

-- STATE OF NORTH CAROLINA--  
DEPARTMENT OF TRANSPORTATION  
RALEIGH, N.C.

**FINAL RFP**

**DESIGN-BUILD PROJECT**

**TIP R-2123CE**

**June 29, 2010**



*VOID FOR BIDDING*

DATE AND TIME OF TECHNICAL AND PRICE PROPOSAL SUBMISSION: **August 10, 2010 BY 4:00 PM**

DATE AND TIME OF PRICE PROPOSAL OPENING: **August 25, 2010 AT 2:00 PM**

CONTRACT ID: C202523

WBS ELEMENT NO. 34379.3.GV2

FEDERAL-AID NO. NHF-0485(26)

COUNTY: Mecklenburg/Cabarrus

ROUTE NO. I-85/I-485

MILES: 1.444 Miles

LOCATION: I-485 (Charlotte Eastern Outer Loop) / I-85

TYPE OF WORK: DESIGN-BUILD AS SPECIFIED IN THE SCOPE OF WORK  
CONTAINED IN THE REQUEST FOR PROPOSALS

**NOTICE:**

ALL PROPOSERS SHALL COMPLY WITH ALL APPLICABLE LAWS REGULATING THE PRACTICE OF GENERAL CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA WHICH REQUIRES THE PROPOSER TO BE LICENSED BY THE N.C. LICENSING BOARD FOR CONTRACTORS WHEN BIDDING ON ANY NON-FEDERAL AID PROJECT WHERE THE BID IS \$30,000 OR MORE, EXCEPT FOR CERTAIN SPECIALTY WORK AS DETERMINED BY THE LICENSING BOARD. PROPOSERS SHALL ALSO COMPLY WITH ALL OTHER APPLICABLE LAWS REGULATING THE PRACTICES OF ELECTRICAL, PLUMBING, HEATING AND AIR CONDITIONING AND REFRIGERATION CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA. NOT WITHSTANDING THESE LIMITATIONS ON BIDDING, THE PROPOSER WHO IS AWARDED ANY PROJECT SHALL COMPLY WITH CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA FOR LICENSING REQUIREMENTS WITHIN 60 CALENDAR DAYS OF BID OPENING, REGARDLESS OF FUNDING SOURCES.

\_\_\_\_\_  
5% BID BOND OR BID DEPOSIT REQUIRED  
\_\_\_\_\_

**PROPOSAL FORM FOR THE CONSTRUCTION OF CONTRACT NO. C202523  
IN MECKLENBURG and CABARRUS COUNTIES, NORTH CAROLINA**

Date \_\_\_\_\_ 20 \_\_\_\_\_

**DEPARTMENT OF TRANSPORTATION,  
RALEIGH, NORTH CAROLINA**

The Design-Build Team herein acknowledges that it has carefully examined the location of the proposed work to be known as Contract No C202523; has carefully examined the Final Request for Proposals (RFP) and all addendums thereto, specifications, special provisions, the form of contract, and the forms of contract payment bond and contract performance bonds, which are acknowledged to be part of the Contract; and thoroughly understands the stipulations, requirements and provisions. The undersigned Design-Build Team agrees to be bound upon their execution of the Contract and including any subsequent award to them by the Board of Transportation in accordance with this Contract to provide the necessary contract payment bond and contract performance bond within ninety (90) calendar days after the written notice of award is received by them.

The undersigned Design-Build Team further agrees to provide all necessary materials, machinery, implements, appliances, tools, labor, and other means of construction, except as otherwise noted, to perform all the work and required labor to design and construct, and complete all the work necessary for State Highway Contract No. C202523 in Mecklenburg and Cabarrus Counties by no later than the date specified in the Final RFP or Technical Proposal, whichever is earlier, and in accordance with the requirements of the Engineer, the Final RFP and Addenda thereto, the *2006 Standard Specifications for Roads and Structures*, specifications prepared by the Department, the Technical Proposal prepared by the Design-Build Team, at the lump sum price(s) bid by the Design-Build Team in their Price Proposal.

The Design-Build Team shall provide signed and sealed documents prepared by the Design-Build Team, which specifications and plans show the details covering this project and adhere to the items noted above.

The Design-Build Team acknowledges that project documents furnished by the Department are preliminary and provided solely to assist the Design-Build Team in the development of the project design. Unless otherwise noted herein, the Department does not warrant or guarantee the sufficiency or accuracy of any information furnished by the Department.

The Department does not warrant or guarantee the sufficiency or accuracy of any investigations made, nor the interpretations made or opinions of the Department as to the type of materials and conditions to be encountered at the project site. The Design-Build Team is advised to make such independent investigations, as they deem necessary to satisfy their self as to conditions to be encountered on this project. The Design-Build Team shall have no claim for additional compensation or for an extension of contract time for any reason resulting from the actual conditions encountered at the site differing from those indicated in any of the information or documents furnished by the Department except as may be allowed under the provisions of the Standard Specifications.

Although the Department has furnished preliminary designs for this project, unless otherwise noted herein, the Design-Build Team shall assume full responsibility, including liability, for the

project design, including the use of portions of the Department design, modification of such design, or other designs as may be submitted by the Design-Build Team.

The Design-Build Team shall be fully and totally responsible for the accuracy and completeness of all work performed under this contract, and shall indemnify and hold the Department harmless for any additional costs and all claims against the Department or the State which may arise due to errors or omissions of the Department in furnishing the preliminary project designs and information, and of the Design-Build Team in performing the work.

The published volume entitled *North Carolina Department of Transportation, Raleigh, Standard Specifications for Roads and Structures, JULY 2006*, as well as, all design manuals, policy and procedures manuals, and AASHTO publications and guidelines referenced in the Request For Proposals, with all amendments and supplements thereto, are by reference, incorporated and made part of this contract; that, except as herein modified, all the design, construction and Construction Engineering Inspection included in this contract is to be done in accordance with the documents noted above and under the direction of the Engineer.

If the Design-Build Proposal is accepted and the award is made, the Technical Proposal submitted by the Design-Build Team is by reference, incorporated and made part of this contract. The contract is valid only when signed either by the Contract Officer or such other person as may be designated by the Secretary to sign for the Department of Transportation. The conditions and provisions herein cannot be changed except by written approval as allowed by the Request for Proposals.

Accompanying the Design-Build Proposal shall be a bid bond secured by a corporate surety, or certified check payable to the order of the Department of Transportation, for five percent of the total bid price, which deposit is to be forfeited as liquidated damages in case this bid is accepted and the Design-Build Team shall fail to provide the required payment and performance bonds with the Department of Transportation, under the condition of this proposal, within the time allotted herein, as provided in the Standard Specifications; otherwise said deposit will be returned to the Design-Build Team.



*Transportation Program  
Management Director*



*State Contract Officer*

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**PROPOSAL FORMS - ITEMIZED SHEET, ETC.**

Itemized Proposal Sheet (WHITE SHEET)

Fuel Usage Factor Chart and Estimate of Quantities (WHITE SHEET)

Listing of DBE Subcontractors (YELLOW SHEET)

Execution of Bid, Noncollusion Affidavit, Debarment Certification and Gift Ban  
Certification (YELLOW SHEETS)

Signature Sheet (YELLOW SHEETS)

**\*\*\* PROJECT SPECIAL PROVISIONS \*\*\*****DURATION OF CONTRACT**

The duration of this contract is dependent on the Design-Build Team's Price Proposal in relation to the Schedule of Payments provided herein.

In the event that the Price Proposal is sufficiently low such that no further payment is required beyond the Final Payment made for the Final Estimate, the contract will extend until such time that the Final Payment is made in accordance with Article 109-9 of the Standard Special Provision entitled Division One.

In the event that the Price Proposal is such that additional payments are due to the Design-Build Team following the Final Payment made for the Final Estimate, the contract will extend until such time that the Final Contract Payment is paid to the Design-Build Team.

Reference the Standard Special Provision entitled Division One for definitions of Final Payment and Final Contract Payment.

**CONTRACT TIME AND LIQUIDATED DAMAGES**

07/12/07

DB1 G04A

The date of availability for this contract is defined as the day after the contract is executed by the Department, except that the Design-Build Team shall not begin ground disturbing activities, other than utility relocations in upland areas, until a meeting is held between the NCDOT, the regulatory agencies and the Design-Build Team; and the required permits have been acquired, as stipulated in the Environmental Permits Scope of Work contained elsewhere in this Request for Proposals (RFP). The Design-Build Team shall consider this factor in determining the proposed completion date for this project.

The completion date for the construction of this project is defined as the date proposed in the Technical Proposal by the proposer who is awarded the project. The completion date for the construction of this project thus proposed shall not be later than **October 1, 2014**.

When observation periods are required by the special provisions, they are not a part of the work to be completed by the completion date and/or intermediate contract times. Should an observation period extend beyond the final completion date, the acceptable completion of the observation period shall be a part of the work covered by the performance and payment bonds.

The liquidated damages for this contract are **Twenty Thousand Dollars (\$20,000.00)** per calendar day.



**OTHER LIQUIDATED DAMAGES AND INCENTIVES**

(3/22/07) (Rev. 02/14/08)

DB1 G11

**Refer to the Traffic Management Scope of Work for more information on the following time restrictions and liquidated damages:**

Liquidated Damages for Intermediate Contract Time #1 for the lane narrowing, lane closure, holiday and special event time restrictions for I-85, I-485, I-85 ramps, and I-485 ramps is \$2,500 per 15-minute period or any portion thereof.

Liquidated Damages for Intermediate Contract Time #2 for lane narrowing, lane closure, holiday and special event time restrictions for SR 2467 Mallard Cr. Rd. is \$1,500 per 15-minute period or any portion thereof.

Liquidated Damages for Intermediate Contract Time #3 for road closure time restrictions for I-85, I-485, I-85 ramps, and I-485 ramps (including the specific offsite detours permitted by this RFP and noted in Technical Proposal) are \$5,000.00 per 15-minute period or any portion thereof.

Liquidated Damages for Intermediate Contract Time #4 for road closure time restrictions for SR 2467 Mallard Cr. Rd. are \$2,500.00 per 15-minute period or any portion thereof.

**Refer to the Erosion and Sedimentation Control Scope of Work for information regarding liquidated damages associated with erosion and sedimentation control violations.****Reference the ITS System Scope of Work for liquidated damages for Intermediate Contract Time #5 for failure to repair / relocate ITS devices and equipment, and restore communication.****PROJECT FINANCE**

The Department has established a target maximum price and a maximum schedule of payments as identified in the Schedule of Payments Project Special Provision. This schedule of payments has been established in concert with the contract completion date. As such, depending on the Design-Build Team's Price Proposal and Progress schedule, a variable amount of financing may be required of the Design-Build Team.

To provide this financing to accommodate the schedule of payments, the Design-Build Team may elect to provide self-finance through their corporate structure(s), may elect to utilize a project specific escrow or trust account to facilitate third party financing, may elect to secure financing in some other manner, or a combination thereof.

In the event that third party finance is utilized, the Department will not be a party to any agreement, contract, or other binding document with the third party financier. However, the Department will consider acknowledging the existence of a third party finance relationship provided the acknowledgement does not require the Department to be a party to any agreement and that the acknowledgement does not violate §143B-426.40A.

## **MAXIMUM PRICE**

The Schedule of Payments Project Special Provision provides payments which total \$131.2 million. This sum represents the Department's target maximum price for this contract. A Design-Build Team's Technical and Price Proposal will be deemed non-responsive in the event that their adjusted price exceeds the target maximum price. Reference the General Section of this RFP for the calculation of adjusted price. If the Design-Build Team's Technical and Price Proposal is deemed non-responsive for this reason, that determination will in no way disqualify that Design-Build Team from further pursuit of the contract in the event that the Department elects to solicit a Best and Final Offer.

## **SCHEDULE OF PAYMENTS**

The Design-Build Team's attention is directed to the Standard Special Provision entitled "Availability of Funds - Termination of Contracts" included elsewhere in this RFP. The Department of Transportation's schedule of funding availability for this project is as follows:

SFY	July 1	October 1	January 1	April 1	Total
2011	9.2	3.4	3.4	6.9	22.9
2012	6.9	3.4	3.4	9.2	22.9
2013	9.2	4.6	4.6	6.9	25.3
2014	9.2	4.6	4.6	6.9	25.3
2015	9.2	6.1	1.5	1.5	18.3
2016	0.9	0.8	0.8	0.8	3.3
2017	0.9	0.8	0.8	0.8	3.3
2018	0.9	0.8	0.8	0.8	3.3
2019	0.9	0.8	0.8	0.8	3.3
2020	0.9	0.8	0.8	0.8	3.3
<b>Total</b>					<b>131.2</b>

All figures in the above table are presented in \$ Millions. All funds are available to the Engineer for making partial payments to the Design-Build Team on the first day of the quarter as noted above. The payment schedule will be cumulative such that any funds not expended during any given quarter will be added to the next quarter's availability of funds. This cumulative effect will continue to subsequent quarters.

The Design-Build Team shall furnish its own progress schedule in accordance with Project Special Provision entitled "Progress Schedule." Any acceleration of progress beyond the above availability of payments will be made at the Design-Build Team's expense and risk. Payment for

the work covered by this contract will be limited by both the Design-Build Team's progress and the above table.

### **Adjustments to Schedule of Payments**

In the event that the successful Design-Build Team's Price Proposal is below the Total shown above, the payment schedule will be amended by eliminating the latest payments until the total of payments is equal to the Design-Build Team's Price Proposal (e.g. a Price Proposal of \$118 Million would be fully paid by the end of State Fiscal Year 2016).

In the event that the successful Design-Build Team's Price Proposal exceeds the Total shown above, the payment schedule will be amended in the following manner. The amount that the Price Proposal exceeds the Total above will be divided by twenty and the result will be added to each quarter up until, and including, the 4<sup>th</sup> quarter of State Fiscal Year 2015.

### **Reserved Funds**

The Department has reserved funding beyond that shown in the above table to provide payment for fuel price adjustments, asphalt binder adjustments, alterations in the contract made by the Engineer, and any additional payments due to the Contractor in accordance with Article 104-8 of the Standard Specifications for Roads and Structures. These contingency funds are independent of the above payment schedule. Payments for fuel price adjustments, asphalt binder adjustments, alterations in the contract, and any additional payments due to the Contractor in accordance with Article 104-8 of the Standard Specifications for Roads and Structures will be paid for by the Department with each applicable partial payment and consistent with the Design-Build Team's progress related to these items and in accordance with the appropriate specifications contained in this RFP and the 2006 Standard Specifications for Roads and Structures.

### **PARTIAL PAYMENT REQUESTS AND INVOICE PROCEDURES**

Until such time that the Final Payment is made for the construction of the project, partial payments will be made in accordance with Article 109-4(A) of the Division One Standard Special Provision, Article 109-5 of the Standard Specifications for Roads and Structures and as amended by the Division One Standard Special Provision, and Article 109-6 of the Standard Specifications for Roads and Structures.

All partial payments will be subject to the limitations of the payment schedule contained in the Schedule of Payments Project Special Provision. If at any time a request for partial payment results in the cumulative payments made to date to exceed the cumulative amount available as detailed in the Schedule of Payments Project Special Provision, the partial payment will be reduced by that amount that the cumulative payments made to date exceed the cumulative amount available. Any such reduction may then be included in the next request for partial payment.

Payments for fuel price adjustments, asphalt binder adjustments, alterations in the contract, and any additional payments due to the Contractor in accordance with Article 104-8 of the Standard Specifications for Roads and Structures will be paid for by the Department with each partial

payment and consistent with the Design-Build Team's progress related to these items and in accordance with the specifications contained in this RFP and the 2006 Standard Specifications for Roads and Structures. The dollar amount of these adjustments that are due to the Design-Build Team or the Department will be made without impact to the availability payments shown in the Schedule of Payments Project Special Provision.

After payment of the Final Payment for the construction of the project, payments will be made quarterly upon invoice by the Contractor. These invoices may be submitted on the first day of the fiscal quarter. These invoices shall cumulatively represent all payments not made with the Final Payment and each invoice shall be in the amount so designated in the schedule of payments contained in the Schedule of Payments Project Special Provision. The Department will allow a third party financier to submit invoices on the Contractor's behalf if so requested in writing by the Contractor.

### **Project Specific Escrow or Trust Account**

If requested in writing by the Contractor, the Department will make payments to a project specific escrow or trust account, provided the escrow account is in the name of the legal entity with which the Department has entered into this contract. All costs associated with such an escrow account shall be fully borne by the Contractor. The intention to utilize such an account shall be included in the Finance Plan submitted with the Technical and Price Proposals.

The request to establish the project specific escrow or trust account shall be made by submitting four copies of the escrow or trust account agreement to the State Contract Officer. Forms for such an agreement are available from the Department upon request.

### **Retainage and Acknowledgement of Completed Work**

No retainage of future payments will be withheld except as otherwise permitted by the Standard Specifications for Roads and Structures, and as may be amended through the Division One Standard Special Provision. Partial payments will be considered irrevocable and payment of such will constitute the Engineer's acknowledgement that the work covered by the request for partial payment has been completed. This acknowledgement will apply to all work contained in the request for partial payment that is verified by the Engineer to have been completed, including any work for which partial payment is deferred in accordance with this provision and the Schedule of Payments Project Special Provision. Partial payments made, however, will not relieve the Contractor to correct material or workmanship deficiencies nor relieve the Contractor of any obligation due under the Twelve Month Guarantee Project Special Provision or any additional warranty or guarantee pledged by the Contractor in its Technical Proposal. Partial payments made will also not relieve any professional liability of any design firm or any other member of the Design-Build Team.

### **FINANCE PLAN SUBMITTAL**

Proposers must submit a Finance Plan along with their Technical Proposal and Price Proposal. Reference the General Section of this RFP for submittal instructions. The Finance Plan is required such that the Department can conduct an independent analysis of any proposed

partnership with a third party financier that demonstrates an overall benefit to the public prior to award of the contract. In addition, the review of the Finance Plan will enable the Department to be reasonably assured that the Design-Build Team has the ability to meet the cash flow needs of the project while accommodating the schedule of payments provided in the Schedule of Payments Project Special Provision.

The Finance Plan will reflect the Design-Build Team's intent to utilize or forego third party financing, and the timing of the pursuit of such third party financing.

No claims for damages may be made against the Department based on or arising out of the Department's review of the Finance Plan. The Department's review of the Finance Plan will neither create, modify, nor activate any legal rights or obligations of the Department. The Department reserves the right to request and receive additional information regarding the Finance Plan deemed necessary to complete the Department's due diligence and complete the pass/fail evaluation.

The Finance Plan shall include, but not necessarily be limited to, the following:

- The source and use of all funds to finance the project.
- A certification from the prime Contractor's Chief Financial Officer that all components of the Financial Qualifications package previously submitted in response to the Request for Qualifications remain valid, or a certified document outlining any changes from those components previously submitted in the Financial Qualifications package. These statements must be for all parties of any legal partnership or joint venture providing financial support to the project.
- Confirmation of any and all financial warranties, bonds, sureties and other commitments for the financial security of the project, and certification as may be appropriate.

In addition to the above, if the Design-build Team elects to utilize third party financing to accommodate the schedule of available payments, the following information is also required:

- Organizational structure illustrating the financial relationships with other entities.
- A discussion of the intent to implement a project specific escrow account for all receivables.
- A preliminary or final Letter of Commitment from a financial institution.
- A certification, commensurate with that required of the prime contractor and lower tier participants, that the financial institution(s) have not participated in any collusion during this procurement process.
- An estimate of when the Design-Build Team will pursue third party financing.
- An estimate of the time required to secure financial close of all third party financing.
- A narrative regarding the interaction between the Design-Build Team's surety company and the financial institution providing the Letter of Commitment.

**PROGRESS SCHEDULE**

(07/29/09)

DB1 G12

Revise the *2006 Standard Specifications for Roads and Structures* as follows:

**Page 1-72, Article 108-2 Progress Schedule, delete in its entirety and replace with the following:**

The Design-Build Team shall prepare and submit for review and approval a schedule of proposed working progress. This schedule shall be submitted on forms supplied by the Engineer or in a format that is approved by the Engineer. A detailed Critical Path Method (CPM) schedule shall not be submitted to replace the progress schedule details required below.

The Design-Build Team shall submit a Progress Schedule for review within thirty (30) calendar days after the contract is executed by the Department. The Department will review the Progress Schedule within twenty-one (21) calendar days of receipt. The Design-Build Team shall make any necessary corrections and adjustments to the Progress Schedule as necessitated by the Department's review within seven (7) calendar days. The Department will review the revised Progress Schedule within seven (7) calendar days of receipt.

When the Engineer has extended the completion date the Design-Build Team shall submit a revised progress schedule to the Engineer for review and approval. If plan revisions are anticipated to change the sequence of operations in such a manner as will effect the progress but not the completion date, then the Design-Build Team may submit a revised progress schedule for review and approval but the completion date shall remain unchanged.

The proposed progress schedule shall contain the following items:

- (A) A time scale diagram with major work activities and milestone dates clearly labeled.
- (B) A cash curve corresponding to the milestones and work activities established above.
- (C) A written narrative that explains the sequence of work, the controlling operation(s), intermediate completion dates, milestones, project phasing, anticipated work schedule, and estimated resources. In addition, explain how permit requirements, submittal tracking, and coordination with subcontractors, utility companies and other entities will be performed.

Major work activities are defined as components comprising more than 5% of the total project cost or occupying more than 10% of total contract time and shall include, if applicable, the following:

Clearing and grubbing  
 Grading  
 Drainage  
 Soil stabilization  
 Aggregate base course  
 Pavement  
 Culverts  
 Bridges (including removal)  
 Signals, ITS and lighting  
 Overhead signs  
 Utility relocation and construction

Major Milestones are derived from the project construction phasing and shall include, if applicable, the following:

Critical design submittal dates  
 Critical permitting dates  
 Completion of right of way acquisition  
 Completion of Utility Conflicts  
 Start of construction  
 Intermediate completion dates or times  
 Seasonal limitation /observation period s/ moratoriums  
 Traffic shifts  
 Beginning and end of each traffic control phase or work area  
 Road openings  
 Completion date

The Design-Build Team shall provide a written narrative each month detailing the work and percentage of work completed, anticipated sequence of upcoming work (2 month forecast), controlling operation(s), intermediate completion dates, and milestones. If any milestones are exceeded or will not be achieved, the Design-Build Team shall provide in the written narrative details of the delay; controlling operation affected, impacts to other operations, revisions to future intermediate completion dates and milestones, and remedial action necessary to get the project back to the original completion date.

### **MOBILIZATION**

(10-31-05) (Rev 01-3-07)

DB1 G15B

Revise the 2006 *Standard Specifications for Roads and Structures* as follows:

### **Page 8-1, Subarticle 800-2, MEASUREMENT AND PAYMENT**

Delete this subarticle in its entirety and replace with the following:

**800-2 MEASUREMENT AND PAYMENT**

5 percent of the “Total Amount of Bid for Entire Project” shall be considered the lump sum amount for Mobilization. Partial payments for Mobilization will be made beginning with the first partial pay estimate paid on the contract. Payment will be made at the rate of 50 percent of the lump sum amount calculated for Mobilization. The remaining 50 percent will be paid with the partial pay estimate following approval of all permits required in the Environmental Permits Scope of Work for this project.

**SUBMITTAL OF QUANTITIES, FUEL BASE INDEX PRICE AND OPT-OUT OPTION**

(07-21-09)

DB1 G43

**(A) Submittal of Quantities**

**Submit quantities** on the *Fuel Usage Factor Chart and Estimate of Quantities* sheet, located in the back of this RFP, following the Itemized Proposal Sheet.

The Design-Build Team shall prepare an Estimate of Quantities that they anticipate incorporating into the completed project and upon which the Price Proposal was based. The quantity breakdown shall include all items of work that appear in the *Fuel Usage Factor Chart and Estimate of Quantities* sheet. Only those items of work which are specifically noted in the Fuel Usage Factor Chart will be subject to fuel price adjustments. The quantity estimate submitted in the Price Proposal shall be the final total quantity limit for which fuel price adjustments will be made for each item, regardless of supplemental agreements. The Department will review the Estimate of Quantities to ensure its reasonableness to the proposed design. Agreement of quantities will be a prerequisite prior to execution of the contract.

**Submittal** The submittal shall be signed and dated by an officer of the Design-Build Team. The information shall be copied and submitted in a separate sealed package with the outer wrapping clearly marked “Fuel Price Adjustment” and shall be delivered at the same time and location as the Technical and Price Proposal. The original shall be submitted in the Price Proposal.

**Trade Secret** Information submitted on the *Fuel Usage Factor Chart and Estimate of Quantities* sheet will be considered “Trade Secret” in accordance with the requirements of G.S. 66-152(3) until such time as the Price Proposal is opened.

**(B) Base Index Price**

The Design-Build Team’s Estimate of Quantities will be used on the various partial payment estimates to determine fuel price adjustments. The Design-Build Team shall submit a payment request for quantities of work completed based on the work completed for that estimate period. The quantities requested for partial payment shall be reflective of the work actually accomplished for the specified period. The Design-Build Team shall certify that the quantities are reasonable for the specified period. **The base index price for DIESEL #2 FUEL is \$ 2.1762 per gallon.**



**(C) Opt Out of Fuel Price Adjustment**

If the Design-Build Team elects not to pursue reimbursement for Fuel Price Adjustments, a quantity of zero shall be entered for all quantities in the *Fuel Usage Factor Chart and Estimate of Quantities* and the declination box shall be checked. Failure to complete this form will mean that the Design-Build Team is declining the Fuel Price Adjustments for this project.

**(D) Change Option** The proposer will not be permitted to change the option after the Price Proposal and the copy of the *Fuel Usage Factor Chart and Estimate of Quantities* sheet are submitted.

**(E) Failure to submit** the completed *Fuel Usage Factor Chart and Estimate of Quantities* sheet separately and in the Price Proposal will result in the Technical and Price Proposal being considered irregular by the Department and the Technical and Price Proposal may be rejected.

**(F) Payment** of each fuel price adjustment due to the Design-Build Team will be paid with each partial payment in accordance with Article 109-8 of the Standard Specifications and this provision. The dollar amount of fuel price adjustments that are due to the Design-Build Team or the Department will be made without impact to the availability payments shown in the Schedule of Payments Project Special Provision.

**PARTNERING**

04/03/07

DB1 G49

**Project Specific Partnering**

As a part of its quality management program, the North Carolina Department of Transportation intends to encourage the formation of a cohesive relationship with the Design-Build Team and its principal subcontractors and suppliers. This relationship will be structured to draw on the strengths of each organization to identify and achieve reciprocal goals. The objectives are safe, effective, and efficient contract performance; and completion within budget, on schedule, and in accordance with the plans and specifications.

This relationship will be bilateral in makeup and participation will be totally voluntary. The cost associated with effectuating this relationship will be agreed to by both parties and shall be shared equally. Compensation for the Department's share of the partnering costs will be by Supplemental Agreement.

To implement this initiative prior to starting work in accordance with the requirements of Section 108 of the Standard Specifications and the Standard Special Provision for Division One (found elsewhere in this RFP), and prior to the preconstruction conference, the Design-Build Team's management personnel and Division Construction Engineer will initiate a partnering development seminar/team building workshop. Project personnel working with the assistance of the Construction Unit will make arrangements to determine attendees at the workshop, agenda of the workshop, duration, and location. Persons required to be in attendance will be the NCDOT

Resident Engineer, the NCDOT Division Construction Engineer, and key project personnel; the Design-Build Team's senior management personnel, the Design-Build Team's on-site project manager, and key project supervisory personnel for both the Design-Build Team and principal subcontractors and suppliers. The project design engineers, FHWA, and key local government personnel will also be invited to attend as necessary.

Follow-up workshops may be held periodically throughout the duration of the contract as agreed by the Design-Build Team and the North Carolina Department of Transportation. In the event that additional workshops are held, compensation for the Department's share of the follow-up partnering workshops will be by Supplemental Agreement.

The establishment of the partnering charter on a project will not change the legal relationship to the contract nor relieve either party from any of the terms of the contract.

### **Multi-Project Partnering**

Due to the proximity of two additional Design-Build Projects that will be under design and construction concurrently with the R-2123CE Project, the Design-Build Team shall participate in a multi-project partnering workshop. In concert with the key personnel from the I-3803B and R-2248E Design-Build Projects, the Department, with assistance from the Design-Build Team, will determine attendees, develop an agenda and secure a location for the workshop. The Department will be responsible for all costs associated with arranging this multi-project workshop. Attendance shall be mandatory for the Design-Build Team's key design and construction personnel.

If necessary, follow-up multi-project workshops will be held. In the event that additional workshops are held, the requirements / responsibilities noted above shall apply.

### **EXECUTION OF SIGNATURE SHEETS AND DEBARMENT CERTIFICATION**

(3-24-10)

DB1 G52

The Proposer's attention is directed to the various sheets in the Request for Proposals which are to be signed by the Proposer. A list of these sheets is shown below. The signature sheets are located behind the Itemized Proposal Sheet in this Request for Proposal. The NCDOT bid bond form is available on-line at:

**[http://www.ncdot.org/doh/preconstruct/altern/design\\_build/R2123CE/R2123CE.html](http://www.ncdot.org/doh/preconstruct/altern/design_build/R2123CE/R2123CE.html)**

or by contacting the Records and Documents office at 919-250-4124.

1. Applicable Signature Sheets: 1, 2, 3, 4, 5, or 6 (Bid)
2. Bid Bond dated the day of Technical and Price Proposal submission

The Proposer shall certify to the best of his knowledge all subcontractors, material suppliers and vendors utilized herein current status concerning suspension, debarment, voluntary exclusion, or determination of ineligibility by any federal agency, in accordance with the "Debarment

Certification" located behind the *Execution of Bid Non-Collusion Affidavit, Debarment Certification and Gift Ban Certification* signature sheets in this RFP. Execution of the bid signature sheets in conjunction with any applicable statements concerning exceptions, when such statements have been made on the "Debarment Certification", constitutes the Proposer's certification of "status" under penalty of perjury under the laws of the United States.

### **SUBMISSION OF DESIGN-BUILD PROPOSAL**

03/17/10

DB1 G55A

The Proposer's attention is directed that each Proposer's Design-Build Proposal shall comply with the following requirements in order for that Design-Build Proposal to be responsive and considered for award.

1. The Proposer shall be prequalified with the Department prior to submitting a Design-Build Proposal.
2. The Proposer shall deliver the Design-Build Proposal to the place indicated, and prior to the time indicated in this Request for Proposals.
3. The Design-Build Proposal documents shall be signed by an authorized employee of the Proposer.
4. The Design-Build Proposal shall be accompanied by Bid surety in the form of a Bid Bond or Bid Deposit, dated the day of Technical and Price Proposal submission.
5. If Disadvantaged Business Enterprises (DBE) goals are established for this contract, the Proposer shall complete the form Listing of DBE Subcontractors contained elsewhere in this RFP in accordance with the Project Special Provision entitled Disadvantaged Business Enterprises.
6. The Design-Build Proposal shall be accompanied by a Financial Plan in accordance with the Financial Plan Submittal Project Special Provision.
7. The Design-Build Proposal shall address all the requirements as specified in this Request for Proposals.

In addition to the above requirements, failure to comply with any of the requirements of Article 102-8 of the Standard Special Provisions, Division One (found elsewhere in this RFP), Article 102-10 of the 2006 Standard Specifications, or Article 102-11 of the Standard Specifications and as amended in the Standard Special Provisions, Division One may result in a Design-Build Proposal being rejected.

### **ALTERNATIVE TECHNICAL CONCEPTS AND CONFIDENTIAL QUESTIONS**

To accommodate innovation that may or may not be specifically allowed by the RFP, or other documents incorporated into the contract by reference, the Design-Build Team has the option of submitting Confidential Questions and Alternative Technical Concepts.

## **Definitions**

A Confidential Question is defined as a private query to the Department containing information whose disclosure could alert others to certain details of doing business in a particular manner.

An Alternative Technical Concept is a private query to the Department that requests a variance to the requirements of the RFP, or other documents incorporated into the contract by reference, that is equal or better in quality or effect as determined by the Department in its sole discretion and that have been used elsewhere under comparable circumstances.

## **Confidential Questions**

The Design-Build Team will be permitted to ask Confidential Questions of the Department, and neither the question nor the answer will be shared with other Design-Build Teams. The Department, in its sole discretion, will determine if a question is considered confidential.

Confidential Questions arising prior to issuance of the Final RFP will be allowed during the industry review of the draft RFP with the individual Design-Build Teams. The Department will answer the Confidential Question verbally at the industry review meeting, if possible, and/or through subtle changes in the Final RFP, which will clarify the scope by either allowing or disallowing the request. To the greatest extent possible, the revision will be made in such a manner as to not disclose the Confidential Question.

After the issuance of the Final RFP, Confidential Questions may be asked by requesting a meeting with the State Contract Officer. The request shall be in writing and provide sufficient detail to evaluate the magnitude of the request. Questions shall be of such magnitude as to warrant a special meeting. Minor questions will not be acknowledged or answered. After evaluation, the State Contract Officer will respond to the question in writing to the Design-Build Team and/or through subtle changes in the Final RFP as reflected in an addendum, which will clarify the scope by either allowing or disallowing the request. To the greatest extent possible, the revision will be made in such a manner as to not disclose the Confidential Question.

If the Design-Build Team includes work based on the Confidential Questions and answers, the work shall be discussed in the Technical Proposal.

## **Alternative Technical Concepts**

The Design-Build Team may include an ATC in the Technical and Price Proposal only if the ATC has been received by the Department by no later than 5 weeks prior to the deadline for submitting Technical and Price Proposals and it has been approved by the Department (including conditionally approved ATCs, if all conditions are met).

The submittal deadline above applies only to initial ATC submittals. Resubmittal of an ATC that has been revised in response to the Department's requests for further information concerning a prior submittal shall be received by the Department **no later than one week** prior to the deadline for submitting Technical and Price Proposals.

Should the Department revise the RFP after a Formal ATC has been approved, the Design-Build Team shall be solely responsible for reviewing the RFP and determining if the ATC deviates from the revised requirements. If necessary, the Design-Build Team must submit a request for approval of all additional required variance(s) within five business days of the revised RFP distribution.

An ATC shall in no way take advantage of an error or omission in the RFP, or other documents incorporated into the contract by reference. If, at the sole discretion of the Department, an ATC is deemed to take an advantage of an error or omission in the RFP, or other documents incorporated into the contract by reference, the RFP will be revised without regard to confidentiality.

By approving an ATC, the Department acknowledges that the ATC may be included in the design and RFC plans; however, approval of any ATC in no way relieves the Design-Build Team of its obligation to satisfy (1) other contract requirements not specifically identified in the ATC submittal; (2) any obligation that may arise under applicable laws and regulations; and (3) any obligation mandated by the regulatory agencies as a permit condition.

### **ATC Submittals**

Each ATC submittal shall include three individually bound hard copies and an electronic pdf file of the entire submittal and shall be submitted to the State Contract Officer at the address provided elsewhere in this RFP.

### **Formal ATCs**

Each Formal ATC submittal shall include the following information:

- 1) Description. A detailed description and schematic drawings of the configuration of the ATC or other appropriate descriptive information (including, if appropriate, product details [i.e., specifications, construction tolerances, special provisions] and a traffic operational analysis, if appropriate);
- 2) Usage. Where and how the ATC would be used on the project;
- 3) Deviations. References to all requirements of the RFP, or other documents incorporated into the contract by reference, that are inconsistent with the proposed ATC, an explanation of the nature of the deviations from said requirements, and a request for approval of such variance(s);
- 4) Analysis. An analysis justifying use of the ATC and why the variance to the requirements of the RFP, or other documents incorporated into the contract by reference, should be allowed;
- 5) Impacts. Discussion of potential impacts on vehicular traffic, environmental impacts identified, community impact, safety and life-cycle project impacts, and infrastructure costs (including impacts on the cost of repair and maintenance);

- 6) History. A detailed description of other projects where the ATC has been used, the success of such usage, and names and telephone numbers of project owners that can confirm such statements;
- 7) Risks. A description of added risks to the Department and other entities associated with implementing the ATC; and
- 8) Costs. An estimate of the ATC implementation costs to the Department, the Design-Build Team, and other entities (right-of-way, utilities, mitigation, long term maintenance, etc.).

The Formal ATC, if approved, shall be included in the Price Proposal if the Design-Build Team elects to include it in their Technical Proposal.

### **Review of ATCs**

A panel will be selected to review each ATC, which may or may not include members of the Technical Review Committee. The Design-Build Team shall make no direct contact with any member of the review panel, except as may be permitted by the State Contract Officer. Unapproved contact with any member of the review panel will result in a disqualification of that ATC.

The Department may request additional information regarding a proposed ATC at any time. The Department will return responses to, or request additional information from, the Design-Build Team within 15 business days of the original submittal of a Formal ATC. If additional information is requested, the Department will provide a response within 5 business days of receipt of all requested information.

The Department may conduct confidential one-on-one meeting(s) to discuss the Design-Build Team's ATC. Under no circumstances will the Department be responsible or liable to the Design-Build Team or any other party as a result of disclosing any ATC materials, whether the disclosure is deemed required by law, by an order of court, or occurs through inadvertence, mistake or negligence on the part of the Department or their respective officers, employees, contractors, or consultants.

In the event that the Department receives ATCs from more than one Design-Build Team that are deemed by the Department to be similar in nature, the Department reserves the right to modify the RFP without further regard for confidentiality.

### **The Department Response to Formal ATCs**

The Department will review each Formal ATC and will respond to the Design-Build Team with one of the following determinations:

- 1) The ATC is approved;
- 2) The ATC is not approved;
- 3) The ATC is not approved in its present form, but may be approved upon satisfaction, in the Department's sole discretion, of certain identified conditions that shall be met or certain clarifications or modifications that shall be made (conditionally approved);

- 4) The submittal does not qualify as an ATC but may be included in the Proposal without an ATC (i.e., the concept complies with the baseline requirements of the RFP);
- 5) The submittal does not qualify as an ATC and may not be included in the Proposal; or
- 6) The ATC is deemed to take advantage of an error or omission in the RFP, or other documents incorporated into the contract by reference, in which case the ATC will not be considered, and the RFP will be revised to correct the error or omission.
- 7) More than one ATC has been received on the same topic and the Department has elected to exercise its right to revise the RFP. This response could also follow and supersede one of the other previously supplied responses above.

### **Formal ATC Inclusion in Technical Proposal**

The Design-Build Team may incorporate one or more approved Formal ATCs as part of its Technical and Price Proposals. If the Department responded to an Formal ATC by stating that it would be approved if certain conditions were met, those conditions shall be stipulated and met in the Technical Proposal.

In addition to outlining each implemented Formal ATC, and providing assurances to meet all attached conditions, The Design-Build Team shall also include a copy of the Formal ATC approval letter from the State Contract Officer in the sealed package that contains the Technical Proposal. This letter will be included in the distribution of the Technical Proposals to the Technical Review Committee.

Approval of an Formal ATC in no way implies that the Formal ATC will receive a favorable review from the Technical Review Committee. The Technical Proposals will be evaluated in regards to the evaluation criteria found in this RFP, regardless of whether or not Formal ATCs are included.

The Price Proposal shall reflect all incorporated Formal ATCs. Except for incorporating approved Formal ATCs, the Technical Proposal may not otherwise contain exceptions to, or deviations from, the requirements of the RFP, or other documents incorporated into the contract by reference.

### **Preliminary ATCs**

At the Design-Build Team's option, a Preliminary ATC submittal may be made that presents a concept and a brief narrative of the benefits of said concept. The purpose of allowing such a Preliminary ATC is to limit the Design-Build Team's expense in the pursuit of a Formal ATC that may be quickly denied by the Department.

The Department will review Preliminary ATCs as quickly as possible but the review of these Preliminary ATCs will not take precedence over the review of other outstanding Formal ATCs. The Department's response to a Preliminary ATC submittal will be either that the Preliminary ATC is denied or that the Preliminary ATC would be considered as a Formal ATC if the Team so elects to pursue a Formal ATC submission. The Department in no way warrants that a favorable response to a Preliminary ATC submittal will translate into a favorable response to a

Formal ATC submittal. Likewise, a favorable response to a Preliminary ATC submittal is not sufficient to include the ATC in a Technical Proposal.

### **VALUE ANALYSIS**

(1-5-07)

DB1 G57

Value Engineering Construction Proposals (VECP), as identified in Article 104-12 of 2006 *Standard Specifications for Roads and Structures* will be accepted. Only proposals, which alter the requirements of the RFP issued by the Department, will be considered as Value Engineering Construction Proposals.

### **REVISION TO FHWA-1273 CONCERNING PERSONAL INFORMATION ON PAYROLL SUBMISSIONS:**

(1-20-09)

DB1G59

Revise the *Standard Special Provision FHWA-1273 Required Contract Provisions Federal-Aid Construction Contracts* as follows:

Section V, Paragraph 2b is replaced with the following:

The payroll records shall contain the name, and the last four digits of the social security number of each such employee, his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof of the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid.

### **DISADVANTAGED BUSINESS ENTERPRISE**

(10-29-09)

DB1 G61

#### **Policy**

It is the policy of the North Carolina Department of Transportation that Disadvantaged Business Enterprises (DBEs) as defined in *49 CFR Part 26* shall have the equal opportunity to compete fairly for and to participate in the performance of contracts financed in whole or in part by Federal Funds.

#### **Obligation**

The Design-Build Team, subcontractor, and sub-recipient shall not discriminate on the basis of race, religion, color, national origin, age, disability or sex in the performance of this contract. The Design-Build Team shall comply with applicable requirements of *49 CFR Part 26* in the award and administration of federally assisted contracts. Failure by the Design-Build Team to comply with these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy, as the Department deems necessary.



**Definitions**

*Commitment* - The approved DBE participation submitted by the Design-Build Team during the bidding process.

*Committed DBE* - Any DBE listed on the DBE commitment list approved by the Department at the time of Price Proposal submission or any DBE utilized as a replacement for a DBE firm listed on the commitment list.

*Department* - North Carolina Department of Transportation

*Disadvantaged Business Enterprise (DBE)* – A firm certified as a Disadvantaged Business Enterprise through the North Carolina Unified Certification Program.

*Goal* - The DBE participation specified herein

*Letter of Intent* – Written documentation of the Design-Build Team’s commitment to use a DBE subcontractor and confirmation from the DBE that it is participating in the contract.

*Manufacturer* - A firm that operates or maintains a factory or establishment that produces on the premises the materials or supplies obtained by the Design-Build Team.

*Regular Dealer* - A firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials or supplies required for the performance of the contract are bought, kept in stock, and regularly sold to the public in the usual course of business. A regular dealer engages in, as its principal business and in its own name, the purchase and sale or lease of the products in question. A regular dealer in such bulk items as steel, cement, gravel, stone, and petroleum products need not keep such products in stock, if it owns or operates distribution equipment. Brokers and packagers are not regarded as manufacturers or regular dealers within the meaning of this section.

*Form RS-1-D* - Form for subcontracts involving DBE subcontractors attesting to the agreed upon unit prices and extensions for the affected contract items.

*North Carolina Unified Certification Program* - A program that provides comprehensive information to applicants for certification, such that an applicant is required to apply only once for a DBE certification that will be honored by all recipients of USDOT funds in the state and not limited to the Department of Transportation only. The Certification Program is in accordance with *49 CFR Part 26*.

*USDOT* - United States Department of Transportation, including the Office of the Secretary, the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), and the Federal Aviation Administration (FAA).

## Contract Goal

The following goal for participation by Disadvantaged Business Enterprises is established for this contract:

Disadvantaged Business Enterprises **9 %**

- (A) *If the goal is more than zero*, the Design-Build Team shall exercise all necessary and reasonable steps to ensure that Disadvantaged Business Enterprises participate in at least the percent of the contract as set forth above as the goal.
- (B) *If the goal is zero*, the Design-Build Team shall continue to recruit the DBEs and report the use of DBEs during the construction of the project. A good faith effort will not be required with a zero goal.

This goal is to be met through utilization of highway construction contractors and / or right-of-way acquisition firms. Utilization of DBE firms performing design, other preconstruction services, or Construction Engineering and Inspection are not included in this goal.

## Contract Requirement

The approved DBE participation submitted by the Design-Build Team shall be the **Contract Requirement**.

## Certified Transportation Firms Directory

Real-time information about firms doing business with the Department and firms that are certified through North Carolina's Unified Certification Program is available in the Directory of Transportation Firms. The Directory can be accessed by the link on the Department's homepage or by entering <https://apps.dot.state.nc.us/vendor/directory/> in the address bar of your web browser. Only firms identified as DBE certified in the Directory can be utilized to meet the contract goals.

The listing of an individual firm in the Department's directory shall not be construed as an endorsement of the firm's capability to perform certain work.

## Listing of DBE Subcontractors in Contract

Only those DBE firms with current certification are acceptable for listing in the Proposer's submittal of DBE participation. The Design-Build Team shall indicate the following required information:

- (1) *If the goal is more than zero*, Proposers at the time the Price Proposal is submitted, shall submit a listing of DBE participation on the appropriate form (or facsimile thereof) contained elsewhere in the RFP in order for the Price Proposal to be considered responsive. Proposers shall indicate the total dollar value of the

DBE participation for the contract. If Proposers have no DBE participation, they shall indicate this on the form “Listing of DBE Subcontractors” by entering the word or number zero. This form shall be completed in its entirety. **Blank forms will not be deemed to represent zero participation.** Price Proposals submitted that do not have DBE participation indicated on the appropriate form will not be read publicly during the opening of Price Proposals. The Department will not consider these Price Proposals for award and the Price Proposal will be returned to the Proposer.

- (2) *If the goal is zero*, Proposers at the time the Price Proposal is submitted, the Proposer shall enter the word “zero” or number “0” or if there is participation, add the value on the “Listing of DBE Subcontractors” (or facsimile thereof) contained elsewhere in the RFP.

### **Written Documentation – Letter of Intent**

The Proposer shall submit written documentation of the Proposer’s commitment to use a DBE subcontractor whose participation it submits to meet a contract goal and written confirmation from each DBE, listed in the proposal, indicating their participation in the contract. This documentation shall be submitted on the Department’s form titled “Letter of Intent to Perform as a Subcontractor”. This letter of intent form is available at:

<http://www.ncdot.org/doh/preconstruct/ps/contracts/letterofintent.pdf>.

It shall be received in the office of the State Contractor Utilization Engineer no later than 12:00 noon of the sixth calendar day following opening of Price Proposals.

If the Proposer fails to submit the letter of intent from each committed DBE listed in the proposal indicating their participation in the contract, the DBE participation will not count toward meeting the goal.

### **Counting DBE Participation toward Meeting DBE Goal of Zero or More**

- (A) If a firm is determined to be an eligible DBE firm, the total dollar value of the participation by the DBE will be counted toward the contract requirement. The total dollar value of participation by a certified DBE will be based upon the value of work actually performed by the DBE and the actual payments to DBE firms by the Design-Build Team.
- (B) When a DBE performs as a participant in a joint venture, the Design-Build Team may count toward its DBE goal a portion of the total value of participation with the DBE in the joint venture, that portion of the total dollar value being a distinct clearly defined portion of work that the DBE performs with its forces.
- (C) (1) The Design-Build Team may count toward its DBE requirement only expenditures to DBEs that perform a commercially useful function in the work of a contract. A DBE performs a commercially useful function when it is responsible for execution of the work of the contract and is carrying out its

responsibilities by actually performing, managing, and supervising the work involved. To perform a commercially useful function, the DBE shall also be responsible with respect to materials and supplies used on the contract, for negotiating price, determining quality and quantity, ordering the material and installing (where applicable) and paying for the material itself. To determine whether a DBE is performing a commercially useful function, the Department will evaluate the amount of work subcontracted, industry practices, whether the amount the firm is to be paid under the contract is commensurate with the work it is actually performing and the DBE credit claimed for its performance of the work, and other relevant factors.

- (2) A DBE may enter into subcontracts. Work that a DBE subcontracts to another DBE firm may be counted toward the contract requirement. Work that a DBE subcontracts to a non-DBE firm does not count toward the contract requirement. If a DBE contractor or subcontractor subcontracts a significantly greater portion of the work of the contract than would be expected on the basis of standard industry practices, the DBE shall be presumed not to be performing a commercially useful function. The DBE may present evidence to rebut this presumption to the Department for commercially useful functions. The Department's decision on the rebuttal of this presumption is subject to review by the Federal Highway Administration but is not administratively appealable to USDOT.
- (3) The following factors will be used to determine if a DBE trucking firm is performing a commercially useful function.
  - (a) The DBE shall be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract, and there shall not be a contrived arrangement for the purpose of meeting DBE goals.
  - (b) The DBE shall itself own and operate at least one fully licensed, insured, and operational truck used on the contract.
  - (c) The DBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs.
  - (d) The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.
  - (e) The DBE may also lease trucks from a non-DBE firm, including from an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit for the total value of transportation services provided by non-DBE

lessees not to exceed the value of transportation services provided by DBE-owned trucks on the contract. Additional participation by non-DBE lessees receives credit only for the fee or commission it receives as a result of the lease arrangement. The value of services performed under lease agreements between the DBE and the Design-Build Team shall not count towards the contract requirement.

- (f) For purposes of this paragraph, a lease shall indicate that the DBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. Leased trucks shall display the name and identification number of the DBE.
- (D) A Design-Build Team may count toward its DBE requirement 60 percent of its expenditures for materials and supplies required to complete the contract and obtained from DBE regular dealer and 100 percent of such expenditures to a DBE manufacturer.
- (E) A Design-Build Team may count toward its DBE requirement the following expenditures to DBE firms that are not manufacturers or regular dealers:
  - (1) The fees or commissions charged by a DBE firm for providing a bona fide service, such as professional, technical, consultant, or managerial services, or for providing bonds or insurance specifically required for the performance of a DOT-assisted contract, provided the fees or commissions are determined to be reasonable and not excessive as compared with fees and commissions customarily allowed for similar services.
  - (2) The fees or commissions charged for assistance in the procurement of the materials and supplies, or for transportation charges for the delivery of materials or supplies required on a job site (but not the cost of the materials and supplies themselves), provided the fees are not from a manufacturer or regular dealer and provided the fees are determined to be reasonable and not excessive as compared with fees customarily allowed for similar services.

### **Good Faith Effort for Projects with Goals More than Zero**

If the DBE participation submitted in the Price Proposal by the Propser with the apparent adjusted low price does not meet or exceed the DBE contract goal, this Propser shall submit to the Department documentation of its good faith efforts made to reach the contract goal. One complete set and 9 copies of this information shall be received in the office of the State Contractor Utilization Engineer no later than 12:00 noon of the sixth calendar day following opening of Price Proposals. Where the information submitted includes repetitious solicitation letters it will be acceptable to submit a representative letter along with a distribution list of the firms that were solicited. Documentation of DBE quotations shall be a part of the good faith effort submittal as necessary to demonstrate compliance with the factors listed below which the

Department considers in judging good faith efforts. This documentation may include written subcontractor quotations, telephone log notations of verbal quotations, or other types of quotation documentation.

The following factors will be used to determine if the Proposer has made adequate good faith effort:

- (A) Whether the Proposer attended any pre-bid meetings that were scheduled by the Department to inform DBEs of subcontracting opportunities.
- (B) Whether the Proposer provided solicitations through all reasonable and available means (e.g. advertising in newspapers owned and targeted to the Disadvantaged at least 10 calendar days prior to Price Proposal opening). Whether the Proposer provided written notice to all DBEs listed in the NCDOT Directory of Transportation Firms, within the Divisions and surrounding Divisions where the project is located, that specialize in the areas of work (as noted in the DBE Directory) that the Proposer will be subletting.
- (C) Whether the Proposer followed up initial solicitations of interests by contacting DBEs to determine with certainty whether they were interested. If a reasonable amount of DBEs within the targeted Divisions do not provide an intent to quote or no DBEs specialize in the subcontracted areas, the Proposer shall notify DBEs outside of the targeted Divisions that specialize in the subcontracted areas, and contact the Director of Business and Opportunity Workforce Development to give notification of the Proposer's inability to get DBE quotes.
- (D) Whether the Proposer selected portions of the work to be performed by DBEs in order to increase the likelihood of meeting the contract goals. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the Proposer might otherwise perform these work items with its own forces.
- (E) Whether the Proposer provided interested DBEs with adequate and timely information about the plans, specifications and requirements of the contract.
- (F) Whether the Proposer negotiated in good faith with interested DBEs without rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection should be noted in writing with a description as to why an agreement could not be reached.
- (G) Whether quotations were received from interested DBE firms but rejected as unacceptable without sound reasons why the quotations were considered unacceptable. The fact that the DBE firms quotation for the work is not the lowest quotation received will not in itself be considered as a sound reason for rejecting the quotation as unacceptable. The fact that the Proposer has the ability and / or desire to perform the contract work with its own forces will not be considered as sound reason for rejecting a

DBE quote. Nothing in this provision shall be construed to require the Proposer to accept unreasonable quotes in order to satisfy contract goals.

- (H) Whether the Proposer specifically negotiated with subcontractors to assume part of the responsibility to meet the contract DBE goal when the work to be sublet includes potential for DBE participation.
- (I) Whether the Proposer made any efforts and / or offered assistance to interested DBEs in obtaining the necessary equipment, supplies, materials, insurance, and / or bonding to satisfy the work requirements in the RFP.
- (J) Any other evidence that the Proposer submits which show that the Proposer has made reasonable good faith efforts to meet the contract goal.

If a Proposer is the Proposer with the apparent adjusted low price or apparent lowest responsive bidder on more than one project within the same letting located in the same geographic area of the state, as a part of the good faith effort the Department will consider allowing the Proposer to combine the DBE participation as long as the overall DBE goal value of the combined projects is achieved.

If the Department does not award the contract to the Proposer with the apparent adjusted low price, the Department reserves the right to award the contract to the Proposer with the next apparent adjusted low price that can satisfy the Department that the contract goal can be met or that adequate good faith efforts have been made to meet the goal.

### **DBE Replacement**

The Design-Build Team shall not terminate a committed DBE subcontractor for convenience or perform the work with its own forces or those of an affiliate. If the Design-Build Team fails to demonstrate reasonable efforts to replace a committed DBE firm that does not perform as intended with another committed DBE firm or completes the work with its own forces without the Engineer's approval, the Design-Build Team and any of its affiliated companies may be disqualified from further bidding for a period of up to 6 months.

The Design-Build Team shall comply with the following for replacement of committed DBE.

#### **(A) Performance Related Replacement**

When a DBE is terminated or fails to complete its work on the contract for any reason, the Design-Build Team shall take all necessary, reasonable steps to replace the DBE subcontractor with another DBE subcontractor to perform at least the same amount of work as the DBE that was terminated. The Design-Build Team is encouraged to first attempt to find another DBE firm to do the same work as the DBE that was being terminated.

To demonstrate necessary, reasonable good faith efforts, the Design-Build Team shall document the steps they have taken to replace any DBE subcontractor who is unable to perform successfully with another DBE subcontractor. Such documentation shall include but not be limited to the following:

- (1) Copies of written notification to DBEs that their interest is solicited in subcontracting the work defaulted by the previous DBE subcontractor or in subcontracting other items of work in the contract.
- (2) Efforts to negotiate with DBEs for specific subbids including, at a minimum:
  - (a) The names, addresses, and telephone numbers of DBEs who were contacted.
  - (b) A description of the information provided to DBEs regarding the plans and specifications for portions of the work to be performed.
- (3) For each DBE contacted but rejected as unqualified, the reasons for the Design-Build Team's conclusion.
- (4) Efforts made to assist the DBEs contacted, if needed, in obtaining bonding or insurance required by the Design-Build Team.

**(B) Decertification Replacement**

- (1) When a committed DBE is decertified by the Department after a Request for Subcontract has been received by the Department, the Department will not require the Design-Build Team to solicit replacement DBE participation equal to the remaining work to be performed by the decertified firm. The participation equal to the remaining work performed by the decertified firm will count toward the contract requirement.
- (2) When a committed DBE is decertified prior to the Department receiving a Request for Subcontract for the named DBE firm, the Design-Build Team shall take all necessary and reasonable steps to replace the DBE subcontractor with another DBE subcontractor to perform at least the same amount of work to meet the contract goal or demonstrate that it has made a good faith effort to do so.

**Changes in the Work**

When the Engineer makes changes that result in the reduction or elimination of work to be performed by a committed DBE, the Design-Build Team will not be required to seek additional participation. When the Engineer makes changes that result in additional work to be performed by a DBE based upon the Design-Build Team's commitment, the DBE shall participate in additional work to the same extent as the DBE participated in the original contract work.



When the Engineer makes changes that result in extra work, which has more than a minimal impact on the contract amount, the Design-Build Team shall seek additional participation by DBEs unless otherwise approved by the Engineer.

When the Engineer makes changes that result in an alteration of plans or details of construction and a portion or all of work had been expected to be performed by a committed DBE, the Design-Build Team shall seek participation by DBEs unless otherwise approved by the Engineer.

When the Design-Build Team requests changes in the work that result in the reduction or elimination of work that the Design-Build Team committed to be performed by a DBE, the Design-Build Team shall seek additional participation by DBEs equal to the reduced DBE participation caused by the changes.

### **Reports**

All requests for subcontracts involving DBE subcontractors shall be accompanied by a certification executed by both the Design-Build Team and the DBE subcontractor attesting to the agreed upon unit prices and extensions for the affected contract items. This information shall be submitted on the Department Form RS-1-D, located at:

<http://www.ncdot.org/doh/forms/files/FORMRS-1-D.doc>

unless otherwise approved by the Engineer. The Department reserves the right to require copies of actual subcontract agreements involving DBE subcontractors.

Within 30 calendar days of entering into an agreement with a DBE for materials, supplies or services, not otherwise documented by a Request for Subcontract as specified above, the Design-Build Team shall furnish the Engineer a copy of the agreement. The documentation should also indicate the percentage (60% or 100%) of expenditures claimed for DBE credit.

All certifications will be considered a part of the project records, and consequently will be subject to penalties under Federal Law associated with falsifications of records related to projects.

### **Reporting Disadvantaged Business Enterprise Participation**

- (A) The Design-Build Team shall provide the Engineer with an accounting of payments made to Disadvantaged Business Enterprise firms, including material suppliers, contractors at all levels (prime, subcontractor, or second tier subcontractor). This accounting shall be furnished to the Engineer for any given month by the end of the following month. Failure to submit this information accordingly may result in the following action:
- (1) Withholding of money due in the next partial pay estimate; or
  - (2) Removal of any affiliated company of the Design-Build Team from the Department's appropriate prequalified list or the removal of other entities from the approved subcontractors list.

- (B) The Design-Build Team shall report the accounting of payments through the Department's DBE Payment Tracking System, which is located at:

<https://apps.dot.state.nc.us/Vendor/PaymentTracking/>.

The Design-Build Team shall also provide the Engineer an affidavit attesting the accuracy of the information submitted in the Payment Tracking System. This too shall be submitted for any given month by the end of the following month.

- (C) Design-Build Teams reporting transportation services provided by non-DBE lessees shall evaluate the value of services provided during the month of the reporting period only.

Prior to payment of the final estimate, the Design-Build Team shall furnish an accounting of total payment to each DBE. A responsible fiscal officer of the payee contractor, subcontractor, or second tier subcontractor who can attest to the date and amounts of the payments shall certify that the accounting is correct.

While each contractor (prime, subcontractor, 2nd tier subcontractor) is responsible for accurate accounting of payments to DBEs, it shall be the prime contractor's responsibility to report all monthly and final payment information in the correct reporting manner.

Failure on the part of the Design-Build Team to submit the required information in the time frame specified may result in the disqualification of that Design-Build Team and any of its affiliated companies from further bidding until the required information is submitted.

Failure on the part of any subcontractor to submit the required information in the time frame specified may result in the disqualification of that contractor and any affiliate companies from working on any DOT project until the required information is submitted.

### **Failure to Meet Contract Requirements**

Failure to meet contract requirements in accordance with Article 102-16(J) of the *Standard Specifications* may be cause to disqualify the Design-Build Team.

### **CERTIFICATION FOR FEDERAL-AID CONTRACTS**

(3-21-90)

DB1 G85

The Proposer certifies, by signing and submitting a Design-Build Proposal, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, *Disclosure Form to Report Lobbying*, in accordance with its instructions.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by *Section 1352, Title 31, U.S. Code*. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

The Proposer also agrees by submitting a Design-Build Proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such sub-recipients shall certify and disclose accordingly.

### **CONTRACTOR'S LICENSE REQUIREMENTS**

(7-1-95)

DB1 G88

If the Design-Build Team does not hold the proper license to perform any plumbing, heating, air conditioning, or electrical work in this contract, he will be required to sublet such work to a contractor properly licensed in accordance with *Article 2 of Chapter 87 of the General Statutes* (licensing of heating, plumbing, and air conditioning contractors) and *Article 4 of Chapter 87 of the General Statutes* (licensing of electrical contractors).

### **U.S. DEPARTMENT OF TRANSPORTATION HOTLINE**

(11-22-94)

DB1 G100

To report bid rigging activities call: **1-800-424-9071**

The U.S. Department of Transportation (DOT) operates the above toll-free *hotline* Monday through Friday, 8:00 a.m. to 5:00 p.m. eastern time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the *hotline* to report such activities.

The *hotline* is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse. It is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

### **SUBSURFACE INFORMATION**

(3-22-07)

DB1 G119

Available subsurface information will be provided on this project. The Design-Build Team shall be responsible for additional investigations and for verifying the accuracy of the subsurface information supplied by the Department.

**COOPERATION BETWEEN CONTRACTORS**

(7/1/95)

DB1 G133

The Design-Build Team's attention is directed to Article 105-7 of the 2006 *Standard Specifications for Roads and Structures*.

Project R-2248E connects to the West end of this project and Project I-3803B connects to the North end of this project.

The Design-Build Team on this project shall cooperate with the Design-Build Team working within or adjacent to the limits of this project, to the extent that the work can be carried out to the best advantage of all concerned.

**BID DOCUMENTATION**

(7/18/06)

DB1 G142

**General**

The successful Design-Build Team shall submit the original, unaltered bid documentation or a certified copy of the original, unaltered bid documentation used to prepare the Price Proposal for this contract to the Department. Such documentation shall be placed in escrow with a banking institution or other bonded document storage facility selected by the Department and preserved by that institution or facility as specified in the following sections of this provision.

**Bid Documentation**

The terms "bid documentation" as used in this provision means all written information, working papers, computer printouts and electronic media, charts, and all other data compilations which contain or reflect information, data, and calculations used by the Proposer in the preparation of their Price Proposal. The term "bid documentation" includes, but is not limited to, Design-Build Team equipment rates, Design-Build Team overhead rates, labor rates, efficiency or productivity factors, arithmetical calculations, finance costs, and quotations from subcontractors and material suppliers to the extent that such rates and quotations were used by the Proposer in formulating and determining the Price Proposal. The term "bid documentation" also includes any manuals, which are standard to the industry used by the Proposer in determining the Price Proposal. Such manuals may be included in the bid documentation by reference. Such reference shall include the name and date of the publication and the publisher. The term does not include bid documents provided by the Department for use by the Proposer in bidding on this project.

**Submittal of Bid Documentation**

A representative of the Proposer shall deliver the original, unaltered bid documentation or a certified copy of the original, unaltered bid documentation to the Department, in a container suitable for sealing, prior to the Department executing the contract. The Department will make a request for the submission bid documentation in writing. Bid documentation will be considered a certified copy if the Proposer includes a letter to the Department from a chief officer of the company stating that the enclosed documentation is an EXACT copy of the original

documentation. The letter must be signed by a chief officer of the company, have the person's name and title typed below the signature, and the signature shall be notarized at the bottom of the letter. The Department will not execute the contract until the original, unaltered bid documentation or a certified copy of the original, unaltered bid documentation has been received by the Department. The container shall be clearly marked "Bid Documentation" and shall also show on the face of the container the Proposer's name, Proposer's address, the date of submittal, the Project Number, and the County.

### **Affidavit**

In addition to the bid documentation, an affidavit signed under oath by an individual authorized by the Proposer to execute the bid shall be included. The affidavit shall list each bid document with sufficient specificity so a comparison may be made between the list and the bid documentation to ensure that all of the bid documentation listed in the affidavit has been enclosed. The affidavit shall attest that the affiant has personally examined the bid documentation, that the affidavit lists all of the documents used by the Proposer to determine the Price Proposal for this project, and that all such bid documentation has been included.

### **Verification**

Upon delivery of the bid documentation, the Department's Contract Officer and the Proposer's representative will verify the accuracy and completeness of the bid documentation compared to the affidavit. Should a discrepancy exist, the Proposer's representative shall immediately furnish the Department's Contract Officer with any other needed bid documentation. The Department's Contract Officer upon determining that the bid documentation is complete will, in the presence of the Proposer's representative, immediately place the complete bid documentation and affidavit in the container and seal it. Both parties will deliver the sealed container to a banking institution or other bonded document storage facility selected by the Department for placement in a safety deposit box, vault, or other secure accommodation.

### **Duration and Use**

The bid documentation and affidavit shall remain in escrow until 60 calendar days from the time the Design-Build Team receives the final estimate for construction; or until such time as the Design-Build Team gives written notice of intent to file a claim, files a written claim, files a written and verified claim, or initiates litigation against the Department related to the contract; or until authorized in writing by the Design-Build Team. Upon the giving of written notice of intent to file a claim, filing a written claim, filing a written and verified claim, or the initiation of litigation by the Design-Build Team against the Department, or receipt of a letter from the Design-Build Team authorizing release, the Department may obtain the release and custody of the bid documentation. If the bid documentation remains in escrow 60 calendar days after the time the Design-Build Team receives the final estimate for construction and the Design-Build Team has not filed a written claim, filed a written and verified claim, or has not initiated litigation against the Department related to the contract, the Department shall instruct the banking institution or other bonded document storage facility to release the sealed container to the Design-Build Team.

The Proposer certifies and agrees that the sealed container placed in escrow contains all of the bid documentation used to determine the Price Proposal and that no other bid documentation shall be relevant or material in litigation over claims brought by the Design-Build Team arising out of this contract.

### **Failure to Provide Bid Documentation**

The Proposer's failure to provide the original, unaltered bid documentation or a certified copy of the original, unaltered bid documentation within 10 days after receipt of the Department's written request for the bid documentation may be just cause for rescinding the award of the contract and may result in the removal of the Proposer from the Department's appropriate prequalified list for a period up to 180 days. Award may then be made to the Proposer with the next lowest adjusted price or the work may be readvertised and constructed under the contract or otherwise, as the Board of Transportation may decide.

### **Escrow Agreement**

The Proposer will be required to sign an Escrow Agreement within 10 days after receipt of the Department's written request for the bid documentation. A copy of this Escrow Agreement document will be mailed to the Proposer with the notice of award for informational purposes. The Proposer and Department will sign the Escrow Agreement at the time that the bid documentation is delivered to a Banking Institution or other facility as outlined above. The Proposer's failure to sign the Escrow Agreement at the time the bid documentation is delivered may be just cause for rescinding the award of the contract and may result in the removal of the Proposer from the Department's appropriate prequalified list for a period up to 180 days. Award may then be made to the Proposer with the next lowest adjusted price or the work may be readvertised and constructed under the contract or otherwise, as the Board of Transportation may decide.

### **Confidentiality of Bid Documentation**

The bid documentation and affidavit in escrow are, and will remain, the property of the Proposer. The Department has no interest in, or right to, the bid documentation and affidavit other than to verify the contents and legibility of the bid documentation unless the Design-Build Team gives written notice of intent to file a claim, files a written claim, files a written and verified claim, or initiates litigation against the Department. In the event of such written notice of intent to file a claim, filing of a written claim, filing a written and verified claim, or initiation of litigation against the Department, or receipt of a letter from the Design-Build Team authorizing release, the bid documentation and affidavit may become the property of the Department for use in considering any claim or in litigation as the Department may deem appropriate.

Any portion or portions of the bid documentation designated by the Proposer as a "trade secret" at the time the bid documentation is delivered to the Department's Contract Officer shall be protected from disclosure as provided by G.S. 132-1.2.

### **Cost and Escrow Instructions**

The cost of the escrow will be borne by the Department. The Department will provide escrow instructions to the banking institution or other bonded document storage facility consistent with this provision.

There will be no separate payment for all costs of compilation of the data, container, or verification of the bid documentation. Payment at the lump sum price for the Design-Build project will be full compensation for all such costs.

### **TWELVE MONTH GUARANTEE**

(7-15-03)

DB1 G145

- (A) The Design-Build Team shall guarantee materials and workmanship against latent and patent defects arising from faulty materials, faulty workmanship or negligence for a period of twelve months following the date of final acceptance of the work for maintenance and shall replace such defective materials and workmanship without cost to the Department. The Design-Build Team will not be responsible for damage due to normal wear and tear, for negligence on the part of the Department, and/or for use in excess of the design.
- (B) Where items of equipment or material carry a manufacturer's guarantee for any period in excess of twelve months, then the manufacturer's guarantee shall apply for that particular piece of equipment or material. The Department's first remedy shall be through the manufacturer although the Design-Build Team shall be responsible for invoking the warranted repair work with the manufacturer. The Design-Build Team's responsibility shall be limited to the term of the manufacturer's guarantee. NCDOT would be afforded the same warranty as provided by the Manufacturer.
- (C) The Design-Build Team shall be responsible for any and all remediation activities at the on-site stream and wetland mitigation sites for a period of twelve months following final acceptance of the project at no additional cost to the Department.

This guarantee provision shall be invoked only for major components of work in which the Design-Build Team would be wholly responsible for under the terms of the contract. Examples would include pavement structures, bridge components, on-site mitigation, and sign structures. This provision will not be used as a mechanism to force the Design-Build Team to return to the project to make repairs or perform additional work that the Department would normally compensate the Design-Build Team for. In addition, routine maintenance activities (i.e. mowing grass, debris removal, ruts in earth shoulders,) are not parts of this guarantee.

Appropriate provisions of the payment and/or performance bonds shall cover this guarantee for the project. In addition, failure on the part of the responsible entity(ies) of the Design-Build Team to perform guarantee work within the terms of this provision shall be just cause to remove the responsible entity(ies) from the Department's corresponding prequalified list. The Design-Build Team will be removed for a minimum of 6 months and will be reinstated only after all work has been corrected and the Design-Build Team requests reinstatement in writing.

To ensure uniform application statewide the Division Engineer will forward details regarding the circumstances surrounding any proposed guarantee repairs to the Chief Engineer for review and approval prior to the work being performed.

### **OUTSOURCING OUTSIDE THE USA**

(5-16-06)

DB1 G150

All work on consultant contracts, services contracts, and construction contracts shall be performed in the United States of America. No work shall be outsourced outside of the United States of America.

*Outsourcing* for the purpose of this provision is defined as the practice of subcontracting labor, work, services, staffing, or personnel to entities located outside of the United States.

The North Carolina Secretary of Transportation shall approve exceptions to this provision in writing.

### **CLEARING AND GRUBBING**

(01-22-08)

DB2 R01

With the exception of areas with Permanent Utility Easements, perform clearing on this project to the limits established by Method "III" shown on Standard No. 200.03 of the *2006 NCDOT Roadway Standard Drawings*. In areas with Permanent Utility Easements, clearing shall extend to the Right of Way limits.

Revise the 2006 *Standard Specifications for Roads and Structures* as follows:

#### **Page 2-2, Article 200-3, Clearing, add the following as the 6th paragraph:**

At bridge sites, clear the entire width of the right of way beginning at a station 3 feet back of the beginning extremity of the structure and ending at a station 3 feet beyond the ending extremity of the structure.

### **BURNING RESTRICTIONS**

(7-1-95)

DB2 R05

Open burning is not permitted on any portion of the right of way limits established for this project. The Design-Build Team shall 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 Mecklenburg County. The Design-Build Team shall dispose of the clearing, grubbing and demolition debris by means other than burning and in accordance with state and local rules and regulations.



**SHPO DOCUMENTATION FOR BORROW / WASTE SITES**

(12-18-07)

DB8 R02

Revise the 2006 *Standard Specifications for Roads and Structures* as follows:

**Division 2 Earthwork**

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

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

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

**Division 8 Incidentals**

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

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

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

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

**EROSION & SEDIMENT CONTROL / STORMWATER CERTIFICATION**

1-15-08

DB1 G180

**General**

Schedule and conduct construction activities in a manner that will minimize soil erosion and the resulting sedimentation and turbidity of surface waters. Comply with the requirements herein regardless of whether or not a National Pollutant Discharge Elimination System (NPDES) permit for the work is required.

Establish a chain of responsibility for operations and subcontractors' operations to ensure that the *Erosion and Sediment Control / Stormwater Pollution Prevention Plan* is implemented and maintained over the life of the contract.

- (A) *Certified Supervisor* – Provide a certified Erosion and Sediment Control / Stormwater (E&SC/SW) Supervisor to manage the Design-Build Team and subcontractor(s) operations, ensure compliance with Federal, State and Local ordinances and regulations, and to manage the Quality Control Program.
- (B) *Certified Foreman* – Provide a certified, trained foreman for each construction operation that increases the potential for soil erosion or the possible sedimentation and turbidity of surface waters.
- (C) *Certified Installer* – Provide a certified installer to install or direct the installation for erosion and sediment control / stormwater practices.
- (D) *Certified Designer* – Provide a certified designer for the design of the erosion and sediment control / stormwater component of reclamation plans and, if applicable, for the design of the project erosion and sediment control / stormwater plan.

In the case of difference of opinion or interpretation of plan or contract requirements between the Design-Build Team and the Engineer, the Engineer's determination and decision will be final.

### **Roles and Responsibilities**

- (A) *Certified Supervisor* - The Certified Supervisor shall be Level II and responsible for ensuring erosion and sediment control / stormwater is adequately implemented and maintained on the project and conducting the quality control program. The Certified Supervisor shall be on the project within 24 hours from initial exposure of an erodible surface to the project's final acceptance when questions or concerns arise with erosion and sedimentation control / stormwater issues. Perform the following duties:
  - (1)
    - (a) Manage Operations - Coordinate and schedule the work of subcontractors so that erosion and sediment control / stormwater measures are fully executed for each operation and in a timely manner over the duration of the contract.
    - (b) Oversee the work of subcontractors so that appropriate erosion and sediment control / stormwater preventive measures are conformed to at each stage of the work.
    - (c) Prepare the required weekly erosion control punchlist and submit to the Engineer.
    - (d) Attend all weekly or monthly construction meetings to discuss the findings of the NPDES inspection and other related issues.
    - (e) Implement the erosion and sediment control / stormwater site plans requested.

- (f) Provide for erosion and sediment control / stormwater methods for the Design-Build Team's temporary work not shown on the plans, such as, but not limited to work platforms, temporary construction, pumping operations, plant and storage yards, and cofferdams.
  - (g) Acquire applicable permits and comply with requirements for borrow pits, dewatering, and any temporary work conducted by the Design-Build Team in jurisdictional areas.
  - (h) Conduct all erosion and sediment control / stormwater work in a timely and workmanlike manner.
  - (i) Fully install erosion and sediment control / stormwater work prior to suspension of the work.
  - (j) Coordinate with Department, Federal, State and Local Regulatory agencies on resolution of erosion and sediment control / stormwater issues due to the Design-Build Team's operations.
  - (k) Ensure that proper cleanup occurs from vehicle tracking on paved surfaces and / or any location where sediment leaves the Right-of-Way.
  - (l) Have available a set of erosion control plans that has been properly updated to reflect necessary plan and field changes for use and review by Department personnel as well as regulatory agencies.
- (2) Requirements set forth under the NPDES Permit – The Department's NPDES permit outlines certain objectives and management measures pertaining to construction activities. The permit references *NCG010000, General Permit to Discharge Stormwater* under the NPDES, and states that the Department shall incorporate the applicable requirements into its delegated Erosion and Sediment Control Program. Some of the requirements are, but are not limited to:
- (a) Control project site waste to prevent contamination of surface or ground waters of the state (i.e. construction materials, concrete washout, chemicals, litter, fuels, lubricants, coolants, hydraulic fluids, any other petroleum products, and sanitary waste).
  - (b) Inspect erosion and sediment control / stormwater devices at least once every 7 calendar days, twice weekly for 303(d) impaired streams, and within 24 hours after a significant rainfall event of 0.5 inches within 24 hours.
  - (c) Maintain an onsite rain gauge and a record of rainfall amounts and dates.
  - (d) Maintain erosion and sediment control / stormwater inspection records for review by Department and Regulatory personnel upon request.
  - (e) Implement approved reclamation plans on all borrow pits and waste sites.
  - (f) Maintain a log of turbidity test results as outlined in the Department's Procedure for Monitoring Borrow Pit Discharge.
  - (g) Provide secondary containment for bulk storage of liquid materials.
  - (h) Provide training for employees concerning general erosion and sediment control / stormwater awareness, the NPDES Permit requirements, and the requirements of the *General Permit, NCG010000*.

- (i) Report violations of the NPDES permit to the Engineer who will notify the DWQ Regional Office within 24 hours.
- (3) Quality Control Program - Maintain a quality control program to control erosion, prevent sedimentation and follow provisions of permits. The quality control program shall:
- (a) Follow permit requirements related to the Design-Build Team and subcontractors' construction activities.
  - (b) Ensure that all operators and / or subcontractor(s) on site have the proper erosion and sediment control / stormwater certification.
  - (c) Notify the Engineer when the required certified erosion and sediment control / stormwater personnel are not available on the job site when needed.
  - (d) Conduct the inspections required by the NPDES permit.
  - (e) Take corrective actions in the proper timeframe as required by the NPDES permit for problem areas identified during the NPDES inspections.
  - (f) Incorporate erosion control into the work in a timely manner and stabilize disturbed areas with mulch / seed or vegetative cover on a section-by-section basis.
  - (g) Maintain temporary erosion and sediment control devices.
  - (h) Remove temporary erosion or sediment control devices when they are no longer necessary as agreed upon by the Engineer.
  - (i) The Design-Build Team's quality control and inspection procedures shall be subject to review by the Engineer. Maintain NPDES inspection records and make records available at all times for verification by the Engineer.
- (B) *Certified Foreman* - At least one Certified Foreman shall be onsite for each type of work listed herein during the respective construction activities to control erosion, prevent sedimentation and follow permit provisions:
- (1) Foreman in charge of grading activities
  - (2) Foreman in charge of bridge or culvert construction over jurisdictional areas
  - (3) Foreman in charge of utility activities

The Design-Build Team may request to use the same person as the Level II Supervisor and Level II Foreman. This person shall be onsite whenever construction activities as described above are taking place. This request shall be approved by the Engineer prior to work beginning.

The Design-Build Team may request to name a single Level II Foreman to oversee multiple construction activities on small bridge or culvert replacement projects. This request shall be approved by the Engineer prior to work beginning.

- (C) *Certified Installers* - Provide at least one onsite, Level I Certified Installer for each of the following erosion and sediment control / stormwater crew:

- (1) Seeding and Mulching
- (2) Temporary Seeding
- (3) Temporary Mulching
- (4) Sodding
- (5) Silt fence or other perimeter erosion / sediment control device installations
- (6) Erosion control blanket installation
- (7) Hydraulic tackifier installation
- (8) Turbidity curtain installation
- (9) Rock ditch check / sediment dam installation
- (10) Ditch liner / matting installation
- (11) Inlet protection
- (12) Riprap placement
- (13) Stormwater BMP installations (such as but not limited to level spreaders, retention / detention devices)
- (14) Pipe installations within jurisdictional areas

If a *Certified Installer* is not onsite, the Design-Build Team may substitute a Level I Installer with a Level II Foreman, provided the Level II Foreman is not tasked to another crew requiring Level II Foreman oversight.

- (D) *Certified Designer* – Include the certification number of the Level III-B Certified Designer on the erosion and sediment control / stormwater component of all reclamation plans and if applicable, the certification number of the Level III-A Certified Designer on the design of the project erosion and sediment control / stormwater plan.

### **Preconstruction Meeting**

Furnish the names of the *Certified Supervisor, Certified Foremen, Certified Installers and Certified Designers* and notify the Engineer in writing of changes in certified personnel over the life of the contract within 2 days of change.

### **Ethical Responsibility**

Any company performing work for the North Carolina Department of Transportation has the ethical responsibility to fully disclose any reprimand or dismissal of an employee resulting from improper testing or falsification of records.

### **Revocation or Suspension of Certification**

Upon recommendation of the Chief Engineer - Operations to the certification entity, certification for Supervisor, Certified Foreman, Certified Installer and Certified Designer may be revoked or suspended with the issuance of a Continuing Immediate Corrective Action (Continuing ICA), Notice of Violation (NOV), or Cease and Desist Order for erosion and sediment control / stormwater related issues.

Should any of the following circumstances occur, the Chief Engineer may suspend or permanently revoke such certification.

- (A) Failure to adequately perform the duties as defined within the certification program
- (B) Issuance of a Continuing ICA, NOV, or Cease and Desist Order
- (C) Failure to fully perform environmental commitments as detailed within the permit conditions and specifications
- (D) Demonstration of erroneous documentation or reporting techniques
- (E) Cheating or copying another candidate's work on an examination
- (F) Intentional falsification of records
- (G) Directing a subordinate under direct or indirect supervision to perform any of the above actions
- (H) Dismissal from a company for any of the above reasons
- (I) Suspension or revocation of one's certification within another state

Suspension or revocation of a certification will be sent by certified mail to the registrant and the Corporate Head of the company that employs the registrant.

A registrant has the right to appeal any adverse action which results in suspension or permanent revocation of certification by responding, in writing, to the Chief Engineer within 10 calendar days after receiving notice of the proposed adverse action.

Chief Engineer - Operations  
1537 Mail Service Center  
Raleigh, NC 27699-1537

Failure to appeal within 10 calendar days will result in the proposed adverse action becoming effective on the date specified on the certified notice. Failure to appeal within the time specified will result in a waiver of all future appeal rights regarding the adverse action taken. The registrant will not be allowed to perform duties associated with the certification during the appeal process.

The Chief Engineer will hear the appeal and make a decision within 7 days of hearing the appeal. The decision of the Chief Engineer will be final and will be made in writing to the registrant.

If a certification is temporarily suspended, the registrant shall pass any applicable written examination and any proficiency examination, at the conclusion of the specified suspension period, prior to having the certification reinstated.

### **Measurement and Payment**

*Certified Supervisor, Certified Foremen, Certified Installers and Certified Designer* will be incidental to the project for which no direct compensation will be made.

**PROCEDURE FOR MONITORING BORROW PIT DISCHARGE**

(2-20-07)

DB1 G181

Water discharge from borrow pit sites shall not cause surface waters to exceed 50 NTUs (nephelometric turbidity unit) in streams not designated as trout waters and 10 NTUs in streams, lakes or reservoirs designated as trout waters. For lakes and reservoirs not designated as trout waters, the turbidity shall not exceed 25 NTUs. If the turbidity exceeds these levels due to natural background conditions, the existing turbidity level shall not be increased.

If during any operating day, the downstream water quality exceeds the standard, the Design-Build Team shall do all of the following:

- (A) Either cease discharge or modify the discharge volume or turbidity levels to bring the downstream turbidity levels into compliance, or
- (B) Evaluate the upstream conditions to determine if the exceedance of the standard is due to natural background conditions. If the background turbidity measurements exceed the standard, operation of the pit and discharge can continue as long as the stream turbidity levels are not increased due to the discharge.
- (C) Measure and record the turbidity test results (time, date and sampler) at all defined sampling locations 30 minutes after startup and at a minimum, one additional sampling of all sampling locations during that 24-hour period in which the borrow pit is discharging.
- (D) Notify DWQ within 24 hours of any stream turbidity standard exceedances that are not brought into compliance.

During the Environmental Assessment required by Article 230-4 of the *Standard Specifications*, the Design-Build Team shall define the point at which the discharge enters into the State's surface waters and the appropriate sampling locations. Sampling locations shall include points upstream and downstream from the point at which the discharge enters these waters. Upstream sampling location shall be located so that it is not influenced by backwater conditions and represents natural background conditions. Downstream sampling location shall be located at the point where complete mixing of the discharge and receiving water has occurred.

The discharge shall be closely monitored when water from the dewatering activities is introduced into jurisdictional wetlands. Any time visible sedimentation (deposition of sediment) on the wetland surface is observed, the dewatering activity shall be suspended until turbidity levels in the stilling basin can be reduced to a level where sediment deposition does not occur. Staining of wetland surfaces from suspended clay particles, occurring after evaporation or infiltration, does not constitute sedimentation. No activities shall occur in wetlands that adversely affect the functioning of a wetland. Visible sedimentation shall be considered an indication of possible adverse impacts on wetland use.

The Engineer shall perform independent turbidity tests on a random basis. These results shall be maintained in a log within the project records. Records will include, at a minimum, turbidity test results, time, date and name of sampler. Should the Department's test results exceed those of the

Design-Build Team's test results, an immediate test shall be performed jointly with the results superseding the previous test results of both the Department and the Design-Build Team.

The Design-Build Team shall use the *NCDOT Turbidity Reduction Options for Borrow Pits Matrix*, available at <http://www.ncdot.org/doh/preconstruct/ps/contracts/letting.html> to plan, design, construct, and maintain BMPs to address water quality standards. Tier I Methods include stilling basins which are standard compensatory BMPs. Other Tier I methods are noncompensatory and shall be used when needed to meet the stream turbidity standards. Tier II Methods are also noncompensatory and are options that may be needed for protection of rare or unique resources or where special environmental conditions exist at the site which have led to additional requirements being placed in the DWQ's 401 Certifications and approval letters, Isolated Wetland Permits, Riparian Buffer Authorization or a DOT Reclamation Plan's Environmental Assessment for the specific site. Should the Design-Build Team exhaust all Tier I Methods on a site exclusive of rare or unique resources or special environmental conditions, Tier II Methods may be required by regulators on a case by case basis per supplemental agreement.

The Design-Build Team may use cation exchange capacity (CEC) values from proposed site borings to plan and develop the Price Proposal for the project. CEC values exceeding 15 milliequivalents per 100 grams of soil may indicate a high potential for turbidity and should be avoided when dewatering into surface water is proposed.

No additional compensation for monitoring borrow pit discharge will be paid.

### **BUILDING AND APPURTENANCE REMOVAL / DEMOLITION**

(04/03/07) (Rev. 12/04/07) (Rev. 7/22/09)

DB2 R12

Unless otherwise as agreed upon by the Department, remove or demolish all buildings and appurtenances, in their entirety, that are located either partially or completely within the project's right of way limits or are located outside the project's right of way limits but within property purchased as an uneconomical remnant in accordance with Sections 210 and 215 of the 2006 *Standard Specifications for Roads and Structures*.

The Department will perform all assessment, removal and disposal of asbestos. Once the Design-Build Team has acquired a parcel and all buildings and appurtenances have been vacated, the Design-Build Team shall immediately notify the Division Right of Way Agent in writing. Upon receipt of the written notification, the Department then requires 60 days to assess and remove any asbestos prior to the Design-Build Team demolishing any building or appurtenance.

### **REINFORCED CONCRETE PIPE DESIGN**

(10-20-09)

DB3 R006

#### **Description**

This work consists of the design and manufacture of reinforced concrete pipes which require fills greater than 40 feet and less than or equal to 80 feet.



## Materials

### (A) Design

When the design of a reinforced concrete pipe is required on the plans developed by the Design-Build Team, design the reinforced concrete pipe in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications. Provide the diameter of pipe as indicated on the plans developed by the Design-Build Team and manufacture the pipe in accordance with ASTM C 1417. Provide a reinforced concrete pipe that meets the requirements of Section 1032-9, Section 1077 and any other applicable parts of the 2006 *Standard Specifications for Roads and Structures*.

The design of the reinforced concrete pipe shall be the Design-Build Team's responsibility and is subject to review, comments and approval. Submit two sets of detailed plans for review and acceptance. Include all details in the plans, including the size and spacing of the required reinforcement necessary to fabricate the reinforced concrete pipe. Include checked design calculations for the reinforced concrete pipe. Have a North Carolina Registered Professional Engineer seal the plans and design calculations. After the plans are reviewed and, if necessary, all corrections made, submit one set of reproducible tracings on 22" \* 34" sheets to become part of the plans developed by the Design-Build Team.

### (B) Reinforced Concrete Pipe Sections

#### (1) Class

Reinforced concrete pipe sections manufactured in accordance with this Special Provision are designated by inside pipe diameter and design earth cover.

#### (2) Design Criteria

The design of the reinforced concrete pipe shall be in accordance with Article 12.10.4.2 "Direct Design Method" of the current edition of the AASHTO LRFD Bridge Design Specifications. The following assumptions shall be used in the design calculations:

<b>NCDOT Criteria for Direct Design Method</b>
Process and Material Factors
Radial Tension, $F_{rp}=1.0$
Shear Strength, $F_{vp}=1.0$
Design Concrete Strength - $f'_c$ 5,000 psi < $f'_c$ < 7,000 psi
Heger Pressure Distribution - Type 2 Installation
Vertical Arching Factor = 1.40
Horizontal Arching Factor = 0.40
Soil Unit Weight = 120 lb / ft <sup>3</sup>
Depth of Fluid = Inside Pipe Diameter
Minimum Concrete Cover = 1.00"
Crack Control = 0.90 (maximum)

**(C) Joints**

Produce the reinforced concrete pipe sections with spigot and bell ends. Design and form the ends of the pipe section so, when the sections are laid together, they make a continuous line of pipe with a smooth interior free of appreciable irregularities in the flow line, and compatible with the permissible variations given in the 2006 *Standard Specifications for Roads and Structures* and ASTM C 1417.

**(D) Manufacture**

In addition to the requirements of the 2006 *Standard Specifications for Roads and Structures* and ASTM C 1417, devices or holes are permitted in each pipe section for the purpose of handling and placement. Submit details of handling devices or holes for approval and do not cast any concrete until approval is granted. Remove all handling devices flush with concrete surfaces as directed. Fill holes in a neat and workmanlike manner with an approved non-metallic non-shrink grout, concrete or plug.

**CULVERT PIPE**

(1-19-10)

DB10R32

Revise the 2006 *Standard Specifications for Roads and Structures* as follows:

**Page 10-67, Article 1032-1, replace (A), (B), (C), (E) and (F) with the following:**

- (A) Coated corrugated metal culvert pipe and pipe arches.
- (B) Coated corrugated metal end sections, coupling band and other accessories
- (C) Corrugated aluminum alloy structural plate pipe and pipe arches
- (D) Corrugated aluminum alloy end sections, coupling band and other accessories
- (E) Welded steel pipe

**Page 10-69, Subarticle 1032-3(A)(5) Coating Repair, replace with the following:**

Repair shall be in accordance with Section 1076-6 of the 2006 *Standard Specifications for Roads and Structures*.

**Subarticle 1032-3(A)(7) Aluminized Pipe, replace with the following:**

Aluminized pipe shall meet all requirements herein, except that the pipe and coupling bands shall be fabricated from aluminum coated steel sheet meeting the requirements of AASHTO M274.

**Page 10-71, Article 1032-4 Coated Culvert Pipe, replace (A), (1), (2), (3), (4), (B), (C), (D), (E), (F) and (G) with the following:**

- (A) Coatings for Steel Culvert Pipe or Pipe Arch

The below coating requirements apply for steel culvert pipe, pipe arch, end sections, tees, elbows and eccentric reducers.

- (1) Steel Culvert Pipe shall have an aluminized coating, meeting the requirement of AASHTO M274.
  - (2) When shown on the plans developed by the Design-Build Team, and as approved by the Engineer, a polymeric coating meeting the requirements of AASHTO M246 for Type B coating may be substituted for aluminized coating.
- (B) Acceptance

Acceptance of coated steel culvert pipe, and its accessories, shall be based on, but not limited to, visual inspections, classification requirements, check samples taken from material delivered to the project, and conformance to the annual Brand Registration.

**Page 10-73, Article 1032-5, sixth paragraph, third sentence, remove the word "spelter"**

**Page 10-74, 1032-7 Vitrified Clay Culvert Pipe, delete section in its entirety.**

**Page 10-75, Article 1032-8 Welded Steel Pipe, change title to WELDED STEEL PIPE FOR DRAINAGE**

**Subarticle 1032-9(B) Plain Concrete Culvert Pipe, delete section in its entirety.**

**Page 10-77, Article 1032-10 Corrugated Polyethylene Culvert Pipe, change title to CORRUGATED POLYETHYLENE (HDPE) CULVERT PIPE**

**Add the following: Article 1032-11 Polyvinyl Chloride (PVC) Pipe**

Polyvinyl Chloride pipe shall conform to AASHT M 304 or ASTM 949. When rubber gaskets are to be installed in the pipe joint, the gasket shall be the sole element relied on to maintain a tight joint. Test pipe joints at the plant hydrostatically using test methods in ASTM D 3212. Soil tight joints shall be watertight to 2 psi. Watertight joints shall be watertight to 5 psi unless a higher pressure rating is specified in the plans developed by the Design-Build Team.

## **DRAINAGE PIPE**

(7-18-06) (Rev 1-19-10)

SP3 R36

### **Description**

Where shown in the plans developed by the Design-Build Team, the Contractor shall use Reinforced Concrete Pipe, Corrugated Aluminum Alloy Pipe, Aluminized Corrugated Steel Pipe, Corrugated Polyethylene Pipe (HDPE Pipe) or Polyvinyl-Chloride Pipe (PVC Pipe) in accordance with the following requirements:

## Material

<b>Item</b>	<b>Section</b>
Corrugated Aluminum Alloy Pipe	1032-2(A)
Aluminized Corrugated Steel Pipe	1032-3(A)(7)
Corrugated Polyethylene Pipe (HDPE)	1032-10
Reinforced Concrete Pipe – Class II or III	1032-9(C)
Polyvinyl-Chloride (PVC)	1032-11
Elbows	1032

Corrugated Steel Pipe shall not be permitted in counties listed in the Pipe Installation and Pipe Culverts Special Provision. In other counties, Corrugated Steel Pipe requires an acceptable coating in accordance with Section 1032-4 of the 2006 *Standard Specifications for Roads and Structures*.

Only pipe with smooth inside walls shall be allowed for storm drain systems. Storm drain systems are defined as pipe under curb and gutter, expressway gutter, and shoulder berm gutter that connects drainage structures and is not open ended.

All pipe types are subject to the maximum and minimum fill height requirements as found on Roadway Standard Detail 300D01 – Sheet 3 of 3. The appropriate Reinforced Concrete Pipe class and the appropriate gage thickness for Corrugated Aluminum Alloy Pipe and Aluminized Corrugated Steel Pipe shall be selected based on fill height.

Site specific conditions may limit a particular material beyond what is identified in this Special Provision. These conditions include, but are not limited to, abrasion, environmental, soil resistivity and pH, high ground water and special loading conditions. The Design-Build Team shall determine if additional restrictions are necessary.

Allowable side drain pipe material is outlined in Article 310-4 of the Pipe Installation and Pipe Culverts Special Provision.

Slope drains shall be Corrugated Aluminum Alloy Pipe, Aluminized Corrugated Steel Pipe, Corrugated Polyethylene Pipe (HDPE Pipe) or Polyvinyl-Chloride Pipe (PVC Pipe).

Transverse median drains, storm drainage system pipes, and open-ended cross drains shall be Reinforced Concrete Pipe unless the pipe slope is greater than 10%, in which case the pipe shall be either Corrugated Aluminum Alloy Pipe or Aluminized Corrugated Steel Pipe.

## Construction Methods

Pipe Culverts shall be installed in accordance with the plans developed by the Design-Build Team, this RFP and the 2006 *Standard Specifications for Roads and Structures*.

Where allowed by the plans developed by the Design-Build Team, use any of the several alternate pipes shown herein, but only one type of pipe shall be permitted between drainage structures or for the entire length of a cross line pipe.

### **PIPE INSTALLATION AND PIPE CULVERTS**

(1-19-10)

DB3R40

Revise the 2006 *Standard Specifications for Roads and Structures* as follows:

Replace Section 300 and Section 310 with the following:

### **SECTION 300**

#### **PIPE INSTALLATION**

##### **300-1 DESCRIPTION**

Excavate, undercut, provide material, condition foundation, lay pipe, joint and couple pipe sections, and furnish and place all backfill material as necessary to install the various types of pipe culverts and fittings required to complete the project.

Do not waste excavation unless permitted. Use suitable excavated material as backfill; or in the formation of embankments, subgrades, and shoulders; or as otherwise directed. Furnish disposal areas for the unsuitable material. The Engineer will identify excavated materials that are unsuitable.

Where traffic is to be maintained, install pipe in sections so that half the width of the roadway is available to traffic.

##### **300-2 MATERIALS**

Refer to Division 10:

<b>Item</b>	<b>Section</b>
Flowable Fill	1000
Select Materials	1016
Joint Materials	1032-9(G)
Engineering Fabric	1056-1

Provide foundation conditioning material meeting the requirements of Article 1016-3 for Class V or VI as shown on the plans developed by the Design-Build Team.

Provide bedding material meeting the requirements of Article 1016-3 for Class II (Type 1 only) or Class III as shown on the plans developed by the Design-Build Team.

Provide backfill material meeting the requirements of Article 1016-3 for Class II (Type 1 only) or Class III material as shown on the plans developed by the Design-Build Team.

Do not use corrugated steel pipe in the following counties:

Beaufort, Bertie, Bladen, Brunswick, Camden, Carteret, Chowan, Columbus, Craven, Currituck, Dare, Gates, Hertford, Hyde, Jones, Martin, New Hanover, Onslow, Pamlico, Pasquotank, Pender, Perquimans, Tyrrell and Washington.

### **300-3 UNLOADING AND HANDLING**

Unload and handle pipe with reasonable care. Do not roll or drag metal pipe or plates over gravel or rock during handling. Take necessary precautions to ensure the method used in lifting or placing the pipe does not induce stress fatigue in the pipe. Use a lifting device that uniformly distributes the weight of the pipe along its axis or circumference. Repair minor damage to pipe when permitted. Remove pipe from the project that is severely damaged or is rejected as being unfit for use. Undamaged portions of a joint or section may be used where partial lengths are required.

### **300-4 PREPARATION OF PIPE FOUNDATION**

Prepare the pipe foundation in accordance with the applicable method as shown on the plans developed by the Design-Build Team, true to line and grade, and uniformly firm.

Camber invert grade an amount sufficient to prevent the development of sag or back slope in the flow line. The Contractor shall determine the amount of camber required and submit to the Engineer for approval.

Where material is found to be of poor supporting value or of rock and when the Engineer cannot make adjustment in the location of the pipe, undercut existing foundation material within the limits established on the plans developed by the Design-Build Team. Backfill the undercut with foundation conditioning material, Class V or VI select material. Encapsulate the foundation conditioning material with Type 4 engineering fabric prior to placing bedding material. Overlap all transverse and longitudinal joints in the fabric at least 18 inches.

Maintain the pipe foundation in a dry condition.

### **300-5 INVERT ELEVATIONS**

No adjustment in contract time or compensation shall be granted for pipe field adjustments.

### **300-6 LAYING PIPE**

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

**(A) Rigid Pipe**

Concrete and welded steel pipe shall be considered rigid pipe. Lay pipe on prepared foundation, bell or groove end upgrade with the spigot or tongue fully inserted. Check each joint for alignment and grade as the work proceeds.

Use flexible plastic joint material except when material of another type is specified on the plans developed by the Design-Build Team. Joint material of another type may be used when permitted.

Repair lift holes in concrete pipe, if present. Thoroughly clean and soak the lift hole and completely fill the void with an approved non-shrink gout. Submit alternate details for repairing lift holes to the engineer for review and approval.

For all pipes 42 inches in diameter and larger, wrap filter fabric around all pipe joints. Use Type 2 Class B fabric. Extend fabric at least 12 inches beyond each side of the joint. Secure the filter fabric against the outside of the pipe by methods approved by the Engineer.

**(B) Flexible Pipe (Except Structural Plate Pipe)**

Corrugated steel, corrugated aluminum, corrugated polyethylene (HDPE), and polyvinylchloride (PVC) pipe shall be considered flexible pipe. Place flexible pipe carefully on the prepared foundation starting at the downstream end with the inside circumferential laps pointing downstream and with the longitudinal laps at the side or quarter points.

Handle coated corrugated steel pipe with special care to avoid damage to coatings.

Join pipe sections with coupling band, fully bolted and properly sealed. Provide coupling bands for annular and helical corrugated metal pipe with circumferential and longitudinal strength sufficient to preserve the alignment, prevent separation of the sections, and prevent backfill infiltration. Match-mark all pipe 60 inches or larger in diameter at the plant for proper installation on the project.

At locations indicated on the plans developed by the Design-Build Team, corrugated steel pipe sections shall be jointed together with rod and lug coupling bands, fully bolted. Sleeve gaskets shall be used in conjunction with rod and lug couplings and the joints properly sealed. Coupling bands shall provide circumferential and longitudinal strength sufficient to preserve the alignment, prevent separation of the sections and prevent infiltration of backfill material.

**300-7 BEDDING AND BACKFILLING**

Loosely place bedding material, in a uniform layer, a depth equal to the inside diameter of the pipe divided by six or six inches, whichever is greater. Leave bedding material directly beneath

the pipe uncompacted and allow pipe seating and backfill to accomplish compaction. Excavate recesses to receive the bells where bells and spigot type pipe is used.

Place fill around the pipe in accordance with the applicable method shown on the plans developed by the Design-Build Team in layers not to exceed 6 inches loose unless otherwise permitted. Compact to the density required by Subarticle 235-4(C). Approval of the backfill material is required prior to its use. Use select material as shown on the plans developed by the Design-Build Team.

Take care during backfill and compaction operations to maintain alignment and prevent damage to the joints. Keep backfill free from stones, frozen lumps, chunks of highly plastic clay, or other objectionable material.

Grade and maintain all pipe backfill areas in such a condition that erosion or saturation will not damage the pipe foundation or backfill.

Excavatable flowable fill may be used for backfill when approved by the Engineer. When using excavatable flowable fill, ensure that the pipe is not displaced and does not float during backfill. Submit methods for supporting the pipe and material placement to the Engineer for review and approval.

Do not operate heavy equipment over any pipe until it has been properly backfilled with a minimum three feet of cover. Place, maintain, and finally remove the required cover that is above the proposed finished grade at no cost to the Department. Remove and replace, at no cost to the Department, pipe that becomes misaligned, shows excessive settlement, or has been otherwise damaged by the Contractor's operations.

### **300-8 INSPECTION AND MAINTENANCE**

Prior to final acceptance, the Engineer will perform random video camera and or mandrel inspections to ensure proper jointing and that deformations do not exceed allowable limits. Replace pipes having cracks greater than 0.1 inches or deflections greater than 7.5 percent. Repair or replace pipes with cracks greater than 0.01 inches, exhibiting displacement across a crack, exhibiting bulges, creases, tears, spalls, or delamination. Maintain all pipe installations in a condition such that they shall function continuously from the time the pipe is installed until the project is accepted.

### **300-9 MEASUREMENT AND PAYMENT**

No separate payment will be made for any costs incurred for compliance with this Special Provision. All material and labor, including but not limited to foundation conditioning material, foundation conditioning fabric, select bedding and backfill material, pavement repair, and removal and disposal of existing pavement shall be included in the lump sum price bid for the entire project.



**SECTION 310****PIPE CULVERTS****310-1 DESCRIPTION**

Furnish and install drainage pipe at locations and size called for in the plans developed by the Design-Build Team. The work includes construction of joints and connections to other pipes, endwalls and drainage structures.

**310-2 MATERIALS**

Refer to Division 10:

<b>Item</b>	<b>Section</b>
Plain Concrete Pipe Culvert	1032-9(B)
Reinforced Concrete Pipe Culvert	1032-9(C)
Precast Concrete Pipe End Sections	1032-9(D)
Concrete Pipe Tees and Elbows	1032-9(E)
Corrugated Aluminum Alloy Pipe Culvert	1032-2(A)
Corrugated Aluminum Alloy Pipe Tees and Elbows	1032-2(B)
Corrugated Steel Culvert Pipe and Pipe Arch	1032-3(A)
Prefabricated Corrugated Steel Pipe End Sections	1032-3(B)
Corrugated Steel Pipe Tees and Elbows	1032-3(C)
Corrugated Steel Eccentric Reducers	1032-3(D)
HDPE Smooth Lined Corrugated Plastic Pipe	1032-10B
Polyvinylchloride (PVC) Pipe	1032-11(B)

Suppliers that provide metal pipe culverts, fittings and all other accessories covered by this section shall meet the requirements of the Department's Brand Certification program for metal pipe culverts, and be listed on the Department's pre-approved list for suppliers of metal pipe culvert.

Do not use corrugated steel pipe in the following counties:

Beaufort, Bertie, Bladen, Brunswick, Camden, Carteret, Chowan, Columbus, Craven, Currituck, Dare, Gates, Hertford, Hyde, Jones, Martin, New Hanover, Onslow, Pamlico, Pasquotank, Pender, Perquimans, Tyrell and Washington.

**310-3 PIPE INSTALLATION**

Install pipe, pipe tees and elbows in accordance with Section 300 above.

**310-4 SIDE DRAIN PIPE**

Side drain pipe shall be defined as storm drain pipe running parallel to the roadway, to include pipe in medians, outside ditches, driveways, and under shoulder berm gutter along outside shoulders greater than four feet wide.

Where shown in the plans developed by the Design-Build Team, side drain pipe may be class II reinforced concrete pipe, aluminized corrugated steel pipe, corrugated aluminum alloy pipe, HDPE pipe or PVC pipe. Corrugated steel pipe shall be restricted in the counties listed in Article 310-2 above. Install side drain pipe in accordance with Section 300 above. Cover for side drain pipe shall be at least one foot.

**310-5 PIPE END SECTIONS**

Choose which material to use for the required end sections. Both corrugated steel and concrete pipe end sections will be allowed on concrete pipe, corrugated steel pipe and HDPE smooth lined corrugated plastic pipe.

**310-6 MEASUREMENT AND PAYMENT**

No separate payment will be made for items covered by this Special Provision. All material and labor, including but not limited to linear feet of pipe, select bedding, backfill material, pipe end sections, tees, elbows and eccentric reducers, shall be included in the lump sum price bid for the entire project.

**CEMENT AND LIME STABILIZATION OF SUB-GRADE SOILS**

(07-12-07)

DB5 R21

**General**

The Design-Build Team shall be responsible for the following:

1. Performing all laboratory tests in a laboratory certified by the AMRL / NCDOT Laboratory Proficiency Program
2. Sampling Sub-grade soils
3. Conducting Laboratory tests to determine:
  - a. Soil classifications
  - b. Moisture-density relationships
  - c. Quantity of lime or cement required to achieve specified strengths
4. Designating areas to be stabilized by either lime or cement and the required rates of application
5. Conducting field tests to determine unconfined compressive strength

**Sampling**

The Design-Build Team shall take soil samples, after the project has been graded to within 2 inches of final sub-grade elevation. The Design-Build Team shall sample the top 8 inches at a

minimum frequency of one sample per 1,000 feet, per each lane, for classification tests; and one sample per 3,000 feet, per each lane, for moisture density tests and lime or cement mix design tests. Additional samples shall be taken to ensure that all the predominant soil types, limits of distribution of these soils and different site conditions have been represented.

**Classification Tests**

The Design-Build Team shall perform the following tests to determine AASHTO classifications of different soils in accordance with AASHTO specifications as modified by NCDOT. Copies of these modified procedures can be obtained from Materials and Test Unit’s Soils Laboratory.

**TABLE 1**

<b><u>TEST</u></b>	<b><u>AASHTO DESIGNATION</u></b>
Dry Preparation of Disturbed Soils	T-87
Particle Size Analysis of Soils	T-88
Determining the Liquid Limit of Soils	T-89
Determining the Plastic Limit and Plasticity Index of Soils	T-90

**Moisture Density Test**

Based on the criteria set in Table 2, below, the Design-Build Team shall perform the Moisture Density Tests, using either lime or cement. The Design-Build Team shall use 10% cement by weight in soil cement and 4% lime by weight, in soil-lime mixtures. The Design-Build Team shall conduct the tests in accordance with AASHTO T-99, and T-134 for soil-lime and soil-cement mixtures, respectively. In each case, The Design-Build Team shall determine the maximum dry density and optimum moisture content.

**TABLE 2**

<b><u>CRITERIA FOR SELECTING LIME OR CEMENT</u></b>		
<b>PROPERTY</b>	<b>A</b>	<b>B</b>
Percent passing #200 Sieve	35 Max	36 Min
Liquid Limit	40 Max	41 Min
Plasticity Index	10 Max	25 Min

The Design-Build Team shall use cement for all soils meeting criteria in Column A and lime for all soils meeting criteria in Column B. The Design-Build Team may choose either lime or cement for all soils not meeting all criteria in either Column A or B.

## **DETERMINING THE APPLICATION RATES FOR SOIL-CEMENT AND SOIL-LIME MIXTURES**

### **Soil-Cement Mixtures**

For soil-cement mixtures, the Design-Build Team shall be required to do the following:

- Make specimens at optimum moisture content using a quantity of cement in the range of 5 to 12 percent by weight.
- Compact the specimens to a minimum density of 95% of maximum dry density obtained using AASHTO T 134.
- Make a minimum of 2 specimens for each selected cement rate.
- Cure the specimens for 7 days in a moist room maintained at a temperature of 73°F ±2.7° and a humidity of 100%. At the end of the curing period, immerse the specimens in water for 4 hours.
- After immersion, test the specimens in unconfined compression in accordance with ASTM D 1633.
- Report the maximum strength obtained and the corresponding percent strain.
- Select the rate of cement that provides a minimum unconfined compressive strength of 200 psi and a maximum of 400 psi.

### **Soil-Lime Mixtures**

For soil-lime mixtures, the Design-Build Team shall be required to do the following:

- Make specimens at optimum moisture content using a quantity of lime in the range of 3.5 to 6.5 percent by weight.
- Compact specimens to a minimum density of 95% of maximum dry density obtained by AASHTO T99.
- Make a minimum of two specimens for each selected lime rate.
- Cure the specimens in sealed plastic bags for 48 hours in an oven at a temperature of 118 °F. Do not immerse the specimens in water at the end of the curing period.

- Test the specimens in unconfined compression in accordance with AASHTO T 208. Report the maximum strength obtained and the corresponding percent strain.
- Select the rate of lime that provides a minimum unconfined compressive strength of 60 psi.

### **Submittals for Review and Approval Prior to Construction**

The Design-Build Team shall adhere to the following submittal guidelines:

- Submit all laboratory test results for review.
- Submit a sketch in plan view showing areas of the project to be stabilized by either lime or cement and application rates for each stabilizer.
- Submit any other documentation that supports the Design-Build Team's recommendations.

### **Construction of Lime Treated Subgrade**

The Design-Build Team shall construct the lime treated sub-grade as specified in Section 501 of the North Carolina Department of Transportation *2006 Standard Specifications for Roads and Structures* with the following exceptions:

#### **Subsection 501-4 Equipment**

Contractor's equipment will not require engineer's approval.

#### **Subsection 501-8 (A) General**

Paragraph #1 is not applicable to this project.

#### **Subsection 501-9 (B) Preliminary Curing**

Amend as follows: Allow a minimum of 2 days and a maximum of 4 days for preliminary curing.

#### **Subsection 501-10 Compacting, Shaping, and Finishing**

Last paragraph is not applicable.

#### **Subsection 501-11 Thickness**

Last two paragraphs are not applicable.

#### **Subsection 501-15 Method of Measurement**

The entire sub-sections are not applicable.

#### **Subsection 501-16 Basis of Payment**

The entire sub-section is not applicable.

## **Construction of Cement Treated Subgrade**

The Design-Build Team shall construct the soil cement sub-grade as specified in section 542 of the North Carolina Department of Transportation *2006 Standard Specifications for Roads and Structures*, with the following exceptions:

### **Subsection 542-4 Equipment**

Contractor's equipment will not require Engineer's approval.

### **Subsection 542-7 Application of Cement**

First paragraph is not applicable.

### **Subsection 542-11 Thickness**

Paragraphs 2 and 3 are not applicable.

### **Subsection 542-16 Method of Measurement**

This entire sub-section is not applicable.

### **Subsection 542-17 Basis of Payment**

This entire sub-section is not applicable.

## **Unconfined Compressive Strength**

The Design-Build Team shall allow a minimum of seven days curing before testing for strength.

The lime-stabilized subgrades shall be tested using Dynamic Cone Penetrometer (DCP) in accordance with *Quality Assurance Testing of Lime-Treated Soils Utilizing the Dynamic Cone Penetrometer*, Test Method #1-2005. The Design-Build Team shall adhere to the testing equipment requirements and procedures as outlined in *Dynamic Cone Penetrometer Testing for Subgrade Stability* except that the minimum penetration depth shall be eight inches. Upon request, a copy of the aforementioned documents can be obtained from the NCDOT Geotechnical Engineering Unit. The required unconfined compressive strength for lime shall be 60 psi, which corresponds to a penetration per blow of approximately 0.5 inches of the Dynamic Cone Penetrometer.

For cement-stabilized subgrades, the Design-Build Team shall make field specimens, cure them for seven days and test them in the laboratory. The minimum and maximum required unconfined compressive strength for soil cement shall be 200 psi and 400 psi, respectively.

For both lime and cement stabilized subgrades, one test shall be required for every 400 feet per lane width at random locations selected using random number tables.

## **Submittals for Review During Construction**

The Design-Build Team shall submit the unconfined compressive strength and dynamic cone penetrometer test results for review and acceptance.

**PRICE ADJUSTMENTS FOR ASPHALT BINDER**

(7-21-09)

DB6 R25

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

When it is determined that the monthly selling price of asphalt binder on the first business day of the calendar month during which the last day of the partial payment period occurs varies either upward or downward from the Base Price Index, the partial payment for that period will be adjusted. The partial payment will be adjusted by adding the difference (+ or -) of the base price index subtracted from the monthly selling price multiplied by the total theoretical quantity of asphalt binder authorized for use in the plant mix placed during the partial payment period involved.

The base price index for asphalt binder for plant mix is \$ 487.33 per ton.

This base price index represents an average of F.O.B. selling prices of asphalt binder at supplier's terminals on June 1, 2010.

Payment of each asphalt binder adjustment due to the Design-Build Team will be paid with each partial payment. The dollar amount of asphalt binder adjustments that are due to the Design-Build Team or the Department will be made without impact to the availability payments shown in the Schedule of Payments Project Special Provision.

**PRICE ADJUSTMENTS - ASPHALT CONCRETE PLANT MIX**

(04-03-07)

DB6 R26

Revise the 2006 *Standard Specifications for Roads and Structures* as follows:

**Page 6-27, Article 609-8 and Page 6-49, Article 610-13**

Add the following paragraph before the first paragraph:

The "Asphalt Price" used to calculate any price adjustments set forth in this section shall be \$35 per theoretical ton. This price shall apply for all mix types.

**SUBSURFACE DRAINAGE**

(7-20-10)

DB8 R05

Revise the 2006 *Standard Specifications for Roads and Structures* as follows:

**Page 8-13, Delete Section 815 SUBSURFACE DRAINAGE** and replace it with the following:

**Description**

The Design-Build Team shall construct subsurface drains, underdrains, blind drains and other types of drains where groundwater is within 6 feet of subgrade. Install markers to locate concrete pads for drains. This provision does not apply to shoulder drains.

## Materials

Refer to Division 10 of the *Standard Specifications*.

<b>Item</b>	<b>Section</b>
Portland Cement Concrete, Class B	1000
Select Material, Class V	1016
Subsurface Drainage Materials	1044
Filter Fabric for Subsurface Drains, Type 1	1056
Steel Markers	1072-4
Steel Marker Paint	1080-14
Pavement Marker Paint	1087

Use Class B Concrete for concrete pads and Class V Select Material for subdrain coarse aggregate. Provide subdrain coarse aggregate for subsurface drains and subdrain fine aggregate for underdrains and blind drains.

## Construction Methods

Do not leave filter fabrics uncovered for more than 7 days. Excavate trenches as necessary in accordance with the contract or as directed by the Engineer. For subsurface drains, line trench with filter fabric and overlap fabric ends a minimum of 6" on top of subdrain coarse aggregate.

Install blind drains at a depth of 4 to 6 ft below subgrade elevation. Install subdrain pipes for subsurface drains and underdrains at a depth of 4 to 6 ft below subgrade elevation unless the subgrade will be proof rolled. For subsurface drains and underdrains in subgrades that will be proof rolled, install subdrain pipes at a depth of 6 ft below subgrade elevation. Firmly connect subdrain pipes together as needed. Place perforated subdrain pipes with perforations down except for pipes in dry materials, in which case turn perforations up or use non-perforated pipes. For concrete pipes in dry materials, construct mortar joints in accordance with Subarticle 300-6(A) of the *Standard Specifications*.

Place subdrain aggregate beneath, around and over subdrain pipes such that pipes are covered by at least 6" of aggregate unless shown otherwise on the plans. Do not displace or damage subdrain pipes while placing and compacting subdrain aggregate. Lightly compact backfill material such that settlement is minimized.

Use solvent cement for connecting polyvinyl chloride (PVC) outlet pipes and fittings such as wyes, tees and elbows. Provide connectors for outlet pipes and fittings that are watertight and suitable for gravity flow conditions. Cover open ends of outlet pipes with rodent screens as shown on the plans.

Connect drains to concrete pads or existing drainage structures at ends of outlet pipes. Construct concrete pads and provide an Ordinary Surface Finish in accordance with Subarticle 825-6(B) of



the *Standard Specifications*. Furnish and install steel and pavement markers at concrete pads as shown on the plans.

Allow drains to function for up to 30 days or a sufficient time as determined by the Engineer before undercutting, proof rolling or constructing embankments over drains.

### **AUTOMATED MACHINE GUIDANCE**

(6-17-08)

#### **General**

This Special Provision contains requirements that shall be followed if the Design-Build Team elects to use Global Positioning System (GPS) machine control grading and shall be used in conjunction with Section 801 of the 2006 *Standard Specifications for Roads and Structures*. The use of this technology is referenced as Automated Machine Guidance (AMG).

All equipment using AMG shall be able to generate end results that adhere to the 2006 *Standard Specifications for Roads and Structures*. The Design-Build Team shall perform test sections for each type of work to be completed with AMG to demonstrate that the system has the capability to achieve acceptable results. If acceptable results can not be achieved, the Design-Build Team shall conform to the requirements for conventional stakeout.

The Design-Build Team shall be responsible for all errors resulting from the use of AMG and shall correct deficiencies to the satisfaction of the Engineer at no cost to the Department.

#### **Submittals**

If the Design-Build Team elects to use AMG, a Digital Terrain Model (DTM) of the design surface and all intermediate surfaces shall be developed in conjunction with plan development. The Engineer of Record shall certify that the model used for AMG is representative of the approved "Released for Construction" sealed plans. The certification and DTM files in TIN format shall be provided to the Engineer for review.

At least 90 days prior to beginning grading operations, the Design-Build Team shall submit to the Engineer an AMG Work Plan to include, but not be limited to, proposed equipment, control software manufacturer and version, types of work to be completed using AMG, project site calibration report, repetitive calibration methods for construction equipment and rover units to be used for the duration of the project, and local GPS base station to be used for broadcasting differential correction data to rover units. This may include the NC Network RTK. All surveys shall be tied to existing project control as established by the Department.

#### **Inspection**

The Engineer will perform quality assurance checks of all work associated with AMG. If it is determined that work is not being performed in a manner that will assure accurate results, the Engineer may require corrective action at no cost to the Department.

The Design-Build Team shall provide the Engineer with a minimum of two GPS rover units for use during the duration of the contract. The rovers shall be loaded with the same model that is used with the AMG and shall have the same capability as rover units used by the Design-Build Team. The rovers will be kept in the possession of the Engineer and will be returned to the Design-Build Team upon completion of the contract. Any maintenance or repairs required for the rover shall be the responsibility of the Design-Build Team. Formal training of at least 8 hours on the use of the proposed AMG system shall be provided to the Engineer by the Design-Build Team and the equipment manufacturer. Training shall include, but not be limited to, hardware, software, and operation of the rover units.

**Subgrade and Base Controls**

If the Design-Build Team elects to use AMG for fine grading and placement of base or other roadway materials, the GPS shall be supplemented with a laser or robotic total station. Include details of the proposed system in the AMG Work Plan. In addition, the following requirements apply for the use of AMG for subgrade and base construction.

- (A) Provide control points at intervals along the project not to exceed 1000 feet. The horizontal position of these points shall be determined by static GPS sessions or by traverse connection from the original base line control points. The elevation of these control points shall be established using differential leveling from project benchmarks, forming closed loops where practical. A copy of all new control point information shall be provided to the Engineer prior to construction activities.
- (B) Provide fine grade hubs referencing the top of finish grade along the cross section at 500-foot intervals. These hubs shall be established using conventional survey methods for use by the Engineer to check the accuracy of fine grading and pavement construction and shall remain in place until completion of all pavement layers unless otherwise allowed by the Engineer.
- (C) Provide conventional survey grade stakes at other critical points such as TSs, SCs, CSs, STs, PCs, PTs, and super elevation transition points as requested by the Engineer.

**OVERHEAD SIGN SUPPORTS**

(5-14-09)

DB11 R012

**Description**

Design, fabricate, furnish and erect various types of overhead sign assemblies. The types of overhead sign assemblies included in this specification are span structures, cantilever structures and sign structures attached to bridges.

**Materials**

Structural Steel.....	Section 1072
Overhead Structures.....	Section 1096
Signing Materials.....	Section 1092
Organic Zinc Repair Paint .....	Article 1080-9
Reinforcing Steel .....	Section 1070

## **Construction Methods**

### **A. General**

Fabricate overhead sign assemblies in accordance with the details shown in the approved working drawings and the requirements of these specifications.

No welding, cutting or drilling in any manner shall be permitted in the field, unless prior approval by the Engineer is obtained.

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 shall not be 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. Use two bolts at each connection.

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

### **B. Shop Drawings**

Design the overhead sign supports, including foundations, prior to fabrication. Submit computations 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. Base design upon the revised structure line drawings, wind load area and the wind speed shown in the plans, and in accordance with the *Standard Specifications for Structural Structures for Highway Signs, Luminaires and Traffic Signals*.

Submit thirteen (13) copies of completely detailed working drawings and one (1) copy of the design computations 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), 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 the *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 4<sup>th</sup> Edition, 2001*, and the latest Interim Specifications.

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

- The wind pressure map that is developed from the 3-second gust speeds, as provided in Article 3.8, shall be used.
- Overhead cantilever sign structures shall include galloping loads (exclude four-chord horizontal trusses), truck-induced gust loading and natural wind gust loading in the fatigue design, as provided for in Article 11.7.1, 11.7.4 and 11.7.3 respectively.
- The natural wind gust speed in North Carolina shall be assumed to be 11.6 mph for inland areas.
- The fatigue importance category used in the design, for each type of structure, as provided for in Article 11.6, Fatigue Importance Factors, shall be Category II unless otherwise shown on the contract plans.

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 upright post, the unbraced length shall be from the chord to post connection to the top of base plate.

- For twin post truss-type upright post, that is subject to axial compression, bending moment, shear, and torsion the post shall satisfy *Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals* 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:

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

Where  $f_a$  = 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,  $M = (P \times D_1) / 2$ .

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  $M = P \times D_2$ .

- $M$  - 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 base plate of Case 1 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 Sign Foundation Project Special Provision found elsewhere in this RFP 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.

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. Provide permanent camber in addition to dead load camber in accordance with the *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*. 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.

Attach the overhead sign assemblies to concrete foundations by the use of galvanized anchor bolts with galvanized nuts, flat washers, and lock washers. For cantilever

structure use a minimum of eight anchor bolts. Provide anchor bolts that have an anchor plate with nut at the end to be embedded in concrete.

Fabricate attachment assemblies for mounting signs in a manner that allows easy removal of sign panels for repair. Provide adequate supporting frames for mounting the lighting luminaires in the positions shown in the plans or approved shop drawings for all overhead sign assemblies to be illuminated.

### **Anchor Rod Assembly**

Attach the overhead sign structure to concrete foundations by the use of straight galvanized anchor bolts with galvanized heavy hex nuts and flat washers. The rods and nuts shall be galvanized in accordance with AASHTO M232. The washers shall be galvanized in accordance with AASHTO M298 Class C. For cantilever structures, use a minimum of eight anchor rods. Provide anchor rods that have an anchor plate with nut at the end to be embedded in concrete.

Ensure material used in steel anchor rods conforms to AASHTO M 314 or ASTM F1554, and the specified yield strength does not exceed 55,000 psi. Compute the required projection of the anchor rod above the foundation top. Compute the total projection based on the following:

- Provide between 3 and 5 threads of anchor rod projection above the top nut after tightening is complete. Avoid any additional projection, or a normal depth socket torque wrench shall not be used on top nuts.
- Include the sum of the thickness of top nut, top nut flat washer or top nut beveled washers, base plate, leveling nut flat washer or leveling nut beveled washers, leveling nut.
- Set the maximum distance between the bottom of the leveling nut and the foundation top to one nut height to avoid excessive bending stresses in the anchor rod under service conditions.
- Do not use lock washers.

### **Anchor Rod Nut Tightening Requirements**

#### **Prior to installation:**

1. Protect the anchor rod threads from damage prior to and during installation.
2. Prior to installation of the rods in the foundation, turn nuts onto and off the rods, well past the elevation of the bottom of the leveling nuts. Turn by the effort of one worker using an ordinary wrench without a cheater bar. Report to the Engineer thread damage requiring unusually large effort.

#### **During installation:**

1. Place leveling nuts (bottom nuts) on the anchor rod.
2. Place leveling nut washers on top of the anchor rod leveling nuts.

3. Place a rigid template on top of the leveling nuts to check the level of the nuts. If the anchor nut and washer cannot be brought into firm contact with the template, then beveled washers shall be used.
4. Verify that the distance between the bottom of the leveling nut and the top of the concrete foundation is no more than one anchor rod diameter. If an upright is required to be back-raked, then the distance between the bottom of the leveling nut and the top of the concrete foundation shall be no more than one anchor rod diameter, averaged over the anchor rod group.
5. Place the base plate and structural element to which it is attached. However, do not attach to the upright element, during tightening of the anchor nuts, cantilever beams or arms with span in excess of 10 feet. Luminaire arms and fixtures may be attached prior to standing the pole on the foundation.
6. Place top nut washers.
7. Do not use lock washers.
8. Lubricate threads and bearing surfaces of top nuts. Lubricant shall be beeswax, stick paraffin, or other lubricant approved by the Engineer.
9. Place top nuts. If the anchor nut and washer cannot be brought into firm contact with the base plate, then beveled washers shall be used.
10. Tighten top nuts to snug-tight. A snug-tight condition is defined as the washer and nut being in full contact with the base plate, and the application of the full effort of a workman on a 12-inch wrench. Turn top nuts in increments following a star pattern (using at least two full tightening cycles).
11. To ensure proper pretensioning, after all top nuts have been brought to snug-tight condition, repeat the procedure on the leveling nuts. Turn leveling nuts in increments following a star pattern (using at least two full tightening cycles).
12. At this point, verify if beveled washers are required. Beveled washers shall be required under the leveling nut or top nut if any face of the base plate has a slope greater than 1:20 and / or any nut can not be brought into firm contact with the base plate.
13. Before further nut turning, mark the reference position of the nut in the snug-tight condition with a suitable marking (ink or paint that is not water-soluble). Mark on the corner at the intersection of two flats with a corresponding reference mark on the base plate at each nut. After tightening, verify the nut rotation.



- 14. Achieve pretensioning by turn-of-nut method. Turn the top nuts to 1/6 of a turn. Do so in a star pattern using at least two full-tightening cycles.
- 15. After installation, ensure that firm contact exists between the anchor rod nuts, washers, and base plate on any anchor rod installed.
- 16. For overhead sign assemblies: The span type truss or the cantilever truss may be placed on the uprights or attached to the upright at this time. For signal support structures: The span wires or mast arms may be attached to the upright at this time.
- 17. After a period of no less than 4 days, and no more than 2 weeks, and in the presence of the Engineer, use a torque wrench to verify that a torque at least equal to 600 foot-pounds is provided on each top nut. For cantilever structures, verify the torque after erection of the remainder of the structure and any heavy attachments to the structure.
- 18. If any top nut torque reveals less than 600 foot-pounds of effort is required to move the nut, then tighten the nut to no less than 600 foot-pounds.
- 19. The Design-Build Team shall calibrate the torque indicator, and obtain corresponding certification, for all torque wrenches used for anchor nut tightening. The calibration and certification shall have occurred no more than 12 months prior to use of the torque wrench. Torque wrenches that were calibrated and certified more than twelve months prior to anchor nut tightening shall be re-calibrated and re-certified prior to use. Provide the Engineer a certification of such calibration.
- 20. Because inspection or re-tightening of the leveling nuts would be prevented, and to reduce moisture retention and associated corrosion, grout shall not be allowed under the base plate.

**OVERHEAD SIGN FOUNDATIONS**

(5-14-09)

DB11 R013

**Description**

The work covered by this project special provision consists of the design and construction of overhead sign foundations in accordance with the submitted approved plans developed by the Design-Build Team and this provision. Design and construct either spread footing type foundations and / or drilled pier type foundations for each overhead sign unless otherwise directed by the Engineer.

**Materials**

Portland Cement Concrete Production and Delivery.....	Section 1000
Reinforcing Steel .....	Section 1070
Anchor Bolts .....	Article 1072-6
Structural Steel and Overhead Sign Structures .....	Section 1072 and 1096

## Construction Methods

### A) General

A North Carolina Licensed Professional Engineer shall seal all design calculations, drawings and recommendations. Design foundations for the effects of dead, wind and ice loads in accordance with the wind zone load shown on the plans developed by the Design-Build Team and Section 3 of the *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals* (including interims). Use either spread footing or drilled pier foundations. In some instances, conflicts with drainage structures may dictate a certain type of foundation. Spread footings or dual drilled pier foundations shall be required for full span overhead signs (no single drilled pier foundations). When designing dual drilled pier foundations, a rectangular grade beam with a moment of inertia approximately equal to either of the drilled piers shall be required to connect the pier tops.

Provide reinforced concrete design in accordance with either Section 13.7.2 or 13.6.2 (whichever is applicable), allowable stress design method, of the *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals* (including interims).

Consider sloping ground in the design, if applicable. Do not exceed an allowable bearing pressure of 3 ksf for spread footings. For drilled pier foundations, do not exceed an allowable lateral soil pressure of 4 ksf for AASHTO Group II Loading. Use the following default soil parameters and groundwater elevation for foundation design in the absence of a site-specific subsurface investigation in accordance with this project special provision.

Total Unit Weight = 120 pcf

Friction Angle = 30 degrees

Cohesion = 0 psf

Assume the groundwater elevation is at a depth of 7 feet below the ground surface. If the groundwater is encountered at a depth shallower than 7 feet, the overhead sign foundation shall be redesigned based upon the actual field conditions. The default soil parameters and allowable pressures shall not apply to very soft or loose soil, muck (generally, SPT blow counts per foot less than 4), weathered rock or hard rock (generally, SPT refusal). If soft or loose soil, muck, weathered rock or hard rock conditions are present, a site-specific subsurface investigation and foundation design shall be required in accordance with this project special provision.

Design spread footings in accordance with Sections 4.4.1 through 4.4.10, allowable stress design method, of the *AASHTO Standard Specifications for Highway Bridges* (including interims). Restrict uplift due to the eccentricity of the loading to one corner of the footing and the tension area shall not exceed 25% of the total bearing area of the spread footing.

Design drilled piers in accordance with Sections 4.6.1 through 4.6.5, allowable stress design method, of the *AASHTO Standard Specifications for Highway Bridges* (including interims). If drilled piers are designed for skin friction only, increase the required length of each drilled pier a minimum of 6 inches to allow for sediment. If drilled piers are designed for end bearing, no additional length is required; however, the drilled piers shall be subject to the cleanliness requirements in Bottom Cleanliness under “Drilled Pier Construction:” below. Clearly state on the plans whether end bearing was accounted for in the foundation design.

Calculate expected vertical, lateral and torsional movements for single drilled pier foundations. Provide drilled pier foundations that result in a horizontal lateral movement of less than 1 inch at the top of the pier and a horizontal rotational movement of less than 1 inch at the edge of the pier. Also, use a factor of safety of 2.0 for lateral and torsion failure. Preliminary design methods described in Section 13.6.1.1 of the *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals* (including interims) shall be used to incorporate a factor of safety in foundation design for lateral failure. Wings shall be required to increase torsion resistance for cantilever signs supported by a single drilled pier.

If a site-specific subsurface investigation is performed, use only an NCDOT Highway Design Branch Pre-Qualified Geotechnical Engineering Firm to provide a site specific foundation design.

**B) Subsurface Investigation**

The Design-Build Team may elect to conduct a site specific subsurface investigation at each proposed overhead sign foundation location in lieu of using the default soil parameters and allowable pressures referenced above. In this case, and subject to the requirements below, perform a boring at each overhead sign foundation location and provide boring data on an NCDOT Standard Boring Log form. Download this form from the NCDOT site at

<http://www.ncdot.org/doh/preconstruct/highway/geotech/contractserv/investigation/Documents/BoringLogs.zip>.

A licensed geologist or a professional engineer registered in the State of North Carolina and employed by an NCDOT Highway Design Branch pre-qualified Geotechnical Engineering Firm shall seal each boring log. Use only an NCDOT Highway Design Branch pre-qualified Geotechnical Engineering Firm to conduct the subsurface investigation. Perform the investigation only after rough grade (within 3 feet of final grade) is achieved. Locate each boring within 3 feet of the center of the overhead sign foundation. Drill the boring to a minimum depth of 10 feet below the required spread footing bearing or drilled pier tip elevation, whichever is deeper. Conduct Standard Penetrating Tests at 1 foot, 2.5 feet, 5 feet, 7.5 feet, 10 feet and every 5 feet after 10 feet below the rough grade in accordance with ASTM D-1586. A boring may be terminated

above the minimum depth required (10 feet below the foundation elevation) if one of the following conditions occur: (a) a total of 100 blows have been applied in any 2 consecutive 6-inch intervals; (b) a total of 50 blows have been applied with less than 3 inches of penetration.

**C) Foundation Construction**

Excavate footings for overhead sign structures in accordance with the applicable provisions of Section 410 of the 2006 *Standard Specifications for Roads and Structures*. Construct footings for overhead sign structures in accordance with Section 825 of the 2006 *Standard Specifications for Roads and Structures*. Construct all footings with Class A concrete. Where rectangular forms are used, use forms that have a chamfer strip at all corners for at least that distance protruding above finished ground. Use chamfers, which measure one-inch along the diagonal face.

Securely brace anchor bolts positioned in the form and hold in proper position and alignment. Provide a rubbed finish on concrete surfaces to be exposed above finished ground in accordance with Section 825-6 (D) of the 2006 *Standard Specifications for Roads and Structures*. Do not erect overhead sign structures on foundations until the concrete has reached a minimum compressive strength of 3000 psi. Determine concrete compressive strength by nondestructive test methods or compressive strength tests made in accordance with AASHTO T22 and T23. Furnish equipment used for nondestructive tests and obtain Engineer's approval prior to performing the tests.

**D) Drilled Pier Construction**

**Excavation**

Perform excavations for drilled piers to the required dimensions and lengths including all miscellaneous grading and excavation necessary to install the drilled pier. Depending on the subsurface conditions encountered excavation in hard rock, weathered rock or removal of boulders and debris may be required.

Dispose of drilling spoils as directed by the Engineer and in accordance with Section 802 of the 2006 *Standard Specifications for Roads and Structures*. Drilling spoils consist of all material excavated including water or slurry removed from the excavation either by pumping or with augers.

Construct drilled piers within the tolerances specified herein. If tolerances are exceeded, provide additional construction as approved by the Engineer to bring the piers within the tolerances specified. Construct drilled piers such that the axis at the top of the piers is no more than 3 inches in any direction from the specified position. Build drilled piers within 1% of the plumb deviation for the total length of the piers. When a grade beam is not required at the top of a pier, locate the top of pier elevation between 18 inches above and 6 inches above the finished grade elevation. Form the top of the pier such that the concrete is smooth and level.

If unstable, caving or sloughing soils are anticipated or encountered, stabilize drilled pier excavations with steel casing and / or polymer slurry. Steel casing may be either the sectional type or one continuous corrugated or non-corrugated piece. All steel casings shall consist of clean watertight steel of ample strength to withstand handling and driving stresses and the pressures imposed by concrete, earth or backfill. Use steel casings with an outside diameter equal to the specified pier size and a minimum wall thickness of 1/4 inch. Extract all temporary casings during concrete placement in accordance with this project special provision unless the Design-Build Team chooses to leave the casing in place in accordance with the requirements below.

Any steel casing left in place will be considered permanent casing. When installing permanent casing do not drill or excavate below the tip of the permanent casing at any time such that the permanent casing is against undisturbed soil. The Design-Build Team may excavate a hole with a minimum diameter of 12 inches smaller than the specified size of the pier in order to facilitate permanent casing installation provided the sides of the excavation do not slough during drilling such that the hole diameter becomes larger than the inside diameter of the casing. Permanent steel casings shall only be allowed for full span overhead signs as approved by the Engineer and prohibited for cantilever overhead signs. No additional compensation will be paid for permanent casing.

If the Design-Build Team elects to use polymer slurry to stabilize the excavation, use one of the polymers listed in the table below:

<b>PRODUCT</b>	<b>MANUFACTURER</b>
SlurryPro EXL	KB Technologies Ltd 3648 FM 1960 West Suite 107 Houston, TX 77068 (800) 525-5237
Super Mud	PDS Company 105 West Sharp Street El Dorado, AR 71730 (800) 243-7455
Shore Pac GCV	CETCO Drilling Products Group 1500 West Shure Drive Arlington Heights, IL 60004 (800) 527-9948

Use slurry in accordance with the manufacturer's guidelines and recommendations unless approved otherwise by the Engineer. The Design-Build Team should be aware that polymer slurry might not be appropriate for a given site. Polymer slurry shall not be used for excavations in very soft or loose soils. If the excavation can not be stabilized with polymer slurry, the Engineer may require a site-specific

subsurface investigation (if not done during design) and the use of steel casing. No additional time or compensation will be provided if steel casing and / or polymer slurry are required to stabilize the excavation.

Construct all drilled piers such that the piers are cast against undisturbed soil. If a larger casing and drilled pier are required as a result of unstable or caving material during drilling, backfill the excavation before removing the casing to be replaced. No additional time or compensation will be provided for substituting a larger diameter drilled pier in order to construct a drilled pier cast against undisturbed soil.

Any temporary steel casing that becomes bound or fouled during pier construction and cannot be practically removed may constitute a defect in the drilled pier. Improve such defective piers to the satisfaction of the Engineer by removing the concrete and enlarging the drilled pier, providing a replacement pier or other approved means. All corrective measures including redesign as a result of defective piers shall not be cause for any claims or requests for additional time or compensation.

### **Bottom Cleanliness**

If the plans indicate end bearing was used in the design, after a drilled pier excavation is complete, and immediately before concrete placement, demonstrate acceptable bottom cleanliness of the drilled pier excavation to the Engineer for approval. Provide any equipment, personnel and assistance required for the Engineer to inspect the drilled pier excavation. The pier excavation bottom shall be considered clean if no portion of the bottom area has more than 3 inches of sediment as determined by the Engineer.

### **Reinforcing Steel**

Completely assemble a cage of reinforcing steel consisting of longitudinal and spiral bars and place cage in the drilled pier excavation as a unit immediately upon completion of drilling unless the excavation is entirely cased. If the drilled pier excavation is entirely cased down to the tip, immediate placement of the reinforcing steel and the concrete is not required.

Lift the cage so racking and cage distortion does not occur. Keep the cage plumb during concrete placement operations and casing extraction. Check the position of the cage before and after placing the concrete.

Securely crosstie the vertical and spiral reinforcement at each intersection with double wire. Support or hold down the cage so that the vertical displacement during concrete placement and casing extraction does not exceed 2 inches.

Do not set the cage on the bottom of the drilled pier excavation. Place plastic bolsters under each vertical reinforcing bar that are tall enough to raise the rebar cage off the bottom of the drilled pier excavation a minimum of 3 inches.

In order to ensure a minimum of 3 inches of concrete cover and achieve concentric spacing of the cage within the pier, tie plastic spacer wheels at five points around the cage perimeter. Use spacer wheels that provide a minimum of 3 inches "blocking" from the outside face of the spiral bars to the outermost surface of the drilled pier. Tie spacer wheels that snap together with wire and allow them to rotate. Use spacer wheels that span at least two adjacent vertical bars. Start placing spacer wheels at the bottom of the cage and continue up along its length at maximum 10-foot intervals. Supply additional peripheral spacer wheels at closer intervals as necessary or as directed by the Engineer.

## Concrete

Begin concrete placement immediately after inserting reinforcing steel into the drilled pier excavation.

### 1) Concrete Mix

Provide the mix design for drilled pier concrete for approval and, except as modified herein, meeting the requirements of Section 1000 of the 2006 *Standard Specifications for Roads and Structures*.

Designate the concrete as Drilled Pier Concrete with a minimum compressive strength of 4500 psi at 28 days. The Design-Build Team may use a high early strength mix design as approved by the Engineer. Make certain the cementitious material content complies with one of the following options:

- Provide a minimum cement content of 640 lbs / yd<sup>3</sup> and a maximum cement content of 800 lbs / yd<sup>3</sup>; however, if the alkali content of the cement exceeds 0.4%, reduce the cement content by 20% and replace it with fly ash at the rate of 1.2 LB of fly ash per LB of cement removed.
- If Type IP blended cement is used, use a minimum of 665 lbs / yd<sup>3</sup> Type IP blended cement and a maximum of 833 lbs / yd<sup>3</sup> Type IP blended cement in the mix.

Limit the water-cementitious material ratio to a maximum of 0.45. Do not air-entrain drilled pier concrete.

Produce a workable mix so that vibrating or prodding is not required to consolidate the concrete. When placing the concrete, make certain the slump is between 5 and 7 inches for dry placement of concrete or 7 and 9 inches for wet placement of concrete.

Use Type I or Type II cement or Type IP blended cement and either No. 67 or No. 78M coarse aggregate in the mix. Use an NCDOT approved water-reducer, water-reducing retarder, high-range water-reducer or high-range water-reducing retarder to facilitate placement of the concrete, if necessary. Do not use a stabilizing admixture as a retarder in Drilled Pier Concrete without prior approval of the Engineer. Use admixtures that satisfy AASHTO M194 and add admixtures at the concrete plant when the mixing water is introduced into the concrete. Redosing of admixtures shall not be permitted.

Place the concrete within 2 hours after introducing the mixing water. Ensure that the concrete temperature at the time of placement is 90°F or less.

## 2) Concrete Placement

Place concrete such that the drilled pier is a monolithic structure. Temporary casing may be completely removed and concrete placement may be temporarily suspended when the concrete level is within 42 to 48 inches of the ground elevation to allow for placement of anchor bolts and construction of grade beam or wings. Do not pause concrete placement if unstable casing soils are present at the ground surface. Remove any water or slurry above the concrete and clean the concrete surface of all scum and sediment to expose clean, uncontaminated concrete before inserting the anchor bolts and conduit. Resume concrete pouring within 2 hours.

Do not dewater any drilled pier excavations unless the Engineer approves the dewatering and the excavation is entirely cased down to tip. Do not begin to remove the temporary casing until the level of concrete within the casing is in excess of 10 feet above the bottom of the casing being removed. Maintain the concrete level at least 10 feet above the bottom of casing throughout the entire casing extraction operation except when concrete is near the top of the drilled pier elevation. Maintain a sufficient head of concrete above the bottom of casing to overcome outside soil and water pressure. As the temporary casing is withdrawn, exercise care in maintaining an adequate level of concrete within the casing so that fluid trapped behind the casing is displaced upward and discharged at the ground surface without contaminating or displacing the drilled pier concrete. Exerting downward pressure, hammering or vibrating the temporary casing is permitted to facilitate extraction.

Keep a record of the volume of concrete placed in each drilled pier excavation and make it available to the Engineer.

After all the pumps have been removed from the excavation, the water inflow rate determines the concrete placement procedure. If the inflow rate is less than 6 inches per half-hour, the concrete placement shall be considered dry. If



the water inflow rate is greater than 6 inches per half-hour, the concrete placement shall be considered wet.

- **Dry Placement:** Before placing concrete, make certain the drilled pier excavation is dry so the flow of concrete completely around the reinforcing steel can be certified by visual inspection. Place the concrete by free fall with a central drop method where the concrete is chuted directly down the center of the excavation.
- **Wet Placement:** Maintain a static water or slurry level in the excavation before placing concrete. Place concrete with a tremie or a pump in accordance with the applicable parts of Sections 420-4 and 420-5 of the 2006 *Standard Specifications for Roads and Structures*. Use a tremie tube or pump pipe made of steel with watertight joints. Passing concrete through a hopper at the tube end or through side openings as the tremie is retrieved during concrete placement is permitted. Use a discharge control to prevent concrete contamination when the tremie tube or pump pipe is initially placed in the excavation. Extend the tremie tube or pump pipe into the concrete a minimum of 5 feet at all times except when the concrete is initially introduced into the pier excavation. If the tremie tube or pump pipe pulls out of the concrete for any reason after the initial concrete is placed, restart concrete placement with a steel capped tremie tube or pump pipe.

Once the concrete in the excavation reaches the same elevation as the static water level, placing concrete with the dry method is permitted. Before changing to the dry method of concrete placement, remove any water or slurry above the concrete and clean the concrete surface of all scum and sediment to expose clean, uncontaminated concrete.

Vibration shall only be permitted, if needed, in the top 10 feet of the drilled pier or as approved by the Engineer. Remove any contaminated concrete from the top of the drilled pier and wasted concrete from the area surrounding the drilled pier upon completion.

### 3) Concrete Placement Time

Place concrete within the time frames specified in Table 1000-2 of the 2006 *Standard Specifications for Roads and Structures* for Class AA concrete except as noted herein. Do not place concrete so fast as to trap air, water, fluids, soil or any other deleterious materials in the vicinity of the reinforcing steel and the annular zone between the rebar cage and the excavation walls. Should a delay occur because of concrete delivery or other factors reduce the placement rate to maintain some movement of the concrete. No more than 45 minutes shall be allowed between placements.

**E) Scheduling and Restrictions**

If caving or sloughing occurs, no additional compensation will be provided for additional concrete to fill the resulting voids.

During the first 16 hours after a drilled pier has achieved its initial concrete set as determined by the Engineer, do not drill adjacent piers, do not install adjacent piles and do not allow any heavy construction equipment loads or “excessive” vibrations to occur at any point within a 20 foot radius of the drilled pier.

In the event that the procedures described herein are performed unsatisfactorily, the Engineer reserves the right to shut down the construction operations or reject the drilled piers. If the integrity of a drilled pier is in question, use core drilling, sonic or other NCDOT approved methods at no additional cost to the Department and under the direction of the Engineer. Dewater and backfill core drill holes with an approved high strength grout with a minimum compressive strength of 4500 psi. Propose remedial measures for any defective drilled piers and obtain approval of all proposals from the Engineer before implementation. No additional time or compensation will be provided for losses or damage due to remedial work or any investigation of drilled piers found defective or not in accordance with this project special provision or the plans.

**HIGH TENSION CABLE BARRIER SYSTEM**

(2-19-09)

SPI

**Description**

Furnish and install NCHRP 350 compliant rope/cable barrier system in accordance with the manufacturer’s recommendation and as directed by the Engineer. On the plans it shall be labeled as High Tension Cable Barrier.

**Materials**

The Design-Build Team may at his option, furnish any one of the following cable barrier systems.

Cable barrier system CASS™ as manufactured by:

TRINITY INDUSTRIES, INC.  
2525 N. STEMMONS FREEWAY  
DALLAS, TEXAS 75207  
TELEPHONE: 800-644-7976  
Website: www.highwayguardrail.com

Cable barrier system WRSF as manufactured by:

BRIFEN, USA  
P.O. BOX 9422  
OKLAHOMA CITY, OK 73143  
TELEPHONE: (405) 793-9500  
Website: www.brifenus.com

## Specifications

The cable barrier system shall meet the following minimum specifications:

- 1) Have a 8 ft. Maximum Deflection
- 2) Install a minimum distance of 8 ft. from centerline of Median Ditch
- 3) Capable of withstanding additional vehicle impact into same area prior to repair
- 4) Socketed / Sleeved Foundation

## Construction

High Tension Cable Barrier installation shall be in accordance with the manufacturer's recommendations.

Prior to installation the Design-Build Team shall submit to the Engineer:

1. FHWA acceptance letter for the cable barrier system certifying it meets the requirements of *NCHRP Report 350, Test Level 3*, in accordance with Section 106-2 of the 2006 *Standard Specifications for Roads and Structures*.
2. Certified working drawings and assembling instructions from the manufacturer for the cable barrier system in accordance with Section 105-2 of the 2006 *Standard Specifications for Roads and Structures*.

No modifications shall be made to the cable barrier system 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.

Prior to acceptance, the Design-Build Team shall submit a certification stating that the High Tension Cable Barrier meets the manufacturer's specifications for materials and installation.

## **FAA NOTIFICATION OF CONSTRUCTION**

The Design-Build Team shall notify the Federal Aviation Administration (FAA) and the Concord Airport Authority in writing sixty days prior to any construction activities on the project, at the following addresses:

### **FAA**

Carole Bernacchi, Air Traffic State Technician  
Federal Aviation Administration  
carole.bernacchi@faa.gov  
<https://oeaaa.faa.gov/>  
Telephone: 847-294-8084

### **Concord Airport Authority**

Dick Lewis, Director of Aviation  
Concord Regional Airport  
900 Aviation Boulevard  
Concord, NC 28027  
Telephone: 704-920-5912

The Design-Build Team shall be responsible for all FAA forms and approvals required for construction of the project. This shall include, but is not limited to, forms 7460-1 and 7460-2.

These forms, instructions, and examples of previous DOT projects can be found at the website listed above.

## **SAFETY FENCE:**

### **Description**

Safety Fence shall consist of furnishing materials, installing and maintaining polyethylene or polypropylene fence along the outside of environmentally sensitive areas, including, but not limited to, riparian buffer, wetland, endangered vegetation, culturally sensitive areas, and water boundaries located within the construction corridor. The fence shall be installed prior to any land disturbing activities.

### **Materials**

Polyethylene or polypropylene fence shall be a highly visible preconstructed safety fence approved by the Engineer. The fence material shall have an ultraviolet coating.

Either wood posts or steel posts may be used. Wood posts shall be hardwood with a wedge or pencil tip at one end, and shall be at least 5 ft. in length with a minimum nominal 2" x 2" cross section. Steel posts shall be at least 5 ft. in length, and have a minimum weight of 0.85 lb./ft. of length.

### **Construction Methods**

No additional clearing and grubbing is anticipated for the installation of this fence; however, if any clearing and grubbing is required, it will be the minimum required for the installation of the safety fence.

The fence shall be erected to conform to the general contour of the ground. When determined necessary, minor grading along the fence line shall be performed to meet this requirement provided no obstructions to proper drainage are created.

Posts shall be set and maintained in a vertical position and may be hand set or set with a post driver. If hand set, all backfill material shall be thoroughly tamped. Wood posts may be sharpened to a dull point if power driven. Posts damaged by power driving shall be removed and replaced prior to final acceptance. The tops of all wood posts shall be cut at a 30-degree angle. The wood posts may, at the option of the Design-Build Team, be cut at this angle either before or after the posts are erected.

The fence fabric shall be attached to the wood posts with one 2" galvanized wire staple across each cable or to the steel posts with wire or other acceptable means.

The Design-Build Team shall be required to maintain the safety fence in a satisfactory condition for the duration of the project as determined by the Engineer. The Design-Build Team shall restore all areas to the original condition after removing the safety fence.

## **ROCK BLASTING**

### **Description**

This project special provision governs fracturing rock for excavation and constructing stable rock cut slopes using controlled, production and trench blasting. Controlled blasting is used to form a certain slope by limiting the effects of blasting with cushion or trim blasting. Another type of controlled blasting known as presplitting is not addressed by this provision. Production blasting is used to fracture rock in manageable sizes for excavation. Trench blasting is used to create trenches in rock for utilities and pipes and construct open ditches. This provision also addresses secondary blasting and blasting adjacent to highway structures in lieu of Article 410-12 of the *Standard Specifications*.

Exercise care when using bulk ammonium nitrate and fuel oil (ANFO) near open water to prevent ANFO from leaching into lakes, streams, creeks and rivers. Control blasting to avoid damaging public and private property. Contain flyrock in the construction limits or perform blasting such that no flyrock occurs if required in the “Project Requirements” section of this provision. When blasting in the vicinity of an open travelway, have equipment standing by to remove material that interferes with traffic flow.

The Design-Build Team shall perform rock blasting, develop blast plans, provide explosive materials, drill, load and stem holes, record drilling, conduct blast surveys, monitor blasts and submit drilling records, surveys and reports in accordance with the plans, *Standard Specifications* and this provision as directed by the Engineer.

### **Project Requirements**

At a minimum, conduct pre-blast surveys for any building, residence or utility when the maximum charge per delay ( $W_{max}$ ) and the distance to the subject structure (D) may result in a peak particle velocity (PPV) equal to or greater than 0.4 in/sec (10 mm/sec) using the formulas in the “Peak Particle Velocity and Scaled Distance” section of this provision.

Blasting is subject to the following warning levels and not-to-exceed limits.

<b>Variable</b>	<b>Warning Level</b>	<b>Not-to-Exceed Limit</b>
Vibration (PPV) > 40 Hz	0.75 in/sec (19 mm/sec)	1.0 in/sec (25 mm/sec)
Vibration (PPV) < 40 Hz	0.40 in/sec (10 mm/sec)	0.50 in/sec (13 mm/sec)
Air-overpressure (noise)	120 dBL	133 dBL

Retain a Blast Monitoring Consultant to provide pre-blast surveys and blast monitoring.

Test blasts are required as necessary near structures, sensitive areas, or as directed by the Engineer.

Retain a Blasting Consultant to design blasts and prepare blast plans for blasting.

Design and perform rock blasting such that no flyrock occurs. If flyrock occurs, the Engineer may suspend blasting operations in accordance with Article 108-7 of the Standard Specifications and require test blasts and a revised general blast plan.

Blasting will be very critical due to the close proximity of populated or sensitive environmental areas, urban or sensitive communities or historic structures. The Contractor shall exercise caution and the utmost care when designing and performing blasts in these areas.

## **Definitions**

*Air-Overpressure or Air Blast (Noise)* – The pulsating pressure changes above and below ambient air pressure generated by an explosion. Air-overpressure “linear scale” measurements include low frequency noise with a 2 hertz (Hz) response and are expressed in units of decibels-L (dBL).

*Blast Pattern* – A plan of blast hole locations or an expression of the burden and spacing distance and their relationship to each other.

*Burden* – The amount of rock broken by an explosive charge measured as the distance between the blast hole and the nearest free face.

*Charge per Delay (W)* – The sum of all charge weights firing within any 8 milliseconds (ms) time period. For example, if two 10 lb (4.5 kg) charges fire at 100 ms and one 15 lb (6.8 kg) charge fires at 105 ms, the charge per delay would be 35 lbs (15.8 kg).

*Cushion or Trim Blasting* – A controlled blasting technique in which a line of blast holes along a rock face are detonated during the last delay period of the blast. The main burden is moved from the face by production blast holes leaving only a small burden to be removed by the line of blast holes at the face. Charges in these holes are lighter than charges in the production blast holes.

*Deck Loading (Decking)* – A method of loading blast holes in which two or more explosive charges, called decks or deck charges, are loaded in the same hole separated by stemming or an air cushion.

*Delay Blasting* – The practice of initiating individual explosive decks, blast holes or rows of holes at predetermined time intervals using delays or delay detonators as compared to firing all blast holes simultaneously.

*Flyrock* – Rocks propelled through the air by the force of an explosion.

*Free Face* – A rock surface exposed to air or water that provides room for expansion upon fragmentation.

*Magazine* – Any building, structure or container, approved for storage of explosive materials other than an explosive manufacturing building.

*Misfire* – An event where all or some charges in a blast fail (do not detonate) when initiated or a term for any portion of explosive materials that fail to detonate as planned.

*Peak Particle Velocity (PPV)* – The maximum ground vibration velocity measured in the vertical, longitudinal or transverse direction. PPV measurement units are expressed in inches or millimeters per second (in/sec or mm/sec).

*Scaled Distance (Ds)* – A calculated value in units of  $\text{ft/lb}^{0.5}$  ( $\text{m/kg}^{0.5}$ ) describing relative vibration energy based on distance to a structure (D) and charge per delay (W). Ds is equal to D divided by the square root of W,  $D_s = D / W^{0.5}$  or  $W = (D / D_s)^2$ .

*Spacing* – The distance between blast holes in a row. In production blasting, the distance is measured parallel to the free face and perpendicular to the burden.

*Stemming* – Crushed stone placed in the unloaded collar area of blast holes for the purpose of confining explosive charges and limiting rock movement and air-overpressure.

*Subdrilling* – The portion of a blast hole that is drilled below or beyond the desired excavation depth or limit. Subdrilling is generally required to prevent the occurrence of high or tight areas of unfractured rock between blast holes.

## Regulations

Comply with all the latest applicable Federal, State and local codes, laws, rules and regulations as well as professional society standards for the storage, transportation and use of explosives. These include but are not limited to the following:

- The Occupational Safety and Health (OSH) Act of 1970 and the Construction Safety Act (CSA) of 1969, as amended
- Safe Explosives Act, Title XI, Subtitle C of Public Law 107-296; Interim Final Rule
- Title 29, U. S. Code, Section 651 et seq., including safety and health regulations for construction
- Title 27, Code of Federal Regulations (27 CFR), Part 555, U. S. Department of Justice, Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF)
- Organized Crime Control Act of 1970, Title XI, Public Law 91-452, as amended
- Title 49, Code of Federal Regulations (49 CFR), Parts 105-177 (DOT RSPA) & Parts 301-399 (DOT FHA)
- Title 29, Code of Federal Regulations (29 CFR), Parts 1910 & 1926, N. C. Department of Labor, Division of Occupational Safety and Health
- *The Mining Act of 1971, North Carolina General Statute, Chapter 74, Article 7, as amended*
- *Fire Code of North Carolina, Section 105.6.15 Explosives*
- Administrative Rules, 13 NCAC 06.0521 – 13 NCAC 06.0526, N. C. Department of Labor
- “A Guide to the Safe Storage of Explosive Materials” and “North Carolina Occupational Safety and Health Standards in Construction for Blasting & Use of Explosives”, N. C. Department of Labor

Keep a copy of all regulations listed above at the project site.

Non-regulatory Industry Support Organizations:

- Blast Monitoring Equipment Operation Standards (1999), Vibration Subcommittee of the International Society of Explosive Engineers (ISEE)

- Institute of Makers of Explosives (IME) Safety Library Publications (SLPs)

In case of conflict, the more stringent regulation applies.

### **Submittals**

In lieu of a blasting plan in accordance with Article 107-11 of the *Standard Specifications*, the following submittals are required for rock blasting.

- Blasting Contractor Personnel and Experience including Blasting Consultant, if applicable
- General Blast Plan including Blast Monitoring Consultant, if applicable
- Site Specific Blast Plans including Pre-blast Surveys
- Post-blast Reports including Drilling Records, Blast Monitoring Report and Blast Damage Report, when necessary

For the site specific blast plans and post-blast reports, submit two hard copies of each to the Resident Engineer. After completing all blasting for a cut, structure or an excavation, submit electronic copies (pdf or jpg format on CD or DVD) of all site specific blast plans and post-blast reports.

Allow 30 calendar days upon receipt by the Department for the review and acceptance of the Blasting Contractor personnel and experience and general blast plan. Provide these submittals in both electronic and hard copy form in accordance with the following:

Submit one hard copy to the Resident Engineer. At the same time, submit a second hard copy and an electronic copy (pdf or jpg format on CD or DVD) directly to the Geotechnical Engineering Unit at the following address:

Via US mail or other delivery service:

Western Regional Geotechnical Manager  
 North Carolina Department of Transportation  
 Geotechnical Engineering Unit  
 Western Regional Office  
 5253 Z Max Boulevard  
 Harrisburg, NC 28075

The Engineer may suspend blasting operations in accordance with Article 108-7 of the *Standard Specifications* if submittals are illegible, incomplete or not provided.

#### **(A) Blasting Contractor Personnel and Experience**

The Engineer may waive this submittal if a Blasting Consultant is not required and the Blasting Contractor and Blaster-in-Charge for this project were previously accepted within the last year for another NCDOT project with subsurface conditions and blasting of a scope and complexity similar to that anticipated for this project.

Obtain acceptance of the Blasting Contractor personnel and experience before submitting a general blast plan.



**(1) Blasting Contractor**

Use a Blasting Contractor prequalified by the Contractual Services Unit for rock blasting work (work code 070). Submit documentation that the Blasting Contractor has successfully completed at least 5 blasting projects within the last 3 years with subsurface conditions and blasting of a scope and complexity similar to that anticipated for this project. Documentation should include the General Contractor and Owner's name and current contact information with descriptions of each past project.

**Blaster-in-Charge**

The Blaster-in-Charge has total authority over the handling, use and security of explosives and is responsible for coordinating, planning and supervising explosives use. The Blaster-in-Charge is also responsible for designing blasts and preparing blast plans when a Blasting Consultant is not required and for monitoring blasts when a Blast Monitoring Consultant is not required. Either the Blaster-in-Charge or an alternate Blaster-in-Charge is required to be on-site during blasting.

Submit documentation that the Blaster-in-Charge and any alternate Blasters-in-Charge have a minimum of 5 years experience in blasting with past projects of scope and complexity similar to that anticipated for this project. Documentation should include resumes, references, certifications, project lists, experience descriptions and details, etc. If there is a change in the Blaster-in-Charge, discontinue explosives use until a new Blaster-in-Charge is submitted and accepted.

**(2) Blasting Consultant**

When a Blasting Consultant is required in the "Project Requirements" section of this provision, submit the consultant's name with the Blasting Contractor personnel and experience. The Blasting Consultant shall not be an employee of the Contractor or any affiliated companies or product suppliers. Contact the Geotechnical Engineering Unit Contract Administrator for a list of approved Blasting Consultants.

**(B) Blast Plans**

Blast plans are for quality control and record keeping purposes and shall be signed by the Blaster-in-Charge (and Blasting Consultant, if applicable). Review and acceptance of blast plans does not relieve the Contractor of responsibility for the blast results or liability in accordance with Articles 107-11 and 107-12 of the *Standard Specifications*.

**(1) General Blast Plan**

Submit a general blast plan before beginning drilling, when revised drilling or blasting methods are proposed or as directed by the Engineer. At a minimum, include the following in the plan:

- Work procedures and safety precautions for the storage, transportation, handling and detonation of explosives
- Explosive products and devices for dry and wet blast holes including explosives, primers and detonators with material safety data sheets
- Drilling equipment and methods for maintaining blast hole alignment
- Typical plan, profile and sectional views for both production and controlled blasting showing hole diameter, depth, inclination and spacing, maximum blast limits, burden, subdrill depth and maximum charge per delay
- Initiation and delay methods and delay times
- Site specific blast plan format
- Blast hole drill log format
- Pre-blast survey criteria and method
- Blast monitoring report format and equipment including calibration information
- Post-blast report format
- Blast Monitoring Consultant if applicable
- Test blast locations when required

Do not deliver explosives to the project site until the general blast plan is reviewed and accepted.

**(2) Site Specific Blast Plan**

After the general blast plan is accepted, submit a site specific blast plan at least 24 hours in advance of each blast. Site specific blast plans may be waived for non-critical blasts as determined by the Engineer. The following is required for the plan:

- Scaled drawings of the blast area with cross-sections showing the beginning and ending stations, hole diameter, depth, inclination, spacing, burden, subdrill depth and free face location and any joints, bedding planes, weathered zones, voids or other significant rock structure that may influence the blast
- A loading pattern diagram showing the location and amount of each type of explosive including primers and detonators
- The locations and depths of stemming, column heights and maximum charge per delay for each type of loading
- A delay and initiation diagram showing delay pattern, sequence and times
- Pre-blast surveys (once per structure; not required when submitted for a prior blast)

For site specific blast plans do not exceed the maximum charge per delay accepted in the general blast plan or submit a revised general blast plan to increase the maximum charge per delay allowed.

**(C) Pre-blast Surveys and Post-blast Reports**

**(1) Blast Monitoring Consultant**

When a Blast Monitoring Consultant is required in the “Project Requirements” section of this provision, submit the consultant’s name with the general blast plan. The Blast Monitoring Consultant shall not be an employee of the Contractor or any affiliated companies or product suppliers. Contact the Geotechnical Engineering Unit Contract Administrator for a list of approved Blast Monitoring Consultants.

**(2) Peak Particle Velocity and Scaled Distance**

Use the following formulas to determine peak particle velocity (PPV) and scaled distance (Ds).

$$PPV = K(Ds)^m \quad \text{and} \quad Ds = D / (W_{max})^{0.5}$$

where: PPV = Peak Particle Velocity (in/sec or mm/sec)

K and m = Site specific constants defining initial energy and decay

Ds = Scaled Distance (ft/lb<sup>0.5</sup> or m/kg<sup>0.5</sup>)

D = Distance to subject structure (ft or m)

W<sub>max</sub> = Maximum charge per delay (lbs or kg)

Typically, a K of 240 (1725 for metric units) and an m of -1.6 may be used for the equations above. However, K and m are site specific and may be determined by performing a regression analysis of multiple PPV and Ds data pairs. Select K and m based on actual site conditions, rock type and structure, subsurface information and blast monitoring measurements.

**(3) Pre-blast Survey**

Conduct pre-blast surveys in accordance with the “Project Requirements” section of this provision and the accepted general blast plan. At a minimum, include the following in the survey:

- Summary naming the person who performed the survey and comments about each structure and existing condition
- Sketches of interior and exterior walls and foundations with existing cracks and a written description of the cracks including the length, width, type and angle
- 4 x 6 inch (100 x 150 mm) color 35-mm or 5-megapixel digital photographs or miniDV or DVD digital video documenting the existing cracks and condition of each structure

Submit pre-blast surveys with site specific blast plans.

**(4) Post-blast Report**

Within 3 days after each blast or before the next blast, whichever is sooner, submit a post-blast report signed by the Blaster-in-Charge that includes the following:

- Results and effectiveness of the blast and any proposed changes to subsequent site specific blast plans
- Blast monitoring report
- Blast damage report when necessary
- Drilling records including blast pattern and blast hole drill logs

**(a) Blast Monitoring**

At a minimum, monitor vibration and air-overpressure (noise) at the nearest building, residence or utility and the nearest building, residence or utility in the direction of the blast in accordance the accepted general blast plan. Furnish seismographs capable of measuring particle velocities in the longitudinal, vertical and horizontal directions. Use monitoring equipment calibrated within one year of the date the data is collected. Interpret the recorded data and submit a blast monitoring report signed by the Blaster-in-Charge (or Blast Monitoring Consultant, if applicable) with the post-blast report that includes the following for each monitoring location:

- Type, identification and specific location of monitoring equipment
- Distance and direction to blast
- PPV in each direction and peak vector sum
- Maximum air-overpressure

If damage occurs from blasting, notify the Engineer immediately. Submit a blast damage report signed by the Blaster-in-Charge (and Blast Monitoring Consultant, if applicable) with the post-blast report that includes the following:

- Property owner's (and injured person's, if any) names, addresses and telephone numbers
- Details and description of property damage (and injury, if any) with photos or video
- Any associated tort claims, complaint letters and other applicable information

**(b) Drilling Records**

Identify each blast hole with a number on a blast pattern. Log the hole number, total depth, date drilled and the depth and description of significant conditions

encountered such as water, voids and weak or jointed seams. Submit the blast pattern and blast hole drill logs signed by the Driller with the post-blast report.

## **Blast Design Requirements**

### **(A) Vibration and Air-overpressure**

Design blasts for the vibration and air-overpressure (noise) warning levels and not-to-exceed limits in the “Project Requirements” section of this provision. If warning levels are exceeded, the Engineer may require additional monitoring and the Contractor should be aware that future blasts could exceed the not-to-exceed limits. If not-to-exceed limits are exceeded, the Engineer may suspend blasting operations in accordance with Article 108-7 of the *Standard Specifications* and require test blasts and a revised general blast plan.

### **(B) Production Blasts**

Design production blasts in accordance with the following unless otherwise approved:

- Maintain a minimum 6 ft (1.8 m) clearance between the production blast holes and final cut slope face
- Diameter of production blast holes may not exceed 6” (150 mm)
- Do not drill production blast holes below the bottom of adjacent controlled blast holes
- Use delay blasting to detonate production blast holes towards a free face

### **(C) Controlled Blasts**

Controlled blasts are required for final cut slopes steeper than 2:1 (H:V) when the height of the rock face exceeds 15 ft (4.6 m).

#### **(1) Cushion Blasts**

Cushion blasts refer to either trim or cushion blasting. Design cushion blasts in accordance with the following unless otherwise approved:

- Diameter of cushion blast holes may not exceed 6” (150 mm)
- Minimize subdrilling to only that required for excavation of the final cut slopes
- Do not subdrill below final grade
- Bench height or lift thickness may not exceed 25 ft (7.6 m)
- Use a maximum of half the charge density and burden of the production blast holes for the cushion blast holes
- Do not use bulk ANFO or any other bulk loaded products
- Fire cushion blast holes after production blast holes with a minimum 25 ms delay

## **Trench Blasts**

Design trench blasts in accordance with the following unless otherwise approved:

- Diameter of trench blast holes may not exceed 3" (75 mm)
- Do not use bulk ANFO or any other bulk loaded products
- Use cartridge explosives or other types of explosives specifically designed for trench blasting
- Use a charge diameter  $\frac{1}{2}$  to  $\frac{3}{4}$  inch (13 to 19 mm) less than the diameter of the trench blast holes

## **Test Blasts**

A test blast is defined as drilling, blasting and excavation of a test section before beginning or restarting full scale blasting. When a test blast is required in the "Project Requirements" section of this provision or as directed by the Engineer, perform one or more test blasts for both production and controlled blasting (cushion or trim blasting) or trench blasting before beginning full scale blasting. Submit proposed test blast locations with the general blast plan. Also, if the Engineer suspends blasting operations after full scale blasting has begun, one or more test blasts may be required before resuming blasting. When this occurs, inform the Engineer of the test blast locations before submitting any site specific blast plans.

Perform test blasts in accordance with the submittal, blast design and construction requirements except submit site specific blast plans for test blasts 72 hours before beginning drilling. Full scale blasting may not begin or resume until the test blasts are acceptable to the Engineer. The Engineer will not consider whether a test blast is acceptable until the rock face is exposed and the post-blast report is submitted. Examples of results that may be unacceptable include excessive vibration, air-overpressure or flyrock, overbreakage, damage to the final cut slope face and overhangs.

## **Construction Methods**

Conduct a pre-blast meeting with the Blaster-in-Charge, Blasting Consultant and Blast Monitoring Consultant, if required, the Resident Engineer, the Roadway Construction Engineer and the Geotechnical Operations Engineer to discuss the blasting and associated activities. This meeting should occur after the general blast plan is accepted and before submitting the site specific blast plan for the first blast on the project.

Drill and blast in accordance with site specific blast plans, the general blast plan, and this provision as directed by the Engineer. Use explosives in accordance with all applicable government regulations, professional society standards and manufacturer guidelines and recommendations.

Remove all overburden material along the top of the excavation for a minimum of 30 ft (9.1 m) beyond the blast holes or the end of the cut unless approved otherwise by the Engineer. Inspect the free face to ensure there is adequate burden.

Drill blast holes within 3" (75 mm) of plan location and control drilling to maintain the final cut slope angle. Accurately determine the angle at which the drill steel enters the rock. Cover all blast holes after drilling to prevent unwanted backfill and identify and mark each hole with hole number and depth. Blast holes shall be free of obstructions the entire depth. Load holes without dislodging material or caving in the blast hole wall. Use standard size nos. 67 and 78M in accordance with Section 1005 of the *Standard Specifications* for stemming. Stem blast holes with diameters of 5" (250 mm) or greater with no. 67 coarse aggregate and blast holes with diameters less than 5" (250 mm) with no. 78M coarse aggregate. Do not stem blast holes with drill cuttings. Matting is required when blasting in close proximity to buildings, residences, utilities, traffic and populated areas. Soil cover may be used in lieu of matting if allowed by the Engineer.

Notify all occupants of residences, businesses and structures in the surrounding area and the Engineer at least 24 hours before blasting. Check for misfires immediately after each blast before signaling all clear. Remove any loose, hanging or potentially dangerous conditions by hand or machine scaling methods. Resume drilling only after scaling is complete.

When the height of a cut requires multiple lifts or benches, offset the controlled blast holes for each subsequent lift the minimum distance necessary to allow for drill equipment clearances. Adjust the alignment of controlled blast holes to account for this offset as well as any drift that occurred in the preceding lift.

The Engineer may suspend blasting operations in accordance with Article 108-7 of the *Standard Specifications* when vibration, air-overpressure or flyrock limits are exceeded, unsatisfactory rock cut slopes are produced or other reasons.

Remove all loose material from final rock faces by scaling. The Contractor is responsible for the final rock face. If blasting damages the final rock face, stabilize the slope at no additional cost to the Department with a method proposed by the Contractor and accepted by the Department.

### **Secondary Blasting**

Secondary blasting is used to reduce the size of naturally occurring boulders or those resulting from initial blasting. Secondary blasting methods include block holing or boulder busting. Block holing or boulder busting is the breaking of boulders by loading and firing small explosive charges in small diameter blast holes. Submit a combined general and site specific blast plan for secondary blasting. The Engineer may waive the pre-blast surveys, blast monitoring and post-blast reports at their discretion.

Mud capping, which is defined as placing an unconfined explosive charge in contact with a rock surface without the use of a blast hole and covering it with mud, is not allowed.

### **Blasting Adjacent to Highway Structures**

Do not blast adjacent to highway structures until the concrete strength reaches 2400 psi (16.5 MPa). When blasting adjacent to highway structures, limit PPV to 4 in/sec (100 mm/sec)

measured at a location on the structure nearest the blast. Perform blasting adjacent to highway structures in accordance with the submittal, blast design and construction requirements in this provision.

When blasting for foundation excavation, submit a combined general and site specific blast plan and the Engineer may waive the pre-blast surveys, blast monitoring and post-blast reports at their discretion.



**GENERAL**

The State will not be bound by oral explanations or instructions given at any time during the bidding process or after award. Only information that is received in response to this RFP will be evaluated; reference to information previously submitted will not suffice as a response to this solicitation.

**NO CONTACT CLAUSE**

To ensure that information is distributed equitably to all short-listed Design-Build Teams, all questions and requests for information shall be directed to the State Contract Officer through the Design-Build e-mail address. This precludes any Design-Build Team Member, or representative, from contacting representatives of the Department, other State Agencies or Federal Agencies either by phone, e-mail or in person concerning the Design-Build Project.

**USE OF TERMS**

Throughout this RFP and all manuals, documents and standards referred to in the RFP the terms Contractor, Bidder, Design-Builder, Design-Build Team, Team, Firm, Company, and Proposer are synonymous.

Throughout this RFP and all manuals, documents and standards referred to in the RFP, the terms NCDOT, Department, Engineer, and State are synonymous.

Throughout this RFP and all documents referred to in the RFP, references to the Technical Proposal include all Technical Proposal supplemental information that may be submitted in response to a Best and Final Offer RFP.

**DESIGN REFERENCES**

Design references developed and published by NCDOT and those developed and published by other agencies and adopted for use by NCDOT which are to be used in the design of this project may be obtained by contacting Contract Standards and Development within the Technical Services Division. Standard prices for materials, which the Department normally sells for a fee, will be in effect. The Design-Build Team shall be responsible for designing in accordance with the applicable documents and current revisions and supplements thereto.

**REVIEW OF SUBMITTALS**

Major design milestones and required design submittals shall be identified as activities on a CPM, bar chart, or other scheduling tool. This schedule shall be submitted to the Transportation Program Management Director and Resident Engineer concurrently with the first design submittal, or within 30 days of the contract award, whichever is earlier. The schedule shall be revised and resubmitted as design milestones change or as directed by the Transportation Program Management Director. Submittals will be reviewed within 10 working days (15 days for temporary structures, overhead sign assemblies, MSE walls, FEMA compliance documents, curved steel girder working drawings and temporary shoring) from the date of receipt by NCDOT unless otherwise stipulated in the scope of work. All submittals shall be prepared and

submitted in accordance with the “*Design-Build Submittal Guidelines*”, which by reference are incorporated and made a part of this contract. All submittals shall be made simultaneously to the Transportation Program Management Director and the Resident Engineer. The Department will not accept subsequent submittals until prior submittal reviews have been completed for that item. The Design-Build Team shall inform the Transportation Program Management Director in writing of any proposed changes to the NCDOT preliminary designs, Technical Proposal and / or previously reviewed submittals and obtain approval prior to incorporation. The Design-Build Team shall prioritize submittals in the event that multiple submittals are made based on the current schedule. All submittals shall include pertinent Special Provisions. No work shall be performed prior to Department review of the design submittals.

## OVERVIEW

The Design-Build Project, R-2123CE, is the modification of the I-485/I-85 Interchange in Mecklenburg and Cabarrus Counties. The proposed improvements consist of modifying the existing interchange to a fully directional freeway to freeway interchange at the intersection of I-485 and I-85.

Project services shall include but are not limited to:

- **Design Services** – completion of construction plans, including Record Drawings
- **Construction Services** – necessary to build and ensure workmanship of the designed facility
- **Permit Preparation / Application** – development of all documents for required permits
- **Right of Way** – acquisition of Permanent Utility Easements, right of way and easements, as necessary, to construct project
- **Finance** – secure financing as necessary to supplement the schedule of availability payments provided in the RFP
  - ✓ The Final Environmental Impact Statement (R-2123) was approved on August 1, 1989.
  - ✓ The Record of Decision (R-2123) was approved on October 2, 1989.
  - ✓ The R-2123CE Categorical Exclusion was approved on November 30, 2009.

**Construction Engineering Inspection will be provided by the NCDOT.**

## GENERAL SCOPE

The scope of work for this project includes design, construction and management of the project. The design work includes all aspects to construct the interchange with I-485 and I-85 and certain widening of I-85 and Y-line improvements. The designs shall meet all appropriate latest versions of *AASHTO Policy on Geometric Design of Highways and Streets*, *AASHTO LRFD Bridge Design Specifications*, *Manual of Uniform Traffic Control Devices*, and all NCDOT design policies that are current as of the Technical and Price Proposal submission date or the Best and Final Offer submission date.

Construction shall include, but not be limited to, all necessary clearing, grading, roadway, drainage, structures, utility coordination and relocation, and erosion and sediment control work items for the proposed four-lane facility and installation of the control of access fence.

Construction engineering and management shall be the responsibility of the Design-Build Team. Construction shall comply with 2006 *NCDOT Standard Specifications for Roads and Structures* and any special provisions.

Areas of work required for this project shall include, but are not limited to the following items:

- Roadway Design
- Structure Design
- Hydraulic Design
- Permit Application
- Subgrade Stabilization
- Foundation Design for Structures and Roadway
- Erosion and Sediment Control Design and Implementation
- R/W Utilities, Conflicts and / or Construction
- Traffic Control and Pavement Marking Design
- Sign Design
- Traffic Management
- Construction
- Project Management
- Design and Construction Management
- Construction Surveying
- On-Site Mitigation
- Lighting (Construction Only)
- Right of Way Acquisition
- Public Information

All designs shall be in Microstation format using Geopak software (current version used by the Department).

#### **DESIGN AND CONSTRUCTION PERFORMED BY DESIGN-BUILD TEAM**

The design work includes all aspects to construct the interchange with I-485 and I-85 and certain widening of I-85 and Y-line improvements. as outlined in the Scope of Work section of this RFP. The Design-Build Team shall prepare final designs, construction drawings and special provisions.

The Design-Build Team shall acknowledge that project documents furnished by the Department are preliminary and provided solely to assist the Design-Build Team in the development of the project design. The Design-Build Team shall be fully and totally responsible for the accuracy and completeness of all work performed under this contract and shall save the State harmless and shall be fully liable for any additional costs and all claims against the State which may arise due to errors, omissions and negligence of the Design-Build Team in performing the work required by this contract.

There shall be no assignment, subletting or transfer of the interest of the Design-Build Team in any of the work covered by the Contract without the written consent of the State, except that the Design-Build Team may, with prior written notification of such action to the State, sublet property searches and related services without further approval of the State.

The Design-Build Team shall certify all plans, specifications, estimates and engineering data furnished by the Team. All work by the Design-Build Team shall be performed in a manner satisfactory to the State and 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 U.S. Secretary of Transportation as provided in Title 23, U.S. Code, Section 109 (b). The decision of the Engineer / State / Department shall control in all questions regarding location, type of design, dimension of design, and similar questions.

Alternate designs, details, or construction practices (such as those employed by other states, but not standard practice in NC) are subject to Department review and will be evaluated on a case by case basis.

The Design-Build Team shall not change team members, subconsultants or subcontractors identified in the Statement of Qualifications (SOQ) or Technical Proposal without written consent of the Engineer or the State Contract Officer. In addition, subconsultants and subcontractors not identified in the SOQ or Technical Proposal shall not perform any work without written consent by the Engineer. Individual offices of the Design-Build Team not identified in the Statement of Qualifications or the Technical Proposal submitted shall not perform any work without written consent by the Engineer. Failure to comply with this requirement may be justification for removing the Team from further consideration for this project and disqualification from submitting on future Design-Build Projects.

All firms shall be prequalified by the Department for the work they are to perform. Joint Ventures, LLCs or any legal structure that are different than the existing prequalification status must be prequalified prior to the Technical and Price Proposal submittal deadline. Subcontractors need only be prequalified prior to performing the work. Design firms should be prequalified prior to the Technical and Price Proposal submittal deadline. If not prequalified at the time of the Technical and Price Proposal submittal deadline, the prime contractor shall be solely responsible for either (1) ensuring that the design firm is prequalified prior to its first design submittal or (2) replacing that firm with a prequalified firm. Design firms and Natural Systems firms are prequalified by the particular office performing the work. If the work is to be performed by an office other than the one that is prequalified, that office shall be prequalified prior to any design submittals.

## **ETHICS POLICY**

Employees employed by the Design-Build Team or employees employed by any subconsultant for the Design-Build Team to provide services for this project shall 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 removal of the Company from the Department's appropriate prequalified list.

## **APPROVAL OF PERSONNEL**

The Department will have the right to approve or reject any personnel, assigned to a project by the Design-Build Team.

The Design-Build Team or any subcontractor for the Design-Build Team which are employed to provide services for this project shall not discuss employment opportunities or engage the services of any person or persons, now in the employment of the State during the time of this contract, without written consent of the State.

In the event of engagement, the Design-Build Team or their subcontractors shall restrict such person or persons from working on any of the Design-Build Team's contracted projects in which the person or persons were "formerly involved" while employed by the State. The restriction period shall be for the duration of the contracted project with which the person was involved. *Former Involvement* shall be defined as active participation in any of the following activities:

- Drafting the contract
- Defining the contract scope of the contract
- Design-Build Team selection
- Negotiation of the contract cost (including calculating manhours or fees); and
- Contract administration

An exception to these terms may be granted when recommended by the Secretary and approved by the Board of Transportation.

Failure to comply with the terms stated above in this section shall be grounds for termination of this contract and / or not being considered for selection of work on future contracts for a period of one year.

## **SUBMITTAL OF TECHNICAL AND PRICE PROPOSALS**

**Technical and / or Price Proposals that do not adhere to all the requirements noted below may be considered non-responsive and may result in the Department not considering the Design-Build Team for award of the contract or reading their Price Proposal publicly.**

### **GENERAL**

Technical Proposals, Price Proposals, and the Finance Plan will be accepted until **4:00 p.m. Local Time on Tuesday August 10, 2010**, at the office of the State Contract Officer:

Mr. Randy A. Garris, PE  
Contract Standards and Development  
1020 Birch Ridge Drive  
Century Center Complex - Building B  
Raleigh, NC 27610

**No Proposals will be accepted after the time specified.**

Proposals shall be submitted in 3 separate, sealed parcels containing the Technical Proposal in one, the Price Proposal in another parcel and the Finance Plan in the third parcel.

**TECHNICAL PROPOSAL**

Technical Proposals shall be submitted in a sealed package. The outer wrapping shall clearly indicate the following information:

Technical Proposal  
Submitted By: (Design-Build Team's Name)  
Contract Number C 202523  
TIP Number R-2123CE  
Mecklenburg and Cabarrus Counties  
Modification of I-485/I-85 Interchange

Technical Proposal Requirements

12 Copies  
8 ½ inch by 11 inch pages  
No fold-out sheets allowed except to present interchange plans  
Printed on one side only  
Double-spaced  
Font size 12  
No more than 45 pages, excluding the introductory letter to Mr. Randy Garris, P.E. (two-page maximum length) and the 11 inch by 17 inch appropriate plan sheets

Key Project Team members, identified in the Statement of Qualifications, shall not be modified in the Technical Proposal without written approval of the Department. Any such request should be sent to the attention of Mr. Randy Garris, PE, at the address below:

NCDOT- Contract Standards and Development  
Century Center Complex - Building B  
1020 Birch Ridge Drive  
Raleigh, NC 27610

The Technical Proposal shall not contain any details regarding the Financial Plan, third party financing, or lack thereof, that may provide the Technical Review Committee with information related to the Price Proposal submitted by the Team.

**PRICE PROPOSAL**

Price Proposals shall be submitted in a sealed package. The outer wrapping will clearly indicate the following information:

Price Proposal  
Submitted By: (Design-Build Team's Name)  
Contract Number C 202523  
TIP Number R-2123CE  
Mecklenburg and Cabarrus Counties  
Modification of I-485/I-85 Interchange

The Price Proposal shall be submitted by returning the Request for Proposals with the item sheets completed, and all required signatures and bonds. Failure to execute the required documents may render the proposal non-responsive.

### **FINANCE PLAN**

The Finance Plan shall be submitted in a sealed package. The outer wrapping shall clearly indicate the following information:

Finance Plan  
Submitted By: (Design-Build Team's Name)  
Contract Number C 202523  
TIP Number R-2123CE  
Mecklenburg and Cabarrus Counties  
Modification of I-485/I-85 Interchange

Three identical copies of the Finance Plan shall be included in the sealed package.

### **EVALUATIONS**

The Financial Plan submitted by each Design-Build Team will be evaluated on a pass/fail basis by members of the Department staff versed in project finance. The Technical Review Committee will not be a party to this evaluation. The Department reserves the right to request and receive clarification or additional information regarding the contents of the Financial Plan as submitted by the Design-Build Team. Reference the Finance Plan Submittal Project Special Provision.

Decisions based on cost alone will not establish the design standards for the project. Technical Proposals shall address the technical elements of the design and construction of the project. The Technical Review Committee will consider the understanding of the project, the anticipated problems and the solutions to those problems, in addition to other evaluation criteria identified herein.

The Design-Build Team's Technical Proposal shall be developed using narratives, tables, charts, plots, drawings and sketches as appropriate. The purpose of the Technical Proposal is to document the firm's understanding of the project, demonstrate the Team's capabilities to complete the project, document their selection of appropriate design criteria, and state their approach and schedule for completing all design and construction activities.

The review of design plans by the Department is not intended to reflect a reviewer's personal preferences, but rather to ensure that all contract requirements are met, sound engineering judgment is exercised by the Design-Build Team, and that the Design-Build Team adheres to all referenced documents, including but not limited to, design standards, codes, memos and manuals. As such, the award of the Design-Build contract does not in any way imply that the NCDOT accepts the details of the Technical Proposal submitted by the Design-Build Team.

The Technical Proposal will be evaluated in each of the following major categories:

	<b>EVALUATION FACTORS</b>	<b>POINTS</b>
1.	Management	20
2.	Responsiveness to Request for Proposal	35
3.	Long Term Maintenance	5
4.	Schedule and Milestones	15
5.	Innovation	5
6.	Maintenance of Traffic and Safety Plan	15
7.	Oral Interview	5

## **TECHNICAL PROPOSAL EVALUATION CRITERIA**

### **1. Management – 20 points**

#### ***Design-Build Team Management***

- Describe the Design-Build Team's concept of design management. The proposal shall identify key positions and subordinate organizational units.
- Describe the plan for the coordination of civil / structural, utilities, traffic maintenance, constructability and environmental responsibility.
- Provide a narrative description of the proposed location of the design office(s) and their respective responsibilities.
- Describe how the designs developed by different firms and offices will be integrated.
- Describe how design personnel will interface with the construction personnel.
- Describe the overall strengths of the Design Team and their ability to fulfill the design requirements of this project.

#### ***Quality Management***

- Describe how the Design-Build Team will comply with the quality control requirements for both design and construction. Specifically, include a narrative describing the Design-Build Team's understanding of the Department's construction quality control philosophy for this project and how the Design-Build Team will implement it.
- The Design-Build Team should detail the number of inspectors they expect the Department to furnish, during various phases, to allow satisfactory progress of project construction.
- Describe any significant quality control issues experienced on NCDOT projects in the last ten years and how those issues will be addressed for this project.
- The narrative shall include both design and construction activities.

#### ***Construction Management***

- Describe the Design-Build Team's concept of the project construction management organization and how it interrelates with the other elements of the Design-Build Team's organization for the project.



- Provide a brief narrative description of the Design-Build Team’s proposed plan for performing construction on the project. This description shall include at least the following:
  - A construction organization chart for the project, showing the relationships between functions shown on the chart and the functional relationships with subcontractors.
  - The chart shall indicate how the Design-Build Team intends to divide the project into work segments to enable optimum construction performance.
  - Descriptions of those categories of work that the Design-Build Team anticipates will be performed by the Design-Build Team’s own direct labor force and those categories that will be performed by subcontractors.
  - The Design-Build Team’s plans and procedures to insure timely deliveries of materials to achieve the project schedule.
  - Describe the overall strengths of the construction team and their ability to fulfill the construction and construction management requirements of this project.
  - Describe the Design-Build Team’s approach to site access and material staging.

## **2. Responsiveness to RFP – 35 points**

### ***Natural Environmental Responsibility***

- Describe the Design-Build Team’s approach to addressing environmental concerns within the project boundaries.
- Identify efforts to minimize impacts on wetlands, streams, riparian buffers, and other environmentally sensitive areas.
- Identify innovative approaches to minimize any impacts in environmentally sensitive areas. Describe any temporary impacts and associated minimization approaches.
- Describe the Design-Build Team’s understanding of the overall approach to permitting and the Team’s comfort level with obtaining the required permits within the allowed timeframe.
- Describe any Notice of Violations (NOV’s) or Immediate Corrective Actions (ICA’s) the Design-Build Team members have received and the disposition of any NOV’s or ICA’s.
- Describe the Design-Build Teams approach to Sedimentation and Erosion Control for the project.
- Describe the Design-Build Team’s approach to and plan for On-Site Mitigation.

### ***Design Features***

- Show plan view of design concepts with key elements noted.
- Identify preliminary horizontal and vertical alignments of all roadway elements.
- Provide a chart detailing the design speeds proposed for all ramps and ramp segments at the I-485/I-85 interchange and denote these design speeds on the proposal plan sheets.
- Show typical sections for both I-85 and I-485, including ramps.

- Identify drainage modifications and designs to be implemented.
- Identify the appropriate design criteria for each feature if not provided.
- Identify all bridge types to be constructed, including any special design features or construction techniques needed.
- Identify any deviations, including proposed design exceptions, from the established design criteria that will be utilized. Explain why the deviation is necessary.
- Describe any geotechnical investigations to be performed by the Design-Build Team.
- Identify any special aesthetics considerations that will be part of the design.
- Describe how any utility conflicts will be addressed and any special utility design considerations. Describe how the Design-Build Team's design and construction methods minimize the Department's utility relocation costs.
- Describe how the design will affect the Department's right-of-way costs.
- Identify types of any retaining walls and / or sound barrier walls if applicable.
- Describe how the profile and alignment accommodate that proposed by the Design-Build Team awarded the contract for TIP #2248E. If modifications are required to the R-2248E design, describe the extent of the impacts to that design and the benefits to the Department for such modifications.

### **3. Long Term Maintenance – 5 points**

- Describe any special materials, not referenced elsewhere in the contract, incorporated into the project that would result in long term reduction in maintenance.
- Describe any special designs or construction methods that would reduce future maintenance costs to the Department.
- Estimate a minimum ten-year cost saving resulting from incorporation of these special materials, design, or construction methods into the project.

### **4. Schedule and Milestones – 15 points**

- Provide a detailed schedule for the project including both design and construction activities. The schedule shall show the sequence and continuity of operations, as well as the month of delivery of usable segments of the project.
- The schedule shall also include the Design-Build Team's final completion date. **This date shall be clearly indicated on the Project Schedule and labeled "Final Completion Date."**

### **5. Innovation – 5 points**

- Identify any aspects of the design or construction elements that the Design-Build Team considers innovative. Include a description of alternatives that were considered whether implemented or not.

## 6. Maintenance of Traffic and Safety Plan – 15 points

### *Maintenance of Traffic*

- Describe any traffic control requirements that will be used for each construction phase.
- Describe how traffic will be maintained as appropriate and describe the Design-Build Team's understanding of any time restrictions noted in the RFP. **Clearly note the number of road closures that will be needed per direction of I-85.**
- Address how hauling will be conducted.
- If a temporary portable barrier system will be utilized, provide the type and why it is needed.
- Note the type of material to be installed for the Final Pavement Markings.
- If temporary shoring will be required, provide the type and why it is required.

### *Safety Plan*

- Describe the safety considerations specific to the project.
- Discuss the Design-Build Team's overall approach to safety.
- Describe any proposed improvements that will be made prior to or during construction that will enhance the safety of the work force and/or travelling public both during and after the construction of the project.

## 7. Oral Interview – 5 points

- The Design-Build Team's Project Management Team shall present a brief introduction of the project team and design / construction approach.
- Introductory comments shall be held to no more than 30 minutes.
- The Department will use this interview to ask specific questions about the Team's Technical Proposal, background, philosophies, and approach to the project.
- Presentation, questions, and answers shall not exceed 90 minutes. No more than 10 people from the Design-Build Team may attend.

The Department will use the information presented in the oral interview to assist in the evaluation of the Technical Proposal.

The presentation by the Design-Build Team shall not contain any written or verbal details regarding the Financial Plan, third party financing, or lack thereof, that may provide the Technical Review Committee with information related to the Price Proposal submitted by the Team.

### **Additional Warranty and / or Guarantee**

- **The Extra Credit for this project shall be a Maximum of 5 Points.**

A twelve-month guarantee as outlined in the *Twelve-Month Guarantee* Project Special Provision is required for this project. However, the Design-Build Team may provide additional warranties

and / or guarantees at their discretion. The Design-Build Team may be awarded additional points as “extra credit” to be added to the technical score.

The Design-Build Team may provide warranties and / or guarantees for major components of the project. Examples of major components are pavements, bridge components, and sign structures. If additional warranties and / or guarantees are offered, the Design-Build Team shall indicate in the Technical Proposal the general terms of the warranties and / or guarantees, a list of the items covered, performance parameters, notification and response parameters for corrective action, and evaluation periods. The Department will be responsible for annual inspections of the components covered by all warranties and / or guarantees offered by the Design-Build Team that extend beyond the required Twelve-Month Guarantee. The warranties and / or guarantees shall also define how disputes will be handled. Prior to the first partial payment, the Design-Build Team shall submit a document that provides additional warranty / guarantee specifics in sufficient detail that allows the document to be made a part of the contract through supplemental agreement.

No direct payment will be made for warranties and / or guarantees. Payment will be considered incidental to the lump sum price for the contract.

No retainage of future payments will occur for failure to perform remedial work covered by any such additional warranty and/or guarantee provided by the Design-Build Team.

However, should the Design-Build Team fail to perform any remedial work covered by these warranties and/or guarantees within 60 days of notification by the Department, or within such other time allotment agreed to by the Department, the Department may remove the responsible party from the Department’s prequalified bidder’s list, for a minimum of 6 months or until the remedial work has been satisfactorily performed, whichever is longer.

Removal of the responsible party from the prequalified bidder’s list shall prevent the responsible party from performing any work for the Department including bidding on any projects (including Purchase Orders), performing as a subcontractor, or as a material supplier.

The performance of remedial work in conjunction with the guarantee is not an obligation of the Design-Build Team's bond required by Article 103-7 of the Division One Standard Special Provision.

### ***SELECTION PROCEDURE***

By reference in the Department’s Public Private Partnerships Policy and Procedures dated June 4, 2009, the selection process will be in accordance with the Design-Build Policy and Procedures dated October 4, 2007.

There will be a Technical Review Committee (TRC) composed of five or more senior personnel from involved engineering groups that will evaluate the Technical Proposal on the basis of the criteria provided in the Request for Proposals.

The selection of a Design-Build Team will involve both technical quality and price. The Technical Proposals will be presented to the TRC for evaluation. The TRC shall first determine

whether the proposals are responsive to the requirements of the Request for Proposals. The Department reserves the right to ask for clarification on any item in the Technical Proposal. A written response to this request for clarification shall be provided to the Department prior to the opening of the Price Proposals. The contents of the written response may affect the Technical Review Committee's determination of the Technical Proposal's responsiveness and/or the overall evaluation of the Technical Proposal. If any commitments or clarifications provided in the written response conflict with the contents of the Technical Proposal, the contents of the written response will govern and be incorporated into the contract.

The Finance Plan will be evaluated on a pass/fail basis only. Any Finance Plan that receives a failing evaluation may result in that Design-Build Team's Price Proposal being deemed non-responsive by the Department.

Each responsive Technical Proposal shall be evaluated based on the rating criteria provided in the Request for Proposals. The TRC will submit an overall consensus Technical Proposal score for each Design-Build Team to the State Contract Officer.

#### **Quality Credit Evaluation Factors for Technical Proposals**

Management	20
Responsiveness to Request for Proposal	35
Long Term Maintenance	5
Schedule and Milestones	15
Innovation	5
Maintenance of Traffic and Safety Plan	15
Oral Interview	5
<b>Maximum Score</b>	<b>100</b>

The State Contract Officer will use a table based on the maximum quality credit percentage to assign a Quality Credit Percentage to each proposal based on the proposal's overall technical score. The maximum quality credit percentage for this project will be **20%**. The Technical Review Committee may elect to assign point values to the nearest one-half of a point (e.g. 90.5). In this event, the Quality Credit Percentage will be determined by linearly interpolating within the table entitled "Quality Credit Percentage for Technical Proposals".

### Quality Credit Percentage for Technical Proposals

Technical Score	Quality Credit (%)	Technical Score	Quality Credit (%)
100	20.00	84	9.33
99	19.33	83	8.67
98	18.67	82	8.00
97	18.00	81	7.33
96	17.33	80	6.67
95	16.67	79	6.00
94	16.00	78	5.33
93	15.33	77	4.67
92	14.67	76	4.00
91	14.00	75	3.33
90	13.33	74	2.67
89	12.67	73	2.00
88	12.00	72	1.33
87	11.33	71	0.67
86	10.67	70	0.00
85	10.00		

**The maximum Technical Score, including any extra credit given for warranties or guarantees, shall not exceed 100 points in determining the Quality Credit percentage.**

If any of the Technical Proposals are considered non-responsive, the State Contract Officer will notify those Design-Build Teams of that fact. For all responsive Technical Proposals, the State Contract Officer shall publicly open the sealed Price Proposals and multiply each Design-Build Team's Price Proposal by the Quality Credit Percentage earned by the Design-Build Team's Technical Proposal to obtain the Quality Value of each Design-Build Team's Technical Proposal. The Quality Value will then be subtracted from each Design-Build Team's Price Proposal to obtain an Adjusted Price based upon Price and Quality combined. In the event that a Design-Build Team's Adjusted Price is above the target maximum price identified in the Maximum Price Project Special Provision, the Price Proposal will be deemed non-responsive regardless of the Technical Score of the corresponding Technical Proposal, and may not be further considered for award.

Unless all Proposals are rejected or the Department elects to proceed with the Best and Final Offer process, the Department will recommend to the State Transportation Board that the Design-Build Team having the lowest adjusted price be awarded the contract. The cost of the design-build contract will be the amount received as the Price Proposal.

The following table shows an example of the calculations involved in this process.

### An Example of Calculating Quality Adjusted Price Ranking

Proposal	Technical Score	Quality Credit (%)	Price Proposal (\$)	Quality Value (\$)	Adjusted Price (\$)
A	95	16.67	3,000,000	500,100	2,499,900
B	90	13.33	2,900,000	386,570	2,513,430
C *	90	13.33	2,800,000	373,240	2,426,760
D	80	6.67	2,700,000	180,090	2,519,910
E	70	0.00	2,600,000	0	2,600,000
* Successful Design-Build Team – Contract Cost \$2,800,000					

### Opening of Price Proposals

Prior to opening the Price Proposals, the State Contract Officer will provide to each Design-Build Team their technical score in a sealed envelope. The sealed envelope will contain that Team's score only.

At the time and date specified, the State Contract Officer will open the Price Proposals and calculate the percentage difference between the Price Proposals submitted and the Engineer's Estimate.

Should all of the Price Proposals be within an acceptable range or below the Engineer's Estimate the State Contract Officer will proceed to calculate the quality credit and publicly read the Price Proposal, technical score, and adjusted price as outlined in the selection procedure above.

Should any one or more of the Price Proposals be within an acceptable range or below the Engineer's Estimate and the remaining Price Proposals exceed an acceptable range of the Engineer's Estimate the State Contract Officer will go to a separate location to calculate the quality credit and determine if the Design-Build Team with the lowest adjusted price is within an acceptable range of the Engineer's Estimate. Should the Price Proposal of the Design-Build Team with the lowest adjusted price be within an acceptable range of the Engineer's Estimate or below the Engineer's Estimate the State Contract Officer will proceed to publicly read the Price Proposals, technical scores, and adjusted prices. Should the Price Proposal of the Design-Build Team with the lowest adjusted price exceed an acceptable range of the Engineer's Estimate the State Contract Officer will publicly read the Price Proposals only and the Department will then determine whether to proceed to request a Best and Final Offer (BAFO) as outlined below.

Should all Price Proposals submitted exceed an acceptable range of the Engineer's Estimate the State Contract Officer will publicly read the Price Proposals only. The Department will then determine whether to proceed to request a Best and Final Offer (BAFO) as outlined below.

In the event that the Department elects to not proceed with a Best and Final Offer (BAFO), then the State Contract Officer will schedule a date and time to publicly reiterate all Price Proposals, and read all technical scores and adjusted prices.

Provided the Department elects to proceed to request a Best and Final Offer (BAFO), at the date and time specified, the State Contract Officer will open the Best and Final Offer Price Proposals and proceed to publicly read all Price Proposals, technical scores and adjusted prices.

### **Best and Final Offer**

In the event initial Price Proposals exceed an acceptable range of the Engineer's Estimate, or all initial Price Proposals exceed the target maximum price, or if the Department feels it is necessary for any reason the Department may choose to make amendments to the details of the RFP and request a Best and Final Offer from all of the previously short-listed teams. Alternately, the Department may choose to redistribute to the short-listed Design-Build Teams another RFP for the project with no amendments to the RFP scope.

After receipt of the redistributed RFP, the Design-Build Team has the option of changing their Technical Proposal details. If the Design-Build Team changes any component of the Technical Proposal, the TRC will review those amended components of the Technical Proposal and reevaluate the scores accordingly. The Design-Build Team shall highlight the changes to bring them to the Department's attention. A revised total score will be calculated, if appropriate, based on these amendments to the Technical Proposal.

A Design-Build Team, whose Price Proposal was deemed non-responsive due to a failing evaluation of the Finance Plan or due to the Adjusted Price being higher than the target maximum price identified in the Maximum Price Project Special Provision, may submit a new Price Proposal, Technical Proposal, and Finance Plan in response to the Best and Final Offer RFP.

Additional oral interviews will not be held. The Design-Build Teams shall submit both a revised Price Proposal and a revised Technical Proposal (if applicable) at the time, place, and date specified in the redistributed RFP. A revised Quality Credit Percentage (if required) and Adjusted Price will be determined. This will constitute the Design-Build Team's Best and Final Offer. Award of the project may be made to the Design-Build Team with the lowest adjusted price on this Best and Final Offer for the project.

### **Stipend**

A stipulated fee of **\$125,000** will be awarded to each short-listed Design-Build Team that provides a responsive, but unsuccessful, Design-Build Proposal. If a contract award is not made, all short-listed Design-Build Teams that provide a responsive Design-Build Proposal shall receive the stipulated fee. Once award is made, or a decision is made not to award, unsuccessful Design-Build Teams will be notified of the opportunity to apply for the stipulated fee. If the Design-Build Team accepts the stipulated fee, the Department reserves the right to use any ideas or information contained in the Design-Build Proposals in connection with any contract awarded for the project, or in connection with any subsequent procurement, with no obligation to pay additional compensation to the unsuccessful Design-Build Team. The stipulated fee shall be paid to eligible Design-Build Teams within ninety days after the award of the contract or the decision not to award. Unsuccessful Design-Build Teams may elect to refuse payment of the stipulated fee and retain any rights to its Design-Build Proposal and the ideas and information contained therein.



In the event that the Department suspends or discontinues the procurement process prior to the Design-Build Proposal submittal date current at the time of the suspension, no stipulated fee will be paid.

**ROADWAY SCOPE OF WORK**

All laneage shall be in accordance with the Interchange Modification Report (IMR), Appendix Q, Alternative 10. Note that the IMR indicates the need to reduce I-85 laneage to three lanes in each direction of I-85 within the interchange itself. In this area, the existing pavement shall not be removed. The Design-Build Team shall provide all other necessary adjustments, across all disciplines, to ensure that this laneage is provided.

**Project Details**

- The Design-Build Team shall design and construct a six-lane divided facility with a minimum 70-foot median width on new location from east of I-85 on existing I-485 to west of I-85 tying into the proposed Project R-2248E at station -L- 465+00 as shown on the R-2248E right of way plans provided by the Department. The Design-Build Team shall coordinate with the R-2248E design and construction to ensure accurate hydrology, capacity, and horizontal and vertical ties that adhere to the design criteria. The Design-Build Team shall not make any design or construction changes that affect the design or construction of Project R-2248E without prior written approval from the Transportation Program Management Director. Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall design and construct -L- Line widening and improvements providing the same or better access, function, performance, widening, and improvements included on the R-2123CE Preliminary Design dated December 2009 provided by the Department. The limits of -L- Line construction shall be of sufficient length to tie to existing based upon the current NCDOT guidelines and standards. Along I-485, the eastern limits shall extend to east of the I-485 westbound US-29 off ramp to provide laneage in accordance with the IMR, Appendix Q, Alternative 10 (Reference Pavement Management, Pavement Markings, and Signing Scopes of Work). The widening of existing I-485 as well as the proposed new location facility shall be designed and constructed to meet a 70-mph design speed for a rolling urban freeway, designed to Interstate standards.
- The Design-Build Team shall design and construct laneage on I-85 in accordance with the approved IMR and ramps from at least as far south as that shown on the R-2123CE Preliminary Design dated December 2009 to the southern limits of the I-3803B project and shall be of sufficient length to tie to existing based upon the current NCDOT guidelines and standards. The widening of existing I-85 shall be designed and constructed to meet a 70-mph design speed for a rolling urban freeway designed to Interstate standards.
- The southern limits of the I-3803B project are defined at Station 159+74.12 -L- for I-85 southbound and Station 170+25.32 -L- for I-85 northbound, as indicated on the I-3803B Preliminary Plans provided by the Department. On northbound I-85, the Design-Build Team shall design and construct improvements to the Ramp C for the Bruton Smith/Concord Mills Blvd exit as shown on the I-3803B Preliminary Plans provided by the Department. On southbound I-85, the I-3803B Design-Build Team will design and construct southbound I-85 such that the ultimate improvements, including the four

through lanes and two auxiliary lanes, with required -Y5- on-ramp realignment, are provided to -L- station 159+74.12 as shown on the I-3803B Preliminary Plans provided by the Department. The Design-Build Team shall coordinate with the I-3803B design and construction to ensure accurate hydrology, capacity, and horizontal and vertical ties that adhere to the design criteria. The Design-Build Team shall not make any design or construction changes that affect the design or construction of Project I-3803B without prior written approval from the Transportation Program Management Director.

- Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall design and construct I-85 and -Y- lines providing the same or better access, function, performance, widening, and improvements included on the R-2123CE Preliminary Design dated December 2009 and the I-3803B preliminary plans provided by the Department.
- The Department will obtain an approved Interchange Modification Report (IMR). The Design-Build Team shall design and construct the project to accommodate any changes to the preliminary design as specified in the approved IMR. If the Design-Build Team revises the roadway designs such that the approved IMR is nullified, the Design-Build Team shall re-analyze the interchange(s) and complete a revised IMR (to the same limits as the original IMR), if necessary, for NCDOT and FHWA review and acceptance. It is the Design-Build Team's sole responsibility to assess what types of revisions to the R-2123CE Preliminary Design dated December 2009 would require a revised IMR. In such case, the Design-Build Team shall be fully responsible for all costs necessary to design and construct an interchange that can support an approved IMR. Interstate to interstate interchanges require approval by NCDOT, FHWA NC Division Office, and FHWA Headquarters.
- The Design-Build Team shall design and construct a fully directional freeway to freeway interchange at the intersection of I-485 and I-85 that provides direct connections with a minimum design speed of 60 mph to beyond the back of gore at all directional ramp entrances and exits to and from the freeways and a minimum design speed of 50 mph for the remaining central portion of the directional ramps. The Design-Build Team shall utilize the 6% superelevation chart for all permanent ramp alignments in the I-485/I-85 interchange. All direct connections shall tie to the outside edge of pavement along I-485 and I-85. The Design-Build Team shall not design or construct any loops as part of this interchange.
- Along I-485, the Design-Build Team shall design and construct minimum 14-foot inside and outside shoulders, 12-foot of which shall be full depth paved shoulders, including acceleration, deceleration and auxiliary lanes and ramps to the back of the gore (12-foot width). Milled rumble strips shall be provided on the outside asphalt shoulders, including acceleration, deceleration and auxiliary lanes and ramps to the back of the gore (12-foot width) beginning at the proposed structures to the southeastern tie to existing I-485.

- Along I-85, the Design-Build Team shall design and construct minimum 14-foot outside shoulder, 12-foot of which shall be full depth paved shoulders, including acceleration, deceleration and auxiliary lanes and ramps to the back of the gore (12-foot width). Milled rumble strips shall be provided on the outside shoulders, including acceleration, deceleration and auxiliary lanes and ramps to the back of the gore (12-foot width).
- The Design-Build Team shall design and construct the I-85 southbound off-ramp to Mallard Creek Church Rd. The existing ramp shall be widened to provide a minimum of two 12-foot lanes, a 14-foot outside shoulder, 4-foot of which shall be full depth paved shoulder, and a 12-foot inside shoulder, four-foot of which shall be full depth paved shoulder. The Design-Build Team shall match existing superelevation on the Mallard Creek Church Road Ramp and shall tie to the existing lane configuration at the intersection with Mallard Creek Church Rd.
- Unless otherwise noted in the IMR, the Design-Build Team shall design and construct two lane ramps that provide minimum 12-foot lanes. All ramps shall have 14-foot outside shoulders, 10-foot of which shall be full depth paved shoulders and 14-foot inside shoulders, four-foot of which shall be full depth paved shoulders. As an exception, for those ramps, or portions thereof, that include a bridge, the above shoulder requirements shall be reversed from back of gore to back of gore for the inside and outside shoulders.
- For all bridges over roadways, the Design-Build Team shall submit documentation that verifies the actual vertical clearance at all critical points including any future widening noted in this RFP.
- The Design-Build Team shall design and construct all lane drops from the outside travelway.
- The Design-Build Team shall design and construct the proposed Mallard Creek Road to accommodate two 12 foot lanes with 8 foot shoulders, 4 foot of which shall be full depth paved shoulders. The Design-Build Team shall design and construct the proposed Mallard Creek Road Bridge to accommodate two 12 foot travel lanes and 10 foot rail offsets. The Design-Build Team shall provide vertical clearance to accommodate future widening of Mallard Creek Road to a 4 lane median divided facility as shown in the R-2123CE Categorical Exclusion Appendix C Sheet Number 8. Mallard Creek Road shall be designed and constructed to meet a 50-mph design speed for a rural collector. The limits of -Y- Line and service road construction shall be of sufficient length to tie to existing based upon the current NCDOT guidelines and standards.
- I-485 and I-85 are full control of access facilities. The Design-Build Team shall bring to the Transportation Program Management Director's attention any deviations from the proposed control of access shown on the R-2123CE Design Public Hearing Map provided by the Department. Prior to negotiating with property owners, the Design-Build Team shall delineate the proposed acquisitions on the Right of Way Plans developed by the Design-Build Team 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 provide chain link fence from property line to property line in front of the apartment complex located in the North East quadrant of the interchange. The Design-Build Team shall be responsible for installation of the woven wire fence and chain link fence.

- The Design-Build Team shall resurface all lanes and shoulders within the outermost construction limits of all proposed widening and construction, including all areas where existing pavement markings are obliterated or replaced.
- Unless noted otherwise elsewhere in this RFP, all guardrail and high tension cable guiderail placement shall be in accordance with the July 2006 NCDOT *Standard Drawings* and / or approved details in lieu of standards. Along all 3:1 fill slopes, constructed at fill heights that are equal to or greater than 12 feet, the Design-Build Team shall install guardrail. Along all fill slopes that are steeper than 3:1, constructed at fill heights that are equal to or greater than six feet, the Design-Build Team shall install guardrail. The guardrail / guiderail design shall be submitted for review with the Preliminary Plans submittal.
- Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall design and construct bridge rail offsets that are equal to the approach roadway paved shoulders. The Design-Build Team shall design and construct all directional ramps to provide a 10 foot bridge rail offset to the inside and a 4 foot bridge rail offset to the outside, additional widening for sight distance will not be required.
- The Department has followed a modified Merger 01 Process agreed to by the environmental agencies and the Department to obtain concurrence points 2A and 4A. 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 allow any contract time extensions or additional compensation associated with any coordination or approval process resulting from design and / or construction modifications.
- The Design-Build Team shall not further impact any cultural, historical, or otherwise protected landmark beyond that shown on the R-2123CE Design Public Meeting Map. Specifically, the Design-Build Team shall minimize impacts to the Schweinitz Sunflower located along Mallard Creek Road. The Design-Build Team shall not acquire right of way or easements from the aforementioned features unless shown on the R-2123CE Design Public Meeting Map.
- The Design-Build Team shall be responsible for the sound barrier wall design and construction listed in the Final Design Noise Report dated January 2010, including any geotechnical investigations necessary to design the foundations. The Design-Build Team shall be responsible for the wall envelope details. If the Design-Build Team revises the horizontal and / or vertical alignments such that greater noise impacts are possible on

surrounding receptors, the Design-Build Team shall re-analyze and complete a revised noise report, if necessary, for NCDOT and FHWA review and acceptance. In such case, the Design/Build Team should contact the NCDOT Traffic Noise & Air Quality Group to discuss assessment options before proceeding. The original Final Design Noise Report will be provided to the Design-Build Team to assist in their determination of anticipated additional noise impact on current receptors due to a design change. If adjustments to, or addition of, sound barrier walls are required as a result of design deviations, the Design-Build Team shall be responsible for all costs associated with the adjustments and / or additions. The date of public knowledge will not change unless a new environmental document is needed to accommodate the Design-Build Team's final design.

- Unless noted otherwise elsewhere in this RFP, the maximum allowable cut and fill slope shall be 2:1. (Reference the Geotechnical Engineering Scope of Work found elsewhere in this RFP), The slopes in the interchange area shall follow the requirements set forth in the *Roadway Design Guidelines for Design-Build Projects* located on the Design-Build web site.
- The Design-Build Team shall inform the Transportation Program Management Director, in writing, of any proposed changes to the NCDOT preliminary design, previously reviewed submittals or the Design-Build Team's Technical Proposal and obtain approval prior to incorporation. The Design-Build Team shall note in the Technical Proposal any proposed deviations to the preliminary design shown on the R-2123CE Preliminary Design dated December 2009 provided by the Department. The Design-Build Team shall be responsible for any activities, as deemed necessary by the Department or the FHWA, resulting from changes to the NCDOT preliminary design, including but not limited to, public involvement, NEPA re-evaluation and re-evaluation of the Interchange Modification Report. The Department shall not honor any requests for additional contract time or compensation for completion of the required activities resulting from changes to the NCDOT preliminary design.
- A Design Exception will be required along I-85 if the existing offset from the edge of pavement to the median barrier is reduced for any reason including bridge piers or overhead sign supports. Other design exceptions shall not be allowed for I-485 and I-85, including all ramps. A design exception will also be required on Mallard Creek Road for the curvature on the west side tying into existing alignment to avoid impact to the sunflower habitat. The Design-Build Team shall utilize the 4% superelevation chart. NCDOT prefers not to have design exceptions except as noted above. If the Design-Build Team anticipates any design exceptions, they shall be clearly noted in the Technical Proposal. Prior to requesting / incorporating a design exception into the Final Plans, the Design-Build Team must obtain prior conceptual approval from the Transportation Program Management Director and the FHWA. If approval is obtained, the Design-Build Team shall be responsible for the development and approval of all design exceptions.
- The Design-Build Team shall submit Structure Recommendations and Design Criteria for NCDOT and FHWA review and acceptance prior to submittal of the Preliminary Plans.

The Design-Build Team shall develop Structure Recommendations that adhere to the format noted in the March 25, 2003 and September 1, 2004 memos from Mr. Jay Bennett, PE, State Roadway Design Engineer. The design speed for all roadways shall be the greater of the minimum design speed for the facility type or the anticipated / actual posted speed plus five-mph.

- The Design-Build Team shall be responsible for the evaluation of the algebraic difference in rates of cross slope (roll-over) between existing shoulders and roadways and the associated suitability for carrying traffic during construction, if necessary. In the event that the roll-over is found to be unacceptable for the proposed temporary traffic patterns, the Design-Build Team shall be responsible for providing cross slopes that meet design standards and eliminate roll-over concerns.
- Within the vehicle recovery area, the Design-Build Team shall design and construct single face concrete barrier in front of all sound barrier walls located on the outside shoulder in fill sections, retaining walls and all elements acting as a retaining wall.
- The Design-Build Team shall place rebar and caps with carsonite posts for right of way monument locations for all parcels, as directed by the Engineer. The NCDOT will furnish the caps and carsonite posts in accordance with Department policy.

### **General**

- The design shall be in accordance with the 2004 AASHTO *A Policy on Geometric Design of Highways and Streets*, 2002 NCDOT *Roadway Design Manual*, July 2006 *NCDOT Roadway Standard Drawings*, or as superseded by detail sheets located at [http://www.ncdot.gov/doh/preconstruct/ps/std\\_draw/06details/default.html](http://www.ncdot.gov/doh/preconstruct/ps/std_draw/06details/default.html), *Roadway Design Policy and Procedure Manual*, *Roadway Design Guidelines for Design-Build Projects*, 2006 *North Carolina Standard Specifications for Roads and Structures* and the 2002 *AASHTO Roadside Design Guide, 3<sup>rd</sup> Edition* and 2006 *Chapter 6 Update*.
- If the NCDOT *Roadway Design Manual*, the 2004 AASHTO *A Policy on Geometric Design of Highways and Streets*, the 2006 *Roadway Standard Drawings* and / or any other guidelines, standards or policies have desirable and / or minimum values, the Design-Build Team shall use the desirable values unless otherwise noted elsewhere in this RFP. Similarly, in case of conflicting design parameters, and / or ranges, in the various resources, the proposed design shall adhere to the most conservative values, unless noted otherwise elsewhere in this RFP.
- A sag vertical curve low point shall not be located on any bridge or approach slab.
- The Design-Build Team shall contact Mr. Gary W. Thompson, North Carolina Geodetic Survey Director, prior to disturbing any geodetic monuments.

- The project shall follow the NCDOT-FHWA Oversight Agreement. This agreement shall be provided. Any changes that affect previous approvals shall be re-submitted by the Design-Build Team for FHWA acceptance.
- The Design-Build Team shall identify the need for any special roadway design details (i.e. any special drainage structures, rock embankment, rock plating, special guardrail, retaining walls, concrete barrier designs, etc.) and shall provide special design drawings. The Contracts Standards and Development Unit may have special details available that can be provided to the Design-Build Team upon request.

### **NCDOT Information Supplied**

- The NCDOT will provide copies of the Original Environmental Impact Statement, Record of Decision and more recent Categorical Exclusion, Interchange Modification Report (IMR) and the latest list of environmental commitments, municipal agreements and all pertinent approvals and correspondence. Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall adhere to all commitments stated in the environmental documents.
- The NCDOT will provide electronic surveys to the Design-Build Team. Any supplemental surveys, including but not limited to additional topography, existing and proposed roadway, structure sites, underground and overhead utilities, existing and proposed drainage, wetland delineation, right of way, parcel names, and deed research and descriptions shall be the responsibility of the Design-Build Team to acquire and process. Known existing utilities have been located and will be included with the survey data. The Design-Build Team shall be responsible for confirming the location of the utilities and the type / size of facilities. All supplemental SUE work shall be the responsibility of the Design-Build Team.
- The NCDOT will provide the Department's R-2248E Right of Way Plans as well as provide access to the successful Design-Build Team's R-2248E plans near the tie with this project. The Design-Build Team shall coordinate the proposed horizontal and vertical alignments with the R-2248E Project.
- The NCDOT will provide the I-3803B preliminary plans provided by the Department as well as provide access to the successful Design-Build Team's I-3803B plans near the tie with this project. The Design-Build Team shall coordinate the proposed horizontal and vertical alignments with the I-3803B Project.
- The NCDOT will provide the R-2123CE Design Public Meeting Map and the Preliminary Design dated December 2009. The Design-Build Team is cautioned that the preliminary designs shown on the Design Public Meeting Map and the December 2009 preliminary design provided by the Department are provided solely to assist the Design-Build Team in the development of the project design. The Design-Build Team shall be fully and totally responsible for the accuracy and completeness of the project design,



including, but not limited to, the use of the NCDOT's design, the use of portions of the NCDOT's design or modifications to the NCDOT's design.

- The NCDOT will provide final pavement designs for R-2123CE. The Design-Build Team shall be responsible for all temporary pavement designs. (Reference the Pavement Management Scope of Work).
- The NCDOT will provide any available Geotechnical Subsurface Investigation in the vicinity of this project.. Each prospective The Design-Build Team may propose ten to fifteen additional structure borings. The Department will attempt to secure as many of these structure borings as possible prior to the submission of Technical and Price Proposals. The Design-Build Team shall be responsible for any additional geotechnical information, all geotechnical recommendations, as well as supplemental structural and roadway investigations. (Reference the Geotechnical Engineering Scope of Work found elsewhere in this RFP).

**STRUCTURES SCOPE OF WORK****Project Details:**

The Design Build team shall be responsible for the design and construction of all required box culvert extensions, replacing the Mallard Creek Road Bridge, and all other structures necessary to complete the project.

All bridges within the I-485 and I-85 interchange shall have sufficient width for a minimum of two lanes and full width shoulders.

All bridges shall meet approved Roadway typical sections and grades. Bridge geometry (width, length, skew, span arrangement, etc.) shall be in accordance with approved Structure Recommendation and approved Hydraulic Bridge Survey Reports.

The minimum vertical clearance over all roadways shall be a minimum of 17'-0". Vertical and horizontal clearances should be set based on the possible future widening of I-85, I-485, and the Mallard Creek Road bridge as noted in this RFP. Vertical clearance for bridges directly over other bridges may be reduced to 16'-6".

Piers, end bents, and MSE walls for bridges crossing I-85 shall be located to allow future widening to a 10 lane (4 – 12 foot general purpose lanes in each direction and 1 – 16 foot painted buffer divided HOV lanes in each direction) median divided facility with a 22 foot median and 12 foot outside shoulders. Piers, end bents, and MSE walls for bridges crossing I-485 shall be located to allow future widening to the median to accommodate an 8 lane (3 – 12 foot general purpose lanes in each direction and 1 – 16 foot painted buffer divided HOV lanes in each direction) median divided facility with 12 foot outside and inside paved shoulders. In addition to accommodating the future laneage along I-485, the locations shall be set to ensure that a full shoulder and necessary pier protection can be placed without the need for a future design exception.

If using MSE walls at end bents for bridges that carry I-485 or I-85, the MSE walls and end bents shall be designed and constructed to accommodate the future widening noted above. If no MSE walls are used, then the Design-Build Team shall describe in the Technical Proposal how their design facilitates the future widening of the bridges.

Reinforced concrete box culverts shall be in accordance with approved Hydraulic Culvert Survey Reports.

The empirical method for deck design will not be allowed

All bridge barrier rails shall be jersey shaped barriers per Standard Drawing CBR1 except that Mallard Creek Church Road shall have a bicycle safe rail.

A live load rating chart for girders will be required on the bridge plans. The load rating shall be in accordance with the August 21, 2009 LRFR Load Factors memo (Rev. Dec. 2009) and AASHTO's Manual for Bridge Evaluation.

Monotube or cantilever DMS (if required on project) support structures will not be allowed.

Attachment of sign structures to bridges will not be allowed.

No cored slab, deck girders, fracture critical, cast-in-place deck slab, or box beam bridges will be allowed on this project.

Any required bridge attachments (e.g. ITS conduit) will not be allowed in the overhang of grade separations. Casting of conduit in the bridge deck or outside railing will not be allowed.

Sound barrier walls shall be in accordance with Standards SBW1 and SBW2 and the Sound Barrier Wall Project Special Provision located on the Structure Design Unit web site or alternate details and special provisions approved by the NCDOT Structure Design Unit, Geotechnical Engineering Unit and Human Environment Unit. Concrete piles are permitted provided adequate connection details are used.

### **Bridge Removal:**

The design build team is responsible for the removal and disposal of the following bridges:

- Bridge Number 119 on I-485 Ramp over I-85
- Bridge Number 311 on Mallard Creek Road over I-85

For existing bridges that have paint systems containing red lead paint, the Design-Build Team is responsible for handling, removing, shipping, and disposing of these materials in accordance with the 2006 NCDOT Standard Specifications for Roads and Structures.

### **General:**

The team's primary design firm shall be on the Highway Design Branch list of firms qualified for Structure Design and maintain an office in North Carolina.

Design shall be in accordance with latest AASHTO *LRFD Bridge Design Specifications*, NCDOT Structure Design Manual (including policy memos), and NCDOT Bridge Policy Manual.

Construction and Materials shall be in accordance with 2006 NCDOT Standard Specifications for Roads and Structures, NCDOT Structure Design Unit Project Special Provisions, and NCDOT Structure Design Unit Standard Drawings.

Alternate designs, details, or construction practices (such as those employed by other states, but not standard practice in NC) are subject to Department review and will be evaluated on a case by case basis.

**PAVEMENT MANAGEMENT SCOPE OF WORK** (6-29-10)

The Design-Build Team shall choose one of the following alternates for the construction of the I-485, including inside and outside shoulders, from the eastern project limits to I-85:

<u>Alternate 1</u>	<u>Alternate 2</u>	<u>Alternate 3</u>
3.0" S9.5D	3.0" S9.5D	3.0" S9.5D
3.5" I19.0D	3.5" I19.0D	3.5" I19.0D
12.5" B25.0C	8.0" B25.0C	6.5" B25.0C
Subgrade Stabilization	10.0" ABC Subgrade Stabilization	8.0" CTABC Subgrade Stabilization

For the above alternates, the inside and outside paved shoulders may incorporate a 3.0" S9.5C mix in lieu of the 3.0" S9.5D mix.

For the remainder of I-485, including the inside shoulders, the Design-Build Team shall use the following design:

- 13.0" doweled jointed concrete with 15 ft. uniform joint spacing
- 3.0" PADC
- 1.25" SF9.5A
- Subgrade Stabilization

The pavement design for the outside shoulders for the remainder of I-485 shall consist of a minimum thickness of 10.5" jointed concrete without dowels, with a joint spacing matching the adjacent mainline pavement, and anchored to the mainline pavement with tie bars.

The pavement design for the outside and inside paved shoulders for I-85 shall consist of:

- 3.0" S9.5C or S9.5D
- 3.0" I19.0C or I19.0D
- 8.0" minimum B25.0C

Subgrade Stabilization shall be to a minimum depth of 8 inches for lime and 7 inches for cement. The type of subgrade stabilization and the amount of stabilizing agent shall be determined in accordance with the Cement and Lime Stabilization of Subgrade Soils Project Special Provision found elsewhere in this RFP.

Other pavement designs for this project are listed in the table below:

<b>LINE</b>					<b>Stabilization</b>
I-85	14.0" concrete	4.0" PADC	1.25" S9.5A		Yes
All Proposed Ramps	13.0" concrete	3.0" B25.0B	1.25" S9.5A		Yes
All Proposed Ramp Shoulders	3.0" S9.5C or S9.5D	3.0" I19.0C or I19.0D	7.0" minimum B25.0C		No
Y1 (Mallard Creek Road)	3.0" S9.5B	3.0" I19.0B	-	10.0" ABC	No

Existing Mallard Creek Church Road Off Ramp and shoulders	3.0" S9.5B	2.5" I19.0B	3.0" B25.0B	8.0" ABC	No
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The Ramp Detour pavement design shall be designed and submitted for review and acceptance by the Department.

Warm mix asphalt is not allowed on this project.

The minimum depth for overlaying the existing pavement on I-485 shall be 3.0" S9.5D. The minimum depth for overlaying the existing pavement on the Mallard Creek Church Road Off Ramp shall be 3.0" S9.5B. The minimum depth for overlaying the existing pavement on Mallard Creek Rd shall be the full thickness of surface course as given in the above table. For Mallard Creek Rd and the Mallard Creek Church Road Off Ramp, the Design-Build Team may substitute an asphalt base course layer for an ABC layer. If such an alternative is proposed, the Design-Build Team shall use an asphalt base course mix that matches the asphalt base course mix specified for the roadway. If an asphalt base course mix is not specified, the Design-Build Team shall use B25.0B base course. The additional thickness of the asphalt base course, used as a substitute for the ABC layer, shall be equal to half of the proposed ABC thickness specified for the roadway. The Design-Build Team shall maintain the same pavement design throughout that roadway's construction limits. In the Technical Proposal, the Design-Build Team shall specify the base option chosen (ABC vs. asphalt) for these roadways.

On all ramps, the adjacent through lane pavement design shall extend to the back of the gore (12-foot width).

When an existing concrete taper is incorporated into a through lane, the Design-Build Team shall remove the existing concrete pavement through the limits of the taper and replace with new pavement to prevent a pavement joint transition across a lane.

Unless noted otherwise elsewhere in this RFP, the minimum widened width shall be six feet. The minimum widened width may be reduced to four feet only if the Design-Build Team demonstrates that their equipment properly compacts narrow widening and obtains prior Department approval. Tapers that tie proposed pavement to existing pavement are excluded from the narrow widening requirements noted above.

In areas where the Mallard Creek Rd. or the Mallard Creek Church Road Off Ramp paved shoulders are proposed to be incorporated into a permanent travel lane, the Design-Build Team shall be responsible for evaluating the existing paved shoulder regarding its suitability for carrying the projected traffic volumes. In the event that the existing paved shoulder is found to be inadequate, the Design-Build Team shall be responsible for upgrading the existing paved shoulder to an acceptable level or replacing the existing paved shoulder. The Design-Build Team shall submit their evaluation and proposed use of existing paved shoulders to the Transportation Program Management Director for review and acceptance or rejection.

The Design-Build Team shall be responsible for the design of all temporary pavements and for the evaluation of existing shoulders and roadways regarding their suitability for carrying traffic during construction, if necessary. In the event that the existing shoulders and roadways are found to be inadequate for the proposed temporary traffic volumes and duration, the Design-Build Team shall be responsible for upgrading the pavement to an acceptable level. Temporary pavements shall be designed in accordance with the most recent version of the North Carolina DOT Pavement Design Procedure. Temporary pavement designs are to be submitted for review and comments using the contract submittal process. The expected duration for traffic on temporary pavement must be included as part of the submittal

All driveways, up to the radius point, shall be constructed with the full-depth pavement design of the intersecting roadway. The entire impacted length of all non-concrete driveways with a 10% or steeper grade shall be constructed with 1.5" S9.5B and 8" ABC. Unless otherwise noted above, the Design-Build Team shall adhere to the following for all driveway construction:

For existing gravel and soil driveways, use 8" ABC.

For existing asphalt driveways, use 1.5" S9.5B and 8" ABC.

For existing concrete driveways, use 6" jointed concrete reinforced with woven wire mesh.

The rate of application and the maximum and minimum thickness per application and layer shall be in accordance with the NCDOT Roadway Design Manual.

The Design-Build Team shall be responsible for the design and construction of shoulder drains and outlets. Shoulder drains shall be placed to drain the entire pavement structure. Where only widening to one side of a facility is required by this RFP, only the widened side will require shoulder drains. The shoulder drain design and outlet locations are to be submitted to the Transportation Program Management Director for review and acceptance or rejection. Shoulder drains are required for this project as follows:

- For I-485 from the eastern project limits to I-85, and for all concrete ramps, shoulder drains shall be provided on the both sides of typical crown sections, on the low side of superelevated sections, throughout all sag vertical curves, throughout crest vertical curves located in cut sections, and where the grade is less than 1%.
- For the remainder of I-485 and for I-85, continuous shoulder drains and outlets shall be used. Shoulder drains shall be provided on both sides of typical crown sections, and on the low side of superelevated sections. Because the inside shoulder for the remainder of I-485 is a potential future travel lane, shoulder drains shall not be placed directly under the inside shoulder.
- Outlets shall be provided approximately every 300 feet. In the median, if drainage structures are spaced at more than 300 feet, the outlet spacing may be increased to 500 feet in those areas.

The Design-Build Team shall pave from the edge of the proposed paved shoulder to the face of sound barrier walls located on the outside shoulder in fill sections and all guardrails with 6" of ABC

(or 4" B25.0B or B25.0C), a split seal and at least one lift of surface course. If a split seal is not used, the ABC pavement design shall require prime coat at the normal application rate. In these areas, the Design-Build Team's installation of ABC or black base shall be consistent with the pavement type for the specific roadway. As an alternative to the above pavement design for paving the shoulders to the face of the guardrail, the Design-Build Team may use the adjacent travel lane pavement design.

The Design-Build Team shall provide incidental milling of the end of existing pavement to provide a smooth transition to the proposed pavement.

**GEOTECHNICAL ENGINEERING SCOPE OF WORK** (06-28-10)**I. GENERAL:**

Obtain the services of a firm prequalified for geotechnical work by the Highway Design Branch List. The prequalified geotechnical firm shall prepare foundation design recommendation reports for use in designing structure foundations, roadway foundations, retaining walls, sound barrier foundations, overhead sign structure foundations, overhead sign structures, and temporary structures.

The Engineer of Record who prepares the foundation design recommendation reports shall be a Professional Engineer registered in the State of North Carolina who has completed a minimum of three geotechnical design projects of scope and complexity similar to that anticipated for this project using the load and resistance factor design (LRFD) method and in accordance with the latest edition of the AASHTO *LRFD Bridge Design Specification*. If the Engineer of Record cannot demonstrate the aforementioned LRFD experience, then the design must undergo a peer review by an individual with such experience. In such case, the reviewer must be a registered Professional Engineer, but not necessarily in the State of North Carolina. Prior to the first geotechnical design submittal, the Design-Build Team shall provide a letter to the NCDOT Design-Build Office that documents the reviewer's LRFD experience for review and acceptance. Furthermore, with each geotechnical design submittal, the reviewer shall provide a sealed letter stating that he / she has carefully reviewed and approved the specific submittal details.

The prequalified geotechnical firm shall also determine if additional subsurface information, other than that required and noted elsewhere in this RFP, is required based upon the subsurface information provided by the NCDOT and the final roadway and structure designs. If a determination is made that additional subsurface information is required; the Design-Build Team shall use a prequalified geotechnical firm to perform all additional subsurface investigation and laboratory testing in accordance with the current NCDOT Geotechnical Engineering Unit *Guidelines and Procedures Manual for Subsurface Investigations*. Submit additional information collected by the Design-Build Team to the Geotechnical Engineering Unit for review. The Design-Build Team shall provide the final Subsurface Investigation report in electronic and hardcopy format to the NCDOT for its records.

A minimum of 2 standard penetration test (SPT) / rock core borings shall be required per bent for all bridges except dual bridges. A minimum of 3 SPT / rock core borings shall be required across the roadway typical section, at each bent location for dual bridges. All borings shall be located within 100 feet of the centerline of each bent location to be counted for these minimum requirements. Extend all borings to a depth below the foundation element required to show a complete subsurface profile. The Design-Build Team shall be responsible for obtaining the borings noted above for all bents where subsurface information is not sufficient or is warranted by variability in the geology unless the prequalified geotechnical firm submits documented justification that the



subsurface investigation provided by the NCDOT is adequate for design purposes and the justification is acceptable to the Department. Any deviations to the requirements noted above shall require acceptance from the NCDOT Geotechnical Engineering Unit prior to construction.

The maximum spacing between borings for retaining walls and sound barrier walls shall be 200 feet, with a minimum of two borings; one at each end of the wall. Drill borings for retaining walls a minimum depth below the bottom of the wall equal to twice the maximum height of the wall. Boring depths for sound barriers shall be equal to the maximum height of the wall or to SPT refusal.

The Design-Build Team is permitted to design bridges on this project using software that accounts for the structural effects of soil / pier interaction.

## II. DESCRIPTION OF WORK:

The Design-Build Team shall design foundations (except sign foundations), embankments, slopes, retaining walls, and sound barriers in accordance with the current edition of the AASHTO *LRFD Bridge Design Specifications*, NCDOT *LRFD Driven Pile Foundation Design Policy*, all applicable NCDOT Geotechnical Engineering Unit Standard Provisions, NCDOT *Structure Design Manual*, and NCDOT *Roadway Design Manual*. The NCDOT *LRFD Driven Pile Foundation Design Policy* is located on the NCDOT Geotechnical Engineering Unit's website at:

**[www.ncdot.org/doh/preconstruct/highway/geotech/LRFD Driven Pile Foundation Design Policy.pdf](http://www.ncdot.org/doh/preconstruct/highway/geotech/LRFD_Driven_Pile_Foundation_Design_Policy.pdf)**

For *Geotechnical Guidelines For Design-Build Projects*, the Design-Build Team shall adhere to the guidelines located at the following website:

**[http://www.ncdot.org/doh/preconstruct/altern/design\\_build/default.html](http://www.ncdot.org/doh/preconstruct/altern/design_build/default.html)**

### A. Structure Foundations

Key in spread footings of structures crossing streams a minimum of full depth below the 100-year design scour elevation and provides scour protection in accordance with scour protection detail in the NCDOT *Structure Design Manual*.

Permanent steel casings shall be required for drilled piers that are constructed in six inches or more of water. Permanent steel casings are required for drilled piers constructed on sloped stream banks subject to degradation from flooding.

When the weathered rock or rock elevation is below the 100-year hydraulic scour elevation, the 100-year and 500-year design scour elevations are equal to the 100-year and 500-year hydraulic scour elevations from the structure survey report accepted by the NCDOT Hydraulics Unit. When the weathered rock or rock elevation is above the 100-year hydraulic scour elevation, the 100-year design

scour elevation may be considered equal to the top of the weathered rock or rock elevation, whichever is higher, and the 500-year design scour elevation may be set two feet below the 100-year design scour elevation.

End bent fill slopes up to 35 feet in height (defined as the difference between grade point elevation and finished grade at toe of slope) shall be 1.5:1 (H:V) or flatter. End bent fill slopes with heights greater than 35 feet shall be 2:1 or flatter. All end bent cut slopes shall be 2:1 or flatter. For 1.5:1 fill slopes, extend end bent slope protection from the toe of slope to berm and to 1.75:1 (H:V) slope or to the limits of the superstructure. For cut slopes and for 2:1 or flatter end bent fill slopes, extend end bent slope protection from the toe of slope to berm and to the limits of the superstructure.

Analyze drilled pier and pile bent foundations using either L-Pile or FB-Pier. Design drilled piers and vertical piles with a sufficient embedment in soil and/or rock to achieve “fixity”.

Design sound barrier foundations in accordance with current allowable stress design AASHTO *Guide Specifications for Structural Design of Sound Barriers*. A minimum factor of safety of 1.5 shall be required for shaft embedment depths.

## **B. Roadway Foundations**

Unless otherwise noted herein, all unreinforced proposed fill slopes shall be 2:1 (H:V) or flatter except bridge end bent slopes (see Section A – Structure Foundations). All proposed soil cut slopes shall be 2:1 (H:V) or flatter, unless the slopes are designed with adequate reinforcement to provide the required stability. If steeper than 2:1 (H:V), all reinforced cut slopes, rock cuts and fill slopes may only be used if detailed design calculations and a slope stability analysis are submitted to the NCDOT Geotechnical Engineering Unit, via the Transportation Program Management Director, for review and acceptance prior to construction.

Design and construct bridge approach embankments such that no more than two inches of settlement shall occur after the waiting periods end. Soil improvement techniques to mitigate long term settlement problems or to transfer the embankment load to a deeper bearing stratum are allowed. Soil improvement techniques shall follow the current industry standard practices and the guidelines of *Ground Improvement Methods FHWA publication NHI-04-001 or Geosynthetic Design and Construction Guidelines FHWA-HI-95-038*.

Embankment settlement monitoring shall be required when a waiting period of more than one month is recommended in the foundation design recommendation reports. Use an appropriate method to monitor settlement across the length of the embankment (from toe to toe) such as settlement gauges, surveyed stakes on finished subgrade or other methods but submit documentation describing the method and procedures to the NCDOT Geotechnical Engineering Unit, via the

Transportation Program Management Director, for review and acceptance prior to construction of the embankment.

Reinforced bridge approach fills in accordance with the NCDOT standard shall be required for end bents on all bridges.

Mitigate all unsuitable soils to the extent that is required to improve the stability of the proposed embankment or subgrade. Use suitable materials to backfill undercut areas except when utilizing Aggregate Subgrade. For undercut backfilling in water, use Select Material, Class III.

### C. Permanent Retaining Wall Structures

Design and construct mechanically stabilized earth (MSE) retaining walls in accordance with AASHTO LRFD Bridge Design Specifications, NCDOT *Mechanically Stabilized Earth Walls* Special Provision (LRFD Version) as provided by the Department by letter dated June 29, 2010 and the NCDOT Policy for Mechanically Stabilized Earth Retaining Walls which can be found at the NCDOT Geotechnical Engineering Unit's website at:

**[http://www.ncdot.org/doh/preconstruct/highway/geotech/msewalls/07-12-18\\_MSE\\_Retaining\\_Walls\\_Policy.pdf](http://www.ncdot.org/doh/preconstruct/highway/geotech/msewalls/07-12-18_MSE_Retaining_Walls_Policy.pdf)**

For tiered MSE Walls, refer to the Design and Construction of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes – Volumes I and II, *FHWA Publications No. FHWA-NHI-10-024 and FHWA-NHI-10-025*.

Steel reinforcing will be required for any critical MSE retaining walls. A maximum of 2 splices performed in accordance with manufacturer's specifications will be allowed in the reinforcing.

Design and construct all other types of permanent retaining walls, with the exception of gravity walls, in accordance with the applicable NCDOT Geotechnical Engineering Unit *Project Special Provisions*, which can be provided upon request by the Design-Build Team. Geotechnical Provisions and Notes can be found at the NCDOT Geotechnical Engineering Unit's website at:

**<http://www.ncdot.org/doh/preconstruct/highway/geotech/provnote/>**

For each retaining wall, with the exception of gravity walls, submit a wall layout and design. The wall layout submittal shall include the following:

- Wall envelope with top of wall, bottom of wall, existing ground and finished grade elevations at incremental stations.
- Wall alignment with stations and offsets.
- Typical sections showing top and bottom of wall, drainage, embedment, slopes, barriers, fences, etc.

- Calculations for bearing capacity, global stability and settlement.
- Details of conflicts with utilities and drainage structures.
- Roadway plan sheets showing the wall (half size).
- Roadway cross sections showing the wall (half size).
- Traffic control plans showing the wall (half size).

Gravity walls shall be designed and constructed in accordance with the NCDOT Structure Standard Drawings and the NCDOT *2006 Standard Specifications*. Gravity walls shall be identified in the roadway foundation design recommendation report. Cast-in-place cantilever walls shall be designed and constructed in accordance with the NCDOT *2006 Standard Specifications*. Conceptual wall layouts and wall designs shall be submitted for NCDOT for review and acceptance.

Locate retaining walls at toe of slopes unless restricted by right of way limits. The Design-Build Team shall submit global stability calculations for slopes at retaining walls and obtain acceptance from the NCDOT prior to construction. Any slopes behind walls shall be 2:1 (H:V) or flatter.

Drainage over the top of retaining walls shall not be allowed. Sags in the top of walls are not permissible. Direct runoff above and below walls away from walls, if possible, or collect runoff at the walls and transmit it away. Curb and gutter or cast-in-place single faced barrier with paving up to the wall shall be required when runoff can not be directed away from the back or front of the wall. A paved concrete ditch with a minimum depth of six inches shall be required at the top of walls when slopes steeper than 6:1 (H:V) intersect the back of walls.

Precast or cast-in-place coping shall be required for walls without a cast-in-place face with the exception of when a barrier is integrated into the top of the wall. Extend coping or cast-in-place face a minimum of six inches above where the finished or existing grade intersects the back of the wall. A fence shall be required on top of the facing, coping or barrier or immediately behind the wall, if there is no slope behind the wall.

Deep foundations shall be used for end bents when abutment retaining walls are employed. When using abutment retaining walls, design and construct the end bent and the wall independent of each other. When using abutment retaining walls, the end bent foundation shall be designed and constructed with one of the following deep foundations: (1) a single row of plumb piles with brace piles battered toward the wall, (2) a single row of plumb piles with MSE reinforcement strapped to the back of the cap, (3) a double row of plumb piles or (4) drilled piers. If fill is required around piles or drilled piers, install foundations before placing any fill. Wing walls independent of abutment retaining walls shall be required unless accepted otherwise by the NCDOT. Do not consider lateral support from any fill placed around drilled piers behind abutment retaining walls when analyzing end bent stability. All pile foundations for end bents with abutment retaining walls shall penetrate minimum 10 feet into natural ground. For bearing piles behind such retaining walls, the penetration can be reduced to 5

feet below the bottom of the wall provided the Design-Build Team analyzes and determines that the vertical piles are “fixed” in natural ground such that the decrease in pile embedment shall not significantly increase the top deflection under lateral loading. The calculations and supporting documentation for this analysis shall be submitted to the NCDOT for review and acceptance prior to construction.

#### **D. Temporary Structures**

Design temporary retaining structures, which include earth retaining structures and cofferdams, in accordance with current allowable stress design AASHTO *Guide Design Specifications for Bridge Temporary Works* and the *Temporary Shoring Special Provision*. The only submittal required to use the standard sheeting design is the “Standard Shoring Selection Form”.

Design and construct temporary retaining walls in accordance with the applicable NCDOT *Project Special Provision* available upon request by the Design-Build Team. Traffic Control barrier on top of walls shall be in accordance with the NCDOT Work Zone Traffic Control Unit details available upon request by the Design-Build Team. If anchored barrier is required, then anchor the barrier in accordance with NCDOT *2006 Roadway Standard Drawing Detail No. 1170.01*.

### **III. CONSTRUCTION REQUIREMENTS:**

All construction and materials shall be in accordance with the NCDOT *2006 Standard Specifications* and current NCDOT *Project Special Provisions* unless otherwise stated in this scope of work. The Design-Build Team shall be responsible for investigating, proposing and incorporating remedial measures for any construction problems related to foundations, retaining walls, subgrades, settlement, slopes, and construction vibrations. The NCDOT Geotechnical Engineering Unit shall review and accept these proposals.

The Design-Build Team shall be responsible for any damage or claim caused by construction, including damage caused by vibration (see Article 107-15 NCDOT *2006 Standard Specifications for Roads and Structures*). The Design-Build Team shall be responsible for deciding what, if any, pre and post-construction monitoring and inventories need to be conducted to satisfy their liability concerns. Any monitoring and inventory work shall be performed by a qualified private engineering firm experienced in the effects of construction on existing structures.

The prequalified geotechnical firm that prepared the foundation designs shall review the embankment settlement monitoring data a minimum of once a month and issue a letter prior to releasing the embankment from the waiting period. Waiting periods may not be ended until less than 0.10 inches of settlement is measured over a period of four weeks. Submit the settlement monitoring data to the Transportation Program Management Director prior to issuing the release letter.

The prequalified geotechnical firm that prepared the foundation designs shall review and approve all pile driving hammers and drilled pier construction sequences. After the

prequalified geotechnical firm has approved these submittals, the Design-Build Team shall submit to the NCDOT for review prior to beginning construction.

Perform hammer approvals with GRLWEAP Version 2002 or later and in accordance with the NCDOT LRFD Driven Pile Foundation Design Policy. Provide pile driving inspection charts or tables for all approved pile hammers.

Limit driving stresses in accordance with the AASHTO LRFD *Bridge Design Specifications*. If a tip elevation is noted on the plans, drive piles to the minimum required driving resistance and tip elevation. Otherwise, drive piles to the minimum required driving resistance and a penetration into natural ground of at least 10 ft. Unless otherwise approved, stop driving piles when refusal is reached. Refusal is defined as 240 blows per foot or any equivalent set.

Perform Pile Driving Analyzer (PDA) testing using a NCDOT prequalified company to develop pile driving inspection charts or tables. For each permanent bridge that includes driven pile bents or driven pile footings, perform a minimum of one (1) PDA test (dual bridges are counted as one structure) for each pile size, pile type (material or shape) and pile driving hammer combination. Additional PDA tests may be required based upon the AASHTO LRFD Bridge Design Specifications. If the bridge length with driven pile foundations is longer than 400 feet, perform an additional PDA test at every 400 feet interval. Provide additional PDA testing for any revisions to pile type, size or hammer previously approved. The locations of specific piles to be tested must be accepted by the NCDOT prior to any PDA test. Perform PDA tests in accordance with ASTM D 4945-89, Standard Test Method for High Strain Dynamic Testing of Piles and this scope of work.

Analyze data with the Case Pile Wave Analysis Program (CAPWAP), version 2006 or later. At a minimum, analysis is required for a hammer blow near the end of initial drive and for each restrike and re-drive. Additional CAPWAP analysis may be required as determined by the Engineer.

Meet the guidelines for NCDOT PDA reports from the Geotechnical Engineering Testing Contract for PDA test reports. To obtain a list of pre-approved Geotechnical Engineering Testing Contract companies to perform PDA testing and guidelines for PDA test report, contact the Geotechnical Engineering Unit at 919-250-4088. PDA testing may be performed by a technician, but PDA testing must be overseen and the reports sealed by a Professional Engineer registered in the State of North Carolina. Submit a complete PDA report sealed by the professional engineer who performed the test to the foundation design firm. The foundation design firm shall develop pile driving inspection charts or tables for acceptance by the NCDOT prior to pile installation.

For drilled-in piles, the following additional requirements apply:

1. Prequalification of contractors is not required for pile excavation or drilled-in pile holes that are 30 inches in diameter or less.

2. Use Class A Concrete in accordance with Article 1000-4 of the NCDOT *2006 Standard Specifications for Roads and Structures* except as modified herein. Provide concrete with a slump of 6 to 8 inches. Use an approved high-range water reducer to achieve this slump. Perform pile excavation to specified elevations shown on the plans. Excavate holes with diameters that will result in at least 3 inches of clearance all around piles. Before filling holes, support and center piles in excavations and when noted on the plans, drive piles to the required driving resistance. Remove any fluid from excavations and fill holes with concrete.
3. Blasting for core removal is only permitted when approved by the Engineer. Dispose of drilling spoils in accordance with Section 802 of the NCDOT *2006 Standard Specifications for Roads and Structures* and as directed by the Engineer. Drilling spoils consist of all excavated materials including fluids removed from excavations by pumps or drilling tools. If unstable, caving or sloughing soils are anticipated or encountered, stabilize excavations with either slurry or steel casing. When using slurry, submit slurry details including product information, manufacturer's recommendations for use, slurry equipment details and written approval from the slurry supplier that the mixing water is acceptable before beginning drilling. When using steel casing, use either the sectional type or one continuous corrugated or non-corrugated piece. Steel casings should consist of clean watertight steel of ample strength to withstand handling and driving stresses and the pressures imposed by concrete, earth and backfill. Use steel casings with an outside diameter equal to the hole size and a minimum wall thickness of ¼ inch.
4. Check the water inflow rate at the bottom of holes after all pumps have been removed. If the inflow rate is less than 6 inches per half hour, remove any fluid and free fall concrete into excavations. Ensure that concrete flows completely around piles. If the water inflow rate is greater than 6 inches per half hour, propose and obtain acceptance of a procedure for placing concrete before filling holes. Place concrete in a continuous manner and remove all casings.

Use current NCDOT inspection forms for drilled piers available on the NCDOT Geotechnical Engineering Unit's webpage. Construct and inspect drilled piers in accordance with the NCDOT *Drilled Piers Special Provision*. The Design-Build Team shall inspect drilled piers using their Shaft Inspection Device (SID) for any pours using the wet method of concrete placement and for any drilled pier excavations that have remained open greater than 24 hours. Install Crosshole Sonic Logging (CSL) tubes in all drilled piers. CSL testing shall be required for all the drilled piers for each bridge. Submit CSL test information and results to the Geotechnical Engineering Unit, via the Transportation Program Management Director, for review and acceptance.

The prequalified geotechnical firm that prepared the original design shall perform any changes to the foundation designs. All changes shall be based upon additional information, subsurface investigation and / or testing. Drilled pier tip elevations shall not

be changed during construction unless the prequalified geotechnical firm that prepared the bridge foundation design redesigns the drilled pier from either an SPT / rock core boring, performed in accordance with ASTM standards at the subject pier location, or observations of the drilled pier excavation. If a drilled pier is designed based on a boring, do not drill a boring inside an open drilled pier excavation. Locate the boring within three pier diameters of the center of the subject pier and drill to a depth of two pier diameters below the revised tip elevation. If a drilled pier is redesigned based upon observations of the drilled pier excavation, the geotechnical engineer of record shall be present during the excavation to determine the actual subsurface conditions. Send copies of revised designs including additional subsurface information, calculations and any other supporting documentation sealed by a professional engineer registered in the State of North Carolina to the NCDOT for review.

Conduct proofrolling in accordance with Section 260 of the 2006 *Standard Specifications for Roads and Structures*.

Send copies of any inspection forms related to foundations, settlement or retaining walls to the NCDOT for review.



**HYDRAULICS DESIGN SCOPE OF WORK**

The Design-Build Team shall be required to do the following:

- Employ a private engineering firm to perform hydraulic design for all work required under this contract. The private engineering firm must be prequalified for Hydraulic Design work under the Hydraulic Unit's normal prequalification procedures.
- Hold a pre-design meeting with the Transportation Program Management Director and Hydraulic Review Engineer upon acceptance of the Preliminary Roadway Plans.
- Design the Storm Drainage using Geopak Drainage.
- Perform all corrective maintenance as noted in the April 28, 2010 Culvert Inspection Memorandum from Don Idol.
- Provide Bridge Survey Reports and/or Culvert Survey Reports as required by Hydraulic Guidelines stated below.
- Prepare a CLOMR or MOA package for any FEMA regulated streams impacted by the design. No construction activity shall occur in FEMA regulated floodplains prior to the CLOMR or MOA approval. The Department will be responsible for all associated fees.
- Construct structures to ensure that the sealed As-Built Plans for structures in FEMA regulated floodplains adhere to the approved FEMA submittal.
- Conduct 4B and 4C Merger 01 interagency meetings to review the hydraulic design and permit sites prior to submittal of the environmental permit applications. All work resulting from the hydraulics and permit reviews shall be the responsibility of the Design-Build Team. The Design-Build Team shall provide roadway plans and permit impact sheets to the Transportation Program Management Director a minimum of five weeks prior to the appropriate interagency meetings. The Design-Build Team shall take minutes of each meeting and provide them to the Department within three business days.
- Prepare the permit drawings and impact summary sheets for submittal of the USACE 404 Permit and NCDWQ Section 401 Permit applications.
- Obtain a Floodplain Development Permit from Charlotte Mecklenburg Stormwater Services.
- Design Stormwater Controls and develop a Stormwater Management Plan using Best Management Practices per the latest NCDOT Stormwater Best Management Practices Toolbox.

**General**

- Design in accordance with criteria provided in the North Carolina Division of Highways *Guidelines for Drainage Studies and Hydraulics Design-1999* and the addendum *Handbook of Design for Highway Drainage Studies-1973*, North Carolina Department of Transportation "Stormwater Best Management Practices Toolbox – 2008" and the North Carolina Division of Highways Hydraulics Unit website:

<http://www.ncdot.org/doh/preconstruct/highway/hydro/>

## **TRAFFIC MANAGEMENT SCOPE OF WORK**

### **I. Traffic Management Plans**

#### **A. Design Parameters**

The Design-Build Team shall prepare the Traffic Management Plans for this project following the parameters listed below:

1. Median crossovers will not be allowed on this project.
2. Except during a lane closure permitted by Intermediate Contract Time #1 or a road closure permitted by Intermediate Contract Time #3, maintain the existing traffic lanes using a minimum 11-foot wide lanes in each direction on I-85 and I-485, as well as all existing auxiliary lanes, ramps and loops. Maintain 4-foot wide paved inside and outside shoulders in each direction of I-85 and I-485 unless temporary barrier is placed on the paved shoulder. Maintain existing lane and shoulder widths on all other roadways.
3. All traffic control devices shall be placed a minimum 2-foot offset (shy distance) from the edge of travel lane.
4. Show temporary barrier system on the Traffic Control Staging Concept. Temporary barrier systems shall be designed in accordance with the following requirements:
  - Perform an Engineering Study to determine the need for temporary barrier that considers clear zone distances, roadway geometry, anticipated construction year traffic volumes, traffic speeds, roadside geometry, workers safety, pedestrian safety, etc. in accordance with FHWA Final Rule on Temporary Traffic Control Devices (23 CFR 630 Subpart K). Reference the NCDOT Work Zone Traffic Control website noted below for examples and Guidelines on the use of positive protection in work zones.  
<http://ncdot.org/doh/preconstruct/wztc/DesRes/English/DesResEng.html>
  - Unless the outside useable shoulder width is eight feet or greater, provide a motorist breakdown area on the right side of the travel way along I-85 or I-485 when temporary barrier is used on both sides of a direction of travel for a distance longer than 1000 feet. Thereafter, a breakdown area every one (1) mile shall be provided. All breakdown areas shall be 1000 feet long and 14 feet wide.
  - The Design-Build Team shall determine, and adhere to, the length of need, flare rate, clear zone and possible deflection of the proposed temporary barrier system in accordance with NCHRP-350 deflections from crash testing.
  - The Design-Build Team shall not place temporary barrier systems utilized for traffic control on soil surfaces.
5. The design speed for temporary alignments of NC, US and interstate routes (including all existing ramps and loops) shall not be lower than the current posted speed limit or advisory speed.
6. Roadway Standard Drawing 1101.11 shall be used for calculating the length of temporary merge and shift tapers on existing roadways only. All other temporary alignments shall adhere to the *NCDOT Roadway Design Manual, 2004 AASHTO A*

*Policy on Geometric Design of Highways and Streets* and the most current *Highway Capacity Manual*.

7. Changes in pavement cross slopes shall only occur on a lane line or lane midpoint and shall not exceed 0.04.
8. Maintain access to all residences, schools, emergency services and businesses at all times.
9. Traffic traveling in the same direction shall not be split (i.e. separation by any type of barrier, bridge piers, existing median, etc.).
10. Prior to incorporation, Department written approval shall be obtained for all road closures.
11. The Design-Build Team shall not place I-485 or Mallard Creek road traffic on an offsite detour.

The Design-Build Team is allowed to place I-85 on an offsite detour for the sole purpose as described in ICT #3. Prior to incorporation, all offsite detours shall receive Department written approval and adhere to the following requirements:

- All detour routes shall be investigated, including but not limited to, analyzing traffic capacity, investigating impacts to emergency services and schools and investigating pavement structural adequacy.
  - Both directions of an interstate shall not be closed at the same time. All detour routes shall be signed for the direction of closure. Alternate routes may be provided for the direction of traffic not closed during the interstate closure operations described in ICT #3.
  - The Design-Build Team shall determine and provide improvements required to accommodate detoured traffic prior to utilizing detour routes. If Bruton Smith Blvd, US 29 and Mallard Creek Church Road are chosen for the detour routes, no roadway improvements will be needed on these roads for this operation.
  - Offsite detours that have non-signalized at-grade railroad crossings shall not be allowed.
  - Signal timing on the detour routes shall be required or Law Enforcement shall be used at each intersection as approved by the Department. Changes to the signal timing shall be coordinated with the Department and may be executed by the Department or the City of Concord.
  - The Design-Build Team shall include all proposed offsite detours in the Technical Proposal, providing justification for using such detours along with the maximum number of closures per direction the Design-Build Team shall use.
  - Submit the detour route and all associated sign designs for review and acceptance prior to incorporation.
12. On all roadways within the project limits, the Design-Build Team shall provide safe access for wide-loads and oversized permitted vehicles through the work zone. Safe access shall entail, but is not limited to, a sufficient pavement structure (Reference the Pavement Management Scope of Work found elsewhere in this RFP), required vertical clearance and minimum clear zone widths as follows:

<b>Roadway</b>	<b>Minimum Clear Width</b>
I-85 and I-485	20 feet
All other roadways	18 feet

13. The Design-Build Team shall utilize Changeable Message Signs (CMS) as follows:

- As part of this project, the Design-Build Team shall provide a minimum of eight (8) CMS's and operate when needed to display pertinent traffic information relevant to work zone conditions (ie. road closures, traffic detours, public information, traffic management, access management etc). The location of these CMS's will be determined by the operations requiring the advance warning. These CMS's shall be in addition to any other devices provided by the Department and operated by the Traffic Management Center (TMC). The Design-Build Team shall coordinate with the TMC if and when alternate route or detour information needs to be displayed.
  - All CMSs shall have the functionality to be controlled remotely by the TMC and operated in the field by the Design-Build Team
  - For Alternate and/or detour routes, CMS locations and CMS messages shall be reviewed and approved by the Department prior to incorporation
- These CMSs shall be in addition to any other CMSs required by the Roadway Standard Drawings.
- The Design-Build Team shall show approximate CMS locations, along with the respective messages that have been coordinated with the TMC, in the Traffic Control Plans.

14. The Design-Build Team shall provide a smooth pavement surface for traffic at all times. The Design-Build Team shall not place traffic on lanes containing rumble strips. (Reference the Pavement Management Scope of Work found elsewhere in this RFP)

#### **B. Traffic Management Plan Requirements:**

The Design-Build Team shall select a Private Engineering Firm (PEF) that has experience designing and sealing Traffic Management Plans for the North Carolina Department of Transportation (NCDOT) on comparable projects. The Design-Build Team shall list projects in the Technical Proposal, including description and similarity to the subject project that the PEF developed.

The Design-Build Team shall develop Traffic Management Plans that maintain all types of traffic (motorists, bicyclists, and pedestrians within the highway, including persons with disabilities in accordance with the Americans with Disabilities Act of 1990 (ADA), Title II, Paragraph 35.130) as defined by the *Manual for Uniform Traffic Control Devices (MUTCD)*.

The Traffic Management Plans shall adhere to the “Design-Build Submittal Guidelines” and the “Guidelines for Preparation of Traffic Control and Pavement Marking Plans for Design-Build Projects”, which by reference are incorporated herein and are a part of the contract. These documents are available on the Design-Build website.

The Work Zone Traffic Control web site contains useful information that may be needed for the design of the Traffic Control Plans.

<http://www.ncdot.org/doh/preconstruct/wztc/>

## II. Project Operations Requirements

The following are Time Restrictions and notes that shall be included with the Traffic Management Plans General Notes, unless noted otherwise elsewhere in this RFP:

### A. Time Restrictions

#### 1. Intermediate Contract Time #1 and #2 for Lane Narrowing, Closure, Holiday and Special Event Restrictions.

As a minimum, the Design-Build Team shall maintain existing traffic patterns and shall not close or narrow a lane during the times below. At all times, a minimum of 2 traffic lanes on I-85 and I-485 (a minimum of 11 ft wide) shall be maintained in each direction of travel. When traffic is placed into the final pattern for any roadway, that will become the minimal traffic pattern and the following time restrictions shall still apply.

Road Name	Time Restrictions
I-85, I-485 I-85 ramps, I-485 ramps	Monday to Sunday 6:00 a.m. to 9:00 p.m.
SR 2467 Mallard Cr. Rd.	Monday through Friday 6:00 a.m. to 9:00 a.m. and 4:00 p.m. to 7:00 p.m.

The Design-Build Team shall not install, reset, and / or remove any traffic control device during the times listed above.

In addition to the lane narrowing and closure restrictions stated above for all roads, during holidays, holiday weekends, special events, or any other time when traffic is unusually heavy on the roadways listed herein as directed by the Engineer, the Design-Build Team shall not close or narrow a lane of traffic, detain the traffic flow or alter the traffic flow on the aforementioned facilities. As a minimum, these requirements / restrictions apply to the following schedules:

- (a) For New Year's between the hours of 6:00 a.m. December 31<sup>st</sup> to 9:00 p.m. January 3<sup>rd</sup>. If New Year's Day is on a Friday, Saturday, Sunday or Monday then until 9:00 p.m. the following Tuesday.
- (b) For Easter, between the hours of 6:00 a.m. the Friday before Easter and 9:00 p.m. the Tuesday after Easter.
- (c) For Memorial Day, between the hours of 6:00 a.m. the Friday before Memorial Day to 9:00 p.m. the Wednesday after Memorial Day.
- (d) For Independence Day, between the hours of 6:00 a.m. July 3<sup>rd</sup> and 9:00 p.m. July 6<sup>th</sup>. If Independence Day is on a Friday, Saturday or Sunday, between the hours of 6:00 a.m. the Thursday before Independence Day and 9:00 p.m. the Tuesday after Independence Day.
- (e) For Labor Day, between the hours of 6:00 a.m. the Friday before Labor Day to 9:00 p.m. the Wednesday after Labor Day.
- (f) For Thanksgiving, between the hours of 6:00 a.m. the Tuesday before Thanksgiving to 9:00 p.m. the Tuesday of the following week.
- (g) For Christmas, between the hours of 6:00 a.m. the Friday before the week of Christmas Day and 9:00 p.m. the following Tuesday after the week of Christmas Day.
- (h) For any NASCAR event at the Charlotte Motor Speedway, between the hours of 6:00 a.m. the Wednesday before the 1<sup>st</sup> track event, until 9:00 p.m. the day after the last track event.

**Liquidated Damages for Intermediate Contract Time #1 for the above lane narrowing, lane closure, holiday and special event time restrictions for I-85, I-485, I-85 ramps, and I-485 ramps is \$2,500 per 15-minute period or any portion thereof.**

**Liquidated Damages for Intermediate Contract Time #2 for the above lane narrowing, lane closure, holiday and special event time restrictions for SR 2467 Mallard Cr. Rd. is \$1,500 per 15-minute period or any portion thereof.**

**2. Intermediate Contract Time #3 and #4 for Road Closure Restrictions for Construction Operations.**

The Design-Build Team shall follow the road closure restrictions listed below. When a road closure is used, the Design-Build Team shall reopen the travel lanes by the end of the road closure duration to allow the traffic queue to deplete before re-closing the roadway.

The Design-Build Team shall not close any direction of travel for the following roads during the times noted below. Closure of these roads or any ramps/loops shall only be allowed for the operations listed in this intermediate contract time restriction.

Road Name	Time Restrictions
I-85, I-485, I-85 ramps, I-485 ramps	Monday thru Sunday 5:00 a.m. to 12:00 a.m. (midnight)
SR 2467 Mallard Cr. Rd.	Monday through Friday 6:00 a.m. to 7:00 p.m. and Saturday and Sunday 9:00 a.m. to 7:00 p.m.

Maximum road closure duration of **30 minutes** shall be allowed for the roadways listed in this ICT for the following operations:

- 1) Traffic shifts to complete tie-in work and placement of pavement markings and markers
- 2) Installation of overhead sign assemblies and / or work on existing overhead sign assemblies over travel lanes

A maximum of nine road closures per direction of I-85 will be allowed for the removal of existing bridges and placement of proposed bridge girders. The Design-Build Team shall provide the maximum number of I-85 road closures per direction to be used in the Technical Proposal.

Proposed road closures for any road within the project limits shall be approved by the Engineer prior to incorporation in the Traffic Management Plans. The dates of the road closures shall be approved by the Department.

**Liquidated Damages for Intermediate Contract Time #3 for the above road closure time restrictions (including the specific offsite detours allowed in this scope and included in the Technical Proposal) for I-85, I-485, I-85 ramps, and I-485 ramps are \$5,000.00 per 15-minute period or any portion thereof.**

**Liquidated Damages for Intermediate Contract Time #4 for the above road closure time restrictions for SR 2467 Mallard Cr. Rd. are \$2,500.00 per 15-minute period or any portion thereof.**

#### 4. Hauling Restrictions

The Design-Build Team shall adhere to the hauling restrictions noted in the NCDOT 2006 *Standard Specifications for Roads and Structures*.

The Design-Build Team shall conduct all hauling operations as follows:

- The Design-Build Team shall not haul against the flow of traffic of an open travelway unless an approved temporary traffic barrier or guardrail protects the work area.
- The Design-Build Team shall not haul during the holiday and special events time restrictions listed in Intermediate Contract Time #1 and #2.
- Haul vehicles shall not enter and / or exit an open travel lane at speeds more than 10 mph below the posted speed limit.
- Hauling access to I-85 and I-485 will be allowed at the beginning and ends of the project. Any additional hauling access points to the I-85 and I-485 shall be limited to those locations chosen by the Design-Build Team and approved by the Department.
- Single vehicle hauling and multi-vehicle hauling shall not be allowed ingress and egress from any open travel lane during the following time restrictions. The following hauling time restrictions apply only where egress and / or ingress occur between the work areas and any travel lane of the roads noted below. Hauling operations that are conducted entirely behind a temporary traffic barrier or guardrail are allowed at all times and are excluded from the following time restrictions:

**For Single Vehicle Hauling**

<b>Road Name</b>	<b>Day and Time Restrictions</b>
All roads	6:00 a.m. to 9:00 a.m. and Monday – Friday 3:00 p.m. to 9:00 p.m.

**For Multi-Vehicle Hauling**

<b>Road Name</b>	<b>Day and Time Restrictions</b>
I-485 and Mallard Creek Road	6:00 a.m. to 9:00 a.m. and Monday – Friday 3:00 p.m. to 9:00 p.m.
I-85, including all ramps and loops	6:00 a.m. to 9:00 p.m. Monday – Sunday

The Design-Build Team shall address how hauling will be conducted in the Technical Proposal, including but not limited to, hauling of materials to and from the site, hauling of materials within NCDOT right of way, an explanation of how a safe ingress and egress shall be provided and a description of the impacts on traffic.



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

The Design-Build Team shall not install more than two (2) miles of lane closures on any roadway within the project limits or in conjunction with this project, measured from the beginning of the merge taper to the end of the lane closure.

On multilane facilities, the Design-Build Team shall not install more than one simultaneous lane closure, in any one direction.

The Design-Build Team shall 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.

When personnel and / or equipment are working within 15 feet of an open travel lane, the Design-Build Team shall close the nearest open shoulder using NCDOT *2006 Roadway Standard Drawing* No. 1101.04, unless the work area is protected by an approved temporary traffic barrier or guardrail.

When personnel and / or equipment are working on the shoulder adjacent to an undivided facility and within 5 feet of an open travel lane, the Design-Build Team shall close the nearest open travel lane using NCDOT *2006 Roadway Standard Drawing* No. 1101.02, unless the work area is protected by an approved temporary traffic barrier or guardrail.

When personnel and / or equipment are working on the shoulder adjacent to a divided facility and within 10 feet of an open travel lane, the Design-Build Team shall close the nearest open travel lane using NCDOT *2006 Roadway Standard Drawing* No. 1101.02, unless the work area is protected by an approved temporary traffic barrier or guardrail.

When personnel and / or equipment are working within a lane of travel of an undivided or divided facility, the Design-Build Team shall close the lane using the appropriate roadway standard drawing from the NCDOT *2006 Roadway Standard Drawings*. The Design-Build Team shall conduct the work so that all personnel and / or equipment remain within the closed travel lane.

The Design-Build Team shall not perform work involving heavy equipment within 15 feet of the edge of travelway when work is being performed behind a lane closure on the opposite side of the travelway.

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

The Design-Build Team shall backfill at a 6:1 slope up to the edge and elevation of the existing pavement and / or use proper traffic control setup to protect traffic from the drop off as follows:

- Elevation differences that exceed 2 inches on roadways with posted speed limits of 45 mph or greater and a paved shoulder four-foot wide or less.

- Elevation differences greater than 3 inches on roadways with posted speed limits less than 45 mph and with a paved shoulder four-foot wide or less.
- Refer to the 2002 *AASHTO Roadside Design Guide* for proper treatment of all other conditions.

Do not exceed a difference of 2 inches in elevation between open lanes of traffic for nominal lifts of 1.5 inches. Install advance warning “UNEVEN LANES” signs (W8-11) 1000 feet in advance and a minimum of every half mile throughout the uneven area.

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

The Design-Build Team shall notify the Engineer in writing at least twenty-one (21) calendar days prior to any traffic pattern alteration. (Reference the Public Information Scope of Work for public information requirements.)

#### **E. Signing**

The Design-Build Team shall install advance work zone warning signs when work is within 100 feet from the edge of travel lane and no more than three days prior to the beginning of construction.

When no work is being conducted for a period longer than one week, the Design-Build Team shall remove or cover all advance work zone warning signs, as directed by the Engineer. Stationary work zone warning signs shall be covered with an opaque material that prevents reading of the sign at night by a driver traveling in either direction.

When portable signs not in use for periods longer than 30 minutes, the Design-Build Team shall lay the portable work zone sign flat on the ground and collapse the sign stand and lay it flat on the ground.

The Design-Build Team shall be responsible for the design, installation and maintenance of all detour signing. The Design-Build Team shall cover or remove all detour signs within and off the project limits when a detour is not in operation.

The Design-Build Team shall ensure proper signing (including but not limited to guide signs) are in place at all times during construction, as required by the *MUTCD*.

#### **F. Traffic Barrier**

The Design-Build Team shall use only an NCDOT approved temporary traffic barrier system and adhere to the following requirements.

Install temporary traffic barrier system a maximum of two (2) weeks prior to beginning work in any location. Once the temporary traffic barrier system is installed at any location, proceed in a continuous manner to complete the proposed work in that location.

Once the temporary traffic barrier system is installed and no work has been or will be performed behind the temporary traffic barrier system for a period longer than two (2) months, remove / reset the temporary traffic barrier system unless the barrier is protecting a hazard.

Protect the approach end of temporary traffic barrier system at all times during the installation and removal of the barrier by either a truck mounted impact attenuator (maximum 72 hours) or a temporary crash cushion.

Protect the approach end of temporary traffic barrier system from oncoming traffic at all times by a temporary crash cushion unless the approach end of temporary traffic barrier system is offset from oncoming traffic as follows:

<b>Posted speed limit (MPH)</b>	<b>Minimum offset (feet)</b>
40 or less	15
45 - 50	20
55	25
60 mph or higher	30

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

Install drums to close or keep closed tangent sections of the roadway until the temporary traffic barrier system can be placed or after the temporary barrier system has been removed. The distance, in feet, between drums shall be no greater than twice the posted speed limit (MPH).

At acceleration ramps / loops, install temporary traffic barrier system in a manner that provides a minimum of 200 feet from the end of the pavement marking taper to the beginning of the barrier taper.

The Design-Build Team shall be responsible for providing proper connection between the existing bridge rail and the temporary barrier system and include this information in the appropriate plans.

## **G. Traffic Control Devices**

The Design-Build Team shall use traffic control devices that conform to all NCDOT requirements and are listed on the NCDOT's Approved Products List. The Approved Products List is shown on NCDOT's Work Zone Traffic Control website. The use of any devices that are not shown on the Approved Product List shall require written approval from the Transportation Management Director.

In tangent sections, channelizing device spacing shall not exceed a distance in feet equal to twice the posted speed limit. At intersections and driveway radii, channelization devices shall be spaced 10 feet on-center and 3 feet off the edge of an open travelway, when lane closures are not in effect. Skinny drums shall only be allowed as defined in Section 1180 of the 2006 *NCDOT Standard Specifications for Roads and Structures*.

Place Type III barricades, with "ROAD CLOSED" signs (R11-2) attached, of sufficient length to close entire roadway. Stagger or overlap barricades to allow for ingress or egress.

When a CMS is placed within the clear zone, provide proper delineation and protection for the traveling public.

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

## **H. Temporary Pavement Markings, Markers and Delineation**

The Design-Build Team shall provide a Temporary Pavement Marking Plan that meets the requirements of the RFP and the *Guidelines for Preparation of Traffic Control and Pavement Marking Plans for Design-Build Projects*.

The Design-Build Team shall use pavement marking and marker products that conform to all NCDOT requirements and are listed on the NCDOT's Approved Products List. The Design-Build Team may contact the NCDOT Signing and Delineation Unit for the aforementioned Approved Products List. The use of any devices that are not on the Approved Product List shall require written approval from the Transportation Program Management Director.

The Design-Build Team shall install pavement markings and markers in accordance with the NCDOT 2006 *Standard Specifications for Roads and Structures*, and in accordance with the manufacturer's procedures and specifications.

The Design-Build Team shall install temporary pavement markings that are the same width as existing pavement markings on all roadways.

The Design-Build Team shall install temporary pavement markings on all Full Control of Access interstate facilities and US routes with widths shown.

<b>Marking</b>	<b>Temporary</b>
Lane line, edge line, skips and mini-skips	4"
Gore	8"

The Design-Build Team shall install temporary pavement markings and temporary pavement markers on the interim surface or temporary pattern as follows:

<b>Road</b>	<b>Marking</b>	<b>Marker</b>
I-85, I-485	Cold Applied Plastic (Type IV)	Raised Temporary
Existing I-85 ramps, I-485 ramps, SR 2467 Mallard Cr. Rd.	Minimum of Paint	Raised Temporary
Proposed structures	Cold Applied Plastic (Type IV)	Raised Temporary

The Design-Build Team may use any type of pavement markings on the NCDOT Approved Products List for temporary pattern. However, the Design-Build Team shall maintain a minimum retroreflectivity for pavement markings on all roads (existing and temporary) at all times during construction, as follows:

White:	125 mcd / lux / m <sup>2</sup>
Yellow:	100 mcd / lux / m <sup>2</sup>

When using Cold Applied Plastic (Type IV) pavement markings, place temporary raised markers half on and half off edgelines and centerlines to help secure the tape to the roadway. Markers shall be spaced the appropriate distance apart as described by the 2006 *Roadway Standard Drawing* 1250.01, Sheet 1 of 3.

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.

The Design-Build Team shall not place temporary markings on any final asphalt pavement surface unless the temporary markings are placed in the exact location of the final pavement marking.

The Design-Build Team shall remove all conflicting markings or markers prior to shifting traffic to a new pattern.

Unless noted otherwise elsewhere in this RFP, removal of the temporary pavement markings on asphalt surfaces shall be accomplished by an NCDOT approved system to minimize damage to the road surface. All temporary pavement markings on concrete pavement shall be removed by water blasting. The Design-Build Team shall remove 100% of all temporary pavement markings without removing more than 1/32-inch of the pavement surface.

## I. Miscellaneous

Provide portable temporary lighting to conduct night work in accordance with the NCDOT 2006 *Standard Specifications for Roads and Structures*.

Provide proper drainage for all temporary alignments and / or traffic shifts.

Law enforcement officers may be used to help protect workers and road users, and to maintain safe and efficient travel through the work zones. The Design-Build Team shall be responsible for coordinating with the law enforcement agency for the use of law enforcement officers. The Design-Build Team shall address where and why law enforcement officers will be used. The Design-Build Team shall only utilize Officers who are outfitted with law enforcement uniforms and marked vehicles, which are equipped with proper lights mounted on top of the vehicle and agency emblems.

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No Parking / Tow Away Zone signs shall be installed 1000 feet in advance of the *Begin Road Work* sign on all on-ramps within the project limits, and a minimum of every 3000 feet in each direction of I-85 and I-485 within the project limits.

The Department will obtain a speed reduction ordinance when workers and / or lane closures are present on I-85.

The Department may grant a \$250 speeding penalty ordinance provided the project meets or exceeds the criteria.

The Design-Build Team shall be responsible for all required temporary shoring, including but not limited to providing, installing, maintaining and removing. Temporary shoring for the maintenance of traffic is defined as shoring necessary to provide lateral support to the side of an excavation or embankment parallel to an open travelway when a theoretical 2:1 (H:V) slope from the bottom of the excavation or embankment intersects the existing ground line closer than 5 feet from the edge of pavement of the open travelway. The Design-Build Team shall identify locations where temporary shoring for maintenance of traffic will be required on the Traffic Control Staging Concept. The Design-Build Team shall install temporary traffic barrier as shown on a detail available from the Work Zone Traffic Control Unit that provides design information on the temporary traffic barrier location in relation to the temporary shoring and traffic location. The NCDOT Geotechnical Engineering Unit and Work Zone Traffic Control Section websites have more information on temporary shoring. (Notes related to Temporary Shoring are not required in the General Notes sheet for the Traffic Management Plan)

**<http://www.ncdot.org/doh/preconstruct/highway/geotech/formdet/standards.html>**

**<http://www.ncdot.org/doh/preconstruct/wztc/DesRes/English/TemporaryShoring/TempShoring.pdf>**

The Design-Build Team shall adhere to the additional shoring requirements located on the Work Zone Traffic Control Unit and Geotechnical Engineering Unit websites.

The Design-Build Team shall identify on the appropriate traffic control detail where temporary shoring will be used by providing station limits, offsets, the type of shoring and where temporary traffic barrier will be located if needed.

#### **J. Traffic Control Supervisor**

The Design-Build Team shall furnish a Traffic Control Supervisor for the project who is knowledgeable of Traffic Management Plan design, devices and application, and has full authority to ensure traffic is maintained in accordance with the plans and specifications.

The Traffic Control Supervisor shall be present on the project site overseeing the Road Closure operations to ensure traffic control devices are properly installed and adjusted as necessary. The Traffic Control Supervisor shall also make necessary changes to the traffic control operations and aide in the monitoring of traffic queuing.

The Design-Build Team shall identify a Traffic Control Supervisor in their Technical Proposal that has the following qualifications:

- (A) A minimum 24 months of On-the-Job Training in supervision and work zone set up and implementation on similar projects.
- (B) Be certified by responsible party (contractor or NCDOT) to have the required experience and training and is qualified to perform the duties of this position. If certified by the Contractor, a notarized certification letter shall be furnished to the Engineer at the preconstruction meeting. The letter shall state the Traffic Control Supervisor is qualified, and state that the Traffic Control Supervisor has the authority to ensure traffic is maintained in accordance with the contract documents.

The Traffic Control Supervisor for the project shall be capable of performing the following:

- (1) Be available and on call at all times to direct / make any necessary changes in the traffic control operations in a timely and safe manner.
- (2) Coordinate and cooperate with traffic control supervisors of adjacent, and overlapping construction projects, as well as construction projects in proximity to the subject project, to ensure safe and adequate traffic control setup is maintained throughout the project at all times, including periods of construction inactivity.
- (3) Coordinate and cooperate with Department Traffic Management Center personnel in Mecklenburg County to ensure proper messages are displayed on the CMSs and DMSs.
- (4) Provide traffic control setup that ensures safe traffic operations and workers' safety throughout the construction area.
- (6) Attend all scheduled traffic control coordination meetings, as required by the Engineer.
- (7) Monitor traffic delays and backups within the work zone. Coordinate with the TMC as required by this Scope of Work. (Reference Design Parameter #13)

**ENVIRONMENTAL PERMITS SCOPE OF WORK** (05-27-10)**General**

The Design-Build Team shall be responsible for preparing all documents necessary for the Department to obtain the environmental permits for the construction requirement for this project. Permit applications shall be required for the: US Army Corps of Engineers (USACE) Section 404 Permit, NC Department of Natural Resources (DENR) Division of Water Quality (DWQ) Section 401 Water Quality Certification. After further consultation with the permitting agencies, the permit for TIP Project R-2248E and the permit for TIP Project R-2123CE shall be submitted separately. The Design-Build Team shall not begin ground-disturbing activities, including utility relocation, in the immediate vicinity of the Sunflower population and jurisdictional areas, until the environmental permits have been issued (this does not include permitted investigative borings covered under Nationwide Permit # 6).

The Department will allow no direct contact between the Design-Build Team and representatives of the environmental agencies. No contact between the Design-Build Team and the environmental agencies shall be allowed either by phone, e-mail or in person, without representatives of the Department's Project Development & Environmental Analysis (PDEA) Branch and / or the Division's Environmental Officer present. A representative from the Transportation Program Management shall be included on all correspondence.

The Design-Build Team may begin utility relocation work prior to obtaining the aforementioned permits provided that (1) the Department is notified in writing prior to these activities; (2) such activities are outside jurisdictional resources. Upon consultation with the NCDOT Natural Environment Unit, a meeting may be required with the permitting agencies prior to beginning work.

Prior to any utility relocation and throughout construction of the project, the Design-Build Team shall clearly demark the Schweinitz's Sunflower population located adjacent to Mallard Creek Rd with a tree protection fence to prevent disturbance to the species. A field meeting with the Department shall be held in order to assist the Design-Build Team with the demarcation of this area. Disturbance of the Sunflower population shall be prohibited, including disturbance by utility relocation / construction. Upon completion of construction, the Design-Build Team shall install typical control of access fencing (minus the barbed wire top) on the Right-of-Way boundary between the population of Schweinitz's sunflower and the adjacent subdivision property owners. This fence shall extend 20 feet in both directions from the sunflowers.

The Department has reached concurrence points 2A and 4A in the Merger Process used by the environmental agencies and the Department to obtain environmental permits for projects. The Design-Build team is required to participate and present information for concurrence point 4B and 4C that are necessary to complete the Merger process. 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 shall not allow any contract time extensions associated



with this additional coordination. The Design-Build Team is directed to follow the appropriate details in the document titled “Merger Implementation Team – Merger Process Information” which will be provided to the short-listed Design-Build Teams.

The Department will schedule the 4B and 4C meeting for R-2123CE for December 2010 and March 2011, respectively. The Design Build Team shall clearly identify in their Technical Proposal if they are proposing earlier dates for these meetings, and in such case, what months they would like the Department to schedule these meetings. Failure on the part of the Design-Build Team to meet these dates shall place all responsibility for delays resulting from missing these dates solely in the hands of the Design-Build Team.

Unless otherwise noted in this RFP, the Design-Build Team is bound by the terms of all signed planning documents and approved minutes and commitments of all concurrence meetings and is held accountable for meeting all permit conditions. The Design-Build Team shall be required to staff any personnel necessary to provide permit compliance.

### **Major Permit Application Process**

It is the Design-Build Team's responsibility to acquire information and prepare permit drawings that reflect the impacts and minimization efforts resulting from the Merger Process and from the project as designed by the Design-Build Team. Further it is the Design-Build Team's responsibility to provide these permit impact sheets (drawings) depicting the design and construction details to the Department as part of the permit application. The Design-Build Team shall be responsible for developing the permit application for all jurisdictional impacts. The permit application shall include all utility relocations. The permit application shall consist, at a minimum, of the following:

- Cover Letter
- Minutes from the 4B and 4C meetings
- Permit drawings
- Half-size plans
- Completed forms (Section 404, ENG 4345, etc.) appropriate for impacts

The Department will re-verify and update, as needed, the required environmental data that expires prior to the completion of the activity causing the impact in the jurisdictional areas. These include, but are not limited to, federally protected species, re-verification of wetland jurisdictional areas, historic and archaeological sites, and 303d (impaired) streams.

The Design-Build Team shall submit one permit application for the entire project. The Design-Build Team shall not submit multiple applications to develop a “staged permitting” process to expedite construction activities in a phased fashion.

Direct coordination between the Design-Build Team, the Department's Transportation Program Management Director, Division Environmental Officer (DEO), Resident Engineer, and the Project Development and Environmental Analysis Branch - Natural Environment Unit (PDEA-NEU) shall be necessary to ensure proper permit application development. Upon completion of

the permit application package, the Design-Build Team shall concurrently forward the package to the Transportation Program Management Director, Resident Engineer, Division Environmental Officer (DEO), Hydraulics Unit and PDEA-NEU for review and approval. After all revisions are complete, the Department will subsequently forward the package to the appropriate agencies to have the permit application placed on public notice.

Any temporary construction measures, including de-watering, construction access, etc. shall be addressed in the permit application. Impacts that result from so-called temporary measures may not be judged to be temporary impacts by the agencies. These issues shall be addressed and reviewed by PDEA-NEU prior to the 4B and 4C meetings and resolved with the agencies during the 4B and 4C meetings.

The Design-Build Team shall clearly indicate the location of and impacts of haul roads and utility relocations on jurisdictional areas. The Design-Build Team shall also identify all proposed borrow and waste sites. Further, the Design-Build Team shall describe the methods of construction of all structures. The description of the temporary impacts (haul roads, utility relocations, work bridges, etc.) shall include restoration plans, schedules, and disposal plans. This information shall be included in the permit application and/or modification. This information shall also be part of the data presented at the 4B and 4C meetings.

The NCDOT hereby commits to ensuring, to the greatest extent possible, that the footprint of the impacts in areas under the jurisdiction of the federal Clean Water Act will not be increased during the Design-Build effort. All fill material shall be immediately stabilized and maintained to prevent sediment from entering adjacent waters or wetlands. The Design-Build Team shall be responsible for ensuring that the design and construction of the project will not impair the movement of aquatic life.

Requests made for modifications to the permits obtained by the Design-Build Team shall only be allowed if the Engineer determines it to be in the best interest of the Department and will be strongly discouraged. The Design-Build Team shall not take an iterative approach to hydraulic design issues. The design shall be complete prior to permit modification application.

### **Individual Permit Timeframe**

The Design-Build Team should expect it to take up to 11 months to accurately and adequately complete all designs necessary for permit application, submit application to the Department, and obtain approval for the permits from the environmental agencies. Agency review time will be approximately 90 days from receipt of a “complete” package. No requests for additional contract time or compensation will be allowed if the permits are obtained within this 11-month period. With the exception of location and survey work and permitted investigative borings covered under a Nationwide #6, no mobilization of men, materials, or equipment for site investigation or construction of the project shall occur prior to obtaining the permits (either within the 11-month period or beyond the 11-month period). This limitation does not preclude the off-site fabrication of bridge members or equipment. The Department will not honor any requests for additional contract time or compensation, including idle equipment or mobilization or demobilization costs, for the Design-Build Team mobilizing men, materials (or ordering materials), or equipment prior to obtaining all permits. The Department will consider requests for contract time extensions for

obtaining the permits only if the Design-Build Team has pursued the work with due diligence, the delay is beyond the Team's control, and the 11-month period has been exceeded. If time were granted it would be only for that time exceeding the 11-month period. This 11-month period is considered to begin on the Date of Availability as noted in the contract.

The Design-Build Team needs to be aware that the timeframes listed above for review by PDEA, NCDWQ, and the USACE, to review any permit applications and/or modifications begin only after a fully complete and 100% accurate submittal.

### **Mitigation Responsibilities of the Design-Build Team**

The Design-Build Team shall be responsible for providing on-site mitigation plans for R-2123CE. See the "On-Site Mitigation Scope of Work" for details.

The Ecosystem Enhancement Program will provide the remaining compensatory mitigation for unavoidable impacts to wetlands and surface waters resulting from project construction.

Any changes proposed by the Design-Build Team to any design or construction details provided by the Department shall be approved by the Department prior to being submitted to the resource agencies for their approval.

Should additional jurisdictional impacts result from revised design/construction details, suitable compensatory mitigation for wetlands and/or streams shall be the sole responsibility of the Design-Build Team. Therefore, it is important to note that additional mitigation will have to be approved by the agencies and such approval will require, at a minimum, the preparation and approval of a mitigation plan before permits are approved and before construction may commence. To mitigate for these additional jurisdictional impacts, the Design-Build Team shall be responsible for all costs associated with acquiring suitable on-site mitigation. Construction of all on-site mitigation shall be performed by a contractor that has successfully constructed similar on-site mitigation. In the absence of suitable on-site mitigation, the Design-Build Team shall be responsible for acquiring additional mitigation from the EEP.

The Design-Build Team shall analyze all new areas to be impacted that have not been analyzed during the NEPA process and preparation of permit applications or any staging areas that are located outside the project right-of-way shall be analyzed. This analysis shall include performing all environmental assessments. These assessments require the Design-Build Team to engage the services of a competent environmental consultant to conduct a full environmental investigation to include, but not be limited to, Federally listed Threatened and Endangered Species, wetlands, streams, avoidance and minimization in jurisdictional areas, compensatory mitigation, FEMA compliance, and historical, archaeological, and cultural resources surveys in these areas. The environmental consultant shall obtain concurrence through PDEA-NEU and from the United States Fish and Wildlife Service to document compliance with Section 7 of the *Endangered Species Act* for those species requiring such concurrence. In addition, the Design-Build Team shall identify additional mitigation required; identify the amount of time the modification will take beyond the 11 month period, and the fulfillment of any other requirements that may be imposed by the permitting agencies to obtain the permit. Any contract time extensions resulting from additional environmental assessments required by the Design-Build Team's design and / or

construction details impacting areas outside those previously analyzed through the NEPA Process shall be solely at the Department discretion.

### **Commitments**

The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize wetland impacts and to provide full compensatory mitigation of all remaining wetland impacts. Avoidance measures were taken during the planning and NEPA phases and minimization measures were incorporated as part of the project development. The Design-Build Team shall incorporate these avoidance and minimization features plus any minimization identified during the 4B and 4C process into the design.

All work by the Design-Build Team must be accomplished in strict compliance with the plans submitted with the Section 404, and 401 permit applications and in compliance with all conditions of the permits and certifications issued by the agencies. The Design-Build Team shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of the permits.

The Design-Build Team shall strictly adhere to these commitments, as well as others, including but not limited to, those made as part of the CE, all permits, and Merger meetings.

If the Design-Build Team discovers any previously unknown historic or archeological remains while accomplishing the authorized work, he shall immediately notify NCDOT Staff Archaeologist and/or NCDOT Project Development Engineer, as listed below, who will initiate the required State/Federal coordination. All questions regarding these sites should be addressed to Mr. Matthew Wilkerson, NCDOT Archaeology (919) 431-1609, or Mr. Ryan White, PE, NCDOT Project Development Engineer (919) 733-7844, ext. 245.

**SIGNING SCOPE OF WORK** (06-23-10)**General**

The Signing Plans shall be prepared by the Design-Build Team in accordance with the latest edition of the *2009 Manual on Uniform Traffic Control Devices (MUTCD)*, the *2004 NC Supplement to the MUTCD*, *NCDOT Standard Specifications for Roads and Structures* (July 2006), the NCDOT Roadway Standard Drawings (July 2006) for the design and development of signing plans, the latest Standard Specifications for *Structural Supports for Highway Signs, Luminaires, and Traffic Signals* published by AASHTO, “*Guidelines for Preparation of Signing Plans for Design-Build Projects*”, and the “*Design-Build Submittal Guidelines*” and the contract requirements contained herein.

**Signing Plan Requirement**

The Design-Build Team shall select a Private Engineering Firm (PEF) that has experience in designing and sealing Signing Plans for NCDOT on projects comparable to this project. The Technical Proposal shall list projects including description and similarity to the subject project. The Design-Build Team shall include preliminary signing plans for this project in their Technical Proposal.

**Signs Furnished by Design-Build Team**

The signs shall be furnished by the Design-Build Team according to the specifications provided by the NCDOT.

**Signing Project Limits**

Unless otherwise noted herein, the Design-Build Team shall design, furnish, and install signs for this project as if both the I-3803B and R-2248E projects are complete. The Design-Build Team shall be responsible for the design, fabrication and installation of all signs required through the construction limits of the mainline and all -Y- Lines. The Design-Build Team shall also be responsible for the design, fabrication and installation of all signs required along I-85 from the northern roadway project limits to beyond the I-85 southern roadway project limits. The Design-Build Team shall also be responsible for the design, fabrication and installation of all signs required along I-485 from the western roadway project limits to beyond the I-485 eastern roadway project limits. The signing limits shall extend along EB I-485 beyond US29 to the extent necessary to appropriately sign the pavement marking changes that accommodate the laneage denoted in the IMR, Appendix Q, Alternative 10. The Design-Build Team shall also be responsible for the design, fabrication and installation of all signs required on Mallard Creek Rd. to ensure adequate advance signage and spacing is provided.

For all I-485 signs and all I-485 advance guide signs, the Design-Build Team shall provide both cardinal directions and INNER / OUTER designations. Specifically, the Design-Build Team shall provide NORTH / SOUTH cardinal directions directly above the interstate shield or beside the interstate shield, as depicted in Chapter E of the *MUTCD*. If the cardinal direction is placed directly

above the interstate shield, the Design-Build Team shall provide the INNER / OUTER designation directly below the interstate shield. If the cardinal direction is placed beside the interstate shield, the Design-Build Team shall provide the INNER / OUTER designation directly below the cardinal direction.

The posted speed limit for this facility shall be 65 MPH.

### **Sign Design**

The Design-Build Team shall be responsible for all Type A, B, and D sign designs, fabrication and installation for ground mounted signs. The Design-Build Team shall be responsible for sizing, fabricating, locating and installing all Type E (warning and regulatory signs), Type F signs (route marker assemblies) and milemarkers.

The Design-Build Team shall design, fabricate and install milemarkers every 0.2 mile on both I-85 and I-485. Each milemarker location shall have milemarkers mounted back to back in the median for each direction of travel on the mainline. The milemarker designs shall be in accordance with the Intermediate Enhanced Reference Location Signs (D10-5) referenced in the *Standard Highway Signs* (2004 Edition).

The Design-Build Team shall design, fabricate and install Thru Bolts for Type "A" Signs in accordance with the revised NCDOT Roadway Standard Drawing No. 901.10 dated January 2008. The revised Roadway Standard Drawing is located at the following website:

<http://www.ncdot.org/doh/preconstruct/traffic/congestion/SIGN/signstd/>

All sign designs shall be included in the Signing Plans. All sign designs shall be prepared using the latest version of GuideSign software. The latest GuideSign updates are located at the following website:

<http://www.ncdot.org/doh/preconstruct/traffic/congestion/SIGN/default.html>

### **Logo and Incidental Signs**

The Design-Build Team is not responsible for designing, locating, or installing any new Logo signs (blue service signs with specific business panels included on signs). The Design-Build Team shall be responsible for relocating existing Logo Signs and any other incidental signs upon completion of the widening, realignment or other construction operations.

### **Sign Maintenance**

The Design-Build Team shall maintain all existing signs during construction, including temporary installations of **Guide and Logo Signs** on supports to ensure signs are properly maintained and visible during project construction. If damage occurs to the Logo Signs or the business panels during construction or installation, notify the Division Logo Coordinator as soon as possible. The Design-Build Team shall be responsible for replacement of Logo Signs or Logo business panels should damage occurs. If the Logo Signs are removed and disposed of per the RFC signing plans, the business panels on the signs shall be removed and returned to the Division Logo Coordinator.

The order of preference for Logo Signs shall be maintained during project construction (see MUTCD section 2F.02).

### **Temporary Signs**

The Design-Build Team shall be responsible for designing, fabricating, and installing temporary signs and supports. Reference the Signing Section of the Traffic Management Scope of Work found elsewhere in this RFP for additional temporary signing requirements.

### **Sign Locations**

The Design-Build Team shall be responsible for determining the station locations for all signs. To avoid sign placement in locations where their usefulness will be short-lived, the Design-Build Team shall coordinate the proposed sign designs and locations with existing and future projects through the Department.

### **Ground Mounted Support Designs**

NCDOT will provide the software for ground mounted sign support designs. The Design-Build Team is responsible for all design, fabrication, and installation of ground mounted supports and signs. Instructions for loading support design software will be made available upon request.

### **Overhead Sign Assemblies**

The Design-Build Team shall design, fabricate and install overhead sign assemblies that meet all Department requirements. The windspeed for the overhead sign assembly designs shall be 90 mph. The Design-Build Team shall be responsible for calculating the windload area for the overhead sign assembly. The windload area shall be flush with the sign height and width. When calculating the windload area, the Design-Build Team shall include exit panels as part of the sign height. The coordination with future projects and sign messages shall be considered when designing and fabricating overhead sign assemblies.

The minimum vertical clearance beneath all overhead sign assemblies shall be 17 feet. The Design-Build Team shall submit written verification of the actual vertical clearance of overhead sign structures.

The Design-Build Team shall design, fabricate, and install overhead and pedestal sign supports and foundations in accordance with the Overhead Sign Supports and Overhead Sign Foundations Project Special Provisions found elsewhere in this RFP.

When applicable, the Design-Build Team has the option to mount signs vertically centered on the horizontal member of the overhead structure or to locate the bottom edge of all signs on each assembly in a horizontal plane.

Lighting will not be required on overhead sign assemblies.

### **Pedestal Overhead Sign Assemblies Option**

For multi-lane facilities, the Design-Build Team has the option to design pedestal overhead sign assemblies or cantilever overhead sign assemblies for advance guide signs only. Pedestal overhead sign assemblies shall not be allowed for signs with “EXIT ONLY” designations. Exit directional signing shall be mounted on cantilever overhead sign assemblies over the appropriate lane(s). The Design-Build Team shall clearly indicate in their Technical Proposal their intention to provide pedestal overhead sign assemblies for advance guide signs.

All pedestal overhead sign assemblies shall have a 20-foot maximum offset from the edge of pavement to the centerline of the support. The Design-Build Team shall install guardrail or other approved positive protection barrier.

### **Overhead Sign Supports for Freeways**

Overhead sign supports shall be located 40 feet from the edge of the outside travel lane to the center of the sign support. If the 40-foot distances cannot be obtained, the overhead sign supports shall be located 20 feet from the outside travel lane and protected by guardrail or other NCDOT approved positive protection barrier.

The Design-Build Team shall provide the appropriate positive protection and drainage for all overhead sign median supports.

### **Overhead Sign Sheeting**

The Design-Build Team shall design and fabricate overhead signs using Type VIII, IX, or XI reflective sheeting for the legends (text) and background. The Type of sheeting selected by the Design-Build Team shall be consistent throughout the project.

### **Guardrail or Other Protection for Signs and Overhead Assemblies**

The Design-Build Team shall be responsible for determining, designing and installing any protection for proposed and existing sign supports. Guardrail protection for overhead assembly foundations in the median shall allow access through guardrail for mowing operations.

### **Signing Roadway Standards, Typical Sheets and Specifications**

Signing roadway standards and typical sheets to be used in summarizing quantities, standard specifications, and compiling Type E and F signs can be located at the following website:

**<http://www.ncdot.org/doh/preconstruct/traffic/congestion/SIGN/default.html>**

The Design-Build Team shall incorporate the appropriate information onto these sheets and submit them to the Transportation Program Management Director for review and acceptance.



**Removal and Disposal of Existing Signs**

The Design-Build Team shall be responsible for determining those existing signs that will no longer be needed upon completion of the project, such as on -Y- lines and project tie-ins. The Design-Build Team shall be responsible for removal and disposal of these signs and supports. The Design-Build Team shall show and note these signs on the signing plan view sheets.

**Construction Revisions**

After submittal of RFC Signing Plans, all construction revision shall be submitted to the Department for review and acceptance prior to incorporation.

**EROSION AND SEDIMENTATION CONTROL SCOPE OF WORK** (10-21-09)

The NCDOT REU shall review and accept all Erosion and Sedimentation Control Plans. Clearing & Grubbing and Final Grade Release for Construction (RFC) Erosion Control Plans shall be submitted to all NCDOT Personnel listed in the Design-Build Submittal Guidelines before **any** land disturbing activities, including clearing and grubbing, can commence. If the Design-Build Team chooses to perform the work in discrete sections, then a complete set of Clearing & Grubbing and Final Grade RFC Erosion Control Plans shall be submitted, accepted, and distributed as noted above prior to land disturbing activities, including clearing and grubbing, commencing in that section. No land disturbing activities, including clearing and grubbing, shall occur in any location that does not have accepted Clearing & Grubbing and Final Grade RFC Erosion Control Plans. Refer to the most recent version of the *NCDENR - Erosion and Sediment Control Planning and Design Manual* for erosion control design guidelines not addressed in this Scope of Work.

Erosion and Sedimentation Control Plans shall at a minimum address the following:

**I. Complete Set of Plans****A. Clearing and Grubbing Phase**

1. Use correct NCDOT symbology
2. Protect existing drainage structure inlets with Rock Inlet Sediment Trap Type 'A' (RIST-A), Rock Inlet Sediment Trap Type 'C' (RIST-C), Rock Pipe Inlet Sediment Trap Type 'A' (PIST-A), etc.
3. Utilize adequate perimeter controls (temporary silt ditches (TSD), temporary silt fence (TSF), etc.)
4. Utilize skimmer basins and rock measures with sediment control stone (Temporary Rock Sediment Dam Type 'B' (TRSD-B), Temporary Rock Silt Check Type 'A' (TRSC-A), etc.) at drainage outlets
5. Take into account existing topography and show contour lines
6. Utilize Temporary Rock Silt Checks Type 'B' (TRSC-B) to reduce velocity in existing ditches with spacing of 250 feet divided by percentage of ditch grade. Also utilize TRSC-B's in proposed TSD's and temporary diversions (TD)
7. Protect existing streams; do not place erosion control devices in live streams
8. Provide adequate silt storage for 3600 cubic feet per disturbed acre and sediment basins shall be sized with surface area equal to 435 square feet per cubic foot per second (cfs) of the peak inflow rate, Q10, using 10-year peak rainfall data (*NCDENR - Erosion and Sediment Control Planning and Design Manual* or NOAA's National Weather Service web site [http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc\\_pfds.html](http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html) for partial duration (ARI) time series type). A Sediment Basin Designer Spreadsheet will be provided by the NCDOT Roadside Environmental Unit (REU) upon request.
9. Design Riser Basins to the following standards:
  - a. Surface Area shall be determined by Equation A(sq. feet) = Q10(cfs) \* 435

- b. Volume requirement shall be 1800 cubic feet per disturbed acre draining to the riser basin
  - c. Riser Pipe shall have a cross-sectional area 1.5 times that of the barrel pipe
  - d. The riser pipe shall be non-perforated with a skimmer attached to the bottom of the pipe 1 ft. from the bottom of the basin
  - e. See *NCDENR - Erosion and Sediment Control Planning and Design Manual* for additional design criteria
10. Skimmer Basins shall provide adequate silt storage for 1800 cubic feet per disturbed acre with surface area equal to 325 square feet per cubic foot per second (cfs) of the peak inflow rate, Q10, using the 10-year peak rainfall data (*NCDENR - Erosion and Sediment Control Planning and Design Manual* or NOAA's National Weather Service web site [http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc\\_pfds.html](http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html) for partial duration (ARI) time series type). A Skimmer Basin Designer Spreadsheet will be provided by the NCDOT Roadside Environmental Unit (REU) upon request.
  11. The minimum and maximum length to width ratio of all Sediment Basins shall be 2:1 and 6:1, respectively.
  12. Coir Fiber Baffles shall be installed in all silt basins and sediment dams at drainage outlets. For silt basins with a 20-foot or longer length, three Coir Fiber Baffles shall be installed with a spacing of 1/4 the basin length. For silt basins with a length less than 20 feet, a minimum of two Coir Fiber Baffles shall be installed, with a spacing of 1/3 the basin length. The Design-Build Team will not be required to show the individual baffles on the Erosion Control Plans, but shall be required to incorporate the Coir Fiber Baffle Detail on the Erosion Control Plans.
  13. Include any culvert and / or pipe construction sequence plan sheets in the Clearing & Grubbing Erosion Control Plans; all pipes 48" or larger, or any combination of pipes that total 48" or more require a construction sequence. Prior to installation of pipes smaller than 48 inches in jurisdictional areas, the Design Build Team shall submit a phasing plan for managing the watercourse to the Resident Engineer for review and acceptance. The phasing plan shall be in accordance with the Best Management Practices for Construction and Maintenance Activities.
  14. Incorporate temporary sediment basins into permanent stormwater devices.
  15. Utilize Wattles with Polyacrylamide (PAM) and/or TRSC-A's with Matting and PAM in temporary and permanent, existing and proposed ditches at a spacing of 50 feet in areas where sediment basins are not feasible at drainage outlets, and in areas where sediment basins at drainage outlets with sediment traps (i.e. PIST-A, RIST-A, etc.) cannot be properly sized to surface area and / or sediment storage requirements due to safety concerns, right of way restrictions, utility conflicts or other construction limitations approved by the Roadside Environmental Unit.

## B. Final Grade Phase

1. Use correct NCDOT symbology
2. Protect existing and proposed drainage structure inlets with RIST-A, RIST-C, PIST-A, etc.
3. Utilize adequate perimeter controls (TSD, TSF, etc.)

4. Utilize TRSC-B's to reduce velocity in existing and proposed ditches with spacing of 250 feet divided by percentage of ditch grade. Also utilize TRSC-B's in proposed TSD's and TD's
5. Utilize temporary slope drains and earth berms at top of fill slopes 8 feet or higher and a fill slope grade of 3:1 or steeper, or where there are superelevations above 0.04 and fills are greater than 5 feet. Maximum slope drain spacing shall be 200 feet.
6. Utilize rock energy dissipater and / or silt basin at outlet of slope drain
7. Devices at all drainage turnouts shall utilize skimmers or sediment control stone (TRSD-B, TRSC-A, etc.) and a spillway with an adequately designed base length to distribute outflow
8. Provide adequate silt storage for 3600 cubic feet per disturbed acre and sediment basins shall be sized with surface area equal to 435 square feet per cubic foot per second (cfs) of the peak inflow rate, Q10, using 10-year peak rainfall data (*NCDENR - Erosion and Sediment Control Planning and Design Manual* or NOAA's National Weather Service web site [http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc\\_pfds.html](http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html) for partial duration (ARI) time series type). A Sediment Basin Designer Spreadsheet will be provided by NCDOT REU upon request
9. Provide matting for erosion control in all ditch lines, including but not limited to temporary ditch lines (TDs) utilized to divert offsite runoff around construction areas, where the velocity is greater than 2.0 ft/s, and the shear stress is 1.55 psf or less. For ditch lines with a shear stress above 1.55 psf, Permanent Soil Reinforcement Mat or Rip Rap shall be utilized
10. Provide matting for erosion control on all fill slopes 2:1 or steeper
11. Design Riser Basins to the following standards:
  - a. Surface Area shall be determined by Equation  $A(\text{sq. feet}) = Q10(\text{cfs}) * 435$
  - b. Volume requirement shall be 1800 cubic feet per disturbed acre draining to the riser basin
  - c. Riser Pipe shall have a cross-sectional area 1.5 times that of the barrel pipe
  - d. The riser pipe shall be non-perforated with a skimmer attached to the bottom of the pipe 1 ft. from the bottom of the basin
  - e. See *NCDENR - Erosion and Sediment Control Planning and Design Manual* for additional design criteria
12. Skimmer Basins shall provide adequate silt storage for 1800 cubic feet per disturbed acre with surface area equal to 325 square feet per cubic foot per second (cfs) of the peak inflow rate, Q10, using the 10-year peak rainfall data (*NCDENR - Erosion and Sediment Control Planning and Design Manual* or NOAA's National Weather Service web site [http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc\\_pfds.html](http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html) for partial duration (ARI) time series type). A Sediment Basin Designer Spreadsheet will be provided by the NCDOT Roadside Environmental Unit (REU) upon request
13. The minimum and maximum length to width ratio of all Sediment Basins shall be 2:1 and 6:1, respectively
14. Coir Fiber Baffles shall be installed in all silt basins and sediment dams at drainage outlets. For silt basins with a 20-foot or longer length, three Coir Fiber Baffles shall be installed with a spacing of 1/4 the basin length. For silt basins with a length less than 20 feet, a minimum of two Coir Fiber Baffles shall be installed, with a spacing of 1/3

- the basin length. The Design-Build Team will not be required to show the individual baffles on the Erosion Control Plans, but shall be required to incorporate the Coir Fiber Baffle Detail on the Erosion Control Plans
15. Incorporate temporary sediment basins into permanent stormwater devices
  16. Utilize Wattles with Polyacrylamide (PAM) and/or TRSC-A's with Matting and PAM in temporary and permanent, existing and proposed ditches at a spacing of 50 feet in areas where sediment basins are not feasible at drainage outlets, and in areas where sediment basins at drainage outlets with sediment traps (i.e. PIST-A, RIST-A, etc.) cannot be properly sized to surface area and / or sediment storage requirements due to safety concerns, right of way restrictions, utility conflicts or other construction limitations approved by the Roadside Environmental Unit.

### C. Intermediate Phase

Intermediate Erosion Control Plans shall only be required if design modifications and / or site conditions require additional erosion control design or design revisions to the RFC Clearing and Grubbing and / or RFC Final Grade Erosion Control Plans. Intermediate Plans shall be submitted for review and shall be accepted prior to construction of any aspect impacted by the revised erosion control design. For any intermediate phase, comply with Section B, "Final Grade Phase" above.

## II. Detail Sheets and Notes

- A. Provide project specific special notes and details such as temporary rock silt check type B, coir fiber baffle, skimmer basin, wattle with Polyacrylamide (PAM), etc.
- B. Provide matting summary sheet(s): matting for erosion control and permanent soil reinforcement mat
- C. Provide reforestation sheet(s): regular, wetland, streambank and / or buffer showing appropriate species

## III. Title Sheet

- A. Show correct notes: HQW, ESA, clearing and grubbing, etc.
- B. Show correct standards for project
- C. List of standard NCDOT symbology
- D. Show name and certification number of Level IIIA certified individual responsible for designing and / or reviewing Erosion and Sedimentation Control Plans

## IV. Special Provisions

- A. Erosion Control Special Provisions are available at the following website:

[http://www.ncdot.org/doh/operations/dp\\_chief\\_eng/roadside/soil\\_water/special\\_provisions/](http://www.ncdot.org/doh/operations/dp_chief_eng/roadside/soil_water/special_provisions/)

- B. References in Erosion Control Special Provisions from the aforementioned website to Method of Measurement, Basis of Payment, or any other statement regarding direct payment for Erosion & Sediment Control measures shall be disregarded
- C. Erosion Control / Stormwater Certification found elsewhere in this RFP

## V. Miscellaneous

- A. Plan submittals shall include all pertinent design information required for review, such as design calculations, drainage areas, etc.
- B. The NCDOT 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 Workspace to the Design-Build Team for reference upon request.
- C. Plans shall address any environmental issues raised during the permitting process.
- D. Sufficient time shall be allowed for the Design-Build Team to make any changes to the Erosion and Sedimentation Control Plans deemed necessary by the NCDOT REU.
- E. 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 and addressed in the Erosion and Sedimentation Control Plans.
- F. Borrow or waste areas that are part of the project shall require a separate Reclamation 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). The Design-Build Team shall submit the permit number for waste / borrow sites covered by the Mining Act or regulated by DSWM (DENR) concurrently to the Transportation Program Management Director and the Resident Engineer. For Reclamation Procedures, see:

[http://www.ncdot.org/doh/operations/dp\\_chief\\_eng/roadside/fieldops/downloads/Files/ContractedReclamationProcedures.pdf](http://www.ncdot.org/doh/operations/dp_chief_eng/roadside/fieldops/downloads/Files/ContractedReclamationProcedures.pdf)

- G. Whenever the Engineer determines that significant erosion and sedimentation continues despite the installation of approved protective practices, the Design-Build Team shall be required to and shall take additional protective action.
- H. An accepted Erosion and Sedimentation Control Plan does not exempt the Design-Build Team from making every effort to contain sediment onsite.
- I. Any Erosion Control Design revisions made during the construction of the project shall be submitted to NCDOT REU by the 15<sup>th</sup> of the month via the Transportation Program Management Director. At anytime requested by the Engineer or the Roadside Environmental Unit, the Design-Build Team shall provide an updated version of the Erosion and Sedimentation Control Plans for distribution to all parties involved in the construction process.
- J. The Design-Build Team shall comply with the *North Carolina Administrative Code Title 15 A Department of Environment and Natural Resources Chapter 4, Sediment Control*.
- K. A pre-design meeting shall take place between the NCDOT REU Soil & Water Engineering Section, the Design-Build Team, and any other pertinent NCDOT personnel before any Erosion and Sedimentation Control Designs are submitted to NCDOT REU. Erosion and Sedimentation Control Plan submittals shall only be reviewed and accepted by

NCDOT REU after the Erosion Control Pre-Design Meeting. The Design Build Team shall be required to submit a tentative Erosion and Sedimentation Control Plan submittal schedule at the pre-design meeting.

- L. At minimum, the Design-Build Team shall bring one erosion control plan sheet with a Clearing & Grubbing erosion control design to the Erosion and Sedimentation Control Plan pre-design meeting.
- M. All RFC Erosion and Sedimentation Control Plans, including any red line revisions, shall be kept on site at all times throughout the duration of the project.
- N. Erosion Control / Stormwater Certification shall be required according to the Project Special Provision found elsewhere in this RFP.
- O. Prior to installation of any erosion control devices, the Design-Build Team shall verify boundaries of jurisdictional areas in the field and delineated with Safety Fence.
- P. Once RFC Erosion and Sedimentation Control Plans are issued, any major design change or addition, any change that involves calculations, and any addition, deletion, or relocation of a sediment basin shall be submitted to the NCDOT REU for review and acceptance. Minor changes such as moving silt fence, adding or moving temporary ditches (unless adding new flow to a sediment basin), and adding or moving slope drains shall be reviewed by the Engineer in the field.

## **EROSION CONTROL LIQUIDATED DAMAGES**

The Design-Build Team shall observe and comply with Federal and State Laws, Local Laws, Ordinances, and Regulations; as well as Orders and Decrees of Bodies having any jurisdiction or authority in accordance with Section 107 of the 2006 *Standard Specifications for Roads and Structures*.

The Design-Build Team shall take all reasonable precautions 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 Design-Build Team's negligence, carelessness, or failure to implement the Erosion and Sedimentation Control Plans and Specifications; or failure to maintain an approved Storm Water Pollution Prevention Plan (SWPPP), regardless of absence of neglect, shall be deducted from monies due the Design-Build Team. 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 Design-Build Team's negligence, carelessness, or failure to implement the Erosion and Sedimentation Control Plans and Specifications; and / or the SWPPP, regardless of absence of neglect, shall be deducted from the monies due to the Design-Build Team.

**RIGHT OF WAY SCOPE OF WORK** (06-01-10)

The Design-Build Team shall employ qualified, competent personnel who are currently **approved by the NCDOT Right of Way Branch**, herein after referred to as the Department, to provide all services necessary to perform all appraisal, appraisal review, negotiation and relocation services required for all right of way and easements, including but not limited to permanent utility easements, necessary for completion of the project in accordance with G.S. 136-28.1 of the General Statutes of North Carolina, as amended, and in accordance with the requirements set forth in the *Uniform Appraisal Standards and General Legal Principles for Highway Right of Way*, the *North Carolina Department of Transportation's Right of Way Manual*, the *North Carolina Department of Transportation's Rules and Regulations for the Use of Right of Way Consultants*, the *Code of Federal Regulations*, and *Chapter 133 of the General Statutes of North Carolina from Section 133-5 through 133-18*, hereby incorporated by reference, including the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. For a list of firms currently approved, the Design-Build Team should contact Mr. Neal Strickland, in the NCDOT Right of Way Branch, at 919-733-7932, extension 317. The Design-Build Team shall perform the services as set forth herein and furnish and deliver to the Department reports accompanied by all documents necessary for the settlement of claims and the recordation of deeds, or necessary for condemnation proceedings covering said properties. The Design-Build Team, acting as an agent on behalf of the State of North Carolina shall provide right of way acquisition services for TIP R-2123CE in Mecklenburg and Cabarrus Counties.

**The Design-Build Team shall carry out the responsibilities as follows:**

- With respect to the payments, costs and fees associated with the acquisition of right of way in this contract, the Department will be responsible for only direct payments to property owners for negotiated settlements, recording fees, any relocation benefits, and deposits and fees involved in the filing of condemnation of any claims. The Department will assume responsibility for all costs associated with the litigation of condemned claims, including testimony by the appraiser(s). The Design-Build Team shall be responsible for all other acquisition related payments, costs and fees, including but not limited to attorney fees required for all non-condemnation acquisitions.
- A Department representative will be available to provide technical guidance on right of way acquisition procedures and to make timely decisions on approving relocation benefits and approving administrative adjustment settlements on behalf of the Department over and above the authority granted to the Department Right of Way Consultant Project Managers.
- The Design-Build Team shall submit a right of way project tracking report and right of way quality control plan to the Department. The Department standard forms and documents shall be used to the extent possible.
- The Design-Build Team shall provide a current title certificate for each parcel as of the date of closing or the date of filing of condemnation, unless required otherwise in the Department's Right of Way Manual.



- The Design-Build Team shall prepare all Final Condemnation Reports.
- The following shall be required:
  - The Design-Build Team shall prepare, execute and record documents conveying title to acquired properties to the Department with the Register of Deeds
  - The Design-Build Team shall deliver all executed and recorded deeds and easements to the Department.
  - For all property purchased in conjunction with the project, title shall be acquired in fee simple or easement and shall be conveyed to “The North Carolina Department of Transportation”, free and clear of all liens and encumbrances except permitted encumbrances.
- It is understood and agreed by and between the parties hereto that all reports, surveys, studies, specifications, memoranda, estimates, etc., secured by and for the Design-Build Team shall become and remain the sole property of the Department upon termination or completion of the work, and the Department shall have the right to use same for any public purpose without compensation to the Design-Build Team.
- The Design-Build Team shall prepare appraisals in accordance with the Department’s *Uniform Appraisal Standards and General Legal Principles for Highway Right of Way Acquisitions*. The Design-Build Team’s appraiser shall be on the Department’s approved state certified appraiser list. The Design-Build Team may request its state certified appraiser be added to the approved state certified appraiser list, subject to approval by the Department’s State Appraiser.
- The Design-Build Team shall provide appraisal reviews complying with The Department’s *Uniform Appraisal Standards and General Legal Principles for Highway Right of Way Acquisitions*. The reviewer shall determine that the appraisal meets the Department’s guidelines and requirements, conforms to acceptable appraisal standards and techniques, does not include any non-compensible items or exclude any compensible items and that the value conclusions are reasonable and based on facts presented in the appraisal. The reviewer has the authority to approve, adjust, request additional data or corrections, or not to recommend and request another appraisal. The reviewer has the authority to approve appraisals not in excess of \$750,000.00. All appraisals showing compensation in excess of \$750,000.00 shall be referred to the Department’s State Appraiser for approval, with the written recommendation of the reviewer. The Design-Build Team’s reviewer shall be on the Department’s approved state certified reviewer appraiser list. The Design-Build Team may request its state certified review appraiser to be added to the approved state certified reviewer appraiser list, subject to approval by the Department’s State Appraiser. Any appraisal over \$1,000,000.00 must have 2 appraisals.
- The Design-Build Team shall provide a right of way certification prior to entering the property.

**UTILITIES SCOPE OF WORK** (4-15-10)

The Design-Build Team shall obtain the services of a Private Engineering Firm (PEF) knowledgeable in the NCDOT Utility Coordination Process involved with utility relocation / installation and highway construction. The Design-Build Team shall be responsible for coordinating all utility relocations, removals, and / or adjustments where the Design-Build Team and Utility Company, with concurrence from the Department, determine that such work is essential for highway safety and performance of the required highway construction. Coordination shall be for all utilities whether or not they are specifically identified in this scope of work and shall include any necessary utility agreements when applicable. NCDOT will be the approving authority for all utility agreements and approval of plans.

**Cost Responsibility**

The Design-Build Team shall be responsible for the relocation of CMU water and sewer facilities as described in the Water and Sewer section of this scope of work.

The NCDOT will be responsible for all other non-betterment utility relocation cost when the utility company has prior rights of way / compensable interest. The utility company shall be responsible for the relocation costs if they can not furnish evidence of prior rights of way or a compensable interest in their facilities. The Design-Build Team shall be responsible for determining the cost responsibility for the utility relocations. The Design-Build Team shall be responsible for all costs associated with utility relocations due to haul roads and / or any other temporary conditions resulting from the Design-Build Team's methods of operation or sequence of work. NCDOT will be the approving authority for all utility agreements and approval of plans

**Project Details**

The Design-Build Team shall be responsible for verifying the utility locations, type of facilities, and identifying the utility owners in order to coordinate the relocation of any utilities, known and unknown, in conflict with the project. The following utilities are known to be located within the project construction limits:

<b>Utility Owner</b>	<b>Utility Type</b>	<b>Cost Responsibility</b>
Duke Energy	Power/Transmission	NCDOT (Prior Rights)
Duke Energy	Power/Distribution	NCDOT (Prior Rights)
AT&T	Telephone	Utility Owner
AT&T	Fiber Optic	Utility Owner
Piedmont Natural Gas	Natural Gas	Utility Owner
CMU (Mallard Creek Rd)	Water	Utility Owner
CMU (Mallard Creek Rd)	Sanitary Sewer	NCDOT

## Water and Sewer

The Design-Build Team shall be responsible for relocating the Charlotte-Mecklenburg Utilities Department (CMU) facilities impacted by the project's construction. If the Design-Build Team's design or construction requires the relocation of existing water or sewer facilities, the Design-Build Team shall provide CMU's Engineering Contractor, Hinde Engineering, with accepted preliminary roadway plans, geopak files, and cross sections. Hinde Engineering will develop designs and prepare all plans for needed agreements and permits. It is anticipated that Hinde Engineering will complete this work, obtain CMU review, and secure the CMU utility construction permits within 45 working days of receipt of the preliminary roadway plan information above. The costs for all engineering charges associated with the design and CMU permits for relocation of these existing water and / or sewer facilities shall be the responsibility of the NCDOT as part of a preliminary engineering agreement. The Design-Build Team shall remain responsible for including the utility construction details in their 404/401 permit application for this project.

CMU has agreed that the existing sewer line currently located in the I-85 culvert may be relocated outside the culvert.

For the construction of the aforementioned CMU water and sewer facilities, the Design-Build Team shall not include the construction costs in their lump sum bid for the entire project but instead will be compensated in accordance with Article 104-8(a) of the 2006 *NCDOT Standard Specifications for Roads and Structures*. The Design-Build Team shall negotiate line item costs for all work associated with relocating the Charlotte-Mecklenburg Utilities Department facilities with CMU. Should the Design-Build Team and CMU fail to reach an agreement through these negotiations, the Design-Build Team shall allow CMU to relocate its facilities and the Design-Build Team shall not be granted contract time extensions or receive additional compensation.

Hinde Engineering shall be responsible for submitting five (5) sets of 11 x 17 utility construction drawings to the State Utility Agent, via the Transportation Program Management Director, for further handling. The necessary Utility Agreement with CMU for reimbursement to the NCDOT shall be a two party agreement between the NCDOT and CMU; and will be developed and executed by the Department.

The relocation of all CMU facilities shall be done in accordance with the latest CMU design requirements and permits. The Department and CMU will both have inspection authority of the utility installation. The Design-Build Team may obtain the CMU design requirements / specifications from the website noted below or by calling 704-336-7600.

<http://www.charmeck.org/Departments/Utilities/Home.htm>

## Utility Relocation Plans

In the event of a utility conflict, the Design-Build Team shall request that the utility company submit relocation plans (Highway Construction Plans to be provided by the Design-Build Team to

Utility Owners) that show existing utilities and proposed utility relocations for approval by the NCDOT.

If the Design-Build Team determines the cost to be borne by NCDOT, then the Design-Build Team shall be required to submit three (3) copies of a detailed utility relocation estimate and copies of verification of compensable interest. The Design-Build Team shall submit (3) three copies of the Utility Relocation Plans to the NCDOT State Utility Agent, via the Transportation Program Management Director, for review and approval prior to relocation work beginning. The Design-Build Team shall also be responsible for submitting the appropriate agreements to be used with the Utility Relocation Plans (See Agreements found elsewhere in this scope of work). After the review process is complete, the NCDOT Utility Coordination Unit will submit one (1) copy of the Utility Relocation Plans, executed agreements and any necessary comments back to the Design-Build Team. The NCDOT Utility Coordination Unit will also submit a copy of the approved Utility Relocation Plans to the Department's Resident Engineer. If the Utility Relocation Plans are approved subject to changes, it shall be the Design-Build Team's responsibility to coordinate these changes with the appropriate utility company.

### **Compensable Interest**

Typically, affidavits, recorded easements or NCDOT agreements can serve as evidence of prior rights. A compensable interest is identified as follows:

- (A) Existing or prior easement rights within the limits of the project, either by recorded right of way or adverse possession (Utility occupying the same location for twenty (20) plus years outside the existing highway rights of way).
- (B) Entities covered under *General Statute 136-27.1* and *136-27.2*. Statute requires the NCDOT to pay the non-betterment cost for certain water, sewer and gas relocations.
- (C) Utilities that have a joint-use agreement that constitutes a compensable interest with entities that have existing or prior easements rights within the project limits.

### **Work Performed by Design-Build Team for Utility Owners**

If the Design-Build Team elects to make arrangements with a Governmental Agency or any other utility owner for proposed utility construction, in which the Agency / Utility Owner shall be responsible for the costs of work to be performed by the Design-Build Team, the Design-Build Team shall be responsible for negotiating all costs associated with the proposed construction. Once the Design-Build Team and the Agency / Utility Owner agree on a plan and a lump sum estimated cost for the utility construction, the Design-Build Team shall be responsible for submitting five (5) sets of 11 x 17 utility construction drawings to the State Utility Agent, via the Transportation Program Management Director, for further handling. Each set shall include a title sheet, plan sheets, profiles and special provisions if required. Also, a letter from the Agency / Utility Owner agreeing to the plans and lump sum cost must accompany this package. The

NCDOT will reimburse the Design-Build Team the estimated lump sum cost under a Supplemental Agreement. The necessary Utility Agreement to the Agency / Utility Owner for reimbursement shall be a two party agreement between the NCDOT and the Agency / Utility Owner; and will be developed and executed by the Department.

If the Design-Build Team is requested, in writing, by a utility company to relocate facilities not impacted by the project's construction, and / or upgrade or incorporate new facilities as part of the highway construction, designs shall be coordinated with the Utility Owner and NCDOT Utility Coordination Unit. The associated design and construction costs shall be negotiated and agreed upon between the Design-Build Team and the utility company. The Design-Build Team shall develop designs; prepare all plans for needed agreements and permits; submit permits directly to the agencies and obtain approval from the agencies. The Design-Build Team shall be responsible for all permit fees.

### **Cable TV**

The cost in relocating CATV due to the highway construction shall be the responsibility of the CATV Company; however, under the following conditions the Department shall bear the relocation expense:

- (A) If the CATV Company can validate a recorded easement for facilities outside the maintained NCDOT rights of way.
- (B) The adjustment is needed on existing utility poles to accommodate a proposed NCDOT Traffic Management System Fiber Optic Communication Cable Project.

The NCDOT will not permit CATV to place poles within the highway rights of way but will allow down guys for their facilities within the highway rights of way. Under most circumstances, the CATV Company will continue a joint-use attachment with the local Power and Telephone Company. If the CATV proposed relocation places buried facilities within the highway rights of way then plans and encroachment agreements shall be required by the NCDOT.

### **Preparation for Communication Cables / Electrical Services for Lighting and ITS Devices:**

Prior to establishing the location for new meter poles / boxes, the Design-Build Team shall coordinate with the local Power Distribution Company concerning accessibility of E/C Service and safety in maintenance of the meter.

Prior to installation, the Design-Build Team shall provide plans for review and approval for all service taps that require a parallel installation within the C/A. The Design-Build Team shall coordinate with the Engineer to follow protocol specific to Division 10 for establishing electrical service.

Parallel service installation within a C/A shall be buried and located as close to the R/W line as practical. Only due to unusual circumstances will parallel aerial service installations within C/A be

allowed. The Design-Build Team shall justify the allowance of parallel aerial service installation and obtain NCDOT approval prior to installation.

The Design-Build Team shall be responsible for all coordination activities, including deposit fees, required for the utility company to provide service taps. Prior to the Design-Build Team developing the associated design and / or instructing the utility company to proceed with providing the service taps, the Design-Build Team shall obtain written approval of the service tap locations from the Resident Engineer. The Department will be responsible for construction costs associated with the utility company providing service taps, including those required for future ITS devices.

### **General**

The Design-Build Team shall not commence work at points where the highway construction operations are adjacent to utility facilities, until making arrangements with the utility company to protect against damage that might result in expense, loss, disruption of service or other undue inconvenience to the public or utility owner. The Design-Build Team shall be responsible for damage to the existing or relocated utilities resulting from the Team's operations. In the event of interruption of any utilities by the project construction, the Design-Build Team shall promptly notify the proper authority (Utility Company) and cooperate with the authority in the prompt restoration of service.

The Design-Build Team shall accommodate utility adjustments, reconstruction, new installation and routine maintenance work that may be underway or take place during the progress of the contract.

If total property acquisition is unavoidable due to encroachment into wells and / or septic systems, then the Design-Build Team shall investigate and determine if extending water and / or sewer lines to the affected property is cost effective. If the Department concurs with the determination that a utility extension is cost effective, the costs associated with the utility construction shall be addressed in accordance with Article 104-7 of the Standard Specifications.

The Design-Build Team shall be required to use the guidelines as set forth in the following:

- (A) *NCDOT Utility Manual - Policies & Procedures for Accommodating Utilities on Highway Rights of Way*
- (B) *Federal Aid Policy Guide - Subchapter G, Part 645, Subparts A & B*
- (C) *Federal Highway Administration's Program Guide, Utility Adjustments & Accommodations on Federal Aid Highway Projects*
- (D) *NCDOT Construction Manual Section 105-8*
- (E) *NCDOT Right of Way Manual - Chapter 16 Utility Relocations*

- (F) *NCDENR Public Water Supply* - Rules governing public water supply
- (G) *NCDENR Division of Water Quality* - Title 15A - Environment and Natural Resources

### **Attachments To Existing And/Or Proposed Structures:**

The Design-Build Team shall not attach utilities to bridges on this project.

### **Agreements**

If a utility company can provide evidence of prior rights of way or a compensable interest in their facilities, the Design-Build Team shall coordinate the non-betterment utility relocation cost with the utility company and develop the Utility Agreement.

The NCDOT State Utility Agent must execute approved agreements on Design-Build highway projects. The Utility Relocation Agreements (Cost Agreement) and encroachment agreements are available from the NCDOT Utility Coordination Unit. Reference Pages 59 and 60 of the *NCDOT Utility Manual on Policies & Procedures for Accommodating Utilities on Highway Rights of Way* for the different types of encroachment agreements available for use.

The Design-Build Team shall be required to utilize the NCDOT Standard Utility Encroachment Agreements as necessary in relocating utilities. The Encroachment Agreements shall be used under the following conditions:

- (A) If a utility company is not occupying a valid right of way / compensable interest and the proposed relocation will place the relocated utilities within the existing or proposed highway rights of way.
- (B) For **all** new utility installations within the existing or proposed highway rights of way. This includes all water, sewer and gas lines owned by entities covered under *General Statute 136-27.1* and *136-27.2*.
- (C) In either case above, the Design-Build Team shall submit 5 copies of the encroachment plans plus 2 originals and 3 copies of the encroachment agreement to the NCDOT State Utility Agent, via the Transportation Program Management Director, for approval.

**LIGHTING SCOPE OF WORK** (06-01-10)

Provide and install roadway lighting equipment and materials, in accordance with Division 1400 of the *2006 NCDOT Standard Specifications for Roads and Structures*, and the *Roadway Standard Drawings*, except as amended below. NCDOT will provide the lighting design.

Allow 10 days to update and finalize lighting design after Release for Construction (RFC) Roadway plans are complete and accepted by the Transportation Program Management Director. Provide electronic CADD files in MicroStation format, using Geopak Software (current version used by the Department) showing design changes.

Allow 10 days for Department review of each submittal for all materials including poles and foundation designs. An additional 10 days shall be required for pole submittals from vendors that do not commonly do business with the Department.

All removed equipment shall be coordinated with the Division 10 Traffic Engineer, Scott Cole (704-982-0101), and delivered to the NC DOT warehouse at the address below:

County Maintenance Yard  
7703 District Drive  
Charlotte, NC 28213

Maintain the lighting system until the project is accepted.

Reference the Traffic Management Scope of Work found elsewhere in this RFP for time restrictions and lane closure requirements.

**MATERIALS****Light Control System**

Amend Section 1408-2 of the *2006 Standard Specifications for Roads and Structures* as follows:

The completed light control system shall be marked "Suitable for Use as Service Equipment", in a prominent location in the enclosure, in accordance with NEC article 409.110.

Provide a polymer concrete (PC) junction box measuring 36"L x 24"W x 18"H (PC36) and meeting the requirements of Section 1411 of the Standard Specifications.

**CONSTRUCTION****Wiring Methods**

Amend Section 1400-4(F) of the *2006 Standard Specifications for Roads and Structures* to include the following:



Pull conductors by hand, or use motorized cable-pulling equipment designed for pulling multiple cables into conduit. Use sheaves or rollers, as required to prevent damage to conductor insulation. Do not use an automobile to generate cable pulling forces. Use equipment similar to the Greenlee model UT2 cable pulling system, or Engineer approved equal.

### **Inspections**

Amend Section 1400-5 of the *2006 Standard Specifications for Roads and Structures* to include the following:

Provide the personnel and equipment necessary for removing and replacing fuseholders and/or operating circuit breakers, to facilitate the insulation resistance test described elsewhere in the Special Provisions.

To minimize the potential for delays preparing the final inspection punch list, the Design-Build Team shall coordinate inspection of the items defined in the NCDOT LIGHTING SYSTEM INSPECTION CHECKLIST with the project inspector as work progresses and at the end of the project. Upon request, a copy of the NCDOT LIGHTING SYSTEM INSPECTION CHECKLIST will be provided.

### **Performance Tests**

Amend Section 1400-6 of the *2006 Standard Specifications for Roads and Structures* to include the following:

Provide a calibrated MegOhmMeter, with certification that calibration was done recently (within one year of use). Provide a meter manufactured by Fluke, Amprobe, Biddle, or Engineer approved equal. Present the meter for inspection at the pre-lighting-work meeting described elsewhere in this Scope of Work.

Removing water from the conduit of a faulty circuit is not considered a repair. Water in the conduit allows current to flow between skinned places in the conductors insulation. If a circuit fails the insulation resistance test, and removing water allows the circuit to pass, replace the conductors and re-test the new circuit.

### **Construction Phasing**

Amend Section 1400-11 of the *2006 Standard Specifications for Roads and Structures* to include the following:

Schedule a pre-lighting-work meeting before beginning work on the lighting system. Include staff members from the prime contractor, electrical sub-contractor, Resident Engineer's office, and the Lighting/ Electrical squad in the Roadway Design Unit in Raleigh.

**High Mount Standard**

Same as Section 1401-3 of the *2006 Standard Specifications for Roads and Structures* except as amended below:

Tighten anchor rod nuts in accordance with the Anchor Rod Nut Tightening Requirements section of the Project Special Provision for Overhead Sign Supports.

**Light Control System**

Amend Section 1408-3 of the *2006 Standard Specifications for Roads and Structures* to add the following:

Install PC36 junction box within 2' of edge of pad in front of Control System. Stub all feeder circuit conduits and spare conduits from Control System in this junction box. See plans for conduit sizes. Place pull cord in any unused conduits and cap unused conduit in junction box.

**FINAL INSPECTION**

Contact Lighting / Electrical engineers from NCDOT to inspect the completed lighting system and perform insulation resistance testing for all conductors prior to contract acceptance.

**ELECTRICAL SERVICE**

Coordinate with the local utility company, make application and pay all deposit fees to provide necessary electrical service. Refer to Utilities Coordination Scope of Work for additional coordination / approval requirements, payments and other costs.

**MAINTENANCE**

Assume responsibility for routine maintenance of the lighting system(s) for the duration of the contract in accordance with Section 1400 of the *2006 NCDOT Standard Specifications for Roads and Structures*, except as amended below.

NCDOT will pay the monthly power bills. NCDOT will assume maintenance responsibility for the completed lighting systems after the project is accepted, and there is no chance of construction-related damage.

Re-lamp, repair and/or replace any non-functional luminaires within the project limit. All luminaires must be operational at project completion.

## **REMOVE LIGHT STANDARDS**

### **Description**

The work covered by this section consists of providing all equipment, labor and materials necessary to remove existing shoulder mounted single-arm light standards and concrete foundations. The work also includes remove existing median mounted twin-arm light standards and install foundation covers on the median barrier cutout after the twin-arm light standards are removed.

### **Materials**

Machine fabricate foundation cover from AISI #304 gauge #11 stainless steel sheet. Dimension of the cover shall be finalized after field verification of the light standard foundation cutout. Dimensions for the proposed foundation covers are based on the Light Standard Foundation Type M1 and M2, shown in the Standard Specifications and the Standard Drawings Section 1405.

No materials are required for remove light standards except such miscellaneous items as tape and terminal devices to deadend circuits serving the light standards.

### **Construction Methods**

Dismount and disassemble the light standard from the existing standard foundation. Use rope or web slings when hoisting or lifting the light standard, to prevent damage or marking. If the light standards are to be stored for future use, provide proper transportation and supports to prevent warping. Provide protection against the elements.

Deliver all salvaged materials including luminaires, luminaire arms, standards, breakaway devices, and fuseholders to the NC DOT warehouse.

Remove or abandon existing concrete Single-Arm light standard foundations. Dispose the removed concrete, reinforcing steel, and anchor bolts in a manner acceptable to the Engineer. Backfill the holes with suitable material and compact the material as required.

Provide foundation cover for median mounted Twin-Arm light standards after the light standard is removed. Leave anchor bolts and nuts intact, cap electrical conduit, terminate circuitry, and install foundation cover.

Mount a grounding lug on the inside of the foundation cover with a 6mm (1/4") stainless steel bolt and nut. The bolt head shall be installed on the outside of the foundation cover while the nut and the lock washer are at the inside. The grounding conductor shall be #8, stranded copper and shall have enough lead wire for the foundation cover to be removed and placed on the ground without disconnecting at the grounding lug.

Install two 3/8" stainless steel expansion anchors on top of the concrete median barrier, at an equal distance from the center of the standard foundation cutout. The maximum protrusion

length of these two 10mm (3/8") anchor bolts shall be less than 1". Install the foundation cover on top of the concrete median barrier through the two 3/8" anchor bolts and be fastened down on the anchor bolts with stainless steel nylon lock nut. Refer to Lighting Details plansheet for foundation cover installation.

Abandon or remove the conductors and conduit as required by construction. Refer to Standard Specifications Section 1400-10.

## **REPLACE LUMINAIRES**

### **Description**

The work covered in this section involves removing existing luminaires, and installing new luminaires and fuseholders for light standards and high mast light standards.

### **Materials**

Provide materials as described in Section 1403-2 of the Standard Specifications for high mast luminaires. Amend the second paragraph to read as follows:

Use high mast luminaires with IES light distribution of MC III (Medium Cut-Off Type III), made by GE, Holophane, or Cooper.

Provide materials as described in Section 1406-2 of the Standard Specifications. Amend the third paragraph to read as follows:

Use cobra head luminaires with IES light distribution of MC III (Medium Cut-Off Type III), made by GE or Cooper.

### **Construction Methods**

Remove existing cobra head luminaires and fuseholders inside the standard. Deliver the luminaires and fuseholders, in good condition, to the NC DOT warehouse. Where indicated on the plan, replace each luminaire with the appropriate luminaire described under "Materials." Replace the breakaway fuseholders for the light standards.

Remove existing HM luminaires and deliver to NC DOT warehouse. Install and aim the HM luminaires, with asymmetric MC III distribution, to ensure lighting the travel lanes.

## **REMOVE CONTROL SYSTEM**

### **Description**

The work covered by this section consists of the removal of an existing lighting control system and concrete foundation, and the delivery of the removed lighting control system with its internal electrical components intact to the NC DOT warehouse.

**Materials**

No materials are required for this work except such miscellaneous items as terminal devices to seal openings in the steel enclosure, after all conduits have been removed.

**Construction Methods**

Leave the existing lighting control system in operation until the lighting is in conflict with construction or as directed by the Engineer.

Coordinate work with NC DOT Traffic Services Supervisor, Donald Griffith (704-982-1998), to assure that circuits can be de-energized where and when necessary.

Conduct work so those portions of the lighting system, which are not in conflict with construction, will be maintained in continuous nighttime operation.

Remove the control system enclosure with all its internal electrical components intact, and deliver the old control system to NC DOT warehouse listed above. Provide protection against the elements during transportation. Remove all conduit and wiring entering the enclosure.

Remove the existing foundations, and dispose the removed concrete and reinforcing steel in a manner acceptable to the Engineer. Backfill the holes with suitable material and compact the material as required.

**RELOCATE HIGH MAST****Description**

The work covered by this section consists of relocating an existing High Mast light standard, removing the concrete foundation and re-installing the standard on a new foundation. The High Mast has four luminaires at 100' mounting height and is attached to the foundation with anchor bolts. A new foundation is included.

**Materials**

No materials are required for this work except such miscellaneous items as tape and terminal devices to dead-end circuits serving the High Mast.

**Construction Methods**

Maintain operation of the existing high mast until such time that it becomes in conflict with the actual construction work, or it becomes a hazard to traffic as determined by the Engineer.

The Contractor shall coordinate his work with the D.O.T. Traffic Services Supervisor to assure that circuits can be de-energized where and when necessary. Coordinate with the

D.O.T. Traffic Services Supervisor to have the portable drive unit available for lowering the carrier ring.

The Contractor shall conduct his work so that portions of the lighting system, which are not in conflict with construction, will be maintained in continuous nighttime operation.

Remove carrier ring, luminaires and winch assembly. Secure the cables and insure that none are crossed or tangled inside the standard. Using a crane rated for the work, lay the standard down in an area near the future site. Use rope or web slings to hoist and lift the High Mast to prevent damage. Provide proper blocking support to prevent warping. Protect all material from the elements.

Remove existing concrete High Mast foundation. Dispose the removed concrete, reinforcing steel, and anchor bolts in a manner acceptable to the Engineer. Backfill the holes with suitable material and compact the material as required. Provide seeding and mulching in the area for erosion control.

Abandon or remove the conductors and the conduit for the removed High Mast as shown on the plans.

Install a new foundation and erect the high mast standard in accordance with Standard Specifications 1401 and 1402.

## **TROUBLESHOOT AND REPAIR EXISTING LIGHTING SYSTEM**

### **Description**

The work covered by this section consists of finding and repairing faults as needed with the existing lighting system served from Control Systems “E”, “F” & “G”, on I-85 from East of Mallard Creek Church Road to West of Bruton Smith Blvd. to ensure a fully operational light system within the project limit.

### **Materials**

Use Meg Tester, Digital Multi-Meter, and other applicable test equipment and tools to troubleshoot.

Provide new materials in accordance with Section 1403-2 for *High Mount Luminaires (1kW, HPS)*.

Provide new materials in accordance with Section 1406-2 for *Light Standard Luminaires (400W or 250W, HPS)*.

Provide new materials in accordance with Section 1409-2, *Electrical Duct*; 1410-2, *Feeder Circuit*, & 1411-2 *Electrical Junction Boxes*, to repair feeder circuits.

## **Construction Methods**

Troubleshoot and replace faulty electrical components, and/or faulty lighting components, and/or faulty circuitry with new materials to ensure the existing lighting system is fully operational.

Troubleshoot and replace faulty electrical components and luminaires. In the case of a faulty feeder circuit run in the median barrier, replace the conductors inside the conduit. In the case of a faulty circuit run in the shoulder, the contractor can either replace the conductors inside the existing conduit, or remove/abandon the existing conductors and conduit of the faulty circuit run, and reinstall new conduit and new conductors for the run.

Upon project completion, the lighting system must be fully operational. All the lights should be burning at full brightness, with all circuits passing inspections and performance tests (meg test) as described above in the Inspections and the Performance Sections. Verify the integrity of existing feeder circuitry with meg test before tie-in to proposed feeder circuitry. Each feeder circuit will be meg tested from the circuit breaker at the existing light control panel to the last load in the circuit run.

The Contractor is responsible for the storage and protection of the reused materials against loss or damage. All removed faulty materials must be disposed of in a manner acceptable to the Engineer.

## **FOUNDATION COVER**

### **Description**

The work described in this section consists of providing and installing foundation covers on concrete median barrier at specified locations, as covers for light standard foundation cutouts where light standards have been removed.

### **Materials**

The foundation cover shall be constructed of 11 gauge AISI #304 stainless steel sheet. The Contractor shall field verify the design dimension of the foundation cover to ensure the cover will adequately cover the light standard foundation cutout. The Contractor will adjust the dimension as necessary after field verification and before fabrication, to ensure the opening is completely covered with at least 1" overlap.

The grounding lug shall be of the appropriate type and size for the connection of the #8 copper conductor.

Nuts, bolts and washers shall be made from 18-8 stainless steel.

## **Construction Methods**

The foundation cover shall be machine fabricated from AISI #304 gauge #11 stainless steel sheet. Dimension of the cover shall be finalized after field verification of the light standard foundation cutout. Dimensions for the proposed foundation covers are based on the Light Standard Foundation Type M1 and M2, shown in the Standard Specifications and the Standard Drawings Section 1405.

Mount a grounding lug on the inside of the foundation cover with a ¼" stainless steel bolt and nut. The bolt head shall be installed on the outside of the foundation cover while the nut and the lock washer are at the inside. The grounding conductor shall be #8, stranded copper and shall have enough lead wire for the foundation cover to be removed and placed on the ground without disconnecting at the grounding lug.

Install two (3/8") stainless steel expansion anchors on top of the concrete median barrier, at an equal distance from the center of the standard foundation cutout. The maximum protrusion length of these two (3/8") anchor bolts shall be less than (1"). The foundation cover shall be installed on top of the concrete median barrier through the two (3/8") anchor bolts and be fastened down on the anchor bolts with stainless steel washers and nuts.

## **RELOCATE LIGHT STANDARDS**

### **Description**

The work covered by this section consists of providing all equipment, labor and materials necessary to move an existing light standard to a new foundation at locations shown on the plans. It also includes storage of materials to be reused, and removal of the existing foundation. It does not include the construction of the new foundation.

### **Materials**

Reuse existing materials, which include the light standard, breakaway base, and arm. Shims and washers may be reused, but new connecting bolts are required. Replace materials that are to be reused, if they are damaged during relocation. Damaged materials will be replaced with new materials, at no additional cost to NC D.O.T.

Use type SO conductors for circuitry inside poles.

The Contractor is responsible for the storage and protection of the reused materials against loss or damage.

### **Construction Methods**

Dismount the light standard from the existing standard foundation, reinstall it on a new foundation and reuse the existing breakaway base. Use rope or web slings when hoisting or lifting the light standard, to prevent damage or marking. If the light standards are to be



stored between dismantling and reinstalling, provide proper transportation and supports to prevent warping. Provide protection against the elements.

Remove existing concrete light standard foundation. Dispose the removed concrete, reinforcing steel, and anchor bolts in waste areas furnished by the Contractor. Backfill the holes with suitable material and compact the material as required.

Abandon or remove the conductors and conduit as required by construction. Refer to Standard Specifications Section 1400-10. Install new circuitry as shown on the plans.

## **PAVEMENT MARKINGS SCOPE OF WORK**

### **General**

The Design-Build Team shall prepare Final Pavement Marking Plans in accordance with the 2003 edition of the *Manual on Uniform Traffic Control Devices (MUTCD)*, the NCDOT Roadway Standard Drawings (July 2006), “*Guidelines for Preparation of Traffic Control and Pavement Marking Plans for Design-Build Projects*”, and the “*Design-Build Submittal Guidelines*” and the contract requirements contained herein.

### **Final Pavement Marking Plan Requirements**

The Design-Build Team shall select a Private Engineering Firm (PEF) that has experience designing and sealing Pavement Marking Plans for NCDOT on comparable projects. The Design-Build Team shall list projects in the Technical Proposal, including description and similarity to the subject project that the PEF developed.

The Design-Build Team shall develop Pavement Marking Plans that maintain all types of traffic (motorists, bicyclists, and pedestrians within the highway, including persons with disabilities in accordance with the Americans with Disabilities Act of 1990 (ADA), Title II, Paragraph 35.130) as defined by the *Manual for Uniform Traffic Control Devices (MUTCD)*.

### **Final Pavement Marking Project Limits**

The Design-Build Team shall modify existing pavement markings, markers and signing located outside the project limits to ensure that all four lanes in each direction are open to through traffic, including area from previous project R-2248E to this project. There will be no additional compensation for altering pavement marking, markers and signing outside of the project limits.

The pavement marking limits shall also extend along EB I-485 beyond the US29 westbound off-ramp to the extent necessary to accommodate the laneage denoted in the IMR, Appendix Q, Alternative 10.

The Final Pavement Marking Plans shall address any required modifications to existing pavement markings located outside the project limits to ensure appropriate tie-ins. The Design-Build Team shall be responsible for installing all pavement markings and markers located within and outside the project limits, resulting from the project construction.

### **Pavement Markings, Markers and Delineation**

The Design-Build Team shall not place any final pavement markings and markers until the Final Pavement Marking Plans are submitted for review and acceptance.

The Design-Build Team shall use pavement marking and marker products that conform to all NCDOT requirements and are listed on the NCDOT’s Approved Products List. The use of any devices that are not shown on the Approved Product List shall require written approval from the Signing and Delineation Unit.

The Design-Build Team shall install pavement markings and markers in accordance with the NCDOT 2006 *Standard Specifications for Roads and Structures*, and in accordance with the manufacturer's procedures and specifications.

The Design-Build Team shall install pavement markings and pavement markers on the final surface as follows:

<b>Road</b>	<b>Marking</b>	<b>Marker</b>
Edgelines for I-485 and I-85 and Ramps	Polyurea with Highly Reflective Elements	Snowplowable (Raised on bridge decks)
Mallard Creek Road	Polyurea with Standard Beads	Raised
Concrete Bridge Decks on -Y- Lines	Polyurea with Highly Reflective Elements	Raised

On concrete pavement, the Design-Build Team shall place cold applied plastic Type II or Type III tape with black contrast border for all skips (6" wide skips with 1.5" wide black contrast borders on each side).

All Full Control of Access interstate facilities and US routes require 6 in wide pavement markings, i.e., lane lines, edge lines and skips for the final pavement marking.

Use water blasting or grinding to remove all residue and surface laitance on all concrete surfaces prior to placing pavement marking materials.

Do not place Polyurea on SF9.5A surface mixes. If this asphalt concrete mix is used on the final wearing surface, use thermoplastic pavement marking.

The Design-Build Team shall tie proposed pavement marking lines to existing pavement marking lines.

The Design-Build Team shall replace any pavement markings that have been damaged by the end of each day's operation.

**ON-SITE MITIGATION SCOPE OF WORK** (4-15-10)**General**

As required by the NEPA process and the ACOE/EPA Section 404 B1 Guidelines, to offset potential wetland and stream impacts, the Design-Build Team shall investigate the on-site mitigation potential of the sites identified in the Site Specific Information (below) provided by the Department and any necessary stream relocations. The mitigation sites are within NCDOT right-of-way. The Design-Build Team shall be responsible for plan, design and successful construction of all on-site mitigation including, but not limited to, the following:

- Complete conceptual mitigation plans, as described below.
- Complete all preliminary mitigation design plans and specifications, as described below, to be presented at the 4C meeting. (60% design)
  - Address NCDOT and agency comments and obtain agency approval for all on-site mitigation sites (after 60% design is completed).
  - Conduct field review of on-site mitigation as requested by the agencies.
  - Complete final mitigation plan, design, and permit drawings for inclusion in the environmental permit application.

The Design-Build Team shall be responsible for fulfilling all permit conditions excluding post construction monitoring. The Design-Build Team shall be responsible for ensuring that all stream mitigation sites are constructed according to the approved mitigation and design/construction plans. The Design-Build Team is not responsible for post-construction monitoring after the completion of the Twelve-Month Guarantee period noted elsewhere in this RFP or as otherwise offered by the Design-Build Team in the Technical Proposal. Prior to the end of the Twelve-Month Guarantee, the Department shall review sites for final review/compliance and acceptance.

The Design-Build Team shall use MicroStation and GeoPak to complete all plans and specifications to meet NCDOT standards. Included in this task are the setup and creation of design sheets. These sheets shall include title, detail, plan, profile, and cross section sheets.

The Design-Build Team shall include the following in the Technical Proposal: (1) the sites identified for potential on-site mitigation; (2) the quantity of anticipated on-site mitigation; (3) any right-of-way necessary to provide the mitigation; and (4) any additional warranty or monitoring of this mitigation that is included in the Price Proposal.

**Site Specific Information**

The following site was recommended for review by the agencies for on-site mitigation potential. Staff of the Natural Environment Unit's Indirect and Cumulative Impacts and Engineering Groups have reviewed the site for feasibility from a hydraulic and biological viewpoint. The site described below does have potential for onsite mitigation. This site is located adjacent to Ramp C in the eastern quadrant of the proposed interchange (see R-2123CE Design Public Meeting Map Roll 1 of 3 and 4A Merger Project Team Meeting Agreement).

The stream enters the site from a culvert under I-85 and flows in a southerly direction for approximately 2000 feet and then enters a culvert under fill associated with the original roadway design from the 1990's. The stream exits the site in a culvert under I-485. The entire reach is within the NCDOT right-of-way. The first segment of the stream, from the I-85 culvert to approximately 1000 feet downstream, is highly incised and has eroding banks. The floodplain is forested and gradually slopes up from the top of the channel. This segment of the channel is within the slope stake lines of the proposed Ramp C and will need to be relocated. NEU recommends that the proposed mitigation should include relocation of the stream to the east, reconnecting the channel to the floodplain, and establishing the appropriate channel dimensions based on the watershed hydrology and regional curves. Cross vanes or other appropriate structures should be used as grade control along this reach as determined during design. The second segment of the stream consists of approximately 400 feet of channel that was previously relocated for the original roadway design. The channel is running between the toe of previous fill section on the west and the toe of the hillside on the east. Riprap was placed in the channel as part of the relocation. There is also natural bedrock throughout this segment. Herbaceous and woody vegetation is established along the banks of the channel. This segment of the channel is outside the slope stake lines of the proposed Ramp C. Based on the current stable condition of the channel and the limited area adjacent to the channel, NEU recommends no channel work in this segment. The last segment of the stream runs for approximately 600 feet from the end of the previous relocation to the culvert under the old fill section. An additional 400 feet of channel runs from the outlet of this culvert to the I-485 culvert at the end of the site. It appears that portions of this segment were straightened and the banks were hardened with riprap. The potential for mitigation within this segment is dependant on the hydraulic structure design. NEU recommends reviewing this segment again once final design is complete.

### **Conceptual Mitigation Plans**

The Design-Build Team shall prepare the conceptual mitigation plan for presentation at the 4B meeting. The Design-Build Team shall coordinate with NCDOT Roadside Environmental Unit with regards to the planting plan. Post-construction monitoring plan and success criteria shall be included in the narrative for the site. The Project Development and Environmental Analysis Branch-Indirect and Cumulative Impacts Group shall be provided the draft mitigation plan for review seven (7) weeks prior to the 4B meeting. The Design Build Team shall address comments before presentation at the 4B meeting.

### **Conceptual Plan for Streams**

The Design Build Team shall conduct a survey of the existing channel features and adjacent areas to adequately define the stream morphology and to prepare the hydraulic model. Additionally, a morphological survey of at least one reference reach in the same region as the project stream shall be conducted to serve as a guide for the design. The existing channel and reference reach surveys include channel dimension, pattern, profile, bankfull identification and verification, and appropriate substrate analysis.

The Design Build Team shall provide a Level II Rosgen geomorphic classification of the existing stream and reference reach. Additionally, the Design Build Team shall prepare the

data for input into the sediment transport analysis and hydraulic model of the existing stream. The following calculations and ratios shall be developed for the existing channel, proposed channel, and reference reach. These calculations need only be shown in table form in the plan.

1. Stream type (level II).
2. Drainage area (square miles)
3. Bankfull width ( $W_{bkf}$ )(taken in straight section)
4. Bankfull mean depth ( $d_{bkf}$ )
5. Width/depth ratio ( $W_{bkf}/d_{bkf}$ )
6. Bankfull cross sectional area ( $A_{bkf}$ )
7. Bankfull velocity ( $U_{bkf}$ )
8. Bankfull discharge ( $Q_{bkf}$ )
9. Bankfull maximum Depth ( $d_{max}$ )
10. Ratio of bankfull max depth to bankfull mean depth ( $d_{max}/d_{bkf}$ )
11. Width of flood prone area ( $W_{fpa}$ )
12. Entrenchment ratio ( $W_{fpa}/W_{bkf}$ )
13. Meander length ( $L_m$ )
14. Ratio of meander length to bankfull width ( $L_m/W_{bkf}$ )
15. Radius of Curvature ( $R_c$ )
16. Ratio of Radius of Curvature to bankfull width ( $R_c/W_{bkf}$ )
17. Belt width ( $W_{blt}$ )
18. Meander width ratio ( $W_{blt}/W_{bkf}$ )
19. Sinuosity ( $K$ , stream length/valley distance)
20. Average slope ( $S$ )
21. Riffle slope ( $S_{riff}$ )
22. Ratio of riffle slope to mean
23. Pool slope ( $S_{pool}$ )
24. Ratio of pool slope to average slope ( $S_{pool}/S_{ave}$ )
25. Maximum pool depth ( $d_{pool}$ )
26. Ratio of pool depth to average bankfull depth ( $d_{pool} / d_{bkf}$ )
27. Pool width ( $W_{pool}$ )
28. Ratio pool width to bankfull width ( $W_{pool}/ W_{bkf}$ )
29. Pool/pool spacing
30. P/P spacing/ $W_{bkf}$
31. Low Bank Height/Max Bankfull Depth

The mitigation plan document shall be a brief narrative (1-2 pages) of existing and proposed site conditions. The existing conditions shall include degrading factors, physiography, land use, plant communities, soils, hydrology, and wetland delineations. The description of the proposed site shall include planting plan, success criteria for monitoring and design assumptions with description of hydrologic and sediment analysis and limiting factors associated with the proposed design and construction. A location map, the morphological table for the existing, proposed, and reference channels mentioned above, and existing and proposed channel cross sections, profiles and plan views shall be attached to the narrative. It

is unnecessary to repeat any information that can be found in the attachments in the body of the narrative.

### **Natural Channel Stream Design**

Data from the existing condition and reference reach surveys shall be used to design the dimension, pattern, and profile of the new channel. The sediment transport calculations shall be made on the existing channel, the reference reach channels, and the design channels for comparison. This analysis shall be used to ensure that the new channel does not aggrade or degrade. The Design-Build Team shall complete the proposed critical shear stress analysis. The hydrology and hydraulics shall include analysis of the bankfull discharge along with the 10-year, 50-year and 100-year discharge. The hydraulic analysis shall consist of preparing a single section analysis for each distinct reach of the existing and proposed stream geometry. The bankfull discharge shall be used to develop the proposed channel dimension and to assess performance while the larger discharges shall be used assess alteration to the flood stages.

### **Site Layout for Streams**

The existing and design longitudinal profiles shall be plotted. The design longitudinal profile shall show the maximum cut depth (thalweg). The bankfull stage shall be used as a control elevation to ensure that the bank height ratio is near or equal to one. The longitudinal profile shall be iterative and proposed slopes shall be based on design parameters and hydraulic analysis while also maintaining a bank height ratio of one. The existing and design cross sections shall be plotted and shown on cross section sheets. Typical design cross sections for straight sections and pools shall be shown. Cross sections shall be iterated to ensure that the design bankfull dimensions are maintained while maintaining a low bank height ratio.

The Design-Build Team shall also develop the horizontal alignments of the proposed channels. This shall include computing the horizontal and vertical location of key channel features that are necessary for construction, such as the centers of radius of curvature, head and tail of riffles, structure locations, and grade controls.

The morphological tables for existing, proposed and reference channels shall be provided on a detail sheet. Miscellaneous details, sequencing, etc. shall also be included on the plan sheets. The Design-Build Team shall produce a construction-staking plan as part of this task.

### **Preliminary Construction Plans (60% Design)**

The Design-Build Team shall prepare preliminary stream design plans based on the roadway plans for each site. The Design-Build Team shall include a morphological table in the detail sheets. The design plans shall consist of the following items in plan view on Roadway plan sheets (Scale 1:50).

- Stream plan view on the Roadway plan sheet (Scale 1:50)
- 1 detail sheet to include:
  - Details-utilize NCDOT Standard Natural Stream Details (to be provided by the Department to the Design-Build Team)
  - Riffle and Pool typical sections
  - Existing and Proposed Channel Profile with in-stream structure data
  - Horizontal curve data

The Design-Build Team shall provide 60% plans for review by the Project Development and Environmental Analysis Branch-Natural Environment Unit's Engineering Group a minimum of seven (7) weeks prior to the 4C meeting.

### **Prepare Final Design Plan and Mitigation Plan**

The Design-Build Team shall address the Regulatory Agencies and NCDOT's comments immediately after review of the 60% design plans and 4C meeting. The Design Build Team shall complete the requested changes and submit the mitigation and design plans to NCDOT for 90% review by the NEU ICI-On-site Mitigation and Engineering groups. Once the 90% review comments are addressed, the final mitigation and design plan shall be submitted with all information necessary to complete construction, as well as the project special provisions and specifications. The Design-Build Team shall include the final stream construction plans with the roadway construction plans.

### **Stream Construction**

Construction of the stream shall be done in accordance with the approved permit drawings, mitigation plan, and design/construction plans. The Design-Build Team shall follow all NCDOT standards and specifications set forth in the construction plans. The Design-Build Team shall ensure that the stream designer shall be on-site as needed during the construction of the stream. Any and all alterations/changes to the approved design shall be approved by the Department/Engineer. All changes that are made as a result of but not limited to the existing field conditions shall be noted and included in the as-built plans. The as-built plans for the stream relocations/mitigation shall be submitted to NCDOT within 60 days of completion of the stream to meet permit requirements. The Design-Build Team shall be responsible for any and all remediation activities at the sites through final acceptance of the roadway project including the Twelve-Month Guarantee period. The Design-Build Team shall use GPS and MicroStation to compile this information. This information shall then be provided to NCDOT in electronic as well as hard copy format within 60 days of completion of construction.



**PUBLIC INFORMATION SCOPE OF WORK**

The Design-Build Team will take the lead role on this project and be responsible for the public information efforts through the NCDOT's IMPACT Public Information Program. The Design-Build Team's responsibilities will include:

- Organizing public meetings, with assistance from the Department to secure a facility
- Providing media announcements
- Developing and producing informational print materials
- Providing details surrounding the project impacts to the public
- Providing advance notice to the Department of upcoming project impacts
- Attending and/or speaking at public meetings
- Facilitate Operations Meetings that will be held once a month during construction
- Attend Incident Management meetings that will be held once a quarter during construction

NCDOT, through the IMPACT Public Information Program, will be responsible for reviewing and approving all of the public information materials created by the Design-Build Team for distribution for this project. The NCDOT will be responsible for mailing public informational material to the identified target audiences, including all necessary postage.

The Design-Build Team shall coordinate with the Department to promote public awareness for this project. The Design Build Team, with assistance from the Department, shall develop a Public Information Plan that identifies the target audiences, details project impacts and outlines proposed efforts to notify the public about the impacts. The following groups are identified as typical target audiences to receive informational materials:

- Governmental agencies (including James Shapard and Rick Gorchoske with the City of Charlotte)
- Municipalities directly affected by construction
- Transportation services
- Emergency services
- Neighborhood groups and private homes
- Industry and businesses
- Chamber of Commerce
- Individual schools effected by the project
- County/City school systems
- Any other organization as deemed necessary by the Department.

The Design-Build Team shall hold an initial project coordination meeting with NCDOT one month prior to start of construction to discuss project impacts to the public and the Public Information Plan.

The Design-Build Team shall inform the Department at least 3 weeks in advance of any construction activity that will have significant impact on the public, including but not limited to the start of construction, major traffic shifts, road closures, ramp closures, detours, night work

and project completion. In the event that the Design-Build Team informs the Department of a construction activity that significantly impacts the public less than three weeks in advance, the Design-Build Team shall hand deliver informational material to the target audiences.

The amount of public information required for this project is directly based on the Design-Build Team's Traffic Control Plans and construction details. The minimum public information requirements solely associated with the Traffic Control Plans shall include, but not be limited to, the following:

- Public Meetings – If Beginning of Construction meeting for area businesses and residents is held, attending and/or speaking at this event. Conduct meetings when necessary to inform businesses, residents and motorists of major traffic shifts or construction events.
- Distribution of Informational Materials - For beginning of construction and for all road/ramp closures with detour routes, the Design-Build Team shall be responsible for developing and producing informational material for the impacted target audiences. If the Design-Build Team informs the Department of the aforementioned activities less than three weeks in advance, the Design-Build Team shall hand deliver the informational material to the impacted target audiences.

The Design-Build Team shall include in their Lump Sum Bid price for the project, all costs associated with their involvement in Public Information scope of work.

A website site shall be required for this project. The website shall be housed on a non-NCDOT server. The Design-Build Team shall submit the initial general content of the website to the Department for review and approval. The Department reserves the right to periodically review the website for inappropriate content and direct revisions to the content. All costs associated with setting up and maintaining this website shall be include in the lump sum bid for this project.

**ITS CONDUIT SYSTEM SCOPE OF WORK** (5-3-10)**GENERAL**

Install an underground conduit system including four 1.25-inch conduits, oversized junction boxes, and delineator markers along I-85 and I-485. Begin conduit installation at the existing junction box located near station 110+00 -L-. Extend the conduit system to the existing junction box located near station 64+00 -L- and from an oversized junction box installed by the R-2248E Design-Build Team near the western end of this project eastward to the existing oversized junction box near station 64+00 -L-. Fiber optic cable, ITS devices, and electrical/communication/ data services to the ITS devices are not included in this contract and will be installed by others. The Design-Build Team is responsible for determining the conduit system routing and location of oversized junction boxes, obtaining Engineer's approval of the locations, installing the conduits, oversized junction boxes, delineator markers and implementing test procedures.

Prior to any underground work, locate existing utilities, communications cable, power cable, and adjust work activities to protect these facilities. Immediately cease work and notify the Engineer and the affected owners if damage to existing utilities occurs. Repair damages to existing utilities, communications cable, and/or power cable at no cost to the Department.

An existing ITS hub located within the I-485/I-85 interchange will be moved by the Department to beyond the southern construction limits of this project prior to the construction of this project.

**Intermediate Contract Time #5 for Failure to Repair ITS devices and equipment, and Restore Communication**

In the event that the Design-Build Team causes any damages or operational impacts to existing ITS devices and equipment, including but not limited to fiber optic cables, cameras, dynamic message signs etc., report damages immediately to the Engineer and MRTMC at (704) 642-6967. The Design-Build Team shall repair all damages and restore communication for all affected ITS devices and equipment within 48 hours.

The Design-Build Team shall repair damaged and / or cut fiber optic cable by replacing the entire section of fiber optic cable and / or conduit between the two adjacent existing junction boxes. Mid-section splices of existing fiber optic cable and / or conduit will not be allowed.

**Liquidated Damages for Intermediate Contract Time #5 for failure to repair ITS devices and equipment, and restore communication within 48 hours are \$1,500.00 per 24-hour period or any portion thereof.**

**DESIGN REQUIREMENTS**

The conduit system installation must be in compliance with the approved *Communication Cable Conduit Routing* Plans developed by the Design-Build Team. The Design-Build Team shall coordinate the conduit system design and installation with NCDOT and Design-Build Teams working on adjacent NCDOT projects to ensure continuity of conduit system to closest fiber

optic cable termination or splicing point. The Design-Build Team shall design the conduit system to avoid conflicts with future widening, drainage facilities, guardrail, sign structures, and future DMS signs. The conduit system shall be designed so that it is not necessary to close a lane or shoulder in order to access the junction or splice boxes. The conduit system shall not be located in the median of either I-485 or I-85.

Design the mainline conduit to stay on the same side of I-485 and I-85 as that where the conduit is installed for the R-2248E and I-3803B projects, respectively. Install lateral conduits (two 2-inch conduits) across the roadway to each of the opposing quadrants of the interchange and outside the ramps. The lateral conduit shall intercept the mainline conduit in an oversized junction box.

Oversized junction boxes shall be located at both ends of directional drill segments and the intersection of every lateral conduit that will be placed to serve future ITS devices.

### **ELECTRICAL SERVICE**

Coordinate with the local electric utility company(s) to retain the current power distribution configuration near existing ITS devices.

### **SPECIFICATIONS**

Perform all work in accordance with the July 2006 *NCDOT Specifications for Roads and Structures* and the 2006 *NCDOT Roadway Standard Drawings*.

### **Other Codes and Standards**

All communication conduit system materials must conform to the latest version of the applicable standards of the National Electrical Code (NEC), National Electric Manufacturer's Association (NEMA), the Underwriters' Laboratories, Inc. (UL), the Electronic Industries Association (EIA), the International Municipal Signal Association (IMSA), and the National Electrical Safety Code (NESC). All materials and workmanship must conform to the requirements of the NESC, standards of the American Society for Testing and Materials (ASTM); American National Standards Institute (ANSI). Comply with all federal laws, state laws, and city codes in accordance with Section 17 of the *Standard Specifications*.

### **SUBMITTALS**

The Design-Build Team must submit a 60% set of preliminary plans, 90% set of project plans, and 100% set of project plans including catalog cuts, and specifications for materials, installation and testing for review and acceptance by the NCDOT. No construction of the conduit system can begin until the Department has approved the 100% plans and specifications. Provide NCDOT with a minimum of 10 working days for each review.

## **MATERIALS & CONSTRUCTION**

The Design-Build Team shall furnish and install new materials and hardware that meet the requirements of the 2006 *NCDOT Standard Specifications for Roads and Structures* and this Scope of Work.

### **1. Multi-duct Conduit**

Furnish and install four (4) – 1.25-inch inside diameter multi-duct conduit system and all necessary hardware by using the plowing method or trenching method in accordance with the provisions of Sections 1098 and 1715 of the 2006 NCDOT Standard Specifications for Roads and Structures.

Provide underground marker tape at a depth of 1 to 1.5 feet directly over all conduit installations.

Do not splice or join sections of conduit(s). Upon approval, an oversized junction box may be installed at locations where splicing or coupling of the conduit is necessary due to problems encountered with the installation.

Immediately following the installation of the conduit(s), use duct plugs to seal the ends of the conduit. Secure the pull lines to the duct plugs in such a manner that it will not interfere with the installation of the duct plug and provide a watertight seal. Provide duct plugs that are removable and reusable.

Do not install longitudinal runs of conduit along the median or in locations of future roadway widening. Install the conduit an adequate distance from the travel lane to avoid future damage from guardrail and sign installations.

Conduit may be supported from bridges or may be installed under -Y- lines and streams. The Design-Build Team shall provide details for the conduit at road and stream crossings. Design details for supporting conduit across a bridge shall be submitted for review and approval.

Furnish conduits in colors. Provide conduits that are factory extruded with the appropriate colors. Furnish conduit organizers at all points where multiple conduits enter and exit a junction box. Furnish conduit organizers that are appropriately sized with regards to the conduits. Provide conduit organizers that are removable.

A Pull Line is required within each conduit.

### **2. Tracer Wire**

Furnish "green" insulated Number 14 AWG, THWN, stranded, copper wire to serve as a tracer wire in one of the 4 conduits. Install the tracer wire in the same conduit through the entire length of the conduit system. Where tracer wire is spliced, provide waterproof butt splices. Splicing is allowed only in junction boxes.

### 3. Oversized Junction Boxes

Furnish and install oversized junction boxes (pull boxes) at maximum intervals of 1,500 feet and as necessary for future device installation and directional drilling conduit segments in accordance with Sections 1098-5(C), and 1716 of the 2006 *NCDOT Standard Specifications for Roads and Structures*.

Provide junction box covers with standard “NCDOT Fiber-Optic Cable” logo, pull slots and stainless steel pins.

Comply with Article 1411-3 Electrical Junction Boxes of the Standard Specifications, except as follows:

Install junction boxes flush with finished grade.

Do not install sealant compound between junction boxes and covers.

Install junction boxes where underground splicing of cable is necessary and where transitioning from below ground to above ground installation or vice-versa.

### 4. Delineator Markers

Furnish and install delineator markers with all necessary hardware in accordance with the provisions of Section 1098-13 and 1733 of the 2006 *NCDOT Standard Specifications for Roads and Structures*.

Place delineator marker at every splice and junction box location.

Provide text, including the division contact number that is hot stamped in black on a yellow background material that will not fade or deteriorate over time. Provide delineator markers with a nominal message height of 15 inches and that contain the following text visible from all directions approaching the assembly:

**WARNING  
NCDOT FIBER OPTIC CABLE  
BEFORE EXCAVATING OR  
IN AN EMERGENCY  
CALL: (704) 347-6605**

Submit a sample of the proposed delineator markers for approval prior to installation.

Install delineator markers at 1,500 feet intervals. Install delineator markers using a method that securely anchors the delineator marker in the ground to prohibit twisting and easy removal.

## **5. Backfill and Incidental Stone Base**

Furnish backfill in accordance with Section 1018-2 and incidental stone base in accordance with Sections 545-2 & 545-3 as necessary to install components as referenced in this Scope of Work.

## **6. Removal of Existing ITS Devices**

Remove and stockpile 18 MVDs located between Bruton Smith Boulevard and Mallard Creek Church Road on I-85 northbound and southbound and two CCTV Cameras located near station 85+00 –L- on I-85 southbound. Stockpile the equipment at the Metrolina Regional Transportation Management Center (MRTMC) as directed by the Engineer and/or MRTMC staff. MRTMC is located at 2327 Tipton Drive, Charlotte, NC 28206 and can be reached at (704) 342-6814.

At each location, remove and stockpile the device, pole-mounted cabinet with all equipment inside, electrical service equipment, metal pole, and cable and conduits. The metal pole foundation shall be abandoned in place unless conflicting with construction. Cut any metal parts protruding above foundation smooth with the surface.

Remove and stockpile the fiber optic splice enclosure, if present, in the junction boxes near these devices. Pull back the fiber optic drop cable to these devices. Coil, cap and store the fiber optic drop cable in the junction boxes containing the backbone fiber optic cable installed along the right of way fence.

Schedule removal of the devices just prior to start of construction in the area and obtain approval from the Engineer prior to removal.

Care must be taken not to damage any devices and related equipment during removing and stockpiling. The Design-Build Team is responsible for damages to the devices and equipment resulting from their operations.

### **Qualified Products List:**

The Design-Build Team shall submit a listing of items on the NCDOT Qualified Products List (QPL) to receive approval for use on the project. Catalog cuts will not be required for items on the QPL. The QPL web site is:

<http://www.ncdot.org/doh/preconstruct/traffic/ITSS/SMS/qpl/>

## **MAINTENANCE AND REPAIR REQUIREMENTS**

The Design-Build Team shall maintain and repair the conduit system installed as part of this project until the final acceptance of the project by the NCDOT. After the acceptance of the project, the Design-Build Team is responsible for repairing any damage to the conduit system caused by Design-Build Team or due to faulty materials or workmanship in accordance with the

Project Special Provision “Twelve-month Guarantee” or longer warranty period offered by the Design-Build Team.

## **DOCUMENTATION**

Upon completion of the conduit system installation, furnish the Engineer with Plan of Record Drawings which are coordinately correct, horizontal and vertical, and tied to the state coordinate system. Provide Plan of Record Drawings for all conduit, and junction boxes installed as part of this Scope of Work.

## **TESTING**

Upon conclusion of all roadway construction activities and completion of the entire project, the Design-Build Team shall perform a mandrel test on all conduits to ensure no conduit(s) has been damaged. Furnish a non-metallic mandrel having a diameter of approximately 50% of the inside diameter of the conduit in which it is to be pulled through each conduit. If damage has occurred, replace the entire length of conduit between junction boxes.



**\*\*\* STANDARD SPECIAL PROVISIONS \*\*\*****LIABILITY INSURANCE**

(11-18-08)

DB1 G80

Revise the 2006 Standard Specifications as follows:

**Page 1-68, Article 107-16 is amended to include the following as the first, second, third and fourth paragraphs:**

The Design-Build Team shall be liable for any losses resulting from a breach of the terms of this contract. The Design-Build Team shall be liable for any losses due to the negligence or willful misconduct of its agents, assigns and employees including any sub-contractors which causes damage to others for which the Department is found liable under the Torts Claims Act, or in the General Courts of Justice, provided the Department provides prompt notice to the Design-Build Team and that the Design-Build Team has an opportunity to defend against such claims. The Design-Build Team shall not be responsible for punitive damages.

The Design-Build Team shall at its sole cost and expense obtain and furnish to the Department an original standard ACORD form certificate of insurance evidencing commercial general liability with a limit for bodily injury and property damage in the amount of \$5,000,000.00 per occurrence and general aggregate, covering the Design-Build Team from claims or damages for bodily injury, personal injury, or for property damages which may arise from operating under the contract by the employees and agents of the Design-Build Team. The required limit of insurance may be obtained by a single general liability policy or the combination of a general liability and excess liability or umbrella policy. The State of North Carolina shall be named as an additional insured on this commercial general liability policy. The policy may contain the following language as relates to the State as an additional insured: "This insurance with respect to the additional insured applies only to the extent that the additional insured is held liable for your or your agent's acts or omissions arising out of and in the course of operations performed for the additional insured."

The Design-Build Team shall maintain all legally required insurance coverage, including without limitation, worker's compensation and vehicle liability, in the amounts required by law. Providing and maintaining adequate insurance coverage is a material obligation of the Design-Build Team and is of the essence of this contract. All such insurance shall meet all laws of the State of North Carolina. Such insurance coverage shall be obtained from companies that are authorized to provide such coverage and that are authorized by the Commissioner of Insurance to do business in North Carolina. The Design-Build Team shall at all times comply with the terms of such insurance policies.

Upon execution of the contract, provide evidence of the above insurance requirements to the Engineer.

**PLANT AND PEST QUARANTINES****(Imported Fire Ant, Gypsy Moth, Witchweed, And Other Noxious Weeds)**

(3-18-03)

DB1 G130

**Within Quarantined Area**

This project may be within a county regulated for plant and/or pests. If the project or any part of the Design-Build Team's operations is located within a quarantined area, thoroughly clean all equipment prior to moving out of the quarantined area. Comply with federal/state regulations by obtaining a certificate or limited permit for any regulated article moving from the quarantined area.

**Originating in a Quarantined County**

Obtain a certificate or limited permit issued by the N.C. Department of Agriculture/United States Department of Agriculture. Have the certificate or limited permit accompany the article when it arrives at the project site.

**Contact**

Contact the N.C. Department of Agriculture/United States Department of Agriculture at 1-800-206-9333, 919-733-6932, or <http://www.ncagr.com/plantind/> to determine those specific project sites located in the quarantined area or for any regulated article used on this project originating in a quarantined county.

**Regulated Articles Include**

1. Soil, sand, gravel, compost, peat, humus, muck, and decomposed manure, separately or with other articles. This includes movement of articles listed above that may be associated with cut/waste, ditch pulling, and shoulder cutting.
2. Plants with roots including grass sod.
3. Plant crowns and roots.
4. Bulbs, corms, rhizomes, and tubers of ornamental plants.
5. Hay, straw, fodder, and plant litter of any kind.
6. Clearing and grubbing debris.
7. Used agricultural cultivating and harvesting equipment.
8. Used earth-moving equipment.
9. Any other products, articles, or means of conveyance, of any character, if determined by an inspector to present a hazard of spreading imported fire ant, gypsy moth, witchweed or other noxious weeds.

**CONTRACTOR CLAIM SUBMITTAL FORM**

(9-16-08)

DB1 G140

If the Design-Build Team elects to file a written claim or requests an extension of contract time, it shall be submitted on the *Contractor Claim Submittal Form (CCSF)* available through the Construction Unit or

[http://ncdot.org/doh/operations/dp\\_chief\\_eng/constructionunit/formsmanuals/](http://ncdot.org/doh/operations/dp_chief_eng/constructionunit/formsmanuals/).

**GIFTS FROM VENDORS AND CONTRACTORS:**

(12-15-09)

DB1 G152

By Executive Order 24, issued by Governor Perdue, and *N.C. G.S. § 133-32*, it is unlawful for any vendor or contractor (i.e. architect, bidder, contractor, construction manager, design professional, engineer, landlord, offeror, seller, subcontractor, supplier, or vendor), to make gifts or to give favors to any State employee of the Governor's Cabinet Agencies (i.e. Administration, Commerce, Correction, Crime Control and Public Safety, Cultural Resources, Environment and Natural Resources, Health and Human Services, Juvenile Justice and Delinquency Prevention, Revenue, Transportation, and the Office of the Governor). This prohibition covers those vendors and contractors who:

- (1) have a contract with a governmental agency; or
- (2) have performed under such a contract within the past year; or
- (3) anticipate bidding on such a contract in the future.

For additional information regarding the specific requirements and exemptions, vendors and contractors are encouraged to review Executive Order 24 and *G.S. § 133-32*.

Executive Order 24 also encouraged and invited other State Agencies to implement the requirements and prohibitions of the Executive Order to their agencies. Vendors and contractors should contact other State Agencies to determine if those agencies have adopted Executive Order 24.

**EMBANKMENTS**

(5-16-06) (Rev 7-21-09)

DB2 R018

Revise the 2006 *Standard Specifications for Roads and Structures* as follows:

**Page 2-22, Article 235-3 Materials**, add the following as the second sentence of the second paragraph:

Aerate and dry material containing moisture content in excess of what is required to achieve embankment stability and specified density.

**Page 2-22, Subarticle 235-4(B) Embankment Formation**, add the following:

- (16) Do not place rock or broken pavement in embankment areas where piles or drilled shaft foundations are to be constructed. This shall include but not be limited to piles and foundations for structures, metal signal poles, overhead sign structures, and high mount lighting.

**AGGREGATE SUBGRADE:**

(9-18-07) (Rev 3-16-10)

DB2 R35

**Description**

This provision applies to undercut less than two feet in depth directly below the pavement structure. Install fabric for soil stabilization and place Class IV Subgrade Stabilization at these locations in accordance with this provision.

**Materials**

Refer to Division 10 of the 2006 *Standard Specifications for Roads and Structures*.

<b>Item</b>	<b>Section</b>
Select Material, Class IV	1016
Fabric for Soil Stabilization, Type 4	1056

Use Class IV Select Material for Class IV Subgrade Stabilization. If Class IV Subgrade Stabilization does not meet the requirements of Article 1010-2 of the 2006 Standard Specifications for Roads and Structures, the Engineer may consider the material reasonably acceptable in accordance with Article 105-3 of the 2006 Standard Specifications for Roads and Structures.

**Construction Methods**

When shallow undercut is required to construct aggregate subgrades, undercut 6 to 24 inches as shown on the plans or as directed by the Engineer. Perform undercut excavation in accordance with Section 225 of the 2006 Standard Specifications for Roads and Structures. Install fabric for soil stabilization in accordance with Article 270-3 of the 2006 Standard Specifications for Roads and Structures. Place Class IV Subgrade Stabilization (standard size no. ABC) by end dumping ABC on the fabric. Do not operate heavy equipment on the fabric until it is covered with Class IV Subgrade Stabilization. Compact ABC to 92% of AASHTO T180 as modified by the Department or to the highest density that can be reasonably obtained.

Maintain Class IV Subgrade Stabilization in an acceptable condition and minimize the use of heavy equipment on ABC in order to avoid damaging aggregate subgrades. Provide and maintain drainage ditches and drains as required to prevent entrapping water in aggregate subgrades.

**REINFORCED BRIDGE APPROACH FILL**

7-18-06

DB4 R 01

**Description**

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

**Materials****(A) Geomembrane**

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

<b>Property</b>	<b>Requirements</b>	<b>Test Method</b>
Thickness	25 mils Minimum	ASTM D1593
Tensile Strength at Break	100 lb/inch Minimum	ASTM D638
Puncture Strength	40 lbs Minimum	ASTM D 4833
Moisture Vapor Transmission Rate	0.018 oz/yd <sup>2</sup> per Day Maximum	ASTM E96

**(B) Fabric**

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

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

<b>Fabric Property</b>	<b>Requirements</b>	<b>Test Method</b>
Minimum Flow Rate	2 gallons/min/square foot	ASTM D 4491

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

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

**(C) Select Material**

Provide select material meeting the requirements of Class III, Type 1 or Type 2, or Class V select material of Section 1016 of the *2006 Standard Specifications*. When select material is required under water, use select material class V only, up to one foot above the existing water elevation.

**(D) 4 inch Diameter Corrugated Drainage Pipe and Fittings**

Provide pipe and fittings that meet all the applicable requirements of Section 815 or 816 of the *2006 Standard Specifications*.

**Construction Methods**

Place the geomembrane and fabric as shown on the plans or as directed by the Engineer. Perform the excavation for the fabric reinforced fill to the limits shown on the plans. Provide an excavated surface free of obstructions, debris, pockets, stumps, and cleared of all vegetation. The geomembrane or fabric will be rejected if it has defects, rips, holes, flaws, deterioration or damage incurred during manufacture, transportation, handling or storage. Lay all layers smooth, and free from tension, stress, folds, wrinkles or creases. Place all the fabric layers with the machine direction (roll direction) parallel to the centerline of the roadway. A minimum roll width of 10.0 feet for the fabric is required. Overlap geomembrane or fabric splices parallel to the centerline of the roadway a minimum of 18 inches. Geomembrane or fabric splices parallel to the backwall face will not be allowed.

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

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

Place four inch diameter perforated drainage pipe along the base of the backwall and sloped to drain as shown on the plans. Completely wrap perforated drainage pipe and #78M stone with Type 2 Engineering Fabric as shown on the plan detail. Install a pipe sleeve through the bottom of or under the wing wall prior to placing concrete for the wing wall. The pipe sleeve shall be of adequate strength to withstand the wingwall load. Place the pipe sleeve in position to allow the drainage pipe to go through the wing wall with a proper slope. Connect four-inch diameter nonperforated (plain) drainage pipe with a coupling to the perforated pipe near the inside face of the wingwall. Place the nonperforated drainage pipe through the pipe sleeve, extend down to the toe of the slope and connect, to a ditch or other drainage systems as directed by the Engineer. For bridge approaches in cut sections where no side slope is available, direct the drainage pipe outlet to the end slope down to the toe using elbows as directed by the Engineer.

### **FINE GRADING SUBGRADE, SHOULDERS AND DITCHES**

(7-21-09)

DB5 R001

Revise the 2006 *Standard Specifications for Roads and Structures* as follows:

**Page 5-1, Article 500-1 Description**, replace the first sentence with the following:

Perform the work covered by this section including but not limited to preparing, grading, shaping, manipulating moisture content, and compacting either an unstabilized or stabilized roadbed to a condition suitable for placement of base course, pavement, and shoulders.

**Page 5-1, Subarticle 500-2(A) General**, insert the following as the fifth paragraph:

Control the moisture content of the material by drying or adding water.

### **AGGREGATE BASE COURSE**

12-19-06

DB5 R03

Revise the 2006 *Standard Specifications for Roads and Structures* as follows:

**Page 5-11, Article 520-5 Hauling and Placing Aggregate Base Material, 6th paragraph**, replace the first sentence with the following:

Base course that is in place on November 15 shall have been covered with a subsequent layer of pavement structure or with a sand seal. Base course that has been placed between November 16 and March 15 inclusive shall be covered within 7 calendar days with a subsequent layer of pavement structure or with a sand seal.

### **PREPARATION OF SUBGRADE AND BASE**

(1-16-96)

DB5 R05

On mainline portions and ramps of this project, prepare the subgrade and base beneath the pavement structure in accordance with the applicable sections of the Standard Specifications except use an automatically controlled fine grading machine utilizing string lines, laser controls,

or other approved methods to produce final subgrade and base surfaces meeting the lines, grades, and cross sections required by the plans or established by the Engineer.

**AGGREGATE FOR SOIL-CEMENT BASE**

(7-18-06)

DB5 R15

Revise the 2006 *Standard Specifications for Roads and Structures* as follows:

**Page 5-27, Article 542-1. Delete the first sentence and substitute the following:**

The work covered by this section consists of constructing and curing a soil-cement base by treating the subgrade, existing subbase, or existing base, or any combination of these materials, by pulverizing, adding portland cement, adding aggregate when required, mixing, wetting, and compacting the mixture to the required density.

**Page 5-27, Article 542-2. Add the following:**

<b>Item</b>	<b>Section</b>
Aggregate, Std. Size ABC	1005

**Page 5-29, Article 542-7. Add the following after the first paragraph:**

Prior to spreading cement, aggregate shall be spread at the rate shown in the plans.

**ASPHALT PAVEMENTS - SUPERPAVE**

(09-14-09)

DB6 R01

Revise the 2006 *Standard Specifications* as follows:

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

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

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

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

**First paragraph, delete and replace with the following.**

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



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

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

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

*or ASTM D 2041*

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

- (i) Option 1

**Insert the following immediately after the first paragraph:**

- (ii) Option 2

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

**Second paragraph, delete and replace with the following:**

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

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

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

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

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

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

- (a) A change in the binder percentage, aggregate blend, or  $G_{mm}$  is made on the JMF, or,
- (b) When the Contractor elects to stop or is required to stop production after one or two moving average values, respectively, fall outside the moving average limits as outlined in subarticle 609-5(C)6 or,
- (c) If failure to stop production after two consecutive moving averages exceed the moving average limits occurs, but production does stop at a subsequent time, re-establish a new moving average beginning at the actual production stop point.

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

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

**CONTROL LIMITS**

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

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

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

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

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

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

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

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

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

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

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

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

If the adjustment does not improve the property in question such that the moving average after four additional individual tests is outside the moving average limits, the mix will be evaluated for acceptance in accordance with Article 105-3. Reduced payment for or removal of the mix in question will be applied starting from the plant sample tonnage at the stop point to the sample tonnage when the moving average is on or within the moving average limits. In addition, any mix that is obviously unacceptable will be rejected for use in the work.

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

Failure to stop production and make adjustments when required due to two consecutive moving average values falling outside the moving average limits will subject all mix produced from the stop point tonnage to the tonnage point when the moving average is back on or within the moving average limits or to the tonnage point when production is actually stopped, whichever occurs first, to being considered unacceptable. Remove this material and replace with materials that comply with the Specifications at no additional costs to the Department, unless otherwise approved. Payment will be made for the actual

quantities of materials required to replace the removed quantities, not to exceed the original amounts.

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

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

**Page 6-22, Subarticle 609-5(D)(4) Nuclear Gauge Density Procedures, third paragraph, insert the following as the second sentence:**

Determine the Daily Standard Count in the presence of the QA Roadway Technician or QA Nuclear Gauge Technician on days when a control strip is being placed.

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

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

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

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

**Page 6-25, Article 609-6 Quality Assurance, Density Quality Assurance, insert the following items after item (E):**

- (F) By retesting Quality Control core samples from control strips (either core or nuclear) at a frequency of 100% of the frequency required of the Contractor;
- (G) By observing the Contractor perform all standard counts of the Quality Control nuclear gauge prior to usage each nuclear density testing day; or
- (H) By any combination of the above

**Page 6-28, Subarticle 610-3(A) Mix Design-General, delete the fourth and fifth paragraphs and replace with the following:**

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

Reclaimed asphalt pavement (RAP) may constitute up to 50% of the total material used in recycled mixtures, except for mix Type S12.5D, Type S9.5D, and mixtures containing reclaimed asphalt shingle material (RAS). Reclaimed asphalt shingle (RAS) material may constitute up to 6% by weight of total mixture for any mix. When both RAP and RAS are used, do not use a combined percentage of RAS and RAP greater than 20% by weight of total mixture, unless otherwise approved. When the percent of binder contributed from RAS or a combination of RAS and RAP exceeds 20% but not more than 30% of the total binder in the completed mix, the virgin binder PG grade shall be one grade below (both high and low temperature grade) the binder grade specified in Table 610-2 for the mix type, unless otherwise approved. When the percent of binder contributed from RAS or a combination of RAS and RAP exceeds 30% of the total binder in the completed mix, the Engineer will establish and approve the virgin binder PG grade. Use approved methods to determine if any binder grade adjustments are necessary to achieve the performance grade for the specified mix type.

For Type S12.5D and Type S9.5D mixes, the maximum percentage of reclaimed asphalt material is limited to 20% and shall be produced using virgin asphalt binder grade PG 76-22. For all other recycled mix types, the virgin binder PG grade shall be as specified in Table 610-2A for the specified mix type.

When the percentage of RAP is greater than 20% but not more than 30% of the total mixture, use RAP meeting the requirements for processed or fractionated RAP in accordance with the requirements of Section 1012-1.

When the percentage of RAP is greater than 30% of the total mixture, use an approved stockpile of RAP in accordance with Section 1012-1(C). Use approved test methods to determine if any binder grade adjustments are necessary to achieve the performance grade for the specified mix type. The Engineer will establish and approve the virgin asphalt binder grade to be used.

Page 6-34, Subarticle 610-3(C), delete Table 610-2 and associated notes. Substitute the following:

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

Mix Type	Design ESALs Millions (a)	Binder PG Grade (b)	Compaction Levels No. Gyration @		Max. Rut Depth (mm)	Volumetric Properties (c)			
			N <sub>ini</sub>	N <sub>des</sub>		VMA % Min.	VTM %	VFA Min. - Max.	%G <sub>mm</sub> @ N <sub>ini</sub>
S4.75A(e)	< 0.3	64 -22	6	50	-----	20.0	7.0 - 15.0	-----	-----
SF9.5A	< 0.3	64 -22	6	50	11.5	16.0	3.0 - 5.0	70 - 80	≤ 91.5
S9.5B	0.3 - 3	64 -22	7	65	9.5	15.5	3.0 - 5.0	65 - 80	≤ 90.5
S9.5C	3 - 30	70 -22	7	75	6.5	15.5	3.0 - 5.0	65 - 78	≤ 90.5
S9.5D	> 30	76 -22	8	100	4.5	15.5	3.0 - 5.0	65 - 78	≤ 90.0
S12.5C	3 - 30	70 -22	7	75	6.5	14.5	3.0 - 5.0	65 - 78	≤ 90.5
S12.5D	> 30	76 -22	8	100	4.5	14.5	3.0 - 5.0	65 - 78	≤ 90.0
I19.0B	< 3	64 -22	7	65	-----	13.5	3.0 - 5.0	65 - 78	≤ 90.5
I19.0C	3 - 30	64 -22	7	75	-----	13.5	3.0 - 5.0	65 - 78	≤ 90.0
I19.0D	> 30	70 -22	8	100	-----	13.5	3.0 - 5.0	65 - 78	≤ 90.0
B25.0B	< 3	64 -22	7	65	-----	12.5	3.0 - 5.0	65 - 78	≤ 90.5
B25.0C	> 3	64 -22	7	75	-----	12.5	3.0 - 5.0	65 - 78	≤ 90.0
All Mix Types	<b>Design Parameter</b> 1. Dust to Binder Ratio (P <sub>0.075</sub> / P <sub>be</sub> ) 2. Retained Tensile Strength (TSR) (AASHTO T283 Modified)					<b>Design Criteria</b> 0.6 – 1.4 85% Min. (d)			

- 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) AASHTO T 283 Modified (No Freeze-Thaw cycle required). TSR for Type S 4.75A, Type B 25.0B, and Type B 25.0C mixes is 80% minimum
  - (e) Mix Design Criteria for Type S 4.75A may be modified subject to the approval of the Engineer

Page 6-34, Insert the following immediately after Table 610-2:

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

	Percentage of RAP in Mix		
	Category 1	Category 2	Category 3
<b>Mix Type</b>	% RAP ≤ 20%	20.1% ≤ %RAP ≤ 30.0%	%RAP > 30.0%
<b>All A and B Level Mixes, I19.0C, B25.0C</b>	PG 64 -22	PG 64 -22	TBD
<b>S9.5C, S12.5C, I19.0D</b>	PG 70 -22	PG 64-22	TBD
<b>S9.5D and S12.5D</b>	PG 76-22	N/A	N/A

Note: (1) Category 1 RAP has been processed to a maximum size of 2 inches.

(2) Category 2 RAP has been processed to a maximum size of 1 inch by either crushing and / or screening to reduce variability in the gradations.

(3) Category 3 RAP has been processed to a maximum size of 1 inch, fractionating the RAP into 2 or more sized stockpiles

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

**TABLE 610-3  
ASPHALT PLACEMENT- MINIMUM TEMPERATURE REQUIREMENTS**

Asphalt Concrete Mix Type	Minimum Air Temperature	Minimum Surface Temperature
ACBC, Type B25.0B, C, B37.5C	35° F	35° F
ACIC, Type I19.0B, C, D	35° F	35° F
ACSC, Type S4.75A, SF9.5A, S9.5B	40° F	50° F*
ACSC, Type S9.5C, S12.5C	45° F	50° F
ACSC, Type S9.5D, S12.5D	50° F	50° F

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

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

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

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

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

**Page 6-50, Article 610-13 Density Acceptance, delete the formula and description in the middle of the page and replace with the following:**

$$PF = 100 - 10(D)^{1.465}$$

where: PF = Pay Factor (computed to 0.1%)  
 D = the deficiency of the lot average density, not to exceed 2.0%

**Page 6-53, Article 620-4 Measurement and Payment**

**Sixth paragraph, delete the last sentence.**

**Seventh paragraph, delete the paragraph and replace with the following:**

The adjusted contract unit price will then be applied to the theoretical quantity of asphalt binder authorized for use in the plant mix placed during the partial payment period involved, except that where recycled plant mix is used, the adjusted unit price will be applied only to the theoretical number of tons of additional asphalt binder materials required by the job mix formula.

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

<b>Pay Item</b>	<b>Pay Unit</b>
Asphalt Binder for Plant Mix, Grade PG 70-28	Ton

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

Type of Coat	Grade of Asphalt	Asphalt Rate Gal / yd <sup>2</sup>	Application Temperature °F	Aggregate Size	Aggregate Rate lb. / sq. yd. Total
Sand Seal	CRS-2 or CRS-2P	0.22-0.30	150-175	Blotting Sand	12-15

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

- (5) Sand Seal

Place the fully required amount of asphalt material in one application and immediately cover with the seal coat aggregate. Uniformly spread the fully required



amount of aggregate in one application and correct all non-uniform areas prior to rolling.

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

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

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

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

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

**Page 6-76, Article 661-2 Materials, add the following after Asphalt Binder, Grade 70-28:**

<b>Item</b>	<b>Section</b>
Asphalt Binder, Grade 76-22	1020
Reclaimed Asphalt Shingles	1012

**Page 6-78, Subarticle 661-2(E), Asphalt Binder For Plant Mix, Grade PG 70-28, rename as ASPHALT BINDER FOR PLANT MIX and add the following as the first paragraph:**

Use either PG 70-28 or PG 76-22 binder in the mix design. Where PG 76-22 is being used in the production of Ultra-thin, the grade of asphalt binder to be paid for will be PG 70-28, unless otherwise approved.

**Page 6-79, Subarticle 661-2(G), Composition of Mix, add the following as the third sentence of the first paragraph.**

The percent of asphalt binder contributed from the RAS shall not exceed 20% of the total binder in the completed mix.

**Page 6-80, Article 661-2(G) Composition of Mix, replace Table 661-4 and associated notes with the following:**

<b>TABLE 661-4 – MIXTURE DESIGN CRITERIA</b>				
<b>Gradation Design Criteria (% Passing by Weight)</b>				
<b>Standard Sieves</b>		<b>1/2 in. Type A</b>	<b>3/8 in. Type B</b>	<b>1/4 in. Type C</b>
<b>ASTM</b>	<b>mm</b>	<b>(% Passing by Weight)</b>		
¾ inch	19.0	100		
½ inch	12.5	85 - 100	100	
3/8 inch	9.5	60 - 80	85 - 100	100
#4	4.75	28 - 38	28 - 44	40 - 55
#8	2.36	19 - 32	17 - 34	22 - 32
#16	1.18	15 - 23	13 - 23	15 - 25
#30	0.600	10 - 18	8 - 18	10 - 18
#50	0.300	8 - 13	6 - 13	8 - 13
#100	0.150	6 - 10	4 - 10	6 - 10
#200	0.075	4.0 - 7.0	3.0 - 7.0	4.0 - 7.0

<b>Mix Design Criteria</b>			
	<b>1/2 in. Type A</b>	<b>3/8 in. Type B</b>	<b>1/4 in. Type C</b>
Asphalt Content, %	4.6 - 5.6	4.6 - 5.8	5.0 - 5.8
Draindown Test, AASHTO T 305	0.1% max.		
Moisture Sensitivity, AASHTO T 283*	80% min.		
Application Rate, lb/ yd <sup>2</sup>	90	70	50
Approximate Application Depth, in.	¾	5/8	1/2
Asphalt PG Grade, AASHTO M 320	PG 70-28 or PG 76-22	PG 70-28 or PG 76-22	PG 70-28 or PG 76-22

NOTE: \*Specimens for T-283 testing are to be compacted using the SUPERPAVE gyratory compactor. The mixtures shall be compacted using 100 gyrations to achieve specimens approximately 95 mm in height. Use mixture and compaction temperatures recommended by the binder supplier.

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

Use asphalt mixing plants in accordance with Article 610-5 of the Standard Specifications.

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

<b>Mix Type</b>	<b>Course Aggregate Angularity<sup>(b)</sup> ASTM D5821</b>	<b>Fine Aggregate Angularity % Minimum AASHTO T304 Method A</b>	<b>Sand Equivalent % Minimum AASHTO T176</b>	<b>Flat &amp; Elongated 5:1 Ratio % Maximum ASTM D4791 Section 8.4</b>
S9.5 D	100/100	45	50	10
OGAFc	100/100	N/A	N/A	10
UBWC	100/85	40	45	10

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

- (c) Does not apply to Mix Types SF9.5A and S9.5B.

**Page 10-43, Subarticle 1012-1(F): Reclaimed Asphalt Shingle Material (RAS), insert the following immediately following the first paragraph:**

(1) Mix Design RAS

Incorporate RAS from stockpiles that have been tested for uniformity of gradation and binder content prior to use in an asphalt mix design.

(2) Mix Production RAS

New Source RAS is defined as acceptable material which was not included in the stockpile when samples were taken for mix design purposes. Process new source RAS so that all materials will pass a ½" inch sieve prior to introduction into the plant mixer unit.

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

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

RAS contamination including but not limited to excessive dirt, debris, clean stone, concrete will not be allowed.

Field approval of new source RAS will be based on the table below and volumetric mix properties on the mix with the new source RAS included. Provided these tolerances are met, volumetric properties of the new mix will then be performed. If all volumetric mix

properties meet the mix design criteria for that mix type, the new source RAS may continue to be used.

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

**NEW SOURCE RAS GRADATION and BINDER TOLERANCES  
(Apply Tolerances to Mix Design Data)**

0-6% RAS	
$P_b$ %	$\pm 1.6\%$
Sieve Size (mm)	Tolerance
9.5	$\pm 1$
4.75	$\pm 5$
2.36	$\pm 4$
1.18	$\pm 4$
0.300	$\pm 4$
0.150	$\pm 4$
0.075	$\pm 2.0$

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

**(G) Reclaimed Asphalt Pavement (RAP)**

**(1) Mix Design RAP**

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

**(a) Millings**

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

**(b) Processed RAP**

RAP that is processed in some manner (possibly by crushing and / or use of a blending method) to produce a uniform gradation and binder content in the RAP prior to use in a recycled mix. Process RAP so that all materials have a uniform gradation and binder content and will pass a 1" sieve prior to introduction into the plant mixer unit.

**(c) Fractionated RAP**

Fractionated RAP is defined as having two or more RAP stockpiles, where the RAP is divided into coarse and fine fractions. Grade RAP so that all materials will pass a 1" sieve. The coarse RAP stockpile shall only contain material retained on a 3/8 inch screen, unless otherwise approved. The fine RAP stockpile shall only contain material passing the 3/8" screen, unless otherwise approved. The Engineer may allow the Contractor to use an alternate to the 3/8 inch screen to fractionate the RAP. The maximum percentages of fractionated RAP may be comprised of coarse, fine, or the combination of both. Utilize a separate cold feed bin for each stockpile of fractionated RAP used.

**(d) Approved Stockpiled RAP**

Approved Stockpiled RAP is defined as fractionated RAP which has been isolated and tested for asphalt content, gradation, and asphalt binder characteristics with the intent to be used in mix designs with greater than 30% RAP materials. Fractionate the RAP in accordance with Section 1012-1(G)(c). Utilize a separate cold feed bin for each approved stockpile of RAP used.

Perform extraction tests at a rate of 1 per 1000 tons of RAP, with a minimum of 5 tests per stockpile to determine the asphalt content and gradation. Separate stockpiles of RAP material by fine and coarse fractions. Erect and maintain a sign satisfactory to the Engineer on each stockpile to identify the material. Assure that no deleterious material is allowed in any stockpile. The Engineer may reject by visual inspection any stockpiles that are not kept clean, separated, and free of foreign materials.

Submit requests for RAP stockpile approval to the Engineer with the following information at the time of the request:

- (1) Approximate tons of materials in stockpile
- (2) Name or Identification number for the stockpile
- (3) Asphalt binder content and gradation test results

## (4) Asphalt characteristics of the Stockpile.

For the Stockpiled RAP to be considered for approval, the gradation and asphalt content shall be uniform. Individual test results, when compared to the target, will be accepted if within the tolerances listed below:

**APPROVED STOCKPILED RAP GRADATION  
and BINDER TOLERANCES  
(Apply Tolerances to Mix Design Data)**

$P_b$ %	$\pm 0.3\%$
Sieve Size (mm)	Percent Passing
25.0	$\pm 5\%$
19.0	$\pm 5\%$
12.5	$\pm 5\%$
9.5	$\pm 5\%$
4.75	$\pm 5\%$
2.36	$\pm 4\%$
1.18	$\pm 4\%$
0.300	$\pm 4\%$
0.150	$\pm 4\%$
0.075	$\pm 1.5\%$

Note: If more than 20% of the individual sieves are out of the gradation tolerances, or if more than 20% of the asphalt binder content test results fall outside the appropriate tolerances, the RAP shall not be used in HMA unless the RAP representing the failing tests is removed from the stockpile.

Do not add additional material to any approved RAP stockpile, unless otherwise approved by the Engineer.

Maintain at the plant site a record system for all approved RAP stockpiles. Include at a minimum the following: Stockpile identification and a sketch of all stockpile areas at the plant site; all RAP test results (including asphalt content, gradation, and asphalt binder characteristics).

**(2) Mix Production RAP**

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

(a) **Mix Design RAP**

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

(b) **New Source RAP**

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

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

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

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

Field approval of new source RAP will be based on Table 1012-2 below and volumetric mix properties on the mix with the new source RAP included. Provided the Table 1012-2 tolerances are met, volumetric properties of the new mix will then be performed. If all volumetric mix properties meet the mix design criteria for that mix type, the new source RAP may continue to be used.

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

<b>TABLE 1012-2</b> <b>NEW SOURCE RAP GRADATION and BINDER TOLERANCES</b> (Apply Tolerances to Mix Design Data)									
Mix Type	0 - 20% RAP			20 <sup>+</sup> - 30 % RAP			30 <sup>+</sup> % RAP		
Sieve (mm)	Base	Inter.	Surf.	Base	Inter.	Surf.	Base	Inter.	Surf.
P <sub>b</sub> %	± 0.7%			± 0.4%			± 0.3%		
25.0	± 10	-	-	± 7	-	-	± 5	-	-
19.0	± 10	± 10	-	± 7	± 7	-	± 5	± 5	-
12.5	-	± 10	± 10	-	± 7	± 7	-	± 5	± 5
9.5	-	-	± 10	-	-	± 7	-	-	± 5
4.75	± 10	-	± 10	± 7	-	± 7	± 5	-	± 5
2.36	± 8	± 8	± 8	± 5	± 5	± 5	± 4	± 4	± 4
1.18	± 8	± 8	± 8	± 5	± 5	± 5	± 4	± 4	± 4
0.300	± 8	± 8	± 8	± 5	± 5	± 5	± 4	± 4	± 4
0.150	-	-	± 8	-	-	± 5	-	-	± 4
0.075	± 4	± 4	± 4	± 2	± 2	± 2	± 1.5	± 1.5	± 1.5

### **ASPHALT PAVER - FIXED AND MOBILE STRING LINE**

07-21-09

DB6 R07

The Design Build Team's attention is directed to Article 610-8 of the 2006 *Standard Specifications for Roads and Structures* dealing with automatically controlled screeds on the asphalt pavement spreaders.

A mobile string line consisting of a 30 to 40 foot long ski is required for the widening and resurfacing on this project. A fixed string line is required for the new pavement construction on this project.

### **ASPHALT BINDER CONTENT OF ASPHALT PLANT MIXES**

(10-6-05)

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_	4.3%
Asphalt Concrete Intermediate Course	Type I 19.0_	4.7%



Asphalt Concrete Surface Course	Type S 4.75_	7.0%
Asphalt Concrete Surface Course	Type SF 9.5_	6.5%
Asphalt Concrete Surface Course	Type S 9.5_	6.0%
Asphalt Concrete Surface Course	Type S 12.5_	5.5%

The actual asphalt binder content will be established during construction by the Engineer within the limits established in the *2006 Standard Specifications* or Project Special Provisions.

### **FINAL SURFACE TESTING - ASPHALT PAVEMENTS**

(07/15/08)

DB6 R45

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

Push the straightedge manually over the pavement at a speed not exceeding 2 miles per hour (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. As an exception, lanes adjacent to curb and gutter, expressway gutter, or shoulder berm gutter may be tested in the left wheel path. 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 (3 meters) 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 1000 feet (300 meters) in length, ramps less than or equal to 1000 feet (300 meters) in length, turn lanes less than or equal to 1000 feet (300 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 1000 feet (300 meters) in length, ramps, full width turn lanes greater than 1000 feet (300 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 Design-Build Team 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.

If during the evaluation of the graphs, 5 lots (mainline travel lanes and full width -Y- line travel lanes greater than 300 feet in length only) require corrective action, then proceed on limited production for unsatisfactory laydown in accordance with Article 610-12. Proceeding on limited production is based upon the Design-Build Team's initial evaluation of the straightedge test results and must begin immediately upon obtaining those results. Additionally, the Engineer may direct the Design-Build Team 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 Design-Build Team and the Engineer. Remain on limited production until such time as acceptable laydown results are obtained or until three consecutive 2500 foot (750 meter) sections have been attempted without

achieving acceptable laydown results. The Engineer will determine if normal production may resume based upon the CSI for the limited production lot and any adjustments to the equipment, placement methods, and/or personnel performing the work. Once on limited production, the Engineer may require the Design-Build Team 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 Design-Build Team may be required to demonstrate acceptable laydown techniques off the project limits prior to proceeding on the project.

If the Design-Build Team fails to achieve acceptable 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.

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

If the Design-Build Team 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.

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

<b>Adjustment Schedule for Cumulative Straightedge Index (CSI) (Obtained by adding SE Index of up to 25 consecutive 100 ft. (30m) sections)</b>		
<b>*CSI</b>	<b>ACCEPTANCE CATEGORY</b>	<b>CORRECTIVE ACTION</b>
0-0	Acceptable	None
1-0 or 2-0	Acceptable	None
3-0 or 4-0	Acceptable	None
Any Other Number	Unacceptable	Required

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

Correct any deviation that exceeds a 0.3 inch (7.5 mm) blanking band such that the deviation is reduced to 0.2 inches (5 mm) or less.

Corrective actions shall be performed at the Design-Build Team'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 or removing and

replacing. 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.

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 required, the test section(s) requiring corrective action will be retested, unless the Engineer directs the retesting of the entire lot.

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

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.

**QUALITY MANAGEMENT SYSTEM FOR ASPHALT PAVEMENTS:  
(OGAFC, PADDC, and ULTRA-THIN HMA Version)**

(3-20-07)(Rev 4-20-10)

DB 06 R062

**Description**

Produce and construct Open Graded Asphalt Friction Course, Permeable Asphalt Drainage Course, and Ultra-thin Hot Mix Asphalt Concrete Wearing Surface asphalt mixtures and pavements in accordance with a Quality Management System described herein. All materials and work shall conform to Division 6 of the *2006 Standard Specifications* except as modified herein. Perform all applicable quality control activities in accordance with the Department’s *Hot Mix Asphalt Quality Management System (HMA/QMS) Manual* in effect on the date of contract advertisement, unless otherwise approved.

## Description of Responsibilities

### (A) Quality Control (QC)

Provide and conduct a quality control program. A quality control program is defined as all activities, including mix design, process control inspection, plant and equipment calibration, sampling and testing, and necessary adjustments in the process that are related to production of a pavement which meets all requirements of the Specifications.

### (B) Quality Assurance (QA)

The Department will conduct a quality assurance program in accordance with Article 609-6 of the *Standard Specifications* and this provision. A quality assurance program is defined as all activities, including inspection, sampling, and testing related to determining that the quality of the completed pavement conforms to specification requirements.

## Mix Design/Job Mix Formula Requirements

All applicable mix design and job mix formula requirements of Article 650-3, Article 652.3, or Article 661-2 of the *2006 Standard Specifications* and the contract documents shall apply. In addition, submit Superpave gyratory compactor printouts for all specimens required to be compacted during the mix design process.

## Field Verification Of Mixture And Job Mix Formula Adjustments

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.

Field verification testing consists of performing a minimum of 1 test series on mix sampled and tested in accordance *Required Sampling and Testing Frequencies*. Mix obtained from NCDOT or non-NCDOT work may be used for this purpose provided it is sampled, tested, and the test data handled in accordance with current procedures in the Department's *HMA/QMS Manual* and the following provisions. Obtain the mix verification sample and split in accordance with the Department's *HMA/QMS Manual*. Do not begin normal plant production until all field verification test results have been completed and the Design-Build Team's Level II Technician has satisfactorily verified the mix. Verification is considered satisfactory when the mix meets all applicable individual test control limits as specified elsewhere in these provisions, except that the drain down test shall meet the requirements as specified in Section 661 of the *2006 Standard Specifications* for the applicable mix type.

In addition to the required sampling and testing for field verification, perform all preliminary inspections and plant calibrations as shown in the *HMA/QMS Manual*.

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 (1) working day after beginning production of the mix.

Conduct the initial mix verification of all new mix designs with the plant set up to produce the aggregate blend and binder content in accordance with the initially approved job mix formula (JMF). If the Design-Build Team and/or the Engineer determine from results of quality control tests conducted during mix verification that adjustments to the job mix formula are necessary to achieve specified mix properties, adjustments to the JMF may be made within tolerances permitted by specifications for the mix type being produced, subject to approval. All JMF adjustments will be approved and documented in writing by the Engineer.

Failure by the Design-Build Team to fully comply with the above mix verification requirements will result in immediate production stoppage by the Engineer. Do not resume normal production until all mix verification sampling, testing, calibrations, and plant inspections have been performed and approved. 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 surface deficiencies.

### **Design-Build Team's Quality Control System**

#### **(A) Personnel Requirements**

Obtain all certifications in accordance with the Department's QMS Asphalt Technician Certification Program as shown in the *HMA/QMS Manual*. Perform all sampling, testing, data analysis and data posting by or under the direct supervision of a certified QMS Asphalt Plant Technician.

Provide a certified Asphalt Plant Technician Level I to perform quality control operations and activities at each plant site at all times during production of material for the project. A plant operator who is a certified Asphalt Plant Technician Level I may be utilized to meet this requirement when daily production for each mix design is less than 100 tons provided the randomly scheduled increment sample is not within that tonnage. When performing in this capacity, the plant operator shall be responsible for all quality control activities that are necessary and required. Absences of the Level I Technician, other than those for normal breaks and emergencies, shall be pre-approved by the appropriate QA Supervisor or his designated representative. Any extended absence of the Technician that has not been approved will result in immediate suspension of production by the Engineer. All mix produced during this absence will be accepted in accordance with Article 105-3 of the *2006 Standard Specifications*.

Provide and have readily available a certified Asphalt Plant Technician Level II to supervise, coordinate, and make any necessary adjustments in the mix quality control process in a timely manner. The Level II Technician may serve in a dual capacity and fulfill the Level I Technician requirements specified.

Provide a certified QMS Roadway Technician with each paving operation at all times during placement of asphalt. This person is responsible for monitoring all roadway paving operations and all quality control processes and activities, to include stopping production or implementing corrective measures when warranted.

Post in the quality control laboratory an organizational chart, including names, telephone numbers and current certification numbers of all personnel responsible for the quality control program while asphalt paving work is in progress.

**(B) Field Laboratory Requirements**

Furnish and maintain a Department certified laboratory at the plant site. A minimum of 320 square feet of floor space (exclusive of toilet facilities), equipment, and supplies necessary for performing Design-Build Team quality control testing is required. Provide convenient telephone and fax machine access for QMS personnel at the plant site.

Provide testing equipment meeting the requirements of the test methods identified herein. Provide equipment that is properly calibrated and maintained. Allow all measuring and testing devices to be inspected to confirm both calibration and condition. If at any time the Engineer determines that the equipment is not operating properly or is not within the limits of dimensions or calibration described in the applicable test method, the Engineer may stop production until corrective action is taken. Maintain and have available a record of all calibration results at the laboratory.

**(C) Plant Mix Quality Control**

**(1) General**

Include in the quality control process the preliminary inspections, plant calibrations and field verification of the mix and JMF. In addition, conduct at a minimum but not limited to, the sampling, testing, and determination of all parameters outlined in these provisions using test methods and minimum frequencies as specified herein. Perform additional sampling and testing when conditions dictate. Obtain, split, and retain all scheduled samples at randomly selected locations in accordance with the Department's *HMA/QMS Manual*, except as modified below. Log all samples taken on forms provided by the Department. Provide documentation in accordance with Subarticle 609-5(E) of the *Standard Specifications*. Identify any additional quality control samples taken and tested at times other than the regularly scheduled random samples or directed samples that take the place of regularly scheduled as process control (PC) samples on the appropriate forms. Process Control test results shall not be plotted on control charts nor reported to Quality Assurance Laboratory.

Split and retain samples in accordance with procedures in the Department's *HMA/QMS Manual*. Obtain at least 2000 grams of mix for each QC, QA, and retained sample. QC samples shall be tested immediately. Place QA samples and

retained samples in silicone-lined sample boxes and store for possible testing in accordance with the procedures established below.

Retain the untested split portion of quality control aggregate and mix samples and the tested TSR specimens for 5 calendar days at the plant site, commencing the day the samples are tested. Quality Assurance personnel may give permission for disposal prior to these minimum storage periods. Retain the split portion of the Design-Build Team's mix verification and referee mix samples until either procured by or permission for disposal is given by QA. Store all retained samples in a dry and protected location.

(2) Required Sampling and Testing Frequencies

All mix sampling, testing, data analysis and data posting shall be performed or directly supervised by a certified QMS Asphalt Plant Technician.

Maintain minimum test frequencies as established in the schedule below. Complete all tests within 24 hours of the time the sample is taken, unless specified otherwise within these provisions. Should the specified tests not be completed within the required time frame, cease production at that point until such time the tests are completed.

Should the Design-Build Team's testing frequency fail to meet the minimum frequency requirements as specified, all mix without the specified test representation will be considered unsatisfactory. If the Engineer allows the mix to remain in place, payment will be made in accordance with Article 105-3 of the *2006 Standard Specifications*.

If desired, innovative equipment or techniques not addressed by these specifications to produce or monitor the production of mix may be utilized, subject to approval.

Quality Control Minimum Sampling and Testing Schedule

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

<u>Accumulative Production Increment</u>	<u>Number of Samples per Increment</u>
500 tons	1

If production is discontinued or interrupted before the accumulative production increment tonnage is completed, continue the increment on the next production day(s) until the increment tonnage is completed. Obtain a random sample within the specified increment at the location determined in accordance with the current edition of the Department's *HMA/QMS Manual*. Conduct quality control sampling and testing on each random sample as scheduled below. When daily



production of each mix design exceeds 100 tons and a regularly scheduled test series random sample location for that mix design does not occur during that day's production, perform a partial test series consisting of Items (a) and (b) in the schedule below. This partial test series does not substitute for the regularly scheduled random sample for that increment.

Perform the following test series on all regularly scheduled random samples:

Asphalt Mixture - Sampled From Truck at Plant (AASHTO T-168 Modified) (Split Sample Required)

- (a) Asphalt Binder Content, % (Design-Build Team may select either option below)
  - 1. Ignition Furnace (AASHTO T 308 Modified)
  - 2. Other (Design-Build Team may request and use other means of determining percent asphalt binder subject to approval)
- (b) Gradation on Recovered Blended Aggregate from Mix Sample (AASHTO T-30 Modified) (Graded on all sieves specified on the job mix formula.)

In addition to the above schedule, conduct the following sampling and testing as indicated:

- (a) Aggregate Stockpile Gradations (AASHTO T 27 and T 11) (Sampled from stockpiles or cold feed system as follows; split samples not required)
  - 1. Coarse Aggregates (Approved Standard Sizes)
    - a. At beginning of production\*
    - b. Weekly thereafter\*
  - 2. Fine Aggregates (Stone Screenings, Natural Sands, Etc.)
    - a. At or within 1 week prior to mix verification (Gradations valid for multiple mix designs).
    - b. Weekly after mix verification \*
    - c. Anytime production is stopped due to plant mix gradation related problems.

\*In lieu of the aggregate stockpile gradations performed by QC personnel, gradation quality control data conducted by the aggregate producer, which is representative of the Design-Build Team's current stockpiles, may be furnished.

- (b) Reclaimed Asphalt Shingle Material (RAS) Binder Content and Gradation (AASHTO T 308 Modified or T 164 and AASHTO T 30 Modified) (sample 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) of the *Standard Specifications*. (Split Sample Required)

- (c) Combined Aggregate Moisture Content (AASHTO T 255) Drum Plant Only (sampled from stockpiles or cold feed system a minimum of once daily).
- (d) Asphalt Drain Down Test Procedure, AASHTO T 305; Copy of procedure may be obtained from the M & T Asphalt Design Engineer. Mix sampled from truck at plant within the first day's production and weekly thereafter. **Note:** Drain Down Test not required for Permeable Asphalt Drainage Course.
- (e) Retained Tensile Strength (TSR) - (AASHTO T 283 Modified)  
**Note:** TSR only required for Ultra-thin HMA.
  - 1. Option 1  
Mix sampled from truck at plant, tested, and results furnished to the Engineer within seven (7) calendar days after beginning production of each new mix design. From the split sample, QC will prepare and submit within 5 calendar days of the sample date, an additional set of specimens to the QA Lab for TSR testing (Split Sample Required).
  - 2. Option 2  
Mix sampled from truck at plant with one set of specimens prepared by the Design-Build Team and then tested jointly by QA and QC at a mutually agreed upon lab site within the first seven (7) calendar days after beginning production of each new mix design.

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

Additional TSR testing required prior to mix production in accordance with above procedures is required when a change is made in anti-strip additive dosage or when a new anti-strip additive source or grade is utilized, unless otherwise approved. Other TSR test(s) may be directed as deemed necessary. TSR testing not required for mix verification, but may be performed at that time.

(3) Control Charts

Maintain standardized control charts furnished by the Department at the field laboratory. For mix incorporated into the project, record test data from all regularly scheduled random samples or directed samples that replace regularly scheduled random samples, on control charts the same day the tests results are

obtained. Process Control (PC) test results shall not be plotted on control charts nor reported to Quality Assurance Laboratory.

In addition, partial test series results obtained due to reasons outlined above will be reported to Quality Assurance personnel on the proper forms, but will not be plotted on the control charts.

Results of quality assurance tests performed by the Engineer will be posted on the Design-Build Team's control charts as data becomes available.

Record the following data on the standardized control charts:

(a) Aggregate Gradation Test Results:

1. 12.5 mm (Types P57 & FC-2 Mod. Only)
2. 9.5 mm (Excluding Type P57)
3. 4.75 mm
4. 2.36 mm
5. 0.075 mm Sieves

(b) Binder Content, %,  $P_b$

Both the individual test values and the moving average of the last four (4) data points shall be plotted on each chart. The Design-Build Team's test data shall be shown in black and the moving average in red. The Engineer's assurance data will be plotted in blue. Denote the moving average limits with a dash green line and individual test limits with a dash red line.

Maintain a continuous moving average with the following exceptions. Re-establish a new moving average only when:

1. A change in the binder percentage or aggregate blend is made in the JMF, or,
2. When the Design-Build Team elects to stop or is required to stop production after one or two moving average values, respectively, fall outside the moving average limits or,
3. If failure to stop production after two consecutive moving averages exceed the moving average limits occurs, but production does stop at a subsequent time, re-establish a new moving average beginning at the actual production stop point.

In addition, re-establish the moving averages for all mix properties. Moving averages will not be re-established when production stoppage occurs due to an individual test result exceeding the individual test limits and/or specifications.

All individual test results for regularly scheduled samples or directed samples that replace regularly scheduled samples are part of the plant quality control record and shall be included in moving average calculations with the following exception. When the Design-Build Team's testing data has been proven incorrect, use the correct data as determined by the Engineer in lieu of the Design-Build Team's data.

(4) Control Limits

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

<b>Mix Control Criteria</b>	<b>Control Limits, %</b>	
	<b>Moving Average</b>	<b>Individual Test</b>
Asphalt Binder Content	+/-0.3	+/-0.7
12.5 mm Sieve (Types P57 & FC-2 Mod)	+/-4.0	+/-8.0
9.5 mm Sieve (Excluding Type P57)	+/-4.0	+/-8.0
4.75 mm Sieve	+/-4.0	+/-8.0
2.36 mm Sieve	+/-4.0	+/-8.0
0.075 mm Sieve	+/-1.5	+/-2.5
TSR (Ultra-thin Only)	N/A	15%

(5) Corrective Actions

All required corrective actions are based upon initial test results and shall be taken immediately upon obtaining those results. In the event situations occur which warrant more than one corrective action and/or adjustment, give precedence to the more severe of these actions. Stopping production when required takes precedence over all other corrective actions. Document all corrective actions.

- (a) Immediately cease production and immediately notify the Engineer when any of the following occur:
1. When an individual test result for a mix control criteria exceeds both the individual test control limits and the applicable specification design criteria, or,
  2. When two consecutive field TSR values fail to meet the minimum specification requirement, or,
  3. When two consecutive binder content test results exceed the individual limits.

- (b) Do not resume normal plant production until one of the following has occurred:
1. Option 1 - Approval has been granted by the appropriate QA Supervisor.
  2. Option 2 - The mix in question has been satisfactorily verified. Normal production may resume based on the approval of the Design-Build Team's Level II technician, provided notification and the verification test results have been furnished to the QA Laboratory.

Failure to comply fully with one of the above provisions will result in immediate production stoppage by the Engineer. Normal production shall not then resume until a complete verification process has been performed and approved by the Engineer.

Acceptance of all mix failing to meet the individual test control or minimum TSR requirements as described above will be determined in accordance with Article 105-3 of the *Standard Specifications*. In addition, any mix, which is deemed unacceptable, will be rejected for use in the work.

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

Failure to stop production when required due to two consecutive TSR tests failing to meet the specification requirements will subject all mix from the stop point tonnage to the point when the next TSR test meets or exceeds the specification requirement, or to the tonnage point when production is actually stopped, whichever occurs first, to being considered unacceptable.

In either case, remove and replace this mix with materials that comply with the specifications at no additional costs to the Department.

Immediately notify the Engineer when any moving average value exceeds the moving average limit. If two consecutive moving average values for any one of the mix control criteria fall outside the moving average limits, cease production of that mix, immediately notify the Engineer of the stoppage, and make adjustments. The Design-Build Team may elect to stop production after only one moving average value falls outside the moving average limits. In either case, do not determine a new moving average until the fourth test after the elective or mandatory stop in production.

Do not resume normal plant production until one of the following has occurred:

- (a) Option 1 - Approval has been granted by the appropriate QA Supervisor.
- (b) Option 2 - The mix in question has been satisfactorily verified. Normal production may resume based on the approval of the Design-Build Team's Level II technician, provided notification and the verification test results have been furnished to the QA Laboratory.

Failure to comply fully with one of the above provisions will result in immediate production stoppage by the Engineer. Normal production shall not then resume until a complete verification process has been performed and approved by the Engineer.

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

If the adjustment does not improve the property in question such that the moving average after four (4) individual tests is outside the moving average control limits, the mix will be evaluated for acceptance. If the Engineer determines the mix is reasonably acceptable based on the test data and an inspection of the completed pavement, the mix will be accepted in accordance with Article 105-3 of the *Standard Specifications*. If the mix is determined to be unacceptable, the mix will be removed and replaced with materials that comply with the specifications. In either case, the adjustment or removal, respectively, for the mix in question will be applied starting from the plant sample tonnage at the stop point to the sample tonnage when the moving average is on or within the moving average limit. In addition, any mix that is obviously unacceptable will be rejected for use in the work.

Failure to stop production and make adjustments when required due to two consecutive moving average values falling outside the moving average limits will subject all mix produced from the stop point tonnage to the tonnage point when the moving average is back on or within the moving average limits or to the tonnage point when production is actually stopped, whichever occurs first, to being considered unacceptable. Remove this material and replace with materials that comply with the specifications at no additional costs to the Department.

(6) Allowable Retesting for Mix Deficiencies

The Design-Build Team may elect to resample and retest for plant mix deficiencies when individual QC test(s) exceed one or more mix property target(s) by more than the tolerances indicated below. Perform the retesting within 10 days after initial test results are determined. Retesting shall be approved prior to being performed and in accordance with the Department's Guidelines for Retests of Plant Mix Deficiencies as shown in the *HMA/QMS Manual*. The Design-Build Team, under the supervision of the Department's QA personnel will perform these retests. Retests for any mix deficiency other than as listed below will not be allowed unless otherwise permitted. Acceptance of the mix in question will be

based on the retest data in accordance with Article 105-3 of the *Standard Specifications*.

The Department reserves the right to require the Design-Build Team to resample and retest at any time or location as directed.

(a)	% Binder Content	by more than +/- 1.0%
(b)	12.5 mm Sieve (Types P 57 & FC-2 Mod)	by more than +/- 9.0%
(c)	9.5 mm Sieve (Excluding Type P 57)	by more than +/- 9.0%
(d)	4.75 mm sieve	by more than +/- 9.0%
(e)	2.36 mm sieve	by more than +/- 9.0%
(f)	0.075 mm sieve	by more than +/- 3.0%
(g)	TSR (Ultra-thin only)	by more by more than -15% from Specification limit

(7) Documentation (Records)

Document all quality control observations, records of inspection, samples taken, adjustments to the mix, and test results on a daily basis. Note the results of observations and records of inspection as they occur in a permanent field record. Record adjustment to mix production and test results on forms provided.

Identify any additional quality control samples taken and tested at times other than the regularly scheduled random samples or directed samples that take the place of regularly scheduled as process control (PC) samples on the appropriate forms. Process Control test results shall not be plotted on control charts nor reported to Quality Assurance Laboratory. Process control sample test results are for the Design-Build Team's informational purposes only.

Make all such records available to the Engineer, upon request, at any time during project construction. Complete all QC records and forms and distribute in accordance with the most current edition of the Department's *HMA/QMS Manual*. Maintain all QC records, forms and equipment calibrations for a minimum of 3 years from their completion date. Failure to maintain QC records and forms as required, or to provide these records and forms to the Engineer upon request, may result in production and/or placement stoppage until the problem is resolved.

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 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 are determined not to be acceptable, remove and replace with mix that complies with the Specifications.

### **Quality Assurance**

The Department's quality assurance program will be conducted by a certified QMS technician(s) and will be accomplished in the following ways:

#### **Plant Mix Quality Assurance**

- (A) By conducting assurance testing of split samples obtained by the Design-Build Team at a frequency equal to or greater than 5% of the frequency required of the Design-Build Team;
- (B) By periodically observing sampling and testing procedures performed by the Design-Build Team;
- (C) By monitoring required control charts exhibiting test results of control parameters;
- (D) By directing the Design-Build Team to take additional samples at any time and any location during production (in lieu of the next scheduled random sample for that increment);
- (E) By conducting verification sampling and testing on samples taken independently of the Design-Build Team's quality control samples at a frequency equal to or greater than 10% of the QC sample frequency; or
- (F) By any combination of the above

The Engineer will periodically obtain quality assurance and verification samples for testing independently of the Design-Build Team's quality control process. The Engineer will conduct assurance tests on both split QC samples taken by the Design-Build Team and verification samples taken by the Department. These samples may be the regular quality control samples or a sample selected by the Engineer from any location in the process, or verification samples taken at random by the Department. The Engineer may select any or all split samples for assurance testing.

Results of quality assurance tests will be provided to the Design-Build Team within 3 working days after the sample has been obtained, except for verification TSR test results that will be provided within 7 calendar days.



### Limits of Precision

Differences between the Design-Build Team's and the Department's split sample test results will be considered acceptable if within the following limits of precision:

<b>Mix Property</b>	<b>Acceptable Limits of Precision</b>
Asphalt Binder Content	±0.5 %
12.5 mm Sieve (Types P 57 & FC-2 Mod. Only)	±6.0 %
9.5 mm Sieve (Excluding Type P 57)	±5.0 %
4.75 mm Sieve	±5.0 %
2.36 mm Sieve	±5.0 %
0.075 mm Sieve	±2.0 %
TSR (Ultra-thin HMA Only)	±15.0 %

The Engineer will immediately investigate the reason for differences if any of the following occur:

- (A) QA test results of QC split sample does not meet above limits of precision, or
- (B) QA test results of QC split sample does not meet the individual test control limits or the specification requirements, or
- (C) QA verification sample test results exceed the allowable retesting tolerances.

If the potential for a pavement failure exists, the Engineer may suspend production, wholly or in part, in accordance with Article 108-7 of the *Standard Specifications* while the investigation is in progress. The Engineer's investigation may include, but not be limited to the following:

- (A) Joint testing of any remaining split samples,
- (B) Review and observation of the QC technician's sampling and testing procedures,
- (C) Evaluation and calibration of QC testing equipment, and/or
- (D) Comparison testing of other retained quality control samples

If additional mix samples or core samples are necessary to resolve the difference, these samples will be taken as directed and tested jointly by the Design-Build-Team's quality control and Department's quality assurance personnel. If reasons for the difference cannot be determined, payment for the mix in question will be determined in accordance with Article 105-3 of the *Standard Specifications*. If the reason for the difference is determined to be an error or other discrepancy in the quality control test results, the applicable quality assurance test results or verification test results will be used to determine compliance with the applicable mix specification requirements.

The Engineer will periodically witness the sampling and testing being performed by the Design-Build Team. If the Engineer observes that the sampling and quality control tests are not being performed in accordance with the applicable test procedures, the Engineer may stop production until corrective action is taken. The Engineer will promptly notify the Design-Build Team of observed deficiencies, both verbally and in writing. The Engineer will document all witnessed samples and tests.

### **Acceptance**

The Engineer will base final acceptance of the mix on the results of random testing made on split samples during the assurance process and validation of the Design-Build Team's quality control process.

### **Measurement and Payment**

All reductions in payment that are based on Unit Cost / Unit Bid Price shall be based on \$45 per ton of material placement.

### **TYING PROPOSED CONCRETE PAVEMENT TO EXISTING CONCRETE PAVEMENT**

7-1-95

DB7 R05

Tie proposed concrete pavement on this project to existing concrete pavement in accordance with the detail shown in the plans and the following provision:

1. Drill holes in the existing concrete pavement 1/8" greater than the diameter of the dowel bar. After drilling, blow the hole out with air and allow to dry.
2. Next, place the cement grout or epoxy resin in the back of the dowel hole. The placement of grout can be achieved by using a flexible tube with a long nose that places the material in the back of the dowel hole; the placement of epoxy-type materials can be achieved by using a cartridge with a long nozzle that dispenses the material to the rear of the dowel hole.
3. Insert the dowel into the hole with a slight twisting motion so that the material in the back of the hole is forced up and around the dowel bar to ensure a uniform coating of the anchoring material over the dowel bar.
4. Place a thin nylon or plastic grout retention disk, (1/16" minimum thickness) manufactured to slip tightly over the dowel over the dowel and against the slab face to prevent the anchoring material from flowing out of the hole, and to create an effective face at the entrance of the dowel hole.

### **TYING PROPOSED CONCRETE PAVEMENT TO PROPOSED ASPHALT PAVEMENT**

7-1-95

DB7 R10

Tie the proposed concrete pavement on this project into proposed asphalt pavements in accordance with the detail shown in the plans and the following provisions:

1. Bevel the end of the proposed concrete pavement on a 1:1 slope and eliminate the dowels.
2. An asphalt connection will be required from the end of the proposed concrete pavement to the proposed asphalt pavement. Construct this connection in accordance with the details in the plans or as directed by the Engineer.

### **CONCRETE PAVEMENTS AND SHOULDERS**

(08-24-09)

DB7 R20

Revise the 2006 *Standard Specifications for Roads and Structures* as follows:

#### **SECTION 700 GENERAL REQUIREMENT FOR PORTLAND CEMENT CONCRETE PAVING**

**Page 7-1, Article 700-3 Concrete Hauling Equipment**, delete the fourth paragraph and substitute the following:

For concrete hauled in a transit mix (ready mix) truck, use Table 1000-2 to determine the maximum elapsed time. For concrete hauled in other equipment, minimize the elapsed time to be 60 minutes or less, unless otherwise approved. The elapsed time is defined as the period from first contact between mixing water and cement until the entire operation of placing and finishing up to micro-surfacing, including corrective measures if necessary, has been completed.

**Page 7-2, Article 700-4 Preparation of Subgrade and Base**, fourth paragraph, delete the 3rd and 4th sentence and substitute the following:

Set pins at a distance no farther than 50 feet apart. When located on a vertical curve, set pins no farther than 25 feet apart.

**Page 7-3, Article 700-5 (A)(4)**, delete the 2nd and 3rd paragraphs and substitute the following:

Where additional pavement, aggregate or soil must be placed adjacent to new pavement by machine methods, do not place it until the concrete has attained a compressive strength of at least 3,000 psi.

Construction equipment or hauling equipment will not be allowed over the pavement until the concrete has attained a compressive strength of 3,000 psi.

**Page 7-5, Article 700-7 Finishing**, insert the following as the second sentence.

The use of excessive water for finishing will not be allowed

**Page 7-5, Subarticle 700-8(C) Hot Weather**, 1st sentence

Substitute 90°F for 80°F.

**Page 7-7, 700-11(A) General**, delete the fourth paragraph and substitute the following:

Immediately after sawing the joint to the dimensions shown on the plans, completely remove the resulting slurry from the joint. Immediately reapply curing membrane following the sawing operation to damaged areas in the vicinity of the joint.

**Page 7-8, insert the following as Subarticle 700-11(G)**

**(G) Verification of Dowel Bar Alignment**

Use either properly secured dowel baskets or a dowel bar inserter, provided the ability to correctly locate and align the dowels at the joints is demonstrated as described below.

Provide a calibrated magnetic imaging device that will document dowel bar location and alignment. Calibrate the magnetic imaging device to the type and size dowel bar used in the work. Utilize this device as a process control and make necessary adjustment to ensure the dowels are placed in the correct location.

Scan at least 25% percent of the joints in the initial placement or 1.0 mile of pavement, whichever is greater, at random intervals throughout the pavement each time the paving train is mobilized. Mark scanned joints on the pavement.

Scan all joints in this initial section if the dowel bars exhibit longitudinal translation (side shift), horizontal translation, vertical translation (depth), horizontal skew, or vertical tilt, above the allowable tolerances defined below. In addition, continue scanning 25% of the joints until it is established that the dowel bar inserter or secured dowel basket assemblies are consistently placing the dowel bars at the correct location (meeting the tolerances defined below). Once the Engineer determines that consistency is established, the Contractor may reduce the percentage of scanned joints to no less than 10%. At any time inconsistency in the placement of the dowel bars become evident, additional scanning may be required up to 100% of the joints.

If consistency of the proper dowel bar alignment cannot be established within a reasonable time frame, the Engineer will have the option of suspending the paving operation.

Provide a report of the scanned joints within 48 hours of completing the day's production. The report should include the station and lane of the joint scanned, as well as the horizontal location, depth, longitudinal translation (side shift), horizontal skew, and vertical tilt of each dowel bar in the joint. If a dowel bar inserter is used, the joint score described below should also be provided in the report.

Longitudinal translation (side shift) is defined as the position of the center of the dowel bar in relation to the sawed joint. The maximum allowable longitudinal translation (side shift) is 2 inches.

Horizontal translation is defined as difference in the actual dowel bar location from its theoretical position as detailed in the standard details. The maximum allowable horizontal translation is 2 inches.

Vertical translation (depth) is the difference in the actual dowel bar location from the theoretical midpoint of the slab. The maximum allowable vertical translation is 1/2 inch higher than the theoretical midpoint, and 1 inch lower than the theoretical midpoint.

Dowel bar misalignment, either vertical tilt or horizontal skew, is defined as the difference in position of the dowel bar ends with respect to each other. Vertical tilt is measured in the vertical axis whereas horizontal skew is measured in the horizontal axis.

If a dowel bar inserter is used, determine a joint score for each joint scanned. The joint score is a measure of combined effects from the dowel's horizontal skew or vertical tilt. The joint score is determined by summing the product of the weight (shown in the table below) and the number of bars in each misalignment category and adding 1. The vertical tilt and horizontal skew should be evaluated and the greater misalignment shall be utilized in determining the joint score. If two lanes are poured simultaneously, the joint score is calculated for the 24 foot section.

<b>Misalignment Category, mm</b>	<b>Weight</b>
$0 \leq d \leq 15$	0
$15 < d \leq 20$	2
$20 < d \leq 25$	4
$25 < d \leq 38$	5
$38 \leq d$	10

where d is the individual dowel bar misalignment.

A joint that has a joint score of 10 or greater will be considered locked.

When a locked joint as defined above is discovered, scan the two joints immediately adjacent to the locked joint. If either of the adjacent joints are deemed to be locked, provide a written proposal to address the dowel misalignment for each locked joint. No corrective action should be performed without written approval.

Any and all corrective action necessitated by improper joint alignment shall be at no cost to the Department.

**Page 7-9, Article 700-13 USE OF NEW PAVEMENT OR SHOULDER**, delete the Article in its entirety and substitute the following:

**700-13 USE OF NEW PAVEMENT OR SHOULDER**

Traffic or other heavy equipment will not be allowed on the concrete pavement or shoulder until the estimated compressive strength of the concrete using the maturity method has exceeded 3,000 psi unless otherwise permitted.

Estimate the compressive strength of concrete pavement in accordance with the most current version of ASTM C 1074 Standard Practice for Estimating Concrete Strength by the Maturity Method unless otherwise specified herein.

Furnish thermocouples or thermistors and digital data logging maturity meters that automatically compute and display the maturity index in terms of a temperature-time factor. The maturity meters must be capable of storing a minimum of 28 days worth of data and exporting data into an excel spreadsheet. Submit the proposed equipment to the Engineer for approval.

When establishing a strength-maturity relationship, perform compressive tests at ages 1, 3, 7, 14 and 28 days in accordance with AASHTO Test Method T22.

Use the temperature-time factor maturity function to compute the maturity index from the measured temperature history of the concrete. Set the datum temperature at  $-10^{\circ}\text{C}$  to calculate the temperature-time factor in Equation 1 of ASTM C 1074.

Establish and submit a strength-maturity relationship in conjunction with each concrete pavement mix design. Determine the temperature-time factor corresponding to the strength-maturity relationship at 3,000 psi, TTF. Any changes to plant operations, material sources, or mix proportions will affect the strength-maturity relationship. If any changes occur during production, develop a new strength-maturity relationship unless otherwise directed.

Verify the strength-maturity relationship during the first day's production. Utilize the temperature-time factor developed at mix design TTF to verify the production strength-maturity relationship. Verify the strength-maturity relationship at a minimum of every 10 calendar days or when production is suspended for more than 10 days. If the verification sample's compressive strength when tested at TTF is less than 3,000 psi, immediately suspend early opening of traffic on pavement that has not obtained TTF until a new strength-maturity relationship is developed.

No permanent traffic will be allowed on the pavement until construction of the joints, including all sawing, sealing, and curing that is required, has been completed.

Take particular care to protect the exposed pavement edges and ends.

**Page 7-11, Subarticle 700-15(E), Flexural Strength,** delete the Subarticle and replace with the following:

**(E) Compressive Strength**

Determine the compressive strength of concrete using one set of two 6" x 12" cylinders at 28 calendar days. Test samples will be made by the Engineer from the concrete as it comes from the mixer. The samples will be made and cured in accordance with AASHTO T 23. Test specimens will be tested by the Engineer in accordance with AASHTO T 22. Furnish curing facilities for the test samples in accordance with Section 725

**Page 7-11, Subarticle 700-15(F), Thickness,** replace the first and second paragraphs with the following:

The thickness of the pavement will be determined by measurement of cores in accordance with AASHTO T 148.

Take 4-inch diameter cores in the presence of the Engineer. Take the cores when the concrete has attained a compressive strength of at least 3,000 psi and at least 72 hours have elapsed since placement of the pavement. If the concrete has not attained a compressive strength of at least 3,000 psi, the gross vehicle weight rating of vehicles supporting the coring operation may not exceed 7,000 pounds. Take cores no later than 30 days after the pavement has been placed. The core locations for each lot will be selected at random by the Engineer.

Patch all core holes within 72 hours of taking the core, using a Department approved nonshrink grout compatible with the pavement or shoulder concrete.

**SECTION 710  
CONCRETE PAVEMENT**

**Page 7-12. Article 710-1 Description,** 1st sentence

Insert *and cylinders* after the words *test beams*

**Page 7-12, Article 710-3 COMPOSITION OF CONCRETE,** after the first paragraph, insert the following:

Prior to placement, concrete produced by the plant must demonstrate that it is represented by the mix design submitted. The Engineer will make compressive and flexural samples from plant produced mix for testing at 1, 3, 7, 14 and 28 days of age. The strength results must be within 10% of the strengths reported by the Contractor during the mix design process. If the plant produced mix meets this criteria at 14 days of age, the Engineer will notify the Contractor that placement of concrete may commence.

If any major change as defined in section 1000-3 is made to the mix design, the process shall be initiated again.

**Page 7-12. Article 710-4 ACCEPTANCE OF CONCRETE**, delete the first sentence and replace with the following:

Test the concrete pavement for acceptance with respect to compressive strength and thickness on a lot by lot basis in accordance with the requirements of Article 700 15 and the following requirements:

For all concrete pavement, including mainline, shoulders, ramps, tapers, intersections, entrances, crossovers, and irregular areas not otherwise defined, produce a lot consisting of 1,333.3 square yards or fraction thereof placed within 28 calendar days. From each lot, make a minimum of one set of two 6" x 12" cylinders from a randomly selected batch of concrete. The average compression strength of the two cylinders is considered one test. If Division of Highways personnel make and test additional sets of cylinders for a lot, these sets will be averaged with the original set to determine the strength. In the case of low strength, the Engineer will perform an investigation.

**Page 7-13, Article 710-6 Finishing**, insert the following at the end of the 6th paragraph.

Provide a textured surface with an average texture depth of 0.8 mm as tested in accordance with ASTM E 965 (*Test Method for Measuring Pavement Macrot texture Depth Using a Sand Volumetric Technique*) with no single test having a texture depth of 0.5 mm or less. Perform four randomly located tests in accordance with ASTM E 965 within the initial pavement lot of each mobilization and provide test results to the Engineer. A lot is defined in Article 710-4. If the average of the four tests does not meet the above criteria, make appropriate changes to the surface texture operations and test the next lot as detailed above. Once the surface texture process is established to meet minimum texture requirements, maintain consistency within the operation to provide the above minimum texture depth. Perform additional sand patch tests in accordance with ASTM E 965 when directed.

Should the surface texture become damaged or reduced by rain or any other action, reestablish or restore surface texture by an approved method.

**Page 7-15, Article 710-9 Thickness Tolerances**, delete the 4th and 5th paragraph and substitute with the following:

When the measurement of the core from a lot is deficient by 0.2" or less from the plan thickness, full payment will be made. When such measurement is deficient by more than 0.2" from the plan thickness, take 2 additional cores at random within the lot and calculate the average thickness of the lot from the 3 cores.

In determining the average thickness of the pavement lot, the Engineer will use all 3 core measurements. Individual core measurements which are greater than the plan thickness



plus 0.2" will be considered as the plan thickness plus 0.2". Individual cores which are less than the plan thickness minus 1.0" will be considered as the plan thickness minus 1.0 inch. If the average measurement of the 3 cores is within 0.2" from the plan thickness, full payment will be made. If the average measurement of the 3 cores is deficient by more than 0.2" from the plan thickness, an adjusted unit price in accordance with Subarticle 710-10(B) will be paid for the lot represented.

Areas found deficient in thickness by more than 1.0" will be removed and replaced with concrete of the thickness shown on the plans. Any full lane or full shoulder width repairs to the concrete pavement must be performed in accordance with the North Carolina Department of Transportation Partial and Full Depth Repair Manual and not be less than 1/2 of the panel length (7.5 feet)

When the measurement of any core (original core or additional cores taken to calculate the average) is less than the plan thickness by more than 1.0", the extent of the removal area due to thickness deficiency will be determined by taking additional exploratory cores at approximately 10 foot intervals parallel to the center line in each direction from the deficient core until an exploratory core is found in each direction which is within 1.0" of the plan thickness. The pavement between these exploratory cores will be removed full lane width wide and replaced with concrete of the thickness shown on the plans. Exploratory cores for deficient thickness will not be used in averages for adjusted unit price.

Patch all core holes within 72 hours of taking the core, using a Department approved nonshrink grout compatible with the pavement concrete.

**Page 7-16, Subarticle 710-10 (A) GENERAL**, delete the second paragraph and substitute the following:

Separate measurement will be made of pavement that is deficient in thickness by more than 0.2" and of pavement that is deficient in compressive strength.

**Page 7-17, Subarticle 710-10 (C) Concrete Pavement Varying in Flexural Strength**, delete the title, first paragraph and the equation for the pay factor calculation and substitute the following:

**(C) Concrete Pavement Varying In Compressive Strength**

The pay factor for pavement achieving a compressive strength in 28 days of 4,500 psi or greater is 100%. The pay factor for pavement achieving a compressive strength in 28 days between 3000 psi and 4,500 psi is determined by the following formula:

$$\text{Pay Factor (\%)} = 0.0333(\text{PSI}) - 50$$

(pay factor rounded to nearest tenth of one percent)

**Page 7-17, Subarticle 710-10 (C) Concrete Pavement Varying in Flexural Strength**, delete the first sentence of the third paragraph and substitute the following:

Any pavement that fails to attain 3,000 psi in compression is subject to removal.

**Page 7-19, Article 720-4 ACCEPTANCE OF CONCRETE**, delete the first sentence and substitute the following:

Concrete shoulders will be tested for acceptance with respect to compressive strength and thickness on a lot by lot basis.

**Page 7-19, Subarticle 720-9, Thickness Tolerances**, replace the first paragraph with the following:

The thickness of the shoulder will be determined by measurement of cores in accordance with AASHTO T 148.

**Page 7-20, Subarticle 720-10 (C) Concrete Shoulder Varying in Flexural Strength**, delete the title and the first sentence of the second paragraph and substitute the following, respectively:

**(C) Concrete Shoulder Varying in Compressive Strength**

The quantities of concrete shoulder that fail to meet 4,500 psi, measured as provided in Article 710-10, will be paid for at an adjusted unit price per square yard, completed in place and accepted.

## **SECTION 725**

### **FIELD LABORATORY FOR PORTLAND CEMENT CONCRETE PAVEMENT**

**Page 7-21, Subarticle 725-2, General Requirements**, replace with the following:

Furnish and maintain for the exclusive use of the Engineer a field office and laboratory in which to house and use all testing equipment needed. Only Department representatives will have access to these facilities. Provide a field office that is dust and water tight, floored, and has an adequate foundation so as to prevent excessive floor movement. Provide a field office that contains 6 or more 110 volt electrical double outlets properly grounded and spaced; a telephone; at least 2 windows, satisfactory locks on all doors and windows; adequate lighting, heating, and air conditioning; sink; running water to sink; and satisfactory exhaust fan. Provide a field office that meets the following approximate minimum requirements: 200 square feet of floor space; 10 feet interior width; 6 feet 6 inches interior height; 20 square feet of counter space, 2.5 to 3 feet high and 2 feet deep with cabinets or drawers below the counter top; and 6 square feet of desk space not enclosed with cabinets. Locate the office in a position that will permit full view of the plant from the interior of the office. At or near the office, furnish toilet facilities, with waste disposal, available for use of the Department personnel. Maintain these toilets in a neat and clean condition.

Provide a laboratory trailer adjacent to the field office that is at least 400 square feet in area, approximately 20 feet wide, 20 feet long, and 7 feet in height. Provide a laboratory trailer that contains 6 or more 110 volt electrical double outlets properly grounded and spaced; satisfactory locks on all doors and windows; adequate lighting, heating, and air conditioning; sink; running water to sink; and satisfactory exhaust fans. Provide two workbenches that are approximately 10 feet long, 2 feet wide, and 2.5 feet high. One workbench shall be installed inside the trailer and the other across the end of the trailer. Provide a shelter or roof over the outside workbench to provide protection from weather. Provide, in the laboratory, an adequate number of water storage tanks to hold all acceptance beams and cylinders and any additional beams and cylinders made for the purpose of determining early strengths. Construct the water storage tanks of non-corroding materials and have requirements for automatic control of the water temperature. Maintain the water in the tank at a temperature of  $73^{\circ}\text{F} \pm 3^{\circ}\text{F}$ . Equip each tank with a recording thermometer with its bulb located in the water. Provide sufficient tank volume to maintain all beams and cylinders, stored with the long axis vertical, in a fully submerged condition for the duration of the required curing period. Furnish a wooden mixing board at least 3/4 inch thick and approximately 4 feet wide and 4 feet long, that is covered on one side with sheet metal of at least 22 gage, at the shelter. Provide facilities to maintain the test beams and cylinders at temperature between  $60^{\circ}\text{F}$  and  $80^{\circ}\text{F}$  during initial curing.

### **SECTION 1000 PORTLAND CEMENT CONCRETE PRODUCTION AND DELIVERY**

**Page 10-2, Subarticle 1000-3(A) Composition and Design**, delete the Subarticle and substitute the following:

Submit concrete paving mix design in terms of saturated surface dry weights on M&T Form 312U for approval a minimum of 30 days prior to proposed use. Use a mix that contains a minimum of 526 pounds of cement per cubic yard, a maximum water cement ratio of 0.559, an air content in the range of 4.5 to 5.5 percent, a maximum slump of 1.5" and a minimum flexural strength of 650 psi and a minimum compressive strength of 4,500 psi at 28 days.

The cement content of the mix design may be reduced by a maximum of 20% and replaced with fly ash at a minimum rate of 1.2 pounds of fly ash to each pound of cement replaced. Use a maximum water-cementitious material ratio not to exceed 0.538.

The cement content of the mix design may be reduced by a maximum of 50% and replaced with blast furnace slag pound for pound.

Include in the mix design the source of aggregates, cement, fly ash, slag, and admixtures; the gradation and specific gravity of the aggregates; the fineness modulus (F.M.) of the fine aggregate; and the dry rodded unit weight and size of the coarse aggregate. Submit test results showing that the mix design conforms to the criteria, including the 1, 3, 7, 14 and 28-day strengths of the average of two beams and the average of two cylinders for each age made and tested in accordance with AASHTO R39, T22 and T97. Design the mix to produce an average

strength sufficient to indicate that a minimum strength of 650 psi in flexure and 4,500 psi in compression will be achieved in the field within 28 days.

If any change is made to the mix design, submit a new mix design.

If any major change is made to the mix design, also submit new test results showing the mix design conforms to the criteria. A major change to the mix design is defined as:

- 1) A source change in Coarse aggregate, Fine aggregate, Cement or Pozzolan (applies only to a change from one type of pozzolan to another; e.g., Class F fly ash to Class C fly ash)
- 2) A quantitative change in Coarse aggregate (applies to an increase or decrease greater than 5 %), Fine aggregate (applies to an increase or decrease greater than 5 %), Water (applies to an increase only), Cement (applies to a decrease only), Pozzolan (applies to a decrease only).

Where concrete with a higher slump for hand methods of placing and finishing is necessary, submit an adjusted mix design for approval to provide a maximum slump of 3" and to maintain the water-cementitious material ratio established by the original mix design.

**Page 10-6, Table 1000-1**, under column titled "Minimum compressive Strength at 28 days, psi", in row titled "Pavement", delete "560 flexural" and substitute "4,500"

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

(4/20/04)

DB8 R60

#### **Description**

Furnish and install guardrail anchor units in accordance with the details in the plans developed by the Design-Build Team, the applicable requirements of Section 862 of the 2006 *Standard Specifications for Roads and Structures*, and at locations shown in the plans.

#### **Materials**

The Design Build Team 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: 800 644-7976

The guardrail anchor unit (FLEAT) as manufactured by:

ROAD SYSTEMS, INC.  
3616 OLD HOWARD COUNTY AIRPORT  
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: 888-32-ENERGY

Prior to installation the Design Build Team 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 2006 *Standard Specifications for Roads and Structures*.
2. Certified working drawings and assembling instructions from the manufacturer for each guardrail anchor unit in accordance with Section 105-2 of the 2006 *Standard Specifications for Roads and Structures*.

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 2006 *Standard Specifications for Roads and Structures* and is incidental to the cost of the guardrail anchor unit.

### **GUARDRAIL ANCHOR UNITS, TYPE 350**

(4/20/04)

DB8 R65

### **Description**

Furnish and install guardrail anchor units in accordance with the details in the plans as developed by the Design-Build Team, the applicable requirements of Section 862 of the 2006 *Standard Specifications for Roads and Structures*, and at locations shown in the plans.

**Materials**

The Design-Build Team 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: 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 Design-Build Team 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 2006 *Standard Specifications for Roads and Structures*.
2. Certified working drawings and assembling instructions from the manufacturer for each guardrail anchor unit in accordance with Section 105-2 of the 2006 *Standard Specifications for Roads and Structures*.

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 2006 *Standard Specifications for Roads and Structures* and is incidental to the cost of the guardrail anchor unit.

**CABLE GUIDERAIL**

(12-19-06) (Revised 11-29-07)

DB8 R69

Revise the 2006 *Standard Specifications for Roads and Structures* as follows:

**Page 8-51, Article 865-1 Description, add the following as the second sentence of the first paragraph:**

Install additional double faced cable guiderail posts without cable at median hazards as shown in Roadway Standard Drawing No. 865.01 (Sheet 1 of 12)

**Page 8-52, Article 865-2 Materials, add the following as the last paragraph:**

Additional guiderail posts shall be double faced guiderail intermediate posts.

**IMPACT ATTENUATOR UNITS, TYPE 350**

(4/20/04) (Rev. 7-18-06)

DB8 R75

**Description**

Furnish and install impact attenuator units and any components necessary to connect the impact attenuator units in accordance with the manufacturer’s requirement, the details in the plans and at locations shown in the plans.

**Materials**

**NON-GATING IMPACT ATTENUATOR UNITS:**

The impact attenuator unit (QUADGUARD) as manufactured by:

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

The impact attenuator unit (TRACC) as manufactured by:

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

**GATING IMPACT ATTENUATOR UNITS:**

The impact attenuator unit (BRAKEMASTER) as manufactured by:

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

The impact attenuator unit (CAT) as manufactured by:

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

Prior to installation the Design-Build Team shall submit to the Engineer:

1. FHWA acceptance letter for each impact attenuator unit certifying it meets the requirements of NCHRP Report 350, Test Level 3, in accordance with Section 106-2 of the 2006 *Standard Specifications for Roads and Structures*.
2. Certified working drawings and assembling instructions from the manufacturer for each impact attenuator unit in accordance with Section 105-2 of the 2006 *Standard Specifications for Roads and Structures*.

No modifications shall be made to the impact attenuator 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 Methods**

If the median width is 40 feet or less, the Design-Build Team shall supply one of the NON-GATING Impact Attenuator Units listed in the Materials Section herein.

If the median width is greater than 40 feet, the Design-Build Team may use any of the GATING or NON-GATING Impact Attenuator Units listed in the Materials Section herein.

### **FENCE**

(3-6-06)

DB8 R86

Revise the 2006 *Standard Specifications for Roads and Structures* as follows:

**Page 8-54, Subarticle 866-3(A), second sentence,**

Add *existing fencing* after stumps



**PREFORMED SCOUR HOLE WITH LEVEL SPREADER APRON**

(08-24-09)

DB8 R105

**Description**

Construct and maintain preformed scour holes with spreader aprons at the locations shown on the plans and in accordance with the details in the plans. Work includes excavation, shaping and maintaining the hole and apron, furnishing and placing filter fabric, rip rap (class as specified in the plans) and permanent soil reinforcement matting.

**Materials**

<b>Item</b>	<b>Section</b>
Plain rip rap	1042
Filter Fabric	1056

The permanent soil reinforcement matting shall be permanent erosion control reinforcement mat and shall be constructed of synthetic or a combination of coconut and synthetic fibers evenly distributed throughout the mat between a bottom UV stabilized netting and a heavy duty UV stabilized top net. The matting shall be stitched together with UV stabilized polypropylene thread to form a permanent three dimensional structure. The mat shall have the following minimum physical properties:

<i>Property</i>	<i>Test Method</i>	<i>Value Unit</i>
Light Penetration	ASTM D6567	9 %
Thickness	ASTM D6525	0.40 in
Mass Per Unit Area	ASTM D6566	0.55 lb/sy
Tensile Strength	ASTM D6818	385 lb/ft
Elongation ( Maximum)	ASTM D6818	49 %
Resiliency	ASTM D1777	>70 %
UV Stability *	ASTM 4355	≥80 %
Porosity (Permanent Net)	ECTC Guidelines	≥85 %
Maximum Permissible Shear Stress (Vegetated)	Performance Bench Test	≥8.0 lb/ft <sup>2</sup>
Maximum Allowable Velocity (Vegetated)	Performance Bench Test	≥16.0 ft/s

\*ASTM D1682 Tensile Strength and % strength retention of material after 1000 hours of exposure.

A certification (Type 1, 2, or 3) from the manufacturer showing:

- (A) the chemical and physical properties of the mat used, and
- (B) conformance of the mat with this specification will be required.

## Construction Methods

All areas to be protected with the mat shall be brought to final grade and seeded in accordance with Section 1660 of the *Standard Specifications*. The surface of the soil shall be smooth, firm, stable and free of rocks, clods, roots or other obstructions that would prevent the mat from lying in direct contact with the soil surface. Areas where the mat is to be placed will not need to be mulched.

### **STREET SIGNS AND MARKERS AND ROUTE MARKERS**

(7-1-95)

DB9 R01

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 Design-Build Team shall be responsible to the owners for any damage to any street signs and markers or route markers during the above described operations.

### **STEEL U-CHANNEL POSTS**

(7-18-06)

DB9 R02

Amend the 2006 *Standard Specifications for Roads and Structures* as follows:

**Page 9-15 Subarticle 903-3(D) first paragraph, last sentence, delete the last sentence and add the following:**

Use posts of sufficient length to permit the appropriate sign mounting height. Spliced posts are not permitted on new construction.

### **SHIPPING SIGNS**

(5-15-07)

DB9 R03

Revise the 2006 *Standard Specifications for Roads and Structures* as follows:

**Page 9-2, Section 901-3(A), General, add the following as the 7th paragraph:**

Ship all multi-panel signs to the project intact, completely assembled and ready to be hung. Fabricate signs taller than 12 ft as 2 separate signs with a horizontal splice, ready to be spliced and hung. No assembly other than a horizontal splice will be permitted.

**GALVANIZED HIGH STRENGTH BOLTS, NUTS AND WASHERS**

(02-17-09)

DB10 R02

Revise the 2006 *Standard Specifications for Roads and Structures* as follows:

**Page 10-126, Subarticle 1072-7(F)(3)** Change the AASHTO reference to B 695 Class 55

**Page 10-247, Table 1092-2, Steel Sign Materials,** Change High Strength Bolts, Nuts & Washers ASTM Specifications for Galvanizing to B695 Class 55.

**Page 10-259, Subarticle 1094-1(A) Breakaway or Simple Steel Beam Sign Supports,** replace the third paragraph with the following:

Fabricate high strength bolts, nuts, and washers required for breakaway supports from steel in accordance with ASTM A325 and galvanize in accordance with AASHTO B 695 Class 55.

**Page 10-261, Article 1096-2 Steel Overhead Sign Structures,** replace the last sentence with the following:

The galvanizing shall meet the requirement of AASHTO B 695 Class 55 for fasteners and of ASTM A123 for other structural steel.

**GALVANIZING**

(8-17-10)

DB10 R03

Revise the *Standard Specifications* as follows:

**Page 10-150, Subarticle 1076-1, Galvanizing,** add a second paragraph as the follows:

Allow the Engineer to obtain samples of molten zinc directly from the galvanizing vat upon request.

**AGGREGATE PRODUCTION**

(11-20-01)

DB10 R05

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 Design-Build Team 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 2006 *Standard Specifications for Roads and Structures*. Copies of this procedure are available upon request from the Materials and Test Unit.

**CONCRETE BRICK AND BLOCK PRODUCTION**

(11-20-01)

DB10 R10

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 Design-Build Team 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 2006 *Standard Specifications for Roads and Structures*. Copies of this procedure are available upon request from the Materials and Test Unit.

**PORTLAND CEMENT CONCRETE (Alkali-Silica Reaction)**

(2-20-07)

DB10 R16

Revise the 2006 *Standard Specifications for Roads and Structures* as follows:

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

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

Obtain the list of reactive aggregates documented by the Department at:

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

<b>Table 1024-1</b>	
<b>Pozzolans for Use in Portland Cement Concrete</b>	
<i>Pozzolan</i>	<i>Rate</i>
Class F Fly Ash	20% by weight of required cement content, with 1.2 lbs Class F fly ash per lb of cement replaced
Ground Granulated Blast Furnace Slag	35%-50% by weight of required cement content with 1 lb slag per lb of cement replaced
Microsilica	4%-8% by weight of required cement content, with 1 lb microsilica per lb of cement replaced

**GLASS BEADS**

(7-18-06)

DB10 R35

Revise the 2006 *Standard Specifications for Roads and Structures* as follows:

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

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

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

Delete the last paragraph.

**ENGINEERING FABRICS TABLE 1056-1**

(7-18-06)

DB10 R40

Revise the 2006 *Standard Specifications for Roads and Structures* as follows:

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

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

**QUALIFICATION OF WELDS AND PROCEDURES**

(6-3-09)

DB 10 R43

**Page 10-143, Subarticle 1072-20(D) Qualification of Welds and Procedures**, replace the third sentence of the first paragraph with the following:

For all prequalified field welds, submit Welding Procedure Specifications (WPS) for each joint configuration for approval at least 30 days prior to performing any welding. In lieu of this, use the WPS provided and preapproved by the Department. These preapproved WPS are available from the Materials and Tests Unit or at:

[http://www.ncdot.org/doh/operations/materials/structural/appr\\_proc.html](http://www.ncdot.org/doh/operations/materials/structural/appr_proc.html).

Use non-prequalified welds only if approved by the Engineer. Submit WPS for all non-prequalified welds to the Engineer for approval. At no cost to the Department, demonstrate their adequacy in accordance with the requirements of the Bridge Welding Code.

**PAINT SAMPLING AND TESTING**

(8-15-06)

DB10 R 45

Revise the 2006 *Standard Specifications for Roads and Structures* as follows:

**Page 10-190, Article 1080-4, Delete the first paragraph and replace with the following:**

All paint will be sampled, either at the point of manufacture or at the point of destination. Inspection and sampling will be performed at the point of manufacture wherever possible. The Design-Build Team shall not begin painting until the analysis of the paint has been performed, and the paint has been accepted.

**PORTABLE CONCRETE BARRIER**

(2-20-07)

DB10 R50

The 2006 *Standard Specifications for Roads and Structures* shall be revised as follows:

**Page 10-245, Article 1090-1(A) General, add the following after the first sentence:**

The requirement for approved galvanized connectors will be waived if the barrier remains the property of the Design-Build Team.

**CHANNELIZING DEVICES (Drums)**

7-20-10

DB10 R60

Revise the 2006 *Standard Specifications for Roads and Structures* as follows:

**Page 10-236, Subarticle 1089-5(A) Drums (1) General,** replace the paragraph with the following:

(1) General

Provide drums composed of a body, alternating orange and white 4 band pattern of Type III-High Intensity Microprismatic Sheeting and ballasts that have been evaluated by NTPEP.

The following guidelines will be used during the transition from drums with the standard 5 band engineer's grade sheeting to the new 4 band configuration.

(a) All **new** drums purchased **after July 20, 2010** shall have the new sheeting and 4 band configuration.

(b) Existing 5 band drums with engineer's grade sheeting (both new and used devices in existing inventories) will be allowed for use on all on-going construction projects until project completion and will also be allowed for use on other projects until a sunset date has been established.

(c) Intermixing of “old drums” and “new drums” on the same project is acceptable during the transition.

(d) 4 band drums with engineer’s grade sheeting will not be allowed at anytime.

**Page 10-236, Subarticle 1089-5(A) Drums (3) Retroreflective Stripes**, replace the paragraph with the following:

(3) Retroreflective Bands

Provide a minimum of 4 retroreflective bands- 2 orange and 2 white alternating horizontal circumferential bands. The top band shall always be orange. Use a 6” to 8” wide band Type III-High Intensity Microprismatic Retroreflective Sheeting or better that meets the requirement of Section 1093 for each band. Do not exceed 2” for any non-reflective spaces between orange and white stripes. Do not splice the retroreflective sheeting to create the 6-inch band. Apply the retroreflective sheeting directly to the drum surface. Do not apply the retroreflective sheeting over a pre-existing layer of retroreflective sheeting. Do not place bands over any protruding corrugations areas. No damage to the reflective sheeting should result from stacking and unstacking the drums, or vehicle impact.

**Page 10-237, Subarticle 1089-5 (B) Skinny-Drums (1) General**, replace the paragraph with the following:

(1) General

All existing skinny-drums that do not have Type III-High Intensity Microprismatic Sheeting as a minimum will have the same transition requirements as drums as stated above. All **new** skinny-drums purchased **after July 20, 2010** shall have Type III-High Intensity Microprismatic Sheeting as the minimum. Type IV and higher grade sheeting is acceptable for use on both new and used devices.

Provide skinny-drums composed of a body, reflective bands, and ballasts that have been evaluated by NTPEP.

**Page 10-237, Subarticle 1089-5 (B) Skinny Drums (3) Retroreflective Stripes**, replace the paragraph with the following:

(3) Retroreflective Bands

Provide a minimum of 4 retroreflective bands- 2 orange and 2 white alternating horizontal circumferential bands for each skinny-drum. The top band shall always be orange. Use a 6” to 8” wide band Type III-High Intensity Microprismatic Retroreflective Sheeting or better that meets the requirement of Section 1093 for each band. Do not exceed 2” for any non-reflective spaces between orange and white stripes. Do not splice the retroreflective sheeting to create the 6-inch band. Apply the retroreflective sheeting

directly to the skinny-drum surface. Do not apply the retroreflective sheeting over a pre-existing layer of retroreflective sheeting. Do not place bands over any protruding corrugations areas. No damage to the reflective sheeting should result from stacking and unstacking the skinny-drums, or vehicle impact.

## **TEMPORARY SHORING**

(09/25/07)

DB11 R02

### **Description**

Design and construct temporary shoring in accordance with the contract. Temporary shoring includes standard shoring, temporary mechanically stabilized earth (MSE) walls and non-anchored temporary shoring. Trench boxes are not considered temporary shoring. "Standard shoring" refers to *standard temporary shoring* and *standard temporary MSE walls*. Notes on plans may restrict the use of one or both types of standard shoring. Notes on plans may also require or prohibit temporary MSE walls.

Unless noted otherwise on the plans, temporary shoring is required as shown on the plans and to maintain traffic. Temporary shoring to maintain traffic is defined as shoring necessary to provide lateral support to the side of an excavation or embankment parallel to an open travelway when a theoretical 2:1 (H:V) slope from the bottom of the excavation or embankment intersects the existing ground line closer than 5 ft from the edge of pavement of the open travelway.

This provision is not applicable to anchored temporary shoring or the installation of pipes, drop inlets and utilities unless noted otherwise on the plans. Provide all shoring submittals before beginning work.

### **Materials**

#### **(A) Certifications, Storage and Handling**

Provide Type 7 Contractor's Certifications in accordance with Article 106-3 of the 2006 *Standard Specifications for Roads and Structures* for all shoring materials used with the exception of reinforcing fabrics and geogrids. Furnish Type 2 Typical Certified Mill Test Reports in accordance with Article 106-3 of the 2006 *Standard Specifications for Roads and Structures* for all seam strengths and reinforcing fabric and geogrid properties. Provide minimum average roll values (MARV) in accordance with ASTM D4759 for test reports. For testing reinforcing fabric and geogrids, a lot is defined as a single day's production.

Load, transport, unload and store shoring materials such that they are kept clean and free of damage. Identify, store and handle all geogrids and geotextile fabrics in accordance with ASTM D4873. Geogrids and fabrics with defects, flaws, deterioration or damage will be rejected. Do not leave fabrics or geogrids uncovered for more than 7 days.



**(B) Shoring Backfill**

Use shoring backfill for the construction of all temporary shoring including backfilling behind non-anchored temporary shoring and in the reinforced zone for temporary MSE walls. Unless backfilling around culverts, use shoring backfill that meets the requirements of Class II Type I, Class III, Class V or Class VI select material in accordance with Section 1016 of the 2006 *Standard Specifications for Roads and Structures* or AASHTO M145 for soil classification A-2-4 with a maximum plasticity index (PI) of 6. For backfilling around culverts, use shoring backfill as defined herein except for A-2-4 soil.

**(C) Non-anchored Temporary Shoring**

Use steel shapes, plates and piles that meet the requirements of ASTM A36 and steel sheet piles that meet the requirements of Article 1084-2 of the *Standard Specifications*. Use timber lagging with a minimum allowable bending stress of 1000 psi that meets the requirements of Article 1082-1 of the 2006 *Standard Specifications for Roads and Structures*. For standard temporary shoring, use pile sections and lengths and lagging sizes as shown on the plans.

**(D) Temporary MSE Walls**

Use welded wire reinforcement forms, facings, mesh and mats that meet the requirements of AASHTO M55 or M221. Use connector bars and wires for welded wire wall components and support struts that meet the requirements of AASHTO M32. For standard temporary MSE walls, use wire gauges, strut sizes and welded wire components as shown on the plans.

**(1) Geotextile Fabrics**

Use geotextile fabrics that meet the requirements of Article 1056-1 of the 2006 *Standard Specifications for Roads and Structures*.

**(a) Reinforcing Fabric**

The reinforcement direction (RD) is defined as the direction perpendicular to the wall face and the cross-reinforcement direction (CRD) is defined as the direction parallel to the wall face.

Use woven polyester or polypropylene fabric that meets the following properties:

<b>Property</b>	<b>Test Method</b>	<b>Requirement (MARV)</b>
Wide Width Tensile Strength @ Ultimate (RD)	ASTM D4595	Varies – 200 lb / in min
Wide Width Tensile Strength @ Ultimate (CRD)	ASTM D4595	100 lb / in min
Trapezoidal Tear Strength	ASTM D4533	100 lb min
CBR Puncture Strength	ASTM D6241	600 lb min
UV Resistance after 500 hrs	ASTM D4355	70 %
Apparent Opening Size (AOS), US Sieve	ASTM D4751	20 min – 70 max
Permittivity	ASTM D4491	0.20 sec <sup>-1</sup>

For standard temporary MSE walls (temporary fabric wall) use reinforcing fabric wide width tensile strengths and lengths in the RD as shown on the plans.

**(b) Retention Fabric**

Retain shoring backfill at the face of temporary MSE walls with retention fabric. Use fabric that meets the requirements of Class 3 and the UV resistance, AOS and permittivity for separation geotextile in accordance with AASHTO M288.

**(2) SierraScape Temporary Wall**

Use uniaxial (UX) geogrids composed of high-density polyethylene (HDPE) manufactured by Tensar Earth Technologies. Test geogrids in accordance with ASTM D6637. Use connection rods manufactured by Tensar Earth Technologies to transfer the load between the facings and geogrids.

For standard temporary MSE walls (SierraScape temporary wall) use geogrid types and lengths as shown on the plans.

**(3) Terratrel Temporary Wall**

Use ribbed reinforcing steel strips manufactured by The Reinforced Earth Company that meet the requirements of ASTM A572, Grade 65. Use connector rods that meet the requirements of AASHTO M31, Grade 60 and hair pin connectors that meet the requirements of ASTM A1011, Grade 50. Use bolts, nuts and washers that meet the requirements of AASHTO M164.

For standard temporary MSE walls (Terratrel temporary wall) use ribbed steel strip size and lengths, rod lengths and diameters, hairpin connectors, bolts, nuts and washers as shown on the plans.

## **Embedment**

“Embedment” is defined as the depth of shoring below the bottom of the excavation or the grade in front of the shoring. For cantilever shoring, embedment is the depth of the piling below the grade in front of the shoring. For temporary MSE walls, embedment is the difference between the grade elevation in front of the wall and the elevation of the bottom of the reinforced zone.

## **Portable Concrete Barriers**

Provide portable concrete barriers in accordance with the plans and if shoring is located within the clear zone as defined in the *AASHTO Roadside Design Guide*. Use NCDOT portable concrete barriers (PCBs) in accordance with Roadway Standard Drawing No. 1170.01 and Section 1170 of the 2006 *Standard Specifications for Roads and Structures*. Use Oregon Tall F-Shape Concrete Barriers in accordance with detail drawing and special provision obtained from:

<http://www.ncdot.org/doh/preconstruct/wztc/DesRes/English/DesResEng.html>

The clear distance is defined as the horizontal distance from the back face of the barrier to the edge of pavement and the minimum required clear distance is shown on the traffic control plans. At the Contractor’s option or if the minimum required clear distance is not available, set an unanchored PCB against the traffic side of the shoring and design shoring for traffic impact or use the “surcharge case with traffic impact” for the standard temporary shoring. An anchored PCB or Oregon barrier is required for barriers above and behind temporary MSE walls.

## **Contractor Designed Shoring**

“Contractor designed shoring” is defined as non-anchored temporary shoring or temporary MSE walls designed by the Contractor. Unless prohibited or required, Contractor designed shoring is optional. Contractor designed shoring is required when notes on plans prohibit the use of standard shoring. Non-anchored Contractor designed shoring is prohibited when notes on plans require the use of temporary MSE walls and Contractor designed temporary MSE walls are prohibited when notes on plans prohibit the use of temporary MSE walls.

Before beginning design, survey the shoring location to determine existing elevations and actual design heights. Submit design calculations and drawings including typical sections for review and acceptance showing details of the proposed design and construction sequence in accordance with Article 105-2 of the 2006 *Standard Specifications for Roads and Structures*. Have shoring designed, detailed and sealed by a Professional Engineer registered in the State of North Carolina. Submit 3 hard copies of design calculations and 10 hard copies of drawings and an electronic copy (pdf or jpeg format on CD or DVD) of both the calculations and drawings.

Design non-anchored temporary shoring in accordance with the *AASHTO Guide Design Specifications for Bridge Temporary Works* and temporary MSE walls in accordance with the *AASHTO Allowable Stress Design Standard Specifications for Highway Bridges*. Use the following soil parameters for shoring backfill in the reinforced zone.

Total Unit Weight = 120 pcf  
Friction Angle = 30 degrees  
Cohesion = 0 psf

Design temporary shoring in accordance with the in-situ assumed soil parameters shown on the plans. Design shoring for a 3-year design service life and a traffic surcharge equal to 240 psf. This surcharge is not applicable for construction traffic. If a construction surcharge will be present within a horizontal distance equal to the height of the shoring, design the shoring for the required construction surcharge. If the edge of pavement or a structure to be protected is within a horizontal distance equal to the height of the shoring, design shoring for a maximum deflection of 3". Otherwise, design shoring for a maximum deflection of 6".

For non-anchored temporary shoring, the top of shoring elevation is defined as the elevation where the grade intersects the back face of the shoring. For traffic impact, apply 2 kips / ft to the shoring 1.5 ft above the top of shoring elevation. When designing for traffic impact, extend shoring at least 32" above the top of shoring elevation. Otherwise, extend shoring at least 6" above the top of shoring elevation.

### **Standard Shoring**

Unless notes on plans prohibit the use of one or both types of standard shoring, standard shoring is optional. Submit a "Standard Temporary MSE Wall Selection Form" for each standard temporary MSE wall location and a "Standard Temporary Shoring Selection Form" for up to three standard temporary shoring locations. Submit selection forms at least 14 days before beginning shoring construction. Obtain standard shoring selection forms from:

<http://www.ncdot.org/doh/preconstruct/highway/geotech/formdet/standards.html>

#### **(A) Standard Temporary Shoring**

Determine the shoring height, traffic impact, groundwater condition and slope or surcharge case for each standard temporary shoring location. Determine the minimum required extension, embedment and sheet pile section modulus or H pile section from the plans for each location.

#### **(B) Standard Temporary MSE Walls**

Choose a standard temporary MSE wall from the multiple temporary MSE wall options shown in the plans. Do not use more than one option per wall location.

Step bottom of reinforced zone in increments equal to vertical reinforcement spacing for the wall option chosen. Determine the wall height and slope or surcharge case for each section of standard temporary MSE wall. With the exception of either the first or last section of wall, use horizontal section lengths in increments equal to the following for the wall option chosen.

<b>Standard Temporary MSE Wall Option</b>	<b>Increment</b>
Temporary Fabric Wall	9 ft min (varies)
Hilfiker Temporary Wall	10 ft min (varies)
SierraScape Temporary Wall	18 ft – 7 ¼ in
Retained Earth Temporary Wall	24 ft
Terratrel Temporary Wall	19 ft – 8 in

Determine the appropriate facings and/or forms and reinforcement length, spacing, strength, type, density and/or size from the plans for each wall section.

### **Construction Methods**

When using an anchored PCB, anchor the barrier in accordance with Roadway Standard Drawing 1170.01 and Section 1170 of the 2006 *Standard Specifications for Roads and Structures*. Control drainage during construction in the vicinity of temporary shoring. Collect and direct run off away from temporary MSE walls, shoring and shoring backfill.

#### **(A) Non-anchored Temporary Shoring**

Install and interlock sheet piling or install piles as shown on the plans or accepted submittals with a tolerance of 1/2 inch per foot from vertical. Contact the Engineer if the design embedment is not achieved. If piles are placed in drilled holes, perform pile excavation to the required elevations and backfill excavations with concrete and lean sand grout.

Remove grout as necessary to install timber lagging. Install timber lagging with a minimum bearing distance of 3” on each pile flange. Backfill voids behind lagging with shoring backfill.

Perform welding in accordance with the accepted submittals and Article 1072-20 of the 2006 *Standard Specifications for Roads and Structures*.

#### **(1) Pile Excavation**

Excavate a hole with a diameter that will result in at least 3” of clearance around the entire pile. Use equipment of adequate capacity and capable of drilling through soil and non-soil including rock, boulders, debris, man-made objects and any other materials encountered. Blasting is not permitted to advance excavations. Blasting for core removal is permitted only when approved by the Engineer. Dispose of drilling spoils in accordance with Section 802 of the 2006 *Standard Specifications for Roads and Structures*. Drilling spoils consist of all excavated material including water removed from excavations by either pumping or drilling tools.

If unstable, caving or sloughing soils are encountered, stabilize excavations with clean watertight steel casing. Steel casings may be either sectional type or one continuous corrugated or non-corrugated piece. Provide casings of ample strength to withstand handling and driving stresses and the pressures imposed by concrete, earth or backfill. Use steel casings with an outside diameter equal to the hole size and a minimum wall thickness of 1/4 inch.

Before placing concrete, check the water inflow rate in the excavation after any pumps have been removed. If the inflow rate is less than 6" per half hour, remove any water and free fall the concrete into the excavation. Ensure that concrete flows completely around the pile. If the water inflow rate is greater than 6" per half hour, propose and obtain approval of the concrete placement procedure before placing concrete.

Center the pile in the excavation and fill the excavation with Class A concrete in accordance with Section 1000 of the 2006 *Standard Specifications for Roads and Structures* except as modified herein. Provide concrete with a slump of 6 to 8 inches. Use an approved high-range water reducer to achieve this slump. Place concrete in a continuous manner to the bottom of shoring or the elevations shown on the accepted submittals. Fill the remainder of the excavation with a lean sand grout and remove all casings.

**(B) Temporary MSE Walls**

The Engineer may require a wall preconstruction meeting to discuss the construction and inspection of the temporary MSE walls. If required, conduct the meeting with the Site Superintendent, the Resident or Bridge Maintenance Engineer, the Bridge Construction Engineer and the Geotechnical Operations Engineer before beginning wall construction.

Perform all necessary clearing and grubbing in accordance with Section 200 of the 2006 *Standard Specifications for Roads and Structures*. Excavate as necessary as shown on the plans or accepted submittals. Notify the Engineer when foundation excavation is complete. Do not place shoring backfill or first reinforcement layer until obtaining approval of the excavation depth and foundation material.

If applicable, install foundations located within the reinforced zone in accordance with the plans or accepted submittals.

Erect and maintain facings and forms as shown on the plans or accepted submittals. Stagger vertical joints of facings and forms to create a running bond when possible unless shown otherwise on the plans or accepted submittals.

Place facings and forms as near to vertical as possible with no negative batter. Construct temporary MSE walls with a vertical and horizontal tolerance of 3" when measured with a 10 ft straight edge and an overall vertical plumbness (batter) and horizontal alignment of less than 6".

Place reinforcement at locations and elevations shown on the plans or accepted submittals and in slight tension free of kinks, folds, wrinkles or creases. Repair or replace any damaged reinforcement. Contact the Engineer when existing or future structures such as foundations, pavements, pipes, inlets or utilities will interfere with reinforcement. To avoid structures, deflect, skew and modify reinforcement.

Do not splice reinforcement in the reinforcement direction (RD), i.e., parallel to the wall face. Seams are allowed in the cross-reinforcement direction (CRD). Bond or sew adjacent reinforcing fabric together or overlap fabric a minimum of 18" with seams oriented perpendicular to the wall face.

Place shoring backfill in 8 to 10 inch thick lifts and compact in accordance with Subarticle 235-4(C) of the 2006 *Standard Specifications for Roads and Structures*. Use only hand operated compaction equipment within 3 ft of the wall face. Do not damage reinforcement when placing and compacting shoring backfill. End dumping directly on the reinforcement is not permitted. Do not operate heavy equipment on reinforcement until it is covered with at least 10" of shoring backfill. Do not use sheepsfoot, grid rollers or other types of compaction equipment with feet.

Cover reinforcing and retention fabric with at least 3" of shoring backfill. Place top reinforcement layer between 4 and 24 inches below top of wall as shown on the plans or accepted submittals.

Bench temporary MSE walls into the sides of excavations where applicable. If the top of wall is within 5 ft of finished grade, remove top form or facing and incorporate the top reinforcement layer into the fill when placing fill in front of the wall. Temporary MSE walls remain in place permanently unless required otherwise.

### **CHANGEABLE MESSAGE SIGNS**

(11-21-06)

DB11 R 11

Revise the 2006 *Standard Specifications for Roads and Structures* as follows:

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

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

### **PAVEMENT MARKING LINES**

(11-21-06) (Rev. 08-17-10)

DB12 R01

Revise the 2006 *Standard Specifications* as follows:

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

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

**Page 12-5, 1205-3 (H) Observation Period**, delete 1205-3 (H) and replace with the following:

Maintain responsibility for debonding and color of the pavement markings during a 12 month observation period beginning upon final acceptance of the project as defined under Article 105-17. Guarantee the markings under the payment and performance bond in accordance with Article 105-17.

During the 12 month observation period, provide pavement marking material that shows no signs of failure due to blistering, chipping, bleeding, discoloration, smearing or spreading under heat or poor adhesion to the pavement materials. Pavement markings that debond due to snowplowing will not be considered a failed marking. Replace, at no additional expense to the Department, any pavement markings that do not perform satisfactorily under traffic during the 12 month observation period.

**Page 12-8, 1205-4 (C) Application**, delete the last two sentences of the second paragraph and replace with the following:

Produce in place markings with minimum retroreflective values shown below, as obtained with a LTL 2000 Retroreflectometer or Department approved mobile retroreflectometer. Retroreflective measurements will be taken within 30 days after final placement of the pavement marking.

**Page 12-9, 1205-4 (D) Observation Period**, delete the entire section and replace with the following:

In addition to the requirements of Subarticle 1205-3(H), maintain responsibility for minimum retroreflective values for a 30-day period beginning upon the Engineer's acceptance of all markings on the project. Guarantee retroreflective values of the markings during the 30-day period under the payment and performance bond in accordance with Article 105-17.

**Page 12-9, 1205-5 (B) Application**, delete the second sentence of the fourth paragraph and replace with the following:

Produce in place markings with minimum retroreflective values shown below, as obtained with a LTL 2000 Retroreflectometer or Department approved mobile retroreflectometer. Retroreflective measurements will be taken within 30 days after final placement of the pavement marking.

**Page 12-10, 1205-5 (C) Observation Period**, delete this entire section and replace with the following:



Maintain responsibility for minimum retroreflective values for a 30-day period beginning upon satisfactory final placement of all markings on the project. Guarantee retroreflective values of the markings during the 30-day period under the payment and performance bond in accordance with Article 105-17.

**Page 12-14, Article 1205-9, Maintenance**, delete Article 1205-9 and replace with the following:

Replace pavement markings that prematurely deteriorate, fail to adhere to the pavement, lack reflectorization, or are otherwise unsatisfactory during the life of the project or during the 12 month observation period as determined by the Engineer at no cost to the Department.

Upon notification from the Engineer, winterize the project by placing an initial or additional application of paint pavement marking lines in accordance with Article 1205-8.

### **EXCAVATION, TRENCHING, PIPE LAYING & BACKFILLING FOR UTILITIES**

(2-17-09)

DB15 R001

Revise the *2006 Standard Specifications for Roads and Structures* as follows:

**Page 15-5, Article 1505-4 Repair of Pavements, Sidewalks and Driveways, first paragraph, add at the end of the first sentence**

in accordance with Section 848.

### **ON-THE-JOB TRAINING**

(10-16-07) (Rev 6-3-09)

Z-10

#### **Description**

The North Carolina Department of Transportation will administer a custom version of the Federal On-the-Job Training (OJT) Program, commonly referred to as the Alternate OJT Program. All contractors (existing and newcomers) will be automatically placed in the Alternate Program. Standard OJT requirements typically associated with individual projects will no longer be applied at the project level. Instead, these requirements will be applicable on an annual basis for each contractor administered by the OJT Program Manager.

On the Job Training shall meet the requirements of 23 CFR 230.107 (b), 23 USC – Section 140, this provision and the On-the-Job Training Program Manual.

The Alternate OJT Program will allow a contractor to train employees on Federal, State and privately funded projects located in North Carolina. However, priority must be given to training employees on NCDOT Federal-Aid funded projects.

#### **Minorities and Women**

Developing, training and upgrading of minorities and women toward journeymen level status is a primary objective of this special training provision. Accordingly, the Contractor shall make

every effort to enroll minority and women as trainees to the extent that such persons are available within a reasonable area of recruitment. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

### **Assessing Training Goals**

The Department through the OJT Program Manager, will assign training goals for a calendar year based on the contractors' past three years' activity and the contractors' anticipated upcoming year's activity with the Department. At the beginning of each year, all contractors eligible will be contacted by the Department to determine the number of trainees that will be assigned for the upcoming calendar year. At that time, the Contractor shall enter into an agreement with the Department to provide a self-imposed on-the-job training program for the calendar year. This agreement will include a specific number of annual training goals agreed to by both parties. The number of training assignments may range from 1 to 15 per contractor per calendar year. The Contractor shall sign an agreement to fulfill their annual goal for the year. A sample agreement is available at [www.ncdot.org/business/ocs/ojt/](http://www.ncdot.org/business/ocs/ojt/).

### **Training Classifications**

The Contractor shall provide on-the-job training aimed at developing full journeyman level workers in the construction craft / operator positions. Preference shall be given to providing training in the following skilled work classifications:

Equipment Operators	Office Engineers
Truck Drivers	Estimators
Carpenters	Iron / Reinforcing Steel Workers
Concrete Finishers	Mechanics
Pipe Layers	Welders

The Department has established common training classifications and their respective training requirements that may be used by the contractors. However, the classifications established are not all-inclusive. Where the training is oriented toward construction applications, training will be allowed in lower-level management positions such as office engineers and estimators. Contractors shall submit new classifications for specific job functions that their employees are performing. The Department will review and recommend for acceptance to FHWA the new classifications proposed by contractors, if applicable. New classifications shall meet the following requirements:

Proposed training classifications are reasonable and realistic based on the job skill classification needs, and

The number of training hours specified in the training classification is consistent with common practices and provides enough time for the trainee to obtain journeyman level status.

The Contractor may allow trainees to be trained by a subcontractor provided that the Contractor retains primary responsibility for meeting the training and this provision is made applicable to the subcontract. However, only the Contractor will receive credit towards the annual goal for the trainee.

Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. The number of trainees shall be distributed among the work classifications on the basis of the contractor's needs and the availability of journeymen in the various classifications within a reasonable area of recruitment.

No employee shall be employed as a trainee in any classification in which they have successfully completed a training course leading to journeyman level status or in which they have been employed as a journeyman.

### **Records and Reports**

The Contractor shall maintain enrollment, monthly and completion reports documenting company compliance under these contract documents. These documents and any other information, as requested, shall be submitted to the OJT Program Manager.

Upon completion and graduation of the program, the Contractor shall provide each trainee with a certification Certificate showing the type and length of training satisfactorily completed.

### **Trainee Interviews**

All trainees enrolled in the program shall receive an initial and Trainee / Post graduate interview conducted by the OJT program staff.

### **Trainee Wages**

Contractors shall compensate trainees on a graduating pay scale based upon a percentage of the prevailing minimum journeyman wages (Davis-Bacon Act). Minimum pay shall be as follows:

60 percent	of the journeyman wage for the first half of the training period
75 percent	of the journeyman wage for the third quarter of the training period
90 percent	of the journeyman wage for the last quarter of the training period

In no instance shall a trainee be paid less than the local minimum wage. The Contractor shall adhere to the minimum hourly wage rate that will satisfy both the NCDOL and the Department.

### **Achieving or Failing to Meet Training Goals**

The Contractor will be credited for each trainee employed by him on the contract work who is currently enrolled or becomes enrolled in an approved program and who receives training for at least 50 percent of the specific program requirement. Trainees will be allowed to be transferred between projects if required by the Contractor's scheduled workload to meet training goals.

If a contractor fails to attain their training assignments for the calendar year, they may be taken off the NCDOT's Bidders List.

**Measurement and Payment**

No compensation will be made for providing required training in accordance with these contract documents.

**STANDARD SPECIAL PROVISION****AVAILABILITY OF FUNDS – TERMINATION OF CONTRACTS**

(05-20-08)

Z-2

*General Statute 143C-6-11. (h) Highway Appropriation* is hereby incorporated verbatim in this contract as follows:

“(h) Amounts Encumbered – Transportation project appropriations may be encumbered in the amount of allotments made to the Department of Transportation by the Director for the estimated payments for transportation project contract work to be performed in the appropriation fiscal year. The allotments shall be multiyear allotments and shall be based on estimated revenues and shall be subject to the maximum contract authority contained in *General Statute 143C-6-11(c)*. Payment for transportation project work performed pursuant to contract in any fiscal year other than the current fiscal year is subject to appropriations by the General Assembly. Transportation project contracts shall contain a schedule of estimated completion progress, and any acceleration of this progress shall be subject to the approval of the Department of Transportation provided funds are available. The State reserves the right to terminate or suspend any transportation project contract, and any transportation project contract shall be so terminated or suspended if funds will not be available for payment of the work to be performed during that fiscal year pursuant to the contract. In the event of termination of any contract, the contractor shall be given a written notice of termination at least 60 days before completion of scheduled work for which funds are available. In the event of termination, the contractor shall be paid for the work already performed in accordance with the contract specifications.”

Payment will be made on any contract terminated pursuant to the special provision in accordance with Article 108-13(E), of the *North Carolina Department of Transportation Standard Specifications for Roads and Structures*, dated July 1, 2006 and as amended by the Standard Special Provision, Division One as found elsewhere in this RFP.

**\*\*\* STANDARD SPECIAL PROVISIONS \*\*\***

**NCDOT GENERAL SEED SPECIFICATIONS FOR SEED QUALITY**

(11-18-08)

Z-3

Seed shall be sampled and tested by the North Carolina Department of Agriculture and Consumer Services, Seed Testing Laboratory. When said samples are collected, the vendor shall supply an independent laboratory report for each lot to be tested. Results from seed so sampled shall be final. Seed not meeting the specifications shall be rejected by the Department of Transportation and shall not be delivered to North Carolina Department of Transportation warehouses. If seed has been delivered it shall be available for pickup and replacement at the supplier's expense.

Any re-labeling required by the North Carolina Department of Agriculture and Consumer Services, Seed Testing Laboratory, that would cause the label to reflect as otherwise specified herein shall be rejected by the North Carolina Department of Transportation.

Seed shall be free from seeds of the noxious weeds Johnsongrass, Balloonvine, Jimsonweed, Witchweed, Itchgrass, Serrated Tussock, Showy Crotalaria, Smooth Crotalaria, Sicklepod, Sandbur, Wild Onion, and Wild Garlic. Seed shall not be labeled with the above weed species on the seed analysis label. Tolerances as applied by the Association of Official Seed Analysts will NOT be allowed for the above noxious weeds except for Wild Onion and Wild Garlic.

Tolerances established by the Association of Official Seed Analysts will generally be recognized. However, for the purpose of figuring pure live seed, the found pure seed and found germination percentages as reported by the North Carolina Department of Agriculture and Consumer Services, Seed Testing Laboratory will be used. Allowances, as established by the NCDOT, will be recognized for minimum pure live seed as listed on the following pages.

The specifications for restricted noxious weed seed refers to the number per pound as follows:

<u>Restricted Noxious Weed</u>	<u>Limitations per Lb. Of Seed</u>	<u>Restricted Noxious Weed</u>	<u>Limitations per Lb. of Seed</u>
Blessed Thistle	4 seeds	Cornflower (Ragged Robin)	27 seeds
Cocklebur	4 seeds	Texas Panicum	27 seeds
Spurred Anoda	4 seeds	Bracted Plantain	54 seeds
Velvetleaf	4 seeds	Buckhorn Plantain	54 seeds
Morning-glory	8 seeds	Broadleaf Dock	54 seeds
Corn Cockle	10 seeds	Curly Dock	54 seeds
Wild Radish	12 seeds	Dodder	54 seeds
Purple Nutsedge	27 seeds	Giant Foxtail	54 seeds
Yellow Nutsedge	27 seeds	Horsenettle	54 seeds
Canada Thistle	27 seeds	Quackgrass	54 seeds
Field Bindweed	27 seeds	Wild Mustard	54 seeds
Hedge Bindweed	27 seeds		

Seed of Pensacola Bahiagrass shall not contain more than 7% inert matter, Kentucky Bluegrass, Centipede and Fine or Hard Fescue shall not contain more than 5% inert matter whereas a maximum of 2% inert matter will be allowed on all other kinds of seed. In addition, all seed

shall not contain more than 2% other crop seed nor more than 1% total weed seed. The germination rate as tested by the North Carolina Department of Agriculture shall not fall below 70%, which includes both dormant and hard seed. Seed shall be labeled with not more than 7%, 5% or 2% inert matter (according to above specifications), 2% other crop seed and 1% total weed seed.

Exceptions may be made for minimum pure live seed allowances when cases of seed variety shortages are verified. Pure live seed percentages will be applied in a verified shortage situation. Those purchase orders of deficient seed lots will be credited with the percentage that the seed is deficient.

**FURTHER SPECIFICATIONS FOR EACH SEED GROUP ARE GIVEN BELOW:**

Minimum 85% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 83% pure live seed will not be approved.

Sericea Lespedeza  
Oats (seeds)

Minimum 80% pure live seed; maximum 1% total weed seed; maximum 2% total other crop; maximum 144 restricted noxious weed seed per pound. Seed less than 78% pure live seed will not be approved.

Tall Fescue (all approved varieties)	Bermudagrass
Kobe Lespedeza	Browntop Millet
Korean Lespedeza	German Millet - Strain R
Weeping Lovegrass	Clover - Red/White/Crimson
Carpetgrass	

Minimum 78% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 76% pure live seed will not be approved.

Common or Sweet Sundangrass

Minimum 76% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 74% pure live seed will not be approved.

Rye (grain; all varieties)  
Kentucky Bluegrass (all approved varieties)  
Hard Fescue (all approved varieties)  
Shrub (bicolor) Lespedeza

Minimum 70% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 70% pure live seed will not be approved.

Centipedegrass  
Crownvetch  
Pensacola Bahiagrass

Japanese Millet  
Reed Canary Grass  
Zoysia

Minimum 70% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 5% inert matter; maximum 144 restricted noxious weed seed per pound.

Barnyard Grass  
Big Bluestem  
Little Bluestem  
Bristly Locust  
Birdsfoot Trefoil  
Indiangrass  
Orchardgrass  
Switchgrass  
Yellow Blossom Sweet Clover



**\*\*\* STANDARD SPECIAL PROVISIONS \*\*\***

**ERRATA**

(07-21-09)

Z-4

Revise the *Standard Specifications for Roads and Structures July 2006* on all projects as follows:

**Division 1**

- Page 1-1, replace AREA - American Railway Engineering Association with ***American Railway Engineering and Maintenance of Way Association***.
- Page 1-7, remove **-L-** in middle of page after INVITATION TO BID and before LABORATORY.
- Page 1-25, 102-16(R), move 2nd paragraph to left margin. It is not a part of this subarticle, but part of the entire article.

**Division 2**

- Page 2-9, Subarticle 225-1(C), 1<sup>st</sup> paragraph, 2<sup>nd</sup> line, last word, add a “d” to make the word grade become **graded**
- Page 2-15, Subarticle 226-3, 5th paragraph, first line, replace the word *in* with the word *is*.
- Page 2-23, Subarticle 235-4(B)(9), at the end of the sentence, replace finished greater with finished **grade**.
- Page 2-28, Article 260-3, First paragraph, second line, remove the word *foot*.

**Division 3**

- Page 3-13, Article 340-4, Second paragraph, change Flowable Backfill to Flowable **Fill**

**Division 4**

- Page 4-29, Article 420-13(A) Description, change reference from Section 1082 to **Article 1081-6**.
- Page 4-40, Subarticle 420-17(F) first line, change Subarticle 420-17(B) to **(B) herein**.
- Page 4-70, 442-13(B) Second sentence, change SSPC Guide 6I to SSPC Guide **6**.
- Pages 4-72, 4-74, 4-76, at the top of the page, substitute the heading Section 452 with Section **450**.
- Page 4-79, at the top of the page, substitute the heading Section 450 with Section **452**
- Page 4-80, change 452-7 to 452-**6** at the top of the page.
- Page 4-80, change Pay Item \_\_\_Steel Pile Retaining Walls, to **Sheet** Pile Retaining Walls.
- Page 4-88, 462-4, Title, Replace last word Measurement with the word **PAYMENT**

**Division 5**

- Page 5-8, Article 501-15 Measurement and Payment, delete the 4th paragraph that begins The quantity of lime, measured as provided ...

- Page 5-14, Article 520-11 Measurement and Payment, first paragraph, second line, delete *will be*.

### Division 6

- Page 6-3, Article 600-9, 2nd Paragraph on this page, replace 818-5 with 818-4.
- Pages 6-30 and 31, Subarticle 610-3(A)(13) Move 2 paragraphs from the margin to the right under the number (13).
- Page 6-43, Article 610-8, 4th paragraph, remove the first *the*
- Page 6-44, 2nd full paragraph, 1<sup>st</sup> sentence, delete the first *and* and add *transverse* just before cross-slope control.
- Page 6-51, at the top of the page, add **610-14** on the same line, and just before the heading MAINTENANCE.
- Page 6-53, Article 620-4 sixth paragraph, second line; the word that should be *which*.
- Page 6-66, title, Replace EXISTNG with **EXISTING**
- Page 6-66, Article 657-1, Description, first sentence, replace PS/AR (hot-poured rubber asphalt with *hot applied joint sealer*.
- Page 6-66, Article 657-2, replace PS/AR (Hot-Poured Rubber Asphalt with the following:

Item	Section
<i>Hot Applied Joint Sealer</i>	<i>1028-2</i>

- Page 6-67, at the top of the page, substitute the heading Section 654 with Section **657**.
- Page 6-67, Article 657-3 Construction Methods, 2nd paragraph, replace PS/AR sealant with *hot applied joint sealer*.
- Page 6-67, at the top of the page, substitute the heading Section 654 with Section **657**.
- Page 6-71, 660-9(B)(1), Replace the first sentence of the first paragraph with the following:

**Using the quantities shown in *Table 660-1*, apply asphalt material to the existing surface followed by an application of No. 78 M or lightweight aggregate.**

- Page 6-89, Add a period at the end of the last sentence at the bottom of the page.
- Page 6-90, Article 663-5, first paragraph, first sentence, change 50oF to **50°F**; third paragraph, fourth sentence change 325oF to **325°F**.

### Division 7

- Page 7-12, at the top of the page, substitute the heading Section 710 with Section **700**.
- Page 7-15, Article 710-9, 4th paragraph, last line, change 710-11(B) to 710-10(B).

**Division 8**

- Page 8-13, Article 808-3, 4th Paragraph, third line, replace the word Eexcavation with the word **Excavation**
- Page 8-35, Article 848-2, Item: Replace Cncrete with **Concrete**

**Division 9**

- Page 9-2, add **901-3** just before CONSTRUCTION METHODS

**Division 10**

- Page 10-12, near bottom of page add (C) before Proportioning and Mixing of Modified Compositions, which should be bold type.
- Page 10-28, at the top of the page, substitute Section 1006 for 1005.
- Page 10-54, Subarticle 1018-2A), First line, substitute (B) for II, third line, substitute (B)(2) for II-b.
- Pages 10-56, 10-58, 10-60 at the top of the page, substitute Section 1018 with Section **1020**.
- Page 10-84, Table 1042-1, Class 2, Maximum, change from 23r to **23**.
- Page 10-84, Article 1042-2 Testing, last sentence, replace the word alterations with the word **cycles**.
- Page 10-100, Table 1056-1, replace on the line for Trapezoidal Tear Strength:

Type 1	Type 2	Type 3		Type 4
		Class A	Class B	Soil Stabilization
<b>45 lb</b>	<b>75 lb</b>	--	--	<b>75 lb</b>

- Page 10-116, Subarticle 1070-10, first paragraph, second sentence, add **or** just before cold-forged sleeve.
- Pages 10-136 through 10-147, at the top of the page, substitute Section 1074 with Section **1072**.
- Page 10-157, Article 1077-11, first paragraph, change the reference from Subarticle 420-18(B) to Subarticle 420-**17(B)**.
- Page 10-200, Subarticle 1080-14(B), change reference to ASTM D3359
- Page 10-211, at the top of the page, substitute Section 1081 with Section **1082**.
- Page 10-229, add **1088-6 BLANK** on the line above 1088-7 TUBULAR MARKERS.
- Page 10-244, add **1089-10 BLANK** and **1089-11 BLANK** on the lines just above 1089-12 FLAGGER.
- Page 10-272, delete Article 1098-6 in its entirety. Renumber Articles 1098-7 through 1098-17 as Articles 1098-6 through 1098-16 consecutively.

**Division 12**

- Page 12-21 Add **1266-2** just before the heading MATERIALS.

**Division 14**

- Page 14-33, Article 1413-6, first paragraph, first sentence, first line, replace the word made with the words *paid for*.

**Division 15**

- Page 15-2 add **1500-4** just before the heading WEEKEND, NIGHT AND HOLIDAY WORK.
- Page 15-4, Subarticle 1505-3(A)(2), replace the 2nd line with the following: *Provide shielding or shoring as required under Section 150 or as required elsewhere in the contract.*
- Page 15-5, add **1505-6** on the same line and just before the heading MEASUREMENT AND PAYMENT. (Remove the period after PAYMENT.)
- Page 15-6, Article 1505-6(3), delete *in Section 1175* and replace it with *elsewhere in the contract*.
- Page 15-8, add **1510-4** on the same line and just before the heading MEASUREMENT AND PAYMENT.
- Page 15-10, substitute **BLANK** for CONSTRUCTION REQUIREMENTS on the same line and just before 1515-4.
- Page 15-10, substitute **CONSTRUCTION REQUIREMENTS** for General Requirements
- Page 15-10, Article 1515-4, add (**D**) just before the bolded Fire Hydrants.
- Page 15-13, Article 1520-3, 8th paragraph, add *pipe* after diameter.
- Page 15-22, add **1540-3** on the same line and just before the heading CONSTRUCTION REQUIREMENTS
- Page 15-28, Replace 1550-6 METHOD OF MEASUREMENT with **MEASUREMENT AND PAYMENT**.

**Division 16**

- Page 16-12, Subarticle 1632-1(C) ¼ Inch hardware cloth, change the minimum width from 24 inches to **48** inches.

**Division 17**

- Page 17-19, Subarticle 1725-2 Material, Second paragraph, change Article 1098-7 to 1098-8
- Page 17-20, Subarticle 1726-2 Material, Second paragraph, change Article 1098-8 to 1098-9

**END**

**\*\*\* STANDARD SPECIAL PROVISIONS \*\*\*****AWARD OF CONTRACT**

(6-28-77)

Z-6

“The North Carolina Department of Transportation, in accordance with the provisions of *Title VI of the Civil Rights Act of 1964* (78 Stat. 252) and the Regulations of the Department of Transportation (*49 C.F.R., Part 21*), issued pursuant to such act, hereby notifies all bidders that it will affirmatively insure that the contract entered into pursuant to this advertisement will be awarded to the lowest responsible bidder without discrimination on the ground of race, color, or national origin”.

**\*\*\* STANDARD SPECIAL PROVISIONS \*\*\*****MINORITY AND FEMALE EMPLOYMENT REQUIREMENTS**

(12-18-07)

Z-7

**NOTICE OF REQUIREMENTS FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (*EXECUTIVE NUMBER 11246*)**

1. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, see as shown on the attached sheet entitled "Employment Goals for Minority and Female Participation".

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

The Contractor's compliance with the Executive Order and the regulations in *41 CFR Part 60-4* shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in *41 CFR 60-4.3(a)*, and its effort to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project or the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the executive Order and the regulations in *41 CFR Part 60-4*. Compliance with the goals will be measured against the total work hours performed.

2. As used in this Notice and in the contract resulting from this solicitation, the "covered area" is the county or counties shown on the cover sheet of the proposal form and contract.

**EMPLOYMENT GOALS FOR MINORITY  
AND FEMALE PARTICIPATION**

Economic Areas

**Area 023 29.7%**

Bertie County  
Camden County  
Chowan County  
Gates County  
Hertford County  
Pasquotank County  
Perquimans County

**Area 024 31.7%**

Beaufort County  
Carteret County  
Craven County  
Dare County  
Edgecombe County  
Green County  
Halifax County  
Hyde County  
Jones County  
Lenoir County  
Martin County  
Nash County  
Northampton County  
Pamlico County  
Pitt County  
Tyrrell County  
Washington County  
Wayne County  
Wilson County

**Area 025 23.5%**

Columbus County  
Duplin County  
Onslow County  
Pender County

**Area 026 33.5%**

Bladen County  
Hoke County  
Richmond County  
Robeson County  
Sampson County  
Scotland County

**Area 027 24.7%**

Chatham County  
Franklin County  
Granville County  
Harnett County  
Johnston County  
Lee County  
Person County  
Vance County  
Warren County

**Area 028 15.5%**

Alleghany County  
Ashe County  
Caswell County  
Davie County  
Montgomery County  
Moore County  
Rockingham County  
Surry County  
Watauga County  
Wilkes County

**Area 029 15.7%**

Alexander County  
Anson County  
Burke County  
Cabarrus County  
Caldwell County  
Catawba County  
Cleveland County  
Iredell County  
Lincoln County  
Polk County  
Rowan County  
Rutherford County  
Stanly County

**Area 0480 8.5%**

Buncombe County  
Madison County

**Area 030 6.3%**

Avery County  
Cherokee County  
Clay County  
Graham County  
Haywood County  
Henderson County  
Jackson County  
McDowell County  
Macon County  
Mitchell County  
Swain County  
Transylvania County  
Yancey County

**SMSA Areas**

**Area 5720 26.6%**

Currituck County

**Area 9200 20.7%**

Brunswick County

New Hanover County

**Area 2560 24.2%**

Cumberland County

**Area 6640 22.8%**

Durham County

Orange County

Wake County

**Area 1300 16.2%**

Alamance County

**Area 3120 16.4%**

Davidson County

Forsyth County

Guilford County

Randolph County

Stokes County

Yadkin County

**Area 1520 18.3%**

Gaston County

Mecklenburg County

Union County

**Goals for Female**

**Participation in Each Trade**

(Statewide) 6.9%



**\*\*\* STANDARD SPECIAL PROVISIONS \*\*\***

**REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS** (FHWA-1273)

- I. General
- II. Nondiscrimination
- III. Nonsegregated Facilities
- IV. Payment of Predetermined Minimum Wage
- V. Statements and Payrolls
- VI. Record of Materials, Supplies, and Labor
- VII. Subletting or Assigning the Contract
- VIII. Safety: Accident Prevention
- IX. False Statements Concerning Highway Projects
- X. Implementation of Clean Air Act and Federal Water Pollution Control Act
- XI. Certification Regarding Debarment, Suspension Ineligibility, and Voluntary Exclusion
- XII. Certification Regarding Use of Contract Funds for Lobbying

**I. GENERAL**

- 1. These contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.
- 2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.
- 3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.
- 4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:
  - Section I, paragraph 2;
  - Section IV, paragraphs 1, 2, 3, 4, and 7;
  - Section V, paragraphs 1 and 2a through 2g.
- 5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the DOL, or the contractor's employees or their representatives.
- 6. **Selection of Labor:** During the performance of this contract, the contractor shall not:
  - a. discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment A), or
  - b. employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

**II. NONDISCRIMINATION**

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

- 1. **Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630 and 41 CFR 60) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 *et seq.*) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:
  - a. The contractor will work with the State highway agency (SHA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.

- b. The contractor will accept as his operating policy the following statement:
- "It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, preapprenticeship, and/or on-the-job training."
2. **EEO Officer:** The contractor will designate and make known to the SHA contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.
  3. **Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:
    - a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.
    - b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.
    - c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.
    - d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
    - e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.
  4. **Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minority groups in the area from which the project work force would normally be derived.
    - a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.
    - b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)
    - c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.
  5. **Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:
    - a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.
    - b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.
    - c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.
    - d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.
  6. **Training and Promotion:**
    - a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.
    - b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.

- c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.
  - d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.
7. **Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:
- a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.
  - b. The contractor will use best efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.
  - c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the SHA and shall set forth what efforts have been made to obtain such information.
  - d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The DOL has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the SHA.
8. **Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.
- a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.
  - b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 23, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from SHA personnel.
  - c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.
9. **Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the SHA and the FHWA.
- a. The records kept by the contractor shall document the following:
    - 1. The number of minority and non-minority group members and women employed in each work classification on the project;
    - 2. The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women;
    - 3. The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and
    - 4. The progress and efforts being made in securing the services of DBE subcontractors or subcontractors with meaningful minority and female representation among their employees.
  - b. The contractors will submit an annual report to the SHA each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data.

### III. NONSEGREGATED FACILITIES

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

- a. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.
- b. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).

- c. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of \$10,000 or more and that it will retain such certifications in its files.

#### IV. PAYMENT OF PREDETERMINED MINIMUM WAGE

(Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempt.)

##### 1. General:

- a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less often than once a week and without subsequent deduction or rebate on any account [except such payroll deductions as are permitted by regulations (29 CFR 3) issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c)] the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV and the DOL poster (WH-1321) or Form FHWA-1495) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also, for the purpose of this Section, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraphs 4 and 5 of this Section IV.
- b. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed.
- c. All rulings and interpretations of the Davis-Bacon Act and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

##### 2. Classification:

- a. The SHA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.
- b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:
1. the work to be performed by the additional classification requested is not performed by a classification in the wage determination;
  2. the additional classification is utilized in the area by the construction industry;
  3. the proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and
  4. with respect to helpers, when such a classification prevails in the area in which the work is performed.
- c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the DOL, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
- d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. Said Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
- e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

##### 3. Payment of Fringe Benefits:

- a. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor or subcontractors, as appropriate, shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly case equivalent thereof.

- b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as a part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

**4. Apprentices and Trainees (Programs of the U.S. DOL) and Helpers:**

a. Apprentices:

1. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.
2. The allowable ratio of apprentices to journeyman-level employees on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate listed in the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor or subcontractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.
3. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator for the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.
4. In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

b. Trainees:

1. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the DOL, Employment and Training Administration.
2. The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.
3. Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which case such trainees shall receive the same fringe benefits as apprentices.
4. In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Helpers:

Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV.2. Any worker listed on a payroll at a helper wage rate, who is not a helper under an approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

**5. Apprentices and Trainees (Programs of the U.S. DOT):**

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements

of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

**6. Withholding:**

The SHA shall upon its own action or upon written request of an authorized representative of the DOL withhold, or cause to be withheld, from the contractor or subcontractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements which is held by the same prime contractor, as much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the SHA contracting officer may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

**7. Overtime Requirements:**

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such workweek unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

**8. Violation:**

Liability for Unpaid Wages; Liquidated Damages: In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible thereof shall be liable to the affected employee for his/her unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of \$10 for each calendar day on which such employee was required or permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

**9. Withholding for Unpaid Wages and Liquidated Damages:**

The SHA shall upon its own action or upon written request of any authorized representative of the DOL withhold, or cause to be withheld, from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 8 above.

**V. STATEMENTS AND PAYROLLS**

(Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

**1. Compliance with Copeland Regulations (29 CFR 3):**

The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

**2. Payrolls and Payroll Records:**

- a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.
- b. The payroll records shall contain the name, social security number, and address of each such employee; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof of the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. In addition, for Appalachian contracts, the payroll records shall contain a notation indicating whether the employee does, or does not, normally reside in the labor area as defined in Attachment A, paragraph 1. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis Bacon Act, the contractor and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees, and ratios and wage rates prescribed in the applicable programs.
- c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices, trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing

Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

- d. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his/her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
  1. that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;
  2. that such laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR 3;
  3. that each laborer or mechanic has been paid not less than the applicable wage rate and fringe benefits or cash equivalent for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.
- e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.
- f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.
- g. The contractor or subcontractor shall make the records required under paragraph 2b of this Section V available for inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

**VI. RECORD OF MATERIALS, SUPPLIES, AND LABOR THIS SECTION DELETED JUNE 4, 2007.**

**VII. SUBLETTING OR ASSIGNING THE CONTRACT**

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635).
  - a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.
  - b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.
2. The contract amount upon which the requirements set forth in paragraph 1 of Section VII is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.
3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the SHA contracting officer determines is necessary to assure the performance of the contract.
4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the SHA contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

**VIII. SAFETY: ACCIDENT PREVENTION**

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the SHA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.
2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).
3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety

and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

**IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS**

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

**NOTICE TO ALL PERSONNEL ENGAGED ON FEDERAL-AID HIGHWAY PROJECTS**

18 U.S.C. 1020 reads as follows:

*"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or*

*Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or*

*Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;*

*Shall be fined not more than \$10,000 or imprisoned not more than 5 years or both."*

**X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT**

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$100,000 or more.)

By submission of this bid or the execution of this contract, or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 *et seq.*, as amended by Pub.L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 *et seq.*, as amended by Pub.L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.
2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.
3. That the firm shall promptly notify the SHA of the receipt of any communication from the Director, Office of Federal Activities, EPA, indicating that a facility that is or will be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.
4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

**XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION**

**1. Instructions for Certification - Primary Covered Transactions:**

(Applicable to all Federal-aid contracts - 49 CFR 29)

- a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.
- b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.
- c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.
- d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
- e. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.



- f. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.
- g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
- h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded From Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.
- i. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

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**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Primary Covered Transactions**

- 1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
  - a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
  - b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
  - c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and
  - d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
- 2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

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**2. Instructions for Certification - Lower Tier Covered Transactions:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions of \$25,000 or more - 49 CFR 29)

- a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.
- b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
- c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.
- d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.
- e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
- f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

- g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.
- h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

\* \* \* \* \*

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Covered Transactions:**

- 1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
- 2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

\* \* \* \* \*

**XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING**

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 - 49 CFR 20)

- 1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:
  - a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
  - b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- 2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.
- 3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

**GENERAL DECISION NC20100011 NC11**

Z-12

Date: March 12, 2010

General Decision Number NC20100011 03/12/2010

Superseded General Decision No. NC20080011

State: North Carolina

Construction Type: HIGHWAY

**COUNTIES:**

Alamance	Durham	Orange
Alexander	Forsyth	Randolph
Buncombe	Franklin	Rowan
Burke	Gaston	Stokes
Cabarrus	Guilford	Union
Catawba	Lincoln	Wake
Cumberland	Mecklenburg	Yadkin
Davidson	New Hanover	
Davie	Onslow	

HIGHWAY CONSTRUCTION PROJECTS (does not include tunnels, building structures in rest area projects, railroad construction, and, bascule, suspension and spandrel arch bridges, bridges designed for commercial navigation, and bridges involving marine construction, and other major bridges).

Modification Number  
0

Publication Date  
03/12/2010

SUNC1990-014 02/12/1990

	Rates	Fringes
CARPENTER	7.63	
CONCRETE FINISHER	7.52	
ELECTRICIAN	10.26	
IRONWORKERS (reinforcing)	9.76	
LABORER		
General	7.25	
Asphalt Lay Down Person	7.25	
Asphalt Raker	7.25	
Form Setter (road)	8.57	
Mason (brick, block, stone)	7.44	
Pipe Layer	7.25	
Power Tool Operator	8.28	

POWER EQUIPMENT OPERATORS		
Asphalt Distributor	7.25	
Asphalt Paver	7.47	
Bulldozer	7.33	
Bulldozer (utility)	7.25	
Concrete Curb Machine	7.25	
Concrete Finishing Machine	7.85	
Concrete Paver	7.25	
Crane, Backhoe, Shovel & Dragline (over 1 yd)	8.16	
Crane, Backhoe, Shovel & Dragline(1 yd and under)	7.25	
Drill Operator	7.34	
Grade Checker	7.25	
Gradeall	8.38	
Grease Person	7.25	
Loader	7.25	
Mechanic	8.47	
Motor Grader (Fine Grade)	8.04	
Motor Grader(Rough Grade)	7.68	
Oiler	7.25	
Roller (Finisher)	7.25	
Roller (Rough)	7.25	
Scraper	7.25	
Screed Asphalt	7.25	
Stone Spreader	7.25	
Stripping Machine Operator	7.25	
Subgrade Machine	7.25	
Sweeper	7.25	
Tractor (Utility)	7.25	
TRUCK DRIVERS		
Trucks – Single Rear Axle	7.25	
Trucks – Multi Rear Axle	7.25	
Trucks – Heavy Duty	9.47	

WELDERS – Receive rate prescribed for craft performing operation to which welding is incidental.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(ii)).

In the listing above, the "SU" designation means that rates listed under that identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

**WAGE DETERMINATION APPEALS PROCESS**

1.) Has there been an initial decision in the matter? This can be:

- \* an existing published wage determination
- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on a wage determination matter
- \* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations  
Wage and Hour Division  
U. S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, D.C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, D.C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board  
U. S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, D.C. 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

**\*\*\* STANDARD SPECIAL PROVISIONS \*\*\***

(12-18-07)

**DIVISION ONE OF STANDARD SPECIFICATIONS**

**Division One of the 2006 NCDOT Standard Specifications for Roads and Structures (Standard Specifications) shall apply except as follows:**

**Definitions:** Throughout Division One of the *Standard Specifications*, the term “Contractor” is replaced with “Design-Build Team”, the term “Bidder” is replaced with “Proposer,” the term “Bid” is replaced by “Price Proposal,” and the phrase “lowest Responsible Bidder” is replaced with “responsible Proposer with the lowest adjusted price.” The replacement of “Contractor” with “Design-Build Team” does not apply to Article 102-2. The replacement of the above terms also does not apply when the terms are part of a phrase (e.g. bid bond, prime contractor, total amount bid, etc.)

**Deletions:** Articles 102-4, 102-10(C)(2), 102-11(A), 103-2(B), 103-4(B), 104-13, and 108-2 of the *Standard Specifications* are deleted from Design-Build Contracts.

**Modifications:** The remainder of this Standard Special Provision includes modifications to Division One of the *Standard Specifications*.

## **SECTION 101 DEFINITION OF TERMS**

**Page 1-2, Article 101-3, replace and add certain definitions as follows:**

**ADDITIONAL WORK**

Additional work is that which results from a change or alteration in the contract and for which there are contract unit prices in the original contract or an executed supplemental agreement.

**ADVERTISEMENT**

The public advertisement inviting Statements of Qualifications for the design and construction of specific projects.

**AWARD**

The decision of the Board of Transportation to accept the proposal of the selected Design-Build Team for work which is subject to the furnishing of payment and performance bonds, and such other conditions as may be otherwise provided by law, the Request for Proposals, and the *Standard Specifications*.

**CONTRACT**

The executed agreement between the Department of Transportation and the successful proposer, covering the performance of the work and the compensation therefor.

The term contract is all inclusive with reference to all written agreements affecting a contractual relationship and all documents referred to therein. The contract shall specifically

include, but not be limited to, the Request for Proposals, the Technical Proposal, the Price Proposal, the printed contract form and all attachments thereto, the contract bonds, the plans and associated special provisions prepared by the Design-Build Team, the standard specifications and all supplemental specifications thereto, the standard special provisions and the project special provisions contained in the Request for Proposals, and all executed supplemental agreements, all of which shall constitute one instrument.

#### **DATE OF AVAILABILITY**

That date set forth in the Request for Proposals, by which it is anticipated that the Contract will be executed and sufficient design efforts or work sites within the project limits will be available for the Design-Build Team to begin his controlling operations or design.

#### **DESIGN-BUILD**

A form of contracting in which the successful proposer undertakes responsibility for both the design and construction of a project.

#### **DESIGN-BUILD TEAM**

An individual, partnership, joint venture, corporation or other legal entity that furnishes the necessary design and construction services, whether by itself or through subcontracts.

#### **DESIGN-BUILD PROPOSAL**

A proposal to contract consisting of a separately sealed Technical Proposal and a separately sealed Price Proposal submitted in response to a Request for Proposals on a Design-Build project.

#### **FINAL CONTRACT PAYMENT**

The final compensation paid to the Design-Build Team under this contract.

#### **FINAL ESTIMATE**

The document that contains a final statement of all quantities and total dollar amount for each item of work performed during the life of the contract including any adjustments to those amounts made under the terms of the contract. The final statement will be titled The Final Estimate and will be the document utilized to document Final Payment to the Contractor for all design, preconstruction work, and construction work. The Final Estimate shall not include any finance costs incurred following the final acceptance date. Receipt of this document by the Contractor will begin the time frame for filing of a verified claim with the Department as provided for in G.S. 136-29 of the General Statutes of North Carolina.

#### **FINAL PAYMENT**

The entire sum found to be due after deducting all previous payments and all amounts to be retained or deducted under the requirements of the contract upon final acceptance of the project. The amount of the Final Payment will be subject to the limitations of the schedule of payments contained in the Schedule of Payments Project Special Provision. The Final Payment is not necessarily synonymous with the Final Contract Payment. The Final Estimate will document the Final Payment.

**PLANS**

The project plans, Standard Drawings, working drawings and supplemental drawings, or reproductions thereof, accepted by the Engineer, which show the location, character, dimensions and details of the work to be performed.

(A) Standard Drawings:

Drawings approved for repetitive use, showing details to be used where appropriate. All Standard Drawings approved by the Department plus subsequent revisions and additions. Standard Drawings are available for purchase from:

Randy A. Garris, PE  
State Contract Officer  
1591 Mail Service Center  
Raleigh, NC 27699-1591

(B) Preliminary Plans:

Department-furnished drawings included along with a Request for Proposals, or as developed by the Design-Build Team.

(C) Project Plans:

Construction drawings prepared, sealed and completed by the Design-Build Team, or as provided by the Department, that contain specific details and dimensions peculiar to the work.

(D) Working Drawings and Supplemental Drawings:

Supplemental design sheets, shop drawings, or similar data which the Design-Build Team is required to submit to the Engineer.

(E) As-Constructed Drawings:

Final drawings prepared by the Design-Build Team, documenting the details and dimensions of the completed work.

**PRICE PROPOSAL**

The offer of a Proposer, submitted on the prescribed forms, to perform the work and furnish the labor and materials at the price quoted.

**PROPOSAL (OR REQUEST FOR PROPOSALS)**

The paper document provided by the Department that the proposer uses to develop his paper offer to perform the work at designated bid prices.

**PROPOSER**

An individual, partnership, firm, corporation, LLC, or joint venture formally submitting a Technical Proposal and Price Proposal in response to a Request for Proposals.



**RIGHT OF WAY**

The land area shown on the plans as right of way within which the project is to be constructed.

**SCHEDULE OF VALUES**

A schedule of work items necessary to complete work, along with the progress of each work item, primarily for the purpose of partial payments.

**TABLE OF QUANTITIES**

A listing of work items (corresponding to the items in the Trns\*port pay item list) that contributes to a project completion. The table shall include estimated quantities for each work item.

**TECHNICAL PROPOSAL**

A submittal from a proposer, in accordance with requirements of the Request for Proposals, for the purpose of final selection. The Technical Proposal is defined to also include any supplemental information requested by the Department from a proposer prior to opening bids.

**SECTION 102  
PROPOSAL REQUIREMENTS AND CONDITIONS**

**Page 1-11, delete Article 102-1 and replace with the following:**

**102-1 INVITATION TO BID**

After the advertisement has been made, an invitation to bid will be mailed to known prequalified contractors and any other contracting firms, material suppliers, and other interested parties who have requested they be placed on the invitation to bid mailing list informing them that bids will be received for the construction of specific projects. Such invitation will indicate the contract identification number, length, locations, and descriptions; a general summary of the items of work to be performed; and information on how to receive a Request for Qualifications.

All projects will be advertised in daily newspapers throughout the state prior to the bid opening.

**Page 1-15, delete Article 102-3 and replace with the following:**

**102-3 CONTENTS OF REQUEST FOR PROPOSALS**

A Request for Proposals will be furnished by the Department to the selected proposers from among the respondents to the Request for Qualifications. Each Request for Proposals will be marked on the front cover by the Department with an identifier of the Proposer to whom it is being furnished. This Request for Proposals will state the location of the project and will show a schedule of contract items for which Technical and Price Proposals are invited. It will set forth the date and time Technical and Price Proposals are to be submitted and will be opened. The

Request for Proposals will also include any special provisions or requirements that vary from or are not contained in any preliminary design information or standard specifications.

The Request for Proposals will also include the printed contract forms and signature sheets for execution by both parties to the contract. In the event the Proposer is awarded the contract, execution of the Request for Proposals by the Proposer is considered the same as execution of the contract.

Standard specifications, sealed plans specifically identified as the Department's responsibility and other documents designated in the Request for Proposals shall be considered a part of the Request for Proposals whether or not they are attached thereto. All papers bound with the proposal are necessary parts thereof and shall not be detached, taken apart, or altered.

The names and identity of each prospective Proposer that receives a copy of the Request for Qualifications for the purposes of submitting a Statement of Qualifications shall be made public, except that a potential Proposer who obtains a Request for Qualifications may, at the time of ordering, request that his name remain confidential.

Up to three copies of the Request for Proposals will be furnished to each prospective Proposer. Additional copies may be purchased for the sum of \$25 each. The copy marked with the Proposer's name and prequalification number shall be returned to the Department.

**Page 1-16, Article 102-6, replace the first paragraph with the following:**

The Proposer shall examine carefully the site of the work contemplated, the preliminary plans and specifications, and the Request for Proposals. The submission of a Technical Proposal and a Price Proposal shall be conclusive evidence that the Proposer has investigated and is satisfied as to the conditions to be encountered; as to the character, quality, and scope of work to be performed; the quantities of materials to be furnished; and as to the conditions and requirements of the proposed contract.

**Page 1-17, delete Article 102-7 and replace with following:**

**102-7 SUBSURFACE INVESTIGATION REPORT**

The Subsurface Investigation and report was made for the purpose of information only.

If a subsurface investigation report is available on this project, a copy may be obtained by the prospective proposers upon request.

The subsurface investigation on which the report is based was made for the purpose of information only. The various field boring logs, rock cores, and soil test data available may be reviewed or inspected in Raleigh at the office of the Geotechnical Unit. Neither the subsurface investigation report nor the field boring logs, rock cores, or soil test data is part of the contract.

General soil and rock strata descriptions and indicated boundaries are based on a geotechnical interpretation of all available subsurface data and may not necessarily reflect the actual subsurface conditions between borings or between sampled strata within the borehole. The laboratory sample data and the in situ (in-place) test data can be relied on only to the degree of reliability inherent in the standard test method. The observed water levels or soil moisture conditions indicated in the subsurface investigations are as recorded at the time of the investigation. These water levels or soil moisture conditions may vary considerably with time

according to climatic conditions including temperature, precipitation, and wind, as well as other nonclimatic factors.

The Proposer is cautioned that details shown in the subsurface investigation report are preliminary only. The Department does not warrant or guarantee the sufficiency or accuracy of the investigation made, nor the interpretations made or opinions of the Department as to the type of materials and conditions that may be encountered. The proposer is cautioned to make such independent subsurface investigations, as he deems necessary to satisfy himself as to conditions to be encountered on this project. The Design-Build Team shall have no claim for additional compensation or for an extension of time for any reason resulting from the actual conditions encountered at the site differing from those indicated in the subsurface investigation.

**Pages 1-17, delete Article 102-8 and replace with the following:**

### **102-8 PREPARATION AND SUBMISSION OF BIDS**

All Price Proposals shall be prepared and submitted in accordance with the following requirements:

1. The Request for Proposals provided by the Department shall be used and shall not be taken apart or altered. The Price Proposal shall be submitted on the same form, which has been furnished to the Proposer by the Department as identified by the Proposer's name marked on the front cover by the Department.
2. All entries including signatures shall be written in ink.
3. The Proposer shall submit a lump sum or unit price for every item in the Price Proposal. The lump sum or unit prices bid for the various contract items shall be written in figures.
4. An amount bid shall be entered in the Request for Proposals for every item and the price shall be written in figures in the "Amount Bid" column in the Request for Proposals.
5. The total amount bid shall be written in figures in the proper place in the Request for Proposals. The total amount bid shall be determined by adding the amounts bid for each lump sum item.
6. Changes in any entry shall be made by marking through the entry in ink and making the correct entry adjacent thereto in ink. A representative of the Proposer shall initial the change in ink.
7. The Price Proposal shall be properly executed. In order to constitute proper execution, the Price Proposal shall be executed in strict compliance with the following:
  - a. If a Price Proposal is by an individual, it shall show the name of the individual and shall be signed by the individual with the word "Individually" appearing under the signature. If the individual operates under a firm name, the bid shall be signed in the name of the individual doing business under the firm name.
  - b. If the Price Proposal is by a corporation, it shall be executed in the name of the corporation by the President, Vice President, or Assistant Vice President. It shall be attested by the Secretary or Assistant Secretary. The seal of the corporation shall be affixed. If the Price Proposal is executed on behalf of a corporation in any other manner than as above, a certified copy of the minutes of the Board of Directors of

- said corporation authorizing the manner and style of execution and the authority of the person executing shall be attached to the Price Proposal or shall be on file with the Department.
- c. If the Price Proposal is made by a partnership, it shall be executed in the name of the partnership by one of the general partners.
  - d. If the Price Proposal is made by a Limited Liability Company (LLC), it shall be signed by the manager and notarized.
  - e. If the Price Proposal is made by a joint venture, it shall be executed by each of the joint venturers in the appropriate manner set out above. In addition, the execution by the joint venturers shall appear below their names.
  - f. The Price Proposal execution shall be notarized by a notary public whose commission is in effect on the date of execution. Such notarization shall be applicable both to the Price Proposal and to the non-collusion affidavit which is part of the signature sheets.
8. The Price Proposal shall not contain any unauthorized additions, deletions, or conditional bids.
  9. The Proposer shall not add any provision reserving the right to accept or reject an award, or to enter into a contract pursuant to an award.
  10. The Price Proposal shall be accompanied by a bid bond on the form furnished by the Department or by a bid deposit. The bid bond shall be completely and properly executed in accordance with the requirements of Article 102-11. The bid deposit shall be a certified check or cashier check in accordance with Article 102-11.
  11. The Price Proposal shall be placed in a sealed envelope and shall have been delivered to and received by the Department prior to the time specified in the Request for Proposals.

**Page 1-21, Article 102-11, delete the third paragraph and replace with the following:**

No bid will be considered or accepted unless accompanied by one of the foregoing securities. The bid bond shall be executed by a Corporate Surety licensed to do business in North Carolina and the certified check or cashiers check shall be drawn on a bank or trust company insured by the Federal Deposit Insurance Corporation and made payable to the Department of Transportation in an amount of at least 5% of the total amount bid for the contract. The condition of the bid bond or bid deposit is: the Principal shall not withdraw its bid within 120 days after the submittal of the same, and if the Board of Transportation shall award a contract to the Principal, the Principal shall within 90 calendar days after the notice of award is received by him give, payment and performance bonds with good and sufficient surety as required for the faithful performance of the contract and for the protection of all persons supplying labor and materials in the prosecution of the work; in the event of the failure of the Principal to give such payment and performance bonds as required, then the amount of the bid bond shall be immediately paid to the Department as liquidated damages, or, in the case of a bid deposit, the deposit shall be forfeited to the Department.

**Page 1-22, delete Article 102-12 and replace with the following:**

**102-12 DELIVERY OF BIDS**

All Price Proposals shall be placed in a sealed envelope having the name and address of the Proposer, and the statement " Price Proposal for the Design/Build of State Highway Project No. \_\_\_\_\_ in \_\_\_\_\_ County(ies)" on the outside of the envelope. If delivered by mail, the sealed envelope shall be placed in another sealed envelope and the outer envelope addressed to the Contract Officer as stated in the Request for Proposals. The outer envelope shall also bear the statement "Price Proposal for the Design/Build of State Highway Project No. \_\_\_\_\_". All Technical Proposals shall be placed in a sealed envelope having the name and address of the Proposer, and the statement "Technical Proposal for the Design/Build of State Highway Project No. \_\_\_\_\_ in \_\_\_\_\_ County(ies)" on the outside of the envelope. If delivered by mail, the sealed envelope shall be placed in another sealed envelope and the outer envelope addressed to the Contract Officer as stated in the Request for Proposal. The outer envelope shall also bear the statement "Technical Proposal for the Design/Build of State Highway Project No. \_\_\_\_\_". If delivered in person on or before the due date, the sealed envelope shall be delivered to the office of the Contract Officer as indicated in the Request for Proposals. Price Proposals and Technical Proposals shall be submitted in accordance with the project special provision "Submittal of Proposals" contained elsewhere in this Request for Proposals.

All Price Proposals and Technical Proposals shall be delivered prior to the time specified in the Request for Proposals. Price proposals and Technical Proposals received after such time will not be accepted and will be returned to the Proposer unopened.

**Pages 1-22, delete Article 102-13 and replace with the following:**

**102-13 WITHDRAWAL OR REVISION OF BIDS**

A Design-Build Team will not be permitted to withdraw its Technical and Price Proposals after they have been submitted to the Department, unless allowed under Article 103-3 or unless otherwise approved by the State Highway Administrator.

**Page 1-23, delete Article 102-14 and replace with the following:**

**102-14 RECEIPT AND OPENING OF BIDS**

Price Proposals will be opened and read publicly at the time and place indicated in the Request for Proposals. The scores of the previously conducted evaluation of the Technical Proposals will also be read publicly in accordance with the procedures outlined in the Request for Proposals. Proposers, their authorized agents, and other interested parties are invited to be present.

**Page 1-23, Article 102-15, Replace the 1<sup>st</sup> paragraph with the following:**

**102-15 REJECTION OF BIDS**

Any Price Proposal submitted which fails to comply with any of the requirements of Articles 102-8, 102-10 or 102-11, or with the requirements of the project scope and functional

specifications shall be considered irregular and may be rejected. A Price Proposal that does not contain costs for all proposal items shall be considered irregular and may be rejected.

## **SECTION 103 AWARD AND EXECUTION OF CONTRACT**

**Page 1-25, delete Article 103-1 and replace with the following:**

### **103-1 CONSIDERATION OF PRICE PROPOSALS**

After the Price Proposals are opened and read, they will be tabulated. The Price Proposal and score of the Technical Proposal will be made available in accordance with procedures outlined in the Request for Proposals. In the event of errors, omissions, or discrepancies in the costs, corrections to the Price Proposal will be made in accordance with the provisions of Article 103-2. Such corrected costs will be used to determine the lowest adjusted price.

After the reading of the Price Proposals and technical scores, the Department will calculate the lowest adjusted price as described in the “Selection Procedure” section of the Request for Proposals.

The right is reserved to reject any or all Price Proposals, to waive technicalities, to request the Proposer with the lowest adjusted price to submit an up-to-date financial and operating statement, to advertise for new proposals, or to proceed to do the work otherwise, if in the judgment of the Board, the best interests of the State will be promoted thereby.

**Page 1-26, Subarticle 103-2(A), add items (7) and (8) as follows:**

**(7) Discrepancy in the “Total Amount Bid” and the addition of the “Amount Bid” for each line Item**

In the case of the Total Amount Bid does not equal the summation of each Amount Bid for the line items, the summation of each Amount Bid for the line items shall be deemed to be the correct total for the entire project.

**(8) Omitted Total Amount Bid –Amount Bid Completed**

If the Total Amount Bid is not completed and the Amount Bid for all line items is completed the Total Amount Bid shall be the summation of the Amount Bid for all line items.

**Page 1-28, Subarticle 103-3(D), delete the entire subarticle and replace with the following:**

### **(D) Bid Bond**

If a bid mistake is made and a request to withdraw the bid is made, the bid bond shall continue in full force and effect until there is a determination by the Administrator that the conditions in Subarticle 103-3(A) have been met. The effect of the refusal of the Contractor to give payment and performance bonds within the time allotted in the Bid Bond form and Article 102-11 of this Special Provision, if award has been made by the Board of Transportation after

consideration and denial of the Contractor's request to withdraw his bid, shall be governed by the terms and conditions of the bid bond.

**Page 1-28, Subarticle 103-4(A), replace the first paragraph with the following:**

**(A) General**

The North Carolina Department of Transportation, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Statute. 252) and the Regulations of the Department of Transportation (49 CFR, Part 21), issued pursuant to such act, hereby notifies all bidders that it will affirmatively insure that contracts entered in pursuant to advertisements, if awarded, will be made by the Board of Transportation to the lowest responsible bidder without discrimination on the grounds of race, color, or national origin. The lowest responsible bidder will be notified by letter that his bid has been accepted and that he has been awarded the contract. This letter shall constitute the notice of award. The notice of award, if the award be made, will be issued within 120 days after the submittal of bids, except that with the consent of the lowest responsible bidder the decision to award the contract to such bidder may be delayed for as long a time as may be agreed upon by the Department and such bidder. In the absence of such agreement, the lowest responsible bidder may withdraw his bid at the expiration of the 120 days without penalty if no notice of award has been issued.

**Page 1-29, delete Article 103-6 and replace with the following:**

**103-6 RETURN OF BID BOND OR BID DEPOSIT**

Checks that have been furnished as a bid deposit will be retained until after the contract bonds have been furnished by the successful proposer, at which time Department of Transportation warrants in the equivalent amount of checks that were furnished as a bid deposit will be issued.

Paper bid bonds will be retained by the Department until the contract bonds are furnished by the successful proposer, after which all such bid bonds will be destroyed unless the individual bid bond form contains a note requesting that it be returned to the proposer or the Surety.

**Page 1-30, delete Article 103-7 and replace with the following:**

**103-7 CONTRACT BONDS**

The successful bidder, within 90 calendar days after the notice of award is received by him, shall provide the Department with a contract payment bond and a contract performance bond each in an amount equal to 100 percent of the amount of the contract. All bonds shall be in conformance with G.S. 44A-33. The corporate surety furnishing the bonds shall be authorized to do business in the State. The Payment and Performance Bond Forms for this project are available at:

[http://ncdot.gov/doh/preconstruct/altern/design\\_build/R2123CE/R2123CE.html](http://ncdot.gov/doh/preconstruct/altern/design_build/R2123CE/R2123CE.html)

The contract payment and performance bonds shall remain in full effect until the completion of the Twelve Month Guarantee as defined in the Project Special Provision for Twelve Month Guarantee.

**Page 1-30, delete Article 103-9 and replace with the following:**

**103-9 FAILURE TO FURNISH CONTRACT BONDS OR ACHIEVE FINANCIAL CLOSURE**

The successful proposer's failure to file acceptable bonds within 90 calendar days after the notice of award is received by him shall be just cause for the forfeiture of the bid bond or bid deposit and rescinding the award of the contract. Award may then be made to the responsible proposer with the next lowest adjusted price or the work may be readvertised and constructed under contract or otherwise, as the Board of Transportation may decide.

**SECTION 104  
SCOPE OF WORK**

**Page 1-30, delete Article 104-1 and replace with the following:**

**104-1 INTENT OF CONTRACT**

The intent of the contract is to prescribe the work or improvements that the Design-Build Team undertakes to perform, in full compliance with the contract. In case the method or character of any part of the work is not covered by the contract, this section shall apply. The Design-Build Team shall perform all work in accordance with the contract or as may be modified by written orders, and shall do such special, additional, extra, and incidental work as may be considered necessary to complete the work to the full intent of the contract. Unless otherwise provided elsewhere in the contract, the Design-Build Team shall furnish all implements, machinery, equipment, tools, materials, supplies, transportation, labor, and as may be needed, secure financing necessary for the design, prosecution and completion of the work.

**Page 1-31, Article 104-3, replace “plans or details of construction” with “contract” in all instances within this Article.**

**Page 1-40, Article 104-10, replace the first paragraph with the following:**

**104-10 MAINTENANCE OF THE PROJECT**

The Design-Build Team shall maintain the project from the date of beginning construction on the project until the project is finally accepted. For sections of facilities impacted by utility construction/relocation performed by the Design-Build Team prior to the beginning construction on the roadway project, maintenance of the impacted sections of the facilities shall be performed by the Design-Build Team beginning concurrently with the impact. All existing and constructed guardrail / guiderail within the project limits shall be included in this maintenance. This maintenance shall be continuous and effective and shall be prosecuted with adequate equipment and forces to the end that all work covered by the contract is kept in satisfactory and acceptable



conditions at all times. The Design-Build Team shall perform weekly inspections of guardrail and guiderail and shall report damages to the Engineer on the same day of the weekly inspection. Where damaged guardrail or guiderail is repaired or replaced as a result of maintaining the project in accordance with this Article, such repair or replacement shall be performed within 7 consecutive calendar days of such inspection report.

**Page 1-41, Article 104-10, add the following after the last paragraph:**

The Design-Build Team will not be compensated for performance of weekly inspections and damage reports for the guardrail / guiderail. Other maintenance activities for existing guardrail / guiderail will be handled in accordance with Articles 104-7 and 104-8.

## **SECTION 105 CONTROL OF WORK**

**Pages 1-46, delete Article 105-2 and replace with the following:**

### **105-2 PLANS AND WORKING DRAWINGS**

All plans shall be supplemented by such approved working drawings as are necessary to adequately control the work. Working drawings furnished by the Design-Build Team and approved by the Engineer shall consist of such detailed drawings as may be required to adequately control the work. They may include stress sheets, shop drawings, erection drawings, falsework drawings, cofferdam drawings, bending diagrams for reinforcing steel, catalog cuts, or any other supplementary drawings or similar data required of the Design-Build Team. When working drawings are approved by the Engineer, such approval shall not operate to relieve the Design-Build Team of any of his responsibility under the contract for the successful completion of the work.

Changes on shop drawings after approval and/or distribution shall be subject to the approval of the Engineer and he shall be furnished a record of such changes.

**Page 1-47, Article 105-3, add the following after the 3<sup>rd</sup> paragraph:**

The Design-Build Team shall bear all the costs of providing the burden of proof that the nonconforming work is reasonable and adequately addresses the design purpose. The Design-Build Team shall bear all risk for continuing with nonconforming work in question until it is accepted.

The Engineer may impose conditions for acceptance of the nonconforming work. The Design-Build Team shall bear all costs for fulfilling the conditions.

The decisions whether the product satisfies the design purpose, whether the nonconforming work is reasonably acceptable and the conditions for acceptance are at the sole discretion of the Engineer.

**Pages 1-47, delete Article 105-4 and replace with the following:**

**105-4 COORDINATION OF PLANS, SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS, AND SPECIAL PROVISIONS**

The Request for Proposals, all Plans, the Standard Specifications, and all supplementary documents are essential parts of the contract and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work.

In case of discrepancy or conflict, the order in which they govern shall be as follows:

- (A) Request for Proposals
- (B) Technical Proposal from the Design-Build Team
- (C) Accepted Plans and Details from the Design-Build Team, or sealed plans provided by the Department, as applicable
- (D) Standard Drawings
- (E) Standard Specifications

Where dimensions on the plans are given or can be computed from other given dimensions they shall govern over scaled dimensions.

The Design-Build Team shall take no advantage of any error or omission in the plans, estimated quantities, or specifications. In the event the Design-Build Team discovers an error or omission, he shall immediately notify the Engineer.

**Page 1-50, delete Article 105-9 and replace with the following:**

**105-9 CONSTRUCTION STAKES, LINES, AND GRADES**

The Design-Build Team shall be responsible for any surveying, construction staking and layout required in the performance of the work. He will be responsible for the accuracy of lines, slopes, grades and other engineering work which he provides under this contract. Unless otherwise specified in the Request for Proposals, no measurement or direct payment will be made for this work. The cost shall be considered as included in other contract items.

**SECTION 106  
CONTROL OF MATERIAL**

**Page 1-56, Article 106-2, add the following after the second paragraph:**

Prior to beginning construction, the Design-Build Team shall provide a Table of Quantities as described in Article 101-3 of these specifications.

The Table of Quantities Work Items shall correspond to Pay Items as defined in the Standard Specifications. These Work Items have associated Materials and Conversion Factors. For non-standard Work Items, a Generic Work Item with the correct Unit of Measure and in an appropriate category will be used. For example, "GENERIC TRAFFIC CONTROL ITEM – EA" or "GENERIC RETAINING WALL ITEM – LF". For these Generic Work Items, Materials must be defined and appropriate conversion factors submitted.

An initial Table of Quantities shall be submitted no later than 30 calendar days after the execution of the contract by the Department. The Table of Quantities shall be updated and resubmitted within 14 days of when a set of Plans is sealed as Release for Construction (RFC) Plans, and whenever there are substantial changes to the Quantities on previously incorporated RFC Plans.

**Page 1-58, Article 106-6, replace “specifications” with “contract” as the last word of the 1<sup>st</sup> paragraph.**

**Page 1-58, Article 106-6(C), replace the 2<sup>nd</sup> paragraph with the following:**

Where the Department agrees to inspect or test materials during their production or at the source of supply, the Design-Build Team shall bear the cost of testing performed on materials ordered by him but not incorporated into the project. For items normally pretested by the Department, the Design-Build Team shall provide a minimum of 30 days notice prior to the beginning of production of the items for this project along with final approved shop drawings.

## **SECTION 107 LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC**

**Page 1-60, Article 107-2, delete the entire article and replace with the following:**

In accordance with G.S. 143B-426.40A, the Department will not recognize any assignment of claims by any Contractor against the Department.

**Page 1-69, Article 107-18, in the last sentence of the first paragraph, replace the word “legally” with the word “contractually”.**

**Page 1-69, delete Article 107-19 and replace with the following:**

### **107-19 FURNISHING RIGHT OF WAY**

The responsibility for coordinating the securing of all necessary rights of way is as outlined in the Request for Proposals.

## **SECTION 108 PROSECUTION AND PROGRESS**

**Page 1-71, Article 108-1, add the following sentence to the end of the 1<sup>st</sup> paragraph:**

The Design-Build Team shall not commence work prior to execution of the contract by both the Department and the Design-Build Team.

**Page 1-72, delete Article 108-3 and replace with the following:**

### **108-3 PRECONSTRUCTION AND PRE-DESIGN CONFERENCES**

The selected Design-Build Team shall meet with the Engineer for a pre-design conference concerning the design phase of the work. This conference shall be held prior to the commencement of work, as it is determined according to Article 108-1, and will be scheduled by the Engineer. At the predesign conference, the Design-Build Team shall furnish authorized signature forms and a list of any proposed subcontractors associated with the design of the project.

A preconstruction conference shall be held at least 10 working days before construction activity begins. This second conference, concerning the construction phase, shall also be scheduled by the Engineer. The Design-Build Team shall give the Engineer a minimum of 45 days notice before he plans to begin construction activities. This will allow the Engineer time for any environmental agency representatives involved in the permitting process, as well as any other pertinent entities, to be scheduled to attend the preconstruction conference. If the Design-Build Team is responsible for utilities in accordance with Article 105-8 and the Request for Proposals, he shall be responsible for coordinating with the Engineer in scheduling their attendance and for notifying them. The Design-Build Team shall also be responsible for coordinating with the Engineer in scheduling the attendance of subcontractors and others deemed appropriate, and for notifying them.

At the preconstruction conference, a list of any proposed subcontractors and major material suppliers associated with the construction of the project will be submitted.

If the contract has a DBE requirement, the Design-Build Team shall submit copies of completed and signed DBE subcontracts, purchase orders, or invoices to the Department.

The Design-Build Team shall submit a traffic control plan in accordance with Article 1101-5 and the Request for Proposals. The Design-Build Team shall designate an employee who is competent and experienced in traffic control to implement and monitor the traffic control plan. The qualifications of the designated employee must be satisfactory to the Engineer.

The Design-Build Team shall submit a safety plan and designate an employee as Safety Supervisor.

Both plans shall be submitted at the preconstruction conference and must be satisfactory to the Engineer. Should the design plan include activities that would place personnel on the work site, traffic control and safety plans for those activities shall be submitted at the predesign conference.

During the preconstruction conference, the Engineer will designate a Department employee or employees who will be responsible to see that the traffic control plans and any alterations thereto are implemented and monitored to the end that traffic is carried through the work in an effective manner. If approved by the Engineer, the Design-Build Team may designate one employee to be responsible for both the traffic control and safety plans. The Design-Build Team shall not designate its superintendent as the responsible person for either the traffic control plan or the safety plan, unless approved by the Engineer.

If the project requires that Design-Build Team or State personnel work from falsework, within shoring, or in any other hazardous area the Design-Build Team shall submit, as part of the Design-Build Team's safety plan, specific measures it will use to ensure worker safety.

The Design-Build Team shall also submit a program for erosion control and pollution prevention on all projects involving clearing and grubbing, earthwork, structural work, or other construction, when such work is likely to create erosion or pollution problems.

If the Design-Build Team fails to provide the required submissions, the Engineer may order the preconstruction conference suspended until such time as they are furnished. Work shall not begin until the preconstruction conference has been concluded and the safety plan has been approved, unless authorized by the Engineer. The Design-Build Team shall not be entitled to additional compensation or an extension of contract time resulting from any delays due to such a suspension.

The Design-Build Team shall designate a qualified employee as Quality Control Manager. The Quality Control Manager shall be responsible for implementing and monitoring the quality control requirements of the project.

**Page 1-72, Article 108-4, add the following sentence to the end of this article:**

The Design-Build Team shall record the proceedings of these conferences and distribute the final minutes of the conferences to all attendees.

**Page 1-74, Article 108-6, replace “40 percent” with “30 percent” in the 1st paragraph.**

**Page 1-74, Article 108-6, delete the second paragraph and replace with the following:**

In any event, the Contractor shall perform with his own organization work amounting to not less than 25% of the difference between the total amount bid and the value of specialty items that have been sublet.

**Pages 1-75, delete Article 108-8 and replace with the following:**

**108-8 FAILURE TO MAINTAIN SATISFACTORY PROGRESS**

The Engineer will check the Design-Build Team's progress at the time each partial pay request is received. The Design-Build Team's progress may be considered as unsatisfactory if, according to the Progress schedule, the projected finish date for all work exceeds the scheduled finish date by more than 10%.

When the Design-Build Team's progress is found to be unsatisfactory as described above, the Engineer may make written demand of the Design-Build Team to state in writing the reason for the unsatisfactory progress and produce such supporting data as the Engineer may require or the Design-Build Team may desire to submit. The Engineer will consider the justifications submitted by the Design-Build Team and extensions of the completion date that have or may be allowed in accordance with Article 108-10(B).

When the Design-Build Team cannot satisfactorily justify the unsatisfactory progress the Engineer may invoke one or more of the following sanctions:

1. Withhold anticipated liquidated damages from amounts currently due or which become due.
2. Remove the Design-Build Team and individual managing firms of the Design-Build Team and/or prequalified design firms from the Department's Prequalified Bidders List.

When any of the above sanctions have been invoked, they shall remain in effect until rescinded by the Engineer.

**Page 1-77, Article 108-9 (D), Replace the second sentence of the first paragraph with the following:**

Subject to the limitations of the Schedule of Payments contained in the contract, the Department, at its election, may retain the sum due the Contractor, or any portion thereof, not to exceed \$2,000,000.00, without interest or penalty, until the contract work is completed; or it may make payment to the Contractor upon declaration of default for work satisfactorily completed to the date that notice of default is received by the Contractor.

**Page 1-79, Article 108-10(B), add the following as the first paragraph:**

Only delays to activities which affect the completion date or intermediate contract date will be considered for an extension of contract time. No extensions will be granted until a delay occurs which impacts the project's critical path and extends the work beyond the contract completion date or intermediate completion date. Any extension to the completion date or intermediate contract date will be based on the number of calendar days the completion date or intermediate completion date is impacted as determined by the Engineer's analysis.

**Pages 1-79, delete Subarticle 108-10(B)(1) in its entirety.**

**Page 1-83, Article 108-13, delete bullet (E)(2) in its entirety and replace with the following:**

Payment for costs incurred in organization of the work will be based on verified actual costs. Payment for costs incurred in the organization of the work will be based on verified actual costs. If reflected in the Price Proposal documentation and the Design-Build Team's Schedule of Values, these verified actual costs will include any costs to finance work incurred prior to the date that the contract is terminated. After reviewing the submitted cost records and the submitted documentation, the Engineer will make such adjustments as he deems warranted.

## **SECTION 109 MEASUREMENT AND PAYMENT**

**Page 1-85, Article 109-2, delete the last sentence of the 1<sup>st</sup> paragraph and replace with the following:**

Payment to the Design-Build Team will be made only for the work completed, certified and accepted in accordance with the terms of the contract.

**Pages 1-90, delete Article 109-4(A) and replace with the following:**

#### **109-4 PARTIAL PAYMENTS**

**(A) General:**

Partial payments will be based upon progress estimates prepared by the Engineer at least once each month on the date established by the Engineer. Partial payments may be made twice each month if in the judgment of the Engineer the amount of work performed is sufficient to warrant such payment. No partial payment will be made when the total value of work performed since the last partial payment amounts to less than \$10,000.00. Partial payments will be approximate only and will be subject to correction in the final estimate and payment.

When the contract includes one lump sum price for the entire work required by the contract, partial payments for the lump sum design-build price shall be based on a certified Schedule of Values submitted by the successful Design-Build Team and approved by the Engineer. The certification shall indicate the Design-Build Team has reviewed the information submitted and the information accurately represents the work performed for which payment is requested. The certified Schedule of Values shall be submitted no later than 30 calendar days after the date of award. Each item on the certified Schedule of Values shall be assigned a cost and quantity and shall be identified as an activity on the progress schedule. A revised certified Schedule of Values shall be submitted with each update of the Progress schedule as described in Article 108-2 or when requested by the Engineer. A certified copy of the Table of Quantities shall also be submitted with each payment request. The certification of the Table of Quantities shall indicate the Design-Build Team has reviewed the information submitted and the information accurately represent the materials for the work performed for which payment is requested.

When the contract includes lump sum items for portions of the work required by the contract, and the applicable section of the Specifications or Request for Proposals specify the means by which the total amount bid be included in the partial pay estimates, the Engineer will determine amounts due on the partial pay estimate in accordance with the applicable portion of the Specifications or Request for Proposals.

The Engineer will withhold an amount sufficient to cover anticipated liquidated damages as determined by the Engineer.

**Page 1-92, Subarticle 109-5(D), delete the 4th and 5th paragraphs and replace with the following:**

Partial payments will not be made on seed or any living or perishable plant materials.

Partial payment requests shall not be submitted by the Design-Build Team until those items requested have corresponding signed and sealed RFC plans accepted by the Department.

**Page 1-94, Article 109-9, replace the entire article with the following:**

**109-9 FINAL PAYMENT**

Upon completion of the final estimate assembly, the Engineer will notify the Contractor giving the final quantities and the apparent liquidated damages, if any are assessed. After the Contractor reviews the final quantities and submits the documents listed in Article 109-10, the entire sum found to be due after deducting all previous payments and all amounts to be retained or deducted under the requirements of the contract will be paid the Contractor. The amount of the Final Payment will be subject to the limitations of the schedule of payments contained in the Schedule of Payments Project Special Provision.

**Pages 1-94, Article 109-10, add the following as bullets (E) and (F) under the 1<sup>st</sup> paragraph.**

- (E) As-constructed plans or other submittals as required by the Contract.
- (G) Documents or guarantees to support any warranty provided by the Design Build Team.



**ITEMIZED PROPOSAL FOR CONTRACT NO. C 202523**

May 04, 2010 1:14 pm

Page 1 of 1

County: Mecklenburg and Cabarrus

Line #	Item Number #	Sec #	Description	Quantity	Unit Cost	Amount
<b>ROADWAY ITEMS</b>						
0001	0000900000-N	SP	GENERIC MISCELLANEOUS ITEM DESIGN AND CONSTRUCTION	Lump Sum	L.S.	

1314/May04/Q1.0/D 900000 /E1

Total Amount Of Bid For Entire Project: \_\_\_\_\_

**FUEL USAGE FACTOR CHART AND ESTIMATE OF QUANTITIES**

Description of Work	Units	Fuel Usage Factor Diesel #2	Estimate of Quantities
Unclassified Excavation	Gal / CY	0.29	_____ CY
Borrow Excavation	Gal / CY	0.29	_____ CY
Aggregate Base Course Aggregate for Cement Treated Base Course Portland Cement for Cement Treated Base Course	Gal / Ton	0.55	_____ Tons
Asphalt Concrete Base Course Asphalt Concrete Intermediate Course Asphalt Concrete Surface Course Open-Graded Asphalt Friction Course Sand Asphalt Surface Course, Type F-1	Gal / Ton	2.90	_____ Tons
Portland Cement Concrete Pavement Structural Concrete (cast-in-place only) Concrete Shoulders Adjacent to Pavement	Gal / CY	0.98	_____ CY

The above quantities represent a reasonable estimate of the total quantities anticipated, for each item, as pertaining to fuel price adjustments, and is representative of the design proposed in the Technical Proposal submitted under separate cover.

Or

The Design-Build Team elects not to pursue reimbursement for Fuel Price Adjustments on this project.

**The information submitted on this sheet is claimed as a “Trade Secret” in accordance with the requirements of G.S. 66-152(3) until such time as the Price Proposal is opened.**

\_\_\_\_\_  
Signature, Title

\_\_\_\_\_  
Dated

\_\_\_\_\_  
Print Name, Title

*(Submit a copy of this sheet in a separate sealed package with the outer wrapping clearly marked “Fuel Price Adjustment” and deliver with the Technical and Cost Proposal.)*

<b>LISTING OF DBE SUBCONTRACTORS</b>				Sheet _____ of _____
FIRM NAME AND ADDRESS	ITEM NO.	ITEM DESCRIPTION	AGREED UPON UNIT PRICE (*)	DOLLAR VOLUME OF SUBLET ITEM
<b>CONTRACT NO.</b>				
		<b>COUNTY</b>		<b>FIRM</b>

THIS FORM MUST BE COMPLETED IN ORDER FOR THE BID TO BE CONSIDERED RESPONSIVE AND BE PUBLICLY READ.  
 BIDDERS WITH NO DBE PARTICIPATION MUST SO INDICATE THIS ON THE FORM BY ENTERING THE WORD OR NUMBER ZERO.



# LISTING OF DBE SUBCONTRACTORS

Sheet \_\_\_\_\_ of \_\_\_\_\_

FIRM NAME AND ADDRESS	ITEM NO.	ITEM DESCRIPTION	AGREED UPON UNIT PRICE (*)	DOLLAR VOLUME OF SUBLET ITEM

CONTRACT NO. \_\_\_\_\_ COUNTY \_\_\_\_\_ FIRM \_\_\_\_\_

## LISTING OF DBE SUBCONTRACTORS

Sheet \_\_\_\_\_ of \_\_\_\_\_

FIRM NAME AND ADDRESS	ITEM NO.	ITEM DESCRIPTION	AGREED UPON UNIT PRICE (*)	DOLLAR VOLUME OF SUBLET ITEM
<b>CONTRACT NO.</b> _____			<b>COUNTY</b> _____	<b>FIRM</b> _____

**COST OF CONSTRUCTION WORK ONLY**      \$ \_\_\_\_\_

(\*) The Dollar Volume Shown In This Column Shall be Actual Price Agreed Upon by the Prime Contractor and the DBE Subcontractor, and These Prices Will Be Used to Determine The Percentage of the DBE Participation in this Contract.

\*\*Dollar Volume of DBE Subcontractor \$ \_\_\_\_\_

Percentage of Total Construction Cost \_\_\_\_\_%

(Including Right-of-Way Acquisition Services)

\*\*MUST HAVE ENTRY EVEN IF FIGURE TO BE ENTERED IS ZERO.

**EXECUTION OF BID  
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION**

**CORPORATION**

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

**SIGNATURE OF CONTRACTOR**

\_\_\_\_\_ Full name of Corporation

\_\_\_\_\_ Address as prequalified

Attest \_\_\_\_\_ By \_\_\_\_\_  
Secretary/Assistant Secretary President/Vice President/Assistant Vice President  
*Select appropriate title* *Select appropriate title*

\_\_\_\_\_ Print or type Signer's name

\_\_\_\_\_ Print or type Signer's name

**CORPORATE SEAL**

**AFFIDAVIT MUST BE NOTARIZED**

Subscribed and sworn to before me this the  
\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

\_\_\_\_\_ Signature of Notary Public  
Of \_\_\_\_\_ County  
State of \_\_\_\_\_  
My Commission Expires \_\_\_\_\_

**NOTARY SEAL**

**EXECUTION OF BID  
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION**

**PARTNERSHIP**

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

*N.C.G.S. § 133-32* and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

**SIGNATURE OF CONTRACTOR**

\_\_\_\_\_  
Full Name of Partnership

\_\_\_\_\_  
Address as Prequalified

\_\_\_\_\_  
Signature of Witness

By \_\_\_\_\_  
Signature of Partner

\_\_\_\_\_  
Print or type Signer's name

\_\_\_\_\_  
Print or type Signer's name

**AFFIDAVIT MUST BE NOTARIZED**

Subscribed and sworn to before me this the  
day of \_\_\_\_\_ 20\_\_\_\_.

\_\_\_\_\_  
Signature of Notary Public

of \_\_\_\_\_ County

State of \_\_\_\_\_

My Commission Expires: \_\_\_\_\_

**NOTARY SEAL**



**EXECUTION OF BID  
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION**

**LIMITED LIABILITY COMPANY**

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

**SIGNATURE OF CONTRACTOR**

\_\_\_\_\_  
Full Name of Firm

\_\_\_\_\_  
Address as Prequalified

**Signature of Member/Manager**

\_\_\_\_\_  
Individually

\_\_\_\_\_  
Print or type Signer's Name

**AFFIDAVIT MUST BE NOTARIZED**

Subscribed and sworn to before me this the  
\_\_\_\_ day of \_\_\_\_\_ 20\_\_.

\_\_\_\_\_  
Signature of Notary Public  
of \_\_\_\_\_ County  
State of \_\_\_\_\_  
My Commission Expires: \_\_\_\_\_

**NOTARY SEAL**

**EXECUTION OF BID  
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION  
JOINT VENTURE (2) or (3)**

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

**SIGNATURE OF CONTRACTORS**

Instructions: **2 Joint Venturers** Fill in lines (1), (2) and (3) and execute. **3 Joint Venturers** Fill in lines (1), (2), (3) and (4) and execute. On Line (1), fill in the name of the Joint Venture Company. On Line (2), fill in the name of one of the joint venturers and execute below in the appropriate manner. On Line (3), print or type the name of the other joint venturer and execute below in the appropriate manner. On Line (4), fill in the name of the third joint venturer, if applicable and execute below in the appropriate manner.

(1) \_\_\_\_\_  
Name of Joint Venture

(2) \_\_\_\_\_  
Name of Contractor

\_\_\_\_\_  
Address as prequalified

\_\_\_\_\_  
Signature of Witness or Attest By \_\_\_\_\_  
Signature of Contractor

\_\_\_\_\_  
Print or type Signer's name \_\_\_\_\_  
Print or type Signer's name

*If Corporation, affix Corporate Seal* and

(3) \_\_\_\_\_  
Name of Contractor

\_\_\_\_\_  
Address as prequalified

\_\_\_\_\_  
Signature of Witness or Attest By \_\_\_\_\_  
Signature of Contractor

\_\_\_\_\_  
Print or type Signer's name \_\_\_\_\_  
Print or type Signer's name

*If Corporation, affix Corporate Seal* and

(4) \_\_\_\_\_  
Name of Contractor (for 3 Joint Venture only)

\_\_\_\_\_  
Address as prequalified

\_\_\_\_\_  
Signature of Witness or Attest By \_\_\_\_\_  
Signature of Contractor

\_\_\_\_\_  
Print or type Signer's name \_\_\_\_\_  
Print or type Signer's name

*If Corporation, affix Corporate Seal*

**NOTARY SEAL**

*Affidavit must be notarized for Line (2)*

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_

Signature of Notary Public

of \_\_\_\_\_ County

State of \_\_\_\_\_

My Commission Expires: \_\_\_\_\_

**NOTARY SEAL**

*Affidavit must be notarized for Line (3)*

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_

Signature of Notary Public

of \_\_\_\_\_ County

State of \_\_\_\_\_

My Commission Expires: \_\_\_\_\_

**NOTARY SEAL**

*Affidavit must be notarized for Line (4)*

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_

Signature of Notary Public

of \_\_\_\_\_ County

State of \_\_\_\_\_

My Commission Expires: \_\_\_\_\_

**EXECUTION OF BID  
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION**

**INDIVIDUAL DOING BUSINESS UNDER A FIRM NAME**

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

*N.C.G.S. § 133-32* and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

**SIGNATURE OF CONTRACTOR**

Name of Contractor

\_\_\_\_\_ Individual name

Trading and doing business as

\_\_\_\_\_ Full name of Firm

\_\_\_\_\_ Address as Prequalified

\_\_\_\_\_ Signature of Witness

\_\_\_\_\_ Signature of Contractor, Individually

\_\_\_\_\_ Print or type Signer's name

\_\_\_\_\_ Print or type Signer's name

**AFFIDAVIT MUST BE NOTARIZED**

Subscribed and sworn to before me this the  
\_\_\_\_\_ day of \_\_\_\_\_ 20\_\_.

\_\_\_\_\_ Signature of Notary Public  
of \_\_\_\_\_ County  
State of \_\_\_\_\_  
My Commission Expires: \_\_\_\_\_

**NOTARY SEAL**

**EXECUTION OF BID  
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION**

**INDIVIDUAL DOING BUSINESS IN HIS OWN NAME**

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

**SIGNATURE OF CONTRACTOR**

Name of Contractor \_\_\_\_\_  
Print or type Individual name

\_\_\_\_\_  
Address as Prequalified

\_\_\_\_\_  
Signature of Contractor, Individually

\_\_\_\_\_  
Print or type Signer's Name

\_\_\_\_\_  
Signature of Witness

\_\_\_\_\_  
Print or type Signer's name

**AFFIDAVIT MUST BE NOTARIZED**

Subscribed and sworn to before me this the  
\_\_\_\_ day of \_\_\_\_\_ 20\_\_.

\_\_\_\_\_  
Signature of Notary Public  
of \_\_\_\_\_ County  
State of \_\_\_\_\_  
My Commission Expires: \_\_\_\_\_

**NOTARY SEAL**

## DEBARMENT CERTIFICATION

Conditions for certification:

1. The prequalified bidder shall provide immediate written notice to the Department if at any time the bidder learns that his certification was erroneous when he submitted his debarment certification or explanation that is file with the Department, or has become erroneous because of changed circumstances.
2. The terms *covered transaction, debarred, suspended, ineligible, lower tier covered transaction, participant, person, primary covered transaction, principal, proposal, and voluntarily excluded*, as used in this provision, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Order 12549. A copy of the Federal Rules requiring this certification and detailing the definitions and coverages may be obtained from the Contract Officer of the Department.
3. The prequalified bidder agrees by submitting this form, that he will not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in NCDOT contracts, unless authorized by the Department.
4. For Federal Aid projects, the prequalified bidder further agrees that by submitting this form he will include the Federal-Aid Provision titled *Required Contract Provisions Federal-Aid Construction Contract (Form FHWA PR 1273)* provided by the Department, without subsequent modification, in all lower tier covered transactions.
5. The prequalified bidder may rely upon a certification of a participant in a lower tier covered transaction that he is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless he knows that the certification is erroneous. The bidder may decide the method and frequency by which he will determine the eligibility of his subcontractors.
6. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this provision. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
7. Except as authorized in paragraph 6 herein, the Department may terminate any contract if the bidder knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available by the Federal Government.

### DEBARMENT CERTIFICATION

The prequalified bidder certifies to the best of his knowledge and belief, that he and his principals:

- a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- b. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records; making false statements; or receiving stolen property;
- c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph b. of this certification; and
- d. Have not within a three-year period preceding this proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
- e. Will submit a revised Debarment Certification immediately if his status changes and will show in his bid proposal an explanation for the change in status.

If the prequalified bidder cannot certify that he is not debarred, he shall provide an explanation with this submittal. An explanation will not necessarily result in denial of participation in a contract.

Failure to submit a non-collusion affidavit and debarment certification will result in the prequalified bidder's bid being considered non-responsive.

Check here if an explanation is attached to this certification.

**Contract No**      **C 202523**

**County (ies):**    **Mecklenburg & Cabarrus**

ACCEPTED BY THE  
DEPARTMENT OF TRANSPORTATION

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Contract Officer

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Date

Execution of Contract and Bonds  
Approved as to Form:

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Attorney General