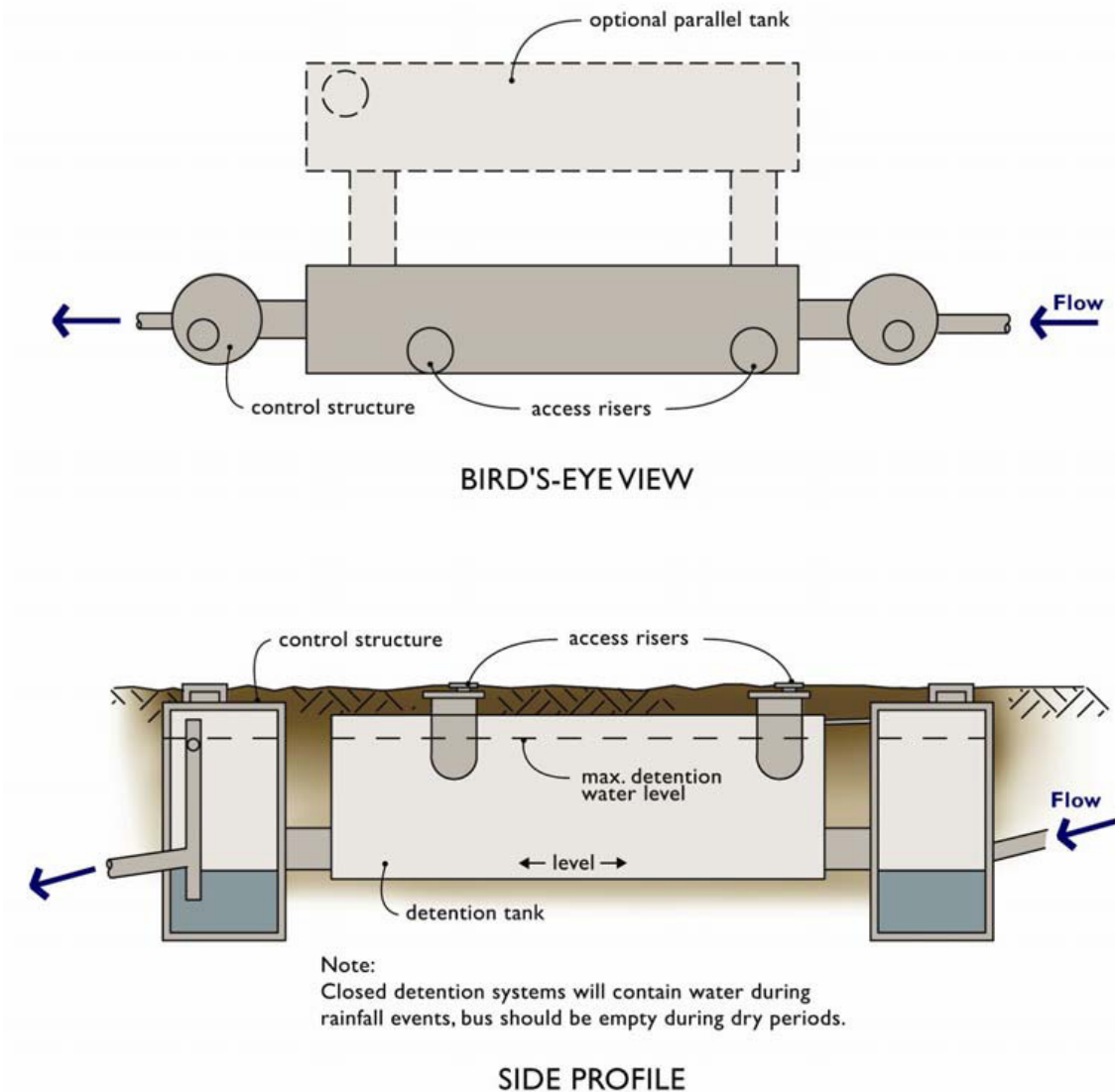


Closed Detention System (Tank/Vault)

A closed detention system functions similarly to a detention pond with the temporary storage volume provided by an underground structure to regulate the storm discharge rate from the site. The structure is typically constructed of large diameter pipe (48 inch diameter or greater) or a concrete box (vault). These systems are typically utilized for sites that do not have space available for an above-ground system and are more commonly associated with commercial sites.

Facility objects that are typically associated with a closed detention system include:

- access road or easement
- control structure/flow restrictor
- conveyance stormwater pipe



Key Operations and Maintenance Considerations

- The most common tool for cleaning closed detention systems is a truck with a tank and vacuum hose (Vactor® truck) to remove sediment and debris from the vault/tank.
- A closed detention system is an enclosed space where harmful chemicals and vapors can accumulate. Therefore, if the inspection and maintenance requires entering a closed detention system, it should be conducted by an individual trained and certified to work in hazardous confined spaces.

Closed Detention System (Tanks/Vaults)				
Drainage System Feature	Potential Defect	Conditions When Maintenance Is Needed	Minimum Performance Standard	
Note: table spans multiple pages				
Storage Area	Plugged Air Vents	One-half of the cross section of a vent is blocked at any point or the vent is damaged.	Vents open and functioning.	
	Debris and Sediment	Accumulated sediment depth exceeds 10% of the diameter of the storage area for 1/2 length of storage vault or any point depth exceeds 15% of diameter. (Example: 72-inch storage tank would require cleaning when sediment reaches depth of 7 inches for more than 1/2 length of tank.)	Storage area free of sediment and debris.	
	Joints Between Tank/Pipe Section	Any openings or voids allowing material to be transported into facility. (Will require engineering analysis to determine structural stability.)	All joint between tank/pipe sections are sealed.	
	Tank Pipe Bent Out of Shape	Any part of tank/pipe is bent out of shape more than 10% of its design shape. (Review required by engineer to determine structural stability.)	Tank/pipe repaired or replaced to design.	
	Vault Structure Includes Cracks in Wall, Bottom, Damage to Frame and/or Top Slab		Cracks wider than 1/2-inch and any evidence of soil particles entering the structure through the cracks, or maintenance/inspection personnel determines that the vault is not structurally sound.	Vault replaced or repaired to design specifications and is structurally sound.
			Cracks wider than 1/2-inch at the joint of any inlet/outlet pipe or any evidence of soil particles entering the vault through the walls.	No cracks more than 1/4-inch wide at the joint of the inlet/outlet pipe.
*NOTE - add one additional defect for "Storage Area" (see next page)				
Manhole	Cover Not in Place	Cover is missing or only partially in place. Any open manhole requires maintenance.	Manhole is closed.	
	Locking Mechanism Not	Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than 1/2 inch of	Mechanism opens with proper tools.	

Closed Detention System (Tanks/Vaults)			
Drainage System Feature	Potential Defect	Conditions When Maintenance Is Needed	Minimum Performance Standard
Note: table spans multiple pages			
	Working	thread (may not apply to self-locking lids).	
	Cover Difficult to Remove	One maintenance person cannot remove lid after applying normal lifting pressure. Intent is to keep cover from sealing off access to maintenance.	Cover can be removed and reinstalled by one maintenance person.
	Ladder Rungs Unsafe	Ladder is unsafe due to missing rungs, misalignment, not securely attached to structure wall, rust, or cracks.	Ladder meets design specifications. Allows maintenance person safe access.
Catch Basins	See "Catch Basins"		

*Add the following line for "Storage Area" defect on page 73:

Vegetation Encroachment	Root encroachment of tree or shrub have impacted function or integrity of wetvault.	Roots are found in vault to be removed and repair vault.
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