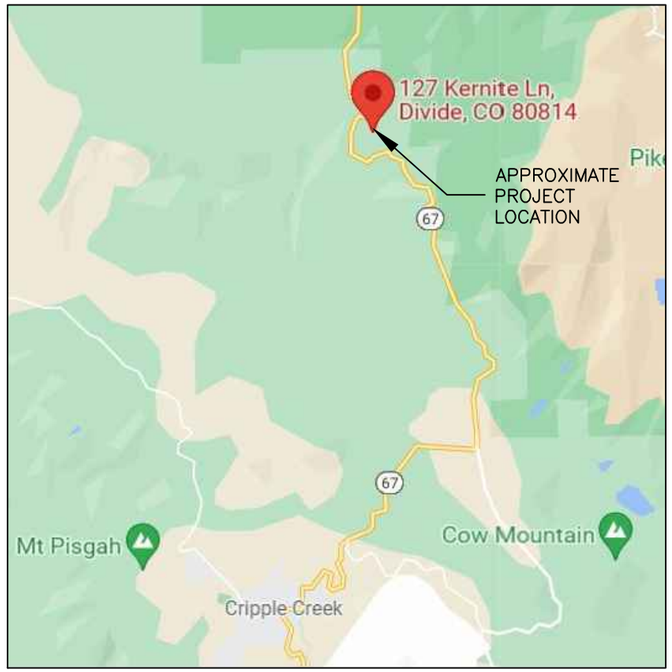


LOCATION MAP

ONSITE WASTEWATER TREATMENT SYSTEM DESIGN
LOT 48, RAINBOW VALLEY, UNIT 9
TELLER COUNTY, COLORADO

GENERAL NOTES

This plan set and the information contained herein has been prepared to fulfill the "Report and Site Plan" and the "Design Document" sections of the OWTS Regulations. The locations of wells and OWTS components shown on this site plan, and staked in the field are not the result of a property survey, and are to be considered approximate. It is the property owner's responsibility to ensure all construction is located within the property boundaries. All separation distances are to be verified prior to excavation.

Design criteria has been created based upon information submitted. If conditions differ from the information presented, this office should be contacted to verify and observe the conditions.

Locate all utilities prior to construction. Contractor shall have one set of county approved plans, on the jobsite, at all times during the construction and observation period. Deviation from these plans must be approved by the engineer.

All onsite wastewater treatment system construction, and any requirements not specified within this design, must meet county requirements and the requirements of local OWTS regulations. The contractor should have documented, and demonstrated, knowledge of the requirements and regulation of the county in which they are working.

All components of the OWTS (septic tank, piping, pump tanks, valves, proprietary units, etc.) are to be installed in accordance with the manufacturer recommendations.

The system is designed and intended to be used only for the wastewater load specified.

DESIGN CRITERIA

The system is designed to serve a proposed 3 bedroom single family residence.

Flows:
Q_1 = 3bedrooms x 2persons x 75 GPD = 450 GPD
Q_{total} = 450 GPD

Septic Tank Requirements:
Install a Valley Precast 1,250 gallon, 2 Compartment concrete septic tank Valley Precast model number 1250T-2CP-HH, equipped with an Orenco screened vault pump system (model BPP50DD-CW-SX-ETMCT).

Soil treatment area:

The soil treatment area has been calculated based upon the soil analysis and the design flows:

INFILTRATIVE SURFACE #1
A = (Q/Secondary Sand Filter Application Rate) x Application Adjustment Factor
A = 450/0.80 (TL1) x 1.0 (Pressure Dosed bed)
A = 563 sq. ft.

We propose one 9' x 64' soil treatment area bed.

INSTALLATION OBSERVATION REQUIREMENTS

This office is to observe the installation of the system at the following intervals:
(1) Open Hole Observation
(2) Final Pre-Burial Observation
(3) Final Grade Observation
(4) This office is to be contacted to verify the operation of any mechanical components (such as a dosing siphon or pump system) prior to placing the system into use

WATER SUPPLY REQUIREMENTS

The residence is to be served by a proposed well to be located greater than 100 feet from the proposed soil treatment area. A well location has been depicted on Sheet 3.

INDEX OF DRAWINGS

285 ENGINEERING
P.O. BOX 1048
CONIFER, CO
80433
(720)-515-1781

PROJECT: 2021624 - OWTS DESIGN

LOCATION:
127 KERNITE LANE
CRIPPLE CREEK, CO 80813

CLIENT: TRINITY BUILDING CONTRACTOR

TITLE: DESIGN CRITERIA

DATE: 11/11/2021

SCALE: NONE

DRAWN BY: JLW

REVISIONS:
1
2
3

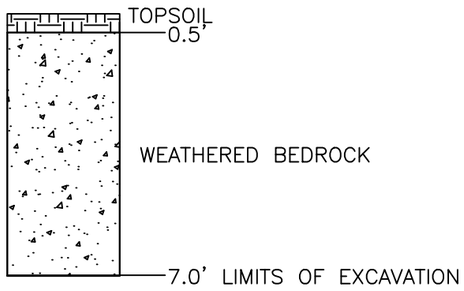
SHEET:
1/7

COLORADO LICENSED
ROGER J. SHAFER
29008
11/11/2021
PROFESSIONAL ENGINEER

SOILS INFORMATION

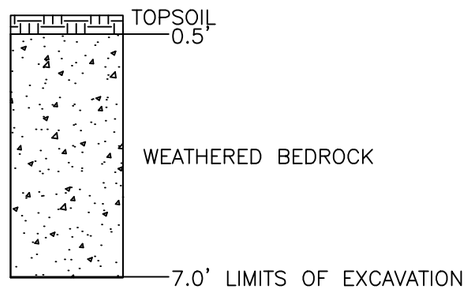
DATE TESTING COMPLETED: 11/11/2021
EQUIPMENT USED: EXCAVATOR
DEPTH TO BEDROCK REFUSAL: NOT PRESENT
DEPTH TO STANDING WATER: NOT PRESENT
REDOXIMORPHIC FEATURES: NOT PRESENT
LTAR: 0.80 SECONDARY SAND FILTER APPLICATION RATE, TL1

PROFILE #1



SOIL TYPE, TEXTURE AND STRUCTURE				
DEPTH	SOIL TYPE	TEXTURE	STRUCTURE/SHAPE	STRUCTURE/GRADE
0.5'–8.0'	R–0	LOAMY SAND WITH >35% ROCK	SINGLE GRAIN	0(STRUCTURELESS)

PROFILE #2



SOIL TYPE, TEXTURE AND STRUCTURE				
DEPTH	SOIL TYPE	TEXTURE	STRUCTURE/SHAPE	STRUCTURE/GRADE
0.5'–8.0'	R–0	LOAMY SAND WITH >35% ROCK	SINGLE GRAIN	0(STRUCTURELESS)

SCALE: 1/4" = 1'

SITE AND SOIL EVALUATION

A site and soil evaluation was conducted by 285 Engineering in accordance with the OWTS Regulations, and the results of that evaluation is presented herein.

ANTICIPATED CONSTRUCTION RELATED ISSUES

No construction related issues are expected for this site.

POTENTIAL LAND USE CHANGES

There are no known or foreseeable land use changes that would affect system performance.

DIFFICULTIES ENCOUNTERED DURING SITE VISIT

There were no difficulties encountered during the site visit that prevented a complete evaluation of the property.

SITE EVALUATOR

Jessica Wiersma
P.O. BOX 1048
CONIFER, CO. 80433
720–281–8395
jessica@285engineering.com

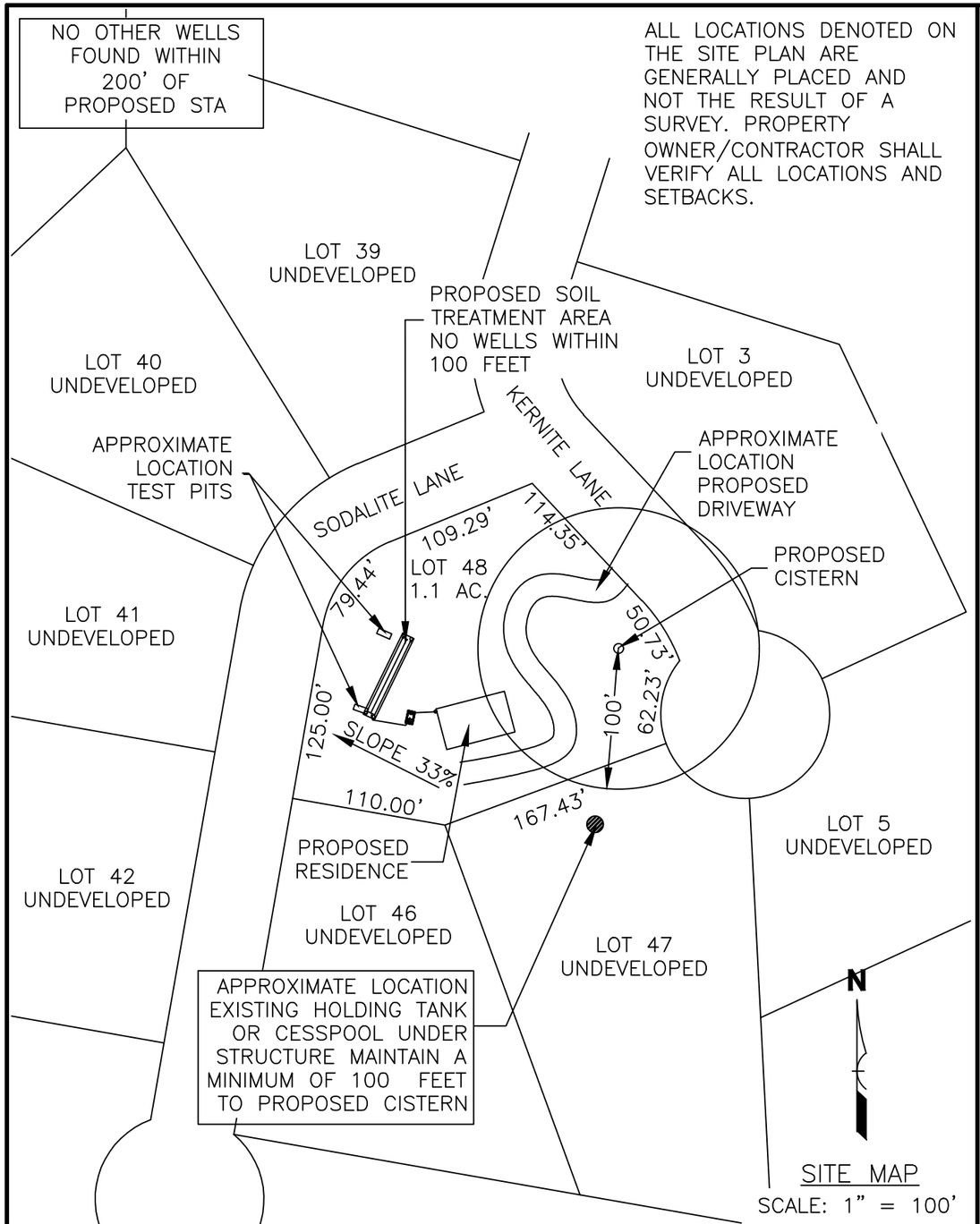
BA Environmental Health and Biology

Credentials: CPOW Soils Characterization Class 2017
NAWT Design Course 2019
Registered Environmental Health Specialist

285 ENGINEERING P.O. BOX 1048 CONIFER, CO 80433 (720)-515-1781	PROJECT: 2021624 - OWTS DESIGN	TITLE: SITE AND SOIL EVALUATION		SHEET: 2/7
	LOCATION: 127 KERNITE LANE CRIPPLE CREEK, CO 80813	DATE: 11/11/2021 SCALE: SHOWN	REVISIONS: 1 2 3	
	CLIENT: TRINITY BUILDING CONTRACTOR	DRAWN BY: JLW		

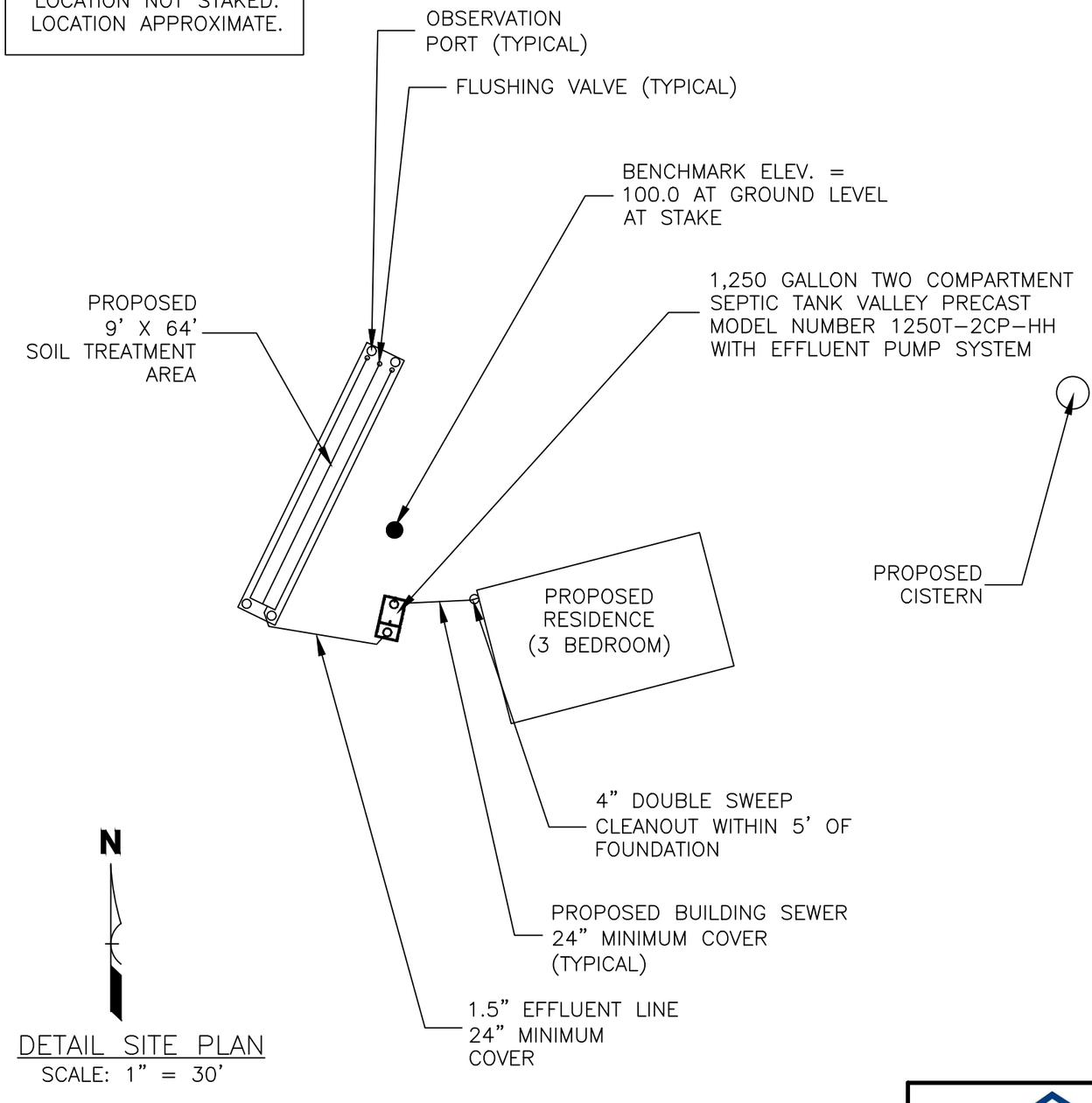
NO OTHER WELLS FOUND WITHIN 200' OF PROPOSED STA

ALL LOCATIONS DENOTED ON THE SITE PLAN ARE GENERALLY PLACED AND NOT THE RESULT OF A SURVEY. PROPERTY OWNER/CONTRACTOR SHALL VERIFY ALL LOCATIONS AND SETBACKS.



SITE MAP
SCALE: 1" = 100'

PROPOSED RESIDENCE LOCATION NOT STAKED. LOCATION APPROXIMATE.



DETAIL SITE PLAN
SCALE: 1" = 30'

285 ENGINEERING P.O. BOX 1048 CONIFER, CO 80433 (720)-515-1781	PROJECT: 2021624 - OWTS DESIGN	TITLE: SITE PLAN	SHEET: 3/7
	LOCATION: 127 KERNITE LANE CRIPPLE CREEK, CO 80813	DATE: 11/11/2021 SCALE: SHOWN	REVISIONS: 1 2 3
	CLIENT: TRINITY BUILDING CONTRACTOR	DRAWN BY: JLW	

285 ENGINEERING

SOIL TREATMENT AREA NOTES:

1. Construct soil treatment area in location depicted on the site plan.

2. Excavate soil treatment area level, scarify the infiltrative surface, and avoid compaction. Soil treatment area is to be installed along the contour.

3. All piping connections shall be securely fastened to avoid water infiltration into the system.

4. Direct surface water away from the soil treatment area by grading to divert water away from the treatment area.

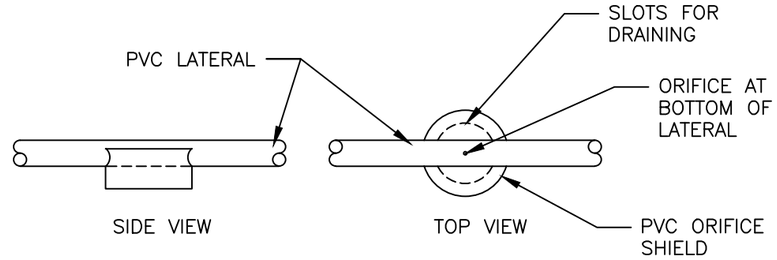
5. Re–vegetate the excavated area with only native species. Contact 285 Engineering, Inc. for recommendations.

6. Snow storage is not recommended on the soil treatment area.

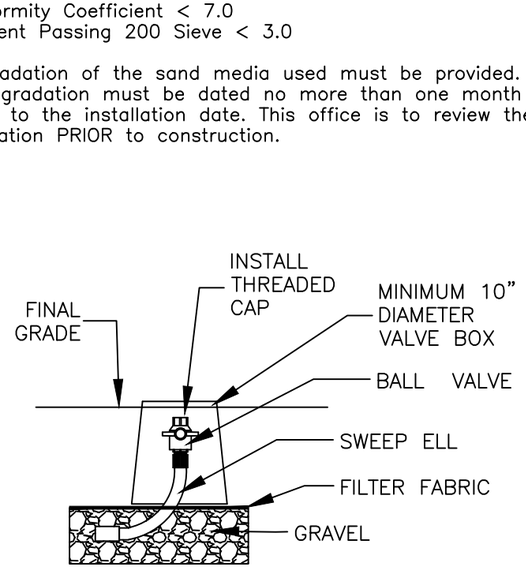
7. If off–site material is specified in this design; Off–site filtering material is to meet the OWTS Regulations for "Secondary" Sand.

Effective size = 0.15 – 0.60
Uniformity Coefficient < 7.0
Percent Passing 200 Sieve < 3.0

A gradation of the sand media used must be provided. The gradation must be dated no more than one month prior to the installation date. This office is to review the gradation PRIOR to construction.

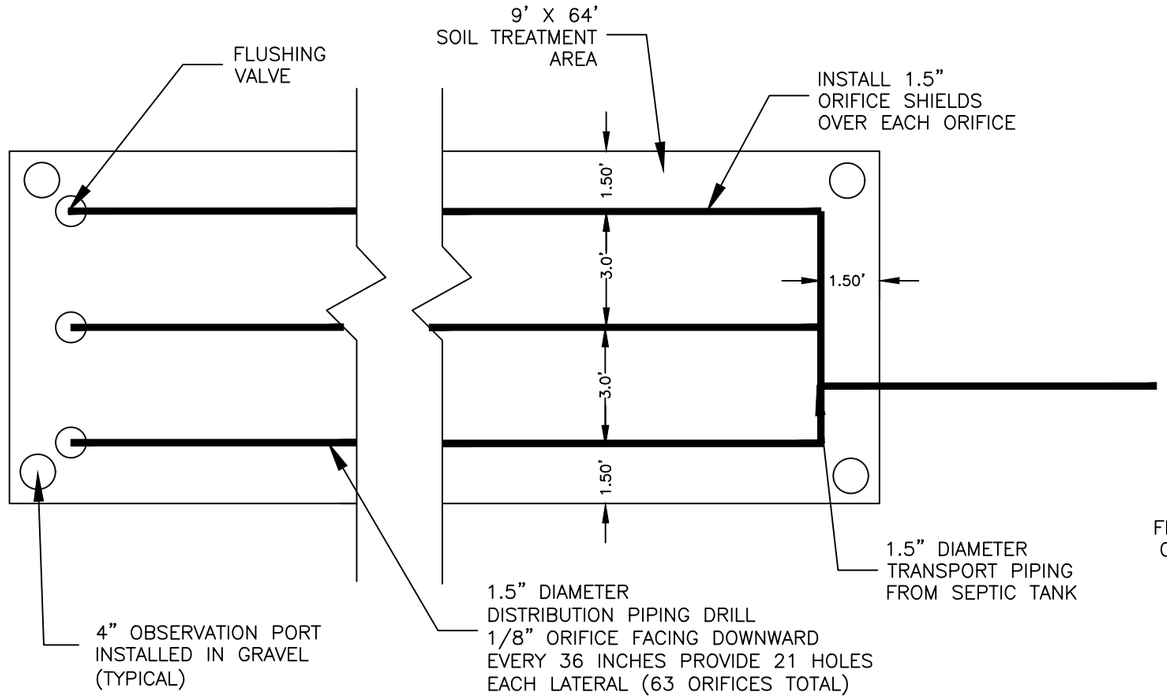


ORIFICE SHIELD DETAIL
NO SCALE

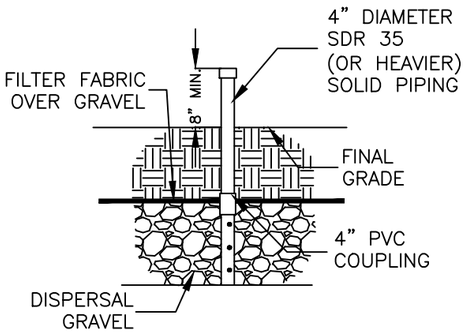


LATERALS ARE TO BE FLUSHED EVERY TWO YEARS FOR PROPER SYSTEM PERFORMANCE

VALVE DETAIL
NO SCALE



SOIL TREATMENT AREA
PLAN VIEW
SCALE: 1/4" = 1'



OBSERVATION PORT DETAIL
SCALE: 1/4" = 1'

285 ENGINEERING
P.O. BOX 1048
CONIFER, CO
80433
(720)-515-1781

PROJECT: 2021624 - OWTS DESIGN

LOCATION:
127 KERNITE LANE
CRIPPLE CREEK, CO 80813

CLIENT: TRINITY BUILDING CONTRACTOR

TITLE: STA/PIPING DETAILS

DATE: 11/11/2021

SCALE: SHOWN

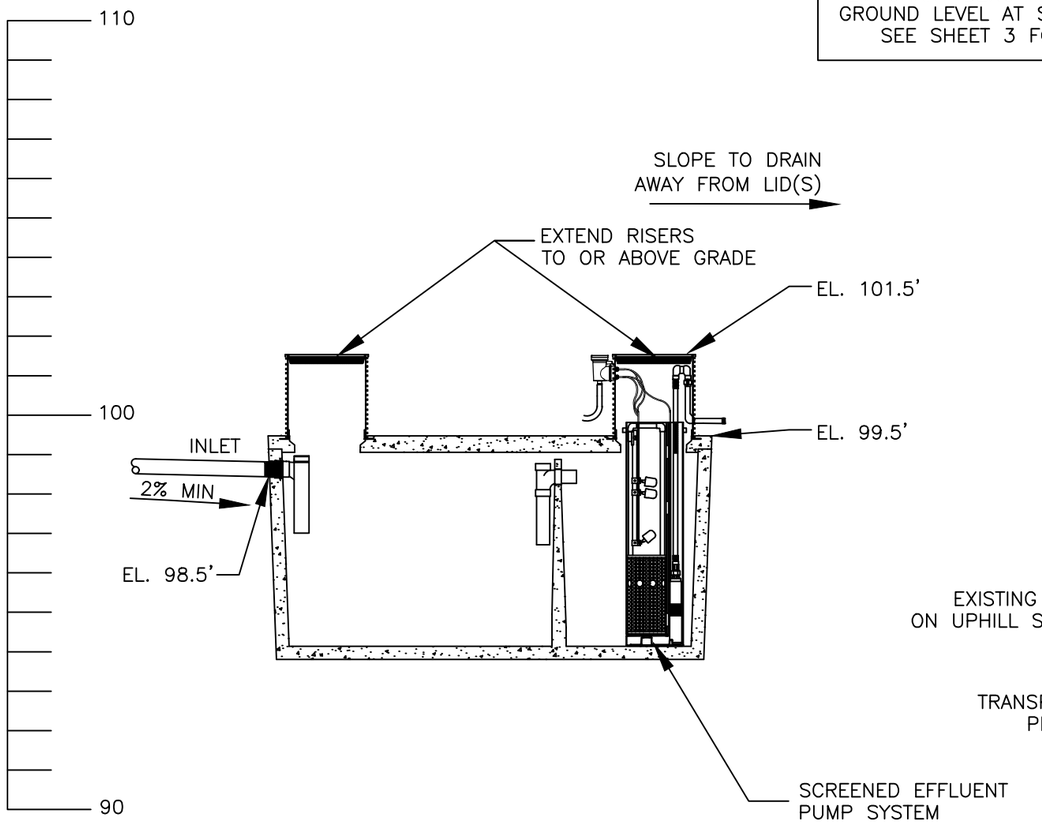
DRAWN BY: JLW

REVISIONS:
1
2
3

SHEET:
4/7

285 ENGINEERING

TEMPORARY BENCHMARK = 100.0' AT GROUND LEVEL AT STAKED LOCATION. SEE SHEET 3 FOR LOCATION.



PLACING THE OWTS INTO OPERATION:

Prior to placing the system into operation, we recommend all components be observed and tested for proper operation. This includes, but is not limited to, verifying the septic tank is watertight, the effluent screen is accessible and serviceable, and all observation ports in the soil treatment area exist.

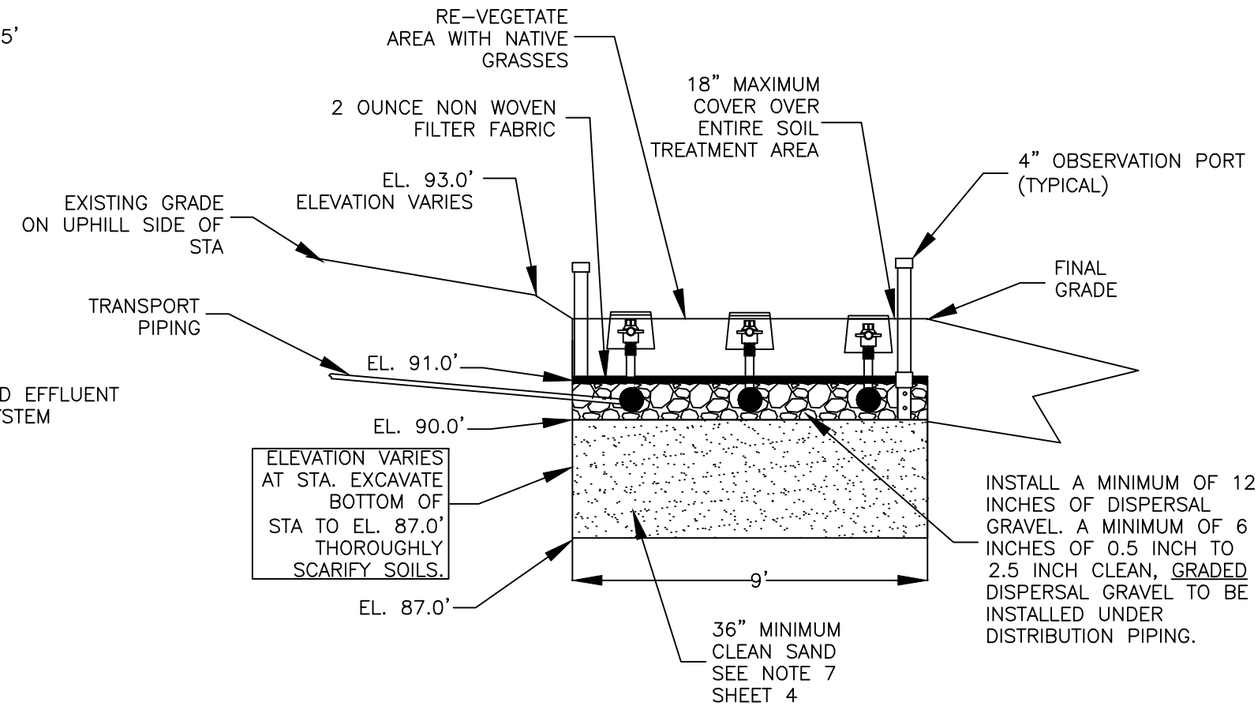
When applicable, pump system amperage is to be checked, and the float functions verified. Automatic distributing valves are to be tested to verify proper rotation. A pressure test is to be performed on pressure distribution systems to verify the minimum 5–foot squirt height at the flushing valves, and all valves are to be flushed.

The installer of the system is to provide the property owner with all product Operation & Maintenance manuals. Maintenance of each component is to be in accordance with the manufacturer recommendations.

MAINTENANCE OF THE OWTS:

Maintenance of the OWTS is the responsibility of the property owner. Maintenance is to be in accordance with county recommendations and is to include, at a minimum, periodic septic tank pumping and soil treatment area valve flushing (if applicable).

The installer of the system is to provide the property owner with all product Operation & Maintenance manuals. Maintenance of each component is to be in accordance with the manufacturer recommendations.



OWTS PROFILE

1/4" = 1'

285 ENGINEERING P.O. BOX 1048 CONIFER, CO 80433 (720)-515-1781	PROJECT: 2021624 - OWTS DESIGN	TITLE: DESIGN PROFILE		SHEET: 5/7
	LOCATION: 127 KERNITE LANE CRIPPLE CREEK, CO 80813	DATE: 11/11/2021 SCALE: NONE	REVISIONS: 1 2 3	
	CLIENT: TRINITY BUILDING CONTRACTOR	DRAWN BY: JLW		

SEPTIC TANK NOTES:

Access risers shall be sealed to prevent the intrusion of ground water and surface water into the system.

Install all access risers to grade.

Install a minimum of 4 feet of cover or 2 foot of cover with 2" of direct burial insulation on the septic tank.

The septic tank shall be constructed to withstand earth and hydrostatic pressures at the installed depth, when full and empty.

Install septic tank and associated equipment per manufacturer's recommendations.

Drill one 1/8" diameter hole in the pump line within the septic tank to facilitate drainback.

The discharge assembly for the pumping system is to have a disconnect union accessible from grade to allow for pump replacement.

All electrical connections must be housed in a UL approved waterproof splice box.

The pump control panel is to be mounted in a manner allowing alarms to be seen and heard, as well as for easy access.

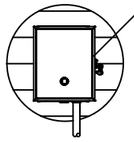
An electrical disconnect must be provided within the line of sight of the pump chamber.

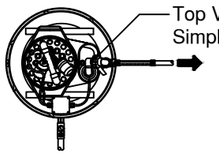
APPROVED EQUALS:

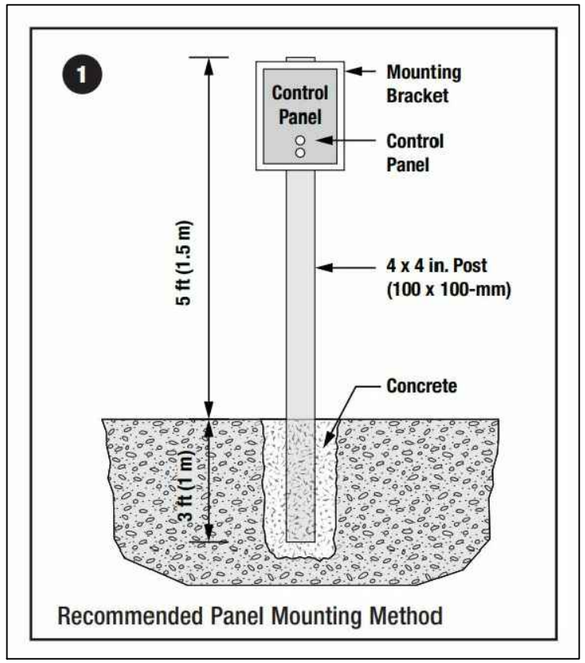
If the installer seeks approval of a product other than the brand or brands specified within these documents, the installer shall furnish written evidence that such product conforms in all respects to the specified requirements, and that it has been used successfully elsewhere under similar conditions.

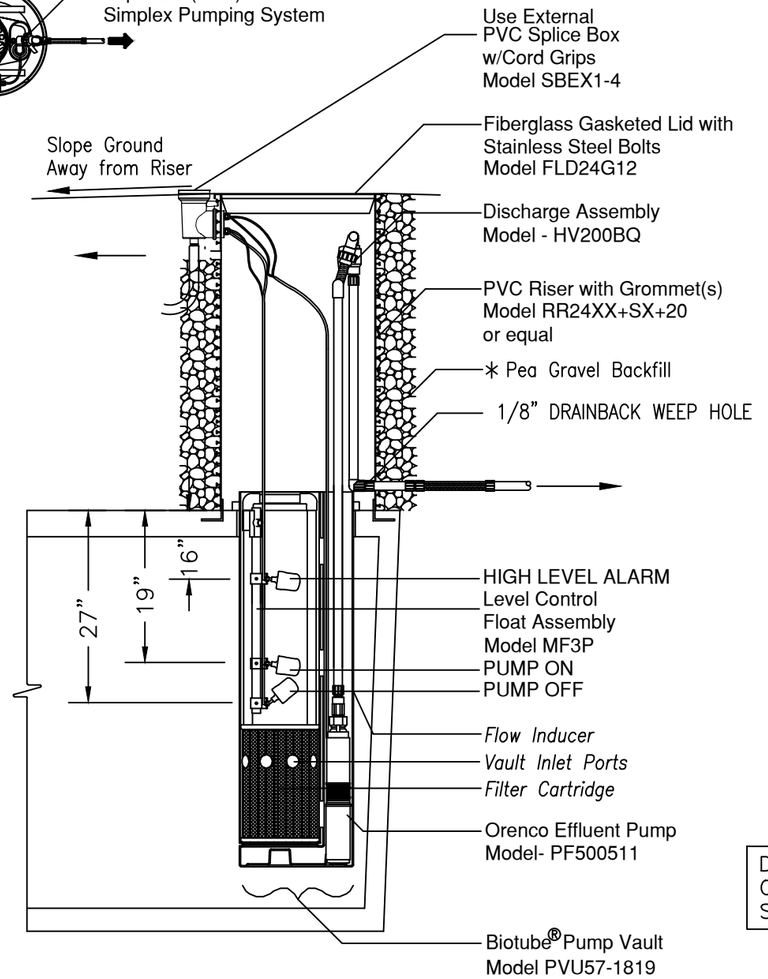
Effluent Pumping System for Cold Weather Applications (cw style)

Scale: NONE









* Pea Gravel Backfill Recommended to Help Prevent Frost Heave

Orenco Systems®
Incorporated

814 AIRWAY AVENUE
SUTHERLIN, OREGON
97479-9012

TOLL FREE:
(800) 348-9843

TELEPHONE:
(541) 459-4449

FACSIMILE:
(541) 459-2884

DRAWING MODIFIED FROM ORENCO PROVIDED STANDARD DETAIL

NDW-TD-EPS-HV-02
Rev. 3.0 (03/06)

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P.O. BOX 1048
CONIFER, CO
80433
(720)-515-1781

PROJECT: 2021624 - OWTS DESIGN

LOCATION:
127 KERNITE LANE
CRIPPLE CREEK, CO 80813

CLIENT: TRINITY BUILDING CONTRACTOR

TITLE: SEPTIC TANK DETAILS

DATE: 11/11/2021

SCALE: NONE

DRAWN BY: JLW

REVISIONS:
1
2
3

SHEET:
6/7

285 ENGINEERING

PUMP AND SYSTEM CURVES:

Pump Selection for a Pressurized System - Single Family Residence Project

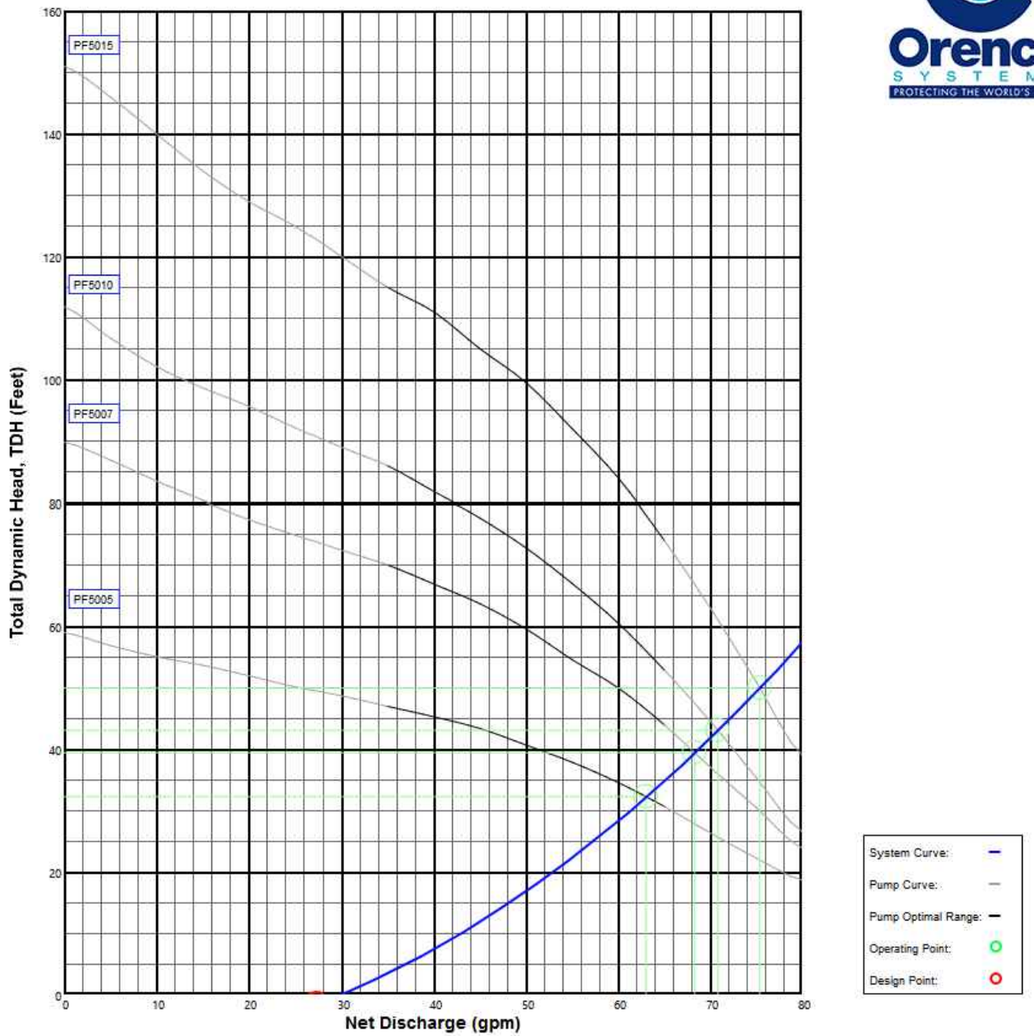
Parameters		
Discharge Assembly Size	2.00	inches
Transport Length	30	feet
Transport Pipe Class	40	
Transport Line Size	1.50	inches
Distributing Valve Model	None	
Max Elevation Lift	-9.5	feet
Manifold Length	6	feet
Manifold Pipe Class	40	
Manifold Pipe Size	1.50	inches
Number of Laterals per Cell	3	
Lateral Length	61	feet
Lateral Pipe Class	40	
Lateral Pipe Size	1.50	inches
Orifice Size	1/8	inches
Orifice Spacing	3	feet
Residual Head	5	feet
Flow Meter	None	inches
'Add-on' Friction Losses	0	feet

Calculations		
Minimum Flow Rate per Orifice	0.43	gpm
Number of Orifices per Zone	63	
Total Flow Rate per Zone	27.3	gpm
Number of Laterals per Zone	3	
% Flow Differential 1st/Last Orifice	1.2	%
Transport Velocity	4.3	fps

Frictional Head Losses		
Loss through Discharge	1.5	feet
Loss in Transport	1.3	feet
Loss through Valve	0.0	feet
Loss in Manifold	0.1	feet
Loss in Laterals	0.1	feet
Loss through Flowmeter	0.0	feet
'Add-on' Friction Losses	0.0	feet

Pipe Volumes		
Vol of Transport Line	3.2	gals
Vol of Manifold	0.6	gals
Vol of Laterals per Zone	19.4	gals
Total Volume	23.2	gals

Minimum Pump Requirements		
Design Flow Rate	27.3	gpm
Total Dynamic Head	1.5	feet



NOTE:

SET PUMP FLOATS TO DISCHARGE 83 GALLONS PER PUMP CYCLE

285 ENGINEERING
P.O. BOX 1048
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PROJECT: 2021624 - OWTS DESIGN

LOCATION:
127 KERNITE LANE
CRIPPLE CREEK, CO 80813

CLIENT: TRINITY BUILDING CONTRACTOR

TITLE: PUMP AND SYSTEM CURVES

DATE: 11/11/2021

SCALE: NONE

DRAWN BY: JLW

REVISIONS:
1
2
3

SHEET:
7/7