DO NOT BEGIN CONSTRUCTION PRIOR TO DISTRICT APPROVAL OF SITE PLAN LAYOUT

DISTRICT INSPECTION (530) 265-1555
SCHEDULE INSPECTIONS 48 HOURS IN ADVANCE BETWEEN 8:00 A.M. AND 3:30 P.M. MONDAY THROUGH FRIDAY. WE DO NOT INSPECT ON HOLIDAYS OR WEEKENDS

THE DISTRICT WILL CONTACT YOU WHEN SITE PLAN IS READY.

WE MAY BE ABLE TO SAVE YOU SOME CONSTRUCTION COSTS.
A. TO BE COMPLETED BY APPLICANT

Sanitation District  
Zone 6, PENN VALLEY  
Zone 12, VALLEY OAK COURT

Lot No. _______ APN: ________________

Site Address: __________________________________________________________________

Owner: _______________________________________ Phone: _________________________

Type of Service: Septic Tank Effluent Pump (STEP)  
Permit Fee (Zone 6, PV) $250.00

Applicant Signature: _________________________________________ Date: ______________

1. THE FOLLOWING MUST BE SUBMITTED PRIOR TO FINAL APPROVAL OF YOUR SEWER CONNECTION:
   a. Offer of Dedication (enclosed)
   b. Recorded Easement with Exhibits “A” and “B” for On-Site Facility (sample enclosed)
   c. Recorded Easement(s) (perpetual public utility easement and right of entry) with appropriate exhibits for any off-site construction, maintenance and repair (sample enclosed)

2. THE FOLLOWING WILL REQUIRE DISTRICT INSPECTION:
   • Septic Tank, Pressure Sewer Piping, Sewage Effluent Pump, Pump Electrical Control Panel, all-weather Access Road, and, if required, a Backflow Prevention Device.
   • Installation of all the above described items and appurtenances thereto shall be constructed and installed in accordance with the design criteria and standards set out in the enclosed manual entitled “Penn Valley On-Lot Sewer Facilities Installation and Materials Specifications.”
   • All requests for inspection shall be scheduled between 8:00 a.m. and 5:00 p.m., Monday through Friday, by calling (530) 265-1555. Inspections shall be scheduled 48 hours in advance. We do not inspect on holidays or weekends.
B. TO BE COMPLETED BY THE LEGAL OWNER OF THE PROPERTY:

I/We hereby certify as the legal owner(s) of this property that I/We have read this permit and confirm all the information is correct. I/We agree to comply with all applicable District Ordinances, County Ordinances, and State laws pertaining to the installation, operation and maintenance of the sewer facilities on my property.

<table>
<thead>
<tr>
<th>Owner Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner Signature</td>
<td>Date</td>
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</tbody>
</table>

“NOTARIZED SIGNATURES REQUIRED”

C. TO BE COMPLETED BY THE SANITATION DISTRICT:

Sewer Connection Permit Number: ________ Effluent Pump Size: ___________

Backflow Prevention Device Required: ______________

Permit issued by: ____________________________ Date: ______
### SEWER SERVICE INSPECTION

**ZONE:** __________  **LOT NO.:** ___________  **OWNER:** ___________________________

**SITE ADDRESS:** ____________________________________________________________

<table>
<thead>
<tr>
<th>INSPECTION ITEM</th>
<th>DATE</th>
<th>INITIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Main line and service valves have been opened or closed so that pumping may occur from the service to the leachfield/treatment plant.</td>
<td></td>
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<tr>
<td>2. Overall field layout is similar to approved site plan.</td>
<td></td>
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<tr>
<td>3. Septic tank has a minimum capacity of 1,000 gallons.</td>
<td></td>
<td></td>
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<tr>
<td>Approximate outside dimensions are 8’ x 5’ x 6’. See site plan for any traffic lid requirement.</td>
<td></td>
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</tr>
<tr>
<td>4. No leaks in tank(s). All side inlets were plugged and water level was maintained at approximately one (1) inch above the riser connection to the tank lid for a 24-hour test period. Tank will be filled with water to at least one inch into the riser prior to inspection request.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. 1-1/2 inch (MLE) or 1-1/4 inch (PVC) pressure service is Class 200 (200 psi rating) or Schedule 40. Service line shall be surrounded by a minimum thickness of four (4) inches of sand bedding and backfill with detectable tape or wire buried four (4) to six (6) inches above the pipe. Ditch must be open so pipe can be visually inspected prior to inspection request.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. 1-1/2 inch (MLE) or 1-1/4 inch (PVC) pressure service held 150 psi for two (2) hours with a maximum drop of five (5) psi to 145 psi (the District accepts either air test or water test). Pipe and pressure gauge will be at the site and ready for inspection prior to inspection request.</td>
<td></td>
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</tr>
<tr>
<td>7. All-weather access road provides access to within fifty (50) feet of septic tank (minimum acceptable surfacing is gravel – 4 inch minimum thickness).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
NOTE: Items 8, 9 and 10 shall be inspected concurrently.

8. All electric splices are waterproof. 

9. Electrical conduit coming from tank riser to electrical panel must be sealed (seal should be within ten (10) inches of tank riser). 

10. Verify that the pump is the correct type and size (either 1/2 hp, 3/4 hp, or 1 hp). Tank must be filled with water and pump installed in tank and ready to start prior to inspection request. 

11. Appropriate control panel has been installed for size of pump (1/2 hp – S-IROPRL; 3/4 and 1 hp – S-ROPRL) including time meter and counter. 

12. Backflow prevention device is required if any portion of the dwelling is below the elevation of the septic tank riser rim elevation. 

13. Dwelling or pedestal mounted control panel. Location determined at District discretion. Contractor to verify location with District prior to construction. When control panel is in excess of 50 feet from dwelling, an additional audible alarm shall be installed at the dwelling. 

14. Run the pump and floats through a minimum of two (2) complete cycles to verify that the alarm on and off floats work, as well as the audible and light alarms, counter and elapsed time meter. 

15. Water lines crossing sewer lines shall rest a minimum of 12 inches above sewer line. 

16. Cleanouts: One at upper terminal placed at closest point beyond last angle as close as possible to structure (if no cleanout beneath structure, then cleanout must be two-way); one cleanout each 100 feet or fraction thereof; and an additional cleanout is required for each aggregate direction change exceeding 135 degrees. 

FINAL INSPECTION WILL NOT OCCUR PRIOR TO DISTRICT RECEIPT OF OFFER OF DEDICATION AND EASEMENT DEED.

COMMENTS: 
_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________

Pump Mfg: ________________ Pump Size: ___________ Serial No. ________________
INSPECTOR: When all items are satisfactory, sign, date, and return this form to the office.

Note: The service valve shall be left in the “ON” position so that sewage may commence to flow to the treatment plant.

Inspected By: ___________________________ Date: ___________________________
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A1.0 GENERAL

The pressure sewer represents an economical means of wastewater collection that has been developed to serve in areas where conventional techniques are not feasible. The pressure sewer system used in Penn Valley and Mountain Lake Estates is referred to as the STEP system, or Septic Tank Effluent Pump. It is comprised of a special septic tank, vault, and a small pump with level controls. These units are located at each home.

Home sewage is conveyed to special septic tanks through standard building sewers. The septic tanks, commonly referred to as interceptor tanks, collect, store solids, and partially treat the sewage before the liquid portion is transported to its final point of treatment which consists of an aerated lagoon followed by storage in an aerated reservoir, and disposal by spray irrigation of pasture. A special vault for housing the pump is fitted into each interceptor tank (Appendix A). Sewage enters the vault through the opening located in the clear region between septic tank scum and sludge zones. The pumps are for transporting the liquid portion of the waste from the tank through the system to the point of disposal. These pumps may vary in size, depending on the total head from pump to treatment plant. Proper selection is critical to the performance and longevity of the system. The sewage, after entering the pumping vault, then passes through a plastic screen before being pumped through the system to the treatment plant.

The septic tank, pump control panel, pump vault, screen, piping and all appurtenances shall be installed by the homeowner in accordance with these specifications and instructions. The maintenance and repair of the pump control panel, septic tank, pump, pump vault, screen, and all pressure discharge piping shall be provided by the Nevada County Sanitation District No. 1 (Sanitation District) and is paid for by each lot owners sewer fee. This maintenance shall include periodic pumping of the septic tank as well as the replacement of any worn or broken facilities which are a part of the septic tank, pump, pump vault, pump control panel, or pressure sewer piping. The homeowners will be responsible for the maintenance and repair of all gravity line to the septic tank. Each homeowner will be required to provide and maintain a backflow prevention device on the gravity line if any floor of the structure is at or below the elevation of the septic tank riser rim elevation.

A2.0 PUMP SELECTION

The pump selection for each installation will be made by the Sanitation District when it issues the sewer permit as a part of the building permit process. The correct selection of a pump by the Sanitation District will be dependent upon each homeowner's contractor providing the correct information on elevation difference between the interceptor tank liquid level and the service box lid elevation as well as length of pressure service line and number of fittings.
A3.0right-of-entry

The Sanitation District, or its representative, shall have the right to enter upon any lot for the purpose of sewer system facilities inspection and maintenance.

As a part of the building permit process all lot owners will be required to execute a right-of-entry document giving the Sanitation District this right-of-entry. Each owner will also be required to obtain a sewer permit from the Sanitation District prior to the Nevada County Building Department (Building Department) issuing a building permit.

A4.0sewer permit

As discussed in A3.0 each lot owner will be required to pay sewer connection fees and obtain a sewer permit from the Sanitation District as a condition of the building permit. The Sanitation District shall review and approve the building plans for location of the septic tank, alarm, and control panel, and select the appropriate pump for each installation. Two (2) copies of a site plan which shows all the information shown on A1.0 shall accompany the sewer permit application.

Each septic tank location will be required to be accessible by maintenance vehicles over an all-weather road constructed and maintained by homeowner for inspection and maintenance including periodic septic tank pumping. The septic tank location shall be reviewed and approved as a part of the sewer permit.

Pump control panels and alarms shall be installed as detailed in Section C5.03 of this report. This requires the pump control panel with alarm to be mounted on the side of the house nearest the tank and pump or on a freestanding pedestal adjacent to the tank and pump. The National Electrical Code (NEC) requires that the control panel be located within 50-feet of and within sight of the pump. The control panel location shall be reviewed and approved as a part of the sewer permit.
SECTION B - INSTALLATION

B1.0 GENERAL INSTALLATION CONDITIONS

All on-lot facilities installation shall be inspected and approved by the Building Department and Sanitation District.

The Homeowner shall be responsible for the installation of all on-lot facilities including the following:

a. Gravity sewer service line to interceptor/septic tank
b. Concrete interceptor/septic tank
c. Tank riser and lid
d. Pump vault and screen inside tank
e. High head effluent pump and power cable
f. Pump pressure discharge piping
g. Pump float controls and electrical hook up
h. Pump control panel and alarm
i. Pressure sewer service lateral to sewer main line connection at front property line.

B1.1 Installer

The Installer, referred to herein, shall be a licensed contractor retained by the Homeowner to complete the installation of on-lot facilities that are the responsibility of the Homeowner as detailed in B1.0 above.

The Installer will be responsible for initiating, maintaining, and supervising all safety precautions and installation programs in connection with the work. Installations shall be accomplished such as to minimize inconvenience to traffic, the general public and to create the least damage to property.

The Installer will be responsible for scheduling the appropriate inspections, installation of electrical components, tank pumps, alarms, and pressure service line to the existing service lateral, and the overall timely completion of the work. Inspections by Sanitation District can be made by calling (530) 265-1555.

The Installer shall not cover any work prior to the approval of the Field Inspector assigned to the work. Installer shall notify Underground Service Alert (U.S.A.) by telephone: (800) 642-2444, two(2) days prior to construction.

Materials damaged by the Installer shall be repaired or replaced.

All requests for inspection shall be scheduled between 8:00 AM and 3:30 PM during the normal five-day work week. Check with the Sanitation District for a specific schedule of inspection, at (530) 265-1555. Each inspection must be scheduled at least 24-hours ahead, including one normal workday ahead.

The final obligation and responsibility for correcting surface settlement will be that of the property owner or his installer.
Installers shall be licensed and bonded when performing work in road right-of-way and must obtain an encroachment permit from the Nevada County Department of Public Works (DPW) when work is to be done in a County road right-of-way. Installer shall be licensed and bonded when performing work on private property unless otherwise approved by the Sanitation District.

**B2.0 TANK INSTALLATION**

All tanks shall be set level and to uniform bearing on a minimum 4-inch thick pea gravel bed overlying a firm and uniform base. Tank location to be a minimum of 10-feet from dwelling or other structure. Unstable or wet foundations shall be stabilized and cared for by over excavation and backfill with select materials, or other means as required. Excavation for the tank shall extend at least two feet outside the farthest outer dimension of the tank to allow room for proper compaction.

The Installer shall be responsible for establishing the tank elevation. Tanks shall be placed at such depth to facilitate a minimum 1/4 -inch per foot slope of the building sewer. In some instances, buildings may have more than one building sewer. Care shall be taken to establish a tank elevation such that a minimum ¼-inch per foot slope is attainable from any building sewer. Prior to backfilling, the inspection lid on concrete tank shall be sealed with the sealant furnished to prevent infiltration but allow removal of the cover for maintenance.

Backfill shall be placed in uniform, mechanically compacted layers of a maximum 24-inches thickness and of nearly equal heights on each side of the tank so as to minimize settlement and to provide support for the tank walls. Each layer shall be thoroughly tamped with sand containing sufficient moisture to allow for proper compaction. Backfilling near to inlet or outlet pipes or the riser shall be accomplished by hand. Backfill material shall be an imported sand or pea gravel as directed by the Field Inspector. Cover over the tank shall be a minimum of 12-inches deep, with the top 6-inches being replaced with salvaged topsoil.

Excess or unsuitable material shall be removed and disposed of by the Installer and suitable material imported. Jetting will not be allowed.

Heavy equipment shall not be operated so near the tank as to cause damage to the tank. If the tank is to be located in a location which will allow it to be exposed to traffic, then it must have a traffic rated lid. Otherwise, it must be fenced or protected from traffic.

**B3.0 PRESSURE SERVICE LINES INSTALLATION**

A pressure service line is a Schedule-40, pipe line which connects the interceptor tank and pump assembly to the main sewer line.

- For Penn Valley  1¼ inch diameter Schedule-40 is required
- For Mountain Lake Estates 1½ inch diameter Schedule-40 is required

Trench depths shall provide a minimum cover of 24-inches on private land and 30-inches on public land. In some instances, depths greater than 24 and 30-inches shall be required to provide continuous slope to the pipe, to avoid obstructions, or due to utility conflict. When crossing water lines, the service line shall be at a minimum of 18-inches below the water line. The trench bottom shall be smooth and uniform.
The pipe shall be surrounded by a minimum of 4-inches of pipe zone backfill which shall be approved sand, free of stones, sticks or other deleterious material and having a maximum particle size of ½ inch. Placement shall provide a firm, smooth and uniform bottom for pipe support. Material excavated from the pipe trench that is unsuitable for backfill shall be removed and supposed of by the Installer, and suitable material imported. Jetting or puddling shall not be allowed.

When in the trench, pipe ends shall be effectively plugged at all times other than when installation is actively undertaken.

Connection to the main will be made as directed by the Field Inspector per the attached A-1 drawing. The field inspector must be present when the connection to the main is made and assure that the service line is clean and free of debris before the connection is made.

Two-inch wide detectable tape reading “CAUTION, BURIED SEWER LINE BELOW” as manufactured by CALTICO and supplied by General Wholesale Supply of Auburn, California, shall be buried 4 to 6 inches above the pipe.

Pipe Backfill shall contain proper moisture for compaction and shall be installed as follows

1. **Class “A” Backfill.** Within paved areas, pavement removal shall be made to neat, cut edges. Backfill shall be ¾-inch crushed rock, mechanically compacted to 90% relative max. density excepting the top 6-inches which shall be compacted to 95% relative max. density in layers not exceeding compacted thickness of 3-inches or the thickness of the removal pavement, whichever is greater.

2. **Class “B” Backfill.** Within graveled areas, backfill shall be native material, if suitable, otherwise imported select backfill and shall be compacted by wheel rolling. Replacement of surfacing shall be ¾-inch crushed rock, compacted to 95% relative max. density by wheel rolling and shall be placed to a minimum compacted thickness of 6-inches or the thickness of the removed surfacing, whichever is greater.

3. **Class “C” Backfill.** Backfill shall be native material if suitable, otherwise imported select backfill and shall be compacted by wheel rolling to 85% relative max. density.
B4.0 ELECTRICAL REQUIREMENTS AND INSTALLATION

Wiring from the home to the panel shall be provided by the property owner. The property owner will supply 115 or 230-volt service depending on the pump requirements and a separate circuit, utilizing 10/3-cable with ground, and 30-amp dual element fuses or circuit breakers at the main panel. The location of the panel shall be as detailed in Section C5.03 herein. The property owner will be responsible for paying the monthly electric bill for the pump.

Installation of panel, connections to the home wiring and wiring to the pump and controls shall be the responsibility of the Installer. The wiring is to be accomplished by a licensed electrician under the direction of the Installer. The cable from the panel to the pump vault shall be placed within a 1¾-inch diameter PVC electrical conduit buried a minimum of 24 inches. An explosion proof conduit seal shall be installed per the attached A28 drawing and shall be filled with approved sealant. Electrical service and connection must be inspected and approved by the Nevada County Building Department. Panel field wiring shall be color coded to match manufacturer color scheme.

B5.0 GRAVITY SERVICE LINE INSTALLATION

The building sewer is the line between the building served and the interceptor tank. The property owner will be responsible for its installation and future maintenance. Pipe materials and installation shall be per the Uniform Plumbing Code. This line will be inspected by the Nevada County Building Department.

B6.0 SPECIAL CONDITIONS

All threaded connections shall be coated with Vaseline or wrapped with Teflon tape.

Vaseline shall be applied to the gasket surface of the pin-lug coupling immediately prior to assembly. Ensure that all irregularities are removed from adjoining nipple prior to assembly.

When unstable walls, unstable bottom, over-excavation or water are encountered in construction and would be detrimental to the proper installation of the work as determined by the Field inspector, they shall be stabilized and cared for in accordance with recognized standard practice and as approve by the Field Inspector.

Existing topsoil shall be salvaged and replaced over tank and pipe excavations to an approximate depth of 6-inches.
SECTION C - MATERIALS SPECIFICATIONS

C1.0 PRECAST CONCRETE INTERCEPTOR TANKS

C1.01 General

This section describes precast concrete interceptor tanks and material. All residential tanks to be installed shall be 1,000 gallons as indicated in the drawings on pages A-1, A-2 and A-4. Georgetown Precast and Merrill & Sons are both acceptable manufacturers.

Tanks shall be manufactured and furnished with access opening 18-inches in diameter and of the configuration shown on the standard drawings. Tanks shall have a 24-inch diameter by ½-inch groove formed in the top of tank at the access opening for installation of 24-inch diameter PVC riser. Modification of completed tanks will not be permitted. Inlet plumbing shall penetrate 12-inches into the liquid from the inlet flow line. Tank shall be installed in strict accordance with the manufacturer’s recommended installation instructions.

C1.02 Quality Assurance

A. Source Quality Control

1. Cast 6 test cylinders each day of concreting operation.
2. Cast 6 additional cylinders whenever there is a change in concreted mix during a day’s operation.
3. Test at least 1 cylinder per set at 28 days.

B. Reference Standards

1. ACI 318: Building Code Requirements for Reinforced Concrete.
2. ACI 350R: Concrete Sanitary Engineering Structures.
3. ASTM A615: Deformed Billet-Steel Bars for Concrete Reinforcing.
4. ASTM C33: Concrete Aggregates.

C1.03 Submittals

A. Shop Drawings and Product Data

1. Design calculations with pertinent tables, charts, and definitions.
2. Complete layout, fabrication, and installation drawings showing inserts and embedment’s.
3. Field joint details.
4. Limitations of field cutting and modification.
5. If requested by Engineer, information on plant capability, productivity, certification, and details of manufacturing equipment and procedures.
B. Test Reports

1. Certified reports covering source and quality of materials.
2. Certified reports of compressive strength of each design mix.
3. Stamped structural calculations by a California Registered Civil or Structural Engineer.

CI.04 Product Delivery, Storage, and Handling

A. Delivery and Handling

1. Transport and handle precast concrete units with equipment to protect from dirt and damage.
2. Do not place units in positions that will cause overstressing, warping, twisting or cracking.
3. Handle by means of lifting inserts or other means to prevent cracking.
4. Concrete shall have a minimum compressive strength or 3,000 psi at day of shipment.

B. Storage

1. Store units off ground.
2. Place stored units so that identification marks are discernible

C1.05 Performance and Design Requirements

A. Structural Design

1. Design in accordance with ACI 318 as modified by ACI 350R-83
   a. \( Z = 95 \)
2. Loadings (apply simultaneously)
   a. 3-feet of backfill over the top
   b. Groundwater table 3-feet over top of tank
   c. Tank empty
   d. Lateral pressures: Equivalent fluid pressure of 95 lb./ft
   e. Traffic rated tank top where indicated or required
3. Minimum thickness for exterior walls, bottom and top: 4 inches
4. Provide integral stiffeners as required

B. Nominal Capacity – 1,000 gallons

C1.06 Materials

A. Reinforcement

1. Reinforcing steel: ASTM A615, Grade 60
B. Concrete

1. Minimum compressive strength: 4,000 psi at 28 days
2. Cement: ASTM C150, Type II
3. Aggregate: ASTM C33, ¾ inch maximum

C. Hardware

1. 304 Stainless Steel

C1.07 Fabrication and Manufacture

A. General

1. Use rigid, adequately braced forming equipment free from dents, gouges, or irregularities that would impair quality or performance
2. Floor and walls of each tank to be monolithically cast.
3. Top slab to be sealed watertight to walls.
4. Provide internal baffles, vents, and piping as shown on drawings.

B. Embedded Accessories

1. Install plates, inserts, anchors, and other items required to be embedded at the time of manufacture.
2. Accurately position embedment’s in forms and fix rigidly in place.
3. Provide lifting loops or similar devices to facilitate handling.

C. Inlet and Outlet Connections

1. Seal all penetrations watertight.
2. Form holes and place penetrations perpendicular to face of tank wall.
3. Provide saddles, headers, or other suitable supports required for size and location of openings.
4. Inlet plumbing shall penetrate 12-inches into the liquid level from the inlet flowline.

D. Riser Sections – Ribbed PVC set in 2-part epoxy

E. Waterproofing

1. Seal all joints with strip bituminous, butyl rubber or approved equal.
   a. Submit joint details for approval
C1.08 Installation

A. GENERAL

1. Set in position in accordance with the drawings.
2. Prepare foundation of 4-inch aggregate base coarse (ASTM C-33).
   a. Compact to 90% relative max density (ATSM 2049).
   b. Provide firm, uniform base. Unit shall not rock.
3. Place backfill around sides of tank.
   a. Compact to 90% max dry density (ATSM 1557).
4. Seal all joints after installation with 2 parts polyurethane expansion joint sealer.

C1.09 Field Testing

1. Test all tanks
2. Hydrostatic test
   a. Plug all inlets and outlets.
   b. Fill tank to full height including riser.
   c. Allow water to stand for 24-hours.
   d. Leakage tested during following 24-hour period.
   e. Leakage: Any loss in 24-hour period constitutes failure.
   f. Repair and retest all tanks that do not pass leakage test.

C2.0 RISERS AND LIDS

Must have two risers and lids

C2.01 Outlet Risers

Outlet risers shall be ribbed PVC as manufactured by Orenco Systems, Inc. Risers shall be at least 12-inches high, shall have a minimum nominal diameter of 24-inches when used with 12-inch diameter pump vaults and shall be factory-equipped with the following:

1. Neoprene Grommets. Two (2)1-inch diameter grommets, one(1) for the splice box and one (1) for the pump discharge, installed as shown on the drawing.
2. Adhesive. Use ADH100 caulking by Orenco.

C2.02 Lids

One shall be furnished with each riser. Lids shall be Orenco Systems Model FL-24g fiberglass with green aggregate finish, and provided with neoprene gasket, stainless steel bolts and wrench. The riser and lid combination shall be able to support a 2500-lb. wheel load. (Note: This is not to imply that PVC risers are intended for traffic areas. Please refer to section on traffic protection.)
C2.03  **Riser Installation**
Riser installation shall be accomplished according to the manufacturer's instructions.

C3.0  **STEP PUMP VAULT & SCREEN ASSEMBLY**

C3.01  **Materials**

All pumping systems shall be Orenco Systems Model 80SI HH series High Head Pumping Assemblies composed of:

1. Riser and Lids. As specified in Section C2.0
2. Screen Pump Vault. Model SV1260Fi, PVC vault, fitted with 1/8-inch mesh polyethylene screen and a 4-inch diameter PVC flow inducer for a high head pump.

C3.02  **Installation**

Installation shall be in accordance with these specifications and drawings and in accordance with the manufacturer's instructions.

C4.0  **HIGH-HEAD EFFLUENT PUMP**

C4.01  **Pump Design**

Pump shall be specifically designed to pump effluent into high pressure wastewater collection systems.

All residential effluent pumps shall be Orenco Systems Inc., 80SI HH Series ½ hp through ¾ hp.

All pumps supplied must be constructed per, and bear the label of, an authorized testing authority such as Underwriter's Laboratories, Inc. (UL) or Canadian Standard Association (CSA) for effluent duty.

Pumps shall have an 8-foot long, extra heavy duty, (SO) electrical cord with ground to motor plug.

Pump shall be constructed of entirely non-corrosive materials such as stainless steel and thermoplastics.

Impeller shall be of partial emission type. Impeller shall be made of non-corrosive stainless steel or thermoplastic.

A. **Motor**

1. Pump motor shall be of the submersible type. Motor shall be of horsepower specified: Single Phase, 115 or 230 Volts, 60 Hertz, 350 RPM minimum Franklin Electric Super Stainless or equal.
2. Single phase motors shall be thermally protected with an automatic reset feature.
C4.02 Operating Conditions

The effluent pump shall be of the submersible high head type capable of delivering 5 GPM against a total dynamic head (TDH) as determined using the enclosed hydraulic grade line (HGL) elevations and the datum elevation provided for each lot. The TDH shall include the static head from the HGL to the liquid level of the interceptor tank plus all dynamic head losses in the on-lot pumping system assuming the pump is pumping a minimum of 5 GPM. Pump selection shall be made using the enclosed OSI 8 OSI HH pump curves for the ½ HP – ¾ HP range.

C4.03 Power Cable

A. Power cable motor-end termination shall enter the submersible pump assembly by quick connect fittings that are watertight to assist in pump replacement.
B. Cable shall be rated for NEC severe service “S”.

C4.04 Warranty

Submersible Effluent Pump(s) limited warranty period shall exist for a period of twelve (12) months from date of installation or eighteen (18) months from date of manufacture, whichever period is shorter.

C5.0 PUMP CONTROL PANEL

C5.01 General

The pump control panel shall be an Orenco Systems, Inc. Model S-IRO simplex pump control/alarm panel with the following features:

2. **Audible Alarm**: Panel mount with a minimum of 80 db sound pressure at 24 inches. Continuous sound. Higher decibel alarm is available and should be used at remote pedestal installations or a second audible alarm should be provided at the house.
3. **Visual Alarm**: NEMA 4-rated, 7/8 inch diameter, oil-tight, with push-to-silence feature.
4. **Audio-Alarm Reset Relay**: 115 V, automatic, with DIN rail mount socket base.
5. **Toggle Switch**: 15-amp motor rated, single-pole, double-throw with three positions: manual (MAN), (OFF) and automatic (AUTO).
6. **Fuse Disconnect**: DIN rail mount socket base with 2-amp SLO BLOW fuse.
7. **Current-Limiting Circuit Breaker**: Rated for 20 amps, OFF/ON switch, DIN rail mounting with thermal magnetic tripping characteristics.
8. **Enclosure**: NEMA 4X-rated, fiberglass with stainless steel or non-metallic hinges, stainless steel screws and pad lockable latch, 8-inches high x 6-inches wide x 5-1/8 inches deep.
9. **Alarm Circuit**: Wired separately from the pump circuit so that, if the pump’s internal overload switch or current-limiting circuit breaker is tripped, the alarm system remains functional.
10. **Cycle Counter**: 6-digit, non-resettable.
11. **Elapsed Time Meter**: 7-digit, no-resettable.

All wiring in the panel shall be MTW. Wiring shall be routed, bundled, and secured in a neat manner. The control enclosure shall be a fiberglass NEMA 4X enclosure as manufactured by Hoffman Engineering Company or approved equal. The enclosure shall be furnished with a stainless-steel hinge and padlockable latch.

The control panel and its components shall be assembled in accordance with the National Electric Code (NEC), and all state and local codes. The assembled control panel shall be constructed per, and bear the label of, Underwriter’s Laboratories, Inc. or Canadian Standard Association (CSA).

The panel manufacturer must demonstrate that the panel is adequately sized to protect the pumps as the given full load current. This includes short circuit protection, a fused control circuit to protect the wiring, the pilot devices and float switches, and shall include a two-year warranty.

**C5.02 Installation**

All pumping systems shall be installed in accordance with the manufacturer’s recommendations and the standard plans.

**C5.03 Location**

The pump control panel shall be mounted on the side of the house nearest the tank and pump or on a freestanding pedestal adjacent to the tank and pump. NEC requires that the control panel be located within 50 feet of and within sight of the pump.

**C6.0 PUMP FLOAT CONTROL ASSEMBLY**

**C6.01 General**

The pump controls shall be Renco Systems, Inc. Model MF-ABR float type mercury switches hermetically sealed in a solid corrosion and shock resistant material.

All switches shall be UL and/or CSA listed and shall be rated for 4.5A @120 V.

A float switch support PVC bracket shall be attached to the side of the pump vault. Switches will not be attached to the pump discharge piping.

The switch cables shall be terminated to a single “Quick-Connect” pin and sleeve connector for ease of installation and service. “Quick-Connect” connection shall be properly sized and manufactured by Joy Cam. Lock or equal.

The high and low-level alarms and on-off function shall be preset as shown in Drawing 2 on page A-4.
Differential float shall operate in a range of 3 1/2 – inches.

C7.0 JUNCTION BOXES

C7.01 General

All junction boxes, where used, shall be NEMA 4X rated fiberglass with water-tight cord grips and UL approved for wet locations.

Box lids will be hinged, fully rubber gasketed and with a minimum four (4) stainless steel screws. All junction box screws shall be captive.

Box shall be equipped with four (4) electrical cord grips and a ¾-inch outlet fitting. Cord Grips shall be corrosion resistant Hubble or Woodhead type. Also included shall be UL-listed heat shrink and butt connections. All conduit shall be sealed with EY conduit seal.

C8.0 PUMP VAULT PIPELINE AND FLEX HOSE.

C8.01 PVC Pipe and Fittings

Where rigid PVC pipe is used on pump discharge, it shall be PVC Type 1, Grade 1, Schedule-40 or Schedule-80. Fittings shall be PVC Type 1, Schedule-40 solvent weld fittings and comply with ASTM D2466.

C8.02 Flex Hose Fittings

Discharge hose and valve assembly shall be Orenco Model HV100B, 1-inch diameter, 150 psi PVC ball valve, PVC flex hose with working pressure rating of 100 psi and Schedule-40 PVC pipe. For the ¾ HP, a 150-psi rating will be required.

Flex hose shall be made of PVC hose with a rigid PVC inner helix.

Working pressure shall be no less than 100 psi. Care should be exercised so that the maximum pump shut-off head does not exceed 75% of the working pressure of the pipe.

Appropriate methods of assembling the flex hose discharge assembly will not include insert fittings and hose clamps.

12-inches of flex hose shall be installed outside the riser with an appropriate adaptor for connection to 1 ¾-inch, Schedule-40, pressure service lateral piping.
C9.0 VALVES

C9.01 Check Valves

Pump discharge check valves shall be PVC ball check valves designed for wastewater effluent pump applications and rated for 150 psi.

The ball check valves shall be made of non-corrosive materials.

The ball check valves shall be Chemtrol Model “BC” or approved equal.

C9.02 Ball Valves

Ball valves shall be PVC, quarter turn shut-off valves, 1-inch minimum, 150 psi rating.

Ball valves shall be located downstream of disconnect for pump removal. Where a union ball valve is used, it shall be of double union design and have positive seal providing for safe removal of the pump side union.

Ball valves shall be located where they can be easily operated from the ground surface.

Ball valves shall be Chemtrol Model "TU" Tru-Union Ball Valves or approved equal.

C9.03 Back-Water Valve

Gravity sewer line back-water valves shall be 4-inch PVC or ABS plastic with solvent cement connections. Valve shall be a swing check with removable flapper and self-lubricating hinge. Valve shall be water tight with a 10-foot column. The valve shall have a quick-open inspection cover and be installed in a valve access box for ease of inspection. Box shall be 12” x 12” with extensions as required and a lid to be installed at grade. Box shall be molded of high impact plastic.

C10.0 PRESSURE SEWER LATERAL PIPING

C10.01 General

Work under this section shall include furnishing all labor, materials, tools and equipment necessary for the installation and pressure testing of PVC pressure sewer pipe for the pump discharge as shown on the plans and specified herein.

C10.02 Materials

Where rigid PVC pipe is used on pump discharge, it shall be PVC Type-1, Grade-1, Schedule-40 or Schedule-80. Fittings shall be PVC Type-1, Schedule-40 solvent weld fittings and comply with ASTM
D2466. If Schedule 40 fittings are not available, the Engineer should be consulted to determine which material will be used.

PVC couplings shall be Flo model number 110-15 rated for 330 psi working pressure. Couplings shall have PVC compression fittings sized for iron pipe sizes.

C10.03 Installation

PVC sewer line shall be installed with 24-inches minimum cover on private land and 30-inches cover on public land.

The PVC sewer service line specifications are specific to their location. For Penn Valley the Sewer Service line shall be 1 ¼ inches and for Mountain Lakes Estates the sewer service line shall be 1 ½ inches.

Pipe shall be clearly marked with warning tape placed on the trench 4-6 inches above the pipe. The tape shall be a warning type, 2-inch wide, detectable tape reading “CAUTION, BURIED SEWER LINE BELOW” as manufactured by CALTICO and supplied by General Wholesale Supply of Auburn, California.

All threaded connections shall be wrapped with Teflon tape.

C10.04 Pressure Testing

PVC sewer service line shall be pressure tested for leakage. Raise pressure to 120 psi and maintain for 2-hours. Pressure loss ≤ 5 psi over a two (2) hour period is acceptable. Air or water tests are both satisfactory.
SECTION D - OSI HIGH-HEAD PUMPING SYSTEM
INSTALLATION AND MAINTENANCE INSTRUCTIONS

OSI HIGH-HEAD PUMPING SYSTEM
INSTALLATION AND MAINTENANCE
INSTRUCTIONS

STEP 1: Carefully read and follow all installation instructions. Improper installation may void warranties.

STEP 2: Inspect your order for completeness and inspect each component for shipment damage.

STEP 3: Check to be sure the instructions and items supplied comply with state and local regulations.

STEP 4: Make certain the tank and riser are installed according to the manufacturer's instructions.

STEP 5: Install the electrical control panel within view of the tank (locate either on interior or exterior wall). If possible, position in the shade and protect from weather. Refer to instructions accompanying the panel (inside enclosure).

STEP 6: If the electrical wires from the panel to the pump vault are placed in a conduit, a conduit seal must be used in accordance with the National Electrical Code (NEC) to prevent transmission of moisture from a leaky conduit back into the splice box.

STEP 6: Before the screened vault can be placed in the tank, support pipes must be inserted through the slots in the top of the vault. Rotate each support pipe until the stainless-steel screw snaps into the 1/4-inch hole between the slots. Once the support pipe is in place, slightly back off the stainless steel screw to secure it.

STEP 7: Position the screened vault in the tank as shown in Drawing 2g.

STEP 8: Install the electrical splice box in the grommet provided in the riser.

ORENCO SYSTEMS, INC.
2826 Colonial Road          Roseburg, Oregon 97470         503 673-0165
STEP 9: Screw the hose and valve assembly into the pump discharge and carefully lower the pump in the 4-inch diameter PVC flow inducer inside the screened vault (see Drawing 2g).

STEP 10: Push the pump and level control wires through the watertight cord grips into the electrical splice box. Leave a length of electrical cord coiled inside the riser adequate to allow easy removal of pump and float assembly. Bring the power source and control panel wires through conduit to the splice box and splice with butt connectors and heat shrink from the kit provided.

Note: The colored wire marker on each float cord identifies that float's particular use as follows:

- Red (2) - Redundant OFF
- Blue (3) - ON-OFF
- Yellow (4) - High-level ALARM

The numbers on the wire markers correspond to the numbers on the terminal strip in the Model S-1ROPRL and S-2ROPRL Control Panels, e.g. one wire from the "ON;OFF" float goes to position 3 on the panel's terminal strip.

STEP 11: Tighten the cord grips by hand, not by tool, then test the tightness of the cord grips by tugging on each cord. A cord is secure when the cord grip is tight enough to prevent slippage. Leave a length of cord inside the splice box adequate to allow easy removal during future disconnecting and re-splicing.

Note: OSI high-head pump motors are equipped with a special "Extra Hard Usage" three-wire cord. The motors are "two-wire"; the third wire in the cord is a ground wire which must be grounded in compliance with the National Electrical Code and state and local codes.

STEP 12: Orient the hose and valve assembly as shown in Drawing 2g. Pass the 1-inch discharge pipe through the neoprene grommet in the riser. Thread the short length of flexible hose provided onto the threaded end of the plumbing discharge protruding outside the riser.

STEP 13: The float assembly comes positioned in the vault. THE FLOATS ARE PRESET FOR DESIRED DRAWDOWN. DO NOT ALTER THE TETHER LENGTH WITHOUT FIRST CONSULTING THE ENGINEER OR MANUFACTURER.
STEP 14: Start up:

(a) Fully open the ball valve.

(b) Be sure the pump is submerged in water before continuing.

(c) When using an S-1ROPRL or S-2ROPRL Control Panel with an MF-ABR Float Assembly, set the MOA switch in the control panel on manual (MAN). Check the automatic operation of the alarm raising the top float should activate the red light and audible alarm. Check to ensure that the pump is now running, then move the MOA switch to automatic (AUTO). To check the automatic operation of the pump:

While keeping the "Redundant-OFF" float in the up position, raise the "ON-OFF" float and the pump turns on; lower the "ON-OFF" float and the pump shuts off. Lowering the "Redundant-OFF" float with the "ON-OFF" float up turns the pump off.

(d) A 1/8-inch diameter recirculation hole is provided in the discharge head of OSI pumps. During the pumping cycle, some noise as a result of the recirculation within the 4-inch diameter flow inducer is to be expected.

STEP 15: The ability to easily remove a screened vault for maintenance is essential and is dependent upon careful installation in accordance with the preceding instructions. To be certain that correct installation has been achieved and to avoid future maintenance problems, the installer should go through the removal process described below (steps a-h).

MAINTENANCE

The alarm is triggered when the liquid in the tank reaches a level that is higher or lower than it should be. To silence the alarm, push the red light on the alarm panel. As soon as possible, call your pump service person or, if you're in a sewer district, call the district's service number. With normal use, the tank has reserve storage capacity good for 24-48 hours. When the liquid level in the tank has been lowered, the red light on the panel will go out and the audible alarm will reset automatically.

The pumping system should be inspected annually. If the liquid level inside the screen is discernibly different from the level outside the pump vault, remove the screened vault and clean it following these steps:

a) Turn off the power by switching the pump's circuit breaker and the disconnect fuse to their "off" positions.

b) Make sure the ball valve is completely closed.

c) Disconnect the PVC union located next to the ball valve.
d) Remove the pump from the flow inducer, setting it aside on the fiberglass lid or on a piece of plastic film to protect it from mud or sand. The pump's electrical cord need not be disconnected.

e) By hand or with a utility tool (3/4-inch holes in the top of the vault are for insertion of the tool), pull the screened vault out of the tank. *There should be ample clearance between the ball valve and the splice box to allow unhindered removal of the vault.*

f) Remove the float assembly from the vault and hose off the floats if needed.

g) Remove the screen from the vault and hose off vault and screen if needed.

h) Reassemble screen, vault and float assembly and replace in tank. **VERY IMPORTANT**—To prevent the vault from floating and the screen from being fouled by solids floating in the tank, it's essential to run clear water (as from a hose) into the vault to sink it.

Premature plugging of the screen may result from abuse of the system. Such abuse might take the form of a large-scale home canning project with concurrent overuse of the garbage disposal. More likely though, it will be excessive inflow resulting from a plumbing leak under the house, a leaky septic tank, a homeowner taking in laundry, two or more families using a tank designed for one, etc.

Plugging of the screen, however, should be considered a *success*, not a failure, as the screen serves to protect the integrity of the collection and treatment facilities. Cleaning a screen is quick and easy and infinitely preferable to the damage that solids carryover can cause downstream in the system. Furthermore, it allows for identification of a problem at its source.

Homeowners should be provided with a copy of the "Do's and Don'ts" user manual so they can avoid possible problems.

**CAUTION:** *The tank access lid must be properly secured to the riser at all times. If bolts are lost or damaged, contact Orenco Systems immediately for replacements.*

**AN UNLOCKED LID OR OPEN TANK ACCESS IS A SAFETY HAZARD!**
DO familiarize yourself with the location of the electrical control panel and note the phone number on the panel. Refer to this number when reporting a malfunction in the system.

DO call 265-1555 day or night whenever the alarm comes on …it sounds like a smoke alarm. The audible alarm can be silenced by pushing the illuminated light located directly above the PUSH TO SILENCE label on the front of the electrical control panel. With normal use, the tank has a reserve storage capacity of 24-hours.

DO be aware that district maintenance personnel will service and maintain all equipment excepting the Inlet plumbing. Maintenance will be done during normal working hours, except in emergencies. **NOTE:** The plumbing from the dwelling to the interceptor tank will be the responsibility of each property owner.

DO call 265-1555 should you have any questions concerning billing on your account. Your monthly sewer charge and any assessments will be collected annually on your tax bill.

DO realize that all legal matters, monthly sewer charges and assessment payments are the obligation and responsibility of the property owner of record. All correspondence will be directed to the owner of record and the owner will be responsible for compliance and informing any tenant users.

DO feel free to place a bird bath, potted plant or other yard decoration on the tank riser lid, as long as it can be readily removed for maintenance.

DO feel free to place a birdbath, potted plant or other yard decoration on the tank riser lid as long as it can be readily removed for maintenance.
DON’TS

**DON’T** construct a new drain-field, cesspool or privy; a better way has come to our community. Hook up to the sewer system all grey water, such as washing machines, shower stalls, etc. Prior to hook-up, consult the District at 265-1555.

**DON’T** start digging and find an underground utility with your backhoe. Before you dig, telephone the UNDERGROUND SERVICE ALERT (USA) number 1-800-642-2444, and the utilities which have underground facilities in the area will come out to surface mark their lines.

**DON’T** connect eaves or storm drains or allow other surface water to get into the pressure sewer. This additional water will increase your electrical costs, deplete the available capacity of the collection system and add needlessly to the daily volume of water the treatment facility has to process.

**DON’T** flush undesirable substances into the sewer. Flushing flammable and toxic products is dangerous. Other materials such as sanitary napkins and large amounts of hair or grease are a maintenance nuisance.

**DON’T** try to hook up to a pressure main without the proper tools and supervision. The sewer lines are under high pressure.

**DON’T** drive over the interceptor tank or riser as damage can result. If your tank is in an area subject to traffic, consider placing an attractive barricade or row of shrubs to discourage traffic unless the tank has been equipped with a special traffic lid. Depending on the circumstances, damage of this nature may be charged to the property owner.

**DON’T** vandalize or tolerate vandalism of our sewer system. Repairs necessitated by abuse or deliberate misuse will be charged to the property owner. Too many problems can lead to rate increases for us all.
CLEANOUT WITH SRV, LOWER THAN SLAB, LOCATED IN CHESLY BOX.

SEWER MAIN STREET (EXISTING)

SERVICE ASSEMBLY W/ BALL VALVE & CHECK VALVE (EXISTING)

1 1/2" P.V.C. PRESSURE SEWER MAIN *

SCREENED VAULT W/ HIGH HEAD EFFLUENT PUMP *

1000 GAL. CONC. SEPTIC TANK/ PUMP VAULT SET IN NON-TRAFFIC AREA *

ALL WEATHER ACCESS ROAD FOR INSPECTION AND MAINTANANCE INCLUDING TANK PUMPING. **

* CONTROL & ELECTRICAL SERVICE CABLES

* PUMP CONTROL PANEL & ALARM (MAY BE INSTALLED ON A FREE STANDING PEDESTAL).

4" GRAVITY SEWER LINE (BACKFLOW DEVICE REQUIRED WHEN ANY FLOOR ELEVATION IS LOWER THAN RIM OF SEPTIC TANK RISER.) **

CLEANOUT WITH SRV, LOWER THAN SLAB, LOCATED IN CHESLY BOX.

* CONSTRUCTED BY HOMEOWNER, NEVADA COUNTY SANITATION DISTRICT No. 1 WILL OPERATE & MAINTAIN.

** CONSTRUCTED BY HOMEOWNER MAINTAINED BY HOMEOWNER

TYPICAL ON-LOT SEWER FACILITIES
CAPACITY

<table>
<thead>
<tr>
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<th>A</th>
<th>B</th>
<th>C</th>
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<tr>
<td>J000</td>
<td>.51</td>
<td>.44</td>
<td>4 2</td>
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</table>

SPECIFICATIONS:

A. CONCRETE, PORTLAND CEMENT, TYPE 11, MIN. COMPRESSIVE STRENGTH - 4000 P.S.I. AT 28 DAYS.
B. REINFORCING BAR, INTERMEDIATE GRADE, ASTM A615.
C. INTERNAL FITTINGS - 4 11 ABS.
D. INTERNAL/EXTERNAL COATINGS PER SPECIFICATIONS.
E. STANDARD GROUND WATER SEAL - B TYL MASTIC AND/OR CEMENT MORTAR.

GpC
SEPTIC TANK - MONOLITHIC CONSTRUCTION
GEORGETOWN PRE-CAST, INC., P.O. BOX 65, GEORGETOWN, CA. 95634
916-333-4404

SCALE: 1/2" = 1
DATE: Jfss
REVISED: J-
ORENCO SYSTEMS, INC.

MATERIALS LIST
PENN VALLEY
ON-LOT PUMPING EQUIPMENT

<table>
<thead>
<tr>
<th>1/2 HP PUMP INSTALLATIONS</th>
<th>MODEL</th>
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</thead>
<tbody>
<tr>
<td>Splice Box w/ cord grips, outlet fittings and heat shrink</td>
<td>SB4i</td>
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<tr>
<td>Screened Pump Vault</td>
<td></td>
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<tr>
<td>Mercury Switch Float Assembly, mounted in screened vault</td>
<td></td>
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<tr>
<td>Effluent Pump 1/2 HP, 1/8&quot; bypass hole, grounded SO power cord</td>
<td>8 OSI05HH</td>
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<tr>
<td>Internal Valve and Pumping Assembly</td>
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<tr>
<td>Control/ Alarm Panel, 115 V</td>
<td>HV1O0B</td>
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<tr>
<td>Quick Disconnect for Float Assembly</td>
<td>S-IROPRL</td>
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<table>
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<tr>
<th>3/4 HP &amp; 1 HP PUMP INSTALLATIONS</th>
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<td>Splice Box w/ cord grips, outlet fittings and heat shrink</td>
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<tr>
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<td>HV1O0B</td>
</tr>
<tr>
<td>Quick Disconnect for Float Assembly</td>
<td>S-2ROPRL</td>
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STEPS (SEPTIC TANK EFFLUENT PUMP SYSTEM)
SIDE VIEW TYPICAL 1000 GALLON TANK w/ MF-ABA LEVEL CONTROL FLOAT ASSEMBLY

NOTE: With this system the control panel is an option: see A-1190 or A-5-1
Slope ground away from Riser

Electrical Splice Box
Internal, with Cord Grips

Conduit Seal at Panel Riser
Electric Conduit to house

8 1/2"

Alarm
On

3 1/2"
Off

3 1/2"

Float Stem (MF-1 has 3 floats)

8 1/2"

4" Dia. PVC Flow Inducer

Vault Inlet Holes

ORENCO & OSI HH
4" Submersible Effluent Pump

Steps "A"
(Septic Tank Effluent Pumping System "A")
Dimensions as shown are for typical 1000 gallon single compartment tanks

Figure 2:
OSI HIGH-HEAD PUMPING ASSEMBLY

A patented system used in a variety of applications, including (STEP) pressure sewers and for dosing drainfields as well as sand and gravel filters. An OSI 1/3 Hp high-head pump can handle heads up to 165 feet; our 1/2 Hp model can handle heads up to 225 feet.

The assembly drops neatly into a septic tank where it is suspended from an opening in the tank top. The vault's ports are located between the sludge and scum layers, resulting in effluent quality better than that from compartmented or multiple tanks.

OSI's 1/8-inch mesh polyethylene screen ensures reliable pump operation and keeps solids from clogging distribution pipe orifices.

(CUTAWAY VIEW)
Screened Pump Vault, Float Switches
High-head Pump In Flow Inducer

OSIENCO SYSTEMS, INC.
292S Colonial Fload Floseburg, Oregon 97470
503 S73-01SS
ORENCO SYSTEMS™ Simplex Control Panels offer fine quality components for reliable automatic pump operation. Standard functions include Circuit Breaker, Manual, Off and Automatic motor control operation plus an audio/visual high-water alarm circuit with audio silence and automatic reset upon correction of the high-water condition.

A selection of optional features offers flexibility for a variety of pumping applications.

ORENCO SYSTEMS™ control panels are specifically engineered for pressure sewer (STEP) systems, for controlling pumping into conventional gravity collection systems and for on-site systems such as intermittent sand filters, recirculating sand filters, low pressure drainfields, as well as for simple uphill pumping to standard drainfields.

ORENCO SYSTEMS™ control panels are especially designed for use with mercury float switches but are compatible with any standard dry-contact switching method.

**STANDARD FEATURES:**
- **Listing:** Underwriters Laboratories
- **Rating:** 1 Hp/115 VAC, 2 Hp/230 VAC, Single Phase, 60 Hz. **Motor-Start Contactor:** Rated for 25 FLA, Single Phase, 60 Hz. **Audible Alarm:** Panel mount with a minimum of 80 db sound pressure at 24 inches, continuous sound.
- **Visual Alarm:** NEMA 4-rated, 7/8-inch diameter, red lens, oiltight with push-to-silence feature.
- **Audio-Alarm Reset Relay:** 115 VAC, automatic, with DIN rail mount socket base.
- **Toggle Switch:** 15 amp motor rated, single-pole, double-throw with three positions: manual (MAN), (OFF) and automatic (AUTO).
- **Fuse Disconnect:** 2 amp, SLO-BLO fuse with DIN rail mount.
- **Enclosure:** NEMA 4X-rated, fiberglass with hinged cover. Noncorroding. Dimensions: 10" High x 8" Wide x 5-1/8" Deep. External mounting ears.
- **Alarm Circuit:** Wired separately from the pump circuit, so that if the pump’s internal overload switch or current-limiting circuit breaker is tripped the alarm system remains functional.
- **Current Limiting Circuit Breaker:** 20 amps, OFF/ON switch, DIN rail mounting (Single Pole/115 V - Double Pole/220 V) with thermal magnetic tripping characteristics.
- **Padlockable Latch:** Constructed of noncorroding stainless steel or reinforced plastic.

**OPTIONAL FEATURES:**
- **Elapsed Time Meter:** 115 VAC, 7-digit, nonresettable, with DIN rail mount socket base.
- **Counter:** 115 VAC, 6-digit, nonresettable, horizontal base mount.
- **Programmable Timer:** 10 amp, "110 VAC, SPOT relay output, repeatable cycle from 15 sec. to 10 hours with two time ranges. Separate variable controls for ON and OFF time.
- **Intrinsically Safe Control Relay:** 115 VAC, Oto 10,000 ohm sensitivity range. Secondary circuit 11 VAC, 2.3 mA.

Other custom features can be provided.

ORENCO SYSTEMS, INC. 2826 Colonial Road
NOTES:
1) Residential Pump Panel 115 VAC
2) Motor must have internal overload protection

---

ORENCO SYSTEMS™
CONTROL PANEL

ORENCO SYSTEMS, INC.
2826 Colonial Road
Roseburg, OR 97470
503/673-0165

1/01/88
TB

NO. 1
INSTALLING Orenco Systems RIBBED PVC RISERS

GETTING THE RIGHT HEIGHT

The installed riser should extend about .3 inches above the original ground level (approximately 2 inches for tank settlement and 1 inch to ensure drainage away from the riser). If it is too long, the riser may be cut. The riser top has a fastening arrangement that accommodates the lid. Risers may be cut at the bottom end using a hand saw. Use masking tape to mark the riser for cutting. To ensure a good fit and a watertight joint, a square cut is absolutely necessary.

If it is too short, a grade ring may be placed under the riser. Generally, it's easiest to bond the grade ring to the top of the tank as described below, then glue the riser to the grade ring using two-part PVC cement.

MAKING A WATERTIGHT SEAL

Center the riser over the access hole and mark its position on the top of the tank. Roughen and clean the surfaces of the riser and tank where they are to be joined.

Set the riser in place over the tank opening. Using the two-part epoxy supplied, mixed according to the directions, run a generous fillet completely around the inside of the riser's base.

Allow ample curing time for the epoxy, then backfill and slope the ground surface away from the riser so that runoff will drain away from the tank. Exercise care during the curing period to avoid displacing the riser or disrupting the watertight seal between the riser and tank.

WORKING IN COLD WEATHER

The epoxy supplied, which cures quickly in very warm weather, needs at least 90 minutes curing time at 60° and often much longer at lower temperatures. Two approaches for successful installation during cold weather are:

1) Set the riser in place on the tank and apply cement grout around the outside of the riser's base. When the grout has set, clean and dry the inside of the riser's base and the adjoining surface of the tank and apply a generous fillet of epoxy. Backfill may be placed when the cement grout is set. Complete curing of the epoxy may take much longer, but will eventually create a watertight seal.

2) Have your local concrete tank maker cast a grade ring into the top of the tank surrounding the access hole at the time of manufacture. The riser can later be bonded to the grade ring with ordinary PVC cement.

ACCESS HOLE TOO BIG?

The Orenco Systems fiberglass tank adaptor converts any oversized opening up to 24" square to an 18" diameter access hole. The tank adaptor is bonded to the top of the tank using the same two-part epoxy as is used in riser installation.
QUTION: An unlocked or open septic tank access is a safety hazard. Always replace lid and lock securely!

FIGURE 1: VAULT PORT AND RISER DETAIL
# Kanaflex

## POOL & SPA HOSE

WORLD-WIDE LEADER IN PLEXIBLE PVC HOSE

### SPECIFICATIONS:

<table>
<thead>
<tr>
<th>SIZE, Inches</th>
<th>OUTSIDE DIAMETER, Inches</th>
<th>WALL THICKNESS, Inches</th>
<th>HELIX HEIGHT, Inches</th>
<th>HELIX WIDTH, Inches</th>
<th>PITCH (spacing), Inches</th>
<th>BEND RADIUS, Inches</th>
<th>WORKING PRESSURE AT 72°F P.S.I.</th>
<th>BURSTING PRESSURE AT 72°F P.S.I.</th>
<th>BURSTING PRESSURE AT 140°F P.S.I.</th>
<th>WEIGHT, Lbs/Ft</th>
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<td>64</td>
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<td>.63</td>
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</table>

- For use with PVC solvent weld fittings only.
- Temperature range is -13°F to 158°F.
- Inside diameter is nominal.
- Tolerance on outside diameters is ± .020".
- Vacuum rating on sizes 1" thru 2" is 29.8" HG @72°F.
- Since 1 1/2" is braided tubing-helix information does not apply.

The Kanaflex brand of Pool and Spa Hose is assurance to your customers that you care about quality installations. In addition to substantially reducing time on each job you also save up to 50% of the fittings required when compared to rigid PVC pipe.

Kanaflex Pool and Spa Hose is designed for use with PVC solvent weld fittings only. Temperature range is from -13°F to 158°F. In addition to the standard 1 1/2", Kanaflex is also available in 1 3/4", 1 1/4", and 2" sizes.

Kanaflex Pool and Spa Hose is made by the world's leading producer and originator of flexible PVC hose. Serving industry from 21 plants world-wide, Kanaflex Corporation has been producing hose of uncompromising quality for over 30 years-holding many of the patents on manufacturing processes.

When making pool and spa installations be sure you use the PVC hose with the Kanaflex brand.

**INSTALLATION NOTE:** Although we recommend the use of a specific brand of PVC solvent cement, please contact your glue supplier for recommendations as well.
WATER LO-TORQUE™
BALL VALVES

PalantNci4,6 65,937

SPECIFICATIONS:

- Low torque required to operate unit manually.
- Seals are self-adjusting to compensate for wear.
- Patented feature - "pre-loaded" stem seal for longer life of seal.
- Precision molded micro-finish ball provides longer life.
- Body made of white PVC Type I with ABS Handle.
- Meets ASTM standards & schedule80 requirements.
- EPDM stem seal.
- Made by KBI in the U.S.A.

<table>
<thead>
<tr>
<th>Size</th>
<th>Locket</th>
<th>Thread</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot;</td>
<td>WLT-500-S</td>
<td>WLT-500-T</td>
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<tr>
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<td>WLT-750-S</td>
<td>WLT-750-T</td>
</tr>
<tr>
<td>1&quot;</td>
<td>WLT-1000-S</td>
<td>WLT-1000-T</td>
</tr>
<tr>
<td>1 1/4&quot;</td>
<td>WLT-1250-S</td>
<td>WLT-1250-T</td>
</tr>
<tr>
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<td>WLT-1500-S</td>
<td>WLT-1500-T</td>
</tr>
<tr>
<td>2&quot;</td>
<td>WLT-2000-S</td>
<td>WLT-2000-T</td>
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</table>

NOTE: Boxed numbers on dimensional drawings refer to "Materials of Construction" Chart on page 10.

WATER SINGLE UNION
BALL VALVES

SPECIFICATIONS:

- Body, ball and handle made of white PVC Type I.
- 1/4 turn shutoff to open and close with stops at both positions.
- Full flow, same as equivalent pipe size.
- Polyethylene ball seats and EPDM stem seal provide long wear and chemical resistance properties.
- Deep sockets on both ends, exceed ASTM requirements, providing additional bonding surface in cementing pipe in valve.
- Valve meets or exceeds ASTM schedule 40 requirements.
- Single union allows proper positioning of valve.
- Patent pending ball design provides smooth and easy manual operation.

DIMENSIONS

<table>
<thead>
<tr>
<th>Nominal</th>
<th>d1 (INCHES)</th>
<th>H</th>
<th>C</th>
<th>L</th>
<th>A</th>
<th>Approx. Weight (LBS)</th>
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DIMENSIONS

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<th>A</th>
<th>B</th>
<th>D</th>
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<td>6.30</td>
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QUIK-FIX™
DOUBLE EXTENSION COUPLINGS

Sizes 1/2" - 6"

The QUIK-FIX Double Extension Coupling is used for the repair of pipe, and with the replacement of valves and fittings in an existing F'VC system without digging up large sections of pipe.

- Both ends of coupling extend or telescope for ease of installation to desired length.
- No additional fittings needed to install.
- Units are sealed with SANTOPRENE gaskets at both ends.
- Constructed of rugged Type I PVC with schedule 40 socket connections.
- When installing, restrain all pipe movement by soil compaction on straight runs and thrust blocking when reducing size or changing direction.
- "BIG RED" Compression Strap Wrench is recommended for tightening of couplings.
- Working pressure rated at 150 psi.

### PVC SCHEDULE SO'UNIONS

- Available 1/2" to 2".
- Slip or thread connections.
- Rugged PVC construction.
- EPDM O'ring.
- Temperature range of -20°F to 150°F.
- Meets ASTM schedule 80 standards.
1"  U-1000-T  FIPT x FIPT

1·Y"  U-1250-S  Slip x Slip

1·1/4"  U-1250-T  FIPT x FIPT

1·Y2"  U-1500-S  Slip x Slip

1·1/2"  U-1500-T  FIPT x FIPT

2"  U-2000-S  Slip x Slip

2"  U-2000-T  FIPT x FIPT

Replacement O'rings available
## eyco® Li uid-Tig ht Fittings

Installs in either clearance or threaded holes.

<table>
<thead>
<tr>
<th>No.</th>
<th>Olumetf Oil</th>
<th>Dimensions</th>
<th>Locating Ht</th>
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<td>3208 090.055</td>
<td>A 0.010</td>
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<td>3.232</td>
<td>2.70-380</td>
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</table>

- V.D.E. accepted. SEV 1302903 (M)
- Ten sizes for cable, ruoing, etc., with diameters rangr.g tram 3/32" ta 1"
- All nryan construcnon wtt, neorene gland
- Restrsnt to salt warer, weoK cc,as.
- gasoline, 01cono1, 011, greosse and common solvents
- Wroinng temperatures - 30°C (-22°F) to 100°C (212°F) For snorr penocs re 150°C (302°F)
- Withdrands worer pressure up to 70%

labKefs for geologips use are available - See PCQ 27

### Suggested Clearance Hole

For Non-Threoc Moun1ng

- Neoprene camerassion gland for seating
- Soeocrac connour crav, aas ng - se a, ar mounng canl11 w,mour O-rings

---

Omea seang nur rest rs snags.
sneas connormerrs

Saoeocras connour crav, aas ng - se a, ar mounng canl11 w,mour O-rings

Neoprene camerassion gland for seating

---

Omea seang nur rest rs snags.
sneas connormerrs

Saoeocras connour crav, aas ng - se a, ar mounng canl11 w,mour O-rings

Neoprene camerassion gland for seating

---
### Table of Measurements

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<th>D</th>
<th>E</th>
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FLANGED BOX WITH FIBREGLASS SAFETY TREAD COVER

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<td>71/4&quot;</td>
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FABRICATED BOXES

Unflanged PVC fabricated boxes of any size may be made to customer specifications and come complete with lids, gaskets and screws. These boxes are not C.S.A. certified and are not returnable.

JUNCTION BOX ADAPTERS

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<td>JBA 50</td>
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<tr>
<td>4&quot;</td>
<td>JBA 55</td>
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</table>
GENERAL DESCRIPTION

Weld-On 10 is a two-part, opaque white thick syrupy, high strength plastic resin adhesive. After mixing Component A (Base Resin) with Component B (Catalyst) Weld-On 10 is ready to be applied to mating surfaces. Pot life of the mixture is about 30 minutes at 75°F. Working time is often shorter than the pot life, because the resin surface air dries to form a thin skin during application. The resin layer cures initially to a hard gel in about 2 hours and reaches near ultimate strength in 24 hours at 70°F. The cured layer is a tough, chemical and water resistant plastic. Note: Cure will be faster in warmer weather, slower in cold weather.

PRODUCT USES:

Weld-On 10 was especially formulated for joining, fabricating and repair of large size PVC and CPVC pipe and fittings. It can also be used for joining PVC or CPVC to other materials, such as metals, concrete and clay ... or to join dissimilar plastics, such as fiberglass reinforced polyester (FRP), ABS, acrylic, polycarbonate and styrene.

Weld-On 10 is unexcelled for joining very large sizes of PVC pipe and fittings, where fits are loose enough to have gaps. It is not recommended for joints with interference fits.

• It provides excellent adhesion in peel, tensile or sheer applications with PVC and CPVC ... withstands very high pressure.
• Fills gaps too large for solvent cement to fill.
• Allows time for careful workmanship in fabricating, joining or repair of very large diameter pipe and fittings. It is ideal for installings large saddles or valve connections.
• Although it hardens to a rigid plastic, it is tough enough to resist impact.
• Forms superior bonds between PVC and other materials ... plastics and non-plastics ... to cast iron, galvanized, concrete, aluminum or clay pipe or fittings.

DIRECTIONS FOR USE:

1. Assemble materials for the job - Weld-On 10 A & B, mixing sticks, applicator (spatula or stiff brush), sandpaper, clean wiping cloths, cleaning solvent and gloves.
2. Prepare joint by sanding to roughen mating surfaces. Wipe surfaces clean with dry rag or with solvent cleaner. Do not soften plastic with solvent cleaner.
3. With pre-measured Weld-On kit add Catalyst B (small container) to Resin A (large container). Mix thoroughly and apply to each mating surface. Pot life and working time is about 30 minutes at 70°F.
4. Assemble parts and allow squeeze out to remain as a fillet.
5. Do not disturb joint for at least 2 hours at 70°F. Warmer weather will shorten pot life and cure time. Colder weather will increase time for both.
6. When joining CPVC for service temperatures of over 150°F, please contact us for more information.

REPAIR WITH WELD-ON 10

Weld-On 10 has had considerable field history in the repair of leaks. We have had many reports of very satisfactory results. We have also made our own test repairs with Weld-On 10 on 4" diameter Schedule 40 PVC pipe with excellent results. All repairs provided leak free service at full rated pressure for 5 weeks without failure. Pressure was then increased to burst pressure of the pipe, but the repairs did not fail. From these results we would expect that field repairs should provide durable leak-free service, depending on the quality of the repairs.
Here are our suggestions for making repairs with Weld-On 10:

1. Have materials ready... sufficient quantity of Weld-On 10; a clean stick for mixing; a spatula or stiff brush for applying Weld-On 10; fiberglass cloth mat cut to desirable size or strip for wrapping; sandpaper or emery, clean, dry rags, gloves for protection. 2. Turn off water pressure: dry off the area of bond and abrade it well with sandpaper and wipe clean. 3. Mix Weld-On 10 as a pre-measured kit. Add small bottle of "B" to larger container of "A" and mix thoroughly. 4. Apply a generous coat of Weld-On 10 to leak and surrounding area. 5. Apply Weld-On 10 to mating surface of cloth and wrap around leak area. Some adhesive should squeeze up through cloth. 6. Apply an additional coat of Weld-On 10 to the top surface. 7. Allow to cure a minimum of 4 hours at 75°F. Overnight or 24 hours cure would be more desirable before re-pressurizing the systems.

• We obtained good results with only Weld-On 10 and no fiberglass cloth, but we recommend the doth for added structural strength.

STORAGE/SHELF LIFE:

Both components should be stored between 45°F and 85°F, and a 12-month shelf life can be expected.

SAFETY PRECAUTIONS:

FLAMMABLE - VAPOR HARMFUL - HARMFUL IF SWALLOWED
IRRITATES SKIN OR EYES

Keep out of the reach of children. Do not take internally. Use with adequate ventilation. Avoid prolonged exposure to vapor. In confined or partially enclosed areas, a ventilating device should be used. Respirators especially designed to minimize the inhalation of organic vapors can also be used. They are commercially available. Avoid contact with skin or eyes. May cause eye injury. For protection use rubber gloves and safety goggles. In case of contact with skin or eyes, flush with plenty of water for 15 minutes and call a physician immediately. Wash contaminated clothing before re-use. If swallowed induce vomiting and call a physician. Keep away from heat, sparks and open flame. Keep container closed when not in use. Observe industrial safety practices. Contains acrylic monomer. For industrial use only.

QUALITY ASSURANCE:

Every batch of this cement is checked to assure that consistent quality is maintained. An infra red absorption curve is recorded for each batch to ensure that this cement is properly formulated. A sample is taken from all batches and kept for a period of at least one year.

IMPORTANT NOTE:

Our suggestions and data are based on information we believe to be reliable. Users should verify by tests that this product, as well as these methods, are suitable with the product being used in their application. Since specific use, materials and handling are not controlled by IFS, our warranty is limited to the replacement of defective IFS products.
A compact float, designed to activate pump control panels, solenoids, relays, etc.

ADVANTAGES

- Two models available
  MPC (Pipe Clamp)
  MWE (External Weight)
- Single pole, heavy-duty mercury float switch, epoxy encapsulated in a compact, non-corrosive PVC plastic float.
- Two-year limited warranty.

DESCRIPTION

Both Mini-Sensor Float models are rated 13 Amp (120V A.C. or 230V A.C.). The heavy-duty mercury-activated 1111 switch and the cord conductor, are epoxy sealed in a water resistant, impact-resistant housing. The mercury 1111-switch (manufactured by S.J. Electro Systems, Inc.), activates when the float reaches the horizontal position.

Two models provide for flexibility in installation.

MPC (Pipe Clamp): The MPC must be installed by trapping the pipe clamp at the desired activation level to a discharge pipe or other smaller mounting.

MWE (External Weight): The MWE has an adjustable weight attached to the cable. The MWE is used in applications where the float is suspended from above.

APPLICATIONS

Mini-Sensor floats may be used to activate pump control panels, solenoids, and relays. This liquid level control is frequently used in sewage systems, irrigation systems, and in other water systems.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODEL</th>
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<th>NORMALLY</th>
<th>IOMPC N.C.</th>
<th>NORMALLY</th>
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<tr>
<td></td>
<td>IOMWE N.O.</td>
<td>OPEN</td>
<td>IOMWE N.C.</td>
<td>CLOSED</td>
</tr>
</tbody>
</table>

NOTE: Numbers preceding model designation (MPC or MWE) refer to cable length. The Mini-Sensor Float control switch is available in standard lengths of 10 ft. (3.048m), 15 ft. (4.57m), 20 ft. (6.09m), 40 ft. (12.19m) and 50 ft. (15.24m). Other lengths are available. Please specify length required.


EXTERNAL WEIGHT: 2 lbs. of cast iron.

FLOAT: 2.8’2” inch (7.142cm) diameter x J.A2 inch (8.686cm) long, high-impact resistant, non-corrosive PVC plastic for use in liquids up to 100°F (60°C).

MERCURY TILT SWITCH: Heavy duty mercury contact.

ELECTRICAL RATED: 13 Amp 120V A.C. or 240V A.C.
Save space and withstand rugged operating conditions

Electrical Parameters
2 to 5 Contacts,
#16 AWG Conductors,
Up to 600 Volts, 13 Amps.

Tough JOY TP Mini-Line connectors are designed to provide dependable and economical service. The use of compact limit and proximity switches, solenoid valves, and other small components creates space problems the JOY TP Mini-Line connector can solve.

TP Mini-Line connectors eliminate time consuming rewiring of equipment on the job. Components can be quickly replaced by simply unplugging the defective unit and plugging in a prewired spare. Wire portable equipment just once, then connect it and disconnect it at will. Rugged, sealed construction allows use in toughest industrial environments.

JOY TP Mini-Line connectors are factory molded, from high-quality thermoplastic rubber compounds, to various standard lengths of cable and are available in two through five contacts.

Designed for safe operations
Molded of thermoplastic rubber, TP Mini-Line connectors offer excellent electrical insulation. Male contacts are shielded by a skirt during connect and disconnect operations. Polarized keyway facilitates correct pin engagement. A molded-in alignment arrow on the shrouded male plug indicates alignment with the keyway so that even in the dark, keyway alignment is made easier. All socket contacts are recessed from the connector face to prevent accidentally touching live contacts. The ground pin makes contact first and breaks contact last.

Sealed against environment
Molded-to-cable design and double-face seal are unaffected by water, coolants or condensation. Female half fits like a cork into the flexible shroud portions of the male. In addition, individual shoulders around the pins fit into recesses in the female sections. The thermoplastic rubber used has excellent weathering properties and is specifically selected for outdoor application. The cable used is also selected for outdoor use and passes UL 1581 for sunlight resistance.

Withstand physical abuse
The one-piece molded thermoplastic rubber construction shrugs off heavy physical abuse. They will withstand many times the twisting and flexing of conventional connectors.

Highly visible
Plugs and receptacles are molded with yellow thermoplastic rubber compound. Plugs are supplied with yellow jacketed cable.

Positive lockings
Threaded couplings insure tight connections - release quickly.

Corrosion resistant
Thermoplastic rubber components are impervious to most industrial environments. Mounting shells and couplers are metal or nylon.

Easily installed
Receptacles are threaded at rear to fit standard pipe threads.
WITH METAL COUPLER AND RECEPTACLE SHELL

### ELECTRICAL DATA

<table>
<thead>
<tr>
<th>No. of Contacts</th>
<th>Maximum Rating (Cable)</th>
<th>PLUGS</th>
<th>RECEPTACLES (10&quot; Pigtails)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Volts</td>
<td>Amps</td>
<td>AWG</td>
</tr>
<tr>
<td>2</td>
<td>600</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>600</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>600</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>250</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### WITH NYLON COUPLER AND RECEPTACLE SHELL

<table>
<thead>
<tr>
<th>No. of Contacts</th>
<th>Maximum Rating (Cable)</th>
<th>PLUGS</th>
<th>RECEPTACLES (10&quot; Pigtails)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Volts</td>
<td>Amps</td>
<td>AWG</td>
</tr>
<tr>
<td>2</td>
<td>600</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>600</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td></td>
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<tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>600</td>
<td>10</td>
<td>16</td>
</tr>
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<td></td>
</tr>
<tr>
<td>5</td>
<td>250</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Accessories
- Adaptor - 1316511
- Threaded Aluminum Adaptor to couple Male and Female Plugs - 3316582-1
- Dust Cap with Chain for Receptacle - 3316582-1
- Dust Cap with Chain for Plug - 3316582-2

Note: Refer to once 1, si ur /en/1/icauon of stock, cems, Temeroacure Raunc: 90°C
Pressure Raunc J-O PS!G on Receptac,a "Wire ano Cable raceo ac 600 1/2"
### Description and application
The hour meter totalizes the running time for AC operated machinery or equipment, and can also be used to monitor warranty periods and service intervals. A low-noise, self-starting synchronous motor with running indicator is used to drive a geared set of figure wheels. The display runs from zero up to the full count range and starts again at zero.

For easy mounting, all models are delivered with accessories. For resettable and/or predetermining hour meters see separate data sheets B 102, B 504, BE 101, BE 102, BE 504.

### Mounting

<table>
<thead>
<tr>
<th>Model</th>
<th>Panel mount</th>
<th>Panel mount</th>
<th>Base mount w/o terminal cover</th>
<th>Base mount w/ terminal cover</th>
<th>DIN-rail mounting for 35x7,5 mm rail per DIN/EN 50 027</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>45x45 mm</td>
<td>50 mm dia. round</td>
<td>mounting clamp</td>
<td>mounting base</td>
<td>screw terminals with wire clamps AMP-plug connection, possible with 6.3 mm flat terminals</td>
</tr>
<tr>
<td></td>
<td>50 mm dia. round</td>
<td>round or square</td>
<td>+ bezel 55x55 mm</td>
<td>+ bezel 72x72 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Technical data

<table>
<thead>
<tr>
<th>Standard voltages</th>
<th>110 VAC/60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternate voltages</td>
<td>24, 42, 48, 220, 240 VAC</td>
</tr>
<tr>
<td></td>
<td>±10% 50 or 60 Hz</td>
</tr>
<tr>
<td>Power consumption</td>
<td>2VA</td>
</tr>
<tr>
<td>Counting range</td>
<td>999999.99 hours (approx. 11 years)</td>
</tr>
<tr>
<td>Reading accuracy</td>
<td>1/100 hr</td>
</tr>
<tr>
<td>Figures</td>
<td>approx. 4mm height hours white on black tenth and hundredths red on black</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operating temperature</th>
<th>-10°C...+50°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing</td>
<td>black plastic</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 110g</td>
</tr>
</tbody>
</table>
**Mounting**

B 148.001, B 148.002, B 148.003
With mounting clamp to mount in panels up to 10 mm thick.

B 148.005, B 148.006, B 148.007
Flat terminals: From hour meter are inserted into contacts on mounting base: Hour meter is then secured to base by tightening mounting screw accessible through front panel.

**Dimensional drawings**

**B 148.001**
48 x 48 mm front panel with panel clamp for mounting in 48x48 mm panel cutout

**B 148.005**
mounting base without panel clamp for fastening to horizontal or vertical surface

**B 148.006**
similar to B 148.005 with terminal cover

**B 148.007**
mounting base for snapping onto DIN-rail

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**WARNING:**
When using the counter, the prevailing safety regulations must be observed. Power must be switched off before installing the counter.
Small in size and price, but large in most popular AC or DC voltages operate on as little as 3 Watts, with the non-reset models measuring only 1" x 1.593" x 2.187" and weigh just three ounces.

Available in 4, 6, or 7 figures, the miniature electric counters are available with three types of mounting and electromagnet drive to assure accurate, reliable, long-life operation. Designed for mounting flexibility and aesthetic appeal in ess, the miniature electric counters are available with three types of mounting, with magnetic drive for accurate, reliable, long-life operation.

**SPECIFICATIONS:**
- **Figures:** 4, 6, and 7
- **Speed:** Up to 1000 cpm
- **Figure Size:** 3/16" high
- **Reset:** Electric, push button, and non-reset
- **Reset Force:** Electric, push button, and non-reset
- **Mounting:** Base, bottom, panel, and plug-in pin
- **Finish:** Black self-extinguishing plastic

**SELECTION TABLE**

<table>
<thead>
<tr>
<th>No.</th>
<th>Figure</th>
<th>Voltage</th>
<th>Mounting</th>
<th>Reset</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>4</td>
<td>24 V DC!</td>
<td>Bottom</td>
<td>Pushbutton</td>
<td>4-Y-41312-402-ME-O</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>120 V AC</td>
<td>Bottom</td>
<td>Pushbutton</td>
<td>4-Y-41312-406-ME-O</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>240 V AC</td>
<td>Bottom</td>
<td>Pushbutton</td>
<td>4-Y-41312-407-ME-O</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>24 V DC!</td>
<td>Base</td>
<td>Pushbutton</td>
<td>4-Y-41313-402-ME-O</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>120 V AC</td>
<td>Base</td>
<td>Pushbutton</td>
<td>4-Y-41313-406-ME-O</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>240 V AC</td>
<td>Base</td>
<td>Pushbutton</td>
<td>4-Y-41313-407-ME-O</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>24 V DC!</td>
<td>Panel</td>
<td>Pushbutton</td>
<td>4-Y-41314-402-ME-O</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>120 V AC</td>
<td>Panel</td>
<td>Pushbutton</td>
<td>4-Y-41314-406-ME-O</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>240 V AC</td>
<td>Panel</td>
<td>Pushbutton</td>
<td>4-Y-41314-407-ME-O</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>24 V DC!</td>
<td>Bottom</td>
<td>Electric</td>
<td>4-Y-41482-402-ME-ER</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>120 V AC</td>
<td>Bottom</td>
<td>Electric</td>
<td>4-Y-41482-406-ME-ER</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>24 V DC!</td>
<td>Base</td>
<td>Electric</td>
<td>4-Y-41483-402-ME-ER</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>120 V AC</td>
<td>Base</td>
<td>Electric</td>
<td>4-Y-41483-406-ME-ER</td>
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<td>4</td>
<td>4</td>
<td>240 V AC</td>
<td>Base</td>
<td>Electric</td>
<td>4-Y-41483-407-ME-ER</td>
</tr>
</tbody>
</table>

**Electrical Connections:** Wire leads, 10" long, AWG 20, stripped 3/8"; and pin terminals

**Power Requirements:**
- Count coil 3 watts, reset coil 6 watts
- Count coils are designed for continuous duty at rated voltage. Reset coils are designed for intermittent duty only.

**Figure Size:** 3/16" high

**Reset Force:** Electric, push button, and non-reset

**Mounting:** Base, bottom, panel, and plug-in pin

**Finish:** Black self-extinguishing plastic
3" & 4" ABS or PVC BACKWATER VALVE AND SPECIFICATION GUIDE

**IMPROVED! NOW WITH SCREW TOP LID**

A plastic backwater valve designed to protect low areas or basements from backflooding of waste water from street sewers. Available in ABS or PVC plastic, with a removable flapper with self-lubricating hinge. This flapper eliminates rust, insures free movement and provides a positive seal against water leaks. For ease of inspection, the valve has a quick-open inspection cover. To aid the installer, flow direction arrows are located on the top of the valve. The valve's spigot outlet is easily adaptable to O.W.V., D.W.V., 10-S.D. adapters, soil pipe, cast iron, P/C or no-hub systems.

**CHARACTERISTICS:** ABS and PVC backwater valves in 3" and 4" sizes for solvent cement connections. Octagonal flapper is joined to valve with a Delrin pin and securely mounted in a guide slot and weight with a lead slug to avoid floating. Both the keyway mounted lid and flapper are tined with replaceable neoprene gaskets. These backwater valves have been pressure tested to over 20 feet (10 PSI) static water pressure.

- **3" PVC** NOS 375P
- **4" PVC** NOS 475P

**BACKWATER VALVE ACCESS BOX**

Also available is the Speed-V alve Access Box, molded of high-moacte plastic, lightweight and durable, easier to handle and less expensive to install. Eliminates the need for conventional mortar-and-brick access boxes. Extension risers are available in 0” and 12”.

**SEE OTHER SIDE FOR APPLICATIONS AND DIMENSIONS**
1. THE FOLLOWING MUST BE SUBMITTED PRIOR TO FINAL APPROVAL OF YOUR SEWER SERVICE:
   a. Offer of Dedication (enclosed)
   b. Recorded Easement with Exhibits “A” and “B” for On-Site Facility (sample enclosed)
   c. Recorded Easement(s) (perpetual public utility easement and right of entry) with appropriate exhibits for any off-site construction, maintenance and repair (sample enclosed)

2. THE FOLLOWING WILL REQUIRE DISTRICT INSPECTION:
   - Septic Tank, Pressure Sewer Piping, Sewage Effluent Pump, Pump Electrical Control Panel, all-weather Access Road, and, if required, a Backflow Prevention Device.
   - Installation of all the above described items and appurtenances thereto shall be constructed and installed in accordance with the design criteria and standards set out in the enclosed manual entitled “Mountain Lake Estates-Lot Sewer Facilities Installation and Materials Specifications.”
   - All requests for inspection shall be scheduled between 8:00 a.m. and 3:30 p.m., Monday through Friday, by calling (530) 265-1555. Inspections shall be scheduled 48 hours in advance. We do not inspect on holidays or weekends.
Recording Requested By:

Board of Directors
Nevada County Sanitation District No. 1

Return to:

Nevada County Sanitation District No. 1
c/o Board of Supervisors
950 Maidu Ave
Nevada City, CA 95959-9517

EASEMENT DEED

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged, We

John Q. Citizen and Sara J. Citizen

Hereby grant to the NEVADA COUNTY SANITATION DISTRICT NO. 1

A perpetual public utility easement and right-of-entry as shown on the attached map to construct, install, lay, operate, maintain, use, inspect and repair, and from time to time reconstruct, modify, alter, enlarge, add to, remove or replace, one or more pipelines for the transportation of wastewater effluent, together with any pumps, manholes, fixtures, devices and/or appurtenances used or useful in connection therewith, including electrical lines, panels, alarms systems to be installed and permanently affixed on or in any improvements, all of which will be on, over, under and across that certain real property described in Exhibit “A” attached hereto. Said easement is within a strip of land shown on Exhibit “B” attached hereto.

Said easement includes reasonable access over existing driveways and open areas for maintenance and repair.

Together with a temporary working easement for the installation and construction of said pipelines and facilities along and adjacent to the hereinabove described easement as shown on the attached map. Said temporary working easement shall terminate upon completion of construction and acceptance of sewer facilities within the hereinabove described easement and right of entry by the NEVADA COUNTY SANITATION DISTRICT NO. 1.

Said easement shall be binding upon all heirs, successors and assigns of the grantor.

GRANTOR(S):

________________________________________   Dated: _________________________________________

______________________________

THIS DOCUMENT MUST BE NOTARIZED

It is important you read the note on the reverse.
FROM THE: State of California Department of Consumer Affairs
Board of Registration for Professional Engineers and Land Surveyors

S.B.1123 amended Section 8726 to add subdivision (k) to that a person engages in the practice land surveying where he or she:

“(k) Determines that information shown or to be shown within the description of any deed, trust deed, or other title document prepared for the purpose of describing the limit of real property in connection with any one or more of the functions described in subdivisions (a) to (f), inclusive.

In addition, subdivision © of Section 8726 provides that a person engages in the practice of land surveying where he or she:

“(c) Locates, relocates, establishes, reestablishes, or retraces any property line or boundary of any parcel of land, right-of-way, easement, or alignment of those lines or boundaries.”

A title company or any attorney does not engage in the practice of land surveying where, in preparing deeds of conveyance or other documents of title, he or she extracts a property description from recorded documents. However, any new property description which creates a new or different boundary that is not recorded in the County Recorder’s Office would constitute the practice of land surveying.
S.B.1123 amended Section 8726 to add subdivision (k) to that a person engages in the practice of land surveying where he or she:

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SAMPLE

Assessor’s Parcel Number 000-000-000
FROM THE: State of California Department of Consumer Affairs Board of Registration for Professional Engineers and Land Surveyors

S.B. 1123 amended Section 8726 to add subdivision (a) to provide that a person engages in the practice of land surveying where he or she:

"(a) Determines that information shown or to be shown within the description of any deed, trust deed, or other title document prepared for the purpose of describing the limit of real property in connection with any one or more of the functions described in subdivisions (b) to (f), inclusive."

In addition, subdivision (c) of Section 8726 provides that a person engages in the practice of land surveying where he or she:

"(c) Locates, relocates, establishes, reestablishes, or retraces any property line or boundary of any parcel of land, right-of-way, easement, or alignment of those lines or boundaries."

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Recording Requested By:

Board of Directors
Nevada County Sanitation District No. 1

Return to:

Nevada County Sanitation District No. 1
c/o Board of Supervisors
950 Maidu Ave
Nevada City, CA 95959-9517

OFFER OF DEDICATION

Recording fee free pursuant to Government Code 6103
APN 000-000-000

We, John Q. Citizen and Sara J. Citizen

DO HEREBY OFFER FOR DEDICATION TO THE Nevada County Sanitation District No. 1 for public use upon satisfactory completion of construction, the septic tank and all appurtenances thereto, including the sewage effluent pump and all pump electrical controls and panel(s) and all pressure sewer piping more commonly known as the Septic Tank Effluent Pump (S.T.E.P) system located within the above referenced Assessor’s Parcel Number and as described on Exhibit ‘A’ attached hereto and made a part of hereof.

This STEP system has been constructed and installed in accordance with the design criteria and standards set out in the manual on file with the District and entitled, ‘Installation and Materials Specifications – Penn Valley/Valley Oak Court On-Lot Sewer Facilities... December 1990’ and such other provisions as the District Board may adopt by ordinance or resolution.

The offer provided for herein is a divisible offer as to each of the purposes set forth hereinabove and the Sanitation District may accept an and/or all of the portions of this offer in any combination that it deems appropriate.

GRANTOR(S):

________________________________________   Dated: _________________________________________

_______________________________________

THIS DOCUMENT MUST BE NOTARIZED

It is important you read the note on the reverse.
SAMPLE

Assessor’s Parcel Number 000-000-000

STATE OF CALIFORNIA
COUNTY OF NEVADA

Portion of the Southeast one-quarter of Section 34, Township 16 North, Range 7 East, M.D.M described as follows to-wit:

Beginning at a point in the center line of that certain private road known as Candy Road from which the southeast corner of said Section 34 bears SOUTH 48 degrees 15’ 05” East 1488.67 feet distant; thence from said point of commencement with TRUE BEARINGS along the center line of said road South 64 degrees 06’ East 78.42 feet; thence leaving said private road and running South 42 degrees 38’ West 673.94 feet; thence North 53 degrees 01’ West 113.61 feet; thence North 65 degrees 43’ West 138.21 feet; thence North 49 degrees 14’ West 30.76 feet, thence North 49 degrees 14’ West 30.76 feet, thence North 48 degrees 54 East 704.78 feet to a point in the center of the said Candy Road; thence along said center line South 50 degrees 24’ 09 East 123.14 feet to the place of beginning.

Containing 3.654 acres.

SUBJECT TO a right-of-way for roadway purposes 20 feet in width the Northeasterly lines of which being identical with the Northeasterly line of the parcel of land herein described

FROM THE: State of California Department of Consumer Affairs
Board of Registration for Professional Engineers and Land Surveyors

S.B.1123 amended Section 8726 to add subdivision (k) to that a person engages in the practice land surveying where he or she:

“(k) Determines that information shown or to be shown within the description of any deed, trust deed, or other title document prepared for the purpose of describing the limit of real property in connection with any one or more of the functions described in subdivisions (a) to (f), inclusive.

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WANT YOUR DOCUMENT ACCEPTED?

LAY OUT is easy

- 8 ½” x 11” paper is the standard size (Govt. Code 27361.5)
- A document including ANY sheet not exactly 8 ½” x 11” will cost the regular recording fee PLUS an ADDITIONAL $3.00 PER PAGE to record. (Govt Code 27361)
- Maximum sheet size is 8 ½” x 14”.
- Exhibits should be on separate pages and properly marked.

FORMAT is critical

- **First page** should look like this:
  If it does not, a separate page with these requirements shall be attached to the front of the document (27361.6)
  - Name and address on left. (Govt. Code 27361.6.27321.5)
  - ⅝” Margin on all pages (27361.6)
  - Title of the document shall appear on the first page immediately below the spaces reserved for the return address and the recorder (G.C. 27324)

CLARITY is assured if you use:

- Originals
- White paper 16lb bond or heavier
- Dark ink of one color
- Print as clear as this page
FORMS STANDARDIZATION

- BILL NUMBER: AB 689
- CHAPTER: 87 (1992)

SECTIONS AFFECTED:
Amends 27201 & 27361 & To Repeal & Add 27324, 27361.5, & 27361.6
Of The Government Code

IMPACT: MAJOR

EFFECTIVE: July 1, 1994

SUMMARY:
This bill will require recorded documents to comply with specified standards respecting format, size, quality of paper, and other related matters.

Provides for a surcharge of $3.00 per page for every page of a document in which any portion of the document is not 8 ½” by 11”. This surcharge is credited to the modernization funds.

Requires Recorder to index only those titles identified on the first page of a document. Other titles may be indexed at the option of the Recorder.

Requires original signatures unless otherwise provided for in statute

Requires recording reference on all documents affecting a previously recorded document. A list of documents which are affected follows the sample of an Abandonment of Homestead. The sample is included to illustrate that this additional requirement will be incorporated in the Document Reference Manual to be issued in 1994.
Recording Requested By:

Return to:

DOCUMENT TITLE

Recording fee free pursuant to Government Code 6103
APN 000-000-000

GRANTOR(S):

________________________________________   Dated: _________________________________________
_______________________________________
COMPARATIVE TYPE SIZES

This is an example of 6 point
This is an example of 8 point
This is an example of 10 point
This is an example of 12 point
This is an example of 12-point bold type
This is an example of 14-point bold type
This is an example of 18-point bold type
This is an example of 24-point bold type.
GOVERNMENT CODE

Section 27361 (Also see OP. 1) (Becomes inoperative 7/1/95 c. 87 '92 Stats)

RECORDATION FEE: The fee for recording and indexing every instrument, paper, or notice required or permitted by law to be recorded is as follows: (a) Four dollars ($4) for recording the first page and two dollars ($2) for each additional page or fraction of a page. (b) One-dollar ($1) of each three-dollar ($3) fee for each additional page shall be transmitted by the County Auditor monthly to the Controller and deposited in the General Fund. (c) If the printing on printed forms is spaced more than nine lines per vertical inch or more than 22 characters and space per inch measured horizontally for not less than three inches in one sentence the Recorder shall charge one dollar ($1) additional for each page on which the printing appears excepting, however, the additional charge shall not apply to printed words which are directive or explanatory in nature for completion of the form or on vital statistics forms.

One dollar ($1) for recording the first page and one dollar ($1) for each additional page or fraction of a page shall be available solely to support, maintain, improve, and provide for the full operation for modernized creation, retention, and retrieval of information in each County’s system of recorded documents.

(Amended, operative 10/14/91)

Section 27361 (Also see OP. 1) (Becomes inoperative 7/1/95 c. 87 '92 Stats)

RECORDATION FEE: (a) The fee for recording and indexing every instrument, paper, or notice required or permitted by law to be recorded is four dollars ($4) for recording the first page and three dollars ($3) for each additional page, except the Recorder may charge additional fees as follows:

1. If the printing on printed forms is spaced more than nine lines per vertical inch or more than 22 characters and spaces per inch measured horizontally for not less than 3 inches in one sentence, the Recorder shall charge one dollar ($1) extra for each page or sheet on which printing appears excepting, however, the extra charge shall not apply to printed words which are directive or explanatory in nature for completion of the form or on vital statistics forms. Fees collected under this paragraph are not subject to subdivision (b) or (c).

2. If a page or sheet does not conform with the dimensions described in subdivision (a) of Section 27361.5, the Recorder shall charge three dollars ($3) extra per page or sheet of the document. The extra charge authorized under this paragraph shall be available solely to support, maintain, improve, and provide for the full operation for modernized creation, retention, and retrieval of information in each County’s system of recorded documents. Fees collected under this paragraph are not subject to subdivision (b) or (c).

(b) Once dollar ($1) of each three dollars ($3) fee for each additional page shall be transmitted by the County Auditor monthly to the Controller and deposited in the General Fund.

(c) One dollar ($1) for recording the first page and one dollar ($1) for each additional page shall be available solely to support, maintain, improve, and provide for the full operation for modernized creation, retention, and retrieval of information in each County’s system of recorded documents.

(Amended, operative 7/1/94)

27361.1 (Also see OP.16)

RECORDATION FEE FOR TWO OR MORE DOCUMENTS SERIALLY INCORPORATED: Whenever two or more instruments, papers, or notices are serially incorporated on one form or sheet, or are attached to one another, except as an exhibit marked as such, each instrument, paper, or notice shall be a separate instrument, paper, or notice for the purpose of computing the fee established by Section 27361 pf this code.
INFORMATION SHEET

CRITERIA FOR A REPAIR AND MAINTENANCE AGREEMENT
FOR A PRIVATE SEWER LINE

An agreement may be written in any manner as long as it meets the following criteria:

1. All concerned parcels are identified by their Assessor’s Parcel Numbers (APN), lot numbers, street addresses, and current property owners’ names.

2. Responsibility must be stated in percentages and shall total one hundred percent.

3. Agreement must be signed by respective parcel owners, notarized, recorded in Nevada County and a copy forwarded to Nevada County Sanitation District No. 1, County of Nevada Department of Public Works, 950 Maidu Avenue, Nevada City, CA 95959-8617.

   Upon receipt of the recorded Repair and Maintenance Agreement, the District shall direct the Building Department to issue final occupancy papers, if applicable.

4. A sample Repair and Maintenance Agreement has been provided on the reverse side for your convenience.