AESTHETICS SCOPE OF WORK (01-07-25)

GENERAL

The aesthetic design and construction of the project shall include aesthetic treatments to roadway, bridge and other elements in a cost and maintenance conscious manner.

The I-5719B / U-5800 Aesthetics are based on input from the Department and Local Governments within the Project Study Area and provides a visual representation of the desired aesthetic theme throughout the I-85 Corridor.

The Design-Build Team is encouraged to consider aspect ratios in the modification of any aesthetic element; 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 drawing and renderings in the Technical Proposal. The Proposer shall also address the attributes of their approach to aesthetics in their Oral Presentation with the Technical Review Committee.

Aesthetic landscaping will not be the responsibility of the Design-Build Team.

BRIDGE AESTHETICS

Unless otherwise noted in this RFP, the Design-Build Team shall provide vertical abutments at all proposed bridges. The Design-Build Team shall provide square columns for all proposed interior bents.

Bridges within the project limits shall be constructed with the following betterments:

High End Bridge Aesthetic Betterments

High End Aesthetic Betterments shall, at a minimum, include the following elements:

- Vertical abutments, turned-back retaining walls (where used), and parallel wing walls (where used) shall have a brick veneer.
- Exterior face and bottom of exterior concrete girders, columns, and wingwalls (or earwalls where MSE abutments are used) shall be concrete
- Medallions on the ends of bent caps – City of Lowell logo without name at NC 7 (McAdenville Road / Main Street) and City of Belmont logo without name at SR 2093 (Belmont Mt Holly Road / Main Street)
- Debossed street / name identification on each side of the bridge
- Black protected coated two-bar rail system

- High-End Bridge Aesthetic Betterments shall be applied to bridges at the following locations:

  - NC 7 (McAdenville Road / Main Street) and I-85 (Exit 23)
  - SR 2093 (Belmont Mt Holly Road / Main Street) and I-85 (Exit 26)

Mid-Grade Bridge Aesthetic Betterments

Mid-Grade Aesthetic Betterments shall, at a minimum, include the following elements:

- Vertical abutments, turned-back retaining walls (where used), and parallel wing walls (where used) shall have a brick veneer.
- Medallions on the ends of bent caps – Gaston County logo without name at SR 2000 (Hickory Grove Road)
- Debossed street / name identification on each side of the bridge
- Black protected coated two-bar rail system
- Mid-Grade Bridge Aesthetic Betterments shall be applied to bridges at the following locations:

  - SR 2000 (Hickory Grove Road) and I-85

Piedmont and Northern Railway (P & N) Spur Line Bridge

The Design-Build Team shall, at a minimum, include the following elements:

- Medallions on the ends of bent caps, P& N logo without name.
- Debossed name identification, Piedmont and Northern Railway, on each side of the bridge.
- Railings, shall be either aluminum or galvanized steel, see the Preliminary Concept Drawing – Typical Section
  - Eastern side four bar metal rail
  - Median / center parapet four bar metal rail
  - Western side two bar metal rail
- Steel girders
- Interior bent columns and caps shall be square or rectangular and closely match the existing columns and caps in appearance.
- Shoulder bent columns and caps shall be square or rectangular and closely match the existing columns and caps in appearance.
- Spill through bents shall be constructed

NC 273 (Beatty Drive) (Exit 27)

Upon completion of rehabilitation work the Design-Build Team shall pressure wash all existing concrete parapets, slope protection, barriers, and bents (shoulder and center) and apply tinted anti-graffiti coating to the bents and parapets.

The Design-Build Team shall, at a minimum, include the following elements:

- Medallions on the ends of bent caps, City of Belmont logo without name.
- Remove the existing three-bar rail system and replace it with black protected coated three-bar rail system.

Vertical abutments shall at a minimum include concrete bridge quoins, cheek walls, emblems, and wall caps. Any necessary pedestrian railings and decorative fencing shall match all other railings and decorative fencing within the project.

Unless otherwise noted in this RFP, concrete girders are preferred for all new bridges over any roadway. In the event that steel girders are used for these bridges, the steel shall be AASHTO M270 Grade 50 and painted in accordance with the *Standard Specifications.* All steel girders on new bridges on the Project shall be painted the same color as the concrete girders.

Barrier rail or parapet on the bridges shall extend to the end of the MSE turned-back retaining wall before transitioning to guardrail.

Except for the bridge at I-85 over South Fork Catawba River and the bridge for the P & N Spur Line over I-85 all proposed bridge barrier rails on roadways over I-85 shall have black protective coated metal rails.

Debossed Street / Name Identification on Bridge

Street / Name Identification signage will be located on the bridge parapet above the outer travel lane, facing the flow of traffic, centered horizontally and vertically. The letter size should be legible, and lengthy crossroad names may use multiple barrier segments.

A reverse mold casting or other accepted means shall be made to accurately create the new identification.

Medallions

The proposed medallions on the bents end caps and cheek walls shall match. The Emblems at interior bent(s) shall be placed on the exterior faces where multiple substructure units are used for a single bent line.

Railings

The Design-Build Team shall provide railings in accordance with the following requirements:

- Railing shall be continuous from end post to end post of bridge. Each joint in rail length shall be spliced as detailed. Panel lengths of rail shall be attached to a minimum of three posts.
- The end of rail to clear face of concrete end post dimension.
- Cap screws shall be ASTM F593 alloy 305 stainless steel. Washers shall meet the requirements of ASTM F844 except they shall be made from alloy 304 stainless steel.
- Certified mill reports are required for rails and posts. Shop inspection is not required.
- Metal rail posts shall be set normal to curb grade.
- To insure future identification of the fabricator, a permanent identifying mark shall be placed on each post. The method of marking and location shall be such that it does not detract from the appearance of the post, but remains visible after rail placement.
- Shims shall be used as necessary for post alignment.
- Alloy 6351-T5 may be substituted for alloy 6061-T6 where applicable.
- Minor variations in details of metal rail will be considered. Details of such variations, if desired, shall be submitted for approval.

Aluminum Rails

The Design-Build Team shall provide aluminum rails in accordance with the following requirements:

- Material for posts, bases and rails, expansion bars and clamp bars shall be ASTM B-221 alloy 6061-T6
- Material for rivets shall be ASTM B316 alloy 6061-T6. Rivets shall be standard button head and cone point cold driven as per drawing.
- The base of rail posts, or any other aluminum surface in contact with concrete shall be thoroughly coated with an aluminum impregnated caulking compound of approved quality
- Material for shims to be ASTM B209 alloy 6061-T6.

Galvanized Steel Rails

The Design-Build Team shall provide materials and galvanizing for galvanized steel rails to conform to the following specifications:

- Post, post bases, rails, expansion bars and clamp bars: ASTM A36 Grade 36 structural steel galvanized to ASTM A123.
- Rivets shall meet the requirements of ASTM A502 for Grade 1 rivets.
- The cut ends of galvanized steel railing, after grinding smooth shall be given two coats of zinc rich paint meeting the requirements of federal specification MIL-P-26915 USAF Type 1, or of Federal Specifications TT-P-641.
- Shims shall meet the requirements of ASTM A1011 for Grade 36, 40, 45 or ASTM A1008 for Grade C and shall be galvanized in accordance with ASTM A123.
- Rail caps shall meet the requirements of ASTM A1011 for Grade 36, 40, 45 or ASTM A1008 for Grade C and shall be galvanized in accordance with ASTM A123

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.

RETAINING WALLS AND VERTICAL ABUTMENT 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 I-85 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 veneer that provide a traditional brick wall appearance with running bond and header courses. The brick shall match the appearance of the brick used on project bridges and shall be approved by the Engineer prior to installation. If the Design-Build Team designs and constructs a wall behind the aforementioned brick veneer, the Design-Build Team shall provide panel anchor details for the Department's review and approval.
- Throughout all sections of the brick veneer, 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 bridge quoins or 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 I-85 that are less than 10.5' tall with standard smooth finish concrete.
- All retaining walls visible to I-85 traffic shall have a brick veneer. The Design-Build Team may utilize full size (2 2/3" x 8" nominal or 2 2/3" x 12" nominal) clay brick. The brick pattern of the retaining walls shall extend a minimum of two feet below the final grade.
- The Design-Build Team shall design and construct all MSE walls that are not visible from I-85 with panels that are rectangular, smoothly finished concrete, and oriented in a horizontal running bond or stacked pattern.
- 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 top of retaining walls in front of sloped bridge end bents shall be sloped to match the end bent slope.
- The Design-Build Team shall consistently step the top of wingwalls at either two or three-foot vertical per horizontal panel.

ANTI-GRAFFITI COATING

The Design-Build Team shall apply anti-graffiti coating that is compatible with the concrete color system / stain on all noise walls. After application, the anti-graffiti coating shall be dry to the touch within one hour and shall achieve a final cure within three hours.

The color of the anti-graffiti coating shall be clear after full cure. The Design-Build Team shall provide specifications for the anti-graffiti coating and one gallon of graffiti remover, thinners, dryers, and all necessary components recommended by the manufacturer to the North Carolina Department of Transportation Materials and Tests Unit, Chemical Testing Engineer.

The anti-graffiti coating shall be applied by brush, roller or airless spray when the ambient temperature is between 45° F and 90° F, and the surface temperature is between 50° F and 100° F or as required by the manufacture. Ensure the surface is clean and dry before applying the anti-graffiti coating. The minimum dry film thickness of the anti-graffiti coating shall be 2.0 mils.

Anti-graffiti coating is also required on other elements as required by the Structures Scope of Work found elsewhere in this RFP.

BRICK VENEER

The Design-Build Team shall utilize full size (2 2/3” x 8" nominal or 2 2/3" x 12" nominal) clay brick. The full brick along vertical abutments, turned-back retaining walls (where used), parallel wing walls (where used), and retaining walls shall extend a minimum of two-foot below the final grade.

The brick veneer shall be a tricolor brick and one of the following types:

CHEROKEE BRICK
Windsor

TRIANGLE BRICK COMPANY
Boylan Heights

PINE HALL BRICK COMPANY, INC.
Spektra Wire Cut Full Range

OLD CAROLINA BRICK CO.
Old Post Office

The Design-Build Team has the option of supplying an alternative type of tricolor brick, as long as the tricolor brick selected is approved, in writing, as an equal or approved alternative by the Engineer and the Local Governments.

ROUNDABOUTS

The Design-Build Team shall design and construct all roundabouts with the following elements:

Concrete Collar

The center island shall have a four-inch thick, ten-foot wide concrete collar from the back of the 9" x 14" concrete curb towards the center of the island. The concrete cap shall be dyed red to match the Federal Standard 10115 or 10233 found in the *AMS Standard 595 Color*.

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 Cities of Belmont and Lowell 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.

FENCING

The Design-Build Team shall construct all fencing with the following betterments:

Control of Access Fence

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

- Chain Link fencing shall be Vinyl Coated Chain Link fencing with anodized rails and post. The Vinyl Coated Chain Link fencing, rails, and posts shall be black.
- Woven Wire fencing shall be as listed in the *Standard Specifications*.

Permanent Retaining Wall Structures Fence

All Permanent Retaining Wall Structures fencing shall be Vinyl Coated Chain Link fencing with anodized rails and post. The Vinyl Coated Chain Link fencing, rails, and posts shall be black.

Ornamental Fencing between the P & N Spur Line and Belmont Rail Trail

The Design-Build Team shall install four-foot high ornamental fencing between the P & N Spur Line and Belmont Rail Trail, excluding the bridge median / center parapet. The ornamental fencing shall begin approximately 25 feet north of the proposed back of curb of the northeast quadrant of the NC 7 (N. Main Street) / US 29 / 74 (Wilkinson Boulevard) intersection and extend northward to approximately 20 feet of the eastern right of way limits for the proposed SR 2093 (Belmont Mt Holly Road) and P & N crossing. The ornamental fencing shall consist of the following types of decorative fencing:

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
Specrail Commercial (SC)

SPECRAIL
Saybrook (S4)

AMERISTAR
AEGIS Plus Majestic 3-Rail

Ultra Aluminum Mfg., Inc.
UAF 200 Flat Top

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

SIDEWALKS

The Design-Build Team shall design and construct all concrete sidewalks with scored joints at five foot on center. Where used, joint sealant shall be light gray, to match concrete surface.

CROSSWALKS

At all crosswalks the Design-Build Teams shall provide the following:

- Curb ramps and ADA Detectable Warning Mats according to ADA and 2024 NCDOT *Roadway Standard Drawing* No. 848.05. Detectable Warning Mats shall be black.
- Where medians are present and a minimum of six-foot in width, provide refuge islands for pedestrians.

LIGHTING

Pedestrian Lighting

The Design-Build Team shall design and install pedestrian lighting requirements noted in the Lighting Scope of Work found elsewhere in this RFP and the requirements noted below:

MUP Lighting on the P&N Spur Bridge

The Design-Build Team shall design and construct Pedestrian Lighting of the MUP on the P&N Spur Bridge – Interior Wall Lighting in the Parapet (anticipated 12-foot spacing at an anticipated height of 28 inches above the walking surface).

The lighting system for the MUP on the P&N Spur Bridge shall include, at a minimum of one 1-inch conduit, junction box(s) (sized per NEC requirements), luminaire boxes, and fixtures. All lighting shall be LED.

For pedestrian safety and visibility, the Design-Build Team shall provide fixtures to be mounted in the interior concrete parapet at a height a spacing shown on the plans developed by the Design-Build Team. 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. Pedestrian light fixtures shall be black, chosen from one of the following types:

FC Lighting
FCSL2008

FC Lighting
FCSL2040 (4 Watt)

VISTA Commercial Outdoor Lighting
1505-L

VISTA Commercial Outdoor Lighting
1503-L

- Fixture, and other hardware shall be matte black to match the fencing.

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 Belmont.

Bridge Lighting

The Design-Build Team shall, at a minimum, install two 3-inch conduits and a single 2-inch conduit with 24” (h) x 36” (w) x 9” (d) formed opening with double plate on the following bridges within the municipal limits of the Cities of Lowell, McAdenville and Belmont and in Gaston County the Design-Build Team for future lighting, see the Lighting Scope of Work found elsewhere in this RFP:

- NC 7 (McAdenville Road/Main Street) (Exit 23)
- SR 2000 (Hickory Grove Road) – Overpass
- SR 2093 (Belmont Mt Holly Road/Main Street) (Exit 26)

DESIGN REQUIREMENTS

The Design-Build Team shall ensure that the aesthetic details incorporated into the plans developed by the Design-Build Team will meet the appropriate engineering standards and the RFP requirements.

Preliminary Design

After contract award, the Design-Build Team shall clearly present, with appropriate visual aids, the design intent, their aesthetic theme, general plan, color scheme(s) and preliminary details for each design element. The Design-Build Team shall allow 30 days for review of the aesthetic details.

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.)

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

RFC 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.)

Materials, Construction, and Fabrication

The Design-Build Team shall demonstrate the long-term durability of any color application (staining, anodizing, painting, etc.) on any feature proposed. Provide a minimum of three test panels, produced in different batches, of each product to demonstrate the consistency of color.

Proposers shall demonstrate in their aesthetics detail show joints will be eliminated or otherwise masked from affecting the overall appearance and continuity of the wall.

Three full size mockup panels will be required for each type of colored concrete / textured element on the project, including but not limited to features that are anodized and / or painted, emblems and embossed street / name identification. At their own risk, the Design-Build Team may elect to use production elements as the test panels.