ROADWAY SCOPE OF WORK (1-3-2018)

1. General

1.1 Unless allowed otherwise in this RFP, roadway designs shall be in accordance with the following documents in order of precedence:

(a) The requirements of this RFP;

(b) 2011 AASHTO A Policy on Geometric Design of Highways and Streets, 2013 Errata.

(c) NCDOT Roadway Design Manual, including all revisions effective on the Technical Proposal submittal date;

(d) 2018 NCDOT Standard Drawings, or as superseded by the detail sheets found at:

https://connect.ncdot.gov/resources/Specifications/Pages/2018-Roadway-Standard-Drawings.aspx

1.2 All pavement designs shall be in accordance with the Pavement Management Scope of Work found elsewhere in this RFP.

1.3 All limits of construction along the Mainline, Cross Streets, Service Roads and Ramps shall be of sufficient length to tie into existing conditions based upon the documents set forth in Section 1.1 of this Roadway Scope of Work.

1.4 Crown points and cross slopes along the Mainline, Cross Streets, Service Roads and Ramps shall be in accordance with the Hydraulics Scope of Work, found elsewhere in this RFP and with the documents set forth in Section 1.1 of this Roadway Scope of Work. The Hydraulics Scope of Work shall take precedence over the documents set forth in Section 1.1.

1.5 Unless otherwise noted in this RFP, the Design-Build Team shall design and construct the Mainline, all Cross Streets, Ramps, and Service Roads 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.

1.6 Unless otherwise required in this RFP, all new curb and gutter along outside edge of pavement and within the Project limits shall be 2' – 6" curb and gutter in accordance with Standard #846.01 (*Roadway Standard Drawing for Concrete Curb, Gutter and Curb & Gutter*) of the 2018 *Roadway Standard Drawings*.

1.7 The Design-Build Team shall design and construct all medians within the Project limits as monolithic concrete islands in accordance with Standard #852.01

(*Roadway Standard Drawing for Concrete Islands*) and associated standard drawings of the 2018 *Roadway Standard Drawings*. Planted medians will not be permitted.

1.8 The Design-Build Team shall design and construct all Cross Streets and Service Roads such that the through movement is not required to change lanes throughout the Project limits except where tying into existing.

1.9 NSR / NCRR At-Grade Railroad Crossings with -Y- Lines:

(a) if any portion of the design and / or construction of the -Y- Lines comes within 10 feet of the centerline of the NSR / NCRR railroad tracks running parallel to the Mainline, the Design-Build Team shall upgrade the existing signals at such at-grade crossings.

1.10 A longitudinal zero percent grade along the roadway profile is acceptable under temporary conditions only. The final, permanent longitudinal grade shall be no less than 0.3%.

1.11 Throughout this Roadway Scope of Work, the following definitions shall apply:

(a) the term "**Mainline**" or "**-L- Line**" refers to US 70.

(b) the terms "**Cross Streets**" and **"-Y- Lines**" refers to the following streets:

Cross Streets (-Y- Lines) as shown on the Preliminary Roadway Plans	
R-5777A & B	**U-5713**
Day Star Lane (SRY21C2)	Garner Road (Y1)
Thurman Road (Y21)	Grantham Road (Y2)
Taberna Way (Y22)	Airport Road (Y3)
	Williams Road (Y4)
Note: The Design-Build Team is advised that the alignment names herein shown are for illustrative purposes only, not contractual and shown in accordance with the definition of Preliminary Roadway Plans. The Design-Build Team has the option to utilize the alignment names herein shown or use new alignment names that fit the need of its proposed designs.	

(c) the term "**Service Roads**" refers to the following alignments shown in the Preliminary Roadway Plans:

Service Roads as shown on the Preliminary Roadway Plans	
R-5777A & B	**U-5713**
SRY21B	SR1
SRY21B2	SR2
SRY21AY22B	SR3_ALT
SRY22A	SR4
SRY21C	SR5

SRY21D	SR6
SRY22D	SR7
Note: The Design-Build Team is advised that the alignment names herein shown are for illustrative purposes only, not contractual and shown in accordance with the definition of Preliminary Roadway Plans. The Design-Build Team has the option to utilize the alignment names herein shown or use new alignment names that fit the need of its proposed designs.	

(d) the term "**Ramps**" refers to the following alignments shown in the Preliminary Roadway Plans:

Ramps as shown on the Preliminary Roadway Plans	
R-5777A & B	**U-5713**
Y21RPA	RPAY2
Y21RPB	RPBY2
Y21RPC	RPCY2
Y21RPD	RPDY2
Y22RPA	RPAY3
Y22RPB	RPBY3
Y22RPC	RPCY3
Y22RPD	RPDY3
	RPAY4
	RPBY4
	RPCY4
	RPDY4
	RPA55
	RPB55
Note: The Design-Build Team is advised that the alignment names herein shown are for illustrative purposes only, not contractual and shown in accordance with the definition of Preliminary Roadway Plans. The Design-Build Team has the option to utilize the alignment names herein shown or use new alignment names that fit the need of its proposed designs.	

2. Preliminary Roadway Plans provided by the Department

2.1 Throughout this Roadway Scope of Work, any references to the Preliminary Roadway Plans shall include the following, in order of precedence:

(a) the preliminary roadway plans with corresponding roadway profiles, roadway cross sections and typical cross sections for each alignment encompassing STIP Projects U-5713 and R-5777A & B provided by the Department; and

(b) the most recent public meeting maps provided by the Department.

2.2 Except were indicated in this Roadway Scope of Work, the Preliminary Roadway Plans are provided by the Department for reference only and shall not be a part of the Design-Build contract between the Design-Build Team and the Department. Any references to the Preliminary Roadway Plans throughout this Roadway Scope of Work are for illustrative purposes only and are not intended to be contractual.

The Department shall not be responsible for any omissions, errors, or any information shown or stated on the Preliminary Roadway Plans.

2.3 The Design-Build Team is allowed and encouraged to proposed modifications to the Preliminary Roadway Plans. Such proposed modifications by the Design-Build Team:

(a) shall not reduce the posted speed limit of the Mainline;

(b) shall fully comply with the Project commitments outlined in the Categorical Exclusion document for U-5713 / R-5777A & B provided by the Department;

(c) shall not place the Cross Streets alignments over the Mainline, under any circumstances. Alternative Technical Concepts proposing Cross Street alignments over the Mainline will be rejected; and

(d) shall comply with the interchange type set forth in Section 4.2 of this Roadway Scope of Work.

2.4 Modifications to the Roadway Preliminary Plans that are in compliance with items 2.3(a) through 2.3(d) shall not require the submittal of an Alternative Technical Concept, unless an Alternative Technical Concept is required due to deviations from the requirements included in other sections of this RFP.

2.5 Design Exceptions in the Preliminary Roadway Plans:

(a) The Department is aware of the following design exceptions:

R-5777A & B	
Service Road -SRY21AY22B-	PI Sta. 63+66.57 Design Speed = 25 mph
U-5713	
Service Road -SR4-	PI Sta. 25+68.10 Design Speed = 20 mph
Service Road -SR7-	PI Sta. 18+82.38 Design Speed = 20 mph
Service Road -Y3-	PI Sta. 27+30.29 Design Speed = 20 mph (stop condition)
Mainline -L- Northbound and Southbound	Distance between ramps in both directions, between Airport Road and Williams Road shall be no less than the distance shown in the Preliminary Roadway Plans.
Grantham Road -Y2-	Storage length for left turn movement into Service Road -SR1- shall be no less than 275 feet.

Ramp -RPAY4-	Minimum width of ramp inside shoulder shall be no less than 4 feet.
Ramp -RPBY4-	
Ramp -RPCY4-	

(b) All design exceptions, whether included in Section 2.5(a) of this Roadway Scope of Work, or as proposed by the Design-Build Team that are not included in the list provided under Section 2.5(a), shall undergo the design exceptions process established by the Department.

3. Mainline Specifications

3.1 Mainline Project Limits:

(a) The overall project limit on the south side of the Project is approximately one (1) mile east of Thurman Road, generally station 212+00 on the Preliminary Roadway Plans.

(b) At the south end of the Project, the Department notes the following:

1. The Mainline Project limit at the south end of the Project is Mainline station 245+00;

2. the limit for Service Road -SRY21C- goes east to approximately Mainline station 217+80.00, beyond the Mainline project limit. The intent is to provide a continuation to the existing service road from approximately -SRY21C- station 10+00.00 to -SRY21C- station 20+00.00;

3. the existing access apron between the existing service road and the Mainline, between Mainline stations 212+00 and 216+50, shall be removed; and

4. the Design-Build Team shall mark the Project limit at the south end of the Project as Mainline station 212+00.

(c) The overall project limit on the north side of the Project is approximately 0.7 mile north of Williams Road, generally station 155+00 on the Preliminary Roadway Plans.

(d) The limit of construction along the ramps on the northern terminus of the project are as follows: for ramp -RPB55-, the project limit shall be approximately -RPB55- station 22+58.81. For ramp -RPA55-, the project limit shall be approximately -RPA55- station 22+54.55.

3.2 The Mainline shall be designed and constructed to meet a 60-mph design speed for a level urban freeway (in an urban area with right of way constraints) designed to interstate standards, except where as specified in this RFP. A maximum grade of 4% along the Mainline is allowable.

3.3 The width of mainline travel lanes throughout the length of the Project shall be 12 feet.

3.4 Mainline superelevation shall be designed and constructed in accordance with AASHTO *A Policy on Geometric Design of Highways and Streets*, Table 3-10b (Minimum Radii for Design Superelevation Rates, Design Speeds, and e_{max}=8%). The Design-Build Team shall provide all other design criteria in the Technical Proposal.

3.5 For the transition between segments R-5777A & B and U-5713 (between the Taberna Way and the Grantham Road interchanges, and around Garner Road), the Design-Build Team shall design and construct all appropriate transitions and taper lengths in accordance with the documents set forth in Section 1.1 of this Roadway Scope of Work.

3.6 To the extent practicable, all lane drops and / or lane additions shall be on the outside of the Mainline.

3.7 Glare screens shall be installed as required by the NCDOT Design Manual. Methodology of installation shall be consistent with the design for the area (i.e. guardrail mounted versus barrier mounted).

3.8 R-5777A & B:

(a) From the south project limit to Garner Road (R-5777A & B), the typical cross section for the Mainline consists of a four-lane divided facility with a 46-foot median, which shall be cable guiderail divided.

(b) For the transition between the proposed condition and the existing condition at the southern project terminus (between Mainline station 245+00.00 and Thurman Road), the Design-Build Team shall design and construct all appropriate transitions and taper length in accordance with the documents set forth in Section 1.1 of this Roadway Scope of Work.

(c) The total width for outside Mainline shoulders along segment R-5777A & B shall be 12 feet of clear, usable width. The 12 feet shall be measured from edge of the travelled way to either face of barrier or shoulder breakpoint.

(d) The total width for inside Mainline shoulders (median side) along segment R-5777A & B shall be six (6) feet of which 4 feet shall be full depth paved shoulder.

(e) All median features designed and constructed by the Design-Build Team shall be in accordance with all documents set forth in Section 1.1 of this Roadway Scope of Work.

(f) The inside shoulder of the bridges carrying the Mainline over Thurman Road and Taberna Way shall be governed by the requirement set forth in Section 3.9(b) of this Roadway Scope of Work.

3.9 U-5713:

(a) From Garner Road to the north project limit (U-5713), the typical cross section for the Mainline consists of a six-lane divided facility with a 22-foot paved median, which shall include a Type "T" double-faced concrete median barrier along the center.

(b) The transition from the proposed condition at the north terminus of the project to the existing condition at the south approach of the Neuse River Bridge, for both the Mainline and ramps, shall be of sufficient length in accordance with the documents set forth in Section 1.1 of this Roadway Scope of Work.

(c) The total width for outside Mainline shoulders along segment U-5713 shall be no less than 12 feet of clear, usable width. The 12 feet shall be measured from edge of the travelled way to either face of barrier or shoulder breakpoint.

(d) The total width for inside Mainline shoulders along U-5713 shall be no less than 10 feet.

(e) All median features designed and constructed by the Design-Build Team shall be in accordance with all requirements of this RFP, and with documents set forth in Section 1.1 of this Roadway Scope of Work.

(f) The Department is aware that the distance between the interchanges of the Mainline with Airport Road and Williams Road, as shown on the Preliminary Roadway Plans, is not in compliance with the documents set forth in Section 1.1 of this Roadway Scope of Work. The Department notes that the Design-Build Team is not required to address this non-compliance. The Design-Build Team, however, shall not further reduce the distance between interchanges, ramps and ramp elements, beyond what is shown on the Preliminary Roadway Plans.

(g) The Design-Build Team shall design and construct 12-foot auxiliary lanes, in both directions, between the interchanges of the Mainline with Airport Road and Williams Road, in accordance with the documents set forth in Section 1.1 of this Roadway Scope of Work. The minimum shoulder width along this segment shall be 12 feet in accordance with Section 3.8(c) of this Roadway Scope of Work.

3.10 Mainline Bridges

(a) The Design-Build Team shall design and construct the bridges carrying the Mainline over Thurman Road, Taberna Way, Grantham Road, Airport Road, and Williams Road in accordance with the Structures Scope of Work found elsewhere in this RFP.

(b) The inside shoulder of the bridges carrying the Mainline over Thurman Road and Taberna Way shall be of sufficient width to accommodate future inside widening (toward the Mainline median) of a third 12-foot lane plus shoulder. Such future shoulders shall be designed and constructed in accordance with the documents set forth in Section 1.1 of this Roadway Scope of Work. However, at final completion the bridges carrying the Mainline over Thurman Road and Taberna Way shall provide pavement marking for the Mainline's two (2) through lanes in each direction. The future third lane and shoulder shall be considered and marked as shoulder.

3.11 Mainline Access:

(a) The Design-Build Team shall design and construct the Mainline as a full control of access facility.

(b) All access from the Mainline onto existing or proposed service roads and / or properties within the Mainline project limits shall be removed.

(c) In addition to the requirements of the preceding item 3.10(b), Mainline access at approximately Mainline stations 216+00.00, 227+35.00 and 240+25.00 shall be removed.

(d) All median crossovers within the Mainline project limits shall be removed, including the median crossover at approximately Mainline station 240+25.00.

(e) The at-grade intersection of the Mainline and Garner Road shall be removed and no access shall be provided from the Mainline onto Garner Road.

3.12 Retaining Walls:

(a) The Design-Build Team shall design and construct all required retaining walls along the Mainline, Ramps and Service Roads in accordance with the Structures Scope for Work found elsewhere in this RFP. Traffic protection for retaining wall shall be in accordance with the documents set forth in Section 1.1 of this Roadway Scope of Work.

(b) The length and amount of retaining walls within the project limits shall depend the Design-Build Team's design.

(c) The Design-Build Team shall design and construct all retaining walls a minimum of ten (10) feet inside the right of way. If an exception for the offset distance between the edge of the traveled way and the retaining wall or noise wall, as the case may be, is required, the Design-Build Team shall submit such design exception request to the Department and seek Department's acceptance for such design exception prior to its implementation.

4. Interchanges

4.1 The Design-Build Team shall design and construct interchanges at the following intersections along the Mainline:

(a) Thurman Road;
(b) Taberna Way;
(c) Grantham Road;
(d) Airport Road; and
(e) Williams Road.

4.2 The Design-Build Team shall design and construct all compact diamond interchanges (CDI).

4.3 Alternative Technical Concepts for different types of interchanges may be submitted.

4.4 Without exception, all interchanges shall be designed and constructed with the Mainline over the intersecting roadway. No Alternative Technical Concepts proposing any portion of the Mainline under an intersecting roadway will be accepted.

4.5 Ramps:

(a) The Design-Build Team shall design and construct all ramps in accordance with AASHTO *A Policy on Geometric Design of Highways and Streets*, Table 10-1 (Guide Values for Ramp Design Speed as Related to Highway Design Speed). The maximum longitudinal grade for ramps within the U-5713 segment shall be 7%. Ramps within the R-5777A & B segment shall comply with the documents set forth in Section 1.1 of this Roadway Scope of Work.

(b) The minimum storage length for all ramps (as defined in Section 9-1 of the NCDOT *Roadway Design Manual*) shall be the most conservative length of either the storage length required in the U-5713 & R-5777 A/B Traffic Operations Analysis Technical Memorandum or the length shown in the Preliminary Roadway Plans. In any case, the storage length shall be no less than the minimum required in Section 9-1 of the NCDOT *Roadway Design Manual*.

(c) For single-lane ramps, the minimum width for ramp lanes shall be 16 feet.

(d) In those areas where ramps have two (2) or more lanes, the minimum lane width shall be 12 feet.

(e) Minimum width for ramp shoulders shall be 4 feet for inside shoulders and 8 feet for outside shoulders.

5. Service Roads

5.1 Unless specified elsewhere in this RFP, the minimum lane width for Service Roads shall be 14 feet, except where tying into existing, in which case the appropriate transition length and taper as required by the documents set forth in Section 1.1 of this Roadway Scope of Work shall be utilized.

5.2 All Service Roads shall consist of a two-lane cross section, with one lane in each direction, and 2'-6" curb and gutter.

5.3 All Service Roads within segment R-5777A & B shall be designed and constructed to meet a minimum speed of 30 mph, except where indicated in Section 2.5(a) of this Roadway Scope of Work. Within this segment, all superelevation along Service Roads shall be in accordance with AASHTO *A Policy on Geometric Design of Highways and Streets, Table 3-8 (Minimum Radii for Design Superelevation Rates*, Design Speeds, and e_{max}=4%).

5.4 All Service Roads within segment U-5713 shall be designed and constructed to meet a minimum design speed of 25 mph, except where indicated in Section 2.5(a) of this Roadway Scope of Work. Within this segment, all superelevation along Service Roads shall be in accordance with AASHTO *A Policy on Geometric Design of Highways and Streets, Table 3-8 (Minimum Radii for Design Superelevation Rates*, Design Speeds, and e_{max}=4%).

5.5 Service Road -SRY21C- (southeast quadrant of the Mainline / Thurman Road interchange): The construction limit for Service Road -SRY21C- starts approximately 0. 5 mile east of the Mainline reconstruction limit.

5.6 Service Roads -SRY21B- and -SRY21B2- (southwest quadrant of the Mainline / Thurman Road interchange):

(a) This Service Road shall extend from Thurman Road south to approximately station 240+00.00 of the Mainline.

(b) At least one point of access shall be provided at each of the parcels within the length of the Service Road, and between the Mainline right of way and the North Carolina Railroad right of way.

(c) To the greatest extent possible, the design and construction of the Service Road shall avoid the wetlands shown on the Preliminary Roadway Plans.

(d) This Service Road shall be designed and constructed to meet a minimum design speed of 50 mph. All superelevation along this Service Road shall be in accordance with AASHTO *A Policy on Geometric Design of Highways and Streets, Table 3-8 (Minimum Radii for Design Superelevation Rates,* Design Speeds, and e_{max}=4%).

5.7 All service roads shall be designed and constructed so as to provide access to properties and side streets in accordance with NCDOT standards and guidelines.

5.8 Service Road Study:

(a) The Design-Build Team shall conduct a Service Road Study to determine whether parcels that no longer have direct access will be provided access to the service roads or will become a total take.

(b) The Design-Build Team shall submit such Service Road Study to the Division Construction Engineer and Resident Engineer for review and approval prior to finalizing the designs.

(c) If the Design-Build Team demonstrates, to the Department's sole satisfaction, that additional service road(s) are required, the design and construction of the service road(s), including all associated NEPA requirements, will be paid for as extra work in accordance with Subarticle 104-8(A) of the NCDOT Standard Specifications for Roads and Structures.

(d) If the Design-Build Team's design and construction methods require additional service road(s), the design and construction of the service road(s), as well as associated NEPA requirements, shall be included in the Design-Build Team's lump sum bid for the entire project.

5.9 The following Service Roads shall, at a minimum, receive a 1.5" overlay with a typical normal section, and maintain the existing drainage features:

(a) Service Road on the east side of, and running parallel to, US 70, between Garner Road and Grantham Road (approximately Mainline stations 17+00.00 to 50+00.00);

(b) Service Road on the east side of, and running parallel to, US 70, between Grantham Road and Airport Road (approximately Mainline stations 54+00.00 to 87+50.00);

(c) Service Road on the east side of, and running parallel to, US 70, between Airport Road and Williams Road (approximately Mainline stations 92+00.00 to 116+50.00); and

(d) Service Road on the east side of, and running parallel to, US 70, between SR 1915 (Oak Street) and SR 1139 (Plum Street), (approximately Mainline stations 130+00.00 to 147+00.00).

6. Cross Streets

6.1 Along segments that include one single lane in each direction, the minimum lane width for Cross Streets shall be 14 feet. Along segments that include two or more lanes in either direction, the minimum lane width for Cross Streets shall be 12 feet.

6.2 The Design-Build Team shall design and construct all cross streets to meet the following minimum design speeds:

(a) Day Star Lane: 40 mph
(b) Thurman Road: 40 mph
(c) Taberna Way: 30 mph
(d) Garner Road: 40 mph
(e) Grantham Road: 40 mph
(f) Airport Road: 50 mph
(g) Williams Road: 50 mph

6.3 Day Star Lane:

(a) The Design-Build Team shall remove and replace Day Star Lane. The new Day Star Lane shall be within the Department's right of way, except for the 300 feet closest to Old Cherry Point Road, where the new Day Star Lane shall align with the existing Gibbs Road centerline.

6.4 Thurman Road:

(a) Reconstruction limits for Thurman Road shall be, at a minimum, the intersecting points with proposed Service Roads east and west of the Mainline.

(b) Between the intersecting points of Thurman Road with proposed Service Roads east and west of the Mainline, Thurman Road shall be designed and constructed with a minimum of two (2) through lanes in each direction and a raised median of variable width.

(c) At its eastern limit, past the intersecting point with proposed Service Roads -SRY21C- and -SRY21D-, Thurman Road shall transition from a 4-lane cross section to the existing 2-lane cross section. Such transition shall be of sufficient length to tie into existing and in accordance with the documents set forth in Section 1.1 of this Roadway Scope of Work.

(d) At the intersection of Thurman Road with the interchange ramps, turning lanes and channelization in the form of raised concrete islands shall be provided in accordance with the documents set forth in Section 1.1 of this Roadway Scope of Work.

6.5 Taberna Way

(a) The western reconstruction limit for Taberna Way shall be, at a minimum, the intersecting point with proposed Service Roads -SRY21AY22B- and -SRY22A-.

(b) The eastern reconstruction limit for Taberna Way shall be Old Cherry Point Road. The new alignment of Taberna Way east of the Mainline shall connect with Old Cherry Point Road. This new intersection with Old Cherry Point Road does not need to include turning lanes, unless specifically requested by the Department.

(c) Between the intersecting points of Taberna Way with proposed Service Roads east and west of the Mainline, Taberna Way shall be designed and constructed with a minimum of two (2) through lanes in each direction and raised median of variable width.

(d) At its eastern limit, past the intersecting point with proposed Service Road -SRY22D-, Taberna Way shall transition from a 4-lane cross section to a 2-lane cross section. Such transition shall be of the length required by the documents set forth in Section 1.1 of this Roadway Scope of Work.

(e) At the intersection of Taberna Way with the interchange ramps, turning lanes and channelization in the form of raised concrete islands shall be provided in accordance with the documents set forth in Section 1.1 of this Roadway Scope of Work.

6.6 Garner Road

(a) The existing intersection of the Mainline and Garner Road will be eliminated, including the existing paved median cross over on the Mainline shall be removed.

(b) Garner Road, east and west of the Mainline shall be connected to the Service Roads.

(c) Reconstruction limits for Garner Road east and west of the Mainline shall be limited to new intersections with Service Roads, as generally shown in the Preliminary Roadway Plans, and match the existing condition on Garner Road.

6.7 Grantham Road:

(a) Reconstruction limit for Grantham Road west of the Mainline shall be at -Y2- station 12+00.00.

(b) Reconstruction limit for Grantham Road east of the Mainline shall be the point of intersection with the proposed Service Road north of the Mainline (-SR7-).

(c) Through the Mainline interchange, Grantham Road shall provide a minimum of two (2) through lanes in each direction.

(d) At the intersection of Grantham Road with the interchange ramps, turning lanes and channelization in the form of raised concrete islands shall be provided in accordance with the documents set forth in Section 1.1 of this Roadway Scope of Work.

(e) All transitions along Grantham Road from the proposed condition back into existing shall be of sufficient length to tie into existing and in accordance with the documents set forth in Section 1.1 of this Roadway Scope of Work.

6.8 Airport Road:

(a) Reconstruction limit for Airport Road west of the Mainline shall be approximately at -Y3- station 8+60.00.

(b) Reconstruction limit for Airport Road east of the Mainline shall be its intersection with Old Cherry Point Road. The Design-Build Team shall be required to install appropriate signage at the intersection of Airport Road and Old Cherry Point Road, however, the Design-Build Team is not required to reconstruct or reconfigure the entire intersection, except where indicated (i.e. the west leg, or Airport Road leg, of the intersection with Old Cherry Point Road). The Design-Build Team is not required to add turning lanes to Old Cherry Point Road, unless specifically requested by the Department. In the event the Department requests turning lanes at the intersection of Old Cherry Point Road with Airport Road, such revisions to the plans, along with any additional studies required shall be paid by the Department as extra work in accordance with Subarticle 104-8(A) of the NCDOT Standard Specifications for Roads and Structures.

(c) Between the proposed Service Road west of the Mainline, going across the Mainline, and continuing to Old Cherry Point Road east of the Mainline, Airport Road shall provide two (2) through lanes in each direction.

(d) West of the Mainline, from the proposed Service Road going west to Airport Road's reconstruction limit approximately at -Y3- station 8+60.00, Airport Road shall transition into existing. Such transition shall be of sufficient length to tie into existing and shall be in accordance with the documents set forth in Section 1.1 of this Roadway Scope of Work.

(e) At the intersection of Airport Road with the interchange ramps, turning lanes and channelization in the form of raised concrete islands shall be provided in accordance with the documents set forth in Section 1.1 of this Roadway Scope of Work.

6.9 Williams Road:

(a) Reconstruction limit for Williams Road west of the Mainline shall be approximately at -Y4- station 11+18.00.

(b) Reconstruction limit for Williams Road east of the Mainline shall be its intersection with Old Cherry Point Road. The Design-Build Team shall be required to install appropriate signage at the intersection of Williams Road and Old Cherry Point Road, however, the Design-Build Team is not required to reconstruct or reconfigure the entire intersection except where indicated (i.e. the west leg, or Williams Road leg, of the intersection with Old Cherry Point Road). The Design-Build Team is not required to add turning lanes to Old Cherry Point Road, unless specifically requested by the Department. In the event the Department requests turning lanes at the intersection of Old Cherry Point Road with Williams Road, such revisions to the plans, along with any additional studies required shall be paid by the Department as extra work in accordance with Subarticle 104-8(A) of the NCDOT Standard Specifications for Roads and Structures.

(c) Between the proposed Service Road west of the Mainline, going across the Mainline, and continuing to Old Cherry Point Road east of the Mainline, Williams Road shall provide a minimum of two (2) through lanes in each direction.

(d) West of the Mainline, from the proposed Service Road going west to Williams Road's reconstruction limit approximately at -Y4- station 11+18.00, Williams Road shall transition into existing. Such transition shall be of sufficient length to tie into existing and shall be in accordance with the documents set forth in Section 1.1 of this Roadway Scope of Work.

(e) At the intersection of Williams Road with the interchange ramps, turning lanes and channelization in the form of raised concrete islands shall be provided in accordance with the documents set forth in Section 1.1 of this Roadway Scope of Work.

6.10 Elder Street:

(a) The existing access from Elder Street into the northbound lanes of the Mainline (i.e. pavement between Plum Street and the Mainline providing access onto Elder Street) shall be removed.

(b) East of the Mainline, Elder Street shall end at its intersection with Plum Street. No work on Elder Street shall be required on the west side of the Mainline.

(c) No bridge carrying the Mainline over Elder Street will be required at this location. The Design-Build Team may design and construct the Mainline to match the existing US 70 vertical alignment at this location.

7. Pedestrian Accommodations

7.1 All existing sidewalk impacted by the Project shall be replaced in kind and in accordance with the documents set forth in Section 1.1 of this Roadway Scope of Work.

7.2 Without exception, the following Cross Streets must include sidewalk along both sides:

(a) Grantham Road;
(b) Airport Road; and
(c) Williams Road.

7.3 Alternative Technical Concepts that eliminate sidewalks at the locations stated in Item 7.2 will be rejected.

7.4 All new sidewalk within the Project limits shall only be added at those locations shown on the Preliminary Roadway Plans, and shall be designed and constructed in accordance with the documents set forth in Section 1.1 of this Roadway Scope of Work. All new sidewalk shall have a minimum width of 5 feet plus a 2-foot utility strip between the sidewalk and back of curb. Berm widths for sidewalk areas shall be the 10-foot standard width.

7.5 Sidewalk transitions, from proposed sidewalk width to existing sidewalk width, shall be a minimum of 50 feet.

8. Additional Requirements

8.1 Due to right of way constraints, the Design-Build Team will be allowed to design and construct minimum ditch widths for the facility functional classification.

8.2 Unless noted otherwise elsewhere in this RFP, all bridge rail offsets shall be the greater of 1) the bridge rail offset as indicated in the NCDOT Roadway Design Manual, 2) the approach roadway paved shoulder width, or 3) the offset required to achieve stopping sight distance (maximum 12-foot). Narrower bridge rail offsets based on bridge length will not be allowed.

8.3 For all intersection design modifications, the Design-Build Team shall provide a traffic analysis that adheres to the July 1, 2015 NCDOT Congestion Management Capacity Analysis Guidelines for the Department’s review and acceptance.

8.4 At all intersections with restricted movements impacted by the Design-Build Team's design and / or construction methods, excluding resurfacing or overlays, the Design-Build Team shall provide five-inch keyed-in concrete monolithic channelization islands, regardless of the island dimensions. (Reference Roadway Standard Drawing No. 852.01.)

8.5 The mainline is a full control of access facility. The Design-Build Team shall bring to the Division's attention any deviations from the proposed control of access shown on the Preliminary Roadway Plans provided by the Department. The proposed right of way and / or control of access limits may deviate in proximity to cultural, historic, or otherwise protected landmarks, including cemeteries, to eliminate / minimize impacts. Prior to negotiating right of way, easement and / or control of access with property owners, the Department shall accept the Right of Way Plans developed by the Design-Build Team.

8.6 Prior to installation, the Design-Build Team shall be responsible for coordinating with, and obtaining approval from, the NCDOT for the control of access fence placement. The Design Build Team shall be responsible for installation of woven wire control of access fence as noted below:

(a) Throughout the construction limits, excluding areas that consist solely of pavement marking obliterations / revisions, the Design-Build Team shall remove and dispose of all existing control of access fence, and install new control of access fence.

(b) The Design-Build Team shall replace all control of access fence damaged during construction.

(c) The Design-Build Team shall install all missing control of access fence.

8.7 Except as required elsewhere in this RFP and / or to eliminate a design exception, the Design-Build Team shall not further impact any cultural, historical or otherwise protected landmark or topographic feature beyond that shown on the Preliminary Roadway Plans provided by the Department.

8.8 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 No. 665.01.

8.9 For all bridges, 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.

9. Noise Abatement

The Department will provide an approved Traffic Noise Report (TNR) and associated Preliminary Noise Wall Recommendation Memorandum that is based on the Department's preliminary design. The Design-Build Team shall evaluate the entire Project and develop the Design Noise Report (DNR) based on the plans developed by the Design-Build Team, regardless of changes to the Department's preliminary design. The DNR shall be developed in accordance with the NCDOT 2016 *Traffic Noise Policy* and the NCDOT 2016 *Traffic Noise Manual*; and be reviewed and accepted by NCDOT. Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall include all design and construction costs for all sound barrier walls required by the accepted DNR, as well as all costs associated with performing any additional geotechnical investigations necessary to design the foundations, in the lump sum price bid for the entire project. However, the Design-Build Team will not be required to include any designs associated with the proposed sound barrier walls in the Technical Proposal. Prequalification under Discipline Code 441 shall be required for the firm developing the DNR.

The Design-Build Team is cautioned that the TNR and Preliminary Noise Wall Recommendation Memorandum are provided to show the general location of potential walls. Thus, as with all information provided by the Department, the TNR and Preliminary Noise Wall Recommendation Memorandum are provided for informational purposes only and; the Department will not honor any requests for additional contract time or compensation for any variations between the approved TNR and the approved DNR.

The Department will ballot all benefited receptors to determine which sound barrier walls recommended in the accepted DNR will be constructed. The Design-Build Team shall (1) develop and provide the information required by the Department to complete the balloting process, and (2) attend and / or speak at all balloting meetings and workshops. The Department will require four months to complete the balloting process. The Department will not honor any requests for additional contract time or compensation for the sound barrier wall construction unless the aforementioned four-month timeframe is exceeded. If time were granted, it would only be for that time exceeding the four-month period, which shall begin on the date the Department accepts the DNR developed by the Design-Build Team. The Design-Build shall not construct any sound barrier walls until the balloting process has been completed by the Department.

In accordance with Subarticle 104-8(A) of the 2018 Standard Specifications for Roads and Structures, if the accepted DNR and balloting process require more than 50,000 square feet (sf) of sound barrier wall, the amount over 50,000 sf will be paid for as extra work at the unit price of $40.00 per square foot. All work tasks required to design and construct the additional sound barrier walls, including but not limited to traffic control, pavement, drainage, concrete barrier, geotechnical investigation and earthwork shall be considered inclusive in the aforementioned unit price. The amount of extra work shall be determined by deducting all additional sound barrier wall square footage required as a result of horizontal and / or vertical alignment changes to the Preliminary Roadway Plans provided by the Department from the accepted DNR and balloting process sound barrier wall total square footage.

The Design-Build Team shall only credit the Department the construction cost of all sound barrier walls eliminated by the balloting process. The construction costs of all sound barrier walls eliminated solely by the balloting process shall be deducted from the lump sum amount bid for the entire project.

The Design-Build Team shall design and construct all proposed sound barrier walls to accommodate the future widening of one additional 12-foot lane and a six-foot buffer without requiring any relocations / adjustments. At all sound barrier walls, the Design-Build Team shall provide 1) a four-foot berm between the wall and fill / cut slopes steeper than 6:1 and 2) a parallel concrete ditch at locations where the final grade slopes toward the wall.

To satisfy the FHWA's Abatement Measure Reporting requirements, the Design-Build Team shall prepare and concurrently submit a summary of the sound barrier walls to be constructed on the project with the final sound barrier wall working drawings submittal. The Design-Build Team shall submit the sound barrier wall summary directly to the NCDOT Traffic Noise and Air Quality Group and include the information noted in Title 23 Code of Federal Regulations Part 772 Section 772.13(f), including but not limited to overall cost and unit cost per square foot.

10. Driveway Access

10.1 Excluding undeveloped properties and / or those properties identified as a total take, as determined by the Service Road Study, the Design-Build Team shall design and construct a minimum of one driveway per parcel.

10.2 The Design-Build Team shall design and construct all driveways in accordance with the most recent version of the NCDOT P*olicy on Street and Driveway Access to North Carolina Highways*, and with the following minimum requirements:

(a) The Design-Build Team shall provide horizontal and vertical alignments for all driveways that require 100 feet or longer to tie to existing.

(b) Excluding grades required to tie to an existing limiting condition, the maximum driveway grade shall be 10.0%.

(c) For shoulder sections, the minimum driveway turnout for residential and commercial properties shall be 16'-0" and 24'-0", respectively, or the existing width, whichever is greater.

(d) For curb and gutter sections, the minimum driveway turnout for residential and commercial properties shall be 20'-0" and 28'-0", respectively, or the existing width, whichever is greater.

TRANSPORTATION MANAGEMENT SCOPE OF WORK (5-24-2019)

I. Project Requirements

A. Laws, Standards and Specifications

The Design-Build Team shall design the Transportation Management Plan (TMP) in accordance with the requirements of this RFP and the version of the standards listed below that are effective on the time of Technical Proposal submittal date.

- NCDOT *Standard Specifications for Roads and Structures*
- NCDOT *Roadway Standard Drawings*
- NCDOT *Supplement to the Manual on Uniform Traffic Control Devices* (NCSMUTCD)
- FHWA *Manual on Uniform Traffic Control Devices* (MUTCD)
- NCDOT *Roadway Design Manual*
- Americans with Disabilities Act of 1990 (ADA)
- AASHTO *A Policy on Geometric Design of Highways and Streets*
- AASHTO *Roadside Design Guide*
- FHWA *Standard Highway Signs*
- NCDOT *Guidelines for Preparation of Traffic Control and Pavement Marking Plans for Design-Build Projects*
- NCDOT *Design-Build Submittal Guidelines*
- FHWA *Rule on Work Zone Safety and Mobility* (23 CFR 630 Subpart J and K)
- Transportation Research Board *Highway Capacity Manual*

B. References

The Design-Build Team shall use the references provided on the site below as supplementary guidelines and requirements for the design and implementation of the TMP.

WZTC Website:
https://connect.ncdot.gov/projects/WZTC/Pages/default.aspx

C. Transportation Management Plans

The Design-Build Team shall prepare TMP that include Temporary Traffic Control Plans (TTCP) and Traffic Operations Plan (TOP). The TOP shall include demand management strategies, corridor network management strategies, work zone safety management strategies and traffic incident management and enforcement strategies. In accordance with the Public Involvement and Information Scope of Work found elsewhere in this RFP, the Design-Build Team shall assist the Department in the development of a Public Information Plan (PIP).

The Design-Build Team shall produce TMP for each phase of work that impacts road users. The TMP shall include details of all planned detours, traffic control devices, striping, and signage applicable to each phase of work. The information on the TMP shall be of sufficient detail to allow verification of design criteria and safety requirements, including, but not limited to, typical sections, alignment, striping layout, drop off conditions, and temporary drainage. The Design-Build Team shall develop TMPs that include procedures to communicate TMP information to the public about road and travel conditions within the work zone and affected roadway network.

A Transportation Management Phasing Concept (TMPC) shall be prepared by the Design-Build Team to present the Design-Build Team's approach to all areas covered under the TMP, including but not limited to hauling of materials to, from, and within the project right of way (ROW). The Design-Build Team shall include the TMPC in the Technical Proposal. The TMPC shall comply with requirements herein. The Design-Build Team shall submit the TMPC for Department review and acceptance and shall address NCDOT comments on the TMPC prior to commencing production of the TMP for each phase of work or any construction. Any changes to the TMPC after acceptance by NCDOT shall require a submittal for review and acceptance prior to any future phasing submittals.

The Design-Build Team shall select a Private Engineering Firm (PEF) that has experience developing TMP on comparable projects for the North Carolina Department of Transportation (NCDOT) and shall list these comparable projects in the Technical Proposal. The PEF selected by the Design-Build team to develop the TMP shall be prequalified through NCDOT in Work Code 541 – Traffic Management Plan – Level 1 and 2.

In the event any self-imposed liquidated damages are included in the Technical Proposal, Intermediate Contract Time(s) shall be established.

D. General Requirements

The Design-Build Team is encouraged to begin construction activities south of Williams Road to allow motorists to adjust to an altered traffic pattern. The existing traffic pattern shall not be altered north of Station 107+00 (U-5713 segment, from just south of the Williams Road interchange to the northern project limit) until traffic has been in an altered pattern South of this location for a minimum of 30 days.

Unless permitted otherwise elsewhere in this RFP, maintain the existing number of travel lanes on all roads, including but not limited to acceleration, deceleration, auxiliary, and turn lanes.

On US 70 two through lanes must be maintained in each direction at all times and shall have travel lanes that are a minimum width of 11 feet.

For existing travel lanes that are 11-foot wide or wider, maintain a minimum of 11-foot travel lanes at all times. For existing travel lanes that are narrower than 11 feet, maintain the existing travel lane widths at all times. Unless permitted otherwise elsewhere in this RFP, maintain existing shoulder widths (paved and unpaved). Unless temporary barrier is placed on the paved shoulder, maintain existing should widths (paved and unpaved). Under structures only, maintain a minimum two-foot wide paved shoulder adjacent to the mainline through lanes and a minimum one-foot wide paved shoulder adjacent to ramps.

As a minimum, the Design-Build Team shall maintain the US 70 Service Roads, parallel to US 70 in a one lane, one-way pattern separated by PCB from US 70. The one-way direction will be approved by the Division.

Unless allowed otherwise elsewhere in this RFP, the Design-Build Team's construction methods and / or construction activities on all -Y- lines, Service Roads, ramps and loops, including timing for temporary signals, shall not create a queue that impacts the flow of traffic on US 70.

The Design-Build Team shall maintain access to all properties not being purchased as part of this project.

Unless permitted otherwise elsewhere in this RFP, all traffic control devices, including bridge barrier rails, shall be placed / located a minimum two-foot offset (shy distance) from the edge of an open travel lane.

Placement of temporary barrier systems shall be shown on the TMPC. Temporary barrier systems shall be designed in accordance with the following requirements:

- Determine the need for temporary barrier in accordance with the FHWA *Rule on Temporary Traffic Control Devices* (23 CFR 630 Subpart K). Reference the NCDOT Work Zone Traffic Control website noted below for examples and Guidelines on the Use of Positive Protection in Work Zones.

  https://connect.ncdot.gov/projects/WZTC/Pages/Design-Resources.aspx

- The Design-Build Team shall adhere to the AASHTO Roadside Design Guide in determining the length of need, flare rate, and clear zone. The Design-Build Team shall adhere to the possible deflection of the proposed temporary barrier system in accordance with NCHRP-350 *Recommended Procedures for the Safety Performance Evaluation of Highway Features* deflections from crash testing and MASH (2016 AASHTO Manual for Assessing Safety Hardware). Providing less than the minimum deflection distance shall require the use of anchored temporary barrier systems in accordance with the NCDOT 2018 *Standard Specifications for Roads and Structures*.

- The Design-Build Team shall not place temporary barrier systems utilized for traffic control on unpaved surfaces.

- The Design-Build Team shall not place temporary barrier within 200 feet of any merging taper, including but not limited to, existing and proposed ramp merges, lane drop merges, and / or temporary lane closure merges. All lanes shall first be closed using channelizing devices and pavement markings.

- The Design-Build Team shall not place temporary barrier along any shifting taper, including but not limited to, existing, temporary, and / or proposed shifting tapers.

- When barrier is placed on a roadway shoulder, the Design-Build Team shall install shoulder closure signs and devices in advance of the barrier in accordance with the NCDOT Roadway Standard Drawings.

Excluding short term median crossovers, the design speed for temporary alignments of US and NC routes shall not be lower than the current posted speed limit. The minimum allowable design speed for temporary alignments on secondary roads shall be the higher of 10 mph below the posted speed limit or 35 mph.

The 2018 *Roadway Standard Drawing* No. 1101.11 shall be used to calculate the length of temporary merges for lane closures and temporary traffic shifts. For temporary traffic patterns that will remain in place for a period longer than three days, including but not limited to traffic shifts, merges, and temporary alignments, breaks in the superelevation and / or breaks in a normal crown section will not be allowed within the shifting taper. Excluding the aforementioned temporary traffic patterns, breaks in the super elevation and / or crown breaks in a normal crown section shall only occur on a lane line or lane midpoint, and shall not exceed 0.04.

Temporary traffic shifts that are not covered by a standard or require vertical grades shall be considered a temporary alignment. All temporary alignments shall adhere to the NCDOT *Roadway Design Manual*, including all revisions, 2011 AASHTO, *A Policy on Geometric Design of Highways and Streets* and the most current Transportation Research Board *Highway Capacity Manual*.

Maintain access to all residences, schools, bus stops, mass transit facilities (park and ride lots), emergency services and businesses at all times. Prior to incorporation, obtain written approval from the Engineer on method to maintain access. Access to all existing transit stop locations shall be maintained during construction or alternative locations that are accepted by NCDOT shall be provided and specified within the TMP. The Design-Build Team shall coordinate with the State and Local Transit Agencies for all traffic control phasing that will affect existing transit stops or transit routes.

At all times, maintain existing level of sidewalk / greenway access, provide temporary sidewalk / greenway (constructed of concrete, asphalt or other suitable material, as approved by the Engineer), and / or provide a sidewalk / greenway detour at all locations where the open pedestrian travel way has been closed and / or removed by the Design-Build Team’s design or construction operations. Prior to

incorporation, all sidewalk / greenway detours shall receive Department written approval.

Through traffic traveling in the same direction shall not be split. (i.e. separation by any type of barrier, bridge piers, existing or proposed median, etc.).

Prior to incorporation, obtain written approval from the Engineer for all road and / or access point closures.

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

- Except as allowed in ICT #4 and ICT #5, and elsewhere in this RFP, all roads, including ramps and loops shall not be closed.

- Unless permitted otherwise elsewhere in this RFP, 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) any proposed traffic signal at the proposed ramp / loop terminal for the corresponding traffic is operational.

- The Design-Build Team shall not concurrently close adjacent -Y- Lines.

- The Design-Build Team shall not concurrently close -Y- Lines with overlapping detours.

- 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 / analysis for the Department's review and acceptance.

- As determined by the Engineer, the Design-Build Team shall provide 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 off-site 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 is not 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 of proposed overhead structures, and providing the minimum horizontal clear widths as follows:

Roadway	Minimum Clear Width
US routes, NC Routes, and all ramps and loops	20 feet
All other roadways	18 feet

The Design-Build Team shall also maintain safe access on US 70 -Y- lines and service roads within the project corridor. Safe access shall include maintenance and repair of the existing pavement structure by performing operations including but not limited to patching, milling, strengthening, and overlay within 5 calendar days of notification. The Design-Build Team should consider increased traffic due to adjacent projects.

The Design-Build Team shall coordinate with the Division Maintenance Engineer, Resident Engineer, Division Traffic Engineer, the Rail Division and Statewide Transportation Operations Center (STOC) 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 TMP. 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 lanes containing rumble strips.

All on-site detours shall meet the minimum number of existing lanes per direction and shall adhere to all temporary alignment requirements noted elsewhere in the RFP. A pavement transition, suitable for the posted speed limit shall be provided at all on-site detour interfaces.

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.

The Design-Build Team shall provide and utilize Changeable Message Signs (CMS) as follows:

- The Design-Build Team shall provide CMSs that have the functionality to be operated locally in the field and controlled remotely from the STOC. All CMSs provided must be fully NTCIP compliant and operate with full functionality via remote communications from the STOC. All CMSs must be able to be controlled remotely using the existing software utilized by the STOC staff at the time of deployment. No vendor specific or third party software will be allowed. CMSs must be approved for use in ITS operations before they are deployed. STOC staff will operate all devices displaying travel information to the public. The Design-Build Team shall not begin any construction that involves lane closures on any road until all CMSs and all other devices are installed and communicating with the STOC.

- For traffic control purposes during construction, the Design-Build Team shall provide and operate a minimum of one CMS per direction on the mainline that provides general information about the construction activities within the project limits. This CMS shall be in addition to any other CMSs required by the NCDOT Roadway Standard Drawings and / or required for incident management use.

- The Design-Build Team shall provide and operate a minimum of 12 speed sensors and 12 CMSs to display alternate route information ahead of the project detour points for incidents on the project. The positioning of these incident management CMSs shall be coordinated with the STOC and the Engineer. These CMSs shall be in addition to any other devices provided by the Department and operated by the STOC. The Design-Build Team shall coordinate with the STOC when alternate route information needs to be displayed. In the event of an incident, STOC will take remote control of the applicable CMSs to provide incident management information to motorists. Upon incident clearance and resumption of normal traffic flow, STOC will allow the Design-Build Team to regain control of the CMS boards.

- The Design-Build Team shall coordinate on 24-hour basis with the STOC to provide relevant and timely travel information throughout the work zone and along alternate routes.

- The Design Build Team will be responsible for ensuring the alternate routes are signed with either existing stationary alternate route signing or provide temporary stationary alternate route signing to guide detoured motorists along the alternate route back to the original road. The Design-Build Team shall provide a plan for STOC and NCDOT approval that shows the STOC's

alternate routes with the approximate locations of the CMSs to be used for incident management, along with their respective messages, and the approximate locations of the existing stationary alternate route signing and temporary stationary alternate route signing.

- The Design-Build Team shall fabricate, install, relocate, and maintain the CMSs and stationary signs during construction. Upon completion of the project, or completion of their usefulness, the Design-Build Team shall remove and dispose of the CMSs and stationary signs.

- The plan for all incident management CMSs and ground mounted signing for alternate routes shall be approved by STOC and NCDOT and installed before beginning any construction. Primary locations shall include ground mounted guide signs at the junction of US 70/US 17 west of New Bern, at US 70/NC 24 in Morehead City and along the alternate route back to US 70. The Design/Build Teams shall have a minimum of 2 ground mounted alternate route signs in advance of the of US 70/US17 interchange and the US 70/NC 24 intersection.

E. Lane Closure Notice (LCN)

The Design-Build Team shall issue a Lane Closure Notice (LCN) to NCDOT and affected government entities a minimum of fourteen (14) 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.

If an emergency condition should occur, a LCN shall be provided to NCDOT within two (2) days after the event. For non-NCDOT controlled facilities, the Design-Build Team shall immediately notify the controlling government entity.

F. Road Closure Notice (RCN)

Proposed road closures on any road shall be approved by the Engineer prior to incorporation in the TMP.

The Design-Build Team shall issue a Road Closure Notice (RCN) to NCDOT and affected government entities a minimum of thirty (30) calendar days prior to the publication of any notices or placement of any traffic control devices associated with road closures, detour routing or other change in traffic control requiring road closures.

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

If an emergency condition should occur, a RCN shall be provided to NCDOT within two (2) days after the event. For non-NCDOT controlled facilities, the Design-Build Team shall immediately notify the controlling government entity.

II. Project Operations Requirements

The following are Time Restrictions and notes that shall be included with the Transportation Management Plan General Notes, unless noted otherwise elsewhere in this RFP:

A. Time Restrictions

1. Intermediate Contract Times #1 through #3 for Lane Narrowing, Lane Closure, Holiday and Special Event Restrictions.

Except as allowed otherwise elsewhere in this RFP, the Design-Build Team shall maintain the existing traffic pattern and shall not close or narrow a single lane of traffic during the times below.

Intermediate Contract Time #1:

Between September 16th and May 14th, the time restrictions in ICT #1 shall apply.

Road Name	Day	Time Restrictions
US 70 and all ramps and loops	Monday through Friday	6:00 a.m. to 7:00 p.m.

Intermediate Contract Time #2:

Between May 15th and September 15th, the time restrictions in ICT #2 shall apply.

Road Name	Day	Time Restrictions
US 70 and all ramps and loops	Monday through Thursday	6:00 a.m. to 7:00 p.m.
	Friday through Sunday	Starting on Friday at 6:00 a.m. and ending on Sunday at 7:00 p.m.

Intermediate Contract Times #3:

Road Name	Day	Time Restrictions
Williams Road	Monday through Friday	6:00 a.m. to 7:00 p.m.
All other -Y- lines and Service Roads	Monday through Friday	6:00 a.m. to 9:00 a.m. and 4:00 p.m. to 7:00 p.m.

The Design-Build Team shall not install, reset and / or remove any traffic control device during the times listed above.

In addition, the Design-Build Team shall not close or narrow a lane of traffic on the aforementioned facilities, detain, and / or alter the traffic flow on or during holidays, holiday weekends, special events, or any other time when traffic is unusually heavy unless allowed otherwise elsewhere in this RFP. At a minimum, these requirements / restrictions shall apply to the following schedules:

(a) For New Year's between the hours of 6:00 a.m. December 31st and 7:00 p.m. January 2nd. If New Year's Day is on a Friday, Saturday, Sunday or Monday then until 7:00 p.m. the following Tuesday.

(b) For Easter, between the hours of 6:00 a.m. Thursday and 7:00 p.m. Monday.

(c) For Memorial Day, between the hours of 6:00 a.m. Friday and 7:00 p.m. Tuesday.

(d) For Independence Day, between the hours of 6:00 a.m. July 3rd and 7:00 p.m. July 5th. If Independence Day is on a Friday, Saturday, Sunday or Monday, then between the hours of 6:00 a.m. the Thursday before Independence Day and 7:00 p.m. the Tuesday after Independence Day.

(e) For Labor Day, between the hours of 6:00 a.m. Friday and 7:00 p.m. Tuesday.

(f) For Thanksgiving Day, between the hours of 6:00 a.m. Wednesday and 7:00 p.m. Monday.

(g) For Christmas, between the hours of 6:00 a.m. the Friday before the week of Christmas Day and 7:00 p.m. the following Tuesday after the week of Christmas Day.

Liquidated Damages for Intermediate Contract Time #1 for the above lane narrowing, lane closure, holiday and special event time restrictions for US 70 and all ramps and loops are $2,500.00 per 15-minute period or any portion thereof.

Liquidated Damages for Intermediate Contract Time #2 for the above lane narrowing, lane closure, holiday and special event time restrictions for US 70 and all ramps and loops are $2,500.00 per 15-minute period or any portion thereof.

Liquidated Damages for Intermediate Contract Time #3 for the above lane narrowing, lane closure, holiday and special event time restrictions for Williams Road are $1,250.00 per 15-minute period or any portion thereof.

2. Intermediate Contract Times #4 and #5 for Road Closure Restrictions for Construction Operations

Unless allowed otherwise elsewhere in this RFP, at a minimum, the Design-Build Team shall maintain the existing traffic pattern and follow the road closure restrictions for all roadways listed below. When a temporary road closure is used, the Design-Build Team shall reopen the travel lanes by the end of the road closure duration to allow the traffic queue to deplete before re-closing the roadway.

Unless allowed otherwise elsewhere in this RFP, the Design-Build Team shall 1) not close any direction of travel on the following roads or any ramps / loops during the times noted below; and 2) only close the following roads or any ramps / loops for the operations listed in this intermediate contract time restriction.

A crossover providing one lane in each direction on US 70 will be allowed for the purpose of bridge demolition, and girder, overhang, and falsework installation and / or removal during the times set forth below. No other roads shall be put in a crossover pattern for these same purposes. If the Design-Build team elects to use a crossover for the aforementioned activities, during the times set forth below, the crossover shall be designed and constructed to meet a design speed of no more than 20 MPH below the posted speed limit prior to implementation of a reduced work zone speed limit. Unless approved otherwise by the Engineer, in writing, the maximum allowable distance between the cross-overs shall be 2,750 feet. The Design-Build Team shall monitor the traffic queue during operation of the crossover. Should the traffic queue extend to the advance warning signs, traffic shall be returned to the existing number of lanes in each direction until the traffic queue is depleted. Traffic shall be returned to the normal pattern at the end of each work period.

Intermediate Contract Times #4 and #5

Road Name	Day	Time Restrictions
US 70 and all existing ramps and loops	Monday through Sunday	5:00 a.m. until 12:00 a.m. (midnight)
All Other Roads	Monday through Sunday	5:00 a.m. until 11:00 p.m.

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 during the time listed above for the operations listed below.

- Bridge demolition
- Girder, overhang, and falsework installation and / or removal
- 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 #4 for the above road closure time restrictions for US 70 and all existing ramps and loops are $5,000.00 per 15-minute period or any portion thereof.

Liquidated Damages for Intermediate Contract Time #5 for the above road closure time restrictions for All Other Roads are $2,500.00 per 15-minute period or any portion thereof.

B. Hauling Restrictions

The Design-Build Team shall adhere to the hauling restrictions noted in the 2018 NCDOT *Standard Specifications for Roads and Structures*.

The Design-Build Team shall conduct all hauling operations as follows:

- The Design-Build Team shall not conduct any hauling operations against the flow of traffic of an open travelway unless an approved temporary traffic barrier or guardrail separates the traffic from the hauling operation.
- The Design-Build Team shall not haul during the holiday and special events time restrictions listed in ICT #1 through ICT #3 unless the hauling operation occurs completely behind temporary traffic barrier or guardrail and does not impact traffic operations.
- All hauling entrances, exits and crossings shall be shown on the TMP and be in accordance with the 2018 NCDOT Roadway Standard Drawings or the Typical

Median Access Special Provision. All hauling entrances, exits, and median access point locations shall be approved by the Department prior to installation.

- Haul vehicles shall not enter and / or exit an open travel lane at speeds more than 10 mph below the posted speed limit.
- Hauling operations that perpendicularly cross a roadway shall require a TMP and shall be subject to the time restrictions, and holiday and special event time restrictions listed in ICT #1 through ICT #3.

Excluding hauling operations that are conducted entirely behind a temporary traffic barrier or guardrail, multi-vehicle hauling shall not be allowed ingress and egress from any open travel lane during the following time restrictions:

Between September 16th and May 14th, the following hauling restrictions will apply.

Road Name	Day	Time Restrictions
US 70 and all ramps and loops	Monday through Friday	6:00 a.m. to 8:00 a.m. and 4:00 p.m. to 7:00 p.m.

Road Name	Day	Time Restrictions
Williams Road	Monday through Friday	8:00 a.m. to 7:00 p.m.

Between May 15th and September 15th, the following hauling restrictions will apply.

Road Name	Day	Time Restrictions
US 70 and all ramps and loops	Monday through Thursday	6:00 a.m. to 8:00 a.m. and 4:00 p.m. to 7:00 p.m.
	Friday through Sunday	Starting on Friday at 6:00 a.m. and ending on Sunday at 7:00 p.m.

Road Name	Day	Time Restrictions
Williams Road	Monday through Friday	8:00 a.m. to 7:00 p.m.

The Design-Build Team shall address how hauling will be conducted in the Technical Proposal, including but not limited to, hauling of any materials to and from the site and hauling material within the NCDOT right of way.

C. Lane and Shoulder Closure Requirements

On two-lane, two-way facilities, the Design-Build Team shall not install more than one (1) mile of lane closure in any one direction on any roadway within the project limits or in conjunction with this project, measured from the beginning of the merge taper to the end of the lane closure.

On multi-lane facilities, the Design-Build Team shall not install more than two (2) miles of lane closure in any one direction, measured from the beginning of the merge taper to the end of the lane closure. The Design-Build Team shall not install more than two simultaneous lane closures in any one direction and shall provide a minimum of two (2) miles between lane closures, measured from the end of one closure to the first sign of the next lane closure.

The Design-Build Team shall remove lane closure devices from the lane when work is not being performed behind the lane closure or when a lane closure is no longer needed.

When barrier is placed on the roadway shoulder, the Design-Build Team shall install shoulder closure signs and devices in advance of the barrier using the 2018 NCDOT Roadway Standard Drawings.

When personnel and / or equipment are working within 15 feet of an open travel lane, the Design-Build Team shall close the nearest open shoulder using the 2018 NCDOT Roadway Standard Drawings, unless the work area is protected by an approved temporary traffic barrier or guardrail.

When personnel and / or equipment are working on the shoulder adjacent to an undivided facility and within five feet of an open travel lane, the Design-Build Team shall, at a minimum, close the nearest open travel lane using the 2018 NCDOT Roadway Standard Drawings, unless the work area is protected by an approved temporary traffic barrier or guardrail.

When personnel and / or equipment are working on the shoulder adjacent to a divided facility and within ten feet of an open travel lane, the Design-Build Team shall, at a minimum, close the nearest open travel lane using the NCDOT 2018 Roadway Standard Drawings, unless the work area is protected by an approved temporary traffic barrier or guardrail.

When personnel and / or equipment are working within a lane of travel of an undivided or divided facility, the Design-Build Team shall, at minimum, close the lane using the NCDOT 2018 Roadway Standard Drawings. The Design-Build Team shall conduct the work so that all personnel and / or equipment remain within the closed travel lane.

The Design-Build Team shall not perform work involving heavy equipment within 15 feet of the edge of travel way when work is being performed behind a lane closure on the opposite side of the travel way.

D. Pavement Edge Drop off Requirements

Using suitable compacted material, the Design-Build Team shall backfill at a 6:1 slope up to the edge and elevation of the existing pavement in areas adjacent to an open travel lane that has an edge of pavement drop-off as follows:

- Elevation differences that exceed two inches on roadways with posted speed limits of 45 mph or greater and a paved shoulder four-foot wide or less.

- Elevation differences greater than three inches on roadways with posted speed limits less than 45 mph and with a paved shoulder four-foot wide or less.

- Refer to the current AASHTO Roadside Design Guide for proper treatment of all other conditions.

Do not exceed a difference of two inches in elevation between open lanes of traffic for nominal lifts of 1.5 inches. Install advance warning "UNEVEN LANES" signs (W8-11) 500 feet in advance and a minimum of every half mile throughout the uneven area.

E. Traffic Pattern Alterations

The Design-Build Team shall notify the Engineer, in writing, at least thirty (30) calendar days prior to any traffic pattern alteration. (Reference the Public Involvement and Information Scope of Work found elsewhere in this RFP for additional public information requirements)

F. Signing

The Design-Build Team shall install advance work zone warning signs when work is within 40 feet from the edge of travel lane and no more than three days prior to the beginning of construction.

When no work is being conducted for a period longer than one week, the Design-Build Team shall remove or cover all advance work zone warning signs, as directed by the Engineer. Stationary work zone warning signs shall be covered with an opaque material that prevents reading of the sign at night by a driver traveling in either direction.

When portable work zone signs are not in use for periods longer than 30 minutes, the Design-Build Team shall lay the portable work zone sign flat on the ground and collapse the sign stand and lay it flat on the ground.

The Design-Build Team shall install and maintain all detour signing and devices required for road closures. The Design-Build Team shall cover or remove all detour signs and devices required for road closures within and off the project limits when a detour is not in operation.

The Design-Build Team shall ensure proper signing (including but not limited to guide signs) is in place at all times during construction, as required by the MUTCD. All temporary signing shall be shown on the Traffic Control Plans or a Temporary Signing Plans to be reviewed and approved by the Work Zone Traffic Control Section and / or the Signing and Delineation Unit prior to incorporation.

G. Traffic Barrier

The Design-Build Team shall use only an NCDOT approved temporary traffic barrier system and adhere to the following requirements:

- Install temporary traffic barrier system a maximum of two (2) weeks prior to beginning work in any location. Once the temporary traffic barrier system is installed at any location, proceed in a continuous manner to complete the proposed work in that location.

- Place all temporary barrier used for traffic control directly on an asphalt or concrete surface.

- Temporary barrier used for traffic control shall not act as a retaining wall.

- Once the temporary traffic barrier system is installed and no work has been or will be performed behind the temporary traffic barrier system for a period longer than two (2) months, remove / reset the temporary traffic barrier system unless the barrier is protecting traffic from a hazard.

- Excluding water filled barrier, protect the approach end of temporary traffic barrier system at all times during the installation and removal of the barrier by either a truck mounted impact attenuator (maximum 72 hours) or a temporary crash cushion.

- Excluding water filled barrier, protect the approach end of temporary traffic barrier system from oncoming traffic at all times by a temporary crash cushion unless the approach end of temporary traffic barrier system is offset from oncoming traffic as follows:

Posted speed limit (mph)	Minimum offset (feet)
40 or less	15
45 – 50	20
55	25
60 mph or higher	30

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

- Install drums to close or keep closed tangent sections of the roadway until the temporary traffic barrier system can be placed or after the temporary barrier system has been removed. The distance, in feet, between drums shall be no greater than twice the posted speed limit (mph).

- The Design-Build Team shall minimize the presence of portable concrete barrier along acceleration ramps / loops. Thus, justification, in the Department's sole discretion, shall be provided in the TMP for the placement of portable

concrete barrier along acceleration ramps / loops. At existing and proposed ramp merges, lane drop merges, and / or temporary lane closure merges, the Design-Build Team shall install temporary traffic barrier system in a manner that provides a minimum of 200 feet from the end of the pavement marking taper to the beginning of the barrier taper.

- The Design-Build Team shall be responsible for providing proper connection between the existing bridge rail and the temporary barrier system and include this information in the appropriate plans.

H. Traffic Control Devices

The Design-Build Team shall use traffic control devices that conform to all NCDOT requirements and are listed on the NCDOT Approved Products List. The Approved Products List is may be referenced on the website noted below:

https://apps.dot.state.nc.us/vendor/approvedproducts/

The use of any devices that are not shown on the NCDOT Approved Products List shall require written approval from the Division Construction Engineer or designee prior to incorporation.

Channelizing device spacing shall not exceed a distance in feet equal to twice the posted speed limit. Channelization devices shall be spaced ten feet on-center in radii. Channelization devices shall be two feet off the edge of an open travelway, when lane closures are not in effect. Skinny drums shall only be allowed as defined in Section 1180 of the NCDOT 2018 *Standard Specifications for Roads and Structures*.

Place Type III barricades, with "ROAD CLOSED" signs (R11-2) attached, of sufficient length to close entire roadway. Stagger or overlap barricades to allow for ingress or egress.

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

Portable changeable message signs should be placed off the shoulder of the roadway and behind a traffic barrier, if practical. Where a traffic barrier is not available to shield the portable changeable message sign, it shall be placed off the shoulder and outside of the clear zone. If a portable changeable message sign must be placed on the roadway shoulder or within the clear zone, it shall be delineated with retroreflective temporary traffic control (TTC) devices. When portable changeable message signs are not being used to display TTC messages, they shall be relocated such that they are outside of the clear zone or shielded behind a traffic barrier and turned away from traffic. If relocation or shielding is not practical, the portable changeable message signs shall be delineated with retroreflective TTC devices.

I. Temporary Pavement Markings, Markers and Delineation

US ROUTES, AND NC ROUTES, INCLUDING ALL RAMPS AND LOOPS

The Design-Build Team shall show temporary pavement markings on the TMP that meet the requirements of the *Work Zone "Performance" Pavement Markings on US Routes and NC Routes* Section below and the *Guidelines for Preparation of Traffic Control and Pavement Marking Plans for Design-Build Projects*.

The Design-Build Team shall install pavement markings and markers in accordance with the NCDOT 2018 *Standard Specifications for Roads and Structures*, and in accordance with the manufacturer's procedures and specifications.

In accordance with the requirements below, the Design-Build Team shall install Work Zone "Performance" pavement markings on the interim surface for temporary traffic patterns. The Design-Build Team shall install temporary raised pavement markers on the interim surface for temporary traffic patterns.

The Design-Build Team shall not place temporary markings on the final asphalt pavement surface unless the temporary markings are placed in the exact location of the final pavement markings.

Temporary pavement markings on concrete surfaces shall only be removed by hydro blasting.

Prior to shifting traffic to a new pattern, the Design-Build Team shall, remove, or mill and fill, as appropriate, all conflicting markings and remove all conflicting markers and snowplowable marker castings.

The Design-Build Team shall tie proposed pavement marking lines to existing pavement marking lines.

By the end of each day's operation, the Design-Build Team shall, remove, or mill and fill, as appropriate, all conflicting markings, replace all damaged markings, and remove / replace all conflicting / damaged markers.

WORK ZONE "PERFORMANCE" PAVEMENT MARKINGS ON US ROUTES AND NC ROUTES, INCLUDING ALL RAMPS AND LOOPS

Description

The Design-Build Team shall furnish and install Work Zone "Performance" pavement markings that delineate the travel way for work zone traffic patterns on the mainline, US Routes, and NC Routes, including all ramps and loops. The purpose of Work Zone "Performance" pavement marking is to provide a more durable work zone pavement marking that shall last the full duration of a traffic pattern without requiring replacement or reapplication for a period of up to 12

months. The Work Zone "Performance" pavement markings shall also provide a higher performance level, for both initial and residual retroreflectivity, than standard traffic paints to improve nighttime work zone visibility.

Materials

a) General

Use materials in accordance with the Manufacturer's recommendations that shall retain both durability and a minimum retroreflectivity, as described elsewhere in this RFP, for a period of at least 12 months.

On concrete pavement, the Design-Build Team shall provide black contrast "Performance" pavement markings that contrast the white skip line along through lanes and ramp lanes. The black contrast "Performance" pavement marking shall immediately follow the white skip line at the same width and half the length, or border the long edges of the white skip line at a width of 1.5 inches. Black contrast "Performance" pavement markings shall be matte and non-retroreflective.

The Work Zone "Performance" pavement markings shall be manufactured to bond successfully to both concrete and asphalt pavements. The pavement marking materials shall be applied in a single application. The following are approved materials to be used for Work Zone "Performance" pavement markings:

- Polyurea
- Thermoplastic (Extruded and Sprayed)
- Epoxy
- Polymer (Single System)
- Cold Applied Plastic Type 4

When using Cold Applied Plastic Type 4 pavement markings, place temporary raised markers half on and half off edge lines and centerlines to help secure the tape to the roadway. Markers shall be spaced the appropriate distance apart as described by the 2018 Roadway Standard Drawing 1250.01, Sheet 1 of 3.

b) Material Qualifications / Certifications

The Design-Build Team shall only use Work Zone "Performance" pavement marking materials, as listed above, that are on the NCDOT Approved Products List at the time of installation. In accordance with Article 106-3, and Section 1087-4 of the NCDOT 2018 *Standard Specifications for Roads and Structures*, the Design-Build Team shall provide a Type 3 Material Certification for all materials, and a Type 3 and Type 4 certification for all reflective media.

Construction Methods

The Design-Build Team shall not use hand applied methods or any other non-truck mounted application equipment / device to install Work Zone "Performance" pavement markings for applications longer than 1,000 feet.

All Work Zone "Performance" pavement markings shall be installed in a single application.

a) Testing Procedures

All Work Zone "Performance" pavement markings shall be tested by the Department through an independent Mobile Retroreflective Contractor. The Work Zone "Performance" pavement markings will be scanned to ensure the retroreflectivity requirements in Section c below are met.

b) Application Equipment

Application equipment shall be in accordance with Section 1205 of the NCDOT 2018 Standard Specifications for Roads and Structures.

c) Material Application

The Work Zone "Performance" pavement marking material shall be applied at the following minimum thicknesses:

- Polyurea = 20 mils wet
- Epoxy = 20 mils wet
- Thermoplastic (Extruded or Sprayed) = 50 mils wet
- Polymer = 20 mils wet
- Cold Applied Plastic (IV) = Manufacturer's recommendation

The Work Zone "Performance" pavement marking line widths shall be as follows:

- Edge lines, Solid Lane Lines, Skip and Mini-Skip Lines = 4"
- Gorelines = 8"

"No track" dry times for the liquid systems shall be ten minutes or shorter. Traffic shall not be placed on any material until it is sufficiently dry / cured to eliminate wheel tracking.

The minimum level of retroreflectivity for all Work Zone "Performance" pavement marking system selected shall be as follows:

Reflectometer Requirements for Work Zone "Performance" Pavement Markings

Color	Initial	6 Months	12 Months
White	375 mcd/lux/m2	275 mcd/lux/m2	150 mcd/lux/m2
Yellow	250 mcd/lux/m2	150 mcd/lux/m2	100 mcd/lux/m2

For the durations noted in the chart above, the Work Zone "Performance" pavement markings shall adhere to the corresponding retroreflectivity levels.

The Design-Build Team shall notify the Engineer, in writing, a minimum of 7 - 10 days prior to the installation of Work Zone "Performance" pavement markings. The Department will measure initial retroreflectivity levels with a mobile retroreflectometer within 30 days after placement to ensure compliance with the reflectivity levels in the chart above.

Work Zone "Performance" pavement markings shall maintain the retroreflectivity levels for the durations noted above. If the markings appear to be non-performing, in the Engineer's sole discretion, the Engineer may request additional retroreflectivity readings. If and when this becomes necessary, the same notification procedure as described above shall be used to have Work Zone "Performance" pavement markings measured by a Mobile Retroreflective Contractor.

If measured and found to be noncompliant, the Design-Build Team shall replace the Work Zone "Performance" pavement markings at no cost to the Department.

All Work Zone "Performance" pavement markings shall be durable enough to withstand a single snow event without showing excessive fatigue in either bonding or retroreflectivity. The Design-Build Team shall replace the Work Zone "Performance" pavement markings if a single snowplow event results in more than 25% of the pavement marking edgelines or skips being physically removed and / or the Work Zone "Performance" pavement markings do not meet the following minimum retroreflectivity values:

Reflectometer Requirements for Work Zone "Performance" Pavement Markings after a Single Snowplowed Event

Color	MINIMUM
White	150 mcd/lux/m2
Yellow	100 mcd/lux/m2

Unless the temporary traffic pattern is to be modified within 30 days, the Design-Build Team shall replace all non-compliant Work Zone "Performance" pavement markings within 30 days of determining they are non-compliant.

If the work zone experiences more than one snow event requiring snowplowing, the retroreflectivity values in the chart above will no longer

apply. The Engineer will determine if the pavement markings are performing adequately and / or if replacement is necessary due to excessive damage caused solely by snowplow activities. If the Work Zone "Performance" pavement markings are found to be deficient, solely in the Engineer's discretion, they shall be replaced. In such case, the Work Zone "Performance" pavement markings will be paid for as extra work in accordance with Subarticle 104-8-(A) of the NCDOT 2018 *Standard Specifications for Roads and Structures* at the unit price of $0.40 per linear foot. Unless the temporary traffic pattern is to be modified within 30 days, the Design-Build Team shall replace all Work Zone "Performance" pavement markings damaged due to multiple snowplow events within 30 days.

If the Work Zone "Performance" pavement markings need to remain in place longer than 12 months, the markings shall be scanned by a Mobile Retroreflective Contractor. If the Work Zone "Performance" pavement markings meet or exceed the 12-month retroreflectivity requirements noted above, the markings can remain in place. If the Work Zone "Performance" pavement markings do not meet or exceed the 12-month retroreflectivity requirements noted above, the Design-Build Team shall replace the Work Zone "Performance" pavement markings within 15 days of the 12-month duration date at no cost to the Department. If and when this becomes necessary, the same notification procedure as described above shall be used to have Work Zone "Performance" pavement markings measured by a Mobile Retroreflective Contractor.

d) Surface Preparation

Prior to installation, all pavement surfaces to receive Work Zone "Performance" pavement markings shall be swept clean and prepared in accordance with the Manufacturer's recommendation.

e) Temperature and Weather Limitations

Work Zone "Performance" pavement markings shall only be applied when the ambient air temperature and the pavement temperature are 50□F or higher for thermoplastic and are 40□F or higher for all other materials. The Design-Build Team shall not install Work Zone "Performance" pavement markings unless the pavement surface is completely dry. The Design-Build Team shall not install Work Zone "Performance" pavement markings within four hours of a heavy rain event, (rainfall intensities equal to or greater than 1 inch /per hour).

In the event a traffic shift must occur when the air and / or pavement temperatures are below the aforementioned minimums and / or a rain event occurs four hours prior to or during a planned traffic shift, the Design-Build Team may install temporary pavement marking paint, at the Engineer's sole

discretion. Temporary pavement marking paint shall be applied in one application and shall produce a four-inch wide line at 15 mils (wet). Beads that provide the following minimum retroreflectivity shall be applied to the temporary pavement marking paint:

White: 225 mcd / lux / m2
Yellow: 200 mcd / lux / m2

The temporary pavement marking paint with beads shall maintain the minimum retroreflectivity noted above until placement of the Work Zone "Performance" pavement markings

The Design-Build Team shall replace / reapply temporary pavement marking paint with beads that does not adhere to the retroreflectivity requirements noted above at no cost to the Department. The Design-Build Team shall apply the Work Zone "Performance" pavement markings within 90 days of installing the temporary pavement marking paint with beads.

Excluding damage due solely to snowplow events, the Design-Build Team shall replace all Work Zone "Performance" pavement material that debonds and /or does not adhere to the retroreflectivity levels for the corresponding durations noted above at no cost to the Department.

ALL OTHER ROADS AND STRUCTURES

The Design-Build Team shall show temporary pavement markings on the Transportation Management Plans that meet the requirements of the RFP and the *Guidelines for Preparation of Traffic Control and Pavement Marking Plans for Design-Build Projects*.

The Design-Build Team shall only use pavement marking and marker products that conform to all NCDOT requirements and are listed on the NCDOT Approved Products List. The use of any devices that are not shown on the NCDOT Approved Products List shall require written approval from the Division Construction Engineer or designee prior to incorporation.

The Design-Build Team shall install pavement markings and markers in accordance with the 2018 NCDOT *Standard Specifications for Roads and Structures*, and in accordance with the manufacturer's procedures and specifications.

The Design-Build Team shall install temporary pavement markings that are the same width as existing pavement markings. For roadways that do not have existing pavement markings, the Design-Build Team shall install temporary pavement markings that are the same width as required for the final pavement markings in the Pavement Markings Scope of Work found elsewhere in this RFP.

The Design-Build Team shall install temporary pavement markings and temporary pavement markers on the interim surface or temporary pattern as follows:

Road	Marking	Marker
All roads and structures, except US Routes, NC Routes, and ramps and loops	Any Marking on the Approved Product List	Raised Temporary

The Design-Build Team may use any type of pavement markings on the NCDOT Approved Products List for temporary patterns. However, the Design-Build Team shall maintain a minimum retroreflectivity for pavement markings (existing and temporary markings) at all times during construction, as follows:

White: 125 mcd / lux / m2
Yellow: 100 mcd / lux / m2

When using Cold Applied Plastic Type 4 pavement markings, place temporary raised markers half on and half off edge lines and centerlines to help secure the tape to the roadway. Markers shall be spaced the appropriate distance apart as described by the 2018 *Roadway Standard Drawing* 1250.01, Sheet 1 of 3.

The Design-Build Team shall tie proposed pavement marking lines to existing pavement marking lines.

By the end of each day's operation, the Design-Build Team shall remove all conflicting markings, replace all damaged markings, and remove / replace all conflicting / damaged pavement markers.

The Design-Build Team shall trace existing and / or proposed monolithic island locations with the proper color pavement marking prior to removal and / or installation. The Design-Build Team shall place drums to delineate existing and / or proposed monolithic islands after the removal and / or before installation.

The Design-Build Team shall not place temporary markings other than Cold Applied Plastic Type 4 – Removable Tape on any final pavement surface unless the temporary markings are placed in the exact location of the final pavement markings.

Temporary pavement markings on concrete surfaces shall only be removed by hydroblasting.

Prior to shifting traffic to a new pattern, the Design-Build Team shall remove all conflicting markings, replace all damaged markings, and remove / replace all conflicting / damaged pavement markers and snowplowable marker castings.

Unless noted otherwise in this RFP, removal of the temporary pavement markings on asphalt surfaces (other than the mainline, US Routes, NC Routes, and all ramps and loops) shall be accomplished by an NCDOT approved system to minimize damage to the road surface. Temporary pavement markings shall not be obliterated with any type of Black Pavement Markings (paint or other material). The Design-

Build Team shall remove all temporary pavement markings without removing more than 1/32 inch of the pavement surface.

J. Temporary Traffic Signals

Use the following notes if the Design-Build Team proposes temporary traffic signals for maintenance of traffic:

- Notify the Engineer in writing a minimum of two months before a temporary traffic signal installation is required.

- Shift and revise all signal heads as shown on the accepted Traffic Signal Plans.

K. Traffic Shifts

All straight-line traffic shifts shall be designed for the full L distance (L=width of traffic shift X speed limit in mph). In addition, solid white line pavement markings shall be used to separate the travel lanes in the straight-line traffic shift for any road having two (2) or more travel lanes in a direction.

L. Traffic Control Supervisor

The Design-Build Team shall furnish a Traffic Control Supervisor for the project who is knowledgeable of TMP design, devices and application, and has full authority to ensure traffic is maintained in accordance with the plans and specifications developed by the Design-Build Team.

The Traffic Control Supervisor shall be on the project site overseeing all road closures and median crossover operations to ensure traffic control devices are properly installed and adjusted as necessary. The Traffic Control Supervisor shall also make necessary changes to the traffic control operations and aide in the monitoring of traffic queuing.

The Design-Build Team shall identify a Traffic Control Supervisor in their Technical Proposal that has the following qualifications:

(1) A minimum 24 months of On-the-Job Training in supervision and work zone set up and implementation on similar projects.

(2) Be certified by responsible party (contractor or NCDOT) to have the required experience and training and is qualified to perform the duties of this position. If certified by the Contractor, a notarized certification letter shall be furnished to the Engineer at the preconstruction meeting. The letter shall state the Traffic Control Supervisor is qualified, and state that the Traffic Control Supervisor has the authority to ensure traffic is maintained in accordance with the contract documents.

The Traffic Control Supervisor for the project shall perform the following:

(1) During construction, be available or on call 24 hours per day, 7 days per week to direct / make any necessary changes in the traffic control operations in a timely and safe manner. The Design-Build Team shall provide NCDOT the name of the Traffic Control Supervisor and support personnel, and the phone number(s) where they can be reached 24 hours per day, seven days per week.

(2) Coordinate and cooperate with traffic control supervisors of adjacent, and overlapping construction projects, as well as construction projects in proximity to the subject project, to ensure safe and adequate traffic control setup is maintained throughout the project at all times, including periods of construction inactivity.

(3) Coordinate and cooperate with the NCDOT Statewide Operations Center (STOC) to ensure proper messages are displayed on the CMSs and DMSs

(4) Coordinate with the following agencies and services:

- School Buses: The Design-Build Team shall coordinate with Craven County Schools prior to construction activities that may result in substantial delays to school buses.

- Craven Area Regional Transit (CARTS): The Design-Build Team shall coordinate with CARTS prior to construction to determine if service is being provided within the project limits. In the event CARTS service is being provided within the project limits, the Design-Build Team shall coordinate with CARTS any detours and construction delays that may impact service.

- Business Outreach and Bike MS: the Design-Build Team shall coordinate with the New Bern Area Chamber of Commerce regarding business impacted by construction, and to the Bike MS organizers prior to project construction. Such outreach activities shall be coordinated in accordance with the requirements of the *Public Information* Scope of Work found elsewhere in this RFP.

- Fire Departments and Emergency Medical Services (EMS): the Design-Build Team shall coordinate with local emergency service providers, including No. 7 Township Fire and Rescue and Craven County Emergency Services, regarding potential detour routes, and prior to any construction that may result in substantial delays for emergency vehicles.

- Marine Corps Air Station at Cherry Point: U.S. 70 is a designated STRAHNET route and serves military commuters. Because the project is expected to have temporary impacts on mobility during construction, the Design-Build Team shall coordinate with the Commanding Officer

of the Marine Corps Air Station at Cherry Point prior to project construction.

- Hospitals, and Law Enforcement Department throughout construction to alert these entities to traffic control impacts that may affect their services.

(4) Provide traffic control setup that ensures safe traffic operations and workers' safety throughout the construction area.

(5) Attend all scheduled traffic control coordination meetings, as required by the Engineer.

(6) Monitor traffic delays and backups within the work zone.

M. Portable Temporary Lighting

The Design-Build Team shall provide portable temporary lighting to conduct night work in accordance with the 2018 NCDOT Standard Specifications for Roads and Structures.

Work Zone Sequential Flashing Warning Lights

In addition to the requirement above, the Design-Build Team shall furnish and install Sequential Flashing Warning Lights on drums used for merging tapers to assist motorist in determining which direction to merge and to decrease late lane merging. (Reference the *Sequential Flashing Warning Lights* Project Special Provisions found elsewhere in this RFP.)

N. Drainage

The Design-Build Team shall provide proper drainage for all temporary alignments and / or traffic shifts.

O. Law Enforcement

Law enforcement officers shall be used during any rolling road block operation and to direct traffic when installing / removing / shifting traffic signal heads at intersections. Law enforcement officers may be used to maintain traffic through the work area and / or intersections. The use of law enforcement officers shall adhere to the following requirements:

- The Design-Build Team shall be responsible for coordinating with the law enforcement agency for the use of law enforcement officers.

- The Design-Build Team shall only utilize officers who are outfitted with law enforcement uniforms and marked vehicles, which are equipped with proper lights mounted on top of the vehicle and agency emblems.

- The Design-Build Team shall coordinate with the Engineer where and how law enforcement officers will be used during construction.

The Design-Build Team shall address where and how law enforcement officers will be used in the Technical Proposal.

P. No Parking / Tow Away Zone Ordinance

Prior to construction, the Department will obtain a No Parking / Tow Away Zone Ordinance on the mainline. The Design-Build Team shall provide and install proper signing for the No Parking / Tow Away Zone Ordinance as follow:

- 1000 feet in advance of the “Begin Road Work” signs
- On all on-ramps within the project limits
- A minimum of every 3000 feet in each direction

Q. On-Call Towing

The Design-Build Team shall provide an on-call towing service for all disabled vehicles within the project limits and one mile outside of the Begin and End Project Limits on the mainline.

The towing service shall relocate disabled vehicles to secure pre-arranged locations outside of the project limits and off the NCDOT right of way.

The towing service shall provide tow vehicles capable of towing automobiles and light trucks (up to 10,000-pound gross vehicle weight) and medium and heavy-duty trucks (greater than 10,000-pound gross vehicle weight). All tow vehicles shall be able to tow using the "wheel lift" method and the conventional boom lift method.

The Design-Build Team shall immediately place a lime green Tow Sticker (provided by the Department) on all disabled vehicles. The Design-Build Team shall provide pertinent information on the sticker, including the designated tow location and the signature and agency of the person authorizing the tow.

The towing service shall tow a disabled vehicle within 20 minutes of placement of the lime green Tow Sticker. The towing service shall only tow vehicles displaying a lime green Tow Sticker.

For all vehicles towed, the Design-Build Team shall keep a record of the approximate disabled vehicle location, vehicle type, including make and color, and the vehicle license plate number. The Design-Build Team shall also maintain a record of the information on the lime green Tow Stickers, including the exact time the vehicle was removed and the exact location of where the vehicle was towed. The Design-Build shall immediately give all the aforementioned information to the Resident Engineer.

Within 30 minutes of a vehicle being towed, the Design-Build Team shall contact the Law Enforcement Agency that is responsible for enforcement on the mainline and provide them with the information necessary for their Database. The towing service shall commence the date construction begins and shall operate 24 hours a day, seven days a week until the project is completed.

Prior to any construction activity, the Design-Build Team shall arrange and attend a towing coordination meeting. The Design-Build Team shall coordinate this meeting with the Division and the Division Construction Engineer or designee. During this meeting, the locations where vehicles will be towed will be determined, the towing requirements will be confirmed and the process by which specific towing information will be conveyed to the appropriate personnel will be determined.

The towing service base of operation shall have a publicly accessible published telephone number that shall be manned, or have call forwarding to an employee on call, during the aforementioned towing service operation times.

The Design-Build Team shall coordinate placement of the towing operation information on the project website with the NCDOT Communications Office. (Reference the *Public Information* Scope of Work found elsewhere in this RFP) This information shall include, but not be limited to vehicle tow locations, reasons for work zone towing, time frame allowed before the abandoned vehicle will be towed, how to retrieve the vehicle and any necessary phone numbers for retrieval.

R. Shoulder Sweeping

At a minimum, the Design-Build Team shall conduct monthly sweeping operations on shoulders within the project and a minimum of one mile beyond the project limits in each direction on the mainline.

S. Work Zone Speed Limit Reduction and $250 Speeding Penalty Ordinances

If, at the Department's sole discretion, the Design-Build Team can justify that the TMPs cannot be designed to adhere to the existing mainline posted speed limit requirements, the Design-Build Team shall submit a formal Work Zone Speed Limit Reduction Ordinance request to the Division Construction Engineer or designee for approval. The request shall state the type of ordinance requested, why the ordinance is needed and why the TMPs cannot be designed to avoid the need. The request shall also include an Engineering Study that justifies the need for a Work Zone Speed Limit Reduction Ordinance. (Reference the criteria listed in the NCDOT Work Zone Traffic Control Guidelines) Upon receipt of the formal request, the Design-Build Team shall allow six weeks for the Work Zone Speed Limit Reduction Ordinance to be approved. The Design-Build Team shall provide and install proper signing for all approved Work Zone Speed Limit Reduction Ordinances. The Design-Build Team shall identify the need for a Work Zone Speed Limit Reduction Ordinance in the Technical Proposal.

The Department may grant a $250 Speeding Penalty Ordinance for the mainline provided the project meets or exceeds the required criteria. If the TMP cannot be designed to eliminate the need for a Speeding Penalty Ordinance and meet the criteria listed in the NCDOT Work Zone Traffic Control Guidelines, the Design-Build Team shall prepare an Engineering Study. The Design-Build Team shall submit a formal Speeding Penalty Ordinance request to the Division Construction Engineer or designee that states why the ordinance is needed and why the TMP cannot be designed to avoid the need. Upon receipt of the formal request, the Design-Build Team shall allow six weeks for the Speeding Penalty Ordinance to be approved. The Design-Build Team shall identify the need for a Speeding Penalty Ordinance in the Technical Proposal.

T. Project Coordination

The Design-Build Team shall coordinate with all Contractors and NCDOT Resident Engineers in charge of any project in the vicinity of this project for any work that may affect the construction, traffic operations, and placement of temporary traffic control devices (including advance warning signs) on all roads within the project limits and associated with this project.

At a minimum, the Design-Build Team shall coordinate with the Division Traffic Engineer, the Rail Division, Law Enforcement, Emergency Services and the Work Zone Traffic Control Section to schedule and attend Traffic Safety and Operations Meetings. These meetings shall be held to monitor and assess safety and mobility during construction. The Traffic Safety and Operations Meetings shall be held on an as needed basis during project construction. Additional Traffic Safety and Operations Meetings shall be held to address any specific issue, as directed by the Engineer.

U. Temporary Shoring

The Design-Build Team shall be responsible for all required temporary shoring, including but not limited to designing, providing, installing, maintaining and removing. Temporary shoring for the maintenance of traffic shall be defined as shoring necessary to provide lateral support to the side of an excavation or embankment parallel to an open travelway when a theoretical 2:1 (H:V) slope from the bottom of the excavation or embankment intersects the existing ground line closer than five feet from the edge of pavement of the open travelway. The Design-Build Team shall identify locations where temporary shoring for maintenance of traffic will be required on the Transportation Management Phasing Concept. The Design-Build Team shall install temporary traffic barrier as shown on the PCB at Temporary Shoring Locations detail available on the Work Zone Traffic Control website noted below. The aforementioned detail provides design information on the temporary traffic barrier location in relation to the temporary shoring and traffic location. (Notes related to Temporary Shoring are not required in the General Notes sheet for the TMP)

The NCDOT Geotechnical Engineering Unit and Work Zone Traffic Control websites have more information on temporary shoring. The Design-Build Team shall adhere to the additional shoring requirement located on the Work Zone Traffic Control and Geotechnical Engineering Unit websites noted below:

https://connect.ncdot.gov/projects/WZTC/Pages/default.aspx

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

The Design-Build Team shall identify on the appropriate traffic control details where temporary shoring will be used by providing station limits, offsets, cut sections, the type of shoring and where temporary traffic barrier will be located, if needed.