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 X ON THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP OF HOWARD COUNTY, MARYLAND, COMMUNITY PANEL No. 24027C0055D EFFECTIVE NOV. 6, 2013.
3) THE OFFSETS FROM BUILDING LINE TO PROPERTY LINE AS SHOWN ON THE PLAT HEREON ARE TO AN ACCURACY OF PLUS OR MINUS 0.5'.
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-17-0316 HAS BEEN FIELD LOCATED BY FISHER, COLLINS AND CARTER, INC. PROFESSIONAL LAND SURVEYORS AND IS ACCURATELY SHOWN.
6) 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. 339, EXPIRATION DATE 10/04/2022.
9) BUILDING PERMIT #B-20004289

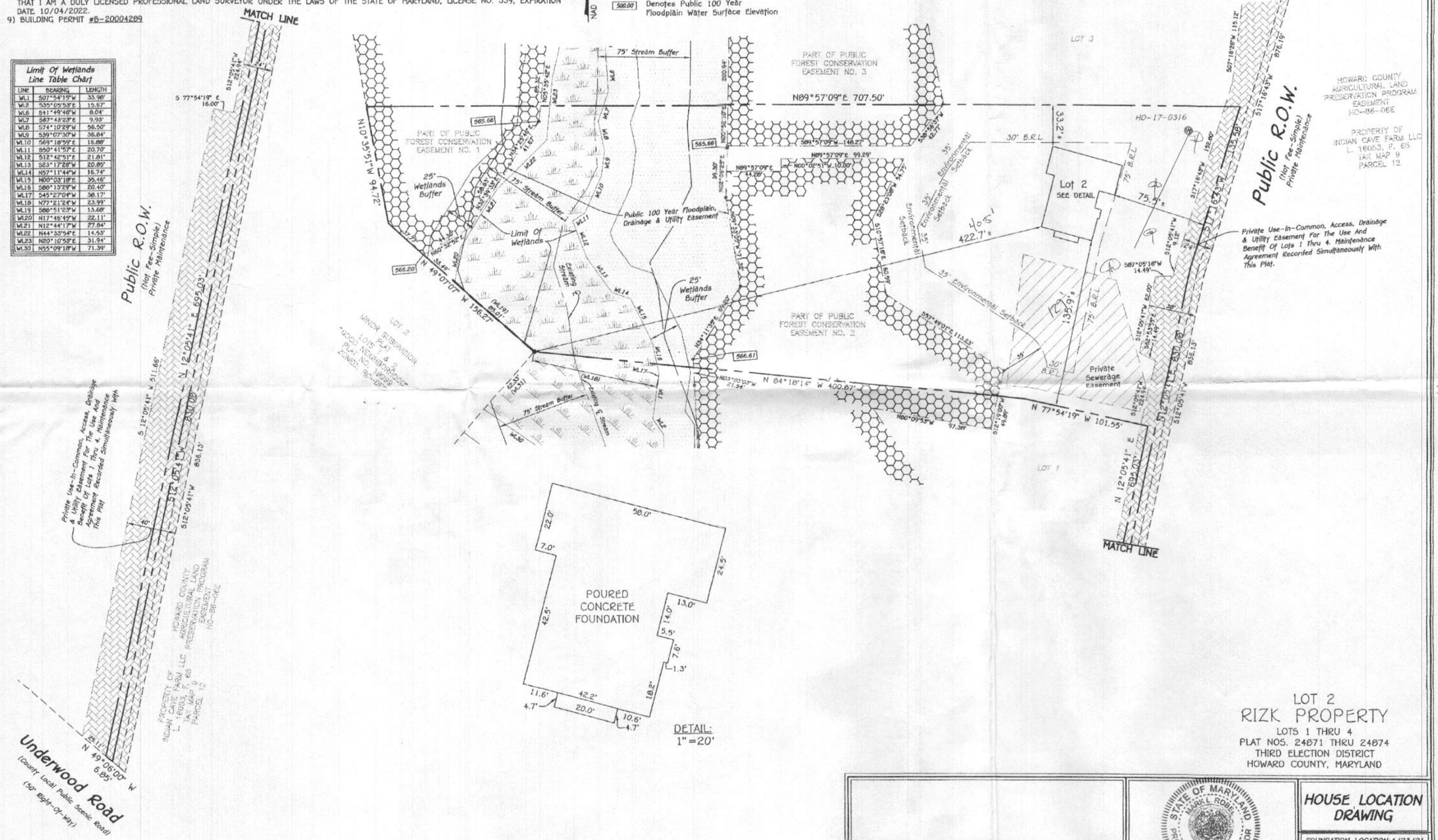
Legend

- Private Use-In-Common, Access, Drainage & Utility Easement For The Use And Benefit Of Lots 1 Thru 4
- Public Forest Conservation Easement (Retention)
- Public 100 Year Floodplain, Drainage & Utility Easement
- Limits Of Wetlands
- 500.00 Denotes Public 100 Year Floodplain Water Surface Elevation

NAD 83'

08/02/2024 P
CONFIRM HOUSE
DISCREPENCY DISTANCES.

Limit Of Wetlands Line Table Chart		
LINE	BEARING	LENGTH
WL1	S07°54'15"W	33.98'
WL2	S35°05'53"E	15.57'
WL6	S41°49'46"W	8.04'
WL7	S87°43'23"E	9.93'
WL8	S74°10'29"W	56.50'
WL9	S39°07'30"W	36.84'
WL10	S69°18'59"E	16.88'
WL11	S50°41'57"E	20.70'
WL12	S12°42'51"E	21.81'
WL13	S23°17'26"W	20.89'
WL14	N57°11'48"W	16.74'
WL15	N00°03'18"E	35.46'
WL16	S88°13'29"W	20.40'
WL17	S45°27'04"W	38.17'
WL18	N77°21'24"W	23.99'
WL19	S86°51'23"W	13.68'
WL20	N17°45'42"W	22.11'
WL21	N12°44'17"W	27.84'
WL22	N44°33'54"E	14.53'
WL23	N20°10'53"E	31.94'
WL30	N55°09'18"W	71.39'



DETAIL:
1" = 20'

LOT 2
RIZK PROPERTY
LOTS 1 THRU 4
PLAT NOS. 24871 THRU 24874
THIRD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

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

#1441 UNDERWOOD ROAD
B.R.L. = BUILDING RESTRICTION LINE
TOP OF FOUNDATION ELEVATION = 580.0'±

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
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ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

STATE OF MARYLAND
MARK L. ROBERTS
No. 339
PROPERTY LINE SURVEYOR

4/28/21
PROPERTY LINE SURVEYOR — DATE
REG. #339

HOUSE LOCATION DRAWING

FOUNDATION LOCATION: 4/23/21
FINAL LOCATION:
BOUNDARY SURVEY:

SCALE: 1" = 50'
DATE: 4/28/2021
DRAWN BY: MD
CHECKED BY: MLR
PROJECT No. 16041-3002

1. 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.
2. THE MAXIMUM EARTH COVER OVER THE TANK IS 3 FEET. GREATER EARTH COVER WILL REQUIRE A HEAVY LOAD BEARING TANK.
3. ELECTRICAL WORK FOR THE INSTALLATION MUST BE PERFORMED BY A LICENSED ELECTRICIAN.
4. THE WELL, HO-17-0316, HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN.
5. ALL WELLS AND SEPTIC SYSTEMS LOCATED WITHIN 100' OF THE PROPERTY BOUNDARIES AND 200' DOWN GRADIENT OF ANY WELLS AND/OR SEPTIC SYSTEMS HAVE BEEN SHOWN.

TRENCH DESIGN

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	WIDTH OF TRENCHES (W)	TRENCH SPACING
1A	578.2	574.7	574.2	3.5 FT	4.5 FT	570.2	7.5 FT	0.5 FT	8 FT	3 FT	10 FT
1B	578.2	574.7	574.2	3.5 FT	4.5 FT	570.2	7.5 FT	0.5 FT	8 FT	3 FT	10 FT
2A	577.2	573.7	573.2	3.5 FT	4.5 FT	569.2	7.5 FT	0.5 FT	8 FT	3 FT	10 FT
2B	577.2	573.7	573.2	3.5 FT	4.5 FT	569.2	7.5 FT	0.5 FT	8 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	TRENCH FLOW RATE (GPM)
1A	578.2	574.2	47	42.30	5/16	2	1.63	9.40	5	8.2
1B	578.2	574.2	47	42.30	5/16	2	1.63	9.40	5	8.2
2A	577.2	573.2	47	41.13	5/16	3	1.99	11.75	4	8.0
2B	577.2	573.2	47	41.13	5/16	3	1.99	11.75	4	8.0
									TOTAL TRENCH FLOW RATE	32.2

FRICTION LOSS IN 2" PIPE FITTINGS:
4 1/8 HB/VB x 4 FEET PER FITTING = 16 EQUIVALENT FEET OF PIPE
2 TEE/CROSS x 10 FEET PER FITTING = 20 EQUIVALENT FEET OF PIPE
1 UNION x 2 FEET PER FITTING = 2 EQUIVALENT FEET OF PIPE
1 ELBOWS x 7 FEET PER FITTING = 7 EQUIVALENT FEET OF PIPE
TOTAL EQUIVALENT FEET OF PIPE = 45 FT

TOTAL LINEAR FEET OF 2" SCH. 40 PVC = 40 LF + 45 LF = 85 LF

DYNAMIC HEAD
85 LF X 2.22 FT PER 100 LF OF PIPE = 1.89 FT OF FRICTION HEAD
DISTAL HEAD = 2.00 FT
VERTICAL FROM PUMP OFF TO DISCHARGE = 4.63 FT OF STATIC HEAD
TOTAL DYNAMIC HEAD = 8.52 FT

PIPE VOLUMES
40 LF (2" SCH. 40 PIPE) X 17.4 GALLONS PER 100 LF = 6.96 GALLONS
166.9 LF (1.5" SCH. 40 PIPE) X 10.6 GALLONS PER 100 LF = 17.7 GALLONS

MINIMUM DOSE
MINIMUM DOSE = (5 X LATERAL PIPE VOLUME) + (FORCE MAIN & MANIFOLD)
= (5 X 17.7) + (7.0)
= 95.5 GALLONS

95.5 GALLONS IS MORE THAN 1/6 DESIGN FLOW (450/6=75)
USE 134 GALLON DOSE (95.5 GALLON MINIMUM)
(RUN TIME = 4 MIN (32.2 GPM X 4 = 128.8 GALLON DOSE)

PUMP NEEDS TO HANDLE 32.2 GPM AT 8.52 FT OF HEAD
USE 0.3 HP (ZOELLER MODEL 50 SERIES PUMP)

BAT NOTES

1. 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.
2. THE MAXIMUM COVER OVER THE BAT PER THE MANUFACTURER'S SPECIFICATION IS 3 FEET.
3. THE BAT SYSTEM SHALL BE MAINTAINED AND OPERATED FOR THE LIFE OF THE SYSTEM.
4. THE BAT SHALL BE OPERATED BY AND MAINTAINED BY A CERTIFIED SERVICE PROVIDER.
5. 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.
6. ELECTRICAL WORK FOR THE BAT INSTALLATION MUST BE PERFORMED BY A LICENSED ELECTRICIAN.
7. AN AGREEMENT AND EASEMENT MUST BE COMPLETED AND SIGNED BY ALL APPLICABLE PARTIES, AND RECORDED IN THE LAND RECORDS OF HOWARD COUNTY.
8. THE HEALTH DEPARTMENT REQUIRES DOCUMENTATION FOR THE START-UP CERTIFICATION FROM THE MANUFACTURER PRIOR TO FINAL APPROVAL OF THE INSTALLATION.
9. SURFACE RUNOFF SHALL BE DIRECTED AROUND THE BAT TANK.

INITIAL SYSTEM

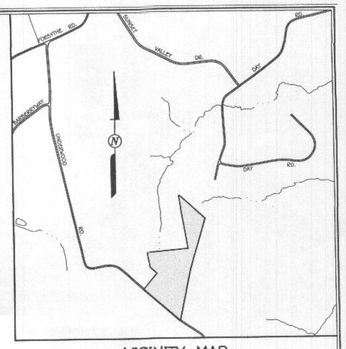
SEWAGE DISPOSAL SYSTEM DATA, DESIGN FOR 3 BEDROOMS
LOADING RATE = 3 BEDROOMS X 150 GPD/BEDROOM = 450 GPD
APPLICATION RATE = 0.8
EFFECTIVE SIDEWALL BEGINS AT 7.5 FEET
TRENCH DEPTH = 8 FEET
TRENCH WIDTH (W) = 3 FEET
EFFECTIVE DEPTH (D) = 0.5 FEET
SF OF DRAINFIELD = 450 GPD / 0.8 = 562.5 SF
COEFFICIENT OF REDUCTION OF TRENCH LENGTH =
(W+2)/(W+1+2D)=(3+2)/(3+1+(2x0.5))=1.0
TRENCH LENGTH = 562.5 SF x 1.0 / 3 = 187.50 FEET
(USE 4 TRENCHES AT 46.87 L.F.)
TRENCH SPACING = 2D+W = ((2*0.5) + 3) = 4' USE 10'

1ST REPLACEMENT SYSTEM

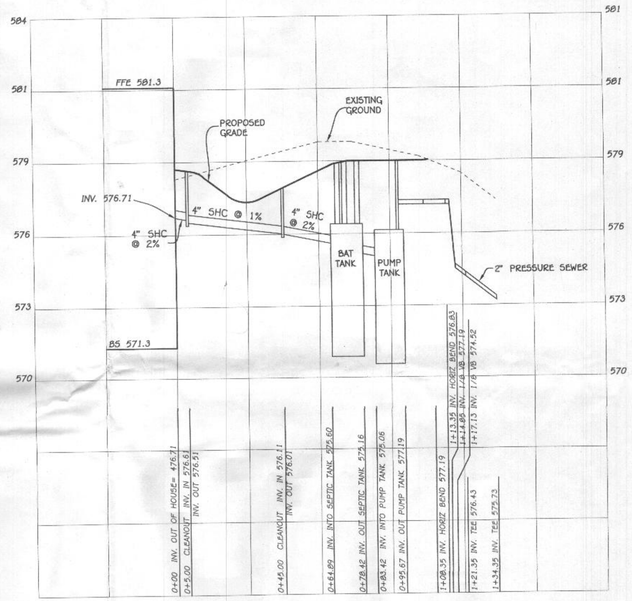
SEWAGE DISPOSAL SYSTEM DATA, DESIGN FOR 3 BEDROOMS
LOADING RATE = 3 BEDROOMS X 150 GPD/BEDROOM = 450 GPD
APPLICATION RATE = 0.8
EFFECTIVE SIDEWALL BEGINS AT 7.5 FEET
TRENCH DEPTH = 8 FEET
TRENCH WIDTH (W) = 3 FEET
EFFECTIVE DEPTH (D) = 0.5 FEET
SF OF DRAINFIELD = 450 GPD / 0.8 = 562.5 SF
COEFFICIENT OF REDUCTION OF TRENCH LENGTH =
(W+2)/(W+1+2D)=(3+2)/(3+1+(2x0.5))=1.0
TRENCH LENGTH = 562.5 SF x 1.0 / 3 = 187.50 FEET
(USE 4 TRENCHES AT 46.87 L.F.)
TRENCH SPACING = 2D+W = ((2*0.5) + 3) = 4' USE 10'

2ND REPLACEMENT SYSTEM

SEWAGE DISPOSAL SYSTEM DATA, DESIGN FOR 3 BEDROOMS
LOADING RATE = 3 BEDROOMS X 150 GPD/BEDROOM = 450 GPD
APPLICATION RATE = 0.8
EFFECTIVE SIDEWALL BEGINS AT 7.5 FEET
TRENCH DEPTH = 8 FEET
TRENCH WIDTH (W) = 3 FEET
EFFECTIVE DEPTH (D) = 0.5 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+(2x0.5))=1.0
TRENCH LENGTH = 562.5 SF x 1.0 / 3 = 187.50 FEET
(USE 4 TRENCHES AT 46.87 L.F.)
TRENCH SPACING = 2D+W = ((2*0.5) + 3) = 4' USE 10'



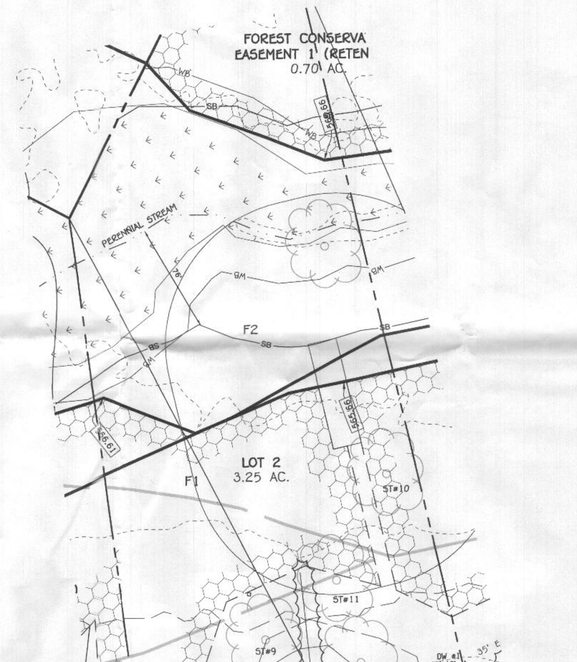
VICINITY MAP
SCALE : 1" = 1200'



PROFILE

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

Approved Septic System Plan
Howard County Health Department
Hank Oduzel 1/28/2021
Signature Date



NOTE: BASEMENT SEWERAGE TO BE PUMPED

TRENCH DATA:

TRENCH 1A & 1B:
EX. GROUND ABOVE = 578.2
INV. IN = 574.2
BOTTOM TRENCH = 570.2

TRENCH 2A & 2B:
EX. GROUND ABOVE = 577.2
INV. IN = 573.2
BOTTOM TRENCH = 569.2

FFE 581.3
BSE 571.3
INV. OUT OF HOUSE = 576.71
PROP. GROUND AT CLEANOUT #1 = 578.5
INV. INTO CLEANOUT = 576.61
INV. OUT OF CLEANOUT = 576.51
PROP. GROUND AT CLEANOUT #2 = 577.0
INV. INTO CLEANOUT = 576.11
INV. OUT OF CLEANOUT = 576.01
EX. GROUND AT BAT TANK = 579.5
PROP. GRADE ABOVE BAT TANK = 579.0
TOP OF BAT TANK = 578.00
INV. INTO BAT TANK = 575.49
INV. OUT OF BAT TANK = 575.16
EX. GROUND AT PUMP TANK = 579.5
PROP GRADE ABOVE PUMP TANK = 579.0
TOP OF PUMP TANK = 576.14
INV. INTO PUMP TANK = 575.06
INV. OUT OF PUMP TANK = 577.19

Stephanie J. Tuite 1/10/21
Stephanie J. Tuite, P.E. 38386 DATE
"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 38386, Expiration Date 1-12-22"

STATE OF MARYLAND STEPHANIE J. TUITE No. 38386 PROFESSIONAL ENGINEER

SITE PLAN FOR BAT INSTALLATION
RIZK PROPERTY
LOT 2

ZONING: RC-DEO
TAX MAP No. 9 GRID No. 8 PARCEL No. 75
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: 1"=50' DATE: JANUARY 2021

OWNER
CHARBEL RIZK
1445 UNDERWOOD ROAD
SYKESVILLE, MARYLAND 21784

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
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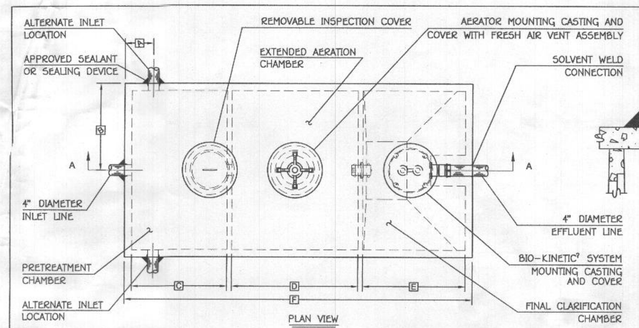
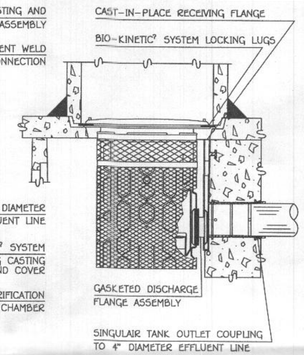
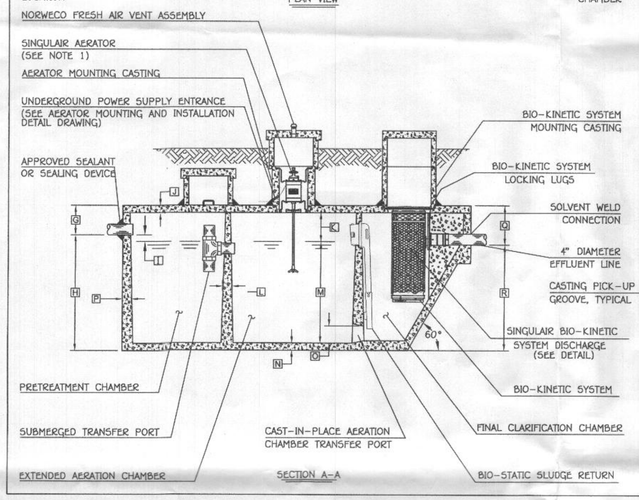


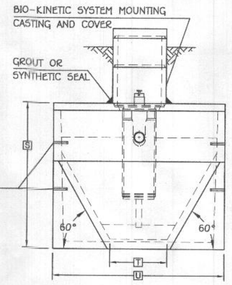


BIO-KINETIC SYSTEM DISCHARGE DETAIL

GENERAL NOTES:

1. SINGULAIR AERATOR, AS TESTED AND ACCEPTED BY NSF, OPERATING 60 MINUTES ON / 60 MINUTES OFF.
2. FALL THROUGH SINGULAIR® PLANT FROM INLET INVERT TO OUTLET INVERT IS FOUR INCHES. INLET INVERT IS TWELVE INCHES BELOW TANK TOP.
3. ON DEEPER INSTALLATIONS, PRECAST RISERS MUST BE USED TO EXTEND AERATOR MOUNTING CASTING AND BIO-KINETIC SYSTEM MOUNTING CASTING TO GRADE.
4. TANK REINFORCED PER ACI STD. 318-05.
5. REMOVABLE COVERS ON RISERS WEIGH IN EXCESS OF SEVENTY-FIVE POUNDS EACH TO PREVENT UNAUTHORIZED ACCESS.
6. CONTACT THE LOCAL, LICENSED SINGULAIR DISTRIBUTOR FOR ELECTRICAL REQUIREMENTS.





OUTLET END VIEW

NOTE: TOTAL SYSTEM CAPACITY: 1,300 GALLONS
RATED CAPACITY: 500 GALLONS PER DAY

PROJECT ENGINEER'S APPROVAL:
I (WE) HEREBY CERTIFY THAT THIS DRAWING HAS BEEN CHECKED AND IS APPROVED FOR USE IN CONFORMITY WITH THE CONTRACT DOCUMENTS.

DATE:

NAME:

CONTRACTOR'S CERTIFICATION:
I (WE) HEREBY CERTIFY THAT THIS DRAWING HAS BEEN CHECKED AND IS APPROVED FOR USE IN CONFORMITY WITH THE CONTRACT DOCUMENTS.

DATE:

NAME:

CRITICAL DIMENSIONS

A	1'- 0"	N	0'- 3"
B	3' - 0"	O	0'- 6"
C	3'- 4"	P	0'- 3"
D	4'- 5"	Q	1'- 4"
E	3'- 7"	R	3'- 8"
F	12'- 2"	S	5'- 0"
G	1'- 0"	T	2'- 0"
H	4'- 0"	U	6' - 0"
I	0'- 3"	V	
J	0'- 3"	W	
K	1'- 0"	X	
L	0'- 2"	Y	
M	3'- 6"	Z	

U.S. AND FOREIGN PATENTS PENDING

© MMVII

norweco®

LOW-PROFILE SINGULAIR® BIO-KINETIC® WASTEWATER TREATMENT SYSTEM
MODEL TNTLP-500 GPD

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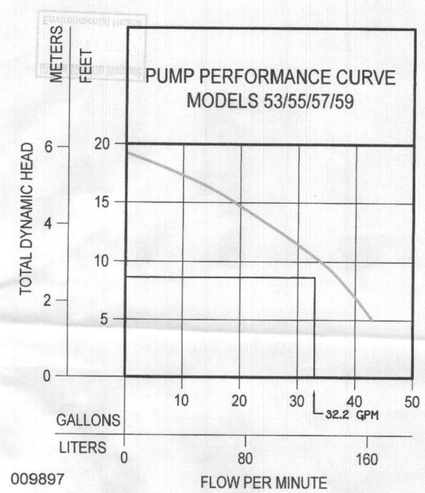
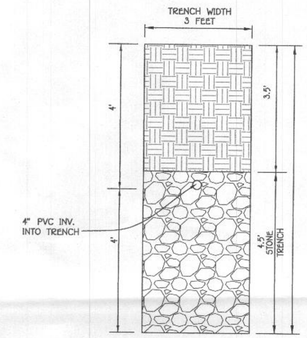
REVISION 3-26-07	SHEET B
DRAWN BDS	
CHECKED JMM	
DATE 10-16-06	
SCALE NTS	
DRAWING NO. PC-5-7091	

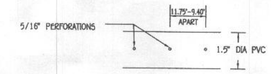


009897

USE 0.3 HP (ZOELLER MODEL 50 SERIES PUMP)



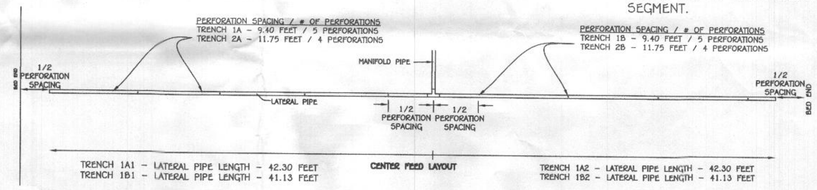
INITIAL TRENCH DETAIL
SCALE : 1"=2'

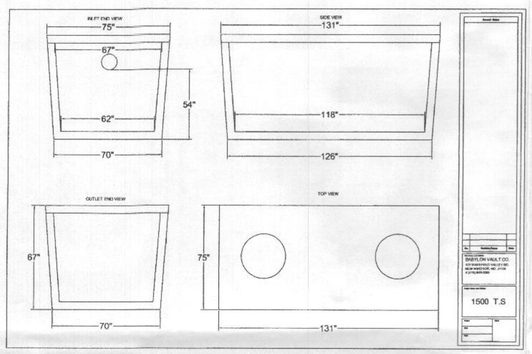


PERFORATED PVC LATERAL PIPE BLOWUP DETAIL

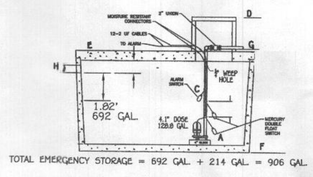
NOTE: SEPTIC SYSTEM ALARM WILL BE ON A CIRCUIT SEPARATE FROM ANY OTHER SEPTIC SYSTEM COMPONENTS OR ALARMS.

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





PUMP TANK DETAIL
NOT TO SCALE



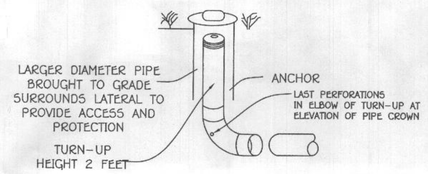
TOTAL EMERGENCY STORAGE = 692 GAL. + 214 GAL. = 906 GAL.

NOTE: THIS DETAIL IS TO BE USED FOR FLOAT CONFIGURATION ONLY - SEE DETAIL ABOVE FOR TANK DIMENSIONS AND ACTUAL LOCATION OF ACCESS COVER.

PUMP ALARMS / INFORMATION

A PUMP OFF : 572.56
B PUMP ON : 572.90
C HIGH WATER ALARM : 573.24
D TOP OF ACCESS COVER : 579.00
E TOP OF TANK : 576.14
F BOTTOM OF TANK : 570.56
G DISCHARGE OUT OF TANK : 577.19
H INVERT INTO TANK : 575.06

NOTE: SEPTIC SYSTEM ALARM WILL BE ON A CIRCUIT SEPARATE FROM ANY OTHER SEPTIC SYSTEM COMPONENTS OR ALARMS.



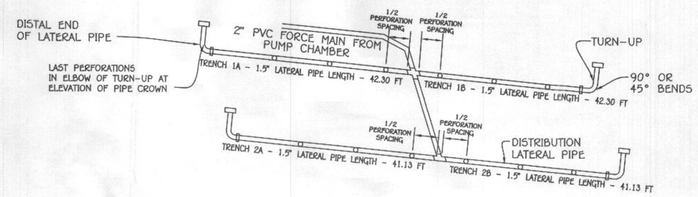


FIGURE 4.1 CENTER FEED MANIFOLD DISTRIBUTION NETWORK

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

OWNER
CHARBEL RIZK
1445 UNDERWOOD ROAD
SYKESVILLE, MARYLAND 21784

Stephanie Tuite

Stephanie J. Tuite, P.E. 38386

1/10/21
DATE

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 38386, Expiration Date 1-12-22."

STATE OF MARYLAND
STEPHANIE J. TUITE
No. 38386
PROFESSIONAL ENGINEER

SITE PLAN FOR
BAT INSTALLATION
RIZK PROPERTY
LOT 2

ZONING: RC-DEO
TAX MAP No. 9 GRID No. 8 PARCEL No. 75
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: 1"=60' DATE: JANUARY 2021