



Howard County
Health Department

Bureau of Environmental Health
8930 Stanford Boulevard, Columbia, MD 21045
Main: 410-313-2640 | Fax: 410-313-2648
TDD 410-313-2323 | Toll Free 1-866-313-6300
www.hchealth.org
Facebook: www.facebook.com/hocohealth

Maura J. Rossman, M.D., Health Officer

RECEIPT DATE: 11/14/18

ONSITE SEWAGE DISPOSAL SYSTEM

P 564069

APPROVAL DATE: 5/26/19

PERMIT: CONSTRUCTION

A _____

PROPERTY ADDRESS: 2178 Millers Mill Road

SUBDIVISION: _____

LOT: _____

TAX ID: _____

CONTRACTOR: Sam's Creek

EMAIL: _____

CONTRACTOR ADDRESS: 2810 Sams Creek Rd, NEW Windsor, MD 21776

PHONE: 443-690-0082

CONTRACTOR CERTIFIED FOR BAT INSTALLATION:



MDE



MANUFACTURER:

PROPERTY OWNER: Samuel and Brandi Katz

EMAIL: _____

OWNER ADDRESS: 2178 Millers Mill Road, Cooksville, MD 21723

PHONE: _____

BAT UNIT MODEL: Norweco TNT 500

PUMP SIZE: ¾

PUMP TANK CAPACITY: 1500

OPERATION & MAINTENANCE AGREEMENT

DATE SIGNED: 9/25/18

DATE RECORDED: 9/25/18

DISTRIBUTION SYSTEM:



GRAVITY



PRESSURE DOSED

BEDROOMS: 3

APPLICATION RATE: 0.8

TRENCHES:

LINEAR FEET REQUIRED: 117.2

INLET DEPTH: 1-4

TRENCH WIDTH: 3

MAXIMUM BOTTOM DEPTH: 8

MINIMUM SPACE

BETWEEN TRENCHES: 10

EFFECTIVE AREA BEGINNING DEPTH: 6

LOCATION:

PER APPROVED SITE PLAN. SEWAGE DISPOSAL AREA AND BAT UNIT LOCATION MUST BE STAKED BY LICENSED SURVEYOR PRIOR TO PRE-CONSTRUCTION INSPECTION.

NOTES:

Install per BAT plan. Use ME 75 pump

ISSUED BY: Jeff Williams

ISSUE DATE: 4/2/19

EXPIRATION DATE: 4/2/20

NOTE: CONTRACTOR MUST SCHEDULE A PRE-CONSTRUCTION INSPECTION PRIOR TO BEGINNING ANY INSTALLATION

NOTE: CONTRACTOR MUST SCHEDULE AN INSPECTION AND GAIN APPROVAL OF ALL COMPONENTS PRIOR TO COVERING

NOTE: STONE MUST BE APPROVED BY HEALTH DEPARTMENT AND GRAVEL TICKET MUST BE AVAILABLE FOR REVIEW.

NOTE: WATERTIGHT SEPTIC TANKS REQUIRED

NOTE: ALL PARTS OF SEPTIC SYSTEM SHALL BE AT LEAST 100 FEET DOWNGRADIENT FROM ANY WATER WELL

NOTE: MANHOLE RISERS REQUIRED ON ALL SEPTIC TANKS AND PUMP CHAMBERS

NOTE: AN ELECTRICAL PERMIT IS REQUIRED FOR INSTALLATION OF ANY ELECTRICAL COMPONENTS OF THE SYSTEM



ELECTRICAL PERMIT ISSUED

E _____

NOTE: AN INDIVIDUAL CERTIFIED BY MDE AND THE MANUFACTURER FOR BAT INSTALLATION MUST BE PRESENT AT ALL TIMES DURING BAT INSTALLATION.

NOTE: MDE RECOMMENDS SEPTIC TANKS, BAT, AND OTHER PRETREATMENT UNITS BE PUMPED AT A FREQUENCY ADEQUATE TO ENSURE THAT SOLIDS ARE NOT DISCHARGED TO THE DISPOSAL AREA

NEITHER THE HOWARD COUNTY COUNCIL NOR THE HEALTH DEPARTMENT IS RESPONSIBLE FOR THE SUCCESSFUL OPERATION OF ANY SYSTEM.

PERMITTEE RESPONSIBLE FOR OBTAINING FINAL APPROVAL ON THIS PERMIT.

CALL 410-313-1771 TO SCHEDULE INSPECTIONS.

NOT TO SCALE

SEE ATTACHED
AS BUILT



ROAD NAME

TRENCH/DRAINFIELD DATA

WIDTH 3' INLET 1-35' BOTTOM 8'
NUMBER OF TRENCHES 4
TOTAL LENGTH _____
ABSORPTION AREA _____
DISTRIBUTION BOX LEVEL N/A
DISTRIBUTION BOX BAFFLE N/A
DISTRIBUTION BOX PORT N/A

SEPTIC TANK DATA

SEPTIC TANK 1 LEVEL YES
MANUFACTURER BACKRIVER
CAPACITY 500 GAL
SEAM LOC TOP
TANK LID DEPTH 3'
BAFFLES YES
BAFFLE FILTER NO
MANHOLE LOC FRONT/BACK
6" PORT LOC INLET
WATERTIGHT TEST -
SLOTTED YES
DATE ON LID _____

PUMP/SEPTIC TANK LEVEL

MANUFACTURER BAFFLOW
CAPACITY 1500 GAL
SEAM LOC TOP
TANK LID DEPTH 3'
BAFFLES INLET
BAFFLE FILTER NO
MANHOLE LOC FRONT/BACK
6" PORT LOC NO
WATERTIGHT TEST NO
SLOTTED NO
DATE ON LID _____

PRE-CONSTRUCTION:

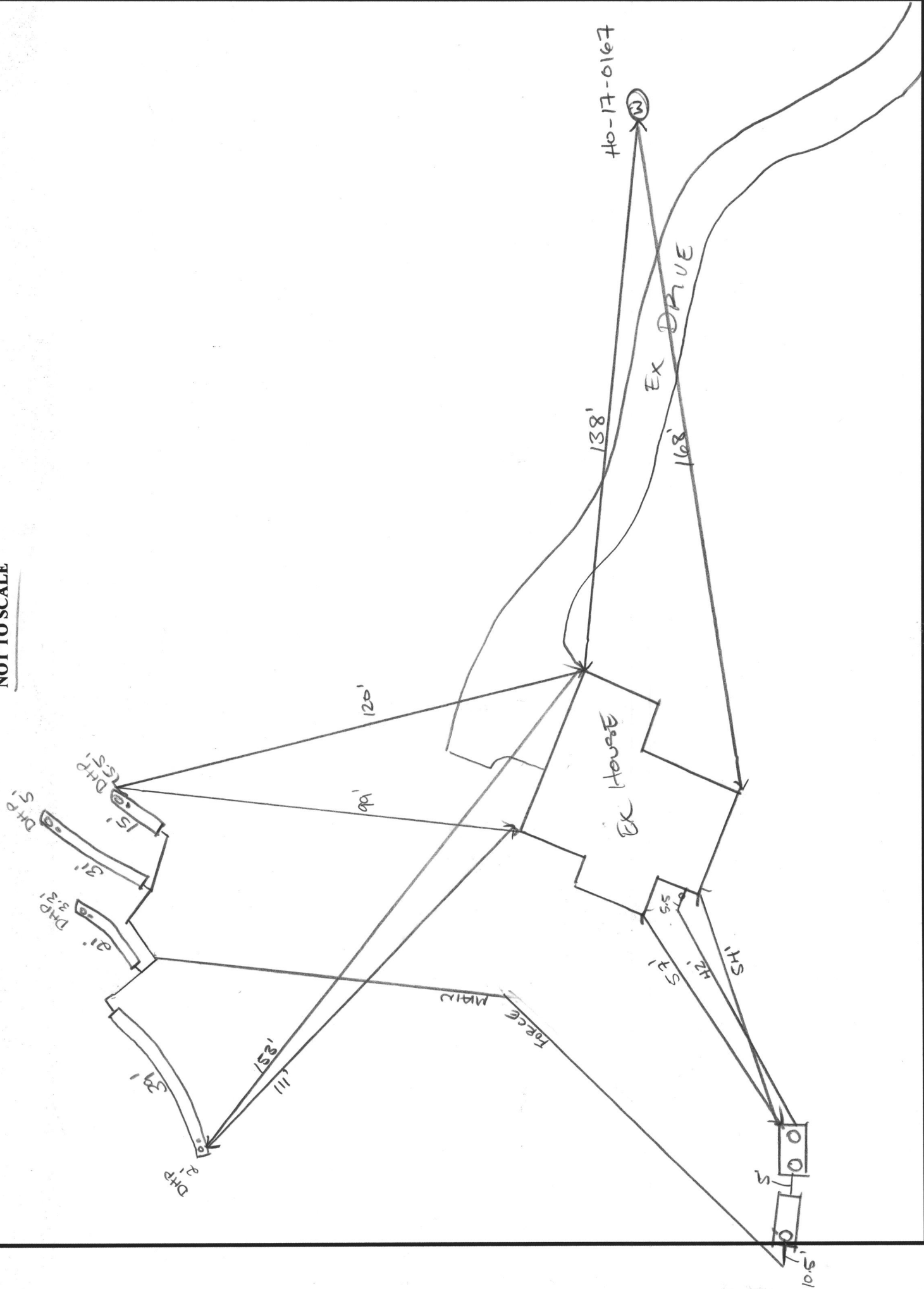
04/02/2019 TANK LOC. STAKED. OK TO SET. F.M AND ~~THE~~ SDA STAKED.
TRENCHES MUST BE STAKED. REINSR TRENCH STAKES. (P)
04/05/2019 TRENCHES STAKED AND CONFIRMED. OK TO START (P)

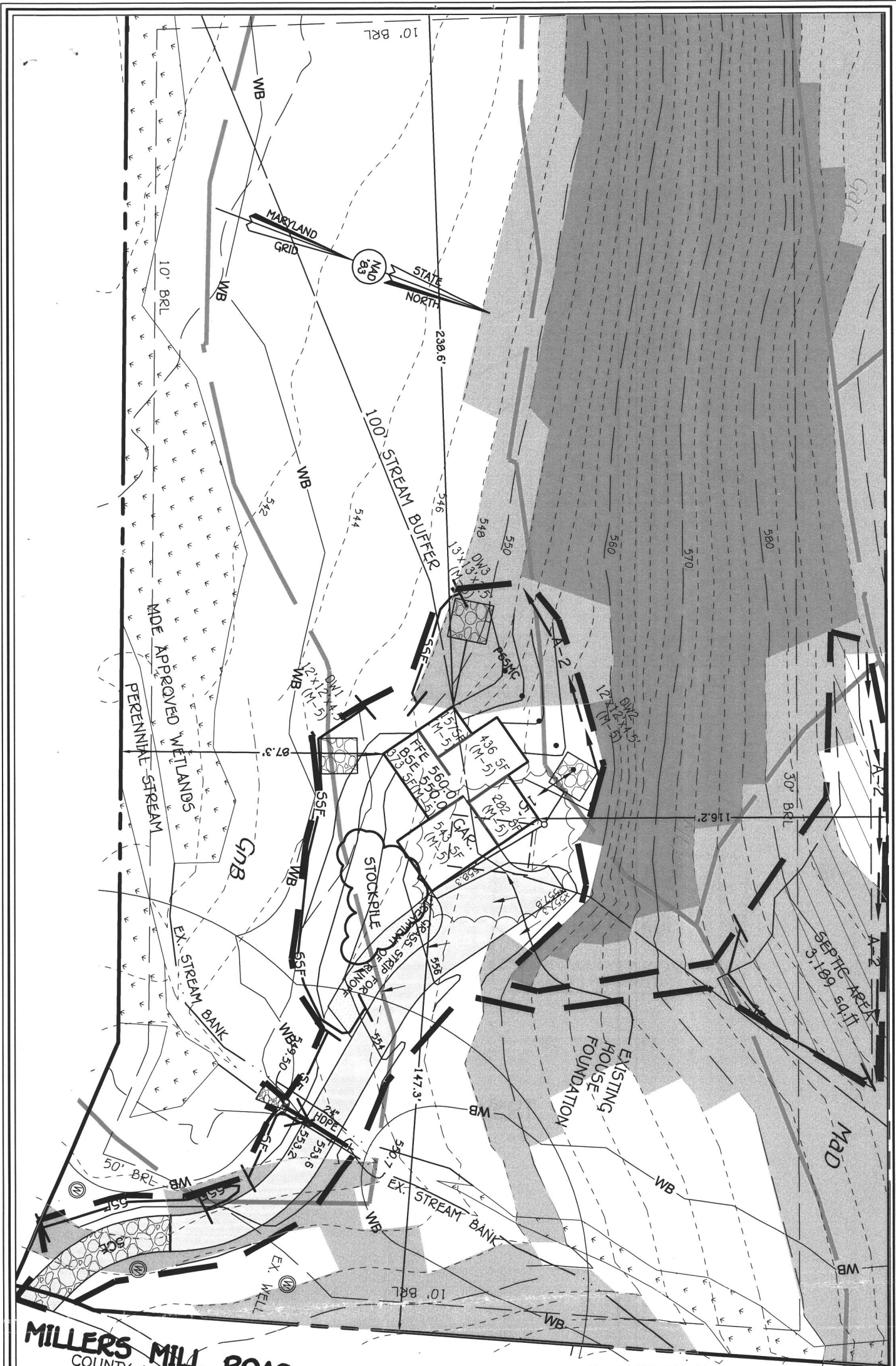
INSTALLATION: 04/04/2019 SHC AND TANK SET. FORCE MAIN PARTIALLY
INSTALLED. SEPTIC AND PUMP TANK BEDDED AND BACKFILLED
PARTIALLY WITH #57 STONE. VERY MUCH GROUND WATER. (P)
04/09/2019 TRENCHES COMPLETE AND PARTIALLY COVERED. CORRECTIVE
ACTIONS: DISTAL CLEAN OUTS MUST BE INSTALLED IN TRENCHES.
6" STONE COVER ON LATERAL NOT INSTALLED. LATERAL INSTALLED
AT STONE DEPTH TO GRADE - MUST CLEAR W/ ENGINEER. (P) 4/10/2019
CORRECTIVE ACTIONS COMPLETE. (P) REINSR. P/A. (P) 4/29/2019 BAT BREAKER
OUTSIDE HOUSE REPORTED SEPARATE FROM PUMP BREAKER (P) 5/13/2019 PUMP WAS

FINAL INSPECTOR _____ DATE OF APPROVAL _____

RAISED 6" PER ENG. RECOMENDATION. IF LATERAL WILL NOT EQUALIZE. (P)

NOT TO SCALE



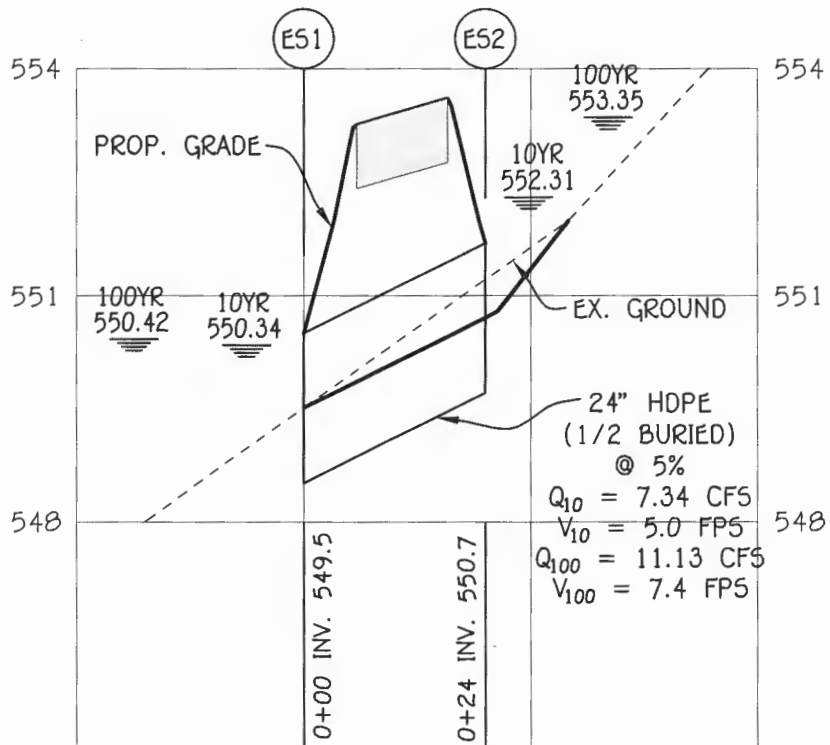


MILLERS MILL ROAD
COUNTY LOCAL ROAD

PERMIT PLAN
2178 MILLERS MILL ROAD

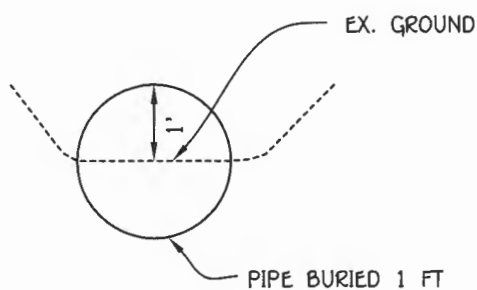
FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLCOTT CITY, MARYLAND 21042
(410) 461 - 2855

TAX MAP #14 GRID #4 PARCEL: 26
ZONED: RC-DEO
FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: 1" = 30' DATE: MAY, 2018
SHEET 1 OF 2



CULVERT

HORIZONTAL SCALE: 1"=30'
VERTICAL SCALE: 1"=3'



CULVERT

SCALE: 1"=5'

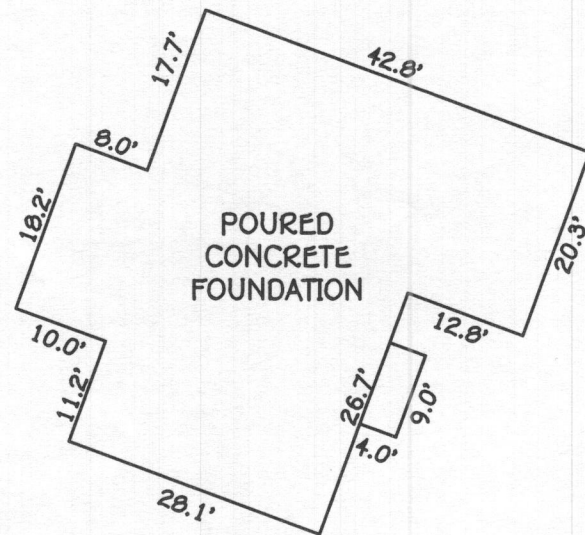
PERMIT PLAN 2178 MILLERS MILL ROAD

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLCOTT CITY, MARYLAND 21042
(410) 461-2855

TAX MAP #14 GRID #4 PARCEL: 26
ZONED: RC-DEO
FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: 1"=30' DATE: MAY, 2018
SHEET 2 OF 2

GENERAL NOTES:

- 1) THIS LOCATION DRAWING IS PREPARED FOR THE BENEFIT OF THE CLIENT SIGNING THE HOUSE LOCATION SURVEY APPROVAL FORM INsofar AS IT IS REQUIRED BY A LENDER OR TITLE INSURANCE COMPANY OR ITS AGENTS IN CONNECTION WITH THE CONTEMPLATED TRANSFER, FINANCING OR REFINANCING OF THE PROPERTY SHOWN HEREON. UNLESS INDICATED AS BEING A BOUNDARY SURVEY, THIS LOCATION DRAWING IS NOT INTENDED FOR USE IN THE ESTABLISHMENT OF PROPERTY LINES AND IS NOT TO BE RELIED UPON FOR THE ESTABLISHMENT OR LOCATIONS OF FENCES, GARAGES, BUILDINGS OR OTHER EXISTING OR FUTURE IMPROVEMENTS. AS A RESULT, THIS LOCATION DRAWING DOES NOT PROVIDE FOR ACCURATE IDENTIFICATION OF PROPERTY LINES, BUT SUCH IDENTIFICATION MAY NOT BE REQUIRED FOR THE TRANSFER OF TITLE OR SECURING FINANCING FOR RE-FINANCING.
- 2) SUBJECT PROPERTY IS SHOWN IN ZONE C ON THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP OF HOWARD COUNTY, MARYLAND, COMMUNITY PANEL No. 24004400088 EFFECTIVE DEC. 4, 1986.
- 3) THE OFFSETS FROM BUILDING LINE TO PROPERTY LINE AS SHOWN ON THE PLAT HEREON ARE TO AN ACCURACY OF PLUS OR MINUS 1' (*).
- 4) NO TITLE REPORT FURNISHED. SUBJECT TO ALL EASEMENTS, RIGHTS OF WAY AND CONDITIONS OF RECORD.
- 5) THE EXISTING WELL(S) SHOWN ON THIS PLAN (IDENTIFIED WITH THE ATTACHED WELL TAG NUMBER HO-17-0167 HAS BEEN FIELD LOCATED BY FISHER, COLLINS AND CARTER, INC. PROFESSIONAL LAND SURVEYORS AND IS ACCURATELY SHOWN.
- 6) BUILDING PERMIT #B-18002052
- 7) PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND THAT I AM A DULY LICENSED PROPERTY LINE SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 339, EXPIRATION DATE 10/04/2020.
- 8) THE BEARINGS AND DISTANCES SHOWN HERON ARE BASED ON A FIELD RUN BOUNDARY SURVEY COMPLETED BY DULEY AND ASSOCIATES, INC ON MAY 26, 2015.

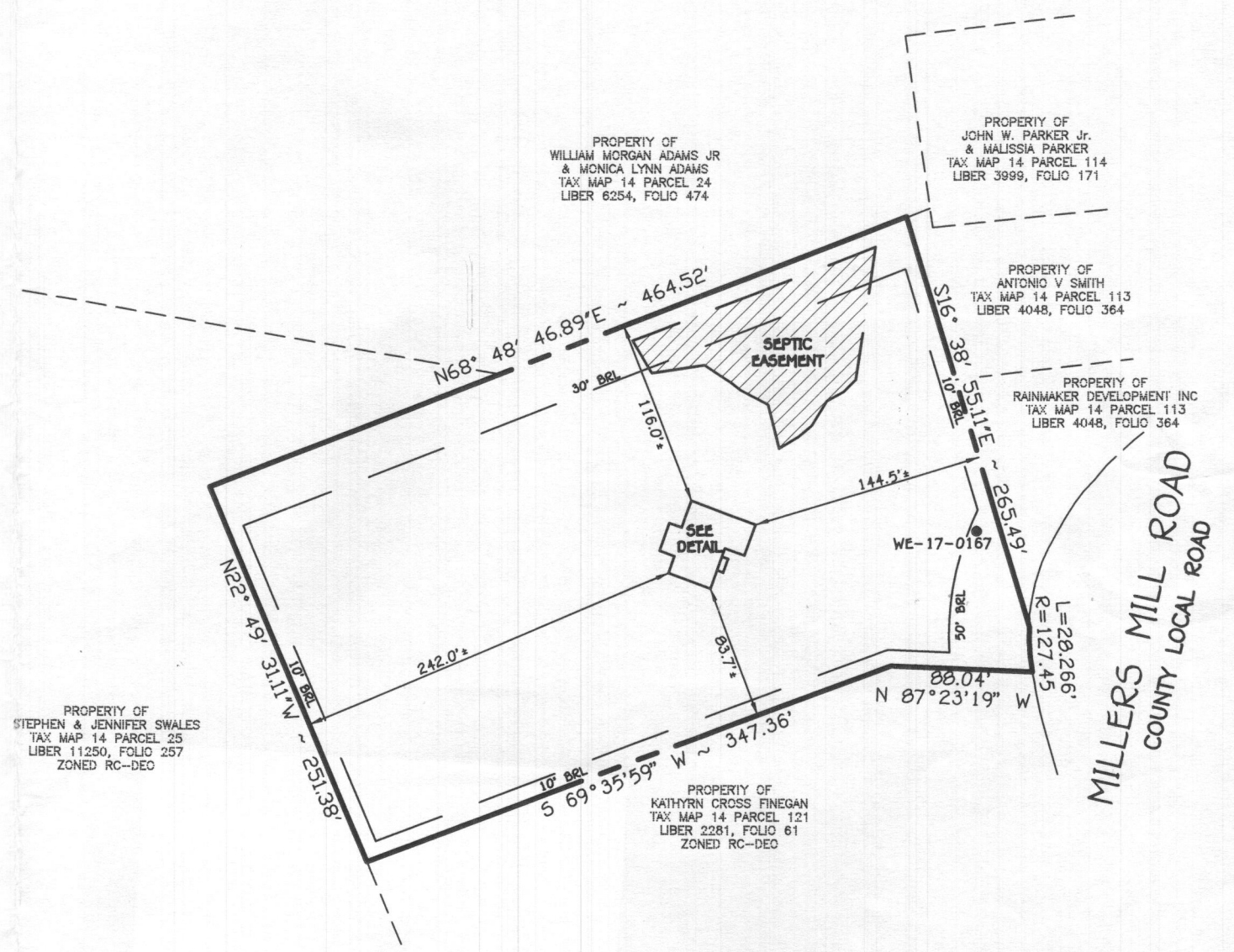


DETAIL:
1" = 20'



Mark L. Robel 11/05/18
PROFESSIONAL LAND SURVEYOR DATE
REG. #

NAD 83



FOUNDATION LOCATION: 10/31/18
FINAL LOCATION: _____
BOUNDARY SURVEY: _____

SCALE: 1" = 100'
DATE: 11/05/18
DRAWN BY: MD
CHECKED BY: MLR
PROJECT No.: 04151-6004

HOUSE LOCATION DRAWING

2178 MILLER MILLS ROAD
DEED REFERENCE: 18154/003
ZONING: RC-DEO
TAX MAP No. 14 GRID No. 04 PARCEL No. 26
4th ELECTION DISTRICT HOWARD COUNTY, MARYLAND

#2178 MILLERS MILL ROAD
B.R.L. = BUILDING RESTRICTION LINE
TOP OF FOUNDATION ELEVATION. = 558.8'±

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLCOTT CITY, MARYLAND 21042
(410) 461 - 2855



BACK RIVER PRE-CAST, LLC
 PO BOX 329
 GLYNDON, MD 21071
 PH# 410-833-3394

NORWECO CERTIFICATION

PROPERTY OWNER: SAMUEL KATZ	INSTALLATION COMPANY: SAMS CREEK
ADDRESS: 2178 MILLERS MILL RD.	CERTIFIED INSTALLER: JOE WRIGHT
CITY, ZIPCODE & COUNTY: COOKSVILLE, 21273, HOWARD	PERMIT#
SIZE OF SYSTEM INSTALLED:	DATE INSTALLED: 04-03-19
600 GPD CONCRETE	START-UP DATE: 04-23-19
NUMBER OF BEDROOMS:	DATE OF FINAL INSPECTION:
TYPE OF INSTALLATION: NEW CONSTRUCTION	DATE OF ELECTRICAL INSPECTION:
ELECTRICAL WIRING PER ELECTRICAL INSTRUCTIONS: YES	TANK LEVEL: YES
HT. OF CONTROL PANEL ABOVE FINAL GRADE: 45"	BURIAL DEPTH OF TANK: 24"
SYSTEM WIRED ON A 15-AMP DEDICATED CIRCUIT WITH STD. BREAKER: YES	RISERS 4" - 6" ABOVE GRADE: YES
LENGTH(S) OF UF WIRE PAST LAST AERATION RISER(S): 12"	VENTED LID(S) ON AERATION CHAMBER(S): YES
FEMALE PLUG(S) WIRED TO UF WIRE: YES	ANY GROUND SETTLING AROUND TANK: NO
CONDUIT(S) ENTERING AERATION RISER MADE WITH A WATERTIGHT CONNECTION: YES	
ISTHE INSIDE OF THE CONDUIT ENTERING THE CONTROL PANEL(S) AND AERATION RISER(S) SEALED WITH DUCT SEAL: YES	

ON 2ND PAGE MAKE A ROUGH SKETCH OF THE HOUSE ,WHERE THE SYSTEM IS LOCATED, WHERE THE CONTROL PANEL IS LOCATED , WHERE THE FRONT OF THE IS AND DIRECTIONS TO THE PROPERTY.

DIRECTIONS CAN START A FEW STREETS AWAY

EXAMPLE: RT. X LEFT ONTO XX STREET RIGHT ONTO PRIVATE DRIVEWAY 5TH HOUSE OF THE LEFT.

I certify that the Norweco Singlair TNT Wastewater Treatment System was installed according to the manufacture's specifications.

Matthew Geckle

April 23, 2019

Signature of BRP Representative

Vice-President

Date

Williams, Jeffrey

From: Williams, Jeffrey
Sent: Friday, March 22, 2019 9:46 AM
To: 'sams.creek@aol.com'; Moore, Dan/VikingCustomHomes
(dan@vikingcustomhomes.com); Stephanie Tuite (Stephanie@fcc-eng.com)
Cc: Wolf, Kevin; Collins, Sarah
Subject: 2178 Millers Mill rd tanks

I reviewed the plans for the plastic tanks. Unfortunately, with the location of the tanks at a toe slope and after getting word that the nearby Stormwater drywells had excessive groundwater, installation of a plastic tank as shown is not approvable and is prohibited according to the tank manufacturer. You will have to come up with an alternative solution for this site. Keep in mind that any proposal must include all details of installation and must be in conformance with any manufacturer requirements. It is likely that we will have to do a site visit and coordinate a test pit before approving any future proposal. Thanks

Jeff Williams
Program Supervisor, Well & Septic Program
Bureau of Environmental Health
Howard County Health Dept.
410-313-4261
jewilliams@howardcountymd.gov

CONFIDENTIALITY NOTICE

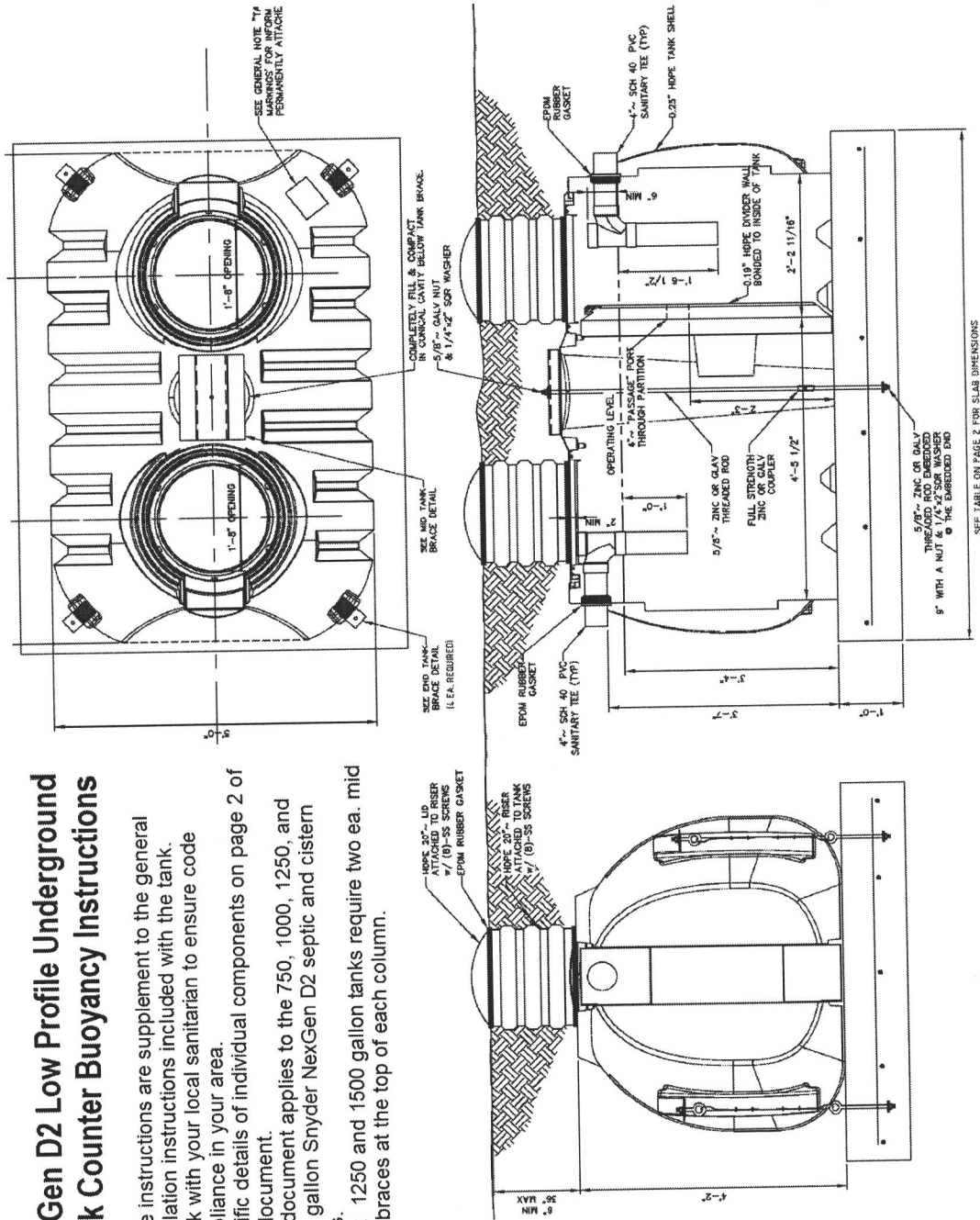
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6940 O Street, Suite 100 • Lincoln, Nebraska 68510 • (402) 467-5221 • FAX (402) 465-1210

NexGen D2 Low Profile Underground Tank Counter Buoyancy Instructions

1. These instructions are supplement to the general installation instructions included with the tank.
2. Check with your local sanitarian to ensure code compliance in your area.
3. Specific details of individual components on page 2 of this document.
4. This document applies to the 750, 1000, 1250, and 1500 gallon Snyder NexGen D2 septic and cistern tanks.
5. Note: 1250 and 1500 gallon tanks require two ea. mid tank braces at the top of each column.



Corporate Headquarters: Lincoln, NE
Other Manufacturing Locations: Marked Tree, AR • Philippi, WV Chowchilla, CA • Mancelona, MI • Bensenville, IL • West Chicago, IL



6940 O Street, Suite 100 • Lincoln, Nebraska 68510 • (402) 467-5221 • FAX (402) 465-1210

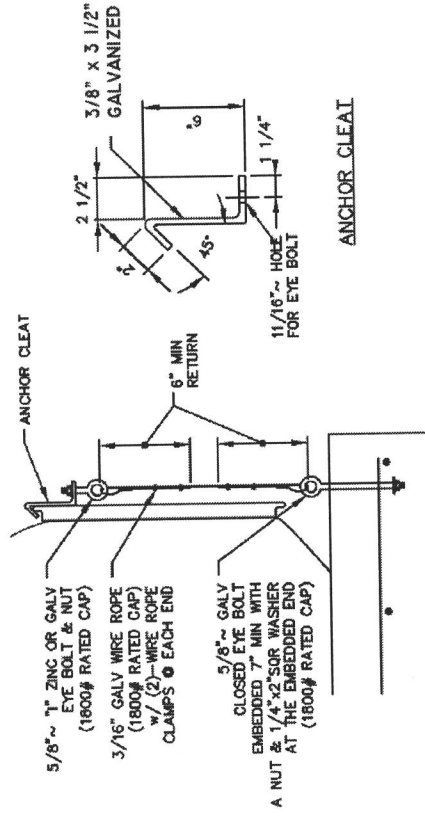
MATERIAL

MOLDED TANK & COMPONENTS:
 HIGH DENSITY POLYETHYLENE (HDPE)
STEEL COMPONENTS OF THE COUNTER BUOYANCY SYSTEM:
 TANK LID: 3000psf or 2500 WHEEL
 TANK WALL & BOTTOM: 62.4 PCF HYDROSTATIC
 SOIL COVER: 6" MIN
 SOIL LOAD: 120 PCF

CONCRETE: MIN 28 DAY COMPRESSIVE STRENGTH OF 2500PSI (F/c
 2500PSI)

LOADS

TANK LID: 3000psf or 2500 WHEEL
 TANK WALL & BOTTOM: 62.4 PCF HYDROSTATIC
 SOIL COVER: 6" MIN
 SOIL LOAD: 120 PCF

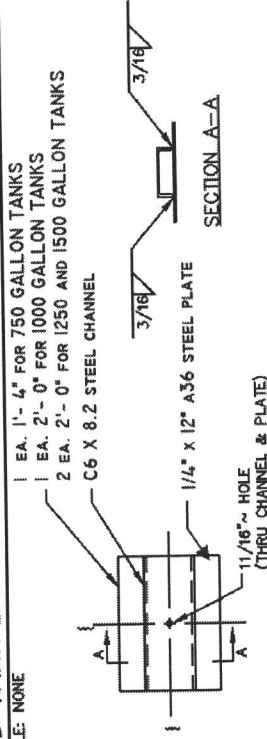


CONCRETE ANCHOR SLAB DIMENSIONS:

750 GALLON TANK: 8' x 6' x 1'
 1000 GALLON TANK: 11' x 6' x 1'
 1250 GALLON TANK: 14' x 6' x 1'
 1500 GALLON TANK: 14' x 7' x 1'

MID TANK BRACE WELDMENT (GALVANIZE AFTER WELDING)

SCALE: NONE



SITE SELECTION/PREPARATION

PROCEDURES AND CRITERIA FOR SELECTING A NEW SEPTIC TANK LOCATION

Where is a Septic System needed?

In areas where no sewer service is available, an On-Site Sewage Treatment and Disposal System, also known as a *septic system*, is needed to treat and properly dispose of sewage on site.

REQUIRED PERMITS/APPROVALS

Most states require the builder or owner to apply for permits which also include a site evaluation. This site evaluation takes into account the proper type and size of septic system, allowable setbacks, the topography, slope and proposed final grade, a proposal showing where the septic tank and drain field are to be located, loading rate (based on soil absorption rates) and any other limiting factors or special conditions. The permitting process helps to insure that septic systems are sized and constructed so that health and environment are protected. The number and type of permit(s) and fee amounts vary substantially from state to state and county to county. Each step of the process has separate applications and fees usually determined by the type of system and the amount of proposed sewage flow. To obtain specific application and fee information for a particular application, please call the on-site agent for your state and county.

TANK SITE SELECTION

Snyder polyethylene tanks offer several advantages over concrete including ease of installation. Instead of an expensive boom lift that is typically required for concrete, Snyder septic tanks can be typically lifted by 2-3 installers and carried to the site in the back of most pickup trucks. When selecting a site, care must be taken to insure all state and county regulations are adhered to including the appropriate permits, setbacks and inspections.

In order to start with a quality onsite system installation, a critical step is the site survey. But first, the installer must assess the proposed site in terms of its existing environmental conditions—geology, prior land use, slopes, swales, wetlands, areas of potential flooding, landscape, vegetation/roots, water wells, utilities, lot lines, site improvements/structures, etc.. In particular, current runoff and water shed conditions need to be assessed, so the septic system will properly function without concerns for ground water infiltration. Landscape position, landforms, sloping terrain, structures, and paved surfaces affect surface and subsurface drainage patterns that can in turn affect system location.

Avoid areas where water runoff from any of these features is directed. Landscape features that retain or concentrate surface and subsurface flows such as swales, depressions and/or floodplains must also be avoided. Failure to do so will void the warranty.

A good approach to selecting tank/system location is to focus on landscape position. The underlying bedrock often controls landscapes, which are modified by a variety of naturally occurring forces. In particular, ridgelines are narrow areas that typically have limited soil depth, but often provide good surface and subsurface drainage. Shoulder slopes and back slopes are convex slopes where erosion is common. These areas often have good drainage, but the soil mantle is typically thin and exposed bedrock outcrops are common. Side slopes are often very steep and erosion is active. Foot slopes and depressions are concave areas of soil accumulation; however, depressions usually have very poor drainage. The better draining soils are found on the summits, ridgelines, lower side slopes and the high side of foot slopes. **Toe slopes and bottomlands have significantly deeper soils, but have extremely poor subsurface drainage, and therefore, must be avoided. Failure to do so will void the warranty.**

Ideally, the septic tank should be located approximately 20-25 feet from the house or building and 50-100 feet from drinking wells (or as dictated by local building codes), situated on high ground, well away from any naturally occurring drainage, in order to keep ground water from entering the fresh excavation. In addition, if located in clay soil or a sloped site, a curtain drain or berm may be necessary to direct excess ground water away from the tank excavation. (Note that the tank must be installed parallel to any slope). The goal of surveying is to identify and correctly locate the treatment system components. All components need to be placed by physical location as well as at the correct elevation. In establishing elevations, remember that even though water runs downhill and gravity distribution is being used, there must be enough drop in the system to move the waste/effluent between the system parts. Be sure to take into account the 2 to 3 inch drop from the inlet pipe to the outlet pipe inside the septic tank.

Snyder Tanks are not approved for use in sites known to be subject to extremely high ground water tables, excessive runoff areas or where the grade dictates that the tank is at the lowest point on the site i.e. where the entire surrounding area drains to the tank, even if the tank is properly mounded. Failure to do so will void the warranty.

INSPECTION REQUIREMENTS

Many states, counties and local municipalities require a "pre-cover" inspection of the septic tank installation. During this time, the open excavation is susceptible to damage, especially if a large amount of rain water were to fill the new excavation and possibly infiltrate the tank. Excessive amounts of ground water could cause potential tank damage, thereby voiding the warranty. Therefore, it is imperative to protect a new excavation that is pending inspection. This can be accomplished in a variety of ways including installing a tarp over the disturbed area, installing silt fencing around the new excavation thereby directing the majority of rain water away from the excavation, mounding dirt around the disturbed site to provide positive drainage away from the site, etc. The whole idea is to prevent the area from becoming inundated with large amounts of ground water before the installation can be properly completed. Then it is imperative that the tank is properly backfilled using 12" layers that are individually compacted. Finally, it is imperative that the tank is mounded as per the Installation Instructions to provide positive drainage away from the top of the tank as well as the entire excavation.

REFERENCES

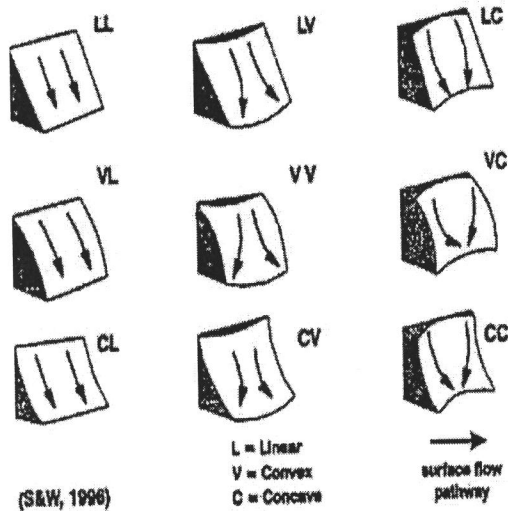
Oregon Department of Environmental Quality—Onsite Wastewater Management Program

EPA/625/R-00/008 2002 USEPA Onsite Wastewater Treatment Systems Manual

State of Indiana Department of Health—Onsite Wastewater Division

Onsite Installer magazine, August 2005 Issue

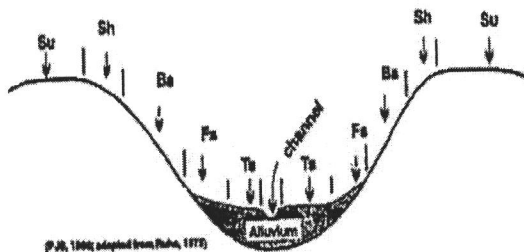
Slope Shape - Slope shape is described in two directions: up and down slope (perpendicular to the contour), and across slope (along the horizontal contour); e.g., linear, convex, or LV.



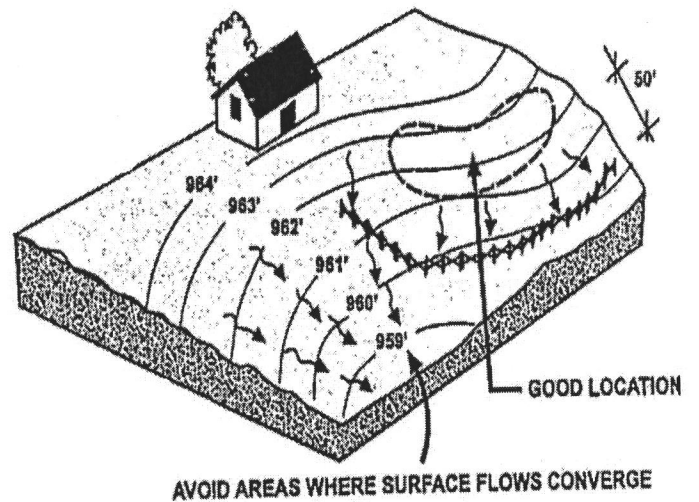
Landscape Position	Tank Siting Potential	Comments
LC VC CC	Poor	Converging flows could overload the tank with ground water
LV VV CV	Fair	Could still overload the tank during major rain storms
LL VL CL	Best	Parallel flow across the septic tank provides the best siting potential

Hillslope - Profile Position (Hillslope Position in PDP) - Two-dimensional descriptions of parts of line segments (slope position) along a transect that runs up and down the slope; e.g., backslope or BS. This is best applied to transects or points, not areas.

Position	Code
summit	SU
shoulder	SH
backslope	BS
footslope	FS
toeslope	TS



Source: NRCS, 1998.



Source: Purdue University, 1990.

CAUTION

Failure to comply with the points below voids warranty.

- A. Tanks are not fire-resistant. Do not store them near an open flame or heat in excess of 180 °F.
- B. Do not install any tank under the path of vehicles or heavy equipment.
- C. Do not leave Low Profile septic tanks empty for extended periods of time.
- D. Low Profile septic tanks and cisterns are designed only for use as underground tanks.
- E. Low Profile septic tanks and Low Profile cisterns may be used as holding tanks or for pumping applications where permitted by local codes.
- F. Low Profile natural colored cisterns are made of resins that meet FDA specifications for the storage of drinking water and can be used for that application.
- G. Protect the tank from sharp objects which could puncture it and cause leakage.
- H. Where saturated soil or seasonal high water tables are indicated between the bottom of the tank and the ground surface, see separate Supplemental Installation Instructions on our website.
- I. For installations requiring counter-buoyancy measures; please refer to Counter-Buoyancy Instructions on our website.
- J. Maximum temperature of liquid entering tank is 120° F.
- K. Maximum bulkhead fitting size is 4".

It is not advised to use this plastic underground tank for any application other than typical household sewage. Such uses would void product warranty.

WARRANTY

Manufacturer warrants that if this part is proven to be defective in material or workmanship within five (5) years from the date of manufacture, manufacturer will (at company's option) either replace or repair said part. This standard limited warranty does not apply to damages resulting from misuse, improper application of recommended materials, accident, or improper installation or maintenance. Remedy to the buyer is limited to the replacement of any defective product (or its component where applicable), F.O.B. point of manufacture. The buyer's remedy under this warranty does not include any other direct or indirect consequential damages which result from defects in material and/or workmanship of its products.



4365 Steiner Street
St. Bonifacius, MN 55375
(800) 328-3420
www.norwesco.com
P/N 63916



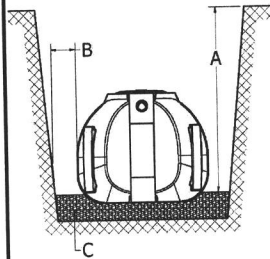
6940 O Street
Suite 100
Lincoln, NE 68510
(402) 467-5221
www.snydernet.com

Low Profile Underground Tank Installation Instructions

For septic installations, it is important to contact your local or state sanitarian regarding approved installation procedures. Refer to **SITE SELECTION/PREPARATION** located on the Snyder or Norwesco website.

• Water runoff caused by sloping terrain, adjacent structures, or paved surfaces can be problematic if the site selection and installation are not managed properly. Refer to **SITE SELECTION/PREPARATION** located on our website on the proper methods of managing these issues. Failure to locate the tank site properly in areas of water runoff caused by sloping terrain, adjacent structures or paved surfaces, and/or not managing the installation properly can void the warranty.

1. EXCAVATION

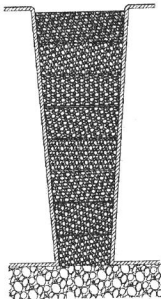


- A. Excavate to a depth that will provide a minimum of 6" and maximum of 36" of cover over the top of the tank.
- B. Allow 18" to 24" on both sides and both ends of the tank.
- C. Prepare the tank bed. Preferred bedding material is well-packed sand — 6" minimum in soil terrain, 12" minimum in rock terrain. Native soil can be used if it is flowable, compactable, rock free, and can provide uniform support in the recessed rib areas. The tank should be installed level. Level tolerance is +/- 1/2" from each end.

2. BACKFILL MATERIALS

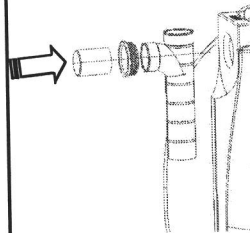
- A. Free flowing native soil can be used as backfill. All fill must be free of any wood, masonry debris, or silt. Shrink/swell clay soils should be avoided as backfill material.
- B. If the native soil is unsuitable, replace it with a free flowing, compactable material. A typical specification is 100% smaller than 1 1/2" and approximately 50% smaller than 1/4".
- C. Sharp objects must not come into contact with the tank.

3. BACKFILLING EXTERIOR



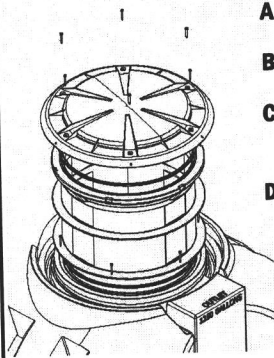
- A. Backfill around tank with 12" layers and compact each layer. Always compact ends first.
- B. Each of the interior support columns must be filled with free-flowing fill and compacted in 6" layers. The columns must have the soil compacted to provide structural support. See diagram.
- C. Be sure to compact soil under inlet and outlet piping.
- D. Maximum backfill over the top of the tank is 36".
- E. Mound soil over the top of the tank to direct surface water away from the tank.

4. SEPTIC TANK CONNECTIONS



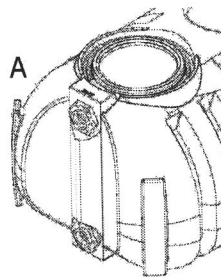
- A. Low Profile septic tanks are provided with 4" PVC sanitary tees and rubber gaskets for the inlet and outlet.
- B. All pipes should be chamfered and gaskets lubricated.
- C. Install gasket from the outside of the tank as shown in the diagram. From outside of the tank, push the pipe into the gasket.
- D. Inlet and outlet piping should be solvent welded to sanitary tees.
- E. Note the direction of flow. The outlet is lower than inlet and all tanks are marked accordingly.

5. MANHOLE EXTENSIONS

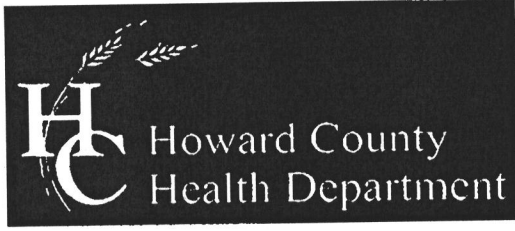


- A. Install manhole extensions and/or lid risers **before** you backfill.
- B. Manhole extensions are supplied with gaskets and screws.
- C. Install screws as shown in the diagram around the circumference of the base of the extension.
- D. Be sure that the self-tapping screws seat squarely into the tank. Do not over-tighten screws.

6. CISTERN / PUMP TANK INSTRUCTIONS



- A. Install bulkhead fittings at the flat areas located on either end of the tank.
- B. All tanks must be vented including each tank in an interconnected series.
- C. The vent pipe should be the same diameter as the outlet pipe.
- D. When multiple tanks are installed in series, you must maintain at least 36" of separation between tanks.
- E. Flexible connections are required between each tank on interconnected tank installations.



Bureau of Environmental Health
8930 Stanford Boulevard, Columbia, MD 21045
Main: 410-313-2640 | Fax: 410-313-2648
TDD 410-313-2323 | Toll Free 1-866-313-6300
www.hchealth.org
Facebook: www.facebook.com/hocohealth
Twitter: HowardCoHealthDep

Maura J. Rossman, M.D., Health Officer

OPERATION AND MAINTENANCE AGREEMENT
FOR AN ON-SITE SEWAGE DISPOSAL SYSTEM
HAVING AN ADVANCED PRE-TREATMENT SYSTEM

THIS AGREEMENT is made this 21 day of 09/2018, among Samuel Ryan Katz & Brandi Anne Katz, hereinafter collectively referred to as "Owner", and the Howard County Health Department hereinafter referred to as the "County".

WHEREAS, Owner is the owner or contract owner of a parcel of land located at 2178 Millers Mill Road, in the 4th Election District of Howard County, Maryland, and the deed to same is recorded or shall be recorded among the Land Records of Howard County, Maryland in Liber 18154 Folio 003.

WHEREAS, The Lot is suitable for the installation of a conventional on-site sewage disposal system with an advanced pre-treatment system, utilizing best available technology to perform nitrogen reduction, in accordance with the Code of Maryland Regulations 26.04.02.07, effective January 1, 2013.

NOW, THEREFORE, the parties hereto agree as follows:

A. Owner hereby grants to the County the right to enter upon the Lot at any reasonable time for access to the system to make periodic inspections and the Owner agrees to provide any information and data in Owner's possession reasonably requested and needed by the County to develop accurate and thorough test results.

B. Owner acknowledges and agrees that neither the County nor any of its agents or employees, either officially or individually, underwrites the operation of any system approved by them.

C. The Owner will devote reasonable care and effort to the operation and maintenance of the system in perpetuity or until a public sewer connection is made so that a system malfunction is not the result of poor maintenance, faulty operation, or neglect.

D. The Owner agrees to enter into a contract reasonably acceptable to the Owner and the County with a private entity to operate and maintain on a regularly scheduled basis an approved advanced pre-treatment system. The owner shall supply a copy of the contract to the County when it is renewed or altered.

E. This agreement shall run with the land and upon Owner's taking title to the Lot shall bind the Owner, their heirs, successors, and assigns to the provisions of the agreement as long as the property is in existence and after installation of the system. Owner further agrees that they shall inform in writing any subsequent purchaser or lessee of the Lot that the system shall require

Handwritten initials: 200, 40, and a circled symbol.

Vertical stamp: Register 04, Agreement, Recording Fee, 20.00, 40.00, 60.00, 60.00, 03:17, CC13-56, 11/07/15, CC0503, CC05.03.04

maintenance or other attention. Upon taking title to the Lot, the Owner agrees to cause this agreement to be recorded in the Land Records of Howard County and assure that it becomes part of the Deed for the subject property in order that prospective buyers may be aware of the special conditions affecting this property.

F. This agreement shall not be construed to limit any authority of the County to protect the public health, safety or comfort or to issue any other orders to take any other action which is now or may hereafter be within its authority.

G. This agreement may be voided at any time at the discretion of the County.

H. This agreement contains the entire agreement and understanding between the County and the Owner. There are no additional terms other than as contained in this agreement. This agreement may not be modified, except in writing signed by each of the parties or by their authorized representatives.

I. The laws of the State of Maryland govern the provisions of all transactions pursuant to this agreement.

J. Owner acknowledges and agrees that interior renovations to increase the number of bedrooms or an increase in living space shall not be permitted without approval from the County.

IN WITNESS WHEREOF, the parties have signed and sealed this agreement on the date indicated above.

Brandi Katz 9/21/18
Owner Date

Brandi Anne Katz

Michael J. Davis 9/25/18
Howard County Health Department

[Signature] 9/21/18
Owner Date

Samuel Ryan Katz

BRESHA LEEANN CALLOWAY
NOTARY PUBLIC STATE OF MARYLAND
My Commission Expires March 25, 2020

Williams, Jeffrey

From: Williams, Jeffrey
Sent: Friday, February 01, 2019 2:02 PM
To: 'Stephanie Tuite'
Cc: Cary/VikingDevelopmentCorp. (cary@vikingcustomhomes.com)
Subject: RE: 2178 Millers Mill Rd revised BAT Plan

I reviewed the revised BAT plan and the calculations are not correct. The new lateral design has 9 perforations for lateral 1A, which equals a lateral flow rate of 14.67. Your chart equates that to a 0.54 flow per linear foot, but the actual flow per linear foot by dividing 14.67 by the 41 foot trench length is 0.36. That is a 37% difference in flow rate from the highest flow trench, 1D.

Is there a reason why you didn't redesign the laterals based on my recommendation from 1/4, which would have lowered trench 1D to keep the stone depth more than 6" below the surface and would have evened up the flow rates to within 2% of each other?

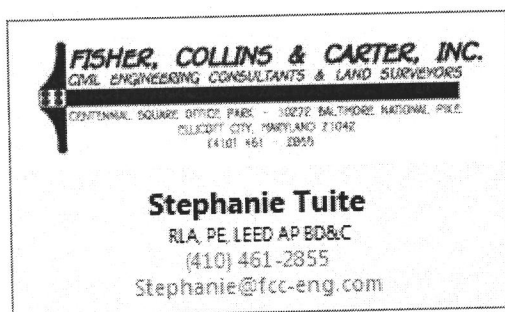
From: Stephanie Tuite <Stephanie@fcc-eng.com>
Sent: Friday, January 25, 2019 12:59 PM
To: Williams, Jeffrey <jewilliams@howardcountymd.gov>
Subject: 2178 Millers Mill Rd revised BAT Plan

[Note: This email originated from outside of the organization. Please only click on links or attachments if you know the sender.]

Jeff,

I had 2178 Millers Mill Rd revised BAT Plan dropped off earlier today. Just wanted to give you a heads up.

Steph



Bernard, Dana

From: Stephanie Tuite <Stephanie@fcc-eng.com>
Sent: Wednesday, November 28, 2018 8:53 AM
To: Bernard, Dana
Subject: 2178 Millers Mill Rd
Attachments: Stephanie Tuite.vcf

[Note: This email originated from outside of the organization. Please only click on links or attachments if you know the sender.]

Dana,

After talking to Dan with Viking yesterday and looking into it, I realized we had evidently not submitted the revision to the BAT plan. I had Tony drop it off first thing this morning on his way to a perc test and wanted to give you a heads up it was dropped off. Let me know if you have any questions.

Steph



Bernard, Dana

From: Bernard, Dana
Sent: Thursday, October 11, 2018 4:46 PM
To: Stephanie Tuite
Subject: RE: 2178 Millers Mill Rd

Stephanie everything looks good. However we have a few minor changes.

1. On your low pressure dosing system chart. We need to add another column to include the flow per liner foot. This column should calculate to equal the same amount of flow in each box to ensure equal flow per linear foot.
2. The perforation diameter for each pipe should be 5/16.
3. We need to make it clear the diameter of the force main.
4. And we need to make clear the diameter of the laterals.

Because the trenches are so small you can just feed them from one end.
Also your application states 3 bedrooms and your OSDS states 3 bedrooms. In accella it states 4 bedrooms and looking at the floor plans I see 4 bedrooms. So we need to make everything match up. If you have any questions don't hesitate to email me.

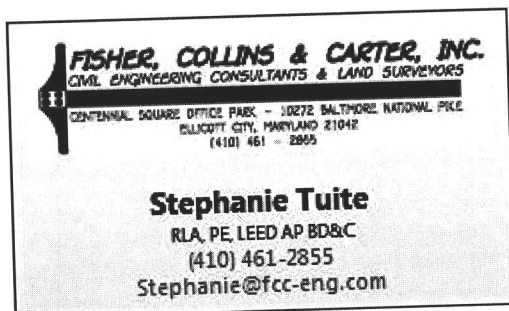
Dana

From: Stephanie Tuite [<mailto:Stephanie@fcc-eng.com>]
Sent: Tuesday, October 09, 2018 11:20 AM
To: Bernard, Dana
Subject: 2178 Millers Mill Rd

Dana,

Can you tell me status of 2178 Millers Mill Rd BAT Plan?

Steph



Williams, Jeffrey

From: Williams, Jeffrey
Sent: Monday, November 07, 2016 1:57 PM
To: tonyf@fcc-eng.com
Cc: Bernard, Dana
Subject: 2178 Millers Mill Rd

As we discussed, please revise the plan with the following note changes:

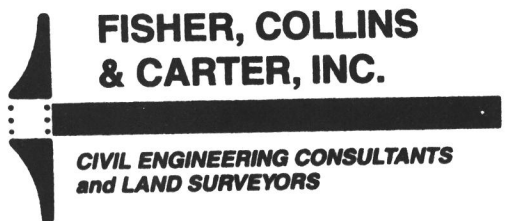
Revise note 11 to state a 3 bedroom restriction based on area shown for 2 systems at 117 linear feet each, 3' wide trenches with a 0.8 application rate and a 2' sidewall reduction credit for sidewall between 6' and 8' depth.

Revise note 13 to state that a BAT unit is required due to the sewage disposal area shown is only large enough to accommodate an initial system and one replacement.

Jeff Williams
Program Supervisor, Well & Septic Program
Bureau of Environmental Health
Howard County Health Dept.
410-313-4261
jewilliams@howardcountymd.gov

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**FISHER, COLLINS
& CARTER, INC.**

**CIVIL ENGINEERING CONSULTANTS
and LAND SURVEYORS**

Terrell A. Fisher, P.E., L.S.
Earl D. Collins, P.E.
Charles J. Crovo, Sr., P.E., L.S.

Paul W. Kriebel, P.E.
Mark L. Robel, P.L.S.
Aldo M. Vitucci, P.E.

Transmittal

Via: Fax Mail Messenger E-Mail To Be Picked Up
 Fax (original to follow via U.S. Mail)

To: Howard County Health Department 8930 Stanford Blvd Columbia, MD 21046	Attn: Dana Fax: Phone:
--	-------------------------------------

From: Tony Fertitta	CC:
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Re: 2178 Millers Mill	W.O.# 04151
Date: November 8, 2016	Pages: 3 Page(s) Including this cover

We are forwarding:	<input checked="" type="checkbox"/> Prints	<input type="checkbox"/> Copy of Letter	<input type="checkbox"/> Specifications	<input type="checkbox"/> Shop drawings	<input type="checkbox"/> Other
	<input type="checkbox"/> Urgent	<input type="checkbox"/> For your use	<input type="checkbox"/> As requested	<input type="checkbox"/> For Review & Comment	

Remarks:

Enclosed please find 1 Maylar and 2 Paper Copies 2178 Millers Mill Sheet 1 of 1 dated November 8, 2016, Perc Certification Plan

If we may be of any further assistance to you, please don not hesitate to call.

Thank you,

CONFIDENTIALITY NOTICE

This transmission contains confidential information which may be legally privileged, and is intended only for the use of the individual named above. If you are not the intended recipient, you are hereby notified that any distribution (except to the intended recipient), copying, or disclosure of this transmission is strictly prohibited.

Williams, Jeffrey

From: Williams, Jeffrey
Sent: Friday, February 01, 2019 2:02 PM
To: 'Stephanie Tuite'
Cc: Cary/VikingDevelopmentCorp. (cary@vikingcustomhomes.com)
Subject: RE: 2178 Millers Mill Rd revised BAT Plan

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Is there a reason why you didn't redesign the laterals based on my recommendation from $\frac{1}{4}$, which would have lowered trench 1D to keep the stone depth more than 6" below the surface and would have evened up the flow rates to with 2% of each other?

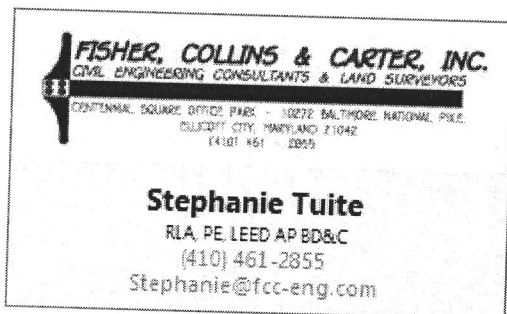
From: Stephanie Tuite <Stephanie@fcc-eng.com>
Sent: Friday, January 25, 2019 12:59 PM
To: Williams, Jeffrey <jewilliams@howardcountymd.gov>
Subject: 2178 Millers Mill Rd revised BAT Plan

[Note: This email originated from outside of the organization. Please only click on links or attachments if you know the sender.]

Jeff,

I had 2178 Millers Mill Rd revised BAT Plan dropped off earlier today. Just wanted to give you a heads up.

Steph



Transmittal

Via: Fax Mail Messenger E-Mail To Be Picked Up
 Fax (original to follow via U.S. Mail)

To: **Bureau of Environmental Health**
8930 Stanford Boulevard
Columbia, MD 21046-4544

Attn: **Dana Bernard**
Fax: **(410) 313-2648**
Phone: **(410) 313-2640**

From: **Stephanie Tuite**

CC:

Re: **2178 Millers Mill Road**

W.O.# **04151**

Date: **September 23, 2016**

Pages: **3** **Page(s) Including this cover**

We are forwarding: Prints Copy of Letter Specifications Shop drawings Other
 Urgent For your use As requested For Review & Comment

Remarks:

Dana:

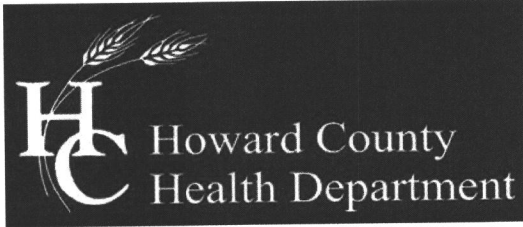
Enclosed please find Two (2) prints and a mylar of the drawing entitled " Perc Certification Plan ". If we may be of any further assistance, please do not hesitate to call. The requested note and legend revisions have been made.

Very truly yours,
Fisher, Collins & Carter, Inc.

Stephanie Tuite, RLA, PE, LEED AP BD&C

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Bureau of Environmental Health

8930 Stanford Boulevard, Columbia, MD 21045
Main: 410-313-2640 | Fax: 410-313-2648
TDD 410-313-2323 | Toll Free 1-866-313-6300
www.hchealth.org
Facebook: www.facebook.com/hocohealth
Twitter: HowardCoHealthDep

Maura J. Rossman, M.D., Health Officer

SEWAGE DISPOSAL SYSTEM SPECIFICATIONS WORKSHEET

Address: 2178 Millers Mill Road

Subdivision: Lot:

Initial system: Application rate: 0.8 Effective area beginning depth: 6 Bottom maximum depth: 8
1st Replacement: Application rate: 0.8 Effective area beginning depth: 6 Bottom maximum depth: 8
2nd Replacement: Application rate: Effective area beginning depth: Bottom maximum depth:

Design Flow = 150 gallons per day per bedroom

Design flow ÷ application rate = square footage of drainfield required

Linear length of trench required = drainfield square footage x sidewall reduction percentage ÷ trench width

Sidewall reduction credit formula:

(W + 2) / (W + 1 + 2D) x 100 = Percent of length of standard trench where W=trench width and D= depth between effective area beginning depth and trench bottom.

Standard design requirements:

- All trenches must be equal length unless low pressure dosed
All trenches must be on contour
Minimum trench spacing: 10' for all trenches utilizing sidewall reduction credit. Additional spacing may be necessary for any trench using over 3.5' of effective sidewall. In those cases, the spacing formula is 2D + W up to a maximum spacing of 18'.
Minimum trench spacing for trenches with no sidewall credit (bottom area only) is 6' for a 2' wide trench and 9' for a 3' wide trench (spacing is measured edge to edge)
Maximum trench length is 100'
Maximum pipe depth is 4'

Additional requirements:

Approved: Dana Beunard Date: 7-8-16

Bernard, Dana

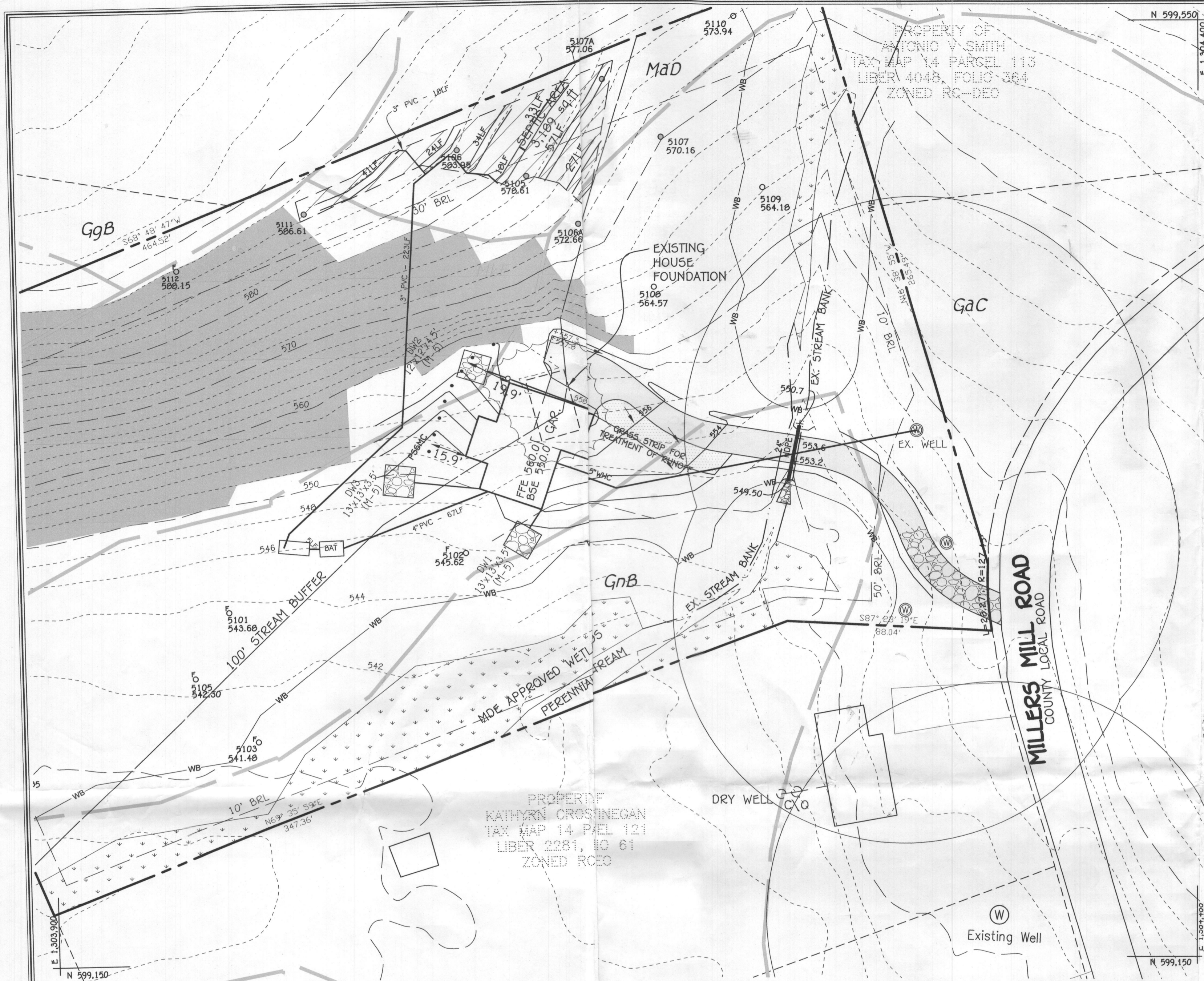
From: Bernard, Dana
Sent: Thursday, October 20, 2016 3:49 PM
To: 'Tony Fertitta'
Subject: 2178 Millers Mill

Tony, The first list on the revision letter states for you to Expand SDA to encompass all passable holes. Maybe you missed it. Please revise your plan and resubmit.

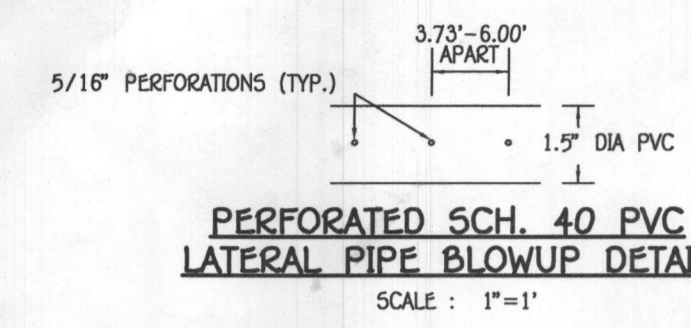
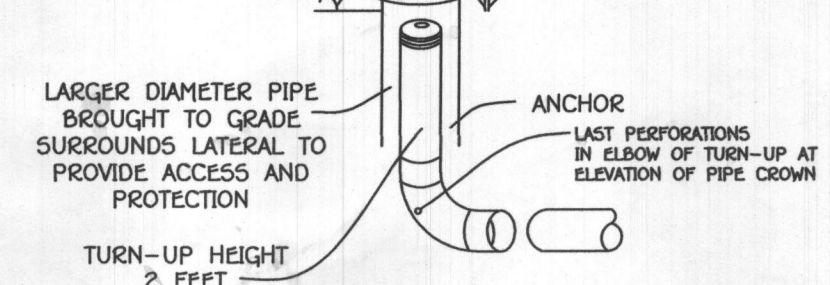
Thank you & Have a*")

,,.,.,.,,*("),,.,,*")
(,.,. (,.,. * Wonderful Day !

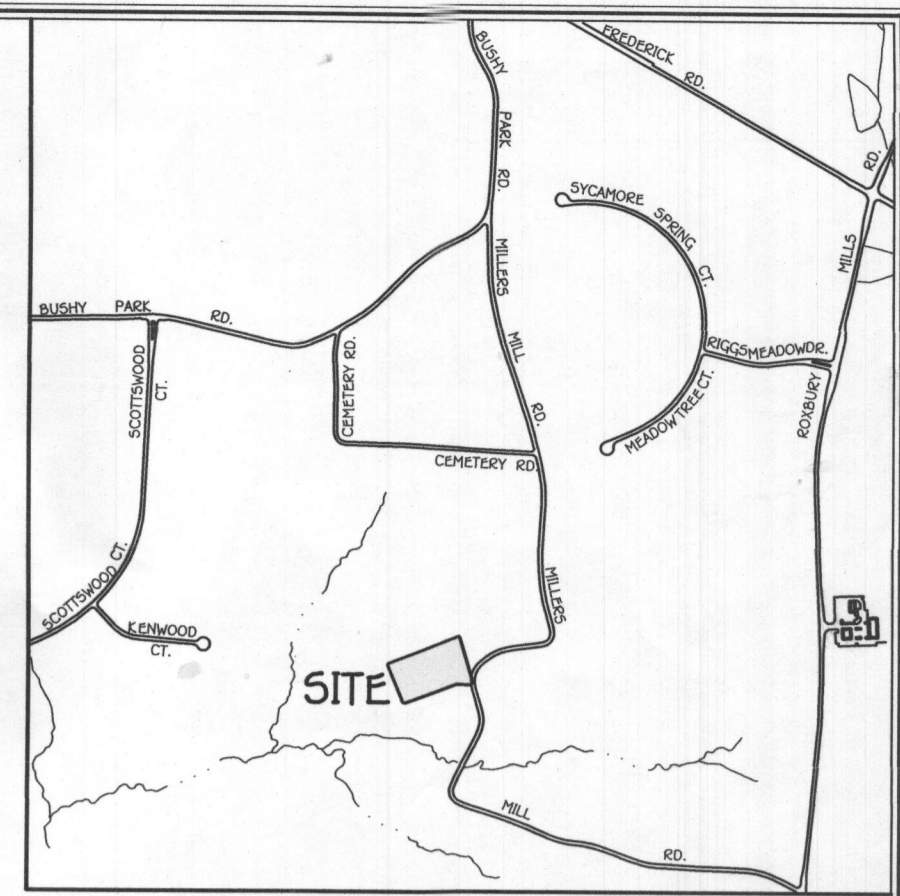
Dana Bernard, R.E.H.S/L.E.H.S.
Environmental Specialist II
Bureau of Environmental Health
Well and Septic Program
Phone (410) 313-2775
E-mail: DBernard@howardcountymd.gov



NOTE: PLACE AN OBSERVATION PIPE IN THE GRAVEL BED AT THE DISTAL END OF EACH TRENCH SEGMENT.



LEGEND	
SYMBOL	DESCRIPTION
--- 342 ---	EXISTING CONTOUR 2' INTERVAL
--- 340 ---	EXISTING CONTOUR 10' INTERVAL
X	EXISTING FENCE
---	EXISTING STORM DRAIN LINE
---	EXISTING WATER LINE
▨	STEEP SLOPES 15%-24.9%
▨	STEEP SLOPES 25% OR GREATER
--- 342 ---	PROPOSED CONTOUR 2' INTERVAL
--- 340 ---	PROPOSED CONTOUR 10' INTERVAL
x 329.14	SPOT ELEVATION
▨	PROPOSED PAVING
---	EXISTING TREELINE
---	PROPOSED TREELINE
-B.R.L.-	BUILDING RESTRICTION LINE

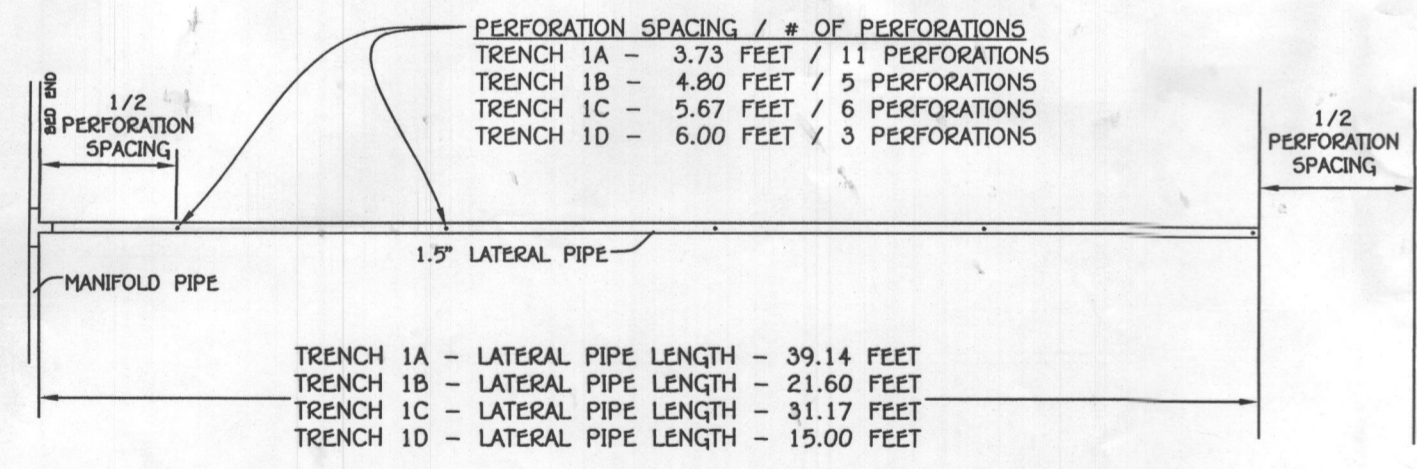


VICINITY MAP
SCALE: 1" = 1200'

- GENERAL NOTES
- SUBJECT PROPERTY ZONED: RC-DEO
 - TOTAL AREA OF PROPERTY: 2.67 AC.
 - CONTRACTOR/BUILDER TO VERIFY ELEVATION IN THE FIELD BEFORE BEGINNING ANY CONSTRUCTION.
 - BOUNDARY SHOWN HEREON IS BASED ON A FIELD RUN MONUMENTED BOUNDARY SURVEY DATED JUNE 2017.
 - TOPOGRAPHY SHOWN HEREON IS BASED ON FIELD RUN TOPOGRAPHIC SURVEY CONDUCTED BY FISHER, COLLINS & CARTER, INC. IN JUNE, 2017. TOPOGRAPHY IS SUPPLEMENTED BY HOWARD COUNTY 200 SCALE TOPOGRAPHY.
 - WETLANDS EXIST ON THIS PROPERTY AND HAVE BEEN SHOWN BASED ON FIELD INVESTIGATION BY ECO-SCIENCE PROFESSIONALS IN JUNE, 2017.
 - DEED REFERENCE: LIBER 1494 FOLIO 451.
 - SOILS SHOWN HEREON ARE BASED ON NECS WEB SOIL SURVEY AND HOWARD COUNTY SOILS MAP 3 & 10.
 - IN ACCORDANCE WITH AN EMAIL FROM THE DIRECTOR OF DPZ DATED JULY 10, 2017, THE PROPOSED STREAM AND STREAM BUFFER DISTURBANCE WILL BE VIEWED AS "ESSENTIAL DISTURBANCE" PER SECTION 16.116(C) OF THE SUBDIVISION REGULATIONS. ANY DISTURBANCE TO ENVIRONMENTAL FEATURES BEYOND THAT REQUIRED FOR THE INITIAL CONSTRUCTION OF THE HOUSE AND DRIVEWAY IS NOT PERMITTED.

TRENCH DESIGN											
TRENCH	GROUND ELEV.	TOP OF STONE ELEV.	PIPE INVERT ELEV.	DEPTH TO STONE FROM GROUND	DEPTH OF STONE (FT) TRENCH ELEV.	BOTTOM OF STONE (FT) TRENCH ELEV.	EFFECTIVE DEPTH STARTS AT	EFFECTIVE DEPTH (D)	TRENCH DEPTH	WIDTH OF TRENCHES (W)	TRENCH SPACING
1A	585.7	582.2	581.70	3.5 FT	4.5 FT	577.7	6 FT	2 FT	0 FT	3 FT	10 FT
1B	584.3	580.9	580.40	3.4 FT	4.6 FT	576.3	6 FT	2 FT	0 FT	3 FT	10 FT
1C	582.0	579.2	578.70	2.8 FT	5.2 FT	574.0	6 FT	2 FT	0 FT	3 FT	10 FT
1D	579.7	578.7	578.20	1.0 FT	7.0 FT	571.7	6 FT	2 FT	0 FT	3 FT	10 FT

LOW PRESSURE DOSING SYSTEM - INITIAL INSTALLATION											
TRENCH	GROUND ELEV.	PIPE INVERT ELEV.	TRENCH LENGTH (FT)	LATERAL PIPE LENGTH (FT)	PERFORATION DIAMETER (IN)	HEAD (FT)	PERFORATION FLOW RATE (GPM)	PERFORATION SPACING (FT)	NUMBER OF ORIFICES	FLOW PER LF	TRENCH FLOW RATE (GPM)
1A	585.7	581.70	41	39.14	5/16	3	1.63	3.75	11	0.44	17.93
1B	584.3	580.40	24	21.60	5/16	2.2	2.09	4.80	5	0.44	10.45
1C	582.0	578.70	34	31.17	5/16	5	2.57	5.67	6	0.45	15.42
1D	579.7	578.20	10	15.00	5/16	5.5	2.63	6.00	3	0.44	7.89
TOTAL TRENCH FLOW RATE										51.69	



END FEED LAYOUT

SEPTIC SYSTEM DESIGN
3 BEDROOM HOUSE
LOADING RATE = 450 GPD
APPLICATION RATE = 0.8
EFFECTIVE SIDEWALL BEGINS AT 6.0 FEET
TRENCH DEPTH = 0 FEET
TRENCH WIDTH (W) = 3 FEET
EFFECTIVE DEPTH (D) = 2 FEET
SF OF DRAINFIELD = 450 GPD / 0.8 = 562.5 SF
COEFFICIENT OF REDUCTION OF TRENCH LENGTH = (W+2)/(W+1+2D) = (3+2)/(3+1+2*2) = 0.625
TRENCH LENGTH = 562.5 SF x 0.625 / 3 = 117.2 FEET (USE 117.2 FEET)
TRENCH SPACING = 2D+W = ((2*2) + 3) = 7 USE 10'

FRICION LOSS IN 3" PIPE FITTINGS:
7 1/8 HB x 6 FEET PER FITTING = 42 EQUIVALENT FEET OF PIPE
1 TEE/CROSS x 15 FEET PER FITTING = 15 EQUIVALENT FEET OF PIPE
1 UNION x 3 FEET PER FITTING = 3 EQUIVALENT FEET OF PIPE
1 ELBOWS x 10 FEET PER FITTING = 10 EQUIVALENT FEET OF PIPE
TOTAL EQUIVALENT FEET OF PIPE = 70 FT

TOTAL LINEAR FEET OF 3" SCH. 40 PVC = 264.7 LF + 70 LF = 335 LF

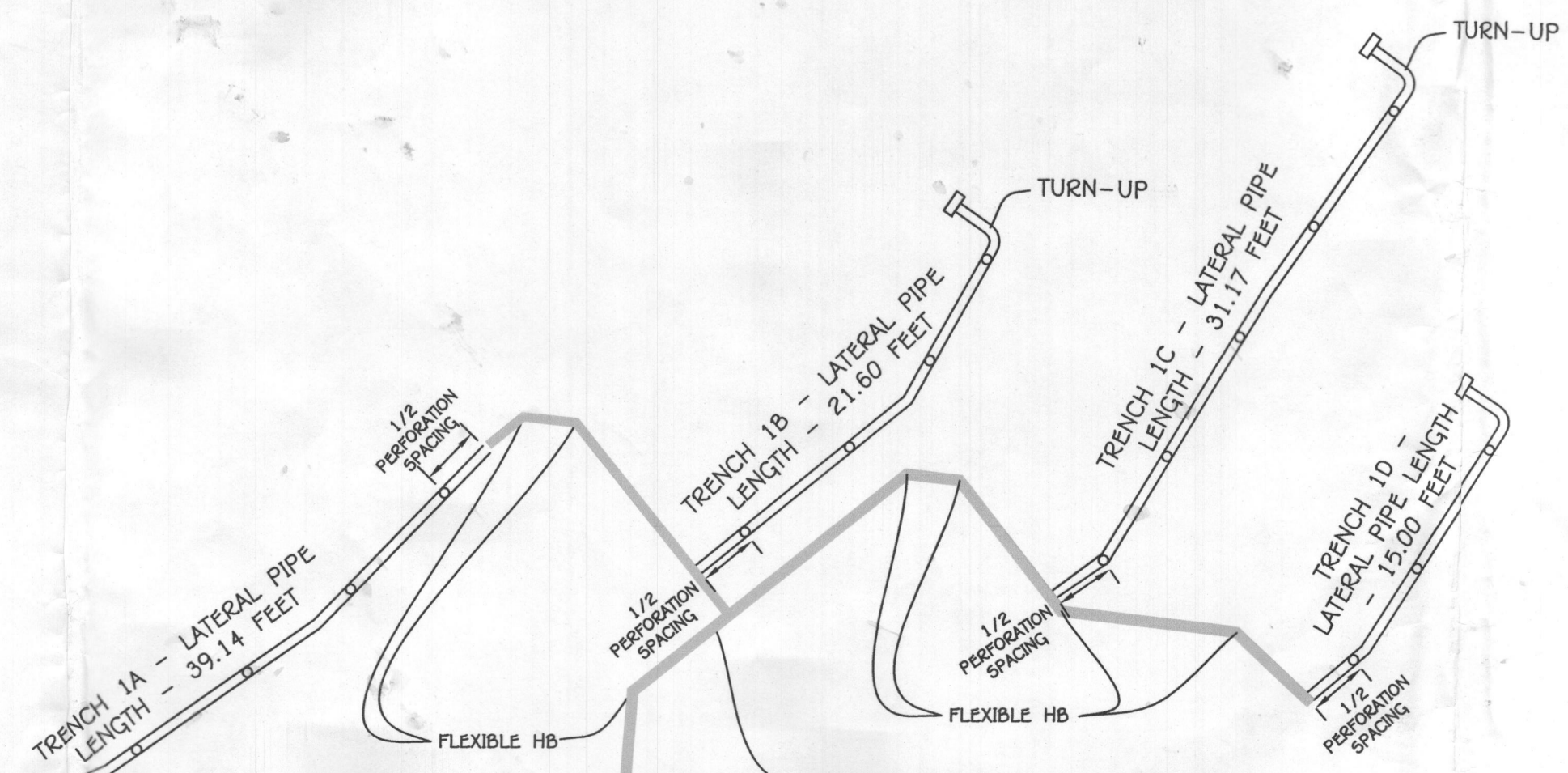
DYNAMIC HEAD
335 LF x 0.56 FT PER 100 LF OF PIPE = 1.88 FT OF FRICTION HEAD
DISTAL HEAD = 2.00 FT
VERTICAL FROM PUMP OFF TO DISCHARGE = 4.18 FT OF STATIC HEAD
VERTICAL FROM DISCHARGE TO HIGHEST ELEV OF MAIN = 36.6 FT
TOTAL DYNAMIC HEAD = 44.66 FT

PIPE VOLUMES
203 LF (3" SCH. 40 PIPE) X 38.4 GALLONS PER 100 LF = 78 GALLONS
106.1 LF (1.5" SCH. 40 PIPE) X 10.6 GALLONS PER 100 LF = 11.2 GALLONS

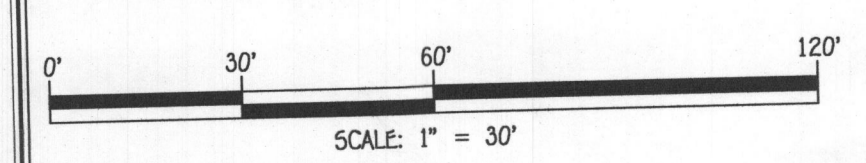
MINIMUM DOSE
MINIMUM DOSE = (5 X LATERAL PIPE VOLUME) + (FORCE MAIN & MANIFOLD)
= (5 X 11.2) + (78)
= 134 GALLONS

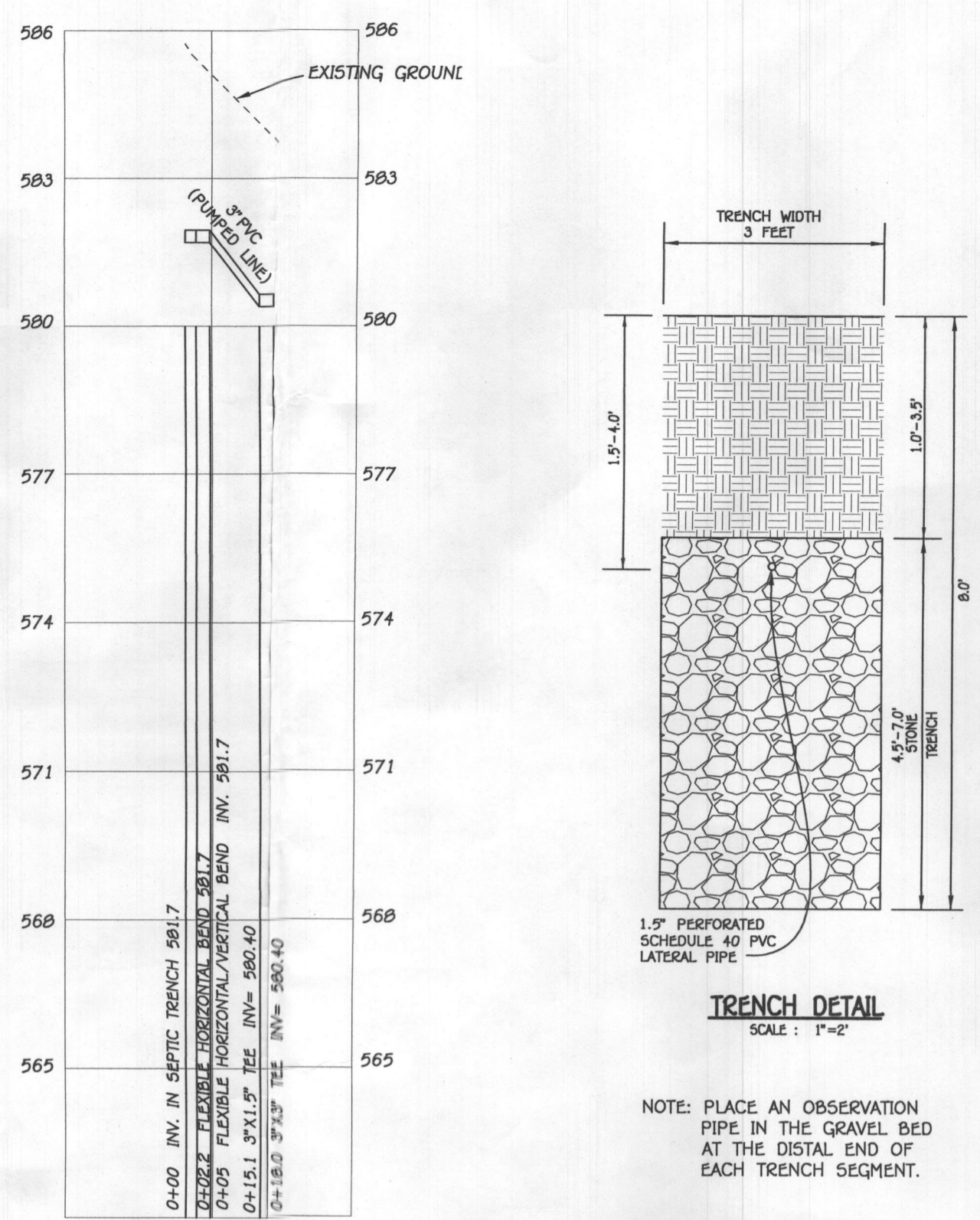
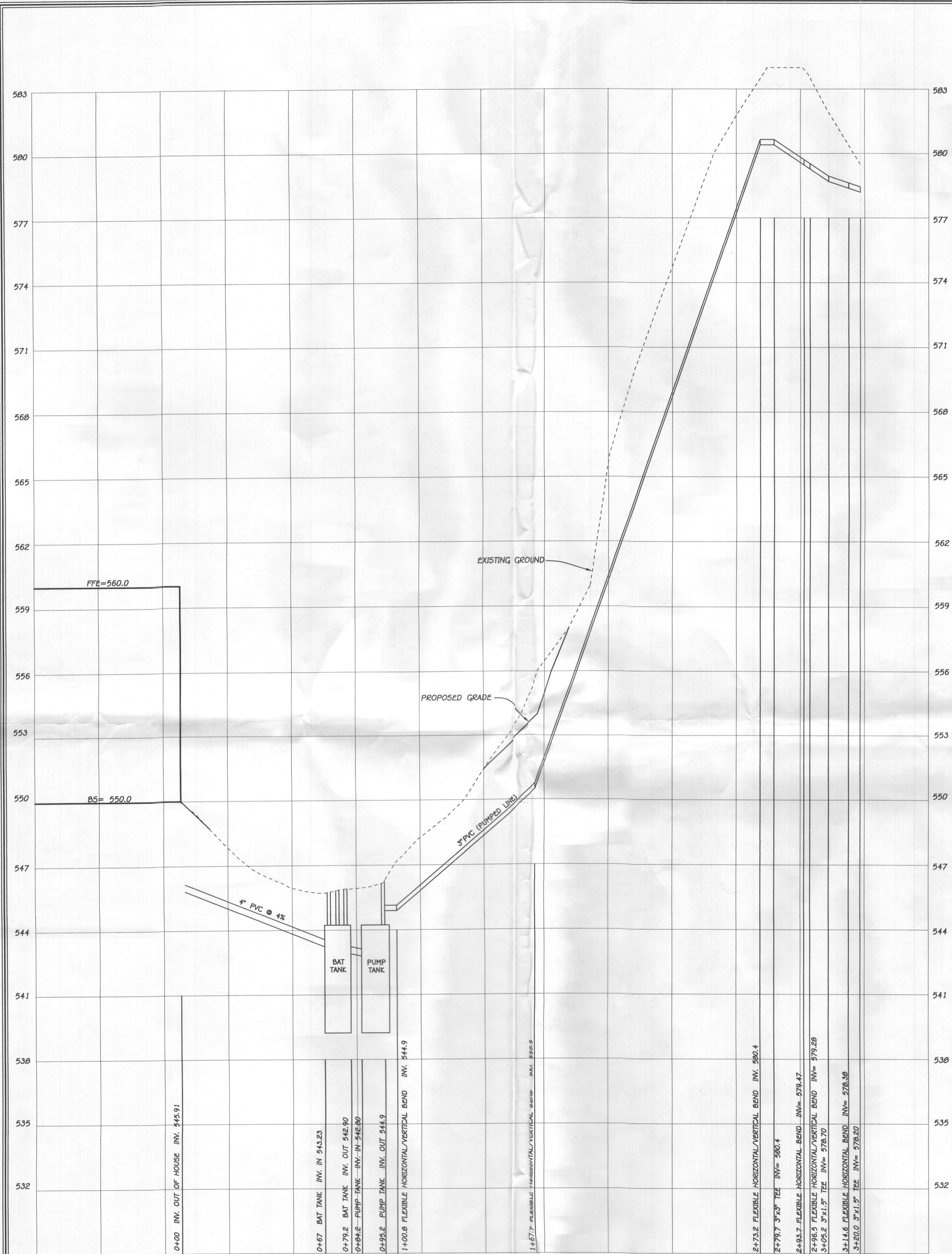
134 GALLONS IS MORE THAN 1/6 DESIGN FLOW (450/6=75)
USE 155.1 GALLON DOSE (134 GALLON MINIMUM)
(RUN TIME = 3 MIN (51.7 GPM X 3 = 155.1 GALLON DOSE)

PUMP NEEDS TO HANDLE 51.7 GPM AT 44.7 FT OF HEAD
USE 0.75 HP (ME75 PUMP)

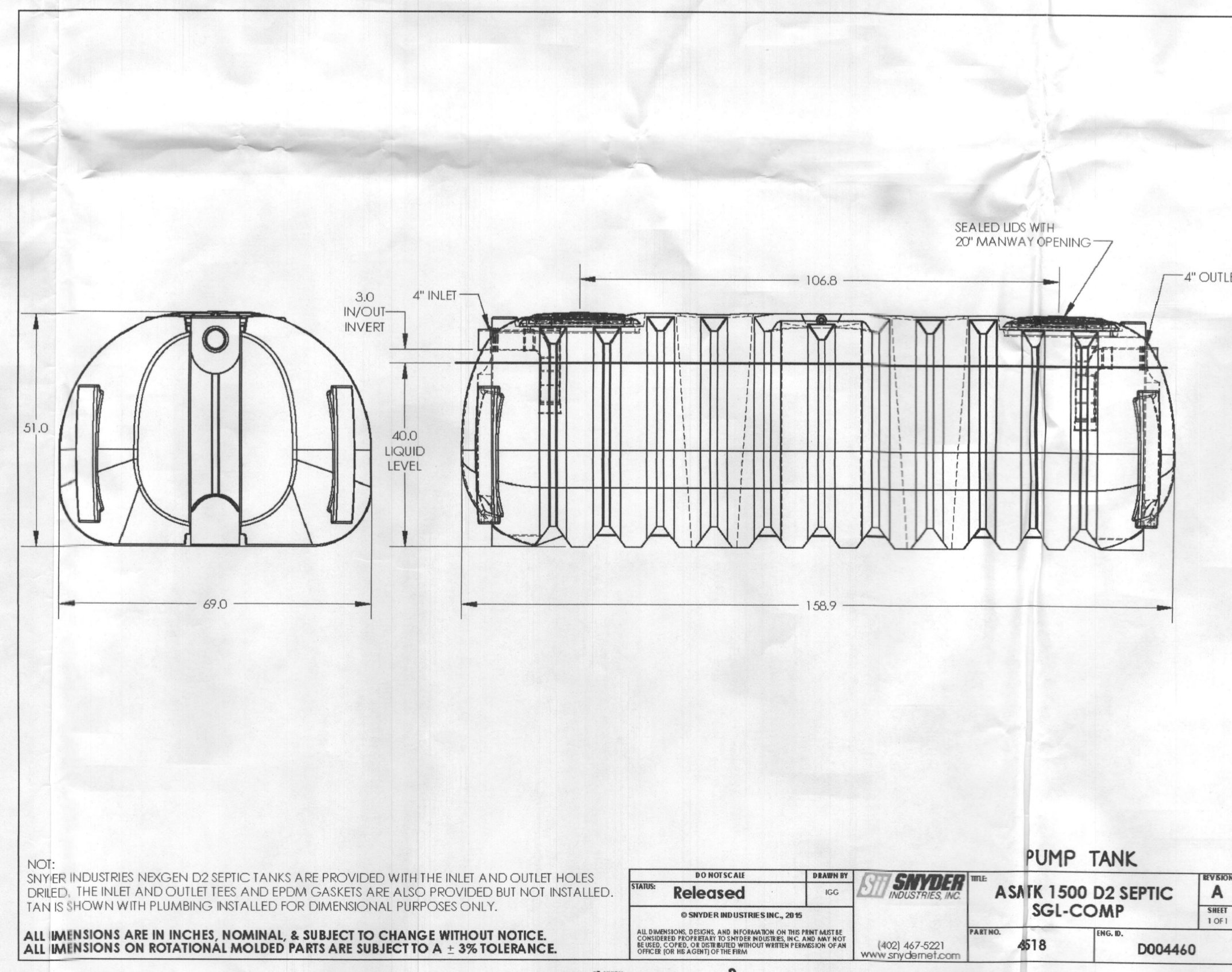
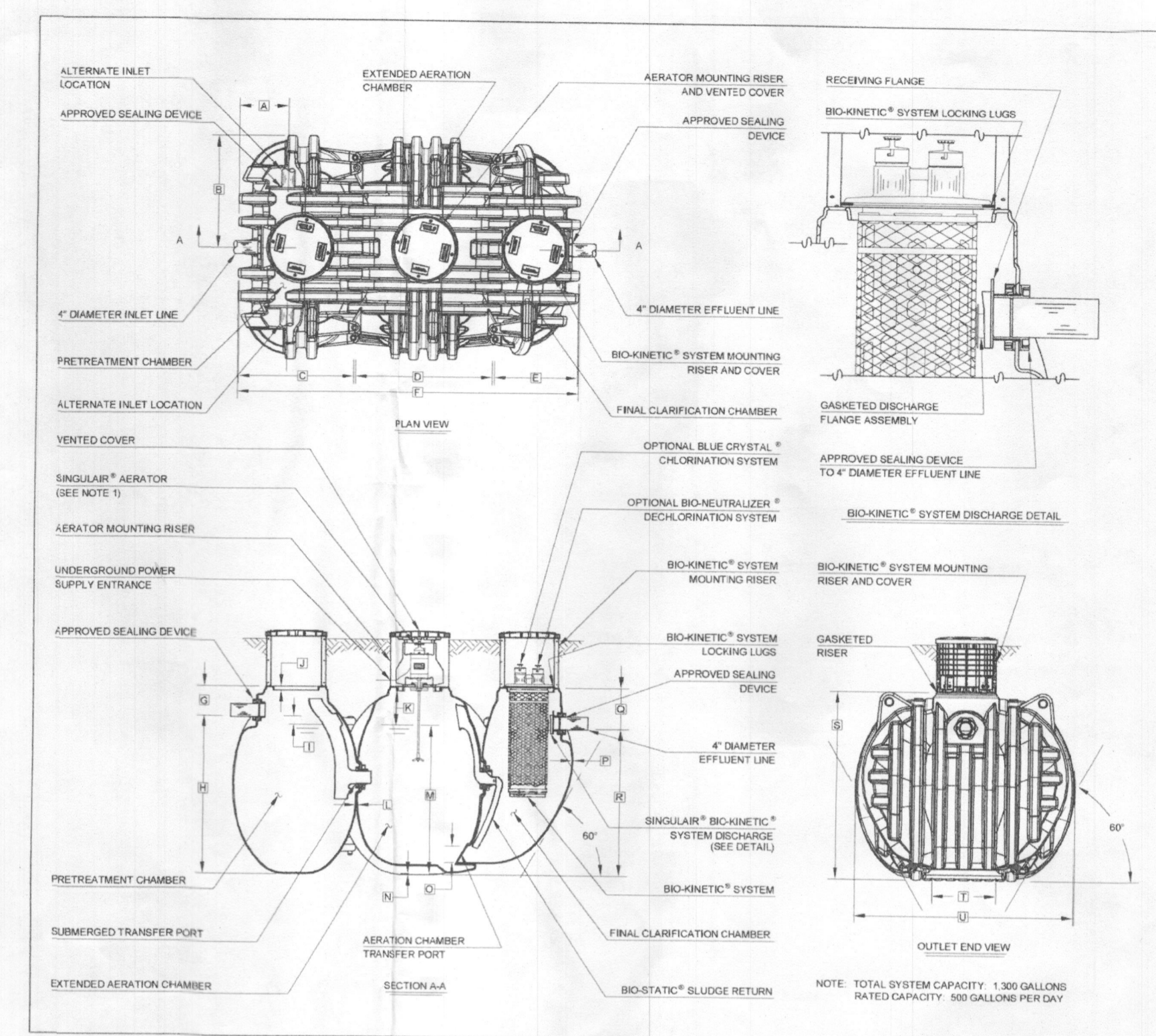


PROFESSIONAL CERTION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE #066, EXPIRATION DATE: 01/12/2020.
Stephan J... 3/13/19
SIGNATURE OF PROFESSIONAL ENGINEER DATE





PROFILE BAT ALIGNMENT 'B'
SCALE : 1" = 30'



EFFLUENT PUMPS

MYERS® ME SERIES

DIMENSIONS

PUMP PERFORMANCE

Capacity (liters per minute)

Total head (meters)

ME505
ME500
ME755

Capacity (liters per minute) - 51.7 GPM

Single Seal

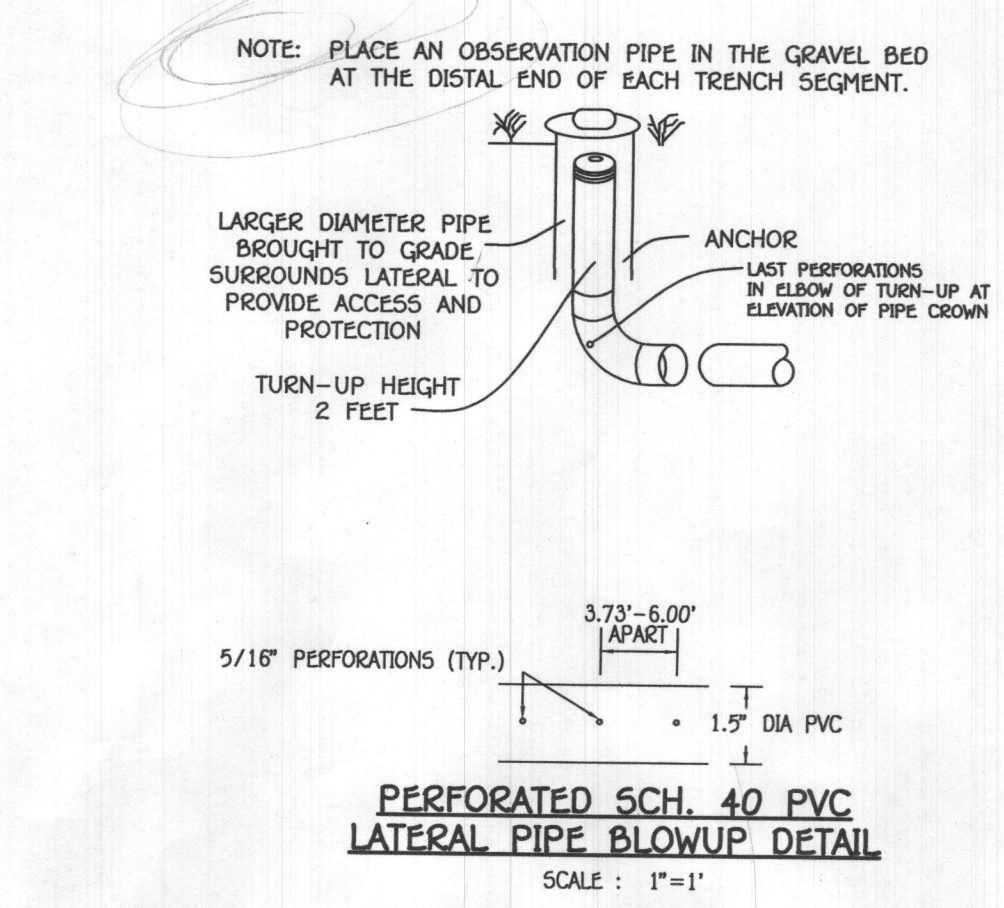
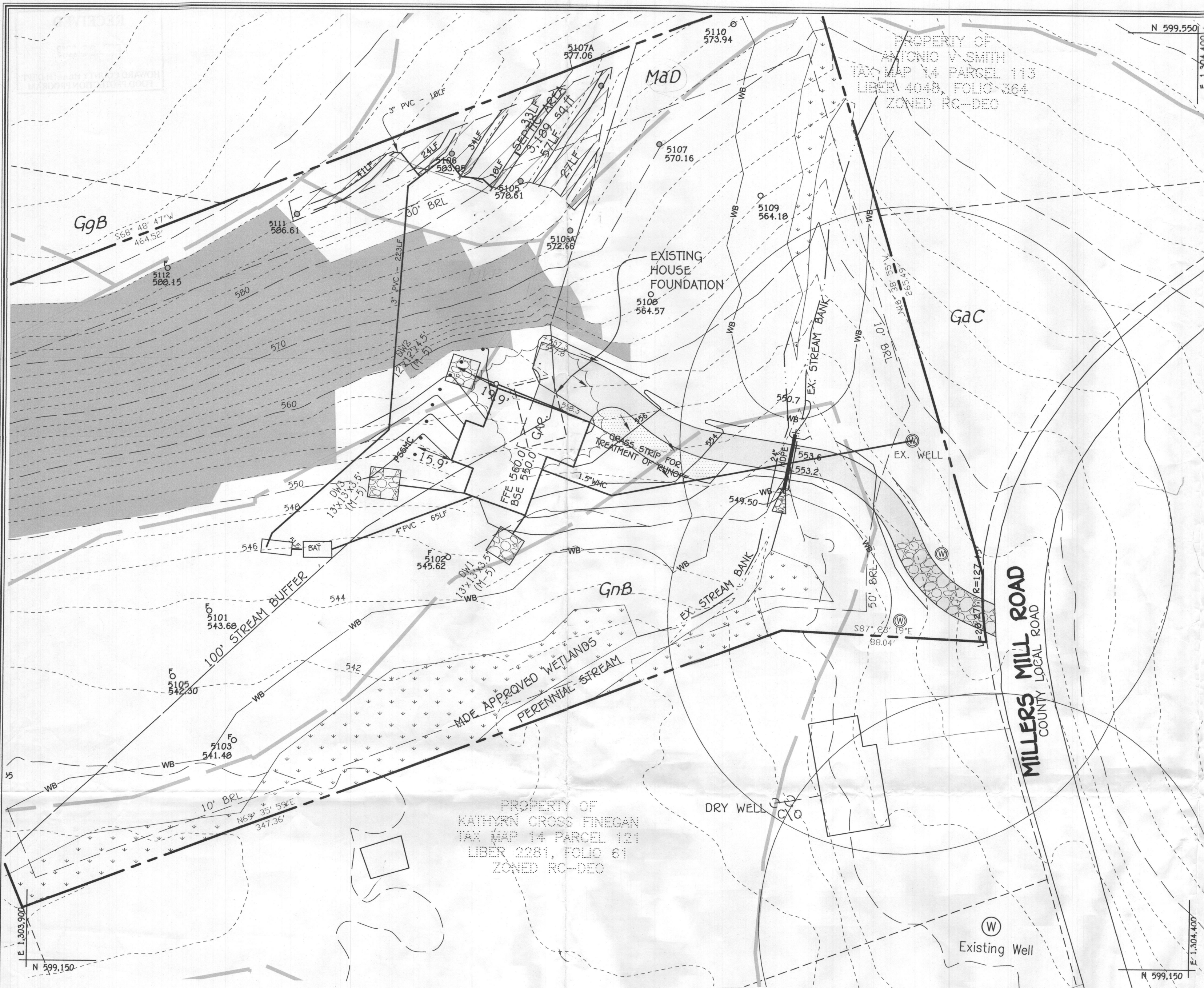
Double Seal

Catalog Number	Inches (millimeters)			
	A	B	C	F
ME505	16.8 (427)	4.99 (126)	1.93 (49)	12.13 (308)
ME500	18.6 (472)	4.99 (126)	1.93 (49)	12.13 (308)
ME755, ME1005, ME1505	18.6 (472)	4.0 (102)	1.86 (47)	12.5 (318)
ME750, ME1000, ME1500	18.6 (472)	4.0 (102)	1.86 (47)	12.5 (318)

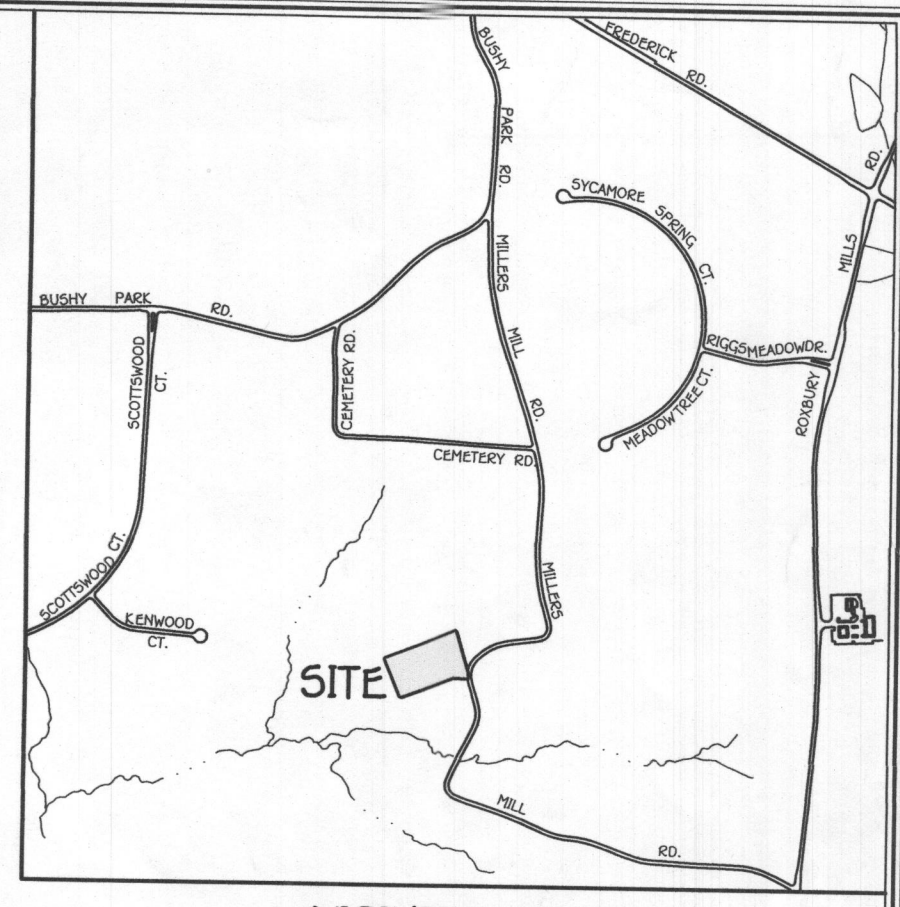
PUMP ALARMS / INFORMATION

A PUMP OFF : 540.72
 B PUMP ON : 541.01
 C HIGH WATER ALARM : 541.6
 D TOP OF ACCESS COVERS : 56.0
 E TOP OF TANK : 543.55
 F BOTTOM OF TANK : 539.22
 G DISCHARGE OUT OF TANK : 44.90
 H INVERT INTO TANK : 54LD

NOTE: SEPTIC SYSTEM ALARM



SYMBOL	DESCRIPTION
- - - - - 342	EXISTING CONTOUR 2' INTERVAL
- - - - - 340	EXISTING CONTOUR 10' INTERVAL
X	EXISTING FENCE
- - - - -	EXISTING STORM DRAIN LINE
- - - - -	EXISTING WATER LINE
- - - - -	STEEP SLOPES 15%-24.9%
- - - - -	STEEP SLOPES 25% OR GREATER
- - - - - 342	PROPOSED CONTOUR 2' INTERVAL
- - - - - 340	PROPOSED CONTOUR 10' INTERVAL
x 329.14	SPOT ELEVATION
- - - - -	PROPOSED PAVING
- - - - -	EXISTING TREELINE
- - - - -	PROPOSED TREELINE
- B.R.L. -	BUILDING RESTRICTION LINE



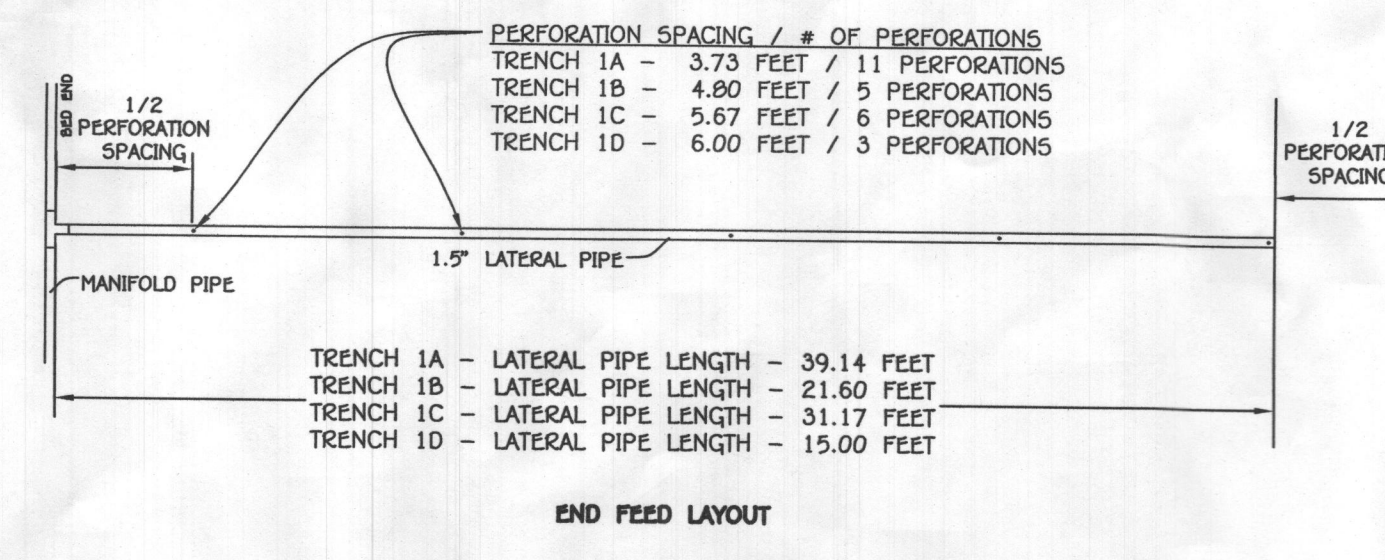
VICINITY MAP
SCALE: 1" = 1200'

- GENERAL NOTES**
- SUBJECT PROPERTY ZONED: RC-DEO
 - TOTAL AREA OF PROPERTY: 2.67 AC.
 - CONTRACTOR/BUILDER TO VERIFY ELEVATION IN THE FIELD BEFORE BEGINNING ANY CONSTRUCTION.
 - BOUNDARY SHOWN HEREON IS BASED ON A FIELD RUN MONUMENTED BOUNDARY SURVEY DATED JUNE 2017, BY FISHER, COLLINS & CARTER, INC. IN JUNE, 2017. TOPOGRAPHY IS SUPPLEMENTED BY HOWARD COUNTY 200 SCALE TOPOGRAPHY.
 - WETLANDS EXIST ON THIS PROPERTY AND HAVE BEEN SHOWN BASED ON FIELD INVESTIGATION BY ECO-SCIENCE PROFESSIONALS IN JUNE, 2017.
 - DEED REFERENCE: LIBE 15454 FOLIO 451.
 - SOILS SHOWN HEREON ARE BASED ON NCS WEB SOIL SURVEY AND HOWARD COUNTY SOILS MAP 3 & 10.
 - IN ACCORDANCE WITH AN EMAIL FROM THE DIRECTOR OF DPZ DATED JULY 10, 2017, THE PROPOSED SEWAGE AND STREAM BUFFER DISTURBANCE WILL BE VIEWED AS "ESSENTIAL DISTURBANCE" PER SECTION 16.11(C) OF THE SUBURBAN REGULATIONS. ANY DISTURBANCE TO ENVIRONMENTAL FEATURES BEYOND THAT REQUIRED FOR THE INITIAL CONSTRUCTION OF THE HOUSE AND DRIVEWAY IS NOT PERMITTED.

TRENCH	GROUND ELEV.	TOP OF STONE ELEV.	PIPE INVERT ELEV.	DEPTH TO STONE FROM GROUND	DEPTH OF STONE (FT)	BOTTOM OF TRENCH ELEV.	EFFECTIVE DEPTH STARTS AT	EFFECTIVE DEPTH (D)	TRENCH DEPTH	TRENCH WIDTH	TRENCH SPACING
1A	585.7	582.2	581.70	3.5 FT	4.5 FT	577.7	6 FT	2 FT	8 FT	3 FT	10 FT
1B	584.3	580.9	580.40	3.4 FT	4.6 FT	576.3	6 FT	2 FT	8 FT	3 FT	10 FT
1C	582.0	579.2	578.70	2.8 FT	5.2 FT	574.0	6 FT	2 FT	8 FT	3 FT	10 FT
1D	579.7	578.7	578.20	1.0 FT	7.0 FT	571.7	6 FT	2 FT	8 FT	3 FT	10 FT

TRENCH	GROUND ELEV.	PIPE INVERT ELEV.	TRENCH LENGTH (FT)	LATERAL PIPE LENGTH (FT)	PERFORATION DIAMETER (IN)	PERFORATION HEAD (FT)	PERFORATION FLOW RATE (GPM)	PERFORATION SPACING (FT)	NUMBER OF ORIFICES	TRENCH FLOW RATE (GPM)	
1A	585.7	581.70	41	39.14	5/16	2	1.63	3.75	11	0.44	17.93
1B	584.3	580.40	24	21.60	5/16	3.3	2.09	4.80	5	0.44	10.45
1C	582.0	578.70	34	31.17	5/16	5	2.57	5.67	6	0.45	15.42
1D	579.7	578.20	18	15.00	5/16	5.5	2.63	6.00	3	0.44	7.39
TOTAL TRENCH FLOW RATE										51.69	

- BAT NOTES**
- ANY CHANGE TO THE LOCATIONS OR DEPTHS TO ANY COMPONENTS MUST BE APPROVED BY THE ENGINEER AND THE HOWARD COUNTY HEALTH DEPARTMENT PRIOR TO INSTALLATION. A REVISED SITE PLAN MAY BE REQUIRED.
 - THE MAXIMUM COVER OVER THE BAT SHALL BE 3 FEET. GREATER EARTH COVER WILL REQUIRE A HEAVY LOAD BEARING TANK.
 - ANY ELECTRICAL WORK FOR THE BAT INSTALLATION MUST BE PERFORMED BY A LICENSED ELECTRICIAN.
 - THE WELL (TAG # HO-14-0047) HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN.
 - ALL WELLS AND SEPTIC SYSTEMS LOCATED WITHIN 100 FEET OF THE PROPERTY BOUNDARIES AND 200 FEET DOWNSTREAM OF ANY WELLS AND/OR SEPTIC SYSTEMS HAVE BEEN SHOWN.
 - THE BAT SYSTEM SHALL BE MAINTAINED AND OPERATED FOR THE LIFE OF THE SYSTEM.
 - THE BAT SHALL BE OPERATED BY AND MAINTAINED BY A CERTIFIED SERVICE PROVIDER.
 - WITHIN ONE MONTH OF INSTALLATION, A PERSON INSTALLING THE BAT SYSTEM SHALL REPORT TO THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) IN A MANNER ACCEPTABLE TO MDE, THE ADDRESS AND DATE OF COMPLETION OF THE BAT INSTALLATION AND THE TYPE OF BAT INSTALLED.
 - THE HEALTH DEPARTMENT REQUIRES DOCUMENTATION FOR THE START-UP CERTIFICATION FROM THE MANUFACTURER PRIOR TO FINAL APPROVAL OF THE INSTALLATION.
 - SURFACE RUNOFF SHALL BE DIRECTED AROUND THE BAT TANK.



Approved Septic System Plan
 Howard County Health Department
 Signature: [Signature] Date: 2/11/19

SEPTIC SYSTEM DESIGN
 3 BEDROOM HOUSE
 LOADING RATE = 450 GPD
 APPLICATION RATE = 0.8
 EFFECTIVE SIDEWALL BEGINS AT 6.0 FEET
 TRENCH DEPTH = 8 FEET
 TRENCH WIDTH (W) = 3 FEET
 EFFECTIVE DEPTH (D) = 2 FEET
 SF OF DRAINFIELD = 450 GPD / 0.8 = 562.5 SF
 COEFFICIENT OF REDUCTION OF TRENCH LENGTH = (W+2)/(W+1+2D) = (3+2)/(3+1+(2*2)) = 0.625
 TRENCH LENGTH = 562.5 SF x 0.625 / 3 = 117.2 FEET (USE 117.2 FEET)
 TRENCH SPACING = 2D+W = ((2*2) + 3) = 7 USE 10'

FRICITION LOSS IN 3" PIPE FITTINGS:
 7 1/8 HB x 6 FEET PER FITTING = 42 EQUIVALENT FEET OF PIPE
 1 TEE/CROSS x 15 FEET PER FITTING = 15 EQUIVALENT FEET OF PIPE
 1 UNION x 3 FEET PER FITTING = 3 EQUIVALENT FEET OF PIPE
 1 ELBOWS x 10 FEET PER FITTING = 10 EQUIVALENT FEET OF PIPE
 TOTAL EQUIVALENT FEET OF PIPE = 70 FT

TOTAL LINEAR FEET OF 3" SCH. 40 PVC = 264.7 LF + 70 LF = 335 LF

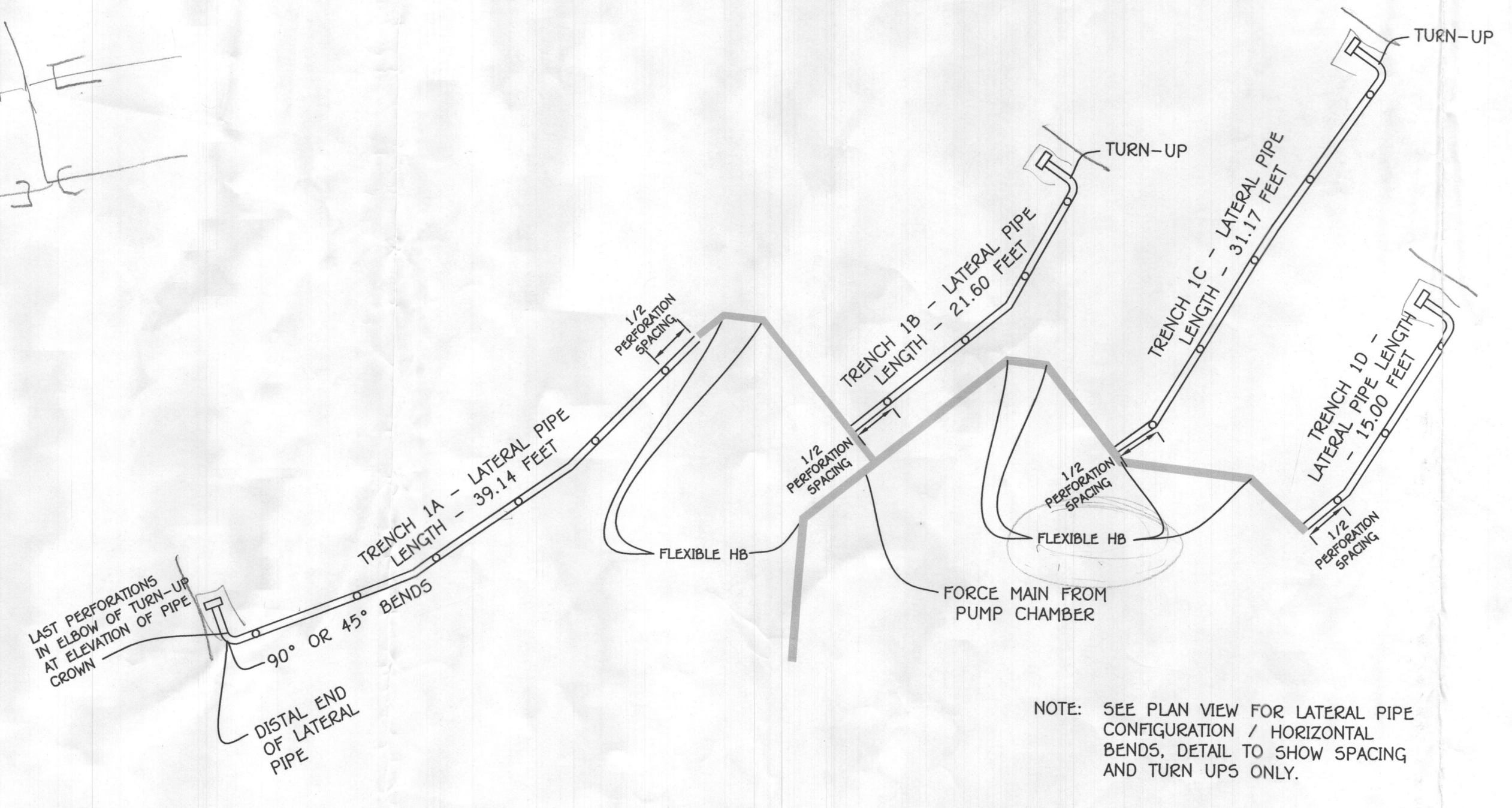
DYNAMIC HEAD
 335 LF x 0.56 FT PER 100 LF OF PIPE = 1.88 FT OF FRICTION HEAD
 DISTAL HEAD = 1.88 FT
 VERTICAL FROM PUMP OFF TO DISCHARGE = 4.18 FT OF STATIC HEAD
 VERTICAL FROM DISCHARGE TO HIGHEST ELEV OF MAIN = 36.6 FT
 TOTAL DYNAMIC HEAD = 44.66 FT

PIPE VOLUMES
 203 LF (3" SCH. 40 PIPE) x 38.4 GALLONS PER 100 LF = 78 GALLONS
 108.1 LF (1.5" SCH. 40 PIPE) x 10.6 GALLONS PER 100 LF = 11.2 GALLONS

MINIMUM DOSE
 = (5 X LATERAL PIPE VOLUME) + (FORCE MAIN & MANIFOLD)
 = (5 X 11.2) + (78)
 = 134 GALLONS

134 GALLONS IS MORE THAN 1/6 DESIGN FLOW (450/6=75)
 USE 155.1 GALLON DOSE (134 GALLON MINIMUM)
 (RUN TIME = 3 MIN (51.7 GPM X 3 = 155.1 GALLON DOSE))

PUMP NEEDS TO HANDLE 51.7 GPM AT 44.7 FT OF HEAD
 USE 0.75 HP (ME75 PUMP)



BAT SITE PLAN
 2178 MILLERS MILL ROAD
 TAX MAP #14 GRID #4 PARCEL: 26
 ZONED: RC-DEO
 FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: 1" = 30' DATE: FEBRUARY, 2019
 SHEET 1 OF 2

PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 36366, EXPIRATION DATE: 01/12/2020.
 Signature: [Signature] Date: 2/5/19
 SIGNATURE OF PROFESSIONAL ENGINEER DATE

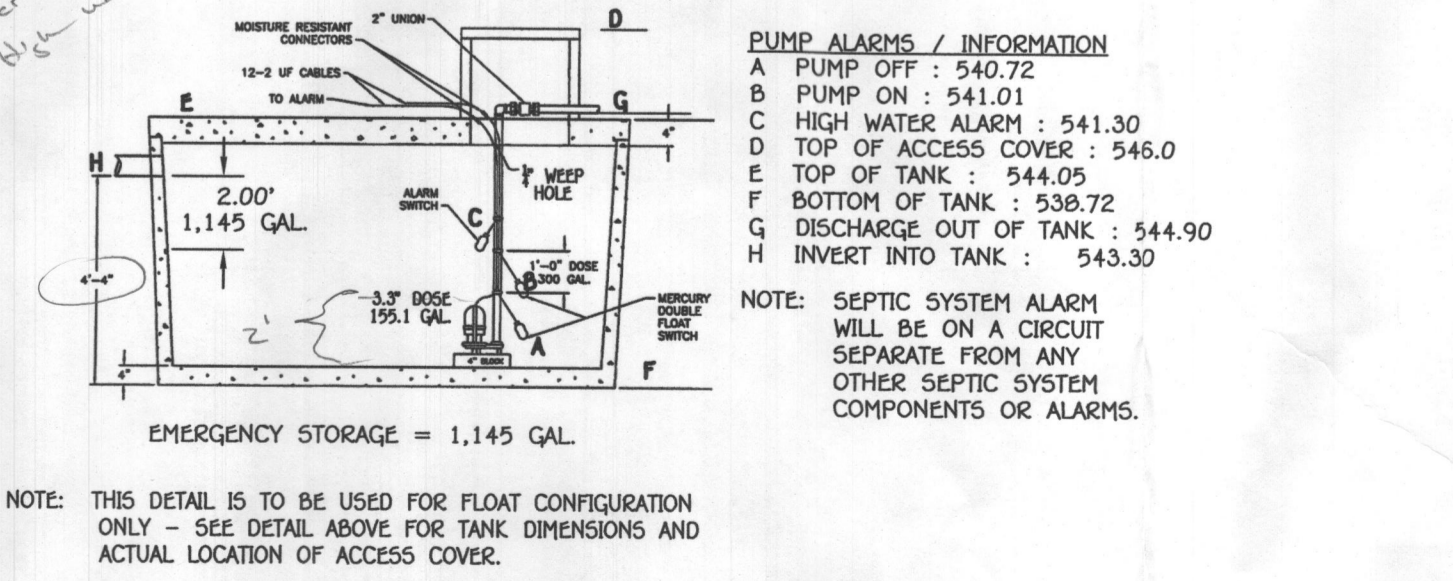
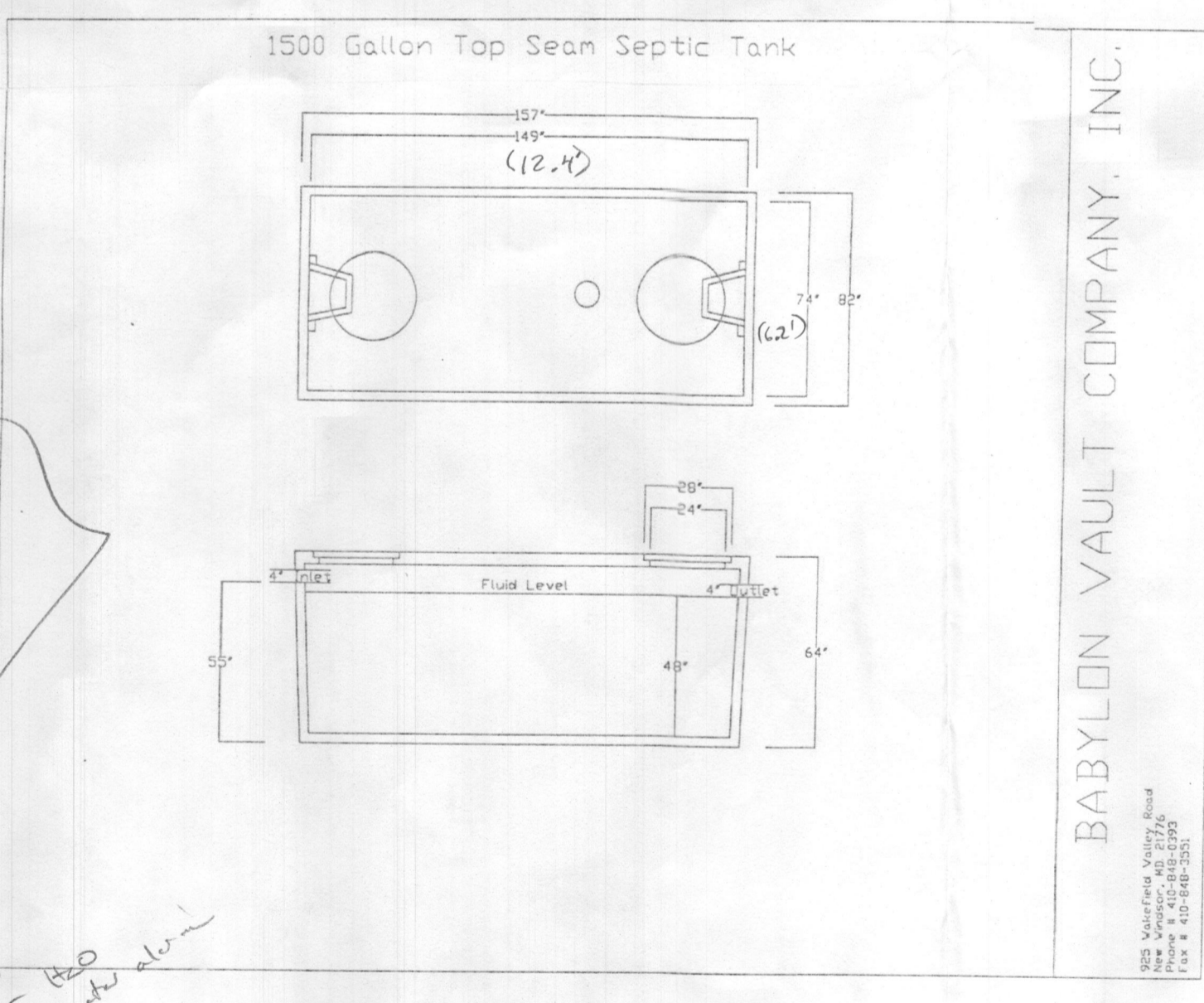
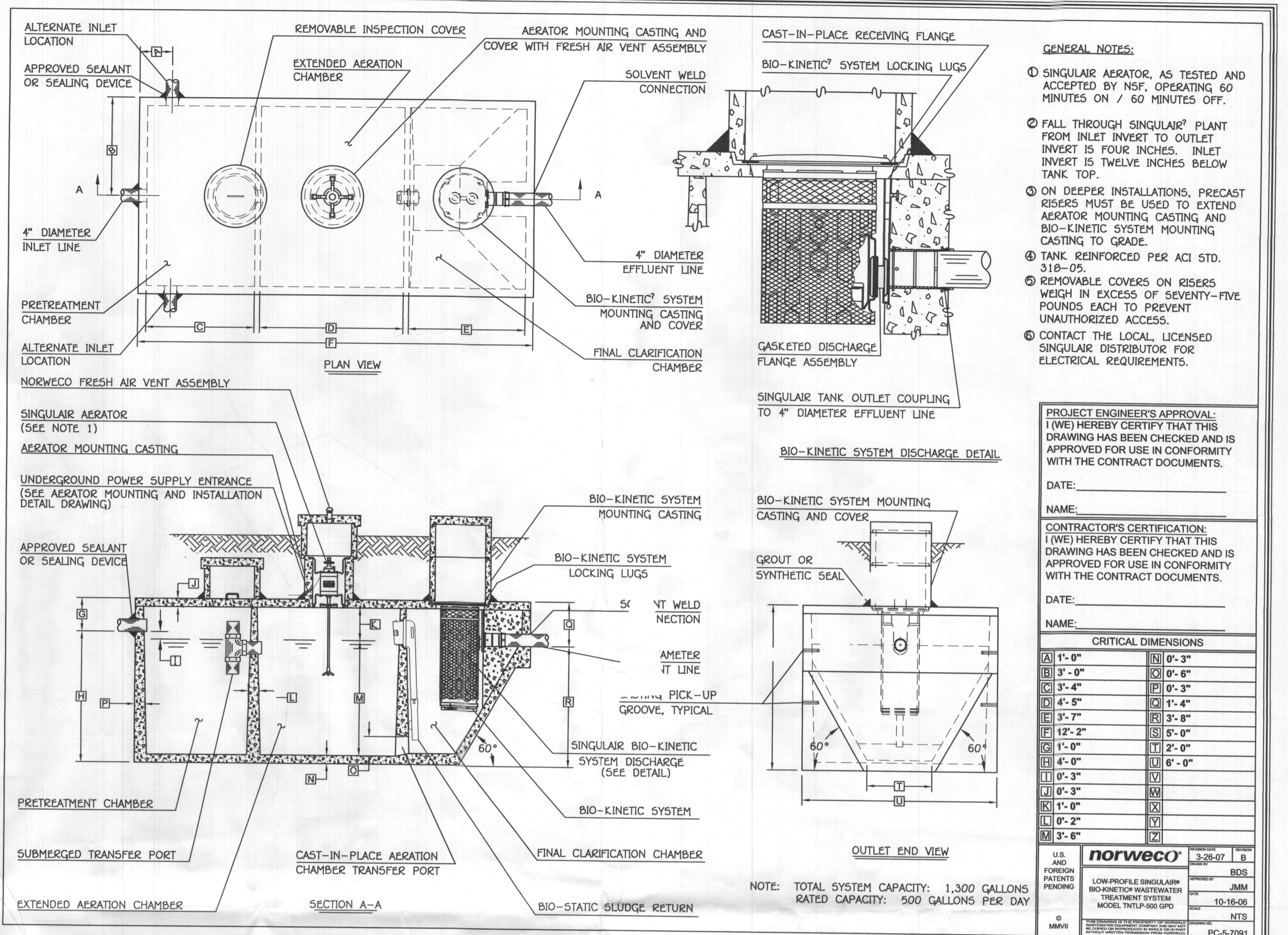
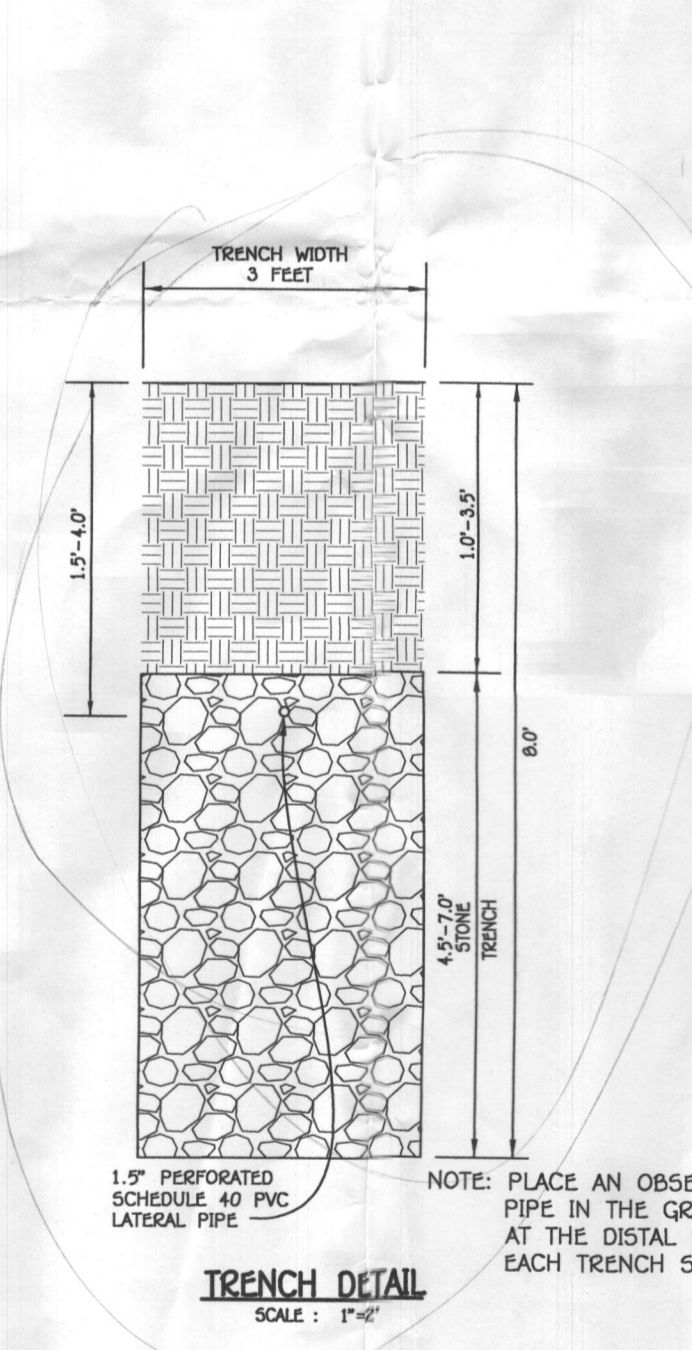
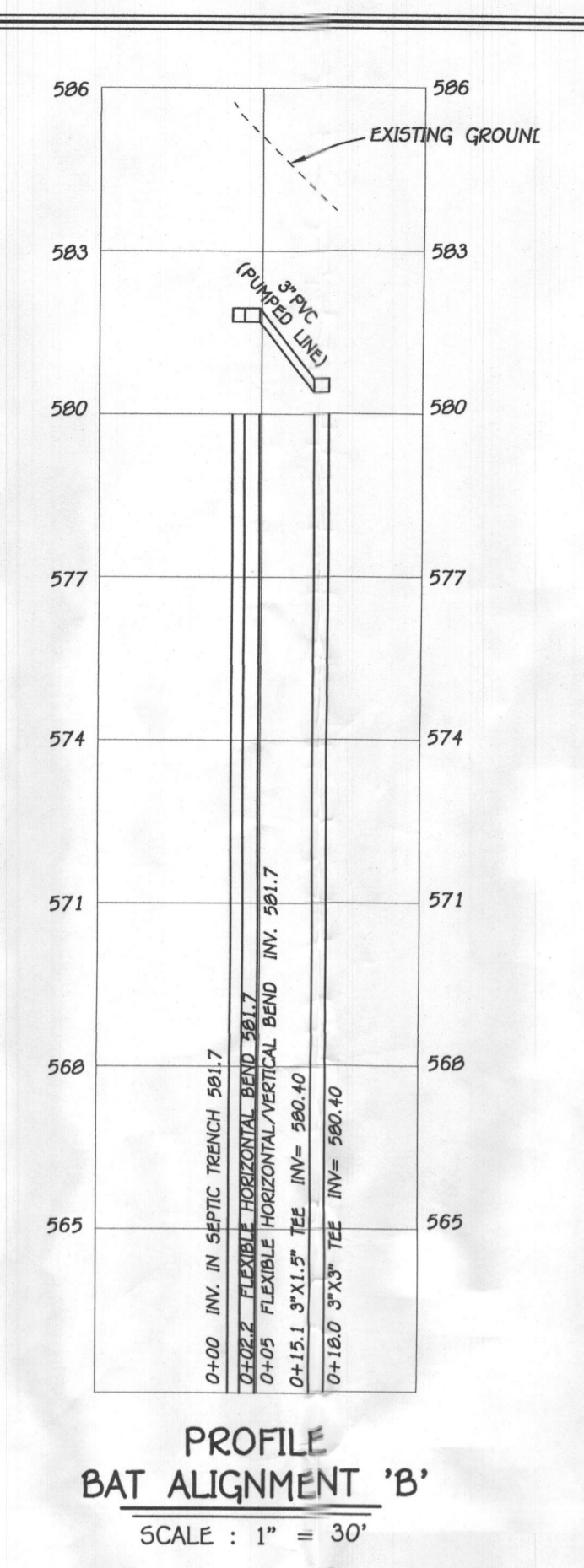
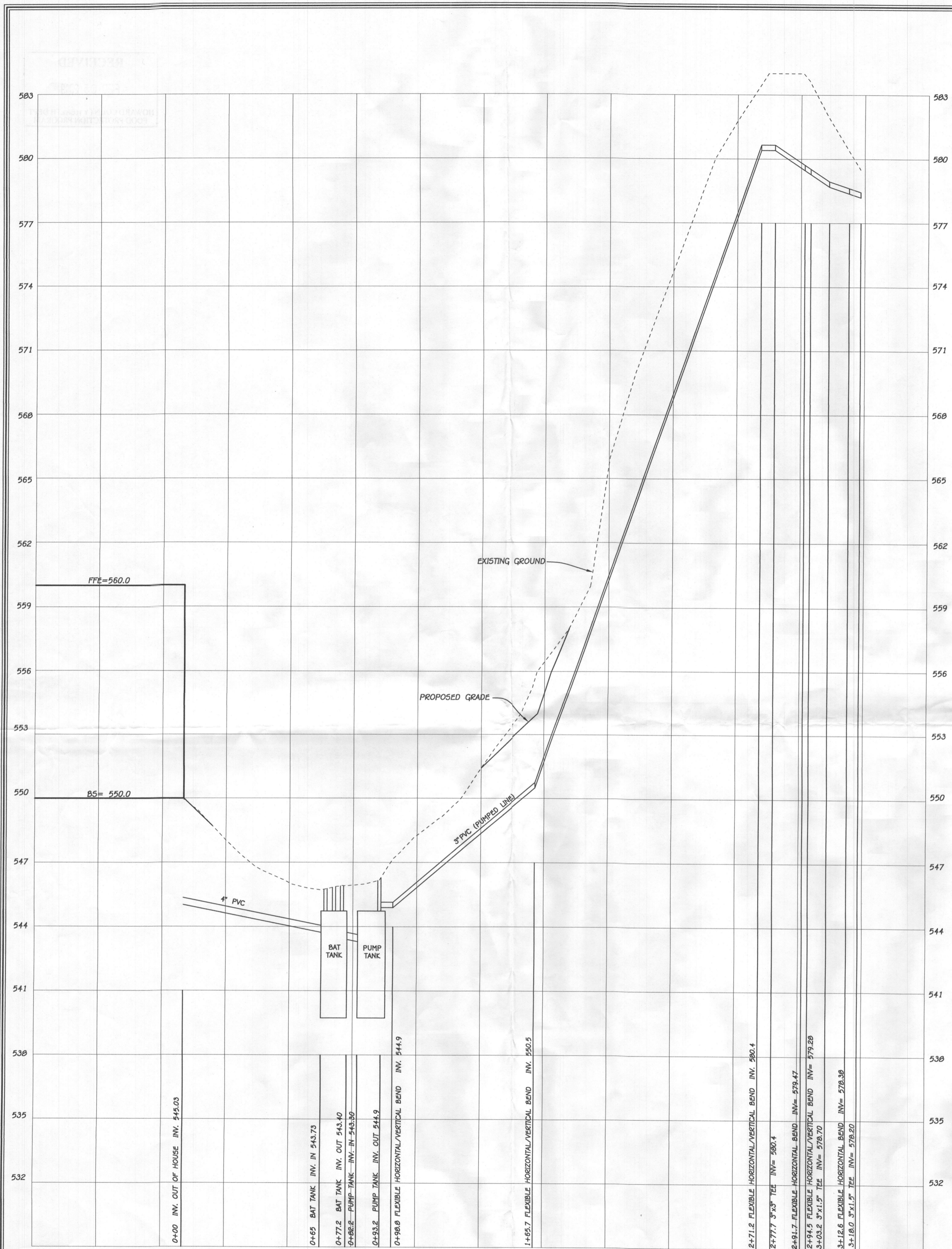
SOIL	NAME	CLASS	K FACTOR
G4C	G4a loam, 0 to 15 percent slopes	B	0.24
G4B	Glenville-Belle silt loam, 0 to 8 percent slopes	C	0.37
MaD	Manor loam, 15 to 25 percent slopes	B	0.24
MLF	Manor-Brinklow complex, 25 to 65 percent slopes, very rocky	B	0.24

SCALE: 1" = 30'

DEVELOPER
 VIKING CUSTOM HOMES
 ATTN: CARY CUMBERLAND
 12800 FREDERICK ROAD
 WEST FRIENDSHIP, MARYLAND 21794
 (410) 977-2180

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SOURCE OFFICE PARK - 16272 BALTIMORE NATIONAL PARK
 ELLETT CITY, MARYLAND 21042
 (410) 461-2895

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EFFLUENT PUMPS

MYERS® ME SERIES

SINGLE SEAT

DOUBLE SEAT

PUMP PERFORMANCE

Capacity (liters per minute)

Head (feet)

Head (meters)

Capacity (gallons per minute)

1.317 GPM

44.7 FT HEAD

PENTAIR

Catalog Number	Inches (Millimeters)			
	A	B	C	F
ME505	10.8 (271)	4.09 (104)	1.03 (26)	12.13 (308)
ME500	10.6 (269)	4.09 (104)	1.03 (26)	12.13 (308)
ME755, ME1005, ME1505	16.8 (427)	4.0 (102)	1.06 (27)	12.5 (318)
ME750, ME1000, ME1500	16.4 (418)	4.0 (102)	1.06 (27)	12.5 (318)

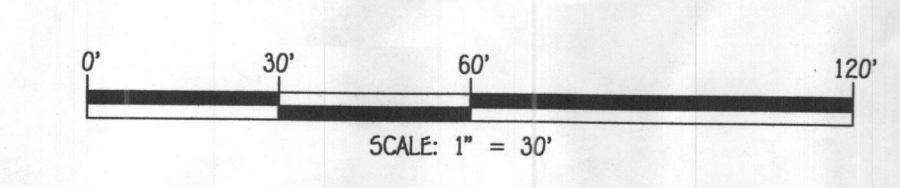
DEVELOPER
VIKING CUSTOM HOMES
ATTN: GARY CUMBERLAND
12800 FREDERICK ROAD
WEST FRIENDSHIP, MARYLAND 21794
(410) 977-2188

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 38386, EXPIRATION DATE: 01/12/2020.

STATE OF MARYLAND
SEPTIC TANK DESIGN
No. 38386
PROFESSIONAL ENGINEER

Stephen J. Juts 2/5/19
SIGNATURE OF PROFESSIONAL ENGINEER DATE

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTRAL SQUARE OFFICE PARK - 10222 BALTIMORE NATIONAL PIKE
ELLETT CITY, MARYLAND 21042
(410) 461-2295



BAT SITE PLAN
2178 MILLERS MILL ROAD
TAX MAP #14 GRID #4 PARCEL: 26
ZONED: RC-DEO
FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: 1" = 30' DATE: FEBRUARY, 2019
SHEET 2 OF 2

Cabahug, Joseph

From: Stephanie Tuite <Stephanie@fcc-eng.com>
Sent: Tuesday, June 4, 2019 6:17 PM
To: Cabahug, Joseph
Cc: Sams Creek
Subject: 2178 Millers Mill Road Pump
Attachments: Stephanie Tuite.vcf

Follow Up Flag: Follow up
Flag Status: Flagged

[Note: This email originated from outside of the organization. Please only click on links or attachments if you know the sender.]

Joseph,

After discussions of multiple options, we ended up upgrading to Goulds we1012h 1hp 230v pump which allowed the head to even out in the trenches. Please accept this as part of your record. This was changed in conjunction with coordination with Sams Creek and the manufacturer.

Steph

