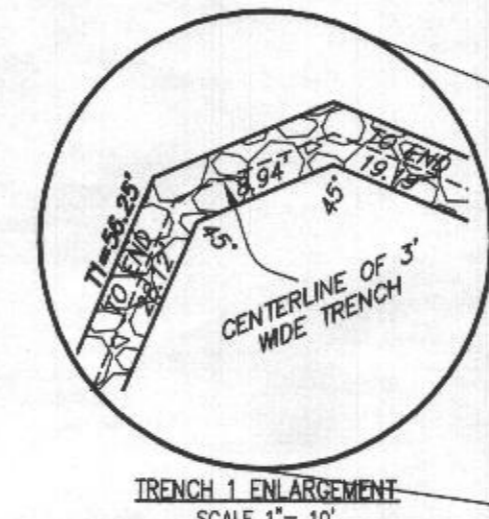
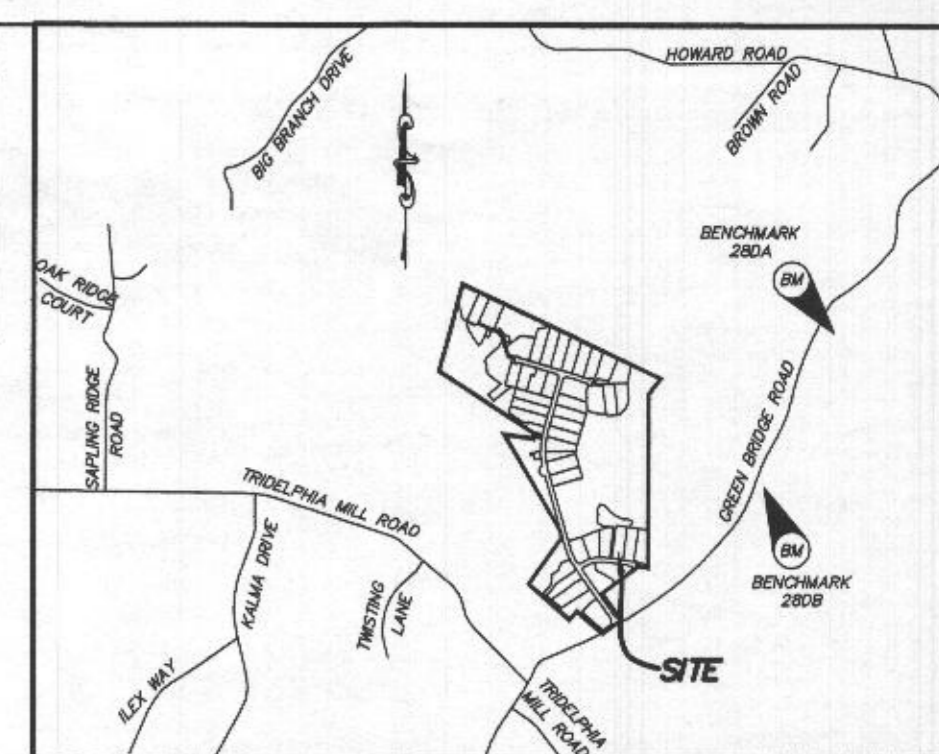


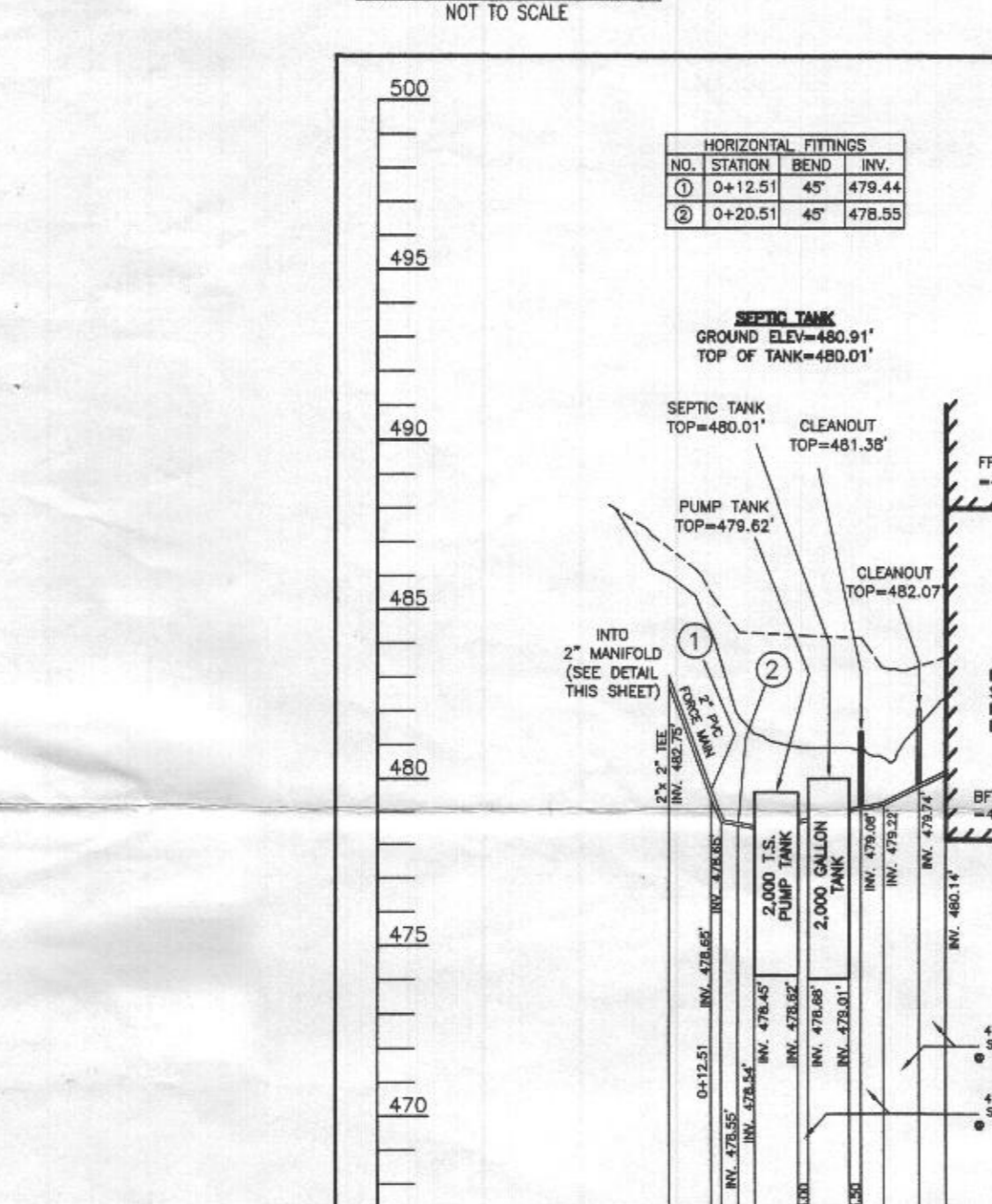
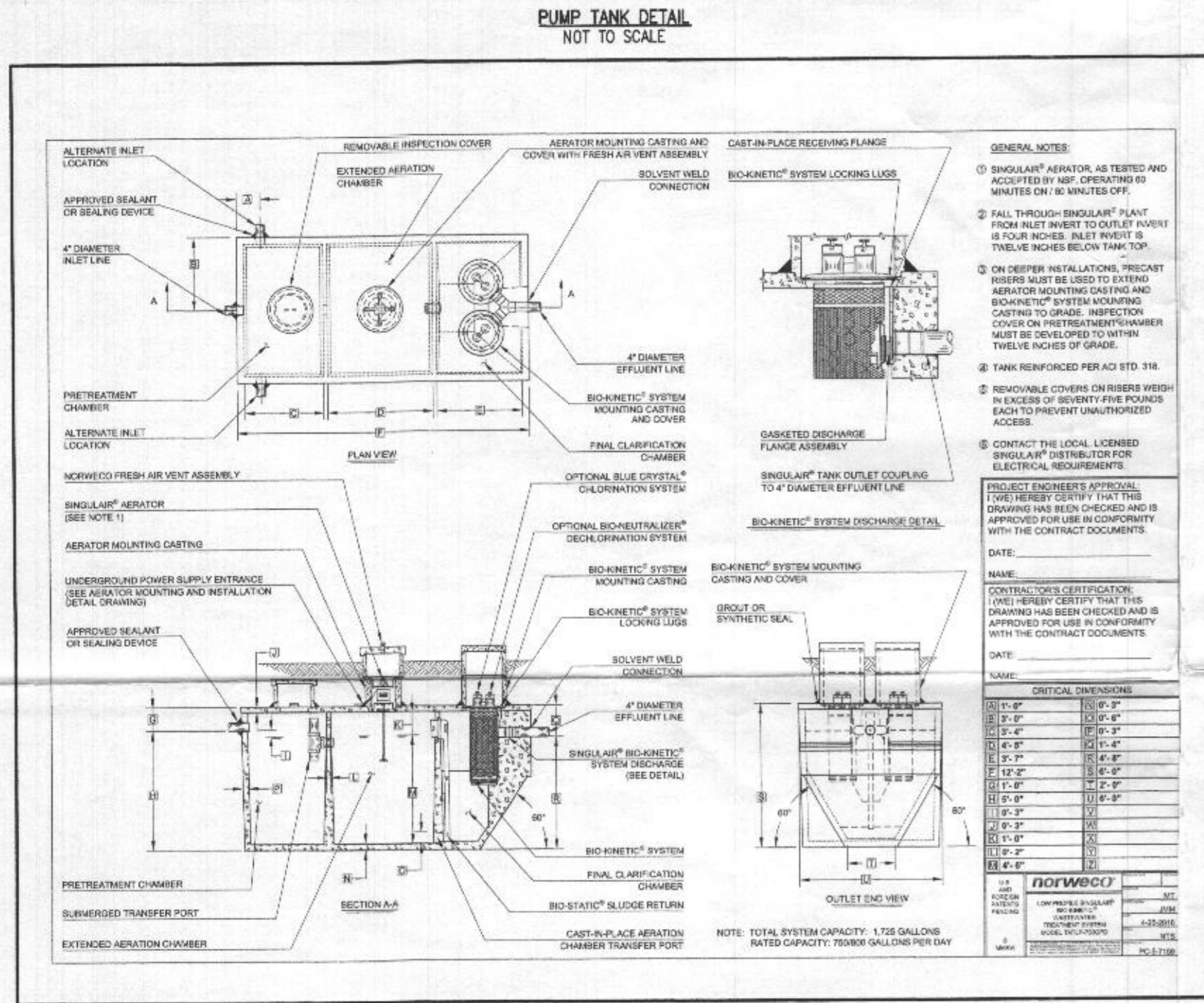
- LEGEND:**
- PASSED PERC TEST LOCATION
 - FAILED PERC TEST LOCATION
 - /○ EXISTING WELL LOCATION
 - C/O CLEANOUT
 - TW TOP OF WALL
 - GF GARAGE FLOOR
 - BF BASEMENT FLOOR
 - BRL BUILDING RESTRICTION LINE
 - PS PRIVATE SEWAGE DISPOSAL AREA TO BE REMOVED
 - PROPOSED TREE LOCATION
 - EXISTING TREE LOCATION
- HOUSE OPTIONS:**
- HOUSE TYPE: RIDGEVIEW (MODERN FARMHOUSE)
- THREE CAR SIDE ENTRY GARAGE
 - FINISHED LOWER LEVEL
 - WALK-OUT BASEMENT
 - OPTIONAL DROP ZONE
 - LUXURY COVERED DECK
 - DOUBLE WIDE DRIVEWAY TAIL
- OPTION No. 001
OPTION No. 013
OPTION No. 017
OPTION No. 263081
OPTION No. 263168
OPTION No. 50010001

SOILS LEGEND

SOIL	NAME	CLASS	Kw
GqB	GLENELEG LOAM, 3 TO 8 PERCENT SLOPES	B	28
GqC	GLENELEG LOAM, 8 TO 15 PERCENT SLOPES	B	28
MmC	MANOR LOAM, 8 TO 15 PERCENT SLOPES	B	28

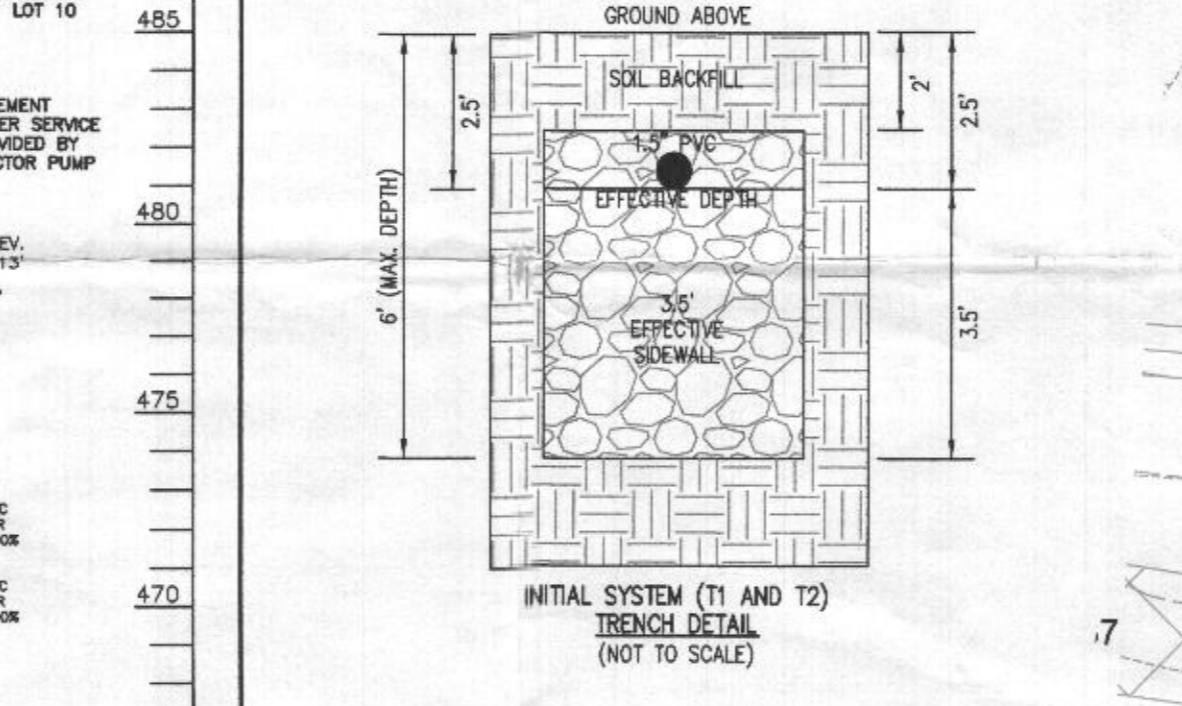


Approved Septic System Plan
Howards County Health Department
NORWEGE TWP - 750
2000-gal Pump Tank & Ashland EPF30 M-20 pump
Signature: G/LB/21
Date: 06/04/21
LPD for 6-bedroom SFD



HORIZONTAL FITTINGS

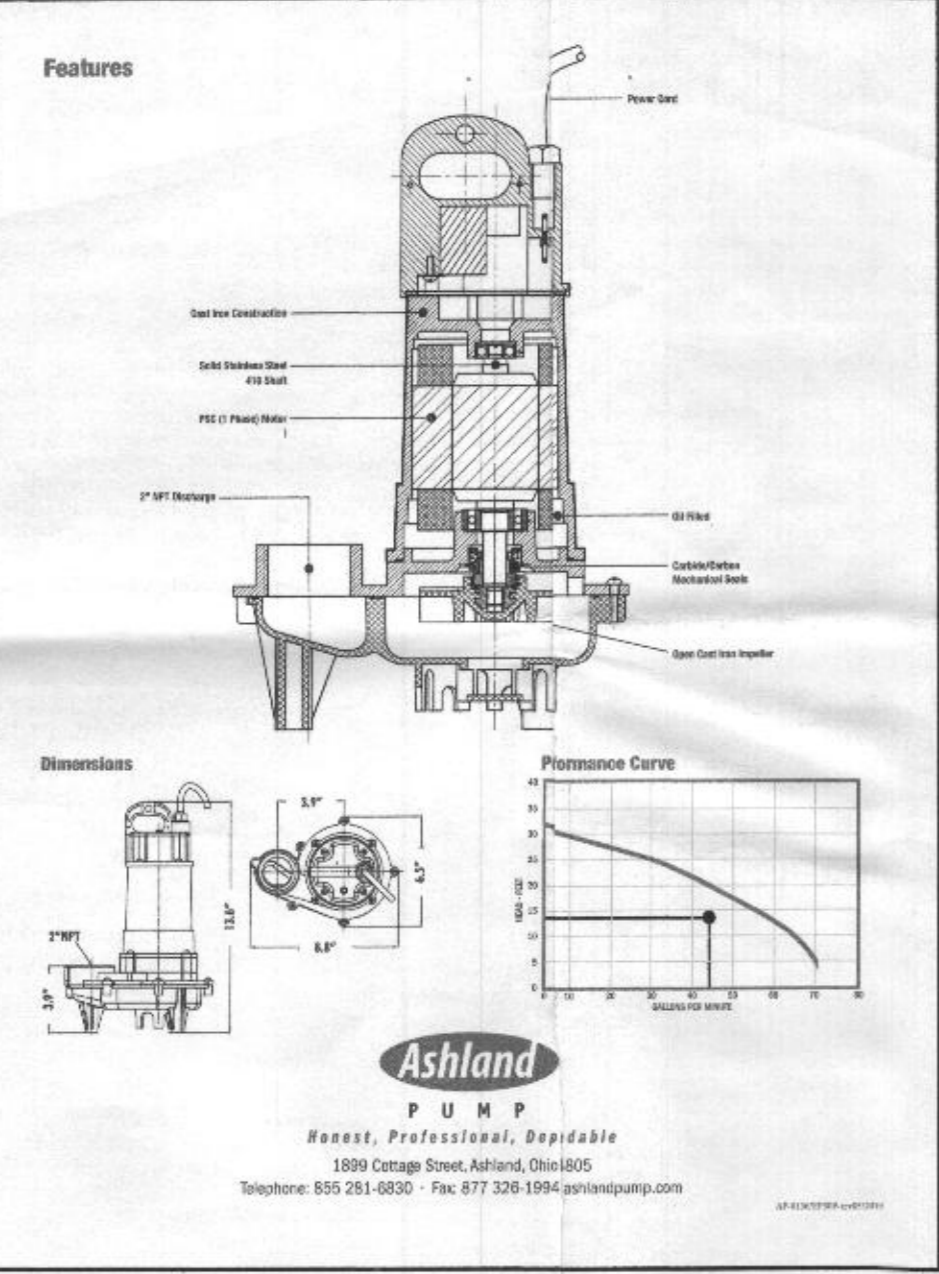
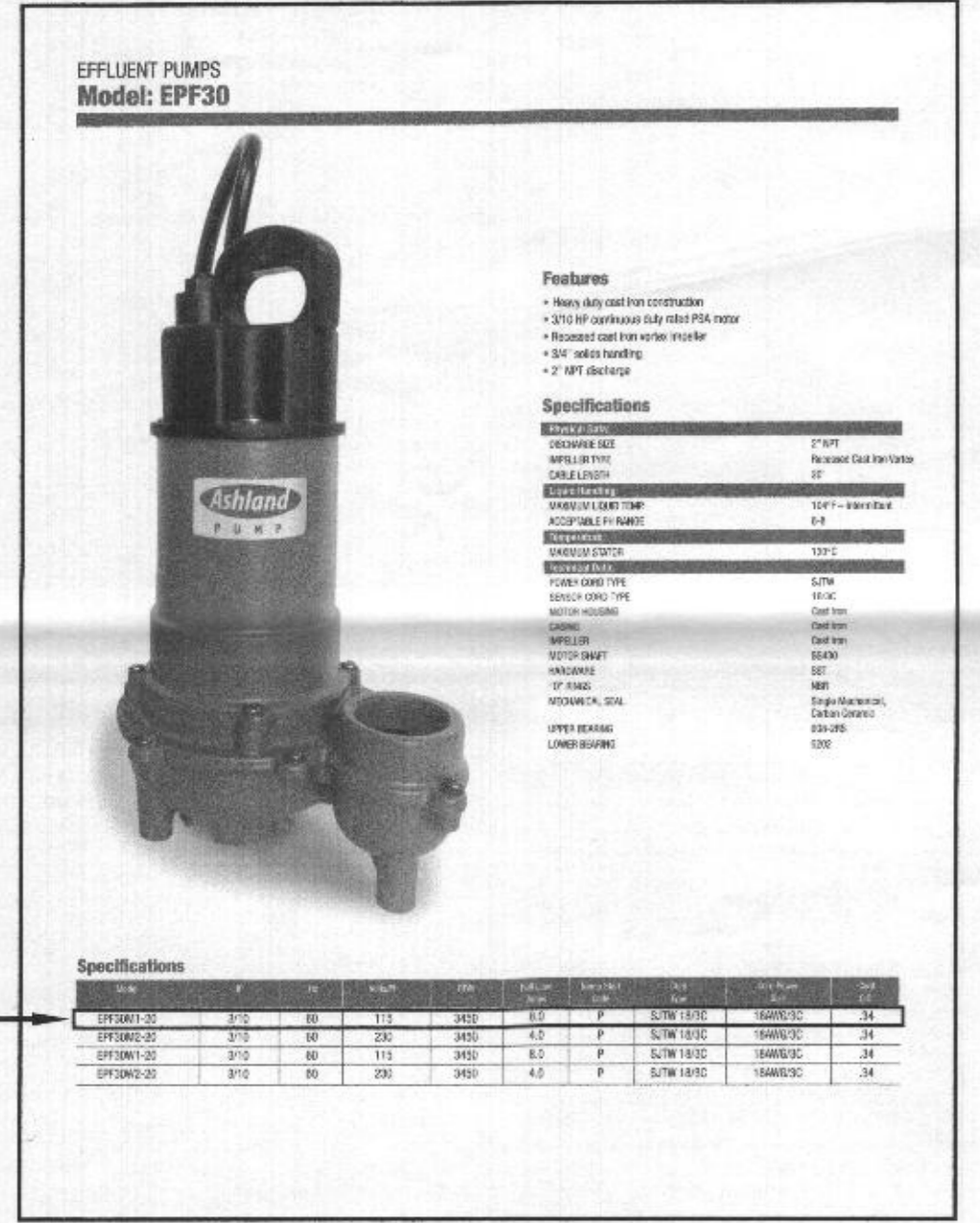
NO.	STATION	BEND	INV.
1	0+12.51	45°	479.44
2	0+20.51	45°	478.55



VICINITY MAP
1" = 2000'
TAX MAP 27, GRID 18

BENCHMARK 28DA
N: 570,824,997, E: 1,313,434,228, EL: 564.389'
BENCHMARK 280B
N: 569,055,561, E: 1,313,795,348, EL: 537.361'

- GENERAL NOTES:**
- THESE AREAS DESIGNATE A PRIVATE SEWAGE AREA OF AT LEAST 10,000 SQUARE FEET AS REQUIRED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWAGE DISPOSAL IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWAGE IS AVAILABLE. THESE AREAS SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWAGE SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT VARIANCES FOR ENFORCEMENTS UNTO THE PRIVATE SEWAGE AREA. RECONSTRUCTION OF A MODIFIED SEWAGE AREA SHALL NOT BE NECESSARY.
 - EXISTING WELLS, SEPTIC SYSTEMS, AND SEWAGE DISPOSAL AREAS WITHIN 100' OF THE PROPERTY AND THOSE WITHIN 200' DOWN GRADIENT OF EXISTING OR PROPOSED SEPTIC SYSTEMS OR SEWAGE DISPOSAL AREAS HAVE BEEN SHOWN.
 - ANY CHANGES TO A PRIVATE SEWAGE AREA SHALL REQUIRE A REVISED PERCOLATION CERTIFICATION PLAN.
 - BUILDING SETBACKS (B.R.L.'s) SHOWN HEREON PER SITE DEVELOPMENT PLAN SETBACK DISTANCES HEREON AS "±" HAVE AN ACCURACY OF ±0.1' FOOT.
 - ANY CHANGES 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 EARTH COVER OVER THE TANK IS THREE (3) FEET. GREATER EARTH COVER WILL REQUIRE A HEAVY LOAD BEARING TANK.
 - THE LOT SHOWN HEREON COMPLEES WITH THE MINIMUM OWNERSHIP, WIDTH, AND LOT AREA AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT.
 - THE EXISTING TOPOGRAPHY SHOWN HEREON IS BASED ON A BOUNDARY & TOPOGRAPHIC SURVEY PREPARED BY BOHER ENGINEERING ON 9/03/15, AND HOWARD COUNTY G.S.
 - THE BAT SYSTEM SHALL BE MAINTAINED AND OPERATED FOR THE LIFE OF THE BAT SYSTEM.
 - THE BAT SYSTEM SHALL BE OPERATED BY AND MAINTAINED BY A CERTIFIED SERVICE PROVIDER.
 - WITHIN ONE (1) 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.
 - ELECTRICAL WORK FOR THE BAT INSTALLATION MUST BE PERFORMED BY A LICENSED ELECTRICIAN.
 - AN AGREEMENT AND EASEMENT MUST BE COMPLETED AND SIGNED BY ALL APPLICABLE PARTIES, AND RECORDED IN THE LAND RECORDS OF HOWARD COUNTY.
 - THE HEALTH DEPARTMENT REQUIRES DOCUMENTATION FOR THE START-UP CERTIFICATION FROM THE MANUFACTURER PRIOR TO THE FINAL APPROVAL OF THE BAT INSTALLATION.
 - AFTER PRESSURE TESTING THE DISTRIBUTION SYSTEM, THE PIPE TURN-UPS AT THE ENDS OF THE LATERALS ARE TO BE CUT BELOW GRADE AND CAPPED. THE TRUNCATED LATERAL TURN-UPS SHOULD BE PROTECTED BY TURF BONES.
 - THE EXISTING WELL FOR LOT 10 (TAG NO. HO-18-0036) HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN HEREON.



LOW PRESSURE DISTRIBUTION SYSTEM CALCULATIONS

NUMBER OF MANFOLDS = 1
MANFOLD TYPE = END FEED

TRENCH 1 (T1) ELEV.=484.25' LENGTH=56.25'
TRENCH 2 (T2) ELEV.=483.75' LENGTH=56.25'

MANFOLD LENGTH = 22.12' TYPE=SQH40
FORCEMAIN LENGTH = 25.51'

TRENCH	FEED	PIPE INV. ELEV. (FT.)	HEAD (FT.)	HOLE DIA. (IN.)	HOLE FLOW RATE (GPM)	HOLE SPACING (FT.)	#HOLES	TRENCH FLOW RATE (GPM)	LATERAL LENGTH LF TRENCH (FT.)	FLOW PER GA. PER LF TRENCH (GPM)	LATERAL DIA. (IN.)	TYPE	
1	56.25	END	485.25	2	5/16	1.63	4,018	14	22.82	54.24	0.421	1.5	SQH40
2	56.25	END	483.75	3.5	5/16	2.15	5,825	10	21.50	53.44	0.402	1.5	SQH40

MIN. SYSTEM DISCHARGE RATE = 44.66 GPM
MANFOLD DIAMETER = 2 IN.
FORCE MAIN DIAMETER = 2 IN.
MINIMUM DOSE = 150 GAL.

MAX./MIN. FLOW RATIO (SHOULD BE < 1.10): 0.82

VELOCITY = 3.59 FPS
VELOCITY = 3.59 FPS

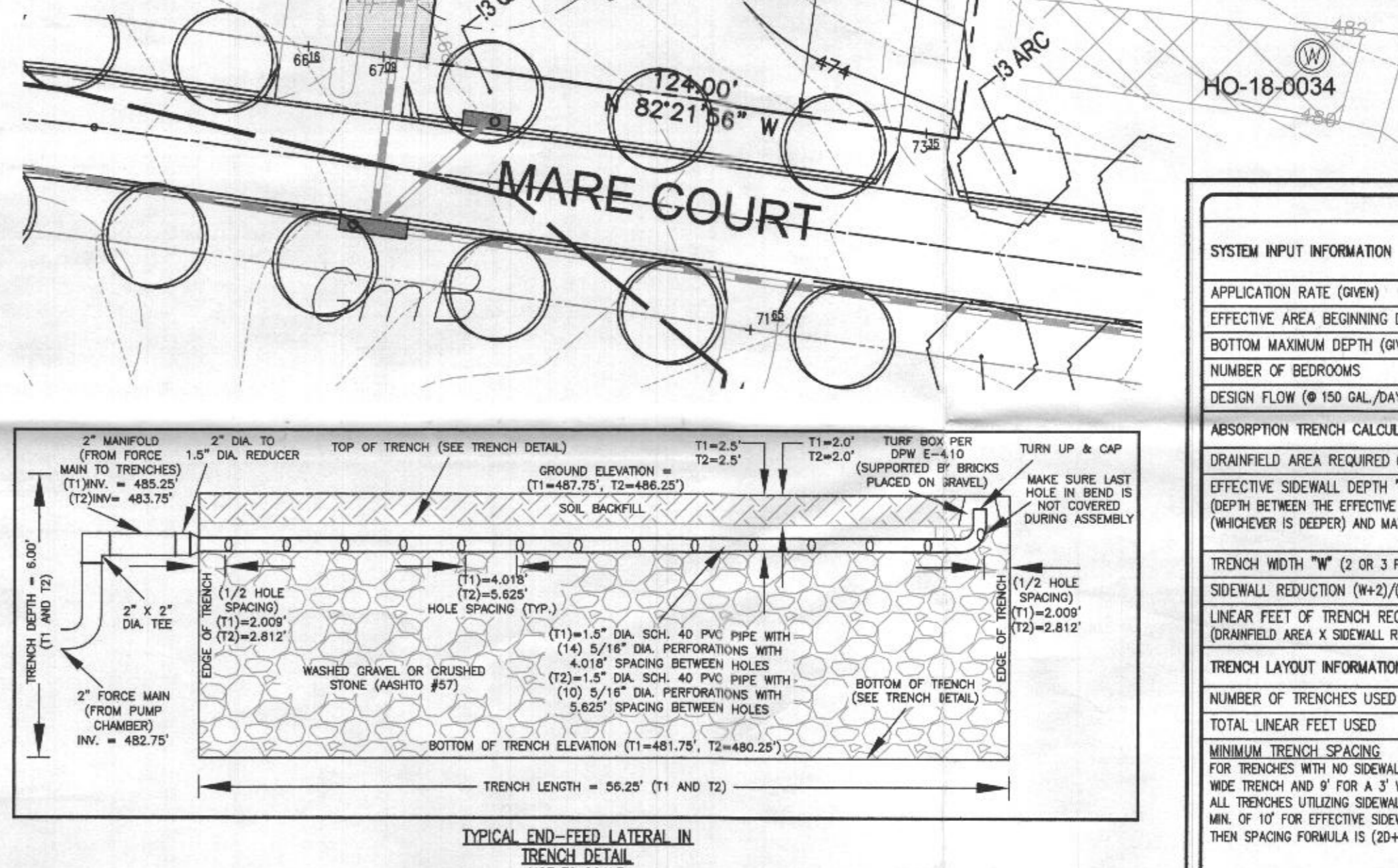
VOL. IN FM, MAN. 5x LATERAL=55.29 GAL < 1/6 DESIGN FLOW/6=90 GAL

CALCULATE TOTAL DESIGN HEAD:

LENGTH OF FM FROM PUMP TANK TO MANFOLD = 25.51' (ADD 4' PER BEND) = 8'
OF (45°) BENDS IN FM = 2 (ADD 10' PER BEND) = N/A
OF (90°) BENDS IN FM = N/A (ADD 4' PER BEND) = N/A
LENGTH OF MANFOLD FROM FM TO TRENCHES = 22.12' (ADD 4' PER BEND) = N/A
OF (45°) BENDS IN MANFOLD = N/A (ADD 10' PER BEND) = 20'
OF (90°) BENDS IN MANFOLD = 2 (ADD 2' PER COUPLING) = 4'
OF COUPLINGS (2" TO 1.5") = 2 (ADD 2' PER COUPLING) = 4'
TOTAL LENGTHS = 47.63' (145.64 GPM OF 2" PVC = 3.27 PER 100' PIPE); 3.27 / 100' = 0.0327 x 79.63' = 2.60'

FRICITION HEAD = 2.60' FT. (PER ABOVE CALCULATION)
OPERATING HEAD = 2.00' FT.
STATIC HEAD = 9.13' FT. (HIGHEST POINT IN DISTRIBUTION SYSTEM - PUMP OFF FLOAT ELEVATION)
TOTAL DYNAMIC HEAD = 13.73' FT. (FRICITION HEAD + OPERATING HEAD + STATIC HEAD)

THEREFORE A PUMP CAPABLE OF DELIVERING AT LEAST 44.66 GPM AGAINST 13.73' OF HEAD IS REQUIRED. EPF30M-20, 3/10 H.P., IS EFFICIENT



SEPTIC TRENCH SIZE CALCULATIONS

SYSTEM INPUT INFORMATION	INITIAL SYSTEM	1ST REPLACEMENT SYSTEM	2ND REPLACEMENT SYSTEM
APPLICATION RATE (GPM)	1.2	1.2	1.2
EFFECTIVE AREA BEGINNING DEPTH (GIVEN)	2.5	2.5	3
BOTTOM MAXIMUM DEPTH (GIVEN)	6	6	6
NUMBER OF BEDROOMS	6	6	6
DESIGN FLOW (150 GAL./DAY/BEDROOM)	900	900	900
ABSORPTION TRENCH CALCULATIONS			
DRAINFIELD AREA REQUIRED (DESIGN FLOW/APP RATE)	750	750	750
EFFECTIVE SIDEWALL DEPTH "D"			
DEPTH BETWEEN THE EFFECTIVE BEGINNING DEPTH OR PIPE DEPTH (WHICHEVER IS DEEPER) AND MAX. TRENCH BOTTOM	3.5	3.5	3
TRENCH WIDTH "W" (2 OR 3 FEET)	3	3	3
SIDEWALL REDUCTION ((W-2)/(W+20))	0.45	0.45	0.50
LINEAR FEET OF TRENCH REQUIRED (DRAINFIELD AREA X SIDEWALL REDUCTION/W)	112.50	112.50	125.00
TRENCH LAYOUT INFORMATION			
NUMBER OF TRENCHES USED	2	2	2
TOTAL LINEAR FEET USED	112.50	112.50	125
MINIMUM TRENCH SPACING	10	10	10

FOR TRENCHES WITH NO SIDEWALL CREDIT, THE SPACING IS 6' FOR A 2' WIDE TRENCH AND 9' FOR A 3' WIDE TRENCH (MEASURED EDGE TO EDGE). ALL TRENCHES UTILIZING SIDEWALL REDUCTION CREDIT MUST BE SPACED A MIN. OF 10' FOR EFFECTIVE SIDEWALL NOT OVER 3.5'. IF MORE THAN 3.5' THEN SPACING FORMULA IS (20+W) UP TO A MAX. OF 18'

PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21328, EXPIRATION DATE 1/8/23.

DESIGNED BY: R.C.K.
DRAWN BY: R.C.K.
CHECKED BY: M.L.B.
DATE: 06/04/21



DESIGNED BY:	DATE:	REVISION:	BY:	APPROVED:
R.C.K.				
R.C.K.				
M.L.B.				

SITE PLAN FOR BAT INSTALLATION
LOT 10
WILLOWSHIRE
PLAT NO. 25503
ELECTION DISTRICT No. 5
HOWARD COUNTY, MARYLAND
ADDRESS: 6517 MARE COURT
DAYTON, MARYLAND 21036

ESE CONSULTANTS
ENGINEERING • ANNING • SURVEYING • ENVIRONMENTAL

ESE Consultants, Inc.
7164 Columbia Gateway Drive • Suite 250 • Columbia, MD 21046
T: 410-672-9105

DATE: 06/03/2021 SCALE: 1"=30' FILE: OSDS LOT 10_rv3
CHK'D: M.L.B. JOB NO: 4520 DRAWN: RWA

SHEET 1 OF 1