From: Eric Hess
To: Rachael Stevie (CD); aboveplumbing@hotmail.com
Cc: Holly Erdman
Subject: Re: VA-21-00007 Frees - Request for Information
Date: Wednesday, September 29, 2021 5:15:41 PM
Attachments: image001.png
20-14-26000-0005_Hembree.pdf
05 Frees A10 rotated.pdf

Please see copy of sheet of A1.0, and on the right side, overall site plan 1 showing septic on the NW corner of the buildable site going to the field under the golf course

Thank you

Eric

On 9/29/2021 4:02 PM, Rachael Stevie (CD) wrote:

> Good afternoon,
>
> Please see below email from Holly at the Health Department requesting information and a site plan showing the location of the on site sewage system so she can complete her review.
>
> Thank you,

Planner I
Kittitas County
Community Development Services
411 N. Ruby Street; Suite 2
Ellensburg, WA 98926
509-962-7637
rachael.stevie.cd@co.kittitas.wa.us

> **From:** Holly Erdman <Holly.erdman@co.kittitas.wa.us>
> **Sent:** Wednesday, September 29, 2021 4:00 PM
> **To:** Rachael Stevie (CD) <rachael.stevie.cd@co.kittitas.wa.us>
> **Subject:** RE: VA-21-00007 Frees - Notice of Application
>
> Rachael,

KITTITAS COUNTY PUBLIC HEALTH DEPARTMENT
Environmental Health Division
411 N. Ruby Street Suite 3
Ellensburg, WA 98926 (509) 962-7698

ON SITE SEWAGE INSTALLATION PERMIT

Parcel # 20-14-26000-0005

Type of Permit: New ☑ Repair ☐ Renewal ☐ Privy ☐ **Type of System:** Gravity ☐ Pressure ☐ Alternative ☑

Description

First Name	Last Name
Jim	Hembree

Subdivision	Division	Block	Lot
Sun Country Resort			7

Site Address	Parcel Size
St Andrews Drive	3

No of Bedrooms	Other
3	

Square Feet of Drainfield	Septic Tank Capacity	Pump Chamber Capacit	Application Rate
371.25	1000	1000	1.

State Licensed Designer/PE Ron Dalle

Installation Contractor

Issued By	Date Issued
Joe Gilbert	1/9/2007

*This permit expires **one year** from the date of issuance. The above specifications are minimum. Changes in specifications shall be approved prior to installation.*
Seventy –two hours (3 business days) advance notice is required for inspections.

Inspected By	Date Approved

Comments #Name?

20-14-26000-0005

To Protect and Promote the Health and the Environment of the People of Kittitas County

PUBLIC HEALTH
ALWAYS WORKING FOR A SAFER AND HEALTHIER KITTITAS COUNTY

Kittitas County Health Department
www.co.kittitas.wa.us/health/

Administration
Personal Health
507 Nanum Street, Rm 102
Ellensburg, WA. 98926
Tel: (509) 962-7515
Fax: (509) 962-7581

Environmental Health
411 North Ruby Street, Suite 3
Ellensburg, WA. 98926
Tel: (509) 962-7698
Fax: (509) 962-7052

PERMIT APPLICATION

A "permit to install a Sewage System" allows the person named thereon to install an on-site disposal system according to the design approved by the Health Officer. Development other than that described on the permit application, incorporated into the approved design and specified on the Permit will, without advance approval of the Health Officer, invalidate the permit. A sewage system installation permit expires one year from the date of issuance. *If more than a year passes between date of issue and date of installation, Permit must be renewed before installation.* A *renewal permit may* be applied for. A completed site evaluation form must be attached to this application.

PLEASE COMPLETE THE FOLLOWING SECTIONS

REQUESTED BY:
AMERIA ENGINEERING
P.O. Box 186
Cle Elum, Washington 989822

OWNER:
Jim Hembree & Assoc., Inc.
P.O. Box 364
Cle Elum, WA. 98922
(509) 674-5975

STRUCTURE: (check all that apply)
- X proposed or existing
- X on-site construction or mobile/manufactured
- X single or multiple family dwelling
  other:

Number of bedrooms: per dwelling unit: 3
Number of (intended) permanent occupants: 2
Approximate number of occupants in 24 hours: 6

SITE:
Assessor's Parcel Number: 20-14-26000-0005
Parcel Size: 3.00 Ac
Directions to Site: St. Andrews Drive
Subdivision: Sun Country Resort
Div: Block: Lot: 7
Legal description, if not in a subdivision:
Section: 26 Township: 20N Range: 14E

WATER SUPPLY:
- X public

Name of system: Sun Country
- private well
- Spring
- Other:

PERMIT APPLIED FOR:
- X New
- Repair / Alteration / Redesign

SEPTIC TANK: (must be from the State approved list.)
- X New
- Existing

Gallons: 1000

PUMP CHAMBER:
- X New
- Existing

Gallons: 1000

TYPE OF SYSTEM:
- Conventional
- Pressure
- Mound
- X Alternative

LIQUID WASTE GENERATED:
360 Gallons per day

DRAINFIELD AREA:
371.25 feet square

DESIGNER/ENGINEER:
Ameria Engineering
Ron A. Dalle

SIGNATURE: Ron A. Dalle

RON A. DALLE LICENSED DESIGNER

INSTALLER'S NAME:

INSTALLER'S SIGNATURE:

DATE:

Application Reviewed: 1/9/06 07 MR Date: 12.29.06 Fee: $240 Service: Receipt: 049354

Permit Issued: OK

Public Health Department

Administration
Community Health Services
Health Promotion Services
507 Nanum Street, Rm 102
Ellensburg, WA. 98926
Phone: (509) 962-7515
Fax: (509) 962-7581

www.co.kittitas.wa.us/health/

Environmental Health
411 North Ruby Street, Suite 3
Ellensburg, WA. 98926
Phone: (509) 962-7698
Fax: (509) 962-7052

REQUIRED SITE EVALUATION INFORMATION

REQUESTED BY:
AMERIA ENGINEERING
P.O. Box 186
Cle Elum, WA. 98922
(509) 674-5125

PROPERTY OWNER:
Jim Hembree & Assoc., Inc.
P.O. Box 364
Cle Elum, WA. 98922
(509) 674-5975

SIGNATURE Ron D Dalle

SITE:

Parcel Number: 20-14-26000-0005

Lot/Acreage Size: 3.00 Acres

Subdivision: Sun Country Resort Division: Lot # 7

Directions To Site: St Andrew's Drive

STRUCTURE: (check all that apply)

X proposed or _____ existing

X single or _____ multiple family dwelling

3 Number of bedrooms

2 Number of (intended) permanent occupants

_____ Other (Specify) Recreational Use

Water Supply:

X Public - Name of system: Suncountry

_____ Private well:

_____ Spring

Date:	Fee:	Receipt:
12/29/06	$195	049354

Fee is non-refundable

To Protect and Promote the Health and the Environment of the People of Kittitas County

PUBLIC HEALTH
ALWAYS WORKING FOR A SAFER AND
HEALTHER KITTITAS COUNTY

Ameria Engineering /hembree-7

TO BE COMPLETED BY: P.E./ Licensed Designer or Health Department Personal

Name: Ron A. Dalle **Date:** 12 / 01 / 06

Application Rate: .2 .3 .4 .5 .6 .7 .8 .9 (1.0) (other)

Type of System Proposed:

Gravity Pressure Alternative X Mound Sand Filter

Other:

Conditions: System to be installed in top 48" or to depth of 1A soils.

0% reduction allowed for gravelless chambers

For Health Department Use Only:

Based on our review of the information provided we: **CONCUR** X **DENY**

that this property can support the installation of an On-Site Sewage System.

Reasons for Denial:

Inspector: Joe Gilbert **Date:** 1/12/06 **License No.** LHO

This report does not constitute approval of any land use permit, building permit, structure or sewage system(s), existing or proposed. It is solely a statement of site suitability for an on-site sewage system. It is not a permit to install a sewage system nor an application for such a permit. This evaluation is valid for five (5) years unless regulations change affecting this evaluation. You have the right to appeal on this evaluation.

To Protect and Promote the Health and the Environment of the People of Kittitas County

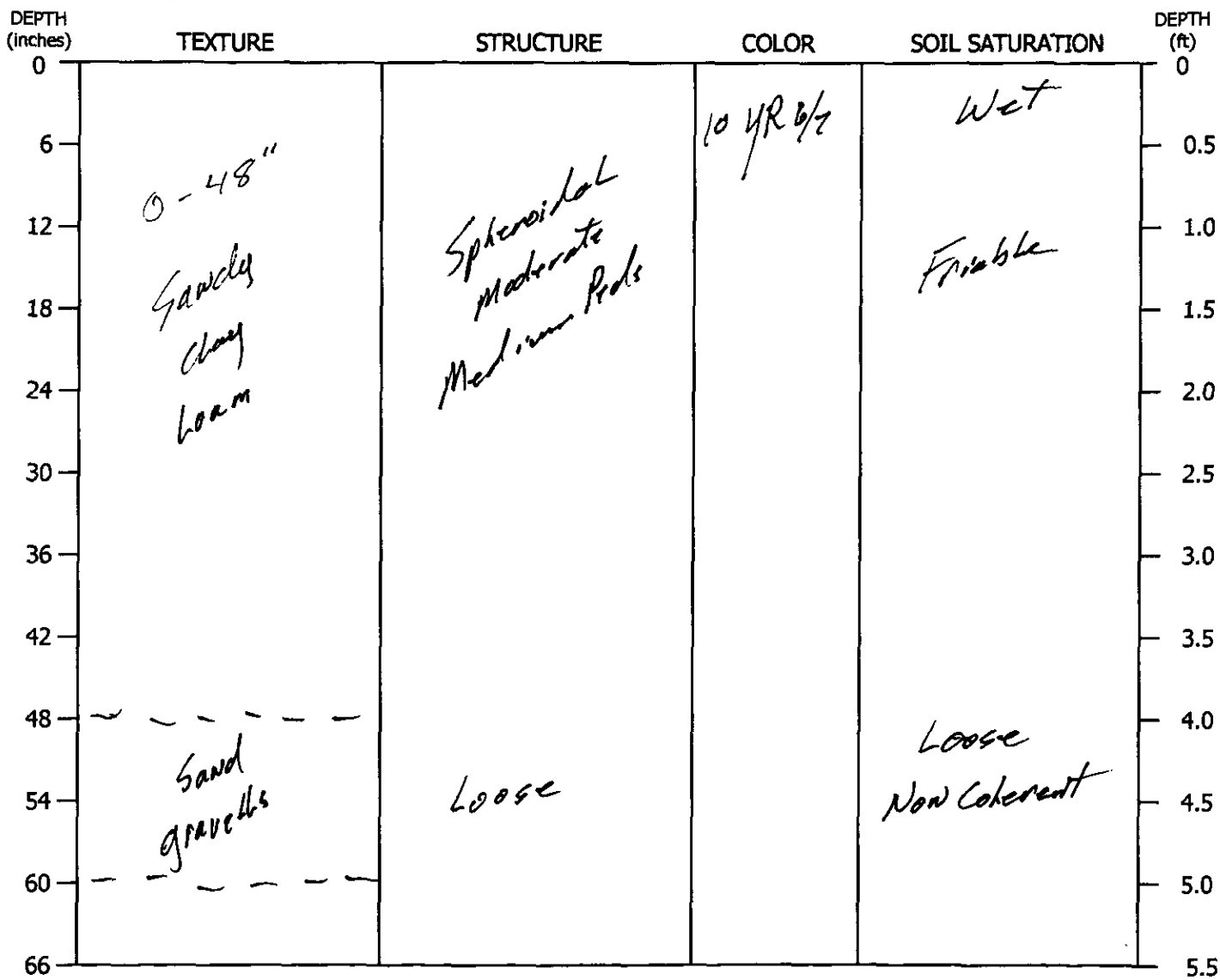
PUBLIC HEALTH

ALWAYS WORKING FOR A SAFER AND HEALTHER KITTITAS COUNTY

Primary Test Hole log

Ameria Engineering
Jim Hembree & Assoc.
Sun Country Resort
Lot 7
3.00 Acres

Soil Pit No: 1



Soil Map Unit: Soil Type: 1A-B

Slope: ± 4% App. Rate: 1.0

Landscape Position: Westerly Exposure

Landscape Type: Mountain Terrace

Ameria Engineering

By: Tom Dallas

O/S WASTEWATER
TS DESIGNER

SINCE 1964

AMERIA ENGINEERING

RON A. DALLE, C.E.T.

MAIN OFFICE
P.O.Box 186
504 N. Columbia Ave
Cle Elum WA. 98922

Cell: 509-899-2375
Office: 509-674-5125
Fax: 509-674-2606
Email: rfdalle@msn.com

On-site Wastewater Treatment System with Pressure Distribution

For

Jim Hembree & Asssoc. Inc.

P.O. Box 364, Cle Elum, WA. 98922

System Design and Specifications

For
Recreational Residence
Sun Country Resort
Parcel 7, 3.00 Acres
AP # 20-14-26000-0005

Submitted
December 29th, 2006

Jim Hembree
Sun Country Resort, Parcel 7, 3.00 Acres

Pressure Distribution Worksheet

1: Determine the daily wastewater load and select a pretreatment process

a. Daily design flow: 360 gal. (120 or 150 gal/bdrm X # b.)
Peak Sewage Flow = 3 bdrm x 120 gal/day/bdrm = 360 gal/day

b. Pretreatment method: none Size:

c. Other pretreatment required? Yes No If yes, what?

none

2: Size the infiltration area

a. Required infiltration area: 360 ft² (Daily wastewater load / soil loading rate)

$$A = 360/1.0 = 360 \text{ ft}^2$$

b. Soil Type 1A; Use sand lined trenches with Quick 4 Chambers and pressure distribution.

$3_{\text{laterals}} \times 55 \text{ ft} = 165 \text{ ft}$
$2.25'_{\text{width under chambers}} \times 165'_{\text{length}} = 371.25 \text{ ft}^2$
$13_{\text{chambers}} \times 4' = 52' + 2 \text{ end caps @ } 18'' = 55.00 \text{ ft}$

$123.75 \text{ ft}^2 \times 3_{\text{laterals}} = 371.25 \text{ ft}^2$

$371.25 \text{ ft}^2 \geq 360 \text{ ft}^2$

c. Absorption Rate at Soil Interface:

Soil loading rate = 360/371.25 = 0.9696

3: Specifications and layout components of the pressure distribution network.

a. Transport:
Length: ± 80 ft.
Diameter: 1.5 in.
Material: SCH-40 PVC
Highest elevation: 5 ft.

b. Manifold:
End manifold: x Center Manifold:
Length: 20 ft
Diameter: 2 in.
Material: SCH 40 PVC
Highest elevation: 6 ft.

c. Lateral:
How many: Three (3)
Length: 55 ft.
Diameter: 1.5 in
Material: Class 200 PVC
Spacing: 9 ft
Highest elevation: 7 ft

d. Orifices:
Diameter: 3/16 in.
Spacing: 32 inches
Orientation: 12 O'clock (First &Last 6 O'clock)
How many/lateral: 21
How many total: 66

e. Manifold/lateral connection selected: Through Tee Branch

f. Cleanouts at end of laterals? Yes X No_____

g. Monitoring ports? Yes (2) No_____

h. Valves/fittings uses and location: 1.5" Ø SCH-40 Ball valve on discharge assembly & union. Orenco Model # HV200B-DB

Microsoft Equation

4: Calculate the required pump/siphon capacity

a. Selected residual head: 2 ft.

b. Orifice discharge rate: 0.62 gpm $Q_o = 11.79\ d^2 h^{0.5}$

c. Required pump capacity: 42 gpm (orifice discharge rate x # orifices)

$$Q = (0.62)\ (67) = 41.54 \text{ gpm}$$

5: Calculate the total dynamic head in the network

Total losses due to friction: 7.1 ft

Transport line: 2.3 ft

Manifold: 0.2 ft.

Laterals: 0.3 ft

Fittings/valves : 1.0 ft

Discharge: 3.4 ft

$$F = L(Q/K)^{1.85}$$

Total elevation difference from pump outlet to top elevation: 7 ft
Selected/Required residual head: 2 ft

TOTAL DYNAMIC HEAD: 16.1 ft

6: Select a pump or siphon:

Pump/Siphon selected: **Pump Monarch WS 50 M**

7: Calculate the dose volume

a. Total number of doses/day selected/required: 8

b. Dose volume: 45 gal. (Daily design flow / #doses/day)

8: Select the method of pump operation

Demand Timer-controlled **Required**

9: Design the pump/siphon chamber or surge tank and set pump controls

a. Required volume: 1004 gal. Design Volume: 1000 gal
Dead space volume: 374.94 gal.
Daily Design Flow: 360 gal.
Emergency volume: 270.79 gal.

b. Outlet filter on septic tank? Yes x No (Optional if a pump screen is used.) Orenco model # FTW0444-36
Screened Pump Vault – Orenco model # SV1560-18 or pump vault Mfg by M-1 tanks.

c. Floats (from bottom of tank up)

Float	Function		Spacing
#1	Redundant Off	18 in.	
			6.0 in.
#2	Timer Activator	24 in.	
			15.0 in.
#3	High Water Alarm	39 in.	

d. If a demand system, pump-run time: (Dose volume / Pump capacity)

e. Volume in piping network = 23.51 gal.

f. If timer controlled system:
Pump-on time: min- sec Pump-off time: hrs- mins.

g. Drawdown: 1⅛ in. (#gal./dose / #gal./in. in tank)

Drawdown = 45 gal / 20.83 gal/inch = 2.16 inches

45 gal + 23 gal = 68 gal

$\frac{68 \text{ gal}}{55 \text{ gal/min}} = 1.236 = 1 \text{ min } 14.16 \text{ sec}$

Timer On 1 min 15 sec

Timer OFF 2 hr 58 min

Pump Selection for a Pressurized System

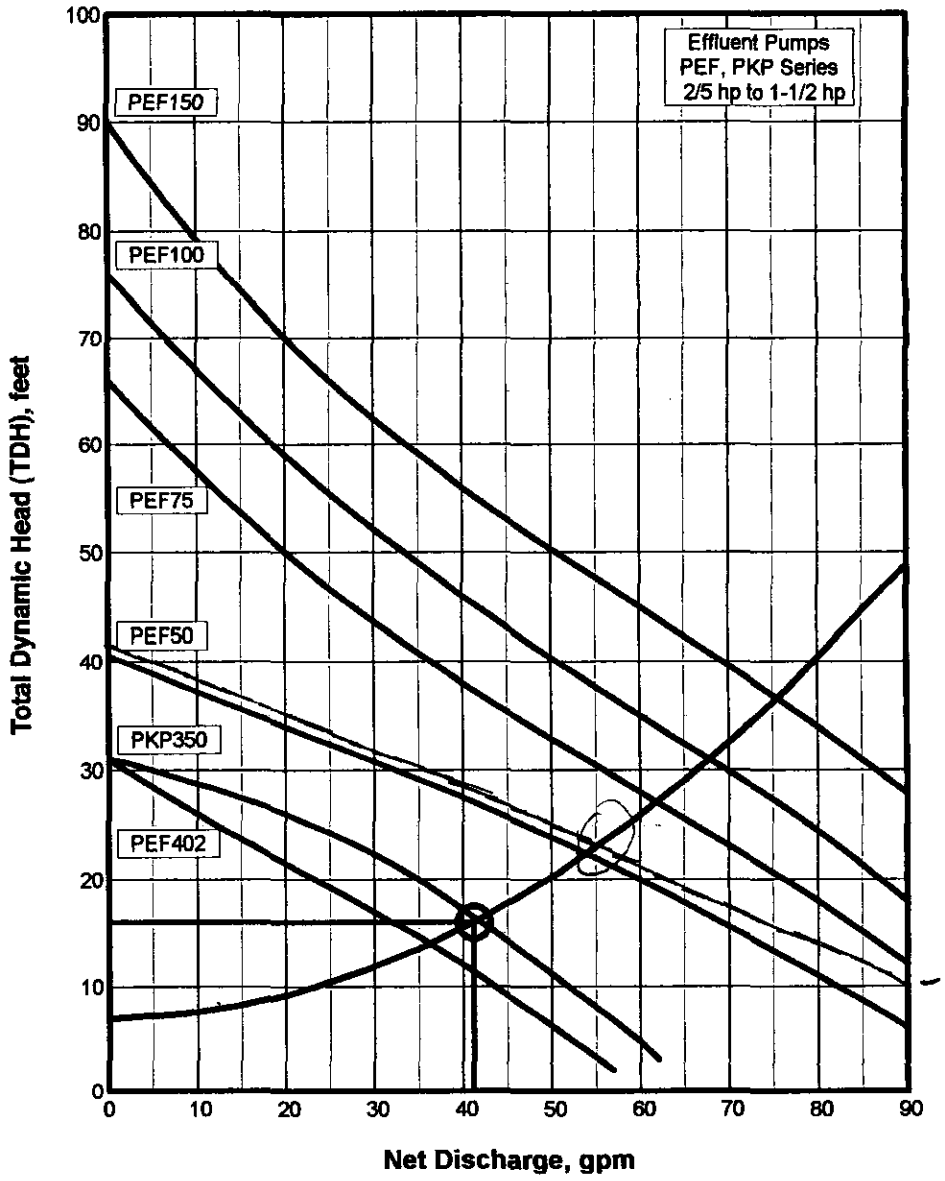
Input Parameters

Orifice Size	3/16	inches
Residual Head at Last Orifice	2.00	feet
Orifice Spacing	2.5	feet
Number of Laterals per Cell	3	
Lateral Length	53.0	feet
Lateral Line Size	1.50	inches
Lateral Pipe Class/Schedule	40	
Distributing Valve Model	None	
Manifold Length	20.0	feet
Manifold Line Size	2.00	inches
Manifold Pipe Class/Schedule	40	
Lift to Manifold	7.0	feet
Transport Length	80.0	feet
Transport Line Size	2.00	inches
Transport Pipe Class/Schedule	40	
Discharge Assembly Size	2.00	inches
Flow Meter	None	inches
Valves & Fittings	1.0	feet

Calculations

Minimum Flow Rate per Orifice	0.62	gpm
Number of Orifices per Zone	66	
Total Actual Flow Rate	41.2	gpm
Number of Lines per Zone	3	
% Flow Differential 1st and Last Orifice	5.4	%
Lift to Manifold	7.0	feet
Residual Head at Last Orifice	2.00	feet
Head Loss in Laterals	0.3	feet
Head Loss Through Distributing Valve	0.0	feet
Head Loss in Manifold	0.2	feet
Head Loss in Transport Pipe	2.3	feet
Head Loss Through Discharge	3.4	feet
Head Loss Through Flow Meter	0.0	feet
Valves & Fittings	1.0	feet
Total Flow Rate	**41.2**	**gpm**
TDH	**16.1**	**feet**

Pump To Sand Trenches
Hembree - 7



Monarch
WS 50
55 gal/min

Orenco Systems
Incorporated

814 AIRWAY AVENUE
SUTHERLIN, OREGON
97479

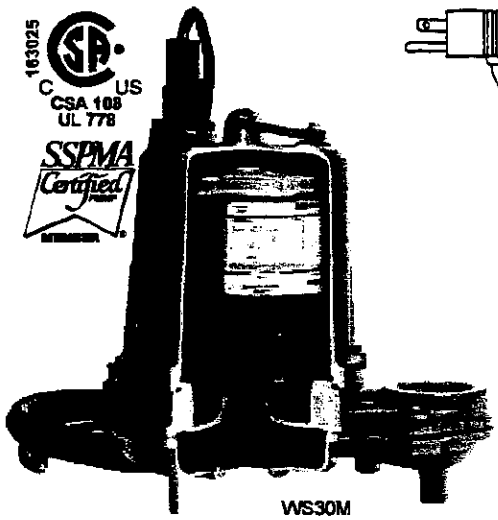
TOLL FREE:
(800) 348-9843

TELEPHONE:
(541) 459-4449

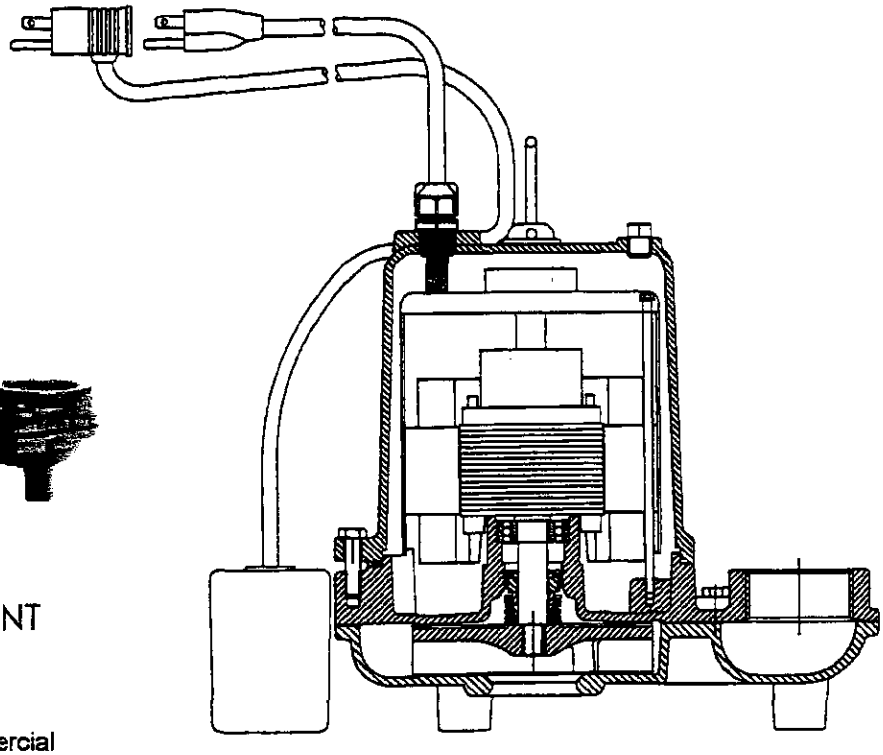
FACSIMILE:
(541) 459-2884

www.orenco.com

07



WS30M



WS SERIES
SUBMERSIBLE EFFLUENT PUMPS

Ideal for liquid effluent pumping applications, as well as light commercial applications with up to 11/16" diameter solids.

CONSTRUCTION - Motor and pump housing is Cast Iron Class 30.

CORD - Power cord sealed at motor housing. WS50, WS50H and WS100H uses SJOW. WS30 uses SJTW.

IMPELLER - Cast Iron Class 30. Solids handling non-clog impeller. Two vanes on the WS50, WS50H and WS100H. Three vanes on the WS30.

SEAL - Mechanical carbon/ceramic type 6, 5/8 rotary.

SHAFT - Motor shaft is 416 stainless steel.

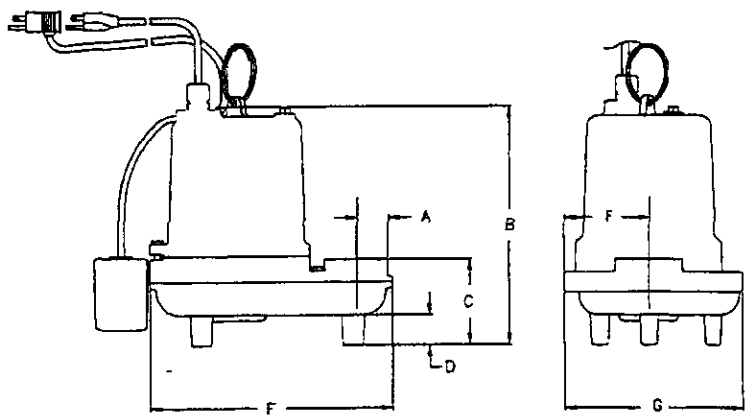
MOTOR - Oil filled chamber with automatic overload protection, double ball bearing. Capacitor Start designed for hi-torque and is thermally protected with automatic reset (single phase only).

SWITCH - *Mercury Free* float switch for automatic on-off operation; piggyback style WS30. SJE pump master used on WS50, WS50H & WS100H models.

DISCHARGE - 2" NPT. *Adaptor kit for* 3" NPT available.

FASTENERS - Stainless steel fasteners throughout, for serviceability.

Dimensions

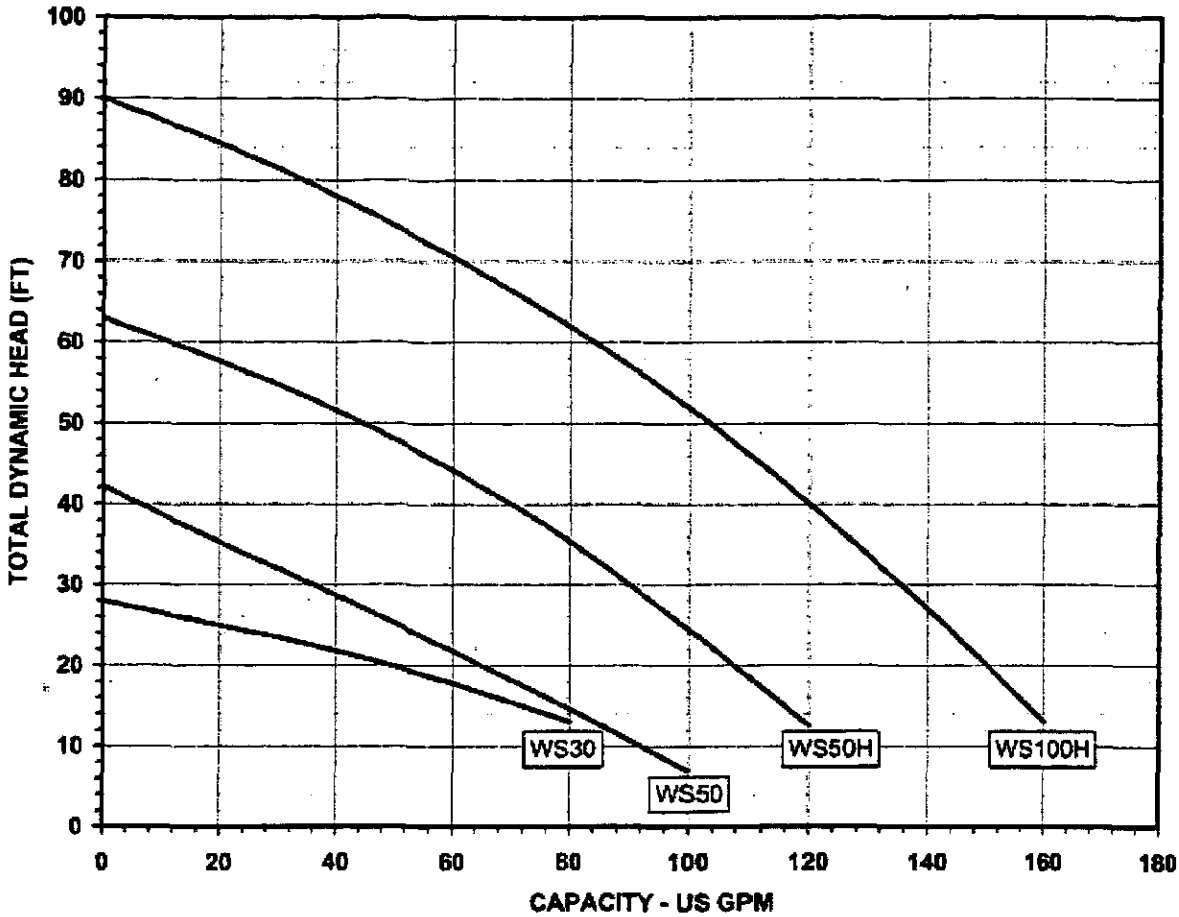


Model	A	B	C	D	E	F	G
WS30	1.75	11.25	3.75	1	12.25	4.86	9.38
WS50	1.75	13.75	3.75	1	12.25	4.68	9.38
WS50H	1.75	13.75	3.75	1	12.25	4.68	9.38
WS100H	1.75	13.75	3.75	1	12.25	4.68	9.38

***Dimensions measured in inches**

P7

SUMP & SEWAGE
SUBMERSIBLE EFFLUENT PUMPS



PERFORMANCE CHART

Model No.	RPM	Total Head in Feet					Shut-Off Head (ft.)
		5	10	15	20	25	
		Capacities in U.S. GPM					
WS30	1750	105	90	70	45	15	28
WS50	3450	105	92	80	64	50	42

PERFORMANCE CHART

Model No.	RPM	Total Head in Feet									Shut-Off Head (ft.)
		10	20	30	40	50	60	70	80	90	
		Capacities in U.S. GPM									
WS50H	3450	115	98	78	57	30	0	-	-	-	63
WS100H	3450	150	140	128	115	97	76	53	27	0	90

SUBMERSIBLE EFFLUENT PUMPS - AUTOMATIC AND MANUAL

Model No.	Order No.	HP	Volts	SFA	Phase	Solids Handling	Ship Wt. (lbs.)	Switch	Cord Length
WS30M	620010	1/3	115 V	10.4	1	11/16"	51	Manual	20'
WS30AM	620000	1/3	115 V	10.4	1	11/16"	53	Automatic	20'
WS50M-20	620231	½	115V	11.6	1	¾"	55	Manual	20'
WS50AM-20	620233	½	115V	11.6	1	¾"	57	Automatic	20'
WS50M-12-20	620251	½	208-230V	9.7	1	¾"	56	Manual	20'
WS50AM-12-20	620253	½	208-230V	9.7	1	¾"	58	Automatic	20'
HIGH HEAD SUBMERSIBLE EFFLUENT PUMPS - AUTOMATIC AND MANUAL									
WS50HM-20	620218	½	115 V	15.0	1	¾"	56	Manual	20'
WS50HAM-20	620219	½	115 V	15.0	1	¾"	58	Automatic	20'
WS50HM-12-20	620220	½	208-230V	9.7	1	¾"	56	Manual	20'
WS50HAM-12-20	620221	½	208-230V	9.7	1	¾"	58	Automatic	20'
WS100HM-12-20	620222	1	208-230V	13.6	1	¾"	57	Manual	20'
WS100HAM-12-20	620223	1	208-230V	13.6	1	¾"	59	Automatic	20'
WS100HM-32	620207	1	208-230V	6.2	3	¾"	62	Manual	30'
WS100HM-34	620206	1	460 V	3.1	3	¾"	62	Manual	30'

30' cord length models are available, please contact factory.

P8

Timed Dosing Control

SJE-Rhombus® Type TD

Installation Instructions and Operation/Troubleshooting Manual

⚠ WARNING!

ELECTRICAL SHOCK HAZARD
Disconnect all power sources before servicing. Failure to do so could result in serious injury or death.

TD1W114H4BD

Warranty void if panel is modified.

Call factory with servicing questions:

1-800-RHOMBUS

(1-800-746-6287)

Manufactured by:

SJE Rhombus® CONTROLS

22650 County Highway 6 ■ P.O. Box 1708
Detroit Lakes, Minnesota 56502 USA
1-888-DIAL-SJE (1-888-342-5753)
Phone: 218-847-1317 ■ Fax: 218-847-4617
E-mail: sje@sjerhombus.com
Website: www.sjerhombus.com

Printed in USA
PN1010434B • Rev 01/01

This control panel must be installed and serviced by a licensed electrician in accordance with the National Electric Code NFPA-70, state and local electrical codes.

All conduit running from the sump or tank to the control panel must be sealed with conduit sealant to prevent moisture or gases from entering the panel. **NEMA 4X enclosures are for indoor or outdoor use,** primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water and hose-directed water. **Cable connectors must be liquid-tight in NEMA 4X enclosures.**

Installation

Type TD control panels are designed to operate with two, three or four float systems. The two float system utilizes one float as the "low level cutout", the second as "high level alarm". A three float system adds either a "redundant off" float or a "timer override" float to the "low level cutout" and "high level alarm" functions. A four float system includes a "redundant off float", a "low level cut-out" float, a "timer override" float, and a "high level alarm" float.

***NOTE:* Options ordered may affect the number of floats and their functions. Please reference the schematic provided with the control panel.**

Installation of Floats

CAUTION: If control switch cables are not wired and mounted in the correct order, the pump system will not function properly.

WARNING: Turn off all power before installing floats in pump chamber. Failure to do so could result in serious or fatal electrical shock.

1. Use float label kit to identify and label cables on both the float and stripped ends (low level cutout, alarm, etc.). See schematic for float options.
2. Determine your normal operating level and desired float configuration, as illustrated in **Figures 1-4**.
3. Mount float switches at appropriate levels as illustrated in **Figures 1-4**. Be sure that floats have free range of motion without touching each other or other equipment in the basin.
4. For mounting clamp installation: place the cord into the clamp as shown in **Figure 5**. Locate the clamp at the desired activation level and secure the clamp to the discharge pipe as shown in **Figure 5**.

   NOTE: Do not install cord under hose clamp.
5. Tighten the hose clamp using a screwdriver. Over tightening may result in damage to the plastic clamp. Make sure the float cable is not allowed to touch the excess hose clamp band during operation.

   NOTE: All hose clamp components are made of 18-8 stainless steel material. See your SJE-Rhombus® supplier for replacements.
6. If using an optional redundant off float, mount slightly below the low level cutout float, but above the pump as illustrated in **Figures 2 & 4**.
7. If using an optional timer override float, position it at a level in the basin as shown in **Figure 3 & 4**.

P9

Installation Instructions

Mounting the Control Panel

1. Determine mounting location for panel. If distance exceeds the length of either the float switch cables or the pump power cables, splicing will be required. For outdoor or wet installation, we recommend the use of an SJE-Rhombus® liquid-tight junction box with liquid-tight connectors to make required connections. **You must use conduit sealant to prevent moisture or gases from entering the panel.**

2. Mount control panel with mounting devices furnished.

3. Determine conduit entrance locations on control panel. Check local codes and schematic for the number of power circuits required.

NOTE: Be sure the proper power supply voltage, amperage, and phase meet the requirements of the pump motor being installed. If in doubt, see the pump identification plate for voltage/phase requirements.

4. Drill proper size holes for type of connectors being used.

NOTE: If using conduit, be sure that it is of adequate size to pull the pump and switch cables through.

5. Attach cable connectors and/or conduit connectors to control panel.

FOR INSTALLATION REQUIRING A SPLICE, FOLLOW STEPS 6-10; FOR INSTALLATION WITHOUT A SPLICE, GO TO STEP 11.

6. Determine location for mounting junction box according to local code requirements. **Do not** mount the junction box inside the sump or basin.

7. Mount junction box to proper support.

8. Run conduit to junction box. Drill proper size holes for the type of conduit used.

9. Identify and label each wire before pulling through conduit into control panel and junction box. Make wire splice connections at junction box.

10. Firmly tighten all fittings on junction box.

11. If a junction box is not required, pull cables through conduit into control panel.

12. Connect pump wires and float switch cables to the proper terminals as seen in **Figures 6 & 7**. If the redundant off float is not required, place a jumper wire across TB1-7 and TB1-8.

13. Connect pump/control and alarm incoming power conductors to proper position on terminals. See schematic and wiring diagram for terminal connections.

VERIFY CORRECT OPERATION OF CONTROL PANEL AFTER INSTALLATION IS COMPLETE.

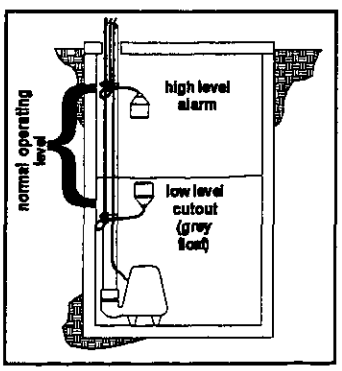


FIGURE 1 - Two float system

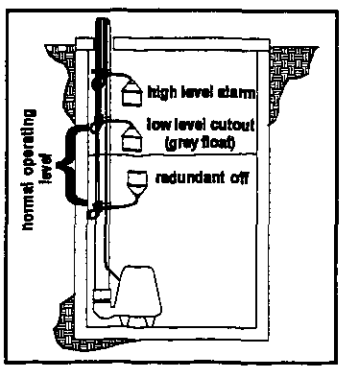


FIGURE 2 - Three float system with redundant off

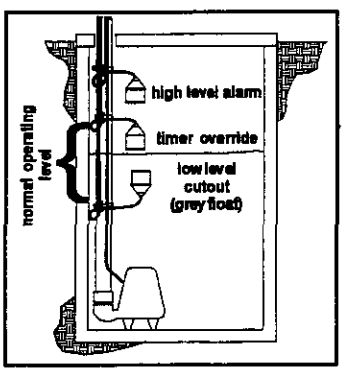


FIGURE 3 - Three float system with timer override

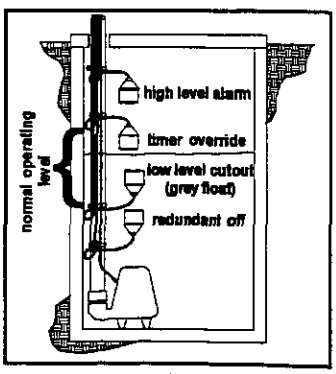


FIGURE 4 - Four float system

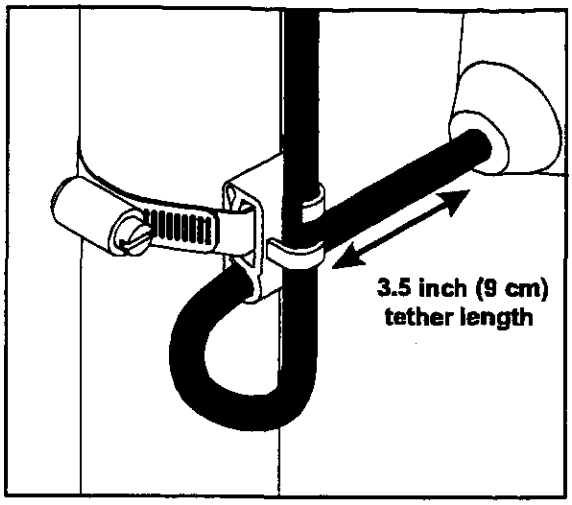


FIGURE 5 - Mounting clamp detail.

Option 4E
Redundant Off / Alarm Activation
Wiring Diagram

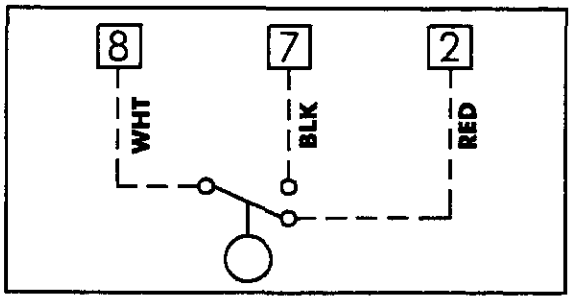


FIGURE 7 -
Redundant off pump

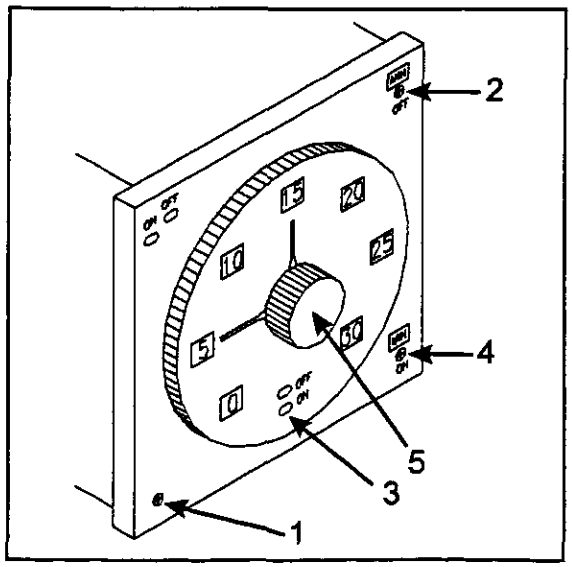


FIGURE 8 - Timer detail

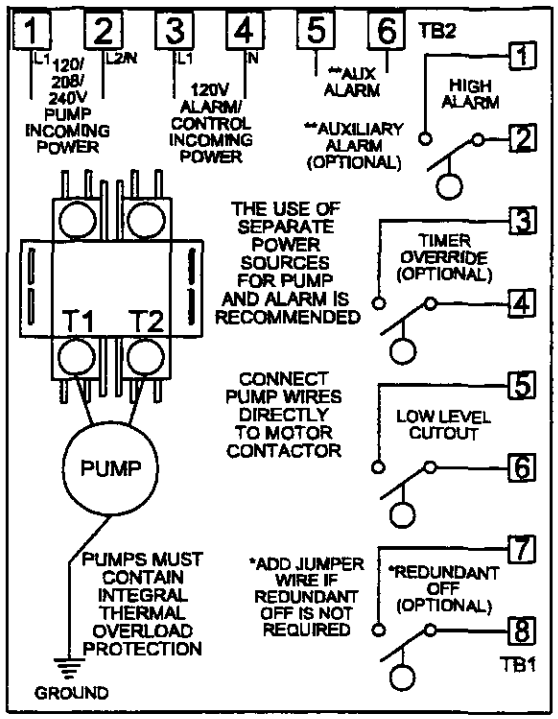


FIGURE 6 -
TD wiring diagram

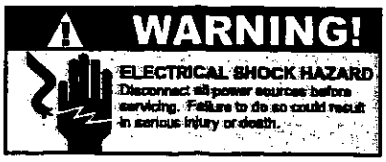
Setting the timer

Remove the timer by clipping the tie strap and pulling it straight out of the socket.

1. Determine the pump "on & off" time and turn the adjustment screw **(1)** so that the most appropriate range of numbers (usable for both the on and off cycles) is visible in the windows on the dial face.
2. Adjust the off time range selector **(2)** to the appropriate period. (*e.g.: minutes*).
3. Adjust the outer dial **(3)** so the green pointer indicates the off time period required. (e.g.:15)
4. Adjust the on timer range selector **(4)** to the appropriate period (e.g.: minutes).
5. Adjust the inner dial **(5)** so the red pointer indicates the on time period required. (e.g.: 5)
6. When setting is complete, place the timer back in the socket.
7. In the example shown, the pump would be off for 15 minutes and then on for 5 minutes. This cycle would continue as long as there was enough liquid in the tank to float the low level *cutoff switch*.

NOTE: "OFF" time is cycled first.

Operations & Troubleshooting



TD series control panels are available for use with two, three or four float combinations. In a two float system, one float in the tank is the "low level cutout" float while the other is a "high level alarm" float. The normal operating level should be between the "low level cutout" position and the "high level alarm" position.

The TD panel can be installed with a choice of three float systems. One choice adds a "redundant off" float which is positioned slightly below the "low level cutout" grey float, but above the pump. The normal operating level shall be between the "low level cutout" position and the "high level alarm" position. The other choice adds a "timer override" float which is positioned between the "low level cutout" (grey float) and the "high level alarm" float. Normal operating level should be between the "low level cutout" float and the "timer override" float.

A four float system includes a "redundant off" float, a "low level cutout" float, a "timer override" float and a "high level alarm" float. The "timer override" float gives you the option of pumping from the basin while the timer is in the "off" cycle. It is only intended for times of abnormally high liquid level inrushes. The normal operating level should be between the "low level cutout" float and the "timer override" float.

The control panel begins timing the "off" sequence when the "low level cutout" float is activated. Once the timer completes the "off" sequence, the timer will start the pump and continue to run until the programmed "on" sequence is complete. At this point the "off" sequence begins timing again and the cycle repeats.

Float Controls

1. Check the floats during their entire range of operation. Clean, adjust, replace and repair damaged floats.

2. Measure the float resistance to determine if the float is operating properly.

To measure float resistance:

a. Isolate the float by disconnecting one or both of the float leads from the float terminals.

b. Place one ohmmeter lead on one of the float wires, and the other ohmmeter lead on the other float wire.

c. Set the ohmmeter dial to read ohms and place on the R X 1 scale. With the float in the "off" position, the scale should read infinity (high resistance), if not replace the float.

With the float in the "on" position, the scale should read close to zero, if not replace the float. **Readings may vary depending on the accuracy of the measuring device.**

Magnetic Contactor Coil

To measure the coil, disconnect one of the coil leads. Measure the coil resistance by setting the ohmmeter on the R X 1 scale. A defective coil will read zero indicating a short, or infinity (high resistance) indicating an opened coil. Replace defective contactor.

Fuses

To check the continuity of the fuse, pull the fuse out of the fuse holder. With the ohmmeter on the R X 1 scale, measure resistance. A reading of infinity (high resistance) indicates a blown fuse that must be replaced with a fuse of the same type, voltage, and amp rating.

Alarm Light

Activate the alarm float. The alarm light should turn on. If not, replace the bulb with that of the same type.

Alarm Horn

Activate the alarm float. The alarm horn should turn on. If not, replace the horn with that of the same type.

SJE-Rhombus® Three-Year Limited Warranty

SJE-RHOMBUS® warrants to the original consumer that this product shall be free of manufacturing defects for three years after the date of consumer purchase. During that time period and subject to the conditions set forth below, **SJE-RHOMBUS®** will repair or replace, for the original consumer, any component which proves to be defective due to defective materials or workmanship of **SJE-RHOMBUS®**.

ELECTRICAL WIRING AND SERVICING OF THIS PRODUCT MUST BE PERFORMED BY A LICENSED ELECTRICIAN.

THIS WARRANTY DOES NOT APPLY: (A) to damage due to lightning or conditions beyond the control of **SJE-RHOMBUS®**; **(B)** to defects or malfunctions resulting from failure to properly install, operate or maintain the unit in accordance with printed instructions provided; **(C)** to failures resulting from abuse, misuse, accident, or negligence; **(D)** to units which are not installed in accordance with applicable local codes, ordinances, or accepted trade practices, and **(E)** to units repaired and/or modified without prior authorization from **SJE-RHOMBUS®**.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

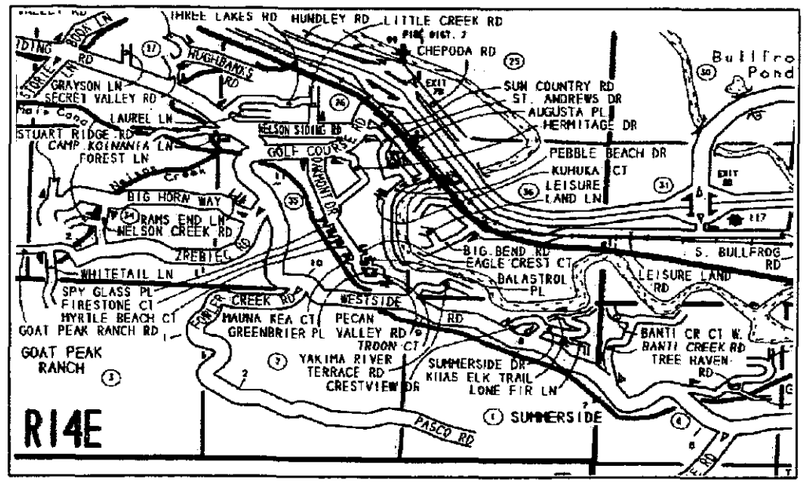
TO OBTAIN WARRANTY SERVICE: The consumer shall assume all responsibility and expense for removal, reinstallation, and freight. Any item to be repaired or replaced under this warranty must be returned to **SJE-RHOMBUS®**, or such place as designated by **SJE-RHOMBUS®**.

ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS ARE LIMITED TO THE DURATION OF THIS WRITTEN WARRANTY. SJE-RHOMBUS® SHALL NOT, IN ANY MANNER, BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES AS A RESULT OF A BREACH OF THIS WRITTEN WARRANTY OR ANY IMPLIED WARRANTY.

SUN COUNTRY GOLF COURSE

Part of Sections 26, 35 & 36,
T.20N, R.14E., W.M.
Kittitas County, State of Washington

Survey References: Book 32 of
Surveys, Page 206, Records of
Kittitas County, State of Washington



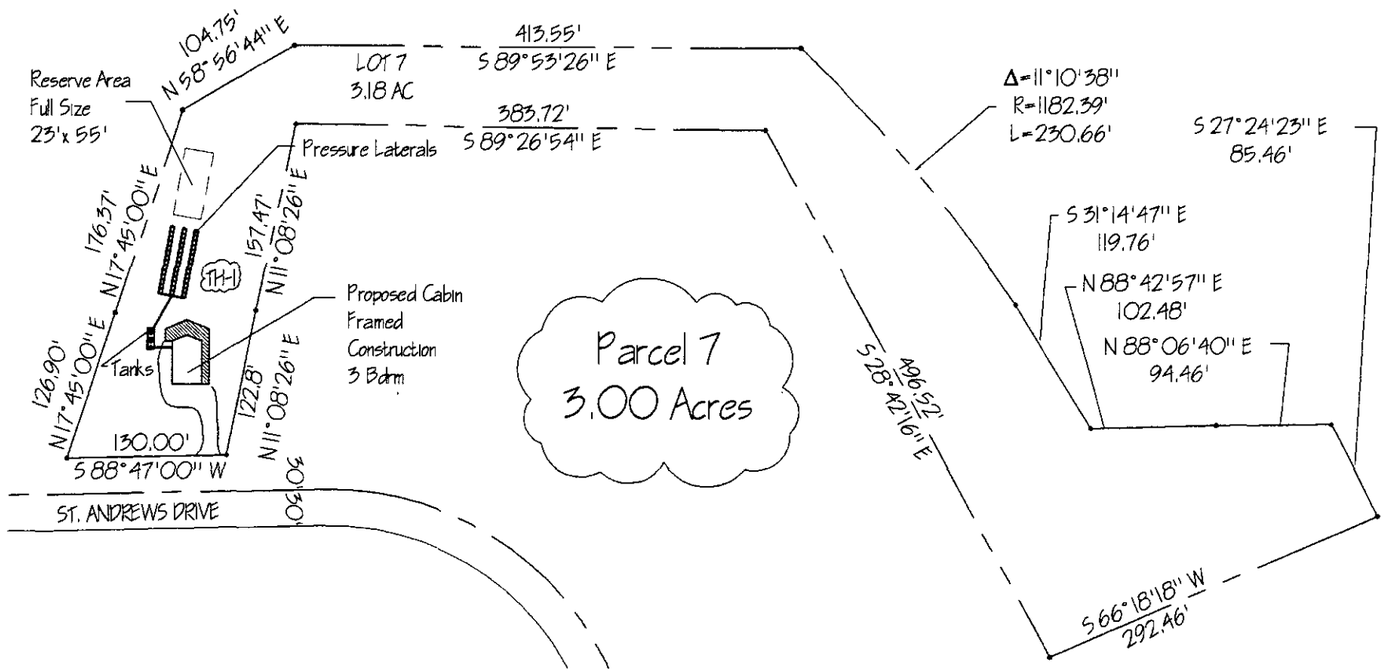
Vicinity Map NTS

General Notes:

1. All work shall be in accordance with the Uniform Plumbing Code; WA. State Dept. of Health Chapter 246-272 WAC On-Site Sewage Systems JAN.1,95 and the National Electrical Code
2. System designed in Accordance With:
   a) Kittitas County Health Dept. Site Evaluation Report
   b) DOH Guidlines For Approved Systems and Products; November 2000
   c) DOH Guidelines For Pressure Systems; April 1999
   d) DOH Guidelines For Sand Lined Trench Systems; April, 1999
3. All Construction Inspections by Kittitas County Health Department and Engineer/ Designer

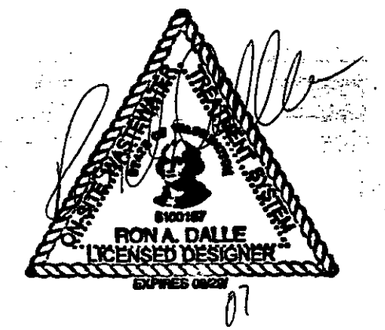
Legend:

E.G. ~ Existing Grade	TH ~ Soil Log Test Holes
F.G. ~ Finish Grade	E.L. ~ Elevation
TBM ~ Tempory Bench Mark	D ~ Drains
P/L ~ Property Line	E ~ Underground Power
98.3 ~ Existing Elevation	Tel ~ Underground Telephone



1 Site Plan
1" = 125'-0"

Original Tax Parcel #
21-14-26000-0005



07

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Cle Elum, WA. 98922
(509) 674-5125

Jim Hembree
P.O. Box 364
Cle Elum, WA. 98922

O/S Sewer System

12/29/06

1 of 7

157.47' N11°08'26" E

N11°08'26" E 122.8'

Reserve Area
Full Size
23'x 55'

Slope ± 4%

20'

10'

55'

Quick4 Infiltrator® Chambers

Manifold
See Sheet 5-1

Note:

During Construction Avoid Soil Compaction of Reserve Area By Machinery

Proposed Home
Modular Const.
3 bdrm

Cleanout
See Sheet 3-2

Transport Line (18)
± 80.00'

(10) Control Panel

Inlet Line (1)
± 10.00'

1000 gal Concrete
Pump Chamber

1000 gal Concrete
Septic Tank

N17°45'00" E 176.37'

N17°45'00" E

(1/2) Septic System Plan
1/16" = 1'-0"

Note:

All Site Plans Within The Design Are Approximate And Do Not Constitute A Survey

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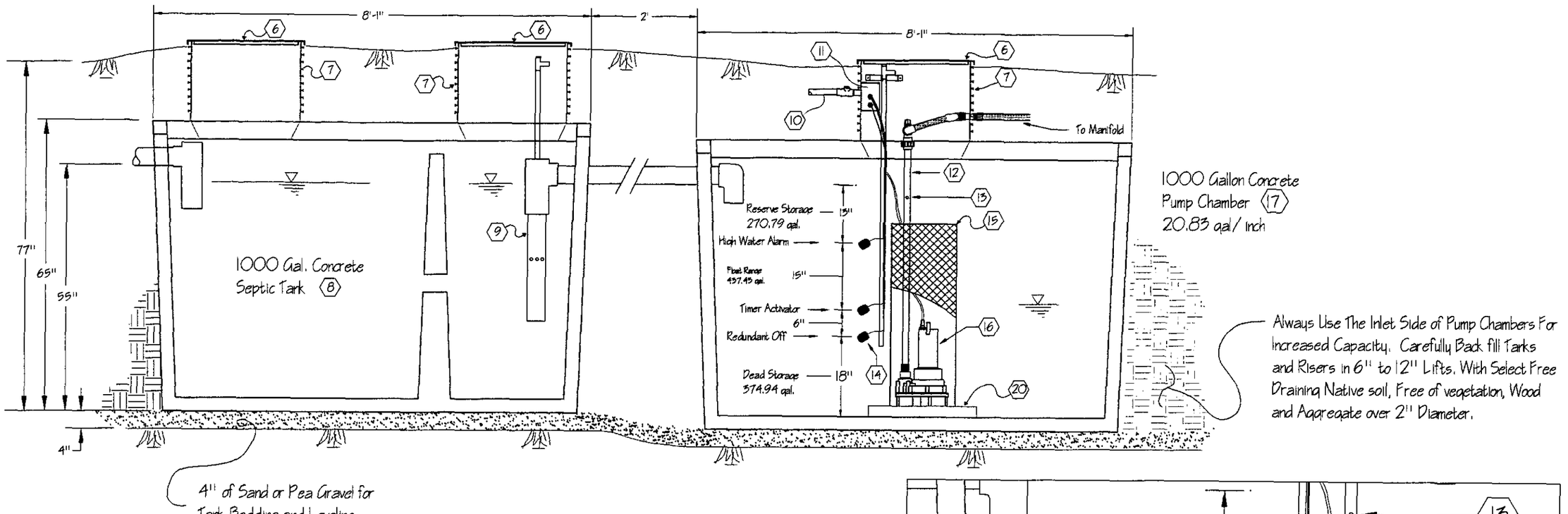
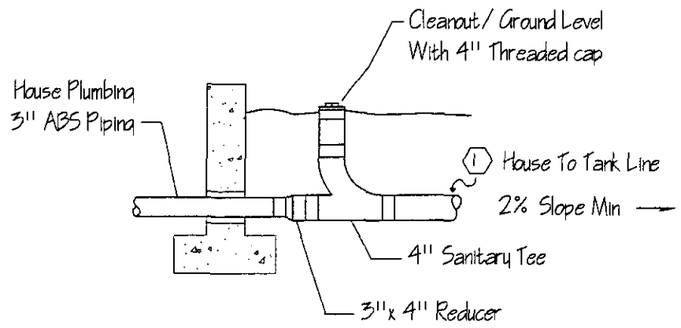
12/29/06



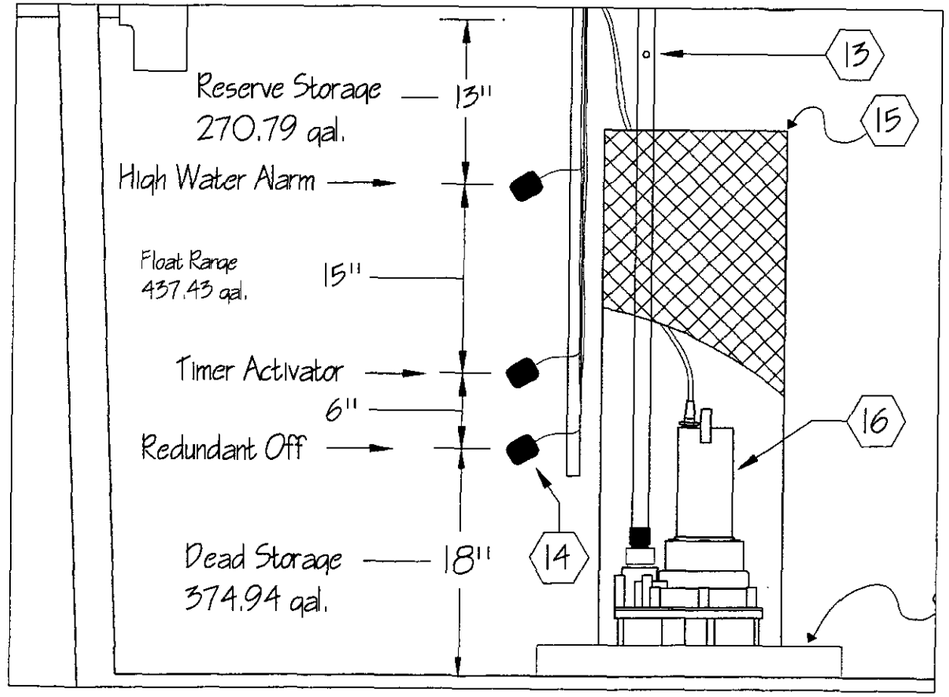
Note:

Tanks Shown Are Manufactured by M-1 Tank; Mosses Lake, WA.
If Other Approved Manufactures Tanks are Used Float Settings Must be Recalculated by Designer.

1/3 Tank Section
1/2" = 1'-0"



2/3 Foundation Detail (Typical)
Not to Scale



3/3 Exploded view (float detail)
1" = 1'-0"

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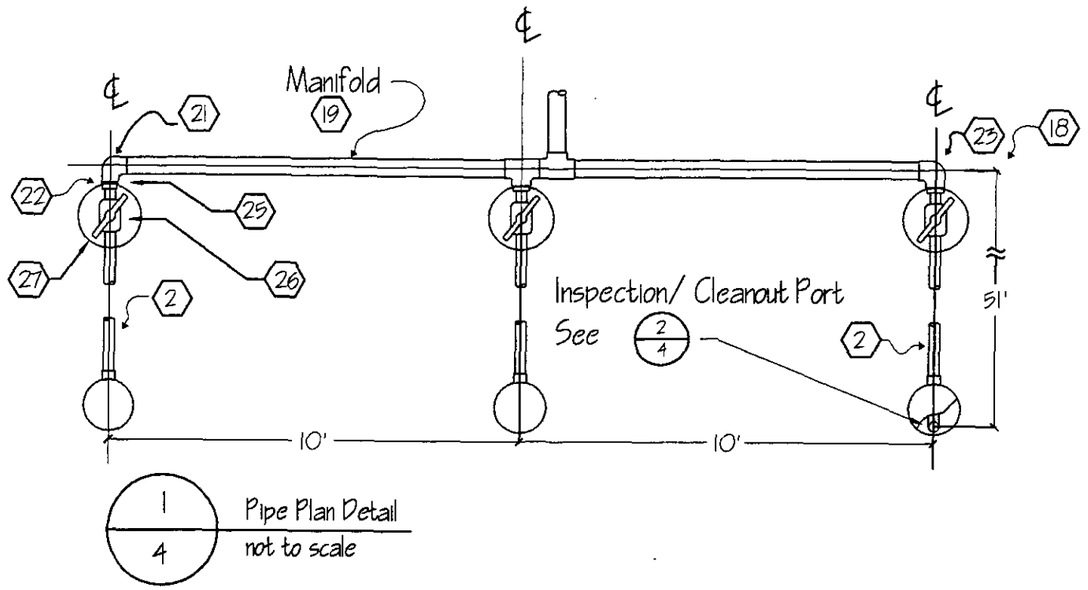
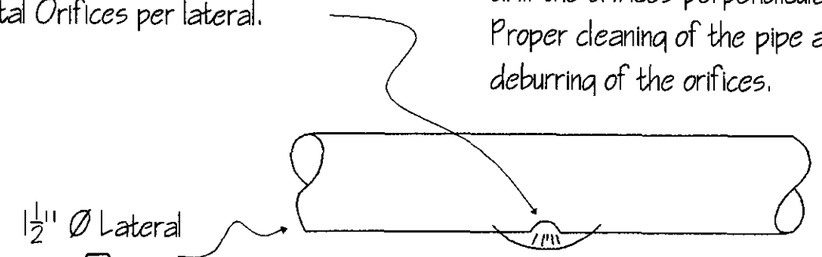


1/4 Pipe Plan Detail
not to scale

All Orifices $\frac{3}{16}$" Ø
20 Orifices per Lateral at 12 O'clock. One at 6-O'clock at the beginning and end of each Lateral. 22 total Orifices per lateral.

Note:

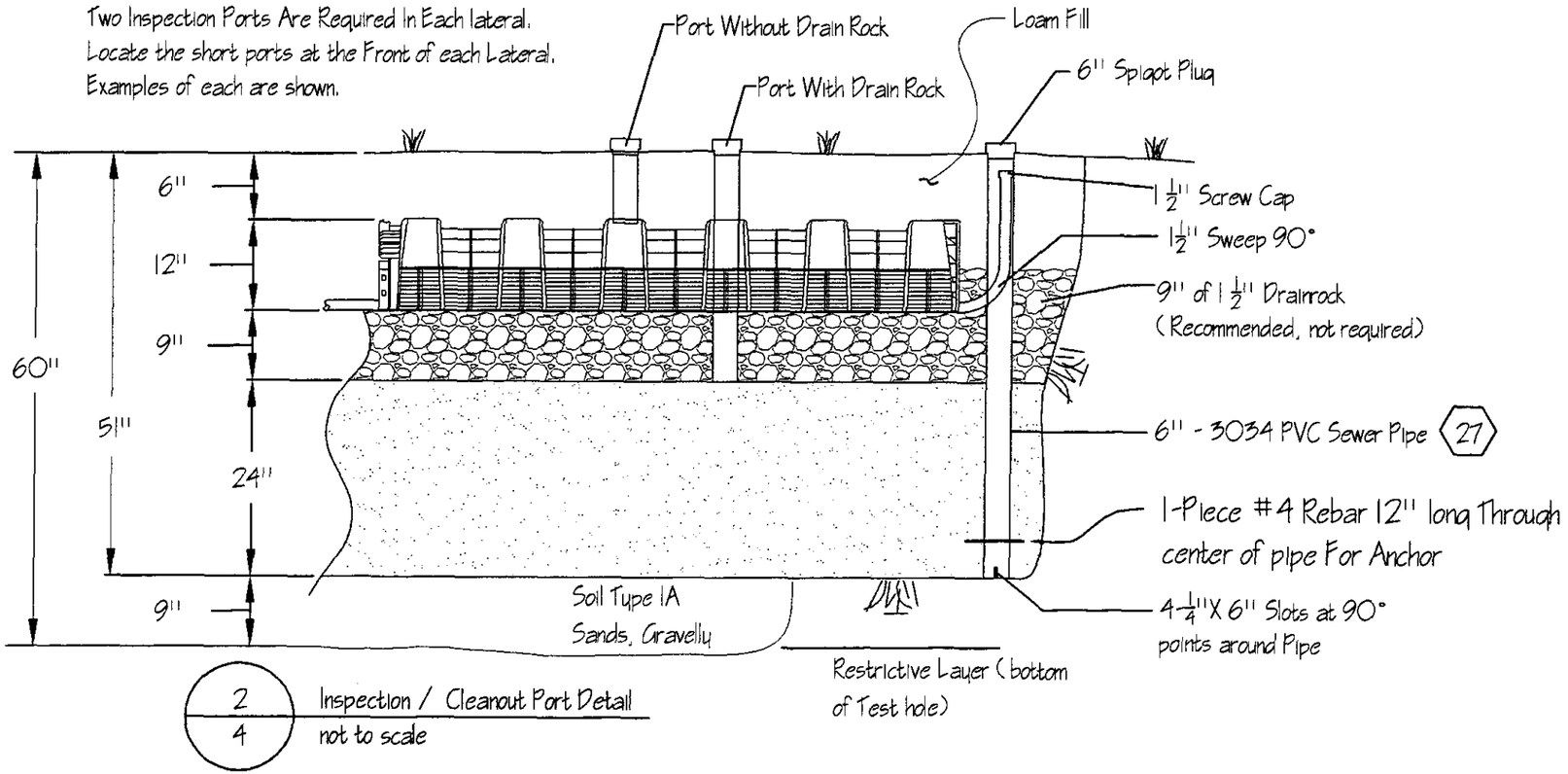
Proper technique and practice should be used in drilling the orifices. This includes using proper drill sizes, sharp bits and drill stabilizing tools to prevent wobble and to drill the orifices perpendicular to the pipe. Proper cleaning of the pipe and careful deburring of the orifices.



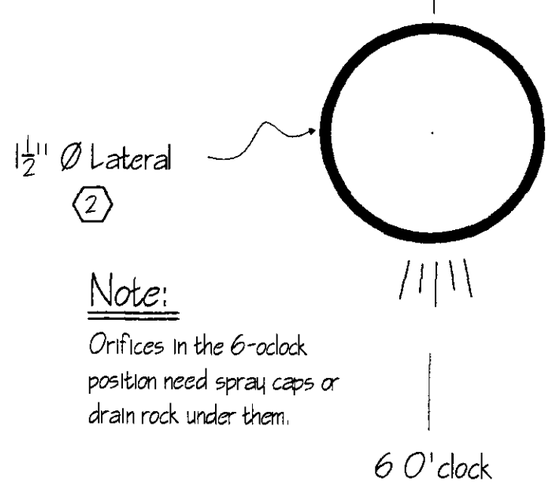
3/4 Orifice Detail
not to scale

Note:

Two Inspection Ports Are Required In Each lateral. Locate the short ports at the Front of each Lateral. Examples of each are shown.



2/4 Inspection / Cleanout Port Detail
not to scale



Note:

Orifices in the 6-oclock position need spray caps or drain rock under them.

4/4 Orifice Section
not to scale

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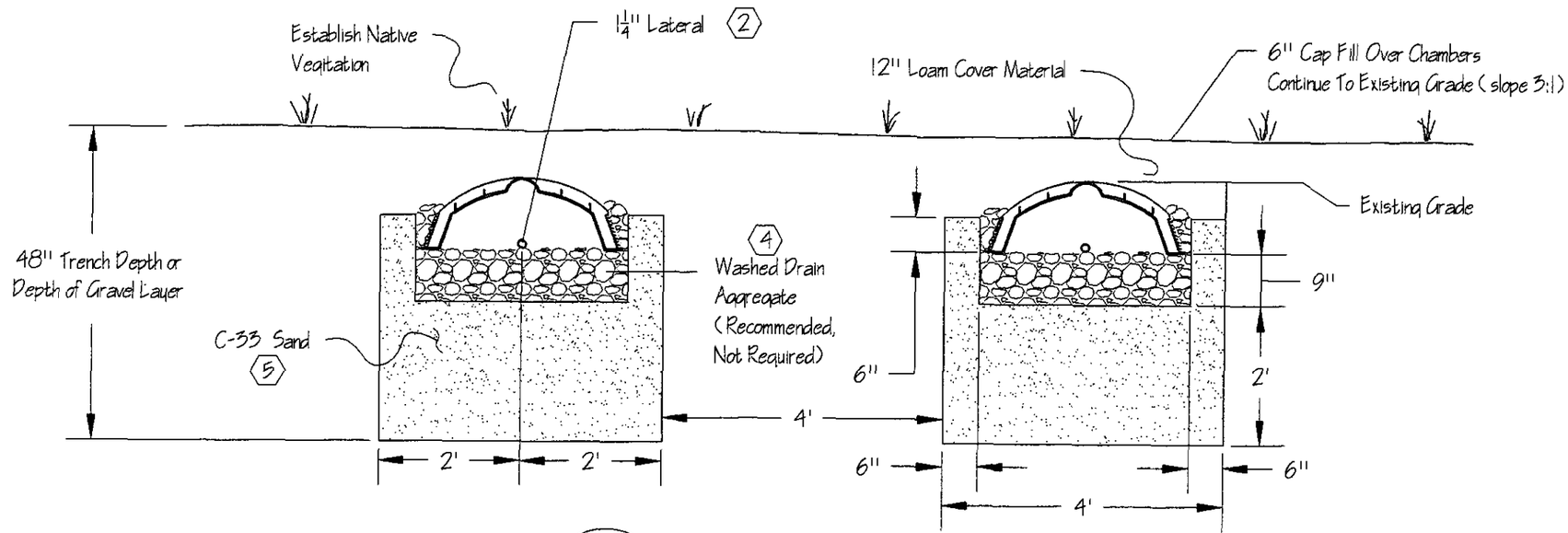
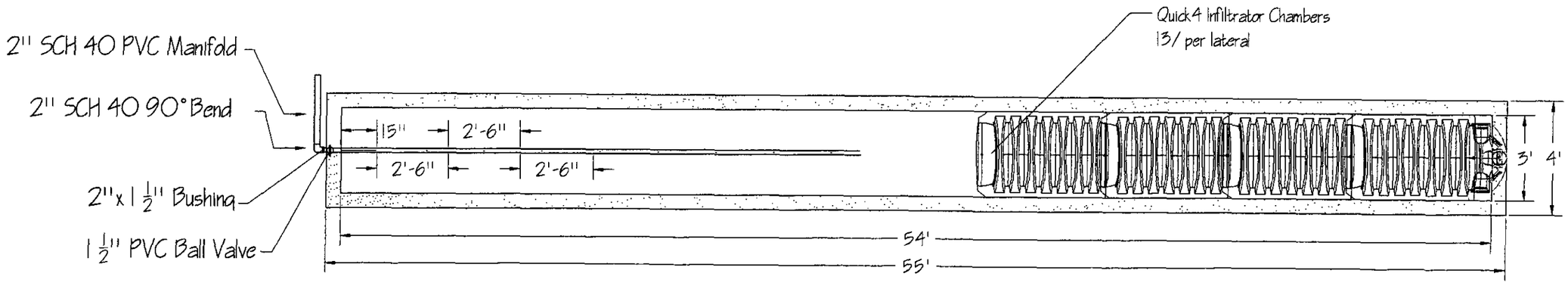


1/5 Lateral Section

½" = 1'-0"



2/5 Orifice Plan

¼" = 1'-0"

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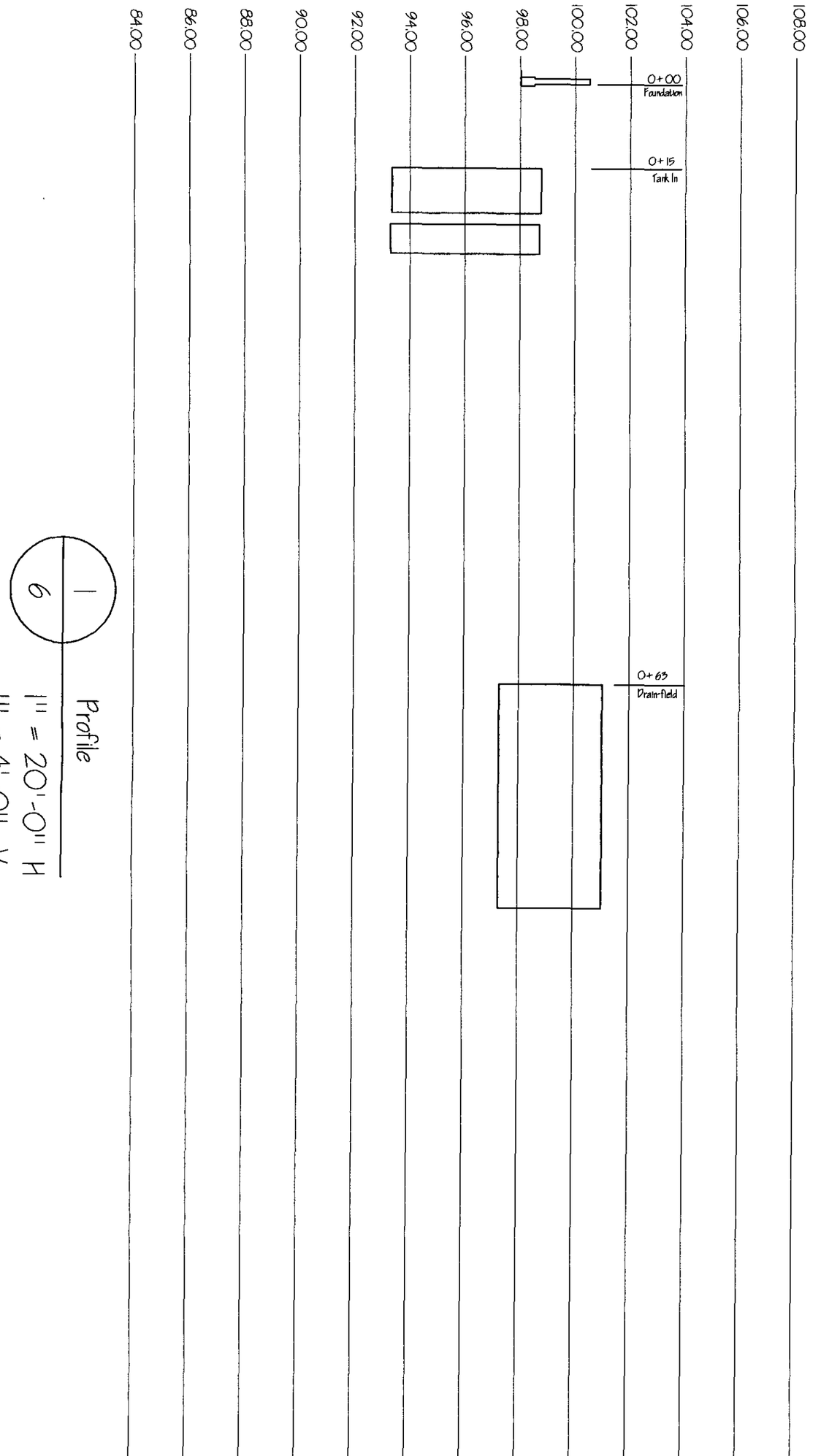

1/6 Profile

1" = 20'-0" H

1" = 4'-0" V

6 of 7	12/29/06	0/S Sewer System

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Construction Notes:

1. House Sewer Pipe Shall Be 4"Ø ,3034 PVC or ABS Sewer Pipe Tightline; Maintain 2% grade
2. $1\frac{1}{2}$" Ø Class 200 PVC Lateral Pipe
3. Geotextile Fabric, Mirafi 14 ons, Grab 90lb. Water Flow Rate 140 qpm/ sf or approved equivalent.
4. Washed Drain Rock (Round not Crushed) $\frac{7}{8}$" to $1\frac{1}{2}$" Ø Amount Passing #200 Sieve Less than 0.5 %.
5. Medium Sand (ASTM C-33)

Sieve	% Passing
$\frac{3}{8}$"	100
#4	95-100
#8	80-100
#16	50-85
#30	25-60
#50	10-30
#100	2-10

Not more than 45 % passing any one sieve and retained on the next sieve, fineness modulus 2.3 < 3.1

Contractor Note:

The filter media must meet the particle size criteria detailed to the left. Media used in constructing a sand-lined trench must be accompanied with a written certification from the supplier that the media fully conforms to ASTM C-33 as dertermined by ASTM D136 and ASTM C-117.

6. 24"Ø Fiberglass Lid w/ ss bolts and urethane gasket. OSI-FL 236 [1] [3]
7. 24" Ø Ribbed PVC Riser, W/ bolt catches for lid. OSI-RR24-12, use cast in place tank adapter or grooved tank adapter; [1] [3]
8. 1000 Gal. Concrete Septic Tank, [4] or from other DOH approved concrete tank supplier.
9. Effluent Filter w/ $\frac{1}{8}$" Mesh Cartridge; Boltube Model FTWO444-36; [1] [2]
10. Electrical Conduit Routed 18" Below Grade to Power Source. Provide 2-Branch Circuits From Electrical Panel. One Circuit for Effluent Pump and controls, and a separate alarm circuit. Use SRE Rhombus Model TDIWII4H4BD Alarm & Control Panel.; [1] [4] . Mount Alarm on West side of home as shown.
11. Splice Box, w/ 4 Cord Grips & 1 outlet; Model OSI-SB4; [1] [2]
12. Orenco Discharge Assembly Model # HV200B-DB; [1] [2]
13. $\frac{3}{16}$" Ø Orifice at Bottom of Pipe For Transport Pipe Vent & drain after shut down. Also must Prevent Anti-Siphon.
14. Floats are Included With The Rhombus Panel. 1-20' NO Wide Angle Float Switch (mechanical) & 2-20' NO Narrow Angle Float Switches (mercury) [1] [4]
15. Universal Biotube Pump Vault-Orenco SV1560-18; [1] , [2]
16. Monarch; WS 50 pump; Series Design Point at 41.2 qpm @ 12.9 ft. TDH; [1] [2]
17. 1000 Gallon Concrete Pump Chamber; [4] , or from Another Approved DOH Supplier.
18. 2" Ø Sch-40 PVC Transport Pipe
19. 2" Ø Sch-40 PVC Manifold Pipe
20. 2" Concrete Pump Vault Support
21. 2" Ø SCH-40 PVC 90° Bend
22. 2" x $1\frac{1}{2}$" Ø SCH-40 PVC Bushing
23. 2" Ø SCH-40 PVC Flow Thru Tee Branch
24. ~~Quick4 Infiltrator® Chambers; [1] , [3] ,~~
25. ~~3" x 2" SCH 40 PVC Bushing~~
26. $1\frac{1}{2}$" Ø SCH-40 PVC Flow Control Valve; [1] , [2] .
27. 6" 3034 PVC Sewer Pipe With Caps; [3] .

[1] Available From HD Fouler, Wenatchee, WA. 1-509-886-8804

[2] Orenco Systems, Inc. Sutherlin, OR. 1-800-348-9843

[3] United Pipe & Supply; Wenatchee, WA. 1-509-662-7128

[4] M-1 Tank; Moses Lake, WA. 1-509-766-2914

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O/S Sewer System

12/29/06

O/S WASTEWATER
TS DESIGNER

SINCE 1964

AMERIA ENGINEERING

RON A. DALLE, C.E.T.

MAIN OFFICE
P.O.Box 186
504 N. Columbia Ave
Cle Elum WA. 98922

Cell: 509-899-2375
Home: 509-674-5125
Fax: 509-674-2606
Email: rfdalle@msn.com

On-site Wastewater Treatment System with Pressure Distribution

for

Jim Hembree & Asssoc. Inc.

P.O. Box 364, Cle Elum, WA. 98922

For
Recreational Residence
Sun Country Resort
Parcel 7, 3.00 Acres
AP # 20-14-26000-0005

December 29th, 2006

TABLE OF CONTENTS

1. SYSTEM DESCRIPTION

This on-site sewage system consists of the following components:

1000-gallon double compartment concrete tank.

1000-gallon pump chamber

Three pressurized drain lines 55 feet in length over a sand lined trench 4'x56'

23' x 55' drain-field reserve area

Control and warning system

See attached sheet 1&2 of 7 of the construction drawings, which contains a site plan showing the system layout.

Septic Tanks

The septic tank is a 1000-gallon, double compartment concrete tank. A 1000-gallon single compartment tank follows it. The tanks are fitted with a fiberglass risers and airtight lids at the ground surface to provide easy access to the tank compartment for cleaning and maintenance. The septic tanks collect solids and provide initial biological treatment to the wastewater.

Pump Chamber

The septic tank wastewater outflow travels by gravity flow to a single compartment 1000-gallon pump chamber located next to the septic tank. The pump chamber collects and stores septic tank outflow until sufficient volume accumulates for a dosing cycle. For this system that volume is 45 gallons. The pump chamber is fitted with an effluent pump, a pump inlet screen, control floats and a high water alarm. The floats are set to turn the pump on and pump a 45-gallon dose volume into the drain field lateral pipes, exiting through orifices spaced at 2.5 ft. along the top and bottom of the lateral pipes. The high water alarm float turns on an audible and visual alarm to alert you to a system malfunction. This pump chamber has a 270-gallon reserve volume above the point where the alarm first sounds. The system is timed to allow a more even spacing of the dose volumes. This system will allow one dose every three hours. For a total of eight in a twenty-four hour period.

Pressure Distribution Drain field

The soil in the drain-field area is type 1A soil, which has coarse sands, very gravelly fine sands, very gravelly loamy sands and extremely gravelly soils with sizes up to 8", which are extremely porous. Fragments are rounded, cobbley and stony. The drain-field design consists of three 55' trenches lined with 24" of sand. A 9" depth of washed rock overlays the top of the sand. On top of the washed rock are 13 Infiltrator Chambers. Under the chambers on top of the rock are 1.25-inch

PVC lateral lines. The lateral pipes have 22 orifices, 3/16 in. diameter in each line. This evenly distributes septic tank effluent when the pump is running. A drain field reserve area 23'x 55 ft. is set aside 6' North of the drain field laterals for use as a replacement area in the event the actual drain field needs repair or replacement in the future.

Control and Warning System

If for some reason the septic pump in the pump chamber fails to come on and the effluent level rises and trips the alarm float, this will turn on a horn and a light at the alarm control panel located on the outside of the house. The alarm can be turned off with a push button at the panel. After the alarm comes on, the pump chamber has a 3/4-day (270 gallon; actual volume in this system is 271 gal) reserve volume above the effluent level that triggered the alarm. The system is demand dosed which means dosing occurs when volumes of effluent flowing into the pump chamber are sufficient to activate the pump-on float.

2. SYSTEM OPERATION

The following recommendations will assist in the proper functioning of the on-site wastewater system.

A. Avoid flushing harmful material into septic tank. Never put materials such as grease, newspapers, paper towels, cigarette butts, coffee grounds, diapers, sanitary napkins, solvents, oils, paint, and pesticides into the tank.

B. Avoid the use of chemical or biological septic tank additives. Such products are not necessary for the proper functioning of a septic tank.

C. Assure that surface water does not collect on the system and drain field areas but runs off freely and quickly.

D. Prohibit vehicular and livestock traffic over the system and drain field areas.

E. Maintain a cover of drought tolerant native grasses on the surface of the system and drain field areas. Do not install underground sprinkler systems for irrigation water in these areas. Also route surface water from rill irrigation away from the drain field area.

F. Know where your system and drain field areas are located and protect them from damage.

G. Practice water conservation to avoid over loading your system. The more waste water produced, the harder you system must work to treat and dispose of the water. Reduce water use by installing water-saving devices,

repairing leaky plumbing fixtures, taking shorter showers and washing only full loads of dishes and laundry.

If the system alarm goes on:

If for some reason (broken wire, debris in tank, tangled floats, failed pump) the effluent level in the pump chamber reaches the alarm float, it will trigger the alarm horn and buzzer. To silence the alarm, push the reset button on the alarm panel. By using water conservatively the reserve storage (270 gallon) in the pump chamber should give adequate time to make repairs. It is strongly recommended that an experienced person make service and repairs. As stated earlier on timed systems during periods of high water use, the alarm might come on even though there is no malfunction. In this system the pump is only allowed to dose the drain field (60 gallons) every four hours. Simply reset the alarm.

CAUTION:

a. Always turn off the power supply at the circuit breaker, and unplug all power cords before handling the pumps or floats.

b. Gases inside the septic tank and pump chamber are poisonous and the lack of air can be fatal. An experienced person must do service or repair of pumps and other electrical equipment.

3. SYSTEM MAINTENANCE

For this on-site wastewater system to operate properly, various components need periodic inspection and maintenance by the owner. Maintenance is the responsibility of the homeowner, but may be performed by experienced and qualified service providers. Keep a written maintenance record.

The following items should be inspected at 6 months, then on a yearly basis after the system has been put into use.

Septic Tank

A. Clean and inspect outlet screen, once per year. If high volumes were sustained over long periods it would be advisable to increase cleaning interval to six months.

B. Look for signs of leaking in tanks and risers, repair if needed.

C. Make sure riser lids are at existing grade and are locked securely.

Septic Tank Capacities

The pump out interval must be within a range that is affordable and provides adequate long-term solids retention for ensuring through digestion. Intervals that are too short not only retard digestion, but force users to pay significantly more for continuous service and pumping. The initial cost difference for a larger prefabricated tank is usually insignificant; especially when compared to the present-worth value of long- term maintenance.

A typical interval range is illustrated in Figure 1; therefore, given an average wastewater flow of 50 gpd, a single-family residential tank, for 4 or fewer occupants, should be 1000 gallons, and 1500 gallons for 5 to 7 occupants. These curves in 1 result from the following curve-a-linear relationship developed for total sludge and scum accumulation.

$$N_{sl+sc} = 47t^{0.675}$$

Where: N_{sl+sc} is the average volume of sludge and scum, in gallons/ capita.
(t) Is the time in years.

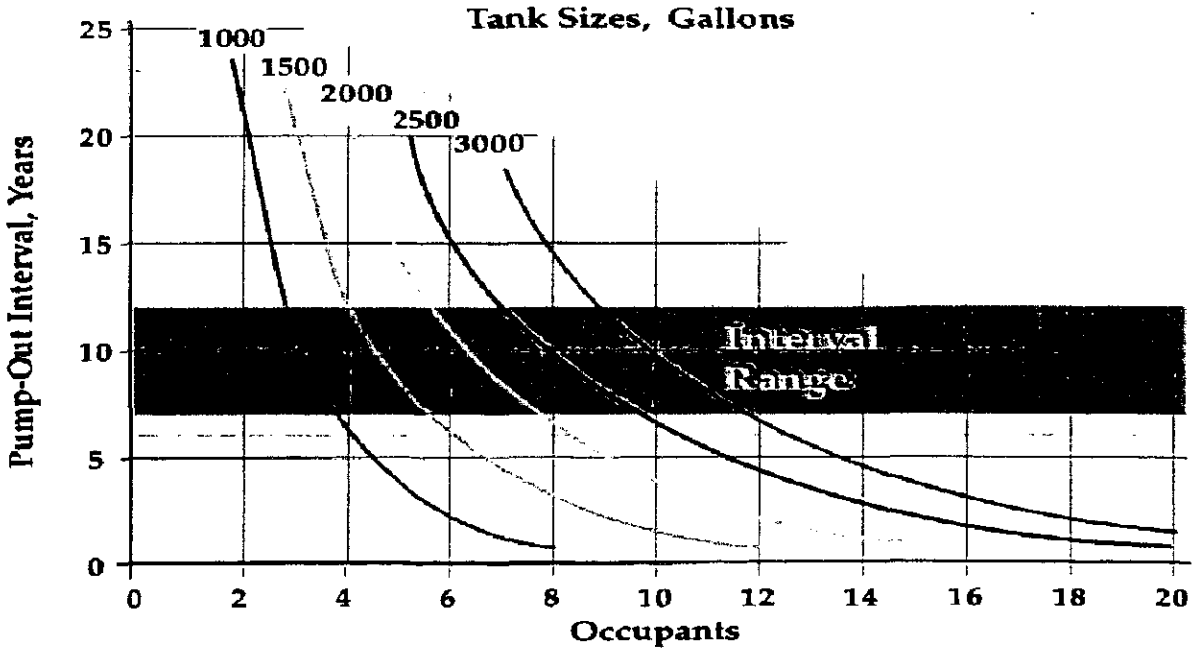

Figure 1: Pump-out Intervals at 95% level of Confidence

In summary, predicting reasonable septic tank pumping intervals with a respectable degree of reliability is an achievable goal. Suggestions or requirements that all septic tanks must be pumped every two; three or even five years are simply unsupported by scientific evidence. The microbial activity that affects optimal decomposition takes up to three years to develop fully. In five years, considerably less than half of most tanks' scum and sludge capacity has been reached (Bound's, 1988). When a management program is in place, pump-outs are scheduled based on inspections and monitoring records so that costs are controlled. Onsite design manuals may encourage frequent pump-outs as a precautionary measure when an inspection program is not in effect; however, longer intervals are usually justified, particularly if an effluent screening device is in place. Adequately sized tanks ensure less frequent pump-outs. Septic tank systems may once have been considered a stopgap until such time as a "real" sewer could be built. As technology has improved the image of the septic tank, it has come to be appreciated as an effective, permanent solution. As such, it deserves to be accorded the same scientific consideration as other treatment systems.

Pump Chamber

A. Clean and inspect outlet screen.

B. Look for signs of leaking in tank and riser. Make sure riser lid is at existing grade and is locked securely, repair if needed.

C. Check for proper functioning of floats. Movement should not be restricted, and they should be positioned correctly.

D. Activated alarm float to assure that it trips the alarms.

CAUTION

Gases inside the septic tank and pump chamber are poisonous and the lack of air can be fatal. An experienced person must do service or repair of pumps and other electrical equipment.

Pressure Distribution Drain field

1. Evaluate the drain field area for the following conditions:

   a. Indication of surfacing effluent.

   b. Appropriate vegetation (should be native grasses, not shrubs or trees) within the drain field area.

   c. Absence of heavy traffic.

   d. Inappropriate buildings.

e. Impervious materials or surfaces lying within drain field area.

f. Abnormal settling or erosion.

Take corrective action as needed.

2. Check drain field inspection ports at the end of each lateral for ponding. If liquid levels are continually over 6 in., this is an indication of system plugging or hydraulic overloading of the drain field.

a. Check daily flow to see that it is not over the system design flow rate of 360 gallons/day.

b. Check for leakage into the septic tank and pump chamber.

c. Check that all extraneous surface water such as irrigation tail water is routed away from drain field area.

d. Call Kittitas County Department of Health for assistance if necessary. (509) 962-7052

3. Using the lateral and inspection ports and operating the septic pump, measure the residual pressure of each lateral to confirm it is the same as recorded on the as-built drawing.

4. Measure the flow rate from each lateral to determine that they are similar. A large discrepancy would indicate the lateral needs cleaning.

5. Measure pump run time per cycle and draw down and compare with as-built drawing. Excessive run time and higher pressure indicates clogged orifices and laterals and the need for cleaning.

4. TELEPHONE NUMBERS

1. Kittitas County Dept. of Health — Joe Gilbert (509) 933-8262
2. System Designer — Ameria Engineering, (509) 674-5125
3. System Installer —
4. System Maintenance —

SYSTEM MAINTENANCE

DATE	DESCRIPTION

O/S WASTEWATER
TS DESIGNER

SINCE 1964

AMERIA ENGINEERING

RON A. DALLE, C.E.T.

MAIN OFFICE
P.O.Box 186
504 N. Columbia Ave
Cle Elum WA. 98922

Cell: 509-899-2375
Office: 509-674-5125
Fax: 509-674-2606
Email: rfdalle@msn.com

On-site Wastewater Treatment System with Pressure Distribution

For

Jim Hembree & Asssoc. Inc.

P.O. Box 364, Cle Elum, WA. 98922

System Design and Specifications

For
Recreational Residence
Sun Country Resort
Parcel 7, 3.00 Acres
AP # 20-14-26000-0005

Submitted
December 29th, 2006

Jim Hembree
Sun Country Resort, Parcel 7, 3.00 Acres

Pressure Distribution Worksheet

1: Determine the daily wastewater load and select a pretreatment process

a. Daily design flow: 360 gal. (120 or 150 gal/bdrm X # b.)
Peak Sewage Flow = 3 bdrm x 120 gal/day/bdrm = 360 gal/day

b. Pretreatment method: none Size:

c. Other pretreatment required? Yes No If yes, what?

none

2: Size the infiltration area

a. Required infiltration area: 360 ft² (Daily wastewater load / soil loading rate)

$$A = 360/1.0 = 360 \text{ ft}^2$$

b. Soil Type 1A; Use sand lined trenches with Quick 4 Chambers and pressure distribution.

$3_{\text{laterals}} \times 55 \text{ ft} = 165 \text{ ft}$
$2.25'_{\text{width under chambers}} \times 165'_{\text{length}} = 371.25 \text{ ft}^2$
$13_{\text{chambers}} \times 4' = 52' + 2 \text{ end caps @ } 18'' = 55.00 \text{ ft}$

$123.75 \text{ ft}^2 \times 3_{\text{laterals}} = 371.25 \text{ ft}^2$

$371.25 \text{ ft}^2 \geq 360 \text{ ft}^2$

c. Absorption Rate at Soil Interface:

Soil loading rate = 360/371.25 = 0.9696

3: Specifications and layout components of the pressure distribution network.

a. Transport:
Length: ± 80 ft.
Diameter: 1.5 in.
Material: SCH-40 PVC
Highest elevation: 5 ft.

b. Manifold:
End manifold: x Center Manifold:
Length: 20 ft
Diameter: 2 in.
Material: SCH 40 PVC
Highest elevation: 6 ft.

c. Lateral:
How many: Three (3)
Length: 55 ft.
Diameter: 1.5 in
Material: Class 200 PVC
Spacing: 9 ft
Highest elevation: 7 ft

d. Orifices:
Diameter: 3/16 in.
Spacing: 32 inches
Orientation: 12 O'clock (First &Last 6 O'clock)
How many/lateral: 21
How many total: 66

e. Manifold/lateral connection selected: Through Tee Branch

f. Cleanouts at end of laterals? Yes X No____

g. Monitoring ports? Yes (2) No____

h. Valves/fittings uses and location: 1.5" Ø SCH-40 Ball valve on discharge assembly & union. Orenco Model # HV200B-DB

4: Calculate the required pump/siphon capacity

a. Selected residual head: 2 ft.

b. Orifice discharge rate: 0.62 gpm $Q_o = 11.79\ d^2 h^{0.5}$

c. Required pump capacity: 42 gpm (orifice discharge rate x # orifices)

$$Q = (0.62)\ (67) = 41.54 \text{ gpm}$$

5: Calculate the total dynamic head in the network

Total losses due to friction: 7.1 ft

Transport line:	2.3 ft
Manifold:	0.2 ft.
Laterals:	0.3 ft
Fittings/valves :	1.0 ft
Discharge:	3.4 ft

$$F = L(Q/K)^{1.85}$$

Total elevation difference from pump outlet to top elevation: 7 ft
Selected/Required residual head: 2 ft

TOTAL DYNAMIC HEAD: 16.1 ft

6: Select a pump or siphon:

Pump/Siphon selected: **Pump Monarch WS 50 M**

7: Calculate the dose volume

a. Total number of doses/day selected/required: 8

b. Dose volume: 45 gal. (Daily design flow / #doses/day)

8: Select the method of pump operation

Demand Timer-controlled **Required**

9: Design the pump/siphon chamber or surge tank and set pump controls

a. Required volume: 1004 gal. Design Volume: 1000 gal
Dead space volume: 374.94 gal.
Daily Design Flow: 360 gal.
Emergency volume: 270.79 gal.

b. Outlet filter on septic tank? Yes x No (Optional if a pump screen is used.) Orenco model # FTW0444-36
Screened Pump Vault – Orenco model # SV1560-18 or pump vault Mfg by M-1 tanks.

c. Floats (from bottom of tank up)

Float	Function		Spacing
#1	Redundant Off	18 in.	
			6.0 in.
#2	Timer Activator	24 in.	
			15.0 in.
#3	High Water Alarm	39 in.	

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d. If a demand system, pump-run time: (Dose volume / Pump capacity)

e. Volume in piping network = 23.51 gal.

f. If timer controlled system:
Pump-on time: min- sec Pump-off time: hrs- mins.

g. Drawdown: 1⅛ in. (#gal./dose / #gal./in. in tank)

Drawdown = 45 gal / 20.83 gal/inch = 2.16 inches

45 gal + 23 gal = 68 gal

$\frac{68 \text{ gal}}{55 \text{ gal/min}} = 1.236 = 1 \text{ min } 14.16 \text{ sec}$

Timer On 1 min 15 sec

Timer OFF 2 hr 58 min

Pump Selection for a Pressurized System

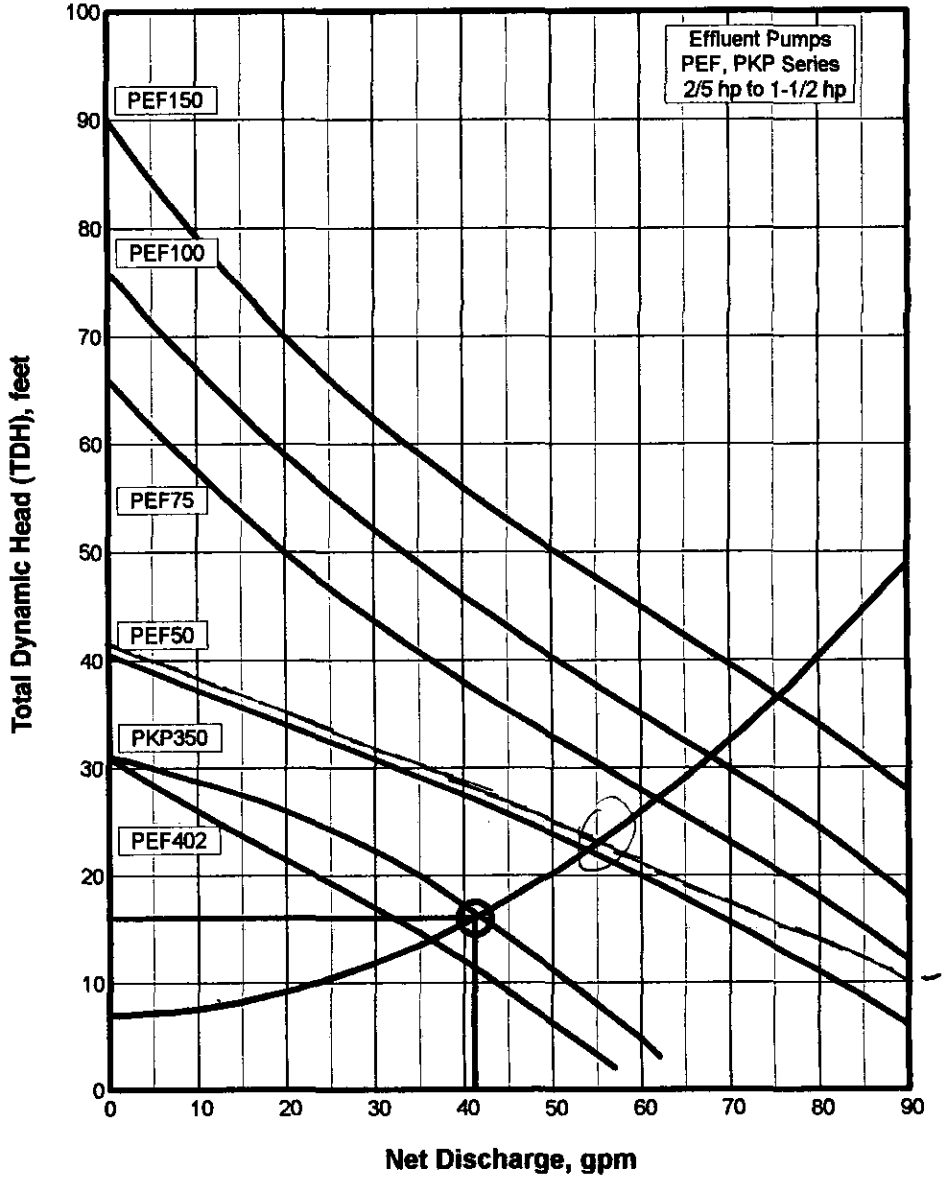
Input Parameters

Orifice Size	3/16	inches
Residual Head at Last Orifice	2.00	feet
Orifice Spacing	2.5	feet
Number of Laterals per Cell	3	
Lateral Length	53.0	feet
Lateral Line Size	1.50	inches
Lateral Pipe Class/Schedule	40	
Distributing Valve Model	None	
Manifold Length	20.0	feet
Manifold Line Size	2.00	inches
Manifold Pipe Class/Schedule	40	
Lift to Manifold	7.0	feet
Transport Length	80.0	feet
Transport Line Size	2.00	inches
Transport Pipe Class/Schedule	40	
Discharge Assembly Size	2.00	inches
Flow Meter	None	Inches
Valves & Fittings	1.0	feet

Calculations

Minimum Flow Rate per Orifice	0.62	gpm
Number of Orifices per Zone	66	
Total Actual Flow Rate	41.2	gpm
Number of Lines per Zone	3	
% Flow Differential 1st and Last Orifice	5.4	%
Lift to Manifold	7.0	feet
Residual Head at Last Orifice	2.00	feet
Head Loss in Laterals	0.3	feet
Head Loss Through Distributing Valve	0.0	feet
Head Loss in Manifold	0.2	feet
Head Loss in Transport Pipe	2.3	feet
Head Loss Through Discharge	3.4	feet
Head Loss Through Flow Meter	0.0	feet
Valves & Fittings	1.0	feet
Total Flow Rate	**41.2**	**gpm**
TDH	**16.1**	**feet**

Pump To Sand Trenches
Hembree - 7



Monarch
WS 50
55 gal/min

Orenco Systems
incorporated

814 AIRWAY AVENUE
SUTHERLIN, OREGON
97479

TOLL FREE:
(800) 348-9843

TELEPHONE:
(541) 459-4449

FACSIMILE:
(541) 459-2884

www.orenco.com

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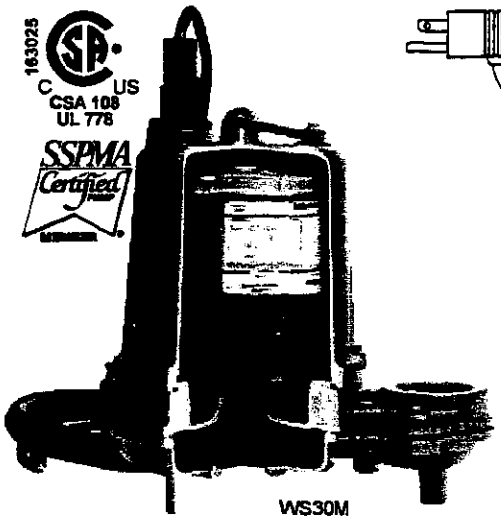
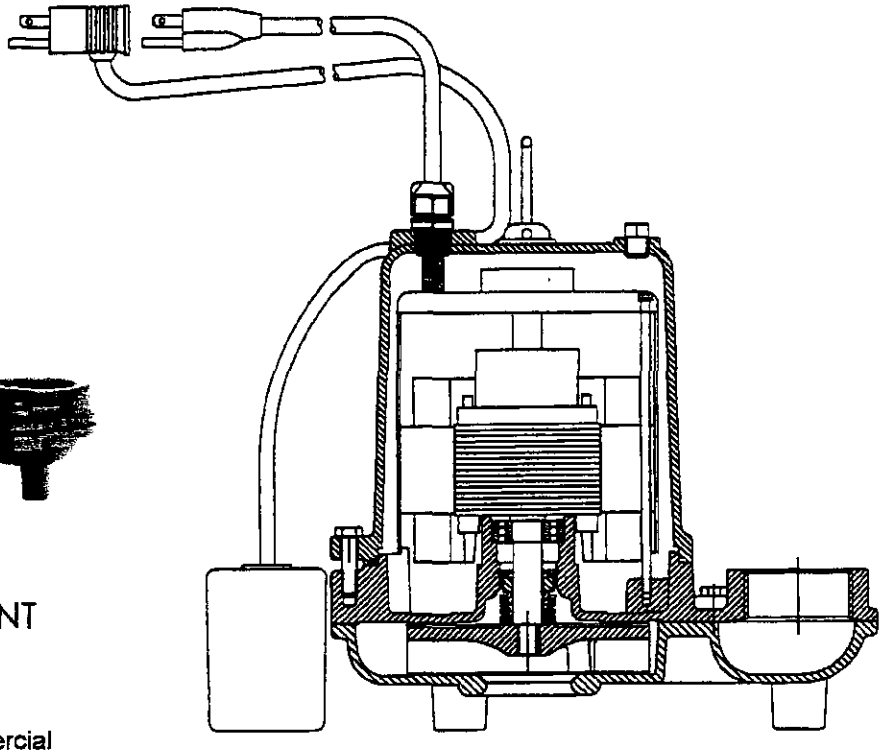


WS30M



WS SERIES
SUBMERSIBLE EFFLUENT PUMPS

Ideal for liquid effluent pumping applications, as well as light commercial applications with up to 11/16" diameter solids.

CONSTRUCTION - Motor and pump housing is Cast Iron Class 30.

CORD - Power cord sealed at motor housing. WS50, WS50H and WS100H uses SJOW. WS30 uses SJTW.

IMPELLER - Cast Iron Class 30. Solids handling non-clog impeller. Two vanes on the WS50, WS50H and WS100H. Three vanes on the WS30.

SEAL - Mechanical carbon/ceramic type 6, 5/8 rotary.

SHAFT - Motor shaft is 416 stainless steel.

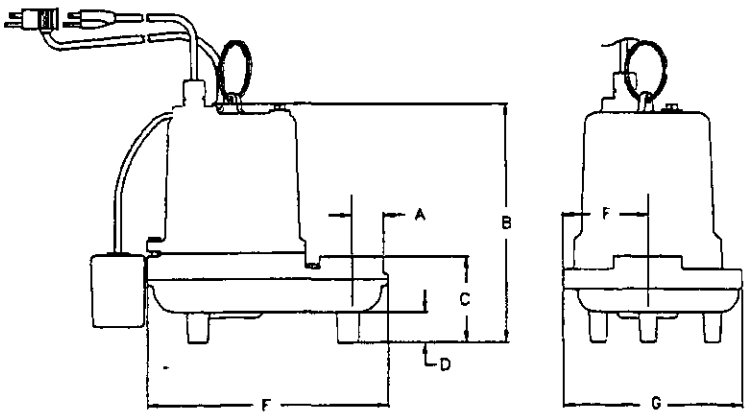
MOTOR - Oil filled chamber with automatic overload protection, double ball bearing. Capacitor Start designed for hi-torque and is thermally protected with automatic reset (single phase only).

SWITCH - *Mercury Free* float switch for automatic on-off operation; piggyback style WS30. SJE pump master used on WS50, WS50H & WS100H models.

DISCHARGE - 2" NPT. Adaptor kit for 3" NPT available.

FASTENERS - Stainless steel fasteners throughout, for serviceability.

Dimensions



Model	A	B	C	D	E	F	G
WS30	1.75	11.25	3.75	1	12.25	4.86	9.38
WS50	1.75	13.75	3.75	1	12.25	4.68	9.38
WS50H	1.75	13.75	3.75	1	12.25	4.68	9.38
WS100H	1.75	13.75	3.75	1	12.25	4.68	9.38

***Dimensions measured in inches**

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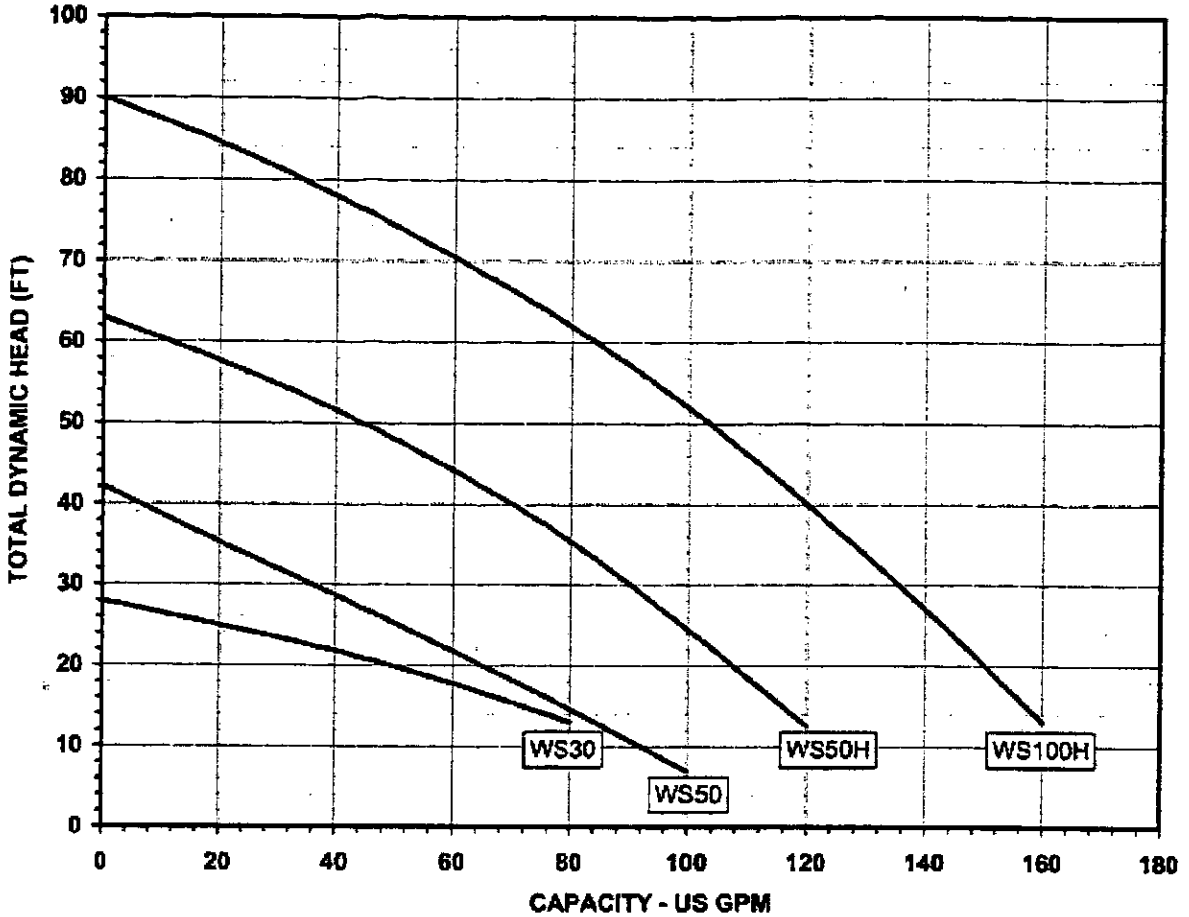

PERFORMANCE CHART

Model No.	RPM	Total Head in Feet					Shut-Off Head (ft.)
		5	10	15	20	25	
		Capacities in U.S. GPM					
WS30	1750	105	90	70	45	15	28
WS50	3450	105	92	80	64	50	42

PERFORMANCE CHART

Model No.	RPM	Total Head in Feet									Shut-Off Head (ft.)
		10	20	30	40	50	60	70	80	90	
		Capacities in U.S. GPM									
WS50H	3450	115	98	78	57	30	0	-	-	-	63
WS100H	3450	150	140	128	115	97	76	53	27	0	90

SUBMERSIBLE EFFLUENT PUMPS - AUTOMATIC AND MANUAL

Model No.	Order No.	HP	Volts	SFA	Phase	Solids Handling	Ship Wt. (lbs.)	Switch	Cord Length
WS30M	620010	1/3	115 V	10.4	1	11/16"	51	Manual	20'
WS30AM	620000	1/3	115 V	10.4	1	11/16"	53	Automatic	20'
WS50M-20	620231	½	115V	11.6	1	¾"	55	Manual	20'
WS50AM-20	620233	½	115V	11.6	1	¾"	57	Automatic	20'
WS50M-12-20	620251	½	208-230V	9.7	1	¾"	56	Manual	20'
WS50AM-12-20	620253	½	208-230V	9.7	1	¾"	58	Automatic	20'
HIGH HEAD SUBMERSIBLE EFFLUENT PUMPS - AUTOMATIC AND MANUAL									
WS50HM-20	620218	½	115 V	15.0	1	¾"	56	Manual	20'
WS50HAM-20	620219	½	115 V	15.0	1	¾"	58	Automatic	20'
WS50HM-12-20	620220	½	208-230V	9.7	1	¾"	56	Manual	20'
WS50HAM-12-20	620221	½	208-230V	9.7	1	¾"	58	Automatic	20'
WS100HM-12-20	620222	1	208-230V	13.6	1	¾"	57	Manual	20'
WS100HAM-12-20	620223	1	208-230V	13.6	1	¾"	59	Automatic	20'
WS100HM-32	620207	1	208-230V	6.2	3	¾"	62	Manual	30'
WS100HM-34	620206	1	460 V	3.1	3	¾"	62	Manual	30'

30' cord length models are available, please contact factory.

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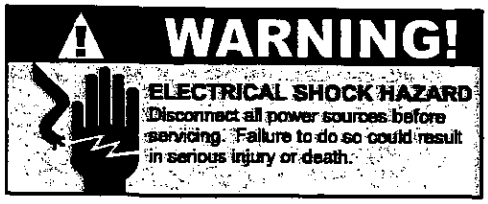
Timed Dosing Control

SJE-Rhombus® Type TD

Installation Instructions and Operation/Troubleshooting Manual



TDIW114H4BD

Warranty void if panel is modified.

Call factory with servicing questions:

1-800-RHOMBUS

(1-800-746-6287)

Manufactured by:

SJE Rhombus® CONTROLS

22650 County Highway 6 ■ P.O. Box 1708
Detroit Lakes, Minnesota 56502 USA
1-888-DIAL-SJE (1-888-342-5753)
Phone: 218-847-1317 ■ Fax: 218-847-4617
E-mail: sje@sjerhombus.com
Website: www.sjerhombus.com

Printed in USA
PN1010434B • Rev 01/01

This control panel must be installed and serviced by a licensed electrician in accordance with the National Electric Code NFPA-70, state and local electrical codes.

All conduit running from the sump or tank to the control panel must be sealed with conduit sealant to prevent moisture or gases from entering the panel. **NEMA 4X enclosures are for indoor or outdoor use,** primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water and hose-directed water. **Cable connectors must be liquid-tight in NEMA 4X enclosures.**

Installation

Type TD control panels are designed to operate with two, three or four float systems. The two float system utilizes one float as the "low level cutout", the second as "high level alarm". A three float system adds either a "redundant off" float or a "timer override" float to the "low level cutout" and "high level alarm" functions. A four float system includes a "redundant off float", a "low level cut-out" float, a "timer override" float, and a "high level alarm" float.

NOTE: Options ordered may affect the number of floats and their functions. Please reference the schematic provided with the control panel.

Installation of Floats

CAUTION: If control switch cables are not wired and mounted in the correct order, the pump system will not function properly.

WARNING: Turn off all power before installing floats in pump chamber. Failure to do so could result in serious or fatal electrical shock.

1. Use float label kit to identify and label cables on both the float and stripped ends (low level cutout, alarm, etc.). See schematic for float options.
2. Determine your normal operating level and desired float configuration, as illustrated in **Figures 1-4**.
3. Mount float switches at appropriate levels as illustrated in **Figures 1-4**. Be sure that floats have free range of motion without touching each other or other equipment in the basin.
4. For mounting clamp installation: place the cord into the clamp as shown in **Figure 5**. Locate the clamp at the desired activation level and secure the clamp to the discharge pipe as shown in **Figure 5**.

   NOTE: Do not install cord under hose clamp.
5. Tighten the hose clamp using a screwdriver. Over tightening may result in damage to the plastic clamp. Make sure the float cable is not allowed to touch the excess hose clamp band during operation.

   NOTE: All hose clamp components are made of 18-8 stainless steel material. See your SJE-Rhombus® supplier for replacements.
6. If using an optional redundant off float, mount slightly below the low level cutout float, but above the pump as illustrated in **Figures 2 & 4**.
7. If using an optional timer override float, position it at a level in the basin as shown in **Figure 3 & 4**.

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Installation Instructions

Mounting the Control Panel

1. Determine mounting location for panel. If distance exceeds the length of either the float switch cables or the pump power cables, splicing will be required. For outdoor or wet installation, we recommend the use of an SJE-Rhombus® *liquid-tight junction box with liquid-tight connectors* to make required connections. **You must use conduit sealant to prevent moisture or gases from entering the panel.**

2. Mount control panel with mounting devices furnished.

3. Determine conduit entrance locations on control panel. Check local codes and schematic for the number of power circuits required.

NOTE: Be sure the proper power supply voltage, amperage, and phase meet the requirements of the pump motor being installed. If in doubt, see the pump identification plate for voltage/phase requirements.

4. Drill proper size holes for type of connectors being used.

NOTE: If using conduit, be sure that it is of adequate size to pull the pump and switch cables through.

5. Attach cable connectors and/or conduit connectors to control panel.

FOR INSTALLATION REQUIRING A SPLICE, FOLLOW STEPS 6-10; FOR INSTALLATION WITHOUT A SPLICE, GO TO STEP 11.

6. Determine location for mounting junction box according to local code requirements. **Do not** mount the junction box inside the sump or basin.

7. *Mount junction box to proper support.*

8. Run conduit to junction box. Drill proper size holes for the type of conduit used.

9. Identify and label each wire before pulling through conduit into control panel and junction box. Make wire splice connections at junction box.

10. Firmly tighten all fittings on junction box.

11. If a junction box is not required, pull cables through conduit into control panel.

12. Connect pump wires and float switch cables to the proper *terminals as seen in* ***Figures 6 & 7****. If the redundant off* float is not required, place a jumper wire across TB1-7 and TB1-8.

13. Connect pump/control and alarm incoming power conductors to proper position on terminals. See schematic and wiring diagram for terminal connections.

VERIFY CORRECT OPERATION OF CONTROL PANEL AFTER INSTALLATION IS COMPLETE.

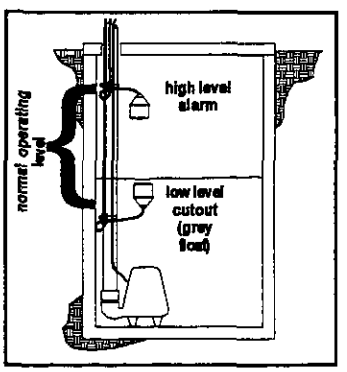


FIGURE 1 - Two float system

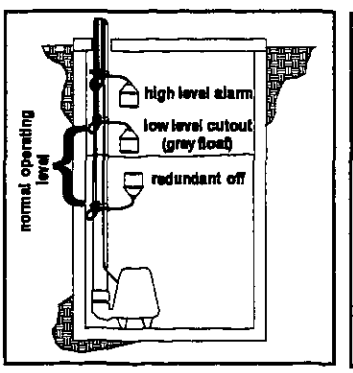


FIGURE 2 - Three float system with redundant off

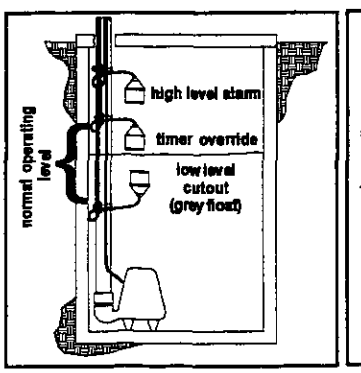


FIGURE 3 - Three float system with timer override

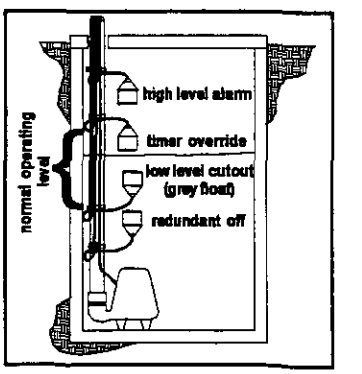


FIGURE 4 - Four float system

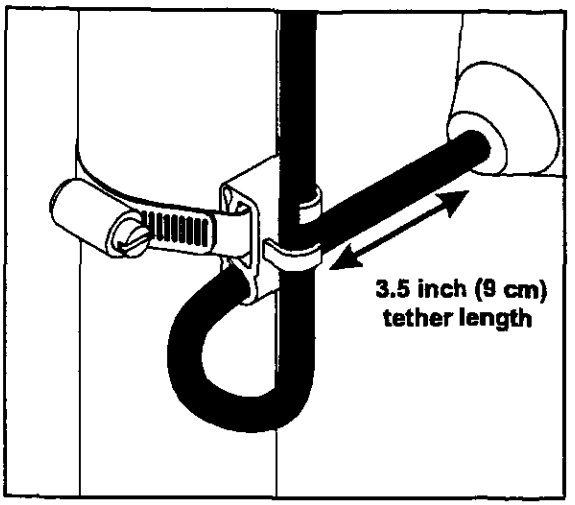


FIGURE 5 - Mounting clamp detail.

Option 4E
Redundant Off / Alarm Activation
Wiring Diagram

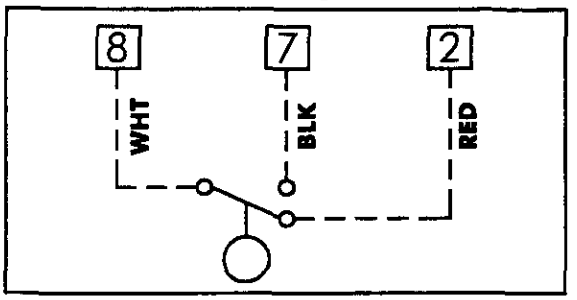


FIGURE 7 -
Redundant off pump

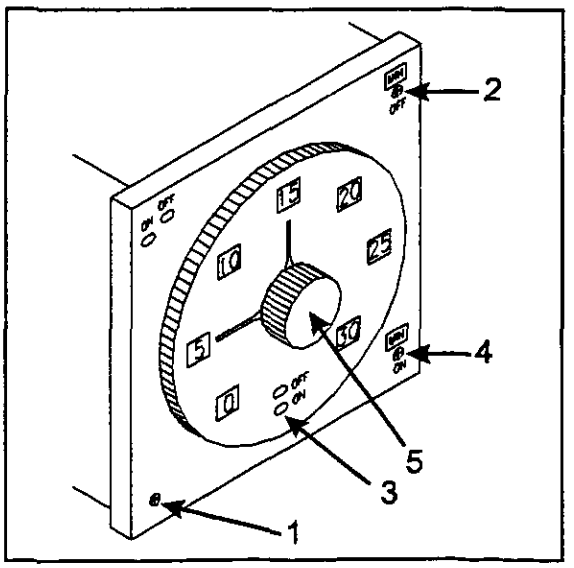


FIGURE 8 - Timer detail

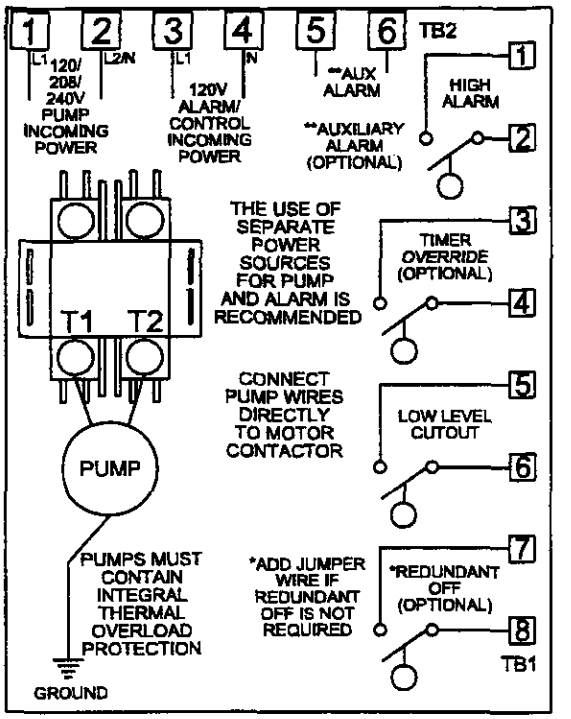


FIGURE 6 -
TD wiring diagram

Setting the timer

Remove the timer by clipping the tie strap and pulling it straight out of the socket.

1. Determine the pump "on & off" time and turn the adjustment screw **(1)** so that the most appropriate range of numbers (usable for both the on and off cycles) is visible in the windows on the dial face.

2. Adjust the off time range selector **(2)** to the appropriate period. (e.g.: minutes).

3. Adjust the outer dial **(3)** so the green pointer indicates the off time period required. (e.g.:15)

4. Adjust the on timer range selector **(4)** to the appropriate period (e.g.: minutes).

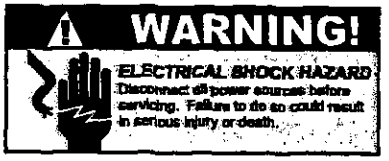
5. Adjust the inner dial **(5)** so the red pointer indicates the on time period required. (e.g.: 5)

6. When setting is complete, place the timer back in the socket.

7. In the example shown, the pump would be off for 15 minutes and then on for 5 minutes. This cycle would continue as long as there was enough liquid in the tank to float the low level cutoff switch.

NOTE: "OFF" time is cycled first.

Operations & Troubleshooting



TD series control panels are available for use with two, three or four float combinations. In a two float system, one float in the tank is the "low level cutout" float while the other is a "high level alarm" float. The normal operating level should be between the "low level cutout" position and the "high level alarm" position.

The TD panel can be installed with a choice of three float systems. One choice adds a "redundant off" float which is positioned slightly below the "low level cutout" grey float, but above the pump. The normal operating level shall be between the "low level cutout" position and the "high level alarm" position. The other choice adds a "timer override" float which is positioned between the "low level cutout" (grey float) and the "high level alarm" float. Normal operating level should be between the "low level cutout" float and the "timer override" float.

A four float system includes a "redundant off" float, a "low level cutout" float, a "timer override" float and a "high level alarm" float. The "timer override" float gives you the option of pumping from the basin while the timer is in the "off" cycle. It is only intended for times of abnormally high liquid level inrushes. The normal operating level should be between the "low level cutout" float and the "timer override" float.

The control panel begins timing the "off" sequence when the "low level cutout" float is activated. Once the timer completes the "off" sequence, the timer will start the pump and continue to run until the programmed "on" sequence is complete. At this point the "off" sequence begins timing again and the cycle repeats.

Float Controls

1. Check the floats during their entire range of operation. Clean, adjust, replace and repair damaged floats.

2. Measure the float resistance to determine if the float is operating properly.

To measure float resistance:

a. Isolate the float by disconnecting one or both of the float leads from the float terminals.

b. Place one ohmmeter lead on one of the float wires, and the other ohmmeter lead on the other float wire.

c. Set the ohmmeter dial to read ohms and place on the R X 1 scale. With the float in the "off" position, the scale should read infinity (high resistance), if not replace the float.

With the float in the "on" position, the scale should read close to zero, if not replace the float. **Readings may vary depending on the accuracy of the measuring device.**

Magnetic Contactor Coil

To measure the coil, disconnect one of the coil leads. Measure the coil resistance by setting the ohmmeter on the R X 1 scale. A defective coil will read zero indicating a short, or infinity (high resistance) indicating an opened coil. Replace defective contactor.

Fuses

To check the continuity of the fuse, pull the fuse out of the fuse holder. With the ohmmeter on the R X 1 scale, measure resistance. A reading of infinity (high resistance) indicates a blown fuse that must be replaced with a fuse of the same type, voltage, and amp rating.

Alarm Light

Activate the alarm float. The alarm light should turn on. If not, replace the bulb with that of the same type.

Alarm Horn

Activate the alarm float. The alarm horn should turn on. If not, replace the horn with that of the same type.

SJE-Rhombus® Three-Year Limited Warranty

SJE-RHOMBUS® warrants to the original consumer that this product shall be free of manufacturing defects for three years after the date of consumer purchase. During that time period and subject to the conditions set forth below, **SJE-RHOMBUS®** will repair or replace, for the original consumer, any component which proves to be defective due to defective materials or workmanship of **SJE-RHOMBUS®**.

ELECTRICAL WIRING AND SERVICING OF THIS PRODUCT MUST BE PERFORMED BY A LICENSED ELECTRICIAN.

THIS WARRANTY DOES NOT APPLY: (A) to damage due to lightning or conditions beyond the control of **SJE-RHOMBUS®**; **(B)** to defects or malfunctions resulting from failure to properly install, operate or maintain the unit in accordance with printed instructions provided; **(C)** to failures resulting from abuse, misuse, accident, or negligence; **(D)** to units which are not installed in accordance with applicable local codes, ordinances, or accepted trade practices, and **(E)** to units repaired and/or modified without prior authorization from **SJE-RHOMBUS®**.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

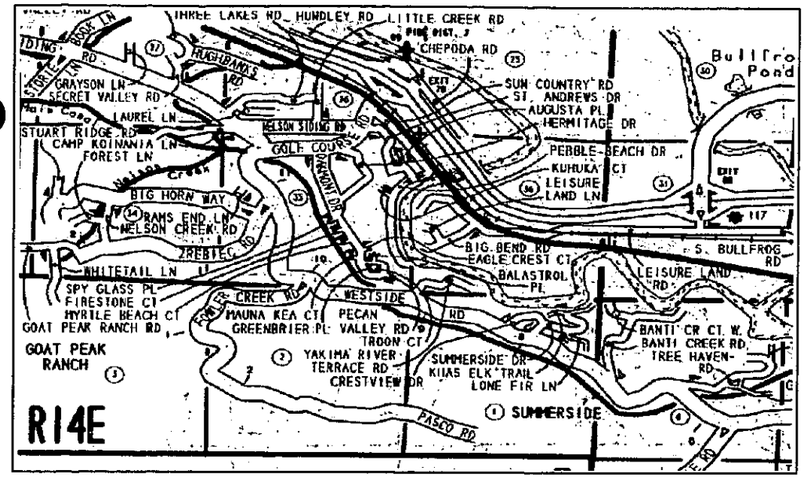
TO OBTAIN WARRANTY SERVICE: The consumer shall assume all responsibility and expense for removal, reinstallation, and freight. Any item to be repaired or replaced under this warranty must be returned to **SJE-RHOMBUS®**, or such place as designated by **SJE-RHOMBUS®**.

ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS ARE LIMITED TO THE DURATION OF THIS WRITTEN WARRANTY. SJE-RHOMBUS® SHALL NOT, IN ANY MANNER, BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES AS A RESULT OF A BREACH OF THIS WRITTEN WARRANTY OR ANY IMPLIED WARRANTY.

SUN COUNTRY GOLF COURSE

Part of Sections 26, 35 & 36,
T.20N, R.14E., W.M.
Kittitas County, State of Washington

Survey References: Book 32 of
Surveys, Page 206, Records of
Kittitas County, State of Washington



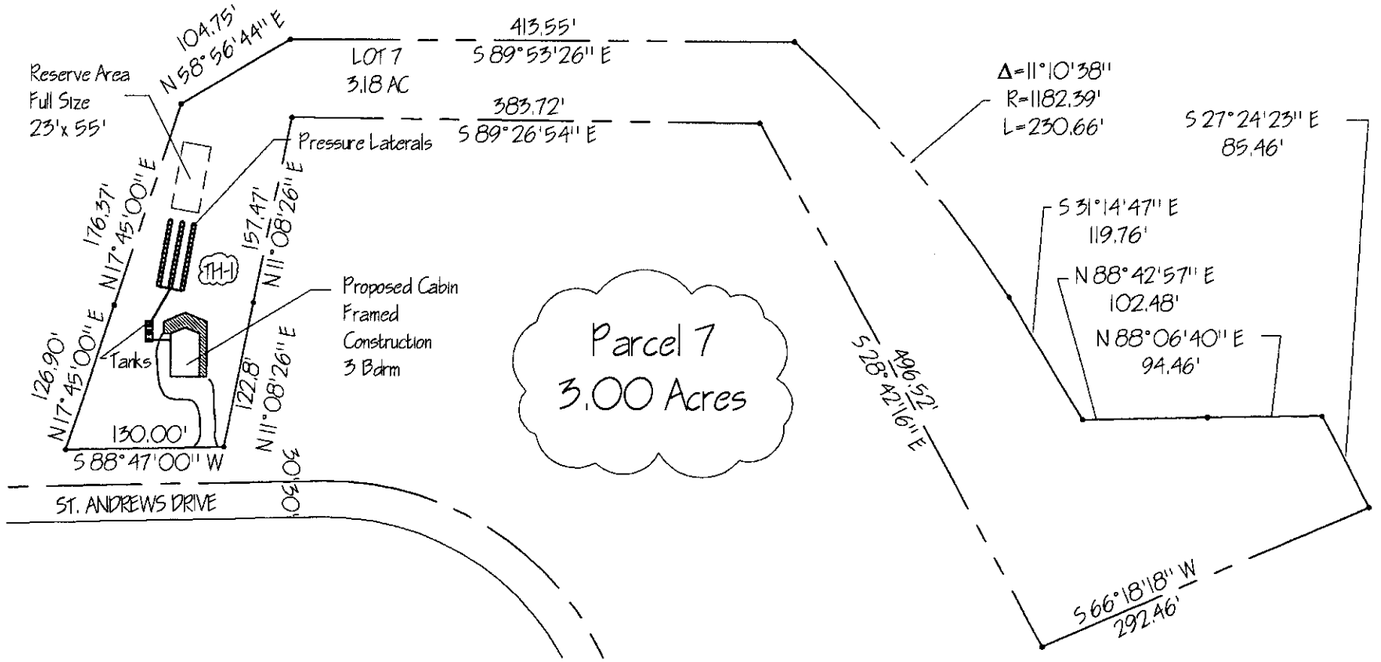
Vicinity Map NTS

General Notes:

1. All work shall be in accordance with the Uniform Plumbing Code; WA. State Dept. of Health Chapter 246-272 WAC On-Site Sewage Systems JAN.1,95 and the National Electrical Code
2. System designed in Accordance With:
   a) Kittitas County Health Dept. Site Evaluation Report
   b) DOH Guidlines For Approved Systems and Products; November 2000
   c) DOH Guidelines For Pressure Systems; April 1999
   d) DOH Guidelines For Sand Lined Trench Systems; April, 1999
3. All Construction Inspections by Kittitas County Health Department and Engineer/ Designer

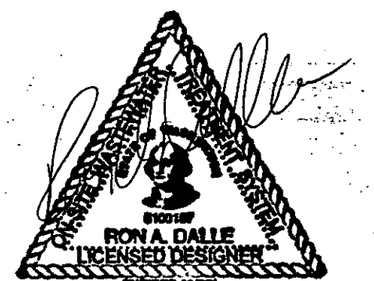
Legend:

E.G. ~ Existing Grade	TH ~ Soil Log Test Holes
F.G. ~ Finish Grade	E.L. ~ Elevation
TBM ~ Tempory Bench Mark	D ~ Drains
P/L ~ Property Line	E ~ Underground Power
98.3 ~ Existing Elevation	Tel ~ Underground Telephone



Site Plan
1" = 125'-0"

Original Tax Parcel #
21-14-26000-0005



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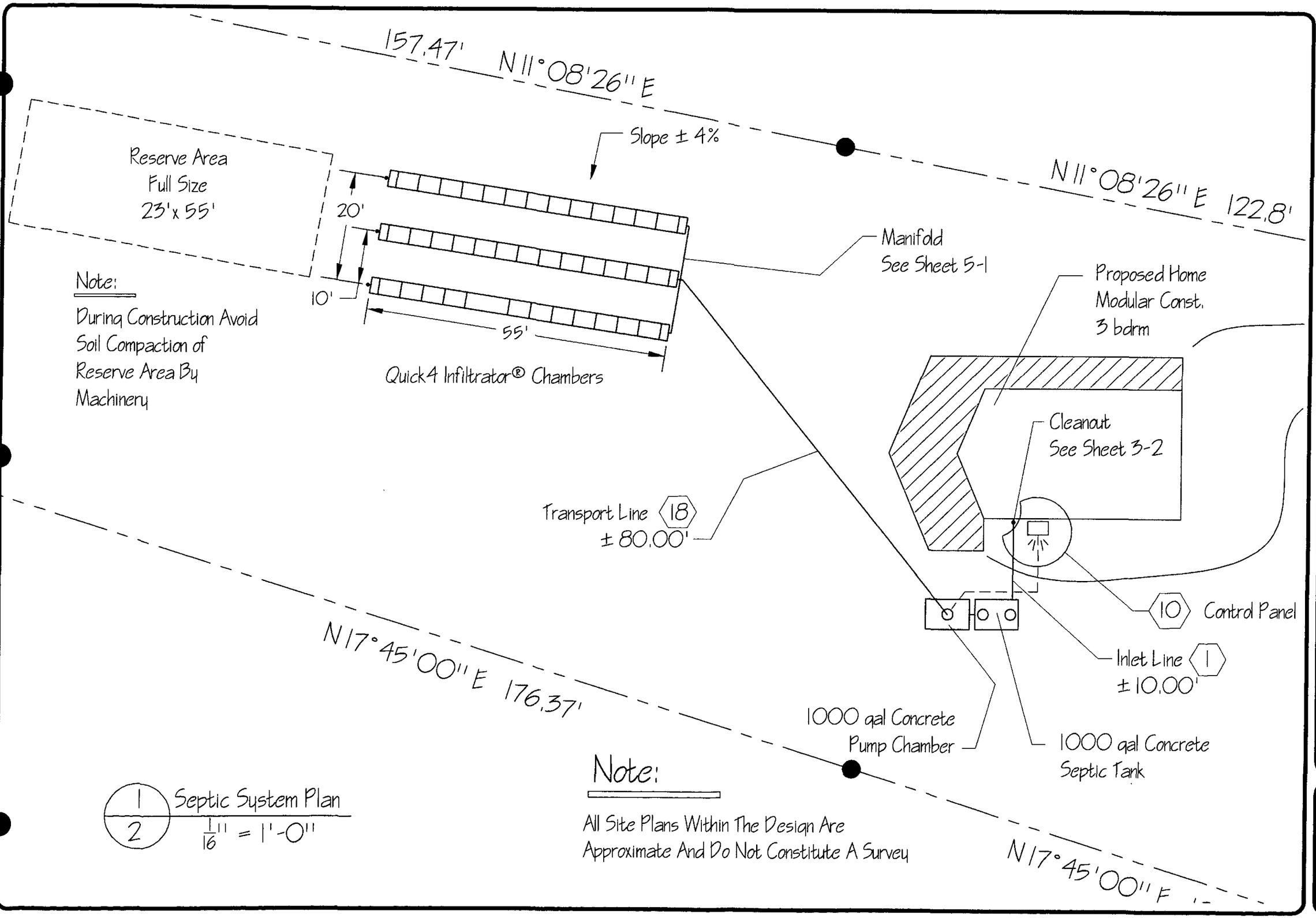
(509) 674-5125

Jim Hembree
P.O. Box 364
Cle Elum, WA. 98922

O/S Sewer System

12/29/06



Note:

During Construction Avoid Soil Compaction of Reserve Area By Machinery

Note:

All Site Plans Within The Design Are Approximate And Do Not Constitute A Survey

1/2 Septic System Plan

1/16" = 1'-0"

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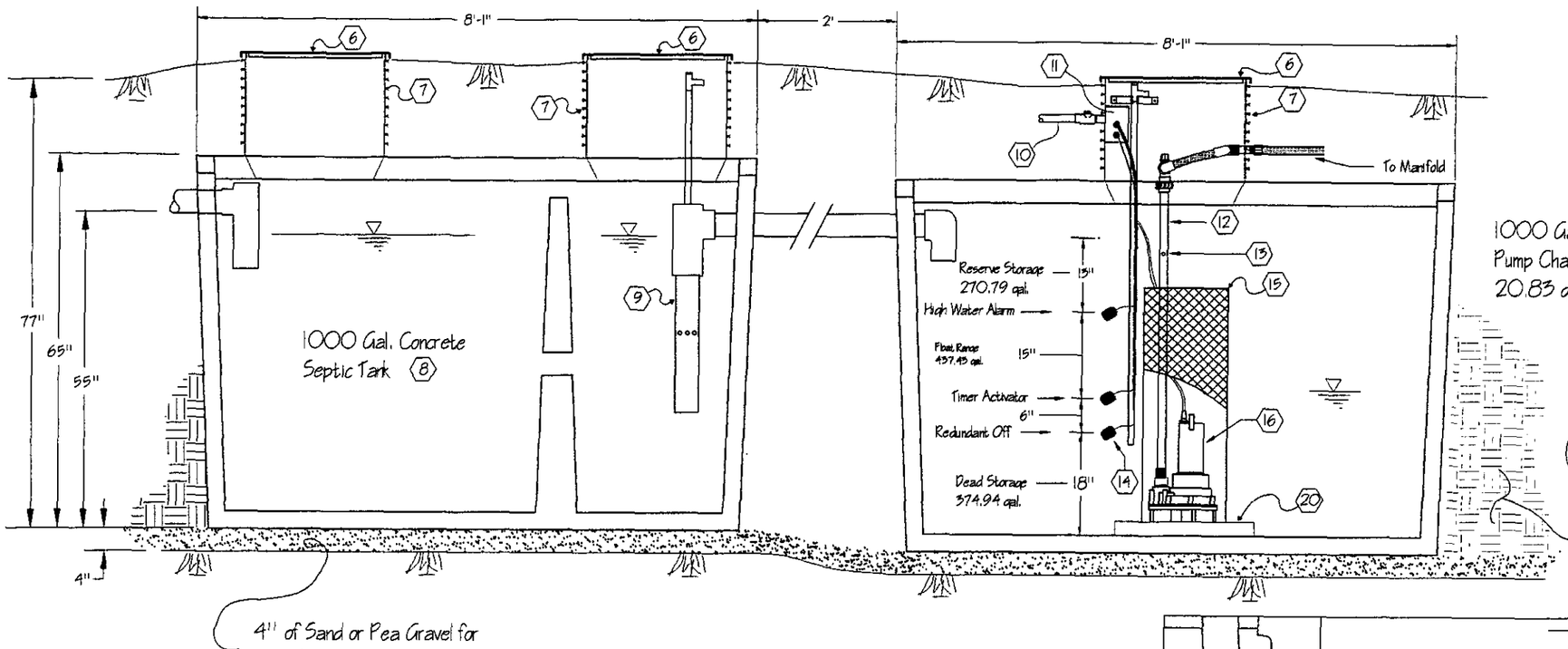


1000 Gallon Concrete
Pump Chamber (17)
20.83 gal/ inch

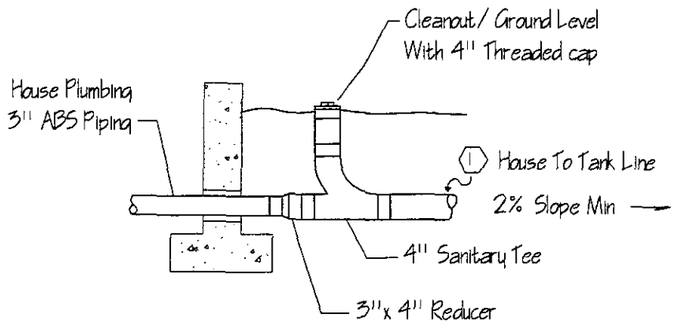
Always Use The Inlet Side of Pump Chambers For Increased Capacity. Carefully Back fill Tanks and Risers in 6" to 12" Lifts. With Select Free Draining Native soil, Free of vegetation, Wood and Aggregate over 2" Diameter.

4" of Sand or Pea Gravel for
Tank Bedding and Leveling

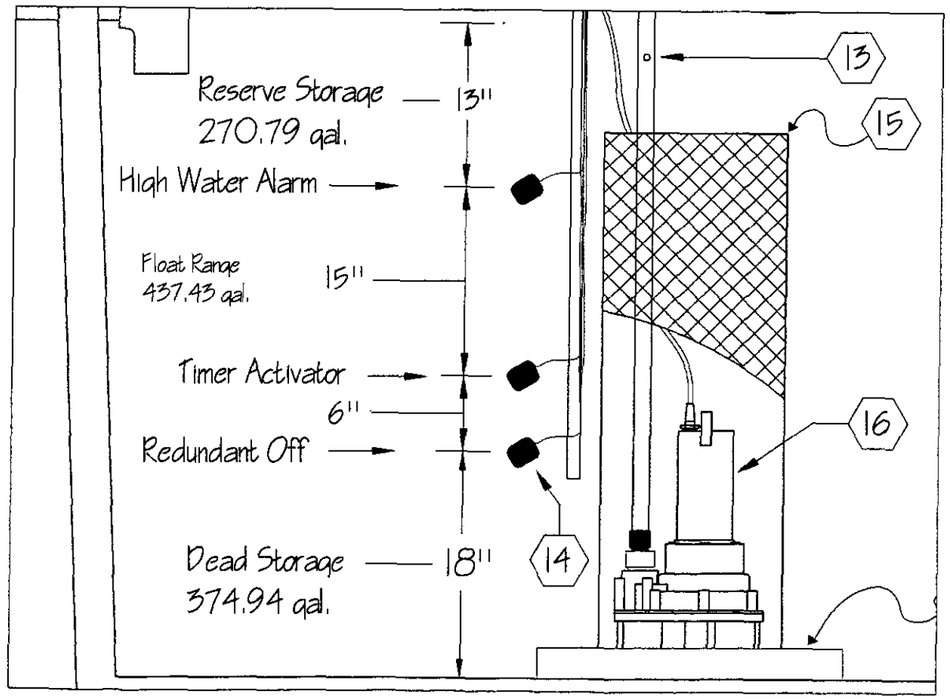
Note:

Tanks Shown Are Manufactured by M-I Tank; Mosses Lake, WA.
If Other Approved Manufactures Tanks are Used Float Settings Must be Recalculated by Designer.

1/3 Tank Section
1/2" = 1'-0"



2/3 Foundation Detail (Typical)
Not to Scale



3/3 Exploded view (float detail)
1" = 1'-0"

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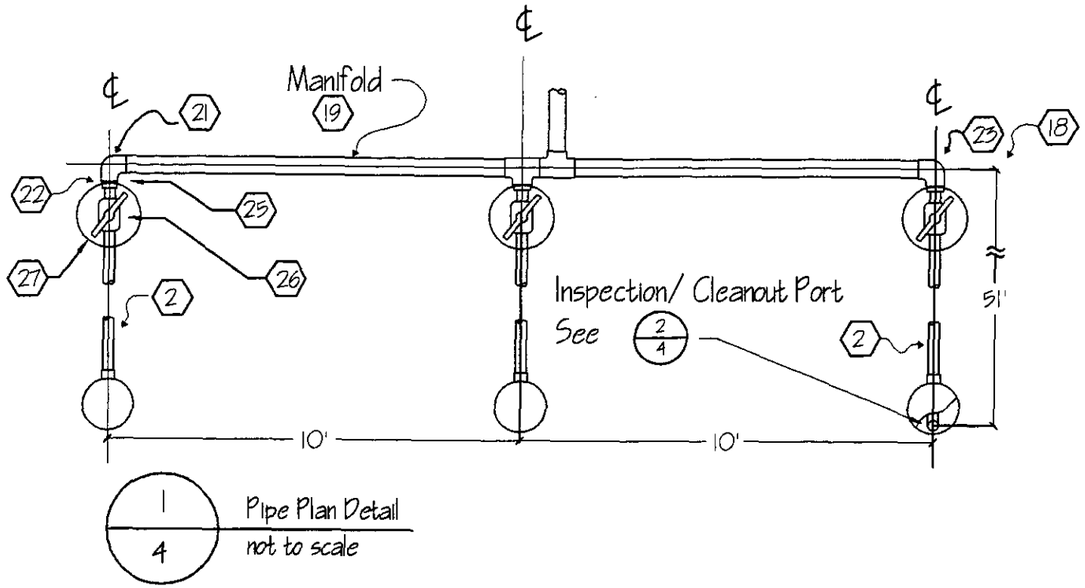
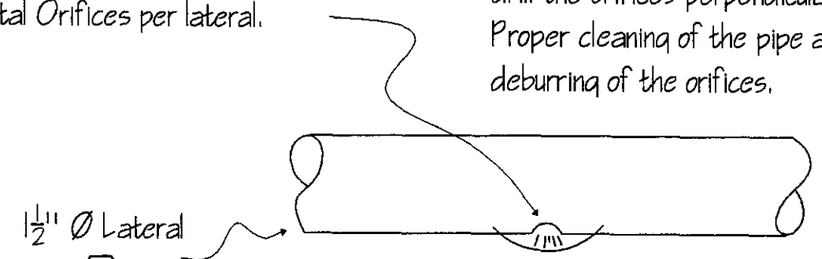
3 of 7



1/4 Pipe Plan Detail
not to scale

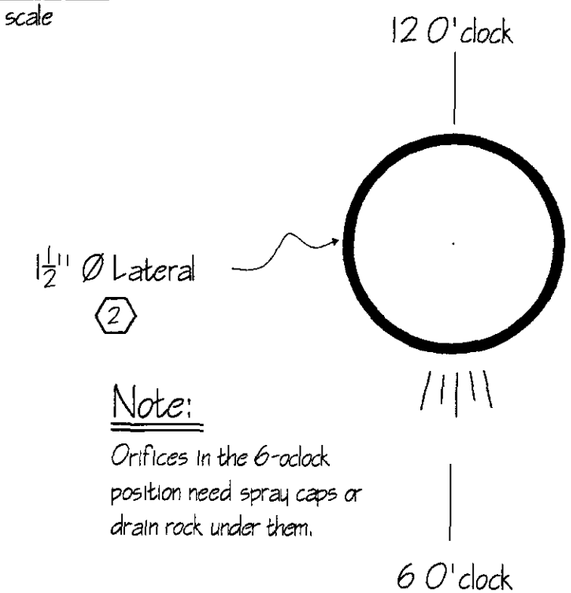
All Orifices $\frac{3}{16}$" Ø
20 Orifices per Lateral at 12 O'clock. One at 6-O'clock at the beginning and end of each Lateral. 22 total Orifices per lateral.



3/4 Orifice Detail
not to scale

Note:

Proper technique and practice should be used in drilling the orifices. This includes using proper drill sizes, sharp bits and drill stabilizing tools to prevent wobble and to drill the orifices perpendicular to the pipe. Proper cleaning of the pipe and careful deburring of the orifices.



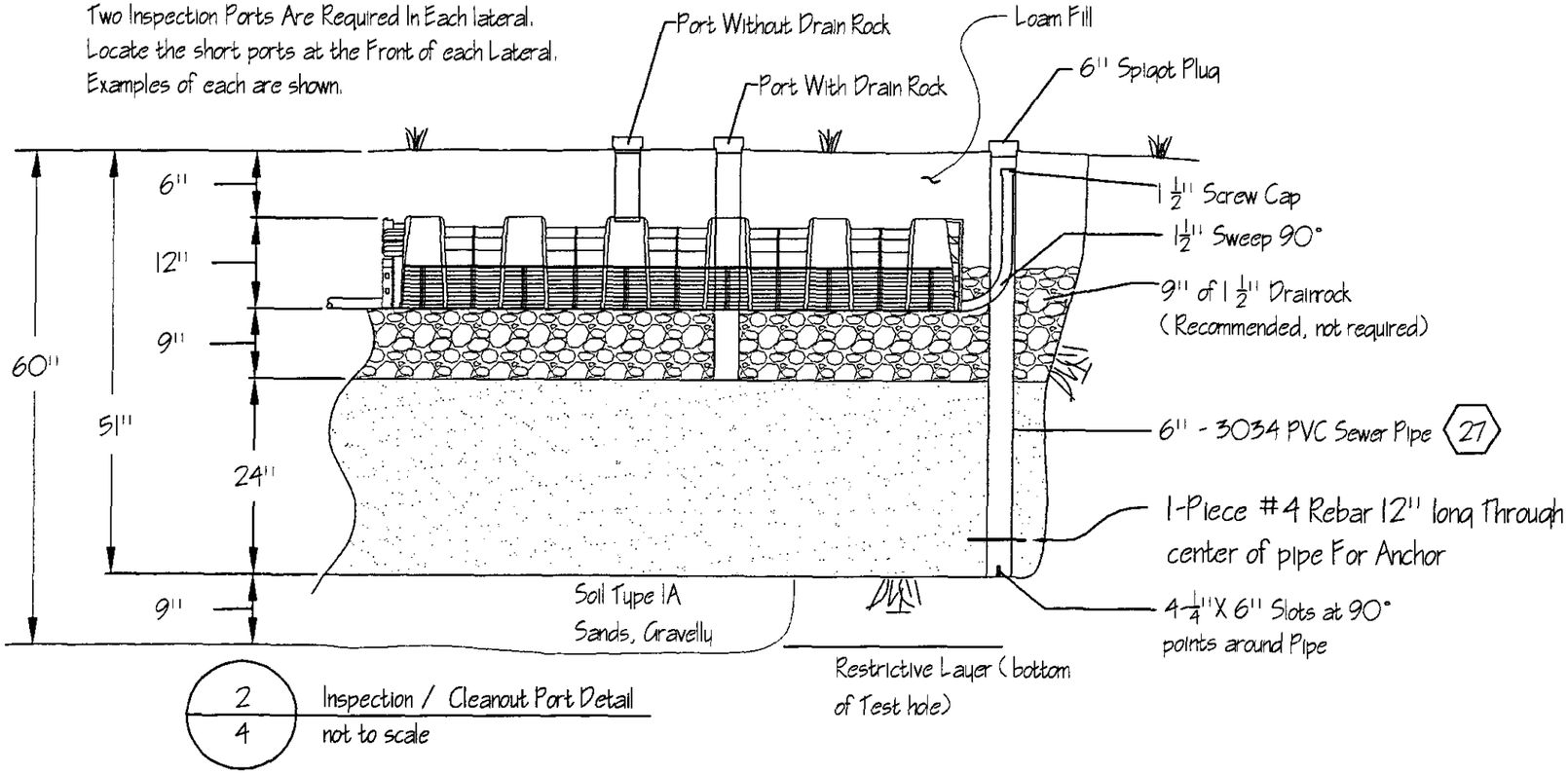
Note:

Orifices in the 6-oclock position need spray caps or drain rock under them.

4/4 Orifice Section
not to scale

Note:

Two Inspection Ports Are Required In Each lateral. Locate the short ports at the Front of each Lateral. Examples of each are shown.



2/4 Inspection / Cleanout Port Detail
not to scale

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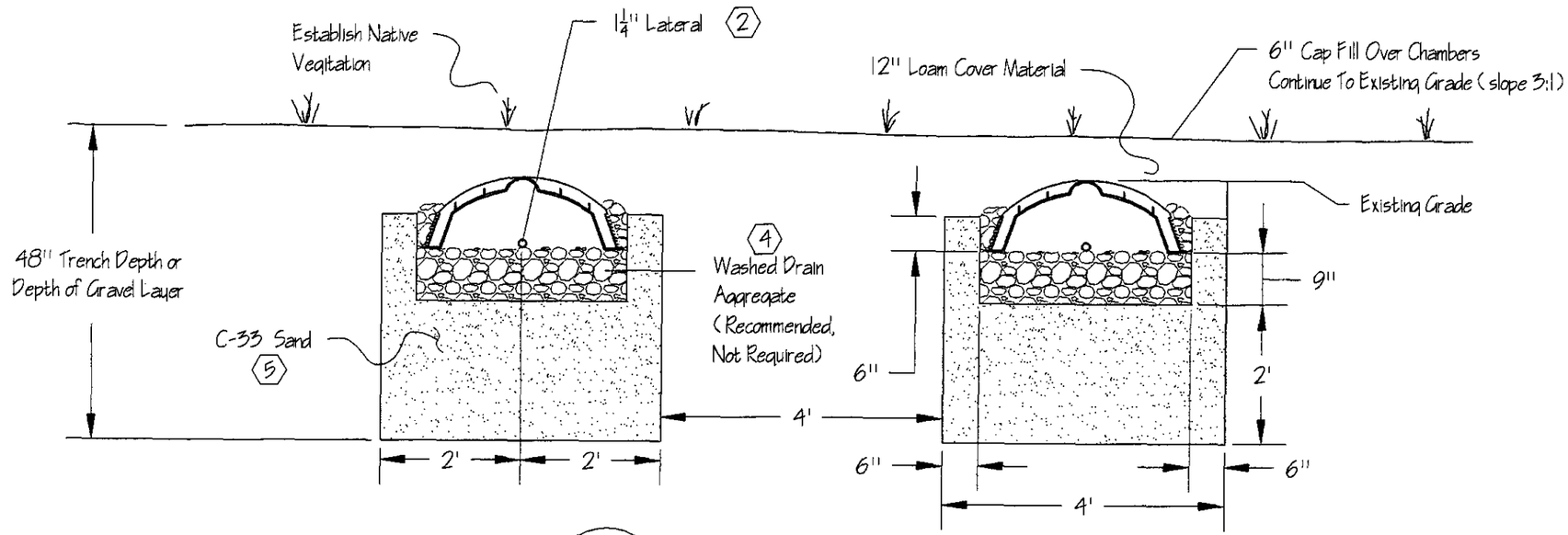
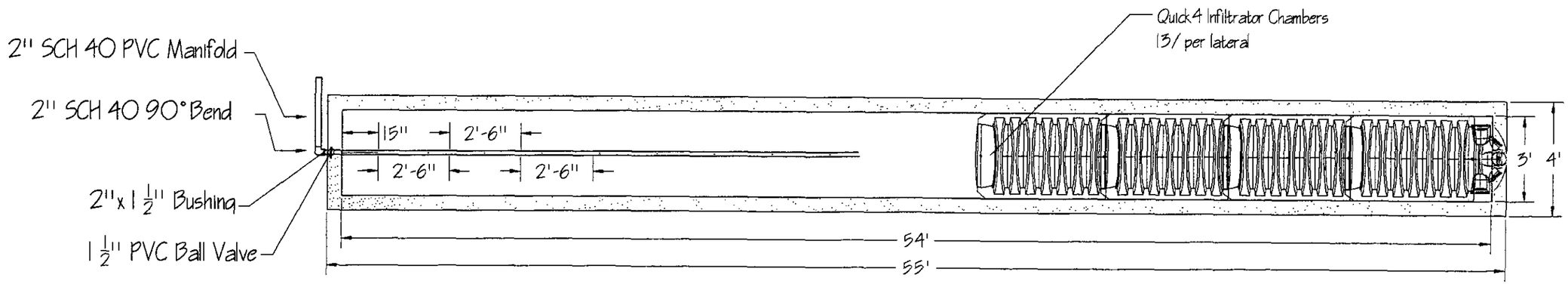


1/5 Lateral Section

½" = 1'-0"



2/5 Orifice Plan

¼" = 1'-0"

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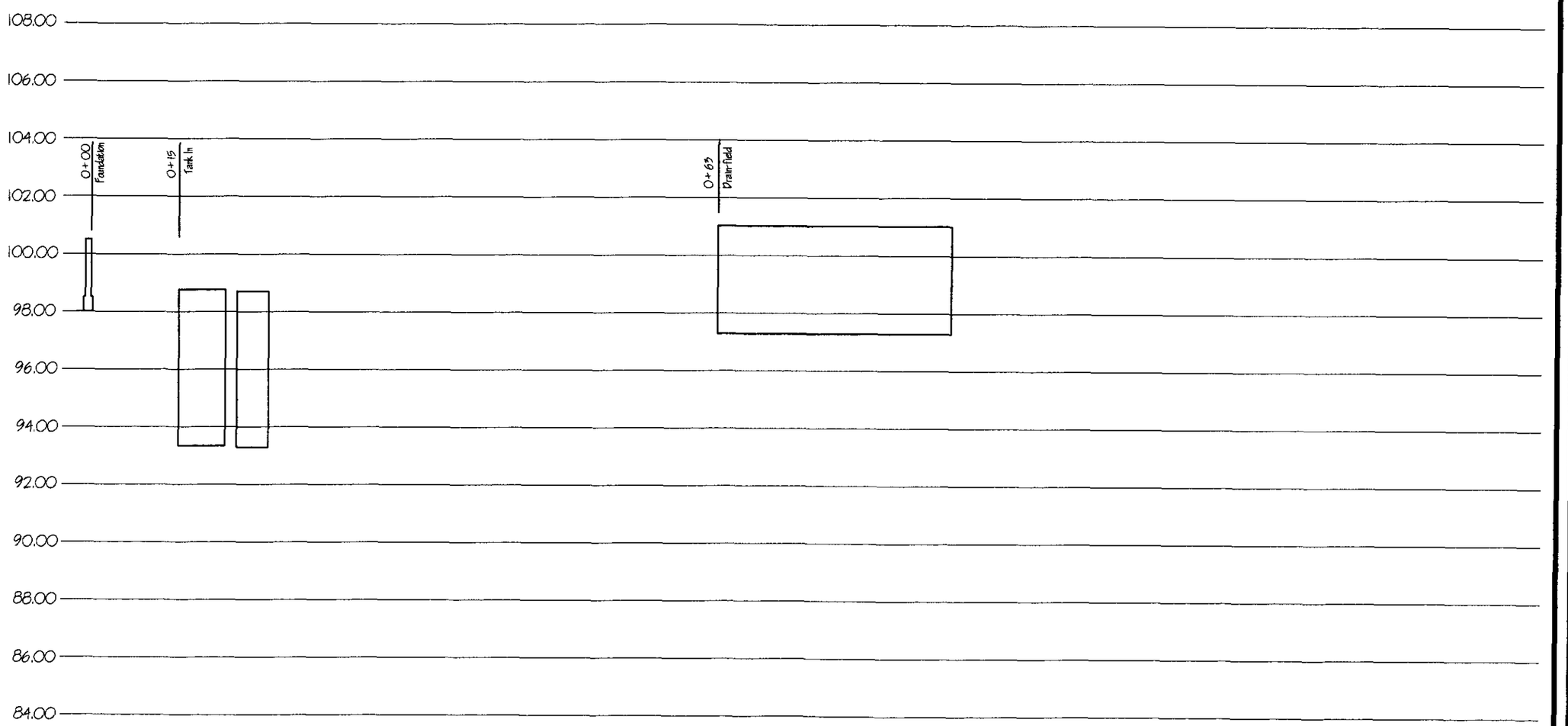

1
6
Profile

1" = 20'-0" H
1" = 4'-0" V

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O/S Sewer System

12/29/06

Construction Notes:

1. House Sewer Pipe Shall Be 4" Ø ,3034 PVC or ABS Sewer Pipe Tightline; Maintain 2% grade
2. 1½" Ø Class 200 PVC Lateral Pipe
3. Geotextile Fabric, Mirafi 14 ons, Grab 90lb. Water Flow Rate 140 qpm/ sf or approved equivalent.
4. Washed Drain Rock (Round not Crushed) ⅞" to 1½" Ø Amount Passing #200 Sieve Less than 0.5 %.
5. Medium Sand (ASTM C-33)

Sieve	% Passing
⅜"	100
#4	95-100
#8	80-100
#16	50-85
#30	25-60
#50	10-30
#100	2-10

Not more than 45 % passing any one sieve and retained on the next sieve, fineness modulus 2.3 < 3.1

Contractor Note:

The filter media must meet the particle size criteria detailed to the left. Media used in constructing a sand-lined trench must be accompanied with a written certification from the supplier that the media fully conforms to ASTM C-33 as dertermined by ASTM D136 and ASTM C-117.

6. 24"Ø Fiberglass Lid w/ ss bolts and urethane gasket. OSI-FL 236 [1] [3]
7. 24" Ø Ribbed PVC Riser, W/ bolt catches for lid. OSI-RR24-12, use cast in place tank adapter or grooved tank adapter; [1] [3]
8. 1000 Gal. Concrete Septic Tank, [4] or from other DOH approved concrete tank supplier.
9. Effluent Filter w/ ⅛" Mesh Cartridge; Boltube Model FTWO444-36; [1] [2]
10. Electrical Conduit Routed 18" Below Grade to Power Source. Provide 2-Branch Circuits From Electrical Panel. One Circuit for Effluent Pump and controls, and a separate alarm circuit. Use SRE Rhombus Model TDIWII4H4BD Alarm & Control Panel.; [1] [4] . Mount Alarm on West side of home as shown.
11. Splice Box, w/ 4 Cord Grips & 1 outlet; Model OSI-SB4; [1] [2]
12. Orenco Discharge Assembly Model # HV2003-DB; [1] [2]
13. 3/16" Ø Orifice at Bottom of Pipe For Transport Pipe Vent & drain after shut down. Also must Prevent Anti-Siphon.
14. Floats are Included With The Rhombus Panel. 1-20' NO Wide Angle Float Switch (mechanical) & 2-20' NO Narrow Angle Float Switches (mercury) [1] [4]
15. Universal Biotube Pump Vault-Orenco SV1560-18; [1] , [2]
16. Monarch; WS 50 pump; Series Design Point at 41.2 qpm @ 12.9 ft. TDH; [1] [2]
17. 1000 Gallon Concrete Pump Chamber; [4] , or from Another Approved DOH Supplier.
18. 2" Ø Sch-40 PVC Transport Pipe
19. 2" Ø Sch-40 PVC Manifold Pipe
20. 2" Concrete Pump Vault Support
21. 2" Ø SCH-40 PVC 90° Bend
22. 2" x 1 ½" Ø SCH-40 PVC Bushing
23. 2" Ø SCH-40 PVC Flow Thru Tee Branch
24. ~~Quick4 Infiltrator® Chambers; [1] , [3] .~~
25. ~~3" x 2" SCH 40 PVC Bushing~~
26. 1 ½" Ø SCH-40 PVC Flow Control Valve. [1] , [2] .
27. 6" 3034 PVC Sewer Pipe With Caps; [3] .

[1] Available From HD Fouler, Wenatchee, WA. 1-509-886-8804

[2] Orenco Systems, Inc. Sutherlin, OR. 1-800-348-9843

[3] United Pipe & Supply; Wenatchee, WA. 1-509-662-7128

[4] M-1 Tank; Moses Lake, WA. 1-509-766-2914

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O/S Sewer System

12/29/06

O/S WASTEWATER
TS DESIGNER

SINCE 1964

AMERIA ENGINEERING

RON A. DALLE, C.E.T.

MAIN OFFICE
P.O.Box 186
504 N. Columbia Ave
Cle Elum WA. 98922

Cell: 509-899-2375
Home: 509-674-5125
Fax: 509-674-2606
Email: rfdalle@msn.com

On-site Wastewater Treatment System with Pressure Distribution

for

Jim Hembree & Asssoc. Inc.

P.O. Box 364, Cle Elum, WA. 98922

For
Recreational Residence
Sun Country Resort
Parcel 7, 3.00 Acres
AP # 20-14-26000-0005

December 29th, 2006

TABLE OF CONTENTS

1. SYSTEM DESCRIPTION

This on-site sewage system consists of the following components:

1000-gallon double compartment concrete tank.

1000-gallon pump chamber

Three pressurized drain lines 55 feet in length over a sand lined trench 4'x56'

23' x 55' drain-field reserve area

Control and warning system

See attached sheet 1&2 of 7 of the construction drawings, which contains a site plan showing the system layout.

Septic Tanks

The septic tank is a 1000-gallon, double compartment concrete tank. A 1000-gallon single compartment tank follows it. The tanks are fitted with a fiberglass risers and airtight lids at the ground surface to provide easy access to the tank compartment for cleaning and maintenance. The septic tanks collect solids and provide initial biological treatment to the wastewater.

Pump Chamber

The septic tank wastewater outflow travels by gravity flow to a single compartment 1000-gallon pump chamber located next to the septic tank. The pump chamber collects and stores septic tank outflow until sufficient volume accumulates for a dosing cycle. For this system that volume is 45 gallons. The pump chamber is fitted with an effluent pump, a pump inlet screen, control floats and a high water alarm. The floats are set to turn the pump on and pump a 45-gallon dose volume into the drain field lateral pipes, exiting through orifices spaced at 2.5 ft. along the top and bottom of the lateral pipes. The high water alarm float turns on an audible and visual alarm to alert you to a system malfunction. This pump chamber has a 270-gallon reserve volume above the point where the alarm first sounds. The system is timed to allow a more even spacing of the dose volumes. This system will allow one dose every three hours. For a total of eight in a twenty-four hour period.

Pressure Distribution Drain field

The soil in the drain-field area is type 1A soil, which has coarse sands, very gravelly fine sands, very gravelly loamy sands and extremely gravelly soils with sizes up to 8", which are extremely porous. Fragments are rounded, cobbley and stony. The drain-field design consists of three 55' trenches lined with 24" of sand. A 9" depth of washed rock overlays the top of the sand. On top of the washed rock are 13 Infiltrator Chambers. Under the chambers on top of the rock are 1.25-inch

PVC lateral lines. The lateral pipes have 22 orifices, 3/16 in. diameter in each line. This evenly distributes septic tank effluent when the pump is running. A drain field reserve area 23'x 55 ft. is set aside 6' North of the drain field laterals for use as a replacement area in the event the actual drain field needs repair or replacement in the future.

Control and Warning System

If for some reason the septic pump in the pump chamber fails to come on and the effluent level rises and trips the alarm float, this will turn on a horn and a light at the alarm control panel located on the outside of the house. The alarm can be turned off with a push button at the panel. After the alarm comes on, the pump chamber has a 3/4-day (270 gallon; actual volume in this system is 271 gal) reserve volume above the effluent level that triggered the alarm. The system is demand dosed which means dosing occurs when volumes of effluent flowing into the pump chamber are sufficient to activate the pump-on float.

2. SYSTEM OPERATION

The following recommendations will assist in the proper functioning of the on-site wastewater system.

A. Avoid flushing harmful material into septic tank. Never put materials such as grease, newspapers, paper towels, cigarette butts, coffee grounds, diapers, sanitary napkins, solvents, oils, paint, and pesticides into the tank.

B. Avoid the use of chemical or biological septic tank additives. Such products are not necessary for the proper functioning of a septic tank.

C. Assure that surface water does not collect on the system and drain field areas but runs off freely and quickly.

D. Prohibit vehicular and livestock traffic over the system and drain field areas.

E. Maintain a cover of drought tolerant native grasses on the surface of the system and drain field areas. Do not install underground sprinkler systems for irrigation water in these areas. Also route surface water from rill irrigation away from the drain field area.

F. Know where your system and drain field areas are located and protect them from damage.

G. Practice water conservation to avoid over loading your system. The more waste water produced, the harder you system must work to treat and dispose of the water. Reduce water use by installing water-saving devices,

repairing leaky plumbing fixtures, taking shorter showers and washing only full loads of dishes and laundry.

If the system alarm goes on:

If for some reason (broken wire, debris in tank, tangled floats, failed pump) the effluent level in the pump chamber reaches the alarm float, it will trigger the alarm horn and buzzer. To silence the alarm, push the reset button on the alarm panel. By using water conservatively the reserve storage (270 gallon) in the pump chamber should give adequate time to make repairs. It is strongly recommended that an experienced person make service and repairs. As stated earlier on timed systems during periods of high water use, the alarm might come on even though there is no malfunction. In this system the pump is only allowed to dose the drain field (60 gallons) every four hours. Simply reset the alarm.

CAUTION:

a. Always turn off the power supply at the circuit breaker, and unplug all power cords before handling the pumps or floats.

b. Gases inside the septic tank and pump chamber are poisonous and the lack of air can be fatal. An experienced person must do service or repair of pumps and other electrical equipment.

3. SYSTEM MAINTENANCE

For this on-site wastewater system to operate properly, various components need periodic inspection and maintenance by the owner. Maintenance is the responsibility of the homeowner, but may be performed by experienced and qualified service providers. Keep a written maintenance record.

The following items should be inspected at 6 months, then on a yearly basis after the system has been put into use.

Septic Tank

A. Clean and inspect outlet screen, once per year. If high volumes were sustained over long periods it would be advisable to increase cleaning interval to six months.

B. Look for signs of leaking in tanks and risers, repair if needed.

C. Make sure riser lids are at existing grade and are locked securely.

Septic Tank Capacities

The pump out interval must be within a range that is affordable and provides adequate long-term solids retention for ensuring through digestion. Intervals that are too short not only retard digestion, but force users to pay significantly more for continuous service and pumping. The initial cost difference for a larger prefabricated tank is usually insignificant; especially when compared to the present-worth value of long- term maintenance.

A typical interval range is illustrated in Figure 1; therefore, given an average wastewater flow of 50 gpd, a single-family residential tank, for 4 or fewer occupants, should be 1000 gallons, and 1500 gallons for 5 to 7 occupants. These curves in 1 result from the following curve-a-linear relationship developed for total sludge and scum accumulation.

$$N_{sl+sc} = 47t^{0.675}$$

Where: N_{sl+sc} is the average volume of sludge and scum, in gallons/ capita.
(t) Is the time in years.

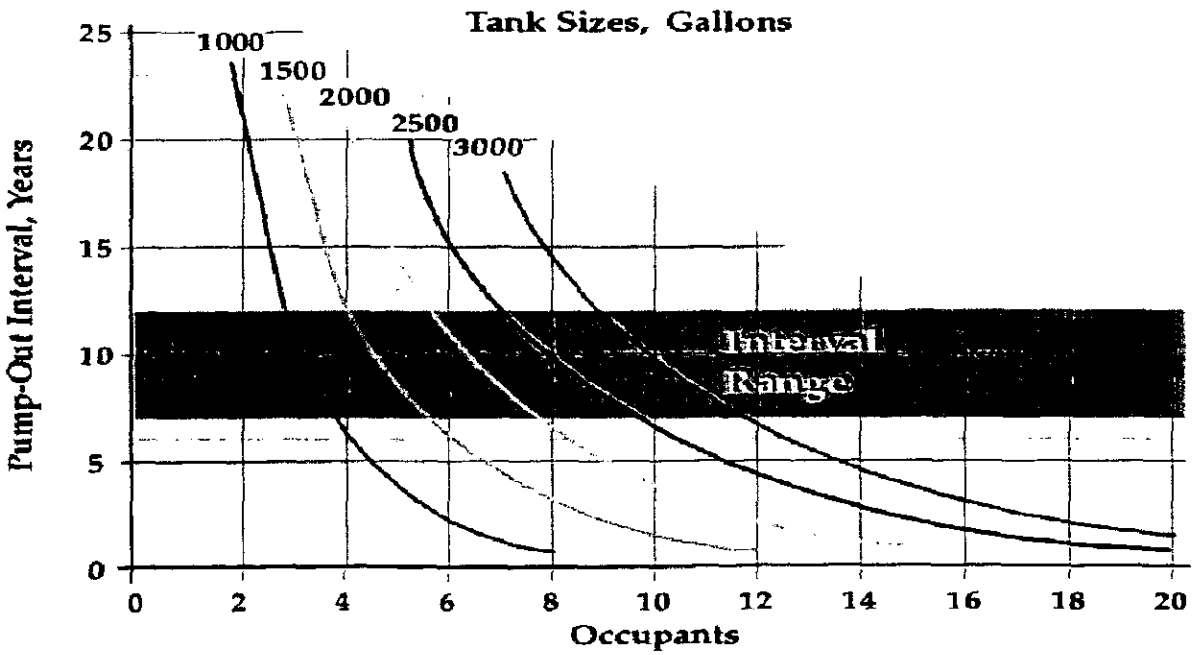


Figure 1: Pump-out Intervals at 95% level of Confidence

In summary, predicting reasonable septic tank pumping intervals with a respectable degree of reliability is an achievable goal. Suggestions or requirements that all septic tanks must be pumped every two; three or even five years are simply unsupported by scientific evidence. The microbial activity that affects optimal decomposition takes up to three years to develop fully. In five years, considerably less than half of most tanks' scum and sludge capacity has been reached (Bound's, 1988). When a management program is in place, pump-outs are scheduled based on inspections and monitoring records so that costs are controlled. Onsite design manuals may encourage frequent pump-outs as a precautionary measure when an inspection program is not in effect; however, longer intervals are usually justified, particularly if an effluent screening device is in place. Adequately sized tanks ensure less frequent pump-outs. Septic tank systems may once have been considered a stopgap until such time as a "real" sewer could be built. As technology has improved the image of the septic tank, it has come to be appreciated as an effective, permanent solution. As such, it deserves to be accorded the same scientific consideration as other treatment systems.

Pump Chamber

A. Clean and inspect outlet screen.

B. Look for signs of leaking in tank and riser. Make sure riser lid is at existing grade and is locked securely, repair if needed.

C. Check for proper functioning of floats. Movement should not be restricted, and they should be positioned correctly.

D. Activated alarm float to assure that it trips the alarms.

CAUTION

Gases inside the septic tank and pump chamber are poisonous and the lack of air can be fatal. An experienced person must do service or repair of pumps and other electrical equipment.

Pressure Distribution Drain field

1. Evaluate the drain field area for the following conditions:

   a. Indication of surfacing effluent.

   b. Appropriate vegetation (should be native grasses, not shrubs or trees) within the drain field area.

   c. Absence of heavy traffic.

   d. Inappropriate buildings.

e. Impervious materials or surfaces lying within drain field area.

f. Abnormal settling or erosion.

Take corrective action as needed.

2. Check drain field inspection ports at the end of each lateral for ponding. If liquid levels are continually over 6 in., this is an indication of system plugging or hydraulic overloading of the drain field.

a. Check daily flow to see that it is not over the system design flow rate of 360 gallons/day.

b. Check for leakage into the septic tank and pump chamber.

c. Check that all extraneous surface water such as irrigation tail water is routed away from drain field area.

d. Call Kittitas County Department of Health for assistance if necessary. (509) 962-7052

3. Using the lateral and inspection ports and operating the septic pump, measure the residual pressure of each lateral to confirm it is the same as recorded on the as-built drawing.

4. Measure the flow rate from each lateral to determine that they are similar. A large discrepancy would indicate the lateral needs cleaning.

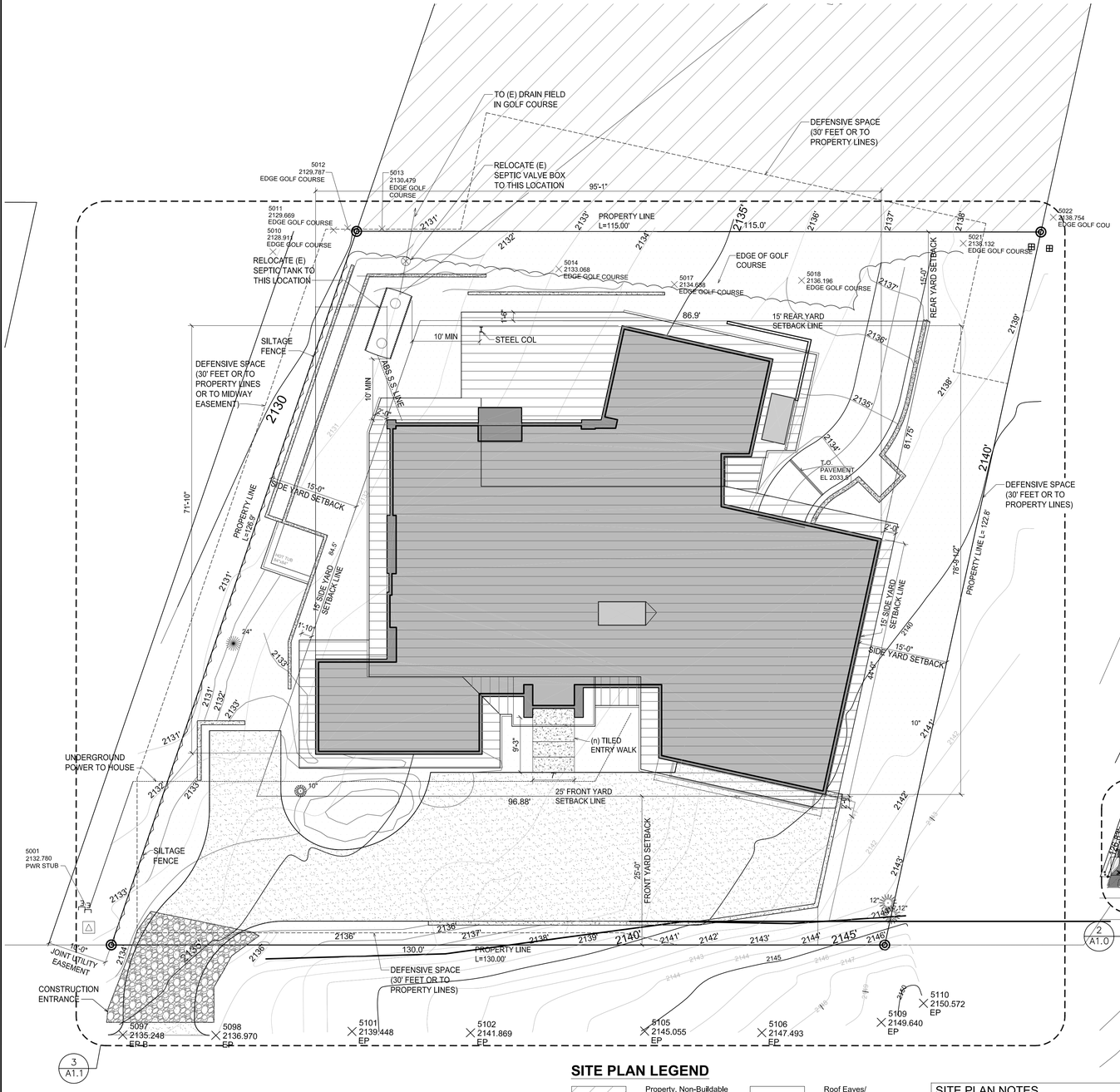
5. Measure pump run time per cycle and draw down and compare with as-built drawing. Excessive run time and higher pressure indicates clogged orifices and laterals and the need for cleaning.

4. TELEPHONE NUMBERS

1. Kittitas County Dept. of Health --- Joe Gilbert (509) 933-8262
2. System Designer — Ameria Engineering, (509) 674-5125
3. System Installer —
4. System Maintenance ---

SYSTEM MAINTENANCE

DATE	DESCRIPTION



MAIN SITE PLAN

SCALE: 1"=10'-0"

True North / Project North

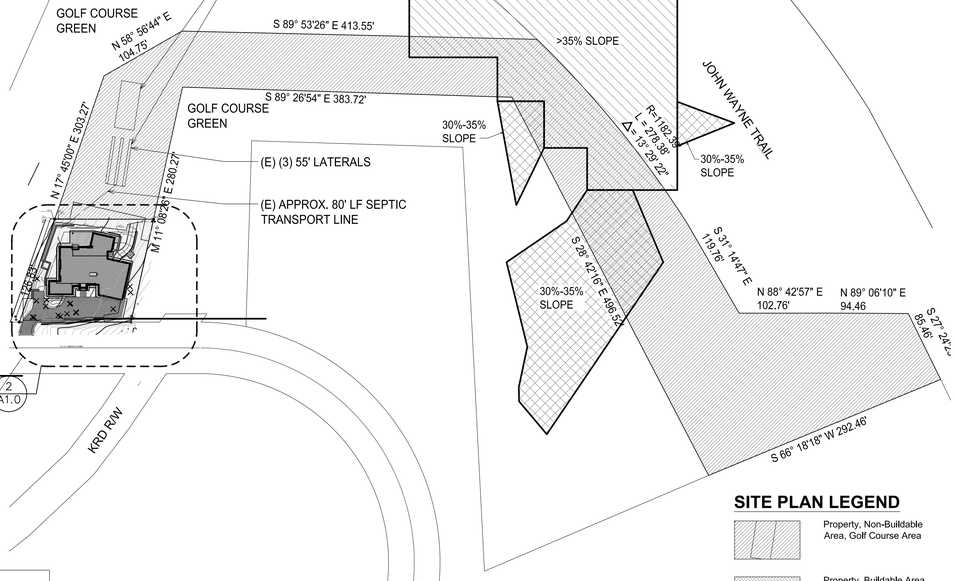
FIRE SPRINKLER SYSTEM NOTE:
HOUSE SHALL BE FURNISHED WITH NFPA 13D AUTOMATIC FIRE SUSPRESSION SYSTEM IN CONFORMANCE WITH FIRE SPRINKER AND PLUMBING CODE

SITE PLAN LEGEND

- Property, Non-Buildable Area, Golf Course Area
- Property, Buildable Area
- House Footprint
- Driveway
- Roof Eaves/ Roof Overhang
- Concrete Retaining Wall
- Tree Drip Line
- Storm Water Flow Direction
- Proposed Trees to be Retained

SITE PLAN NOTES

1. SEE SHEET A1.1 FOR ENLARGED SITE PLAN IN IMMEDIATE AREA OF THE HOUSE
2. SEE SHEET A1.1 FOR PERIMETER HOUSE DIMENSIONS
3. SEE THIS SHEET FOR UTILITIES
4. UTILITY DISTRICT IS KITTITAS RECLAIMATION DISTRICT (KRD): (509) 925-6158; 315 N Water St, Ellensburg, WA 98926
5. FIRE INTERFACE CODE IR1



SITE PLAN

SCALE: 1"=100'-0"

True North / Project North

SITE PLAN LEGEND

- Property, Non-Buildable Area, Golf Course Area
- Property, Buildable Area
- Proposed Trees to be Removed
- Steep Slope 30-35%
- Steep Slope >35%

PROPERTY OWNERS

CHRISTINA AND JAY FREES
16611 38th AVE SE., BOTHELL, WA 98012
PH: 425-275-8710, EMAIL: freesitintime@mac.com

SITE ADDRESS

7 ST ANDREWS DR, CLE ELUM, WA 98922
PARCEL # 5634500027

LEGAL DESCRIPTION

A PORTION OF THE SE 1/4 OF SECTION 26, A PORTION OF HTE NEW 1/4 OF SECTION 35 & A PORTION OF THE NEW 1/4 SECTION 36; TOWNSHIP 20 NORTH, RANGE 14 EAST, W.M., KITTITAS COUNTY, STATE OF WASHINGTON

AREA

14,688 S.F. (0.337 ACRE)

PARCEL

951931 & 956960

ZONING

RURAL-5

CONSTRUCTION TYPE

TYPE V-A

SPRINKLER SYSTEM

NFPA-13D

ZONING

R-6

HOUSE HEIGHT CALCULATION

-

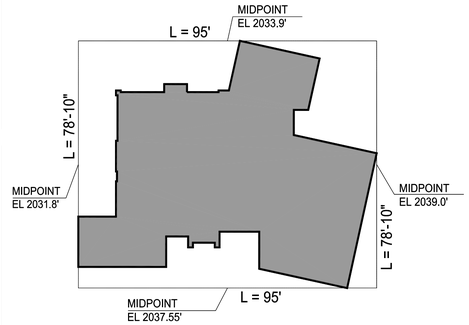
'A' Midpoint Elevation	'L' Length	'A' x 'L' Length
2033.9'	95.0'	193,220.5
2031.8'	78.83'	160,173.5
2037.55'	95.0'	193,567.3
2039.0'	78.83'	160,741.1
	347.67'	707,702.4

707,703.4 / 347.67 = 2035.55' is Avg Grade
Top of Roof: 2058.8'

Building Ht is 2059.8'- 2035.55' = 24.25' < 30'.. OKAY

BUILDING & SITE AREAS

Item	Proposed Areas
1st Floor	3,178 S.F.
Attached 1st Floor Garage	1,228 S.F.
Subtotal	4,466 S.F.
2nd Floor	1,087 S.F.
Total Habitable	4,581 S.F.
Total House Foot Print	5,406 S.F.
Covered Porches	
1st Floor	467 S.F.
2nd Floor	316 S.F.
Total	783 S.F.
Total Roof Footprint	5,860 S.F.
Total House Foot Print (First Floor + Covered Porch)	4,933 S.F.



indomus
Indomus Architects LLC
3213 Whalley PL W. Seattle, WA 98199

Contact:
Ph: 206.290.2693
www.indomusarch.com
eric@indomusarch.com

8699 REGISTERED ARCHITECT Eric G. Hess STATE OF WASHINGTON

FREES RESIDENCE

7 St. Andrews Dr, Cle Elum, WA 98922

OVERALL & MAIN SITE PLANS

NO.	REVISIONS
6	
5	
4	
3	
2	
1	
DATE	Jan 26th, 2021
FILE	Frees
DESIGN	E. Hess

A1.0

SHEET #5

ISSUE FOR PERMIT

EGH