



PAT McCRORY
Governor

NICHOLAS J. TENNYSON
Secretary

September 21, 2016

Addendum No. 2

Contract No.: C203840
TIP No.: R-2247CD & EC
County: Forsyth
Project Description: Winston-Salem Northern Beltway – Modification of the US 421 / SR 1891 (Peace Haven Road) Interchange and the US 52 (Future I-74) / NC 65 (Bethania – Rural Hall Road) Interchange

RE: Addendum No. 2 to Final RFP

November 15, 2016 Letting

To Whom It May Concern:

Reference is made to the Final Request for Proposals dated August 17, 2016 recently furnished to you on the above project. We have since incorporated changes, and have attached a copy of Addendum No. 2 for your information. Please note that all revisions have been highlighted in gray and are as follows:

On the COVER SHEET, change the date for the Technical and Price Proposal submission to October 25, 2016 and change the date for the Price Proposal Opening to November 15, 2016. Please mark through the dates shown on the August 17, 2016 (Labeled) RFP and insert the new dates. These corrections must be done in ink and initialed and dated by your Team's primary contractor (reference the attached example). The corrected RFP must be used to submit the Price Proposal for return to this office.

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

Page No. 1 of the *Contract Time and Liquidated Damages Project Special Provision* has been revised. Please void Page No. 1 in your proposal and staple the revised Page No. 1 thereto.

Page No. 2 of the *Other Liquidated Damages, Damages and Incentives Project Special Provision* has been revised. Please void Page No. 2 in your proposal and staple the revised Page No. 2 thereto.

Page No. 5 of the *Submittal of Quantities, Fuel Base Index Price and Opt-Out Option Project Special Provision* has been revised. Please void Page No. 5 in your proposal and staple the revised Page No. 5 thereto.



Page No. 8 of the *Schedule of Estimated Completion Progress Project Special Provision* has been revised. Please void Page No. 8 in your proposal and staple the revised Page No. 8 thereto.

Page Nos. 31 and 33 of the *Erosion & Sediment Control / Storm Water Certification Project Special Provision* have been revised. Please void Page Nos. 31 and 33 in your proposal and staple the revised Page Nos. 31 and 33 thereto.

Page Nos. 38 and 39 of the *Price Adjustments For Asphalt Binder Project Special Provision* have been revised. Please void Page Nos. 38 and 39 in your proposal and staple the revised Page Nos. 38 and 39 thereto.

Page Nos. 115, 122, and 126 of the *General Section* have been revised. Please void Page Nos. 115, 122, and 126 in your proposal and staple the revised Page Nos. 115, 122, and 126 thereto.

Page Nos. 128, 129, 131, 132, 135, and 137 of the *Roadway Scope of Work* have been revised. Please void Page Nos. 128, 129, 131, 132, 135, and 137 in your proposal and staple the revised Page Nos. 128, 129, 131, 132, 135, and 137 thereto.

Page No. 143 of the *Structures Scope of Work* has been revised. Please void Page No. 143 in your proposal and staple the revised Page No. 143 thereto.

Page No. 146 of the *Pavement Management Scope of Work* has been revised. Please void Page No. 146 in your proposal and staple the revised Page No. 146 thereto.

Page Nos. 170, 171, and 175 of the *Transportation Management Scope of Work* have been revised. Please void Page Nos. 170, 171, and 175 in your proposal and staple the revised Page Nos. 170, 171, and 175 thereto.

Page No. 175A has been added to add the *Transportation Management Scope of Work*. Please add Page No. 175A in your proposal.

Page Nos. 194, 195, and 196 of the *Utilities Coordination Scope of Work* have been revised. Please void Page Nos. 194, 195, and 196 in your proposal and staple the revised Page Nos. 194, 195, and 196 thereto.

Page No. 222 of the *Environmental Permits Scope of Work* has been revised. Please void Page No. 222 in your proposal and staple the revised Page No. 222 thereto.

Page Nos. 231 and 232 of the *Traffic Signals, ITS & Signal Communications Scope of Work* have been revised. Please void Page Nos. 231 and 232 in your proposal and staple the revised Page Nos. 231 and 232 thereto.

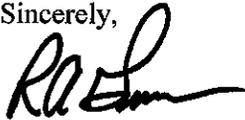
Page No. 271 of the *Materials Standard Special Provision* has been revised. Please void Page No. 271 in your proposal and staple the revised Page No. 271 thereto.

As a reminder, each Team is required to participate in a 30-minute presentation, followed by an oral interview with the Department's Technical Review Committee. The presentations and oral interviews will be held on November 9, 2016 in the Riverwood Conference Room (Century Center Building "B") at the times noted below. A maximum of ten (10) people from the Design-Build Team may attend.

Company	Time
Blythe Construction, Inc.	9:00 a.m.
E. S. Wagner Company, LLC	11:00 a.m.
Smith-Rowe / Thompson Arthur J.V. (Smith-Rowe, LLC / Thompson-Arthur Paving & Construction - a division of APAC - Atlantic, Inc. Joint Venture)	1:30 p.m.

If you have any questions or need additional information, I can be reached by telephone at (919) 707-6900.

Sincerely,



R. A. Garris, PE
Contract Officer

RAG / jgn

Cc: Rodger Rochelle, PE
Pat Ivey, PE
Teresa Bruton, PE
Ron McCollum, PE
Karen Capps, PE
File

EXAMPLE

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

FINAL REQUEST FOR PROPOSALS



DESIGN-BUILD PROJECT

TIP R-2247CD & EC

August 17, 2016

VOID FOR BIDDING



October 25, 2016 Initial, Date

DATE AND TIME OF TECHNICAL AND PRICE PROPOSAL SUBMISSION: ~~September 28, 2016~~ BY 4:00 PM

DATE AND TIME OF PRICE PROPOSAL OPENING: ~~October 18, 2016~~ AT 2:00 PM

CONTRACT ID: C203840 **November 15, 2016** Initial, Date

WBS ELEMENT NO. 34409.3.23

FEDERAL-AID NO. NHP-0421(088)

COUNTY: Forsyth

ROUTE NO. US 421 / SR 1891 (Peace Haven Road)
US 52 (Future I-74) / NC 65 (Bethania-Rural Hall Road)

MILES: 1.8

LOCATION: Winston-Salem Northern Beltway – Modification of the US 421 / SR 1891 (Peace Haven Road) Interchange and the US 52 (Future I-74) / NC 65 (Bethania – Rural Hall Road) Interchange

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

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PROPOSAL FORMS - ITEMIZED SHEET, ETC.

- Itemized Proposal Sheet (TAN SHEET)
- Fuel Usage Factor Chart and Estimate of Quantities
- Listing of DBE Subcontractors
- ** NOTE ** Deleted Listing of MBE / WBE Subcontractors
- Execution of Bid, Non-Collusion Affidavit, Debarment Certification and Gift Ban Certification
- Signature Sheet

***** PROJECT SPECIAL PROVISIONS *******CONTRACT TIME AND LIQUIDATED DAMAGES**

(7-12-7)

DB1 G04A

The date of availability for this contract is **January 3, 2017**, except that the Design-Build Team shall only begin ground disturbing activities as allowed by 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 this contract is defined as the date proposed in the Technical Proposal by the proposer who is awarded the project. The completion date thus proposed shall not be later than **July 1, 2020**.

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 proposed by the Design-Build Team in the Technical Proposal, the performance and payment bonds shall remain in full force and effect until the observation period has been completed and the work accepted by the Department.

The liquidated damages for this contract are **Three Thousand Dollars (\$3,000.00)** per calendar day. As an exception to this amount, where the contract has been determined to be substantially complete as defined by the *Substantial Completion* Project Special Provision found elsewhere in this RFP, the liquidated damages will be reduced to **One Thousand Dollars (\$1,000.00)** per calendar day.

Where the Design-Build Team who is awarded the contract has proposed a completion date for the contract as required above, but also has proposed an earlier date for substantial completion, then both of these proposed dates will become contract requirements.

Liquidated damages of **Three Thousand Dollars (\$3,000)** per calendar day will be applicable to the early date for substantial completion proposed by the bidder. Liquidated damages of **One Thousand Dollars (\$1,000.00)** per calendar day will be applicable to the Final Completion Date proposed by the bidder where the Design-Build Team has proposed an earlier date for substantial completion.

OTHER LIQUIDATED DAMAGES, DAMAGES AND INCENTIVES

(3-22-7) (Rev. 2-14-8)

DB1 G11

Reference the Transportation Management Scope of Work found elsewhere in this RFP for more information on the following time restrictions and liquidated damages:

Liquidated Damages for Intermediate Contract Time #1 for lane narrowing, lane closure, holiday and special event time restrictions for US 52 (Future I-74), including all ramps / loops; and US 421, including all ramps / loops, are \$1,250.00 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 NC-65 (Bethania – Rural Hall Road) and SR 1891 (Peace Haven Road) are \$500.00 per 15-minute period or any portion thereof.

Liquidated Damages for Intermediate Contract Time #3 for road closure time restrictions for US 52 (Future I-74), including all ramps / loops; and US 421, including all ramps / loops, are \$1,250.00 per 15-minute period or any portion thereof.

Liquidated Damages for Intermediate Contract Time #4 for road closure time restrictions for the US 421 **existing** northbound entrance ramp from SR 1891 (Peace Haven Road) – US 421 / SR 1891 Ramp B are \$1,000.00 per day or any portion thereof.

Liquidated Damages for Intermediate Contract Times #5 and #6 for road closure time restrictions for US 421 / SR 1891 (Peace Haven Road) **existing Ramp C, and proposed Ramp D / proposed Loop D** are \$1,000.00 per hour or any portion thereof.

Reference the Traffic Signals Scope of Work found elsewhere in this RFP for more information on the following time restrictions and liquidated damages:

Liquidated Damages for Intermediate Contract Time #5 for failure to repair a damaged traffic signal fiber optic communications cable and restore communication within 24 hours are \$500.00 per hour or any portion thereof.

Liquidated Damages for Intermediate Contract Time #6 for failure to reestablish traffic signal fiber communications within 72 hours are \$2,500.00 per 12-hour period or any portion thereof.

Liquidated Damages for Intermediate Contract Time #7 for failure to provide a plan that defines 1) an anticipated traffic signal fiber optic communications disruption timeframe and 2) a plan of action for reestablishing traffic signal communications a minimum of 21 days prior to a proposed disruption are \$10,000.00 per failure.

Liquidated Damages for Intermediate Contract Time #8 for failure to reestablish CCTV Camera communications within 72 hours are \$2,500.00 per 12-hour period or any portion thereof.

Liquidated Damages for Intermediate Contract Time #9 for failure to provide a plan that defines 1) an anticipated CCTV Camera communications disruption timeframe and 2) a plan of action for reestablishing CCTV Camera communications a minimum of 21 days prior to a proposed disruption are \$10,000.00 per failure.

Damages for Erosion and Sedimentation Control efforts apply to this project.

Reference the Erosion and Sedimentation Control Scope of Work found elsewhere in this RFP for additional information under the Erosion Control Damages Section.

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 **\$1.5950** 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* sheet 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**

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.

INDIVIDUAL MEETINGS WITH PROPOSERS

(9-1-11)

DB1 G048

The Department will provide at least two Question and Answer Sessions to meet with each proposer individually to specifically address questions regarding the draft Requests for Proposals.

The Department will attempt to arrange for a meeting between each individual proposer and the affected utility owners.

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 Department will **NOT** consider Alternative Technical Concepts.

SCHEDULE OF ESTIMATED COMPLETION PROGRESS

(9-1-11) (Rev. 8/3/15)

DB1 G58

The Design-Build Team's attention is directed to the *Availability of Funds - Termination of Contracts* Standard Special Provision found elsewhere in this RFP. The Department of Transportation's schedule of estimated completion progress for this project, as required by that Standard Special Provision, is as follows:

<u>Fiscal Year</u>	<u>Progress (% of Dollar Value)</u>
2017 (07/01/16 – 06/30/17)	8% of Total Amount Bid
2018 (07/01/17 – 06/30/18)	39% of Total Amount Bid
2019 (07/01/18 – 06/30/19)	33% of Total Amount Bid
2020 (07/01/19 – 06/30/20)	20% of Total Amount Bid

The Design-Build Team shall also furnish its own progress schedule in accordance with Article 108-2 of the 2012 *Standard Specifications for Roads and Structures*. Any acceleration of the progress as shown by the Design-Build Team's progress schedule over the progress as shown above shall be subject to the approval of the Engineer.

groundcover and be 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 Stormwater Permit (NCS000250) 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 for construction activities disturbing one or more acres of land. The Department further incorporates these requirements on all contracted bridge and culvert work at jurisdictional waters, regardless of size. Some of the requirements shall be, but are not limited to:
- (a) Control project site waste to prevent contamination of surface or ground waters of the state, i.e. from equipment operations / maintenance 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 and stormwater discharge outfalls at least once every 7 calendar days, and within 24 hours after a rainfall event of 0.5 inch, or greater, that occurs within a 24-hour period. At the discretion of Division of Water Resources personnel, additional monitoring may be required if the receiving stream is 303(d) listed for turbidity and the project has had documented problems managing turbidity.
 - (c) Maintain an onsite rain gauge or use the Department's Multi-Sensor Precipitation Estimate website to maintain a daily 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, waste sites and staging areas.
 - (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 Department's NPDES Stormwater Permit NCS000250 requirements, and the applicable requirements of the *General Permit, NCG010000*.
 - (i) Report violations of the NPDES Permit to the Engineer immediately who will notify the NC Department of Environmental Quality Regional Office within 24 hours of becoming aware of the violation.
- (3) Quality Control Program - Maintain a quality control program to control erosion, prevent sedimentation and follow provisions / conditions of permits. The quality control program shall:

- (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 Level I *Certified Installer* is not onsite, the Design-Build Team may substitute a Level II Foreman for a Level I Installer, 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 Erosion and Sediment Control / Stormwater 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 two 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 to the certification entity, certification for Supervisor, Certified Foremen, Certified Installers and Certified Designer may be revoked or suspended with the issuance of an Immediate Corrective Action (ICA), Notice of Violation (NOV), or Cease and Desist Order for erosion and sediment control / stormwater related issues.

DRAINAGE PIPE

(9-1-11)

DB3 R36

Description

Where shown in the plans developed by the Design-Build Team, the Design-Build Team 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:

- All pipe types shall be subject to the maximum and minimum fill height requirements as found on Roadway Standard Drawing No. 300.01 - 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 Project 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.
- 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.

PRICE ADJUSTMENTS FOR ASPHALT BINDER

(9-1-11)

DB6 R25

Price adjustments for asphalt binder for plant mix will be made in accordance with Section 620 of the 2012 *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 **\$337.50 per ton**.

This base price index represents an average of F.O.B. selling prices of asphalt binder at supplier's terminals on **September 1, 2016**.

PRICE ADJUSTMENTS - ASPHALT CONCRETE PLANT MIX

(9-1-11) (Rev. 3-13-13)

DB6 R26

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

Page 6-18, Article 609-11 and Page 6-35, Article 610-14

Add the following paragraph before the first paragraph:

The “Asphalt Price” used to calculate any price adjustments set forth in this section shall be \$40.00 per theoretical ton. This price shall apply for all mix types.

WORKSPACE FOR DEPARTMENT STAFF

(6-1-07)

DB 08-02

The Design-Build Team shall provide and maintain space for one Department staff member at the project site. This space can be a separate facility or part of the area provided to the Design-Build Team. The workspace provided shall be adequately lighted, and will include as a minimum, one desk, one chair, one telephone (a separate line from the Design-Build Team’s), and Internet access. The Engineer shall make the final determination for location and adequacy of the facilities.

DYNAMIC MESSAGE SIGN (DMS)

(5-22-15)

DB 08-04

General Requirements

DMSs used on the State Highway System shall be preapproved on the current NCDOT ITS & Signals 2012 Qualified Products List (QPL) by the date of installation. DMSs not preapproved will not be allowed for use on the project. To ensure compatibility with the existing DMS Control Software deployed in the State, furnish NTCIP compliant DMSs that are fully compatible with Daktronics, Inc. Vanguard Version 4 software (also referred to hereinafter as the “Control Software”). The QPL is available on the Department’s website. The QPL website is:

<https://connect.ncdot.gov/resources/safety/Pages/ITS-and-Signals-Qualified-Products.aspx>

DMS Requirements

Furnish and install DMSs compliant with UL standards 48, 50, and 879.

Add and configure the new DMSs in the system using the Control Software and computer system. Furnish, install, test, integrate and make fully operational the new DMSs at locations shown in the plans developed by the Design-Build Team.

Furnish operating DMS systems consisting of, but not limited to, the following:

- Full Matrix, 27 pixel high and 90 pixels wide LED DMS with 18” border

GENERAL

Technical and Price Proposals will be accepted until **4:00 p.m. Local Time on Tuesday, October 25, 2016** 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 two separate, sealed parcels containing the Technical Proposal in one and the Price Proposal in the other parcel.

TECHNICAL PROPOSAL - Hard Copies

Hard copies of the Technical Proposal shall be submitted in a sealed package. The outer wrapping shall clearly indicate the following information:

Technical Proposal – Hard Copies
Submitted By: (Design-Build Team's Name)
Design-Build Team Address
Contract Number C203840
TIP Number R-2247CD & EC
Forsyth County
US 421 / Peace Haven Road (SR 1891) and US 52 (Future I-74) / NC 65
(Bethania – Rural Hall Road) interchange modifications on the
Winston-Salem Northern Beltway

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 "Technical Proposal for the Design-Build of State Highway Contract No. C203840".

Technical Proposal Requirements

12 Copies
8 ½ inch by 11 inch pages
No fold-out sheets allowed
Printed on one side only
Double-spaced
Font size 12

Minimal font size 10 is permissible within embedded tables, charts, or graphics. No more than 50 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 - 24 x 36 inch fold out sheets will only be allowed to present interchange plans

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 – 25 points***Maintenance of Traffic***

- Provide a Transportation Management Phasing Concept (TMPC).
- 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.
- Identify any self-imposed liquidated damages and associated Intermediate Contract Time(s), if applicable.
- Specifically describe how business, school and residential access will be maintained, if applicable.
- Address how hauling will be conducted, including but not limited to, hauling of any materials to and from the site and hauling material within NCDOT right of way.
- Describe the Design-Build Team's approach to providing the public with communication access to project personnel to inquire as to traffic impacts, including vehicular and pedestrian.
- If a temporary portable barrier system will be utilized, provide the type and why it is needed.
- Identify the type of US 421 and US 52 (Future I-74) positive median cross-over protection proposed and replacement / resetting requirements.
- If temporary shoring will be required, provide the type and why it is required.
- Include all proposed road closures, detour routes, durations, and justifications, including but not limited to the duration, in days, for ICT #4; and the duration, in hours, for ICT #5 and #6.
- Address where and how law enforcement officers will be used.
- Identify a Traffic Control Supervisor and briefly describe their qualifications for this role.

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 project construction.

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.

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 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.

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.

Stipend

A stipulated fee of **\$70,000** 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

ROADWAY SCOPE OF WORK (9-12-16)

It should be noted that all references to TIP Projects R-2247, R-2247CD and R-2247EC in material provided by the Department shall apply to this project.

Throughout this RFP, references to the Preliminary Roadway Plans shall denote 1) the R-2247CD Preliminary Design Map, and 2) the October 27, 2015 R-2247EC Public Meeting Map provided by the Department.

Throughout this RFP, references to the “mainline” shall apply to US 421 and US 52 (Future I-74).

Project Details

R-2247CD - US 421 / SR 1891 (Peace Haven Road) Interchange Modifications

- From the eastern limits of the US 421 bridge over Muddy Creek to the existing six-lane typical section east of SR 1891 (Peace Haven Road), the Design-Build Team shall design and construct a six-lane divided facility on US 421. Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall design and construct US 421 providing the same or better access, widening, improvements and traffic measures of effectiveness, in the Department’s sole discretion, included in the Preliminary Roadway Plans provided by the Department. The limits of the US 421 construction shall be of sufficient length to tie to existing based upon the current NCDOT guidelines and standards. The US 421 six-lane facility shall be designed and constructed to meet a 70 mph design speed for a rolling urban freeway. The Design-Build Team shall provide all other design criteria for R-2247CD in the Technical Proposal.
- Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall design and construct the US 421 shoulders as follows:
 - Design and construct minimum 14-foot outside shoulders (twelve-foot useable shoulder width plus two feet), 12-foot of which shall be full depth paved shoulders, including all acceleration, deceleration and auxiliary lanes, and ramps / loops to the back of the gore (12-foot width).
 - Excluding the areas of existing ten-foot median paved shoulders and the transitional areas required to reduce the median paved shoulder width, the Design-Build Team shall design and construct minimum 12-foot full depth paved median shoulders. Within all other areas, the Design-Build Team shall design and construct minimum ten-foot full depth paved median shoulders.
- Throughout the entire R-2247CD project limits, the minimum US 421 median width shall be 36 feet.
- The US 421 normal crown cross slope shall be 0.02. The Design-Build Team may design and construct the US 421 inside lane in each direction of travel to slope in the direction of the existing inside lane. The Design-Build Team shall design and construct all other US 421 lanes to slope towards the outside.

Addendum No. 2, September 21, 2016

C203840 (R-2247CD & EC)

Roadway Scope of Work

Forsyth County

- The Design-Build Team will be allowed to design and construct Ramp A and Ramp B with a maximum 6.0% grade.
- The minimum design speed for Loop D shall be 25 mph with a minimum 180-foot radius.
- The Design-Build Team shall design and construct Kester Mill Road, including -DW1-, to meet a 30 mph design speed and encompass the entire facility in right of way. (Reference the Right of Way Scope of Work found elsewhere in this RFP)
- Within the SR 1891 (Peace Haven Road) curb and gutter limits, the Design-Build Team shall design and construct five-foot sidewalks on both sides of the roadway.
- Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall design and construct at-grade intersections with the lane configurations noted in the April 22, 2016 *R-2247CD Traffic Capacity Analysis Report* provided by the Department. At all intersections impacted by the Design-Build Team's design and / or construction, excluding resurfacing, the Design-Build Team shall design and construct turn lanes that adhere to the greater of the following:
 - All turn lane lengths shall adhere to the NCDOT minimum turn lane lengths as defined in the *NCDOT Roadway Design Manual* (Reference Section 9-1, F-4).
 - All lengths for the turn lanes required by the April 22, 2016 *R-2247CD Traffic Capacity Analysis Report* provided by the Department shall adhere to the NCDOT Recommended Treatment for Turn Lanes, as defined in the *NCDOT Roadway Design Manual* - Section 9-1, Figures F-4A and F-4B. These lengths shall be determined by using the length defined in the aforementioned Memorandum and the appropriate minimum deceleration length noted in Figure F-4A for the variable storage length and deceleration length, respectively.
 - Right turn lanes / tapers shall be provided in accordance with the NCDOT Right Turn Lane Warrants, as defined in the *NCDOT Roadway Design Manual* (Reference Section 9-1, Figure F-4C).
 - The Design-Build Team will not be required to adhere to the minimum length requirements noted above for the SR 1891 (Peace Haven Road) northbound right turn lane onto Ramp D. However, the Design-Build Team shall maximize the aforementioned northbound right turn lane length, to the extent practicable in the Department's sole discretion, between Villas Drive and Ramp D.
 - The Design-Build Team will not be required to lengthen the following turn lanes beyond that shown on the Preliminary Roadway Plans provided by the Department strictly to adhere to the minimum length requirements noted above:
 - The SR 1891 (Peace Haven Road) southbound left turn lane onto Villas Drive
 - The SR 1891 (Peace Haven Road) northbound left turn lane onto Regents Village Drive
 - The SR 1891 (Peace Haven Road) southbound right turn lane onto Regents Village Drive
 - The SR 1891 (Peace Haven Road) southbound right turn onto Ramp B
 - The SR 1891 (Peace Haven Road) northbound left turn onto Ivystone Lane

- The Design-Build Team shall prepare functional horizontal and vertical designs of the **future ultimate** US 52 (Future I-74) / NC 65 (Bethania-Rural Hall Road) interchange improvements, as shown on the October 27, 2015 R-2247EB Public Meeting Map provided by the Department. At a minimum, the functional designs shall 1) begin at the end of the acceleration taper or the beginning of the deceleration taper located at approximately Station 90+00 -L-, as shown on Roll 1 of 2 of the aforementioned Map, whichever is the most western; 2) include the end of the Ramp A gore, as shown on Roll 2 of 2 of the aforementioned Map, at approximately Sta. 156+00 -L-; and 3) include all the Ramp B alignment within Project R-2247EB, as shown on Roll 2 of 2 of the aforementioned Map. The Design-Build Team shall include the aforementioned functional design in the Technical Proposal.

- Within the limits defined above, the Design-Build Team shall provide preliminary designs of the **future ultimate** improvements, as shown on the October 27, 2015 R-2247EB Public Meeting Map provided by the Department, for the Department's review and acceptance post Award. In accordance with the accepted design, the Design-Build Team shall, at a minimum, adhere to the following requirements:
 - Prior to negotiating right of way, control of access and / or permanent easement acquisitions with property owners, the aforementioned preliminary plans must be reviewed and accepted by the Department. (Reference the Right of Way Scope found elsewhere in this RFP)

 - Excluding the Woodland Baptist Church property, the Design-Build Team shall make a determination of, and acquire, the additional right of way, control of access and permanent easements required for the **future ultimate** improvements for all parcels 1) impacted by Project R-2247EC; and 2) delineated with proposed right of way on the Preliminary Roadway Plans provided by the Department. The aforementioned required acquisitions shall extend completely through a parcel, terminating on a property line; and shall include, but not be limited to, the right of way and permanent easements required for future drainage and **future** utility relocations. (Reference the Right of Way Scope found elsewhere in this RFP)

 - **** NOTE ** Deleted bullet on utility relocations**

- To the extent practicable, the Design-Build Team shall minimize property impacts to the homes located along Hallmark Drive. The Design-Build Team shall identify the design details and / or construction methods that will be incorporated to reduce the property impacts in the Technical Proposal.

- At the Hallmark Drive eastern terminus, the Design-Build Team shall design and construct a turn-around / cul-de-sac that accommodates a school bus U-Turn maneuver.

- Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall design and construct at-grade intersections with the lane configurations noted in Figure 11 of the September 16, 2015 *R-2247EB / EC Traffic Capacity Analysis Report* provided by the Department. At all intersections impacted by the Design-Build Team's design and / or construction, excluding resurfacing, the Design-Build Team shall design and construct turn lanes that adhere to the greater of the following:

- All turn lane lengths shall adhere to the NCDOT minimum turn lane lengths as defined in the NCDOT *Roadway Design Manual* (Reference Section 9-1, F-4).
- All lengths for the turn lanes required by the September 16, 2015 *R-2247EB / EC Traffic Capacity Analysis Report* provided by the Department shall adhere to the NCDOT Recommended Treatment for Turn Lanes, as defined in the NCDOT *Roadway Design Manual* - Section 9-1, Figures F-4A and F-4B. These lengths shall be determined by using the length defined in the aforementioned Memorandum and the appropriate minimum deceleration length noted in Figure F-4A for the variable storage length and deceleration length, respectively.
- Right turn lanes / tapers shall be provided in accordance with the NCDOT Right Turn Lane Warrants, as defined in the NCDOT *Roadway Design Manual* (Reference Section 9-1, Figure F-4C).
- The Design-Build Team will not be required to adhere to the minimum length requirements noted above for the NC 65 (Bethania-Rural Hall Road) southbound left turn lane onto Forum Parkway. However, the Design-Build Team shall maximize the aforementioned southbound left turn lane length, to the extent practicable in the Department's sole discretion, within the proposed concrete median island.
- The Design-Build Team will not be required to lengthen the following turn lanes beyond that shown on the Preliminary Roadway Plans provided by the Department strictly to adhere to the minimum length requirements noted above:
 - The NC 65 (Bethania-Rural Hall Road) southbound left turn lane onto the U-turn bulb out located south of Shore Road
 - The NC 65 (Bethania-Rural Hall Road) northbound left turn lane onto Shore Road
- The Design-Build Team shall design and construct all U-turn bulb-outs to accommodate a WB-67 design vehicle.
- The Design-Build Team shall design and construct the Bethania-Rural Hall Road / Forum Parkway intersection to accommodate a Single Unit (SU) U-Turn maneuver for NC 65 (Bethania-Rural Hall Road) northbound traffic.
- The Design-Build Team shall paint stripe out the NC 65 (Bethania-Rural Hall Road) southbound dual left turn lanes that will access the future Ramp C. The Design-Build Team shall paint stripe the NC 65 (Bethania-Rural Hall Road) northbound to Loop B maneuver to operate as a single left turn lane. (Reference the Pavement Markings Scope of Work found elsewhere in this RFP)
- Along the east side of NC 65 (Bethania-Rural Hall Road), from the point south of Angus Road that corresponds with the February 5, 2016 Town of Rural Hall's NC Hwy 65 Sidewalk Improvements Preliminary Plans – Sheet 1 to Forum Parkway, the Design-Build Team shall design and construct 1) the widening required to provide a 14-foot wide northbound lane, 2) 2'-6" curb and gutter, and 3) a ten-foot berm with a five-foot sidewalk. The aforementioned improvements shall tie to the proposed curb and gutter and sidewalk shown on the plan sheet noted above and be in addition to the access, widening, improvements and

or topographic feature beyond that shown on the Preliminary Roadway Plans provided by the Department. The Design-Build Team shall not acquire right of way or easements from the aforementioned features unless shown on the Preliminary Roadway Plans provided by the Department.

- The Design-Build Team shall provide milled rumble strips along the mainline outside and median paved shoulders, including ramp and loop terminals, and acceleration, deceleration and auxiliary lanes, in accordance with the NCDOT *Roadway Standard Drawings*.
- For all bridges over roadways, the Design-Build Team shall submit vertical and horizontal clearance design calculations at all critical points. The Design-Build Team shall submit post construction survey points for the aforementioned critical points that verify construction adhered to the vertical and horizontal clearances accepted by the Department. The Design-Build Team shall be responsible for all costs associated with correcting vertical and horizontal clearances resulting from any construction variation from the design accepted by the Department.
- Excluding US 52 (Future I-74), the construction areas along US 421 that consist solely of pavement marking obliterations / revisions, and haul roads, the Design-Build Team shall design and construct resurfacing grades for all roadways impacted by construction. All resurfacing grades shall adhere to the design criteria and standards, provide all required pavement wedging (Reference the Pavement Management Scope of Work found elsewhere in this RFP) and adhere to the minimum requirements noted below:
 - The Design-Build Team shall resurface all lanes and shoulders of an undivided facility throughout the limits of proposed widening and construction.
 - The Design-Build Team shall resurface each one-way roadway of a divided facility throughout the limits of the one-way roadway widening and construction, allowing varying resurfacing limits for the opposing directions of travel.
 - Unless noted otherwise elsewhere in this RFP, for both divided and undivided facilities, the Design-Build Team shall resurface all lanes and shoulders within the outermost construction limits of all proposed widening and construction, including any gaps along the facility where construction activities are not required.
 - The Design-Build Team shall resurface all existing facilities to the limits of pavement marking obliterations / revisions.
- The Design-Build Team shall provide turn-arounds / cul-de-sacs on all roads that are dead-ended.
- The Design-Build Team shall inform the Design-Build Unit, in writing, of all proposed design revisions, including but not limited to the following:
 - Excluding the modifications required herein, the Design-Build Team shall note in the Technical Proposal any proposed deviations to Preliminary Roadway Plans provided by

General

- Unless allowed otherwise elsewhere in this RFP, the design shall be in accordance with the 2011 AASHTO *A Policy on Geometric Design of Highways and Streets* and 2013 Errata, 2002 NCDOT *Roadway Design Manual*, including all revisions effective on the Technical Proposal submittal date, January 2012 NCDOT *Roadway Standard Drawings*, or as superseded by detail sheets located at <https://connect.ncdot.gov/resources/Specifications/Pages/2012-Roadway-Drawings.aspx>, *Roadway Design Policy and Procedure Manual*, *Roadway Design Guidelines for Design-Build Projects*, 2012 NCDOT *Standard Specifications for Roads and Structures* and the 2011 AASHTO *Roadside Design Guide*, 4th Edition and 2015 Errata.
- If the NCDOT *Roadway Design Manual*, including all revisions, the 2011 AASHTO *A Policy on Geometric Design of Highways and Streets* and 2013 Errata, the 2012 NCDOT *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 noted otherwise 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.
- At all intersections, the Design-Build Team shall not exceed a 0.05 roll-over between the outside edge of travel lane of the primary roadway and the beginning of the proposed grade for the secondary roadway.
- Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall design and construct bridge rail offsets as indicated in the NCDOT *Roadway Design Manual* or that are equal to the approach roadway paved shoulders, whichever is greater. Narrower bridge rail offsets based on bridge length will not be allowed.
- Unless noted otherwise elsewhere in this RFP, the maximum allowable cut and fill slope shall be 2:1. (Reference the Geotechnical 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.
- Outside the project limits, the Design-Build Team will not be allowed to use the NCDOT right of way and / or property for borrow or waste sites. Within the project limits, including but not limited to right of way purchased for the future ultimate R-2247EB improvements, the Design-Build Team shall adhere to the following:
 - Only clean waste material may be wasted within the NCDOT right of way or property.
 - Excluding crushed concrete, debris shall not be buried within the NCDOT right of way or property.
 - Normal grading operations shall occur, including but not limited to, removal of the existing embankments supporting all removed roadway sections.
 - All waste sites within the future ultimate R-2247EB improvements, including but not limited to within the associated right of way, shall adhere to all the 2012 NCDOT *Standard Specifications for Roads and Structures* embankment requirements and the following:
 - At no location shall the waste site elevation be higher than the proposed top of ground / grade elevation of the future ultimate R-2247EB improvements, as shown on the Preliminary Plans developed by the Design-Build Team.
 - Rock and / or crushed concrete shall be placed a minimum of four feet above the water table and shall not be placed within the top ten-feet of any waste site.

may be attached to the deck, as long as it is not adhesively attached in tension; 3) shall not be attached to a girder; 4) shall not be load bearing; and 5) shall be in accordance with the September 21, 2016 R-2247EC Concrete Arch Façade Aesthetic Guidelines provided by the Department. The Design-Build Team shall provide conceptual designs and renderings for the aesthetic concrete arch facades in the Technical Proposal.

- On both sides of the bridge, mid-span concrete plinths shall be centered over the proposed median bent cap and may be supported by the median bent cap. The mid-span concrete plinth face shall be flush with the sidewalk side of the bridge rail, and shall extend a minimum of six-inches beyond the face of the concrete arch facades and bridge overhang. The height of the mid-span concrete plinths shall be equal to the height of the bridge rail. The width of the mid-span concrete plinths shall be at least three feet wide, but shall not be wider than the width of the bent cap.
- The median bent shall be a square concrete column with a smooth finish.
- All exterior steel girders shall be painted black.
- All exterior concrete girders shall be stained black.

The design and construction of Bridge No. 159 - (Kester Mill Road over Silas Creek) shall adhere to the following:

- Cored slab or box beam units, with an asphalt overlay, will be allowed.
- The bridge barrier rails shall be per Standard Drawing CBR2.
- The bridge approach fills defined in the *Sub-Regional Tier Design Guidelines for Bridge Projects* will be allowed.
- Twelve-foot bridge approach slabs will be allowed.

Unless noted otherwise elsewhere in this RFP, all proposed bridge barrier rails shall be per Standard Drawing BMR34. Bridge No. 36 (NC 65 (Bethania-Rural Hall Road) over US 52 / Future I-74) shall have anodized black metal bridge rails.

End bents and end bent slopes at each end of a bridge shall have the same appearance.

Vertical abutment walls and / or retaining walls shall not be allowed in lieu of spill through slopes adjacent to waterways or wetlands.

The number of expansion joints for each structure shall be kept to a minimum. Structures shall be integral if the criteria listed in the NCDOT *Structures Management Unit Manual* is met. When required by the criteria in Section 6.2.3.2 of the NCDOT *Structures Management Unit Manual*, the Design-Build Team shall use expansion joints, except Bullets 3 and 4 in the aforementioned Section shall apply to all roadways.

A live load rating chart for proposed girders shall be included with the bridge plans and shall state design assumptions and methodology used in the load rating calculations. The load rating shall be in accordance with the NCDOT *Structures Management Unit Manual*, including Policy Memos, and AASHTO's *Manual for Bridge Evaluation*.

The Design-Build Team shall lengthen or replace all existing reinforced concrete box culverts as required by the Design-Build Team's design. Reinforced concrete box culvert designs shall be in accordance with the latest edition of the AASHTO LRFD Bridge Design Specifications and the Hydraulic Culvert Survey Reports prepared by the Design-Build Team and accepted by the Department. (Reference the Hydraulics Scope of Work found elsewhere in this RFP)

PAVEMENT MANAGEMENT SCOPE OF WORK (9-12-16)

US 421

The Design-Build Team shall use the following pavement design for the construction and / or widening of US 421 travel lanes, acceleration / deceleration lanes, median full-depth paved shoulders and outside full-depth paved shoulders.

3.0" S9.5C
4.0" I19.0C
8.0" B25.0C

Beginning at the western limits of the US 421 pavement marking obliterations / revisions, including but not limited to obliterations / revisions to the existing arrows and text for the Peace Haven Road eastbound exit ramp, or the eastern terminus of the US 421 bridge over Muddy Creek, whichever is furthest west, to the eastern limits of the US 421 pavement marking obliterations / revisions, including but not limited to obliterations / revisions to the existing mini-skips west of the Jonestown Road westbound entrance ramp taper, the Design-Build Team shall resurface or overlay the existing pavement of each one-way roadway in accordance with the requirements noted below:

- Throughout the construction areas that consist solely of pavement marking obliterations / revisions and / or are required solely to extend to the bridge terminus noted above, the Design-Build Team shall uniformly overlay the existing pavement with 1.5" S9.5C.
- Throughout all other areas of construction, the Design-Build Team shall resurface the existing pavement with a minimum pavement depth that equals the full thickness of the surface course as provided above. (Reference the Roadway Scope of Work found elsewhere in this RFP)

US 52 (Future I-74)

The Design-Build Team shall use the following pavement design for the construction of US 52 (Future I-74) acceleration / deceleration lanes and outside full-depth paved shoulders.

Ultra-thin Bonded Wearing Course
3.0" S9.5C
3.0" I19.0C
7.0" B25.0C

Excluding the sections of US 52 that solely require pavement marking obliterations / revisions, and the associated mill and fill operation, the Design-Build Team shall completely reconstruct (remove, dispose of / recycle and replace) the US 52 (Future I-74) existing outside paved shoulders. The existing US 52 (Future I-74) outside shoulder pavement structure shall be removed and disposed of / recycled, in its entirety, to the top of the soil subgrade, including but not limited to the removal and disposal of existing aggregate base course.

Throughout the US 52 (Future I-74) project limits, including but not limited to the sections of US 52 that solely require pavement marking obliterations / revisions, and the associated mill and fill operation, the Design-Build Team shall 1) mill the existing ultrathin bonded wearing course on the US 52 (Future I-74) through lanes and acceleration / deceleration lanes to the top of the existing jointed concrete pavement, 2) mill the existing median paved shoulders to the adjacent milled through lane elevation, 3) assess and recommend repairs to the underlying concrete pavement, 4) construct new acceleration / deceleration lanes for the proposed US 52 (Future I-74) / NC 65 (Bethania-Rural Hall Road) interchange ramps and loops, and 5) overlay the existing concrete pavement, existing median paved shoulders, outside paved shoulders, and newly constructed acceleration / deceleration lanes to the back of the gore (12-foot width) with an ultra-thin bonded

Prior to incorporation, all offsite detour routes shall receive Department written approval and shall adhere to the following requirements:

- Except as allowed in **ICT #3 - ICT #6** and elsewhere in this RFP, all roads, including ramps and loops, shall not be closed.
- The Design-Build Team shall not permanently close the Hallmark Drive / NC 65 (Bethania – Rural Hall Road) intersection prior to the Hallmark Drive extension to Crooked Rim Road being open to traffic and fully operational.
- The Design-Build Team shall not permanently close the private road adjacent to the existing Ramp D at the US 421 / SR 1891 (Peace Haven Road) interchange prior to -DW1-, Kester Mill Road Extension, and Kester Mill Road, including but not limited to Bridge No. 159 (Kester Mill Road over Silas Creek), being open to traffic and fully operational.
- The Design-Build Team shall not permanently close any existing ramp / loop until 1) the proposed ramp / loop that will carry the corresponding traffic is open to traffic and fully operational; and 2) the proposed traffic signal at the proposed ramp / loop terminal for the corresponding traffic is operational.
- The Design-Build shall not incorporate Jonestown Road into any offsite detour route.
- The Design-Build Team shall investigate all detour routes, including but not limited to analyzing traffic capacity, investigating impacts to emergency services and schools, analyzing design characteristics to ensure the design supports the traffic volumes (existing traffic volumes plus detoured traffic volumes), and investigating pavement structural adequacy including any bridge postings on the detour route. The Design-Build Team shall submit recommendations resulting from the aforementioned investigations / analyzes for the Department's review and acceptance.
- As determined by the Engineer, the Design-Build Team shall provide all improvements required to accommodate detoured traffic prior to utilizing detour routes.
- Offsite detours that have non-signalized at-grade railroad crossings shall not be allowed.
- Submit detour routes and all associated sign designs for review and acceptance prior to incorporation.
- All proposed road closures, detour routes, durations and justifications shall be incorporated into the Technical Proposal. (All proposed road closures, detour routes, durations and justifications incorporated into the Technical Proposal shall require Department approval.)
- Unless approved otherwise by the controlling government entity, in writing, use only state maintained roads for offsite detour routes.

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 shall not be limited to, a sufficient pavement structure (Reference the Pavement Management Scope of Work found elsewhere in this RFP), maintaining the existing vertical clearance of overhead structures, providing the required vertical clearance on proposed overhead structures and providing the minimum horizontal clear widths as follows:

Roadway	Minimum Clear Width
US 52 (Future I-74) and US 421	20 feet
All other roadways	18 feet

The Design-Build Team shall coordinate with the Division Operations Engineer and Division Traffic Engineer to manage traffic operations within the work zone and other roadways within the network that may be affected by the work zone activities. Coordination shall include, but not be limited to, providing notification of planned lane or road closures, traffic detours, public information, traffic management, access management, incidents, etc.

On all roads, the Design-Build Team shall make all modifications to existing pavement markings, markers and / or signing located outside the project limits that are necessitated by the Transportation Management Plans. Additionally, the Design-Build Team shall readjust the markings, markers, and / or signing located outside the project limits to the existing / proposed pattern when the temporary changes are no longer needed.

The Design-Build Team shall not place traffic on pavement containing rumble strips.

The Design-Build Team shall take steps to minimize disruptions to existing roadway facilities during construction and shall demonstrate how the traffic control phasing, minimizes inconvenience to motorists on all roads.

Lane Closure Notice (LCN)

The Design-Build Team shall issue a Lane Closure Notice (LCN) to NCDOT and affected government entities a minimum of twenty-one (21) calendar days prior to the publication of any notices or placement of any traffic control devices associated with lane closures, detour routing or other change in traffic control requiring lane closures. The Design-Build Team will be allowed to issue a single LCN for multiple / consecutive lane closures that occur in the same location.

For a LCN utilizing a non-NCDOT controlled facility, the Design-Build Team shall secure concurrence, in writing, from the controlling government entity. A LCN shall contain the estimated date, time, duration and location of the proposed work. The Design-Build Team shall keep NCDOT informed of any and all changes or cancellations of proposed lane closures prior to the date of their implementation.

For the operations noted below, the maximum road closure duration shall not exceed **thirty (30) minutes** without an approved offsite detour. With an approved offsite detour, the roadways listed may be closed from 12:00 a.m. (Midnight) to 5:00 a.m. for the operations listed below.

- Bridge demolition
- Girder, overhang, and falsework installation and / or removal
- Installation / removal of temporary shoring
- Installation / removal of temporary traffic barrier systems
- Installation of overhead sign assemblies and / or work on existing overhead sign assemblies over travel lanes

Proposed road closures for any road within the project limits shall be approved by the Engineer, in writing, prior to incorporation in the Transportation Management Plans.

Liquidated Damages for Intermediate Contract Time #3 for the above road closure time restrictions for US 52 (Future I-74), including all ramps and loops; and US 421, including all ramps and loops, are \$1,250.00 per 15-minute period or any portion thereof.

3. Intermediate Contract Times #4, #5, and #6 for Ramp Reconstruction

One road closure for each ramp / loop, with an approved offsite detour, will be permitted for the reconstruction, phase construction, and / or removal of the existing ramp / loop for the maximum durations listed below. The Design-Build Team shall not concurrently close more than two ramps / loops.

Intermediate Contract Time #	Road Name	Day	Time Restrictions
#4	US 421 existing northbound entrance ramp from SR 1891 (Peace Haven Road) – US 421 / SR 1891 Ramp B	Monday through Sunday	21 consecutive days

The date of availability for Intermediate Contract Time #4 shall be the date the Design-Build Team elects to begin work after closing the US 421 existing northbound entrance ramp from SR 1891 (Peace Haven Road) – US 421 / SR 1891 Ramp B. The Design-Build Team shall provide the Engineer a minimum of 30 days written notice prior to the date of availability. The date of completion shall be the number of

calendar days proposed by the Design-Build Team in the Technical Proposal, and such number of calendar days proposed shall not be greater than 21 days.

Intermediate Contract Time #	Road Name	Day	Time Restrictions
#5	US 421 existing southbound exit ramp at SR 1891 (Peace Haven Road) – US 421 / SR 1891 Ramp C	From Friday at 9:00 p.m. until 5:00 a.m. on Monday	56 consecutive hours
#6	US 421 proposed southbound entrance / exit ramp and loop at SR 1891 (Peace Haven Road) – US 421 / SR 1891 Ramp D / Loop D	From Friday at 9:00 p.m. until 5:00 a.m. on Monday	56 consecutive hours

The time of availability for Intermediate Contract Time #5 and #6 shall be 9:00 p.m. on the date the Design-Build Team elects to begin work on the operations noted in the table above. The Design-Build Team shall provide the Engineer a minimum of 30 days written notice prior to each time of availability. The time of completion for Intermediate Contract Time #5 and #6 shall be the number of hours proposed by the Design-Build Team in the Technical Proposal, and such number of hours proposed shall not be greater than 56 hours.

Liquidated Damages for Intermediate Contract Time #4 for the above road closure time restrictions for US 421 existing northbound entrance ramp from SR 1891 (Peace Haven Road) – US 421 / SR 1891 Ramp B are \$1,000.00 per day or any portion thereof.

Liquidated Damages for Intermediate Contract Time #5 and #6 for the above road closure time restrictions for US 421 / SR 1891 (Peace Haven Road) existing Ramp C, and proposed Ramp D / proposed Loop D are \$1,000.00 per hour or any portion thereof.

B. Hauling Restrictions

The Design-Build Team shall adhere to the hauling restrictions noted in the NCDOT 2012 *Standard Specifications for Roads and Structures*.

UTILITIES COORDINATION SCOPE OF WORK (9-9-16)

The Design-Build Team shall obtain the services of a Professional Services Firm (PSF) 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 owner, 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.

Unless allowed otherwise elsewhere in this RFP, the Design-Build Team shall relocate / coordinate the relocation of all existing facilities, in accordance with the requirements herein, that are 1) parallel to a roadway in full control of access, 2) in physical conflict with the construction, 3) beneath the existing or proposed pavement structure and structurally inadequate, and / or 4) beneath the existing or proposed pavement structure and consist of unacceptable material. Proposed / relocated underground facilities that are located beneath the pavement structure shall only be allowed to cross the roadway as close to perpendicular as possible.

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 required relocation of any utilities, known and unknown, in conflict with the project. Unless allowed otherwise elsewhere in this RFP, all utilities in conflict with the R-2247EC project shall be relocated such they will not be in conflict with the future ultimate R-2247EB improvements, as shown on the Preliminary Plans developed by the Design-Build Team. (Reference the Roadway Scope of Work found elsewhere in this RFP) The following utilities are known to be located within the project construction limits:

Utility Owner	Utility Type	Cost Responsibility
Duke Energy	Power (Distribution)	NCDOT (normally)
AT&T	Telecommunications	AT&T (normally)
City of Winston-Salem	Water and Sewer	Design-Build Team (NCDOT will obtain an agreement with the City of Winston Salem allowing the Design-Build Team to work on their facilities)
Piedmont Natural Gas	Gas	NCDOT (with easement) or PNG
Time Warner	CATV	Time Warner (normally)
Windstream Communications	Telecommunications	Windstream (normally)
Baptist Hospital	Fiber Optic	Duke Net (normally)

Water and Sewer

If the Design-Build Team's design and / or construction require the relocation and / or encasement of existing water and / or sewer facilities, designs shall be coordinated with the NCDOT Utilities Unit. All costs associated with the design and construction for relocation and / or encasement of these existing water and / or sewer facilities shall be the responsibility of the Design-Build Team and shall be included in the lump sum bid for the project. 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.

The Design-Build Team shall replace all existing vitrified clay pipes (VCP) sanitary sewer mains located within the construction limits that modify the existing ground elevation, excluding modifications that consist solely of pavement resurfacing, with ductile iron pipe (DIP).

The City of Winston Salem will replace the existing sanitary sewer pump station located at 780 Crooked Run Road with a gravity sewer line extension that crosses US 52 east of the existing 60" CMP. The gravity sewer line extension will be completed by July 1, 2017. The Design-Build Team shall coordinate with the Department to ensure that the gravity sewer line extension will not be impacted by the Design-Build Team's design, construction methods and / or the future ultimate R-2247EB improvements, as shown on the Preliminary Plans developed by the Design-Build Team. Should the Design-Build Team's design, construction methods and / or the future ultimate R-2247EB improvements, as shown on the Preliminary Plans developed by the Design-Build Team impact the gravity sewer line extension, all costs for those impacts and / or relocations shall be borne by the Design-Build Team.

Designs shall be coordinated with the NCDOT Utilities Unit and the utility owners or their representatives. In .pdf format, the Design-Build Team shall electronically submit one half-size set and one full size set of utility construction drawings to the State Utilities Manager, via the Design-Build Unit, for further handling. Each set shall include a title sheet, plan sheets, profiles and special provisions, if required. Once approved by the State Utilities Manager, the plans, with the appropriate agreement, will be sent to the utility owner for their review and concurrence.

The relocation of all water and sewer facilities shall be done in accordance with the NCDOT policies and standards, as well as the latest City of Winston Salem Technical Specifications and Detail Drawings for Water Line and Sanitary Sewer Line Construction. In the event of conflicting design parameters in the requirements noted above, the proposed design shall adhere to the most conservative values. The materials and appurtenances proposed by the Design-Build Team shall require approval by both NCDOT and the aforementioned appropriate utility owner prior to installation.

Utility Relocation Plans

Excluding water and sewer conflicts, and utilities that are allowed to remain in their current location under the conditions noted elsewhere in this RFP, if the Design-Build Team's design

and / or construction create a utility conflict, the Design-Build Team shall request that the utility owner 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.

In .pdf format, the Design-Build Team shall electronically submit one half-size set and one full size set of the Utility Relocation Plans to the NCDOT State Utility Manager, via the Design-Build Unit, 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 Utilities Unit will submit an electronic copy of the authorization letter to the Design-Build Team. The NCDOT Utilities Unit will also submit an electronic copy of the approved Utility Relocation Plans, estimate and agreement 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 owner.

If the Design-Build Team's design and / or construction methods do not impact the existing Windstream telephone cabinet located adjacent to Jammie Court, the Design-Build Team will not be required to relocate the cabinet outside of the NCDOT control of access (the cabinet may remain in its current location). If the aforementioned cabinet is not relocated, the Design-Build Team shall design and construct 1) a four-foot high chain-link fence that completely encompasses the Windstream existing easement, and 2) a ten-foot wide gravel driveway from NC 65 (Bethania-Rural Hall Road) to the cabinet. Within the aforementioned chain-link fence, the Design-Build Team shall design and construct a 12-foot wide access gate for maintenance. In proximity to, but outside the clear zone of, NC 65 (Bethania-Rural Hall Road, the Design-Build Team shall design and construct a 12-foot wide gate across the access driveway. The Design-Build Team shall design and construct the two aforementioned gates such that they can be locked. (Reference the Pavement Management Scope of Work found elsewhere in this RFP)

Cost Responsibility

The Design-Build Team shall be responsible for all costs associated with relocating 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 owner has prior rights of way / compensable interest. The utility owner shall be responsible for the relocation costs if they cannot furnish evidence of prior rights of way or a compensable interest in their facilities. The Design-Build Team shall be responsible for verifying / determining the cost responsibility (prior rights and compensable interest) for the utility relocations. Excluding the temporary powerline relocations noted below, 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.

with this additional coordination. The Design-Build Team shall follow the appropriate details in the document titled "Section 404 / NEPA Merger Process Information" which can be found at the website noted below:

<https://connect.ncdot.gov/resources/Environmental/Compliance%20Guides%20and%20Procedures/Section404NEPAMergerProcessInformation.pdf>

Unless stipulated otherwise in the Technical Proposal, the Department will schedule a combined R-2247CD and R-2247EC Concurrence Point 4B Meeting and a combined R-2247CD and R-2247EC Concurrence Point 4C Meeting for April 2017 and July 2017, respectively. The Design-Build Team shall clearly indicate in the Technical Proposal if separate Concurrence Point 4B and Concurrence Point 4C meetings will be required for R-2247CD and R-2247EC; and what months the Department should schedule the specific 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 noted otherwise elsewhere in this RFP, the Design-Build Team shall be bound by the terms of all signed planning documents, and approved minutes and commitments of all concurrence meetings and shall be held accountable for meeting all permit conditions. The Design-Build Team shall be required to staff any personnel necessary to provide permit compliance.

Unless noted otherwise elsewhere in this RFP, the Department will not honor any requests for additional contract time or compensation for any efforts required in order to obtain any permit or permit modification, including but not limited to public involvement, additional design effort, additional construction effort, and / or additional environmental agency coordination and approvals.

Permit Application Process

It shall be 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 shall be 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 required by the project. At a minimum, the permit application shall consist of the following:

- Cover Letter
- Completed forms (Section 404 ENG 4345, etc.) appropriate for impacts
- Division of Mitigation Services Acceptance Letter
- Minutes from the 4B and 4C Meetings
- Stormwater Management Plan
- Permit drawings (with and without contours)

- *North Carolina Supplement to the Manual on Uniform Traffic Control Devices (NCMUTCD)*
- *Guidelines for the Preparation of ITS & Signal Plans by Private Engineering Firms*

Links to additional ITS & Signals Unit design standards and aides are available on website noted below:

<http://www.ncdot.gov/doh/preconstruct/traffic/ITSS/>

II. TRAFFIC SIGNALS

If the Design-Build Team's design and / or construction methods require the installation of a new permanent traffic signal(s), the NCDOT ITS & Signals Unit will assign Signal Inventory Numbers (SIN) for each location. Once all the new permanent traffic signal locations have been finalized and accepted by the Department, the Design-Build Team shall submit a written request for the SINs to the NCDOT ITS & Signals Unit, via the Design-Build Unit. At a minimum, this request shall list each signal location that requires a SIN and include the following:

- County
- Nearest Municipality
- Names of all intersecting roads that will be under signal control, including state route numbers (Interstate, US, NC or SR) and common street names
- The dominant through movement

The Design-Build Team shall upgrade / rebuild five (5) existing traffic signals. All these signals shall be incorporated into the City of Winston-Salem Signal System. (Reference Section III for the system interconnection requirements) The vehicle detection for the final traffic patterns shall be inductive loop detection unless 1) the existing signal is a pre-timed signal, 2) the required location of the inductive loop is within a bridge deck, and / or 3) the Department provides written approval otherwise. The Design-Build Team may only provide out of street detection for 1) temporary traffic patterns during construction and 2) final traffic patterns at locations where inductive loops would be located within a bridge deck. The required traffic signal work and signal communications for each intersection are listed below:

Addendum No. 2, September 21, 2016

Existing Signals to be Upgraded / Rebuilt (5)		
Signal Inventory Number	Intersection Description	Work Requirements
* 09-0641	NC 65 (Bethania-Rural Hall Road) at SR 1663 (Montroyal Road)	The Design-Build Team shall modify / upgrade these existing traffic signals to match all temporary construction phasing and the proposed final traffic pattern. This may require new signal supports, signal phasing changes, signal head changes, installation of an auxiliary file, system detectors, and system interconnection equipment.
* 09-0806	NC 65 / SR 4002 (Bethania-Rural Hall Road) at US 52 (Future I-74) SB Ramps / Loops	The Design-Build Team shall completely upgrade / rebuild these signals during the project using new equipment, including but not limited to a cabinet and controller, messenger cable, signal heads, signal cable, inductive loops, lead-in cable, junction boxes, and conduit. * The Design-Build Team shall use black powder coated metal poles with dual mast arms for the permanent signal support. ** The Design-Build Team shall use black powder coated metal poles for the permanent signal support. The aforementioned poles shall consist of dual mast arms in the southeast quadrant and a single mast arm in the northeast and northwest quadrants.
** 09-0997	NC 65 (Bethania-Rural Hall Road) at SR 3955 (Forum Parkway) and US 52 (Future I-74) NB Ramps / Loops	*** The Design-Build Team shall use galvanized metal strain poles for the permanent signal support. The Design-Build Team may use wood poles as the signal supports for the temporary construction phases.
*** 09-1043	SR 1891 (Peace Haven Road) at US 421 SB Ramps / Loops	The Design-Build Team shall install a new 2070E controller operating OASIS software, including base adapters / extenders, in a 170 cabinet. Except as allowed otherwise elsewhere in this RFP, the final signal design shall utilize inductive loop detection. Existing vehicle detection shall be maintained for the movements throughout construction.
*** 09-1046	SR 1891 (Peace Haven Road) at US 421 NB Ramps	The Design-Build Team shall provide pedestrian signal heads at each approach with existing or proposed sidewalk. Prior to final design and installation, the Design-Build Team shall coordinate all signal phasing recommendations for NCDOT signals with the Division Traffic Engineer, the Regional Traffic Engineer, the ITS & Signals Unit, and the City of Winston-Salem. Upon placing these signals in operation (includes temporary operation), the Design-Build Team shall install the required system communication equipment as described in Section III.

Page 10-23, Table 1005-1, AGGREGATE GRADATION-COARSE AGGREGATE, replace with the following:

TABLE 1005-1 AGGREGATE GRADATION - COARSE AGGREGATE													
Percentage of Total by Weight Passing													
Std. Size #	2"	1-1/2"	1"	3/4"	1/2"	3/8"	#4	#8	#10	#16	#40	#200	Remarks
4	100	90-100	20-55	0-15	-	0-5	-	-	-	-	-	A	Asphalt Plant Mix
467M	100	95-100	-	35-70	-	0-30	0-5	-	-	-	-	A	Asphalt Plant Mix
5	-	100	90-100	20-55	0-10	0-5	-	-	-	-	-	A	AST, Sediment Control Stone
57	-	100	95-100	-	25-60	-	0-10	0-5	-	-	-	A	AST, Structural Concrete, Shoulder Drain, Sediment Control Stone
57M	-	100	95-100	-	25-45	-	0-10	0-5	-	-	-	A	AST, Concrete Pavement
6M	-	-	100	90-100	20-55	0-20	0-8	-	-	-	-	A	AST
67	-	-	100	90-100	-	20-55	0-10	0-5	-	-	-	A	AST, Structural Concrete, Asphalt Plant Mix
78M	-	-	-	100	98-100	75-100	20-45	0-15	-	-	-	A	Asphalt Plant Mix, AST, Structural Concrete, Weep Hole Drains
14M	-	-	-	-	100	98-100	35-70	5-20	-	0-8	-	A	Asphalt Plant Mix, AST, Weep Hole Drains, Structural Concrete
9M	-	-	-	-	100	98-100	85-100	10-40	-	0-10	-	A	AST
ABC	-	100	75-97	-	55-80	-	35-55	-	25-45	-	14-30	4-12 ^B	Aggregate Base Course, Aggregate Stabilization
ABC (M)	-	100	75-100	-	45-79	-	20-40	-	0-25	-	-	0-12 ^B	Maintenance Stabilization
Light-weight ^C	-	-	-	-	100	80-100	5-40	0-20	-	0-10	-	0-2.5	AST

A. See Subarticle 1005-4(A).
 B. See Subarticle 1005-4(B).
 C. For Lightweight Aggregate used in Structural Concrete, see Subarticle 1014-2(E)(6).