

**PROJECT SPECIAL PROVISIONS****ROADWAY****CONSTRUCTION SEQUENCE:**

(7-1-95) (Rev. 8-21-12)

560

SP1 R34R

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.

**CLEARING AND GRUBBING - METHOD II:**

(9-17-02) (Rev. 1-17-12)

200

SP2 R02A

Perform clearing on this project to the limits established by Method "II" shown on Standard Drawing No. 200.02 of the *2012 Roadway Standard Drawings*.

**SHOULDER RECONSTRUCTION PER SHOULDER MILE:**

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

R1 R07A

**Description**

This work consists of reconstructing each shoulder (including median shoulders as applicable) in accordance with Roadway Standard Nos. 560.01 and 560.02 except that the rate of slope and width will be as shown on typical section, or to the existing shoulder point, whichever is nearer, as long as the desired typical is achieved, and when completed, seeding and mulching. This work shall be performed immediately after the resurfacing operations are complete as directed by the Engineer.

**Materials**

The Contractor shall furnish all earth material necessary for the construction of the shoulders. Provide soil with a P.I. greater than 6 and less than 25 and with a pH ranging from 5.5 to 6.8 and capable of supporting vegetation. Remove stones and other foreign material 2 inches or larger in diameter. All soil is subject to test and acceptance or rejection by the Engineer.

The Contractor will have the option of using Aggregate Shoulder Borrow (ASB) which meets the following gradation on **all** maps.

<u>Sieve</u>	<u>Percent Passing</u>
1 1/2"	100
1/2"	55 - 95
#4	35 - 74

**Construction Methods**

Obtain material from within the project limits or approved borrow source. Prior to adding borrow material, the existing shoulder shall be scarified to provide the proper bond and shall be compacted to the satisfaction of the Engineer.

Any excess material generated by the shoulder reconstruction shall be disposed of by the Contractor in an approved disposal site.

### **Measurement and Payment**

*Shoulder Reconstruction* will be measured and paid 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.

*Borrow Excavation* will be paid in accordance with Section 230 of the *Standard Specifications* for earth material furnished by the Contractor. The requirements of Article 104-5 of the *Standard Specifications* pertaining to revised contract prices for overrunning minor items will not apply to the item of *Borrow Excavation*. If ASB is used for borrow, a unit weight of 140 pounds per cubic foot will be used to convert the weight of ASB to cubic yards.

Incidental Stone Base will be measured and paid as provided in Article 545-6 of the *Standard Specifications*. If ASB is used for Incidental Stone Base, payment will be made for borrow as referenced above.

Seeding and Mulching will be measured and paid as shown elsewhere in the contract documents. If ASB is used, seeding and mulching will not be required.

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Shoulder Reconstruction	Shoulder Mile
Borrow Excavation	Cubic Yard

### **SHOULDER AND FILL SLOPE MATERIAL:**

(5-21-02)

235, 560

SP2 R45 A

### **Description**

Perform the required shoulder and slope construction for this project in accordance with the applicable requirements of Section 560 and Section 235 of the *2012 Standard Specifications*.

### **Measurement and Payment**

Where the material has been obtained from an authorized stockpile or from a borrow source and *Borrow Excavation* is not included in the contract, no direct payment will be made for this work, as the cost of this work will be part of the work being paid at the contract lump sum price for *Grading*. If *Borrow Excavation* is included in this contract and the material has been obtained from an authorized stockpile or from a borrow source, measurement and payment will be as provided in Section 230 of the *2012 Standard Specifications* for *Borrow Excavation*.

**PIPE INSTALLATION:**

(11-20-12)

300

SP3 R01

Revise the *2012 Standard Specifications* as follows:

**Page 3-1, Article 300-2, Materials**, line 23-24, replace sentence with:

Provide foundation conditioning geotextile in accordance with Section 1056 for Type 4 geotextile.

**INCIDENTAL STONE BASE:**

(7-1-95) (Rev.8-21-12)

545

SP5 R28R

**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 Section 545 of the *2012 Standard Specifications*.

**Measurement and Payment**

*Incidental Stone Base* will be measured and paid in accordance with Article 545-6 of the *2012 Standard Specifications*.

**ASPHALT PAVEMENTS - SUPERPAVE:**

(6-19-12)

605

SP6 R01

Revise the *2012 Standard Specifications* as follows:

**Page 6-3, Article 605-7 APPLICATION RATES AND TEMPERATURES**, replace this article, including Table 601-1, with the following:

Apply tack coat uniformly across the existing surface at target application rates shown in Table 605-1.

**TABLE 605-1  
APPLICATION RATES FOR TACK COAT**

Existing Surface	Target Rate (gal/sy)
	Emulsified Asphalt
New Asphalt	0.04 ± 0.01
Oxidized or Milled Asphalt	0.06 ± 0.01
Concrete	0.08 ± 0.01

Apply tack coat at a temperature within the ranges shown in Table 605-2. Tack coat shall not be overheated during storage, transport or at application.

**TABLE 605-2  
APPLICATION TEMPERATURE FOR TACK COAT**

<b>Asphalt Material</b>	<b>Temperature Range</b>
Asphalt Binder, Grade PG 64-22	350 - 400°F
Emulsified Asphalt, Grade RS-1H	130 - 160°F
Emulsified Asphalt, Grade CRS-1	130 - 160°F
Emulsified Asphalt, Grade CRS-1H	130 - 160°F
Emulsified Asphalt, Grade HFMS-1	130 - 160°F
Emulsified Asphalt, Grade CRS-2	130 - 160°F

**Page 6-18, Article 610-1 DESCRIPTION**, lines 40-41, delete the last sentence of the last paragraph.

**Page 6-19, Subarticle 610-3(A) Mix Design-General**, line 5, add the following as the first paragraph:

Warm mix asphalt (WMA) is allowed for use at the Contractor's option in accordance with the NCDOT Approved Products List for WMA Technologies available at:

<http://www.ncdot.org/doh/operations/materials/pdf/wma.pdf>.

**ASPHALT BINDER CONTENT OF ASPHALT PLANT MIXES:**

(11-21-00) (Rev. 7-17-12)

609

SP6 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 SA-1	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	5.6%

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

**ASPHALT PLANT MIXTURES:**

(7-1-95)

609

SP6 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.

**PRICE ADJUSTMENT - ASPHALT BINDER FOR PLANT MIX:**

(11-21-00)

620

SP6 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 **\$557.33** per ton.

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

**FINAL SURFACE TESTING NOT REQUIRED:**

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

610

SP6 R45

**Except for Sections of Map 1 using Typical 1, 2, 3, and 5**, final surface testing is not required on this project.

**ASPHALT CONCRETE SURFACE COURSE COMPACTION:**

(7-1-95) (Rev. 8-21-12)

SP6 R49R

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.

**RESURFACING EXISTING BRIDGES:**

(7-1-95) (Rev. 8-21-12)

SP6 R61AR

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) (Rev. 8-21-12)

610

SP6 R67BR

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.

Widen the pavement on curves as directed by the Engineer.

**PAVEMENT INTERLAYER FOR REINFORCEMENT OF ASPHALT OVERLAY:**

(11-30-12)

SPI 6-14

**Description**

Furnish and install a pavement interlayer for reinforcement of an asphalt overlay at locations shown on the plans.

**Materials**

Select either Option A or Option B or an approved equal. The pavement interlayer shall be resistant to chemicals, mildew and rot, and shall not have any tears or holes that will adversely affect the in-situ performance and physical properties of the installed pavement interlayer.

Pavement interlayer shall be capable of being placed on a milled asphalt surface and overlaid with asphalt, provide reinforcement to the asphalt overlay, and provide waterproofing capabilities.

Furnish with each shipment a Type 3 certification in accordance with Article 106-3 of the *2012 Standard Specifications* to Engineer at least 14 days prior to beginning work. Pavement interlayer shall meet the requirements of either Option A or Option B.

**Polypropylene Fabric – Option A**

Physical Properties	Test Method	Unit	Minimum Value
Mass / Unit Area	ASTM D5261	oz/yd <sup>2</sup>	16.0
Wide Width Tensile Strength, Machine Direction	ASTM D6637 (Method A Modified)	lbs/in	459
Tensile Elongation		Percent	< 3
Melting Point	ASTM D276	°F	752
Asphalt Retention	ASTM D6140	gal/yd <sup>2</sup>	0.17
Glass by Weight		Percent	85

**Polyester Fabric – Option B**

Physical Properties	Test Method	Unit	Minimum Value
Mass / Unit Area	ASTM D5261	oz/yd <sup>2</sup>	8.0
Wide Width Tensile Strength	ASTM D6637	lbs/ft	3425
Tensile Strength at 3% Strain	ASTM D6637	lbs/ft	825
Tensile Elongation		Percent	10
Melting Point	ASTM D276	°F	490

**Pre-Pave Meeting**

Schedule a pre-pave meeting at least 14 days prior to beginning any paving operation. Include the Engineer, Roadway Inspector, Subcontractor, Fabric Manufacturer, Experienced Installer, Area Roadway Engineer, Materials and Tests Unit representative, State Pavement Management Engineer, and State Pavement Construction Engineer.

**Pavement Interlayer Installation**

A trained and experienced installer, certified by the manufacturer, shall be present on-site during the installation of the pavement interlayer until the crew has a comfort level working with and installing this material.

Inspect the pavement interlayer upon delivery to insure proper material has been received. Pavement interlayer shall be protected with protective wrapping and shall not be exposed to temperatures exceeding 150°F. Storage and handling shall be in accordance with ASTM D4873.

The surface to be overlaid with the pavement interlayer shall be cleaned, dry and free of all dirt and debris. Fill all surface cracks over 1/4 inch with sealant until flush with the existing pavement surface and in accordance with Section 657 of the *2012 Standard Specifications*. At the direction of the Engineer, perform leveling or wedging of asphalt to reduce any irregular surface conditions. Any and all pavement repairs to be made shall be made at the direction of the Engineer prior to the installation of the tack coat.

**Tack Coat Application**

Apply tack coat in accordance with Section 605 of the *2012 Standard Specifications* and the following:

- (A) Use Asphalt Binder, Grade PG 64-22 tack coat material or as approved.
- (B) Uniformly apply the tack coat material at a rate of application 0.20 gal/sy. The application rate may be increased for heavily aged or deteriorated pavements. The Engineer will establish the exact rate for the application.
- (C) The use of emulsions, cutbacks, or materials containing solvents shall not be permitted for use as tack coat.

The tack coat application temperatures shall be sufficiently hot so as to ensure proper coverage and proper adhesion of the pavement interlayer to the pavement surface. The use of hand sprayers, squeegee or brush-applied tack coat may be used in locations where the distributor truck cannot reach. Every effort shall be made to minimize the application of tack coat by hand-applied means.

The application width of tack coat shall be sufficiently wide to cover the entire width of the pavement interlayer, plus any additional width required for overlapping joints. The tack coat shall be applied only as far in advance of the pavement interlayer installation to ensure a tacky surface at the time of the mat installation. Traffic shall not be permitted to drive on the tack coat at any time.

Clean any excess tack coat from the pavement. In the event that installation operations must be curtailed, prevent vehicular traffic from driving on the affected area where the tack coat and pavement interlayer have been installed.

Install the pavement interlayer over the hot asphalt tack coat. Use mechanically powered installation equipment to install the pavement interlayer to the surface. The mechanical equipment shall be capable of installing full width rolls of up to 12.5 feet in width. Where mechanical installation methods can not be accomplished due to situations that require specially cut sections, install the pavement interlayer by hand. Use brooms or squeegees to remove any air bubbles and ensure the pavement interlayer is completely in contact with the tack-coated surface. Folds or wrinkles that are encountered during lay down operations shall be cut or smoothed and additional tack material shall be applied as needed to achieve a complete bond to the surface.

Overlap longitudinal joints a minimum of 2 inches and transverse joints a minimum of 10 inches to bond seams unless otherwise directed by the Engineer. Overlaps on the transverse roll ends shall be in the direction of the paving operation. All overlapping of pavement interlayer shall be tack coated to ensure proper adhesion.

Blotting the sealant, spreading sand or broadcasting hot mix asphalt over the pavement interlayer shall be used to minimize and prevent construction and or paving tires/tracks from adhering to the tack coat and pulling up the pavement interlayer. In the event that the pavement interlayer is displaced from the surface, additional rolling and hand-brushing shall be required to restore the bond between the surface and pavement interlayer. An additional application of tack may be required to ensure adhesion.

### **Measurement and Payment**

*Pavement Interlayer* will be measured and paid 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 pavement interlayer or any additional tack coat or labor required for a satisfactory bond between the surface and pavement interlayer.

Such prices 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.

Payment will be made under:

**Pay Item**  
Pavement Interlayer

**Pay Unit**  
Square Yard



**PATCHING EXISTING PAVEMENT (MILL):**

(1-26-07)

**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.

The Contractor shall 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 shall consist of Asphalt Concrete Base Course, Asphalt Concrete Intermediate Course, or Asphalt Concrete Surface Course, or a combination of base, intermediate and surface course, and pavement removal, **as shown on the Summary of Quantities sheet** or as directed by the Engineer.

Patching of existing pavement shall include, but not be limited to; milling, 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.

Asphalt Concrete Base Course shall be placed in lifts not exceeding 5 1/2 inches. Compaction equipment suitable for compacting patches as small as 4 feet by 6 feet shall be utilized on each lift. Compaction pattern to achieve proper compaction shall be approved by the engineer.

The Contractor shall remove existing pavement at locations directed by the Engineer in accordance with Section 607 of the *Standard Specifications*.

The Contractor may be required to make multiple passes with the milling machine to achieve additional depth of the patch at the direction of the engineer. There will be no additional payment for additional passes as all work will be compensated at the unit price for the type of mill patching to be performed. The Contractor will utilize a maximum milling head width of 4 feet unless otherwise allowed by the Engineer.

The Contractor shall schedule his 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 shall be 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, 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 patching existing pavement, measured as provided above, will be paid for at the contract unit price per ton for the type of mill patching to be performed.

The above price and payment will be full compensation for all work covered by this provision, including but not limited to milling; 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 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.

*Patching Existing Pavement* will be considered a minor item.

There are areas to be patched in accordance with this provision where the type of asphalt plant mix will be specified. Patching performed in these areas will be measured and paid for per ton for *Patching Existing Pavement I19.0B (Mill Patch)* or *Patching Existing Pavement S9.5B (Mill Patch)*

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Patching Existing Pavement (Mill)	Ton
Patching Existing Pavement I19.0B (Mill Patch)	Ton
Patching Existing Pavement S9.5B (Mill Patch)	Ton

**PATCHING EXISTING PAVEMENT (FULL DEPTH):**

(1-15-02) (Rev.11-20-12)

R6 R88 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.

The Contractor shall 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, Asphalt Concrete Intermediate Course, Asphalt Concrete Surface Course, or a combination of base, intermediate and surface course, and pavement removal, **as shown on the Summary of Quantities sheet** or as directed by the Engineer.

Patching of existing pavement shall include, but not be limited to, the 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.

Asphalt Concrete Base Course shall be placed in lifts not exceeding 5.5 inches. Compaction equipment suitable for compacting patches as small as 4 feet by 6 feet shall be utilized on each lift. Compaction pattern to achieve proper compaction shall be approved by the engineer.

The Contractor shall remove existing pavement at locations directed by the Engineer in accordance with Section 607 of the *Standard Specifications*.

The Contractor may be required to make multiple passes with the milling machine to achieve additional depth of the patch at the direction of the engineer. There will be no additional payment for additional passes as all work will be compensated at the unit price for the type of mill patching to be performed. The Contractor will utilize a maximum milling head width of 4 feet unless otherwise allowed by the Engineer.

The Contractor shall schedule his 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 shall be 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, 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 patching existing pavement, measured as provided above, will be paid for at the contract unit price per ton for the type of mill patching to be performed.

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 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.

Patching Existing Pavement (Full Depth) will be considered a minor item.

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Patching Existing Pavement (Full Depth)	Ton

**ASPHALT CONCRETE SURFACE COURSE, TYPE S4.75A:**

(2-21-12) (Rev. 6-19-12)

610, 1012

SPI 6-09

Revise the 2012 *Standard Specifications* as follows:

**Page 6-21, Table 610-2, SUPERPAVE AGGREGATE GRADATION CRITERIA,** add the following:

Standard Sieves (mm)	Mix Type (Nominal Max. Aggregate Size)	
	4.75 mm	
	<i>Min.</i>	<i>Max.</i>
50.0	-	-
37.5	-	-
25.0	-	-
19.0	-	-
12.5	100.0	-
9.50	95.0	100.0
4.75	90.0	100.0
2.36	-	-
1.18	30.0	60.0
0.600	-	-
0.300	-	-
0.150	-	-
0.075	6.0	12.0

**Page 6-22, Table 610-3, SUPERPAVE MIX DESIGN CRITERIA,** add the following:

Mix Type	Design ESALs millions	Binder PG Grade	Compaction Levels		Max. Rut Depth (mm)	Volumetric Properties			
			G <sub>mm</sub> @			VMA	VTM	VFA	%G <sub>mm</sub>
			N <sub>ini</sub>	N <sub>des</sub>		% Min.	%	Min. - Max.	@ N <sub>ini</sub>
S4.75A	For Pilot Program:  < 1	64-22	6	50	-	16.0	4.0 - 6.0	65 - 80	≤ 91.5

**Page 6-22, Table 610-3, SUPERPAVE MIX DESIGN CRITERIA,** replace line 4, note C, with the following:

C. TSR for Type S4.75A and Type B25.0 mixes is 80% minimum.

**Page 6-23, Table 610-5, PLACEMENT TEMPERATURES FOR ASPHALT,** replace “SF9.5A, S9.5B” in the “Asphalt Concrete Mix Type” column with “S4.75A, SF9.5A and S9.5B”.

**Page 6-28, Table 610-6, SUPERPAVE DENSITY REQUIREMENTS**, add the following:

Superpave Mix Type	Minimum % of $G_{mm}$ (Maximum Specific Gravity)
S4.75A	85.0(a)

(a) Compaction to the above specified density will be required when the S4.75A mix is applied at a rate of 100 lb/sy or greater.

**Page 6-37, Article 610-16, MEASUREMENT AND PAYMENT**, add the following:

Payment will be made under:

Pay Item	Pay Unit
Asphalt Concrete Surface Course, Type S4.75A	Ton

**Page 10-26, Subarticle 1012-1(B)(4), FLAT AND ELONGATED PIECES**, replace line 44, “for Types SF9.5A and S9.5B.”, with the following:

“for Types S4.75A, SF9.5A and S9.5B.”

**Page 10-27, Table 1012-1, AGGREGATE CONSENSUS PROPERTIES**, add the following:

Mix Type	Coarse Aggregate Angularity	Fine Aggregate Angularity % Minimum	Sand Equivalent % Minimum	Flat & Elongated 5 : 1 Ratio % Maximum
<i>Test Method</i>	<i>ASTM D 5821</i>	<i>AASHTO T 304</i>	<i>AASHTO T 176</i>	<i>ASTM D 4791</i>
S4.75A	-	40	40	-

**ASPHALT CONCRETE SURFACE COURSE, TYPE xxx (Leveling Course):**

(7-1-95) (Rev. 8-21-12)

610

SP6 R85R

Place a leveling course of *Asphalt Concrete Surface Course, Type \_\_\_* at locations shown on the sketch maps and as directed by the Engineer. The rate of this leveling course is not established but will be determined by allowing the screed to *drag* the high points of the section. It is anticipated that some map numbers will be leveled from beginning to end while others may only require a leveling course for short sections.

The Asphalt Concrete Surface Course, Type \_\_\_ (Leveling Course) shall meet the requirements of Section 610 of the *2012 Standard Specifications* except payment will be made at the contract unit price per ton for *Asphalt Concrete Surface Course, Type \_\_\_ (Leveling Course)*.

**TRENCHING FOR BASE COURSE:**

(7-1-95) (Rev. 8-21-12)

610

SP6 R79AR(Revised)

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 2,000 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 *2012 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. **The Contractor shall also remove all existing substandard widening as directed by the Engineer.**

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 bid unit price per ton for *Asphalt Concrete Base Course, Type \_\_\_*.

**REMOVE AND REPLACE FRAME WITH GRATE AND HOOD, STD. 840.03, TYPE E:****(For Map 4 Only)**

Revise the Standard Specification as follows:

**840-4 Measurement and Payment**

Replace with the following:

Frame with Grate and Hood, Std. 840.03 (Type E) will be measured and paid in units of each for actual number of assemblies incorporated into the completed work. No separate measurement will be made of grates, hoods, and covers that are part of the assembly. Such work also includes

the removal and disposal of the existing grate and any adjustments necessary for the installation of the new frame, grate, and hood.

Pay Item	Pay Unit
Frame w/ Grate and Hood, Std. 840.03 Type E (Remove and Replace)	Each

### **ADJUSTMENT OF MEDIAN DROP INLETS:**

Revise the Standard Specification as follows:

#### 858-4 Measurement and Payment

Replace with the following:

Adjustment of Drop Inlets (Median Drop Inlets) will be measured and paid in units of each for median drop inlets satisfactorily adjusted. Such price also includes the removal and disposal of the existing concrete aprons, installation of new concrete aprons and any grading work that may be necessary to insure positive drainage.

Pay Item	Pay Unit
Adjustment of Median Drop Inlets	Each

### **ADJUST MONUMENTS:**

The Contractor shall adjust monument rings and lids using construction methods and materials meeting the applicable requirements of Section 858 of the *Standard Specifications* and as directed by the Engineer. Payment for this work will be made per each as *Adjustment of Monuments*.

### **ADJUSTMENT OF MANHOLES, METER BOXES, AND VALVE BOXES:**

(7-1-95) (Rev. 8-21-12)

858

SP8 R97R

The Contractor's attention is directed to Article 858-3 of the *2012 Standard Specifications*.

Make adjustments to manholes on this project by using rings or rapid set (grout, mortar, or concrete) as approved by the Engineer.

Cast iron or steel fittings will not be permitted for the adjustment of manholes, meter boxes, and valve boxes within New Hanover County.

### **CONCRETE ISLAND CHANNEL POST:**

(4-18-07)

SPI Rev

All concrete or paved channelization islands shall have a 12 inch diameter round or square smooth wall hole drilled, cored, formed or air hammered to the sub-grade and back-filled with soil placed a minimum of 10 feet from the nose of each end of the island (see *Roadway Standard Drawing 904.50*), or as directed by the Engineer. The cost for this work shall be included in the square yard contract bid price for *5" Monolithic Concrete Islands (Surface Mounted)*.

All signs and supports shall be furnished and installed by others.

**REMOVE AND REPLACE 2'-6" CURB AND GUTTER:****Description**

The Contractor shall remove and replace existing curb & gutter as directed by the Engineer. All work for this item shall be in accordance with Section 846. Section 846 is amended as follows: Removal and disposal of existing curb & gutter shall be incidental to the item *Remove and Replace 2'-6" Curb and Gutter*.

**Measurement and Payment**

*Remove and Replace 2'-6" Curb and Gutter* will be measured and paid for in units of linear feet for the actual number of linear feet that have been completed and accepted. Such price and payment includes but is not limited to providing all materials, removal and disposal of existing curb & gutter, placing all concrete, excavating and backfilling, forming, finishing, constructing and sealing joints, and all incidentals necessary to complete the work.

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Remove and Replace 2'-6" Curb and Gutter	Linear Foot

**REMOVAL OF 1'-6" CURB AND GUTTER:****Description**

Remove 1'-6" curb and gutter in areas designated on the plans or as directed by the Engineer. shall be removed. Break up and remove 1'-6" curb and gutter for its entire depth. Dispose of all materials that cannot be used in the work in accordance with Section 802.

**Measurement and Payment**

*Removal of 1'-6" Curb and Gutter* will be measured and paid for per linear foot for 1'-6" curb and gutter satisfactorily removed. Such price and payment includes but is not limited to excavating and backfilling, removal and disposal of the 1'-6" curb and gutter, and all incidentals necessary to complete the work.

<b>Pay Item</b>	<b>Pay Unit</b>
Removal of 1'-6" Curb and Gutter	Linear Foot

**REMOVAL OF CONCRETE ISLAND:****Description**

Break up, remove and satisfactorily dispose of 4' wide Monolithic Concrete Island.

**Pavement Removal and Disposal**

Break up and remove the concrete island for its entire depth. Dispose of all materials that cannot be used in the work in accordance with Section 802.



**Measurement and Payment**

*Removal of Concrete Island* will be measured and paid for in square yards of existing concrete island actually removed and disposed of properly. Removal of existing concrete island will be measured by actual surface measurements of the concrete island prior to its removal.

Once the concrete island is removed, all the work required to bring the pavement flush with existing asphalt pavement will be paid for as *Asphalt Plant Mix, Pavement Repair*.

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Removal of Concrete Island	Square Yard

**REMOVAL OF CURB RAMPS:****Description**

Curb Ramps deemed substandard by the Engineer shall be removed. Break up and remove the curb ramp and curb and gutter for its entire depth. Dispose of all materials that cannot be used in the work in accordance with Section 802.

**Measurement and Payment**

*Removal of Curb Ramps* will be measured and paid in units of each for curb ramps satisfactorily removed. Such price and payment includes but is not limited to excavating and backfilling, removal and disposal of the existing curb & gutter and curb ramps, and all incidentals necessary to complete the work.

<b>Pay Item</b>	<b>Pay Unit</b>
Removal of Curb Ramps	Each

**DETECTABLE WARNINGS TO RETROFIT EXISTING CURB RAMPS:**

(10-21-03) (Rev. 8-16-11)

848

SP8 R125

**Description**

Construct detectable warnings consisting of raised truncated domes to retrofit existing curb ramps in accordance with the plan details, Section 848 of the *2012 Standard Specifications*, the requirements of the *28 CFR Part 36 ADA Standards for Accessible Design* and these provisions.

**Materials**

Detectable warning for retrofitting existing curb ramps shall consist of raised truncated domes. The description, size and spacing shall conform to Section 848 of the *2012 Standard Specifications*.

Use material for detectable warning systems as shown herein. Material and coating specifications must be stated in the Manufacturers Type 3 Certification and all Detectable Warning systems must be on the NCDOT Approved Products List.

Install detectable warnings created from one of the following materials: precast concrete blocks or bricks, clay paving brick, gray or ductile iron castings, mild steel, stainless steel, and engineered plastics, rubber or composite tile. Only one material type for detectable warning will be permitted per project, unless otherwise approved by the Engineer.

- (A) Detectable Warnings shall consist of a base with integrated raised truncated domes, and when constructed of precast concrete they shall conform to the material requirements of Article 848-2 of the *2012 Standard Specifications*.
- (B) Detectable Warnings shall consist of a base with integrated raised truncated domes, and may be comprised of other materials including, but not limited to, clay paving brick, gray iron or ductile iron castings, mild steel, stainless steel, and engineered plastics, rubber or composite tile, which are applied directly to the curb ramps by incorporating into or attaching to the existing ramp floor. The material shall have an integral color throughout the thickness of the material. The detectable warning shall include fasteners, anchors, or adhesives for attachment in the existing ramp and shall be furnished as a system from the manufacturer.

Prior to installation, the Contractor shall submit to the Engineer assembling instructions from the manufacturer for each type of system used in accordance with Article 105-2 of the *2012 Standard Specifications*. The system shall be furnished as a kit containing all consumable materials and consumable tools, required for the application. They shall be capable of being affixed to or anchored in the concrete curb ramp, including green concrete (concrete that has set but not appreciably hardened). The system shall be solvent free and contain no volatile organic compounds (VOC). The static coefficient of friction shall be 0.8 or greater when measured on top of the truncated domes and when measured between the domes in accordance with ASTM C1028 (dry and wet). The system shall be resistant to deterioration due to exposure to sunlight, water, salt or adverse weather conditions and impervious to degradation by motor fuels, lubricants and antifreeze.

- (C) When steel or gray iron or ductile iron casting products are provided, only products that meet the requirements of Subarticle 106-1(B) of the *2012 Standard Specifications* may be used. Submit to the Engineer a Type 6 Certification, catalog cuts and installation procedures at least 30 days prior to installation for all.

### **Construction Methods**

- (A) Prior to placing detectable warnings in existing concrete curb ramps, saw cut to the full depth of the concrete, for other material remove as necessary, and adjust the existing subgrade to the proper grade and in accordance with Article 848-3 of the *2012 Standard Specifications*.

- (B) Install all detectable warning to retrofit existing curb ramps in accordance with the manufacturer's recommendations.

### **Measurement and Payment**

*Retrofit Existing Curb Ramps* with detectable warnings constructed of any type material will be paid as the actual number of retrofitted curb ramps, completed and accepted. Such price and payment will be full compensation for excavating and backfilling; sawing, repairing and replacing portions of the existing curb ramp within the pay limits for retrofit shown on the detail; pavement repairs; furnishing and placing detectable warnings, construction joints and removing and disposing of portions of the existing curb ramp when required and for all materials, labor, equipment, tools and incidentals necessary to complete the work.

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Retrofit Existing Curb Ramp	Each

### **DETECTABLE WARNINGS FOR PROPOSED CURB RAMPS:**

(6-15-10) (Rev. 8-16-11)

848

SP8 R126

### **Description**

Construct detectable warnings consisting of integrated raised truncated domes on proposed concrete curb ramps in accordance with the *2012 Standard Specifications*, plan details, the requirements of the *28 CFR Part 36 ADA Standards for Accessible Design* and this provision.

### **Materials**

Detectable warning for proposed curb ramps shall consist of integrated raised truncated domes. The description, size and spacing shall conform to Section 848 of the *2012 Standard Specifications*.

Use material for detectable warning systems as shown herein. Material and coating specifications must be stated in the Manufacturers Type 3 Certification and all Detectable Warning systems must be on the NCDOT Approved Products List.

Install detectable warnings created from one of the following materials: precast concrete blocks or bricks, clay paving brick, gray or ductile iron castings, mild steel, stainless steel, and engineered plastics, rubber or composite tile. Only one material type for detectable warning will be permitted per project, unless otherwise approved by the Engineer.

- (A) Detectable Warnings shall consist of a base with integrated raised truncated domes, and when constructed of precast concrete they shall conform to the material requirements of Article 848-2 of the *2012 Standard Specifications*.
- (B) Detectable Warnings shall consist of a base with integrated raised truncated domes, and may be comprised of other materials including, but not limited, to clay paving brick, gray

iron or ductile iron castings, mild steel, stainless steel, and engineered plastics, rubber or composite tile, which are cast into the concrete of the curb ramps. The material shall have an integral color throughout the thickness of the material. The detectable warning shall include fasteners or anchors for attachment in the concrete and shall be furnished as a system from the manufacturer.

Prior to installation, the Contractor shall submit to the Engineer assembling instructions from the manufacturer for each type of system used in accordance with Article 105-2 of the *2012 Standard Specifications*. The system shall be furnished as a kit containing all consumable materials and consumable tools, required for the application. They shall be capable of being affixed to or anchored in the concrete curb ramp, including green concrete (concrete that has set but not appreciably hardened). The system shall be solvent free and contain no volatile organic compounds (VOC). The static coefficient of friction shall be 0.8 or greater when measured on top of the truncated domes and when measured between the domes in accordance with ASTM C1028 (dry and wet). The system shall be resistant to deterioration due to exposure to sunlight, water, salt or adverse weather conditions and impervious to degradation by motor fuels, lubricants and antifreeze.

- (C) When steel or gray iron or ductile iron casting products are provided, only products that meet the requirements of Subarticle 106-1(B) of the *2012 Standard Specifications* may be used. Submit to the Engineer a Type 6 Certification, catalog cuts and installation procedures at least 30 days prior to installation for all.

### **Construction Methods**

- (A) Prior to placing detectable warnings in proposed concrete curb ramps, adjust the existing subgrade to the proper grade and in accordance with Article 848-3 of the *2012 Standard Specifications*.
- (B) Install all detectable warning in proposed concrete curb ramps in accordance with the manufacturer's recommendations.

### **Measurement and Payment**

Detectable Warnings installed for construction of proposed curb ramps will not be paid for separately. Such payment will be included in the price bid for *Concrete Curb Ramps*.

### **REMOVE AND REPLACE CURB RAMPS:**

(8-16-11)(Rev. 8-21-12)

848

R8 R127

### **Description**

Remove and replace curb ramps as directed by the Engineer. Perform all work in accordance with Section 848 of the *2012 Standard Specifications*. Construct detectable warnings consisting of integrated raised truncated domes on curb ramps in accordance with the *2012 Standard Specifications*, plan details, the requirements of the *28 CFR Part 36 ADA Standards for Accessible Design* and this provision.

**Materials**

Detectable warning for curb ramps shall consist of integrated raised truncated domes. The description, size and spacing shall conform to Section 848 of the *2012 Standard Specifications*.

Use material for detectable warning systems as shown herein. Material and coating specifications must be stated in the Manufacturers Type 3 Certification and all Detectable Warning systems must be on the NCDOT Approved Products List.

Install detectable warnings created from one of the following materials: precast concrete blocks or bricks, clay paving brick, gray or ductile iron castings, mild steel, stainless steel, and engineered plastics, rubber or composite tile. Only one material type for detectable warning will be permitted per project, unless otherwise approved by the Engineer.

- (A) Detectable Warnings shall consist of a base with integrated raised truncated domes, and when constructed of precast concrete they shall conform to the material requirements of Article 848-2 of the *2012 Standard Specifications*.
- (B) Detectable Warnings shall consist of a base with integrated raised truncated domes, and may be comprised of other materials including, but not limited, to clay paving brick, gray iron or ductile iron castings, mild steel, stainless steel, and engineered plastics, rubber or composite tile, which are cast into the concrete of the curb ramps. The material shall have an integral color throughout the thickness of the material. The detectable warning shall include fasteners or anchors for attachment in the concrete and shall be furnished as a system from the manufacturer.

Prior to installation, the Contractor shall submit to the Engineer assembling instructions from the manufacturer for each type of system used in accordance with Article 105-2 of the *2012 Standard Specifications*. The system shall be furnished as a kit containing all consumable materials and consumable tools, required for the application. They shall be capable of being affixed to or anchored in the concrete curb ramp, including green concrete (concrete that has set but not appreciably hardened). The system shall be solvent free and contain no volatile organic compounds (VOC). The static coefficient of friction shall be 0.8 or greater when measured on top of the truncated domes and when measured between the domes in accordance with ASTM C1028 (dry and wet). The system shall be resistant to deterioration due to exposure to sunlight, water, salt or adverse weather conditions and impervious to degradation by motor fuels, lubricants and antifreeze.

- (C) When steel or gray iron or ductile iron casting products are provided, only products that meet the requirements of Subarticle 106-1(B) of the *2012 Standard Specifications* may be used. Submit to the Engineer a Type 6 Certification, catalog cuts and installation procedures at least 30 days prior to installation for all.

**Construction Methods**

- (A) Prior to placing detectable warnings in concrete curb ramps, adjust the existing subgrade to the proper grade and in accordance with Article 848-3 of the *2012 Standard Specifications*.
- (B) Install all detectable warning in concrete curb ramps in accordance with the manufacturer's recommendations.

**Measurement and Payment**

Detectable Warnings installed where curb ramps are to be removed and replaced will not be paid separately. Such payment will be included in the price bid for *Remove and Replace Curb Ramps*.

*Remove and Replace Curb Ramps* will be measured and paid in units of each. Such price includes, but is not limited to, excavating and backfilling, sawing the existing sidewalk or driveway and furnishing and installing truncated domes. Removal and disposal of existing curb ramps will be incidental to the work performed.

Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Remove and Replace Curb Ramps	Each

**MATERIALS:**

(2-21-12) (Rev. 12-18-12)

1000, 1005, 1080, 1081, 1092

SP10 R01

Revise the 2012 Standard Specifications as follows:

Page 10-1, Article 1000-1, DESCRIPTION, line 14, add the following:

Use materials which do not produce a mottled appearance through rusting or other staining of the finished concrete surface.

Page 10-5, Table 1000-1, REQUIREMENTS FOR CONCRETE, replace with the following:

TABLE 1000-1 REQUIREMENTS FOR CONCRETE											
Class of Concrete	Min. Comp. Strength at 28 days	Maximum Water-Cement Ratio				Consistency Max. Slump		Cement Content			
		Air-Entrained Concrete		Non Air- Entrained Concrete		Vibrated	Non- Vibrated	Vibrated		Non- Vibrated	
		Rounded Aggregate	Angular Aggre- gate	Rounded Aggregate	Angular Aggre- gate			Min.	Max.	Min.	Max.
Units	psi					inch	inch	lb/cy	lb/cy	lb/cy	lb/cy
AA	4,500	0.381	0.426	-	-	3.5	-	639	715	-	-
AA Slip Form	4,500	0.381	0.426	-	-	1.5	-	639	715	-	-
Drilled Pier	4,500	-	-	0.450	0.450	-	5-7 dry 7-9 wet	-	-	640	800
A	3,000	0.488	0.532	0.550	0.594	3.5	4	564	-	602	-
B	2,500	0.488	0.567	0.559	0.630	2.5	4	508	-	545	-
B Slip Formed	2,500	0.488	0.567	-	-	1.5	-	508	-	-	-
Sand Light- weight	4,500	-	0.420	-	-	4	-	715	-	-	-
Latex Modified	3,000 7 day	0.400	0.400	-	-	6	-	658	-	-	-
Flowable Fill excavatable	150 max. at 56 days	as needed	as needed	as needed	as needed	-	Flow- able	-	-	40	100
Flowable Fill non-excavatable	125	as needed	as needed	as needed	as needed	-	Flow- able	-	-	100	as needed
Pavement	4,500 design, field 650 flexural, design only	0.559	0.559	-	-	1.5 slip form 3.0 hand place	-	526	-	-	-
Precast	See Table 1077-1	as needed	as needed	-	-	6	as needed	as needed	as needed	as needed	as needed
Prestress	per contract	See Table 1078-1	See Table 1078-1	-	-	8	-	564	as needed	-	-

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	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, Str. Conc, Weep Hole Drains	
14M	-	-	-	-	-	100	35-70	5-20	-	0-8	-	A	Asphalt Plant Mix, AST, Weep Hole Drains, Str. Concrete	
9	-	-	-	-	-	100	85-100	10-40	-	0-10	-	A	AST	
ABC	-	100	75-97	-	55-80	-	35-55	-	25-45	-	14-30	4-12 <sup>B</sup>	Aggregate Base Course, Aggregate Stabilization	
ABC (M)	-	100	75-100	-	45-79	-	20-40	-	0-25	-	-	0-12 <sup>B</sup>	Maintenance Stabilization	
Light-weight <sup>C</sup>	-	-	-	-	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 10-126, Table 1078-1, REQUIREMENTS FOR CONCRETE**, replace with the following:

**TABLE 1078-1  
REQUIREMENTS FOR CONCRETE**

Property	28 Day Design Compressive Strength 6,000 psi or less	28 Day Design Compressive Strength greater than 6,000 psi
Maximum Water/Cementitious Material Ratio	0.45	0.40
Maximum Slump without HRWR	3.5"	3.5"
Maximum Slump with HRWR	8"	8"
Air Content (upon discharge into forms)	5 + 2%	5 + 2%

**Page 10-151, Article 1080-4 Inspection and Sampling, lines 18-22**, replace (B), (C) and (D) with the following:

- (B) At least 3 panels prepared as specified in 5.5.10 of AASHTO M 300, Bullet Hole Immersion Test.
- (C) At least 3 panels of 4"x6"x1/4" for the Elcometer Adhesion Pull Off Test, ASTM D4541.
- (D) A certified test report from an approved independent testing laboratory for the Salt Fog Resistance Test, Cyclic Weathering Resistance Test, and Bullet Hole Immersion Test as specified in AASHTO M 300.
- (E) A certified test report from an approved independent testing laboratory that the product has been tested for slip coefficient and meets AASHTO M253, Class B.

**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.

Page 10-204, Subarticle 1092-2(A) Performance and Test Requirements, replace Table 1092-3 Minimum Coefficient of Retroreflection for NC Grade A with the following:

Observation Angle, degrees	Entrance Angle, degrees	White	Yellow	Green	Red	Blue	Fluorescent Yellow Green	Fluorescent Yellow
0.2	-4.0	525	395	52	95	30	420	315
0.2	30.0	215	162	22	43	10	170	130
0.5	-4.0	310	230	31	56	18	245	185
0.5	30.0	135	100	14	27	6	110	81
1.0	-4.0	120	60	8	16	3.6	64	48
1.0	30.0	45	34	4.5	9	2	36	27

**HIGH STRENGTH CONCRETE FOR DRIVEWAYS:**

(11-21-00) (Rev. 1-17-12)

848

SP10 R02

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 1000-5 of the *2012 Standard Specifications*.

Measurement and payment will be in accordance with Section 848 of the *2012 Standard Specifications*.

**TEMPORARY TRAFFIC CONTROL DEVICES:**

(1-17-12)

1105

SP11 R05

Revise the *2012 Standard Specifications* as follows:

Page 11-5, Article 1105-6 Measurement and Payment, add the following paragraph after line 24:

Partial payments will be made on each payment estimate based on the following: 50% of the contract lump sum price bid will be paid on the first monthly estimate and the remaining 50% of the contract lump sum price bid will be paid on each subsequent estimate based on the percent of the project completed.

**TRUCK MOUNTED CHANGEABLE MESSAGE SIGNS:**

(8-21-12)

1101.02

SP11 R10

Revise the *2012 Roadway Standard Drawings* as follows:

**Drawing No. 1101.02, Sheet 12, TEMPORARY LANE CLOSURES**, replace General Note #11 with the following:

11- TRUCK MOUNTED CHANGEABLE MESSAGE SIGNS (TMCMS) USED ON SHADOW VEHICLES FOR "IN LANE" ACTIVITIES SHALL BE A MINIMUM OF 43" X 73". THE DISPLAY PANEL SHALL HAVE FULL MATRIX CAPABILITY WITH THE CAPABILITY TO PROVIDE 2 MESSAGE LINES WITH 7 CHARACTERS PER LINE WITH A MINIMUM CHARACTER HEIGHT OF 18". FOR ADDITIONAL MESSAGING, CONTACT THE WORK ZONE TRAFFIC CONTROL SECTION.

12- TMCMS USED FOR ADVANCED WARNING ON VEHICLES LOCATED ON THE SHOULDER MAY BE SMALLER THAN 43" X 73". THE DISPLAY PANEL SHALL HAVE THE CAPABILITY TO PROVIDE 2 MESSAGE LINES WITH 7 CHARACTERS PER LINE WITH A MINIMUM CHARACTER HEIGHT OF 18". FOR ADDITIONAL MESSAGING, CONTACT THE WORK ZONE TRAFFIC CONTROL SECTION.

**Drawing No. 1101.02, Sheet 13, TEMPORARY LANE CLOSURES**, replace General Note #12 with the following:

12- TRUCK MOUNTED CHANGEABLE MESSAGE SIGNS (TMCMS) USED ON SHADOW VEHICLES FOR "IN LANE" ACTIVITIES SHALL BE A MINIMUM OF 43" X 73". THE DISPLAY PANEL SHALL HAVE FULL MATRIX CAPABILITY WITH THE CAPABILITY TO PROVIDE 2 MESSAGE LINES WITH 7 CHARACTERS PER LINE WITH A MINIMUM CHARACTER HEIGHT OF 18". FOR ADDITIONAL MESSAGING, CONTACT THE WORK ZONE TRAFFIC CONTROL SECTION.

13- TMCMS USED FOR ADVANCED WARNING ON VEHICLES LOCATED ON THE SHOULDER MAY BE SMALLER THAN 43" X 73". THE DISPLAY PANEL SHALL HAVE THE CAPABILITY TO PROVIDE 2 MESSAGE LINES WITH 7 CHARACTERS PER LINE WITH A MINIMUM CHARACTER HEIGHT OF 18". FOR ADDITIONAL MESSAGING, CONTACT THE WORK ZONE TRAFFIC CONTROL SECTION.

**EROSION AND STORMWATER CONTROL FOR SHOULDER CONSTRUCTION AND RECONSTRUCTION:**

(11-16-10) (Rev. 8-21-12)

105-16, 225-2, Division 16

SP16 R03R

Land disturbing operations associated with shoulder construction/reconstruction may require erosion and sediment control/stormwater measure installation. National Pollutant Discharge Elimination System (NPDES) inspection and reporting may be required.

Erosion control measures shall be installed per the erosion control detail in any area where the vegetated buffer between the disturbed area and surface waters (streams, wetlands, or open waters) or drainage inlet is less than 10 feet. The Engineer may reduce the vegetated buffer threshold for this requirement to a value between 5 and 10 feet. Erosion control measures shall be spot checked every 14 days until permanent vegetative establishment.

In areas where shoulder construction/reconstruction includes disturbance or grading on the front slope or to the toe of fill, relocating ditch line or backslope, or removing vegetation from the ditch line or swale, NPDES inspection and monitoring are required every 14 days or within 24 hours of a rainfall event of 0.5" or greater. Maintain daily rainfall records. Install erosion control measures per detail.

In areas where the vegetated buffer is less than 10 feet between the disturbed area and waters of the State classified as High Quality Water (HQW), Outstanding Resource Water (ORW), Critical Areas, or Unique Wetlands, NPDES inspection and monitoring are required every 14 days or within 24 hours of a rainfall event of 0.5" or greater. The Engineer may reduce the vegetated buffer threshold for this requirement to a value between 5 and 10 feet. The plans or provisions will indicate the presence of these water classifications. Maintain daily rainfall records. Install erosion control measures per detail.

Land disturbances hardened with aggregate materials receiving sheet flow are considered non-erodible.

Sites that require lengthy sections of silt fence may substitute with rapid permanent seeding and mulching as directed by the Engineer.

NPDES documentation shall be performed by a Level II Erosion and Sediment Control/Stormwater certificate holder.

Materials used for erosion control will be measured and paid as stated in the contract.