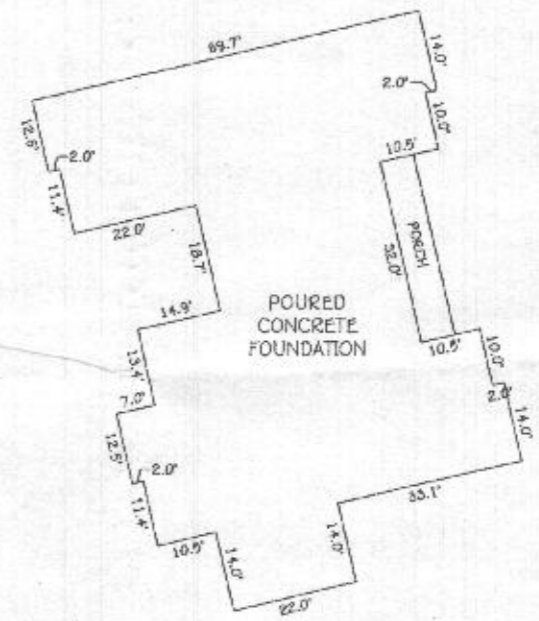
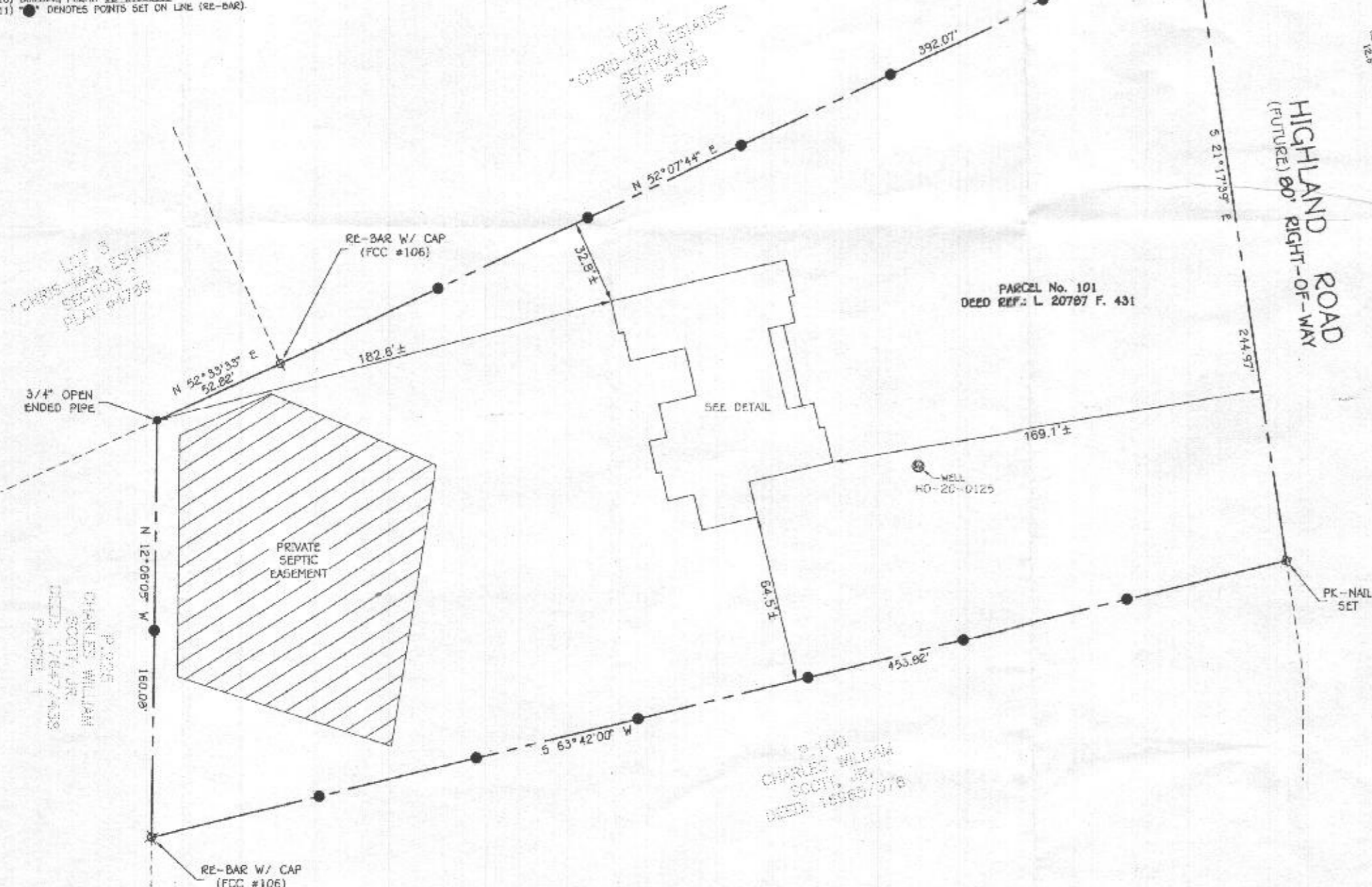


**GENERAL NOTES:**

- 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. 24027C01200 EFFECTIVE NOV. 6, 2021.
- 3) THE DIFFERENCES FROM BUILDING LINE TO PROPERTY LINE AS SHOWN ON THE PLAN HEREON ARE TO AN ACCURACY OF PLUS OR MINUS 0.1'.
- 4) NO TITLE REPORT FURNISHED. SUBJECT TO ALL EASEMENTS, RIGHTS OF WAY AND CONDITIONS OF RECORD.
- 5) THE EXISTING WELLS SHOWN ON THIS PLAN (IDENTIFIED WITH THE ATTACHED WELL TAG NUMBER HO-20-0125 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. 21476, EXPIRATION DATE 7/14/2023.
- 7) THE BEARINGS AND DISTANCES SHOWN ARE FROM A FIELD RUN BOUNDARY SURVEY PERFORMED BY FISHER, COLLINS AND CARTER, INC. ON APRIL 9TH 2021.
- 8) BUILDING PERMIT #B-21003586
- 9) ● DENOTES POINTS SET ON LINE (RE-BAR).



DETAIL:  
1"=20'

Wall Check  
OK  
RAC 2/10/2022

Scale 1"=50'

LOT 3  
CHRIS-WAR ESTATES  
SECTION 1  
PLAT #4728

LOT 4  
CHRIS-WAR ESTATES  
SECTION 1  
PLAT #4728

PARCEL No. 101  
DEED REF.: L 20787 F. 431

P. 100  
CHARLES WILLIAM  
SCOTT, JR.  
DEED: 15869/378

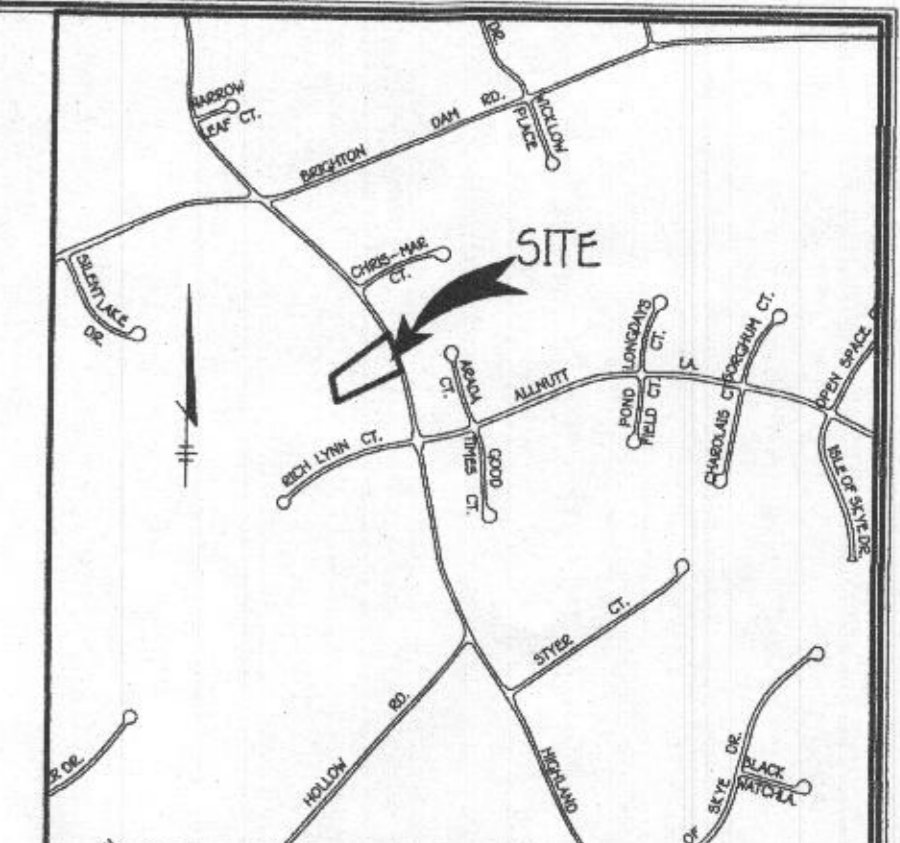
**FISHER, COLLINS & CARTER, INC.**  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
113429 HIGHLAND ROAD  
TOP OF FOUNDATION ELEVATION = 532.0'

TAX MAP No. 34    GRID No. 15    PARCEL No. 101  
5th ELECTION DISTRICT    HOWARD COUNTY, MARYLAND



HOUSE LOCATION DRAWING	
FOUNDATION LOCATION:	12/14/21
FINAL LOCATION:	12/15/2021
BOUNDARY SURVEY:	12/9/2021
SCALE:	1"=30'
DATE:	12/15/2021
DRAWN BY:	MD
CHECKED BY:	FM R
PROJECT No.:	21010-6001

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. THE WELL HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN.
4. 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.

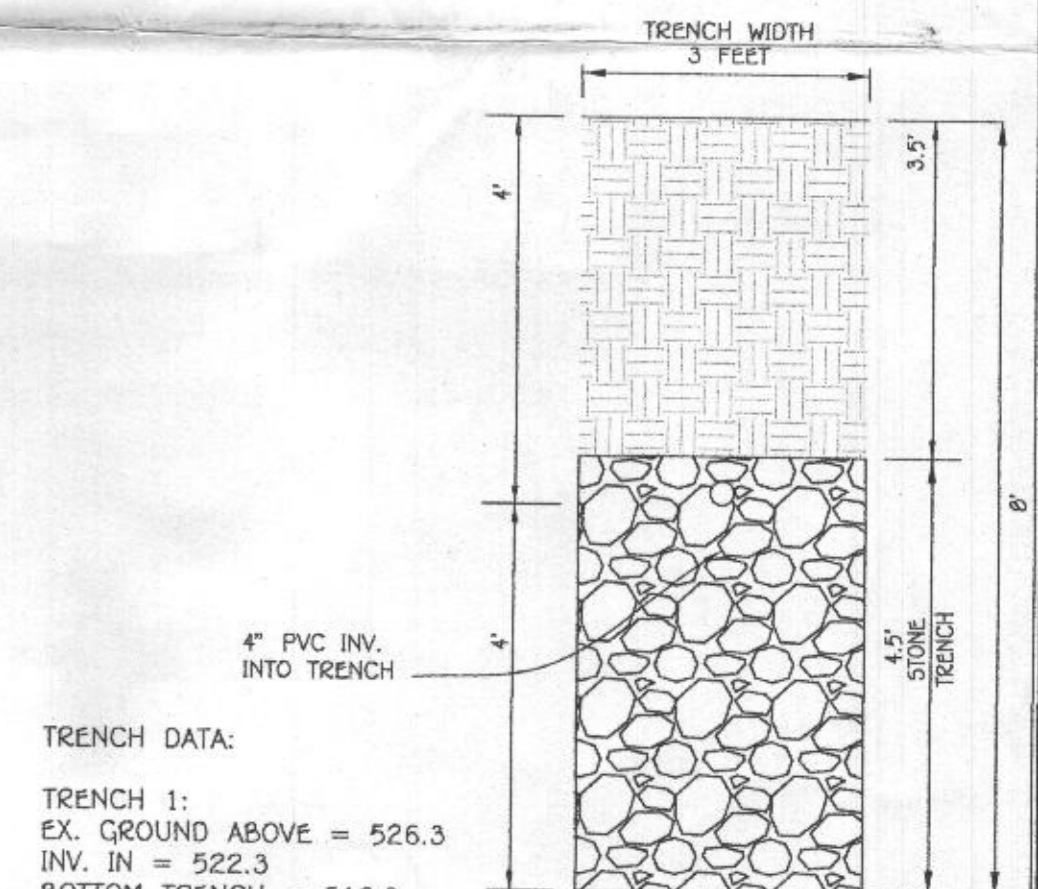


**VICINITY MAP**  
SCALE: 1" = 1200'



**PLAN**  
SCALE: 1" = 10'

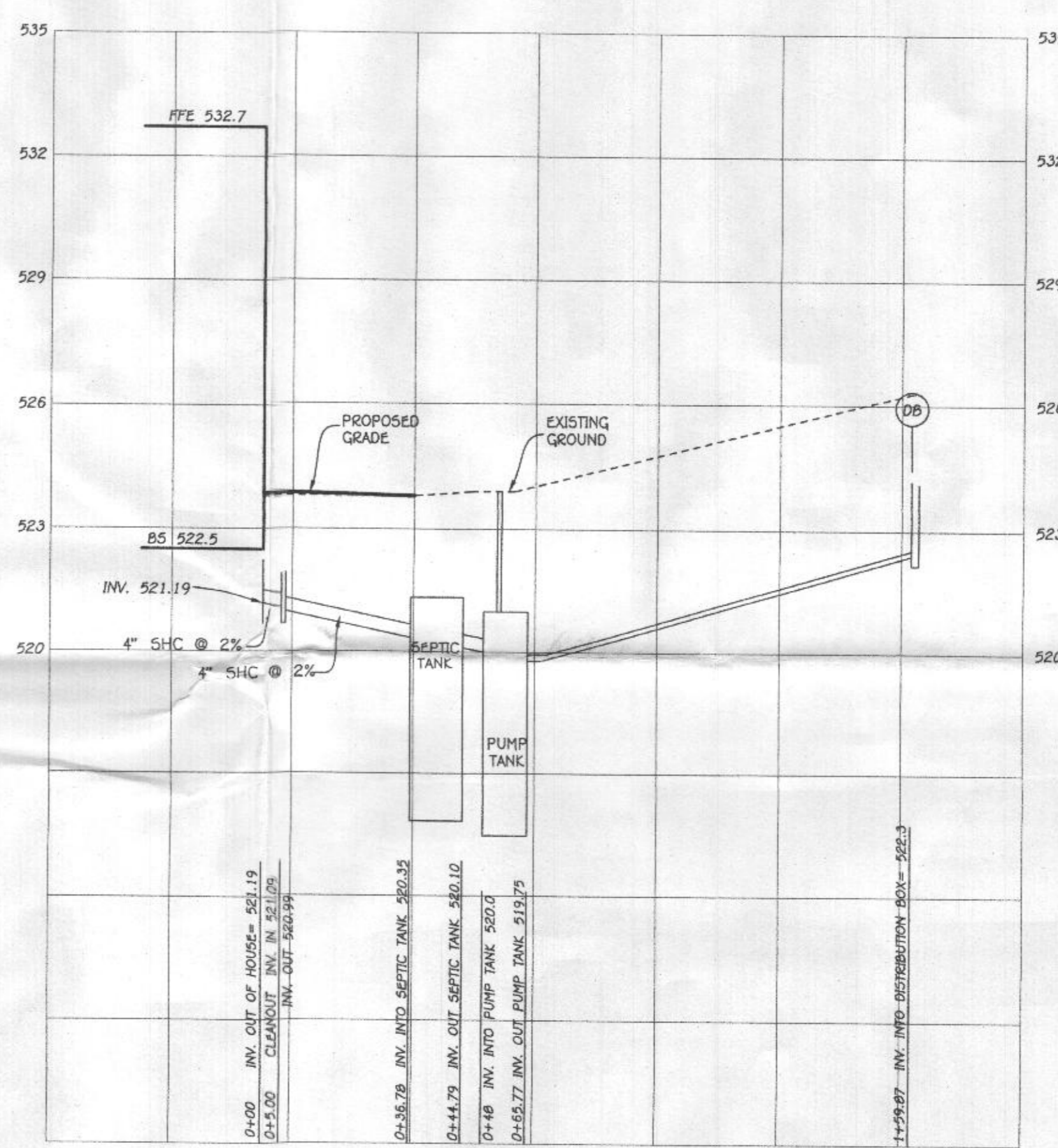
FFE 532.7  
BSE 522.5  
INV. OUT OF HOUSE = 521.19  
PROP. GROUND AT CLEANOUT # 1 = 523.9  
INV. INTO CLEANOUT = 521.09  
INV. OUT OF CLEANOUT = 520.99  
EX. GROUND AT SEPTIC TANK = 523.8  
PROP. GRADE ABOVE SEPTIC TANK = 523.8  
TOP OF SEPTIC TANK = 521.35  
INV. INTO SEPTIC TANK = 520.35  
INV. OUT OF SEPTIC TANK = 520.10  
EX. GROUND AT PUMP TANK = 524.0  
PROP. GRADE ABOVE PUMP TANK = 524.0  
TOP OF PUMP TANK = 521.0  
INV. INTO PUMP TANK = 520.0  
INV. OUT OF PUMP TANK = 519.75  
EX. GROUND AT DISTRIBUTION BOX = 526.3  
INV. INTO DISTRIBUTION BOX = 522.4  
INV. OUT OF DISTRIBUTION BOX = 522.3



**TRENCH DATA:**

TRENCH 1:  
EX. GROUND ABOVE = 526.3  
INV. IN = 522.3  
BOTTOM TRENCH = 518.3  
TRENCH 2:  
EX. GROUND ABOVE = 524.7  
INV. IN = 520.7  
BOTTOM TRENCH = 516.7

**INITIAL TRENCH DETAIL**  
SCALE: 1" = 2'



**SEPTIC PROFILE**  
SCALE: 1" = 30'

**INITIAL SYSTEM**

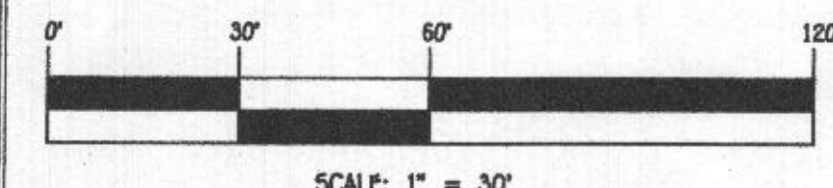
SEWAGE DISPOSAL SYSTEM DATA. DESIGN FOR 6 BEDROOMS (PERMIT FOR 5)  
LOADING RATE = 5 BEDROOMS X 150 GPD/BEDROOM = 900 GPD  
APPLICATION RATE = 0.8  
EFFECTIVE SIDEWALL BEGINS AT 4.5 FEET  
TRENCH DEPTH = 8 FEET  
TRENCH WIDTH (W) = 3 FEET  
EFFECTIVE DEPTH (D) = 3.5 FEET  
SF OF DRAINFIELD = 750 GPD / 0.8 = 1125 SF  
COEFFICIENT OF REDUCTION OF TRENCH LENGTH = (W+2)/(W+1+2D) = (3+2)/(3+1+(2x3)) = 0.45  
TRENCH LENGTH = 375 SF x 0.45 = 168.75 FEET  
(USE 2 TRENCHES AT 84.38 LF.)  
TRENCH SPACING = 2D+W = ((2x8) + 3) = 11' USE 11'

**1ST REPLACEMENT SYSTEM**

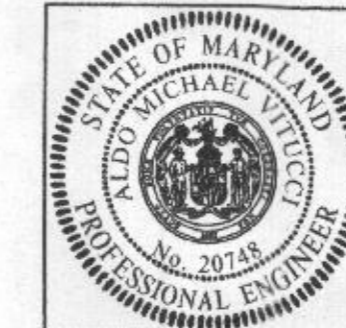
SEWAGE DISPOSAL SYSTEM DATA. DESIGN FOR 6 BEDROOMS (PERMIT FOR 5)  
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APPLICATION RATE = 0.8  
EFFECTIVE SIDEWALL BEGINS AT 5.5 FEET  
TRENCH DEPTH = 9 FEET  
TRENCH WIDTH (W) = 3 FEET  
EFFECTIVE DEPTH (D) = 3.5 FEET  
SF OF DRAINFIELD = 750 GPD / 0.8 = 1125 SF  
COEFFICIENT OF REDUCTION OF TRENCH LENGTH = (W+2)/(W+1+2D) = (3+2)/(3+1+(2x3)) = 0.45  
TRENCH LENGTH = 375 SF x 0.45 = 170 FEET  
(USE 4 TRENCHES AT 42.61 LF.)  
TRENCH SPACING = 2D+W = ((2x9.5) + 3) = 10' USE 10'

**2ND REPLACEMENT SYSTEM**

SEWAGE DISPOSAL SYSTEM DATA. DESIGN FOR 6 BEDROOMS (PERMIT FOR 5)  
LOADING RATE = 5 BEDROOMS X 150 GPD/BEDROOM = 900 GPD  
APPLICATION RATE = 0.8  
EFFECTIVE SIDEWALL BEGINS AT 4.5 FEET  
TRENCH DEPTH = 8 FEET  
TRENCH WIDTH (W) = 3 FEET  
EFFECTIVE DEPTH (D) = 3.5 FEET  
SF OF DRAINFIELD = 750 GPD / 0.8 = 1125 SF  
COEFFICIENT OF REDUCTION OF TRENCH LENGTH = (W+2)/(W+1+2D) = (3+2)/(3+1+(2x3)) = 0.45  
TRENCH LENGTH = 375 SF x 0.45 = 168.75 FEET  
(USE 2 TRENCHES AT 84.38 LF.)  
TRENCH SPACING = 2D+W = ((2x8) + 3) = 11' USE 11'



SCALE: 1" = 30'



**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. 20748, EXPIRATION DATE: 02/22/2023.

*Michael J. Vitell*  
Signature of Professional Engineer  
5/3/22  
DATE

**FISHER, COLLINS & CARTER, INC.**  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
10722 BALTIMORE NATIONAL PIKE  
ELLSWORTH CITY, MARYLAND 21042  
(410) 461-2855

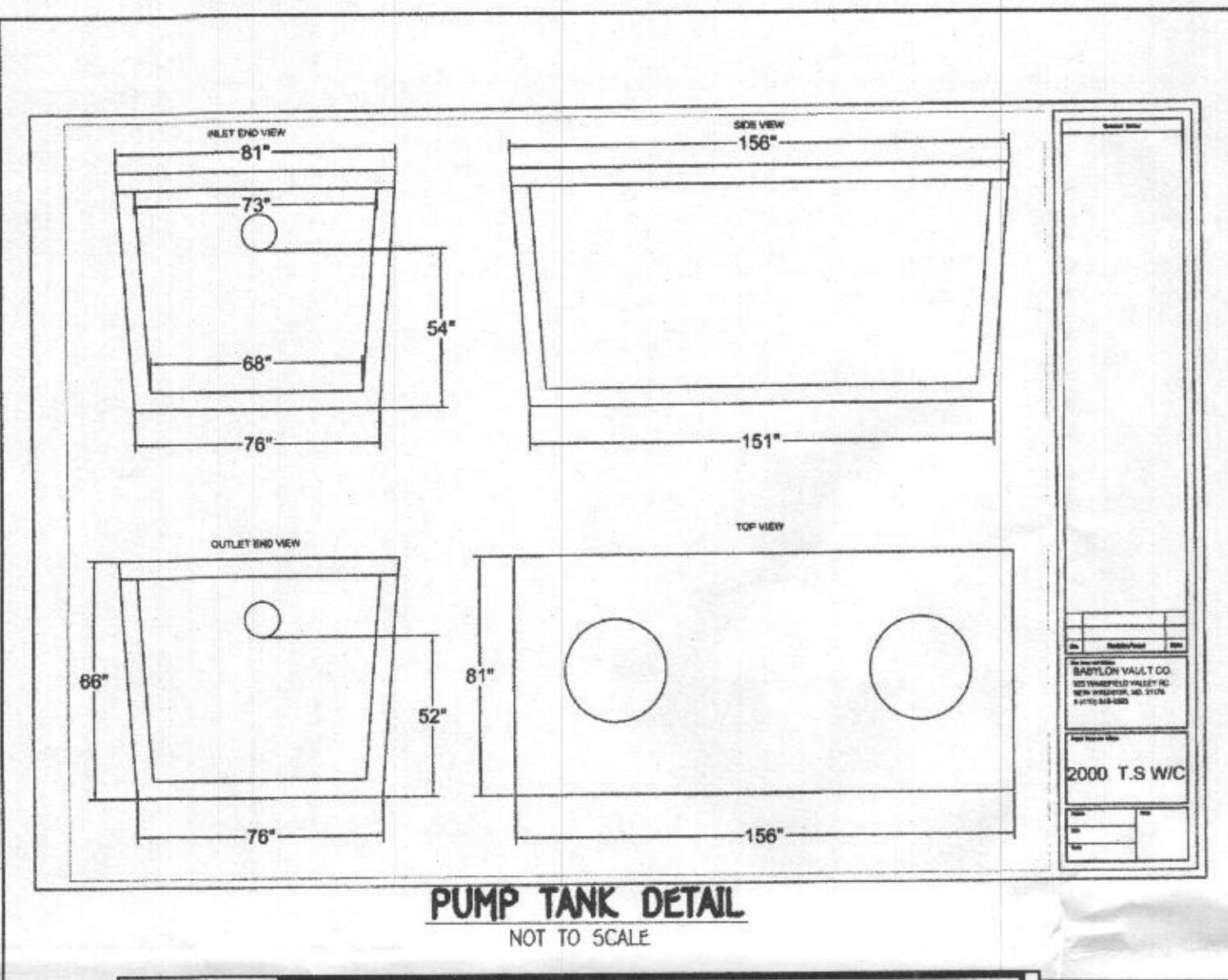
**OWNER**  
CAIRN CUSTOM HOMES LLC  
10548 FORMAN RD  
LAUREL MD 20723

ADDRESS CHART	
STREET ADDRESS	13429 HIGHLAND RD

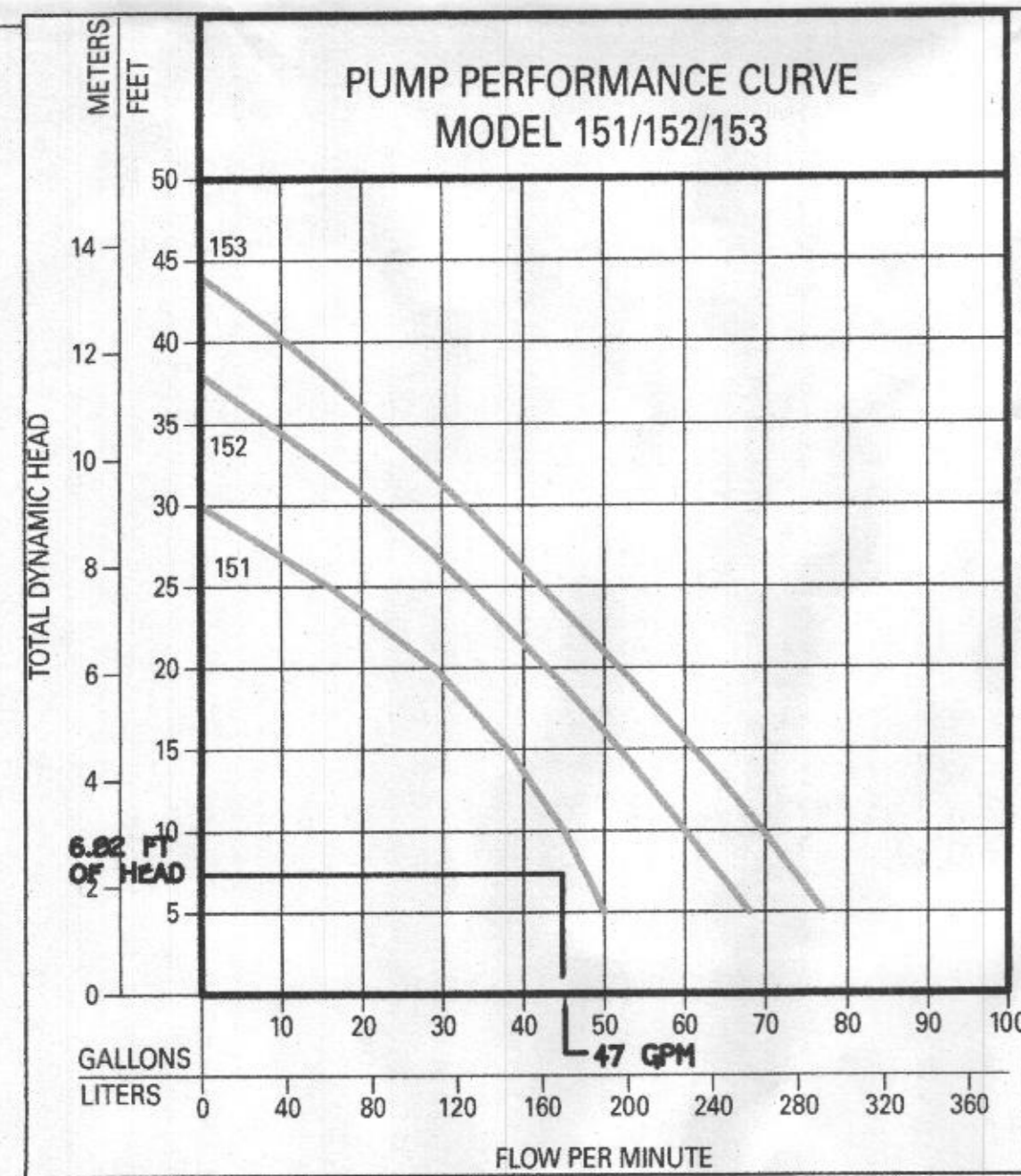
**SEPTIC SYSTEM  
INSTALLATION SITE PLAN  
13429 HIGHLAND RD**

ZONED RR-DEO  
TAX MAP No. 34 GRID No. 15 PARCEL No. 101  
5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
SCALE: 1"=50' DATE: MAY 31, 2022  
SHEET: 1 OF 2

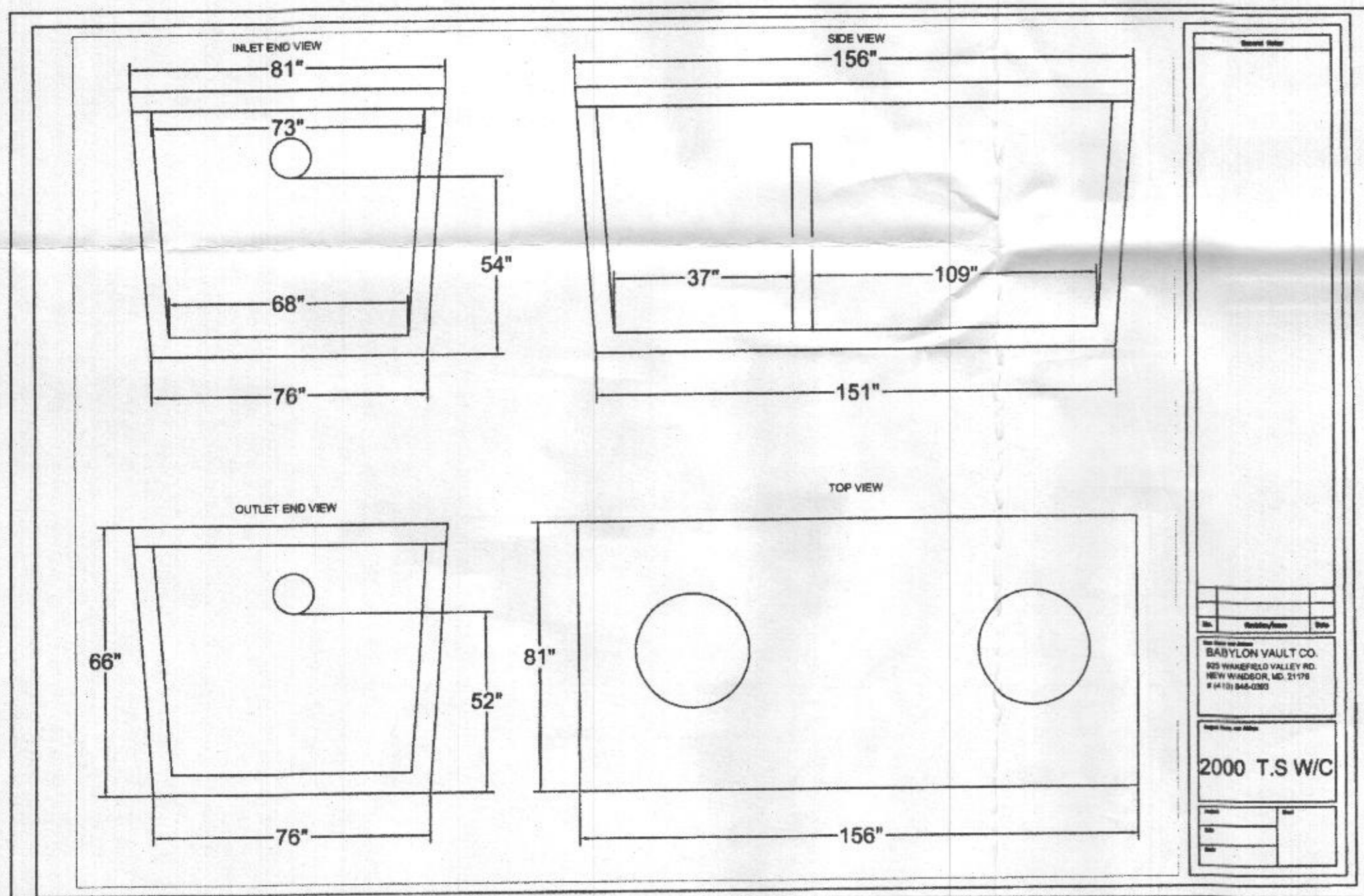
Approved Septic System Plan  
Howard County Health Department  
*[Signature]* / *[Date]*  
Resub approved as shown



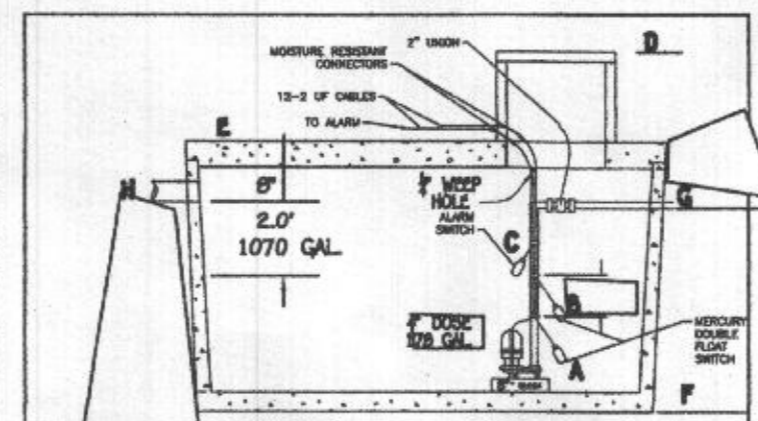
**PUMP TANK DETAIL**  
NOT TO SCALE



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



- PUMP ALARMS / INFORMATION**
- A PUMP OFF : 518.0
  - B PUMP ON : 517.67
  - C HIGH WATER ALARM : 518.5
  - D TOP OF ACCESS COVER : 524.0
  - E TOP OF TANK : 521.0
  - F BOTTOM OF TANK : 515.5
  - Q DISCHARGE OUT OF TANK : 519.75
  - H INVERT INTO TANK : 520



1070 + 300 = 1370 GALLONS EMERGENCY STORAGE  
NOTE: THIS DETAIL IS TO BE USED FOR FLOAT CONFIGURATION ONLY - SEE DETAIL ABOVE FOR TANK DIMENSIONS AND ACTUAL LOCATION OF ACCESS COVER.



**PROFESSIONAL CERTIFICATION**

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*Michael J. Vitucci*  
Signature Of Professional Engineer

5/31/22  
DATE

2" SCH. 40 PVC = 96 LF  
1 UNION @ 2 EQUIVALENT FEET = 2 LF  
1 1/8 HD @ 4 EQUIVALENT FEET = 4 LF  
TOTAL LINEAR FEET OF 2" SCH. 40 PVC = 102 LF

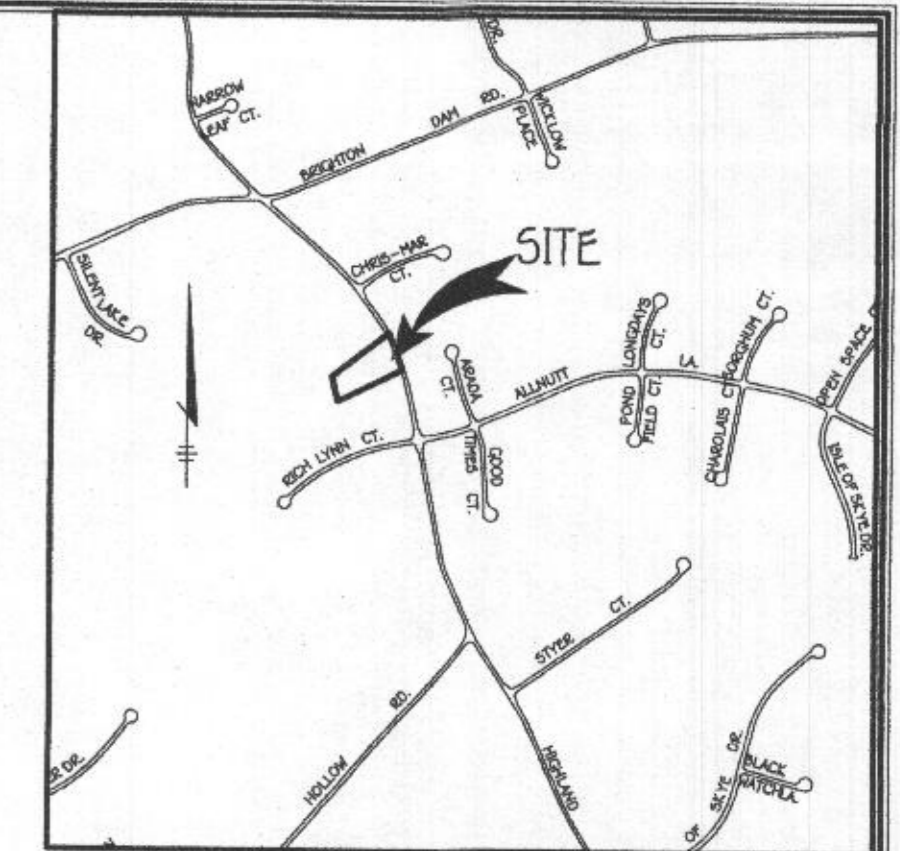
**DYNAMIC HEAD**  
102 LF X 2.05 FT PER 100 LF OF 2" PIPE = 2.09 FT OF FRICTION HEAD  
VERTICAL FROM PUMP OFF TO HIGH POINT IN PUMP CHAMBER = 2.03 FT OF FRICTION HEAD  
HIGH POINT IN PUMP CHAMBER TO HIGHEST ELEV OF SYSTEM = 2.7 FT (DISTRIBUTION BOX IS THE HIGHEST POINT)

TOTAL DYNAMIC HEAD = 6.82 FT

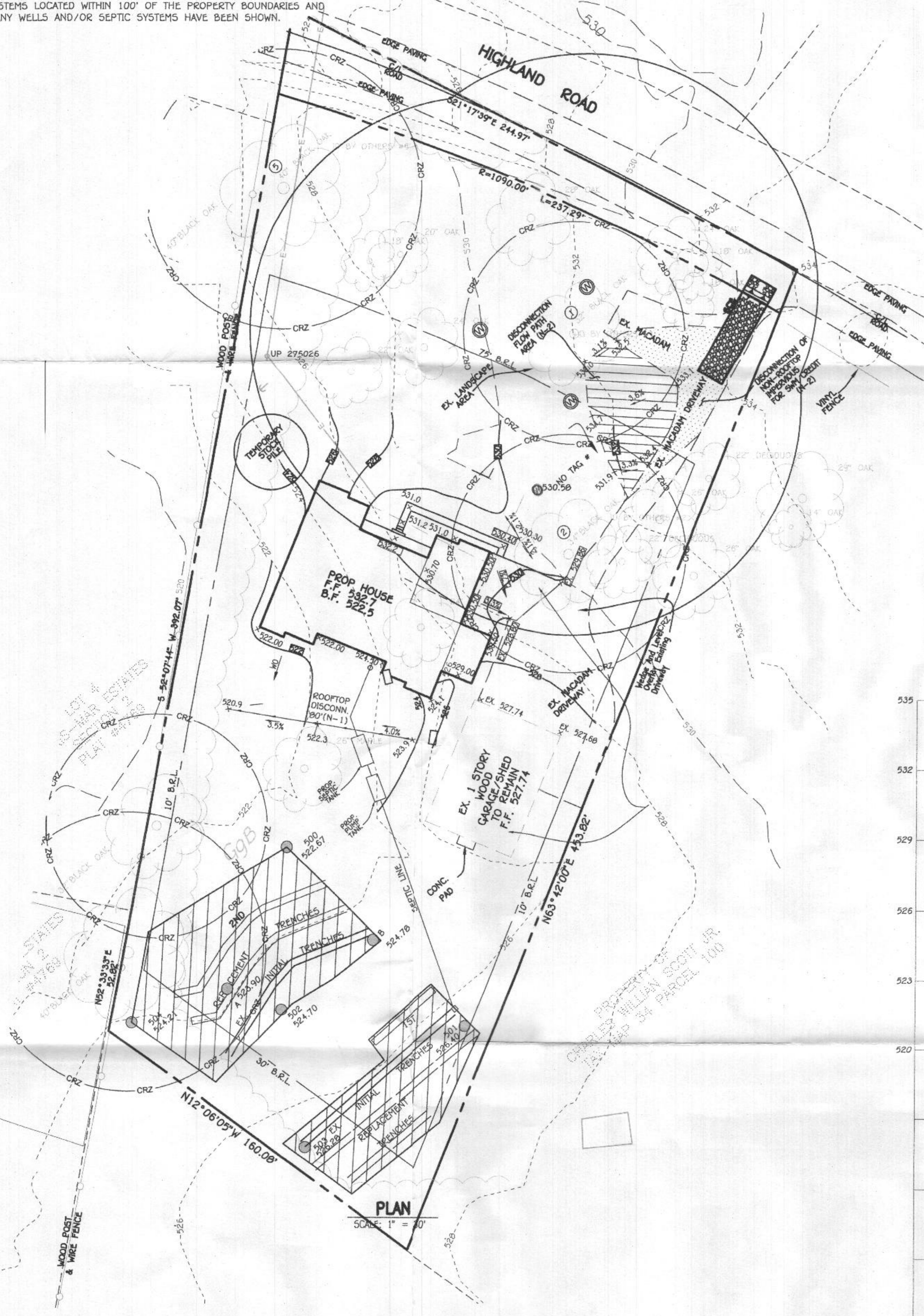
1/6 DESIGN FLOW (750/6=125) PLUS VOLUME OF 2" PIPE (17 GALLONS)  
USE 143 GALLON DOSE (125 GALLON MINIMUM)  
(RUN TIME = 3.8 MIN (47 GPM X 4 = 188 GALLON DOSE))

PUMP NEEDS TO HANDLE 47 GPM AT 6.82 FT OF HEAD  
USE 1/3 HP (ZOELLER MODEL 151 PUMP)

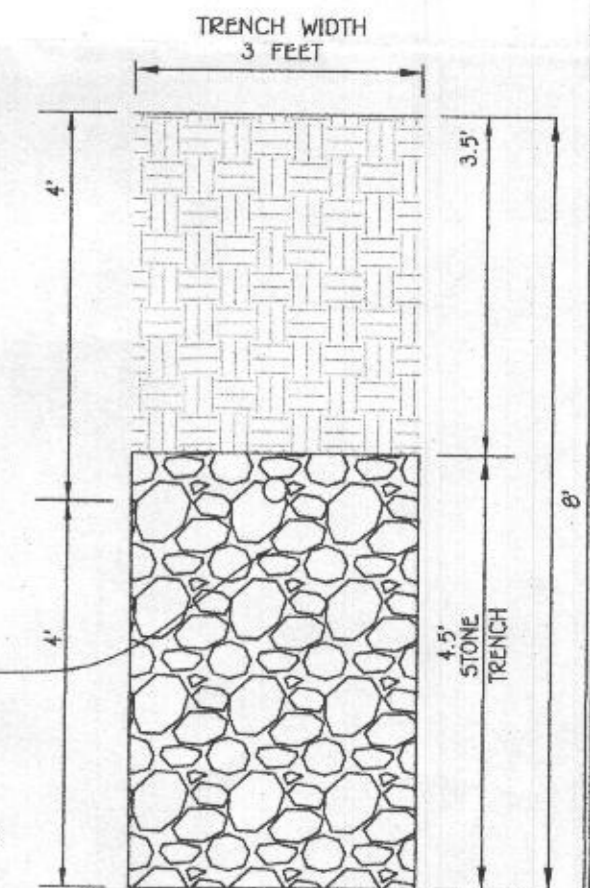
1. ANY CHANGE TO THE LOCATIONS OR DEPTHS TO ANY COMPONENTS MUST BE APPROVED BY THE ENGINEER AND THE HOWARD COUNTY HEALTH DEPARTMENT PRIOR TO INSTALLATION. A REVISED SITE PLAN MAY BE REQUIRED.
2. THE MAXIMUM EARTH COVER OVER THE TANK IS 3 FEET. GREATER EARTH COVER WILL REQUIRE A HEAVY LOAD BEARING TANK.
3. THE WELL HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN.
4. 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.



VICINITY MAP  
SCALE: 1" = 1200'

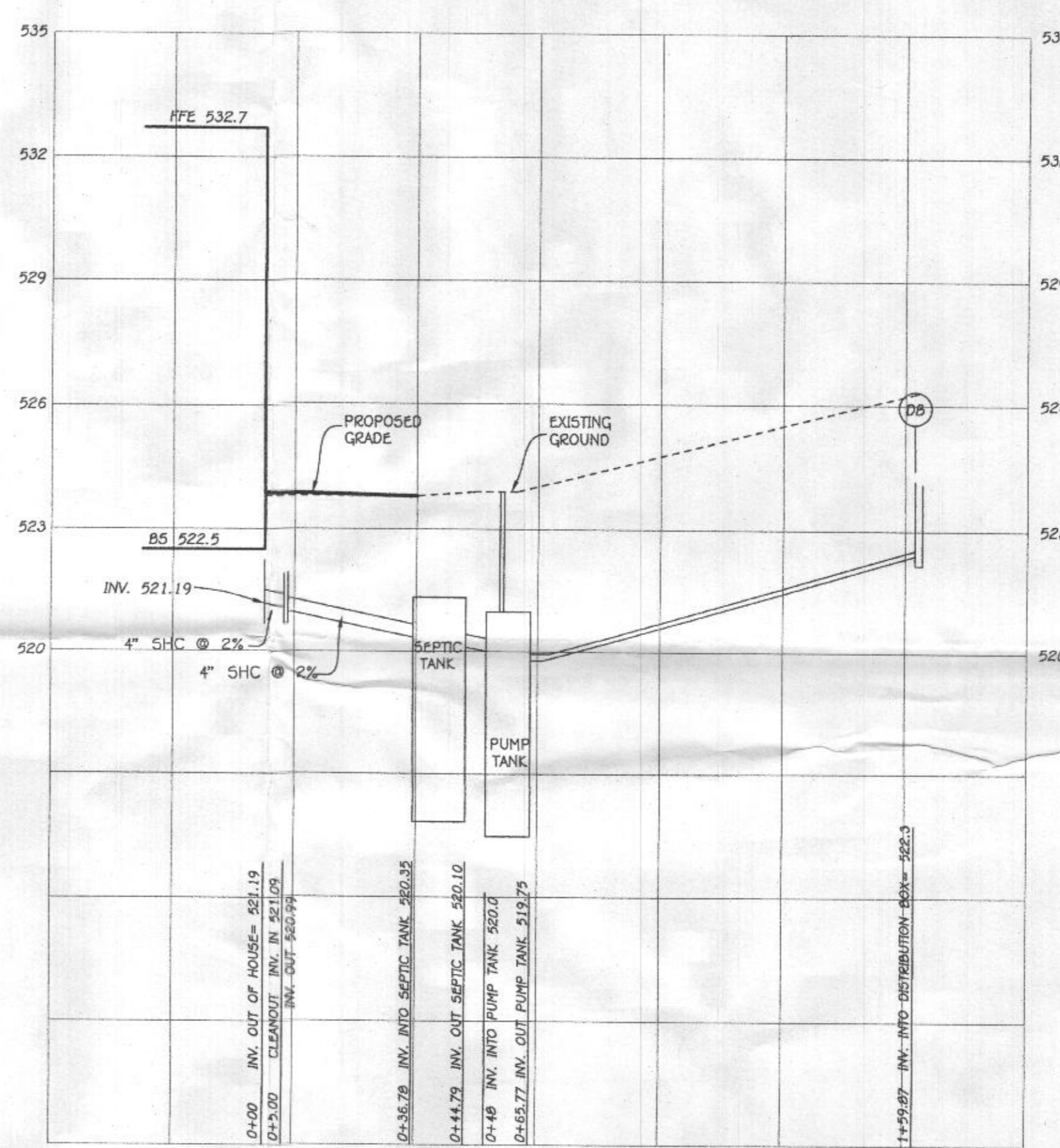


FFE 532.7  
BSE 522.5  
INV. OUT OF HOUSE = 521.19  
PROP. GROUND AT CLEANOUT # 1 = 523.9  
INV. INTO CLEANOUT = 521.09  
INV. OUT OF CLEANOUT = 520.99  
EX. GROUND AT SEPTIC TANK = 523.8  
PROP. GRADE ABOVE SEPTIC TANK = 523.8  
TOP OF SEPTIC TANK = 521.35  
INV. INTO SEPTIC TANK = 520.35  
INV. OUT OF SEPTIC TANK = 520.10  
EX. GROUND AT PUMP TANK = 524.0  
PROP. GRADE ABOVE PUMP TANK = 524.0  
TOP OF PUMP TANK = 521.0  
INV. INTO PUMP TANK = 520.0  
INV. OUT OF PUMP TANK = 519.75  
EX. GROUND AT DISTRIBUTION BOX = 526.3  
INV. INTO DISTRIBUTION BOX = 522.4  
INV. OUT OF DISTRIBUTION BOX = 522.3



TRENCH DATA:  
TRENCH 1:  
EX. GROUND ABOVE = 526.3  
INV. IN = 522.3  
BOTTOM TRENCH = 518.3  
TRENCH 2:  
EX. GROUND ABOVE = 524.7  
INV. IN = 520.7  
BOTTOM TRENCH = 516.7

INITIAL TRENCH DETAIL  
SCALE: 1" = 2'



SEPTIC PROFILE  
SCALE: 1" = 30'

**INITIAL SYSTEM**

SEWAGE DISPOSAL SYSTEM DATA, DESIGN FOR 6 BEDROOMS (PERMIT FOR 5)  
LOADING RATE = 5 BEDROOMS X 150 GPD/BEDROOM = 900 GPD  
APPLICATION RATE = 0.8  
EFFECTIVE SIDEWALL BEGINS AT 4.5 FEET  
TRENCH DEPTH (D) = 3.5 FEET  
SF OF DRAINFIELD = 750 GPD / 0.8 = 1125 SF  
COEFFICIENT OF REDUCTION OF TRENCH LENGTH =  $(W+2)/(W+1+2D) = (3+2)/(3+1+(2 \times 3)) = 0.45$   
TRENCH LENGTH = 375 SF x 0.45 = 168.75 FEET  
(USE 2 TRENCHES AT 84.38 L.F.)  
TRENCH SPACING =  $2D+W = ((2 \times 4) + 3) = 11'$  USE 11'

**1ST REPLACEMENT SYSTEM**

SEWAGE DISPOSAL SYSTEM DATA, DESIGN FOR 6 BEDROOMS (PERMIT FOR 5)  
LOADING RATE = 5 BEDROOMS X 150 GPD/BEDROOM = 900 GPD  
APPLICATION RATE = 0.8  
EFFECTIVE SIDEWALL BEGINS AT 5.5 FEET  
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TRENCH LENGTH = 375 SF x 0.45 = 170 FEET  
(USE 4 TRENCHES AT 42.61 L.F.)  
TRENCH SPACING =  $2D+W = ((2 \times 3.5) + 3) = 10'$  USE 10'

**2ND REPLACEMENT SYSTEM**

SEWAGE DISPOSAL SYSTEM DATA, DESIGN FOR 6 BEDROOMS (PERMIT FOR 5)  
LOADING RATE = 5 BEDROOMS X 150 GPD/BEDROOM = 900 GPD  
APPLICATION RATE = 0.8  
EFFECTIVE SIDEWALL BEGINS AT 4.5 FEET  
TRENCH DEPTH (D) = 3.5 FEET  
SF OF DRAINFIELD = 750 GPD / 0.8 = 1125 SF  
COEFFICIENT OF REDUCTION OF TRENCH LENGTH =  $(W+2)/(W+1+2D) = (3+2)/(3+1+(2 \times 3)) = 0.45$   
TRENCH LENGTH = 375 SF x 0.45 = 168.75 FEET  
(USE 2 TRENCHES AT 84.38 L.F.)  
TRENCH SPACING =  $2D+W = ((2 \times 4) + 3) = 11'$  USE 11'

**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. 20748, EXPIRATION DATE: 02/22/2023.



*Michael V. Scott*  
Signature Of Professional Engineer  
5/31/22  
DATE

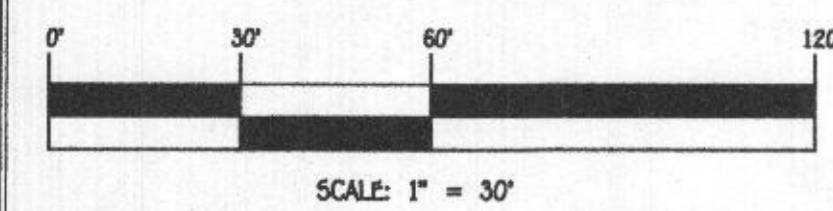
Approved Septic System Plan  
Howard County Health Department  
*K. Hill*  
Signature 6/29/22  
Date  
\*Rousari Approval as shown

**SEPTIC SYSTEM  
INSTALLATION SITE PLAN  
13429 HIGHLAND RD**

ADDRESS CHART	
STREET ADDRESS	13429 HIGHLAND RD

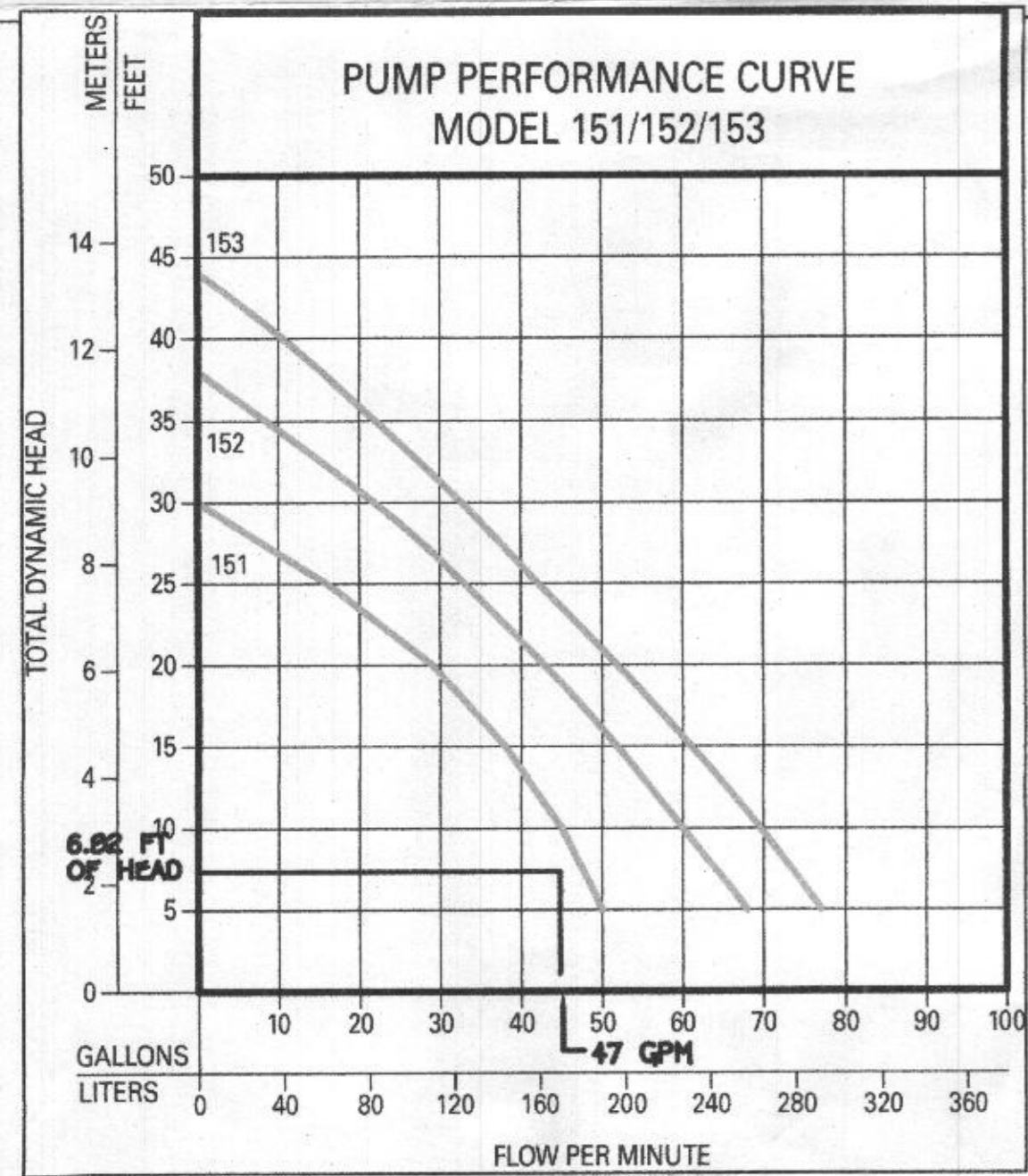
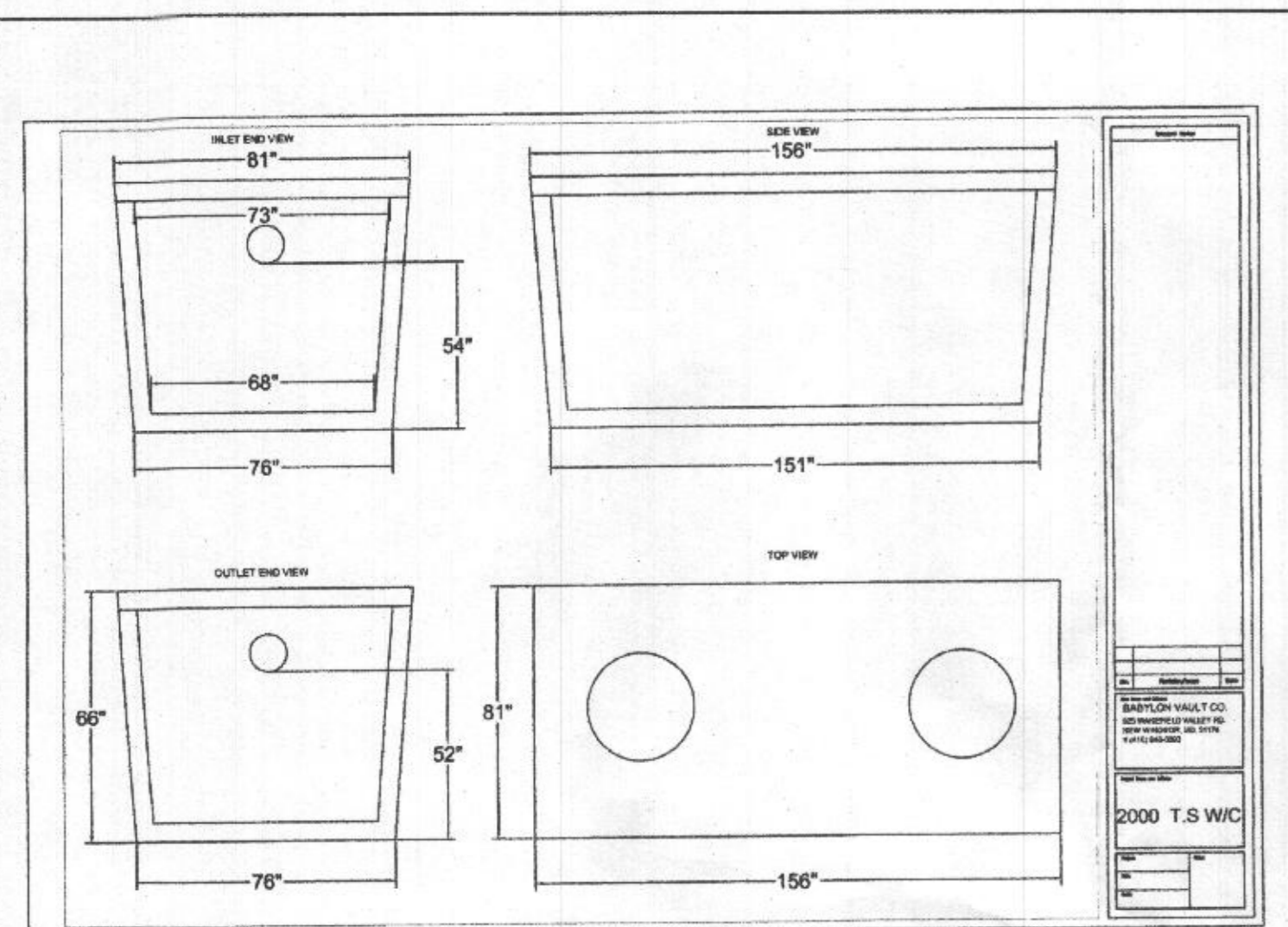
**OWNER**  
CAIRN CUSTOM HOMES LLC  
10548 FORMAN RD  
LAUREL MD 20723

ZONED RR-DEO  
GRID No. 15  
PARCEL No. 101  
TAX MAP No. 34  
5TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND  
SCALE 1"=50'  
DATE MAY 31, 2022  
SHEET 1 OF 2

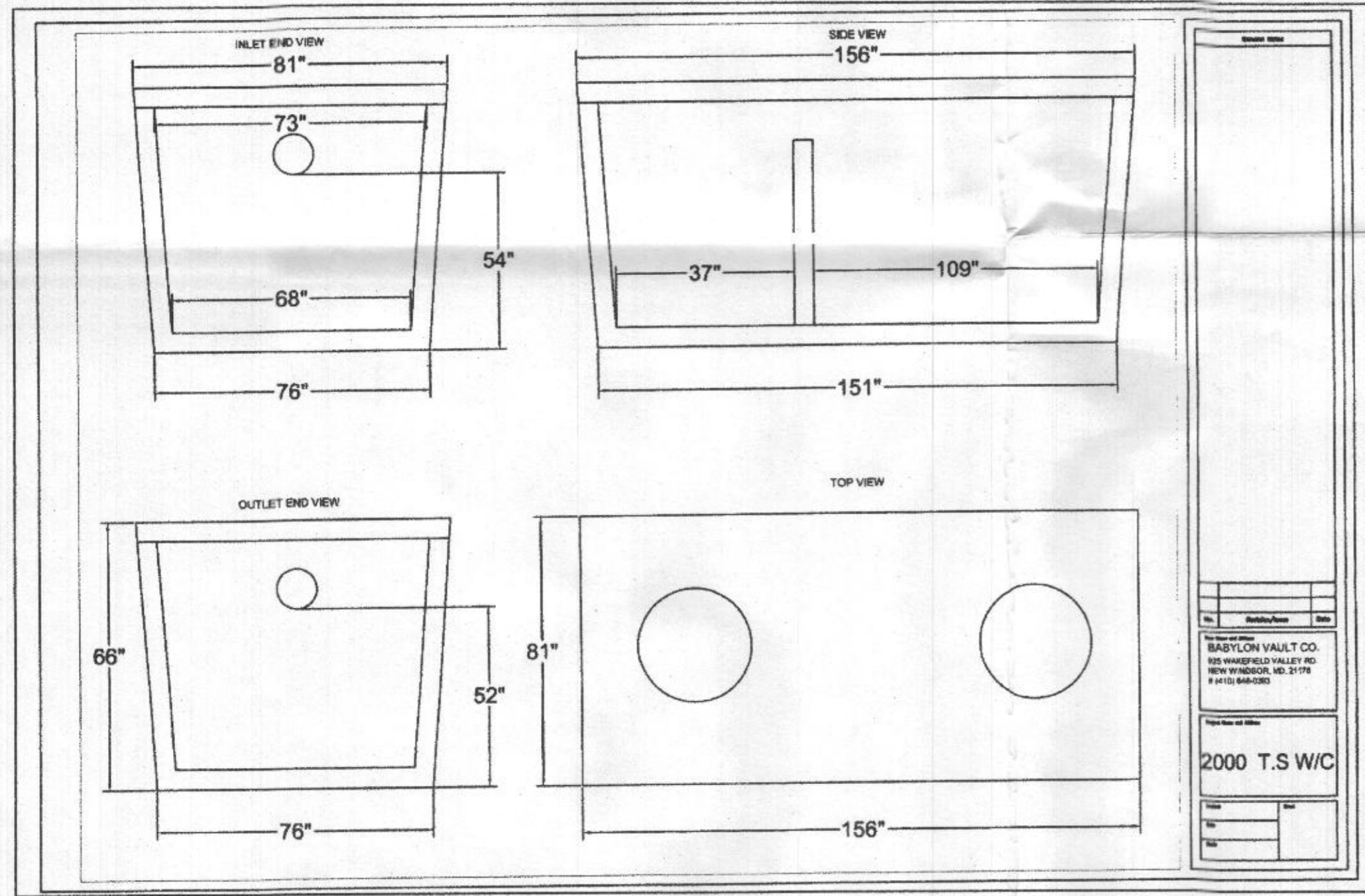


SCALE: 1" = 30'

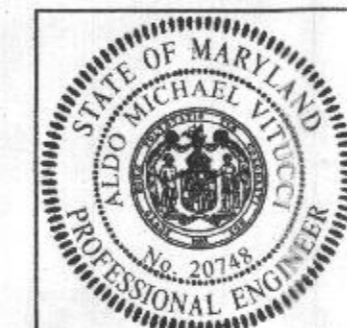
**FISHER, COLLINS & CARTER, INC.**  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE  
ELLSWORTH CITY, MARYLAND 21042  
(410) 481-2995



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

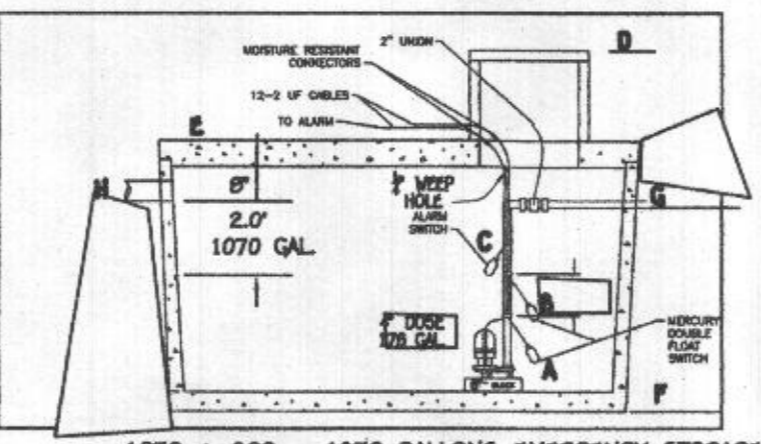


- PUMP ALARMS / INFORMATION**
- A. PUMP OFF : 518.0
  - B. PUMP ON : 517.67
  - C. HIGH WATER ALARM : 518.5
  - D. TOP OF ACCESS COVER : 524.0
  - E. TOP OF TANK : 521.0
  - F. BOTTOM OF TANK : 515.5
  - G. DISCHARGE OUT OF TANK : 519.75
  - H. INVERT INTO TANK : 520



**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. 20746, EXPIRATION DATE: 02/22/2023.

*Michael P. Vitarci*  
Signature of Professional Engineer      5/31/22  
DATE



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

2" SCH. 40 PVC = 96 LF  
1 UNION @ 2 EQUIVALENT FEET = 2 LF  
1 1/2" HD @ 4 EQUIVALENT FEET = 4 LF  
TOTAL LINEAR FEET OF 2" SCH. 40 PVC = 102 LF

**DYNAMIC HEAD**  
102 LF X 2.05 FT PER 100 LF OF 2" PIPE = 2.09 FT OF FRICTION HEAD  
VERTICAL FROM PUMP OFF TO HIGH POINT IN PUMP CHAMBER = 2.03 FT OF FRICTION HEAD  
HIGH POINT IN PUMP CHAMBER TO HIGHEST ELEV OF SYSTEM = 2.7 FT (DISTRIBUTION BOX IS THE HIGHEST POINT)

TOTAL DYNAMIC HEAD = 6.82 FT

1/6 DESIGN FLOW (750/6=125) PLUS VOLUME OF 2" PIPE (17 GALLONS)  
USE 143 GALLON DOSE (125 GALLON MINIMUM)

(RUN TIME = 3.8 MIN (47 GPM X 4 = 188 GALLON DOSE))  
PUMP NEEDS TO HANDLE 47 GPM AT 6.82 FT OF HEAD  
USE 1/3 HP (ZOELLER MODEL 151 PUMP)

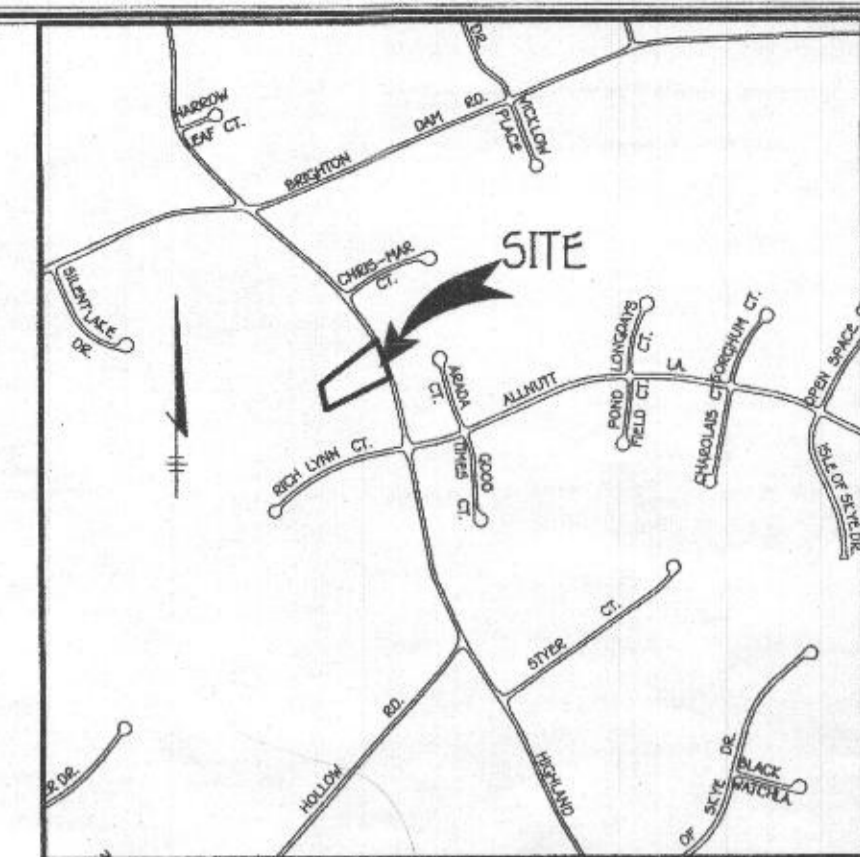
**OWNER**  
CAIRN CUSTOM HOMES LLC  
10548 FORMAN RD  
LAUREL MD 20723

ADDRESS CHART	
STREET ADDRESS	13429 HIGHLAND RD

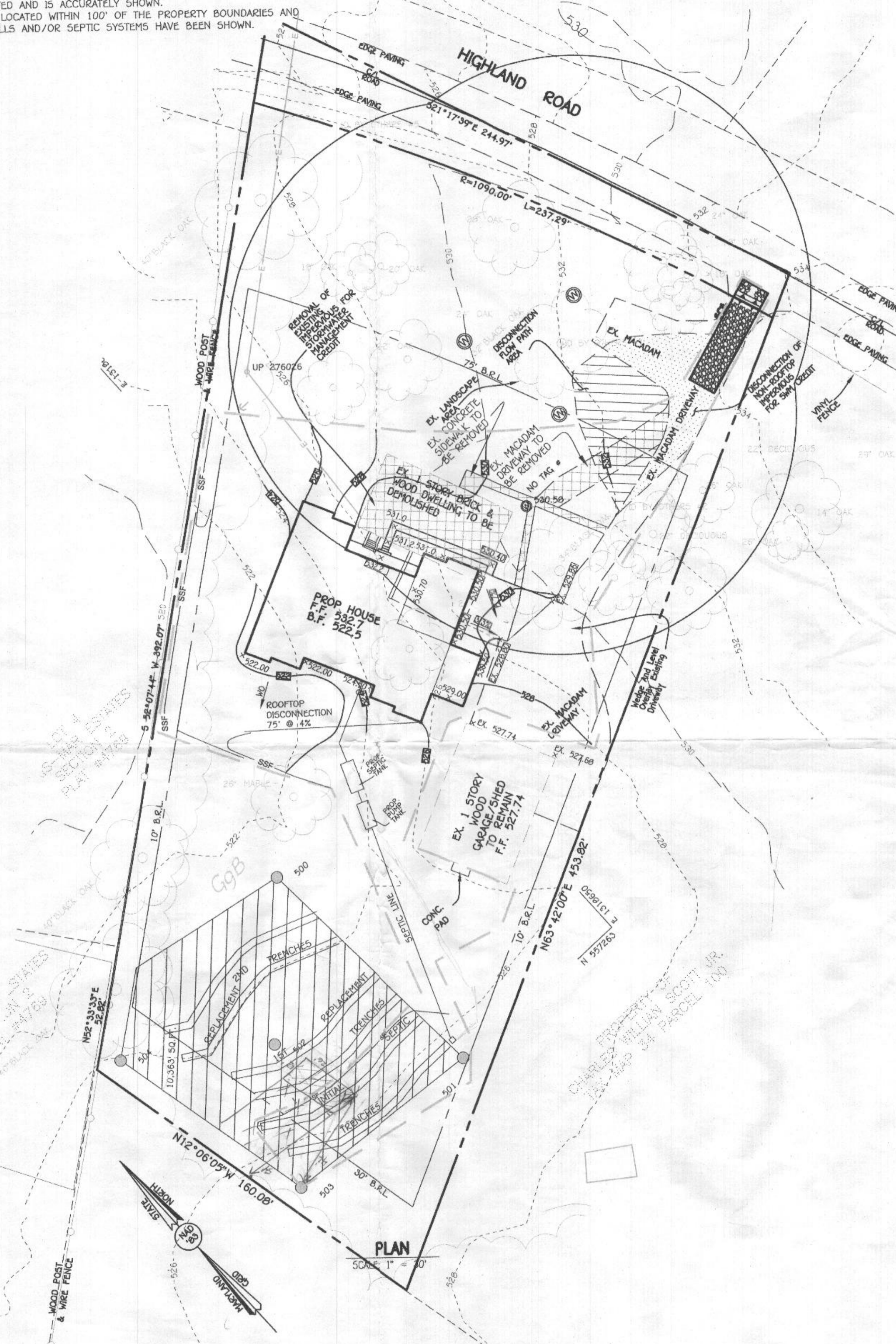
**INSTALLATION SITE PLAN**  
**13429 HIGHLAND RD**

TAX MAP No. 34      ZONED RR-DEO      PARCEL No. 101  
5TH ELECTION DISTRICT      CSD No. 15      HOWARD COUNTY, MARYLAND  
SCALE 1"=50'      DATE: MAY 31, 2022  
SHEET: 2 OF 2

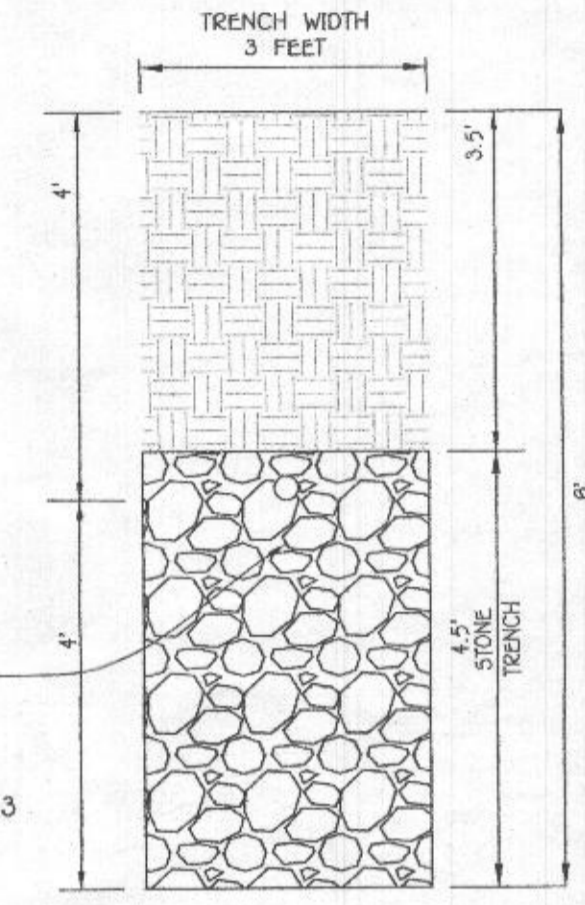
1. ANY CHANGE TO THE LOCATIONS OR DEPTHS TO ANY COMPONENTS MUST BE APPROVED BY THE ENGINEER AND THE HOWARD COUNTY HEALTH DEPARTMENT PRIOR TO INSTALLATION. A REVISED SITE PLAN MAY BE REQUIRED.
2. THE MAXIMUM EARTH COVER OVER THE TANK IS 3 FEET. GREATER EARTH COVER WILL REQUIRE A HEAVY LOAD BEARING TANK.
3. THE WELL HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN.
4. 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.



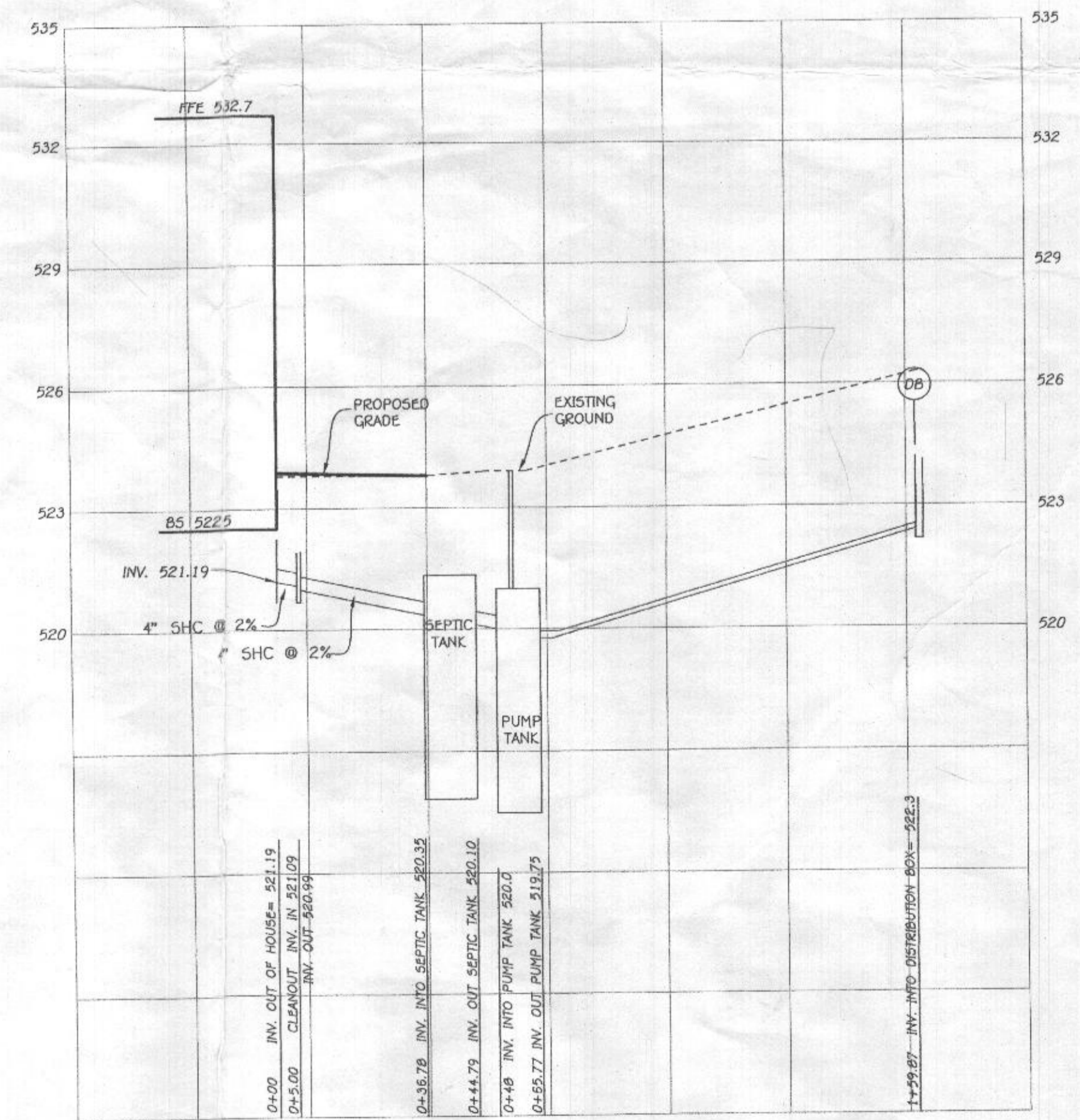
**VICINITY MAP**  
SCALE: 1" = 1200'



FFE 532.7  
BSE 522.5  
INV. OUT OF HOUSE = 521.19  
PROP. GROUND AT CLEANOUT # 1 = 523.9  
INV. INTO CLEANOUT = 521.09  
INV. OUT OF CLEANOUT = 520.99  
EX. GROUND AT SEPTIC TANK = 523.8  
PROP. GRADE ABOVE SEPTIC TANK = 523.8  
TOP OF SEPTIC TANK = 521.35  
INV. INTO SEPTIC TANK = 520.35  
INV. OUT OF SEPTIC TANK = 520.10  
EX. GROUND AT PUMP TANK = 524.0  
PROP. GRADE ABOVE PUMP TANK = 524.0  
TOP OF PUMP TANK = 521.0  
INV. INTO PUMP TANK = 520.0  
INV. OUT OF PUMP TANK = 519.75  
EX. GROUND AT DISTRIBUTION BOX = 526.3  
INV. INTO DISTRIBUTION BOX = 522.4  
INV. OUT OF DISTRIBUTION BOX = 522.3



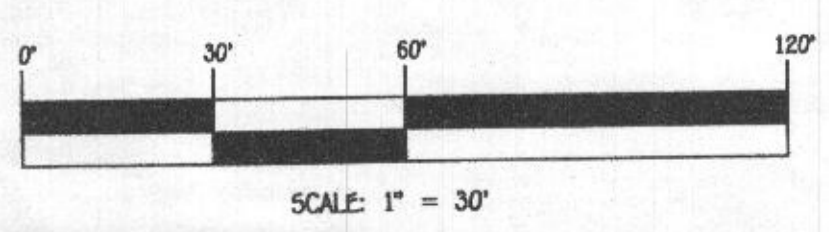
TRENCH DATA:  
TRENCH 1:  
EX. GROUND ABOVE = 526.3  
INV. IN = 522.3  
BOTTOM TRENCH = 518.3  
TRENCH 2:  
EX. GROUND ABOVE = 525.7  
INV. IN = 521.7  
BOTTOM TRENCH = 521.7



**INITIAL SYSTEM**  
SEWAGE DISPOSAL SYSTEM DATA, DESIGN FOR  
6 BEDROOMS (PERMIT FOR 5)  
LOADING RATE = 5 BEDROOMS X 150 GPD/BEDROOM = 900 GPD  
APPLICATION RATE = 0.8  
EFFECTIVE SIDEWALL BEGINS AT 4.5 FEET  
TRENCH DEPTH = 8 FEET  
TRENCH WIDTH (W) = 3 FEET  
EFFECTIVE DEPTH (D) = 3.5 FEET  
SF OF DRAINFIELD = 750 GPD / 0.8 = 1125 SF  
COEFFICIENT OF REDUCTION OF TRENCH LENGTH =  
(W+2)/(W+1+2D) = (3+2)/(3+1+(2x3)) = 0.45  
TRENCH LENGTH = 375 SF x 0.45 = 168.75 FEET  
(USE 2 TRENCHES AT 84.38 L.F.)  
TRENCH SPACING = 2D+W = ((2x4) + 3) = 11' USE 11'

**1ST REPLACEMENT SYSTEM**  
SEWAGE DISPOSAL SYSTEM DATA, DESIGN FOR  
6 BEDROOMS (PERMIT FOR 5)  
LOADING RATE = 5 BEDROOMS X 150 GPD/BEDROOM = 900 GPD  
APPLICATION RATE = 0.8  
EFFECTIVE SIDEWALL BEGINS AT 4.0 FEET  
TRENCH DEPTH = 8 FEET  
TRENCH WIDTH (W) = 3 FEET  
EFFECTIVE DEPTH (D) = 3.5 FEET  
SF OF DRAINFIELD = 750 GPD / 0.8 = 1125 SF  
COEFFICIENT OF REDUCTION OF TRENCH LENGTH =  
(W+2)/(W+1+2D) = (3+2)/(3+1+(2x3)) = 0.41  
TRENCH LENGTH = 312.5 SF x 0.41 = 153.75 FEET  
(USE 2 TRENCHES AT 76.88 L.F.)  
TRENCH SPACING = 2D+W = ((2x3.5) + 3) = 10' USE 10'

**2ND REPLACEMENT SYSTEM**  
SEWAGE DISPOSAL SYSTEM DATA, DESIGN FOR  
6 BEDROOMS (PERMIT FOR 5)  
LOADING RATE = 5 BEDROOMS X 150 GPD/BEDROOM = 900 GPD  
APPLICATION RATE = 0.8  
EFFECTIVE SIDEWALL BEGINS AT 4.5 FEET  
TRENCH DEPTH = 8 FEET  
TRENCH WIDTH (W) = 3 FEET  
EFFECTIVE DEPTH (D) = 3.5 FEET  
SF OF DRAINFIELD = 750 GPD / 0.8 = 1125 SF  
COEFFICIENT OF REDUCTION OF TRENCH LENGTH =  
(W+2)/(W+1+2D) = (3+2)/(3+1+(2x3)) = 0.45  
TRENCH LENGTH = 375 SF x 0.45 = 168.75 FEET  
(USE 2 TRENCHES AT 84.38 L.F.)  
TRENCH SPACING = 2D+W = ((2x4) + 3) = 11' USE 11'



**FISHER, COLLINS & CARTER, INC.**  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
CENTENNIAL SQUARE OFFICE PARK - 18272 BALTIMORE NATIONAL PIKE  
ELLSWORTH CITY, MARYLAND 21042  
(410) 461-2255



**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. 20748, EXPIRATION DATE: 02/22/2023.  
*Signature of Professional Engineer*  
DATE: 6/25/21

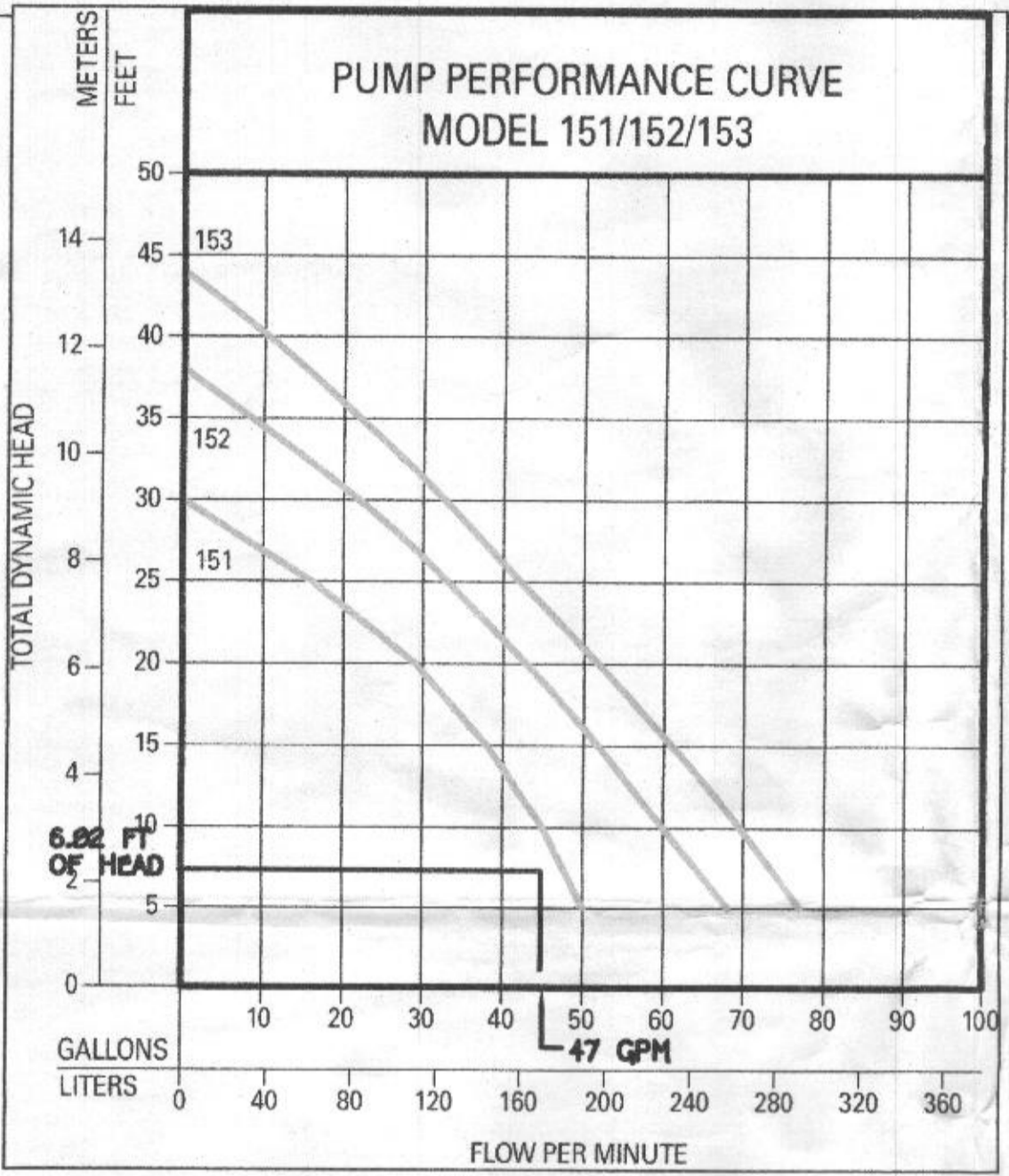
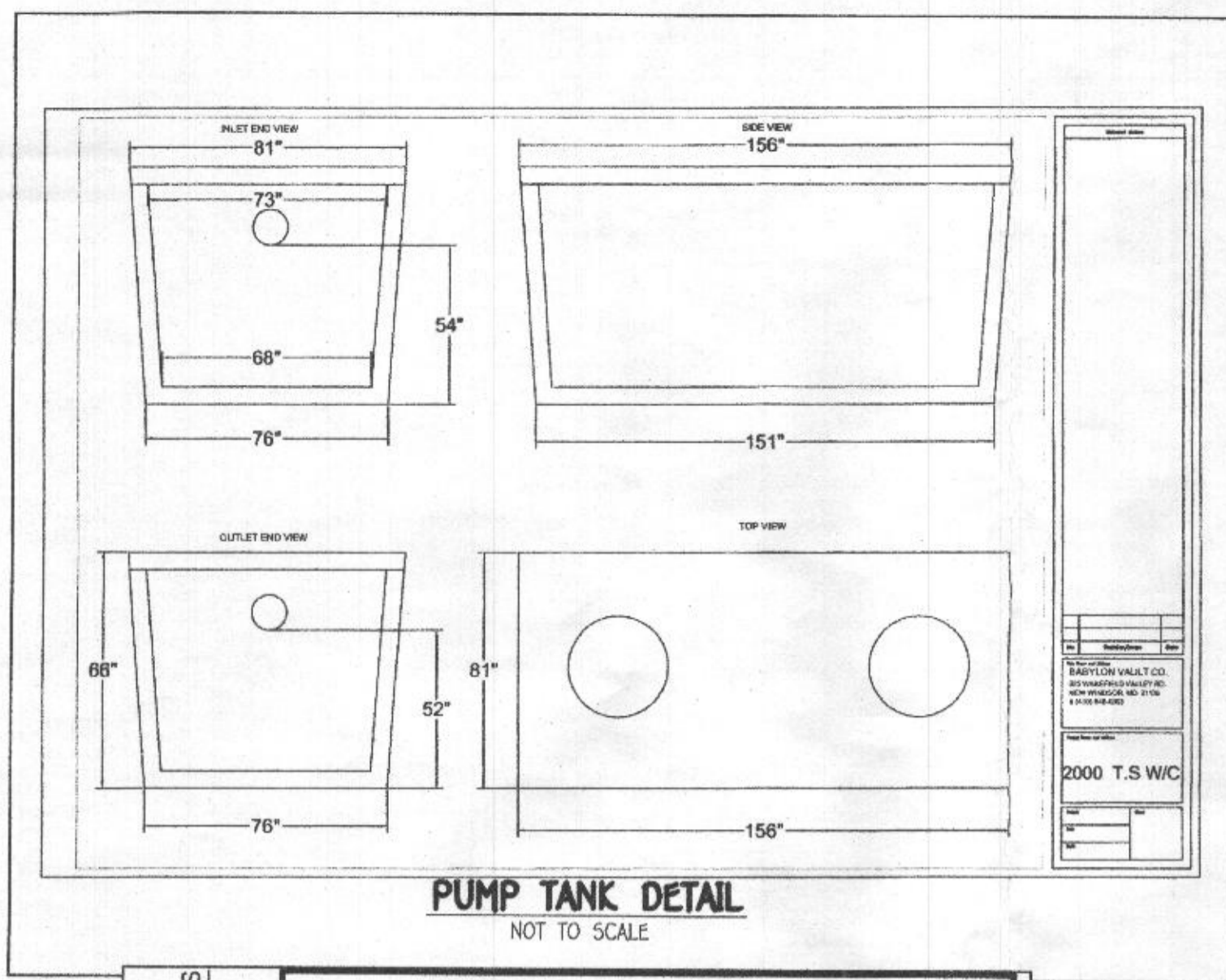
**SEPTIC PROFILE**  
SCALE: 1" = 30'

**OWNER**  
CAIRN CUSTOM HOMES LLC  
10548 FORMAN RD  
LAUREL MD 20723

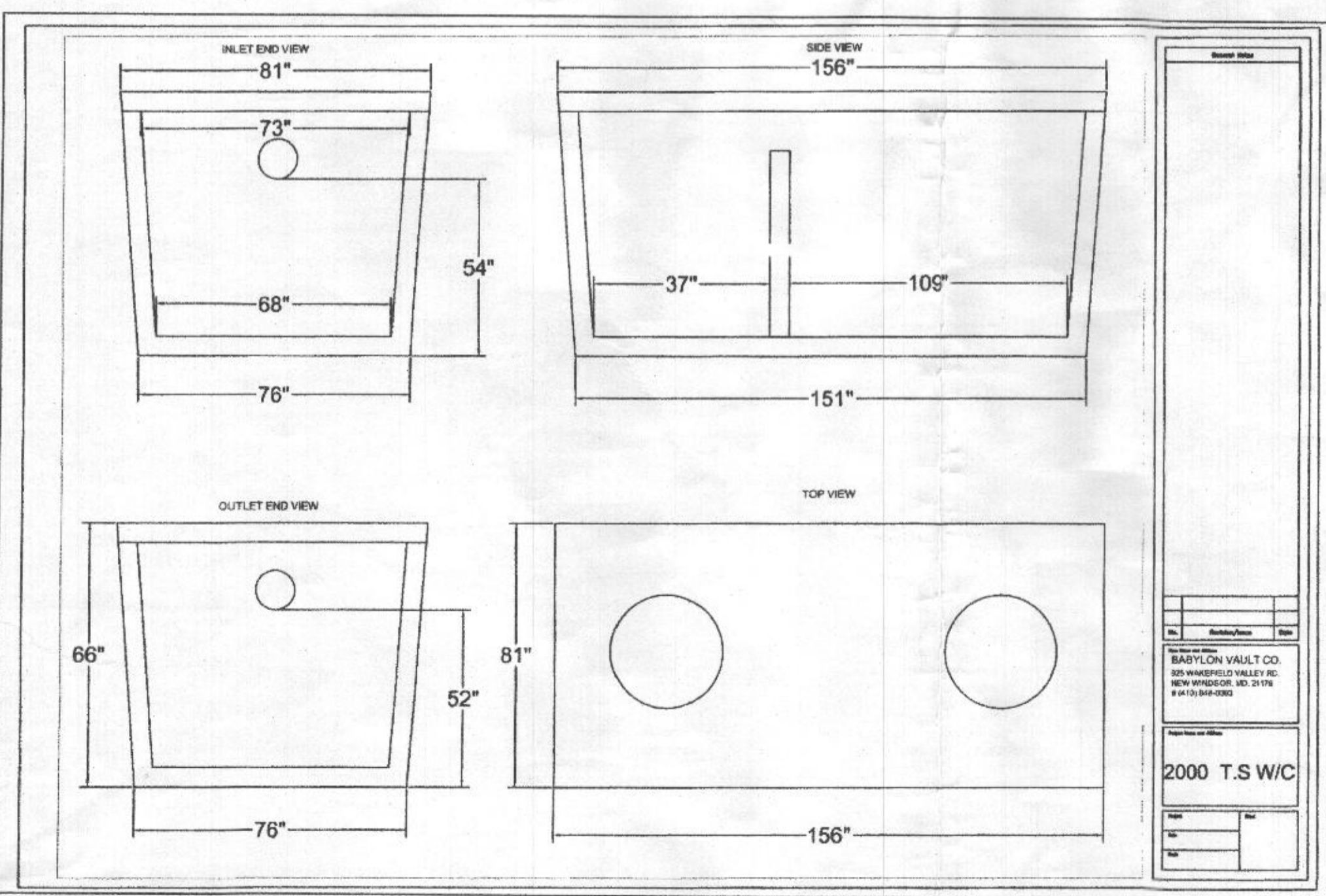
ADDRESS CHART	
STREET ADDRESS	13429 HIGHLAND RD

Approved Septic System Plan  
Howard County Health Department  
*Signature* 7/1/21  
Date

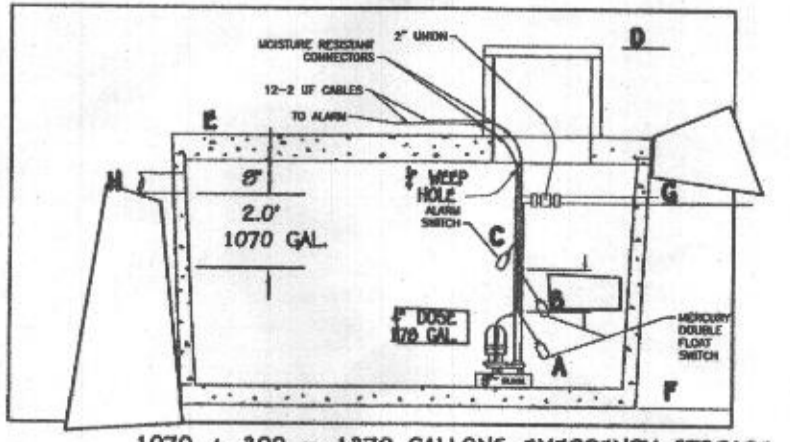
**SEPTIC SYSTEM  
INSTALLATION SITE PLAN**  
13429 HIGHLAND RD  
ZONED RR-DEO  
TAX MAP No. 34 GRID No. 15 PARCEL No. 101  
5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
SCALE: 1" = 50' DATE: JUNE 25, 2021  
SHEET: 1 OF 2



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



- PUMP ALARMS / INFORMATION**
- A. PUMP OFF : 518.0
  - B. PUMP ON : 517.67
  - C. HIGH WATER ALARM : 518.5
  - D. TOP OF ACCESS COVER : 524.0
  - E. TOP OF TANK : 521.0
  - F. BOTTOM OF TANK : 515.5
  - G. DISCHARGE OUT OF TANK : 519.75
  - H. INVERT INTO TANK : 520



1070 + 300 = 1370 GALLONS EMERGENCY STORAGE  
 NOTE: THIS DETAIL IS TO BE USED FOR FLOAT CONFIGURATION ONLY - SEE DETAIL ABOVE FOR TANK DIMENSIONS AND ACTUAL LOCATION OF ACCESS COVER.



**PROFESSIONAL CERTIFICATION**  
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 20748, EXPIRATION DATE: 02/22/2023.

*Michael J. Gabel*  
 Signature of Professional Engineer  
 DATE

- 1 UNION @ 2 EQUIVALENT FEET = 2 LF
- 1 1/8 HB @ 4 EQUIVALENT FEET = 4 LF
- TOTAL LINEAR FEET OF 2" SCH. 40 PVC = 102 LF

**DYNAMIC HEAD**  
 102 LF X 2.05 FT PER 100 LF OF 2" PIPE = 2.09 FT OF FRICTION HEAD  
 VERTICAL FROM PUMP OFF TO HIGH POINT IN PUMP CHAMBER = 2.03 FT OF FRICTION HEAD  
 HIGH POINT IN PUMP CHAMBER TO HIGHEST ELEV OF SYSTEM = 2.7 FT (DISTRIBUTION BOX IS THE HIGHEST POINT)  
 TOTAL DYNAMIC HEAD = 6.82 FT

1/8 DESIGN FLOW (750/6=125) PLUS VOLUME OF 2" PIPE (17 GALLONS)  
 USE 143 GALLON DOSE (125 GALLON MINIMUM)  
 (RUN TIME = 3.0 MIN (47 GPM X 4 = 188 GALLON DOSE))

PUMP NEEDS TO HANDLE 47 GPM AT 6.82 FT OF HEAD  
 USE 1/3 HP (ZOLLER MODEL 151 PUMP)

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 (410) 461-2895

**OWNER**  
 CAIRN CUSTOM HOMES LLC  
 10548 FORMAN RD  
 LAUREL MD 20723

ADDRESS CHART	
STREET ADDRESS	
13429	HIGHLAND RD

**INSTALLATION SITE PLAN**  
**13429 HIGHLAND RD**

ZONED RR-DEO  
 TAX MAP No. 34 GRID No. 15 PARCEL No. 101  
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 SCALE 1"=50' DATE: JUNE 25, 2021  
 SHEET: 2 OF 2