Engineering Services

Guidelines & Plan Development Milestone Checklist

Table of Contents

Revision No.	Revision Date	Summary of Changes	Approved by	Approver's Title
00	March 4, 2026	Initial Issuance.	Rebecca L. Chambers, PE Keith Bryant, PE	Division Manager Division Manager

1. INTRODUCTION

1.1 Project Details

- Please fill in the blanks to complete the following information:

PROJECT NAME:	
A/E:	
PROJECT MANAGER:	
PROJECT NUMBER:	

1.2 Document Purpose

- The following guidelines have been established to aid the Engineer/Designer/Manager in understanding the design process as it relates to Engineering Services work.
- These guidelines serve as the general minimum criteria by which standard design activities occur, however it is understood that each project is unique and may require special considerations.
- This document contains 4 distinct review sections that should be completed as the project design progresses. Each review section includes a general overview of intended project status, a list of required submittals, and checklists that detail specific requirements for various aspects of design.
- Each gateway review is required and must be completed by the Project Manager and the entire project team.
- At the end of each review section, a space is provided for "Notes and Assumptions." Please include supporting details to provide background or context on what you indicate on the checklist, even if it might be obvious to you. For example, if a line or section is not applicable, explain: why does it not apply in this particular instance? If your project design includes deviations from Engineering Services/General Services/City of Charlotte/NCDOT standards, elaborate: why is this anomaly necessary or preferred? How have pertinent risks been mitigated? When decisions are made, document: when, why, and with whom did this conversation occur?

2. FEASIBILITY PLANS REVIEW

2.1 General Overview

- This phase will include a concept design, Feasibility Report, high level estimate, draft scope definition memo, initial risk registry for mitigation, initial survey and utility coordination.
- The Consultant shall attend a preliminary kickoff meeting with the Client to ensure that the project goals, objectives, and deliverables are clearly understood and aligned with the City's expectations.
- Please fill in the blanks to complete the following information:

SUBMITTAL DATE:	
A/E:	
REVIEWER:	
REVIEW DATE:	

2.2 Required Submittals

- Use a check mark to indicate completion or select "N/A" if not applicable; if N/A, please provide explanation in section 2.5.

___ _____ Feasibility (Concept Design) Roll Plot

___ _____ Feasibility Report

___ _____ Draft Scope Definition Memo

___ _____ Engineer's Estimate (including quantities/calculations used)

2.3 Exhibit Maps (Concept Design/Roll Plot) Checklist

- Use a check mark to indicate completion or select "N/A" if not applicable; if N/A, please provide explanation in section 2.5.

___ _____ Project Name & Project Number

___ _____ List of graphical scale used

___ _____ North Arrow

___ _____ Proposed vertical and horizontal alignments

___ _____ Proposed traffic lane lines, crosswalks, and stop bars

___ _____ Proposed sidewalk, curb and gutter, and median locations

___ _____ Proposed transit facilities

___ _____ Proposed bicycle facilities

___ _____ Typical roadway sections

___ _____ Critical cross sections as directed by the City's Project Manager

___ _____ Conceptual landscape plans

___ _____ Conceptual storm drainage improvements (including proposed pipes and ditches outside main roadway)

___ _____ Conceptual facilities for compliance with the City of Charlotte Post-Construction Controls Ordinance

___ _____ Major known utilities impacted (overhead and underground)

2.4 Feasibility Report Checklist

- Use a check mark to indicate completion or select "N/A" if not applicable; if N/A, please provide explanation in section 2.5.

___ _____ Cover Page

___ _____ Project Summary

___ _____ Existing Conditions

___ _____ Feasibility Issues and Initial Risk Registry

___ _____ Exhibits of Each Alternative

___ _____ Total project cost estimate for each alternative (prepared in conjunction with City's Project Manager

___ _____ Feasibility Conclusions and Recommendations

___ _____ References

Appendices (as needed)

2.5 Notes and Assumptions

- Please use the next page to include supporting details that provide background or context on what you have indicated on this checklist.

3. PRELIMINARY DESIGN PLANS REVIEW

3.1 General Overview

- Note**:** Survey should be field verified prior to beginning of Preliminary Design with project core team members to assure it is correct and no improvements have been installed since survey was received. All review plans submitted must be 24" X 36" Black-Line (Originals or PDFs). Each sheet should have a "Plans Prepared By:" block and have the stamping "*Preliminary Plans – Do Not Use for Construction*," until the final plan set is issued.
- Please fill in the blanks to complete the following information:

FIELD VISIT (TO VERIFY SURVEY) COMPLETE:	☐
DATE OF VISIT:	
SENT PHOTOS TO PROJECT MANAGER:	☐

- This milestone has been set to ensure the Project Design is proceeding according to IPDS Project Plan, preset design criteria, and sound engineering judgment. At this milestone, conceptual designs should have evaluated multiple alternatives (if applicable) to determine which are the most cost-effective Preliminary Horizontal and Vertical Alignments based on the client's initial scope of work, design criteria and approved design exceptions. If not, the design should not proceed with plan production with cutting sheets.
- With the conceptual design approved, proceed with preparing plans. The design should be checked for constructability, utility conflicts and compliance with Storm Water Services design requirements. To meet this milestone requirement, initial storm drainage design should be completed with preliminary spread calculations and inlet locations with pipe layout and slopes.
- In addition, a written phasing for traffic control should be reviewed by CDOT to ensure the project can be constructed without temporary widening or overnight lane closures. Utility conflicts, above ground and underground, should be highlighted and discussed with the Utility Coordinator.
- Throughout the project limits, cut and fill lines should be imported to identify tree and environmental impacts as well as potential retaining wall or guardrail locations.
- Please fill in the blanks to complete the following information:

SUBMITTAL DATE:	
A/E:	
REVIEWER:	
REVIEW DATE:	

- The Preliminary Design Plans Review should include the following *(see next section)*.

3.2 Required Submittals

- Use a check mark to indicate completion or select "N/A" if not applicable; if N/A, please provide explanation in section 3.4.

___ _____ Updated Design Assumptions or Design Criteria
___ _____ Listing of Required Permits of Special Reviews (select if applicable)
___ _____ Phase I Environmental Site Assessment
___ _____ Historical Agency Review
___ _____ NCDOT Encroachment Agreement
___ _____ 401/404 Permit
___ _____ Erosion Control Permit
___ _____ PSCO
___ _____ Urban Forestry Permit
___ _____ Other
___ _____ Other
___ _____ Verification of Correspondence with Pertinent Utility Companies
___ _____ Vertical Clearance Calculations
___ _____ Preliminary Pavement Design
___ _____ Geotechnical Report (if applicable)
___ _____ Engineer's Estimate (to include itemized storm drainage items)
___ _____ Project Preliminary Design Plans
___ _____ Storm Drainage Calculations to include topo map with drainage areas
___ _____ Environmental Document needed (if project is receiving State or Federal funding)
___ _____ Summary of concerns noted in the Phase I ESA document (if applicable)

___ _____ Final Scope Definition Memo

3.3 Preliminary Design Plans Checklist

- Use a check mark to indicate completion or select "N/A" if not applicable; if N/A, please provide explanation in section 3.4.

___ _____ Verify latest CAD standards and sheet templates are used

___ _____ Update all items from Feasibility design that have changed

A. Title Sheet (use City of Charlotte Standard Cover Sheet)

___ _____ Vicinity Map is "complete" and "accurate;" includes at least two major streets and one intersection. Show North Arrow inside vicinity map.

___ _____ Index of Sheets (varies per project; see suggested layout below)

Suggested Layout:

Sheet 1	Title Sheet
Sheet 2, 2A, 2B, etc. (2 Series)	General Notes, Standard Abbreviations & Various Details (including ramp details)
Sheet 3, 3A, 3B, etc. (3 Series)	Typical Sections, Drainage Summary, other summary tables as needed and directed by the City
Sheets 4 thru XX	Plan & Profile Sheets
Sheets TCP1 thru TCPxx	Traffic Control Plans
Sheets PM1 thru PMxx	Pavement Marking & Signing Plans
Sheets EC1 thru ECxx	Erosion Control Plans
Sheets SIG1 thru SIGxx	Signal Plans
Sheets ITS1 thru ITSxx	ITS Plans
Sheets UC1 thru UCxx	Utility Construction Plans
Sheets UBO1 thru UBOxx	Utilities By Others Plans
Sheets S1 thru Sxx	Structures Plans
Sheets E1 thru Exx	Electrical Plans
Sheets X1 thru Xxx	Cross-Sections Sheets

___ ___ Project Name & Project Number (place in two locations)

- ___ ___ As a heading under the City logo (centered at the top of the sheet)
- ___ ___ Vertically along the right-hand border

___ ___ Standard Specification Date (most current publication of "NCDOT Standard Specifications for Roads & Structures")

___ ___ Signature Block containing City Engineer's approval signature and date (unsigned at this point in the project)

___ ___ List of Graphical Scales used for the project

___ ___ Label Project Name and Number along right side of sheet

___ ___ Add "Preliminary Design Plan" label to top right-hand corner of sheet

___ ___ Level B Utility Survey information incorporated with Survey Data (per ASCE 38-22 and 75-22)

___ ___ Survey Description (complete information in "Survey Prepared By:" block)

___ ___ Project Features: place under Project Name & Number in heading. Below is a comprehensive list of key project features that may be used on the title sheet. Note: this should only include *major* features specific to this type of project. Select from the following:

- ___ ___ Grading
- ___ ___ Concrete Sidewalks
- ___ ___ Concrete Curb Ramps
- ___ ___ Concrete Curb and Gutter
- ___ ___ Concrete Driveway
- ___ ___ Concrete Pedestrian Refuge
- ___ ___ Concrete Truck Aprons
- ___ ___ Concrete Multi-Use Path
- ___ ___ Concrete Bike Ramp
- ___ ___ Milling
- ___ ___ Asphalt Pavement
- ___ ___ Pavement Markings Storm Drainage Roundabout
- ___ ___ Traffic Signal Pedestrian Signals

___ _____ Pedestrian Hybrid Beacon

___ _____ PCSO: choose applicable items from list below:

- ___ _____ Bioretention
- ___ _____ Wet Pond
- ___ _____ Engineered Wetland
- ___ _____ Underground Sand Filter
- ___ _____ Surface Sand Filter
- ___ _____ Underground Pipe Detention
- ___ _____ Dry Pond

___ _____ Signage

___ _____ Guardrail

___ _____ Utilities (water and sewer)

___ _____ Retaining Wall

___ _____ Bridge

___ _____ Structures (type)

___ _____ Decorative Paving/Pavers

___ _____ Location Map (shows project layout on numbered, superimposed sheets to include the following:

- ___ _____ Project Alignment for all proposed construction (include Stations for -L- lines, -Y- lines, detours, etc.)
- ___ _____ Existing Roads and Streets affected by construction (include all: those included in the project scope and those that are not a part of the project)
- ___ _____ Show major proposed work with shading (do not show any associated text or other details)
- ___ _____ Street Names, Route Numbers, Survey Line Names & Numbers
- ___ _____ Alignment equality stations
- ___ _____ Streams and rivers
- ___ _____ Railroads
- ___ _____ City Limits
- ___ _____ Beginning and ending stations for the project

___ _____ North Arrow with survey designation (NAD83 with year designation matching survey info)

B. General Notes (Details and Typical Sections to be shown in the "2 & 3 Series" of sheets)

___ _____ Legend of conventional symbols; ensure line types are shown correctly

___ _____ Provide a list of standards to be used on the project

___ _____ Provide details for retaining walls, non-standard catch basins and culvert improvements

___ _____ Provide details for other non-standard items not covered under NCDOT specs

___ _____ Label detail sheet with description of details included on sheet within the title block

C. Typical Sections (to be shown in the "3 Series" of sheets)

___ _____ Provide Typical Roadway Section(s). Include road name, construction alignment reference identification and stations. Label pavement types, curb & gutter, sidewalk, etc. to match items listed in the Preliminary Material Schedule

___ _____ Provide Material Schedule (Refer to NCDOT Roadway Design Manual Section 3.5.2)

___ _____ Provide Preliminary Drainage Summary

D. Plan and Profile Sheets

___ _____ In general, show Existing Features with dashed and/or "screened" lines and proposed features with heavier solid lines and/or shading. **Use City of Charlotte layering standards.**

___ _____ Sheets are ½ Plan (at the bottom of sheet) and ½ Profile (at the top of the sheet) unless project lends itself to separate plan and profile sheets. The Horizontal Scale should be 1" = 20' and the Vertical Scale should be 1" = 4'. Any variance from these scales should be approved by the **Program Manager**.

___ _____ Existing Plan Survey Features (to be field verified by designer):

___ _____ Streets, roads, driveways, sidewalks (names, labels, etc.)

___ _____ Houses, buildings, garages, sheds (names, labels, etc.)

___ _____ Fences, walls (labels)

___ _____ Trees, shrubs, woods lines, etc. (type and size if pertinent)

___ _____ Utilities (above and below ground; include type, size, and material if known)

___ _____ Storm Drainage Facilities (size, type, and invert elevations)

___ _____ Sanitary Sewer Facilities (size, type, and invert elevations, smart manholes)

___ _____ Water Line Facilities (size, type, and invert elevations, smart manholes)

___ _____ Property Lines, Exist. R/W Lines, Exist. Permanent Easement Lines (Show Monumentation found with label – ex. ½" EIP)

___ _____ Property Owner Information (use City of Charlotte standard parcel block info)

___ _____ Railroads (show tracks to scale)(label ownership)

___ _____ Bodies of water (rivers, creeks, streams, lakes, ponds, etc.) (give name, width, direction of flow, etc.)

___ _____ Any other existing features relative to the project

___ _____ Survey Plan Information (shown at the correct location on the plan sheet)

___ _____ Survey Control Points (symbol, point name, material, N, E, Elev.) (ex. TP-2 (60d Nail) with N, E, and Elev.)

___ _____ Survey Benchmarks (symbol, name, alignment reference, and Elev.) (ex. BM-2 (-L- Sta 10+53 34' Rt.) (Elev. = 750.56')

___ _____ North Arrow

___ _____ Proposed Plan Features

___ _____ Horizontal Alignment(s) Proposed Design/Construction Alignment(s) to include**:**

___ _____ Heavy solid line(s) showing Proposed Alignment (Designate with -L-, -Y- or multiple with –L1-, -Y1-, etc.)

___ _____ Beginning and Ending Stations (with Coordinates) (ex. -L- POT Sta. 10+00.00) (N = , E =)

___ _____ Equality Stations (with Coordinates) (ex. -L- POC Sta. 13+26.54 = -Y- POT Sta. 10+85.63) (N = , E =)

___ _____ Event Point Stations (i.e. PC, PT, PCC, PRC, PINC, etc.)

___ _____ Bearings and Distances on Tangents

___ _____ Horizontal Curve Data (Show in Curve Info. Box)

___ _____ Number each curve and provide delta angle, radius, length of curve, and tangent length) (Optional: chord distance, chord bearing

___ _____ Proposed Plan Improvements such as curb and gutter, sidewalk, driveways, etc. (show with appropriate line weight and shading)

___ _____ Label center of proposed driveways at EOP with width, material, station, and standard (i.e. Prop. 15' Conc. Dwy, Sta. 11+45.80, CLDSM 10.25A)

___ _____ Label tie-in material of driveway if material other than concrete

___ _____ Label pavement widths and tapers/transitions

___ _____ Show the limits of construction by placing slope-stake lines on the plans. (lines should be designated as cut or fill by linetype)

___ _____ Show retaining wall limits if determined necessary

___ _____ Add required tree protection

___ _____ Show pavement removal with appropriate hatching

___ _____ Show accessible ramp locations

___ _____ Show super elevation at correct plan location(s) (if applicable)

___ _____ Show guard rail and retaining wall location(s) (if applicable)

___ _____ Label utility poles to be relocated "by others"

___ _____ Highlight aboveground and underground utilities that conflict with the proposed improvements

___ _____ Show and label preliminary proposed drainage system with structure numbers, pipe material, length, slope and class in both plan and profile

___ _____ Potential/feasible PCSO locations shown on plan sheets (Provide approximate sizing)

___ _____ Preliminary Right-of-Way & Easement lines, and RE parcel numbers shown with standard parcel block information, ensuring to match plats

___ _____ Locations of pavement cores or borings (if needed)

___ _____ Proposed pavement markings shown on plan sheets at this phase

___ _____ Draft signal pole layout (if needed)

___ _____ Match Lines (reference station number and sheet number)

___ _____ Turning Templates at intersections/critical locations (if applicable)

___ _____ Existing Profile Features

___ _____ Dashed Line(s) labeled Existing Grade along -L-, -Y-, etc. (show existing centerline elevations every 25')

___ _____ Existing Drainage or Utility Structures and Pipes (show to scale) (label size, type, material, and top/rim and invert elevations)

___ _____ Proposed Profile Features

___ _____ Vertical Alignment(s) (Show on a project-by-project basis) Proposed Design/Construction Alignments to include:

___ _____ Heavy solid line(s) labeled "Proposed Grade" (designate with -L-, -Y- or multiple with –L1-, -Y1-, etc.)

___ _____ Label proposed grades along grade line, PVC, PVT, and PVI Stations and Elevations

___ _____ Vertical Curves – label PVI station/elevation, K value, algebraic difference in grade, length of curve, low/high point station/elevation

___ _____ Proposed Elevations every 25'

E. Traffic Control (written phasing scheme only)

___ _____ List by phase the proposed approach to accommodating the traffic control during the life of the project. Phases should be consistent with general construction guidelines and practices

___ _____ Show proposed detours if required

F. Signal Plan Sheets

___ _____ Follow all CDOT Implementation requirements for signal plans

___ _____ Traffic Signal Cover sheet per location (embedded within ES title block); Note: this would be sheet SIG-1.

___ _____ Index of Sheets

___ _____ Vicinity Map

___ _____ Any additional information required by CDOT Signal

___ _____ Signal Layout Sheet(s) showing:

___ _____ Preliminary proposed roadway geometry

___ _____ Preliminary pole and equipment locations

___ _____ Signal poles
___ _____ Down guys (as applicable)
___ _____ Signal cabinet
___ _____ Meter base
___ _____ Pull boxes
___ _____ Conduit runs
___ _____ Pedestrian signal poles & buttons
___ _____ Existing and proposed R/W and easements
___ _____ Signal heads and numbering per CDOT phasing
___ _____ Proposed span attachment heights (as applicable)
___ _____ Mast arm or steel pole detail sheets (as applicable)

G. ITS Plan Sheets

___ _____ ITS Cover sheet per location (embedded within ES title block);
Note: this would be sheet ITS-1.
___ _____ Index of Sheets
___ _____ Vicinity Map/Project Locations
___ _____ General Notes and Standards Sheet
___ _____ Traffic Control Notes Sheet (if done outside of typical traffic control)
___ _____ Summary of quantities (may be combined with other sheets if spacing allows)
___ _____ Typical details
___ _____ Individual splice details
___ _____ Fiber Optic Cable Testing Documentation
___ _____ Schematic of fiber cable routing, splicing, and testing
___ _____ Cable Routing Plan sheets
___ _____ Pull boxes
___ _____ Conduit routes
___ _____ Poles
___ _____ Fiber cable size and route
___ _____ Traffic management cameras
___ _____ Ethernet switches

H. Cross-Sections Sheets

___ _____ In general, show Existing Features with dashed and/or "screened" lines and proposed features with heavier solid lines and/or shading. **Use City of Charlotte layering standards.**

___ _____ Scale should be 1" = 5' (Horizontal and Vertical). Any variance from this scale should be approved by the **Program Manager**.

___ _____ Show Existing Ground Line (give existing elevation at construction alignment location(s))

___ _____ Show critical cross sections as identified by the Project Manager at a minimum (locations with large obstacles such as trees, signs, retaining walls, culverts, driveways, or locations with high cut/fill lines)

___ _____ Show Proposed Ground Line (templates with no labeling at this point in the project)

___ _____ Add daylight lines for Cut/Fill slopes

___ _____ Provide proposed elevation at construction alignment location(s)

___ _____ Show proposed retaining wall or guardrail locations

___ _____ Sections should be shown at min. 50' increments (25' increment are required for projects < 1 mile and all sidewalk projects along the construction alignment(s) (i.e.10+00, 10+50, 11+00, etc.)

___ _____ Label alignment designation and station on each cross section (i.e. 10+50 -L-)

___ _____ Check to ensure sight distance requirements have been met (per the design criteria) at intersections and major entrances with large traffic volumes

___ _____ Label existing right-of-way ("R/W")

I. General

___ _____ "Preliminary Plans- Do Not Use for Construction" is noted on all sheets

___ _____ Same project number is shown on all sheets

___ _____ Date plans printed shown in the title block

___ _____ Fill out the title block information.(Drawn by, Checked by, Approved by)

___ _____ Verify latest CAD standards and sheet templates are used

J. Sidewalk & Bike Mileage (measured in miles to the nearest 0.1 and should be counted per side of the roadway to be listed on the Cover Sheet)

☐ Quantity of new sidewalk the project is proposing

☐ Quantity of new SUP the project is proposing

☐ Quantity of new bike lanes the project is proposing

☐ Quantity of new cycle track (each way) the project is proposing

K. Preliminary Utility by Others (UBO) Plans

___ _____ Label all utility conflicts with UBO boxes

___ _____ Include in the construction set as separate plans if needed due to plan sheet clutter

___ _____ Check plans to ensure only work to be performed by others (not the contractor) is indicated with heavy lines and text)

___ _____ Show other pertinent plan information with background or gray-scale symbology

___ _____ Confirm proposed lighting is in ROW/Easement or indicate if not (if applicable)

3.4 Notes and Assumptions

- Please use the next page to include supporting details that provide background or context on what you have indicated on this checklist.

4. RIGHT-OF-WAY PLANS REVIEW

4.1 General Overview

- Note**:** Survey should be field verified again prior to beginning Right-of-Way Plans to assure no improvements have been installed since the survey was received and the last field visit occurred. A cursory review of previous milestone reviews should be completed prior to proceeding with the next milestone review to ensure changes and additions have been updated or corrected.
- Please fill in the blanks to complete the following information:

FIELD VISIT (TO VERIFY SURVEY AND DESIGN) COMPLETE:	☐
DATE OF VISIT:	
SENT PHOTOS TO PROJECT MANAGER:	☐

- At this milestone, final mark-ups and comments from utility companies and Storm Water Services should be fully incorporated into the project design.
- The submittal should include updated detailed plans, drainage (horizontal and vertical), traffic control (including written phasing and associated diagrams), pavement marking, and erosion control plans.
- An updated engineer's estimate must be prepared, including revised real estate costs.
- Project grading limits should be reviewed to determine the total area disturbed; if the area exceeds one acre, an erosion control permit is required. All required permit applications (e.g., 401/404) should be prepared, and any necessary fees and check requests should be submitted. This milestone precedes the preparation of plats and easement exhibits for real estate acquisition.
- Please fill in the blanks to complete the following information:

SUBMITTAL DATE:	
A/E:	
REVIEWER:	
REVIEW DATE:	

4.2 Required Submittals

- Use a check mark to indicate completion or select "N/A" if not applicable; if N/A, please provide explanation in section 4.4.

___ _____ Project Right-of-Way Plans

___ _____ Updated Right-of-Way Plans engineer's estimate

___ _____ Project Special Provisions

___ _____ Final Storm Drainage Calculations

___ _____ ROW/easement quantities (spreadsheet)

___ _____ Final Pavement Design Calculation

___ _____ Permit Applications that do not require final signed plans such as 401/404 permit. Other permits typically wait until final plans are completed. Verify with Project Manager which permit submittals are needed.

___ _____ Ramp Calculations

___ _____ ADA Inventory Spreadsheet

___ _____ ICE review/reconciliation on all projects with construction cost $2.5M or greater

___ _____ Update on list of required Permits or Special Reviews

___ _____ Verification of Correspondence with Pertinent Utility Companies

4.3 Right-Of-Way Plans Checklist

- Use a check mark to indicate completion or select "N/A" if not applicable; if N/A, please provide explanation in section 4.4.

___ _____ Verify latest CAD standards and sheet templates are used

___ _____ Update all items from previous checklist that have changed

A. Title Sheet

___ _____ Update label to Right-of-Way Plans on top right-hand corner

B. Typical Sections & Details (to be shown in the "2 and 3 Series" of sheets)

___ ___ All necessary dimensions shown on pavement, subgrade, shoulders, slopes, centerline, medians, sidewalks, utility strips, curb & gutter, etc.

___ ___ All necessary dimensions shown on pavement, subgrade, shoulders, slopes, centerline, medians, sidewalks, utility strips, curb & gutter, etc.

___ ___ Milling limits shown

___ ___ All slopes shown on pavement, sidewalk, shoulders, subgrade, hinge point grading, ditches, cut & fills

___ ___ All grade points shown

___ ___ All variable limits shown

___ ___ Provide Details for retaining walls, non-standard catch basins, and culvert improvements. (update from previous milestone reviews)

___ ___ Provide Details for special ditches (lateral and berm ditches). Provide alignment, station, offset, and quantities such as drainage ditch excavation, rip rap, and filter fabric (Note: Project Manager may choose to show this information on the plan sheets)

___ ___ Provide Details for other non-standard items not covered under NCDOT Specifications. Some that may be considered are sidewalk taper, pipe trench detail for storm drainage pipe, and pavement overlay or wedging

___ ___ Ramp details

___ ___ Curb return details and profiles (ensure no low points without appropriate drainage)

___ ___ Drainage Summary (Pipes and Structures) (Standard NCDOT or City formats)

___ ___ Update List of standards used on project

___ ___ Update typical sections and material schedule

C. Plan & Profile Sheets: Plan Information

___ ___ Turn off pavement markings on plan sheets since PM plans are created

___ ___ Update the limits of construction by placing slope-stake lines on the plans. (lines should be designated as cut or fill by linetype)

___ ___ Show berm and lateral ditches if required. Insert corresponding ditch details

___ ___ Show and label pipe inlet and outlet devices such as headwalls, endwalls, flared-end sections, false sumps, rip rap and filter fabric requirements and quantities

___ ___ Label radii measured to face of curb

___ ___ Label proposed utility poles to be relocated "by others" at the specified locations indicated by utility companies

___ ___ Guardrail shown & labeled

___ ___ Show and label signal items to be installed by roadway contractor (ped bases, pull boxes, conduit, etc.) Note: if signal is to be included in construction contract, separate signal plan to be provided by CDOT. These items shall be shown, but labels are not required as plan should reference SIG sheets for signal items.

___ ___ Show curb return elevations (if necessary). Label elevation on plan at 10' increments along lip of curb or shown on a curb return profile on a separate sheet

___ ___ Check to ensure all proposed work is clearly indicated. Such items overlooked to this point might include: fence relocations/additions, tree removal/protection & trimming needs, sign relocations/removal/additions, pipes to be removed/plugged/extended/, sealing abandoned wells, driveway reconnections, driveway pipes, etc.

___ ___ Final Right-of-way & Easement lines, and RE parcel numbers shown with standard parcel block information, ensuring to match plats

___ ___ Check to ensure no property has been landlocked with proposed improvements

___ ___ Areas to remain undisturbed with the right-of-way clearly marked

___ ___ Finalize proposed drainage. Label all pipes (parallel and cross-pipes) with size, material, length, slope, and class of pipe in plan view

___ ___ Provide top/rim and invert elevations for all drainage structures in profile view. Label NCDOT or CLDSM standards required (i.e. NCDOT Std. 840.01)

___ ___ Retaining walls shown & labeled

___ ___ Ramps shown accurately on plan sheet with type of ramp labeled and reference to WCR sheet

___ ___ Easements shown accurately (permanent and temporary). Temporary easements should include all needs for removal of trees and for utility

relocation. Temporary Easements needed for only a specific duration (i.e. tree removal) shall be labeled as such.

D. Plan & Profile Sheets: Profile Information

___ _____ Show curb line grades if different from proposed design-line grade line

___ _____ Label proposed edge of pavement elevations for left and right lip lines

___ _____ Show proposed lateral ditches with beginning, ending, and PVI stations and elevations. Label proposed lateral ditch grades

___ _____ Update proposed drainage. Make sure drainage structure number corresponds with that shown in plan view.

___ _____ If a retaining wall is needed show the wall envelope. Ensure that the top, bottom and steps in the wall are accurately shown with station and elevations. Wall profile may be shown on separate sheets.

E. Erosion Control Plans

___ _____ Preferred scale 1"=40'.

___ _____ Erosion Control Notes & Legend Key (use symbology consistent with the Erosion & Sediment Control Planning & Design Manual) (find in PM Handbook References or online at https://www.deq.nc.gov/about/divisions/energy-mineral-and-land-resources/erosion-and-sediment-control/erosion-and-sediment-control-planning-and-design-manual)

___ _____ Erosion Control measures shown on plan view. Erosion control plan must be sufficient to obtain plan approval and required erosion permits from NCDEQ

___ _____ Erosion Control Details - if standard, note standard number on Sheet 2 Series (General Notes and details)

- ___ _____ Temporary Wattle Check Dam/Inlet Protection
- ___ _____ Temporary Silt Fence
- ___ _____ Temporary and Permanent Seeding Specifications
- ___ _____ Other

___ _____ Narrative (if necessary)

___ _____ Construction Sequence (if necessary)

___ _____ Check to ensure all erosion control measures are contained within existing or proposed right-of-way and easements

F. Pavement Marking Plan

___ _____ Pavement Marking Plan preferred scale 1"=40'

___ _____ Legend matches NCDOT pavement marking schedule

___ _____ Legend matches plan view symbology

G. Traffic Control

___ _____ Standard Traffic Control General Notes & Project Notes modified per project

___ _____ Traffic control phasing is consistent with general construction practices

___ _____ Traffic control custom phase drawings and/or CDOT WATCH diagrams correctly referenced per written phasing

___ _____ If on an NCDOT street, be sure notes and work hours are updated for NCDOT requirements. (Note S: add NCDOT Engineer, Note T: change 2' to 5', Revise works hours restricted 6:00 am - 9:00 am and 4:00 pm – 8:00 pm or as directed by NCDOT.)

H. Cross-Sections Sheets

___ _____ Label cut & fill slopes and varying pavement cross slopes

___ _____ Label pertinent proposed elevations such as lip elevations and grade break point elevations

___ _____ Show berm and lateral ditches

___ _____ Show additional critical cross-sections at driveways and other critical areas such as drainage inlets

___ _____ Label any non-typical existing or proposed features such as retaining walls, buildings, headwalls, channel changes, etc.

___ _____ Label Right-of-Way and easement locations on cross-sections

___ _____ If NCDOT street, follow NCDOT Cross Section Guidelines

___ _____ Show volumes for embankments, unclassified excavation, and known undercut excavation on each cross-section

___ _____ Provide dimensions as needed (required on NCDOT streets)

I. Signal Plan Sheets

___ _____ Update signal plans including pole locations signal plans, fiber optic cable splicing plans, and signal & low voltage wiring diagrams

___ _____ Follow all CDOT Implementation requirements for signal plans

J. ITS Plan Sheets

___ _____ Update signal plans including pole locations signal plans, fiber optic cable splicing plans, and signal and low voltage wiring diagrams

K. Utility Construction Plans (Water and Sewer Plans)

___ _____ Check to ensure only work to be performed by the contractor is indicated with heavy lines and text

___ _____ Show other pertinent plan information with background or gray-scale symbology

L. Utility By Others (UBO) Plans

___ _____ Label all utility conflicts with UBO boxes

___ _____ Include in the construction set as separate plans if needed due to plan sheet clutter

___ _____ Check to ensure only work to be performed by others (not the contractor) is indicated with heavy lines and text

___ _____ Show other pertinent plan information with background or gray-scale symbology

___ _____ Lighting Plan (if applicable)

4.4 Notes and Assumptions

- Please use the next page to include supporting details that provide background or context on what you have indicated on this checklist.

5. CONSTRUCTION PLANS REVIEW

5.1 General Overview

- The purpose of this milestone is to finalize construction plans, engineer's estimate, project special provisions, and any other items necessary to submit to Bid Phase. It incorporates review comments from the Right-Of-Way plans review and external reviews such as NCDOT Encroachment Agreement.
- Prior to this review, right-of-way and easement needs have been determined and incorporated into the plans, plats and exhibits have been prepared, and Real Estate Phase is well underway. Coordination has occurred for landscaping needs, traffic signal work, and utility relocations.
- This review should present a clear picture of the project design with all necessary details for successful construction.
- Please fill in the blanks to complete the following information:

SUBMITTAL DATE:	
A/E:	
REVIEWER:	
REVIEW DATE:	

5.2 Required Submittals

- Use a check mark to indicate completion or select "N/A" if not applicable; if N/A, please provide explanation in section 5.5.

___ _____ Submit Permit Applications (May include Erosion Control, NCDOT encroachment, Municipal Agreement, PCSO)

___ _____ Final Engineer's Estimate (all computations included)

___ _____ Written Project Special Provisions

___ _____ Final Project Construction Plans with signed/sealed mylar cover sheet and final review stamp on remaining sheets

5.3 Final Plans Checklist

- Use a check mark to indicate completion or select "N/A" if not applicable; if N/A, please provide explanation in section 5.5.

A. Title Sheet

___ _____ Updated Index of Sheets

___ _____ Project Stakeholder signatures under the "Recommended for Construction" block

___ _____ City Engineer's approval signature

___ _____ When submitting cover sheet, update label to Final Plans on top. Right-hand corner; otherwise may note as 100% Plans if part of review set

B. Details (to be shown in the "2 Series" of sheets)

___ _____ List of Standard Drawings pertinent to project (NCDOT or CMLDS)

___ _____ Revise details as needed to match plans

C. Plan and Profile Sheets

___ _____ Plan Information

___ _____ All cross-reference notes are correct

___ _____ All utility relocations/adjustments labeled and clearly identified as work the contractor is to perform or as work to be done by others

___ _____ Make any changes from RE agreements

___ _____ Profile Information

___ _____ All cross-reference notes are correct if separate plan & profile sheets

D. Traffic Control Plans

___ _____ Update to reflect any changes from Right-Of-Way Plan review or to address any access issues

E. Pavement Marking Plans

___ _____ Clearly denote markings to be removed (include line item(s) & quantities in engineer's estimate)

___ _____ Check for any temporary markings needed (include line item(s) & quantities in engineer's estimate)

___ _____ Check for the need of permanent pavement markers (raised or snow plowable)

___ ___ Reference Standard Drawings (if applicable)

___ ___ Clearly identify signs to be installed by the contractor & signs to be installed by others

F. Signal Plans

___ ___ Update all signal sheets

G. ITS Plan Sheets

___ ___ Update all ITS sheets

H. Permits

___ ___ Submit final plans and application to NCDEQ for EC permit when disturbance is greater than 1 acre

___ ___ Prepare NCDOT encroachment forms (EA161B, VCER, NPDES) if any part of project is on an NCDOT maintained street

___ ___ Prepare/submit for any other necessary permits; list here:

___ ___ Updated NEPA document (if applicable)

___ ___ USACE 404 Permit

___ ___ Other

___ ___ Other

___ ___ Other

I. All Other Sheets

___ ___ Update/review for accuracy

5.4 Final Proposed Sidewalk & Bike Mileage (measured in miles to the nearest 0.1 and should be counted per side of the roadway)

- Please fill in the blanks to complete the following information:

Quantity of new sidewalk the project is proposing

Quantity of new SUP the project is proposing

Quantity of new bike lanes the project is proposing

Quantity of new cycle track (each way) the project is proposing

5.5 Notes and Assumptions

- Please use the next page to include supporting details that provide background or context on what you have indicated on this checklist.