

# Structural Detention Facility

<u>Stormwater Management Goals Achieved</u>	<u>Acceptable Sizing Methodologies</u>
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Pollution Reduction.....	NA
√ Flow Control.....	PRES
Destination.....	NA

This facility is **not** classified as an Underground Injection Control structure (UIC).

SIM=Simplified Approach, PRES= Presumptive Approach, PERF= Performance Approach

**Notes:** See Report requirements, **Exhibit 2-2**, for hydrologic and hydraulic calculations that must be submitted with structural detention design. Structural detention facilities may be used to provide flow control for any impervious surface type, and may be located on private property or within the public right-of-way.

**Description:** Structural detention facilities such as tanks, vaults, and oversized pipes provide underground storage of stormwater as part of a runoff flow control system. As with any underground structure, they must be designed not only for their function as runoff flow control facilities, but also to withstand an environment of periodic inundation, potentially corrosive chemical or electrochemical soil conditions, and heavy ground and surface loadings. They must also be accessible for maintenance. Facilities in this section must be designed using acceptable hydrologic modeling techniques (Section 2.3) to meet applicable flow control requirements. Additional facilities will be required to meet applicable pollution reduction requirements.

Tanks and vaults typically do not have a built-in design feature for containing sediment, as do multi-cell ponds. When tanks or vaults are used for detention storage, therefore, either a surface sediment containment pond shall be placed upstream of the tank or vault, or the tank/vault shall be oversized to allow for the temporary accumulation of sediment. Where the tank or vault is designed to provide sediment containment, a minimum of ½ foot of dead storage shall be provided, and the tank or vault shall be designed and constructed with 0% (flat) bottom slope.

Tanks and vaults can be used in conjunction with other detention storage facilities, such as ponds or parking lot ponds, to provide initial or supplemental storage.

Because of minimum orifice size specifications, structural flow control facilities (such as detention tanks, vaults, and oversized pipes) for projects with less than 15,000 square feet of impervious surface are not effective and will not be permitted. Projects with less than 15,000 square feet of impervious surface are required to use surface retention facilities to control flows.

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**Design Requirements:** The following criteria apply to detention tank, vault, and oversized pipe design.

- All areas of a tank or vault shall be within 50 feet of a minimum 36-inch diameter access entry cover. All access openings shall have round, solid locking lids.
- Publicly owned detention tanks, vaults, and pipes are permitted within public rights-of-way. City-maintained tanks and vaults that are not located within the right-of-way, the tanks/vaults shall be located in separate open space tracts with public sewer easements that are dedicated to the City of Eugene. All privately owned and maintained facilities shall be located to allow easy maintenance and access. (**Chapter 3.0: Operation and Maintenance**)
- All tanks and vaults shall be designed as flow-through systems, unless separate sediment containment is provided.
- Minimum size for a public detention pipe shall be 36 inches. If the collection system piping is designed also to provide storage, the resulting maximum water surface elevation shall maintain a minimum 1-foot of freeboard in any catch basin below the catch basin grate. Pipe capacity shall be verified using an accepted methodology. The minimum internal height of a vault or tank shall be 3 feet, and the minimum width shall be 3 feet. The maximum depth of the vault or tank invert shall be 20 feet. Pipe material and surface treatment shall conform to the standards for detention tanks and vaults (see **Exhibits 2-22 and 2-24**).
- Detention tanks and vaults shall have a minimum of ½ foot of dead storage, unless upstream sedimentation is provided (see **Exhibits 2-22 and 2-24**).

## **Flow Control:**

- To restrict flow rates exiting the pond to those required by **Section 1.6.2**, a control structure per **Section 2.5** must be used.

## **Materials and Structural Stability:**

- For city-maintained facilities, pipe materials and joints shall conform to the City of Eugene's *Public Improvements Design Standards Manual*. For privately owned and maintained facilities, the pipe material shall conform to the Unified Plumbing Code.
- All tanks, vaults, and pipes shall meet structural requirements for overburden support and traffic loadings, if appropriate. H-20 live loads shall be accommodated for tanks and vaults under roadways and parking areas. End caps shall be designed for structural stability at maximum hydrostatic loading conditions.
- Detention vaults shall be constructed of structural reinforced concrete (3000 psi, ASTM 405). All construction joints shall be provided with water stops.
- In soils where groundwater may induce flotation and buoyancy, measures shall be taken to counteract these forces. Ballasting with concrete or earth backfill, providing concrete anchors or other counteractive measures shall be required. Calculations shall be required to demonstrate stability.
- Tanks and vaults shall be placed on stable, consolidated native soil with suitable bedding. Tanks and vaults shall not be allowed in fill slopes, unless a geotechnical analysis is performed for stability and construction practices.

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**Stormwater Report Requirements For Presumptive Approach:** See Exhibit 2-2.

**Checklist of minimal information to be shown on the permit drawings:**

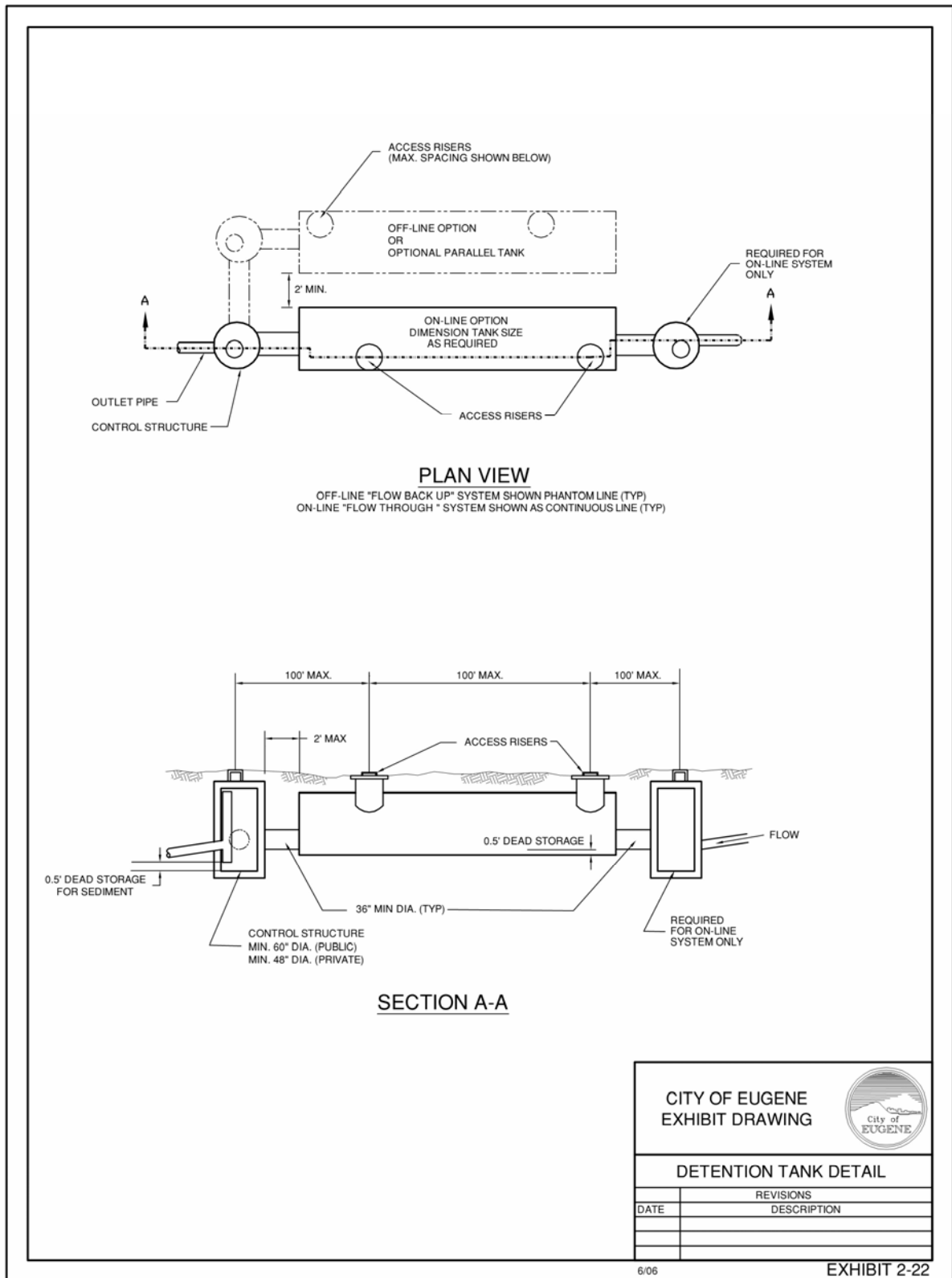
- 1) Facility dimensions and setbacks from property lines and structures
- 2) Profile view of facility, including typical cross-sections with dimensions
- 3) All stormwater piping associated with the facility, including pipe materials, sizes, slopes, and invert elevations at every bend or connection

**Inspection requirements and schedule:** The following table shall be used to determine which stormwater facility components require City inspection, and when the inspection shall be requested:


<b>Facility Component</b>	<b>Inspection Requirement</b>
Vault excavation	
Piping	Call for inspection
Vault installation	Call for inspection
Control structure (orifice structure)	Call for inspection

**Operations and Maintenance requirements:** See Chapter 3.0.

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CITY OF EUGENE  
 EXHIBIT DRAWING

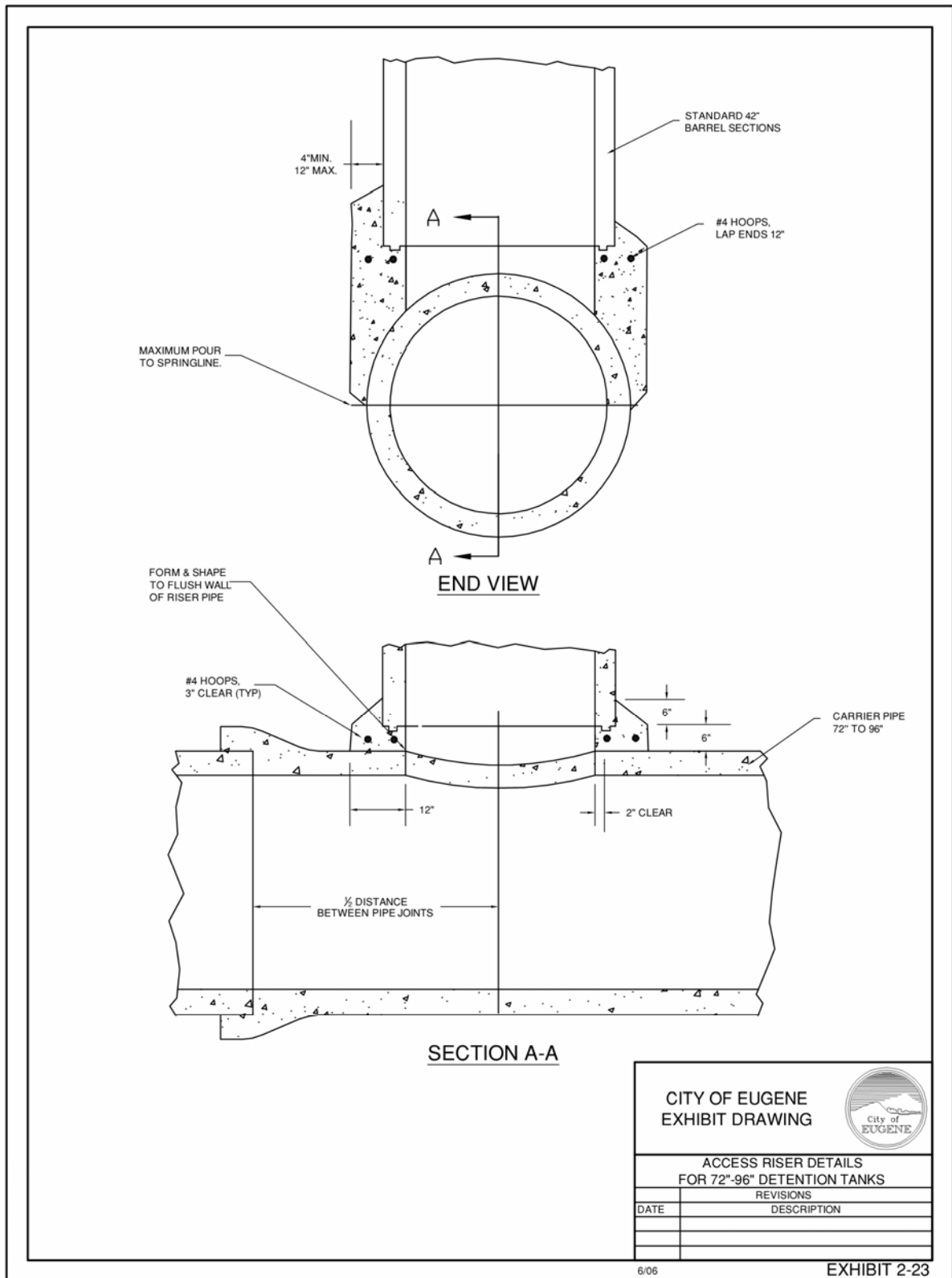


DETENTION TANK DETAIL

REVISIONS	
DATE	DESCRIPTION

6/06 EXHIBIT 2-22

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