STATE OF NORTH CAROLINA
# DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

May 31, 2012

**Addendum No. 1**

| | |
|---|---|
| Contract No.: | C 202853 |
| TIP No.: | U-2800 |
| County: | Forsyth |
| Project Description: | SR 2601 (Macy Grove Road) from south of SR 4319 (Industrial Park Drive) to north of SR 1005 (East Mountain Street) |

RE: Addendum No. 1 to Final RFP

**July 17, 2012 Letting**

To Whom It May Concern:

Reference is made to the aforementioned Final Request for Proposals dated May 15, 2012 recently furnished to you. We have since incorporated changes, and have attached a copy of Addendum No. 1 for your information. Please note that all revisions have been highlighted in gray and are as follows:

The first and second pages of the *Table of Contents* have been revised. Please void the first and second pages in your proposal and staple the revised pages thereto.

Page Nos. 48 and 76 of the *Dynamic Message Sign* Project Special Provision have been revised. Please void Page Nos. 48 and 76 in your proposal and staple the revised Page Nos. 48 and 76 thereto.

Page Nos. 86 through 93 and Page No. 95 of the *Overhead Sign Support, Overhead and Dynamic Sign Foundations,* and the *High Mount Foundations* Project Special Provisions have been revised. Please void Page Nos. 86 through 93 and Page No. 95 in your proposal and staple the revised Page Nos. 86 through 93 and Page No. 95 thereto.

Page No. 115 of the *Roadway Scope of Work* has been revised. Please void Page No. 115 in your proposal and staple the revised Page No. 115 thereto.

Page No. 204 of the *Asphalt Binder Content of Asphalt Plant Mixes* Standard Special Provision has been revised. Please void Page No. 204 in your proposal and staple the revised Page No. 204 thereto.

**MAILING ADDRESS:**
NC DEPARTMENT OF TRANSPORTATION
CONTRACT STANDARDS AND DEVELOPMENT UNIT
1591 MAIL SERVICE CENTER
RALEIGH NC 27699-1591

TELEPHONE: 919-707-6900
FAX: 919-250-4119
*WEBSITE:* WWW.NCDOT.GOV

**LOCATION:**
CENTURY CENTER COMPLEX
ENTRANCE B-2
1020 BIRCH RIDGE DRIVE
RALEIGH NC

Page No. 233 of the *Errata* has been revised. Please void Page No. 233 in your proposal and staple the revised Page No. 233 thereto.

Please do not hesitate to contact me at (919) 707-6900 if you have any questions or need additional information.

Sincerely,

R.A. Garris, P.E.
Contract Officer

Cc: Mr. Pat Ivey, PE
Mr. Victor Barbour, PE
Mr. Rodger Rochelle, PE
Ms. Teresa Bruton, PE
Project File

# TABLE OF CONTENTS

**COVER SHEET**

**PROPOSAL SHEETS**

**PROJECT SPECIAL PROVISIONS** *PAGE NO.*

## SCOPES OF WORK



## STANDARD SPECIAL PROVISIONS

Professional Engineer registered in the state of North Carolina, and bear his signature, seal and date of acceptance.

Provide removable lifting eyes or the equivalent on the DMS enclosure rated for its total weight to facilitate handling and mounting the DMS enclosure.

Design the DMS structure to conform to the applicable requirements of the 2009 AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 5th Edition*, and the 2010 and 2011 Interim Revisions, and the section titled "Dynamic Message Sign Assembly" of these Project Special Provisions.

**D. DMS / DMS Controller Interconnect**

Furnish and install all necessary cabling, conduit, and terminal blocks to connect the DMS and the DMS controller. Use approved manufacturer's specifications and project plans for cable and conduit types and sizes. Use fiber optic cable to interconnect sign and controller. Install fiber optic interconnect centers in the sign enclosure and cabinet to securely install and terminate the fiber optic cable. Submit catalog cut sheets for the interconnect centers for approval.

**E. DMS Controller and Cabinet**

Furnish and install one DMS controller with accessories per DMS in a protective cabinet. Mount the controller cabinet on the DMS support structure. Install cabinet so that the height to the middle of the cabinet is 4 feet.

Provide the DMS controller as a software-oriented microprocessor and with resident software stored in non-volatile memory. The Control Software, controller and communications must comply with the NTCIP Standards identified in these project special provisions. Provide sufficient non-volatile memory to allow storage of at least 500 multi-page messages and a test pattern program.

Furnish the controller cabinet with, but not limited to, the following:

- Power supply and distribution assembly
- Power line filtering hybrid surge protectors
- Radio Interference Suppressor
- Communications surge protection devices
- Industrial-Grade UPS system and local disconnect
- Microprocessor-based controller
- Display driver and control system (unless integral to the DMS)
- Industrial-grade dial-up modem and interface cable
- Industrial-grade telephone line surge and lightning protector
- Serial interface port for local laptop computer

No welding, cutting, or drilling in any manner will be permitted in the field, unless approved by the Engineer.

Drill bolt holes and slots to finished size. Holes may also be punched to finished size, provided the diameter of the punched holes is at least twice the thickness of the metal being punched. Flame cutting of bolt holes and slots will not be permitted.

Use two coats of a zinc-rich paint to touch up minor scars on all galvanized materials.

## B. Shop Drawing

Submit to the Engineer for approval a complete design for the DMS assembly, including footings, DMS assembly hardware, brackets for supporting the DMS and the access platform. Base the design on the line drawings and correct wind speed in accordance with the 2009 AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 5th Edition,* and the 2010 and 2011 Interim Revisions.

The manufacturer of the DMS assembly must ensure that design of the assembly is totally compatible with the DMS for mounting and attachment.

Submit six copies of completely detailed shop drawings and one copy of the design computations for the DMS assembly to the Engineer for approval prior to fabrication. Show in the shop drawings complete design and fabrication details including foundations, provisions for attaching DMS and access platform to supporting structures, applicable material specifications, and any other information necessary for procuring and replacing any part of the complete Dynamic message sign assembly.

Allow a minimum of 10 working days for shop drawing approval after the Engineer receives them. If revised drawings are necessary, allow an additional 10 working days for review and approval of final shop drawings.

Approval of shop drawings by the Engineer will not relieve the Design-Build Team of his responsibility for the correctness of drawings, or for the fit of all shop and field connections and anchors.

## C. Design and Fabrication

For additional design and fabrication requirements, reference the Overhead Sign Supports Project Special Provision..

### 1. Dynamic Message Sign Assembly

Fabricate the DMS assembly in accordance with the details shown in the approved shop drawings and with the requirements of this Project Special Provisions.

Determine the actual DMS assembly dimensions from field measurements and DMS enclosure dimensions and furnish revised plans. Attach the DMS assembly to the concrete foundation by the use of galvanized anchor bolts. Furnish anchor

Drill bolt holes and slots to finished size. Holes may also be punched to finished size, provided the diameter of the punched holes is at least twice the thickness of the metal being punched. Flame cutting of bolt holes and slots is not permitted.

Erect sign panels in accordance with the requirements for Type A or B signs as indicated in the plans or Roadway Standard Drawings. Field drill two holes per connection in the Z bars for attaching signs to overhead structures. Provide two U-bolts at each U-bolt connection such as each truss chord to sign hanger and each truss chord to walkway support or light support. Provide two U-bolts at each U-bolt connection where ends of truss chords are supported. The minimum diameter of all U-bolts is ½ inch.

For all U-bolt connections of hanger beams to overhead assembly truss chords, provide all U-bolts with a flat washer and double nuts at each end of the U-bolts. All double nuts that are on any U-bolt shall be the same thickness and weight. When assembled, the double nuts shall be brought tight against each other by the use of two wrenches.

Use two coats of a zinc-rich paint to touch up minor scars on all galvanized materials.

For high strength bolted connections, use direct tension indicators. Galvanize bots, nuts and washers in accordance with the Standard Specifications.

**B. Shop Drawings**

Design the overhead sign supports, including foundations, prior to fabrication. Submit design calculations and working drawings of the designs to the Engineer for review and acceptance.

Have a professional engineer registered in the State of North Carolina perform the computations and render a set of sealed, signed and dated drawings detailing the construction of each structure.

Submit to the Engineer for review and acceptance complete design and fabrication details for each overhead sign assembly, including foundations and brackets for supporting the signs and maintenance walkways, if applicable, electrical control boxes, and lighting luminaires. Base design upon the revised structure line drawings, wind load area and the wind speed shown in the plans, and in accordance with the 2009 AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, *5th Edition*, and the 2010 and 2011 Interim Revisions.

Submit thirteen (13) copies of completely detailed working drawings and one copy of the design calculations including all design assumptions for each overhead sign assembly to the Engineer for approval prior to fabrication. Working drawings shall include complete design and fabrication details (including foundations); provisions for attaching signs, maintenance walkways (when applicable), lighting luminaires to supporting structures, applicable material specifications, and any other information necessary for procuring and replacing any part of the complete overhead sign assembly.

Allow 15 days for initial working drawing review after the Engineer receives them. If revisions to working drawings are required, an additional 15 days shall be required for review and approval of the final working drawings.

Approval of working drawings by the Engineer shall not relieve the Design-Build Team of responsibility for the correctness of the drawings, or for the fit of all shop and field connections and anchors.

## C. Design and Fabrication

The following criteria govern the design of overhead sign assemblies:

Design shall be in accordance with 2009 AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, *5th Edition*, and the 2010 and 2011 Interim Revisions.

Within this Specification, there are several design criteria that are owner specified. They include:

- Overhead cantilever sign structures shall include galloping loads (exclude four-chord horizontal trusses).
- The natural wind gust speed in North Carolina shall be assumed to be 11.6 mph.
- The fatigue importance category used in the design, for each type of structure, shall be for:
    - Cantilever structures with span greater than 50 feet – Fatigue Category I
    - Cantilever structures with span less than or equal to 50 feet – Fatigue Category II
    - Non-cantilever structures – Fatigue Category II

The following Specification interpretations or criteria shall be used in the design of overhead sign assemblies:

- For design of supporting upright posts or columns, the effective length factor for columns "K", as provided for in Appendix B, Section B.5, shall be taken as the following, unless otherwise approved by the Engineer:

    Case 1 For a single upright post of cantilever or span type overhead sign structure, the effective column length factor, "K", shall be taken as 2.0.

    Case 2 For twin post truss-type upright post with the post connected to one chord of a horizontal truss, the effective column length factor for that column shall be taken as 2.0.

    Case 3 For twin post truss-type upright post with the post connected to two truss chords of a horizontal tri-chord or box truss, the effective column length factor for that column shall be taken as 1.65

- For twin post truss-type uprights, the unbraced length of the post shall be from the chord to post connection to the top of base plate.

- For twin post truss-type uprights, when the post is subject to axial compression, bending moment, shear, and torsion the post shall satisfy the 2009 AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, *5th Edition*, and the 2010 and 2011 Interim Revisionss Equations 5-17, 5-18 and 5-19. To reduce the effects of secondary bending, in lieu of Equation 5-18, the following equation may be used:

$$\frac{f_a}{F_a} + \frac{f_b}{\left(1 - \frac{0.6 f_a}{F_{é}}\right) F_b} + \left(\frac{f_v}{F_v}\right)^2 \leq 1.0$$

Where fa = Computed axial compression stress at base of post

- The base plate thickness for all uprights and poles shall be a minimum of 2" but not less than that determined by the following criteria and design.

Case 1 Circular or rectangular solid base plates with the upright pole welded to the top surface of base plate with full penetration butt weld, and where no stiffeners are provided. A base plate with a small center hole, which is less than 1/5 of the upright diameter, and located concentrically with the upright pole, may be considered as a solid base plate.

The magnitude of bending moment in the base plate, induced by the anchoring force of each anchor bolt shall be calculated as M = (P x $D_1$) / 2.

Case 2 Circular or rectangular base plate with the upright pole socketed into and attached to the base plate with two lines of fillet weld, and where no stiffeners are provided, or any base plate with a center hole that is larger in diameter than 1/5 of the upright diameter
The magnitude of bending moment induced by the anchoring force of each anchor bolt shall be calculated as M = P x $D_2$.

- M - bending moment at the critical section of the base plate induced by one anchor bolt
- P - anchoring force of each anchor bolt
- $D_1$ - horizontal distance between the center of the anchor bolt and the outer face of the upright, or the difference between the radius of the bolt circle and the outside radius of the upright

– $D_2$ - horizontal distance between the face of the upright and the face of the anchor bolt nut

- The critical section shall be located at the face of the anchor bolt and perpendicular to the radius of the bolt circle. The overlapped part of two adjacent critical sections shall be considered ineffective.

- The thickness of Case 1 base plate shall not be less than that calculated based on formula for Case 2.

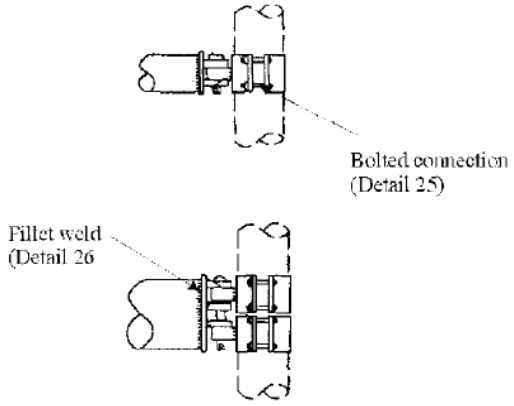
- Uprights, foundations, and trusses that support overhead signs shall be designed in accordance with the Overhead and Dynamic Message Sign Foundations Project Special Provision for the effects of torsion. Torsion shall be considered from dead load eccentricity of these attachments, as well as for attachments such as walkways, supporting brackets, lights, etc., that add to the torsion in the assembly. Truss vertical and horizontal truss diagonals in particular and any other assembly members shall be appropriately sized for these loads.

- Uprights, foundations, and trusses that support overhead mounted signs shall be designed for the proposed sign wind area and future wind areas. The design shall consider the effect of torsion induced by the eccentric force location of the center of wind force above (or below) the center of the supporting truss. Truss vertical and horizontal truss diagonals in particular and any other assembly members shall be appropriately sized for these loads.

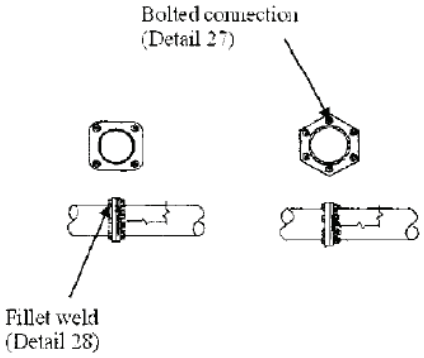
For non-cantilevered monotube sign support structures, the following table and figures are considered as a required addition to the 2009 AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, *5th Edition*, and the 2010 and 2011 Interim Revisions:

| Construction | Detail | Stress Category | Application | Example |
|---|---|---|---|---|
| Mechanically Fastened Connections | 25. Bolts in Tension | D | Beam column connection for monotube structures | 16 |
| Fillet Weld Connections | 26. Fillet welded with one side normal to applied stress | E’ | Beam column connection for monotube structures | 17 |
| Mechanically Fastened Connections | 27. High strength bolts in tension | D | Monotube or truss-chord splice | 17 |
| Fillet Weld Connections | 28. Fillet welded with one side normal to applied stress | E’ | Monotube or truss-chord splice | 17 |
| Mechanically Fastened Connections | 29. U-bolts tied to transverse truss column to keep chords in place | D | Horizontal truss connection with vertical truss | 18 |
| Mechanically Fastened Connections | 30. Net section of full-tightened, high tension bolts in shear | B | Truss bolted joint | 18 |

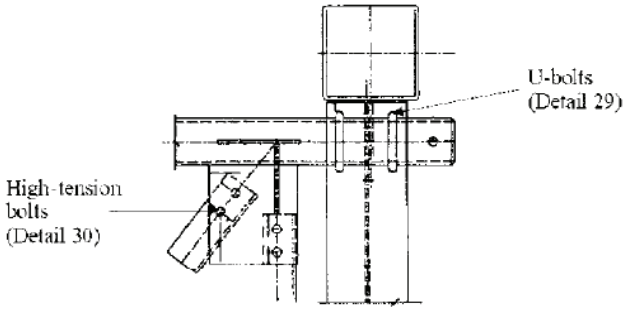
Add to the Specifications, Figure 11-1:




Beam-Column Connection for monotube structure
Example 16




Monotube beam splice
Example 17




Beam-Column Connection for Truss Structure
Example 18

Fabricate all overhead sign assemblies, including but not limited to foundations, in accordance with the details shown on the approved shop drawings and with the requirements of these Specifications.

Fabricate the span and cantilever supporting structures using tubular members of either aluminum or steel, using only one type of material throughout the project. Sign support structures that are to be attached to bridges shall be fabricated using other structural shapes.

Horizontal components of the supporting structures for overhead signs may be of a truss design or a design using singular (monotube) horizontal members to support the sign panels.

Truss or singular member centerline must coincide with the centerline of sign design area shown on the structure line drawing.

Provide permanent camber in addition to dead load camber in accordance with the 2009 AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, *5th Edition*, and the 2010 and 2011 Interim Revisions. Indicate on the shop drawings the amount of camber provided and the method employed in the fabrication of the support to obtain the camber.

Use cantilever sign structures that meet the following design criteria:

a. Do not exceed an L / 150 vertical dead load deflection at the end of the arm due to distortions in the arm and vertical support, where L is the length of the arm from the center of the vertical support to the outer edge of the sign.

b. Do not exceed an L / 40 horizontal deflection at the end of the arm due to distortions in the arm and vertical support, as a result of design wind load.

Fabricate attachment assemblies for mounting signs in a manner that allows easy removal of sign panels for repair.

## OVERHEAD AND DYNAMIC MESSAGE SIGN FOUNDATIONS

(9-1-11) DB11 R013

### Description

Sign foundations include foundations for overhead and dynamic message signs (DMS) supported by metal poles or upright trusses. Sign foundations consist of footings with pedestals or drilled piers with or without grade beams or wings, conduit and anchor rod assemblies. Construct sign foundations in accordance with the contract and accepted submittals. Define "cantilever sign" as an overhead cantilever sign support in accordance with Figure 1-1 of the 2009 AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, *5th Edition*, and the 2010 and 2011 Interim Revisions.

### Materials

Use sign foundation materials that meet the *Foundations and Anchor Rod Assemblies for Metal Poles* provision.

### Assumed Subsurface Conditions

Assume the following soil parameters and groundwater elevation for sign foundations unless these subsurface conditions are not applicable to sign locations:

(D) Unit weight = 120 lb/cf,

(E) Friction angle = 30 degrees,

(F) Cohesion = 0 lb/sf, and

(G) Groundwater 7 ft below finished grade.

A subsurface investigation is required if the Engineer determines these assumed subsurface conditions do not apply to a sign location and the sign cannot be moved. Subsurface conditions requiring a subsurface investigation include but are not limited to weathered or hard rock, boulders, very soft or loose soil, muck or shallow groundwater. No extension of completion date or time will be allowed for subsurface investigations.

**Subsurface Investigations**

Use a prequalified geotechnical consultant to perform one standard penetration test (SPT) boring in accordance with ASTM D1586 at each sign location requiring a subsurface investigation. In fill sections, rough grade sign locations to within 2 ft of finished grade before beginning drilling. Drill borings to 2 drilled pier diameters below anticipated pier tip elevations or refusal, whichever is higher.

Use the computer software gINT version 8.0 or later manufactured by Bentley Systems, Inc. with the current NCDOT gINT library and data template to produce SPT boring logs. Provide boring logs sealed by a geologist or engineer licensed in the state of North Carolina.

**Sign Foundation Designs**

Design sign foundations for the appropriate wind zone and the clearances shown in the plans developed by the Design-Build Team and the slope of finished grade at each sign location. Use the assumed soil parameters and groundwater elevation above for sign foundation designs unless a subsurface investigation is performed or required by the Engineer. For sign locations requiring a subsurface investigation, design sign foundations for the subsurface conditions at each sign location. Design footings, pedestals, drilled piers, grade beams and wings in accordance with the 2009 AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, *5th Edition*, and the 2010 and 2011 Interim Revisions. In some instances, conflicts with drainage structures may dictate sign foundation types.

Design footings in accordance with Section 4.4 of the *AASHTO Standard Specifications for Highway Bridges*. Do not use an allowable bearing pressure of more than 3,000 lb/sf for footings.

Design drilled piers for side resistance only in accordance with Section 4.6 of the *AASHTO Standard Specifications for Highway Bridges* except reduce ultimate side resistance by 25% for uplift. Use the computer software LPILE version 5.0 or later manufactured by Ensoft, Inc. to analyze drilled piers. Provide drilled pier designs with a horizontal deflection of less than 1" at top of piers. For cantilever signs with single drilled pier foundations supporting metal poles, use wings to resist torsion forces. Provide drilled pier designs with a factor of safety of at least 2.0 for torsion.

For drilled pier sign foundations supporting upright trusses, use dual drilled piers connected with a grade beam having a moment of inertia approximately equal to that of either pier. The Broms' method is acceptable to analyze drilled piers with grade beams instead of LPILE. Use a safety factor of at least 3.5 for the Broms' design method in accordance with C13.6.1.1 of the 2009 AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, *5th Edition*, and the 2010 and 2011 Interim Revisions.

**Subsurface Investigations**

Use a prequalified geotechnical consultant to perform one standard penetration test (SPT) boring in accordance with ASTM D1586 at each high mount location requiring a subsurface investigation. In fill sections, rough grade high mount locations to within 2 ft of finished grade before beginning drilling. Drill borings to 2 drilled pier diameters below anticipated pier tip elevations or refusal, whichever is higher.

Use the computer software gINT version 8.0 or later manufactured by Bentley Systems, Inc. with the current NCDOT gINT library and data template to produce SPT boring logs. Provide boring logs sealed by a geologist or engineer licensed in the state of North Carolina.

**High Mount Foundation Designs**

Design high mount foundations for the wind zone and high mount heights shown in the accepted plans developed by the Design-Build Team and the slope of finished grade and subsurface conditions at each high mount location. Design drilled piers, footings and pedestals in accordance with the 2009 AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, *5th Edition*, and the 2010 and 2011 Interim Revisions.

Design drilled piers for side resistance only in accordance with Section 4.6 of the *AASHTO Standard Specifications for Highway Bridges*. Use the computer software LPILE version 5.0 or later manufactured by Ensoft, Inc. to analyze drilled piers. Provide drilled pier designs with a horizontal deflection of less than 0.5" at top of piers.

Design footings in accordance with Section 4.4 of the *AASHTO Standard Specifications for Highway Bridges.* Do not use an allowable bearing pressure of more than 3,000 lb/sf for footings.

Submit boring logs, working drawings and design calculations for acceptance in accordance with Article 105-2 of the *Standard Specifications*. Submit working drawings showing plan views, required foundation dimensions and elevations and typical sections with reinforcement, conduit and anchor rod assembly details. Include all boring logs, design calculations and LPILE output for high mount foundation design submittals. Have high mount foundations designed, detailed and sealed by an engineer licensed in the state of North Carolina.

**Construction Methods**

Grade a 3 ft diameter level work area around high mount locations with cut and fill slopes as shown on Standard Drawing No. 1402.01. Construct drilled piers, footings and pedestals and install anchor rod assemblies for high mount foundations in accordance with the *Foundations and Anchor Rod Assemblies for Metal Poles* provision.

- As delineated on the Combined Public Hearing Map provided by the Department, TIP Project U-2800 has full control of access facilities and a partial control of access facility. Specifically, the mainline (Macy Grove Road) is primarily a full control of access facility with a short section of partial control of access that extends from the beginning of the project to staggered limits north of the -L- / -Y9- intersection. Additionally, -Y2- (US 421 / I-40 Business) and -Y7- are entirely full control of access facilities. The Design-Build Team shall adhere to the specific control of access requirements noted below:
  - Excluding the mainline -Y- Line intersections shown on the U-2800 Preliminary Plans provided by the Department, access points will not be allowed on any full control of access facility.
  - All parcels with 2000 feet of frontage, or less, on the partial control of access portion of the mainline, shall be provided only one access point, unless otherwise approved by the Engineer. For those parcels with less than 2000 feet of frontage along this portion of the mainline and access along another roadway, access may be denied along the mainline. For parcels currently without access points, the Design-Build Team shall only be responsible for providing control of access breaks, not for the construction of driveway stub-outs.
  - As defined above and prior to negotiating with property owners, the Design-Build Team shall delineate the proposed control of access and associated break points on the Right of Way Plans for the Department's review and acceptance.
  - The Design-Build Team shall be responsible for coordinating with, and obtaining approval from, the NCDOT for the woven wire fence placement. The Design-Build Team shall be responsible for installation of the woven wire fence along the control of access, including the replacement of all existing woven wire fence within the project limits.

- The Department has followed the Merger Process used by the Environmental Agencies and the Department to obtain environmental permits. Any variations in the Department's proposed design and / or construction methods that nullify any concurrence points obtained or decisions reached between the Department and the Environmental Agencies; and / or require additional coordination with the Environmental Agencies shall be the sole responsibility of the Design-Build Team. The Department will not honor and requests for additional contract time or additional compensation for any efforts required to obtain approval from the Environmental Agencies, including but not limited to additional design effort, additional construction effort, and / or additional coordination and approvals, associated with design and / or construction modifications.

- Outside the project limits, the Design-Build Team will not be allowed to use the NCDOT right of way and / or property for borrow or waste sites. Within the project limits, the Design-Build Team shall adhere to the following:
  - Only clean waste material may be wasted within the NCDOT right of way or property
  - Debris shall not be buried within the NCDOT right of way or property
  - Normal grading operations shall occur, including but not limited to removal of the existing I-40 Business embankment supporting all removed roadway sections

| TABLE 605-2<br>APPLICATION TEMPERATURE FOR TACK COAT | |
|---|---|
| **Asphalt Material** | **Temperature Range** |
| Asphalt Binder, Grade PG 64-22 | 350 - 400°F |
| Emulsified Asphalt, Grade RS-1H | 130 - 160°F |
| Emulsified Asphalt, Grade CRS-1 | 130 - 160°F |
| Emulsified Asphalt, Grade CRS-1H | 130 - 160°F |
| Emulsified Asphalt, Grade HFMS-1 | 130 - 160°F |
| Emulsified Asphalt, Grade CRS-2 | 130 - 160°F |

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

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

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

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

## ASPHALT BINDER CONTENT OF ASPHALT PLANT MIXES

(9-1-11) DB6 R15

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

| | | |
|---|---|---|
| Asphalt Concrete Base Course | Type B 25.0_ | 4.4% |
| Asphalt Concrete Intermediate Course | Type I 19.0_ | 4.8% |
| Asphalt Concrete Surface Course | Type S 4.75A | 6.8% |
| Asphalt Concrete Surface Course | Type SA-1 | 6.8% |
| Asphalt Concrete Surface Course | Type SF 9.5A | 6.7% |
| Asphalt Concrete Surface Course | Type S 9.5_ | 6.0% |
| Asphalt Concrete Surface Course | Type S 12.5_ | 5.5% |

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

## ASPHALT PLANT MIXTURES

(07-01-95) DB6 R20

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

## STANDARD SPECIAL PROVISION

## ERRATA

(1-17-12) (Rev. 03-20-12) Z-4

Revise the *2012 Standard Specifications for Roads and Structures* as follows:

### Division 2

**Page 2-7, line 31, Article 215-2 Construction Methods,** replace "Article 107-26" with "Article 107-25".

**Page 2-17, Article 226-3, Measurement and Payment, line 2,** delete "pipe culverts,".

**Page 2-20, Subarticle 230-4(B), Contractor Furnished Sources, change references as follows: Line 1,** replace "(4) Buffer Zone" with "(c) Buffer Zone"; **Line 12,** replace "(5) Evaluation for Potential Wetlands and Endangered Species" with "(d) Evaluation for Potential Wetlands and Endangered Species"; and **Line 33,** replace "(6) Approval" with "(4) Approval".

### Division 4

**Page 4-77, line 27, Subarticle 452-3(C) Concrete Coping,** replace "sheet pile" with "reinforcement".

### Division 6

**Page 6-7, line 31, Article 609-3 Field Verification of Mixture and Job Mix Formula Adjustments,** replace "30" with "45".

**Page 6-10, line 42, Subarticle 609-6(C)(2),** replace "Subarticle 609-6(E)" with "Subarticle 609-6(D)".

**Page 6-11, Table 609-1 Control Limits,** replace "Max. Spec. Limit" for the Target Source of $P_{0.075}/P_{be}$ Ratio with "1.0".

**Page 6-40, Article 650-2 Materials,** replace "Subarticle 1012-1(F)" with "Subarticle 1012-1(E)".

### Division 10

**Page 10-74, Table 1056-1 Geotextile Requirements,** replace "50%" for the UV Stability (Retained Strength) of Type 5 geotextiles with "70%".

### Division 12

**Page 12-8, Table 1205-4 and 1205-5,** replace "THERMOPLASTIC" in the title of these tables with "POLYUREA".

### Division 15

**Page 15-6, Subarticle 1510-3(B), after line 21,** replace the allowable leakage formula with the following: $\boldsymbol{W = LD\sqrt{P} \div 148,000}$

**Page 15-6, Subarticle 1510-3(B), line 32, delete "may be performed concurrently or" and replace with "shall be performed".**

**Page 15-17, Subarticle 1540-3(E), line 27,** delete "Type 1".