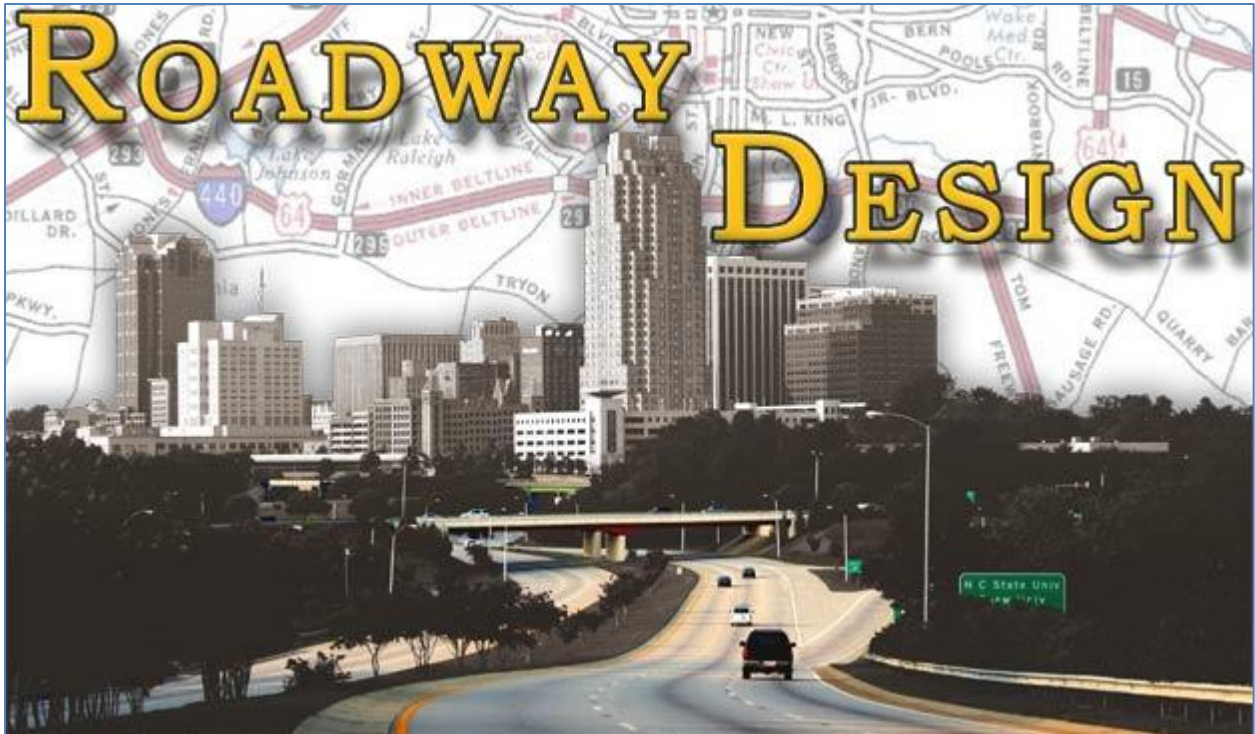


**STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
ROADWAY DESIGN UNIT**



**GUIDELINES TO BE USED BY CONSULTANTS FOR PRODUCING  
ROADWAY PLANS**

**October 1, 2015**

These guidelines were established to aid the Consultant, hereby called the “Engineer” in understanding the expectations of the North Carolina Department of Transportation (NCDOT), hereby called the “State” throughout the roadway design process. Performance evaluations will be made at various points throughout the design process. Please refer to the Consultant Evaluation Section contained elsewhere within this document.

## **I. GENERAL INFORMATION**

### **A. PROJECT CONTACT**

All inquiries concerning the project shall be directed to the Roadway Design - Project Engineer or Project Design Engineer. **THE ENGINEER SHALL NOT CONTACT INTERNAL UNITS OF THE STATE UNLESS DIRECTED SO BY THE ROADWAY DESIGN – PROJECT ENGINEER OR PROJECT DESIGN ENGINEER.** This policy is effective throughout the life of the project.

All project submittals shall be submitted to the Roadway Design – Project Engineer.

### **B. PLAN CONTROL AND STANDARDS**

All plans, designs, specifications and estimates shall conform to the State's standard practices for highway construction, which are based on the latest edition of the following materials:

1. AASHTO - A Policy on Geometric Design of Highways and Streets
2. AASHTO - Roadside Design Guide
3. AASHTO - Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT  $\leq$  400)
4. NCDOT - Policy and Procedure Manual for Roadway Design
5. NCDOT - Design Manual for Roadway Design
6. NCDOT - Standard Specifications for Roads and Structures
7. NCDOT - Roadway Standard Drawings
8. NCDOT - Subregional Tier Guidelines
9. NCDOT - Resurfacing, Restoration and Rehabilitation Guide (3-R Guide)
10. NCDOT - Subdivision Roads Minimum Construction Standards
11. NCDOT - Policy on Street and Driveway Access to North Carolina
12. Highway Capacity Manual (All associated software shall be used as applicable, including any modifications as may be directed by the State during the life of this project, see Congestion Management Guidelines for more details)
13. MicroStation and GEOPAK software information can be found on the NCDOT CADD Consultant Resources website (see Appendix F for the website address).

### **C. INFORMATION TO BE PROVIDED BY THE STATE TO THE ENGINEER (If Available)**

1. An Approved Project Environmental Document
2. Updated Traffic Data
3. Survey Data
4. Basic Design Criteria and Congestion Management Recommendations
5. Pavement Designs (Preliminary and Final)
6. Project Schedule for Submittals, see Appendix D
7. Roadway Geotechnical Subsurface Investigation Recommendations, see Appendix D
8. Copy of Public Hearing Map and/or Preliminary Designs
9. NCDOT Workspace for MicroStation Files
10. Memos Concerning Design and/or Policy Changes will be available via NCDOT Websites and/or email

11. All other data in the hands of the State that can be released that would assist the Engineers in the accomplishment of work on the project.
12. The latest available information can be found on the NCDOT Roadway Design website, see Appendix F for the website address.

**D. SERVICES TO BE PROVIDED BY THE ENGINEER TO THE STATE**

1. Prior to any submittal to the State, the Engineer responsible for the design shall carefully check all designs and computations.
2. Detailed design assumptions will be provided by the Engineer prior to beginning design on the project. These design assumptions are subject to change during project development. The current NCDOT Design Manual criteria shall be utilized during design.
3. Effective October 1, 2015, the Engineer shall provide the State with PDFs and **1** hard copy of the plans for each submittal as needed for review of the work throughout the life of the contract.
4. All printed plans submitted by the Engineer shall be printed on white bond paper (OCE Bruning 45 9022 Opaque, 20 lb. or an equivalent thereof). All full size reproducible copies shall be on 22" x 34" sheets and all half size reproducible copies shall be on 11" x 17" sheets. All cross-sections containing 30 or more sheets shall be on 11" x 17" sheets. Cross-sections containing less than 30 sheets will be on 22" x 34" sheets. A 3" border is required on the left end of all 22" x 34" sheets. Plans that do not meet these requirements will not be accepted.
5. The Engineer shall provide PDFs of the plans for all submittals. For more information on the format requirements of the PDFs, see Appendix B.
6. Estimated quantities at TIP Cost Estimate milestones. Specifics are detailed in the submittal guidelines contained within this document.
7. Wall envelopes should be provided for all retaining walls. Noise walls envelopes should only be provided upon request.
8. Special Details need to be requested by the Engineer to the Project Design Engineer within the Roadway Design Unit as they are identified.
9. The Engineer shall attend all meetings, consultations, and field inspections deemed necessary by the State.
10. The Engineer shall provide the State with electronic files of the plans and cross sections at all stages in the design process. For more information on Electronic File Submittals, see Appendix B.
11. The Engineer shall provide the State electronically sealed and signed plans which conform to the NCDOT eSignature Policy. This policy can be found in the Guidelines Section of the NCDOT Private Engineering Resources website (see Appendix F for the website address). For more information on the format of electronically sealed and signed plans, see Appendix B.

## II. CONTRACT INFORMATION

**Prior to any work being completed on a project, an engineering agreement shall be in place for justified work on the project.**

All projects shall be advertised for Right of Way and Final Plans. If there is a significant gap between the Right of Way and the LET dates, the phases may be scoped separately. Limited Services Agreements may be utilized on an “as-needed basis” to speed up the project delivery process.

## III. RIGHT OF WAY PLAN PREPARATION SUBMITTAL GUIDELINES

### A. DESIGN ASSUMPTIONS SUBMITTAL

The Engineer shall submit for review, an electronic copy of the design assumptions with the associated typical sections.

Prior to beginning the design, the Engineer shall submit detailed design assumptions for approval by the State as shown on the project schedule (see Appendix E). Design assumptions not in compliance with AASHTO should be brought to the State’s attention for evaluation of a design exception. Design Exception requests shall be included in the Preliminary Plan (25% Plan) Review Submittal.

### B. LINE AND GRADE (15% PLAN) REVIEW SUBMITTAL

The Engineer shall submit PDFs and **1** hard copy of the plans and all electronic files needed to review and reproduce additional hard copy sets of the plans. For more information on the format of these PDFs and electronic file submittals, see Appendix B.

The Engineer shall establish the most cost-effective preliminary horizontal and vertical alignments for the roadway including interchange and intersection layouts. Interchange configurations (if applicable) should be reviewed and approved by the State prior to submitting the preliminary review plans. For more information about Interchanges, see Appendix C.

The Engineer shall prepare line and grade plans (15% submittal) to include but not limited to the following:

1. Plan Sheets with Horizontal Design for all Alignments
  - Horizontal curve data with superelevation and runoff lengths for each curve.  
The design speed should be noted when the horizontal curve does not meet the proposed design speed.
  - The design engineer should make sure the beginning and end of each proposed alignment ties to the best-fit alignment even if only segments of the best-fit alignment are used.
  - Proposed Sag and Crest Locations identified on plan sheets.
    - Existing contours that have been generated by the PEFs hydraulics engineer should be reflected on the set of plans that will be sent to the Hydraulics Unit.
2. Profile Sheets with Vertical Design for all alignments
  - Existing and Proposed profiles for the mainline and intersecting roads.
  - Vertical curve data contained on the profile sheets. The design speed should be noted

when the vertical curve does not meet the proposed design speed.

3. The Engineer shall remove the note on the Title Sheet "FOR REVIEW ONLY, NOT FOR UTILITY OR HYDRAULIC DESIGN" and replace it with "15% APPROVED PLANS" for this submittal.
4. To ensure compliance with Board Rule [21 NCAC 56.1103 \(c\)](#) which pertains to Exceptions to Required Certifications and [21 NCAC 56.1103 \(d\)](#) which addresses Electronically Transmitted Documents, the current use of the "Preliminary Plans" sticker/label should be replaced with a new label that reads, "Document Not Considered Final Unless All Signatures Completed." This new label will become a permanent part of the document and will maintain validity prior to and after electronic signature. This note has been deemed by the Board as substantially the same as the other exception statements in paragraph .1103(c). This same label (Document Not Considered Final Unless All Signatures Completed) should be placed in all other CADD files that contain engineering drawings, specifications, or reports. The primary concern is when CADD files are transmitted electronically without any exception label, they may be improperly used and thus jeopardize the safety of the public. The Engineer can meet compliance by simply placing the label somewhere in the CADD file on a scratch level so that it will never plot.

**Plans for this submittal shall NOT be accepted until all the above requirements are met.**

### **C. PRELIMINARY PLAN (25% PLAN) REVIEW SUBMITTAL**

The Engineer shall submit PDFs and **1** hard copy set of the plans with cross sections. For more information on the format of these PDFs, see Appendix B.

The Engineer shall provide all electronic files needed to review and reproduce a hard copy set of plans and the associated engineer's estimate. For more information on electronic file submittals, see Appendix B.

The Engineer shall establish the most cost-effective preliminary horizontal and vertical alignments for the roadway including interchange and intersection layouts. Interchange configurations (if applicable) should be reviewed and approved by the State prior to submitting the preliminary review plans. For more information about Interchanges, see Appendix C.

The Engineer shall prepare preliminary plans (25% submittal) to include but not limited to the following:

1. All items listed for the previous submittal.
2. Title Sheet
3. Typical Sections including the pavement schedule labeled Preliminary or Final Pavement Schedule.
4. Plan Sheets with Horizontal Design for all Alignments
  - Proposed design for the roadway, intersections, and interchanges (if applicable)

- Horizontal curve data contained on the plan sheets
  - The design engineer should make sure the beginning and end of each proposed alignment ties to the best-fit alignment even if only segments of the best-fit alignments are used.
  - Driveways with grades of 10% or greater shall have a horizontal and vertical alignment provided.
  - Preliminary right of way and easement limits, no monuments, markers or flags are needed for this submittal.
  - Proposed guardrail design
  - Preliminary slope stake lines
  - Proposed Sag and Crest locations identified on plan sheets as well as contours reflected on the set of plans that will be sent to the Hydraulics Unit. Contouring will be provided by the PEFs hydraulics engineer.
  - Superelevation with arrows shown and increment dimension. The superelevation and runoff lengths for each curve should be noted under the curve data. The design speed should be noted if the curve does not meet the proposed design speed.
  - Final Survey file information with appropriate levels turned off.
  - Delineation of wetlands and jurisdictional streams.
5. Profile Sheets with Vertical Design for all alignments
    - Existing and Proposed profiles for the mainline and intersecting roads.
    - Vertical curve data contained on the profile sheets. The design speed should be noted when the vertical curve does not meet the proposed design speed.
    - All Y line grades shall have mainline stations & offsets and edge of pavement elevations shown at the tie points.
    - If the project requires a resurfacing grade, this should be submitted along with control point calculations for review.
  6. Cross Sections
    - Preliminary cross sections shall be shown for all proposed construction. The cross-sections must be generated using corridor modeling.
    - Station labels shall be provided below the cross section templates.
    - The existing ground elevation shall be provided in a visible location on the cross section template at the center line of the alignment.
    - Superelevation shall be labeled on all cross section templates.
    - Cross sections shall contain grid lines at (5 or 10) foot intervals.
    - Grid combinations shall be discussed and approved by the State prior to preparing cross sections.
    - Bar scale shall be provided on all cross section sheets.
    - If it has been determined that an on-site detour will be utilized after discussions with the Roadway Design Engineer, then the cross sections shall include temporary slopes for the detour.
  7. Preliminary Structure Recommendations – Two (2) Copies (if applicable)
  8. Letter stating minimum grade required to achieve hydraulic design criteria or that the proposed grade is not hydraulically controlled.
  9. Design Exception Checklist and/or Design Exception Request
  10. Preliminary Earthwork Summary
  11. Sight Distance Calculations at bridges, intersections, and other obstructions
  12. Vertical Clearance Calculations (if applicable)
  13. Gore Calculations for Ramp/Loop Interchange Designs (if applicable)
  14. Shear Point Diagram (if applicable)

15. Retaining and/or Noise Walls  
Provide Retaining and/or Noise wall horizontal alignment as approved by the Roadway Design Project Engineer. (if applicable)
16. The Engineer shall identify land-locked properties and provide the location of any proposed service roads (if applicable). A Service Road study shall be completed by the Engineer before the Service Road is approved to be placed on the plans.
17. On-Site Detour and/or Service Road Alignments  
If it has been determined that an on-site detour and/or service road will be utilized, after discussions with the Roadway Design Project Engineer, then the horizontal and vertical alignments shall be provided on the plan sheets.
18. Preliminary Construction Phasing Concept – Narrative format
19. The Engineer shall provide written documentation outlining the comments made by the State and provide a detailed explanation on how that comment was addressed.
20. Project Coordination Checklist (if applicable)
21. The 2012 Review List for Preliminary Plans found on the NCDOT Contracts Resources website (see Appendix F for the website address).
22. The Phase Submittal Form found on the NCDOT Roadway Design Resources website (see Appendix F for the website address).

**Plans for this submittal shall NOT be accepted until all the above requirements are met.**

The Engineer shall submit revised preliminary plans (25% Plan) as soon as they have the comments addressed from the State's first review. The Preliminary Plan (25% Plan) Approval/Distribution Submittal date is when the preliminary plans need to be approved in order to maintain the project schedule.

#### **D. PRELIMINARY PLAN (25% PLAN) APPROVAL/DISTRIBUTION SUBMITTAL**

The Engineer shall submit PDFs and **1** hard copy set of the plans with cross sections. For more information on the format of the PDFs, see Appendix B.

The Engineer shall remove the note on the Title Sheet "15% APPROVED PLANS" and replace it with "25% APPROVED PLANS" for this submittal.

The Engineer shall provide all electronic files needed to reproduce a hard copy set of plans and the associated engineer's estimate. For more information on electronic file submittals, see Appendix B.

If applicable, the Engineer is responsible for contacting the Hydraulics Unit to set up a Pre-Design Meeting. Dates for all hydraulic design submittals should be obtained at this meeting. Upon completion of hydrological studies, the Engineer shall design all cross drains, ditches, storm systems etc. as required by the Hydraulics Unit. The Engineer shall submit 1 copy of Bridge and/or Culvert Survey Report(s), all hydraulic calculations, and 1 copy of a full size set of plans to the Hydraulics Unit for review and approval (if not previously submitted).

## E. 65% PLAN SUBMITTAL

The Engineer shall submit PDFs and 1 hard copy set of the plans with cross sections. For more information on the format of these PDFs, see Appendix B.

The Engineer shall provide all electronic files needed to review and reproduce a hard copy set of plans and the associated engineer's estimate. For more information on electronic file submittals, see Appendix B.

Prior to submission of the 65% Plans, the Culvert and/or Bridge Survey Report(s) and drainage design shall be approved by the State. All drainage items shall be shown on the Field Inspection Plans.

The Engineer shall prepare 65% Roadway Plans to include but not limited to the following:

1. All items listed for previous submittals
2. Final pavement design incorporated (if available)
3. Proposed right of way and easements are to be appropriately labeled on the plans.  
All right of way and easement points will be flagged with an offset station and distance. If the monument or marker is located at a property line or existing right of way, the flag shall provide a station and the offset shall be EX. R/W or EX. P/L.
4. Permanent Utility Easements (PUE) as requested by the NCDOT Utilities Unit.
5. The location and size of all drainage structures and systems required for complete drainage of the project.
6. The location of slope stake limits and construction limits including berm or lateral ditches and channel changes shall be shown.
7. Details for all drainage ditches shall be included.
8. Property lines are to be tied to the proposed centerline for construction.  
The Engineer will be required to tie the properties if Location & Surveys is a part of their scope of work; otherwise, the State will provide property tie information. All affected parcels must show property owner names, deed book information and parcel numbers.
9. The existing right of way lines of public roads within the project limits.
10. Roadway Geotechnical Recommendations shall be incorporated into the Roadway plans.
11. Construction phasing narrative
12. The Engineer shall provide a preliminary estimate with quantity calculations so it may be provided to the Division Construction Engineer.
13. Earthwork Summaries.
14. A copy of the FDFI or CFI field inspection questions found on the NCDOT Roadway Design Resources website (see Appendix F for the website address).  
The Engineer shall select questions from the list that apply directly to the project. The Engineer may also incorporate additional questions into this list as needed.
15. The Engineer shall provide written documentation outlining the comments made by the State and provide a detailed explanation on how the comment was addressed.
16. Project Coordination Verification Checklist (if applicable) found on the NCDOT Roadway Design Resources website (see Appendix F for the website address).
17. The 2012 Review List for Preliminary Plans found on the NCDOT Contracts Resources website (see Appendix F for the website address).
18. The Phase Submittal Form found on the NCDOT Roadway Design Resources website (see Appendix F for the website address).



19. Remove and replace the “25% APPROVED PLANS” note with “65% PLANS” on the title sheet.

**Plans for this submittal shall NOT be accepted until all the above requirements are met.**

#### **F. FINAL DESIGN OR COMBINED FIELD INSPECTION PLAN DISTRIBUTION SUBMITTAL**

The Engineer shall submit PDFs and **1** hard copy set of the plans with cross sections. For more information on the format of the PDFs, see Appendix B. The Engineer shall also send the appropriate Division Engineer 6 sets of plans, 2 sets of cross-sections and Approved Field Inspection Questions that apply to the project. We suggest using some form of two-day mail service for print distribution.

The Engineer shall provide all electronic files needed to reproduce a hard copy set of plans and the associated engineer’s estimate. For more information on electronic file submittals, see Appendix B.

The Engineer shall prepare the Final Design or Combined Field Inspection Plans to include all items needed for the previous submittals.

Remove and replace the “65% PLANS” note with “DFDI PLANS” or “CFI PLANS” on the title sheet.

The State will set a date for the Final Design or Combined Field Inspection and notify the appropriate personnel involved.

#### **G. 75% PLAN SUBMITTAL**

The Engineer shall submit PDFs and **1** hard copy set of the plans with cross sections. For more information on the format of these PDFs, see Appendix B.

The Engineer shall provide all electronic files needed to review and reproduce a hard copy set of plans and the associated engineer’s estimate. For more information on electronic file submittals, see Appendix B.

The Engineer shall prepare 75% Roadway Plans to include but not limited to the following:

1. All items listed for previous submittals
2. All comments from the Final Design or Combined Field Inspection incorporated
3. Right of way estimate with updated quantity calculations (a seeding and mulching quantity must be provided for the Roadside Environmental Unit) - For electronic file submittal, see Appendix B.
4. The Engineer shall provide written documentation outlining the comments made by the State and provide a detailed explanation on how the comment was addressed.
5. Project Coordination Verification Checklist (if applicable) found on the NCDOT Roadway Design Resources website (see Appendix F for the website address).
6. The 2012 Review List for Right of Way Plans found on the NCDOT Contracts Resources website (see Appendix F for the website address).

7. The Phase Submittal Form found on the NCDOT Roadway Design Resources website (see Appendix F for the website address).
8. Remove note "DFI PLANS" or "CFI PLANS" from the title sheet.

**Plans for this submittal shall NOT be accepted until all the above requirements are met.**

#### **H. RIGHT OF WAY PLAN DISTRIBUTION SUBMITTAL**

The Engineer shall submit PDFs and **1** hard copy set of the plans with cross sections. For more information on the format of the PDFs, see Appendix B. The Engineer shall submit a right of way estimate which reflects the revisions noted from the 75% review submittal.

The Engineer shall provide all electronic files needed to reproduce a hard copy set of plans and the associated engineer's estimate. For more information on electronic file submittals, see Appendix B.

**The Engineer shall NOT begin the Final Plan Design Phase until authorized by NCDOT**

#### **I. RIGHT OF WAY REVISION AND DESIGN REVISION SUBMITTALS (if applicable)**

The Engineer shall submit PDFs of the plans. For more information on the format of the PDFs, see Appendix B.

The Engineer shall provide all electronic files needed to review and reproduce a hard copy set of plans. For more information on electronic file submittals, see Appendix B.

The Engineer shall complete the necessary Right of Way Revisions in accordance with the requested letter and submit revised Plan Sheet(s) to the State within 14 calendar days.

The Engineer shall be required to make all plan revisions including, but not limited to: revisions to the proposed right of-way and/or easements, owners names, etc. as requested by the State. When revisions are made to the Right-of-Way plans, the Engineer shall place a descriptive revision note in the revisions block of the sheet as follows:

ROW REV. - February 14, 2015 - Revised the TCE along Parcel 5. (Initials of Engineer)

**These notes shall remain on all subsequent plans until the 100% Plan Submittal.**

## IV. FINAL PLAN PREPARATION SUBMITTAL GUIDELINES

### A. 90% PLAN SUBMITTAL

The Engineer shall submit PDFs and **1** hard copy set of the plans with cross sections.

The Engineer shall provide all electronic files needed to review and reproduce a hard copy set of plans and the associated engineer's estimate. For more information on electronic file submittals, see Appendix B.

The Consultant shall prepare 90% Roadway Plans to include but not limited to the following:

1. All items listed for previous submittals
2. Quantity Calculations, estimate and associated estimate design files (if applicable)
3. Earthwork Balance Card
4. Summary of Drainage Items
5. Summary of Guardrail (Permanent, Temporary, and Future)
6. Summary of Pavement Removal
7. Earthwork Summary Sheet
8. Geotech. Summary Table(if applicable)
9. Special Detail Request
10. Parcel Index Summary, if more than two plan sheets.
11. If applicable, a copy of the Pre-Let Field Inspection questions found on the NCDOT Roadway Design Resources website (see Appendix F for the website address).  
The Engineer shall select questions from the list that apply directly to the project. The Engineer may also incorporate additional questions into this list as needed.
12. The Engineer shall provide written documentation outlining the comments made by the State and provide detailed explanation on how the comments were addressed.
13. Project Coordination Verification Checklist (if applicable) found on the NCDOT Roadway Design Resources website (see Appendix F for the website address).
14. The 2012 Review List for Final Plans found on the NCDOT Contracts Resources website (see Appendix F for the website address).
15. The Phase Submittal Form found on the NCDOT Roadway Design Resources website (see Appendix F for the website address).

**Plans for this submittal shall NOT be accepted until all the above requirements are met.**

### B. PRE-LET FIELD INSPECTION PLAN FOR DISTRIBUTION SUBMITTAL (if applicable)

The Engineer shall submit PDFs and **1 hard copy set** of the plans with cross sections. For more information on the format of the PDFs, see Appendix B.

The Engineer shall provide all electronic files needed to reproduce a hard copy set of plans and any associated engineer's estimate. For more information on electronic file submittals, see Appendix B.

The Engineer shall also send the appropriate Division Engineer 6 sets of Roadway Plans, 2 sets of Cross Sections, and a copy of the Approved Field Inspection Questions on the same day other copies are sent to NCDOT.

Please add a "PLFI PLANS" note to the title sheet.

The State will set a date for the Pre-Let Field Inspection and notify everyone involved.

### **C. 100% PLAN SUBMITTAL**

The Engineer shall submit PDFs properly formatted for electronic seals and signatures and **1** hard copy set of the plans with cross sections, see Appendix B.

The Engineer does not need to seal the plan sheets for this submittal.

The Engineer shall provide all electronic files needed to review and reproduce a hard copy set of plans and the associated engineer's estimate. For more information on electronic file submittals, see Appendix B.

The Consultant shall prepare 100% Roadway Plans to include but not limited to the following:

1. All items listed for previous submittals
2. Quantity Calculations and Estimate
3. Index of Sheets
  - Submit an 8.5" X 11" sheet for 100% submittal. The information shall be transferred to the 1-A sheet only after review by Contracts and Proposals with any necessary revisions incorporated.
4. List of General Notes
  - Submit an 8.5" X 11" Excel print for 100% submittal. The information shall be transferred to the 1-A sheet only after review by Contracts and Proposals with any necessary revisions incorporated.
5. List of Standard Details
  - Submit an 8.5" X 11" Excel print for 100% submittal. The information shall be transferred to the 1-A sheet only after review by Contracts and Proposals with any necessary revisions incorporated.
6. List of Special Provisions
7. Cost Based Estimate Quantity Breakdown
8. Determination of Lump Sum Grading Warrants
9. The Engineer shall provide written documentation outlining the comments made by the State and provide detailed explanation on how the comment was addressed.
10. Project Coordination Verification Checklist (if applicable) found on the NCDOT Roadway Design Resources website (see Appendix F for the website address).
11. The 2012 Review List for Final Plans found on the NCDOT Contracts Resources website (see Appendix F for the website address).
12. The Phase Submittal Form found on the NCDOT Roadway Design Resources website (see Appendix F for the website address).
13. Remove note "PLFI PLANS" from the title sheet.

All quantity computations shall be completed on the State's standard Calculation of Quantity forms on the NCDOT Contracts Resources website (see Appendix F for the website address).

**Plans for this submittal shall NOT be accepted until all the above requirements are met.**

#### **D. FINAL PLAN SUBMITTAL**

The Engineer shall submit PDFs properly formatted for electronic seals and signatures and **1** hard copy set of plans with cross sections, see Appendix B.

The Engineer shall provide all electronic files needed to review and reproduce a hard copy set of plans and the associated engineer's estimate. For more information on electronic file submittals, see Appendix B.

The Engineer shall submit everything as listed under the 100% Plan Submittal. The Engineer shall also provide written documentation outlining the comments made by the State and provide a detailed explanation on how the comment was addressed.

#### **E. FINAL SEALED PLAN SUBMITTAL (Plans addressing Plan Checking Comments)**

The Engineer shall submit electronically sealed and signed PDFs in the proper format and **1** hard copy set of plans with cross sections, see Appendix B.

The Engineer shall provide all electronic files needed to reproduce a hard copy set of plans and the associated engineer's estimate. For more information on electronic file submittals, see Appendix B.

The Engineer shall prepare Final Sealed Plans addressing ALL the comments from Plan Checking and provide them to the State within 6 calendar days from receiving the comments from Plan Checking. The Engineer shall also provide a written response to each comment from Plan Checking describing how the plans were revised. If for any reason the sealed, signed and dated PDFs cannot be submitted before returning them to Plan Checking, the Engineer shall coordinate delivery with the State.

## CONSULTANT EVALUATIONS

## [APPENDIX A]

The State will complete evaluations on the Engineer at various phases throughout the project life. It is the Engineer's responsibility to produce plans in a timely manner, with minimal assistance and coordination by the State in the development of the Roadway Plans, be responsive to the State's comments, and produce Roadway Plans that are accurate, clear, and complete.

The State will provide evaluations at the following individual phases:

1. Preliminary Plan Submittal  
The Preliminary Plan (25% Plan) Submittal will start this evaluation period. Feedback on the 15% plan submittal will be included in this evaluation.
2. Final Design Field Inspection or Combined Field Inspection Submittal  
The 65% Plan Submittal will start this evaluation period.
3. Right of Way Plan Submittal  
The 75% Plan Submittal will start this evaluation period.
4. Pre-LET Field Inspection (if applicable)  
The 90% Plan Submittal will start this evaluation period.
5. Final Plan Submittal  
The 100% Plan Submittal will start this evaluation period.  
The Contract Standards and Development Unit will provide part of this evaluation.

The State will provide an overall evaluation after all the individual phases are completed. It is the Engineer's responsibility to return the original signed forms to the State for the record. These evaluations shall be used in the selection process for future design contracts.

## ELECTRONIC FILE SUBMITTAL GUIDELINES

[APPENDIX B]

### ELECTRONIC FILE SUBMITTALS

When the Engineer submits Electronic Files to the State, they shall include all the electronic files necessary for the State to review and reproduce a hard copy of plans. The Engineer should also submit all electronic files associated with the engineer's estimate including, but is not limited to, calculation of quantity spreadsheets, earthwork log files and estimate shape design files. Do not submit working or miscellaneous files unless directed to do so by the State. The Electronic Files shall be sent to the State either by the State's File Transfer System (FTS) or by Compact Disc (CD).

The Department is moving towards paperless plan distribution. Two phases of this transition have already taken place. The first phase required final right of way plans and right of way revisions to be sent in PDF format. The second phase required the final plans be electronically sealed and signed plans to be sent in PDF format. These PDFs will be the record set and hard copies of plans will no longer be stored by NCDOT. The last phase will be making PDFs available for every request for information or plan distribution. To that end, the following guidelines shall be adhered to when submitting electronic files:

### DESIGN FILE NAMING CONVENTION

Title Sheet	TIP#_RDY_TSH.DGN
Symbology Sheet	
Control Data Sheets (begin with 1C)	TIP#_LS_1C.DGN
Centerline Coordinate List (if applicable)	TIP#_RDY_1D.DGN
Typical Sections	TIP#_RDY_TYP.DGN
Detail Sheets (if applicable)	
Detour Sheets (if applicable)	
Shear Point Diagram (if applicable)	TIP#_RDY_SPD.DGN
Drainage Summary Sheets	
Earthwork Summary Sheet	
Guardrail Summary Sheet	
Miscellaneous Summary Sheets	
Parcel Index Sheet (if applicable)	
Plan Sheets	TIP#_RDY_PSH#.DGN (use leading 0 for sheets 4 through 9)
Profile Sheets	TIP#_RDY_PFL.DGN
Final Survey	TIP#_NCDOT_FS.DGN (.pln-logical name)
Wetland File	TIP#_NEU_WET or WEX.DGN
Proposed Drainage	TIP#_HYD_DRN.DGN
Cross Sections	TIP#_RDY_XSC.DGN
Cross Section Sheets	TIP#_RDY_XPL.DGN
GPK File	jobrdy.gpk

More information about these naming conventions may be found on the NCDOT CADD Resources for Consultants website and the NCDOT Roadway Design Resources website (see Appendix F for the website addresses).

## **FOLDER STRUCTURE AND FILE MAINTENANCE**

An electronic copy of NCDOT's TIP folder structure may be found on the NCDOT CADD Resources for Consultants website (see Appendix F for the website addresses).

Design files delivered from or shared with other Units [Location and Surveys (FS), Hydraulics (DRN), PDEA (WEX or WET), Geotech (GEO\_env)] shall be placed in their respective directories and not copied into the \Roadway\Proj directory.

The only modifications allowed to the final survey file is changing property owner names and deed information based on official right of way revisions, moving text to make the plans readable and modifying baseline information to comply with the memo dated December 1, 2009.

## **FILE FORMAT**

To establish uniformity among all Engineers and the State, all electronic submittals must meet the following requirements:

- Engineer must use the same versions of MicroStation and Geopak as NCDOT.
- All plans must be coordinately correct.
- The NCDOT Design and Computation Manager databases shall be used for all applicable items including plan sheets.
- The coordinate geometry point numbering convention must be followed.
- The Geopak Data File Transmittal form must be completed.
- Use of all NCDOT Cell Libraries and Leveling DGN Library must be adhered to.

## **PLAN SHEETS**

Design files delivered from or shared with other Units shall be referenced from the appropriate directories and the relative path saved to eliminate NCDOT personnel from having to recreate these connections.

The appropriate levels shall be used for each element in the design files. The NCDOT cell libraries and Design and Computation manager shall be used unless otherwise directed.

All plan sheets (PSH#) shall have all the elements of the plan sheet border from the Design and Computation Manager contained within each file. They shall not be referenced.

The final survey file must be referenced with the logical name (PLN). This ensures all the final survey elements plot at weight = 0 with the exception of the property owner names and deed information. For consistency, the hard copy plans submitted shall be similar in appearance.

The logo and/or firm information for the Roadway and Hydraulic firms shall be placed on title, plan, and profile sheets as well as any sheets requiring seals. These logos must be able to be viewed on PDFs without manipulation by NCDOT personnel.



The seals shall be referenced to the plans sheets for final plans but the file with the seals shall not be transmitted with any submittal.

## PROFILE SHEETS

All profile sheets (PFL#) shall have the plan sheet border contained within each file and shall not be referenced to the files.

## GPK FILE

Only the alignments used for the creation of the plans shall be in this file.

The file shall contain the following information:

- Existing ground profiles for each alignment
- Proposed profiles for each alignment
- Existing horizontal alignments
- Proposed horizontal alignments(w/ties to existing horizontal alignments on both ends)
- Ditch grades provided by Hydraulics
- Alignments used by corridor modeling

\*Note: All Alignments shall start at station 10+00.

Proposed horizontal and vertical alignment names shall match and follow the outline below:

### Standard RDY GPK Alignment Naming Convention

Chain Name	Profile Name	Comment
L	L	
L_LT	L_LT	
L_RT	L_RT	
NBL	NBL	North Bound Lane
SBL	SBL	South Bound Lane
EBL	EBL	East Bound Lane
WBL	WBL	West Bound Lane
Y[#]	Y[#]	# Shall start with 1 and proceed along the project from beginning to end
Y#LPA	Y#LPA	Loop [order, quadrant], if only one Y line the Y# may be omitted
Y#RPA	Y#RPA	Ramp [order, quadrant]
WL[#]	WL[#]_T, WL[#]_B	Wall may have both top and bottom profiles
CD[#]	CD[#]	Collector-Distributor
FLY[#]	FLY[#]	Flyovers, Y# may be added for clarity.
LY_QC	LY_QC	At-grade Intersection [mainline,Y-line_Q, quadrant]
DRW[#]	DRW[#]	Driveways

## **CORRIDOR MODELING DELIVERABLES**

Any files containing graphics elements used to develop the model and the following:

\Roadway\CorridorModeling\

- TIP#\_RDY\_CMD.dgn
- TIP#.ird
- TIP#.rdp
- TIP#.itl
- Shape input files for every alignment
- DTM and TIN file for every alignment
- Combined TIN file named TIP#\_RDY\_combined.tin
- Cross sections for every alignment
- Cross section lay out sheets for every alignment

\Roadway\CorridorModeling\Rddbbs\

- cmjobRDY.alg
- cmjobRDY.xml
- planGraphics.txt

## **CROSS SECTIONS AND LAYOUT SHEETS**

The cross section sheets files (XPL) shall be created as one sheet per model instead of all in the default model using the cross section layout tool ( NCDOT\_English\_XS.xssl ).

The names of the models shall follow the standard naming convention of “XS\_SHEET\*”.

If cross sections are too wide to fit on the appropriately scaled sheet, fold lines shall be utilized. Any deviation from this practice must be discussed with and agreed upon by the Project Engineer.

## PDF FORMATTING FOR SUBMITTALS

PDFs shall be created for all submittals requiring distribution beyond Roadway Design. Each set of PDFs shall meet the following criteria:

- formatted to 22" x 34" in size; projects with cross sections over 30 sheets formatted to 11" x 17" and plot to the appropriate scale
- text searchable (not scanned)
- have a 0 degree rotation
- have the ability to turn any and/or all levels on and off
- conform to the naming convention below
- Combined PDFs should not exceed 50 MB

	TTD	PLAN	PFL	XSC
DP	Combined	Combined	Combined	Combined
CFI				
FDFI		Individual		
RPC				
PER				
PLFI				
FP	Individual Sheets			

Submittal Phase Type		Sheet Names	
DP	Distribute Plans (Approved 25%)	TTD	Title, Typical, Details
CFI	Combined Field Inspection	PLAN	All Plan Sheets
FDFI	Final Design Field Inspection	PFL	Profile Sheets
RPC	Right of Way Plans Complete	XSC	Cross Sections
PER	Permit Plans	PSH	Individual Plan Sheets (PSH04, PSH05, ...)
PLFI	Pre-Let Field Inspection		
FP	Final Plans		

### Naming Convention (see Electronically Sealed and Signed Plans Section for Final Plans)

TIP#\_RDY\_Phase\_Sheet Name.PDF

ex. R2915B\_RDY\_DP\_TTD.PDF

## ELECTRONICALLY SEALED AND SIGNED PLANS

Each plan sheet shall meet the following criteria:

- saved as a separate PDF
- text searchable (not scanned)
- formatted to 22" x 34" in size; projects with cross sections over 30 sheets formatted to 11" x 17" and plot to the appropriate scale
- have a 0 degree rotation

- The file name shall follow the format: **100\_001\_B9999\_RDY\_PSH01** (see breakdown details below). The first eight characters of the name will ensure proper placement.

100	All Roadway plans will be in the 100 series of sheets
001	Sheet number Note: Gaps shall be provided between the numbers to allow for possible additions, ex. 001, 003, 005, etc.)
B9999	TIP number for the particular project
RDY	Roadway
PSH01	Plan sheet number

## PHASE SUBMITTALS

Electronic Files shall be submitted to the State at the following submittals:

- 1. Base Plan Submittal (Only if Base Plan Preparation is on the scope of work)**  
These files are reviewed by Location and Surveys and Photogrammetry Units to ensure conformation to NCDOT Standards.
- 2. Design Assumption Spreadsheet**  
This file is used to determine the design criteria that will be utilized for the project.
- 3. Line and Grade (15% Plan) Review Submittal**  
These files are used by Roadway Design and other units to review all horizontal and vertical alignments.
- 4. Preliminary Plan (25% Plan) Review Submittal**  
These files are used by Roadway Design and other Units to review the preliminary design and initial proposed right of way and easements limits for the project.  
The .gpk file shall be submitted along with the Geopak Data File Transmittal form.
- 5. Preliminary Plan (25% Plan) Approval / Distribution Submittal**  
These files are used by the Hydraulics and Geotechnical Units to begin their respective investigations and designs.
- 6. Any Design Revision**  
These files are used by various NCDOT Units to illustrate design revisions that have been incorporated into the plans after the Preliminary Plan (25% Plan) Approval.
- 7. 65% Plan Submittal**  
These files are used by Roadway Design to review the Hydraulic Design and proposed right of way and easements limits for the project.
- 8. Final Design or Combined Field Inspection Submittal**  
The Division Office uses these files to prepare for the field inspection and review the project for any issues which could affect the proposed right of way.
- 9. 75% Plan Submittal**  
These files shall incorporate all comments from the Final Design/Combined Field Inspection.
- 10. Right of Way Plan Submittal**  
These files are placed on the Project Store Server. The Right of Way Unit will use these files to acquire the needed property to construct the project. The Geotechnical Unit uses these files to prepare the subsurface plans. These files are often requested by other NCDOT Units, Government Agencies and the general public.

**11. Right of Way Revision Submittals**

These files are needed to ensure the State has the latest information resulting from a right of way revision.

**12. 90% Plan Submittal**

On I, R, U projects, these files are used by Roadway Design to review the plans prior to sending them out for Pre-Let Field Inspection. On bridge projects, these files are used by Roadway Design to complete a final review.

**13. Pre-LET Field Inspection Submittal (if applicable)**

The Division Office uses these files to prepare for the Field Inspection and to review the project for any potential constructability issues.

**14. 100% Plan Submittal**

These files shall incorporate all comments from the Pre-Let field inspection. These files are provided to other NCDOT Units as requested (Roadside Environmental Unit, Utilities Unit, Right of Way Unit, etc.).

**15. Final Plan Submittal**

These files are used by Plan Checking to complete the final review of the plans.

**16. Final Sealed Plan Submittal**

The Engineer shall place the “Seal On” cell on all electronic files that were sealed for the final plans when submitting these electronic files.

**17. Construction Revision Submittals**

These files are used to ensure that the State has the latest information resulting from any revisions that are made after the plans have been let to construction.

Electronic Files can be requested at any time by the State and the Engineer shall provide the requested information.

**TRANSPORT ESTIMATE (.csv File)**

All final construction estimates shall be submitted using this application. Before each use, the pay items tables must be updated by downloading them from the Consultant Specific web site under Roadway Design.

More information may be obtained from the NCDOT Roadway Design Resources, NCDOT Roadway Design Private Engineering Firm Resources and NCDOT CADD Resources for Consultants websites (see Appendix F for website addresses).

**INTERCHANGES**

**[APPENDIX C]**

It is advisable to submit preliminary interchange design concepts as soon as possible for review by the State prior to the Preliminary Plan Review submittal. These concepts should include the following information:

1. Preliminary grades for ramps
2. Ramp grade control calculations and sketches in gore areas (See the example in the Design Manual)
3. Vertical clearance calculations and critical points noted
4. Cross sections through the gore area extending an additional 300’ beyond the gore area
5. Super-elevation with arrows shall be shown on the cross sections and plan view
6. Critical sight distance calculations

7. All other related factors that could influence the vertical and horizontal geometry of the interchange

Once the mainline and Y line grades are approved all controls and calculations can be finalized.

Interchange detail sheets shall be prepared at a scale of 1" = 50' on 34" x 68" white bond sheets. These sheets shall meet the same requirements for content as specified for plan sheets. Ground profiles and proposed grade lines for ramps shall be prepared on separate sheets. Ramp stations shall begin at the L line and run toward the Y line. The direction of stationing on ramp profiles shall match the plan sheet.

A cross section layout showing numbered shear points and break points shall be prepared for obtaining field data for earthwork. It is not necessary to use shear sections in diamond interchanges and other ramps that do not depart radically from the L alignment, unless requested by the State. These sheets will be included as 2-series plan sheets.

Slopes inside the gore areas 200' 300'± from nose, should be 6:1 or flatter. Slopes inside the interchange area should be a maximum of 4:1. Topographic conditions, wetlands, property values, and earthwork requirements may dictate steeper or flatter slopes. Interior slopes steeper than 4:1 will require written justification and approval by the State. The entire interchange shall be graded to provide adequate sight distances.

## **SUBSURFACE DATA FOR STRUCTURES AND ROADWAY**

## **[APPENDIX D]**

The State (or Engineer) will provide geotechnical inventory data and recommendations for structures and roadway portions of this project. The State (or Engineer) will also prepare all subsurface profiles for the construction plans on reproducible copies of the Engineer's Preliminary Plan and Profile. The State (or Engineer) will be responsible for all changes to these drawings and furnish the State (or Engineer) the final plans for inclusion in the construction documents. Subsurface recommendations are necessary for the design phase of project plan preparation. These recommendations may affect the following:

### **Project Grade Line:**

In fill conditions, the underlying material and position of the water table may determine the position of the grade line.

In cut conditions, the position of the water table and the usability of the excavated material may affect the grade line. Often the excavation of unsuitable material can be avoided by adjustment of the grade line. Sag vertical curves with the low point in a cut should be avoided.

### **Slopes:**

Slope stability will determine the maximum cut, fill, and end bent slopes to be used on the project. Unless otherwise noted, slopes for projects east of I-95 and/or in Division 4 shall be 3:1 maximum.

**Alignment:**

Since areas with extremely poor subsurface conditions should be avoided, preliminary subsurface reviews should be made during preliminary design. Alternate construction methods are to be considered for poor subsurface conditions during the design of the project. For example, the use of boulevard (extra wide and deep) ditches should be used to lower the existing water table or the use of construction fabric in place of undercut and backfill.

Other items for consideration should be underdrain systems, stone embankment in standing water, select backfill in undercut areas which cannot be drained and settlement times and gauges and/or surcharges in areas with underlying deformable strata. Summaries for underdrains, subsurface drains, rock plating, reinforced soil slopes, settlement gauges, bridge waiting periods, embankment waiting periods, surcharges and surcharge waiting periods shall be provided when needed in the summary sheets in the plans.

**Undercut:**

The limits of undercut shall be shown by cross-hatching in the profile view and on the cross-sections. The approximate depth of undercut shall be indicated by the lower edge of the cross-hatching.

Quantities of undercut shall be computed and shown in the appropriate summaries and pay item list as "undercut excavation". Replacement backfill for undercut shall be computed and added to the embankment plus % column in the Earthwork Summary sheet and Earthwork Balance card.

The limits of shallow undercut shall be shown by shading on the cross-sections. The approximate depth of shallow undercut shall be indicated by the lower edge of the shading. Quantities of shallow undercut and class IV subgrade stabilization shall be computed and shown in the appropriate summaries and pay item list as "shallow undercut" and "class IV subgrade stabilization" respectively. Shallow undercut and class IV subgrade stabilization will be shown as separate lines below the grand total of the Earthwork Summary sheet and Earthwork Balance card.

Subsurface recommendations may require select backfill material to be used in some undercut areas. This quantity shall be computed and added to the pay item list.

Under some conditions, fabric for soil stabilization may be used in lieu of undercutting. The quantity of fabric shall be computed and added to the pay item list.

**PROJECT SCHEDULE [APPENDIX E]  
BRIDGE PROJECT SCHEDULE**

**PROJECT SCHEDULE**

**TIP:** \_\_\_\_\_

COUNTY:  
DIVISION:  
STATE PROJECT:  
F.A. PROJECT:

DESCRIPTION:

RPE:  
RPDE:

ENGINEERING FIRM:  
SUBCONTRACTORS:

SCOPE OF WORK:

Original Schedule Date:  
Revised Schedule Date:

<u>Description</u>	<u>Scheduled Date</u>	<u>Actual Date</u>
Consultant's Notice to Proceed Authorized	_____	_____
Consultant Submits Design Assumptions for Review	_____	_____
Design Assumptions Approved	_____	_____
Consultant Submits 15% Plans For Review	_____	_____
15% Preliminary Plans Approved / Distributed	_____	_____
Consultant Submits 25% Plans For Review	_____	_____
25% Preliminary Plans Approved / Distributed	_____	_____
To Hydraulics (THYD)	_____	_____
From Hydraulics (FHYD)	_____	_____
Consultant Submits 65% Plans For Review	_____	_____
Consultant Submits CFI Plans for Distribution	_____	_____
Combined Field Inspection (CFI) Held	_____	_____
Consultant Submits 75% Plans For Review	_____	_____
Consultant Submits R/W Plans for Distribution	_____	_____
R/W Date - Plans Distributed	_____	_____
Consultant Submits 90% Plans for Review	_____	_____
Consultant Submits 100% Plans for Review	_____	_____
Consultant & Other NCDOT Units Submit Final Plans to Roadway Design Project Design Engr.	_____	_____
Roadway Design Submits Final Plans to Contracts Unit - Plan Checking	_____	_____
Letting Date	_____	_____



## INTERPRETATION OF BRIDGE PROJECT SCHEDULE

1. Consultant's Notice to Proceed  
The Consultant will be authorized to start work for the project on this date.
2. Consultant Submits Design Assumptions for Review  
The Consultant submits the design criteria to Roadway Design for review on this date.
3. Design Assumptions Approved  
The Consultant shall submit revised design criteria to Roadway Design addressing the comments from the first review **PRIOR TO THIS DATE**. Roadway Design wishes to approve the design assumptions on this date.
4. Consultant Submits 15% Plans for Review  
The Consultant submits 15% plans for Roadway Design and other units to review.
5. 15% Plans Approved/Distributed  
The Consultant shall submit revised 15% Preliminary Plans to Roadway Design addressing the comments from the first review **PRIOR TO THIS DATE, usually one (1) week prior to this date**.
6. Consultant Submits 25% Plans for Review  
The Consultant submits the 25% Preliminary Plans to Roadway Design for review on this date. A review meeting will be held approximately two (2) weeks later to go over the plans with the Consultant and other NCDOT Units.
7. 25% Preliminary Plans Approved / Distributed  
The Consultant shall submit revised 25% Preliminary Plans to Roadway Design addressing the comments from the first review **PRIOR TO THIS DATE, usually one (1) week prior to this date**. Roadway Design wishes to approve the 25% Preliminary Plans and distribute them to the Hydraulics Unit, Utilities Unit, and Geotechnical Units on this date.
8. To Hydraulics (THYD)  
This is the same date as 25% Preliminary Plans Approved / Distributed. This is when the Consultant is authorized to start the Hydraulic Design.
9. From Hydraulics (FHYD)  
This is the date that the Hydraulic Design is approved from the Hydraulic Design Unit.
10. Consultant Submits 65% Plans for Review  
The Consultant submits 65% Plans to Roadway Design for review on this date.
11. Consultant Submits CFI Plans for Distribution  
The Consultant submits the required copies of the plans to Roadway Design on this date. Roadway Design will distribute the copies as needed.

12. Combined Field Inspection (CFI) Held  
This is the approximate date of the Combined Field Inspection. The letter that is sent out with the CFI Distribution will contain the actual date.
13. Consultant Submits 75% Plans for Review  
The Consultant submits the 75% Plans to Roadway Design for review on this date.
14. Consultant Submits R/W Plans for Distribution  
The Consultant submits the R/W Plans to Roadway Design for distribution on this date.
15. R/W Date – Plans Distributed  
Roadway Design shall send out the Final Right of Way Plans on this date.
16. Consultant Submits 90% Plans for Review  
The Consultant submits 90% Plans to Roadway Design for review on this date.
17. Consultant Submits 100% Plans for Review  
The Consultant submits 100% Plans to Roadway Design for review on this date.
18. Consultant & Other Units Submit Final Plans to Roadway Design Project Design Engineer  
The Consultant, along with other NCDOT Units, submits Final Plans to Roadway Design for compiling the plans for the Contracts Unit.
19. Roadway Design Submits Final Plans to Contracts Unit – Plan Checking  
Roadway Design shall submit Final Plans to the Contracts Unit (Plan Checking) on this date.
20. Letting Date  
This is the date when the project will be awarded for Construction.

I, R, U PROJECT SCHEDULE

**PROJECT SCHEDULE**

**TIP:** \_\_\_\_\_

COUNTY:  
 DIVISION:  
 STATE PROJECT:  
 F.A. PROJECT:

DESCRIPTION:

RPE:  
 RPDE:

ENGINEERING FIRM:  
 SUBCONTRACTORS:

SCOPE OF WORK:

Original Schedule Date:  
 Revised Schedule Date:

Description	Scheduled Date	Actual Date
Consultant's Notice to Proceed Authorized	_____	_____
Consultant Submits Design Assumptions for Review	_____	_____
Design Assumptions Approved	_____	_____
Consultant Submits 15% Plans For Review	_____	_____
15% Preliminary Plans Approved / Distributed	_____	_____
Consultant Submits 25% Plans For Review	_____	_____
25% Preliminary Plans Approved / Distributed	_____	_____
To Hydraulics (THYD)	_____	_____
From Hydraulics (FHYD)	_____	_____
Consultant Submits 65% Plans For Review	_____	_____
Consultant Submits FDFI Plans for Distribution	_____	_____
Final Design Field Inspection (FDFI) Held	_____	_____
Consultant Submits 75% Plans For Review	_____	_____
Consultant Submits R/W Plans for Distribution	_____	_____
R/W Date - Plans Distributed	_____	_____
Consultant Submits 90% Plans for Review	_____	_____
Consultant Submits PLFI Plans for Distribution	_____	_____
Pre-Let Field Inspection(PLFI) Held	_____	_____
Consultant Submits 100% Plans for Review	_____	_____
Consultant & Other NCDOT Units Submit Final Plans to Roadway Design Project Design Engr.	_____	_____
Roadway Design Submits Final Plans to Contracts Unit - Plan Checking	_____	_____
Letting Date	_____	_____

REVISED 10-1-15

## INTERPRETATION OF I, R, U PROJECT SCHEDULES

1. Consultant's Notice to Proceed  
The Consultant will be authorized to start work for the project on this date.
2. Consultant Submits Design Assumptions for Review  
The Consultant submits the design criteria to Roadway Design for review on this date.
3. Design Assumptions Approved  
The Consultant shall submit revised design criteria to Roadway Design addressing the comments from the first review **PRIOR TO THIS DATE**. Roadway Design wishes to approve the design assumptions on this date.
4. Consultant Submits 15% Plans for Review  
The Consultant submits 15% plans for Roadway Design and other units to review.
5. 15% Plans Approved/Distributed  
The Consultant shall submit revised 15% Preliminary Plans to Roadway Design addressing the comments from the first review **PRIOR TO THIS DATE, usually one (1) week prior to this date**.
6. Consultant Submits 25% Plans for Review  
The Consultant submits the 25% Preliminary Plans to Roadway Design for review on this date. A review meeting will be held approximately two (2) weeks later to go over the plans with the Consultant and other NCDOT Units.
7. 25% Preliminary Plans Approved / Distributed  
The Consultant shall submit revised 25% Preliminary Plans to Roadway Design addressing the comments from the first review **PRIOR TO THIS DATE, usually one (1) week prior to this date**. Roadway Design wishes to approve the 25% Preliminary Plans and distribute them to the Hydraulics Unit, Utilities Unit, and Geotechnical Units on this date.
8. To Hydraulics (THYD)  
This is the same date as 25% Preliminary Plans Approved / Distributed. This is when the Consultant is authorized to start the Hydraulic Design.
9. From Hydraulics (FHYD)  
This is the date that the Hydraulic Design is approved from the Hydraulic Design Unit.
10. Consultant Submits 65% Plans for Review  
The Consultant submits 65% Plans to Roadway Design for review on this date.
11. Consultant Submits FDFI Plans for Distribution  
The Consultant submits the required copies of the plans to Roadway Design on this date. Roadway Design will distribute the copies as needed.

12. Final Design Field Inspection (FDFI) Held  
This is the approximate date of the Final Design Field Inspection. The letter that is sent out with the FDFI Distribution will contain the actual date.
13. Consultant Submits 75% Plans for Review  
The Consultant submits the 75% Plans to Roadway Design for review on this date.
14. Consultant Submits R/W Plans for Distribution  
The Consultant submits the R/W Plans to Roadway Design for distribution on this date.
15. R/W Date – Plans Distributed  
Roadway Design shall send out the Final Right of Way Plans on this date.
16. Consultant Submits 90% Plans for Review  
The Consultant submits 90% Plans to Roadway Design for review on this date.
17. Consultant Submits PLFI Plans for Distribution  
The Consultant submits the required copies of the plans to Roadway Design on this date. Roadway Design will distribute the copies as needed.
18. Consultant Submits 100% Plans for Review  
The Consultant submits 100% Plans to Roadway Design for review on this date.
19. Consultant & Other Units Submit Final Plans to Roadway Design Project Design Engineer  
The Consultant, along with other NCDOT Units, submits Final Plans to Roadway Design for compilation for the Contracts Unit.
20. Roadway Design Submits Final Plans to Contracts Unit – Plan Checking  
Roadway Design shall submit Final Plans to the Contracts Unit (Plan Checking) on this date.
21. Letting Date  
This is the date when the project will be awarded for Construction.

## WEBSITE RESOURCES

[APPENDIX F]

NCDOT Roadway Design Resources

<https://connect.ncdot.gov/projects/Roadway/Pages/default.aspx>

NCDOT Roadway Design Private Engineering Firm Resources

<https://connect.ncdot.gov/projects/Roadway/Pages/Private-Engineering-Firm-Resources.aspx>

NCDOT CADD Resources for Consultants

<https://connect.ncdot.gov/resources/CADD/Pages/default.aspx>

NCDOT Contracts Resources web-site

<https://connect.ncdot.gov/resources/Specifications/Pages/Contracts-Resources.aspx>