



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

November 8, 2013

Addendum No. 2

Contract No.: C 203359
TIP No.: R-3601
Counties: Brunswick and New Hanover
Project Description: US 17 / US 74 / US 76 from NC 133 / SR 1472 Interchange to the US 421 / NC 133 Interchange

RE: Addendum No. 2 to Final RFP

December 17, 2013 Letting

To Whom It May Concern:

Reference is made to the Final Request for Proposals with Addendum No. 1 dated October 21, 2013 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:

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 Nos. 5, 16, 17, 21 and 41 of the *Project Special Provisions* have been revised. Please void Page Nos. 5, 16, 17, 21 and 41 in your proposal and staple the revised Page Nos. 5, 16, 17, 21 and 41 thereto.

Page Nos. 104, 108 and 110 of the *Roadway Scope of Work* have been revised. Please void Page Nos. 104, 108 and 110 in your proposal and staple the revised Page Nos. 104, 108 and 110 thereto.

Page No. 118 of the *Pavement Management Scope of Work* has been revised. Please void Page No. 118 in your proposal and staple the revised Page No. 118 thereto.

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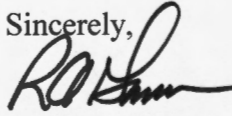
Page Nos. 159, 160, 162 and 167 of the *Geotechnical Engineering Scope of Work* have been revised. Please void Page Nos. 159, 160, 162 and 167 in your proposal and staple the revised Page Nos. 159, 160, 162 and 167 thereto.

Page Nos. 191 and 192 of the *Environmental Scope of Work* have been revised. Please void Page Nos. 191 and 192 in your proposal and staple the revised Page Nos. 191 and 192 thereto.

Page Nos. 264, 275 and 276 of the *Standard Special Provisions* have been revised. Please void Page Nos. 264, 275 and 276 in your proposal and staple the revised Page Nos. 264, 275, and 276 thereto.

Page Nos. 275A and 275B have been added to the *Standard Special Provisions*. Please staple Page Nos. 275A and 275B thereto.

Please do not hesitate to forward any questions associated with the revisions noted above and / or any outstanding unresolved questions to the Design-Build e-mail address (designbuild@ncdot.gov).

Sincerely,

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

RAG/kmm

Cc: Ms. Karen Fussell, PE
Mr. Victor Barbour, PE
Mr. Rodger Rochelle, PE
Ms. Teresa Bruton, PE
File

TABLE OF CONTENTS**COVER SHEET****PROPOSAL SHEETS****PROJECT SPECIAL PROVISIONS***PAGE NO.*

Contract Time and Liquidated Damages	1
Intermediate Contract Time Number 1 and Liquidated Damages	1
Intermediate Contract Time Number 2 and Liquidated Damages	1
Intermediate Contract Time Number 8 and Liquidated Damages	2
Other Liquidated Damages and Incentives	2
Alternate Bids	3
Payout Schedule	3
Mobilization	4
Submittal of Quantities, Fuel Base Index Price and Opt-Out Option	4
Individual Meetings with Proposer	5
Partnering	6
Execution of Signature Sheets and Debarment Certification	7
Submission of Design-Build Proposal	7
Alternative Technical Concepts and Confidential Questions	8
Value Analysis	13
Schedule of Estimated Completion Progress	13
Disadvantaged Business Enterprise	13
Certification for Federal-Aid Contracts	26
Contractor's License Requirements	27
U. S. Department of Transportation Hotline	27
Resource Conservation	27
Subsurface Information	28
Domestic Steel	28
** NOTE ** Deleted Cooperation between Contractors PSP	
Bid Documentation	28
Twelve Month Guarantee	32
Erosion & Sediment Control / Storm Water Certification	33
Procedure for Monitoring Borrow Pit Discharge	38
Clearing and Grubbing	40
Burning Restrictions	40
Pipe Installation	40
Drainage Pipe	40
Price Adjustments for Asphalt Binder	41
Price Adjustments - Asphalt Concrete Plant Mix	41
Foundations and Anchor Rod Assemblies for Metal Poles	42
Overhead Sign Supports	48
Overhead and Dynamic Message Sign Foundations	55
High Mount Foundations	57

Sonic Caliper Testing.....59
Static Axial Load Test60
Overlay Surface Preparation65
Concrete for Deck Repair71
Latex Modified Concrete72
Latex Modified Concrete – Very Early Strength.....75
Safety Fence79
Permanent Soil Reinforcement Mat81
Sanitary Sewer82

GENERAL83

SCOPES OF WORK

Design Build100
Roadway103
Structures111
Hydraulics115
Pavement Management.....117
Transportation Management121
Signing139
Pavement Markings145
ITS and Signals147
Utilities.....152
Geotechnical Engineering.....158
Erosion and Sedimentation Control.....169
Right of Way.....180
Lighting.....184
Environmental.....191
Public Information194

PERMITS196

STANDARD SPECIAL PROVISIONS

Plant and Pest Quarantines.....260
Gifts from Vendors and Contractors260
State Highway Administrator Title Change.....261
Bridge Approach Fills.....261
Preparation of Subgrade and Base263
Asphalt Pavements – Superpave.....263
Asphalt Binder Content of Asphalt Plant Mixes266
Asphalt Plant Mixtures266
Final Surface Testing – Asphalt Pavements266
Subsurface Drainage268
Guardrail Anchor Units, Type M-350268

Guardrail Anchor Units, Type 350	269
Preformed Scour Hole with Level Spreader Apron	270
Street Signs and Markers and Route Markers.....	271
Materials	272
Select Material, Class III, Type 3	277
Shoulder and Slope Borrow	278
Temporary Shoring	278
Truck Mounted Changeable Message Signs.....	289
Coordination of Lighting Work	290
On-the-Job Training.....	290
Availability of Funds – Termination of Contracts	294
NCDOT General Seed Specifications for Seed Quality	295
Errata.....	298
Award of Contract.....	300
Minority and Female Employment Requirements	301
Required Contract Provisions Federal-Aid Construction Contracts	304
Minimum Wages General Decision NC130095 01/04/2013 NC95	313
Division One	317

PROPOSAL FORMS - ITEMIZED SHEET, ETC.

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

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 \$ 3.0850 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

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.

The Department will afford each proposer one additional meeting with the Department to discuss project specifics and address the proposers' concerns and questions. The meeting may occur at

- (B) *If the DBE goal is zero*, the Design-Build Team shall make an effort to recruit and use DBEs during the performance of the contract. Any DBE participation obtained shall be reported to the Department.

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, or other preconstruction services, are not included in this goal.

Directory of Transportation Firms (Directory)

Real-time information is available about firms doing business with the Department and firms that are certified through NCUCP in the Directory of Transportation Firms. Only firms identified in the Directory as DBE certified shall be used to meet the DBE goal. The Directory can be found at the following link. <https://partner.ncdot.gov/VendorDirectory/default.html>

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

Listing of DBE Subcontractors

At the time of bid, Proposers shall submit all DBE participation that they anticipate to use during the life of the contract. Only those identified to meet the DBE goal will be considered committed, even though the listing shall include both committed DBE subcontractors and additional DBE subcontractors. Additional DBE subcontractor participation submitted at the time of bid will be used toward the Department's overall race-neutral goal. Only those firms with current DBE certification at the time of Price Proposal opening will be acceptable for listing in the Proposer's submittal of DBE participation. The Design-Build Team shall indicate the following required information:

**** NOTE ** Relocated bullet on blank forms**

- (1) *If the DBE goal is more than zero*,
- (a) Proposers, at the time the Price Proposal is submitted, shall submit a listing of DBE participation, including the names and addresses on *Listing of DBE Subcontractors* contained elsewhere in the contract documents in order for the Price Proposal to be considered responsive. Proposers shall indicate the total dollar value of the DBE participation for the contract.
 - (b) If Proposers have no DBE participation, they shall indicate this on the *Listing of DBE Subcontractors* by entering the word "None" or the number "0." 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 the Price Proposals. The Department will not consider these Price Proposals for award and the proposal will be rejected.
 - (c) The Proposer shall be responsible for ensuring that the DBE is certified at the time of bid by checking the Directory of Transportation Firms. If the firm is not

certified at the time of the opening of the Price Proposals, that DBE's participation will not count towards achieving the DBE goal.

- (2) *If the DBE goal is zero, entries on the Listing of DBE Subcontractors are not required for the zero goal, however any DBE participation that is achieved during the project shall be reported in accordance with requirements contained elsewhere in this RFP.*

DBE Prime Contractor

When a certified DBE firm proposes on a contract that contains a DBE goal, the DBE firm is responsible for meeting the goal or making good faith efforts to meet the goal, just like any other proposer. In most cases, a DBE proposer on a contract will meet the DBE goal by virtue of the work it performs on the contract with its own forces. However, all the work that is performed by the DBE proposer and any other DBE subcontractors will count toward the DBE goal. The DBE proposer shall list itself along with any DBE subcontractors, if any, in order to receive credit toward the DBE goal.

For example, if the DBE goal is 45% and the DBE proposer will only perform 40% of the contract work, the prime will list itself at 40%, and the additional 5% shall be obtained through additional DBE participation with DBE subcontractors or documented through a good faith effort.

DBE prime contractors shall also follow Sections A and B listed under *Listing of DBE Subcontractor* just as a non-DBE proposer would.

Written Documentation – Letter of Intent

The Proposer shall submit written documentation for each DBE that will be used to meet the DBE goal of the contract, indicating the Proposer's commitment to use the DBE in the contract. This documentation shall be submitted on the Department's form titled *Letter of Intent*.

The documentation shall be received in the office of the State Contractor Utilization Engineer or at DBE@ncdot.gov no later than 12:00 noon of the sixth calendar day following opening of Price Proposals, unless the sixth day falls on an official state holiday. In that situation, it is due in the office of the State Contractor Utilization Engineer no later than 12:00 noon on the next official state business day.

If the Proposer fails to submit the Letter of Intent from each committed DBE to be used toward the DBE goal, or if the form is incomplete (i.e. both signatures are not present), the DBE participation will not count toward meeting the DBE goal. If the lack of this participation drops the commitment below the DBE goal, the Design-Build Team shall submit evidence of good faith efforts, completed in its entirety, to the State Contractor Utilization Engineer or DBE@ncdot.gov no later than 12:00 noon on the eighth calendar day following opening of the Price Proposals, unless the eighth day falls on an official state holiday. In that situation, it is due in the office of the State Contractor Utilization Engineer no later than 12:00 noon on the next official state business day.

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) Joint Checks

Prior notification of joint check use shall be required when counting DBE participation for services or purchases that involves the use of a joint check. Notification shall be through submission of Form JC-1 (*Joint Check Notification Form*) and the use of joint checks shall be in accordance with the Department's Joint Check Procedures.

(C) Subcontracts (Non-Trucking)

A DBE may enter into subcontracts. Work that a DBE subcontracts to another DBE firm may be counted toward the contract goal requirement. Work that a DBE subcontracts to a non-DBE firm does not count toward the contract goal 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, it shall be presumed that the DBE is not performing a commercially useful function. The DBE may present evidence to rebut this presumption to the Department. 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.

(D) Joint Venture

When a DBE performs as a participant in a joint venture, the Design-Build Team may count toward its contract goal requirement 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.

(E) Suppliers

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 a DBE regular dealer and 100 percent of such expenditures from a DBE manufacturer.

(F) Manufacturers and Regular Dealers

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.

All pipe types are subject to the maximum and minimum fill height requirements as found on Roadway Standard Drawing 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 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, 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 Corrugated Aluminum Alloy 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 **\$ 569.38** per ton.

This base price index represents an average of F.O.B. selling prices of asphalt binder at supplier's terminals on **November 1, 2013**.

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 per theoretical ton. This price shall apply for all mix types.

- Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall design and construct lane widths for all spurs (right and left turn movements from / to the mainline) that accommodate a WB-67; however, the minimum spur lane width shall be 15 feet. All approach / departure ramp lanes to / from the spurs shall be tapered to the spur lane width prior to entering / after exiting the spur. Regardless of the spur lane width, all spur alignments shall be located 15 feet from the edge of travel lane.
- The four ramp channelization islands shall be raised grass islands bordered with 2'-6" curb and gutter.
- Excluding the median section between the DDI crossovers, the Design-Build Team shall design and construct five-foot sidewalk on both sides of the -Y- Line. Between the DDI crossovers, the Design-Build Team shall provide a minimum ten-foot wide pedestrian accommodation within the -Y- Line median. Along both sides of the aforementioned ten-foot pedestrian accommodation, the Design-Build Team shall provide barrier (2'-6" concrete dual flat-faced barrier with metal handrail and no glare screen) that extends a minimum of 42" above the walking surface. The barrier shall meet AASHTO TL-2 crash test requirements and terminate with a ten-foot taper that reduces the barrier height to 2'-3". Excluding within the aforementioned ten-foot taper, the handrail shall be installed in accordance with the 10-30-2013 Proposed Pedestrian Safety Rail Detail provided by the Department.
- The curves approaching / departing the crossovers shall slope from the median to the outside at a 0.025 cross slope.
- The Design-Build Team shall design and construct one-lane ramps that provide a minimum 16-foot lane width unless otherwise noted in this document. 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, four-foot of which shall be full depth paved shoulders and 12-foot inside shoulders, four-foot of which shall be full depth paved shoulders.
- 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 Congestion Management Recommendations. All turn lane lengths shall meet the NCDOT standards where vehicle storage does not govern or the lengths required by the aforementioned Congestion Management Recommendations, whichever is greater. This determination shall be made by calculating the recommended treatment for turn lanes, incorporating the minimum deceleration lengths, as defined in the NCDOT Roadway Design Manual (Reference Section 9-1, Figure F-4A) and comparing the calculated values with the NCDOT minimum turn lane lengths. At all intersections impacted by the Design-Build Team's design and / or construction, excluding resurfacing, the Design-Build Team shall accommodate the right turn maneuver in accordance with the NCDOT Roadway Design manual (Reference Section 9-1, Figure F-4C).
- For all intersection / interchange design modifications, the Design-Build Team shall provide a traffic analysis that adheres to the January 1, 2012 Congestion Management Capacity Analysis Guidelines for the Department's review and acceptance.

- Outside the project limits, the Design-Build Team will not be allowed to use the NCDOT right of way and / or property for borrow or waste sites. Within the project limits, the Design-Build Team shall adhere to the following:
 - Only clean waste material may be wasted within the NCDOT right of way or property
 - Debris shall not be buried within the NCDOT right of way or property
 - Normal grading operations shall occur, including but not limited to, removal of the existing embankments supporting all removed roadway sections
- 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. The Design-Build Team will not be required to widen existing bridges solely to provide the aforementioned minimum bridge rail offsets.
- Within the project paving limits, the Design-Build Team shall remove, dispose of and replace all existing guardrail along the mainline, all -Y- Lines and all ramps. Unless noted otherwise elsewhere in this RFP, all guardrail placement shall be in accordance with the January 2012 NCDOT *Roadway Standard Drawings* and / or approved details in lieu of standards. The Design-Build Team will not be required to widen existing outside shoulders solely to increase the horizontal offset for guardrail that can be located a minimum of twelve feet from the proposed edge of the travel lane. 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 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.
- Along all -Y- Line and driveway intersection radii, the proposed sidewalk shall parallel the curb and gutter, terminating at the radius point.
- Functional classifications that have a defined usable shoulder width shall have the appropriately wider overall shoulder width.
- 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.
- The Design-Build Team shall submit Design Criteria, and Structure Recommendations if necessary, for NCDOT and FHWA review and acceptance prior to submittal of the Preliminary Plans. If necessary, 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.

- walls, concrete barrier designs, etc.) and shall provide special design drawings. The Contract Standards and Development Unit may have special details available that can be provided to the Design-Build Team upon request.
- As identified in the October 30, 2013 Right of Way Recommendations, the Department has investigated six properties for hazardous and contaminated materials. The Department will clear the project limits of hazardous or contaminated materials within 30 days of the Department's approval of the Design-Build Team's Hydraulic Plans. In the unlikely event that additional hazardous and / or contaminated materials are encountered, these materials will be handled in accordance with Subarticle 104-8(A) of the 2012 *Standard Specifications for Roads and Structures*, and the Department will obtain the appropriate identification numbers and sign the shipping manifests as the generator.

NCDOT Information Supplied

- The NCDOT will provide copies of the Categorical Exclusion (CE) and Categorical Exclusion Addendum (CE Addendum) 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. 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. The Design-Build Team shall modify / incorporate boundary information used for the determination and valuation of property solely under the direct supervision of a Professional Land Surveyor registered in North Carolina. 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 Subsurface Utility Engineering (SUE) work shall be the responsibility of the Design-Build Team.
- The NCDOT will provide the R-3601 Right of Way Plans developed by the Department. The Design-Build Team is cautioned that the preliminary designs shown on these plans 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-3601. The Design-Build Team shall be responsible for all temporary pavement designs. (Reference the Pavement Management Scope of Work found elsewhere in this RFP)
- The NCDOT will provide Geotechnical Subsurface Investigation and Bridge Foundation recommendations for R-3601. The Design-Build Team shall be responsible for any additional geotechnical information, geotechnical recommendations, as well as supplemental structural and roadway investigations. (Reference the Geotechnical Engineering Scope of Work found elsewhere in this RFP)

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, including but not limited to pavement for temporary breakdown areas, 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 NCDOT *Pavement Design Procedure*. Temporary pavement designs and associated calculations shall be submitted for review and comments using the contract submittal process prior to incorporation. The expected duration for traffic on temporary pavement must be included as part of the submittal.

On all ramps, the adjacent through lane pavement structure design shall extend to the back of the gore (12-foot width).

Longitudinal joints of all surface course layers shall not be located in the final traffic pattern wheel path. The Design-Build Team shall indicate in the Technical Proposal where all underlying longitudinal joints will be located and demonstrated how the underlying joint location will minimize reflective cracking.

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% 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 reinforces with woven wire mesh.

The rate of application and the maximum and minimum thickness per application and layer shall be in accordance with NCDOT Roadway Design Manual.

Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall pave from the edge of all paved shoulders to the face of all retaining walls located on the outside shoulder in fill sections, to the face of all guardrail and the area denoted as "Special Layer of Pavement" on Roadway Standard Drawing No. 862.01 with 6" of ABC (or 4" B25.0B), prime coat, at the normal application rate, and at least one lift of surface course. If the ABC pavement design is not used, the asphalt base course pavement design shall require a split seal. 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 guardrail, the Design-Build Team may use the adjacent travel lane pavement design. The Design-Build Team will not be required to pave to the face of guardrail for existing and proposed signs located outside the project's paving limits.

- All driven piles shall be located within 75 feet of an SPT / rock core boring.
- All drilled piers and other types of bridge foundations shall be located within 25 feet of an SPT / rock core boring.
- Borings shall extend to a depth below the foundation element that is, at a minimum, three times the diameter of the foundation element to show a complete subsurface profile.

The maximum spacing between borings for retaining 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.

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

Unless otherwise noted herein, the Design-Build Team shall design foundations, embankments, slopes, and retaining walls 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 Structures Management Unit 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:

<https://connect.ncdot.gov/resources/Geological/Pages/default.aspx>

For *Geotechnical Guidelines for Design-Build Projects*, the Design-Build Team shall adhere to the guidelines located at the following website:

<https://connect.ncdot.gov/letting/Pages/Design-Build-Resources.aspx>

A. Structure Foundations

The Design-Build Team may choose one of the following two options for the design of each of the bridges' foundations:

Option 1:

Use the foundation design included in the sealed structure plans that were prepared and furnished by the Department.

If the Design-Build Team chooses Option 1 for the replacement bridge over Brunswick River, the Design-Build Team shall perform a static axial load test on a non-production drilled pier. The static axial load test shall be performed with NCDOT oversight and in accordance with the *Static Axial Load Test Project Special Provision* found elsewhere in this RFP and the *Static Axial Load Test for Replacement of BR*

103 and 105 over Brunswick River plan sheet signed and sealed on October 10, 2013. A minimum of one month prior to performing the static axial load test, the Design-Build Team shall provide an SPT boring that extends to elevation 170.0 feet at the static axial load test pier location.

After completion of the static axial load test, the Design-Build Team shall remove the test pier down to the ground surface. The Design-Build Team shall remove all ancillary items installed as part of the load test.

The Department may elect to issue revised sealed structure plans for the replacement bridge over Brunswick River with increased or decreased drilled pier lengths based on the static load test results and / or as may be necessary to accommodate field conditions. The Department will provide the aforementioned revised sealed structure plans within ten working days of approving the final static axial load test report. The Department will review the static axial load test report in accordance with the Design-Build Submittal Guidelines for geotechnical submittals.

As may be necessary to accommodate field conditions, the Department may elect to issue revised sealed structure plans for the bridges over Alligator Creek with increased or decreased drilled pier lengths. The Department will not honor requests for compensation for drilled piers that are lengthened by five feet or less. However, any additional drilled pier length greater than five feet will be paid for as extra work in accordance with Subarticle 104-8(A) of the 2012 *Standard Specifications for Roads and Structures*.

No extension of contract time will be granted for changes in drilled pier tip elevations.

Option 2:

The Design-Build Team may elect to prepare and submit their own foundation design for any bridge on the project. If the Design-Build Team chooses this option, the foundation design shall be done in accordance with the procedures described in the latest version of AASHTO LRFD Bridge Design Specifications.

Do not use driven piles for interior bent foundations for any bridge on the project.

In accordance with ASTM D-1143 or the *Static Axial Load Test* Project Special Provision found elsewhere in this RFP, the Design-Build Team may conduct a static axial load test on a non-production drilled pier for use in drilled pier foundation design. The minimum test pier diameter shall be 50% of the production drilled pier diameter or four feet, whichever is greater. At the test pier location, the Design-Build Team shall provide an SPT boring that extends below the bottom of the test pier a minimum distance of 15 feet or a distance equal to three test pier diameters, whichever is greater. Incorporate

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. Design all end bent fill slopes to have a minimum factor of safety of 1.3 for global stability. Design all end bent cut slopes to have a minimum factor of safety of 1.5 for global stability. For all end bent slopes, extend end bent slope protection from the toe of slope to berm and to 2.75:1 (H:V) slope.

In accordance with the NCDOT Roadway Standard Drawings, the Design-Build Team shall install reinforced bridge approach fills for all bridge end bents. For Bridge No. 108, the Design-Build Team shall grade the reinforced bridge approach fill to drain away from the existing bridge approach fill and shall provide details that illustrate how the reinforced bridge approach fill will tie to the existing bridge approach fill and how drainage will be accommodated.

B. Roadway Foundations

For roadway sections that are widened, if groundwater is encountered within four feet of the proposed subgrade elevation, one, or a combination of the following shall be required on the side(s) that is widened:

- A lateral ditch, with a grade and outfall that prevents ponding, cut on the low side(s) of the road to a depth of at least five feet below the subgrade.
- Subsurface Drain in accordance with NCDOT Standard Drawing 815.02 and Section 815 of the NCDOT 2012 *Standard Specifications for Roads and Structures* with grades and outfalls that prevent ponding or to deepest available outfall.
- A roadway grade that provides a minimum of four feet between the subgrade elevation and the groundwater elevation.

Unless otherwise noted herein, all unreinforced proposed fill slopes shall be 3:1 (H:V) or flatter except bridge end bent slopes (see Section A – Structure Foundations). All proposed soil cut slopes shall be 3:1 (H:V) or flatter, unless the slopes are designed with adequate reinforcement to provide the required stability. If steeper than 3:1 (H:V), all reinforced cut slopes 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 all roadway fill slopes to have a minimum factor of safety of 1.3 for global stability. Design all roadway cut slopes to have a minimum factor of safety of 1.5 for global stability. Use limiting equilibrium methods, such as Modified Bishop, Simplified Janbu, Spencer, or any other generally accepted method for slope stability analysis. Submit detailed design calculations and slope stability analysis for all reinforced slopes and any non-reinforced slopes higher than ten feet for review and acceptance by the Geotechnical Engineering Unit prior to construction.

Bridge approach embankments are defined as embankments within 250 feet of end bents. Design and construct bridge approach embankments such that no more

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 piles, 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 LFRD 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 restrrike and redrive. 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 919-707-6850. 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. If the Design-Build Team modifies the signed and sealed structural plans provided by the Department, the foundation design firm shall develop pile driving inspection charts or tables for acceptance by the NCDOT prior to pile installation. If the Design-Build Team does not modify the signed and sealed structural plans provided by the Department, the Design Build Team has the option of asking the Department to develop pile driving inspection charts or tables or may choose to develop pile driving inspection charts or tables for acceptance by the NCDOT prior to pile installation.

If the Design-Build Team elects not to use the sealed structure plans, use bentonite or polymer slurry construction for all drilled piers in accordance with Section 411 of the NCDOT 2012 *Standard Specifications for Roads and Structures*. If the Design-Build Team elects to use the sealed structure plans, use polymer slurry for all drilled piers in accordance with Section 411 of the NCDOT 2012 *Standard Specifications for Roads and Structures*.

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 Section 411 of the 2012 *Standard Specifications for Roads and Structures*. If the Design-Build Team elects to use the sealed structure plans, the Department will approve the drilled pier construction sequence prior to installation. The Department will inspect 25% of drilled piers at each bridge, but not less than two per cent, using the Shaft Inspection Device (SID). The Design-Build Team shall notify Hesham El-Boulaki by e-mail (hel-boulaki@ncdot.gov) a minimum of five days prior to the required SID testing, followed by a confirmation two

ENVIRONMENTAL SCOPE OF WORK (11-7-13)**Regulatory Permitting**

NCDOT has been issued the USACE 404 Permits, the NCDWQ Section 401 Certifications and the Coastal Area Management Act (CAMA) Major Development Permits for this project.

Unless noted otherwise in this RFP, all work by the Design-Build Team shall be accomplished in compliance with the permits and certifications issued by the agencies and as may be amended under permit modification(s). 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. Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall also adhere to the commitments made as part of the Categorical Exclusion, Categorical Exclusion Addendum and all consultations. The Design-Build Team's attention is directed to the moratorium that applies to certain work on this project.

The Design-Build Team shall identify in the Technical Proposal any changes to the design and / or construction methods that may require permit modifications. The Department will not allow direct contact between the Design-Build Team and representatives of the environmental agencies. No direct 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 Natural Environment Section (NES) – Project Management Group or the Division's Environmental Officer present. A representative from the Transportation Program Management shall be included on all correspondence. All required coordination with the environmental agencies, approvals from the environmental agencies, public involvement, utility relocation / coordination, and / or permit modifications / applications resulting from a variation in the Department's proposed design and / or construction methods shall be discussed with the Department. The Design-Build Team shall be responsible for preparing the necessary permit material for the Department to review and forward to the environmental agencies for approval.

For investigative borings within jurisdictional resources, the Design-Build Team shall submit all necessary Preconstruction Notification documents and forms to the Transportation Program Management Director for submittal to the appropriate agencies. The Design-Build Team shall not proceed with geotechnical investigations within jurisdictional resources until written approval is obtained from the appropriate agencies.

The Department will not honor any requests for additional contract time or compensation for any efforts required in order to obtain any permit modification(s), if necessary, including but not limited to public involvement, additional design effort, additional construction effort and / or additional environmental agency coordination and approvals.

In-water Work Moratorium

“In-water work” shall be defined as any activity that occurs in the Brunswick River, Alligator Creek or inundated wetland during an active (surface water) connection to the aforementioned water sources.

The National Marine Fisheries Service (NMFS) is requiring a January 1 - May 31 in-water work moratorium for shortnose and Atlantic sturgeon in the Brunswick River and Alligator Creek. The

NC Wildlife Resources Commission (NCWRC) and the NC Division of Marine Fisheries (NCDMF) have imposed a Primary Nursery Area moratorium for the Brunswick River from February 15 - September 30 and for Alligator Creek from February 15 - June 30. Since submittal of the permit application, the Department has obtained approval from the resource agencies for the moratoria dates noted above and will obtain any necessary permit modifications required solely due to these revised dates and / or allowing the activities noted below. The Design-Build Team shall assume that the ONLY in-water work that will be allowed during the above mentioned periods are those noted below:

- Work within casings may occur year round (all casings shall be installed outside of all moratoria)
- Static pile extraction
- Spudding associated with barges
- Geotechnical borings (Upon obtaining approval in accordance with the requirements noted above.)

On October 14, 2013, the Department afforded each short-listed Design-Build Team an individual meeting with the resource agencies. Technical and / or Price Proposals that rely upon assumptions that are inconsistent with the moratoria details / activities expressly outlined above, which may be based on discussions held during the aforementioned meetings, shall be solely at the Design-Build Team's risk. The Department will not honor any requests for a contract time extension or additional compensation if the Design-Build Team elects to assume in their Technical and / or Price Proposal that 1) additional in-water activities will be allowed during the moratoria and / or 2) the moratoria dates will be relaxed; and such assumptions are not ultimately approved by the resource agencies.

Mitigation Responsibilities

The Department has acquired the compensatory mitigation for unavoidable impacts to wetlands and surface waters due to the project construction from the Ecosystem Enhancement Program (EEP). This mitigation was based on impacts as identified in the planning stage.

Any changes proposed by the Design-Build Team to any design or construction details provided by the Department and / or inconsistent with the approved permits 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 and / or construction methods, 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 environmental agencies and such approval shall 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 mitigation. Construction of any 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 Ecosystem Enhancement Program or an approved compensatory mitigation banking resource.

The Design-Build Team shall analyze all new areas to be impacted that were not analyzed during the NEPA Process and any staging areas that are located outside the project right of way. This analysis shall include performing all environmental assessments. These assessments shall 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-NES and from the United

TABLE 605-1	
APPLICATION RATES FOR TACK COAT	
Existing Surface	Target Rate (gal/sy)
	Emulsified Asphalt
New Asphalt	0.04 ± 0.01
Oxidized or Milled Asphalt	0.06 ± 0.01
Concrete	0.08 ± 0.01

Apply tack coat at a temperature within the ranges shown in Table 605-2. Tack coat shall not be overheated during storage, transport or at application.

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

Page 6-7, Article 609-3 FIELD VERIFICATION OF MIXTURE AND JOB MIX FORMULA ADJUSTMENTS, lines 35-37, delete the second sentence of the second paragraph.

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

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

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

<https://connect.ncdot.gov/resources/Materials/MaterialsResources/Warm%20Mix%20Asphalt%20Approved%20List.pdf>

conformance to M306 loading (40,000 lbs.) will be required only when noted on the design documents

Page 10-126, Table 1078-1, REQUIREMENTS FOR CONCRETE, replace with the following:

TABLE 1078-1 REQUIREMENTS FOR CONCRETE		
Property	28 Day Design Compressive Strength 6,000 psi or less	28 Day Design Compressive Strength greater than 6,000 psi
Maximum Water/Cementitious Material Ratio	0.45	0.40
Maximum Slump without HRWR	3.5"	3.5"
Maximum Slump with HRWR	8"	8"
Air Content (upon discharge into forms)	5 + 2%	5 + 2%

Page 10-151, Article 1080-4 Inspection and Sampling, lines 18-22, replace (B), (C) and (D) with the following:

- (B) At least 3 panels prepared as specified in 5.5.10 of AASHTO M 300, Bullet Hole Immersion Test.
- (C) At least 3 panels of 4"x6"x1/4" for the Elcometer Adhesion Pull Off Test, ASTM D4541.
- (D) A certified test report from an approved independent testing laboratory for the Salt Fog Resistance Test, Cyclic Weathering Resistance Test, and Bullet Hole Immersion Test as specified in AASHTO M 300.
- (E) A certified test report from an approved independent testing laboratory that the product has been tested for slip coefficient and meets AASHTO M253, Class B.

Page 10-161, Subarticle 1081-1(A) Classifications, lines 29-33, delete first 3 sentences of the description for Type 2 and replace with the following:

Type 2 - A low-modulus, general-purpose adhesive used in epoxy mortar repairs. It may be used to patch spalled, cracked or broken concrete where vibration, shock or expansion and contraction are expected.

Page 10-162, Subarticle 1081-1(A) Classifications, lines 4-7, delete the second and third sentences of the description for Type 3A. **Lines 16-22**, delete Types 6A, 6B and 6C.

Page 10-162, Subarticle 1081-1(B) Requirements, lines 26-30, replace the second paragraph with the following:

For epoxy resin systems used for embedding dowel bars, threaded rods, rebar, anchor bolts and other fixtures in hardened concrete, the manufacturer shall submit test results showing that the bonding system will obtain 125% of the specified required yield strength of the fixture. Furnish certification that, for the particular bolt grade, diameter and embedment depth required, the anchor system will not fail by adhesive failure and that there is no movement of the anchor bolt. For certification and anchorage, use 3,000 psi as the minimum Portland cement concrete compressive strength used in this test. Use adhesives that meet Section 1081.

List the properties of the adhesive on the container and include density, minimum and maximum temperature application, setting time, shelf life, pot life, shear strength and compressive strength.

Page 10-163, Table 1081-1 Properties of Mixed Epoxy Resin Systems, replace table with the following:

		Table 1081-1					
		Properties of Mixed Epoxy Resin Systems					
Property	Type 1	Type 2	Type 3	Type 3A	Type 4A	Type 4B	Type 5
Viscosity-Poises at 77°F ± 2°F	Gel	10-30	25-75	Gel	40-150	40-150	1-6
Spindle No.	1	3	4	--	4	4	2
Speed (RPM)	1	20	20	--	10	10	50
Pot Life (Minutes)	20-50	30-60	20-50	5-50	40-80	40-80	20-60
Minimum Tensile Strength at 7 days (psi)	1,500	2,000	4,000	4,000	1,500	1,500	4,000
Tensile Elongation at 7 days (%)	30 min.	30 min.	2-5	2-5	5-15	5-15	2-5
Min. Compressive Strength of 2" mortar cubes at 24 hours	3,000 (Neat)	4,000-	6,000-	6,000 (Neat)	3,000	3,000	6,000
Min. Compressive Strength of 2" mortar cubes at 7 days	5,000 (Neat)	1	1	1	1	5,000	1
Maximum Water Absorption (%)	1.5	1.0	1.0	1.5	1.0	1.0	1.0
Min. Bond Strength Slant Shear Test at 14 days (psi)	1,500	1,500	2,000	2,000	1,500	1,500	1,500

Page 10-164, Subarticle 1081-1(E) Prequalification, lines 31-33, replace the second sentence of the first paragraph with the following:

Manufacturers choosing to supply material for Department jobs must submit an application through the Value Management Unit with the following information for each type and brand name:

Page 10-164, Subarticle 1081-1(E)(3), line 37, replace this subarticle with the following:

(3) Type of the material in accordance with Articles 1081-1 and 1081-4.

Page 10-165, Subarticle 1081-1(E)(6), line 1, in the first sentence of the first paragraph replace “AASHTO M 237” with “the specifications”.

Page 10-165, Subarticle 1081-1(E) Prequalification, line 9-10, delete the second sentence of the last paragraph.

Page 10-165, Subarticle 1081-1(F) Acceptance, line 14, in the first sentence of the first paragraph replace “Type 1” with “Type 3”.

Page 10-169, Subarticle 1081-3(G) Anchor Bolt Adhesives, delete this subarticle.

Page 10-170, Article 1081-3 Hot Bitumen, line 9, add the following at the end of Section 1081:

1081-4 EPOXY RESIN ADHESIVE FOR BONDING TRAFFIC MARKINGS

(A) General

This section covers epoxy resin adhesive for bonding traffic markers to pavement surfaces.

(B) Classification

The types of epoxies and their uses are as shown below:

Type I – Rapid Setting, High Viscosity, Epoxy Adhesive. This type of adhesive provides rapid adherence to traffic markers to the surface of pavement.

Type II – Standard Setting, High Viscosity, Epoxy Adhesive. This type of adhesive is recommended for adherence of traffic markers to pavement surfaces when rapid set is not required.

Type III – Rapid Setting, Low Viscosity, Water Resistant, Epoxy Adhesive. This type of rapid setting adhesive, due to its low viscosity, is appropriate only for use with embedded traffic markers.

Type IV – Standard Set Epoxy for Blade Deflecting-Type Plowable Markers.

(C) Requirements

Epoxies shall conform to the requirements set forth in AASHTO M 237.

(D) Prequalification

Refer to Subarticle 1081-1(E).

(E) Acceptance

Refer to Subarticle 1081-1(F).

Page 10-173, Article 1084-2 STEEL SHEET PILES, lines 37-38, replace first paragraph with the following:

Steel sheet piles detailed for permanent applications shall be hot rolled and meet ASTM A572 or ASTM A690 unless otherwise required by the plans developed by the Design-Build Team. Steel sheet piles shall be coated as required by the plans developed by the Design-Build Team. Galvanized sheet piles shall be coated in accordance with Section 1076. Metallized sheet piles shall be metallized in accordance to the Project Special Provision “Thermal Sprayed Coatings (Metallization)” with an 8 mil, 99.9% aluminum alloy coating and a 0.5 mil seal coating. Any portion of the metallized sheet piling encased in concrete shall receive a barrier coat. The barrier coat shall be an approved waterborne coating with a low-viscosity which readily absorbs into the pores of the aluminum thermal sprayed coating. The waterborne coating shall be applied at a spreading rate that results in a theoretical 1.5 mil dry film thickness. The manufacturer shall issue a letter of certification that the resin chemistry of the waterborne coating is compatible with the 99.9% aluminum thermal sprayed alloy and suitable for tidal water applications.

Page 10-174, Subarticle 1086-1(B)(1) Epoxy, lines 18-24, replace this subarticle with the following:

The epoxy shall meet Article 1081-4.

The 2 types of epoxy adhesive which may be used are Type I, Rapid Setting, and Type II, Standard Setting. Use Type II when the pavement temperature is above 60°F or per the manufacturer’s recommendations whichever is more stringent. Use Type I when the pavement temperature is between 50°F and 60°F or per the manufacturer’s recommendations whichever is more stringent. Epoxy adhesive Type I, Cold Set, may be used to attach temporary pavement markers to the pavement surface when the pavement temperature is between 32°F and 50°F or per the manufacturer’s recommendations whichever is more stringent.

Page 10-175, Subarticle 1086-2(E) Epoxy Adhesives, line 27, replace “Section 1081” with “Article 1081-4”.

Page 10-177, Subarticle 1086-3(E) Epoxy Adhesives, line 22, replace “Section 1081” with “Article 1081-4”.

Page 10-179, Subarticle 1087-4(A) Composition, lines 39-41, replace the third paragraph with the following:

All intermixed and drop-on glass beads shall not contain more than 75 ppm arsenic or 200 ppm lead.

Page 10-180, Subarticle 1087-4(B) Physical Characteristics, line 8, replace the second paragraph with the following:

All intermixed and drop-on glass beads shall comply with NCGS § 136-30.2 and 23 USC § 109(r).