

**PROCEDURES FOR PRIVATE, INDIVIDUAL LOT, SEWAGE PUMP
APPROVAL AND INSTALLATION**

1.0 BEFORE THE DESIGN PHASE BEGINS:

- 1.1 Contact the Central Contra Costa Sanitary District (Central San) Permit Counter at (925) 229-7371 for information, applications, fee quotes, etc.
- 1.2 Provide Central San with sufficient information to determine that a pump is required for sewer service and that a gravity system cannot be installed that meets Central San standards.
- 1.3 If a sewage pump is required, the property owner or their representative (engineer, supplier, etc.) shall design the sewage pumping system.
- 1.4 A pump installed within the Central San service area shall be reviewed and approved by Central San prior to installation.

2.0 DESIGN / REVIEW PHASE:

- 2.1 The owner/representative shall obtain an information packet from the Central San Permit Counter by calling (925) 229-7371, or online.
- 2.2 The Owner/Representative shall prepare a plot plan/sketch for the site **sufficient to determine the vertical lift and the length of the pressure line**. The plot plan/sketch for outside pumps shall at a minimum include the following:
 - Pump pit location
 - Pressure line
 - Gravity lateral
 - Sewer tie-in location
 - North arrow
 - Horizontal scale
 - Property lines
 - Building footprint if available
- 2.3 The Owner/Representative shall prepare a sewage pumping system design to meet Central San requirements. See Central San Standard Specifications for Design and Construction.
- 2.4 The Owner/Representative shall complete and submit:
 - Individual Lot Sewage Pumping System sheet (attached)
 - Pumping System Information sheet (attached)
 - Plot plan/sketch
 - Pump curve
 - Catalog cut sheets for the:
 - Pump
 - Sump/Pump pit

- Control panel
- Alarm panel
- The Individual Lot Sewage Pumping System plan check fee shall be paid with the first submittal to Central San.

2.5 The Engineer at Central San will review the submitted information, request additional information if necessary, and/or require changes for conformance with Central San's specifications.

3.0 CONSTRUCTION PHASE:

3.1 The Owner shall engage a properly licensed Contractor to install the pump system, including electrical.

3.2 The Owner or Contractor shall pay all applicable fees and charges. Please contact the Central San Permit Counter at (925) 229-7371 to receive a quote for the current amount of these fees.

3.3 For exterior pump installations, the Contractor shall obtain a pump system installation permit from Central San, and an electrical inspection permit from the city or county building code enforcement department prior to construction. All sewer work outside the building footprint shall be inspected by Central San. The properly licensed Contractor shall pull the pump system permit prior to starting any sewer work, including trenching and excavating.

3.4 For interior pump installations, the local building department shall permit and inspect the pump installation. If any sewer work is outside the footprint of the building, a Central San permit shall be pulled prior to the start of any exterior sewer work, including trenching and excavating. All sewer work outside the footprint shall be inspected by Central San.

3.5 At least one business day prior to the start of work, the Contractor shall notify Central San Inspection Section at (925) 229-7373.

3.6 The Contractor shall notify the Central San Inspector of the specific construction schedule. The Central San Inspector will specify the points during the installation process when inspection is required.

3.7 At least one business day prior to the day each phase of the work is ready for inspection, the Contractor shall call the Central San Inspection Section at (925) 229-7373 to request that the inspection be scheduled.

SEWAGE PUMPING SYSTEM REQUIREMENTS

GENERAL

All design and installation shall be done in conformance with the general requirements of Cal OSHA, current applicable electrical, plumbing, and building codes, and Central Contra Costa Sanitary District Code, Standard Specifications, procedures and requirements.

The minimum requirements for a private, individual lot, outside sewage pumping system are specified in the following paragraphs. Central San accepts no responsibility for the design, operation, nor maintenance of such privately owned and operated systems.

All equipment and accessories shall be standard manufactured items, and those coming in direct contact with sewage shall be specifically manufactured for sewage use by a company regularly engaged in the manufacture and assembly of similar units for a minimum of five (5) years. Manufacturer's specifications for pump systems, including electrical controllers, sumps, etc., shall be submitted to Central San for review and approval prior to the start of any work.

For uses other than service to an individual residential unit, installations require dual pumps (duplex systems) designed to function independently in case of overload or mechanical failure. Duplex systems may be used for individual residential units at the Owner's option.

PUMPS

Unless allowed by Central San through a "Special Approval," the pump shall be approved for sewage service by a Nationally Recognized Testing Laboratory (NRTL) such as Underwriters Laboratories (UL Listed) and/or CSA, shall carry an NRTL label for this use, and shall be one of the types described below:

1. Centrifugal, non-clog, vertical column with enclosed shaft.
2. Submersible, centrifugal, non-clog.
3. Submersible, centrifugal, grinder pump.
4. Positive displacement, grinder pump.

The pump selected shall produce a velocity in the force main of 3 to 7 feet per second when pumping against the non-surcharged head at sump Low Water Level (LWL). If the pump discharge line is to be connected to the house plumbing, a grinder pump with a maximum 1-1/2 inch discharge must be used and the maximum flow rate shall not exceed 30 gpm. If the pump discharge line connects to an outside side sewer the maximum flow rate shall be 70 gpm.

If pump type 1) or 2) is used, the impeller shall be a non-clog type and shall be capable of passing a 2-inch sphere, and the pump discharge line shall be at least 2-inches in diameter.

If pump Type 3) or 4) is used, the pump discharge shall be at least 1-1/4 inches in diameter. The grinder shall be constructed of long-lasting, low maintenance material that is capable of reducing all components in normal domestic sewage (including "foreign objects," such as

paper, wood, plastic, glass, rubber, etc.) to finely divided particles which will pass freely through the passages of the pump, force main, and fittings.

For installations with dual pumps (duplex systems), an alternator shall be provided to automatically alternate the starting of the lead pump on each operating cycle so that each pump is assured of equal operating time. An alarm shall be activated in the event the lead pump is unable to maintain proper level and the lag pump is called to run.

PUMP SUMP

The sump shall be cylindrical in configuration with a minimum diameter of 24-inches.

The pump sump shall be made of one of the following materials:

1. Asphalt-coated steel (prefabricated 3/16-inch steel plate); with tank surface protected with a minimum of 0.10-inch thick corrosion barrier;
2. Filament wound fiberglass, minimum ¼-inch wall thickness with tank interior surface protected with a minimum of 0.10-inch thick, resin-rich, corrosion barrier;
3. PVC T-lock lined reinforced concrete pipe;
4. High-density polyethylene; or
5. A Central San-approved alternate.

Sumps with an anti-floatation flange shall be installed, according to manufacturer's recommendations, if the calculated buoyant force exceeds 0.75 times the weight of the sump assuming the groundwater surface is one foot (1') below existing grade. As a minimum, the collar shall be weighted with 0.2 cubic yards of concrete ballast.

The sump shall have a 4-inch minimum inlet and an outlet at least the size of the pump discharge. The invert of the inlet shall be 6-inches above the first pump on set-point and have a minimum cover of 30 inches. A standard cleanout with a backwater overflow prevention device shall be placed immediately upstream of the inlet stub of the sump.

The pump sump cover shall be epoxy coated steel plate (1/2-inch minimum thickness), heavy cast iron or manufacturer's standard molded plastic made to accommodate the pump (if column type) with an opening for the electrical conduits, vent, and an inspection plate. The cover shall be designed to support reasonably anticipated dead and live loads, including impact (H-20 required for traffic areas). The top of the cover shall be 3-inches above the surrounding ground surface in non-traffic areas. The sump cover shall be securely anchored to the pump sump by stainless steel bolts, and all joints between the component parts shall be sealed with gasketed covers that are gas tight.

MOTOR

Motors for column-type pumps shall be a drip-proof vertical type, totally enclosed, weather protected, and shall conform to the standards of NEMA.

Explosion proof pump and motor assemblies shall be approved by an NRTL and listed as explosion proof for Class 1 Division 1 groups C and D installations. Explosion proof pumps constructed with a separate thermal overload protection switch in the motor and a moisture-sensing seal failure probe shall have these devices connected to sensors and an alarm in the control panel according to the manufacturer's requirements.

LEVEL CONTROLS

The pump's level controls shall be the ball and rod mechanical float switch mounted above the lid, or if mounted in the sump, weighted type switches sealed within polypropylene shell(s) with neoprene-covered cable, pressure sensing diaphragm, or a Central San-approved alternate.

Each pump level control shall be wired directly and independently to terminals within the control panel. Each pump and the level control/alarm system shall be on separate electrical circuit breakers.

The following level control switches shall be provided:

1. A "High Water Alarm (HWA)" switch set to alarm a minimum of three inches (3") below the invert elevation of the gravity inlet sewer from the house and start the "lag" pump in a duplex system.
2. A "First Pump On" switch set to start the single pump in a simplex system or the "lead" pump in a duplex system at least two inches (2") below the HWA.
3. A "Pump Off" switch set to turn off the pump(s) at a reasonable elevation above the LWA. The distance between the First Pump On and Pump Off shall be great enough to allow the pump to run for at least 30 seconds during each pump cycle.
4. An optional "Low Water Alarm" (LWA) switch wired to a redundant fail-safe circuit cutoff in the control panel that will shut off the pump at an elevation above the pump inlet and activate an alarm.

INTRINSICALLY SAFE CIRCUITS

Level control and alarm system circuit wiring connected to level switches in the tank shall be listed as intrinsically safe by an NRTL such as UL or CSA. The circuits shall reduce the power to the pilot devices and alarms to a value incapable of releasing sufficient thermal or electrical energy to ignite a hazardous environment. Separate conduits shall be run between the sump and the control panel for the level switch wiring and the motor power wiring. Both conduits will have explosion proof seals to prevent sewer gasses from migrating to the control panel.

ALARM SYSTEMS

The alarm system shall be mounted within the building(s) that is (are) served by the pump or in conjunction with the control panel adjacent to the pump and shall provide a visible pilot light and audible alarm with silencer to alert the occupant. An exterior alarm shall be for outside operation. The alarm system shall be on a separate circuit from the pump motor(s). When activated by a high water or low water condition, the alarm system shall remain latched until manually acknowledged and cleared.

CONTROL PANEL

The control panel shall be mounted external to the pump sump. The panel shall have a NEMA 1 classification when mounted inside a building or a minimum NEMA 3R classification when mounted outside a building.

ELECTRICAL WORK

All electrical work shall conform to the technical and permitting requirements of the applicable Building Code enforcement jurisdiction for the location of the house being served.

DISCHARGE LINE

The pressure portion of the discharge line, including the isolation valve, check valve, cleanout and mechanical couplings shall be no smaller than the pump discharge line. Banded couplings shall not be used on the pressure portion of the discharge line. The valves and discharge line connecting the gate valve, check valve, cleanout and mechanical couplings inside the sump shall be DWV brass, copper, or approved alternative. The isolation valve shall be operable from grade and shall be placed in a utility box if outside the sump.

The remaining portion of the pressure discharge line to the gravity private side sewer shall be PVC (SCH 40), or high-density polyethylene (SDR 11) conforming to Central San's Standard Specifications and shall meet Central San depth and bedding requirements for side sewers.

The gravity portion of the discharge line shall meet Central San requirements for private side sewers. The gravity portion of the discharge line shall extend at least five feet from the sewer main. A wye/45 degree or combo with cleanout shall be placed where the discharge line transitions from pressure to gravity as shown on the next page. The pressure discharge line may connect to an existing building lateral downstream of the building cleanout with a wye connection. If physical limitations prevent at least five feet of gravity lateral from being installed between the end of the pressure line and the sewer main, then the pressure line may connect directly to the sewer main with a wye connection; no tee connection shall be allowed.

TESTING

When tested, the force main shall test at a minimum of 1-1/2 times the operating pressure or 60 pounds, whichever is less.



INDIVIDUAL LOT SEWAGE PUMPING SYSTEM

**CCCCSD
Use Only**

Today's Date: _____

App No: _____

Job No: _____

Grid No: _____

5019 Imhoff Place, Martinez, CA 94553 Permits: (925) 229-7371 Fax: (925) 689-7259 permits@centralsan.org

Property Owner: _____

Property Address: _____

APN: _____

Mailing Address: _____

Sewer Contractor: _____

Engineer: _____

Contact Email: _____

Required Attachments

- Plot Plan/sketch sufficient to determine vertical lift required, total length of pressure line and all fittings on pressure line
- Pump Curve
- Catalog Cut Sheets for
 - Pump
 - Sump/Pump Pit
 - Control Panel
 - Alarm Panel
 (See Procedure Section 2.2 and 2.4 for more information)

EQUIPMENT DATA

1. Pump Manufacturer _____ Model # _____
2. Sump Manufacturer _____ Model # _____
3. Control System Manufacturer _____ Model # _____
4. Alarm System Manufacturer _____ Model # _____
5. Outdoor Pump _____ or Indoor Pump _____

DISTRIBUTOR NAME: _____ BY: _____ DATE: _____
 PHONE # _____

CENTRAL SAN USE ONLY (do not write below line)

Procedure

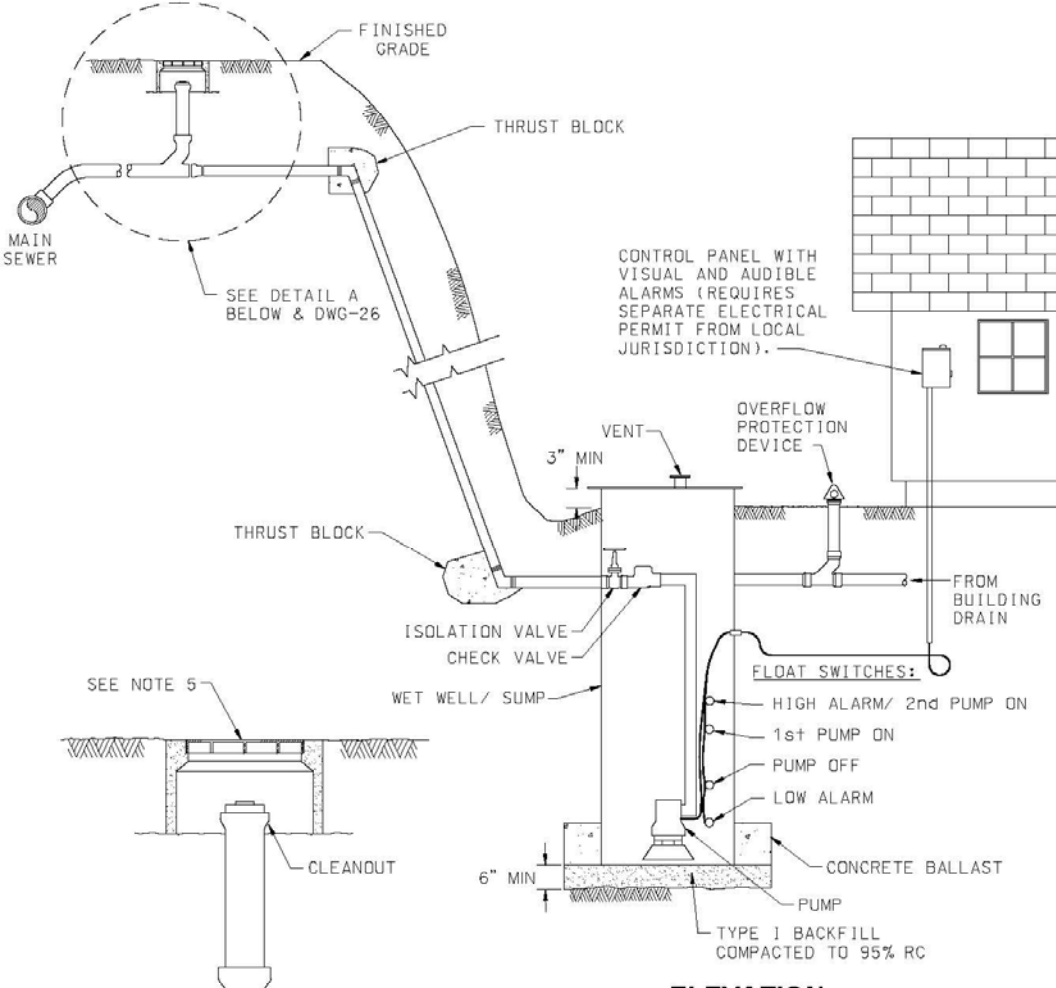
Date

By

- | | | |
|-------------------------------------|--|--|
| 1. Plot plan submitted: | | |
| 2. Elevation and distances checked: | | |
| 3. Equipment data submitted: | | |
| 4. Reviewed and approved: | | |

**CENTRAL CONTRA COSTA SANITARY DISTRICT
MARTINEZ, CALIFORNIA**

INDIVIDUAL LOT PUMPING SYSTEM
(CCCSD REVIEW AND APPROVAL REQUIRED)



ELEVATION
(N.T.S.)

- NOTES:**
1. OBTAIN PROCEDURES FOR PRIVATE, INDIVIDUAL LOT, SEWAGE PUMP APPROVAL AND INSTALLATION BEFORE PROCEEDING WITH DESIGN.
 2. CLEANOUT WITH OVERFLOW PROTECTION DEVICE SHALL BE INSTALLED AT BUILDING CONNECTION.
 3. PUMP INSTALLATION SHALL BE IN ACCORDANCE WITH SECTION 33 32 26.
 4. SEE SECTION 31 23 16 FOR BEDDING AND BACKFILL REQUIREMENTS.
 5. SEE APPROVED MATERIALS LIST FOR TRAFFIC AND NON-TRAFFIC AREA PRECAST UTILITY BOXES AND GRATED LIDS.

DETAIL A

- NOTES:**
1. TEE SHALL BE WYE, SANITARY TEE , OR COMBO WYE.
 2. FOR COMMERCIAL PROPERTIES, 6-INCH TEE, CLEANOUT, AND GRAVITY LINE IS REQUIRED.
 3. SOLVENT WELD YPE JOINTS SHALL BE USED FOR PVC PIPES.

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PUMPING SYSTEM INFORMATION

Applicant to complete this form in full. Applicant may need to contact pump distributor for information.

PROFILE & PLAN

Surface elevation (USGS) at pump pit _____ Ft.
 Pump Pit Surrounding area: Traffic or Paved Area _____, or Bare Ground/Landscaped _____
Note: Pump pit lid shall be 3-inches above ground surface in bare ground/landscaped areas
 Pump pit floor below ground surface _____ inches
 Top of motor above pump pit floor _____ inches
 Optional Low Water Alarm/redundant off level above pump pit floor _____ inches
 Pump off level above pump pit floor _____ inches
 First pump on level above pump pit floor _____ inches
 Second pump on level above pump pit floor _____ inches
 High Water Alarm level above pump pit floor _____ inches
 Building lateral invert level above pump pit floor _____ inches
 Pressure line depth at change to gravity sewer _____ Ft.
 Pressure line distance _____ Ft.
 Upstream manhole rim elevation (determined by District) _____ Ft.

EQUIPMENT INFORMATION

Centrifugal Pump Yes _____ No _____
 Non-Clog Pump Yes _____ No _____ Grinder Pump Yes _____ No _____
 Submersible Pump Yes _____ No _____ Explosion-proof Yes _____ No _____
 Simplex Control System _____ or Duplex Control System _____
 Intrinsically safe Yes _____ No _____
 Sump Material: _____
 Force Main Size and Material (eg. 2" PVC Schedule 40): _____

NUMBER OF EACH PIPE FITTING ON PRESSURE LINE

Check Valve _____	22.5-degree ells _____
Gate/Plug Valve _____	Wyes _____
Clean out _____	Tees _____
90-degree ells _____	Reducers _____
45-degree ells _____	Increasesers _____

FACILITY INFORMATION

Facilities served by this pump system: Residential _____ Commercial _____
 Description of project: _____
