

**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](http://www.hchealth.org)  
 Facebook: [www.facebook.com/hocohealth](http://www.facebook.com/hocohealth)

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

RECEIPT DATE: 3-3-16 **ONSITE SEWAGE DISPOSAL SYSTEM** P 558020

APPROVAL DATE: 6-14-16 **PERMIT: CONSTRUCTION** A \_\_\_\_\_

PROPERTY ADDRESS: 15221 Sweetbay Street

SUBDIVISION: Belle Haven Estates LOT: 43 TAX ID: \_\_\_\_\_

CONTRACTOR: Ben Lewis Plumbing EMAIL: \_\_\_\_\_

CONTRACTOR ADDRESS: 23407 Frederick Road, Clarksburg, MD 20871 PHONE: 301) 428-3900

CONTRACTOR CERTIFIED FOR BAT INSTALLATION:  MDE  MANUFACTURER:

PROPERTY OWNER: K Hovnanian Homes EMAIL: cwillet@khov.com

OWNER ADDRESS: 1802 Brightseat Road, Landover, MD 20785 PHONE: 301-683-6268

BAT UNIT MODEL: Hoot 600 BNR PUMP SIZE: Ep0511 PUMP TANK CAPACITY: 750gal

OPERATION & MAINTENANCE AGREEMENT DATE SIGNED: \_\_\_\_\_ DATE RECORDED: \_\_\_\_\_

DISTRIBUTION SYSTEM:  GRAVITY  PRESSURE DOSED BEDROOMS: 5 APPLICATION RATE: 0.8

TRENCHES:	LINEAR FEET REQUIRED: <u>196</u>	INLET DEPTH: <u>4</u>
	TRENCH WIDTH: <u>3</u>	MAXIMUM BOTTOM DEPTH: <u>8</u>
	MINIMUM SPACE BETWEEN TRENCHES: <u>10</u>	EFFECTIVE AREA BEGINNING DEPTH: <u>6</u>

LOCATION: **PER APPROVED SITE PLAN. SEWAGE DISPOSAL AREA AND BAT UNIT LOCATION MUST BE STAKED BY LICENSED SURVEYOR PRIOR TO PRE-CONSTRUCTION INSPECTION.**

NOTES:

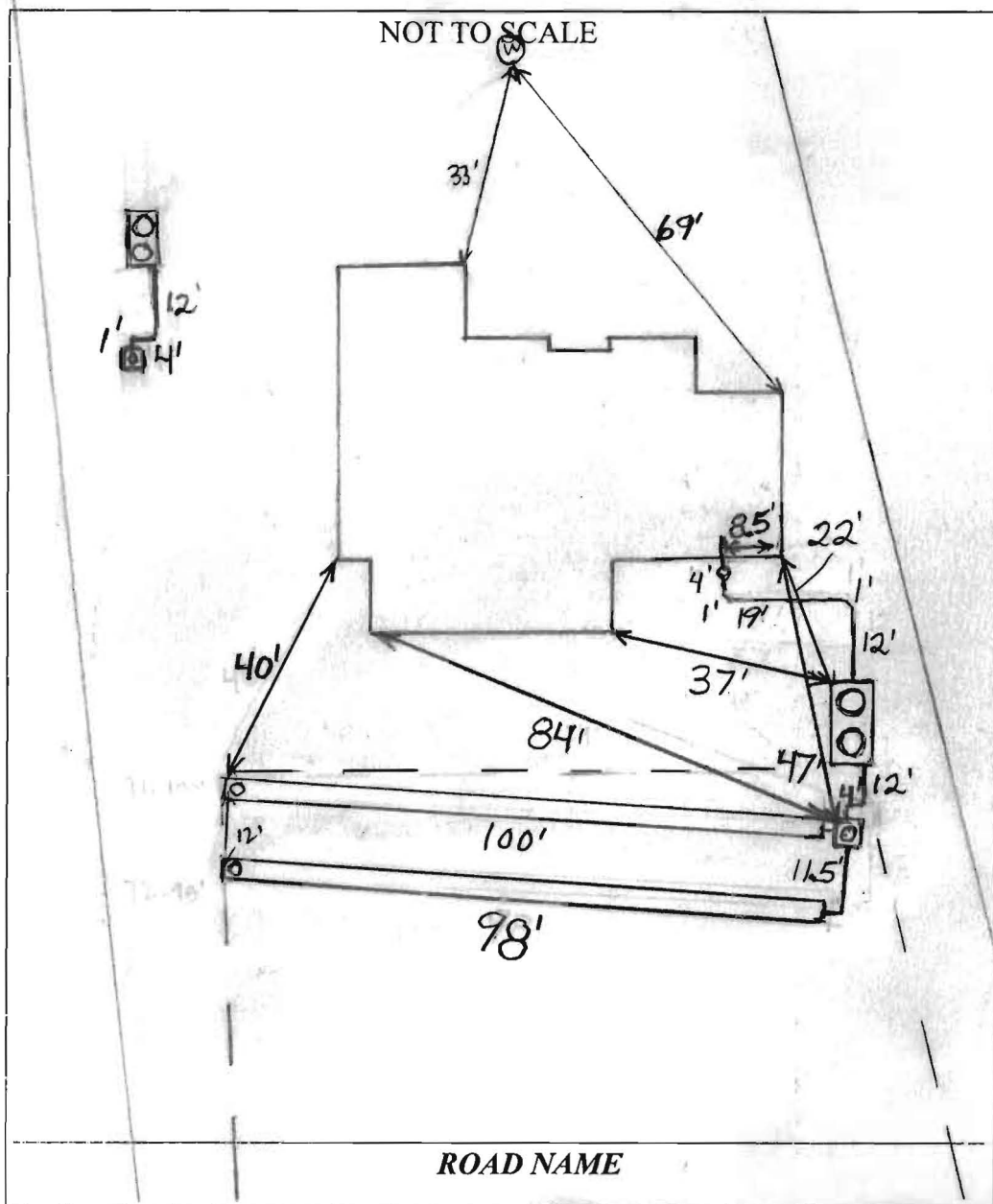
ISSUED BY: Hank Oswald ISSUE DATE: 3-7-16 EXPIRATION DATE: 3-3-17

- 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 SEPTIC TANKS REQUIRED
- NOTE: ALL PARTS OF SEPTIC SYSTEM SHALL BE AT LEAST 100 FEET DOWNGRAIENT 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 1600115
- NOTE: AN INDIVIDUAL CERTIFIED BY MDE AND THE MANUFACTURER FOR BAT INSTALLATION MUST BE PRESENT AT ALL TIMES DURING BAT INSTALLATION.
- 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'	4'	8'
NUMBER OF TRENCHES	2	
TOTAL LENGTH	198'	
ABSORPTION AREA	594+Sidewall	
DISTRIBUTION BOX LEVEL	Yes	
DISTRIBUTION BOX BAFFLE	Yes	
DISTRIBUTION BOX PORT	Yes	

SEPTIC TANK DATA	
SEPTIC TANK I LEVEL	Yes
MANUFACTURER	Mayer/Hoot
CAPACITY	1350 GAL
SEAM LOC	Top
TANK LID DEPTH	0.5'-1.5'
BAFFLES	Front
BAFFLE FILTER	N/A
MANHOLE LOC	Front+Rear
6" PORT LOC	None
WATERTIGHT TEST	No
SLOTTED	N/A
DATE ON LID	Dry

PUMP/SEPTIC TANK LEVEL	
N/A	
MANUFACTURER	
CAPACITY	GAL
SEAM LOC	
TANK LID DEPTH	
BAFFLES	
BAFFLE FILTER	
MANHOLE LOC	
6" PORT LOC	
WATER TIGHT TEST	
SLOTTED	
DATE ON LID	

**PRE-CONSTRUCTION:**

4/11/16 Met Ben Lewis on site for layout. All SDA stakes present. Tank stake missing - determined tank location using swing sheet from engineer. Laid out 2x98' trenches on contour on upper edge of SDA. (SC)

INSTALLATION: 4/11/16 T2 finished + left open. 3' wide, 3.5' to stone. D-box installed + connected to T2. (SC) 4/12/16 T1 complete and left open. 3' wide, 3' to stone. D-box lid corner cracked. Ben Lewis will patch with hydraulic cement. (SC)

4/13/2016 Tank installed. House connection made. Need approval from Hoot inspector. (BB)  
6/14/2016

FINAL INSPECTOR B. Baker DATE OF APPROVAL 6-14-16

## Oswald, Hank

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**From:** Oswald, Hank  
**Sent:** Tuesday, December 08, 2015 1:41 PM  
**To:** 'Brian Collins'  
**Cc:** Willett, Chester  
**Subject:** RE: BAT Plan & FP Questions\_Belle Haven Estates\_Lot 43  
**Attachments:** Table 4.4.pdf

Brian:

At 35 gpm, the velocity is too strong for a 1 ¼ (It's off the table). Please see attached Table 4.4. It would be better to increase to a 2 inch pipe and use friction loss factor of 2.05.

Hank

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**From:** Brian Collins [<mailto:BCollins@ddcinc.us>]  
**Sent:** Tuesday, December 08, 2015 12:40 PM  
**To:** Oswald, Hank  
**Cc:** Willett, Chester  
**Subject:** RE: BAT Plan & FP Questions\_Belle Haven Estates\_Lot 43

Hank,

In Response to your question below. The 13.62 is the Friction Loss Factor. To calculate the friction loss for odd lengths we multiply the total length of pipe divided by 100, by the friction loss factor. Which is basically a number we get off a chart for the friction loss over 100' of an 1"-1/4 pipe.

Please let me know if you have any additional Questions.

Thanks  
Brian



**Brian Collins, RIA, ASLA, LEED AP**

Project Manager  
[bcollins@DDCinc.us](mailto:bcollins@DDCinc.us)

**Development Design Consultants, Inc.**

Planners, Surveyors, Engineers, Landscape Architects

192 East Main Street office 410.386.0560

Westminster, MD 21157 cell 410.336.6362

[www.DDCinc.us](http://www.DDCinc.us) fax 410.386.0564



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**From:** Oswald, Hank [<mailto:hoswald@howardcountymd.gov>]  
**Sent:** Tuesday, December 08, 2015 9:41 AM  
**To:** Willett, Chester  
**Subject:** BAT Plan & FP Questions\_Belle Haven Estates\_Lot 43

Hi Chester:

Under Friction Head, where did **13.62** come from?

The FP appears to show 4 BR on the 2<sup>nd</sup> FL, and 1 BR on the 1<sup>st</sup> FL. It's unclear to me what exactly is going on in the basement. I will need revised drawing to help clarify this.

Thanks,

Hank

Hank Oswald, L.E.H.S.  
Howard County Health Department  
Bureau of Environmental Health  
Well & Septic Program  
8930 Stanford Boulevard  
Columbia, MD 21045  
410.313.1786 (Office)  
410.313.2648 (Fax)



# HOWARD COUNTY HEALTH DEPARTMENT

58020

DATE 3/31/16

PS

Received From

K. Hornman

PHONE #

240 35-4515

For

SEPTIC PERMIT - 152221  
Sweetbay Street Lot  
43

- CASH
- CHECK

NO. 000  
25510

Three hundred ninety five Dollars

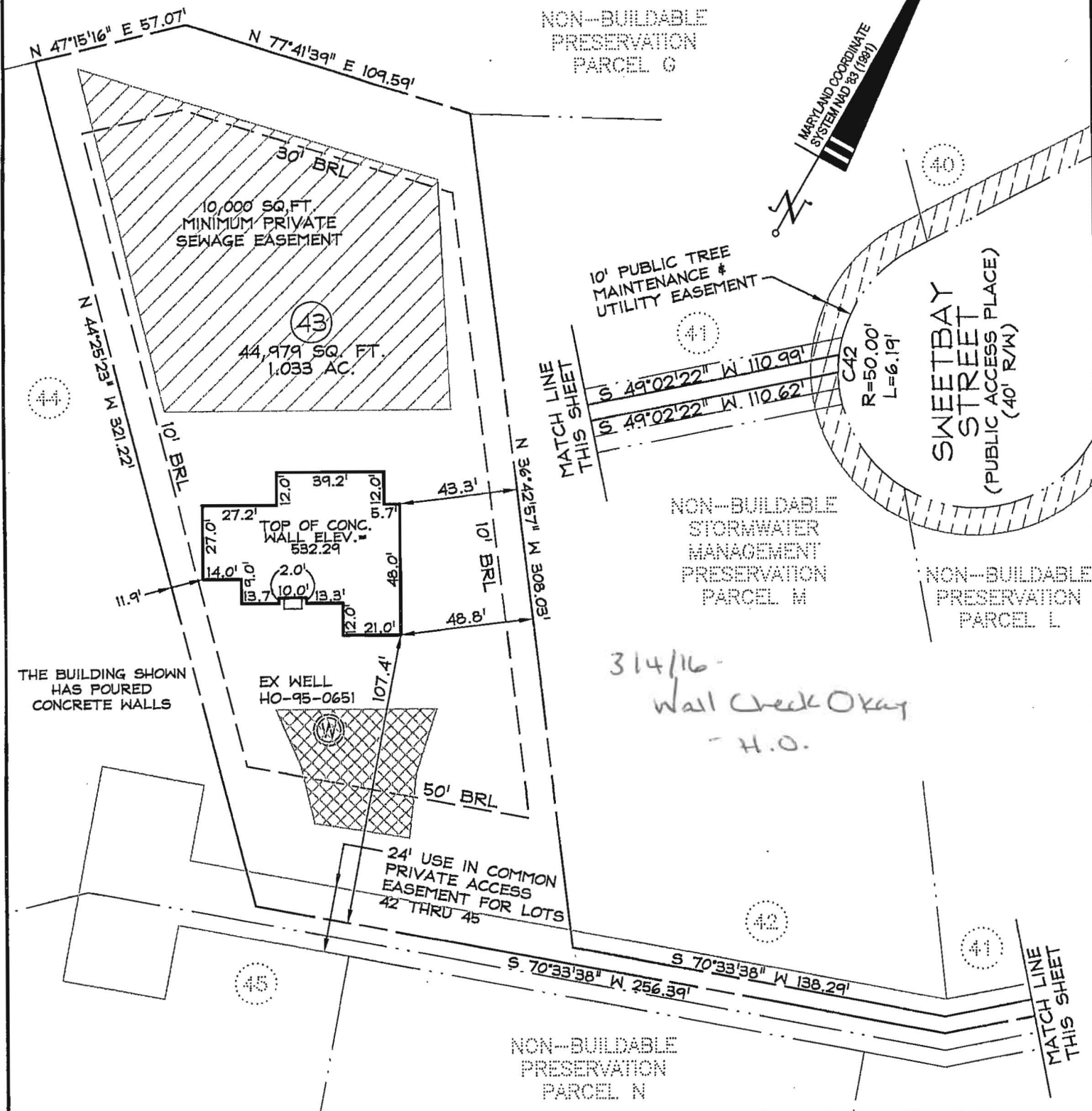
\$ 395.00

Received By

King

CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TAN	CHD. BRG.	CHD. DIST.
C42	50.00'	6.19'	7°06'22"	3.10'	S 26°27'56" E	6.19'



SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT I EITHER PERSONALLY PREPARED OR WAS IN RESPONSIBLE CHARGE OVER THE PREPARATION OF THIS DRAWING AND THE SURVEYING WORK REFLECTED IN IT, AND THAT IT IS IN COMPLIANCE WITH REQUIREMENTS SET FORTH IN REGULATION .12 OF CHAPTER 06, MINIMUM STANDARDS OF PRACTICE.

I AM A DULY LICENSED PROPERTY LINE SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 239, EXPIRATION DATE 07/06/16.



Planners  
 Surveyors  
 Engineers  
 Landscape Architects

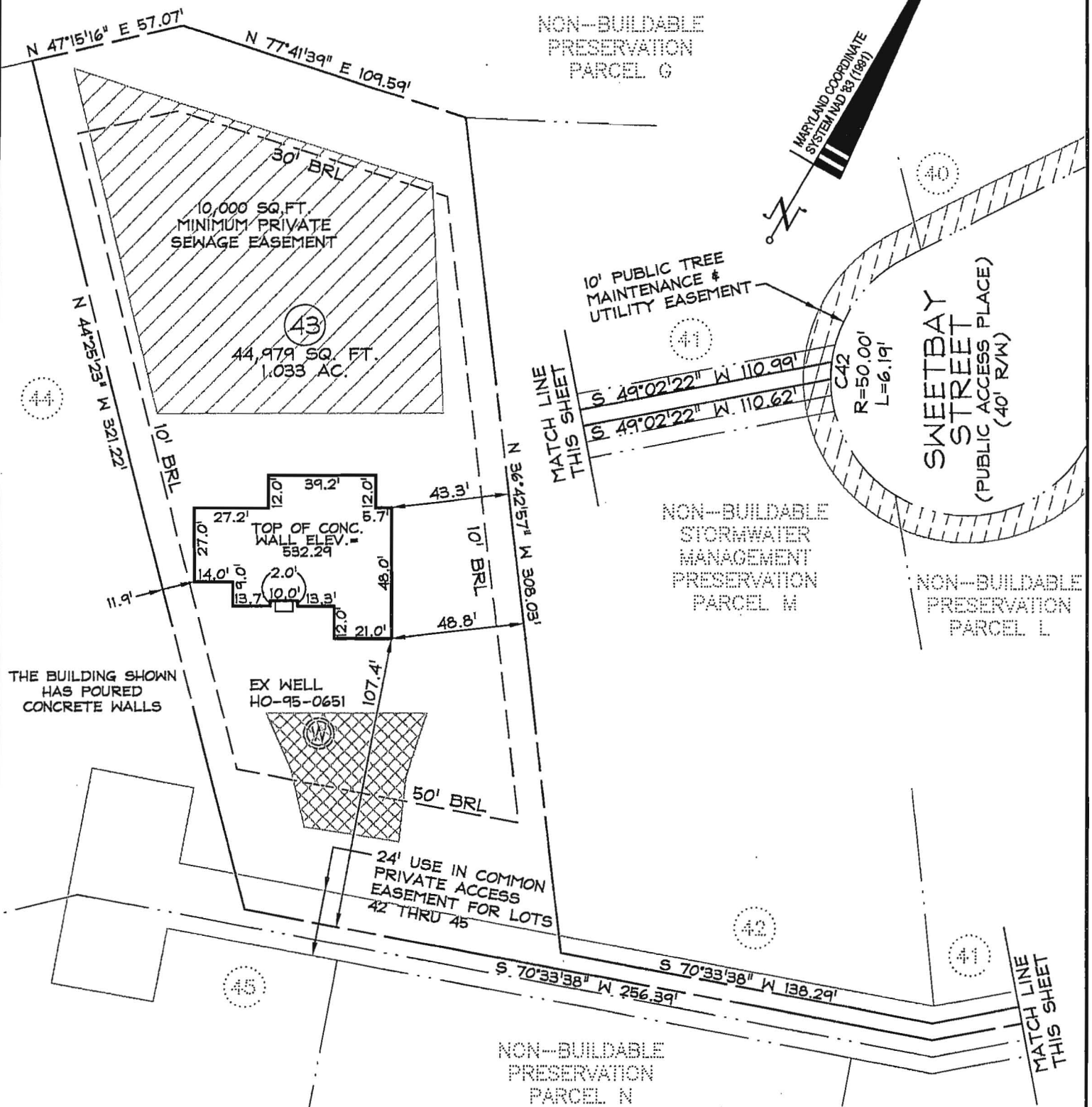
192 East Main Street  
 Westminster, MD 21157  
 410.386.0560  
 410.386.0564 (Fax)  
 DDC@DDCinc.us  
 www.DDCinc.us

LOCATION DRAWING / WALL CHECK  
 #15221 SWEETBAY STREET  
 LOT 43  
 BELLE HAVEN ESTATES  
 PLAT No. 19953  
 ELECTION DIST. No. 4 HOWARD COUNTY, MD

DDC JOB#:	06116.5
DATE:	2-25-2016
SCALE:	1"=50'
DRN. BY:	RC
CHK. BY:	RBS

CURVE TABLE

CURVE RADIUS	LENGTH	DELTA	TAN	CHD. BRG.	CHD. DIST.
C42	50.00'	6.19'	7°06'22"	3.10'	S 26°27'56" E 6.19'



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I HEREBY CERTIFY THAT I EITHER PERSONALLY PREPARED OR WAS IN RESPONSIBLE CHARGE OVER THE PREPARATION OF THIS DRAWING AND THE SURVEYING WORK REFLECTED IN IT, AND THAT IT IS IN COMPLIANCE WITH REQUIREMENTS SET FORTH IN REGULATION .12 OF CHAPTER 06, MINIMUM STANDARDS OF PRACTICE.

I AM A DULY LICENSED PROPERTY LINE SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 239, EXPIRATION DATE 07/06/16.



*Robert B. Southard*

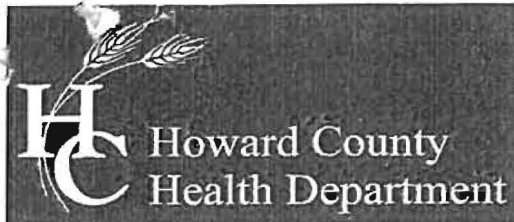
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Facebook: www.facebook.com/hocohealth

Twitter: HowardCoHealthDep

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

**OPERATION AND MAINTENANCE AGREEMENT  
FOR AN ON-SITE SEWAGE DISPOSAL SYSTEM  
HAVING AN ADVANCED PRE-TREATMENT SYSTEM**

THIS AGREEMENT is made this 3<sup>rd</sup> day of MARCH 2014, among K HUNNANIAN HOMES (F MARYLAND) LLC, hereinafter collectively referred to as "Owner", and the Howard County Health Department hereinafter referred to as the "County".

WHEREAS, Owner is the owner or contract owner of a parcel of land located at 15217 SWEETEN STREET WOODBRIDGE MD 21797, in the 07 Election District of Howard County, Maryland, and the deed to same is recorded or shall be recorded among the Land Records of Howard County, Maryland in Liber 16587 Folio 6210. 07/374126

WHEREAS, The Lot is suitable for the installation of a conventional on-site sewage disposal system with an advanced pre-treatment system, utilizing best available technology to perform nitrogen reduction, in accordance with the Code of Maryland Regulations 26.04.02.07, effective January 1, 2013. The pre-treatment device being installed is 600 GPD ENR SYSTEM W/750 GALLON PUMP/HAMMILL.

NOW, THEREFORE, the parties hereto agree as follows:

- A. Owner hereby grants to the County the right to enter upon the Lot at any reasonable time for access to the system to make periodic inspections and the Owner agrees to provide any information and data in Owner's possession reasonably requested and needed by the County to develop accurate and thorough test results.
- B. Owner acknowledges and agrees that neither the County nor any of its agents or employees, either officially or individually, underwrites the operation of any system approved by them.
- C. The Owner will devote reasonable care and effort to the operation and maintenance of the system in perpetuity or until a public sewer connection is made so that a system malfunction is not the result of poor maintenance, faulty operation, or neglect.
- D. The Owner agrees to enter into a contract reasonably acceptable to the Owner and the County with a private entity to operate and maintain on a regularly scheduled basis an approved advanced pre-treatment system. The owner shall supply a copy of the contract to the County when it is renewed or altered.
- E. This agreement shall run with the land and upon Owner's taking title to the Lot shall bind the Owner, their heirs, successors, and assigns to the provisions of the agreement as long as the property is in existence and after installation of the system. Owner further agrees that they shall inform in writing any subsequent purchaser or lessee of the Lot that the system shall require

maintenance or other attention. Upon taking title to the Lot, the Owner agrees to cause this agreement to be recorded in the Land Records of Howard County and assure that it becomes part of the Deed for the subject property in order that prospective buyers may be aware of the special conditions affecting this property.

F. This agreement shall not be construed to limit any authority of the County to protect the public health, safety or comfort or to issue any other orders to take any other action which is now or may hereafter be within its authority.

G. This agreement may be voided at any time at the discretion of the County.

H. This agreement contains the entire agreement and understanding between the County and the Owner. There are no additional terms other than as contained in this agreement. This agreement may not be modified, except in writing signed by each of the parties or by their authorized representatives.

I. The laws of the State of Maryland govern the provisions of all transactions pursuant to this agreement.

J. Owner acknowledges and agrees that interior renovations to increase the number of bedrooms or an increase in living space shall not be permitted without approval from the County.

IN WITNESS WHEREOF, the parties have signed and sealed this agreement on the date indicated above.

Bert Nifan 3/3/2016  
Howard County Health Department

Steven J. Snyder 3/1/16  
Owner #1 Signature                      Date

STEVEN J. SNYDER VP. CONSTRUCTION  
Owner #1 Print Name

[Signature] [Date]  
Owner#2 Signature                      Date

\_\_\_\_\_  
Owner #2 Print Name

\_\_\_\_\_  
Buyer #1 Signature                      Date

\_\_\_\_\_  
Buyer #1 Print Name

\_\_\_\_\_  
Buyer #2 Signature                      Date

\_\_\_\_\_  
Buyer #2 Print Name



HOWARD COUNTY HEALTH DEPARTMENT

58020

DATE 3/13/16

PS

Received From K Hovmanian

PHONE # 301-375-4515

CASH  
 CHECK  
NO. 000

For SEPTIC PERMIT - 15222  
Sweetbay Street Lot 43

25510

Three hundred ninety five Dollars

\$ 390.00

Received By Skirp



HOWARD COUNTY HEALTH DEPARTMENT

58019

DATE 3/13/16

PS

Received From K Hovmanian Homes

PHONE # 301-375-4515

CASH  
 CHECK  
NO. 000

For Septic Permit / 15217 Sweetbay St. Lot 44

25511

Three hundred ninety five Dollars

\$ 390.00

Received By Skirp

Clerk of the Circuit Court for  
Howard County  
Land Records/Licensing  
The Thomas Dorsey Building  
9250 Bendix Road  
Columbia, MD 21045  
410-313-5850

Clerk of the Circuit Court for  
Howard County  
Land Records/Licensing  
The Thomas Dorsey Building  
9250 Bendix Road  
Columbia, MD 21045  
410-313-5850

LR - Agreement Recording Fee	1x	20.00	20.00
Grantor/Grantee Name: K Hovmanian			
Reference/Control #: 126			
LR - Agreement Surcharge	1x	40.00	40.00
SubTotal:			60.00
Total:			60.00

LR - Agreement Recording Fee	1x	20.00	20.00
Grantor/Grantee Name: K Hovmanian Homes			
Reference/Control #: 127			
LR - Agreement Surcharge	1x	40.00	40.00
SubTotal:			60.00
Total:			60.00

REV-Check-BOA  
Number : 00025509 60.00  
03/03/2016 13:26 CC13-CH  
#5692473 / 495/109  
"Thank you for visiting us today"

REV-Check-BOA  
Number : 00025508 60.00  
03/03/2016 13:29 CC13-CH  
#5692486 / 495/109  
"Thank you for visiting us today"

# Letter of Satisfaction

## Hoot System Installation

Address of Property: 15221 Sweetbay St.  
Woodbine, mp. 21797

Date of Final Inspection: 6/14/16

Installer: Ben Lewis Plumbing

Hoot Technician/Inspector: Mike Sample

I hereby certify that the Hoot system installed at the property listed above has been installed according to proper Hoot installation practices. I have also verified the startup of the system and it is in proper working order.

Sincerely,

H. Michael Dayer

Name of Inspector  
Mayer Bros. ,Inc.

PH: 410-796-1434

**WBE**

FX: 410-796-1438

[www.mayerbrosprecast.com](http://www.mayerbrosprecast.com)

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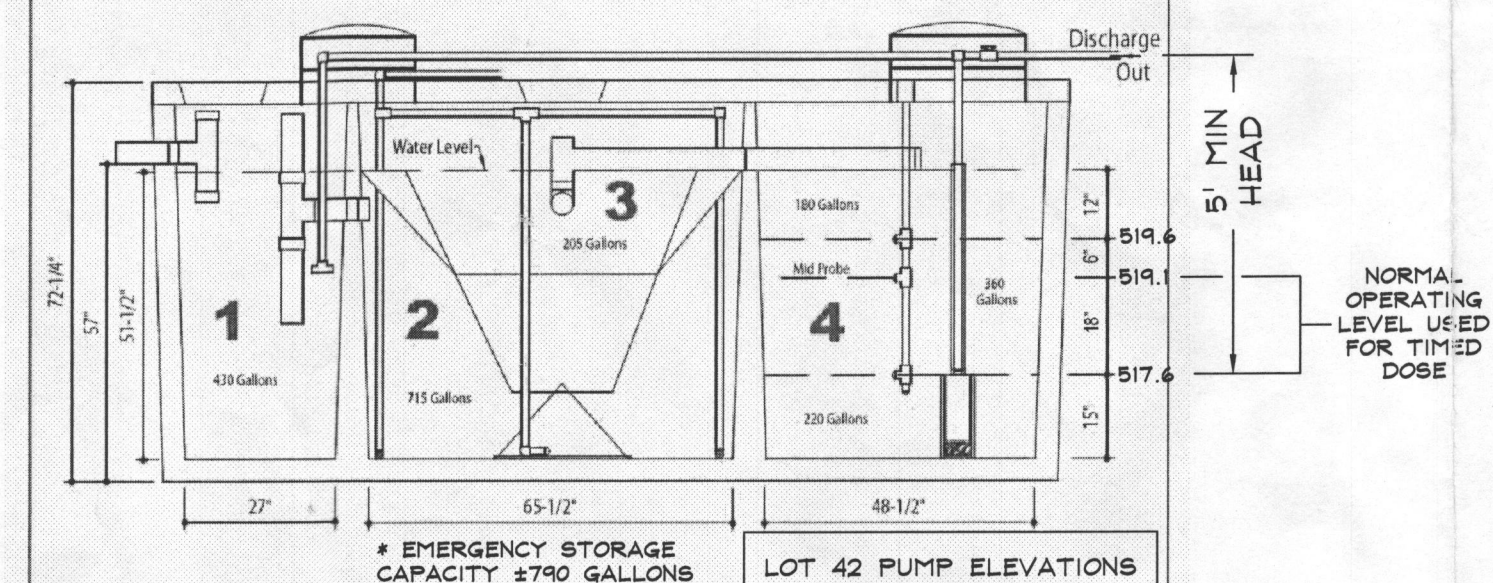
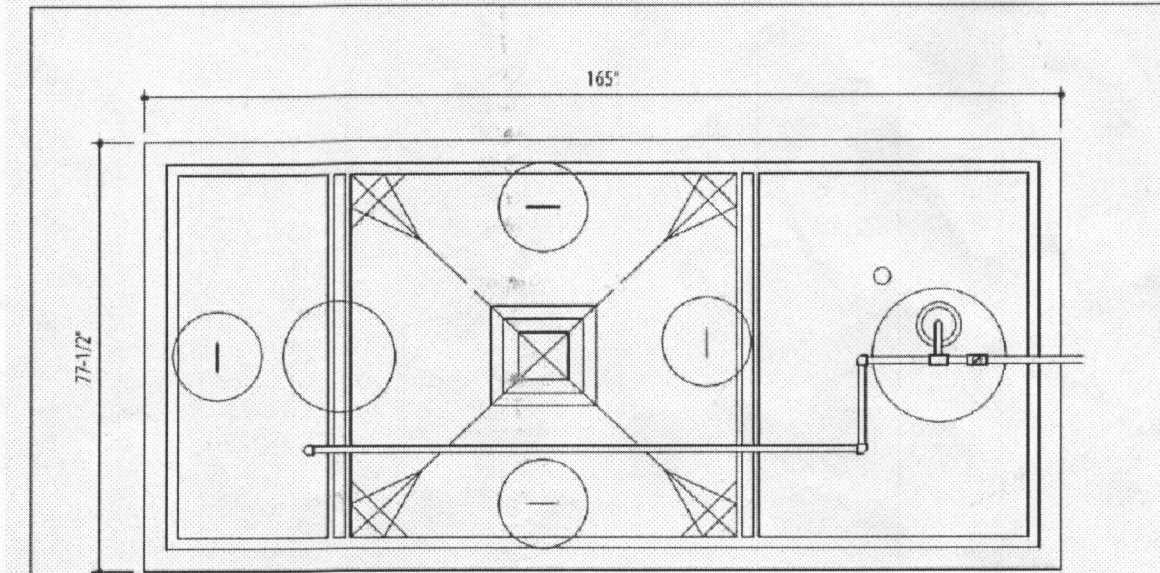
Grease Interceptors, Grease Solutions, Aerobic Treatment Units, Septic Tanks, Holding Tanks, Storm Water Structures, Hydroceptors,  
Bench Barrier, Water Meter Vaults, Sectional Valve Vaults, Top Slabs, Curb Heads, Curb Bumpers,  
Custom Precast Products

**GENERAL NOTES**

- BASE SQUARE FOOTAGE OF HOUSE: 3,592 SQ. FT. NUMBER OF BEDROOMS: 4
- EJECTOR PUMP REQUIRED TO SEWER BASEMENT
- PER THE APPROVED ROAD DRAWINGS, F-07-38, A DRIVEWAY CULVERT IS NOT REQUIRED
- THE SUBJECT PROPERTY IS ZONED RC-DEO PER THE 2/2/04 COMPREHENSIVE ZONING PLAN AND PER COMP-LITE ZONING REGULATIONS DATED 7/28/06
- PLAT REFERENCE: #19948
- BASE INFORMATION SHOWN ON THIS PLAN IS BASED ON PLANS PREPARED BY DMN, AND DATED 06/25/07. EXISTING TOPOGRAPHY BASED ON GRADING PLAN PREPARED BY DENARIO DESIGN CONSULTANTS DATED 07/09/07 AND FIELD RUN TOPOGRAPHY PREPARED BY DDC INC IN JAN. 2012
- SEE ARCHITECTURAL PLANS FOR BUILDING DIMENSIONS AND DESIGN DETAILS. PRIOR TO STAKEOUT FOR CONSTRUCTION, IT SHALL BE THE OWNER/BUILDERS RESPONSIBILITY TO PROVIDE DDC, INC. WITH THE MOST RECENT SET OF HOUSE PLANS.
- THE CONTRACTOR OR DEVELOPER SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS / BUREAU OF ENGINEERING / CONSTRUCTION INSPECTION DIVISION AT (410)313-1881 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- TOTAL LIMIT OF DISTURBANCE: 17,487 SQ. FT. / 0.40 AC. STORMWATER MANAGEMENT FOR THIS LOT IS PROVIDED PER THE PREVIOUSLY APPROVED FINAL PLAN (F-07-38).
- ANY DAMAGE TO PUBLIC "RIGHT-OF-WAYS" OR PAVED PUBLIC ROADS SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTORS EXPENSE IN ACCORDANCE WITH THE HOWARD COUNTY STANDARDS AND SPECIFICATIONS.
- DEVIATIONS FROM THESE PLANS AND SPECIFICATIONS WITHOUT PRIOR WRITTEN CONSENT OF THE CIVIL ENGINEER (DDC, INC.) MAY CAUSE THE WORK TO BE UNACCEPTABLE.
- THE DIMENSIONED DISTANCES SHALL GOVERN IF SCALED AND DIMENSIONED DISTANCES ON THIS PLAN ARE FOUND TO BE IN DISAGREEMENT.
- THE LOTS SHOWN HEREON COMPLY WITH THE MINIMUM LOT AREA AND OWNERSHIP WIDTH AS REQUIRED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT.
- THIS AREA DESIGNATES A PRIVATE SEWAGE DISPOSAL AREA OF AT LEAST 10,000 SQ. FT. AS REQUIRED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWAGE DISPOSAL. IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED. THIS SEWAGE DISPOSAL AREA SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWERAGE SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWAGE EASEMENT. RECORDATION OF A REVISED SEWAGE EASEMENT SHALL NOT BE NECESSARY.
- EXISTING WELLS, SEPTIC SYSTEMS, AND SEWAGE DISPOSAL AREAS WITHIN 100' OF THE PROPERTY AND THOSE WELLS WITHIN 200' DOWN GRADIENT OF EXISTING OR PROPOSED SEPTIC SYSTEMS OR SEWAGE DISPOSAL AREAS HAVE BEEN SHOWN.
- ANY CHANGES TO A PRIVATE SEWAGE AREA SHALL REQUIRE A REVISED PERCOLATION CERTIFICATION PLAN.
- UPON BUILDING PERMIT REVIEW THE SEPTIC SYSTEMS OF ALL PROPOSED STRUCTURES AND OR EXISTING STRUCTURE EXPANSIONS SHALL BE RE-EVALUATED TO DETERMINE SUFFICIENT SYSTEM CAPACITY.
- THE DEVELOPMENT OF THIS LOT DOES NOT REQUIRE AN ENVIRONMENTAL CONCEPT PLAN SINCE STORMWATER MANAGEMENT WAS PREVIOUSLY APPROVED UNDER F-07-38.
- THE EXISTING WELL SHOWN (H0-095-0650) HAS BEEN FIELD LOCATED AND IS SHOWN ACCURATELY.
- AT ANY TIME IN THE FUTURE THAT A BUILDING PERMIT IS SUBMITTED TO FINISH THE AREA CURRENTLY IDENTIFIED AS OPTIONAL DEN, THEN A SEPTIC SYSTEM UPGRADE WILL BE REQUIRED AS FINISHING THE OPTIONAL DEN CREATES A FIFTH BEDROOM PER HOWARD COUNTY CODE § 80(B).

**SEPTIC SYSTEM/BEST AVAILABLE TECHNOLOGY (BAT) NOTES:**

- 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.
- THE MAXIMUM DEPTH OF THE BAT PER THE MANUFACTURER'S SPECIFICATION IS 3 FEET.
- THE BLOWER MAY NOT BE LOCATED MORE THAN 10 FEET FROM THE TANK BASED ON THE MANUFACTURE'S SPECIFICATIONS.
- THE BAT SYSTEM SHALL BE MAINTAINED AND OPERATED FOR THE LIFE OF THE SYSTEM.
- THE BAT SHALL BE OPERATED BY AND MAINTAINED BY A CERTIFIED SERVICE PROVIDER.
- 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.
- ELECTRICAL WORK FOR THE BAT INSTALLATION MUST BE PERFORMED BY A LICENSED ELECTRICIAN.
- AN AGREEMENT AND EASEMENT MUST BE COMPLETED AND SIGNED BY ALL APPLICABLE PARTIES, AND RECORDED IN LAND RECORDS OF HOWARD COUNTY.
- THE HEALTH DEPARTMENT REQUIRES DOCUMENTATION FOR THE START-UP CERTIFICATION FROM THE MANUFACTURER PRIOR TO FINAL APPROVAL OF THE INSTALLATION.

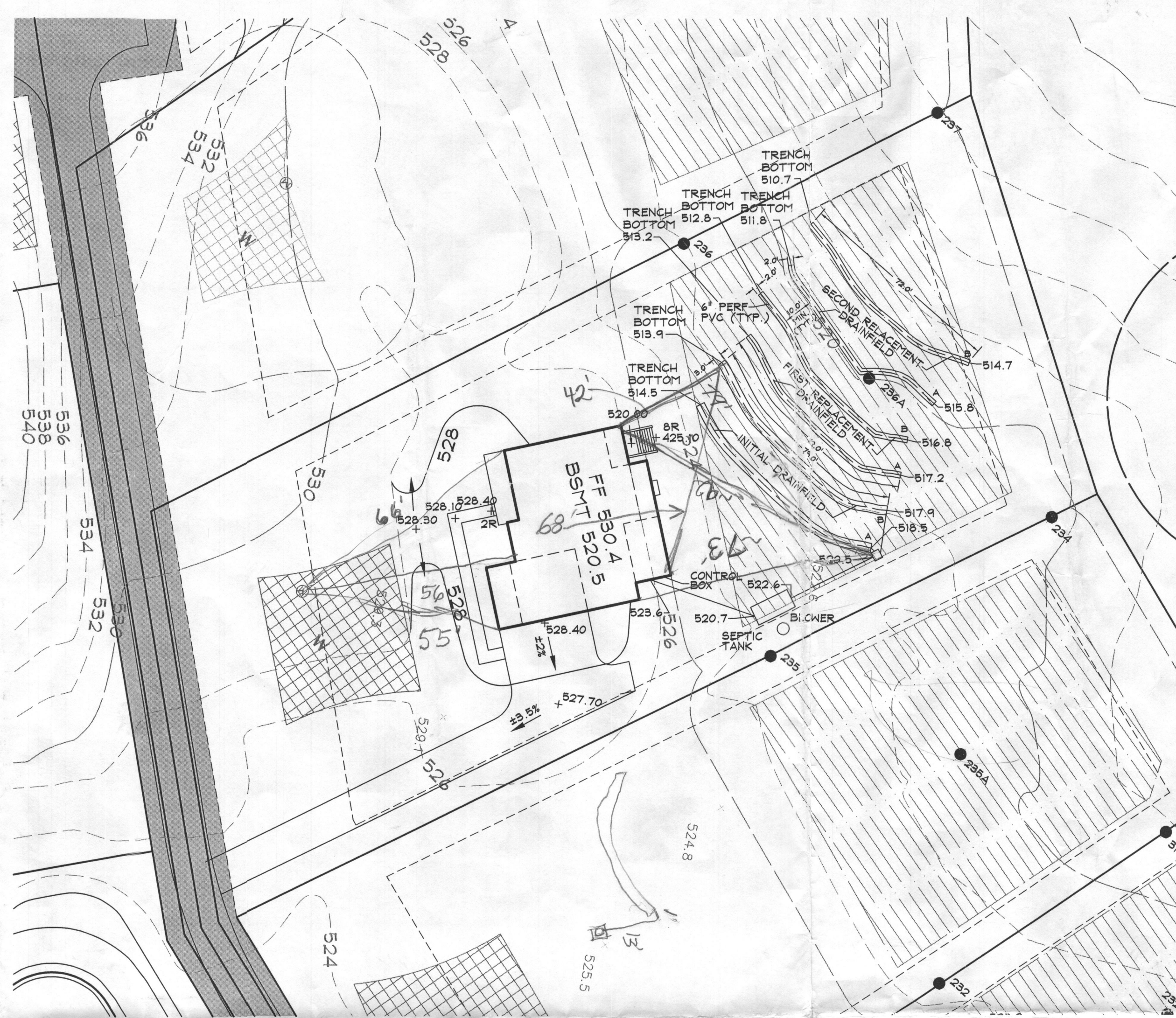


**LOT 42 PUMP ELEVATIONS**

LOPH PROBE/PUMP OFF	MID PROBE	ALARM
517.6	519.1	519.6

**600 GPD BNR SYSTEM H-600 ABNR with 750 GALLON PUMP CHAMBER**

Dwg. No. Hoot Form #1 No Scale March 19, 2009



SCALE = 1"=30'

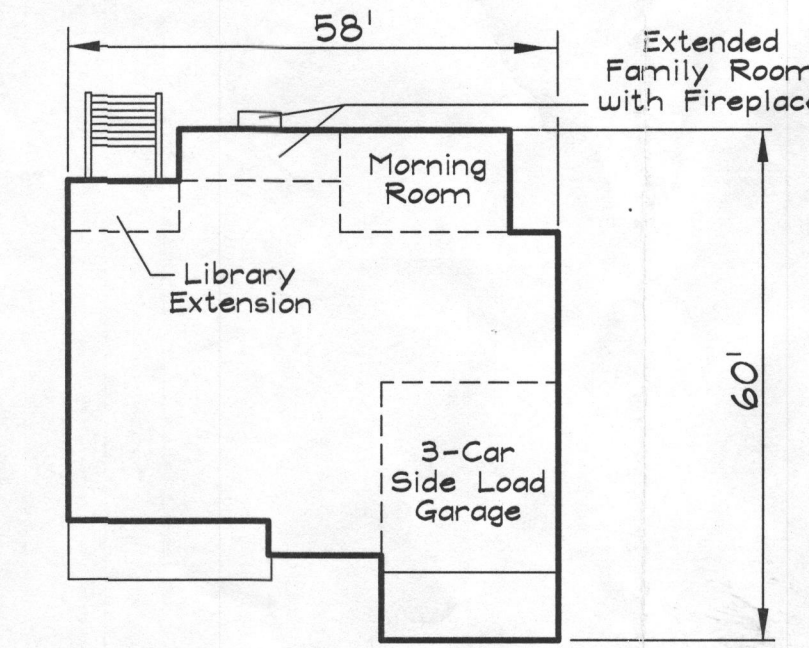
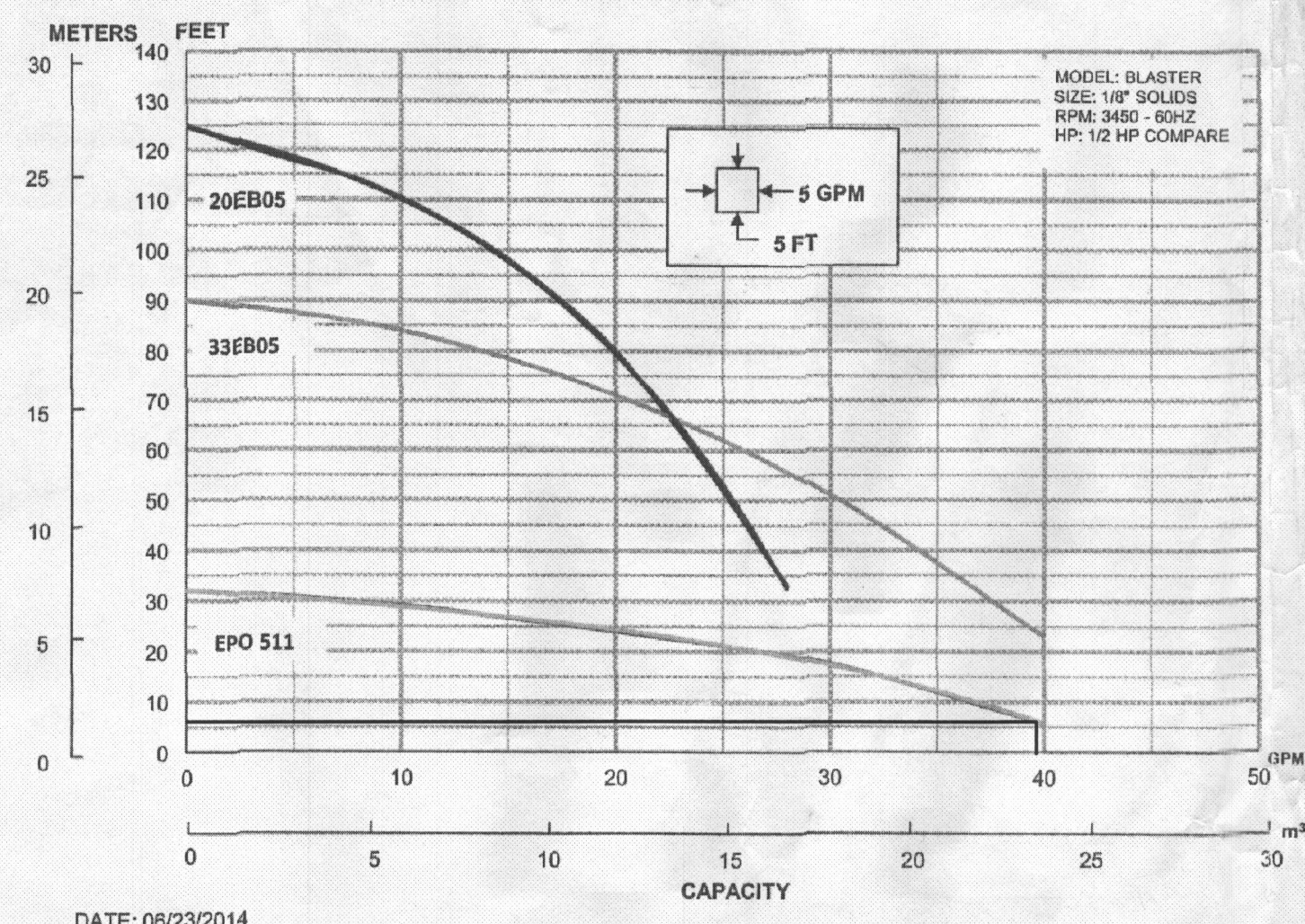
**TOTAL DYNAMIC HEAD CALCULATIONS**

STATIC HEAD	5.0'
FRICITION HEAD	1.6'
DISTAL END HEAD	0'
TOTAL DYNAMIC HEAD	6.6'
GALLONS PER MINUTE	39 GPM
DOSE	78
PUMP RUN TIME	2.0 MIN

OFF FLOAT ELEVATION	517.6'
HIGH POINT OF THE SYSTEM	+ 522.6'
VERTICAL ELEVATION CHANGE	5.0'
FITTINGS	19.7'
LENGTH OF PVC PIPE	+ 31.5'
TOTAL LENGTH	51.2'
51.2'/100 x 3.1" = 1.6' TOTAL FRICTION LOSS	
TOTAL HEAD	5.0'
VERTICAL ELEVATION CHANGE	1.6'
TOTAL FRICTION LOSS	1.6'
SYSTEM PRESSURE REQUIREMENTS	+ 2.0'
TOTAL DYNAMIC HEAD	6.6'

\* PER AMERICAN MANUFACTURING COMPANY, INC. FRICTION HEAD LOSS TABLE.

**HOOT PUMP CURVES w/BNR RISER FIGURED IN LOSS**



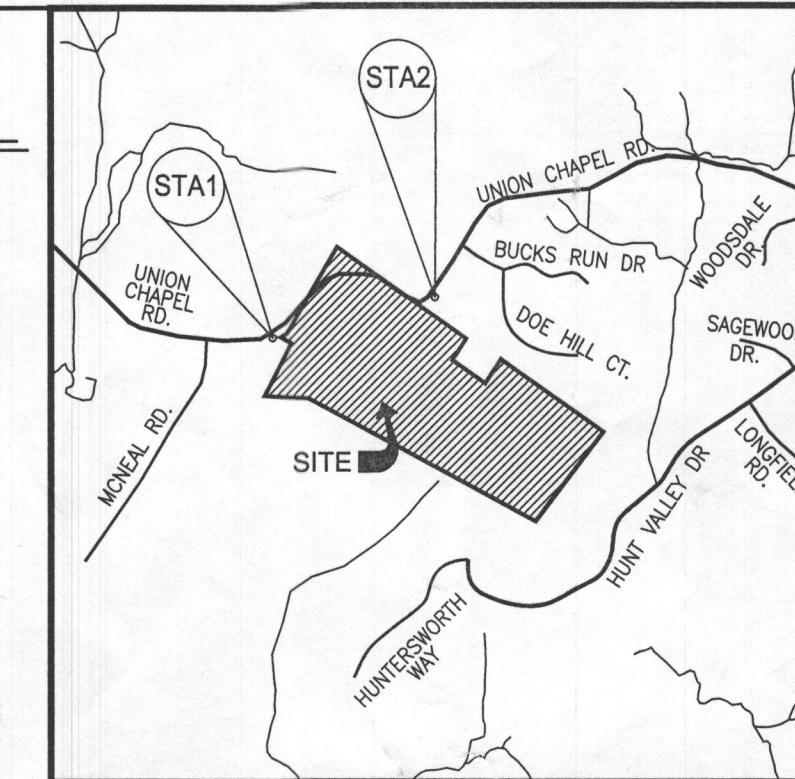
COLORADO COUNTRY ELEVATION BRICK FRONT

**LOT 36 INITIAL SYSTEM TRENCH SPECIFICATIONS**

	GROUND ELEVATION	INVERT ELEVATION	BOTTOM ELEVATION
INITIAL SYSTEM TRENCH (A)	522.5	518.5	514.5
INITIAL SYSTEM TRENCH (B)	521.9	517.9	513.9
FIRST REPLACEMENT TRENCH (A)	521.2	517.2	513.2
FIRST REPLACEMENT TRENCH (B)	520.8	516.8	512.8
SECOND REPLACEMENT TRENCH (A)	519.8	515.8	511.8
SECOND REPLACEMENT TRENCH (B)	518.7	514.7	510.7

**BENCHMARK**

GEODETIC SURVEY CONTROL #1	N. 591450.42
E. 1297571.25	146A
A.A. ELEV. 535.43	
GEODETIC SURVEY CONTROL #2	N. 591693.88
E. 1299121.80	146B
B.M. ELEV. 542.23	
ADC MAP COORDINATES	4812C4



**VICINITY MAP**

SCALE: 1"= 2000'

**DRAWING LEGEND**

- 500 PROPOSED GRADE
- 502 PROPOSED LIMIT OF DISTURBANCE
- + 665.5 PROP. SPOT ELEV./FLOW ARROW
- PROPOSED 20' SEPTIC RESERVE BUFFER
- EXISTING 30' WELL BUFFER
- EXISTING 100' WELL BUFFER
- BUILDING RESTRICTION LINE
- SEPTIC RESERVE AREA
- WELL AREA
- 174 PASSED PERCOLATION TEST
- 127 FAILED PERCOLATION TEST

**DATA SOURCES:**

**SEWAGE DISPOSAL SYSTEM DATA (5 BEDROOM):**

- INVERT @ FOUNDATION WALL: 523.6 (BASEMENT PUMP REQUIRED)
- 600 GPD BNR SYSTEM W/ 750 GALLON PUMP CHAMBER EX. GRADE OVER TANK: 523.9 PROPOSED GRADE OVER TANK: 523.9 INVERT: 520.7
- DISTRIBUTION BOX EX @ PROPOSED GRADE OVER TANK: 522.3 INVERT: 520.5
- TRENCH DESIGN (4 BDRM x 150 GPD/BDRM = 600 GPD)

INITIAL SYSTEM  
600 GPD / 0.8 GPD/SF (APP. RATE) = 750 SF  
USE 3' WIDE TRENCH W/ 24" OF GRAVEL BELOW PIPE  
750 SF / 3' WIDTH = 250 LF x 0.625 = 157 LF MIN. TRENCH

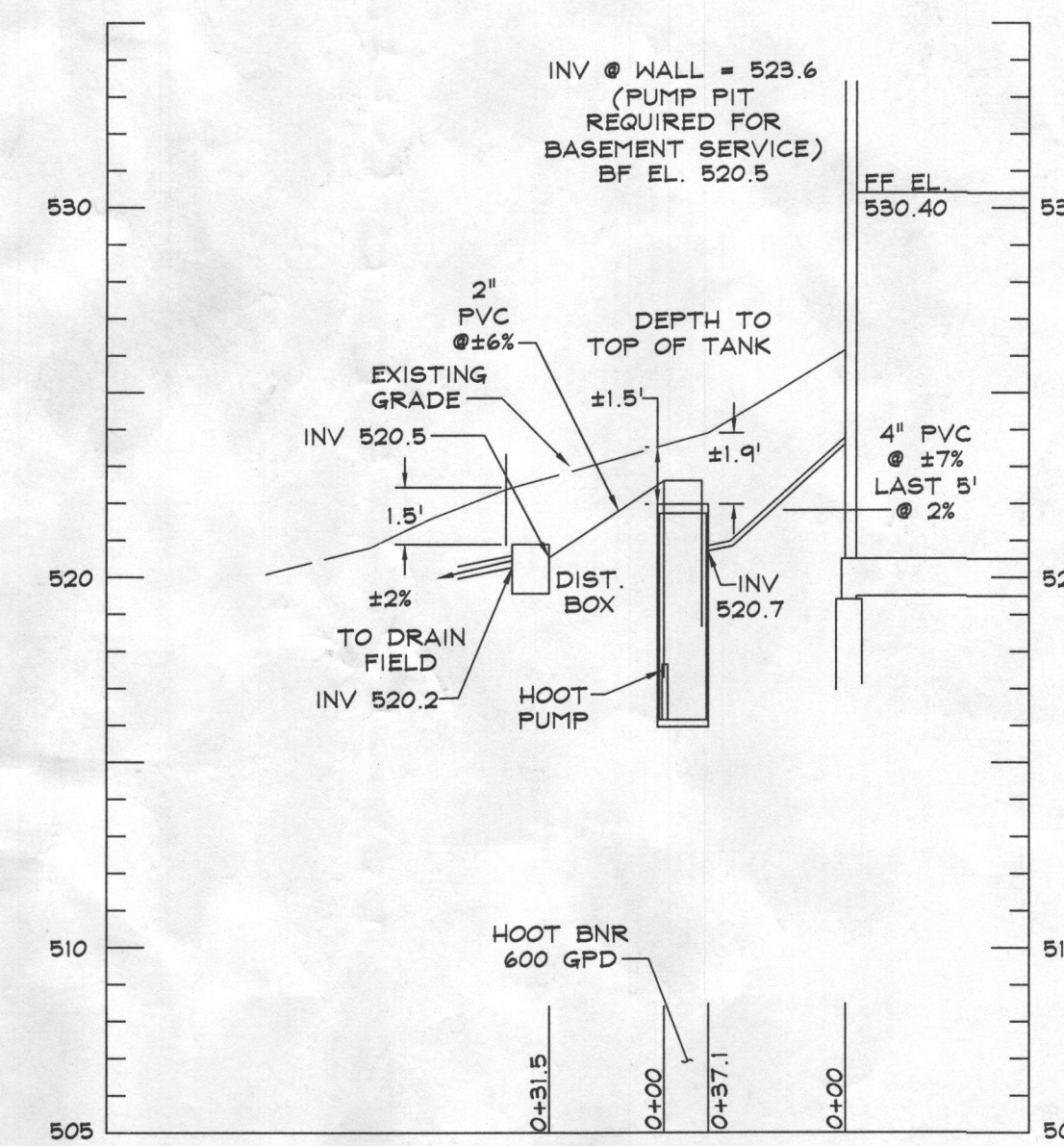
1ST/2ND REPLACEMENT SYSTEM  
600 GPD / 1.2 GPD/SF (APP. RATE) = 500 SF  
USE 2' WIDE TRENCH W/ 24" OF GRAVEL BELOW PIPE  
500 SF / 2' WIDTH = 250 LF x 0.57 = 143 LF MIN. TRENCH

10' MIN SPACING BETWEEN TRENCH EDGES

USE 2 - 79' LONG TRENCH FOR INITIAL SYSTEM  
USE 2 - 72' LONG TRENCH FOR FIRST REPLACEMENT SYSTEM  
USE 2 - 72' LONG TRENCH FOR SECOND REPLACEMENT SYSTEM

Approved Septic System Plan  
Howard County Health Department

Signature: Hank Oswald Date: 1/11/16



SEPTIC SYSTEM PROFILE

LOT 42

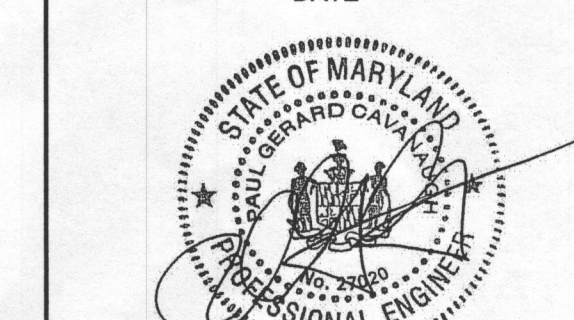
SCALE: HORIZ. 1"=50'

VERT. 1"=5'

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. 27020, EXPIRATION DATE: JANUARY 29, 2018

DATE: 12/16/2015



PAUL G. CAVANAUGH

Planners  
Surveyors  
Engineers  
Landscape Architects

192 East Main Street  
Westminster, MD 21157  
410.386.0560  
410.386.0564 (Fax)  
DDC@DDCincus  
www.DDCincus

**DDC**  
Development Design Consultants

OWNER:  
K. HOVANNIAN HOMES  
1802 Brightseat Road  
Landover, Maryland 20785  
(301) 885-6288

DEVELOPER:  
Belle Haven Estates  
LOT 42  
16225 Sweetbay Street  
Woodbine, Maryland 21797

**SITE PLAN FOR BAT INSTALLATION**

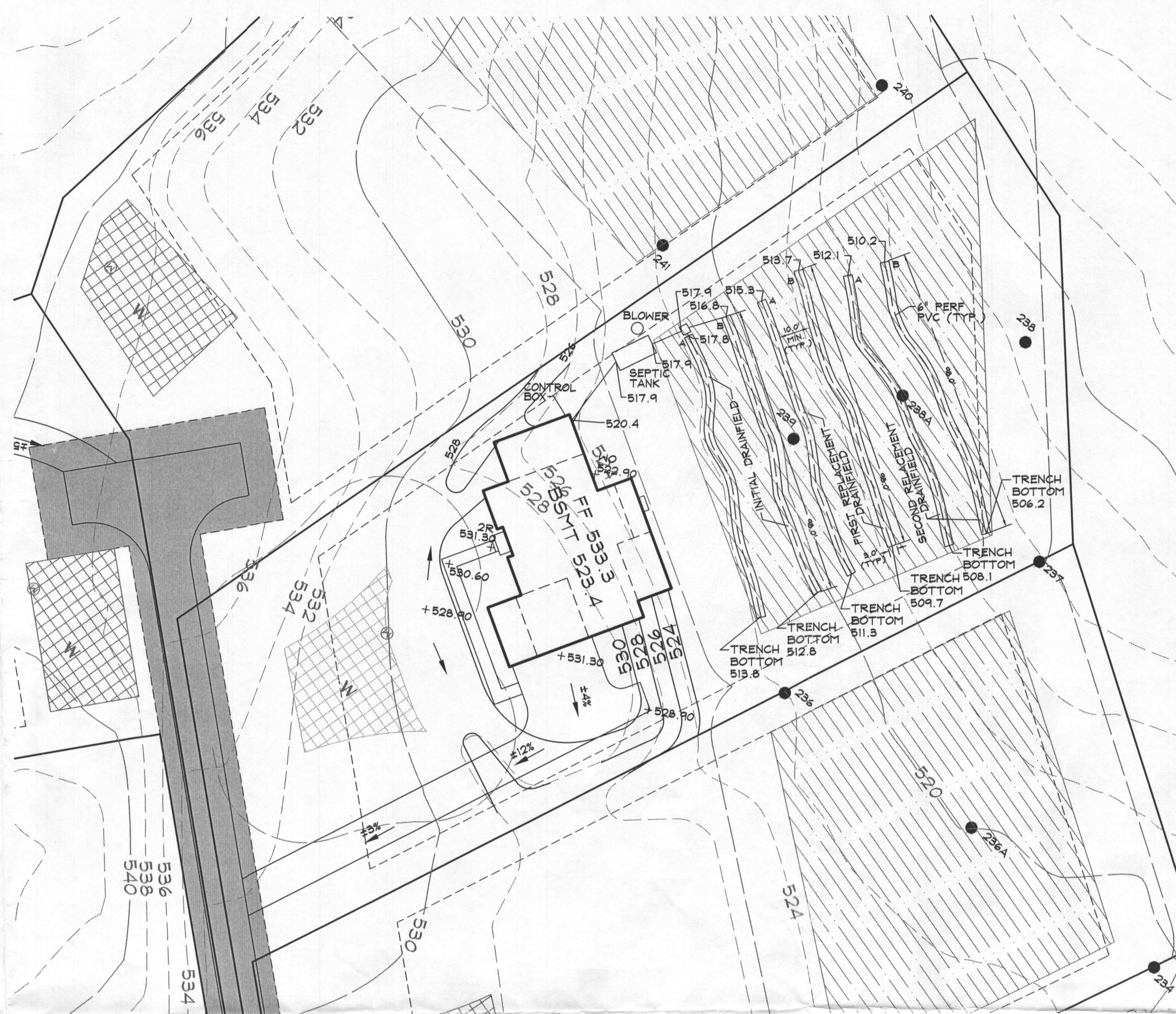
3rd ELECTION DISTRICT HOWARD COUNTY

REVISIONS

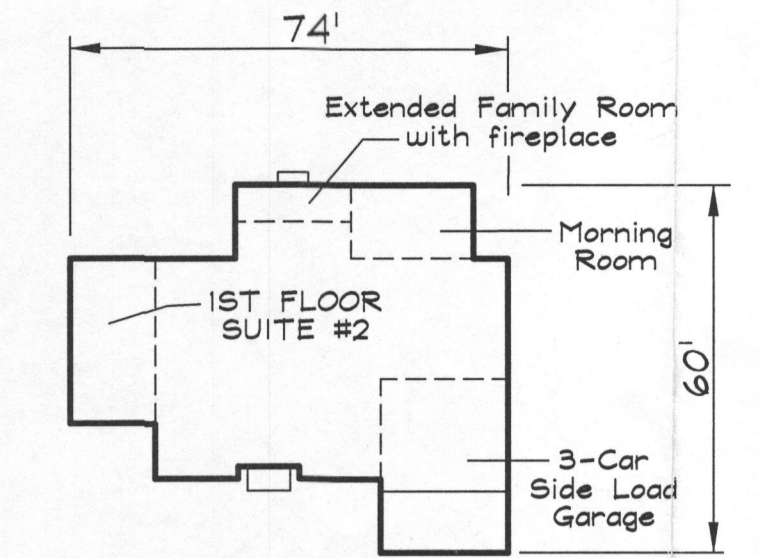
NO.	DESCRIPTION OF CHANGES	DRN.	REV.	DATE
CO. FILE #:	DES. BY: BKC			
TAX ACC. #:	DRN. BY: BKC			
TAX MAP / 14:	CHK. BY: PGC			
BLOCK / GRID:	DATE: 12/16/15			
PARCEL #:	DDC JOB#: 06116.5			
ZONE / USE: RC-DEO	SHEET NUMBER:			
DWG. SCALE: 1"=30'	1 of 1			

- GENERAL NOTES**
1. BASE SQUARE FOOTAGE OF HOUSE: 3,594 SQ. FT.  
NUMBER OF BEDROOMS: 5
  2. EJECTOR PUMP REQUIRED TO SEWER BASEMENT
  3. PER THE APPROVED ROAD DRAWINGS, F-07-38, A DRIVEWAY CULVERT IS NOT REQUIRED
  4. THE SUBJECT PROPERTY IS ZONED RC-DEO PER THE 2/2/04 COMPREHENSIVE ZONING PLAN AND PER COMP-LITE ZONING REGULATIONS DATED 7/28/04
  5. PLAT REFERENCE: #19948
  6. BASE INFORMATION SHOWN ON THIS PLAN IS BASED ON PLANS PREPARED BY DMW, AND DATED 06/25/07. EXISTING TOPOGRAPHY BASED ON GRADING PLAN PREPARED BY DEMARIO DESIGN CONSULTANTS DATED 07/09/07 AND FIELD RUN TOPOGRAPHY PREPARED BY DDC INC IN JAN. 2012
  7. SEE ARCHITECTURAL PLANS FOR BUILDING DIMENSIONS AND DESIGN DETAILS. PRIOR TO STAKEOUT FOR CONSTRUCTION, IT SHALL BE THE OWNER/BUILDERS RESPONSIBILITY TO PROVIDE DDC, INC. WITH THE MOST RECENT SET OF HOUSE PLANS.
  8. THE CONTRACTOR OR DEVELOPER SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS / BUREAU OF ENGINEERING / CONSTRUCTION INSPECTION DIVISION AT (410)318-1881 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
  9. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
  10. TOTAL LIMIT OF DISTURBANCE: 16,836 SQ. FT. / 0.40 AC.
  11. STORMWATER MANAGEMENT FOR THIS LOT IS PROVIDED PER THE PREVIOUSLY APPROVED FINAL PLAN (F-07-38)
  12. ANY DAMAGE TO PUBLIC "RIGHT-OF-WAYS" OR PAVED PUBLIC ROADS SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTORS EXPENSE IN ACCORDANCE WITH THE HOWARD COUNTY STANDARDS AND SPECIFICATIONS.
  13. DEVIATIONS FROM THESE PLANS AND SPECIFICATIONS WITHOUT PRIOR WRITTEN CONSENT OF THE CIVIL ENGINEER (DDC, INC.) MAY CAUSE THE WORK TO BE UNACCEPTABLE
  14. THE DIMENSIONED DISTANCES SHALL GOVERN IF SCALED AND DIMENSIONED DISTANCES ON THIS PLAN ARE FOUND TO BE IN DISAGREEMENT.
  15. THE LOTS SHOWN HEREON COMPLY WITH THE MINIMUM LOT AREA AND OWNERSHIP WIDTH AS REQUIRED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT
  16. THIS AREA DESIGNATES A PRIVATE SEWAGE DISPOSAL AREA OF AT LEAST 10,000 SQ. FT. AS REQUIRED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWAGE DISPOSAL IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED. THIS SEWAGE DISPOSAL AREA SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWAGE SYSTEM. HEALTH OFFICERS SHALL HAVE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWAGE EASEMENT. RECORDATION OF A REVISED SEWAGE EASEMENT SHALL NOT BE NECESSARY.
  16. EXISTING WELLS, SEPTIC SYSTEMS, AND SEWAGE DISPOSAL AREAS WITHIN 100' OF THE PROPERTY AND THOSE WELLS WITHIN 200' DOWN GRADIENT OF EXISTING OR PROPOSED SEPTIC SYSTEMS OR SEWAGE DISPOSAL AREAS HAVE BEEN SHOWN.
  17. ANY CHANGES TO A PRIVATE SEWAGE AREA SHALL REQUIRE A REVISED PERCOLATION CERTIFICATION PLAN.
  18. UPON BUILDING PERMIT REVIEW THE SEPTIC SYSTEMS OF ALL PROPOSED STRUCTURES AND OR EXISTING STRUCTURE EXPANSIONS SHALL BE RE-EVALUATED TO DETERMINE SUFFICIENT SYSTEM CAPACITY
  19. THE DEVELOPMENT OF THIS LOT DOES NOT REQUIRE AN ENVIRONMENTAL CONCEPT PLAN SINCE STORMWATER MANAGEMENT WAS PREVIOUSLY APPROVED UNDER F-07-38
  20. THE EXISTING WELL SHOWN (HO-095-0651) HAS BEEN FIELD LOCATED AND IS SHOWN ACCURATELY.
  21. AT ANY TIME IN THE FUTURE THAT A BUILDING PERMIT IS SUBMITTED TO FINISH THE AREA CURRENTLY IDENTIFIED AS OPTIONAL DEN, THEN A SEPTIC SYSTEM UPGRADE WILL BE REQUIRED AS FINISHING THE OPTIONAL DEN CREATES A SIXTH BEDROOM PER HOWARD COUNTY CODE 3.80(B).

- SEPTIC SYSTEM/BEST AVAILABLE TECHNOLOGY (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 DEPTH OF THE BAT PER THE MANUFACTURER'S SPECIFICATION IS 3 FEET.
  3. THE BLOWER MAY NOT BE LOCATED MORE THAN 10 FEET FROM THE TANK BASED ON THE MANUFACTURE'S SPECIFICATIONS.
  4. THE BAT SYSTEM SHALL BE MAINTAINED AND OPERATED FOR THE LIFE OF THE SYSTEM.
  5. THE BAT SHALL BE OPERATED BY AND MAINTAINED BY A CERTIFIED SERVICE PROVIDER.
  6. 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.
  7. ELECTRICAL WORK FOR THE BAT INSTALLATION MUST BE PERFORMED BY A LICENSED ELECTRICIAN.
  8. AN AGREEMENT AND EASEMENT MUST BE COMPLETED AND SIGNED BY ALL APPLICABLE PARTIES, AND RECORDED IN LAND RECORDS OF HOWARD COUNTY.
  9. THE HEALTH DEPARTMENT REQUIRES DOCUMENTATION FOR THE START-UP CERTIFICATION FROM THE MANUFACTURER PRIOR TO FINAL APPROVAL OF THE SYSTEM.



SCALE = 1"=30'

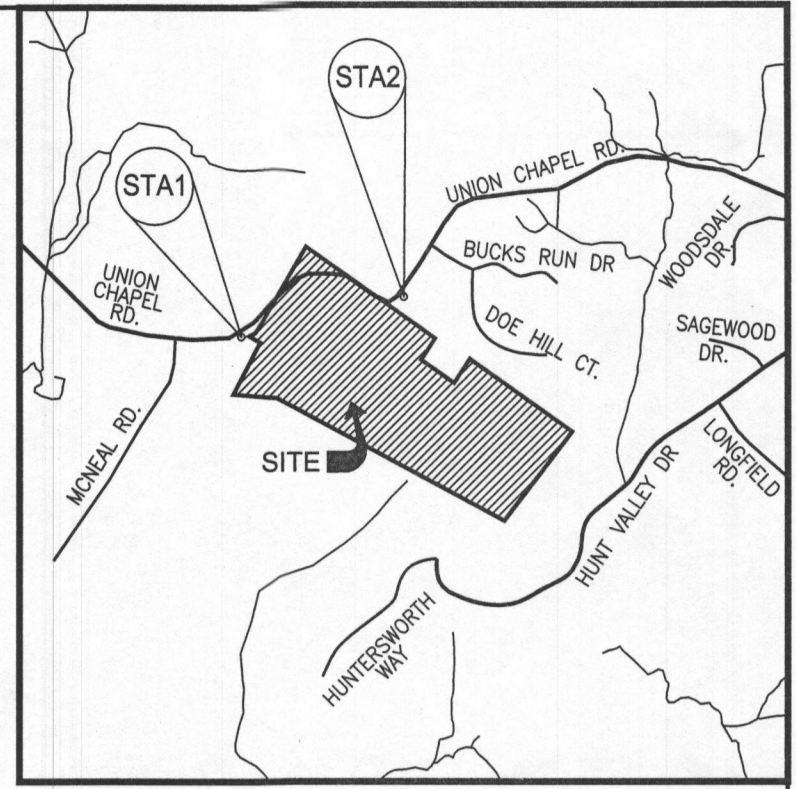


COLORADO COLONIAL ELEVATION BRICK FRONT WALKOUT

LOT 36 INITIAL SYSTEM TRENCH SPECIFICATIONS			
	GROUND ELEVATION	INVERT ELEVATION	BOTTOM ELEVATION
INITIAL SYSTEM TRENCH (A)	521.8	517.8	513.8
INITIAL SYSTEM TRENCH (B)	520.8	516.8	512.8
FIRST REPLACEMENT TRENCH (A)	519.3	513.3	511.3
FIRST REPLACEMENT TRENCH (B)	517.7	513.7	509.7
SECOND REPLACEMENT TRENCH (A)	516.1	512.1	508.1
SECOND REPLACEMENT TRENCH (B)	514.2	510.2	506.2

**BENCHMARK**

GEODEIC SURVEY CONTROL #1	
N.	591450.42
E.	1297571.25
A.A.	146A
ELEV.	535.43
GEODEIC SURVEY CONTROL #2	
N.	591693.88
E.	1299121.60
B.M.	146B
ELEV.	542.23
ADC MAP COORDINATES 4812/04	



VICINITY MAP  
SCALE: 1" = 2000'

**DRAWING LEGEND**

- 500 PROPOSED GRADE
- 502 PROPOSED LIMIT OF DISTURBANCE
- + 665.5 PROP. SPOT ELEV./FLOW ARROW
- PROPOSED 20' SEPTIC RESERVE BUFFER
- EXISTING 30' WELL BUFFER
- EXISTING 100' WELL BUFFER
- BUILDING RESTRICTION LINE
- SEPTIC RESERVE AREA
- WELL AREA
- 174 PASSED PERCOLATION TEST
- 127 FAILED PERCOLATION TEST

DATA SOURCES:

**TOTAL DYNAMIC HEAD CALCULATIONS**

STATIC HEAD	5.0'
FRICTION HEAD	1.0'
DISTAL END HEAD	0'
TOTAL DYNAMIC HEAD	6.0'
GALLONS PER MINUTE	39 GPM
DOSE	78
PUMP RUN TIME	2.0 MIN

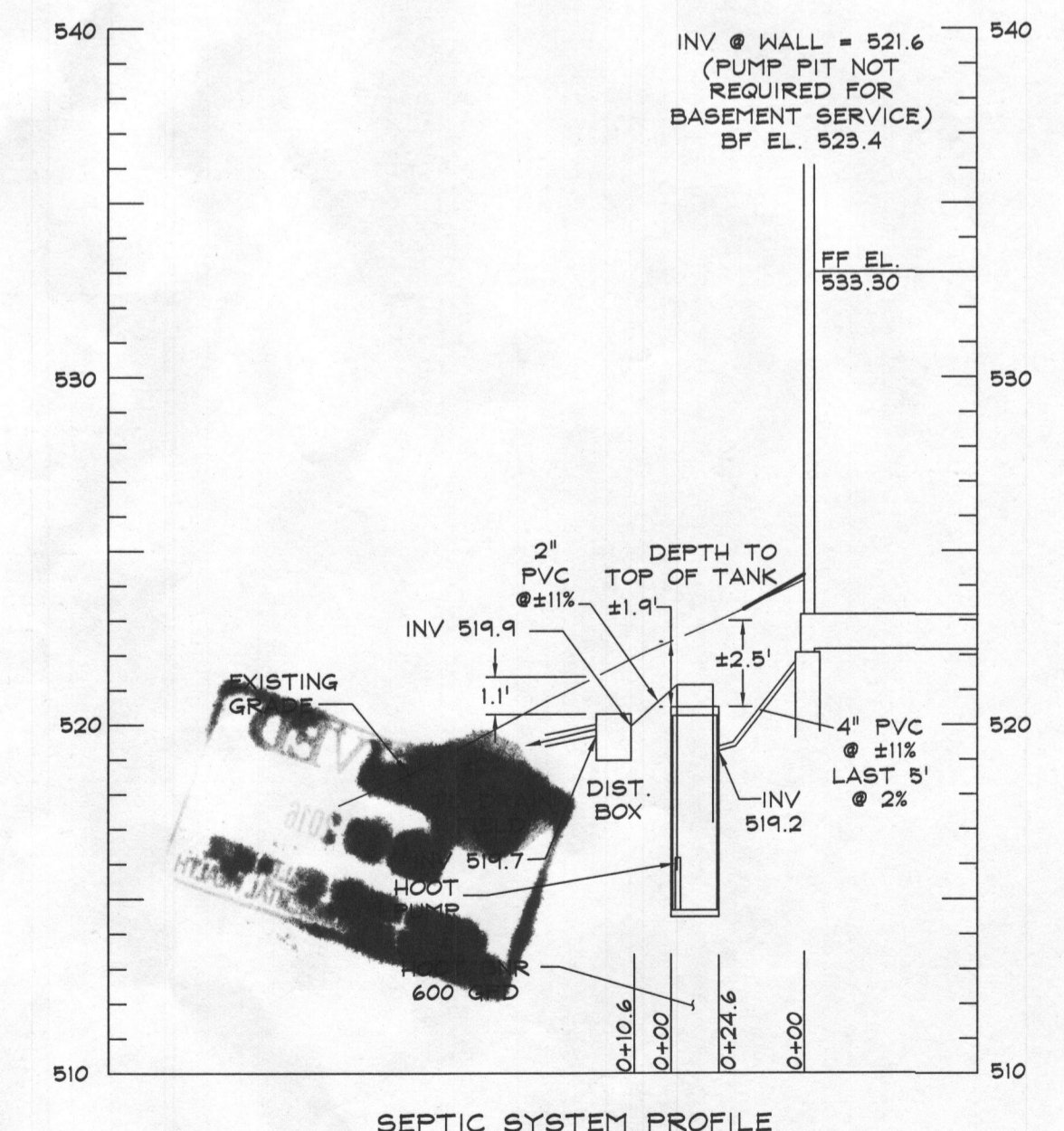
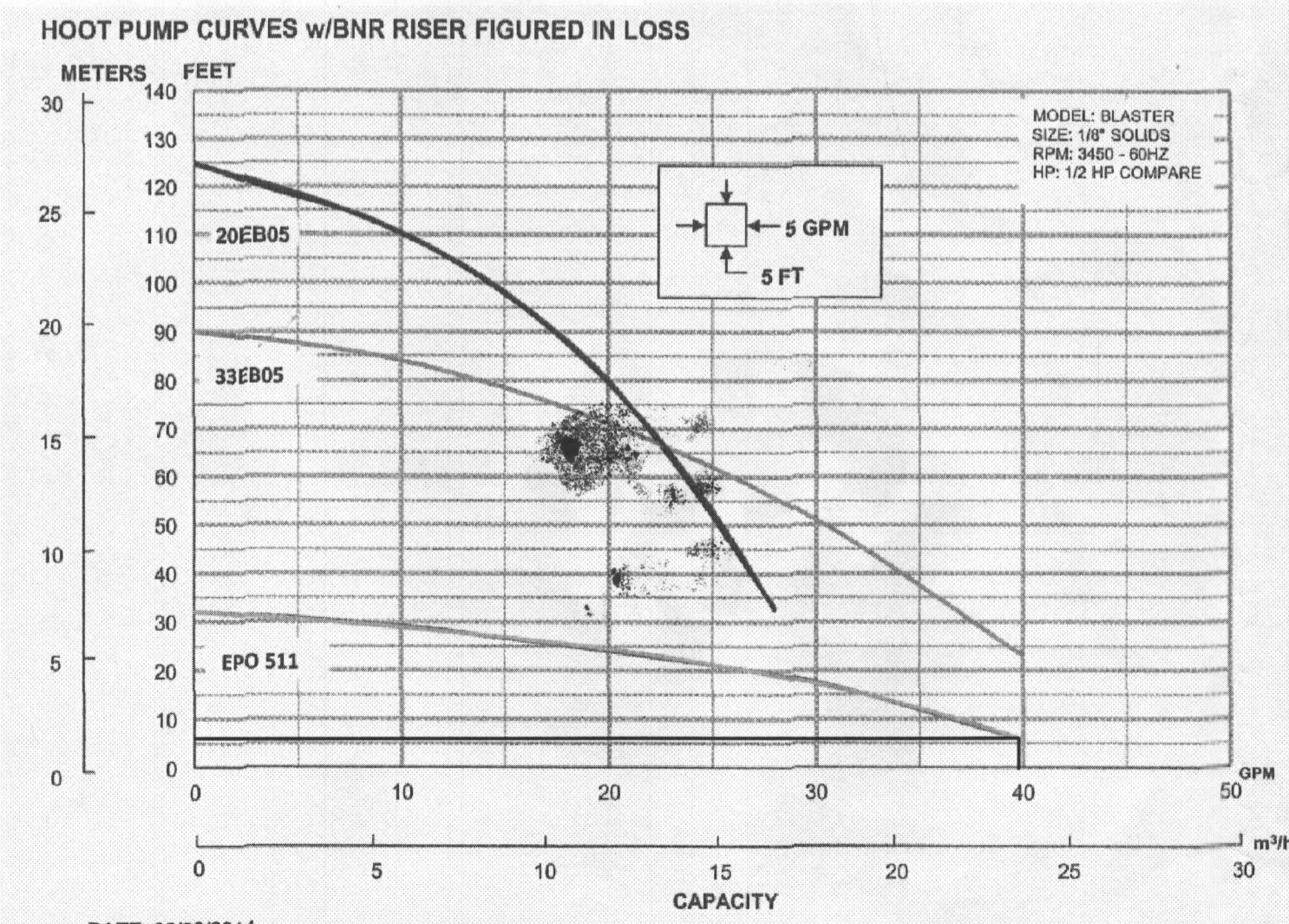
OFF FLOAT ELEVATION: 516.1'  
HIGH POINT OF THE SYSTEM: + 521.1'  
VERTICAL ELEVATION CHANGE: 5.0'

FITTINGS: 19.7'  
LENGTH OF PVC PIPE: + 10.6'  
TOTAL LENGTH: 30.3'

30.3/100 x 3.10 = 1.0' TOTAL FRICTION LOSS

TOTAL HEAD: 5.0'  
VERTICAL ELEVATION CHANGE: 5.0'  
TOTAL FRICTION LOSS: 1.0'  
SYSTEM PRESSURE REQUIREMENTS: + 0.0'  
TOTAL DYNAMIC HEAD: 6.0'

\* PER AMERICAN MANUFACTURING COMPANY, INC. FRICTION HEAD LOSS TABLE



SEPTIC SYSTEM PROFILE  
LOT 45  
SCALE: HORIZ. 1"=50'  
VERT. 1"=5'

**SEWAGE DISPOSAL SYSTEM DATA (5 BEDROOM):**

1. INVERT @ FOUNDATION WALL: 530.8 (BASEMENT PUMP REQUIRED)
2. 600 GPD BNR SYSTEM W/ 750 GALLON PUMP CHAMBER  
EX. GRADE OVER TANK: 525.0  
PROPOSED GRADE OVER TANK: 523.0  
INVERT: 519.2
3. DISTRIBUTION BOX  
EX @ PROPOSED GRADE OVER TANK: 521.8  
INVERT: 519.9
4. TRENCH DESIGN (5 BDRM x 150 GPD/BDRM = 750 GPD)

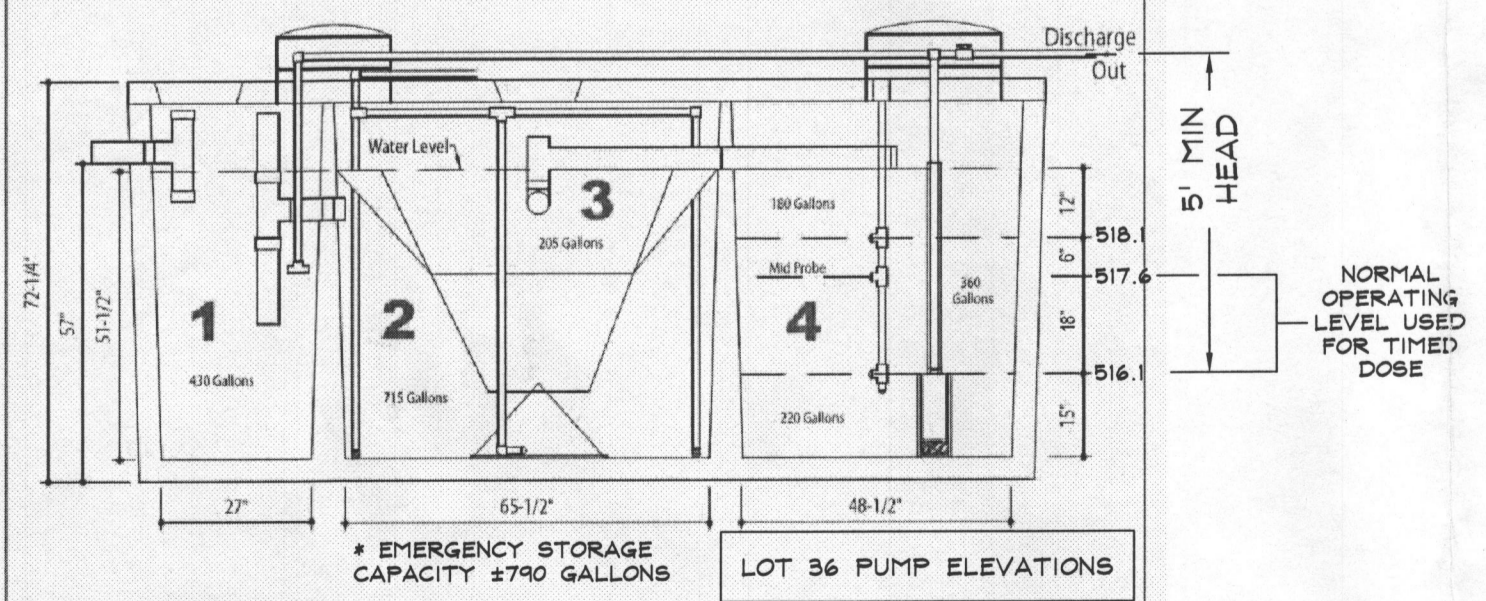
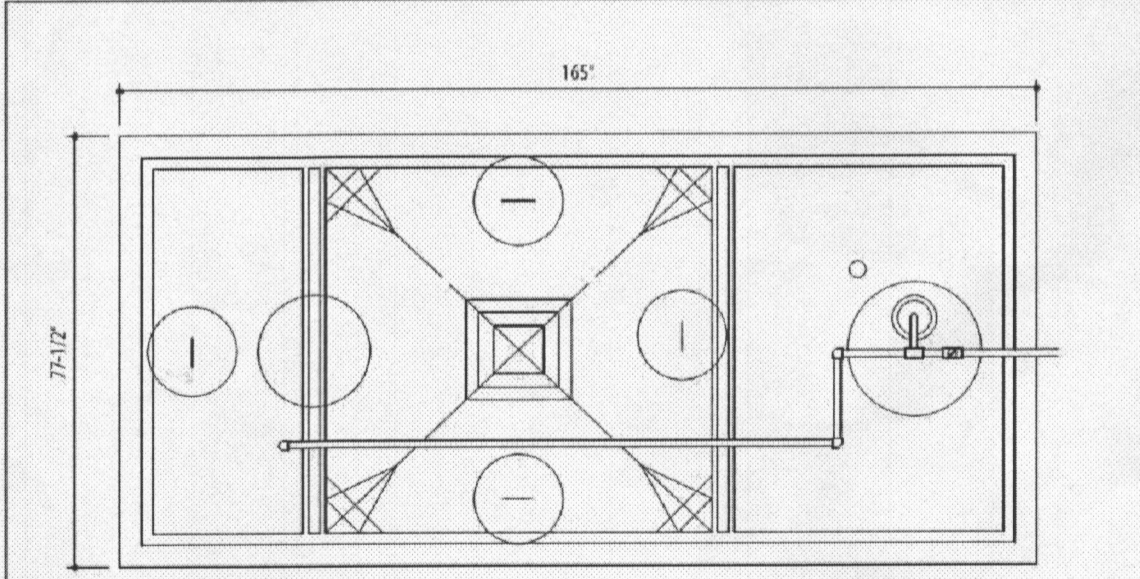
INITIAL SYSTEM  
750 GPD / 0.8 GPD/SF (APP. RATE) = 937.5 SF  
USE 3' WIDE TRENCH W/ 24" OF GRAVEL BELOW PIPE  
937.5 SF / 3' WIDTH = 312.5 LF x 0.625 = 196 LF MIN. TRENCH

1ST/2ND REPLACEMENT SYSTEM  
750 GPD / 0.8 GPD/SF (APP. RATE) = 937.5 SF  
USE 3' WIDE TRENCH W/ 24" OF GRAVEL BELOW PIPE  
937.5 SF / 3' WIDTH = 312.5 LF x 0.625 = 196 LF MIN. TRENCH

10' MIN SPACING BETWEEN TRENCH EDGES

USE 2 - 98' LONG TRENCH FOR INITIAL SYSTEM  
USE 2 - 98' LONG TRENCH FOR FIRST REPLACEMENT SYSTEM  
USE 2 - 98' LONG TRENCH FOR SECOND REPLACEMENT SYSTEM

Approved Septic System Plan  
Howard County Health Department  
*Mark Oswald* 1/11/16  
Signature Date



DESIGN DATA & GENERAL NOTES		
11	Concrete strength: f'c=4000 psi, f's=60,000 psi, Density = 150 pcf.	
12	Concrete - Portland Type III per ASTM C 150-92.	
13	Admixtures - Plasticizer per ACI 308.8R CC 499-92.	
14	Reinforcing per ASTM A 618, Min. 1/2" cover.	
LOT 36 PUMP ELEVATIONS		
LOW PROBE/PUMP OFF	MID PROBE	ALARM
516.1	517.6	518.1

**Mayer Brothers, Inc.**  
1306 East Road  
Baltimore, Maryland 21105  
Tel: 410.766.1431  
Fax: 410.766.1438  
www.mayerbrothers.com

**MBI**

600 GPD BNR SYSTEM  
H-600 ABNR  
with 750 GALLON PUMP CHAMBER

Dwg No. Hoot Form #1 No Scale March 19, 2009

Planners  
Surveyors  
Engineers  
Landscape Architects

192 East Main Street  
Westminster, MD 21157  
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410.386.0564 (Fax)  
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**DDC**  
Development Design Consultants

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Landover, Maryland 20785  
(301) 683-5288

DEVELOPER:  
BELLE HAVEN ESTATES  
LOT 45

SITE ADDRESS:  
LOT 45  
15221 Sweetbay Street  
Woodbine, Maryland 21797

**SITE PLAN FOR BAT INSTALLATION**

3rd ELECTION DISTRICT	HOWARD COUNTY
NO. 1	REVISIONS
CO. FILE #:	DES. BY: BKC
TAX ACC. #:	DRN. BY: BKC
TAX MAP: 14	CHK. BY: PGC
BLOCK / GRID:	DATE: 12/16/15
PARCEL #: 66	DDC JOB#: 06116.5
ZONE / USE: RC-DEO	SHEET NUMBER:
DWG. SCALE: 1"=30'	1 of 1

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.

12/16/2015  
DATE

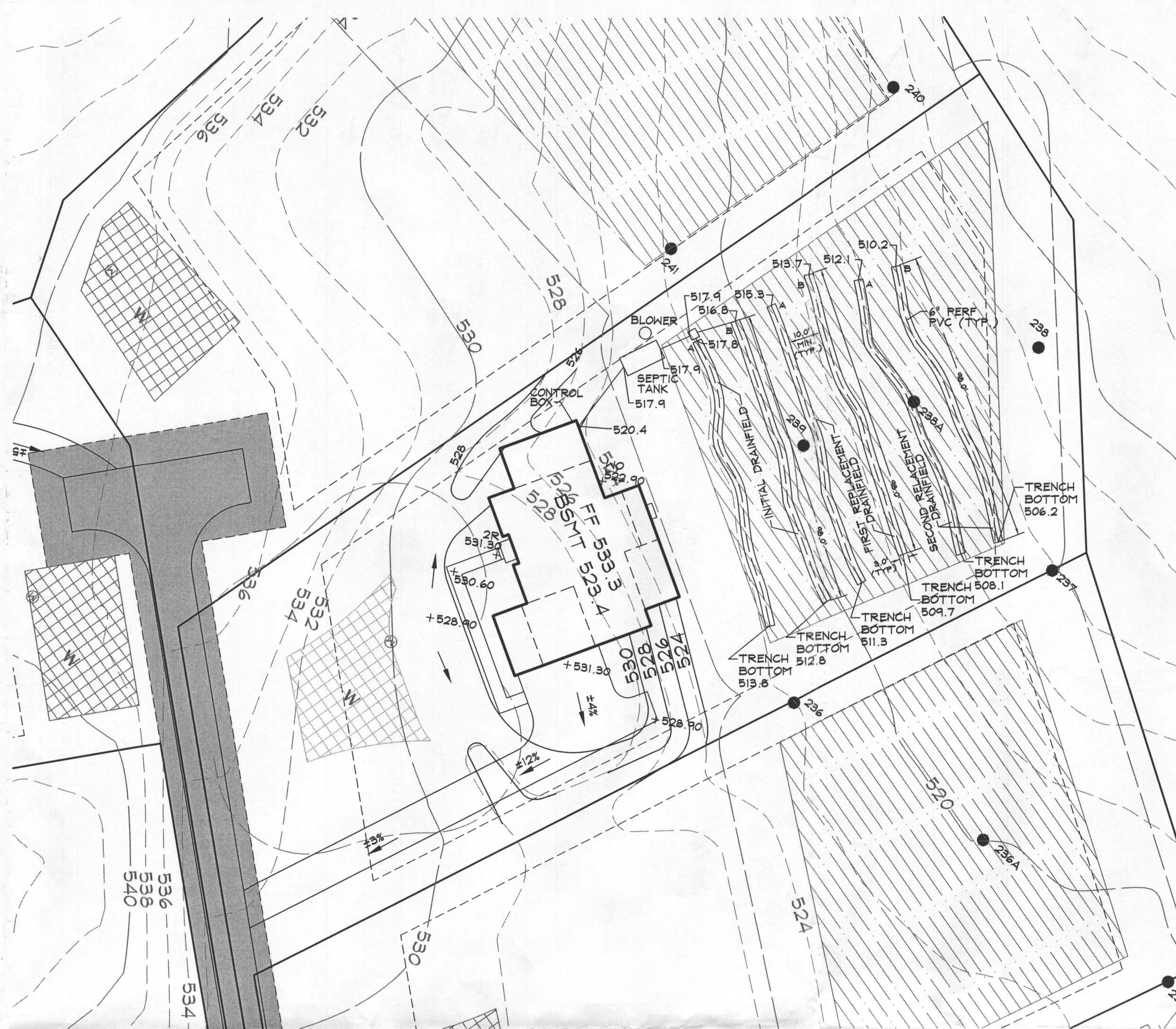
PAUL G. CAVANAUGH  
PROFESSIONAL ENGINEER

**GENERAL NOTES**

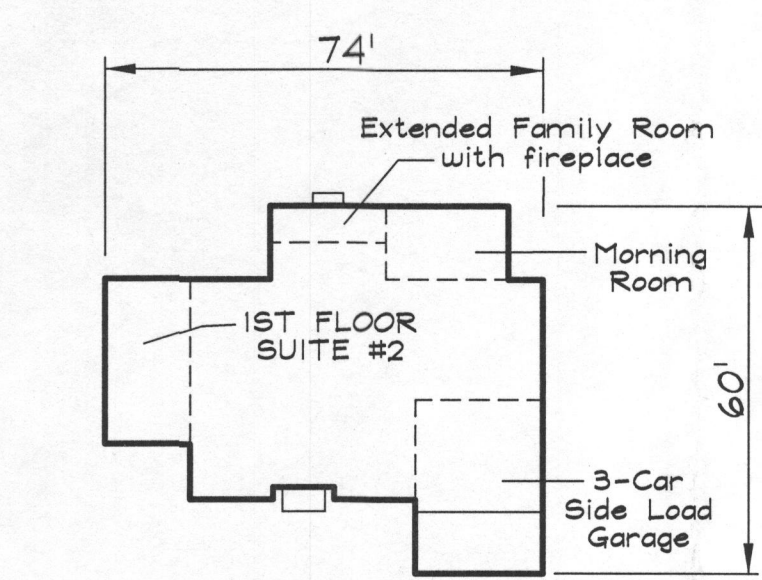
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2. EJECTOR PUMP REQUIRED TO SEWER BASEMENT
3. PER THE APPROVED ROAD DRAWINGS, F-07-38, A DRIVEWAY CULVERT IS NOT REQUIRED
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SCALE = 1"=30'

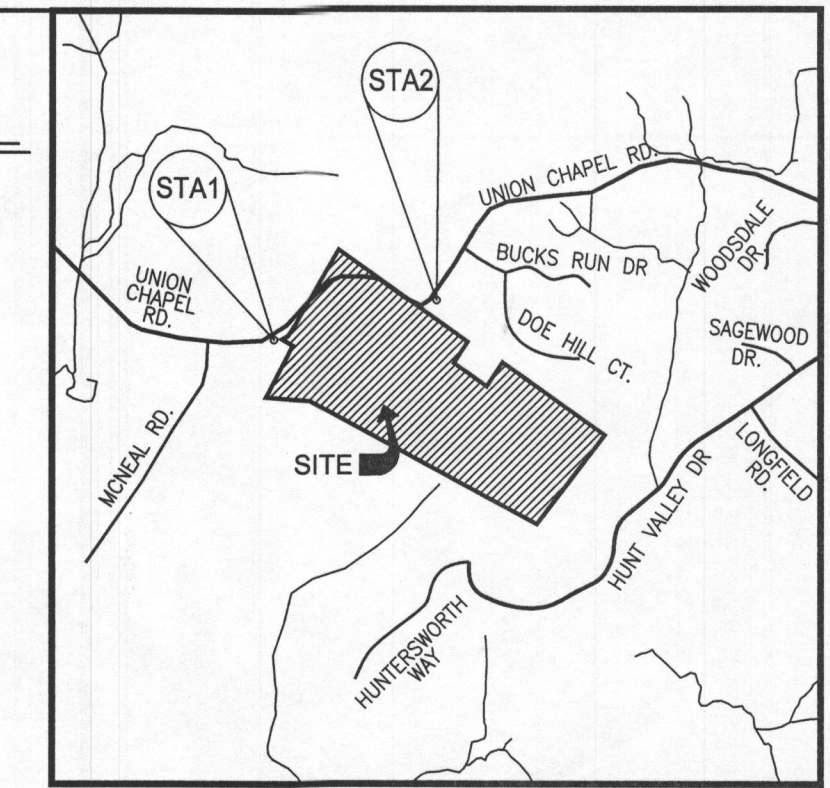


COLORADO COLONIAL ELEVATION BRICK FRONT WALKOUT

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**BENCHMARK**

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ADC MAP COORDINATES	4812C4



VICINITY MAP  
SCALE: 1" = 2000'

**DRAWING LEGEND**

- 502 PROPOSED GRADE
- 502 PROPOSED LIMIT OF DISTURBANCE
- + 665.5 PROP. SPOT ELEV./FLOW ARROW
- PROPOSED 20' SEPTIC RESERVE BUFFER
- EXISTING 30' WELL BUFFER
- EXISTING 100' WELL BUFFER
- BUILDING RESTRICTION LINE
- SEPTIC RESERVE AREA
- WELL AREA
- 174 PASSED PERCOLATION TEST
- 127 FAILED PERCOLATION TEST

DATA SOURCES:

**TOTAL DYNAMIC HEAD CALCULATIONS**

STATIC HEAD	5.0'
FRICTION HEAD	1.0'
DISTAL END HEAD	0'
TOTAL DYNAMIC HEAD	6.0'
GALLONS PER MINUTE	39 GPM
DOSE	78
PUMP RUN TIME	2.0 MIN

STATIC HEAD 516.1'  
OFF FLOAT ELEVATION: + 521.1'  
HIGH POINT OF THE SYSTEM: + 521.1'  
VERTICAL ELEVATION CHANGE: 5.0'

FRICTION HEAD  
FITTINGS: 19.7'  
LENGTH OF PVC PIPE: + 10.6'  
TOTAL LENGTH: 30.3'

30.3'/100 x 3.10" = 1.0' TOTAL FRICTION LOSS

TOTAL HEAD  
VERTICAL ELEVATION CHANGE 5.0'  
TOTAL FRICTION LOSS 1.0'  
SYSTEM PRESSURE REQUIREMENTS + 0.0'  
TOTAL DYNAMIC HEAD 6.0'

\* PER AMERICAN MANUFACTURING COMPANY, INC. FRICTION HEAD LOSS TABLE.

**SEWAGE DISPOSAL SYSTEM DATA (5 BEDROOM):**

1. INVERT @ FOUNDATION WALL: 530.8 (BASEMENT PUMP REQUIRED)
2. 600 GPD BNR SYSTEM W/ 750 GALLON PUMP CHAMBER  
EX. GRADE OVER TANK: 523.0  
PROPOSED GRADE OVER TANK: 523.0  
INVERT: 519.2
3. DISTRIBUTION BOX  
EX. PROPOSED GRADE OVER TANK: 521.8  
INVERT: 519.9
4. TRENCH DESIGN (5 BDRM x 150 GPD/BDRM = 750 GPD)

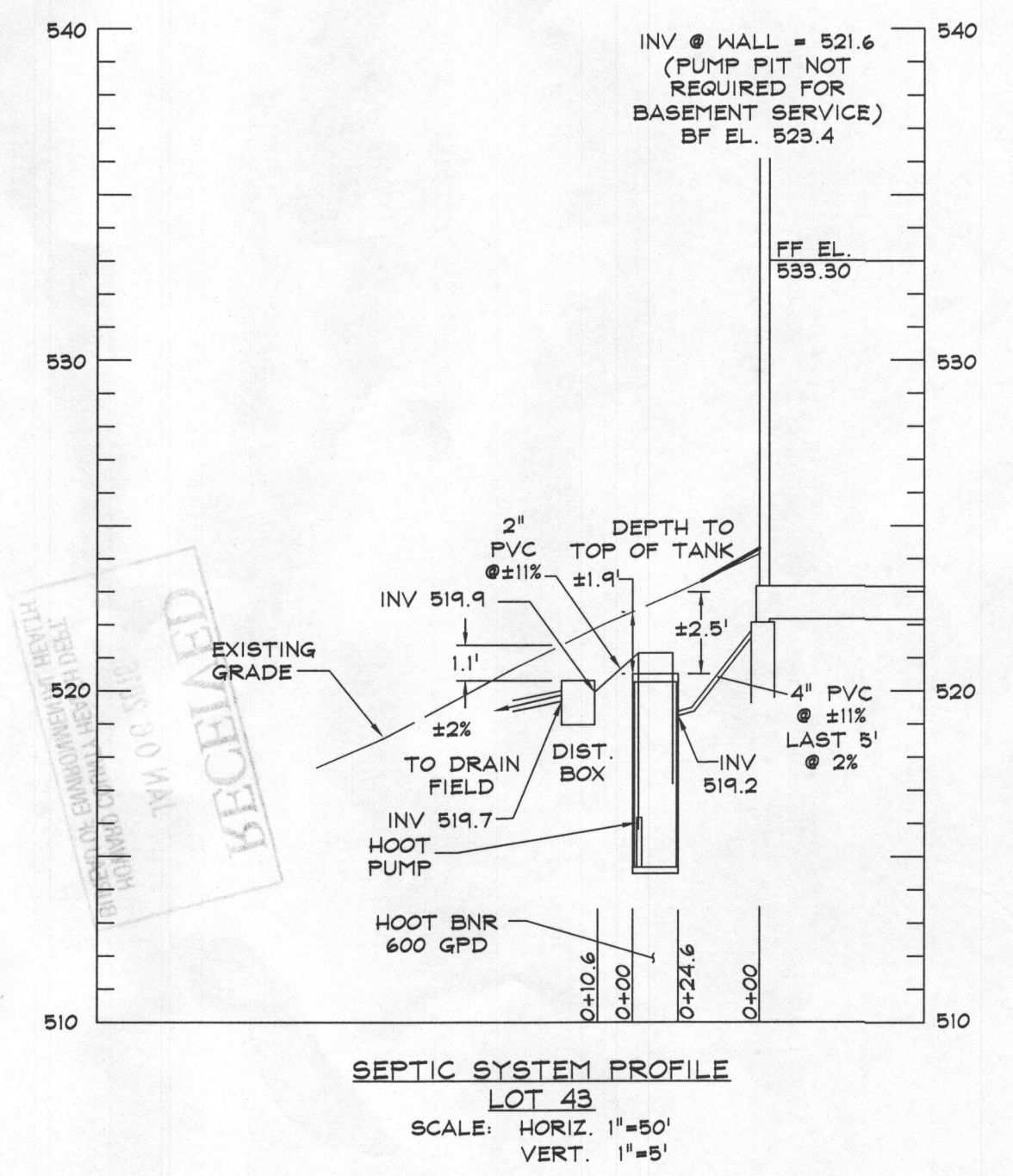
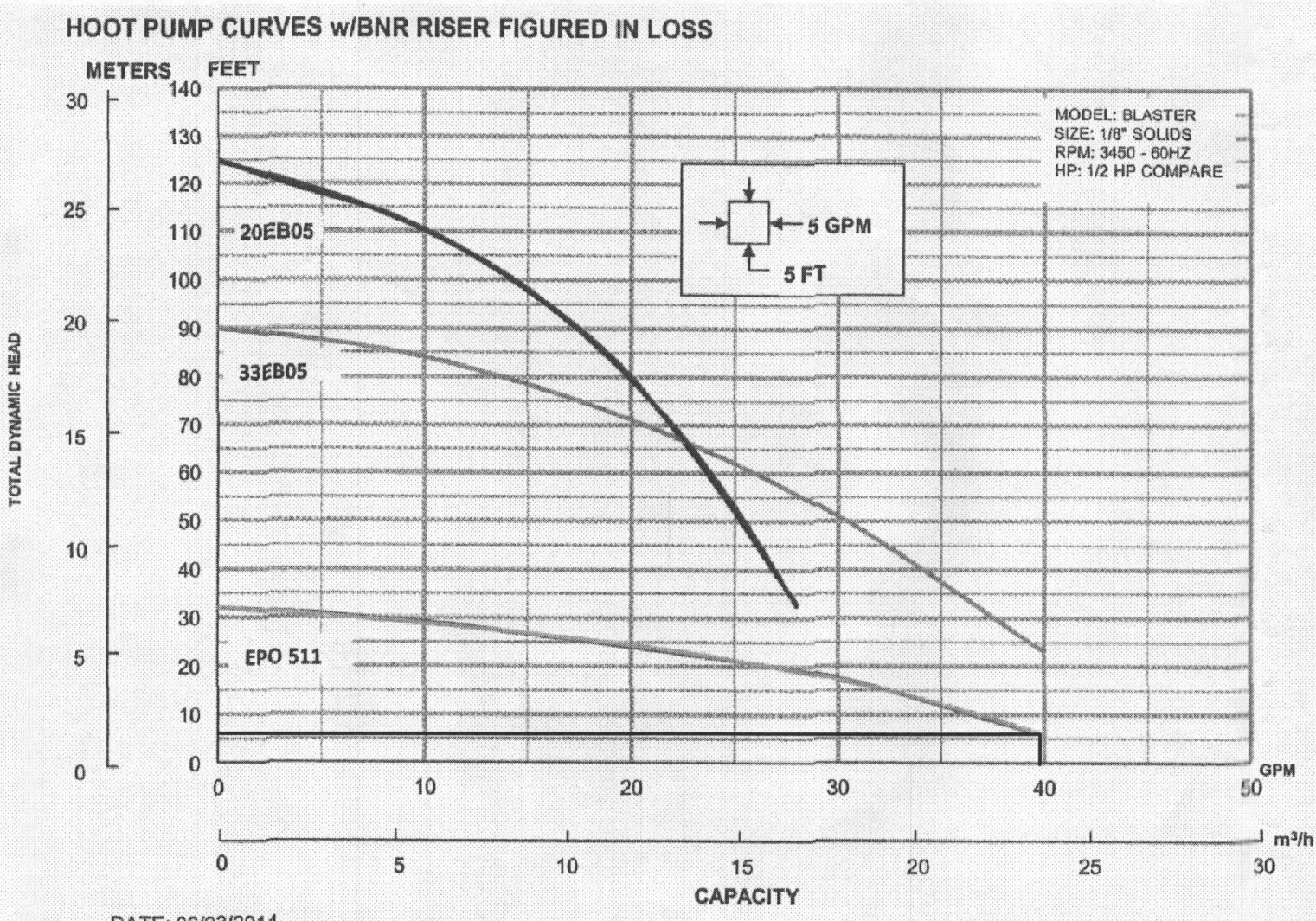
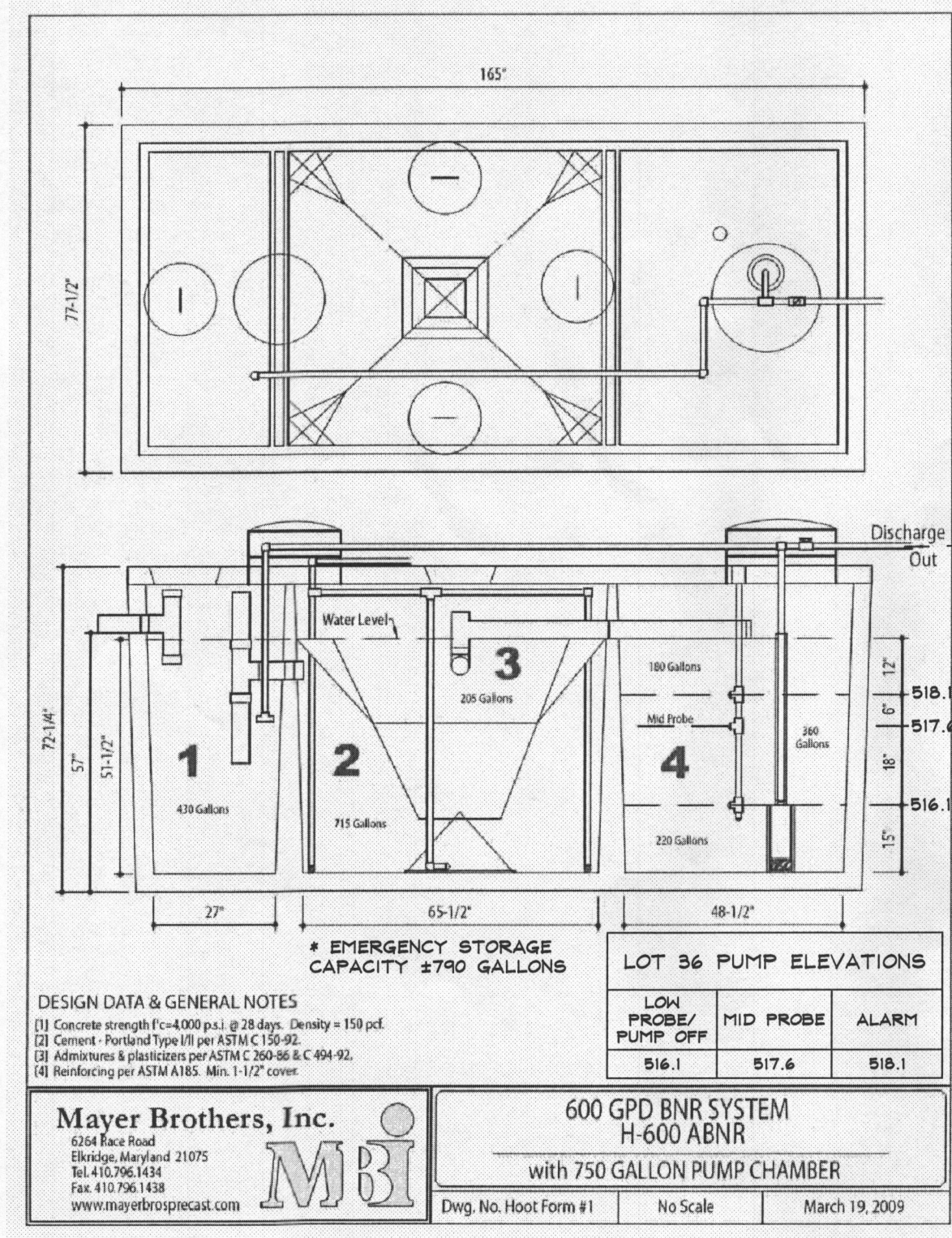
INITIAL SYSTEM  
750 GPD / 0.8 GPD/SF (APP. RATE) = 937.5 SF  
USE 3' WIDE TRENCH 1/4' 24" OF GRAVEL BELOW PIPE  
937.5 SF / 3' WIDTH = 312.5 LF x 0.625 = 196 LF MIN. TRENCH

1ST/2ND REPLACEMENT SYSTEM  
750 GPD / 0.8 GPD/SF (APP. RATE) = 937.5 SF  
USE 3' WIDE TRENCH 1/4' 24" OF GRAVEL BELOW PIPE  
937.5 SF / 3' WIDTH = 312.5 LF x 0.625 = 196 LF MIN. TRENCH

10' MIN SPACING BETWEEN TRENCH EDGES

- USE 2 - 98' LONG TRENCH FOR INITIAL SYSTEM
- USE 2 - 98' LONG TRENCH FOR FIRST REPLACEMENT SYSTEM
- USE 2 - 98' LONG TRENCH FOR SECOND REPLACEMENT SYSTEM

Approved Septic System Plan  
Howard County Health Department  
Mark Oswald 1/11/16  
Signature Date



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. 27020, EXPIRATION DATE: JANUARY 25, 2016

DATE: 12/16/2015

PAUL G. CAVANAUGH  
PROFESSIONAL ENGINEER

Planners  
Surveyors  
Engineers  
Landscape Architects

192 East Main Street  
Westminster, MD 21157  
410.386.0560  
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**DDC**  
Development Design Consultants

OWNER:  
K. HOVANNIAN HOMES  
1802 Brightseat Road  
Lanover, Maryland 20785  
(301) 885-6288

DEVELOPER:  
BELLE HAVEN ESTATES  
LOT 43

SITE ADDRESS:  
LOT 43  
16221 Sweetbay Street  
Woodbine, Maryland 21797

**SITE PLAN FOR BAT INSTALLATION**

3rd ELECTION DISTRICT HOWARD COUNTY

NO.	DESCRIPTION OF CHANGES	DRN.	REV.	DATE
CO. FILE #:	DES. BY: BKC			
TAX ACC. #:	DRN. BY: BKC			
TAX MAP: 14	CHK. BY: PGC			
BLOCK/GRID:	DATE: 12/16/15			
PARCEL #: 66	DDC JOB#: 06116.5			
ZONE / USE: RC-DEO	SHEET NUMBER:			
DWG. SCALE: 1"=30'	1 of 1			

DESIGN DATA & GENERAL NOTES  
 (1) Concrete strength (f'c=4000 p.s.i.) @ 28 days. Density = 150 pcf.  
 (2) Cement - Portland Type III per ASTM C 150-02.  
 (3) Admixtures - Modifiers per ASTM C 260-06 & 404-02.  
 (4) Reinforcing per ASTM A618, Min. 1/2" cover.

Mayer Brothers, Inc.  
5304 Rice Road  
Bowie, Maryland 21075  
Tel: 410.796.1431  
Fax: 410.796.1433  
www.mayerbrothers.com

600 GPD BNR SYSTEM  
H-600 ABNR  
with 750 GALLON PUMP CHAMBER

Dwg. No. Hoot Form #1  
No Scale  
March 19, 2009

DATE: 06/23/2014