

**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.orgFacebook: www.facebook.com/hocohealth

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

RECEIPT DATE: 4/14/16**ONSITE SEWAGE DISPOSAL SYSTEM**P 558078APPROVAL DATE: 6/15/2016**PERMIT:****CONSTRUCTION**

A

PROPERTY ADDRESS: 18380 Chelsea Knolls DriveSUBDIVISION: Chelsea KnollsLOT: 10TAX ID: 04-594324CONTRACTOR: Hatfield's EquipmentEMAIL: ken@hatfieldsequiment.comCONTRACTOR ADDRESS: P.O. Box 519 Annapolis Junction, MD 20701PHONE: 301-490-4289

CONTRACTOR CERTIFIED FOR BAT INSTALLATION:



MDE



MANUFACTURER:

PROPERTY OWNER: Ryan HomesEMAIL: dsnyder@nvrinc.comOWNER ADDRESS: 9720 Patuxent Woods DrivePHONE: 410-796-0980BAT UNIT MODEL: Norweco TNTLP 500PUMP SIZE: 0.4HPPUMP TANK CAPACITY: 1500 GAL

OPERATION & MAINTENANCE AGREEMENT

DATE SIGNED:

5/1/14

DATE RECORDED:

5/1/14

DISTRIBUTION SYSTEM:



GRAVITY



PRESSURE DOSED

BEDROOMS: 4

APPLICATION RATE:

0.8

TRENCHES:

LINEAR FEET REQUIRED: 208INLET DEPTH: 4TRENCH WIDTH: 3MAXIMUM BOTTOM DEPTH: 5

MINIMUM SPACE

BETWEEN TRENCHES: 10EFFECTIVE AREA BEGINNING DEPTH: 4

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: Robert BrickerISSUE DATE: 4/14/16EXPIRATION DATE: 4/14/17

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 DOWNGRADIENT FROM ANY WATER WELL

NOTE: MANHOLE RISERS REQUIRED ON ALL SEPTIC TANKS AND PUMP CXHAMBERS

NOTE: AN ELECTRICAL PERMIT IS REQUIRED FOR INSTALLATION OF ANY ELECTRICAL COMPONENTS OF THE SYSTEM



ELECTRICAL PERMIT ISSUED

E

16001167

NOTE: AN INDIVIDUAL CERTIFIED BY MDE AND THE MANUFACTURER FOR BAT INSTALLATION MUST BE PRESENT AT ALL TIMES DURING BAT INSTALLATION.

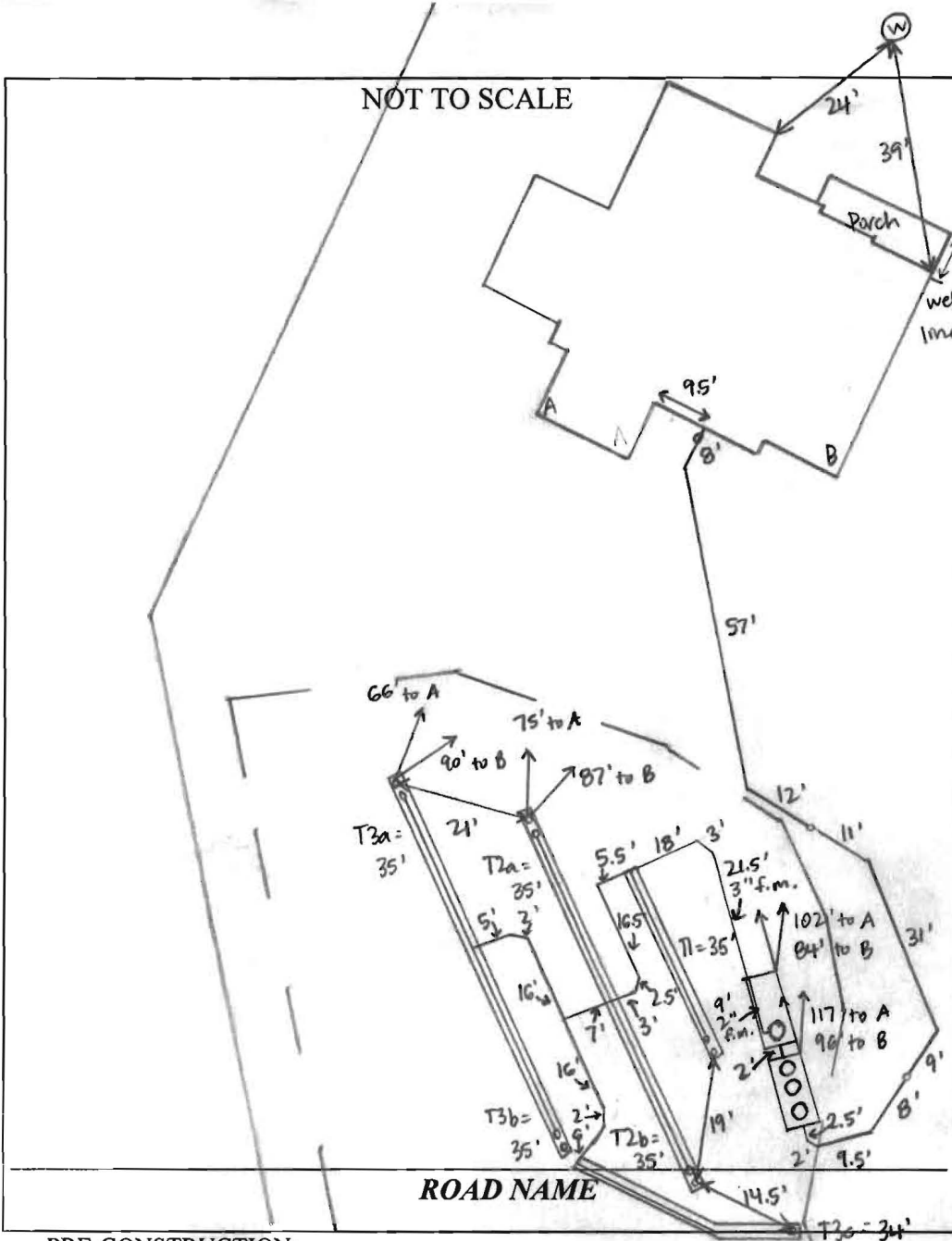
NOTE: MDE RECOMMENDS SEPTIC TANKS, BAT, AND OTHER PRETREATMENT UNITS BE PUMPED AT A FREQUENCY ADEQUATE TO ENSURE THAT SOLIDS ARE NOT DISCHARGED TO THE DISPOSAL AREA

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.

NOT TO SCALE



TRENCH/DRAINFIELD DATA

WIDTH INLET BOTTOM

NUMBER OF TRENCHES
TOTAL LENGTH
ABSORPTION AREA
DISTRIBUTION BOX LEVEL
DISTRIBUTION BOX BAFFLE
DISTRIBUTION BOX PORT

SEPTIC TANK DATA

SEPTIC TANK 1 LEVEL

MANUFACTURER BACKRIVER/NOVATEC

CAPACITY 1300 GAL

SEAM LOC TOP

TANK LID DEPTH 3.5'

BAFFLES NO

BAFFLE FILTER NONE

MANHOLE LOC FRONT, MID, REAR

6" PORT LOC NONE

WATERTIGHT TEST NO

SLOTTED NO

DATE ON LID 3-21-16

PUMP/SEPTIC TANK LEVEL YES

MANUFACTURER BACKRIVER

CAPACITY 1500 GAL

SEAM LOC TOP

TANK LID DEPTH 3.5 - 4'

BAFFLES NO

BAFFLE FILTER NONE

MANHOLE LOC FRONT

6" PORT LOC NONE

WATERTIGHT TEST NO

SLOTTED NO

DATE ON LID 3-1-16

PUMP: MESOS-11

PRE-CONSTRUCTION:

4/28/16 Met Hatfield's on site for layout. All SDA, tank, and lateral stakes present. Trench 1B staked at 64' (should be close to 70') - Hatfield's will add a few ft. to end from middle to equal 34.67' total. Checked elevations of stakes - all within a few inches of rest of trench stakes, except end of 1C1 which is near a perc hole. Hatfield's will step line from house to tank down hill. (SC)

INSTALLATION: 5/12/16 House connection made + line run to area of tanks. Line not stepped down hill - not okay to cover. Jeff from Hatfield's will look at line tomorrow. (SC) 5/12/16

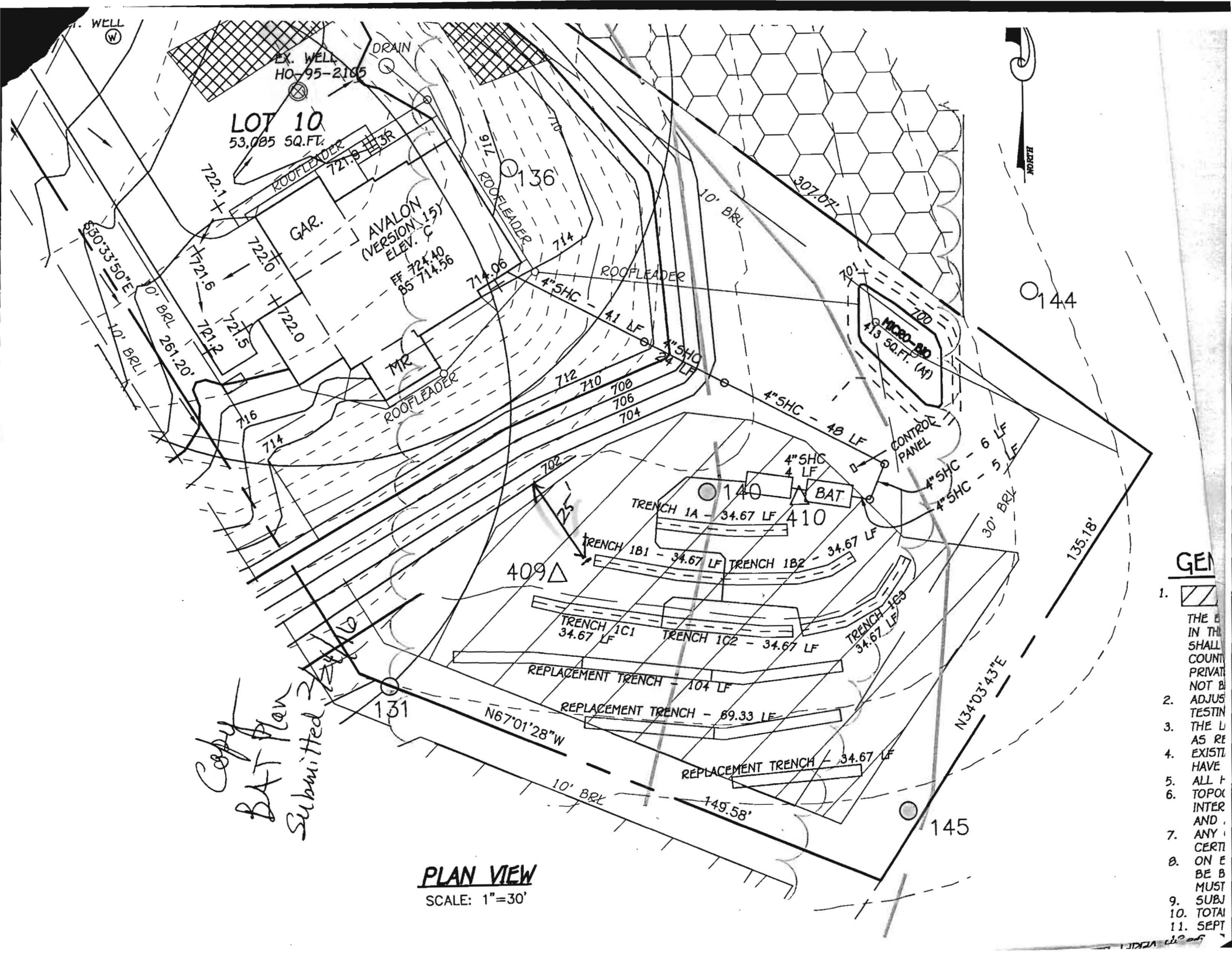
Update: Jeff Williams okay'd current house connection and Hatfield's will not step. (SC)

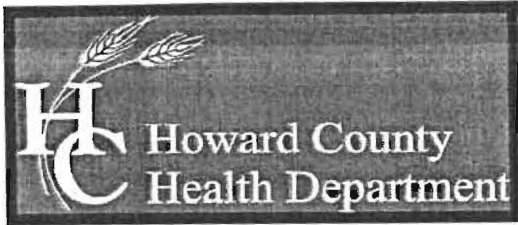
5/31/16 On site while pump tank is being set. No visible cracks on sides or bottom. BAT tank connected to line from house. Pump tank connected to BAT tank. Lots of rock hit in tank holes, mainly @ bottom. (SC) 6/1/16 BAT startup certification received. (SC) 6/6/16 On site while Hatfield's is digging T1. 4' inlet, 5' bottom. All other trenches/laterals complete + open at ends. Using laser while digging. Holes drilled in laterals for trench 1 are free of burs. (SC)

6/7/16 Force main all complete. Need pump + alarm. (SC) 6/15/2016 Pump and

FINAL INSPECTOR DATE OF APPROVAL

alarm working. Around 3' of head in turn-ups. (BE)





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Twitter: HowardCoHealthDep

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

Lot 10

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

THIS AGREEMENT is made this 15th day of May 2014 among Chelsea Knolls, LC, 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 18381 Chelsea Knolls Drive, Mt Airy, Maryland 21771, in the 4th 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 8717 Folio 579.

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.

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.

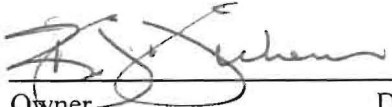
G. This agreement may be voided at any time at the discretion of the County.

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.

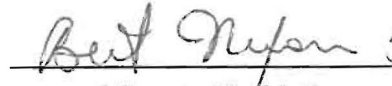
J. Owner acknowledges and agrees that interior renovations to increase the number of bedrooms or an increase in living space shall not be permitted without approval from the County.

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

 4/25/14

Owner Date
Chelsea Knolls, L.C., Russell Dickens, Manager

Owner Date

 5/1/2014

Howard County Health Department

Bricker, Robert

From: Stephanie Tuite <~~Stephanie@fcc-eng.com~~>
Sent: Tuesday, February 16, 2016 3:50 PM
To: Bricker, Robert
Subject: RE: Chelsea Knolls Lot 10
Attachments: NDS PVC drain riser and piping.pdf

"DRAW"

Small PVC drain, looking at a 6" pipe with 12" grate. See attached detail to give you a better idea. Drain should be tied into the roofleader system as I am looking at on the BAT Plan.

Steph

Stephanie Tuite, RLA, PE, LEED AP BD&C
FISHER, COLLINS & CARTER, INC.

From: Bricker, Robert [mailto:~~RBricker@howardcountymd.gov~~]
Sent: Tuesday, February 16, 2016 3:34 PM
To: Stephanie Tuite <~~Stephanie@fcc-eng.com~~>
Subject: RE: Chelsea Knolls Lot 10

Is it an 'Inlet' grate?), a large diameter pipe(?); what are its dimensions? The pipe to micro-bioretenction isn't illustrated.

From: Stephanie Tuite [mailto:~~Stephanie@fcc-eng.com~~]
Sent: Tuesday, February 16, 2016 3:15 PM
To: Bricker, Robert
Subject: RE: Chelsea Knolls Lot 10

It is for lack of a better word, an inlet type structure that will be closed piping to the micro-bioretenction.

Steph

Stephanie Tuite, RLA, PE, LEED AP BD&C
FISHER, COLLINS & CARTER, INC.

From: Bricker, Robert [mailto:~~RBricker@howardcountymd.gov~~]
Sent: Tuesday, February 16, 2016 2:52 PM
To: Stephanie Tuite <~~Stephanie@fcc-eng.com~~>
Subject: Chelsea Knolls Lot 10

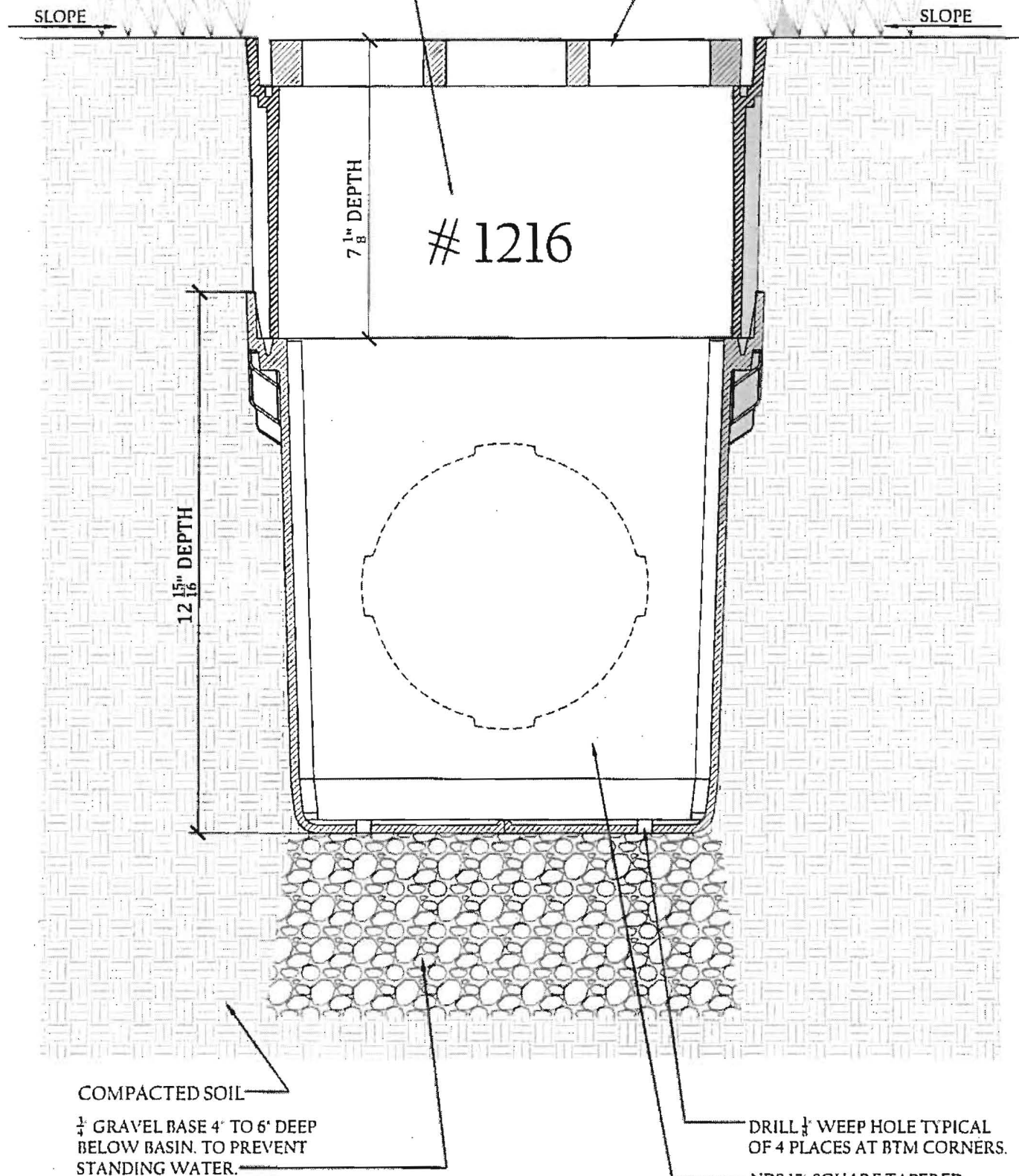
Stephanie,
What is the "Drain" that is located between the house and the well zone?

ROBERT BRICKER, REHS/R.S., L.E.H.S.
ENVIRONMENTAL SANITARIAN II
BUREAU OF ENVIRONMENTAL HEALTH, WELL AND SEPTIC PROGRAM
8930 STANFORD BLVD., COLUMBIA, MD 21045

Phone: Desk, ~~410-313-2694~~, Program, ~~410-313-1771~~, Bureau, ~~410-313-1771~~
Fax: ~~410-313-2648~~

NDS 12" SQUARE TAPERED
POLYPROPYLENE CATCH BASIN
(RISER) W/ U.V. INHIBITORS.

GRATE W/ U.V. INHIBITORS.



NOTE:

- GRATE TO BE ATTACHED TO CATCH BASIN WITH SCREW PROVIDED AT TIME OF INSTALLATION.
- RISER CAN BE CUT TO ACHIEVE EXACT ELEVATION.
- DO NOT USE OVER 5 RISERS WITH CATCH BASIN.

DRILL $\frac{1}{8}$ " WEEP HOLE TYPICAL
OF 4 PLACES AT BTM CORNERS.

NDS 12" SQUARE TAPERED
POLYPROPYLENE CATCH BASIN
W/ U.V. INHIBITORS.

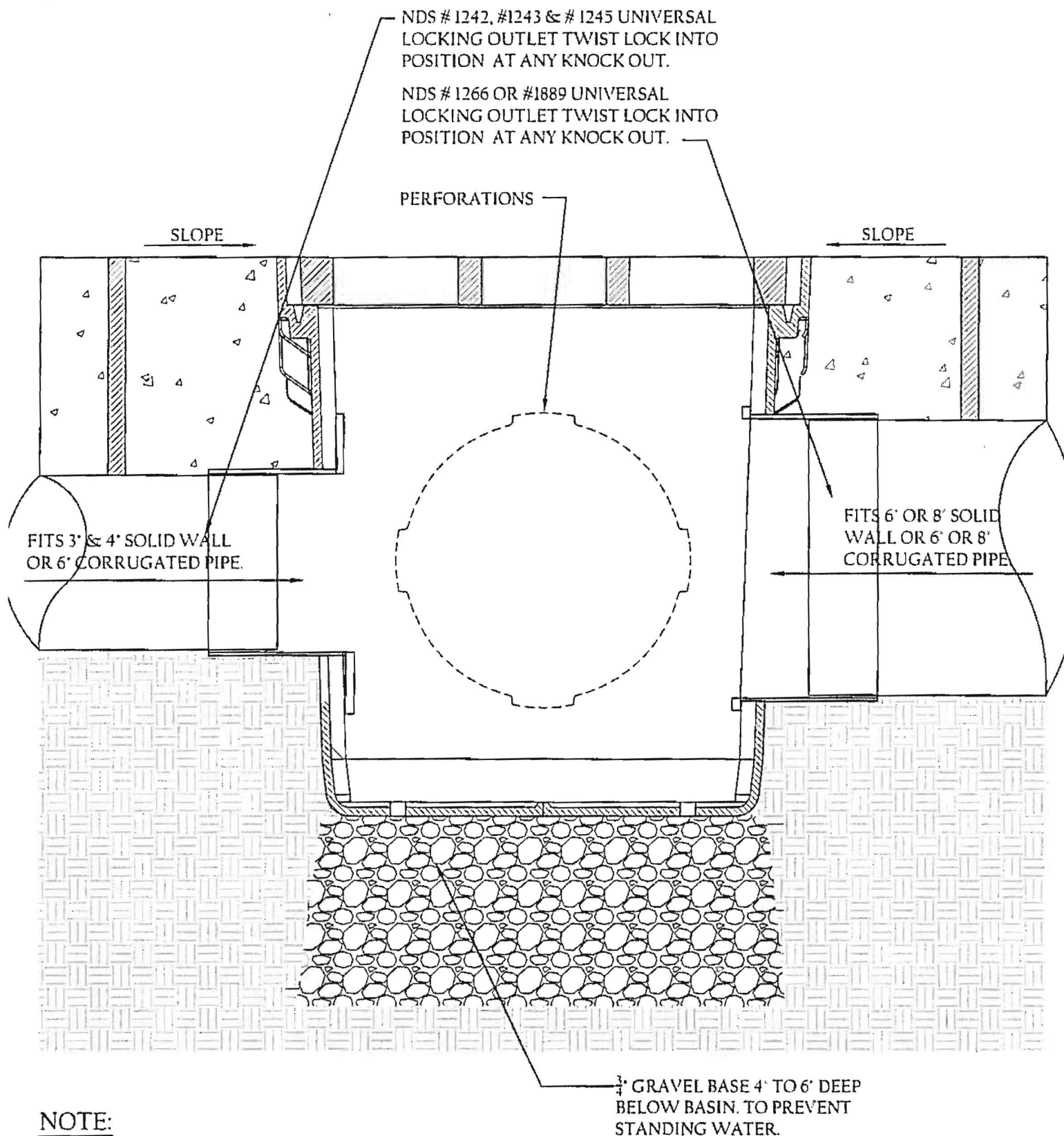
NDS 12" sq. CATCH BASIN WITH RISER INSTALLATION.

LANDSCAPE APPLICATION



NDS
WE PUT WATER IN ITS PLACE

TECHNICAL SERVICES
1.800.825.4750
EOL: 10/11/11



NOTE:

- NDS ADAPTERS THAT FIT THIS BASIN ARE AS FOLLOWS.
1242, # 1243, # 1245 # 1266 & #1889 USE # 1206 IF PLUGGING AN OUTLET.
- PERFORATIONS ON NON OPEN SIDES AND BTM. TO BE CUT OUT WHEN ADDING EXTRA OUTLETS.

NDS 12" sq. CATCH BASIN PLUMBING CONNECTIONS.

Back River Pre-Cast, LLC

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

Letter of Certification

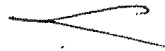
This is to certify that the Norweco Singlair TNT 600 GPD Septic Tank installed at 18380 Chelsea Knolls Dr., Mt. Airy, MD 21771 on May 31, 2016 was installed according to the manufacture's specifications.

Installer: Jeff Reiter

Property Owner: NVR

Permit #

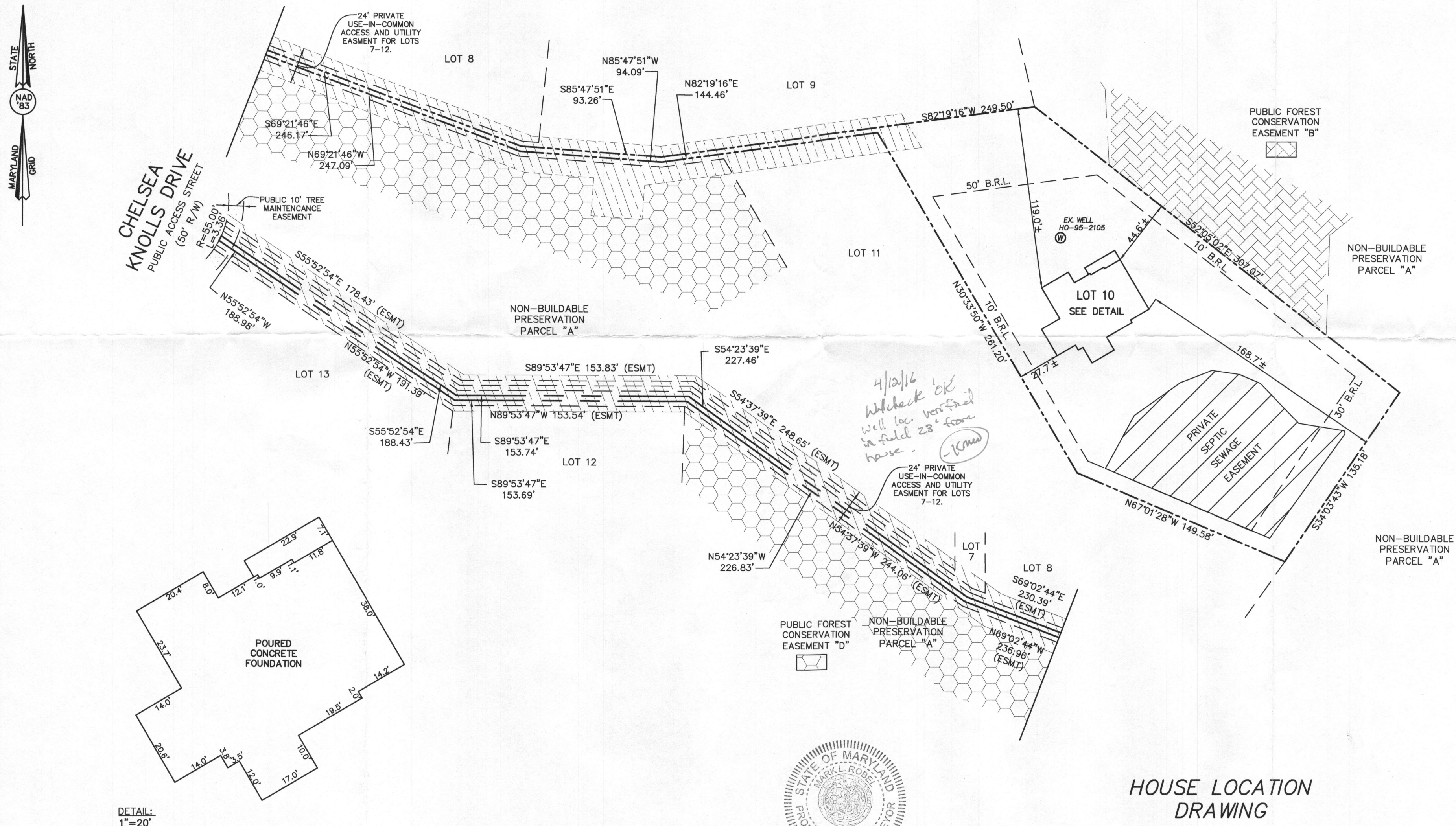
THIS CERTIFICATION IS FOR INSTALLATION ONLY. THE 5-YEAR OPERATIONS & MAINTENANCE AGREEMENT FROM DATE OF INSTALLATION WILL ONLY GO INTO EFFECT AFTER BACK RIVER PRE-CAST, LLC RECEIVES FINAL AND FULL PAYMENT FOR THE SYSTEM.



MATTHEW GECKLE
Vice-President

GENERAL NOTES:

- 1) THIS LOCATION DRAWING IS PREPARED FOR THE BENEFIT OF THE CLIENT SIGNING THE HOUSE LOCATION SURVEY APPROVAL FORM INsofar AS IT IS REQUIRED BY A LENDER OR TITLE INSURANCE COMPANY OR ITS AGENTS IN CONNECTION WITH THE CONTEMPLATED TRANSFER, FINANCING OR REFINANCING OF THE PROPERTY SHOWN HEREON. UNLESS INDICATED AS BEING A BOUNDARY SURVEY, THIS LOCATION DRAWING IS NOT INTENDED FOR USE IN THE ESTABLISHMENT OF PROPERTY LINES AND IS NOT TO BE RELIED UPON FOR THE ESTABLISHMENT OR LOCATIONS OF FENCES, GARAGES, BUILDINGS OR OTHER EXISTING OR FUTURE IMPROVEMENTS. AS A RESULT, THIS LOCATION DRAWING DOES NOT PROVIDE FOR ACCURATE IDENTIFICATION OF PROPERTY LINES, BUT SUCH IDENTIFICATION MAY NOT BE REQUIRED FOR THE TRANSFER OF TITLE OR SECURING FINANCING FOR RE-FINANCING.
- 2) SUBJECT PROPERTY IS SHOWN IN ZONE X ON THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP OF HOWARD COUNTY, MARYLAND, COMMUNITY PANEL No. 24027C0010D 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 1.0.'
- 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-95-2105 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 10/04/2016.
- 7) BUILDING PERMIT #B-15005534



HOUSE LOCATION DRAWING

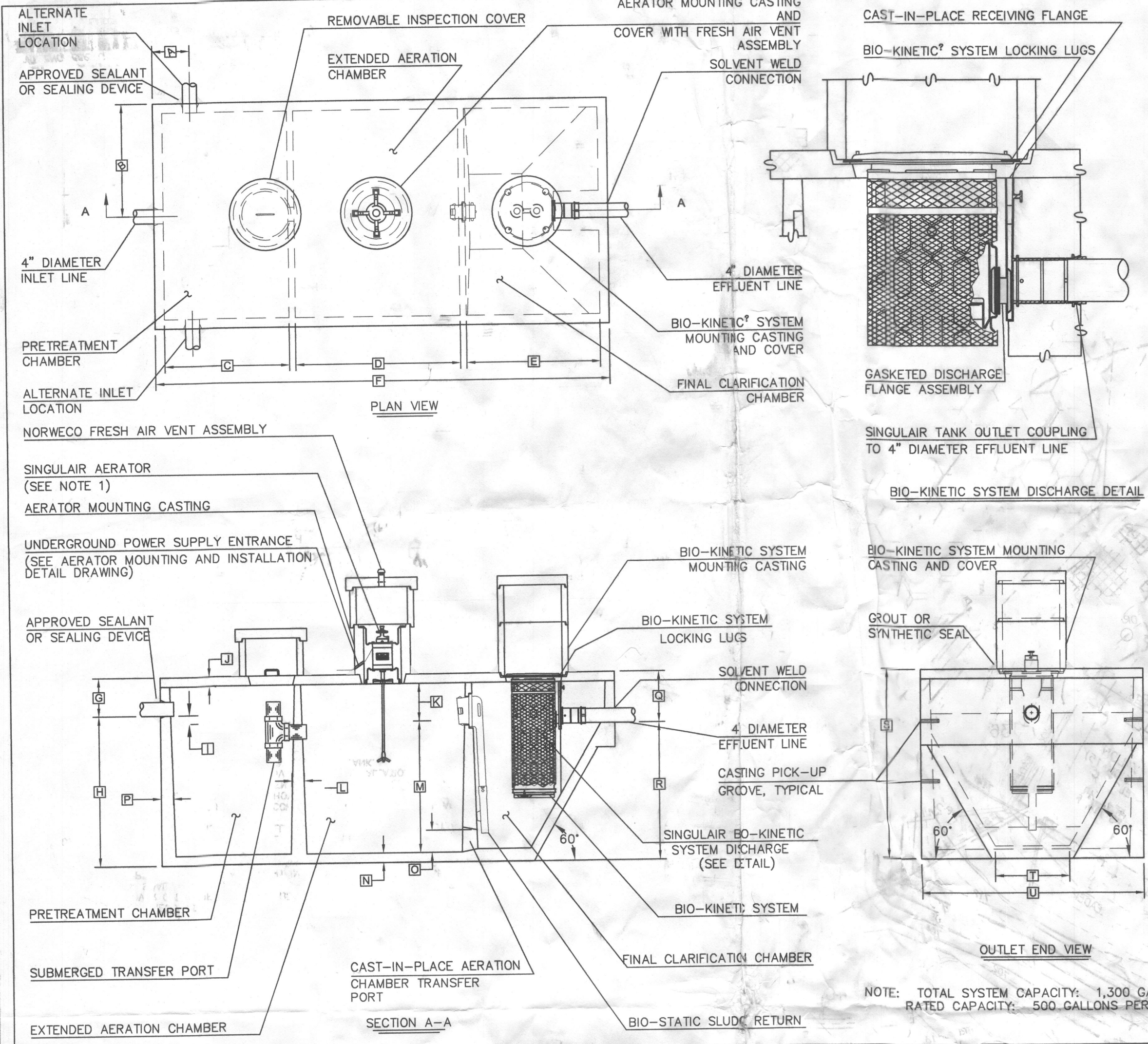
FOUNDATION LOCATION: 3/29/16
 FINAL LOCATION:
 BOUNDARY SURVEY:
 SCALE: 1"=50'
 DATE: 3/31/16
 DRAWN BY: GAD
 CHECKED BY: MLR
 PROJECT No.: 13038-3001

LOT 10
 CHELSEA KNOLLS
 LOTS 1 THRU 14,
 NON-BUILDABLE PRESERVATION
 PARCELS 'A' & 'B' AND
 NON-BUILDABLE BULK PARCEL 'C'
 PLAT NOS. 22016 THRU 22019
 FOURTH ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

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

#18380 CHELSEA KNOLLS DRIVE
 B.R.L. = BUILDING RESTRICTION LINE
 TOP OF FOUNDATION ELEVATION = 723.2'±

Mark L. Rober
 PROPERTY LINE SURVEYOR
 REG. #339
 4/08/16
 DATE



GENERAL NOTES:

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

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

DATE: _____

NAME: _____

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

DATE: _____

NAME: _____

CRITICAL DIMENSIONS

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

norweco 3-26-07 B

U.S. AND FOREIGN PATENTS PENDING

LOW-PROFILE SINGULAR BIO-KINETIC WASTEWATER TREATMENT SYSTEM MODEL TWP-400 GPD

© MMVIT

PC-5-7091

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 COVER OVER THE BAT SHALL BE 3 FEET.
- 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.
- ANY ELECTRICAL WORK FOR THE BAT INSTALLATION MUST BE PERFORMED BY A LICENSED ELECTRICIAN.
- AN AGREEMENT AND EASEMENT HAS BEEN COMPLETED AND SIGNED BY ALL APPLICABLE PARTIES, AND RECORDED IN THE LAND RECORDS OF HOWARD COUNTY, LIBER 15565, FOLIO 065.
- THE HEALTH DEPARTMENT REQUIRES DOCUMENTATION FOR THE START-UP CERTIFICATION FROM THE MANUFACTURER PRIOR TO FINAL APPROVAL OF THE INSTALLATION.
- SURFACE RUNOFF SHALL BE DIRECTED AROUND THE BAT TANK.

SEPTIC SYSTEM ELEVATIONS

FPE = 724.40
BSE = 714.58
INV. OUT OF HOUSE = 710.04
PROP. GROUND AT C/O = 712.1
INV. INTO C/O = 707.58
INV. OUT OF V/O = 702.58
PROP. GROUND AT C/O = 703.2
INV. INTO C/O = 701.14
EX. GROUND A C/O = 700.2
INV. INTO C/O = 698.88
EX. GROUND A C/O = 700.4
INV. INTO C/O = 698.48
INV. OUT OF V/O = 698.36
EX. GROUND (BAT TANK) = 700.9
TOP OF BAT ANK = 699.26
COVER OVER AT TANK = 1.64 FT
INVERT INTO AT TANK = 698.28
INVERT INTO BAT TANK = 697.93
EX. GROUND (PUMP TANK) = 701.6
TOP OF PUMP TANK = 698.6
COVER OVER PUMP TANK = 3 FT
INVERT INTO PUMP TANK = 697.85
INVERT OUT OF PUMP TANK = 699.60

LOW PRESSURE DOSING SYSTEM - INITIAL INSTALLATION

TRENCH	GROUND ELEV.	PIPE INVERT ELEV.	TRENCH LENGTH (FT)	LATERAL PIPE LENGTH (FT)	PERFORATION DIAMETER (IN)	HEAD (FT)	PERFORATION FLOW RATE (GPM)	PERFORATION SPACING (FT)	NUMBER OF OFFICES	TRENCH FLOW RATE (GPM)
1A	701.2	697.2	34.67	32.20	5/16	2	1.63	4.95	7	11.41
1B1	700.5	696.5	34.67	31.78	5/16	2.7	1.89	5.78	6	11.34
1B2	700.5	696.5	34.67	31.78	5/16	2.7	1.89	5.78	6	11.34
1C1	699.9	695.9	34.67	31.21	5/16	3.3	2.09	6.93	5	10.45
1C2	699.9	695.9	34.67	31.21	5/16	3.3	2.09	6.93	5	10.45
1C3	699.9	695.9	34.67	31.21	5/16	3.3	2.09	6.93	5	10.45
TOTAL TRENCH FLOW RATE										65.44

TRENCH DESIGN

TRENCH	GROUND ELEV.	TOP OF STONE ELEV.	PIPE INVERT ELEV.	DEPTH TO STONE FROM GROUND	DEPTH OF STONE	BOTTOM OF TRENCH ELEV.	EFFECTIVE DEPTH AT	EFFECTIVE DEPTH (D)	WIDTH OF ENGINES (W)	TRENCH SPACING
1A	701.2	697.7	697.2	3.5'	1.5'	696.2	4'	1'	3.0'	10'
1B1	700.5	697.0	696.5	3.5'	1.5'	695.5	4'	1'	3.0'	10'
1B2	700.5	697.0	696.5	3.5'	1.5'	695.5	4'	1'	3.0'	10'
1C1	699.9	696.4	695.9	3.5'	1.5'	694.9	4'	1'	3.0'	10'
1C2	699.9	696.4	695.9	3.5'	1.5'	694.9	4'	1'	3.0'	10'
1C3	699.9	696.4	695.9	3.5'	1.5'	694.9	4'	1'	3.0'	10'

SEPTIC SYSTEM DESIGN

4 BEDROOM HOUSE
LOADING RATE = 600 GPD
APPLICATION RATE = 0.8
EFFECTIVE SIDEWALL BEGINS AT 4.0 FEET
TRENCH DEPTH = 5 FEET
TRENCH WIDTH (W) = 3 FEET
EFFECTIVE DEPTH (D) = 1.0 FEET
SF OF DRAINFIELD = 600 GPD / 0.8 = 750 SF
COEFFICIENT OF REDUCTION OF TRENCH LENGTH = (W+2)/(W+1+2D) = (3+2)/(3+1+2(1.0)) = 0.83
TRENCH LENGTH = 750 SF x 0.83 / 3 = 207.5 FEET (USE 208 FEET)
TRENCH SPACING = 20+W = (2(1.0) + 3) = 5 USE 10'

FRICITION LOSS IN 3" PIPE FITTINGS:

9 1/8 HB x 6 FEET PER FITTING = 54 EQUIVALENT FEET OF PIPE
5 TEE/CROSS x 17 FEET PER FITTING = 85 EQUIVALENT FEET OF PIPE
1 UNION x 4 FEET PER FITTING = 4 EQUIVALENT FEET OF PIPE
4 ELBOWS x 12 FEET PER FITTING = 48 EQUIVALENT FEET OF PIPE
TOTAL EQUIVALENT FEET OF PIPE = 191 FT

TOTAL LINEAR FEET OF 3" SCH. 40 PVC = 115.9 LF + 191 LF = 306.9 LF

DYNAMIC HEAD
306.9 LF x 0.96 FT PER 100 LF OF PIPE = 2.9 FT OF FRICTION HEAD
DISTAL HEAD = 2.0 FT
VERTICAL FROM PUMP OFF TO DISCHARGE = 4.5 FT OF STATIC HEAD
VERTICAL FROM DISCHARGE TO TRENCH = 0 FT
TOTAL DYNAMIC HEAD = 9.4 FT

PIPE VOLUMES
115.9 LF (3" SCH. 40 PIPE) X 38.4 GALLONS PER 100 LF = 44.5 GALLONS
189.4 LF (1.5" SCH. 40 PIPE) X 10.6 GALLONS PER 100 LF = 20.1 GALLONS

MINIMUM DOSE
MINIMUM DOSE = (5 X LATERAL PIPE VOLUME) + (FORCE MAIN & MANIFOLD)
= (5 X 20.1) + (44.5)
= 145 GALLONS

145 GALLONS IS MORE THAN 1/6 DESIGN FLOW (600/6=100)
USE 196.2 GALLON DOSE (145 GALLON MINIMUM)
(RUN TIME = 3 MIN (65.4 GPM X 3 = 196.2 GALLON DOSE))

PUMP NEEDS TO HANDLE 65.4 GPM AT 9.4 FT OF HEAD
USE 0.4 HP (ME40 PUMP)

PROFESSIONAL CERTIFICATION

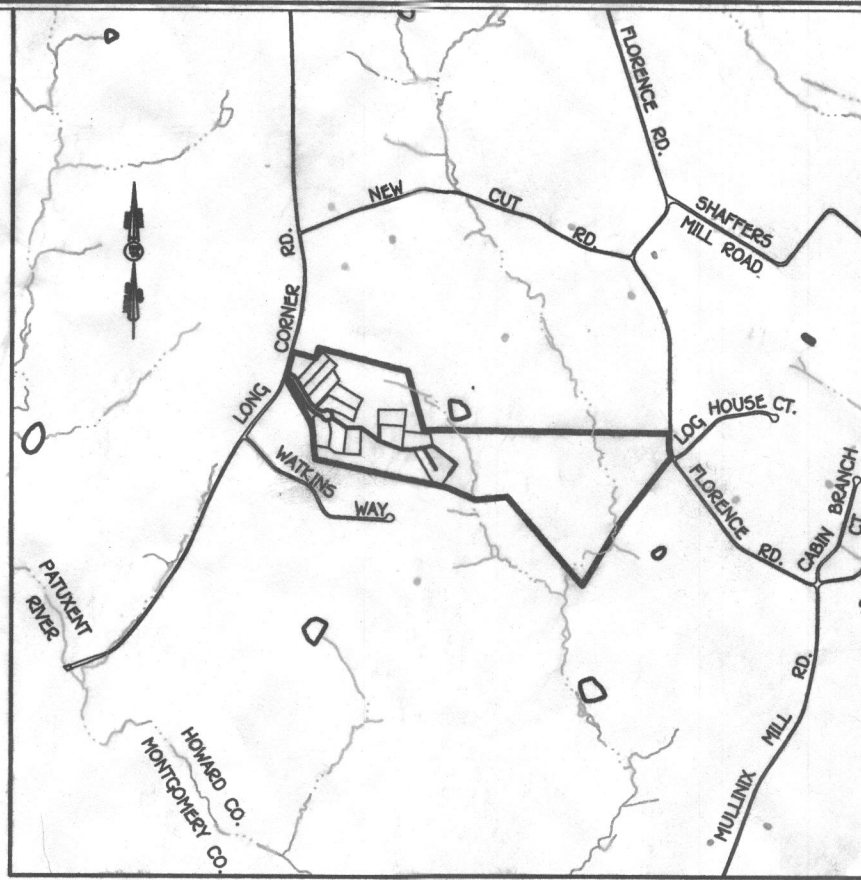
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 38386, EXPIRATION DATE: 01/12/2018.

Stephanie J. Smith 2/23/16
Signature Of Professional Engineer DATE

OWNER
CHELSEA KNOLLS, LC
1355 BEVERLY RD, SUITE 240
MCLEAN, VIRGINIA 22101
(703) 734-9730
(301) 720-3021

DEVELOPER
RYAN HOMES, INC.
ATTN: KEVIN BOWSER
720 PATUXENT WOODS DRIVE
COLUMBIA, MARYLAND 21046
410-796-0980

- LEGEND**
- EXISTING 2' CONTOURS
 - EXISTING 10' CONTOURS
 - SOIL LINES AND TYPES
 - DENOTES FAILED PERC
 - DENOTES PASSED PERC
 - DENOTES EXISTING FOREST CONSERVATION EASEMENT
 - DENOTES AREA OF WELL BOX BEING REMOVED
 - DENOTES PASSED PERC JULY-2014
 - DENOTES AN EXISTING WELL
 - SPOT ELEVATION
 - EXISTING PERIMETER TREES FROM 12-072



VICINITY MAP
SCALE : 1" = 2000'
HO. CO. MD. ADC MAP 7, GRID D8

BENCH MARKS

STA 0+00 ELEV 786.421
N. 603.004.896
E. 1,333,265.9

STA 0+64 ELEV 714.283
N. 602,649.523
E. 1,271,163.330



- GENERAL NOTES:**
- THIS AREA DESIGNATES A PRIVATE SEWERAGE EASEMENT OF AT LEAST 10,000 SQUARE FEET AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWERAGE DISPOSAL. IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWERAGE IS AVAILABLE. THESE EASEMENTS SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWERAGE SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWERAGE EASEMENT. RECORDATION OF A MODIFIED SEWERAGE EASEMENT SHALL NOT BE NECESSARY.
 - ADJUSTMENTS TO SEPTIC EASEMENT AREA IS NOT PERMITTED WITHOUT ADDITIONAL TESTING.
 - THE LOTS SHOWN HEREON COMPLY WITH THE MINIMUM OWNERSHIP WIDTH AND LOT AREA AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT.
 - EXISTING WELLS AND/OR SEWERAGE EASEMENTS WITHIN 100 FEET OF THE PROPERTY HAVE BEEN SHOWN FROM ALL REASONABLE EFFORTS.
 - ALL HOUSE SITES SHOWN COMPLY WITH MINIMUM BUILDING RESTRICTION REGULATIONS.
 - TOPOGRAPHY SHOWN IS FROM HOWARD COUNTY GIS TOPOGRAPHY AT 2' CONTOUR INTERVAL AND SUPPLEMENTED BY FIELD RUN TOPOGRAPHY BY MILDENBERG, BOENDER & ASSOC. ON OR ABOUT SEPT. 2001.
 - ANY CHANGES TO A PRIVATE SEWERAGE EASEMENT SHALL REQUIRE A REVISED PERC CERTIFICATION PLAN.
 - ON EVERY LOT IN THIS SUBDIVISION, ALL SEPTIC SYSTEM EFFLUENT DISTRIBUTION WILL BE BY PRESSURIZED SYSTEMS, AS IT FOLLOWS, ALL SEPTIC SYSTEM INSTALLATION PLANS MUST INCLUDE LOW-PRESSURE DISTRIBUTION DESIGN.
 - SUBJECT PROPERTY ZONED: RC-100.
 - TOTAL AREA OF PROPERTY: 83,089 SQ. FT. OR 1.22 AC.
 - SEPTIC EASEMENT SUBJECT TO HOWARD COUNTY HEALTH DEPARTMENT REVIEW.
 - CONTRACTOR/BUILDER TO VERIFY ELEVATION IN THE FIELD BEFORE BEGINNING ANY CONSTRUCTION.
 - BOUNDARY OF LOT BASED ON PLAT #22017.
 - TOPOGRAPHY SHOWN HEREON TAKEN FROM F-07-072 WHICH IS BASED ON FIELD RUN TOPOGRAPHIC SURVEY CONDUCTED BY MILDENBERG, BOENDER & ASSOCIATES, INC. IN SEPTEMBER, 2001. TOPOGRAPHY IN NON-DEVELOPED AREAS IS BASED ON HOWARD COUNTY 200 SCALE TOPOGRAPHY.
 - NO WETLANDS EXIST ON THIS LOT.

NOTE

THE EXISTING WELL SHOWN ON THIS PLAN, TAG NO. HO #95-2105 HAS BEEN FIELD LOCATED BY FISHER, COLLINS & CARTER, INC., PROFESSIONAL LAND SURVEYORS AND IS ACCURATELY SHOWN.

SOILS LEGEND

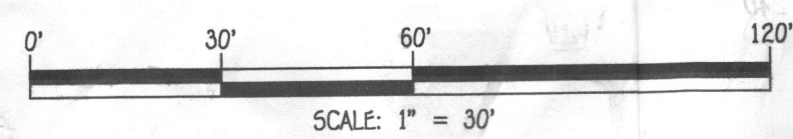
SOIL	NAME	CLASS
MB2	Mt. Airy channery loam, 3 to 8 percent slopes, moderately eroded	A
MC2	Mt. Airy channery loam, 8 to 15 percent slopes, moderately eroded	A

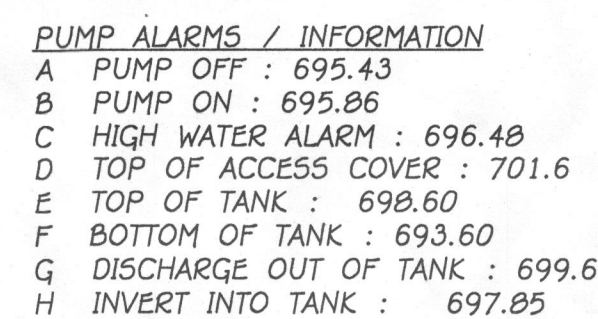
Approved Septic System Plan
Howard County Health Department
NORWECO TWP-400
W/ MONARCH 1500 gal Pump Tank
& Myers 0.4 hp (ME40) Pump
3/2/2016
Date

BAT SITE PLAN & PERC RECERTIFICATION PLAN
LOT 10
CHELSEA KNOLLS
13300 CHELSEA KNOLLS DRIVE

ZONING: RC-DEO
TAX MAP NO. 12 GRID NO. 5 PARCEL NO. 78
FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE: FEBRUARY, 2016
SHEET 1 OF 2

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTRAL SOURCE OFFICE PARK - 10777 BALDWIN NATIONAL PIKE
ELLSWORTH CITY, MARYLAND 21042
(410) 461-2895





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

PROFESSIONAL CERTIFICATION

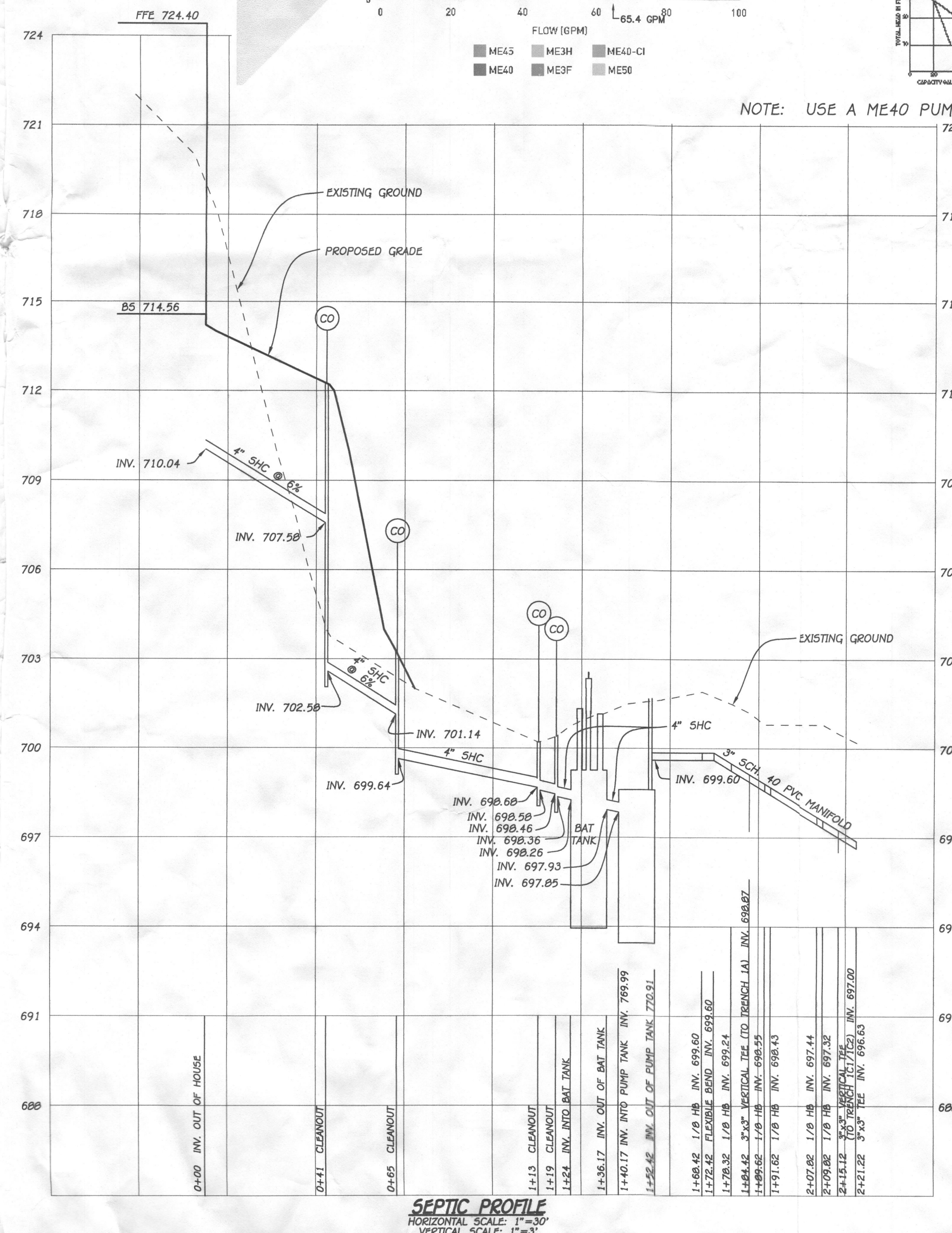
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Signature Of Professional Engineer 2/23/16
DATE

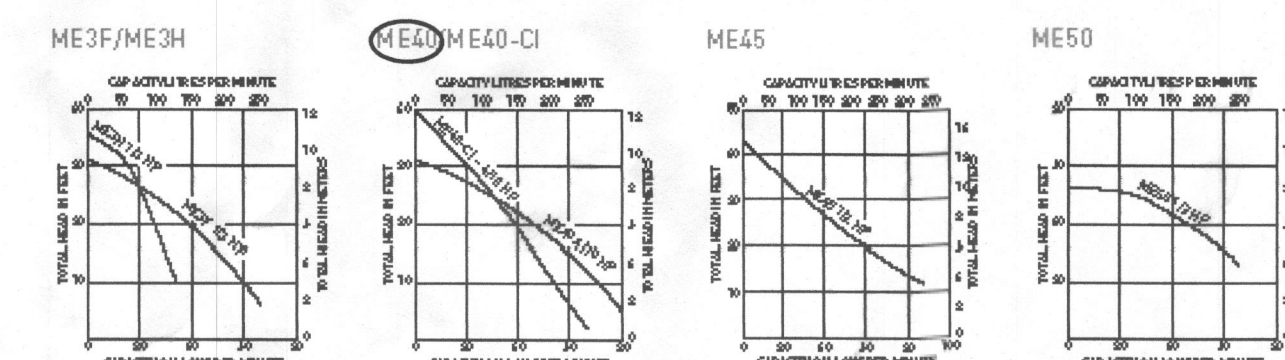


OWNER
ELSEA KNOLLS, LC
BEVERLY RD. SUITE
LEAN, VIRGINIA 22101
(703) 734-9730
(301) 720-3021

DEVELOPER
RYAN HOMES, INC.
ATTN: KEVIN BOWSER
9720 PATUXENT WOODS DRIVE
COLUMBIA, MARYLAND 21046
410-796-0980



NOTE: USE A ME40 PUMP



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

Approved Septic System Plan
Howard County Health Department

694 NORWECO TMTLP-500
w/ MONARCH 1500 gal Pump Tank
a Meyers 4thp (ME40) Pump
691 Phidder 3/2/2016
Signature Date or equiv

BAT SITE PLAN

LOT 10
CHELSEA KNOLLS
18380 CHELSEA KNOLLS DRIVE

TAX MAP No. 12 GRID No. 5 PARCEL No. 78
FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE: FEBRUARY, 2016
SHEET 2 OF 2

Trust The Pump Experts.

Myers has a market leading portfolio of horsepower and pump curve combinations, delivered with distinctive service.

Features

RELIABLE AND TOUGH

- Rugged, oil-cooled motor provides continuous bearing lubrication and maximizes heat dissipation
- EXTENDED SERVICE**
- Lubricated ball bearings and shaft seal for longer service life

MOTOR PROTECTION

- Long-life carbon/ceramic seal protects motor against water leakage

THERMAL OVERLOAD

- Heat sensor overload protection with automatic reset when motor cools to safe operating temperature

NO DRILLING REQUIRED

- Anti-airlock hole in base reduces added labor

EASY SERVICEABILITY

- Pump, intake screen volute base, switch and power cord are serviceable

Family Curve

