

	Water System	PCA / EO Plans		
		SUBMITTAL DATE:		
PROJECT NAME:		DESIGN FIRM / DESIGNER:		
PROJECT NUMBER:		<u>City of Lincoln Design Standards supersede this check list.</u>		
WORK COMPLETED				
<u>Alignment and Location (with respect to street and ROW line)</u>				
<u>General Items</u>	YES	NO	NA	SUBMITTER OR DESIGNER COMMENTS
Consider future development, maintenance, and other utilities.				
Clear distance to existing and future structures. <i>(2' radius on curb inlets and manholes; 15' horizontal from buildings)</i>				
All conflicting utilities have been studied and resolution documented.				
Connections with existing mains identified and shown on the plans				
Preferably North and East sides of street with crossings at 90° at intersections.				
All lots served by abutting main <i>(new subdivisions / districts)</i>				
Location of air valves and permanent blow offs				
Location of temporary hydrants, valves, and / or blow offs for flushing and disinfection. Coordinate with Lincoln Water.				
Evaluate need for encasement pipe, i.e. railroad, highway crossings and may be recommended at other locations. <i>(near MSE walls, embankments, structures, etc.)</i>				
Show locations of water main abandonment and valve box abandonment.				
<u>Horizontal Location</u>	YES	NO	NA	SUBMITTER OR DESIGNER COMMENTS
Easement, if not in ROW				

50 feet from centerline in 120 feet. ROW type arterials				
5 feet back of curb for residential; 7 feet back of curb for commercial / industrial				
10 foot horizontal separation from sanitary sewer and/or storm drainage when utility mains parallel				
2 foot crossing clearance from open structures				
Bore under trees – coordinate w/ City Forester				
<u>Horizontal Alignment</u>	YES	NO	NA	SUBMITTER OR DESIGNER COMMENTS
Curvilinear alignments for jointed pipe deflect at joint only and do not exceed 1° for PVC; 4° for DIP				
Curvilinear alignments for bored pipe do not exceed 1° for PVC to PVC; 4° for DIP to DIP (minimize pipe wall stress when ever possible)				
Curvilinear alignments exceeding maximum joint deflections constructed with appropriate bends				
<u>Profile / Vertical Alignment</u>	YES	NO	NA	SUBMITTER OR DESIGNER COMMENTS
Vertical depth between 4.5 and 6.5 feet				
Vertical deflections occur at joint only and do not exceed allowance				
Evaluation of major storm water utility crossings with preference of water crossing over rather than under. (Eliminate looping under storm pipes when possible by adjusting storm pipe grades or water line grades to minimize the number of fittings.)				
18 inch vertical separation on sanitary sewer and/or storm drainage transverse crossings				
Reconstruct sanitary sewer pipe with 20 foot pressure pipe section centered across water main where applicable.				
<u>Dead-Ends and Cul-de-Sac details</u>	YES	NO	NA	SUBMITTER OR DESIGNER COMMENTS
All lots served from a BOC tap location...not necessarily in front of each lot.				
All taps can be made to an abutting main				

<u>Existing Services</u>	YES	NO	NA	SUBMITTER OR DESIGNER COMMENTS
Existing service lines and meter pits are located and shown on the plans				
Consideration for restraining segments that need to be restored to service (<i>retainer glands versus thrust blocks</i>)				
Identify proper contacts with LWS to adequately plan outages				
Specials for addressing disruption of major water lines (<i>24" and larger</i>)				
Reconnect all non-abutting services to abutting main per GPP				

Detailed Components

<u>Thrust Restraint</u>	YES	NO	NA	SUBMITTER OR DESIGNER COMMENTS
Thrust blocks at all dead ends, bends, tees, plugs and other fittings as outlined in Design Standards.				
Include special details when necessary for special restraint callouts				
<u>Fire Hydrants</u>	YES	NO	NA	SUBMITTER OR DESIGNER COMMENTS
Easement, if not in ROW				
Fire hydrants on all distribution mains				
Fire hydrant installed on either corner of tee intersection				
Constructed with anchor coupling and thrust blocking				
Fire hydrant spacing of 420 feet in residential areas				
7 feet back of curb opposite ROW corners for residential; 9 feet back of curb for commercial and arterial.				
10 feet Separation from Storm inlets				

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 (<i>Maximum extension length of two feet. LWS installs hydrant extension and contractor responsible for all costs.</i>)				
Check that hydrant locations are not in conflict with existing sidewalks, future sidewalks, or other structures, driveways, & turning radii				
<u>Valves</u>	YES	NO	NA	SUBMITTER OR DESIGNER COMMENTS
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 locations shall have 3 feet minimum radius, clear space from any vertical structures greater than 2 feet in height (<i>for ease of shutoff with valve key</i>)				
Valves located in ROW on property lines extended				
Tapping sleeve and valves have adequate clearance to be installed in locations shown (<i>see LSP</i>)				
Gate valves are used on 12" diameter and smaller mains.				
Butterfly valves are used on 16" diameter and larger mains				