

Bureau of Environmental Health
 8930 Stanford Boulevard, Columbia, MD 21045
 Main: 410-313-2640 | Fax: 410-313-2648
 TDD 410-313-2323 | Toll Free 1-866-313-6300
www.hchealth.org
 Facebook: www.facebook.com/hocohealth

Maura J. Rossman, M.D., Health Officer

RECEIPT DATE: 2-8-18 **ONSITE SEWAGE DISPOSAL SYSTEM** P 562422

APPROVAL DATE: 4/17/18 sec **PERMIT: CONSTRUCTION** A _____

PROPERTY ADDRESS: 1015 Fairlane Road

SUBDIVISION: Fairlane Farms LOT: 16 TAX ID: _____

CONTRACTOR: South Carroll Backhoe EMAIL: scbackhoe@comcast.com

CONTRACTOR ADDRESS: 4410 Salem Bottom Road, Westminster, MD 21157 PHONE: 410-596-3618

PROPERTY OWNER: NV Homes EMAIL: _____

OWNER ADDRESS: 9720 Patuxent Woods Drive, Columbia, MD 21046 PHONE: 410-379-5956

SEPTIC TANK SIZE (GALLONS): 2000 TANK MANUFACTURER: Babylon Vault or equivalent

PUMP MODEL: N/A PUMP SIZE: N/A PUMP TANK CAPACITY: N/A

DISTRIBUTION SYSTEM: GRAVITY PRESSURE DOSED BEDROOMS: 5 APPLICATION RATE _____

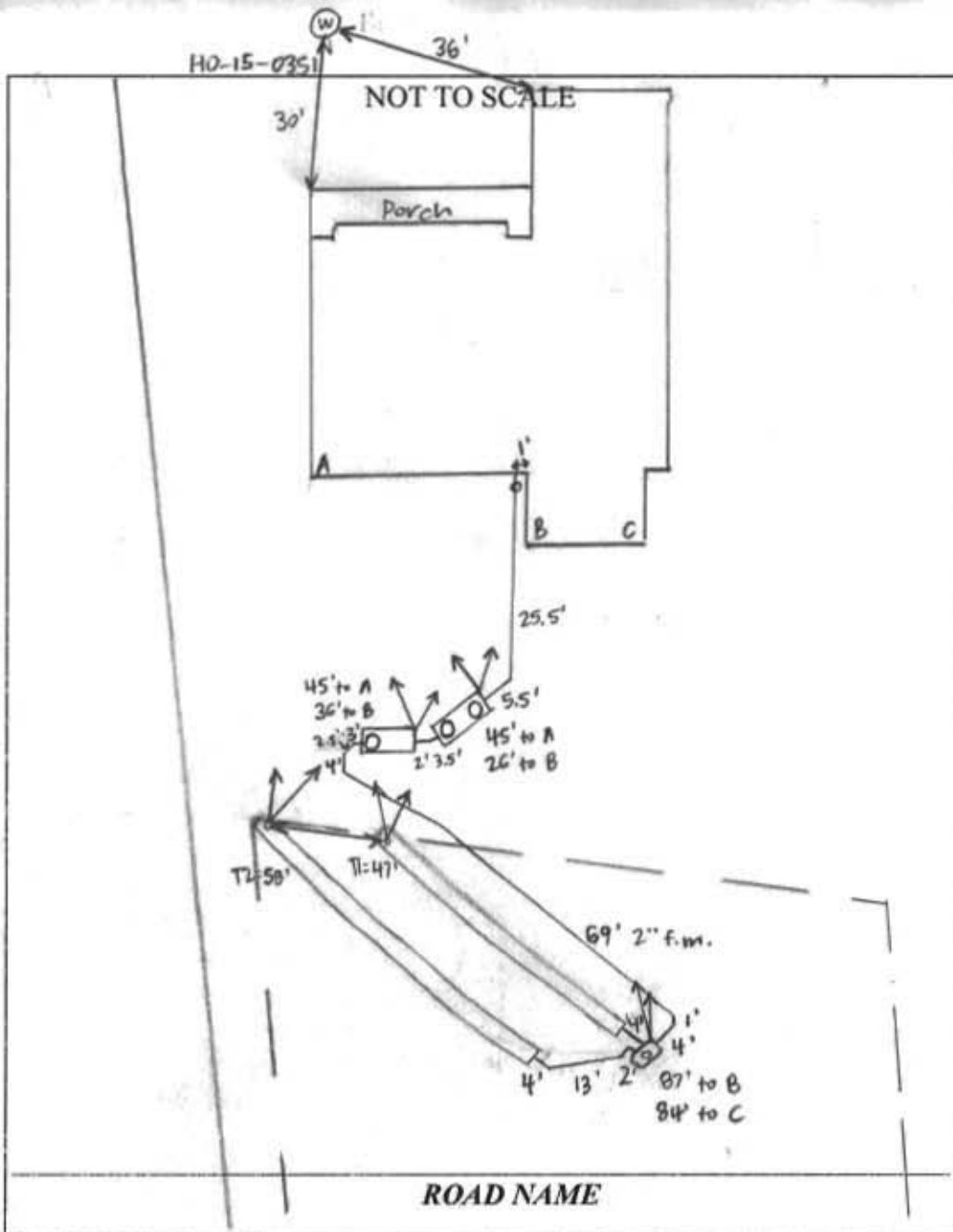
TRENCHES:	LINEAR FEET REQUIRED: <u>104.17</u>	INLET DEPTH: <u>3</u>
	TRENCH WIDTH: <u>3</u>	MAXIMUM BOTTOM DEPTH: <u>6</u>
	MINIMUM SPACE BETWEEN TRENCHES: <u>10</u>	EFFECTIVE AREA BEGINNING DEPTH: <u>3</u>
LOCATION:	PER APPROVED SITE PLAN. SEWAGE DISPOSAL AREA AND TANK LOCATIONS MUST BE STAKED BY LICENSED SURVEYOR PRIOR TO PRE-CONSTRUCTION INSPECTION.	
NOTES:	Install 2 x 52.08 LF of trench	

ISSUED BY: Hank Oswald ISSUE DATE: 2-8-18 EXPIRATION DATE: 2-8-19

- NOTE: CONTRACTOR MUST SCHEDULE A PRE-CONSTRUCTION INSPECTION PRIOR TO BEGINNING ANY INSTALLATION
- NOTE: CONTRACTOR MUST SCHEDULE AN INSPECTION AND GAIN APPROVAL OF ALL COMPONENTS PRIOR TO COVERING
- NOTE: STONE MUST BE APPROVED BY HEALTH DEPARTMENT AND GRAVEL TICKET MUST BE AVAILABLE FOR REVIEW.
- NOTE: WATERTIGHT TANKS REQUIRED
- NOTE: ALL PARTS OF SEPTIC SYSTEM SHALL BE AT LEAST 100 FEET DOWNGRADIENT FROM ANY WATER WELL
- NOTE: MANHOLE RISERS REQUIRED ON ALL SEPTIC TANKS AND PUMP CHAMBERS
- NOTE: AN ELECTRICAL PERMIT IS REQUIRED FOR INSTALLATION OF ANY ELECTRICAL COMPONENTS OF THE SYSTEM
 ELECTRICAL PERMIT ISSUED E _____
- NOTE: MDE RECOMMENDS SEPTIC TANKS, BAT, AND OTHER PRETREATMENT UNITS BE PUMPED AT A FREQUENCY ADEQUATE TO ENSURE THAT SOLIDS ARE NOT DISCHARGED TO THE DISPOSAL AREA

NEITHER THE HOWARD COUNTY COUNCIL NOR THE HEALTH DEPARTMENT IS RESPONSIBLE FOR THE SUCCESSFUL OPERATION OF ANY SYSTEM.

**PERMITTEE RESPONSIBLE FOR OBTAINING FINAL APPROVAL ON THIS PERMIT.
 CALL 410-313-1771 TO SCHEDULE INSPECTIONS.**



TRENCH/DRAINFIELD DATA		
WIDTH	INLET	BOTTOM
3'	3'	6'
NUMBER OF TRENCHES		2
TOTAL LENGTH		105'
ABSORPTION AREA		315' + SIDEWALL
DISTRIBUTION BOX LEVEL		YES
DISTRIBUTION BOX BAFFLE		ELBOW
DISTRIBUTION BOX PORT		YES

SEPTIC TANK DATA	
SEPTIC TANK I LEVEL	YES
MANUFACTURER	BABYLON
CAPACITY	2000 GAL
SEAM LOC	TDP
TANK LID DEPTH	1.5-2.5'
BAFFLES	YES
BAFFLE FILTER	NO
MANHOLE LOC	FRONT + REAR
6" PORT LOC	NONE
WATERTIGHT TEST	NO
SLOTTED	YES
DATE ON LID	2-28-17
PUMP/SEPTIC TANK LEVEL YES	
MANUFACTURER	BABYLON
CAPACITY	1500 GAL
SEAM LOC	TOP
TANK LID DEPTH	1.5-2'
BAFFLES	NO
BAFFLE FILTER	NO
MANHOLE LOC	REAR
6" PORT LOC	NONE
WATERTIGHT TEST	NO
SLOTTED	NO
DATE ON LID	12-13-17
Pump: Gould's 1/3 hp	

PRE-CONSTRUCTION:

2/22/18 Met S. Carroll on site for layout. SDA stakes present. house connection on different wall than shown on plan. Shot elevations and cannot make fall to 3' inlet at trenches. Will contact engineer to get revised plans. (SC)

3/14/18 Shot contour to install a 48' and 58' trench on contour, running south start trench approx. 2.8' down from top center of SDA. Run P.M. next to (5') upper trench (flow) (No tank layout given)

INSTALLATION: 3/16/18 T1 dug + left open @ ends for inspection. T1 dug + partially stoned 3' wide 3' inlet. 6' bottom. D-box set + connected to trenches. Force main installed from silt fence to D-box. (SC) 4/3/18 Laid out tanks per plan. New house connection drilled through wall - shot elevations + tanks will have $\leq 3'$ cover. (SC) 4/5/18 House connection made, tanks set per revised plan. Need pump + alarm test and

Any well 7' from SDA violated. (SC) 4/17/18 Met S. Carroll on site for pump + alarm. Alarm sounds, pump pumps effluent to D-box. Dry well relocated. (SC)

FINAL INSPECTOR Sarah Collins DATE OF APPROVAL 4/17/18

**FINAL
STORMWATER MANAGEMENT
REPORT**

Fairlane Farms, Lot 16

GP-17-081

*Zoned: RC-DEO
Howard County, Maryland
Sixth Election District
Tax Map #8 Grid 2 & 3 Parcel 8 & 17*

Thursday, October 19, 2017

Builder:

NV Homes
9720 Patuxent Woods Drive
Columbia, MD 21046
410-379-5956

Prepared By:

Fisher, Collins and Carter, Inc.
Centennial Square Office Park
10272 Baltimore National Pike
Ellicott City, Maryland 21042
410-461-2855
w.o. #12036



Professional Certification: I hereby certify that these documents were prepared by me and that I am a duly Licensed Professional Surveyor under the laws of the State of Maryland. License No. 20748, Expiration Date: 2/22/19.

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I. NARRATIVE

Introduction:

This report will demonstrate how the criteria set forth in the Maryland Stormwater Design Manual, Volumes I and II (effective October 2000, revised May 2009) will be satisfied on this project. The goal of creating hydrology similar to that of "Woods in Good Condition" will be accomplished through the use of the practices contained within Chapter 5 of said manual. The achievement of this goal will remove the requirement of providing Channel Protection Volume.

General Site Conditions:

"This Property is zoned RC-DEO and consist of Parcels 8 & 17 located on both Tax Map 3 & Tax Map 8 of the Howard County, Maryland Tax Map Database System. Parcel 8 which is 69.2 acres in size borders Morgan Station Road and Old Frederick Road. Parcel 17 consist of three separate portions of land. One portion which is 28.0 acres in size is adjacent to the aforementioned Parcel 8 and also borders Old Frederick Road. Located to the northeast of this portion is another area of Parcel 17 that is 4.83 in size. The final piece is 36.71 acres and borders the South Branch of the Patapsco River. These three portions of Parcel 17 total 69.4 acres in size. Parcel 8 and the portion of Parcel 17 that border Old Frederick Road create the developable area where improvements have been proposed. The other portions of Parcel 17 (totaling 41.5) along with a proposed contiguous parcel that meanders through the developable area created by Parcels 8 & 17 (totaling 36.7) are planned to be in presentation by the design of this project. The total area of preservation that is currently proposed by this development is approximately 78.2 acres.

The developable area mostly contains 'B' Soils with some 'C' soils located in the area of the wetland, which no disturbance is proposed. Several existing drainage swales travel from the south to the north and develop into two streams, which discharge into the South Branch of the Patapsco River. "

I. Natural Resource Protection:

To ensure the protection of natural resources located on this site, all buffers will be honored by locating improvements away from environmentally sensitive areas.

II. Maintenance of Natural Flow Patterns:

It is the intent of the proposed design to discharge runoff similar to the characteristics and direction of this site prior to any of the proposed improvements.

III. Reduction of impervious areas through better site design, alternative surfaces and Nonstructural Practices

This project maintains the original design provided by F-15-054.

- IV. **Integration of Erosion and Sediment Controls into Stormwater Strategy:**
Erosion Control Matting is being used in the proposed swale and super silt fence as shown on the approved GP plans.
- V. **Implementation of ESD Planning Techniques and practices to the Maximum Extent Practicable (MEP)**
The full required ESD volume is being provided.
- VI. **Request for Design Manual Waiver:**
No waivers are expected to be required on this project.

Table 5.2 Summary of Site Development Strategies

Better Site Design Technique	MDE Recommendations	Proposed Strategies
Using narrower, shorter streets, rights of ways and sidewalks	Streets may be as narrow as 22-feet in neighborhoods serving low traffic volumes; open space designs and clustering will reduce street lengths; rights-of-ways can be reduced by minimizing sidewalk width, providing sidewalks on one side of the road, and reducing the border width between the street and sidewalk	N/A
Cul-de-sacs	Allow for smaller radii for turn around as low as 35-feet; use a landscaped island in the center of the Cul-de-sac and design these areas to treat stormwater runoff.	N/A
Open vegetated channels	Allow grass channels or biofilters for residential street drainage and stormwater treatment.	N/A
Parking ratios, parking codes, parking lots, and structured parking	Parking ratios should be interpreted as maximum number of spaces; use shared parking arrangements; minimum parking stall width should be less than 9-feet and stall length less than 18-feet; parking garages are encouraged rather than surface lots.	N/A
Roadway Runoff	Runoff from proposed roadways will be Open Section with offset filter areas located on Open Space Lots.	N/A
Open Space	Flexible design criteria should be provided to developers who wish to use cluster development and open space designs	N/A
Setbacks and frontages	Relax setbacks and allow narrower frontages to reduce total road length; eliminate driveways	N/A
Driveways	Allow for shared driveways and alternative impervious surfaces	Disconnection
Rooftop runoff	Direct to pervious surfaces	Drywells
Buffer systems	Designate a minimum buffer width and provide mechanisms for long-term protection	N/A
Clearing and grading	Clearing, grading, and earth disturbance should be limited to that required to develop lot.	Smaller LOD
Tree conservation	Provide long-term protection of large tracts of contiguous forested areas; promote the use of native plantings.	Forest Conservation addressed by F-01-191.
Conservation incentives	Provide incentives for conserving natural areas through density compensation, property tax reduction, and flexibility in the design process.	N/A

**III. SITE DATA
FOR PROJECT**

LOT 16, STORMWATER MANAGEMENT CONCEPT SUMMARY

Site Data:

Total Site Area: 1.30 acres

LOD (Limit of Disturbance): 44,907 SqFt. or 1.03 Acres.

Soil Condition: 0% "A", 100% "B", 0% "C", 0% "D"

Measured Impervious Area: 5,964 SqFt. or 0.14 Acres+/-

**IV. CHAPTER 5
SWM
COMPUTATIONS**

Stormwater Management Requirements

Initial Site Assessment (Site Data):

1. Existing Conditions

Total L.O.D: 44,907sq.ft. or 1.03acres +/-
Soil Types: 100% B Soil
Land Use: Residential
Lot Size 56,601 sq.ft.

2. Proposed Conditions

Impervious Cover: 5,964 sq.ft. or 0.14 acres +/-
(2,760 sq.ft. Paving + 3,204 sq.ft. Rooftop = 5,964 sq.ft. = 0.14 acre)

RCN's for Wooded Conditions: Target Pe Using Table 5.3

% Impervious: 0.14 acres/1.03 acres (LOD) = "I" = 0.133 USE 14%

Using Table 5.3 and applying 14% Impervious

Pe Target for ESD Practices: 1.0 inches

ESD Targets

Impervious Area 14%

$$\begin{aligned}R_v &= 0.05 + 0.009 (I) \\ &= 0.05 + 0.009 (14) \\ &= 0.18\end{aligned}$$

$$\begin{aligned}ESD_v &= \frac{(P_e)(R_v)(A)}{12} \\ &= \frac{(1.0)(0.18)(44,907)}{12}\end{aligned}$$

Minimum Required ESDv = 658.64

Use 659 cu.ft.

ESDv Provided - Disconnection of Non-Rooftop Runoff

ESDv provided by N-2 (16) Non-Rooftop Runoff Lot : 215 cu.ft.

Determine Treatment for the proposed driveway: 2,710 SqFt. of Driveway

A non-rooftop disconnect area has been proposed along the driveway, The following calculations reflect the most extream of the the disconnectuin area.

Impervious Ratio = 100.0%

Disconnection Length / Impervious Length = 14.0/14.0

Using Table 5.7(page 5.62) the PE treatment provided based on a 1:1 ratio is 1.0"

Pervious ratio = Disconnection Length / Contribution Length = N/A

Using Table 5.7 (page 5.62) the PE treatment provided based one a 1:1 ratio is 1.0" Using a treated Pe of 1.0" Environmental Site Design has been provided.

$$ESDv = \frac{(Pe)(Rv)(A)}{12}$$

$$ESDv \text{ Required: } (1.0)(0.95)(2,710)/12 = 214.54 \text{ cu.ft.}$$

ESDv Provided - Drywells

ESDv provided Dry Wells on DW 1 0: 90 cu.ft.

There will be approximately three (2) downspouts for a total roof area of 853 sq.ft. for the proposed house. It is proposed to use one (1) drywell that will meet the following conditions:

Treatment: Drywells shall meet the following conditions:

1. Installing Gutter Drain Filters within the pipe of each downspout will provide pretreatment.
2. Each drywell has been designed to capture and store the ESDv and the Pe value based upon this ESDv has been applied to each contributing drainage area. Also, the storage calculations account for the porosity of the sand and gravel media in the bottom of the facility.
3. The drainage area to each drywell will not exceed 1000 sq.ft..
4. The soils for this project are HSG B and C, so the drywells will not exceed 5' in depth.
5. The length of each drywell will be greater than the width.
6. A one-foot layer of sand will be provided at the bottom of each drywell.

SWM Volume Computations for the Drywells (M-5)

The ESDv for each of the drywells is:

The ESDv equation is $(Pe \times Rv \times A)/12$ where:

Impervious Area = 853 sq.ft.

$Rv = 0.95$

$Pe = 1.00$

$ESDv = (1.00 \times 0.95 \times 853)/12 = 67.53$ cu.ft. say 68

Provided will be 0 (1) drywells with dimensions of 9 ft. long x 5 ft. wide x 5 ft. deep = 225
225 cu.ft. of storage x 0.40 void ration for stone = 90 cu.ft > 68 cu.ft.

ESDv Provided - Drywells

ESDv provided Dry Wells on DW 2 0: 94 cu.ft.

There will be approximately three (2) downspouts for a total roof area of 849 sq.ft. for the proposed house. It is proposed to use one (1) drywell that will meet the following conditions:

Treatment: Drywells shall meet the following conditions:

1. Installing Gutter Drain Filters within the pipe of each downspout will provide pretreatment.
2. Each drywell has been designed to capture and store the ESDv and the Pe value based upon this ESDv has been applied to each contributing drainage area. Also, the storage calculations account for the porosity of the sand and gravel media in the bottom of the facility.
3. The drainage area to each drywell will not exceed 1000 sq.ft..
4. The soils for this project are HSG B and C, so the drywells will not exceed 5' in depth.
5. The length of each drywell will be greater than the width.
6. A one-foot layer of sand will be provided at the bottom of each drywell.

SWM Volume Computations for the Drywells (M-5)

The ESDv for each of the drywells is:

The ESDv equation is $(Pe \times Rv \times A)/12$ where:

Impervious Area = 849 sq.ft.

$Rv = 0.95$

$Pe = 1.00$

$ESDv = (1.00 \times 0.95 \times 849)/12 = 67.21$ cu.ft. say 68

Provided will be 0 (1) drywells with dimensions of 9 ft. long x 6 ft. wide x 5 ft. deep = 234 *0.4,"0")&" cu.ft > "&ROUNDUP(N61,0.1)&" cu.ft."

ESDv Provided - Drywells

ESDv provided Dry Wells on DW 3 0: 99 cu.ft.

There will be approximately two (3) downspouts for a total roof area of 865 sq.ft. for the proposed house. It is proposed to use one (1) drywell that will meet the following conditions:

Treatment: Drywells shall meet the following conditions:

1. Installing Gutter Drain Filters within the pipe of each downspout will provide pretreatment.
2. Each drywell has been designed to capture and store the ESDv and the Pe value based upon this ESDv has been applied to each contributing drainage area. Also, the storage calculations account for the porosity of the sand and gravel media in the bottom of the facility.
3. The drainage area to each drywell will not exceed 1000 sq.ft..
4. The soils for this project are HSG B and C, so the drywells will not exceed 5' in depth.
5. The length of each drywell will be greater than the width.
6. A one-foot layer of sand will be provided at the bottom of each drywell.

SWM Volume Computations for the Drywells (M-5)

The ESDv for each of the drywells is:

The ESDv equation is $(Pe \times Rv \times A)/12$ where:

Impervious Area = 865 sq.ft.

$Rv = 0.95$

$Pe = 1.00$

$ESDv = (1.00 \times 0.95 \times 865)/12 = 68.48$ cu.ft. say 69

Provided will be 0 (1) drywells with dimensions of 9 ft. long x 6 ft. wide x 5 ft. deep = 248 *0.4,"0")&" cu.ft > "&ROUNDUP(N105,0.1)&" cu.ft."

ESDv Provided - Drywells

ESDv provided Dry Wells on DW 4 0: 77 cu.ft.

There will be approximately two (2) downspouts for a total roof area of 907 sq.ft. for the proposed house. It is proposed to use one (1) drywell that will meet the following conditions:

Treatment: Drywells shall meet the following conditions:

1. Installing Gutter Drain Filters within the pipe of each downspout will provide pretreatment.
2. Each drywell has been designed to capture and store the ESDv and the Pe value based upon this ESDv has been applied to each contributing drainage area. Also, the storage calculations account for the porosity of the sand and gravel media in the bottom of the facility.
3. The drainage area to each drywell will not exceed 1000 sq.ft..
4. The soils for this project are HSG B and C, so the drywells will not exceed 5' in depth.
5. The length of each drywell will be greater than the width.
6. A one-foot layer of sand will be provided at the bottom of each drywell.

SWM Volume Computations for the Drywells (M-5)

The ESDv for each of the drywells is:

The ESDv equation is $(Pe \times Rv \times A)/12$ where:

Impervious Area = 907 sq.ft.

$Rv = 0.95$

$Pe = 1.00$

$ESDv = (1.00 \times 0.95 \times 907)/12 = 71.80$ cu.ft. say 72

Provided will be 0 (1) drywells with dimensions of 11 ft. long x 4 ft. wide x 5 ft. deep = 193 *0.4,"0")&" cu.ft > "&ROUNDUP(N149,0.1)&" cu.ft."

Total ESDv required: 625 CuFt.

-ESDv credit provided by N-2 Disconnection of Non-Rooftop Runoff: 268 CuFt.

-ESDv storage provided by M-5 Dry Well: 90 CuFt.

-ESDv storage provided by M-5 Dry Well: 94 CuFt.

-ESDv storage provided by M-5 Dry Well: 99 CuFt.

-ESDv storage provided by M-5 Dry Well: 77 CuFt.

Total ESDv remaining: -3 Cu.Ft.

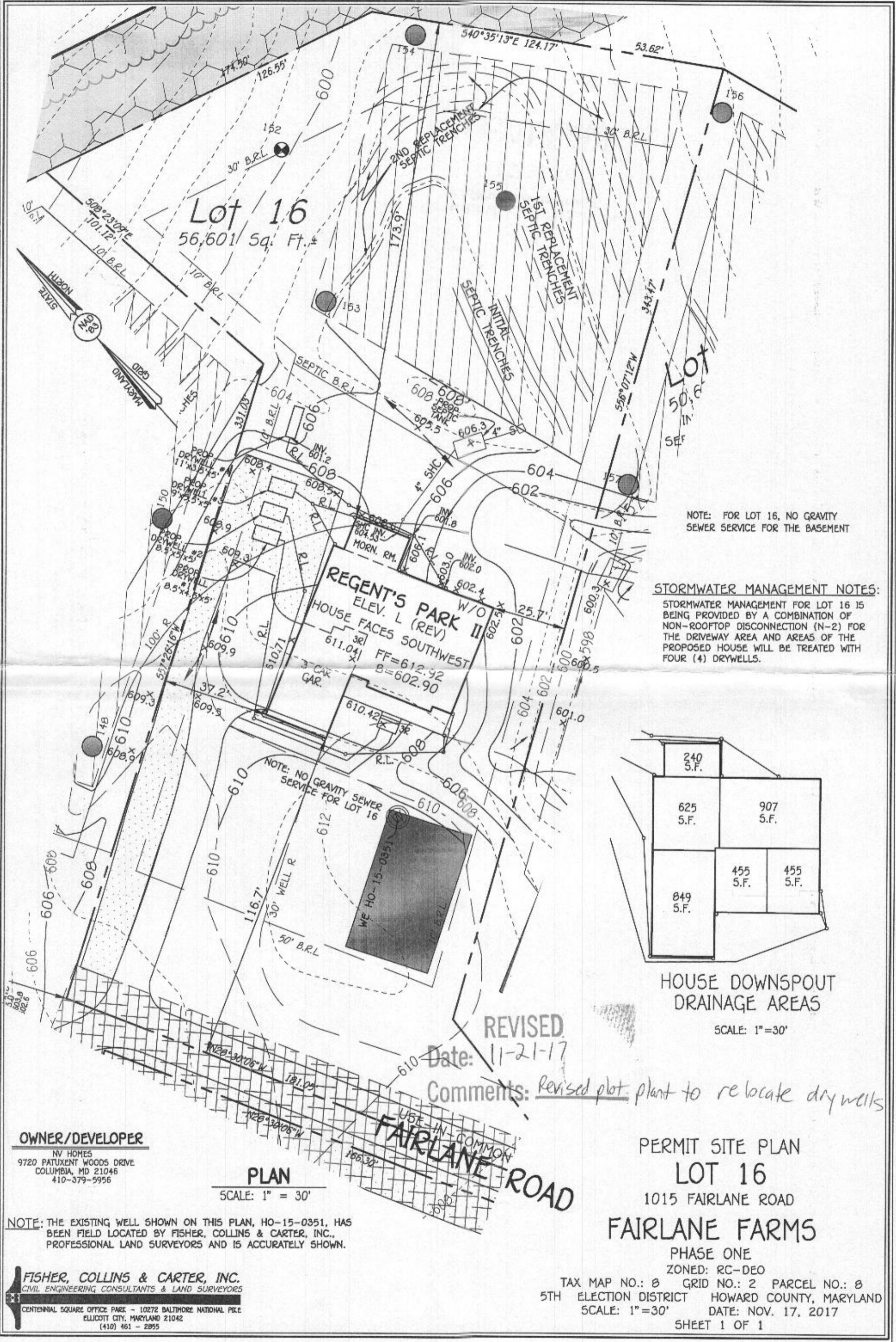
Required ESDv storage (-3 Cu.Ft. x .75) = 268 Cu.Ft.

Total ESDv storage provided 628 CuFt.

VIII. CONCLUSION

VI. Conclusion:

Contained within this SWM report, we have attempted to demonstrate the ability to mimic the runoff characteristics of "woods in good condition" through approved MDE Chapter V practices. It is this firm's opinion that Environmental Site Design (ESD) to the Maximum Extent Practicable (MEP) has been achieved through the use of 3 drywells & non-rooftop disconnection, to meet and exceed the required ESD volume.



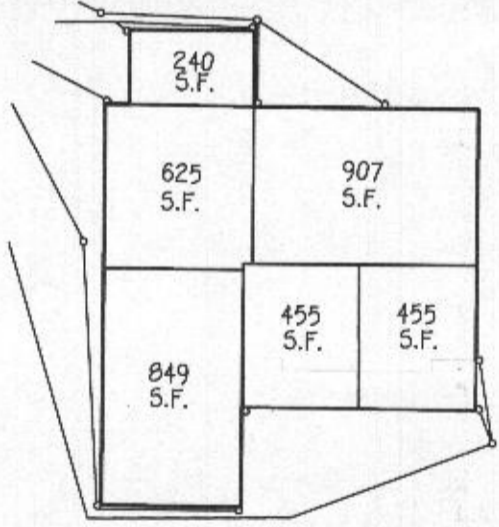
Lot 16
56,601 Sq. Ft.

REGENT'S PARK II
ELEV. L (REV)
HOUSE FACES SOUTHWEST
FF=612.92
B=602.90

NOTE: FOR LOT 16, NO GRAVITY SEWER SERVICE FOR THE BASEMENT

STORMWATER MANAGEMENT NOTES:

STORMWATER MANAGEMENT FOR LOT 16 IS BEING PROVIDED BY A COMBINATION OF NON-ROOFTOP DISCONNECTION (N-2) FOR THE DRIVEWAY AREA AND AREAS OF THE PROPOSED HOUSE WILL BE TREATED WITH FOUR (4) DRYWELLS.



HOUSE DOWNSPOUT DRAINAGE AREAS

SCALE: 1"=30'

REVISED
Date: 11-21-17

Comments: Revised plot plan to relocate drywells

OWNER/DEVELOPER
NV HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA, MD 21046
410-379-5956

PLAN
SCALE: 1" = 30'

NOTE: THE EXISTING WELL SHOWN ON THIS PLAN, HO-15-0351, HAS BEEN FIELD LOCATED BY FISHER, COLLINS & CARTER, INC., PROFESSIONAL LAND SURVEYORS AND IS ACCURATELY SHOWN.

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

PERMIT SITE PLAN
LOT 16
1015 FAIRLANE ROAD
FAIRLANE FARMS
PHASE ONE
ZONED: RC-DEO
TAX MAP NO.: 8 GRID NO.: 2 PARCEL NO.: 8
5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: 1"=30' DATE: NOV. 17, 2017
SHEET 1 OF 1

Transmittal

Via: Fax Mail Messenger E-Mail To Be Picked Up
 Fax (original to follow via U.S. Mail)

To: Bureau of Environmental Health 8930 Stanford Blvd. Columbia, Maryland 21046-4544	Attn: Sharhonda Fax: Phone: 410-313-2640
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From: Tony Fertitta	CC:
----------------------------	-----

Re: Fairlane Farms, Lot 16	W.O.# 05106-3003
Date: Nov. 20, 2017	Pages: 0 Page(s) Including this cover

We are forwarding: <input checked="" type="checkbox"/> Prints <input type="checkbox"/> Copy of Letter <input type="checkbox"/> Specifications <input type="checkbox"/> Shop drawings <input type="checkbox"/> Other <input type="checkbox"/> Urgent <input type="checkbox"/> For your use <input type="checkbox"/> As requested <input checked="" type="checkbox"/> For Review & Comment

Remarks:

Re: Fairlane Farm, Lot 16, 1015 Fairlane Rd.

Provided here are 3 copies of a Septic Installation Site Plan for Lot 16, for your review. If approved as is, please leave 1 signed copy up front for us.

Thank You,

Tony

Fisher, Collins, & Carter, Inc. Ph. 410-461-2855

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Oswald, Hank

From: Oswald, Hank
Sent: Tuesday, November 28, 2017 8:11 AM
To: Tony Fertitta
Subject: OSDS_1015 Farilane Road_Fairlane Farm Lot 16

Hi Tony:

The inverts are still not lining up. Also, the coefficient of reduction calculation for the 2nd replacement system is incorrect. There is no point in showing the calculation because there is no sidewall credit to be given toward the 2nd system (It doesn't equate to 1).

Can you please look over the plan and revise it or let me know what the inverts are supposed to be and I can redline it.

Thanks,

Hank

Hank Oswald
Licensed Environmental Health Specialist
Howard County Health Department
Bureau of Environmental Health
Well & Septic Program
8930 Stanford Boulevard
Columbia, MD 21045
410.313.1786 (Office)
hoswald@howardcountymd.gov

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Transmittal

Via: Fax Mail Messenger E-Mail To Be Picked Up
 Fax (original to follow via U.S. Mail)

To: Bureau of Environmental Health 8930 Stanford Blvd. Columbia, Maryland 21046-4544	Attn: Hank Oswald Fax: Phone: 410-313-2640
---	--

From: Tony Fertitta	CC:
----------------------------	-----

Re: Fairlane Farms, Lot 16	W.O.# 05106-3003
Date: Nov. 30, 2017	Pages: 0 Page(s) Including this cover

We are forwarding: <input checked="" type="checkbox"/> Prints <input type="checkbox"/> Copy of Letter <input type="checkbox"/> Specifications <input type="checkbox"/> Shop drawings <input type="checkbox"/> Other
<input type="checkbox"/> Urgent <input type="checkbox"/> For your use <input type="checkbox"/> As requested <input checked="" type="checkbox"/> For Review & Comment

Remarks:

Re: Fairlane Farm, Lot 16, 1015 Fairlane Rd.

Provided here are 3 copies new of a Septic Installation Site Plan for Lot 16, for your review and approval, with changes made per email. If approved as is, please leave 1 signed copy up front for us.

Thank You,

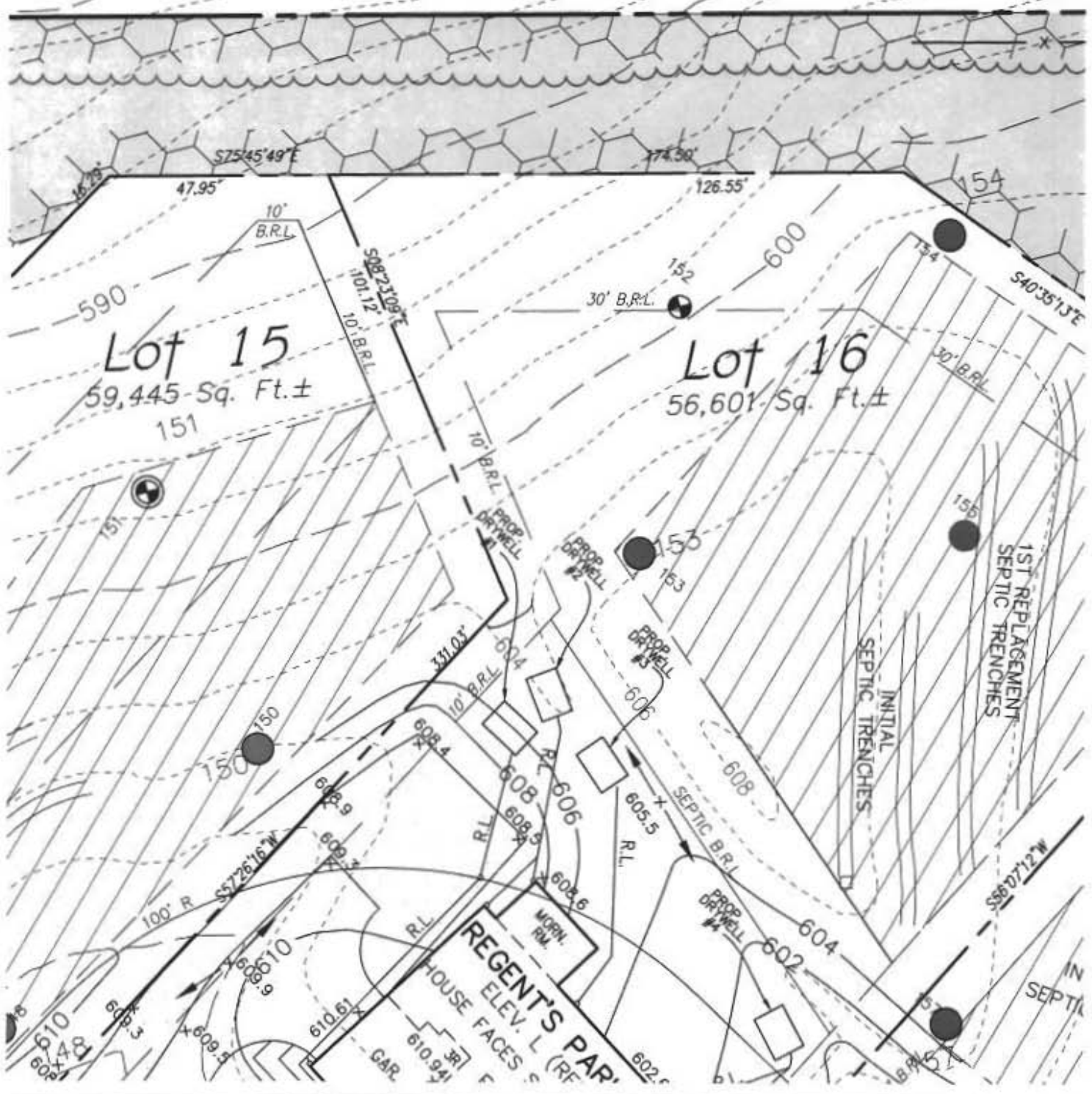
Dave Harward

Fisher, Collins, & Carter, Inc. Ph. 410-461-2855

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10/10/17 Drp 25r
proposed trench placement
longitud 4:0



Oswald, Hank

From: Oswald, Hank
Sent: Wednesday, November 15, 2017 9:00 AM
To: Tony Fertitta
Subject: OSDS_1015 Fairlane Road_Lot 16

Hello Tony:

The OSDS plan for 1015 Fairlane Road, Lot 16 has been reviewed with the following comments:

- ✓1.) Septic tank is less than 25 feet from the nearest storm water management drywell. The setback requirement is 25 feet.
- ✗ 2.) Septic profile shows invert into septic tank is greater than invert out of cleanout.
- ✓3.) 1st replacement coefficient calculation number should be 2 (not 1)
- ✗ 4.) 2nd replacement effective depth equals 0 therefore no sidewall reduction
- ✓5.) 1st replacement trench layout shows longer than 65.10 feet of trench
- ✓6.) Trench data elevations shows 7 foot trench depths (should be 6 feet)

Should you have any questions, please don't hesitate to ask.

Thanks,

Hank

Hank Oswald
Licensed Environmental Health Specialist
Howard County Health Department
Bureau of Environmental Health
Well & Septic Program
8930 Stanford Boulevard
Columbia, MD 21045
410.313.1786 (Office)
hoswald@howardcountymd.gov

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Collins, Sarah

From: Collins, Sarah
Sent: Thursday, February 22, 2018 3:04 PM
To: Tony Fertitta (tonyf@fcc-eng.com)
Cc: Oswald, Hank
Subject: 1015 Fairlane Road

Hi Tony,

I was at 1015 Fairlane Rd today for the layout of the septic system. The contractor and I shot some elevations in the field and it appears that the line will not make fall to a 3' inlet at the trenches. From what I calculated, the inlet at the trenches would be 4.5'+. Here are our measurements:

70" at the house where the line comes out, top of pipe (slightly different location than shown on the plan- 1' left of the bumpout)

57" at the approximate location of the tank

27" at the approximate location of the distribution box

We figured out that there is enough room to turn the tank 90 degrees and fit in a pump tank to make the 3' inlet. If the inlet is deeper than 3', the length of the trenches in the initial system needs to be increased as sidewall credit would be reduced.

Also, Perc 153 had a hard bottom at 7', so I'm planning to dig a test hole just above the proposed trenches to make sure we do not have a restrictive layer shallower than 10'. If shallower than 10', the bottom of the trenches needs to be raised to meet a 4' buffer.

Let me know if you have any questions.

Thanks,
Sarah

Sarah Collins, L.E.H.S.
Howard County Health Department
Bureau of Environmental Health
8930 Stanford Blvd.
Columbia, MD 21045
SCollins@howardcountymd.gov
410-313-6287

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- 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. 24027C00350, EFFECTIVE 11-06-2013.
- 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-15-0351 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 PROPERTY LINE SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 339, EXPIRATION DATE 10/04/2018.
- 7) BUILDING PERMIT #B-17003959

Legend

- Public Forest Conservation Easement (Retention)
- Public Forest Conservation Easement (Reforestation)
- Private Drainage & Utility Easement
- 10' Public Tree Maintenance Easement
- 36' Private Access And Stormwater Management Easement For Lots 15 Thru 18
- Private Use-In-Common Access Easement

Public And Private Drainage & Utility Easement Line Table

LINE	BEARING	LENGTH
D22	S85°37'32"E	106.11'
D26	N85°37'32"W	112.08'
D27	N03°18'26"E	20.00'

24' Private Use-In-Common Access Easement Line Table

LINE	BEARING	LENGTH
UIC-1	N03°18'26"E	234.62'
UIC-2	N28°30'06"W	186.50'
UIC-3	N61°29'54"E	24.00'
UIC-4	S28°30'06"E	193.34'
UIC-5	S03°18'26"W	237.32'

36' Private Access And Stormwater Management Easement Line Table

LINE	BEARING	LENGTH
SWM-1	N03°18'26"E	234.90'
SWM-2	N28°30'06"W	183.08'
SWM-3	N61°29'54"E	36.00'
SWM-4	S28°30'06"E	193.34'
SWM-5	S03°18'26"W	237.32'

#1015 FAIRLANE ROAD
B.R.L. = BUILDING RESTRICTION LINE
TOP OF FOUNDATION ELEVATION = 611.6±



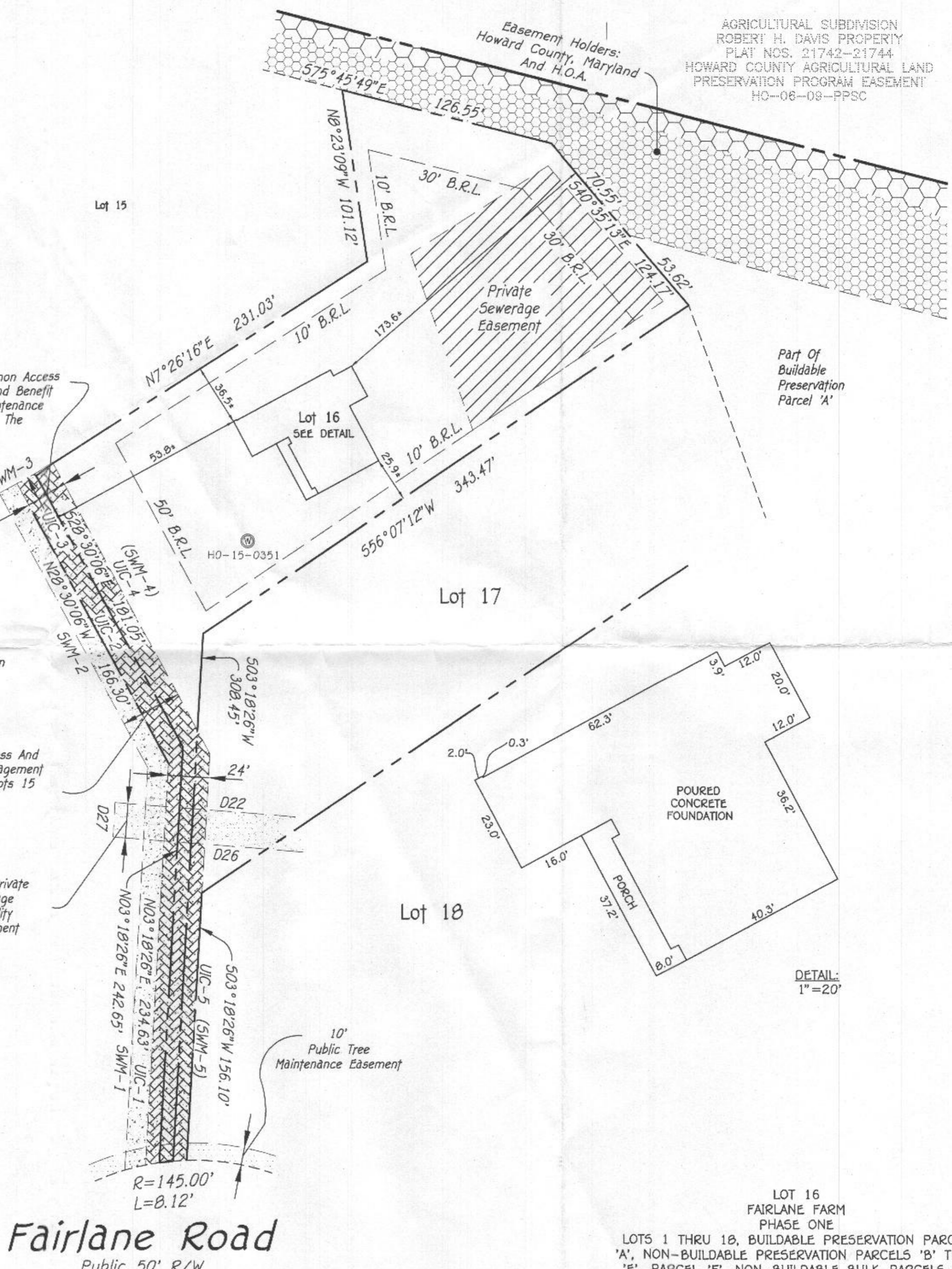
HOUSE LOCATION DRAWING

FOUNDATION LOCATION: 1/10/18
FINAL LOCATION:
BOUNDARY SURVEY:

SCALE: 1"=50'
DATE: 1/11/18
DRAWN BY: MSD
CHECKED BY: MLR
PROJECT No. 02106-3003

Mark L. Roberge
PROPERTY LINE SURVEYOR
REG. #339

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLCOTT CITY, MARYLAND 21104
(410) 461-2895



Well Check
OK
RAE 2/8/18

LOT 16
FAIRLANE FARM
PHASE ONE
LOTS 1 THRU 18, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E', PARCEL 'F', NON-BUILDABLE BULK PARCELS 'G' AND 'H' AND FOREST MITIGATION BANK
PLAT NOS. 24251 THRU 24259
FOURTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

DETAIL: 1"=20'

Maura J. Rossman, M.D., Health Officer

MEMORANDUM

TO: NV Homes
Jeff Hyde, Superintendent
Sent via email to jhyde@nvrinc.com on 3/20/18

FROM: Sarah Collins, L.E.H.S. SEC
Howard County Health Department
Well and Septic Program

DATE: March 20, 2018

RE: **Drywell installations at Fairlane Farm**

Several of the drywells installed at lots in Fairlane Farm have do not meet the 25' setbacks to the septic tank and sewage disposal area (SDA). On Lot 16, a drywell cleanout is located 7' from the SDA; on Lot 10, one drywell edge is 13' from the SDA and another is 14' from the septic tank.

The septic permits for all lots in Fairlane Farm will not be approved until the drywells meet the 25' setback from the septic tank and SDA and the 100' setback from the well box. The locations shown on the approved septic system installation site plan meet these setbacks and the drywells should be installed per plan.

Feel free to contact me at 410-313-6287 or SCollins@howardcountymd.gov with any questions.

Cc: NV Homes, Clint Cagle (ccagle@nvrinc.com)
Tony Fertita - Fisher, Collins & Carter (tonyf@fcc-eng.com)
File

Transmittal

Via: Fax Mail Messenger E-Mail To Be Picked Up
 Fax (original to follow via U.S. Mail)

To: Bureau of Environmental Health 8930 Stanford Blvd. Columbia, Maryland 21046-4544	Attn: Hank Oswald Fax: Phone: 410-313-2640
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From: Tony Fertitta	CC:
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Re: Fairlane Farms, Lot 16	W.O.# 05106-3003
Date: aMarch 15, 2018	Pages: 0 Page(s) Including this cover

We are forwarding: <input checked="" type="checkbox"/> Prints <input type="checkbox"/> Copy of Letter <input type="checkbox"/> Specifications <input type="checkbox"/> Shop drawings <input type="checkbox"/> Other
<input type="checkbox"/> Urgent <input type="checkbox"/> For your use <input type="checkbox"/> As requested <input checked="" type="checkbox"/> For Review & Comment

Remarks:

Re: Fairlane Farm, Lot 16, 1015 Fairlane Rd.

Provided here are 3 copies new of a new Septic Installation Site Plan for Lot 16. (Since the plumber installed the exiting sewer pipe from the house contrary to the original plan's elevation & horizontal location, a pump tank will be needed (Sarah Collins is familiar with the situation). Please review this plan and if approvable as is, please leave 1 signed copy up front for us.

Thank You,

Tony Fertitta

Fisher, Collins, & Carter, Inc. Ph. 410-461-2855

RECEIVED

MAR 16 2018

HOWARD COUNTY HEALTH DEPT.
BUREAU OF ENVIRONMENTAL HEALTH

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#1015 FAIRLANE ROAD
B.R.L. = BUILDING RESTRICTION LINE
TOP OF FOUNDATION ELEVATION = 611.6±



HOUSE LOCATION DRAWING

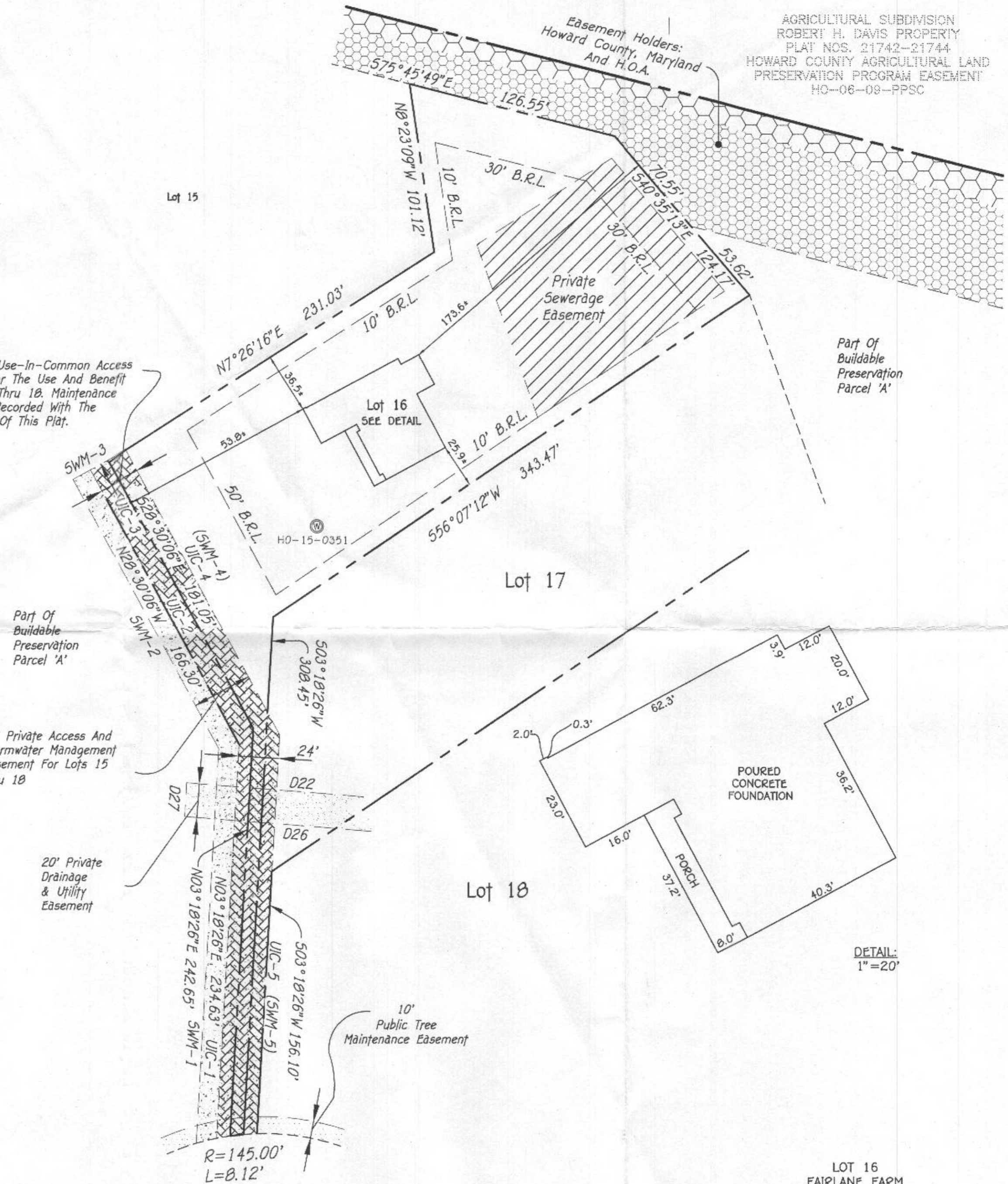
FOUNDATION LOCATION: 1/10/18
FINAL LOCATION:
BOUNDARY SURVEY:

SCALE: 1"=50'
DATE: 1/11/18
DRAWN BY: MSD
CHECKED BY: MLR
PROJECT No. 02106-3003

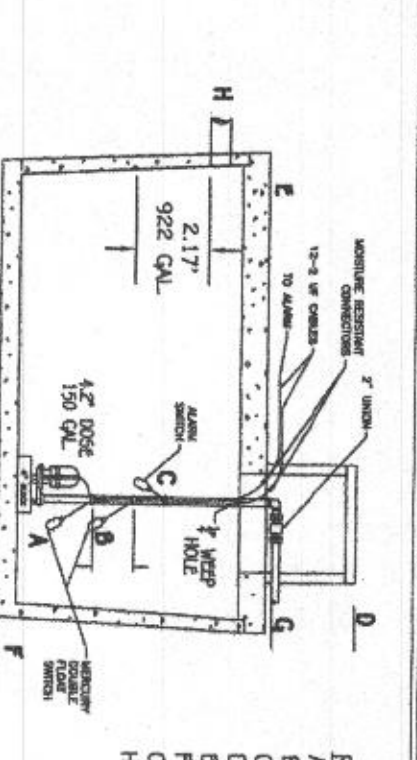
Mark L. Roberge
PROPERTY LINE SURVEYOR
REG. #339

Well Check
OK
RAZ 2/8/18

Fairlane Road
Public 50' R/W



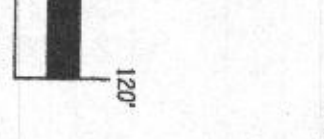
LOT 16
FAIRLANE FARM
PHASE ONE
LOTS 1 THRU 18, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E', PARCEL 'F', NON-BUILDABLE BULK PARCELS 'G' AND 'H' AND FOREST MITIGATION BANK
PLAT NOS. 24251 THRU 24259
FOURTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND



NOTE: SEPTIC SYSTEM ALARM SEPARATE FROM ANY OTHER SEPTIC SYSTEM COMPONENTS OR ALARMS.

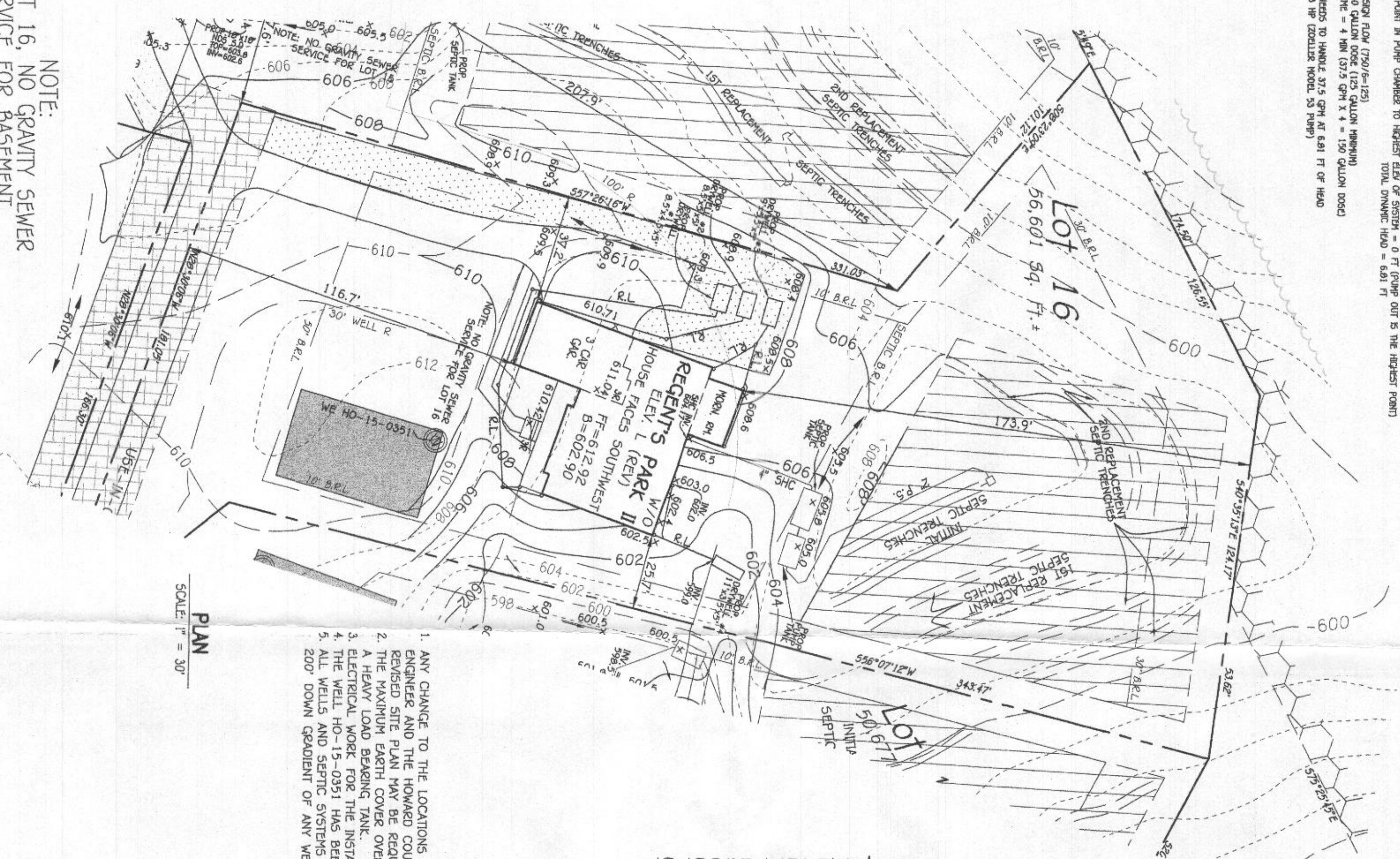
6.1/8 IN. @ 1.5000 FT. = 0.81 FT.
TOTAL DYNAMIC HEAD = 112 FT.
DYNAMIC HEAD: 112 FT. X 2.34 FT PER 100 FT OF PIPE = 2.63 FT OF FRICTION HEAD
VERTICAL LOSS: 1.5000 FT. X 0.75 FT PER 100 FT OF PIPE = 1.13 FT OF FRICTION HEAD
TOTAL DYNAMIC HEAD = 112 FT + 2.63 FT + 1.13 FT = 115.76 FT

NOTE:
FOR LOT 16, NO GRAVITY SEWER SERVICE FOR BASEMENT



FISHER, COLLINS & CARTER, INC.
SEWERAGE ENGINEERS, ARCHITECTS & LANDSCAPE ARCHITECTS
1410 W. WASHINGTON ST.
COLUMBIA, MD 21046
(410) 481-2000

OWNER/DEVELOPER
AN HOMES
9720 PATENTLAND WOODS DRIVE
COLUMBIA, MD 21046
410-379-4998



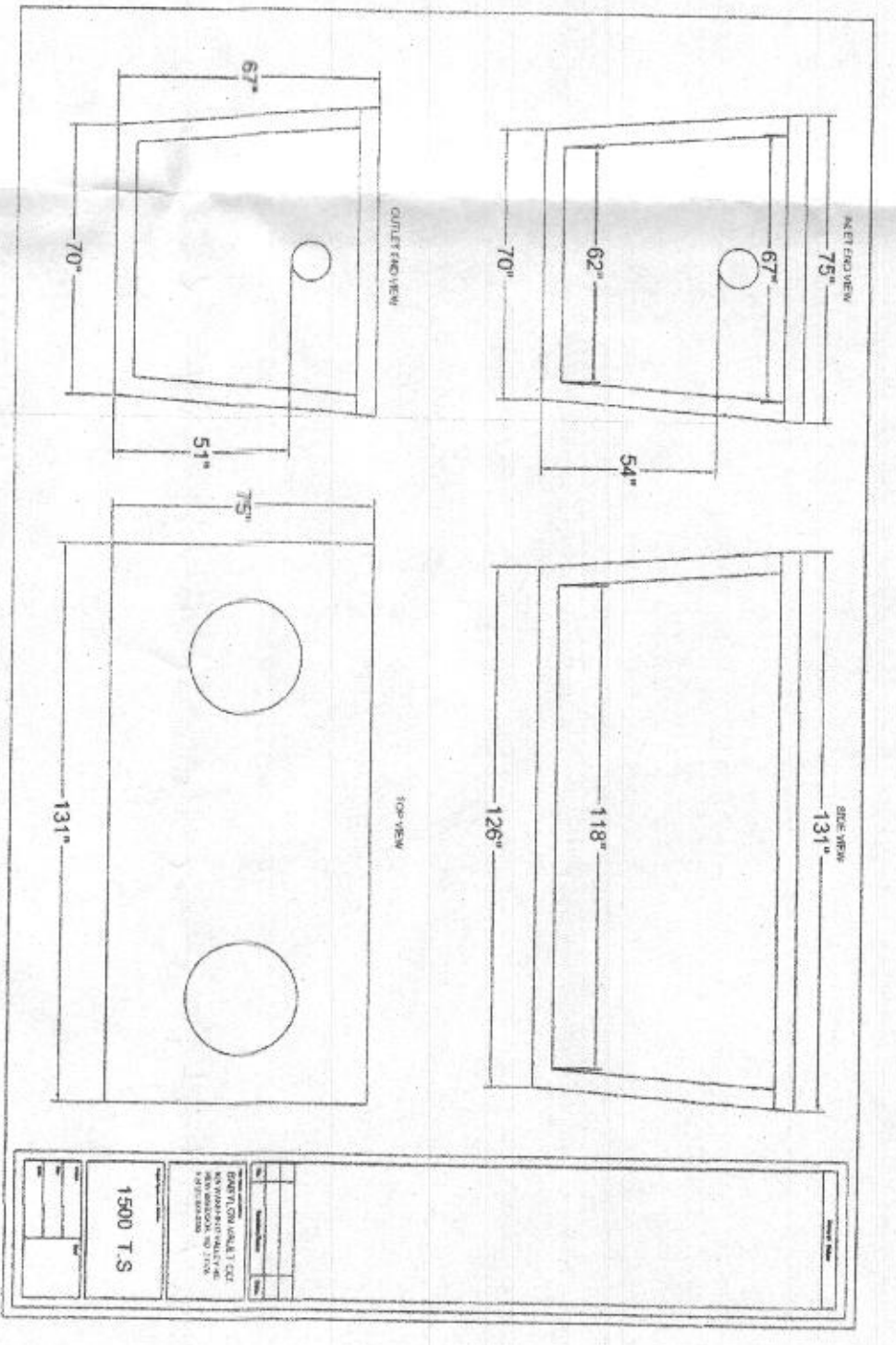
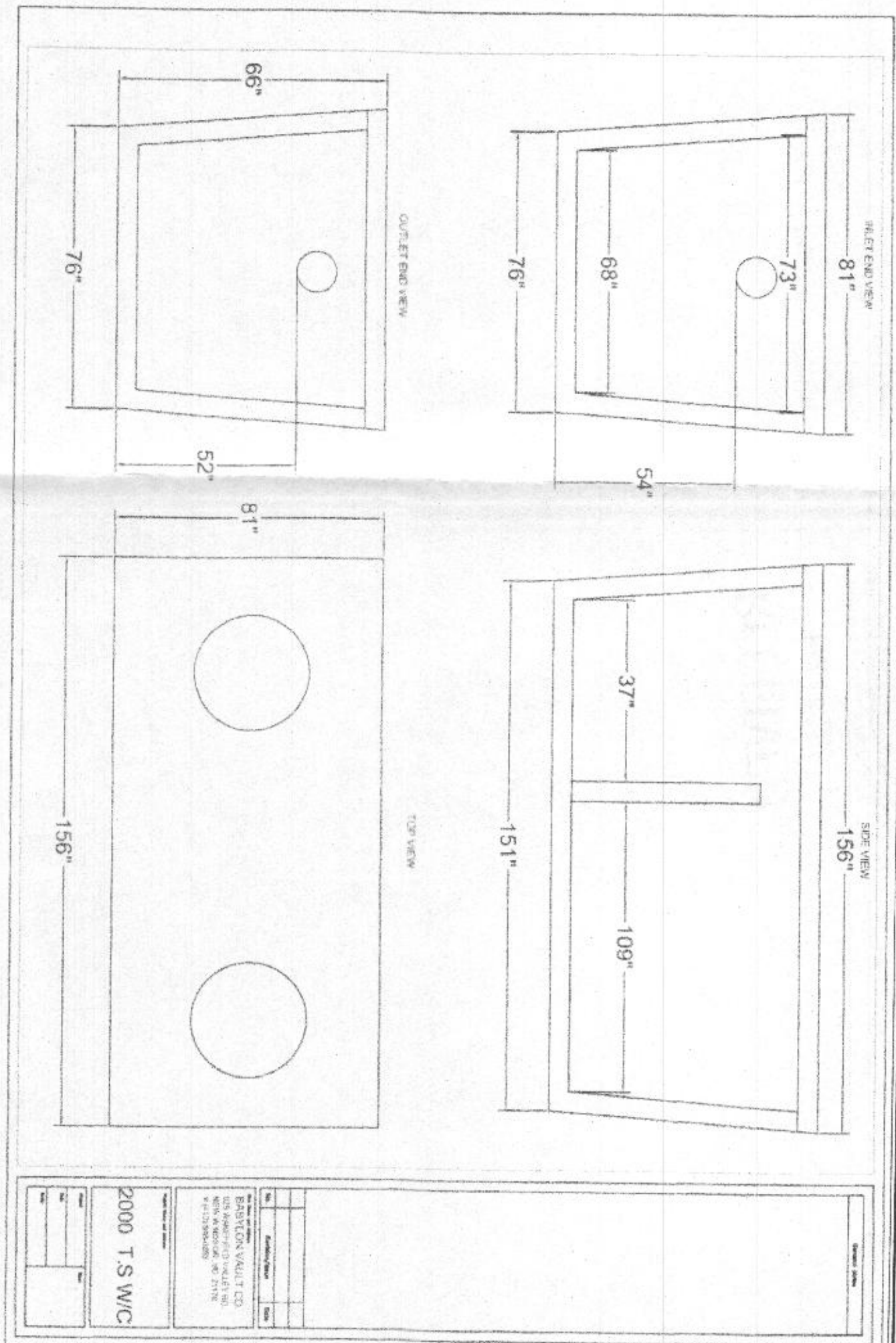
PLAN
SCALE: 1" = 30'

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 VACUUM PUMP COVER OVER THE TANK IS 3 FEET. GREATER PUMP COVER WILL REQUIRE ELECTRICAL WORKERS TANK.
3. ELECTRICAL WORKERS TANK.
4. THE WELLS HO-15-0351 HAS BEEN FIELD VERIFIED BY A LICENSED ELECTRICIAN.
5. ALL WELLS AND SEPTIC SYSTEMS LOCATED WITHIN 100' OF THE COASTLINE SHOWN.
- 200' DOWN GRADIENT OF ANY WELLS AND/OR SEPTIC SYSTEMS HAVE BEEN SHOWN.

INITIAL SYSTEM
SEWAGE DISPOSAL SYSTEM DATA DESIGN FOR 5 BEDROOMS
LOADING RATE = 5 BEDROOMS X 150 GPD/BEDROOM = 750 GPD
APPLICATION RATE = 1.2
EFFECTIVE SIDEWALL BEGINS AT 3 FEET
TRENCH DEPTH (D) = 6 FEET
TRENCH WIDTH (W) = 3 FEET
EFFECTIVE DEPTH (D) = 3 FEET
SF OF DRAINFIELD = 750 GPD / 1.2 = 625 SF
COEFFICIENT OF REDUCTION OF TRENCH LENGTH = (M+2)/(M+1+2D) = (3+2)/(3+1+2(6)) = 0.5
TRENCH LENGTH = 625 SF X 1 = 104.17 FEET
(USE 2 TRENCHES AT 52.09 X 3 = 104.17 FEET)
TRENCH SPACING = 2D+W = (2(6) + 3) = 15' USE 10'

1ST REPLACEMENT SYSTEM
SEWAGE DISPOSAL SYSTEM DATA DESIGN FOR 5 BEDROOMS
LOADING RATE = 5 BEDROOMS X 150 GPD/BEDROOM = 750 GPD
APPLICATION RATE = 1.2
EFFECTIVE SIDEWALL BEGINS AT 4 FEET
TRENCH DEPTH (D) = 6 FEET
TRENCH WIDTH (W) = 3 FEET
EFFECTIVE DEPTH (D) = 3 FEET
SF OF DRAINFIELD = 750 GPD / 1.2 = 625 SF
COEFFICIENT OF REDUCTION OF TRENCH LENGTH = (M+2)/(M+1+2D) = (3+2)/(3+1+2(6)) = 0.5
TRENCH LENGTH = 625 SF X 1 = 104.17 FEET
(USE 2 TRENCHES AT 52.09 X 3 = 104.17 FEET)
TRENCH SPACING = 2D+W = (2(6) + 3) = 15' USE 10'

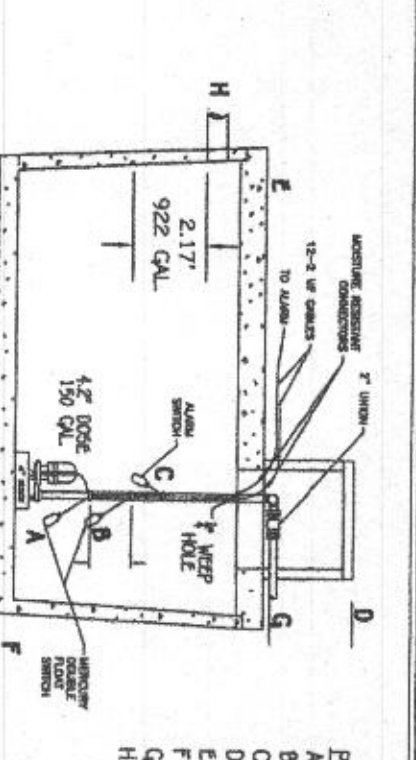
FILE 612.92
R.F. 602.90
R.F. 604.17
PROP. GROUND CLEARANCE = 605.8
INV. INTO CLEANOUT = 603.42
EX. GROUND AT SEPTIC TANK = 605.8
PROP. GRADE ABOVE SEPTIC TANK = 605.8
TOP OF SEPTIC TANK = 603.14
INV. INTO SEPTIC TANK = 602.89
EX. GROUND AT SEPTIC TANK = 605.0
PROP. GRADE ABOVE PUMP TANK = 605.0
TOP OF PUMP TANK = 603.83
INV. INTO PUMP TANK = 604.00
GROUND INTO DISTRIBUTION BOX = 606.1
INV. INTO DISTRIBUTION BOX = 603.22
INV. OUT OF DISTRIBUTION BOX = 603.12



2ND REPLACEMENT SYSTEM
SEWAGE DISPOSAL SYSTEM DATA DESIGN FOR 5 BEDROOMS
LOADING RATE = 5 BEDROOMS X 150 GPD/BEDROOM = 750 GPD
APPLICATION RATE = 0.8
EFFECTIVE SIDEWALL BEGINS AT 3 FEET
TRENCH DEPTH (D) = 3 FEET
TRENCH WIDTH (W) = 3 FEET
SF OF DRAINFIELD = 750 GPD / 0.8 = 937.5 SF
COEFFICIENT OF REDUCTION OF TRENCH LENGTH = 0
TRENCH LENGTH = 312.5 SF X 1 = 312.5 FEET
(USE 5 TRENCHES AT 62.5 FT.)
TRENCH SPACING = 2D+W = (2(3) + 3) = 9' USE 10'

VICINITY MAP
SCALE: 1" = 1200'

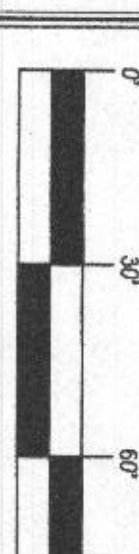
MATERIALS		PUMP		MOTOR	
1.0" PVC	1.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
1.5" PVC	1.5" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
2.0" PVC	2.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
3.0" PVC	3.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
4.0" PVC	4.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
5.0" PVC	5.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
6.0" PVC	6.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
8.0" PVC	8.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
10.0" PVC	10.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
12.0" PVC	12.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
15.0" PVC	15.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
18.0" PVC	18.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
20.0" PVC	20.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
24.0" PVC	24.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
30.0" PVC	30.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
36.0" PVC	36.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
42.0" PVC	42.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
48.0" PVC	48.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
54.0" PVC	54.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
60.0" PVC	60.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
66.0" PVC	66.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
72.0" PVC	72.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
78.0" PVC	78.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
84.0" PVC	84.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
90.0" PVC	90.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
96.0" PVC	96.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
102.0" PVC	102.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
108.0" PVC	108.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
114.0" PVC	114.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
120.0" PVC	120.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
126.0" PVC	126.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
132.0" PVC	132.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
138.0" PVC	138.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
144.0" PVC	144.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
150.0" PVC	150.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
156.0" PVC	156.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
162.0" PVC	162.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
168.0" PVC	168.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
174.0" PVC	174.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
180.0" PVC	180.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
186.0" PVC	186.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
192.0" PVC	192.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
198.0" PVC	198.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
204.0" PVC	204.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
210.0" PVC	210.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
216.0" PVC	216.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
222.0" PVC	222.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
228.0" PVC	228.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
234.0" PVC	234.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
240.0" PVC	240.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
246.0" PVC	246.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
252.0" PVC	252.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
258.0" PVC	258.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
264.0" PVC	264.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
270.0" PVC	270.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
276.0" PVC	276.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
282.0" PVC	282.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
288.0" PVC	288.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
294.0" PVC	294.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
300.0" PVC	300.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
306.0" PVC	306.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
312.0" PVC	312.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
318.0" PVC	318.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
324.0" PVC	324.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
330.0" PVC	330.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
336.0" PVC	336.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
342.0" PVC	342.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
348.0" PVC	348.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
354.0" PVC	354.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
360.0" PVC	360.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
366.0" PVC	366.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
372.0" PVC	372.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
378.0" PVC	378.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
384.0" PVC	384.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
390.0" PVC	390.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
396.0" PVC	396.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
402.0" PVC	402.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
408.0" PVC	408.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
414.0" PVC	414.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
420.0" PVC	420.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
426.0" PVC	426.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
432.0" PVC	432.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
438.0" PVC	438.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
444.0" PVC	444.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
450.0" PVC	450.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
456.0" PVC	456.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
462.0" PVC	462.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
468.0" PVC	468.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
474.0" PVC	474.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
480.0" PVC	480.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
486.0" PVC	486.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
492.0" PVC	492.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
498.0" PVC	498.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
504.0" PVC	504.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
510.0" PVC	510.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
516.0" PVC	516.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
522.0" PVC	522.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
528.0" PVC	528.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
534.0" PVC	534.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
540.0" PVC	540.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
546.0" PVC	546.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
552.0" PVC	552.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
558.0" PVC	558.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
564.0" PVC	564.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
570.0" PVC	570.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
576.0" PVC	576.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
582.0" PVC	582.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
588.0" PVC	588.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
594.0" PVC	594.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
600.0" PVC	600.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
606.0" PVC	606.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
612.0" PVC	612.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
618.0" PVC	618.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
624.0" PVC	624.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
630.0" PVC	630.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
636.0" PVC	636.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
642.0" PVC	642.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
648.0" PVC	648.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
654.0" PVC	654.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
660.0" PVC	660.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
666.0" PVC	666.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
672.0" PVC	672.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
678.0" PVC	678.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
684.0" PVC	684.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
690.0" PVC	690.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
696.0" PVC	696.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
702.0" PVC	702.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
708.0" PVC	708.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
714.0" PVC	714.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
720.0" PVC	720.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
726.0" PVC	726.0" SCH 40	1.5 HP	1.5 HP	1.5 HP	1.5 HP
73					



NOTE: SEPTIC SYSTEM ALKSH SEPARATE FROM ANY OTHER SEPTIC SYSTEM COMPONENTS OR ALKSHS.

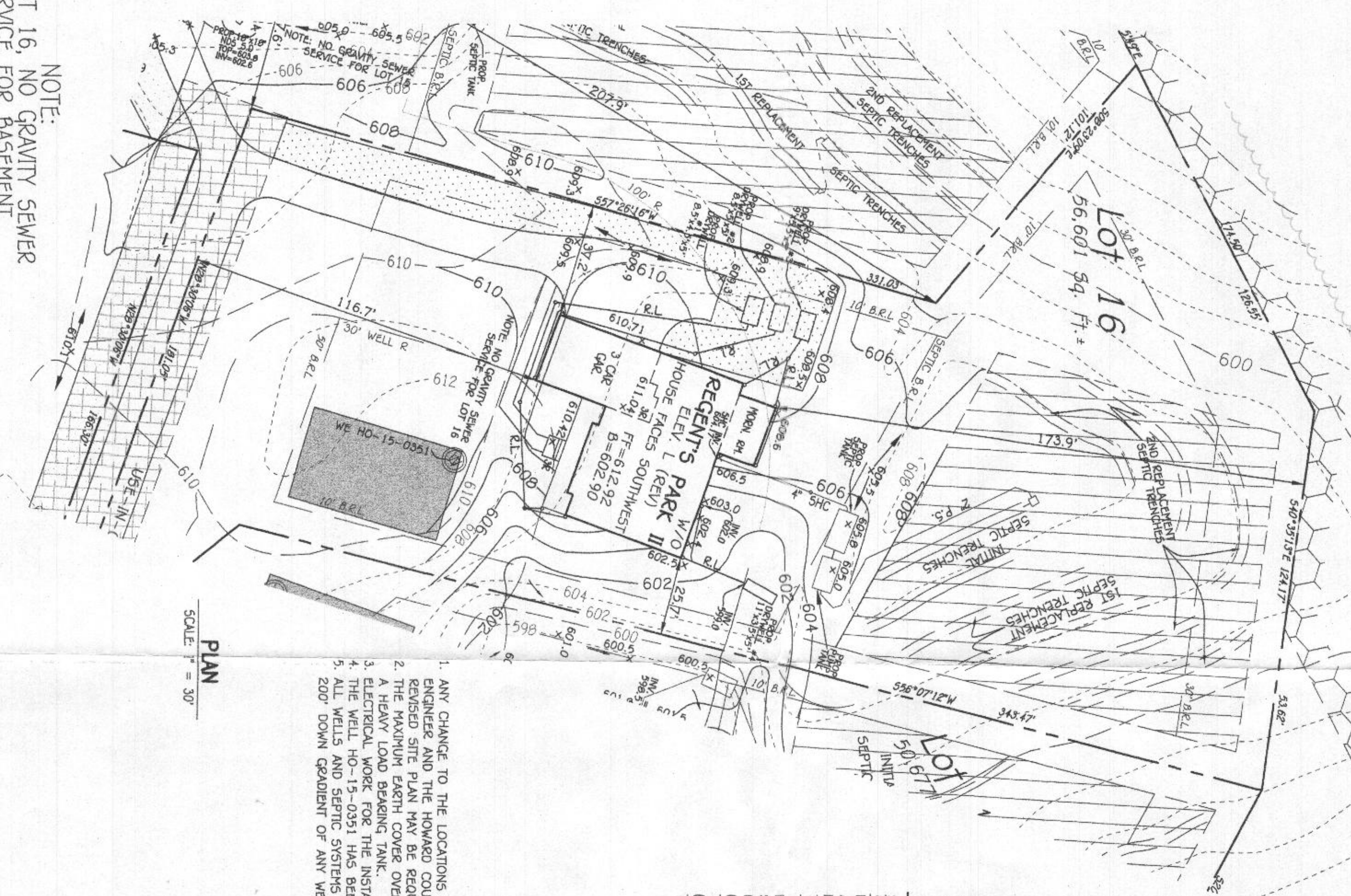
TOTAL EMERGENCY STORAGE = 922 GAL.
 NOTE: THIS DETAIL IS TO BE USED FOR PUMP COMPARTMENT ONLY - SEE DETAIL ABOVE FOR TANK DIMENSIONS AND ACTUAL LOCATION OF ACCESS COVER.

NOTE:
 FOR LOT 16, NO GRAVITY SEWER SERVICE FOR BASEMENT



FISHER, COLLINS & CARTER, INC.
 PROFESSIONAL ENGINEERS & ARCHITECTS
 1100 W. WASHINGTON ST., SUITE 100
 ANN ARBOR, MI 48106
 (734) 769-2200

OWNER/DEVELOPER
 AN HOVENS
 9720 PATRICIAN WOODS DRIVE
 ANN ARBOR, MI 48106
 (734) 769-2200



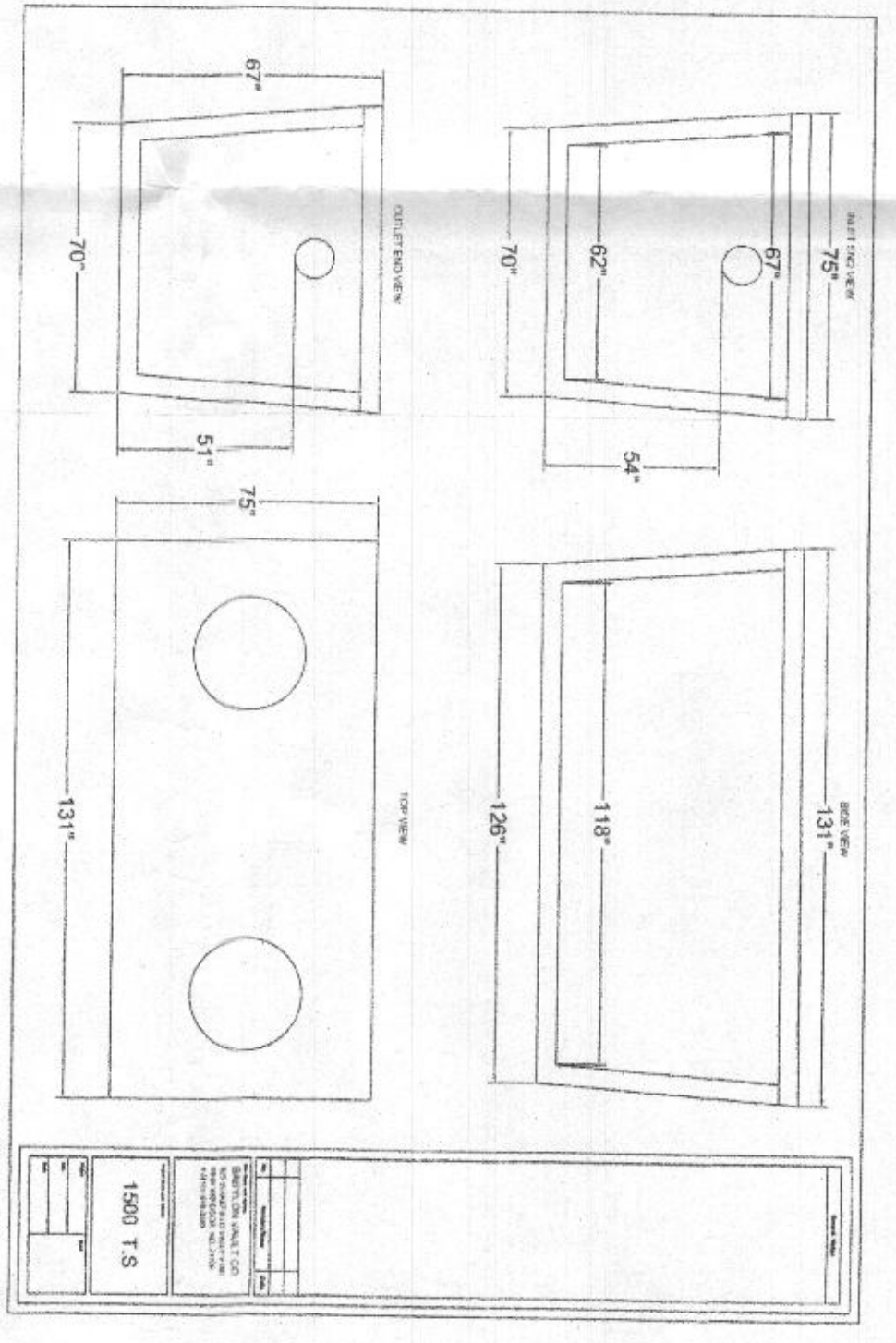
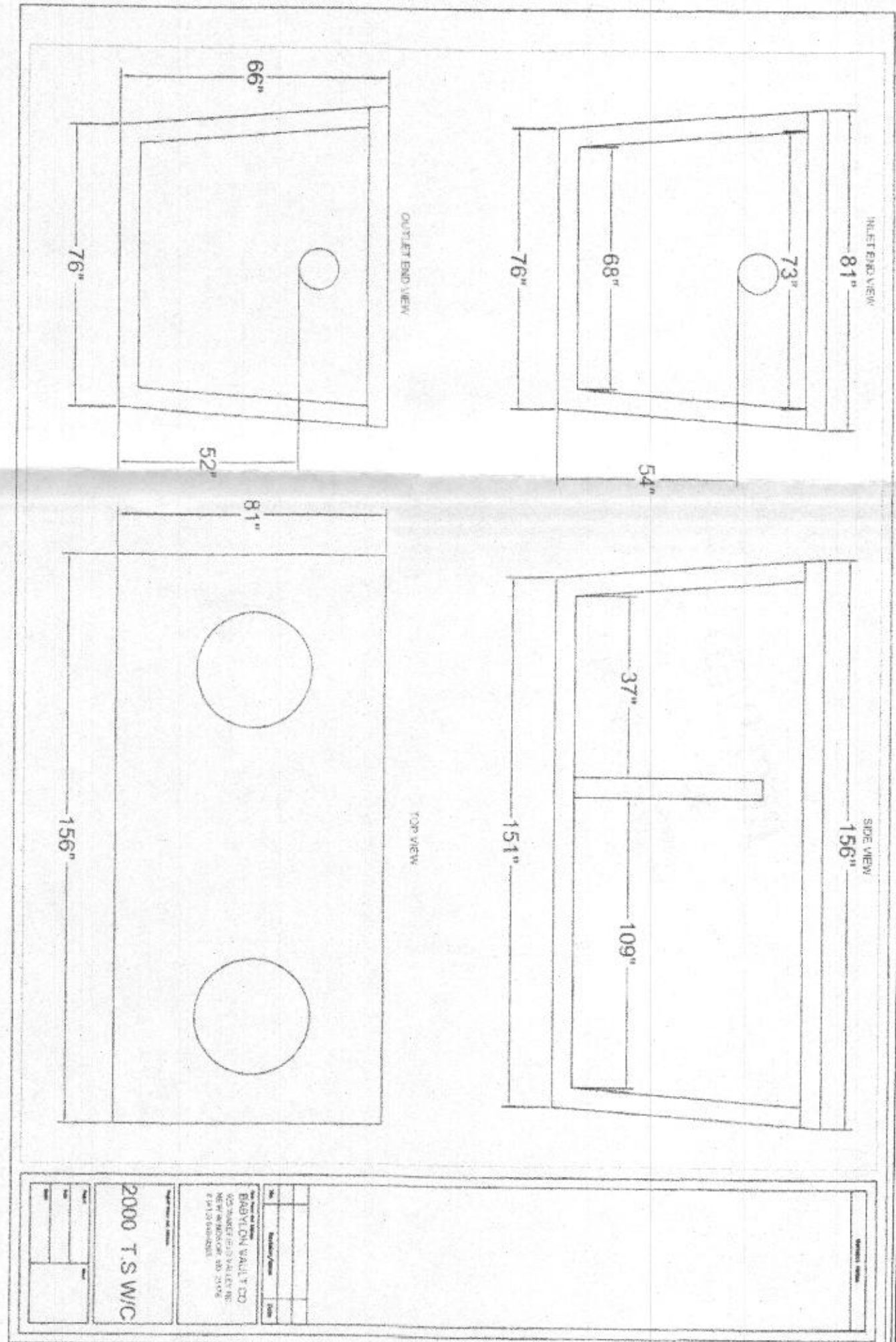
PLAN
 SCALE: 1" = 30'

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 ELECTRICAL WIRE FOR THE TANK.
3. ELECTRICAL WIRE FOR THE TANK SHALL BE INSTALLED BY A LICENSED ELECTRICIAN.
4. THE WELL, HO-15-0051 HAS BEEN FIELD LOCATED WITHIN 100' OF THE PROPOSED SEPTIC SYSTEM. ALL WELLS AND SEPTIC SYSTEMS LOCATED WITHIN 100' OF THE PROPOSED SEPTIC SYSTEM AND 200' DOWN GRADIENT OF ANY WELLS AND/OR SEPTIC SYSTEMS HAVE BEEN SHOWN.

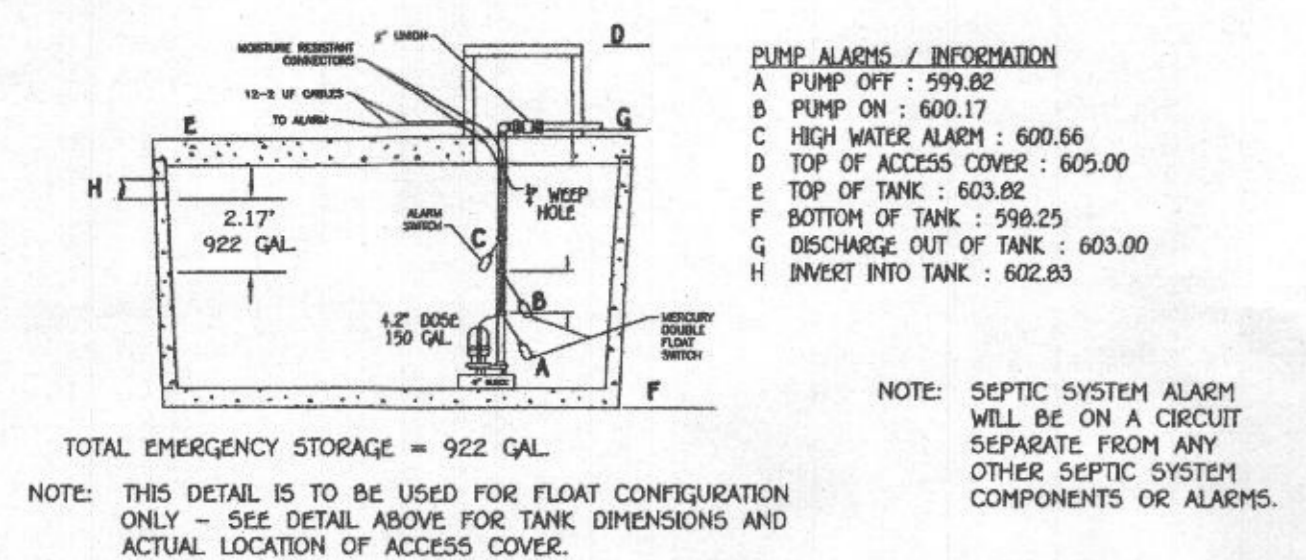
INITIAL SYSTEM
 SEWAGE DISPOSAL SYSTEM DATA, DESIGN FOR 5 BEDROOMS
 LOADING RATE = 5 BEDROOMS X 150 GPD/BEDROOM = 750 GPD
 APPLICATION RATE = 1.2
 EFFICIENT SIDEWALL BEGINS AT 3 FEET
 TRENCH DEPTH (W) = 6 FEET
 EFFICIENT DEPTH (D) = 3 FEET
 COEFFICIENT OF REDUCTION OF TRENCH LENGTH = (W+2)/(W+1+2D) = (6+2)/(6+1+12) = 0.407
 TRENCH LENGTH = 625 SF X 1.15 = 718.75 FEET
 (USE 2 TRENCHES AT 320.8 LF.)
 TRENCH SPACING = 20+H = (2+3) + 3) = 8' USE 10'

1ST REPLACEMENT SYSTEM
 SEWAGE DISPOSAL SYSTEM DATA, DESIGN FOR 5 BEDROOMS
 LOADING RATE = 5 BEDROOMS X 150 GPD/BEDROOM = 750 GPD
 APPLICATION RATE = 1.2
 EFFICIENT SIDEWALL BEGINS AT 4 FEET
 TRENCH DEPTH (W) = 6 FEET
 EFFICIENT DEPTH (D) = 3 FEET
 COEFFICIENT OF REDUCTION OF TRENCH LENGTH = (W+2)/(W+1+2D) = (6+2)/(6+1+12) = 0.407
 TRENCH LENGTH = 625 SF X 1.15 = 718.75 FEET
 (USE 2 TRENCHES AT 320.8 LF.)
 TRENCH SPACING = 20+H = (2+4) + 3) = 5' USE 10'

FFE 612.92
 BSE 602.90
 INV. INTO HOUSE = 604.17
 PROP. GROUND INVERT = 605.8
 INV. INTO CLEANOUT = 603.42
 EX. GROUND AT SEPTIC TANK = 605.8
 PROP. GRADE ABOVE SEPTIC TANK = 605.8
 TOP OF SEPTIC TANK = 604.14
 INV. INTO SEPTIC TANK = 602.89
 EX. GROUND AT SEPTIC TANK = 605.0
 PROP. GRADE ABOVE PUMP TANK = 605.0
 TOP OF PUMP TANK = 603.83
 INV. INTO PUMP TANK = 604.00
 EX. GROUND AT DISTRIBUTION BOX = 606.1
 INV. INTO DISTRIBUTION BOX = 603.22
 INV. INTO DISTRIBUTION BOX = 603.12



MATERIALS		PUMP		MOTOR	
1/2" SCH 40 GALV. PIPE	100'	1/2" SCH 40 GALV. PIPE	100'	1/2" SCH 40 GALV. PIPE	100'
3" SCH 40 GALV. PIPE	100'	3" SCH 40 GALV. PIPE	100'	3" SCH 40 GALV. PIPE	100'
4" SCH 40 GALV. PIPE	100'	4" SCH 40 GALV. PIPE	100'	4" SCH 40 GALV. PIPE	100'
6" SCH 40 GALV. PIPE	100'	6" SCH 40 GALV. PIPE	100'	6" SCH 40 GALV. PIPE	100'
8" SCH 40 GALV. PIPE	100'	8" SCH 40 GALV. PIPE	100'	8" SCH 40 GALV. PIPE	100'
10" SCH 40 GALV. PIPE	100'	10" SCH 40 GALV. PIPE	100'	10" SCH 40 GALV. PIPE	100'
12" SCH 40 GALV. PIPE	100'	12" SCH 40 GALV. PIPE	100'	12" SCH 40 GALV. PIPE	100'
15" SCH 40 GALV. PIPE	100'	15" SCH 40 GALV. PIPE	100'	15" SCH 40 GALV. PIPE	100'
18" SCH 40 GALV. PIPE	100'	18" SCH 40 GALV. PIPE	100'	18" SCH 40 GALV. PIPE	100'
24" SCH 40 GALV. PIPE	100'	24" SCH 40 GALV. PIPE	100'	24" SCH 40 GALV. PIPE	100'
30" SCH 40 GALV. PIPE	100'	30" SCH 40 GALV. PIPE	100'	30" SCH 40 GALV. PIPE	100'
36" SCH 40 GALV. PIPE	100'	36" SCH 40 GALV. PIPE	100'	36" SCH 40 GALV. PIPE	100'
42" SCH 40 GALV. PIPE	100'	42" SCH 40 GALV. PIPE	100'	42" SCH 40 GALV. PIPE	100'
48" SCH 40 GALV. PIPE	100'	48" SCH 40 GALV. PIPE	100'	48" SCH 40 GALV. PIPE	100'
54" SCH 40 GALV. PIPE	100'	54" SCH 40 GALV. PIPE	100'	54" SCH 40 GALV. PIPE	100'
60" SCH 40 GALV. PIPE	100'	60" SCH 40 GALV. PIPE	100'	60" SCH 40 GALV. PIPE	100'
66" SCH 40 GALV. PIPE	100'	66" SCH 40 GALV. PIPE	100'	66" SCH 40 GALV. PIPE	100'
72" SCH 40 GALV. PIPE	100'	72" SCH 40 GALV. PIPE	100'	72" SCH 40 GALV. PIPE	100'
78" SCH 40 GALV. PIPE	100'	78" SCH 40 GALV. PIPE	100'	78" SCH 40 GALV. PIPE	100'
84" SCH 40 GALV. PIPE	100'	84" SCH 40 GALV. PIPE	100'	84" SCH 40 GALV. PIPE	100'
90" SCH 40 GALV. PIPE	100'	90" SCH 40 GALV. PIPE	100'	90" SCH 40 GALV. PIPE	100'
96" SCH 40 GALV. PIPE	100'	96" SCH 40 GALV. PIPE	100'	96" SCH 40 GALV. PIPE	100'
102" SCH 40 GALV. PIPE	100'	102" SCH 40 GALV. PIPE	100'	102" SCH 40 GALV. PIPE	100'
108" SCH 40 GALV. PIPE	100'	108" SCH 40 GALV. PIPE	100'	108" SCH 40 GALV. PIPE	100'
114" SCH 40 GALV. PIPE	100'	114" SCH 40 GALV. PIPE	100'	114" SCH 40 GALV. PIPE	100'
120" SCH 40 GALV. PIPE	100'	120" SCH 40 GALV. PIPE	100'	120" SCH 40 GALV. PIPE	100'
126" SCH 40 GALV. PIPE	100'	126" SCH 40 GALV. PIPE	100'	126" SCH 40 GALV. PIPE	100'
132" SCH 40 GALV. PIPE	100'	132" SCH 40 GALV. PIPE	100'	132" SCH 40 GALV. PIPE	100'
138" SCH 40 GALV. PIPE	100'	138" SCH 40 GALV. PIPE	100'	138" SCH 40 GALV. PIPE	100'
144" SCH 40 GALV. PIPE	100'	144" SCH 40 GALV. PIPE	100'	144" SCH 40 GALV. PIPE	100'
150" SCH 40 GALV. PIPE	100'	150" SCH 40 GALV. PIPE	100'	150" SCH 40 GALV. PIPE	100'
156" SCH 40 GALV. PIPE	100'	156" SCH 40 GALV. PIPE	100'	156" SCH 40 GALV. PIPE	100'
162" SCH 40 GALV. PIPE	100'	162" SCH 40 GALV. PIPE	100'	162" SCH 40 GALV. PIPE	100'
168" SCH 40 GALV. PIPE	100'	168" SCH 40 GALV. PIPE	100'	168" SCH 40 GALV. PIPE	100'
174" SCH 40 GALV. PIPE	100'	174" SCH 40 GALV. PIPE	100'	174" SCH 40 GALV. PIPE	100'
180" SCH 40 GALV. PIPE	100'	180" SCH 40 GALV. PIPE	100'	180" SCH 40 GALV. PIPE	100'
186" SCH 40 GALV. PIPE	100'	186" SCH 40 GALV. PIPE	100'	186" SCH 40 GALV. PIPE	100'
192" SCH 40 GALV. PIPE	100'	192" SCH 40 GALV. PIPE	100'	192" SCH 40 GALV. PIPE	100'
198" SCH 40 GALV. PIPE	100'	198" SCH 40 GALV. PIPE	100'	198" SCH 40 GALV. PIPE	100'
204" SCH 40 GALV. PIPE	100'	204" SCH 40 GALV. PIPE	100'	204" SCH 40 GALV. PIPE	100'
210" SCH 40 GALV. PIPE	100'	210" SCH 40 GALV. PIPE	100'	210" SCH 40 GALV. PIPE	100'
216" SCH 40 GALV. PIPE	100'	216" SCH 40 GALV. PIPE	100'	216" SCH 40 GALV. PIPE	100'
222" SCH 40 GALV. PIPE	100'	222" SCH 40 GALV. PIPE	100'	222" SCH 40 GALV. PIPE	100'
228" SCH 40 GALV. PIPE	100'	228" SCH 40 GALV. PIPE	100'	228" SCH 40 GALV. PIPE	100'
234" SCH 40 GALV. PIPE	100'	234" SCH 40 GALV. PIPE	100'	234" SCH 40 GALV. PIPE	100'
240" SCH 40 GALV. PIPE	100'	240" SCH 40 GALV. PIPE	100'	240" SCH 40 GALV. PIPE	100'
246" SCH 40 GALV. PIPE	100'	246" SCH 40 GALV. PIPE	100'	246" SCH 40 GALV. PIPE	100'
252" SCH 40 GALV. PIPE	100'	252" SCH 40 GALV. PIPE	100'	252" SCH 40 GALV. PIPE	100'
258" SCH 40 GALV. PIPE	100'	258" SCH 40 GALV. PIPE	100'	258" SCH 40 GALV. PIPE	100'
264" SCH 40 GALV. PIPE	100'	264" SCH 40 GALV. PIPE	100'	264" SCH 40 GALV. PIPE	100'
270" SCH 40 GALV. PIPE	100'	270" SCH 40 GALV. PIPE	100'	270" SCH 40 GALV. PIPE	100'
276" SCH 40 GALV. PIPE	100'	276" SCH 40 GALV. PIPE	100'	276" SCH 40 GALV. PIPE	100'
282" SCH 40 GALV. PIPE	100'	282" SCH 40 GALV. PIPE	100'	282" SCH 40 GALV. PIPE	100'
288" SCH 40 GALV. PIPE	100'	288" SCH 40 GALV. PIPE	100'	288" SCH 40 GALV. PIPE	100'
294" SCH 40 GALV. PIPE	100'	294" SCH 40 GALV. PIPE	100'	294" SCH 40 GALV. PIPE	100'
300" SCH 40 GALV. PIPE	100'	300" SCH 40 GALV. PIPE	100'	300" SCH 40 GALV. PIPE	100'
306" SCH 40 GALV. PIPE	100'	306" SCH 40 GALV. PIPE	100'	306" SCH 40 GALV. PIPE	100'
312" SCH 40 GALV. PIPE	100'	312" SCH 40 GALV. PIPE	100'	312" SCH 40 GALV. PIPE	100'
318" SCH 40 GALV. PIPE	100'	318" SCH 40 GALV. PIPE	100'	318" SCH 40 GALV. PIPE	100'
324" SCH 40 GALV. PIPE	100'	324" SCH 40 GALV. PIPE	100'	324" SCH 40 GALV. PIPE	100'
330" SCH 40 GALV. PIPE	100'	330" SCH 40 GALV. PIPE	100'	330" SCH 40 GALV. PIPE	100'
336" SCH 40 GALV. PIPE	100'	336" SCH 40 GALV. PIPE	100'	336" SCH 40 GALV. PIPE	100'
342" SCH 40 GALV. PIPE	100'	342" SCH 40 GALV. PIPE	100'	342" SCH 40 GALV. PIPE	100'
348" SCH 40 GALV. PIPE	100'	348" SCH 40 GALV. PIPE	100'	348" SCH 40 GALV. PIPE	100'
354" SCH 40 GALV. PIPE	100'	354" SCH 40 GALV. PIPE	100'	354" SCH 40 GALV. PIPE	100'
360" SCH 40 GALV. PIPE	100'	360" SCH 40 GALV. PIPE	100'	360" SCH 40 GALV. PIPE	100'
366" SCH 40 GALV. PIPE	100'	366" SCH 40 GALV. PIPE	100'	366" SCH 40 GALV. PIPE	100'
372" SCH 40 GALV. PIPE	100'	372" SCH 40 GALV. PIPE	100'	372" SCH 40 GALV. PIPE	100'
378" SCH 40 GALV. PIPE	100'	378" SCH 40 GALV. PIPE	100'	378" SCH 40 GALV. PIPE	100'
384" SCH 40 GALV. PIPE	100'	384" SCH 40 GALV. PIPE	100'	384" SCH 40 GALV. PIPE	100'
390" SCH 40 GALV. PIPE	100'	390" SCH 40 GALV. PIPE	100'	390" SCH 40 GALV. PIPE	100'
396" SCH 40 GALV. PIPE	100'	396" SCH 40 GALV. PIPE	100'	396" SCH 40 GALV. PIPE	100'
402" SCH 40 GALV. PIPE	100'	402" SCH 40 GALV. PIPE	100'	402" SCH 40 GALV. PIPE	100'
408" SCH 40 GALV. PIPE	100'	408" SCH 40 GALV. PIPE	100'	408" SCH 40 GALV. PIPE	100'
414" SCH 40 GALV. PIPE	100'	414" SCH 40 GALV. PIPE	100'	414" SCH 40 GALV. PIPE	100'
420" SCH 40 GALV. PIPE	100'	420" SCH 40 GALV. PIPE	100'	420" SCH 40 GALV. PIPE	100'
426" SCH 40 GALV. PIPE	100'	426" SCH 40 GALV. PIPE	100'	426" SCH 40 GALV. PIPE	100'
432" SCH 40 GALV. PIPE	100'	432" SCH 40 GALV. PIPE	100'	432" SCH 40 GALV. PIPE	100'
438" SCH 40 GALV. PIPE	100'	438" SCH 40 GALV. PIPE	100'	438" SCH 40 GALV. PIPE	100'
444" SCH 40 GALV. PIPE	100'	444" SCH 40 GALV. PIPE	100'	444" SCH 40 GALV. PIPE	100'
450" SCH 40 GALV. PIPE	100'	450" SCH 40 GALV. PIPE	100'	450" SCH 40 GALV. PIPE	100'
456" SCH 40 GALV. PIPE	100'	456" SCH 40 GALV. PIPE	100'	456" SCH 40 GALV. PIPE	100'
462" SCH 40 GALV. PIPE	100'	462" SCH 40 GALV. PIPE	100'	462" SCH 40 GALV. PIPE	100'
468" SCH 40 GALV. PIPE	100'	468" SCH 40 GALV. PIPE	100'	468" SCH 40 GALV. PIPE	100'
474" SCH 40 GALV. PIPE	100'	474" SCH 40 GALV. PIPE	100'	474" SCH 40 GALV. PIPE	100'
480" SCH 40 GALV. PIPE	100'	480" SCH 40 GALV. PIPE	100'	480" SCH 40 GALV. PIPE	100'
486" SCH 40 GALV. PIPE	100'	486" SCH 40 GALV. PIPE	100'	486" SCH 40 GALV. PIPE	100'
492" SCH 40 GALV. PIPE	100'	492" SCH 40 GALV. PIPE	100'	492" SCH 40 GALV. PIPE	100'
498" SCH 40 GALV. PIPE	100'	498" SCH 40 GALV. PIPE	100'	498" SCH 40 GALV. PIPE	100'
504" SCH 40 GALV. PIPE	100'	504" SCH 40 GALV. PIPE	100'	504" SCH 40 GALV. PIPE	100'
510" SCH 40 GALV. PIPE	100'	510" SCH 40 GALV. PIPE	100'	510" SCH 40 GALV. PIPE	100'
516" SCH 40 GALV. PIPE	100'	516" SCH 40 GALV. PIPE	100'	516" SCH 40 GALV. PIPE	100'
522" SCH 40 GALV. PIPE	100'	522" SCH 40 GALV. PIPE	100'	522" SCH 40 GALV. PIPE	100'
528" SCH 40 GALV. PIPE	100'	528" SCH 40 GALV. PIPE	100'	528" SCH 40 GALV. PIPE	100'
534" SCH 40 GALV. PIPE	100'	534" SCH 40 GALV. PIPE	100'	534" SCH 40 GALV. PIPE	100'
540" SCH 40 GALV. PIPE	100'	540" SCH 40 GALV. PIPE	100'	540" SCH 40 GALV. PIPE	100'
546" SCH 40 GALV. PIPE	100'	546" SCH 40 GALV. PIPE	100'	546" SCH 40 GALV. PIPE	100'
552" SCH 40 GALV. PIPE	100'	552" SCH 40 GALV. PIPE	100'	552" SCH 40 GALV. PIPE	100'
558" SCH 40 GALV. PIPE	100'	558" SCH 40 GALV. PIPE	100'	558" SCH 40 GALV. PIPE	100'
564" SCH 40 GALV. PIPE	100'	564" SCH 40 GALV. PIPE	100'	564" SCH 40 GALV. PIPE	100'
570" SCH 40 GALV. PIPE	100'	570" SCH 40 GALV. PIPE	100'	570" SCH 40 GALV. PIPE	100'
576" SCH 40 GALV. PIPE	100'	576" SCH 40 GALV. PIPE	100'	576" SCH 40 GALV. PIPE	100'
582" SCH 40 GALV. PIPE	100'	582" SCH 40 GALV. PIPE	100'	582" SCH 40 GALV. PIPE	100'
588" SCH 40 GALV. PIPE	100'	588" SCH 40 GALV. PIPE	100'	588" SCH 40 GALV. PIPE	100'
594" SCH 40 GALV. PIPE	100'	594" SCH 40 GALV. PIPE	100'	594" SCH 40 GALV. PIPE	100'
600" SCH 40 GALV. PIPE	100'	600" SCH 40 GALV. PIPE	100'	600" SCH 40 GALV. PIPE	100'
606" SCH 40 GALV. PIPE	100'	606" SCH 40 GALV. PIPE	100'	606" SCH 40 GALV. PIPE	100'
612" SCH 40 GALV. PIPE	100'	612" SCH 40 GALV. PIPE	100'	612" SCH 40 GALV. PIPE	100'
618" SCH 40 GALV. PIPE	100'	618" SCH 40 GALV. PIPE	100'	618" SCH 40 GALV. PIPE	100'
624" SCH 40 GALV. PIPE	100'	624" SCH 40 GALV. PIPE	100'	624" SCH 40 GALV. PIPE	100'
630" SCH 40 GALV. PIPE	100'	630" SCH 40 GALV. PIPE	100'	630" SCH 40 GALV. PIPE	100'
636" SCH 40 GALV. PIPE	100'	636" SCH 40 GALV. PIPE	100'	636" SCH 40 GALV. PIPE	100'
642" SCH 40 GALV. PIPE	100'	642" SCH 40 GALV. PIPE	100'	642" SCH 40 GALV. PIPE	100'
648" SCH 40 GALV. PIPE	100'	648" SCH 40 GALV. PIPE	100'	648" SCH 40 GALV. PIPE	100'
654" SCH 40 GALV. PIPE	100'	654" SCH 40 GALV. PIPE	100'	654" SCH 40 GALV. PIPE	100'
660" SCH 40 GALV. PIPE	100'	660" SCH 40 GALV. PIPE	100'	660" SCH 40 GALV. PIPE	100'
666" SCH 40 GALV. PIPE	100'	666" SCH 40 GALV. PIPE	100'	666" SCH 40 GALV. PIPE	100'
672" SCH 40 GALV. PIPE	100'	672" SCH 40 GALV. PIPE	100'	672" SCH 40 GALV. PIPE	100'
678" SCH 40 GALV. PIPE	100'				



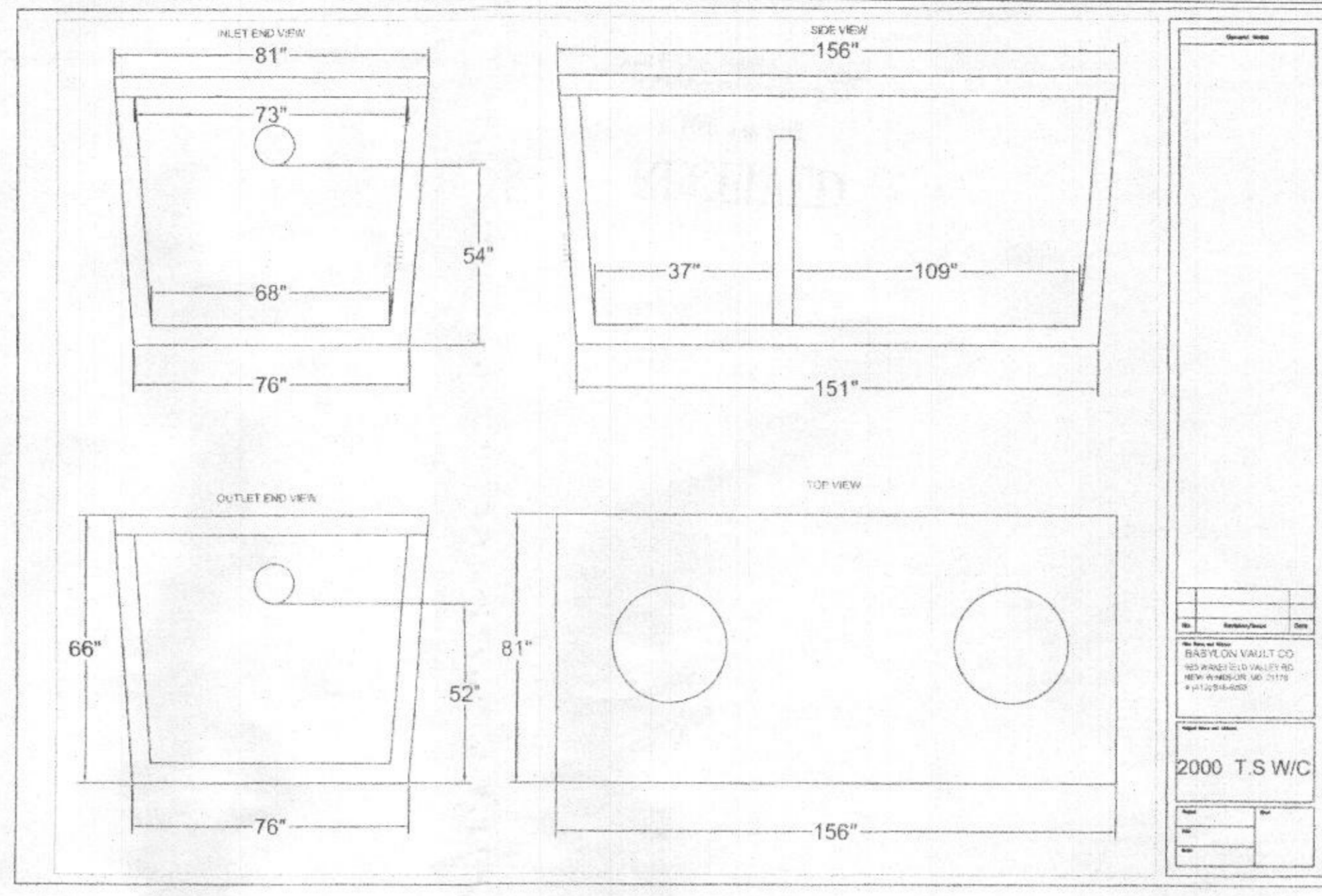
TOTAL EMERGENCY STORAGE = 922 GAL.
 NOTE: THIS DETAIL IS TO BE USED FOR FLOAT CONFIGURATION ONLY - SEE DETAIL ABOVE FOR TANK DIMENSIONS AND ACTUAL LOCATION OF ACCESS COVER.

2" SCH. 40 PVC = 88 LF
 5 1/8" HD B & 4 EQUIVALENT FEET = 24 LF
 TOTAL LINEAR FEET OF 2" SCH. 40 PVC = 112 LF

DYNAMIC HEAD
 112 LF x 2.34 FT PER 100 LF OF 2" PIPE = 2.63 FT OF FRICTION HEAD
 VERTICAL FROM PUMP OFF TO HIGH POINT IN PUMP CHAMBER = 4.18 FT OF FRICTION HEAD
 HIGH POINT IN PUMP CHAMBER TO HIGHEST ELEV. OF SYSTEM = 0 FT (PUMP OUT IS THE HIGHEST POINT)
 TOTAL DYNAMIC HEAD = 6.81 FT

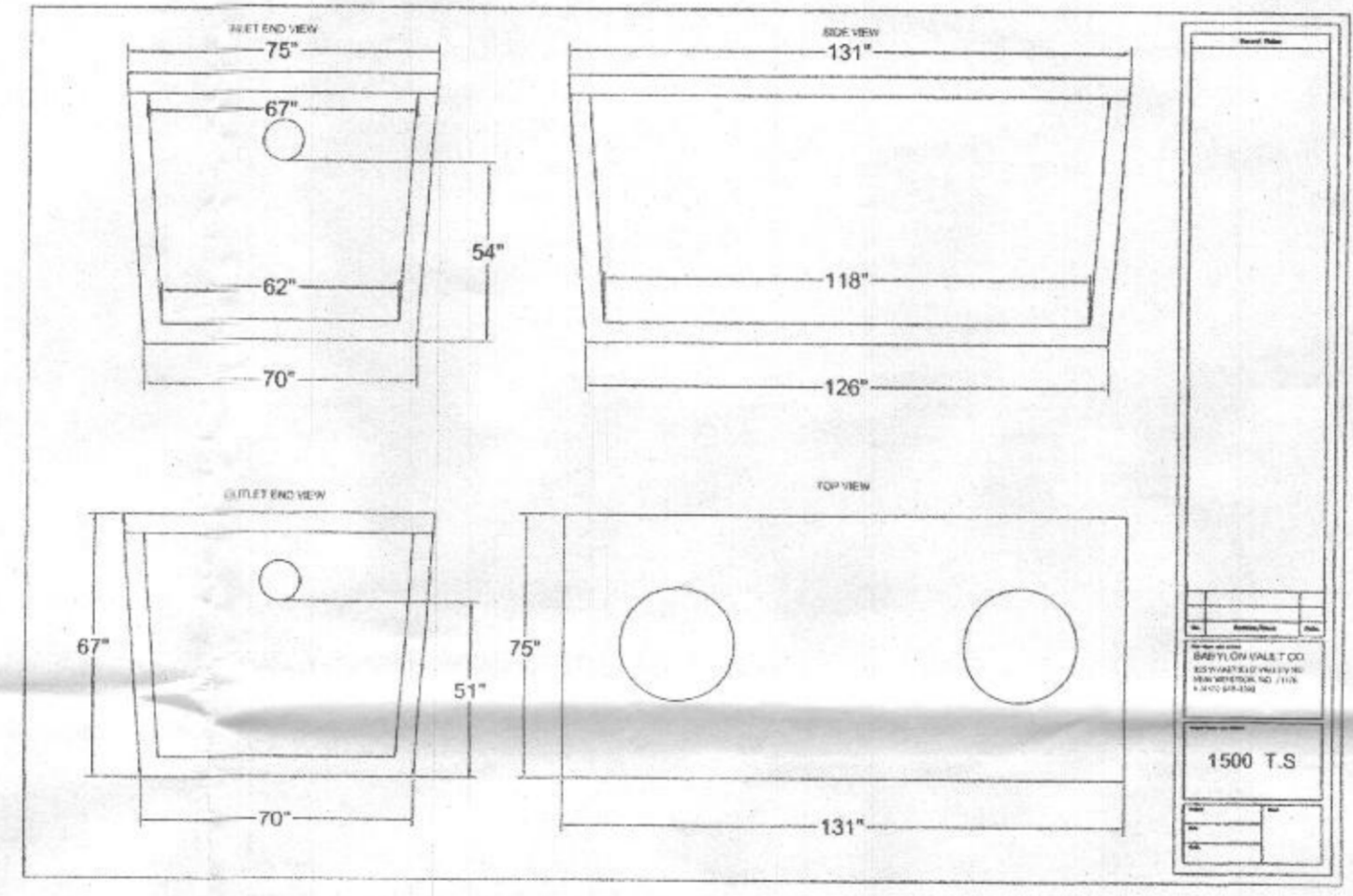
1/8" DESIGN FLOW (750/6=125)
 USE 150 GALLON DOSE (125 GALLON MINIMUM)
 (RUN TIME = 4 MIN (37.5 GPM X 4 = 150 GALLON DOSE))
 PUMP NEEDS TO HANDLE 37.5 GPM AT 6.81 FT OF HEAD
 USE 0.3 HP (ZOLLER MODEL 53 PUMP)

FFE 612.92
 BSE 602.90
 INV. OUT OF HOUSE = 604.17
 PROP. GROUND AT CLEANOUT = 605.8
 INV. INTO CLEANOUT = 603.52
 INV. OUT OF CLEANOUT = 603.42
 EX. GROUND AT SEPTIC TANK = 605.8
 PROP. GRADE ABOVE SEPTIC TANK = 605.8
 TOP OF SEPTIC TANK = 604.14
 INV. INTO SEPTIC TANK = 603.14
 INV. OUT OF SEPTIC TANK = 602.89
 EX. GROUND AT SEPTIC TANK = 605.0
 PROP. GRADE ABOVE PUMP TANK = 605.0
 TOP OF PUMP TANK = 603.83
 INV. INTO PUMP TANK = 602.83
 INV. OUT OF PUMP TANK = 604.00
 GROUND AT DISTRIBUTION BOX = 606.1
 INV. INTO DISTRIBUTION BOX = 603.22
 INV. OUT OF DISTRIBUTION BOX = 603.12

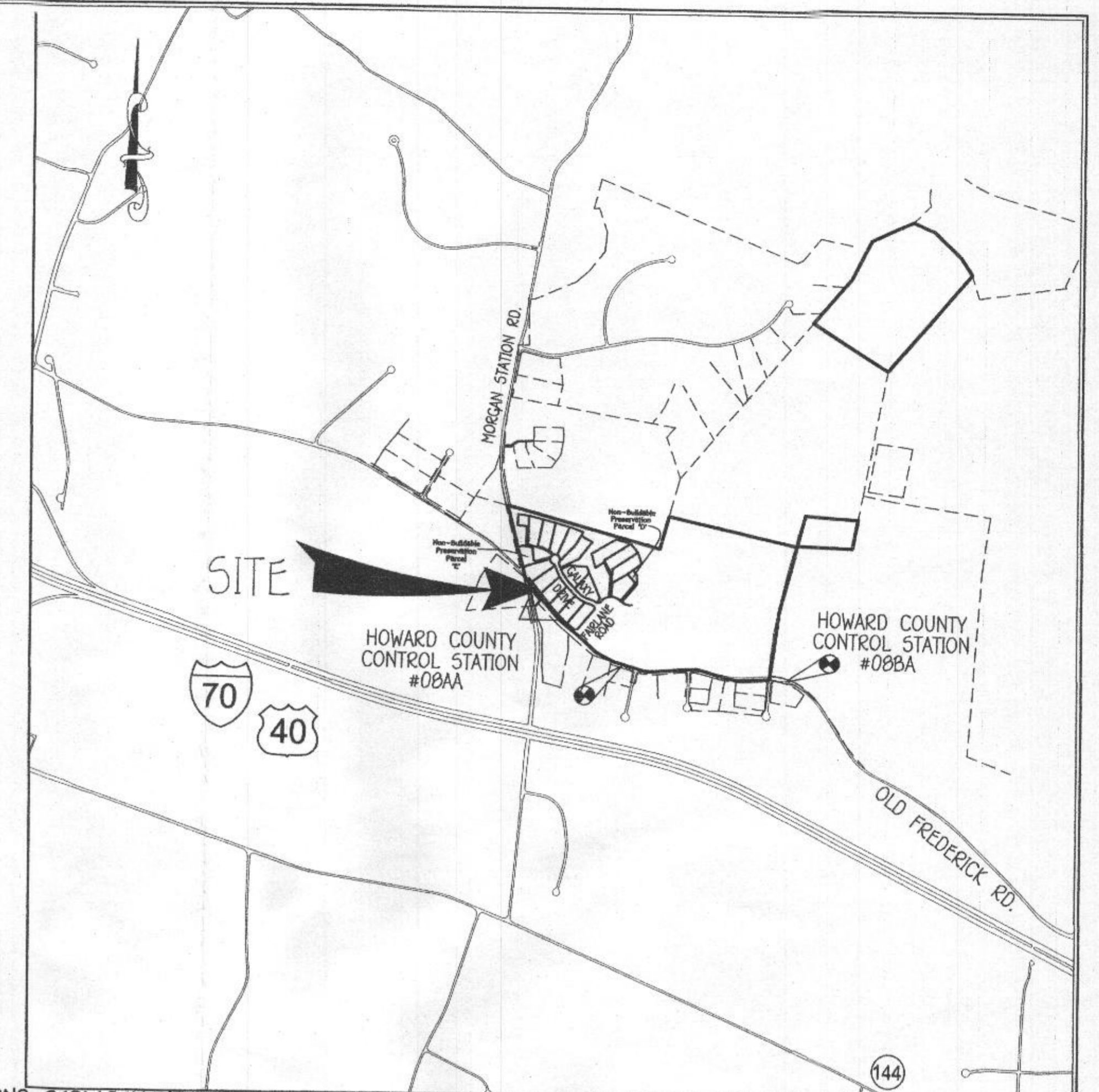


INITIAL SYSTEM
 SEWAGE DISPOSAL SYSTEM DATA, DESIGN FOR 5 BEDROOMS
 LOADING RATE = 5 BEDROOMS X 150 GPD/BEDROOM = 750 GPD
 APPLICATION RATE = 1.2
 EFFECTIVE SIDEWALL BEGINS AT 3 FEET
 TRENCH DEPTH = 6 FEET
 TRENCH WIDTH (W) = 3 FEET
 EFFECTIVE DEPTH (D) = 3 FEET
 SF OF DRAINFIELD = 750 GPD / 1.2 = 625 SF
 COEFFICIENT OF REDUCTION OF TRENCH LENGTH = (W+2)/(W+1+2D) = (3+2)/(3+1+(2x3)) = 0.5
 TRENCH LENGTH = 625 SF x 0.5 = 104.17 FEET (USE 2 TRENCHES AT 52.08 LF.)
 TRENCH SPACING = 2D+W = ((2x3) + 3) = 9' USE 10'

1ST REPLACEMENT SYSTEM
 SEWAGE DISPOSAL SYSTEM DATA, DESIGN FOR 5 BEDROOMS
 LOADING RATE = 5 BEDROOMS X 150 GPD/BEDROOM = 750 GPD
 APPLICATION RATE = 1.2
 EFFECTIVE SIDEWALL BEGINS AT 4 FEET
 TRENCH DEPTH = 6 FEET
 TRENCH WIDTH (W) = 3 FEET
 EFFECTIVE DEPTH (D) = 2 FEET
 SF OF DRAINFIELD = 750 GPD / 1.2 = 625 SF
 COEFFICIENT OF REDUCTION OF TRENCH LENGTH = (W+2)/(W+1+2D) = (3+2)/(3+1+(2x2)) = 0.625
 TRENCH LENGTH = 625 SF x 0.625 = 130.21 FEET (USE 2 TRENCHES AT 65.10 LF.)
 TRENCH SPACING = 2D+W = ((2x2) + 3) = 5' USE 10'

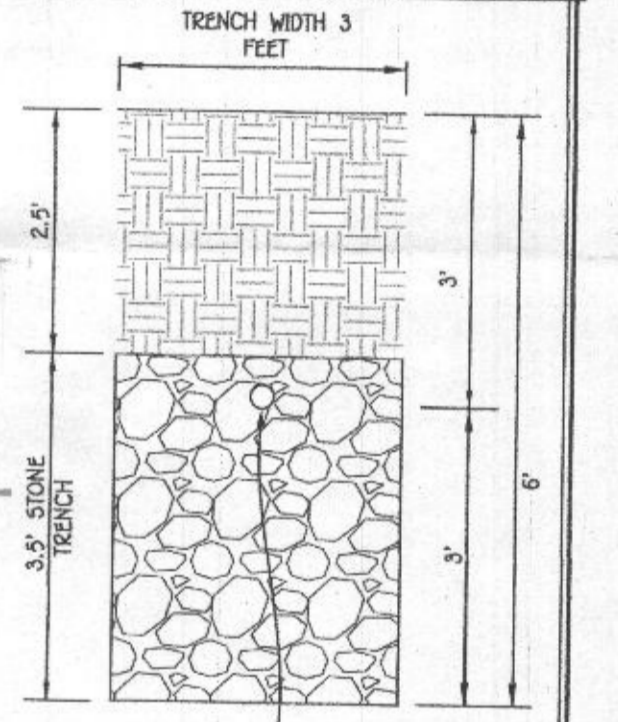


2ND REPLACEMENT SYSTEM
 SEWAGE DISPOSAL SYSTEM DATA, DESIGN FOR 5 BEDROOMS
 LOADING RATE = 5 BEDROOMS X 150 GPD/BEDROOM = 750 GPD
 APPLICATION RATE = 0.8
 EFFECTIVE SIDEWALL BEGINS AT 3 FEET
 TRENCH DEPTH = 3 FEET
 TRENCH WIDTH (W) = 3 FEET
 EFFECTIVE DEPTH (D) = 3 FEET
 SF OF DRAINFIELD = 750 GPD / 0.8 = 937.5 SF
 COEFFICIENT OF REDUCTION OF TRENCH LENGTH = (W+2)/(W+1+2D) = (3+2)/(3+1+(2x3)) = 0.5
 TRENCH LENGTH = 937.5 SF x 0.5 = 468.75 FEET (USE 5 TRENCHES AT 93.75 LF.)
 TRENCH SPACING = 2D+W = ((2x3) + 3) = 9' USE 10'



VICINITY MAP
 SCALE: 1" = 1200'

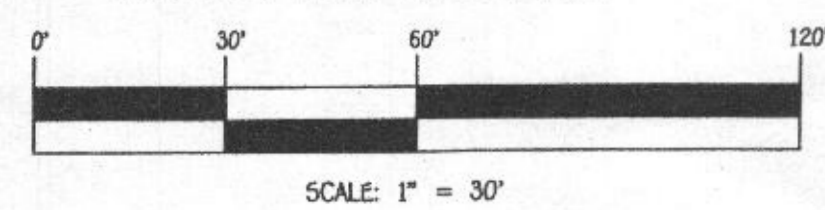
Approved Septic System Plan
 Howard County Health Department
 Signature: [Signature] Date: 3/16/18



PLAN
 SCALE: 1" = 30'

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-15-0351 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.

NOTE:
 FOR LOT 16, NO GRAVITY SEWER SERVICE FOR BASEMENT

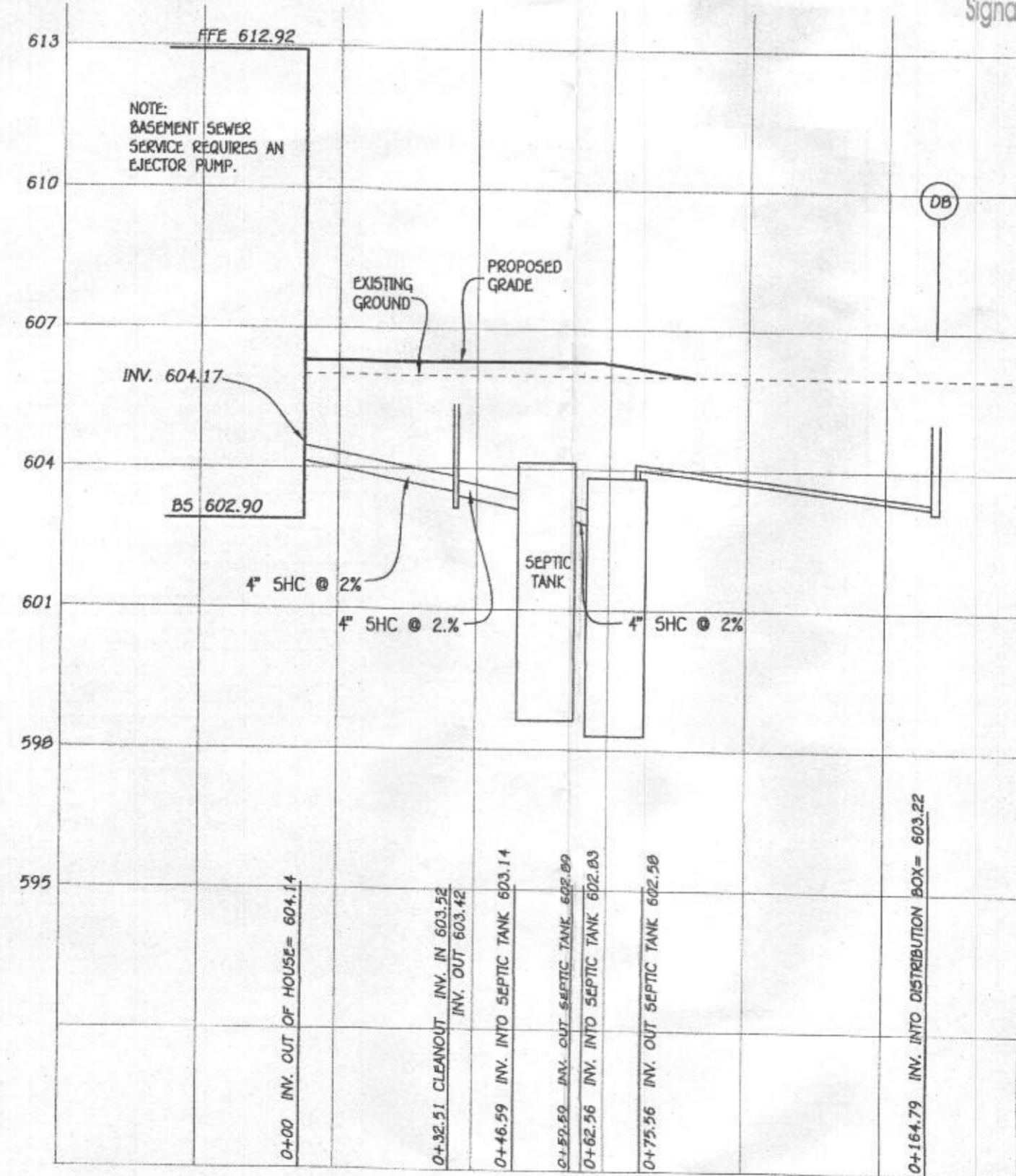
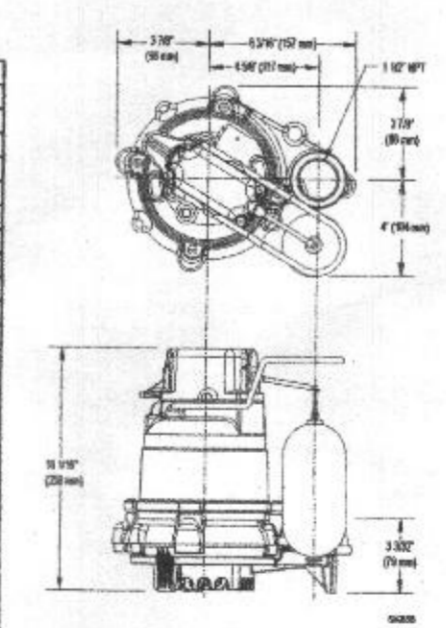


FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 18272 PATUXENT WOODS DRIVE
 COLUMBIA, MD 21046
 410-379-5956

OWNER/DEVELOPER
 181 FISHCREEK
 9720 PATUXENT WOODS DRIVE
 COLUMBIA, MD 21046
 410-379-5956

PRODUCT SPECIFICATIONS

GROUP	ITEM	DESCRIPTION
MOTOR	Make/Model	2HP
	Voltage	115 or 230
	Phase	1 Ph.
	Type	1800
PUMP	Material	Cast Iron
	Capacity	44-57
	Operation	Automatic or Manual
	Motor Mount	2" x 4" (4" x 4" or 2" x 2")
	Discharge Size	1 1/2" NPT
	Float Switching	1/2" (1/2" steel adjustable style)
	Control Voltage	120 VAC (120V/240V/277V)
	Control Type	LA Switch, Switch, ground/floating plug
	Max. Head	80 FT (80 m)
	Flow Rate	45 GPM (170 LPM)
MATERIALS	Upper Bearing	Cast Iron, bronze or engineered thermoplastics
	Lower Bearing	Cast Iron, bronze or engineered thermoplastics
	Upper Seal	Cast Iron, bronze or engineered thermoplastics
	Lower Seal	Cast Iron, bronze or engineered thermoplastics
	Impeller	Cast Iron, bronze or engineered thermoplastics
	Impeller Seal	Cast Iron, bronze or engineered thermoplastics
	Impeller Housing	Cast Iron, bronze or engineered thermoplastics
	Impeller Housing Seal	Cast Iron, bronze or engineered thermoplastics
	Impeller Housing Gasket	Cast Iron, bronze or engineered thermoplastics
	Impeller Housing Bolt	Cast Iron, bronze or engineered thermoplastics



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: 02/22/2019.

Aldo M. Vitucci 3/16/18
 ALDO MICHAEL VITUCCI DATE

SEPTIC SYSTEM
 INSTALLATION SITE PLAN
 LOT 16
 1015 FAIRLANE ROAD
 FAIRLANE FARMS
 PHASE ONE
 ZONED: RC-DEO

ADDRESS CHART

LOT NUMBER	STREET ADDRESS
16	1015 FAIRLANE ROAD

TAX MAP NO.: B GRID NO.: 2 PARCEL NO.: 8
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: 1" = 30' DATE: NOV. 30, 2017
 SHEET 1 OF 1

SEPTIC PROFILE
 SCALE: 1" = 30'