

24

PROJECT SPECIAL PROVISIONS

Roadway

7-1-95

SP1R01

CLEARING AND GRUBBING:

9-17-02

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

The 2002 Standard Specifications shall be revised as follows:

Page 2-3, Article 200-5

Delete the first sentence of this article and insert the following:

The property owner will have no right to use or reserve for his use any timber on the project. All timber cut during the clearing operations is to become the property of the Contractor, and shall be either removed from the project by him, or else shall be satisfactorily disposed of as hereinafter provided.

SP2R01

ROADWAY EXCAVATION

03-15-05

Install erosion control measures as required by the plans prior to any kind of land-disturbing activity.

1. Unless otherwise required by the plans, construct embankments in such a manner that cut and fill slopes are completely graded to final slopes in a continuous operation, and permanently seeded and mulched in accordance with the requirements of the Specifications.
2. Should the Contractor fail to comply with the requirements specified in No. 1 above within the time frames established by the *Sedimentation and Pollution Control Act*, the Contractor shall perform temporary seeding and mulching on any exposed areas at his own expense.
3. When the Contractor fails or neglects to coordinate grading with the permanent seeding and mulching operation, the Engineer may suspend the Contractor's grading operation in accordance with the provisions of Article 108-7 of the *Standard Specifications* until the work is coordinated in a manner acceptable to the Engineer. Failure to perform the directed work may result in the Engineer having the work performed in accordance with Article 105-16 of the *Standard Specifications*.

SP2R25

PILE/PANEL RETAINING WALL

Construct a pile and precast concrete panel retaining wall at the locations indicated in the plans and in accordance with the details in plans, the following special provision and as directed.

Schedule a pile/panel retaining wall preconstruction conference with the Contractor (including the drilling superintendent), the Resident Engineer (including the inspector), the Area Bridge Construction Engineer and the Geotechnical Engineer to discuss construction and inspection of the pile/panel retaining wall. This conference must be completed a minimum of 5 days prior to beginning any work for the pile/panel wall.

Steel Piles

Provide HP steel piles conforming to the applicable parts of the Standard Specifications and these provisions. Steel piles must be ASTM Grade A36 with the addition of 0.2% minimum copper. The size of piles must be as shown in the plans.

See special provisions contained herein for painting of steel piles.

Install the piles to grade using the lengths and cut off elevations shown in the plans by pre-augering or drilling a 24-inch minimum diameter hole. Backfill the hole with concrete up to the bottom of the cushioning material.

Install piles to within 2 inches of their plan location, and the center to center distance between piles must not differ from the plans by more than 3 inches after installation.

The plumbness of the piles must not vary from the vertical by more than 1/8 inch per foot. In general, installed piles will be acceptable if the precast concrete panels, when installed, have an acceptable appearance without significant gaps between the face of the panels and the pile flanges. The precast concrete panels must have a minimum 2 inch bearing on the pile flanges.

Splice piles subject to the Engineer's approval and in accordance with the plans. Splices will not be permitted in the portion of the pile that is permanently exposed. Welding must conform to the requirements of Article 1072-20 of the Standard Specifications.

Precast Concrete Panels

Concrete materials for precast panels must conform to the applicable parts of the Standard Specifications and these special provisions.

Concrete for the precast panels must have a minimum 28-day compressive strength of 4,000 psi. Do not remove the panels from the forms until the concrete has attained sufficient strength to prevent damage. Cracked, spalled or discolored panels will be rejected.

The exposed face of the concrete panels should have a vertical broomed finish. Place the panels between the pile flanges such that their sides are plumb and have a minimum bearing distance of 2 inches on the pile flanges. Place half-inch thick expansion joint material between the panels and pile flanges for the width of the bearing surface. Seat the panels firmly on the cushioning

material and hold securely against the pile flange until enough backfill is placed to hold the panels in place.

C.I.P. Coping

The work covered by this provision consists of the construction of Portland cement concrete coping in accordance with the details in the plans and the following provisions.

- (1) Use Class A concrete conforming to the applicable requirements of Sections 420 and 1000 of the Specifications.
- (2) Supply reinforcing steel conforming to the applicable requirements of Sections 425 and 1070 of the Specifications.

Expansion joints are not permitted, but construction joints may be used at 50 foot centers.

Shaft Excavation and Concrete

Shaft excavation must conform to the applicable provisions of Section 410 of the Standard Specifications. Use Class A concrete meeting the requirements of Section 1000 of the Standard Specifications.

Excavate the shaft, as shown in the plans, by drilling, augering or coring to a depth sufficient to set the full length of steel pile to grade. Cast shaft concrete in accordance with Section 825 of the Standard Specifications and against undisturbed ground unless otherwise permitted by the Engineer. If over-excavation occurs vertically, backfill with No. 57 stone before setting the pile. Remove all loose and soft material and dewater the excavation immediately before and during the concrete casting operation. Make the top of the concrete shafts generally level.

If necessary, take special measures to insure the stability of the shaft, such as installing temporary casings prior to drilling, installing the pile and placing concrete immediately after a shaft is excavated before caving occurs, installing well points or other measures. If caving occurs, halt the shaft excavation operation until special measures are implemented.

Do not install concrete panels before the shaft concrete has cured for a minimum of 3 days.

Excavation and Backfill

Where necessary for safety, the excavation must be sloped or shored in accordance with local and state safety standards. It is suggested to use timber lagging in conjunction with the permanent retaining wall piles as excavation shoring. Alternate methods may be used provided they are submitted to the Engineer for review and acceptance.

Take care to minimize the excavation necessary to place the cushioning material and panels. Backfill the excavation immediately after panels are placed with No. 57 stone. Limit excavation to install panels and timber lagging to 6 inches behind the panels. Backfill any overexcavation with No. 57 stone.

No. 57 stone must conform to the applicable requirements of Section 1005 of the Standard Specifications and these provisions.

Compact the No. 57 stone backfill to the satisfaction of the Engineer. Rod and spread the stone in order to fill all voids and insure maximum density. Compact larger areas with hand operated equipment. Flushing the stone with water will not be allowed. Heavy compaction equipment will not be allowed behind the wall.

Painting of Piles

Paint steel piles in accordance with Section 442 of the Standard Specifications and these provisions.

Painting is required only from the top of the pile down to 18 inches below grade. Match the color of the finish coat to the color of the precast concrete panels.

In addition to surface preparation requirements of Section 442, plane all free edges to be painted in accordance with Section 1072-14.

Measurement and Payment

The pile/panel retaining wall will be paid for as a lump sum for "Pile/Panel Retaining Wall".

Such price and payment will be full compensation for all work covered by this provision including but not limited to shaft excavation, stabilization and dewatering of the shafts, furnishing, installing and painting the piles, furnishing and placing shaft concrete, furnishing and placing precast concrete panels, furnishing and placing No. 57 stone, construction of C.I.P. coping, and all other incidental work and materials necessary to construct the pile/panel retaining walls.

Payment will be made as:

Pile/Panel Retaining Wall _____Lump Sum

FLAP GATE:

The Contractor's attention is directed to the fact that he shall construct flap gates in accordance with the detail in the plans at location shown in the plans and as directed by the Engineer.

All materials shall meet the requirements of Division 10 of the Standard Specifications.

The quantity of flap gate to be paid for will be the actual number of flap gates that have been completed and accepted.

The quantity of flap gates will be paid for at the contract unit price per each for "FLAP GATE". Such Price and payment shall be full compensation for all equipment, materials, labor, tools and incidentals necessary to complete each gate satisfactorily.

DISPOSAL OF CONTAMINATED SOIL:

The Contractor’s attention is directed to the fact that soils containing petroleum hydrocarbon compounds exist within right-of-way at the following location:

<u>Line</u>	<u>Station</u>	<u>Offset</u>	<u>R/W Parcel No.</u>
-L-	9+88 to 10+14	47’ to 70’ Rt.	1
-L-	10+71 to 10+94	17’ to 48’ Rt.	1
-L-	12+20 to 12+54	25’ to 52’ Rt.	2
-L-	12+92 to 13+35	15’ to 50’ Rt.	2

Information about this contamination areas, sample locations and laboratory results are available upon request. Please note that only non-hazardous levels of contaminants were detected at this parcel.

Any excavation advanced within these areas may impact contaminated soils. If any excavation occurs in these areas, the Contractor should only excavate those soils that the Engineer determines must be removed to complete a particular task. The Contractor must transport and properly dispose of all contaminated media excavated within the above-mentioned limits at a licensed facility. It shall be the Contractors responsibility to locate such a facility. NCDOT Departmental approval of the specific facility identified for use by the Contractor shall occur prior to disposal of any contaminated media from the project limits. The Contractor is required to present all disposal manifests to the Engineer within twenty (20) days of completion of the excavation. The Contractor must provide Certificates of Remediation to the Department within sixty (60) days of completion of the excavation.

The contractor is entirely responsible for compliance with all OSHA, EPA, DOT, DENR and local rules and regulations pertaining to excavation and transportation of the contaminated soil. Examples of such rules and regulations include, but are not limited to, 29 CFR 1910 and 1926, 40 CFR 260 - 265, 49 CFR 173 and 178, 15A NCAC 13A North Carolina Hazardous Waste Management Rules, NCGS 130A - 310 Inactive Hazardous Sites, the Federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Federal Resource Conservation and Recovery Act (RCRA). It must be noted that inclusion of this paragraph is meant to highlight the Contractor’s responsibility for regulatory compliance in all phases of work on this project.

Measurement:

The quantities of contaminated soil disposal to be paid for will be the actual number of tons of material, which have been acceptably excavated, transported and received at the disposal facility, determined through weighing the loaded material with certified scales, documented by a certified weight certificate issued by a North Carolina public weighmaster, licensed in accordance with Chapter 81A of the General Statutes of North Carolina. The certificate shall be in the form of a ticket furnished by the Contractor and shall contain the following information:

1. Division of Highways project number
2. Date
3. Time issued

- 4. Gross weight
- 6. Tare weight
- 7. Net weight of material
- 8. Scale location
- 9. Truck number
- 10. Contractor's name
- 11. Public weighmaster's stamp or number
- 12. Public weighmaster's signature in ink or initials in ink

Payment:

The quantities of disposal of contaminated soil, measured as provided above, will be paid for at the contract unit price per ton for "Disposal of Contaminated Soil".

The above prices and payments will be full compensation for all loading, transportation, weighing and disposal of contaminated materials, equipment, decontamination of equipment, labor, and personal protective equipment.

Payment will be made under:

Disposal of Contaminated Soil..... Ton

BORROW EXCAVATION:

2-19-02

Revise the 2002 Standard Specifications as follows:

Page 2-20, Article 230-6

After the first paragraph, insert the following paragraph:

"No direct payment will be made for the work of Evaluation of Potential Wetlands and Endangered Species as outlined above. Payment at the contract unit price for the pay item 'Borrow Excavation' or 'Grading - Lump Sum' will be considered full compensation for this work."

SP2R37

SHOULDER AND FILL SLOPE MATERIAL(LUMP SUM GRADING)

5-21-02

General:

Perform the required shoulder and slope construction for this project in accordance with the applicable requirements of Section 226 of the Standard Specifications except as follows:

Construct the top 6 inches (150 mm) of shoulder and fill slopes with soils capable of supporting vegetation.

Provide soil with a P.I. greater than 6 and less than 25 and with a pH ranging from 5.5 to 6.8. Remove stones and other foreign material 2 inches (50 mm) or larger in diameter. All soil is subject to test and acceptance or rejection by the Engineer.

Obtain material from within the project limits or approved borrow source.

Compensation:

No direct payment will be made for this work, as the cost of this work will be considered to be a part of the work being paid for at the contract lump sum price for "Grading".

SP2R45

FLOWABLE FILL:

9-17-02

Provide and install flowable fill material in accordance with Articles 340-2 of the Standard Specifications.

Discharge flowable fill material directly from the truck into the space to be filled, or by other approved methods. The mix may be placed full depth or in lifts as site conditions dictate. The Contractor shall provide a method to plug the ends of the existing pipe in order to contain the flowable fill.

At locations where flowable fill is called for on the plans and a pay item for flowable fill is included in the contract, the quantity of flowable fill to be paid for will be the actual number of cubic yards (cubic meters) of flowable fill that have been satisfactorily placed and accepted.

The quantity of flowable fill, measured as provided above, will be paid for at the contract unit price per cubic yard (cubic meter) for "Flowable Fill". Such price and payment will be full compensation for all work covered by this provision including but not limited to the mix design, furnishing, hauling, placing and containing the flowable fill.

SP3R30

Payment will be made under:

Flowable Fill Cubic Yard (Cubic Meter)

REINFORCED BRIDGE APPROACH FILLS:

03-18-03

Description:

This work consists of all work necessary to construct reinforced bridge approach fills in accordance with these provisions and the plans, and as directed by the Engineer.

Materials:

Geomembrane

Provide geomembrane that is impermeable, composed of polyethylene polymers or polyvinyl chloride, and meets the following physical requirements:

<u>Property</u>	<u>Requirements</u>	<u>Test Method</u>
Thickness	25 mils (0.6 mm) Minimum	ASTM D1593
Tensile Strength at Break	100 lb/inch (18 KN/M) Minimum	ASTM D638
Puncture Strength	40 lbs (0.2KN) Minimum	FTMS 101 C 2065
Moisture Vapor Transmission Rate	0.018 ounce/yard ² (0.615 gm/ m ²) per Day Maximum	ASTM E96

Fabric

Refer to section 1056 for Type 2 Engineering Fabric and the following:

Use a woven fabric consisting of strong rot-proof synthetic fibers such as polypropylene, polyethylene, or polyester formed into a stable network such that the filaments or yarns retain their relative positions to each other.

<u>Fabric Property</u>	<u>Requirements</u>	<u>Test Method</u>
Minimum Flow Rate	2 gallons/min/square foot (1358 cm ³ /sec/square meter)	ASTM D 4491

Lamination of fabric sheets to produce the physical requirements of a fabric layer will not be accepted. Furnish letters of certification from the manufacturer with each shipment of the fabric and geomembrane attesting that the material meets the requirements of this provision; however, the material is subject to inspection, test, or rejection by the Engineer at any time.

During all periods of shipment and storage, wrap the geomembrane and fabric in a heavy-duty protective covering to protect the material from ultraviolet rays. After the protective wrapping has been removed, do not leave the material uncovered under any circumstances for longer than 4 days.

Select Material

Provide select material meeting the requirements of Class III, Type 1 or Type 2, or Class V select material of section 1016 of the Standard Specifications. When select material is required under water, use select material class V only, up to one foot (300mm) above the existing water elevation.

4" (100mm) Diameter Corrugated Drainage Pipe and Fittings

Provide pipe and fittings that meet all the applicable requirements of Section 815 or 816 of the Standard Specifications.

Construction:

Place the geomembrane and fabric as shown on the plans or as directed by the Engineer. Perform the excavation for the fabric reinforced fill to the limits shown on the plans. Provide an excavated surface free of obstructions, debris, pockets, stumps, and cleared of all vegetation. The geomembrane or fabric will be rejected if it has defects, rips, holes, flaws, deterioration or damage incurred during manufacture, transportation, handling or storage. Lay all layers smooth, and free from tension, stress, folds, wrinkles or creases. Place all the fabric layers with the machine direction (roll direction) perpendicular to the backwall face. Overlap geomembrane or fabric splices perpendicular to the backwall face a minimum of 18 inches (450 mm). Geomembrane or fabric splices parallel to the backwall face will not be allowed.

Deposit and spread select material in successive, uniform, approximately horizontal layers of not more than 10 inches (250 mm) in depth, loose measurement, for the full width of the cross section, and keep each layer approximately level. Place and compact each layer of select material fill no more than 10 inches (250 mm) thick with low ground pressure equipment. Use hand operated equipment to compact the fill material within three feet (0.9 m) of the backwall and wingwalls as directed by the Engineer. Compact select material to a density equal to at least 95% of that obtained by compacting a sample of the material in accordance with AASHTO T99 as modified by the Department. Compact the top eight inches (200 mm) of select material to a density to at least 100% of that obtained by compacting a sample of the material in accordance with AASHTO T99 as modified by the Department. Density requirements are not applicable to select material, class V; however compact the fill with at least four passes of low ground pressure equipment on the entire surface as directed by the Engineer. The compaction of each layer of select material must be inspected and approved by the Department prior to the placement of the next fill layer. No equipment will be allowed to operate on the drainage pipe or any geomembrane/fabric layer until it is covered with at least six inches (150 mm) of fill material. Compaction must not damage the drainage pipe, geomembrane, or fabric under the fill. Cover the geomembrane/fabric with a layer of fill material within four days after placement of the geomembrane/fabric. Geomembrane and fabric that is damaged as a result of installation will be replaced as directed by the Department at no additional cost.

Place the geomembrane on the ground, and attach and secure it tightly to the vertical face of the backwall and wingwalls with adhesives, duct-tape, nails or any other method approved by the Engineer. Place the first fabric layer on the surface of the geomembrane with the same dimensions of the geomembrane. No material or void is allowed between the geomembrane and the first fabric layer. Place and fold the remaining fabric layers on the edges as shown on the plans or as directed by the Engineer. Provide vertical separation between fabric layers as specified on the plans. The number of fabric layers will be shown in the plans.

Place four inch (100 mm) diameter perforated drainage pipe along the base of the backwall and sloped to drain as shown on the plans. Completely wrap perforated drainage pipe and #78M stone with Type 2 Engineering Fabric as shown on the plan detail. Install a pipe sleeve through the bottom of or under the wing wall prior to placing concrete for the wing wall. The pipe sleeve must be of adequate strength to withstand the wingwall load. Place the pipe sleeve in position to allow the drainage pipe to go through the wing wall with a proper slope. Connect four-inch (100-mm) diameter nonperforated (plain) drainage pipe with a coupling to the perforated pipe

near the inside face of the wingwall. Place the nonperforated drainage pipe through the pipe sleeve, extend down to the toe of the slope and connect, to a ditch or other drainage systems as directed by the Engineer. For bridge approaches in cut sections where no side slope is available, direct the drainage pipe outlet to the end slope down to the toe using elbows as directed by the Engineer.

Measurement and Payment:

Compensation:

All work covered by this provision will be paid for at the contract lump sum price for "Reinforced Bridge Approach Fills, Station _____". Such price and payment will be full compensation for both approach fills at each bridge installation, including but not limited to furnishing, placing and compacting select material, furnishing and placing geomembrane and woven fabric, furnishing and placing pipe sleeve, drainage pipe, and stone, furnishing and installing concrete pads at the end of outlet pipes, excavation and any other items necessary to complete the work.

Payment will be made under:	
Reinforced Bridge Approach Fills, Station _____	Lump Sum
	SP4R01

<u>ASPHALT PAVEMENTS - SUPERPAVE</u>	01-18-05
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Revise the 2002 *Standard Specifications* as follows:

PRIME COAT

Page 6-2, **Article 600-9**

Delete the first paragraph and substitute the following:

The quantity of prime coat to be paid will be the number of gallons (liters) of prime coat material that has been satisfactorily placed on the roadway. Each distributor load of prime coat material delivered and utilized on the project will be measured.

ASPHALT TACK COAT

Page 6-4, **Article 605-8**

Insert the following after paragraph one.

Take necessary precautions to limit the tracking and/or accumulation of tack coat material on either existing or newly constructed pavements. Excessive accumulation of tack may require corrective measures.

FIELD VERIFICATION AND JOB MIX FORMULA ADJUSTMENTS

Page 6-7, **Article 609-4**

Delete the first paragraph and substitute the following:

Conduct field verification of the mix at each plant within 30 calendar days prior to initial production of each mix design, when required by the Allowable Mix Adjustment Policy and when directed as deemed necessary.

Page 6-8, **Article 609-4**

Delete the first paragraph and substitute the following:

Retain records of these calibrations and mix verification tests, including Superpave Gyrotory Compactor (SGC) printouts, at the QC laboratory. In addition, furnish copies, including SGC printouts, to the Engineer for review and approval within one working day after beginning production of the mix.

Page 6-8, **Article 609-4**

Add the following sentence at the end of the last paragraph:

Any mix produced that is not verified may be assessed a price reduction at the Engineer's discretion in addition to any reduction in pay due to mix and/or density deficiencies.

Quality control minimum sampling and testing schedule:

Page 6-8, **Subarticle 609-5(A)**

Delete the second sentence in the fourth paragraph and substitute the following:

This person is responsible for monitoring all roadway paving operations and all quality control processes and activities, to include stopping production or implementing corrective measures when warranted.

Page 6-9, **Subarticle 609-5(C)1**

Delete the second sentence in the second paragraph and substitute the following:

Retain the QC compacted volumetric test specimens for 5 calendar days, commencing the day the specimens are prepared.

Page 6-9, **Subarticle 609-5(C)2**

At the bottom of this page, delete the sentence directly above the Accumulative Production Increment and substitute the following:

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

Page 6-10, **Subarticle 609-5(C)2**

Revise Items B, C, D and E on this page as follows:

- B. Gradation on Recovered Blended Aggregate from Mix Sample (AASHTO T 30 Modified) Grade on all sieves specified on JMF
- C. Maximum Specific Gravity (AASHTO T 209 or ASTM D 2041), optional (ASTM D 6857)
- D. Bulk Specific Gravity of Compacted Specimens (AASHTO T166), optional (ASTM D 6752), Average of 3 specimens at N_{des} gyrations (AASHTO T 312)
- E. Air Voids (VTM) (AASHTO T 269), Average of 3 specimens at N_{des} gyrations

Page 6-11, **Subarticle 609-5(C)2**

At the top of this page, delete Item B., "Reclaimed Asphalt Pavement..." and substitute the following:

- B. Reclaimed Asphalt Pavement (RAP) Binder Content and Gradation (AASHTO T 308 Modified or T 164 and AASHTO T 30 Modified) (sampled from stockpiles or cold feed system at beginning of production and weekly thereafter). Have RAP approved for use in accordance with Article 1012-1(G). (Split Sample Required)

Page 6-11, **Subarticle 609-5(C)2**

Insert the following sampling and testing at the end of this Subarticle:

- F. Uncompacted Void Content of Fine Aggregate, AASHTO T 304, Method A (natural sand only). Performed at Mix Design and when directed as deemed necessary. (Split Sample Required)
- G. Reclaimed Asphalt Shingle Material (RAS) Binder Content and Gradation (AASHTO T 308 Modified or T 164 and AASHTO T 30 Modified) (sampled from stockpiles or cold feed system at beginning of production and weekly thereafter). Have RAS approved for use in accordance with Article 1012-1(F). (Split Sample Required)

CONTROL CHARTS

Page 6-11, **Subarticle 609-5(C)3**

Delete the first paragraph and substitute the following:

Maintain standardized control charts furnished by the Department at the field laboratory. For mix incorporated into the project, record full test series data from all regularly scheduled random

samples or directed samples which replace regularly scheduled random samples, on control charts the same day the tests are obtained.

In addition, partial test series results obtained due to reasons outlined in Subarticle 609-5(C)2 will be reported to Quality Assurance personnel on the proper forms, but will not be plotted on the control charts.

Page 6-12, **Subarticle 609-5(C)3**

Delete item 3 in the list below the second full paragraph and substitute the following:

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

Page 6-12, **Subarticle 609-5(C)3**

Delete the first and second sentence in the third full paragraph and substitute the following:

In addition, re-establish the moving averages for all mix properties.

CONTROL LIMITS

Page 6-12, **Subarticle 609-5(C) 4**

At the bottom of this page, delete the table and substitute the following:

CONTROL LIMITS

Mix Control Criteria	Target Source	Warning Limit	Moving Average Limit	Individual Limit
2.36mm Sieve	JMF	±4.0 %	±5.0 %	±8.0 %
0.075mm Sieve	JMF	±1.5 %	±2.0 %	±2.5 %
Binder Content	JMF	±0.3 %	±0.5 %	±0.7 %
VTM @ N _{des}	JMF	±1.0 %	±1.5 %	±2.0 %
VMA @ N _{des}	Min. Spec. Limit	-0.5%	-0.8%	-1.0%
P _{0.075} / P _{be} Ratio	Max. Spec. Limit	0.0	N/A	+0.4%
%G _{mm} @ N _{ini}	Max. Spec. Limit	N/A	N/A	+2.0%
TSR	Min. Spec. Limit	N/A	N/A	-15.0%

Allowable Retesting for Mix Deficiencies:

Page 6-14, **Subarticle 609-5C(7)**

In the first paragraph, insert the following as the fourth sentence:

The Contractor under the supervision of the Department’s QA personnel will perform these retests.

FIELD COMPACTION QUALITY CONTROL

Page 6-15, **Subarticle 609-5(D)1**

Delete the first and second sentences in the fourth paragraph and substitute the following:

Base and intermediate mix types (surface mixes not included) utilized for pavement widening of less than 4.0 feet and all mix types used in tapers, irregular areas and intersections (excluding full width travel lanes of uniform thickness), will not be subject to the sampling and testing frequency specified above provided the pavement is compacted using approved equipment and procedures. However, the Engineer may require occasional density sampling and testing to evaluate the compaction process.

Page 6-16, **Subarticle 609-5(D)1**

Delete item number 2 at the top of this page. Item number 3 should be re-numbered as 2 after the specified deletion.

Pavement Samples (Cores)

Page 6-16, **Subarticle 609-5(D)(2)**

In the first paragraph, delete the second sentence and insert the following as the last sentence in that paragraph:

The use of a separator medium beneath the layer to be tested is prohibited.

LIMITED PRODUCTION PROCEDURE

Page 6-17, **Subarticle 609-5(D) 5**

Delete the first paragraph and substitute the following:

Proceed on limited production when, for the same mix type, one of the following items occur:

- (1) Two consecutive failing lots, excluding lots representing an individual resurfacing map or portion thereof.

- (2) Three consecutive failing lots, with each lot representing an individual resurfacing map or portion thereof.
- (3) Two consecutive failing nuclear control strips.

Pavement within each construction category (New and Other), as defined in Article 610-13, and pavement placed simultaneously by multiple paving crews will be evaluated independently for limited production purposes.

Delete the first sentence in the last paragraph and substitute the following:

If the Contractor does not operate by the limited production procedures as specified above, the two consecutive failing density lots, three consecutive failing lots with each lot representing an individual resurfacing map or portion thereof, or two consecutive failing nuclear control strips, whichever is applicable, and all mix produced thereafter will be considered unacceptable.

DOCUMENTATION (RECORDS)

Page 6-18, **Subarticle 609-5(E)**

Delete the third and fourth sentence in the first full paragraph and substitute the following:

Maintain all QC records, forms and equipment calibrations for a minimum of 3 years from their completion date.

Delete the second full paragraph and substitute the following:

Falsification of test results, documentation of observations, records of inspection, adjustments to the process, discarding of samples and/or test results, or any other deliberate misrepresentation of the facts will result in the revocation of the applicable person's QMS certification. The Engineer will determine acceptability of the mix and/or pavement represented by the falsified results or documentation. If the mix and/or pavement in question is determined to be acceptable, the Engineer may allow the mix to remain in place at no pay for the mix, asphalt binder and other mix components. If the mix and/or pavement represented by the falsified results is determined not to be acceptable, remove and replace with mix, which complies with the Specifications. Payment will be made for the actual quantities of materials required to replace the falsified quantities, not to exceed the original amounts.

QUALITY ASSURANCE

Page 6-18, **Article 609-6**

In Item 1 under Plant Mix Quality Assurance, substitute "5 percent" for "10 percent".

In Item 2 under Plant Mix Quality Assurance, substitute "sampling and testing procedures" for "tests".

In Item 4 under Plant Mix Quality Assurance, add “for that increment” after the word “sample”.

In Item 5 under Plant Mix Quality Assurance, add “at a frequency equal to or greater than 10 percent of the QC sample frequency”; or

Insert the following after Item 5 under Plant Mix Quality Assurance:

- 6. By any combination of the above.

Delete the paragraph below Plant Mix Quality Assurance, and replace with the following:

The Engineer will conduct assurance tests on both split QC samples taken by the Contractor and verification samples taken by the Department. These samples may be the regular quality control samples or a sample selected by the Engineer from any location in the process or verification samples taken at random by the Department. The frequency will be equal to or greater than 5 percent of that required of the Contractor as stated in Subarticle 609-5(C)2. The Engineer may select any or all samples for assurance testing.

In Item 1 under Density Quality Assurance, delete the wording at the end of the sentence “at a frequency equal to or greater than 10 percent of the frequency required of the Contractor”.

In Item 3 under Density Quality Assurance, substitute 5 percent for 10 percent.

Page 6-19, **Article 609-6**

In Item 4 under Density Quality Assurance, add “at a frequency equal to or greater than 10 percent of the QC sample frequency.”

Insert the following after Item 4 under Density Quality Assurance:

- 5. By periodically directing the recalculation of random numbers for the Quality Control core or nuclear density test locations. The original QC test locations may be tested by QA and evaluated as verification tests.

LIMITS OF PRECISION

Page 6-19, **Article 609-6**

In the limits of precision table, delete the last three rows and substitute the following:

QA retest of prepared QC Gyrotory Compacted	
Volumetric Specimens	± 0.015
Retest of QC Core Sample	± 1.2% (% Compaction)
Comparison of QA Core Sample	± 2.0% (% Compaction)
QA Verification Core Sample	± 2.0% (% Compaction)
Nuclear Comparison of QC Test	± 2.0% (% Compaction)
QA Nuclear Verification Test	± 2.0% (% Compaction)

In the first sentence of the paragraph below the limits of precision table, insert “or verification test results” after “quality assurance test results”.

In the third sentence of the second paragraph below the limits of precision table, insert “or verification test results” after “quality assurance test results”.

ASPHALT CONCRETE PLANT MIX PAVEMENTS – DESCRIPTION

Page 6-20, **Article 610-1**

Insert the following after the last paragraph:

A high frequency of asphalt plant mix, density, or mix and density deficiencies occurring over an extended duration of time may result in future asphalt, which is represented by mix and/or density test results not in compliance with minimum specification requirements, being excluded from acceptance at an adjusted contract unit price in accordance with Article 105-3. This acceptance process may apply to all asphalt produced and /or placed and may continue until the Engineer determines a history of quality asphalt production and placement is reestablished.

MATERIALS

Page 6-21, **Article 610-2**

Delete reference of Anti-strip additive (chemical) to **Article 1020-2** and substitute **Article 1020-8**.

COMPOSITION OF MIXTURES (MIX DESIGN AND JOB MIX FORMULA)

Page 6-21, **Subarticle 610-3(A)**

At the end of the second paragraph, add the following sentence:

In addition, submit Superpave gyratory compactor printouts for all specimens compacted at N_{des} and N_{max} during the mix design process.

Insert the following paragraph after the second paragraph:

For the final surface layer of the specified mix type, use a mix design with an aggregate blend gradation above the maximum density line on the 2.36 mm and larger sieves.

Insert the following at the end of the third paragraph:

When the percent of binder contributed from RAS or a combination of RAS and RAP exceeds 20 percent of the total binder in the completed mix, the virgin binder PG grade shall be one grade below (both high and low temperature grade) the binder grade specified in Table 610-2 for the mix type.

Delete the fourth paragraph and substitute the following:

For Type S 12.5D mixes, the maximum percentage of reclaimed asphalt material is limited to 15% and shall be produced using virgin asphalt binder grade PG 76-22. For all other recycled mix types, when the percentage of RAP is 15 percent or less of the total mixture, the virgin binder PG grade shall be as specified in Table 610-2 for the specified mix type. When the percentage of RAP is greater than 15 but not more than 25 percent of the total mixture, the virgin binder PG grade shall be one grade below (both high and low temperature grade) the specified grade for the mix type. When the percentage of RAP is greater than 25 percent of the total mixture, the Engineer will establish and approve the asphalt binder grade.

Page 6-22, **Subarticle 610-3(A)**

Insert the following sentence at the end of the Item 4:

If natural sand is utilized in the proposed mix design, determine and report the Uncompacted Void Content of the natural sand in accordance with AASHTO T-304, Method A.

Page 6-23, **Subarticle 610-3(A)**

Under the quantities of mix components insert the following sentence:

When requested by the Engineer, submit to the Department's Materials and Tests Unit, in Raleigh, six (6) Superpave Gyrotory Compactor specimens compacted to a height of 75 mm and to a void content (VTM) of 4.0% +/- 0.5% for performance rut testing with the Asphalt Pavement Analyzer.

JOB MIX FORMULA

Page 6-24, **Subarticle 610-3(C)**

Delete Table 610-1 and associated notes. Substitute the following:

**TABLE 610-1
SUPERPAVE AGGREGATE GRADATION DESIGN CRITERIA**

Standard Sieves (mm)	Percent Passing Criteria (Control Points)											
	Mix Type (Nominal Maximum Aggregate Size)											
	4.75 mm (a)		9.5 mm (c)		12.5 mm (c)		19.0 mm		25.0 mm		37.5 mm	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
50.0											100.0	
37.5									100.0		90.0	100.0
25.0							100.0		90.0	100.0		90.0
19.0					100.0		90.0	100.0		90.0		
12.5			100.0		90.0	100.0		90.0				
9.5	100.0		90.0	100.0		90.0						
4.75	90.0	100.0		90.0								
2.36	65.0	90.0	32.0(b)	67.0(b)	28.0	58.0	23.0	49.0	19.0	45.0	15.0	41.0
1.18												
0.600												
0.300												
0.150												
0.075	4.0	8.0	4.0	8.0	4.0	8.0	3.0	8.0	3.0	7.0	3.0	6.0

- (a) For Type S 4.75A, a minimum of 50% of the aggregate components shall be manufactured material from the crushing of stone.
- (b) For Type SF 9.5A, the percent passing the 2.36mm sieve shall be a minimum of 60% and a maximum of 70%.
- (c) For the final surface layer of the specified mix type, use a mix design with an aggregate blend gradation above the maximum density line on the 2.36 mm and larger sieves.

Delete Table 610-2 and associated notes. Substitute the following:

**TABLE 610-2
SUPERPAVE MIX DESIGN CRITERIA**

Mix	Design	Binder	Compaction Levels			Volumetric Properties (c)			
	ESALs	PG	No. Gyration @			VMA	VTM	VFA	%Gmm
Type	millions	Grade				% Min.	%	Min. - Max.	@ N _{ini}
(f)	(a)	(b)	N _{ini}	N _{des}	N _{max}				
S-4.75A	<0.3	64 -22	6	50	75	20.0	7.0-15.0		
SF-9.5A	<0.3	64 -22	6	50	75	16.0	3.0 - 5.0	70 - 80	≤ 91.5
S-9.5B	0.3 - 3	64 -22	7	75	115	15.0	3.0 - 5.0	65 - 80	≤ 90.5
S-9.5C	3 - 30	70 -22	8	100	160	15.0	3.0 - 5.0	65 - 76	≤ 90.0
S-12.5C	3 - 30	70 -22	8	100	160	14.0	3.0 - 5.0	65 - 75	≤ 90.0
S-12.5D	> 30	76 -22	9	125	205	14.0	3.0 - 5.0	65 - 75	≤ 90.0
I-19.0B	< 3	64 -22	7	75	115	13.0	3.0 - 5.0	65 - 78	≤ 90.5
I-19.0C	3 - 30	64 -22	8	100	160	13.0	3.0 - 5.0	65 - 75	≤ 90.0
I-19.0D	> 30	70 -22	9	125	205	13.0	3.0 - 5.0	65 - 75	≤ 90.0
B-25.0B	< 3	64 -22	7	75	115	12.0	3.0 - 5.0	65 - 78	≤ 90.5
B-25.0C	> 3	64 -22	8	100	160	12.0	3.0 - 5.0	65 - 75	≤ 90.0
B-37.5C	> 3	64 -22	8	100	160	11.0	3.0 - 5.0	63 - 75	≤ 90.0
	<i>Design Parameter</i>				<i>Design Criteria</i>				
All	1. %G _{mm} @ N _{max}				≤ 98.0% (d)				
Mix	2. Dust to Binder Ratio (P _{0.075} / P _{be})				0.6 - 1.4				
Types	3. Retained Tensile Strength (TSR) (AASHTO T 283 Modified)				85 % Min. (e)				

- Notes:**
- (a) Based on 20 year design traffic.
 - (b) When Recycled Mixes are used, select the binder grade to be added in accordance with Subarticle 610-3(A).
 - (c) Volumetric Properties based on specimens compacted to N_{des} as modified by the Department.
 - (d) Based on specimens compacted to N_{max} at selected optimum asphalt content.
 - (e) AASHTO T 283 Modified (No Freeze-Thaw cycle required). TSR for Type S 4.75A, Type B 25.0 and Type B 37.5 mixes is 80% minimum.
 - (f) Mix Design Criteria for Type S 4.75A may be modified subject to the approval of the Engineer

WEATHER, TEMPERATURE, AND SEASONAL LIMITATIONS FOR PRODUCING AND PLACING ASPHALT MIXTURES

Page 6-26, **Article 610-4, Table 610-3**

Delete the title of **Table 610-3** and substitute the following title:

ASPHALT PLACEMENT- MINIMUM TEMPERATURE REQUIREMENTS

In the first column, third row; delete reference to the ACSC Types S 9.5A and S 12.5B mix.

Add the following minimum placing temperatures for mix types S 4.75A and SF 9.5A.

Asphalt Concrete Mix Type	Minimum Air Temperature	Minimum Road Surface Temperature
ACSC, Type S 4.75A, SF 9.5A	40°F (5°C)	50°F (10°C)

SPREADING AND FINISHING

Page 6-32, **Article 610-8**

Insert the following after the second sentence within the sixth paragraph.

Take necessary precautions during production, loading of trucks, transportation, truck exchanges with paver, folding of the paver hopper wings, and conveying material in front of the screed to prevent segregation of the asphalt mixtures.

Page 6-32, **Article 610-8**

Delete the last paragraph beginning on this page and continuing on the next page and substitute the following:

Use pavers equipped with an electronic screed control that will automatically control the longitudinal profile and cross slope of the pavement. Control the longitudinal profile through the use of either a mobile grade reference(s), including mechanical, sonic and laser grade sensing and averaging devices, an erected string line(s) when specified, joint matching shoe(s), slope control devices or the approved methods or combination of methods. Unless otherwise specified, use a mobile grade reference system capable of averaging the existing grade or pavement over a minimum 30 foot (9.1 meter) distance or by non-contacting laser or sonar type ski with at least four referencing stations mounted on the paver at a minimum length of 24 feet. Establish the position of the reference system such that the average profile grade is established at the approximate midpoint of the system. The transverse cross-slope shall be controlled as directed by the Engineer.

Page 6-33, **Article 610-8**

Delete the second full paragraph on this page and substitute the following:

Use the 30 foot (9.1 meter) 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 courses, including resurfacing and asphalt in-lays, unless other specified or approved. A joint matching device short (6 inch [152.4 mm] shoes) may be used only when approved.

At the end of the third full paragraph, add the following sentence:

Waiver of the use of automatic screed controls does not relieve the Contractor of achieving plan grades and cross-slopes.

Insert the following as the last paragraph:

Repair any damage caused by hauling equipment across structures at no additional cost to the Department.

DENSITY REQUIREMENTS

Page 6-34, **Article 610-10**,

Delete **Table 610-4** and substitute the following table and associated notes:

**Table 610-4
MINIMUM DENSITY REQUIREMENTS**

MIX TYPE	MINIMUM % of G _{mm}
SUPERPAVE MIXES	(Maximum Specific Gravity)
S 4.75A	85.0 ^(a,b)
SF 9.5A	90.0
S 9.5X, S 12.5X, I 19.0X, B 25.0X, B 37.5X	92.0

- (a) All S 4.75A pavement will be accepted for density in accordance with Article 105-3
- (b) Compaction to the above specified density will be required when the S 4.75 A mix is applied at a rate of 100 lbs/sy (55 kg/m²)

Delete the second paragraph and substitute the following:

Compact base and intermediate mix types (surface mixes not included) utilized for pavement widening of less than 4.0 feet (1.2 meters) and all mix types used in tapers, irregular areas and intersections (excluding full width travel lanes of uniform thickness), using equipment and procedures appropriate for the pavement area width and/or shape. Compaction with equipment other than conventional steel drum rollers may be necessary to achieve adequate compaction. Occasional density sampling and testing to evaluate the compaction process may be required. Densities lower than that specified in Table 610-4 will be accepted, in accordance with Article 105-3, for the specific mix types and areas listed directly above.

SURFACE REQUIREMENTS AND ACCEPTANCE

Delete the first paragraph and substitute the following:

Construct pavements using quality paving practices as detailed herein. Construct the pavement surface smooth and true to the plan grade and cross slope. Immediately correct any defective areas with satisfactory material compacted to conform with the surrounding area. Pavement imperfections resulting from unsatisfactory workmanship such as segregation, improper longitudinal joint placement or alignment, non-uniform edge alignment and excessive pavement repairs will be considered unsatisfactory and if allowed to remain in place will be accepted in accordance with Article 105-3.

When directed due to unsatisfactory laydown or workmanship, operate under the limited production procedures. Limited production for unsatisfactory laydown is defined as being restricted to the production, placement, compaction, and final surface testing (if applicable) of a sufficient quantity of mix necessary to construct only 2500 feet (750 meter) of pavement at the laydown width.

Remain on limited production until such time as satisfactory laydown results are obtained or until three consecutive 2500 foot (750 meter) sections have been attempted without achieving satisfactory laydown results. If the Contractor fails to achieve satisfactory laydown results after three consecutive 2500 foot (750 meter) 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.

Mix placed under the limited production procedures for unsatisfactory laydown or workmanship will be evaluated for acceptance in accordance with Article 105-3.

DENSITY ACCEPTANCE

Page 6-36, Article 610-13

Delete the second paragraph and substitute the following:

The pavement will be accepted for density on a lot by lot basis. A lot will consist of one day's production of a given job mix formula on a contract. As an exception, separate lots will be established when the one of the following occurs:

- (1) Portions of pavement are placed in both "New" and "Other" construction categories as defined below. A lot will be established for the portion of the pavement in the "New" construction category and a separate lot for the portion of pavement in the "Other" construction category.
- (2) Pavement is placed on multiple resurfacing maps, unless otherwise approved prior to paving. A lot will be established for each individual resurfacing map or portion thereof.
- (3) Pavement is placed simultaneously by multiple paving crews. A lot will be established for the pavement placed by each paving crew.
- (4) Pavement is placed in different layers. A lot will be established for each layer.
- (5) Control strips are placed during limited production.

The Engineer will determine the final category and quantity of each lot for acceptance purposes.

Page 6-36, Article 610-13

Delete the first sentence in the third paragraph and insert the following:

The "New" construction category will be defined as pavements of uniform thickness, exclusive of irregular areas, meeting all three of the following criteria:

Delete the sixth paragraph and substitute the following:

A failing lot for density acceptance purposes is defined as a lot for which the average of all test sections, and portions thereof, fails to meet the minimum specification requirement. If additional density sampling and testing, beyond the minimum requirement, is performed and additional test sections are thereby created, then all test results shall be included in the lot average. In addition, any lot or portion of a lot that is obviously unacceptable will be rejected for use in the work.

Page 6-36, **Article 610-13**

Delete the last paragraph and substitute the following:

Any density lot not meeting minimum density requirements detailed in Table 610-4 will be evaluated for acceptance by the Engineer. If the lot is determined to be reasonably acceptable, the mix will be paid at an adjusted contract price in accordance with Article 105-3. If the lot is determined not to be acceptable, the mix will be removed and replaced with mix meeting and compacted to the requirement of these specifications.

BASIS OF PAYMENT, ASPHALT PAVEMENTS

Page 6-37, **Article 610-16**

Add the following to the second paragraph:

The quantity of hot mix asphalt pavement, measured as provided in Article 610-15, will be paid for at the contract unit prices per ton (metric ton) for “Asphalt Concrete Surface Course, Type S 4.75A, and SF 9.5A”.

Add the following to the payment item description:

Asphalt Concrete Surface Course, Type S 4.75A	Ton (Metric Ton)
Asphalt Concrete Surface Course, Type SF 9.5A	Ton (Metric Ton)

Delete reference to the Asphalt Concrete Surface Course, Types S 9.5A and S 12.5B in both the second paragraph and in the payment description.

ASPHALT BINDER FOR PLANT MIX - METHOD OF MEASUREMENT

Page 6-39, **Article 620-4**

Delete the first sentence of the second paragraph and substitute the following:

Where recycled plant mix is being produced, the grade of asphalt binder to be paid for will be the grade for the specified mix type as required in Table 610-2 unless otherwise approved.

OPEN-GRADED ASPHALT FRICTION COURSE CONSTRUCTION REQUIREMENTS

Page 6-43, **Article 650-5**

Add the following paragraph after the first paragraph:

Do not place open-graded asphalt friction course between October 31 and April 1 of the next year, unless otherwise approved. Place friction course, Type FC-1 mixes, only when the road surface temperature is 50°F (10°C) or higher and the air temperature is 50°F (10°C) or higher.

The minimum air temperature for Type FC-1 Modified and FC-2 Modified mixes will be 60°F (15°C).

AGGREGATES FOR ASPHALT PLANT MIXES

Page 10-34, **Subarticle 1012-1(B)4**

Delete and substitute the following:

(4) Flat and Elongated Pieces:

Use coarse aggregate meeting the requirements of Table 1012-1 for flat and elongated pieces when tested in accordance with ASTM D 4791 (Section 8.4) on the No. 4 (4.75 mm) sieve and larger with a 5:1 aspect ratio (maximum to minimum) for all pavement types, except there is no requirement for Types S 4.75A, SF 9.5A, and S 9.5B.

Page 10-35, **Table 1012-1**

Delete **Table 1012-1** and substitute the following:

Table 1012-1
AGGREGATE CONSENSUS PROPERTIES^(a)

Mix Type	Course	Fine	Sand	Flat &
	Aggregate	Aggregate	Equivalent	Elongated
	Angularity ^(b)	Angularity		5 : 1 Ratio
		% Minimum	% Minimum	% Maximum
	ASTM D 5821	AASHTO T 304 Method A	AASHTO T 176	ASTM D 4791 Section 8.4
S 4.75 A		40	40	
SF 9.5 A S 9.5 B I 19.0 B B 25.0 B	75 / -	40	40	10 ^(c)
S 9.5 C S 12.5 C I 19.0 C B 25.0 C B 37.5 C	95 / 90	45	45	10
S 12.5 D I 19.0 D	100 / 100	45	50	10
OGAFC	100 / 100	N/A	N/A	10

(a) Requirements apply to the course aggregate blend and/or fine aggregate blend

(b) 95/90 denotes that 95% of the course aggregate (+No.4 or + 4.75mm sieve) has one fractured face and 90% has two or more fractured faces.

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

Page 10-36, **Subarticle 1012-1(C)1**

Insert the following after the fourth paragraph:

When natural sand is utilized in “C” or “D” level asphalt mixes, do not exceed the maximum natural sand percentage in the mix design and/or production aggregate blend detailed in Table 1012-1A.

Table 1012-1A

Uncompacted Void Content of Fine Aggregate AASHTO T 304 Method A	Maximum Percent Natural Sand Included in Mix Design and/or Production*
Less than 42.0	10
Equal to 42.0 to 44.9	15
Equal to 45.0 and greater	20

*Maximum percent natural sand may be exceeded with approval from Pavement Construction Engineer upon satisfactory evaluation of pavement performance testing

FINE AGGREGATE ANGULARITY

Page 10-36, **Subarticle 1012-1(C)6**

Delete reference to AASHTO TP 33 Method A and substitute AASHTO T 304, Method A.

Page 10-37, **Subarticle 1012-1(H)**

Delete this Subarticle. It is a duplicate of Subarticle 1012-1(F) located on Page 10-36.

ASPHALT BINDER

Page 10-46, **Article 1020-2**

Delete the first paragraph and substitute the following:

Use Performance Graded Asphalt Binder meeting the requirements of AASHTO M 320. See Article 610-3 for the specified grades. Submit a Quality Control Plan for asphalt binder production in conformance with the requirements of AASHTO R 26 to the Materials and Tests Unit.

SP6R01

ASPHALT BINDER CONTENT OF ASPHALT PLANT MIXES:

11-21-00R

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 Standard Specifications or Project Special Provisions.

SP6R15

ASPHALT PLANT MIXTURES:

7-1-95_c

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.

SP6R20

PRICE ADJUSTMENT - ASPHALT BINDER FOR PLANT MIX:

11-21-00

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

The base price index for asphalt binder for plant mix is \$200.00 per ton (metric ton).

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

SP6R25

CONSTRUCTION SURVEYING:

01-20-04

Add the following after the first sentence of Section 801-1 of the January 2002 Standard Specifications:

Provide a stakeout of areas where an environmental permit is required prior to performing any construction in or adjacent to these areas. Stake out limits of the permitted work areas according to the approved permit drawings. Provide clear delineation by use of pink or other highly visible flagging. Insure construction limits do not exceed approved permitted work areas. Immediately notify the Resident Engineer of any variations of the stakeout limits when compared to the approved permit drawings.

Replace the fifth paragraph of Section 801-4 of the January 2002 Standard Specifications with the following:

Partial payments for the item of "Construction Surveying" will be made on each particular payment estimate based upon the percentage complete of the item of "Construction Surveying" as determined by the Engineer. The Contractor is required to submit a certified statement each month indicating the percentage of "Construction Surveying" work completed. The Resident Engineer will determine if the amount indicated is reasonably correct and the Resident Engineer will pay accordingly on the next partial pay estimate.

SP8R02

DISPOSAL OF WASTE AND DEBRIS:

2-19-02

Revise the 2002 Standard Specifications as follows:

Page 8-9, Subarticle 802-2(7. Buffer Zones:)

At the end of the last sentence in this subarticle, add the words "unless superseded by an environmental permit."

SP8R03

AGGREGATE PRODUCTION:

11-20-01

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

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

SP10R05

CONCRETE BRICK AND BLOCK PRODUCTION:

11-20-01

Provide concrete brick and block from a producer who utilizes the new 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 utilize the new program. Participation in the new program does not relieve the producer of the responsibility of complying with all requirements of the Standard Specifications. Copies of this procedure are available upon request from the Materials and Test Unit.

SP10R10

FINE AGGREGATE:

11-19-02

Revise the 2002 Standard Specifications as follows:

Page 10-17, Table 1005-2

Make the following change to the table:

For Standard Size 2MS the following gradation change applies.

The minimum percent shown for material passing the No. 8 (2.36mm) sieve has been changed from 84 to **80**.

SP10R15

BORROW MATERIAL

02-17-04

Revise the 2002 Standard Specifications as follows:

Page 10-44

Section 1018-2 II (b) Delete the last sentence in its entirety.

SP10R17

COATED, PAVED AND LINED CORRUGATED STEEL CULVERT PIPE: 10-21-03

Revise the 2002 Standard Specifications as follows:

Section 1032-4(E) Optional Coatings for Bituminous Coated Pipe and Pipe Arch:

Page 10-58. Delete Numbers 2. and 3., and substitute the following;

2. Type B: In lieu of Type B, Half Bituminous Coated and Partially Paved galvanized pipe, aluminized pipe or polymeric coated pipe without bituminous coating and paving may be used.
3. Type C: In lieu of Type C, Fully Bituminous Coated and Partially Paved galvanized pipe, aluminized pipe or polymeric coated pipe without a bituminous coating and paving may be used.

SP10R25

TRAFFIC CONTROL

01-18-05

Revise the *2002 Standard Specifications* as follows:

Article 1089-1 WORK ZONE SIGNS is deleted. Substitute the following:

(A) General:

Rigid sign retroreflective sheeting requirements for Types VII, VIII and IX (prismatic) fluorescent are described in Tables 1089-A, 1089-B and 1089-C. Cover the entire sign face of the sign substrate with NCDOT approved Type VII, VIII or IX (prismatic) fluorescent orange reflective sheeting. Apply the reflective sheeting in a workmanlike manner so that there are no bubbles or wrinkles in the material.

Roll-up sign retroreflective requirements are described in Table 1089-D.

1. Work Zones Signs (Stationary)

Use Type VII, VIII or IX (prismatic) fluorescent orange retroreflective sheeting that meets the following reflective requirements in Tables 1089-A, 1089-B or 1089-C respectively. Use approved composite or aluminum for sign backing. Signs and sign supports must meet or exceed NCHRP 350 requirements for Breakaway Devices.

Table 1089-A
Minimum Coefficient of Retroreflection R_A for
TYPE VII Fluorescent Orange Sheeting
(Candelas per lux per square meter)

Observation Angle	Entrance Angle	
	-4°	30°
0.1°	300	170
0.2°	230	130
0.5°	72	41

Table 1089-B
Minimum Coefficient of Retroreflection R_A for
TYPE VIII Fluorescent Orange Sheeting
(Candelas per lux per square meter)

Observation Angle	Entrance Angle	
	-4°	30°
0.1°	300	135
0.2°	210	95
0.5°	75	35

Table 1089-C
Minimum Coefficient of Retroreflection R_A for
TYPE IX Fluorescent Orange Sheeting
(Candelas per lux per square meter)

Observation Angle	Entrance Angle	
	-4°	30°
0.1°	200	110
0.2°	115	65
0.5°	72	41
1.0°	24	14

2. Work Zones Signs (Barricade Mounted)

Use approved composite or roll-up signs for barricade mounted sign substrates. Approved composite barricade mounted warning signs (black on orange) must be Type VII, VIII or IX sheeting which meet the retroreflective requirements of Table 1089-A, 1089-B or 1089-C. Roll-up mounted barricade warning signs (black on orange) must meet the retroreflective requirements in Table 1089-D. Sign and barricade assembly

must meet or exceed the requirements of NCHRP 350 for Work Zone Category II Devices.

3. Work Zones Signs (Portable)

Use approved composite or roll-up sign substrates on portable sign stands.

Composite - Use Type VII, VIII or IX (prismatic) fluorescent orange retroreflective sheeting that meets the following reflective requirements in Tables 1089-A, 1089-B or 1089-C. Signs and sign supports must meet or exceed NCHRP 350 requirements for Breakaway Devices.

Roll-up Signs - Use fluorescent orange retroreflective roll-up signs that meet the following reflective requirements:

Table 1089-D Minimum Coefficient of Retroreflection R_A for Fluorescent Orange Roll-Up Signs (Candelas per lux per square meter)		
Observation Angle	Entrance Angle	
	-4°	30°
0.1°	300	120
0.2°	200	80
0.5°	90	34

Use roll up signs that have a minimum 3/16" x 1 1/4" horizontal rib and 38" x 1 1/4" vertical rib and has been crash test to meet NCHRP 350 requirements and Traffic Control qualified by the Work Zone Traffic Control Unit.

Add the following after 1089-1(C):

(D) Warranty

Warranty requirements for rigid sign retroreflective sheeting Types VII, VIII and IX are described in Section 1093-9 (F) and Tables 1089 A, B and C.

Roll-up fluorescent orange retroreflective signs will maintain 80% of its retroreflectivity (Table 1089-D) for years 1 – 2 and 50% for year 3.

Rigid and Rollup Fluorescent orange signs will maintain a Fluorescence Luminance Factor (Y_F)* of 13% for three (3) years.

*Fluorescence Testing Method is described in ASTM E2301 Test Methods for Fluorescent Retro reflective Sheeting.

Rigid and Roll up fluorescent orange signs shall maintain a total Luminance Factor (Y) of 25 for three (3) years and conform to the requirements of Table 1089-E when measured in accordance with ASTM D4956.

Table 1089-E
Fluorescent Orange colorimetric requirements

Color	1		2		3		4	
	x	y	x	y	x	y	x	y
Fluorescent Orange	0.583	0.416	0.535	0.400	0.595	0.351	0.645	0.355

BARRICADES

Article 1089-3(A) General, delete both paragraphs and substitute the following:

Type III Barricades shall be constructed of perforated square steel tubing and/or angle iron. Provide Type III barricades that use a cross member or stabilization bar and meet the requirements of NCHRP 350 for Work Zone Category II Devices with composite and roll-up signs attached.

Use approved composite or plastic barricade rails that have a smooth face and have alternating orange and white retroreflective stripes that slope at an angle of 45 degrees.

Article 1089-3(C) Reflective Sheeting, delete the first paragraph only and substitute the following:

Use Type VII, VIII or IX (prismatic) retroreflective fluorescent orange sheeting on both sides of the barricade rails. The rail sheeting retroreflectivity values shall meet the retroreflectivity requirements in Table 1089-A, 1089-B or 1089-C and shall be listed on the Department’s approved product list or accepted as traffic qualified by the Traffic Control Unit.

SP10R30

DRUMS:

07-16-02

Revise the 2002 Standard Specifications as follows:

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

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

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

SP11R05

WORK ZONE SIGNS

01-18-05

Revise the *Standard Specifications* as follows:

DESCRIPTION

Page 11-5, **Article 1110-1 Description**

Replace the second paragraph with the following:

Furnish, install, maintain and relocate portable work zone signs and portable work zone sign stands in accordance with the plans and specifications. When portable work zone signs and portable work zone sign stands are not in use for periods longer than 30 minutes, collapse sign stand and reinstall once work begins.

Replace the last sentence in the third paragraph with the following:

Use work zone signs (portable) only with portable work zone sign stands specifically designed for one another. Work Zone Signs (portable) may be roll up or approved composite.

MATERIALS

Page 11-5, **Article 1110-2 Part (A) General:**

Add the following:

Barricade Mounted Signs.....Article 1089-3

MATERIAL QUALIFICATIONS

Page 11-5, **Article 1110-2 Part (B) Material Qualifications.**

Delete the first sentence in the first paragraph and replace with the following:

Provide portable work zone sign stands, portable signs and sign sheeting which are listed on the North Carolina Department of Transportation’s approved product list or accepted as traffic qualified by the Traffic Control Unit.

Delete “Traffic Control Section” in the second sentence of the first paragraph and insert “Traffic Control Unit”.

CONSTRUCTION METHODS

Page 11-6, Article 1110-3 CONSTRUCTION METHODS.

Replace **Article 1110-3 (B) Work Zone Signs (Barricade Mounted)** with the following:

Mount approved composite or roll-up signs to barricade rails so that the signs do not cover more than 50 percent of the top two rails or 33 percent of the total area of the three rails. Signs are to be mounted a minimum of 1' from the ground to the bottom of the sign.

Replace **Article 1110-3 (C, 2) Work Zone Signs (Portable)** with the following:

Install portable work zone signs to carry roll-up or approved composite at a minimum height of 1' from the bottom of the sign to the ground on two lane-two way roadways.

Install portable work zone signs to carry roll-up or approved composite at a minimum height of 5' from the bottom of the sign to the ground on multi-lane roadways.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Method of Measurement and Basis of Payment will be in accordance with Section 1110-5 and 1110-6 of the *Standard Specifications*.

SP11R15

BARRICADES

01-18-05

Revise the *2002 Standard Specifications* as follows:

Page 11- 12, **Article 1145-2 Materials**, delete the contents and substitute the following:

(A) General

Refer to Division 10:

Barricades..... Article 1089-3

(B) Material Qualifications

Provide Type III barricades and barricade rails that are listed on the North Carolina Department of Transportation's approved product list or accepted as traffic qualified by the Traffic Control Unit. For more information on the Traffic Qualification process, contact the Traffic Control Unit at Century Center Building B, 1020 Birch Ridge Drive, Raleigh, NC 27610; (919) 250-4159, or see the approved product list on the NCDOT web site at: www.doh.dot.state.nc.us/construction/tc/Apv_Prod/apv_prod.htm

(C) Historical Performance:

Historical performance of Type III barricades and barricade rails will be used in determining future use of the material by the NCDOT, even if the Type III Barricade is traffic-qualified. Poor past or poor current performance of Type III Barricades at any site, whether or not related to a specific contract may be grounds for non-acceptance of a product on any project under contract.

MEASUREMENT AND PAYMENT

Method of Measurement and Basis of Payment will be in accordance with Section 1145-5 and 1145-6 of the *Standard Specifications*.

SP11R20

PAVEMENT MARKING GENERAL REQUIREMENTS:

07-16-02

Revise the 2002 Standard Specifications as follows:

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

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

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

SP12R01