Durham County
FRA Grant # 69A36525420180RCENC

Project Description

Durham County has received funding for this project through the United States Department of Transportation (USDOT) Federal Railroad Administration (FRA) Fiscal Year 2022 Rail Crossing Elimination Program for the East Durham Rail Crossing Study (the Project).

The Project will entail planning and project development activities, as defined by FRA, to grade separate, close, and/or improve safety through other alternatives identified through the planning process for three adjacent crossings in East Durham. The at-grade crossings are on the NCRR NC Line and include Plum Street (DOT Crossing Inventory Number 630472K) at milepost (MP) 56.40; Driver Street (DOT Crossing Inventory Number 630471D) at MP 56.70; and Ellis Road (DOT Crossing Inventory Number 735236Y) at MP 57.57. The study will examine recommendations from the North Carolina Department of Transportation (NCDOT) 2014 Traffic Separation Study and P-5716 (Ellis Road Grade Separation) functional alignments, update it for current and expected traffic and safety information. The Tasks identified with the FRA grant Agreement outline technical studies and stakeholder/community engagement activities that will support future Final Design and Construction, with the goal of improving connectivity and safety for vehicular traffic, rail operations, and cyclists and pedestrians.

Scope of Work

HDR Engineering Inc. of the Carolinas (CONSULTANT) will develop planning documentation, preliminary engineering and environmental review documentation for a set of coordinated grade crossing improvements for three adjacent existing at-grade crossings located in East Durham County. Potential improvements include grade separation and/or closure or other safety improvements, including those to adjacent roadway networks to improve safety, traffic flow, multimodal accommodations as well as the quality of life in Durham County.

This Project will focus on completing planning activities, including identifying and completing conceptual design(s) for coordinated crossing improvement options. The Project will include pre-NEPA project development activities, including public engagement, identification of a full corridor project inventory, conceptual design, and establishment of an implementation plan/project phasing plan to assist with the transition of project elements through implementation phases. Once planning lifecycle stage activities are complete, the Project then includes the development of Preliminary Engineering and environmental review for a Preferred Alternative as contemplated in FRA's Project Development Lifecycle Stage. NEPA Documentation under Task 6 will be prepared once scope prerequisites are approved by FRA.

The ultimate construction of the improvements to be identified through the Project will significantly enhance safety within Durham County by improving existing highway-rail at grade, enhancing pedestrian and cyclist access options, and reducing congestion associated with queuing at at-grade crossings during occupied crossing events.

The CONSULTANT's Scope of Work, in this Scope of Services, is to support Durham County with its FRA Grant Award Attachment 2, Project Specific Terms and Conditions. The CONSULTANT will support Durham County with coordination with the FRA, and other requirements of the Grant Award not listed in this Scope of Services, including the potential for administrative amendments or other changes to the Grant Award.

Task 1: Project Management

1.1 Kick-off Meeting

The CONSULTANT will participate in both a CONSULTANT/Durham County and a CONSULTANT/Durham County/FRA project kick off meeting.

Assumptions:

- Kick-off meeting is budgeted with up to one hour's participation from select CONSULTANT task leads and key support staff within 10 business days of execution of contract with Durham County.
- CONSULTANT will develop meeting agenda and minutes for distribution to participants.

Deliverables:

- Agenda and Minutes for CONSULTANT/Durham County kick-off
- Agenda and Minutes for CONSULTANT/Durham County/FRA kick-off

1.2 Biweekly Coordination Meetings

The CONSULTANT will participate in meetings with the County and with FRA.

Assumptions:

- The CONSULTANT will schedule biweekly meetings with the County.
- The CONSULTANT will facilitate schedule of FRA monthly meetings and participate in FRA monthly meetings as scheduled.
- Each coordination meeting is budgeted with up to one hour's participation from select CONSULTANT task leads and key support staff.
- CONSULTANT will develop agenda, minutes, and list of specific follow-up tasks for all parties for distribution to participants.
- All items will be reviewed by County, and items for County review will be sent at least two business days ahead of a meeting.
- CONSULTANT will send out meeting notes to all participants within one business day of meeting.
- Select members of CONSULTANT team will join meetings to facilitate project specific discussions.

Deliverables:

- Agenda, Minutes, and action items for biweekly meetings.

1.3 Quarterly Reporting / Other Reporting

Federal grant recipients must comply with all federal reporting compliance to keep awards of federal funding in good standing. HDR will assist the County in the completion of federal reporting requirements throughout the period of performance identified in the Grant Agreement.

Pursuant to quarterly reporting requirements, the CONSULTANT will:

- Provide draft Quarterly Progress Reports for review by Durham County and submission to the FRA within 15 days of the end of every federal fiscal quarter.

- Provide draft SF-425s outlining, by task, financial progress on a quarterly basis, for review by Durham County and submission to the FRA, within 15 days of the end of every federal fiscal quarter.
- Provide draft performance measurement reporting, as required by the grant agreement performance measurements, for review by Durham County and submission to the FRA to conform to RCE program requirements, within 15 days of the end of every federal fiscal quarter.
- Provide compliance assistance with applicable miscellaneous reporting requirements under 2 CFR 180 and 2 CFR 200 Appendix XII.

Assumptions:

- The County will share financial, invoicing and accounting information with HDR as required to complete the Quarterly Progress Reports and quarterly financial worksheets.
- Durham County will submit reporting to FRA as grantee of record.
- CONSULTANT will provide support with documentation and reimbursement requests to FRA as needed.
- CONSULTANT will prepare grant reporting using current FRA Quarterly Reporting Templates and SF-425 forms.

Deliverables:

- Quarterly financial data request from CONSULTANT
- Draft FRA Quarterly reporting documentation submitted to Durham County to provide to FRA

1.4 Presentations

CONSULTANT will support the County with the preparation of and participation in various Project presentations to Committees, Boards and Councils including (but not limited to) the Board of County Commissioners, Durham City Council, and the Triangle West TPO Board. CONSULTANT will provide draft presentation materials and be available to present and engage in question-and-answer sessions regarding project status.

Assumptions:

- Meetings (assumed up to 10) will be both virtual and in-person, as determined by Durham County.
- All items will be reviewed by County, and items for County review will be sent to County at least two business days ahead of the deadline for submitting the presentation to the specific board, committee, or council.

Deliverables:

- Draft presentation materials for Durham County review at least two business days prior to meeting.
- Revised presentation materials for presentation event.

1.5 Project Management Plan

The CONSULTANT will prepare a Project Management Plan (PMP) for submission to the FRA, that describes how the Project will be implemented and monitored for effective and efficient delivery of the Project on time and within budget. The PMP will describe, in detail, the activities and steps to develop the tasks outlined in this Project Scope in accordance with the Statement of Work (Article 4) in the FRA Grant Agreement.

The PMP will also include a:

- Detailed Project Schedule, including review periods and final deadlines

- Detailed Project Budget by Subtask element
- Detailed description of who is responsible for various tasks/subtasks.

The PMP will be submitted to the FRA for review and approval and work in Tasks 2 and 3 will not begin until the FRA has provided written approval of the PMP. This project does not have FRA pre-award authority; therefore, work in Tasks 2 and 3 cannot begin until the PMP is approved by the FRA.

The PMP is intended to be a living project management document; as such CONSULTANT will plan to review quarterly for updates, including schedule and budget. Should modifications to the PMP support a grant amendment, CONSULTANT will prepare grant amendment request documentation.

Assumptions:

- Review and approval time by FRA is assumed to be a minimum of two (2) weeks and a maximum of eight weeks total for the PMP submittal.
- The CONSULTANT will address comments from FRA before submitting the final PMP.
- The FRA may require updates to the PMP during the project duration. The scope includes projected time for updates on a quarterly basis.
- CONSULTANT and Durham County will monitor review time by FRA to keep review process on schedule as much as possible. Monthly conference calls with FRA will assist in monitoring status of reviews.

Deliverables:

- Project Management Plan (including draft, final and updates)
- Detailed Project Delivery Schedule
- Detailed Project Budget
- Draft FRA Quarterly reporting submitted to Durham County to provide to FRA

1.6 Final Performance Report and Project Closeout

The CONSULTANT will prepare for Durham County a Final Performance Report for submission to the FRA per FRA's Form FRA F 33. The final report will describe the cumulative activities of the project, including a description of the achievements with respect to the project objectives and milestones.

Assumptions:

- The CONSULTANT will respond to review comments from the FRA as needed in relation to the Final Performance Report.
- Project Closeout by the FRA is anticipated to occur no later than 90 days after the end of the Period of Performance end date (July 31, 2028).

Deliverables:

- Final Performance Report: due no more than 120 days after the Period of Performance end date of July 31, 2028. Therefore, Final Performance Report is due no later than November 30, 2028.

1.7 Project Administration

The CONSULTANT will:

- Perform project management activities including:
    - Project cost controls

  - Task monitoring - monitoring work progress of the Project as well as the financial status of work
  - Project scheduling and staff work planning - including monitoring actual schedule and budget compared to the recommended baseline schedule and budget
  - Providing updated project to-do lists for full project team based on Task/Subtask on a biweekly basis.
  - Sub-consultant contracting / management
- Develop an internal Project Guide that lays out administrative features of the project, including team contacts, project scope, schedule, QA/QC plan, safety plan, and communication protocols among team members including sub-consultants
- Prepare Monthly Invoicing and Progress Reports
  - Invoices will be prepared for the previous month or period of work.
  - Invoices will include a budget status amount invoiced to date and amount remaining.
  - Progress Report will outline work completed to date, task progress and work planned for the next period(s) and remaining tasks. A list of upcoming deliverables and due dates will be provided.

Planned Meetings:

- Quarterly one-hour Internal Project Review meeting with Project Principal, Project Manager, Deputy Project and Project Accountant to review monthly budget and project tracking.

Assumptions:

- Internal team meetings for project discussion and subject matter experts are included in the Tasks identified below; this Subtask focuses on business management responsibilities.

Deliverables:

- Monthly Invoices and Progress Reports submitted to Durham County.

Task 2: Purpose & Need Statement and Public / Stakeholder Communication and Engagement Plan

2.1 Preliminary Purpose and Need Statement

The CONSULTANT will develop a Preliminary Purpose & Need Statement for the project. The Draft Preliminary Purpose & Need will be used to inform initial public and stakeholder outreach. The Draft Preliminary Purpose & Need will be refined based upon input received from public meetings and early hands-on community and stakeholder engagement activities, as well as important baseline traffic/crossing/crash data. It will serve as a guide for the alternatives analysis.

The Final Purpose & Need statement will focus on the primary challenges to be addressed through the East Durham Rail Crossing Study. The use of charts, tables, maps, and other illustrations useful for demonstrating the need for the project will be included. Ultimately, the Preliminary Purpose & Need statement will include information on:

- Issues and deficiencies of the present facilities
- Linkages (roadway, pedestrian, bicycle)
- Safety
- Trespassers onto railroad right-of-way within the 2-mile project corridor
- Project area boundaries
- Public/stakeholder feedback

Assumptions:

- The Preliminary Purpose and Need will be adjusted in coordination with other project partners, key stakeholders, feedback from the public, and FRA.
- The CONSULTANT will address FRA comments on the Preliminary Purpose & Need Statement.

Deliverables to FRA:

- Draft Preliminary Purpose & Need Statement
- Final Preliminary Purpose & Need Statement

2.2 Project Branding Package

The CONSULTANT will Create a Project-Specific Brand, including a logo, colors, icons, and a tagline for the project. To establish this brand, the CONSULTANT will brainstorm ideas with relevant County staff at a project kickoff meeting. The CONSULTANT will develop up to three branding options. The CONSULTANT will hold a one-hour meeting with the same County staff to review the options and solidify branding. In the event CONSULTANT needs to make adjustments, there will be a follow-up meeting with County staff to review revised options.

Planned Meetings:

- Branding Kickoff Meeting (3 CONSULTANT staff, 1 Hour virtual meeting) (prepare agenda and meeting minutes)

Deliverables:

- Up to three Branding options
- Draft Brand guide
- Revised Brand Guide

2.3 Stakeholder Coordination and Community Engagement Plan

2.3.1 Stakeholder Coordination Plan

The CONSULTANT will conduct a Stakeholder Analysis to inform the creation of the Stakeholder Coordination Plan, a subsection of the larger Stakeholder Coordination Plan and Community Engagement Plan. For the purposes of this project, "stakeholders" are defined as technical experts and decision-makers who will guide the outcomes of the process. Building on the existing stakeholder list previously provided by Durham County, the CONSULTANT will work with the County to conduct a stakeholder analysis to outline key audiences, organizations/businesses, groups, and individuals who will need to be engaged throughout the project. This analysis will outline each stakeholder's interest in the project and relevant context for engaging with them, such as historical opposition and issues raised. The stakeholder list (at a minimum) will include:

- City of Durham
- North Carolina Department of Transportation
- CSX Transportation
- Norfolk Southern Railway Company
- North Carolina Railroad Company
- Amtrak
- GoTriangle
- Triangle West TPO

- Emergency service providers including police, fire department and emergency response services.

Assumptions:

- Each Deliverable will undergo one round of review by County staff, with an assumed review period of 10 business days.
- Stakeholder Coordination Plan must be completed and approved by FRA prior to beginning community engagement as outlined in 2.3.2.

Deliverables:

- Stakeholder list in Excel
- Draft Stakeholder Coordination Plan
- Final Stakeholder Coordination Plan

2.3.2 Community Engagement Strategy and Implementation Plan

With input from County staff, the CONSULTANT will develop a Stakeholder and Community Engagement Strategy and Implementation Plan that will guide efforts throughout the various project phases. This plan will include both the Stakeholder Analysis (2.2.1) and Community stakeholder mapping, strategy, and implementation. The CONSULTANT will conduct stakeholder/project-area analyses to help understand community needs and provide a snapshot of information about behaviors, lifestyles, trends, and communication needs. The plan, and subsequent engagement materials, will be made available via project or County website. CONSULTANT anticipates outreach to established community interest groups, church communities, schools and targeted residents within the project area, informed by coordination with the County and Stakeholders identified in 2.3.1.

The strategy will include suggested engagement approaches to use at each stage, including large community/public meetings, focus groups, and other supporting engagement tools, and identify how each tool can best be leveraged to target specific stakeholders throughout the process. The strategy will also include community stakeholder (non-decision maker) mapping to understand the target community groups and best ways to engage each. We anticipate delivering up to two (2) drafts of the strategy for review prior to delivering the final version. The plan will be drafted in such a way to allow for flexibility in the engagement approach as implementation begins, with the understanding that based on the outcomes of engagement, some approaches may need to be modified for a more effective outcome. We recommend a review and retooling of the strategy after major milestones and/or phase changes throughout the project. The strategy will include direct-contact follow-up with key stakeholder groups as the Project progresses though the Tasks, as needed. Materials used for outreach, and produced as a result of outreach, will be made available to stakeholder participants with permission of the County.

Based on our understanding of the project, we recommend the following mix of activities at each phase to help identify coordinated recommended project alternatives; quantity limitations have been specified for scope purposes, and the CONSULTANT will work with the County to determine the appropriate mix and formation of engagement activities throughout each phase through the production of the Community Engagement Strategy and Plan. No activities/events will take place until the County agrees, either through the approval of the Community Engagement Strategy and Plan or direct instruction:

Purpose & Need / Alternatives (anticipated Q1 2026)

- Project Kickoff (virtual recorded webinar suggested) - *up to one (1) webinar*
- Goal and Prioritization Workshop/Open House (In Person with Virtual Participation Component available via project or County website) - *up to one (1) workshop/open house with one (1) virtual component; to be recorded and available via project or County website after completion.*

Preliminary Recommended Alternatives (anticipated end of Q3 2026)

- Stakeholder Interviews - *up to ten (10) interviews, assumed virtual,,* to inform the consideration of improvement options and the Alternatives Analysis.
- Pop-Ups - *up to six (6) pop-ups*
- Alternatives I Workshop/Open House (In Person with Virtual Component available via project or County website) - *up to one (1) workshop/open house with one (1) virtual component*

Recommended Alternatives (anticipated mid Q1 2027)

- Pop-Ups - *up to six (6) pop-ups*
- Alternatives II Workshop/Open House (In Person with Virtual Component available via project or County website) - *up to one (1) workshop/open house with one (1) virtual component*

NEPA (dates TBD)

- Focus Groups - *up to eight (8) assumed, mix of virtual and in-person,* focusing on safety and mobility within the community and community in addition to anticipated environmental impacts
- Project Update Webinars - *up to two (2) assumed throughout the NEPA process*

Planned Meetings:

- Stakeholder and Community Engagement Kickoff Meeting (4 CONSULTANT staff, 1 Hour virtual meeting) (prepare agenda and meeting minutes and send out after meeting)

Assumptions:

- Meeting materials may be used at both the stakeholder and public meetings for efficiency, where appropriate. Should new materials be required, CONSULTANT will provide drafts to Durham County for review ten business days before the anticipated event.
- Community engagement activities will be conducted in both English and Spanish as needed, with materials provided in both English and Spanish based on identified community needs.
- The CONSULTANT will research the project area in coordination with the County and will identify venues for pop-ups and the public and stakeholder meetings.

Deliverables:

- Draft Community Engagement Plan
- Revised Community Engagement Plan
- Targeted community engagement meeting agendas and materials, which may include PowerPoint presentation slide deck, fliers, display boards, one handout, scroll map, comment forms, etc.

2.3.3 NCDOT Coordination

The CONSULTANT will hold meetings each quarter with North Carolina Department of Transportation (NCDOT) to discuss project development, including project study and analysis related to the crossings and project timeline. County staff will be invited to meetings with NCDOT.

Planned Meetings:

- Meeting with NCDOT each quarter of year.
- 3 CONSULTANT staff, 1 hour virtual meeting
- CONSULTANT will prepare agenda and meeting minutes

2.4 Community Engagement Summary Report

Using materials developed pursuant to Task 2.3, CONSULTANT will record the results of Community Engagement Efforts and create a Community Engagement Summary Report. The Community Engagement Summary Report will outline intended and achieved objectives regarding identified interests and concerns. The Community Engagement Summary Report will also make recommendations regarding ongoing meaningful community engagement opportunities for the future project Lifecycle Stages, including final design and construction.

Assumptions:

- Community Engagement Summary Report will provide qualitative and quantitative summaries of engagement conducted through the scoped project, use maps, graphics, etc. to support analysis.
- The CONSULTANT will update the Community Engagement Summary Report as the project progresses. The Community Engagement Summary Report will not be finalized until after FRA review pursuant to the Grant Agreement.

Deliverables:

- Draft Community Engagement Summary Report
- Final Community Engagement Summary Report

Task 3: Alternatives Analysis

The CONSULTANT will prepare and submit to the FRA for approval an Alternatives Analysis Report summarizing the project alternatives and proposing a recommended alternative to carry forward to future project development phases. As identified in Task 3.1 and described in the 3.1 Methodology Memo, the Alternatives Analysis Report will study up to three build alternatives in addition to a no-build alternative.

The report will capture elements of Task 3 Subtasks detailed below.

3.1 Methodology Memo

Prior to initiating alternatives analysis work, the CONSULTANT will develop a memo documenting the technical quantitative and qualitative methodologies proposed to perform Task 3 Alternatives Analysis. The CONSULTANT will work with the County and seek input from key stakeholders to establish appropriate methodologies for data collection, technical analyses including traffic and safety, and preliminary environmental baseline information for the project Area. CONSULTANT will support the County with submission of the Methodology Memo to the FRA.

Assumptions:

- The Alternatives Analysis will analyze improvement options for each of the three subject grade crossings including the ability to meet the Preliminary Purpose and Need as part of a coordinated improvement package, constructability, and potential anticipated impacts to existing features, communities and resources. Feasible improvement options for each at-grade crossing will be generally evaluated in Task 3 at the desktop review level for environmental resources as described in Subtasks 3.6, and supported by technical studies and data gathered through Subtasks 3.2-3.5.
- The Alternatives Analysis will produce up to three recommended Alternatives, which will include coordinated recommended improvements for each grade crossing, which together with the no-build alternative, will be recommended to advance to Task 4 Environmental Review.
- The County will provide input on the initial list of methodologies

- The draft will be reviewed by the County and the stakeholders listed in Section 2.3.1. Comments will be used to inform the final methodology memo.
- Environmental information gathered will align environmental analysis under 23 CFR 771 and FRA's Railroad Capital Planning Guidance.
- The County will be provided ten business days for review of Draft Methodology. CONSULTANT will produce the Final Methodology within ten business days of receiving review comments.

Deliverables:

- Draft Methodology Memo
- Final Methodology Memo

3.2 Existing Conditions Report and Community Analysis Report

The CONSULTANT will collect data on, and assess where noted, the current site conditions of the project area, which includes the existing at-grade crossings located on the NCRR NC Line — including Plum Street, Driver Street, and W. Ellis Road. This information will be used to develop conceptual alternatives for each crossing through analysis of the existing and potential future conditions. The CONSULTANT will conduct the following data-collection and assessment activities:

- Previous Studies / Engineering:
    - The County and/or community stakeholders will provide available previous studies or reports available for this project area. The CONSULTANT will review these documents and will extract information relevant to the study to produce a Draft and Final Literature review summarizing previous, related project studies including public stakeholder coordination efforts and outcomes.

- Desktop reviews:
    - The CONSULTANT will review available relevant visual data sets, including digital aerial / street-view imagery and publicly available GIS mapping.

- Field Visit:
    - The CONSULTANT (four staff members) will conduct a one-day walking site visit to the study crossing locations, noting existing conditions and taking site photographs.
    - The CONSULTANT will prepare a site Job Hazard Analysis and wear PPE
    - In advance of the visit, the CONSULTANT will arrange a one-call utility locate with paint or flags within the project area and relevant marked utilities will be noted and photographed during the field visit.
    - CONSULTANT will not access railroad right-of-way during this field visit except at designated at-grade rail crossing locations. No "Right of Entry" permit will be used.

- Gathering Infrastructure Data:
    - At-Grade Crossings:
        - For each crossing, the CONSULTANT will inventory the number and width of roadway lanes, observed site distance, speed limit of vehicular traffic, distance between crossings, traffic management devices, sight distance, topography, nearby land usage and existing bicycle and pedestrian facilities, and evidence of bicycle and pedestrian demand.

        - The CONSULTANT will identify public transit services operating within the project area and the interface of these services with at-grade crossings.
        - The CONSULTANT will identify ongoing/expected maintenance activities or improvements/upgrades to the existing crossings from railroad stakeholders or Durham County.
    - CONSULTANT will identify existing pedestrian and bicycle facilities at the crossings, as well as planned pedestrian and bicycle infrastructure as identified in local and regional documents.

- Gathering Traffic Data:
    - The CONSULTANT will conduct automated 48-hour video counts at each of the three crossings. The counts will include vehicle classifications as well as bicyclists and pedestrians. For each of the three at-grade crossings, the CONSULTANT will place cameras on both sides of the tracks, facing the tracks, in order to record train arrivals, crossing occupancy durations, and automobile queueing/delay.
    - The CONSULTANT will conduct weekday AM (7:00 – 9:00 AM) and PM (4:00 – 6:00 PM) peak-period turning-movement counts at up to 16 study intersections (classified + bicyclists/pedestrians),

- Gathering Train Operations Information:
    - Based on available data, the CONSULTANT will inventory the number of trains and train tracks, train speed, and frequency at each of the subject at-grade crossings.
    - CONSULTANT will gather data about maintenance activities along the rail line.

- Gathering Safety Data:
    - Using USDOT databases, City of Durham, County records and NCDOT records, the CONSULTANT will obtain crash data at each of the at-grade crossings from the last 10-years, including count, location, severity, and contributing circumstances.
    - To the extent data is available, the CONSULTANT will inventory historical near misses withing the corridor.
    - To the extent data is available, the CONSULTANT will inventory historical incidents of trespassing within the corridor. The CONSULTANT will review existing trespasser mitigation measures throughout the project corridor
    - The CONSULTANT will review the adopted Safety Action Plan from Triangle West TPO to inform safety data gathering.
    - As part of the safety data gathering phase, CONSULTANT will meet with local law enforcement agencies to identify safety concerns not available through crash data or other available data sources.

- Utilities Analysis:
    - Based on available data, the CONSULTANT will perform a cursory review of existing utilities near each crossing. The CONSULTANT will log information on age, condition and capacity of utility, if available, including information on future expansion or improvements (if available).
    - CONSULTANT will review existing GIS mapping as well as contact local utility companies, based on one call data, to obtain existing as-built utility information within the limits of the project. No field exploration or potholing is included with this Scope of Services.

- It is expected that private utilities will only be identified based on the one-day walking visit.
- Utility relocation design is not part of this project scope except to support Preliminary Engineering for a preferred alternative under Task 5.
- Only utility replacements in-kind and no upgrades will be considered for this project.

- Survey / Soil / Property Data:
  - The CONSULTANT will obtain existing available Lidar survey data for existing topography in the two-mile project corridor extending approximately 700 feet north and south of the railroad tracks. The Lidar will be used primarily to understand the existing ground line elevations for alternatives analysis. A topographic survey will not be collected.
  - The CONSULTANT will review available existing subsurface geotechnical soil boring data near the project area.
  - The CONSULTANT will review existing available property information in the project area to understand approximate property limits within project corridor.

- Community Analysis:
  - The CONSULTANT will prepare a Community Analysis for populations located within and adjacent to the project area. CONSULTANT will consult USDOT tools including databases indexing Opportunity Zones and US Census Data.
  - The CONSULTANT will provide conduct updated community analytics within the project area
  - Using relevant data sources, the CONSULTANT will include within the project design minimization and mitigation of impacts through the project to the East Durham community.
  - The CONSULTANT will detail how improvement options may impact mobility considerations for the East Durham community, both quantitatively (through an anticipated reduction in incidents) and qualitatively (through anticipated improvements in community access).
  - The CONSULTANT will detail how improvement options may impact economic development opportunities for the East Durham community, including identification of potential impacts to local businesses and potential displacements.
  - This Community Analysis will be used inform evaluation of improvement options for each crossing.

Deliverables:

- Draft Literature Review
- Final Literature Review
- Draft Existing Conditions Report
- Final Existing Conditions Report
- Draft Community Analysis
- Final Community Analysis

3.3 Transportation Technical Analysis

The CONSULTANT will conduct a transportation technical analysis for each railroad crossing for each project alternative, referencing the 2017 Federal Highway Administration Scoping and Conducting Data-Driven 21st Century Transportation System Analyses document.

Transportation technical analysis, informed by data collection and existing conditions analysis performed in 3.2, will include:

- Traffic analysis:
  - One (1) virtual scoping meeting is assumed to be held with review agencies.
  - The following study area intersections are assumed as part of this review:
    - Plum Street and Pettigrew Street
    - Driver Street and Pettigrew Street
    - Driver Street and Peabody Street
    - W. Ellis Road and Pettigrew Street
    - W. Ellis Road and Angier Avenue
    - S. Briggs Avenue and Pettigrew Street
    - Bacon Street and Pettigrew Street
    - NC 147 on/off ramps and S. Briggs Avenue
  - Additional intersections may be identified for review based on the improvement options analyzed for each crossing, to inform the recommendation of Alternatives.
  - Existing Year (2026) Traffic Analysis
    - The CONSULTANT will verify and report intersection level of service (LOS) analyses for existing conditions at the study area intersections utilizing the Transportation Research Board's *Highway Capacity Manual* methodologies of the *Synchro* Version 11 software for the weekday AM and PM peak hours. This will include a discussion of the direction the travel delays are occurring.
    - Additionally, the CONSULTANT will verify and report intersection queuing analyses (95th percentile and maximum queue lengths by movement) for the weekday AM and PM peak hours at project intersections utilizing the *Synchro* Version 11 and *SimTraffic* software
    - The CONSULTANT will identify frequency and duration of roadway blockage by trains including sidewalks and bicycle lanes (if applicable)
    - The CONSULTANT will analyze existing daily automobile delays at each crossing using NCDOT Average Annual Daily Traffic (AADT) Volumes and numbers of trains per day.
    - The CONSULTANT will use the historical crash data obtained in previous tasks to analyze the frequency, severity, and type of train-vehicle/pedestrian crashes at the crossings and will qualitatively consider crashes near the crossings that may have been related to queueing during crossing events.
  - Future Year (2050) No-Build Traffic Analysis
    - The CONSULTANT will develop future traffic volumes utilizing an approved annually compounded growth rate and considering adjacent developments within the vicinity of the study area.
    - Background improvements to the study area, as identified by NCDOT and local review agencies, determined to be built out prior to construction of the Project, will also be considered under future conditions.
    - The CONSULTANT will verify and report intersection LOS analyses for future No-Build conditions at the study area intersections utilizing the Transportation Research Board's *Highway Capacity Manual* methodologies of the *Synchro* Version 11 software for the weekday AM and PM peak hours.

        - Additionally, the CONSULTANT will verify and report future No-Build conditions intersection queuing analyses (95th percentile and maximum queue lengths by movement) for the weekday AM and PM peak hours at project intersections utilizing the *Synchro* Version 11 and *SimTraffic* software
    - Future Year (2050) Build Traffic Analysis
        - For alternatives to be developed, the CONSULTANT will evaluate intersection operations, crossing delays, and simple exposure-based crashes for the future horizon year.
        - Additionally, the CONSULTANT will verify and report Build conditions intersection queuing analyses (95th percentile and maximum queue lengths by movement) for the weekday AM and PM peak hours at project intersections utilizing the *Synchro* Version 11 and *SimTraffic* software
        - If necessary, in support of this evaluation, the CONSULTANT will estimate traffic diversions associated with proposed crossing improvements. As part of the diversion analysis, the CONSULTANT will use the Replica software tool to identify high-level origin-destination (O-D) patterns for vehicles using these crossings.
        - The CONSULTANT will review proposed crossings and will make recommendations for modified or new turn lanes based on NCDOT guidelines and a review of the analysis results. The CONSULTANT will generate turn lane warrants at each of the study intersections based on the NCDOT Warrant for Left and Right-Turn Lanes.
        - The CONSULTANT will summarize the findings of the study in a report format. Results and recommendations will be coordinated with the Client prior to submittal.

- Travel-demand forecasting:
    - The CONSULTANT will gather information from the County regarding near-term and short-term land-use forecasts near the crossings – both approved / anticipated near-term developments and potential future growth anticipated within Durham County.
    - In conjunction with the County, and with the approval of FRA, the CONSULTANT will select a horizon year for the future analysis (assumed 2050 above). Based on the future land-use assumptions collected above, the CONSULTANT will develop daily and peak-hour forecasts for each of the study at-grade crossings and study intersections.
    - The CONSULTANT will confer with the County and FRA to determine whether a simple factor should be applied to train volumes for the future year based on expected freight growth along the corridor.

- Multi-modal transportation analyses:
    - The CONSULTANT will document existing daily pedestrian and bicycle patterns at each crossing based on existing count data performed in Task 3.2.
    - The CONSULTANT will consider the potential impact of proposed improvement alternatives on pedestrians and cyclists. This will include consideration of the extra distance walked/biked to the next available crossing from representative travel sheds. It will also note the reduction in exposure due to proposed grade separations (if warranted) and will provide guidance on tie-ins to the existing (and future) bicycle and pedestrian network on either side of the tracks. Existing and documented planned future bike/pedestrian networks will be used as a reference point.

- Access and Circulation analyses:

- The CONSULTANT will consider existing school attendance boundaries, and the anticipated effects of proposed crossing modifications on school and community feature access patterns, under corridor improvement alternatives.
- In addition to school attendance boundaries, The CONSULTANT will consider the adjacent road network and existing land use to understand access issues.
- The CONSULTANT will confer with local police, fire, and ambulance personnel to understand emergency response service areas and patterns. The CONSULTANT will assess the anticipated effects of proposed crossing modifications on response times, under corridor improvement alternatives.

Assumptions:

- Synchro/SimTraffic will be used traffic analysis.
- If performing a microsimulation, section 6 (pages 42-55) in the Case Studies to Develop a Highway-Rail Grade Crossing Analysis Framework Using Microsimulation (2023) document should be used for guidance.
- The CONSULTANT will provide supporting data for technical analysis and traffic analysis/tools used.

Deliverables:

- A Traffic Analysis Report will be prepared as part of this task and will be included in the Alternative Analysis Report.

3.4 Conceptual Engineering

The CONSULTANT will develop conceptual level alternatives (approximately 15% design) for up to three (3) overall build alternatives containing recommended coordinated improvements for each subject grade crossing for the project area that satisfy the Preliminary Purpose & Need Statement in Task 2.1. Each overall alternative will show proposed concept improvements for each of the three crossings (and adjacent cross-streets as applicable). Note some crossings may only have one improvement developed for each overall alternative.

These conceptual level designs will be used to inform selection a recommended alternative which will serve as the Project Basis of Design and Construction in future phases of the project. Design will be developed with adequate detail to allow for an accurate cost estimate based on the level of design.

The CONSULTANT will prepare Design Criteria for the alternatives studied. The Design Criteria will be developed based on current NCDOT Design guidelines and/or the appropriate design guidelines including the current version of AASHTO's A Policy on Geometric Design of Highways and Streets and AASHTO's Roadside Design Guide, AREMA 2020 Manual for Railway Engineering and North Carolina Railroad Company's Future Track Infrastructure Planning Study.

The CONSULTANT will also review publicly available geotechnical or subsurface information at or near each of the grade crossings. The findings will be summarized and a brief discussion of the potential geotechnical related impacts of the alternatives will be provided for review.

Conceptual Engineering drawings at a minimum will include (as applicable based on Alternatives evaluated):

- Roadway Improvements including horizontal and vertical alignments, curve data, edges of pavement, lane lines, essential dimensions, estimated Right of Way, and large drainage pipes (larger than 72").
- Mobility enhancements in the project corridor for each overall alternative.
- New Roadway facilities to accommodate vehicular grade crossing (overpass or underpass).
- New Bridge structures to accommodate vehicular grade crossing (overpass or underpass).

- New Bridge structures to accommodate pedestrian/bicycle grade crossing (overpass or underpass). Separate structure or combined structure with roadway.
- Improvements to At-Grade Crossing protection devices for vehicular traffic and pedestrian traffic, including potential technology solutions.
- Relocation and/or upgrade of existing utilities (water, sewer, storm) to accommodate possible improvements. Determine approximate linear footage amount of relocation and/or upgrades of existing utilities.

The CONSULTANT will continue Stakeholder and Community involvement, input and communication as outlined in Task 2 through the development of Conceptual Engineering.

The CONSULTANT will develop a Project Phasing plan for project alternatives to assist with identification of a preferred alternative. This will include:

- A conceptual construction phasing plan for construction at the crossings so traffic flow is not significantly impacted during construction and rail operations are not impacted during construction.

Assumptions:

- Develop up to three coordinated Alternative options not including the no-build option.
- Information and feedback about potential construction phase traffic and access impacts/concerns, including potential re-routing and emergency access, will be considered in Design Criteria and inform Conceptual Alternative Options.

Deliverables:

- Design Criteria for improvement options and Alternatives Studied will be coordinated with Stakeholders and submitted to the County.
- No deliverable for this task. Conceptual options and Design Criteria will be used for the Alternative Analysis Report.
- Conceptual Alternative Options will be 11x17 scaled drawings showing proposed roadway (including bridge and supporting structure) features and dimensions.
- Project phasing plan will be included for each studied option.

3.5 Capital Cost Estimates

The CONSULTANT will develop conceptual-level cost estimates (design, construction and administration) for each overall alternative studied – which may include new grade crossings, street modifications, utility relocation and crossing upgrades to existing facilities for train operations. Cost estimates will be prepared using estimated quantities and unit costs for each element of the project.

Assumptions:

- Land acquisition estimates will be provided be included, in coordination with Durham County.
- Contingency factor will be identified and applied for this level of design.
- Utility relocation for in-kind sizes (no upgrades) will include approximate length of relocation at new grading crossing structures only.
- Detailed cost estimates in tabular form with contingency factor. Land acquisition estimates will be included.

Deliverables:

- Draft Capital Cost Estimates for submission to FRA
- Revised Capital Cost Estimates

3.6 Preliminary Environmental Impact Analysis

The CONSULTANT will collect environmental data from readily available electronic data sources, which will be entered into a GIS database that will be used for constraints mapping, impact evaluation, and alternative comparison. This data gathering will include, but is not limited to public water supplies, cultural and historical file review using NCHPO's online mapping tools to screen for potentially historic structures, census data, zoning, major utilities, known hazardous materials/hazardous waste sites, farmlands, noise, water quality, wetlands, streams, floodplains, public lands, 6(f) and 4(f) resources, biological communities (terrestrial and aquatic) and other ecologically important resources, community features, and property and landowner data. Data will be compiled into GIS databases for analysis and mapping. Photos of environmentally sensitive features will be taken. The constraints map will be available for design team consideration through the Project design. The contractor can use the Railroad Capital Project Guidance (2023) document section IV.b.ii.E as a high-level reference for developing the preliminary environmental analysis.

The CONSULTANT will develop a Constraints Memo that summarizes the results of mapping and data collection and includes avoidance recommendations. Environmental data collected will be transferred to appropriately scaled aerial photographs and/or overlaid on the conceptual design plans, which will be the basis for avoidance and minimization of environmental impacts during the early design process.

Within the Alternatives Analysis Report, the CONSULTANT will provide the FRA with documentation and summary of environmental analyses completed including a NEPA transition plan for future NEPA requirements. It is anticipated that the Preliminary Environmental Impact Analysis will be used to help inform a recommended Class of Action under 23 CFR 771 during Task 6.

This sub-task includes preparation for and virtual attendance for up to three meetings with the FRA environmental subject matter expert staff.

Planned Meetings:

- Virtual Meeting with Client and FRA. Up to three meetings, up to one hour in duration. Up to five CONSULTANT team members will attend. CONSULTANT will prepare agendas and distribute minutes.

Deliverables:

- The deliverables for this task will be included in the Alternatives Analysis Report
    - Baseline environmental conditions / constraints map
    - Constraints Memo (Draft and Final)

Assumptions:

- No field studies or surveys will be conducted during this subtask, and no quantitative analysis (e.g., noise modeling) and/or field surveys (e.g., architectural and/or archaeological survey) are anticipated at this stage of study.
- Additionally, at this stage, no environmental/agency approvals will be sought, but agencies may be contacted to gather pertinent environmental information.
- County will provide comments and revisions on draft memo

CONSULTANT work product associated with Subtasks 3.3, 3.4, and 3.6 will be included in an Alternative Analysis Report Deliverable to the FRA

Deliverables:

- Draft Alternative Environmental Impact Analysis Report
- Revised Alternative Environmental Impact Analysis Report

Task 4: Environmental Review

4.1 Environmental Screening

The CONSULTANT will engage in environmental screening to evaluate reasonable alternatives identified and carried forward from the Alternatives Analysis in Task 3. Additional documentation developed will support future lifecycle stages of the proposed project's development and support NEPA documentation to be produced in Task 6.

The CONSULTANT will ensure technical environmental documentation is completed for FRA review in accordance with 23 CFR Part 771 Environmental Impact and Related Procedures and 23 CFR Part 774, Parks, Recreation Areas, Wildlife and Waterfowl Refuges, and Historic Sites (section 4(f)) (effective Nov. 28, 2018) (Environmental Procedures) and other applicable environmental laws.

The CONSULTANT will conduct Project screening in coordination with the County and the Stakeholder and Engagement Plans to determine the key issues and will coordinate with FRA to identify studies in accordance with FRA's Environmental Procedures and other relevant authorities.

4.1.1. Update to the Community Engagement Strategy and Implementation Plan and Community Engagement Summary Report – Environmental

Building upon the Community Engagement Strategy and Implementation Plan completed in Task 2 during planning lifecycle stage activities, the CONSULTANT will update the plan to include specifics outlining how detailed environmental review data and study results will be shared with the public and how the public will be allotted opportunity to engage in project screening.

After Screening activities have been completed for Task 4, the CONSULTANT will produce a supplemental section to the Community Engagement Summary Report summarizing stakeholder and public involvement and including an appendix of comments received pursuant to engagement opportunities.

Assumptions:

- Updated Community Engagement Strategy and Implementation Plan will be provided to FRA but it is not a formal Task 4 Deliverable.

Deliverables:

- Updated Community Engagement Strategy and Implementation Plan
- Draft Supplement to the Community Engagement Strategy and Implementation Report
- Final Supplement to the Community Engagement Strategy and Implementation Report

4.2 Technical Environmental Reports

Building off desktop reviews performed in Task 3 to determine the anticipated presence/absence of wetlands, waters under the jurisdiction of the US Army Corps of Engineers, major farmlands, floodplains, unique geological features, important visual resources and economically distressed communities, the CONSULTANT will perform additional subject-specific field verifications and delineations to support the production of a comprehensive environmental Technical Reports Deliverable.

Technical Reports will also include detailed analysis of important community resources, potential ROW needs, consistency with local plans, noise sensitive areas, land use, land ownership, Section 4(f) and Section 6(f) properties. CONSULTANT will prepare environmental constraints mapping to show the location of resources where efforts should be made to avoid, if practicable. CONSULTANT will also assess major issues to be explored in the future NEPA Task.

Anticipated specific documentation includes:

- Natural Resources Technical Report
    - The CONSULTANT team will coordinate with Durham County and FRA to verify the required level of effort with respect to biological resources. It is assumed that a biological resources survey will be required. The CONSULTANT team will complete a 100 percent pedestrian biological resources survey within the project area to identify vegetation, wildlife, migratory birds, state-protected species and federally listed species.
    - Building on information gathered in Task 3, the CONSULTANT will perform additional review of the United States Geological Service's national hydrography dataset and the United States Fish and Wildlife Service's National Wetland Institute data within the project area to determine presence of wetlands or streams intersecting the project area. As needed, the CONSULTANT will perform delineation of streams and wetlands defined by the Clean Water Act (CWA) in relation to Ordinary High-Water Mark (OHWM). Required OHWM delineation will be included as part of the biological report.

      Assumptions

        - No protocol surveys or supplemental biological investigations will be required.
        - Agency coordination or consultation is included as required.
        - Durham County and FRA will agree to the Action Area.
        - No more than one round of revisions from Durham County and FRA will be addressed.
        - Delineation of the OHWM will be included in the biological report.
        - Fieldwork for both the cultural and biological surveys will be conducted in 10-hour days and can be completed in a total of 10-person days.

      Deliverables

        - Natural Resources Technical Report will be included in Technical Reports Deliverable to FRA.

- Cultural Resource Studies
    - The CONSULTANT team will coordinate with Durham County and FRA to verify level of effort with respect to cultural resources, as well as confirm the Area of Potential Effect (APE) for both architectural and archaeological resources. Because the project is federally funded, it will require an assessment of effects to cultural resources under Section 106 of the National Historic Preservation Act (NHPA); 36 CFR § 800. Therefore, a cultural resources survey to include both architectural and archaeological review will be completed for the project area that satisfies applicable federal regulations.
    - A draft and final technical cultural resources report will be produced describing these resources and potential project-related effects. Historic and archaeologic resources will be documented using NCHPO and North Carolina OSA processes as appropriate. Survey, resource documentation, and reporting standards will be consistent with applicable state and federal regulations. The

CONSULTANT will identify recommendations for use of the Final Section 106 Program Comment for Rail Rights-of-Way within the cultural resources report.

Assumptions:

- It is assumed there will be unfettered access to the survey area and access negotiations with private landowners will not be required.

Deliverables:

- Cultural Resources Report will be included in Technical Reports Deliverable to FRA.

- Noise Analysis Study
  - The CONSULTANT team will document existing noise conditions in the field, develop a Federal Highways Administration (FHWA) Traffic Noise Model (TNM) of existing and proposed conditions to estimate traffic noise levels for the project design year, assess potential project-related traffic noise impacts, and recommend noise mitigation. The analysis, methods, and documentation will be consistent with 23 Code of Federal Regulations (CFR) 772. Ambient noise data will be obtained where noise sensitive land uses exist.

    Assumptions:

    - The noise measurements will be collected during a site visit.
    - No in-person meetings are required.
    - Roadway design files in .DXF format will be provided of the existing and proposed horizontal and vertical alignments.

    Deliverables:

    - Noise Study Report will be included in Technical Reports Deliverable to FRA.

- Hazardous Materials Analysis and Documentation
  - The CONSULTANT team will conduct a Phase I Environmental Site Assessment. The Phase I Assessment will include a review of publicly available records to document current conditions and assess potential risk for encountering hazardous materials and recognized environmental conditions in addition to a field visit.

    Deliverables:

    - Phase I Environmental Assessment will be included in Technical Reports Deliverable to FRA

Task 5: Draft Preliminary Engineering

The CONSULTANT will develop preliminary plans (30% plans) for the preferred alternative as identified through Task 4. The Draft Preliminary Engineering (PE) Package will be produced for the preferred alternative only and provided to FRA for review as a Deliverable.

5.1 Basis of Design

The CONSULTANT will compile a memorandum documenting the basis of design for the preferred alternative, including applicable federal, state and local design standards and integrating host and operating railroad

requirements. This Basis of Design will be made available to inform the production of PE and Stakeholder (including FRA) review requirements.

Deliverables:

- Draft Basis of Design Memo
- Final Basis of Design Memo

5.2 Draft Preliminary Engineering Design Package for Preferred Alternative

Project plans shall be prepared per NCDOT CAD standards. Plans for the preferred alternative shall include: horizontal alignment details, profile information, main line geometric details, drainage plan layout, construction signing sequence of construction, existing utility information, centerline information for major access points, typical roadway sections, limits of construction, preliminary right-of-way requirements, and preliminary earthwork analysis. The CONSULTANT shall prepare preliminary cross section using corridor modeler in 50-foot increments in the Preliminary Design Phase.

The CONSULTANT will organize and attend a preliminary (30%) design review meeting.

The CONSULTANT anticipates development of the following components as part of the Draft Preliminary Engineering Design Package:

- CONSULTANT will develop cover sheet identified with a drawing revision number or date, vicinity map, index of sheets, summary of quantities, general notes, environmental commitments sheet, and a legend of symbols or abbreviations.
- CONSULTANT will develop proposed typical sections.
- CONSULTANT will develop plan and profile sheets with planimetric and topographic data at a horizontal scale of 1" = 50' and a vertical scale of 1"= 10'. Plan and profile sheets will be developed with a 1"=50' horizontal scale and a 1"=10' vertical scale.
- CONSULTANT will provide a basic suggested sequence of construction and a general traffic maintenance concept plan. CONSULTANT will also provide a preliminary construction estimate for traffic maintenance as a lump sum based on the construction specifics and project need.
- CONSULTANT will develop existing utility sheets
- CONSULTANT will provide preliminary structure placement sections for culvert or other structure placements or extensions
- CONSULTANT should include the following elements in the Draft PE design civil plans, as applicable: design criteria and specifications; identification and location of ownership for affected or abutting property; public and private roadway or railroad ROW; topography; existing facilities (roadway, railroad, utilities, buildings, structures, etc.); proposed modifications to existing facilities; new facilities; vertical profiles and grades; and typical sections and cross sections showing vertical and horizontal clearances.
- CONSULTANT should include the following elements in the Draft PE design plans, as applicable: proposed track changes, showing track centers, turnouts, vertical clearances below and above structures, horizontal clearances to obstructions within 25 feet of the centerline of track, horizontal curve and spiral data, vertical curve data and track design speed calculations for both passenger and freight trains.
- CONSULTANT will also provide proposed design criteria, proposed construction staging plan, staging areas and access roads for construction, typical sections of bridge and track, utilities (as applicable), structural arrangement showing substructure and superstructure, right-of-way limits, boring locations, a geotechnical

investigation report showing boring logs and the foundation design criteria, and other relevant information required for construction.

The CONSULTANT will provide the following coordination during the production of preliminary engineering:

- **Hydraulics:**
    - CONSULTANT hydraulic design staff will coordinate with roadway and track design staff during the Preliminary Design Phase to help verify decisions made in this phase do not negatively impact the development of the hydraulic designs during the Final Design Phase. Primary items of interest during the 30% design stage will focus on sizing and placement of new cross pipes along the alignment and determine critical roadway profile minimums to allow for the proposed cross pipes for the full build-out condition. CONSULTANT staff will communicate these critical profile control points to roadway staff to facilitate establishing the 30% vertical profile grade. No preliminary drainage layout will be included as part of the scope.

- **Traffic Control**
    - CONSULTANT Traffic Management staff will coordinate with Design staff and NC Utility staff during the Preliminary Design Phase to help verify decisions made in this phase do not negatively impact the development of the traffic control during the Final Design Phase. Items of interest would be the need for temporary shoring, temporary pavement, temporary road closures, etc. during construction phases.
    - CONSULTANT will consider traffic management planning for construction phase in the PE package.

- **Signing Design and Pavement Marking**
    - CONSULTANT Signing and Marking staff will coordinate with design staff during the Preliminary Design Phase to help verify decisions made in this phase do not negatively impact the development of the signing and marking plans during the Final Design Phase.

- **Erosion and Sedimentation Control**
    - CONSULTANT Erosion and Sedimentation Control design staff will coordinate with Roadway and Track Design staff during the Preliminary Design Phase to help verify decisions made in this phase do not negatively impact the development of the erosion and sedimentation control plans during the Final Design Phase. CONSULTANT will prepare Erosion Control design to verify proper right of way and easements are shown on the right of way plans and to provide for basin placement and install areas..

Assumptions:

- The work outlined within this task assumes that contingent work is completed, delivered, and accepted in a fashion consistent with typical project development.
- A one-month review period is assumed for railroad Stakeholders receiving 30% complete design plans. CONSULTANT will provide electronic file format (PDF) plans for Stakeholder review.

- The Draft PE Package cannot be finalized/approved as part of this Project until after Durham County completes NEPA for the preferred alternative(s) presented in the PE and obtains concurrence from the associated or impacted railroads.
- Design review meeting will be held at County offices and/or virtually; CONSULTANT will provide agenda and meeting minutes.

Deliverables:

- Draft Preliminary Engineering Design Package, including draft Drainage Report. Report will contain supporting documentation within the appendices including watershed analysis and hydraulic calculations.

5.3 Draft Preliminary Engineering Cost Estimate for Preferred Alternative

Based on the preliminary design, the engineer will prepare a construction cost estimate (Engineer's Opinion of Probable Construction Cost) for the project. We will prepare this document in spreadsheet format based on historical average unit bid prices for major components, obtained from NCDOT's Bid Averages.

Assumptions:

- CONSULTANT will deliver electronic file format (PDF) copy of the preliminary construction cost estimate along with the plan set submittal.
- Draft Preliminary Engineering Cost Estimate will be updated as Draft Preliminary Engineering Design Package is updated throughout course of Stakeholder Review.

Deliverables:

- Draft Preliminary Engineering Cost Estimate for Preferred Alternative(s)
- Final Preliminary Engineering Cost Estimate for Preferred Alternative(s)

Task 6: NEPA Documentation

The CONSULTANT, in accordance with FRA's Procedures for Considering Environmental Impacts found in 23 CFR 771, and in coordination with the County, will provide environmental review documentation enabling FRA to make a decision under NEPA. Work will not be performed for this task unless: (1) all other work under the scope is complete, and (2) FRA provides written approval to proceed with this task.

6.1 NEPA Class of Action Recommendation Memo

In order to succinctly provide appropriate information to assist FRA in determining the appropriate class of action, CONSULTANT will provide a Class of Action Recommendation Memo for FRA review.

Deliverables:

- NEPA Class of Action Recommendation Memo

6.2 Draft NEPA Document (CE or EA)

If FRA determines the appropriate class of action is a Categorical Exclusion (CE), the CONSULTANT will then complete the FRA CE worksheet providing the current project description of the preferred alternative advanced through previous Tasks, appropriate project maps and supporting documentation, integrating analysis and findings associated with Task 4 Deliverables.

If FRA determines the appropriate class of action is an Environmental Assessment (EA) leading to a Finding of No Significant Impact (FONSI), then CONSULTANT will provide a detailed scope of services including cost estimate to complete the EA/FONSI. Once scope is determined and agreed upon, CONSULTANT will advance the production of an EA in accordance with 23 CFR 771. As part of the EA process, CONSULTANT will assess the need for and complete additional public engagement opportunities, as well as the need for additional studies. Within the EA, CONSULTANT will provide definition of the Project and existing conditions, identification of the purpose of and need for the Project integrating Task 2 Deliverables, identification and analysis of project build and no-build alternatives integrating Task 3, 4 and 5 Deliverables, and provide an analysis of existing conditions as gathered in Task 3 to enable comparison to the impacts of the Preferred Alternative.

CONSULTANT will submit a Draft EA to Durham County and then FRA for review and comment, address comments received produce a Final EA for FRA approval and determination that a FONSI is appropriate. Upon this determination, CONSULTANT will produce a draft FONSI for FRA's signature and environmental decision.

In the event that FRA determines an Environmental Impact Statement (EIS) leading to a Record of Decision (ROD) is the appropriate class of action, CONSULTANT will provide a detailed scope of services including cost estimate to complete the EIS/ROD.

Assumptions:

- CONSULTANT will consult 23 CFR 771 and FRA environmental guidance to verify use of proper current documentation standards and forms.
-

Deliverables:

- Draft NEPA Document
- Final NEPA Document, including permitting matrix and supporting documentation
- FRA NEPA Decision document, as applicable.

6.3 Supporting Environmental Documentation

Regardless of the class of action, CONSULTANT will produce a permitting matrix identifying permits anticipated for delivery of the Preferred Alternative. CONSULTANT will additionally provide a package of applicable environmental technical studies, related correspondence, maps and other exhibits to support the environmental decision-making process.

Assumptions:

- CONSULTANT will consult 23 CFR 771 and FRA environmental guidance to verify use of proper documentation standards and forms.

- Technical work from Tasks 3, 4 and 5 will support the creation of the full NEPA analysis within the FRA-identified class of action.

Deliverables:

- Permitting matrix and supporting documentation

6.4 Final NEPA Document

After County and FRA review, the CONSULTANT will address comments and complete remaining public engagement activities. Comments received will be indexed; public comments received will be documented in an Appendix to the Final NEPA document.

Deliverables:

- Final NEPA Document, including permitting matrix and supporting documentation
- FRA NEPA Decision document (FONSI), as applicable