

Cover Page

CALCULATIONS (New OWTS):

Multi-Family Camping Site
Up to 4 Plumbed "Premium" Campsites (2 Occupants/Site)
Bathhouse Serving up to 4 "Off-Grid" Campsite (2 Occupants/Site)
n=16 Occupants
q=75 GPD/Occupant

LTAR = 0.50 Gallons per Day per Square Foot (GPD/SF).
USDA Soil Type 2A per Profile Pit 2/4/2022.

Q = (16 Occupants)(75 GPD/Occupant)
Q = 1,200.0 GPD

A = $\frac{Q}{LTAR} = \frac{1,200.0 \text{ GPD}}{0.50 \text{ GPD/SF}}$

A = 2,400.0 SF

Gravity Fed Chamber Beds:
A = (2,400.0 SF)(1.2)(0.7)
A = 2,016.0 SF Required

CHAMBER BED SYSTEM (Gravity Fed):

Infiltrator Systems Inc. Quick 4 Standard Chambers
Chambers = SF RQD / 12.0 SF per Chamber
Chambers = 2,016.0 SF / 12.0 SF = Min. 168 Chambers
Install 2 Zones: 4 Rows x 21 Chambers Long
Chambers Provided = 168 Total
Total Contact Area = 2,016.0 SF Actual
Total Contact Area = 2,016.0 SF Required

Note: Use of Alternative Chambers is Acceptable.
For ARC 36 Standard Chambers (15.0 SF / Chamber, Min. 135 Chambers). Install 2 Zones with 4 Rows of 17 Chambers (136 Total). Contact Engineer for Clarification.

MAXIMUM DEPTH:

48" As Measured on the Up-Hill Side of the Excavation

TANK SIZES:

Main Tank Size = Min. 2,500 Gallons (Two-Compartment)
OR 1,500 Gallon (One-Compartment) + 1,000 Gallon (One-Compartment)
OR (2) 1,250 Gallon (One-Compartment)
EPCHD Approved Effluent Filter on Outlet

INSPECTIONS REQUIRED ARE AS FOLLOWS:

- 1.) Engineer Will Inspect the Installation of All OWTS Components (i.e. All Plumbing, Tanks, Pump Chamber, STA, etc.) Prior to Backfill.
 - 2.) Engineer to Inspect the Soil Treatment Area After Backfill to Insure Min. Cover and Proper Drainage Away from Soil Treatment Area.
- Please Notify this Office Min. 24 Hours Prior to Inspection.

PIPE NOTES:

Provide 2.0% Min. Grade on Pipe to Septic Tank. Provide 2.0% Min. Grade on Pipe to the Soil Treatment Area.

All Bends Limited to 45 Degree Ells or Long Sweep Quarter Bends. Areas Under Driveways Shall Be Protected as Per El Paso County Health Department Regulations.

Building Sewer Clean-Outs Shall Be Installed within 5 FT of the Structure and at Intervals Not to Exceed 100' in Straight Runs and When the Cumulative Change in Direction Exceeds 135 Degrees.

FINAL GRADING NOTES:

Soil Treatment Area Shall Be Crowned and Covered with a Minimum of 6" of Select Topsoil to Provide a Base for Good Vegetative Cover.

Contact Soil Conservation Service or County Extension Agent for Vegetation Best Suited for the Area. Grasses are Best. Trees and Shrubs May Damage/Block Pipes. Vegetation Shall Be Maintained and Mowed to Prevent Formation of Bio-Matting. Do Not Pave Over the Soil Treatment Area.

Provide Drainage Swale Around Uphill Side of the Soil Treatment Area.

HOMEOWNER RESPONSIBILITY:

- Have Septic Tank Pump Every 3-5 Years (or As Needed, Contact Licensed Pumper)
 - Have OWTS Inspected Annually
 - Clean Effluent Filter
 - Check Water Levels in Inspection Ports
 - Plant Native Grass Over STA (No Plants with Roots or that Require Irrigation)
 - Don't Pour Chemicals Down Drain
 - Don't Throw Trash in Toilet (Minimize Toilet Paper Consumption)
 - Use of Garbage Disposal is Discouraged
 - Conserve Water and Repair Leaking Fixtures
- This is NOT a Complete List (Contact Local Health Department and EPA List of Septic "Do's and Don'ts")

Geoquest, LLC. has Provided this Design in Accordance with the Standards of Practice Common to the Area. However, as with All Underground Absorption Fields, Guarantee from Failure is Impossible. Even with Proper Installation, as Outlined for this Proposed Construction, There Can Remain Many Uncertainties, and Difficulties Can Still Arise in the Operation of the System in the Future. Proper Design, Construction, and Maintenance can Assist in Minimizing Uncertainties, but Cannot Entirely Eliminate Them. Homeowners Should be Advised of Maintenance and Special Considerations for Septic Systems. Refer to El Paso County Public Health Brochure: "Maintaining Your Septic System" for Additional Information. Due to the Possibility of Unknown Water Usage Factors, Geoquest, LLC. Provides No Warranty of this Design or Installation Against Failure or Damage of Any Type. Therefore, the Limits of Liability Extend Only to the Fee Rendered for the Professional Services Provided.

GENERAL NOTES:

All Work per El Paso County Board of Health Regulations Chapter 8: On-Site Wastewater Treatment Systems (OWTS) Criteria.

All Setbacks Shall Conform to El Paso County Regulations (See Table 7-1 in the Regulations for Additional Information). Contractor/Homeowner Must Verify All Setbacks and Obtain Utility Clearances Prior to Construction.

Contractor/Homeowner is Responsible for Permit. Contractor/Homeowner Must Obtain Approval of Engineered OWTS from the El Paso County Health Department.

All Bends Limited to 45 Degree Ells or Long Sweep Quarter Bends. Areas Under Driveways Shall Be Protected as Per El Paso County Health Department Regulations.

Building Sewer Clean-Outs Shall Be Installed within 5 FT of the Structure and at Intervals Not to Exceed 100 FT in Straight Runs, Upstream at Each Change of Direction Greater Than 45°, and at Any Combination of Bends Greater Than 45° within a 40 FT Section of Building Sewer.

Grade Surrounding Area to Drain Away from the Soil Treatment Area (STA).

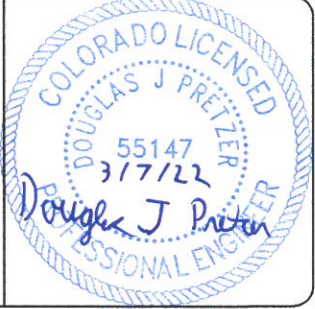
Paving, Planting of Trees/Shrubs, Irrigation, Vehicular Traffic or Hoofed Animal Traffic of Any Kind Over the STA may Cause Premature Failure and is Prohibited.

Refer to Sheet 2, 3, and 4 for Additional Details and Information.

GEOQUEST, LLC.

6825 SILVER PONDS HEIGHTS
SUITE 102
COLORADO SPRINGS, CO
80908

OFFICE: (719) 481-4560
FAX: (719) 481-9204



Project: 22-0086

Sheet: 1 of 4

Date: 7 Mar 2022

Revised:

Drawn by: djp

Checked by: djp

Project Name and Address

Christopher Jeub
16315 Rickenbacker Avenue
Lot #2, Block #1,
Vans Subdivision,
Sch. No. 7127001011
El Paso County, Colorado

CHAMBER BED SYSTEM (Gravity Fed):

Infiltrator Systems Inc. Quick 4 Standard Chambers
Chambers = SF RQD / 12.0 SF per Chamber
Chambers = 2,016.0 SF / 12.0 SF = Min. 168 Chambers
Install 2 Zones: 4 Rows x 21 Chambers Long
Chambers Provided = 168 Total
Total Contact Area = 2,016.0 SF Actual
Total Contact Area = 2,016.0 SF Required

Note: Use of Alternative Chambers is Acceptable.
For ARC 36 Standard Chambers (15.0 SF / Chamber, Min. 135 Chambers). Install 2 Zones with 4 Rows of 17 Chambers (136 Total). Contact Engineer for Clarification.

4" Ø PVC Solid Pipe from Each Structure to the Septic Tank, with Cleanouts within 5 FT of Each Structure and at Intervals Not to Exceed 100 FT in Straight Runs, Upstream at Each Change of Direction Greater Than 45°, and at Any Combination of Bends Greater Than 45° within a 40 FT Section of Building Sewer. Maintain 2.0% Min. Grade on Pipe Feeding the Septic Tank. Exact Location of the Discharge Line from the House per Plumbing Design by Others.

Min. 2,500 Gal. Precast Concrete Two Compartment Septic Tank (or Combination of Tanks) w/ EPCPH Approved Effluent Filter on Outlet (Requires Regular Maintenance). Inlet Approx. 24" Below Existing Grade. Risers to Grade with Secure Access Cover (Water Tight, Min. 3" Above Finish Grade, Typ. All Septic Tank Access Locations). Exact Location to be Field Determined.

Minor Rotation or Curvature (ie. Less Than 15°) of the Soil Treatment Area (STA) Beds to Best Fit the Site Topography is Acceptable (i.e. Parallel to Site Contours). STA shall Maintain the Approximate Orientation Shown w/ Respect to Buildings and Lot Lines. Contact Engineer for Clarification.

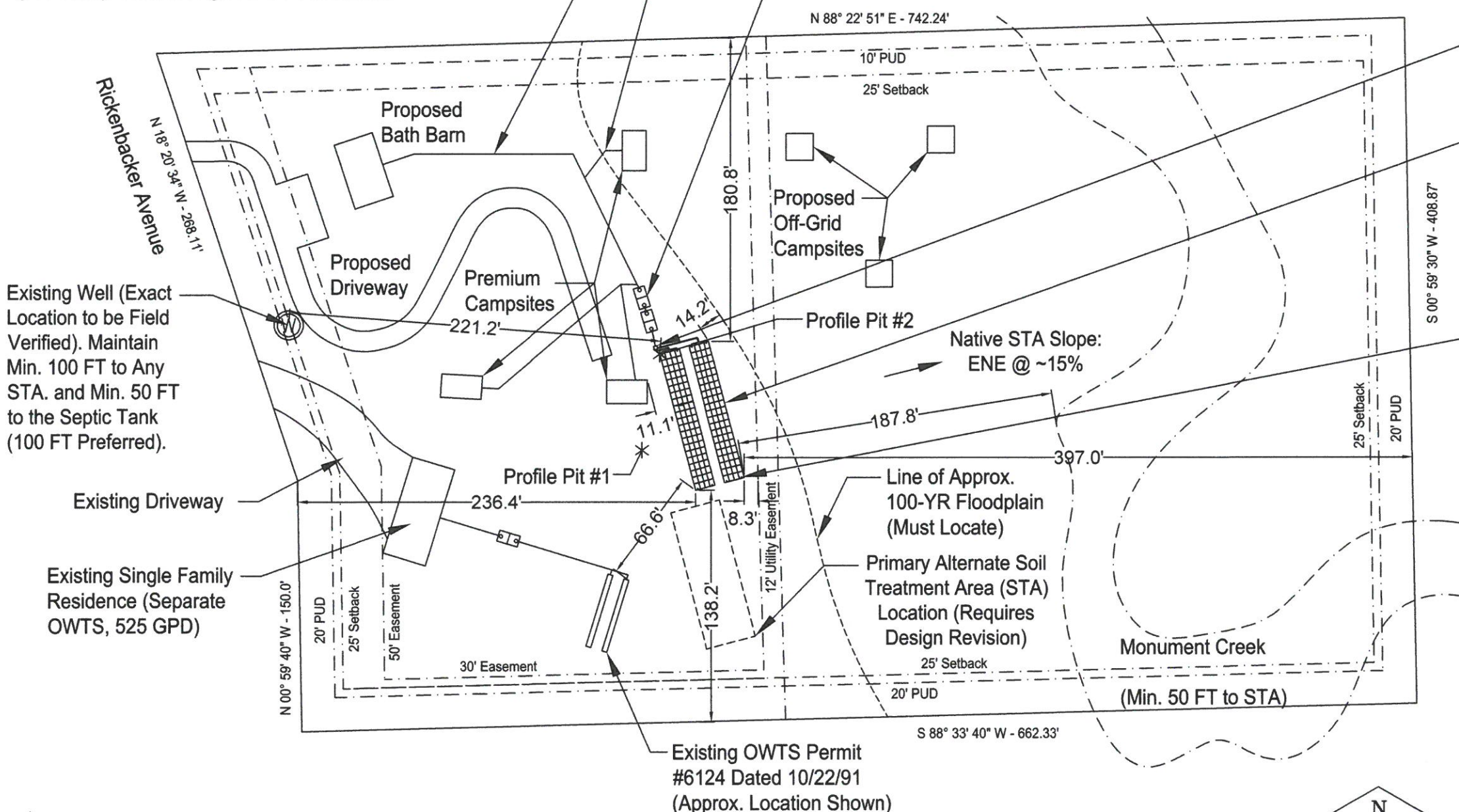
Install Drainage Swale Between the House and Soil Treatment Area to Ensure Surface Runoff is Diverted Around the STA. Downspouts near the STA Shall Discharge into the Swale or Extended Beyond the STA.

Distribution Box w/ Speed Levelers to Ensure Equal Distribution. Install a Secure Access Riser to Grade to Allow for Future Speed Leveler Adjustment.

Quick4 Plus Standard Chambers:
34" W x 48" L x 12" H Each
2 Zones: 4 Rows x 21 Chambers Long (168 Total).
Max. Depth of Installation 48" Below Native Grade (As Measured on the Uphill Side). See STA Layout and Cross-Section for Additional Detail and Clarification.

Inspection Port / Vent at Each Corner of Each Bed (Typ. of 8 Total). See Detail on Page 3 for Additional Information.

OWTS to be Roped Off (Caution Tape or Temporary Construction Fencing is Acceptable) Prior To and During Construction to Prevent Construction Traffic from Compacting Surface Soils and Protect the STA from Traffic After Installation.



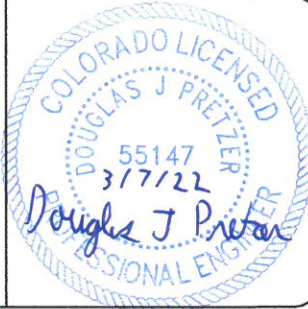
* Indicates Geoquest, LLC. Profile Pit Test Locations
Location from Northwest Lot Corner to Profile Pit #1: S. 45° E. - 346'
Location from Profile Pit #1 to Profile Pit #2: N. 12° E. - 60'
GPS Coordinates Profile Pit #1: N. 39° 04' 5.0" , W. 104° 52' 28.9"
GPS Coordinates Profile Pit #2: N. 39° 05' 5.5" , W. 104° 52' 28.8"

Site Plan

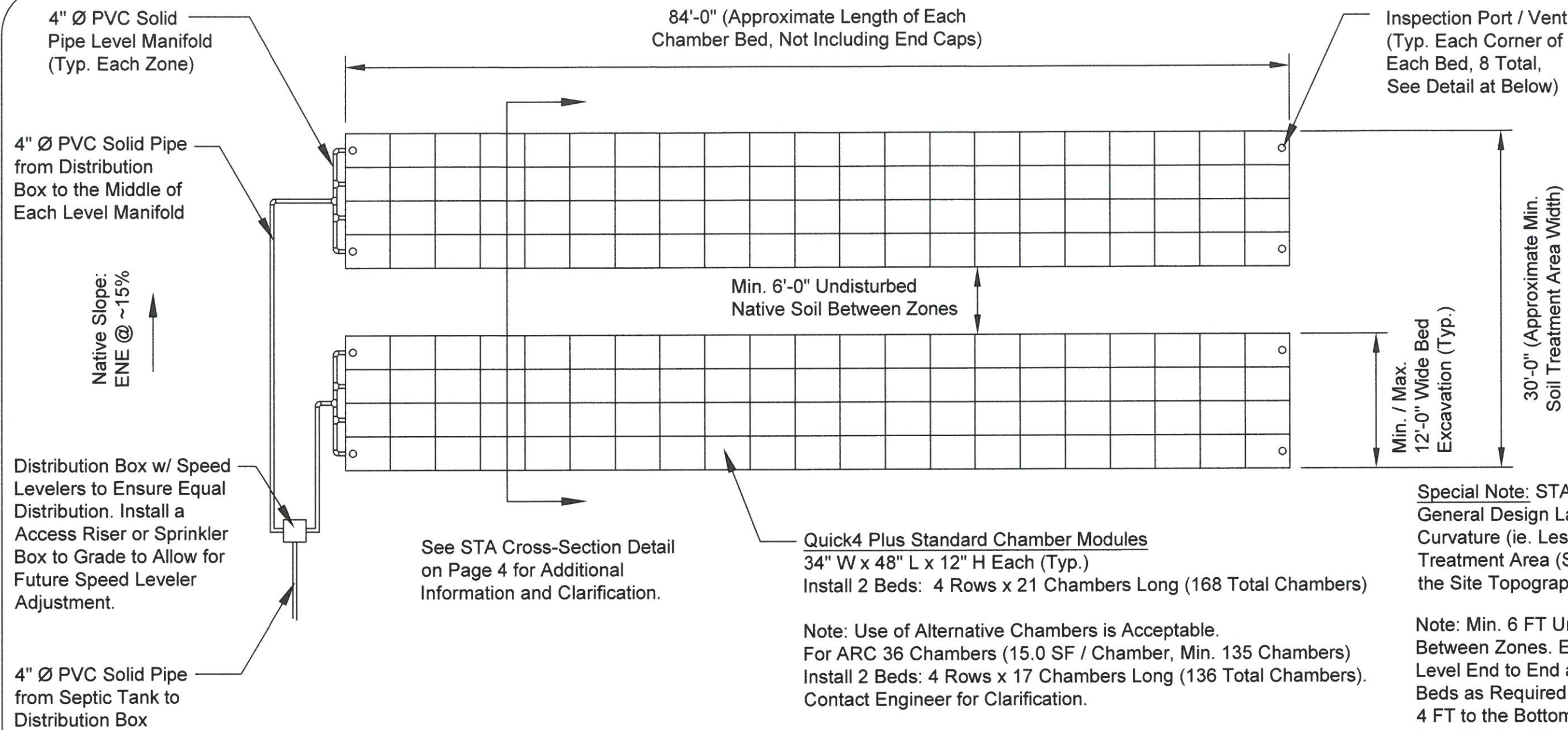
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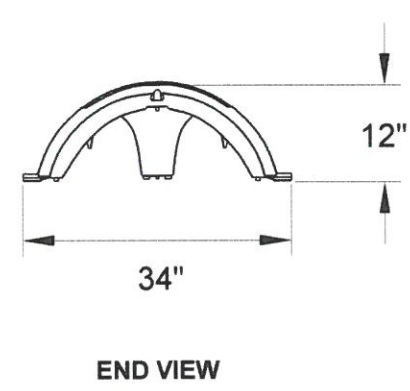
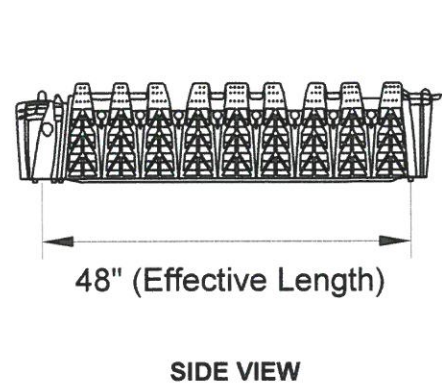
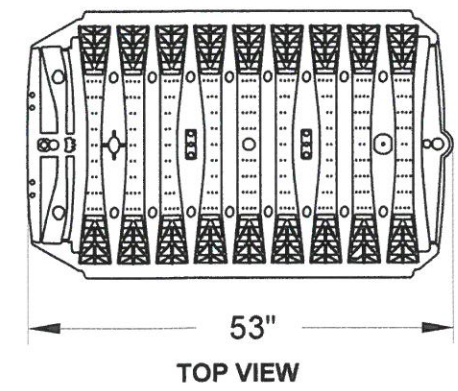


Special Note: STA Layout Illustrates the General Design Layout. Minor Rotation or Curvature (ie. Less Than 15°) of the Soil Treatment Area (STA) Beds to Best Fit the Site Topography is Acceptable.

Note: Min. 6 FT Undisturbed Native Soil Between Zones. Each Bed Shall be Level End to End and Side to Side. Step Beds as Required by Native Slope. Max. 4 FT to the Bottom of the Chambers from Finished Grade as Measured on the Uphill Side of Each Chamber Bed.

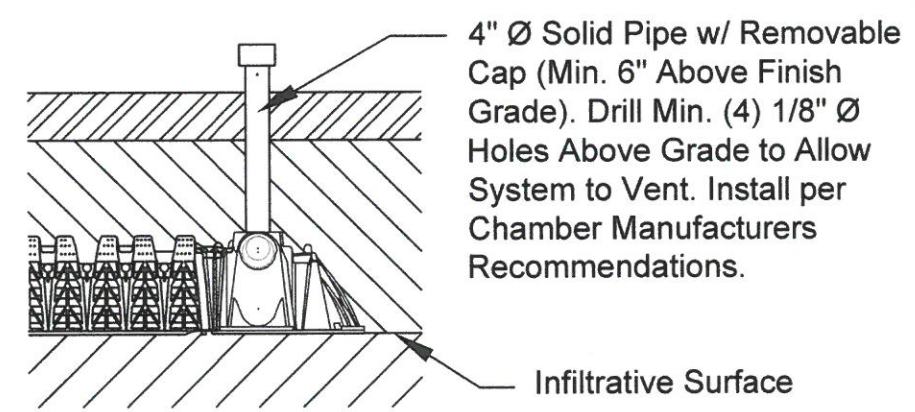
Soil Treatment Area (STA) Layout (Chamber Beds)

SCALE: 1" = 10'



Quick 4 Plus Standard Details

Not to Scale



Inspection Port / Vent Detail

Not to Scale

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COLORADO LICENSED
DOUGLAS J. PRETZER
55147
3/7/22
Professional Engineer

Project: 22-0086	Project Name and Address
Sheet: 3 of 4	Christopher Jeub
Date: 7 Mar 2022	16315 Rickenbacker Avenue
Revised:	Lot #2, Block #1,
Drawn by: djp	Vans Subdivision,
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Provide Min. 12" (36" Max.) Cover Over Top of Chambers with Min. 6" Topsoil. Install a Continuous Crowned Slope Over All Chamber Beds to Prevent Ponding of Precipitation. It is Acceptable to Cover Each Bed Individually if Desired. Special Care Shall be Taken to Grade the Area Between Beds to Prevent Ponding of Precipitation.

Plant w/ Native Grasses and Maintain (See Notes)

Native Slope: ENE @ ~15%

Roughen Sidewall Surface to Eliminate Bucket Smear (Typ. All Sides of Each Excavation)

Remove All Native Topsoil within STA Footprint and Stockpile for Re-Use (Approx. 4" Native), then Remove Approx. 20"-32" Native Material in the Area Each Chamber Bed. Scarify Bottom of Each Bed and Eliminate Bucket Smear on All Excavation Sidewalls (Prior to Placing Chambers, Typ. Each Bed). Max. 48" to the Bottom of the Chambers from Finished Grade as Measured on the Uphill Side of Each Chamber Bed.

Note: Min. 6 FT Undisturbed Native Soil Between Zones. Each Bed Shall be Level End to End and Side to Side. Step Beds as Required by Native Slope. Max. 48" to the Bottom of the Chambers from Finished Grade as Measured on the Uphill Side of Each Chamber Bed.

Special Note: STA Layout Illustrates the General Design Layout. Minor Rotation or Curvature (ie. Less Than 15°) of the Soil Treatment Area (STA) Beds to Best Fit the Site Topography is Acceptable.

30'-0" (Approximate Min. Soil Treatment Area Width)

Min. 6'-0" Undisturbed Native Soil Between Chamber Beds

Min. / Max. 12'-0" Wide Excavation for Each Bed (Typ.)

Provide Positive Drainage Swale on Uphill Side to Divert Surface Precipitation Runoff Around the Soil Treatment Area (Min. 2% Grade)

Max. 48" from Native/Finished Grade (24" to 36" Preferred) as Measured on the Uphill Side of the Each Zone to Maintain 48" from Groundwater Evidence @ 86"

Quick4 Plus Standard Chamber Modules

34" W x 48" L x 12" H Each (Typ.)

Install 2 Beds: 4 Rows x 21 Chambers Long (168 Total Chambers)

Step Beds as Required by Native Slope. Chambers Shall be Set Level in Each Bed.

Note: Use of Alternative Chambers is Acceptable.

For ARC 36 Chambers (15.0 SF / Chamber, Min. 135 Chambers)

Install 2 Beds: 4 Rows x 17 Chambers Long (136 Total Chambers).

Contact Engineer for Clarification.

Soil Treatment Area (STA) Cross-Section (Chamber Beds)

Not to Scale



Topsoil (Min. 6" on Final Cover)
Native Topsoil (Approx. 4", Remove All from STA Footprint and Stockpile for Re-Use on Final Cover)



Approved Material to Provide Cover (Min. 12", Max. 36" Total, Including Topsoil)

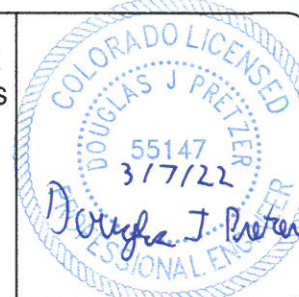


Native Soil - Sandy Loam (USDA 2A, Approx. 4" - 8' Below Existing Grade)

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