

PLACEMENT

Surface temperature shall be between 40 degrees F (5 degree C and 140 degrees F (60 degrees C) prior to laying interlayer reinforcement.

Interlayer reinforcement grid shall be laid out by mechanical means or by hand using sufficient pressure to eliminate ripples. Remove any ripples by pulling the grid tight. Cutting of the grid may be done on tight radii to prevent ripples.

Lap transverse joint in the direction of the paving 3 inches (75 mm) to 6 inches (150 mm).

Lap longitudinal joints shall be overlapped 1 inch (25 mm) to 2 inches (50 mm).

After placement activate self-adhesive glue by rolling with a rubber coated drum roller or a pneumatic tire roller until properly adhered. Clean tires regularly during rolling operations.

Protect interlayer reinforcing mesh until placement of the finished asphalt topping. Repair damaged sections prior to placement of finished asphalt topping.

ASPHALT OVERLAY:

Place the asphaltic overlay course the same day the interlayer reinforcing mesh is placed,

FIELD QUALITY CONTROL

Testing and Inspection shall be provided by an independent laboratory provided by the Contractor and acceptable to the Engineer.

Perform adhesion tests in accordance with the following:

1. Place a 1 SY (1 SM) of interlayer reinforcing mesh on a properly prepared leveling course.
2. Activate self-adhesive glue by rolling with a rubber tired roller or by applying adequate pressure to fully activate the pressure-sensitive adhesive.
3. Use a calibrated spring balance by inserting the hook of the balance under the center of the mesh and pulling upwards until the mesh starts to pull away from the surface.
4. A 20 pound (9kg) pull is required without pulling the mesh free or creating ripples in the mesh.
5. Consult mesh manufacturer if mesh does not meet this pull rating and do not place asphalt topping until an acceptable adhesion is achieved.

Adhesion Test: Provide a minimum of one test per 1000 SF (100 SM) of surface area.

MANUFACTURERS FIELD SERVICES

Provide the services of the manufacturer's field representative for the first three days of interlayer reinforcing mesh installation.

PROTECTION

Protect installed product until completion of project.

Repair or replace damaged products before Substantial Completion.

Measurement and Payment

Asphalt Interlayer Reinforcement System will be measured and paid for at the contract unit price per square yard. In measuring this quantity, the length will be the actual length constructed, measured along the surface. The width will be the width measured along the ground that has been acceptably placed. No separate measurement will be made for overlapping fabric.

The contract prices for this section shall include but not be limited to furnishing all labor, materials (including asphalt tack coat), tools, equipment and other incidentals necessary to perform the required work.

Measurement and payment for sealing existing pavement cracks and joints will be in accordance with Section 657-4 of the Standard Specifications.

PRICE ADJUSTMENT - ASPHALT BINDER FOR PLANT MIX:
(11-21-00) R6 R25

Price adjustments for asphalt binder for plant mix will be made in accordance with Section 620 of the *2006 Standard Specifications.*

The base price index for asphalt binder for plant mix is $ **361.54** per ton.

This base price index represents an average of F.O.B. selling prices of asphalt binder at supplier's terminals on **March 1, 2008**.

FINAL SURFACE TESTING – ASPHALT PAVEMENTS (Rideability):
(5-18-04) (Rev.7-18-06) R6 R45 (Rev.)

The work covered by this provision shall only apply to Map 2 and Map 5.

On portions of this project where the typical section requires two or more layers of new pavement, perform acceptance testing of the longitudinal profile of the finished pavement surface in accordance with these provisions using a North Carolina Hearne Straightedge (Model No. 1). Furnish and operate the straightedge to determine and record the longitudinal profile of the pavement on a continuous graph. Final surface testing is an integral part of the paving operation and is subject to observation and inspection by the Engineer as deemed necessary.

Push the straightedge manually over the pavement at a speed not exceeding 2 miles per hour. For all lanes, take profiles in the right wheel path approximately 3 ft from the right edge of pavement in the same direction as the paving operation, unless otherwise approved due to traffic control or safety considerations. Make one pass of the straightedge in each full width travel lane. The full lane width should be comparable in ride quality to the area evaluated with the Hearne Straightedge. If deviations exist at other locations across the lane width, utilize a 10 foot non-mobile straightedge or the Hearne Straightedge to evaluate which areas may require corrective action. Take profiles as soon as practical after the pavement has been rolled and compacted but in no event later than 24 hours following placement of the pavement, unless otherwise authorized by the Engineer. Take profiles over the entire length of final surface travel lane pavement exclusive of -Y- line travel lanes less than or equal to 300 feet in length, turn lanes less than or equal to 300 feet in length, structures, approach slabs, paved shoulders, loops, and tapers or other irregular shaped areas of pavement, unless otherwise approved by the Engineer. Test in accordance with this provision all mainline travel lanes, full width acceleration or deceleration lanes, -Y- line travel lanes greater than 300 feet in length, ramps, full width turn lanes greater than 300 feet in length, and collector lanes.

At the beginning and end of each day's testing operations, and at such other times as determined necessary by the Engineer, operate the straightedge over a calibration strip so that the Engineer can verify correct operation of the straightedge. The calibration strip shall be a 100 ft section of pavement that is reasonably level and smooth. Submit each day's calibration graphs with that day's test section graphs to the Engineer. Calibrate the straightedge in accordance with the current NCDOT procedure titled *North Carolina Hearne Straightedge - Calibration and Determination of Cumulative Straightedge Index*. Copies of this procedure may be obtained from the Department's Pavement Construction Section.

Plot the straightedge graph at a horizontal scale of approximately 25 ft per inch with the vertical scale plotted at a true scale. Record station numbers and references (bridges, approach slabs, culverts, etc.) on the graphs, and distances between references/stations shall not exceed 100 ft. Have the operator record the Date, Project No., Lane Location, Wheel Path Location, Type Mix, and Operator's Name on the graph.

Upon completion of each day's testing, evaluate the graph, calculate the Cumulative Straightedge Index (CSI), and determine which lots, if any, require corrective action. Document the evaluation of each lot on a QA/QC-7 form. Submit the graphs along with the completed QA/QC-7 forms to the Engineer, within 24 hours after profiles are completed, for verification of the results. The Engineer will furnish results of their acceptance evaluation to the Contractor within 48 hours of receiving the graphs. In the event of discrepancies, the Engineer's evaluation of the graphs will prevail for acceptance purposes. The Engineer will retain all graphs and forms.

Use blanking bands of 0.2 inches, 0.3 inches, and 0.4 inches to evaluate the graph for acceptance. The 0.2 inch and 0.3 inch blanking bands are used to determine the Straightedge Index (SEI), which is a number that indicates the deviations that exceed each of the 0.2 inch and 0.3 inch bands within a 100 ft test section. The Cumulative Straightedge Index (CSI) is a number representing the total of the SEIs for one lot, which consist of not more than 25 consecutive test sections. In addition, the 0.4 inch blanking band is used to further evaluate deviations on an

individual basis. The Cumulative Straightedge Index (CSI) will be determined by the Engineer in accordance with the current procedure titled "North Carolina Hearne Straightedge - Calibration and Determination of Cumulative Straightedge Index".

The pavement will be accepted for surface smoothness on a lot by lot basis. A test section represents pavement one travel lane wide not more than 100 ft in length. A lot will consist of 25 consecutive test sections, except that separate lots will be established for each travel lane, unless otherwise approved by the Engineer. In addition, full width acceleration or deceleration lanes, ramps, turn lanes, and collector lanes, will be evaluated as separate lots. For any lot that is less than 2500 feet in length, the applicable pay adjustment incentive will be prorated on the basis of the actual lot length. For any lot which is less than 2500 feet in length, the applicable pay adjustment disincentive will be the full amount for a lot, regardless of the lot length.

If during the evaluation of the graphs, 5 lots (mainline travel lanes and full width -Y- line travel lanes greater than 300 feet in length only) require corrective action, then proceed on limited production for unsatisfactory laydown in accordance with Article 610-12. Proceeding on limited production is based upon the Contractor's initial evaluation of the straightedge test results and shall begin immediately upon obtaining those results. Additionally, the Engineer may direct the Contractor to proceed on limited production in accordance with Article 610-12 due to unsatisfactory laydown or workmanship.

Limited production for unsatisfactory laydown is defined as being restricted to the production, placement, compaction, and final surface testing of a sufficient quantity of mix necessary to construct only 2500 feet of pavement at the laydown width. Once this lot is complete, the final surface testing graphs will be evaluated jointly by the Contractor and the Engineer. Remain on limited production until such time as acceptable laydown results are obtained or until three consecutive 2500 foot sections have been attempted without achieving acceptable laydown results. The Engineer will determine if normal production may resume based upon the CSI for the limited production lot and any adjustments to the equipment, placement methods, and/or personnel performing the work. Once on limited production, the Engineer may require the Contractor to evaluate the smoothness of the previous asphalt layer and take appropriate action to reduce and/or eliminate corrective measures on the final surface course. Additionally, the Contractor may be required to demonstrate acceptable laydown techniques off the project limits prior to proceeding on the project.

If the Contractor fails to achieve satisfactory laydown results after three consecutive 2500 foot sections have been attempted, cease production of that mix type until such time as the cause of the unsatisfactory laydown results can be determined.

As an exception, the Engineer may grant approval to produce a different mix design of the same mix type if the cause is related to mix problem(s) rather than laydown procedures. If production of a new mix design is allowed, proceed under the limited production procedures detailed above.

After initially proceeding under limited production, the Contractor shall immediately notify the Engineer if any additional lot on the project requires corrective action. The Engineer will determine if limited production procedures are warranted for continued production.

If the Contractor does not operate by the limited production procedures as specified above, the 5 lots, which require corrective action, will be considered unacceptable and may be subject to removal and replacement. Mix placed under the limited production procedures for unsatisfactory laydown will be evaluated for acceptance in accordance with Article 105-3.

The pay adjustment schedule for the Cumulative Straightedge Index (CSI) test results per lot is as follows:

Pay Adjustment Schedule for Cumulative Straightedge Index (CSI)
(Obtained by adding SE Index of up to 25 consecutive 100 ft. sections)

			PAY ADJUSTMENT	
*CSI	ACCEPTANCE CATEGORY	CORRECTIVE ACTION	Before Corrective Action	After Corrective Action
0-0	Acceptable	None	$300 incentive	None
1-0 or 2-0	Acceptable	None	$100 incentive	None
3-0 or 4-0	Acceptable	None	No Adjustment	No Adjustment
1-1, 2-1, 5-0 or 6-0	Acceptable	Allowed	$300 disincentive	$300 disincentive
3-1, 4-1, 5-1 or 6-1	Acceptable	Allowed	$600 disincentive	$600 disincentive
Any other Number	Unacceptable	Required	Per CSI after Correction(s) (not to exceed 100% Pay)	

***Either Before or After Corrective Actions**

Correct any deviation that exceeds a 0.4 inch blanking band such that the deviation is reduced to 0.3 inches or less.

Corrective actions shall be performed at the Contractor's expense and shall be presented for evaluation and approval by the Engineer prior to proceeding. Any corrective action performed shall not reduce the integrity or durability of the pavement that is to remain in place. Corrective action for deviation repair may consist of overlaying, removing and replacing, indirect heating and rerolling. Scraping of the pavement with any blade type device will not be allowed as a corrective action. Provide overlays of the same type mix, full roadway width, and to the length and depth established by the Engineer. Tapering of the longitudinal edges of the overlay will not be allowed.

Corrective actions will not be allowed for lots having a CSI of 40 or better. If the CSI indicates *Allowed* corrective action, the Contractor may elect to take necessary measures to reduce the CSI in lieu of accepting the disincentive. Take corrective actions as specified if the CSI indicates *Required* corrective action. The CSI after corrective action should meet or exceed *Acceptable* requirements.

Where corrective action is allowed or required, the test section(s) requiring corrective action will be retested, unless the Engineer directs the retesting of the entire lot. No disincentive will apply after corrective action if the CSI is 40 or better. If the retested lot after corrective action has a CSI indicating a disincentive, the appropriate disincentive will be applied.

Test sections and/or lots that are initially tested by the Contractor that indicate excessive deviations such that either a disincentive or corrective action is necessary, may be re-rolled with asphalt rollers while the mix is still warm and in a workable condition, to possibly correct the problem. In this instance, reevaluation of the test section(s) shall be completed within 24 hours of pavement placement and these test results will serve as the initial test results.

Incentive pay adjustments will be based only on the initially measured CSI, as determined by the Engineer, prior to any corrective work. Where corrective actions have been taken, payment will be based on the CSI determined after correction, not to exceed 100 percent payment.

Areas excluded from testing by the N.C. Hearne Straightedge will be tested by using a non-mobile 10-foot straightedge. Assure that the variation of the surface from the testing edge of the straightedge between any two contact points with the surface is not more than 1/8 inch. Correct deviations exceeding the allowable tolerance in accordance with the corrective actions specified above, unless the Engineer permits other corrective actions.

Furnish the North Carolina Hearne Straightedge(s) necessary to perform this work. Maintain responsibility for all costs relating to the procurement, handling, and maintenance of these devices. The Department has entered into a license agreement with a manufacturer to fabricate, sell, and distribute the N.C. Hearne Straightedge. The Department's Pavement Construction Section may be contacted for the name of the current manufacturer and the approximate price of the straightedge.

No direct payment will be made for the work covered by this section. Payment at the contract unit prices for the various items covered by those sections of the specifications directly applicable to the work constructed will be full compensation for all work covered by this section including, but not limited to, performing testing in accordance with this specification, any corrective work required as a result of this testing and any additional traffic control as may be necessary.

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 *2006 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

Place a wedge course at locations ahead of the paving operation as required by the Engineer.

RESURFACING EXISTING BRIDGES:
(7-1-95) R6 R61

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 that 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.

PAVING INTERSECTIONS:
(7-1-95) R6 R64

Condition, prime, and surface all unpaved intersections back from the edge of the pavement on the main line of the project a minimum distance of 50 feet. The pavement placed in the intersections shall be of the same material and thickness placed on the mainline of the project.

Resurface all paved intersections back to the ends of the radii, or as directed by the Engineer.

State Forces will place the base on the unpaved intersections.

Widen the pavement on curves as directed by the Engineer.

PAVING INTERSECTIONS, DRIVEWAYS, AND MAILBOX TURNOUTS:
(7-1-95) R6 R70

Surface all unpaved intersections back from the edge of the pavement on the main line of the project at least 50 feet. Surface all driveway and mailbox turnouts as directed by the Engineer. The pavement placed in the intersections shall be of the same material and thickness as being used on the main line. Use material to pave driveway and mailbox turnouts that are being used on the project and place it in depths directed by the Engineer.

Resurface all paved intersections back to the ends of the radii, or as directed by the Engineer.

The unpaved intersections, driveways, and mailbox turnouts will be prepared for surfacing by State Forces.

Widen the pavement on curves as directed by the Engineer.

TRENCHING FOR BASE COURSE:
(7-1-95) R6 R79

Perform all trenching necessary to place the asphalt concrete base course widening in accordance with the typical sections, at locations shown on the sketch maps, and as directed by the Engineer.

Perform the trenching for the base course on the same day that the base course is to be placed. If the base course cannot be placed on the same day the trench section is excavated, backfill the trench with earth material and compact it to the satisfaction of the Engineer. Once the trench is open, perform backfilling and re-opening of the trench at no cost to the Department.

The Contractor will be restricted to widening one side of the project at a time unless otherwise permitted by the Engineer. In widening, operate equipment and conduct operations in the same direction as the flow of traffic.

Density tests may be taken every 2000 feet in the widened areas as directed by the Engineer. Shape and compact the subgrade in the widened areas to the satisfaction of the Engineer. Compact the asphalt concrete base course in the widened areas in accordance with the provisions of Article 610-9 of the *2006 Standard Specifications*.

Place the excavated material from trenching operation on the adjacent shoulder area as directed by the Engineer. Cut adequate weep holes in the excavated material to provide for adequate drainage as directed by the Engineer. Remove all excavated material from all drives to provide ingress and egress to abutting properties and from in front of mailboxes and paper boxes. Saw a neat edge and remove all asphalt and/or concrete driveways, and existing asphalt widening, as directed by the Engineer, to the width of the widening and dispose of any excavated concrete or asphalt materials. Properly reconnect driveways.

Upon completion of the paving operation, backfill the trench to the satisfaction of the Engineer. Properly dispose of any excess material remaining after this operation.

No direct payment will be made for trenching, sawing, and removal of driveways, depositing material on shoulder area, backfilling trench, or removal of spoil material, as the cost of this work shall be included in the contract unit price per ton for *Asphalt Concrete Base Course, Type ___*.

PATCHING EXISTING PAVEMENT: **1-15-02 (Rev.)**

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.

Construction Methods:

The patching consists of Asphalt Concrete Base Course Type B25.0B and Asphalt Concrete Surface Course Type S9.5B, Aggregrate Base Course, Geogrid Reinforcement Material and removal, per the Patching Existing Pavement Details or as directed by the Engineer.

The Specifications for Geogrid is included elsewhere in this contract

Patching of existing pavement includes but is not limited to the **saw**-cutting of the existing pavement to a neat vertical joint and uniform line; the removal and disposal of pavement, base, and subgrade material as approved or directed by the Engineer; the coating of the area to be repaired with a tack coat; and the replacement of the removed material with asphalt plant mix.

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. If patched pavement is to be open to traffic for more than 48 hours prior to overlay, then use Asphalt Surface Course in the top 1.25 inches of the patch.

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

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.

Method of Measurement:

The quantity of patching existing pavement to be paid for will be the actual number of tons of asphalt plant mix, **tons of aggregate base course, square yards of geogrid reinforcement material** complete in place, which has been used to make completed and accepted repairs. The asphalt plant mixed material **and aggregate base course** will be measured by being weighed in trucks on certified platform scales or other certified weighing devices. **The geogrid reinforcement material will be measured by the Engineer and rounded up to the closest square yard.**

Basis of Payment:

The quantities measured as provided above, will be paid for at the contract unit price per ton for "Patching Existing Pavement (Asphalt)", contract unit price per ton for "Patching Existing Pavement (Aggregate Base Course)" and the contract unit price per square yard "Patching Existing Pavement (Geogrid Reinforcement Material)".

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 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.

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 "Patching Existing Pavement (Asphalt)", "Patching Existing Pavement (Aggregate Base Course)" and "Patching Existing Pavement (Geogrid Reinforcement Material)" will be considered to be 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 pertaining to revised contract unit price for overrunning minor items will not apply to this item.

Payment will be made under:

Patching Existing Pavement (Asphalt)	**Ton**
Patching Existing Pavement (Aggregate Base Course)	**Ton**
Patching Existing Pavement (Geogrid Reinforcement Material)	**SY**

GEOGRID REINFORCEMENT MATERIAL:

(3-10-08) SPI

Description

Furnish and install an geogrid reinforcement material at locations shown on the plans.

Materials

Physical Properties of

PRODUCT PROPERTIES	TEST METHOD	UNITS	MD / TD
Type	N/A[4]	N/A	Single Layer
Manufacturing Process	N/A	N/A	Integrally Formed (Punched & Drawn
Material	N/A	N/A	Polypropylene
Coating Type	N/A	N/A	N/A
Carbon Black[5]	ASTM 4128	%	2.0
Roll Width	N/A	ft.	13.1
		m	4
Roll Length	N/A	ft.	164
		m	50
Roll Weight	N/A		
3m x 50m	N/A	lb / kg	N/A
3m x 75m	N/A	lb / kg	N/A
4m x 50m	N/A	lb / kg	164 / 74.4
4m x 75m	N/A	lb / kg	N/A
Unit Weight	ASTM D5261	oz / yd^2	11.0
		g/m^2	372
Shipping Quantities (Approximate):			4m x 50m
Truckload (53-ft. van)	N/A	roll	180
Truckload (48-ft. van)	N/A	roll	180
Truckload (flatbed w/sides)	N/A	roll	N/A
Truckload (flatbed w/ stakes)	N/A	roll	150
Container (40-ft. high cube)	N/A	roll	120

General Requirements

PRE-CONSTRUCTION MEETING

Prior to construction of geogrid reinforcement material, conduct a meeting at the site with the materials supplier, the installer, and the Contractor to review the preparation and installation requirements.

Notify the Owner and the Engineer at least 3 days in advance of the time of the meeting.

DELIVERY, STORAGE, AND HANDLING

Store products in manufacturer's unopened packaging until ready for installation.

Store in a dry, covered location that is free of dust dirt and moisture. Prevent excessive mud, fluid concrete, asphalt, or other deleterious materials from coming in contact with reinforcement mesh materials.

Store at temperatures above minus 20 degrees F (minus 29 degrees C).

MANUFACTURERS FIELD SERVICES

Provide the services of the manufacturer's field representative for the first three days of interlayer reinforcing mesh installation.

PROTECTION

Protect installed product until completion of project.

Repair or replace damaged products before Substantial Completion.

VARIABLE DEPTH MILLING:

Variable Depth Milling will be used on maps where the typical cross slope and/or centerline profile need to be reestablished. The Contractor will be responsible for the milling method to establish an acceptable centerline profile and a cross slope of 0.021 from the centerline towards the edge of pavement, or **as directed by the Engineer**. Milling depth will vary from 0 to 6".

All other provisions of section 607 of the Standard Specifications shall apply.

Payment will be made under:

Variable Depth Milling (0" – 6").....Square Yard

BORROW EXCAVATION AND SHPO DOCUMENTATION FOR BORROW/WASTE SITES:
(12-18-07) (4-15-08) RR8 R02

Revise the *2006 Standard Specifications* as follows:

Division 2 Earthwork

Page 2-16, Subarticle 230-1(D), add the words: *The Contractor specifically waives* as the first words of the sentence.

Page 2-17, Article 230-4(B) Contractor Furnished Sources, first paragraph, first sentence replace with the following:

Prior to the approval of any borrow sources developed for use on any project, obtain certification from the State Historic Preservation Officer of the State Department of Cultural Resources certifying that the removal of the borrow material from the borrow sources(s) will have no effect on any known district, site building, structure, or object, architectural and/or archaeological that is included or eligible for inclusion in the National Register of Historic Places.

Division 8 Incidentals

Page 8-9, Article 802-2 General Requirements, add the following as the 1st paragraph:

Prior to the removal of any waste from any project, obtain certification from the State Historic Preservation Officer of the State Department of Cultural Resources certifying that the deposition of the waste material to the proposed waste area will have no effect on any known district, site building, structure, or object, architectural and/or archaeological that is included or eligible for inclusion in the National Register of Historic Places. Furnish a copy of this certification to the Engineer prior to performing any work in the proposed waste site.

Page 8-10, Article 802-2, General Requirements, 4th paragraph, add the following as the 2nd sentence:

The Department's borrow and waste site reclamation procedures for contracted projects is available on the NCDOT website and shall be used for all borrow and waste sites on this project.

ADJUSTMENT OF MANHOLES, METER BOXES, AND VALVE BOXES:
(7-1-95) R8 R97

The Contractor's attention is directed to Article 858-3 of the *2006 Standard Specifications*. Cast iron or steel fittings will not be permitted for the adjustment of manholes, meter boxes, and valve boxes on this project.

REMOVAL OF ASPHALT TRAFFIC ISLANDS:

The removal of the asphalt traffic islands, located at the intersection of US 64 Bus. and SR1126, are incidental to the various items in the contract and there is **NO DIRECT PAYMENT FOR THE WORK INVOLVED.**

HIGH STRENGTH CONCRETE FOR DRIVEWAYS:
(11-21-00) (7-18-06) R10 R01

Use high early strength concrete for all driveways shown in the plans and as directed by the Engineer. Provide high early strength concrete that meets the requirements of Article 1000-6 of the *2006 Standard Specifications.*

Measurement and payment will be in accordance with Section 848 of the *2006 Standard Specifications.*

AGGREGATE PRODUCTION:
(11-20-01) (Rev. 11-21-06) R10 R05

Provide aggregate from a producer who uses the current 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 use the program. Participation in the program does not relieve the producer of the responsibility of complying with all requirements of the *2006 Standard Specifications*. Copies of this procedure are available upon request from the Materials and Test Unit.

CONCRETE BRICK AND BLOCK PRODUCTION:
(11-20-01) (Rev. 11-21-06) R10 R10

Provide concrete brick and block from a producer who uses the current Solid Concrete Masonry Brick/Unit Quality Control/Quality Assurance Program that is in effect on the date that material is received on the project.

No price adjustment is allowed to contractors or producers who use the program. Participation in the program does not relieve the producer of the responsibility of complying with all requirements of the *2006 Standard Specifications*. Copies of this procedure are available upon request from the Materials and Test Unit.

PORTLAND CEMENT CONCRETE (Alkali-Silica Reaction):
2-20-07 R10 R16

Revise the *2006 Standard Specifications* as follows:

Article 1024-1(A), replace the 2nd paragraph with the following:

Certain combinations of cement and aggregate exhibit an adverse alkali-silica reaction. The alkalinity of any cement, expressed as sodium-oxide equivalent, shall not exceed 1.0 percent. For mix designs that contain non-reactive aggregates and cement with an alkali content less than 0.6%, straight cement or a combination of cement and fly ash, cement and ground granulated blast furnace slag or cement and microsilica may be used. The pozzolan quantity shall not exceed the amount shown in Table 1024-1. For mixes that contain cement with an alkali content between 0.6% and 1.0%, and for mixes that contain a reactive aggregate documented by the Department, regardless of the alkali content of the cement, use a pozzolan in the amount shown in Table 1024-1.

Obtain the list of reactive aggregates documented by the Department at:http://www.ncdot.org/doh/operations/materials/pdf/quarryasrprob.pdf

Table 1024-1
Pozzolans for Use in Portland Cement Concrete

Pozzolan	*Rate*
Class F Fly Ash	20% by weight of required cement content, with 1.2 lbs Class F fly ash per lb of cement replaced
Ground Granulated Blast Furnace Slag	35%-50% by weight of required cement content with 1 lb slag per lb of cement replaced
Microsilica	4%-8% by weight of required cement content, with 1 lb microsilica per lb of cement replaced

GLASS BEADS:
(7-18-06) R10 R35

Revise the *2006 Standard Specifications* as follows:

Page 10-223, 1087-4(C) Gradation & Roundness

Replace the second sentence of the first paragraph with the following:

All Drop-On and Intermixed Glass Beads shall be tested in accordance with ASTM D1155.

Delete the last paragraph.

ENGINEERING FABRICS TABLE 1056-1:
(7-18-06) R10 R40

Revise the *2006 Standard Specifications* as follows:

Page 10-100, Table 1056-1, replace the values for Trapezoidal Tear Strength with the following:

Physical Property	ASTM Test Method	Type 1	Type 2	Type 3		Type 4
				Class A	Class B	
Typical Applications		Shoulder Drain	Under Riprap	Temporary Silt Fence		Soil Stabilization
Trapezoidal Tear Strength	D4533	*45* lb	*75* lb	--	--	*75* lb

CHANGEABLE MESSAGE SIGNS

(11-21-06) R11 R11

Revise the *2006 Standard Specifications* as follows:

Page 11-9, Article 1120-3, Replace the 3rd sentence with the following:

Sign operator will adjust flash rate so that no more than two messages will be displayed and be legible to a driver when approaching the sign at the posted speed.

PAVEMENT MARKING LINES:

(11-21-06) (Rev. 9-18-07) R12 R01

Revise the *2006 Standard Specifications* as follows:

Page 12-2, 1205-3(D) Time Limitations for Replacement, add the following at the beginning of the chart:

Facility Type	Marking Type	Replacement Deadline
Full-control-of-access multi-lane roadway (4 or more total lanes) and ramps, including Interstates	All markings including symbols	By the end of each workday's operation if the lane is opened to traffic

Page 12-14, Subarticle 1205-10, Measurement and Payment, delete the first sentence of the first paragraph and replace with the following:

Pavement Marking Lines will be measured and paid for as the actual number of linear feet of pavement marking lines per application that has been satisfactorily placed and accepted by the Engineer.