



12713 MAJESTIC OAKS DRIVE
AUSTIN, TEXAS 78732
OFFICE: (512) 583-1397
DELCON@AUSTIN.RR.COM

E N V I R O N M E N T A L S Y S T E M S , L . L . C .

January 24, 2020

Travis County Transportation and Natural Resources
700 Lavaca, 5th Floor
P. O. Box 1748
Austin, Texas 78767
Attn: Mr. Brandon Couch, R.S.

Re: Permit Number 19-24934
MPAC Development
5 Hillside Court, Austin, Texas 78746
Lot 5, Hillside Vista Subdivision

Mr. Couch,

Thank you for your review comments dated January 17 regarding the septic design submittal for the above referenced address. The following responses correspond in order to the comments contained in your letter:

1. The soil profile holes will be re-opened and presented for review by your office at the first installation inspection.
2. Official documentation will be provided to your office demonstrating the appropriate pump-out of the existing tanks scheduled for abandonment. A pump-out manifest is typically offered from the licensed wastewater hauler.
3. I apologize for this discrepancy. The tank cross-section detail has been updated to show the correct dimensions and corresponding volumes for the float settings within the pump tank.
4. Thank you for pointing out this discrepancy. The detailed site plan has been updated to show the correct scale.
5. The updated site plan includes a note to place Curlex brand erosion control blankets over the installed system.
6. Please refer to the recorded aerobic affidavit included with this response.

Please feel free to contact me with any questions or comments.

Respectfully,

A handwritten signature in black ink that reads "Derrick E. Lormand".

Derrick E. Lormand, R.S.
Managing Partner
Delcon Environmental Systems, LLC





12713 MAJESTIC OAKS DRIVE
AUSTIN, TEXAS 78732
OFFICE: (512) 583-1397
DELCON@AUSTIN.RR.COM

E N V I R O N M E N T A L S Y S T E M S , L . L . C .

September 9, 2019

Travis County Transportation and Natural Resources
700 Lavaca Street, 5th Floor
P. O. Box 1748
Austin, Texas 78767
Attn: Mr. Brandon Couch, R.S.

Re: MPAC Development
5 Hillside Court, Austin, Texas 78746
Lot 5, Hillside Vista Subdivision

Mr. Couch,

The following are calculations and design drawings for a conventional treatment tank with drip emitter disposal to serve a proposed five-bedroom residence containing 5,347 square feet of conditioned living space located at the above referenced address. Based on the square footage, this is considered a six-bedroom equivalent residence. The current residence at this address will be demolished to make way for the proposed residence. A Drip-Tech brand filtration unit will be included to permit the use of drip emitter tubing. Somewhat limited soil depth and complex elevations led to this design selection. Shallow Class III soil texture was observed, thus it will be sized utilizing a long-term soil loading rate of 0.10 gpd/sf. The system has been sized in accordance with Chapter 285 of the TCEQ OSSF Rule, effective December 2016 and the additional criteria of Travis County.

For your reference, I have included a summary of the system components:

- One 1,250-gallon, two-compartment concrete septic tank
- One 750-gallon concrete pump tank
- 1/2 horsepower effluent pump with floats and controls for "timed" dosing
- One Drip Tech hydraulic filtration unit with two outlet zones
- 2,110 linear feet of emitter tubing developing 4,220 square feet of application area

Please feel free to contact me with any questions or comments.

Respectfully,

A handwritten signature in black ink that reads "Derrick E. Lormand".

Derrick E. Lormand, R.S.
Managing Partner
Delcon Environmental Systems, LLC



Site Evaluation Form

Address: 5 Hillside Court
Subdivision: Vista Subdivision Sec.: _____ Lot: 5 Blk: _____
Or, Survey: _____ Abstract: _____ Acres: _____
Slope: Flat (Under 2%) [] Slight (2% to 15%) [X] Severe (Over 15%) []
Site Drainage: Poor [] Adequate [X] Good [] Other []
Outside 100-Year Flood Plain [X] In 100 Year Flood Plain [] In 100 Year Flood Plain/Floodway []
Water Supply: Public [X] Community [] Private []
Other wells within 100 feet of property lines: Yes [] No [X] (If yes, shown on site plan)

Soil Evaluation

Profile Hole Number 1

Depth	Texture (USDA)	Description
0" - 4"	Class III	Dark brown silty clay loam with roots, < 30% rock content
4" - 16"	Class III	Dark gray clay loam with roots and rocks, > 30% rock content
@ 16"	No Class	Fracture rock – restrictive horizon

Profile Hole Number 2

Depth	Texture (USDA)	Description
0" - 4"	Class III	Dark brown silty clay loam with roots, < 30% rock content
4" - 18"	Class III	Dark gray clay loam with roots and rocks, < 30% rock content
@ 18"	No Class	Fracture rock – restrictive horizon

Profile Hole Number 3

Depth	Texture (USDA)	Description
0" - 8"	Class III	Dark brown silty clay loam with roots, < 30% rock content
8" - 21"	Class III	Light gray clay loam with rocks, < 30% rock content
@ 21"	No Class	Fracture rock – restrictive horizon

Indication of Seasonal Water Table: YES [] NO [X]
If yes, at what depth: None observed
Property Located Within Edwards Aquifer Recharge Zone: YES [] NO [X]
Indication of Recharge Features within 150 feet: YES [] NO [X]
Is Soil Suitable for a Standard System YES [] NO [X]
Application Rate: 0.1 Gal/SF*Day

I, Derrick E. Lormand, a Registered Professional Sanitarian and Licensed Site Evaluator, conducted the site evaluation at the referenced location. I certify that these results are true and correct for the property evaluated.

Date of Site Visit: September 5, 2019



Derrick E. Lormand, R.S., OS# 0026727

Design Calculations

9/9/2019

5 Hillside Court

Design Basis

Per The Texas Commission on Environmental Quality's (TCEQ)
Health and Safety Code Chapter 366, On-Site Sewage Disposal Systems, September 11, 2007
On-Site Sewage Facilities, Title 30, TAC Chapter 285, Effective December 2012

Proposed single-family residence

Number of Bedrooms = 5
HVAC Living Space = 5,347 Square Feet (SF)
Number of Equivalent Bedrooms = 6
Estimated Wastewater Flow Rate, Q = 420 Gallons Per Day (GPD)
(Per TCEQ OSSF Title 30 TAC Chapter 285, Table III)
Long-Term Soil Loading Rate, Ra = 0.1 GPD/SF
(Refer to Site Evaluation for soil loading rate determination)

Treatment Tank Determination

(Per TCEQ OSSF Title 30 TAC Chapter 285, Table II)

Required Septic Tank Volume 1250 Gallons
Proposed Septic Tank Volume 1250 Gallons

Drainfield Calculation

Minimum Required Application Area = $Q / Ra = 4200$ SF

Emitters are assumed to achieve 4 square feet of application area each.

Thus, Required Number of Emitters = 1050 Emitters
Proposed Number of Emitters = 1055 Emitters = 4220 SF

The following calculations are derived from the zone with the greatest requirements

Effluent Pump Performance Requirements

Flow Rate per Emitter = 0.01 Gallons Per Minute

(Refer to emitter tubing specifications for this flow rate determination)

Flow Rate of Emitters = 5.28 GPM

It is recommended to include an additional 1.6 gallons per minute for each emitter tubing connecting to

Flow Rate per Return Line Connection = 1.6 GPM
Number of Return Line Connections = 4 Connections
Flow Rate for Connections = 6.4 GPM
Required Flow Rate = 11.68 GPM

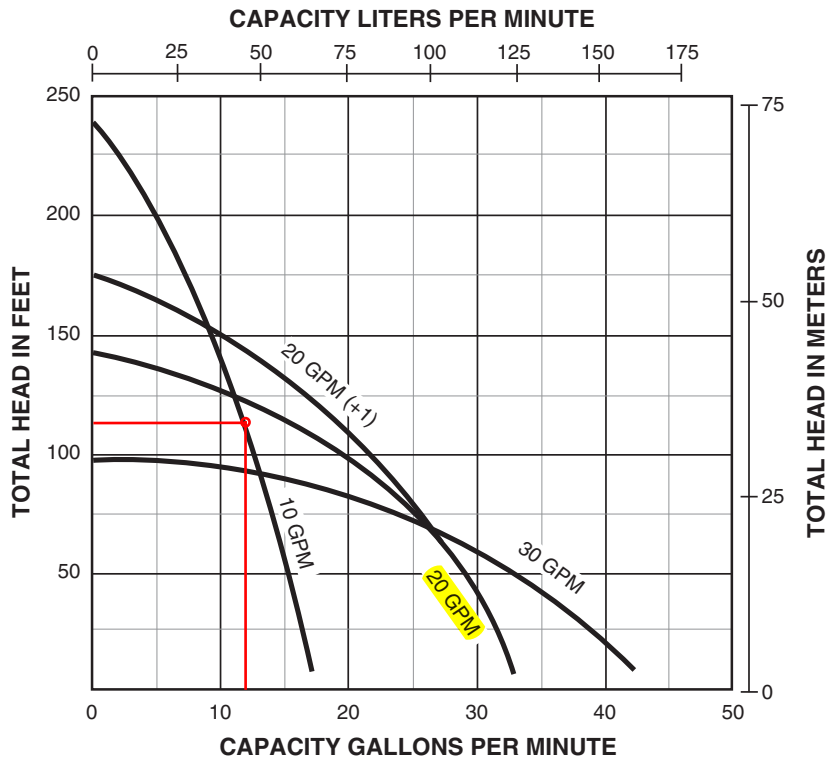
Total System Head = Friction Head + Elevation Head + Operating Head

Pipe Friction Head Determination		Pipe Length (Feet)	Pipe Diameter (Inches)	Flow Rate (GPM)	Head Loss (Feet)
Supply Pipe		64	1	11.68	4.3
		8	1	9.15	0.4
		8	1	5.88	0.2
		18	1	3	0.2
Return Pipe		Friction Loss in Supply Pipe =			5.1
		8	1	1.6	0.1
		8	1	3.2	0.1
		4	1	4.8	0.1
		73	1	6.4	1.6
		Friction Loss in Return Pipe =			1.9
		Total Pipe Friction Loss =			7
		Add 20% for joints, elbows, tees, etc. =			8.4

Total Pipe Friction Head = 8.4 Feet
 Hydraulic Filter Head Loss = 18 Feet
 Elevation Head Loss = 3 Feet
 Operating Head = 82 Feet
 Total System Head = 111.4 Feet (47.9 psi)

Calculated System Work Point =

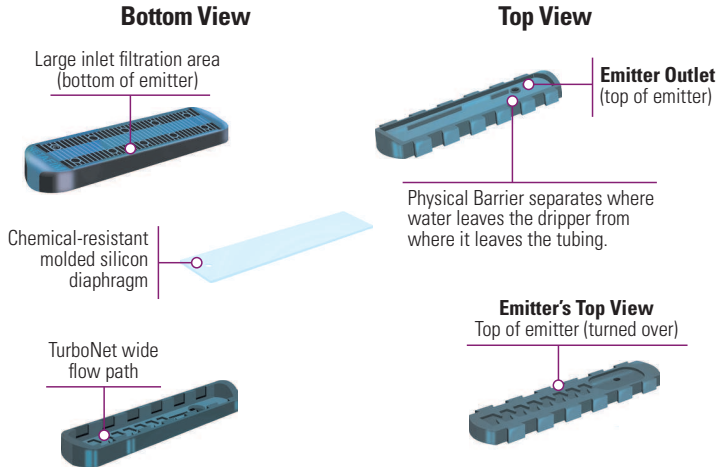
11.68	GPM Operating At
111.4	Feet of Head



PUMP PERFORMANCE (Capacity in Gallons per Minute)

Pump Model	Flow Rate (GPM)	PSI											
		0	10	20	30	40	50	60	70	80	90	100	110
10DOM05221	10			15.0	13.7	12.7	11.5	10.2	8.4	6.5	4.3	1.0	
10DOM05121	10			15.0	13.7	12.7	11.5	10.2	8.4	6.5	4.3	1.0	
20DOM05221	20			30.0	26.0	21.5	14.2	4.4					
20DOM05121	20			30.0	26.0	21.5	14.2	4.4					
30DOM05221	30		38.5	33.3	25.8	16							
30DOM05121	30		38.5	33.3	25.8	16							
20DOM05221+1	20 + 1			30	27.5	24	20	13.5	6				
20DOM05121+1	20 + 1			30	27.5	24	20	13.5	6				

EXPLODED VIEW OF BIOLINE EMITTER



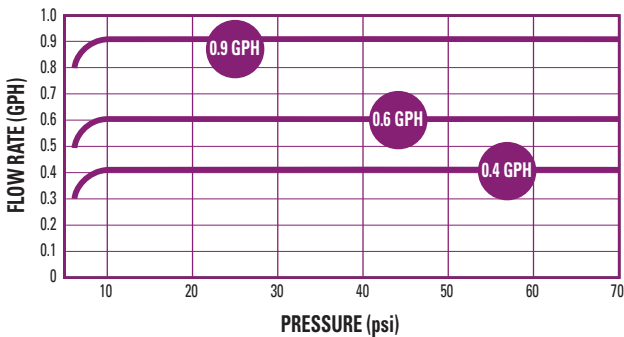
BIOLINE EMITTER OPERATION

Bioline® dripperline emitters are pressure compensating - delivering the water uniformly into the soil for further treatment or for reuse by the landscape. These unique emitters allow the tubing to be installed on flat topography or steep slopes.

Bioline emitters are protected against microbial slime. Each emitter is impregnated with an antimicrobial agent to resist biological build-up.

Netafim emitters are continuously self-cleaning during operation, not just at the beginning and end of a cycle. The result is dependable, clog-free operation, year after year.

DRIPPER FLOW RATE VS. PRESSURE



Between 0 and 7 psi, the dripper functions as a turbulent flow emitter, ensuring that the nominal design flow is not exceeded at system start-up.

FLOW PER 100 FEET

DRIPPER SPACING	0.4 GPH DRIPPER		0.6 GPH DRIPPER		0.9 GPH DRIPPER	
	GPH	GPM	GPH	GPM	GPH	GPM
12"	40.0	0.67	61.0	1.02	92.0	1.53
18"	26.7	0.44	41.0	0.68	61.0	1.02
24"	20.0	0.34	31.0	0.51	46.0	0.77

SPECIFYING INFORMATION

A Bioline Dripperline = **08WRAM**

SAMPLE MODEL NUMBER

08WRAM.6-24 V

1 DRIPPER FLOW RATE
0.4 GPH = .4
0.6 GPH = .6
0.9 GPH = .9

2 DRIPPER SPACING
12" = 12
18" = 18
24" = 24

3 COIL LENGTH
500' = V500
1,000' = V

BLANK Tubing Model Number: 250' = 08WRAM-250

ORDERING INFORMATION

FLOW RATE	DRIPPER SPACING	COIL LENGTH	MODEL NUMBER
0.4 GPH	12"	1,000' 500'	08WRAM.4-12V 08WRAM.4-12V500
0.4 GPH	18"	1,000' 500'	08WRAM.4-18V 08WRAM.4-18V500
0.4 GPH	24"	1,000' 500'	08WRAM.4-24V 08WRAM.4-24V500
0.6 GPH	12"	1,000' 500'	08WRAM.6-12V 08WRAM.6-12V500
0.6 GPH	18"	1,000' 500'	08WRAM.6-18V 08WRAM.6-18V500
0.6 GPH	24"	1,000' 500'	08WRAM.6-24V 08WRAM.6-24V500
0.9 GPH	12"	1,000' 500'	08WRAM.9-12V 08WRAM.9-12V500
0.9 GPH	18"	1,000' 500'	08WRAM.9-18V 08WRAM.9-18V500
0.9 GPH	24"	1,000' 500'	08WRAM.9-24V 08WRAM.9-24V500
Blank Tubing 17mm		250'	08WRAM-250



12713 MAJESTIC OAKS DRIVE
AUSTIN, TEXAS 78732
(512) 583-1397
DELCON@AUSTIN.RR.COM

E N V I R O N M E N T A L S Y S T E M S , L . L . C .

The on site wastewater system has been designed to dispose of the specified wastewater flow rate. In addition to the proper design and construction of the system, it is the owner's responsibility to properly maintain the system. The following care should be taken to help ensure proper operation and high quality effluent:

Do Not:

1. Pour strong disinfectants or bleaches, other than small amounts used in day to day house cleaning and laundries into the system.
2. Discharge from any type of water softener into the system.
3. Put coffee grounds, chemical wastes, paint or paint thinner, oils or grease (such as used cooking grease), pet shampoo or pet dip disinfectant into the system.
4. Permit disposable diapers, tampons, sanitary napkins, large quantities of paper products, tobacco products or similar items to enter the system.
5. Overload the system with large amounts of wastewater.
6. Plant large trees or shrubs near the system tanks or disposal field – the root systems may damage the installed system components.

Do:

1. Maintain the vegetation (grass) in the disposal field area.
2. Conserve water usage as much as possible. Maintain low-flow plumbing fixtures throughout the structure.
3. Monitor the drainfield periodically for signs of effluent surfacing and odors.
4. Use care when digging in the vicinity of the system tanks or drainfield to avoid damaging any of the disposal system's components.

It is recommended that the system be inspected annually by a trained service person to monitor the performance of all components and to determine the frequency of solids removal. Effluent filters should be cleaned at least every 3 months. Pump performance, including electrical components (breakers, float switches, electrical connections) should be reviewed during each inspection. The high water alarm (both audio and visual) should be checked during inspections.

5 HILLSIDE COURT

CURVE	CHORD BEARING	LENGTH	RADIUS
CI	N 86° 34' 01" E	50.00'	50.00'

INSTALLER SHALL PLACE CURLEX EROSION CONTROL BLANKETS OVER NEWLY ESTABLISHED SEPTIC DRAINFIELD TO HELP STABILIZE DISTURBED SOILS AND PROMOTE VEGETATION.

EXISTING DRAINFIELD NOTE:
EXISTING DRAINFIELDS SHALL BE ABANDONED IN CONJUNCTION WITH PROPOSED DRAINFIELD INSTALLATION. EXISTING DRAINFIELD MATERIAL, INCLUDING PIPES, GRAVEL, SOIL, ETC., MAY REMAIN UNDISTURBED AND BURIED. EXISTING DRAINFIELD MATERIAL ENCOUNTERED DURING INSTALLATION, THAT CONFLICTS WITH PROPOSED DRAINFIELD, SHALL BE REMOVED AND DISPOSED OFF SITE IN A SANITARY LANDFILL.

EXISTING TANK(S) NOTE:
EXISTING SEPTIC TANK(S) SHALL BE ABANDONED. TANK(S) SHALL BE PUMPED CLEAN OF ALL EFFLUENT BY A LICENSED WASTEWATER CARRIER HOLDING A CURRENT LICENSE WITH THE EXECUTIVE DIRECTOR. PROOF OF THIS PUMP-OUT SERVICE SHALL BE AVAILABLE FOR REVIEW BY INSPECTORS. LID, WALLS AND BASE SHALL BE CRUSHED AND BURIED IN PLACE. REMAINING VOID SPACE SHALL BE BACKFILLED WITH CLEAN NON-EXPANSIVE SOIL.

TREES	
T1164	18.2" CEDAR
T1	10.2", 10.3", 7" PIN OAK
T2	17.8" HACKBERRY
T3	16.8" CEDAR
T4	16.2" CEDAR
T5	15.9", 12.2" LIVE OAK
T6	19.2" LIVE OAK
T7	17" LIVE OAK
T8	20" LIVE OAK
T9	14.8", 14" LIVE OAK
T10	27" WILLOW (DAMAGED)
T11	21" LIVE OAK

SETBACK REQUIREMENTS:

INSTALLER SHALL ACHIEVE ALL MINIMUM REQUIRED SEPARATION DISTANCES AS SET FORTH BY THE TCEQ IN TITLE 30, TAC CHAPTER 285, EFFECTIVE DECEMBER 2012, AND ANY ADDITIONAL LOCAL REQUIREMENTS.

MINIMUM SEPARATION FROM TANK: 5 FEET TO FOUNDATIONS, SWIMMING POOLS AND PROPERTY LINES, ONE FOOT TO EASEMENTS, 5 FEET TO DRAINAGE EASEMENTS AND GRADE BREAKS, 10 FEET TO WATER LINES, 50 FEET TO EXISTING OR PROPOSED WATER WELLS.

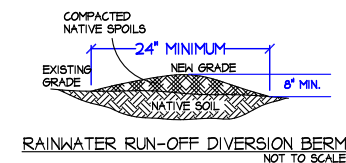
MINIMUM SEPARATION FROM DRAINFIELD: ONE FOOT TO FOUNDATIONS, EASEMENTS AND SWIMMING POOLS, 5 FEET TO PROPERTY LINES, 10 FEET TO GRADE BREAKS, 10 FEET TO WATER LINES, 100 FEET TO EXISTING OR PROPOSED WATER WELLS.

DRAINFIELD SHALL CONSIST OF A TOTAL OF 2,110 LINEAR FEET OF EMITTER TUBING CONTAINING 1,055 EMITTERS DEVELOPING 4,220 SQUARE FEET OF APPLICATION AREA.

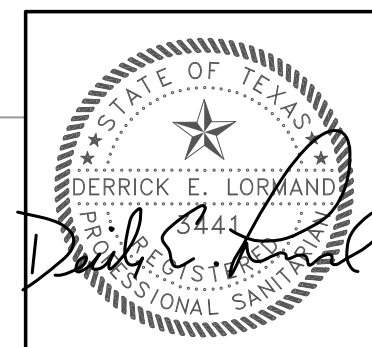
LEGEND:

- A. SEWAGE STUB-OUT
- B. 4" SCH. 40 PVC SEWER PIPE
- C. TWO-WAY CLEAN-OUT
- D. 1,250-GALLON SEPTIC TANK
- E. 750-GALLON PUMP TANK
- F. DRIP-TECH FILTRATION UNIT
- G. 1" SCH. 40 PVC SUPPLY LINE
- H. 1" SCH. 40 PVC RETURN LINE
- J. VACUUM BREAKER VALVES
- K. ONE-WAY CHECK VALVES

NO PORTION OF THIS PROPERTY LIES WITHIN A 100-YEAR FLOOD PLAIN PER F.I.R.M. RATE MAPS

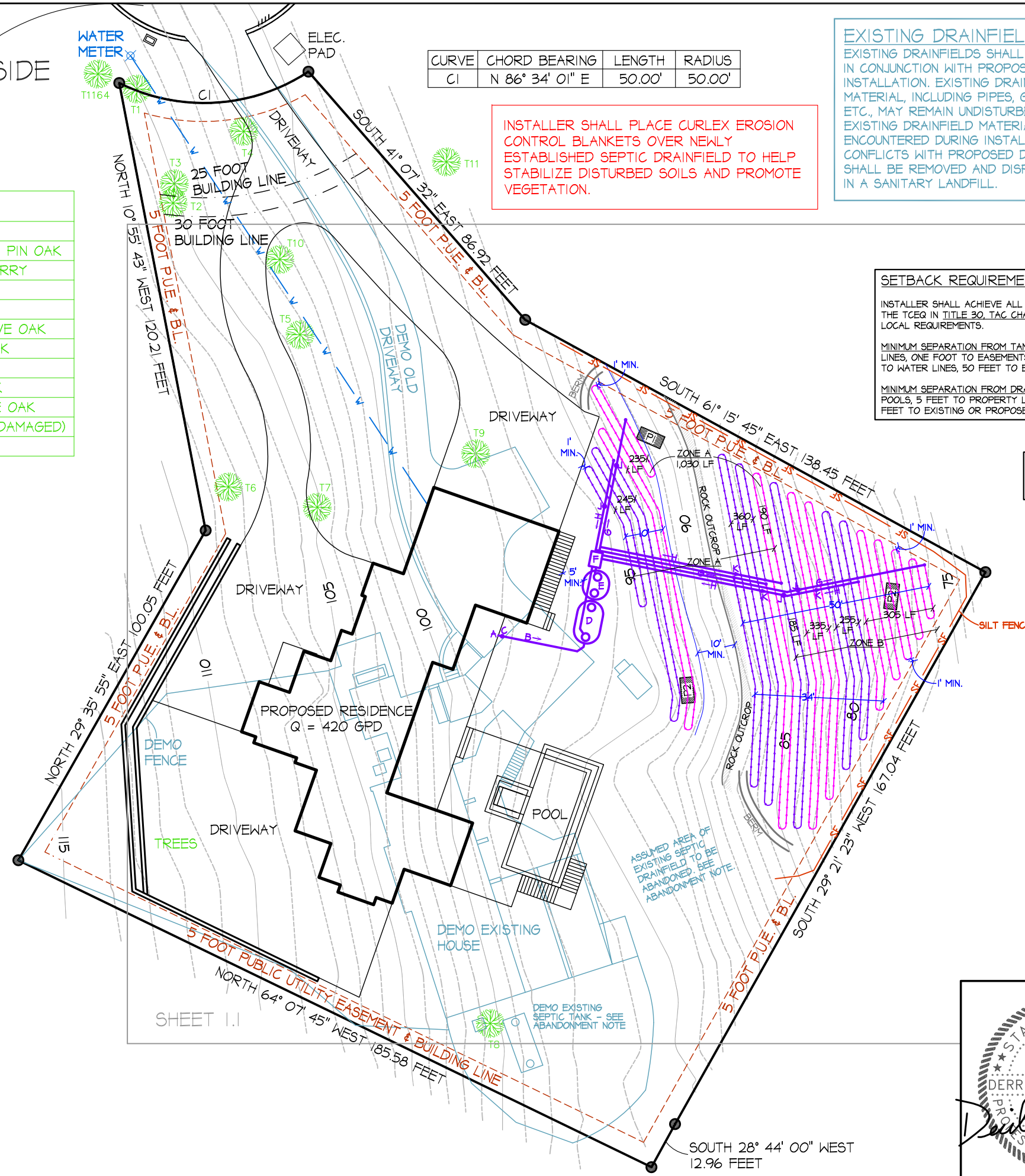


REVISED SHEET 1.0 - OVERALL SITE PLAN

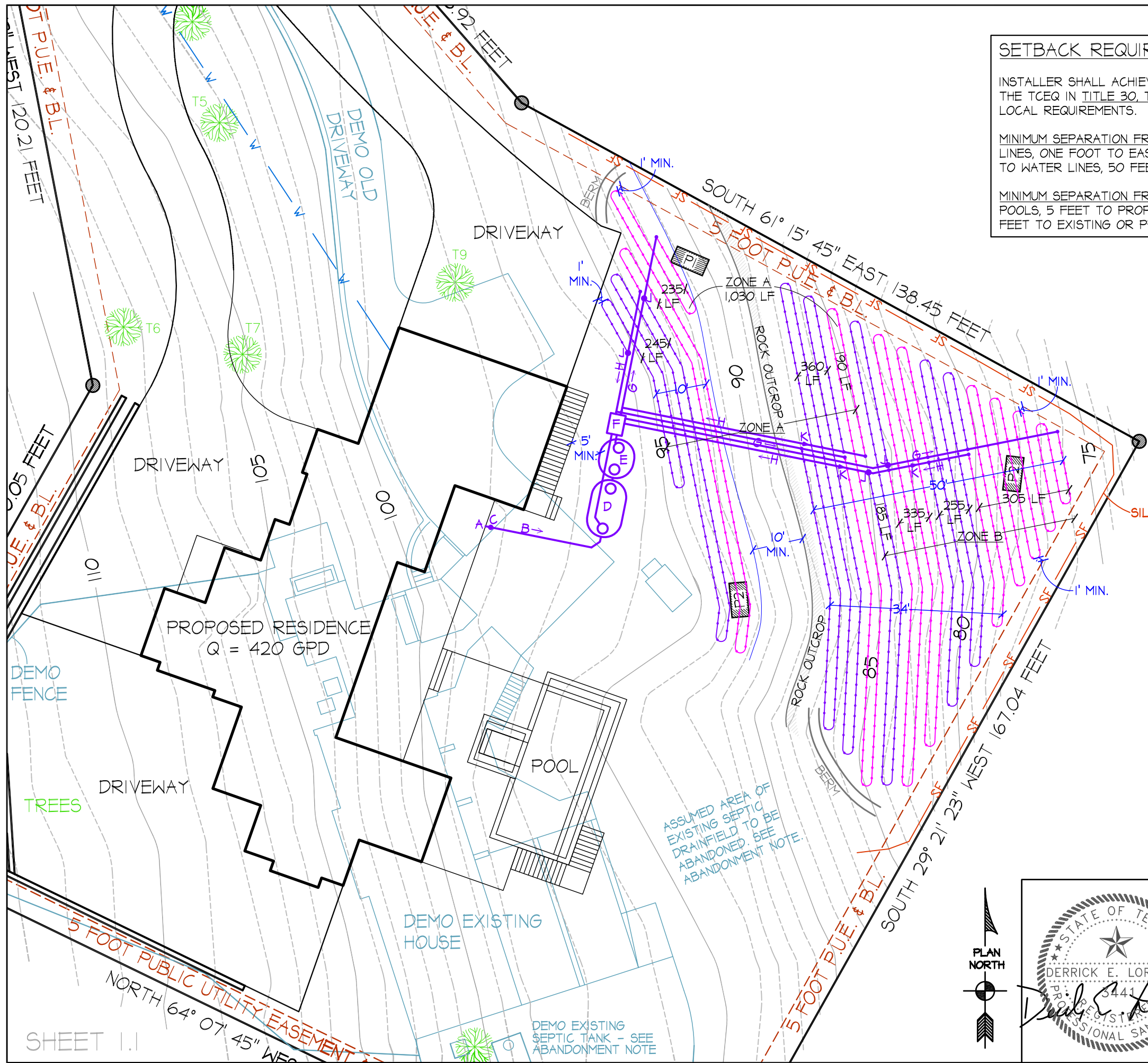


ENVIRONMENTAL SYSTEMS, L.L.C.
DELCON
 12713 MAJESTIC OAKS DRIVE
 AUSTIN, TEXAS 78732
 (512) 583-1397

CLIENT:	MPAC DEVELOPMENT
STREET:	5 HILLSIDE COURT, AUSTIN, TX 78746
LOT, SUBDIVISION:	LOT 5, HILLSIDE VISTA SUBDIVISION
PERMIT AUTHORITY:	TRAVIS COUNTY TNR
DRAWN BY:	DATE:
M. PETERMAN	01/24/2020
SCALE: 1" = 30'	



SHEET 1.1



SETBACK REQUIREMENTS:

INSTALLER SHALL ACHIEVE ALL MINIMUM REQUIRED SEPARATION DISTANCES AS SET FORTH BY THE TCEQ IN TITLE 30, TAC CHAPTER 285, EFFECTIVE DECEMBER 2012, AND ANY ADDITIONAL LOCAL REQUIREMENTS.

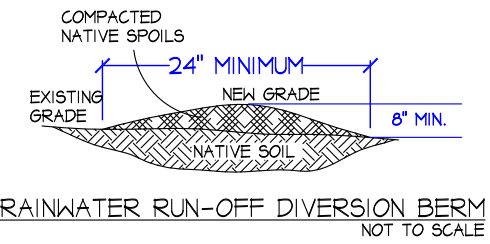
MINIMUM SEPARATION FROM TANK: 5 FEET TO FOUNDATIONS, SWIMMING POOLS AND PROPERTY LINES, ONE FOOT TO EASEMENTS, 5 FEET TO DRAINAGE EASEMENTS AND GRADE BREAKS, 10 FEET TO WATER LINES, 50 FEET TO EXISTING OR PROPOSED WATER WELLS.

MINIMUM SEPARATION FROM DRAINFIELD: ONE FOOT TO FOUNDATIONS, EASEMENTS AND SWIMMING POOLS, 5 FEET TO PROPERTY LINES, 10 FEET TO GRADE BREAKS, 10 FEET TO WATER LINES, 100 FEET TO EXISTING OR PROPOSED WATER WELLS.

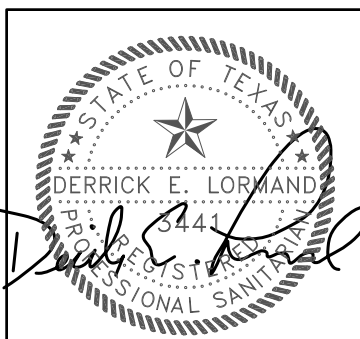
DRAINFIELD SHALL CONSIST OF A TOTAL OF 2,110 LINEAR FEET OF EMITTER TUBING CONTAINING 1,055 EMITTERS DEVELOPING 4,220 SQUARE FEET OF APPLICATION AREA.

- LEGEND:**
- A. SEWAGE STUB-OUT
 - B. 4" SCH. 40 PVC SEWER PIPE
 - C. TWO-WAY CLEAN-OUT
 - D. 1,250-GALLON SEPTIC TANK
 - E. 750-GALLON PUMP TANK
 - F. DRIP-TECH FILTRATION UNIT
 - G. 1" SCH. 40 PVC SUPPLY LINE
 - H. 1" SCH. 40 PVC RETURN LINE
 - J. VACUUM BREAKER VALVES
 - K. ONE-WAY CHECK VALVES

NO PORTION OF THIS PROPERTY LIES WITHIN A 100-YEAR FLOOD PLAIN PER F.I.R.M. RATE MAPS

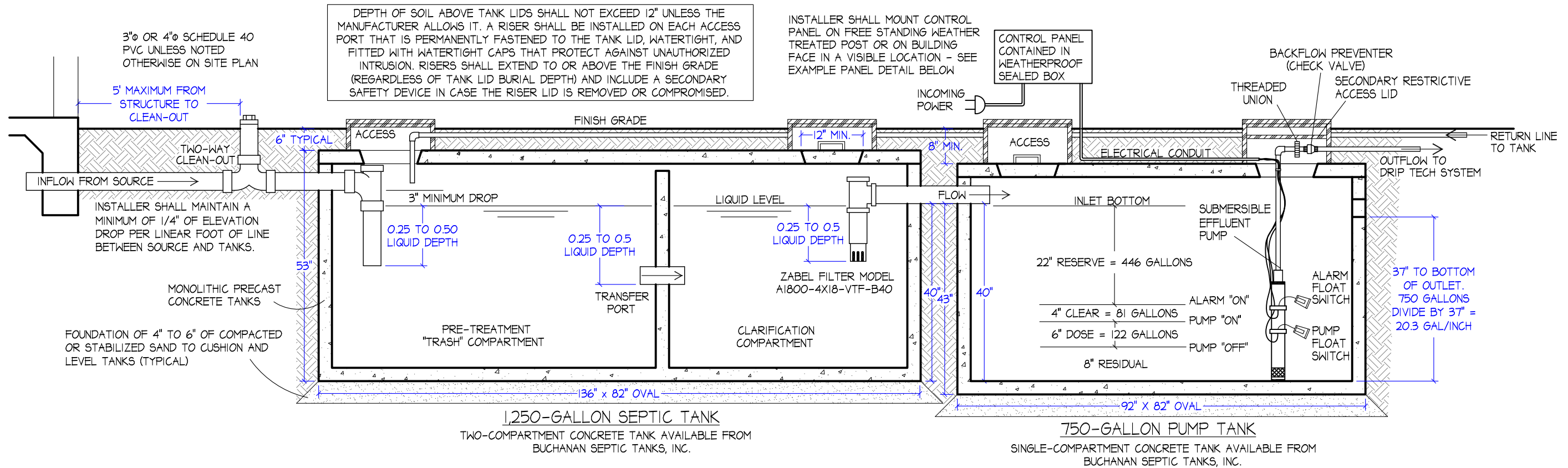


REVISED SHEET I.I - DETAILED SITE PLAN



ENVIRONMENTAL SYSTEMS, L.L.C.
DELCON
 12713 MAJESTIC OAKS DRIVE
 AUSTIN, TEXAS 78732
 (512) 583-1397

CLIENT:	MPAC DEVELOPMENT
STREET:	5 HILLSIDE COURT, AUSTIN, TX 78746
LOT, SUBDIVISION:	LOT 5, HILLSIDE VISTA SUBDIVISION
PERMIT AUTHORITY:	TRAVIS COUNTY TNR
DRAWN BY:	DATE:
M. PETERMAN	01/24/2020
SCALE: 1" = 20'	



TIMED DOSING SCHEDULE:
 SET TIMER FOR 4 EQUAL-DURATION DOSES LASTING 20 MINUTES EACH. EACH DOSE SHALL DELIVER AN AVERAGE TOTAL OF 106 GALLONS. DOSE FOR 20 MINUTES AND REST FOR 340.

PUMP:
 STA-RITE BRAND EFFLUENT PUMP MODEL 20 DOM 05121.

POWER REQUIREMENT:
 115 VOLT, SINGLE PHASE, 60 HERTZ.

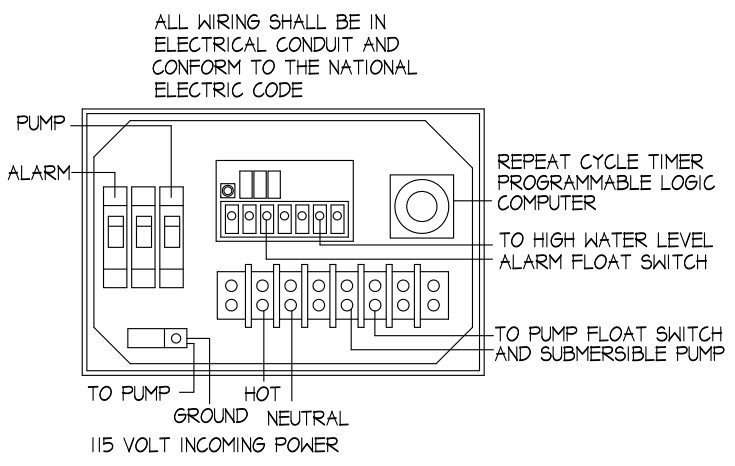
HIGH LEVEL ALARM:
 ON SEPARATE CIRCUIT TO ACTIVATE AUDIO-VISUAL ALARM AT CONTROL PANEL WHEN WATER LEVEL REACHES ELEVATION INDICATED ABOVE PUMP "ON" POSITION OF PUMP FLOAT SWITCH.

FLOAT SWITCHES:
 PER MANUFACTURER'S REQUIREMENTS - ADJUST FLOAT TO HAVE THE OPERATING RANGE AS INDICATED.

DRAINFIELD SHALL HAVE GRASS COVER. THE EXISTING SOIL IS SUITABLE TO SUPPORT VEGETATIVE GROWTH. THE OWNER IS RESPONSIBLE FOR MAINTAINING THE VEGETATION AT THE DRAINFIELD LOCATION. NO AUTOMATIC SPRINKLER SYSTEMS MAY BE INSTALLED TO APPLY ADDITIONAL WATER TO THE VEGETATION AT THE DRAINFIELD LOCATION. HAND WATERING IS PERMITTED WHEN NECESSARY.

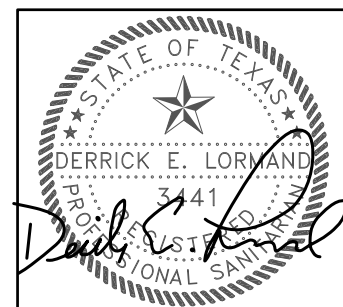
CONVENTIONAL SEPTIC TREATMENT TANKS DRIP TECH BRAND PROPRIETARY FILTRATION SYSTEM MODEL ACT-100S SERIES HEADWORKS. DRIP EMITTER DISPOSAL SOIL APPLICATION RATE = 0.10 GALLONS PER SQUARE FOOT PER DAY. PER TCEQ 055F RG-276/EV-01 REVISED DECEMBER 2012; TABLE I, APPENDIX B.

- TREATMENT METHOD:**
- (I) 1,250-GALLON TWO-COMPARTMENT CONCRETE SEPTIC TANK
 - (II) 750-GALLON CONCRETE PUMP TANK WITH SUBMERSIBLE EFFLUENT PUMP
 - (I) DRIP TECH FILTRATION SYSTEM - TWO OUTLET ZONES



EXAMPLE CONTROL PANEL BOX
 JMN TECHNOLOGIES DRIP TECH MODEL
 BDMC (BIOLINE DOSING MANAGEMENT CONTROL)

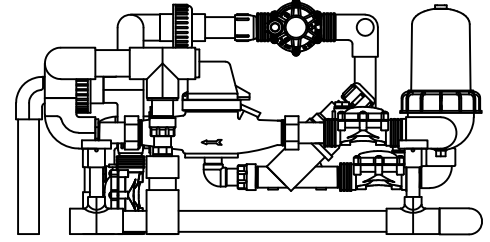
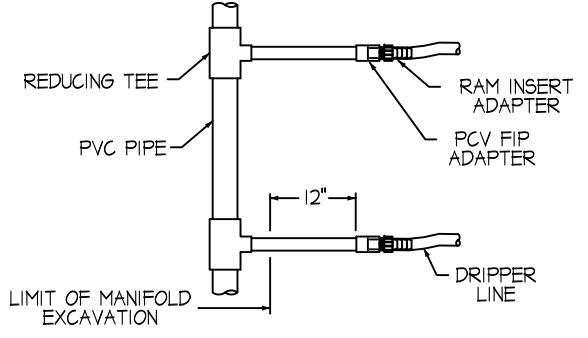
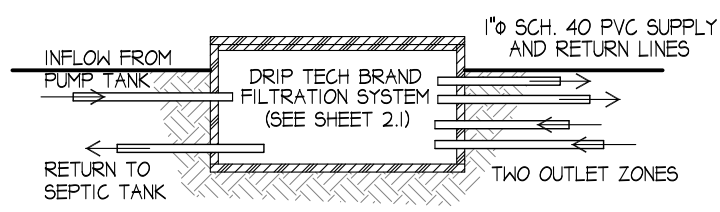
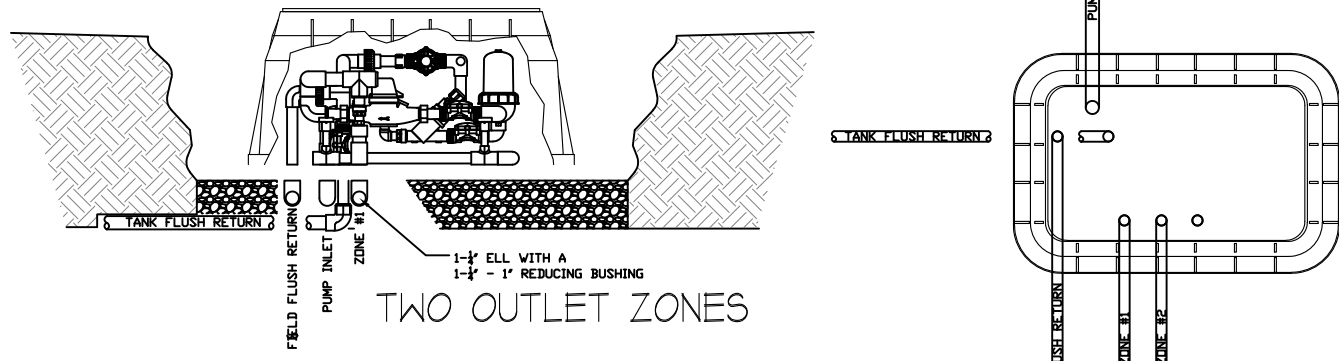
REVISED SHEET 2.0 - TANK SECTION DETAIL



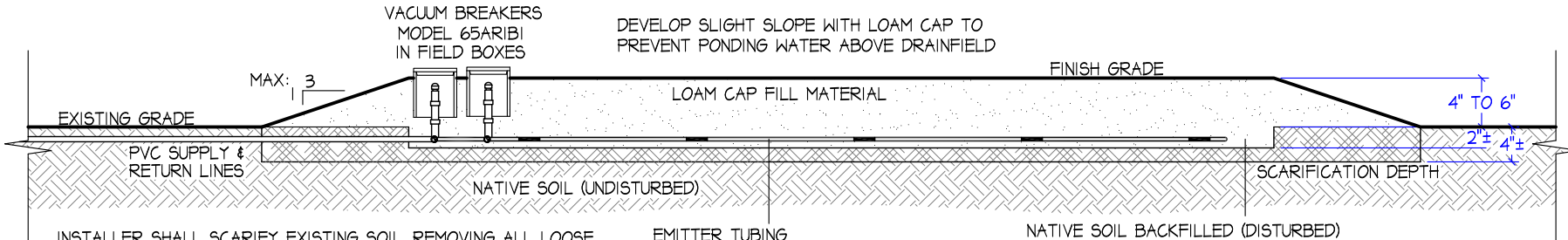
ENVIRONMENTAL SYSTEMS, L.L.C.
 12713 MAJESTIC OAKS DRIVE
 AUSTIN, TEXAS 78732
 (512) 583-1397

CLIENT:	MPAC DEVELOPMENT	
STREET:	5 HILLSIDE COURT, AUSTIN, TX 78746	
LOT, SUBDIVISION:	LOT 5, HILLSIDE VISTA SUBDIVISION	
PERMIT AUTHORITY:	TRAVIS COUNTY TNR	
DRAWN BY:	DATE:	SCALE: 1/2" = 1'-0"
M. PETERMAN	01/24/2020	

ACT-100S SERIES HEADWORKS

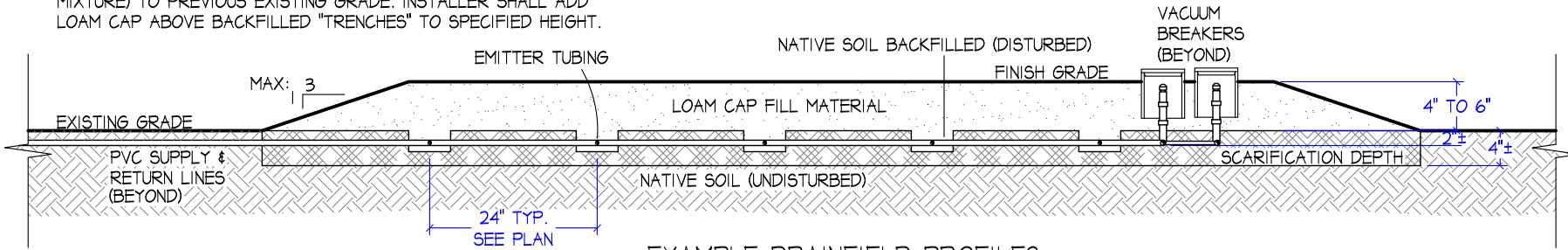


TYPICAL MANIFOLD CONNECTION

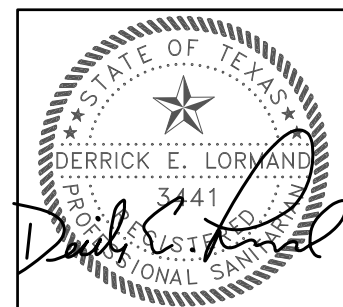


INSTALLER SHALL SCARIFY EXISTING SOIL, REMOVING ALL LOOSE ROCKS, ROOTS, LEAVES, ETC. TO INDICATED SCARIFICATION DEPTH. EMITTER TUBING SHALL BE PLACED INTO NATIVE SOIL TO DEPTH SHOWN. SOME FILL MATERIAL MAY BE MIXED INTO SCARIFIED SOIL TO ALLOW FOR INCREASED WORKABILITY. EMITTER "TRENCHES" SHALL BE BACKFILLED WITH NATIVE SOIL (OR NATIVE SOIL AND IMPORTED FILL MIXTURE) TO PREVIOUS EXISTING GRADE. INSTALLER SHALL ADD LOAM CAP ABOVE BACKFILLED "TRENCHES" TO SPECIFIED HEIGHT.

NETAFIM PRESSURE COMPENSATING DRIP TUBING (0.61 GPH) WITH 24-INCH CENTER-TO-CENTER EMITTER SPACING



EXAMPLE DRAINFIELD PROFILES



REVISED SHEET 2.1 - DRAINFIELD SECTION DETAIL		
DELCON		
ENVIRONMENTAL SYSTEMS, L.L.C.		
12713 MAJESTIC OAKS DRIVE AUSTIN, TEXAS 78732 (512) 583-1397		
CLIENT:	MPAC DEVELOPMENT	
STREET:	5 HILLSIDE COURT, AUSTIN, TX 78746	
LOT, SUBDIVISION:	LOT 5, HILLSIDE VISTA SUBDIVISION	
PERMIT AUTHORITY:	TRAVIS COUNTY TNR	
DRAWN BY:	DATE:	SCALE: 1/2" = 1'-0"
M. PETERMAN	01/24/2020	

GENERAL NOTES:

1. ON-SITE SEWAGE FACILITY PERMIT OR AUTHORIZATION TO CONSTRUCT SHALL BE OBTAINED FROM THE LOCAL PERMITTING AUTHORITY AND POSTED ON SITE IN A HIGHLY VISIBLE LOCATION PRIOR TO THE COMMENCEMENT OF THE INSTALLATION OF THIS SYSTEM. NO WORK MAY BEGIN UNTIL THE PERMIT TO CONSTRUCT HAS BEEN POSTED ON SITE.
2. THE INSTALLATION OF THIS SYSTEM MUST BE PERFORMED BY A STATE LICENSED INSTALLER HOLDING A CURRENT CLASS I OR CLASS II CERTIFICATE, OR BY A STATE LICENSED APPRENTICE OPERATING UNDER THE DIRECT SUPERVISION OF A STATE LICENSED INSTALLER. THE LICENSED INDIVIDUAL MUST MAINTAIN CURRENT PROOF OF LICENSE AT THE JOB SITE. THIS LICENSE MUST BE MADE AVAILABLE FOR REVIEW UPON REQUEST.
3. THIS PLAN IS SITE SPECIFIC. THIS DESIGN AND THE INFORMATION CONTAINED WITHIN REMAIN THE OWNERSHIP OF THE DESIGNER AND DELCON ENVIRONMENTAL SYSTEMS, LLC. ADDITIONAL COPIES OF THIS DESIGN MAY BE PRINTED AND REPRODUCED OR OBTAINED FROM DELCON ENVIRONMENTAL SYSTEMS, LLC. FOR CONVENIENCE ASSOCIATED WITH THE PERMIT REVIEW, INSPECTION, INSTALLATION AND LICENSING OF THIS SYSTEM. ADDITIONAL FEES MAY BE REQUIRED. ELECTRONIC COPIES OF THIS DESIGN THAT INCLUDE THE SEAL AND SIGNATURE OF THE DESIGNER ARE VALID AND SHALL BE CONSIDERED AS ORIGINAL COPIES.
4. THE LAWS AND REGULATIONS CONTAINED IN THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S TITLE 30 TEXAS ADMINISTRATIVE CODE CHAPTER 285 FOR ON-SITE SEWAGE FACILITIES ADOPTED MAY 2001, EFFECTIVE JUNE 2001 AND MOST RECENTLY REVISED DECEMBER 5, 2012 GOVERN THE DESIGN, PERMIT AND INSTALLATION OF THIS SYSTEM. ANY ADDITIONAL REGULATIONS ADOPTED BY THE LOCAL PERMITTING AUTHORITY ABOVE AND BEYOND THE REQUIREMENTS OF THE STATE MINIMUM SHALL SUPERSEDE. ANY ADDITIONAL REQUIREMENTS AND/OR SPECIFIC STIPULATIONS LISTED IN THE PERMIT TO CONSTRUCT OR THIS DESIGN SHALL BE STRICTLY FOLLOWED.
5. IT IS THE RESPONSIBILITY OF THE INSTALLER TO READ AND UNDERSTAND THE LAWS REGARDING THE INSTALLATION OF ON-SITE SEWAGE FACILITIES, THE SPECIAL CONDITIONS (IF ANY) CONTAINED IN THE PERMIT OR AUTHORIZATION TO CONSTRUCT AND THE REQUIREMENTS AND SPECIFICATIONS OF THIS DESIGN.
6. THIS PLAN IS INTENDED FOR USE AS A SEPTIC SYSTEM INSTALLATION GUIDE. THE PROPERTY DESCRIPTION, DIMENSIONS AND LOCATION OF ALL SITE FEATURES HAVE BEEN DEVELOPED FROM SURVEYS (IF PROVIDED), GLOBAL INFORMATION SYSTEM DATA, AERIAL PHOTOGRAPHY, SITE PLANS, SITE VISITS, FIELD MEASUREMENTS AND ANY ADDITIONAL INFORMATION PROVIDED BY THE BUILDER, INSTALLER AND OWNER. THIS SITE PLAN IS NOT A LEGAL LAND SURVEY OR PLAT MAP AND SHOULD NOT BE TREATED AS SUCH.
7. TREES AND VEGETATION WITHIN THE VICINITY OF THE PROPOSED SYSTEM SHALL BE PROTECTED. IT IS POSSIBLE THAT DAMAGE MAY OCCUR TO TREES AND VEGETATION DURING THE INSTALLATION OF THIS SYSTEM. NEITHER THE DESIGNER NOR THE INSTALLER SHALL BE RESPONSIBLE FOR DAMAGE TO VEGETATION AND/OR TREES CAUSED DURING CONSTRUCTION. NEITHER THE DESIGNER NOR THE INSTALLER SHALL BE RESPONSIBLE FOR VEGETATION REPLACEMENT ABOVE AND BEYOND THE SPECIFIC STIPULATIONS CONTAINED IN THIS DESIGN. REMOVAL AND/OR TRIMMING OF TREES AND VEGETATION MAY BE REQUIRED TO PROPERLY INSTALL AND OPERATE THIS SYSTEM.
8. NO WATER WELLS MAY BE INSTALLED CLOSER THAN 50 FEET FROM THIS SYSTEM. ALL WATER SUPPLY LINES (INCLUDING IRRIGATION SYSTEM LINES) SHALL REMAIN AT LEAST 10 FEET AWAY FROM ALL SEPTIC SYSTEM COMPONENTS UNLESS NOTED OTHERWISE ON PLAN AND SPECIFICALLY ADDRESSED AND APPROVED BY THE PERMITTING AUTHORITY.
9. NO AUTOMATIC WATER SPRINKLER SYSTEM MAY BE INSTALLED TO DIRECTLY IRRIGATE THE VEGETATION ABOVE THE APPLICATION FIELD. HAND WATERING IS PERMISSIBLE TO HELP MAINTAIN APPLICATION FIELD VEGETATION.
10. A MAINTENANCE CONTRACT WITH AN LICENSED AND CERTIFIED MAINTENANCE PROVIDER MAY BE REQUIRED BY STATE LAW WITH THIS SYSTEM. REGARDLESS, PERIODIC MAINTENANCE IS NECESSARY TO MAINTAIN OPTIMUM SYSTEM PERFORMANCE AND ENVIRONMENTAL PROTECTION. IT IS HIGHLY RECOMMENDED THAT PERIODIC ROUTINE MAINTENANCE BE PERFORMED AT THREE-MONTH INTERVALS.
11. TO THE BEST OF MY KNOWLEDGE THERE APPEAR TO BE NO EDWARD'S AQUIFER RECHARGE FEATURES WITHIN 150 FEET OF THIS SYSTEM.
12. IT IS MY PROFESSIONAL OPINION THAT THIS ON-SITE SEWAGE FACILITY CAN BE OPERATED WITHOUT CAUSING A THREAT OR HARM TO THE PUBLIC HEALTH OR TO THE ENVIRONMENT. THIS SYSTEM MUST BE PROPERLY INSTALLED AND MAINTAINED TO ACHIEVE THE DESIRED LEVEL OF TREATMENT AND DISPOSAL TO PREVENT THREATS OR HARM TO THE PUBLIC HEALTH OR TO THE ENVIRONMENT.

INSPECTION AND COORDINATION NOTES:

1. THE INSTALLER SHALL COORDINATE WITH THE PERMITTING AUTHORITY TO SCHEDULE ALL REQUIRED INSPECTIONS THROUGHOUT THE INSTALLATION PROCESS. THE INSTALLER MAY CONTACT THE PERMITTING AUTHORITY TO OBTAIN A SCHEDULE OF INSPECTIONS REQUIRED FOR THIS SYSTEM. SEVERAL INSPECTIONS MAY BE REQUIRED AT GIVEN INTERVALS DURING CONSTRUCTION. ADDITIONAL INSPECTION FEES MAY BE REQUIRED IF INSPECTIONS ARE NOT APPROVED OR IF THE INSTALLATION DEVIATES FROM THE PERMITTED DESIGN WITHOUT PRIOR APPROVAL FROM BOTH THE PERMITTING AUTHORITY AND DELCON ENVIRONMENTAL SYSTEMS, LLC.
2. NO PORTION OR COMPONENT OF THIS SYSTEM SHALL BE COVERED UNTIL REVIEWED AND APPROVED BY THE PERMITTING AUTHORITY. THE DESIGNER SHALL BE NOTIFIED TO PERFORM AN INSPECTION AT LEAST 48 HOURS IN ADVANCE PRIOR TO COVERING ANY SYSTEM COMPONENTS.
3. PERMANENT UTILITIES INCLUDING WATER, ELECTRIC AND POSSIBLY TELEPHONE SERVICE SHALL BE CONNECTED TO THIS SYSTEM AS A CONDITION OF FINAL APPROVAL.
4. THE DESIGNER SHALL DELIVER TO THE PERMITTING AUTHORITY AN APPROVAL/CERTIFICATION LETTER UPON REVIEWING THE INSTALLED SYSTEM INDICATING COMPLIANCE WITH THE DESIGN. AN AS BUILT DRAWING MAY BE REQUIRED AND INCLUDED WITH THE FINAL APPROVAL LETTER. APPROVAL SHALL NOT BE GRANTED UNTIL ALL INSPECTIONS ARE PERFORMED, ALL REQUIREMENTS ARE ACHIEVED AND ALL FEES TO THE DESIGNER AND PERMITTING AUTHORITY ARE PAID IN FULL.
5. A LICENSE TO OPERATE WILL BE ISSUED BY THE PERMITTING AUTHORITY UPON INSTALLATION COMPLETION AND WRITTEN APPROVAL/CERTIFICATION FROM DELCON ENVIRONMENTAL SYSTEMS, LLC. USE OF THIS ON-SITE SEWAGE FACILITY WITHOUT A LICENSE TO OPERATE IS A VIOLATION OF STATE AND LOCAL LAW AND IS SUBJECT TO FINES AND ADDITIONAL LEGAL ACTION INCLUDING PROPERTY CONDEMNATION AND INCARCERATION.

FIELD MODIFICATION AND ALTERATION NOTES:

1. THE INSTALLER SHALL FIELD VERIFY ALL DIMENSIONS (INCLUDING TOPOGRAPHICAL INFORMATION OF CURRENT GRADES) OF THIS DESIGN PRIOR TO CONSTRUCTION, AS SITE CONDITIONS MAY CHANGE DURING THE INTERIM TIME BETWEEN THE PERMIT ISSUANCE AND SYSTEM INSTALLATION.
2. THE INSTALLER SHALL STRICTLY ADHERE TO THE DESIGN (BOTH DIMENSIONS AND EQUIPMENT SPECIFICATIONS) AND TO ANY ADDITIONAL REQUIREMENTS OF THE PERMIT TO CONSTRUCT. ANY DISCREPANCIES BETWEEN THE DESIGN AND ACTUAL FIELD CONDITIONS SHALL BE REPORTED BY THE INSTALLER TO THE DESIGNER AND/OR THE PERMITTING AUTHORITY PRIOR TO CONSTRUCTION.
3. THE INSTALLER IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES. PRIOR TO CONSTRUCTION, THE INSTALLER SHALL CONTACT DIG TESS OR OTHER UTILITY LOCATING ORGANIZATION TO CONFIRM THE LOCATION OF ALL PERTINENT UTILITIES WITHIN THE VICINITY OF THIS ON-SITE SEWAGE FACILITY. ANY UNFORESEEN UTILITIES DISCOVERED SHALL BE REPORTED TO DELCON ENVIRONMENTAL SYSTEMS, LLC AND/OR THE PERMITTING AUTHORITY. DESIGN MODIFICATIONS MAY BE REQUIRED TO ACCOMMODATE DISCOVERED UTILITIES.
4. IF A FIELD DISCREPANCY IS DISCOVERED DURING CONSTRUCTION, WORK SHALL STOP UNTIL THE ISSUE IS RESOLVED BY DELCON ENVIRONMENTAL SYSTEMS, LLC AND THE PERMITTING AUTHORITY. DESIGN CHANGES REQUIRED DUE TO FIELD MODIFICATIONS MAY REQUIRE ADDITIONAL DESIGN FEES, ADDITIONAL PERMITTING FEES AND ADDITIONAL TIME. FIELD CHANGES MADE WITHOUT PRIOR APPROVAL AND AUTHORIZATION FROM BOTH DELCON ENVIRONMENTAL SYSTEMS, LLC AND THE PERMITTING AUTHORITY MAY VOID PERMIT AND COULD RESULT IN LEGAL ACTIONS AGAINST THE INSTALLER.

PIPING NOTES:

1. ALL PIPING INCLUDED WITH THIS SYSTEM SHALL CONSIST OF SCHEDULE 40 PVC UNLESS NOTED OTHERWISE ON SITE PLAN OR SECTION DETAILS. ALL CONNECTIONS SHALL BE PROPERLY JOINED USING APPROPRIATE PRIMER AND SEALER/CEMENT. ALL LINES AND CONNECTIONS SHALL BE WATER-TIGHT AND MAY BE PRESSURE TESTED TO VERIFY INTEGRITY.
2. GRAVITY-FED SEWER AND TRANSMISSION LINES SHALL MAINTAIN AT LEAST $\frac{1}{8}$ " OF VERTICAL FALL PER LINEAR FOOT OF RUN THROUGHOUT ENTIRE RUN. NO LOCAL LOW SPOTS OR DIPS WITHIN LINES. NO HARD 90 DEGREE ELBOWS ON FITTINGS SHALL BE USED WITH GRAVITY-FED SEWER LINES. A PAIR OF 45 DEGREE SWEEPING ELBOWS SHALL BE USED.
3. SEWER LINES SHALL FROM THE SOURCE(S) TO THE TREATMENT TANK(S) AND FROM THE TREATMENT TANK(S) TO THE DISPOSAL AREA(S) SHALL BE EMBEDDED IN A MINIMUM OF 4 INCHES OF CLEAN CLASS Ib, CLASS II, OR CLASS III TYPE SOIL CONTAINING LESS THAN 30% GRAVEL AND CLEAN OF ANY ORGANIC MATERIAL, TRASH AND ROCKS/GRAINS LARGER THAN 1/2" IN ORDER TO TO AVOID SHIFTING, SETTLING AND PUNCTURES.
4. A MINIMUM OF 4" OF SOIL COVER SHALL BE PLACED ABOVE ALL PVC PIPES FOR PROTECTION.
5. INSTALLER SHALL VERIFY ON PLAN THE SPECIFIC USE OF PURPLE COLORED PVC PIPE.

TANK NOTES:

1. CONCRETE TANKS SHALL BE MANUFACTURED IN COMPLIANCE WITH ASTM C 1227, STANDARD SPECIFICATION FOR PRECAST CONCRETE SEPTIC TANKS ADOPTED 2000 AND AS AMENDED.
2. PLASTIC (POLYETHYLENE) OR FIBERGLASS TANKS SHALL BE RATED FOR USE AS UNDERGROUND SEPTIC EFFLUENT AND/OR PUMP TANKS. SPECIFIC INSTRUCTIONS ASSOCIATED WITH INSTALLATION AND BACK-FILLING SHALL BE STRICTLY FOLLOWED.
3. TANKS SHALL BE BEDDED ON SPECIFIED SAND CUSHION AND SET LEVEL TO WITHIN AN OVERALL TOLERANCE OF ONE INCH FROM INLET TO OUTLET.
4. TANKS SHALL BE FILLED TO THE FLOW LINE TO DETERMINE INTEGRITY. ANY LEAKS OR WEEPS SHALL BE PATCHED TO HOLD WATER. ONCE TANKS ARE REVIEWED AND APPROVED BY THE PERMITTING AUTHORITY, THE WATER LEVEL WITHIN THE PUMP TANK (OR PUMP CHAMBER) MUST BE LOWERED TO THE NORMAL OPERATING LEVEL. DO NOT DISCHARGE EXCESS WATER INTO THE DRAINFIELD. EXCESS WATER SHALL BE REMOVED FROM TANK WITHOUT ENTERING DRAINFIELD.
5. INLET PIPES AND OUTLET PIPES SHALL BE SEALED WITH GROUT, EXPANSIVE FOAM OR SILICONE TO PREVENT LEAKING. RISERS AND INSPECTION PORTS SHALL BE SEALED WITH GROUT, EXPANSIVE FOAM OR SILICONE TO PREVENT WATER, SOIL OR INSECT INTRUSION INTO TANKS.
6. TANK EXCAVATION SHALL BE BACKFILLED WITH CLEAN CLASS II OR CLASS III SOIL FREE OF ROCK. ROCKS, CONSTRUCTION DEBRIS, TRASH, ORGANICS AND CLASS IV SOIL ARE UNACCEPTABLE BACKFILL MATERIAL.
7. DEPTH OF SOIL ABOVE TANK LIDS SHALL NOT EXCEED 12 INCHES UNLESS SPECIFICALLY ADDRESS BY THIS DESIGN AND APPROVED BY THE MANUFACTURER.

DRAINFIELD NOTES:

1. ALL ROCKS AND EXISTING VEGETATION (EXCEPT DESIRED TREES) SHALL BE REMOVED FROM PROPOSED DRAINFIELD LOCATION AS PREPARATION FOR SYSTEM INSTALLATION. ANY REMAINING ROCK EXPOSURES SHALL BE CAPPED WITH AT LEAST 3" OF LOAM TOPSOIL TO PROMOTE VEGETATIVE GROWTH.
2. INSTALLER SHALL IMMEDIATELY ESTABLISH VEGETATION ON NEWLY CONSTRUCTED DRAINFIELD. ACCEPTABLE GRASSES INCLUDE BERMUDA, SAINT AUGUSTINE, RYE, ZOIZA, TIFF OR A COMBINATION FOR MULTI-SEASON GROWTH. CLAY LOAM BACKED SOD MAY NOT BE USED. HYDROMULCH, RAW SEED OR SANDY LOAM BACKED SOD ARE ACCEPTABLE METHODS FOR ESTABLISHING VEGETATION.
3. APPLICATION AREA SHALL BE CROWNED SLIGHTLY TO SHED RAINWATER. REFER TO SITE PLAN FOR THE USE OF DIVERSION BERMS OR TROUGHS.

