



NETAFIM BIOLINE

.61 GPH @ 24"

Q= 1600 /

.0987654320 =

16200 SF MIN

16200 / 2 =

8100 LF MIN

Z1 1440'

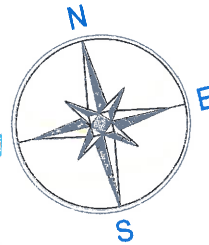
Z2 2700'

Z3 2260'

Z4 1700'

TOTAL

8100'



LEGEND				
				
WATER LINE CROSSING	REMEDIAL ZONE	AIR/VACUUM RELIEF VALVES ● HIGHEST ELEVATION OF MANHOLE	50 PSI REGULATOR IN VALVE BOX	SWING CHECK VALVE

3/4" IRON PIPE FOUND 0.41' SOUTHWEST OF BOUNDARY LINE

Jon Maass

10-21-20

(4.008 ACRES)
ESTHER G. ROSEMOND, AND
LAUREN W. LUBBOCK
DOCUMENT NO. 201613140
OPRICT



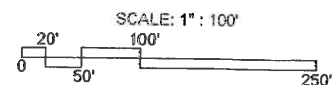
**Know what's below.
Call before you dig.**

ANY AND ALL DRAINAGE ON THIS SITE
SHALL BE DIVERTED AWAY FROM ALL
OSSF COMPONENTS.

ANY FUTURE POTABLE WATER LINE,
(SWIMMING POOL, IRRIGATION ETC)
MUST MAINTAIN 10' SEPARATION FROM ANY
OSSF COMPONENT.

CURLEX SHALL BE USED FOR STABILIZING OVER
THE IMPORTED SOILS FOR THE ENTIRE FIELD OR A
VEGETATIVE COVER IS TO BE ESTABLISHED ON
ALL DRAIN FIELDS PRIOR TO FINAL INSPECTION
BEING PASSED, IF FIELD AREA IS GREATER THAN
10% SLOPE .

1' SETBACK BETWEEN ANY EASEMENT & ANY OSSF COMPONENT
5' SETBACK BETWEEN PROPERTY LINE & ANY OSSF COMPONENT
5' SETBACK BETWEEN SURFACE IMPROVEMENT & ANY OSSF TANK
10' SETBACK BETWEEN ANY WATER LINE OR WATER TANK & ANY OSSF COMPONENT



DESIGNED BY:

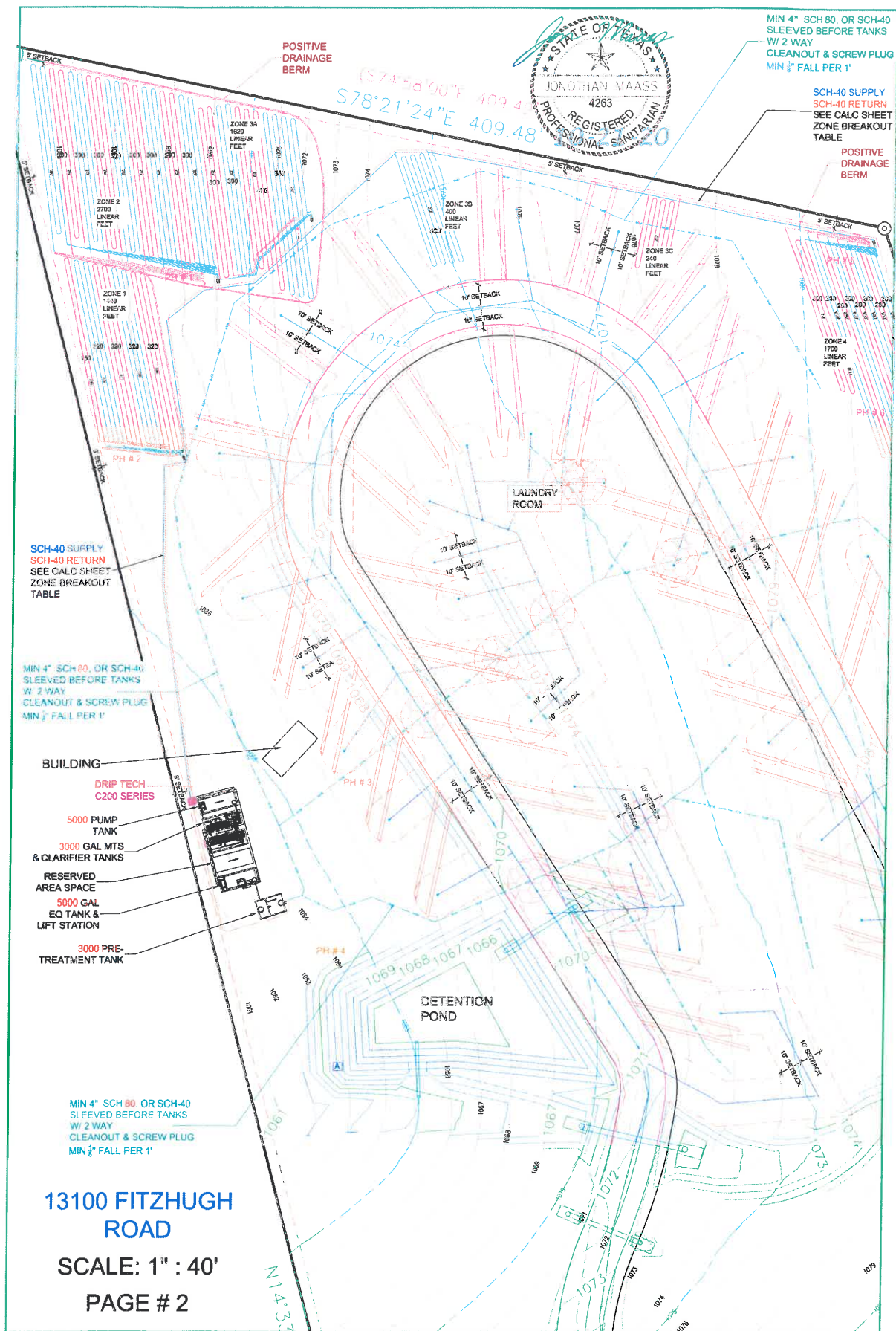
PAGE # 1 of 16

JON MAASS, RS 4263
6513 THOMAS SPRINGS ROAD
AUSTIN, TEXAS 78736
512-297-2346

13100 Fitzhugh Road
Austin, TX 78736
RV PARK

Legal Description:

ABS 363 SUR 624 HYATT
J J ACR 10.0017



On-Site Sewage Facility

Soil Evaluation Report Information

Date Soil Survey Performed: 09-27-18

County: Travis

Name of Site Evaluator: Jon Maass

Proposed Excavation Depth: 21"p
Registration Number: SE 0028165

Requirements:

At least two soil excavations must be performed on the site, at opposite ends of the proposed disposal area. Soil boring locations or dug pits must be shown on the site drawing. For subsurface disposal, soil evaluations must be performed to depth of at least two feet below the proposed excavation depth. For surface disposal, the surface horizon must be evaluated. Describe each soil horizon, identify any restrictive features and indicate depths where features appear

Soil Boring Number 1, 4, 5 & 6							
Depth (Feet)	Texture Class	Soil Texture	Structure (For Class III blocky, platy or massive)	Drainage (Mottles/ Water Table)	Restrictive Horizon	Observations	
0	0" to 30"	III	Silty Clay Loam	Blocky			Gravel < 30%
1				No evidence of groundwater	31" Rock		
2							
3							
4							
5							
Soil Boring Number 2 & 3							
Depth (Feet)	Texture Class	Soil Texture	Structure (For Class III blocky, platy or massive)	Drainage (Mottles/ Water Table)	Restrictive Horizon	Observations	
0	0" to 6"	III	Silty Clay Loam	Blocky			Gravel < 30%
1				No evidence of groundwater	7" Rock		
2							
3							
4							
5							

Features of Site Area

Presence of 100 year flood zone	Yes	No X
Presence of adjacent ponds, streams, water impoundments	Yes X	No
Existing or proposed water well in nearby area	Yes	No X
Organized sewage service available to lot or tract	Yes	No X

I certify that the findings of this report are based on my field observations and are accurate to the best of my ability.

Signature of Site Evaluator

Date: 02-10-19

System Use:

Design capacity for 35 RV spaces @ 40 GPD each 35 x 40 = 1400 and laundry mat @ 200 GPD with water-saving devices, estimated daily flow will be rounded to 1600 GPD.

Proposed System:

Install an aerobic pre-treatment system with a drip irrigation type drainfield on the site.

Design Description:

Primary treatment of effluent will be accomplished using a approved aerobic pre-treatment & Drip Treatment unit. The unit is approved under TCEQ chapter 285. Treated effluent (<140 MG/L) will then be distributed to the disposal field area. Drip irrigation will be the method of effluent disposal and disposal. The surface soil conditions for this site will have to be amended (sealant) and prepared to support the system.

Class III, see site evaluation, a class III soil may have to be added to achieve at least 8" of soil above the dripfield. Any existing soil surface where soil is added should be scarified before additional soil is added.

Drip Field Calculations:

The designed load for this system is 1600 GPD

Drip Irrigation requires 1600 (G) / (0.98765432) (fta) = 16200 sq. ft. min field area.

16200 / 2 = 8100 linear feet of tubing.

a) Drip Irrigation Flushing: Flushing tubing will be automatically done by drip test at a minimum of 2 feet per second at the distal end of the flushing manifold.

b) Treatment: Extended Aeration treatment system (see design)

c) Filter: Drip Tech / A/C 200 series filtration unit

d) Chlorination: no chlorination required

e) Pressure Regulator: 1/2" psi each zone

f) Air Relief: 1" air relief shall be installed at the highest points of both the supply and flushing manifolds, air relief valves shall be covered by a 6" round valve box with a purple cover.

g) Pump Ther: Drip Tech BDMC (PLC/DUPLEX) programmable logic computer, controller is capable of auto filter / field flushing, and dosing intervals in minutes.

h) Tank Data: (SEE DETAIL)

i) Pump tank: (SEE DETAIL)

j) Installation Note: Tanks are to be installed with a minimum separation of the feet from the foundation. The tank is to be level (+/- 1") and is to be set on a minimum of 6" of compacted sand. One drain out shall be installed between the foundation and septic tank every 50' of treatment sewer line.

k) Alarm System: An undischarged high water alarm (red light) will be installed on this system, included in Drip Tech BDMC/DUPLEX. Alarm will be installed in a highly visible location as near the pump tank as possible. Alarm and pump on separate circuits.

l) Chain Field Data: The drip lines shall be spaced 2.0' apart.

m) Disposal Field Flushing: 1. The drip irrigation system area shall be located in a relatively open area at least 100' away from any well and 5' from any property lines (manifolds should be 1' away from any PUE).

n) 2. The field area must be seeded, mulched, or sodded immediately after installation.

o) 3. The field shall be maintained at all times (mowed).

p) 4. The field surface may have to be amended (sealant) plus have soil added to meet minimum depths for tubing, and separations to a restrictive horizon and/or groundwater (see design).

Construction Notes:

1. Installer shall be responsible to comply with TCEQ and local codes for proper OSSF installation. 2. The owner or contractor is to be responsible for identifying all property lines, easements, wells and other features. 3. The owner or contractor shall be responsible for ensuring the septic system installation does not violate any local codes. 4. All materials shall be a minimum of 1" from any OSSF drainfield. 5. All materials shall be a minimum of 1" from any OSSF drainfield. 6. All materials shall be a minimum of 1" from any OSSF drainfield. 7. All materials shall be a minimum of 1" from any OSSF drainfield. 8. All materials shall be a minimum of 1" from any OSSF drainfield. 9. All materials shall be a minimum of 1" from any OSSF drainfield. 10. All materials shall be a minimum of 1" from any OSSF drainfield.

11. The design is no way constitutes a warranty, certification of competency, and/or guarantee of system operation or function. Owner is ultimately responsible for the system upkeep (including maintenance, repaving, problems, monitoring flow, etc.). While the designer has made diligent effort to preserve vegetation and the landscape, the designer is not responsible for any losses (trees landscaping, etc.) due to installation, operation, and/or system failure.

12. Design, Maintenance and Limitations: This OSSF design is intended to meet minimum state requirements for OSSF as of 1/28/2012. The owner should be aware that a septic system is a system of thousands of parts and will not stand up to prolonged abuse. Any of the guidelines below which are not followed will void the warranty and the septic system compromises agreement by the homeowner to regulate use of this system so as to maintain its integrity.

13. Inspection Schedule: Inspection schedule must be adhered to in order to demonstrate compliance. The schedule is as follows: 1. Pre-construction Meeting: Meet with design inspection & requirements. 2. Plumbing Inspection: Plumbing, pump, control, and alarm are in place, operational and exposed. 3. Final: Within system is complete and landscaping is finished.

14. A. The owner is to be responsible for properly maintaining the septic system. 1. Keep your septic system in peak condition in the following steps should be taken: 2. Do not allow excess water to enter your drainfield (gopher systems, run-off, etc.). 3. Do not allow excess water to enter your drainfield (gopher systems, run-off, etc.). 4. Do not let harsh chemicals, grease, high sodium, etc. enter the system. 5. Avoid the use of harsh chemicals, grease, high sodium, etc. enter the system. 6. Do not use harsh chemicals, grease, high sodium, etc. enter the system. 7. Do not use harsh chemicals, grease, high sodium, etc. enter the system. 8. Do not use harsh chemicals, grease, high sodium, etc. enter the system. 9. Do not use harsh chemicals, grease, high sodium, etc. enter the system. 10. Do not use harsh chemicals, grease, high sodium, etc. enter the system.

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JON MAASS, RS 4263 6513 THOMAS SPRINGS ROAD AUSTIN, TEXAS 78736 512-287-2346 maass4020@yahoo.com		SITE: 13100 Fitzhugh Road Austin, TX 78736 RV PARK LEGAL: ABS 363 SUR 624 HYATT J J ACR 10.0017	
SCALE NOT TO SCALE PAGE # 3 PERMITTING AUTHORITY: TRAVIS COUNTY		Property ID # 902001	

Pump Data:

BRAND Franklin Electric

MODEL 35FE15S4-2W230

HP 1

Voltage 230

Phase 1

Full Load Amps NA

Locked Rotor Amps NA

Min Circuit Breaker NA

Discharge NA

EFFLUENT PUMP

Franklin Electric

35FE15S4-2W230

Curve

TOTAL RUN = 120 MIN

TOTAL REST = 1320 MIN

3 ZONES

2 DOSES PER ZONE PER DAY

EACH DOSE 20 MIN

EACH REST 220 MIN



Effluent quality dosed to drip field must be treated to <140 mg/ltr BOD5

Duplexing operation functions are required for the system per TAC 30 Ch. 285.34(b)(3).

The alarm will lock on and require manual reset and the pumps will be set to alternate.

MINIMUM PSI SETTING FOR THIS SYSTEM AT THE ENTRY TO THE EMITTER LINES IS DETERMINED INCLUDING RECOMMENDED REQUIREMENTS FOR TUBING LATERAL FLUSHING AT 2" PER SECOND AND RETURN LINE FLUSHING REQUIREMENTS

COLUMN H 51.50

COLUMN N + 12.20

===== / 2.31

27.57 PSI

DUPLEX PUMPS

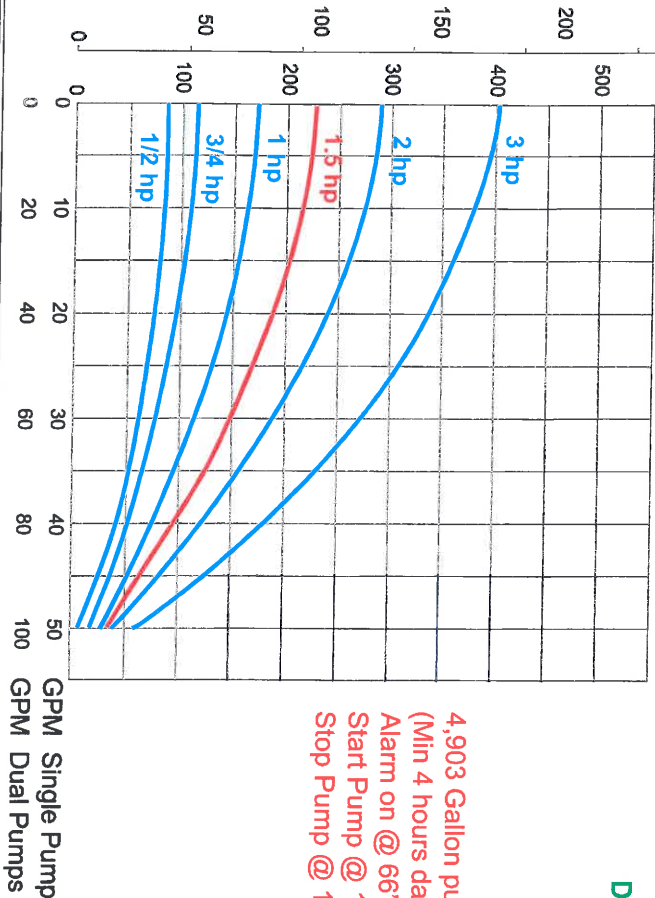
4,903 Gallon pump tank 82" liquid depth, 59.80 GPI

(Min 4 hours daily flow for alarm volume 88.88 (calculated with 18 hour day))

Alarm on @ 66" inches above the floor (leaving 16" or 956.80 gallons for alarm volume)

Start Pump @ 19" inches above the floor (2,870.40 gallons between pump stop and alarm on)

Stop Pump @ 18" inches above the floor (1,076.40 residual)



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SCALE NOT TO SCALE			
PAGE # 4			
PERMITTING AUTHORITY:			
TRAVIS COUNTY		Property ID # 902001	

Location: 13100 FITZUGH ROAD RV PARK

Netfarm Bioline: 17mm 5gph 24in spacing @ 21pa Flush

Maximum Recommended Bioline Lateral Length: 300

1. Soil Texture or Perc Time: 0
2. Soil Structure Shape: 0
3. Infiltration Loading Rate (ILR): 0.098765432 gal/day/ft²
4. Slope: 0
5. Infiltration Depth: 0 in.
6. Hydraulic Linear Loading Rate: 4 gal/day/ft
7. Maximum Contour Length (MCL): 150
8. Daily Flow: 1.00

No. of Bedrooms: 1600.00 = 1600.00 GPD

9. Dosing Area: 1600.00 / 0.10 = 16200.00 sqft

10. Dosing A. Length: 1600.00 / 4.00 = 400.00 ft

11. Dosing A. Width: 16200.00 / 400.00 = 40.50 ft

11a. Dosing Design Width & Length Adjustment
Design Width: 40.50 ft Adjusted Dosing Length: 400.00 ft

12. Required Dripper Line: 16200.00 / 24 = 675.00 ft

13. Required Zones: 400.00 / 150.00 = 2.67 = 3

14. Zone Breakout Table

Zone No.	Zone Dosing Area (sqft)	Linear Ft. of Tubing (ft)	Longest Lateral (ft)	Dosing Flow Rate (gpm)	Number of Distal Ends	Field Flush Rate (gpm)	Required Total Flow (RTF) (gpm)	Field Flushing Head (ft)	Force Main Supply Line				Return Flush Line				Static Lift (ft)	Total Field Head Loss (TFHL)
									Pipe Nom. Dia. (in)	Len. of Run (ft)	Head Loss (ft)	Pipe Nom. Dia. (in)	Len. of Run (ft)	Head Loss (ft)				
Zone 1	5400.0	2700.0	270.0	13.7	10.0	16.0	29.7	43.5	2	60.0	0.9	1.1/2	60.0	1.0	10.0	55.3		
Zone 2	5400.0	2700.0	300.0	13.7	10.0	16.0	29.7	51.5	2	435.0	6.6	1.1/2	430.0	7.0	14.0	79.2		
Zone 3	5400.0	2700.0	300.0	13.7	10.0	16.0	29.7	51.5	2	750.0	11.4	1.1/2	745.0	12.2	28.0	103.1		
Zone 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0	0.0	0.0	0	0.0	0.0	0.0	0.1		
Zone 5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0	0.0	0.0	0	0.0	0.0	0.0	0.1		
Zone 6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0	0.0	0.0	0	0.0	0.0	0.0	0.1		

Note: (144) Lateral must be located

Note: (14c) Longest lateral may be looped one or more times and is a function of: (7) contour length, Bioline lateral length, #of dial ends, #of zones and (10) dosing area length.

15. Max Required Total Flow: 29.7 (Largest RTF Based on 14g.)

16. Max Total Field Head Loss: 103.1 (Largest TFHL Based on 14c)

Notes:

20. Pump Data: MINIMUM Pump Specifications

0.0 HP 0 Phase 0 Volts 29.7 GPM @ 131.1 FT.
Note: Selected pump must produce 115 ft @ 12gpm or 35 gpm for filter flush depending on filter model. (auto-flush units only)

21. Dosing Schedule

Peak		Peak Flow Adjustment		4.00			
Total Run Time:		Average					
117.0		Total Run Time					
Total Rest Time:		Total Rest Time					
1323.0							
Peak		Minutes		Minutes			
Zone 1	13.7 GPM	0.0	Min/Dose	0.0	Gal/Dose	#DIV/0!	Cycles/Day
Zone 2	13.7 GPM	0.0	Min/Dose	0.0	Gal/Dose	#DIV/0!	Cycles/Day
Zone 3	13.7 GPM	0.0	Min/Dose	0.0	Gal/Dose	#DIV/0!	Cycles/Day
Zone 4	0.0 GPM	0.0	Min/Dose	0.0	Gal/Dose	0.0	Cycles/Day
Zone 5	0.0 GPM	0.0	Min/Dose	0.0	Gal/Dose	0.0	Cycles/Day
Zone 6	0.0 GPM	0.0	Min/Dose	0.0	Gal/Dose	0.0	Cycles/Day
Avg	13.7 GPM	0.0	Min/Dose	0.0	Gal/Dose	#DIV/0!	Cycles/Day
Zone 1	13.7 GPM	0.0	Min/Dose	0.0	Gal/Dose	#DIV/0!	Cycles/Day
Zone 2	13.7 GPM	0.0	Min/Dose	0.0	Gal/Dose	#DIV/0!	Cycles/Day
Zone 3	13.7 GPM	0.0	Min/Dose	0.0	Gal/Dose	#DIV/0!	Cycles/Day
Zone 4	0.0 GPM	0.0	Min/Dose	0.0	Gal/Dose	0.0	Cycles/Day
Zone 5	0.0 GPM	0.0	Min/Dose	0.0	Gal/Dose	0.0	Cycles/Day
Zone 6	0.0 GPM	0.0	Min/Dose	0.0	Gal/Dose	0.0	Cycles/Day

Portion of Peak Daily Flow

#DIV/I



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512-297-2346

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SCALE NOT TO SCALE

PAGE # 5

PERMITTING AUTHORITY:

TRAVIS COUNTY

SITE:

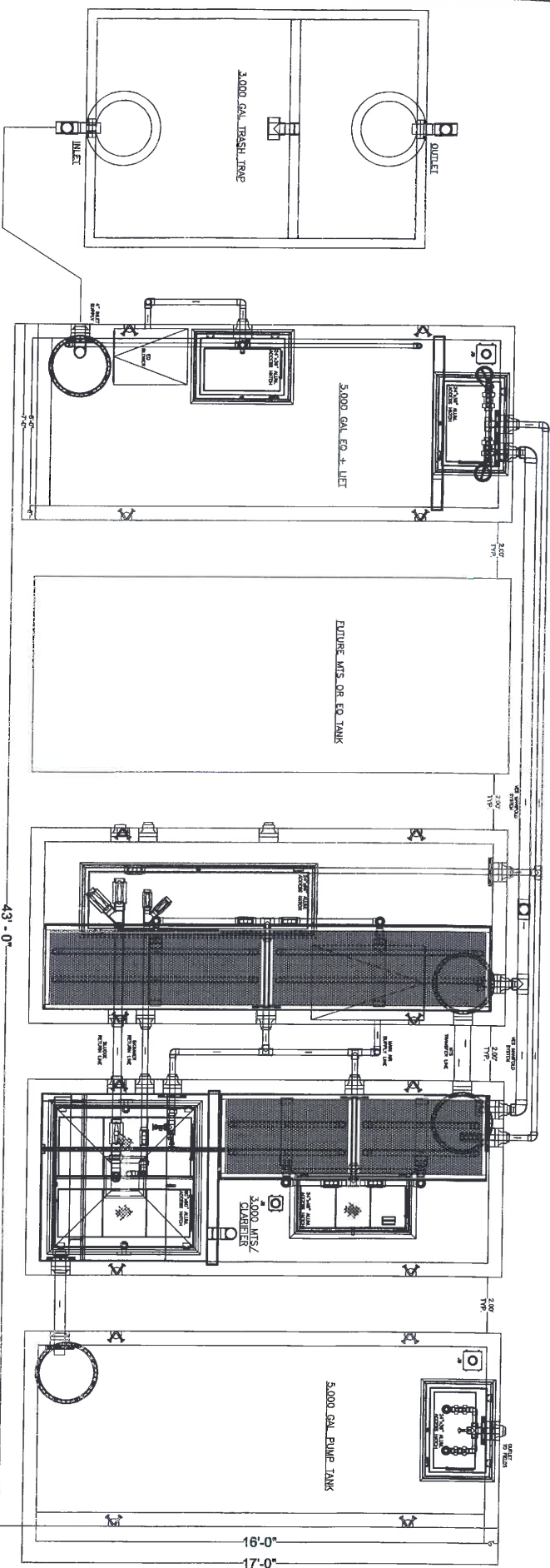
13100 Fitzugh Road
Austin, TX 78736

LEGAL:

ABS 363 SUR 624 HYATT
J J ACR 10.0017

Property ID # 902001

Aeration controller
Hoot MTS Blower by OEC
Description - Duplex Main Blower Control Panel



BEDDING AND BACKFILL SPECIFICATION FOR THE TANKS 4 INCH MINIMUM OF EITHER SAND, SANDY LOAM, OR PEA GRAVEL, FREE OF ROCK LARGER THAN PEA GRAVEL THE TANK IS TO BE LEVEL (+/-1")



HOOT SYSTEMS, LLC
www.hootsystems.com

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DATE: 2-10-2019
DRAWN BY: AY
CHECK BY: RS
SCALE: N.T.S.

PART #
OVERVIEW
LAYOUT

PAGE # 6
PERMITTING AUTHORITY:
TRAVIS COUNTY

Property ID # 902001

JON MAASS, RS 4263
6513 THOMAS SPRINGS ROAD
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512-297-2346

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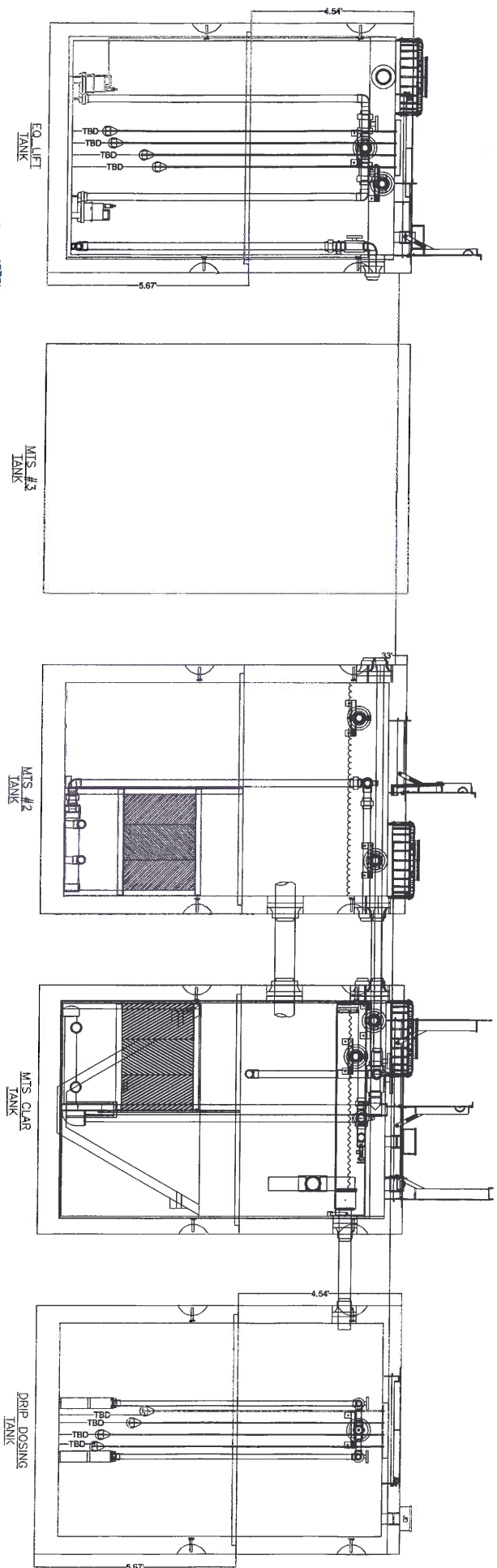
PAGE # 6

PERMITTING AUTHORITY:


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SITE:
13100 Fitzhugh Road
Austin, TX 78736
LEGAL:
ABS 363 SUR 624 HYATT
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Aeration controller
Hoot MTS Blower by OEC
Description - Duplex Main Blower Control Panel



BEDDING AND BACKFILL SPECIFICATION FOR THE TANKS 4 INCH MINIMUM OF EITHER SAND, SANDY LOAM, OR PEA GRAVEL, FREE OF ROCK LARGER THAN PEA GRAVEL THE TANK IS TO BE LEVEL (+/- 1")

 HOOT SYSTEMS, LLC www.hootsystems.com		JON MAASS, RS 4263 6513 THOMAS SPRINGS ROAD AUSTIN, TEXAS 78736 512-297-2346		SITE: 13100 Fitzhugh Road Austin, TX 78736	
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DESCRIPTION: 3100 FITZHUGH ROAD RV PARK HOOT TT +EQ + BK MTS+ CLAR + PT		PART #		SCALE NOT TO SCALE	
DATE: 2-10-2019		DRAWN BY: AY		CHECK BY: RS	
SCALE: N.T.S.		ELEVATION LAYOUT		PAGE # 7	
PERMITTING AUTHORITY: TRAVIS COUNTY		Property ID # 902001			

5,026.70 Gallon flow equalization tank 84" liquid depth, 59.80 GPM
(Min 4 hours daily flow for alarm volume 88.88 (calculated with 18 hour day))
Alarm on @ 74" inches above the floor (leaving 10" or 598.00 gallons for alarm volume)
Start Pump @ 19" inches above the floor (3,348.80 gallons between pump stop and alarm on)
Stop Pump @ 18" inches above the floor (1,076.40 residual)

FLOW EQUALIZATION (Sewage)

Pump controller

Rhombus IFS Meter Dosing Duplex Pump Control

Set timer to run

1 minute every 30 min or

48, 33.333 gallon doses per day.

Adjust bypass valve to reach desired flow.

Duplexing operation functions are required for the system per TAC 30 Ch. 285.34(b)(3).

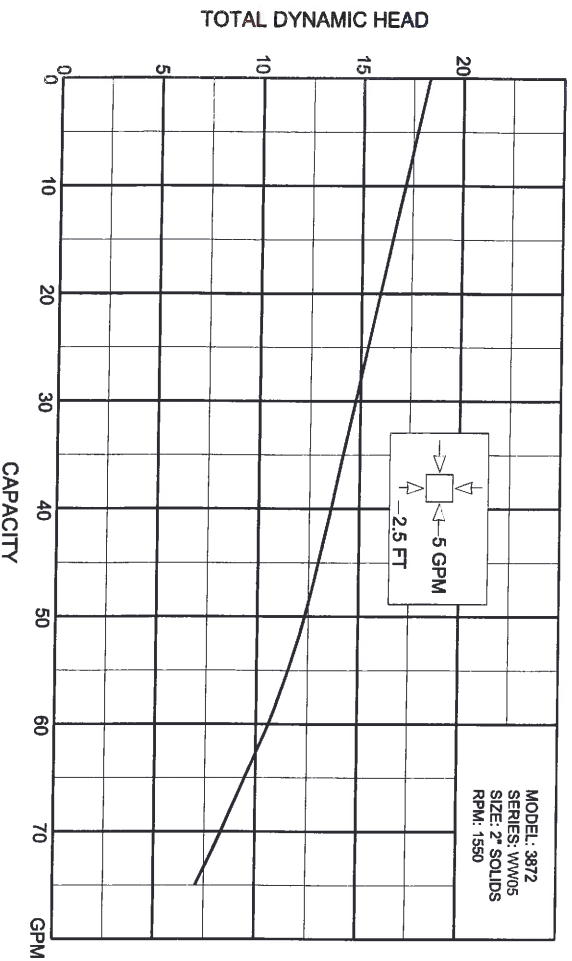
The alarm will lock on and require manual reset and the pumps will be set to alternate.

Pump Data:
Provide 33.40 GPM at 7.50 Ft
BRAND Goulds
MODEL WW0511F
HP 1/2
Voltage 115
Phase 1
Full Load Amps 13.0
Locked Rotor Amps NA
Min Circuit Breaker 20
Discharge 2" NPT

DUPLEX PUMPS

TREATMENT PACKAGE DOSING PUMP

GOULDS WW0511



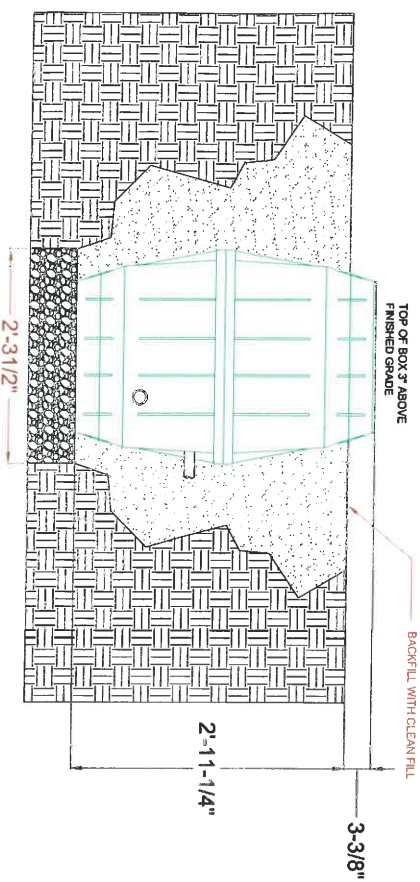
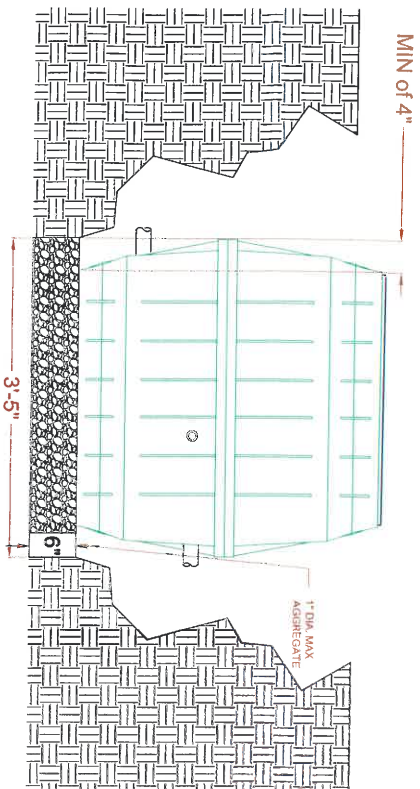
Schedule 40 Pipe Supply Line Loss Calculator

Pipe Section	Pipe Length (in feet)	Size in Inches	Flow Rate (gallons per minute)	Loss (feet)
1	20	2	33.4	0.4
Total Pipe Loss				
With 20% for fittings				0.4 feet
With Elevation in feet				0.5 feet
With Operating Head in feet				7.5 feet
TOTAL LOSS:				7.5 FEET OR 3.2 PSI



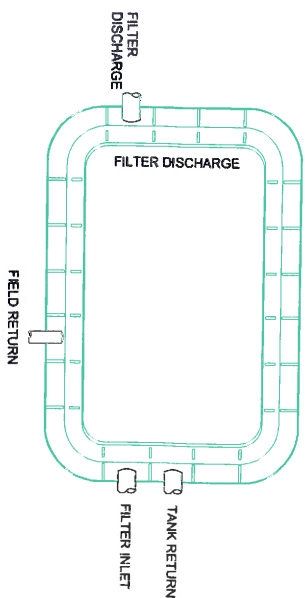
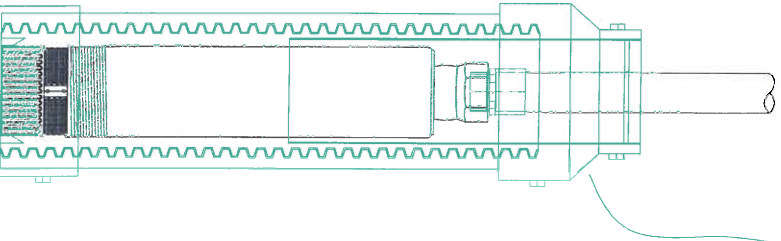
JON MAASS, RS 4263 6513 THOMAS SPRINGS ROAD AUSTIN, TEXAS 78736 512-297-2346 maass4020@yahoo.com	SITE: 13100 Fitzhugh Road Austin, TX 78736 RV PARK LEGAL: ABS 363 SUR 624 HYATT JJ ACR 10.0017
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DRIP TECH / ACT-200 COMMERCIAL SERIES HEADWORKS



1 TYPICAL INSTALLATION DETAIL
SCALE: 3/4" = 1'-2"

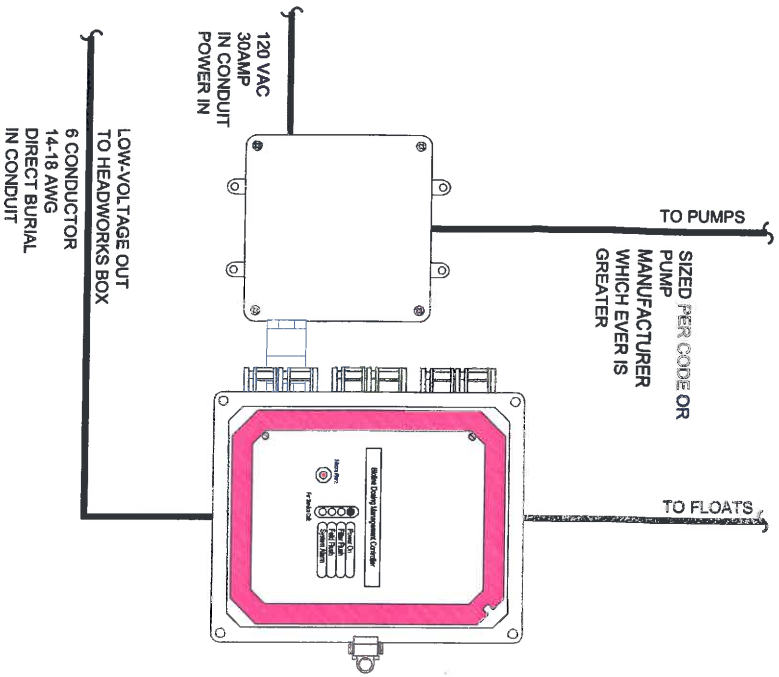
PUMP EFFLUENT SCREEN



- CONNECTIONS
- 1) FILTER DISCHARGE 1" IPS
 - 2) TANK RETURN 1" IPS
 - 3) FILTER INLET 1 1/4" IPS
 - 4) FIELD RETURN 1" IPS



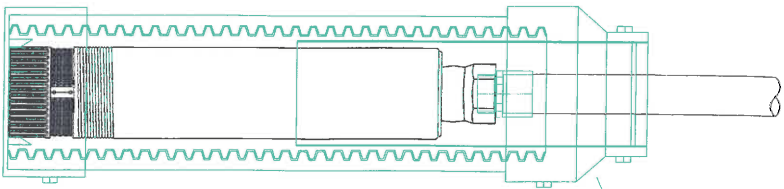
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CONTROLLER MODEL
BDMC (DUPLEX)
 TIMER MODEL NUMBER
PLC



PUMP EFFLUENT SCREEN



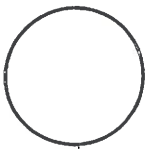
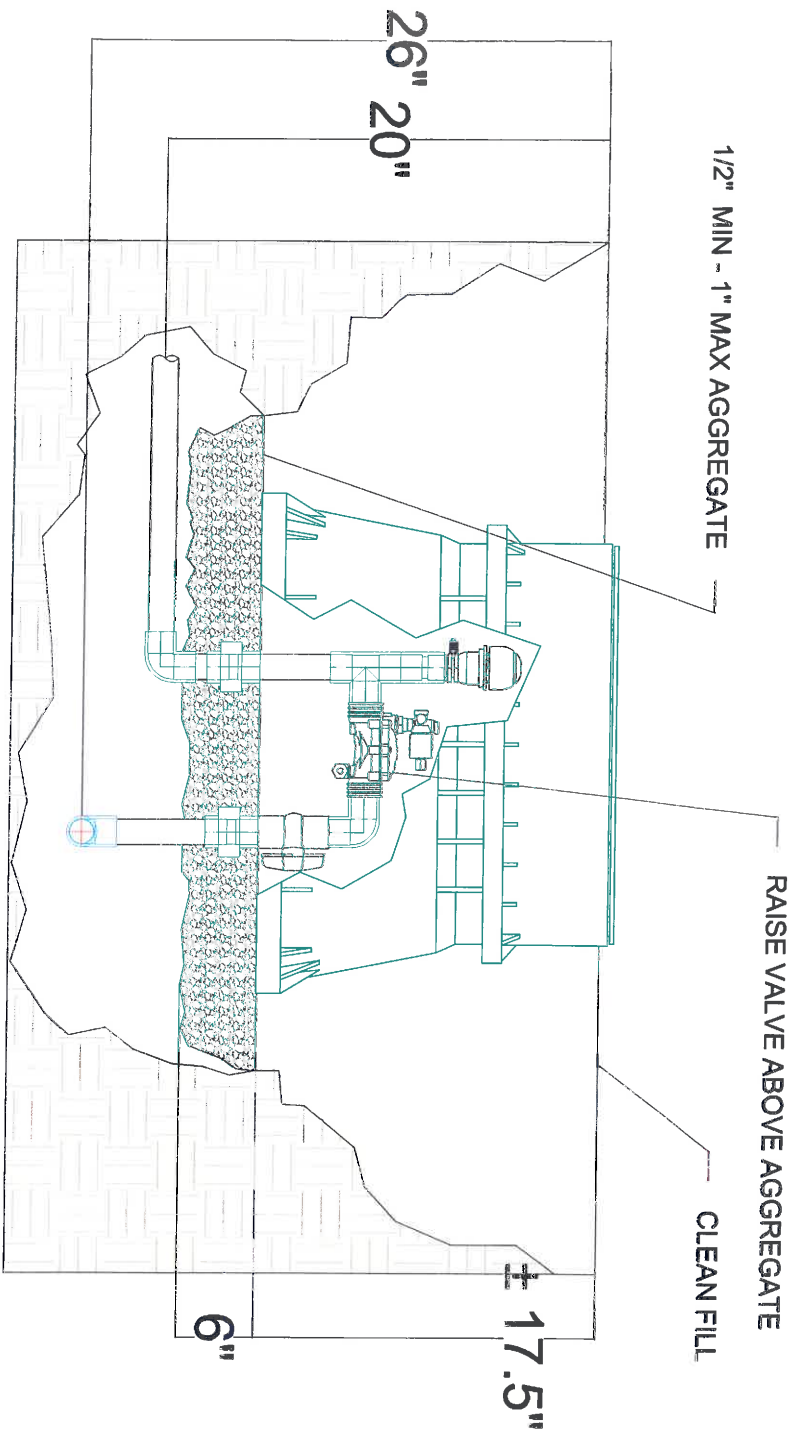
ALL CABLES / WIRES LISTED MUST BE
 ROUTED IN SEPARATE CONDUIT

- POWER SUPPLY TO PUMP
- SENSOR FLOATS
- LOW VOLTAGE TO DRIPTech

ALL CABLES / WIRES LISTED MUST BE
 CONDUIT SEALED TO PREVENT OF
 GASSES TO CONTROLLER

- POWER SUPPLY TO PUMP
- SENSOR FLOATS
- LOW VOLTAGE TO DRIPTech

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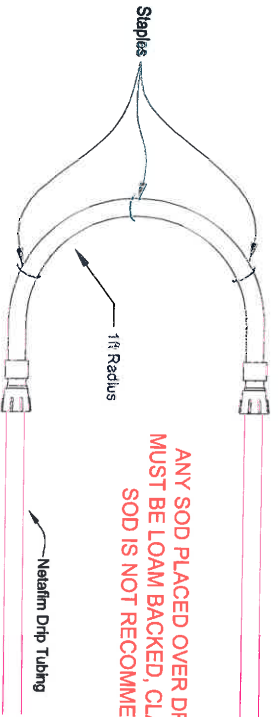
ZONE CONTROL VALVE
SCALE: NONE

VALVE MODEL
61EL1.5PL

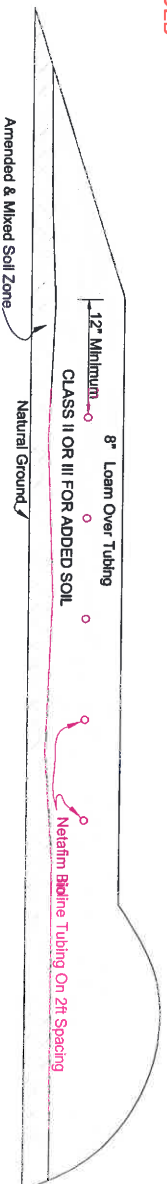
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Detail of Drip Tubing Loops On 2' Centers

Cross Section Detail of Drainfield



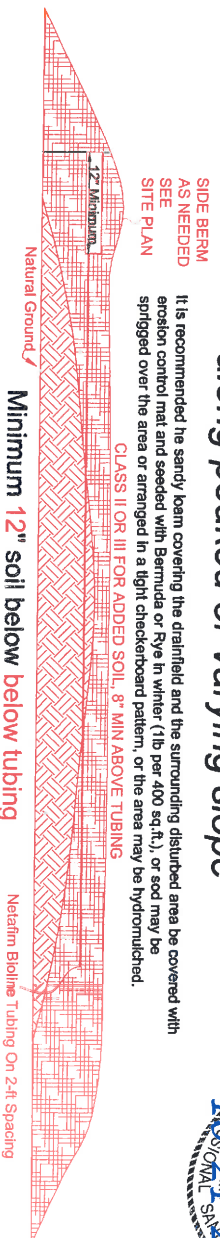
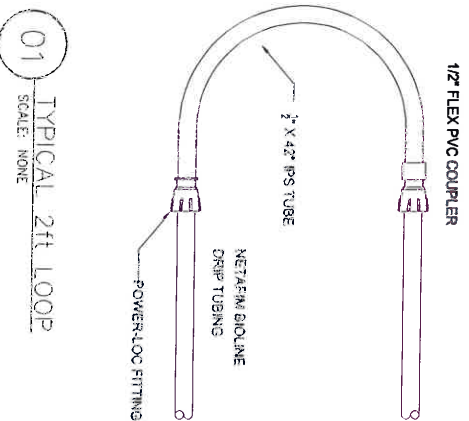
Each line of tubing is to be installed as close as possible to level.
It is recommended the sandy loam covering the drainfield and the surrounding disturbed area be covered with erosion control mat and seeded with Bermuda or Rye in winter (1lb per 400 sq.ft.), or sod may be sprigged over the area or arranged in a tight checkerboard pattern, or the area may be hydromulched.



Minimum **12"** soil below tubing existing or added
6" soil to added below tubing **as needed**
8" soil to added above tubing

Longitudinal Cross Section Detail of Drainfield

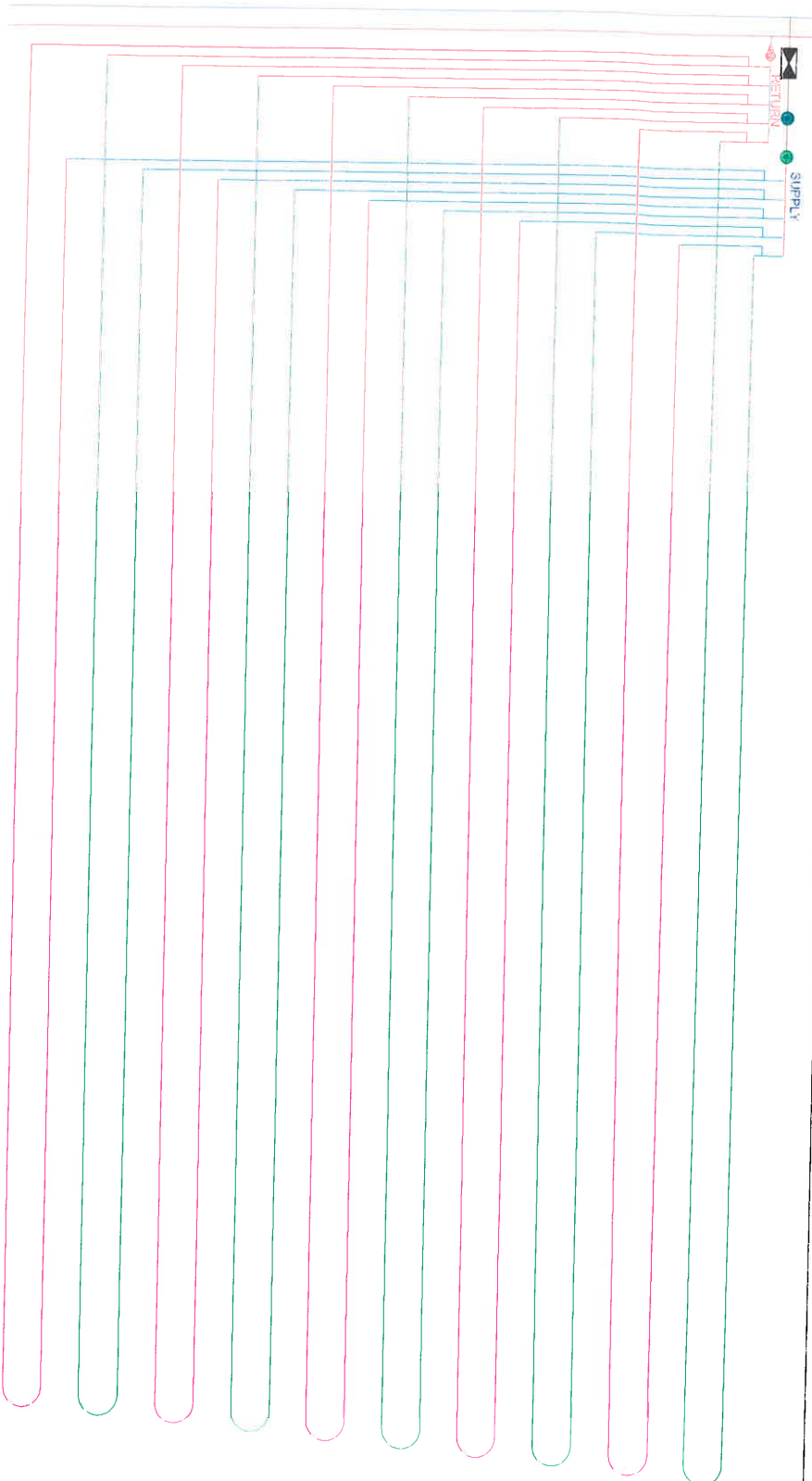
along peaked or varying slope



ANY ADDED SOILS DEPTH MUST BE MEASURED AFTER 100% COMPACTION

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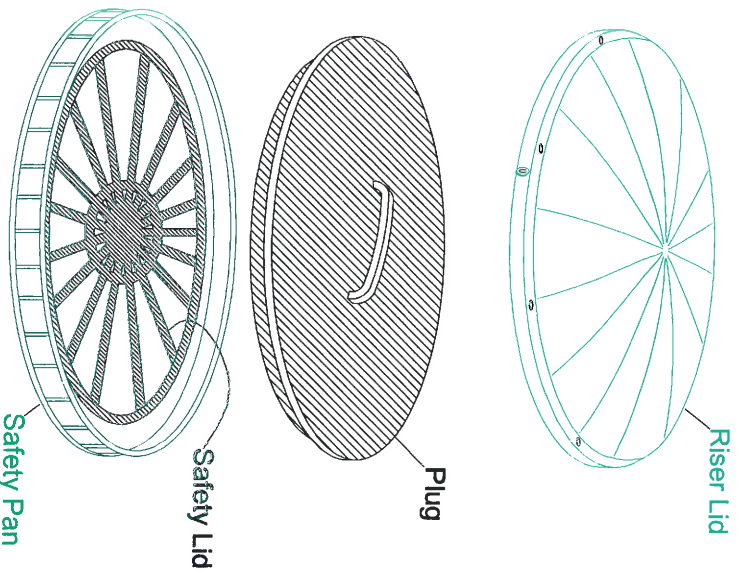
TYPICAL ELEVATED MANIFOLD SYSTEM DETAIL

SUPPLY (drop) 1-1/2" 1" **RETURN (drop)** 1-1/2" 3/4"

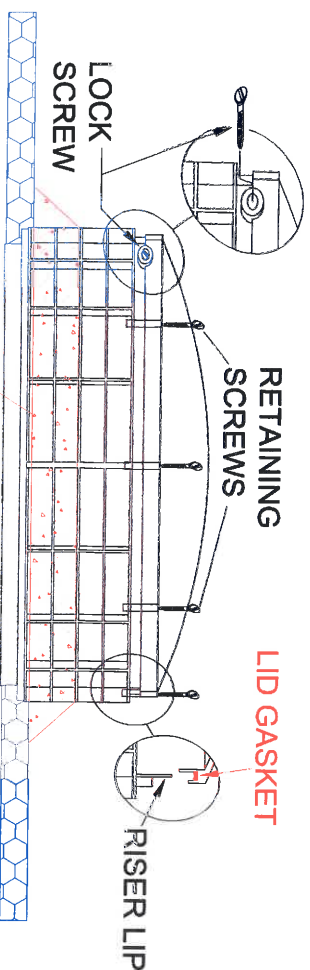


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RISER DETAIL



Secondary lid / safety component options



Risers must be permanently fastened to the tank lid or cast into the tank. The connection between the riser and the tank lid must be watertight.

Risers must be fitted with removable watertight caps and protected against unauthorized intrusions. Acceptable protective measures required:

- a cover that can be removed with tools
- a cover having a minimum net weight of (65 pounds)

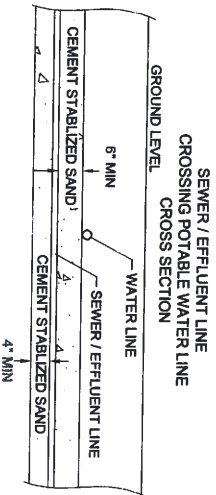
Only septic tanks are allowed to have a riser extend to within 6" of the ground surface, or extend to grade if tank lid is over 12" deep. Risers on all other tanks must extend to the ground surface.

Risers and tank inspection ports will be required to have access safety provisions per 30 TAC 285.38 (12/5/2012).



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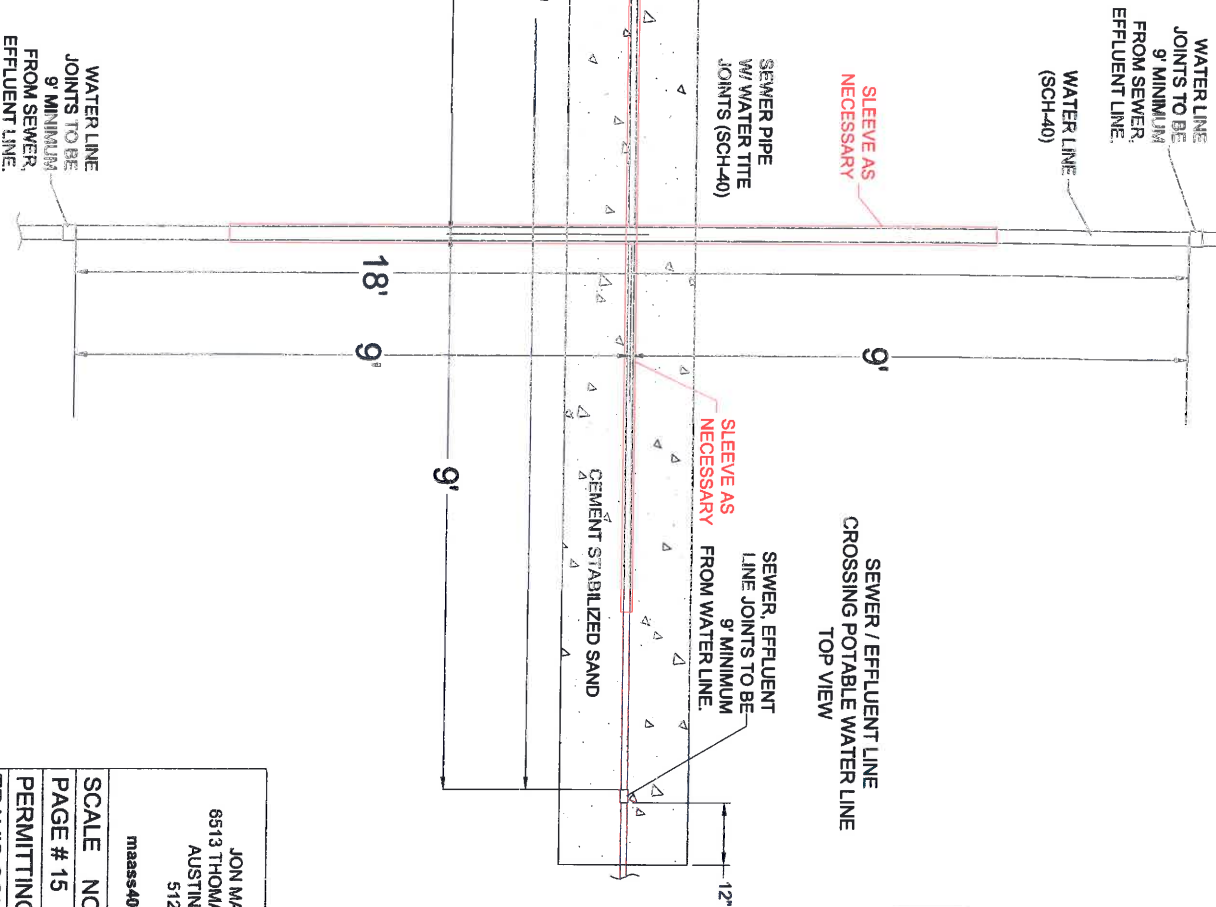
SEWER / EFFLUENT LINE CROSSING POTABLE WATER LINE



Texas Administrative Code
RULE §290.44

(B) New watertight installation - crossing lines.

(v) Where a new potable watertight crosses a new, pressure rated wastewater main or lateral, one segment of the watertight pipe shall be centered over the wastewater line such that the joints of the watertight pipe are equidistant and at least nine feet horizontally from the center line of the wastewater main or lateral. The potable watertight shall be at least six inches above the wastewater main or lateral. Whenever possible, the crossing shall be centered between the joints of the wastewater main or lateral. The wastewater pipe shall have a minimum pressure rating of at least 150 psi. The wastewater main or lateral shall be embedded in cement stabilized sand (see clause (vi) of this subparagraph) for the total length of one pipe segment plus 12 inches beyond the joint on each end.



(vi) Where cement stabilized sand bedding is required, the cement stabilized sand shall have a minimum of 10% cement per cubic yard of cement stabilized sand mixture, based on loose dry weight volume (at least 2.5 bags of cement per cubic yard of mixture). The cement stabilized sand bedding shall be a minimum of six inches above and four inches below the wastewater main or lateral. The use of brown coloring in cement stabilized sand for wastewater main or lateral bedding is recommended for the identification of pressure rated wastewater mains during future construction.

If nine foot separation between lines crossing and pipe joints cannot be achieved, both sewer effluent and water line must be sleeved with sch-40 PCV pipe in addition to cement stabilized sand bedding.



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PROPERTY ID # 902001		

8,000 gpd for Fitzhugh RV

CFM Calculations

Lbs of BOD ₅ /D	ppm	Gallons	Rate	Lbs
	1000	1,600	8.34E-06	13.3
Lbs NH ₃ /D	70	8,000	8.34E-06	4.7

O ₂ rate per Lb	Lbs	Total Lbs Needed
1.8	13.3	24.0
4.6	4.7	21.5

O₂ Needed per lb of BOD
O₂ Needed be Lb of NH₃

Cubic Feet of Air Needed (58.2 CF = 1 lb of O₂)
True CFM Needed @ 100% uptake in 720 min
Actual CFM efficiency (2.0 fine air)
Additional Air Needed for Air Lift
Total CFM Needed

lbs of O ₂ Needed	45.5
Fine Air	2,648.3
	3.7
	21.1
	8.0
	29.1

Basin Sizing Calculations

VA = (BOD x Q x 8.34)/BLF
VA = Volume of Aeration Basin in 1,000 ft³
BOD Loading in ppm
Q= Influent Flow in MGD
BLF = BOD Loading Factor of 10

ppm of BOD Gallons	1,000			
	1,600			
	15/15	30/30	<140	
Cubic Feet Needed at above BLF	1,334	1,068	667	
Gallons of Treatment Needed	9,981	7,985	4,991	
IFAS & EQ Credit of 35%	7,486	5,989	3,743	
Actual Gallons Provided	8,000	8,000	8,000	

Fine Diffuser Requirement Calculations

CFM	Fine Air
Rate Per Diffuser	21.1
Total Diffusers	3.52 (range is 2-8 CFM)
	6



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