CONSULTANT TRAINING

Wednesday, June 24, 2020

9:00 am - 1:00 pm

AGENDA

Opening Remarks	November 2018 Training Highlights	New Consultant Services Scope Template	New Consultant Services Fee Template	Plan Review Part 1
BREAK (10 minutes)	Plan Review Part 2	Cost Estimating	Real Estate	Special Provisions
	Construction	Questions ??	Adjourn	

November 2018 Training Highlights

- More accountability - All team members
- Compress planning schedule
- Define scope/Minimize scope changes- 25% plan approval
- Scope & fee changes/Additional Services- approve before work is done
- Standardize invoicing
- More Forums/ Meetings
- Example/template plans
- Consistent PM reviews- reduce subjectivity
- Reduce number of contract tasks
- More lump sum tasks
- Restructure contract; roll up small tasks into larger tasks

CONTRACT

Contract - Scope Template

- Revised December 2019
- Please read it and understand it
- Simplified tasks and removed underutilized items
- The goal is to standardize consistent work efforts across City projects
- Worked to standardize hours for travel, meetings, and minutes
- Worked to standardize the number of consultants participating in meetings
- Restructured contract; roll up small tasks into larger tasks
- Do not delete anything in the template; template is for all phases of the project- mark unneeded items as RESERVED.
- Items PM should make project specific:
  - # of public meetings
  - # of consultant staff at each meeting
  - # of alternatives
  - Design criteria hours
  - Geotech
  - Walls, pedestrian bridges
  - Monthly meetings -put in # and time frame for each
  - # of site visits during construction

Bette Frederick, PE

Scope Template - Standardization

EXHIBIT A
SCOPE OF SERVICES
Planning, Design and Construction Administration Services

BACKGROUND AND PURPOSE OF THE PROJECT
This scope of services is for the design and construction administration of ***____project name____*** (PROJECT) *add in full project description including limits.* The design shall include *type in pertinent project details*.

PLAN CONTROL AND STANDARDS
The Consultant shall perform all services in accordance with the current version (as of the date of this contract) of the City of Charlotte CADD standards, the "Charlotte-Mecklenburg Storm Water Design Manual", Charlotte- Mecklenburg BMP Design Standards Manual, multi-modal and context-sensitive design principles, Public Rights of Way Accessibility Guidelines (PROWAG), Charlotte Walks Manual, Charlotte Bikes Manual, and the Urban Street Design Guidelines within the Charlotte Land Development Standards Manual (CLDSM). All design for the Project shall conform to the current year's AASHTO Green Book, the AASHTO Roadside Design Guide, the current practices of the NCDOT, and the current practices of CDOT. At the time work commences under this Contract, the Consultant shall use the current edition of the NCDOT Design Manual for Roadway Design. In cases where the CLDSM and NCDOT Design Manuals conflict, the CLDSM should prevail unless the roadway is maintained by NCDOT or otherwise indicated by the City's Project Manager. The Consultant shall perform all services using English units.

The Consultant shall perform all of the following services (unless otherwise noted by RESERVED).

2.0 STAKEHOLDER COORDINATION
The Consultant shall identify all stakeholders for the project. The City's Project Manager and the Consultant shall coordinate efforts to contact the Land Development Division of General Services and the Charlotte Mecklenburg Planning Department to identify all private developments currently under review that would be affected by or would affect the alternate designs being considered. The Consultant shall understand potential impacts, risks, and needs of each. The Consultant shall review updates and changes to their plans throughout the life of the project, from preliminary planning to final plan submittal, and make changes to the plans as needed in accordance with stakeholder plans and improvements.

The stakeholders may include but is not limited to the following:

- NCDOT
- Business Owners
- Private Developers
- Emergency Responders – Police and Fire
- Charlotte Mecklenburg School (CMS)
- Mecklenburg County Park and Rec and Greenways
- Charlotte Area Transit System (CATS)

1.1 Planning Phase Public Involvement
The Consultant will develop and implement an engagement approach to assist the CITY with **up to** ____ (_) public meetings during the planning phase. The Consultant will provide community engagement support documents for the meetings. It is anticipated that the documents will include **up to** ____ (_) visuals/renderings. It is assumed that the planning for these meetings will occur during scheduled monthly project meetings. The CITY will coordinate the location for the meetings and the Consultant will pay for rental fees.

The Consultant will attend **up to** ____ (_) public meetings anticipated to be **up to eight (8) hours** each in duration, which includes travel, set up and breakdown, and meeting minutes. Up to **three (3)** Consultant personnel may attend each meeting. The Consultant shall provide meeting minutes **within five (5) business days** of the public meeting.

The Consultant will participate in **up to** ____ (_) meetings with homeowner associations anticipated to be **up to four (4) hours each** in duration, which includes travel and meeting minutes. Meeting(s) will utilize existing plans/or exhibits during these informal presentations which are anticipated to be a combination of the City's Project Manager and the Consultant's Project Manager. It is assumed that the planning for these meetings will occur during scheduled monthly project meetings. Up to **three (3)** Consultant personnel may attend each meeting. The Consultant shall provide meeting minutes **within five (5) business days** of the homeowner association meeting.

Bette Frederick, PE

Contract - Fee Estimate Worksheet

EXHIBIT _

Design and Construction Administration Fee Estimate Worksheet

FINAL 1/10/2020

Task #	Item Description	Principal/Technical Expert	Senior Project Manager/ QA/QC	Project Manager	Engineer I	Junior Engineer	Designer	Technician	Administrative	Total Hours	Total	Subconsultants
	BILLING RATES PER HOUR	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00			
1.0	**Public Involvement Process**											
1.1	Planning Phase Public Involvement									0	$0.00	
	Project Meetings (insert # of mtgs)									0	$0.00	
	Public Meetings (insert # of mtgs)									0	$0.00	
	Homeowner Association Meetings									0	$0.00	
1.2	Design Phase Public Engagement									0	$0.00	
	Project Meetings (insert # of mtgs)									0	$0.00	
	Public Meetings (insert # of mtgs)									0	$0.00	
	Homeowner Association Meetings (insert # of mtgs)									0	$0.00	
	TOTAL PERSONHOURS	0	0	0	0	0	0	0	0		$0.00	
	BILLING RATES PER HOUR	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	0		
	SUBTOTAL	$0	$0	$0	$0	$0	$0	$0	$0		$0.00	

Bette Frederick, PE

Contract Negotiation

- Use current contract template
- Always have specified additional services and unspecified additional services
- Specified Additional services example - additional public meetings
- Unspecified - for those things that come up that aren't in the contract - need to have some funds in the contract
- City considerations when reviewing fees-
  - Compare to similar project (look up their approved hours)
  - If multiple projects, (Like XCLT) compare to one another
  - Internal reviews; Peer and Management review
- Make sure engineer is paid at the role they are doing - i.e. - if a principal or senior engineer is acting as PM - then they are paid at a PM rate for that work
- PM to send consultant's hourly rates to Contracts Section early in the process
- Make sure hours for certain tasks match contract - like # of staff attending a meeting, # of alternatives, etc.
- Limit the number of design alternatives

Tom Russell, PE
Bette Frederick, PE

Plan Review Part I

Engineering Services Guidelines and Plan Development Milestone Checklists

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.

Dan Leaver, PE

PLAN SET - General

- Follow our plan standards
- Do not alter our plan set standards (unless directed by Eng. Services)
- Provide the full milestone checklist for submittals, not partial (should be same one developed and utilized for each phase)
- Profile detail of curb ramps showing 2" curb reveal height- should be on plans to show how it will look and get built
- Plans and demo sheets should be consistent with each other. If new item is proposed show removal of existing and vice versa
- ROW data spreadsheet not required
- For projects adjacent to proposed development ensure that appropriate notes are included for proper coordination
- General Services not E&PM on plans
- Types of retaining walls are labeled
- Design to eliminate utility impacts

TITLE SHEET

- The title should give a clear snapshot of the project improvements
- Index of Sheets should match numbering and title on each sheet
- Add plan submittal phase % label on end of sheet in top right corner (25%,50%,75%,90%,100%, Final)
- "Final" submittal phase shall be place on the final mylar used for bidding
- To reduce clutter and to represent proposed work, do not show existing planimetrics other than those related to road (i.e. right of way, parking, houses, etc.)
- Clearly label Begin and End for project and limits of construction for each line
- Include project length and speed limit

INDEX OF SHEETS

CHARLOTTE.
GENERAL SERVICES

Construction Plans of Proposed

Project No. ####

Project Features:

Features
Features
Features
Features

PE SEAL

Record Drawings

XX% Plans

VICINITY MAP
NTS

Begin Project
Sta. XX+00.00 -L-

End Project
Sta. XX+00.00 -L-

LOCATION MAP
NTS

811
Know what's below.
Call before you dig.

SURVEY PREPARED BY:

CITY OF CHARLOTTE SURVEY-MAPPING-GIS FROM THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON STATE PLANE COORDINATES ESTABLISHED BY: NCGS MONUMENT OR CONTROL POINT WITH NAD 83(2011) STATE PLANE COORDINATES OF NORTHING:0.0000000 EASTING: 0.0000000 ELEVATION NAVD: THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.0000000 VERTICAL DATUM: NAVD 88 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES. DATE RANGE OF SURVEY:00/01/0000 TO 00/00/0000

PLANS PREPARED BY:

BUILDING Value
FOR CHARLOTTE
CITY OF CHARLOTTE
GENERAL SERVICES

600 East Fourth Street
Charlotte, North Carolina 28202
Phone: (704) 336-2281
Fax: (704) 336-5686

PROJECT LENGTH = X.X MILES

2018 NCDOT STANDARD SPECIFICATIONS

GRAPHIC SCALES

Plan View	20	40	60
Horz. Profile	20	40	60
Vert. Profile	4	8	12
Cross Section	5	10	15

RECOMMENDED FOR CONSTRUCTION

CDOT - Design	
CDOT - Implementation	
CLT Water	
Construction Administration	
Contract Administration	
Engineering Services	
Landscape Management	
Planning, Design & Development	
Storm Water Services	
Utility Coordination	

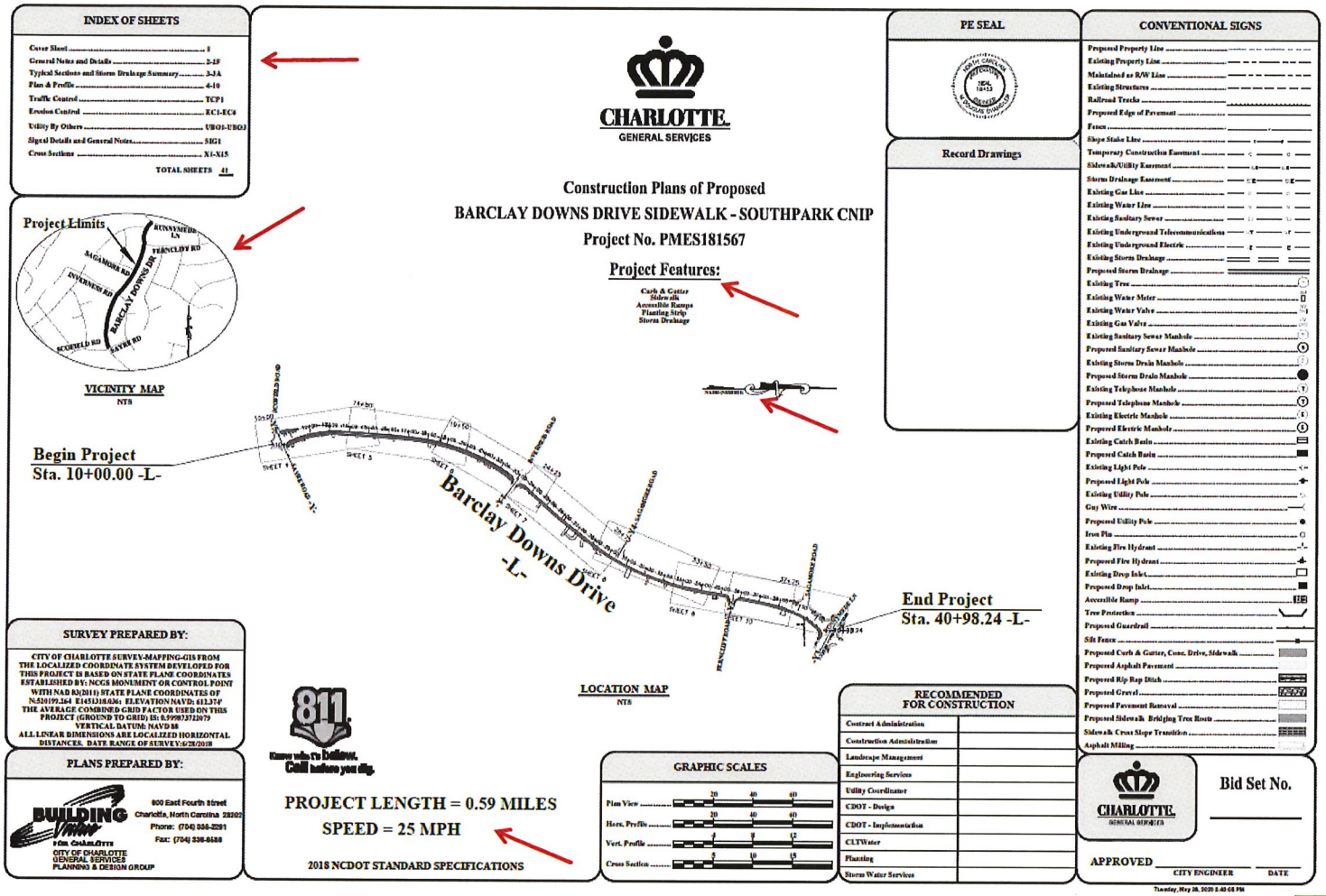
CHARLOTTE.
GENERAL SERVICES

Bid Set No. _____

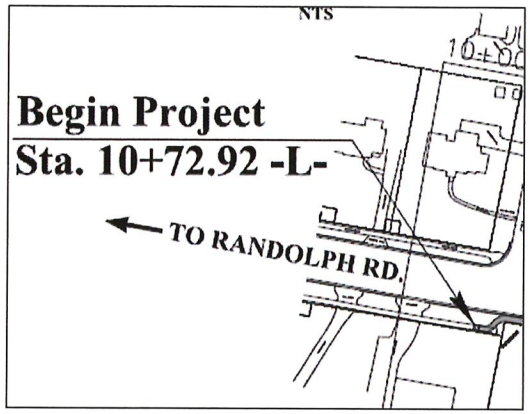
APPROVED _____ _____
FOR CITY ENGINEER DATE

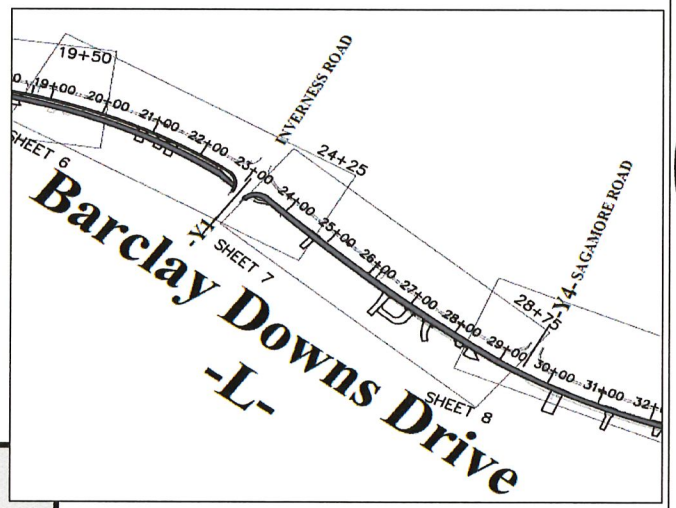
Project Name: ##### Project Number: #####

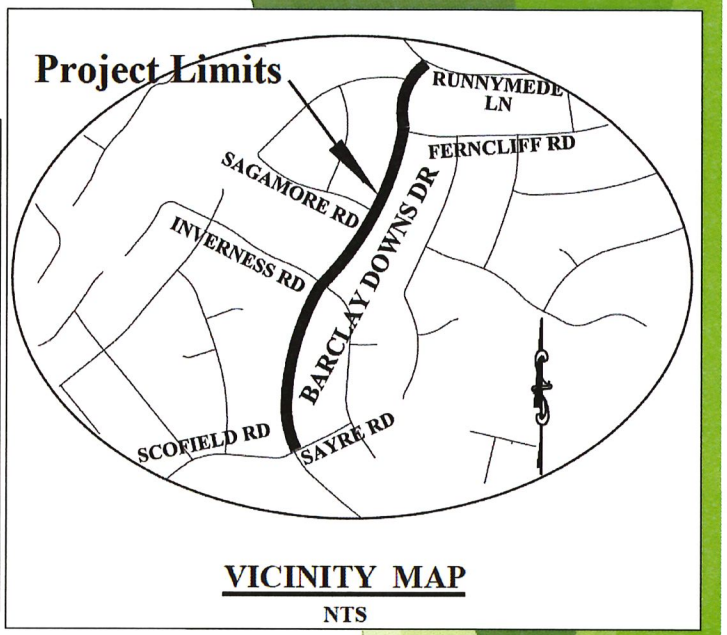
Title Sheet - Example



Title Sheet - Examples







INDEX OF SHEETS

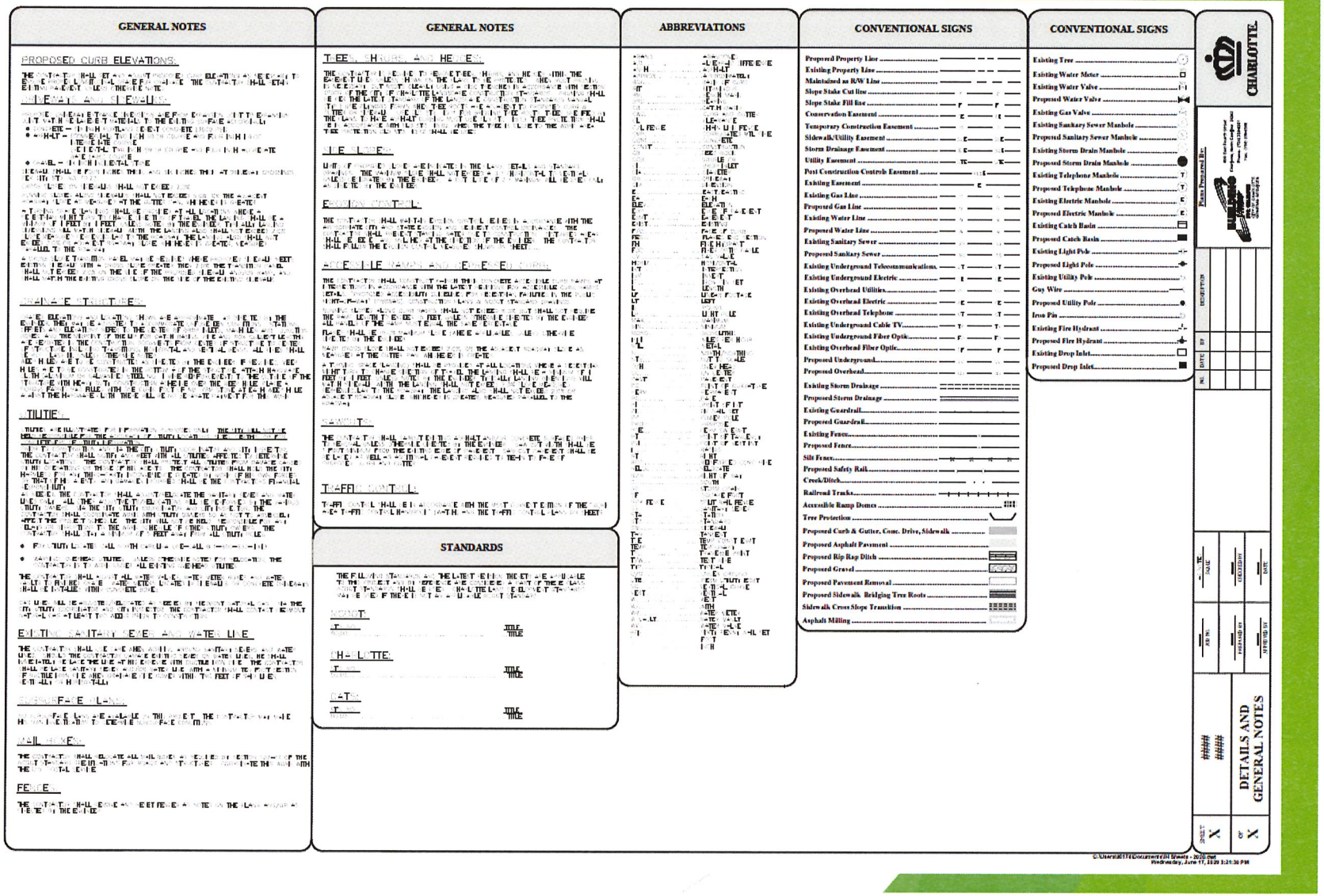
TOTAL SHEETS 41

NAD83(2011)

SURVEY PREPARED BY:

CITY OF CHARLOTTE SURVEY-MAPPING-GIS FROM THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON STATE PLANE COORDINATES ESTABLISHED BY: NCGS MONUMENT OR CONTROL POINT WITH NAD 83(2011) STATE PLANE COORDINATES OF N:520199.264 E1451318.036: ELEVATION NAVD: 612.374' THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999873722079 VERTICAL DATUM: NAVD 88 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES. DATE RANGE OF SURVEY:6/28/2018

General Notes, Abbrev., Standards



GENERAL NOTES

PROPOSED CURB ELEVATIONS:

GENERAL NOTES

ABBREVIATIONS

CONVENTIONAL SIGNS

CONVENTIONAL SIGNS

Proposed Property Line
Existing Property Line
Maintained at R/W Line
Slope Stake Cut line
Slope Stake Fill line
Conservation Easement
Temporary Construction Easement
Sidewalk/Utility Easement
Storm Drainage Easement
Utility Easement
Post Construction Controls Easement
Existing Easement
Existing Gas Line
Proposed Gas Line
Existing Water Line
Proposed Water Line
Existing Sanitary Sewer
Proposed Sanitary Sewer
Existing Underground Telecommunications
Existing Underground Electric
Existing Overhead Utilities
Existing Overhead Electric
Existing Overhead Telephone
Existing Underground Cable TV
Existing Underground Fiber Optic
Existing Overhead Fiber Optic
Proposed Underground
Proposed Overhead
Existing Storm Drainage
Proposed Storm Drainage
Existing Guardrail
Proposed Guardrail
Existing Fence
Proposed Fence
Silt Fence
Proposed Safety Rail
Creek/Ditch
Railroad Tracks
Accessible Ramp Domes
Tree Protection
Proposed Curb & Gutter, Conc. Drive, Sidewalk
Proposed Asphalt Pavement
Proposed Rip Rap Ditch
Proposed Gravel
Proposed Pavement Removal
Proposed Sidewalk Bridging Tree Roots
Sidewalk Cross Slope Transition
Asphalt Milling

Existing Tree
Existing Water Meter
Existing Water Valve
Proposed Water Valve
Existing Gas Valve
Existing Sanitary Sewer Manhole
Proposed Sanitary Sewer Manhole
Existing Storm Drain Manhole
Proposed Storm Drain Manhole
Existing Telephone Manhole
Proposed Telephone Manhole
Existing Electric Manhole
Proposed Electric Manhole
Existing Catch Basin
Proposed Catch Basin
Existing Light Pole
Proposed Light Pole
Existing Utility Pole
Guy Wire
Proposed Utility Pole
Iron Pin
Existing Fire Hydrant
Proposed Fire Hydrant
Existing Drop Inlet
Proposed Drop Inlet

STANDARDS

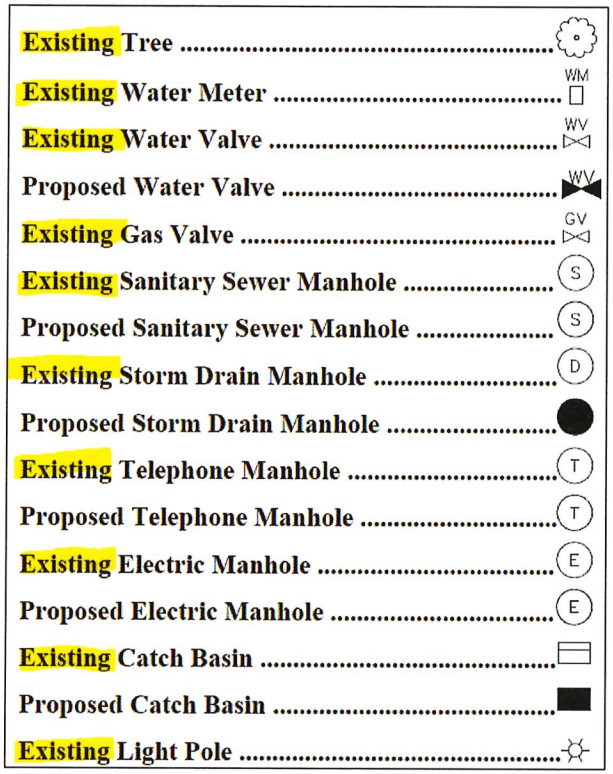
CHARLOTTE

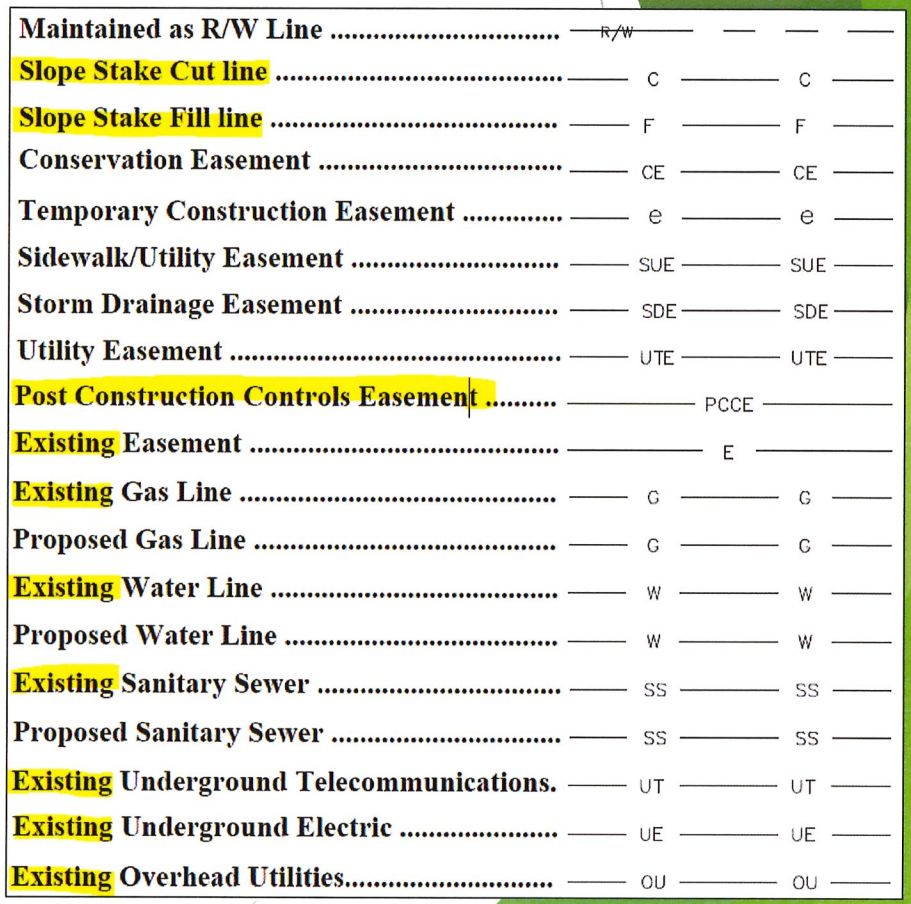
DESCRIPTION

DETAILS AND GENERAL NOTES

SHEET X OF X

Conventional Signs- what's new....





TYPICAL SECTIONS

- Typical Sections- represent the predominant sections of roadway. Should capture major changes along roadways, use of label "varies" should be used when needed and should include varying widths.
- All existing materials should be shown as dashed; proposed shown solid
- Pavement layers should be shown with different pattern/shading
- Label slopes with directional arrow (roadway, sidewalk, shoulder)
- Each typical section should be numbered and include station reference with line
  - -L- STA. 10+00 TO -L- STA. 15+00
- Refer to NCDOT Roadway Design Manual- Part II, Chapter Six for pavement descriptions
- Provide Full Material Schedule
  - Tabulated Form
  - Logical Order - C, C1, C2; D, D1, D2, etc.
  - Proper thickness and lift
  - Proper Rates

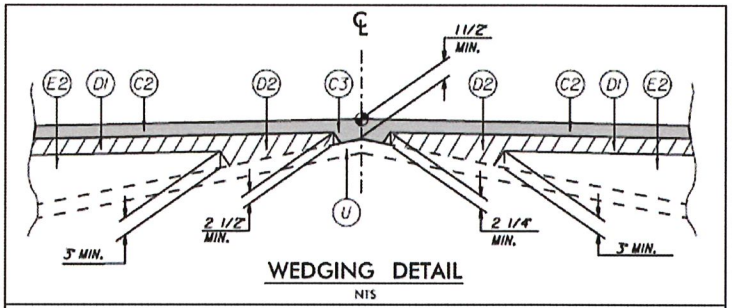
TYPICAL SECTIONS

- Milling- standard is to show as 0-3" square yards. Should be estimated appropriately
- Recommend not labeling existing material that is not affected by proposed improvements. Should be shown as dashed line style (ex. existing sidewalk, existing curb and gutter, etc.)
- If making reference to wedging, typicals should always include complimentary wedging detail; variable asphalt pavement should be listed in schedule
- 3:1 Max for fill slope; 2:1 Max for cut slope (prefer to 3:1 for maintenance)
- Make sure station numbering for typical sections for pavement design match up correctly on plan sheets

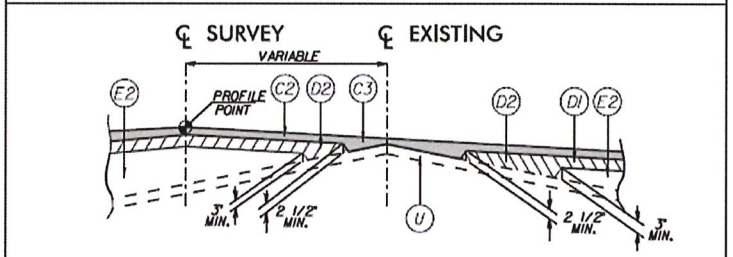
Typical Sections- Examples

PAVEMENT SCHEDULE
(PRELIMINARY PAVEMENT DESIGN)

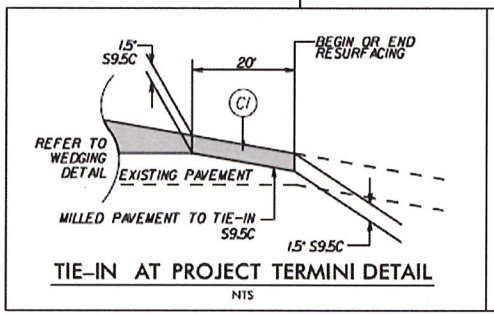
C1	PROPOSED APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROPOSED APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROPOSED VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROPOSED APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 119.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROPOSED VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 119.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2¼" OR GREATER THAN 4" IN DEPTH.
E1	PROPOSED APPROX. 6" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E2	PROPOSED VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5.5" IN DEPTH.
R1	PROPOSED 2'-6" CONCRETE CURB & GUTTER
R2	PROPOSED 1'-6" CONCRETE CURB & GUTTER
R3	PROPOSED 5" MONOLITHIC CONCRETE ISLAND (KEYED-IN)
S1	PROPOSED 4" CONCRETE SIDEWALK
S2	PROPOSED 6" CONCRETE SIDEWALK WITH LONGITUDINAL JOINTS
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING EXISTING PAVEMENT
W	WEDGING DETAIL FOR RESURFACING



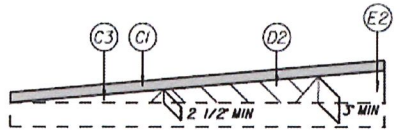
WEDGING DETAIL
NTS



WEDGING DETAIL FOR SHIFTING CROWN POINT
NTS



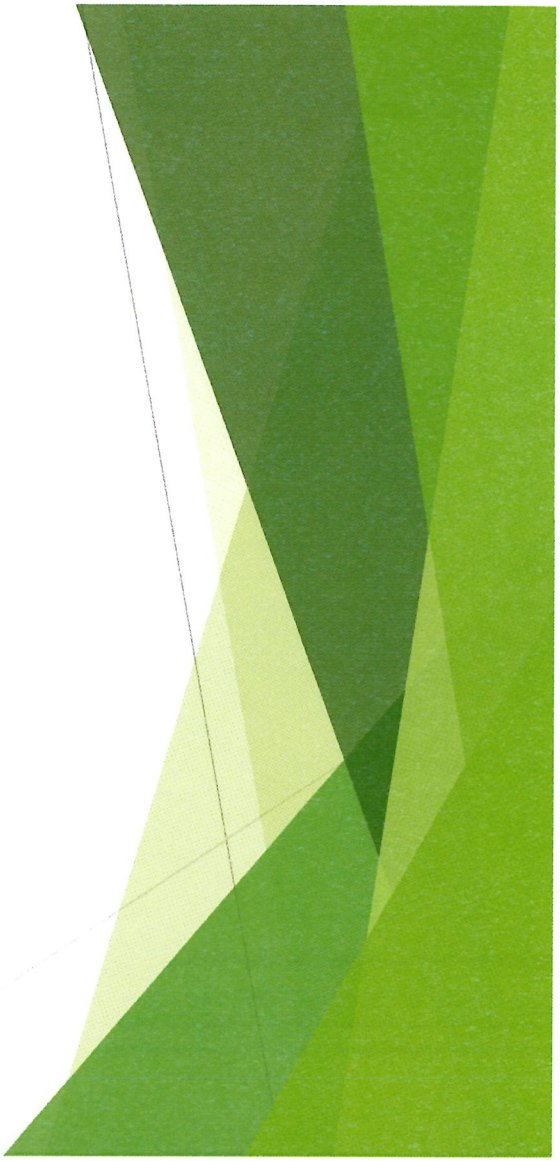
TIE-IN AT PROJECT TERMINI DETAIL
NTS



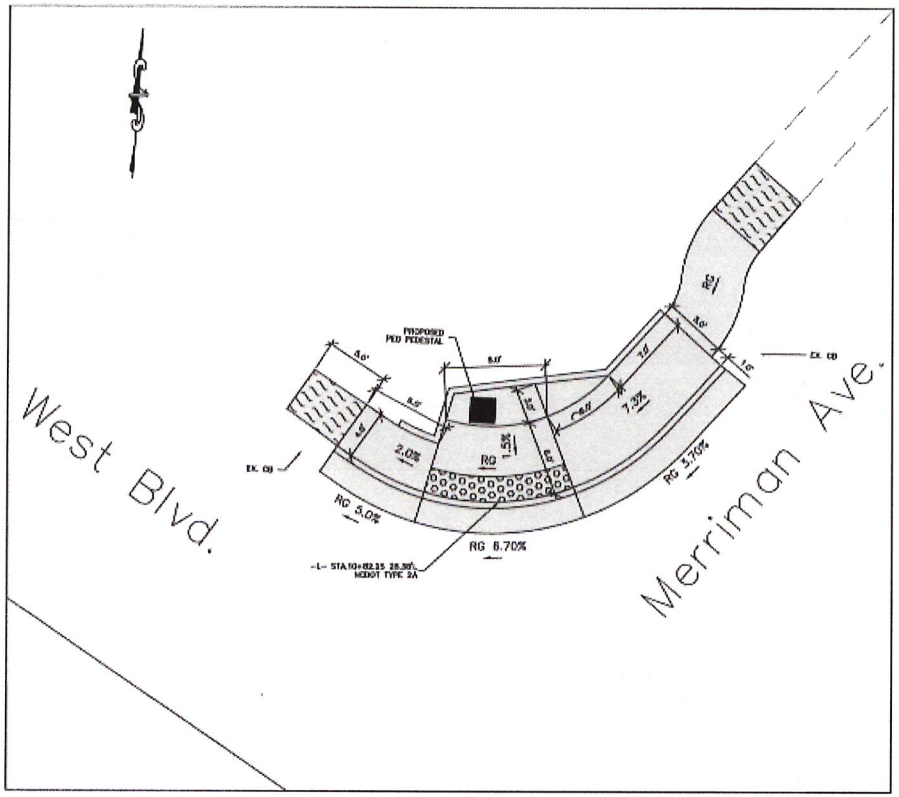
WEDGING DETAIL FOR RESURFACING
NTS

DETAILS

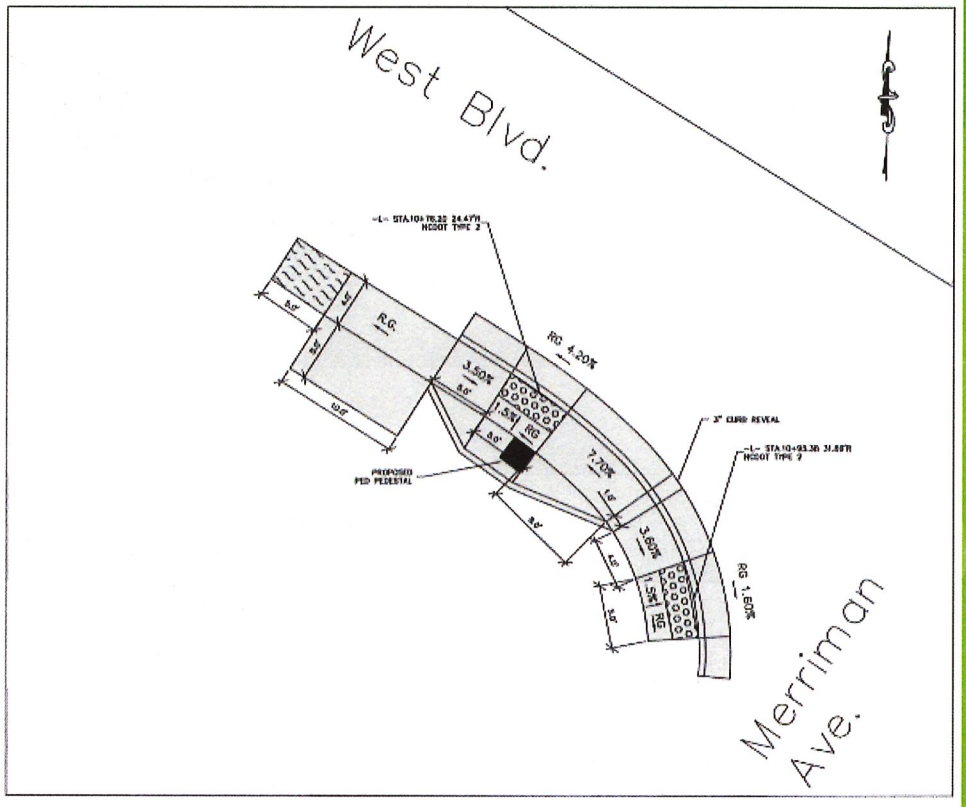
- Standard Drawings should not be included on detail sheets but should be included in Standards list on Sheet 2
- Ramp Details should be scaled appropriately to minimize number of sheets needed
- Each detail should be named/numbered



Ramp Details - Examples



CURB RAMP DETAIL 1

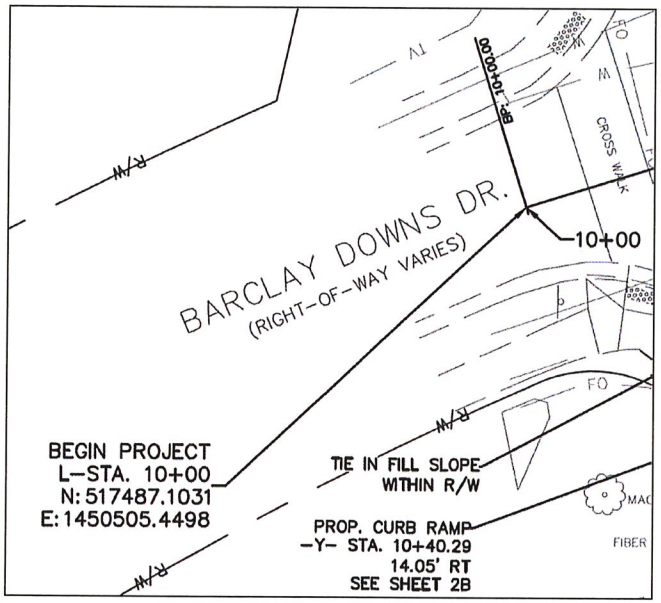


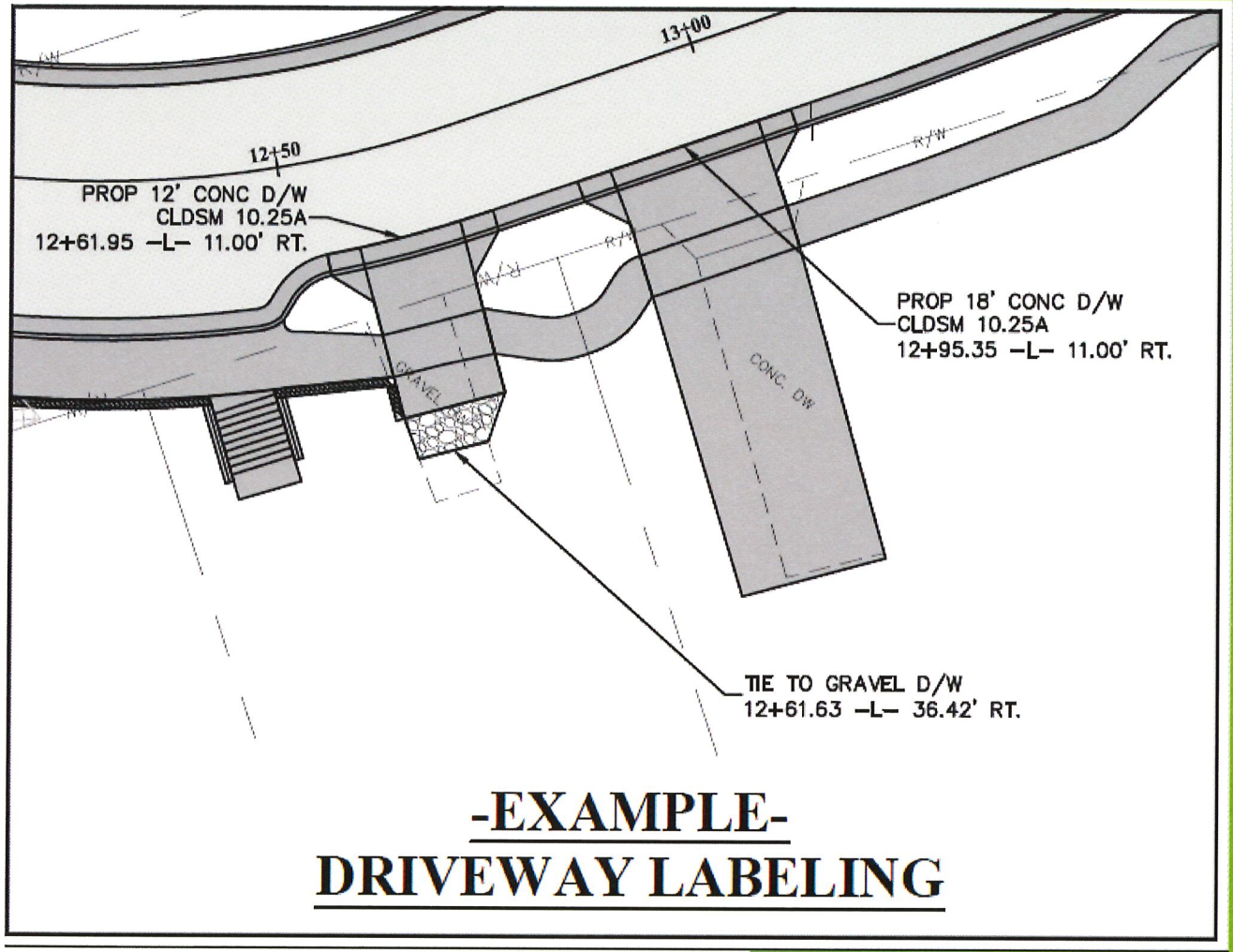
CURB RAMP DETAIL 2

PLAN SHEETS

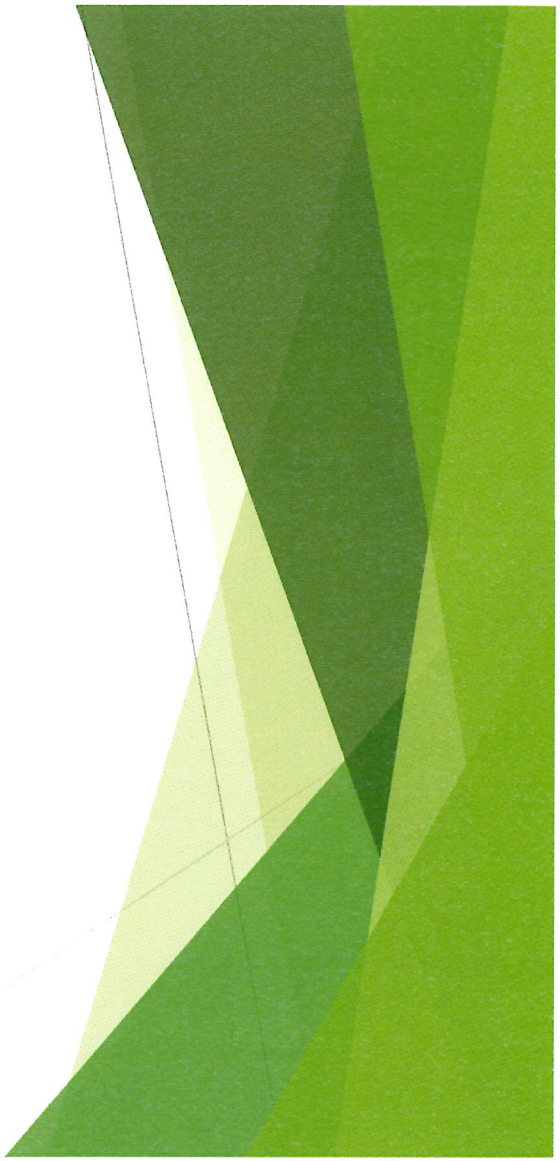
- Heavy solid lines showing Proposed Alignment (Designate with- L and -Y or multiple with L1 and Y1 etc.)
- Beginning and Ending Stations (with Coordinates) (ex. L- POT Sta. 10+00.00) (N= ,E=)
- Clearly show labeling for all proposed improvements and transition areas
  - (Begin/End Stations, Widths, Type, Lengths, Curve Data)
- There should be more discussion and approval before showing proposed driveways to tracts of land with no current land use; is there an existing driveway?
- 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
- Make sure all labeling is legible; reduce clutter
- Show limits and type of retaining walls clearly in plans and that they tie back to the retaining wall details clearly; keep labeling consistent
- Labeling of streets- should be clear and font size should be standardized
- Clearly label Begin and End for project and limits of construction for each line
- Pavement removal should generally be denoted outside of slope stakes. Assume everything within slope stake limits is graded (pavement removal is included in cost) Some urban conditions provide reasons to show otherwise

Labeling Examples



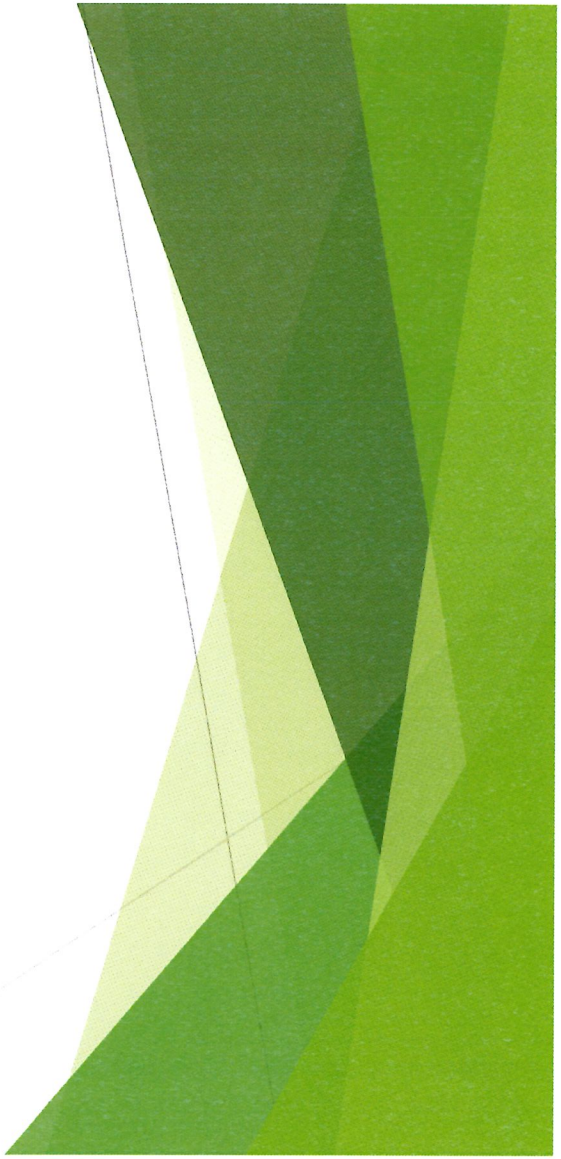


Plan Review Part II



PROFILE SHEETS

- Follow Design Plan Milestone Checklists
- If an alignment and proposed grade is run, then profile should be shown as a solid line with all appropriate labeling
- Existing road profile should be shown as a dashed line
- Existing road to be resurfaced should show a solid line on top of the existing profile grade

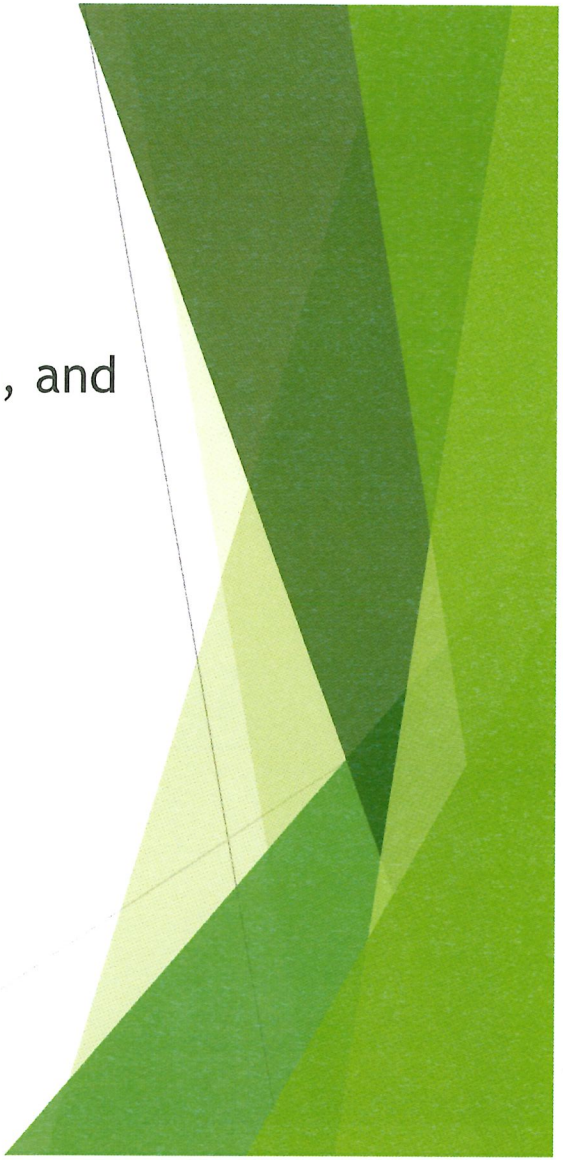


TRAFFIC CONTROL

- Traffic Control Notes sheet should include appropriate language for NCDOT maintained roadways and City roadways
- Traffic control phasing is consistent with general construction practices
- Temporary pavement should be shown and quantity should be included in estimate
- When using offsite detour, Engineer should coordinate with emergency response personnel

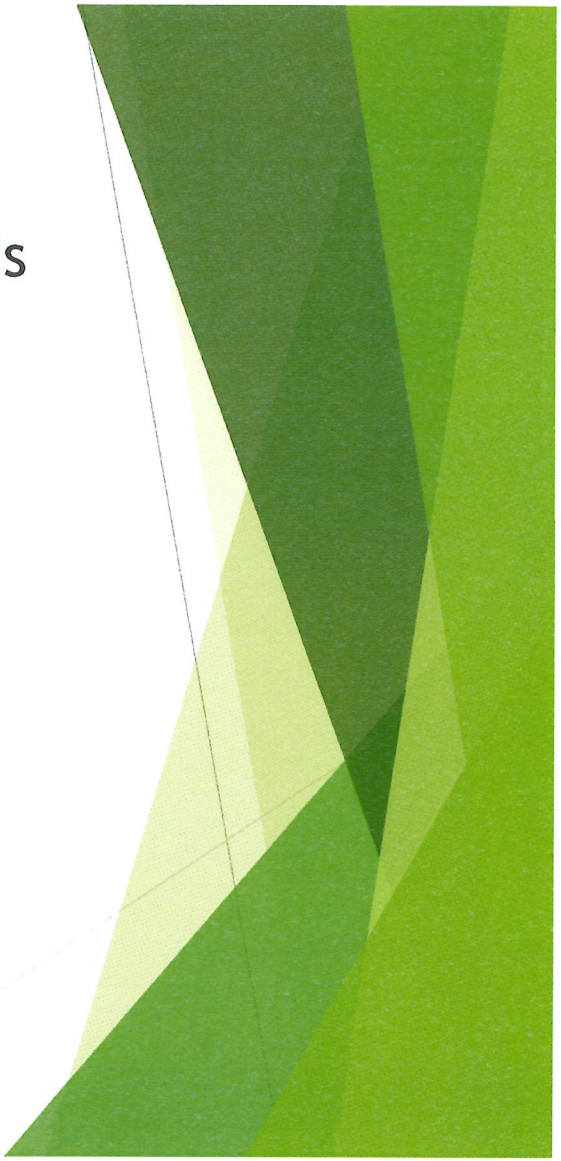
CROSS SECTIONS

- Stationing starts from bottom of sheet
- Label slopes with directional arrow (roadway, sidewalk, shoulder)
- Show volumes for embankments, unclassified excavation, and known undercut excavation on each cross- section
- Clearly label pipes and utilities to identify conflicts



QUALITY

- Consultant is responsible for ensuring the design is based on the approved design criteria set for the project
- QA/QC- should be completed before each submittal
- Before finalizing plans for bid- Verify latest CAD standards and sheet templates are used (this is important to do!)
- The consultant is responsible for verifying field conditions throughout life of the project and making adjustments as needed



COST ESTIMATING

- Planning estimates
  - Should itemize costs as much as possible
  - Should include a minimum 40% contingency for unknowns
- Retaining wall measurement
  - Verify the quantity in the engineer's estimate for retaining walls is measured from top of face of wall to top of foundation and not from top of wall to ground elevation. Make sure retaining wall specification calls this out clearly as well
- Select, estimate 100% pipe backfill on City streets, 50% pipe backfill on NCDOT streets. Use Storm Water's spreadsheet to calculate quantities: https://charlottenc.gov/gs/procurement/gsbids/Pages/SPdetails.aspx?NotFoundURL=https://charlottenc.gov/Engineering/Bids/Pages/SPdetails.aspx&Referrer=
- Add Rock Removal line item to all estimates
- Add new Erosion Control line item to all estimates
- Lump Sum Items - Accurate measurement; correct costs assessment;

REAL ESTATE

- City utilizing Real Estate Division to
- Try to reduce property takes, if small area, try to eliminate ROW need
- Keep easement areas to a minimum based on what is required for the equipment and construction operation
- Investigate and manage opportunities to begin Real Estate at 75% plan completion

SPECIAL PROVISIONS

Becky Chambers, PE
Tonia Wimberly, PE

SPECIAL PROVISIONS

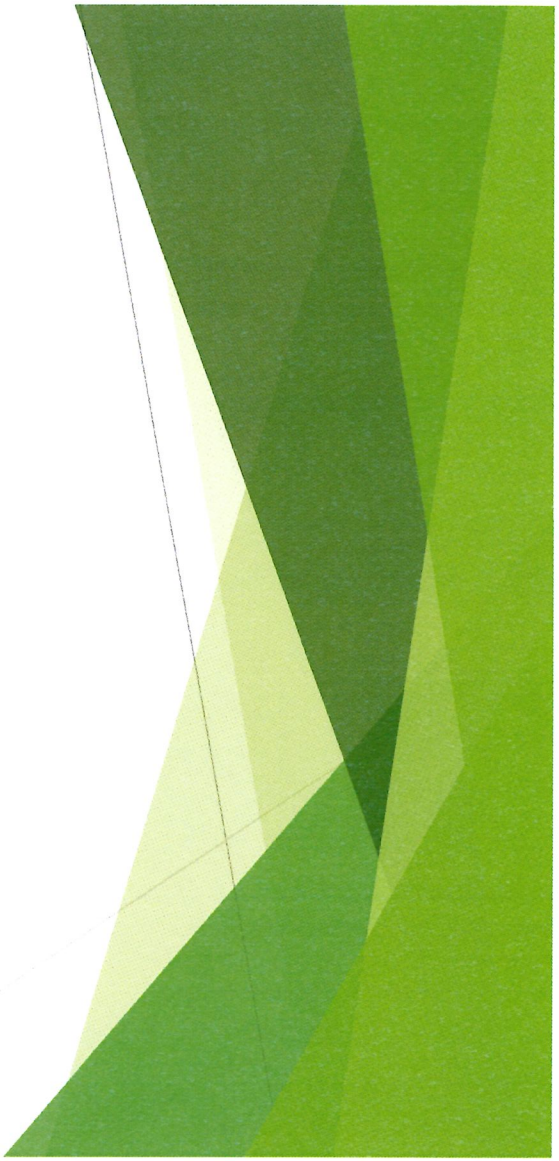
- Use City standard SPs on website:
  - https://charlottenc.gov/GS/procurement/GSBids/Pages/SpecialProvisions.aspx
- Do not change number of SP-01, SP-02, SP-03 (Comp Grading, Earthwork, Select Material)
- Highlight any wording changes to the City Standard SPs so they can easily be identified
- New special provisions for *Erosion Control* and *Rock Removal* should be used on all projects and separate line item costs.

Becky Chambers, PE
Tonia Wimberly, PE

CONSTRUCTION

Tonia Wimberly, PE

QUESTIONS ????



ADJOURN

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. 25% Plans Review (Preliminary Plans – Core Team Review) removed *Client Dept review for Large Projects* text
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. 25% Plans Review Submittal Date:_____Designer: _____

Review Date:_____Reviewer: _____

Note: Survey should be field verified prior to beginning 25% 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 25% 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)

replaced *Water Quality* with 401/404

____ Verification of Correspondence with Pertinent Utility Companies

_____ Vertical Clearance Calculations

____ Preliminary Pavement Design

____ Engineer's Estimate

____ Project Construction Plans (Approx. 25% Completion)

removed *Control Point Calculations for resurfacing* requirement here

C. 25% Plans Checklist (Place a Check Mark, or N/A)

removed *Originals* requirement here - only require PDF now

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".

removed *Verify CAD standards* requirement here
Also removed check box for legend of conventional symbols - put it in General Notes section

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
-- 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

other summary tables a needed and directed by the City

_____ 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

_____ Project Features
(Type of work such as: Grading, Storm Drainage, Concrete Curb & Gutter, Paving, etc. Place under Project Name & Number in heading.

_____ 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)

_____ 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)

____ List of Graphical Scales used for the Project

____ Label Project Name and Number along right side of sheet

____ Add 25% Plan label to top right corner of sheet

2. General Notes

____ Survey Description (Complete Information in Survey Prepared By block)
this was previously listed under plan sheet as Datum Description

____ 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

4. Plan and Profile Sheets
combined a lot of the plan and profile information that was repetitive

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
_____ Datum Description (Place Block on Plan sheet #4)

_____ 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). Labeling is not necessary at this milestone. Drainage improvements should not be shown – these are not detailed enough at this milestone)

_____ Proposed pavement markings shown on plan sheets at this phase

_____ Match Lines (reference station number and sheet number)

_____ Existing Profile Features added profile information here
_____ 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 (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

this was at the top but made more sense to move here

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 25% 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)

got rid of pavement deg., erosion control and Traffic Control notes that are no longer needed

_____ Provide Details for retaining walls, non-standard catch basins an 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. removed "*label tree removal*"

_____ Show pavement removal with appropriate hatching

_____ Show accessible ramp locations removed "*with crossings*"

_____ 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):

_____

_____

_____

_____

_____

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 removed "*if applicable*"

_____ 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.

_____ 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 updated from Utility Construction 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):

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 removed *and typical sections modified*

_____ Final storm drainage calculations *simplified text here*

_____ 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. Verity 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 numbers shown with standard parcel block information (check to make sure this matches plats/exhibits)

_____ 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):

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

removed *listing of Right of way and easement areas*

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

Removed *Construction Staking Plans Section - no longer needed*

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

Consultant Forum 6-24-2020

Specifications:

Specifications are the mechanism we use to give direction to the contractor. Special Provisions are indigenous to the individual project. They are our chance to describe and explain what we want from the contractor. Most of our claims are based on vagueness or conflicts between the plans and the specifications.

Expectations:

- SPs must be clear.
- SPs must match both the plans and the cost estimate (bid tabs).
- The SP is between the City and the Contractor. Not the State or a Manufacturer or the Designer.
- Write as many SPs as it takes to build the project.

Examples of what we're seeing with the Special Provisions.

- When an SP references another SP, then the numbers must align. For example, we see SPs that reference SP-04 Borrow, but SP-04 is Concrete WCR. That creates vagueness.
- SPs must match the plans. If the SP is "Adjust water vault" and the SP reads that this item covers adjusting the water vault vertically, but the plans show the water vault being "adjusted" five feet horizontally, then these two don't match. The result is an extra item.
- SPs should represent something unique to the project. An SP shouldn't be a repeat of a State Standard or a City Standard. The SP should show something that is not normal that is included in the project.
- When using a City boilerplate SP, edit the boilerplate to fit the project.
- When on a City project with no State participation, do not write a specification requiring NCDOT to review and approve something.
- When on a City project with State participation, and NCDOT review is required, all submittals will still be submitted to the City before being sent to NCDOT. SPs should not require the contractor to have direct submittals or direct contact with NCDOT.
- The contractor sends all submittals to the City. City staff will then forward the submittals to the appropriate parties for review, Engineer of Record and NCDOT if applicable. (On a City Project – all submittals will go to the Engineer of Record for review, especially all structural reviews.)
- The unit of measurement in the SP and the unit of payment in the bid tab must match.

- The SP must include items that are incidental to the item. For example, a retaining wall SP whose payment is in SF measured from the top of footing to the top of wall, must make it clear that the footing is incidental to the pay item. Another example, a bridge approach whose payment is LS must list out everything that is included in the lump sum.
- Do not insert a manufacturer's specification directly into the City's contract as an SP. We are seeing SP's that say "if owner does not install per manufacturer's specifications then the warranty is voided" and "if owner cannot show proof of regular maintenance, then the manufacturer's warranty is voided". The City has a warranty between the City and the Contractor. If an extended warranty is required, it is still between the City and the Contractor.

Role of Construction Program

Construction inspectors are responsible for administering the construction contract to ensure that the contractor meets the specifications within the contract and the project is built per the plans.

During construction, the construction staff:

- Will be the point of contact with the contractor
    - Designers do not interact directly with contractors without City staff being present.
    - The City has a contract with the Contractor. The City has a contract with the Designer. There is no contract between the contractor and the designer. Construction staff will have those interactions take place in an open form so that any decisions can be documented.
- Will receive submittals and RFI's from the contractor and distribute them to the PM (and team) for review, approval, etc.
    - Submittals for structural items, specialty items, etc. require the approval of the Engineer of Record.
    - The Construction staff does not approve submittals.
- Will contact the PM (and team) with issues.
    - The construction staff will not change the plans.
    - We will ask the engineer of record for guidance.
    - A call from the construction team requires immediate attention, because we're not going to call if everything is going per plan

During design and bid phases, the construction staff:

- Will review plan sets for constructability
    - We aren't questioning the design. We are looking for how the contractor will build the project. Usually we are identifying risks.
    - We are looking for the critical path in the construction of the project.

- Will request a field walk thru with project team (typically at 50-75%)
    - It is important to look at issues and potential risks in the field. The more issues that you can address through design, the fewer changes we should have during construction.
- Will assist in reviewing cost estimates
    - We do not have the capability to do quantity take-offs, therefore we rely on the designer to perform and double check the quantity take-offs.
    - We are looking for pay items to match the materials on the plans.
- Will review specifications to help look for conflicts or vagueness. (We don't like claims.)
    - We are looking at pay items vs measurement items
    - Looking for anything confusing or duplicated.
    - We are looking for long lead items that may affect the schedule.
- Will review the project manual prior to bid advertisement
- Will work with the PM to set a realistic construction duration for the project. The Construction Program is working on a process that identifies risks on a project and thus adds contingency for unknown items or time for known items. A duration can be refined as the plans are developed.

Change Orders are required for budget, scope, and time changes. We are seeing a significant increase in Change Orders for time changes or durations. On a typical sidewalk project or widening project etc., a contractor does not average $10,000 expenditures. Things to think about as the plans are developed and Special Provisions are written:

- Are there any specialty items on the project?
    - If so, how long will it take to get these manufactured and delivered AFTER the submittals are approved.
- Are there utilities in conflict that have to be relocated during construction?
    - We usually see this for gas lines because of their close proximity to underground stormwater work.
    - Sometimes these are Charlotte Water facilities especially sewer laterals.
- Will there be any Encroachment agreement requirements?
    - We see lane closure requirements in encroachment agreements that either are not on the plans, or they are on the plans but they conflict with the Traffic Control SP.

- Look at the time of year that the project will be built.
    - Asphalt and Full Depth Reclamation have temperature requirements that keep the work from being installed during the winter months. Most of the time we can't do final pavement and pavement markings between December and March.

Please concentrate on producing a constructible project package (plans & specs). We are available for questions prior to construction and will assist the PM any way we can to ensure that construction can proceed "smoothly".