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ENGINEERING · PLANNING · SURVEYING · ENVIRONMENTAL

TRANSMITTAL

Attention:	Jeff Williams / Dana Bernard / <i>Kevin Wolf</i>	Date	12/06/2022
Address:	8930 Standford Blvd - Columbia, MD 21045	Project Number:	3502
Phone Number:	410-313-2691	Project Name:	Kings Forest

We are sending you: ☒ Attached ☐ Under Separate Cover

VIA: ☒ US Mail ☐ Courier/Delivery ☐ Overnight Carrier ☐ Interoffice Mail ☐ Pick-up
☐ Other

The following items: ☒ Prints/Plans ☐ Specifications ☐ Disk
☐ Other _____

No. of Copies	Date	No.	Description
1	11/22/2022	1	Redline BAT Plan Lot 28
1	12/06/2022	1	Email from Kevin about Redline BAT Lot 28
1	11/23/2022	1	Email from Kevin about Redline BAT Lot 28 (Approval Email)

These are Transmitted: ☒ For approval ☐ For your use ☐ As Requested
☐ For review and Comment ☐ Other _____

Remarks: Please find attached the submittal package for review and approval of the Redline BAT Plan for Lot 28 at Kings Forest. This plan had to be redline to meet the field conditions per installer, this was approved by Email on 11/23/22. Any questions or comments please contact us as soon as possible. Thank you!

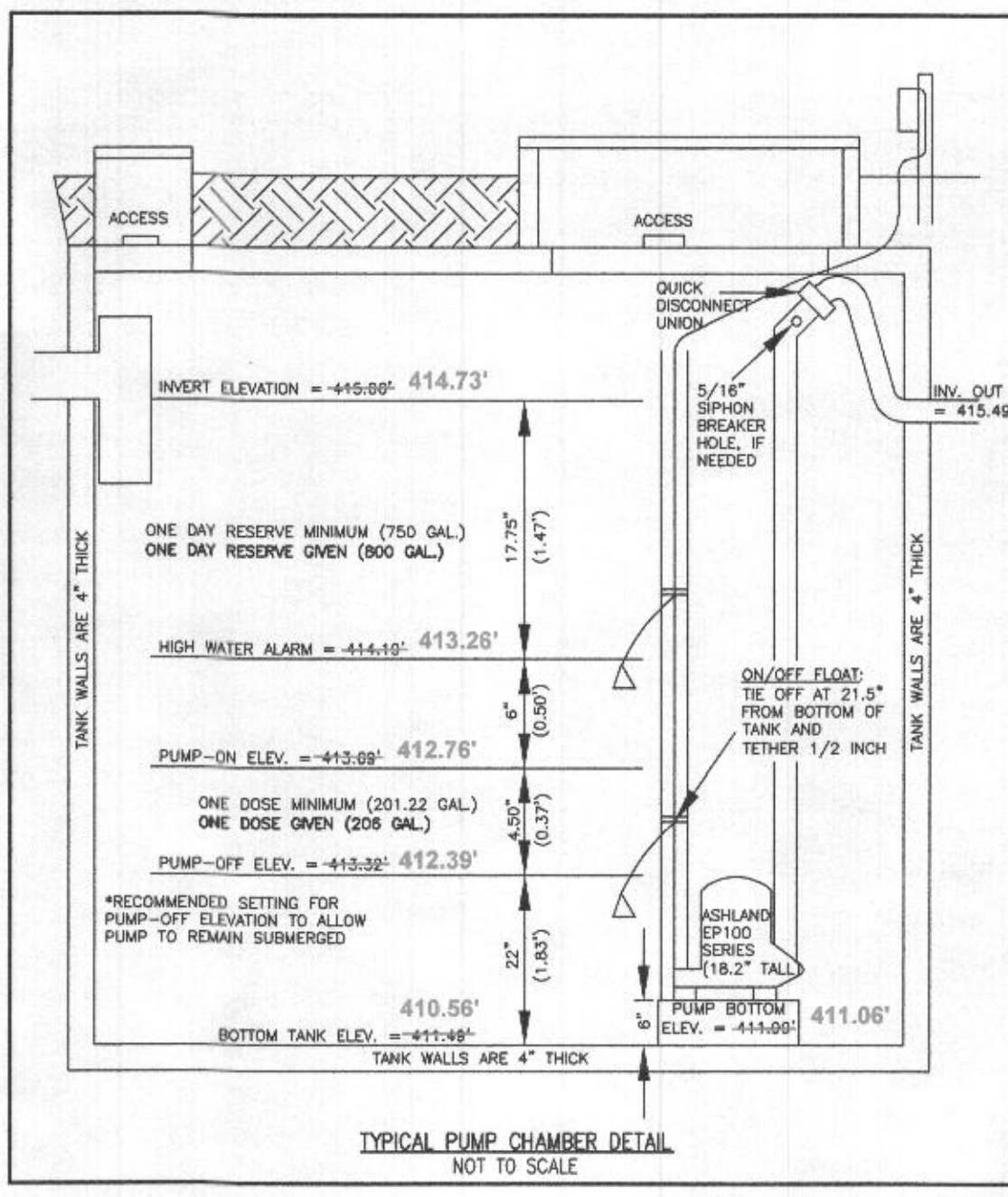
Signed: _____


















































































Ryan Ketner
ESE Consultants, Inc.

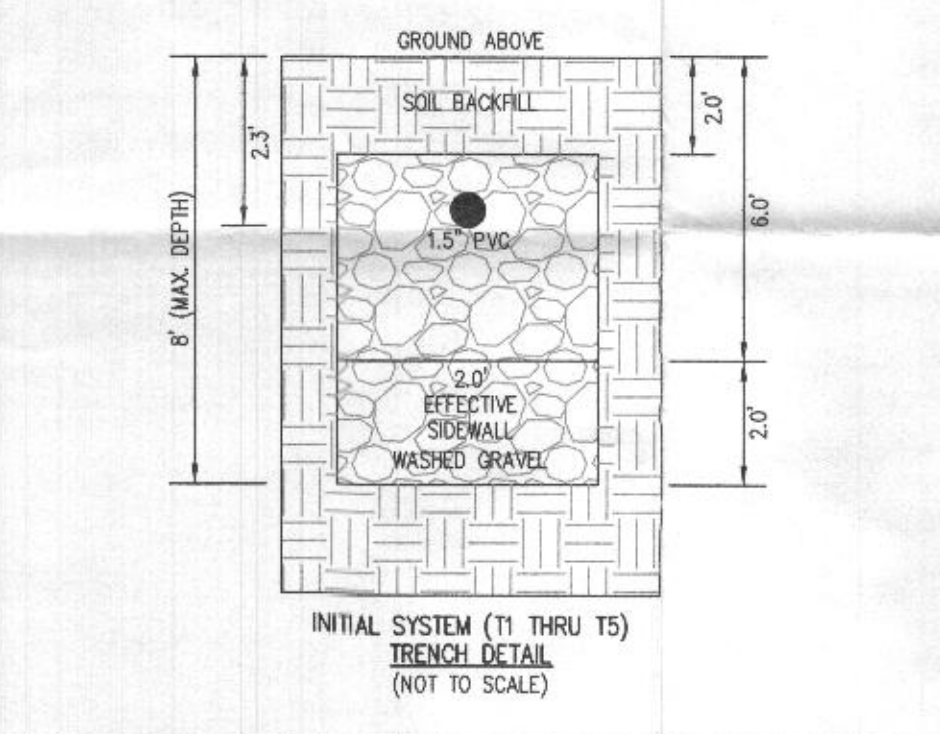
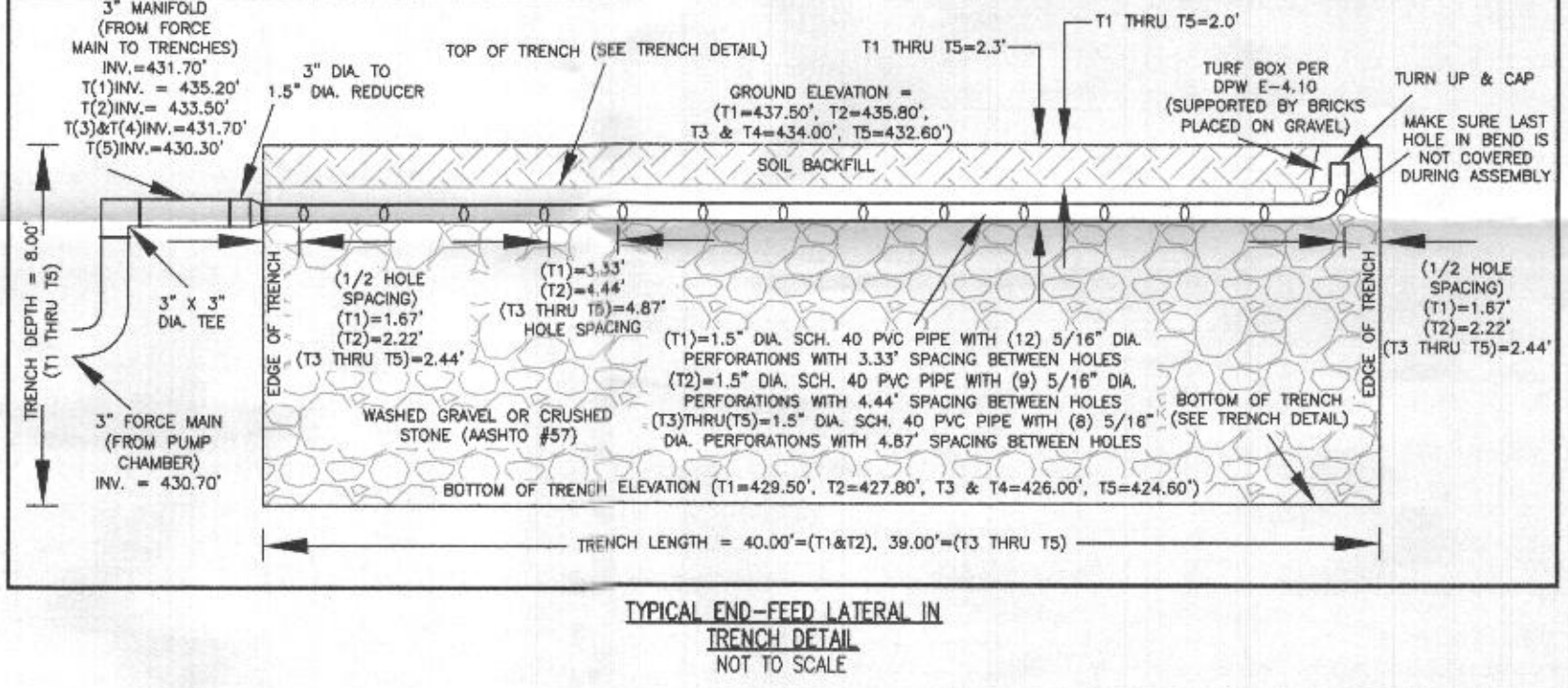
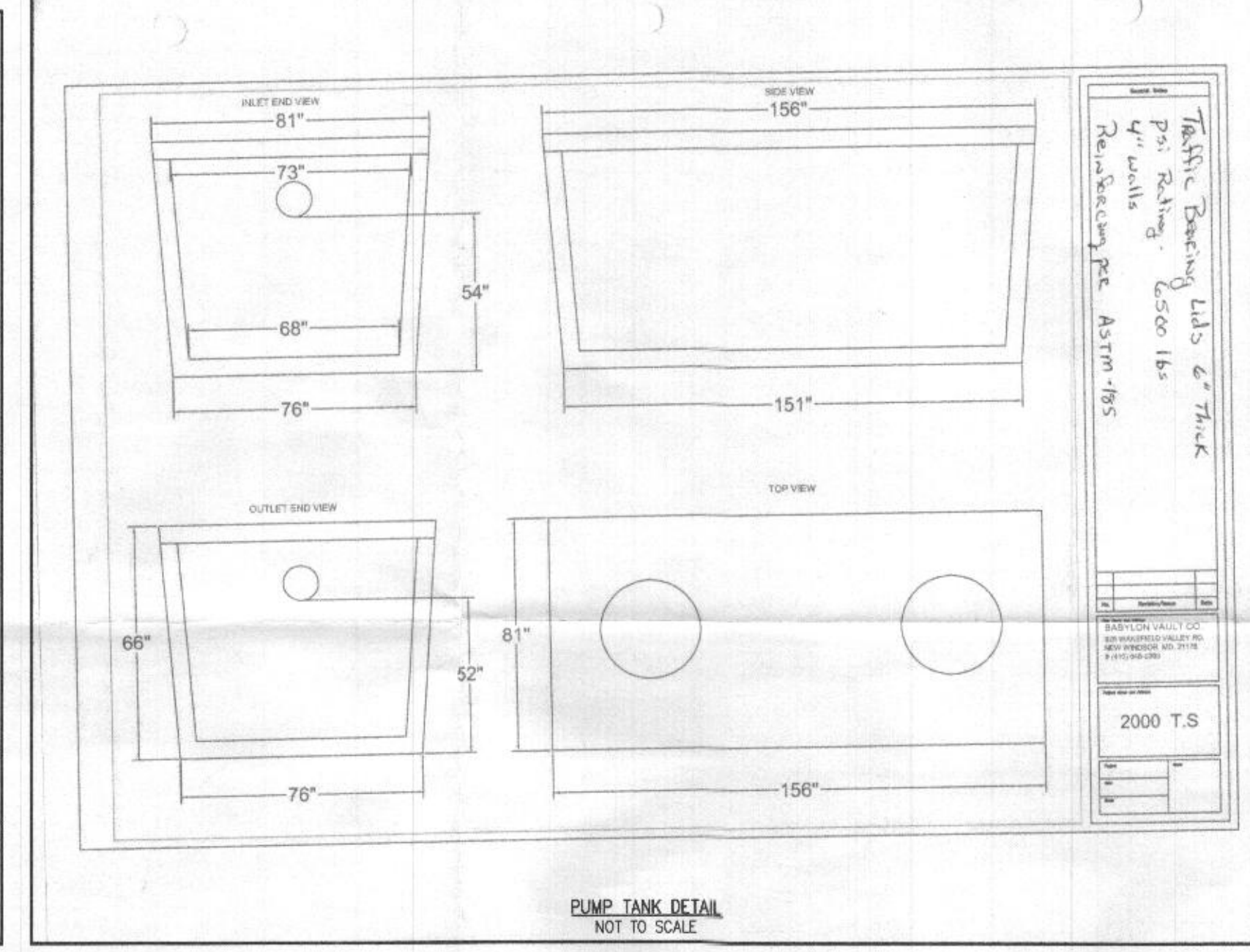
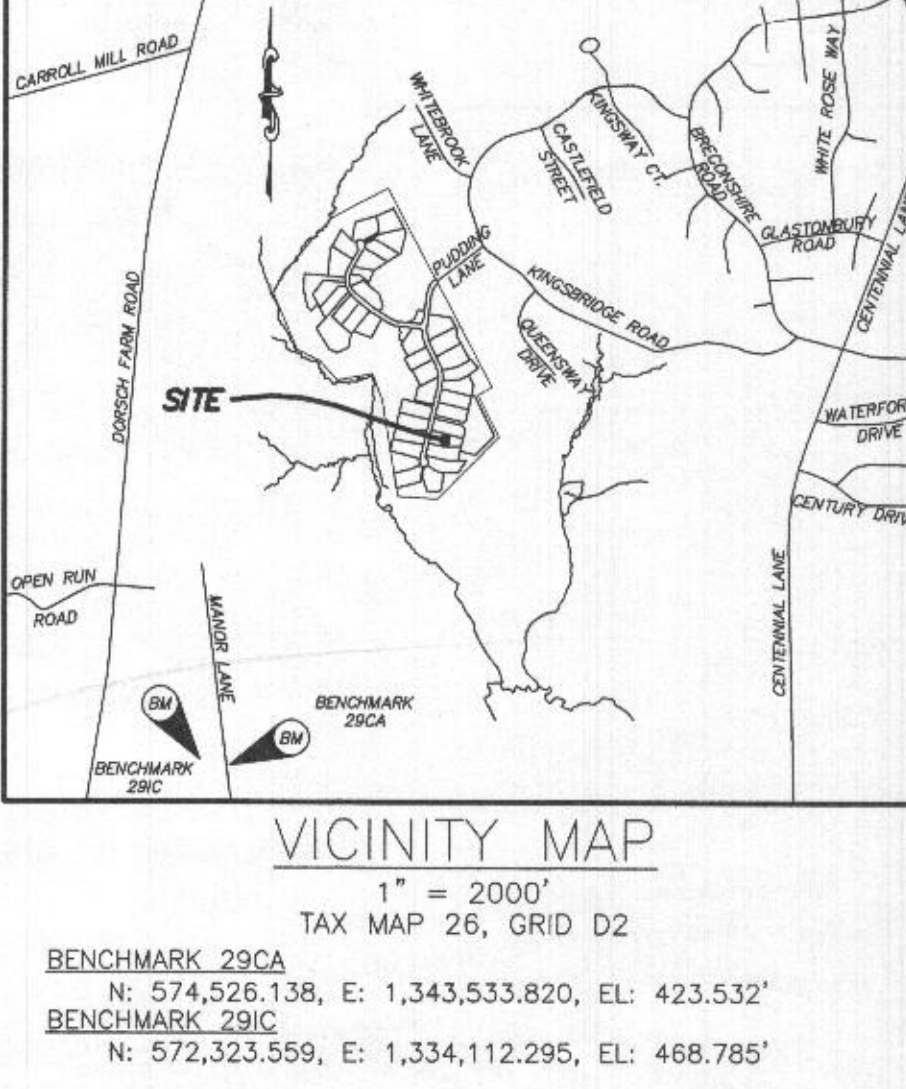
10537 Pudding Ln.

CC:

If enclosures are not as noted, please notify us.



HOUSE OPTIONS:		LEGEND:
<u>HOUSE TYPE: PARKHURST (FAIRVIEW)</u>		
INTERIOR WET BAR	OPTION No. 003	BOL
FINISHED LOFT	OPTION No. 007	
TWO CAR SIDE ENTRY GARAGE	OPTION No. 012	T.W.
WALK-OUT BASEMENT	OPTION No. 016	G.F.
OPTIONAL DROP ZONE	OPTION No. 017	B
OPTIONAL ONE CAR FRONT ENTRY GARAGE-14'	OPTION No. 263/081	 
OUTDOOR LIVING DECK-WALK-OUT	OPTION No. 263/032	 
	OPTION No. 263/159	
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
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INITIAL TRENCH DATA

BOTTOM MAX. DEPTH (8')

TRENCH 1 (71') 40.00 FL'
GROUND ABOVE = 437.50' 437.95'
INV. IN = 435.20' 435.74'
BOTTOM TRENCH = 429.56' 430.68'

TRENCH 2 (72') 40.00 FL'
GROUND ABOVE = 436.80' 436.42'
INV. IN = 433.50' 434.03'
BOTTOM TRENCH = 427.89' 427.74'

TRENCH 3 (73') 39.00 FL'
GROUND ABOVE = 434.30' 434.70'
INV. IN = 431.00' 431.53'
BOTTOM TRENCH = 426.69' 425.80'

TRENCH 4 (74') 38.00 FL'
GROUND ABOVE = 434.40' 435.17'
INV. IN = 431.70' 433.38'
BOTTOM TRENCH = 428.03' 428.03'

TRENCH 5 (75') 39.00 FL'
GROUND ABOVE = 435.60' 433.16'
INV. IN = 430.30' 430.75'
BOTTOM TRENCH = 424.66' 424.87'

3. THE BAT SYSTEM SHALL BE MAINTAINED AND OPERATED FOR THE LIFE OF THE BAT SYSTEM.

10. THE BAT SYSTEM SHALL BE OPERATED BY AND MAINTAINED BY A CERTIFIED SERVICE PROVIDER.

11. 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 APPROPRIATE TO MDE, THE ADDRESS AND DATE OF COMPLETION OF THE BAT INSTALLATION AND THE TYPE OF BAT INSTALLED.

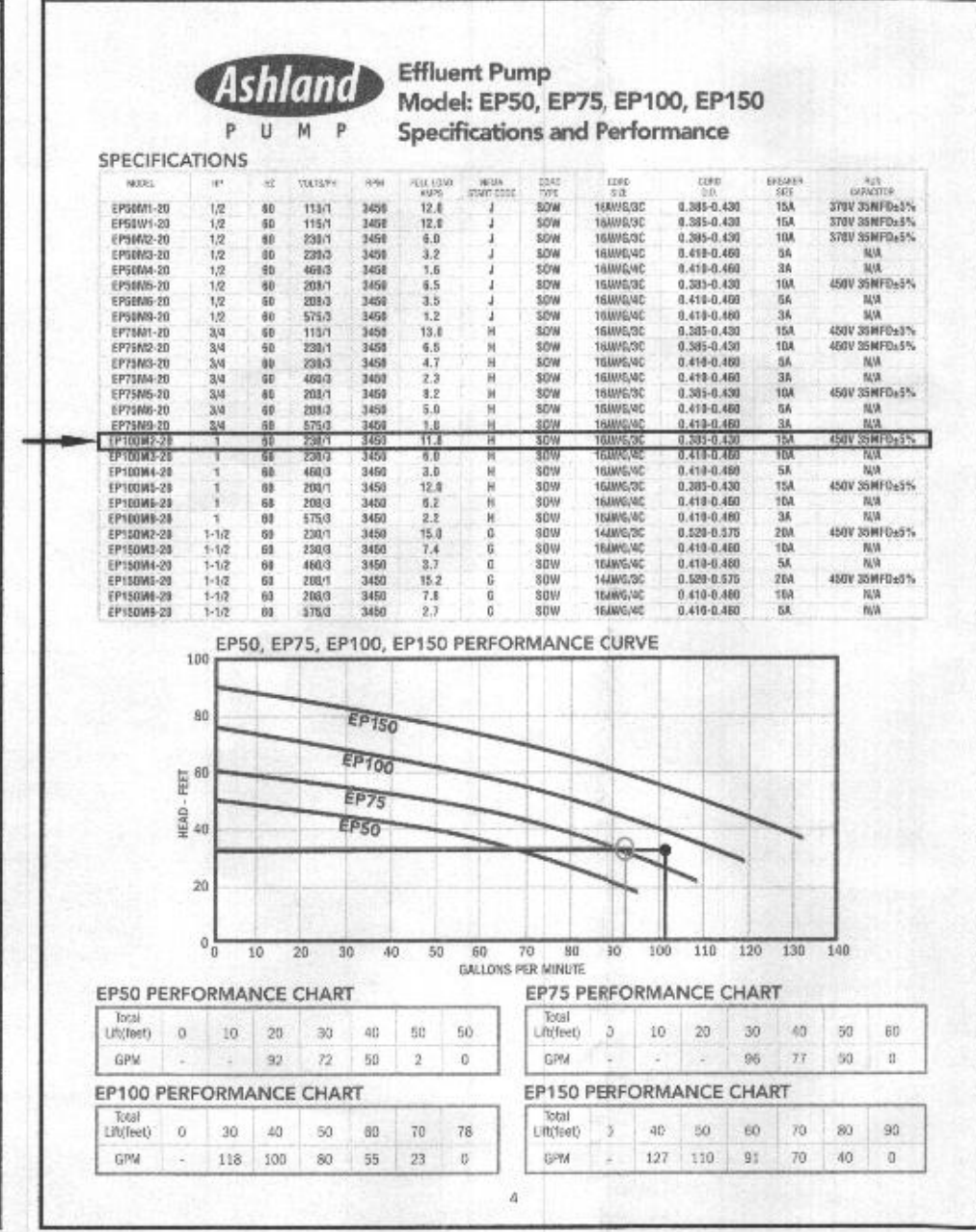
12. ELECTRICAL WORK FOR THE BAT INSTALLATION MUST BE PERFORMED BY A LICENSED ELECTRICIAN.

13. AN AGREEMENT AND EASEMENT MUST BE COMPLETED AND SIGNED BY ALL APPLICABLE PARTIES, AND RECORDED IN THE LAND RECORDS OF HOWARD COUNTY.

14. THE HEALTH DEPARTMENT REQUIRES DOCUMENTATION FOR THE START-UP CERTIFICATION FROM THE MANUFACTURER PRIOR TO THE FINAL APPROVAL OF THE BAT INSTALLATION.

15. 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 TRIP BUCKS.

16. THE EXISTING WELL FOR LOT 28 (TAG NO. HO-18-0157) HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN HEREIN.



LOW PRESSURE DISTRIBUTION SYSTEM CALCULATIONS

NUMBER OF MAINFOLDS = 1 MAINFOLD TYPE = END FEED

DESIGN FLOW = 750 GPD
PUMP OFF ELEV. = 413.32' 412.39'
INV. OUT PUMP TANK = 415.49'
PUMP BOTTOM ELEV. = 414.99' 410.56'
PUMP SELECTED = 1 HP

MAINFOLD LENGTH = 189.00' TYPE=SCH40
FORCEMAIN LENGTH = 6.00' TYPE=SCH40

TRENCH	TRENCH LENGTH (FT)	FEED	PIPE INV. ELEV. (FT)	HEAD (FT)	HOLE DIA. (IN.)	FLOW RATE (GPM)	HOLE SPACING (FT)	#HOLES	TRENCH FLOW RATE (GPM)	LATERAL LENGTH (FT)	FLOW PER GAL. PER LF TRENCH IF TRENCH		LATERAL DIA. (IN.)	TYPE
											LF TRENCH	LF TRENCH		
1	40.00'	END	-435.26	2.5	5/8	-1.83 1.41	3.33	12	-19.56 16	0.23667	-0.533	4.233	1.5	SCH40
2	40.00'	END	-435.55	2.9	7/8	-2.56 1.99	4.44	9	-20.76 17	0.13778	-0.548	4.448	1.5	SCH40
3	39.00'	END	-435.76	2.4	5/8	-2.62 2.94	4.87	8	-20.56 17	0.23656	-0.560	5.001	1.5	SCH40
4	39.00'	END	-436.76	3.5	5/8	-2.29 2.15	4.87	8	-20.56 17	0.23656	-0.560	4.441	1.5	SCH40
5	39.00'	END	-436.39	3.0	5/8	-2.57 2.47	4.87	8	-20.56 17	0.23656	-0.562	5.577	1.5	SCH40

MIN. SYSTEM DISCHARGE RATE = -101.94 GPM 92.11
MAINFOLD DIAMETER = 3" IN.
FORCE MAIN DIAMETER = 3" IN.
MINIMUM DOSE = 201.22 GAL.

VELOCITY = 4.42 FPS
VELOCITY = 4.42 FPS
(VOL. IN FM, MAN. 5x LATERAL=201.22 GAL > 1/8" DESIGN FLOW=750/50=150 GAL)

CALCULATE TOTAL DESIGN HEAD

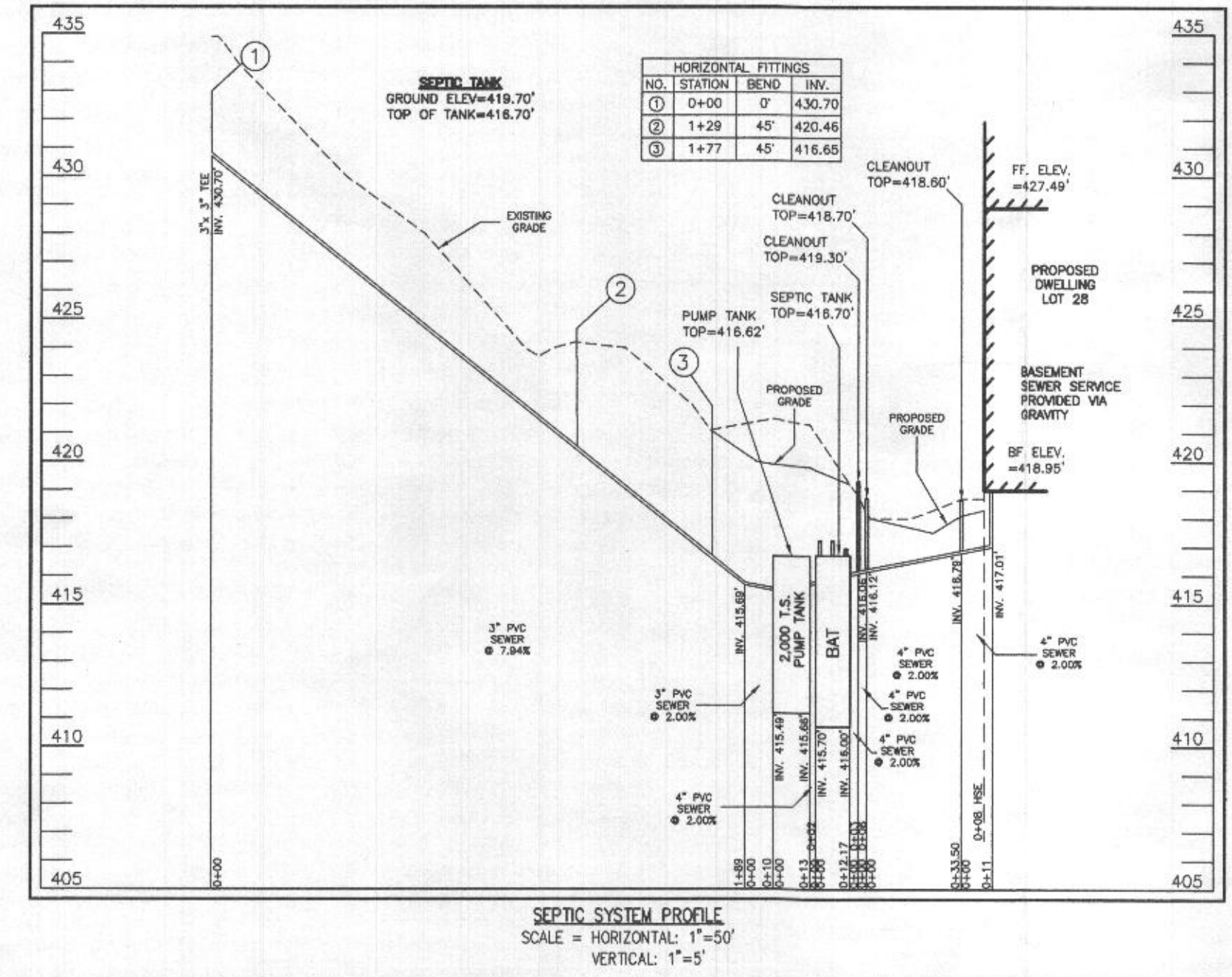
LENGTH OF FM FROM PUMP TANK TO MAINFOLD = 189.00'
OF (45°) BENDS IN FM = 4
OF (90°) BENDS IN FM = N/A
LENGTH OF MAINFOLD FROM FM TO TRENCHES = 53.00' (6.00' MAINFOLD + 47.00' (LONGEST 1/2" PIPE FROM MAINFOLD TO TRENCH 4))
OF (45°) BENDS IN TRENCHES = 4
OF (90°) BENDS IN MAINFOLD = 3
OF COUPLINGS (5' TO 1.5') = 5
TOTAL LENGTHS = 242.00'
((101.94 GPM OF 3" PIPE = 2.09 PER 100' PIPE); 209 / 100' = 0.0209 x 335.00' = 7.002')

(ADD 6° PER BEND) = 24'
(ADD 10° PER BEND) = N/A
(ADD 6° PER BEND) = 24'
(ADD 10° PER BEND) = 30'
(ADD 3" PER COUPLING) = 15'
TOTAL ADD'L LENGTHS = 83'
FRICITION LOSS = 335.00'

FRICITION HEAD = 7.00' FT. (PER ABOVE CALCULATION)
OPERATING HEAD = 2.00' 1.50' FT.
STATIC HEAD = 28.88' 31.35' FEET. (HIGHEST POINT IN DISTRIBUTION SYSTEM - PUMP OFF FLAT ELEVATION)
TOTAL DYNAMIC HEAD = 35.88' 31.35' FEET. (FRICITION HEAD + OPERATING HEAD+ STATIC HEAD)

92.11
31.35'

THEREFORE A PUMP CAPABLE OF DELIVERING AT LEAST 101.94 GPM AGAINST 35.88' OF HEAD IS REQUIRED.
EP100M2-20, 1 H.P. IS EFFICIENT



SEPTIC TRENCH SIZE CALCULATIONS			
SYSTEM INPUT INFORMATION	INITIAL SYSTEM	1ST REPLACEMENT SYSTEM	2ND REPLACEMENT SYSTEM
APPLICATION RATE (GPN)	0.8	0.6	0.6
EFFECTIVE AREA BEGINNING DEPTH (GWN)	6	5	5
BOTTOM MAXIMUM DEPTH (GWN)	8	8	8
NUMBER OF BEDROOMS	5	5	5
DESIGN FLOW (@ 150 GAL./DAY/BEDROOM)	750	750	750
ABSORPTION TRENCH CALCULATIONS			
DRAINFIELD AREA REQUIRED (DESIGN FLOW/APP. RATE)	875	1,250	1,250
EFFECTIVE SIDEWALL DEPTH "D" (DEPTH BETWEEN THE EFFECTIVE BEGINNING DEPTH OR PIPE DEPTH (WHICHEVER IS DEEPER) AND MAX. TRENCH BOTTOM	2	3	3
TRENCH WIDTH "W" (2 OR 3 FEET)	3	3	3
SIDEWALL REDUCTION $(W+2)/(W+1+20)$	0.63	0.50	0.50
LINEAR FEET OF TRENCH REQUIRED (DRAINFIELD AREA X SIDEWALL REDUCTION)/W	196.88	208.34	208.34
TRENCH LAYOUT INFORMATION			
NUMBER OF TRENCHES USED	5	4	3
TOTAL LINEAR FEET USED	197.00	209.00	208.50
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'			

DATE	COMMITTEE	BY	APPROVED
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SITE PLAN FOR BAT INSTALLATION
LOT 28
KINGS FOREST
LIBER 11372, FOLIO 431
PLAT No. 25767
TAX No. 03-603438
2nd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
ADDRESS: 10537 PUDDING LANE
ELLIOTT CITY, MARYLAND 21042

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