Project Name:	**Consultant:**
Project Number:	**Project Manager:**

ENGINEERING SERVICES GUIDELINES AND PLAN DEVELOPMENT MILESTONE CHECKLISTS

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 are meant to be used as the minimum criteria by which design activities occur while realizing that each project is unique and may require special considerations. This checklist is expected to be filled out as design occurs. Notes in each section are encouraged and welcomed to assist with review.

Design Plan Milestone Checklists

Projects are recommended to the following Plan Development Milestones:

I. 30% Plans Review (Preliminary Plans – Core Team Review)
II. 50% Plans Review (Preliminary Plans – Core & Support Team Review)
III. 75% Plans Review (Preliminary Plans – Core & Support Team Review)
IV. 90% Plans Review (Preliminary Plans – Core & Support Team Review)
V. 100% Plans Review/Final Plans (Core & Support Team Review)

Following are Outlines of each Milestone with:

A. General Overview
B. Required Submittals
C. Plan Checklist

I. 30% Plans Review Submittal Date:_____ Designer: _____

Review Date:_____ Reviewer: _____

Note: Survey should be field verified prior to beginning 30% plans 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.

____ Field visit to verify survey _____ List date of visit (send photos to PM)

A. General Overview

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 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 30% Plans Review should include the following:

B. Required Submittals (Place a Check Mark, or N/A)

____ Design Assumptions or Design Criteria

____ Listing of Required Permits or Special Reviews (Circle below or note)

(Phase I Environmental Site Assessment, Historical Agency Review, NCDOT Encroachment Agreement, 401/404 Permit, Erosion Control Permit, PCSO)

____ Verification of Correspondence with Pertinent Utility Companies

_____ Vertical Clearance Calculations

____ Preliminary Pavement Design

____ Engineer's Estimate

____ Project Construction Plans (Approx. 30% Completion)

C. 30% Plans Checklist (Place a Check Mark, or N/A)

Note: All plans submitted must be 24" X 36" Black-Line PDFs. Each sheet should have a "Plans Prepared By:" block and have the stamping "Preliminary Plans – Do Not Use for Construction".

1. Title Sheet (Use City of Charlotte Standard Cover Sheet)

____ Vicinity Map is "complete" and "accurate"
(Includes at least two major streets and an intersection)
(Show North Arrow inside vicinity map)

____ Index of Sheets (Varies per Project)
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 SP1 thru SPxx	Construction Staking Plans
-- Sheets SIG1 thru SIGxx	Signal Plans
-- Sheets UC1 thru UCxx	Utility Construction Plans
-- Sheets UBO1 thru UBOxx	Utilities By Others 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) (NCDOT Standard Specifications for Roads & Structures)

____ Signature Block entitled "Recommended for Construction" with signature space for project stakeholders (unsigned at this point)

____ Signature Block containing City Engineer's approval signature & date (unsigned at this point)

____ List of Graphical Scales used for the Project

____ Label Project Name and Number along right side of sheet

____ Add 30% Plan label to top right corner of sheet

_____ 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. Intended to only include those major features specific to type of project.

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 from list below for applicable items:
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
(both those that are part of the project and those not part of 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)

2. General Notes

____ Legend of Conventional Symbols – make sure line types are shown correctly

____ Start list of standards to be used on project

3. 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)

4. 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 relative to project (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) (type, size & mat'l if known)
- _____ Storm Drainage Facilities (size, type, and invert elevations)
- _____ 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 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).

_____ Proposed pavement markings shown on plan sheets at this phase

_____ Match Lines (reference station number and sheet number)

_____ 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'

5. 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)

6. 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.

_____ Verify latest CAD standards and sheet templates are used

Notes (explanation of any variance from standard, why N/A used, conversations had that complete checklist):

_____

_____

_____

_____

_____

II. 50% Plans Review Submittal Date:_____ Designer: _____

Review Date:_____ Reviewer: _____

A. General Overview

Note: 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.

At this point, 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.

B. Required Submittals (Place a Check Mark, or N/A)

_____ Geotechnical Report (if applicable)

_____ Summary of concerns noted in the Phase I ESA document (if applicable)

_____ Storm Drainage Calculations to include topo map with drainage areas

_____ 50% Engineer's estimate

_____ Project Construction Plans (approximately 50% complete)

_____ Update on list of required Permits or Special Reviews

_____ Verification of Correspondence with Pertinent Utility Companies

C. 50% Plans Checklist (Place a Check Mark, or N/A)

_____ Verify latest CAD standards and sheet templates are used

_____ Update all items from previous checklist that have changed

1. Title Sheet (Use City of Charlotte Standard Cover Sheet) (complete per 30% Plans)

_____ Update label to 50% Plans on top right corner.

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

_____ 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 sheets with description of details included on sheet within title block.

_____ Update List of standards used on project.

_____ Update typical sections and material schedule

3. Plan and Profile Sheets

_____ Label proposed 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.

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

_____ Highlight above ground and underground utilities that are in conflict with the proposed improvements.

_____ Show and label proposed drainage system with structure numbers, pipe material, length, slope and class.

_____ Import cut/fill lines and 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)

_____ Show proposed drainage system in profile view

4. 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.

5. Cross-Sections Sheets

_____ Show Proposed Ground Line (templates with no labeling at this point).

_____ 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.

Notes (explanation of any variance from standard, why N/A used, conversations had that complete checklist):

_____

_____

_____

_____

_____

III. 75% Plans Review

Submittal Date:_____ Designer: _____

Review Date:_____ Reviewer: _____

A. General Overview

Note: Survey should be field verified again prior to beginning 75% plans to assure no improvements have been installed since survey was received and 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.

For this review, mark-ups/comments from utility companies as well as Storm Water Services should be incorporated into the project design. A traffic control plan (both written phasing and associated diagrams), erosion control plan, and a pavement marking plan should be prepared for this submittal in addition to the detailed plans, an updated engineer's estimate should be prepared. Any required permits should be reviewed at this milestone and plans should be prepared for appropriate submittals as needed such as 401/404 permitting. Project grading limits should be checked for area disturbed. If the area exceeds one acre, an erosion control permit is required.

____ Field visit to verify survey and design _____ Date of visit

B. Required Submittals (Place a Check Mark, or N/A)

_____ Updated 75% engineer's estimate

_____ Storm Drainage Calculation Revisions

_____ ROW/easement quantities (spreadsheet)

_____ Project Construction Plans (approximately 75% complete)

_____ Update on list of required Permits or Special Reviews

_____Verification of Correspondence with Pertinent Utility Companies

C. 75% Plans Checklist (Place a Check Mark, or N/A)

_____ Verify latest CAD standards and sheet templates are used

____ Update all items from previous checklist that have changed

1. Title Sheet

____ Update label to 75% Plans on top right corner.

2. 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.

_____ 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.

_____ Update List of standards used on project.

_____ Update typical sections and material schedule

3. Plan Sheets

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

_____ Show 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.

_____ Right-of-way & Easement lines, and RE parcel numbers shown with standard parcel block information

_____ Retaining walls shown & labeled

_____ Ramps shown accurately on plan sheet with station labels (details not yet created)

_____ Easements shown accurately (permanent and temporary). Temporary easements should include all needs for removal of trees for utility relocation. Temporary Easements needed for only a specific duration (i.e. tree removal) shall be labeled as such.

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

4. Profile Sheets

_____ 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.

5. Erosion Control Plans

_____ Preferred scale 1"=40'.

_____ Erosion Control Notes & Legend Key.

(Use symbology consistent with the Erosion & Sediment Control Planning & Design Manual: https://deq.nc.gov/about/divisions/energy-mineral-land-resources/energy-mineral-land-permit-guidance/erosion-sediment-control-planning-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, refer to standard number.

_____ Temporary Wattle Check Dam/Inlet Protection

_____ Temporary Silt Fence

_____ Temporary and Permanent Seeding Specifications

_____ Other

6. Traffic Control/ Pavement Marking Plan

_____ 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.)

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

_____ Legend matches NCDOT pavement marking schedule.

_____ Legend matches plan view symbology.

7. 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.

_____ If NCDOT street, follow NCDOT Cross Section Guidelines.

8. 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

Notes (explanation of any variance from standard, why N/A used, conversations had that complete checklist):

_____

_____

_____

_____

IV. 90% Plans Review

Submittal Date:_____ Designer: _____

Review Date:_____ Reviewer: _____

A. General Overview

Note: 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.

This review milestone precedes preparing plats and easement exhibits for real estate acquisition. For this review, final mark-ups/comments from utility companies as well as Storm Water Services should be incorporated into the project design. The project design at this milestone should include updated drainage (horizontal and vertical), traffic control, and pavement marking plans. In addition to the detailed plans, an updated engineer's estimate should be prepared with an updated real estate cost. All required permit applications should be prepared at this point along with any required fees with check requests submitted.

B. Required Submittals (Place a Check Mark, or N/A)

_____ Final Pavement Design Calculation

_____ Final storm drainage calculations

_____ Updated 90% engineer's estimate

_____ 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

_____ Project Construction Plans (approximately 90% complete).

_____ Update on list of required Permits or Special Reviews

_____Verification of Correspondence with Pertinent Utility Companies

C. 90% Plans Checklist (Place a Check Mark, or N/A)

____ Verify latest CAD standards and sheet templates are used

____ Update all items from previous checklist that have changed

1. Title Sheet

_____ Update label to 90% Plans on top right corner.

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

_____ Ramp details

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

_____ Update List of standards used on project.

_____ Update typical sections and material schedule

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

3. Plan and Profile Sheets

_____ 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.

_____ Right-of-way & Easement lines, and Parcel information updated as needed to make sure this matches 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).

4. Erosion Control Plans

_____ 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

5. Traffic Control/ Pavement Marking Plan

_____ Update sheets per comments from 75% review

6. Cross-Sections Sheets

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

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

7. 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

8. Utilities By Others Plans

_____ 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

Notes (explanation of any variance from standard, why N/A used, conversations had that complete checklist):

_____

_____

_____

_____

_____

V. Final (100%) Plan Review Submittal Date:_____ Designer: _____

Review Date:_____ Reviewer: _____

A. General Overview

This milestone review has as its purpose 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 90% 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.

B. Required Submittals (Place a Check Mark, or N/A)

_____ 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

C. Final Plans Checklist (Place a Check Mark, or N/A)

1. Title Sheet

_____ Updated Index of Sheets

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

_____ City Engineer's approval signature

_____ When submitting mylar cover sheet, update label to Final Plans on top right corner. Otherwise may note as 100% Plans if part of review set.

2. 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.

3. Plan Sheets

_____ 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

4. Profile Sheets

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

5. Traffic Control Plans

_____ Update to reflect any changes from 90% review or to address any access issues

6. 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

7. Signal Plans

_____ Include in the construction plans if the contractor is to perform this work (this should be signed/sealed and provided by CDOT)

8. 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: _____

9. All other sheets

____ Update/review for accuracy