

**R317-4 OWS PLAN DESIGN**  
**Installation**  
**AT-GRADE TRENCH**

**Tank Risers**

Cast-In or Bolt Down Risers  
 Seal Water-tight.  
 Extend all Required Risers to the Surface

**Effluent Distribution**

Install Frazier Tee and Bottom Manifold or  
 Distribution Box and Top Manifold

**Distribution and Drop Boxes Inspection**

Water Level Test Required

**Distribution Device Riser**

Bring Access Riser to Final Grade

**Distribution Method**

Install Double Closed Loop

**Absorption System**

**Estimated Hydraulic Flow Rate 600 gpd**

**Hydraulic Loading Rate 0.4 (gpd/ft<sup>2</sup>)**

**Maximum Trench Depth 0"**

**Absorption System Placement**

± 5 feet Change from Approved Design

**Absorption System Excavations**

Install Shallow as Possible

Follow Contours on Sloping Sites

Excavate **Each** Trench or Bed Level

Trench Spacing ≥ 7 ft

Rake Smeared or Compacted Surfaces

Protect from Surface Runoff

Install Absorption System ASAP

**Absorption System Layout**

May Increase or Decrease Number of Trenches if  
 Retain Overall L<sub>M</sub>

**Observation Ports**

Install Observation Ports on Outside Distal  
 Corners

Diameters 4"

SDR35 PVC or better

**Component Access**

Install 10" Round Valve Covers for all 4" Pipe

**At-Grade or Mound Scarification**

Scarify Effective Absorption Area Level

Order of Preference:

○ Chisel Teeth Mounted to Backhoe;

○ Chisel Plow (Spring Tooth Plow);

○ Backhoe Bucket with Short Teeth.

Rotary tilling is prohibited.

Depth of Scarification 6"

Protect Scarified Soil from **Any Water Event**



**Scarification Inspection**

Soil Preparation before Fill Placement

**Chambered Trenches**

**Minimum Length of Trenches 350 ft**

**Chamber Criteria**

Type A IAPMO Standard Chambers

Advanced Drainage Systems

Arc36 Leachfield Chambers

Infiltrator Systems Inc.

Quick4 Standard Chamber

**D-Box-Chamber Effluent Inlet**

Use **Top Port** of End Cap or Side Port Coupler

Place Gravel or Equivalent below Effluent Inlet

**Side Port Coupler and End Cap**



**Frazier-Tee-Chamber Effluent Inlet**

Use **Bottom Port** of End Cap or Side Port  
 Coupler

**Chamber Effluent Outlet**

Use **Bottom Port** of End Cap or Side Port  
 Coupler

**Chamber Installation**

Follow Manufacturer's Recommendations

Walk-in Soil Cover over Sidewall Louvers

**Standard Trenches**

**Minimum Length of Trenches 500 ft**

**Drain Media Criteria**

UAC §§ R317-4-2.34

Effective size ¾ - 2½"

Maximum #10 (or 2 mm) Sieve 2%

Drain Media Minimum Depth

Under Pipe 6"

Over Pipe 2"

Distribution Pipe 4"

per UAC § R317-4-13 Table 4

Five o'clock and seven o'clock rows of ½"  
 round holes at ~6" intervals

**Barrier Material (UAC §§ R317-4-2.7)**

Use Filter Fabric ≥ 4 oz/yd<sup>2</sup>

or Compacted Straw ≥ 2"

**Trench Cover**

Top Soil Preferred

Backfill Slightly Mounded 2-3"

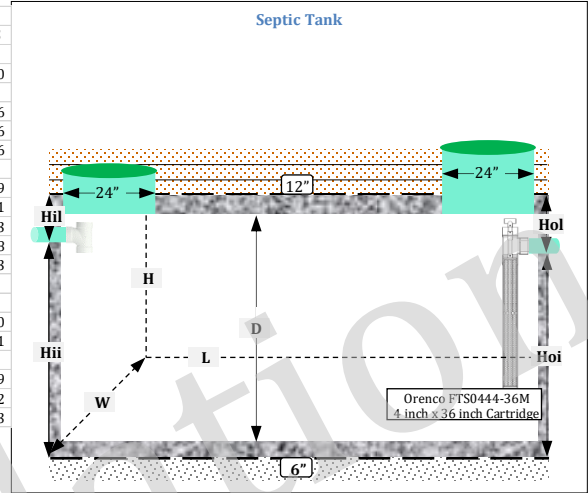
**At-Grade Cover**

Extend Cover Horizontally 10 feet in all  
 Directions beyond Absorption Trenches

**At-Grade Side Slopes**

Maximum Side Slope 4:1

Tank	All measurements in inches											Gallons		
	L	W	H	Hii	Hil	Hoi	Hol	Drop	D	Wall	Floor	Lid	gpi	ES
<b>Orengo - AXRT Pod Tank - Fiberglass - Sutherlin Oregon</b>														
AX2x-RT	102	64	72	44	28	32.5	39.5	11.5	72	0.3	0.3	0.3	8.0	500
<b>Oldcastle - Concrete - Ogden Utah</b>														
1000 gallon	139	67	53	41	12	38	15	3	61	4	5	5	32.6	326
1250 gallon	139	67	61	49	12	46	15	3	51	4	5	5	32.6	326
1500 gallon	139	67	67	55	12	52	15	3	57	4	5	5	32.6	326
<b>Duracrete - Concrete - Salt Lake City Utah</b>														
1000 gallon	112	56	70	55	15	51.5	18.5	3.5	61	3	4	5	22.9	309
1250 gallon	126	60	70	55	15	52.5	17.5	2.5	61	3	4	5	28.1	351
1500 gallon	130	68	68	55	13	51.5	16.5	3.5	59	3	4	5	33.3	383
1750 gallon	127	66	75.5	63.5	12	61	14.5	2.5	66.5	3	4	5	31.4	298
2500 gallon	151	80	82	68	14	65.5	16.5	2.5	72	4	5	5	44.6	513
1000 gallon	68	68	78	-	-	-	-	-	66	4	6	6	16	
<b>Roth - RMT - HDPE - Syracuse New York</b>														
1250 gallon	148	62	51	43	8	40	11	3.0	51	0.5	0.5	0.5	31.0	210
1500 gallon	177	62	51	43	8	40	11	3.0	51	0.5	0.5	0.5	37.5	231
<b>Norwesco - Low Profile - HDPE - Tooele Utah</b>														
1000 gallon	127	60	51	43	8	40.0	11.0	3.0	51	0.3	0.3	0.3	21.3	149
1250 gallon	157	60	51	43	8	40.0	11.0	3.0	51	0.3	0.3	0.3	26.0	182
1500 gallon	157	69	51	43	8	40.0	11.0	3.0	51	0.3	0.3	0.3	31.9	223



**KEY**

- Potable Water
- Replacement Area
- Horizontal Setbacks
- GPZ
- Soil Test Pit
- Cover Soil
- Original Grade
- Undisturbed Native Soil
- Self-Compacting Gravel
- Building Sewer
- Septic/Pump Tank
- Effluent Sewer
- Distribution Device
- Standard Drain Media
- Chambered Trenches
- Scarified Soil
- At-Grade Cover Extension
- Observation Ports
- Round Valve Box
- Sewer Cleanouts
- Asphalt, Concrete

**UAC § R317-4-13 Table Two**

Tanks (to Foundation)	5 ft
Absorption System	5 ft
Open Water	100 ft
Groundwater Sources	100 ft

**General System Requirements**

**Final Inspections**

Health Authority May Inspect All Components in  
 Relative Elevation Schedule before Backfilling

UAC R317-4-7 Construction and Installation

Install System in Accordance with OWS Rule and  
 Regulatory Authority Special Requirements

**Culinary Water Lines**

Sleeve all Culinary Water Lines Crossing any  
 Sewer Line in Solvent Welded Sch 40 Pipe at  
 least Ten Feet beyond the Crossing

Use Solvent-Welded Sch 40 PVC Pipe Sewers at  
 least Ten Feet beyond the Crossing of any  
 Culinary Water Lines

**Septic Tank Landscaping**

Bring all Risers to the Surface per R317-4-  
 6.7.F.1.a if Concrete or Asphalt Blocks Access

**Absorption Area Landscaping**

Add Additional Absorption Area per R317-4-  
 6.14.B.4.h if Oxygen Flow to Absorption  
 System Is Blocked

**Water Softener Backwash**

Divert Salt-Type Water Softener Backwash to an  
 Appropriate Underground Absorption Area

**Special Requirements**

**Trench Maximum Cover**

**Trench Maximum Cover ≤ 36"**

**Sewers**

**Building and Effluent Sewer**

Install Cleanouts at least every: 100 ft

135°

Driving or Parking Areas:

○ Bed in 12" inch minus gravel

○ 4" Sch 40 PVC Pipe or better

○ If Less than 30", Insulate Pipe

(≥ 2"x16" Foamboard 6" above pipe)

**Building Sewer**

SDR 35 PVC Pipe or better 4"

or per UAC § R317-4-13 Table Four

Install Cleanout at Foundation

Install Ells after Cleanouts

Use 45 Degree Ells or less for all changes in  
 direction

≥ ¼" per foot drop

**Septic Tank**

Septic Tank Size ≥ 1250 gallon

Required Septic Tank Cover 6-36"

**Water Tightness Inspection**

Fill Tanks 24 hours before Inspection

Backfill when Approved

If Conditions Require Shoring, Contact  
 Regulatory Authority and Photograph

Minimize Tank Sidewall Coverage

Regulatory Authority May Require Tank  
 Exposure during Inspection

**Septic Tank Effluent Filter**

Install Effluent Filter at Septic Tank Outlet

**Effluent Sewer**

SDR 35 PVC Pipe or better 4"

or per UAC § R317-4-13 Table Four

≥ 1/8" per foot drop **with filter**

≥ ¼" per foot drop **without filter**

**ROGERS RESIDENCE**  
 660 N 4700 West St West Weber  
 SE4 Sec8 T6N R22W S16M

Address:  
 System Design #: WC-15-027-0111-6.0  
 Design Date: 2020 Jun 20

**Shupe Environmental Solutions Inc**  
 P. O. Box 199, Hammsville, Utah 84317  
 Carl R. Shupe  
 801-814-3036  
 cshupe001@gmail.com



**R317-4 OWS PLAN DESIGN**  
**Feasibility and Plan Review**

Address: 660 N 4700 West St West Weber  
 System Design #: WC- 15-027-0111-6.0  
 Design Date: 2020 Jun 20

**AT-GRADE TRENCH**

**Est Hydraulic Flow Rate (HFR) 600 gpd**  
 Single Family Dwelling  
 three bedrooms,  
 no basement,  
 eight people maximum sustained use

**Feasibility Assessment Record**

**Hydraulic Loading Rate (HLR) 0.4 (gpd/ft<sup>2</sup>)**  
 Soil Based Rate 0.35 (gpd/ft<sup>2</sup>)  
 HD Required Rate 0.4 (gpd/ft<sup>2</sup>)  
 Soil Profile see WMHD  
 Clay Loam, blocky 0-14"  
 Silty Clay Loam, blocky 14-48"  
 Perc Rate 6.2 MPI

**Max Absorption Trench Depth 0"**  
 Maximum Ground Water Design 32"  
 per WMHD

Absorption Area Max Ground Slope ≤1%

**Flood Plain Zones**

Flood Plain Zone See Map  
 FEMA Designation Zone X  
 Area of Minimal Flood Hazard 500 year



**KEY**

- Flood Plain Zone
- Absorption Area
- Groundwater Protection Zone 2
- Non-Public Water Supply
- 100 foot Groundwater Protection Zone
- x Soil Test Pit

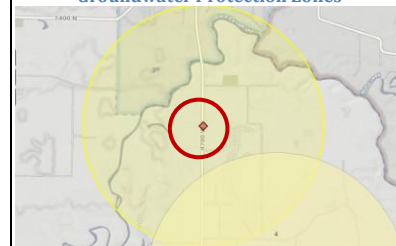
**Plan Review and Permitting**

Wastewater Type Domestic  
 Water Supply Taylor-West Weber Water District  
 Application Attached  
 Soil Pit Location see Map

**Lot Size and Dimensions**

See Site Plan

**Groundwater Protection Zones**



**Non-Public Water Supply Sources**



The field verified wells are shown on the Site Plan

**R317-4 OWS PLAN DESIGN**  
**Design Requirements**

**Sewer & Septic Tank Details**

**Inlet Riser**

Orengo:  
 PRTA24, Tank Adapter 24"  
 PRTA24BDKIT, Bolt Down Kit or Cast-In  
 FLD24G, DuraFiber™ Access Lid 24"  
 RR24xx **As needed**  
 Ultra-Rib™ Access Riser

**Outlet Riser**

Orengo:  
 PRTA24, Tank Adapter 24"  
 PRTA24BDKIT, Bolt Down Kit or Cast-In  
 FLD24G, DuraFiber™ Access Lid 24"  
 RR24xx **As needed**  
 Ultra-Rib™ Access Riser

**Effluent Filter - Optional**

Orengo FTS0444-36, 4" x 36" Cartridge

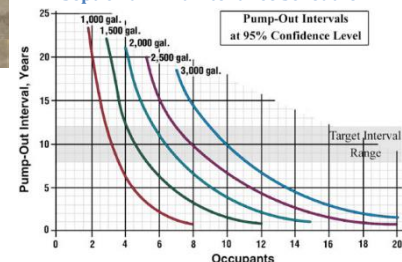
**Orengo Equipment Purchase**

**SCG Enterprises, Inc.**  
 Richard Jex, P.E., LEHS  
 435-753-2051, office  
 435-757-4905, mobile  
[rjex@scgenterprises.com](mailto:rjex@scgenterprises.com) [www.scgenterprises.com](http://www.scgenterprises.com)  
 PO Box 3603, Logan, UT 84323

**Alternate Septic Tank Risers**

Tuf-Tite:  
 Tank Adapter and Lid 24"  
 PolyRiser **As needed**

**Septic Tank Maintenance Schedule**

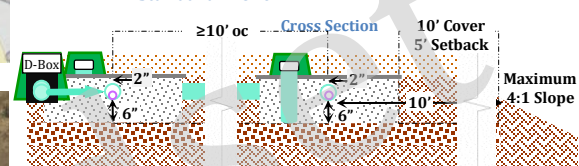


**Absorption Trench System Details**

**Absorption Trenches**

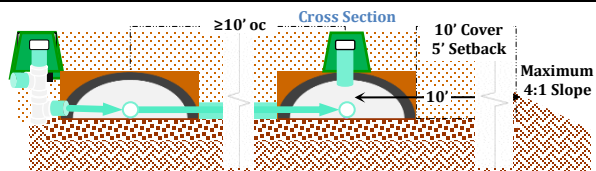
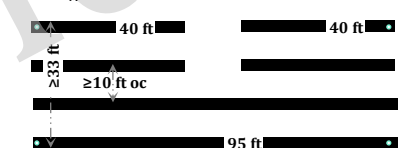
Sizing Criteria  
 Effective Absorption Area (E<sub>AA</sub>) =  $\frac{HFR}{HLR}$   
 = 600 gpd / 0.4 (gpd/ft<sup>2</sup>) = 1500 ft<sup>2</sup>  
 Reduction Factor (None) 1.0  
 E<sub>AA</sub> x RF = 1500 ft<sup>2</sup> x 1.0 = 1500 ft<sup>2</sup>  
 Width of Media (W<sub>M</sub>) = 3 ft  
 Length of Media (L<sub>M</sub>) =  $\frac{E_{AA}}{W_M}$   
 = 1500 ft<sup>2</sup> / 3 ft = 500 ft

**Standard Trench**



**Chambered Trenches**

Sizing Criteria  
 Reduction Factor (Chamber) 0.7  
 L<sub>M</sub> x RF = 500 ft x 0.7 = 350 ft



**Disclaimer**

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The designer is not responsible for the results of any changes to this plan without approval by the designer and the local health department. Any deviations shall be coordinated with the designer and local health department prior to proceeding with the related work concerning the deviation.

This design assumes installer experience or competency with the system shown herein. The designer shall not be held liable for any errors, omissions, or deficiencies in any form by the installer.

The installer shall read the notes and details in this plan.

All third party information provided including any plot plans, site plans, geographic maps, health department requirements and statements, is "as is" without any guarantee, representation, condition or warranty of any kind, either express, implied, or statutory.

Any location of utilities shown on this plan are approximate. The installer shall call the Blue Stakes utility locating company, 1-800-662-4111, for field location marking before excavating.