



COUNTY WATER DISTRICTS

Delivering Quality and Commitment in Every Drop

Design Criteria Checklist for Force Main & Lift Stations	
Design Report & Design Narrative	
Design per Ten State Standards Chapter 40. Any deviation shall be clearly noted.	
	Summarize the population served, per capita flows, percentage of units contributing flow, design flows, corresponding velocities, minimum/maximum elevations, and minimum/maximum pressures.
	<ul style="list-style-type: none"> Verify the line sizes match between calculation and plans.
	<ul style="list-style-type: none"> Use CHW roughness coefficient not greater than 120.
	If proposed force main manifolds into an existing force main, lift station shall be evaluated to operate at both minimum and maximum pressures as provided by WSB.
	Identify future phases of development. Verify initial design is adequate to serve future growth.
	Hydraulic analysis and design narratives shall be sealed by a KY-licensed professional engineer.
	* All review comments from DOW, if any, shall be shared with WSB.
Design Plans - General Information	
	Include a vicinity map. Include a key map for linear or large projects.
	WSB's standard sewer note block shall be attached to any sewer or joint utility plan.
	WSB's most recent standard details shall be attached to the plan set.
	WSB's most recent lift station details shall be attached to the plan set.
	Force main features shall be bold or orange.
	Show faint existing contours and bold proposed contours on utility plans.
	Force mains shall be proposed at least 5' horizontally from any existing or proposed utilities (10' separation with water). Variances to this require DOW approval.
	Access from the entrance of the site, to the lift station, and back to the entrance shall be traversable by WSB vac-truck. See standard turn radius drawing for wheelbase in WSB Standard Lift Station Drawings.
	Air release valves shall be installed at all high points and as directed by WSB.
	Where possible, force mains shall be installed along traversable paths. No force main shall be proposed in ditch lines and when passing through a steep slope, the main shall run perpendicular to the slope.
	Show clear depiction of future phases of development with proper tie in locations.
	No tree plantings shall be proposed within 5' of any water, sewer, or force mains or services.
Plan view shall include:	
	<ul style="list-style-type: none"> Horizontal separation with other utilities.
	<ul style="list-style-type: none"> Service line location(s).
	<ul style="list-style-type: none"> Show stationing on force main in plan view and ensure it matches profile stationing.
Profile shall include:	
	<ul style="list-style-type: none"> Major and minor gridlines that allow for at least half a foot vertical accuracy.
	<ul style="list-style-type: none"> Existing and proposed ground surfaces.
	<ul style="list-style-type: none"> Provide continuous upward or downward slopes in force main between air release valves and low points.
	<ul style="list-style-type: none"> Alignment stationing at notable features (ARV's, line valves, bends, casing locations, etc.).
	<ul style="list-style-type: none"> Invert elevations for force main discharge into gravity sewer.
	<ul style="list-style-type: none"> Force mains less than 12" in diameter require a minimum of 30" of cover. Force mains 12" in diameter or greater require a minimum of 48" of cover.



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	<ul style="list-style-type: none"> Existing and proposed crossings with water, sewer, storm, or force mains with 2' of vertical separation or less shall include a dimension stating the vertical separation to the hundredth of a foot on a profile. If 18" cannot be achieved due to site constraints, casing can be utilized down to a minimum separation of 6". Where possible, water mains shall be installed above other utilities at crossings.
Lift station design shall be in compliance with Chapter 10, 20, and 40 of the Ten State Standards and shall include considerations for:	
	Site Plan with existing and proposed grading depicting orientation of incoming gravity sewer, wet well, valve vault, force main discharge, and electrical transformers if applicable.
	The top of the lift station shall be at least 1' above finished grade. When adjacent to drainage basins, the top of the lift station shall be a minimum of 2' above the HW-100.
	Lift station detail shall include a plan view, section view, and, when applicable, shall include an auxiliary wet well (all to scale). Refer to WSB standard lift station detail templates.
	For projects requiring work in state or county rights-of-way, provide ROW Permit.
	Plans shall be sealed by a KY-licensed professional engineer.
Material & Construction Requirements	
Size and Material	
	All proposed force mains shall be class 200 PVC or C900.
	Casings shall be required when crossing existing roadways and in new construction for any street above local road classification. Casings may be required in other scenarios on a case by case basis defined by WSB.
	Carrier pipe in casings above 50 feet shall be restrained (either restrained joint PVC, external PVC bell clamps, or fused DR-11 HDPE).
	4" minimum diameter.
Connection to Existing Sewer	
	For public force main connections, construct "external drop" tie-in per WSB Standard Drawings.
	Any force main out letting to a gravity sewer should have an in-line valve on the force main approximately five feet from the outside of the structure.
	Connection to existing manhole requires application of WSB approved corrosion prevention coating to the connecting manhole and next two downstream manholes.
	For private force main connections, consult with WSB.
	Spacing of line valves shall be approximately 1,000-ft. Line Valves shall be placed in low points of line, or as directed by WSB.
	* All precast structure submittals must be accompanied by signed documentation from the design engineer verifying that the shop
Easements & Property	
	10-ft Utility Easement (5' ESOL) is required for all public force mains.
	It is the responsibility of the developer to obtain all needed easements.
	Property for sewer lift station shall be deeded to WSB. Depending on location, WSB may require a dedicated 20-ft wide access easement to lift station.
	Utility Easements or subdivision plats must be recorded before the system will be accepted by WSB.