

Organic Load — Standard Stage

The following influent characteristics provided on the Plans were estimated and not derived from direct sampling. Even though the influent characteristics were not derived from direct sampling, the values provided are consistent with values we have seen in other, similar Type 2, Park applications.

| Influent (Primary Tank Effluent) Characteristics — Loading to Textile | |
|--|--------------------|
| Average BOD ₅ (mg/L) | Average TSS (mg/L) |
| 250 | 200 |

Based on the average influent biochemical oxygen demand (BOD₅) concentration and flow data specified on the Plans, the system will receive approximately 7.3 pounds of BOD₅ per day at Design Average Flow, and 15.6 pounds of BOD₅ per day at Maximum Day Design Flow. Using this information, the organic loading rate of the system calculates as:

| Organic Loading Rate (OLR) — Standard Stage | | | | |
|--|--------------------------------|----------------------------------|-----------------------------------|-----------------------------------|
| Average Organic Load (lbs/day) | Maximum Organic Load (lbs/day) | Nominal Treatment Area (sq. ft.) | Average OLR (lbs BOD/sq. ft./day) | Maximum OLR (lbs BOD/sq. ft./day) |
| 7.3 | 15.6 | 200 | 0.04 | 0.08 |

Conclusions

I have reviewed the Final Design of the Burlingame Park wastewater treatment system, and have found that the design is compliant with the most current version of the system's applicable design criteria published by Orenco for the specified parameters provided by the system's designer in the Plans. In addition, I noted no anomalies in the site layout or configuration of the system during my review.

| Compliance Table — Meets Minimum Design Standards | |
|--|-----------------------|
| | Standard Stage |
| Recirc Tank Size | Yes |
| Hydraulic Load | Yes |
| Organic Load | Yes |

As such, the system as designed satisfactorily complies with Orenco's design criteria to meet the following effluent limits specified in the Plans at a 95% confidence level, provided that all influent flows and constituent concentrations specified in the Plans are not exceeded:

| Expected Effluent Quality | |
|----------------------------------|----------------|
| Constituent | Average (mg/L) |
| BOD ₅ | 20 |
| TSS | 20 |

It is important to note that even though the AdvanTex Treatment System has the capability to meet or exceed the required treatment parameters, there is no way that Orenco can guarantee that a particular system will be operated or maintained in a manner consistent with the Final Design reviewed. Once the facility is placed into operation, the influent flows and constituent concentrations to the facility should be monitored, and if flow or any of the influent constituent concentrations exceed those listed in the Plans, measures should be taken to reduce the flow or constituent concentration to those listed. However, if additional treatment capacity becomes necessary, the system is designed to have the capability to expand to account for the new flow or constituent concentration.

Proper air ventilation is a critical feature of all commercial AdvanTex Treatment Systems, and as such, adequate active ventilation is required for all systems. In addition, please note that disposing of toxics or chemicals into the system is strictly prohibited. Examples of toxics include restaurant degreasers, cleansers, wax strippers for linoleum, carpet shampoo, waste products, or any other toxins. Furthermore, water softener brine discharge is prohibited from being discharged into the AdvanTex Treatment System. Failure to adhere to these policies will void Orenco's limited product warranties.

If you have any questions about my review process, findings, or conclusions, please feel free to call or e-mail me.

Sincerely,



Caleb Castleman
Systems Engineering
Orenco Systems Inc.
(800) 348-9843 ext. 548
ccastleman@orencocom

Project: Burlingame State Park and Camp Ground
 Location: Main Camp

| Description | Input values | Units |
|---|--------------|---------------------|
| Finish Grade | 69.75 | Elevation |
| Water Table Elevation | 64.25 | Elevation |
| Bottom of Tank Elevation | 58.83 | Elevation |
| Lowest Pipe Invert | 66.50 | Elevation |
| Counter Weight | 0.00 | lbs |
| Soil Above Tank | 19.00 | Inches |
| Length of Tank | 30.83 | Feet |
| Width of Tank | 11.33 | Feet |
| Depth of Tank | 9.33 | Feet |
| Top of Concrete Thickness | 8.00 | Inches |
| Bottom of Concrete Thickness | 8.00 | Inches |
| Sides Concrete Thickness | 8.00 | Inches |
| Two Compartment Tank | | |
| Compartment Wall Thickness | 4.00 | Inches |
| Compartment Wall Height | 87.00 | Inches |
| Computed Value | | |
| Submerged Depth | 5.42 | Feet |
| Top/Bottom Surface Area of Tank | 349.43 | SF |
| Displaced Volume | 1,893.93 | CF |
| Volume of Tank Top | 232.96 | CF |
| Volume of Tank Sides | 435.53 | CF |
| Volume of Tank Bottom | 232.96 | CF |
| Volume of Baffle | 24.17 | CF |
| Weight of Tank Top | 34,943.38 | lbs |
| Weight of Tank Sides | 65,330.02 | lbs |
| Weight of Tank Bottom | 34,943.38 | lbs |
| Weight of Baffle | 3,624.88 | lbs |
| Total Weight of Tank | 138,841.66 | lbs |
| Volume of Soil | 553.27 | CF |
| Weight of Soil Above Tank | 55,327.02 | lbs |
| Uplift Created by Submerged Tank | 118,181.30 | lbs |
| Total Weight of Tank, Counter Weight and Soil | 194,168.68 | lbs |
| Exceeds Displaced Volume by | 75,987.38 | lbs |
| Buoyance Point for Empty Tank | 6.37 | Feet (above bottom) |
| Buoyance Point for Empty Tank | 65.20 | Elev |
| Buoyance Point for Tank in Place | 8.90 | Feet (above bottom) |
| Buoyance Point for Tank in Place | 67.73 | Elev |

(Soil friction has not been taken into account)

Project: Burlingame State Park and Camp Ground
 Location: Main Camp

| Description | Input values | Units |
|---|--------------|---------------------|
| Finish Grade | 70.25 | Elevation |
| Water Table Elevation | 64.25 | Elevation |
| Bottom of Tank Elevation | 58.65 | Elevation |
| Lowest Pipe Invert | 66.15 | Elevation |
| Counter Weight | 6,307.20 | lbs |
| Soil Above Tank | 29.00 | Inches |
| Length of Tank | 17.00 | Feet |
| Width of Tank | 10.00 | Feet |
| Depth of Tank | 9.17 | Feet |
| Top of Concrete Thickness | 8.00 | Inches |
| Bottom of Concrete Thickness | 6.00 | Inches |
| Sides Concrete Thickness | 6.00 | Inches |
| Two Compartment Tank | | |
| Compartment Wall Thickness | 0.00 | Inches |
| Compartment Wall Height | 0.00 | Inches |
| Computed Value | | |
| Submerged Depth | 5.60 | Feet |
| Top/Bottom Surface Area of Tank | 170.00 | SF |
| Displaced Volume | 952.00 | CF |
| Volume of Tank Top | 113.33 | CF |
| Volume of Tank Sides | 208.00 | CF |
| Volume of Tank Bottom | 85.00 | CF |
| Volume of Baffle | 0.00 | CF |
| Weight of Tank Top | 17,000.00 | lbs |
| Weight of Tank Sides | 31,199.74 | lbs |
| Weight of Tank Bottom | 12,750.00 | lbs |
| Weight of Baffle | 0.00 | lbs |
| Total Weight of Tank | 60,949.74 | lbs |
| Volume of Soil | 410.83 | CF |
| Weight of Soil Above Tank | 41,083.33 | lbs |
| Uplift Created by Submerged Tank | 59,404.80 | lbs |
| Total Weight of Tank, Counter Weight and Soil | 108,340.27 | lbs |
| Exceeds Displaced Volume by | 48,935.47 | lbs |
| | | |
| Buoyance Point for Empty Tank | 5.75 | Feet (above bottom) |
| Buoyance Point for Empty Tank | 64.40 | Elev |
| Buoyance Point for Tank in Place | 10.21 | Feet (above bottom) |
| Buoyance Point for Tank in Place | 68.86 | Elev |

(Soil friction has not been taken into account)

Project: Burlingame State Park and Camp Ground
Location: Main Camp

| Description | Input values | Units |
|---|--------------|---------------------|
| Finish Grade | 70.25 | Elevation |
| Water Table Elevation | 64.25 | Elevation |
| Bottom of Tank Elevation | 58.83 | Elevation |
| Lowest Pipe Invert | 65.58 | Elevation |
| Counter Weight | 6,307.20 | lbs |
| Soil Above Tank | 39.00 | Inches |
| Length of Tank | 17.00 | Feet |
| Width of Tank | 10.00 | Feet |
| Depth of Tank | 8.17 | Feet |
| Top of Concrete Thickness | 8.00 | Inches |
| Bottom of Concrete Thickness | 6.00 | Inches |
| Sides Concrete Thickness | 6.00 | Inches |
| Two Compartment Tank | | |
| Compartment Wall Thickness | 0.00 | Inches |
| Compartment Wall Height | 0.00 | Inches |
| Computed Value | | |
| Submerged Depth | 5.42 | Feet |
| Top/Bottom Surface Area of Tank | 170.00 | SF |
| Displaced Volume | 921.40 | CF |
| Volume of Tank Top | 113.33 | CF |
| Volume of Tank Sides | 182.00 | CF |
| Volume of Tank Bottom | 85.00 | CF |
| Volume of Baffle | 0.00 | CF |
| Weight of Tank Top | 17,000.00 | lbs |
| Weight of Tank Sides | 27,300.13 | lbs |
| Weight of Tank Bottom | 12,750.00 | lbs |
| Weight of Baffle | 0.00 | lbs |
| Total Weight of Tank | 57,050.13 | lbs |
| Volume of Soil | 552.50 | CF |
| Weight of Soil Above Tank | 55,250.00 | lbs |
| Uplift Created by Submerged Tank | 57,495.36 | lbs |
| Total Weight of Tank, Counter Weight and Soil | 118,607.33 | lbs |
| Exceeds Displaced Volume by | 61,111.97 | lbs |
| Buoyance Point for Empty Tank | 5.38 | Feet (above bottom) |
| Buoyance Point for Empty Tank | 64.21 | Elev |
| Buoyance Point for Tank in Place | 11.18 | Feet (above bottom) |
| Buoyance Point for Tank in Place | 70.01 | Elev |

(Soil friction has not been taken into account)

Project: Burlingame State Park and Camp Ground
 Location: Main Camp

| Description | Input values | Units |
|---|--------------|---------------------|
| Finish Grade | 70.75 | Elevation |
| Water Table Elevation | 64.25 | Elevation |
| Bottom of Chamber Elevation | 60.50 | Elevation |
| Lowest Pipe Invert | 67.00 | Elevation |
| Counter Weight | 0.00 | lbs |
| Soil Above Chamber | 27.00 | Inches |
| Chamber Length | 7.00 | Feet |
| Chamber Width | 7.00 | Feet |
| Diameter of Opening | 2.50 | Feet |
| Chamber Interior Height | 7.00 | Feet |
| Top of Concrete Thickness | 6.00 | Inches |
| Bottom of Concrete Thickness | 6.00 | Inches |
| Concrete Wall Thickness | 6.00 | Inches |
| Computed Value | | |
| Submerged Depth | 3.75 | Feet |
| Top Surface Area of Chamber | 44.09 | SF |
| Surface Area of Chamber Sides | 182.00 | SF |
| Bottom Surface Area of Chamber | 49.00 | SF |
| Displaced Volume | 183.75 | CF |
| Volume of Chamber Top | 22.05 | CF |
| Volume of Chamber Sides | 91.00 | CF |
| Volume of Chamber Bottom | 24.50 | CF |
| Weight of Chamber Top | 3,306.84 | lbs |
| Weight of Tank Side | 13,650.00 | lbs |
| Weight of Chamber Bottom | 3,675.00 | lbs |
| Total Weight of Chamber | 20,631.84 | lbs |
| Volume of Soil | 99.21 | CF |
| Weight of Soil Above Chamber | 9,920.53 | lbs |
| Uplift Created by Submerged Chamber | 11,466.00 | lbs |
| Total: Chamber, Counter Weight and Soil | 30,552.38 | lbs |
| Exceeds Displaced Volume by | 19,086.38 | lbs |
| | | |
| Buoyance Point for Empty Chamber | 6.75 | Feet (above bottom) |
| Buoyance Point for Empty Chamber | 67.25 | Elev |
| Buoyance Point for Chamber in Place | 9.99 | Feet (above bottom) |
| Buoyance Point for Chamber in Place | 70.49 | Elev |

(Soil friction has not been taken into account)

Duplex Control Panels

Applications

Orenco Duplex Control Panels are used to control dual pumps, alarms, and other equipment as specified in pressure sewers and onsite septic systems.



Orenco® DAX2 Control Panel



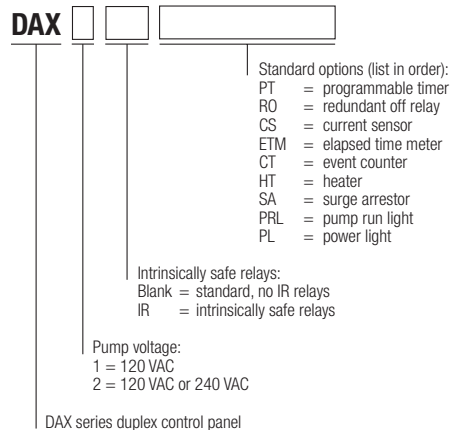
General

Orenco Duplex Control Panels are specifically engineered for pressure sewer (STEP) systems and onsite septic treatment systems that require the use of two alternating pumps. Standard features include circuit breakers, an automatic/manual/off motor control toggle for each pump, an audio/visual high level alarm, an alarm reset, and a duplex alternator. Other standard features and options are listed on page 2. Orenco panels are designed for use with mechanical and/or mercury float switches. Listed per UL 508 in the US and Canada.

Standard Models

DAX1, DAX2

Product Code Diagram



Materials of Construction

| | |
|-----------|-------------------------------------|
| Enclosure | UV-resistant fiberglass, UL Type 4X |
| Hinges | Stainless steel |

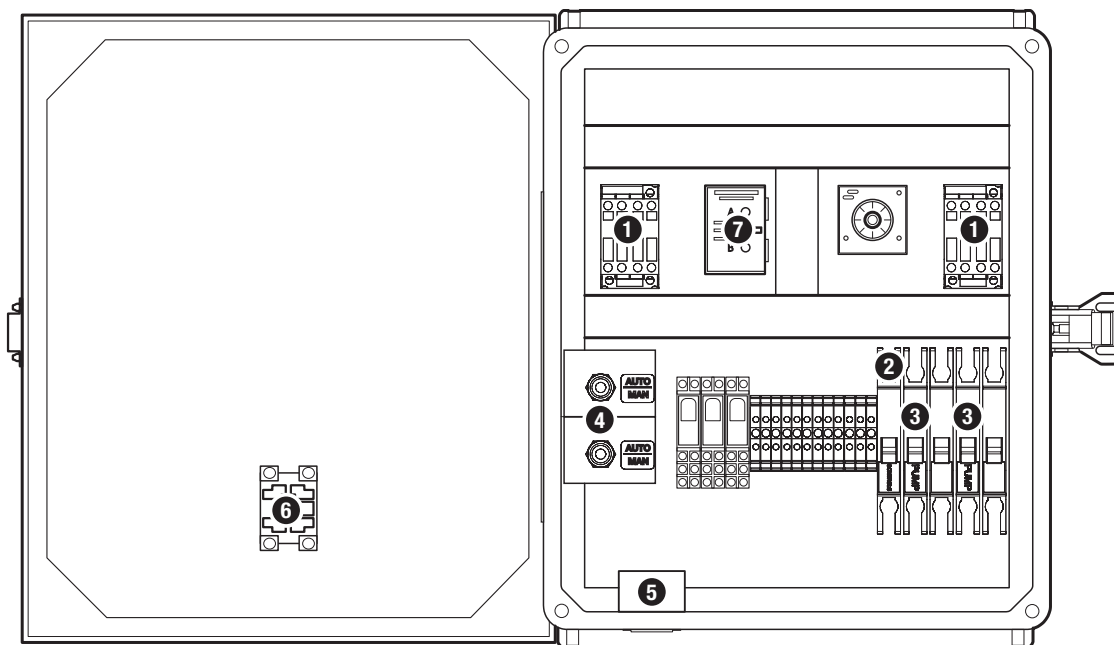
Specifications

Panel Ratings

| | |
|-------|--|
| DAX1: | 120 V, 1 hp, 16 amps, single phase, 60 Hz. |
| DAX2: | 240 V, 3 hp, 16 amps, single phase, 60 Hz. |

Dimensions

| | |
|------------------|------------|
| Height, in. (mm) | 15.5 (394) |
| Width, in. (mm) | 13.5 (343) |
| Depth, in. (mm) | 6.7 (170) |



Orenco® DAX2PTRO 240 V panel

Standard Components

| Feature | Specification(s) |
|--|--|
| 1. Motor-Start Contactor | 120 V, 16 FLA, 1 hp (0.75 kW), 60 Hz; 2.5 million cycles at FLA (10 million at 50% of FLA). 240 V, 16 FLA, 3 hp (2.24 kW), 60 Hz; 2.5 million cycles at FLA (10 million at 50% of FLA). |
| 2. Controls Circuit Breaker | 10 A, OFF/ON switch. Single-pole 120 V. DIN rail mounting with thermal magnetic tripping characteristics. |
| 3. Pump Circuit Breakers | 20 A, OFF/ON switch. Single-pole 120 V or double-pole 240 V. DIN rail mounting with thermal magnetic tripping characteristics. |
| 4. Toggle Switches | 20 A, 1hp (0.75 kW). Single-pole, double-throw HOA switch, |
| 5. Audible Alarm | 95 dB at 24 in. (610 mm), warble-tone sound. |
| 6. Visual Alarm | 7/8-in. (22-mm) diameter red lens, "Push-to-silence." UL Type 4X rated, 1 W LED light, 120 V. |
| 7. Duplex Alternator | 120 V. Cross-wired style for independent lag pump function. Selector switch for locking one pump into lead position. |
| Audible Alarm Silence Relay (Not shown) | 120 V. Automatic reset. DIN rail mount. |

Optional Features

| Feature | Specification(s) | 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 | 120 V. Repeat cycle from 0.05 seconds to 30 hours. Separate variable controls for OFF & ON time periods. | PT |
| Redundant Off Relay | 120 V. Provides a secondary off. Sounds alarm on low level condition. DIN rail mount. | RO |
| Elapsed Time Meter | 120 V, 7-digit, non-resettable. Limit of 99,999 hours; accurate to 0.01 hours. | ETM |
| Event Counter | 120 V, 6-digit, non-resettable. | CT |
| Heater | Anti-condensation heater. Self-adjusting: radiates additional wattage as temperature drops. | HT |
| Surge Arrestor | Status light on unit; protects incoming power supply from electrical surges. | SA |
| Pump Run Light | 7/8-in. (22-mm) diameter green lens. UL Type 4X rated, 1 W LED light, 120 V. | PRL |
| Power Light | 7/8-in. (22-mm) diameter green lens. UL Type 4X rated, 1 W LED light, 120 V. | PL |

PF-Series Submersible Effluent Pumps: 1-Phase, 60-Hz, 4-inch (100-mm)

Applications

Our PF-Series 4-inch (100-mm) Submersible Effluent Pumps are designed to transport screened effluent (with low TSS counts) from septic tanks or dosing tanks. These pumps are constructed of light-weight, corrosion-resistant stainless steel and engineered plastics, and are field-serviceable and repairable with common tools. They're also CSA- and UL-certified to U.S. and Canadian safety standards for effluent pumps.

PF-Series pumps are used in a variety of applications, including pressurized drainfields, packed-bed filters, mounds, aerobic units, effluent irrigation, liquid-only (effluent) sewers, wetlands, lagoons, and more. These pumps are designed to be used with a Biotube® pump vault or after a secondary treatment system.



Features/Specifications

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

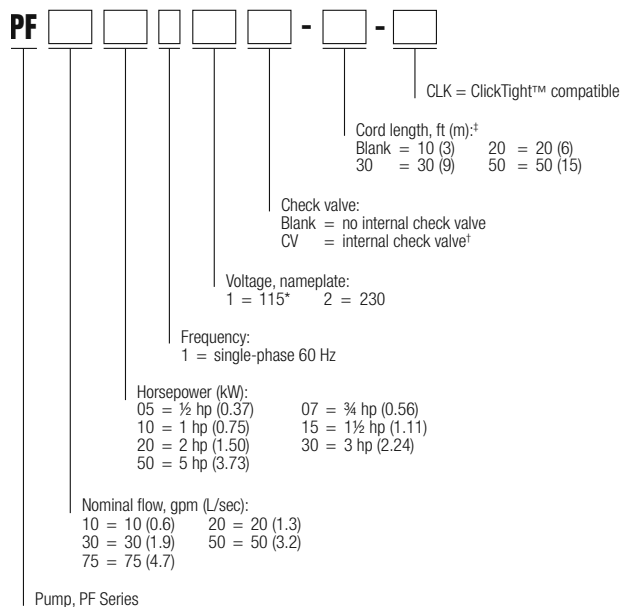
- Minimum 24-hour run-dry capability (liquid end) with no deterioration in pump life or performance*
- 1/8-inch (3-mm) bypass orifice to ensure flow recirculation for motor cooling and to prevent air bind
- Liquid-end repair kits available for better long-term cost of ownership
- TRI-SEAL™ floating impeller design on 10, 20, and 30 gpm (0.6, 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 (model PF751512 uses 14 AWG, SJ00W, 300-V cord)

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

Standard Models

See specifications chart on page 2 for a list of standard pumps. For a complete list of available pumps, call Orenco.

Product Code Diagram



* ½-hp (0.37 kW) only

[†] Available for 10 gpm (0.6 L/sec), 1/2 hp (0.37 kW)

[‡] Note: 20-ft cords are available only for pumps through 1½ hp

Specifications

| Pump Model | Design gpm (L/sec) | Horsepower (kW) | Phase | Nameplate voltage | Actual voltage | Design flow amps | Max amps | Discharge size and material ¹ | Length in. (mm) | Min. liquid level in. (mm) | Weight lb (kg) | Rated cycles per day |
|-----------------------------|-----------------------|--------------------|-------|----------------------|-------------------|---------------------|----------|---|--------------------|-------------------------------|-------------------|-------------------------|
| PF100511 ⁹ | 10 (0.6) | 0.50 (0.37) | 1 | 115 | 120 | 12.7 | 12.7 | 1 ¼ in. GFP | 23.0 (660) | 16 (406) | 26 (12) | 300 |
| PF100511CV ⁹ | 10 (0.6) | 0.50 (0.37) | 1 | 115 | 120 | 12.7 | 12.7 | 1 ¼ in. GFP | 23.0 (660) | 16 (406) | 26 (12) | 300 |
| PF100512 ⁹ | 10 (0.6) | 0.50 (0.37) | 1 | 230 | 240 | 6.3 | 6.3 | 1 ¼ in. GFP | 23.0 (660) | 16 (406) | 26 (12) | 300 |
| PF100712 ^{4,5,9} | 10 (0.6) | 0.75 (0.56) | 1 | 230 | 240 | 8.3 | 8.3 | 1 ¼ in. GFP | 25.9 (658) | 17 (432) | 30 (14) | 300 |
| PF101012 ^{5,6,9} | 10 (0.6) | 1.00 (0.75) | 1 | 230 | 240 | 9.6 | 9.6 | 1 ¼ in. GFP | 27.9 (709) | 18 (457) | 33 (15) | 100 |
| PF200511 ⁹ | 20 (1.3) | 0.50 (0.37) | 1 | 115 | 120 | 12.3 | 12.5 | 1 ¼ in. GFP | 22.3 (566) | 18 (457) | 25 (11) | 300 |
| PF200512 ⁹ | 20 (1.3) | 0.50 (0.37) | 1 | 230 | 240 | 6.4 | 6.5 | 1 ¼ in. GFP | 22.5 (572) | 18 (457) | 26 (12) | 300 |
| PF201012 ^{4,5,9} | 20 (1.3) | 1.00 (0.75) | 1 | 230 | 240 | 10.5 | 10.5 | 1 ¼ in. GFP | 28.4 (721) | 20 (508) | 33 (15) | 100 |
| PF201512 ^{4,5} | 20 (1.3) | 1.50 (1.11) | 1 | 230 | 240 | 12.4 | 12.6 | 1 ¼ in. GFP | 34.0 (864) | 24 (610) | 41 (19) | 100 |
| PF300511 ⁹ | 30 (1.9) | 0.50 (0.37) | 1 | 115 | 120 | 11.8 | 11.8 | 1 ¼ in. GFP | 21.3 (541) | 20 (508) | 28 (13) | 300 |
| PF300512 ⁹ | 30 (1.9) | 0.50 (0.37) | 1 | 230 | 240 | 6.2 | 6.2 | 1 ¼ in. GFP | 21.3 (541) | 20 (508) | 25 (11) | 300 |
| PF300712 ⁹ | 30 (1.9) | 0.75 (0.56) | 1 | 230 | 240 | 8.5 | 8.5 | 1 ¼ in. GFP | 24.8 (630) | 21 (533) | 29 (13) | 300 |
| PF301012 ^{4,9} | 30 (1.9) | 1.00 (0.75) | 1 | 230 | 240 | 10.4 | 10.4 | 1 ¼ in. GFP | 27.0 (686) | 22 (559) | 32 (15) | 100 |
| PF301512 ^{4,5} | 30 (1.9) | 1.50 (1.11) | 1 | 230 | 240 | 12.6 | 12.6 | 1 ¼ in. GFP | 32.8 (833) | 24 (610) | 40 (18) | 100 |
| PF302012 ^{5,6,7} | 30 (1.9) | 2.00 (1.49) | 1 | 230 | 240 | 11.0 | 11.0 | 1 ¼ in. SS | 35.5 (902) | 26 (660) | 44 (20) | 100 |
| PF303012 ^{5,6,7,8} | 30 (1.9) | 3.00 (2.23) | 1 | 230 | 240 | 16.8 | 16.8 | 1 ¼ in. SS | 44.5 (1130) | 33 (838) | 54 (24) | 100 |
| PF305012 ^{5,6,7,8} | 30 (1.9) | 5.00 (3.73) | 1 | 230 | 240 | 25.6 | 25.8 | 1 ¼ in. SS | 66.5 (1689) | 53 (1346) | 82 (37) | 100 |
| PF500511 ⁹ | 50 (3.2) | 0.50 (0.37) | 1 | 115 | 120 | 12.1 | 12.1 | 2 in. SS | 20.3 (516) | 24 (610) | 27 (12) | 300 |
| PF500512 ⁹ | 50 (3.2) | 0.50 (0.37) | 1 | 230 | 240 | 6.2 | 6.2 | 2 in. SS | 20.3 (516) | 24 (610) | 27 (12) | 300 |
| PF500712 ⁹ | 50 (3.2) | 0.75 (0.56) | 1 | 230 | 240 | 8.5 | 8.5 | 2 in. SS | 23.7 (602) | 25 (635) | 31 (14) | 300 |
| PF501012 ⁹ | 50 (3.2) | 1.00 (0.75) | 1 | 230 | 240 | 10.1 | 10.1 | 2 in. SS | 27.0 (686) | 26 (660) | 35 (16) | 100 |
| PF501512 ⁴ | 50 (3.2) | 1.50 (1.11) | 1 | 230 | 240 | 12.5 | 12.6 | 2 in. SS | 32.5 (826) | 30 (762) | 41 (19) | 100 |
| PF503012 ^{4,5,7,8} | 50 (3.2) | 3.00 (2.23) | 1 | 230 | 240 | 17.7 | 17.7 | 2 in. SS | 43.0 (1092) | 37 (940) | 55 (25) | 100 |
| PF505012 ^{5,6,7,8} | 50 (3.2) | 5.00 (3.73) | 1 | 230 | 240 | 26.2 | 26.4 | 2 in. SS | 65.4 (1661) | 55 (1397) | 64 (29) | 100 |
| PF751012 ⁹ | 75 (4.7) | 1.00 (0.75) | 1 | 230 | 240 | 9.9 | 10.0 | 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 | 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.

⁹ ClickTight™ compatible.

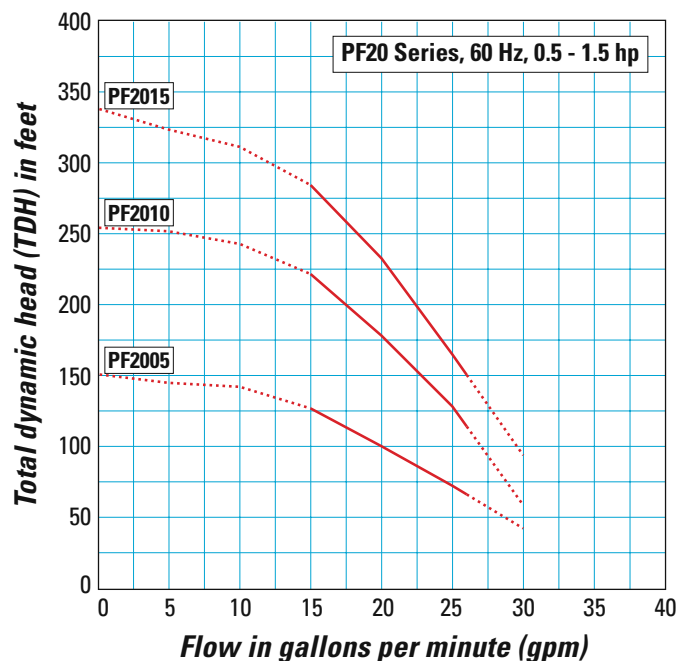
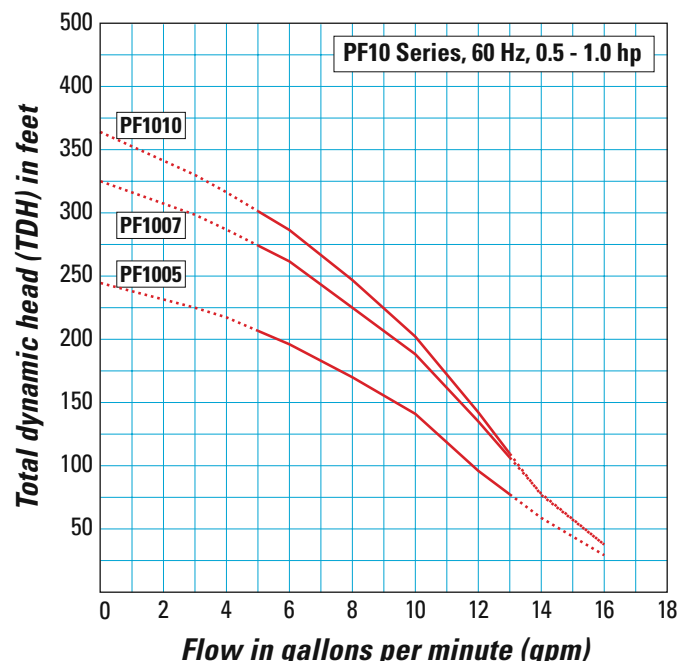
Materials of Construction

| | |
|--------------------|---|
| 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-in. 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 are equipped with surge arrestors for added security. Single-phase motors through 1.5 hp (1.11 kW) have built-in thermal over-load protection, which trips at 203-221° F (95-105° C). |

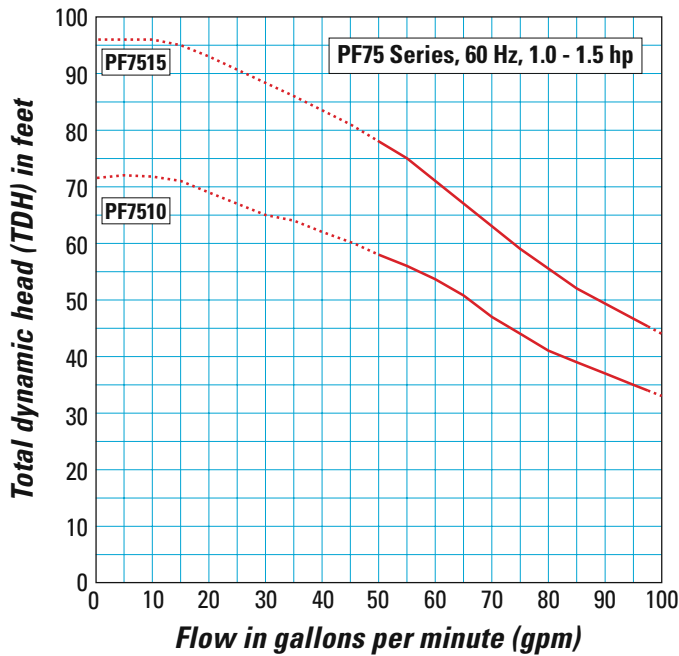
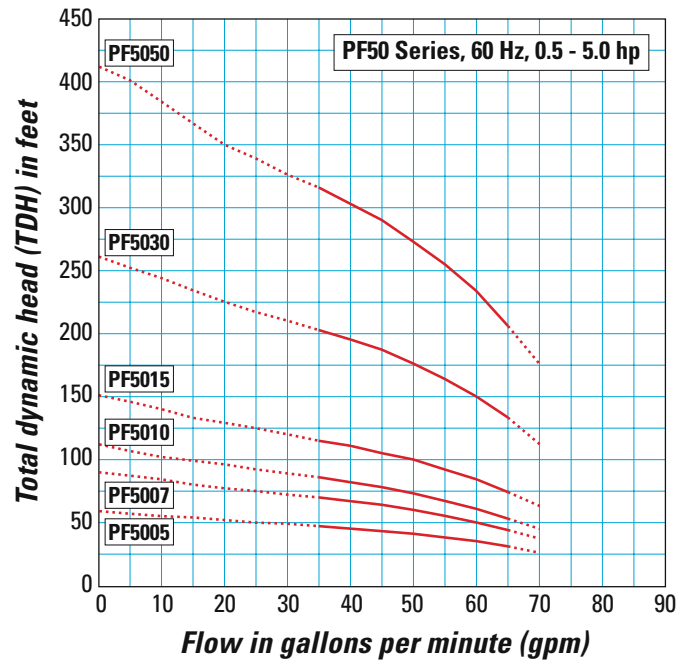
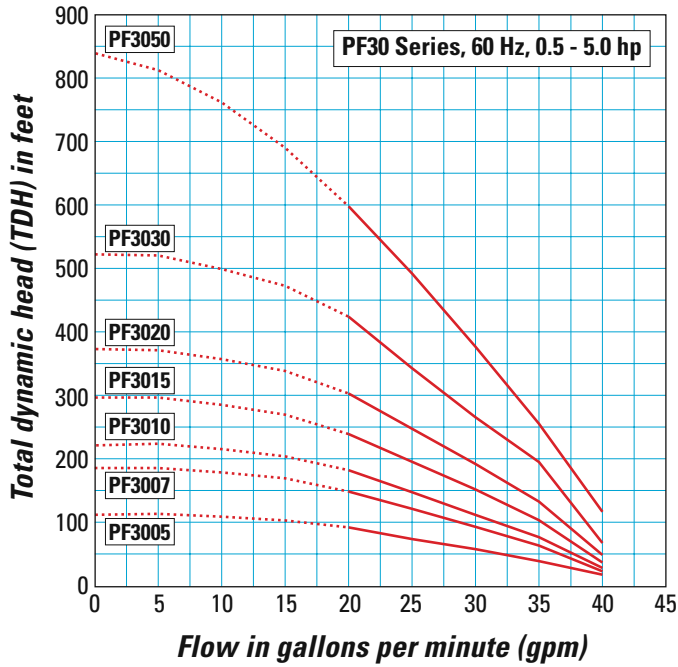
Using a Pump Curve

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



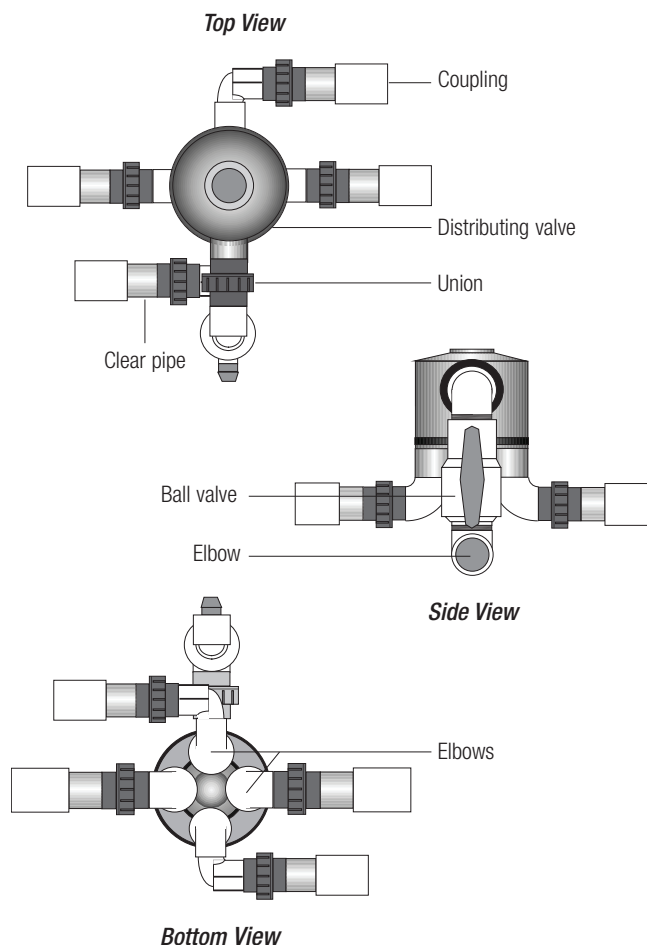
Pump Curves, cont.



Distributing Valves

Applications

Automatic Distributing Valve Assemblies are used to pressurize multiple zone distribution systems including textile filters, sand filters and drainfields.



General

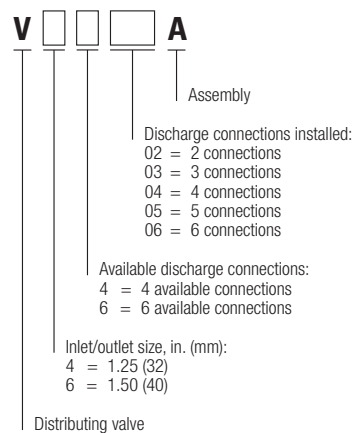
Orenco's Automatic Distributing Valve Assemblies are mechanically operated and sequentially redirect the pump's flow to multiple zones or cells in a distribution field. Valve actuation is accomplished by a combination of pressure and flow. They allow the use of smaller horsepower pumps on large sand filters and drainfields. For example, a large community drainfield requiring 300 gpm (18.90L/sec) can use a six-line valve assembly to reduce the pump flow rate requirement to only 50 gpm (3.14L/sec).

Orenco only warrants Automatic Distributing Valves when used in conjunction with High-Head Effluent Pumps with Biotube® pump vaults to provide pressure and flow requirements, and to prevent debris from fouling valve operation. An inlet ball valve, a section of clear pipe, and a union for each outlet are provided for a complete assembly that is easy to maintain and monitor. Ideal valve location is at the high point in the system. Refer to Automatic Distributing Valve Assemblies (NTP-VA-1) for more information.

Standard Models

V4402A, V4403A, V4404A, V4605A, V4606A, V6402A, V6403A, V6404A, V6605A, V6606A.

Product Code Diagram



Materials of Construction

| | |
|--------------|------------------------------------|
| All Fittings | Sch. 40 PVC per ASTM specification |
| Unions | Sch. 80 PVC per ASTM specification |
| Ball Valve | Sch. 40 PVC per ASTM specification |
| Clear Pipe | Sch. 40 PVC per ASTM specification |

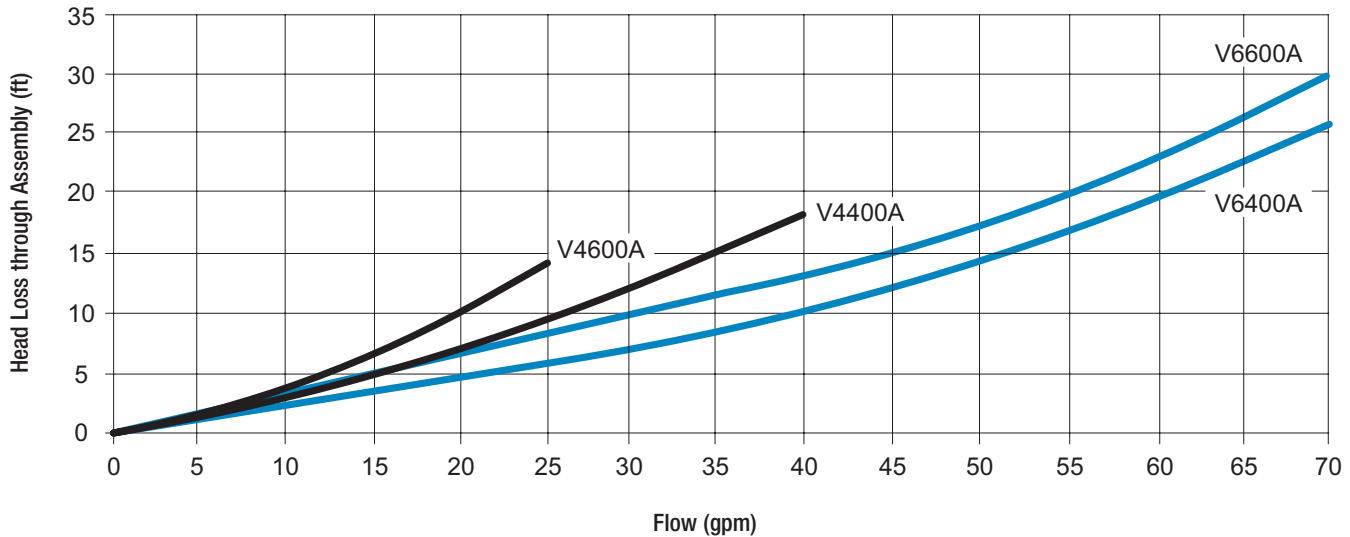
Specifications

| Model | Inlet Size, in. (mm) | Outlets Size, in. (mm) | Flow Range, gpm (L/sec) | Max Head, ft (m) | Min. Enclosure* |
|--------|----------------------|------------------------|-------------------------|------------------|-----------------|
| V4402A | 1.25 (32) | 1.25 (32) | 10 – 40 (0.63 – 2.52) | 170 (51.816) | VB1217 |
| V4403A | 1.25 (32) | 1.25 (32) | 10 – 40 (0.63 – 2.52) | 170 (51.816) | VB1217 |
| V4404A | 1.25 (32) | 1.25 (32) | 10 – 40 (0.63 – 2.52) | 170 (51.816) | VB1217 |
| V4605A | 1.25 (32) | 1.25 (32) | 10 – 40 (0.63 – 2.52) | 170 (51.816) | RR2418 |
| V4606A | 1.25 (32) | 1.25 (32) | 10 – 40 (0.63 – 2.52) | 170 (51.816) | RR2418 |
| V6402A | 1.50 (38) | 1.50 (38) | 15 – 100 (0.95 – 6.31) | 345 (105.16) | RR2418 |
| V6403A | 1.50 (38) | 1.50 (38) | 15 – 100 (0.95 – 6.31) | 345 (105.16) | RR2418 |
| V6404A | 1.50 (38) | 1.50 (38) | 15 – 100 (0.95 – 6.31) | 345 (105.16) | RR2418 |
| V6605A | 1.50 (38) | 1.50 (38) | 15 – 100 (0.95 – 6.31) | 345 (105.16) | RR2418 |
| V6606A | 1.50 (38) | 1.50 (38) | 15 – 100 (0.95 – 6.31) | 345 (105.16) | RR2418 |

* When using an enclosed basin, choose the next larger-sized diameter.

Table 1. Automatic Distributing Valve Assembly Headloss Equations

| Model Series | Equation | Operating Range, gpm (L/sec) |
|--------------|---|------------------------------|
| V4400A | $H_L = 0.085 \times Q^{1.45}$ | 10 - 40 (0.63 – 2.52) |
| V4600A | $H_L = 0.085 \times Q^{1.58}$ | 10 - 25 (0.63 – 1.57) |
| V6400A | $H_L = 0.0045 \times Q^2 + 3.5 \times (1 - e^{-0.06Q})$ | 15 - 70 (0.95 – 4.42) |
| V6600A | $H_L = 0.0049 \times Q^2 + 5.5 \times (1 - e^{-0.1Q})$ | 15 - 70 (0.95 – 4.42) |



AdvanTex® AX100 Textile Filter

Applications

Orenco's AdvanTex® AX100 Treatment System is an innovative technology for onsite treatment of domestic-strength wastewater. The heart of the system is the AdvanTex Filter, a sturdy, watertight fiberglass basin filled with an engineered textile material. This lightweight, highly absorbent textile material treats a tremendous amount of wastewater in a small space. AX100 Treatment Systems are ideal for:

- New construction
- System upgrades and repairs
- Small sites
- Poor soils
- Pretreatment
- Nitrogen reduction
- Price-sensitive markets

For sizing, see AdvanTex® Design Criteria (NDA-ATX-COMM-1-PKG).



The heart of the AdvanTex® AX100 Treatment System is this sturdy, watertight fiberglass basin filled with an engineered textile material.

Features/Specifications

To specify this product, require the following:

- Wastewater treatment to better than secondary treatment standards
- Consistent treatment, even during peak flows
- Timer operation for flow monitoring, flow modulation, and surge control
- Fixed-film, engineered textile media, operated in an unsaturated condition
- Consistent media quality
- Low energy consumption
- Low maintenance requirements
- Complete pre-manufactured package, ready to install
- Watertight construction, corrosion-proof materials, and components
- Foam-core lid provides insulation value of R-6 (RSI-1.1)
- Quiet operation

Standard Model

AX100

Specifications**

| | |
|----------------------------|------------|
| Length, in. (mm) | 191 (4851) |
| Width, in. (mm) | 94 (2388) |
| Height, in. (mm) | 42 (1067) |
| Area (footprint), ft² (m²) | 128 (11.9) |
| Dry Weight, lb (kg) | 1616 (733) |

* Covered by U.S. patent numbers 6,540,920; 6,372,137; 5,531,894; 5,480,561; 5,360,556

** Nominal values provided. See AdvanTex® Treatment System drawings for exact dimensions.

AdvanTex[®] Vent Fan Assembly

Applications

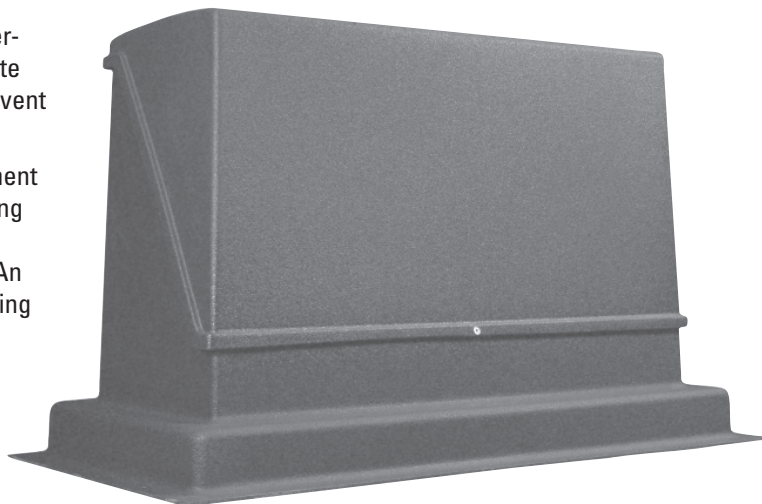
Oreco's AdvanTex[®] Vent Fan Assembly consists of a water-proof fiberglass enclosure with equipment for venting onsite wastewater treatment systems. One enclosure can hold a vent fan with carbon filter and an optional heater.

The vent fan is used in commercial-sized AdvanTex Treatment Systems to gently pull air through the textile media, ensuring that adequate oxygen is available for biological treatment. The carbon filter scrubs the air that the system exhausts. An optional heater can be added where climate requires heating of the air that enters the AdvanTex textile filter pods.

Standard Models

AXVFACF — AX above ground Vent Fan Assembly with LMF-3 Fan

AXVFACF-HT — AX above ground Vent Fan Assembly with LMF-3 Fan and HT10 Heater



Enclosure

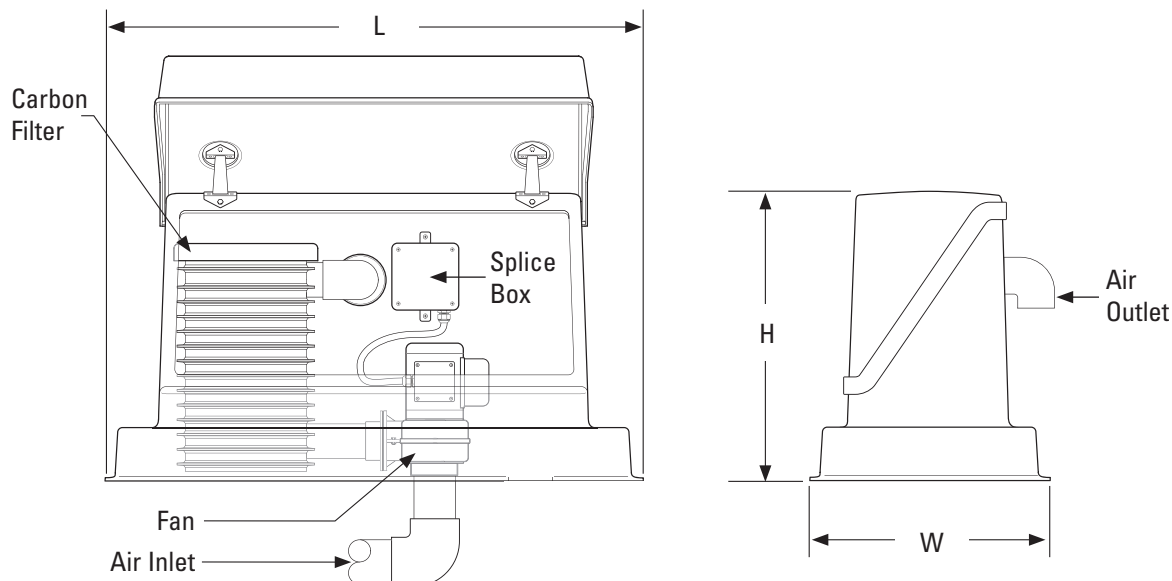
Physical Specifications

Materials of Construction

| | |
|-----------------|---------------------------------------|
| Shell | Fiberglass-reinforced polyester (FRP) |
| Hardware | Stainless steel |
| Exterior finish | Green, textured, UV resistant |
| Straps | Nylon |

Dimensions

| | |
|------------------|---|
| Length (L) | 50 in. (1270 mm) |
| Width (W) | 24 in. (610 mm) |
| Height (H) | 30 in. (762 mm) |
| Volume | 15.1 ft ³ (0.43 m ³) |
| Area (footprint) | 8.3 ft ² (0.77 m ²) |



AdvanTex® Vent Fan Assembly (continued)

Fan

Physical Specifications

Dimensions

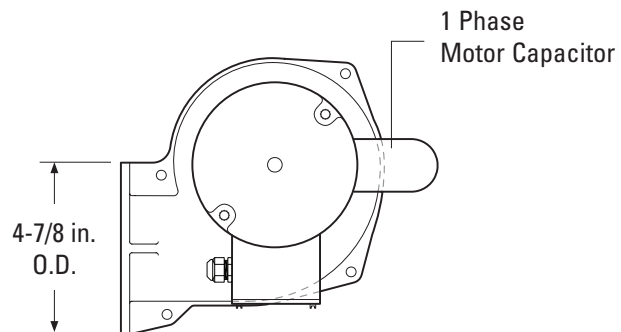
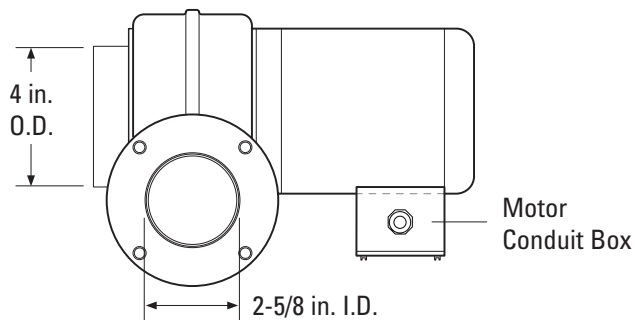
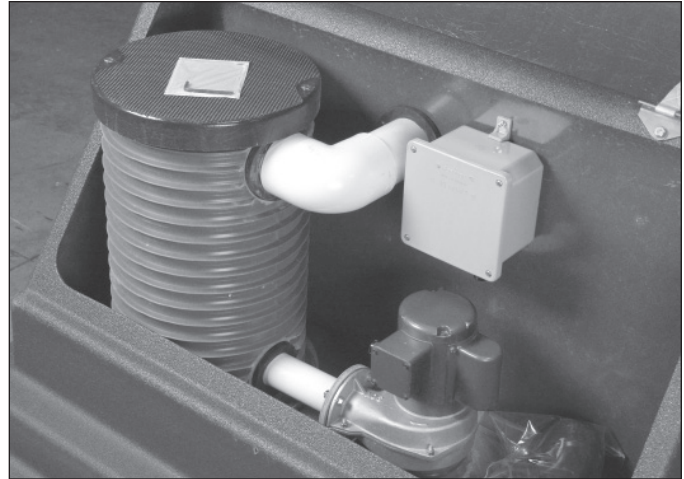
| | |
|-------------------------|--------------------|
| Inlet O.D. | 4 in. (100 mm) |
| Inlet nominal pipe size | 4 in. (100 mm) |
| Outlet I.D. | 2-5/8 in. (67 mm) |
| Outlet Flange O.D. | 4-7/8 in. (124 mm) |

Materials of Construction

| | |
|---------|----------|
| Housing | Aluminum |
| Wheel | Steel |

Performance Data

| | 60 Hz | 50 Hz |
|--|----------------|----------------|
| Horsepower (kW) | 0.08 (0.06 kW) | 0.08 (0.06 kW) |
| Phase | 1 phase | 1 phase |
| Volts | 115/230 | 110/220 |
| Amperage | 1.4 A/0.7 A | 1.8 A/0.9 A |
| RPM | 3400 | 2900 |
| CFM at 0" H ₂ O static pressure | 245 | 205 |
| CFM at 0.4" H ₂ O static pressure | 220 | 170 |
| CFM at 0.8" H ₂ O static pressure | 190 | 130 |
| CFM at 1.5" H ₂ O static pressure | 120 | N/A |



AdvanTex® Vent Fan Assembly (continued)

Carbon Filter Basin

Physical Specifications

Dimensions

| | |
|-----------------|--------------------------------|
| Outlet diameter | Accepts nominal 3-in. PVC pipe |
| Inlet diameter | Accepts nominal 2-in. PVC pipe |
| Height | 21.5 in. (546 mm) |
| Diameter | 12 in. (305 mm) |

Materials of Construction

| | |
|-------------------|--|
| Housing | PVC |
| Bottom | Fiberglass-reinforced polyester (FRP) |
| Interior supports | Polypropylene grid and polyethylene screen |
| Support rings | PVC |
| Lid | Fiberglass |
| Fill material | Activated carbon |



Heater (Optional)

Physical Specifications

Dimensions

| | |
|--------------------------|---------------------------------------|
| Outlet diameter | Fits nominal 3-in. Class 125 PVC pipe |
| Length (inlet to outlet) | 11.75 in. (297 mm) |
| Width | 11.25 in. (286 mm) |
| Depth | 8.25 in. (210 mm) |

Performance Data

| | |
|-------|------|
| Watts | 1000 |
| Volts | 120 |
| Amps | 8.3 |



Miragrid® 22XT

Miragrid® 22XT geogrid is composed of high molecular weight, high tenacity polyester multifilament yarns woven in tension and finished with a PVC coating. Miragrid® 22XT geogrid is inert to biological degradation and resistant to naturally encountered chemicals, alkalis, and acids.

Miragrid 22XT geogrid is used as soil reinforcement in MSE structures such as segmental retaining walls, precast modular block walls, wire faced walls, geosynthetic wrapped faced walls and steepened slopes. Miragrid 22XT is also used in MSE stabilized platforms for voids bridging, embankments on soft soils, landfill veneer stability, reducing differential settlement and for foundation seismic stability.

TenCate Geosynthetics Americas is accredited by Geosynthetic Accreditation Institute – Laboratory Accreditation Program ([GAI-LAP](#)).

| MECHANICAL PROPERTIES | TEST METHOD | UNIT | MINIMUM AVERAGE ROLL VALUE |
|---|-----------------------|--|----------------------------|
| | | | MD |
| Tensile Strength @ Ultimate | ASTM D6637 (Method B) | lbs/ft (kN/m) | 20559 (300.0) |
| Tensile Strength @ 5% strain | ASTM D6637 (Method B) | lbs/ft (kN/m) | 6700 (97.8) |
| Mass/Unit Area ¹ | (ASTM D5261) | oz/yd ² (g/m ²) | 28.2 (956) |
| MINIMUM ROLL VALUE | | | |
| Creep Rupture Strength ² | ASTM D5262/D6992 | lbs/ft (kN/m) | 14277 (208.3) |
| Long Term Design Strength ³ | | lbs/ft (kN/m) | 12361 (180.4) |
| PHYSICAL PROPERTIES | | UNIT | ROLL CHARACTERISTIC |
| Roll Dimensions ⁴ (width x length) | | ft (m) | 12 x 200 (3.6 x 61) |
| Roll Area | | yd ² (m ²) | 267 (220) |
| Estimated Roll Weight | | lbs (kg) | 470 (213) |
| Label Roll Color | | | WHITE |

¹ Typical Value

² 75-year design life based on NTPEP Report [REGEO-2016-01-069](#).

³ Long Term Design Strength for sand, silt, clay. RF_{CR} = 1.44; RF_{ID} = 1.05; RF_D = 1.1 (Installation damage reduction factor for other soils available upon request).

⁴ Special order roll lengths are available upon request

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FGS000105
ETQR19



MYERS[®]
MODEL SRM4
4/10 HORSEPOWER
RESIDENTIAL SEWAGE PUMP



WWW.FEMYERS.COM

MYERS® MODEL SRM4

Residential Sewage Pump

The Right Choice

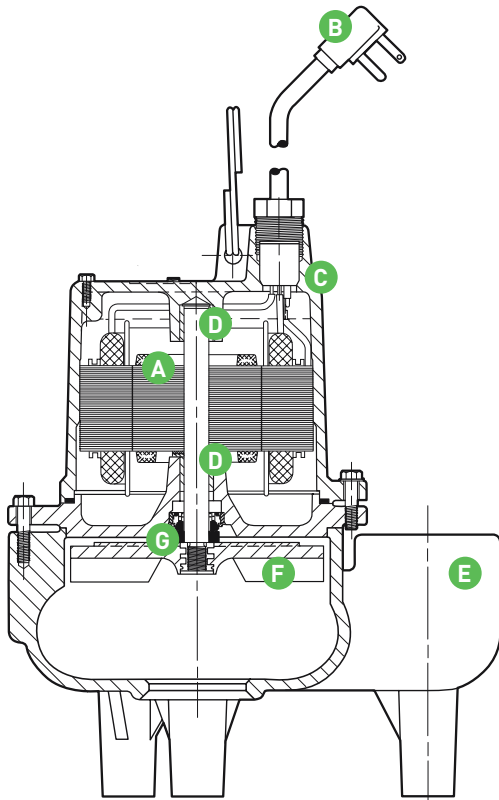
The SRM4 solids handling pump is the most reliable 4/10 horsepower residential sewage pump available today. The SRM4 is a plumbers/contractors dream! Its recessed impeller design allows 2" solids to pass freely through the volute without the chance of jamming the impeller. The SRM4 series pump has a national field-proven record of reliability. Look to your Myers distributor for the answer to your residential sewage handling needs ... and across the counter will be the Myers mini solids handling, the SRM4. It works for you! For more information, call your Myers distributor today, or the Myers Ohio sales office at 419-289-6898.



| Product Capabilities | | |
|------------------------------|--------------------------------------|---------------|
| Capacities To | 95 gpm | 360 lpm |
| Heads To | 18 ft. | 5.5 m |
| | 19 ft. shutoff | 5.8 m |
| Pump Down Range Float Switch | 7 to 14 in. | 178 to 356 mm |
| Solids Handling Capacity | 2 in. | 50.8 mm |
| Liquids Handling | raw sewage, effluent, drain water | |
| Intermittent Liquid Temp. | up to 140°F | up to 60°C |
| Motor Electrical Data | 4/10 HP shaded pole 1650 RPM | |
| Electrical | 115V, 12A or 230V, 6A, 1Ø, 60 Hz. | |
| Acceptable pH Range | 6 – 9 | |
| Discharge, NPT | 2 in. | 50.8 mm |
| Min. Sump Diameter | 18 in. | 457 mm |
| | 30 in. | 762 mm |

Note: Consult factory for applications outside these recommendations.

Pump Features and Applications



A. 4/10 HP Motor

Pressed in place and oil-filled for best alignment and heat transfer. Built-in overload protection.

B. Power Cord

Quick-disconnect watertight fitting.

C. Motor Housing

Heavy cast iron for efficient heat transfer.

D. Dual Thrust Washers, Sleeve Bearings

Oil lubricated, enhance smooth operation and extend pump life..

E. Cast Iron Volute

Passes 2" diameter solids.

F. Recessed Impeller

Operates out of volute passage, allowing maximum flow of liquids and solids.

G. Mechanical Shaft Seal

Carbon and ceramic faces, body is stationary, prevents string or trash from winding on seal..

Mechanical Float Switch

Mercury-free, 90° angle operation. (Piggyback models only).

Durable Motor Will Deliver Many Years Of Reliable Service.

- Oil-filled motor for maximum heat dissipation and continuous bearing lubrication.
- Overload protected shaded pole motor eliminates starting switches.
- Recessed vortex impeller provides minimal radial loading for long bearing life.

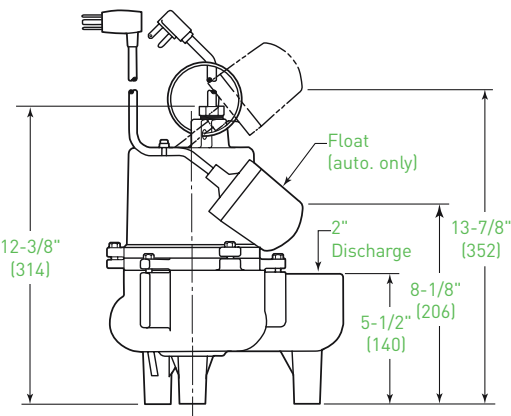
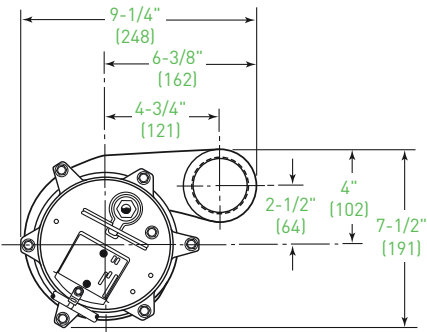
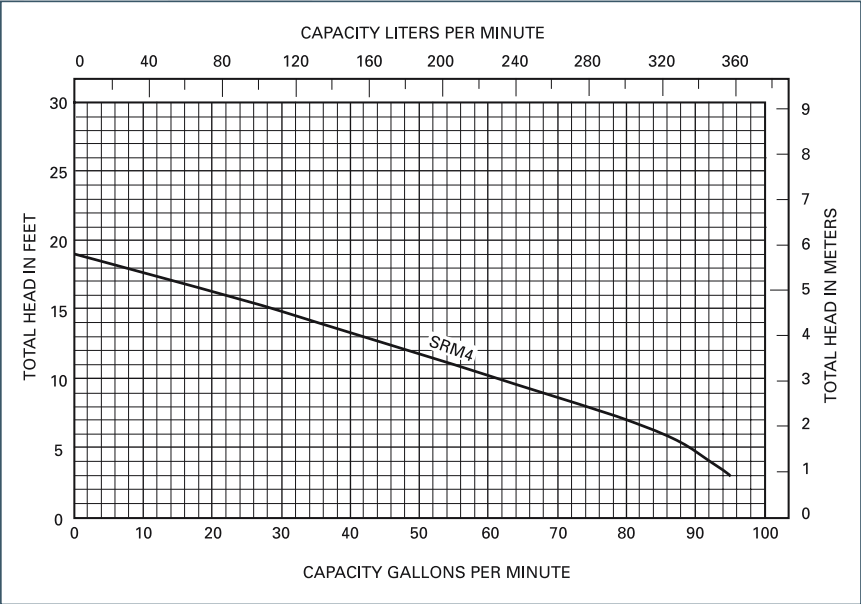
The SRM4P Is Engineered For Many Years Of Maintenance-Free Operation.

- Wide-angle piggy-back float switch for maximum draw down. (Automatic models.)
- Pump can be operated manually by unplugging piggy-back switch and plugging pump directly into outlet (Automatic models).
- Recessed vortex impeller operates completely out of volute and provides free flow through passage for solids and liquids.

Performance Data and Dimensions

[Dimensions in mm]

1650 RPM



740 EAST 9TH STREET,
ASHLAND, OHIO 44805
WWW.FEMYERS.COM

269 TRILLIUM DRIVE, KITCHENER,
ONTARIO, CANADA N2G 4W5
WWW.FEMYERS.COM

Because we are continuously improving our products and services, Pentair reserves the right to change specifications without prior notice.
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January 13, 2023

David T. Bray, PLS
President
Caputo & Wick LTD
1150 Pawtucket Ave.
Rumford, RI 02916-1897
Phone: (401) 434-8880

RE: Burlingame State Park and Camp Ground, Charlestown, RI

Dear Mr. Bray:

This letter will confirm that you have been trained and certified to design GST™ Leaching Systems by Geomatrix Systems, LLC ("Geomatrix") in the State of Rhode Island.

This letter also confirms that Geomatrix has reviewed the design of the GST Leaching System proposed for installation at Burlingame State Park and Camp Ground, Charlestown, RI and found the site and design to be suitable and in compliance with the approved design manuals for the aforementioned product.

If you have any questions, please contact me.

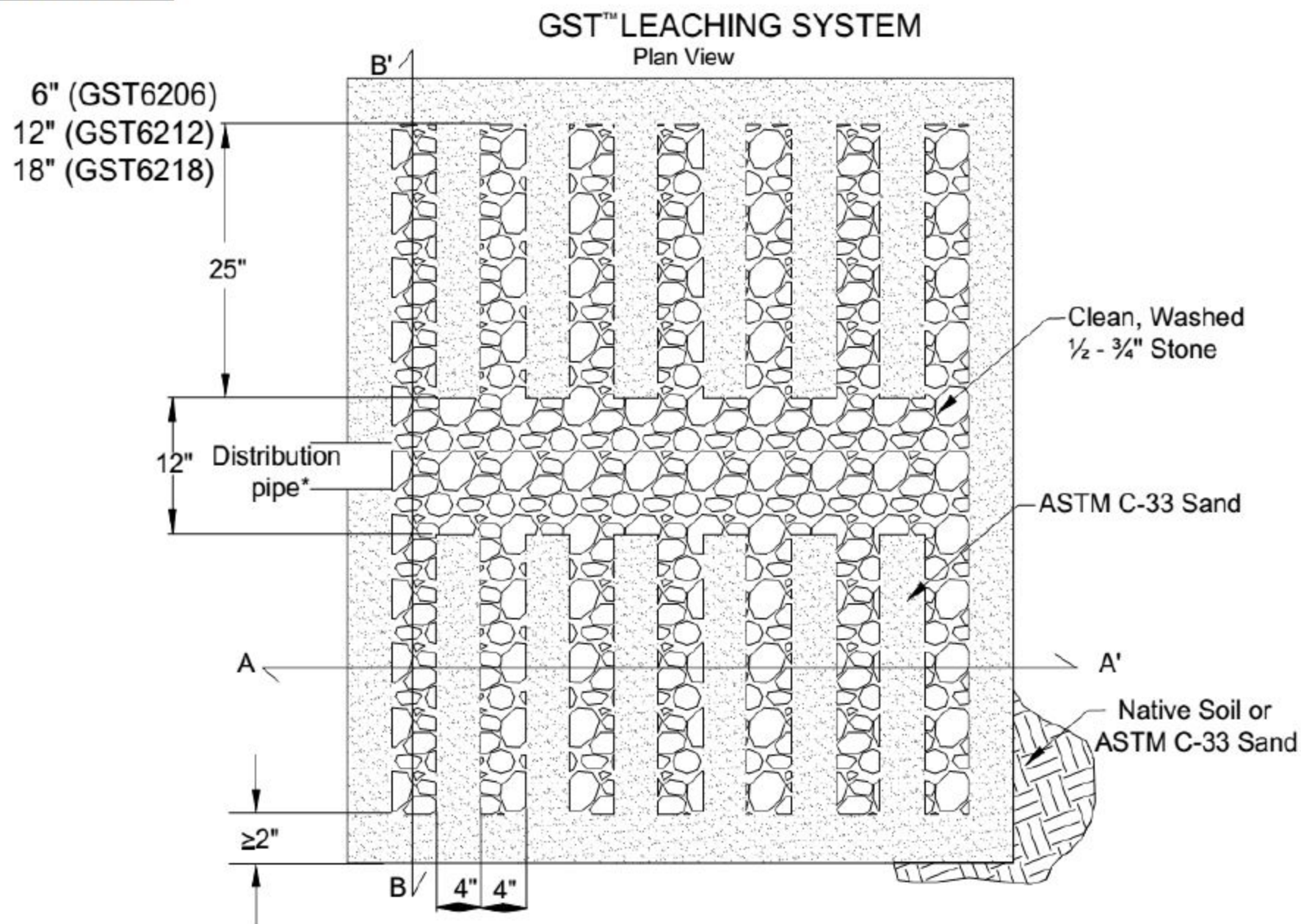
Sincerely,
GEOMATRIX SYSTEMS, LLC

A handwritten signature in black ink, appearing to read "David Jewett". The signature is fluid and cursive, with a long horizontal stroke extending from the end.

David Jewett

Geomatrix Systems, LLC
114 Mill Rock Road East - Old Saybrook, CT 06475
Phone: 860-510-0730 – Fax: 860-510-0735

GST Schematics



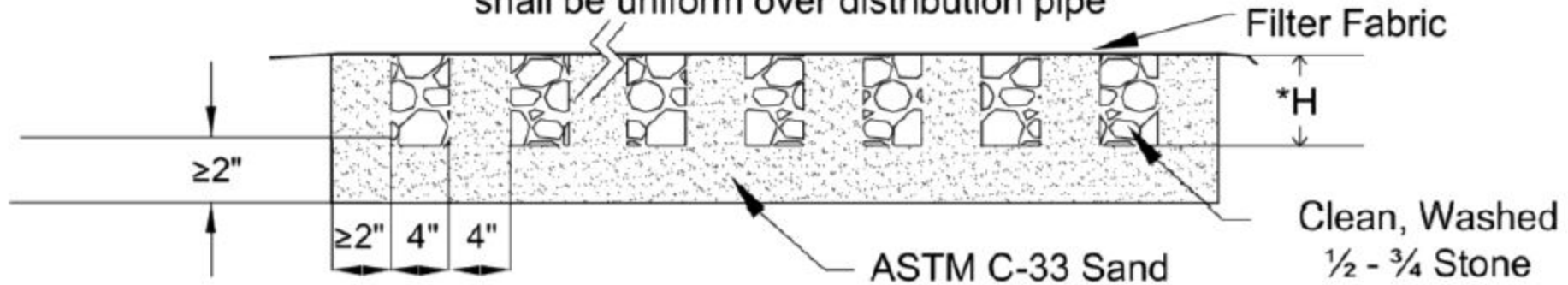
* Distribution pipe for gravity systems shall comply with RIDEM OWTS Rule 6.34C
Distribution pipe for pressure applications shall comply with RIDEM Guidelines for the Design, Use and Maintenance of Pressurized Drainfields.

GEOMATRIX GST™ LEACHING SYSTEM

A-A' CROSS SECTION

Finished Grade shall be pitched to sheet flow
stormwater away from system

Cover material depth shall be 6-30" and
shall be uniform over distribution pipe



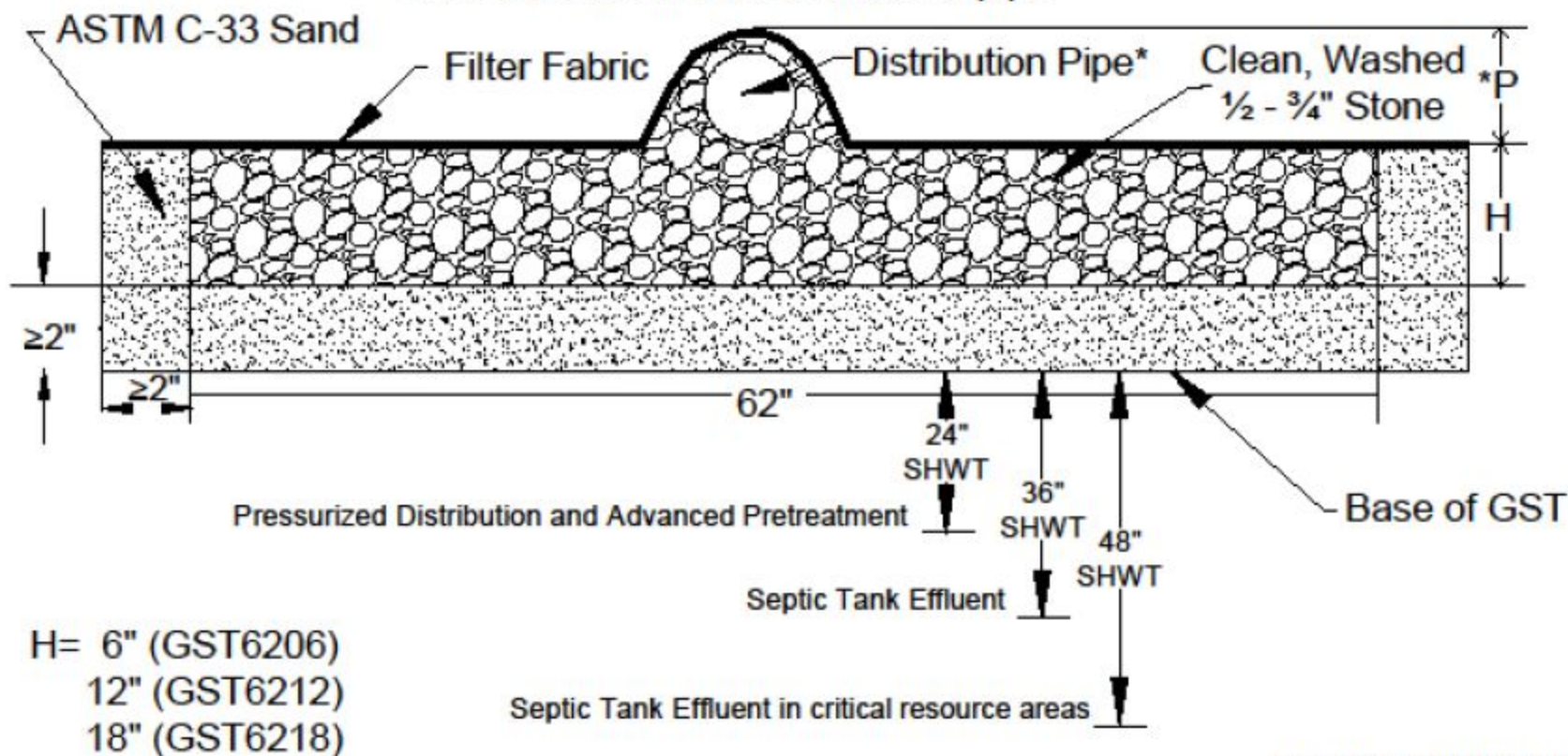
*H= 6" (GST6206)
12" (GST6212)
18" (GST6218)

GST™ LEACHING SYSTEM

B-B' CROSS SECTION

Finished Grade shall be pitched to sheet flow
stormwater away from system

Cover material depth shall be 6-30" and
shall be uniform over distribution pipe



* Distribution pipe for gravity applications shall comply with RIDEM OWTS Rule 6.34C
Distribution pipe for pressure applications shall comply with RIDEM Guidelines for the
Design, Use and Maintenance of Pressurized Drainfields

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patents: www.geomatrixsystems.com

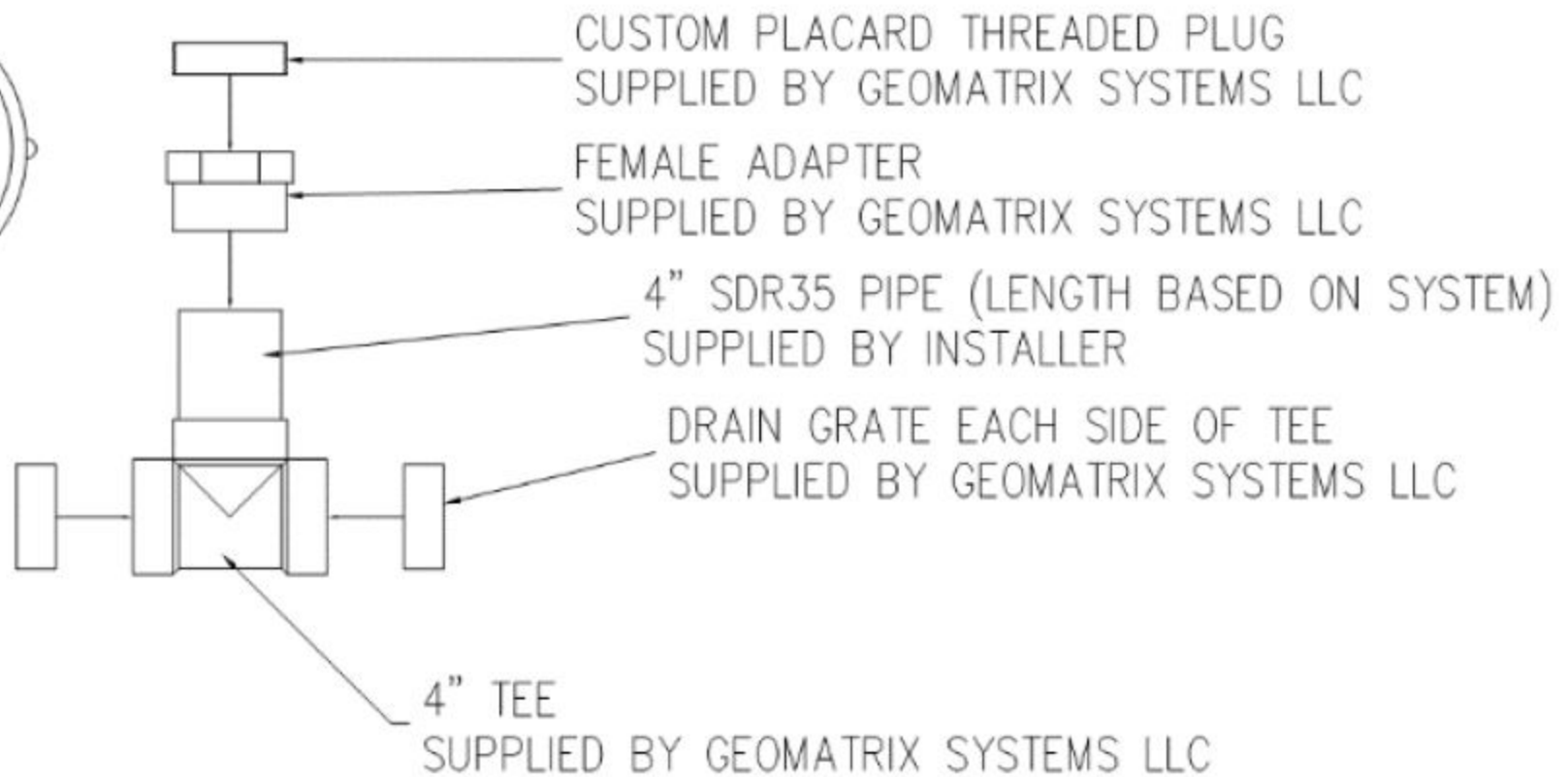
GST LEACHING SYSTEM

B-B' Cross Section

Geomatrix Systems, LLC., Old Saybrook, CT
860-510-0730

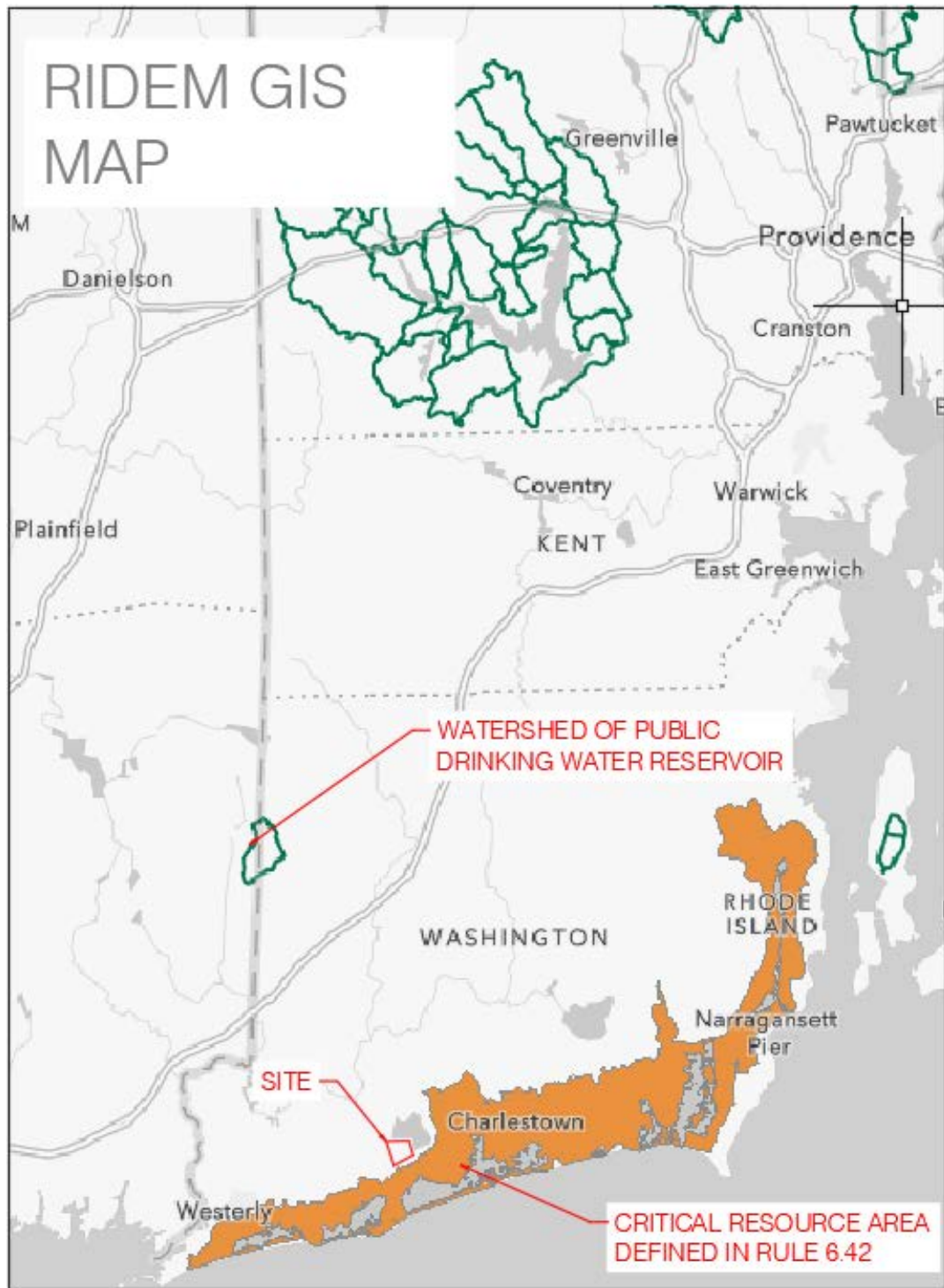
| | | | |
|-----------|----------|----------|------------------|
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| DATE | 9-4-2018 | ACAD No. | 040 GLS B-B'.DWG |
| DRAWN BY: | ERP | SHEET | 3 Of 3 |

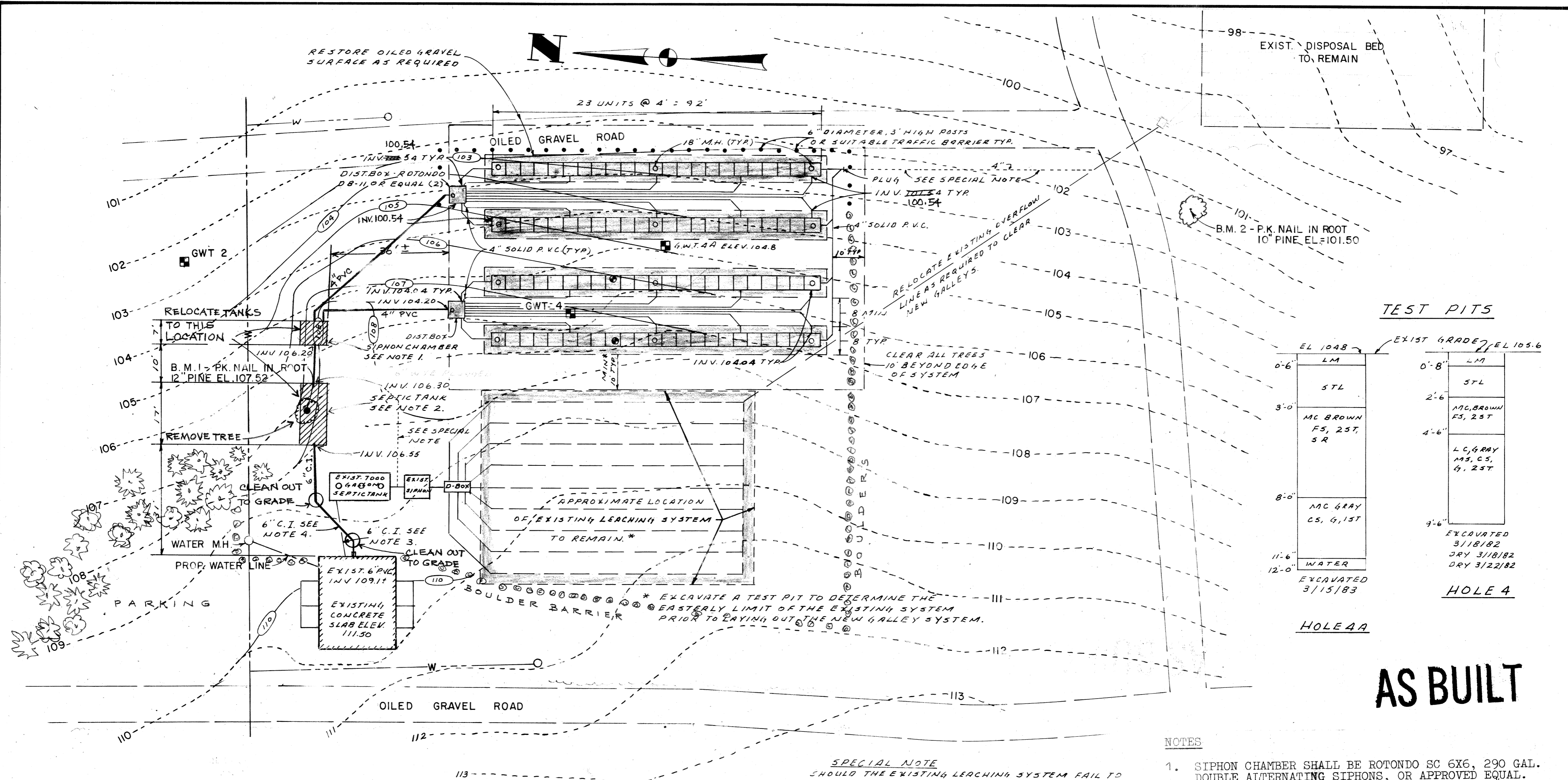
GEOMATRIX GST™ LEACHING SYSTEM INSPECTION PORT DETAIL



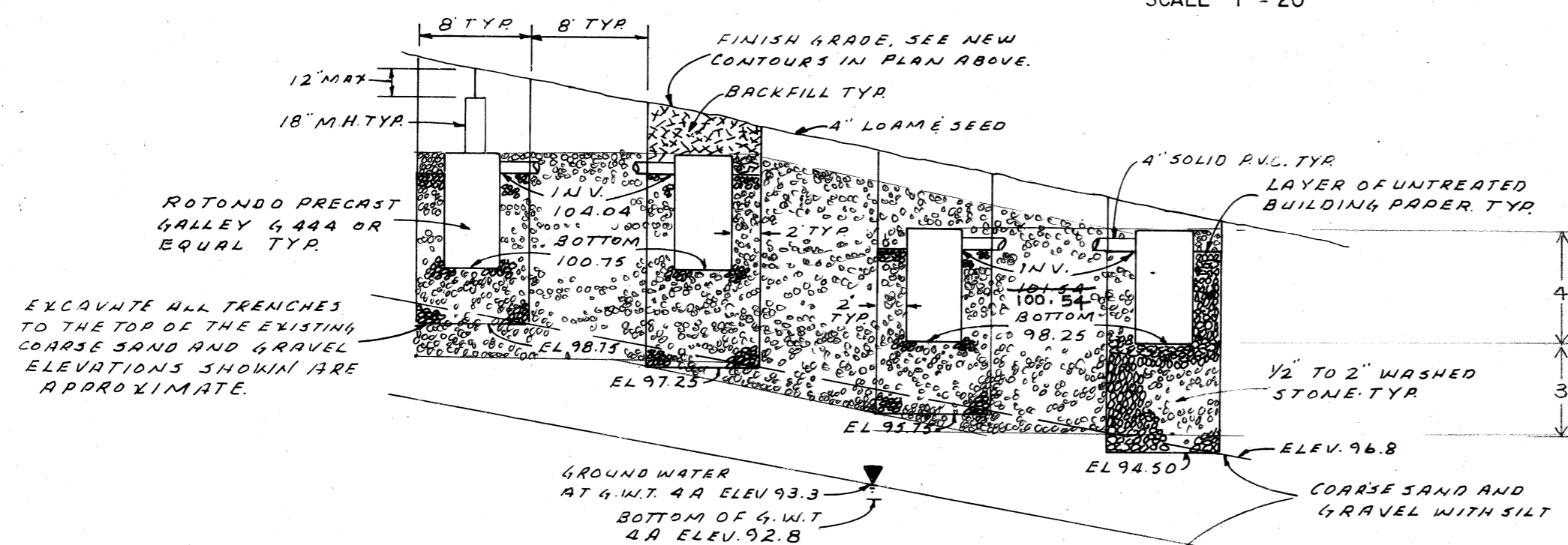
| GST LEACHING SYSTEM Inspection Port Detail Geomatrix Systems, LLC., Old Saybrook, CT 860-510-0730 | | | |
|--|----------|----------|-----------|
| SCALE | None | REV. | A |
| DATE | 6/2/2015 | ACAD No. | GSTIP.DWG |
| DRAWN BY: | ERP | SHEET | I OF I |

RIDEM GIS MAP





PLAN
SCALE 1" = 20'



SECTION
SCALE HOR. 1" = 10'
VERT. 1" = 5'

TEST PITS

| EL 1048 | EXIST GRADE EL 105.6 |
|----------------------------|---|
| 0'-6" LM | 0'-8" LM |
| STL | STL |
| 3'-0" MC BROWN FS, 2ST, SR | 2'-6" MC BROWN FS, 2ST |
| 8'-0" MC GRAY CS, 4, 1ST | 4'-6" L C GRAY MS, CS, 4, 2ST |
| 11'-6" WATER | 9'-6" EXCAVATED 3/18/82 DRY 3/18/82 DRY 3/22/82 |
| 12'-0" EXCAVATED 3/15/83 | |

HOLE 4

HOLE 4A

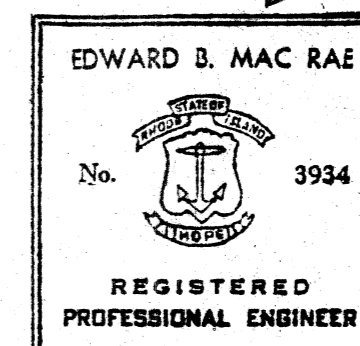
AS BUILT

NOTES

1. SIPHON CHAMBER SHALL BE ROTONDO SC 6X6, 290 GAL. DOUBLE ALTERNATING SIPHONS, OR APPROVED EQUAL.
2. SEPTIC TANK SHALL BE ROTONDO ST 7X16, 6000 GAL. OR APPROVED EQUAL.
3. NEW 6" C.I. FOR WASH BASINS AND WATER CLOSETS ONLY, TIE INTO EXIST SEPTIC TANK. VERIFY INVERT AT EXISTING TANK BEFORE LAYING PIPE.
4. NEW 6" C.I. FOR SHOWERS ONLY.

SPECIAL NOTE
SHOULD THE EXISTING LEACHING SYSTEM FAIL TO OPERATE PROPERLY IN THE FUTURE, FLOW FROM THE EXISTING 7,000 GALLON SEPTIC TANK SHALL BE DIVERTED TO THE NEW SYSTEM AS SHOWN AND A NEW 4" OVERFLOW LAID TO CONNECT THE GALLEY SYSTEM TO THE EXISTING 4" OVERFLOW.

INV. OF EASTERLY
GALLEYS LOWERED
3/22/83
PER ORDER OF



APPROVED DEPT. DIRECTOR

APPROVED DIV. CHIEF

| DATE | ITEM | CHECK | BY |
|---|------|-------|----|
| REVISIONS | | | |
| STATE OF RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT DIVISION OF PLANNING AND DEVELOPMENT | | | |
| PROPOSED SEWAGE DISPOSAL SYSTEM | | | |
| BURLINGAME STATE PARK MAIN CAMP CHARLESTOWN, R.I. | | | |

DRAWN BY: P.M.C. DATE: 3-19-83 SHEET NO. 1 OF 3
CHECKED BY: SCALE: AS NOTED



“Legion Town Bathhouse and Onsite Wastewater Treatment System Replacement”

For

Rhode Island Department of Environmental Management
Burlingame State Park and Campground

Burlingame Park Road
Charlestown, Rhode Island

Assessors Map 15 – Lot 10
Area: 847 Acres±

July 2022

Prepared by

Caputo & Wick Ltd.
1150 Pawtucket Avenue
Rumford, Rhode Island 02916-1897
401-434-8880



**RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
ONSITE WASTEWATER TREATMENT SYSTEM CONSTRUCTION PERMIT**

www.dem.ri.gov/septic



FOR RIDEM USE ONLY

APPLICATION No. 2205-1142 DATE RECEIVED 06/29/22 AMOUNT RECEIVED \$ 0.00 CHECK # --- NOTE ---

TYPE OF APPLICATION (CHECK ALL THAT APPLY)

- ☒ NEW BUILDING CONSTRUCTION
☐ ALTERATION
☐ REPAIR
☐ TRANSFER
- ☐ A/E TECHNOLOGY TYPE DAEM 12/13/5
☐ VARIANCE
☐ REDESIGN
☐ JOINT OWTS / WETLANDS PD

SITE INFORMATION

BURLINGAME STATE PARK AND CAMP GROUND (LEGION TOWN)
1100 BURLINGAME PARK ROAD CHARLESTOWN
NO. STREET CITY/TOWN POLE #
PLAT NUMBER 15 LOT NUMBER 10 SUBDIVISION LOT NUMBER N.A.
LOT SIZE 847 SF/ACRES
SUBDIVISION NAME N.A.
SUBDIVISION SITE SUITABILITY CERTIFICATION # N.A.

OWNER INFORMATION

STATE OF RI
LAST NAME FIRST NAME M.I.
235 PROMENADE ST PROVIDENCE 02108
NO. STREET CITY/TOWN ZIP CODE

RIDEM APPLICATION HISTORY

PREVIOUS SITE TESTING ☒ YES ☐ NO APPLICATION # 2205-1142
DEPTH TO APPROVED WATER TABLE 40" HOW DETERMINED SOIL EVALUATION
TEST HOLE # LA DATE EXCAVATED 9/13/21 WETLANDS within 200' OF OWTS ☐ YES ☒ NO
WETLAND DETERMINATION ☐ YES ☒ NO RIDEM FILE # _____ DATE ____/____/____
LARGE SYSTEM ☒ YES ☐ NO OCI FILE # IF APPLICABLE _____

DESIGN INFORMATION

BUILDING USE: ☐ Residential ☐ Commercial
☒ Other BATHHOUSE **MAR 6 2023**
WATER SUPPLY: ☐ public water ☒ public well ☐ private well
OF DESIGN UNITS 156
UNIT DESIGN FLOW 50 gallons per (unit) TOTAL DAILY FLOW _____ gallons
TANK SIZE 16,000 gallons DESIGN LOADING RATE 3.5 gpd/sf
MINIMUM REQUIRED LEACHFIELD AREA 2,229 square feet
LEACHFIELD TYPE GRAVEL AND TREATMENT SYSTEM (AST)
TOTAL AREA OF LEACHFIELD PROVIDED 4,300 square feet

CERTIFICATION

I, KEVIN HARROP (print), the undersigned licensed OWTS designer, certify that I prepared this application and accompanying forms, submittals, plans and sketches in accordance with the RULEs of the RIDEM pertaining to OWTS and that all the information provided on this application and accompanying forms, submittals, plans and sketches is true and accurate.

Designer's Signature [Signature] License # D 3155

Designer's Email kharp@dem.ri.gov Phone # 401-454-4900

Business/Company Name CAPITO & WILKES LTD.

I certify that a) I am the owner of the property indicated under the site information on this application, b) I will hire a licensed OWTS installer to install the system proposed herein, c) the system will be installed in strict accordance with this application, d) I will hire and retain the licensed OWTS designer of record to witness and inspect the installation of the system, e) I assume all responsibility for the truth and accuracy of this application and all liability and responsibility for any improper installations of the system on this site and agree to hold the RIDEM harmless from any and all claims relating whatsoever to the system. In the case of a transfer application, I acknowledge that the permit application and plans previously approved and accompanying this application are the operative documents subject to certification.

Owner's Phone Number (401) 222-4700 ext 2774307

Owner's Email MEGAN.DIPIRE@DEM.RI.GOV

Owner(s) Signature [Signature]

PERMIT APPROVAL SECTION: DO NOT WRITE BELOW THIS LINE

Based upon the representations of the owner and the owner's agents, including the representations of the owner's OWTS designer, and the truth and accuracy of all information submitted, this application for an OWTS is hereby approved. The RIDEM assumes no responsibility or liability for the future safe operation or maintenance of the aforesaid system, of the fitness or suitability of this system to this site, nor does it assume any responsibility for the accuracy and truth of the owner's, or the owner's agent's representations. This approval is subject to future suspension or revocation in the event that subsequent examination reveals any data indicated on any application, form, submittal, plan or sketch to be incorrect, or not in compliance with the RULES or any conditions at the site are such that the approved design is not in accordance with the RULES, or in the event that the system discharges inadequately treated wastewater to waters of the State or fails to operate satisfactorily in any other manner.

IMPORTANT: Additional terms of approval as circled.

- A. Bottom of leaching area excavation must be inspected by the RIDEM prior to placement of any gravel or stone.
- B. System installation must be inspected by RIDEM prior to covering any component of the system with backfill.
- C. Applicant shall comply with all requirements, conditions and stipulations of variance(s) approved on _____.
- D. Joint Permit: Designer of record must contact RIDEM prior to start of any site construction.
- E. A/E Technology: additional installation, operation or maintenance requirements may apply (see A/E Technology Certification.)
- F. Copy of this form and Operation/Maintenance contract must be filed in land evidence records prior to conformance.
- G. Proposed construction falls within "Coastal Zone". Contact Rhode Island Coastal Resources Management Council.
- H. Proper erosion and sedimentation controls must be installed prior to start of construction.
- I. Transfer: See original permit for all applicable conditions.
- J. Other

Signature of RIDEM Official

Date of Approval

Date of Expiration

DESIGNER



RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT ONSITE WASTEWATER TREATMENT SYSTEM CONSTRUCTION PERMIT

www.dem.ri.gov/septic



FOR RIDEM USE ONLY

APPLICATION No. _____ DATE RECEIVED ____/____/____ AMOUNT RECEIVED \$ _____ CHECK # _____ NOTE _____

TYPE OF APPLICATION (CHECK ALL THAT APPLY)

- ☐ NEW BUILDING CONSTRUCTION
☐ ALTERATION
☐ REPAIR
☐ TRANSFER

- ☒ A/E TECHNOLOGY TYPE ORENCO AX100/BSE
☐ VARIANCE
☐ REDESIGN
☐ JOINT OWTS / WETLANDS PD

CERTIFICATION

I, KEVIN HARROP (print), the undersigned licensed OWTS designer, certify that I prepared this application and accompanying forms, submittals, plans and sketches in accordance with the RULES of the RIDEM pertaining to OWTS and that all the information provided on this application and accompanying forms, submittals, plans and sketches is true and accurate.

Designer's Signature K Harrop License # D3155

Designer's Email Kharrop@cw1td.net Phone # 401-434-8880

Business/Company Name CAPUTO and WICK LTD.

I certify that a) I am the owner of the property indicated under the site information on this application, b) I will hire a licensed OWTS installer to install the system proposed herein, c) the system will be installed in strict accordance with this application, d) I will hire and retain the licensed OWTS designer of record to witness and inspect the installation of the system, e) I assume all responsibility for the truth and accuracy of this application and all liability and responsibility for any improper installations of the system on this site and agree to hold the RIDEM harmless from any and all claims relating whatsoever to the system. In the case of a transfer application, I acknowledge that the permit application and plans previously approved and accompanying this application are the operative documents subject to certification.

Owner's Phone Number (401) 222-4700 ext. 2774307

Owner's Email MEGAN.DIPRETE@DEM.RI.GOV

Owner(s) Signature _____

OWNER INFORMATION

STATE OF RI DEM
LAST NAME FIRST NAME M.I.
235 PROMENADE ST. PROVIDENCE 02908
NO. STREET CITY/TOWN ZIP CODE

RIDEM APPLICATION HISTORY

PREVIOUS SITE TESTING ☐ YES ☐ NO APPLICATION # _____
DEPTH TO APPROVED WATER TABLE 40" HOW DETERMINED SOIL EVALUATION
TEST HOLE # 6A DATE EXCAVATED 8/18/21 WETLANDS within 200' OF OWTS ☐ YES ☒ NO
WETLAND DETERMINATION ☐ YES ☒ NO RIDEM FILE # _____ DATE ____/____/____
LARGE SYSTEM ☒ YES ☐ NO OCI FILE # IF APPLICABLE _____

DESIGN INFORMATION

BUILDING USE: ☐ Residential ☐ Commercial _____
☒ Other BATHHOUSE
WATER SUPPLY: ☐ public water ☒ public well ☐ private well
OF DESIGN UNITS 156
UNIT DESIGN FLOW 50 gallons per SITE (unit) TOTAL DAILY FLOW 7,800 gallons
TANK SIZE 16,000 gallons DESIGN LOADING RATE 3.5 gpd/sf
MINIMUM REQUIRED LEACHFIELD AREA 2,229 square feet
LEACHFIELD TYPE BOTTOMLESS SAND FILTER
TOTAL AREA OF LEACHFIELD PROVIDED 2,304 square feet

PERMIT APPROVAL SECTION: DO NOT WRITE BELOW THIS LINE

Based upon the representations of the owner and the owner's agents, including the representations of the owner's OWTS designer, and the truth and accuracy of all information submitted, this application for an OWTS is hereby approved. The RIDEM assumes no responsibility or liability for the future safe operation or maintenance of the aforesaid system, of the fitness or suitability of this system to this site, nor does it assume any responsibility for the accuracy and truth of the owner's, or the owner's agent's representations. This approval is subject to future suspension or revocation in the event that subsequent examination reveals any data indicated on any application, form, submittal, plan or sketch to be incorrect, or not in compliance with the RULES or any conditions at the site are such that the approved design is not in accordance with the RULES, or in the event that the system discharges inadequately treated wastewater to waters of the State or fails to operate satisfactorily in any other manner.

IMPORTANT: Additional terms of approval as circled.

- Bottom of leaching area excavation must be inspected by the RIDEM prior to placement of any gravel or stone.
- System installation must be inspected by RIDEM prior to covering any component of the system with backfill.
- Applicant shall comply with all requirements, conditions and stipulations of variance(s) approved on _____.
- Joint Permit: Designer of record must contact RIDEM prior to start of any site construction.
- A/E Technology: additional installation, operation or maintenance requirements may apply (see A/E Technology Certification.)
- Copy of this form and Operation/Maintenance contract must be filed in land evidence records prior to conformance.
- Proposed construction falls within "Coastal Zone". Contact Rhode Island Coastal Resources Management Council.
- Proper erosion and sedimentation controls must be installed prior to start of construction.
- Transfer: See original permit for all applicable conditions.
- Other

Signature of RIDEM Official

Date of Approval

Date of Expiration



RHODE ISLAND

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

OFFICE OF WATER RESOURCES

235 Promenade Street, Providence, Rhode Island 02908

March 15, 2023

State of Rhode Island

Rhode Island Department of Environmental Management Division of Planning and Development

235 Promenade Street

Providence, RI 02908

**RE: Legion Town Bathhouse
Burlingame State Park and Campground
Charlestown, RI
OWTS Application No. 2205-1142**

Dear Applicant:

Attached herewith are revised monitoring and reporting requirements applicable to the above listed permit. As you are aware the above listed Onsite Wastewater Treatment System (OWTS) permit is granted based on a maximum daily design flow of **7,800** gallons per day and includes 1 - 16,000 gallon septic tank, 1 - 8,000 gallon anoxic tank, 1 - 6,000 gallon recirculation tank, 2 - Advantex AX 100 filter pods followed by a 6 x 6 pump chamber to a Gravel Sand Treatment (GST) type of leaching system.

Advanced treatment systems are utilized to mitigate against possible adverse impacts of residual onsite wastewater pollutants on groundwater quality and surface water quality. Owners of advanced OWTSs with design flows $\geq 2,000$ gallons per day are subject to regular monitoring and reporting. The following stipulations now apply to your permit:

1. The following discharge limits as measured at the 6 x 6 pump chamber shall apply:

Orengo Systems, Inc. AdvanTex AX-100 – Mode 1
Biochemical Oxygen Demand (5 Day) ≤ 20 mg/L
Total Suspended Solids ≤ 20 mg/L
Oil & Grease ≤ 5 mg/L

2. Wastewater flow shall not exceed a maximum daily flow of **7,500** gallons per day. Wastewater flow shall be monitored and recorded to ensure compliance with this stipulation.
3. Sampling and testing shall be conducted quarterly at the compliance point specified in Item 1 above. Sampling and measurements shall be representative of the monitored activity. The Permittee shall sample and test the wastewater in each system as follows:

Dissolved Oxygen (mg/L) – *Field Test*
Effluent Temperature (°F) – *Field Test*
pH (s.u.) – *Field Test*
Biochemical Oxygen Demand (5-Day) (mg/L)
Total Suspended Solids (mg/L)
Oil and Grease (mg/L)
Alkalinity (mg/L)

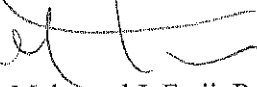
4. Corrective Action – Corrective action must be taken as soon as practicable following receipt of monitoring results which indicate that system modifications or maintenance is required. The system must be resampled no sooner than seven (7) days after any adjustment is made to the system and within thirty (30) days of the routine quarterly sample date. Samples must be analyzed for each of the parameters listed in Item 3 for any post corrective action sampling events.
5. Annual Report – All monitoring results including wastewater flow data shall be submitted to the DEM in the form of an annual report. The annual report is due **February 15th** of each year. The annual report must summarize all monitoring results and corrective actions implemented during the previous calendar year. A clear determination regarding the compliance status of the OWTS must be made as part of the annual report. The annual report must include a copy of the most recent Operation and Maintenance Contract as proof of compliance with this requirement.
6. The Permittee shall properly operate and maintain all facilities and equipment associated with the OWTS in accordance with the most recent operation and maintenance (O&M) plan. The O&M plan specifies procedures for operation, process control, record keeping, monitoring, weekly maintenance checks, other routine and periodic maintenance, safety and security. Also, the O&M plan includes a contingency plan to address emergency actions and procedures in the event of equipment failure and power loss.
7. Your permit approval is for the discharge of sanitary waste only. No toxic, hazardous or industrial processing waste may be discharged into the system.
8. All septage, sludges, screenings or other pollutants removed from the system shall be disposed in accordance with all applicable state and federal laws.
9. The permit may be automatically transferred by the Permittee to a new owner provided:
 - a. The current Permittee notifies the DEM by certified mail at least thirty (30) days in advance of the proposed transfer date;
 - b. The notice includes the name and address of the new Permittee and a written agreement between the existing and new Permittee containing a specific date for the transfer of permit responsibility, surety and liability between them and;
 - c. The DEM does not notify the existing Permittee and the proposed new Permittee of its intent to modify or reissue the permit.
10. The operator or person in responsible charge of the OWTS shall have at a minimum a Rhode Island Class 1 Wastewater Treatment Plant Operator Certification or an equivalent certification from another jurisdiction acceptable to the DEM. If the operator is not employed directly by the Permittee, a service agreement with the operator shall be entered into and continuously maintained, and a copy of the active service agreement shall be submitted to the DEM as part of the annual report.
11. The permit may be modified, suspended, or revoked for cause. The DEM reserves the right to revise the permit to ensure compliance with applicable state and federal regulations. Failure to comply with the conditions of this permit approval letter may result in an enforcement action.

12. The Permittee shall allow the DEM or their authorized representative to access the OWTS and work areas to inspect equipment, practices, records pertinent to this permit and stipulated compliance requirements, and to sample and monitor the wastewater for the purposes of determining compliance.
13. In the event of treatment interruption, bypass or sewage overflow, the Permittee shall notify the DEM verbally within twenty-four (24) hours. Such incident shall be reported in writing within five (5) days after it becomes known to the Permittee, the report shall include the date and time(s) of the incident, the duration of the incident, and actions taken to correct the problem and prevent a reoccurrence.
14. For purposes of notification, monitoring, compliance or inquiries pursuant to this permit, all correspondence, telephone calls and other contacts must reference the OWTS permit number and shall be directed to:

The Rhode Island Department of Environmental Management
Onsite Wastewater Treatment Systems Program
235 Promenade Street
Providence, RI 02908
Telephone: (401) 222-3961
www.dem.ri.gov/septic

Should you have any questions concerning these permit requirements, please contact Tom Angelone by email at tom.angelone@dem.ri.gov or by phone at 401-222-3961, extension 2777607.

Very truly yours,



Mohamed J. Freij, P.E., PLS
Supervising Sanitary Engineer

KF

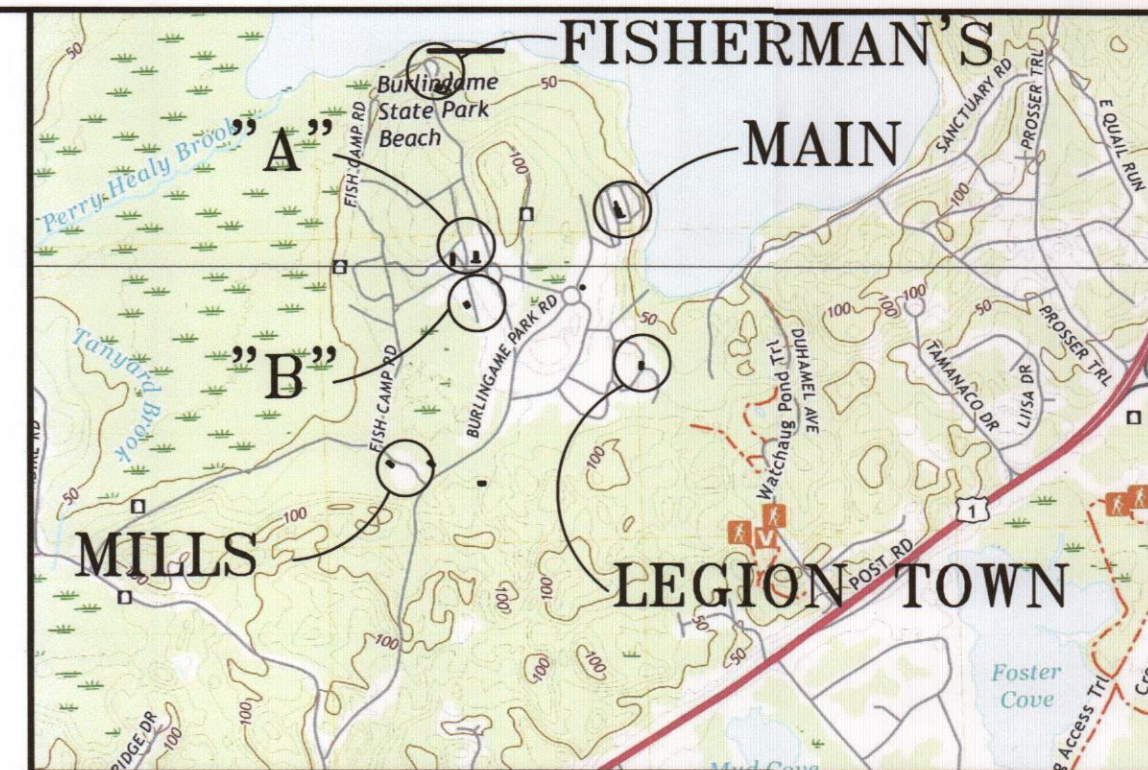
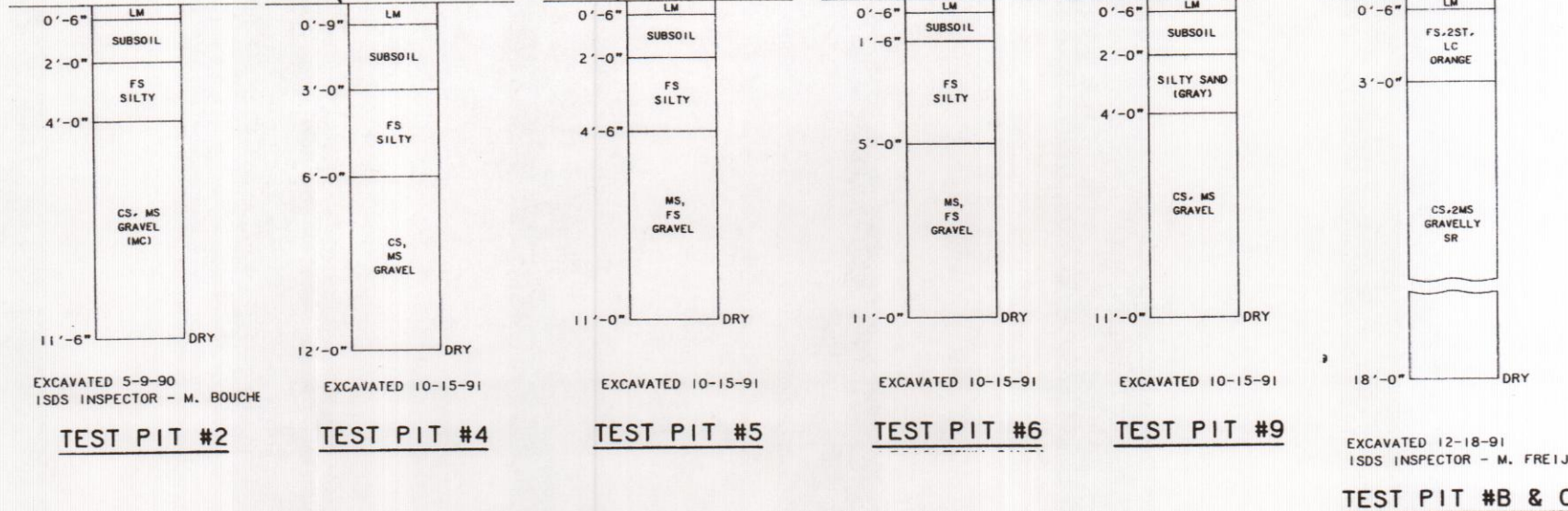
Enclosure(s)

cc: Joseph L. Warner Jr., Charlestown Building Official

3:\Rhode\land\Charlestown\RDDEM - Burlingame 009 - 025 and S-6 Site Design 2023.02.10.dwg

| TH-6A - GROUND ELEV: 74.1 - AUGUST 18, 2021 | | | | | | | | | | | | |
|--|------------|---------|------|------------|-----------------|---------------|---------|--------|---------|-----------|-------------|---------------|
| HORIZON | DEPTH | HORIZON | | BOUNDARIES | | SOIL | COLORS | RE-DOX | TEXTURE | STRUCTURE | CONSISTENCE | SOIL CATEGORY |
| | | DIST | TOPO | MATRIX | RE-DOX FEATURES | Ab. S. CONTR. | | | | | | |
| Ap | 0 - 9" | C | S | | | 2.5YR 6/3 | | | La | 2ghd | Vfr | 3 |
| Bw | 9" - 25" | C | W | | | 10YR 5/6 | | | La | 2ghd | Fr | 3 |
| C1 | 25" - 40" | C | S | | | 2.5YR 7/3 | | | La | 2ghd | Fr | 3 |
| C2 | 40" - 120" | C | S | | | 2.5YR 7/3 | 5YR 4/4 | M M P | La | 2ghd | Fr | 3 |
| SOIL CLASS: B OBSERVED STANDING GROUNDWATER - NA ESTIMATED SEASONAL HIGH WATER TABLE - 40" (ELEV. 70.8) OBSERVED WEEPING GROUNDWATER - NA PERFORMED BY: KAMAL HINGORANY | | | | | | | | | | | | |

| TH-6B - GROUND ELEV. 70.5 - AUGUST 18, 2021 | | | | | | | | | | | | | |
|--|------------|-------|------|------|------------|---------|--------|--------|---------------|---------|-----------|-------------|---------------|
| HORIZON | | DEPTH | DIST | TOPO | BOUNDARIES | SOIL | COLORS | RE-DOX | Ab. S. CONTR. | TEXTURE | STRUCTURE | CONSISTENCE | SOIL CATEGORY |
| Ap | 0 - 16" | C | | S | 2.5YR 6/3 | | | | | Ls | 2ghd | Vfr | 3 |
| Bw | 16" - 36" | C | | W | 10YR 5/6 | | | | | Ls | 2ghd | Fr | 3 |
| C1 | 36" - 42" | C | | S | 2.5YR 7/3 | | | | | Ls | 2ghd | Fr | 3 |
| C2 | 42" - 120" | C | | S | 2.5YR 7/3 | 5YR 4/4 | M M P | | | Ls | 2ghd | Fr | 3 |
| SOIL CLASS: B OBSERVED STANDING GROUNDWATER - NA ESTIMATED SEASONAL HIGH WATER TABLE - 42" (ELEV. 67.0) OBSERVED WEEPING GROUNDWATER - NA PERFORMED BY: KAMAL HINGORANY | | | | | | | | | | | | | |



LOCUS MAP

NOTES:

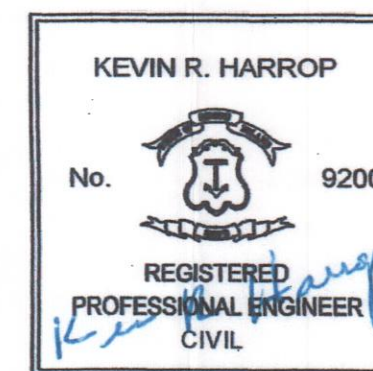
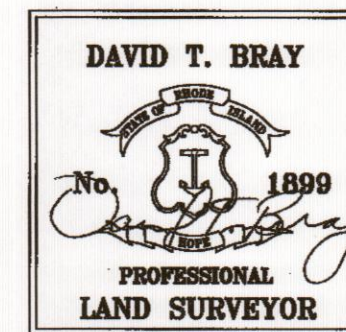
- ALL WORK SHALL CONFORM TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, OFFICE OF WATER RESOURCES "RULES AND REGULATIONS ESTABLISHING MINIMUM STANDARDS RELATING TO LOCATION, DESIGN, CONSTRUCTION AND MAINTENANCE OF ONSITE WASTEWATER TREATMENT SYSTEMS", LATEST EDITION.
- THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO CAPUTO AND WICK LTD. FOR APPROVAL OF ALL PROPOSED CONSTRUCTION MATERIALS AND EQUIPMENT PRIOR TO ANY CONSTRUCTION.
- EXISTING ONSITE WASTEWATER TREATMENT SYSTEM (OWTS) PRECAST STRUCTURES ARE TO BE PUMPED OUT, RINSED WITH CLEAN WATER AND PUMPED OUT AGAIN. PUMPING MUST BE PERFORMED BY A STATE LICENSED SEPTIC HAULER AND THE CONTENTS OF THE TANK DISPOSED OF PROPERLY. AFTER PUMPING, THE EXISTING OWTS STRUCTURES MUST BE FILLED WITH FLOWABLE FILL OR REMOVED AND REPLACED WITH GRAVEL BORROW AND 4" LOAM AND SEED.
- REMOVE ALL PORTIONS OF THE EXISTING OWTS WITHIN 5' OF THE GRAVEL SAND TREATMENT SYSTEM AND ALL FILL, A HORIZON SOIL, B HORIZON SOIL, AND "SCARIFY" 3" OF THE C HORIZON SOIL BELOW THE GRAVEL SAND TREATMENT SYSTEM AND THOUGHLY MIX WITH ASTM C-33 SAND (SEE NOTE 16) TO INTERFACE THE FILL WITH THE SOIL, AND REPLACE ALL REMOVED SOIL WITH ASTM C-33 SAND. A AND B SOIL HORIZON LAYERS ARE TO BE REMOVED IN THIS APPLICATION DUE TO COMPACTION CAUSED BY PREVIOUS SYSTEM INSTALLATION AND FILL BEING PLACED ABOVE.
- UNSATURABLE MATERIAL USED TO BACKFILL THE TEST HOLES SHALL BE REMOVED AND REPLACED WITH WITH ASTM C-33 SAND (SEE NOTE 16).
- ASTM C-33 SAND (SEE NOTE 16) MUST BE PLACED ON SCARIFIED, RELATIVELY DRY NATURAL SOIL. THE CONTRACTOR SHALL PROVIDE FOR DETERMINING AS REQUIRED AND ALL WORK SHALL BE PERFORMED UNDER DRY CONDITIONS.
- BUILDING SEWER PIPE TO BE 4" P. V. C. SCH. 40 UNLESS OTHERWISE NOTED.
- PLACE 6" MINIMUM COMPACTED CRUSHED STONE UNDER SEPTIC TANK, ANOXIC TANK, RECIRCULATION TANK, PUMP CHAMBER, ADVANTEX TREATMENT TANKS AND SYSTEM STRUCTURES.
- INLET AND OUTLET TESTS FOR SEPTIC TANK, ANOXIC TANK, RECIRCULATION TANK AND PUMP CHAMBER ARE TO BE LOCATED DIRECTLY BELOW ACCESS COVERS.
- SEPTIC TANK, ANOXIC TANK, RECIRCULATION TANK, PUMP CHAMBER AND ADVANTEX TREATMENT TANK RISERS/COVERS TO BE AT FINISH GRADE.
- IF CONDITIONS ENCOUNTERED DURING CONSTRUCTION VARY SUBSTANTIALLY FROM THOSE SHOWN ON THIS PLAN, NOTIFY CAPUTO AND WICK, LTD. BEFORE PROCEEDING WITH CONSTRUCTION. IF IN DOUBT, ASK.
- NEW SEPTIC TANK SHALL MEET ALL OF THE REQUIREMENTS OF 250-RICR-150-10-6-27.
- INSPECTION OF THE SEPTIC TANK, ANOXIC TANK, RECIRCULATION TANK, PUMP CHAMBER AND ADVANTEX TREATMENT TANK SHALL BE PART OF THE MAINTENANCE SERVICE FOR THE OWTS AND ALL COMPONENTS SHALL BE CLEANED WHEN REQUIRED.
- IT IS RECOMMENDED THAT THE SEPTIC TANK BE INSPECTED TWICE A YEAR, AND BE CLEANED WHEN THE SOLIDS EQUAL ONE THIRD THE LIQUID DEPTH.
- MINIMUM PERIMETER INVERT ELEVATION = 73.00. NO FINISHED GRADE BELOW 73.00 FROM THE EDGE OF THE GRAVEL SAND TREATMENT SYSTEM FOR A 10 FEET MINIMUM.
- THE SAND MEDIA USED IN CONSTRUCTION SHALL MEET THE ASTM C-33 SPECIFICATIONS. SIEVE ANALYSIS FROM PROPOSED SOURCE IS REQUIRED TO BE SUBMITTED TOGETHER WITH SHOP DRAWINGS. TESTING OF SAND MATERIAL DELIVERED TO THE SITE IS REQUIRED.
- OWTS INSTALLER MUST BE FAMILIAR WITH ADVANTEX PRODUCTS AND GRAVEL SAND TREATMENT SYSTEMS PROPOSED FOR THIS SITE. SEE ADVANTEX INSTALLATION MANUAL, GRAVEL SAND TREATMENT SYSTEM DESIGN AND INSTALLATION MANUAL, AND RIDEM GUIDELINES FOR ADDITIONAL DETAILS OF INSTALLATION.
- INSTALLATION SHALL BE IN STRICT CONFORMANCE WITH THE ORENCO ADVANTEX INSTALLATION MANUAL AND GRAVEL SAND TREATMENT SYSTEM INSTALLATION MANUAL AND ALL OTHER APPLICABLE SECTIONS OF 250-RICR-150-6. THE INSTALLATION SHALL ONLY BE PERFORMED BY A RHODE ISLAND DEM LICENSED INSTALLER WHO HAS RECEIVED TRAINING AND IS AUTHORIZED IN WRITING BY THE VENDORS TO INSTALL THE SYSTEM. AUTHORIZATION FROM THE VENDORS SHALL BE SUBMITTED TO ENGINEER PRIOR TO ANY CONSTRUCTION.
- REFER TO 250-RICR-150-10-6 AND RIDEM GUIDELINES FOR ADDITIONAL INFORMATION CONCERNING THE INSTALLATION, OPERATION AND MAINTENANCE OF THE SYSTEM. THE INSTALLER AND OWNER SHOULD REVIEW AND APPLY 250-RICR-150-10-6 AND RIDEM GUIDELINES. THE SYSTEM TO BE CONSTRUCTED BY AN INSTALLER LICENSED BY RIDEM AND THOROUGHLY FAMILIAR WITH THE INSTALLATION OF ADVANTEX TREATMENT DEVICES AND GRAVEL SAND TREATMENT SYSTEMS.
- THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH THE DESIGN ENGINEER IN ORDER TO FACILITATE WITNESSING THE REQUIRED PHASES OF THE SYSTEM INSTALLATION AS STATED IN 250-RICR-150-47 OF THE "REGULATIONS". THE CONTRACTOR TO NOTIFY THE DESIGN ENGINEER IN A TIMELY MANNER WHO REQUIRE THE CONTRACTOR TO EXCAVATE AND EXPOSE SYSTEM COMPONENTS FOR OBSERVATION.
- THE DESIGNER EXPRESSLY DISCLAIMS ANY RESPONSIBILITY FOR THE INSTALLATION AND MAINTENANCE OF THE SYSTEM. IT SHALL BE THE RESPONSIBILITY OF THE INSTALLER TO CONSTRUCT THE SYSTEM IN ACCORDANCE WITH THE ABOVE REFERENCED REGULATIONS.
- CONTRACTOR SHALL CONTACT "DIG-SAFE" PRIOR TO CONSTRUCTION. LOCATION OF UTILITIES ON THIS PLAN ARE FROM EXISTING INFORMATION, BUT ARE ONLY TO BE CONSIDERED APPROXIMATE.
- THERE ARE NO PUBLIC WELLS, EXISTING OR PROPOSED, FOUND TO BE LOCATED WITHIN 500 FEET OF THE PROPOSED OWTS EXCEPT AS SHOWN.
- NO FRESHWATER WETLANDS OBSERVED WITHIN 200 FEET OF THE PROPOSED OWTS. THIS SITE DOES NOT LIE WITHIN A CRITICAL RESOURCE AREA.
- I CERTIFY THAT THERE ARE NO WELLS FOUND TO BE LOCATED WITHIN 200 FEET OF THE PROPOSED LEACHING AREA, OTHER THAN AS SHOWN ON THIS PLAN. I ALSO CERTIFY THAT THERE ARE NO EXISTING OR PROPOSED DRAINS, FOUNDATION DRAINS OR SUB DRAINS FOUND TO BE LOCATED WITHIN 25 FEET OF THIS PROPOSED OWTS.
- ALL PIPE JOINTS, PIPE CONNECTIONS AND ACCESS COVERS ARE TO BE WATER TIGHT.
- PRESSURE PIPE SHALL BE INSTALLED TO MAINTAIN SLOPE BACK TO TANK/PUMP CHAMBER TO DRAIN BETWEEN PUMPING CYCLES. ELIMINATE ANY HIGH OR LOW POINTS THAT MAY PREVENT DRAINING AND/OR AIR POCKETS.
- CONTRACTOR TO PAY ANY REQUIRED INSTALLATION FEES.
- CONTROL PANEL AND ALARM TO BE MOUNTED INSIDE BUILDING IN A CONSPICUOUS LOCATION, EXACT LOCATION TO BE COORDINATED WITH OWNER. ALL CONTROL PANELS AND JUNCTION BOXES SHALL BE NEMA 4X.
- THE PUMP DOSING CONTROLS WILL BE FIELD TESTED IN THE PRESENCE OF THE DESIGN ENGINEER AND ORENCO REPRESENTATIVE. ADJUSTMENT TO CONTROLS ARE THE CONTRACTORS RESPONSIBILITY. CONTRACTOR MUST MAKE WATER AVAILABLE FOR TESTING OF THE CONTROL FLOWS.
- ALL TREES AND SHRUBS SHALL BE CLEAR AND NO NEW ONES SHALL BE PLANTED WITHIN 10' OF THE GRAVEL SAND TREATMENT SYSTEM.
- THE GRAVEL SAND TREATMENT SYSTEM LOCATION SHALL BE STAKED OUT AND PROTECTED PRIOR TO ANY SITE PREPARATION ACTIVITIES.
- NO IMPERVIOUS SURFACE IS TO BE PLACED ABOVE THE GST (LEACHING) SYSTEM.
- MATERIAL AND EQUIPMENT FROM ALTERNATE MANUFACTURERS MAY BE USED IF EQUAL. APPROVAL FOR ALTERNATE MATERIAL AND/OR EQUIPMENT IS REQUIRED FROM THE OWNER AND ENGINEER. FULL SPECIFICATIONS FOR ALTERNATE EQUIPMENT MUST BE PROVIDED BY THE CONTRACTOR. IF ACCEPTABLE, THE CONTRACTOR MUST PREPARE AND SUBMIT FOR AN RIDEM OWTS CONSTRUCTION PERMIT BASED UPON THE REDESIGN.

DESIGN DATA

DAILY SEWAGE FLOW:
50 GPD/CAMPSITE x 156 CAMPSITES = 7800 GALLONS PER DAY (G.P.D.)
GROUND WATER TABLE: 40"
DEPTH TO IMPERVIOUS: NOT ENCOUNTERED
SOIL CLASS: B, SOIL CATEGORY: 3, LOADING RATE: 0.70 GALS./S.F./DAY
SEPTIC TANK REQUIREMENTS VOLUME = 2 X 7,800 G.P.D. = 15,600 GALLONS
LEACHING AREA REQUIREMENTS:
GRAVEL SAND TREATMENT (GST) SYSTEM WITH CATEGORY 1 TREATMENT (ORENCO ADVANTEX TREATMENT AX100)
ASSIGNED EFFLUENT LOADING RATE = 3.5 GPD PER S. F.
SQUARE FOOTAGE OF GST REQUIRED = 7800 GPD / 3.5 GPD PER S.F. = 2,229 S.F.
LENGTH OF GST 6212 REQUIRED = 2,229 S.F. / 17.5 S.F./L.F. = 127 L.F.
LENGTH OF GST 6212 SPECIFIED: 280 L.F.
TOTAL GST SYSTEM CAPACITY = 280 L.F. X 17.5 S.F./L.F. X 3.5 G.P.D./S.F. = 17,150 GPD
17,150 GPD > 7,800 GPD - CAPACITY = 220% OF ANTICIPATED DESIGN FLOW

CERTIFICATION:

THIS SURVEY HAS BEEN CONDUCTED AND THE PLAN HAS BEEN PREPARED PURSUANT TO SECTION 6 OF THE RULES AND REGULATIONS ADOPTED BY THE RHODE ISLAND STATE BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS ON NOVEMBER 20, 2015, AS FOLLOWS:
TYPE OF BOUNDARY SURVEY: LIMITED CONTENT BOUNDARY SURVEY
OTHER TYPE OF SURVEY: DATA ACQUISITION SURVEY (LOCATIONS)
TOPOGRAPHIC SURVEY ACCURACY: CLASS III
T2 (IMMEDIATE AREA AROUND BATHHOUSE AND OWTS)
THE PURPOSE OF THIS SURVEY IS TO DEPICT THE EXISTING CONDITIONS IN THE PROJECT AREA FOR CONSTRUCTION AND THE DESIGN OF A NEW ONSITE WASTEWATER TREATMENT SYSTEM.
DAVID T. BRAY PLS NO. 1889
CAPUTO AND WICK LTD., CDA NO. A177
DATE: 8/10/2022



STATE OF RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
DIVISION OF PLANNING AND DEVELOPMENT

DEMOLITION AND REBUILD OF BATHHOUSES
BURLINGAME STATE PARK AND CAMPGROUND
CHARLESTOWN, RHODE ISLAND

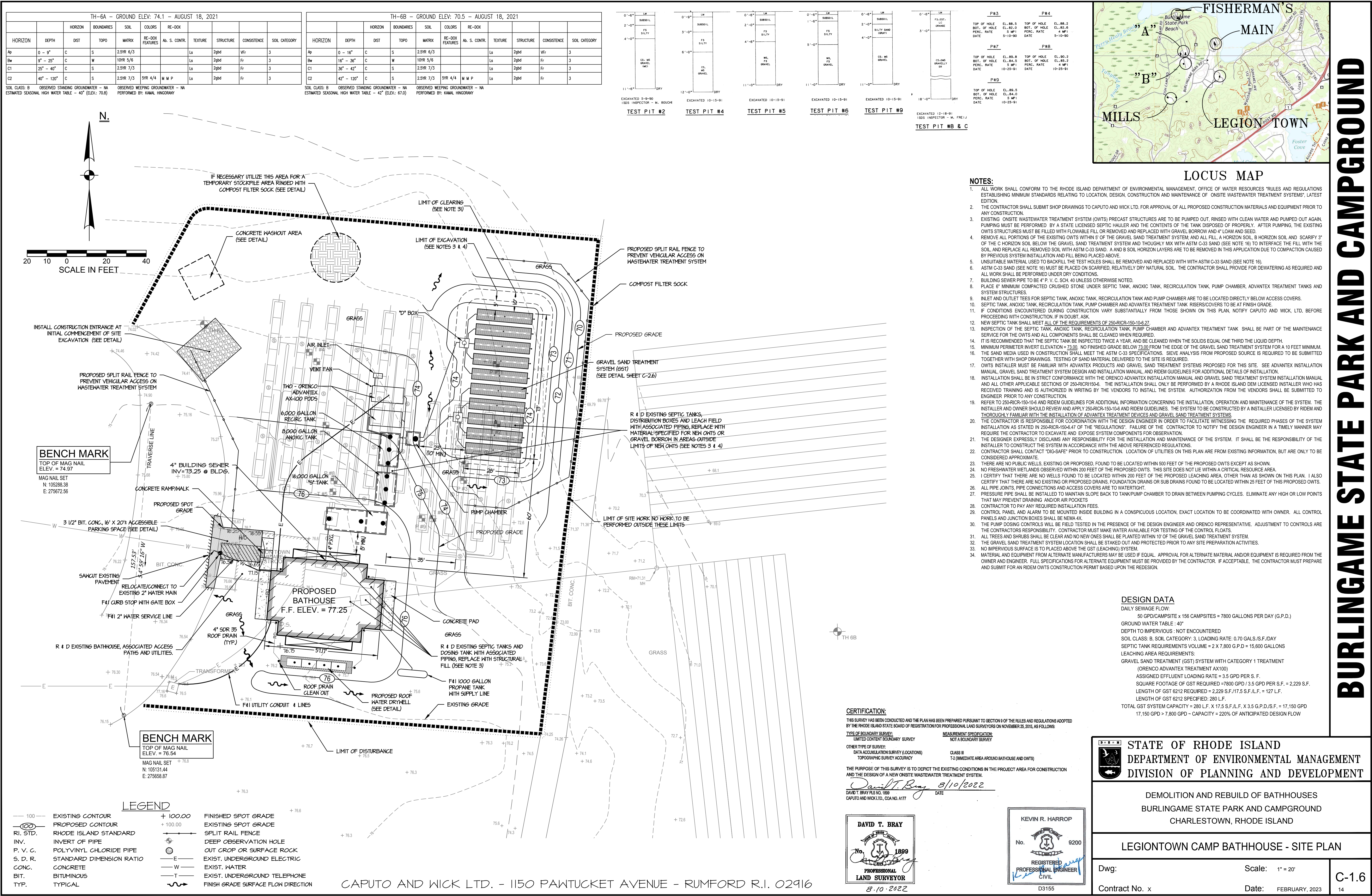
LEGIONTOWN CAMP BATHHOUSE - SITE PLAN

Dwg: Scale: 1" = 20'
Contract No. x Date: FEBRUARY, 2023
C-1.6 14

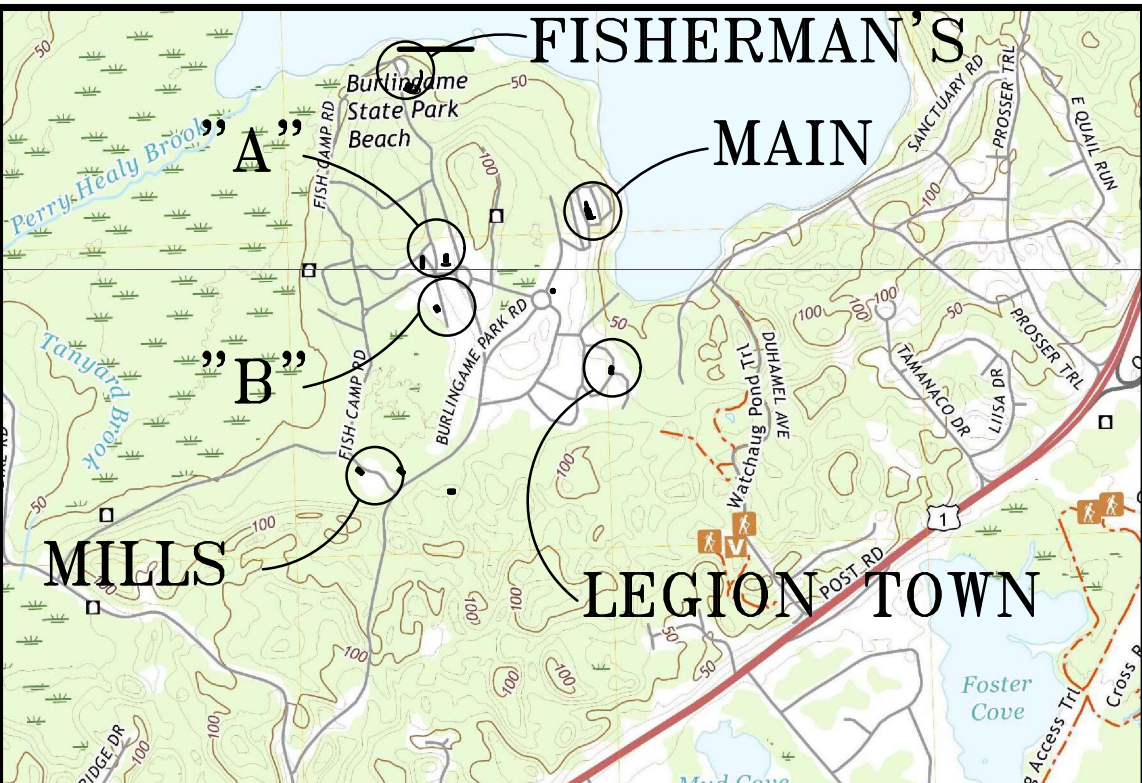
BURLINGAME STATE PARK AND CAMPGROUND

OWTS SUBMISSION - FEBRUARY 16, 2023

J:\RhodeIsland\Charlestown\RDEN - Burlingame\009 - 025 and S-6 Site Design\2023.02.10.dwg

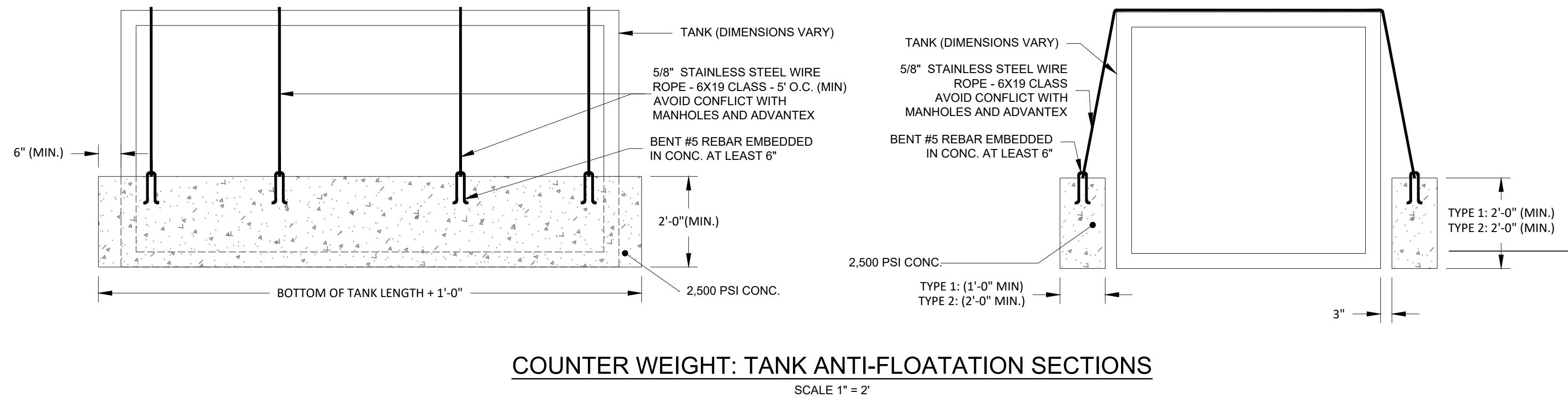
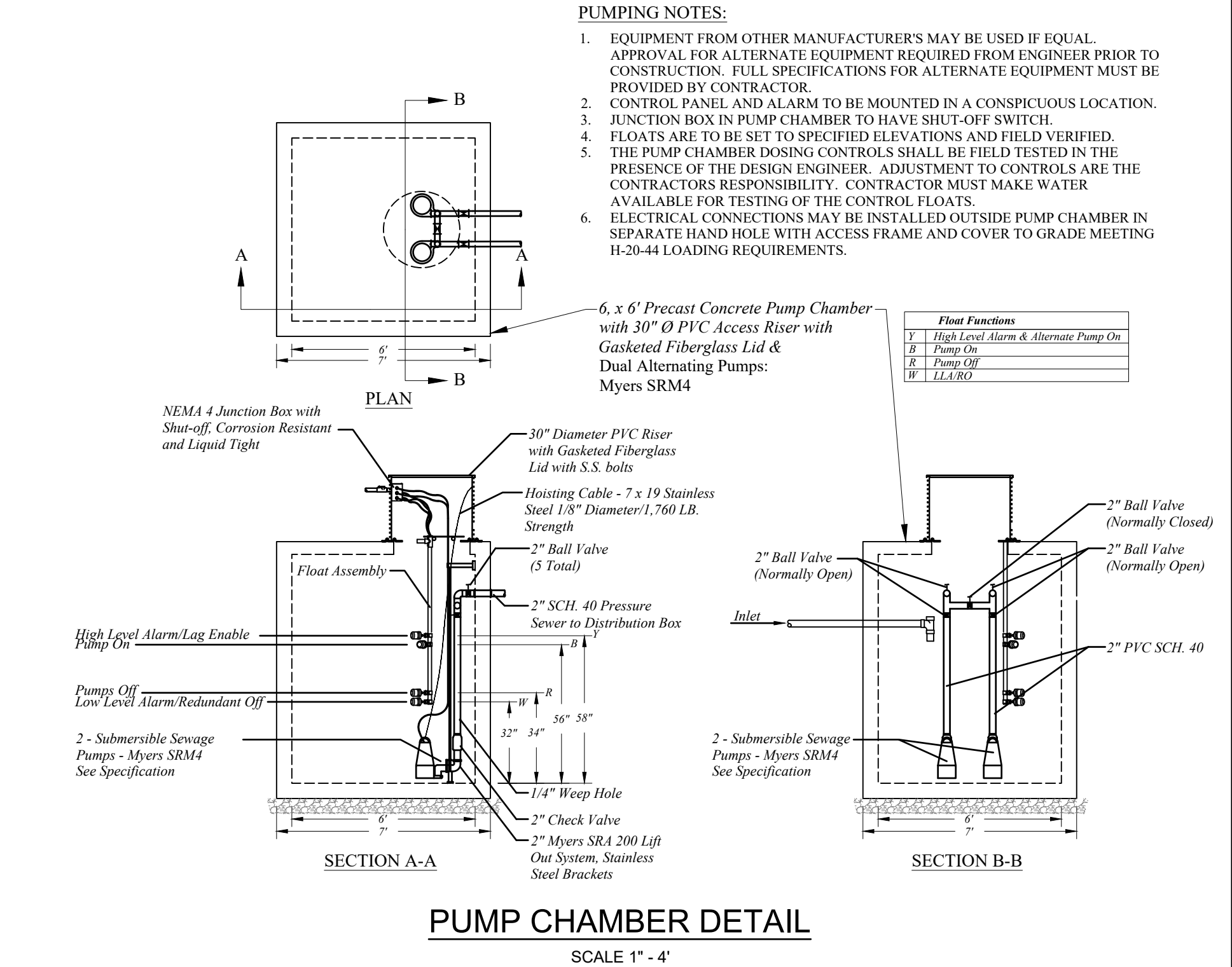
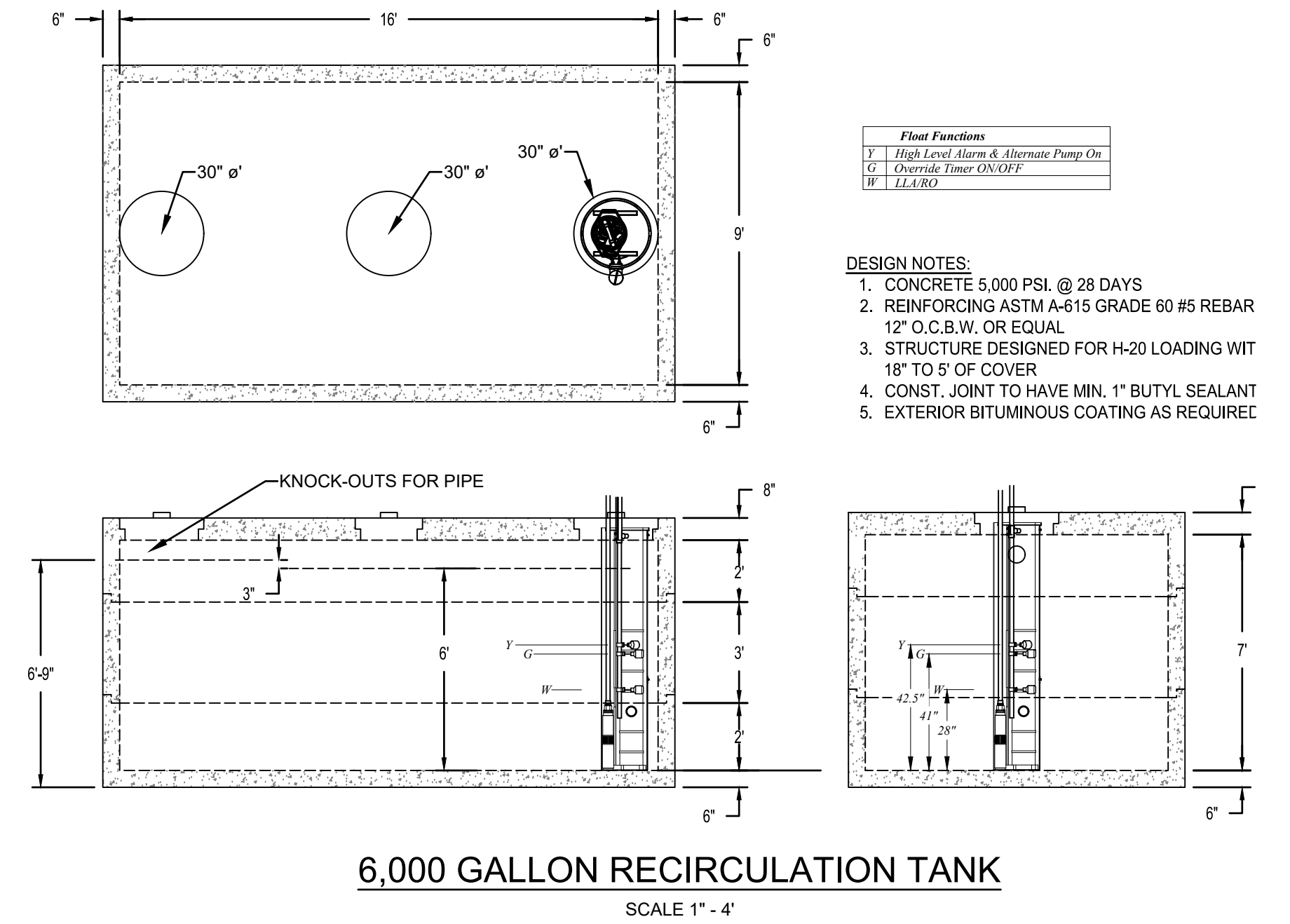
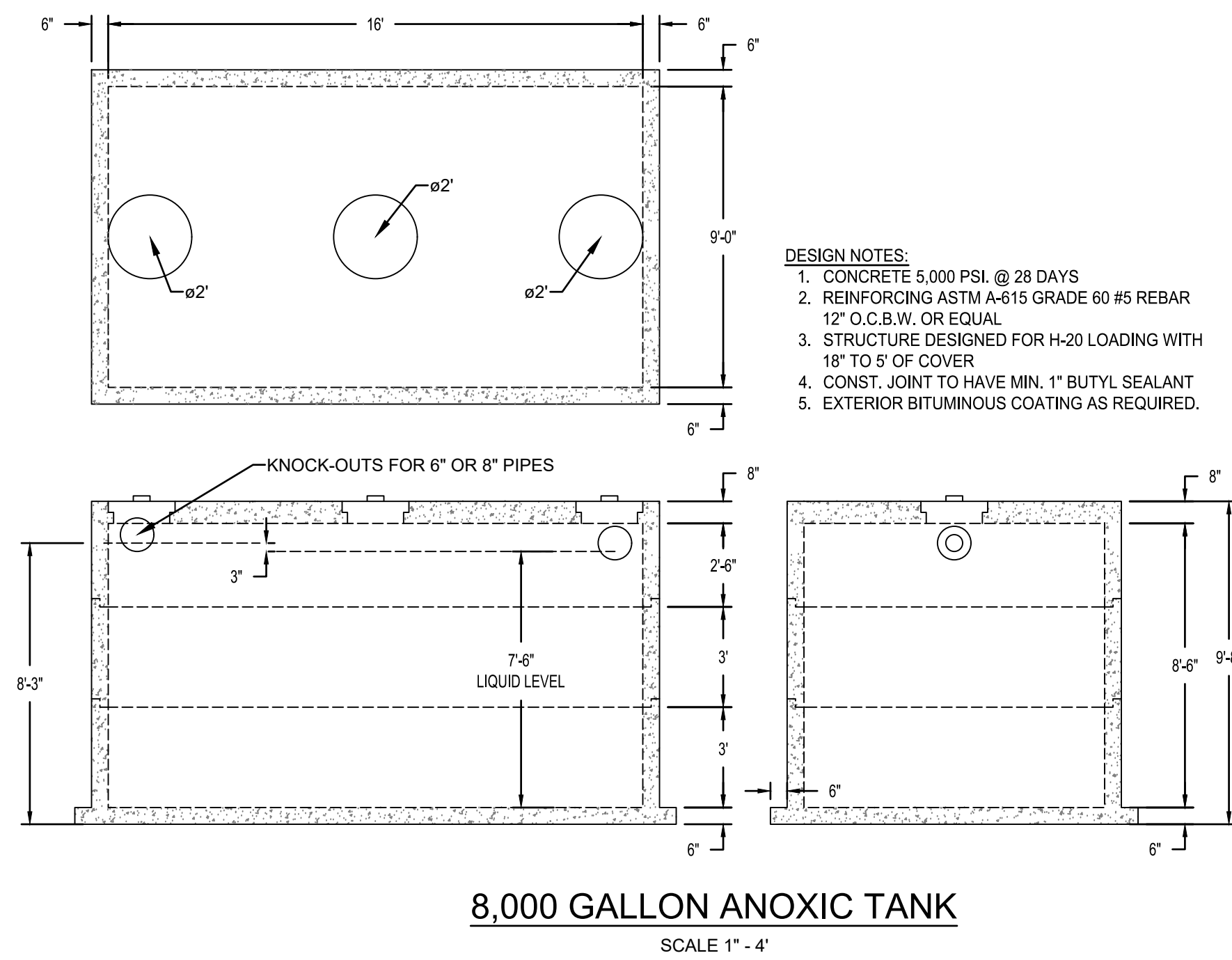
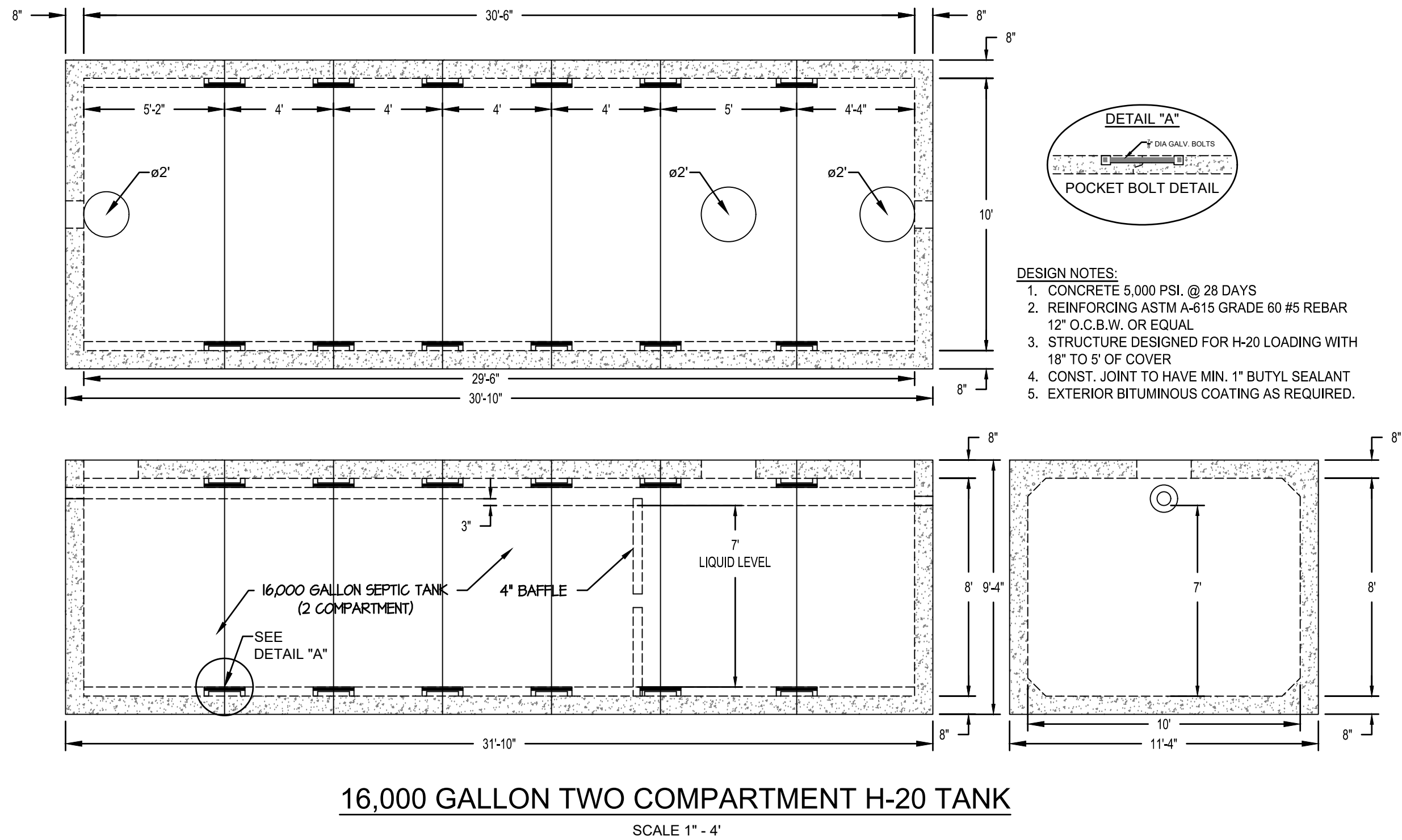


BURLINGAME STATE PARK AND CAMPGROUND

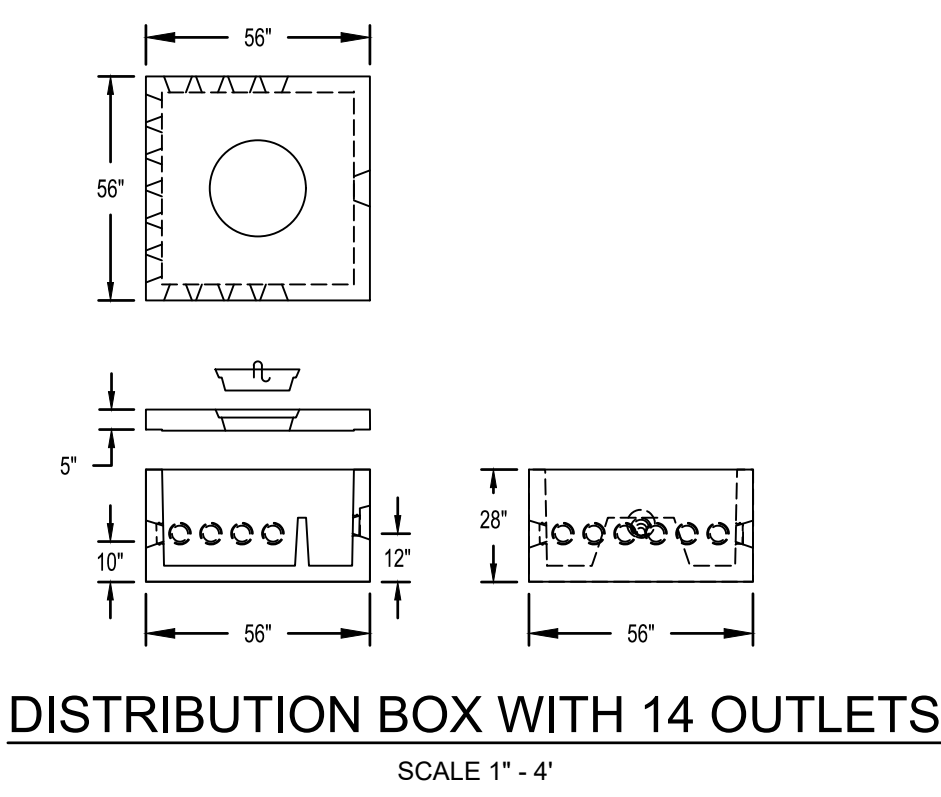


LOCUS MAP

- NOTES:**
- ALL WORK SHALL CONFORM TO THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, OFFICE OF WATER RESOURCES "RULES AND REGULATIONS ESTABLISHING MINIMUM STANDARDS RELATING TO LOCATION, DESIGN, CONSTRUCTION AND MAINTENANCE OF ONSITE WASTEWATER TREATMENT SYSTEMS", LATEST EDITION.
 - THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO CAPUTO AND WICK LTD. FOR APPROVAL OF ALL PROPOSED CONSTRUCTION MATERIALS AND EQUIPMENT PRIOR TO ANY CONSTRUCTION.
 - EXISTING ONSITE WASTEWATER TREATMENT SYSTEM (OWTS) PRECAST STRUCTURES ARE TO BE PUMPED OUT, RINSED WITH CLEAN WATER AND PUMPED OUT AGAIN. PUMPING MUST BE PERFORMED BY A STATE LICENSED SEPTIC HAULER AND THE CONTENTS OF THE TANK DISPOSED OF PROPERLY. AFTER PUMPING, THE EXISTING OWTS STRUCTURES MUST BE FILLED WITH FLOWABLE FILL OR REMOVED AND REPLACED WITH GRAVEL BORROW AND 4" LOAM AND SEED.
 - REMOVE ALL PORTIONS OF THE EXISTING OWTS WITHIN 5' OF THE GRAVEL SAND TREATMENT SYSTEM, AND ALL FILL, A HORIZON SOIL, B HORIZON SOIL, AND SCARIFY 3" OF THE C HORIZON SOIL BELOW THE GRAVEL SAND TREATMENT SYSTEM AND THOUGHLY MIX WITH ASTM C-33 SAND (SEE NOTE 16) TO INTERFACE THE FILL WITH THE SOIL, AND REPLACE ALL REMOVED SOIL WITH ASTM C-33 SAND. A AND B HORIZON SOIL LAYERS ARE TO BE REMOVED IN THIS APPLICATION DUE TO COMPACTION CAUSED BY PREVIOUS SYSTEM INSTALLATION AND FILL BEING PLACED ABOVE.
 - UNSATURABLE MATERIAL USED TO BACKFILL THE TEST HOLES SHALL BE REMOVED AND REPLACED WITH WITH ASTM C-33 SAND (SEE NOTE 16).
 - ASTM C-33 SAND (SEE NOTE 16) MUST BE PLACED ON SCARIFIED, RELATIVELY DRY NATURAL SOIL. THE CONTRACTOR SHALL PROVIDE FOR DEWATERING AS REQUIRED AND ALL WORK SHALL BE PERFORMED UNDER DRY CONDITIONS.
 - BUILDING SEWER PIPE TO BE 4" P. V. C. SCH. 40 UNLESS OTHERWISE NOTED.
 - PLACE 6" MINIMUM COMPACTED CRUSHED STONE UNDER SEPTIC TANK, ANOXIC TANK, RECIRCULATION TANK, PUMP CHAMBER, ADVANTEX TREATMENT TANKS AND SYSTEM STRUCTURES.
 - INLET AND OUTLET TEES FOR SEPTIC TANK, ANOXIC TANK, RECIRCULATION TANK AND PUMP CHAMBER ARE TO BE LOCATED DIRECTLY BELOW ACCESS COVERS.
 - SEPTIC TANK, ANOXIC TANK, RECIRCULATION TANK, PUMP CHAMBER AND ADVANTEX TREATMENT TANK RISERS/COVERS TO BE AT FINISH GRADE.
 - IF CONDITIONS ENCOUNTERED DURING CONSTRUCTION VARY SUBSTANTIALLY FROM THOSE SHOWN ON THIS PLAN, NOTIFY CAPUTO AND WICK, LTD. BEFORE PROCEEDING WITH CONSTRUCTION. IF IN DOUBT, ASK.
 - NEW SEPTIC TANK SHALL MEET ALL OF THE REQUIREMENTS OF 250-RICR-150-10-6-27.
 - INSPECTION OF THE SEPTIC TANK, ANOXIC TANK, RECIRCULATION TANK, PUMP CHAMBER AND ADVANTEX TREATMENT TANK SHALL BE PART OF THE MAINTENANCE SERVICE FOR THE OWTS AND ALL COMPONENTS SHALL BE CLEANED WHEN REQUIRED.
 - IT IS RECOMMENDED THAT THE SEPTIC TANK BE INSPECTED TWICE A YEAR, AND BE CLEANED WHEN THE SOLIDS EQUAL ONE THIRD THE LIQUID DEPTH.
 - MINIMUM PERIMETER INVERT ELEVATION = 73.00. NO FINISHED GRADE BELOW 73.00 FROM THE EDGE OF THE GRAVEL SAND TREATMENT SYSTEM FOR A 10 FEET MINIMUM.
 - THE SAND MEDIA USED IN CONSTRUCTION SHALL MEET THE ASTM C-33 SPECIFICATIONS. SIEVE ANALYSIS FROM PROPOSED SOURCE IS REQUIRED TO BE SUBMITTED TOGETHER WITH SHOP DRAWINGS. TESTING OF SAND MATERIAL, DELIVERED TO THE SITE IS REQUIRED.
 - OWTS INSTALLER MUST BE FAMILIAR WITH ADVANTEX PRODUCTS AND GRAVEL SAND TREATMENT SYSTEMS PROPOSED FOR THIS SITE. SEE ADVANTEX INSTALLATION MANUAL, GRAVEL SAND TREATMENT SYSTEM DESIGN AND INSTALLATION MANUAL, AND RIDEM GUIDELINES FOR ADDITIONAL DETAILS OF INSTALLATION.
 - INSTALLATION SHALL BE IN STRICT CONFORMANCE WITH THE ORENCO ADVANTEX INSTALLATION MANUAL AND GRAVEL SAND TREATMENT SYSTEM INSTALLATION MANUAL AND ALL OTHER APPLICABLE SECTIONS OF 250-RICR-150-6. THE INSTALLATION SHALL ONLY BE PERFORMED BY A RHODE ISLAND DEM LICENSED INSTALLER WHO HAS RECEIVED TRAINING AND IS AUTHORIZED IN WRITING BY THE VENDORS TO INSTALL THE SYSTEM. AUTHORIZATION FROM THE VENDORS SHALL BE SUBMITTED TO ENGINEER PRIOR TO ANY CONSTRUCTION.
 - REFER TO 250-RICR-150-10-6 AND RIDEM GUIDELINES FOR ADDITIONAL INFORMATION CONCERNING THE INSTALLATION, OPERATION AND MAINTENANCE OF THE SYSTEM. THE INSTALLER AND OWNER SHOULD REVIEW AND APPLY 250-RICR-150-10-6 AND RIDEM GUIDELINES. THE SYSTEM TO BE CONSTRUCTED BY A INSTALLER LICENSED BY RIDEM AND THOROUGHLY FAMILIAR WITH THE INSTALLATION OF ADVANTEX TREATMENT DEVICES AND GRAVEL SAND TREATMENT SYSTEMS.
 - THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH THE DESIGN ENGINEER IN ORDER TO FACILITATE WITNESSING THE REQUIRED PHASES OF THE SYSTEM INSTALLATION AS STATED IN 250-RICR-150-47 OF THE "REGULATIONS". FAILURE OF THE CONTRACTOR TO NOTIFY THE DESIGN ENGINEER IN A TIMELY MANNER MAY REQUIRE THE CONTRACTOR TO EXCAVATE AND EXPOSE SYSTEM COMPONENTS FOR OBSERVATION.
 - THE DESIGNER EXPRESSLY DISCLAIMS ANY RESPONSIBILITY FOR THE INSTALLATION AND MAINTENANCE OF THE SYSTEM. IT SHALL BE THE RESPONSIBILITY OF THE INSTALLER TO CONSTRUCT THE SYSTEM IN ACCORDANCE WITH THE ABOVE REFERENCED REGULATIONS.
 - CONTRACTOR SHALL CONTACT "DIG-SAFE" PRIOR TO CONSTRUCTION. LOCATION OF UTILITIES ON THIS PLAN ARE FROM EXISTING INFORMATION, BUT ARE ONLY TO BE CONSIDERED APPROXIMATE.
 - THERE ARE NO PUBLIC WELLS, EXISTING OR PROPOSED, FOUND TO BE LOCATED WITHIN 500 FEET OF THE PROPOSED OWTS EXCEPT AS SHOWN.
 - NO FRESHWATER WETLANDS OBSERVED WITHIN 200 FEET OF THE PROPOSED OWTS. THIS SITE DOES NOT LIE WITHIN A CRITICAL RESOURCE AREA.
 - I CERTIFY THAT THERE ARE NO WELLS FOUND TO BE LOCATED WITHIN 200 FEET OF THE PROPOSED LEACHING AREA, OTHER THAN AS SHOWN ON THIS PLAN. I ALSO CERTIFY THAT THERE ARE NO EXISTING OR PROPOSED DRAINS, FOUNDATION DRAINS OR SUB DRAINS FOUND TO BE LOCATED WITHIN 25 FEET OF THIS PROPOSED OWTS.
 - ALL PIPE JOINTS, PIPE CONNECTIONS AND ACCESS COVERS ARE TO BE WATER TIGHT.
 - PRESSURE PIPE SHALL BE INSTALLED TO MAINTAIN SLOPE BACK TO TANK/PUMP CHAMBER TO DRAIN BETWEEN PUMPING CYCLES. ELIMINATE ANY HIGH OR LOW POINTS THAT MAY PREVENT DRAINING AND/OR AIR POCKETS.
 - CONTRACTOR TO PAY ANY REQUIRED INSTALLATION FEES.
 - CONTROL PANEL AND ALARM TO BE MOUNTED INSIDE BUILDING IN A CONSPICUOUS LOCATION, EXACT LOCATION TO BE COORDINATED WITH OWNER. ALL CONTROL PANELS AND JUNCTION BOXES SHALL BE NEMA 4X.
 - THE PUMP DOSING CONTROLS WILL BE FIELD TESTED IN THE PRESENCE OF THE DESIGN ENGINEER AND ORENCO REPRESENTATIVE. ADJUSTMENT TO CONTROLS ARE THE CONTRACTORS RESPONSIBILITY. CONTRACTOR MUST MAKE WATER AVAILABLE FOR TESTING OF THE CONTROL FLOATS.
 - ALL TREES AND SHRUBS SHALL BE CLEAR AND NO NEW ONES SHALL BE PLANTED WITHIN 10' OF THE GRAVEL SAND TREATMENT SYSTEM.
 - THE GRAVEL SAND TREATMENT SYSTEM LOCATION SHALL BE STAKED OUT AND PROTECTED PRIOR TO ANY SITE PREPARATION ACTIVITIES.
 - NO IMPERVIOUS SURFACE IS TO BE PLACED ABOVE THE GST (LEACHING) SYSTEM.
 - MATERIAL AND EQUIPMENT FROM ALTERNATE MANUFACTURERS MAY BE USED IF EQUAL. APPROVAL FOR ALTERNATE MATERIAL AND/OR EQUIPMENT IS REQUIRED FROM THE OWNER AND ENGINEER. FULL SPECIFICATIONS FOR ALTERNATE EQUIPMENT MUST BE PROVIDED BY THE CONTRACTOR. IF ACCEPTABLE, THE CONTRACTOR MUST PREPARE AND SUBMIT FOR AN RIDEM OWTS CONSTRUCTION PERMIT BASED UPON THE REDESIGN.



| | |
|--|-------------------|
| ANTI-FLOATATION AREA | |
| 16,000 GALLON TANK (TYPE 1) - 2 SIDES x 32.83' LONG x 1.00' WIDE | = 65.66 S.F. |
| 16,000 GALLON TANK (TYPE 1) - 2 SIDES x 31.83' LONG x 1.00' WIDE | = 63.66 S.F. |
| 16,000 GALLON TANK (TYPE 2) - 2 SIDES x 31.83' LONG x 2.00' WIDE | = 127.32 S.F. |
| 8,000 GALLON TANK (TYPE 1) - 2 SIDES x 19.00' LONG x 1.00' WIDE | = 38 S.F. |
| 8,000 GALLON TANK (TYPE 2) - 2 SIDES x 19.00' LONG x 2.00' WIDE | = 76 S.F. |
| 7,500 GALLON TANK (TYPE 1) - 2 SIDES x 18.00' LONG x 1.00' WIDE | = 36 S.F. |
| 7,500 GALLON TANK (TYPE 2) - 2 SIDES x 18.00' LONG x 2.00' WIDE | = 72 S.F. |
| 6,000 GALLON TANK (TYPE 1) - 2 SIDES x 18.00' LONG x 1.00' WIDE | = 36 S.F. |
| 6,000 GALLON TANK (TYPE 2) - 2 SIDES x 18.00' LONG x 2.00' WIDE | = 72 S.F. |
| PUMP CHAMBER (TYPE 1) - 2 SIDES x 8.00' LONG x 1.00' WIDE | = 16 S.F. |
| PUMP CHAMBER (TYPE 2) - 2 SIDES x 8.00' LONG x 2.00' WIDE | = 32 S.F. |
| ANTI-FLOATATION VOLUMES | |
| 16,000 GALLON TANK (TYPE 1) - 65.66 S.F. x 2.00' HIGH | = 131.32 C.F. |
| 16,000 GALLON TANK (TYPE 1) - 63.66 S.F. x 2.00' HIGH | = 127.32 C.F. |
| 16,000 GALLON TANK (TYPE 2) - 127.32 S.F. x 2.00' HIGH | = 254.64 C.F. |
| 8,000 GALLON TANK (TYPE 1) - 38 S.F. x 2.00' HIGH | = 76 C.F. |
| 8,000 GALLON TANK (TYPE 2) - 76 S.F. x 2.00' HIGH | = 152 C.F. |
| 7,500 GALLON TANK (TYPE 1) - 36 S.F. x 2.00' HIGH | = 72 C.F. |
| 7,500 GALLON TANK (TYPE 2) - 72 S.F. x 2.00' HIGH | = 144 C.F. |
| 6,000 GALLON TANK (TYPE 1) - 36 S.F. x 2.00' HIGH | = 72 C.F. |
| 6,000 GALLON TANK (TYPE 2) - 72 S.F. x 2.00' HIGH | = 144 C.F. |
| PUMP CHAMBER (TYPE 1) - 16 S.F. x 2.00' HIGH | = 32 C.F. |
| PUMP CHAMBER (TYPE 2) - 32 S.F. x 2.00' HIGH | = 64 C.F. |
| CONSTANTS (WEIGHTS) | |
| CONCRETE | 150 POUNDS/C.F. |
| WATER | 62.4 POUNDS/C.F. |
| SUBMERGED CONCRETE | 87.6 POUNDS/C.F. |
| WEIGHT OF ANTI-FLOATATION IN PLACE | |
| 16,000 GALLON TANK (TYPE 1) - 131.32 C.F. x 87.6 POUNDS/C.F. | = 11,503.6 POUNDS |
| 16,000 GALLON TANK (TYPE 1) - 127.32 C.F. x 87.6 POUNDS/C.F. | = 11,053.6 POUNDS |
| 16,000 GALLON TANK (TYPE 2) - 254.64 C.F. x 87.6 POUNDS/C.F. | = 22,306.6 POUNDS |
| 8,000 GALLON TANK (TYPE 1) - 76 C.F. x 87.6 POUNDS/C.F. | = 6,657.6 POUNDS |
| 8,000 GALLON TANK (TYPE 2) - 152 C.F. x 87.6 POUNDS/C.F. | = 13,315.2 POUNDS |
| 7,500 GALLON TANK (TYPE 1) - 72 C.F. x 87.6 POUNDS/C.F. | = 6,307.2 POUNDS |
| 7,500 GALLON TANK (TYPE 2) - 144 C.F. x 87.6 POUNDS/C.F. | = 12,614.4 POUNDS |
| 6,000 GALLON TANK (TYPE 1) - 72 C.F. x 87.6 POUNDS/C.F. | = 6,307.2 POUNDS |
| 6,000 GALLON TANK (TYPE 2) - 144 C.F. x 87.6 POUNDS/C.F. | = 12,614.4 POUNDS |
| PUMP CHAMBER (TYPE 1) - 32 C.F. x 87.6 POUNDS/C.F. | = 2,803.2 POUNDS |
| PUMP CHAMBER (TYPE 2) - 64 C.F. x 87.6 POUNDS/C.F. | = 5,606.4 POUNDS |



STATE OF RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
DIVISION OF PLANNING AND DEVELOPMENT

DEMOLITION AND REBUILD OF BATHHOUSES
BURLINGAME STATE PARK AND CAMPGROUND
CHARLESTOWN, RHODE ISLAND

OWTS PRECAST STRUCTURES DETAILS

Dwg: Scale: 1" = 20'
Contract No. x Date: FEBRUARY, 2023

C-3.1
21



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management
Office of Water Resources
Onsite Wastewater Treatment Systems Program

20.0179 6A, 6B
SHEET 1-2



Site Evaluation Form Part A – Soil Profile Description

Application Number _____

Property Owner: RHODE ISLAND STATE OF (DEM) DIVISION OF PARKS

Property Location: 1-100 BURLINGAME PARK RD, CHARLESTOWN, RI PLAT 15 LOT 10

Date of Test Hole: 8/18/21

Soil Evaluator: KAMAL HINGORANY

License Number: D4005

Weather: CLOUDY

Shaded: Yes ☐ No ☒ Time: 9:30

| TH <u>6A</u> Horizon | Depth | Horizon Boundaries | | Soil Colors | | Re-Dox | | | Texture | Structure | Consistence | Soil Category |
|-------------------------|--------|--------------------|------|-------------|-----------------|--------|----|--------|---------|-----------|-------------|---------------|
| | | Dist | Topo | Matrix | Re-Dox Features | Ab. | S. | Contr. | | | | |
| Ap | 0-9 | C | S | 2.5YR 6/3 | - | - | - | - | Ls | 2gbd | VFr | 3 |
| Bw | 9-25 | C | S | 10YR 5/6 | - | - | - | - | Ls | 2gbd | Fr | 3 |
| C ₁ | 25-40 | C | S | 2.5YR 7/3 | - | - | - | - | Ls | 2gbd | Fr | 3 |
| C ₂ | 40-120 | C | C | 2.5YR 7/3 | 5YR 4/4 | M | M | P | Ls | 2gbd | Fr | 3 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| TH <u>6B</u> Horizon | Depth | Horizon Boundaries | | Soil Colors | | Re-Dox | | | Texture | Structure | Consistence | Soil Category |
| | | Dist | Topo | Matrix | Re-Dox Features | Ab. | S. | Contr. | | | | |
| Ap | 0-16 | C | S | 2.5YR 6/3 | - | - | - | - | Ls | 2gbd | VFr | 3 |
| Bw | 16-36 | C | W | 10YR 5/6 | - | - | - | - | Ls | 2gbd | Fr | 3 |
| C ₁ | 36-42 | C | S | 2.5YR 7/3 | - | - | - | - | Ls | 2gbd | Fr | 3 |
| C ₂ | 42-120 | C | S | 2.5YR 7/3 | 5YR 4/4 | M | M | P | Ls | 2gbd | Fr | 3 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

TH 6A Soil Class B Total Depth 120" Impervious/Limiting Layer Depth 120" (og) GW Seepage Depth - SHWT 40" (og)

TH 6B Soil Class B Total Depth 120" Impervious/Limiting Layer Depth 120" (og) GW Seepage Depth - SHWT 42" (og)

Comments: _____

Part B

Site Evaluation – to be completed by Soil Evaluator or Class II or III Designer

Please use the area below to locate:

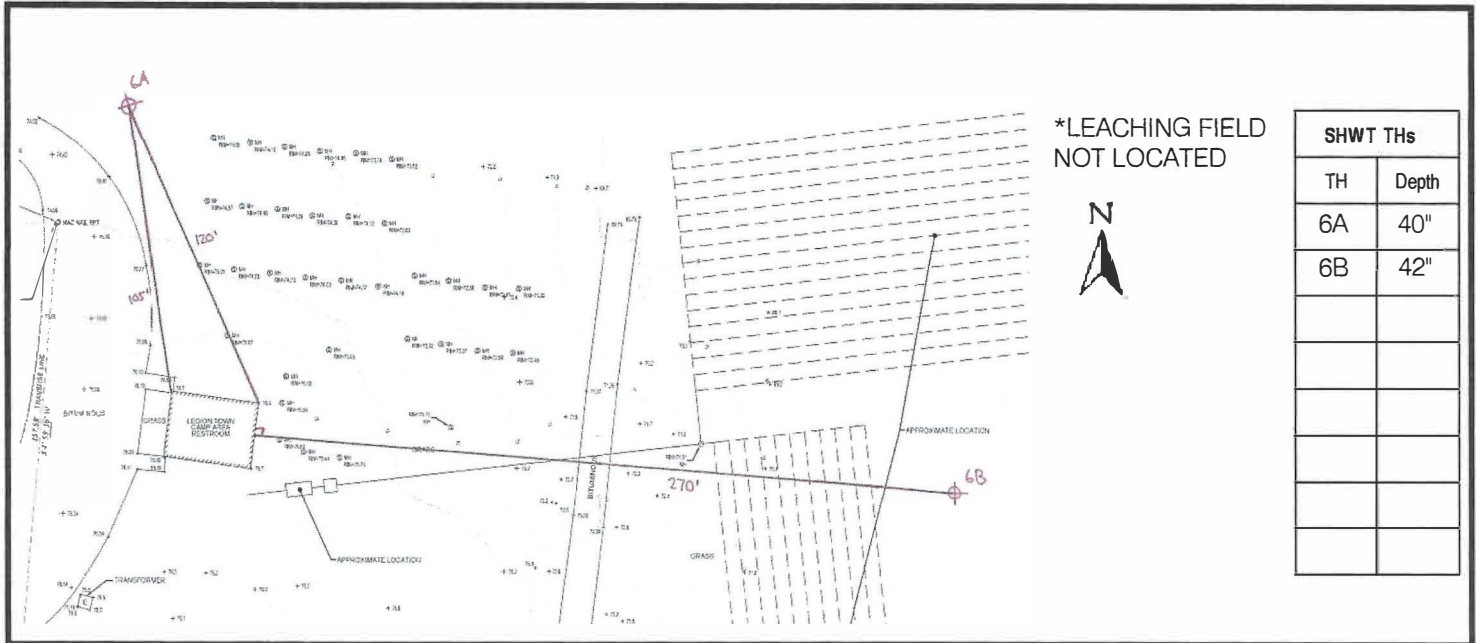
1. Test holes and bedrock test holes,
2. Approximate direction of due north,
3. Offsets from all test holes to fixed points such as street, utility pole, or other permanent, marked object.*

***OFFSETS MUST BE SHOWN**

20.0179 6A, 6B
SHEET 2-2

Key:

- Approximate location of test holes
- Approximate location of bedrock test holes
- Estimated gradient and direction of slope
- Approximate direction of due north



1. Relief and Slope: _____
2. Presence of any watercourse, wetlands or surface water bodies, within 200 feet of test holes? If yes, locate on above sketch. NO ☒ YES ☐
3. Restrictive Layer or Bedrock within 4' below original ground within 25 feet of test hole? Provide all test hole locations & depths above. NO ☒ YES ☐
4. Presence of existing or proposed private drinking water wells within 200 feet of test holes? If yes, locate on above sketch. NO ☒ YES ☐
5. Public drinking water wells within 500 feet of test holes? If yes, locate on above sketch. NO ☒ YES ☐
6. Is site within the watershed of a public drinking water reservoir or other critical area defined in Rule 6.42? NO ☒ YES ☐
7. Has soil been excavated from or fill deposited on site? If yes, locate on above sketch. NO ☒ YES ☐
8. Site's potential for flooding or ponding: NONE ☒ SLIGHT ☐ MODERATE ☐ SEVERE ☐
9. Landscape position: SHOULDER
10. Vegetation: GRASS
11. Indicate approximate location of property lines and roadways.
12. Additional comments, site constraints or additional information regarding site: _____

Certification

The undersigned hereby certifies that all information on this application and accompanying forms, submittals and sketches are true and accurate and that I have been authorized by the owner(s) to conduct these necessary field investigations and submit this request.

Part A prepared by: [Signature] D4005 License # _____ Part B prepared by: [Signature] D4005 License # _____

DO NOT WRITE IN THIS SPACE

Witnessed Soil Evaluation Decision: Concur ☐ Inconclusive ☐ Disclaim ☐
Unwitnessed Soil Evaluations Decision: Accept ☐ Inconclusive ☐ Disclaim ☐

Wet Season Determination required ☐ Additional Field Review Required ☐

Explanation: _____

Signature Authorized Agent _____

Date _____



Legiontown Bathhouse and System Replacement Project
Burlingame State Park and Campground
Charlestown, Rhode Island

DESIGN NARRATIVE

RIDEM is in the process of replacing the Bathhouse and Onsite Wastewater System (OWTS) at this location. Soil logs can be found on Sheet C-1.6 together with the proposed site layout and System Design Data and Notes. Details for the system are on Sheets C-2.6, C-3.1 and C-3.2.

Soil evaluations for this OWTS location were conducted on August 18, 2021, soils are Category 3 and the Estimated Seasonal High Water Table depth at the OWTS is 40" or at elevation 70.8±.

In total the six bathhouses for the overall campground accommodate approximately 720 campsites. Utilizing the RIDEM wastewater design flow for a campground with washroom and toilets of 50 gallons per day we determine a daily flow for the entire campground to be approximately 36,000 gallons per day (GPD). The average daily flow per acre of the campground is (36,000 GPD / 847 Acres) 42.5 GPD/Acre. The average daily flow for each bathhouse is approximately 6,000 GPD. In calculating an estimated daily flow for the Legiontown Bathhouse OWTS we took a conservative approach utilizing 156 campsites at 50 GPD/campsite to determine a design flow for the Legiontown Bathhouse to be 7,800 GPD which is greater than the 6,000 GPD average. Please see the attached campsite map which depicts the campsites (as highlighted) chosen to be included within the 156 sites utilized for sizing the OWTS. Please note that sites throughout the campground overlap to agree with the conservative estimate. The system as sized is oversized and is considered a large system. The system is used on a seasonal basis between the months of April and October.

The OWTS will utilize Two (2) Orenco AdvanTEX AX100 Pods for advanced treatment. This system is a Category 1 advanced treatment technology. The system will treat the wastewater and reduce the biochemical oxygen demand (BOD) and comply with the latest Orenco system design criteria and thus the RIDEM OWTS criteria. See attached Final Design Review Letter from Orenco.

The systems drainfield is designed as a Geomatrix Gravel Sand Treatment (GST) System. The Loading Rate for Category 1 Technology for the GST is 3.5 GPD/square feet (SF). The minimum size drainfield is 7,800 GPD/3.5 GPD/SF which equals 2,229 SF. We propose to use the GST 6212 and the minimum size drainfield requirement for this application is 127 lineal feet (LF). We propose to use the 280 lineal feet (LF) of GST 6212 which provides 17.5 S.F. per LF, which equals 4,900 SF. and is greater than 2,229 SF (minimum size). The GST system has been divided into two equal drainfields and the GST are spaced 7'6" on center. The two drainfields consist of 5 rows each 28 feet long and 62" wide with a stone depth of 12" below the 4" perforated distribution pipe. See pump selection and system specifications on Sheet C-2.6 for additional information. Please see the attached review letter from Geomatrix.

WATCHAUG POND



FISH CAMP AREA

150

400 AREA

150

MAIN CAMP AREA

146

LEGIONTOWN
CAMP AREA

156

500 AREA

B
150

MILLS CAMP AREA

150

- CHECK STATION
- PERMITS
- COMFORT STATION

TO WESTERLY

TO WAKEFIELD & PROVIDENCE

DEVELOPED BY:
PARE
PARE CORPORATION
100 BAYVIEW AVENUE
BOSTON, MASSACHUSETTS
02116-1100



BURLINGAME STATE PARK RHODE ISLAND DEPT. OF ENVIRONMENTAL MANAGEMENT

LEGEND

- | | |
|------------------------------------|-----------------------------|
| A TENTS ONLY | Ⓐ WATER |
| B SMALL TRAILERS | ▨ RESTROOMS WITH SHOWERS |
| C LARGE TRAILERS AND MOTORHOMES | ★ DUMPING STATIONS |
| M MOTORHOMES | ■ CABIN |
| P PORTAJONS | D DUMPSTERS |

01/19/2023

Kevin Harrop
Caputo & Wick
1150 Pawtucket Ave
Rumford, RI 02916

Subject: Final Design Review of Burlingame Park/Legion Town

Kevin,

Orenco Systems, Inc. ("Orenco") has received the Plans with all required fields completed (attached to this letter), a copy of the plan set showing the designed site layout and configuration plans, and other documents that comprise the Final Design for the Burlingame Park project. Orenco staff reviews the Final Design of all wastewater collection and treatment systems for commercial applications to ensure that the design is compliant with the most current version of the system's applicable design criteria published by Orenco for the specified parameters provided by the system's designer in the Plans. The findings and conclusions of my review of this Final Design are as follows:

Design Basis

The system has been designed for a Type 2, Park application. Influent flow and constituent concentrations and effluent constituent concentration requirements have been provided by the system's designer on the Plans and were used in my review of the Final Design.

The influent flow on the Plans were not extrapolated from the metered flows from the subject site, but in our experience, they are consistent with influent flows from other, similar Type 2, Park systems that Orenco has previously observed. As such, I have no reason to doubt the accuracy of the designer's findings and assumptions as to the influent flow, and find that it was reasonable for the designer to use them as the design basis for the system.

System Design

The proposed Final Design of the system consists of a treatment plant for a state park and campground. Influent will enter a 16,000 gallon Primary Tank, which will then flow into an 8,000 gallon Pre-Anoxic Tank. From here, effluent flow will gravity discharge into a 6,000 gallon Recirculation Tank. The recirc-filtrate blend in this tank will pump into (2) AX100 pods and the filtrate will enter a splitter valve in the front of the Recirculation Tank where it will either be recirculated again or discharge to a pump chamber that leads to a drain field.

Design Criteria

The applicable design criteria for this system, which I used to conduct the review of its Final Design, is revision 8.0 of document NDA-ATX-1, titled *Orenco[®] AdvanTex[®] Design Criteria, Commercial Treatment Systems*, which was published by Orenco in October, 2020. A copy of the design criteria can be downloaded from Orenco's online document library at www.orenco.com/corporate/doclibrary.cfm.

Findings

The findings of my review as to whether the Final Design complies with Orenco's design criteria for treating wastewater to the effluent constituent concentration requirements provided in the Plans are as follows:

Primary Treatment

The Final Design specifies the use of 1 - 16,000 U.S. Gallon Primary concrete and 1 – 8,000 U.S. Gallon Primary concrete tank in series for primary treatment. Using the flow data specified on the Plans the hydraulic retention times for primary treatment calculates as follows:

| Primary Tank(s) Hydraulic Retention Time (HRT) ¹ | | | | |
|---|-------------------------------|--|----------------|--------------------|
| Design Average Flow (gpd) | Design Maximum Day Flow (gpd) | Effective Combined Primary Tankage (gpd) | Avg HRT (days) | Max Day HRT (days) |
| 3,900 | 7,800 | 24,000 | 6.2 | 3.1 |

¹ Design Max Day Flow is the maximum daily flow a facility is expected to receive no more than one day within any week's time.

The Primary Tank Sizing Recommendations states that the recommended primary tankage for a Park treatment system should be sized to at a minimum of 3 days of hydraulic retention time at the Design Max Day Flow. Therefore, the configuration and specifications of the primary treatment tanks in the Final Design satisfy Orenco's recommendation for primary tankage for this Park application. This pre-anoxic tank should be sized equal to one day at maximum day design flow and is considered part of the overall primary tank volume.

Recirculation Tank — Standard Stage

The Final Design further specifies the use of 1 - 6,000 U.S. Gallon concrete tank for recirculation and blending of the AdvanTex-treated effluent with primary tank effluent. Using the flow data specified on the Plans the tank is sized to be equal to 77% of the Maximum Day Design Flow. The recirculation tank for the standard stage should be sized at a minimum of 75% of the Maximum Day Design Flow. Therefore, the specification of the recirculation-blend tank in the Final Design satisfies Orenco's design criteria.

Hydraulic Load — Standard Stage

The Final Design specifies the use of 2 - AX100 pods, which contain a nominal surface area of 200 square feet of treatment media. Using the flow data specified on the Plans the hydraulic loading rate for the system calculates as follows:

| Hydraulic Loading Rate (HLR) — Standard Stage | | | | |
|---|-------------------------------|--------------------------------|------------------------------------|---------------------------------|
| Design Average Flow (gpd) | Design Maximum Day Flow (gpd) | Nominal Textile Area (sq. ft.) | Average HLR (gal. per day/sq. ft.) | Peak HLR (gal. per day/sq. ft.) |
| 3,900 | 7,800 | 200 | 19.5 | 39.0 |

According to the AdvanTex System Loading Chart in the applicable design criteria, the standard AdvanTex treatment system (Stage 1) should not be hydraulically loaded more than 25 gpd/square foot at Design Average Flow or 50 gpd/square foot at Design Max Day Flow. Therefore, the specified type and number of AdvanTex pods in the Final Design satisfy Orenco's design criteria to achieve the effluent quality listed in the design criteria at a 95% confidence level for this Type 2, Park application.

Organic Load — Standard Stage

The following influent characteristics provided on the Plans were estimated and not derived from direct sampling. Even though the influent characteristics were not derived from direct sampling, the values provided are consistent with values we have seen in other, similar Type 2, Park applications.

| Influent (Primary Tank Effluent) Characteristics — Loading to Textile | |
|--|--------------------|
| Average BOD ₅ (mg/L) | Average TSS (mg/L) |
| 250 | 200 |

Based on the average influent biochemical oxygen demand (BOD₅) concentration and flow data specified on the Plans, the system will receive approximately 8.1 pounds of BOD₅ per day at Design Average Flow, and 16.3 pounds of BOD₅ per day at Maximum Day Design Flow. Using this information, the organic loading rate of the system calculates as:

| Organic Loading Rate (OLR) — Standard Stage | | | | |
|--|--------------------------------|----------------------------------|-----------------------------------|-----------------------------------|
| Average Organic Load (lbs/day) | Maximum Organic Load (lbs/day) | Nominal Treatment Area (sq. ft.) | Average OLR (lbs BOD/sq. ft./day) | Maximum OLR (lbs BOD/sq. ft./day) |
| 8.1 | 16.3 | 200 | 0.04 | 0.08 |

Conclusions

I have reviewed the Final Design of the Burlingame Park wastewater treatment system, and have found that the design is compliant with the most current version of the system's applicable design criteria published by Orenco for the specified parameters provided by the system's designer in the Plans. In addition, I noted no anomalies in the site layout or configuration of the system during my review.

| Compliance Table — Meets Minimum Design Standards | |
|--|-----------------------|
| | Standard Stage |
| Recirc Tank Size | Yes |
| Hydraulic Load | Yes |
| Organic Load | Yes |

As such, the system as designed satisfactorily complies with Orenco's design criteria to meet the following effluent limits specified in the Plans at a 95% confidence level, provided that all influent flows and constituent concentrations specified in the Plans are not exceeded:

| Expected Effluent Quality | |
|----------------------------------|----------------|
| Constituent | Average (mg/L) |
| BOD ₅ | 20 |
| TSS | 20 |

It is important to note that even though the AdvanTex Treatment System has the capability to meet or exceed the required treatment parameters, there is no way that Orenco can guarantee that a particular system will be operated or maintained in a manner consistent with the Final Design reviewed. Once the facility is placed into operation, the influent flows and constituent concentrations to the facility should be monitored, and if flow or any of the influent constituent concentrations exceed those listed in the Plans, measures should be taken to reduce the flow or constituent concentration to those listed. However, if additional treatment capacity becomes necessary, the system is designed to have the capability to expand to account for the new flow or constituent concentration.

Proper air ventilation is a critical feature of all commercial AdvanTex Treatment Systems, and as such, adequate active ventilation is required for all systems. In addition, please note that disposing of toxics or chemicals into the system is strictly prohibited. Examples of toxics include restaurant degreasers, cleansers, wax strippers for linoleum, carpet shampoo, waste products, or any other toxins. Furthermore, water softener brine discharge is prohibited from being discharged into the AdvanTex Treatment System. Failure to adhere to these policies will void Orenco's limited product warranties.

If you have any questions about my review process, findings, or conclusions, please feel free to call or e-mail me.

Sincerely,



Caleb Castleman
Systems Engineering
Orenco Systems Inc.
(800) 348-9843 ext. 548
ccastleman@orencosystems.com

Project: Burlingame State Park and Camp Ground
 Location: Legion Town

| Description | Input values | Units |
|---|--------------|---------------------|
| Finish Grade | 76.50 | Elevation |
| Water Table Elevation | 70.80 | Elevation |
| Bottom of Tank Elevation | 65.08 | Elevation |
| Lowest Pipe Invert | 72.75 | Elevation |
| Counter Weight | 0.00 | lbs |
| Soil Above Tank | 25.00 | Inches |
| Length of Tank | 31.83 | Feet |
| Width of Tank | 11.33 | Feet |
| Depth of Tank | 9.33 | Feet |
| Top of Concrete Thickness | 8.00 | Inches |
| Bottom of Concrete Thickness | 8.00 | Inches |
| Sides Concrete Thickness | 8.00 | Inches |
| Two Compartment Tank | | |
| Compartment Wall Thickness | 4.00 | Inches |
| Compartment Wall Height | 87.00 | Inches |
| Computed Value | | |
| Submerged Depth | 5.72 | Feet |
| Top/Bottom Surface Area of Tank | 360.77 | SF |
| Displaced Volume | 2,063.59 | CF |
| Volume of Tank Top | 240.51 | CF |
| Volume of Tank Sides | 446.20 | CF |
| Volume of Tank Bottom | 240.51 | CF |
| Volume of Baffle | 24.17 | CF |
| Weight of Tank Top | 36,076.68 | lbs |
| Weight of Tank Sides | 66,929.96 | lbs |
| Weight of Tank Bottom | 36,076.68 | lbs |
| Weight of Baffle | 3,624.88 | lbs |
| Total Weight of Tank | 142,708.19 | lbs |
| Volume of Soil | 751.60 | CF |
| Weight of Soil Above Tank | 75,159.75 | lbs |
| Uplift Created by Submerged Tank | 128,767.77 | lbs |
| Total Weight of Tank, Counter Weight and Soil | 217,867.94 | lbs |
| Exceeds Displaced Volume by | 89,100.17 | lbs |
| | | |
| Buoyance Point for Empty Tank | 6.34 | Feet (above bottom) |
| Buoyance Point for Empty Tank | 71.42 | Elev |
| Buoyance Point for Tank in Place | 9.68 | Feet (above bottom) |
| Buoyance Point for Tank in Place | 74.76 | Elev |

(Soil friction has not been taken into account)

Project: Burlingame State Park and Camp Ground
 Location: Legion Town

| Description | Input values | Units |
|------------------------------|--------------|-----------|
| Finish Grade | 76.75 | Elevation |
| Water Table Elevation | 70.80 | Elevation |
| Bottom of Tank Elevation | 64.90 | Elevation |
| Lowest Pipe Invert | 72.40 | Elevation |
| Counter Weight (Type2) | 13,315.20 | lbs |
| Soil Above Tank | 28.00 | Inches |
| Length of Tank | 17.00 | Feet |
| Width of Tank Top | 10.00 | Feet |
| Additional Bottom Overhang | 6.00 | Inches |
| Depth of Tank | 9.67 | Feet |
| Top of Concrete Thickness | 8.00 | Inches |
| Bottom of Concrete Thickness | 6.00 | Inches |
| Sides Concrete Thickness | 6.00 | Inches |

Two Compartment Tank

| | | |
|----------------------------|------|--------|
| Compartment Wall Thickness | 0.00 | Inches |
| Compartment Wall Height | 0.00 | Inches |

| | Computed Value | |
|---|----------------|---------------------|
| Submerged Depth | 5.90 | Feet |
| Bottom Surface Area of Tank | 198.00 | SF |
| Displaced Volume | 1,168.20 | CF |
| Volume of Tank Top | 113.33 | CF |
| Volume of Tank Sides | 221.00 | CF |
| Volume of Tank Bottom | 99.00 | CF |
| Volume of Baffle | 0.00 | CF |
| Weight of Tank Top | 17,000.00 | lbs |
| Weight of Tank Sides | 33,150.13 | lbs |
| Weight of Tank Bottom | 14,850.00 | lbs |
| Weight of Baffle | 0.00 | lbs |
| Total Weight of Tank | 65,000.13 | lbs |
| Volume of Soil | 396.67 | CF |
| Weight of Soil Above Tank | 39,666.67 | lbs |
| Uplift Created by Submerged Tank | 72,895.68 | lbs |
| Total Weight of Tank, Counter Weight and Soil | 117,982.00 | lbs |
| Exceeds Displaced Volume by | 45,086.32 | lbs |
| Buoyance Point for Empty Tank | 5.26 | Feet (above bottom) |
| Buoyance Point for Empty Tank | 70.16 | Elev |
| Buoyance Point for Tank in Place | 9.55 | Feet (above bottom) |
| Buoyance Point for Tank in Place | 74.45 | Elev |

(Soil friction has not been taken into account)

Project: Burlingame State Park and Camp Ground
Location: Legion Town

| Description | Input values | Units |
|---|--------------|---------------------|
| Finish Grade | 75.25 | Elevation |
| Water Table Elevation | 70.80 | Elevation |
| Bottom of Tank Elevation | 64.50 | Elevation |
| Lowest Pipe Invert | 71.25 | Elevation |
| Counter Weight (Type 2) | 12,614.00 | lbs |
| Soil Above Tank | 31.00 | Inches |
| Length of Tank | 17.00 | Feet |
| Width of Tank | 10.00 | Feet |
| Depth of Tank | 8.17 | Feet |
| Top of Concrete Thickness | 8.00 | Inches |
| Bottom of Concrete Thickness | 6.00 | Inches |
| Sides Concrete Thickness | 6.00 | Inches |
| Two Compartment Tank | | |
| Compartment Wall Thickness | 0.00 | Inches |
| Compartment Wall Height | 0.00 | Inches |
| Computed Value | | |
| Submerged Depth | 6.30 | Feet |
| Top/Bottom Surface Area of Tank | 170.00 | SF |
| Displaced Volume | 1,071.00 | CF |
| Volume of Tank Top | 113.33 | CF |
| Volume of Tank Sides | 182.00 | CF |
| Volume of Tank Bottom | 85.00 | CF |
| Volume of Baffle | 0.00 | CF |
| Weight of Tank Top | 17,000.00 | lbs |
| Weight of Tank Sides | 27,300.13 | lbs |
| Weight of Tank Bottom | 12,750.00 | lbs |
| Weight of Baffle | 0.00 | lbs |
| Total Weight of Tank | 57,050.13 | lbs |
| Volume of Soil | 439.17 | CF |
| Weight of Soil Above Tank | 43,916.67 | lbs |
| Uplift Created by Submerged Tank | 66,830.40 | lbs |
| Total Weight of Tank, Counter Weight and Soil | 113,580.80 | lbs |
| Exceeds Displaced Volume by | 46,750.40 | lbs |
| | | |
| Buoyance Point for Empty Tank | 5.38 | Feet (above bottom) |
| Buoyance Point for Empty Tank | 69.88 | Elev |
| Buoyance Point for Tank in Place | 10.71 | Feet (above bottom) |
| Buoyance Point for Tank in Place | 75.21 | Elev |

(Soil friction has not been taken into account)

Project: Burlingame State Park and Camp Ground
 Location: Legion Town

| Description | Input values | Units |
|---|--------------|---------------------|
| Finish Grade | 74.00 | Elevation |
| Water Table Elevation | 69.80 | Elevation |
| Bottom of Chamber Elevation | 65.00 | Elevation |
| Lowest Pipe Invert | 71.00 | Elevation |
| Counter Weight | 0.00 | lbs |
| Soil Above Chamber | 12.00 | Inches |
| Chamber Length | 7.00 | Feet |
| Chamber Width | 7.00 | Feet |
| Diameter of Opening | 2.50 | Feet |
| Chamber Interior Height | 7.00 | Feet |
| Top of Concrete Thickness | 6.00 | Inches |
| Bottom of Concrete Thickness | 6.00 | Inches |
| Concrete Wall Thickness | 6.00 | Inches |
| Computed Value | | |
| Submerged Depth | 4.80 | Feet |
| Top Surface Area of Chamber | 44.09 | SF |
| Surface Area of Chamber Sides | 182.00 | SF |
| Bottom Surface Area of Chamber | 49.00 | SF |
| Displaced Volume | 235.20 | CF |
| Volume of Chamber Top | 22.05 | CF |
| Volume of Chamber Sides | 91.00 | CF |
| Volume of Chamber Bottom | 24.50 | CF |
| Weight of Chamber Top | 3,306.84 | lbs |
| Weight of Tank Side | 13,650.00 | lbs |
| Weight of Chamber Bottom | 3,675.00 | lbs |
| Total Weight of Chamber | 20,631.84 | lbs |
| Volume of Soil | 44.09 | CF |
| Weight of Soil Above Chamber | 4,409.13 | lbs |
| Uplift Created by Submerged Chamber | 14,676.48 | lbs |
| Total: Chamber, Counter Weight and Soil | 25,040.97 | lbs |
| Exceeds Displaced Volume by | 10,364.49 | lbs |
| | | |
| Buoyance Point for Empty Chamber | 6.75 | Feet (above bottom) |
| Buoyance Point for Empty Chamber | 71.75 | Elev |
| Buoyance Point for Chamber in Place | 8.19 | Feet (above bottom) |
| Buoyance Point for Chamber in Place | 73.19 | Elev |

(Soil friction has not been taken into account)

Duplex Control Panels

Applications

Orenco Duplex Control Panels are used to control dual pumps, alarms, and other equipment as specified in pressure sewers and onsite septic systems.



Orenco® DAX2 Control Panel



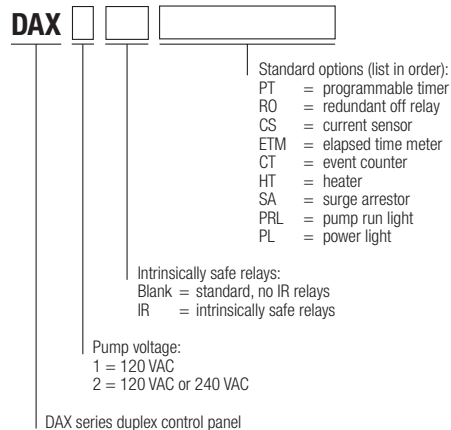
General

Orenco Duplex Control Panels are specifically engineered for pressure sewer (STEP) systems and onsite septic treatment systems that require the use of two alternating pumps. Standard features include circuit breakers, an automatic/manual/off motor control toggle for each pump, an audio/visual high level alarm, an alarm reset, and a duplex alternator. Other standard features and options are listed on page 2. Orenco panels are designed for use with mechanical and/or mercury float switches. Listed per UL 508 in the US and Canada.

Standard Models

DAX1, DAX2

Product Code Diagram



Materials of Construction

| | |
|-----------|-------------------------------------|
| Enclosure | UV-resistant fiberglass, UL Type 4X |
| Hinges | Stainless steel |

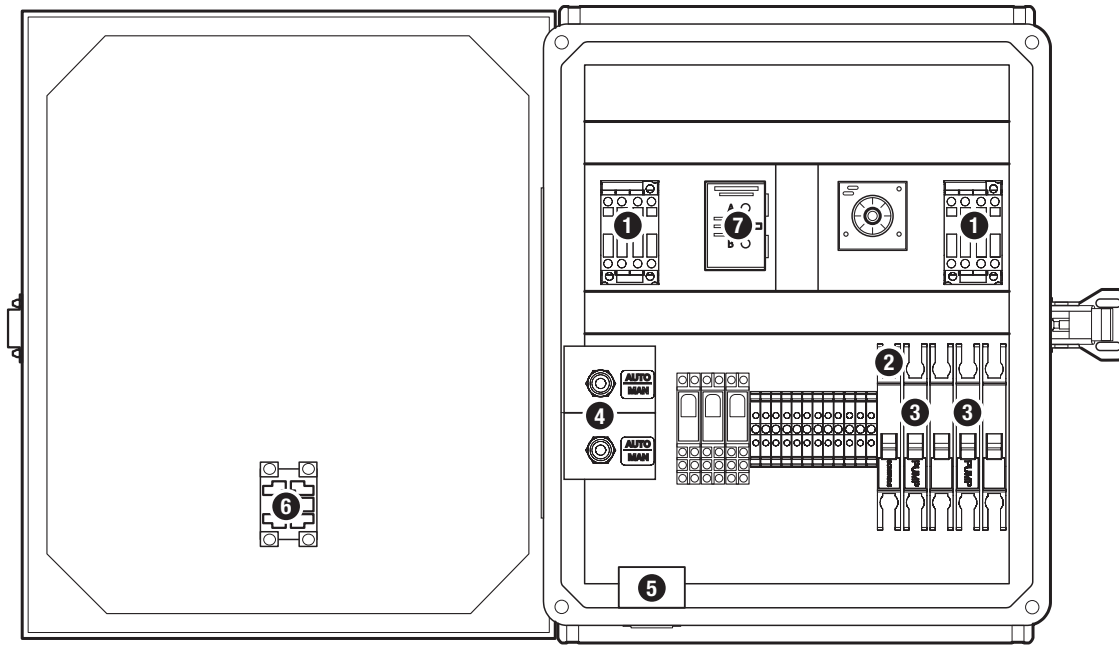
Specifications

Panel Ratings

| | |
|-------|--|
| DAX1: | 120 V, 1 hp, 16 amps, single phase, 60 Hz. |
| DAX2: | 240 V, 3 hp, 16 amps, single phase, 60 Hz. |

Dimensions

| | |
|------------------|------------|
| Height, in. (mm) | 15.5 (394) |
| Width, in. (mm) | 13.5 (343) |
| Depth, in. (mm) | 6.7 (170) |



Orenco® DAX2PTRO 240 V panel

Standard Components

| Feature | Specification(s) |
|--|--|
| 1. Motor-Start Contactor | 120 V, 16 FLA, 1 hp (0.75 kW), 60 Hz; 2.5 million cycles at FLA (10 million at 50% of FLA). 240 V, 16 FLA, 3 hp (2.24 kW), 60 Hz; 2.5 million cycles at FLA (10 million at 50% of FLA). |
| 2. Controls Circuit Breaker | 10 A, OFF/ON switch. Single-pole 120 V. DIN rail mounting with thermal magnetic tripping characteristics. |
| 3. Pump Circuit Breakers | 20 A, OFF/ON switch. Single-pole 120 V or double-pole 240 V. DIN rail mounting with thermal magnetic tripping characteristics. |
| 4. Toggle Switches | 20 A, 1hp (0.75 kW). Single-pole, double-throw HOA switch, |
| 5. Audible Alarm | 95 dB at 24 in. (610 mm), warble-tone sound. |
| 6. Visual Alarm | 7/8-in. (22-mm) diameter red lens, "Push-to-silence." UL Type 4X rated, 1 W LED light, 120 V. |
| 7. Duplex Alternator | 120 V. Cross-wired style for independent lag pump function. Selector switch for locking one pump into lead position. |
| Audible Alarm Silence Relay (Not shown) | 120 V. Automatic reset. DIN rail mount. |

Optional Features

| Feature | Specification(s) | 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 | 120 V. Repeat cycle from 0.05 seconds to 30 hours. Separate variable controls for OFF & ON time periods. | PT |
| Redundant Off Relay | 120 V. Provides a secondary off. Sounds alarm on low level condition. DIN rail mount. | RO |
| Elapsed Time Meter | 120 V, 7-digit, non-resettable. Limit of 99,999 hours; accurate to 0.01 hours. | ETM |
| Event Counter | 120 V, 6-digit, non-resettable. | CT |
| Heater | Anti-condensation heater. Self-adjusting: radiates additional wattage as temperature drops. | HT |
| Surge Arrestor | Status light on unit; protects incoming power supply from electrical surges. | SA |
| Pump Run Light | 7/8-in. (22-mm) diameter green lens. UL Type 4X rated, 1 W LED light, 120 V. | PRL |
| Power Light | 7/8-in. (22-mm) diameter green lens. UL Type 4X rated, 1 W LED light, 120 V. | PL |

PF-Series Submersible Effluent Pumps: 1-Phase, 60-Hz, 4-inch (100-mm)

Applications

Our PF-Series 4-inch (100-mm) Submersible Effluent Pumps are designed to transport screened effluent (with low TSS counts) from septic tanks or dosing tanks. These pumps are constructed of light-weight, corrosion-resistant stainless steel and engineered plastics, and are field-serviceable and repairable with common tools. They're also CSA- and UL-certified to U.S. and Canadian safety standards for effluent pumps.

PF-Series pumps are used in a variety of applications, including pressurized drainfields, packed-bed filters, mounds, aerobic units, effluent irrigation, liquid-only (effluent) sewers, wetlands, lagoons, and more. These pumps are designed to be used with a Biotube® pump vault or after a secondary treatment system.



Features/Specifications

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

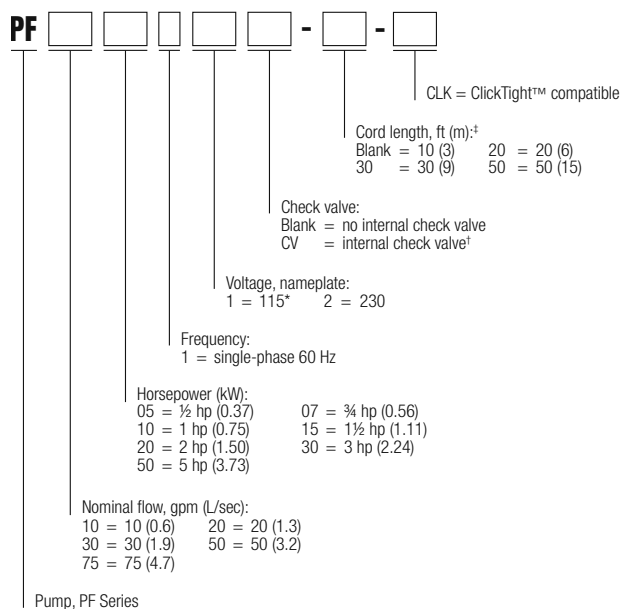
- Minimum 24-hour run-dry capability (liquid end) with no deterioration in pump life or performance*
- 1/8-inch (3-mm) bypass orifice to ensure flow recirculation for motor cooling and to prevent air bind
- Liquid-end repair kits available for better long-term cost of ownership
- TRI-SEAL™ floating impeller design on 10, 20, and 30 gpm (0.6, 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 (model PF751512 uses 14 AWG, SJ00W, 300-V cord)

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

Standard Models

See specifications chart on page 2 for a list of standard pumps. For a complete list of available pumps, call Orenco.

Product Code Diagram



* ½-hp (0.37 kW) only

[†] Available for 10 gpm (0.6 L/sec), 1/2 hp (0.37 kW)

[‡] Note: 20-ft cords are available only for pumps through 1½ hp

Specifications

| Pump Model | Design gpm (L/sec) | Horsepower (kW) | Phase | Nameplate voltage | Actual voltage | Design flow amps | Max amps | Discharge size and material ¹ | Length in. (mm) | Min. liquid level in. (mm) | Weight lb (kg) | Rated cycles per day |
|-----------------------------|-----------------------|--------------------|-------|----------------------|-------------------|---------------------|----------|---|--------------------|-------------------------------|-------------------|-------------------------|
| PF100511 ⁹ | 10 (0.6) | 0.50 (0.37) | 1 | 115 | 120 | 12.7 | 12.7 | 1 ¼ in. GFP | 23.0 (660) | 16 (406) | 26 (12) | 300 |
| PF100511CV ⁹ | 10 (0.6) | 0.50 (0.37) | 1 | 115 | 120 | 12.7 | 12.7 | 1 ¼ in. GFP | 23.0 (660) | 16 (406) | 26 (12) | 300 |
| PF100512 ⁹ | 10 (0.6) | 0.50 (0.37) | 1 | 230 | 240 | 6.3 | 6.3 | 1 ¼ in. GFP | 23.0 (660) | 16 (406) | 26 (12) | 300 |
| PF100712 ^{4,5,9} | 10 (0.6) | 0.75 (0.56) | 1 | 230 | 240 | 8.3 | 8.3 | 1 ¼ in. GFP | 25.9 (658) | 17 (432) | 30 (14) | 300 |
| PF101012 ^{5,6,9} | 10 (0.6) | 1.00 (0.75) | 1 | 230 | 240 | 9.6 | 9.6 | 1 ¼ in. GFP | 27.9 (709) | 18 (457) | 33 (15) | 100 |
| PF200511 ⁹ | 20 (1.3) | 0.50 (0.37) | 1 | 115 | 120 | 12.3 | 12.5 | 1 ¼ in. GFP | 22.3 (566) | 18 (457) | 25 (11) | 300 |
| PF200512 ⁹ | 20 (1.3) | 0.50 (0.37) | 1 | 230 | 240 | 6.4 | 6.5 | 1 ¼ in. GFP | 22.5 (572) | 18 (457) | 26 (12) | 300 |
| PF201012 ^{4,5,9} | 20 (1.3) | 1.00 (0.75) | 1 | 230 | 240 | 10.5 | 10.5 | 1 ¼ in. GFP | 28.4 (721) | 20 (508) | 33 (15) | 100 |
| PF201512 ^{4,5} | 20 (1.3) | 1.50 (1.11) | 1 | 230 | 240 | 12.4 | 12.6 | 1 ¼ in. GFP | 34.0 (864) | 24 (610) | 41 (19) | 100 |
| PF300511 ⁹ | 30 (1.9) | 0.50 (0.37) | 1 | 115 | 120 | 11.8 | 11.8 | 1 ¼ in. GFP | 21.3 (541) | 20 (508) | 28 (13) | 300 |
| PF300512 ⁹ | 30 (1.9) | 0.50 (0.37) | 1 | 230 | 240 | 6.2 | 6.2 | 1 ¼ in. GFP | 21.3 (541) | 20 (508) | 25 (11) | 300 |
| PF300712 ⁹ | 30 (1.9) | 0.75 (0.56) | 1 | 230 | 240 | 8.5 | 8.5 | 1 ¼ in. GFP | 24.8 (630) | 21 (533) | 29 (13) | 300 |
| PF301012 ^{4,9} | 30 (1.9) | 1.00 (0.75) | 1 | 230 | 240 | 10.4 | 10.4 | 1 ¼ in. GFP | 27.0 (686) | 22 (559) | 32 (15) | 100 |
| PF301512 ^{4,5} | 30 (1.9) | 1.50 (1.11) | 1 | 230 | 240 | 12.6 | 12.6 | 1 ¼ in. GFP | 32.8 (833) | 24 (610) | 40 (18) | 100 |
| PF302012 ^{5,6,7} | 30 (1.9) | 2.00 (1.49) | 1 | 230 | 240 | 11.0 | 11.0 | 1 ¼ in. SS | 35.5 (902) | 26 (660) | 44 (20) | 100 |
| PF303012 ^{5,6,7,8} | 30 (1.9) | 3.00 (2.23) | 1 | 230 | 240 | 16.8 | 16.8 | 1 ¼ in. SS | 44.5 (1130) | 33 (838) | 54 (24) | 100 |
| PF305012 ^{5,6,7,8} | 30 (1.9) | 5.00 (3.73) | 1 | 230 | 240 | 25.6 | 25.8 | 1 ¼ in. SS | 66.5 (1689) | 53 (1346) | 82 (37) | 100 |
| PF500511 ⁹ | 50 (3.2) | 0.50 (0.37) | 1 | 115 | 120 | 12.1 | 12.1 | 2 in. SS | 20.3 (516) | 24 (610) | 27 (12) | 300 |
| PF500512 ⁹ | 50 (3.2) | 0.50 (0.37) | 1 | 230 | 240 | 6.2 | 6.2 | 2 in. SS | 20.3 (516) | 24 (610) | 27 (12) | 300 |
| PF500712 ⁹ | 50 (3.2) | 0.75 (0.56) | 1 | 230 | 240 | 8.5 | 8.5 | 2 in. SS | 23.7 (602) | 25 (635) | 31 (14) | 300 |
| PF501012 ⁹ | 50 (3.2) | 1.00 (0.75) | 1 | 230 | 240 | 10.1 | 10.1 | 2 in. SS | 27.0 (686) | 26 (660) | 35 (16) | 100 |
| PF501512 ⁴ | 50 (3.2) | 1.50 (1.11) | 1 | 230 | 240 | 12.5 | 12.6 | 2 in. SS | 32.5 (826) | 30 (762) | 41 (19) | 100 |
| PF503012 ^{4,5,7,8} | 50 (3.2) | 3.00 (2.23) | 1 | 230 | 240 | 17.7 | 17.7 | 2 in. SS | 43.0 (1092) | 37 (940) | 55 (25) | 100 |
| PF505012 ^{5,6,7,8} | 50 (3.2) | 5.00 (3.73) | 1 | 230 | 240 | 26.2 | 26.4 | 2 in. SS | 65.4 (1661) | 55 (1397) | 64 (29) | 100 |
| PF751012 ⁹ | 75 (4.7) | 1.00 (0.75) | 1 | 230 | 240 | 9.9 | 10.0 | 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 | 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.
- ⁹ ClickTight™ compatible.

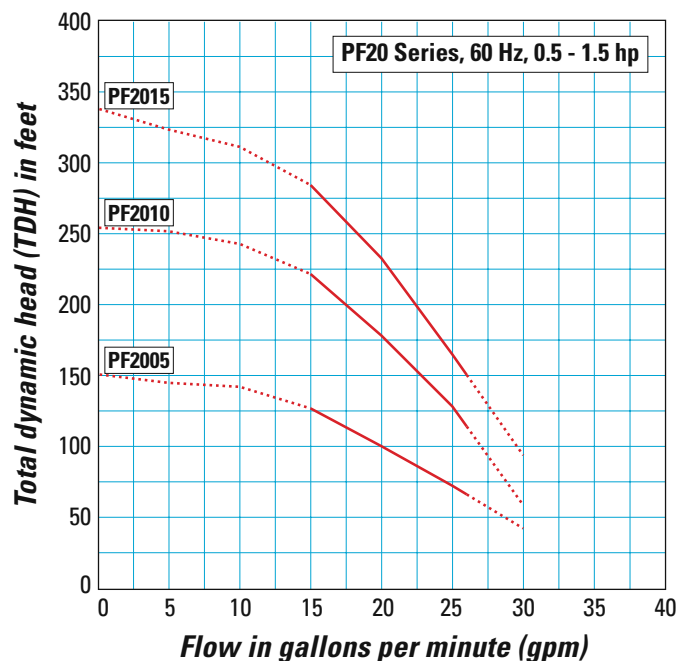
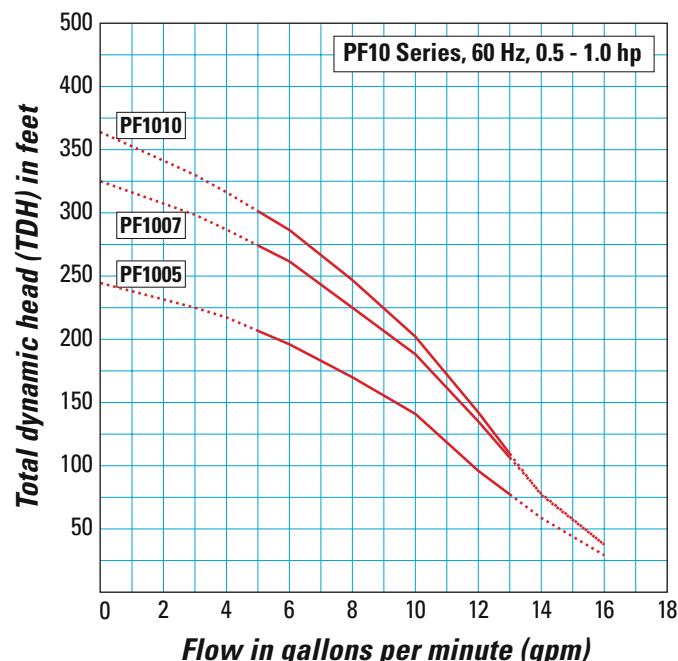
Materials of Construction

| | |
|--------------------|---|
| 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-in. 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 are equipped with surge arrestors for added security. Single-phase motors through 1.5 hp (1.11 kW) have built-in thermal over-load protection, which trips at 203-221° F (95-105° C). |

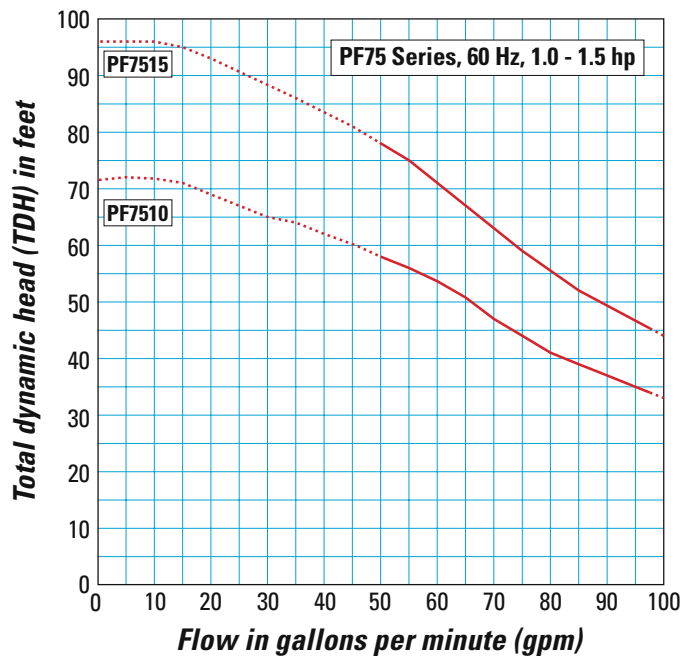
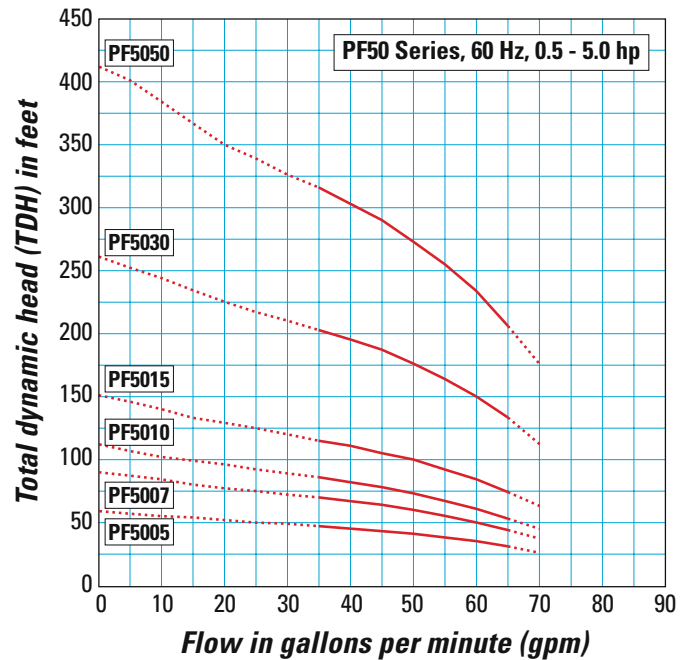
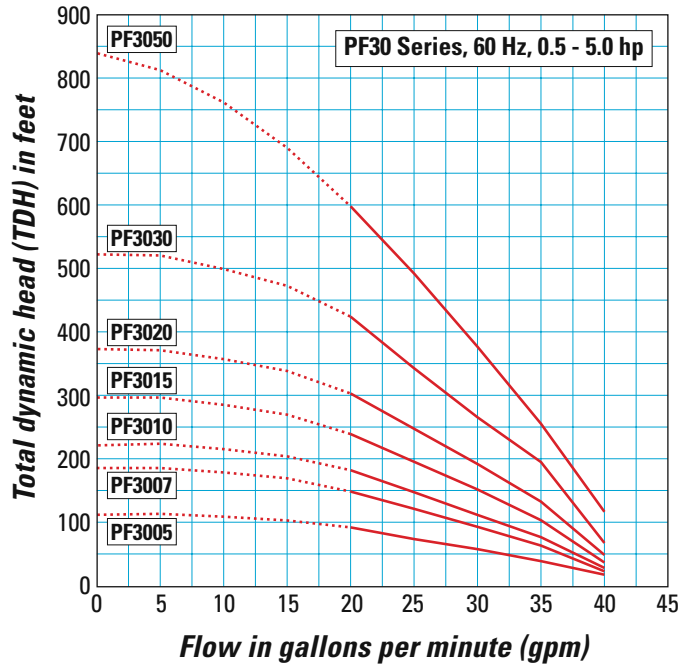
Using a Pump Curve

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



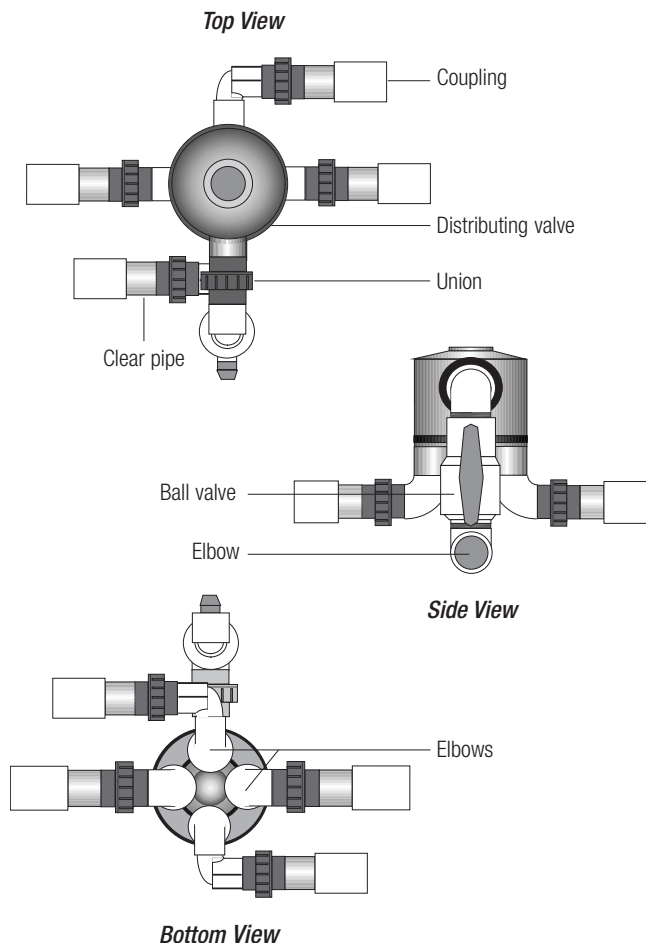
Pump Curves, cont.



Distributing Valves

Applications

Automatic Distributing Valve Assemblies are used to pressurize multiple zone distribution systems including textile filters, sand filters and drainfields.



General

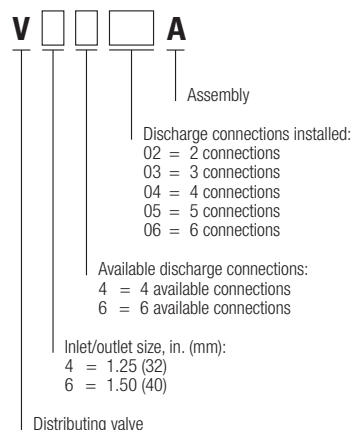
Orenco's Automatic Distributing Valve Assemblies are mechanically operated and sequentially redirect the pump's flow to multiple zones or cells in a distribution field. Valve actuation is accomplished by a combination of pressure and flow. They allow the use of smaller horsepower pumps on large sand filters and drainfields. For example, a large community drainfield requiring 300 gpm (18.90L/sec) can use a six-line valve assembly to reduce the pump flow rate requirement to only 50 gpm (3.14L/sec).

Orenco only warrants Automatic Distributing Valves when used in conjunction with High-Head Effluent Pumps with Biotube® pump vaults to provide pressure and flow requirements, and to prevent debris from fouling valve operation. An inlet ball valve, a section of clear pipe, and a union for each outlet are provided for a complete assembly that is easy to maintain and monitor. Ideal valve location is at the high point in the system. Refer to Automatic Distributing Valve Assemblies (NTP-VA-1) for more information.

Standard Models

V4402A, V4403A, V4404A, V4605A, V4606A, V6402A, V6403A, V6404A, V6605A, V6606A.

Product Code Diagram



Materials of Construction

| | |
|--------------|------------------------------------|
| All Fittings | Sch. 40 PVC per ASTM specification |
| Unions | Sch. 80 PVC per ASTM specification |
| Ball Valve | Sch. 40 PVC per ASTM specification |
| Clear Pipe | Sch. 40 PVC per ASTM specification |

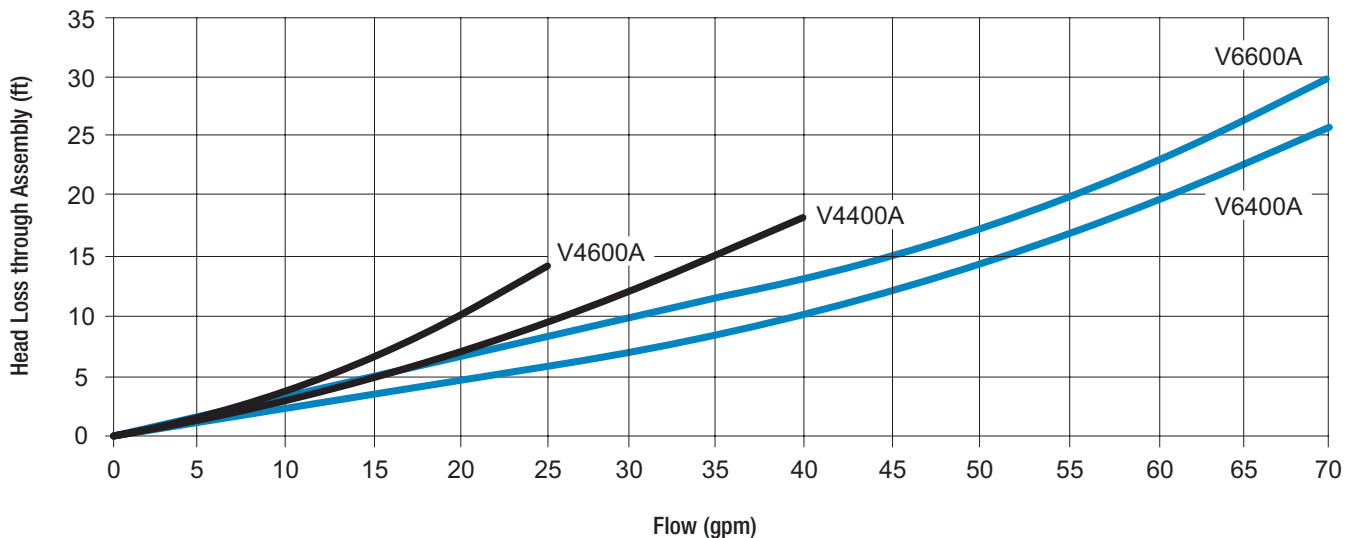
Specifications

| Model | Inlet Size, in. (mm) | Outlets Size, in. (mm) | Flow Range, gpm (L/sec) | Max Head, ft (m) | Min. Enclosure* |
|--------|----------------------|------------------------|-------------------------|------------------|-----------------|
| V4402A | 1.25 (32) | 1.25 (32) | 10 – 40 (0.63 – 2.52) | 170 (51.816) | VB1217 |
| V4403A | 1.25 (32) | 1.25 (32) | 10 – 40 (0.63 – 2.52) | 170 (51.816) | VB1217 |
| V4404A | 1.25 (32) | 1.25 (32) | 10 – 40 (0.63 – 2.52) | 170 (51.816) | VB1217 |
| V4605A | 1.25 (32) | 1.25 (32) | 10 – 40 (0.63 – 2.52) | 170 (51.816) | RR2418 |
| V4606A | 1.25 (32) | 1.25 (32) | 10 – 40 (0.63 – 2.52) | 170 (51.816) | RR2418 |
| V6402A | 1.50 (38) | 1.50 (38) | 15 – 100 (0.95 – 6.31) | 345 (105.16) | RR2418 |
| V6403A | 1.50 (38) | 1.50 (38) | 15 – 100 (0.95 – 6.31) | 345 (105.16) | RR2418 |
| V6404A | 1.50 (38) | 1.50 (38) | 15 – 100 (0.95 – 6.31) | 345 (105.16) | RR2418 |
| V6605A | 1.50 (38) | 1.50 (38) | 15 – 100 (0.95 – 6.31) | 345 (105.16) | RR2418 |
| V6606A | 1.50 (38) | 1.50 (38) | 15 – 100 (0.95 – 6.31) | 345 (105.16) | RR2418 |

* When using an enclosed basin, choose the next larger-sized diameter.

Table 1. Automatic Distributing Valve Assembly Headloss Equations

| Model Series | Equation | Operating Range, gpm (L/sec) |
|--------------|---|------------------------------|
| V4400A | $H_L = 0.085 \times Q^{1.45}$ | 10 - 40 (0.63 – 2.52) |
| V4600A | $H_L = 0.085 \times Q^{1.58}$ | 10 - 25 (0.63 – 1.57) |
| V6400A | $H_L = 0.0045 \times Q^2 + 3.5 \times (1 - e^{-0.06Q})$ | 15 - 70 (0.95 – 4.42) |
| V6600A | $H_L = 0.0049 \times Q^2 + 5.5 \times (1 - e^{-0.1Q})$ | 15 - 70 (0.95 – 4.42) |



AdvanTex® AX100 Textile Filter

Applications

Orenco's AdvanTex® AX100 Treatment System is an innovative technology for onsite treatment of domestic-strength wastewater. The heart of the system is the AdvanTex Filter, a sturdy, watertight fiberglass basin filled with an engineered textile material. This lightweight, highly absorbent textile material treats a tremendous amount of wastewater in a small space. AX100 Treatment Systems are ideal for:

- New construction
- System upgrades and repairs
- Small sites
- Poor soils
- Pretreatment
- Nitrogen reduction
- Price-sensitive markets

For sizing, see AdvanTex® Design Criteria (NDA-ATX-COMM-1-PKG).



The heart of the AdvanTex® AX100 Treatment System is this sturdy, watertight fiberglass basin filled with an engineered textile material.

Features/Specifications

To specify this product, require the following:

- Wastewater treatment to better than secondary treatment standards
- Consistent treatment, even during peak flows
- Timer operation for flow monitoring, flow modulation, and surge control
- Fixed-film, engineered textile media, operated in an unsaturated condition
- Consistent media quality
- Low energy consumption
- Low maintenance requirements
- Complete pre-manufactured package, ready to install
- Watertight construction, corrosion-proof materials, and components
- Foam-core lid provides insulation value of R-6 (RSI-1.1)
- Quiet operation

Standard Model

AX100

Specifications**

| | |
|---|------------|
| Length, in. (mm) | 191 (4851) |
| Width, in. (mm) | 94 (2388) |
| Height, in. (mm) | 42 (1067) |
| Area (footprint), ft ² (m ²) | 128 (11.9) |
| Dry Weight, lb (kg) | 1616 (733) |

* Covered by U.S. patent numbers 6,540,920; 6,372,137; 5,531,894; 5,480,561; 5,360,556

** Nominal values provided. See AdvanTex® Treatment System drawings for exact dimensions.

AdvanTex[®] Vent Fan Assembly

Applications

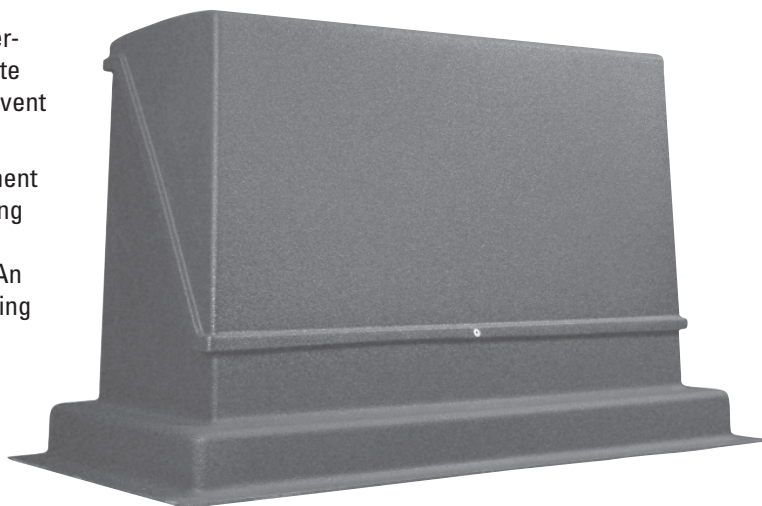
Oreco's AdvanTex[®] Vent Fan Assembly consists of a water-proof fiberglass enclosure with equipment for venting onsite wastewater treatment systems. One enclosure can hold a vent fan with carbon filter and an optional heater.

The vent fan is used in commercial-sized AdvanTex Treatment Systems to gently pull air through the textile media, ensuring that adequate oxygen is available for biological treatment. The carbon filter scrubs the air that the system exhausts. An optional heater can be added where climate requires heating of the air that enters the AdvanTex textile filter pods.

Standard Models

AXVFACF — AX above ground Vent Fan Assembly with LMF-3 Fan

AXVFACF-HT — AX above ground Vent Fan Assembly with LMF-3 Fan and HT10 Heater



Enclosure

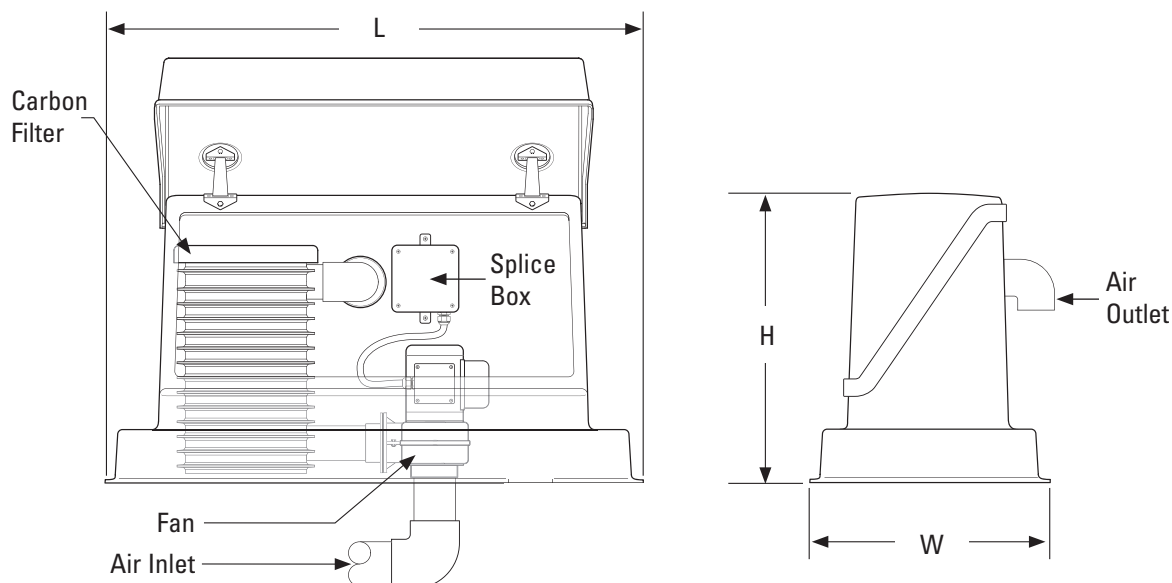
Physical Specifications

Materials of Construction

| | |
|-----------------|---------------------------------------|
| Shell | Fiberglass-reinforced polyester (FRP) |
| Hardware | Stainless steel |
| Exterior finish | Green, textured, UV resistant |
| Straps | Nylon |

Dimensions

| | |
|------------------|---|
| Length (L) | 50 in. (1270 mm) |
| Width (W) | 24 in. (610 mm) |
| Height (H) | 30 in. (762 mm) |
| Volume | 15.1 ft ³ (0.43 m ³) |
| Area (footprint) | 8.3 ft ² (0.77 m ²) |



AdvanTex® Vent Fan Assembly (continued)

Fan

Physical Specifications

Dimensions

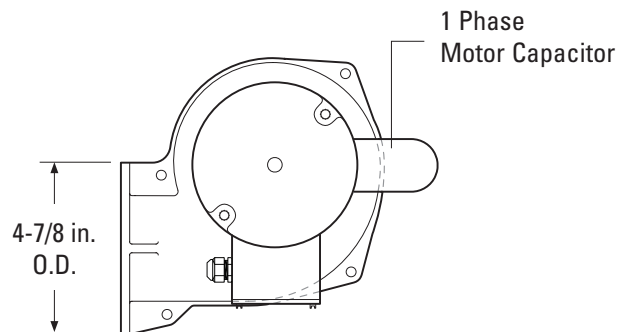
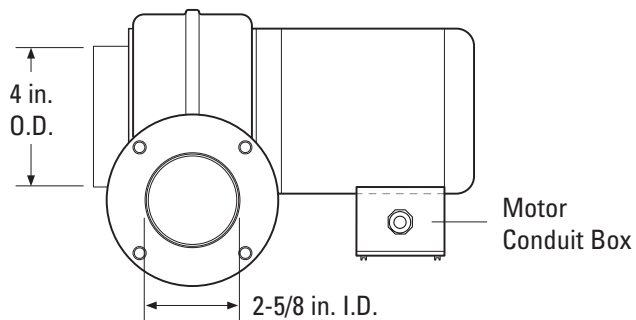
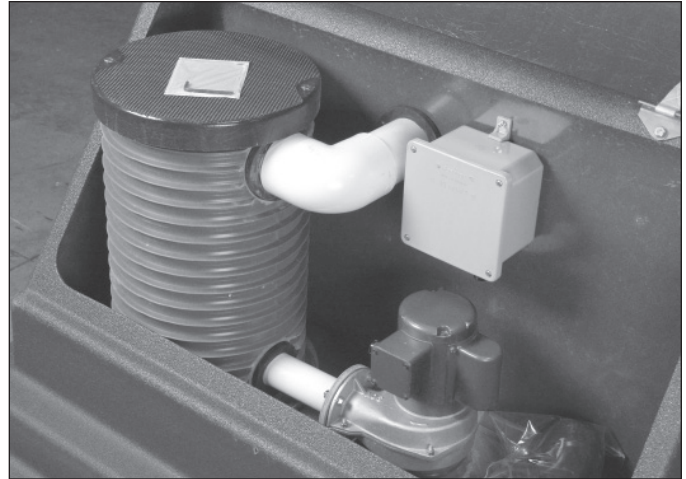
| | |
|-------------------------|--------------------|
| Inlet O.D. | 4 in. (100 mm) |
| Inlet nominal pipe size | 4 in. (100 mm) |
| Outlet I.D. | 2-5/8 in. (67 mm) |
| Outlet Flange O.D. | 4-7/8 in. (124 mm) |

Materials of Construction

| | |
|---------|----------|
| Housing | Aluminum |
| Wheel | Steel |

Performance Data

| | 60 Hz | 50 Hz |
|--|----------------|----------------|
| Horsepower (kW) | 0.08 (0.06 kW) | 0.08 (0.06 kW) |
| Phase | 1 phase | 1 phase |
| Volts | 115/230 | 110/220 |
| Amperage | 1.4 A/0.7 A | 1.8 A/0.9 A |
| RPM | 3400 | 2900 |
| CFM at 0" H ₂ O static pressure | 245 | 205 |
| CFM at 0.4" H ₂ O static pressure | 220 | 170 |
| CFM at 0.8" H ₂ O static pressure | 190 | 130 |
| CFM at 1.5" H ₂ O static pressure | 120 | N/A |



AdvanTex® Vent Fan Assembly (continued)

Carbon Filter Basin

Physical Specifications

Dimensions

| | |
|-----------------|--------------------------------|
| Outlet diameter | Accepts nominal 3-in. PVC pipe |
| Inlet diameter | Accepts nominal 2-in. PVC pipe |
| Height | 21.5 in. (546 mm) |
| Diameter | 12 in. (305 mm) |

Materials of Construction

| | |
|-------------------|--|
| Housing | PVC |
| Bottom | Fiberglass-reinforced polyester (FRP) |
| Interior supports | Polypropylene grid and polyethylene screen |
| Support rings | PVC |
| Lid | Fiberglass |
| Fill material | Activated carbon |



Heater (Optional)

Physical Specifications

Dimensions

| | |
|--------------------------|---------------------------------------|
| Outlet diameter | Fits nominal 3-in. Class 125 PVC pipe |
| Length (inlet to outlet) | 11.75 in. (297 mm) |
| Width | 11.25 in. (286 mm) |
| Depth | 8.25 in. (210 mm) |

Performance Data

| | |
|-------|------|
| Watts | 1000 |
| Volts | 120 |
| Amps | 8.3 |



Miragrid® 22XT

Miragrid® 22XT geogrid is composed of high molecular weight, high tenacity polyester multifilament yarns woven in tension and finished with a PVC coating. Miragrid® 22XT geogrid is inert to biological degradation and resistant to naturally encountered chemicals, alkalis, and acids.

Miragrid 22XT geogrid is used as soil reinforcement in MSE structures such as segmental retaining walls, precast modular block walls, wire faced walls, geosynthetic wrapped faced walls and steepened slopes. Miragrid 22XT is also used in MSE stabilized platforms for voids bridging, embankments on soft soils, landfill veneer stability, reducing differential settlement and for foundation seismic stability.

TenCate Geosynthetics Americas is accredited by Geosynthetic Accreditation Institute – Laboratory Accreditation Program ([GAI-LAP](#)).

| MECHANICAL PROPERTIES | TEST METHOD | UNIT | MINIMUM AVERAGE ROLL VALUE |
|---|-----------------------|--|----------------------------|
| | | | MD |
| Tensile Strength @ Ultimate | ASTM D6637 (Method B) | lbs/ft (kN/m) | 20559 (300.0) |
| Tensile Strength @ 5% strain | ASTM D6637 (Method B) | lbs/ft (kN/m) | 6700 (97.8) |
| Mass/Unit Area ¹ | (ASTM D5261) | oz/yd ² (g/m ²) | 28.2 (956) |
| MINIMUM ROLL VALUE | | | |
| Creep Rupture Strength ² | ASTM D5262/D6992 | lbs/ft (kN/m) | 14277 (208.3) |
| Long Term Design Strength ³ | | lbs/ft (kN/m) | 12361 (180.4) |
| PHYSICAL PROPERTIES | | UNIT | ROLL CHARACTERISTIC |
| Roll Dimensions ⁴ (width x length) | | ft (m) | 12 x 200 (3.6 x 61) |
| Roll Area | | yd ² (m ²) | 267 (220) |
| Estimated Roll Weight | | lbs (kg) | 470 (213) |
| Label Roll Color | | | WHITE |

¹ Typical Value

² 75-year design life based on NTPEP Report [REGEO-2016-01-069](#).

³ Long Term Design Strength for sand, silt, clay. $RF_{CR} = 1.44$; $RF_{ID} = 1.05$; $RF_D = 1.1$
(Installation damage reduction factor for other soils available upon request).

⁴ Special order roll lengths are available upon request

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FGS000105
ETQR19



MYERS[®]
MODEL SRM4
4/10 HORSEPOWER
RESIDENTIAL SEWAGE PUMP



MYERS® MODEL SRM4

Residential Sewage Pump

The Right Choice

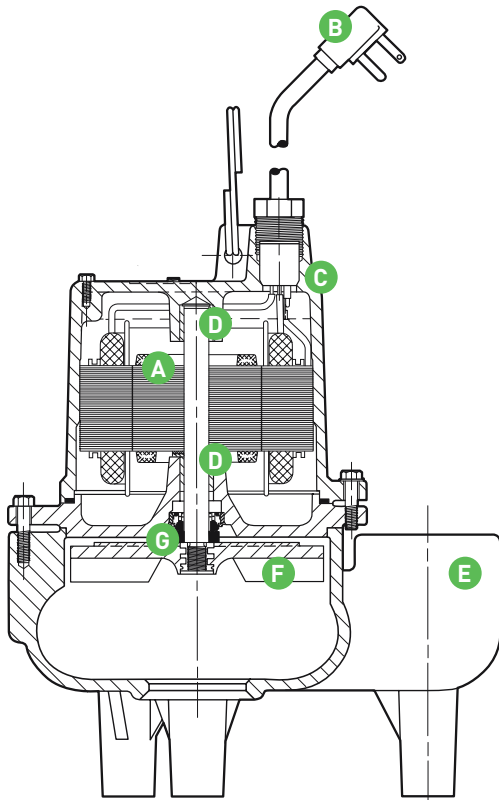
The SRM4 solids handling pump is the most reliable 4/10 horsepower residential sewage pump available today. The SRM4 is a plumbers/contractors dream! Its recessed impeller design allows 2" solids to pass freely through the volute without the chance of jamming the impeller. The SRM4 series pump has a national field-proven record of reliability. Look to your Myers distributor for the answer to your residential sewage handling needs ... and across the counter will be the Myers mini solids handling, the SRM4. It works for you! For more information, call your Myers distributor today, or the Myers Ohio sales office at 419-289-6898.



| Product Capabilities | | |
|------------------------------|--------------------------------------|---------------|
| Capacities To | 95 gpm | 360 lpm |
| Heads To | 18 ft. | 5.5 m |
| | 19 ft. shutoff | 5.8 m |
| Pump Down Range Float Switch | 7 to 14 in. | 178 to 356 mm |
| Solids Handling Capacity | 2 in. | 50.8 mm |
| Liquids Handling | raw sewage, effluent, drain water | |
| Intermittent Liquid Temp. | up to 140°F | up to 60°C |
| Motor Electrical Data | 4/10 HP shaded pole 1650 RPM | |
| Electrical | 115V, 12A or 230V, 6A, 1Ø, 60 Hz. | |
| Acceptable pH Range | 6 – 9 | |
| Discharge, NPT | 2 in. | 50.8 mm |
| Min. Sump Diameter | 18 in. | 457 mm |
| | 30 in. | 762 mm |

Note: Consult factory for applications outside these recommendations.

Pump Features and Applications



A. 4/10 HP Motor

Pressed in place and oil-filled for best alignment and heat transfer. Built-in overload protection.

B. Power Cord

Quick-disconnect watertight fitting.

C. Motor Housing

Heavy cast iron for efficient heat transfer.

D. Dual Thrust Washers, Sleeve Bearings

Oil lubricated, enhance smooth operation and extend pump life..

E. Cast Iron Volute

Passes 2" diameter solids.

F. Recessed Impeller

Operates out of volute passage, allowing maximum flow of liquids and solids.

G. Mechanical Shaft Seal

Carbon and ceramic faces, body is stationary, prevents string or trash from winding on seal..

Mechanical Float Switch

Mercury-free, 90° angle operation. (Piggyback models only).

Durable Motor Will Deliver Many Years Of Reliable Service.

- Oil-filled motor for maximum heat dissipation and continuous bearing lubrication.
- Overload protected shaded pole motor eliminates starting switches.
- Recessed vortex impeller provides minimal radial loading for long bearing life.

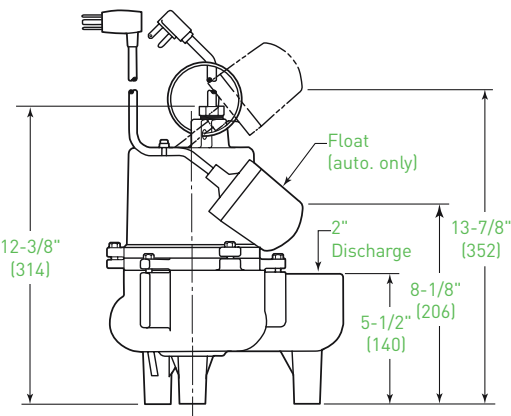
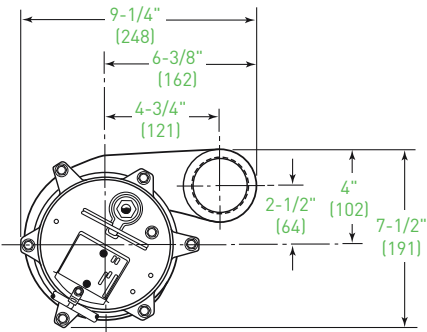
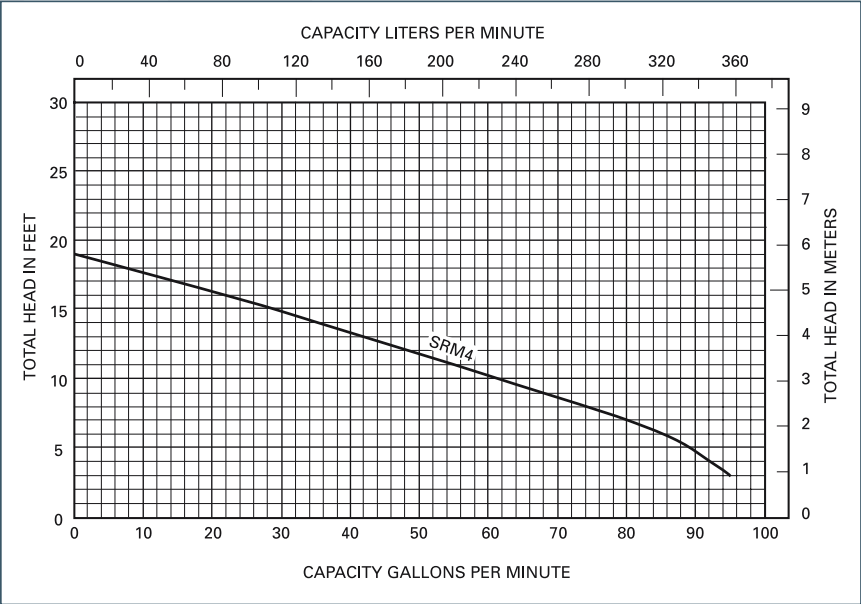
The SRM4P Is Engineered For Many Years Of Maintenance-Free Operation.

- Wide-angle piggy-back float switch for maximum draw down. (Automatic models.)
- Pump can be operated manually by unplugging piggy-back switch and plugging pump directly into outlet (Automatic models).
- Recessed vortex impeller operates completely out of volute and provides free flow through passage for solids and liquids.

Performance Data and Dimensions

[Dimensions in mm]

1650 RPM



740 EAST 9TH STREET,
ASHLAND, OHIO 44805
WWW.FEMYERS.COM

269 TRILLIUM DRIVE, KITCHENER,
ONTARIO, CANADA N2G 4W5
WWW.FEMYERS.COM

Because we are continuously improving our products and services, Pentair reserves the right to change specifications without prior notice.
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January 13, 2023

David T. Bray, PLS
President
Caputo & Wick LTD
1150 Pawtucket Ave.
Rumford, RI 02916-1897
Phone: (401) 434-8880

RE: Burlingame State Park and Camp Ground, Charlestown, RI

Dear Mr. Bray:

This letter will confirm that you have been trained and certified to design GST™ Leaching Systems by Geomatrix Systems, LLC ("Geomatrix") in the State of Rhode Island.

This letter also confirms that Geomatrix has reviewed the design of the GST Leaching System proposed for installation at Burlingame State Park and Camp Ground, Charlestown, RI and found the site and design to be suitable and in compliance with the approved design manuals for the aforementioned product.

If you have any questions, please contact me.

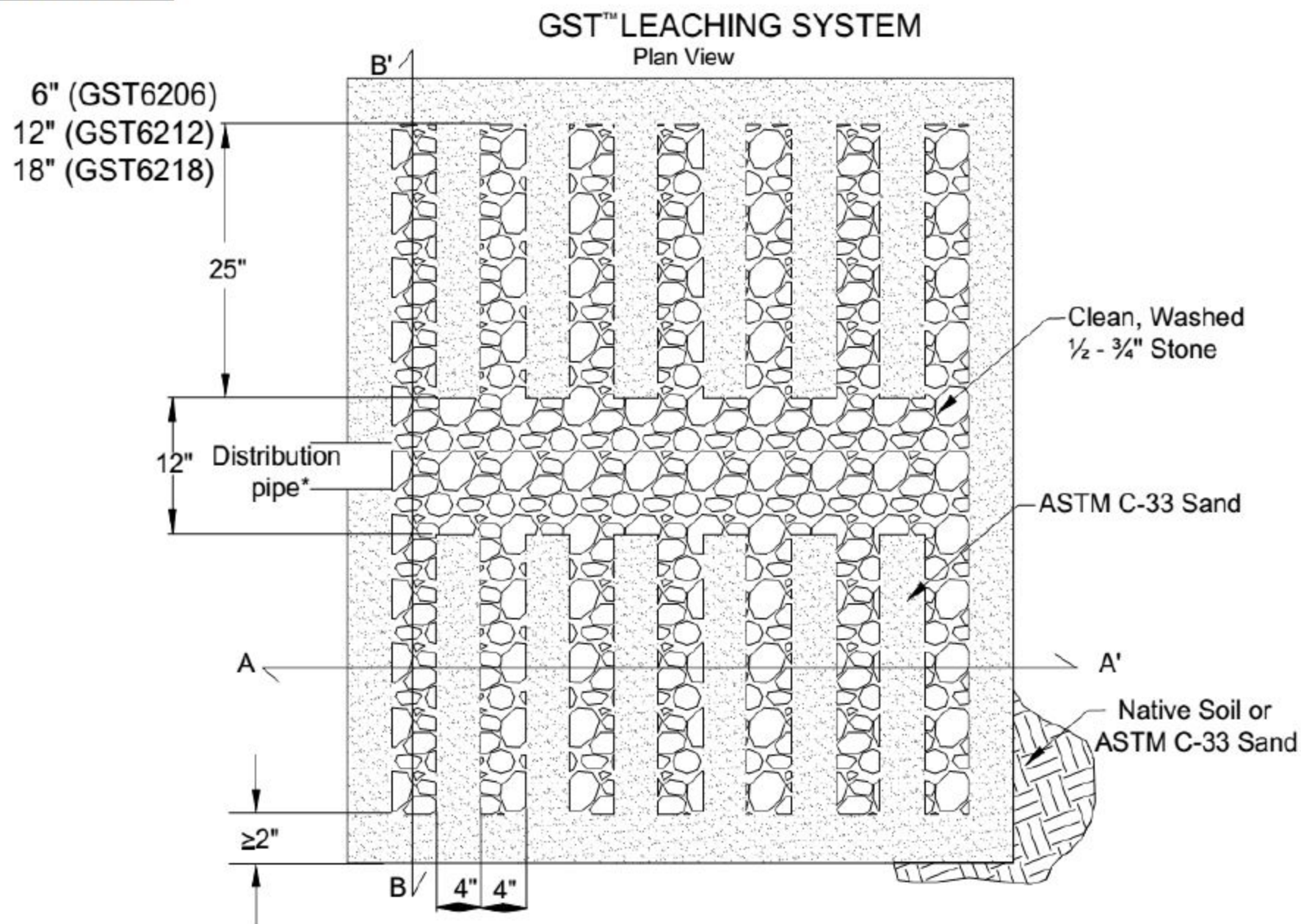
Sincerely,
GEOMATRIX SYSTEMS, LLC

A handwritten signature in black ink, appearing to read "David Jewett". The signature is fluid and cursive, with a long horizontal stroke extending from the end.

David Jewett

Geomatrix Systems, LLC
114 Mill Rock Road East - Old Saybrook, CT 06475
Phone: 860-510-0730 – Fax: 860-510-0735

GST Schematics



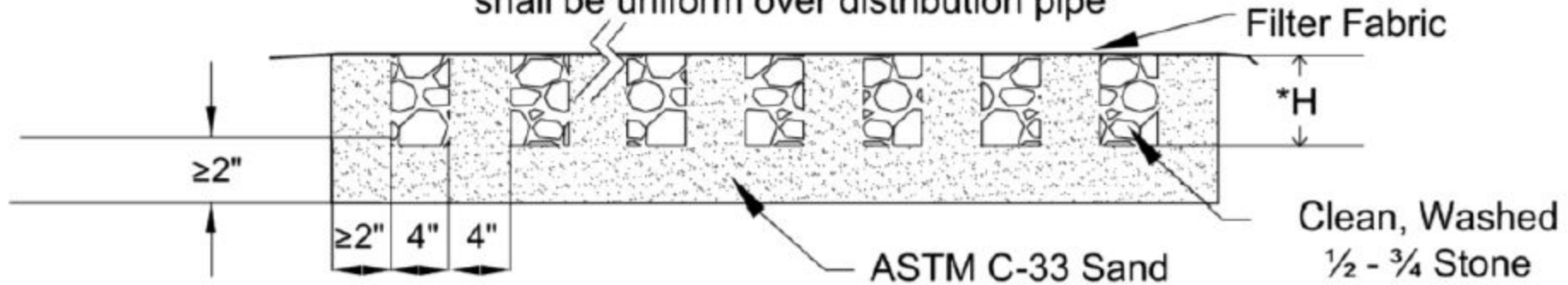
* Distribution pipe for gravity systems shall comply with RIDEM OWTS Rule 6.34C
Distribution pipe for pressure applications shall comply with RIDEM Guidelines for the Design, Use and Maintenance of Pressurized Drainfields.

GEOMATRIX GST™ LEACHING SYSTEM

A-A' CROSS SECTION

Finished Grade shall be pitched to sheet flow
stormwater away from system

Cover material depth shall be 6-30" and
shall be uniform over distribution pipe



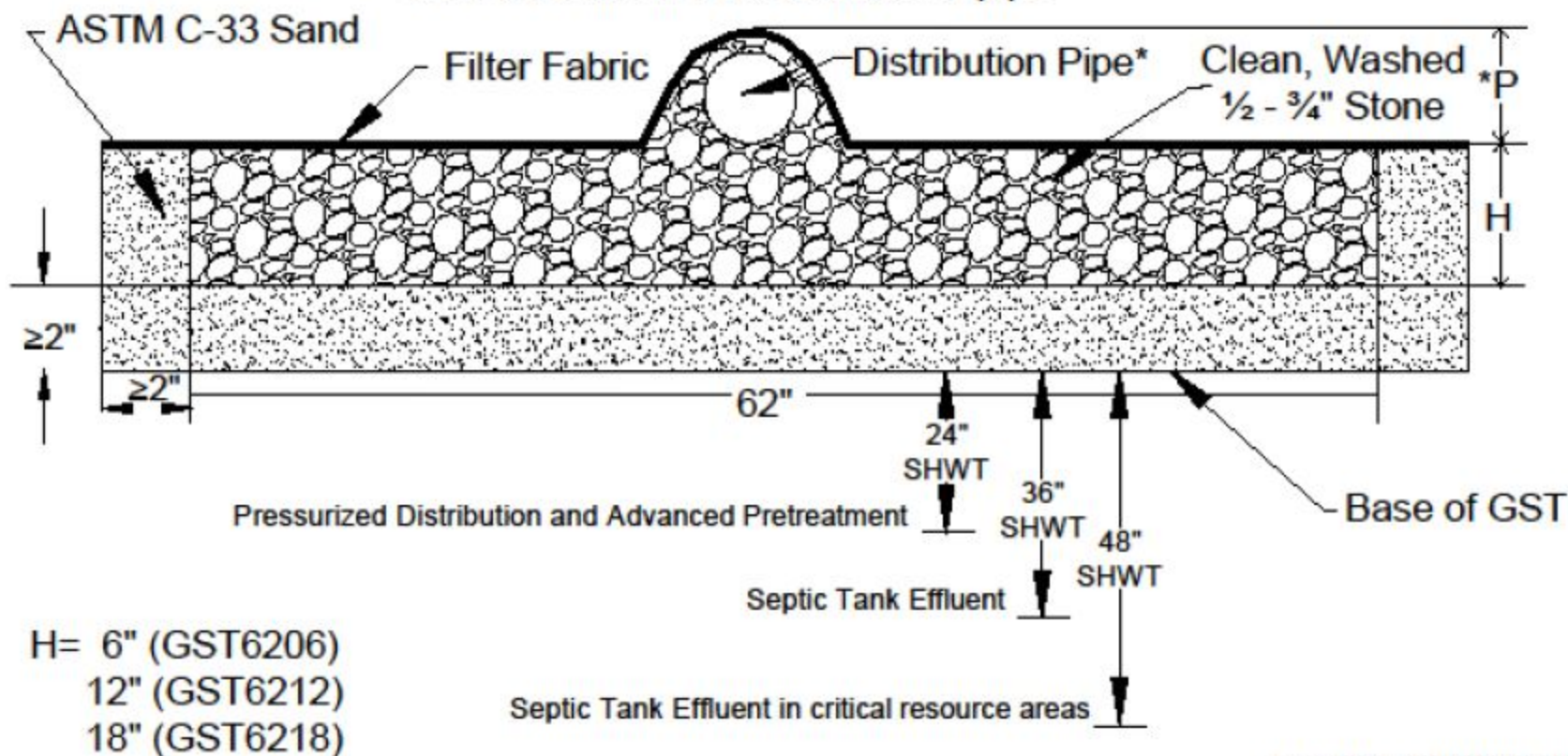
*H= 6" (GST6206)
12" (GST6212)
18" (GST6218)

GST™ LEACHING SYSTEM

B-B' CROSS SECTION

Finished Grade shall be pitched to sheet flow
stormwater away from system

Cover material depth shall be 6-30" and
shall be uniform over distribution pipe



* Distribution pipe for gravity applications shall comply with RIDEM OWTS Rule 6.34C
Distribution pipe for pressure applications shall comply with RIDEM Guidelines for the
Design, Use and Maintenance of Pressurized Drainfields

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patents: www.geomatrixsystems.com

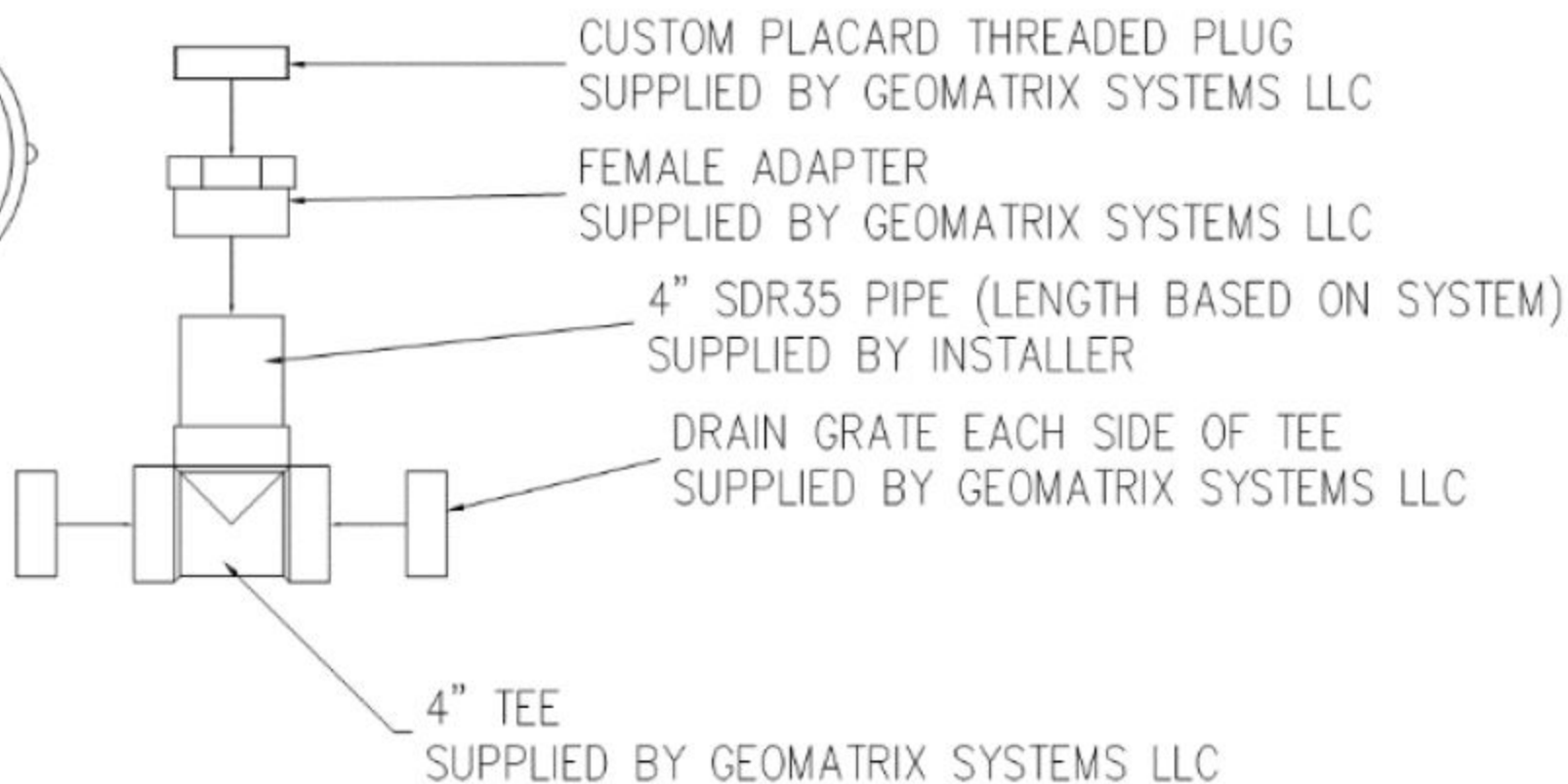
GST LEACHING SYSTEM

B-B' Cross Section

Geomatrix Systems, LLC., Old Saybrook, CT
860-510-0730

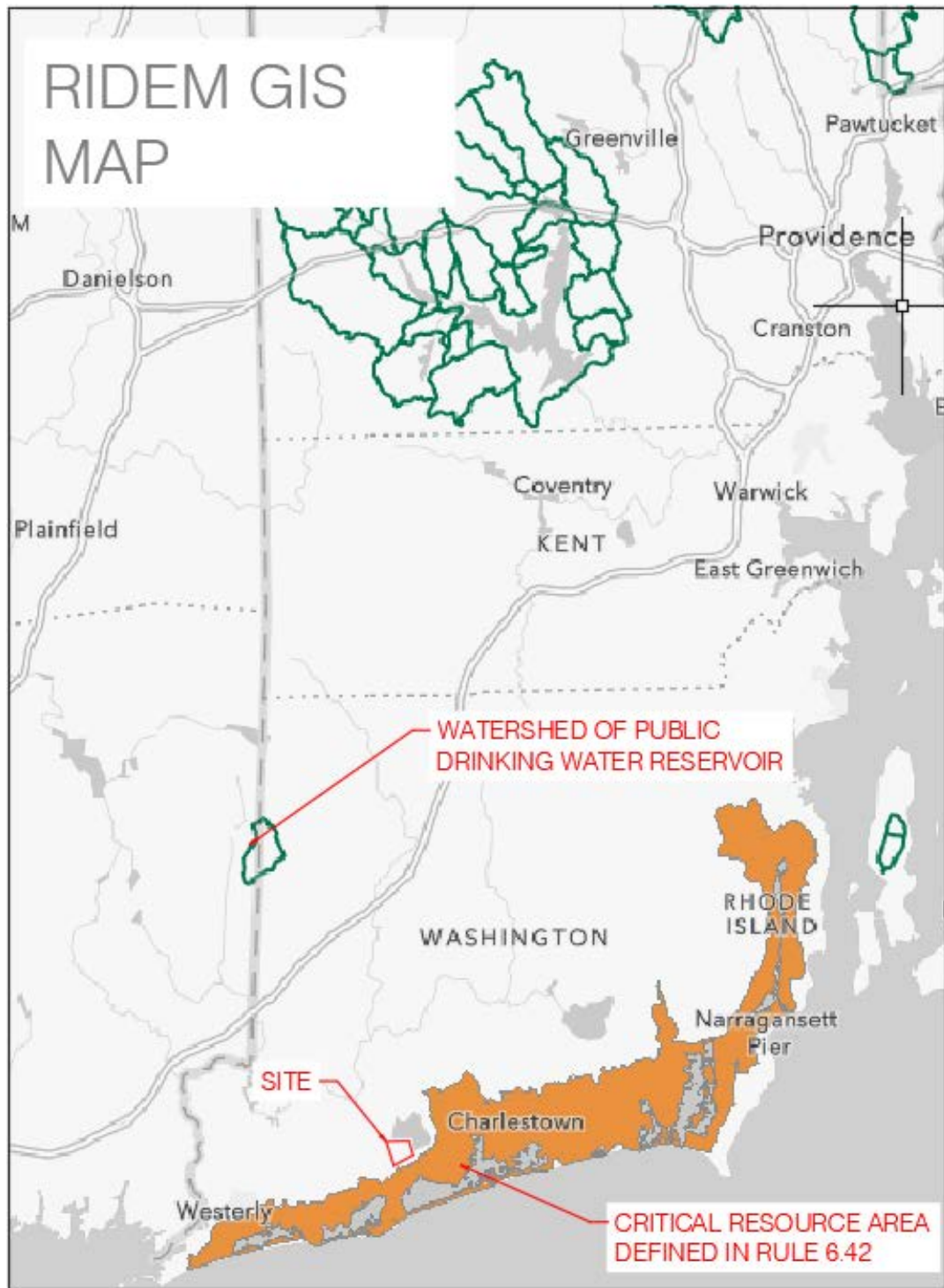
| | | | |
|-----------|----------|----------|------------------|
| SCALE | None | REV. | 0 |
| DATE | 9-4-2018 | ACAD No. | 040 GLS B-B'.DWG |
| DRAWN BY: | ERP | SHEET | 3 Of 3 |

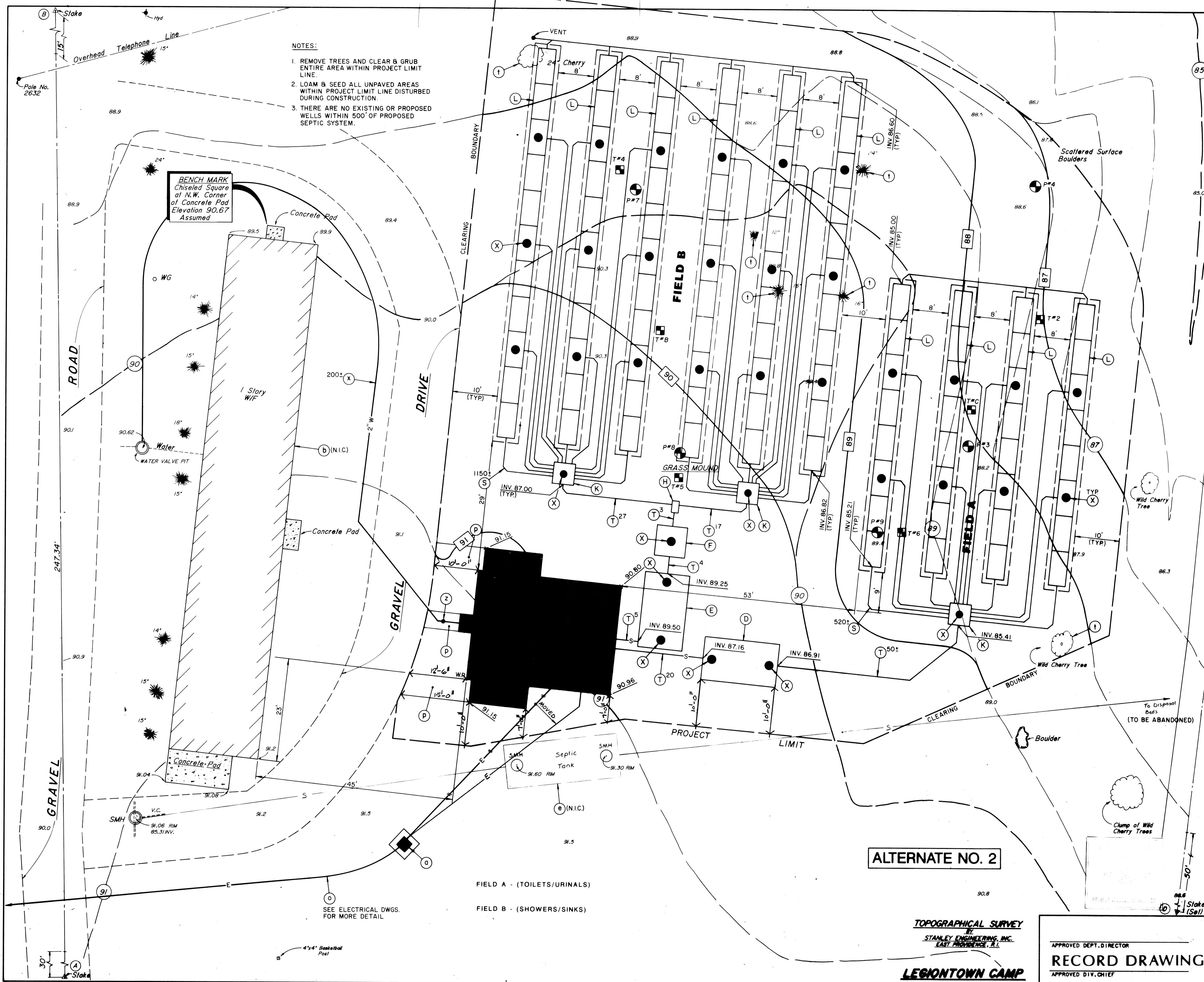
GEOMATRIX GST™ LEACHING SYSTEM INSPECTION PORT DETAIL



| GST LEACHING SYSTEM Inspection Port Detail Geomatrix Systems, LLC., Old Saybrook, CT 860-510-0730 | | | |
|--|----------|----------|-----------|
| SCALE | None | REV. | A |
| DATE | 6/2/2015 | ACAD No. | GSTIP.DWG |
| DRAWN BY: | ERP | SHEET | I OF I |

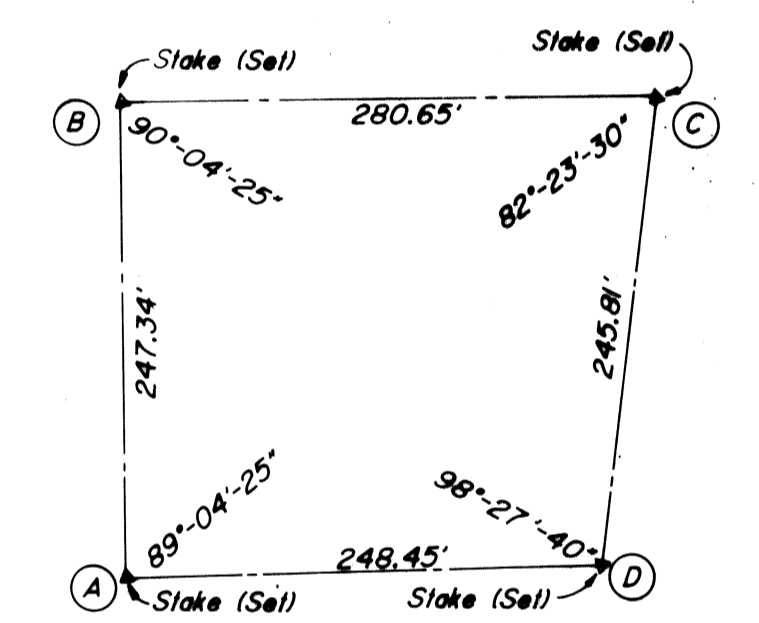
RIDEM GIS MAP





- NOTES:
1. REMOVE TREES AND CLEAR & GRUB ENTIRE AREA WITHIN PROJECT LIMIT LINE.
 2. LOAM & SEED ALL UNPAVED AREAS WITHIN PROJECT LIMIT LINE DISTURBED DURING CONSTRUCTION.
 3. THERE ARE NO EXISTING OR PROPOSED WELLS WITHIN 500' OF PROPOSED SEPTIC SYSTEM.

- LEGEND:
- 90 - EXISTING CONTOURS
 - SURVEY TRAVERSE LINE
 - SPRUCES TREE
 - SMH - SEWER MANHOLE
 - WG - WATER GATE
 - Δ SIK (Soil) - STAKE (Soil)



ROBERT HAIG ASSOCIATES
ARCHITECTS-PLANNERS-ENGINEERS
EAST PROVIDENCE, RI TAUNTON, MA

| REVISIONS | | | |
|-----------|------|-------|----|
| DATE | ITEM | CHECK | BY |
| | | | |
| | | | |
| | | | |

MAINTENANCE BUILDING AND
TOILET/SHOWER FACILITIES
BURLINGAME STATE PARK
CHARLESTOWN, RI

STATE OF RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
DIVISION OF PLANNING & DEVELOPMENT

SITE PLAN - LEGIONTOWN

| | | |
|------------------|-----------------|---------|
| DRAWN BY: M.W. | DATE: JULY 1991 | C1.5 |
| CHECKED BY: M.W. | SCALE: 1"=10' | 7 OF 90 |

TOPOGRAPHICAL SURVEY
STANLEY ENGINEERING, INC.
EAST PROVIDENCE, R.I.

LEGIONTOWN CAMP

APPROVED DEPT. DIRECTOR
RECORD DRAWING
APPROVED DIV. CHIEF

