Building Permit Application

Email to: info@townofblueriver.org
Questions? Call (970) 547-0545 ext. 1

Lot Number: 43 **Subdivision:** 1462
Blue River Physical Address: 135 Mount Argentine Road (CR 598), Blue River CO 80424

Homeowner Information:
Name: Owen & Ashley Nalle
Mailing Address: PO BOX 2137, Breckenridge CO 80424
Phone:
Email: owennalle@yahoo.com

Contractor Information
Company Name: Pinnacle Mountain Homes
Contact Name: Ashley Goldberg
Mailing Address: PO Box 1000, Frisco, CO 80443
Phone: 646-373-4434
Email: ashley@pinnaclemtnhomes.com
Contractor Registration #: BL23-000036
***Please note a Town of Blue River Business License is required for all businesses to conduct business in the Town of Blue River including contractors, sub-contractors and architects. ***

Description of Project:
SINGLE FAMILY NEW CONSTRUCTION.

Distance to Property Line	Type of Heat:RADIANT	Construction Type:5A
North:228'	Roof:METAL + SHINGLES	Building Height:34'
South:77'	Exterior Walls:WOOD SIDING	No. Stories:2
East:140'	Interior Walls:T&G + DRYWALL	Total # Bedrooms:6
West:90'	Basement Fin. Sq.Ft.:3,152 SF	Total # Bathrooms:8
New Addition/Res. Sq.Ft.:	Main Level Sq.Ft.:6,534 SF	Septic or Sewer:
Garage Sq.Ft.:1,821 SF	2nd Level Sq.Ft.:	SEPTIC
Total Square footage:11,613 SF	3rd Level Sq.Ft.:	

SEPARATE PERMITS ARE REQUIRED FOR ELECTRICAL, PLUMBING, HEATING, VENTILIATION WORK, & FIREPLACES. THIS PERMIT BECOMES NULL AND VOID IF CONSTRUCTION AUTHORIZED IS NOT COMMENCED WITHIN ____ OR IF CONSTRUCTION IS SUSPENDED OR ABANDONED FOR A PERIOR OF ___ AT ANY TIME AFTER WORK IS COMMENCED.

I HEREBY CERTIFY THAT I HAVE READ AND EXAMINDED THIS APPLICATION AND KNOW THE SAME TO BE TRUE AND CORRECT. I AGREE TO COMPLY WITH ALL TOWN ORDINANCES AND STATE LAWS REGARDING BUILDING CONSTRUCTION AND TO BUILD ACCORDING TO THE APPROVED PLANS. THE GRANT OF A PERMIT DOES NOT PRESUMED TO GIVE AUTHORITY TO VIOLATE OR CANCEL THE PROVISIONS OF ANY OTHER STATE OR LOCAL LAW REGULATING CONSTRUCTION OR THE PERFORMANCE OF CONSTRUCTION.

Signature of Owner or Contractor: _____ Date: _____

Submittal Requirements

****ALL Submittals Must be Electronic****
Emailed to: info@townofblueriver.org

Planning & Zoning Review Submittal Requirements
****Please indicate via check box item included as well as page number in submitted packet.**

Completed √	Item	Description	Page #
	Site Plan	Scale: 1" = 10'; May appear on a single sight plan. IF on a separate page, please indicate the page.	
	SITE PLAN	Property Boundaries	SP1.01
	SITE PLAN	Building Envelope with setbacks	SP1.01
	SITE PLAN	Proposed Buildings	SP1.01
	SITE PLAN	Structures (existing & proposed)	SP1.01
	SITE PLAN	Driveway & Grades	SP1.01
	NA	A wetlands delineation & Stream crossing structures where applicable.	NA
	SURVEY PROVIDED BY RANGE WEST. SECOND PAGE OF PACKET.	Topographic survey, prepared and stamped by a licensed surveyor, indicating site contours at 2' intervals, easements, and significant natural features such as rock outcroppings, drainages and mature tree stands.	SV
		Transformer & vault location (if installed by owner or existing)	
	SEPTIC PERMIT INCLUDED	Well location; septic if applicable	SP1.01
	SITE PLAN	Snow storage areas and calculations	SP1.01
	SITE PLAN	Major site improvements	SP1.01
	SITE PLAN	Existing & proposed grading & drainage	SP1.01
	Landscaping Plan	*May be included in the site plan**	
		Landscaping must indicate tree removal for defensible space requirement; any trees 6" or more primarily noting the removal of any ponderosa pines or large trees. Clear cutting of a site is not allowed.	SP1.02
		Indicate the percentage of trees removed and revegetation to be conducted.	SP1.02
	LANDSCAPE NOTES	Upon completion of the construction project, all land must be raked and	SP1.02

		reseeded with native seed prior to issuance of CO. in cases of completion during snow coverage and/or winter, CO may be issued with conditions for completions within 60 days of the last snow and a deposit.	SP1.02
		Any major structures (retaining walls; fences; landscaping rocks) must be indicated in detail on plans in conformance with the design regulations.	SP1.02
		Indicating building walls, floors and roof relative to the site, including existing and proposed grades, retaining wall and proposed site improvements.	SP1.02
	Floor Plans	Scale 1/8" = 1'	
	FLOOR PLANS	Indicate the general layout of all rooms, approximate size, and total square footage of enclosed space for each floor level.	A1.01-A 1.11
	Exterior Elevations	Scale same as floor plans	
	BUILDING ELEVATIONS	Detail to indicate the architectural character of the residence, fenestration and existing and proposed grades. Elevations must include a description of exterior materials and colors.	A2.01-A 2.11
	Roof Plan	Scale same as floor plans	
	ROOF PLAN + SITE PLAN (BUILDING HEIGHTS)	Indicate the proposed roof pitch, overhang lengths, flue locations, roofing materials and elevations of major ridge lines and all eave lines.	SP1.01, A1.03, A1.09 & A1.10
	Materials Sheet	Display materials to be used. Color renderings are suggested as well. In cases of additions, if matching the existing structure, photos of current home.	MATERIA L LEDGEN D ON SHEETS A2.01

After Approval and BEFORE Permit is Issued:

ELECTRONIC COPY Stamped set.

- **All of the above mentioned plus items below in one plan set.**

Completed √	Item	Page #
	Soils report if applicable	INCLUDED
	Electrical, plumbing and mechanical plans.	E/M SHEETS
	Construction Management Plan. Please refer to the Town Code and Architectural Guidelines for all requirements.	SP1.02
	Stamped structural plan	S SHEETS
	Current Summit County Septic System Permit (including system plot plan), or evidence of full payment of tap fees to Upper Blue Sanitary District.	APPLIED FOR
	Current Colorado Well Permit or evidence of full payment of tap fees to Timber Creek Water District	APPLIED FOR
	Colorado Department of Transportation Hwy Access Permit	
	Designation of General Contractor, except for bona fide homeowner contractor	PINNACLE MOUNTAIN HOMES
	For Manufactured Homes the following additional information is required	
	• **State of Colorado Division of Housing Approved Plans**	
	• **State of Colorado Division of Housing Registered Installer Certificate**	

Blue River Plan Submittal Requirements for Residential Plan Review

- When designing the structure, refer to the Blue River Municipal Town Code, Chapter 16 for zoning information and allowable uses/construction. The Building Code information is available under Chapter 18. https://townofblueriver.colorado.gov.

- Building Codes Adopted:
  - International Residential Code 2018
  - The Electrical Code is the current code adopted by the State of Colorado: 2020

Note: Applicable codes are required to be notated on plans.

- Snow loads:
  - Roofs shall be designed in accordance with accepted engineering practice based upon a ground snow load of 100 psf.
  - Balconies/decks-125 psf.
  - No reductions for duration.
- Frost line depth:
  - Foundation footing minimum depth below grade-40 inches.
  - Uncovered deck piers may be set at 24 inches.
- Roof underlayment 100% Ice & Water shield.
- Roof may be metal; 30-year minimum architectural grade, composition fiberglass (dark brown, dark gray, dark green, weathered wood or black only); or class-A #1 cedar shakes.
- Wind speed: 90 mph, exposure "B". Seismic design category: "B".
- Propane gas alarm/shutoff system required.
- Wood burning stoves: Required to meet Colorado Dept. of Health, Regulation No. 4.
- The building height limit in the Town is 35 feet. Refer to the Architectural Guidelines for additional information.
- Locally re-settable GFCI breakers are required in bathrooms.
- Compliance with the International Energy Conservation Code is required.
- Any application that would create an accessory apartment must meet zoning regulations and will not be processed without prior approval of the Town Board of Trustees.
- Note that Hwy 9 access permits may require 3-4 months and well permits 5-6 weeks.
- Planning & Zoning Commission approvals become void if the building permit is not issued within eighteen (18) months.
- Building permits become void if construction is discontinued for more than 180 days.

In order for your permit application to be reviewed and processed properly, the following construction information must be provided. **Note:** "Preliminary" and/or plans shown as "Not for Construction" or similar are unacceptable. ***Hardcopy submittals will not be accepted.***

Note: Items below are not all inclusive of the requirements. Please review the Building Application Packet, design guidelines, building and land use codes for complete information.

Soils Report

Must be sealed and signed by a licensed Colorado Engineer.

- Provide an engineer's soil investigation report indicating type of soil and recommended foundation design. include any required shoring.

Improvement Survey Plat

- Provide an Improvement Survey Plat (ISP) following Colorado Revised Statutes for new principal structures, substantial expansions (25% or more) to principal structures and new accessory dwelling units (ADU's).
- Provide a permanent reference to spot elevation (benchmark) that will not be disturbed during construction.
- Provide existing spot elevations at property corners and at midpoints of the side property lines.
- Must be stamped and signed by a Professional Land Surveyor (PLS) licensed by the state of Colorado.

Site Plan

- Provide site plan that shows dimensions reflecting the distances to property lines
- Indicate all public or private easements
- Show location of all proposed and existing structures with dimensions
- Prove type of construction for all structures on site
- Provide landscaping plan.
- Show permanent reference spot elevation (benchmark), existing spot elevations at property corners and at midpoints of the side property lines.
- Indicate roof drainage on site plan with arrows showing the direction of the gutter downspouts. Roof drainage shall flow towards the road and away from all structures.

Structural Plans

Plans must be sealed and signed by a Colorado Structural Engineer or Architect

- Indicate size, location and method of reinforcement for all proposed footings, column pads, piers, caissons, grad beams, foundation walls, decks, guardrails, guardrail posts. Specify location of reinforcing steel and anchor bolts.

- Provide complete and clearly dimensioned floor framing plan for each level and roof framing plan which indicates the materials, types, sizes and location of all structural elements.
- Provide complete structural design criteria including but not limited to required design loads, material specifications and structural construction requirements.
- Provide complete structural calculations for each structure.

Architectural Plans

- Provide complete and dimensioned floor layout at each level which identifies the use of each room.
- Provide Complete and dimensioned roof plan and indicate all roof slopes.
- Provide complete and dimensioned reflected ceiling plan.
- Provide exterior elevations for each side of the building which contains an overall building height and floor-to-floor heights and indicate location, size and types of all doors and glazed openings including hazardous glazing and fall protection locations.
- Provide a bulk plane diagram on front and rear exterior elevations relative to the base plane elevation. The base plan for the bulk plane is establishing by taking the average of the existing grades of the midpoints of the two side property lines.
- Provide building and wall sections which clearly identify the required type and location of all materials for construction of beams, columns, floors, walls, ceilings, roofs.
- Provide stair geometry. Include rise and run, handrail and guardrail heights.
- Provide one major section through the exterior wall from footings to the highest part of the roof (min. scale 1/4"=1')
- Provide square foot area breakdown per floor level.

Electrical Plans

Provide electrical plans showing the location and capacity of the service equipment and electrical panels, the location of all smoke detectors, carbons monoxide detectors, electrical receptacles, switches, and lighting fixtures.

Mechanical Plans

- Provide mechanical plans and indicate the location of all heating, ventilating and air conditioning equipment. Show the location of the condensing unit. Detail the equipment access and working clearances.
- Show dryer exhaust termination location and clearances, environmental exhaust termination locations and clearances.
- Provide Manual J and Manual D calculations. Must be legible. No exceptions.
- Provide all fireplace specifications, rated separation details, direct vent termination details when applicable, hearth extensions when required, chimney clearances, shutoff and control access.

Plumbing Plans

- Provide plumbing plans and indicate the location of all plumbing fixtures and appliances (Isometric may be required per the discretion of the plans examiner.)
- Provide the supply line size and main discharge size. Note the water supply inlet location.
- Indicate whether appliances are gas-operated, electric, or otherwise. List types of material to be used for all water supply, drainage and vent piping. Provide fixture max flow rates and insulation values.
- Gas load calculations and piping diagram is required.

Energy Conservation Plans

Provide verification that the project meets the requirements of the IECC, or provide a simulated energy performance analysis such as RES-check. Provide all required information per 2012 IECC R103.2.

Resubmittal Requirements

- Provide a written response addressing each correction.
- Provide revision clouds for each correction made.
- Provide updated information in the revision section of the title block.
- Provide complete plan packs per discipline requiring corrections. Example: If you are resubmitting for Civil corrections, provide a complete revised plan pack.

Subsoil Investigation Report

Rob Theobald P.E.

Prepared For:

135 Mount Argentine Road
Blue River, Colorado

This report presents the findings of sub-surface soils testing performed at 135 Mount Argentine Road, Blue River, Colorado. This testing was done in anticipation of the construction of a new single family residence. The purpose of said testing was to determine soil bearing pressure, groundwater conditions, soils classification for Onsite Wastewater Treatment System (OWTS) design, and any other special soil conditions so as to allow for design of foundations, shoring and excavation.

The findings in this report are based upon soils samples taken on June 7, 2023, observations of the soil in the test pit, and knowledge of excavations near the site and testing of the soil sample.

Project Description:

The anticipated project includes the construction of a new single family residence. The anticipated construction will be wood frame construction. It is anticipated that the foundation will be cast in place concrete foundation walls sitting on continuous strip footings. It is also anticipated that there will be point loads sitting on pads. The floor will be a cast in place slab on grade. It is anticipated that cut depths will be relatively shallow at less than 10 feet.

If cut depths exceed 10 feet Engineer should be called to inspect site conditions during excavation. Footings, foundation walls and associated reinforcement will be designed by the structural engineer for the project.

Site Conditions:

The lot is bounded by Mount Argentine Road to the north, residential parcels to the east and west and US Forest service to the south. Site vegetation is primarily spruce/fir forest. The site slopes gently to moderately to the north. A braid of Indiana Creek flows at the north east corner of the lot. The site was vacant and appeared to be largely undisturbed at the time of sampling. According to the Geologic Map of the Breckenridge Quadrangle, Summit County, Colorado (2003) near surface deposits are alluvial. This was confirmed with field testing.

Sub-surface Conditions:

Soils were taken from two pits excavated for the purpose of this report. Test pits were dug with a rubber tracked mini-excavator. Disturbed sampling methods were used.

The first test pit was dug on the north portion of the lot adjacent to the proposed soil treatment area of the OWTS and just north of the anticipated house site. Soils in test pit consisted of 3” of organic topsoil followed by reddish sandy gravel with cobbles and boulders to the limits of exploration at 7’. No groundwater or indication of groundwater was observed.

The second test pit was dug on a bench near the center of the lot within or immediately adjacent to the anticipated house site. Soils in test pit consisted of 3” of organic topsoil followed by reddish slightly silty slightly clayey sand to the limits of excavation at 8’. Groundwater was encountered at 2.5’.

Soil has slight to moderate swell potential.

Foundation:

Cast in place strip footings and pads will be ideal for this site. Foundation should be cast in place and should be placed on undisturbed native soils.

Footings should be designed for a maximum soil bearing pressure of 1,500 pounds per square foot with no minimum loading required.

Any soils disturbed during excavation, or that become inundated with water during excavation or prior to pouring of footers should be removed and replaced with dry native soil compacted to 95% Standard Proctor Density (ASTM D-698) or screened or crushed rock with a nominal size of .75-1.5". Foundations should not be placed on loose, wet or frozen soils.

Footings and foundation walls at footing steps should be poured against undisturbed soils as described above at the bottom of the forms as described above to prevent infiltration of water or backfill soil.

Foundation walls should be designed for a minimum unsupported length of 4'. Footers should be a minimum of 16" wide and minimum pad dimensions should be at least 24".

Based on these recommendations it is anticipated that settlement will be less than 1". Engineer should be called for an open hole inspection prior to placement of footings.

Reinforcing shall be installed per structural plans.

Slabs:

Concrete slabs should be poured on a 6" layer of .75"-1.5" screened rock placed on top of undisturbed native soil.

Slabs should also be isolated from foundation walls and columns by means of expansion joints to allow for unrestrained vertical movement of floor slabs.

Slab should be reinforced per the structural design.

Control joints in slab should be tooled into wet concrete, or saw cut as soon as practical to prevent or control cracking. Control joints should create areas no larger than 100 s.f., and should be laid out to with particular attention towards managing cracking from any corners, sharp turns in edges and blocked out portions of the slab.

A vapor barrier should be installed beneath the slab, and should be uninterrupted or fully sealed. Under-slab insulation should be installed that meets or exceed the 2018 International Energy Conservation Code (IECC 2018), or other applicable codes. Insulation should be continuous, or should be fully sealed, and an insulation material that can support the design loads should be used.

Under-slab utilities should be minimized to the extent possible. Backfilling of excavations for required utilities should be done with screened rock in the .75-1.5" range. Under-slab plumbing should be pressure tested prior to backfill, or pouring of the slab. All utilities should be isolated from the slab to allow for vertical movement as discussed above. Utility trenches entering the building envelope from the outside, or continuing from outside the excavation under the slab should be backfilled with well-compacted native material or dammed with clay to prevent water intrusion.

Foundation Drain:

Due to observed seasonal groundwater due to snow melting, limiting soils layers and ground frost conditions foundation drainage should be provided. A 4" perforated pipe wrapped in filter cloth located at or below footing depth, and bedded in at least 12" of screened rock in the .75-1.5" diameter range will provide foundation drainage. This drain should be located on the outside of the footing and sloped at at least 1% to daylight.

Because of observed and potential perched groundwater, foundation should be waterproofed. A drainage plane such as miri-Drain or Warm-n-Dri or 12" of screened rock shall be installed from 6" below finished grade to footer elevation to footer drain elevation. Foundation should be insulated and insulation should be installed that meets or exceed the 2018 International Energy Conservation Code (IECC 2018), or other applicable codes.

Retaining Walls:

Retaining walls, that is walls that are only backfilled on one side, should be designed with an equivalent passive fluid pressure of 45 p.s.f.. Provisions for drainage of groundwater from behind retaining walls should be made.

Radon:

No radon testing was done as part of this report and Engineer makes no claims of knowledge of radon levels on the site. It is advisable to assume radon levels could be elevated and to refer to a radon expert or Appendix F of the International Residential Code or other applicable codes.

Excavation and Shoring:

The observed soils are an OSHA Type C soil. Excavation safety shall responsibility of the contractor. If shoring is required Engineer should be contacted for a shoring design.

Backfill and Grading:

Backfill under landscape and unimproved areas should be mechanically compacted to minimize settling. Backfill under structural areas (including but not limited to slabs, sidewalks and brick pavers) should be compacted to a minimum of 95% Standard Proctor Density (ASTM D-698). Care should be taken during backfilling to make sure no rocks with a diameter of 8" or greater rest directly against foundation walls.

Additionally care should be taken to make sure foundation waterproofing is not damaged during backfill.

Site should be graded to provide positive surface drainage away from the structure. Grading should have a minimum of 6" of fall in the first 10' away from the structure, or should slope a minimum of 2% away from the structure to a swale sloped at a minimum of 2%.

OWTS:

Site appears well suited for onsite wastewater treatment (OWTS). Based on testing, anticipated infiltrative soils are a Type 1 with a high rock content resulting in an R-0 Type soil. Based on this a mounded sand filter soil treatment area with pressure dosing is anticipated.

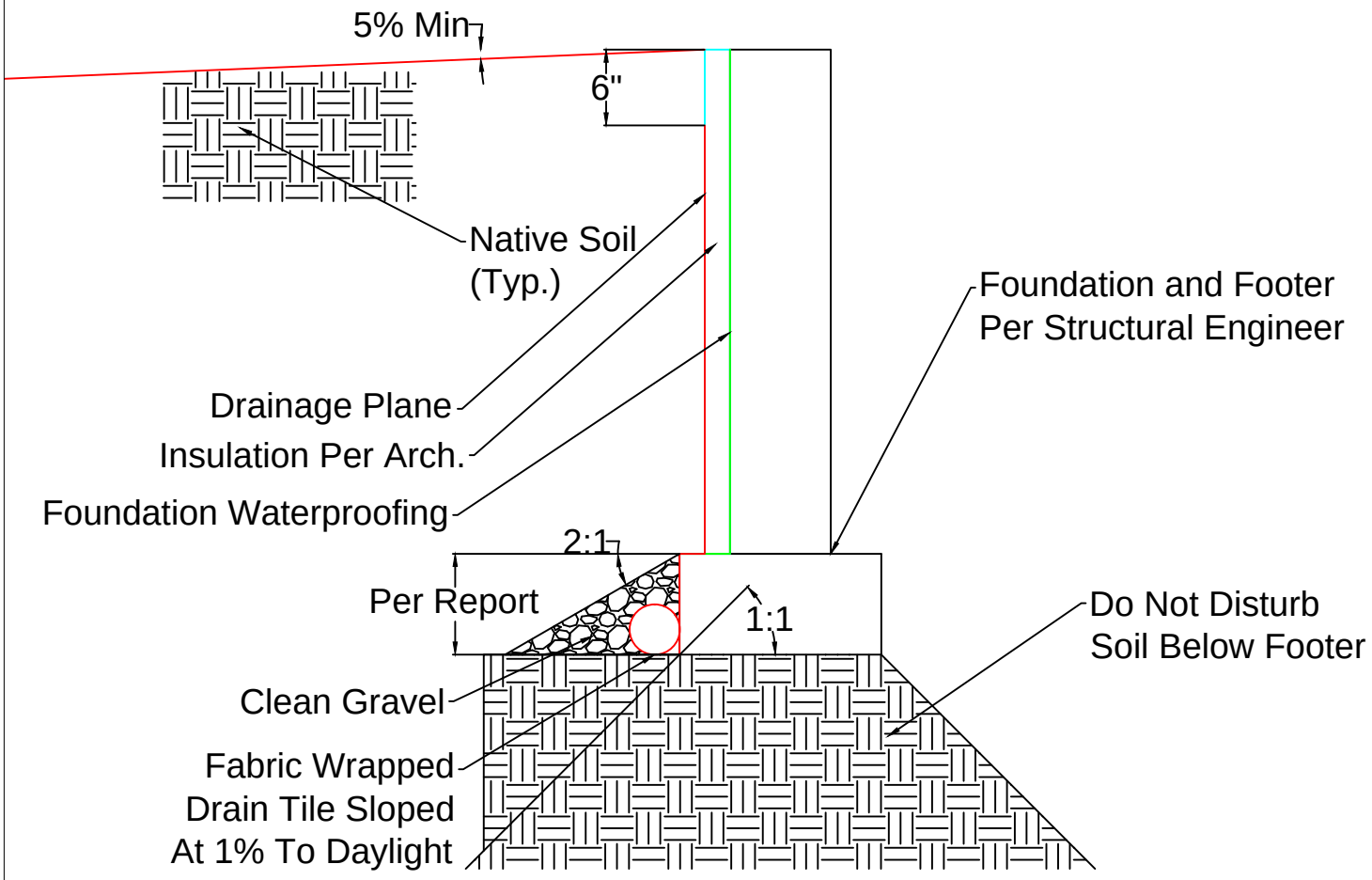
Conclusion:

Soils on site are ideal for proposed methods of construction. If cut depths are to be excessive or if any changes in conditions are found Engineer should be contacted.

Due to nature of soils deposit it is recommended that Engineer be contacted to inspect excavation prior to placement of any foundations.

Due to practical constraints of pre-construction subsoil studies it is possible that unforeseen changes in conditions may be encountered. If any soils conditions different than those described in this report Engineer shall be contacted immediately.

Robert Theobald
Robert Theobald P.E.



Typical Foundation Drain Detail

N.T.S.

SUMMIT COUNTY
COLORADO

PUBLIC HEALTH | Environmental Health Division

970.668.4070 ph | 970.668.4255 f
www.SummitCountyCO.gov

0037 Peak One Dr. | PO Box 5660
Frisco, CO 80443

OWS_____

APPLICATION FOR AN ONSITE WASTEWATER TREATMENT SYSTEM PERMIT
(Please print or type information)

****PLEASE INCLUDE SITE PLAN WITH APPLICATION****

PROPERTY TAX SCHEDULE NO.: 6507503

LOT(S) 43 BLOCK _____ FIL _____ TRACT _____ SUBDIVISION Spruce Valley Ranch

IF METES & BOUNDS LEGAL DESCRIPTION: SECTION _____ TOWNSHIP _____ RANGE _____

STREET ADDRESS: 135 Mount Argentine RD SUMMIT COUNTY ROAD NO.: CR 598

IS THIS PROPERTY BACK COUNTRY (BC) ZONED? _____YES X _____NO

DOES THIS PROPERTY HAVE A DISTURBANCE ENVELOPE? X_____YES _____NO
(If YES, please indicate location on site plan)

PLEASE INCLUDE DIRECTIONS TO SITE ON BACK O F THIS PAGE
****

PROPERTY OWNER: Nalle, Owen and Ashley PHONE (_____)_____

MAILING ADDRESS: PO BOX 2137, Breckenridge, CO, 80424 EMAIL_____

APPLICANT (OWNER'S AGENT): Theobald Engineering and Construction PHONE (970) 409-7978

MAILING ADDRESS: PO Box 3817, Breckenridge, Colorado, 80424 EMAIL robtheobald@yahoo.com

LOT SIZE: 4.02 ACRE(S)
STRUCTURE TYPE: COMMERCIAL _____ OR RESIDENTIAL X
IN SEWER DISTRICT OR WITHIN 400 FT OF SEWER? _____Y X _____N
WATER SUPPLY: PRIVATE (WELL) X _____ OR PUBLIC _____
CLOTHES WASHER X _____ DISHWASHER X _____ GARBAGE DISPOSAL X _____ HOT TUB X _____
TOTAL NO. OF BEDROOMS PLANNED (INCLUDE ANY FUTURE BEDROOMS): 5

APPROPRIATE FEES MUST BE PAID TO THE SUMMIT COUNTY PUBLIC HEALTH DEPARTMENT, ENVIRONMENTAL HEALTH PRIOR TO ARRANGING THE INITIAL SITE INSPECTION(S). THE SITE INSPECTION DOES NOT GUARANTEE THE ISSUANCE OF A PERMIT. THE PERMIT FEE MUST BE PAID TO THE DEPARTMENT PRIOR TO PERMIT ISSUANCE. THE PERMIT ISSUANCE IS BASED ON THE ABOVE INFORMATION, THE ILLUSTRATED SITE PLAN AND ALL OTHER INFORMATION AS SUBMITTED AND APPROVED BY THE DEPARTMENT. THE ONSITE WASTEWATER TREATMENT SYSTEM PERMIT MUST BE ISSUED BEFORE A BUILDING PERMIT CAN BE OBTAINED. PLEASE CONTACT ENVIRONMENTAL HEALTH IF YOU HAVE QUESTIONS OR REQUIRE ASSISTANCE.

APPLICATION FOR AN ONSITE WASTEWATER TREATMENT SYSTEM PERMIT IS HEREBY SUBMITTED. THE UNDERSIGNED ACKNOWLEDGES THAT THE ABOVE INFORMATION IS TRUE AND THAT FALSE INFORMATION WILL INVALIDATE THE APPLICATION AND ANY SUBSEQUENT PERMIT. THIS APPLICATION IS VALID FOR ONE (1) YEAR.

SIGNATURE OF APPLICANT _____ DATE _____

****

Environmental Health Officer Approval for Permit_____ **Date**_____

Date Permit Issued_____

Environmental Health Officer Final Approval _____ **Date**_____

FILE NO.: _____

SITE PLAN

LOT(S) 43 BLOCK _____ FIL _____ TRACT _____ SUBDIVISION Spruce Valley Ranch

IF METES & BOUNDS LEGAL DESCRIPTION: SECTION _____ TOWNSHIP _____ RANGE _____

****

ANY REVISIONS TO THE SITE PLAN AS SUBMITTED AND APPROVED REQUIRES A REVISED SITE PLAN TO BE SUBMITTED AND APPROVED PRIOR TO CONSTRUCTION.

****

*****PLEASE INCLUDE DIRECTIONS TO SITE HERE*****

From Breck:
Go south on Hwy 9
Turn left onto Wagon Road
Turn left onto Indiana Creek Road
Turn right onto Mount Argentine Road
Property is on south side of road

Project: 135 Mount Argentine, Lot 43 Sub, Breckenridge, CO, 80424
New SFR, New Septic System

Number of Bedrooms:	5 Bedrooms
Design Flow:	750 (150 Gallons per Bedroom)
Percolation Rate:	N/A MPI
Soil Type:	3
Septic Tank Sizing:	Valley Precast 2000 gal. 3-comp (2000T-3CP-F-HH)
Dosing Rate (Calculated):	6-hour dose (Design Flow/4 = 187.5 gpd)
Float and Spacing:	Per Tank Manufacturer

Seepage Bed Sizing: (New Mounded Sand Bed, New Septic Tank, Pressure-dosed)

Gravel Bed Area = $\frac{\text{Flow}}{\text{LTAR}} = \frac{750 \text{ gpd}}{0.8 \text{ gpd/ft}^2}$ = 937.5 ft^2

Bed Length: $\frac{\text{Flow}}{\text{LLR}} = \frac{750 \text{ gpd}}{9 \text{ gpd/LF}}$ = 83.33 ft

Gravel Area Dimensions: 11.25 ft x 84 ft = 753.75 ft^2

Basal Area = $\frac{\text{Flow}}{\text{LTAR}} = \frac{750 \text{ gpd}}{0.55 \text{ gpd/ft}^2}$ = 1,363.63 ft^2

Basal Area Dimensions (Actual): 15.5 ft x 88 ft = 1,364 ft^2

System elevations:

Tank Outlet Elevation:	10228’
Field Inlet Elevation:	10225’

Profile Test Hole:

Date:

Hole Depth:

Bedrock @: NA

Groundwater @: NA

Impervious Strata @: NA

Depth	Note

Distribution System Design:

Spacing:	1’-6” from edge of bed 2’-9” center to center
Number:	4 End-dosed
Total Length:	256’ ft total
Diameter:	1.5 in

Holes in Laterals

1/8” holes in PVC Piping

Residual Pressure:	5 ft	
Flow per Hole:	0.43 gpm @ residual	
System Flow:	60 gpm	
System Holes:	148 Calculated	144 Actual
Hole Spacing:	2 ft 3 in	
Holes per Lateral:	36	

System Flow during Pressure Distribution Dosing

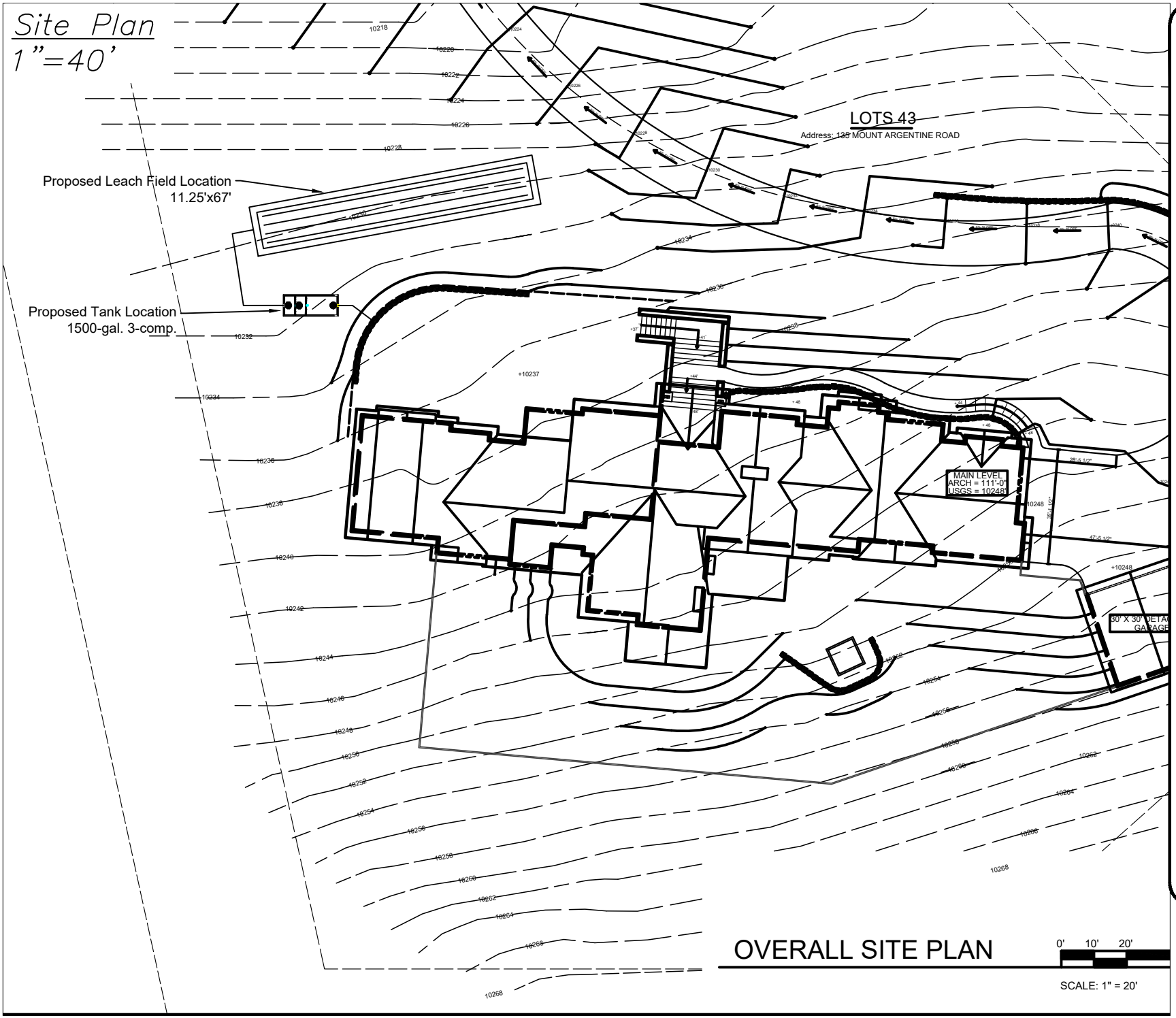
Flow/Lateral:	30 gpm
System Flow:	60 gpm
System Pump:	Orenco PF500511
Vol-gal of Laterals:	34.3 gal
Length of 2-inch manifold:	20 ft
Vol-gal of Manifold (2 in):	3.5 gal
Total Volume:	37.8 gal
Ratio:	4.96 dose/pipe volume

Note: Install clean out with 2 45’s or sweeping 90’s at end of each lateral per OWS Regulations

General Notes:

1) All work shall be done in workman like manner by licensed contractor
2) All work shall be done in accordance with permit and any changes shall be approved by Engineer and Summit County Environmental Health
(Including Onsite Wastewater Treatment System Regulations of Summit County Colorado, Amended February 27, 2018)
3) All work shall be done in accordance with all applicable codes
4) Sand Filter material shall be in accordance Summit County OWS Code with gradation report dated within one month if install. Design is based on "Secondary" sand media requirements. Engineer can be contacted for size reduction if "Preferred" sand media is to be used.
5) Bed material shall be in accordance Summit County OWS Code
6) Geotextile fabric (max 2 oz./yard per Summit County OWS Code) shall be installed covering seepage bed as a barrier to backfill material
7) All manifolds, laterals and looped ends shall be installed level
8) All holes in distribution lines shall face downwards.
9) All pressure distribution laterals shall be provided with clean out at end per Summit County OWS Code
10) All pressure distribution laterals shall be provided with an inspection port at the end of each lateral, and not more than fifty (50) feet apart.
11) All pressure distribution laterals shall be cleaned and purged after install
12) Squirt height test shall be performed to determine equal distribution and verify distal pressure is in accordance with design and Summit County OWS Code.
13) Septic tank, risers and manholes and all septic tank plumbing shall be installed per County OWS Regulations
14) An audible alarm shall be installed in residence only; no audible alarm shall be located outside
15) Mound cover shall be 8" = 10" of Type 1 or Type 2 soil with an additional 2" of topsoil
16) All disturbed areas shall be revegetated to prevent erosion
17) All disturbed areas particularly bed shall be seeded with grass seed mixture designed for revegetation by qualified landscaper, nursery or seed supplier prior to completion of project.
18) No additional vegetation shall be planted or allowed to grow over Soil Treatment area
19) Engineer shall be called for inspection at each County Inspection
20) OWS requires special operated and maintained including household water and plumbing use. Use and maintenance guide available from Summit County Government, State of Colorado, U.S. EPA shall be followed

Site Plan
1"=40'



OVERALL SITE PLAN

0' 10' 20'

SCALE: 1" = 20'

1) Call before you dig for underground locates, 811

2) All work shall be performed in a workman like manner compliant to industry standards

3) Any changes to plans shall be approved by Engineer prior to construction

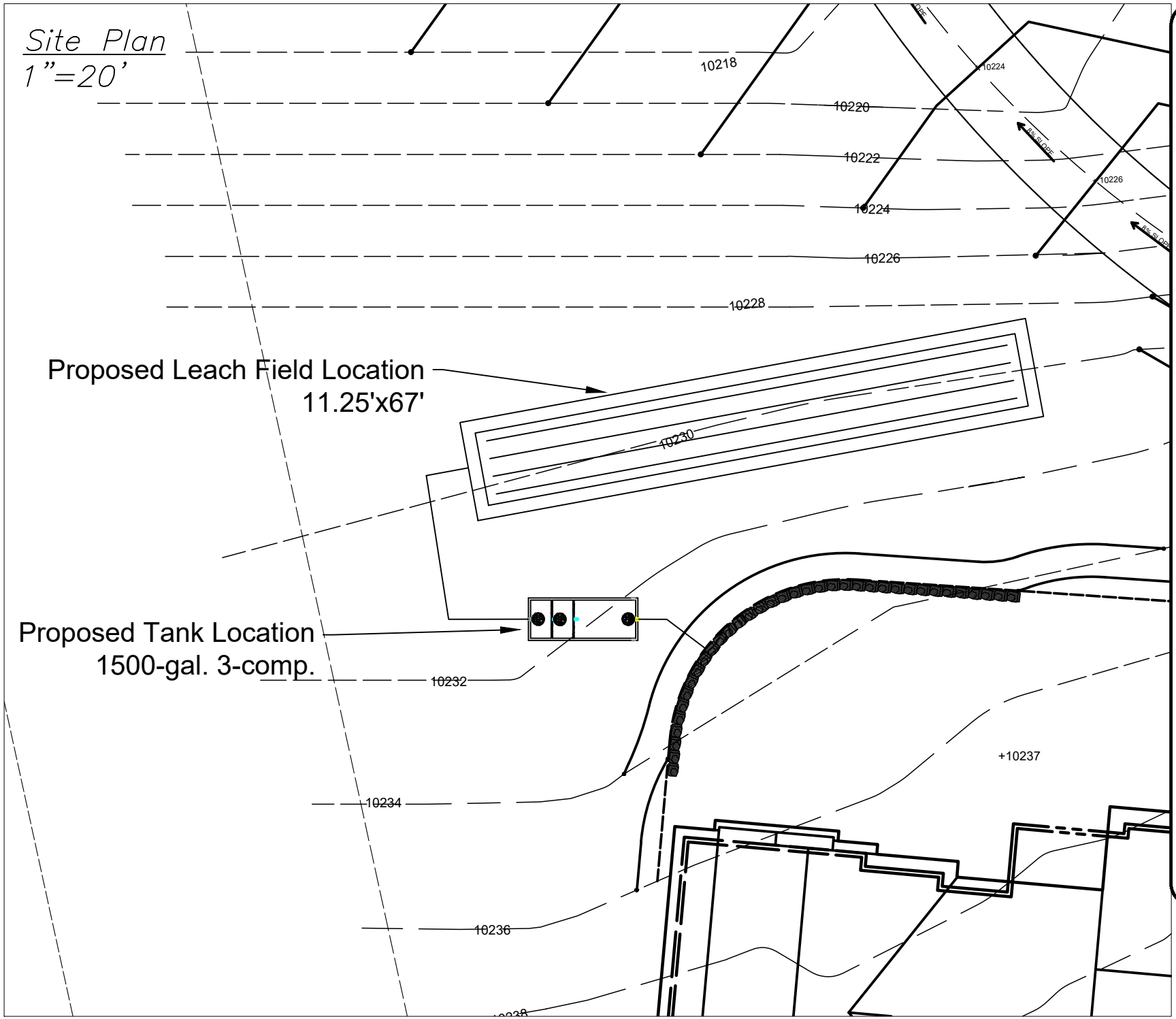
4) All work shall conform to Town of Breckenridge Standards and Code and Conditions of the Permit

No.	Revision/Issue

Theobald Engineering & Construction Services, LLP
1000 Airport Rd.
Breckenridge, CO 80424
(970) 409-7978

Job Name and Address
135 Mount Argentine Road
Lot 43 Spruce Valley Ranch Sub
Breckenridge, CO 80424

Project	Sheet
135 Mount Argentine	1 of 3
Date: 5/4/23	
Scale: 1" = 40'	



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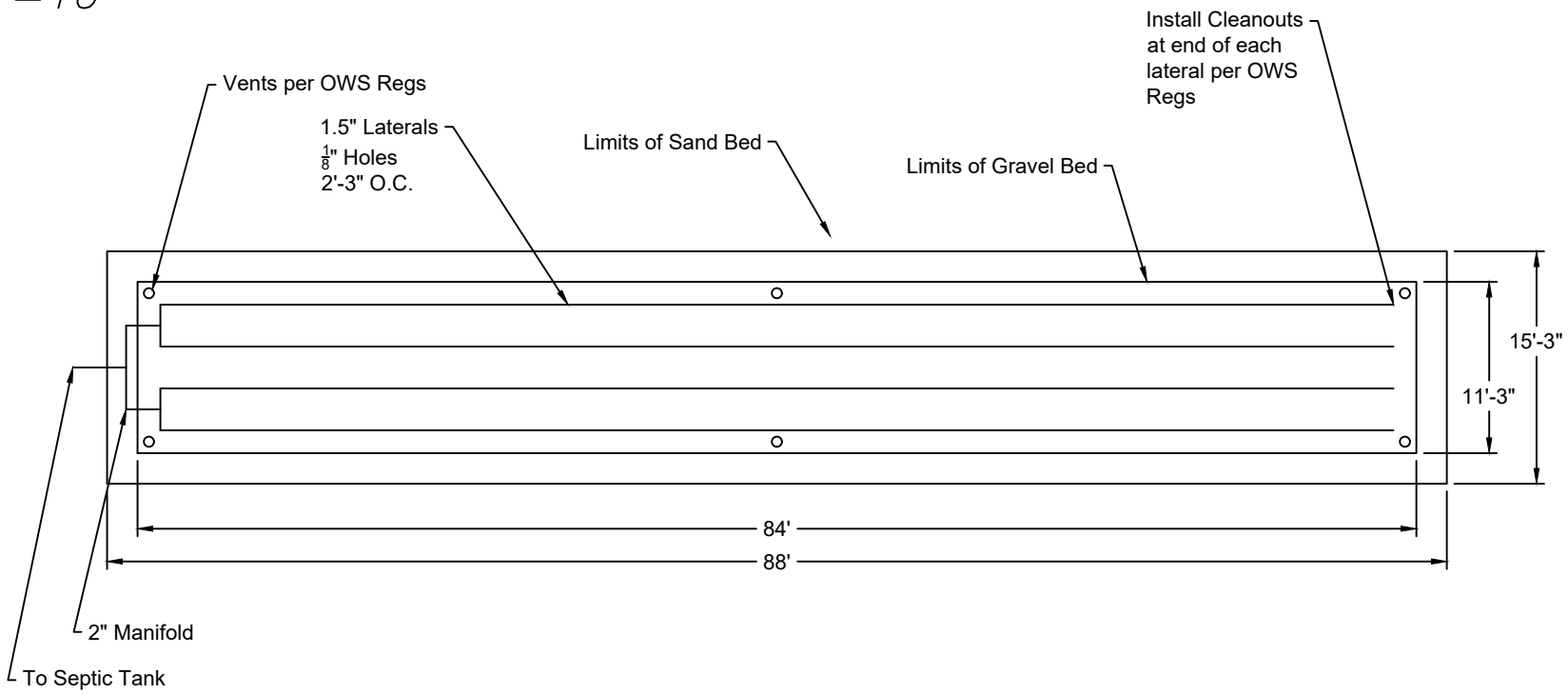
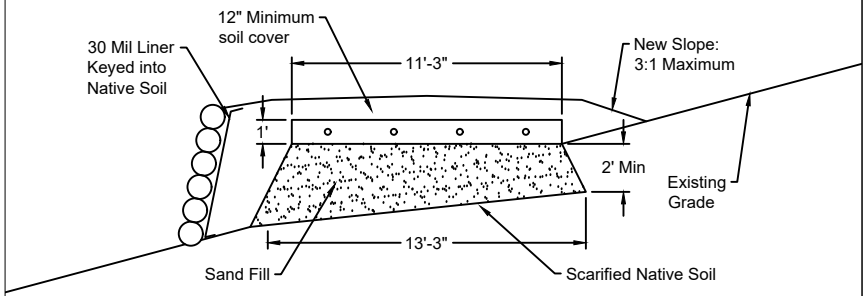
Breckenridge, CO 80424

Project	Sheet
135 Mount Argentine	2 of 3
Date: 5/4/23	
Scale: 1" = 40'	

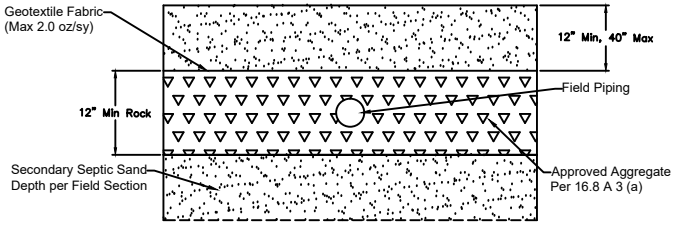
Field Layout
1"=10'



Field Section
1/8"=1'



Bed Section
NTS



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Project Name and Address
135 Mount Argentine Road
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Breckenridge, CO 80424

Project	Sheet
135 Mount Argentine	3 of 3
Date: 5/4/23	
Scale: Varies	

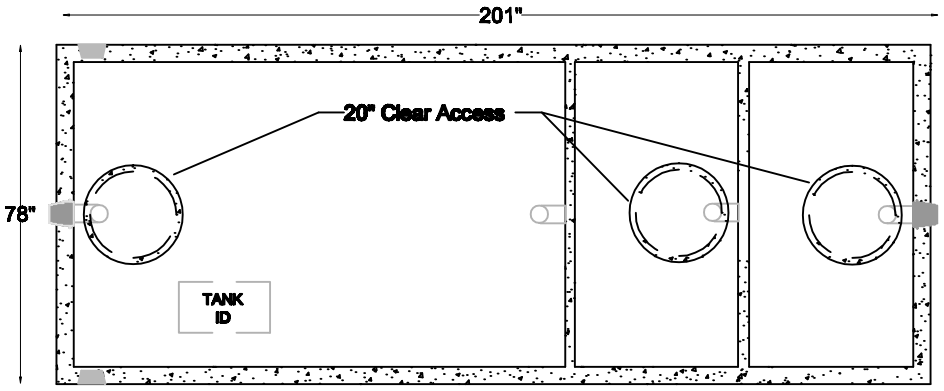
2000 Gallon Top Seam - 3CP Filter & High Head Pump

Item # 2000T-3CP-F-HH

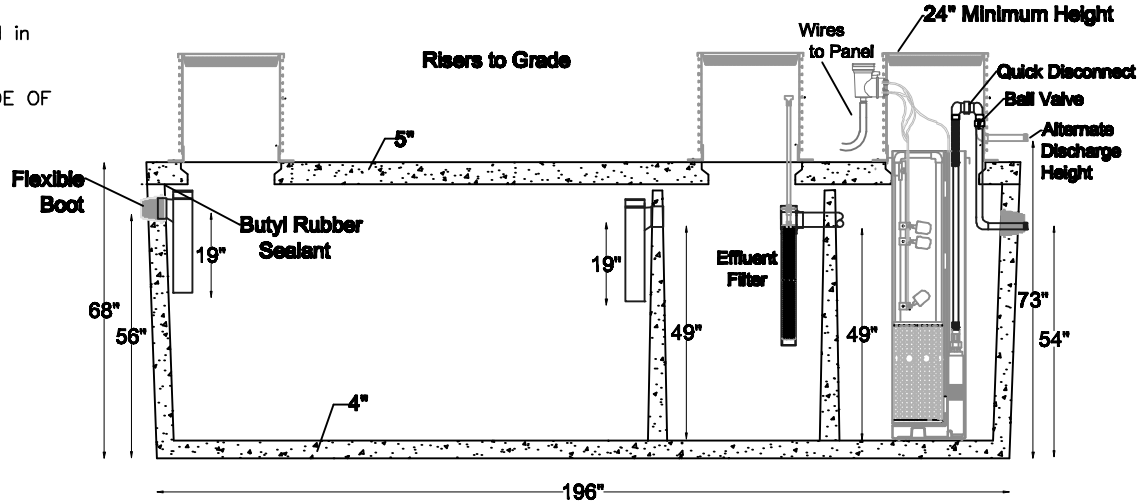
(2500 Gallon Total Volume)

DESIGN NOTES
- Design per performance test per ASTM C1227
- Top surface area 108.88 ft²
- f'c @ 28 days; concrete = 6,000 PSI Min.

Installation:
- Tank to be set on 5" min. sand bed or pea gravel
- Tank to be backfilled uniformly on all sides in lifts less than 24" and mechanically compacted
- Excavated material may be used for backfill, provided large stones are removed
- Excavation should be dewatered and tank filled with water prior to being put in service for installation with water table less than 2' below grade
- Meets C1644–06 for resilient connectors
- Inlet and Outlet identified above pipe
- Delivered complete with internal piping
- Control Panel to be mounted in sight line of tank
- TRUCK MUST BACK UP PERPENDICULAR TO LONG SIDE OF HOLE, LID IS A SECOND SET (NO EXCEPTIONS)
- 4' Maximum bury depth



Top View



Section View

ALLOWABLE BURY (Based on Water Table)	
WATER TABLE	ALLOWABLE EARTH FILL
0' – 0"	2' – 0"
1' – 0"	3' – 0"
2' – 0"	3' – 0"
3' – 0"	4' – 0"
DRY	4' – 0"

Pump:
- Lowers TSS and improves effluent quality to field
- Complete installation (wiring, panel, mounting and start-up procedures)
- Complete warranty

Service contracts available for maintenance

Digging Specs	Invert		Dimensions			Net Capacity				Net Weight		
19' Long x 8' Wide	Inlet	Outlet	Length	Width	Height	Inlet Side	Middle	Outlet	Total	Lid	Tank	Total
	56"	54"or73"	201"	78"	92"	1583 gal	517 gal	521 gal	2621 gal	6420 lbs	18590 lbs	25210 lbs

VALLEY PRECAST, Inc.
Buena Vista, Colorado

Phone: 719-395-6764
Fax: 719-395-3727
Website: www.valleyprecast.com
Email: frontdesk@valleyprecast.com

Orenco SYSTEMS

Technical Data Sheet

PF Series 60-Hz, 4-inch (100-mm) Submersible Effluent Pumps

Applications

Our 4-inch (100-mm) Submersible Effluent Pumps are designed to transport screened effluent (with low TSS counts) from septic tanks or separate dosing tanks. All our pumps are constructed of lightweight, corrosion-resistant stainless steel and engineered plastics; all are field-serviceable and repairable with common tools; 60-Hz PF Series models are CSA certified to the U.S. and Canadian safety standards for effluent pumps, meeting UL requirements.

Orenco's Effluent Pumps are used in a variety of applications, including pressurized drainfields, packed bed filters, mounds, aerobic units, effluent irrigation, effluent sewers, wetlands, lagoons, and more. These pumps are designed to be used with a Biotube® pump vault or after a secondary treatment system.

C US
LR80980
LR2053896

Powered by
Franklin Electric

Features/Specifications

To specify this pump for your installation, require the following:

- Minimum 24-hour run-dry capability with no deterioration in pump life or performance*
- Patented 1⁄8-inch (3-mm) bypass orifice to ensure flow recirculation for motor cooling and to prevent air bind
- Liquid end repair kits available for better long-term cost of ownership
- TRI-SEAL™ floating impeller design on 10, 15, 20, and 30 gpm (0.6, 1.0, 1.3, and 1.9 L/sec) models; floating stack design on 50 and 75 gpm (3.2 and 4.7 L/sec) models
- Franklin Electric Super Stainless motor, rated for continuous use and frequent cycling
- Type SOOW 600-V motor cable

** Not applicable for 5-hp (3.73 kW) models*

Standard Models

See specifications chart, pages 2-3, for a list of standard pumps. For a complete list of available pumps, call Orenco.

Product Code Diagram

PF [50] [05] [1] [1] [ ] - [ ]

Cord length, ft (m):‡
Blank = 10 (3) 20 = 20 (6)
30 = 30 (9) 50 = 50 (15)

Check valve:
Blank = no internal check valve
CV = internal check valve†

Voltage, nameplate:
1 = 115* 200 = 200
2 = 230 4 = 460

Frequency:
1 = single-phase 60 Hz
3 = three-phase 60 Hz

Horsepower (kW):
03 = ⅓ hp (0.25) 05 = ½ hp (0.37)
07 = ¾ hp (0.56) 10 = 1 hp (0.75)
15 = 1½ hp (1.11) 20 = 2 hp (1.50)
30 = 3 hp (2.24) 50 = 5 hp (3.73)

Nominal flow, gpm (L/sec):
10 = 10 (0.6) 15 = 15 (1.0)
20 = 20 (1.3) 30 = 30 (1.9)
50 = 50 (3.2) 75 = 75 (4.7)

Pump, PF Series

* ½-hp (0.37kW) only
† Available for 10 gpm (0.6 L/sec), 1/2 hp (0.37 kW) only
‡ Note: 20-ft cords are available only for single-phase pumps through 1½ hp

Specifications

Pump Model	Design gpm (L/sec)	Horsepower (kW)	Phase	Nameplate voltage	Actual voltage	Design flow amps	Max amps	Impellers	Discharge size and material [1]	Length, in. (mm)	Min. liquid level, [2] in. (mm)	Weight, [3] lb (kg)	Rated cycles/day
PF100511	10 (0.6)	0.50 (0.37)	1	115	120	12.7	12.7	6	1 ¼ in. GFP	23.0 (660)	16 (406)	26 (12)	300
PF100511CV	10 (0.6)	0.50 (0.37)	1	115	120	12.7	12.7	6	1 ¼ in. GFP	23.0 (660)	16 (406)	26 (12)	300
PF100512	10 (0.6)	0.50 (0.37)	1	230	240	6.3	6.3	6	1 ¼ in. GFP	23.0 (660)	16 (406)	26 (12)	300
PF10053200	10 (0.6)	0.50 (0.37)	3	200	208	3.8	3.8	6	1 ¼ in. GFP	23.0 (660)	16 (406)	26 (12)	300
PF100712 [4, 5]	10 (0.6)	0.75 (0.56)	1	230	240	8.3	8.3	8	1 ¼ in. GFP	25.9 (658)	17 (432)	30 (14)	300
PF10073200 [4, 5]	10 (0.6)	0.75 (0.56)	3	200	208	5.1	5.2	8	1 ¼ in. GFP	25.4 (645)	17 (432)	31 (14)	300
PF101012 [5, 6]	10 (0.6)	1.00 (0.75)	1	230	240	9.6	9.6	9	1 ¼ in. GFP	27.9 (709)	18 (457)	33 (15)	100
PF10103200 [5, 6]	10 (0.6)	1.00 (0.75)	3	200	208	5.5	5.5	9	1 ¼ in. GFP	27.3 (693)	18 (457)	37 (17)	300
PF102012 [5, 6, 7, 8]	10 (0.6)	2.00 (1.49)	1	230	240	12.1	12.1	18	1 ¼ in. SS	39.5 (1003)	22 (559)	48 (22)	100
PF102032 [5, 6, 8]	10 (0.6)	2.00 (1.49)	3	230	240	7.5	7.6	18	1 ¼ in. SS	37.9 (963)	20 (508)	44 (20)	300
PF10203200 [5, 6, 8]	10 (0.6)	2.00 (1.49)	3	200	208	8.7	8.7	18	1 ¼ in. SS	37.9 (963)	20 (508)	44 (20)	300
PF150311	15 (1.0)	0.33 (0.25)	1	115	120	8.7	8.8	3	1 ¼ in. GFP	19.5 (495)	15 (380)	23 (10)	300
PF150312	15 (1.0)	0.33 (0.25)	1	230	240	4.4	4.5	3	1 ¼ in. GFP	19.5 (495)	15 (380)	23 (10)	300
PF200511	20 (1.3)	0.50 (0.37)	1	115	120	12.3	12.5	4	1 ¼ in. GFP	22.3 (566)	18 (457)	25 (11)	300
PF200512	20 (1.3)	0.50 (0.37)	1	230	240	6.4	6.5	4	1 ¼ in. GFP	22.5 (572)	18 (457)	26 (12)	300
PF20053200	20 (1.3)	0.50 (0.37)	3	200	208	3.7	3.8	4	1 ¼ in. GFP	22.3 (566)	18 (457)	26 (12)	300
PF201012 [4, 5]	20 (1.3)	1.00 (0.75)	1	230	240	10.5	10.5	7	1 ¼ in. GFP	28.4 (721)	20 (508)	33 (15)	100
PF20103200 [4, 5]	20 (1.3)	1.00 (0.75)	3	200	208	5.8	5.9	7	1 ¼ in. GFP	27.8 (706)	20 (508)	33 (15)	300
PF201512 [4, 5]	20 (1.3)	1.50 (1.11)	1	230	240	12.4	12.6	9	1 ¼ in. GFP	34.0 (864)	24 (610)	41 (19)	100
PF20153200 [4, 5]	20 (1.3)	1.50 (1.11)	3	200	208	7.1	7.2	9	1 ¼ in. GFP	30.7 (780)	20 (508)	35 (16)	300
PF300511	30 (1.9)	0.50 (0.37)	1	115	120	11.8	11.8	3	1 ¼ in. GFP	21.3 (541)	20 (508)	28 (13)	300
PF300512	30 (1.9)	0.50 (0.37)	1	230	240	6.2	6.2	3	1 ¼ in. GFP	21.3 (541)	20 (508)	25 (11)	300
PF30053200	30 (1.9)	0.50 (0.37)	3	200	208	3.6	3.6	3	1 ¼ in. GFP	21.3 (541)	20 (508)	25 (11)	300
PF300712	30 (1.9)	0.75 (0.56)	1	230	240	8.5	8.5	5	1 ¼ in. GFP	24.8 (630)	21 (533)	29 (13)	300
PF30073200	30 (1.9)	0.75 (0.56)	3	200	208	4.9	4.9	5	1 ¼ in. GFP	24.6 (625)	21 (533)	30 (14)	300
PF301012 [4]	30 (1.9)	1.00 (0.75)	1	230	240	10.4	10.4	6	1 ¼ in. GFP	27.0 (686)	22 (559)	32 (15)	100
PF30103200 [4]	30 (1.9)	1.00 (0.75)	3	200	208	5.8	5.8	6	1 ¼ in. GFP	26.4 (671)	22 (559)	33 (15)	300
PF301512 [4, 5]	30 (1.9)	1.50 (1.11)	1	230	240	12.6	12.6	8	1 ¼ in. GFP	32.8 (833)	24 (610)	40 (18)	100
PF30153200 [4, 5]	30 (1.9)	1.50 (1.11)	3	200	208	6.9	6.9	8	1 ¼ in. GFP	29.8 (757)	22 (559)	34 (15)	300
PF301534 [4, 5]	30 (1.9)	1.50 (1.11)	3	460	480	2.8	2.8	8	1 ¼ in. GFP	29.5 (685)	22 (559)	34 (15)	300
PF302012 [5, 6, 7]	30 (1.9)	2.00 (1.49)	1	230	240	11.0	11.0	10	1 ¼ in. SS	35.5 (902)	26 (660)	44 (20)	100
PF30203200 [5, 6]	30 (1.9)	2.00 (1.49)	3	200	208	9.3	9.3	10	1 ¼ in. SS	34.0 (864)	24 (610)	41 (19)	300
PF303012 [5, 6, 7, 8]	30 (1.9)	3.00 (2.23)	1	230	240	16.8	16.8	14	1 ¼ in. SS	44.5 (1130)	33 (838)	54 (24)	100
PF303032 [5, 6, 8]	30 (1.9)	3.00 (2.23)	3	230	240	10.0	10.1	14	1 ¼ in. SS	44.3 (1125)	27 (686)	52 (24)	300
PF305012 [5, 6, 7, 8]	30 (1.9)	5.00 (3.73)	1	230	240	25.6	25.8	23	1 ¼ in. SS	66.5 (1689)	53 (1346)	82 (37)	100
PF305032 [5, 6, 8]	30 (1.9)	5.00 (3.73)	3	230	240	16.6	16.6	23	1 ¼ in. SS	60.8 (1544)	48 (1219)	66 (30)	300
PF30503200 [5, 6, 8]	30 (1.9)	5.00 (3.73)	3	200	208	18.7	18.7	23	1 ¼ in. SS	60.8 (1544)	48 (1219)	66 (30)	300
PF500511	50 (3.2)	0.50 (0.37)	1	115	120	12.1	12.1	2	2 in. SS	20.3 (516)	24 (610)	27 (12)	300
PF500512	50 (3.2)	0.50 (0.37)	1	230	240	6.2	6.2	2	2 in. SS	20.3 (516)	24 (610)	27 (12)	300
PF500532	50 (3.2)	0.50 (0.37)	3	230	240	3.0	3.0	2	2 in. SS	20.3 (516)	24 (610)	28 (13)	300
PF50053200	50 (3.2)	0.50 (0.37)	3	200	208	3.7	3.7	2	2 in. SS	20.3 (516)	24 (610)	28 (13)	300
PF500534	50 (3.2)	0.50 (0.37)	3	460	480	1.5	1.5	2	2 in. SS	20.3 (516)	24 (610)	28 (13)	300
PF500712	50 (3.2)	0.75 (0.56)	1	230	240	8.5	8.5	3	2 in. SS	23.7 (602)	25 (635)	31 (14)	300
PF500732	50 (3.2)	0.75 (0.56)	3	230	240	3.9	3.9	3	2 in. SS	23.7 (602)	25 (635)	32 (15)	300

Orenco Systems® Inc. , 814 Airway Ave., Sutherlin, OR 97479 USA • 800-348-9843 • 541-459-4449 • www.orenco.com

Specifications, cont.

Pump Model	Design gpm (L/sec)	Horsepower (kW)	Phase	Nameplate voltage	Actual voltage	Design flow amps	Max amps	Impellers	Discharge size and material [1]	Length, in. (mm)	Min. liquid level, [2] in. (mm)	Weight, [3] lb (kg)	Rated cycles/day
PF50073200	50 (3.2)	0.75 (0.56)	3	200	208	4.9	4.9	3	2 in. SS	23.1 (587)	26 (660)	32 (15)	300
PF500734	50 (3.2)	0.75 (0.56)	3	460	480	1.8	1.8	3	2 in. SS	34.8 (884)	25 (635)	31 (14)	300
PF501012	50 (3.2)	1.00 (0.75)	1	230	240	10.1	10.1	4	2 in. SS	27.0 (686)	26 (660)	35 (16)	100
PF50103200	50 (3.2)	1.00 (0.75)	3	200	208	5.7	5.7	4	2 in. SS	26.4 (671)	26 (660)	39 (18)	300
PF501034	50 (3.2)	1.00 (0.75)	3	460	480	2.2	2.2	4	2 in. SS	26.4 (671)	26 (660)	39 (18)	300
PF501512[4]	50 (3.2)	1.50 (1.11)	1	230	240	12.5	12.6	5	2 in. SS	32.5 (826)	30 (762)	41 (19)	100
PF50153200[4]	50 (3.2)	1.50 (1.11)	3	200	208	7.0	7.0	5	2 in. SS	29.3 (744)	26 (660)	35 (16)	300
PF503012 [4, 5, 7, 8]	50 (3.2)	3.00 (2.23)	1	230	240	17.7	17.7	8	2 in. SS	43.0 (1092)	37 (940)	55 (25)	100
PF50303200 [4, 5, 8]	50 (3.2)	3.00 (2.23)	3	200	208	13.1	13.1	8	2 in. SS	43.4 (1102)	30 (762)	55 (25)	300
PF503034 [4, 5, 8]	50 (3.2)	3.00 (2.23)	3	460	480	5.3	5.3	8	2 in. SS	40.0 (1016)	31 (787)	55 (25)	300
PF505012 [5,6,7,8]	50 (3.2)	5.00 (3.73)	1	230	240	26.2	26.4	13	2 in. SS	65.4 (1661)	55 (1397)	64 (29)	100
PF505032 [5,6, 8]	50 (3.2)	5.00 (3.73)	3	230	240	16.5	16.5	13	2 in. SS	59.3 (1506)	49 (1245)	64 (29)	300
PF751012	75 (4.7)	1.00 (0.75)	1	230	240	9.9	10.0	3	2 in. SS	27.0 (686)	27 (686)	34 (15)	100
PF751512	75 (4.7)	1.50 (1.11)	1	230	240	12.1	12.3	4	2 in. SS	33.4 (848)	30 (762)	44 (20)	100

1 GFP = glass-filled polypropylene; SS = stainless steel. The 1 ¼-in. NPT GFP discharge is 2 7⁄8 in. octagonal across flats; the 1 ¼-in. NPT SS discharge is 2 1⁄8 in. octagonal across flats; and the 2-in. NPT SS discharge is 2 7⁄8 in. hexagonal across flats. Discharge is female NPT threaded, U.S. nominal size, to accommodate Orenco® discharge hose and valve assemblies. Consult your Orenco Distributor about fittings to connect hose and valve assemblies to metric-sized piping.

2 Minimum liquid level is for single pumps when installed in an Orenco Biotube® Pump Vault or Universal Flow Inducer. In other applications, minimum liquid level should be top of pump. Consult Orenco for more information.

3 Weight includes carton and 10-ft (3-m) cord.

4 High-pressure discharge assembly required.

5 Do not use cam-lock option (Q) on discharge assembly.

6 Custom discharge assembly required for these pumps. Contact Orenco.

7 Capacitor pack (sold separately or installed in a custom control panel) required for this pump. Contact Orenco.

8 Torque locks are available for all pumps, and are supplied with 3-hp and 5-hp pumps.

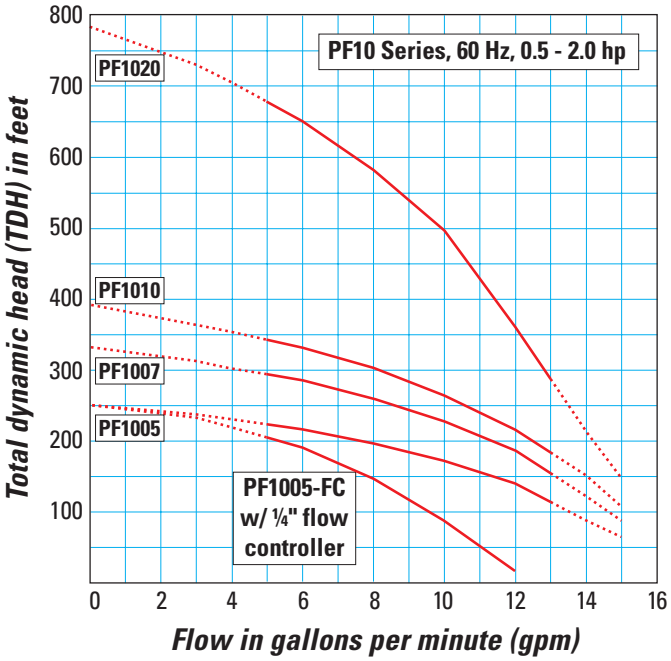
Materials of Construction

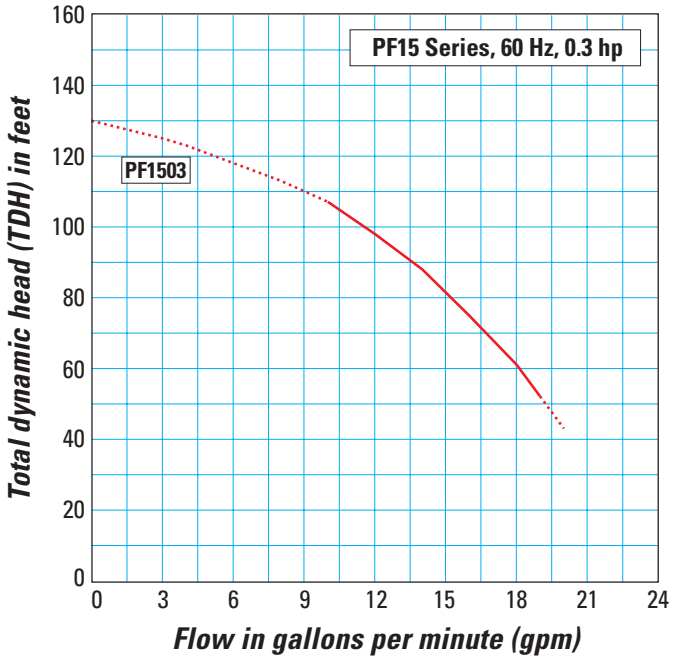
Discharge	Glass-filled polypropylene or stainless steel
Discharge bearing	Engineered thermoplastic (PEEK)
Diffusers	Glass-filled PPO (Noryl GFN3)
Impellers	Celcon® acetal copolymer on 10-, 20, and 30-gpm models; 50-gpm impellers are Noryl GFN3
Intake screen	Polypropylene
Suction connection	Stainless steel
Drive shaft	7/16 inch hexagonal stainless steel, 300 series
Coupling	Sintered stainless steel, 300 series
Shell	Stainless steel, 300 series
Motor	Franklin motor exterior constructed of stainless steel. Motor filled with deionized water and propylene glycol for constant lubrication. Hermetically sealed motor housing ensures moisture-free windings. All thrust absorbed by Kingsbury-type thrust bearing. Rated for continuous duty. Single-phase motors and 200 and 230 V 3-phase motors equipped with surge arrestors for added security. Single-phase motors through 1.5 hp (1.11 kW) have built-in thermal overload protection, which trips at 203-221˚ F (95-105˚ C).

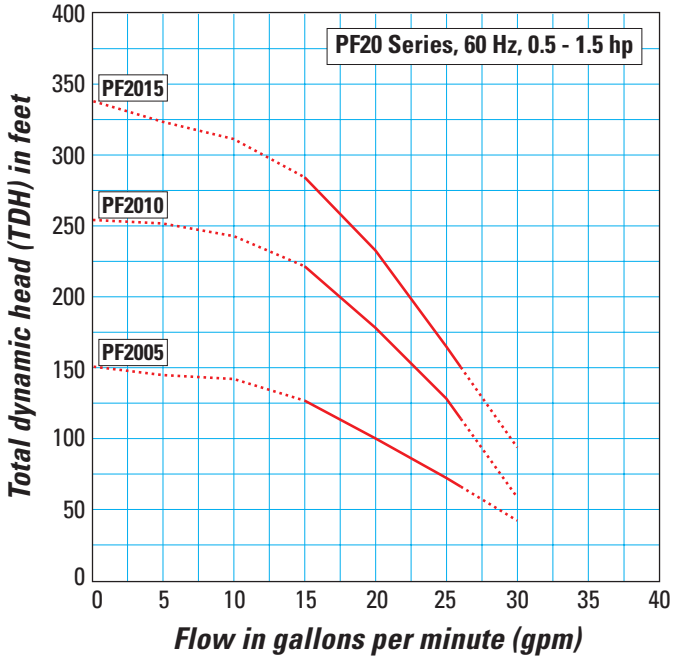
Using a Pump Curve

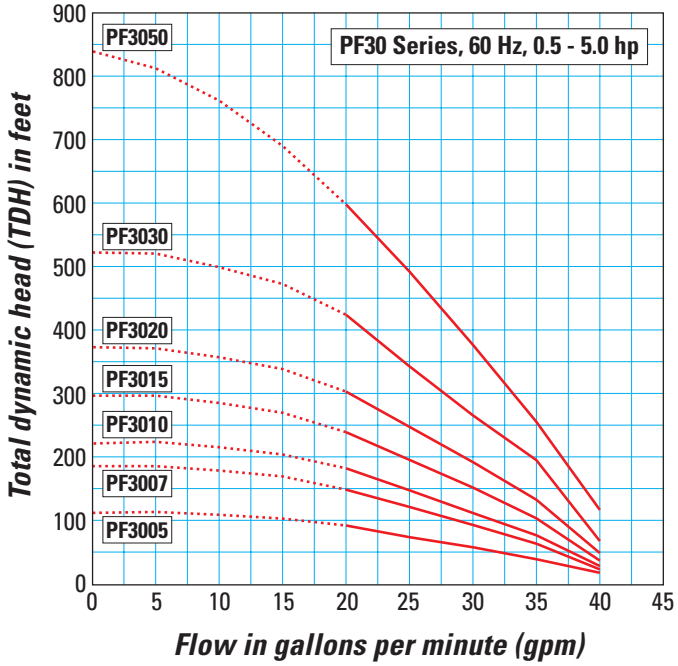
A *pump curve* helps you determine the best pump for your system. Pump curves show the relationship between flow and pressure (total dynamic head, or TDH), providing a graphical representation of a pump's optimal performance range. Pumps perform best at their nominal flow rate. These graphs show optimal pump operation ranges with a solid line and show flow rates outside of these ranges with a dashed line. For the most accurate pump specification, use Orenco's PumpSelect™ software.

Pump Curves









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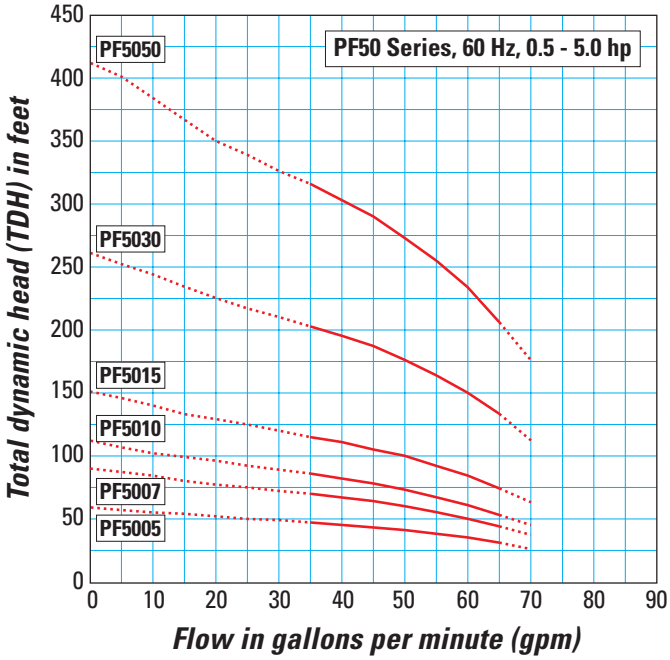
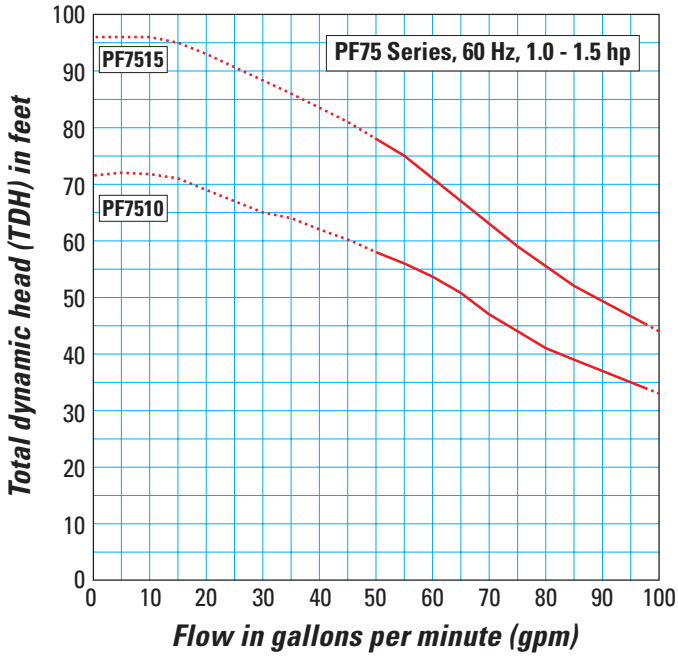
Pump Curves, cont.





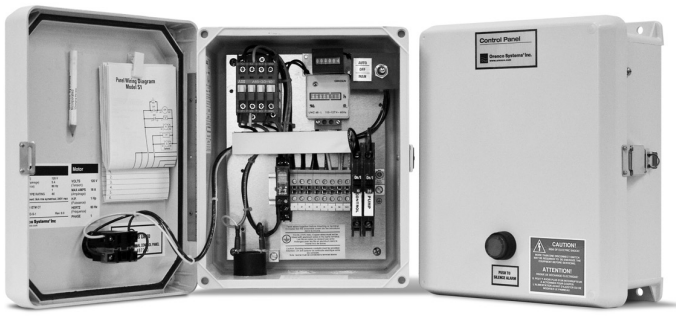
Orenco SYSTEMS

Technical Data Sheet

S-Series Simplex Control Panels

Applications

Orenco® S-Series Simplex Control Panels control single pumps in effluent sewer (STEP) systems, onsite septic systems, and for pump control into conventional gravity sewer systems.



Orenco S-Series Simplex Control Panel (S1ETMCT shown)

General

Orenco® S-Series Simplex Control Panels are electromechanical panels for controlling single pumps. Standard features include an Automatic/Off/Manual (Auto/Off/Man) toggle switch, controls circuit breaker, pump circuit breaker, automatic motor control operation, and an audible/visible high water level alarm with auto reset. Specifications for standard and optional features are listed on page 2.

All S-Series control panels have a 120 VAC controls circuit breaker. S1 panels have a 120 VAC pump circuit breaker, while S2 panels have a 240 VAC pump circuit breaker.

All S-Series panels can be used with both mechanical and mercury float switches.

Listed per UL-508 and cUL-508; CE-listed versions of S-Series panels are available.

Standard Models

S1, S2

Materials of Construction

Component	Material
Enclosure	UV-resistant fiberglass, Type 4X (IP 66)
Hinge	Stainless steel
Latch	Stainless steel

Specifications

Feature	Specifications
Height, in. (mm)	11.5 (292)
Width, in. (mm)	9.3 (236)
Depth, in. (mm)	5.4 (137)
S1 panel ratings*	120 VAC, 1 hp (0.75 kW), 16 A, 1-phase, 60 Hz
S2 panel ratings*	240 VAC, 3 hp (2.24 kW) 16 A, 1-phase, 60 Hz

** Pump motors used with these panels require internal overload protection.*

Product Code Diagram

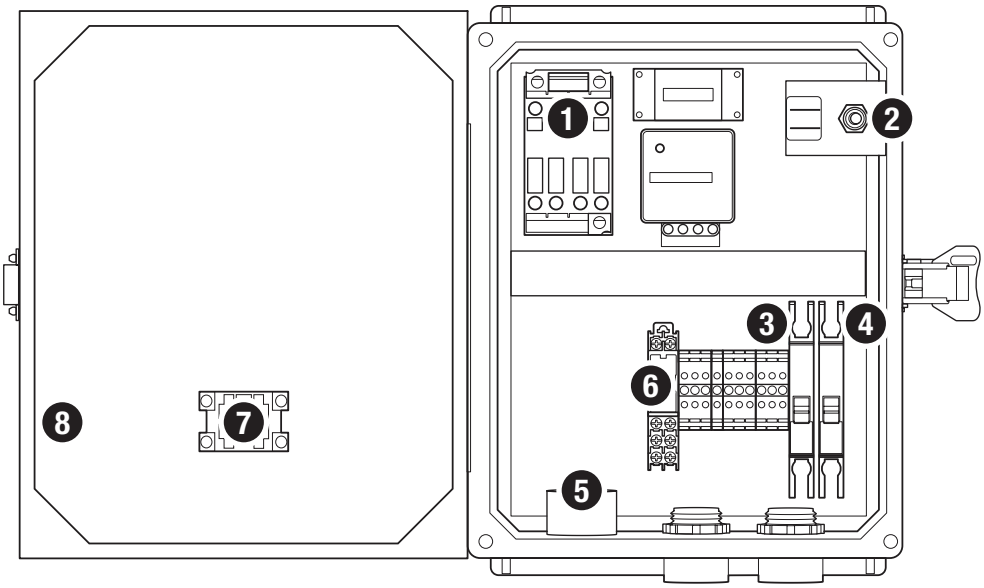
S | 1 | [ ] | ETM CT

Standard options (list in order):
- PT = programmable timer
- RO = redundant off relay
- DS = disconnect switch
- ETM = elapsed time meter
- CT = event counter
- HT = heater
- PRL = pump run light
- PL = power light
- SA = surge arrestor

Intrinsically safe relays:
- Blank = standard, no IR relays
- IR1 = up to 2 float switches
- IR2 = up to 4 float switches

Pump voltage:
- 1 = 120 VAC
- 2 = 120 VAC or 240 VAC

S Series simplex control panel



Orenco S-Series Simplex Control Panel (S1ETMCT shown)

Standard Features

Feature	Specifications*
1. Motor-start contactor	120 VAC: 17 FLA, 1 hp (0.75 kW), 2.5 million cycles at FLA 240 VAC: 17 FLA, 3 hp (2.24 kW), 2.5 million cycles at FLA
2. Auto/Off/Man toggle switch	Single-pole, double-throw HOA switch
3. Controls circuit breaker	10 A, OFF/ON switch, single pole, DIN rail mounting with thermal magnetic tripping characteristics
4. Pump circuit breaker	20 A, OFF/ON switch, single pole (120 VAC) or double pole (240 VAC), DIN rail mounting with thermal magnetic tripping characteristics
5. Audible alarm	95 dB at 24 in. (610 mm), warble-tone sound; gasketed, UL Type 4X (IP66)
6. Audible alarm silence relay	Automatic reset, DIN rail mount
7. Visible alarm	7⁄8-in. (22-mm) diameter red lens, “Push-to-silence,” UL Type 4X (IP66), 1 W LED light
8. Enclosure	UV-resistant fiberglass and stainless steel, UL Type 4X (IP66)

Optional Features

Feature	Specifications*	Product code adder
Intrinsically safe control relays	Listed per UL 698A, for Class 1 Div. 1, groups A, B, C, D hazardous locations (Requires larger enclosure)	IR
Programmable timer	Repeat cycle from 0.05 seconds to 30 hours; separate variable controls for OFF & ON time periods	PT
Redundant off relay	DIN rail mount; provides a secondary off; sounds alarm upon low level condition	RO
Elapsed time meter	7-digit, non-resettable; limit of 99,999 hours; accurate to 0.01 hours	ETM
Event counter	6-digit, non-resettable	CT
Heater	anti-condensation heater; self-adjusting: radiates additional wattage as temperature drops	HT
Pump run light	7⁄8-in. (22-mm) diameter green lens; UL Type 4X (IP66), 1 W LED light	PRL
Power light	7⁄8-in. (22-mm) diameter green lens; UL Type 4X (IP66), 1 W LED light	PL
Surge arrestor	Status light on unit; protects incoming power supply from electrical surges	SA
Test Switch	Momentary switch for alarm testing	TS

** All voltages are 120 VAC unless otherwise noted.*

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