

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: 4/27/15 ONSITE SEWAGE DISPOSAL SYSTEM P 555833

INSTALLATION APPROVAL DATE: 6/9/15 SEC PERMIT CONSTRUCTION A

PROPERTY ADDRESS: 2165 McKendree Road

SUBDIVISION: LOT: 2 TAX ID: 03-294331

CONTRACTOR: Level Land Inc. EMAIL: 443-677-0627

CONTRACTOR ADDRESS: 15298 Union Chapel Road PHONE: 410-489-5206

PROPERTY OWNER: Charles G. Beall EMAIL: Cgb411@gmail.com

OWNER ADDRESS: 1824 Woodside Avenue, Halethorpe, MD 21227 PHONE: 443-756-9944

BAT UNIT MODEL: Norweco TNTLP-5 PUMP SIZE: PUMP TANK CAPACITY: 600

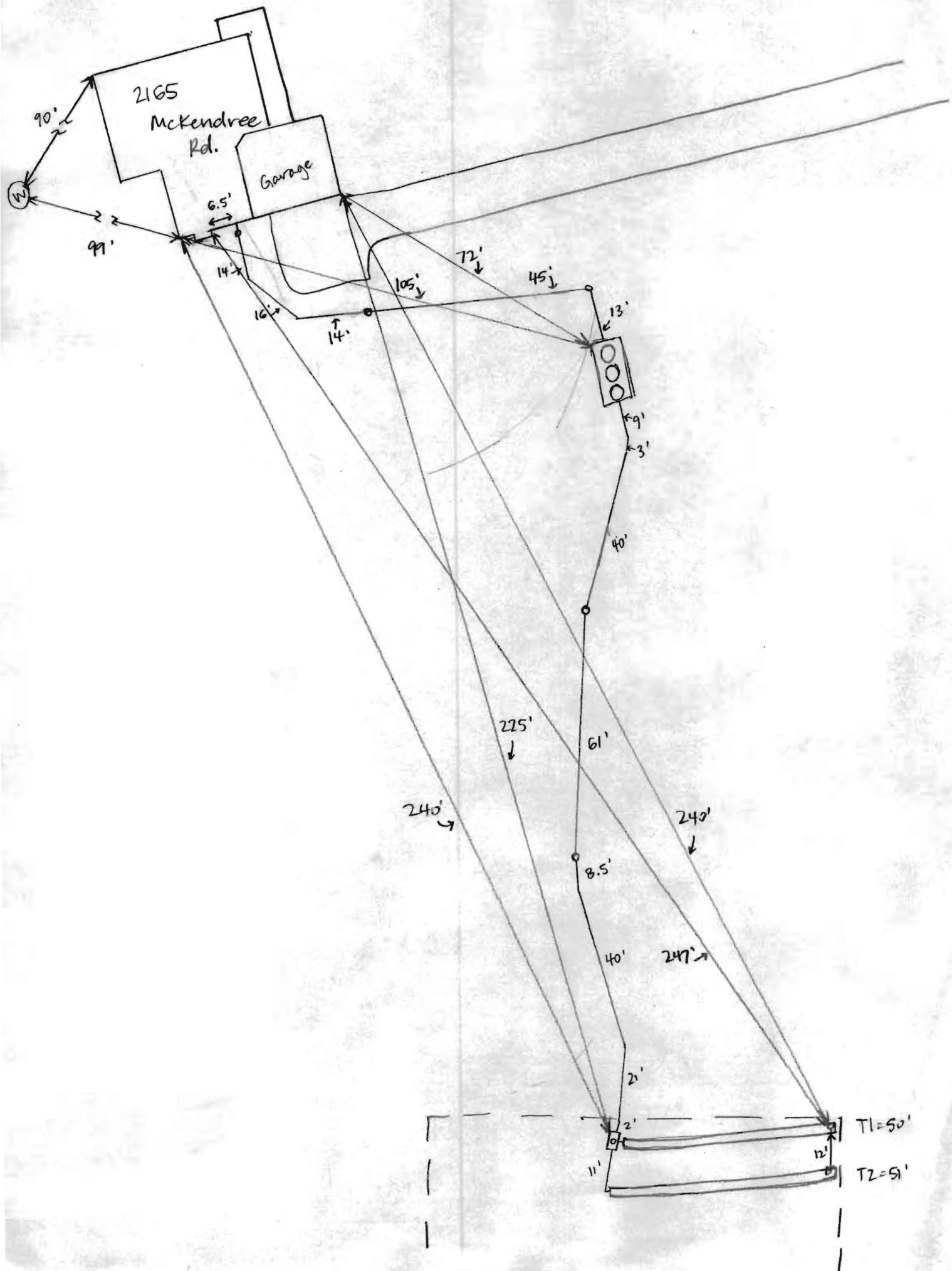
DISTRIBUTION SYSTEM: GRAVITY [] LOW PRESSURE DOSED [] NUMBER OF BEDROOMS:

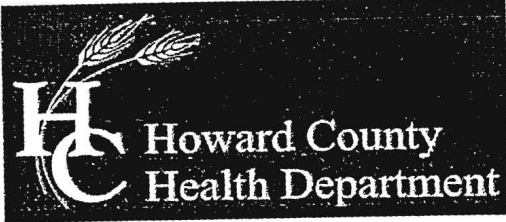
Table with 2 columns: Field Name (TRENCHES, LOCATION, NOTES) and Field Value (Linear feet required: 100, Inlet depth: 4, etc.)

ISSUED BY: Hank Oswald ISSUE DATE: 4/27/15 EXPIRATION DATE: 4/27/16

- 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 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
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.





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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 10th day of September, among Charles Beall and Patricia Beall, 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 2165 McKendree Rd., in the 4 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 15280 Folio 116.

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 Hoot Systems Model H-630-BNR

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.

Beell Refan 9/10/14
Howard County Health Department

[Signature] 9/9/14
Owner #1 Signature Date

Charles G. Beall
Owner #1 Print Name

[Signature] 9/9/14
Owner#2 Signature Date

Patricia Beell
Owner #2 Print Name

Buyer #1 Signature Date

Buyer #2 Signature Date

Buyer #1 Print Name

Buyer #2 Print Name

**COMPUTATIONS
FOR
BAT PLAN
2165 MCKENDREE ROAD
(LOT 2 ROVER MILL ROAD)**

PREPARED BY:

John Hutton P.E.

13282 Hunt Ridge

Ellicott City, MD 21042

(410) 531-2724

**Total Dynamic Head for BAT pump
(Gould pump model EP0411A)**

Total Static Head = peak discharge elevation - pump pit head

$$4.17' = 585.50 - 581.33$$

Trial #1

Total friction head for 50 gpm flow:

pipe length = 6.5' + 3' = 9.5', use 10'

fitting loss (1 1/2" pvc) for 50gpm = 1 -1/4 bends + 1 -gate valve

$$5.3' = (1 \times 4.3') + (1 \times 1')$$

Equivalent friction loss = 10' + 5.3' = 15.3'

Loss of head for 1 1/2" pvc (C=130) (From *Hazen-Williams formula = 4')

Total Dynamic Head = Static Head + Friction head

$$8.2' = 4.2' + 4'$$

. use 9', from pump curve flow = 47gpm

Note: To obtain a 75 gallon dose from the BAT pump, it will be necessary to run the pump (75gpg/47gpm) = 1.60 min. or 1 minute and 36 seconds.

*Hazen-Williams formula for pipe loss (f) = $0.2083(100/c)^{1.852} q^{1.852} / Dh^{4.8655}$

Where (f) is friction head loss per 100' of pipe , C= Hazen Williams coefficient, q=gal/min, Dh=hydraulic diameter

Hazen-Williams Equation for Pressure Loss in Pipes

Imperial Units

Specified Data

l = length of pipe (ft)	15.3
c = Hazen-Williams roughness constant	130
q = volume flow (gal/min)	50
dh = inside or hydraulic diameter (inches)	1.5

Calculated Pressure Loss

f = friction head loss in feet of water per 100 feet of pipe (ft H ₂ O per 100 ft pipe)	<u>24.97</u>
f = friction head loss in psi of water per 100 feet of pipe (psi per 100 ft pipe)	<u>10.74</u>

Head loss (ft H ₂ O)	<u>3.82</u>
Head loss (psi)	<u>1.64</u>

Calculated Flow Velocity

v = flow velocity (ft/s)	<u>9.08</u>
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SI Units

Specified Data

l = length of pipe (m)	30
c = Hazen-Williams roughness constant	140
q = volume flow (liter/sec)	10
dh = inside or hydraulic diameter (mm)	76

Calculated Pressure Loss

f = friction head loss in mm of water per 100 m of pipe (mm H ₂ O per 100 m pipe)	<u>6406.62</u>
f = friction head loss in kPa per 100 m of pipe (kPa per 100 m pipe)	<u>62.85</u>

Head loss (mm H ₂ O)	<u>1921.99</u>
Head loss (kPa)	<u>18.85</u>

Calculated Flow Velocity

v = flow velocity (m/s)	<u>2.20</u>
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The Engineering ToolBox

www.EngineeringToolBox.com



ITT

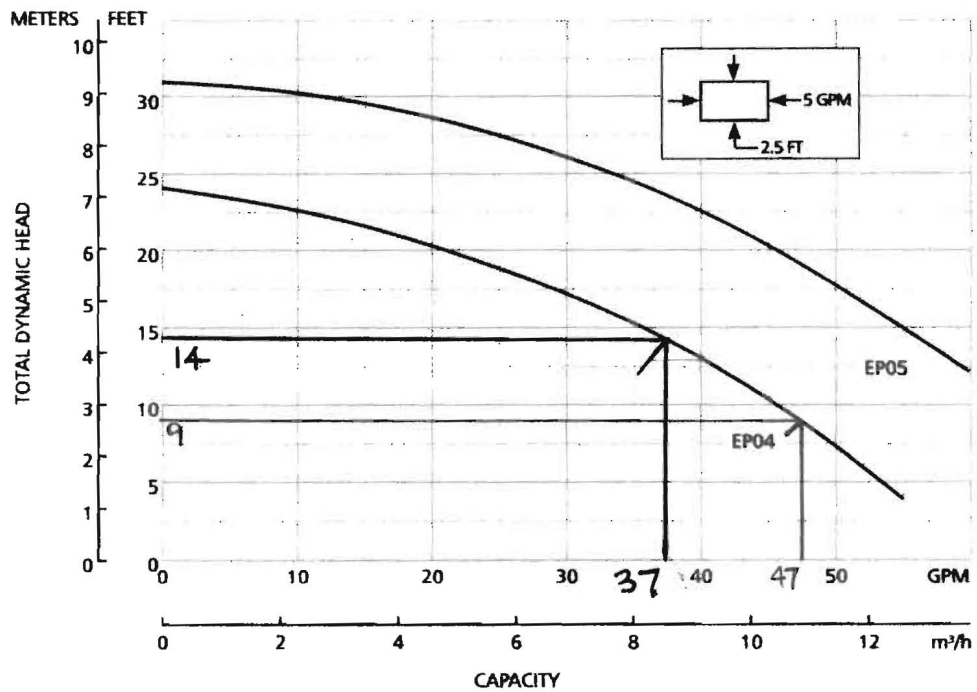
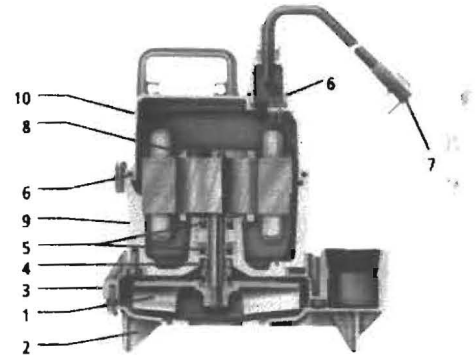
GOULDS PUMPS Wastewater

PERFORMANCE RATINGS

Total Head (ft. of water)	Gallons Per Minute	
	EP04	EP05
5	53	-
10	46	62
15	36	55
20	21	46
25	0	33
30	-	11

COMPONENTS

Item No.	Description
1	Impeller
2	Base
3	Pump Casing
4	Mechanical Seal
5	Ball Bearings
6	O-Rings
7	Power Cord
8	Oil Filled Motor
9	Motor Housing/ Stator Assembly
10	Motor Cover



Back River Pre-Cast, LLC

PO BOX 329
Glyndon, MD 21071
Phone # 410-833-3394
Fax # 410-833-4116

Letter of Certification

This is to certify that the Norweco Singulair TNT 600 GPD Septic Tank installed at 2165 McKendree Rd., West Friendship, MD 21794 was installed on April 30, 2015 according to the manufacture's specifications.

Installer: Brian Jones

Property Owner: Charles Beall



MATTHEW GECKLE

Vice-President



Bureau of Environmental Health **000120**

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20
40
15

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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.
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Beell Ryan 9/10/14
Howard County Health Department

[Signature] 9/9/14
Owner #1 Signature Date

[Signature] 9/9/14
Owner#2 Signature Date

✓ Charles G. Beall
Owner #1 Print Name

✓ Patricia Beall
Owner #2 Print Name

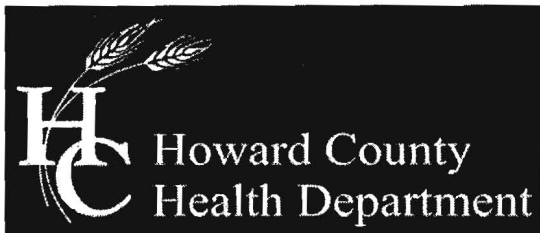
Buyer #1 Signature Date

Buyer #2 Signature Date

Buyer #1 Print Name

Buyer #2 Print Name

RE - Agreement
Recording Fee 20.00
Grantor/Grantee Name:
BEALL
Reference/Control #:
120
F - Agreement
Surcharge 40.00
Subtotal: 60.00
Total: 80.00
09/12/2014 11:09
0013-ES
3884587 COMS02 -
Howard Co
Columbia/0005.00.00 -
Register 06



Bureau of Environmental Health

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

MEMORANDUM

TO: John Hutton

FROM: Jeff Williams
Program Supervisor, Well & Septic Program

RE: 2165 McKendree Road BAT plan

DATE: September 9, 2014

The Health Department has reviewed the BAT plan for the proposed house at 2165 McKendree Rd. The following revisions are needed prior to Health approval. Please contact me at 410-313-4261 if you wish to schedule a meeting to discuss these revisions.

- ✓ • The septic system layout must be revised to show equal length trenches on contour in the upper portion of the septic disposal area with a distribution box at the upper edge of the area near the upper trench. Place the first trench in the upper corner along contour near test hole 11 (~50' long) and place the next trenches 10' away down the hill along contour with trenches extending in either direction. A separate line should extend from the d-box to each trench. The trench bottom must be level across each trench and all trenches within each system must be equal length. Elevations of the ground, invert, and trench bottom for each trench must be noted. No profile of the trench lateral is needed.
- ✓ • See the attached spec sheet for the property in order to revise the trench design. The initial system may use a 1.2 application rate with 2' of sidewall credit and a trench bottom of 6' depth. The first replacement system will be similar, but with a 0.8 application rate. Trenches using sidewall must have 10' spacing edge to edge.
- ✓ • The 100' radius around the well box is not to scale.
- Show the calculations for determining the dynamic head for the site (static head plus friction head). Plot the corresponding point along the pump curve.
- ✓ • The Hoot system doses based on a runtime set at the control panel. Indicate on the plan the proposed runtime in order to achieve ~50 gallons discharge into the d-box with each dose. For example, if the selected pump discharges at 25gpm, indicate that the runtime will be set for 2 minutes to equal a 50 gallon dose.
- Revise the detail on the d-box profile to show the force main discharge above the floor and show a baffle by the inlet.

2165 McKendree Rd

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: BEALL
Reference/Control #: 120

LR - Agreement Surcharge
1x 40.00 40.00

=====
SubTotal: 60.00
Total: 60.00
=====

REV-Check-BOA 60.00
Number : 2517

09/12/2014 11:07 CC13-ES
#3284587 /1247/109

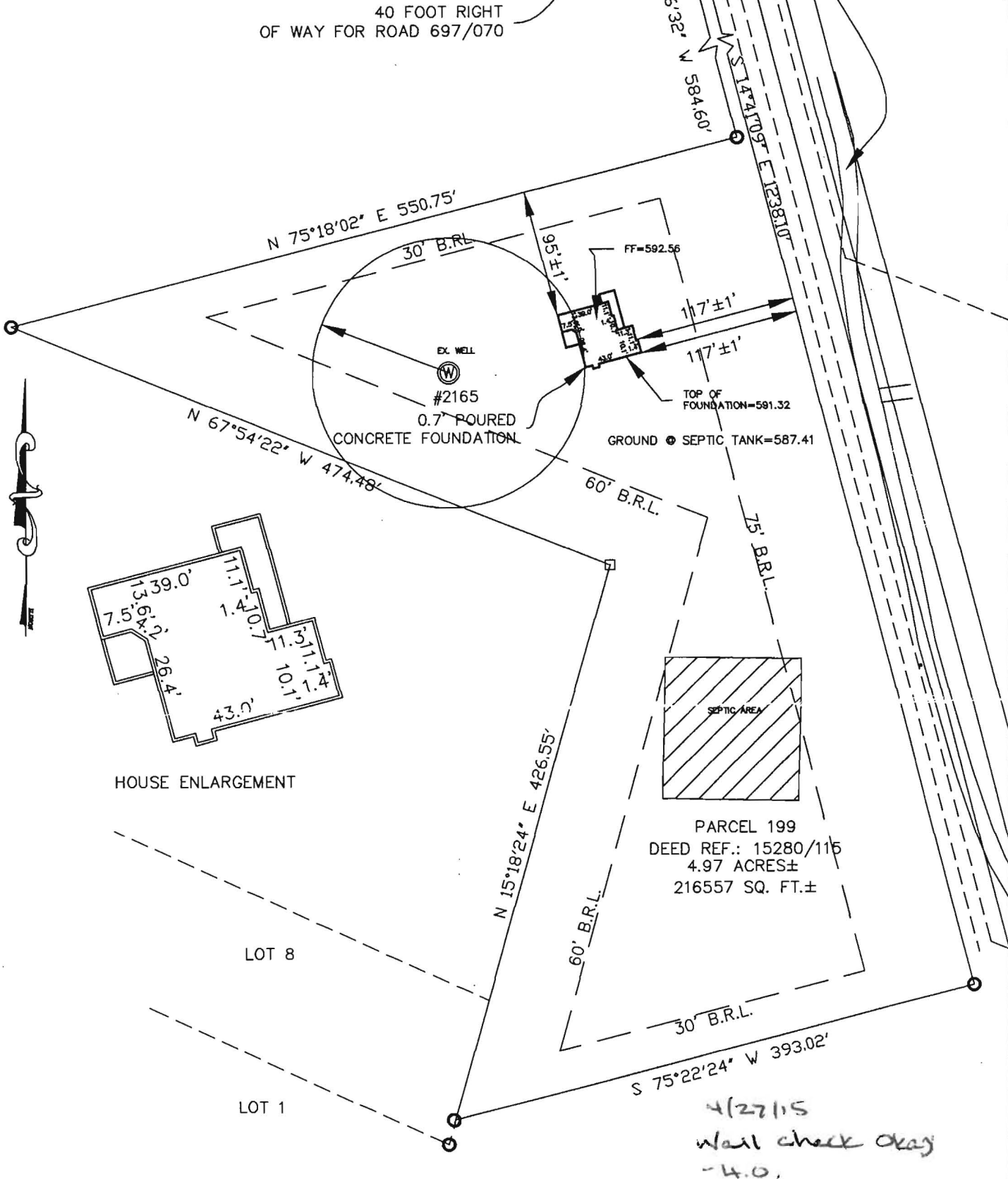
Thank you for visiting us today~

NOTE" NOT TO BE USED FOR ISSUANCE OF PERMITS

MCKENDREE ROAD
N 78°28'39" E 10.01'

EXISTING STONE ROAD

40 FOOT RIGHT
OF WAY FOR ROAD 697/070

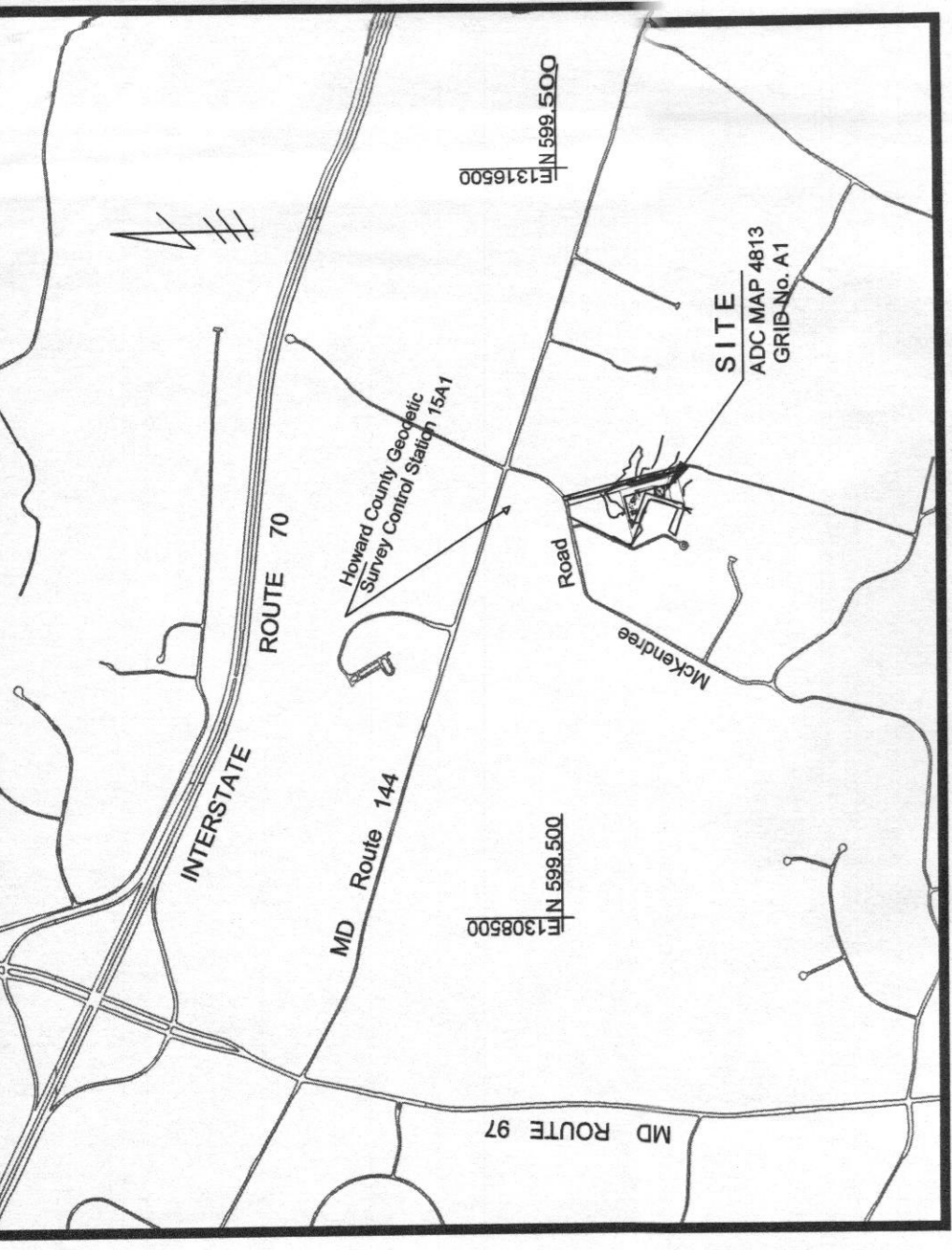


DEED REF.: 15280/115

- 1) The plat is of benefit to a consumer only insofar as it is required by a lender or a title insurance company or its agent in connection with contemplated transfer, financing or re-financing;
- 2) The plat is not to be relied upon for the establishment or location of fences, garages, buildings, or other existing or future improvements;
- 3) The plat does not provide for the accurate identification of property boundary lines, but such identification may not be required for the transfer of title or securing financing or re-financing.



FOUNDATION CERTIFICATION		SCALE:
2165 MCKENDREE ROAD HOWARD COUNTY MARYLAND		1"=100'
JOHN C. MELLEMA SR., INC.		DATE:
LAND SURVEYORS		12-1-14
5409 EAST DRIVE BALTIMORE, MARYLAND 21227 (410)247-7488		JOB NO:
		14227



VICINITY MAP
1" = 2000'

- LEGEND**
- ⊙ EXISTING WELL
 - 881.5 PROF. SPOT ELEV.
 - DOWNSPOUTS
 - DRY WELLS
 - DISTURBANCE
 - SILT FENCE
 - SLOTTED PVC PIPE
 - PERFORATED DRAIN TILE

GENERAL NOTES

1. Existing topography for lot 2 was provided by John C. Mellama Sr., Inc., Land Surveyors. Existing off site features and topography were taken from Howard County GIS information.
2. The property is not located in a 100 year flood plain or preservation area. There are also no steep slopes of 25% or greater, wetlands, or streams within the designated lot.
3. Any changes 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.
4. The maximum depth of the BAT per the manufacturer's specifications is three feet.
5. The blower may not be located more than 50 feet from the tank based on the manufacturer's specifications.
6. The BAT System shall be maintained and operated for the life of the system.
7. The BAT shall be operated by and maintained by a certified service provider.
8. 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.
9. Electrical Work for the BAT installation must be performed by a licensed electrician.
10. An agreement and Easement must be completed and signed by all applicable parties, and recorded in Land Records of Howard County.
11. The Health Department requires documentation for the start-up certification from the manufacturer prior to final approval of the installation.

Septic and Drain field design
for Lot 2 Rover Mill Road
Tax Map 15 Grid 7 Parcel 199
Tax Acct. no 03-294331

Proposed 4 bedroom, 2 story frame house = 150 gal x 4 = 600 gal wastewater/day

* Percolation test results:

Test #	Test Type	Percolation Rate	Date	Test #	San.
10	ST	4 min at 5 ft.	6/20/13	10	H.S.
11	ST	8 min at 4.5 ft.	6/20/13	11	H.S.
12	ST	3 min at 4.2 ft.	6/20/13	12	H.S.
13	ST	4 min at 4.5 ft.	6/20/13	13	H.S.
14	VISUAL		6/20/13	14	H.S.

* From "Percolation Certification Plan" for Lot 2 Rover Mill Road, May 2013

INITIAL SYSTEM

1.2 gallons per day/sq ft.
Design flow / Application Rate = Sq ft of trench required.
600 / 1.2 = 500 sq. ft of trench
Use 2' trench width, with effective depth of 24"
Length of trench = 500 / 2 = 250 feet
Sidewall reduction credit = $(W+2)/(W+1+2D) \times 100 = ((2+2)/(2+1+2(2))) \times 100 = 57\%$
Length of trench = sq. ft trench x sidewall reduction %
143' = 250' x 0.57
Note: use 3 - 50' lengths for 150'

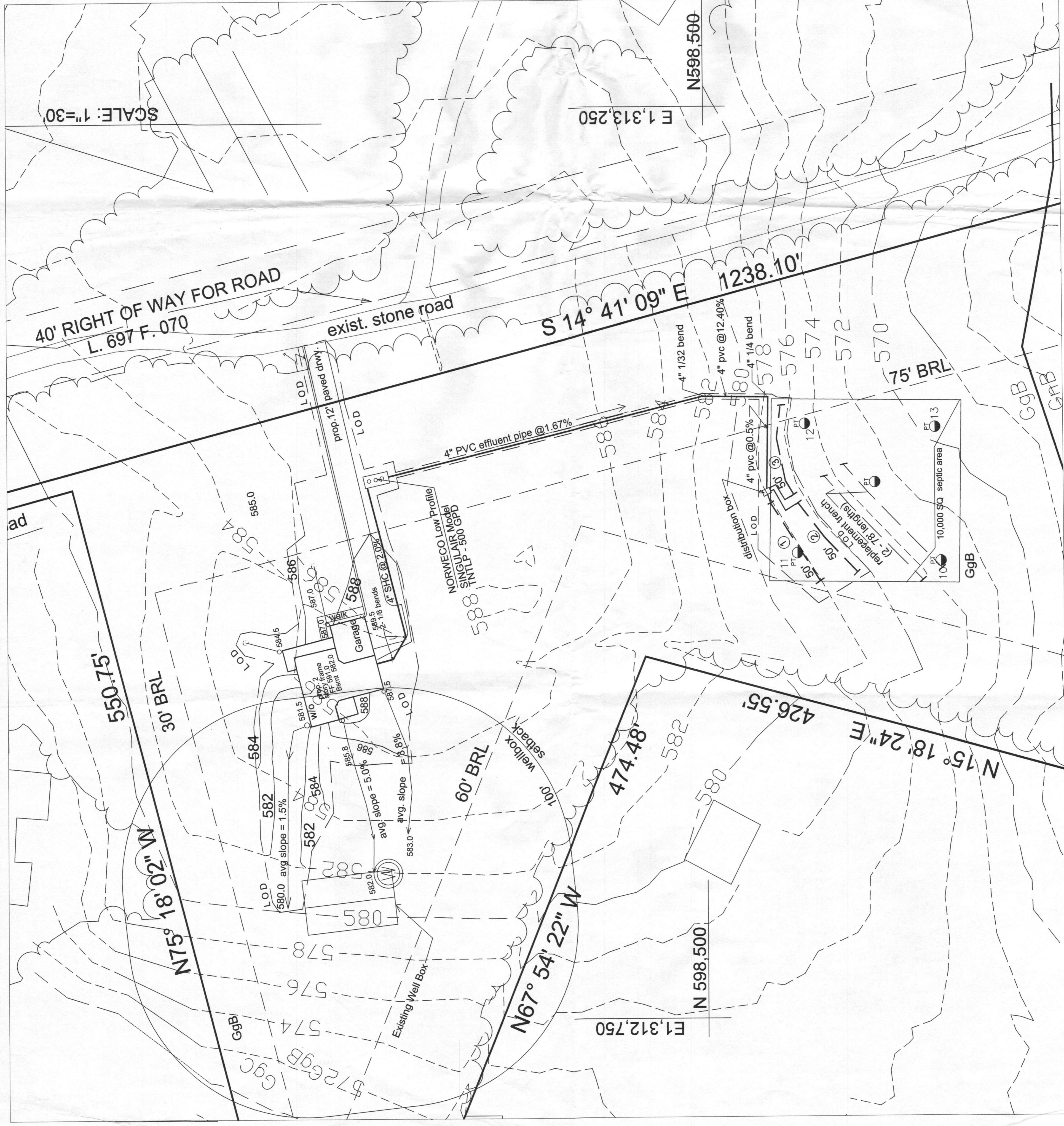
FIRST REPLACEMENT

0.8 gallons per day/sq. ft.
Design flow / Application Rate = Sq ft of trench required.
600 / 0.8 = 750 sq. ft of trench
Use 3' trench width, with effective depth of 24"
Length of trench = 750 / 3 = 250 feet
Sidewall reduction credit = $(W+2)/(W+1+2D) \times 100 = ((3+2)/(3+1+2(2))) \times 100 = 63\%$
Length of trench = sq. ft trench x sidewall reduction %
156' = 250' x 0.63
Note: use 2 - 78' length of trench

INITIAL TRENCH ELEVATIONS

TRENCH #	GROUND	INVERT	BOTTOM TRENCH
1	578.1	574.1	572.1
2	576.5	572.5	570.5
3	576.5	572.5	570.5

Approved Septic System Plan
Howard County Health Department
Signature: [Signature]
Date: 5/11/13



SHEET 1 OF 2

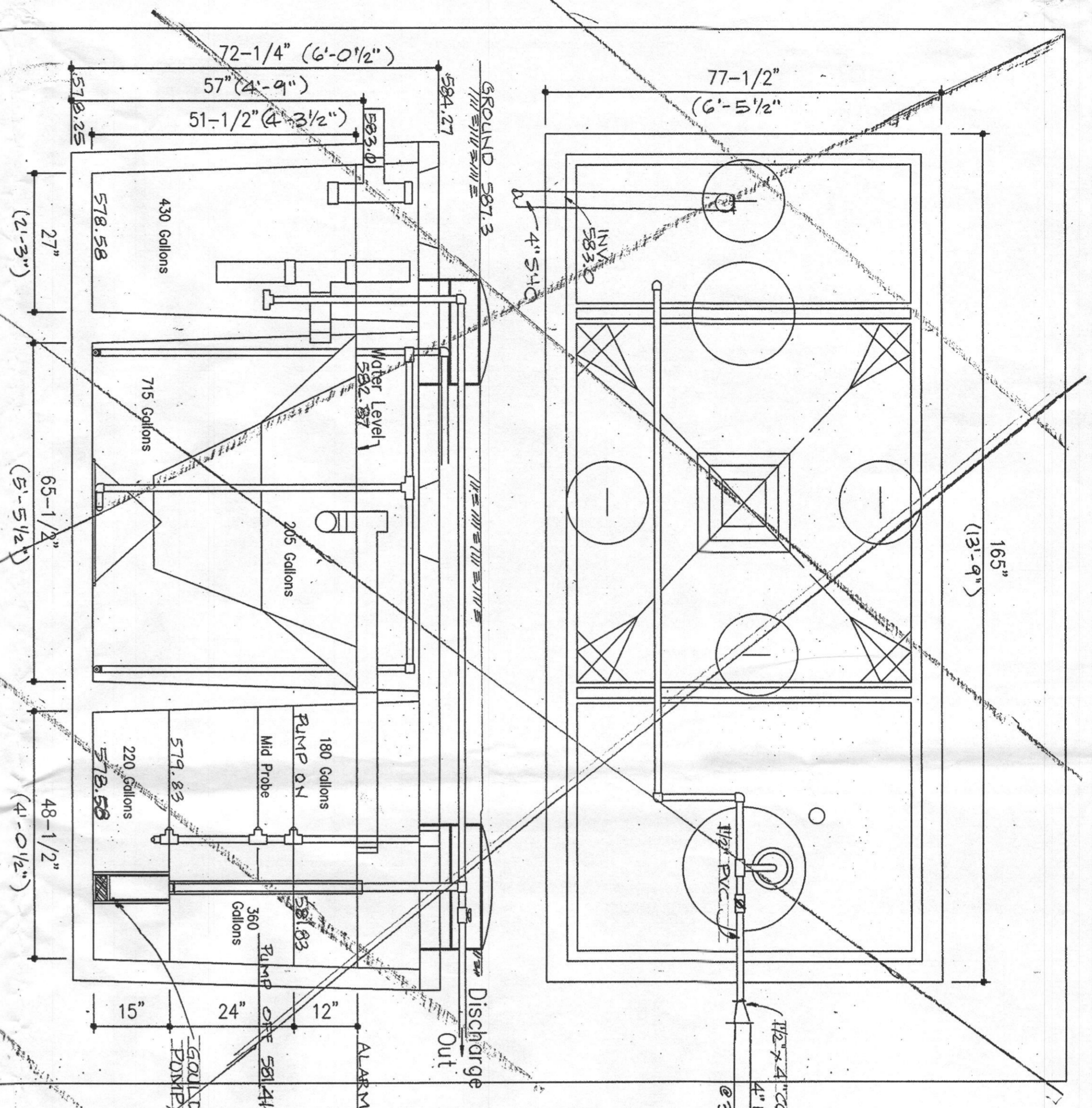
APPROVED: For Private Water and Private Sewerage Systems

Engineer
John Hutton P.E.
13282 Hunt Ridge
Ellicott City, MD 21042
(410) 531-2724

BUILDER
Charles G Beall
1824 Woodside Avenue
Halethorpe, MD 21227
Phone: (443) 756-9941

Owner:
Charles G. Beall and Patricia H. Beall
and Gary G. Beall
1824 Woodside Avenue
Halethorpe, MD 21227
Phone: (443) 756-9941

Site Plan for BAT Installation
TAX Account NO 03-294331
LOT 2 ROVER MILL ROAD
2165 McKendree Road, West Friendship, MD 21794
Parcel 189
Tax Map 15
4th Election District Grid 7
Zoning: RC-BEO
Scale: As Shown
Date: July, 2014
Sheet 1 of 2



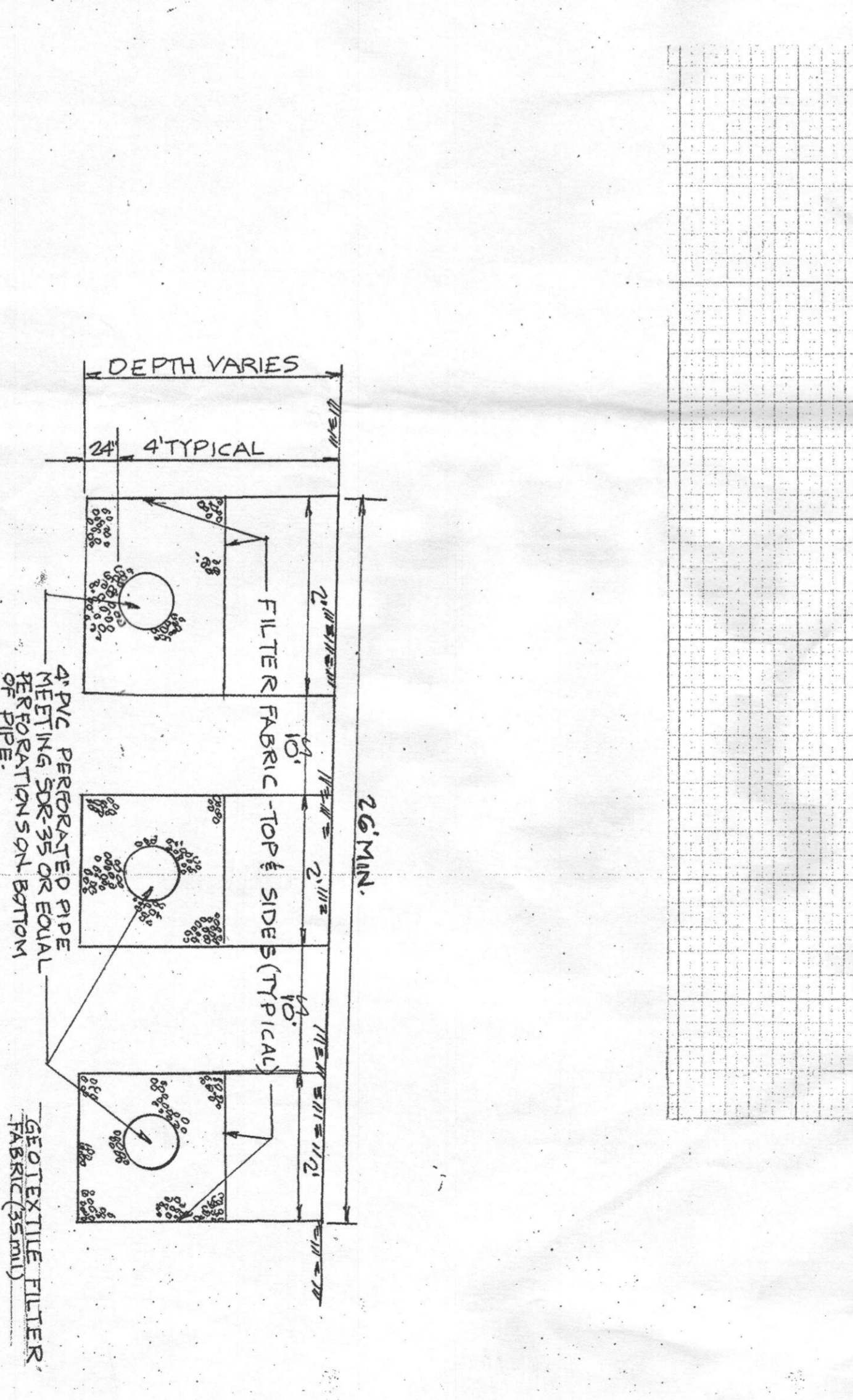
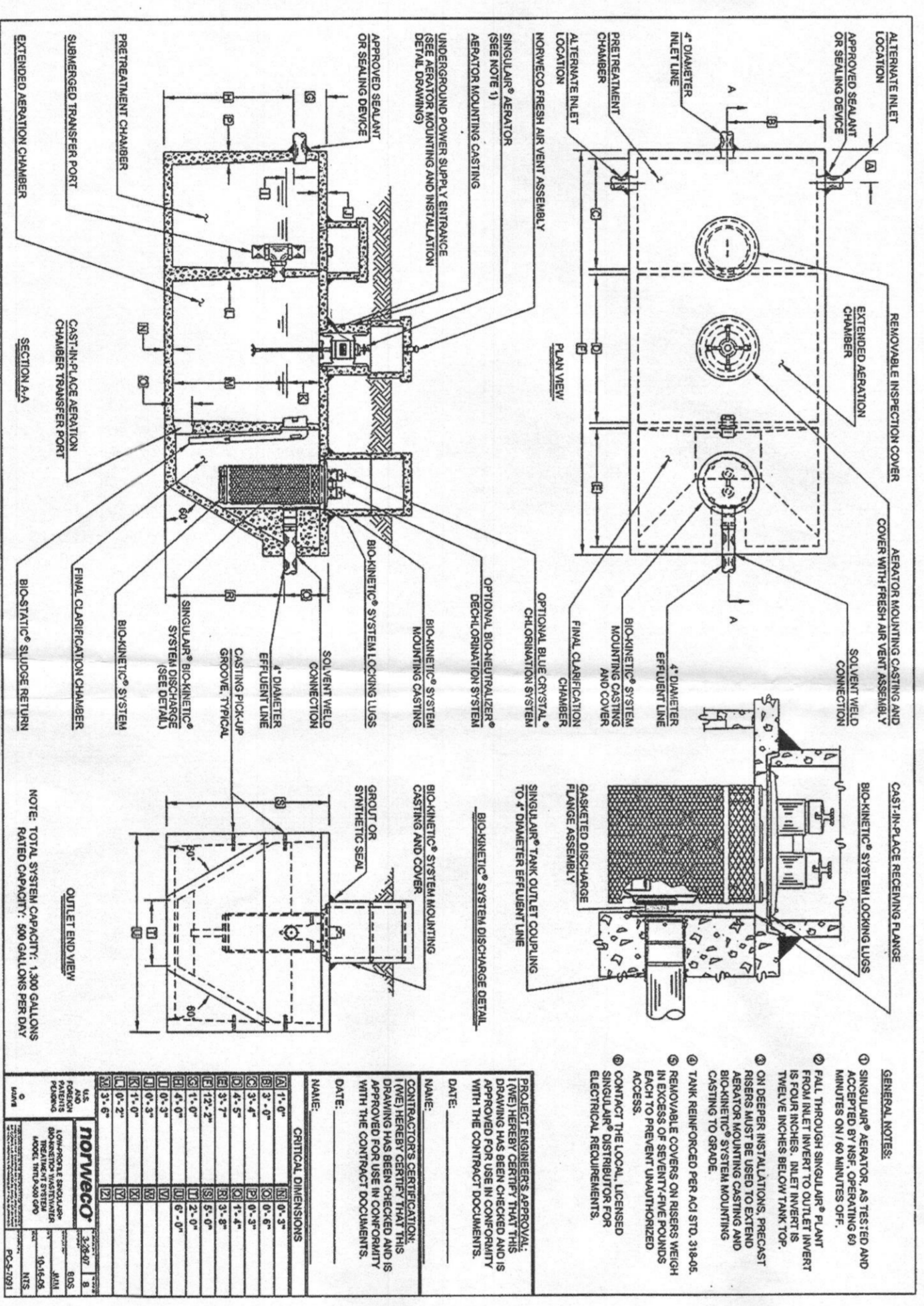
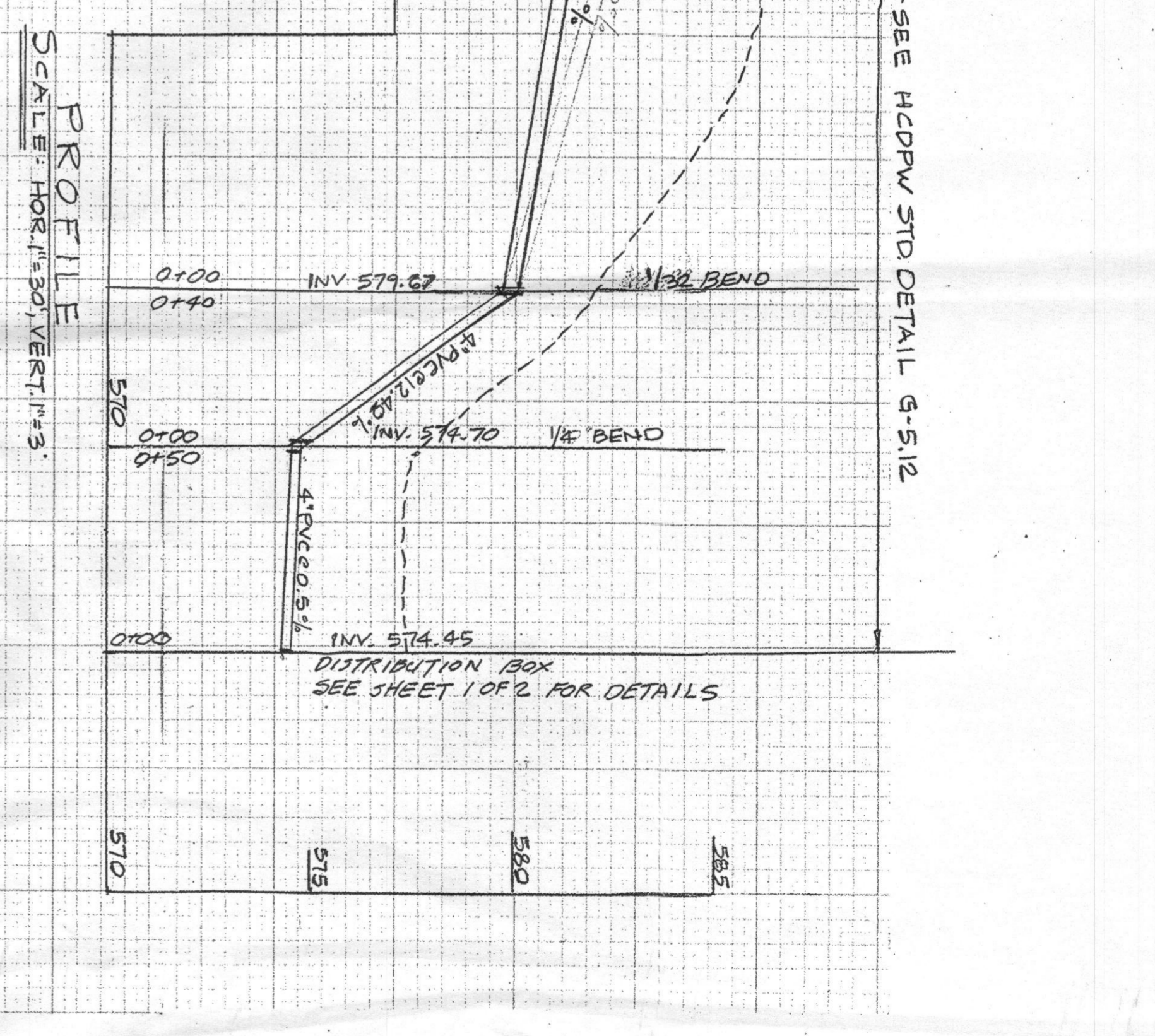
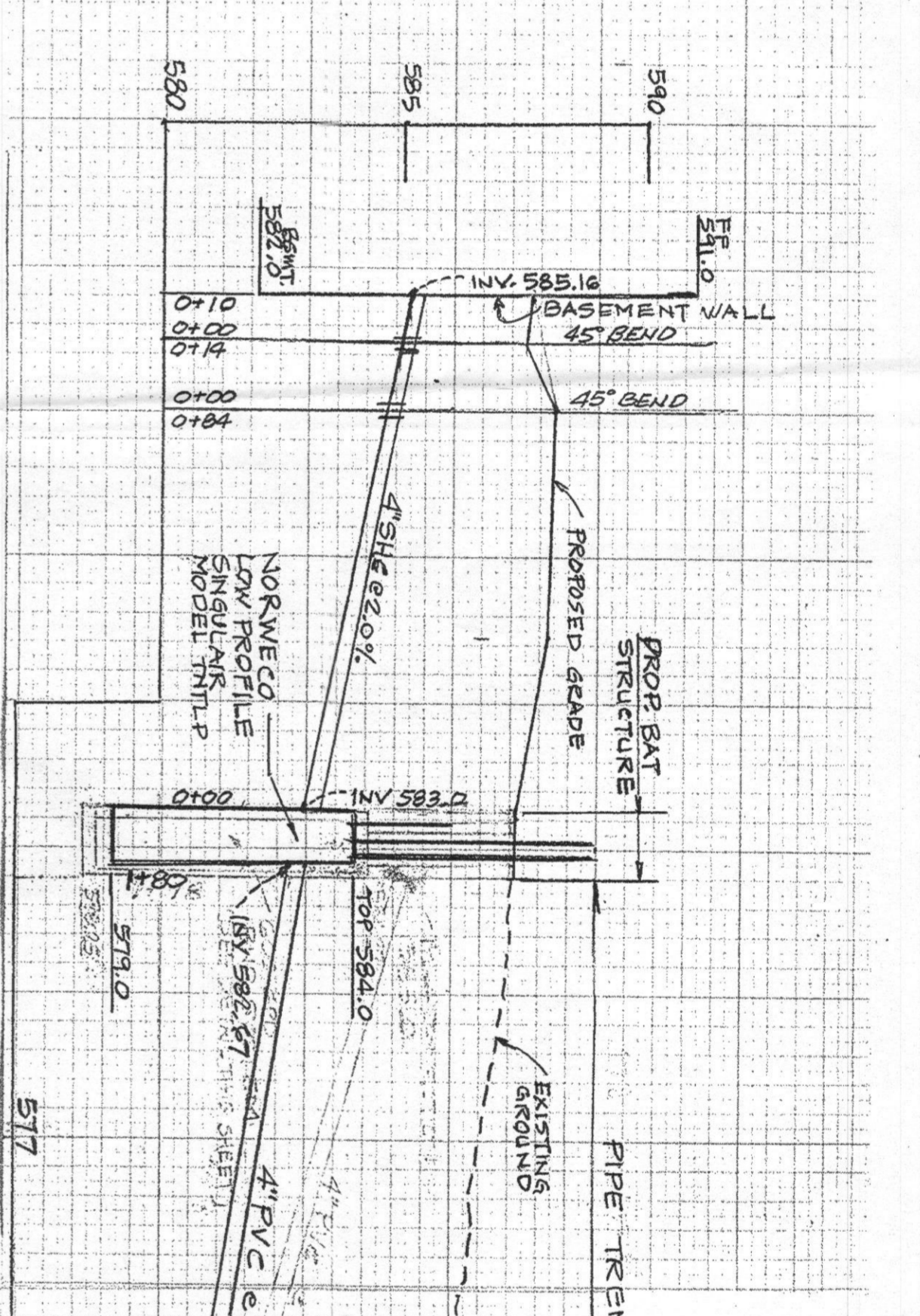
DESIGN DATA & GENERAL NOTES

- Concrete strength $f'_c = 4,000$ p.s.i. @ 28 days. Density = 150 p.c.f.
- Cement - Portland Type I/II per ASTM C 150-92.
- Admixtures & plasticizers per ASTM C 260-86 & C 494-92.
- Reinforcing per ASTM A185. Min. 1-1/2" cover.

Mayer Brothers, Inc.
 6264 Rode Road
 Elkridge, Maryland
 Tel. 410.796.1434
 Fax. 410.796.1438
 www.mroyebrotherspec.com

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

Wg. No. Hoot Form # No. Scale March 19, 2009



APPROVED: For Private Water and Private Sewerage Systems

County Health Officer
 Howard County Health Department

Engineer
 John Hutton P.E.
 13282 Hunt Ridge
 Ellicott City, MD 21042
 (410) 531-2724

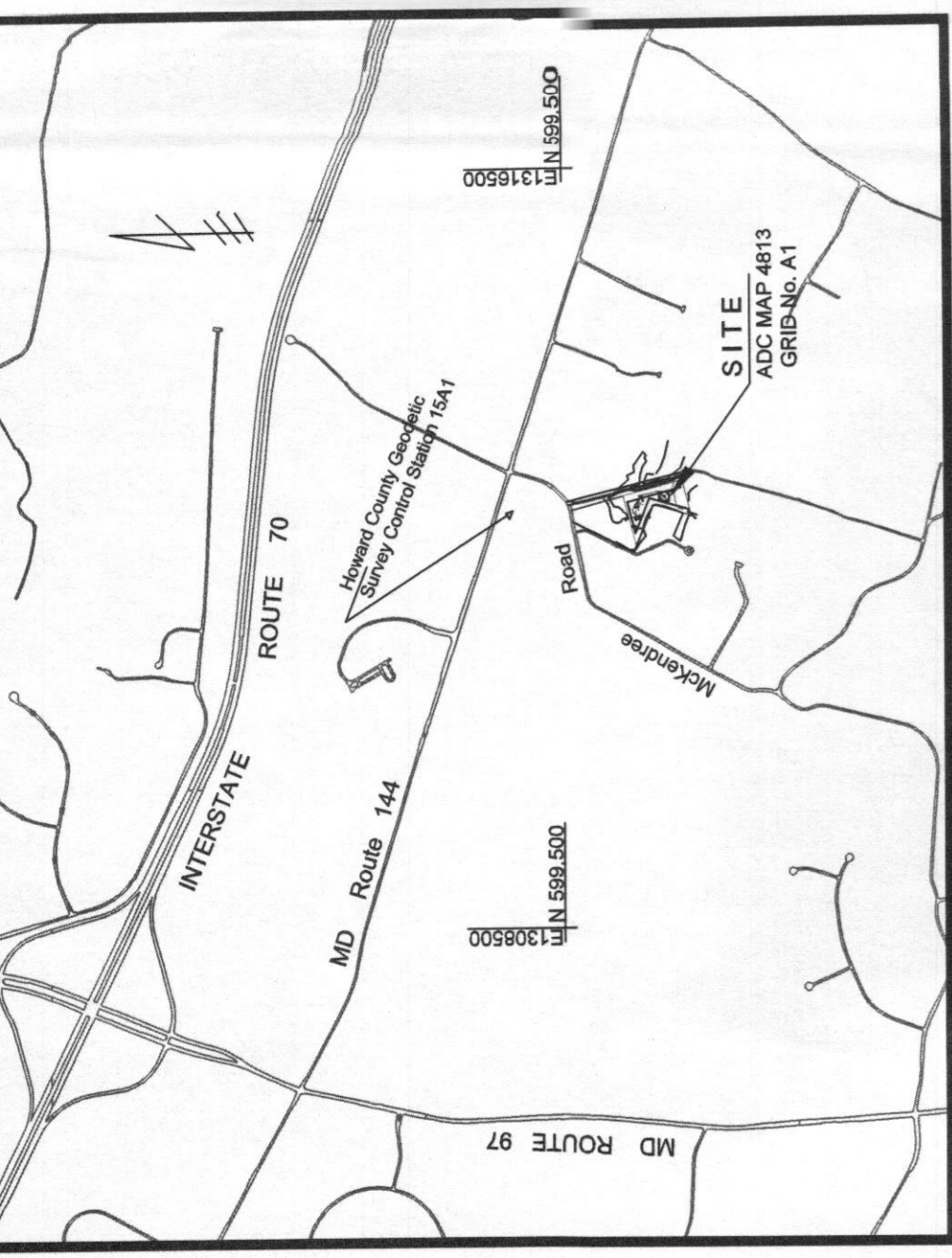
Builder
 Charles G Beall
 1824 Woodside Avenue
 Halethorpe, MD 21227
 Phone: (443) 756-9941

Owner:
 Charles G. Beall and Patricia H. Beall
 1824 Woodside Avenue
 Halethorpe, MD 21227
 Phone: (443) 756-9941

REVISID 9/15/14 PER HEALTH DEPT COMMENTS OF 9/9/14.
 REVISED 12/15/14 PER FIELD CHANGE TO FOOTINGS.
 REVISED 4/30/15 TO CHANGE BAT SYSTEM FROM
 "HOOT" BNR TO NORWECO INT.

Site Plan for BAT Installation
 Tax Account Number 03-294331
 LOT 2 ROVER MILL ROAD
 2165 Mckendree Road, West Friendship, MD 21794
 Tax Map 15 Ghd 7 Parcel 189
 4th Election District
 Zoning RC-DEO
 Scale: As Shown Date: July, 2014

- LEGEND**
- ⊙ EXISTING WELL
 - 581.5 PROP. SPOT ELEV.
 - DOWNSPOUTS
 - DRY WELLS
 - LOD (prop. line only)
 - SILT FENCE
 - SLOTTED PVC PIPE
 - PERFORATED DRAIN TILE



GENERAL NOTES

- Existing topography for lot 2 was provided by John C. Mellema Sr., Inc., Land Surveyors. Existing off site features and topography were taken from Howard County GIS information.
- The property is not located in a 100 year flood plain or preservation area. There are also no steep slopes of 25% or greater, wetlands, or streams within the designated lot.
- Any changes 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 specifications is three feet.
- The blower may not be located more than 50 feet from the tank based on the manufacturer'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.

Septic and Drain field design
for Lot 2 Rover Mill Road
Tax Map 15 Grid 7 Parcel 199
Tax Act. no 03-294331

Proposed 4 bedroom, 2 story frame house = 150 gal x 4 = 600 gal wastewater/day

* Percolation test results:

Test #	Test Type	Percolation Rate	Date	Test #	San.
10	ST	4 min at 5 ft.	6/20/13	10	H.S.
11	ST	8 min at 4.5 ft.	6/20/13	11	H.S.
12	ST	3 min at 4.2 ft.	6/20/13	12	H.S.
13	ST	4 min at 4.5 ft.	6/20/13	13	H.S.
14	VISUAL		6/20/13	14	H.S.

INITIAL SYSTEM

1.2 gallons per day/sq ft.
Design flow / Application Rate = Sq ft of trench required.
600 / 1.2 = 500 sq. ft. of trench
Use 2' trench width, with effective depth of 24"
Length of trench = 500 / 2 = 250 feet
Sidewall reduction credit = ((W+2)/(W+1+2D)) x 100 = ((2+2)/(2+1+2(24))) x 100 = 57%
Length of trench = sq. ft. trench x sidewall reduction %
143' = 250' x 0.57

Note: use 3 - 50' lengths for 150'

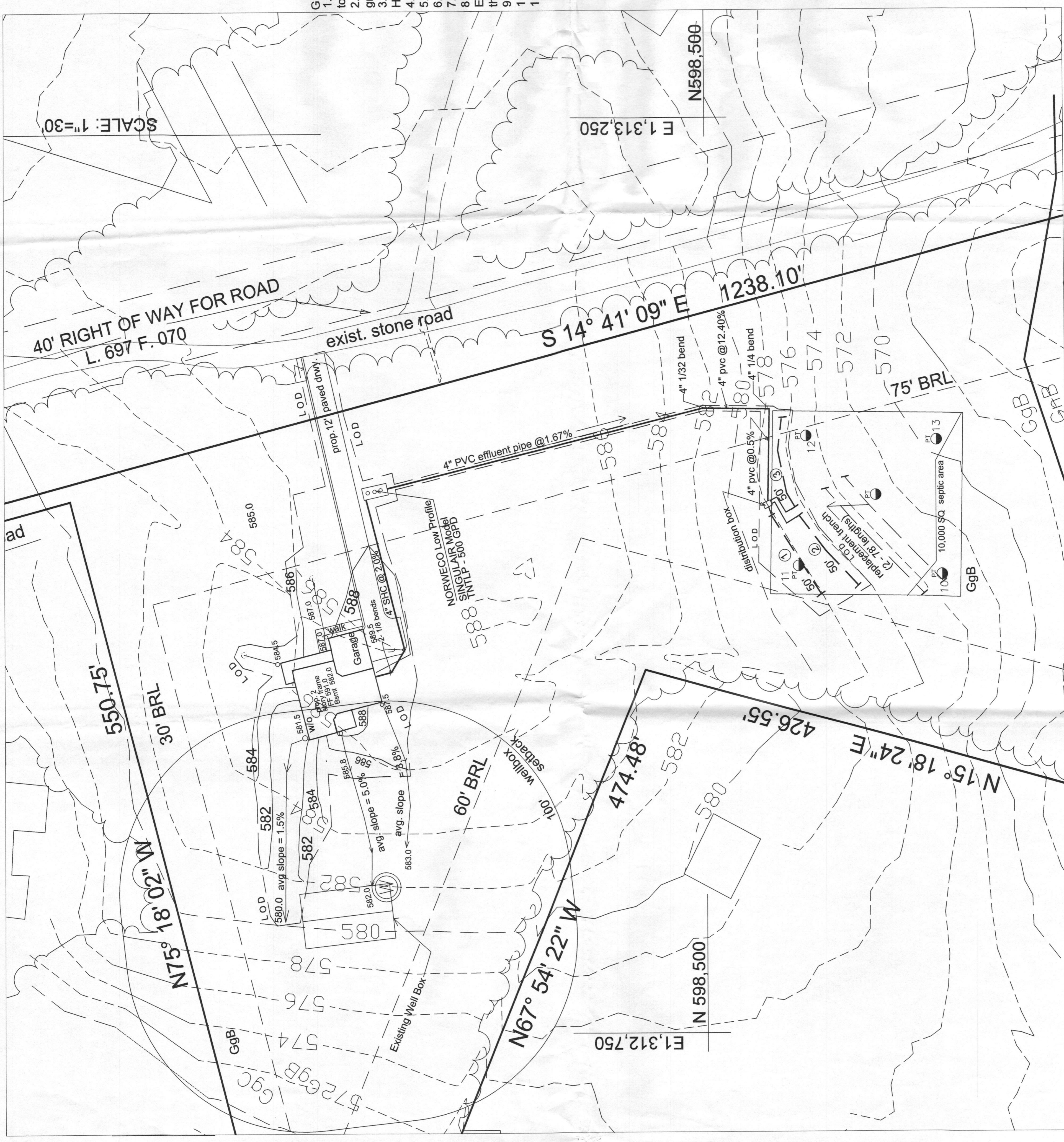
FIRST REPLACEMENT

0.8 gallons per day/sq. ft.
Design flow / Application Rate = Sq ft of trench required.
600 / 0.8 = 750 sq. ft. of trench
Use 3' trench width, with effective depth of 24"
Length of trench = 750 / 3 = 250 feet
Sidewall reduction credit = ((W+2)/(W+1+2D)) x 100 = ((3+2)/(3+1+2(24))) x 100 = 63%
Length of trench = sq. ft. trench x sidewall reduction %
156' = 250' x 0.63

Note: use 2-78' length of trench

INITIAL TRENCH ELEVATIONS

TRENCH #	GROUND	INVERT	BOTTOM TRENCH
1	578.1	574.1	572.1
2	576.5	572.5	570.5
3	576.5	572.5	570.5



APPROVED: For Private Water and Private Sewerage Systems

County Health Officer
Howard County Health Department

Engineer
John Hutton P.E.
13282 Hunt Ridge
Ellicott City, MD 21042
(410) 531-2724

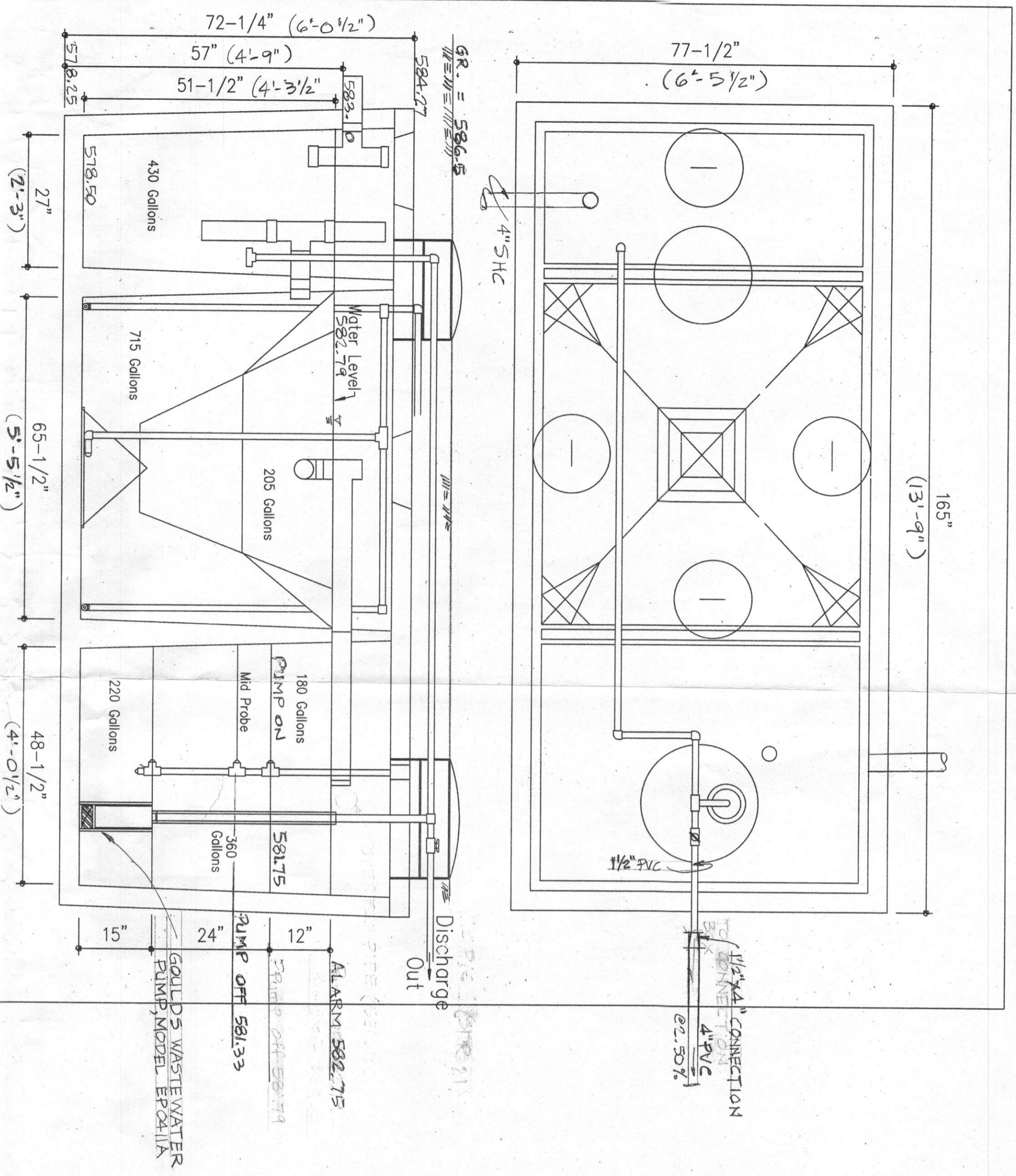
Builder
Charles G. Beall
1824 Woodside Avenue
Halethorpe, MD 21227
Phone: (443) 756-9941

Owner:
Charles G. Beall and Patricia H. Beall
and Gary G. Beall
1824 Woodside Avenue
Halethorpe, MD 21227
Phone: (443) 756-9941

Site Plan for BAT Installation
TAX Account NO 03-294331
LOT 2 ROVER MILL ROAD
2165 Mckenzie Road, West Friendship, MD 21794
Tax Map 15 Grid 7 Parcel 199
4th Election District Zoning RC-DEO
Scale: As Shown Date: July, 2014

Approved Septic System Plan
Howard County Health Department
Signature: [Signature] Date: 7/15

SHEET 1 OF 2



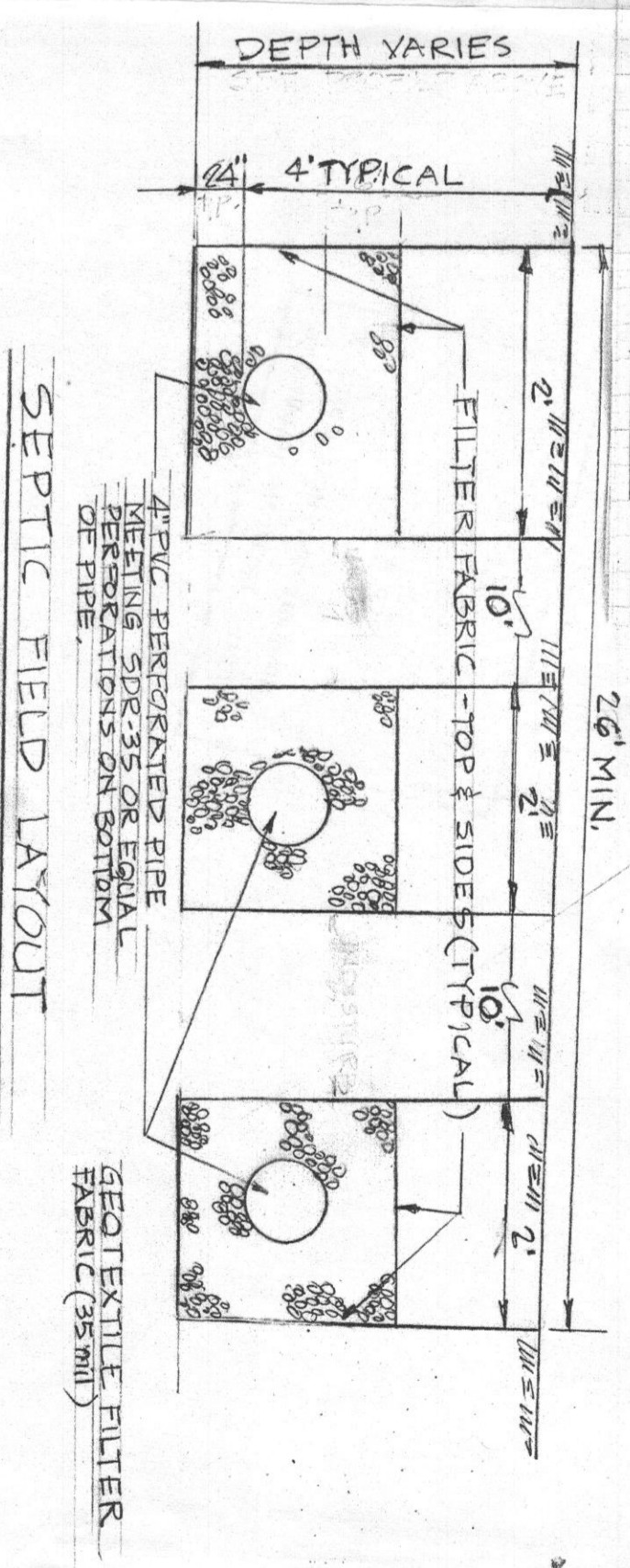
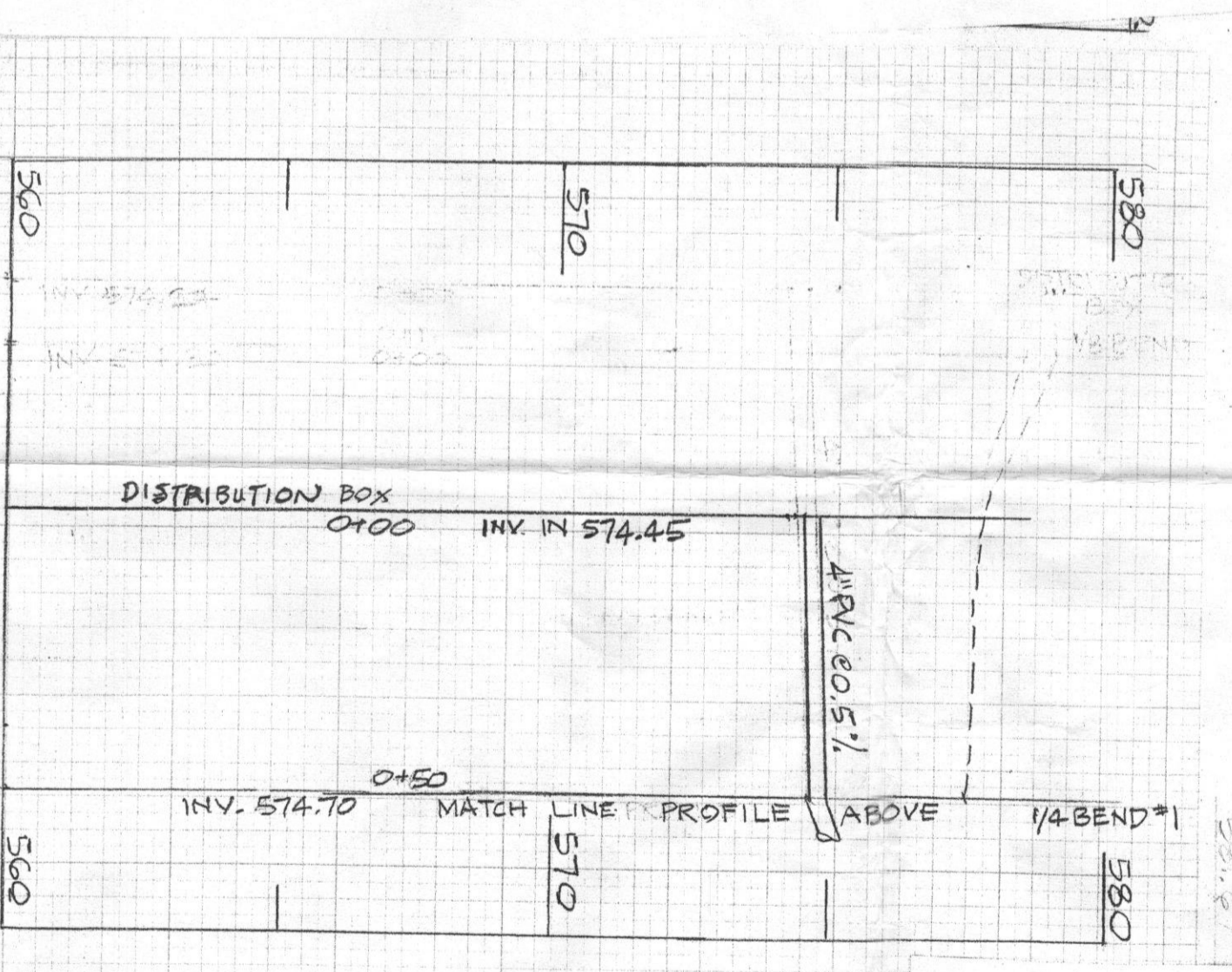
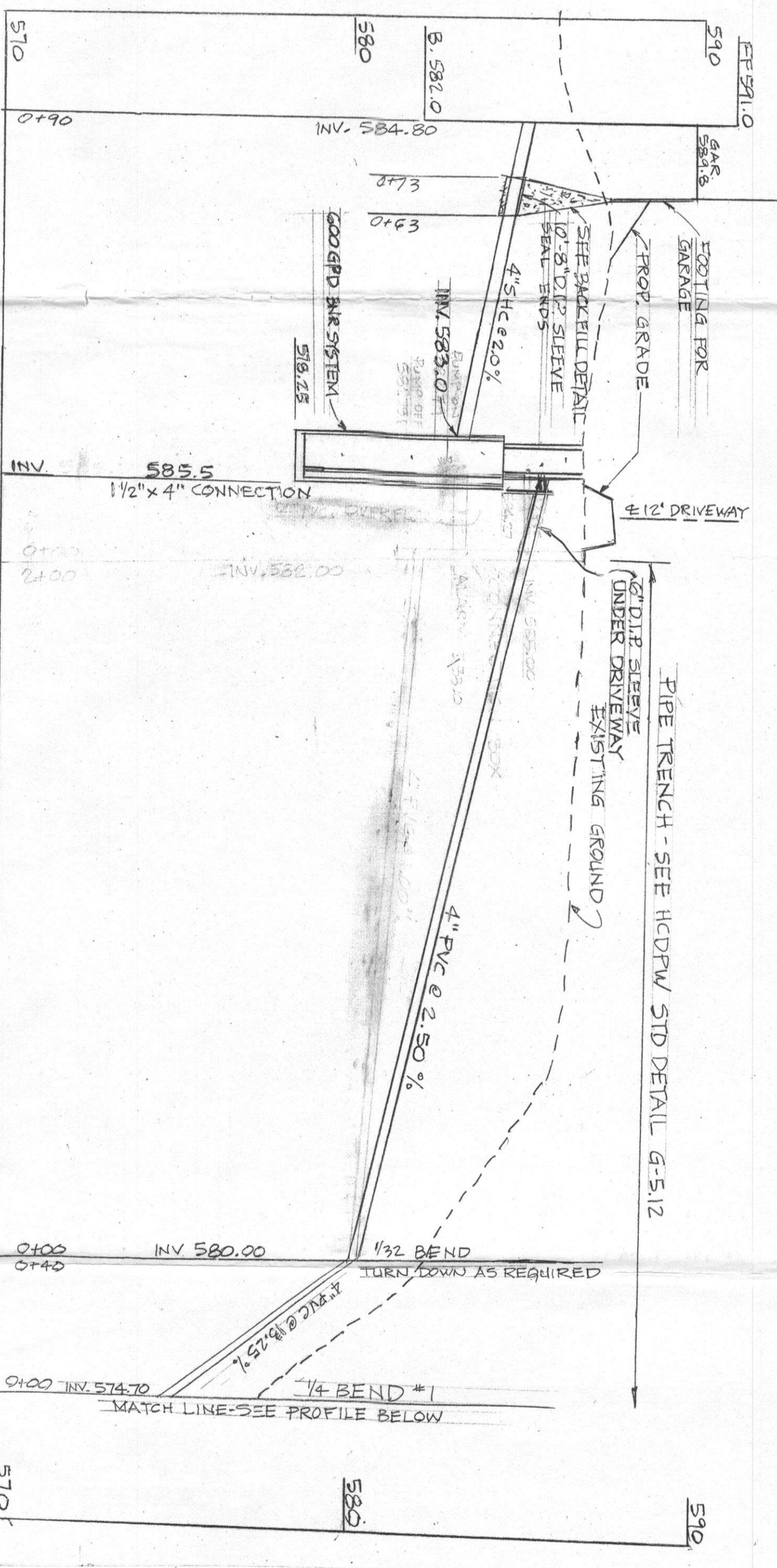
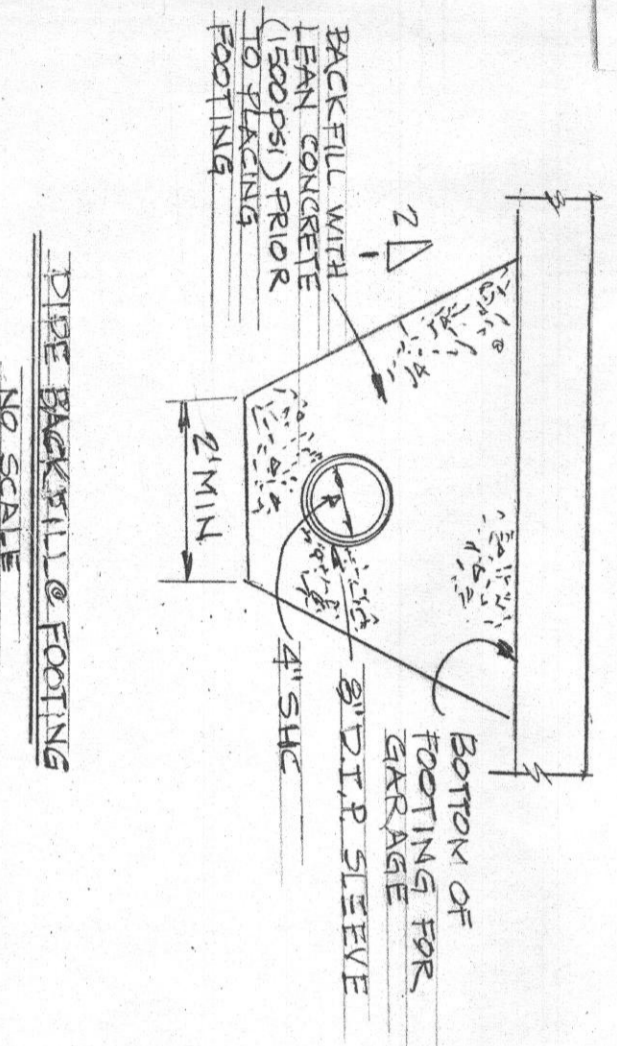
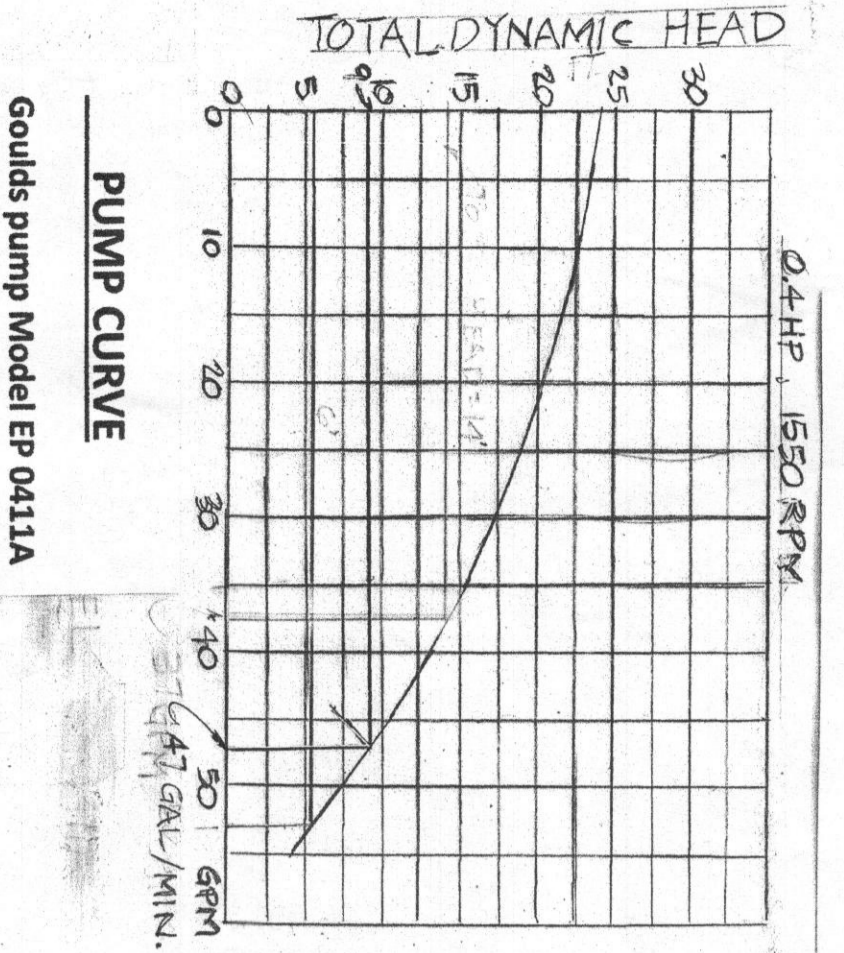
DESIGN DATA & GENERAL NOTES
 [1] Concrete strength $f_c=4,000$ p.s.i. @ 28 days. Density = 150 pcf
 [2] Cement - Portland type I/II per ASTM C 150-92
 [3] Aggregates & plasticizers per ASTM C 260-86 & C 494-92.
 [4] Reinforcing per ASTM A185, Min. 1-1/2" cover.

Mayer Brothers, Inc.
 6264 Race Road
 Elkridge, Maryland
 Tel. 410.796.1434
 Fax. 410.796.1438
 www.mayerbrothersprecast.com

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

wg. No. Hoop Form # No Scale
 March 19, 2009

Note: For a 75 gallon dose, it will be necessary to set the pump runtime to 1 minute and 36 seconds.
 (75 gpm / 47 gpm = 1.60 minutes or 1 minute and 36 seconds.)



Approved Septic System Plan
 Howard County Health Department
 10/17/14
 DJS

APPROVED: For Private Water and Private Sewerage Systems

County Health Officer
 Howard County Health Department

Engineer
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 13282 Hunt Ridge
 Ellicott City, MD 21042
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REVISIED 9/15/14 PER HEALTH DEPT COMMENTS OF 9/9/14.

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 TAX Account Number 03-294331
 LOT 2 ROVER MILL ROAD
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 4th Election District Zoning RC-250
 Scale: As Shown Date: June, 2014

SHEET 2 OF 2

