CITY OF SCOTTSDALE
SEWER LIFT STATION DESIGN CRITERIA

Last revised: 03/28/07

GENERAL

1. There shall be a minimum of 2 pumps at each site. Pumps shall be capable of passing 2 1/2" solids and equipped with stainless steel motor shafts. Each pump will pump 35 gpm above the design report, this is to prevent the station from being overwhelmed due to swimming pools being pumped into the lift station.

2. Check valves shall be silent closing type. (BALL VALVE) The checks shall be outside the wet well in separate vault.

3. Three-phase/480 volt power shall be used for all sewer lift pumps.

4. Field prints shall include all electrical information.

5. Phase protection shall be provided for all three-phase motors and pumps.

6. An hour meter shall be provided for each pump.

7. Pump failure indicator lights shall be provided on the control panel. An internal lamp will latch upon failure and will not clear until reset by operator.

8. An access hatch shall be installed in the wet well lid. Aluminum or stainless steel with locking hasp.

9. All sewer lift stations will have a telemetry system compatible to the City of Scottsdale telemetry system.

10. Submersible pumps on a rail system are required and will include the following:

    a. Submersible pumps shall be mounted on 2- stainless steel rails. A stainless steel chain shall be provided for pump removal.

    b. All companion flange seals shall be the rubber diaphragm type.

    c. Motors shall be oil cooled submersible type, totally enclosed, non-ventilated, constant speed, continuous duty, 55 C rize, 1750 RPM, 60 cycle, with immersible cable attached to reach necessary length.

    d. One submersible Pump will have a mix flush valve per Flygt 4901 flush valve or a solenoid operated back wash system. The back wash will be designed to back wash at each run cycle for set time.

11. Ductile iron discharge piping to a point 10 feet outside of the station.

12. A minimum of three (2) sets of operation, as-builts specifications and maintenance manuals shall be prepared and provided to the Water Resources Department (Operations Division) prior to final inspection.

13. Endress Hauser Water pilot Transducer, Calibrated to 20 ft. will be used for pump alarm and sensing level of wet well for pump operation.

14. The Pump site flow meter will be a mag meter type Endress+Hauser ProMag 53. Call Water Operations for detail specifications.

    a. The Mag meter must comply with the applicable provisions of AWWA C704-70.

b. Totalizer will feature a digital indicator-totalizer and solid state construction transmitter. The totalizer transmitter will provide a 4-20 mA current signal proportional to the rate of flow.

c. Meter shall be installed per manufacturer's specs concerning pipe diameters before and after meter.

d. Meter shall be sized to accurately determine flow at both high and low ends of system's operating range verified by manufacturer.

e. Meter must have Empty Pipe Detection that uses no external devices to operate.

15. Manufacturer recommended spare parts will be provided.

16. Odor control must be installed to control H2S Gas. Contact Water/Waste Water Operations for details.

16. A 1.5"metered water source will be installed for washing down and cleaning up. The meter and backflow devise will be located adjacent to but outside the walls of the facility. (See detail No. 2354) All hose bibs will have approved atmospheric vacuum breakers and be in an above ground location. At no time will there be a connection between domestic water and the wet well or waste water.

17. Main service disconnect or breaker is required.

18. Control power will have separate breaker other than using one of the pump breakers.

19. Generators will be provided for back up power. The Generator shall be 4 cycle natural gas, diesel if natural gas is not feasible. Generator set shall be load tested at the site at full rated power for a minimum of 6 hours. Should the generator be diesel fueled the tank will be toped off after the load test. (See Pump Station Noise Spec.)

20. All pump station sites shall be secured as a minimum by a block wall eight-foot (8') high, with a minimum of two access points. Access shall be provided by a 36" wide passage door and a sliding gate, minimum of twelve feet (12') wide for vehicular access (See Standard Detail 2165-1). Each access will be keyed to City specification: Best Lock #83K7D44CS3 with SC Key way. No equipment inside the site shall protrude above the fence line, except the emergency beacon and the RTU antenna.

21. Walk-in and Drive-through door, see Standard detail No. 2165

22. Watt-hour transducers comparable to Sineax PQ502 active power measurement device with balanced load, sized with current transformers with a 4/20 ma output proportional to power used at each pump, wired to RTU.

23. A.C. outlet required (outdoor type).

24. Wet well wall surface shall be coated with Raven 405 or approved Equal. The coating will be applied to a minimum thickness of 80 mils. A factory Certified Technician will install the coating. The coating will be guaranteed free of defects and workmanship for a Five-Year period. The warranty will cover material, coating replacement and or repair. After the protective coating has set hard to the touch it shall be inspected with high-voltage holiday detection equipment. An induced holiday shall be made on to the coated concrete surface and shall serve to determine the minimum/maximum voltage to be used to test the coating for holidays at that particular area. The spark tester shall be initially set at 100 volts per 1 mil (25 microns) of
film thickness applied but may be adjusted as necessary to detect the induced holiday. All detected holidays shall be marked and repaired by abrading the coating surface with grit disk paper or other hand tooling method. After abrading and cleaning, additional protective coating material can be hand applied to

the repair area. All touch-up/repair procedures shall follow the protective coating manufacturers recommendations.

Note: Designers will coordinate their pump station design with the Water Resources Department prior to final plan preparation. (See Sewer System Design Procedures & Criteria.)

SITE SIGNS

1. The sign will have a green background with 2" white reflective lettering. The sign will be made of aluminum. The sign will read the City of Scottsdale, Sewer Lift No., Emergency Phone No.

   Example:

   CITY OF SCOTTSDALE
   SEWER LIFT NO. _____
   PHONE NO. 480-312-5650

TELEMETRY SPECIFICATIONS

1. Bristol Babcock DPC 3310 remote terminal unit (RTU), or 3305-10a (Fixed I/O package). When the design engineer has furnished the City of Scottsdale with the number of pumps and sequence of operation, water production will determine the number of digital inputs and outputs required that must be ordered with the RTU.

2. As soon as the location is located by the engineer, Water Production will survey the site for communication to the repeater and give the engineer the approximate height necessary for the antenna.

3. Microwave Data Systems 9710A "smart" data remote transceiver, TX ON: 928.18125 MHz, 12V, DC input power, 4800 and 9600 baud rate Asynch digital interface modem, RS 232 interface-direct, type "N" female antenna connector with loopback option.

   Scala TY-900 Yagi antenna, "N" female connector

   Polyphaser IS-50NX-C2 lightning arrestor

4. Heliax coaxial cable 1/2" foam dielectric 50 OHM LDF 4-50A; number of feet to be determined by the design engineer.

   Two Andrew type L44PLU "N" male connectors

5. Hoffman enclosure - NEMA 4, 30" x 24" x 8", including panel. Painted white.

   Hoffman Catalog #A30H24BLP

   Hoffman Catalog #A30P24, including lock kit.

6. Single output series power supply 12V, DC output, 3.4 Amp, 115VAC input. Newark Catalog #89F1271

   Single output series power supply 24V, DC output, 3.6 AMP, 115VAC input. Newark Catalog #89F1264

   Two gellcell batteries, 12VDC, 6 AMP/hr operable to 140° F. Newark Stock #99F1805

7. RTU will be programmed by the City of Scottsdale personnel.

8. RTU will include keypad option.

SOUND LEVEL LIMITS

1. It shall be unacceptable for any pump station to cause noise by any means to the extent that any fifteen (15) minute period average sound level exceed the applicable limit given in the following table, at any location in the City of Scottsdale on or beyond the boundaries of the property line of the pump station facility. The noise subject to these limits is that part of the total noise at the specified location that is due solely to the action of said pump station.

TABLE OF APPLICABLE LIMITS	
Land Use Zone	Fifteen-Minute Average Sound Level (decibels)
Residential	45
Commercial	60

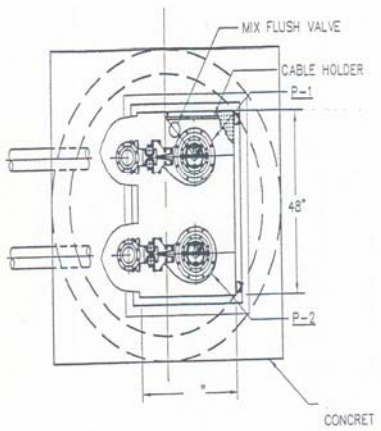
2. Maximum allowable noise level of the generator will be 85 dBA.

3. Average sound level measurements will consist of Leq (15) measurements performed with an ANSI-S1.4-1971 Type 1 or Type 2 Sound Level Meter using the A-weighting network. Instrument response shall be "slow". Leq means the constant sound level that, in a given situation and time period, conveys the same sound energy as the actual time -varying A-weighted sound. Measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour.

4. The location for measuring exterior sound levels shall be at the property line of the pump station facility and four to five feet (4' to 5') above ground level and at least four feet (4') from walls and other reflective surfaces. If a wall is closer than the required four feet (4') to the property line, move the required distance outside the property line. An exception occurs when the pump station shares a boundary with an affected property. In this case the location for measuring exterior sound levels shall be at least one foot (1') inside the property line of the affected property and four to five feet (4' to 5') above ground level and at least four feet (4') from walls and other reflective surfaces.

5. Alternative sound level measurements. Cmpliance with these guidelines can be demonstrated if the maximum sound level caused by the operation of the pump station does not exceed the average sound level limits set forth in Section A, when tested at the locations prescribed in Section C.

NOTE: All SUBMITTALS FOR APPROVED EQUAL SHALL BE APPROVED BY CITY OF SCOTTSDALE, WATER OPERATIONS.

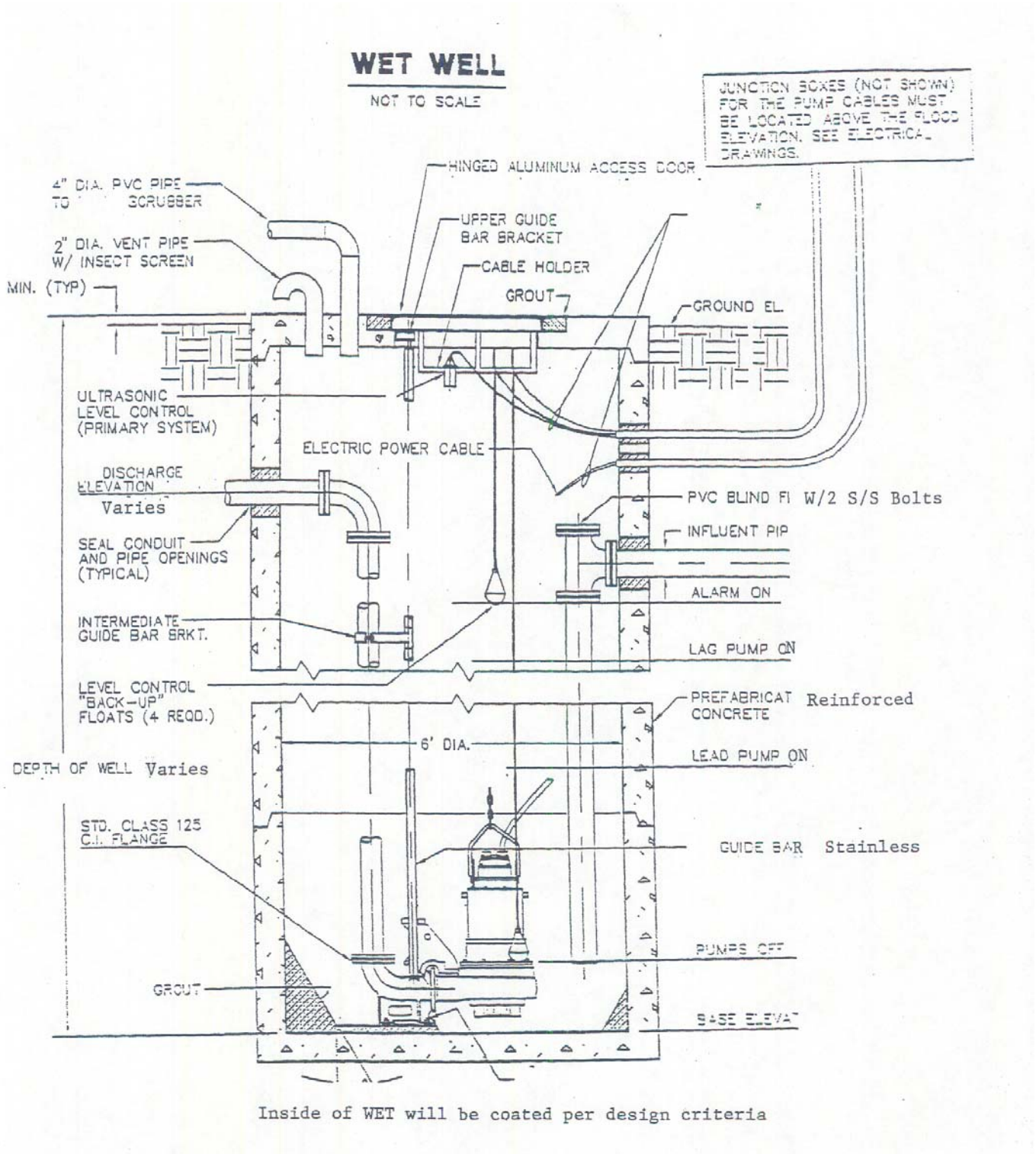


TOP VIEW

NOT TO SCALE

GENERAL NOTES:

1. CONFIGURATION AND DIMENSIONS SHOWN ARE SUGGESTED REQUIREMENTS ONLY. ALL DETAILS INCLUDING SIZING OF PIT, TYPE, LOCATION AND ARRANGEMENT OF VALVES AND PIPING, ETC. SUBJECT TO ACTUAL EQUIPMENT SELECTIONS (COORDINATE WITH PUMP SUPPLIER).
2. REFER TO ELECTRICAL DRAWINGS FOR CONTROL SCHEMATICS.
3. ALL PAD ELEVATIONS AND TOP OF LIFT STATION ARE ABOVE LEVEL OF 100 YEAR FREQUENCY FLOOD LEVEL.
4. ALL LIFT STATION PIPING TO BE LINED D.I.P.



Inside of WET will be coated per design criteria