Transportation

PAT McCRORY
Governor

NICHOLAS J. TENNYSON
Secretary

July 29, 2016

Addendum No. 1

Contract No.:	C203862
TIP No.:	U-2827B / C-5620A
County:	Forsyth
Project Description:	US 421 / I-40 Business Pavement Reconstruction, Bridge Replacements and Interchange Modifications from west of Fourth Street to east of Church Street; and Multi-Use Path from Fourth Street to Liberty Street
RE:	Addendum No. 1 to Final RFP

August 30, 2016 Letting

To Whom It May Concern:

Reference is made to the Final Request for Proposals dated July 20, 2016 recently furnished to you on the above project. We have since incorporated changes, and have attached a copy of Addendum No. 1 for your information. Please note that all revisions have been highlighted in gray and are as follows:

The second page of the *Table of Contents* has been revised. Please void the second page in your proposal and staple the revised second page thereto.

Page Nos. 133 and 134 of the *Architectural Concrete Surface Treatment* Project Special Provision have been revised. Please void Page Nos. 133 and 134 in your proposal and staple the revised Page Nos. 133 and 134 thereto.

Page Nos. 185, 186, 191, 194 and 196 of the *Roadway Scope of Work* have been revised. Please void Page Nos. 185, 186, 191, 194 and 196 in your proposal and staple the revised Page Nos. 185, 186, 191, 194 and 196 thereto.

Page No. 204 of the *Pavement Management Scope of Work* has been revised. Please void Page No. 204 in your proposal and staple the revised Page No. 204 thereto.

Page Nos. 212, 214 and 215 of the *Structures Scope of Work* have been revised. Please void Page Nos. 212, 214 and 215 in your proposal and staple the revised Page Nos. 212, 214 and 215 thereto.

Page Nos. 226 and 227 of the *Geotechnical Engineering Scope of Work* have been revised. Please void Page Nos. 226 and 227 in your proposal and staple the revised Page Nos. 226 and 227 thereto.

Page Nos. 236 and 244 of the *Transportation Management Scope of Work* have been revised. Please void Page Nos. 236 and 244 in your proposal and staple the revised Page Nos. 236 and 244 thereto.

Page No. 264 of the *Signing Scope of Work* has been revised. Please void Page No. 264 in your proposal and staple the revised Page No. 264 thereto.

Page Nos. 277 and 280 of the *Traffic Signals and Signal Communications Scope of Work* have been revised. Please void Page Nos. 277 and 280 in your proposal and staple the revised Page Nos. 277 and 280 thereto.

Page No. 294 of the *ITS Scope of Work* has been revised. Please void Page No. 294 in your proposal and staple the revised Page No. 294 thereto.

Page Nos. 322 and 325 of the *Utilities Coordination Scope of Work* have been revised. Please void Page Nos. 322 and 325 in your proposal and staple the revised Page Nos. 322 and 325 thereto.

Page Nos. 342 - 346, 348, 349, 351 - 353, and 355 - 358 of the *Aesthetics Scope of Work* have been revised. Please void Page Nos. 342 - 346, 348, 349, 351 - 353, and 355 - 358 in your proposal and staple the revised Page Nos. 342 - 346, 348, 349, 351 - 353, and 355 – 358 thereto.

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

Sincerely,

R.A. Garris, PE
Contract Officer

RAG / rem

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

being galvanized, and the top coat color shall be approved by the Engineer. After erection, the bolts, nuts, and washers shall be primed by brush, then the entire support system of posts, backing angles, bolts, nuts and washers shall be top-coated. The structural panels shall be masked off so no overspray or spatters occur. The Design-Build Team shall provide the Engineer three samples of paint that are close to the structural panel color for final color selection. The limits of the painting shall be from the top of the posts to the bottom of the lowest panel.

CONSTRUCTION METHODS

The erection of the sound barrier components shall not begin until the concrete in the bridge railing has reached a minimum compressive strength of 3,000 psi. Install posts as shown on the plans developed by the Design-Build Team or in the accepted submittals with a tolerance of ½-inch per foot from vertical or as necessary to conform to the plank / panel design, if more restrictive.

WORKING DRAWINGS

In accordance with the 2012 *Standard Specifications for Roads and Structures*, submit plank design calculations and specifications for approval prior to purchasing the plank / panel materials. Submit metalwork fabrication drawings for approval prior to fabrication of steel wall components. This submittal shall clearly indicate access for visual inspection of the post attached bolts. Submit an erection plan and plank / panel support components, for review and acceptance prior to fabrication of metalwork. Submit five sets of detail drawings for review and acceptance.

ARCHITECTURAL CONCRETE SURFACE TREATMENT

(1-28-15)

1.0 GENERAL

The work covered by this Project Special Provision shall consist of constructing a stained, simulated wave masonry textured surface and a stained, simulated stone textured surface on the faces of pre-cast concrete panels used in ground mounted sound barrier walls, as indicated on the plans developed by the Design-Build Team and herein. The Design-Build Team shall furnish all materials, labor, equipment and incidentals necessary for the construction of architectural concrete surface treatment using simulated wave and stone masonry form liners (molds) and a compatible concrete coloring system.

TRAFFIC SIDE OF GROUND MOUNTED SOUND BARRIER WALLS

The Design-Build Team shall use the same source of form liner and color stains for all sound barrier wall panels facing the traffic side. The architectural concrete surface treatment shall match the appearance (wave size, wave shape, wave texture, pattern and relief) of natural stone to resemble a wave pattern with panel staining on the traffic side that matches the Grey Palette Color # FS 36270 found in the *Federal Standard 595B – Colors Used in Government Procurement*. All texture shall be in addition to the nominal

thickness of the wall panels of four inches ± ¼ inch. Maximum relief of the textured surface shall be 1¼ inch or less. The top 1'-0" of the top panel within each wall segment shall have a smooth, non-textured and non-stained finish to resemble faux coping. Concrete columns shall remain unstained in their natural concrete color. There shall be an appreciable contrast between the colors of the unstained concrete columns and the stained panels. For information purposes only, sources of form liners in the wave pattern include, but are not limited to:

Custom Rock Formliner
2020 West 7th Street
St. Paul, MN 55116
http://www.customrock.com/
Pattern: Simulated Wave (3/4" Relief) # 8004

Dayton Superior Corporation
1125 Byers Road
Miamisburg, OH 45342
http://www.daytonsuperior.com/
Pattern: 3/4" Aqua Wave # F70655

US Formliner Powered By Reckli
370 Commerce Boulevard
Athens, GA 30606
http://usformliner-reckli.com/
Pattern: 2/244 Jamaica # C 2244

The Design-Build Team has the option of supplying an alternative pattern of simulated wave form liner, as long as the pattern selected is approved, in writing, as an equal or approved alternative by the Engineer.

RESIDENTIAL SIDE OF GROUND MOUNTED SOUND BARRIER WALLS

The Design-Build Team shall use the same source of form liner and color stains for all sound barrier wall panels facing the residential side. The architectural concrete surface treatment shall match the appearance (stone size, stone shape, stone texture, pattern and relief) of natural stone to resemble an ashlar stone pattern with panel staining on the residential side that matches the Grey Palette Color # FS 36270 found in the *Federal Standard 595B – Colors Used in Government Procurement*. All texture shall be in addition to the nominal thickness of the wall panels of four inches ± ¼ inch. Maximum relief of the textured surface shall be 1¼ inch or less. The top 1'-0" of the top panel within each wall segment shall have a smooth, non-textured and non-stained finish to resemble faux coping. Concrete columns shall remain unstained in their natural concrete color. There shall be an appreciable contrast between the colors of the unstained concrete columns and the stained panels. For information purposes only, sources of form liners in the ashlar stone pattern include, but are not limited to:

ROADWAY SCOPE OF WORK (7-29-16)

It should be noted that TIP Project, U-2827B, as referenced throughout this Request for Proposals (RFP), represents TIP Projects U-2827B and C-5620A. All references to TIP Projects U-2827B and C-5620A in material provided by the Department shall apply to this project.

It should be noted that Fourth Street as referenced throughout this RFP, represents Fourth Street and West Fourth Street.

Throughout this RFP, references to the U-2827B Preliminary Plans shall denote 1) the U-2827B Preliminary Roadway Design (U-2827BA, U-2827B, Brookstown Avenue Lane Shift dated July 19, 2016, Academy Street Improvements, and N. Martin Luther King Jr. Dr. Improvements), and 2) the Multi-Use Path (MUP) (C-5620A) Preliminary Plans (Roll 1 of 1) dated May 6, 2016.

Project Details

- The Design-Build Team shall design and construct a four-lane divided freeway with a minimum 11-foot median throughout the pavement reconstruction limits from the eastern terminus of the concrete median barrier located west of Fourth Street to the western approach slab of the US 421 / I-40 Business bridge over Salem Avenue. Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall design and construct the -L- Line (mainline) providing the same or better access, widening, improvements and traffic measures of effectiveness, in the Department's sole discretion, included in the U-2827B Preliminary Plans provided by the Department. The limits of -L- Line construction shall be of sufficient length to tie to existing based upon the current NCDOT guidelines and standards. The mainline (-L- Line) shall be designed and constructed to meet a 50-mph design speed for a rolling urban freeway. The Design-Build Team shall provide all other design criteria in the Technical Proposal.

- Along the -L- Line, including but not limited to within the sound barrier wall construction limits located outside the pavement reconstruction limits, the Design-Build Team shall design and construct minimum 12-foot outside shoulders (ten-foot useable shoulder width plus two feet), ten-foot of which shall be full depth paved shoulders, including all acceleration, deceleration and auxiliary lanes, and ramps / loops to the back of the gore (12-foot width). Within the pavement reconstruction limits along the -L- Line, the Design-Build Team shall design and construct a minimum 11-foot full depth paved median with Type "T" double-faced concrete median barrier.

- The Design-Build Team shall coordinate with 1) Project U-2925, anticipated completion January 2017, and 2) the NCDOT Contract No. C203854 - Milling, Resurfacing and Shoulder Reconstruction of US 421 / I-40 Business west of Crafton Street, anticipated completion May 2017, design and construction to ensure accurate hydrology, capacity, and horizontal and vertical ties that adhere to the design criteria. Excluding the design revisions required herein, the Design-Build Team shall not make any design or construction revisions

that impact the design or construction of project U-2925 or C203854 without prior written approval from the Design-Build Unit. The aforementioned prior written approval shall occur 1) through the ATC Process Prior to Award or 2) through coordination and / or submittals to the Design-Build Unit after Award. (Reference the *Cooperation Between Contractors* Project Special Provision found elsewhere in this RFP)

- Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall design and construct -Y- Lines, ramps and loops providing the same or better sidewalks, access, widening, improvements and traffic measures of effectiveness, in the Department's sole discretion, included in the U-2827B Preliminary Plans and Appendix D of the U-2827B Finding of No Significant Impact (FONSI) provided by the Department. On the west side of Peters Creek Parkway, from the north side of the culvert under Peters Creek Parkway (approximately Sta. 34+50 -Y1-, RT) to Fourth Street, the Design-Build Team will be allowed to provide a five-foot sidewalk in lieu of the eight-foot sidewalk indicated in the FONSI - Appendix D. In the event of conflicting design parameters in the requirements noted above, excluding the aforementioned sidewalk width, the proposed design shall adhere to the most conservative values. The limits of -Y- Line construction shall be 1) of sufficient length to tie to existing based upon the current NCDOT guidelines and standards, 2) to the construction limits shown on the U-2827B Preliminary Plans provided by the Department, or 3) to the construction limits shown on the U-2827B Combined Public Hearing Map provided by the Department, whichever is greater.

- Excluding modifications included in the U-2827B Preliminary Plans provided by the Department, the Design-Build Team shall coordinate with, and obtain written approval from, the Engineer and the City of Winston-Salem for all horizontal alignment revisions to City Streets. The Department will not honor any requests for additional contract time or compensation for any efforts required to obtain the aforementioned approval, including but not limited to public involvement, additional design effort, additional construction effort, and / or additional environmental agency coordination and approval.

- The Design-Build Team shall design and construct minimum 12-foot lanes on Brookstown Avenue.

- The Design-Build Team shall design and construct all -Y- Lines such that the through movement is not required to change lanes throughout the project limits.

- The minimum width of all grass covered islands / medians shall be eight feet, measured face to face from the surrounding mountable concrete curb and gutter or from edge of pavement to edge of pavement, as appropriate. All grass covered islands shall be constructed with topsoil and appropriate cross slope and median drain with pipe to prevent groundwater and surface water infiltration into the subgrade and / or pavement structure. Prior to construction of the grass covered islands and / or the median drain with pipe, the Design-Build Team shall submit to the Design-Build Unit, for review and acceptance, the proposed number of drains, drain locations within the typical section, topsoil specifications and construction details. Within all proposed grass covered island limits, the Design-Build Team shall completely remove and dispose of the existing pavement structure.

In addition to the aforementioned temporary offsite intersection improvements, the Design-Build Team shall design and construct the Peters Creek Parkway Loop A and Loop D as a temporary two-lane entrance loop and a temporary two-lane exit loop, respectively.

All the aforementioned temporary improvements shall be completed prior to the full closure of US 421 / I-40 Business.

- 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 January 2012 NCDOT *Roadway Standard Drawings*.

- For all bridges over roadways, greenways and / or multi-use paths, including but not limited to the multi-use path under the Broad Street bridge and the Cherry Street bridge noted elsewhere in this RFP, 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 NCDOT. 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 NCDOT.

- Excluding 1) haul roads, 2) US 421 / I-40 Business, 3) the offsite temporary intersection improvements, and 4) areas where the grade allows existing curb and gutter and / or expressway gutter to be retrained on -Y- Lines that the Pavement Management Scope of Work allows a mill and fill operation, the Design-Build Team shall design and construct resurfacing grades for all roadways impacted by construction. All resurfacing grades shall adhere to the design criteria and standards, provide all required pavement wedging (Reference the Pavement Management Scope of Work found elsewhere in this RFP) and adhere to the minimum requirements noted below:

  - The Design-Build Team shall resurface all lanes and shoulders of an undivided facility throughout the limits of proposed widening and construction.

  - The Design-Build Team shall resurface each one-way roadway of a divided facility throughout the limits of the one-way roadway widening and construction, allowing varying resurfacing limits for the opposing directions of travel.

  - Unless noted otherwise elsewhere in this RFP, for both divided and undivided facilities, the Design-Build Team shall resurface all lanes and shoulders within the outermost construction limits of all proposed widening and all construction activities, including any gaps along the facility where construction activities are not required. The Design-Build Team will not be required to resurface roadways between the limits of -Y- Line construction, as defined above, and any offsite improvements solely to adhere to the requirement to resurface gaps along a facility where construction activities are not required. Outside the Roadway Construction Signing Limits, the Design-Build Team will not be required to resurface roadways between the

- The Design-Build Team shall design and construct the relocation of the Strollway as shown on the U-2827B Preliminary Plans and Appendix D of the U-2827B FONSI. The Strollway typical section shall consist of a minimum ten-foot paved facility with two-foot turf shoulders. The Design-Build Team shall design and construct the Strollway in accordance with the 2012 AASHTO *Guide for the Development of Bicycle Facilities*, except those sections of the Strollway that are steeper than five percent shall be designed and constructed in accordance with the FHWA *Designing Sidewalks and Trails for Access*. (Reference the Pavement Management Scope of Work found elsewhere in this RFP)

- Excluding the rest areas and pocket parks, the Design-Build Team shall design and construct 1) Phase 1A of the proposed MUP and 2) the section of the MUP directly beneath the Broad Street and Cherry Street bridges over US 421 / I-40 Business, including but not limited to all required retaining walls and appropriate positive protection, as shown in the U-2827B Preliminary Plans. The Design-Build Team shall grade to drain the areas adjacent to the MUP constructed beneath the aforementioned bridges. The Design-Build Team shall design and construct the MUP in accordance with the 2012 AASHTO *Guide for the Development of Bicycle Facilities*, except those sections of the MUP that are steeper than five percent shall be designed and constructed in accordance with the FHWA *Designing Sidewalks and Trails for Access*. The MUP Phase 1A typical section shall consist of a minimum ten-foot paved facility with two-foot turf shoulders. To accommodate construction of the future MUP phases, the Design-Build Team shall design and construct the retaining walls shown on the July 18, 2016 *Required Additional MUP Walls* detail provided by the Department, unless the Design-Build Team can demonstrate, in the Department's sole discretion, that the aforementioned walls will not be required for the future MUP phases. (Reference the Structures, Geotechnical, Aesthetics and Pavement Management Scopes of Work found elsewhere in this RFP)

- In accordance with the requirements found elsewhere in this RFP, the Design-Build Team shall design and construct all permanent structures, including but not limited to all bridges, abutment walls and retaining wall, such that they will not require modifications to construct the future MUP phases, including but not limited to the future MUP bridge over the Cherry Street Ramp D. To ensure that all permanent structures will accommodate the future MUP construction, the Design-Build Team shall provide functional horizontal and vertical alignments for all MUP phases shown in the U-2827B Preliminary Plans, and indicate how the MUP future phases can be constructed without modifying the proposed permanent structures in the Technical Proposal. Post Award, for the Department's review and acceptance, the Design-Build Team shall provide preliminary designs of the aforementioned MUP future phases that verify that the permanent structures will not require modifications. (Reference the Geotechnical and Structures Scopes of Work found elsewhere in this RFP)

- The Design-Build Team shall design and construct a pedestrian connection from the northern terminus of the Green Street Pedestrian Bridge to the to the Green Street / Ball Park Way intersection. The width of the pedestrian connection shall be as noted in Appendix D of the U-2827B FONSI.

- Only clean waste material may be wasted within the NCDOT right of way or property.

- Excluding crushed concrete, debris shall not be buried within the NCDOT right of way or property.

- Normal grading operations shall occur, including but not limited to, removal of the existing embankments supporting all removed roadway sections.

- Unless noted otherwise elsewhere in this RFP, all guardrail / guiderail placement shall be in accordance with the January 2012 NCDOT *Roadway Standard Drawings* and / or approved details in lieu of standards. Along all 3:1 fill slopes, constructed at fill heights that are equal to or greater than 12 feet, the Design-Build Team shall install guardrail. Along all fill slopes steeper than 3:1, constructed at fill heights that are equal to or greater than six feet, the Design-Build Team shall install guardrail. The Design-Build Team shall install a wood rub rail on all guardrail installed in front of sidewalk. (Reference the *Detail of Wood Rub Rail* provided by the Department) The guardrail / guiderail design shall be submitted for review with the Preliminary Plans submittal.

- The total outside shoulder width for all facilities with defined usable shoulders shall equal the usable shoulder plus two feet.

- The Design-Build Team shall be responsible for the evaluation of the algebraic difference in rates of cross slope (roll-over) between existing shoulders and roadways and the associated suitability for carrying traffic during construction, if necessary. In the event that the roll-over is found to be unacceptable for the proposed temporary traffic patterns, the Design-Build Team shall be responsible for providing cross slopes that meet design standards and eliminate roll-over concerns.

- The Design-Build Team shall submit Structure Recommendations and Design Criteria for NCDOT review and acceptance prior to the Preliminary Roadway Plans submittal. The Design-Build Team shall develop Structure Recommendations that adhere to the format noted in the March 25, 2003 and September 1, 2004 memos from Mr. Jay Bennett, PE, former State Roadway Design Engineer.

- Unless noted otherwise elsewhere in this RFP, the design speed for all roadways shall be the greater of the minimum design speed for the facility type, as specified in the 2011 AASHTO *A Policy on Geometric Design of Highways and Streets*, or the anticipated / actual posted speed plus five mph. If a speed limit is not physically posted on an existing facility outside the Winston-Salem City limits, General Statues mandate the speed limit as 55 mph, resulting in a 60 mph design speed. If a speed limit is not physically posted on an existing facility within the Winston-Salem City limits, the design speed shall be 40 mph or the design speed indicated in the July 20, 2016 *Roadway Design and Posted Speed Table* provided by the Department.

- The Design-Build Team shall design and construct single face concrete barrier in front of the traffic face of all sound barrier walls, retaining walls and all elements acting as a retaining wall that are located within the vehicle recovery area. The aforementioned concrete barrier

construction limits, the Design-Build Team shall 1) resurface the existing pavement with a minimum 3.0" S9.5B in those sections that require a resurfacing grade and / or 2) mill 3.0" of pavement and overlay with 3.0" S9.5B in those sections that do not require a resurfacing grade. (Reference the Roadway Scope of Work found elsewhere in this RFP)

Throughout the retained pavement sections of Peters Creek Parkway, Academy Street, Eighth Street, and Martin Luther King, Jr. Drive within the construction limits, the Design-Build Team shall 1) resurface the existing pavement with a minimum 1.5" S9.5B in those sections that require a resurfacing grade and / or 2) mill 1.5" of pavement and overlay with 1.5" S9.5B in those sections that do not require a resurfacing grade. (Reference the Roadway Scope of Work found elsewhere in this RFP)

For all other -Y- Lines, the Design-Build Team shall resurface the existing pavement with a minimum depth that equals the full thickness of surface course as provided in the table above. (Reference the Roadway Scope of Work found elsewhere in this RFP)

Throughout the limits of the temporary offsite intersection improvements, including but not limited to the limits of pavement marking obliterations / revisions, the Design-Build Team shall mill 1.5" of pavement and overlay with 1.5" S9.5B.

In accordance with the City of Winston Salem Standard Drawing for Asphalt Pavement Repair (For Non-State Maintained Roads), as revised by NCDOT (7-15-16), the Design-Build Team shall make pavement repairs utilizing 5.5" B25.0B and 3.0" S9.5B throughout the limits of all water and sewer installations / relocations beneath roadway pavement. For each roadway, the Design-Build Team shall monitor all pavement repair areas for settlement; and repair areas, as required by the Engineer, for a one-year period that begins after completion of the last utility installation / relocation within that roadway. At the end of the aforementioned one-year monitoring period for each roadway, the Design Build Team shall mill 1.5" of the entire roadway typical section between the outermost limits of the pavement repairs and overlay with 1.5" S9.5B.

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

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

Unless noted otherwise elsewhere in this RFP, the minimum widened width shall be six feet. The minimum widened width may be reduced to four feet only if the Design-Build Team demonstrates that their equipment properly compacts narrow widening and obtains prior Department approval. Tapers that tie proposed pavement to existing pavement are excluded from the narrow widening requirements noted above.

In areas where the existing -Y- Line or ramp paved shoulders are proposed to be incorporated into a permanent travel lane, the Design-Build Team shall be responsible for evaluating the existing paved shoulder regarding its suitability for carrying the projected traffic volumes. In the event that the existing paved shoulder is found to be inadequate, the Design-Build Team shall be

The following will not be allowed on the project:

- Empirical method for deck design
- Monotube or cantilever DMS support structures
- Attachment of sign structures to bridges
- Precast bridge barrier rails
- Excluding the Strollway Pedestrian Bridge and the Green Street Pedestrian Bridge, Fracture critical, deck slab or deck girder bridges
- Interior pile bents
- Bridge piers adjacent to a roadway shoulder
- Segmental block wall with geogrid, or similar product
- Bridge piers within the US 421 / I-40 Business median for the Green Street Pedestrian Bridge.
- Excluding the bridge on Fourth Street over US 421 / I-40 Business, cored slab or box beam bridges
- Unless allowed otherwise elsewhere in this RFP, bridge attachments (e.g. ITS conduit, water lines) in the overhang of grade separations
- Excluding conduit for proposed and / or future lighting accommodations, casting of conduit in the bridge deck or barrier rail (Reference the Lighting Scope of Work found elsewhere in this RFP)

The Design-Build Teams will be allowed to attach NCDOT fiber optic communication cable to the bridges noted in the July 5, 2016 *US 421 Structures over Features* document provided by the Department. The location and hardware needed to attach the required conduit to the existing bridges noted in the aforementioned document shall be reviewed and approved by the Engineer in writing prior to installation. (Reference the ITS Scope of work found elsewhere in this RFP) For the proposed bridge on US 421 / I-40 Business over Brookstown Avenue, the Design-Build Team shall design and construct the attachment in accordance with Structure Standard Drawings ECS1 and the attachment shall be located within an outside girder bay.

Regardless of wall height, sound barrier walls shall be designed in accordance with the latest edition of the AASHTO *LRFD Bridge Design Specifications* with a minimum base wind pressure of 40 psf.

All ground-mounted sound barrier walls shall be detailed in accordance with Structure Standard Drawings SBW1 and SBW2, and concrete piles shall be used. (Reference the *Sound Barrier*

Aesthetic Design

In accordance with the Aesthetics Scope of Work found elsewhere in this RFP, all bridges (roadway and pedestrian) and retaining walls shall have aesthetic treatments.

The concrete arch facades may be braced to the deck or exterior girders. The concrete arch facades shall be non-load bearing.

At the Broad Street and Cherry Street bridges over US 421 / I-40 Business the aesthetic columns located between US 421 / I-40 Business and the proposed MUP shall be non-load bearing and shall be positively anchored at the base. (Reference the Aesthetics Scope of Work found elsewhere in this RFP)

Pedestrian Bridges

The Design-Build Team shall design and construct pedestrian bridges in accordance with the AASHTO *LRFD Guide Specifications for the Design of Pedestrian Bridges*. The Design-Build Team shall provide a conceptual design and rendering for both pedestrian bridges in the Technical Proposal.

Unless noted otherwise elsewhere in this RFP, on all pedestrian bridges, the Design-Build Team shall design and construct protective vinyl coated fencing with anodized posts and supports that adhere to the 2012 NCDOT *Standard Specifications for Roads and Structures*.

To accommodate the decorative lighting designed and constructed by the Design-Build Team, the Design-Build Team shall design and construct two 1.5" conduits in all pedestrian bridge decks. (Reference the Lighting Scope of Work found elsewhere in this RFP)

The Design-Build Team shall design and construct the Green Street Pedestrian Bridge in accordance with the requirements noted below:

- The bridge shall be a double tied arch structure with a minimum 12-foot clear width.
- The double tied arch structure shall maintain the proportions of the bridge, as shown in the Business 40 Aesthetics Guidelines provided by the Department.
- The arches shall be tubular with a circular cross section.
- All structural steel shall be painted in accordance with the 2012 NCDOT *Standard Specifications for Roads and Structures* and the Aesthetics Scope of Work found elsewhere in this RFP.
- All post-tensioning ducts shall be encased in concrete.

The Design-Build Team shall design and construct the Strollway Pedestrian Bridge in accordance with the requirements noted below:

- The bridge shall be a land bridge with a minimum 24-foot out-to-out dimension at the base of the superstructure.
- The bridge shall provide a minimum 12-foot wide pedestrian walkway with planter troughs on each side of the walkway. The aforementioned walkway shall be skewed to the center line of the bridge, and the walkway elevation may be lower than the top of the adjacent planter troughs. (Reference the Business 40 Aesthetics Guidelines provided by the Department)
- The exterior walls of the planter troughs shall be angled at a slope equal to four-foot of vertical rise for every one-foot of horizontal distance instead of the angle shown in the Business 40 Aesthetics Guidelines provided by the Department.
- The median bent shall be a continuous concrete rectangular wall with a smooth surface.
- The bridge shall be designed and constructed to accommodate four-foot thick lightweight growing material, with a minimum soil density of 100 pcf and a 20% increase for plantings, in each of the aforementioned planter troughs.
- An irrigation and drainage system shall be designed and constructed in each of the aforementioned planter troughs. Water from the planter troughs shall be drained to both sides of the bridge and continue away from the structure and the bridge approach fill. The drainage system shall be designed and constructed such that it can be easily maintained and cleaned out. For irrigation system requirements, reference the Utilities and Aesthetics Scopes of Work found elsewhere in this RFP.
- The Design-Build Team shall design and construct retaining walls in front of the end bents. On the west side of the bridge the retaining wall shall turn-back parallel to the Strollway. The Design-Build Team shall design and construct gabion elements adjacent to, and in front of, the aforementioned turned-back section of retaining wall that provide a variable slope transition from the retaining wall to the Strollway 2:1 fill slope. (Reference the Geotechnical and Aesthetics Scopes of Work found elsewhere in this RFP)

Structure Removal

The Design Build Team shall remove and dispose of the following existing structures:

- Bridge No. 269 on Fourth Street over US 421 / I-40 Business
- Bridge No. 278 on NC 150 (Peters Creek Parkway) over US 421 / I-40 Business
- Bridge No. 286 on Green Street over US 421 / I-40 Business
- Bridge No. 178 on Broad Street over US 421 / I-40 Business
- Bridge No. 288 on US 421 / I-40 Business over Brookstown Avenue
- Bridge No. 291 on Spruce Street over US 421 / I-40 Business
- Bridge No. 293 on Marshall Street over US 421 / I-40 Business
- Bridge No. 305 on Cherry Street over US 421 / I-40 Business
- Bridge No. 312 on US 421 / I-40 Business over Liberty Street
- Bridge No. 313 on Main Street over US 421 / I-40 Business
- Bridge No. 336 on Church Street over US 421 / I-40 Business

In accordance with the *Asbestos Assessment for Bridge Demolition and Renovation Activities* Project Special Provision located on the Structures Management Unit's website, the Design-

C. Permanent Retaining Wall Structures

Retaining walls or abutment walls will not be allowed at any location where more than five feet of scour is calculated at the base of the wall.

Excluding Segmental Retaining Walls, mechanically stabilized earth (MSE) retaining walls will be allowed. For design and construction of allowable MSE retaining walls, refer to the NCDOT *Policy for Mechanically Stabilized Earth Retaining Walls* which can be found at the NCDOT Geotechnical Engineering Unit's website at:

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

For the design and construction of gabion walls, reference the *Gabions* Project Special Provision found elsewhere in this RFP.

With the exception of gravity walls, design and construct permanent retaining walls in accordance with the applicable NCDOT Geotechnical Engineering Unit Project Special Provisions, which can be provided upon request by the Design-Build Team. Geotechnical Provisions and Notes can be found at the NCDOT Geotechnical Engineering Unit's website at:

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

The Design-Build Team shall design and construct all retaining walls such that they do not require modifications to accommodate construction of the future MUP phases, including but not limited to the future MUP bridge over the Cherry Street Ramp D.

With the exception of gravity walls, submit a wall layout and design for each retaining wall. At a minimum, the wall layout submittal shall include the following:

- Wall envelope with top of wall, bottom of wall, existing ground, finished grade elevations, and MUP elevations, if applicable, at incremental stations
- Wall alignment with stations and offsets
- Typical sections showing top and bottom of wall, drainage, embedment, slopes, barriers, fences, etc.
- Calculations for bearing capacity, global stability and settlement
- Details of conflicts with utilities and drainage structures
- Roadway plan sheets showing the wall (half size)
- Roadway cross sections showing the wall (half size)
- Traffic Control Plans showing the wall (half size)

Gravity walls shall be designed and constructed in accordance with the NCDOT Structure Standard Drawings and the January 2012 NCDOT *Standard*

Specifications for Roads and Structures. Gravity walls shall be identified in the roadway foundation design recommendation report developed by the Design-Build Team. Cast-in-place cantilever walls shall be designed and constructed in accordance with the January 2012 NCDOT *Standard Specifications for Roads and Structures.* Conceptual wall layouts and wall designs shall be submitted to NCDOT for review and acceptance.

Locate retaining walls at toes of slopes unless restricted by right of way limits. The Design-Build Team shall submit global stability calculations for slopes at retaining walls and obtain acceptance from the NCDOT prior to construction. Any slopes behind walls shall be 2:1 (H:V) or flatter.

Drainage over the top of retaining walls shall not be allowed. Sags in the top of walls will be permissible. Direct runoff above and below walls away from walls, if possible, or collect runoff at the walls and transmit it away. Appropriate drainage, in the Department's sole discretion, shall be provided at all retaining walls, including but not limited to areas of sags in the top of walls. (Reference the Hydraulics Scope of Work found elsewhere in this RFP) Curb and gutter or cast-in-place single faced barrier with paving up to the wall shall be required when runoff can not be directed away from the back or front of the wall. A paved concrete ditch with a minimum depth of twelve inches shall be required at the top of walls when slopes steeper than 6:1 (H:V) intersect the back of walls.

Precast or cast-in-place coping shall be required for all walls with the exception of when a barrier is integrated into the top of the wall. Extend coping to the height required by the Aesthetics Scope of Work found elsewhere in this RFP above where the finished or existing grade intersects the back of the wall. (Reference the Aesthetics Scope of Work found elsewhere in this RFP for the precast or cast-in-place coping dimensions)

For all proposed walls and existing walls to be retained, a fence shall be installed on top of the wall, coping, barrier, or immediately behind the wall, if there is no slope behind the wall.

Deep foundations shall be used for end bents when abutment retaining walls are employed. When using abutment retaining walls, design and construct the end bent and the wall independent of each other. When using abutment retaining walls, the end bent foundation shall be designed and constructed with one of the following deep foundations: (1) a single row of plumb piles with brace piles battered toward the wall, (2) a single row of plumb piles with MSE reinforcement connected to the back of the cap, (3) integral abutment with a single row of plumb piles and no reinforcement connected to the back of the cap in accordance with FHWA GEC 11 pages 6-8 through 6-10, or (4) drilled piers. Regardless of foundation type, the abutment wall shall be designed to satisfactorily resist the additional pressure resulting from lateral foundation displacement. Wing walls independent of abutment retaining walls shall be required unless accepted otherwise by the NCDOT. All foundations for end bents with abutment retaining walls shall extend a minimum of 10 feet below the retaining wall foundation or leveling pad. For drilled-in piles behind such retaining walls, the penetration can be reduced to 5 feet below the bottom of the wall provided the Design-Build

- 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 deflections from crash testing. Providing less than the minimum deflection distance shall require the use of anchored temporary barrier systems in accordance with the January 2012 NCDOT *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 speed for temporary alignments of Interstate, 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 January 2012 NCDOT *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 superelevation and / or 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 requiring vertical grades shall be considered a temporary alignment. All temporary alignments shall adhere to the NCDOT *Roadway Design Manual*, 2011 AASHTO, *A Policy on Geometric Design of Highways and Streets* and the most current *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.

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

Liquidated Damages for Intermediate Contract Time #5 for the above road closure time restrictions for US 421 / I-40 Business including all ramps and loops and NC 150 (Peters Creek Parkway) are $5,000.00 per 15-minute period or any portion thereof.

**** NOTE **** Relocated ICT information on two-year full closure of US 421 / I-40 Business to *Intermediate Contract Time Number 1 and Liquidated Damages* Project Special Provision found elsewhere in this RFP.

3. Intermediate Contract Time #6 for Lane Narrowing, Lane Closure Restrictions during the Two-Year Full Closure of US 421 / I-40 Business (ICT #1).

US 421 / I-40 Business, from the western sound barrier wall construction limits to the NC 150 (Peters Creek Parkway) Loop A gore located at approximately Station 24+00 -L-, may be reduced to one lane of traffic eastbound and one lane of traffic westbound during ICT #1 to complete the mainline pavement removal / replacement operations, and any other required construction activities, within the aforementioned limits. The Design Build Team may 1) utilize an approved offsite detour for wide loads and oversized permitted vehicles on US 421 / I-40 Business during ICT #6; and 2) reduce the temporary NC 150 (Peters Creek Parkway) Loop A and Loop D to a one-lane entrance loop and one-lane exit loop, respectively. The Design-Build Team shall adhere to the following time restrictions listed below.

Road Name	Day	Time Restrictions
US 421 / I-40 Business	Monday through Sunday	90 consecutive days

The date of availability shall be the date the Design-Build Team elects to begin work after closing US 421 / I-40 Business. The Design-Build Team shall provide the Engineer a minimum of 30 days written notice prior to the date of availability. The date of completion shall be the number of calendar days proposed by the Design-Build Team in the Technical Proposal, and such number of calendar days proposed shall not be greater than 90 days.

Proposed offsite detours for wide loads and oversized permitted vehicles shall be approved by the Engineer, in writing, prior to incorporation in the Transportation Management Plans.

Liquidated Damages for Intermediate Contract Time #6 for the above lane narrowing, lane closure restrictions of US 421 / I-40 Business, from the western sound barrier wall construction limits to the NC 150 (Peters Creek Parkway) Loop A gore located at approximately Station 24+00 -L- during the two-year full closure of US 421 / I-40 Business (ICT #1) are $1,500.00 per calendar day or any portion thereof.

4. Intermediate Contract Times #7 and #8 for Lane Narrowing, Lane Closure Restrictions for median bent construction prior to the Two-Year Full Closure of US 421 / I-40 Business (ICT #1).

Within the entire US 421 / I-40 Business Corridor, including but not limited to all -Y- Lines and the I-40 interchanges in Forsyth and Guilford Counties, the Design-Build Team shall:

- Remove and dispose of all advance guide signs (ground-mounted and overhead) and Type F-assemblies (route marker assemblies) with the I-40 Business designation.
- Remove and dispose of all exit gore signs, exit panels and mile markers.
- Design, fabricate and install all guide signs (ground mounted and overhead) and Type F-assemblies for the aforementioned re-designation.
- In accordance with the mile numbers provided by the Department, design, fabricate and install all exit gore signs, exit panels and mile markers for the aforementioned re-designations.
- Remove and dispose of all Type D signs with the I-40 Business designation. The Design-Build Team will not be required to include the aforementioned re-designation on new Type D signs.
- For the I-40 interchange in Forsyth County, the Design-Build Team will not be required to include the *DOWNTOWN* notation on the overhead signs with the aforementioned re-designation.
- For the I-40 interchange in Guilford County, the Design-Build Team will not be required to include the *Winston-Salem DOWNTOWN* notation on the overhead signs with the aforementioned re-designation.
- The aforementioned new roadway name and mileage designation shall be included on the overhead sign structures at the interchanges noted below. Unless allowed otherwise elsewhere in this Scope of Work, design, fabricate and install new overhead sign structures for these new roadway and mileage designations. At all new overhead sign structures required for the aforementioned re-designations, the Design-Build Team shall upgrade / widen shoulders to accommodate the required positive protection. (Reference the *Guardrail or other Positive Protection for Overhead Sign Supports* section of this Scope of Work and the Roadway Scope of Work found elsewhere in this RFP)

    - I-40 / US 421 in Forsyth County
    - US 421 / Silas Creek Parkway
    - US 421 / US 52
    - I-40 / US 421 in Guilford County

The City of Winston-Salem and / or the Department will be responsible for the removal and disposal of span wire signing with the I-40 Business designation.

Sign Designs

The Design-Build Team shall include all sign designs in the Signing Plans. Unless noted otherwise elsewhere in this Scope of Work, all sign designs shall be prepared using the latest version of GuideSign software.

The Design-Build Team shall design, fabricate and install all signs required for the Signing Project Limits defined elsewhere in this Scope of Work, including Type A, B overhead signs, Type A, B, and D ground mounted signs, and exit gore signs. The Design-Build Team shall size

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

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

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

II. TRAFFIC SIGNALS

The Design-Build Team shall provide one (1) new traffic signal, upgrade / rebuild five (5) existing traffic signals, modify a minimum of ten (10) existing traffic signals, and remove three (3) existing traffic signals. All of these signals shall be interconnected into the City of Winston-Salem Signal System. (Reference Section III for the system interconnection requirements.) Unless existing as a pre-timed signal or the Department provides written approval otherwise, the vehicle detection for the final traffic patterns shall be inductive loop detection. The Design-Build Team may provide video detection only for temporary traffic patterns during construction. The required traffic signal work for each intersection is detailed below:

Signal Modifications (10 minimum) for Detours, Resurfacing and / or Pavement Marking Modifications		
Signal Inventory Number	**Intersection Description**	**Work Requirements**
City Signal C-194 **09-0089** **09-0081** **09-0082** **09-0137** **City Signal** **09-0138** **City Signal** **City Signal** **09-1311**	Broad Street / First Street SR 1770 (Marshall Street) / SR 4008 (High Street) SR 1770 (Marshall Street) / First Street SR 1725 (Cherry Street) / First Street SR 4315 (Liberty Street) / Cemetery Street SR 4315 (Liberty Street) / First Street SR 1824 (Main Street) / Cemetery Street SR 1824 (Main Street) / First Street Church Street / First Street SR 2516 (MLK Jr. Drive) / SR 1824 (Main Street) / SR 4315 (Liberty Street) Offsite Intersections with Temporary Improvements, as necessary	The Design-Build Team shall modify these existing traffic signals to match all temporary construction phasing and the proposed final traffic pattern. This may require new inductive loops, signal phasing changes, signal head changes, phase retiming, installation of an auxiliary output file, and / or system interconnection equipment. These signals already have 2070 controllers. The Design-Build Team may reuse the existing controllers and cabinets (if feasible); however all traffic signals must remain in full operation during all temporary construction phases. The Design-Build Team shall upgrade the signal heads at all protected / permissive left turns to Flashing Yellow Arrow signal heads. The Design-Build Team shall coordinate all Flashing Yellow Arrow signal recommendations with the Division 9 Traffic Engineer and the Regional Traffic Engineer prior to final design and installation. Vehicle detection, if existing, shall be maintained for all movements throughout the life of the project. The Design-Build Team shall provide pedestrian signal heads at each approach with existing or proposed sidewalk. If a temporary traffic pattern closes an intersection approach(s) that significantly reduces traffic through these intersections, the associated traffic signal(s) may operate in flash mode under the following criteria: • The flash mode decreases traffic delays. • The flash mode does not compromise pedestrian safety through the intersection. Prior to modifying a traffic signal to flash mode, the Design-Build Team shall obtain prior written Department approval. Prior to opening the closed intersection approach(s) to traffic, the Design-Build Team shall return the traffic signal to steady mode. These signals shall be interconnected into the Winston-Salem Signal System. See Section III for signal communication requirements.

the Design-Build Team shall repair or replace the damaged DMS and / or associated equipment.

- The Design-Build Team shall determine the exact location of the new overhead span structure / pedestal mount structure and obtain the Engineer's approval of the location prior to installing the overhead span structure / pedestal mount structure.

- The Design-Build Team shall install the existing DMS and all associated equipment and cabling on the new DMS overhead structure as described below. Once the DMS is installed and the Department has approved all required repairs / replacements, the Design-Build Team shall perform a DMS Operational Field Test in accordance with the requirements noted above.

CONDUIT

Furnish and install two (2) – 2 inch conduits (for communication) and all necessary hardware, including tracer wire and delineator markers by 1) plowing, trenching or directional drilling in accordance with Section 1715 and 1733 of the 2012 NCDOT *Standard Specifications for Roads and Structures* for installing the fiber optic communications cable, and / or 2) in accordance with the Structures Scope of Work found elsewhere in this RFP. Conduit shall not be placed in the median or under the roadway, except for lateral traverse crossings.

Intercept the existing conduit installed at US 421 / I-40 Business and Martin Luther King Jr. Boulevard (MLK Jr. Drive) and install new conduit from this location WB within the NCDOT right-of-way to the proposed DMS located EB / WB at US 421 / I-40 Business between Exits 1 and 2.

Furnish and install one (1) – 2 inch conduit (for electricity) and all necessary hardware by trenching or directional drilling in accordance with Section 1715 of the 2012 NCDOT *Standard Specifications for Roads and Structures* for installing the power service to the ITS devices. (Reference the Electrical Service Section below)

Upon completion of the conduit installation furnish the Engineer with Plan of Record documentation showing the horizontal and vertical locations of the installed conduits.

JUNCTION BOXES

Furnish and install junction boxes (pull boxes) with all necessary hardware in accordance with Section 1098-5 of the 2012 NCDOT *Standard Specifications for Roads and Structures*. Provide oversized junction boxes with minimum inside dimensions of 36"(l) x 24"(w) x 24"(d) for installing fiber optic communications cable. Install junction boxes at maximum intervals of fifteen hundred (1500) feet or at locations where underground splicing is necessary.

Furnish and install junction boxes (pull boxes) with all necessary hardware in accordance with Section 1098-5 of the 2012 NCDOT *Standard Specifications for Roads and Structures*. Provide standard junction boxes with minimum inside dimensions of 16"(l) x 10"(w) x 10"(d) for electrical service.

Water and Sewer

If the Design-Build Team's design and / or construction requires the relocation and / or encasement of existing water and / or sewer facilities, designs shall be coordinated with the NCDOT Utilities Unit. All costs associated with the design and construction for relocation and / or encasement of these existing water and / or sewer facilities shall be the responsibility of the Design-Build Team and shall be included in the lump sum bid for the project The Design-Build Team shall develop designs; prepare all plans for needed agreements and permits; submit permits directly to the agencies and obtain approval from the agencies. The Design-Build Team shall be responsible for all permit fees.

Designs shall be coordinated with the NCDOT Utilities Unit and the utility owners or their representatives. The Design-Build Team shall submit five (5) sets of 11 x 17 utility construction drawings to the State Utilities Manager, via the Design-Build Unit, for further handling. Each set shall include a title sheet, plan sheets, profiles and special provisions, if required. Once accepted by the State Utility Manager, the plans, with the appropriate agreement, will be sent to the utility owner for review and concurrence.

In accordance with the January 21, 2016 *Evaluation of Aerial Water Mains Crossing Business 40 – Revised Modeling Results* developed by Hazen, the Design-Build Team shall design and construct 1) the relocations of the aerial water main crossings at Church Street, Cherry Street, Marshall Street, Spruce Street, Broad Street and Green Street; and 2) the relocation of the existing underground water main crossing US 421 / I-40 Business parallel to Liberty Street.

The Design-Build Team shall design and construct an irrigation system on the Strollway Pedestrian Bridge that connects to the Winston-Salem / Forsyth County water system at Liberty Street. The Design-Build Team shall purchase a meter directly from the Winston-Salem Revenue Division for the irrigation system. The Design-Build Team shall coordinate with Jack Fitzgerald, Sr., Civil Engineer / Plans Review Coordinator, at (336)747-7309, to submit the application for the water meter to the Winston-Salem Parks and Recreation Department for review, approval, and signature. (Reference the Aesthetics Scope of Work found elsewhere in this RFP)

The Design-Build Team shall design and construct the relocations of the existing sanitary sewer mains located in the southeast and northeast quadrants of the US 421 / I-40 Business / NC 150 (Peters Creek Parkway) interchange. The aforementioned sanitary sewer main relocations shall be upsized to an 18" sanitary sewer main, shall not be relocated to the US 421 / I-40 Business / NC 150 (Peters Creek Parkway) interchange southwest quadrant, and shall tie to the existing sanitary sewer system at Points A, B and C, as shown on the July 18, 2016 *Peters Creek Parkway Sanitary Sewer Routing Option* provided by the Department.

Within the construction limits that modify the existing ground elevation, excluding modifications that consist solely of pavement resurfacing, the Design-Build Team shall replace all existing vitrified clay pipes (VCP) sanitary sewer mains with ductile iron pipe (DIP), including but not limited to the design and construction of the relocations / replacements noted below:

between the Design-Build Team and the utility owner. The Design-Build Team shall develop designs; prepare all plans for needed agreements and permits; submit permits directly to the agencies and obtain approval from the agencies. The Design-Build Team shall be responsible for all permit fees.

Cable TV

The cost in relocating CATV due to highway construction shall be the responsibility of the CATV Company; however, 1) if the CATV Company can validate a recorded easement for facilities outside the maintained NCDOT right of way, the Department will bear the relocation expense; and 2) if the adjustment is needed on existing utility poles to accommodate a proposed NCDOT Traffic Management System Fiber Optic Communication Cable Project, the Design-Build Team shall be responsible for the relocation cost.

The NCDOT will not permit CATV to place poles within the highway right of way but will allow down guys for their facilities within the highway right of way. Under most circumstances, the CATV Company will continue a joint-use attachment with the local Power and Telephone Company. If the CATV proposed relocation places buried facilities within the highway right of way then plans and encroachment agreements shall be required by the NCDOT.

Communication Cables / Electrical Services for Lighting, Traffic Signals and ITS Devices

Prior to establishing the location for new meter poles, the Design-Build Team shall coordinate with the local Power Distribution Company concerning accessibility of E/C service and safety in maintenance of the meter.

Prior to installation, the Design-Build Team shall provide plans for review and approval for all service taps that require a parallel installation within the C/A.

Parallel service installation within a C/A shall be buried and located as close to the right of way line as practical. Only due to unusual circumstances will parallel aerial service installations within C/A be allowed. Temporary relocation of utility poles will be allowed within the US 421 / I-40 Business / NC 150 (Peters Creek Parkway) interchange. The Design-Build Team shall justify the allowance of parallel aerial service installation and obtain NCDOT approval prior to installation

The Design-Build Team shall be responsible for all coordination activities, including deposit fees, required for the utility company to provide service taps. Prior to the Design-Build Team developing the associated design and / or instructing the utility company to proceed with providing the service taps, the Design-Build Team shall obtain written approval of the service tap locations from the Resident Engineer.

AESTHETICS SCOPE OF WORK (7-29-16)

General

The project shall include aesthetic treatments to roadways, bridges, and other elements consistent with the Business 40 Aesthetics Guidelines provided by the Department. The Business 40 Aesthetic Guidelines are based on stakeholder input from public involvement efforts and provide a visual representation of the desired aesthetic theme throughout the US 421 / I-40 Business Corridor. Thus, in case of discrepancy or conflict in the aforementioned Business 40 Aesthetics Guidelines and the RFP, the RFP shall govern.

The Design-Build Team shall utilize details that aesthetically match the Business 40 Aesthetics Guidelines. In accordance with the RFP requirements, the Design-Build Team shall utilize the aforementioned Business 40 Aesthetic Guidelines to develop the designs, plans and details necessary for aesthetic treatments of the roadways, bridges, and other elements as outlined herein.

The Business 40 Aesthetic Guidelines are guidelines; however they shall serve as the basis for achieving the aesthetic theme desired throughout the US 421 / I-40 Business Corridor. The Design-Build Team is cautioned that the Business 40 Aesthetics Guidelines are not engineered drawings and may be modified to suit the design. The Design-Build Team is encouraged to consider aspect ratios in the modification of any dimension shown in the Business 40 Aesthetics Guidelines; but warned that design modifications shall not lessen the visual effect on the travelling public. The Design-Build Team shall ensure that all aspects of the aesthetic features including but not limited to structural details and dimensions, adhere to the appropriate engineering standards and the RFP requirements.

The Design-Build Team shall provide conceptual designs and renderings for the required aesthetic features in the Technical Proposal.

Green Street Pedestrian Bridge

All structural steel shall be painted to match Sherwin Williams Current SW4058 or an equivalent color approved by the Engineer.

Pedestrian fencing shall be ten-foot high at the mid-span of the bridge and taper on a parabolic curve to an eight-foot height at the ends. The pedestrian fencing shall be Black Vinyl Coated Chain Link fencing with anodized black rails and posts.

The concrete bridge deck shall be a non-slip surface, broom finish perpendicular to the travel direction.

Reference the Lighting Section below for lighting requirements.

Strollway Pedestrian Bridge

The concrete bridge deck shall be a non-slip surface, broom finish perpendicular to the travel direction.

Pedestrian fencing shall be twelve-foot high at the mid-span of the bridge and taper on a parabolic curve to an eight-foot height at the ends. The pedestrian fencing shall be Black Vinyl Coated Chain Link fencing with anodized black rails and posts.

Reference the Lighting Section below for lighting requirements.

Landscaping

The Design-Build Team shall develop a landscaping plan for review and acceptance by the Department. The landscaping plan shall include, but is not limited to, planting plan, plant palette, insulation, irrigation system, drainage, specifications, material requirements and / or construction processes needed to accomplish the landscape work. Upon approval, the Design-Build Team shall install the landscaping in accordance with the approved plan.

Plant Palette Example

The plant palette shall include plants native to North Carolina. An example of a plant palette is as follows:

Small Trees / Large Shrubs (5' Max. Dia.)

- Calycanthus floridus- Carolina allspice
- Sambucus Canadensis- Elderberry
- Physocarpus opulifolius 'Diablo'- Eastern Ninebark
- Hydrangea quercifolia- Oakleaf Hydrangea
- Viburnum rafinesquianum- Downy Viburnum

Approximately 15 plants at 5 gal or larger

Medium Shrubs / Perennials / Ornamental Grasses (3' Max. Dia.)

- Clethra acuminate - Mountain Pepperbush
- Eupatorium purpureum - Sweet Joe Pye Weed
- Ilex glabra - Inkberry
- Itea virginica -Virginia Sweetspire
- Muhlenbergia capillaris - Pink Muhly Grass
- Panicum virgatum - Switchgrass
- Yucca filamentosa - Spoonleaf Yucca

Approximately 61 plants at 3 gal

Perennials / Ornamental Grasses (18" O.C.)

- Amsonia tabernaemontana - Bluestar
- Asclepias tuberosa - Butterfly Weed
- Baptisia tinctoria - Wild Indigo

- Echinacea purpurea - Purple Coneflower
- Helianthus atrorubens - Purpledisk Sunflower
- Heuchera americana - American Alumroot/Coral Bells
- Monarda didyma - Bee Balm
- Solidago speciose - Showy Goldenrod
- Sorghastrum nutans - Indian Grass

Approximately 253 plants at 1 gal

Perennials / Ornamental Grasses (12" O.C.)

- Carex pennsylvanica - Pennsylvania sedge
- Coreopsis auriculata - Lobed Coreopsis
- Coreopsis verticillata - Threadleaf Coreopsis
- Lobelia cardinalis - Cardinal Flower
- Phlox paniculata - Garden Phlox
- Rudbeckia hirta - Black Eyed Susan
- Schizachyrium scoparium - Little Bluestem

Approximately 385 plants between 1 quart and 1 gal size

All plant material shall conform to the most recent issue of American Standards For Nursery Stock (ASNS) and installation shall conform to the 2012 NCDOT Standard Specifications for Roads and Structures.

The plant palatte must be approved in writing by the Engineer and City of Winston-Salem prior to proceeding with the landscaping plan.

Insulation Specifications

Polystyrene Insulation: The insulation shall be a closed cell extruded polystyrene panels and shall, at a minimum, conform to ASTM C 578-92 2.0 pound properties and meet the following details:

- One inch thickness with a continuous skin surface
- R Value at one-inch thick at 75 degrees Fahrenheit: 4.35
- Minimum Comprehensive Deformation (PSI): 29
- Shear Modulus (PSI): 36
- Absorption Volume Maximum %: 2.0
- Degradation due to Moisture: None
- Degradation due to Fungal or Bacterial Growth: None

The Design-Build Team shall submit the name of the manufacturer, product name, description and data to the Engineer for approval. A sample, two-feet square, shall be submitted to the Engineer for approval.

Adhesive: This adhesive will be used to adhere the polystyrene directly to the inside walls of the planter boxes. The adhesive shall be a water-based asphalt emulsion, trowel grade,

and recommended by the manufacturer for use with extruded polystyrene insulation or another adhesive approved by the Engineer. The Design-Build Team shall submit the name of the manufacturer, product name, description and data to the Engineer for approval.

Geotextile: The geotextile shall meet MARV requirements for a Type 4 (soil stabilization) Geotextile as described in Table 1056-1 (Geotextile Requirements) (p.10-56) of the 2012 *Standard Specifications for Roads and Structures*. The Design-Build Team shall submit the name of the manufacturer, product name, description and data to the Engineer for approval. A sample two-feet square shall be submitted to the Engineer for approval.

Installation Of Above Components: The polystyrene insulation shall be installed without gaps and directly to the inside of the planter wall. The polystyrene insulation shall be installed from the bottom of the planter to within six inches (soil depth) from the top of the planter. The polystyrene insulation shall be adhered to the inside of the planter using dabs of adhesive. A continuous coating of adhesive is not needed. The geotextile shall be installed over the #58 stone, perforated pipe, and the vertical polystyrene insulation, but before the engineered soil is installed. The geotextile shall line and wrap over the top of the polystyrene insulation and fold down between the polystyrene insulation and the planter wall for a minimum of 4 inches. The geotextile shall be lapped or joined where necessary with a continuous bead of adhesive approved by the manufacturer for this purpose or as approved by the Engineer.

Irrigation System

The Design-Build Team shall provide the Engineer with a professionally designed irrigation system plan and installation details. Upon Department acceptance of the irrigation system plan and installation details, the Design-Build Team shall install the irrigation system.

Basic installation details for this project include: the system shall be constructed using new pipe, elbows, connectors, controller components, etc. No used, or secondary-market components will be permitted. At a minimum the irrigation system design shall include the location of a backflow preventer / device, shutoff(s) and a drain(s) for winterization, and schedule 40 primed and glued PVC piping appropriately sized to deliver adequate water pressure and flow to pop-up, fully adjustable irrigation heads. Note: the application of PVC approved cleaner / primer and the subsequent application of glue (PVC approved) shall be two-separate applications. The system shall be an electric system with an onsite control box - zoned to deliver uniform, head-to-head coverage of entire planter box surface. No stream-rotors shall be included in the design.

Prior to the start of any work, the Contractor shall verify available static water pressure (PSI) and gallons per minute (GPM) at point of connection to water service. Any replacement, relocation or additional materials required as a failure to check (PSI) and (GPM) shall be done at the Contractor's expense.

The irrigation contractor shall, in the presence of City of Winston-Salem employees responsible for maintenance of the system, meet the following obligations:

- Explain the complete operation of the system,
- Be available to answer any questions of system operators during the first year of operation,
- Winterize the system, during November of the first year of operation,
- Reenergize the irrigation system in April the following year and check the system for full operation.

Control wire must meet the following installation specifications:

- Wire shall be insulated single strand copper designed for twenty (20) to fifty (50) volts and UL approved as Type U.F. (Underground Feeder),
- Copper conductor must meet or exceed ASTM B-3 requirements,
- Red and white colors shall be available for common and lead-in wires,
- Yellow color shall be provided for spare wires,
- All pipe shall be trenched to a minimum of 12 inches and backfilled with the engineered soil or irrigation may be installed prior to the last 12 inches of engineered soil is installed. The irrigation pipe shall be installed so as to not interfere with plant placement. Control wire and PVC pipe shall be installed in the same trench.

Other irrigation specifications:

- Electrical tape shall be black plastic, three-quarters (3/4) inch wide and a minimum of 0.007 inches thick and the all-weather type,
- All flexible nipples or pipe joints shall be "Toro Funny Pipe"; "Rainbird Swing Pipe"; "Triple Swing Joint Assembly" or approved equal,
- All electrical wire splices must be made watertight with sealing 3M Direct Burial Splice Kit or approved equal,
- Thrust blocking shall be on three (3) inch and larger mainline piping only.

Planter – Soil Mix Specifications

Description: The work covered by this section shall consist of furnishing and installing the soil mix in the planters as shown on the plans developed by the Design-Build Team and as directed by the Engineer. The Design-Build Team shall provide a soil mix which provides the physical properties specified herein and is composed of the specified components. The Design-Build Team shall be responsible for all testing to verify these specifications are achieved. ASTM Standard Specifications For Woven Wire Test Sieve Cloth And Test Sieves (ASTM E11 – 15) noted in link below shall be used to make the following determinations:

http://www.advantechmfg.com/pdf/ASTM%20E11-15%20Standards%20Table.pdf

Material: It shall be the Design-Build Team's responsibility to determine the initial input percentages of the following components so that the final composition of the soil mix is as follows:

Very Fine: 0.002 to 0.004 (0.05 – 0.10mm)	2 – 7
Silt and Clay: 0.002 and less (0.05mm and less)	20 – 40

A two pound sample of each component, along with the source of the component, shall be concurrently submitted to the Engineer and to a Certified Soil Testing Laboratory for analysis / testing. A particle analysis shall be performed on each component including the turkey compost. An inspection of the source for each component may also be performed.

Each component must be approved by the Engineer prior to proceeding with preparing a soil mix sample.

Mixing: The soil mix components shall be thoroughly mixed by a mechanical device designed specifically for producing uniform soil mixes. The process for mixing shall be submitted in writing to the Engineer prior to mixing. An onsite inspection of the mixing procedure may be required prior to approval of the mixing process. No sample shall be prepared prior to receiving approval of the mixing process.

After approval of the soil mix components and approval of the mixing process have been obtained, a sample of the combined mixture shall be prepared for testing. Approximately two cubic feet shall be concurrently submitted to the Engineer and to a Certified Soil Testing Laboratory for organic and physical analysis. The remaining soil mix will not be prepared until results of the testing are received and approved by the Engineer.

Physical analysis testing shall be run on samples that have been compacted at 45 foot pounds when at 15.75 inches (40 cm) moisture tension. The water permeability will be run for five (5) hours with a one-inch (25 mm) hydraulic head at 68 degrees Fahrenheit (20 degrees Celsius). The following properties will be analyzed and the results shall fall within the ranges provided.

Water permeability (inches per hour)	15 to 35
Pore Space (%)	
Aeration	20 to 25
Capillary	15 to 25
Bulk Density	
0.0073 to 0.0084 pounds per inch (1.3 to 1.5grams per cubic centimeter)	
Percent Moisture Retention	
(at 15.75 inches (40 cm) moisture tension)	12 to 17

Should variations outside of the given ranges specified above occur, the Design-Build Team shall be responsible for making the necessary adjustments to the initial input percentages of the components in order to bring the soil mix within the specified ranges at no additional cost to the Department.

During the mixing operation, the Design-Build Team shall be responsible for maintaining a soil mix which meets the specifications. Random samples will be submitted as requested by

the Engineer in order to test for mix uniformity and to verify that it remains within the specified ranges for the physical properties.

All the individual components as well as the soil mix shall be reasonably free of weed seed or toxic substances or any other material which would be harmful to plant growth, and shall be maintained free from such during stockpiling, transport, and installation. If the soil mix is to be stockpiled, the location chosen for stockpiling must be reasonably free of weed seed, vegetation, toxic substances, or any other material which would be harmful to plant growth. The stockpiling location must be approved by the Engineer prior to stockpiling.

Testing: It shall be the Design-Build Team's responsibility to use a Certified Soil Testing Laboratory with the following professional accreditations to conduct the testing / analysis outlined in the RFP.

- American Society for Testing and Materials - A.S.T.M.
- Council on Soil Testing and Plant Analysis
- Compost Analysis Proficiency Program (US Composting Council)
- Soil Science Society of America - S.S.S.A.
- Mid-Atlantic Soil and Plant Testing Workgroup
- United States Golf Association's Putting Green Materials Testing Committee (P.U.G.)
- North American Proficiency Testing Program (NAPT)

The Design-Build Team shall identify the Laboratory (name, address, telephone and contact person) to perform testing of the soils.

The Laboratory shall have a specific working knowledge of engineered soils and North Carolina native soils. To verify this requirement, the Design-Build Team shall submit a list of North Carolina specific soil related projects dated within the last twelve (12) months for which the laboratory has provided analysis. The Design-Build Team shall provide NCDOT with a list of input material sources. The Design-Build Team shall submit a copy of the Laboratory's most recent NAPT quarterly report.

Laboratory accuracy should be within +10 percent of the "true" soil test value. Laboratory precision should be + 20 percent. The laboratory shall provide proof that all of their instruments are checked and calibrated using NAPT standards. Every batch of analyses shall include standard samples with known nutrient levels. If the results from these standards do not match the known values, ALL results shall be discarded and the entire testing / analysis process shall be reviewed until the source(s) of error(s) is found and corrected.

The Design-Build Team shall submit results of the laboratory analysis of the individual components and subsequent mix(s) to: NCDOT-Roadside Environmental Unit (attn.: Derek Smith), 1557 Mail Service Center, Raleigh, NC 27699-1557 for review and approval prior to installation.

Roadway Bridges

Unless noted otherwise elsewhere in this RFP, the Design-Build Team shall design and construct concrete arch facades for all roadway bridges over US 421 / I-40 Business and the MUP. (Reference the Structures Scope of Work found elsewhere in this RFP) The concrete arch facades shall have a smooth finish and shall provide sufficient clearance for future bridge maintenance and inspections, including but not limited to inspection of exterior girders. If the Design-Build Team provides a cored slab or box beam bridge on Fourth Street over US 421 / I-40 Business, concrete arch facades will not be required.

For bridges utilizing steel girders, the exterior girders shall be painted black.

For bridges utilizing concrete girders other than cored slabs or box beams, the exterior girder shall be stained black.

All proposed bridge barrier rails on roadways over US 421 / I-40 Business shall have Sherwin Williams Current SW4058 or an equivalent color approved by the Engineer anodized metal rails.

The Design-Build Team's design shall provide for the future construction of concrete plinths at all corners of the roadway bridges noted below. The future plinths shall not be attached to the proposed bridge structure and shall not hinder future bridge maintenance or inspections. Lighting requirements for the future plinths are as shown on the Preliminary Lighting Plans provided by the Department. The location and dimensions of the future plinths are as follows:

Bridge	**Offset Distance from end of Bridge Rail / Parapet to Face of Future Plinth**	**Offset Distance from back of Guardrail to Face of Future Plinth**	**Dimension of Future Plinths (W x L x H)**
Peters Creek Parkway	8 feet	3 feet	5 feet x 5 feet x 16 feet
Fourth Street, Broad Street, Marshall Street, Cherry Street, Liberty Street, Main Street and Church Street	5 feet	3 feet	3 feet x 3 feet x 5 feet

The Design-Build Team shall design and construct mid-span concrete plinths on the Church Street Bridge. The mid-span concrete plinths shall be centered over the proposed median bent cap. The dimensions of the mid-span concrete plinths shall be three (3) foot wide, three (3) foot long and be equal to the height of the bridge rail. The mid-span concrete plinths face shall be flush with the sidewalk side of the bridge rail parapet.

The Design-Build Team shall design and construct square columns for the proposed median bents.

Retaining Walls and Vertical Abutment Walls, excluding Gabion Walls

Unless otherwise noted elsewhere in this RFP, the traffic face of all retaining walls and vertical abutment walls, including retaining walls in front of roadway bridge end bents, shall be designed and constructed as noted below:

- The Design-Build Team shall design and construct walls with a minimum eight-foot panel width.
- The Design-Build Team shall design and construct all walls visible from US 421 / I-40 Business that are 10.5' tall or higher in accordance with the requirements noted below:
    - From the bottom of the single-faced concrete barrier in front of the wall to a minimum six-foot height / maximum seven-foot height, the wall shall be standard smooth finish concrete. The Design-Build Team shall step the top of the aforementioned smooth finish concrete at one-foot vertical per horizontal panel(s).
    - The top of all walls shall have concrete coping of a uniform height. The coping height shall be 18 inches, unless the overall wall height will not accommodate an additional row of bricks in one or more panels. In which case the coping height shall be uniformly increased.
    - From the top of the aforementioned smooth finish concrete portion of the wall to the bottom of the aforementioned concrete coping, all visible sections of the wall shall be brick embedded concrete panels that provide a traditional brick wall appearance with running bond and header courses. The brick shall match the appearance of the brick used on TIP Project U-2925 and be approved by the Engineer prior to installation. If the Design-Build Team designs and constructs a wall behind the aforementioned brick embedded concrete panels, the Design-Build Team shall provide panel anchor details for the Department's review and approval.
    - Throughout all sections of the brick embedded concrete panels, the Design-Build Team shall design and construct continuous two-foot wide, smoothly finished, concrete vertical dividers in accordance with the requirements noted below:
        - The Design-Build Team will not be required to space the concrete vertical dividers uniformly.
        - Excluding the sections of brick embedded concrete panels directly beneath a bridge, all concrete vertical dividers shall be spaced between 24.0' and 64.0' apart.
        - The Design-Build Team shall design and construct a concrete vertical divider at all bridge edges.
        - The Design-Build Team shall design and construct a concrete vertical divider at the end of all brick sections.

      The Design-Build Team will not be required to include the aforementioned concrete vertical dividers in the Technical Proposal aesthetic renderings.
- The Design-Build Team shall design and construct all walls visible from US 421 / I-40 Business that are less than 10.5' tall with standard smooth finish concrete.
- The Design-Build Team shall design and construct all MSE walls that are not visible from US 421 / I-40 Business with panels that are rectangular, smoothly finished concrete, and oriented in a horizontal running bond or stacked pattern.

- Between adjacent retaining walls of different appearance (e.g. between a wall of embedded bricks and a wall textured and stained to provide the appearance of the locally quarried stone), the Design-Build Team shall design and construct a continuous two-foot wide, smoothly finished, concrete vertical divider.
- Unless noted otherwise elsewhere in this RFP, the top of all retaining walls shall be stepped at two-foot vertical per horizontal panel(s).
- The top of retaining walls located between a ramp and the -L- Line shall be sloped to match the ramp profile.
- The Design-Build Team shall texture and stain the retaining walls for the end bents of the Strollway Bridge to provide the appearance of the locally quarried stone used in the gabion elements.
- The top of retaining walls in front of sloped bridge end bents shall be sloped to match the end bent slope.
- The top of retaining walls located between sections of the MUP shall be sloped to match the higher MUP profile.
- The Design-Build Team shall consistently step the top of wingwalls at either two or three-foot vertical per horizontal panel.

Aesthetic Columns

The Design-Build Team shall design and construct aesthetic columns between US 421 / I-40 Business and the proposed MUP beneath the Broad Street and Cherry Street bridges over US 421 / I-40 Business. (Reference the Structures Scope of Work found elsewhere in this RFP) These columns are to provide a visual delineation between the MUP and US 421 / I-40 Business. The columns shall be located on top of the retaining wall US 421 / I-40 Business and the MUP or directly behind the wall. The columns shall extend from the top of the retaining wall coping and / or the finished grade of the MUP to the bottom of, but not be attached to, the concrete arch façade. Columns shall be square with the minimum width and depth dimension to be determined by the width of the retaining wall coping. The columns shall be constructed of concrete with a smooth finish.

Sound Barrier Walls

Reference the *Sound Barrier Wall – Ground Mounted* Project Special Provision, the *Sound Barrier Wall – Bridge Mounted* Project Special Provision, the *Architectural Concrete Surface Treatment* Project Special Provision, and the Structures Scope of Work found elsewhere in this RFP.

Control of Access Fence

All control of access fencing shall be four-foot high and shall consist of the following types of decorative fencing:

- Vinyl Coated Chain Link fencing with anodized rails and posts. Vinyl Coated Chain Link fencing, rails and posts shall be black.
- Ornamental Fence with metal pickets and three rails with a smooth top rail. Ornamental Fence shall be black and one of the following types:

SPECRAIL	AMERISTAR	Ultra Aluminum Mfg., Inc.
Saybrook	AEGIS Plus Majestic 3-Rail	UAF 200 Flat Top

The Design-Build Team has the option of supplying an alternative type of fixture, as long as the fixture selected is approved, in writing, as an equal or approved alternative by the Engineer and the City of Winston-Salem.

Green Street Pedestrian Bridge

The lighting system for the Green Street Pedestrian Bridge shall include, but not be limited to spotlighting for the tied arches, fence post pedestrian lights, and deck paver lighting. All lighting shall be LED.

- The spotlighting shall highlight the cables, from the bottom, which will also provide some illumination of the arches, depending on angle spread. Spotlighting fixtures for the tied arches shall be color changing, with a DMX controller and be one of the following types:

  Traxon, Nano Liner Allegro AC XB RGB, Butler XT2 Controller

  Philips, Color Kinetics, ColorGraze MX4 Powercore (RGB Amber), iPlayer 3 Controller

  Lumenpulse, Lumenfacade horizontal color changing, Lumentouch 2.0 Controller

  The Design-Build Team shall design and construct a climate controlled box or facility if required by the manufacture for the aforementioned spotlight fixtures. The climate controlled box or facility shall be located within the existing right of way southwest of the proposed Green Street Pedestrian Bridge near the proposed Green Street turnaround.

- For pedestrian safety and visibility, the Design-Build Team shall provide small cut-off fixtures to be mounted on fence posts. These fixtures shall be small enough to be unobtrusive yet provide ample lighting for users. All pedestrian lighting shall be full cut off / Dark Sky Compliant. Fence post pedestrian light fixtures shall be black and mounted to the top of the pedestrian fence post, chosen from one of the following types:

  Architectural Area Lighting, Kick Small Scale
  K41, Type3 Distribution

  Bega, Single Light Building Element
  #88 977

  Hess America, Linea #LN450 NW ME
  type 3 distribution

  Landscape Forms, RAMA LED
  R4, 4000K

- The Design-Build Team shall design and construct the pedestrian fence posts / light poles to accommodate the aforementioned small cut-off fixtures and any transformers, conduits, etc. required by the manufacturer.
- The Design-Build Team shall be responsible for determining the appropriate mounting design based on the selected fixture. Post mounted lights shall be spaced as needed per photometrics to achieve an average 1.5 to 2 fc at the walkway surface.
- All post / pole mounted lights shall be mounted between eight feet and twelve feet above the walkway surface. Fence posts or light poles shall extend above the top of the fence line. Posts / poles for light fixtures shall be set in line with the pedestrian fencing on the Green Street Pedestrian Bridge.
- Fixture, pole, bracket arms, or other hardware shall be matte black to match the fencing.

- A minimum of ten deck paver light fixtures, evenly spaced across the structure, shall be installed in the center of, and flush with, the bridge deck. All deck paver lighting fixtures shall be outdoor wet rated, IP65 minimum. Deck paver lighting fixtures for the deck shall be one of the following types:

  Bega, Small Scale in-grade Luminaire
  #77018

  FC Lighting, Mini LED Recessed Drive-over
  FCD23, 4K, FG

  KIM Lighting, In Grade LED
  LTV83FF

The Design-Build Team has the option of supplying an alternative type of fixture(s), as long as the fixture(s) selected is approved, in writing, as an equal or approved alternative by the Engineer and the City of Winston-Salem.

Strollway Pedestrian Bridge

The lighting system for the Strollway Pedestrian Bridge shall include, but not be limited to linear LED façade lighting, fence post pedestrian lights, and deck paver lighting. All lighting shall be LED.

- The linear LED façade lighting shall highlight the mesh fence and / or the horizontal bridge beam or other façade elements. Linear LED façade lighting fixtures shall be color changing, with a DMX controller and be one of the following types:

Philips, Vaya Tube RGB, iPlayer 3 Controller

Traxon, Media Tube HO RGBW, Diffused, Butler XT2 Controller

Lumenpulse, Lumencove XT Direct View Color Changing, Lumentouch 2.0 Controller

Barron Specialty LED, RGB LED Flexible Border Tube

The Design-Build Team shall design and construct a climate controlled box or facility if required by the manufacture for the aforementioned fixtures. The climate controlled box or facility shall be located within the existing right of way northwest of the proposed Strollway Pedestrian Bridge.

- For pedestrian safety and visibility, the Design-Build Team shall provide small cut-off fixtures to be mounted to posts. These fixtures should be small enough to be unobtrusive yet provide ample lighting for users. All pedestrian lighting shall be full cut off / Dark Sky Compliant. Post mounted pedestrian light fixtures shall be black and mounted to the planter side of the interior parapet wall, chosen from one of the following types:

  Architectural Area Lighting, Kick Small Scale
  K41, Type3 Distribution

  Bega, Single Light Building Element
  #88 977

  Hess America, Linea #LN450 NW ME
  type 3 distribution

  Landscape Forms, RAMA LED
  R4, 4000K

  - The Design-Build Team shall design and construct the pedestrian light poles to accommodate the aforementioned small cut-off fixtures and any transformers, conduits, etc. required by the manufacturer.
  - The Design-Build Team shall be responsible for determining the appropriate mounting design based on the selected fixture. Post mounted lights shall be spaced as needed per photometrics to achieve an average 1.5 to 2 fc at the walkway surface.
  - All pole mounted lights shall be mounted between eight feet and twelve feet above the walkway surface. Light poles for light fixtures shall be set in line with or just behind the interior parapet walls adjacent to the Strollway walking surface.
  - Fixture, pole, bracket arms, or other hardware shall be matte black to match the fencing.

- Deck paver lighting shall be installed flush with the walking surface in a random pattern, see concept sketch in the Business 40 Aesthetic Guidelines. All deck paver lighting fixtures shall be outdoor wet rated, IP65 minimum. Deck paver lighting fixtures for the deck shall be one of the following types:

  Bega, Small Scale in-grade Luminaire
  #77018

  FC Lighting, Mini LED Recessed Drive-over
  FCD23, 4K, FG

  KIM Lighting, In Grade LED
  LTV83FF

The Design-Build Team has the option of supplying an alternative type of fixture(s), as long as the fixture(s) selected is approved, in writing, as an equal or approved alternative by the Engineer and the City of Winston-Salem.

Preliminary Design

After the contract has been executed, the Design-Build Team shall clearly present, with appropriate visual aids, the aesthetic design intent, including but not limited to the aesthetic theme, the general plan, color scheme(s) and Preliminary General Drawings for each design element within the project for review and approval. The NCDOT will require 30 days to review this information to ensure that it is acceptable and complementary to the general theme for the US 421 / I-40 Business Corridor.

Final Design

The Design-Build Team shall include the accepted aesthetics details with the appropriate submittal of preliminary and final designs plans for each element (bridge, roadway, structure, lighting, etc.)

For each element, the Design-Build Team shall develop and submit for review and acceptance any specifications, material requirements and / or construction processes needed to accomplish the aesthetic work with the final design submittal.

Materials, Construction, and Fabrication

To demonstrate the color consistency and the facsimile to real brick, the Design-Build Team shall demonstrate the long-term durability of all proposed staining. At a minimum this demonstration shall require the Design-Build Team to provide a minimum of three test panels, produced in different batches, of each product.

Visible joints in the brick appearance or brick façade are of concern to the Department. The Design-Build Team shall demonstrate how joints will be eliminated or otherwise masked from