6.0 STRUCTURAL REQUIREMENTS

6.1 STRUCTURE DESIGN

The pump station structure shall consist of a wet well and a valve chamber, if required, constructed of either pre-cast or poured in place reinforced concrete design. All structure top elevations shall be located a minimum of one foot above the 100-year flood elevation if applicable.

6.2 CONCRETE SPECIFICATIONS

All requirements on cast-in-place concrete shall be in accordance with the City of Columbia Street and Storm Drainage Specifications and Standards, Section 250 Concrete Structures.

6.3 ACCESS HATCHES

Access hatches shall be cast in the top sections of each chamber.

6.4 PIPE & CONDUIT ENTRIES

"A-lock" or "Z-lock" gaskets embedded in the concrete castings is the preferred method of entry. Other methods may be allowed provided that:

A. Entry methods do not affect structural integrity.

B. All entries must be a minimum of one foot from section joints.

C. Areas around pipe shall be grouted as to be leak-proof.

6.5 WET-WELL FLOOR

A poured concrete invert shall be installed to minimize solids accumulation.

6.6 VALVE CHAMBER

A. Valve chambers are required on all pump stations that utilize submersible pumps.

B The valve chamber floor shall be sloped with a 3-sided invert towards the 4-inch drain pipe using a 2-inch fillet.

1. Valve chamber shall be sized and configured as per the Standard Details.

6.7 PIPING DESIGN

A. The standard pump station piping arrangements called out in this design book have proven themselves to be of sound design in typical pump station installations. Special bracing or water hammer protection devices have not been included or called for; however, when the surrounding terrain or station site is such that extreme hydraulic conditions may be created, it is the responsibility of the engineer to anticipate such conditions and design for the probability of excessive pressure, stress and/or movement in the piping system. The engineer shall be responsible for including whatever restraints, relief valves or surge protection, deemed necessary for the protection of the valve and piping system.

B. Valve Chamber Piping Supports - After discharge piping and valves have been installed in the valve chamber, adjustable pipe cradle jacks shall be placed under the valves and tee, so that they have a 10-inch clearance between the floor and valve flanges. The supports shall be firmly bolted to the valve chamber floor.

6.8 RETENTION CHAMBER

An 8-hour minimum sewerage retention must be provided. Both the pump chamber and the incoming gravity system are not to be considered for the 8-hour calculations.

Retention shall be installed below ground with an access manhole located at the upstream end. The connection between the retention chamber and the wet well wall shall be made with an 8-inch PVC or ductile iron pipe. The retention tank must be a dedicated system, it may not be used as part of the gravity system. The retention chamber and connecting line shall be laid with a minimum 1% slope.