

**PROJECT SPECIAL PROVISIONS**

Roadway

7-1-95

SP1R01

**CRITICAL PATH METHOD TRAFFIC CONTROL SCHEDULE:**

11-18-03

**DESCRIPTION:**

The work of this provision consists of the Contractor planning, scheduling, and maintaining traffic on this project using a Critical Path Method Project Schedule (CPM). Use the CPM for coordinating and monitoring the traffic control measures specified in this contract including all activities of subcontractors, vendors, suppliers, utilities, railroads, NCDOT, and all other parties associated with the traffic control measures. The work covered by this section includes but is not limited to submitting an initial CPM, and providing monthly updates to the CPM. Make sure that all activities relating to the maintenance of traffic, are included in the CPM.

**MATERIALS:**

Use software for the CPM that generates files that are compatible with Primavera Project Planner.

**REQUIREMENTS:****(A) Float**

Float is defined as the amount of time between when an activity “can start or finish” (early start or early finish) and when an activity “must start or finish” (late start or late finish). Float is a shared commodity for the use of NCDOT and/or the Contractor and is not for the exclusive use or benefit of either party. Both parties have the full use of the float until it is depleted.

**(B) Contractor’s Scheduling Representative**

Designate an individual from the Contractor’s organization, prior to submission of the Initial Critical Path Method Schedule, who will be the Contractor’s authorized representative responsible for the development, updating, and revising of the Contractor’s CPM schedule. Have the scheduling representative represent the Contractor in all matters regarding the schedule and attend all schedule related meetings. The scheduling representative must be skilled in the application of computer network schedules on construction projects of the magnitude and complexity of this project.

**(C) Initial Critical Path Method Schedule (ICPM)**

Within thirty (30) calendar days of receiving the Notice of Award, submit an ICPM for approval. Within twenty-one (21) calendar days of receipt of the Contractor’s ICPM, the Engineer will complete the review of the ICPM. If required, a Joint Review Conference will be convened at

which the Engineer and the Contractor will make any necessary corrections or adjustments to the ICPM. If a revision to the ICPM is necessary due to the Engineer's review or a Joint Review Conference, submit a revised ICPM within seven (7) calendar days after the date of the Joint Review Conference. The Engineer will respond to the submitted revised ICPM with seven (7) calendar days of receipt.

Once the ICPM has been accepted, it becomes the CPM of record. Acceptance of the ICPM in no way attests to the validity of the assumptions, logic constraints, dependency relationships, resource allocations, manpower and equipment, or any other aspect of the ICPM. The Contractor is and will remain solely responsible for the planning and execution of work in order to meet project milestones or contract completion dates.

Include the following in the ICPM submittal:

- (1) A time scale diagram containing the following:
  - (a) an acceptable scale and format
  - (b) all activities clearly labeled
  - (c) all activity identification clearly shown for each activity
  - (d) all relationships between activities shown
  
- (2) Tabular reports containing the following:
  - (a) Precedence diagrams with activities listed and lead and lag times shown
  - (b) Activity duration shown. All activities must have a duration of not more than 20 days unless otherwise approved. Divide activities with longer durations into subgroups of activities not exceeding 20 working days in duration. Indicate logical start and end points (e.g. stationing, staging, etc.) for each subgroup.
  - (c) Activity descriptions shown
  - (d) Early start and finish dates shown
  - (e) Late start and finish dates shown
  - (f) Status (critical or not) shown
  - (g) Total float shown
  - (h) Responsibility (i.e. Contractor, specific subcontractor, specific supplier, NCDOT, etc.) shown
  
- (3) Written narrative complying with the requirements listed below
  
- (4) Data disk containing all of the information in the ICPM. The disk must be compatible with Primavera Project Planner software.

**(D) Written Narrative**

Provide a written narrative that explains the sequence of work, the critical path, interim completion dates, project phasing, non-work days or periods, and maintenance of traffic. In addition, explain in the written narrative how the Contractor has provided special non-work days or periods, and weather in the ICPM.

Provide the following information for each activity listed in the ICPM:

- (1) Estimated start and completion date
- (2) Description of the location on the project where activity occurs
- (3) Description of work days per week, holidays, number of shifts per day, and number of hours per shift
- (4) Utilize the written narrative to explain the following:
  - (a) relationship between activities not obviously identified
  - (b) manpower usage and limitations
  - (c) activity codes, abbreviations, and activity identification system
  - (d) all calendars used in the CPM
  - (e) constraints (date or time constraints)
  - (f) all abbreviations used in the ICPM
  - (g) scheduling of weather and/or temperature sensitive activities
  - (h) describe critical completion dates for maintaining the construction schedule

**(E) Schedule Updates**

Submit a monthly update of the CPM or record. The data date for the CPM update will be seven days prior to the cut-off date for the monthly pay estimate. Submit the update within seven calendar days of the data date. Failure to submit the CPM update may result in the Engineer withholding pay estimates. Upon acceptance, the monthly update will become the CPM of record for the time period between its data date and the next approved update or revision.

Include in the monthly updates activity data as specified in (1) through (4) under (C) Initial Critical Path Method Schedule using actual activity start dates. Include in the written narration a description of the traffic control work performed during the update period, the current critical path, the amount of float on the critical path, any delays or disruptions experienced during the update period, any change in manpower or equipment, and any potential delays or disruptions.

**(F) Revisions to the Schedule of Record**

A revision to the schedule of record is defined as one or more of the following:

- (1) a change in the original duration of an activity
- (2) a change in the logic of the schedule
- (3) a change to resources
- (4) a change to any Actual date, previously established
- (5) the deletion or addition of an activity
- (6) a change to, addition of, or deletion of a constraint (date or time constraint)
- (7) a change to, addition of, or deletion of an activity code
- (8) a change to an activity description
- (9) any change other than updating an activity

Whenever a revision is proposed for any of the above reasons, contact the Engineer and verbally discuss the revision. If the revision is considered minor, the Engineer may allow the revision to be included in the next update of the CPM. If the revision is not considered minor, submit for approval the proposed revision with the same requirements as the ICPM including the following:

- an updated CPM including the proposed revision
- a written narrative that describes the reason for the revision, the resulting critical path, and all particulars of the revision including but not limited to:
  - (1) changes in the method or manner of the work
  - (2) changes in the specifications
  - (3) changes in resources
  - (4) extra work
  - (5) addition or deletion of work
  - (6) increased or decreased quantities
  - (7) defective work
  - (8) acceleration of work

Submitted revisions will be responded to within fourteen (14) calendar day after receipt. If the Contractor is required to resubmit the proposed revision, do so within seven (7) calendar days after receipt of the Engineer’s comments. The Engineer reserves the right to reject any proposed revision, which adversely affects the NCDOT, utilities, or other interested parties.

**(G) Extensions of Contract Time**

No extension of the completion date or intermediate completion date will be allowed except as provided by Article 108-10 of the *Standard Specifications*. Justifications shall be submitted for request for extension of the completion date as required by Article 108-10. Justifications shall include the schedule prior to the events upon which the requested extension is based and the schedule reflecting the events upon which the extension is based. Include with the request a written narrative describing the events that would require an extension of contract time.

Any extension to the Contract completion date will be based on the number of calendar days the contract completion date is impacted as determined by the Engineer’s analysis.

**COMPENSATION:**

The work covered by this section will be paid for at the contract lump sum price for “Critical Path Method Schedule”. The lump sum price will be paid out as follows:

- 50% of the lump sum price will be paid upon the acceptance of the ICPM
- The balance will be paid as a monthly pro-rated sum based upon the specified Contract duration. This monthly payment will be made on the next progress payment after the Engineer’s acceptance of the monthly CPM update.

Payment will be made under:

Critical Path Method Schedule .....Lump Sum

**DESIGN AND CONSTRUCTION FOR TRAFFIC CONTROL AND EROSION CONTROL:****General:**

The Contractor shall design the Traffic Control and Erosion Control plans for this project.

**Review and Approval of Design Submittals:**

Submittal requirements for the Traffic Control and Erosion Control plans are in the scopes below.

Approval of the 90% Erosion Control plan will be required before construction may begin.

Also, Approval of the Staging Concept for Traffic Control will be required before more detailed Traffic Control Phase Design can begin. After the Staging Concept and the Phase I submittal are approved, construction may begin.

All Submittals will be reviewed within 10 working days.

A licensed North Carolina Engineer will be required to seal all final plans and special provisions for the Traffic Control and Erosion Control plans.

**Design and Construction Work Performed by the Contractor**

The Contractor will be responsible for following plans for all work performed under this contract.

The Contractor will certify all plans, specifications, estimates and engineering data furnished by him. The Contractor shall use an Engineering firm on the Department approved listing of Registered Qualified Engineering Firms to perform the design work for Traffic Control and Erosion Control.

All work by the contractor is to be done in a manner satisfactory to the State in accordance with the established customs, practices and procedures of the North Carolina Department of Transportation and in conformity with the standards adopted by the American Association of State Highway Transportation Officials, and approved by the Secretary of Transportation as provided in Title 23, US Code, Section 109 (b). The decision of the State is to control in all questions regarding locations, type of design, dimension of design, and similar questions.

**Ethics Policy**

Employees employed by the contractor or employees employed by any subconsultant for the Contractor to provide services for this project will comply with the Department's ethics policy. Failure to comply with the ethics policy will result in the employee's removal from the project and may result in the removal of the Company from the Department's listing of Registered Qualified Engineering Firms.

**TRAFFIC CONTROL SCOPE:****Traffic Control Plans**

Design and prepare the Traffic Control Plan for this project. Development of the Traffic Control Plan should proceed as follows:

Submit a Staging Concept, a description of the sequenced phases and steps to be followed in implementing the construction plans, of the Traffic Control Plan to the Resident Engineer and State Alternate Delivery Systems Engineer for review and acceptance. The Staging Concept for the entire project must be accepted before proceeding further with the development of the Traffic Control Plan. A complete Traffic Control Plan will not be required to begin phased construction activities on this project. If a barrier system will be used, the Staging Concept will need to identify what barrier system will be proposed for approval by the State Alternate Delivery Systems Engineer.

Construction may begin on a Phase once the Traffic Control Plan for that Phase has been accepted by the State Alternate Delivery Systems Engineer and sealed by the Contractor's Designer.

The Traffic Control Plan will identify all maintenance of traffic needs, including lane closures, road closures, traffic control devices, temporary lane markings, construction signing, phasing, project notes and other possible needs. The plan will identify lane widths, transition taper widths and any geometry necessary to define placement of devices and temporary roadway alignments. The Traffic Control Plan will show the pavement design to be used for pavement markings/markers for temporary patterns on existing/proposed/temporary roadways. NCDOT's *Roadway Standard Drawings* – Sections 1100 and 1200 are for traffic control and will need to be incorporated into the plans for most work activities. Detailed phasing plans will be required where traffic control activities and device placement cannot be entirely covered by these standard drawings. Sealed and accepted plans showing all pavement markings which are not covered in the NCDOT's *Roadway Standard Drawings* are required prior to placement of any temporary markings and temporary markers. Ensure the development of the Traffic Control Plan is in compliance with the NCDOT 2002 *Roadway Standard Drawings*, NCDOT 2002 *Standard Specifications for Roads and Structures*, and the 2003 *Manual on Uniform Traffic Control Devices (M.U.T.C.D.)*.

Develop Traffic Control Plan details at a scale of 1"=50' (metric 1:500) and overviews at a scale of 1"=100' (metric 1:5000) unless otherwise agreed upon. Use the *Requirements for the preparation of Traffic Control & Pavement Markings plans* as a guideline to developing plans. The Traffic Control Website provides key information necessary in preparing the Traffic Control Plans and is continuously updated. Traffic Control Website is located at the address shown below.

<http://www.doh.dot.state.nc.us/preconstruct/traffic/congestion/tc/>

Coordinate with the Engineer to promote public awareness for this project. Hold a coordination meeting with NCDOT one month prior to the beginning of construction. NCDOT will be responsible for the initial public information effort through its IMPACT Team. Once the project is announced formally to the public, it will be the Design-Build team's responsibility to hold public meetings and press conferences, make media announcements, distributing flyers, and posting advertisements. "SMARTZONE" will also be used to promote public awareness of work zone congestion and delay.

Inform the following groups at least 3 weeks in advance of any construction activities that will have significant impact on the public:

- Governmental agencies
- Municipalities directly affected by the construction
- Transportation services
- Emergency services
- Neighborhood groups and private homes
- Industry and businesses
- Any other organization as deemed necessary by the Engineer

Use traffic control devices that conform to all NCDOT requirements and are listed on the Department's Approved Products List as shown on NCDOT's Traffic Control Website. Use of devices not shown on the Approved Product List will need approval from the Traffic Control Unit.

The Traffic Control Unit does not have traffic counts to provide for use during development of the Traffic Control.

Submittal requirements:

- Staging Concept

Please refer to the Requirements for the preparation of Traffic Control & Pavement Markings plans for Staging Concept requirements.

- Submit 5 sealed half-size sets of plans, deliver 2 sets directly to the Resident Engineer and deliver 3 sets directly to the State Alternate Delivery Systems Engineer.

- Phase submittals

Phase submittals should include more detailed information than what was required for the staging concept. Plans can be used for construction if approved and no changes are required. Section B for preparing 50% submittals in the *Requirements for the preparation of Traffic Control & Pavement Markings plans* has a lot of good information that should be researched when preparing phase submittals.

- Submit 5 sealed half-size sets of plans, deliver 2 sets directly to the Resident Engineer and deliver 3 sets directly to the State Alternate Delivery Systems Engineer.

After the reviewed phase submittal is returned, if any comments require changes to the plans, a sealed set of revised plans will be required before construction begins on that phase.

- Submit 5 sealed half-size sets of plans, deliver 2 sets directly to the Resident Engineer and deliver 3 sets directly to the State Alternate Delivery Systems Engineer.

## II. Final Pavement Marking Plans

Placement of Final pavement markings and markers, can proceed only with an accepted and sealed Final Pavement Marking Plan. See project requirements for types of marking and marker materials required. Submit the Pavement Marking Plan to the Resident Engineer and State Alternate Delivery Systems Engineer for review and acceptance prior to the final pavement marking and marker installation. Prepare Final Pavement Marking Plans at a scale of 1"=50' (metric 1:500) unless otherwise agreed upon. NCDOT's 2002 *Roadway Standard Drawings* – Sections 1100 and 1200 pertaining to pavement markings, markers and devices left on the project will be utilized where applicable. Prepare detailed plans for all locations where NCDOT's 2002 *Roadway Standard Drawings* do not completely describe the required markings and markers. The plans will show lane widths, transition tapers, lane lines, edge lines, gore markings, symbols, word messages, and other appropriate markings and markers.

Use pavement marking and marker products that conform to all NCDOT's requirements and specifications and are listed on the Department's Approved Products List as shown on the NCDOT's Traffic Control Website. Install pavement markings and markers in accordance with NCDOT's 2002 *Standard Specifications for Roads and Structures*, and in accordance with the manufacturer's procedures and specifications.

Submittal requirements:

- Submit Preliminary Pavement Marking Plan with Staging Concept for approval. (See Section I. above) Please refer to the *Requirements for the preparation of Traffic Control & Pavement Markings plans* for Staging Concept and preliminary pavement marking plan requirement. Contractor may begin design of Final pavement marking plans when preliminary pavement marking plan is accepted.
  - Submit 5 unsealed half-size sets of plans, deliver 2 sets directly to the Resident Engineer and deliver 3 sets directly to the State Alternate Delivery Systems Engineer.
- Submit the Final Pavement Marking Plan with the final phase submittal package. Refer to the *Requirements for the preparation of Traffic Control & Pavement Markings plans* for Final Pavement Marking Plan requirements. If no changes are required, plans can be used to install final traffic control devices, final pavement markings and final pavement markers when required by final phase submittal.
  - Submit 5 sealed half-size sets of plans, deliver 2 sets directly to the Resident Engineer and deliver 3 sets directly to the State Alternate Delivery Systems Engineer.



After the reviewed Final Pavement Marking Plan is returned, if any comments require changes to the plans, a sealed set of revised plans will be required before final traffic control devices, final pavement markings and final pavement markers can be installed.

### III. Project Requirements

The following general notes apply at all times for the duration of the construction project.

#### A. Time Restrictions

##### 1. Lane narrowing and closure restrictions.

The Contractor shall maintain existing traffic patterns as a minimum and not close or narrow a lane of traffic on –L- (I-95 & ramps/loops) during the following times:

12:00pm (noon) Friday to 12:00am (midnight) Sunday

The Contractor shall not install or remove any traffic control device required for narrowing or closing a lane during the times listed above. This work may include but not limited to, installing, maintaining, and removing the traffic control devices for lane closures and restoring traffic to a minimal four-lane, two-way traffic pattern.

In addition, the Contractor shall not close or narrow a lane of traffic on –L- (I-95 & ramps/loops), detain and/or alter the traffic flow during holidays, holiday weekends, special events, or any other time when traffic is unusually heavy, including the following schedules:

- a) For any event that creates unusually high traffic volumes including hurricanes, as directed by the Engineer.
- b) For New Year's, between the hours of 6:30 a.m. December 31<sup>st</sup> to 7:00 p.m. January 2nd. If New Year's day is on a Saturday or a Sunday, then 7:00 p.m. the following Tuesday.
- c) For Easter, between the hours of 6:30 a.m. Thursday and 7:00 p.m. Monday.
- d) For Memorial Day, between the hours of 6:30 a.m. Friday to 7:00 p.m. Tuesday.
- e) For Independence Day, between the hours of 6:30 a.m. the day before Independence Day and 7:00 p.m. the day after Independence Day. If Independence Day is on a Saturday or Sunday, then between the hours of 6:30 a.m. the Thursday before Independence Day and 7:00 p.m. the Tuesday after Independence Day.
- f) For Labor Day, between the hours of 6:30 a.m. Friday to 7:00 p.m. Tuesday.
- g) For Thanksgiving, between the hours of 6:30 a.m. Tuesday to 7:00 p.m. Monday.

- h) For Christmas, between the hours of 6:30 a.m. the Friday before the week of Christmas day and 7:00 p.m. the following Monday after the week of Christmas.

**Liquidated Damages for the above lane closures, narrowing of lanes, holidays and special events time restrictions for –L- (I-95) and ramps are \$10,000.00 per hour. (See Intermediate Contract Times)**

## **2. Road Closure restrictions for construction operations.**

The Contractor shall maintain the existing traffic pattern as a minimum for –L- I-95 ramps & loops, maintain all existing I-95 ramps & loops traffic patterns during times listed below.

In addition the Contractor shall reopen the travel lanes to traffic until the existing traffic queue is depleted.

- a) The Contractor shall not close –L- I-95 & ramps/loops during the following times:

5:00am to 12:00am (midnight) Monday thru Friday and  
12:00am (midnight) Friday thru 12:00am (midnight) Sunday

The maximum allowable time for road closures on –L- (I-95 & ramps/loops) is **15 minutes** for any traffic operation..

**Liquidated Damages for the above road closure time restrictions for –L- (I-95) and ramps/loops, are \$2,500.00 per 15 minute period or any portion thereof. (See Intermediate Contract Times)**

## **3. Hauling restrictions**

Do not conduct any hauling operations against the flow of traffic of an open travelway unless the work area is protected by barrier or guardrail or otherwise directed by the Engineer.

### **B. Lane and Shoulder Closure Requirements**

Remove lane closure devices from the lane when work is not being performed behind the lane closure or when a lane closure is no longer needed, or as directed by the Engineer.

When personnel and/or equipment are working within 40 ft of an open travel lane, close the nearest open shoulder using roadway standard drawing no. 1101.04 unless the work area is protected by barrier or guardrail.

When personnel and/or equipment are working on the shoulder adjacent to a divided facility and within 10 ft of an open travel lane, close the nearest open travel lane using roadway standard drawing no. 1101.02 unless the work area is protected by barrier or guardrail.

When personnel and/or equipment are working within a lane of travel of an undivided or divided facility, close the lane according to the Contractor team's traffic control plans, roadway standard drawings or as directed by the Engineer. Conduct the work so that all personnel and/or equipment remain within the closed travel lane.

Do not perform work involving heavy equipment within 15 ft of the edge of travelway when work is being performed behind a lane closure on the opposite side of the travelway.

Do not install more than 3 miles of lane closure on I-95, measured from the beginning of the merge taper to the end of the lane closure.

Do not install more than one lane closure, in any one direction, on I-95.

Maintain minimum 12' wide lanes, which are open to traffic on I-95. In addition, a minimum 2' offset from the edge of travel to any Traffic Control Device is required at all times. Less than minimum lane and shoulder widths will need approval from the State Alternate Delivery Systems Engineer

Maintain existing inside and outside shoulder widths when no work is being performed.

#### **C. Pavement Edge Drop Off Requirements**

Backfill at a 6:1 slope up to the edge and elevation of existing pavement in areas adjacent to an opened travel lane that has a drop-off as follows:

Backfill drop-offs that exceed 2 inches on roadways with posted speed limits of 45 mph or greater.

Backfill drop-offs that exceed 3 inches on roadways with posted speed limits less than 45 mph.

Backfill with suitable compacted material, as approved by the Engineer, at no expense to the Department.

Do not exceed a difference of 2.0 inches in elevation between open lanes of traffic. Install advance warning "UNEVEN LANES" signs (W8-11) 500 ft in advance and a minimum of once every mile throughout the uneven area.

#### **D. Traffic Pattern Alterations**

Notify the Engineer twenty-one (21) calendar days prior to any traffic pattern alteration.

**E. Signing**

Use FLUORESCENT ORANGE SHEETING (TYPE VII or Higher) on all advanced work signs. Use WZ Advance Warning Sign drawings that may apply which can be found at the Traffic Control Web Site. (See Project Special Provision for Work Zone Signing )

Install advance work zone warning signs when work is within 100 ft from the edge of travel lane and no more than three (3) days prior to the beginning of construction.

When no work is being conducted for a period longer than one week, remove or cover all advance work zone warning signs, as directed by the Engineer, at no cost to the Department.

Ensure all necessary signing is in place prior to altering any traffic pattern.

Maintain all Guide Signs throughout the life of the project. Also, cover any Guide Signs when the signs are no longer applicable.

Install black on orange "DIP" signs (W8-2) 500 ft in advance of the uneven area on I-95.

Install black on orange "BUMP" signs (W8-1) 500 ft in advance of the uneven area on I-95.

**F. Slab Removal**

Approved barrier systems will be required for all slab removal and replacement construction.

Water filled barrier system will not be an acceptable system to use for slab removal and replacement.

**G. Traffic Barrier**

Install approved barrier system a maximum of two (2) weeks prior to beginning work in any location. Once the approved barrier system is installed at any location, proceed in a continuous manner to complete the proposed work in that location unless otherwise directed by the Engineer.

Once the approved barrier system is installed and if no work has been performed behind the approved barrier system for a period longer than two (2) months, remove/reset the approved barrier system at no cost to the Department unless barrier is protecting a hazard, or as directed by the Engineer.

Protect the approach end of the approved barrier system at all times during the installation and removal of the barrier. If system requires installation of a temporary crash cushion, a truck mounted impact attenuator can be used for a maximum of 72 hours.

Offset the approach's end of the approved barrier system a minimum of 40 ft from oncoming traffic or protect at all times by a temporary crash cushion if the approved barrier system requires a temporary crash cushion.

Install approved barrier system with the traffic flow, beginning with the upstream side of traffic. Remove the approved barrier system against the traffic flow, beginning with the downstream side of traffic.

Install and space drums no greater than twice the posted speed limit (mph) to close or keep closed the section of the roadway until the barrier can be placed or after barrier is removed.

Offset the approved barrier system a minimum of 2' from the edge of travel on all open travelways.

**H. Traffic Control Devices**

All drums must meet the requirements of the Drum Standard Detail found on the Traffic Control Web page.

Space channelizing devices in work areas no greater than twice the posted speed limit (mph), except 10 ft on-center in radii, and 3 ft off the edge of an open travelway, when lane closures are not in effect.

Place sets of three drums perpendicular to the edge of the travelway on 500 ft centers when unopened lanes are closed to traffic. These drums shall be in addition to channelizing devices.

**I. Pavement Markings and Markers**

Install pavement markings and pavement markers on the final surface as follows:

<b>Road name</b>	<b>Marking</b>	<b>Marker</b>
I-95	Polyurea with Highly Retroreflective elements (See Project Special Provision for Polyurea Pavement marking)	Raised

Install temporary pavement markings and temporary pavement markers on interim layers of pavement as follows:

<b>Road name</b>	<b>Marking</b>	<b>Marker</b>
I-95	Paint	Raised

Tie proposed pavement marking lines to existing pavement marking lines.

Replace any pavement markings that have been damaged by the end of each day's operation.

Place at least two applications of paint on new asphalt with temporary traffic patterns which will remain in place over three (3) months. Place additional applications of paint upon sufficient drying time, as determined by the Engineer.

Use of other types of pavement marking for temporary use will need prior approval from the State Alternate Delivery Systems Engineer.

#### **J. Miscellaneous**

Provide portable temporary lighting to conduct night work in accordance with the *NCDOT Standard Specifications for Roads and Structures*.

A 'Smart Zone' work zone system will be required for use during the construction of this project. A set of 'Smart Zone' work zone plans and a project special provision have been included for use during the design and construction of this project.

### **EROSION AND SEDIMENTATION CONTROL SCOPE OF WORK:**

Erosion and Sedimentation Control Plans should at minimum address the following:

- A. Complete Set of Plans
  1. Use correct NCDOT symbology
  2. Utilize adequate perimeter controls (temporary diversions, silt fence, etc.)
  3. Utilize rock measures w/ sediment control stone @ drainage outlets (TRSD-B, TRSC-A, etc.)
  4. Take into account existing topography
  5. Protect existing streams
  6. For areas of shoulder work, may need adequate silt storage for 2400 cubic feet per disturbed acre (170 cubic meters per disturbed hectare) and sediment basins should be sized with surface area equal to .01 times the peak inflow rate using 25-year peak runoff data (NCDENR-Land Quality's Erosion and Sediment Control Planning and Design Manual)
  7. Protect existing/proposed inlets with RIST-A, RIST-C, PIST-A, etc.
- B. Detail Sheets and Notes
  1. Construction entrance detail
- C. Title Sheet
  1. Show correct notes: HQW, ESA, critical habitat, clearing and grubbing, etc.
  2. Show correct standards for project
  3. List of standard NCDOT symbology

## D. Special Provisions

1. Included as an attachment to this scope are the NCDOT Special Provisions that may be applicable to the Erosion and Sedimentation Control Plans. All included Special Provisions may or may not be needed and additional special provisions may be necessary.

## E. Miscellaneous

1. Plan submittal must include all pertinent design information required for review, such as design calculations, drainage areas, etc.
2. The NCDOT Roadside Environment Unit (REU) will provide a sample set of Erosion and Sedimentation Control plans (including any special details or special provisions used by the NCDOT REU) and MicroStation Erosion Control tool palette to the Designer/Planner for reference if requested.
3. Plans must address any environmental issues raised during the permitting process.
4. Sufficient time must be allowed for the Designer/Planner to make any changes to the Erosion and Sedimentation Control Plans deemed necessary by the NCDOT REU.
5. All Erosion and Sedimentation Control plans must be approved by the NCDOT REU before any land disturbing activities can commence.
6. Temporary access and haul roads, other than public roads, constructed or used in connection with the project shall be considered a part of the project.
7. Borrow or waste areas that are part of the project will require a separate Erosion and Sedimentation Control plan, unless the borrow or waste activity is regulated under the Mining Act of 1971, or is a landfill regulated by the Division of Solid Waste Management (NCDENR).
8. Whenever the Engineer determines that significant erosion and sedimentation continues despite the installation of approved protective practices, the Contractor will be required to and shall take additional protective action.
9. Final Grade Erosion Control Plans are final only if Roadway Drainage Design has been completed and finalized.
10. An approved Erosion and Sedimentation Control Plan Does Not Exempt the Builder from Making Every Effort to Contain Sediment Onsite.
11. Any Erosion Control Design revisions made during the construction of the project should be submitted to REU by the 15<sup>th</sup> of the month. At anytime the Engineer or the Roadside Environmental Unit can request the contractor to provide an updated version of the erosion control plan from the Erosion Control Designer for distribution to all parties involved in the construction process.
12. The contractor shall comply with the North Carolina Administrative Code Title 15 A Department of Environment and Natural Resources Chapter 4, Sediment Control.
13. A pre-design meeting must take place between the REU Soil & Water Engineering Section, the Contractor, and any other pertinent DOT personnel before Erosion Control Design begins.

F. Submittal Requirements shall include, but not be limited to:

1. 90% Submittal
  - a) 1 Full size bond copy
  - b) 1 Half size set of final cross sections
  - c) 1 set of design calculations and all other pertinent design information
2. 100 % Submittal
  - a) 1 Full size bond copy
  - b) 1 set of design calculations and all other pertinent design information
3. RFC
  - a) 3 Half size bond copies of Erosion Control Plans
  - b) 2 Half size bond copies of Roadway Plans

**Erosion Control Liquidated Damages:**

The Contractor shall take all reasonable precaution to comply with all regulations of all authorities having jurisdiction over public and private land governing the protection of erosion and sedimentation. Any fines, remediation required, or charges levied against the Department for failing to comply with all rules and regulations concerning erosion and sediment control, due to the Contractor’s negligence, carelessness, or failure to implement the erosion and sediment control plan and specifications, will be deducted from monies due to the Contractor on his contract. In addition to said fines, remediation required, or charges levied, any associated engineering costs or actions taken by the Department in order for the Department to comply with rules and regulations, as a result of the Contractor’s negligence, carelessness, or failure to implement the erosion and sediment control plan and specifications, will be deducted from the monies due to the Contractor.

**Seeding And Mulching:**

(2B)

The kinds of seed and fertilizer, and the rates of application of seed, fertilizer, and limestone, shall be as stated below. During periods of overlapping dates, the kind of seed to be used shall be determined by the Engineer. All rates are in pounds per acre (kilograms per hectare).

**All Roadway Areas**

March 1 - August 31	September 1 - February 28
50# (55kg) Tall Fescue	50# (55kg) Tall Fescue
5# (6kg) Centipede	5# (6kg) Centipede
25# (28kg) Bermudagrass (hulled)	35# (40kg) Bermudagrass (unhulled)
500# (560kg) Fertilizer	500# (560kg) Fertilizer
4000# (4500kg) Limestone	4000# (4500kg) Limestone



**Waste and Borrow Locations****January 1 - December 31**

75# (85kg) Tall Fescue

50# (55kg) Bahia

500# (560kg) Fertilizer

4000# (4500kg) Limestone

## Approved Tall Fescue Cultivars:

Adventure	Adventure II	Amigo	Anthem
Apache	Apache II	Arid	Austin
Brookstone	Bonanza	Bonanza II	Chapel Hill
Chesapeake	Chieftain	Coronado	Crossfire II
Debutante	Duster	Falcon	Falcon II
Finelawn Petite	Finelawn	Finelawn I	Genesis
Grande	Guardian	Houndog	Jaguar
Jaguar III	Kentucky 31	Kitty Hawk	Monarch
Montauk	Mustang	Olympic	Pacer
Phoenix	Pixie	Pyramid	Rebel
Rebel Jr.	Rebel II	Renegade	Safari
Shenandoah	Tempo	Titan	Tomahawk
Trailblazer	Tribute	Vegas	Wolfpack
Wrangler			

On cut and fill slopes 2:1 or steeper add 30# (35kg) Sericea Lespedeza January 1 - December 31.

Fertilizer shall be 10-20-20 analysis. Upon written approval of the Engineer, a different analysis of fertilizer may be used provided the 1-2-2 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as a 10-20-20 analysis.

**Temporary Seeding:**

Fertilizer shall be the same analysis as specified for "Seeding and Mulching" and applied at the rate of 400 pounds (450 kilograms) and seeded at the rate of 50 pounds per acre (55kg per hectare). Sweet Sudan Grass, German Millet or Browntop Millet shall be used in summer months and Rye Grain during the remainder of the year. The Engineer will determine the exact dates for using each kind of seed.

**Fertilizer Topdressing:**

Fertilizer used for topdressing on all roadway areas shall be 10-20-20 grade and shall be applied at the rate of 500 pounds per acre (560 kg per hectare). Upon written approval of the Engineer, a different analysis of fertilizer may be used provided the 1-2-2 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as 10-20-20 analysis.

Fertilizer used for topdressing on waste and borrow areas shall be 16-8-8 grade and shall be applied at the rate of 500 pounds per acre (560 kg per hectare). Upon written approval of the Engineer, a different analysis of fertilizer may be used provided the 2-1-1 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as 16-8-8 analysis.

**Supplemental Seeding:**

The kinds of seed and proportions shall be the same as specified for "Seeding and Mulching", with the exception that no centipede seed will be used in the seed mix for supplemental seeding. The rate of application for supplemental seeding may vary from 25# to 75# per acre (28kg to 85kg per hectare). The actual rate per acre (hectare) will be determined by the Engineer prior to the time of topdressing and the Contractor will be notified in writing of the rate per acre (hectare), total quantity needed, and areas on which to apply the supplemental seed. Minimum tillage equipment, consisting of a sod seeder shall be used for incorporating seed into the soil as to prevent disturbance of existing vegetation. A clodbuster (ball and chain) may be used where degree of slope prevents the use of a sod seeder.

**Mowing:**

The minimum mowing height on this project shall be 4 inches (100 mm).

**Specialized Hand Mowing:**

The work covered by this section consists of specialized hand mowing around or under fixed objects, including but not limited to guardrails, signs, barriers and slopes in a method acceptable to the Engineer.

The work of specialized hand mowing shall be completed with mechanically powered trimmers, string trimmers, hand operated rotary mowers, or self-propelled mowers of sufficient size and quality to perform the work timely and efficiently.

**Minimize Removal Of Vegetation**

The Contractor shall minimize removal of vegetation at stream banks and disturbed areas within the project limits as directed by the Engineer.

**Stockpile Areas**

The Contractor shall install and maintain erosion control devices sufficient to contain sediment around any erodible material stockpile areas as directed by the Engineer.

**Gravel Construction Entrance:**

Description:

The work covered by this section consists of furnishing, installing, and maintaining and removing any and all material required for the construction of a Gravel Construction Entrance.

Materials:

The filter fabric shall meet the requirements of Section 1056 for Type 2 Fabric.

Stone shall be Class A Stone and shall meet the requirements of Section 1042 for Stone for Erosion Control, Class A.

Construction:

The Contractor shall install a Gravel Construction Entrance in accordance with the details in the plans and at locations as directed by the Engineer.

**Opening Burning:**

Open burning is not permitted on any portion of the right-of-way limits established for this project. Do not burn the clearing, grubbing or demolition debris designated for disposal and generated from the project at locations within the project limits, off the project limits or at any waste or borrow sites in this county. Dispose of the clearing, grubbing and demolition debris by means other than burning, according to state or local rules and regulations.

**BASIS OF PAYMENT:**

All work covered by this provision will be paid for at the contract lump sum price for the "Design and Construction for Traffic Control and Erosion Control." Such price and payment will be full compensation for all design, design drawings, equipment, labor, tools, materials, traffic control devices, including all needs for the 'Smart Zone' work zone system, and installation of all traffic control and erosion control related work.

**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

**SAFETY CLEARING:**

The work of safety clearing shall consist of the cutting, removal, and satisfactory disposal of all trees, brush, weeds, vegetation and other annual growth. Safety clearing will be within 40 feet of the edge of pavement.

All work under this section shall be performed in a manner which will cause minimum of soil erosion. The Contractor shall perform temporary erosion control work to minimize erosion resulting from safety clearing at no cost to the Department.

The work of safety clearing shall be performed within the limits established by the Engineer.

The trees shall be cut off at ground level or as close to the natural ground surface as possible as determined by the Engineer.

All timber cut during the safety clearing operations is to become the property of the Contractor, and shall be either removed from the property by him, or else shall be satisfactorily disposed of as hereinafter provided.

The Contractor shall not cut any timber beyond the clearing limits established by the Engineer.

All timber, brush and other vegetation, shall be disposed of by the Contractor either by disposal in locations off the right of way and out of sight of the project or by chipping the timber, brush, and other vegetation from the safety clearing operation. Chipping material can be used in lieu of hauling and disposing of the debris.

In lieu of hauling the material off the project, the Contractor has the option of chipping material and placing the residue within areas of the right of way as determined by the Engineer where chips will not drift from storm water flow.

The quantity of safety clearing to be paid for will be the actual number of acres of safety clearing measured along the surface of the ground which has been completed and accepted.

The quantity of safety clearing measured as provided for above will be paid for at the contract unit price per acre for "Safety Clearing".

**BURNING RESTRICTIONS:****7-1-95**

Open burning is not permitted on any portion of the right-of-way limits established for this project. Do not burn the clearing, grubbing or demolition debris designated for disposal and generated from the project at locations within the project limits, off the project limits or at any waste or borrow sites in this county. Dispose of the clearing, grubbing and demolition debris by means other than burning, according to state or local rules and regulations.

SP2R05

**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:**

5-21-02

**General:**

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

When the Contractor elects to obtain material from an area located beneath a proposed fill sections which does not require excavation for any reason other than to generate acceptable shoulder and fill slope material, the work of performing the excavation will be considered incidental to the item of "Borrow Excavation" or "Shoulder Borrow". If there is no pay item for "Borrow" or "Shoulder Excavation" in the contract, this work will be considered incidental to "Unclassified Excavation". Stockpile the excavated material in a manner to facilitate measurement by the Engineer. Fill the void created by the excavation of the shoulder and fill slope material with suitable material. Payment for material used from the stockpile will be made at the contract unit price for "Borrow Excavation" or "Shoulder Borrow". If there is no pay item for "Borrow Excavation" or "Shoulder Borrow", then the material will be paid for at the contract unit price for "Unclassified Excavation". The material used to fill the void created by the excavation of the shoulder and fill slope material will be made at the contract unit price for "Unclassified Excavation", "Borrow Excavation", or "Shoulder Borrow", depending on the source of the material.

Material generated from undercut excavation, unclassified excavation or clearing and grubbing operations that is placed directly on shoulders or slope areas, will not be measured separately for payment, as payment for the work requiring the excavation will be considered adequate compensation for depositing and grading the material on the shoulders or slopes.

When undercut excavation is performed at the direction of the Engineer and the material excavated is found to be suitable for use as shoulder and fill slope material, and there is no area on the project currently prepared to receive the material generated by the undercut operation, the Contractor may construct a stockpile for use as borrow at a later date. Payment for the material used from the stockpile will be made at the contract unit price for "Borrow Excavation" or "Shoulder Borrow".

When shoulder material is obtained from borrow sources or from stockpiled material, payment for the work of shoulder construction will be made at the contract unit price per cubic yard (cubic meter) for "Borrow Excavation" or "Shoulder Borrow" in accordance with the applicable provisions of Section 230 or Section 560 of the Standard Specifications.

SP2R50

### **REPAIR OF 8.5" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT:**

The work covered by this provision consists of removing by sawing out and disposing of the existing 8.5 inch continuously reinforced concrete pavement (punchouts), installing reinforcing steel using mechanical couplers at the exposed edge of concrete, utilizing a lap splice in the middle of the patch, and furnishing and replacing with 8.5 inch continuously reinforced concrete pavement as directed by the Engineer. At locations as directed by the Engineer, the Contractor shall remove unsuitable base material and backfill with Select Granular Class, III. At locations as directed by the Engineer, the Contractor shall undercut the subgrade and backfill with Select Granular Class, III as directed by the Engineer. Undercut is considered any material below existing stone base. This material will be considered undercut excavation.

The table below lists the approximate number of punchout repairs.

Milepost Range	SBL 10' punchouts	SBL punchouts lengths above 10'	NBL 10' punchouts	NBL punchouts lengths above 10'
107 – 108	2	1 @ 120'	9	
108 – 109	1	1 @ 120'	1	
109 – 110	1		4	
110 – 111	1		4	1 @ 300'
111 – 113	19	1 @ 30'	18	
113 – 114	7	1 @ 50'	6	1 @ 60'
114 – End of Project	0		8	1 @ 30'
TOTAL	31	220'	50	390'

On average, each punchout may be considered to be an area 10 feet by the full lane width.

The 8.5" continuously reinforced concrete pavement shall meet the applicable requirements of Section 700 of the Standard Specifications and the following provisions:

Materials:

CONCRETE:

The concrete shall produce a minimum compressive strength at 72 hours of 3500 psi.

The pavement shall not be opened to traffic until the minimum specified strength is obtained.

The Contractor shall submit a mix design to the Engineer for approval as specified in Section 1000-3 of the Standard Specification.

The concrete will be accepted based on suitable cylinders tested at 72 hours.

The finish of the proposed concrete pavement shall be a burlap drag finish and conform to the cross-section of adjacent pavement

Select Granular (Class III) Backfill:

Select Granular shall conform to the requirements of Section 265 of the Standard Specifications. Density of the backfill shall be to the satisfaction of the Engineer.

Reinforcing Steel:

Reinforcing steel shall meet all the requirements of Section 1070, except that epoxy coating will not be required.

Curing of Concrete:

Immediately after finishing operations have been completed and surface water has disappeared, all exposed surfaces of the pavement shall be cured in accordance with the applicable provisions of Section 700-9 "Curing", and Section-1026 "Curing Agents for Concrete" of the Standard Specifications.

Construction:

The placement of 8.5" continuously reinforced concrete pavement shall be conducted in one lane at a time. The work shall be accomplished with other operations in progress in the same area.

Reinforcing steel of the size shown on the plans shall be installed, spliced and lapped in accordance with the details in the plans. Splices shall be made by using bar couplers or by welding. The reinforcing steel shall be cleaned of loose concrete, rust and other materials to a degree acceptable to the Engineer before making the splice or weld.

The bar coupler shall be a cold forged mechanical splice applied by dies of an appropriate shape. The completed splice shall achieve 125% of the required minimum yield strength. Samples of complete splices shall be furnished to the Engineer for testing purposes. The proposed bar coupler shall be approved by the Engineer before being used.

If the Contractor chooses to make the splice by welding the weld must achieve the same minimum yield strength as the mechanical splice. Details of the welded connection shall be submitted to the Engineer for approval.

Any existing No. 4 transverse tie bars, located at the longitudinal contraction joint, that are cut as a result of sawing to remove the pavement in the distressed areas shall not be replaced.

As a result of full depth sawing of the existing pavement to remove the distressed area, saw cuts that extend into the adjacent pavement shall be filled with epoxy prior to placing traffic on the new area. The epoxy shall meet the requirements of Section 1081 Type 3 of the Standard Specifications.

The Contractor shall take necessary measures to protect the exposed subgrade and base from damage resulting from surface water and/or rain during the period between the pavement removal and replacement. The Contractor shall replace the concrete within 24 hours after removal of the distressed concrete unless otherwise directed by the Engineer.

The Contractor shall thoroughly tamp any subgrade material loosened in the pavement removal process to the satisfaction of the Engineer before the pavement is replaced. New pavement shall be cast to a minimum thickness of 8.5”.

#### Opening to Traffic:

No traffic will be permitted on the 8.5” continuously reinforced concrete pavement patch until the minimum compressive strength of 3500 psi has been obtained. Tests may be made by the Engineer using a Swiss Hammer.

#### Method of Measurement:

The quantity of 8.5” continuously reinforced concrete pavement repair to be paid for will be the actual number of square yards of continuously reinforced concrete pavement 8.5” in depth which has been completed and accepted. Measurement will be made along the completed work.

The quantity select granular to be paid for will be the actual number of cubic yard of select material which has been incorporated into the completed and accepted work. The select granular material will be measured in accordance with Section 265-4 of the Standard Specifications.

#### Basis of Payment:

8.5” Continuously Reinforced Concrete Pavement: The quantity of 8.5” continuously reinforced concrete pavement repair measured as provided above, will be paid for at the contract unit price per square yard “8.5” Continuously Reinforced Concrete Pavement”. The unit price shown in the contract will be full compensation for all work covered by this provision, and applicable



sections of the Standard Specifications for finishing all labor, materials, tools, equipment, and incidentals for doing all work involved in placement of the concrete including but not limited to furnishing and placing concrete, reinforcing steel, splicing reinforcing steel, and filling saw cuts around the pavement replacement.

Select Granular: The quantity of select granular measured as provided above will be paid for at the contract unit price per cubic yard "Select Granular". The unit price shown in the contract will be full compensation for all work covered by this provision and the Standard Specifications including but not limited to removing of existing asphalt layer and existing stone base course and replacing with select granular backfill.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
8.5" Continuously Reinforced Concrete Pavement Repair.....	Square Yard
Select Granular Material.....	Cubic Yard
Undercut Excavation.....	Cubic Yard
Removal of Existing Concrete Pavement.....	Square Yard

**MILLING SHOULDERS, 9 ¼" DEPTH:**

Perform all trenching necessary to place the asphalt concrete base course widening in accordance with the typical section, the plans and as directed by the Engineer. The entire trench section shall be excavated by the use of a milling machine, in accordance with the applicable provisions of Section 607.

The Contractor should expect to encounter approximately 6" of asphalt (existing paved shoulder), stone base under the paved shoulders and earth material outside of the paved shoulder limits. All milled material shall be wasted.

Perform the trenching for the base course utilizing lane closures approved by the Engineer. If the base course cannot be placed during the duration of the lane closure, backfill the trench with earth material and compact same 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. Refer to Intermediate Contract Times for lane closure restrictions.

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

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

The quantity of "Milling Shoulders" to be paid for will be the actual number of square yards of shoulders which have been milled in accordance with the requirements of this provision. In measuring this quantity, the length will be the actual length milled measured along the pavement surface. The width will be the width required by the plans or directed, measured along the pavement surface. Where the Engineer directs multiple cuts to achieve the final depth, measurement will be made for each cut. Where the Contractor elects to make multiple cuts to achieve the final depth, no additional measurement will be made.

The quantity of "Milled Shoulders" measure as provided above will be paid for at the contract unit price per square yard for "Milling Shoulders, 9¾ Inch Depth".

Such price and payment shall include but not be limited to milling, cleaning the milled surface, loading, hauling and disposal of all milled material.

**EXISTING SHOULDER DRAIN OUTLET CLEANOUT:**

The work covered by this provision consists of locating and cleaning out existing shoulder drain outlet pipe. Outlet pipe that is damaged shall be replaced as directed by the Engineer. Also, included in this work is the resetting of concrete pads for pipe outlets.

The quantity of "Existing Shoulder Drain Outlet Cleanout" to be paid for will be the actual number completed and accepted.

The quantity of "Existing Shoulder Drain Outlet Cleanout" measured as provided for above will be paid for at the contract unit price per each for "Existing Shoulder Drain Outlet Cleanout".

**ASPHALT PAVEMENTS - SUPERPAVE**

**02-17-04**

Revise the 2002 Standard Specifications as follows:

**PRIME COAT**

Page 6-2, Article 600-9

Delete the first paragraph under this Article 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 in this Article:

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 under this Article 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 on this page and substitute the following:

Retain records of these calibrations and mix verification tests, including Superpave Gyratory 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 to the end of the last paragraph in this Article:

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

Delete the second sentence in the second paragraph of this Article 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 second sentence of the first paragraph in this Subarticle and substitute the following:

Record all regularly scheduled random sample or directed sample full test series results for mix incorporated into the project on control charts the same day the test results are obtained.

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

Delete item 3 in the list below the second full paragraph on this page.

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**

<b>Mix Control Criteria</b>	<b>Target Source</b>	<b>Warning Limit</b>	<b>Moving Average Limit</b>	<b>Individual Limit</b>
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 <sub>des</sub>	JMF	±1.0 %	±1.5 %	±2.0 %
VMA @ N <sub>des</sub>	Min. Spec. Limit	-0.5%	-0.8%	-1.0%
P <sub>0.075</sub> / P <sub>be</sub> Ratio	Max. Spec. Limit	0.0	N/A	+0.4%
%G <sub>mm</sub> @ N <sub>ini</sub>	Max. Spec. Limit	N/A	N/A	+2.0%
TSR	Min. Spec. Limit	N/A	N/A	-15.0%

FIELD COMPACTION QUALITY CONTROL

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

Delete the first and second sentences in the fourth paragraph on this page 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.

LIMITED PRODUCTION PROCEDURE

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

Delete the first paragraph in this Subarticle 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 in this Subarticle 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 on this page 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 on this page 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 5 under Plant Mix Quality Assurance, add “at a frequency equal to or greater than 5% of the QC sample frequency”.

In the first sentence within the paragraph below Plant Mix Quality Assurance, delete the words “of mix”.

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% of the frequency required of the Contractor”.

Page 6-19, Article 609-6

In Item 4 under Density Quality Assurance, add “at a frequency equal to or greater than 5% of the QC sample frequency.”

Insert the following after Item 4 under Density Quality Assurance:

- 6. 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 Gyratory 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)

## ASPHALT CONCRETE PLANT MIX PAVEMENTS – DESCRIPTION

Page 6-20, Article 610-1

Insert the following after the last paragraph in this Article:

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 under this Subarticle, 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 under this Subarticle:

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 under this Article:

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 must 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 in this Subarticle and substitute the following:

For Type S 12.5D mixes, the maximum percentage of reclaimed asphalt material is limited to 15% and must 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 must 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 must 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 Gyratory 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>(b)</b>	67.0 <b>(b)</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.

Page 6-25, Subarticle 610-3(C),

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

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

Mix Type (f)	Design ESALs millions (a)	Binder PG Grade (b)	Compaction Levels			Volumetric Properties (c)			
			No. Gyration @ N <sub>ini</sub>	N <sub>des</sub>	N <sub>max</sub>	VMA % Min.	VTM %	VFA Min. - Max.	%G <sub>mm</sub> @ N <sub>ini</sub>
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
	<b>Design Parameter</b>				<b>Design Criteria</b>				
All	1. %G <sub>mm</sub> @ N <sub>max</sub>				≤ 98.0% (d)				
Mix	2. Dust to Binder Ratio (P <sub>0.075</sub> / P <sub>be</sub> )				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<sub>des</sub> as modified by the Department.
  - (d) Based on specimens compacted to N<sub>max</sub> 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.

<b>Asphalt Concrete Mix Type</b>	<b>Minimum Air Temperature</b>	<b>Minimum Road Surface Temperature</b>
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 in this Article,

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 6-33, Article 610-8

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

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

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**

<b>MIX TYPE</b>	<b>MINIMUM % of G<sub>mm</sub></b>
<b>SUPERPAVE MIXES</b>	<b>(Maximum Specific Gravity)</b>
S 4.75A	85.0 <sup>(a,b)</sup>
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/m<sup>2</sup>)

Page 6-34, Article 610-10

Delete the second paragraph in this Article 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

Page 6-35, Article 610-12

Delete the first paragraph in this Article 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 on this page 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:

- (6) 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.
- (7) 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.
- (8) Pavement is placed simultaneously by multiple paving crews. A lot will be established for the pavement placed by each paving crew.
- (9) Pavement is placed in different layers. A lot will be established for each layer.
- (10) 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 on this page 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 in this Article 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 on this page 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 on this page 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.

CONSTRUCTION REQUIREMENTS

Page 6-43, Article 650-5

Add the following paragraph after the first paragraph under this Article:

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 this Subarticle 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<sup>(a)</sup>**

Mix Type	Course Aggregate Angularity <sup>(b)</sup>	Fine Aggregate Angularity % Minimum	Sand Equivalent % Minimum	Flat & Elongated 5 : 1 Ratio % 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 <sup>(c)</sup>
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 on this page:

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**

<b>Uncompacted Void Content of Fine Aggregate AASHTO T 304 Method A</b>	<b>Maximum Percent Natural Sand Included in Mix Design and/or Production*</b>
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 under this Article 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:**11-21-00<sub>R</sub>

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

**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 \$218.06 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 September 1, 2004.

SP6R25

**FINAL SURFACE TESTING - ASPHALT PAVEMENTS (RIDEABILITY) 05-18-04**

Perform acceptance testing of the longitudinal profile of the finished pavement surface in accordance with these provisions using a North Carolina Hearne Straightedge (Model No. 1). Furnish and operate the straightedge to determine and record the longitudinal profile of the pavement on a continuous graph. Final surface testing is an integral part of the paving operation and is subject to observation and inspection by the Engineer as deemed necessary.

Push the straightedge manually over the pavement at a speed not exceeding 2 miles per hour (3 kilometers per hour). For all lanes, take profiles in the right wheel path approximately 3 ft (1 m) from the right edge of pavement in the same direction as the paving operation, unless otherwise approved due to traffic control or safety considerations. Make one pass of the straightedge in each full width travel lane. The full lane width should be comparable in ride quality to the area evaluated with the Hearne Straightedge. If deviations exist at other locations across the lane width, utilize a 10 foot non-mobile straightedge or the Hearne Straightedge to evaluate which areas may require corrective action. Take profiles as soon as practical after the pavement has been rolled and compacted but in no event later than 24 hours following placement of the pavement, unless otherwise authorized by the Engineer. Take profiles over the entire length of final surface travel lane pavement exclusive of -Y- line travel lanes less than or equal to 300 feet (90 meters) in length, turn lanes less than or equal to 300 feet (90 meters) in length, structures, approach slabs, paved shoulders, loops, and tapers or other irregular shaped areas of

pavement, unless otherwise approved by the Engineer. Test in accordance with this provision all mainline travel lanes, full width acceleration or deceleration lanes, -Y- line travel lanes greater than 300 feet (90 meters) in length, ramps, full width turn lanes greater than 300 feet (90 meters) in length, and collector lanes.

At the beginning and end of each day's testing operations, and at such other times as determined necessary by the Engineer, operate the straightedge over a calibration strip so that the Engineer can verify correct operation of the straightedge. The calibration strip must be a 100 ft (30 m) section of pavement that is reasonably level and smooth. Submit each day's calibration graphs with that day's test section graphs to the Engineer. Calibrate the straightedge in accordance with the current NCDOT procedure titled "North Carolina Hearne Straightedge - Calibration and Determination of Cumulative Straightedge Index". Copies of this procedure may be obtained from the Department's Pavement Construction Section.

Plot the straightedge graph at a horizontal scale of approximately 25 ft per inch (3 m per cm) with the vertical scale plotted at a true scale. Record station numbers and references (bridges, approach slabs, culverts, etc.) on the graphs, and distances between references/stations must not exceed 100 ft (30 m). Have the operator record the Date, Project No., Lane Location, Wheel Path Location, Type Mix, and Operator's Name on the graph.

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

Use blanking bands of 0.2 inches, 0.3 inches, and 0.4 inches (5 mm, 7.5 mm, and 10 mm) to evaluate the graph for acceptance. The 0.2 inch and 0.3 inch (5 mm and 7.5 mm) blanking bands are used to determine the Straightedge Index (SEI), which is a number that indicates the deviations that exceed each of the 0.2 inch and 0.3 inch (5 mm and 7.5 mm) bands within a 100 ft (30 m) test section. The Cumulative Straightedge Index (CSI) is a number representing the total of the SEIs for one lot, which consist of not more than 25 consecutive test sections. In addition, the 0.4 inch (10 mm) blanking band is used to further evaluate deviations on an individual basis. The Cumulative Straightedge Index (CSI) will be determined by the Engineer in accordance with the current procedure titled "North Carolina Hearne Straightedge - Calibration and Determination of Cumulative Straightedge Index".

The pavement will be accepted for surface smoothness on a lot by lot basis. A test section represents pavement one travel lane wide not more than 100 ft (30 m) in length. A lot will consist of 25 consecutive test sections, except that separate lots will be established for each travel lane, unless otherwise approved by the Engineer. In addition, full width acceleration or deceleration lanes, ramps, turn lanes, and collector lanes, will be evaluated as separate lots. For any lot which is less than 2500 feet (750 m) in length, the applicable pay adjustment incentive will be prorated on the basis of the actual lot length. For any lot which is less than 2500 feet

(750 m) in length, the applicable pay adjustment disincentive will be the full amount for a lot, regardless of the lot length.

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

Limited production for unsatisfactory laydown is defined as being restricted to the production, placement, compaction, and final surface testing of a sufficient quantity of mix necessary to construct only 2500 feet (750 meter) of pavement at the laydown width. Once this lot is complete, the final surface testing graphs will be evaluated jointly by the Contractor and the Engineer. Remain on limited production until such time as satisfactory laydown results are obtained or until three consecutive 2500 foot (750 meter) sections have been attempted without achieving satisfactory laydown results. The Engineer will determine if normal production may resume based upon the CSI for the limited production lot and any adjustments to the equipment, placement methods, and/or personnel performing the work. Once on limited production, the Engineer may require the Contractor to evaluate the smoothness of the previous asphalt layer and take appropriate action to reduce and/or eliminate corrective measures on the final surface course. Additionally, the Contractor may be required to demonstrate acceptable laydown techniques off the project limits prior to proceeding on the project.

If the Contractor fails to achieve satisfactory laydown results after three consecutive 2500 foot (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. If production of a new mix design is allowed, proceed under the limited production procedures detailed above.

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

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

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

<b>Pay Adjustment Schedule for Cumulative Straightedge Index (CSI)</b> (Obtained by adding SE Index of up to 25 consecutive 100 ft. (30m) sections)				
*CSI	ACCEPTANCE CATEGORY	CORRECTIVE ACTION	PAY ADJUSTMENT	
			Before Corrective Action	After Corrective Action
0-0	Acceptable	None	\$300 incentive	None
1-0 or 2-0	Acceptable	None	\$100 incentive	None
3-0 or 4-0	Acceptable	None	No Adjustment	No Adjustment
1-1, 2-1, 5-0 or 6-0	Acceptable	Allowed	\$300 disincentive	\$300 disincentive
3-1, 4-1, 5-1 or 6-1	Acceptable	Allowed	\$600 disincentive	\$600 disincentive
Any other Number	Unacceptable	Required	Per CSI after Correction(s) (not to exceed 100% Pay)	

**\*Either Before or After Corrective Actions**

Correct any deviation that exceeds a 0.4 inch (10 mm) blanking band such that the deviation is reduced to 0.3 inches (7.5 mm) or less.

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

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

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

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

Areas excluded from testing by the N.C. Hearne Straightedge will be tested by using a non-mobile 10-foot (3 m) straightedge. Assure that the variation of the surface from the testing edge of the straightedge between any two contact points with the surface is not more than 1/8 inch (3 mm). Correct deviations exceeding the allowable tolerance in accordance with the corrective actions specified above, unless the Engineer permits other corrective actions.

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

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

SP6R45

**MATERIALS TRANSFER VEHICLE:**

11-20-01

Use a Material Transfer Vehicle (MTV) when placing all asphalt concrete plant mix pavements, including open-graded asphalt friction course, which require the use of asphalt binder grade PG 76-22, unless otherwise approved. Utilize the MTV when placing all full width travel lanes, including shoulders, collector lanes, ramps, and loops which require PG 76-22.

Provide an MTV that receives mixture from the hauling equipment and independently delivers the mixture from the hauling equipment to the paving equipment. Provide an MTV capable of transferring the material from the haul vehicle to the paver hopper at a uniform and continuous rate to allow the continuous movement of the paver. Install a paver hopper insert with a minimum capacity of 14 tons (12.7 metric tons) in the hopper of conventional paving equipment when utilizing a MTV. Perform remixing of the material prior to discharge into the paver conveyor system by utilizing either a MTV with a remixing system contained within a minimum 14 ton (12.7 metric ton) capacity storage bin or a dual pugmill system with two full length transversely mounted paddle mixers located in the paver hopper insert.

Use an MTV that provides to the paver a homogeneous, non-segregated mixture that is of uniform temperature such that there is no more than 20°F (11°C) difference between the highest and lowest temperatures when measured transversely across the width of the mat in a straight line at a distance of one foot (0.3 m) to three feet (0.9 m) from the screed while the paver is

operating. Obtain the temperature measurements approximately one foot (0.3 m) from each edge and at least once in the middle of the mat.

Empty the MTV when crossing a bridge and move across without any other Contractor vehicles or equipment being on the bridge. Move the MTV across a bridge in a travel lane and not on the shoulder. While crossing a bridge move the MTV at a speed no greater than five miles per hour (8 km per hour) without any abrupt acceleration or deceleration.

In the event the MTV malfunctions during paving operations, immediately discontinue plant operations and do not resume operations until the MTV malfunctions have been remedied, unless otherwise directed due to safety concerns. The Contractor may continue placement of the mix until any additional mix in transit has been placed, provided satisfactory results are achieved. This procedure in no way alleviates the Contractor from meeting contract requirements.

No direct payment will be made for providing and using the materials transfer vehicle or any associated equipment, as the cost of providing same shall be included in the contract unit bid price per ton (metric ton) for the mix type to be placed.

SP6R65

**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

**GUARDRAIL POSTS AND OFFSET BLOCKS:****06-22-04**

Revise the *2002 Standard Specifications* as follows:

Page 10-69, Subarticle 1046-3

Delete this sub-article in its entirety and replace with the following:

**1046-3 POSTS AND OFFSET BLOCKS.****(A) General:**

The Contractor may at his option furnish either of the following types of steel guardrail posts. Only one type of post will be permitted at any one continuous installation. Use structural steel posts throughout the project, unless otherwise directed or detailed in the plans.

1. Steel W6 x 8.5 or W6 x 9.0 posts
2. Steel 4.5" x 6.0" "C" shape posts (C150 x 12.2 kg/m)

The Contractor may at his option furnish either of the following types of treated timber posts if specifically directed or detailed in the plans. Only one type of post will be permitted at any one continuous installation.

1. Timber 6" x 8" (152 mm x 203 mm) posts.
2. Timber 8" x 8" (203 mm x 203 mm) posts.

**(B) Structural Steel Posts:**

Fabricate steel posts for guardrail of the size and weight shown on the plans from structural steel complying with the requirements of Section 1072. Metal from which C shape posts are fabricated shall meet the requirements of ASTM A570 for any grade of steel, except that mechanical requirements shall meet the requirements of ASTM A36. Punch or drill the holes for connecting bolts. Burning will not be permitted. After fabrication, the posts shall be galvanized in accordance with Section 1076.

**(C) Treated Timber Posts:**

Timber guardrail posts shall be of treated southern pine meeting the requirements of Article 1082-2 and 1082-3.

Bore bolt holes to a driving fit for the bolts. A minus tolerance of 1 percent will be allowed in the length of the post. Perform all framing and boring before the posts receive preservative treatment.

**(D) Offset Blocks:**

Provide 8-inch deep recycled plastic or composite offset blocks that have been approved for use with the guardrail shown in the standard drawings and/or plans. Only one type of offset block will be permitted at any one continuous installation. Prior to beginning the installation of recycled offset block, submit the FHWA acceptance letter for each type of block to the Engineer for approval.

Treated timber offset blocks with steel beam guardrail will not be allowed unless required by Specifications, directed by the Engineer or detailed in the plans. Steel offset blocks with steel beam guardrail will not be allowed.

Recycled plastic or composite offset blocks shall be made from no less than 50% recycled plastic or composite, and shall meet the following minimum requirements:

- Specific Gravity: .....0.950
- Compressive Strength in Lateral Direction: .....1600 psi (11 MPa)
- Maximum Water Absorption: .....10% by weight
- Maximum Termite and Ant Infestation: .....10%
- Testing.....Shall pass NCHRP Report 350,  
Test Level 3 by CRASH TESTING

Revise the *2002 Standard Roadway Drawings* as follows:

Sheet 4 of 6, Standard 862.03, delete the note and substitute the following:

Note: The midpost and offset block of the WTR section will require special bolt hole drilling in the thrie beam offset block and line post.

SP8R57

**GUARDRAIL ANCHOR UNITS, TYPE M-350:**

**04-20-04**

**DESCRIPTION**

Furnish and install guardrail anchor units in accordance with the details in the plans, the applicable requirements of Section 862 of the Standard Specifications, and at locations shown in the plans.

**MATERIALS**

The Contractor may, at his option, furnish any one of the following guardrail anchor units.

The guardrail anchor unit (SRT-350) as manufactured by:

TRINITY INDUSTRIES, INC.  
2525 N. STEMMONS FREEWAY  
DALLAS, TEXAS 75207  
TELEPHONE: 1-800-644-7976

The guardrail anchor unit (FLEAT) as manufactured by:

ROAD SYSTEMS, INC.  
1507 EAST 4TH STREET  
BIG SPRINGS, TEXAS 79720  
TELEPHONE: 915-263-2435

The guardrail anchor unit (REGENT) as manufactured by:

ENERGY ABSORPTION SYSTEMS, INC.  
ONE EAST WACKER DRIVE  
CHICAGO, ILLINOIS 60601-2076  
TELEPHONE: 312-467-6750

Prior to installation the Contractor shall submit to the Engineer:

1. FHWA acceptance letter for each guardrail anchor unit certifying it meets the requirements of NCHRP Report 350, Test Level 3, in accordance with Section 106-2 of the Standard Specifications.
2. Certified working drawings and assembling instructions from the manufacturer for each guardrail anchor unit in accordance with Section 105-2 of the Specifications.

No modifications shall be made to the guardrail anchor unit without the express written permission from the manufacturer. Perform installation in accordance with the details in the plans, and details and assembling instructions furnished by the manufacturer.

**CONSTRUCTION**

Guardrail end delineation is required on all approach and trailing end sections for both temporary and permanent installations. Guardrail end delineation consists of yellow reflective sheeting applied to the entire end section of the guardrail in accordance with Section 1088-3 of the Standard Specifications and is incidental to the cost of the guardrail anchor unit.

**MEASUREMENT AND PAYMENT**

Measurement and payment will be made in accordance with Articles 862-5 and 862-6 of the Standard Specifications.

Payment will be made under:

Guardrail Anchor Units, Type M-350 .....	Each	
		SP8R60

<b><u>GUARDRAIL ANCHOR UNITS, TYPE 350:</u></b>	<b>04-20-04</b>
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**DESCRIPTION**

Furnish and install guardrail anchor units in accordance with the details in the plans, the applicable requirements of Section 862 of the Standard Specifications, and at locations shown in the plans.

**MATERIALS**

The Contractor may at his option, furnish any one of the guardrail anchor units.

Guardrail anchor unit (ET-2000) as manufactured by:

TRINITY INDUSTRIES, INC.  
 2525 N. STEMMONS FREEWAY  
 DALLAS, TEXAS 75207  
 TELEPHONE: 1-800-644-7976

The guardrail anchor unit (SKT 350) as manufactured by:

ROAD SYSTEMS, INC.  
 3616 OLD HOWARD COUNTY AIRPORT  
 BIG SPRING, TEXAS 79720  
 TELEPHONE: (915) 263-2435

Prior to installation the Contractor shall submit to the Engineer:

1. FHWA acceptance letter for each guardrail anchor unit certifying it meets the requirements of NCHRP Report 350, Test Level 3, in accordance with Section 106-2 of the Standard Specifications.

- 2. Certified working drawings and assembling instructions from the manufacturer for each guardrail anchor unit in accordance with Section 105-2 of the Specifications.

No modifications shall be made to the guardrail anchor unit without the express written permission from the manufacturer. Perform installation in accordance with the details in the plans, and details and assembling instructions furnished by the manufacturer.

**CONSTRUCTION**

Guardrail end delineation is required on all approach and trailing end sections for both temporary and permanent installations. Guardrail end delineation consists of yellow reflective sheeting applied to the entire end section of the guardrail in accordance with Section 1088-3 of the Standard Specifications and is incidental to the cost of the guardrail anchor unit.

**MEASUREMENT AND PAYMENT**

Measurement and payment will be made in accordance with Articles 862.5 and 862-6 of the Standard Specifications.

Payment will be made under:

Guardrail Anchor Units, Type 350 .....	Each	
		SP8R65

**REMOVE AND RESET EXISTING DOUBLE-FACED CABLE GUIDERAIL:**

**7-1-95**

Description:

The Contractor shall remove and reset existing double-faced cable guiderail at locations shown in the plans and as directed by the Engineer.

Construction:

The guiderail, after resetting, shall be in a condition that is equal to or better than before the guiderail is removed. The Contractor shall replace any of the guiderail components which have been unnecessarily damaged by him.

Method of Measurement:

The quantity of remove and reset existing double-faced guiderail to be paid for will be the actual number of linear feet of guiderail that has been removed, reset, and accepted. Measurement will be made after the guiderail has been reset, as provided in Section 865 of the Standard Specifications.

Basis of Payment:

The quantity of remove and reset existing guiderail, measured as provided above, will be paid for at the contract unit price per linear foot for "Remove and Reset Existing Double-Faced Cable Guiderail". Such price and payment will be full compensation for removing and resetting the guardrail, guiderail anchor units and for furnishing all equipment, labor, and incidentals necessary to complete the work.

Payment will be made under:

Remove and Reset Existing Double-Faced Cable Guiderail .....Linear Foot

**STREET SIGNS AND MARKERS AND ROUTE MARKERS: 7-1-95**

Move any existing street signs, markers, and route markers out of the construction limits of the project and install the street signs and markers and route markers so that they will be visible to the traveling public if there is sufficient right of way for these signs and markers outside of the construction limits.

Near the completion of the project and when so directed by the Engineer, move the signs and markers and install them in their proper location in regard to the finished pavement of the project.

Stockpile any signs or markers that cannot be relocated due to lack of right of way, or any signs and markers that will no longer be applicable after the construction of the project, at locations directed by the Engineer for removal by others.

The Contractor will be responsible to the owners for any damage to any street signs and markers or route markers during the above described operations.

No direct payment will be made for relocating, reinstalling, and/or stockpiling the street signs and markers and route markers as such work will be considered incidental to other work being paid for by the various items in the contract.

SP9R01

**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

**DRUMS:****7/16/02**

Revise the 2002 Standard Specifications as follows:

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

Delete the first (1<sup>st</sup>) sentence of the first (1<sup>st</sup>) 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

**PORTABLE CONCRETE BARRIER:****11-19-02**

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

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

SP11R10

**PAVEMENT MARKING GENERAL REQUIREMENTS:****07-16-02**

Revise the 2002 Standard Specifications as follows:

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

Delete the first (1<sup>st</sup>) sentence of the first (1<sup>st</sup>) 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

**MOVEABLE BARRIER:**

The Department has moveable barrier and a transfer and transport vehicle which may be available for the Contractor’s use on this project. Should the Contractor (Bidder) desire to consider using any of this barrier and/or vehicle, he may contact the following people:

Mr. Bobby Lewis, District Engineer, Nash County Maintenance Yard, 252-459-2128 or  
Mr. Ronnie Keeter, District Engineer, Halifax County Maintenance Yard, 252-583-5861 to determine the quantity available, its location, and the conditions under which the barrier may be picked up.

The Engineer will inspect the transfer and transport vehicle prior to the Contractor obtaining. The Contractor shall inspect the Department furnished transfer and transport and once accepting the vehicle shall become fully responsible for any damage or theft that occurs to it.

The Contractor shall load and transport the vehicle to the project. The Contractor shall provide any necessary storage area for the vehicle.



The Contractor shall refurbish the vehicle including, but not limited to, cleaning and repairing the vehicle to good operational condition. All operating manuals, maintenance records, special tools, hardware, and parts shall be included with the vehicle. Any small parts and hardware shall be properly packed and labeled. When requested by the Contractor, the Department may have the necessary repairs made, and deduct the associated costs from monies due the Contractor.

The Contractor shall return the vehicle to the Department.

Compensation:

All costs associated with the use of Department Furnished barrier and/or transfer vehicle shall be included in the lump sum price for "Design and Construction For Traffic Control and Erosion Control".