

**INITIAL TRENCH DATA**

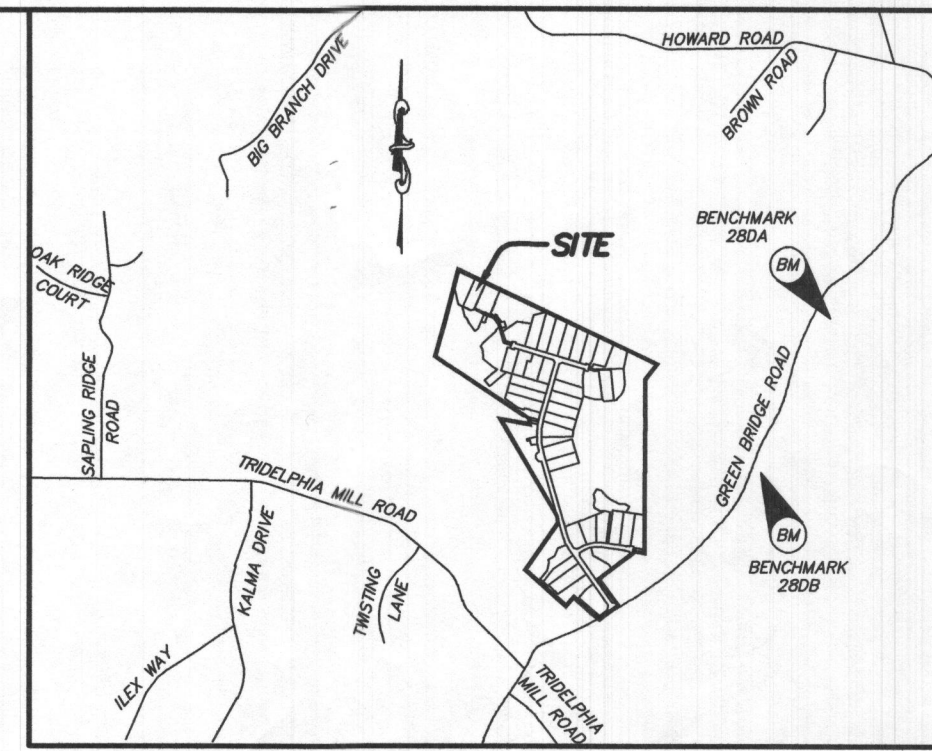
BOTTOM MAX. DEPTH (6")

**TRENCH 1 (T1): 35.50 LF**  
GROUND ABOVE = 502.40'  
INV. IN = 500.90'  
BOTTOM TRENCH = 496.40'

**TRENCH 2 (T2): 35.50 LF**  
GROUND ABOVE = 502.40'  
INV. IN = 500.90'  
BOTTOM TRENCH = 496.40'

**TRENCH 3 (T3): 35.00 LF**  
GROUND ABOVE = 501.50'  
INV. IN = 500.00'  
BOTTOM TRENCH = 495.50'

**TRENCH 4 (T4): 35.00 LF**  
GROUND ABOVE = 501.50'  
INV. IN = 500.00'  
BOTTOM TRENCH = 495.50'



BENCHMARK 280A  
N: 570,624.997, E: 1,313,434.228, EL: 564.389'  
BENCHMARK 280B  
N: 569,055.561, E: 1,313,795.348, EL: 537.361'

**EFFLUENT PUMPS Model: EPF30**

**Features**

- Heavy duty cast iron construction
- 3/16" HP centrifugal duty rated PSC motor
- Recessed cast iron motor housing
- 1/4" wide handling
- 1/2" HP discharge

**Specifications**

Model	Capacity (GPM)	Flow (GPM)	Head (ft)	Power (HP)	Material
EPF30-10	30	60	15	1/2	Cast Iron
EPF30-20	30	60	15	1/2	Cast Iron
EPF30-30	30	60	15	1/2	Cast Iron
EPF30-40	30	60	15	1/2	Cast Iron

**Features**

**Dimensions**

**Performance Curve**

**Ashland PUMP**  
Honest, Professional, Dependable  
1899 Cottage Street, Ashland, Ohio 44805  
Telephone: 855-281-6830 • Fax: 877-326-1994 • ashlandpump.com

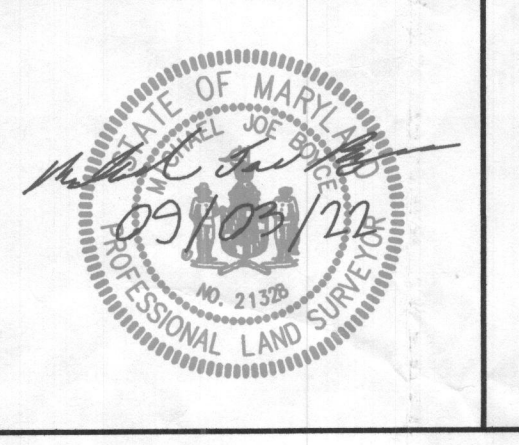
180g  
20  
TDH  
Flow →

2' (uphill)  
2' (downhill)  
2' (slope)

Friction loss + Total Δ = TDH  
+ Friction loss + Total Δ = TDH  
+ Friction loss + Total Δ = TDH

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.

*Michael Joe Boyce*  
MICHAEL JOE BOYCE  
09/03/22  
DATE



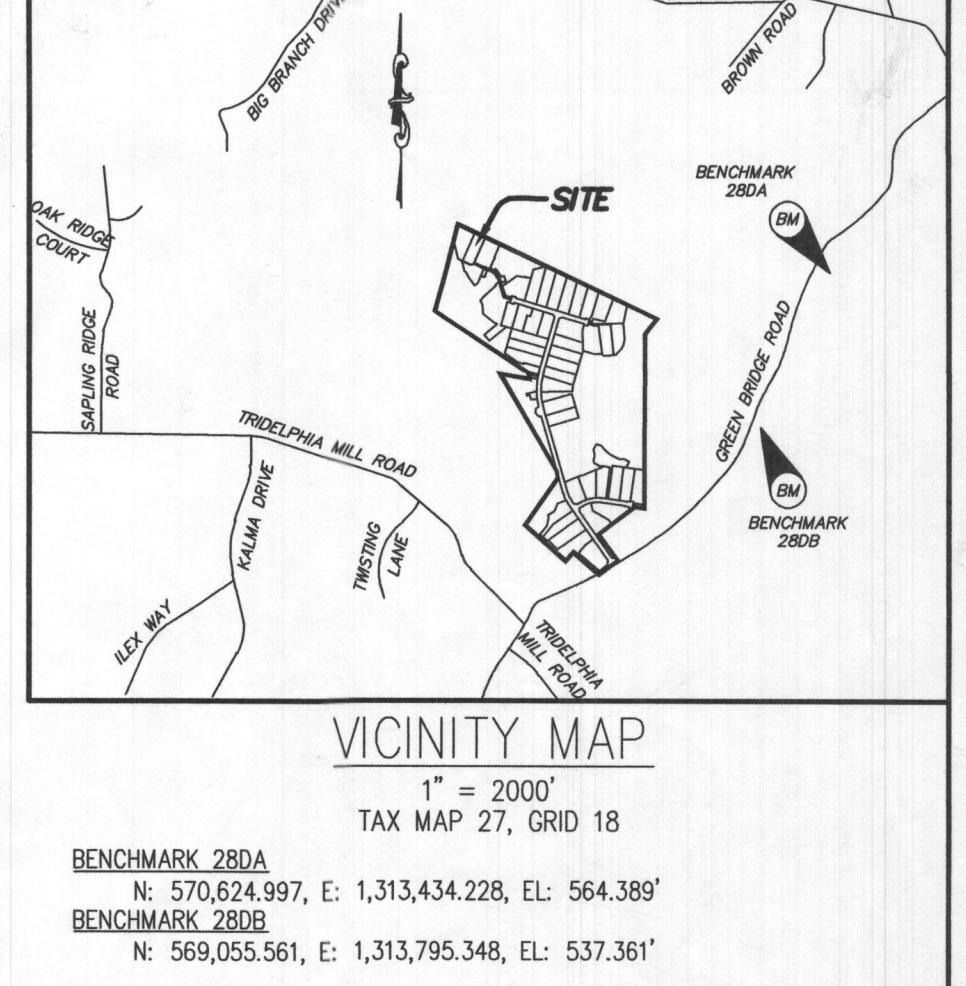
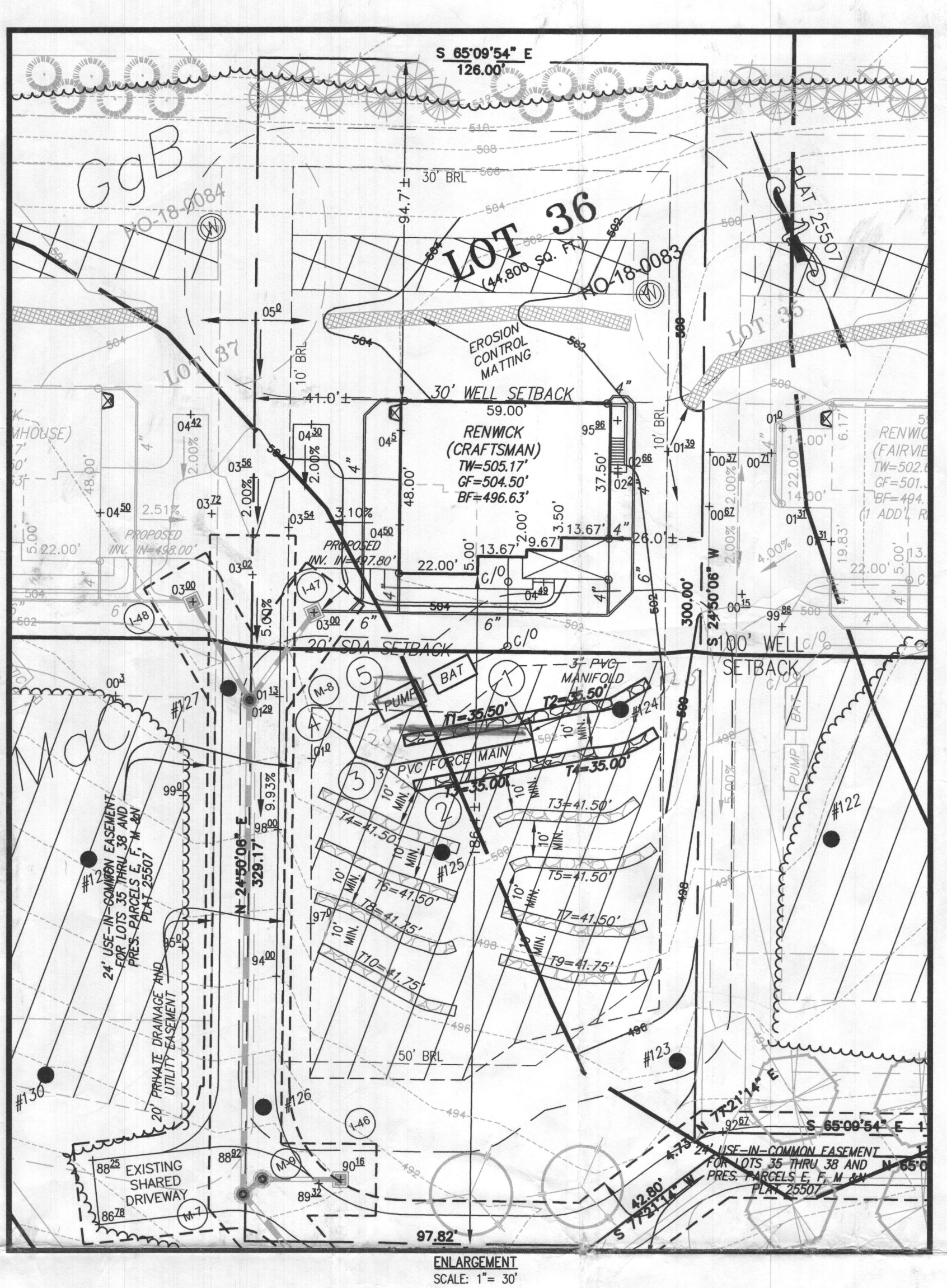
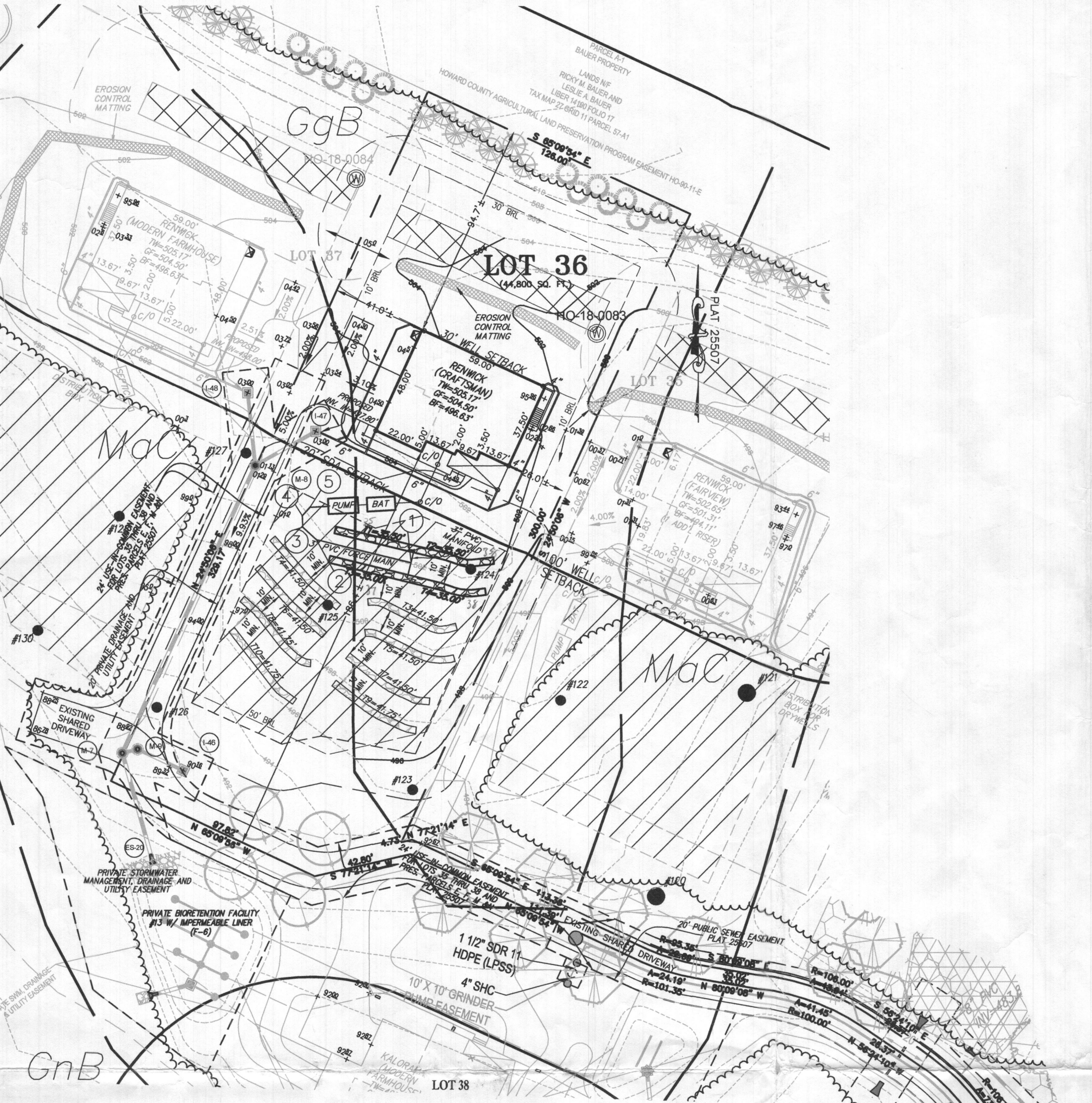
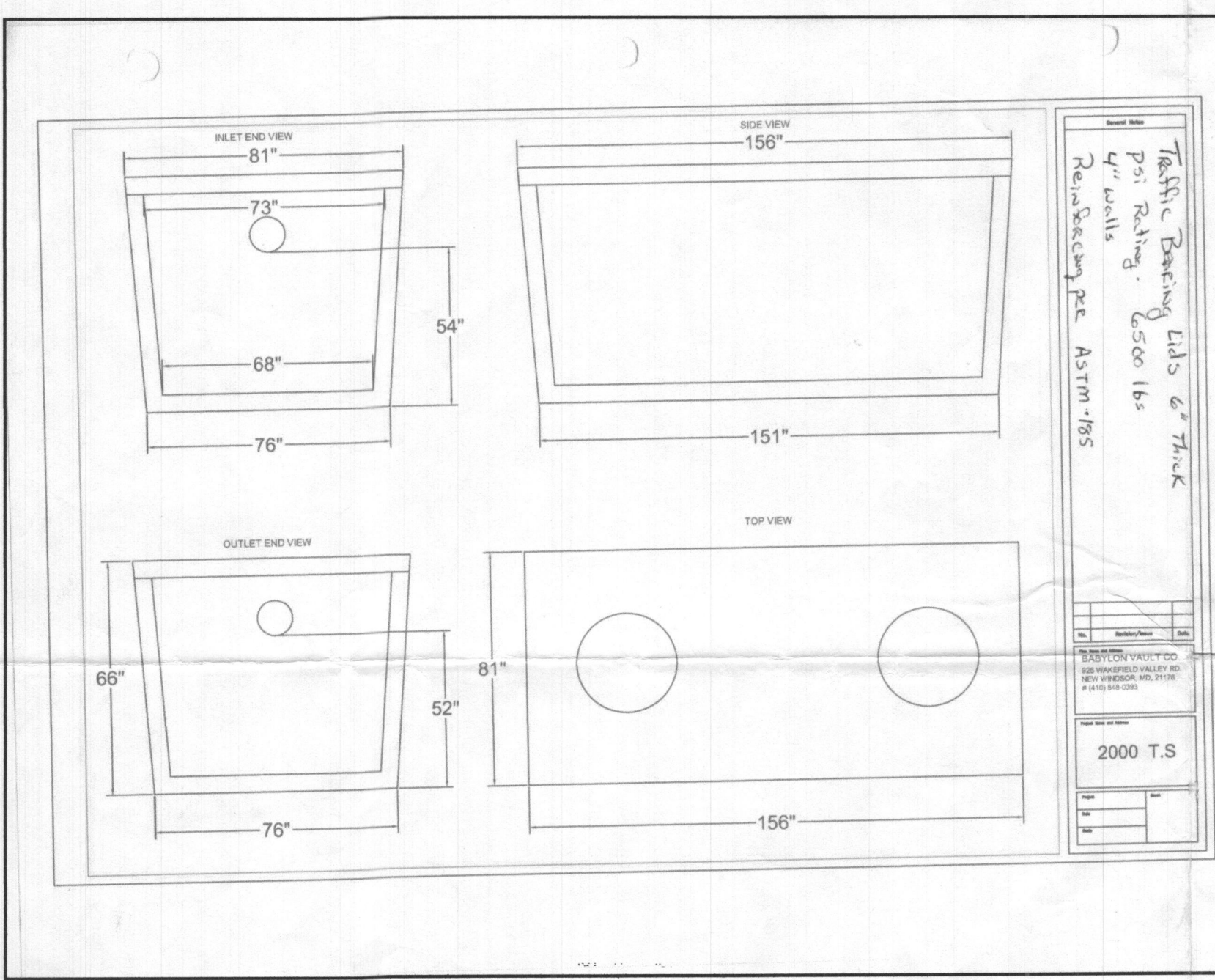
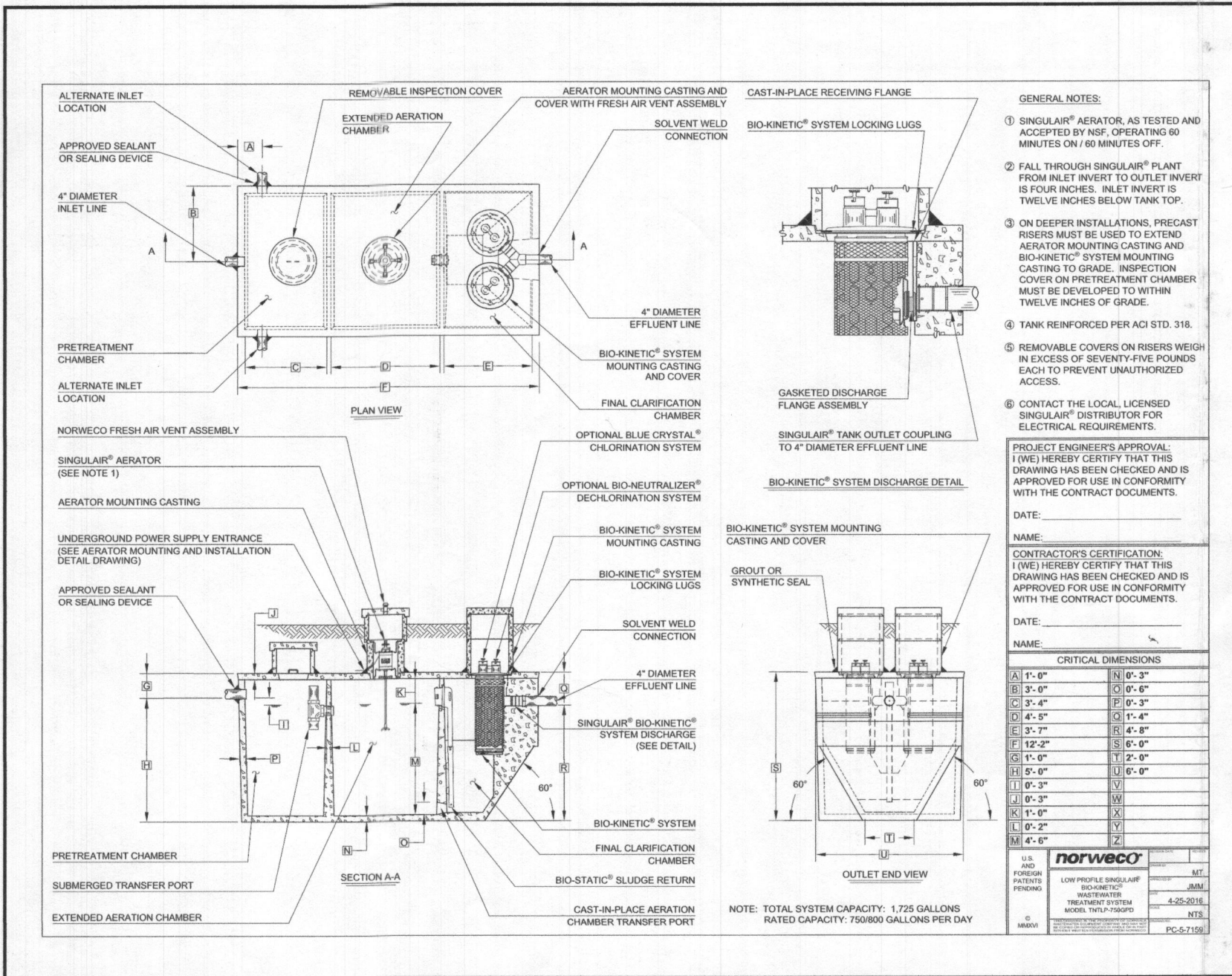
DESIGNED BY:	DRAWN BY:	CHECKED BY:	DATE	REVISION	BY	APPROVED
R.C.K.	R.C.K.	M.A.B.				

SITE PLAN FOR BAT INSTALLATION  
LOT 36  
**WILLOWSHIRE**  
LIBER 18479, FOLD 296  
PLAT No. 25507  
TAX No. 05-603024  
FIFTH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND  
ADDRESS: 7044 COLT PLACE  
DAYTON, MARYLAND 21036

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ENGINEERING • PLANNING • SURVEYING • ENVIRONMENTAL

ESE Consultants, Inc.  
6731 Columbia Gateway Drive • Suite 120 • Columbia, MD 21046  
T: 410-872-9105

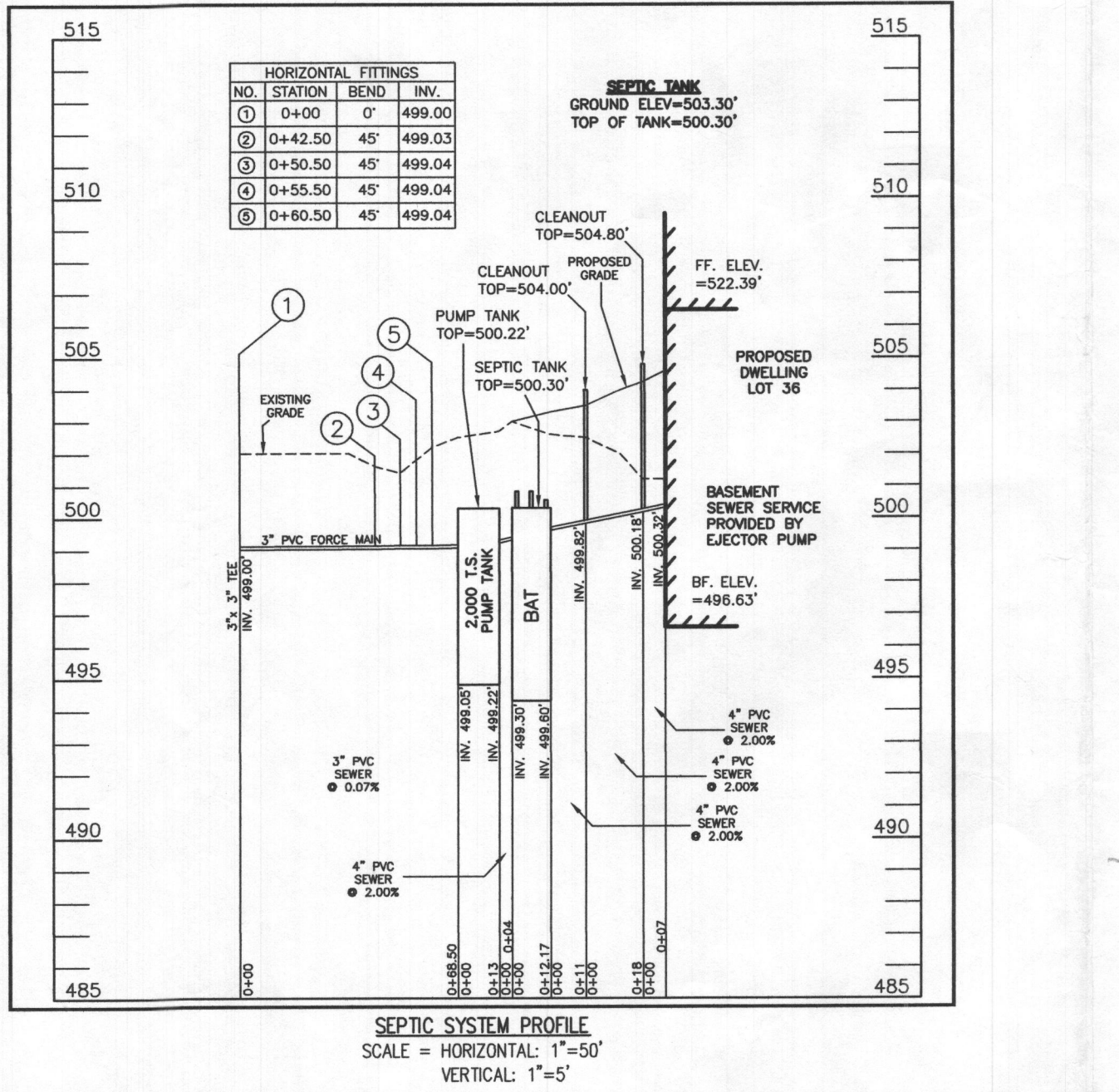
DATE: 09/02/2022 SCALE: 1"=50' FILE: BAT LOT 36  
CHK'D: M.J.B. JOB NO: 4320 DRAWN: R.C.K.



- 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 ENCROACHMENTS INTO THE PRIVATE SEWAGE AREA. RECORDATION OF A MODIFIED SEWAGE AREA SHALL NOT BE NECESSARY.
  - EXISTING WELLS, SEPTIC SYSTEMS, AND SEWAGE DISPOSAL AREAS WITHIN 100' OF THE PROPERTY AND THOSE WELLS 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 SHOWN HEREON AS "2" 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 COMPLIES 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 BOHNER ENGINEERING ON 9/03/15, AND HOWARD COUNTY GIS.
  - 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 BOXES.
  - THE EXISTING WELL FOR LOT 36 (TAG NO. HO-18-0083) HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN HEREON.

- HOUSE OPTIONS:**
- HOUSE TYPE: RENWICK (CRAFTSMAN)
- TWO CAR SIDE ENTRY GARAGE
  - FINISHED LOWER LEVEL
  - DAYLIGHT BASEMENT
  - BEDROOM FINISHED LOWER LEVEL
  - ADDITIONAL BATH
  - ADDITIONAL BATH FINISHED LOWER LEVEL
  - DAYLIGHT WINDOW WELL
- LEGEND:**
- PASSED PERC TEST LOCATION
  - EXISTING WELL LOCATION
  - CLEANOUT
  - TW TOP OF WALL
  - GF GARAGE FLOOR
  - BF BASEMENT FLOOR
  - BRL BUILDING RESTRICTION LINE
  - SSW SEWAGE DISPOSAL AREA
  - SOIL DELINEATION LINE

Approved Septic System Plan  
Howard County Health Department  
*Handwritten Signature*  
Date: 09.28.22



**LOW PRESSURE DISTRIBUTION SYSTEM CALCULATIONS**

NUMBER OF MANIFOLDS = 1 MANIFOLD TYPE = CENTER FEED

TRENCH	TRENCH LENGTH (FT.)	FEED	PIPE INV. ELEV. (FT.)	HEAD (FT.)	HOLE DIA. (IN.)	HOLE FLOW RATE (GPM)	HOLE SPACING (FT.)	# HOLES	TRENCH FLOW RATE (GPM)	LATERAL LENGTH (FT.)	FLOW PER GAL. PER TRENCH (GPM)	LATERAL DIA. (IN.)	TYPE
TRENCH 1 (T1)	35.50'	CENTER	500.90	2	5/16	1.63	4.44	8	13.04	31.06	0.367	1.5	SCH40
TRENCH 2 (T2)	35.50'	CENTER	500.90	2	5/16	1.63	4.44	8	13.04	31.06	0.367	1.5	SCH40
TRENCH 3 (T3)	35.00'	CENTER	500.00	-2.9	5/16	1.99	5.00	7	13.93	30.00	0.398	1.5	SCH40
TRENCH 4 (T4)	35.00'	CENTER	500.00	-2.9	5/16	1.99	5.00	7	13.93	30.00	0.398	1.5	SCH40

MIN. SYSTEM DISCHARGE RATE = 53.94 GPM  
MANIFOLD DIAMETER = 3 IN.  
FORCE MAIN DIAMETER = 3 IN.  
MINIMUM DOSE = 150 GAL.

VELOCITY = 2.34 FPS  
FRICTION LOSS (TABLE 4.4) = 0.81 (FT. IN F.M. MAN. 5/8" LATERAL=96 GAL > 1/8" DESIGN FLOW=900 GPM=150 GAL.)

**CALCULATE TOTAL DESIGN HEAD:**

LENGTH OF FM FROM PUMP TANK TO MANIFOLD = 68.50' (ADD 6' PER BEND) = 24'  
# OF (45°) BENDS IN FM = 4 (ADD 10' PER BEND) = 10'  
# OF (90°) BENDS IN FM = 1  
LENGTH OF MANIFOLD FROM FM TO TRENCHES = 15'  
# OF (45°) BENDS IN MANIFOLD = N/A  
# OF (90°) BENDS IN MANIFOLD = 2 (ADD 10' PER BEND) = 20'  
# OF COUPLINGS (3" TO 1.5") = 2 (ADD 3' PER COUPLING) = 6'  
TOTAL LENGTHS = 81.50' TOTAL ADD'L LENGTHS = 60' TOTAL PIPE/FRICITION LOSS = 141.50'

OPERATING HEAD = 1.15' FT. (PER ABOVE CALCULATION)  
STATIC HEAD = 2.00' FT. (HIGHEST POINT IN DISTRIBUTION SYSTEM - PUMP OFF FLOOR ELEVATION)  
TOTAL DYNAMIC HEAD = 4.12' FT. (FRICTION HEAD + OPERATING HEAD + STATIC HEAD)

THEREFORE A PUMP CAPABLE OF DELIVERING AT LEAST 53.94 GPM AGAINST 7.27' OF HEAD IS REQUIRED. EPF30M1-20, 3/10 H.P. IS EFFICIENT.

**SOILS LEGEND**

SOIL	NAME	CLASS	Kw
GgB	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	B	.28
M&C	MANOR LOAM, 8 TO 15 PERCENT SLOPES	B	.28

**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)	3.5	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)	2.5	1	3
TRENCH WIDTH "W" (2 OR 3 FEET)	3	3	3
SIDEWALL REDUCTION ((W+2)/(W+10))	0.56	0.83	0.50
LINEAR FEET OF TRENCH REQUIRED (DRAINFIELD AREA X SIDEWALL REDUCTION)/W	140.00	207.50	125.00
TRENCH LAYOUT INFORMATION			
NUMBER OF TRENCHES USED	4	5	3
TOTAL LINEAR FEET USED	141.00	207.50	125.25
MINIMUM TRENCH SPACING	10	10	10

PROFESSIONAL CERTIFICATION:  
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*Handwritten Signature*  
MICHAEL JOE BOYCE

09/03/22  
DATE

DESIGNED BY:	DATE	REVISION
R.C.K.		
DRAWN BY:		
R.C.K.		
CHECKED BY:		
M.A.B.		

SITE PLAN FOR BAT INSTALLATION  
LOT 36  
**WILLOWSHIRE**  
LIBER 18479, FOLIO 296  
PLAT No. 25507  
TAX No. 05-603024  
FIRST ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND  
ADDRESS: 7044 COLT PLACE  
DAYTON, MARYLAND 21036

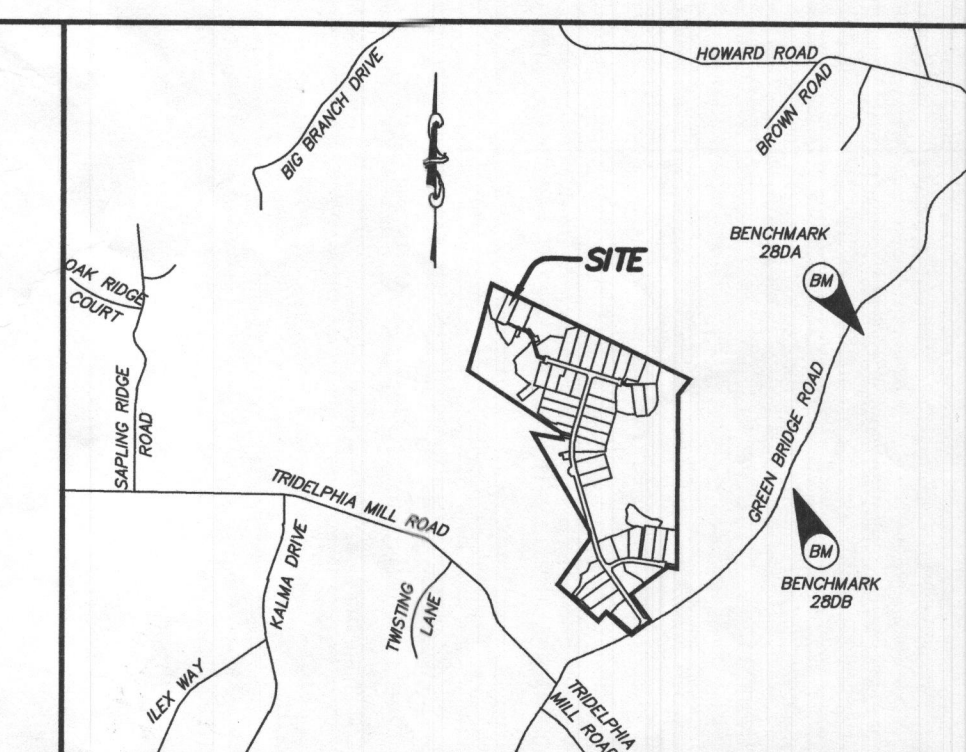
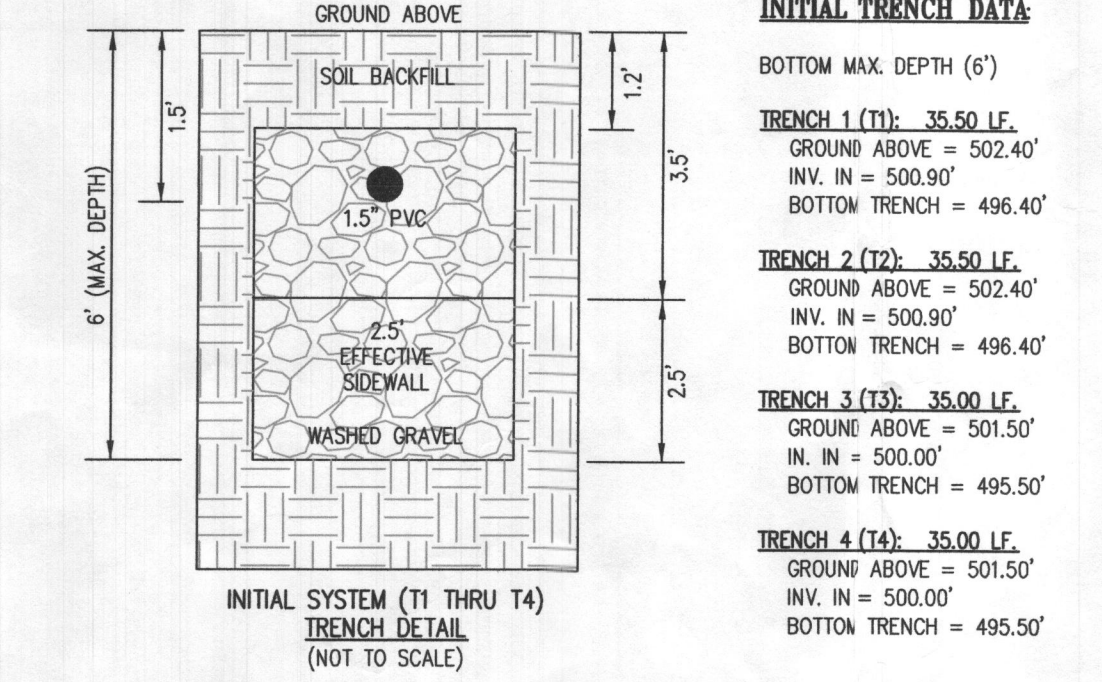
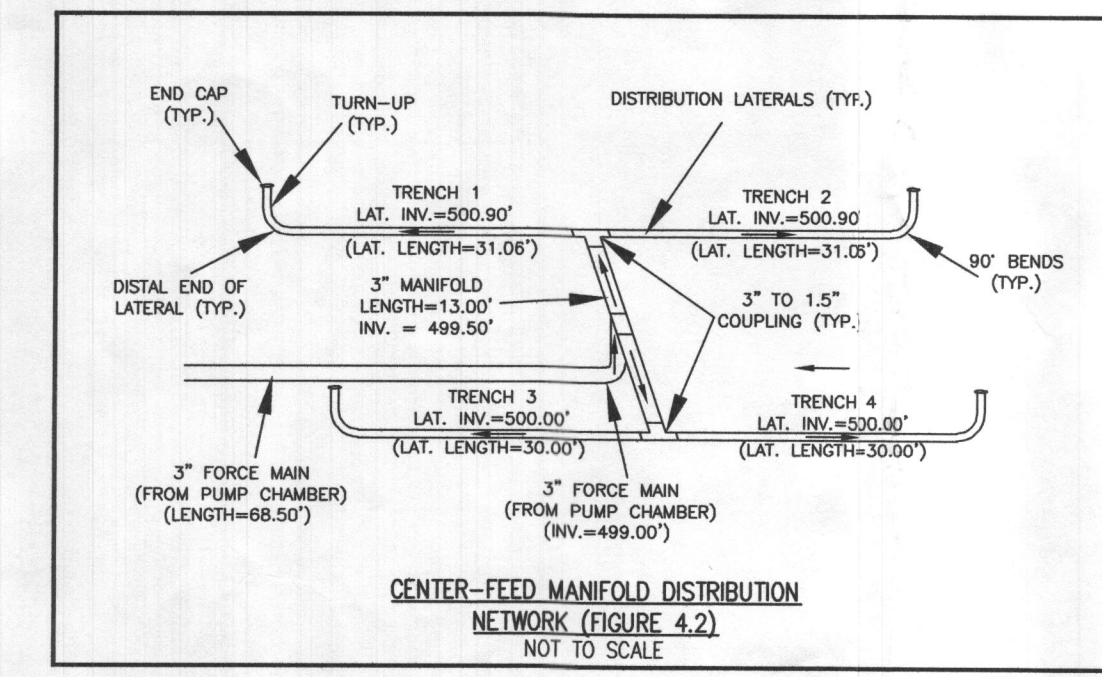
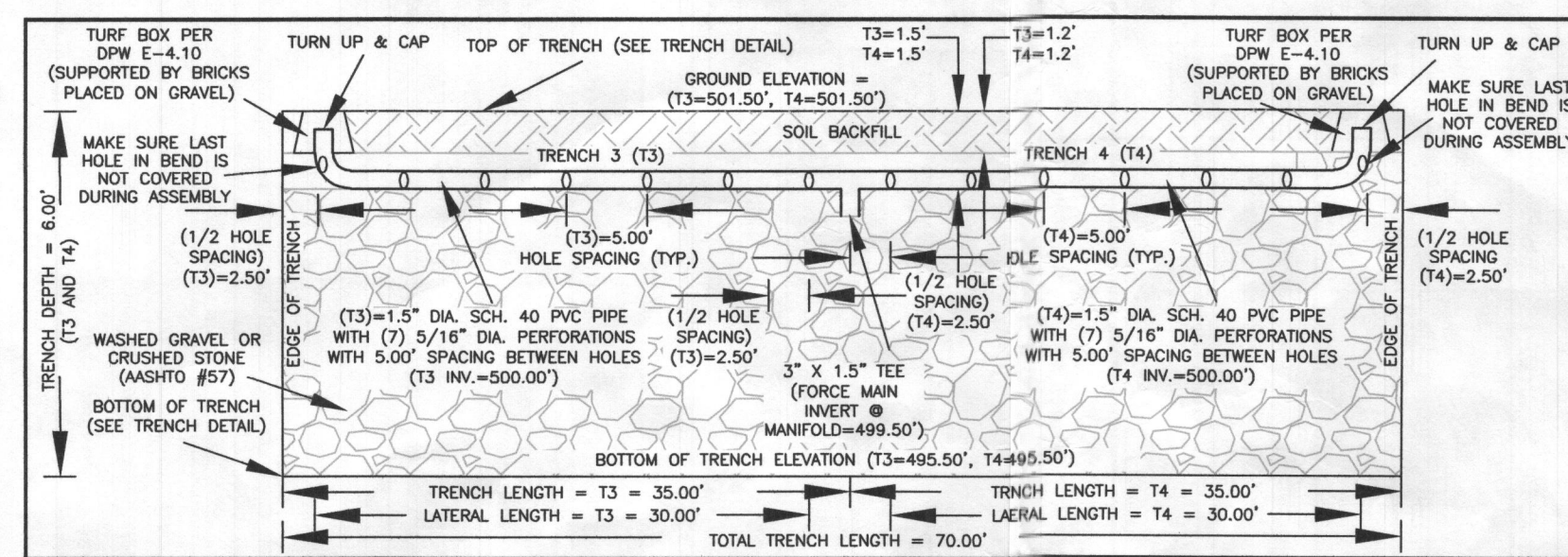
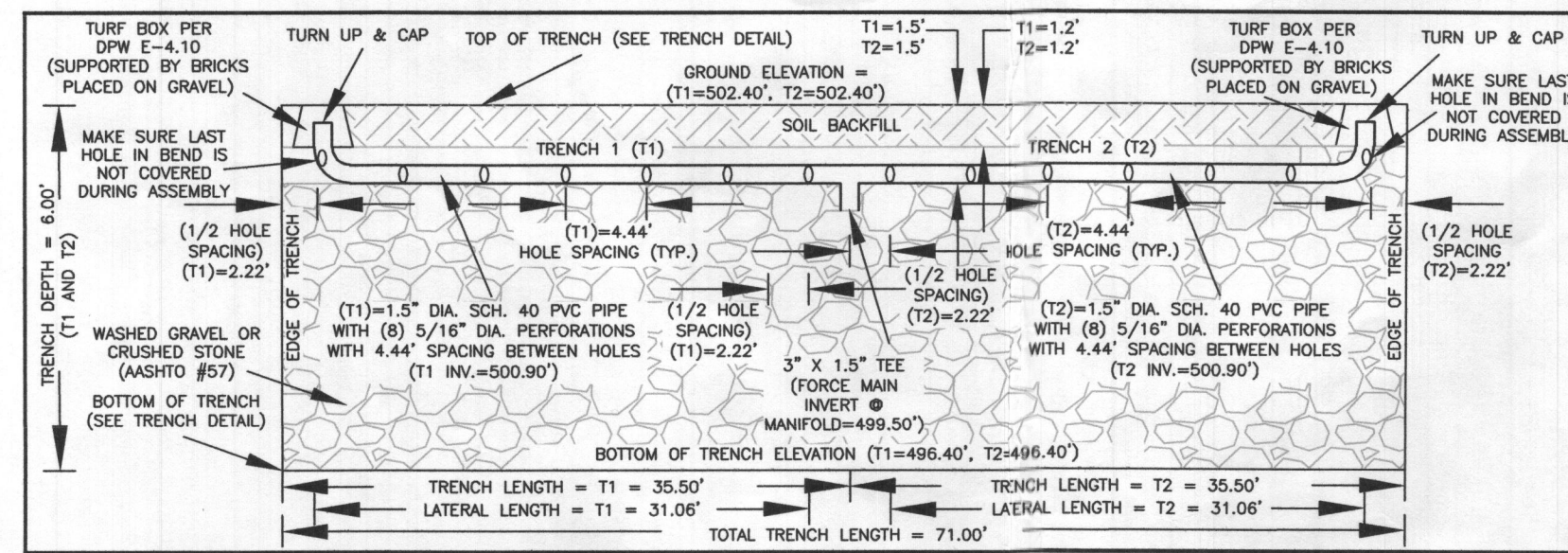
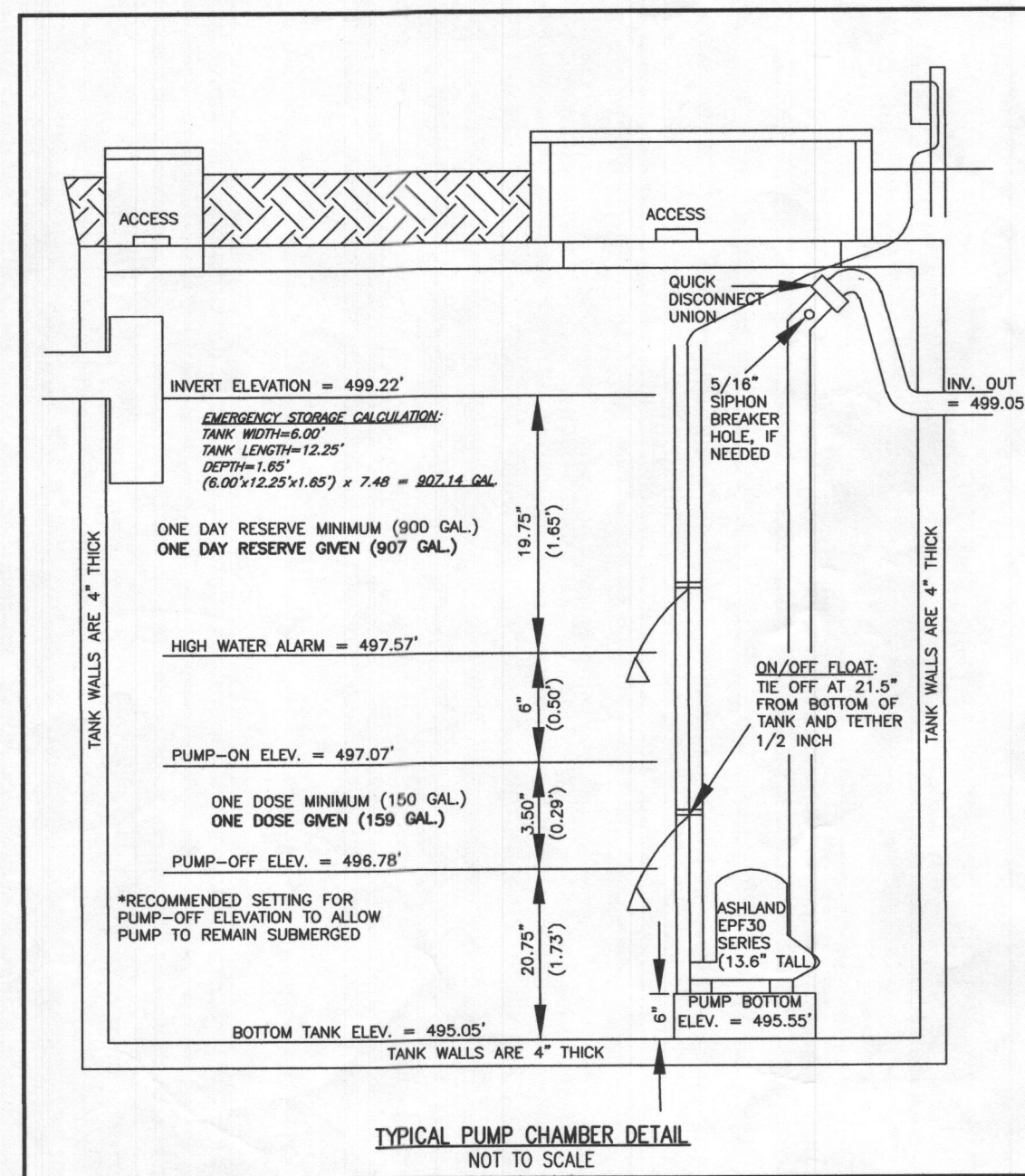
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6731 Columbia Gateway Drive • Suite 120 • Columbia, MD 21046  
T: 410-872-9105

**SHEET 1 OF 2**

DATE: 09/02/2022 SCALE: 1"=40' FILE: BAT LOT 36  
CHK'D: M.J.B. JOB NO: 4520 DRAWN: R.C.K.





VICINITY MAP  
 1" = 2000'  
 TAX MAP 27, GRID 18  
 BENCHMARK 280A  
 N: 570,624.997, E: 1,313,434.228, EL: 564.389'  
 BENCHMARK 280B  
 N: 569,055.561, E: 1,313,795.348, EL: 537.361'

**EFFLUENT PUMPS**  
**Model: EPF30**

**Features:**

- Heavy duty cast iron construction
- 3/16" OF continuous duty steel PFA motor
- Reinforced cast iron upper impeller
- 3" x 3" auto handling
- 7' NPT discharge

**Specifications:**

Model	Capacity (GPM)	Head (ft)	Power (HP)	Discharge (NPT)	Material
EPF30-01	30	10	1/2	3"	Cast Iron
EPF30-02	30	15	3/4	3"	Cast Iron
EPF30-03	30	20	1	3"	Cast Iron
EPF30-04	30	25	1 1/2	3"	Cast Iron
EPF30-05	30	30	2	3"	Cast Iron

**Features:**

- Cast Iron Construction
- Auto Handling
- 3" x 3" PFA Motor
- 7' NPT Discharge
- 3" Dia. Filter
- Cast Iron Construction
- 3" Dia. Filter

**Dimensions:**

**Performance Curve:**

**Ashland PUMP**  
 Honest, Professional, Dependable  
 1899 Cottage Street, Ashland, Ohio 44805  
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*Michael Joe Boyce*  
 MICHAEL JOE BOYCE  
 DATE: 09/03/22



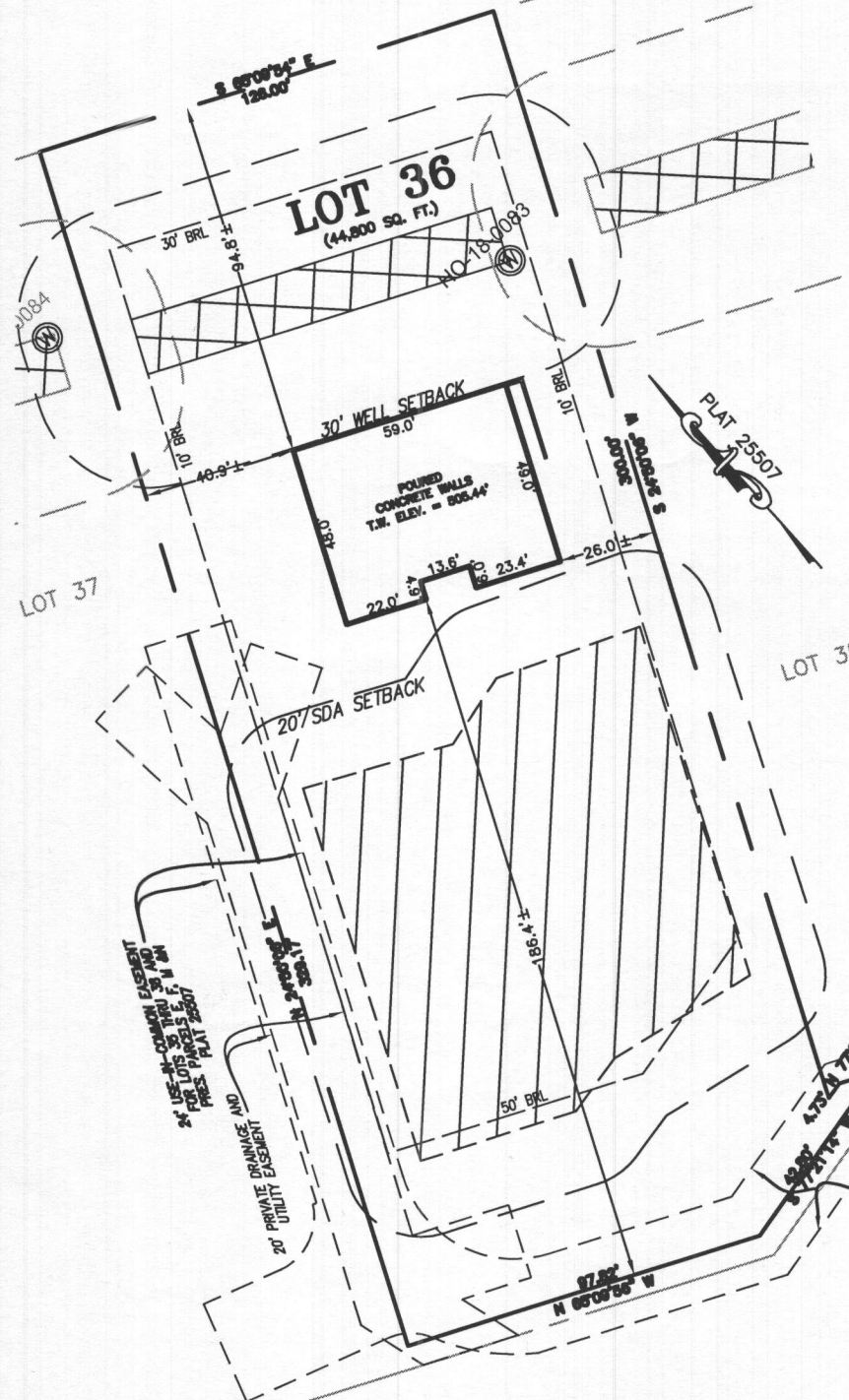
DESIGNED BY:	R.C.K.	DATE:	
DRAWN BY:	R.C.K.	DATE:	
CHECKED BY:	M.J.B.	DATE:	
RECON:		BY:	
APPROVED:		DATE:	

SITE PLAN FOR BAT INSTALLATION  
 LOT 36  
**WILLOWHIRE**  
 LIBER 18479, FOLIAGE 296  
 PLAT No. 25507  
 TAX No. 05-603924  
 FIFTH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND  
 ADDRESS: 7044 COLT PLACE  
 DAYTON, MARYLAND 21036

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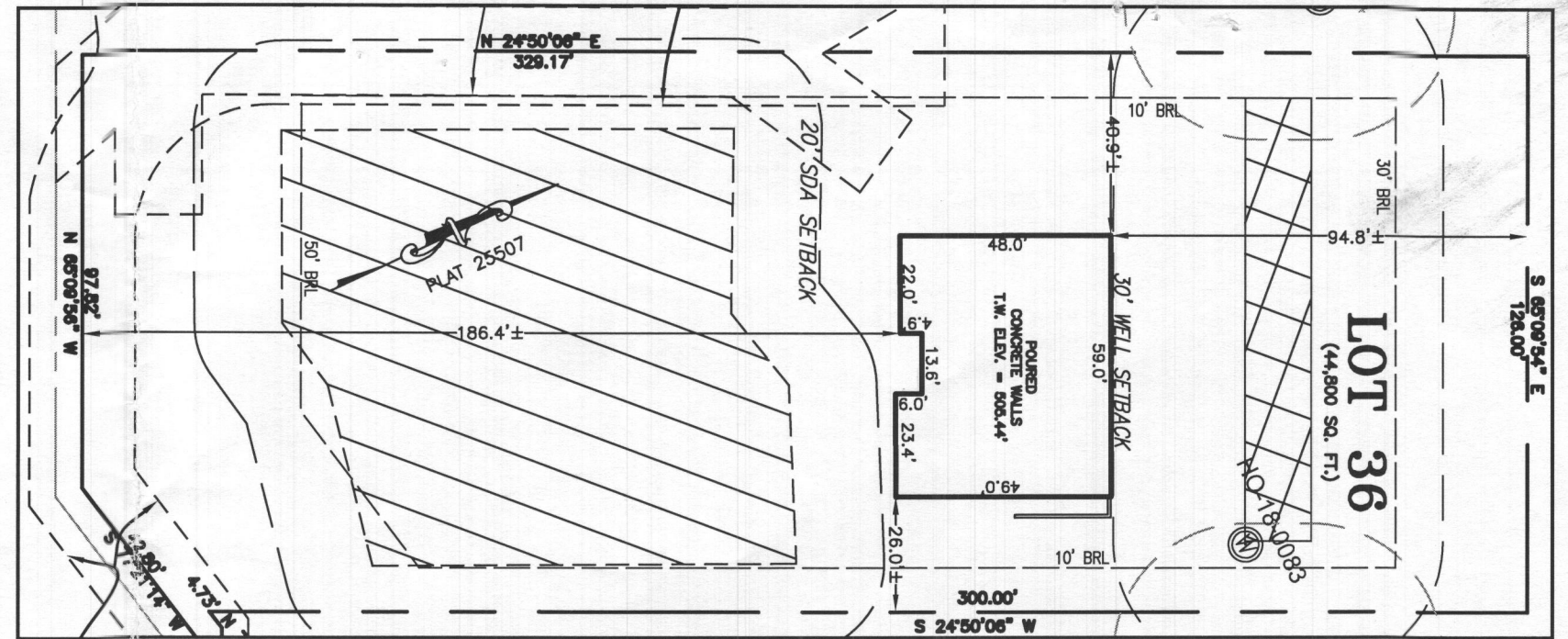
DATE: 09/02/2022 SCALE: 1"=50' FILE: BAT LOT 36  
 CHK'D: M.J.B. JOB NO: 4520 DRAWN: R.C.K.



**LEGEND:**

- BRL BUILDING RESTRICTION LINE
- W.L. WELL LOCATION
- T.W. TOP OF WALL
- SDA SEWAGE DISPOSAL AREA
- W.B.A. WELL BOX AREA

WELL NUMBER: HO-18-0083  
 ADDRESS: 7044 COLT PLACE  
 DAYTON, MD 21036  
 PERMIT No.: B22002738



HOUSE ENLARGEMENT  
 SCALE 1" = 40'

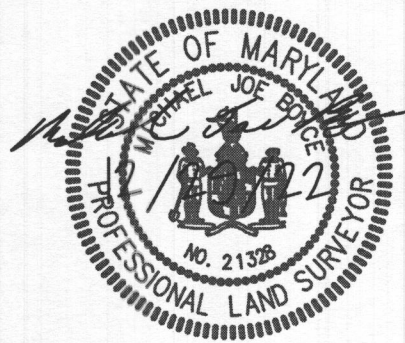
*Wall Check  
 OK  
 RJE 11/13/23*

BUILDING SETBACKS (B.R.L.'s) SHOWN HEREON PER SITE DEVELOPMENT PLAN  
 SETBACK DISTANCES SHOWN HEREON AS "±" HAVE AN ACCURACY OF ±0.1' FOOT.

**SURVEYOR'S CERTIFICATE**

THIS WALLCHECK WAS PREPARED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT. THIS PROPERTY IS SUBJECT TO ANY AND ALL EASEMENTS, RIGHT-OF-WAYS, COVENANTS, AND RESTRICTIONS, ETC. OF RECORD, SOME OR ALL OF WHICH MAY OR MAY NOT BE SHOWN AND/OR REFERENCED HEREON. BEARINGS AND DISTANCES OF THE PROPERTY BOUNDARY LINES SHOWN HEREON ARE PER AVAILABLE RECORDS AND HAVE NOT BEEN FIELD VERIFIED.  
**THIS IS NOT A "LOCATION DRAWING" AND IS NOT TO BE USED FOR SETTLEMENT PURPOSES.**

*Michael Joe Boyce* 21328 12/29/22  
 SIGNATURE: MICHAEL JOE BOYCE MD. LIC NO. DATE



WALLCHECK  
 LOT 36  
**WILLOWSHIRE**  
 LIBER 18479, FOLIO 296  
 PLAT NO. 25507  
 5th ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

**ESE CONSULTANTS**

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 6731 Columbia Gateway Drive • Suite 120 • Columbia, MD 21046  
 T: 410-872-9105

DATE: 12/22/2022 SCALE: 1" = 50' FILE: WC LOT 36  
 CHK'D: M.J.B. JOB NO: 4520 DRAWN: V.X.P.