ATTACHMENT A

Scope of Work

December 22, 2020
SCOPE OF WORK

I. OVERVIEW

A. The purpose of this Request for Proposals (RFP) is to solicit proposals for professional architectural/engineering (A/E) services to complete design development and prepare construction documents for the Broad Run Expansion Project (Project) to include the expansion of the Virginia Express Railway (VRE) Broad Run Station, Maintenance and Storage Facility (MSF), and addition of a third main Norfolk Southern Railway (NSR) track between the Broad Run Station and Wellington Road in the City of Manassas.

B. The firm selected to provide the services identified in this Scope of Work shall hereinafter be referred to as the “Consultant”. If the Consultant elects to subcontract a portion of the Scope of Work to one or more other firms, such firms will be referred to as “Subconsultant(s)”.

C. The Consultant shall provide all labor, supervision, materials, supplies and transportation necessary to complete the Scope of Work to the satisfaction of VRE, the local jurisdictions having authority, and where applicable, to the satisfaction of NSR.

D. In the performance of this Contract, the Consultant shall comply with VRE’s General Provisions and Special Provisions (if applicable) included herein this solicitation.

The Consultant’s work shall be managed through VRE’s Headquarters Office of Design and Development. A Project Manager (PM) will be designated by VRE for this Contract to coordinate all tasks and to oversee the Consultant.

II. GENERAL REQUIREMENTS

A. The Scope of Work under this Contract includes final engineering design services (Base Task). Additional optional limited construction administration (CA) services (Optional Task) may be undertaken by the Consultant at VRE’s discretion contingent upon funding availability and satisfactory completion of previous tasks.

B. VRE will issue a Notice-To-Proceed (NTP) limited to the Base Task upon accepting the Consultant’s cost proposal and after obtaining required authorization(s) to award the Contract. Unless otherwise modified in writing by VRE, the Base Task and all required submittals shall be completed by the Consultant within 540 consecutive calendar days of the NTP for the Base Task.
C. Should VRE choose to exercise the Optional CA Task, VRE shall provide an updated scope of work that reflects the additional work to be completed, and the Consultant shall provide a price proposal to complete the task. VRE shall conduct negotiations with the Consultant to reach an agreed-upon price for the additional work and will subsequently issue an NTP for the Optional Task.

D. VRE has completed Project Development activities for the Project, including Preliminary Engineering and National Environmental Policy Act (NEPA) review. Preliminary Engineering design plans, also referred to as 30% design plans, and the approved NEPA will be provided to the Consultant. The Consultant may use, but shall not rely exclusively upon, these documents in developing a Final Design that meets or exceeds all requirements.

E. The Consultant shall coordinate tasks requiring access to the NSR right-of-way (ROW) with NSR and obtain right-of-entry to complete such tasks. VRE has a Force Account Agreement in place with NSR that will include provisions for NSR design review, flagging services, and other coordination for the Project. The Consultant shall provide required insurance coverage for each firm that will be performing field work and ensure all personnel undertaking work within or adjacent to the railroad ROW have the required Roadway Worker Protection (RWP) training.

F. The Consultant will be required to interface with e-Builder, VRE’s enterprise project controls software, for project submissions and management functions, including, but not limited to, uploading and downloading project files, submitting meeting notes and project deliverables, and submitting invoices. VRE will provide the Consultant a license for the VRE e-Builder software; purchase of the e-Builder software is not a requirement of this Contract.

G. All design work and plans shall be prepared and submitted by the Consultant using U.S. Customary Units.

H. One hundred percent (100%) and Final Construction Plans as well as other bid documents, and project technical design specifications shall be signed and sealed by a Commonwealth of Virginia licensed Professional Engineer and/or other licensed professional(s), as required by Virginia law or review/permitting agencies. Any survey or test hole data shall be signed and sealed by a Commonwealth of Virginia licensed Land Surveyor or Geotechnical Engineer, as appropriate. All design work and plans must be prepared under the direct supervision of these licensed professionals.

I. Funding has been identified and is available for the Project through a combination of Federal, State and Local sources. Therefore, the Consultant must comply with Federal, State and Local regulations as they pertain to procurement, design and construction contracts.
J. The Broad Run Station, MSF and existing NSR main tracks shall remain in operation throughout the construction of the proposed improvements, to the maximum extent possible. The design shall consider all existing operations (size and makeup of train consists) for continued operations throughout construction. A suggested sequence of construction that meets this requirement shall be provided as part of the submittals. The storage capacity or capabilities of the MSF to perform servicing and maintenance functions shall not be reduced or compromised during construction, relative to its current capabilities.

K. VRE anticipates the Project will be delivered using a design-bid-build approach for all project elements and will be constructed through one or more competitively bid construction contracts and/or through a Force Account with NSR for the third main track and signals.

L. The Final Design process shall not be considered complete until comments and requested changes provided as part of the design review processes from VRE and, where applicable, from NSR, the Virginia Department of Rail and Public Transportation (DRPT), local jurisdictions (Prince William County and City of Manassas) issuing permits, and other agencies, are addressed to VRE’s satisfaction, and VRE has provided the Consultant with formal notification that the Final Design documentation satisfactorily addresses all requirements identified in the RFP.

III. PROJECT DESCRIPTION

A. The Project site is located at and nearby the VRE Broad Run Station and adjacent Broad Run MSF, located at 10637 Piper Lane, Bristow, VA in Prince William County and the City of Manassas. The Broad Run complex is located at NSR Piedmont Division Milepost (MP) 35.7. The Project also includes a proposed third main track that extends along the NSR ROW between MP 33.5, south of Wellington Road., to approximate MP 35.4, near Wakeman Drive.

B. The Project is necessary to enable VRE to expand its Broad Run Station and equipment storage facility capacity to accommodate growth through the operation of longer trains, the provision of more commuter park-and-ride spaces, enhanced station access and circulation, and maintaining high schedule reliability by improving operating flexibility on the NSR-owned Manassas Line.

C. The Project generally consists of the following elements (see also Appendix A Project Overview Plan):

1. **MSF Tracks, Employee Parking Lot, and Access Road**
   a. Extend the existing Broad Run MSF tracks to provide storage capacity. The Preliminary Design considers storage for five 10-car
trainsets, consisting of 10 coaches and 1 locomotive, plus spare coaches and locomotives. However, VRE is currently considering use of maximum 8 car trainsets instead of 10 car trainsets and the Final Design shall consider storage capacity for a minimum of five 8-car trainsets, consisting of 8 coaches and 1 locomotive, plus spare coaches and locomotives and additional trainsets. The Consultant shall review and revise the design at the revised 30% design to accommodate these changes. The expanded tracks must be able to access the relocated VRE Broad Run Station platform and connect to the new NSR third main track at the primary switch point, located at approximate MP 35.4.

b. Employee parking for MSF employees will be relocated to the western side of the existing station parking lot, in the area currently used for VRE customer parking.

c. A new MSF access road and vehicle gate will be constructed at the western end of the existing MSF to provide a new entry point for delivery vehicles.

2. **Administration and Employee Welfare (AEW) Building**
   The existing MSF crew and administrative buildings will be demolished as part of the MSF track expansion and relocated to a new building, located adjacent to the new MSF employee parking lot. The approximately 5,400 square foot building will include offices, locker rooms, a conference room, and storage area.

3. **Platform**
   The station platform will be relocated approximately 370 feet railroad north of its current location to accommodate the expanded MSF tracks. The Final Design shall review this design and revise if needed as part of the revised 30% design based on redesign of the MSF track. The platform location must remain outside the Manassas Regional Airport Runway Protection Zone (RPZ). A minimum 623-foot long platform (8 car trainset) shall be provided. ADA-compliant access shall be provided between the platform and adjacent surface parking lot(s).

4. **Existing Surface Parking Lot**
   The station’s existing surface parking areas located railroad east of the NSR tracks will be affected by the revisions to the MSF track and station platform and shall be reconfigured to maintain about 800 spaces for VRE riders, including the ADA parking spaces. A “kiss-and-ride” drop-off area and bicycle parking shall also be provided.

5. **New Residency Road Surface Parking**
Additional parking for VRE riders shall be provided in a new surface parking lot located railroad west of the NSR tracks and the existing VRE station and MSF at the terminus of Residency Road (10236 and 10599 Residency Road). About 600 additional parking spaces shall be provided in the new parking lot, to maintain a total 1,400 spaces between the east and west sides of the NSR tracks. The parking lot shall include ADA parking spaces, bicycle parking, a kiss-and-ride and bus drop-off area, and ADA-compliant sidewalks and pedestrian pathways.

6. **Pedestrian Tunnel**
   An approximately 180-foot long, ADA compliant tunnel will be built between the new Residency Road parking lot and the VRE Broad Run complex and relocated station platform. The tunnel shall have 15-feet minimum clear passageway width and 10-feet minimum of clear head space, as well as approximately 3-feet below the NSR railroad ties.

7. **NSR Third Track and Signals**
   A new third track, dispatched by NSR and shared by freight, VRE and Amtrak trains, shall be provided east of the two existing NSR tracks between approximate MP 33.5, south of Wellington Road, to about MP 35.4, near Wakeman Drive. Existing railroad signals, at-grade roadway crossing, bridges, and culverts/pipes shall be modified or expanded to accommodate the additional track. Acquisition of property adjacent to the existing NSR ROW from multiple owners is required to construct the third track. Property acquisition is currently being coordinated by VRE’s General Planning Consultant (GPC) as part of a separate task order. The Final Design Consultant shall coordinate property requirements with VRE’s GPC.

   The Consultant shall prepare the final track design plans, for approval by NSR; NSR will design the signal and communications systems for the track.

D. The design of the VRE improvements must maintain access to private property owned by CenturyLink/Williams Communication, located south of the existing MSF facility (10631 and 10633 Piper Lane). Uninterrupted access to the CenturyLink property shall be provided at all times and all utilities to/from the CenturyLink parcels must be maintained continuously during construction of the Project.

E. The ownership of facilities constructed or modified is assumed to be as outlined below and shall be confirmed during the Final Design phase.

1. VRE-owned track and facilities will include the relocated Broad Run Station platform, modified park-and-ride lots, MSF track and new AEW facility located railroad east of the NSR ROW. VRE will also own the new pedestrian tunnel beneath the NSR ROW.
2. VRE will own the Residency Road park-and-ride facilities located railroad west of the NSR tracks. Acquisition of the property required for the new parking lot is NOT included in this Scope of Work; however, the Consultant will need to coordinate the design with real estate acquisition activities.

3. Prince William County or the Virginia Department of Transportation (VDOT) will own the cul-de-sac at the terminus of Residency Road, as modified to accommodate the park-and-ride lot.

4. NSR owned track and facilities (within the VRE project area, between MP 33.5 and MP 35.4) will include all railroad right-of-way, existing Tracks 1 and 2, the new third track, service road, turnouts, interlockings, and signal systems. Acquisition of the property required for the new track is NOT included in this Scope of Work; however, the Consultant will need to coordinate the design with real estate acquisition activities.

IV. FINAL ENGINEERING DESIGN (BASE TASK)

The Consultant shall perform the following tasks:

A. Project Management

1. Appoint a Project Manager who will serve as the primary point of contact between VRE and the Consultant’s team. The Consultant’s Project Manager is responsible for managing their team’s work as well as keeping the project work on schedule and within the project budget. All communications with VRE shall flow through and from the Consultant’s Project Manager to the VRE Project Manager.

2. Develop, adhere to, and periodically update a Project Management Plan (PMP) identifying the Consultant’s approach to managing the Project and fulfilling the Contract requirements. It is anticipated that the PMP will be revised prior to completion of the sixty percent (60%), ninety percent (90%), and one hundred (100%) design milestones, or other intervals, as needed, based on project progress. At a minimum, the PMP shall include the following:

a. A Safety Plan for all activities including Consultant work, field work, interface with NSR, Prince William County and the City of Manassas staff and officials.

b. A description of the overall Consultant team organization, team member roles and responsibilities, including the identification of key team members (including subconsultants), and a resume or summary of qualifications for each.
c. A description of project tasks to be completed as part of the Contract and summary of the Consultant’s approach to completing such tasks.

d. A project schedule, in Microsoft Project, with milestones for all project tasks to be completed as part of the Contract, and in the format established by VRE. The schedule shall address all major project activities from Final Design through construction and the initiation of revenue service, including those activities not part of Final Design such as property acquisition. The schedule shall be regularly updated and submitted monthly for VRE review.

e. A project budget by task and by Consultant/Subconsultant role, in Microsoft Excel. The budget shall be regularly updated and submitted monthly for VRE review.

f. A description of the document control and recordkeeping system that will be implemented for the Project. The Consultant shall utilize e-Build as directed by the VRE Project Manager to manage document control tasks.

g. A description of the quality control and assurance program that will be implemented to ensure all work products and submissions to VRE are consistent with the Project scope of work and meet the Project’s technical and performance requirements.

3. Prepare meeting materials (e.g., agendas, PowerPoint presentations, plans, presentation boards) and participate in a Project kick-off meeting with the VRE team to review the project approach, schedule, coordination, and deliverables.

   a. Prepare notes for all meetings attended by the Consultant. The meeting notes shall be submitted to the VRE Project Manager within three (3) business days of the meeting. Once comments are incorporated, the notes shall be finalized in PDF for distribution, as directed.

4. Conduct a site visit with VRE representatives to become familiar with the Project’s location, proposed elements, and review the Project’s Scope of Work.

5. Prepare for and attend Project Management Team (PMT) meetings with the VRE team to discuss overall progress relative to the Project’s scope, schedule, and budget, and review the status of specific tasks underway. Meetings shall be conducted once a month at a minimum. Meeting agendas shall be submitted to VRE a minimum of three (3) business days prior to meetings, along with any materials that will be reviewed at the meeting (e.g., PowerPoint presentations, plans, etc.).
6. Prepare notes for PMT meetings. The meeting notes shall be uploaded to e-Builder with notification to the VRE Project Manager within three (3) business days of each meeting. Once comments are incorporated, the notes shall be finalized in PDF for distribution, as directed.

7. Develop and update, as needed, a Project Action Log. The Action Log shall track the assignment and completion of project tasks, sub-tasks, and other critical project activities.

8. Prepare, review, and submit monthly invoices, including related back-up and progress reports, to the VRE Project Manager. The Consultant may be required to revise and resubmit invoices and/or invoice documentation as required by the VRE Project Manager.

B. VRE Access Coordination
The Consultant shall coordinate and identify access needs in advance with VRE so that field staff receive any specific training, guidance or review of procedures specific to VRE and NSR guidelines. The Consultant shall earmark time in the budget to attend any on-site VRE training or safety reviews prior to accessing the track locations.

C. Accessing the NSR, and VRE Station
The Consultant personnel shall successfully complete the mandatory NSR safety training and shall be badged to access NSR property. VRE cannot and shall not obtain access on behalf of the Consultant or the Consultant’s personnel or Subconsultants. Failure to obtain badging and authorized access to NSR property does not alleviate the responsibility of the Consultant to perform the required services.

The Consultant shall coordinate with VRE when access to NSR ROW is required. If the Consultant’s personnel need to directly access any track or are required to have flagging protection services, the Consultant shall coordinate with VRE for scheduling NSR flagging protection services. VRE will reimburse the Consultant for any flagging costs incurred for the Project.

D. Accessing the Airport Property
The Consultant’s personnel shall successfully complete the Manassas Regional Airport online training and exam in order to be granted access to airport property. The Consultant’s personnel shall coordinate a time to meet airport administration to complete the badging process. VRE cannot and shall not obtain access on behalf of the Consultant or the Consultant’s personnel or Subconsultants. Failure to obtain badging and authorized access to airport property does not alleviate the responsibility of the Consultant to perform the required services.
E. **Stakeholder and Public Outreach**

VRE will have the lead role in stakeholder and public outreach for the Project. Most of the stakeholder meetings are assumed to be focused on coordination with internal VRE staff and VRE’s primary Project partners, including NSR, Prince William County, the City of Manassas/Manassas Regional Airport, DRPT, and the Federal Transit Administration (FTA). Some outreach meetings and other communications with VRE riders and other members of the public may also be conducted.

The Consultant shall perform the following tasks:

1. Maintain a stakeholder roster and contact list. VRE will provide the existing contact list for use by the Consultant.

2. Develop communications material describing the Project and the status of the design and construction, including meeting invitations, website content, media notices and press releases, as requested by VRE.

3. Attend up to twenty-five (25) coordination or review meetings or presentations over the duration of the Contract with VRE staff or external Project stakeholders. The meetings may include:
   a. “Over-the-shoulder” or progress reviews with VRE staff, NSR, Prince William County, the City of Manassas (including Manassas Regional Airport), and utility or property owners to receive informal feedback and resolve questions that may arise prior to the completion of the 60%, 90% and 100% design documents.
   b. “Page turn” reviews of design document submissions with VRE staff and/or external stakeholders and review agencies to receive formal comments and feedback.
   c. VRE Operations Board meetings as well as meetings of the Northern Virginia Transportation Commission, the Potomac and Rappahannock Transportation Commission, Prince William Board of County Supervisor, Manassas City Council, or other regional boards.
   d. Up to three (3) public events or meetings such as rider-focused station events, regional public meetings, or similar forums.

4. Prepare meeting materials (e.g., agendas, PowerPoint presentations, plans, presentation boards). Draft materials shall be submitted to VRE for review a minimum of three (3) business days prior to meetings or as requested by VRE.
5. Prepare notes for all meetings attended by the Consultant. The meeting notes shall be submitted to the VRE Project Manager within three (3) business days of the meeting. Once comments are incorporated, the notes shall be finalized in PDF for distribution as directed by VRE.

F. **Design Development**

1. **Basis of Design**
   Review and update, as needed, the Basis of Design developed during Preliminary Engineering to identify the functional requirements, applicable standards, and design assumptions upon which Final Design is to be based. The Basis of Design shall incorporate applicable guidelines, standards, specifications and requirements from VRE, NSR, American Railway Engineering and Maintenance-of-Way Association (AREMA), National Fire Protective Association (NFPA), Federal Railroad Administration (FRA), Federal Transit Administration (FTA), Federal Aviation Administration (FAA), Commonwealth of Virginia, Prince William County, City of Manassas, and other applicable sources. The Basis of Design will be reviewed prior to the completion of the 60%, 90%, and 100% design milestones and shall be revised, as needed, to reflect the current design.

2. **Base Map**
   Site and topographic map data prepared during the Preliminary Engineering phase is available for use by the Consultant to complete Final Design. Additionally, survey data for Final Design has been performed in the Project Area railroad south of Cannon Branch and is available for use by the Consultant. The Consultant shall review the existing map data and identify additional survey or data needed.

   The Project Area north of Cannon Branch has not been surveyed for Final Design by VRE and shall be surveyed by the Consultant.

3. **Utility Location Survey**
   Utility designation has been performed for the Project Area railroad south of Cannon Branch by VRE for Final Design. The resulting utility data is available for use by the Consultant to complete the Final Design. The Consultant shall review the existing utility data and identify if any additional survey or data is needed.

   For the Project Area North of Cannon Branch, the Consultant shall confirm utility location information by reviewing the existing documentation developed during Preliminary Engineering. The Consultant shall then perform utility designation as required to complete the Final Design. The Consultant shall verify all known affected utilities and identify and document, on the plans, the ownership and contact persons for all affected utilities including utilities within the NSR ROW.
Additionally, the Consultant shall provide test hole services as needed for targeted underground utilities for the entire Project Area (Both North and South of Cannon Branch).

The Consultant shall endeavor to minimize conflicts with existing utilities and ensure that any relocation(s) is designed by either the Consultant or utility entities in accordance with existing agreements between the utility company(ies) and VRE, and that any new agreements required are identified and presented to VRE. The Consultant shall schedule a Utility Workshop with all the utility companies to identify for the utility companies the anticipated impacts and schedule of the Project.

4. **Geotechnical Survey and Borings**
   The Consultant shall review the Geotechnical Report prepared during Preliminary Engineering and obtain additional geotechnical investigations necessary to complete Final Design. At a minimum, it is assumed additional geotechnical information will be needed in the vicinity of the proposed pedestrian tunnel, platform, AEW building, proposed Cannon Branch bridge, and proposed retaining or crash walls.

5. **Building Code and National Fire Protection Association (NFPA) Conformance**
   All facilities for this Project, including buildings and station platform, shall be designed in compliance with Virginia Uniform Statewide Building Code (VUSBC) and International Building Code (IBC), and shall be permitted by the Authority Having Jurisdiction (AHJ). Due to the nature of our stations, VRE does not subscribe wholly to NFPA 130, however, VRE encourages that the design meet NFPA 130 Guidelines wherever possible. VRE will provide the Consultant with examples of recent projects permitted by local AHJs. The Consultant, in coordination with VRE, shall prepare a code compliance analysis and the permit application package for review and approval by VRE prior to applying for a permit at the AHJ.

6. **Risk Assessment**
   Perform a Risk Assessment prior to the completion of the 60% design milestone, including review of the Preliminary Risk Analysis prepared during Preliminary Engineering, to verify and document the possible Project risks. The Consultant shall recommend the methodology to be used to identify and quantify probabilistic risks and impacts. The Consultant shall organize and lead a Risk Workshop, in which members of the Consultant’s team and VRE will consider the verified potential risks and agree upon steps to be taken to mitigate the identified risks. The Consultant shall record conclusions of the risk analysis and workshop in a Risk Register and shall maintain said Risk Register throughout Final Design. The Risk Register shall be updated, as needed, at the 60%, 90%
and 100% design milestones. The Consultant shall also incorporate the mitigations into the Project plans, as directed by VRE.

7. **Value Engineering**
   Participate in and provide support for a Value Engineering (VE) study, to be conducted by others, prior to the 60% design milestone. The Consultant shall review VE recommendations and incorporate such recommendations into the Project plans, as directed by VRE.

8. **Safety and Security Assessment**
   Participate in and provide support for Safety and Security Assessment activities to be conducted by others prior to the 60% design milestone. The Consultant shall review the recommendations of the consultant that prepared the Safety and Security Certification and incorporate such recommendations into the Project plans, as directed by VRE.

9. **Constructability Review**
   Conduct a Constructability Review prior to the completion of the 60% design milestone. The Consultant shall propose the format for the review, such as a workshop, duration (number of days), participants (including outside parties), timing, and format for documenting the findings of the review. The Constructability Review shall include consideration of phasing and contracting options for the project (e.g., one construction contract vs. multiple contracts). The Consultant shall incorporate the findings of the Constructability Review into the Project plans, as directed by VRE.

10. **Development Plan Reviews and Permitting**
    Develop a Review and Permitting Plan, in consultation with VRE, identifying the reviews, permits and other approvals required for the Project by Prince William County, the City of Manassas, or other applicable agencies. The Consultant shall be responsible for obtaining the permits on behalf of VRE; identifying required development plan reviews and permits in the Project schedule and preparing necessary applications and supporting materials for VRE review prior to submission to the relevant permitting or review authority. VRE shall reimburse the Consultant for any permit fees required by the AHJs.

    It is assumed the VRE station and MSF improvements will require Site Plan and Final Development Plan (100% design) review and approval, including a building permit from both Prince William County and the City of Manassas. It is also assumed that the NSR Third Track will be exempt from those reviews. A determination is required from Prince William County whether the VRE station and MSF improvements must undergo a Public Facilities Review; no Public Facilities Review is required by the City of Manassas.
11. **Level Boarding Report**  
The Consultant shall prepare documentation of Project compliance with ADA level boarding requirements for review and approval by the FTA.

12. **Environmental Compliance**  
The Consultant shall comply with mitigation measures identified in the NEPA Documented Categorical Exclusion for the Project in preparing the Final Design and undertake post-NEPA environmental compliance activities, including but not limited to, the following:

   a. Prince William County Public Facility Review.

   b. Adhering to conditions set forth in the Federal Consistency Determination.

   c. Wetland Jurisdictional Determination from the U.S. Army Corps of Engineers (USACE).

   d. Flood Hazard Use Permit and floodplain study, if required, from Prince William County and or the City of Manassas.

   e. Preservation Area Site Assessment and Water Quality Impact Assessment for Prince William County and the City of Manassas.

   f. Coordination with U.S. Fish and Wildlife Service (USFWS) /Virginia Department of Game and Inland Fisheries (DGIF) and review/update of threatened and endangered species listings applicable to the Project area, including the presence of habitat and roost trees for Northern Long-Eared Bat and habitat for the Yellow Lance Mussel and Brook Floater.

   g. Coordination of the Project schedule and construction activities located within 660 feet of identified Bald Eagle nest adjacent to the Project area with USFWS/DGIF.

   h. Preparation of a joint permit application with the State and USACE.

13. **Federal Aviation Administration (FAA) Coordination**  
Advancement of the overall design shall be coordinated with the Manassas Regional Airport staff and FAA staff, where applicable. The Final Design shall avoid or minimize impacts to the Manassas Regional Airport Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) for runway 16R-34L, which bisects the VRE project area between the existing station platform and Wakeman Drive. A Limited Design and Implementation Reimbursable Agreement is in place between VRE and the FAA, Eastern Service Area, NY NAVAIDS Engineering Center for FAA technical and design review.
The FAA has conducted an aeronautical study (Form 7460) of the Project to determine whether it would pose a hazard to air navigation. The Final Design and construction of the Project shall comply with the conditions outlined in the FAA determination. If the Final Design conditions (e.g., elevations of project elements within or adjacent to Manassas Regional Airport property) vary from those documented in the completed aeronautical study, the Project must be resubmitted to FAA for a new study and determination. The required FAA documentation shall be prepared and submitted by others; the Consultant shall provide design information and plans to VRE’s Aviation consultant to assist in preparing required submittals to the FAA.

14. **Material Samples**
   The Consultant shall provide VRE samples of materials included in the specifications upon request.

15. **Revised 30% Design**
   a. Prepare a schedule for the Project activities.
   b. Prepare a Safety Plan for the project activities including Consultant work, field work, interface with NSR, Prince William County and the City of Manassas staff and officials.
   c. Conduct a Risk Analysis for the Project. Propose components of analysis, participants in exercises such as a workshop (half day or full day), outside of project personnel, timing and final findings report format. Facilitate and record findings of the risk analysis in a Risk Register. Maintain and update the Risk Register through design.
   d. Obtain additional survey as needed to prepare Final Design plans for all elements of the Project. Incorporate into mapping.
   e. Obtain additional soil borings to prepare Final Design plans for all elements of the Project. Revise or amend the Geotechnical Report to include data collected and revise design assumptions as necessary to incorporate findings.
   f. Conduct analysis studies for utility designation and relocation.
   g. Identify and revise the 30% design to include items that had not been previously considered or re-design items for baseline 30% design as identified in this scope. Upon completion of the design items, provide a set of plans with changes to the 30% plans incorporated.
16. **60% Design Documents**

Advance the Project design to a stage that reflects approximately 60% completion. A “draft” 60% submission shall be made by the Consultant to VRE for internal review and comment. The Consultant shall allow fifteen (15) calendar days for VRE review.

VRE comments shall be incorporated in the design documents and a “final” 60% submission provided to VRE for review by Project stakeholders and review/permitting agencies such as NSR, Prince William County, the City of Manassas, or DRPT, as required. The Consultant shall allow either thirty (30) calendar days for review or the timeframe required by the reviewing/permitting agency, whichever is longer. The design documents shall address, but not be limited to, the following requirements:

a. Prepare plans, profiles, cross-sections, calculations and standard detail sheets, using the Preliminary Engineering plans sheet index as a guide to the required plan sheets. Incorporate comments/revisions provided by the VRE consultants performing Value Engineering and the Safety and Security Assessment. All Project elements shall be designed according to applicable codes and standards for permits required by the local jurisdiction.

b. Develop draft Construction Specifications. VRE will supply the Division 001 specifications and specifications for communications, signage, lighting, and other special equipment for use by the Consultant.

c. Develop a Construction Schedule, based on the suggested sequence or phasing of construction, initial schedule prepared during Preliminary Engineering, and in consultation with VRE. The schedule shall be consistent with the corresponding level design drawings and construction specifications and the Consultant’s stated assumptions regarding construction methods. The schedule shall include property acquisition, permitting, utility relocations, and commissioning in addition to all aspects of demolition and construction.

d. Review the Construction Cost Estimate prepared during Preliminary Engineering and update, as needed, to be consistent with the corresponding level design drawings, construction specifications, and Consultant’s stated assumptions regarding construction methods and phasing. The estimate shall be provided in current and year of expenditure (YOE) dollars. Escalation assumptions shall be consistent with the estimated dates presented in the Construction Schedule. Allocated and unallocated contingencies shall be applied based on industry standards and identified Project risk or uncertainty. All assumptions shall be documented in the cost estimate or as a
supplemental document. The deliverable shall be as a Microsoft Excel file using the VRE Cost Tool Template.

e. Identify Construction Pay Items for use in the Final Design phase and use those for the Construction Specifications, Schedule and Cost Estimate with close coordination with the VRE Project Manager. The Consultant shall identify, provide a list, and recommend a schedule for the procurement of long lead items, if any, which will be necessary to construct the Project.

f. Conduct a Constructability Review. Propose components such as workshop format(s) and the duration (number of days), as well as proposed participants, including those outside of project personnel, timing, and the format of the final findings report.

g. Prepare full color, illustrative graphics for use as hard copy boards, in digital presentations, and on the VRE web site and social media platforms. The graphics shall be of presentation quality and shall include rendered site plan(s), cross section(s), and 3-D perspective sketch(s) that reflect the proposed improvements and major project elements, including but not limited to, the station platform, pedestrian tunnel, third track/railroad ROW, MSF storage tracks and AEW facility. Graphics shall be submitted to VRE by the Consultant in .JPG or .PNG and .PDF formats.

17. **90% Design Documents**

The 90% Design Documents shall address and incorporate all comments from the 60% submittal and advance the design to a stage that reflects approximately 90% completion. A “draft” 90% submission shall be made to VRE for internal review and comment. The Consultant shall allow thirty (30) calendar days for VRE review.

VRE comments shall be incorporated in the design documents and a “final” 90% submission provided to VRE for review by Project stakeholders and review/permitting agencies such as NSR, Prince William County, the City of Manassas, or DRPT. The Consultant shall allow either thirty (30) calendar days for review or the timeframe required by the reviewing/permitting agency, whichever is longer. The design documents shall address, but not be limited to, the following requirements:

a. Revised plans, profiles, cross-sections, calculations and standard detail sheets.

b. Revised Construction Specifications.

c. Revised Construction Schedule.
d. Revised Construction Cost Estimate, including review of escalation assumptions, contingencies, and other assumptions. All assumptions shall be documented in the cost estimate or as a supplemental document.

e. Revised Illustrative Graphics.

f. Coordinate permitting requirements and questions with Prince William County, the City of Manassas or other applicable agencies, as necessary.

g. Produce draft bid sheets using the Construction Pay Items previously identified.

18. **100% Design Documents**

   The 100% Design Documents shall address and incorporate all comments from the 90% submittal and advance the design to a stage that reflects 100% completion. A “draft” 100% submission shall be made to VRE for internal review and comment. The Consultant shall allow fifteen (15) calendar days for VRE review.

   VRE comments shall be incorporated in the design documents and a “final” 100% submission provided to VRE for submission to review/permitting agencies including, but not limited to, Prince William County and the City of Manassas. The “final” 100% design documents shall be signed and sealed by a Virginia licensed Professional Engineer or other licensed professional, as required by Virginia law or the review/permitting agencies.

   The timeframe between distribution of 100% design documents to the agencies and receipt of comments by them will be consistent with the agencies review timeframe. The design documents shall address, but not be limited to, the following requirements:

   a. Revised plans, profiles, cross-sections, calculations and standard detail sheets.

   b. Revised Construction Specifications.

   c. Revised Construction Schedule.

   d. Revised Construction Cost Estimate, including review of escalation assumptions, contingencies, and other assumptions. All assumptions shall be documented in the cost estimate or as a supplemental document.

   e. Revised Illustrative Graphics.
f. Submit the permitting plans and obtain permit in accordance with Prince William County and the City of Manassas requirements.

g. Revised bid sheets for Construction Pay Items.

G. Final Design IFB Documents
As directed by VRE, the Consultant shall address comments received from the review/permitting agencies and prepare final construction documents, also known as Issued for Bid (IFB) documents. The final construction plans and cost estimates shall be submitted to address any comments from the 100% submission. The IFB documents shall be signed and sealed by a Virginia licensed Professional Engineer or other licensed professional(s), as required by Virginia law or the review/permitting agencies. The documents shall be complete with no outstanding issues. Upon approval by VRE and incorporation of comments received from the previous submittal, the Consultant shall submit the following IFB documents to include:

1. Final plans, profiles, cross-sections, calculations and standard detail sheets.

2. Final Construction Specifications.

3. Final Construction Schedule.


5. Final bid sheets for Construction Pay Items.


7. Approved local jurisdiction permit(s).

8. Final temporary construction easement exhibits, including access, if necessary.

9. Consult with VRE to review operational impacts and construction scheduling.

H. Construction Procurement Support
VRE’s construction procurement phase is expected to begin prior to the completion of the Final Design period. It is assumed VRE will solicit one or more separate contracts for construction of the Project. If the Optional Task is exercised, the Consultant shall perform the following tasks in support of VRE’s procurement activities to include, but not limited to, the following:

1. Attend and participate in the Pre-Bid meeting.
2. Maintain a log of questions on the IFB Documents submitted by prospective bidders.


4. Assist VRE, as requested, in preparing responses to technical questions requesting clarification of the design documents from the IFB package. The Consultant shall prepare the response within five (5) business days of receiving the question(s).

5. Assist VRE, as requested, in preparing addendum(s) to plans and technical specifications, as necessary.

6. Review bid submittals and bidder’s qualifications, as requested by VRE, and render an opinion on the bid results and the selected Contractor’s experience and qualifications for performing the subject work.

7. Revise IFB Documents, incorporating all addendum(s) and clarifications from the bid process and resubmit to VRE marked Issued for Construction (IFC).

V. LIMITED CONSTRUCTION ADMINISTRATION (OPTIONAL TASK)

A. Construction Administration

VRE anticipates having an independent Construction Manager assigned to the Project during construction. Inclusion of Construction Administration services within the Contract during construction will be at the option of VRE and shall be priced separately by the Consultant, if and when requested by VRE. A separate Scope of Work will be provided by VRE. However, tasks may include, but are not be limited to, the following:

1. Coordinate with VRE, the Construction Contractor(s) and Construction Manager and serve as the Project Architect/Engineer of Record.

2. Attend and participate in the pre-construction meeting.

3. Attend and participate in Construction Progress Meetings and Owner Meetings as requested by VRE.

4. Conduct periodic site inspections, during construction, as requested by VRE and prepare field observation reports.

5. Review technical submittals consisting of shop drawings, cut sheets, samples, and test result submittals as requested by the Construction Manager.
6. Prepare supplemental drawings and specifications.

7. Prepare design revisions and related independent cost estimates.

8. Respond to and document Requests for Information (RFI) submitted by the Construction Contractor(s).

9. Review Requests for Change Orders (RFC) and render opinions regarding the need for the work and fairness of the pricing.

10. Assist VRE in evaluating claims from the Construction Contractor(s), including preparation of independent cost estimates.

11. Coordinate with VRE and the Construction Manager and perform an initial project walkthrough with the Construction Manager and assist in preparing punch list items for the Construction Contractor to address. Perform the final project walkthrough and confirm substantial completion has been achieved.

12. Review redline As-Built (Record) Drawings submitted by the Construction Contractor.

13. Coordinate construction close out documentation with the Construction Manager.
VI. **DELIVERABLES**

**SUMMARY OF MAJOR DELIVERABLES**

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<thead>
<tr>
<th>Deliverables</th>
<th>Draft Submission for VRE Review</th>
<th>Final Submission*</th>
<th>Remarks</th>
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**Revised 30% Design Documents**

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**60% Design Documents**

| Digital Copy of Construction Documents including Plans, Cost Estimate and Schedule | 1 | 1 | In original file format(s) and PDF |

**90% Design Documents**

| Digital Copy of Construction Documents                                             | 1 | 1 | In .DGN/.DWG and other original file format(s) and PDF |

RFP No. 021-008
RFP Title: Final Engineering Design Services for VRE Broad Run Expansion

Virginia Railway Express
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**100% Design Documents**

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**Final Construction/IFB/IFC Documents**

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*As required by review/permitting agencies*
APPENDIX A

Broad Run Expansion
Project Overview Plan*

*Not For Construction