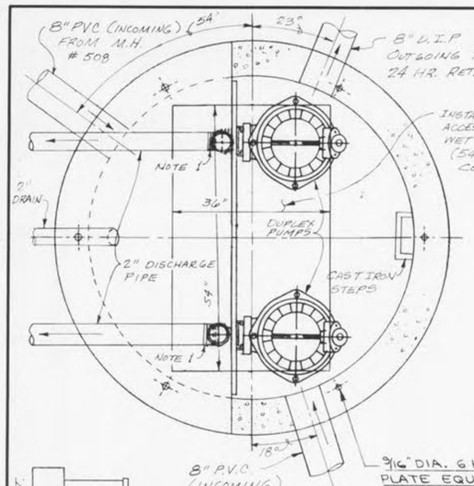
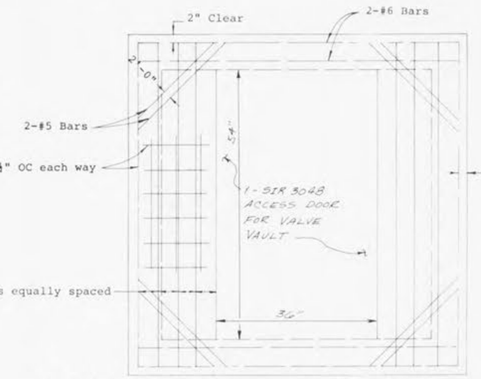
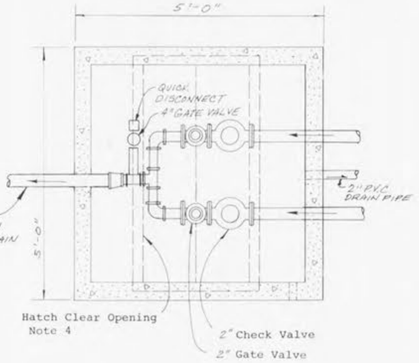
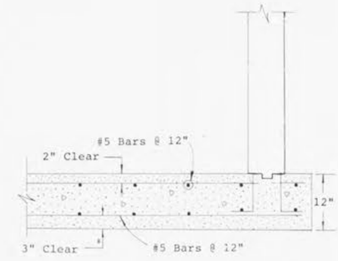
Rev. 9-6-94 L.S.S.



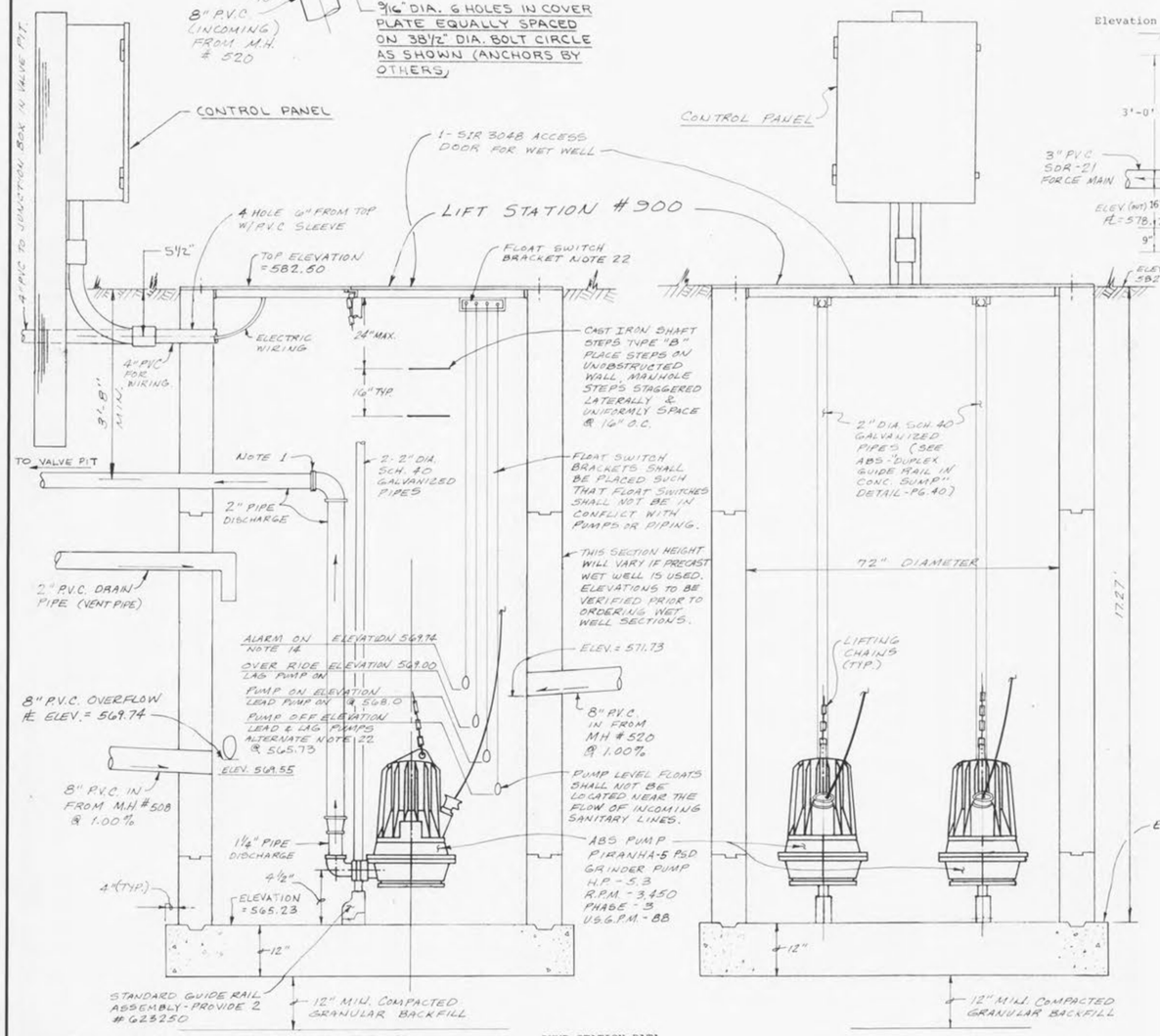
TYPICAL PLAN VIEW OF VALVE PIT TOP

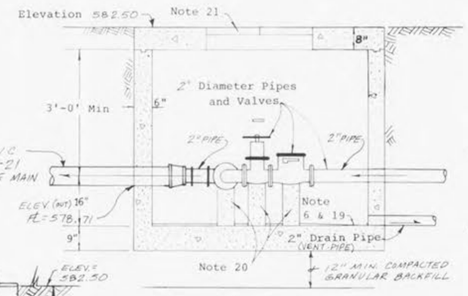


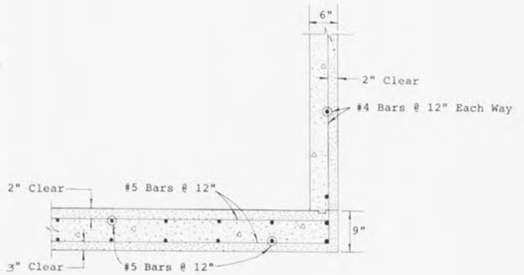




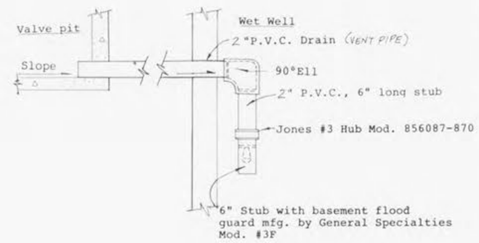
PUMP STATION BASE REINFORCING







VALVE PIT REINFORCING



VALVE PIT DRAIN BACK FLOW PREVENTER

The 2" PVC drain line shall have a 90° glued elbow with a six inch long stub placed on the wet well side of the drain line. The stub is to be directed towards the wet well floor. An additional six inch length of 2" stub shall have a basement floor drain "Back Flow Prevention Float" inserted inside the stub. The stub shall then be coupled to the valve pit drain pipe with a stainless Back Flow Float Mfg. by General Specialties, Flood Guard Model #3F.

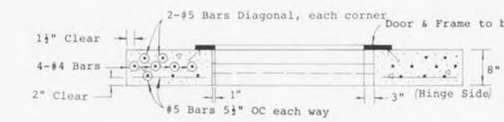
31. The minimum clearances around all valves, elbows, flanges and mechanical joints and pipe connections shall be:

	4" off floor
	18" off wall or obstruction
(valve boxes)	48" inside height
(dry wells)	90" inside height

32. All valves (e.g. check valves and gate valves) shall be installed to facilitate easy removal without cutting the piping. Examples of acceptable methods are: unions, bolts together flanges.

33. Mechanical strength of piping materials where valves are installed is essential. The construction material for piping where valves are installed shall be either cast or ductile iron or equal.

34. Wet well floors shall provide a one to one slope to the hopper bottom to prevent accumulation of debris. The horizontal area of the floor shall not be greater than necessary for proper installation and functioning of the pump base or inlet.



TYPICAL SECTION OF PUMP STATION & VALVE PIT TOP REINFORCING

PUMP STATION DATA

AVERAGE DAILY FLOW	= 45,307 G.P.M.
PEAK FLOW	= 113,268 G.P.M.
T.D.H.	= 97 FT.
FLOW VELOCITY	= 3.6 F.P.S.
PUMP CYCLE TIME	= 47.8 MIN.
24 HOUR RETENTION	= 6,057 C.F.
SHUT OFF HEAD - FT.	167

PUMP STATION GENERAL NOTES

1. Use S/S bolts on all connections.
2. Use S/S chain (lifting chain).
3. CONNECTION BOX OR CHANNEL (RATED NEMA 3R OR NEMA 4 R ACCORDING TO CONDITIONS) LOCATED OUTSIDE OF THE WET WELL TO FACILITATE PUMP AND/OR CONTROL WIRE REMOVAL WITHOUT DISTURBING THE MOISTURE SEAL.
6. Slope valve pit bottom to 3" drain pipe.
7. 15" clearance between check valve arms and valve pit wall.
8. Strain relief fittings to be used on junction box. Strain reliefs shall be plastic and rubber gromit, water resistant box connectors.
9. Fresh water to be provided in valve pit with frost free bib. Contractor to install 3/4" potable water supply in accordance with applicable plumbing codes.
10. All locking hardware will be "Best Locking Hardware" per D.C.S.D. specifications.
11. Power line to enter valve pit through 3" PVC conduit.
12. The 12 foot wide access road and the area within the fence shall be paved with 2" of type "C" asphaltic concrete laid over 6" of type "X" asphaltic concrete. All subgrade shall consist of 6" of well compacted crushed limestone.
13. Power lines and level switch cables shall enter valve pit through a 3" PVC conduit connected to the junction box.
14. RACO ALARM DIALER shall be provided per D.C.S.D. specifications. (DIALER SPECIFICATION VERBATIM SERIES V55)
15. Provide 4" PVC through wall of valve pit into wet well for wiring. The wiring raceway installed between the valve pit and wet well shall be sealed at each end with chase foam.
16. A-lock type compression fittings shall be used where all piping passes through the concrete walls.
17. Pipes to be located a minimum of 1.0 Ft. clear above or below joint.
18. LIFT STATION SHALL BE ENCLOSED BY A 6 FT. CHAIN LINK OR WOVEN WIRE FENCE WITH 3 STRANDS OF BARBED WIRE ACROSS THE TOP. A GATE SHALL BE PROVIDED WITH TRUCK ACCESS.
19. The valve pit floor shall be sloped with a three sided invert towards the drain pipe. Use 2 inch concrete fillet.
20. Pump slide rails shall be supported with brackets every 15 feet. Concrete supports placed underneath the valves and tees inside the valve pit shall be placed so:
    A. The supports are solidly secured in the valve pit floor.
    B. They allow for a minimum of 10" clearance under the valve bodies.
    C. Not to interfere with flange bolt removal.
    All sewage pipes running through the valve pit and wet well walls shall be passed through an A-lock type compression fittings.
21. The wet well and valve pit shall be provided with Bilco, Type O or K aluminum sidewalk type access doors with padlock type lugs.
22. All pump power and control leads, level control, and float wires shall be hung from the switch bracket supplied by the pump manufacturer. The switch bracket shall be attached to the wet well access door frame. Pumps shall be wired so that they alternate, except where the influent rate exceeds the capacity of one pump and activates the second pump.
23. Shop drawings shall be submitted to D.C.S.D. for review in accordance with the general conditions and shall include mechanical and electrical details of equipment as well as schematics and interconnection drawings. A minimum of three (3) sets of drawings shall be furnished. The following shop drawings are required:
    Main Circuit Breaker
    Wiring Devices
    Motor Starters and Control Devices
    Alarm and Transmitting Equipment
    Pump Control Panel
24. ALL FORCE MAIN STATION PIPING SHALL BE D.I.P. OR APPROVED EQUAL. SPECIFICALLY, ALL OF THE PIPE CONNECTED TO THE VALVES AND FITTINGS IN THE VALVE VAULT, AND ALL OF THE PIPING WITHIN THE WET WELL SHALL BE D.I.P. OR APPROVED EQUAL. THE DRAIN PIPE FROM THE VALVE VAULT TO THE WET WELL MAY BE SCH-40 AS SHOWN.
25. ALL WET WELL STEPS SHALL BE P.V.C. COATED.
26. The pump station manufacturer shall be present and responsible for the initial start up of the station. The manufacturer will further be responsible to check for proper installation of the unit and will make all necessary adjustments to insure proper operation, fully meeting the performance specifications.
27. Float requirements are as follows:
    A. Off Float - The pump shall have water covering a minimum of 1/2 the pump motor at the off level.
    B. First Pump - No less than 1 1/2' above top of pump motor.
    C. Second Pump - No less than 2' above top of pump motor.
    D. High Level - No less than 2 1/2' above the top of pump motor and Alarm no more than 1 in. below the 24 hr. retention line.
28. Run #12 AWG stranded conductor with insulation for direct burial over the force main. Splice only with split bolt type of wire connectors. Provide access to line at valve pit and receiving manhole.
29. Precast wet well and valve pit manufactured by "Klueter Bros." may be used in lieu of cast in place reinforced concrete structures.
30. Permanent signs that read "DANGER, KEEP OUT, SEWAGE TREATMENT FACILITY" shall be posted so that the signs are no further than 13' from the next sign or fence corner post.
35. Strain relief shall be provided in the wet well for all motor and control wires.
36. Motors shall have ground-fault-interrupting circuit breakers.
37. Pumps shall have internal moisture and heat sensors that will not allow the pump to restart without manual resetting at the control panels.
38. Stations shall utilize either the floating mercury switch or the TRANSDUCER type control.
39. The valve box shall be designed and built to prevent ground or rain water flooding.
40. The storage volume in the wet well shall be such as to prevent heat build up in the motor due to frequent starting (this is also an important consideration where add-a-phase units are used) and at the same time septic conditions must be avoided due to excessive retention times.
41. All electrical conduits shall be either threaded rigid metal conduit, or threaded steel intermediate metal. (See N.E.C. hazardous locations, Class I, Group D, Division 1).
42. Force mains shall be installed with #12-AWG solid bare copper wire beneath the pipe. All valve boxes and points of termination shall have an access to this wire. All splices shall be performed with copper split-bolt wire connectors.
43. Access points to the tracer wire shall be provided at intervals not greater than 1000 feet and shall be plainly marked on the plans. The access points may be of the meter box or lamphole type.
44. Forced mains that terminate at manholes or lift stations at a point higher than 2 feet must be made into an outside drop. The drop must have a threaded screw plug or cap at the top clean-out and the bottom inlet shall be at the flow line or floor.
45. Where controls are located above ground; the controls shall be of the floating mercury or flow matcher type.
46. In wet-well/dry-well stations, controls shall be of the bubbler or flow matcher type.
    A. The final bubbler tube or canister shall be mounted to provide for easy removal and cleaning.
    B. There shall be a platform easily accessible from the ladder to provide easy removal of the final bubbler tube or canister.
47. Control wires that enter the wet-well (except moisture sensor wires) shall be either ground fault protected or less than 25 volts to ground.
48. Control voltages must be provided for stations of two or more pumps in one of the following ways:
    A. Separate, plainly marked fuse or circuit breakers.
    B. If the control voltage is taken from the fuse/s or circuit breaker that supplies power for any other device (e.g., a pump); a method must be provided to switch to an alternate fuse/s or circuit breaker in the event that breaker or fuse opens.
49. All control panels shall contain a GFI duplex receptacle that can provide 20 amperes at 115 volts and shall have a locking cover.
50. Each station shall have an audio visual alarm with self contained power source. The alarm shall activate on power outage and/or high water. The high water alarm float shall not be used for any other purpose. Telemetry may be required by the District.
51. All pump flanges and carriages shall be compatible with the ABS SLIDE RAIL System.
52. There shall be an air-tight moisture seal between the control panel and the connection box.