GENERAL NOTES

THERE IS NO SANITARY SEWER IN THIS SUBDIVISION.

THERE IS NO KNOWN WELL ON THIS, OR ADJACENT PROPERTIES WITHIN 100 FEET OF THIS WASTEWATER TREATMENT SYSTEM.

THE TOPO LINES ON THESE PLANS WERE PROVIDED FOR THE SOLE PURPOSE OF LOCATING THE WASTEWATER SYSTEM. ALL GRADES AND ELEVATIONS MUST BE FIELD VERIFIED PRIOR TO CONSTRUCTION.

ALL TREES IN THE DISPOSAL AREA MUST EITHER BE REMOVED OR AVOIDED WHEN INSTALLING THE DRIP TUBING. WHEN DRIP TUBING IS ROUTED AROUND A TREE, IT SHOULD NOT AFFECT THE SURROUNDING DRIP LINES. THE RE-ROUTED TUBE MAY END UP CLOSER THAN 2' FOR A SHORT DISTANCE.

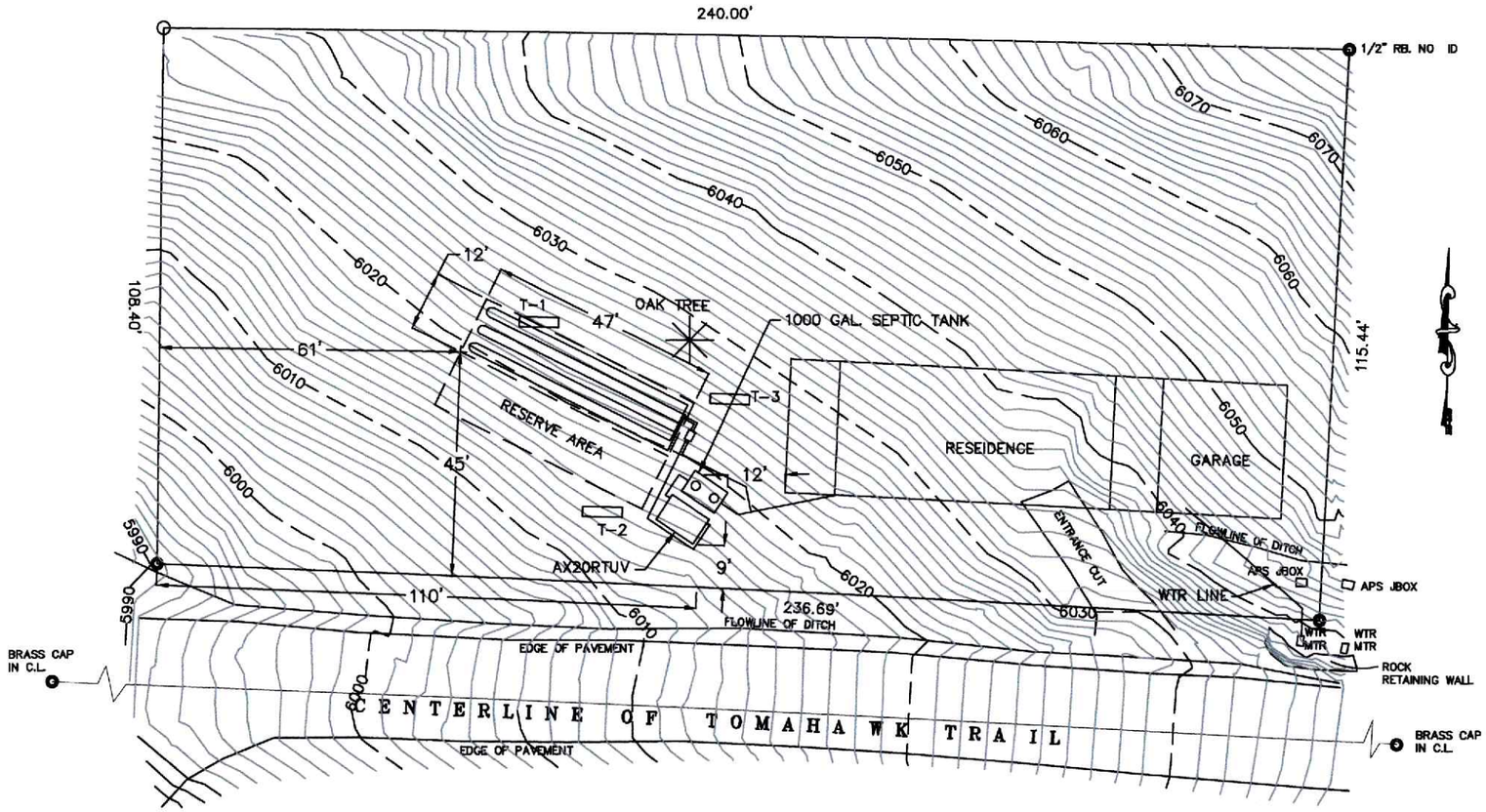
THE WATER LINE IS TO BE SLEEVED IN SCHEDULE 40 PIPE WHEREVER IT IS LESS THAN 5' FROM ANY PORTION OF THE WASTEWATER SYSTEM.

THIS SUBDIVISION HAS A PUBLIC WATER SYSTEM SUPPLYING WATER TO ALL OF THE ADJACENT PROPERTIES.

Registered Professional Engineer (Civil)
CERTIFICATE NO.
37273
TODD T.
CHRISTIANSON
Date Signed 7/07/25
ARIZONA, U.S.A.

EXPIRES 3/31/26

TONTO NATIONAL FOREST



PLOT PLAN

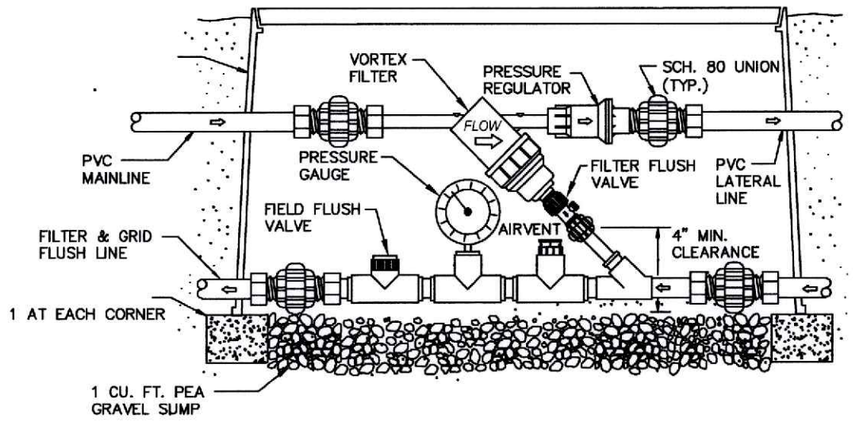
SCALE: 1" = 30'
C.I. = 1'

APN 301-59-055
LAT. 34° 24' 40"
LONG. 111° 31' 49"
SHEET 1 OF 5

TODD T. CHRISTIANSON, P.E.
209 N. EDISON WAY
PAYSON, ARIZONA 85541
(928) 970-0397

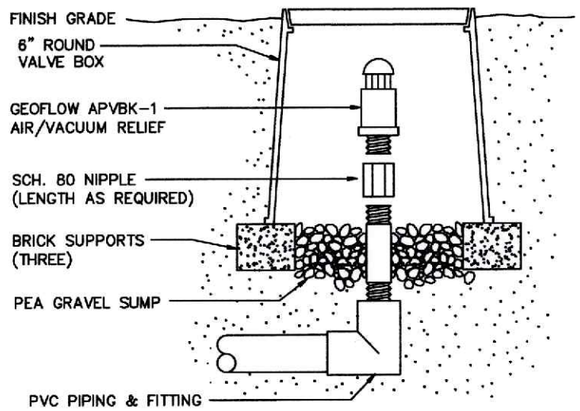
AN ADVANTEX AX-20 TEXTILE FILTER WITH A SUBSURFACE DRIP DISPOSAL FOR THE MR. & MRS. MICHAEL STARKE PROPERTY
9658 TOMAHAWK TRAIL
GILA COUNTY, ARIZONA

JOB NO.	
DESIGNED BY:	T.T.C.
DATE:	7/07/25
CHECKED BY:	T.T.C.
REVISED:	
CHECKED BY:	



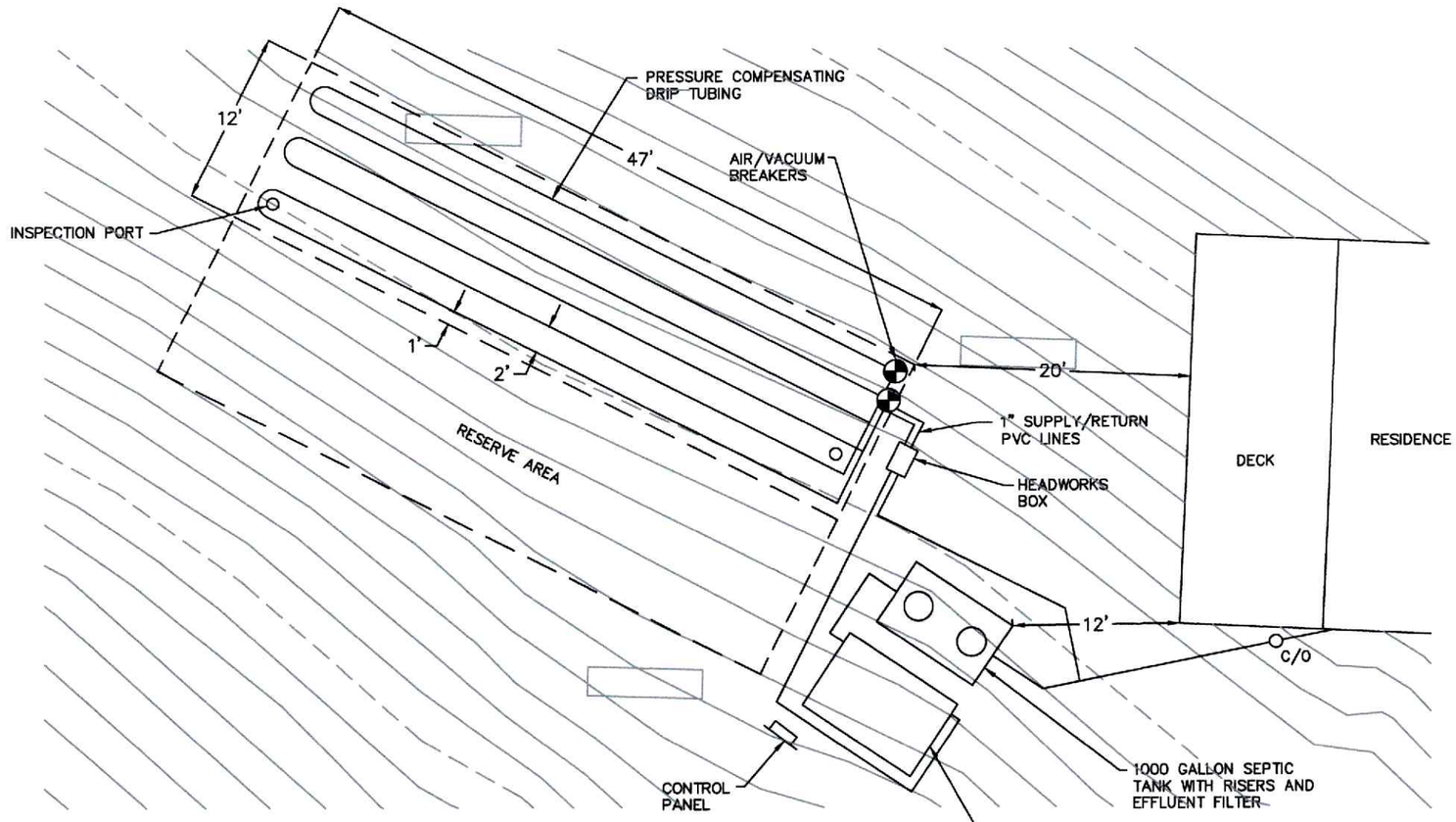
565A GEOFLOW SECTION — 1" MANUAL HEADWORK & 40 PSI PRESSURE REGULATOR

NOT TO SCALE



522 GEOFLOW SECTION — 1" AIR/VACUUM RELIEF

NOT TO SCALE



TREATMENT & DISPOSAL DETAIL

NOT TO SCALE

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DESIGN CALCULATIONS

DAILY DESIGN FLOW

THIS WASTEWATER SYSTEM IS DESIGNED ACCORDING TO THE FLOOR PLANS PROVIDED BY THE PROPERTY OWNER.

3 BEDROOM RESIDENCE
3 x 150 = 450 GPD

FIXTURE COUNT

WATER CLOSET	– 6 UNITS	
LAVATORY	– 2 UNITS	
TUB/SHOWER	– 4 UNITS	
KIT. SINK	– 2 UNITS	
WASH. MACH.	– 2 UNITS	
WASH. SINK	– 2 UNITS	
	18 UNITS	= 450 GPD

THIS WASTEWATER SYSTEM DESIGN IS BASED ON 450 GPD.

TEXTILE FILTER

ADVANTEX AX–20RT – 600 GPD
THE DAILY DESIGN FLOW IS 600 GALLONS, SO USE AN ADVANTEX AX–20RTUV TEXTILE FILTER.

PROCESSING TANK

MINIMUM TANK SIZE – APP	= 1000 GAL.
MINIMUM TANK SIZE – ORENCO	= 1000 GAL.
PROCESSING TANK SIZE USED	= 1000 GAL.

USE A 1000 GALLON SEPTIC TANK.

THE ONE DAY STORAGE CAN BE MET WITH THIS TANK BY USING THE TOP 12" OF THE CONCRETE TANK AND THE RT – 250 + 800 = 1050 GAL.

TEXTILE FILTER DOSING PUMP

THE STANDARD RECIRCULATION PUMP IS A SPECIFIC PUMP FOR THE AX20RT SYSTEM, AND THE ITS A MODEL PF300511.

FIELD DESIGN

NUMBER OF ZONES	= 1
QUANTITIY OF EFFLUENT	= 450 GPD
HYDRAULIC LOAD. RATE	= .40 GPD/SQ.FT.
TOTAL AREA REQUIRED = 450/.89	= 506 SQ. FT.
TOTAL AREA PROPOSED	= 564 SQ. FT.
SPACING BETWEEN DRIP LINES	= 2 FT.
SPACING BETWEEN EMITTERS	= 2 FT.
TOTAL LINEAR FEET	= 282 FT.
DIAMETER OF DRIP LINE	= .55 IN.
NUMBER OF DRIP LATERALS	= 3 LATERALS
TOTAL NUMBER OF EMITTERS	= 141 EMITTERS
PRESSURE AT BEGINNING OF FIELD	= 40 PSI
FT OF HEAD AT BEGINNING OF FIELD	= 92.40 FT.
TYPE OF DRIP LINE (CLASSIC OR PC)	= PC
FLOW RATE PER EMITTER (GPH)	= .60 GPH
TOTAL FIELD FLOW (GPM)	= 1.41 GPM

FIELD DESIGN – DISPOSAL CALCULATIONS

MIN. PUMP CAPACITY FOR DISPOSAL	= 1.41 GPM
HEAD REQUIRED AT DRIP FIELD	= 92.40 FT.
HEAD LOSS THROUGH HEADWORKS	= 3.5 PSI
HEAD LOSS THROUGH HEADWORKS	= 8.09 FT.
ENTRANCE VELOCITY	= .46 FPS
FRICTION LOSS IN DRIP LINE (PSI)	= 1.00 PSI
FRICTION LOSS IN DRIP LINE (FT.)	= 2.31 FT.
FRICTION LOSS THROUGH DRIP FIELD	= 102.80 FT.

SUPPLY LINE & MANIFOLD CALCULATIONS

SUPPLY PIPE ID	= 1.05 IN.
FRICTION LOSS PER 100' OF PIPE	= .28 FT.
LENGTH OF SUPPLY LINE	= 15 FT.
VELOCITY IN SUPPLY LINE	= .46 FPS
HEAD LOSS IN SUPPLY LINE	= .06 FT.
MANIFOLD PIPE ID	= 1.05 IN.
FRICTION LOSS PER 100' OF PIPE	= .28 FT.
LENGTH OF SUPPLY MANIFOLD	= 25 FT.
VELOCITY IN SUPPLY MANIFOLD	= .46 FPS
HEAD LOSS IN SUPPLY MANIFOLD	= .06 FT.
TOTAL FRICTION LOSS IN SUPPLY	= .12 FT.
STATIC HEAD	= 5 FT.
HEIGHT FROM PUMP TO OUTLET	= 5 FT.
TOTAL FRICTION LOSS	= 102.91 FT.
TOTAL STATIC HEAD	= 10 FT.
TOTAL DYNAMIC HEAD	= 112.91 FT.

FIELD DESIGN – FLUSHING CALCULATIONS

MIN. PUMP CAPACITY FOR FLUSHING	= 2.52 GPM
HEAD REQUIRED AT DRIP FIELD	= 92.40 FT.
HEAD LOSS THROUGH HEADWORKS	= 3.5 PSI
HEAD LOSS THROUGH HEADWORKS	= 8.09 FT.
ENTRANCE VELOCITY	= .92 FPS
EXIT VELOCITY	= .50 FPS
FRICTION LOSS IN DRIP LINE (PSI)	= 1.0 PSI
FRICTION LOSS IN DRIP LINE (FT.)	= 2.31 FT.
FRICTION LOSS THROUGH DRIP FIELD	= 102.80 FT.

SUPPLY LINE & MANIFOLD CALCULATIONS

SUPPLY PIPE ID	= 1.05 IN.
FRICTION LOSS PER 100' OF PIPE	= .60 FT.
LENGTH OF SUPPLY LINE	= 20 FT.
VELOCITY IN SUPPLY LINE	= 1.01 FPS
HEAD LOSS IN SUPPLY LINE	= .12 FT.
MANIFOLD PIPE ID	= 1.05 IN.
FRICTION LOSS PER 100' OF PIPE	= .60 FT.
LENGTH OF SUPPLY MANIFOLD	= 20 FT.
VELOCITY IN SUPPLY MANIFOLD	= 1.01 FPS
HEAD LOSS IN SUPPLY MANIFOLD	= .12 FT.
TOTAL FRICTION LOSS IN SUPPLY	= .24 FT.
STATIC HEAD	= 5 FT.
HEIGHT FROM PUMP TO OUTLET	= 5 FT.

RETURN LINE & MANIFOLD CALCULATIONS

RETURN PIPE ID	= 1.05 IN.
FRICTION LOSS PER 100' OF PIPE	= .28 FT.
LENGTH OF RETURN LINE	= 30 FT.
VELOCITY IN RETURN LINE	= .55 FPS
HEAD LOSS IN RETURN LINE	= .08 FT.
MANIFOLD PIPE ID	= 1.05 IN.
FRICTION LOSS PER 100' OF PIPE	= .28 FT.
LENGTH OF RETURN MANIFOLD	= 30 FT.
VELOCITY IN RETURN MANIFOLD	= .55 FPS
HEAD LOSS IN RETURN MANIFOLD	= .06 FT.
TOTAL FRICTION LOSS IN RETURN	= .14 FT.
STATIC HEAD	= –5 FT.
TOTAL FRICTION LOSS	= 103.18 FT.
TOTAL STATIC HEAD	= 5.0 FT.
TOTAL DYNAMIC HEAD	= 108.18 FT.

PUMP SELECTION

BECAUSE THE DEMAND ON THE PUMP IS HIGHER FOR THE FLUSHING CYCLE, IT WAS USED TO ENSURE THAT THE SYSTEM DEMAND FIT WITHIN THE SPECIFICATIONS OF THE OSI PUMP MODEL PF100511FC.

PUMP BASIN SETTINGS

THE DISCHARGE ADSSEMBLY IS IN THE AX20RT. THE DRAWDOWN IS APPROX. 25 GALLONS PER INCH, THEREFORE FOR A 50 GALLON DOSE, THE FLOAT SETTINGS ARE (FROM THE BOTTOM):

OFF	= 33 IN.
ON	= 35 IN.
HIGH WATER ALARM	= 37 IN.

VOLUME OF EFFLUENT IN LINES

DRIP LINE – .012 x 282	= 3.4 GAL.
1" LINES – .045 x 40 – SUPPLY	= 1.8 GAL.
1" LINES – .045 x 50 – RETURN	= 2.3 GAL.
TOTAL	= 7.5 GAL.

VOLUME DISPOSED PER DOSE

50 GAL. – 7.5 GAL. DRAINBACK = 42.5 GAL/DOSE

LINEAR LOADING RATE ANALYSIS

450 GPD x .67	= 302 GPD AVG.
302 GPD/47 FT	= 6.4 GPD/L.F.

SEE HYDRAULIC ANALYSIS INFORMATION ON FILE

MINIMUM VERTICAL SEPARATION (MVS)

IN THE PRIMARY DISPERSAL AREA, A TEST HOLE WAS DUG TO A DEPTH OF 16 & 17 INCHES. WITH TEXTILE FILTER TREATED EFFLUENT, A MVS OF 30 INCHES IS REQUIRED TO IMPERV. SOIL. WITH 16 INCHES AVAILABLE, THE DRIP LINES CAN BE INSTALLED 4 INCHES BELOW GRADE AND MEET THE MVS TO IMPERV. SOIL & GROUND WATER, USING UV DISINFECTION. MOTTLING WAS FOUND AT 16" INDICATING SEASONAL HIGH GROUNDWATER.

AX20–RTUV BOUYANCY CALCULATIONS

5.2'x8.5'x3'	= 132 CU.FT. UP
132 CU.FT. x 62.4	= 8237 LB. UPFORCE
5.2'x8.5'x3'	= 132 CU.FT. DOWN
132 CU.FT x 62.4 LB	= 8237 LB DOWN
8237LB+900LB (RT WEIGHT)	= 9137 LB DOWN

9137 LB > 8237 LB, THEREFORE TANK WILL NOT FLOAT

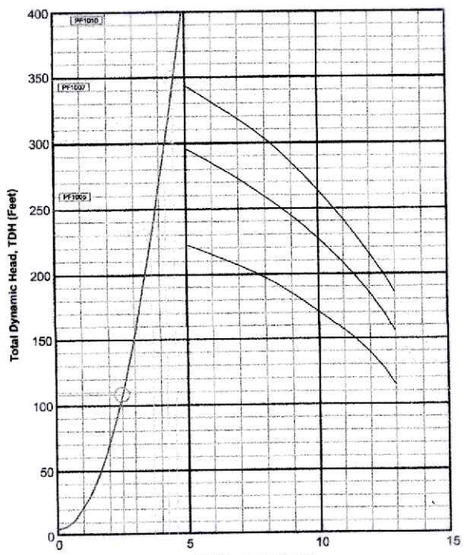
1000 GAL. TANK BOUYANCY CALCULATIONS

250 GAL/7.48 – 12" OF VOID	= 33.4 CU.FT. UP
33.4 CU.FT. x 62.4	= 2084 LB. UPFORCE
(8'x5'x1')–8.05 CU.FT.	= 32 CU.FT. DOWN
32 CU.FT x 110 LB	= 3520 LB DOWN

3520 LB > 2084 LB, THEREFORE TANK WILL NOT FLOAT

UV MODEL – AXUV125/31

THIS UV UNIT WILL RUDUCE BACTERIA BY 99.999% (5 LOGS). THE AX20RT WILL PRODUCE A PEAK FLOW JUST UNDER 2 GPM. AT 5 GPM, THE FLOW IS STILL BELOW THE MINIMUM TARGET DOSE, AND IS WELL OVER 2 TIMES THE DESIGN FLOW.



EFFLUENT PUMP

SET TO PUMP 50 GAL/DOSE ON DEMAND

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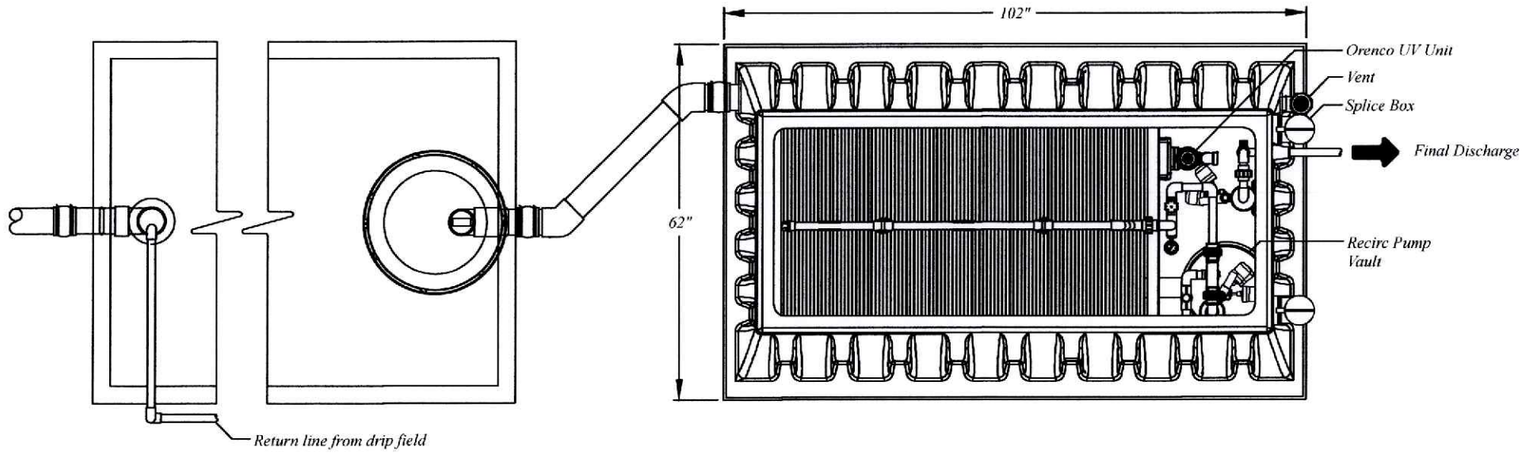


1000 gal. Primary Tank - Top View

AX20RTUV 800 gal. Recirc. Tank - Top View

GENERAL NOTES

FOLLOW THE MANUFACTURERS GUIDELINES FOR SETTING THE PROCESSING TANK. ENSURE THAT ALL BACKFILL MATERIAL IS FREE OF DEBRIS, ESPECIALLY ROCKS AND SHARP MATERIALS.

FOLLOW THE ADVANTEX AX20RT TREATMENT SYSTEMS INSTALLATION GUIDE FOR THE INSTALLATION PROCESS OF THE TEXTILE FILTER AND RELATED COMPONENTS.

FOLLOW THE GEOFLOW GUIDELINES FOR THE INSTALLATION OF THE DRIP TUBING, HEADWORKS BOX & ALL OTHER GEOFLOW PRODUCTS SPECIFIED IN THE PLANS.

THE INSTALLATION OF PLUMBING PIPE AND FITTINGS FOR THE WASTEWATER SYSTEM SHALL COMPLY WITH THE UNIFORM PLUMBING CODE.

ALL PLUMBING CONNECTIONS, CHAMBERS, AND TANK OPENINGS MUST BE WATER TIGHT. ALL COMPONENTS MUST BE LEAK TESTED PRIOR TO, OR UPON INSTALLATION IN ACCORDANCE WITH ADEQ AQUIFER PROTECTION PERMIT, R18-9-A314.5.d.

ALL CONSTRUCTION AND MATERIALS SHALL COMPLY WITH THE ADEQ APP, MAG STANDARDS, AND MANUFACTURERS SPECIFICATIONS, AS APPLICABLE.

AS DESIGNED, THE PROCESSING TANK MEETS THE REQUIREMENTS SET IN THE ADEQ AQUIFER PROTECTION PERMIT, AS SPECIFIED IN R18-9-A314.

AS DESIGNED, THE PUMP SYSTEMS IN THIS WASTEWATER SYSTEM MEET THE REQUIREMENTS SET IN THE ADEQ AQUIFER PROTECTION PERMIT, AS SPECIFIED IN R18-9-E304.

AS DESIGNED, THE TEXTILE FILTER MEETS THE REQUIREMENTS SET IN THE ADEQ AQUIFER PROTECTION PERMIT, AS SPECIFIED IN R18-9-E312.

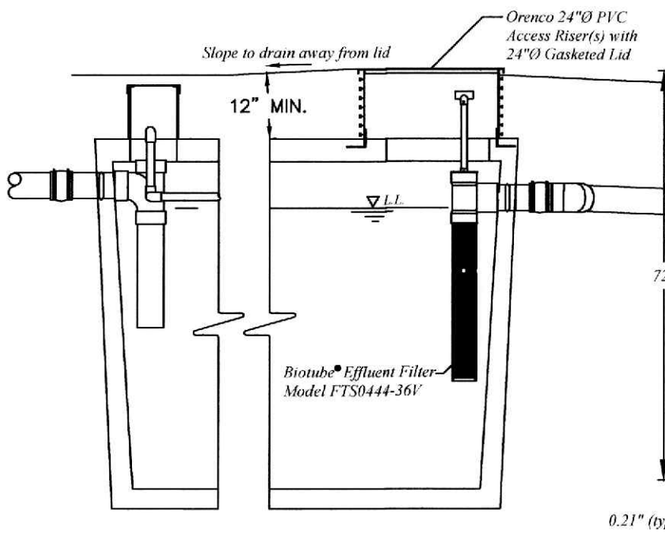
AS DESIGNED, THE SUBSURFACE DRIP DISPOSAL FIELD MEETS THE REQUIREMENTS SET IN THE ADEQ AQUIFER PROTECTION PERMIT, AS SPECIFIED IN R18-9-E322.

AS DESIGNED, THE DISINFECTION MEETS THE REQUIREMENTS SET IN THE ADEQ AQUIFER PROTECTION PERMIT, AS SPECIFIED IN R18-9-E320.

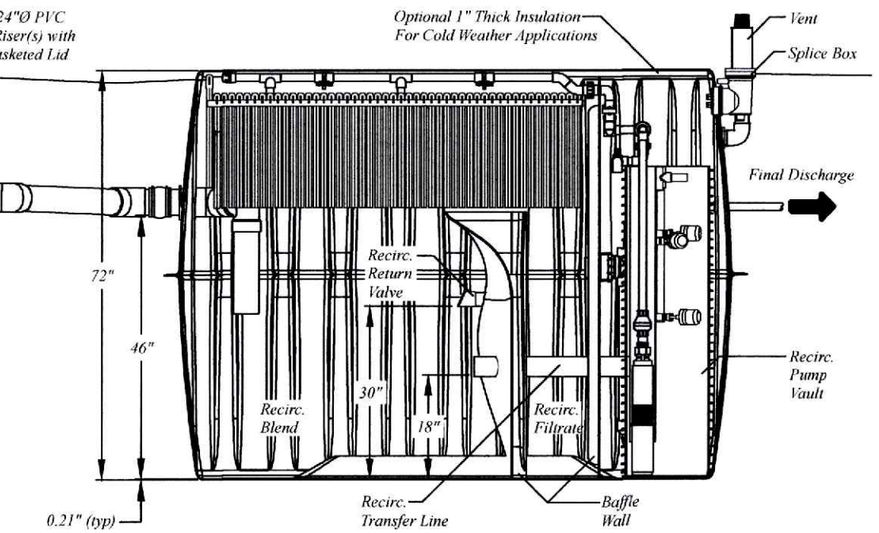
THE CONTROL PANEL MUST BE WIRED AS SHOWN ON THE ATTACHED WIRING DIAGRAM. THE PANEL IS TO BE INSTALLED AT LEAST 3 FEET OFF OF THE GROUND AND VISIBLE FROM THE RESIDENCE. ALARM HORN MUST BE HEARD FROM HOME.

CONTROL PANEL TO BE LOCATED SO THAT IT IS VISIBLE FROM A COMMONLY USED AREA OF THE HOME, WITH AN 'ALWAYS ON' GREEN LIGHT.

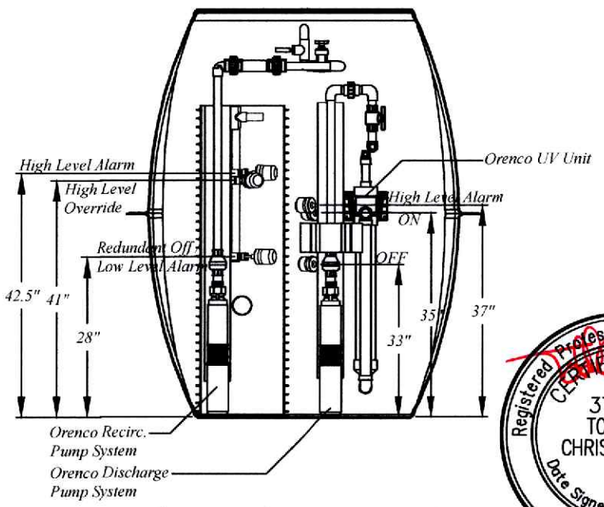
ANY DEVIATION FROM THESE PLANS AND SPECIFICATIONS SHALL BE APPROVED, IN IN WRITING, BY THE DESIGN ENGINEER.



1000 gal. Primary Tank - Side View



AX20RTUV 800 gal. Recirc. Tank - Side View



Discharge Chamber - End View

Registered Professional Engineer (Civil) CERTIFICATE NO. 37273 TODD T. CHRISTIANSON Date Signed 10/7/25 ARIZONA, U.S.A.

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FOR THE
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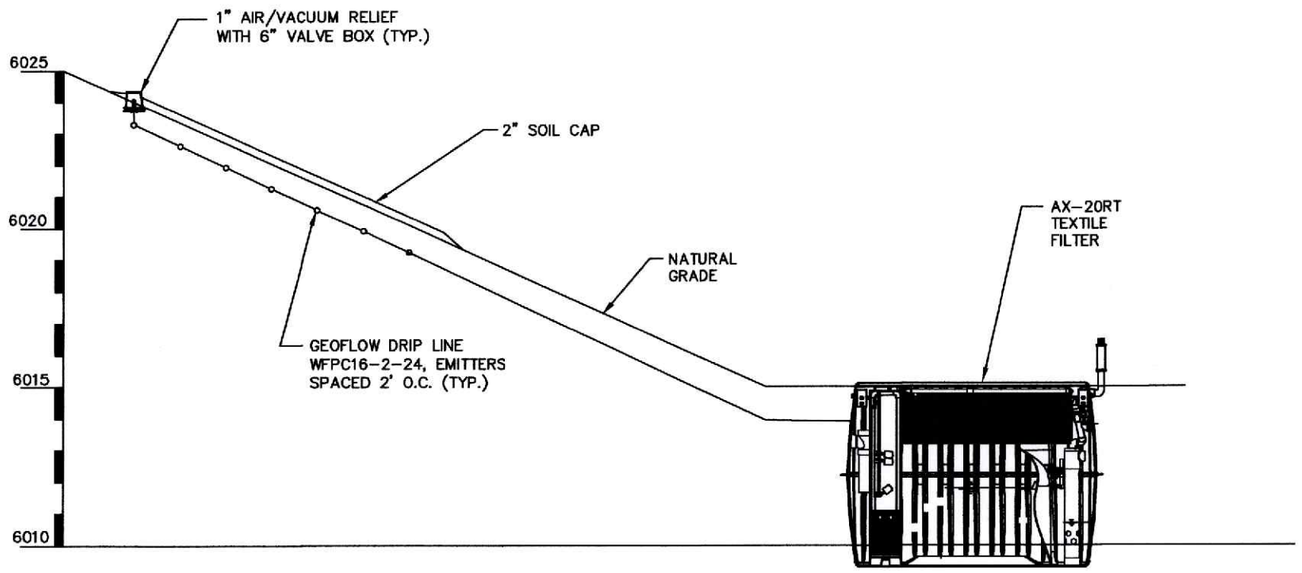

HYDRAULIC PROFILE

EQUIPMENT LIST

1000 GALLON SEPTIC TANK WITH RISERS AND FILTER
ADVANTEX AX-20RTUV TEXTILE FILTER
OSI EFFLUENT PUMP MODEL PF300511 - RECIRC
PVC SPLICE BOX - 4 CORD
ADVANTEX VERICOM-AXB1 PANEL
FLOAT SWITCH ASSEMBLY
EFFLUENT FILTER (FOR SEPTIC TANK)
RISER TO GRADE
OSI EFFLUENT PUMP MODEL PF100511FC - DISCHARGE
GEOFLOW WASTEFLOW PC DRIP LINE - WFPC16-2-24, 282 FT.
GEOFLOW CA-600 COMPRESSION ADAPTERS - 1/2" SLIP, 10 EA.
GEOFLOW MANUAL HEADWORK MODEL WHW-100-MAN
GEOFLOW PRESSURE REGULATOR MODEL PMR-40MF
GEOFLOW AIR/VACUUM BREAKER MODEL APVBK-1, 2 EA.

ALL PRODUCTS ARE "OR EQUAL", BUT MUST BE APPROVED BY THE DESIGN ENGINEER PRIOR TO SUBSTITUTION.

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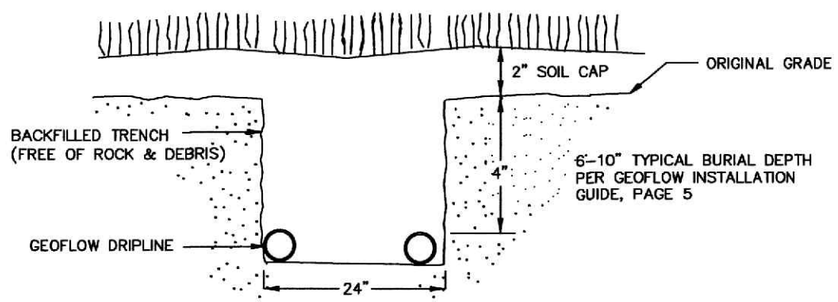
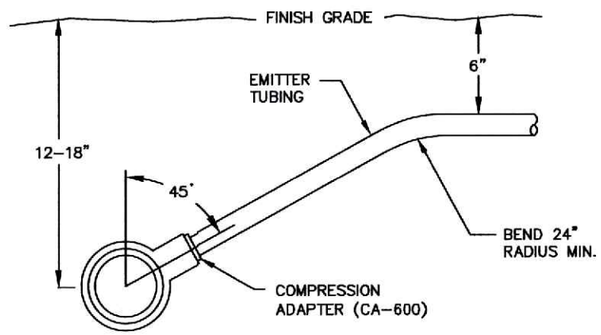


NOTES:
BOTTOM OF THE TRENCH & DRIP TUBING MUST BE INSTALLED 6" BELOW GRADE.
THE TRENCH IS TO BE 4" DEEP & 24" WIDE.

GEOFLOW TRENCHING
INSTALLATION

NOT TO SCALE



DRIP LINE TO SUPPLY/RETURN LINE CONNECTION

NOT TO SCALE

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