

PROJECT NAME: \_\_\_\_\_

LOUDOUN WATER PROJECT ID# \_\_\_\_\_ SUBMISSION # \_\_\_\_\_ DATE: \_\_\_\_\_

Note: This checklist is provided for the convenience of design firms, so that the most common errors and omissions may be avoided. Refer to Loudoun Water's Engineering Design Manual for comprehensive design requirements and parameters. Please include this completed checklist with all submissions to ensure QA/QC has been performed prior to submission to

	1st submission	Resubmission # _____	Notes
<b>Cover Sheet and General</b>			
Include Loudoun Water Project ID # on subsequent submissions of the plan and transmittal forms/letters	Blank		
Professional Engineer's/Surveyor's/Architect's Seal, Signature and Date provided (all sheets)			
Accurate Sheet Index			
Revision block; every applicable sheet notated after the plan has been approved and issued to construction by Loudoun Water			
Standard Notes (G-5 within the <i>Standard Details</i> ) fully legible			
Most current and all applicable Loudoun Water Standard Details included in plan set			
Ensure Loudoun Water address and telephone numbers are correct/up to date.			
Facilities sized appropriately accordingly to design calculations, BOD (basis of design), master plans, minimum/maximum velocities, hydraulic water model, etc.			
Existing Loudoun Water project ID#s labeled at connecting water/sewer infrastructure; adjoining work by other plans shown (if applicable) with plan names referenced			
Recorded instrument # provided for all existing Loudoun Water easements depicted			
Existing conditions and existing utilities shown and accurately portrayed			
Coordinate system and vertical datum identified			
For projects that are phased, depict phase lines and label phases clearly on plan and profile; phases must allow independent Beneficial Use achieved and fire flow minimum pressures met			
Correct materials per EDM and Approved Materials List			
Provide updated estimate of construction costs pursuant to plans and comments. (non-linear:all submissions; linear: re-submissions only)			
Hydraulic water model provided on large developments, phased sequencing of construction or buildings, or when there may be inadequate flows, pressures, connections, or excessive amount of water main lengths or pipe velocities			
<b>Plan View - General</b>			
North arrow and minimum three grid tics per sheet			
Adequate separation between water and sanitary sewer, and with other utilities			
Pipes a minimum 15' from buildings			
Dedicated service connection for each building (water and sewer)			
Easements shown for utilities outside of public right of way			
Minimum easement widths provided for water and sanitary sewer			
Loudoun Water easements unencumbered, free and clear of structures, retaining walls, encumbrances, landscape, light poles, etc. and accessible for traverse			

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Limits of pre-blast clearly specified, where appropriate			
Access to water & sanitary sewer provided to adjoining properties			
Minimum 14 feet clearance for above ground structures (i.e., bridge, walkway)			
Crossings of retaining walls are not allowed			
<b>Profile - General</b>			
Utility crossings shown with accurate vertical clearances specified			
Profiles of existing water and sanitary sewer provided if impacted by proposed grading			
Test pits performed for all transmission mains and any mains with less than minimal clearances			
<b>WATER</b>			
<b>Water - Plan View</b>			
Minimum of two (2) separate and independent water supply source connections provided to create redundant and reliable water loop			
Minimum 10-ft separation from sanitary sewer			
Dead-end lengths less than 500-ft for 8-inch and larger, 300-ft for 6 inch			
Valving at appropriate intervals and configurations			
Minimum 300-ft radius for pipe 12" and smaller, bends required otherwise			
Minimum 500-ft radius for pipe 16" and larger, bends required otherwise			
Bends shown at accurate angles $\pm 3^\circ$			
Adequate separation from curb, storm drains, and structures			
Adequate fire hydrant spacing and coverage to all structures [300-ft (except SFD) measured by hose lay length]			
All permanent terminations by means of a hydrant			
Air release valves specified at significant high points of 16-inch and larger pipes			
Line anchor and blow-off valve provided where future extension needed			
Valve between service connection and blow-off valve in temporary terminus			
Fire hydrant min. 50-ft from commercial/industrial building			
Fire hydrant is maximum 100-ft from FDC siamese connection			
Fire service independent with anchored branch valve (6" min.) at main			
Meter crocks min 5-ft away from driveway apron and fire hydrants			
Meter sizing calculations or load letter provided; all plumbing service locations, meter size(s), maximum demand flows coordinated with MEP; include irrigation demands			

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Two (2) inch and smaller meters must be located outdoors and within a minimum 3-ft wide grass area			
Note on plan that 1-1/2-inch water meters and larger must have backflow prevention inside building mechanical room			
All water mains have stationing shown; consider labeling the fittings and valves on the plan view			
Corrosion protection provided (as required by the EDM)			
<b>Water - Profile</b>			
Proper cover specified (based on diameter) and minimized as practical			
Water crossings located above other utilities with proper			
All fittings, valves and hydrants called out and stationed			
Controlled fill specified where pipe is above existing grade			
16-inch and larger pipes have air release valves at substantial high points			
Hydrants at substantial high and low points			
diameter)			
Restrained joint piping identified where needed			
Provide profiles of the domestic water service and fire service lines			
Provide minimum 4-ft of cover on water main at locations where fire hydrants branch off the main			
<b>SANITARY SEWER</b>			
<b>Sanitary Sewer - Plan View</b>			
Manhole placement conforms to street design			
Number of manholes minimized			
Spacing between manholes within the maximum length (based on diameter)			
Minimum 90° between incoming and outgoing pipes at manhole			
Adequate angle to provide separation between pipe penetrations at manhole			
Manholes provided where future extensions are anticipated			
Pipes extend beyond waterlines, pavement, other improvements to allow for ease of future connection			
Pre-blast for future extension from manhole			
No doghouse manholes allowed, all manholes must be cut in on existing mains			
All sanitary mains have stationing shown			
Provide arrows to depict direction of flow on proposed/existing sanitary sewer			
<b>Sanitary Sewer - Profile</b>			
All invert information shown on manholes, including laterals entering manholes			

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Invert elevation of existing sewer based on as-builts and/or verified via field survey			
Length, slope, and diameter of sewer shown, accurate, matching plan view			
Minimum slopes provided (based on diameter)			
Twice minimum slope on permanent terminal run			
Cover on pipe is within standards			
Minimum depth of manhole in pavement is six (6) feet			
Adequate protection provided for stream crossings			
Drop across manholes: 0.2-ft desired; 0.1-ft minimum; pipe crowns match or better			
Maximum invert difference at manholes is 0.5-ft (no drop connections)			
Sewer depths designed to ensure that future adjacent extensions can cross adjacent stream with adequate cover			
Top of manhole is 1-ft above grade if beyond right of way and developed lawns			
Water-tight cover specified if manhole is below 100-year storm elevation			
Vents provided where necessary.			
Specify heavy duty frame and cover where manhole is in future pavement; composite manhole lids in non-paved areas			
Lining of manholes specified when force main entering manhole and for downstream manholes			
Specify material in profile. Typical material is DR25 PVC. Specify DR18 PVC sanitary sewer where cover is less than 6-ft or greater than 20-ft			
Diameter of manholes specified if larger than 48-inches			
Provide loading plane diagrams when sanitary sewer in close proximity to structures			
Note on sanitary sewer profiles that private sanitary manhole tops shall be labeled "private sewer"			
At manholes, match the crown elevation of effluent pipe with the crown elevation of the smaller diameter influent pipe			
At a manhole where influent pipes differ in size, match crowns of influent pipes			
<b>Sanitary Laterals</b>			
Laterals enter sewer at 90°			
Laterals end one foot beyond dry utility easements			
Profile or lateral table provided			
Minimum riser height three (3) feet			
Invert information correct, including laterals entering manhole			
Stations and lengths match plan view			
Risers start out of right of way and end a minimum 5-ft from end of lateral			

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Lowest floor elevation in each building listed			
Clean out added for laterals more than 100-ft			
Commercial/industrial - clean out 5-ft from building wall			
Pretreatment devices specified where applicable			
Minimum lateral size of 6-inches for commercial uses			