

NCDOT Feasibility Studies Unit / Central Corridor Development Unit Express Design Evaluation & Project Scoping Process Guidance

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Prepared for:

NCDOT

Prepared by:

AECOM



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Appendices

Appendix A: Conceptual Express Design Team Site and Workbench Upload Instructions

Appendix B: Preliminary Mapping Product Description

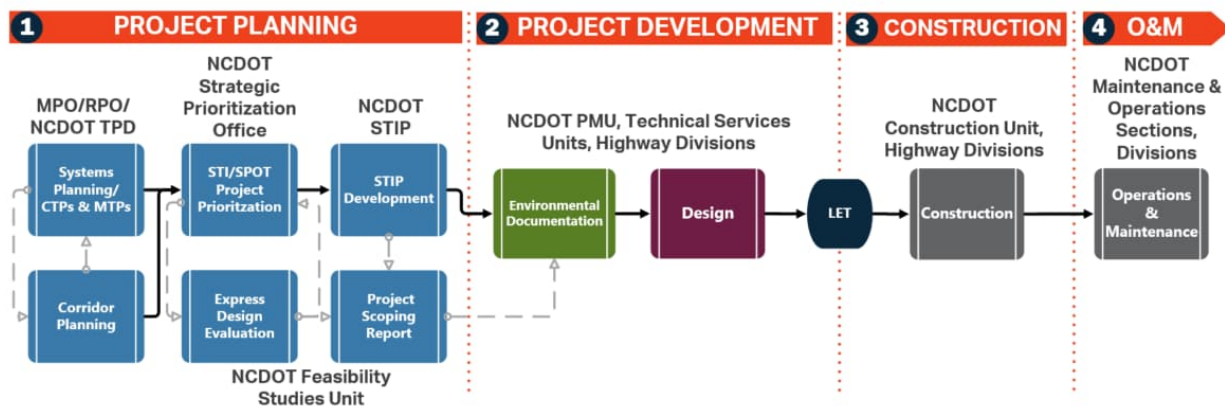
Appendix C: Preliminary Environmental Considerations Checklist Guidance



1. Introduction

The North Carolina Department of Transportation's (NCDOT) Feasibility Studies Unit (FSU) is responsible for investigating candidate State Transportation Improvement Program (STIP) projects requested by the public, local government, and/or NCDOT Board of Transportation Members. Feasibility studies (*now referred to as the Project Scoping Process*) are conducted as part of the initial step known as Stage 1 Project Initiation in the [Project Delivery Network](#) (PDN). The PDN outlines the stages, activities, tasks, deliverables, and references to accomplish the goals of the Project Scoping Process. Throughout this guide, references to the PDN sections are noted by an activity identifier (example [1TP1](#)). The purpose of the Project Scoping Process is to describe the proposed project, estimate preliminary costs, and identify any potential problems that may require consideration in the project development phase.

NCDOT Existing Process



This guide provides instructions for NCDOT consultants to complete the Project Scoping Process and its associated deliverables, as the majority of express designs and project scoping reports will be assigned to one of NCDOT 'FSU's on-call consulting firms (Consultant). Throughout this guidance, the party responsible for assigning the project from NCDOT FSU, reviewing all deliverables from the Consultant, and providing direction and oversight to the Consultant is referred to as the [NCDOT Project Engineer](#). Once deliverables are reviewed and approved by the [NCDOT Project Engineer](#), they will be uploaded by the [Consultant](#) to the ATLAS Workbench for the project.

The [Project Scoping Process](#) will be completed in two phases – the [Express Design Evaluation](#) and [Project Scoping Report \(PSR\)](#).

The [Express Design Evaluation](#) will investigate conceptual design alternative(s) and prepare costs needed for the project to go through the prioritization process (SPOT), in accordance with the Strategic Transportation Investments Law (STI), and potentially be included in the STIP. The [Express Design Evaluation](#) will result in a submittal that includes the following:

- Project Initiation Form (PIF): a summary of the project description, costs, and preliminary recommendations
- Design assumptions and conceptual design(s) on environmental features mapping (including all dgn files for designs)
- Cost estimates: copies of construction, right of way, utilities, and ITS cost estimates for the project



- Proposed mapping limits for project surveys (pdf and dgn files)
- Stakeholder coordination log and documentation
- Maintenance of traffic/constructability narrative
- Additional support documentation as directed by NCDOT, such as complete street sheet, traffic estimate and/or analysis, and other background information

When or if the project moves forward after SPOT, the [PSR](#) will be initiated. The PSR will provide project background, more detailed environmental screening data, and documentation for NCDOT management to use in determining how the project will proceed into the project development phase. Deliverables of the [Project Scoping Report](#) include:

- PIF: summary of the project, potential impacts, and recommendations for moving the project through project development (same form started during the Express Design Evaluation)
- Preliminary Environmental Considerations (PEC) Checklist: environmental screening of the project
- Project Scoping Technical Report: a narrative description of the project, existing conditions, and potential impacts (if applicable)
- Merger documentation: documentation and agency coordination related to Merger Pre-Screening, Merger Screening, and Concurrence Point 1 (if applicable)
- Contract Type Decision Tool
- Coordination log

All components of the [Express Design Evaluation](#) and [Project Scoping Report](#) will be uploaded to the NCDOT Conceptual Express Design Site or emailed to the NCDOT Project Engineer, unless noted otherwise in this guidance (some tools/questionnaires are completed within the project's Workbench), for review by NCDOT. The Workbench is the platform to upload the final version of all the deliverables for the Project Scoping Process. Information uploaded to the Workbench will be integrated and automatically placed in the correct location on the Conceptual Express Design Site with the correct naming convention. See Appendix A for Conceptual Express Design Site and Workbench upload instructions.

DISCLAIMER:

The Project Scoping Process is NOT intended to satisfy NEPA/SEPA requirements for a project, nor be an exhaustive investigation of design and environmental issues. Appropriate NEPA/SEPA documentation must be completed during the project development phase of a project before the project will be approved for right of way acquisition or construction.

Updates to this process guidance will periodically be completed as needed. For questions on this guidance or to provide suggested improvements, please contact:

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2. Express Design Initiation

NCDOT FSU will assign a new Express Design to one of its on-call consulting firms (Consultant) and create a site for the assigned project on the NCDOT Conceptual Express Design Site. Prior to assigning the Express Design to a firm, the NCDOT Project Engineer will consult with Congestion Management to determine if an Express Design Traffic Evaluation (EDTE) is needed. If an EDTE is needed, then the NCDOT Project Engineer and Congestion Management will determine the EDTE level of analysis and agree on a firm to complete the work based on the prequalification status of the available firms.



Note: Unless specifically noted in this guidance that a task is to be completed by the NCDOT Project Engineer or other staff, tasks outlined throughout this guidance are the responsibility of the Consultant.

2.1 Express Design Assignment

Upon receiving a new Express Design assignment, the NCDOT Project Engineer will coordinate the rough outline of the scope of work with the NCDOT Division prior to the start of the new task assignment. The NCDOT Project Engineer will provide the following information to the assigned Consultant based on coordination with the NCDOT Division:

- Project Description
 - Proposed typical section(s)
 - Project limits
 - Number of alternatives & segments if known
 - Available project background information
- Stakeholder Identification
- Priority of this assignment
- Internal Kickoff Meeting Requested by Division (Yes/No)
- Preliminary Stakeholder Coordination Plan

RESOURCES

- ❖ Upload Instructions (Appendix A)
- ❖ ED Assignment Checklist Template

If the Division indicates that an Internal Kickoff meeting is needed, the NCDOT Project Engineer will set up the internal meeting with the NCDOT Division Staff, NCDOT FSU Staff, NCDOT Congestion Management, EDTE Program Manager, and the Consultant to discuss the project and the Express Design Assignment Checklist and plan for the next steps of the Express Design. The Express Design Assignment Checklist should be filled out by the Consultant and emailed to the NCDOT Project Engineer for review. Once approved, the Consultant will provide the checklist to the NCDOT Division, Congestion Management, and NCDOT Project Engineer (if applicable) for verification of the project scope. Once approved, the Consultant should upload the approved checklist to the Workbench (see Appendix A for upload instructions). The assignment checklist will serve as the scope of work for the Express Design assignment.



Note: The Express Design Assignment Checklist, and all other templates referenced in this guidance, can be found on the Conceptual Express Design Site under the Help Tab at:

<https://connect.ncdot.gov/site/scoping/Help/Forms/AllItems.aspx>




2.2 Stakeholder Identification

Stakeholders are identified on the assignment checklist as discussed with the NCDOT Project Engineer. For all projects, stakeholders will always include the parties shown in the "Key Stakeholders" section of [Table 1](#). Other stakeholders, as identified on the assignment checklist, could include other NCDOT units (Ferry Division, Port Division, Aviation Division, Transportation Planning Division, Traffic Safety Unit, etc.), local government representatives (staff and elected officials), or other agencies with potential interests in the project. Public involvement is not part of this process but could be incorporated at the request of the NCDOT Division staff.

Table 1: Key Stakeholders

Key Stakeholders		
NCDOT Division	Metropolitan Planning Organization (MPO) <i>(as applicable)</i>	Rural Planning Organization (RPO) <i>(as applicable)</i>
NCDOT Project Management Unit (PMU)	NCDOT Congestion Management	
Other Stakeholders <i>(to be contacted as applicable)</i>		
Local staff and elected officials	NCDOT Rail Division	

 *Note: NCDOT's Environmental Analysis Unit (EAU) should NOT be contacted to review or provide input on Express Design projects.*

Designated Express Design contacts for Divisions and other units can be found on the Conceptual Express Design Site under the Help Tab [\(see Express Design Contacts\)](#).

2.3 Data Collection

Collect readily available data, including GIS data layers, local plans, and project history. Data collected may include but is not limited to, the information noted in [Table 2](#). The PDN outlines the tasks needed to receive the data listed below. The PDN activity identifier is included in parentheses where applicable.

Table 2: Project Data

Provided By NCDOT*	Download From NCDOT (PDN)	From Publicly Available Sources and ATLAS
Traffic information (PDN 1TP1)	Digital Terrain Model (DTM)	Comprehensive transportation plans (CTP)
Adjacent project CADD files	Parcel information	County or municipal bicycle/pedestrian plans
Crash data (PDN 1IM1)	Digital orthoimagery	GIS data
Structure reports (PDN 1ST1)		Other local plans (future land use plan, area plans, economic development plans)
Complete Street Sheet (PDN 1IM1)		

*Data will be provided as available and as applicable to the project. Traffic information may be provided if previously developed during SPOT prioritization; however, this is typically a part of the EDTE development.



Crash data, previously developed Express Design Traffic Volume (EDTV) Reports, structures reports, complete street sheet, and other data collected should be uploaded by the Consultant to the Conceptual Express Design Site (see Appendix A).

2.4 Project Scoping Study Area

The project scoping study area will be used to determine the limits of environmental features mapping and ATLAS Screening. The study area is defined by the type of project (see Table 3 for Project Scoping Study Area Definitions). The study area will evolve throughout the life of the project and continue to be refined. Use professional judgment on a case-by-case basis to determine the limits that will best capture the environmental features needed to develop design alternatives. Create a closed shape encompassing the study area and export to a shapefile. Upload a zip file of the study area shapefile to the Workbench (see Appendix A). This zip file should include all shapefile file extensions, including a projection file.

Table 3: Project Scoping Study Area Definitions

	Project Scoping Study Area (Minimum Area)
Upgrade Existing Intersection	<ul style="list-style-type: none"> '2500' radii from the center of the intersection
Upgrade Existing Intersection to Interchange	<ul style="list-style-type: none"> '5000' radii from the center of the intersection
Upgrade Existing Interchange	<ul style="list-style-type: none"> '5000' radii from the center of the interchange
Widening Projects	<ul style="list-style-type: none"> '500' offset from existing centerline '2500' beyond proposed project termini
New Locations Projects (Use Professional Judgment)	<ul style="list-style-type: none"> 1000' corridor(s) '5000' radii from the center of the interchange '2500' beyond proposed project termini

The Project Study Area should be re-evaluated as discussed in activity 1EN1 – Initiate Environmental Analysis of the PDN.

2.5 ATLAS Screening and Environmental Features Mapping

Use the ATLAS Screening Tool to generate an ATLAS Screening Report, identify potential natural and human resources in the project study area, and download applicable spatial data. Guidance for using the Tool is available at:

<https://connect.ncdot.gov/resources/Environmental/EAU/Project-Atlas/Pages/default.aspx>

Upload the project scoping study area to the Tool and indicate the desired size of additional buffer to be added to the project scoping study area. If no additional buffer is needed, leave the buffer distance box empty. Depending on the project type/phase, select the appropriate project screening template from the drop-down box. The Tool will produce a report that lists each data layer that intersects the study area. Download a pdf of this report. The Tool will also give you the option to download the applicable data layers in gdb or dgn format.

Not all necessary layers are available through ATLAS at this time. Instructions for locating these features can be found in Appendix C.



Prepare environmental features mapping (EFM) for the study area using data from the ATLAS Screening Tool or Data Search Tool. The EFM should include, at a minimum, roads and parcels on aerial photography. Digital orthoimagery for the state and each county are available from [NC OneMap](#). As appropriate, other features shown should include county/municipal boundaries, railroads, community resources, major hydrography and wetlands, federal and state lands, historic properties, and other managed areas or notable features. [Table 4](#) includes a list of spatial data and attributes that should be reviewed and included on EFM, as appropriate. See Appendix C for links to check these data sets.

Table 4: Environmental Features Map Attributes

Environmental Attributes	
Roads	Water Resources
County/Municipal Boundaries	Surface water classifications
Railroads	Outstanding resource waters/high quality waters
Parcels	Water supply watersheds
Community Resources	303(d) listed impaired water bodies
Medical facilities	Submerged Aquatic Vegetation (SAV)
Public libraries	Mountain trout streams
Places of worship	Wild and Scenic Rivers
Cemeteries	Waters of the US
EMS	Wetlands
Schools (Public and Non-Public)	Streams, lakes, and ponds
Gas stations	Protected Species
Federal Emergency Management Agency (FEMA) Resources	Historic Resources
Hazardous Materials	Federal, State, and Managed Lands

Once the ATLAS Screening Report and Environmental Features Mapping has been prepared, upload to the project's Conceptual Express Design Site and notify the NCDOT Project Engineer for their review. Once approved, upload both to the Workbench.

2.6 Preliminary Coordination

Once the data collection is complete and environmental features have been identified, begin initial coordination with key stakeholders. Coordination with stakeholders may take place via phone or email; a formal meeting may not be required at this time; the type of coordination will be identified on the assignment checklist. For any stakeholder coordination meetings, coordinate with the Division and MPO/RPO to schedule and extend a courtesy invitation to all parties listed in [Table 1](#). Every meeting should include a conference call option so that those who cannot attend in person can participate remotely.

RESOURCES

- ❖ Preliminary Coordination Questionnaire Template
- ❖ Coordination Log Template

The preliminary coordination discussion should include the project history, the need for the project, if a potential alternative(s) or typical section(s) has been identified, and other projects in the area.

There will be opportunities for stakeholders to review and comment on alternatives later in the process. Record all communication in a coordination log and upload the log to the Conceptual Express Design Site monthly (see Appendix A). Any external communication, including meeting minutes, phone calls, and email correspondence, should be documented in the coordination log. Pertinent information received



from stakeholders should also be noted in the Project Initiation Form (see section 4.4). The NCDOT Division and NCDOT Project Engineer should be carbon copied on any external coordination via email or US Mail.

2.7 Express Design Initiation Deliverables

The Consultant and NCDOT Project Engineer should upload any pertinent data (see Section 2.3) collected during the initiation phase of the Express Design Evaluation to the Conceptual Express Design Site. Drafts of deliverables can be emailed to the NCDOT Project Engineer or uploaded to the Conceptual Express Design Site (with proper naming convention), for approval. Once approved, the Consultant should upload to the project Workbench (see Appendix A for upload instructions). Deliverables include:

- Express Design Assignment Checklist
- Project Scoping Study Area Shapefile
- ATLAS Screening Report
- Environmental Features Map (EFM)
- Coordination Log

DELIVERABLES

- ✓ Express Design Assignment Checklist
- ✓ Project Scoping Study Area Shapefile
- ✓ ATLAS Screening Report
- ✓ EFM
- ✓ Coordination Log



If draft deliverables are uploaded to the Conceptual Express Design Site for the NCDOT Project Engineer's review – proper naming conventions must be used (see Appendix A). Once the final documents are uploaded to the Workbench, these files will be copied to the Conceptual Express Design Site, and any prior drafts will be replaced.

Be sure to notify the NCDOT Project Engineer when posting deliverables to the Conceptual Express Design Site or Workbench.

3. Express Design Alternative Development

Based on decisions from the assignment checklist and input from preliminary coordination with stakeholders, the Consultant begins developing conceptual design alternative(s) for the candidate project. These designs are intended to identify and avoid fatal flaws and generate high-level cost estimates. The designs are also intended to provide a starting point for later planning and design phases. Remember, the express design represents just one or a few (if multiple alternatives are being evaluated) possible alternative(s) for a candidate project.

All designs and estimates shall be in accordance with the latest editions of the following:

- AASHTO – A Policy on Geometric Design of Highways and Streets
- AASHTO – Roadside Design Guide
- NCDOT – Design Manual for Roadway Design
- NCDOT – Roadway Standard Drawings



3.1 Alternative Naming Standards

The development process for Express Design projects must follow naming standards to allow for the tracking of alternatives during the process and the elimination of confusion as the study progresses to future stages of project development. The following Alternative Naming Standards should be adhered to:

- Each design concept will be referred to as an Alternative and shall be titled as such. The use of Option, Concept or other naming conventions shall not be used.
- Alternatives will be numbered sequentially for each distinct Alternative.
- Variations of Alternatives will be designated with a letter appended to the Alternative number (for example, Alternative 1B is a variation of Alternative 1).
- Alternative numbers will not be reused throughout the duration of a project's Express Design. As projects move from Draft Conceptual Design to Final Conceptual Design, they will maintain the same Alternative numbering and the numbering shall not be reset once it moves forward.
- If a project is broken into segments or sections for cost estimating purposes, then the Segments will be labeled alphabetically with the label being appended to the SPOT ID (for example, if Alternative 1 for SPOT ID H231111 is broken into two segments it will be named H231111-A Alternative 1 and H231111-B Alternative 1).

3.2 Design Assumptions

The NCDOT Project Engineer will provide a proposed typical section for use in developing the conceptual designs, if applicable. Prepare high-level design assumptions to provide backup for design decisions made throughout the conceptual design process. The Express Design Assumptions Template can be found on the Conceptual Express Design Site. These assumptions sent to the NCDOT Project Engineer for review. Once approved, upload to the Workbench (See Appendix A).

3.3 Traffic Analysis

If specified on the assignment checklist or recommended by NCDOT at any time, investigate traffic volumes and levels of service to aid in the development of design alternatives in accordance with the Express Design Traffic Evaluation (EDTE) guidance. The EDTE steps to obtain Traffic Analyses are identified in the PDN within activities [1TP1 – Complete Express Design Traffic Volume \(EDTV\) and 1TM1 – Complete Express Design Traffic Analysis \(EDTA\)](#). EDTV Reports will be developed for all non-new location roadways. Traffic estimate or traffic forecast will be provided by the NCDOT Project Engineer.

RESOURCES

- ❖ Express Design Traffic Evaluation Guidance
- ❖ Express Design Traffic Evaluation SharePoint

Traffic analysis (through the development of an EDTA Report) should verify the proposed typical section and recommend additional lanes or other improvements that could affect the project's impacts or cost. Additional investigations may be included to develop interchange or intersection options. Documentation of the traffic investigations will be included in the EDTA Report and uploaded to the Conceptual Express Design Site for the NCDOT Project Engineer's review. Once approved, upload to the Workbench (see Appendix A).



3.4 Traffic Safety Screening

Complete the Traffic Safety Screening Tool per guidance found in activity [1TS1 – Initiate Safety Planning Assessment](#) of the PDN to determine if coordination with the NCDOT Traffic Safety Unit is needed to discuss existing and potential traffic safety issues. The Traffic Safety Screening Tool is available on the Workbench for each project.

Fill in the applicable information for the proposed project in the screening spreadsheet as described in [Table 5](#).

RESOURCES

- ❖ Traffic Safety Screening Tool (on project's Workbench)

Table 5: Traffic Safety Screening Tool Information

Project Information	Description
SIT Type	Select SIT Type
Primary Needs	Primary Need Category as identified on Identified Needs Form
Secondary Need Category	Secondary Need Category as identified on P6.0 Identified Needs Form
Existing Multimodal Features	Select multimodal features existing within the current right of way occupied by the proposed project
Proposed Multimodal Features	Select proposed multimodal features, including existing features that will remain
Proposed Typical Section	Select proposed typical section
Project Speed Limit	Select the appropriate range that includes the proposed posted speed limit
Intersection/Interchanges	Select from Grade-Separated Intersection/Interchange, Roundabout, Directional Crossover (Reduced-Conflict Intersection), or At-Grade Quadrant
Project Access Control	Select the proposed type of access control

Once the inputs are complete, click ""Get Screening Result"," which will populate the Screening Tool Results and Project Conditions Justifying Further NCDOT Traffic Safety Review. If the screening indicates a need to coordinate with the Traffic Safety Unit, notify the NCDOT Project Engineer to determine how to proceed with this coordination. Document coordination in the Coordination Log.

3.5 Complete Streets Review

In accordance with PDN Activity [1IM1](#), complete the NCDOT Complete Streets Project Sheet, with any information known at this time, to determine if other modes of transportation, such as bicycle and pedestrian elements, can be incorporated into the project. This will include initial information gathered from MPO/RPO/Municipal and Division partners, physical observations of the area, the [Demand Estimation Map](#), area plans, and other readily available data on the subject and will be used if a project is programmed to begin the Complete Streets Review Assessment. Quantities for any of these elements incorporated into the final express design will be prepared to assess costs with and without complete streets elements.

RESOURCES

- ❖ Complete Streets Project Sheet



3.6 Draft Alternative Development

3.6.1 Horizontal Design

Prepare horizontal design for alternatives agreed upon in the express design initiation phase. Horizontal design should be developed with enough detail to allow for an adequate cost estimate and right of way impact assessment.

The horizontal design of the alternative(s) should include:

- Typical sections for the L-line and major Y-lines
- Centerlines for the L-line, ramps, and Y-lines
- Conceptual design of intersections or interchanges
- Turn lanes, access control, or other issues that would affect right of way limits or cost estimation

Specific consideration should be given to the following when developing the alternative:

- Symmetrical vs. asymmetrical widening to minimize impacts
- Non-standard intersection concepts (roundabouts, superstreets, continuous flow intersections, etc.)
- Pedestrian and bicycle improvements (as recommended by stakeholders or published plans)
- Determination of bridge replacements or modifications
- Minimizing lateral encroachment into FEMA floodplain
- Avoiding impacts to FEMA floodway (strategies include bridges and walls)
- Existing stormwater BMPs and allowing right of way for future replacement (label existing stormwater BMPs that are impacted on conceptual designs)
- Avoiding impacts to large-scale utilities, such as transmission lines, towers, substations, or other notable utility features



When developing multiple alternatives, use appropriate naming conventions as indicated in Section 3.1.

3.6.2 Vertical Design, Cross Sections, and Slope Stakes

For the selected alternative (s), prepare vertical design and slope stakes for major alignments necessary for the identification of fatal flaws, impacts, or cost estimation. The following assumptions are recommended for profile development:

- Existing pavement is to be reused and overlaid (unless stated by stakeholders or in other coordination).
- Preliminary vertical clearance should be assessed.

3.6.3 Right of Way and Control of Access


In general, NCDOT sets conservative proposed right of way and control of access for the proposed design(s) based on the slope stake limits plus a 25-foot buffer. In urban areas or where there is level terrain, professional judgement should be applied, and a smaller right of way could be used (such as slope stakes plus 10 feet). Include any areas necessary for constructability or maintenance of traffic. Normally, NCDOT



assumes that all work should be included inside of the proposed right of way (temporary and permanent easements should be considered right of way at this time). However, the use of Temporary Construction Easements and Permanent Utility Easements will be considered outside of the ROW in situations where the use of these significantly impact the ROW estimates. The use of these mitigation measures, including what buffer outside of the slope stakes is being used, should be discussed during the development of the Express Designs and concurrence of NCDOT Division staff documented during the stakeholder coordination of the conceptual designs.

3.6.4 Maintenance of Traffic/Constructability

Conceptual designs should consider the constructability of the project and note on-site or off-site detours as necessary for construction. Prepare a brief maintenance of traffic narrative summarizing the high-level constructability, phasing as applicable, and maintenance of traffic needs for the project. For projects with constructability challenges, additional design may be needed to show impacts and costs (temporary detours, walls, bridges, etc.). Complete the Constructability Review Checklist as described in activity [1VM1 – Initiate CR-RAVE and CLEAR Activities](#) of the PDN and upload the constructability narrative to the Workbench (see Appendix A).




Maintenance of traffic and constructability should be considered and accounted for in construction quantities and cost estimates.

3.7 Draft Express Design Alternative Deliverables

Overlay the conceptual design alternative (s) on environmental features mapping to create the conceptual design map(s). Include information necessary to portray the conceptual design and its impacts, including but not limited to existing parcels and right of way, proposed right of way and control of access, and major -L- line stationing. In addition, label key features that aid in identifying the project location and constraints to the design or unique features. At a minimum, label roads, landmarks, major businesses, and community resources. Also, label commercial properties that would have right of way impacts. Provide typical sections with design speeds listed for key alignments on the maps. For new location sections, interchanges, or other key alignments with major profile changes where the profile could impact the proposed right of way or cost, provide profile sheets as part of the conceptual design map submittal.

DELIVERABLES

- ✓ Design Assumptions
- ✓ Draft Conceptual Design Map(s)
- ✓ Express Design Traffic Evaluation (EDTE)
- ✓ Maintenance of Traffic/Constructability Narrative
- ✓ Coordination Log



The scale of the conceptual design map should be set based on the size of the project and features to be shown and can vary by project. All sheets will be clearly marked with the notes:

Conceptual Design Subject to Change without Notice – For Express Design Evaluation Purposes Only
This Express Design alternative may be incorporated by NCDOT into a federal or state environmental review process, pursuant to Title 23 USC 168(d)(4), or to the state project development process.

Send the design assumptions, draft conceptual design map(s), EDTE, and constructability narrative to the NCDOT Project Engineer for review and verification before moving to the next step.



3.8 Stakeholder Coordination

Once approved by the NCDOT Project Engineer, provide a pdf of the conceptual design map(s) to the key stakeholders (as specified in the assignment checklist) for review and comment. Ask them to provide comments within three weeks. Once the three-week period has concluded, proceed with finalizing the express design alternative(s) and preparing the cost estimate request once the NCDOT Project Engineer has notified you to proceed. Update the coordination log to include any comments received from the stakeholders and upload the revised coordination log to the Conceptual Express Design Site.

4. Final Express Design

4.1 Final Conceptual Design Alternative(s)

Finalize the conceptual design alternative (s), incorporating comments from the stakeholders that will affect the overall cost of the project. If comments do not substantially affect the impacts or cost of the project, document them for inclusion during the project development design phases. If it is determined that additional alternatives are required because of comments received, then additional express design evaluations may take place. These additional alternatives may be developed at this point or during the project scoping process.

4.2 Express Design Estimate Request

Fill out the Express Design Estimate Request form to obtain cost estimates for various components of the project, including construction, utilities, ITS, and right of way. Upload the completed Estimate Request and supporting estimate documents as described in sections 4.2.1 and 4.2.2 to the Conceptual Express Design Site and notify the NCDOT Project Engineer. Additional guidance describing tasks and deliverables is detailed in PDN activity 1CS1 – Prepare Conceptual Construction Estimate.

RESOURCES

- ❖ Express Design Estimate Request
- ❖ Construction Cost Estimate Template

4.2.1 Quantities

Calculate quantities for the selected design alternative and/or segments, as applicable. Quantities should include, but are not limited to, the following:

- Elements from Complete Streets Sheet (some projects may include the development of design for two alternatives at the direction of NCDOT Project Engineer with and without these elements)
- Clearing and grubbing
- Earthwork
- Drainage (by length, typical section; *note*: assume all existing drainage is to be replaced)
- Pavement removal
- Fine grading
- New pavement or resurfacing (by area, alignment)
- Curb & gutter, sidewalk, monolithic island
- Guardrail, guiderail, and barrier
- Erosion control
- Traffic control (by length, typical section)



- Temporary pavement
- Temporary bridges
- Associated earthwork
- Pavement markings (by length, typical section)
- Traffic signals
- Structures (bridges, culverts, retaining walls)
 - Approach slabs
 - Removal of existing bridge (if necessary)
- Lighting (interchange)



Additional items that may have a major influence on the overall cost of the project should be included in quantities for the design alternative. This could include mitigation for potential impacts, such as noise abatement measures or environmental mitigation.

4.2.2 Construction, Utilities & ITS Costs

Construction and utility costs will be requested for all projects; ITS cost estimates may be requested, as applicable. Construction quantities should be added to the Construction Cost Estimate spreadsheet. Developing conceptual construction cost estimates is outlined in PDN activity 1CS1 – Prepare Conceptual Construction Estimates.

The NCDOT Project Engineer will notify the appropriate NCDOT Units, who will add unit costs and prepare the official cost estimates. The completed construction, utilities and ITS cost estimates should be uploaded by the NCDOT Project Engineer to the Workbench; for multiple alternatives, combine file into a zip file for uploading to the Workbench (see Appendix A).

4.2.3 Right of Way Costs


The PDN outlines the tasks and deliverables for receiving right of way cost estimates in activity [1RW1 – Prepare Conceptual ROW Cost Estimate](#).

In general, right of way estimates may be prepared by NCDOT ROW or Express Design Right of Way Tool (AECOM). A determination on who prepares the ROW estimate (NCDOT ROW Branch or the Express Design Right of Way Tool) will be made by the NCDOT during the development of the Express Designs. Note: The Express Design Right of Way Tool is not recommended for projects with significant property impacts especially in urban settings. If an in-house right of way estimate is requested by the NCDOT Project Engineer, request the most up to date right of way worksheet from the NCDOT Project Engineer and upload the completed form(s) to the Conceptual Express Design Site (see Appendix A) and notify the NCDOT Project Engineer. The NCDOT Project Engineer will notify the NCDOT Right of Way Unit, who will calculate a right of way cost estimate.

If the right of way cost estimate will be prepared by AECOM (through the Express Design Right of Way Tool), send email notification with transmittal form (available on the Conceptual Express Design Site) to express.designs@aecom.com and copy the NCDOT Project Engineer with links to the following files:

- Express Design Estimate Request
- Right of way shape dgn file (CADD file in dgn format) that represents project right of way





In General, right of way limits should reflect all proposed permanent or temporary easements, including any temporary impacts needed for constructability or maintenance of traffic. However, temporary construction easements and permanent utility easements may be considered if they are anticipated to impact the ROW estimate significantly.

The right of way shape dgn file should be a closed shape containing the entire existing and proposed right of way within the limits of the project. Separate files should be prepared for each design alternative, and the alternatives should be broken into segments to match the cost estimate as determined in the assignment checklist. Place the shape on the appropriate level that reflects the type of control of access proposed (i.e., no control of access versus full control of access).

More information on right of way estimates can be found in the *Quick Access Guide to ROW Parcels and Requesting Estimates* on the Conceptual Express Design Site and referenced in PDN activity [1RW1 – Prepare Conceptual ROW Cost Estimates](#).

4.3 Preliminary Mapping Limits

Develop preliminary mapping limits based on the express design alternative. These limits are to be used as an aid in the next phase of design by the NCDOT Project Manager, Photogrammetry, and Location & Surveys. The PDN outlines the tasks and deliverables needed in activity [1LS1 – Provide Photogrammetric Control and Initiate Surveys](#) and [1PH2 – Compile Aerial Photography and Mapping](#).

RESOURCES

- ❖ Mapping Product Descriptions (Appendix B)

Create a CADD file with one closed shape for the entire project following guidelines for mapping limits shown in [Table 6](#). Additional information on the mapping product descriptions can be found in Appendix A8. Export the CADD file to a shapefile. Also prepare a pdf of the mapping limits on aerial imagery, including a scale bar and a north arrow. Upload the CADD file, pdf, and shapefile (zip file including all shapefile file extensions, including a projection file) to the Workbench based on the instructions in Appendix A.

Table 6: Preliminary Mapping Limits Summary

	Mapping Limits	Mapping Products
Intersections	<ul style="list-style-type: none"> 25'-50' outside the limits of existing or proposed right of way, whichever is greater 200' beyond proposed project termini 	1"=50' final surveys
Interchange Projects Widening Projects	<ul style="list-style-type: none"> 100'-300' outside the limits of proposed or existing right of way, whichever is greater 500' beyond proposed project termini 	1"=50' shell plan sheets
New Location Projects	<ul style="list-style-type: none"> 500' outside the limits of existing or proposed right of way, whichever is greater, for all alternatives 1000' beyond proposed project termini 	1"=100' topographic mapping (with multiple alternatives) or 1"=50' shell plan sheets (with selected corridor)



4.4 Project Initiation Form

Begin preparation of the Project Initiation Form using the instructions in [Table 7](#). The Project Initiation Form is a two- to three-page summary of the project that includes general project information, such as characteristics of the existing facility and proposed facility, a brief description of the project, and costs. At this stage of the project, it may not be possible to answer all questions completely, so complete as much as possible with the best available data. The Project Initiation Form is discussed in PDN activity [1FS3 – Complete Project Scoping Report](#).

RESOURCES

- ❖ [Project Initiation Form Template](#)



At this stage, it may not be possible to answer all questions on the Project Initiation Form, so complete as much as possible with the best available data. The form will be updated and completed if the project proceeds to Project Scoping.

Upload the Project Initiation Form to the Conceptual Express Design Site for the NCDOT Project Engineer's review. Once approved, upload to the Workbench (see Appendix A). Cost estimates may not have been received prior to uploading the form to the Workbench and should be added by the Consultant when available. Once approved and sent to the project stakeholders for review by the NCDOT Project Engineer, as appropriate, the PIF will be considered final.

Table 7: Project Initiation Form

Project Information	Description
SPOT ID/STIP NO.	SPOT ID and STIP number, if available
STIP Description	Project description from the STIP
Division	Highway Division where project is located
County	County where project is located
Existing Facility Characteristics	
Functional Classification	Select functional classification
Existing No. of Lanes	Number of lanes on existing facility
Existing Median	Note if existing facility includes a median
Existing control of access	Select the existing control of access
Posted Speed	Posted speed limit
AADT	Existing AADT
Right of Way Width	Existing right of way width
Structures	Identify existing culverts and/or bridges including number and sizes, if applicable
Proposed Facility Characteristics	
Proposed Functional Classification	Select proposed functional classification
Proposed Typical Section	Select the proposed typical section
Proposed No. of Lanes	Number of lanes on proposed facility
Addition of a Median	Note if a median is proposed
Proposed control of access	Select the proposed control of access
Design Speed	Proposed design speed
AADT	Projected future AADT, if available
Right of Way Width	Proposed right of way width
Structures	Identify proposed culverts and/or bridges, including number and sizes, if applicable



Project Information	Description
Project Description	Identify and describe the proposed action, including its location; include the termini (project beginning and end) and design features, such as laneage proposed
Cost Estimates	Insert construction, right of way, utilities, and ITS (if applicable) cost estimates for the project (PDN activities 1RW1 and 1CS1)
Findings and Recommendations	For Express Design Evaluation, indicate the mapping product recommendation (PDN activity 1FS2). For Project Scoping, summarize findings from Preliminary Environmental Considerations Checklist and/or Project Scoping Technical Report This section should also include a summary of the Complete Street Sheet, as applicable.
<i>STOP HERE FOR EXPRESS DESIGN EVALUATION</i>	
Findings and Recommendations Level of PSR Document Type Merger Project Type Funding Contract Type	Indicate level of Project Scoping Report completed (PDN activity 1FS3) Indicate the recommended level of environmental documentation If merger screening was completed, indicate the decision and note date of screening Indicate if the project should be centrally or division-managed Select the recommended funding source Note the recommended contract type (from the Contract Type Decision Tool)
Project History	Provide information from previous studies of the project completed during the planning phase
Purpose and Need	Indicate the purpose and identified needs for the project and note any data/studies that support the identified needs
Alternatives Being Considered	Describe any alternatives evaluated for the proposed project or alternatives that were considered but eliminated
Public/Agency Coordination	Note anticipated permits, agency involvement, and public involvement strategy
Preliminary Resource Inventory Table	Note resources that may be involved or impacted by the proposed project; reference the Preliminary Environmental Considerations Checklist and/or Project Scoping Technical Report for additional information
Risk Identification	Check all risks that have the potential to impact the project scope, schedule, budget, quality or commitments. For all risks identified, provide additional information in the Preliminary Environmental Considerations Checklist (see Section 5.3). For more information, see Risk Management Manual and/or PDN activity 1VM1 .

4.5 Design and Cost Decision Log

Throughout development of the express design alternative and final express design, various changes are likely to be made to the design based on comments from NCDOT, stakeholder comments, etc. The Design and Cost Decision Log should be updated throughout design development and continue as express designs and cost are updated periodically until a project enters the STIP. This log serves as a rolling history of design and cost changes to document why these changes have occurred. This information is anticipated to assist NCDOT divisions and MPO/RPOs as express design alternatives are refined and entered into the candidate project process. Include the Design and Cost Decision Log in the express design evaluation submittal as noted in Section 4.6. The Consultant will upload an updated version to the Conceptual Express Design Site periodically as needed if changes are made after submittal. The final log should be uploaded to the Workbench once the express design is finalized.



4.6 Express Design Evaluation Submittal

Be sure all the deliverables associated with the Express Design Evaluation are uploaded to the Conceptual Express Design Site for the NCDOT Project Engineer's review. Once approved, upload to the Workbench (see Appendix A) so that they can be used in later phases of scoping and project delivery.

Once the [Express Design Evaluation](#) process is complete, the project may be entered into the SPOT process for prioritization and possible inclusion in the STIP (PDN activity [1FS2 – Complete Express Design](#)).

DELIVERABLES

- ✓ Project Initiation Form
- ✓ Conceptual design map(s) and DGN files
- ✓ Mapping Limits (PDF, DGN, and shapefile)
- ✓ Estimate Request
- ✓ Construction Quantities
- ✓ Right of Way Polygon
- ✓ Right of Way Worksheet (if applicable)
- ✓ Coordination Log
- ✓ Design and Cost Decision Log



5. Project Scoping Report

When or if the project is programmed in the STIP, the [Project Scoping Report \(PSR\)](#) will be initiated by the NCDOT Project Engineer. The PSR may be completed by the same consulting firm that completed the Express Design Evaluation or a different firm may be selected for this task. Project Scoping will provide project background, more detailed environmental screening data, and documentation for NCDOT management to use in determining how the project will proceed into the project development phase.

The PSR is used to update the Express Design Evaluation and provides more in-depth evaluation to inform how the project should proceed. The PSR is a deliverable package that can include a combination of 1) Preliminary Environmental Considerations (PEC) Checklist, 2) Project Initiation Form, and 3) a Project Scoping Technical Report, depending on the complexity of the project. Steps to complete the PSR are detailed in the PDN under activity [1FS3 – Complete Project Scoping Report](#).

The Project Scoping Report Assignment Checklist template can be found in Appendix B1 and should be filled out by the Consultant and emailed to the NCDOT Project Engineer for verification of the project scope. Once approved, the Consultant should upload the approved checklist to the Workbench (see Appendix A for upload instructions). The assignment checklist will serve as the scope of work for the Project Scoping Report assignment.

5.1 Project Scoping Level of Detail Screening

Because the size and complexity of projects vary significantly, three tiers of PSR allow for different levels of effort and detail based on the project type. While the level of PSR is ultimately the decision of the NCDOT FSU, in general, the smaller and simpler the project, the lower the level of PSR and required documentation. PDN activity [1FS3 – Complete Project Scoping Report](#) Level-of-Detail Evaluation details the three tiers of PSRs and deliverables needed and is summarized in [Table 8](#). The Consultant will coordinate with the NCDOT Project Engineer on the level of detail and include on the PSR Assignment Checklist as noted above.

Table 8: PSR Level of Detail

Level of PSR	General Project Type*	Deliverable Elements
Streamlined PSR	<ul style="list-style-type: none"> At-grade intersection improvements Interchange improvements Bridge replacements Bicycle/pedestrian facilities 	<ul style="list-style-type: none"> PEC Checklist Project Initiation Form
PSR	<ul style="list-style-type: none"> New interchange Simple widening 	<ul style="list-style-type: none"> PEC Checklist Project Initiation Form Project Scoping Technical Report
Enhanced PSR	<ul style="list-style-type: none"> Extensive widening New location NEPA/Section 404 Merger Process project 	<ul style="list-style-type: none"> PEC Checklist Project Initiation Form Project Scoping Technical Report Public Involvement Documentation Resource Agency Documentation

* All projects should be assessed based on their project-specific characteristics and potential impacts.



5.2 Project Review and Updates

Upon notification from the NCDOT Project Engineer that Project Scoping is being initiated, review the information compiled during Express Design Evaluation and determine if updates are needed. Notify project stakeholders that Project Scoping is underway and confirm with the NCDOT Project Engineer and other stakeholders as needed that the project description, limits, and study area established during Express Design Evaluation are still valid.

If substantial time has passed (more than six months) since the initial data collection and environmental features map were completed, check appropriate sources for updates (see sections 2.3 to 2.5). Following the instructions in section 2.5, generate a new ATLAS Screening Report, download applicable spatial data, and create an updated environmental features map for comparison with the data obtained during the Express Design Evaluation. Upload the updated ATLAS Screening Report and environmental features map to the Workbench (see Appendix A).

Discuss updates with the NCDOT Project Engineer to determine if the conceptual design alternative (s) and/or cost estimates need to be re-evaluated based on new information.

5.3 Community and Public Involvement Screening

The NCDOT Project Engineer should provide a PDF of the Project Scoping Study Area and Final Express Design Alternative Map(s) to NCDOT Public Involvement, Community Studies, and Visualizations (PICSviz). NCDOT PICSviz will review the project with respect to potential impacts to community resources and demographics and provide a summary and recommendations. Document any recommendations from this review in the Preliminary Environmental Considerations (PEC) Checklist (see Section 5.4) and Project Scoping Technical Report (see Section 5.7) as appropriate.

If the project level is an Enhanced PSR, and/or if NCDOT PICSviz requests that a Public Involvement Plan (PIP) be prepared for the project at this stage, the NCDOT Project Engineer will coordinate with the Project Management Unit (PMU) or division personnel to submit a request via [ETRACS](#) to NCDOT PICSviz to develop a draft PIP as described in PDN activity [1PI1 – Initiate Public Engagement Tasks](#). The PIP will include a project overview, goals and objectives for outreach, key messages to be communicated to the public, project-specific or potentially controversial issues, potential for Environmental Justice, Limited English Proficiency, or other Title VI considerations, stakeholders and interested groups, commitments made to stakeholders in previous project phases, potential communication methods, and a preliminary schedule of engagement activities. The draft PIP will be summarized and included as an appendix to the PSR.

5.4 Project Initiation Form

Update and complete the Project Initiation Form started during the Express Design Evaluation. See section 4.4 for instructions on completing the Project Initiation Form. The Project Initiation Form is a two- to three-page summary of the project that includes general project information, such as characteristics of the existing facility and proposed facility, a brief description of the project, and costs. PDN activity [1FS3 – Complete Project Scoping Report](#) summarizes deliverables and tasks for completing the Project Initiation Form.

RESOURCES

❖ [Project Initiation Form Template](#)

The Findings and Recommendations section should provide key findings of the PEC Checklist and Project Scoping Technical Report, the recommended NEPA/SEPA document type, and any issues that should be



considered when deciding how to move the project into the project development phase. This section should also note whether the project is following the Merger Process. In particular, the following should be noted in the summary if they are within or adjacent to the project right of way:

- Presence of known historic resources, noting National Register status
- Presence of publicly owned parks, recreational facilities, or wildlife refuges
- Known protected species occurrences
- Other federal lands and coordination needed with other federal agencies
- Unusual resources or impacts
- Adjacent or connecting STIP projects and their schedule

The information on the first page of the Project Initiation Form will be used for NCDOT Management to review and make decisions regarding project development. Specifically, the recommendations noted at the bottom of page one will be used to determine how the project will be funded and managed and the level of documentation and effort that will be required to deliver the project.

The Project Initiation Form will be transferred to the NCDOT Project Management Unit and/or Division when the project transitions into the environmental documentation and design phase to provide background information and a record of the project to date.

5.5 Preliminary Environmental Considerations (PEC) Checklist

Complete the PEC Checklist in the Workbench based on the latest available data and input from key stakeholders and upload to the Workbench. Detailed instructions for this Checklist are included in Appendix C. The PEC Checklist is intended to be a screening based on available data to identify issues and risks that have the potential to substantially impact project cost or schedule.

RESOURCES

- ❖ Preliminary Environmental Considerations (PEC) Checklist Guidance (Appendix C)

5.6 Contract Type Recommendation

The Contract Type Decision Tool (Decision Tool) was developed to assist in selecting the most appropriate project delivery method (for construction contracting) for projects. Making this recommendation early in the project can help guide the project development process and schedule.

There are four types of project delivery methods available for publicly funded transportation projects in North Carolina:

- Design Bid Build (DBB)
- Design Build (DB)
- Construction Manager/General Contractor (CM/GC)
- Progressive Design Build (PDB)

RESOURCES

- ❖ Contract Type Decision Tool

Complete the Contract Type Decision Tool to identify the most appropriate delivery method. Upload the completed Decision Tool (Delivery Method/Contract Type Recommendation Form) to the Workbench (see Appendix A) and report the recommended delivery method in the Project Initiation Form.



5.7 Project Scoping Technical Report

The Project Scoping Technical Report summarizes the context and history of the project, including any available information on the request to evaluate the project for inclusion in the STIP, the status of the project in MPO/RPO planning, and the purpose and need for the project. Table 9 includes an outline for the Project Scoping Technical Report, and a template is provided in the Conceptual Express Design Site. PDN activity [1FS3 – Complete Project Scoping Report](#) summarizes deliverables and tasks for completing the Project Scoping Technical Report.

RESOURCES

- ❖ Project Scoping Technical Report Template

Table 9: Project Scoping Technical Report Outline

Section	Description
Table of Contents	
I. Introduction	
General Description	Provide a brief description of the project vicinity, including local jurisdictions, major land uses, and character (i.e., urban/rural, topography, etc.)
Background	Determine if the project is included in a current comprehensive transportation plan or long-range transportation plan; if it is, note the name and date of the plan and any relevant project information (description, horizon year, etc.)
II. Preliminary Purpose and Need	Provide a brief write-up of the problem statement/identified need and preliminary purpose and need for the project. Always include the disclaimer below at the end of this section: <i>It should be noted that a Project Scoping Report is a preliminary document that is the initial step in the planning and design process for a candidate project and not the product of exhaustive environmental or design investigations. The purpose of this Project Scoping Report is to describe the proposed project, including cost, and identify potential issues/problems that may require consideration in the planning and design phases.</i> <i>When a project is identified for funding in the State Transportation Improvement Program (STIP), the Project Scoping Report is followed by a rigorous planning and design process that meets the appropriate requirements of the National Environmental Policy Act (NEPA) and/or State Environmental Policy Act (SEPA).</i>
Previous Studies	Identify any previous studies that may have included or referenced the project (e.g., local plans, corridor studies) and provide a list
Adjacent Projects	List any STIP projects within 3 miles of the project (see http://ncdot.maps.arcgis.com/home/index.html)
Crash Analysis	Include crash data and analysis, if available
III. Express Design Evaluation	
Design Alternative(s)	Describe the design alternative (s) developed during the express design evaluation
Other Alternatives Considered	Summarize other design alternatives considered, but not developed during the express design evaluation
Traffic Analysis	Include projected traffic volumes and capacity analysis, if available
Maintenance of Traffic/Constructability	Include brief conceptual maintenance of traffic/constructability narrative prepared in the express design evaluation

IV. Design Alternative Impacts and Costs



Section	Description
Impacts	Summarize potential impacts of the build alternatives Include the following text: <i>Because this Project Scoping Report is not the product of an exhaustive environmental or design effort, but rather an initial step to this process, the environmental impacts are based on a screening of readily available GIS data. It is assumed that a more detailed impacts analysis would be performed during the NEPA/SEPA phase.</i>
Costs	Include estimated construction, utilities, right of way, and ITS (if applicable) costs for the project
V. Existing Conditions	
Land Use	Describe existing land use in the project area
Community Resources	List the following community resources in project scoping study area for the project: Schools Places of worship & cemeteries Parks, greenways, publicly owned recreational facilities, etc. Water and wastewater Emergency management services Underground storage tank or other contamination sites identified Include the following text: <i>A detailed community resource study was not conducted for this Project Scoping Report. GIS level research and a preliminary site review were completed. Figure x shows the location of documented community resources within and near the project study area.</i>
Cultural Resources	Include a brief description of known cultural resources within the project right of way and project scoping study area of the project for the following: Historic resources Archaeological resources
Natural Environment	Include a brief discussion of the following: Water quality resources Jurisdictional features Protected species Existing NCDOT mitigation sites FEMA resources Include the following text: <i>A detailed environmental study was not conducted for this Project Scoping Report. GIS level research and a preliminary site review were completed. Figure x shows the location of documented natural resources within and near the project study area.</i>
VI. Recommendations	Recommend a preferred design alternative and related information including cost and impacts; this section will also address any discussion on state vs federal funding situations identified in the Project Scoping Report process; also indicate the type of environmental document anticipated in the next phase as well as the anticipated time to accomplish the project development phase (NEPA/SEPA planning) and design (preliminary, right of way, and final plans)
VII. References	Document references used
Figures	Attach figures, as appropriate

5.8 NEPA/Section 404 Merger Process

To advance projects more efficiently through project development, some elements that feed into the environmental documentation for a project will be conducted during the Project Scoping Process and are detailed in PDN activity [1EP1 – Initiate Environmental Review](#). This includes screening for the NEPA/Section 404 Merger Process (Merger) and, if appropriate, Concurrence Point 1 (Project Purpose and Need and Study Area Defined). More information on Merger can be found on the NCDOT Connect Site.



The NCDOT Environmental Policy Unit (EPU) is generally responsible for the oversight of the deliverables in this section in coordination with the NCDOT Project Engineer and various technical units. Documentation from this process will be included in the Project Scoping Technical Report (see Section 5.7).

RESOURCES

❖ NEPA/Section 404 Merger Process Guidance

5.8.1 Merger Pre-Screening

Merger Pre-Screening is an internal NCDOT process to determine if a project could benefit from following the Merger Process and if formal Merger Screening should be pursued. Merger Pre-Screening is documented in the project's Workbench on the NCDOT Conceptual Express Design Site as part of the Project Scoping Report by the NCDOT Project Engineer or their designee. Instructions are found in the [NEPA/Section 404 Merger Process Guidance](#) and activity [1EP1 – Initiate Environmental Review](#) of the PDN to complete Merger Pre-Screening.

There are two possible outcomes of pre-screening: 1) the Merger Process is not recommended for the project, or 2) Merger Screening is recommended. The recommendation is made based on an evaluation of available project information with respect to key merger indicators, including Clean Water Act Section 404 requirements, proposed project activities, potential conflicting impacts to resources, and intensity of potential impacts.

If Merger Pre-Screening concludes that the Merger Process is not recommended and NCDOT EPU has concurred with that conclusion, then no additional Merger-related action is needed.

5.8.2 Merger Screening and Merger Plan

If the Merger Pre-Screening indicates that Merger Screening is required, the NCDOT Project Engineer should coordinate with NCDOT EPU to determine how to proceed with formal screening. In most cases, the appropriate NCDOT Division and/or PMU personnel will be assigned to coordinate the Merger Screening, preparation of the Merger Plan, and other Merger Process activities as described in the following sections. FSU would continue with the Express Design and Project Scoping activities concurrent with this process. Documentation from this process will be included in the Project Scoping Technical Report.

NCDOT EPU and PMU or Division staff will oversee the drafting of a Merger Plan in coordination with the NCDOT PM after Merger Pre-Screening when it is determined the project will proceed to Merger Screening. The Merger Plan is a project-specific plan intended to outline how the Merger Process will be conducted for an individual project; it provides the Merger Team flexibility to establish the appropriate Merger approach for each project. The Merger Plan will be discussed at Merger Screening. See NEPA/Section 404 Merger Process Guidance and PDN activity [1EP1 – Initiate Environmental Review](#) of the PDN for instructions and templates for developing the Merger Plan.

5.8.3 Concurrence Point 1 (Purpose and Need and Study Area Defined)

Concurrence Point (CP) 1 establishes the project's Purpose and Need and Study Area. The primary product of CP 1 is gaining concurrence on a purpose and need statement that clearly states the needs, or problems, that require action in the study area as well as the purpose or objective that the project would achieve. If it is determined CP 1 should occur during this stage, NCDOT EPU will oversee the preparation of this task in accordance with the NEPA/Section 404 Merger Process Guidance and activity [1EP1 – Initiate Environmental Review](#) of the PDN for preparing for CP 1.



5.9 Other Requests

In coordination with the NCDOT Project Engineer, determine if other data requests should be prepared to give the project a jump start on the project development phase. This decision should be based on how far out the project is programmed in the STIP. If the project proceeds immediately, it will save time to go ahead and submit these data requests; however, if the project is several years out from project development, data requests should be postponed. Data requests could include:

- Traffic forecast request (to be coordinated with NCDOT Transportation Planning Division): PDN [1TP2](#)
- Traffic capacity analysis (coordinated with NCDOT Congestion Management): PDN [2TM1](#)
- Preliminary hydraulic review (coordinated with NCDOT Hydraulics): PDN [2HY1](#)
- Cultural resources screening (coordinated with NCDOT Historic Architecture and Archaeology groups through ETRACS): PDN [2EN2](#)
- Geoenvironmental screening (coordinated with NCDOT Geoenvironmental Group): PDN [2GT1](#)
- Surveys for protected species (coordinated with NCDOT-Biological Surveys Group through ETRACS): PDN [2EN1](#)
- Other natural resources fieldwork, including wetland and stream delineations (coordinated with NCDOT-Environmental Coordination and Permitting Group through ETRACS): [2EN1](#)

5.10 Project Scoping Report Submittal

Compile the deliverables for the appropriate level of PSR completed for the project (see [Table 8](#)) and upload to the Conceptual Express Design Site for the NCDOT Project Engineer's review. Once approved, upload to the Workbench (see [Appendix A](#)) and notify the NCDOT Project Engineer. The Project Scoping Report includes the following, dependent upon the type of PSR (Streamlined PSR, PSR, or Enhanced PSR):

- Project Initiation Form
- Preliminary Environmental Considerations (PEC) Checklist
- Project Scoping Technical Report (PSR and Enhanced PSR)
- Merger Pre-Screening (filled out in Workbench), at minimum
- Other Merger documentation (as applicable if screened into Merger)
- Contract Type Decision Tool
- Coordination Log
- Design and Cost Decision Log

DELIVERABLES

- ✓ Project Initiation Form
- ✓ Preliminary Environmental Considerations Checklist
- ✓ Project Scoping Technical Report (if applicable)
- ✓ Merger Pre-Screening
- ✓ Contract Type Decision Tool
- ✓ Coordination Log
- ✓ Design and Cost Decision Log



At this point, the Conceptual Express Design Site and ATLAS Scoping Workbench should contain the complete record of all deliverables prepared throughout the Express Design Evaluation and Project Scoping Report submittal.



Appendix A:

Conceptual Express Design Site and Workbench Upload Instructions



UPLOAD INSTRUCTIONS

Uploading to NCDOT Connect and ATLAS Workbench

The Express Design Evaluation and Project Scoping Process utilizes three sites to store deliverables created throughout the duration of the project:

- NCDOT Connect Conceptual Express Design Site
- NCDOT Connect Preconstruction Project Site
- ATLAS Workbench

Users may store their working files directly in the Connect project sites for collaboration before finalizing their required project documentation in the ATLAS Workbench. NCDOT policy instructs final project documents and related spatial data be uploaded to the ATLAS Workbench. The ATLAS Workbench is heavily integrated with both the Conceptual Express Design and Preconstruction Project sites. Documents and data files are saved automatically to the appropriate Connect site when they are uploaded to the ATLAS Workbench. The NCDOT Connect Conceptual Express Design site is the file repository for the Express Design Evaluation; the NCDOT Connect Preconstruction site is the file repository for the Project Scoping Process.

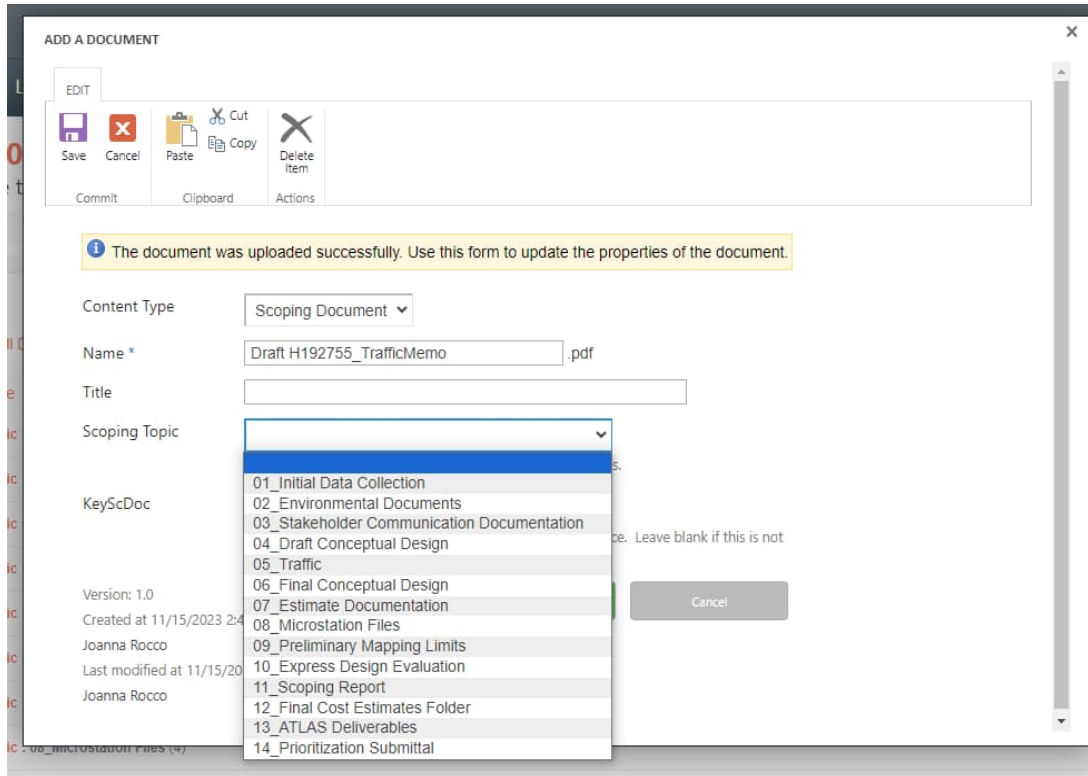
In addition to uploading final documents and data, the ATLAS Workbench also asks users to answer some questions about their project. Utilizing the ATLAS Workbench allows for key project information to be stored uniformly across projects by enforcing quality standards, such as file naming conventions. This standardization allows project data and documentation status to be analyzed for multiple projects across the program to inform various business decisions.

Instructions are included below to upload documents to each site. [Table A-1](#) and [Table A-2](#) summarize the naming conventions of all deliverables to be created and which site to upload them to.



NCDOT Conceptual Express Design Site Upload

1. Log in to <https://connect.ncdot.gov/> using your NCID.
2. Scroll down to Your Team Sites, search for the project using the Spot ID or STIP number and select the project.
3. In the top left corner of the page (above Connect NCDOT) the top of the page select Files > Upload Document, or you may choose to select your files and drag them into the window.
4. Select the Scoping Topic that matches your file and click save.



ATLAS Workbench Upload

1. Log in to <https://connect.ncdot.gov/> using your NCID.
2. Scroll down to Your Team Sites and search for the project using the Spot ID.
3. On the left side of the screen, click ATLAS Workbench.
4. Log in using your NCID again, if necessary.
5. Navigate the different topics on the left and upload documents to appropriate section.





Table A-1: Express Design Evaluation – Conceptual Express Design Site and ATLAS Workbench Uploads

Conceptual Express Design Site Topic	Deliverable	ED Site	ATLAS Workbench
01_Initial Data Collection	Express Design Assignment Checklist <i>xxxxxxx_AssignmentChecklist.pdf</i>	X	
	Complete Streets Project Sheet <i>xxxxxxx_CompleteStreets.pdf</i>		X
	Other: Traffic Estimates, Adjacent Project CADD Files, Crash Data, Structure Report, Other Available Data	X	
02_Environmental Documents	Project Scoping Study Area <i>xxxxxxx_ScopingStudyArea.zip (shapefiles)</i>		X
	Environmental Features Map <i>xxxxxxx_EFM.pdf</i>		X
	Express Design ATLAS Screening Report <i>xxxxxxx_ATLASScreeningReport_EXD.pdf</i>		X
03_Stakeholder Communication Documentation	Coordination Log <i>xxxxxxx_CoordinationLog.pdf</i>	X	
04_Draft Conceptual Design	Design Assumptions <i>xxxxxxx_DesignAssumptions.pdf</i>		X
	Draft Conceptual Design Map(s) <i>xxxxxxx_DraftConceptualDesign-Alternative#.pdf</i>	X	
05_Traffic Forecast	Traffic Memo <i>xxxxxxx_TrafficMemo.pdf</i>		X
	Traffic Forecast Request <i>xxxxxxx_TrafficForecastRequest.pdf</i>	X	
06_Final Conceptual Design	Constructability Narrative <i>xxxxxxx_ConstructabilityNarrative.pdf</i>		X
	Final Conceptual Design Maps <i>xxxxxxx_FinalConceptualDesign-Alternative#.pdf</i>		X
07_Estimate Documentation	Estimate Request <i>xxxxxxx_ExpressDesignEstimateRequest.docx</i>	X	
	Construction Estimate Quantities <i>xxxxxxx_ConstructionQuantities.zip</i>	X	
	Right of Way Polygon <i>xxxxxxx_ROWShapes.dgn (for each alternative)</i>	X	
	Right of Way Worksheet <i>xxxxxxx_ROWWorksheet.xlsx</i>	X	
08_Microstation Files	Microstation Files <i>Xxxxxxxx_Microstation.zip</i>		X
09_Preliminary Mapping Limits	Mapping Limits <i>xxxxxxx_PrelimMappingLimits.dgn</i>		X
	<i>xxxxxxx_PrelimMappingLimits.pdf</i>		X
	<i>xxxxxxx_PrelimMappingLimits.zip (shapefiles)</i>		X
10_Express Design Evaluation	Project Initiation Form <i>xxxxxxx_ProjectInitiationForm_EXD.pdf</i>	X (Word file)	X (Final PDF file)
11_Scoping Report	Note: Project Scoping documents should be uploaded to the ATLAS Workbench and the NCDOT Connect Preconstruction Site. See Table A-2.		



Conceptual Express Design Site Topic	Deliverable	ED Site	ATLAS Workbench
12_Final Cost Estimates Folder (uploaded by NCDOT)	Right of Way Estimate <i>xxxxxxx_RightofWayEstimate.pdf</i>		X
	Utility Cost Estimate <i>xxxxxxx_UilitiesEstimate.pdf</i>		X
	Construction Estimate <i>xxxxxxx_ConstructionCostEstimate.pdf</i>		X
	ITS Estimate <i>xxxxxxx_ITSCostEstimate.pdf</i>		X
13_ATLAS Deliverables	Note: All documents uploaded to ATLAS Workbench will be in this topic		
14_Prioritization Submittal (uploaded by NCDOT)	Prioritization Submittal <i>xxxxxxx_PrioritizationSubmittal.pdf</i>	X	

Notes:
 "xxxxxxx" is the ProjectID on SharePoint. Typically, this is the SPOT ID for the Connect Scoping Site. This value will be displayed in the Workbench header as well as in tool tips next to upload controls.
 Draft documents may be emailed to the NCDOT Project Engineer for review before (or instead of) uploading to the Conceptual Express Design Site. Final documents should be uploaded to the Workbench after approval.

Table A-2: Project Scoping – Preconstruction Site and ATLAS Workbench Uploads

Connect Preconstruction Topic	ATLAS Workbench Section	Deliverable	Preconstruction Site	ATLAS Workbench
Project Scoping	Project Scoping	Complete Streets Project Sheet <i>xxxxx_CompleteStreets.pdf</i>		X
		PSR Assignment Checklist <i>xxxxxxx_PSRAssignmentChecklist.pdf</i>		X
		Project Initiation Form <i>xxxxx_ProjectInitiationForm_PSR.pdf</i>		X
		Preliminary Environmental Considerations (PEC) Checklist <i>xxxxx_PECChecklist.pdf</i>		X
		Project Scoping Technical Report <i>xxxxx_ProjectScopingReport.pdf</i>		X
		Project Scoping ATLAS Screening Report <i>xxxxx_ATLASScreeningReport.pdf</i>		X
		Construction Type Decision Tool <i>xxxxx_ConstructionTypeDecisionTool.pdf</i>	X	
		Coordination Log <i>xxxxx_CoordinationLog.pdf</i>	X	
Project Management	Merger Screening	Merger Screening Meeting Minutes <i>xxxxx_MergerScreeningMinutes.pdf</i>		X
		Merger Plan <i>xxxxxxx_MergerPlan.pdf</i>		X
	Merger CP1 – Purpose and Need	CP1 Merger Meeting Packet <i>xxxxx_CP1_MergerMeetingPacket.pdf</i>		X
		CP1 Meeting Minutes/Summary <i>xxxxx_CP1Summary.pdf</i>		X
		Merger Study Area <i>xxxxx_MergerStudyArea.zip (shapefiles)</i>		X

Notes: xxxxx is the ProjectID on SharePoint. Typically, this is the STIP number for the Connect Preconstruction Site. This value will be displayed in the Workbench header as well as in tool tips next to upload controls.



Appendix B:

Preliminary Mapping Product Description



PRELIMINARY MAPPING PRODUCT DESCRIPTION

Product	Product Description	Typical Uses	Scale	Product Delivery Timeline
Topographic (T) Mapping	<ul style="list-style-type: none"> 2-D microstation design (.dgn) file with limited detail graphic planimetric mapping including municipal property data 3-D (digital terrain model) DTM (.dgn) file with 20 ft spaced elevation points TIN file 	Preliminary design activities for larger projects, such as new location projects with multiple options.	<p>Standard 1"=200'</p> <p>Alternative 1"=100'</p>	2-4 months after aerial photography completed and receipt of photo control.
Shell Plan Sheet (SPS) Mapping	<ul style="list-style-type: none"> 2-D microstation design (.dgn) file with highly detailed graphic planimetric mapping 3-D DTM (.dgn) file with highly detailed elevation points and break lines TIN file¹ 	Preliminary design activities for smaller projects including interchanges, widening, or new location projects with a selected corridor. Usually supplemented with additional detailed ground surveys to produce Final Surveys.	<p>Standard 1"=50'</p> <p>Alternative 1"=30' 1"=20'</p>	
Preliminary Plan Sheet (PPS) Mapping	<ul style="list-style-type: none"> 2-D microstation design (.dgn) file with highly detailed graphic planimetric mapping 3-D DTM (.dgn) file with highly detailed elevation points and break lines TIN file² 	Preliminary design activities for smaller projects. Usually supplemented with additional detailed ground surveys to produce Final Surveys.	<p>Standard 1"=50'</p> <p>Alternative 1"=30' 1"=20'</p>	
Final Surveys	Includes all information provided from Preliminary Plan Sheet Mapping plus the addition of more accurate ground surveys for utility locations, drainage features, pavement elevations, and obscured areas, along with detailed property survey data.	Final Design Projects or small projects such as intersection improvements. Base mapping/survey product used for R/W plans and construction plans.	<p>Standard 1"=50'</p> <p>Alternative 1"=30' 1"=20'</p>	Varies.

1. This is a lesser product than preliminary plan sheet mapping as it does NOT include field classification of planimetric features. Municipal property data available upon request.
2. Includes field classification of planimetric features to final plan sheet specifications. Municipal property data available upon request.



Appendix C:

Preliminary Environmental Considerations Checklist Guidance



Preliminary Environmental Considerations (PEC) Checklist Guidance

The Preliminary Environmental Considerations (PEC) Checklist is intended to be a screening to identify issues that have the potential to substantially impact project cost or schedule. These issues may include other regulatory requirements; need for coordination with other federal, state, and/or local agencies; sensitive environmental or cultural resources; or public controversy. Note, some of the issues included in the PEC Checklist apply only to federally funded projects; however, as funding has not been determined for most projects being evaluated at the project scoping phase, these issues should be screened for all projects.

To ensure that key issues are identified early in the project, the PEC Checklist mirrors the NCDOT Categorical Exclusion Action Classification Forms (CE Checklists). On the PEC Checklist, Questions 1 through 31 are taken from the CE Checklist for TYPE I and II Ground-Disturbing Projects, and Questions 32 and 33 are additional questions from the CE Checklist for TYPE III Projects (Questions 7 and 29 on the TYPE III CE Checklist). A Risk Assessment table has also been included to identify risks and their potential impacts on the project.

In contrast to the CE Checklists, the “yes” and “no” boxes have been removed because at the project scoping phase of the project, the answer is usually “maybe” or “to be determined.” Therefore, responses to the questions on the PEC Checklist should be narrative and provide qualitative information on the potential for the resource in question to be present in the project area or impacted by the project. Brief instructions are included in gray text below each question on the PEC Checklist. Use space provided in the box below each question to respond. Supporting information can be provided in an attachment or in digital files submitted to Feasibility Studies Unit or uploaded to the Scoping Site upon project completion.

For some questions, responses have been entered into the PEC Checklist template and should not be edited. Question 32 does not impact project cost or schedule and are therefore not important to decision-making during project scoping. A response of “N/A” has been entered for this question. Questions 8, 14, and 28 are about topics covered by earlier questions on the PEC Checklist. Responses referring to the earlier questions have been entered for these questions.

The Risk Assessment table includes common risks that could affect the project’s schedule or cost or cause the project to have to be re-prioritized and programmed. Each risk should be assessed and ranked, and a summary of identified risks included on the Project Initiation Form.

Data Sources

[Table 1](#) includes a list of issues covered by questions in the PEC Checklist and links to data sources that can be used to answer the questions. In most cases, spatial data is available for download through ATLAS or other sources as noted and can be added to environmental features mapping for the express conceptual designs (see Express Design Evaluation & Project Scoping Process Guidance, section 2.3). Checklist questions refer to the project scoping study area, which was defined during the express design evaluation (see Express Design Evaluation & Project Scoping Process Guidance, section 2.4).



Table 1: Preliminary Environmental Considerations (PEC) Checklist Questions

Checklist Question(s)	Issue	Data Source
1, 2, 3	Federally Protected Species	ATLAS -or- https://www.fws.gov/raleigh/species/cntylist/nc_counties.html https://ipac.ecosphere.fws.gov/
4,5,6,7	Water Resources	
4	Outstanding Resource Waters, High Quality Waters, and Water Supply Watershed	ATLAS or https://ncdenr.maps.arcgis.com/home/index.html
4	303(d) listed impaired water bodies	ATLAS or https://deq.nc.gov/about/divisions/water-resources/planning/classification-standards/303d/303d-files
4	NC Buffer Rules	ATLAS or https://deq.nc.gov/about/divisions/water-resources/water-resources-permits/wastewater-branch/401-wetlands-buffer-permitting/riparian-buffers-protection
4	Submerged Aquatic Vegetation	ATLAS
5	Anadromous fish spawning areas	http://portal.ncdenr.org/web/mf/afsa-maps
6	Mountain trout stream	ATLAS
7	Wild and Scenic Rivers	ATLAS or National Wild and Scenic Rivers System: https://www.rivers.gov/north-carolina.php
8,9	Coastal	
8	CAMA Area of Environmental Concern	County website (CAMA land use plan) or ATLAS
9	Coastal Barrier Resources Act (CBRA) area	USFWS: https://www.fws.gov/cbra/maps/Boundaries.html or ATLAS
10,11	Floodway/Floodplain	
10	Floodzones	ATLAS or NC Floodmaps: https://flood.nc.gov/ncflood
11	HMGP/Buyout Properties	County/municipal website
12-18	Human Environment	
12	Public Opposition or Controversy	Stakeholder coordination or CTP/MTP
13	Environmental Justice (EJ) & Title VI Populations	NCDOT Demographic Tool https://epa.gov/ejscreen
14	Relocations	Express Design Evaluation
15, 16	Community Resources/Indirect and Cumulative Effects	NCDOT Community Studies Group input
17	STIP/MPO's TIP Consistency	NCDOT Current STIP and MPO website
18	Farmland	N/A
19,20,21	Traffic and Access	Express Design Evaluation



22	Noise	Express Design Evaluation and NCDOT Traffic Noise Policy: https://connect.ncdot.gov/resources/Environmental/PDEA%20Procedures%20Manual%20Documents/2016%20NCDOT%20Traffic%20Noise%20Policy.pdf
23	Air Quality	NCDEQ: https://deq.nc.gov/about/divisions/air-quality/air-quality-planning/attainment
24, 25, 26	Section 4(f) and Section 106 Resources	NC HPO: https://www.ncdcr.gov/about/history/division-historical-resources/state-historic-preservation-office/gis-maps-and-data#gis-data-download or ATLAS (historic properties) County/municipal website (local and county parks)
27	Protected Lands	
27	Section 6(f) Land & Water Conservation Fund Resources	National Park Service, Land and Water Conservation Fund: http://waso-lwcf.nrc.nps.gov/public/index.cfm
28	Voluntary Agricultural Districts (VAD) or Enhanced Voluntary Agricultural District (EVAD)	ATLAS
29, 30, 31	Document Type and Permitting	
29	Document Type	CE Programmatic Agreement
30	Section 404	Wetlands: ATLAS or USFWS: https://www.fws.gov/wetlands/data/data-download.html Streams, lakes, and ponds: ATLAS or NC DEQ: https://ncdenr.maps.arcgis.com/home/index.html
31	FERC	NCDOT Division Resource Map or FERC: https://www.ferc.gov/industries/hydropower/gen-info/licensing/active-licenses.xls
32	USCG	NCDOT USCG Stream Coordination Map: https://connect.ncdot.gov/resources/Environmental/PDEA%20Consultants/Request%20-%20Coast%20Guard%20-%20Map.pdf
33	USFS	USFS: https://data.fs.usda.gov/geodata/webapps/EDW_DataExtract/ or ATLAS
33	EBCI	NCDOT Division Resource Map
33	Military Installation	Google Maps or NC OneMap: http://data.nconemap.gov/ (Federal Lands in North Carolina)
34	GeoEnvironmental Sites of Concern	ATLAS or NCDEQ Site Locator Map



Preliminary Environmental Considerations Checklist Questions

The following sections contain additional guidance on evaluating the issues covered by the PEC Checklist. Note, coordination and permitting requirements related to these issues are provided for informational purposes to show how the issue could affect the schedule or cost of a project; it is not intended that these requirements will be completed during the project scoping phase of the project.

Federally Protected Species

Questions 1, 2, and 3 are related to federally protected species. Species with the federal status of endangered (E), threatened (T) are protected under provisions of the Endangered Species Act (ESA) of 1973 as amended (16 USC 1531 et. seq.). Any action likely to adversely affect a species classified as federally protected will be subject to review by the US Fish and Wildlife Service (USFWS). A Natural Resources Technical Report (NRTR) must be completed during the project development phase of the project before the questions in the PEC Checklist can be fully answered.

Question 1: Review the current USFWS [Endangered and Threatened Species and Species of Concern by County for North Carolina](#) and note species or designated critical habitat listed in the county(s). You can also use the [IPaC \(Information for Planning and Consultation\)](#).

Question 2: Contact NCDOT Environmental Policy Unit (EPU) or Division Environmental Officer (DEO) to determine if a programmatic agreement or programmatic biological opinion is applicable.

Question 3: Note if Bald and Golden Eagle Protection Act (BGPA) species are present in the county(s) using the current USFWS [Endangered and Threatened Species and Species of Concern by County for North Carolina](#) or [IPaC \(Information for Planning and Consultation\)](#).

Questions 4, 5, 6, and 7 ask about water resources impacted by the project. Using ATLAS, note if there are water resources in the proposed right of way, as well as within the project scoping study area, and for each resource provide the NCDEQ Surface Water Classification, as well as any of the following resources that apply:

Question 4: Determine if the project has waters classified as Outstanding Resource Water (ORW), High Quality Water (HOW), Water Supply Watershed Critical Areas, 303(d) listed impaired water bodies, buffer rules, or Submerged Aquatic Vegetation (SAV) present.

Section 303(d) of the Clean Water Act (CWA), requires states to develop a list of waters meeting water quality standards or which have impaired uses. Check the current [303\(d\) list](#) for 303(d) listed waters within the project scoping study area.

[NC buffers](#) apply in the following watersheds: Neuse River Basin, Tar-Pamlico River Basin, Catawba River Basin, and Randleman Lake Water Supply Watershed. Review ATLAS to determine if the project is within a watershed subject to buffer rules.

The NC Division of Water Resources manages the Water Supply Watershed program, which was established as a means of safeguarding water quality by protecting the lands surrounding public drinking water sources. Water Supply Watersheds are comprised of two subareas; the "critical area" and the "balance of the watershed". The "critical area" surrounds the "intake" for a regional public water supply, with the "balance area" comprising the remainder of the water supply watershed. Land use within the entire watershed is restricted, with the critical area being tightly controlled with few permitted



uses and in many cases left totally undeveloped. These restrictive land use regulations are intended to allow the natural landscape to retain the ability to filter stormwater runoff and keep it as clean as possible for use by the public as source of drinking water. Review ATLAS to determine if the project is within a water supply watershed or critical area. Water Supply Watersheds are also identified by a [Surface Water Classification](#) of "WS" (Water Supply).

Question 5: Anadromous fish are fish that spend most of their lives in saltwater but return to freshwater to spawn. To protect anadromous fish spawning areas, NC Wildlife Resources Commission and NC Division of Marine Fisheries require coordination to ensure that replacement of existing and new highway stream crossing structures will not impede the movement of anadromous fish. Projects that impact anadromous fish spawning areas may be required to follow "Stream Crossing Guidelines for Anadromous Fish" and be subject to an in-stream moratorium. Review ATLAS to determine if these areas exist within the project scoping study area.

Question 6: Trout waters are defined in the North Carolina Environmental Management Commission Rule (15A NCAC 2B .0202) as "waters which have conditions which shall sustain and allow for trout propagation and survival of stocked trout on a year-round basis." The Sedimentation Pollution Control Act of 1973 requires 25-foot buffer zones along trout waters. If waters are designated as trout waters, an in-stream moratorium and additional design standards ("Guidelines for Construction of Highway Improvements Adjacent to or Crossing Trout Waters in North Carolina") may be required for a project. Spatial data can be reviewed in ATLAS in the Public Mountain Trout Waters data file. Trout counties are also identified by "Tr" classification in their [NCDEQ Surface Water Classification](#).

Question 7: Determine if federally designated Wild and Scenic Rivers under the Wild and Scenic Rivers Act, or those under study for designation, are within 1,000 feet of the project. The list of North Carolina's designated and study rivers is available at: <https://www.rivers.gov/north-carolina.php>. Review the [Division Resource Map](#) to determine if a Wild and Scenic River is within the project scoping study area. Spatial data is also available in the Wild and Scenic Rivers file from [NC OneMap](#) or ATLAS.

Question 8: North Carolina's Coastal Area Management Act of 1974 (NCGS 113A-100 *et seq.*) applies to 20 coastal counties and is regulated by the NC Division of Coastal Management (DCM). Identify Areas of Environmental Concern (AEC) within the project scoping study area. Review the county's CAMA Land Use Plan for mapping and descriptions of AECs. Spatial data may also be available from the individual counties.

Question 9: The Coastal Barrier Resources Act (CBRA) protects delicate habitats of barrier islands, reefs, etc. from degradation due to human development. CBRA areas include some portions of North Carolina's Outer Banks and barrier islands. These areas are ineligible for direct or indirect federal financial assistance for projects that might promote development. Review mapping from [US Fish and Wildlife Service \(USFWS\) Ecological Services](#), the [Division Resource Map](#), or ATLAS to determine if the project is in a CBRA area.

Question 10: Protection of floodways and floodplains is required under 23 CFR 650A; Executive Order 11988, Floodplain Management; and US Department of Transportation (USDOT) Order 550.2, Floodplain Management and Protection. The intent of these regulations is to avoid or minimize highway encroachments within the 100-year (base) floodplains or regulatory floodway, where practicable, and to avoid supporting land use development that is incompatible with floodplain values. Review ATLAS in the



North Carolina Flood Zones file. [NC Floodmaps](#) also includes data to determine whether the project scoping study area includes any base (100-year) floodplain and/or regulatory floodway.

Question 11: Data for FEMA Hazard Mitigation Grant Program (HMGP) buyout properties is generally only available by contacting the county or municipality. These properties may also be identified from parcel data where property within a flood zone is owned by the locality. Note HMGP properties within the project scoping study area.

Question 12: Note if public opposition or controversy related to the project was an issue indicated during preliminary coordination with local officials or in the Metropolitan Transportation Plan (MTP) or Comprehensive Transportation Plan (CTP).

Question 13: Pursuant to Executive Order 12898, Federal Actions to Address Environmental Justice (EJ) in Minority Populations and Low-Income Populations, federal agencies (and recipients of federal monies) must identify and address disproportionately high and adverse human health and environmental effects on minority and low-income populations. This question will require additional evaluation during project development. However, a cursory demographic review of the project area using the NCDOT Demographic Tool can reveal the presence of higher than average minority or low-income populations. In addition, aerial photography should be reviewed and the presence of mobile homes, mobile home parks, or multifamily housing units noted. Using the [NCDOT Demographic Tool](#), note the total population, as well as minority and low-income populations (Below Poverty Level) for the county and each Census Block Group in which the project is located. Also note any observations based on review of aerial photography.

Questions 14 and 15: Provide a count of potential residential and commercial displacements as noted in the right of way cost estimate received during the Express Design Evaluation for the project. Note reduction in access to community resources, impacts on community resources, or changes to community cohesiveness.

Question 16: Summarize comments and recommendations provided by NCDOT Community Studies Group. Include specific type(s) of anticipated analyses if that level of guidance was provided (CCR, CIA, ICE, LUSA, DIST).

Question 17 asks about consistency with the State Transportation Improvement Program (STIP) or Metropolitan Planning Organization's (MPO) Transportation Improvement Program (TIP). As most projects receiving a Project Scoping Report have been programmed, or are expected to be programmed into the STIP, note if the project is currently in the STIP. Also indicate if the project is listed in an MTP or the CTP. If it is not consistent, these documents may need to be updated before the environmental document can be approved.

Question 18: A detailed evaluation of farmland soils is not needed during project scoping but could be required during project development for federally funded projects in non-urbanized areas. Therefore, review [Census urbanized area maps](#) and note if the project is located within the boundaries of a Census urbanized area. Urbanized areas include Asheville, Burlington, Charlotte, Concord, Fayetteville, Gastonia, Goldsboro, Greensboro, Greenville, Hickory, High Point, Jacksonville, New Bern, Raleigh, Rocky Mount, Wilmington, Winston-Salem, and some areas of Brunswick County. A [farmland conversion form](#) under FPPA may be required if the project is in a non-urbanized area and if additional right of way is required.



Questions 19, 20, and 21 are about changes in access and traffic patterns. From the Express Design Evaluation, note if the project is proposing a change in control of access or modification or construction of an interchange. Also, note changes in traffic patterns and any reduction in access to community resources or if an offsite detour is likely to be recommended. Refer to the maintenance of traffic narrative prepared as part of the Express Design Evaluation.

Question 22: NCDOT's 2021 [Traffic Noise Policy](#) applies to all Type I federal projects, including any highway project that is funded with federal-aid highway funds or requires FHWA approval. The policy applies to state-funded projects only when the project is located on a US or Interstate route that is full control of access where the project involves adding a through-traffic lane. For other state-funded projects for which a State Environmental Assessment (EA) or State Environmental Impact Statement (EIS) will be prepared, noise barriers may be considered where practicable.

Since funding is likely not known at the project scoping phase, this question should be answered for both potential funding options. If the project is federally funded, note if it would be categorized as a Type I project based on the list on page 2 of the NCDOT Traffic Noise Policy. If the project is state funded, note if it meets the noise policy criteria or might require a state EA or EIS.

Question 23: Maps showing attainment status for each NAAQS pollutant (ozone, particulates, carbon monoxide, and sulfur dioxide) are available on NCDEQ's [Attainment Status of National Ambient Air Quality Standards](#) website. Refer to [North Carolina Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants](#).

Question 24: Section 4(f) applies only to federally funded or federally permitted transportation projects and the project's impacts on historic sites ("historic" sites are defined as those on or eligible for the National Register of Historic Places/NRHP) or publicly-owned parks, recreation areas, and wildlife and waterfowl refuges. These questions will require additional evaluation during project development, but for the PEC Checklist, note the presence of potential Section 4(f)-eligible resources, including historic resources, parks, and wildlife/waterfowl refuges, within the project right of way and within the project scoping study area. Data sources that should be reviewed to identify these resources include:

- ATLAS (Federal Lands in North Carolina, State Owned Lands; Managed Areas in North Carolina, Land Trust Conservation Properties; NC Gamelands)
- [NC State Historic Preservation Office GIS data](#) (available on ATLAS)
- County or municipal website (for local or county parks)

Questions 25 and 26: Section 106 and the Advisory Council on Historic Preservation's implementing regulations (36 CFR 800) require Federal agencies to take into account the effects of federal undertakings on properties eligible for or listed in the National Register of Historic Places (NRHP). These questions will require additional evaluation during project development. Review the [NC State Historic Preservation Office \(SHPO\) website](#) or ATLAS for historic architectural resources that have been identified in a previous survey or that are listed in or have been determined eligible for listing in the NRHP. Note this data does not include archaeological resources.

Question 27: If parks or recreational resources are present within the project scoping study area, determine whether funds provided through Section 6(f) of the Land and Water Conservation Fund (LWCF) Act were used to purchase, develop, or buy equipment for the property. A list of resources using these funds is available at <http://waso-lwcf.ncrc.nps.gov/public/index.cfm>. If a federally funded project proposes to take land from a recreational resource that has been wholly or partially developed with a LWCF grant, the project must be coordinated with the NC Division of Parks and Recreation and replacement land of "reasonably equivalent usefulness and location" must be found. *Note: typically*



Section 6(f) properties are recreational lands that are also regulated under Section 4(f) of the Department of Transportation Act of 1966 (for federal projects).

Question 28: Review VAD and EVAD data to determine if the project is near one of these parcels. Data is available by county, some of which is available on ATLAS. If the project may affect a VAD/EVAD property, analysis and public outreach may be needed.

Question 29: Review the [CE Programmatic Agreement](#) (Type III CE Impact Criteria Checklist pages 20-21) to determine potential project impact thresholds.

Question 30: "Waters of the United States" include surface waters and wetlands (inundated or saturated areas that support vegetation typically adapted to wet conditions) as defined in 33 CFR Part 328.3. Impacts to waters of the U.S. fall under the jurisdiction of the USACE through Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344) and under the jurisdiction of the NCDEQ through the Section 401 Water Quality Certification Process (NC General Statutes Chapter 143 Article 21, Part 1). Sometimes it is obvious that no streams or wetlands will be affected by a project based on its location (e.g., densely developed urban environment) or project type (e.g., installation of sidewalk). Review ATLAS for streams or other water bodies that may be present within the project scoping study area. An NRTR will be prepared during project development to fully identify and evaluate impacts to these resources. For the purposes of project scoping, use available data from ATLAS Major Hydrography data to calculate potential impacts to waters of the U.S. from the express conceptual design right of way limits. Note impacts to wetlands to the nearest 0.1 acre and to streams to the nearest 10 feet. Generally, a project may require an Individual Section 404 Permit (IP) if it would impact more than 1/2 acre of non-tidal Waters of the US or 1/3 acre of tidal waters or if there would be more than 300 linear feet of stream impacts.

Question 31: The Office of Hydropower Licensing, a division of the Federal Energy Regulatory Commission (FERC), regulates and licenses non-federal hydropower projects. NCDOT generally coordinates directly with the permit holder (i.e., Duke Energy) to obtain a conveyance agreement for implementing projects that impact FERC-regulated waterways. Review ATLAS to determine if there are FERC resources within the project scoping study area.

Question 32: The US Coast Guard (USCG) administers Section 9 of the Rivers and Harbors Appropriation Act of 1899 and the General Bridge Act of 1946, which regulate construction of new bridges or causeways or reconstruction/modification of existing bridges or causeways over navigable waters. Review NCDOT's [USCG Stream Coordination Map](#) to determine if the project impacts a navigable waterway that may require coordination and permitting with the USCG.

Question 33: Determine if lands or waterways in the project scoping study area are under the jurisdiction of another federal agency, which may require coordination or permitting during planning and design of the project.

There are four National Forests in North Carolina including 1.25 million areas of public lands. National Forests in North Carolina are:

- Nantahala National Forest (Macon, Graham, Cherokee, Jackson, Clay, and Swain Counties)
- Pisgah National Forest (Transylvania, McDowell, Haywood, Madison, Caldwell, Burke, Yancey, Buncombe, Avery, Mitchell, Henderson, and Watauga Counties)
- Uwharrie National Forest (Montgomery, Randolph, and Davidson Counties)
- Croatan National Forest (Craven, Carteret, and Jones Counties)



Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments) requires coordination with federally recognized tribes on Federal projects that may impact tribes. There is currently one federally recognized tribe with property in North Carolina. The Eastern Band of Cherokee Indians is a federally recognized sovereign nation with lands in Swain, Jackson, Haywood, Cherokee, and Graham Counties. In addition, projects in one of 27 counties, as identified on NCDOT's Agency Merger Contact Map, should include general coordination with EBCI. Review the [Division Resource Map](#) to determine if the project is within 1,000 feet of EBCI lands.

Eastern North Carolina is one of the most militarily dense areas of the United States, so it is possible that coordination with a military installation will be necessary in the course of an NCDOT project. There are nine stand-alone federal military installations in North Carolina. They are listed by NCDOT Division below and shown on Google Maps:

- Division 1 – USCG Air Station Elizabeth City (Pasquotank County); Harvey's Point Defense Testing Facility (Perquimans County)
- Division 2 – Cherry Point Marine Corps Air Station (Carteret County)
- Division 3 – Marine Corps Base Camp Lejeune (Onslow County); New River Marine Corps Air Station (Onslow County); Military Ocean Terminal at Sunny Point (Brunswick County)
- Division 4 – Seymour Johnson Air Force Base (Wayne County)
- Division 5 – Camp Butner National Guard Training Center (Granville County)
- Division 6 – Fort Bragg/Pope Air Force Base (Cumberland/Hoke Counties); Camp McCall (Richmond/Scotland/Moore Counties)

Check if the project may have any of the following:

- Potential right of way impacts to a military installation.
- Impacts to traffic operations on or adjacent to a military installation.
- Need for surveys to be conducted on a military installation.

Tennessee Valley Authority (TVA) service area includes Avery, Burke, Cherokee, Clay, McDowell, and Watauga Counties in North Carolina, where they manage four reservoirs – Appalachia (Cherokee County), Fontana (Swain and Graham Counties), Hiwassee (Cherokee County), and a portion of Chatuge (Clay County), as well as more than 1,500 acres of public land around the reservoirs. ATLAS to determine if the project crosses a TVA area.

Question 34: A geoenvironmental assessment will be completed during project development. For this screening, note any potential hazardous properties (such as industrial sites, landfills, junk yards, gas stations, dry cleaners, etc.) within the project scoping study area based on review of aerial photography or ATLAS data (Gas Stations, Regional Underground Storage Tanks (UST), and Active Permitted Landfills data files). Also refer to [NCDEQ Site Locator Map](#).

Question 35: Other issues may affect project decisions and should be considered during project development. Noteworthy items could include:

- Community facilities (fire stations, EMS, schools, medical facilities, places of worship)
- State-owned lands, conservation lands, or other non-federal managed lands
- Transit facilities or routes
- Designated bicycle routes
- Existing or planned greenways
- Nearby airport or railroad



Spatial data for several of these are available from ATLAS (Fire Stations, Emergency Medical Services, Public Schools, Non-Public Schools, Education, Colleges and Universities, and State-Owned Lands data sets) or will show up on Google Maps. Others, such as transit facilities and routes, designated bicycle routes, and existing/planned greenways, may be researched through local government websites.

Risk Assessment

Risks are defined as uncertainties that, if they occur, would be an obstacle or opportunity in meeting the project objectives. Risk Management is a proactive process with the goal to:

- minimize potential obstacles that may negatively impact a project's objectives (scope, schedule, budget, quality, and commitments) and
- maximize the ability to capitalize on opportunities that may improve project delivery.

Early identification and continuous management of risks reduces negative impacts, promotes timely decision making, and improves our success in meeting project objectives and delivering what we promised.

The purpose of risk management in the Project Initiation Phase is to begin identifying potential uncertainties that may impact the project scope, schedule, budget, quality, or commitments because projects that experience major changes in these areas later may be required to go through reprioritization. Early identification of these risks allows the project team to execute mitigation strategies that can prevent or decrease the significance of the impact.

During the development of the Project Scoping Report (PSR), identify and assess risks on the PEC Checklist. Review the risks identified and select the corresponding impact level (Low, Medium, or High) appropriate for the project. If the risk is not applicable to the project, the individual or the team can select "N/A". A summary of the identified risks should be included on the Project Initiation Form.

The following risks should be evaluated and rated:

- Project may be subdivided into smaller projects or combined into a larger project
- Identified Purpose and Need may require updating
- Complex design (i.e., first of a kind, prototype, special and unproven technology) may impact schedule
- Adequate funding may not be available
- Additional impacts (more than currently indicated) to historic/archaeological preservation site (Section 106)
- Additional impacts to wetlands, floodplains, and/or federally protected species
- Significant stakeholder involvement may result in scope, schedule, budget, or commitment changes
- Site contamination/hazardous waste may be discovered
- Scope change/creek is likely
- Project limits/area may increase
- Quantity and complexity of ROW impacts may increase costs and/or delay schedule
- Level of utility coordination/relocations may increase cost and/or delay schedule

The Value Management Office (VMO) will be automatically notified when a PSR is completed so they can review the risks to understand the level of risk exposure the project has and determine if the project would benefit from having a formal Risk Assessment Study (RAS) in a future stage. On these projects, the VMO will coordinate with the CDE (or designee) or Project Manager to determine when a formal RAS is appropriate.



See the Risk Management Manual for additional information and guidance on risk.