I. GENERAL

A. Project Overview

First Submittal

___Proposed improvements and project limits are consistent with the scope and type of work

___Other projects in the same area have been noted

___Adjacent plats reviewed for subdivision regulations and commitments

Second Submittal

___Design exceptions requested and approved

PS&E Submittal

___Checked for multi-year contract and appropriate fact sheets created

B. Special Provisions

Draft PS & E Submittal

___Special provisions written for items not covered by the City of Lincoln Standard Specifications for Municipal Construction, any supplemental specifications, or previously approved special provisions.

___ Special events during construction noted

___ Status of Adjacent Projects analyzed

___ Status of Utilities noted

___ Status of ROW noted

___ Status of Railroad noted

___ City supplied traffic items listed

C. Special Plans

First Submittal

___Cost/Benefit Analysis to determine if guardrail needed

___Fence replacement with project? By contractor or property owner?

Second Submittal

___ Special Plans drafted

___Lincoln Standard Plans reviewed

___Lincoln Specifications reviewed

___ Lincoln Design Standards reviewed

D. PS & E

PS & E Submittal

___PS&E forms completed

___Verify all bid item #'s are referenced in Appia software

___Bid Form matches Summary of Quantities sheet

E. Permits / Agreements

Periodically throughout design, Project Managers should be looking at agreements that were in place prior to the beginning of the project to verify correct information

First Submittal

___"Project Permit Checklist" completed
___Begin coordination with the Railroad

Draft PS&E

___Permit applications have been submitted (update the city's project database to include submittal date)
___Check for agreements with other local government agencies

PS&E Submittal

___ Permits obtained (update city's project database to include the permit approval date)

F. Geotechnical

Second Submittal

___Geotechnical Report reviewed to assure conformity with plans and specifications
___Unsuitable material identified
___Settlement time determined
___Compaction requirements determined
___Groundwater concerns identified

G. Cost Estimates

Level of Cost Estimating detail appropriate for project submittal
Cost Estimates shall be the total cost of the project. Items shall include, but not be limited to: utilities (private and public), right-of-way, construction, preliminary engineering, railroad, and construction engineering

First Submittal

___Major cost changes have been noted

Second Submittal

___Group Pay Items by discipline

a. Paving
b. Storm Sewer
c. Sanitary Sewer
d. Water Main
e. Erosion Control
f. Pavement Markings
g. Signing
h. Lighting and Traffic Signals
i. Miscellaneous
j. Bridge
k. Landscaping

___Estimates and Appia broken out into separate City funding sources (i.e. Water

Department Funding)
___Check that pay items in cost estimate match “Pay Items List”
___Estimates checked against Summary of Quantities Sheet.
___Submit cost estimates at each submittal or as directed by the Project Manager

II. ROADWAY

A. Typical Section

First Submittal

Items identified are:
___Pavement type
___Pavement depth
___Pavement cross-slope
___Over excavation
___Subgrade
___Lane width
___Shoulder width / type
___Curb type
___Sidewalk width
___Median surfacing & width

B. Geometrics

First Submittal
___Alignment of lanes checked
___Length of Turn Lanes conforms to C.O.L. standards
___Bus turnouts analyzed
___Geometrics designed for U-turns where applicable
___Taper lengths in accordance with City of Lincoln Standards
___Location of turn lanes identified
___ Check Geometrics using "Auto Turn" software

C. Horizontal Alignment

First Submittal
___Superelevation Method Noted
___Alignment checked by hand to determine if data is correct and not affected by rounding errors created in GEOPAK
___Curve Radii conform to C.O.L. Standards

D. Vertical Alignment

First Submittal
___Length of curve rounded to nearest 10' increment (20' preferable)
___"K" Value meets more conservative of C.O.L. design standards or AASHTO Green Book
___High point / low point location adjusted to minimize drainage concerns
___Verify no low points in intersections
___Intersection and driveway sight distance calculations submitted
___Minimum and maximum allowable grades checked for all locations (including 3% platform at all intersections that could potentially be signalized)

E. Intersections / Driveways

First Submittal

___ Surfacing material for driveways and intersections identified
___Access Control analyzed

Second Submittal

___Angle of intersection in conformance to C.O.L. Design Standards
___Appropriate curb return radii & tapers meet C.O.L. Standards
___Proposed entrances and exits align with other proposed or existing entrances and exits
___Proposed entrances and exits located to provide maximum separation from other drive approaches and intersections
___Left-turn lanes are offset for sight distance
___Intersection and driveway sight distance calculations submitted
___Locations of obstacles / hazards identified, including objects in sight distance triangle
___Driveway slope in conformance with C.O.L. Standards
___Driveway profile meets ADA regulations across sidewalk
___Adjacent sidewalks adjusted to proposed intersection / driveway elevation and meet ADA Guidelines

F. Earthwork

First Submittal

___Over excavation requirements analyzed

Second Submittal

___Earthwork quantities calculated
___Additional top soil requirements analyzed
___Compost requirements analyzed (if required then coordinate with City Landfill)

G. Cross Sections

Second Submittal

___Tie-in locations meet existing ground
___Positive Drainage achieved at tie-ins
___Retaining walls shown at correct locations
___Meet C.O.L. Standard tie-slopes

H. Cul-De-Sacs / Dead Ends

First Submittal

___Maximum length requirements are not exceeded

Second Submittal

___Conformity to Design Standards and LSP 662
___Turn around provisions met (LSP 620)
___Proper barricades and markers specified (LSP 164)

I. Construction / Removal

Second Submittal
___Salvaged materials identified (pipes, poles, fire hydrants, etc.)
___Pavement Removal for Utility Construction Included
___Pavement Replacement for Utility Construction Included
___Coordination completed with Rehab for pavement resurfacing
___Check trench depths in relation to construction limits
___Check limits of excavation for retaining walls in relation to construction limits

J. Joints / Grades

Second Submittal
___Grades Reflect proposed drainage patterns
___Check Turn lane taper elevation at curb line for positive drainage

K. Sidewalk & Trail Issues (maintain pedestrian access)

First Submittal
___Check Current Comp Plan for future bike trail locations
___Sidewalk width – 5 feet along arterials; Passing opportunities provided elsewhere
___Pedestrian connections have been identified

Second Submittal
___Temporary construction phase issues identified and addressed
___All sidewalk ramps in project limits meet ADA requirements
___Pedestrian write up for the sidewalk and trail committee is completed

III. TRAFFIC

A. Data

First Submittal
___Traffic data, projections, and vehicle turn movements (including u-turns) have been obtained and addressed
___Design is appropriate for ADT

B. Traffic Analysis

First Submittal
___Intersection Capacity Analysis completed
___All appropriate warrants analyzed (i.e. Signal, Turn-lane, Etc.)

C. Signals

Second Submittal
___Signalization times are included
___Traffic Engineering contacted
___Identify city supplied items

Draft PS&E
___Order city supplied items

D. Markings

Second Submittal
___Pavement markings conform to MUTCD Standards and LSP 79
___Parking issues that affect markings have been identified and addressed
___Crosswalk locations identified and any issues addressed
___Pavement markings consistent with existing markings on project ends
___Stop bar locations identified for bus / truck turning movements
___ Include strip map

E. Signing

Second Submittal
___Signing items are included
___Sign sleeves are included

F. Lighting

Second Submittal
___Lighting items are included
___Coordination complete with Lincoln Electric System

IV. TRAFFIC CONTROL

A. Construction Phasing

First Submittal

___ Include strip map

___General description of phasing and Initial Detour Route discussed with Construction Engineer and Traffic Ops

Second Submittal

___Provide and maintain access during construction

___Roadway and pedestrian traffic handling considerations are listed on the plans and if appropriate noted in Special Provisions

_____Businesses

_____Local traffic

_____School busses

_____Emergency vehicles

_____Postal delivery

___Peak hour lane closures and weekend closures have been addressed

___Temporary pavement markings have been addressed

B. Detours

Second Submittal

___Detour routes

_____Necessary improvements needed for intersections on detour route identified

_____Coordination done with other projects in the area

_____NDOR and/or County to review detour routes if route is on their system

_____Structures along detour route checked for Vertical and Horizontal clearances

C. Traffic Controls

Second Submittal

___Minimum MUTCD requirements and City of Lincoln Traffic Control Guidelines for Street Construction, Maintenance and Utility Operations have been reviewed

___Posted speed during construction

V. STORMWATER

Second Submittal

Pipe Systems:

___Storm Water drainage system provides required capacity and meets C.O.L. design Standards
___Drainage Study Data reviewed
- _____Drainage area
- _____Storm Frequencies used
- _____Discharges determined (including pre and post development if applicable)
- _____Check that necessary water surface elevations will not be increased

___Hydrologic and Hydraulic Computation requirements:
- _____Appropriate rational method coefficients used
- _____Overland flow computations completed
- _____Street carrying capacity completed
- _____Inlet computations completed
- _____Placement of inlets appropriate both horizontally and vertically so that they collect drainage, are not on the high side of curves, appropriate number of inlets, canted or straight, etc.
- _____Pipe size computations completed
- _____Open channel computations completed
- _____Outlet computations completed including appropriate erosion control
- _____Analysis of downstream impacts below the outlet of the system

___Storm Water drainage profile requirements:
- _____Minimum and maximum slope requirements satisfied
- _____Minimum cover requirements satisfied
- _____Minimum separation between storm sewer and other utilities satisfied
- _____Any needed water looping accounted for in design and cost estimate
- _____Hydraulic grade line checked
- _____Profiles for trunk lines and lateral lines shown

___Storm water drainage system coordinates with area Subdivision Studies.
___Pipe taps into pipes > 30” if adjoining pipe is < 0.5 x pipe diameter checked
___Account for sewer and water service lines(s) conflicts in design and estimate
___Special ditches designed if necessary
___Special structures or headwalls designed if necessary (check maximum depth of inlets and manholes)
___Grate on flared end section (inlet side only)

Bridges and Culverts:

___Storm Water drainage system provides required capacity and meets C.O.L. design Standards
___Drainage Study Data reviewed
- _____Drainage area
- _____Storm Frequencies used
- _____Discharges determined (including pre and post development if applicable)
- _____Check that necessary water surface elevations will not be increased

___Hydrologic and Hydraulic Computation requirements:
- _____Appropriate SCS curve numbers used
- _____Appropriate Time of Concentration used
- _____Flow acquired from a Watershed Master Plan
- _____HEC-RAS or HY8 model
- _____Appropriate roadway overtopping used
- _____Analysis of downstream impacts below the outlet of the system

___Special structures or headwalls designed if necessary

VI. SANITARY SEWER

First Submittal

___Existing service lines researched – location available from TV Logs

___Meeting with Wastewater to discuss possible system improvements, capacity, by-pass pumping plan, etc.

Second Submittal

___Sanitary sewer sized appropriately (minimum size = 8") and designed to meet C.O.L. Standards

___Hydraulic grade line checked

___Manhole locations at intersections of sanitary sewer pipes, change in pipe diameter, when there is a significant change in slop or direction, and at maximum spacing of 600 feet

___Flow line elevation difference between manhole inlet(s) and outlet checked

___Drop manhole(s) used when invert elevation differences are greater than 2.5 feet

___Services shown to each platted lot (table of information)

- _____Location of wye on sanitary sewer checked
- _____Flow line of main sewer at wye checked
- _____Flow line of service at wye checked (1 foot above flow line of main sewer)
- _____Flow line of service at lot line checked
- _____Length of service checked
- _____Location of service at lot line shown (dimension from lot line if not centered in lot)

___Sanitary Sewer Profile requirements:

- _____Minimum slopes and maximum slopes requirements checked
- _____Minimum cover requirements; (maximum depth = 15 feet)
- _____Minimum separation between sewer line and other utilities

VII. WATER MAIN

First Submittal

___Recommend pipe materials for special circumstances and large transmission piping
___Alignment and location (with respect to street and ROW line)
_____ Design standards (for new areas) or consultation with LWS
_____ Consider future development, maintenance, and future one-call locates
_____ Clear distance to existing and future structures
_____ North and East sides of street
___Horizontal Location
_____3.5 feet back of curb for residential
_____7 feet back of curb for commercial / industrial
_____50 feet from centerline in 120 ft ROW type arterials
___Preliminary profile
___Evaluation of major storm water utility crossings with preference of water crossing over rather than under.
___Determination of additional field verification of alignments and depths of water, storm, sewer or other conflicting utilities
___Evaluation of corrosion concerns and determination of additional analysis such as soil testing
___Disruption of service (if allowed, duration, location and type of customers)

Second Submittal

___All lots served by abutting main (new subdivisions / districts)
___Connections with existing mains identified and shown on the plans
___Existing service lines and meter pits are located and shown on the plans
___Easement if not in ROW
___Horizontal Alignment
_____Curvilinear alignments for jointed pipe deflect at joint only and do not exceed allowance
_____Curvilinear alignments for bored pipe do not exceed manufacturer's maximum deflections
_____Curvilinear alignments exceeding maximum joint deflections constructed with appropriate bends
___Vertical Alignment
_____Vertical depth between 4.5 and 6.5 feet
_____Vertical deflections occur at joint only and do not exceed allowance
___Thrust Restraint
_____Thrust blocks at all dead ends, bends, tees, plugs and other fittings
_____Thrust collar detail for 6" - 16" PVC pipe materials
_____Fire hydrants constructed with anchor coupling and thrust blocking
_____Consideration for restraining segments that need to be restored to service (retainer glands versus thrust blocks)
_____Consideration for restrained joint pipe for larger mains
___Water Service, Backflow Prevention and Fire Flow Metering if replacing a meter pit/structure
_____Customer contacted regarding project to discuss options, design issues and disruption of service
___Dead-Ends and Cul-de-Sac details
_____All lots served

_____All taps can be made to an abutting main
_____Type V hydrant installed at abutting property line

___Fire Hydrants on all distribution mains
_____Fire Hydrant spacing of 420 feet in residential areas
_____5.5 feet back of curb opposite ROW corners for residential
_____7 feet back of curb for commercial and arterial
_____Fire hydrant Installed on either corner of tee intersection
_____Fire hydrant locations reviewed by Fire Dept on arterials & commercial / industrial area. The number of hydrants required may be reduced on arterials.
_____Minimum of two hydrants on cul-de-sac lengths from 150 feet – 400 feet
_____Minimum of one hydrant on cul-de-sac lengths less than 150 feet
_____Maximum of one hydrant extension and only where necessary (Maximum extension length of two feet.)
_____LWS installs hydrant extension and contractor responsible for all costs
_____Check that hydrant locations are not in conflict with existing sidewalks, future sidewalks, or other structures, driveways, & turning radii

___Valves
_____Feeder loop isolation
_____Valves spacing at maximum of 600 feet or maximum of 15 service connections
_____Allow isolation for flushing and disinfection
_____Allow for main to be extended in the future without hampering operations / service
_____Valves located on ROW / property lines extended
_____Tapping sleeve and valves have adequate clearance to be installed in locations shown (LSP 340)
_____Butterfly valve detail showing field bevel for proper operation (Butterfly valves required on 12" PVC)

___Crossing and Clearances from Utilities
_____10 foot horizontal separation from sanitary sewer and/or storm drainage
_____18 inch vertical separation on sanitary sewer and/or storm drainage crossings
_____Reconstruct sanitary sewer pipe with pressure pipe to provide 10 foot clearance of joints from water main where applicable
_____2 foot clearance from open structures
_____Eliminate looping under storm pipes when possible by adjusting storm pipe grades or water line grades to minimize the number of fittings.
_____All conflicting utilities have been studied and resolution documented
_____Evaluate need for encasement pipe, i.e. railroad, highway crossings and may be recommended at other locations (near MSE walls, embankments, structures, etc.)

___Provide a schedule of water service reconnections/reconstruction per GPP
___Reconnect all non-abutting services to abutting main per GPP
___Provide approximate location of water service from property line to water main
___Show locations of water main abandonment and valve box abandonment
___Bore under trees – coordinate w/ City Forester
___Determine flushing and disinfection by LWS or by contractor depending on pipe size and project scope
_____Location of temporary hydrants or blow offs for flushing and disinfection. Coordinate with Lincoln Water.
_____Temporary blow off size to provide minimum 2.5 feet per second velocity for flushing
_____Erosion control and conveyance of flush water
_____Neutralization of chlorine in flush water

___Location of air valves and permanent blow offs

Draft PS&E Submittal

___Schedule of shop drawing submittals included in Special Provisions
___Specials for addressing outages and disruption of water service within distribution system
    _____Identify critical customers and specify times and lengths of allowable outages
    _____Identify proper contacts with LWS to adequately plan outages
___Specials for addressing disruption of major water lines (24" and larger)
___Specials for restrained joint fittings and valves where applicable
    _____Include special details when necessary for special restraint callouts
___Specials for air valves and permanent blow offs for large pipe
___Specials for flushing, disinfection, dechlorination and erosion control.
    _____Refer to AWWA Standards
    _____Require flushing and disinfection plan
    _____Dechlorination procedures

VIII. EROSION CONTROL

Second Submittal

___Appropriate erosion control design requirements:

- _____Rip Rap
- _____Seeding (temporary and permanent)
- _____Erosion control mat
- _____Channel bank stabilization material
- _____Silt fence
- _____Mulching
- _____Inlet protection
- _____Construction entrance
- _____Other

IX. RIGHT-OF-WAY

First Submittal

___Retaining wall locations identified (city property or private property)

Second Submittal

___Right-of-Way, Temporary Easements and Permanent Easements acquired and recorded

_____Easements must be shown around sump inlets ponding on private property and sump inlet ponding calculations must be provided

_____Easements must be provided around open drainage ways and computations supporting the drainage way must be provided

X. LANDSCAPING

Second Submittal

___Coordination with Parks and Recreation Department and Water Department

___Irrigation systems addressed

XI. BRIDGES

First Submittal

___Structures checked for vertical and horizontal clearance
___Coordination with private and public Utilities to determine if utilities, including lighting, will be on bridge
___Check to see if pedestrian or bike trail needs to be incorporated into bridge design
___MSE walls or fill slope comparison completed
___Type, size and location (TS&L)

Second Submittal

___Guardrail designed
___Approach slab designed
___Hydraulic Impact Study submitted
___Fencing shown
___Impact attenuators designed

XII. UTILITY ISSUES

First Submittal

___Utility conflicts identified (early coordination is required – send a copy of 1st submittal to all utilities, with a copy of cover letter to be placed in the file)

Second Submittal

___All conflicting utilities have been studied and resolutions documented

___Affected utilities are notified

___Plans sent to Utilities with a copy of cover letter to be placed in the file

Draft PS&E

___Plans sent to Utilities with a copy of cover letter to be placed in the file

PS&E Submittal

___Plans sent to Utilities with a copy of cover letter to be placed in the file

XIII. MISCELLANEOUS

A. Environmental
Check to see if Environmental impact statement or Environmental assessment is needed

First Submittal

___Endangered Species identified
___Endangered Plants identified
___Borrow pit – exposed groundwater?
___Hazardous Waste materials identified
___Historical Sites / Structures / Section 4f areas identified
___Coordinate with State Historical Preservation Organization and with City Historian
___Air Quality Study completed (required for ADT > 100,000 in design year)
___Noise Study completed
___Verify plans include known environmental commitments
___Coordinate final plans with "Project Permit Checklist"
___Miscellaneous removal items included:
  _____Houses, Garages, Sheds
  _____Septic Tanks
  _____Pumps / pump islands
  _____Gas tanks
  _____Well abandonment
  _____Asbestos
___Wetlands identified
___Groundwater contamination requirements checked and met
___Contaminated soil requirements checked and met