ABBREVIATIONS

Ø	DIAMETER
AB	AGGREGATE BASE
ABDN	ABANDONED
AC	ACRE, ASPHALT CONCRETE
ACP	ASBESTOS CEMENT PIPE
ACM	ASBESTOS CONTAINING MATERIAL
AD	AREA DRAIN
AGG	AGGREGATE
ALGN	ALIGNMENT
ARV	AIR RELEASE VALVE
ASB	AGGREGATE SUBBASE
ASPH	ASPHALT
BC	BEGIN CURVE
BEG	BEGIN
BFP	BACK FLOW PREVENTER
BLDC	BUILDING CORNER
BLDG	BUILDING
BMP	BEST MANAGEMENT PRACTICES
BOD	BOTTOM OF DOCK
BOL	BOLLARD
BSW	BACK OF SIDEWALK
BVC	BEGIN VERTICAL CURVE
BW	FINISHED GRADE AT BOTTOM OF WALL
C	CONCRETE OR CIVIL
CB	CATCH BASIN
C&G	CURB AND GUTTER
CG&S/W	CURB, GUTTER & SIDEWALK
CI	CAST IRON OR CURB INLET
CIP	CAST IRON PIPE
CL	CENTERLINE
CLR	CLEAR
CLSM	CONTROLLED LOW-STRENGTH MATERIAL
CMN	COMMUNICATION
CMP	CORRUGATED METAL PIPE
CO	CLEAN OUT
CONC	CONCRETE
CONST	CONSTRUCTION OR CONSTRUCT
CONF	CONFORM TO EXISTING
CSC	CITY OF SANTA CLARA
CU	CUBIC
CY	CUBIC YARD
D=	DELTA (CURVE)
DCDA	DOUBLE CHECK DETECTOR ASSEMBLY
DEMO	DEMOLISH
DEPT	DEPARTMENT
DET	DETAIL
DI	DROP INLET, DUCTILE IRON
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DOM	DOMESTIC
DW	DOMESTIC WATER
DWG	DRAWING
E	EASTING COORDINATE, ELECTRIC
EC	END CURVE
EG	EXISTING GRADE
EL, ELEV	ELEVATION
ELEC	ELECTRICAL
EP	EDGE OF PAVEMENT
EVA	EMERGENCY VEHICLE ACCESS
EX,EXIST, (E)	EXISTING
(F)	FUTURE
FA	FIRE ALARM
F/C,FC	FACE OF CURB
FD	FOUND
FDC	FIRE DEPARTMENT CONNECTION
FF,FFE	FINISHED FLOOR ELEVATION
FG	FINISH GRADE
FH	FIRE HYDRANT
FIPT	FEMALE IRON PIPE THREAD
FL	FLOW LINE, FLANGE
FLG	FLANGE
FM	FLOWMETER/FORCE MAIN
FOUND	FOUNDATION
FS	FINISHED SURFACE
FT	FOOT, FEET
FW	FIRE WATER
G	GAS, GROUND ELEVATION
GB	GRADE BREAK
GI	GALVANIZED IRON
GRD, G	GROUND
GV	GATE VALVE
HMA	HOT MIX ASPHALT
HORIZ	HORIZONTAL
HT	HEIGHT
HP	HIGH POINT
INV	INVERT
INST	INSTALL
IRR	IRRIGATION
JP	JOINT POLE
JT	JOINT TRENCH
L	LEFT
L=	LENGTH (CURVE)
LF	LINEAR FEET
LAT	LATERAL
LIP	LIP OF GUTTER
LP	LIGHT POLE, LOW POINT
LPFH	FIRE HYDRANT
LS	LANDSCAPE
LSA	LANDSCAPE ARCHITECT
MA	MEDICAL AIR
MAX	MAXIMUM
MEP	MECHANICAL/ELECTRICAL/PLUMBING
MH	MANHOLE
MIN	MINIMUM
MIPT	MALE IRON PIPE THREAD
MJ	MECHANICAL JOINT
MPVC	MIDPOINT OF VERTICAL CURVE
MON	MONUMENT
N	NORTHING COORDINATE
(N)	NEW
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NUMBER
NTS	NOT TO SCALE
OHE	OVERHEAD ELECTRIC
O.R.	OFFICIAL RECORDS
(P)	PROPOSED
P	PAVEMENT ELEVATION
PA	PLANTER AREA
PB	PULL BOX
PCC	POINT OF COMPOUND CURVATURE PORTLAND CEMENT CONCRETE
PE	PLAIN END
PED	PEDESTRIAN
PERF	PERFORATED
PH	POTHOLE
PID	POINT ID
PIV	POST INDICATOR VALVE
PL	PROPERTY LINE
PM	PARKING METER
PMH	POWER MANHOLE
PO	PUSH-ON
POC	POINT ON CURVE
POI	POINT OF INTERSECTION
PP	POWER POLE
PRC	POINT OF REVERSE CURVATURE
PRV	PRESSURE REDUCING VALVE
PRUE	PRIVATE UTILITY EASEMENT
PT	POINT OF TANGENCY
PUE	PUBLIC UTILITY EASEMENT
PVC	POLYVINYL CHLORIDE PIPE
R	RIGHT
R=	RADIUS (CURVE)
RC	RELATIVE COMPACTION
RCP	REINFORCED CONCRETE PIPE
RJ	RESTRAINED JOINT
RP	RADIUS POINT
RPBFP	REDUCED PRESSURE BACKFLOW PREVENTER
RPPA R	EDUCED PRESSURE PRINCIPLE ASSEMBLY
RSC	RECEIVING AND SUPPORT CENTER
RW	RECYCLED WATER
R/W, ROW	RIGHT OF WAY
S	SOUTH, SLOPE
S.A.D.	SEE ARCHITECTURAL DRAWINGS
SD	STORM DRAIN
SDCB	STORM DRAIN CATCH BASIN
SDI	STORM DRAIN INLET
SDMH	STORM DRAIN MANHOLE
SDCO	STORM DRAIN CLEANOUT
S.E.D.	SEE ELECTRICAL DRAWINGS
SF	SILT FENCE
SG	SUBGRADE
SHLDR	SHOULDER
SHT	SHEET
SL	STREETLIGHT
S.L.D.	SEE LANDSCAPE DRAWINGS
SMH	SIGNAL MANHOLE
S.M.D	SEE MECHANICAL DRAWINGS
S.P.D	SEE PLUMBING DRAWINGS
SS	SANITARY SEWER
S.S.D.	SEE STRUCTURAL DRAWINGS
SSD	SUBSURFACE DRIP
SSCO	SANITARY SEWER CLEANOUT
SSFM	SANITARY SEWER FORCE MAIN
SSMH	SANITARY SEWER MANHOLE
SSPS	SANITARY SEWER PUMP STATION
STA	STATION
STD	STANDARD
STL	STEEL
S/W	SIDEWALK
SVP	SILICON VALLEY POWER
T	TELEPHONE
TC	TOP OF CURB
TD	TRENCH DRAIN
TEL	TELEPHONE
TEMP	TEMPORARY
TFC	TOP FACE OF CURB
THK	THICK
TOD	TOP OF DOCK
TOE	TOP OF SLOPE
TW,TOW	TOP OF WALL
TS	TOP OF SLAB
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
U/G	UNDERGROUND
VC	VERTICAL CURVE
W	WEST, WATER
WM	WATER METER
WV	WATER VALVE
WWF	WELDED WIRE FABRIC
W/	WITH
YDS	YARDS

PEM 6/3/2024 MYE_Renfrew_OWTS Plans.dwg

CIVIL SYMBOLS LEGEND

SURVEY TOPO AND SITE IMPROVEMENTS

- 6" CURB & GUTTER
- EDGE OF AC PAVEMENT
- 6" VERTICAL CURB
- DW — DOMESTIC WATER MAIN
- E — ELECTRIC LINE
- FL — FLUSH LINE
- FM — FORCE MAIN
- G — GAS LINE
- IRR — IRRIGATION LINE
- OH — OVERHEAD WIRES
- OHE — OVERHEAD ELECTRIC
- OHT — OVERHEAD TELEPHONE
- RW — RECYCLED WATER
- SS — SANITARY SEWER LINE
- SD — STORM DRAIN LINE
- SL — STREET LIGHT CONDUIT
- C — TELECOMMUNICATIONS LINE
- TEL — TELEPHONE LINE
- TV — TELEVISION LINE
- W — WATER LINE
- UGE — UNDERGROUND ELECTRIC
- TRENCH DRAIN
- METAL BEAM GUARD RAIL
- SILT FENCE
- CHAIN LINK FENCE
- FLOW LINE
- CONTOUR ELEVATION LINE
- CENTER LINE
- PROPERTY LINE
- MONUMENT LINE
- EASEMENT LINE
- TC 24.52 / FG — FINISH GRADE
- 2.0% — SURFACE DRAINAGE SLOPE
- x 95.94 — SPOT ELEVATION
- GRADE BREAK
- LIMIT OF WORK/GRADING
- IRRIGATION BOX
- GM — GAS METER
- G — GAS VALVE
- WM — WATER METER
- W — WATER VALVE
- WATER METER OR BFP
- FIRE HYDRANT
- FIRE DEPARTMENT CONNECTION
- WATER TAPPING SADDLE
- SSMH — SEWER MANHOLE
- SEWER CLEANOUT
- SEWER LAMP HOLE
- SEWER VENT
- SDMH — STORM DRAIN MANHOLE
- CB — CATCH BASIN
- CI — CURB INLET
- DI — DRAINAGE INLET
- SDCO — STORM DRAIN CLEANOUT
- E — ELECTRIC VAULT COVER
- PB — PULL BOX
- HVE — HIGH VOLTAGE ELECTRIC
- T — TELEPHONE MANHOLE
- POWER POLE
- GUY — GUY WIRE & ANCHOR
- JOINT POLE
- STREET LIGHT
- ELECTROLIER
- TRAFFIC SIGNAL
- TS — TRAFFIC SIGNAL
- PEDESTRIAN LIGHT
- PEDESTRIAN PUSH BUTTON
- DET — CROSSWALK DETECTOR
- SL — STREET LIGHT PULLBOX
- SIGN (AS NOTED)
- THRUST BLOCK
- CAP
- GATE VALVE
- BUTTERFLY VALVE
- DEMO
- WELL
- PUMP
- BALL VALVE
- ACTUATED BALL VALVE
- SOLENOID VALVE
- AIR/VACUUM BREAKER
- PRESSURE REGULATOR
- SSD FILTER
- ISOLATION VALVE
- CHECK VALVE
- FLOW METER
- PRESSURE GAUGE
- PRESSURE SWITCH
- FLOAT VALVE

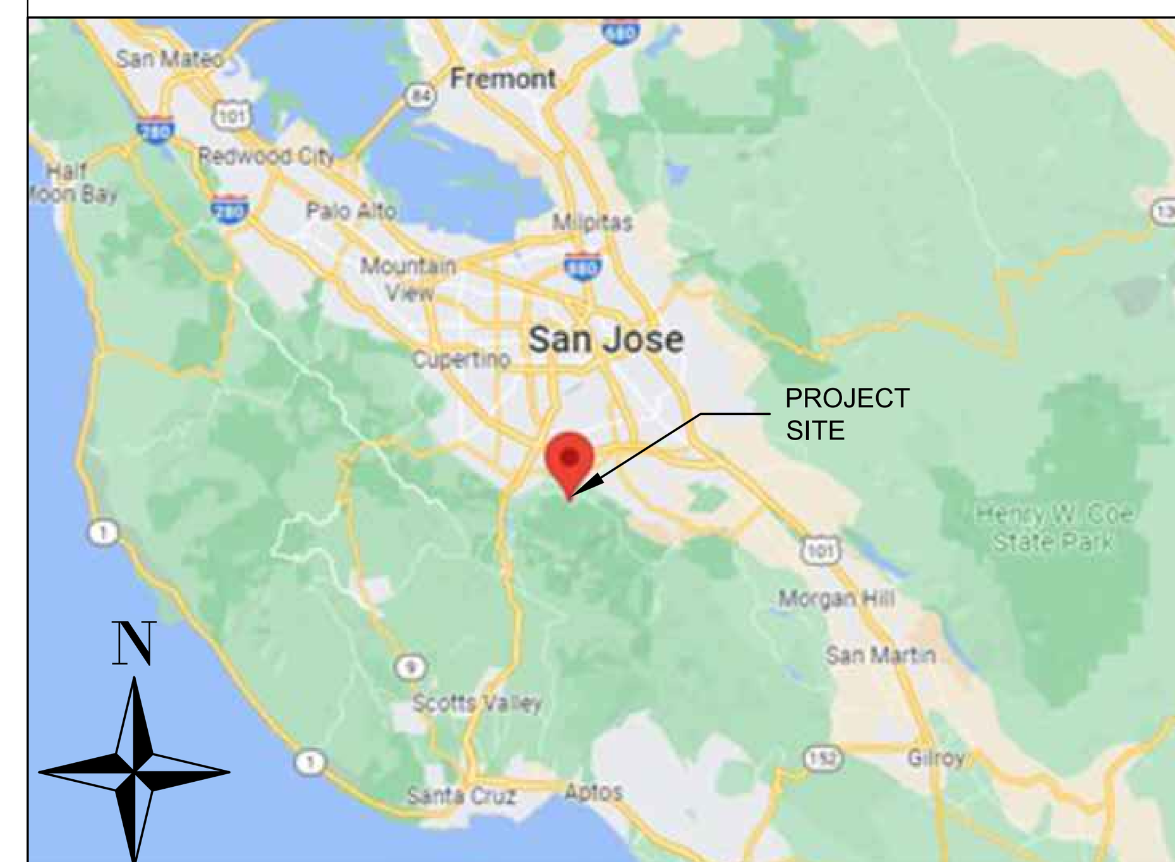
ANNOTATION

- (1) KEYNOTE
- (1) DEMOLITION NOTE

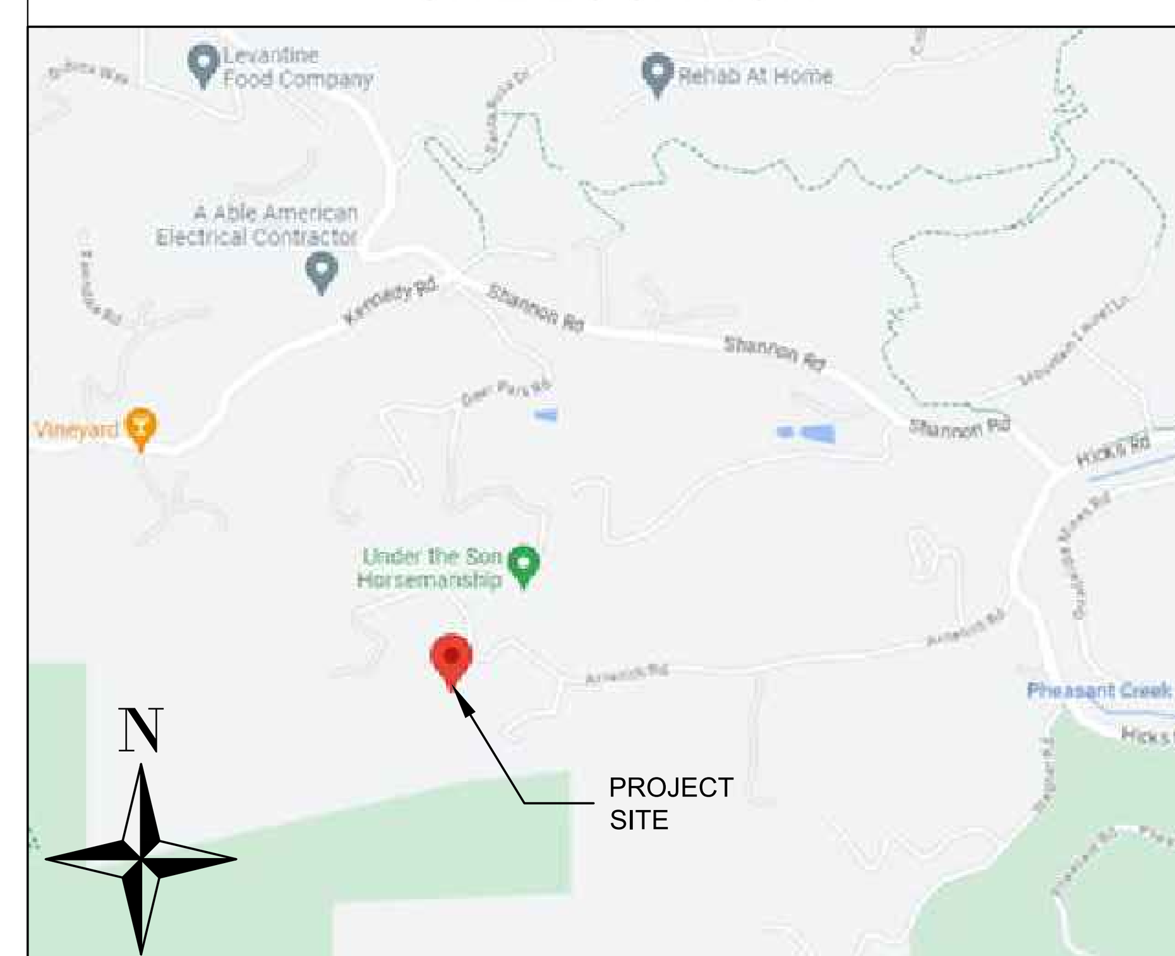
DETAIL NUMBER — 1 / C-501 — SHEET NUMBER ON WHICH DETAIL APPEARS
DETAIL INDICATOR

SECTION LETTER — A / C-301 — SHEET NUMBER ON WHICH SECTION APPEARS
SECTION INDICATOR

SITE VICINITY



SITE LOCATION



PROJECT DESCRIPTION

GENERAL: NEW REPLACEMENT OWTS
BASIS: SFD BEDROOM ADU AND POOL CABANA ADDITIONS

JUSTIFICATION FOR ALTERNATIVE OWTS DESIGN:
THERE IS A LIMITING CLAY LAYER STARTING AT 3' BELOW GROUND LEVEL (BGL), AND MYER ENGINEERING PROPOSES ENHANCED (SUPPLEMENTAL) TREATMENT THAT PRODUCES EFFLUENT QUALITY OF LESS THAN 30 MG/L BOD, TSS AND TN, FOLLOWED BY SUBSURFACE DRIP DISPERSAL INSTALLED TO A MAXIMUM DEPTH OF 8" BGL, TO MEET THE SEPARATION REQUIREMENTS TO THIS LIMITING LAYER.

GENERAL SHEET NOTES

1. ABBREVIATIONS AND SYMBOLS ON THIS SHEET APPLY ONLY TO THE CIVIL DRAWINGS, REFER TO OTHER DISCIPLINES FOR APPLICABLE ABBREVIATIONS AND SYMBOLS NOT PROVIDED HERE.
2. THIS IS A STANDARD ABBREVIATION AND LEGEND SHEET, THEREFORE, SOMEABBREVIATIONS AND LEGEND SYMBOLS MAY APPEAR ON THIS SHEET AND MAY NOT BE UTILIZED ON THIS PROJECT.
3. DO NOT SCALE DRAWINGS.
4. ALL WORK AND MATERIALS SHALL BE IN FULL ACCORDANCE WITH THE CURRENTLY REQUIRED VERSION OF THE FOLLOWING CODE:
   - 4.1. CALIFORNIA BUILDING CODE
   - 4.2. CALIFORNIA PLUMBING CODE
   - 4.3. CALIFORNIA MECHANICAL CODE
   - 4.4. CALIFORNIA ELECTRICAL CODE
   - 4.5. ALL APPLICABLE LOCAL, STATE, AND FEDERAL CODES AND ORDINANCES
5. NOTHING ON THE ENCLOSED DRAWINGS IS TO BE CONSTRUED AS REQUIRING OR PERMITTING WORK THAT IS CONTRARY TO THE CODES, ORDINANCES, OR REGULATIONS DESCRIBED ABOVE.
6. ANY DEVIATIONS FROM THE PROPOSED PLANS SHALL BE DISCUSSED WITH THE PROJECT ENGINEER PRIOR TO MAKING CHANGES IN THE FIELD.

INDEX

PROJECT DESIGN AND OPERATION NOTES

DESIGN FLOWS, VOLUMES, AND TREATMENT

FACILITY TYPE: RESIDENTIAL
UNIT FLOW BASIS: # OF BEDROOMS
OF UNITS: 5 BEDROOMS + 1 BEDROOM ADU + POOL CABANA
DESIGN FLOWS: 825 GPD
TREATMENT CATEGORY: ENHANCED/ALTERNATIVE
NEW TREATMENT TANK VOLUME: 2,000 GALLONS
NEW PUMP TANK VOLUME: 2,000 GALLONS
TREATMENT SYSTEM: ORENCO ADVANTEX AX20 2-POD, MODE 3
WASTEWATER STRENGTH: DOMESTIC RESIDENTIAL STRENGTH
DOMESTIC STRENGTH DEFINITION: <220 MG/L BOD, <60 MG/L TSS, <60 MG/L TN

SOIL TESTING RESULTS AND DISPOSAL DESIGN

SITE TEST PITS (SOIL PROFILES):
MYER ENGINEERING OBSERVED THE SOIL CHARACTERISTICS OF 2 TEST PITS EXCAVATED TO DEPTHS OF 12' AND 13' BELOW GROUND LEVEL (BGL). THE LOCATION OF THE TEST PITS IS PROVIDED ON THE PROJECT DESIGN PLANS. THE FOLLOWING SOIL PROFILE WAS OBSERVED:

TEST PIT #1 (TP-1)
0'-15" BGL: DARK BROWN LOAMY TOPSOIL
15"- 40" BGL: BROWNISH GREY CLAY W/ MEDIUM TO COARSE GRAIN SAND AND GRAVEL, MOIST
40"- 9' BGL: LIGHT BROWN LOAMY CLAY W/ ROCK CLASTS 1" TO 3" SIZE
9'- 12' BGL: LIGHT BROWN SANDY CLAY W/ FRACTURED SHALE (1" TO 4" SIZE)
GROUNDWATER WAS NOT ENCOUNTERED, AND GROUNDWATER INDICATORS WERE NOT PRESENT.

TEST PIT #2 (TP-2)
0'-15" BGL: DARK BROWN LOAMY TOPSOIL
15"- 6' BGL: DARK BROWN CLAY W/ SILT, SAND AND GRAVEL, MOIST
6'- 13' BGL: LIGHT BROWN SANDY CLAY W/ FRACTURED SHALE (1" TO 4" SIZE)
GROUNDWATER WAS NOT ENCOUNTERED, AND GROUNDWATER INDICATORS WERE NOT PRESENT.

SITE PERCOLATION TEST:
TEST HOLE #1 (P-1): DEPTH = 1', RATE = 18.5 MPI
TEST HOLE #2 (P-2): DEPTH = 1', RATE = 34.3 MPI
TEST HOLE #3 (P-3): DEPTH = 1', RATE = 12 MPI
TEST HOLE #4 (P-4): DEPTH = 1', RATE = 27.9 MPI
TEST HOLE #5 (P-5): DEPTH = 1', RATE = 60 MPI
TEST HOLE #6 (P-6): DEPTH = 1', RATE = 60 MPI

ADJUSTED STABILIZED MPI: R X 1.4=
TEST HOLE #1 (P-1): DEPTH = 1', RATE = 25.9 MPI
TEST HOLE #2 (P-2): DEPTH = 1', RATE = 48.0 MPI
TEST HOLE #3 (P-3): DEPTH = 1', RATE = 16.8 MPI
TEST HOLE #4 (P-4): DEPTH = 1', RATE = 39.0 MPI
TEST HOLE #5 (P-5): DEPTH = 1', RATE = 84.0 MPI
TEST HOLE #6 (P-6): DEPTH = 1', RATE = 84.0 MPI
AVERAGE ADJUSTED STABILIZED RATE= 49.6 MPI

DESIGN AREA APPLICATION RATE FOR SUBSURFACE DRIP: 0.4 GPD/SF
DESIGN PRIMARY EFFECTIVE LEACHING AREA: 2,064 SF
DESIGN SECONDARY EFFECTIVE AREA: 2,064 SF

SEE SHEETS WW3 AND WW4 FOR SYSTEM SIZING CALCULATIONS AND DETAILS

WATER SUPPLY: SAN JOSE WATER (PUBLIC)

OWNER IS RESPONSIBLE FOR GENERAL OPERATION AND MAINTENANCE OF THE WASTEWATER SYSTEM

THE SEPTIC/WASTEWATER SYSTEM SHALL BE INSTALLED BY A QUALIFIED PROFESSIONAL.

No.	Revision/Issue	Date

COVER SHEET

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APN: 537-12-012

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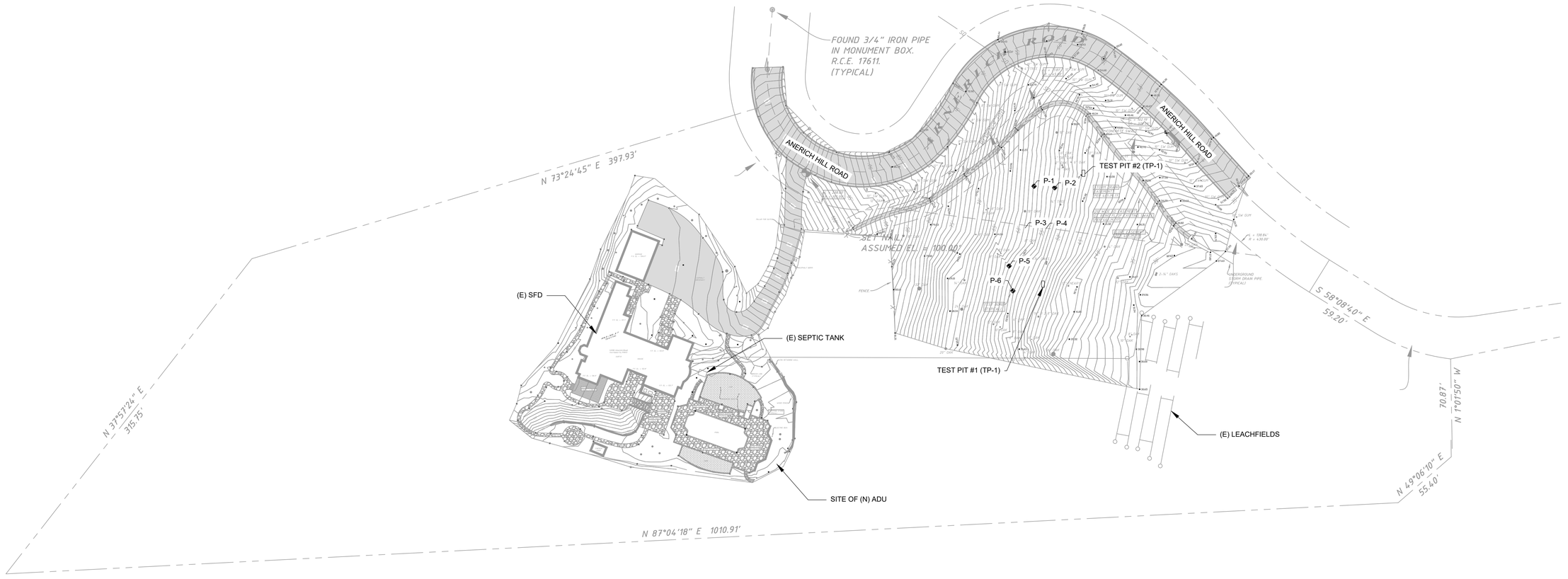
REGISTERED PROFESSIONAL ENGINEER
PAUL MYER
C 80522
EXP 03/31/25
CIVIL
STATE OF CALIFORNIA

Drawn By: PEM	Checked By: PEM
Project No.: 202304	Scale: AS SHOWN
Date: JUNE 2024	

Sheet No.
WW1



1 EXISTING SITE LAYOUT
SCALE: 1" = 40'

N

0 40' 80'

No.	Revision/Issue	Date

EXISTING SITE LAYOUT

Renfrew Site Improvement Project
14500 Arnerich Hill Road
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Drawn By	Checked By
PEM	PEM
Project No. 202304	Scale AS SHOWN
Date JUNE 2024	
Sheet No. WW2	

Total field

Total Quantity of effluent to be disposed per day	825	gallons / day
Hydraulic loading rate	0.4	gallons / sq.ft. / d
Minimum Dispersal Field Area	2,063	square ft.
Total Dispersal Field Area	4,128	square ft.

Flow per zone

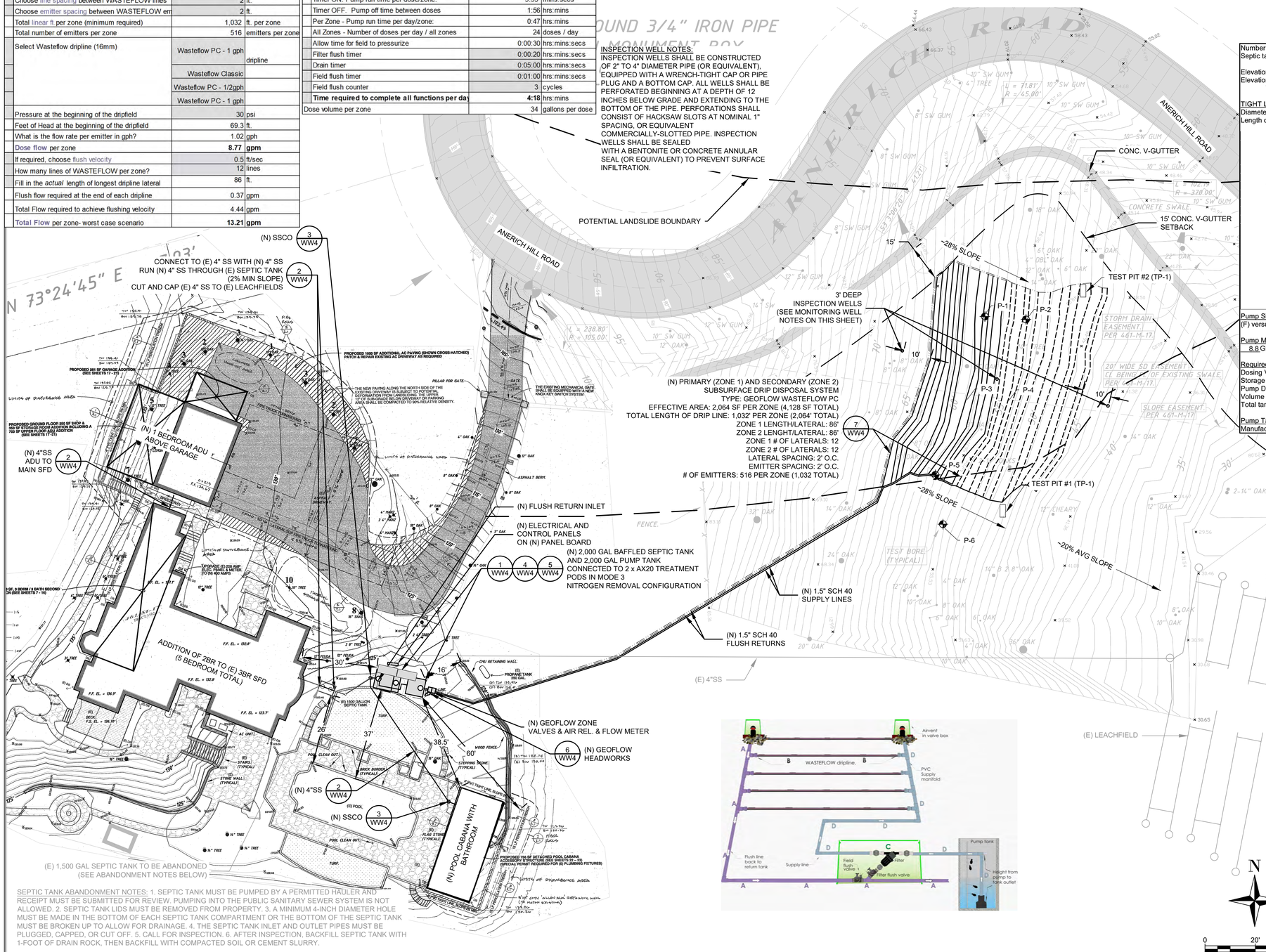
Number of Zones	2	zone(s)
Dispersal area per zone	2,064	square ft.
Choose line spacing between WASTEFLOW lines	2	ft.
Choose emitter spacing between WASTEFLOW em	2	ft.
Total linear ft per zone (minimum required)	1,032	ft. per zone
Total number of emitters per zone	516	emitters per zone
Select Wasteflow dripline (16mm)	Wasteflow PC - 1 gph	dripline
	Wasteflow Classic	
	Wasteflow PC - 1/2gph	
	Wasteflow PC - 1 gph	
Pressure at the beginning of the dripfield	30	psi
Feet of Head at the beginning of the dripfield	69.3	ft.
What is the flow rate per emitter in gph?	1.02	gph
Dose flow per zone	**8.77**	**gpm**
If required, choose flush velocity	0.5	ft/sec
How many lines of WASTEFLOW per zone?	12	lines
Fill in the *actual* length of longest dripline lateral	86	ft.
Flush flow required at the end of each dripline	0.37	gpm
Total Flow required to achieve flushing velocity	4.44	gpm
Total Flow per zone- worst case scenario	**13.21**	**gpm**

Select Filters and zone valves

Select Filter Type	BioDisc Filter	
Recommended Filter (item no.)	BioDisc Filter-150	1.5in < 30 gpm
Select Zone Valve Type	Electric Solenoid	-
Recommended Zone Valve (item no.)	SVLVB-100	1-in. Solenoid valve

Dosing

Number of doses per day / zone:	12	doses
Timer ON. Pump run time per dose/zone:	3.55	mins:secs
Timer OFF. Pump off time between doses	1:56	hrs:mins
Per Zone - Pump run time per day/zone:	0:47	hrs:mins
All Zones - Number of doses per day / all zones	24	doses / day
Allow time for field to pressurize	0:00:30	hrs:mins:secs
Filter flush timer	0:00:20	hrs:mins:secs
Drain timer	0:05:00	hrs:mins:secs
Field flush timer	0:01:00	hrs:mins:secs
Field flush counter	3	cycles
Time required to complete all functions per day	**4:18**	hrs:mins
Dose volume per zone	34	gallons per dose



1 OWTS PLAN
SCALE: 1" = 20'

Number of bedrooms 2 Total square footage of living space TBD
Septic tank size 2,000 GAL Installed drainfield 4,128 SQFT SSD Expansion drainfield INSTALLED = 2,064 SQFT PRIMARY + 2,064 SQFT SECONDARY (EXPANSION)

Elevation of highest drainfield (ft) NA - DOWNHILL
Elevation of pump off (ft) - NA - DOWNHILL
Total lift (Ft Head) = 0 (A)

TIGHT LINE
Diameter of tight line (inches) 1.5"
Length of tight line from pump to upper drainfield (ft) NA (B)

****SEE GEOFLOW SPREADSHEET BELOW FOR TOTAL DYNYAMIC HEAD (TDH) CALCULATIONS**

****SEE PUMP CURVE ON DETAILS SHEET (WW4)**

Pump Size:
(F) versus GPM = Pump Size (refer to pump curve)

Pump Model: (Attach Pump Curve)
8.8 GPM at 97.5 (G) (ft of head: from pump curve) Manufacturer/Model ORENCO PF1007

Required Capacity in Gallons

Dosing Volume	34 GAL
Storage Capacity (1 ½ days)	1,312 GAL
Pump Displacement	8 GAL
Volume from tank bottle to pump base	72 GAL
Total tank capacity	2,000 GAL (2,200 GAL MAX)

Pump Tank Information
Manufacturer CHAPIN PRE-CAST Size 2,000 GAL Gallons per inch 36 AVG.

ction 2	Ft of head	Pressure
Flush line - Losses through return line		
Select Pipe from dropdown menu	PVC schedule 40	
Select Flush Line Diameter	1-1/2" inch	
Length of return line	340 ft.	
Equivalent length of fittings	10 ft.	
Elevation change. (if downhill enter 0)	**0** ft.	
Pressure loss in 100 ft of pipe	0.17 ft.	0.08 psi
Total pressure loss from end of dripline to return tar	*0.6 ft.*	0.26 psi
Dripline - Losses through Wasteflow dripline		
Length of longest dripline lateral	**86** ft.	
Minimum dosing pressure required at end of dripline	23.10 ft.	10.00 psi
Loss through dripline during flushing	1.29 ft.	0.559 psi
Total minimum required dripline pressure	*24.39 ft.*	10.56 *psi*
B. Minimum Pressure required at begginning of dripfield		
CALCULATED pressure required at beginning of dri	*25.00 ft.*	10.82 *psi*
SPECIFIED pressure at beginning of dripfield (from	**69.3 ft.**	30.00 *psi*
Great! SPECIFIED Pressure is greater than CALCULATED Pressure requirement. Go to next step		
Drip components - Losses through headworks		
Filter	11.6 ft.	5.00 psi
Zone valve pressure loss (not in diagram)	2.31 ft.	1.00 psi
Flow meter pressure loss (not in diagram)	1.00 ft.	0.43 psi
Other pressure losses	5.00 ft.	2.16 psi
Total loss through drip components	**19.86 ft.**	8.60 psi
Supply line - Minimum Pressure head required to get from pump tank to top of dripfield		
Select Pipe from dropdown menu	PVC schedule 40	
Select Supply line diameter	1-1/2" inch	
Length of supply line	250 ft.	
Equivalent length of fittings	5 ft.	
Height from pump to tank outlet	5 ft.	
Elevation change. (if downhill enter 0)	0 ft.	
Pressure loss/gain in 100 ft. of pipe	1.31 ft.	0.57 psi
Total gain or loss from pump to field	***8.3 ft.***	3.61 psi
Total dynamic head	**97.5 ft.**	42.21 *psi*
Pump capacity * - Field Flush Flow	**13.2 gpm**	42.21 *psi*
- Field Dose Flow	**8.8 gpm**	
- Filter Flush Flow	**- gpm**	- *psi*
Pump Model Number	**See Plan/Details**	
Voltz / Hp / phase	**See Plan/Details**	

No.	Revision/Issue	Date

WASTEWATER SYSTEM PLAN

Renfrew Site Improvement Project
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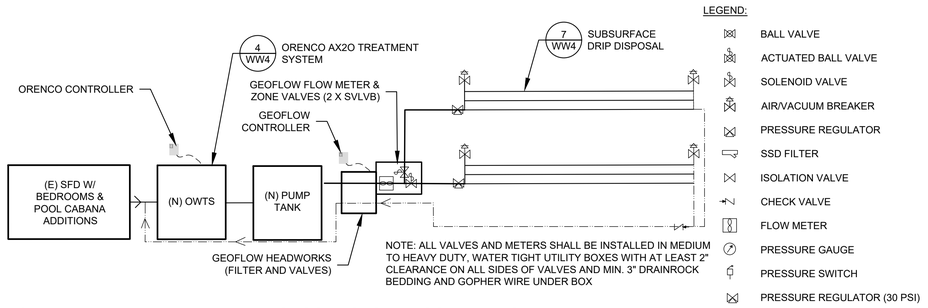
Drawn By	Checked By
PEM	PEM
Project No. 202304	Scale AS SHOWN
Date JUNE 2024	

Sheet No.
WW3
3 OF 6

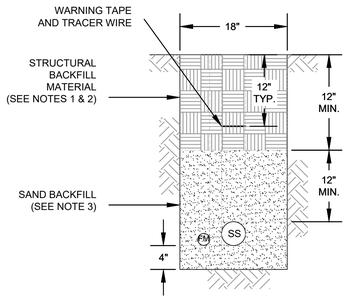


LEGEND:

- BALL VALVE
- ACTUATED BALL VALVE
- SOLENOID VALVE
- AIR/VACUUM BREAKER
- PRESSURE REGULATOR
- SSD FILTER
- ISOLATION VALVE
- CHECK VALVE
- FLOW METER
- PRESSURE GAUGE
- PRESSURE SWITCH
- PRESSURE REGULATOR (30 PSI)

1 WASTEWATER TREATMENT AND DISPOSAL SYSTEM SCHEMATIC

SCALE: AS DIMENSIONED

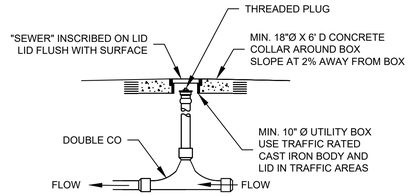


UTILITY TRENCH NOTES:

1. UTILITY TRENCH STRUCTURAL BACKFILL UNDER DRIVEWAYS AND ROADS SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.
2. UTILITY TRENCH STRUCTURAL BACKFILL UNDER NON-TRAFFIC AREAS SHALL BE COMPACTED TO 90% RELATIVE COMPACTION.
3. ALL SAND BACKFILL SHALL BE COMPACTED TO 90% RELATIVE COMPACTION.
4. SS=SANITARY SEWER
5. SANITARY SEWER LINES SHALL BE INSTALLED WITH A 10' MINIMUM SEPARATION FROM ALL POTABLE WATER LINES.
6. IF SANITARY SEWER AND WATER LINES MUST CROSS, THE SANITARY SEWER SHALL BE LOCATED AT LEAST 2' BELOW THE WATER LINE.

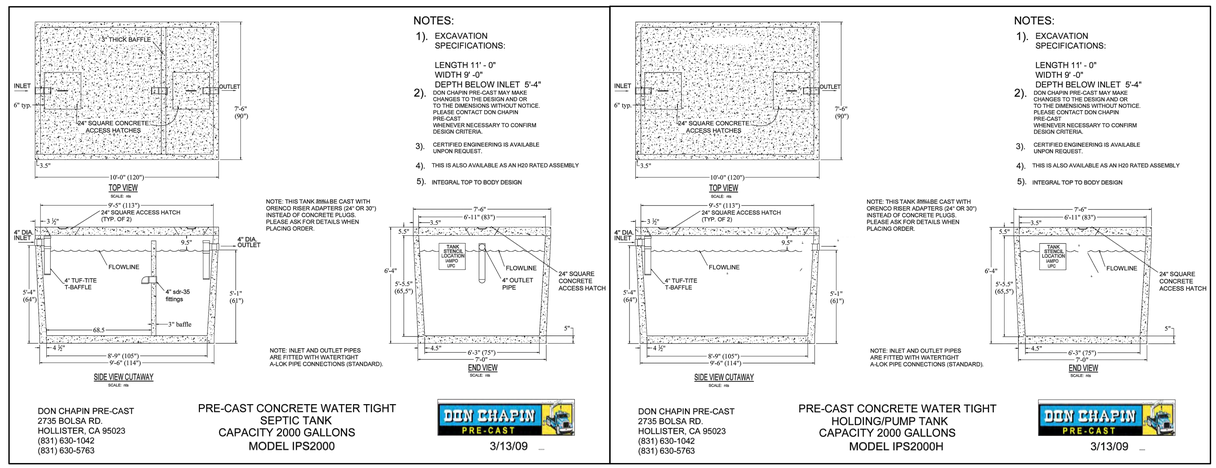
2 SS UTILITY TRENCH DETAIL

SCALE: AS DIMENSIONED



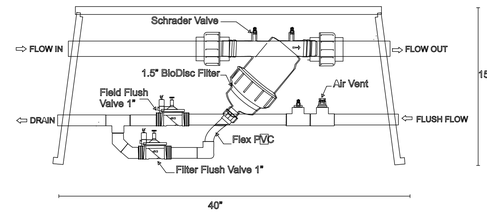
3 SS CLEANOUT

SCALE: AS DIMENSIONED



5 2,000 GAL SEPTIC TANK AND 1,000 GAL PUMP TANK (CHAPIN PRE-CAST OR EQUIV)

SCALE: AS DIMENSIONED

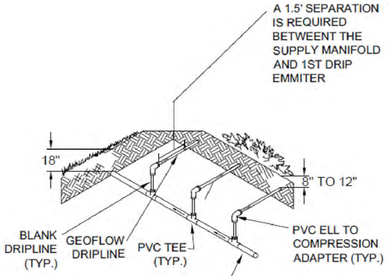


Enclosure Top Opening -30 x17"
Enclosure Bottom Opening -40 x27"

GEOFLOW 1.5in BIODISC SPORTY HEADWORKS SURFACE FLUSH

WHW 1.5" DISC FILTER
Automatic Surface Flush

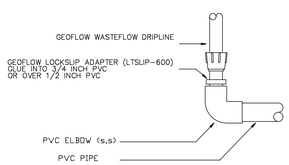
not to scale



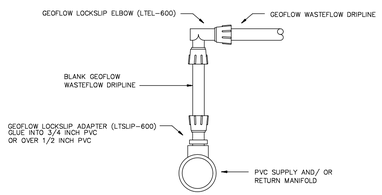
END FEED/ FLUSH MANIFOLD

6 GEOFLOW HEADWORKS

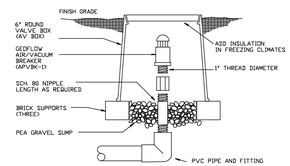
SCALE: AS DIMENSIONED



GEOFLOW MANIFOLD CONNECTION (PVC TO ADAPTER) SECTION Not To Scale



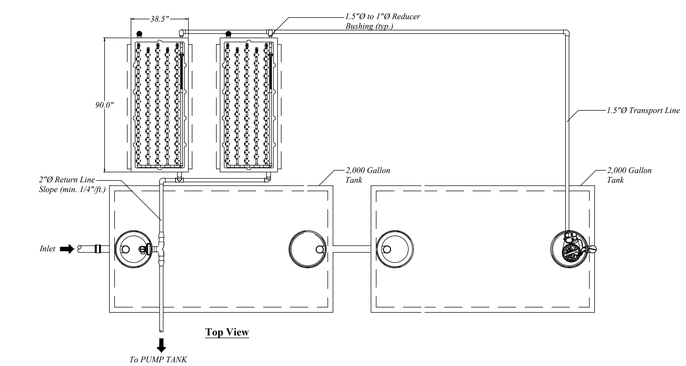
GEOFLOW LOCKSLIP ELBOW TO LOCKSLIP ADAPTER CONNECTION SECTION Not To Scale

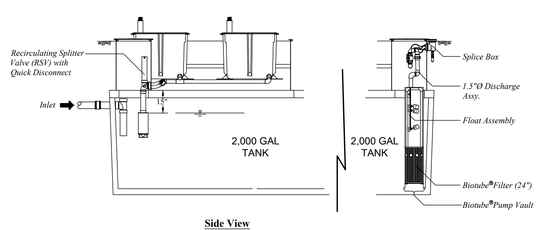


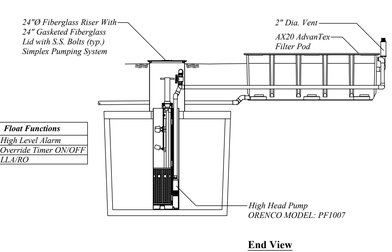
GEOFLOW 1" AIR/VACUUM BREAKER (PLUMBED TO PVC) SECTION Not To Scale

7 SUBSURFACE DRIP (SSD) GEOFLOW DETAILS

SCALE: AS DIMENSIONED



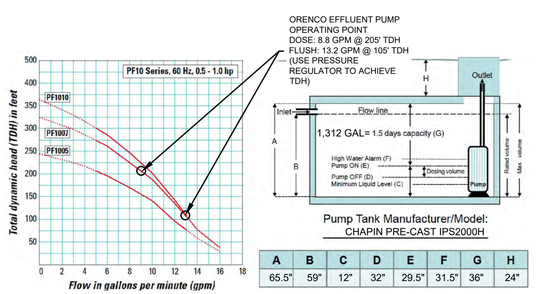




Float Functions	
Y	High Level Alarm
G	Override Timer ON/OFF
W	LLA/RO

4 ADVANTEX 2-POD AX20 MODE 3A ENHANCED TREATMENT SYSTEM (WITH 2,000 GALLON WATERTIGHT SEPTIC TANK)

SCALE: AS DIMENSIONED



ORENCO EFFLUENT PUMP
OPERATING POINT
DOSE: 8.8 GPM @ 205' TDH
FLUSH: 13.2 GPM @ 105' TDH
(USE PRESSURE REGULATOR TO ACHIEVE TDH)

Pump Tank Manufacturer/Model:
CHAPIN PRE-CAST IPS2000H

A	B	C	D	E	F	G	H
65.5"	59"	12"	32"	29.5"	31.5"	36"	24"

8 PUMP SYSTEM DETAILS

SCALE: AS DIMENSIONED

No.	Revision/Issue	Date

WASTEWATER SYSTEM SCHEMATIC AND DETAILS

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C 80522
EXP 03/31/25
CIVIL
STATE OF CALIFORNIA

Drawn By	Checked By
PEM	PEM
Project No. 202304	Scale AS SHOWN
Date JUNE 2024	
Sheet No. WW4	

GENERAL SPECIFICATIONS

THE FOLLOWING SPECIFICATIONS ARE FOR THE INSTALLATION OF THE ENHANCED WASTEWATER TREATMENT SYSTEM AT THE LOCATION SPECIFIED IN THE BORDER OF THESE DESIGN PLANS. THE ACCOMPANIED PLANS PRESENT THE GENERAL LAYOUT, PLUMBING CONFIGURATION, AND CONSTRUCTION DETAILS.

MATERIAL SPECIFICATIONS

THE FOLLOWING ARE MATERIAL SPECIFICATIONS FOR THE WASTEWATER SYSTEM COMPONENTS. ALL MATERIALS USED FOR THE CONSTRUCTION OF THIS PROJECT SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS AND AS DESCRIBED IN THE ACCOMPANIED PLANS OR AN ENGINEER APPROVED EQUIVALENT.

1. SUBSURFACE TANKS

THE SUBSURFACE TANKS INCLUDE THE 2,000 GALLON CONCRETE WATER-TIGHT SEPTIC TANK (TREATMENT TANK) AND THE 2,000 GALLON CONCRETE WATER-TIGHT PUMP TANK.

1.1. DIMENSIONS, FITTING SIZES AND LOCATIONS, AND OPTIONAL ACCESSORIES SHALL BE INCLUDED AS SHOWN ON TANK DRAWINGS. THE TANK SHALL BE WATERTIGHT AND TESTED IN THE FIELD AFTER INSTALLATION.

1.2. PRODUCT STORAGE. THE SUBSURFACE TANKS SHALL BE CAPABLE OF STORING SEPTAGE LIMITED TO THE COLLECTION AND STORAGE OF HUMAN SOLID OR LIQUID ORGANIC WASTE.

1.3. PIPING. SDR35 PVC PIPE, SCHEDULE 40 PVC PIPE, OR ABS PIPE SHALL BE USED FOR INLET AND OUTLET PIPING AS SHOWN ON DRAWINGS. ALL PIPING SHALL BE FACTORY SEALED TO ENABLE FIELD TIGHTNESS TESTING WITH AT LEAST ONE PIPE OPENING PROVIDED WITH A THREADED FITTING FOR CONNECTING A PRESSURE TEST MANIFOLD.

1.4. ACCESS OPENINGS. ALL ACCESS OPENINGS SHALL BE 30 INCHES IN DIAMETER OR LARGER AS SHOWN ON THE PLANS, SHALL BE MANUFACTURED OF FIBERGLASS, CONCRETE OR CAST IRON WITH RESPECT TO SPECIFIED TRAFFIC RATING. LOCATIONS SHALL BE AS SHOWN ON TANK DRAWINGS. EACH MANHOLE SHALL HAVE A WATERTIGHT RISER TO FINISH GRADE.

1.5. RISERS. RISERS SHALL BE REQUIRED FOR ACCESS TO INTERNAL VAULTS AND ACCESS INTO THE TANKS FOR SEPTAGE PUMPING. ALL RISERS SHALL BE CONSTRUCTED WITH WATERTIGHT SEALS PROVIDED. RISERS SHALL BE A MINIMUM OF 30" IN NOMINAL DIAMETER WHEN THE DEPTH OF BURY IS 36" OR GREATER. TO ENSURE PRODUCT COMPATIBILITY, RISERS, LIDS, AND ATTACHMENT COMPONENTS SHALL BE SUPPLIED BY A SINGLE MANUFACTURER AND, WHERE APPLICABLE, SHALL BE FACTORY EQUIPPED WITH THE FOLLOWING:

1.5.1. ADHESIVE. WHEN BONDING TO THE RISER RINGS, AN EPOXY PROVIDED BY THE MANUFACTURER SHALL BE USED. ADHESIVES AND SEALANTS SHALL BE WATERPROOF, CORROSION RESISTANT, AND APPROVED FOR THE INTENDED APPLICATION. THE RISER-TO-TANK CONNECTION SHALL BE WATERTIGHT AND STRUCTURALLY SOUND. THE RISER-TO-TANK CONNECTION SHALL BE CAPABLE OF WITHSTANDING A VERTICAL UPLIFT OF 5,000 POUNDS TO PREVENT RISER SEPARATION DUE TO TANK SETTLEMENT, FROST HEAVE, AND VEHICLE TRAFFIC OVER THE TANK.

1.5.2. LIDS. ONE LID SHALL BE FURNISHED WITH EACH ACCESS RISER. LIDS SHALL BE WATERPROOF, CORROSION RESISTANT, AND UV RESISTANT. LIDS SHALL BE FLAT, WITH NO NOTICEABLE UPWARD DOME. LIDS SHALL NOT ALLOW WATER TO POND ON THEM. LIDS SHALL FORM A WATERTIGHT SEAL WITH THE TOP OF RISER. TRAFFIC-RATED LIDS SHALL BE CAPABLE OF WITHSTANDING A TRUCK WHEEL LOAD (36 SQUARE INCHES) OF 2500 POUNDS FOR 60 MINUTES WITH A MAXIMUM VERTICAL DEFLECTION OF 1-1/2". LIDS SHALL BE PROVIDED WITH TAMPER-RESISTANT STAINLESS STEEL FASTENERS AND A TOOL FOR FASTENER REMOVAL. TAMPER-RESISTANT FASTENERS INCLUDE RECESSED DRIVES, SUCH AS HEX, TORX, AND SQUARE. FASTENERS THAT CAN BE REMOVED WITH COMMON SCREWDRIVERS, SUCH AS SLOTTED AND PHILLIPS, OR FASTENERS THAT CAN BE REMOVED WITH STANDARD TOOLS, SUCH AS PLIERS OR CRESCENT WRENCHES, ARE NOT CONSIDERED TAMPER-RESISTANT. TO PREVENT A TRIPPING HAZARD, FASTENERS SHALL NOT EXTEND ABOVE THE SURFACE OF THE LID.

1.5.3. RISER INSTALLATION. RISER INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

2. PIPING AND FITTINGS

THE TYPE OF PIPE MATERIALS AND FITTINGS SHALL BE AS DESIGNATED ON THE PLANS AND SHALL COMPLY WITH THE FOLLOWING:

2.1. FITTINGS AND COUPLINGS
THE FITTINGS AND COUPLINGS FOR PVC PIPES SHALL BE THREADED OR SLIP-FITTED TAPERED SOCKET SOLVENT WELD. THREADED ADAPTERS SHALL BE PROVIDED WITH SOCKET PIPE FOR CONNECTIONS TO THREADED PIPE.

3. VALVES

3.1. GENERAL
VALVES SHALL BE OF THE SIZE, TYPE, AND CAPACITY DESIGNATED ON THE PLANS OR IN THE SPECIFICATIONS AND SHALL COMPLY WITH THE REQUIREMENTS SPECIFIED HEREIN. ALL VALVES ON PRESSURIZED PORTIONS OF THE SYSTEM SHALL BE CAPABLE OF SATISFACTORY PERFORMANCE AT WORKING PRESSURE OF 150 PSI. ALL VALVES ON GRAVITY PORTIONS OF THE SYSTEM SHALL BE RATED FOR AT LEAST TWICE THE ESTIMATED STATIC HEAD ABOVE THE VALVE. VALVES SHALL BE DESIGNED TO PERMIT DISASSEMBLY TO REPLACE SEALING COMPONENTS WITHOUT REMOVAL OF THE VALVE BODY FROM THE PIPELINE, SUCH AS TRUE UNION BALL VALVES AND CHECK VALVES.

4. PUMP SYSTEMS

ALL PUMP SYSTEMS SHALL BE INSTALLED PER MANUFACTURER RECOMMENDATIONS. IF THERE IS A CONFLICT BETWEEN MANUFACTURER RECOMMENDATIONS, AND THE DESIGN PLANS, THE PROJECT ENGINEER SHALL BE CONTACTED FOR APPROVAL OF INSTALLATION CONFIGURATION.

5. ADDITIONAL COMPONENTS

ALL COMPONENTS SHALL BE INSTALLED PER MANUFACTURER RECOMMENDATIONS. IF THERE IS A CONFLICT BETWEEN MANUFACTURER RECOMMENDATIONS, AND THE DESIGN PLANS, THE PROJECT ENGINEER SHALL BE CONTACTED FOR APPROVAL OF INSTALLATION CONFIGURATION.

7. SUBSURFACE DRIP SYSTEM

THE SUBSURFACE DRIP SYSTEM SHALL PROVIDE ADDITIONAL TREATMENT AND DISPOSAL OF THE WASTEWATER. THE SYSTEM SHALL BE CONSTRUCTED PER MANUFACTURER RECOMMENDATIONS AND AS SHOWN ON PLANS.

7.1. SOIL COVER
THE SOIL COVER (CAP) SHALL BE PLACED OVER THE MOUND SYSTEM TO PROVIDE A SUBSTRATE FOR VEGETATION AND REDUCE EROSION CONTROL. THE SOIL SHALL BE A SANDY LOAM TO INCREASE THE POTENTIAL FOR AIR THROUGH THE DEPTH OF THE SOIL.

CONSTRUCTION SPECIFICATIONS

THE CONSTRUCTION OF THE PROJECT SHALL CONFORM TO THE PLANS AND FOLLOWING SPECIFICATIONS. ALL NECESSARY CONSTRUCTION PERMITS SHALL BE OBTAINED PRIOR TO COMMENCEMENT OF ALL SITE WORK.

1. PRECONSTRUCTION CONFERENCE

THE CONTRACTOR SHALL HAVE A PRECONSTRUCTION MEETING WITH THE ENGINEER AND OWNER AT LEAST ONE WEEK PRIOR TO COMMENCEMENT OF SITE WORK. THE ENGINEER SHALL BE CONTACTED 48 HOURS PRIOR TO THE MEETING CONFERENCE. THE MEETING SHOULD BE CONDUCTED TO REVIEW THE DESIGN, MATERIAL, AND CONSTRUCTION SPECIFICATIONS. ALL CONTRACTOR PROPOSED REVISIONS IN THE DESIGN SHALL BE APPROVED BY THE ENGINEER. THE INSTALLATION MUST BE INSPECTED BY THE ENGINEER FOR CONFORMANCE TO THE DESIGN.

2. STAKING

THE CONTRACTOR WILL PROVIDE SUFFICIENT HORIZONTAL AND VERTICAL CONTROL FOR INSTALLATION OF THE WORK AT DATUM POINTS NECESSARY TO ESTABLISH ALIGNMENT AND GRADE. THE PROTECTION AND CARE OF THE STAKES ONCE SET, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

3. EXCAVATION

ALL EXCAVATION WORK SHALL BE MADE TO THE LINES, GRADES AND DIMENSIONS SHOWN IN THE ACCOMPANIED PLANS. EXCAVATIONS SHALL BE PERFORMED IN THE DAY AND IN A MANNER THAT MINIMIZES EROSION, FLOODING AND SEDIMENTATION. EXCAVATED SOILS THAT ARE TO BE STOCKPILED ON-SITE SHALL BE PLACED IN A LOCATION AND MANNER THAT MINIMIZES EROSION AND CONTROLS SEDIMENTATION.

THE CONTRACTOR SHALL TAKE EXTRA PRECAUTION WHERE EXCAVATION EQUIPMENT MAY ENCOUNTER EXISTING UNDERGROUND UTILITIES AND OTHER FACILITIES OF ANY NATURE. CONTRACTOR SHALL PERSON HIS OPERATION IN SUCH A MANNER AND SHALL EXERCISE THE GREATEST OF CARE SO AS NOT TO INJURE IN ANY MANNER EXISTING UNDERGROUND UTILITIES, MAINS OR FACILITIES OF ANY NATURE. SHOULD THE CONTRACTOR INJURE, BREAK OR DAMAGE EXISTING UNDERGROUND UTILITIES, MAINS, OR FACILITIES OF ANY NATURE IN ANY MANNER, THEY SHALL REPAIR THE SAME AT THEIR OWN EXPENSE. IF IT DOES NOT APPEAR FEASIBLE THAT THE CONTRACTOR CAN MAKE NEEDED REPAIRS, THEN SUCH REPAIRS SHALL BE MADE BY THE OWNER AND THE CONTRACTOR SHALL BE CHARGED FOR SUCH REPAIRS.

4. POLLUTION CONTROL

4.1. WATER POLLUTION
THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ALL PERMITTING REQUIREMENTS RELEVANT TO THE CONSTRUCTION OF THE PROJECT ARE MET AT ALL TIMES. ACTIONS BY THE CONTRACTOR, THE SUBCONTRACTORS OR EMPLOYEES THEREOF RESULTING IN NONCOMPLIANCE OF PERMITTING REQUIREMENTS MAY BE GROUNDS FOR TERMINATION OF THIS CONTRACT.

4.2. NOISE POLLUTION
IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO KEEP NOISE POLLUTION, DUE TO THESE CONSTRUCTION ACTIVITIES, AS LOW AS POSSIBLE.

4.3. SOIL CONTAMINATION
THE CONTRACTOR SHALL NOT ALLOW REGULATED MATERIALS TO SPILL ON THE PROJECT SITE. ANY SPILLAGE OR REGULATED MATERIALS RESULTING FROM THE CONTRACTOR'S OPERATION SHALL BE REMOVED IMMEDIATELY BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

4.4. STORAGE OF REGULATED MATERIALS
THE STORAGE AND USE OF ANY REGULATED MATERIALS SHALL MEET ALL REQUIREMENTS OF LOCAL, STATE, AND FEDERAL REGULATORY AGENCIES. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO SATISFY THE REQUIREMENTS OF ANY REGULATORY AGENCY FOR THE STORAGE, MONITORING, USAGE, TRANSPORTATION, SAFETY, REPORTING, OR ANY OTHER REQUIREMENTS REGARDING THE MANAGEMENT OF REGULATED MATERIALS ON AND OFF THE PROJECT SITE.

5. SITE WORK

5.1. MOBILIZATION
THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PREPARATORY WORK AND PLACEMENT OF MATERIALS IN A STAGING AREA REQUIRED FOR CONSTRUCTION OPERATIONS INCLUDING, BUT NOT LIMITED TO, THOSE NECESSARY FOR THE MOVEMENT OF PERSONNEL, EQUIPMENT, SUPPLIES, AND INCIDENTALS TO THE PROJECT SITE; FOR THE ESTABLISHMENT OF FACILITIES NECESSARY FOR WORK ON THE PROJECT; PROVIDING POLLUTION CONTROL MEASURES; AND FOR ALL OTHER WORK AND OPERATIONS WHICH MUST BE PERFORMED.

THE CONTRACTOR SHALL PROVIDE MATERIALS, NOT SPECIFICALLY DESCRIBED BUT REQUIRED FOR PROPER COMPLETION OF THE WORK OF THIS SECTION, AS SELECTED BY THE CONTRACTOR SUBJECT TO THE APPROVAL OF THE COUNTY.

5.2. CLEARING AND GRUBBING
CLEAR THE SITE AS SHOWN ON THE DRAWINGS AND AS SPECIFIED IN THIS SECTION. CLEARING AND GRUBBING SHALL CONSIST OF ALL WORK INCLUDING, BUT NOT LIMITED TO, SALVAGED MATERIALS REMOVAL, PROVIDING AND INSTALLING TEMPORARY EROSION CONTROL, AND PLACEMENT OF TREES, TREE BRANCHES, TREE STUMPS, BRUSH, ROOTS, BOULDERS, SHRUBS, SEDIMENT, AND ALL OBJECTIONABLE MATERIALS IN AN AGREED UPON LOCATION ADJACENT TO THE WORK SITE.

EXAMINE THE AREAS AND CONDITIONS UNDER WHICH THE WORK OF THIS SECTION WILL BE PERFORMED. CORRECT CONDITIONS DETRIMENTAL TO TIMELY AND PROPER COMPLETION OF THE WORK. DO NOT PROCEED UNTIL UNSATISFACTORY CONDITIONS ARE CORRECTED.

ALL WASTES DISPOSAL SHALL BE CONDUCTED AS FOLLOWS:
A. REMOVE WASTE FROM CLEARING OPERATIONS.
B. DISPOSE OF AWAY FROM THE SITE IN A LEGAL MANNER.
C. DO NOT STORE OR PERMIT DEBRIS TO ACCUMULATE ON THE JOB SITE.
D. DO NOT BURN DEBRIS AT THE SITE.

6. DELETERIOUS MATERIALS

MATERIALS CONTAINING AN EXCESS OF 5% (BY WEIGHT) OF VEGETATION OR OTHER DELETERIOUS MATTER MAY BE UTILIZED IN AREAS OF LANDSCAPING OR OTHER NON-STRUCTURAL FILLS. DELETERIOUS MATERIAL INCLUDES ALL VEGETATIVE AND NON-MINERAL MATTER, AND ALL NON-REDUCIBLE STONE, RUBBLE AND/OR MINERAL MATTER OF GREATER THAN 6 INCHES.

7. UTILITY TRENCHES

A. A SELECT, NONCORROSIVE, GRANULAR, EASILY COMPACTED MATERIAL SHOULD BE USED AS BEDDING AND SHADING IMMEDIATELY AROUND UTILITY PIPES. THE SITE SOILS MAY BE USED FOR TRENCH BACKFILL ABOVE THE SELECT MATERIAL. IF OBTAINING COMPACTION IS DIFFICULT WITH THE SITE SOILS, USE OF A MORE EASILY COMPACTED SAND MAY BE DESIRABLE. THE UPPER FOOT OF BACKFILL IN LANDSCAPED OR OTHER OPEN AREAS SHOULD CONSIST OF NATIVE MATERIAL TO REDUCE THE POTENTIAL FOR SEEPAGE OF WATER INTO THE BACKFILL.
B. TRENCH BACKFILL IN THE UPPER 12 INCHES OF SUBGRADE BENEATH AREAS TO RECEIVE PAVEMENT SHOULD BE COMPACTED TO A MINIMUM OF 95 PERCENT OF MAXIMUM DRY DENSITY. TRENCH BACKFILL IN OTHER AREAS SHOULD BE COMPACTED TO A MINIMUM OF 90 PERCENT OF MAXIMUM DRY DENSITY. JETTING OF UTILITY TRENCH BACKFILL SHOULD NOT BE ALLOWED.

8. PIPE INSTALLATION

8.1. GENERAL
PIPE SHALL BE JOINED BY SOCKET TYPE SOLVENT-WELDED FITTINGS OR THREADED FITTINGS. PLASTIC PIPE SHALL BE CUT SQUARE, EXTERNALLY CHAMFERED APPROXIMATELY 10 TO 15 DEGREES, AND ALL BURRS AND FINS REMOVED. SOLVENT-WELDED JOINTS SHALL BE MADE IN ACCORDANCE WITH ASTM D 2855. THE SOLVENT RECOMMENDED BY THE MANUFACTURER SHALL BE USED.

CARE SHALL BE EXERCISED IN ASSEMBLING A PIPELINE WITH SOLVENT WELDED JOINTS SO THAT STRESS ON PREVIOUSLY MADE JOINTS IS AVOIDED. HANDLING OF THE PIPES FOLLOWING JOINTING, SUCH AS LOWERING THE ASSEMBLED PIPELINE INTO THE TRENCH, SHALL NOT OCCUR PRIOR TO THE SET TIMES SPECIFIED BY THE MANUFACTURER. SOLVENTS SHALL BE APPLIED TO PIPE ENDS IN SUCH A MANNER THAT NO MATERIAL IS DEPOSITED ON THE INTERIOR SURFACE OF THE PIPE OR EXTRUDED INTO THE INTERIOR OF THE PIPE DURING JOINTING. EXCESS CEMENT ON THE EXTERIOR OF THE JOINT SHALL BE WIPED CLEAN IMMEDIATELY AFTER ASSEMBLY.

THREADED PIPE JOINTS SHALL BE MADE USING TEFLON TAPE OR OTHER APPROVED JOINTING MATERIAL. SOLVENT SHALL NOT BE USED WITH THREADED JOINTS. PLASTIC PIPE WHICH HAS BEEN NICKED, SCARRED, OR OTHERWISE DAMAGED SHALL BE REMOVED AND REPLACED. PLASTIC PIPE SHALL BE SNAKED FROM SIDE TO SIDE IN THE TRENCH TO ALLOW 1 FOOT OF EXPANSION AND CONTRACTION PER 100 FEET OF STRAIGHT RUN.
THE PIPELINE SHALL NOT BE EXPOSED TO WATER FOR 24 HOURS AFTER THE LAST SOLVENT-WELDED JOINT IS MADE.

8.2 GRAVITY PIPE
GRAVITY PIPE FOR WASTEWATER SHALL PROVIDE 2 FT VERTICAL AND 10 FT HORIZONTAL CLEARANCE FROM WATER LINES, AND SHALL CROSS SUCH LINES AS NEARLY AS POSSIBLE TO 90 DEGREES, IF CROSSING CAN NOT BE AVOIDED.

PIPE SLOPES SHALL NOT BE LESS THAN 2% FOR 4"Ø PIPE. PIPES SHALL ENTER AND LEAVE CONNECTIONS AS CLOSE TO PARALLEL AS POSSIBLE, BUT IN NO WAY TO EXCEED AN ANGLE OF 45°. 90° TEE CONNECTIONS ARE NOT ALLOWED.

8.3 GENERAL TRENCHING
EXCAVATION OF PIPE TRENCHES SHALL FOLLOW NEAT AND PARALLEL LINES, WITH TRENCH WIDTH, IN GENERAL, TO BE ONE FOOT, WITH SUCH WIDENING, AS REQUIRED TO PLACE VALVES AND FITTINGS WITH A MINIMUM OF 4 INCH CLEARANCE TO TRENCH WALL. THE TRENCH SHALL BE NO LESS THAN 24 INCHES DEEP, EXCEPT WHEN IT IS NECESSARY, TO AVOID UNDERGROUND OBSTRUCTIONS OR ROCKY CONDITIONS. IN ALL CASES, THE PIPE SHALL BE PLACED ON A BEDDING OF IMPORTED OR NATIVE MATERIAL PROVIDING CONTINUOUS SUPPORT THROUGHOUT ITS LENGTH.

BACKFILL FOR THE PIPE TO THE TOP OF THE PIPE PLUS 4 INCHES SHALL BE SELECTED OR IMPORTED SANDY MATERIAL, FREE OF STONE, CLAY, LIMBS OR OTHER DELETERIOUS MATERIALS IN EXCESS OF 1/2 INCH MAXIMUM DIMENSION, PLACED AND TAMPED AND/OR PADDLED ABOUT THE PIPE TO ENSURE PROPER BEDDING PRIOR TO COMPLETION OF TRENCH FILL. THE REMAINING BACKFILL SHALL BE PLACED AT 90% RELATIVE COMPACTION.

9. FLUSHING AND TESTING

AFTER COMPLETION, ALL PIPELINES SHALL BE THOROUGHLY FLUSHED TO REMOVE DIRT, SCALE, OR OTHER MATERIAL. AFTER FLUSHING, THE LINE SHALL BE PRESSURE TESTED. ALL EQUIPMENT, MATERIALS AND LABOR NECESSARY TO PERFORM THE TESTS SHALL BE FURNISHED BY THE CONTRACTOR AND ALL TESTS SHALL BE CONDUCTED IN THE PRESENCE OF THE OWNER OR ENGINEER.

THE CONTRACTOR SHALL PERFORM A TEST TO DEMONSTRATE THAT THE TANKS AND BASINS ARE WATER TIGHT. THE INLET AND OUTLET PIPES OF THE TANKS SHALL BE CAPPED AND THE TANKS SHALL BE COMPLETELY FILLED WITH WATER. THE WATER LEVEL SHALL REMAIN CONSTANT FOR MORE THAN 24 HOURS, OR DURATION BY THE REVIEWING AGENCY JURISDICTION, WHICHEVER IS GREATER, TO DETERMINE IF IT IS WATER TIGHT.

10. OPERATIONAL TEST

THE PERFORMANCE OF ALL COMPONENTS OF THE SYSTEMS SHALL BE EVALUATED BY THE CONTRACTOR.

DURING THE TEST PERIOD AND AT LEAST 15 DAYS PRIOR TO FINAL INSPECTION, THE SYSTEM SHALL OPERATE SATISFACTORILY DURING SUCH PERIOD. ALL NECESSARY REPAIRS, REPLACEMENTS, AND ADJUSTMENTS SHALL BE MADE UNTIL ALL EQUIPMENT, ELECTRICAL WORK, CONTROLS, AND INSTRUMENTATION ARE FUNCTIONING IN ACCORDANCE WITH THE CONTRACTORS DOCUMENTS OR MANUFACTURER SPECIFICATIONS.

11. AS-BUILT DRAWINGS

THE CONTRACTOR SHALL PROVIDE THE OWNER WITH A SET OF AS-BUILT DRAWINGS OF THE LAYOUT AND CONSTRUCTION OF THE SYSTEM.

12. OTHER ITEMS

ANY PROCEDURES NOT NOTED OR INCLUDED IN THE ENGINEERING PLANS OR SPECIFICATIONS SHALL BE APPROVED BY THE PROJECT ENGINEER PRIOR TO IMPLEMENTATION.

13. CONSTRUCTION INSPECTION.

13.1. AT A MINIMUM, INSPECTION OF THE DRIP DISPERSAL SYSTEM INSTALLATION SHOULD INCLUDE THE FOLLOWING. THIS IS IN ADDITION TO INSPECTION WORK REQUIREDFOR THE TREATMENT SYSTEM. JOINT INSPECTION BY THE DESIGNER, CONTRACTOR, AND DEH MAY BE REQUIRED.
13.1.1. PRE-CONSTRUCTION INSPECTION WHERE THE CONSTRUCTION STAKING OR MARKING OF THE DRIP LINES, SUPPLY AND RETURN PIPING, PUMP SYSTEM AND APPURTENANCES IS PROVIDED AND CONSTRUCTION PROCEDURES DISCUSSED;
13.1.2. WATER TIGHTNESS OF EFFLUENT DOSING (PUMP) TANK;
13.1.3. DRIP FIELD LAYOUT, PIPING MATERIALS AND INSTALLATION, AND ALL ASSOCIATED VALVES AND CONNECTIONS;
13.1.4. HYDRAULIC TESTING OF THE DRIP SYSTEM;
13.1.5. FUNCTIONING AND SETTING OF ALL CONTROL DEVICES; AND
13.1.6. FINAL INSPECTION TO VERIFY THAT ALL CONSTRUCTION ELEMENTS ARE IN CONFORMANCE WITH THE APPROVED PLANS, SPECIFICATIONS, AND MANUFACTURE RECOMMENDATIONS; ALL INSPECTION WELLS ARE INSTALLED; AND EROSION CONTROL HAS BEEN COMPLETED.

14. MANAGEMENT REQUIREMENTS

14.1. RECOMMENDED MINIMUM PROCEDURES AND FREQUENCY FOR INSPECTION, MAINTENANCE, MONITORING AND REPORTING ACTIVITIES FOR SUBSURFACE DRIP DISPERSAL SYSTEMS ARE OUTLINED IN TABLE DD-2.

15. OPERATING PERMITS (PER SANTA CLARA COUNTY ORDINANCE SECTION B11-92)

15.1. (A) IN ADDITION TO AN INSTALLATION PERMIT, AN OPERATING PERMIT IS REQUIRED FOR ALL ALTERNATIVE OWTS, INCLUDING THOSE INSTALLED IN CONNECTION WITH THE REPAIR OR UPGRADE OF EXISTING OWTS AS WELL AS THOSE FOR NEW CONSTRUCTION. GENERAL REQUIREMENTS PERTAINING TO OPERATING PERMITS ARE AS FOLLOWS:
15.1.1. (1) THE OPERATING PERMIT WILL BE ISSUED BY THE DIRECTOR FOLLOWING: A.COMPLETION OF CONSTRUCTION OF THE ALTERNATIVE OWTS; B.SATISFACTORY COMPLIANCE WITH THE INSTALLATION PERMIT REQUIREMENTS; AND C.PAYMENT OF APPLICABLE FEES. OPERATING PERMITS ARE NON-TRANSFERABLE.
15.1.2. (2) AFTER INITIAL ISSUANCE, THE OPERATING PERMIT IS REQUIRED TO BE RENEWED PERIODICALLY, THE STANDARD RENEWAL PERIOD BEING ONE YEAR. THE DIRECTOR MAY ESTABLISH CONDITIONS ALLOWING THE TIME PERIOD BETWEEN RENEWALS TO BE EXTENDED FOR CERTAIN TYPES OF OWTS BASED ON A RECORD OF FAVORABLE PERFORMANCE OR OTHER FACTORS WARRANTING A REDUCTION IN SYSTEM OVERSIGHT BY DEH. PROVISIONS FOR ADJUSTING THE OPERATING PERMIT RENEWAL PERIOD SHALL BE PRESCRIBED BY THE DIRECTOR IN THE ONSITE SYSTEMS MANUAL. OPERATING PERMITS MUST ALSO BE RENEWED AT THE TIME OF CHANGE IN PROPERTY OWNERSHIP.
15.1.3. (3) OPERATING PERMITS ARE INTENDED TO SERVE AS THE BASIS FOR VERIFYING THE ADEQUACY OF ALTERNATIVE OWTS PERFORMANCE AND ENSURING ON-GOING MAINTENANCE. PERMIT CONDITIONS SHALL INCLUDE MONITORING AND INSPECTION REQUIREMENTS, PERMIT DURATION, AND OTHER PROVISIONS AS PRESCRIBED BY THE DIRECTOR IN THE ONSITE SYSTEMS MANUAL OR AS DEEMED APPROPRIATE BY THE DIRECTOR ON A CASE-BY-CASE BASIS.
15.1.4. (4) RENEWAL OF AN OPERATING PERMIT REQUIRES:A.PAYMENT OF THE APPLICABLE FEES, UPON RECEIPT OF NOTICE FROM THE DIRECTOR; ANDB.SUBMISSION OF THE RESULTS OF REQUIRED SYSTEM INSPECTION AND MONITORING.
15.1.5. (5) FAILURE TO PAY THE REQUIRED FEE OR SUBMIT THE SPECIFIED MONITORING AND INSPECTION INFORMATION, OR FAILURE TO UNDERTAKE ANY REQUIRED CORRECTIVE WORK SPECIFIED BY THE DIRECTOR MAY BE CAUSE FOR ISSUANCE OF A CITATION, PENALTY FEES, NON-RENEWAL AND/OR REVOCATION OF THE OPERATING PERMIT BY THE DIRECTOR. THE DIRECTOR MAY PLACE A LIEN ON THE PROPERTY FOR RECOVERY OF ANY ASSOCIATED ABATEMENT COSTS AND UNPAID FEES.
15.1.6. (6) A CERTIFIED COPY OF THE FOLLOWING SHALL BE RECORDED AGAINST THE PROPERTY IN THE OFFICE OF THE COUNTY RECORDER OF SANTA CLARA COUNTY:A.INITIAL OPERATING PERMIT ISSUED FOR THE SYSTEM;B.REISSUANCE OF OPERATING PERMIT TO NEW OWNERS; ANDC.NOTICES OF WITHDRAWAL OF ANY OPERATING PERMIT.

15.2. (B) OTHER USES OF OPERATING PERMITS. AN OPERATING PERMIT MAY ALSO BE UTILIZED FOR CIRCUMSTANCES OTHER THAN ALTERNATIVE OWTS, SUCH AS FOR LARGER FLOW OWTS (> 2,500 GPD), IN CONNECTION WITH HOLDING TANK EXEMPTIONS OR WHERE, IN THE OPINION OF THE DIRECTOR, THE TYPE, SIZE, LOCATION OR OTHER ASPECTS OF A PARTICULAR OWTS INSTALLATION WARRANT THE ADDITIONAL LEVEL OF OVERSIGHT PROVIDED BY AN OPERATING PERMIT. IN SUCH CASES, THE ISSUANCE AND SCOPE OF OPERATING PERMITS WILL BE ISSUED IN ACCORDANCE WITH THE GENERAL REQUIREMENTS LISTED IN SECTION B11-92(A)(1) THROUGH (A)(6) ABOVE, AND ANY ADDITIONAL REQUIREMENTS PRESCRIBED BY THE DIRECTOR IN THE ONSITE SYSTEMS MANUAL FOR PARTICULAR CIRCUMSTANCES.

16. PERFORMANCE MONITORING AND REPORTING.

16.1. (A) A MONITORING PROGRAM WILL BE ESTABLISHED FOR EACH ALTERNATIVE OWTS AS A CONDITION OF THE OPERATING PERMIT AT THE TIME OF PERMIT ISSUANCE, AND MAY BE AMENDED AT THE TIME OF PERMIT RENEWAL. SAID MONITORING SHALL BE PERFORMED TO ENSURE THAT THE ALTERNATIVE OWTS IS FUNCTIONING SATISFACTORILY TO PROTECT WATER QUALITY AND PUBLIC HEALTH AND SAFETY. THE MONITORING PROGRAM WILL BE IN ACCORDANCE WITH GUIDELINES IN THE ONSITE SYSTEMS MANUAL AND MAY ALSO INCORPORATE RECOMMENDATIONS OF THE SYSTEM DESIGNER, MANUFACTURER, OR THIRD-PARTY REVIEWER.
16.2. (B) MONITORING REQUIREMENTS WILL VARY DEPENDING UPON THE SPECIFIC TYPE OF ALTERNATIVE OWTS IN ACCORDANCE WITH GUIDELINES IN THE ONSITE SYSTEMS MANUAL.
16.3. (C) THE REQUIRED FREQUENCY OF MONITORING WILL BE IN ACCORDANCE WITH GUIDELINES IN THE ONSITE SYSTEMS MANUAL. MONITORING FREQUENCY MAY BE INCREASED IF, IN THE OPINION OF THE DIRECTOR, SYSTEM PROBLEMS ARE EXPERIENCED.
16.4. (D) MONITORING OF ALTERNATIVE OWTS SHALL BE CONDUCTED BY OR UNDER THE SUPERVISION OF ONE OF THE FOLLOWING:
16.4.1. (1) REGISTERED CIVIL ENGINEER;
16.4.2. (2) PROFESSIONAL GEOLOGIST;
16.4.3. (3) REGISTERED ENVIRONMENTAL HEALTH SPECIALIST; OR
16.4.4. (4) OTHER ONSITE WASTEWATER MAINTENANCE PROVIDER REGISTERED WITH THE DEPARTMENT OF ENVIRONMENTAL HEALTH AND MEETING QUALIFICATIONS AS ESTABLISHED IN THE ONSITE SYSTEMS MANUAL. REGISTRATION SHALL ENTAIL:
16.4.4.1. A. DOCUMENTATION OF REQUIRED QUALIFICATIONS;
16.4.4.2. B. PARTICIPATION IN ANNUAL TRAINING/REVIEW CONDUCTED BY THE DIRECTOR; AND
16.4.4.3. C. PAYMENT OF AN ANNUAL FEE ESTABLISHED BY THE BOARD OF SUPERVISORS.
16.4.4.4. ADDITIONALLY, THE DIRECTOR MAY REQUIRE THIRD-PARTY OR COUNTY MONITORING OF ANY ALTERNATIVE OWTS WHERE DEEMED NECESSARY BECAUSE OF SPECIAL CIRCUMSTANCES, SUCH AS THE COMPLEXITY OF THE SYSTEM OR THE SENSITIVE NATURE OF THE SITE. THE COSTS FOR SUCH ADDITIONAL MONITORING WOULD BE THE RESPONSIBILITY OF THE OWNER.
16.5. (E) MONITORING RESULTS SHALL BE SUBMITTED TO THE DIRECTOR IN ACCORDANCE WITH REPORTING GUIDELINES PROVIDED IN THE ONSITE SYSTEMS MANUAL. THE MONITORING REPORT SHALL BE SIGNED BY THE PARTY RESPONSIBLE FOR THE MONITORING. NOTWITHSTANDING FORMAL MONITORING REPORTS, THE DIRECTOR SHALL BE NOTIFIED IMMEDIATELY OF ANY SYSTEM PROBLEMS OBSERVED DURING SYSTEM INSPECTION AND MONITORING THAT THREATEN PUBLIC HEALTH OR WATER QUALITY.
16.6. (F) IN ADDITION TO REGULAR INSPECTION AND MONITORING ACTIVITIES, POST-SEISMIC INSPECTION AND EVALUATION OF ALTERNATIVE OWTS LOCATED IN HIGH-RISK SEISMIC AREAS WILL BE REQUIRED IN THE EVENT OF AN EARTHQUAKE CAUSING SIGNIFICANT GROUND SHAKING IN THE REGION, AS DETERMINED BY THE DIRECTOR IN CONSULTATION WITH THE COUNTY GEOLOGIST. THE DIRECTOR WILL BE RESPONSIBLE FOR ISSUING APPROPRIATE NOTICES WHEN SUCH INSPECTIONS ARE REQUIRED; THOSE CONDUCTING THE INSPECTIONS WILL BE REQUIRED TO REPORT THE INSPECTION RESULTS TO THE DIRECTOR. THE PURPOSE OF SUCH INSPECTIONS WILL BE TO ASSESS AND DOCUMENT ANY DAMAGE TO THE OWTS AND TO IMPLEMENT CORRECTIVE MEASURES, AS NEEDED, IN A TIMELY MANNER. POST-SEISMIC INSPECTION SHALL BE IN ACCORDANCE WITH REQUIREMENTS PRESCRIBED BY THE DIRECTOR, IN CONSULTATION WITH THE COUNTY GEOLOGIST, AND CONTAINED IN THE ONSITE SYSTEMS MANUAL.
16.7. (G)THE DIRECTOR WILL, FROM TIME-TO-TIME, COMPILE AND REVIEW MONITORING AND INSPECTION RESULTS FOR ALTERNATIVE OWTS AND, AT LEAST EVERY TWO YEARS, WILL PROVIDE A SUMMARY OF RESULTS TO THE SAN FRANCISCO BAY AND CENTRAL COAST REGIONAL WATER QUALITY CONTROL BOARDS. BASED ON THIS REVIEW, THE DIRECTOR MAY REQUIRE CORRECTIVE ACTION FOR SPECIFIC PROPERTIES OR CERTAIN TYPES OF ALTERNATIVE OWTS, OR GENERAL CHANGES IN MONITORING AND INSPECTION REQUIREMENTS.

EROSION CONTROL NOTES:

GENERAL. THE CONTRACTOR SHALL INSTALL, MAINTAIN AND INSPECT EROSION CONTROL AND TEMPORARY STORMWATER CONTROL MEASURES TO CONTROL SEDIMENT AND RUNOFF IN ACCORDANCE WITH THESE PLANS AND THE LOCAL JURISDICTION.

1.1. THE CONSTRUCTION OF THIS PROJECT IS NOT EXPECTED TO OCCUR DURING THE WINTER SEASON (OCTOBER 15TH THROUGH APRIL 15TH).

1.2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL BMP INSTALLATION AND MAINTENANCE.

1.3. ALL GRADING SHALL CONFORM TO THE LOCAL GRADING ORDINANCE, EROSION CONTROL ORDINANCES, AND CALIFORNIA BUILDING CODE.

1.4. ALL DISTURBED SURFACES SHALL BE PREPARED AND MAINTAINED TO CONTROL EROSION AND TO ESTABLISH NATIVE OR NATURALIZED VEGETATIVE GROWTH COMPATIBLE WITH THE AREA. THIS CONTROL SHALL CONSIST OF: A. EFFECT TEMPORARY PLANTING SUCH AS RYE GRASS, SOME OTHER FAST-GERMINATION SEED, AND MULCHING WITH STRAW AND/OR OTHER SLOPE STABILIZATION MATERIAL; B) PERMANENT PLANTING OF NATIVE OR NATURALIZED DROUGHT RESISTANT SPECIES OF SHRUBS, TREES, OR OTHER VEGETATION, PURSUANT TO THE COUNTY'S LANDSCAPE CRITERIA, WHEN THE PROJECT IS COMPLETED; C) MULCHING, FERTILIZING, WATERING OR OTHER METHODS MAY BE REQUIRED TO ESTABLISH NEW VEGETATION, ON SLOPES LESS THAN 20%, TOPSOIL SHOULD BE STOCKPILED AND REAPPLIED.

SEED AND MULCH. ALL AREAS ON- AND OFF-SITE EXPOSED DURING CONSTRUCTION ACTIVITIES, IF NOT PERMANENTLY LANDSCAPED PER PLAN, SHALL BE PROTECTED BY MULCHING AND/OR HAND BROADCASTING OF THE FOLLOWING STERIL, WEED FREE, SEED MIX AND INCORPORATED OVER ALL DISTURBED SLOPES:

BROMUS CARINATUS 10#/ACRE
LEYMUS TRITICOIDES 8#/AC.
HORDEUM BRACHYANTHERUM 5#/AC.
FESTUCA RUBRA 8#/AC.
DESCHAMPSIA CESPITOSA 8#/AC.

THE MIX/APPLICATION SHALL ALSO CONTAIN:
- FERTILIZER (6-3-3) SHALL BE HAND BROADCAST AND INCORPORATED AT 30-LB/ACRE OVER ENTIRE AREA.
- MYCHORRHIZAL FUNGI SHALL BE ADDED AT 50 LB/ ACRE.
- IF HYDROSEEDING, ADD MULCH AND TACKIFIER TO ABOVE.

ALL EXCAVATED MATERIAL SHALL BE REMOVED TO AN APPROVED DISPOSAL SITE OR DISPOSED OF ON-SITE IN A MANNER THAT WILL NOT CAUSE EROSION.

CONCRETE WASHOUT. TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE LOCATED A MINIMUM OF 50 FEET FROM STORM DRAIN INLETS, OPEN DRAINAGE FACILITIES, AND WATERCOURSES. THE CONCRETE WASHOUT FACILITY SHALL BE BELOW GRADE AND CONSTRUCTED WITH A MINIMUM LENGTH AND MINIMUM WIDTH OF 10 FEET. TEMPORARY CONCRETE FACILITIES SHALL BE CONSTRUCTED AND MAINTAINED IN SUFFICIENT QUANTITY AND SIZE TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS. THE WASHOUT SHALL HAVE A 10 MIL POLYETHYLENE PLASTIC LINER. WHEN CONCRETE WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE AND MATERIALS FOR THE WASHOUT SHALL BE REMOVED AND DISPOSED OF. HOLES, DEPRESSIONS, OR OTHER GROUND DISTURBANCES CAUSED BY THE REMOVAL OF THE CONCRETE WASHOUT SHOULD BE BACKFILLED AND REPAIRED.

OTHER PROVISIONS. IF CONSTRUCTION OCCURS BETWEEN OCTOBER 15TH AND APRIL 15TH, EXPOSED SOIL NOT INVOLVED IN IMMEDIATE CONSTRUCTION ACTIVITY SHALL BE PROTECTED FROM EROSION AT ALL TIMES. AFTER APRIL 15TH, EROSION CONTROL MEASURES SHALL BE IN PLACE DURING INCLEMENT WEATHER.

EROSION CONTROL MEASURES SHALL BE KEPT IN PLACE BY THE CONTRACTOR UNTIL NATIVE VEGETATION HAS BEEN ESTABLISHED AND PROVIDES NECESSARY SLOPE COVER (MINIMUM 70% COVER).

Orenco SYSTEMS Technical Data Sheet

PF-Series Submersible Effluent Pumps: 3-Phase, 60-Hz, 4-inch (100-mm)

Applications

Our 3-phase, 4-inch (100-mm) Submersible Effluent Pumps are designed to transport screened effluent (with low TSS counts) from septic tanks or separate dosing tanks. These pumps are constructed of lightweight, corrosion-resistant stainless steel and engineered plastics, and all 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.

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

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

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

Standard Models

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

Product Code Diagram

PF 10 07 3 2 CV - 50

Cord length, ft (m): Blank = 10 (3) 30 = 30 (9) 50 = 50 (15)
Check valve: Blank = no internal check valve CV = internal check valve*
Voltage, nameplate: 2 = 230 200 = 200 4 = 460
Frequency: 3 = three-phase, 60 Hz
Horsepower (kW): 05 = ½ hp (0.37) 07 = ¾ hp (0.56) 10 = 1 hp (0.75) 15 = 1½ hp (1.11) 20 = 2 hp (1.50) 30 = 3 hp (2.24) 50 = 5 hp (3.73)
Nominal flow, gpm (L/sec): 10 = 10 (0.6) 20 = 20 (1.3) 30 = 30 (1.9) 50 = 50 (3.2) 75 = 75 (4.7)
Pump, PF Series

* Available for 10 gpm (0.6 L/sec), 1/2 hp (0.37 kW) only

C US LR80980 LR2053896
Powered by Franklin Electric

Worksheet 3 - Parts List					
Qty	Units	Item Number	Description		
Dripline					
2,064	ft.	WFPC16-4-24	Wasteflow PC . 1 gph, 24 in. emitter spacing		
Airvent and box					
4	ea.	APVBK-1	1" airvent for use on zones less than 50gpm		
4	ea.	AV BOX 6 inch	6" round box		
Pressure Regulators - Use to keep pressure from being too high					
2	ea.	Select	Restricts pressure from exceeding required pressure. Required with Classic dripline.		
Controllers					
1	ea.		Select Controller from list left		
Pre-assembled Headworks					
Select from cell with		BioDisc Filter			
0	-	WHWS-V-1F-A	Sporty Headworks box & guts with 1" Vortex Filter. Automatic flush		
1	ea.	BIODISC Filter Headworks	-		
0	-	GEOVAC filter Headworks	-		
* **Solenoid Flush valves** - Select only if Headworks is not selected above					
	ea.	SVLV-B-100	Flush valves		
* **Filters** - Select only if Headworks is not selected above					
	ea.	BioDisc Filter-150	0		
* **Pressure Gauges** - Select only if Headworks is not selected above					
	ea.	PG-25-Lead	Presssure gauge with lead		
Flow Meters					
1	ea.	Flow Meter - Digital Display	Select Flow Meter		
Zone valves -					
2	ea.	SVLVB-100	1" Solenoid valve. 24V,FPT,Normally closed.		
Dripline fittings - Quantities below are estimates only.					
48	ea.	LTSLIP-600	Lockslip Adapter. 3/4" PVC slip to Wasteflow dripline		
8	ea.	LTC-600	This adds 2 couplings for each coil ordered.		
	ea.	LTTEE-600	Lockslip Tee. Fits 16mm Wasteflow dripline		
	ea.	LTELL-600	Lockslip Elbow. Fits 16mm Wasteflow dripline		
	ea.	LTFlex-R-18	18" flex PVC riser with 1 lockslip adapter. Used for risers		
	ea.	LTFlex-L-36	36" flex PVC with 2 lockslip adapters. Used for risers or loops		
Check Valves - Check design for quantities					
	ea.	CV-B-10	1" True Union ball check PVC/Viton		
	ea.	Spring check	Select size from drop down menu left		
Unions					
	ea.	Unions	0		

Recommended minimum procedures and frequency for inspection, maintenance, monitoring and reporting activities for subsurface drip dispersal systems are outlined in **Table DD-2.**

Table DD-2. Drip Dispersal System Management Requirements

	Work	Frequency
Inspection	• Conduct routine visual observations of drip field, downslope area and surroundings for wet areas, pipe leaks or damage, soil erosion, drainage issues, abnormal vegetation, gophers or other problems. • Conduct routine physical inspections of system components, including valves, filters, and headworks box(es). • Perform special inspections of drip field at time of any landscaping work or other digging in drip field area. • Perform inspections of dosing pump(s) and appurtenances (per O&M manual and Performance Evaluation Guidelines, Part 5 of this Manual). • Record observations.	• Every 6 to 12 months.
Maintenance	• Manually remove and clean filter. • Clean and check operation of pressure reducing valves. • Clean flush valves and vacuum release valves.	• Clean filter every 6 months. • Other maintenance annually.
Water Monitoring & Sampling	• Measure and record water levels in dispersal field monitoring wells, as applicable, per permit requirements. • Obtain and analyze water samples from dispersal field monitoring wells, as applicable, per permit requirements.	• According to permit conditions, if applicable.
Reporting	• Report findings to DEH per permit requirements. • Standard report to include dates, monitoring well and other data collected, work performed, corrective actions taken, and performance summary. • Report public health/water quality emergency to DEH immediately.	• According to permit conditions, typically every 1 to 2 years, depending on system size, usage, history, location.

No.	Revision/Issue	Date

WASTEWATER SYSTEM SPECIFICATIONS

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APN: 537-12-012

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EXP 03/31/25
CIVIL
STATE OF CALIFORNIA

Drawn By	Checked By
PEM	PEM
Project No. 202304	Scale AS SHOWN
Date JUNE 2024	
Sheet No. WW5	

Orenco Systems — Technical Data Sheet

Access Risers – Ultra-Rib™

Applications

Orenco's Access Risers provide access to septic tank openings and can be cast into the tops of concrete tanks, bonded in place, or bolted down using a riser-to-tank adapter. They can also be used as valve enclosures.

General

Orenco Ultra-Rib™ Access Risers are constructed of ribbed PVC pipe and are available in 12-in. (300-mm), 18-in. (450-mm), and 24-in. (600-mm) diameters. They can be ordered in 3-in. (76.2-mm) increments in lengths up to 13 ft (3.96 m) for 12-in. (300-mm) and 18-in. (450-mm) diameter risers, and up to 14-ft (4.27 m) for 24-in. (600-mm) diameter risers. Orenco Ultra-Rib riser pipe is also available in truckload quantities. A complete line of Orenco pipe-cutting tools makes it easy to fabricate risers in your shop or in the field.

Standard Models

RR12XX, RU18XX, RR24XX

Product Code Diagram

R R 24 30" + TBD + TBD

Discharge assembly or grommet option:
- Blank = No discharge grommet
- HD = Pre-drilled for HDA125
- HD2 = Pre-drilled for HDA200
- 10 = 1-in. (25-mm)
- 12 = 1¼-in. (32-mm)
- 15 = 1½-in. (38-mm)
- 20 = 2-in. (51-mm)

Connector/splice box option
- Blank = No grommet or splice box
- CLK = Pre-drilled for ClickTight™
- S = 1-in. (25-mm) grommet installed
- L = 1¼-in. (32-mm) grommet installed
- SX = Pre-drilled for Orenco® external splice box†
- S1 = SB1 attached
- S2 = SB2 attached
- S3 = SB3 attached
- S4 = SB4 attached
- L5 = SB5 attached
- L6 = SB6 attached
- SX = Pre-installed hub for external splice box*
- XS = Explosion-proof splice box for simplex pumps‡
- XD = Explosion-proof splice box for duplex pumps‡
- XT = Explosion-proof splice box for triplex pumps‡

Riser height, 3-in. (76-mm) increments standard

Riser diameter:
- 12 = 12-in. (300-mm)*
- 18 = 18-in. (450-mm)*
- 24 = 24-in. (600-mm)

Riser type code:
- R = 12-in. (300-mm) and 24-in. (600-mm) diameters
- U = 18-in. (450-mm) diameter
- PU = Bulk Ultra-Rib™ pipe, all diameters

Riser, Ultra-Rib™

* Not intended for use over pump vaults
† Minimum riser height 18-in. (457-mm)
‡ For Class I Division 1 environments

Materials of Construction

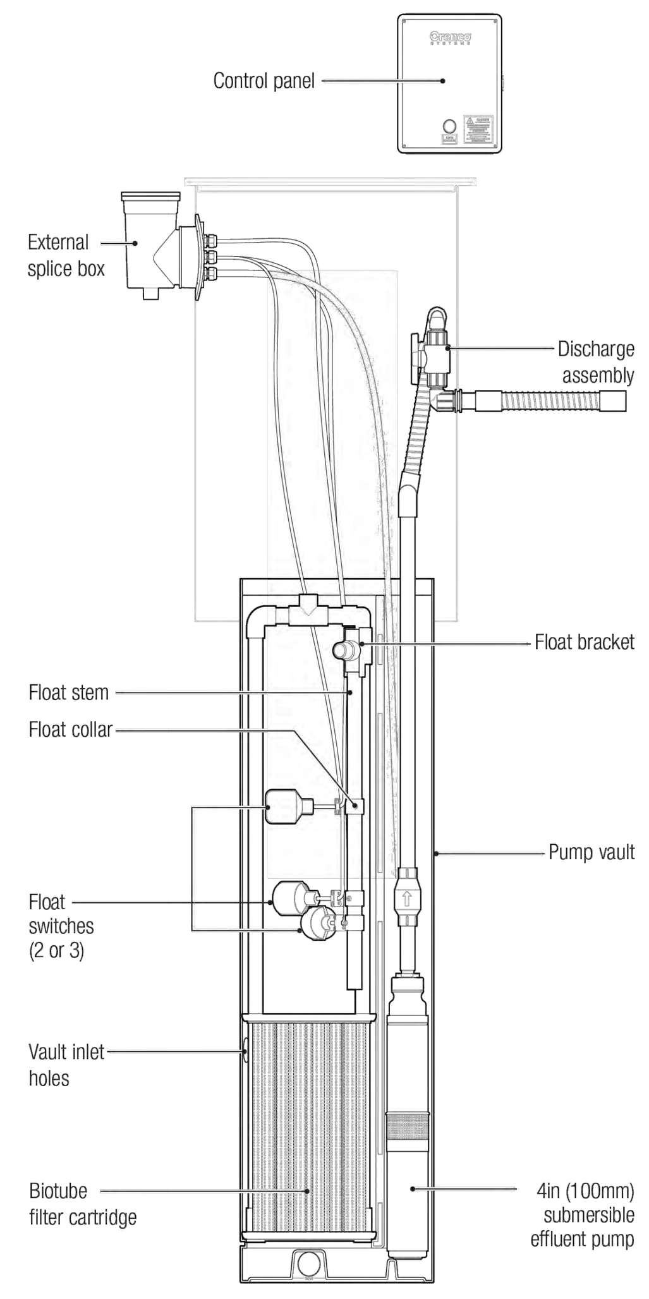
Ultra-Rib™ PVC Pipe: PVC

Specifications

Model	RR12XX	RU18XX	RR24XX
I.D., in. (mm)	11.74 (298)	17.65 (448)	23.50 (597)
Wall thickness – excluding ribs, in. (mm)	0.10 (3)	0.19 (5)	0.25 (6)
O.D. – including ribs, in. (mm)	13.13 (334)	19.44 (494)	25.63 (651)
Weight, lbs/ft (kg/m)	5 (7.4)	11 (16.4)	19 (28.3)

Orenco Water — Technical Data Sheet

Biotube® ProPak™ 60Hz Pump Package



Biotube ProPak 60Hz Pump Package

Applications

The Biotube ProPak Pump Package is designed to filter and pump effluent from a one- or two-compartment septic tank or pump tank to gravity or pressurized dispersal.

Packages for on-demand dosing or timed dosing at 10, 20, 30, and 50gpm (0.6, 1.3, 1.9, and 3.2L/sec) and 50Hz are available.

General

Orenco's Biotube ProPak Pump Package makes it simple to select and install the correct pump and controls package. Its patented Biotube pump vault technology eliminates the need for separate dosing tanks. The pump vault also allows removal of the effluent filter for cleaning with no need to remove the pump vault or pump, which simplifies servicing.

For more information on specific ProPak components and options, see the following Orenco technical documents:

- *S-Series Simplex Control Panels* (NTD-CP-S-1)
- *MVP Simplex Control Panels* (NTD-CP-MVP-1)
- *External Splice Box* (NTD-SBEX-1)
- *Splice Boxes* (NTD-SB-SB-1)
- *Discharge Assemblies* (NTD-HV-HV-1)
- *HDA Discharge Assemblies* (NTD-HDA-1)
- *PF-Series Submersible Effluent Pumps: 1-Phase, 60-Hz, 4-inch* (100-mm) (NTD-PU-PF-1)
- *PVA-Series 4-in. (100-mm) Submersible Effluent Pumps* (NTD-PU-PVA-1)
- *Universal Biotube Pump Vaults* (NTD-PVU-1)
- *PVP-Series Biotube Pump Vaults* (NTD-PVU-3)
- *PV-Series Biotube Pump Vaults* (NTD-PVU-2)

Orenco Water — Fact Sheet

Flow Rates and Cleaning Intervals

Flow rates for effluent filters need to be tied to service intervals in order to be meaningful. Not all filter manufacturers make this connection clear. Filters with very low Total Flow Areas (which plug up easily) cannot handle very high flow rates unless they are cleaned frequently.

Graphs 2a and 2b show the relationship between Orenco's effluent filter models (residential and commercial), design flow, and the "mean time between cleaning." The larger the filter and the smaller the flow, the longer you can go between cleanings.

Based on maintenance records, we know that our standard 4in (100mm) FT0444-36 residential filter has an average maintenance interval in excess of 10 years, when used with typical residential flows.

Level of Filtration

A good filter has a LARGE Total Flow Area to prevent premature filter clogging, along with many SMALL individual openings or holes, to prevent the passing of biosolids. That's what's meant by a good "level of filtration."

Some competitors compare their 1⁄16in (1.6mm) slots to our 1⁄8in diameter (3.2mm) holes, hoping you'll assume that their slots offer better filtration. But the proof is in TSS reduction. Our field test data from thousands of installations using filters with 1⁄8in diameter (3.2mm) holes prove that our effluent filters reduce Total Suspended Solids by an average of two-thirds (we also offer 1⁄16in diameter holes).

Performance Verification

Our new PSC06 (1/8in mesh) filters are NSF46 certified. We also have long-term user data to back up how well our effluent filters work over time.

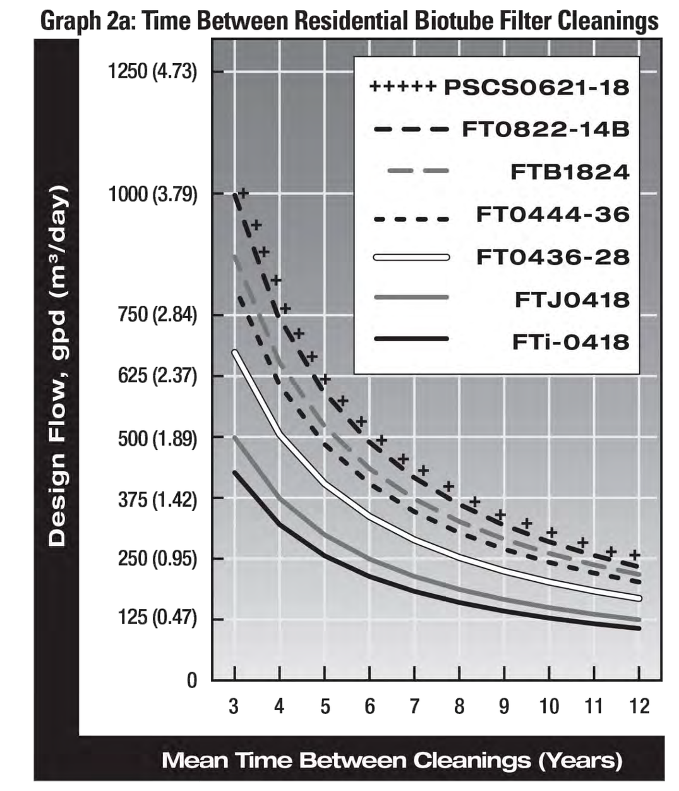
Alarm Feature

Orenco's residential filters offer an alarm as an option.

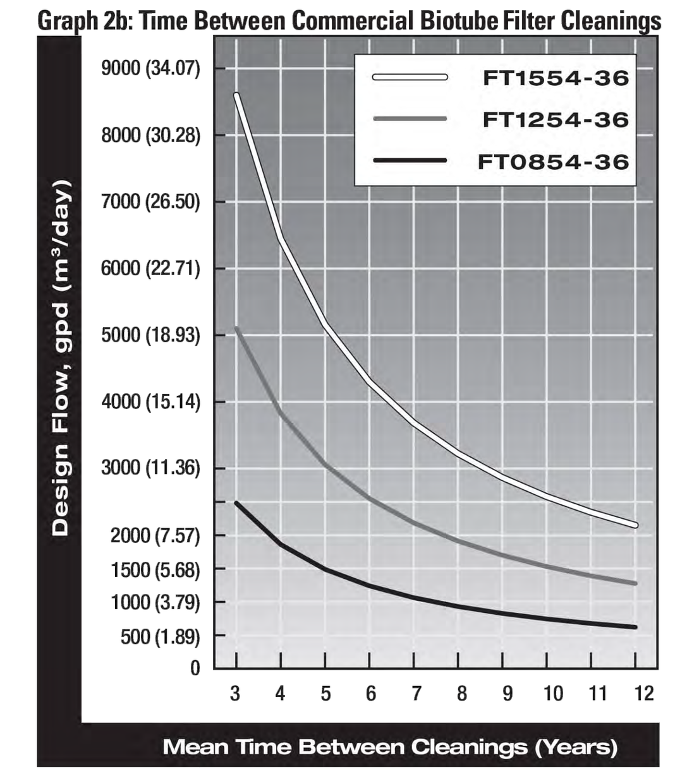
Lifetime Warranty

Orenco's Biotube effluent filters come with a lifetime warranty when used in residential applications.

Graph 2a: Time Between Residential Biotube Filter Cleanings



Graph 2b: Time Between Commercial Biotube Filter Cleanings



Orenco Water — Technical Data Sheet

AdvanTex® AX20 Textile Filter

Applications

Orenco's AdvanTex AX20 Treatment System is an innovative technology for onsite treatment. The heart of the system is the modular AdvanTex AX20 filter, a sturdy, watertight basin filled with an engineered textile material. This lightweight, highly absorbent textile material treats a tremendous amount of wastewater in a small space.

AdvanTex AX20 Textile Filter

Related Information

See *AdvanTex Air Vents Technical Data Sheet*, NTD-ATX-VENT-1 for information on air vents.

Features/Specifications

To specify this product, require the following:

- Non-skid lid surface
- Easily removable and serviceable fixed-film textile media (a polyester plastic), operated in an unsaturated condition
- Consistent media quality
- Completely serviceable manifold
- Watertight construction and corrosion-proof materials
- Multiple inlet and vent locations available for flexible orientation of the unit
- Foam-core lid with insulation value of R-6 (RSI-1.1)

Product Code Diagram

AX 20 - [ ] - [ ]

Application options:
- Blank = Residential (includes AX-VENT only)
- COM = Commercial (includes antibuoyancy flanges only)

Lid color options:
- Blank = Green
- B = Brown

20ft² (1.9m²) nominal treatment area

AdvanTex® Treatment System

Physical Specifications*

Filter basin length, in (mm)	91 (2311)
Width, in (mm)	40 (1016)
Height, in (mm)	31 (787)
Area (footprint), ft² (m²)	20 (1.85)
Filter dry weight, lb (kg)	383 (174)

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

NSF — AdvanTex Treatment Systems are listed to NSF/ANSI Standards 40 and 245 for Class I Systems.

All product and performance assertions are based on proper design, installation, operation, and maintenance according to Orenco's current published documentation.

Orenco Systems — Technical Data Sheet

VeriComm® AX20B Control Panels

Applications

VeriComm® AX20B remote telemetry control panels are used in AdvanTex® AX20 Treatment Systems with two pumps for timed recirculation and pump discharge. Coupled with the web-based VeriComm Monitoring System, these affordable control panels give the ability to remotely monitor and control treatment system operation, with real-time efficiency to wastewater system operators and maintenance organizations, while remaining invisible to the homeowner. AX20B panels allow remote operators to change system parameters, including timer settings, from the web interface. Interlocked controls prevent recirculation pump operation if there is a high-level alarm on the discharge side.

Typical AX20B VeriComm® Control Panel
Standard Models: VCOM AX20B1, VCOM AX20B2

Features

Three Operating Modes
- "Start-Up Mode" collects trend data and establishes operating standards during the first 30 days of operation
- "Normal Mode" manages day-to-day functions
- "Test Mode" suspends data collection and alarm reporting during installation and service

Data Collection and Utilization
- Compiles data logs of system conditions and events such as pump run times, pump cycles, and alarm conditions

Troubleshooting and Diagnostic Logic
- Reports suspected component failures, which then trigger alarms

Features, cont.

Advanced Control Logic
- Activates system diagnostics in the event of a float failure or malfunction and maintains normal system operation until servicing can occur

Communication and Alarm Management
- Provides remote telemetry and a web-based monitoring application for communication and alarm management (see *VeriComm Monitoring System*, NTD-CP-VCOM-1)
- Updates point values (including timer settings) and queued changes during each host communication session
- Contacts with host monthly; more frequently during alarm conditions

Multiple Communication Methods
- Call-In to VeriComm® Host (phone line or optional high speed internet)
  – Signals critical fault conditions that require immediate attention (e.g., pump failure) through automatic alarm notifications
  – Signals less-critical fault conditions (e.g., stuck float switch) through automatic alert notifications and triggers the panel's troubleshooting logic and alternative operating mode
  – Sends updates through automatic update notifications, including alarm updates or all-clear notifications following alarms/alerts, as well as normally scheduled monthly panel reports
  – Allows manual, forced communication from panel to host for updating point values and receipt of queued changes
- Real-Time, Manual Direct Panel Connection
  – Allows a local operator real-time access to detailed logged data and the ability to change point values through direct connection via RS-232 serial port from a laptop or Android® device with optional Bluetooth® kit
  – Allows a local operator to initiate an auto-answer mode in real-time to access detailed logged data and the ability to change point values via direct, forced communication at the site

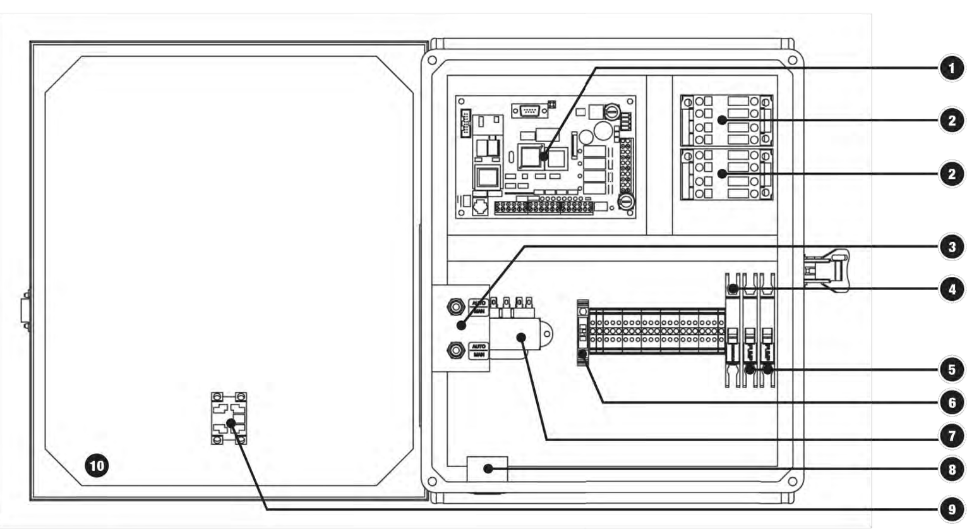
Open-architecture software with password security is used during real-time, manual connections. Orenco offers BT-VCOM software as an option, but VeriComm panels require no proprietary software. VT100 protocol allows access and control from a Mac or PC computer using a simple communication program (e.g., Windows® HyperTerminal), with multilevel password protection ensuring that only qualified personnel can access the panel's data.

Status Light Indicators
– Flashing green LED for normal operation
– Yellow LEDs for status of digital inputs
– Red LEDs for status of digital outputs and modem activity

UL-recognized and FCC-approved

For more information, try our online demo at www.vericomm.net (no password required).

Orenco Systems — Technical Data Sheet



Standard Components

Feature	Specifications
1. VeriComm® Remote Telemetry Unit*	ATRTU-100: 36/18 VAC (center tap transformer); 8 digital inputs, 4 analog inputs, 4 digital outputs, 0 analog outputs, on-board modem (2400 baud); LED input and output indicators; 1-year battery backup of data and program settings
2. Motor-Start Contactors	120 V, 16 FLA, 1 hp (0.75 kW), 60 hz; 2.5 million cycles at FLA (5 million at 50% of FLA) 240 V, 16 FLA, 3 hp (2.24 kW), 60 hz; 2.5 million cycles at FLA (5 million at 50% of FLA)
3. Toggle Switch	Single-pole, single-throw, momentary manual switch; 20 A, 3/4 hp (0.75 kW)
4. Controls Circuit Breaker	10 A, OFF/ON switch; single-pole 120 V; DIN rail mounting with thermal magnetic tripping characteristics (240 V units are available for international markets)
5. Pump Circuit Breaker	20 A, OFF/ON switch; single-pole 120 V or double-pole 240 V; DIN rail mounting with thermal magnetic tripping characteristics
6. Fuse	250 VAC, 1 A
7. Transformer	120 VAC primary, 36 VCT @ 0.85 A secondary
8. Audible Alarm	95 dB at 24 in. (610 mm), warble-tone sound
9. Visual Alarm	7⁄8-in. (22-mm) diameter red lens; "Push-to-silence;" UL Type 4X rated, 1 W LED light, 120 V
10. Panel Enclosure	Measures 13.51 in. high × 11.29 in. wide × 5.58 in. deep (343 × 287 × 135 mm). UL Type 4X rated. Constructed of UV-resistant fiberglass; hinges and latch are stainless steel.

**See VeriComm® Monitoring System (NTD-CP-VCOM-1) for details.*

Optional Components

Feature	Specification(s)	Product Code Adder
Pump Run Lights	7⁄8-in. (22-mm) diameter green lens. UL Type 4X rated, 1 W LED light, 120 V	PRL
Heater	Anti-condensation heater; self-adjusting: radiates additional wattage as temperature drops	HT
Programmable Timer	Discharge pump timed dosing	PT
UV Disinfection Compatibility	UV grounded power circuit and alarm contacts; pump disable upon UV failure	UV

Additional options available on a custom basis. Contact Orenco Controls for more information.

WASTEWATER SYSTEM SPECIFICATIONS CONTINUED

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