

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: 12/30/16 **ONSITE SEWAGE DISPOSAL SYSTEM** P 559890
 APPROVAL DATE: 11/08/16 **PERMIT: CONSTRUCTION** A _____
 PROPERTY ADDRESS: 3461 Daisy Road
 SUBDIVISION: _____ LOT: 10 TAX ID: 04-319923
 CONTRACTOR: South Carroll Backhoe EMAIL: scbackhoe@comcast.net
 CONTRACTOR ADDRESS: 4410 Salem Bottom Road, Westminster, MD 21157 PHONE: 410-596-3618

CONTRACTOR CERTIFIED FOR BAT INSTALLATION: MDE MANUFACTURER:

PROPERTY OWNER: Taylor Properties LLC EMAIL: _____
 OWNER ADDRESS: 9321 Spring Water Path, Jessup, MD 20794 PHONE: 443-631-2070

BAT UNIT MODEL: Norweco 500 TNT PUMP SIZE: WS03B Goulds PUMP TANK CAPACITY: 1500

OPERATION & MAINTENANCE AGREEMENT DATE SIGNED: 11/14/16 DATE RECORDED: 11/14/16

DISTRIBUTION SYSTEM: GRAVITY PRESSURE DOSED BEDROOMS: 5 APPLICATION RATE: 1.2

TRENCHES:	LINEAR FEET REQUIRED: <u>126</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>5</u>

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

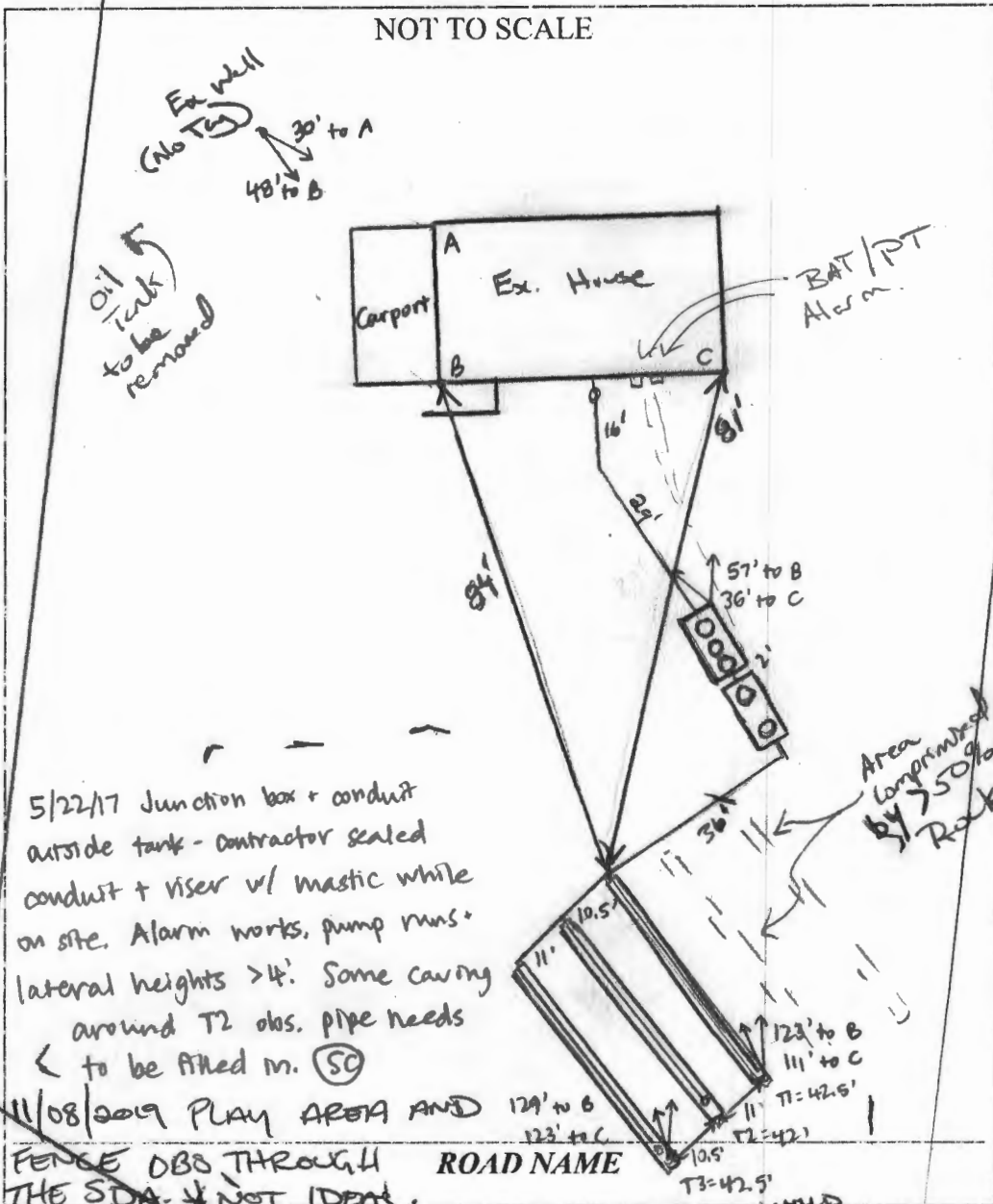
NOTES:

ISSUED BY: Jeff Williams ISSUE DATE: 12/30/16 EXPIRATION DATE: 12/30/17

- 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 CHAMBERS
- NOTE: AN ELECTRICAL PERMIT IS REQUIRED FOR INSTALLATION OF ANY ELECTRICAL COMPONENTS OF THE SYSTEM
 ELECTRICAL PERMIT ISSUED E 16004501
- 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
3'	4'	8'
NUMBER OF TRENCHES		3
TOTAL LENGTH		127'
ABSORPTION AREA		381' - SIDENALL
DISTRIBUTION BOX LEVEL		_____
DISTRIBUTION BOX BAFFLE		_____
DISTRIBUTION BOX PORT		_____

SEPTIC TANK DATA	
SEPTIC TANK I LEVEL	YES
MANUFACTURER	BACKRIVER/NO RW/ECO
CAPACITY	1300 GAL
SEAM LOC	TOP
TANK LID DEPTH	2.5'
BAFFLES	NO
BAFFLE FILTER	NO
MANHOLE LOC	FRONT, MID, REAR
6" PORT LOC	NONE
WATERTIGHT TEST	YES
SLOTTED	NO
DATE ON LID	9-27-16 (STAMP)

PUMP/SEPTIC TANK LEVEL	
MANUFACTURER	BABYLON
CAPACITY	1500 GAL
SEAM LOC	TOP
TANK LID DEPTH	2.5'
BAFFLES	INLET
BAFFLE FILTER	NO
MANHOLE LOC	FRONT + REAR
6" PORT LOC	NONE
WATERTIGHT TEST	YES
SLOTTED	NO
DATE ON LID	12-18-16

5/22/17 Junction box + conduit outside tank - contractor sealed conduit + viser w/ mastic while on site. Alarm works, pump runs. lateral heights > 4'. Some caving around T2 obs. pipe needs to be filled in. (S)

11/08/2019 Play AREA AND FENCE OBS THROUGH ROAD NAME THE SDA - NOT IDENT

PRE-CONSTRUCTION: Caving is over Crown w/ CURBS.
 2/21/17 Area staked. OK to cut BAT and P.T. Any P.T. on plan is a cylindrical style tank. Contractor will have to adjust float specs to fit close volume correct w/ plans. Also Pump model speed on plan is not made anymore. Told contractor he should call engineer to confirm alterations. Several large trees will need to be cut down prior to installing trenches. Unable to check grade @ this time will do so @ time of INSTALLATION: (K) install (K) 3/1/17 SDA cleared below trench - laid out 2-42' trenches. (S)
 2/27/17 S. Carroll dug tank holes, waiting for delivery. Old ^{septic} tank abandoned. On site during Norweco delivery - no cracks on sides or bottom of tank. (S) 2/28/17 T3 dug + stone added. S. Carroll hit rock at end of T2, starts @ 5' depth to bottom, continues for 20' from T2 end. Stone 4' in T3. Layout two trenches once area is cleared. Both tanks full for 24 hr presoak of watertight test. (S) 3/2/17 S. Carroll digging T3, 4' to stone. Only occasional rock in lower 2 trenches. (S) 3/3/17 House connection ran up to house. No connection thru wall. F.M. on Need p/a + startup of BAT. (K) 5/15/17 Nothing working on pump or alarm. BAT unit running. No conduit. Need conduit
 FINAL INSPECTOR M. W. DATE OF APPROVAL 11/8/2019
 w/ Junction outside tank. (K) #Corrective Action

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 3461 Daisy Rd., Woodbine, MD 21797 February 27, 2017 was installed according to the manufacture's specifications.

Installer: Mark Seal

Property Owner: Taylord Properties, LLC

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

CIRCUIT COURT FOR HOWA
 8360 COURT AVENUE
 ELICOTT CITY, MD 21043
 11/14/2016 15:10:02

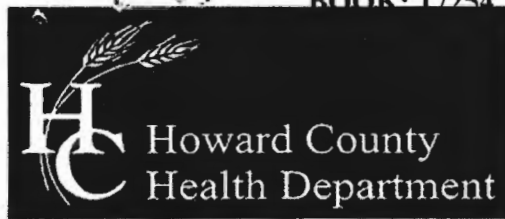
CREDIT CARD
 MC SALE

CARD # XXXXXXXXXXXXXXX010
 Chip Card: Debit MasterCard
 Chip Card AID: A0000000041010
 ATC: 0047
 TC: 7958F9A40D2BBE52
 INVOICE 0001
 SEQ #: 0001
 Batch #: 000258
 CLERK 0008
 Approval Code: 059603
 Entry Method: Chip Read
 Mode: Issuer
 SALE AMOUNT \$60.00

NO REFUND WITHOUT COURT ORDER

CUSTOMER COPY

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
 Name: Taylor
 Ret: 173
 LR - Agreement Surcharge 1x 40.00 40.00
 Subtotal: 60.00
 Total: 60.00
 CRD-Credit 60.00
 Credit Card Confirmation: 54603
 11/14/2016 15:11
 #7285959 / 1247/109
 CC13-LS
 Thank you for visiting us today



Bureau of Environmental Health

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TDD 410-313-2323 | Toll Free 1-866-313-6300
www.hchealth.org
Facebook: www.facebook.com/hocohealth
Twitter: HowardCoHealthDep

LR - Agreement 20.00
Recording Fee
Name: taylor
Rep: 173
LR - Agreement 40.00
SubTotal: 60.00
Total: 60.00
11/14/2016 03:11
CC13-LS
#7285959 CC0503 -
Howard Co
Columbia/CC05.03.08 -
Register 08

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 14th day of NOVEMBER 2016 among
Jennifer Taylor c/o Taylor Properties 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
3441 Daisy Road, in the 4 Election District of Howard
County, Maryland, and the deed and subdivision plat of the property is recorded among the Land
Records of Howard County, Maryland, Tax Map #, Block #, Parcel # 18, Deed
Reference # 17060 / 00192 and Tax Account # 1404319923 ("the Property").

WHEREAS, The Property 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
TNTLP unit by Norweco or Approved Equal Capacity.

NOW, THEREFORE, the parties hereto agree as follows:

- A. Owner hereby grants to the County the right to enter upon the Property at any reasonable time
with prior notice 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.
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.

HOWARD COUNTY CIRCUIT COURT (Land Records) WAR 2016-0001, MSA_CE53_17246. Date available 11/17/2016. Printed 02/09/2017.

E. This agreement shall run with the land and upon Owner's taking title to the Property 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 Property that the system shall require maintenance or other attention. Upon taking title to the Property, 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.

Beal Ryan 11/14/2016
Howard County Health Department

[Signature] 11/14/16
Owner #1 Signature Date

Jennifer Taylor
Owner #1 Print Name

Owner#2 Signature Date

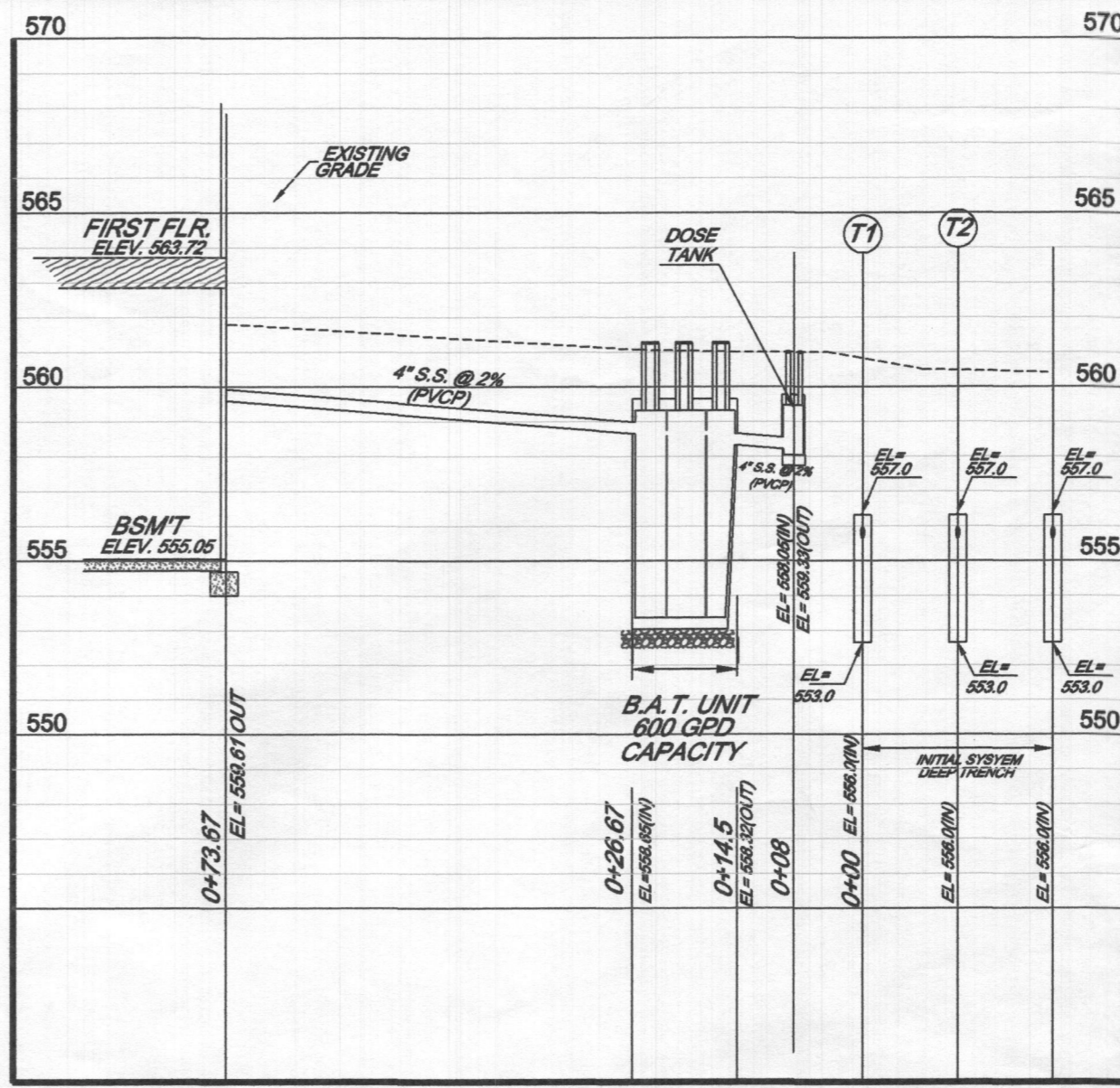
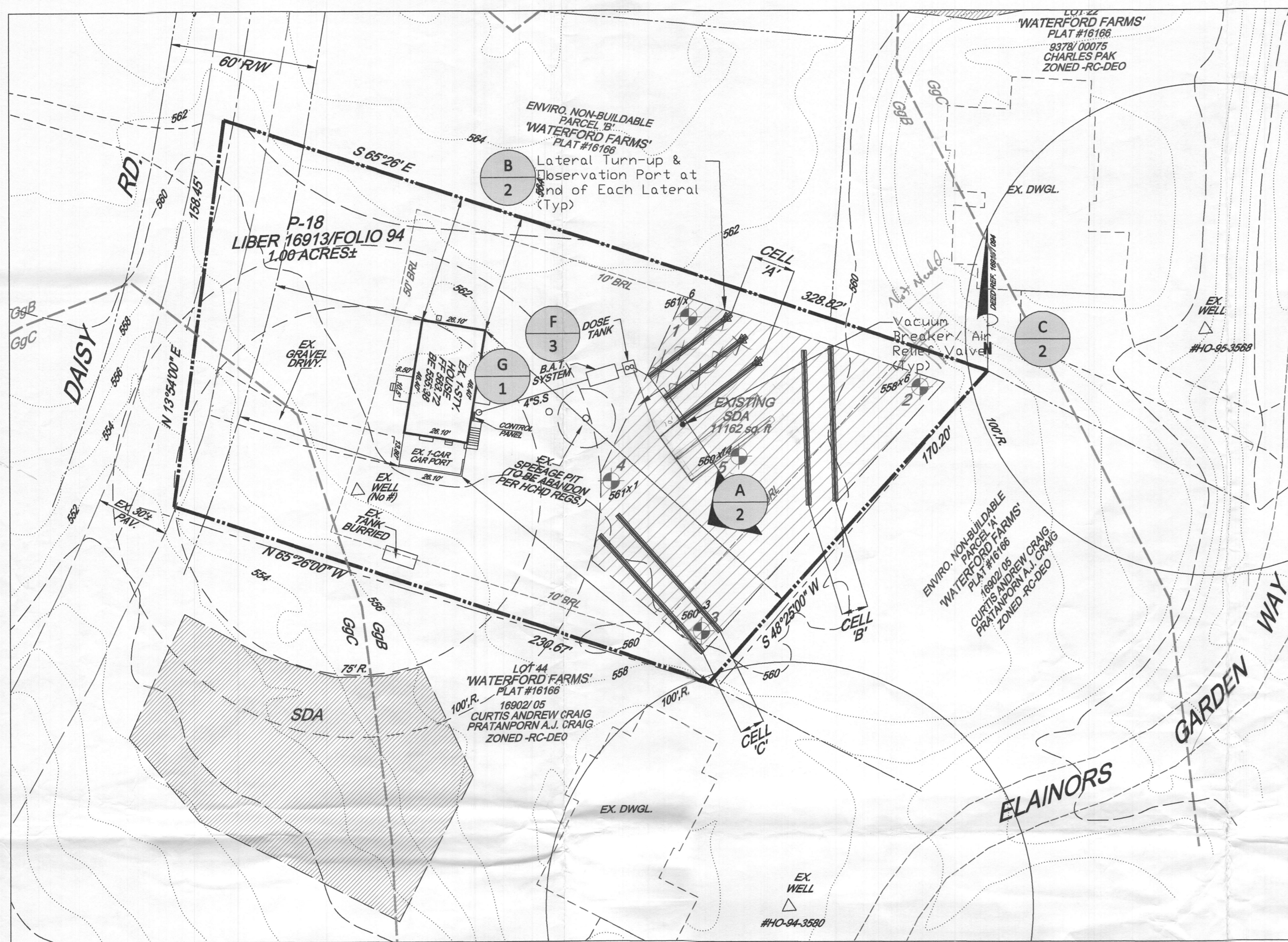
Owner #2 Print Name

Buyer #1 Signature Date

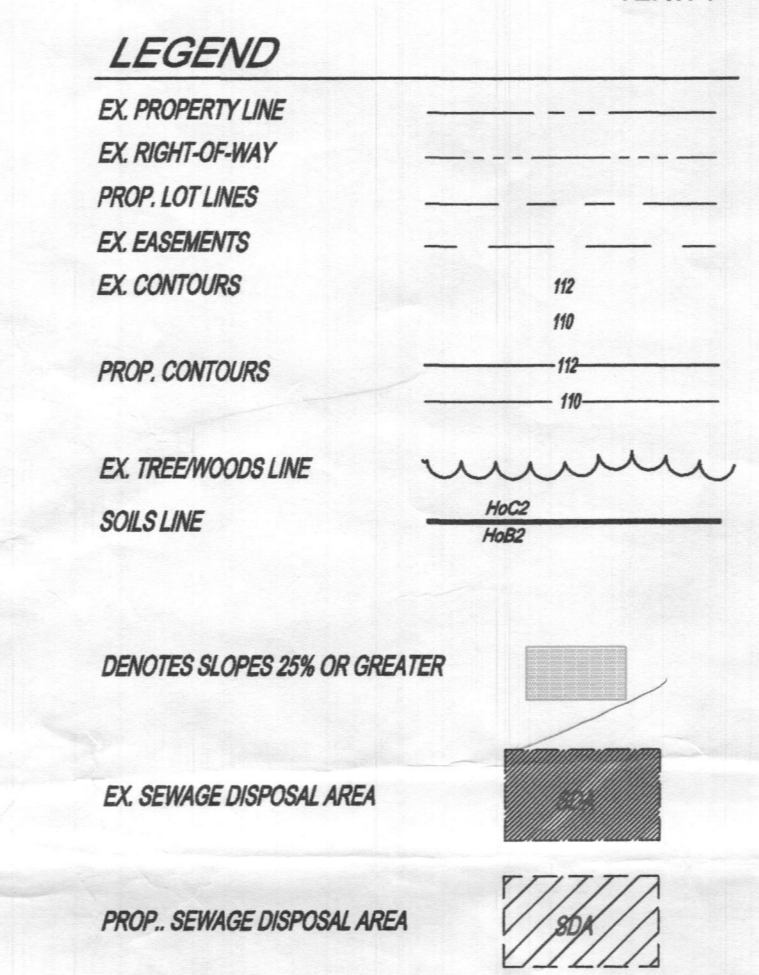
Buyer #2 Signature Date

Buyer #1 Print Name

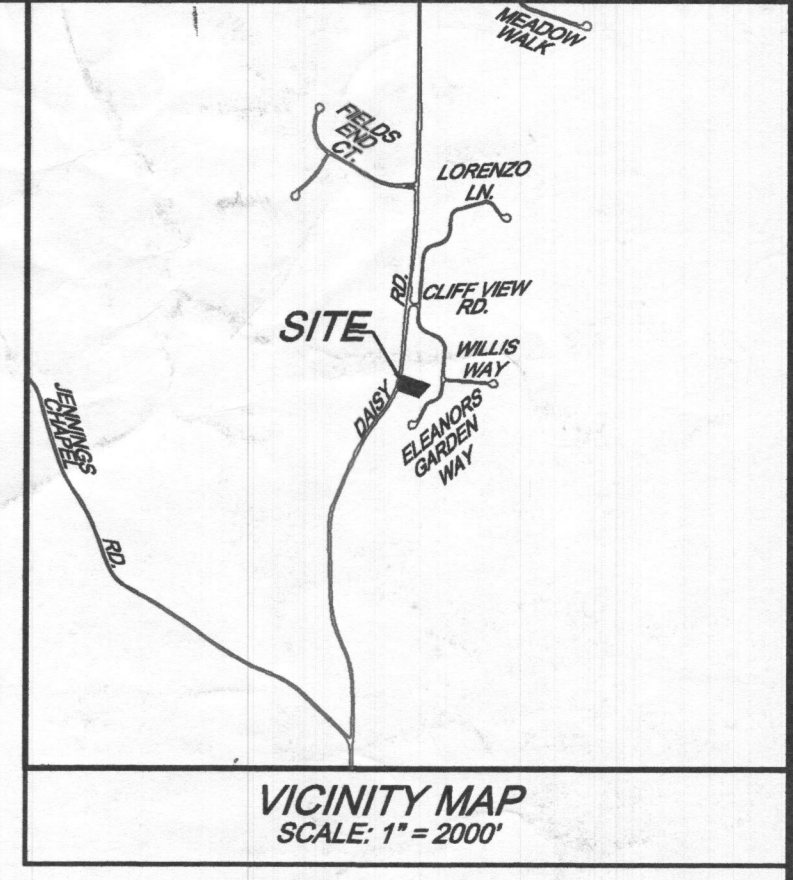
Buyer #2 Print Name



SEPTIC SYSTEM PROFILE:
SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'



**contours in Red - road*



SOILS LEGEND				
SYMBOL	NAME/DESCRIPTION	SOIL GROUP	K-VALUE	HYDRIC GROUP
GgA	Glenelg loam, 0 to 3 percent slopes	B	0.28	+ NOT HYDRIC
GgB	Glenelg loam, 3 to 8 percent slopes	C	0.28	+ NOT HYDRIC
GgC	Glenelg loam, 8 to 15 percent slopes	B	0.28	+ NOT HYDRIC

SOIL TYPES BASED ON HOWARD COUNTY SOIL SURVEY MAP # 1 DAMASCUS NE, MARYLAND

- GENERAL NOTES:**
- OWNERS: THE BANK OF NEW YORK MELLON, 8742 LUCENT BLVD / SUITE 300, HIGHLANDS RANCH CO RD129, DEED REFERENCE: LIBER 16913, FOLIO 94, DATE: APRIL 20, 1998, GRANTOR: LEONA C. JENSON
 - TAX MAP 020, GRID 06, PARCEL 19
 - THE BOUNDARY SHOWN HEREON IS BASED UPON LIBER 16913, FOLIO 94
 - SOILS BASED UPON NRCS-SOIL WEB MAPS
 - WATER SERVICE IS PRIVATE, SEWER SERVICE IS PRIVATE
 - THERE IS NO 100 YEAR FLOOD PLAIN LOCATED ON THIS PROPERTY BASED ON FEMA INSURANCE RATE MAP COMMUNITY PANEL #2400440013B ZONE 'X'
 - TOPOGRAPHY SHOWN HEREON IS FIELD RUN BASED UPON HOWARD COUNTY GIS DATA NAVD83, CONTOUR INTERVAL = 2 FT, CHECKED BY CRC & ASSOC., INC. AND IS AN ACCURATE REPRESENTATION OF FIELD CONDITIONS.
 - THERE ARE NO WELLS OR SEPTIC SYSTEMS WITHIN 100 FEET UNLESS SHOWN HEREON.
 - SUBJECT PROPERTY IS ZONED RC-DEO
 - THE PURPOSE OF THIS PLAN IS TO ESTABLISH A SEWAGE DISPOSAL AREA
 - THERE ARE NO STREAMS, WETLANDS, STEEP SLOPES, FLOOD PLAINS OR FORESTED AREAS LOCATED ON THE LOT.

BAT SYSTEM NOTES (HCHD)

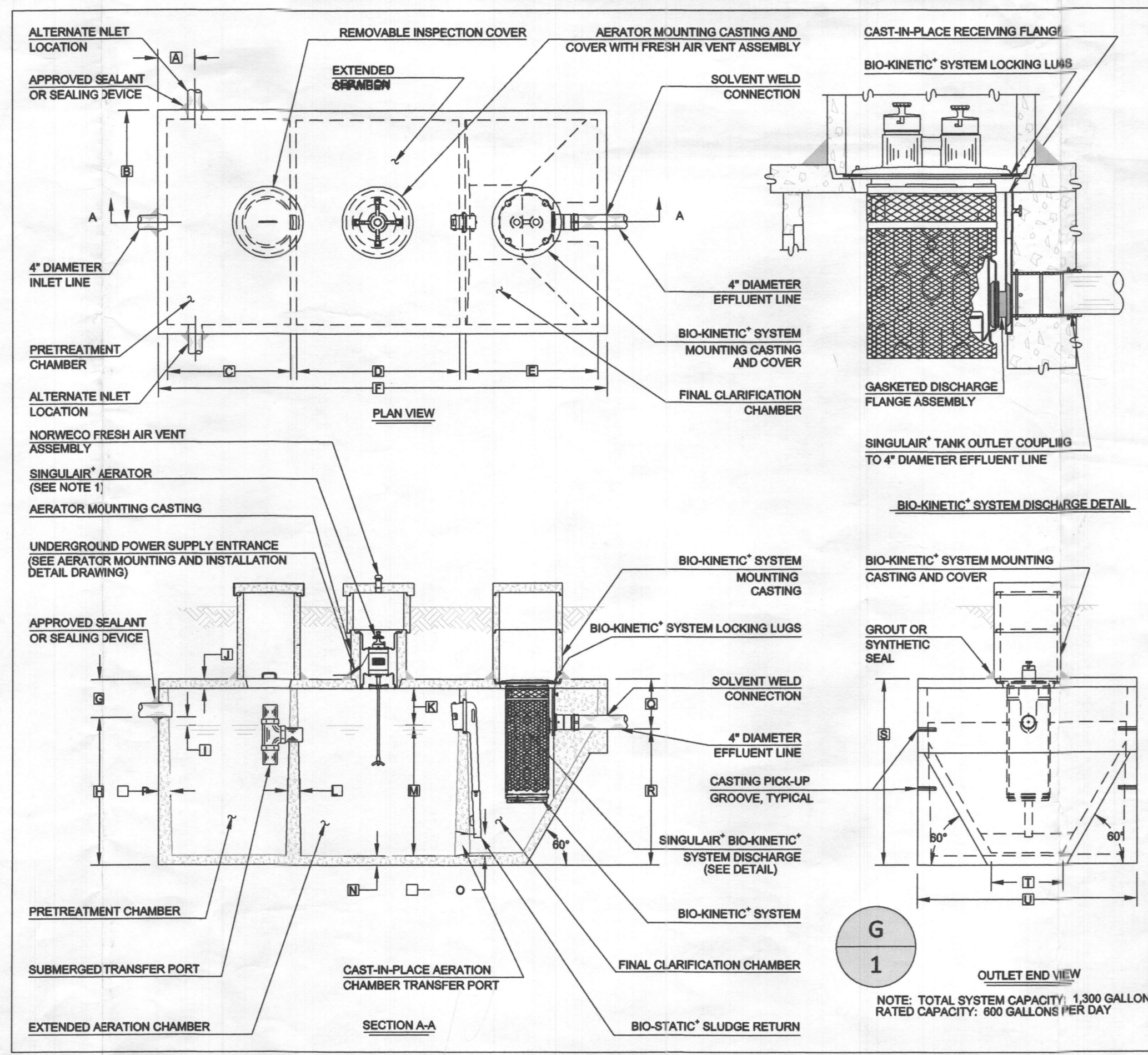
- ANY CHANGE TO THE LOCATIONS OR DEPTHS TO ANY COMPONENTS MUST BE APPROVED BY THE ENGINEER AND THE HOWARD COUNTY HEALTH DEPARTMENT (HCHD) PRIOR TO INSTALLATION. A REVISED SITE PLAN MAY BE REQUIRED.
- THE MAXIMUM DEPTH OF THE BAT PER HCHD SPECIFICATIONS IS 3 FT.
- THE BLOWER MAY NOT BE LOCATED MORE THAN 10 FEET FROM THE TANK BASED ON THE MANUFACTURER'S SPECIFICATIONS.
- THE BAT SYSTEM SHALL BE MAINTAINED AND OPERATED FOR THE LIFE OF THE SEPTIC SYSTEM.
- THE BAT SHALL BE OPERATED AND MAINTAINED BY A CERTIFIED SERVICE PROVIDER.
- WITHIN ONE MONTH OF INSTALLATION, THE CONTRACTOR 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 AND MANUFACTURER OF THE BAT UNIT INSTALLED.
- ALL 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 THE LAND RECORDS OF HOWARD COUNTY.
- THE HOWARD COUNTY HEALTH DEPARTMENT (HCHD) REQUIRES DOCUMENTATION FOR THE START-UP CERTIFICATION FROM THE MANUFACTURER PRIOR TO FINAL APPROVAL OF THE INSTALLATION.

Use Projections		
properties served	1	
bedrooms per property	4	
flow per bedroom (gpd)	150	
MDF (gpd)	600	
ADF (gpd)	300	

Treatment Loadings	loading	overall treatment criteria
flow (gpd)	600	600
biochemical oxygen demand (BOD, mg/l)	220	30 mg/l
total suspended solids (TSS, mg/l)	220	30 mg/l
total nitrogen (TN, mg/l)	60	30 mg/l

Notes:
calculated values in italics
ADF = average daily flow
MDF = maximum daily flow
unit rates from Howard County Well and Septic memo Nov 2014
concentrations from previous residential experience and studies

USE PROJECTIONS



- GENERAL NOTES:**
- SINGULAR[®] AERATOR, AS TESTED AND ACCEPTED BY NSF, OPERATING 80 MINUTES ON / 160 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 ACT 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: _____

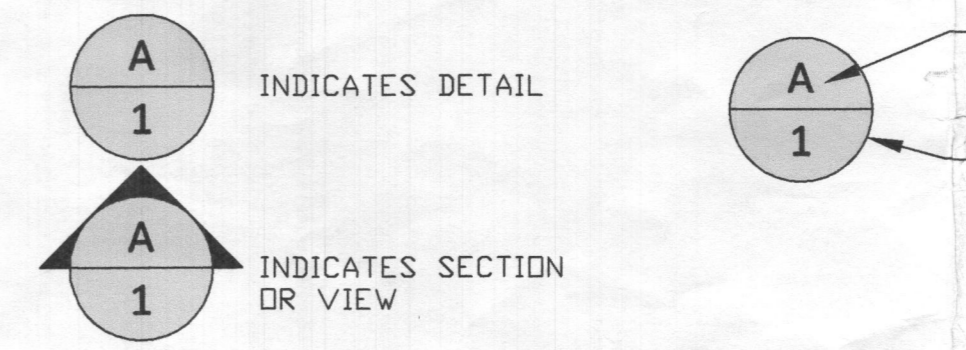
CRITICAL DIMENSIONS

A) 1'-0"	B) 0'-3"
B) 3'-0"	C) 0'-6"
C) 3'-4"	D) 0'-3"
D) 4'-6"	E) 1'-4"
E) 3'-7"	F) 3'-6"
F) 1'-2"	G) 3'-0"
G) 1'-0"	H) 2'-0"
H) 4'-0"	I) 6'-0"
I) 0'-3"	J) 0'-0"
J) 0'-3"	K) 0'-0"
K) 1'-0"	L) 0'-0"
L) 0'-2"	M) 0'-0"
M) 3'-6"	N) 0'-0"

- This area designates a private sewage area as required by the Maryland State Department of the Environment for individual sewage disposal. For lots created prior to March of 1972 it provides at least enough area to accommodate an initial and two replacement systems as required by the Howard County Health Department. Improvements of any nature in this area are restricted until public sewerage is available. This area 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 sewage area. Recordation of a modified sewage area shall not be necessary.
- The lot shown hereon complies with the minimum ownership, width, and lot area as required by the Maryland State Department of the Environment.
- 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 perc certification plan.
- Pretreatment is proposed: An advanced pre-treatment system, which utilizes best available technology to perform nitrogen reduction, must be installed on the septic system located on subject property LIBER 12656, FOLIO 369 in accordance with MDE regulations. A supplemental site plan with all of the necessary details for installation of the system will be required prior to the release of the building permit (if applicable) and septic system installation permit. In addition, an operation and maintenance contract agreement must be filed with Howard County Land Records prior to release of the septic system permit.

☞ DENOTES; EX. PERCOLATION TEST

SYMBOLS



LETTER INDICATES A SECTION.
SHEET NUMBER ON WHICH THE DETAIL OR SECTION IS DRAWN OR THE SHEET NUMBER FROM WHERE THE DETAIL OR SECTION IS REFERENCED.

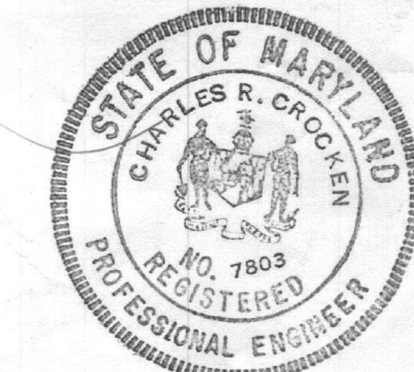
APPROVED FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS
HOWARD COUNTY HEALTH DEPARTMENT

HOWARD COUNTY HEALTH OFFICER _____ DATE _____

I HEREBY CERTIFY THAT THE PERCOLATION TEST LOCATIONS SHOWN HEREON ARE TO THE BEST OF MY KNOWLEDGE ARE CORRECT AS SHOWN.

CHARLES R. CROCKEN, PE MD. LICENSE REG. NO. 7803 (EXPIRATION DATE 4-22-2017) 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. 7803 EXPIRATION DATE 4-22-2017
Charles R. Crocken 12-19-2016
CHARLES R. CROCKEN, PE MD. LICENSE REG. NO. 7803 DATE _____



Approved Septic System Plan
Howard County Health Department
[Signature] Date: 12/19/16

NO.	DATE	REVISION
1		
2		

DEVELOPER/PURCHASER:
TAYLOR PROPERTIES, LLC
8321 SPRING WATER PATH
JESSUP, MD. 20794
PHONE: 443-531-2070

B.A.T. SYSTEM SITE PLAN
3461 DAISY RD
SINGLE FAMILY DETACHED
GLENWOOD
DEED REF. LIBER 16913 / FOLIO 094
ZONED RC-DEO

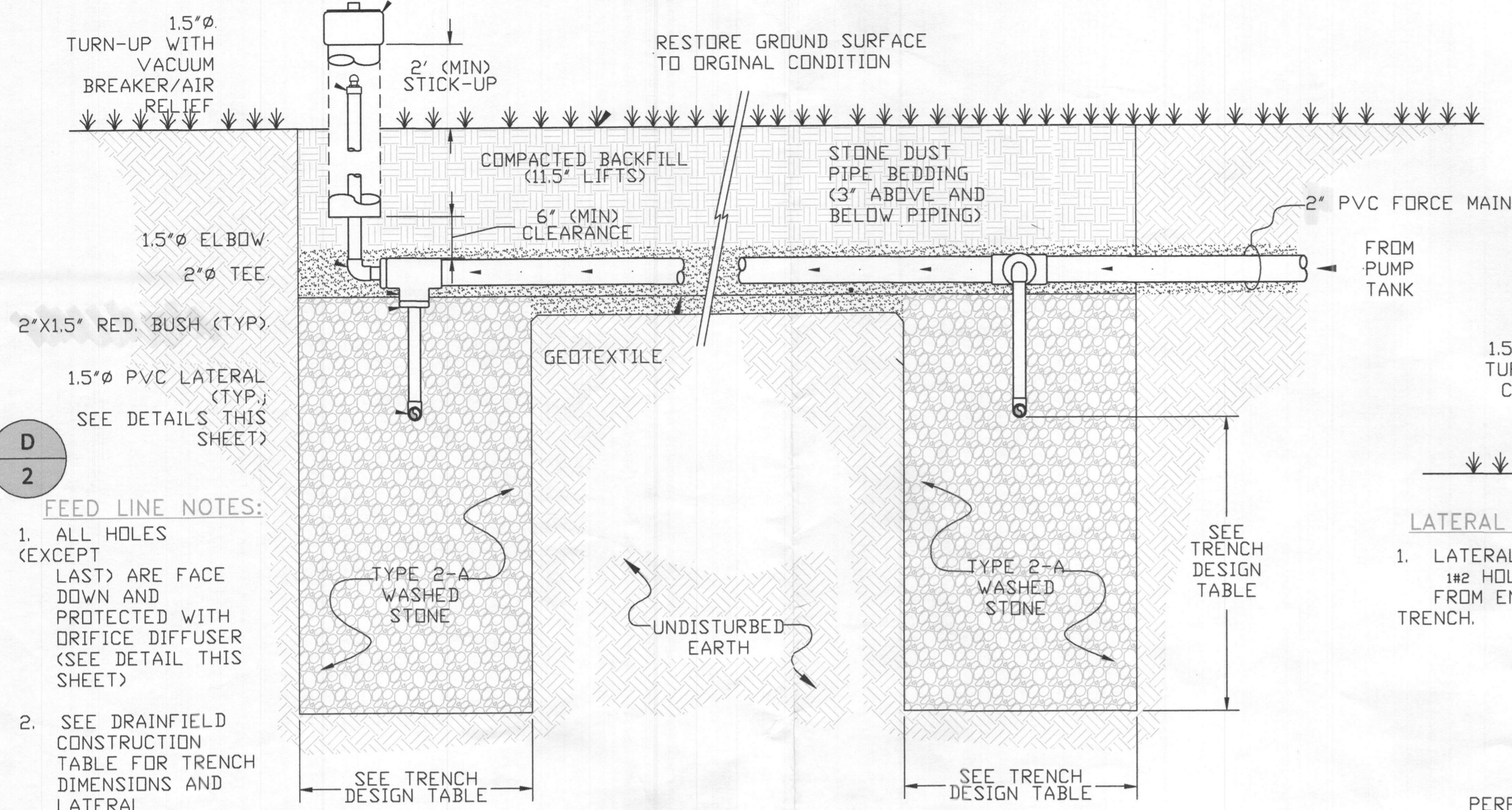
FOURTH ELECTORAL DISTRICT TAX MAP 020, GRID 06, PARCEL 19
HOWARD COUNTY, MARYLAND

Prepared by:
CHARLES R. CROCKEN AND ASSOCIATES, INC.
802 LEE AVE
SYKESVILLE, MARYLAND 21157
Tel. (410) 549-2708

SCALE: 1"=30' DATE: 09/19/16 SHEET 1 OF 3

TURN-UP (END OF FORCE MAIN)
4" SCH. 40 PROTECTOR PIPE W/
VENTED REMOVABLE CAP/PLUG
FOR INSPECTION/ CLEANOUT

E
2



- FEED LINE NOTES:**
- ALL HOLES (EXCEPT LAST) ARE FACE DOWN AND PROTECTED WITH DRIFIE DIFFUSER (SEE DETAIL THIS SHEET)
 - SEE DRAINFIELD CONSTRUCTION TABLE FOR TRENCH DIMENSIONS AND LATERAL PERFORATIONS NOT SHOWN.

FEED LINE/DEEP TRENCH DETAIL (TYP)

NOT TO SCALE

A
1

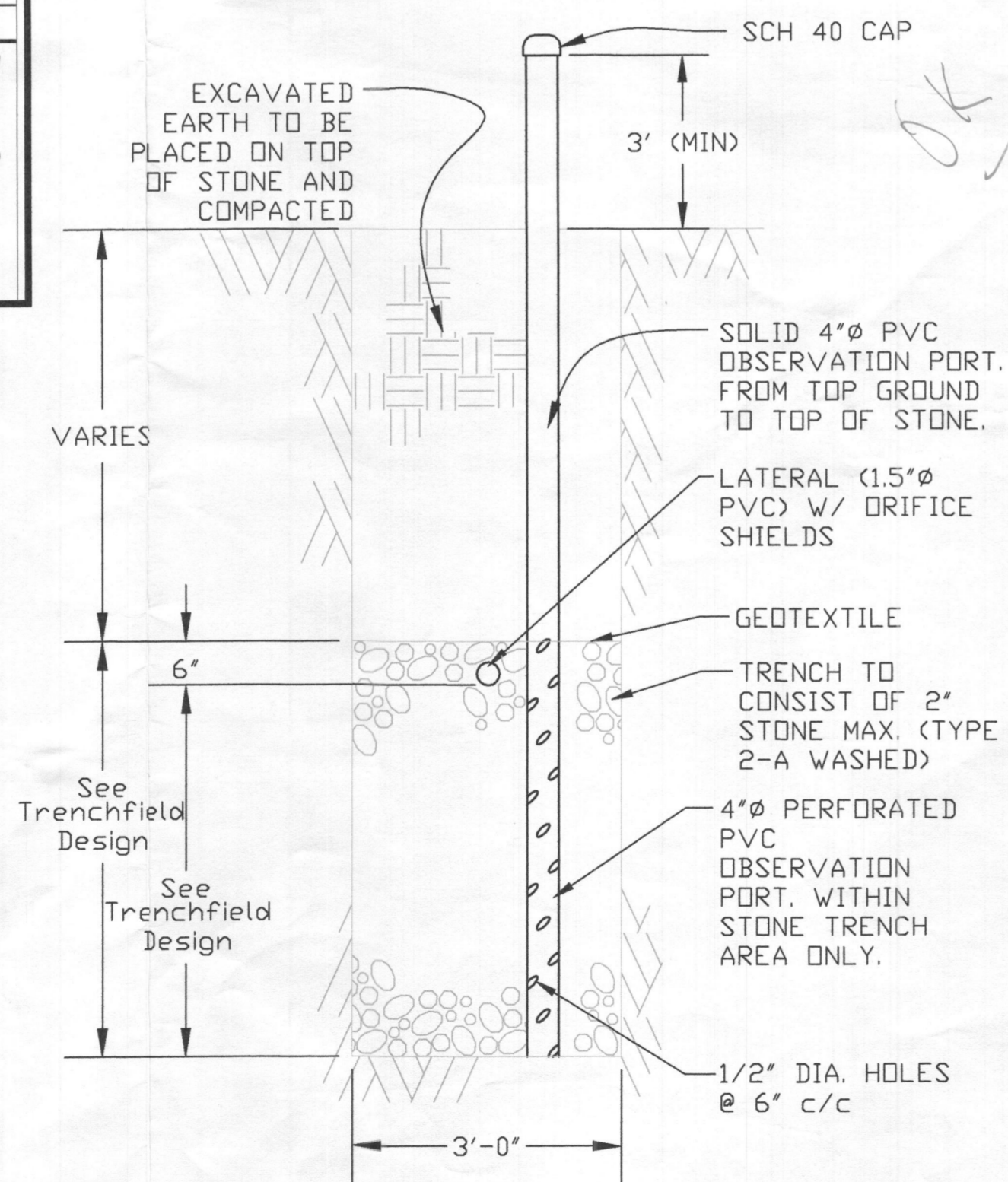
100% capacity build-out with low pressure distribution system

Cell	Trench	Existing Ground Elevation (feet msl)	perc ID's	Sidewall Top Elevation (feet msl)	Sidewall Height (feet)	Trench Bottom Elevation (feet msl)	Trench Bottom Depth (feet)	Trench Length (feet)	Trench Width (feet)	Application Rate (gpd/ft ²)	Capacity (gpd, L*W*Appr/ft)
A	1	561.50	1	556.00	9.5	553.0	8.5	42	3	0.8	200
	2	561.25	1	556.00	9.5	553.0	8.3	42	3	0.8	200
	3	561.00	1	556.00	9.5	553.0	8.0	42	3	0.8	200
B	4	561.00	3,4	555.00	6.0	552.0	9.0	63	3	0.8	300
	5	560.50	3,4	555.00	6.0	552.0	8.5	63	3	0.8	300
	6	560.50	5,2	555.00	6.0	552.0	8.5	63	3	0.8	300
C	7	560.25	5,2	555.00	6.0	552.0	8.3	63	3	0.8	300
	300% total capacity (gpd) 1,800 100% capacity (gpd) 600 primary capacity, 200% (gpd) 600 reserve capacity, 100% (gpd) 1,200										

calculated values in italics
gpd = gallons per day
NA = not available

msl = mean sea level in feet
laterals in each trench are at same elevation

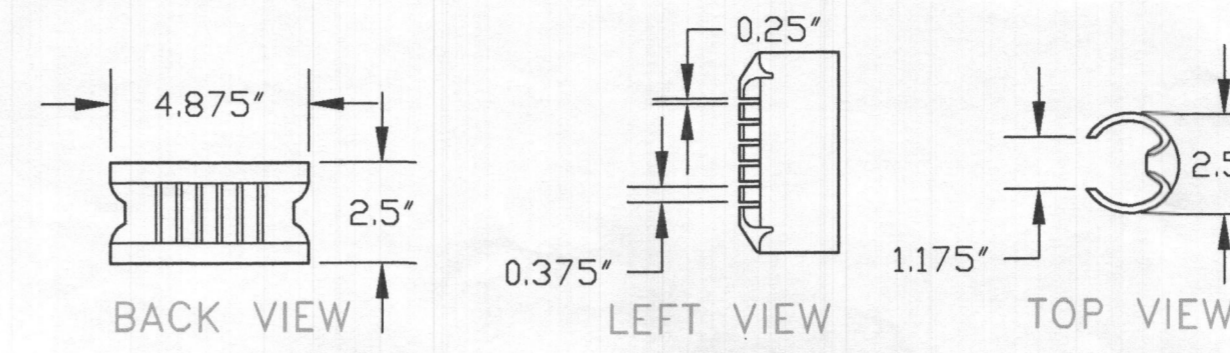
TRENCHFIELD DESIGN



TYPICAL OBSERVATION PORT

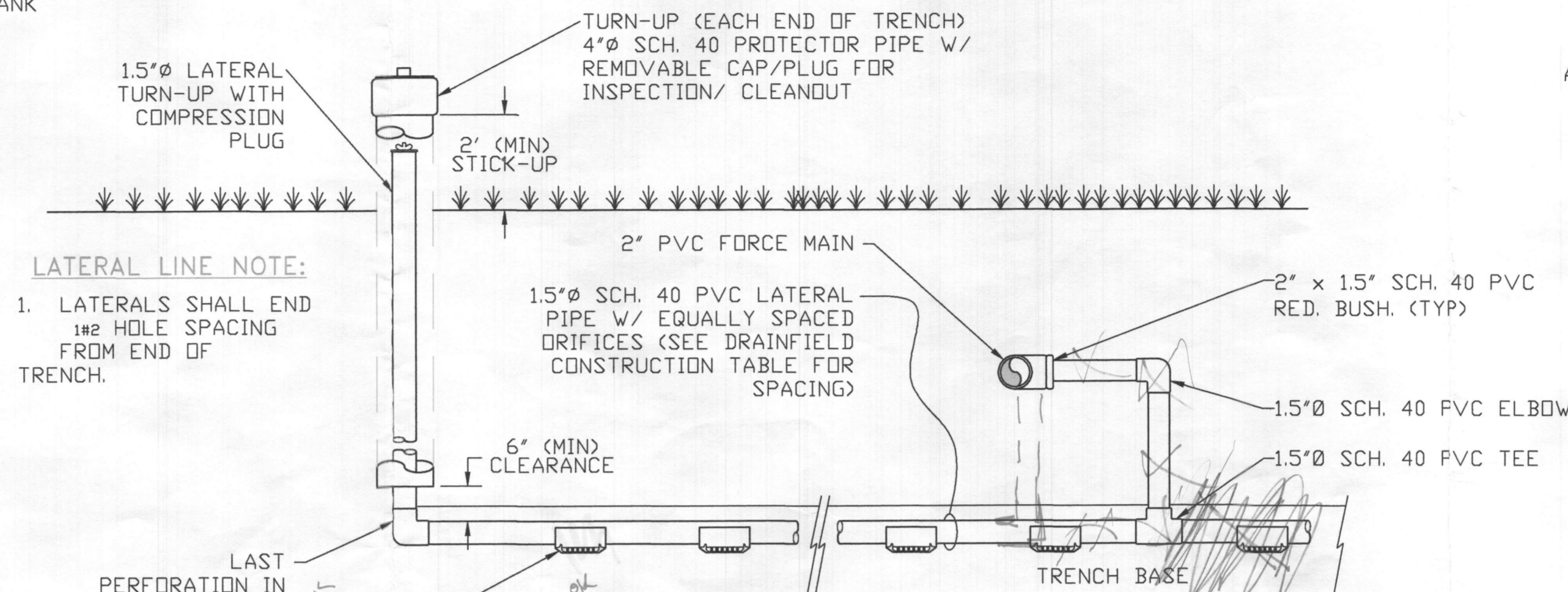
NOT TO SCALE

C
1



SIM TECH ORIFICE SHIELD 1.5" (STF-106-1.5)

NOT TO SCALE



DISTRIBUTION LATERAL DETAIL

NOT TO SCALE

D
2

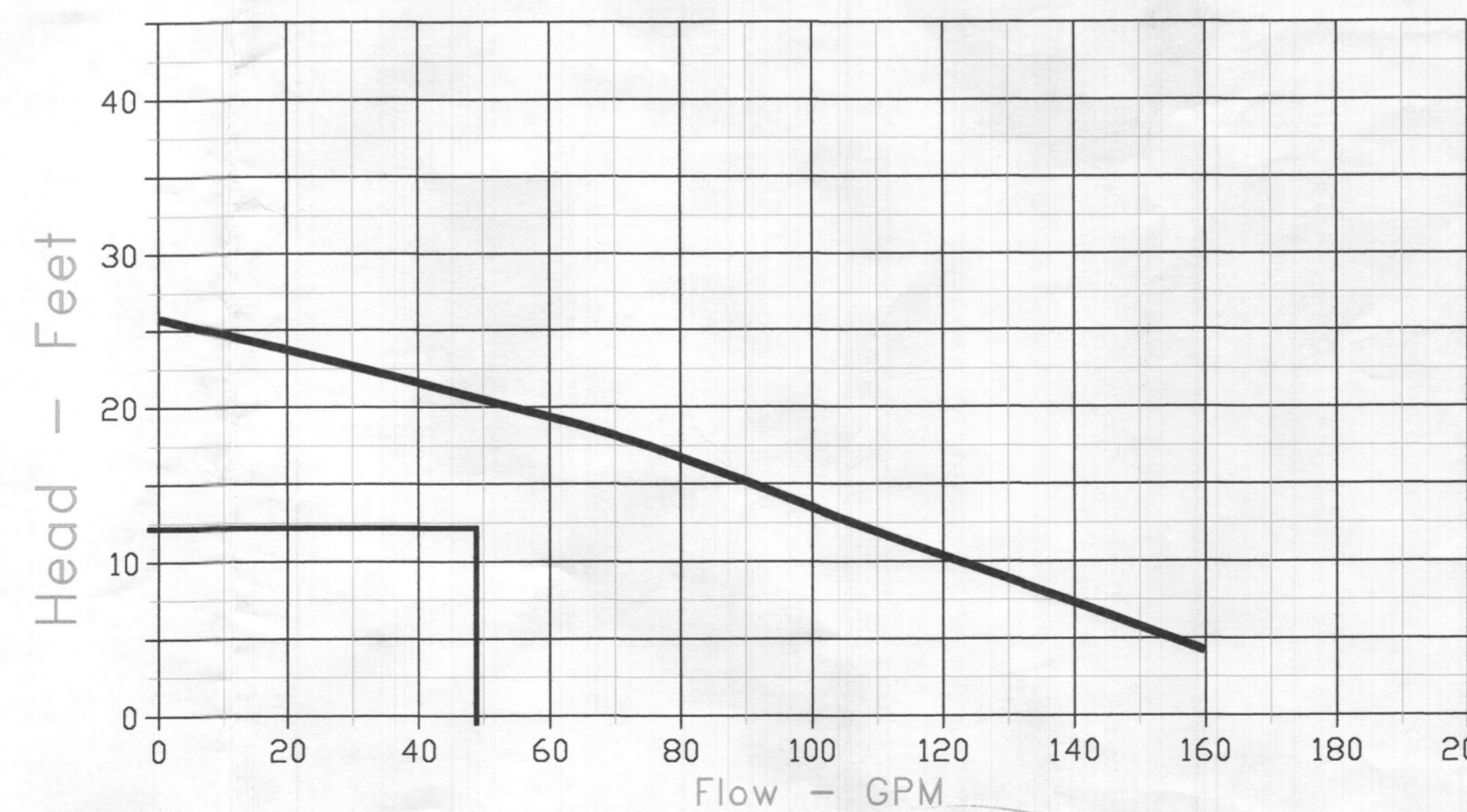
Distribution Design for initial build-out

Cell	Trench	Sidewall Top Elevation (feet msl)	Lateral Elevation (feet msl)	Trench Length (feet)	# Holes - Each Lateral	Perf Spacing (feet)	Lateral Length (feet)	Perf Dia (inches)	Perf Flow (gpm)	Lateral Flow (gpm)	Dose Rate (gpm/foot of trench)	Max. Lateral Friction Loss (feet)	Lateral Velocity (feet/second)	Cell Flow (gpm)
A	1	556.0	556.0	42	8	5.21	18.2	5/16	2.00	16.0	0.38	0.4	2.5	48
	2	556.0	556.0	42	8	5.21	18.2	5/16	2.00	16.0	0.38	0.4	2.5	
	3	556.0	556.0	42	8	5.21	18.2	5/16	2.00	16.0	0.38	0.4	2.5	

Notes
calculated values in italics
gpm = gallons per minute
msl = mean sea level in feet

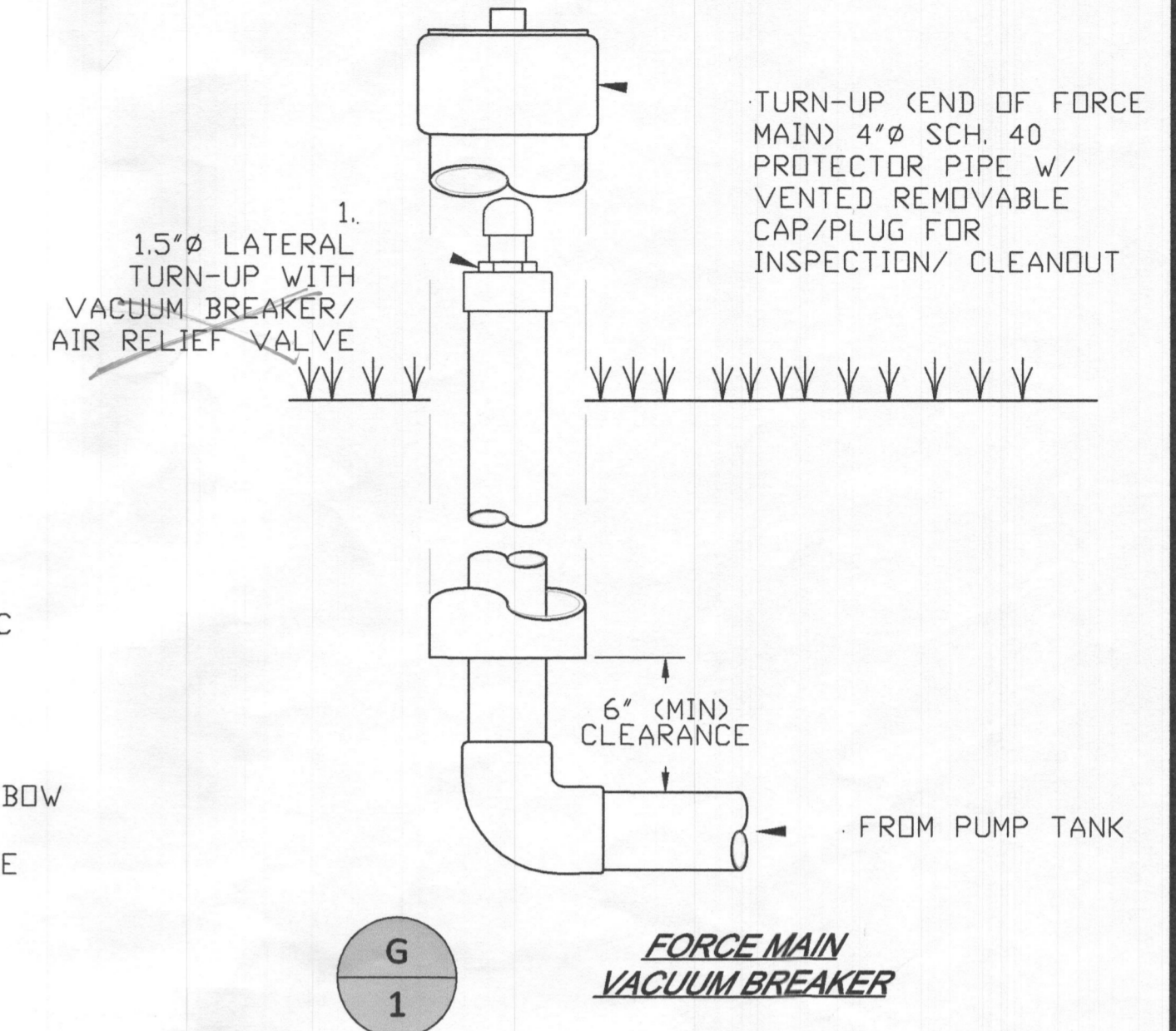
design distal head (feet) = 3.0
friction C factor for plastic pipes = 130
lateral inside diameter (1.5" dia sch40PVC, in) = 1.610

DISTRIBUTION DESIGN



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. 7803 EXPIRATION DATE 4-23-2017

Signature: Charles R. Crocken
DATE: 12-19-2016
CHARLES R. CROCKEN, PE, MD, LICENSE REG. NO. 7803



G
1

DESIGN CALCULATIONS

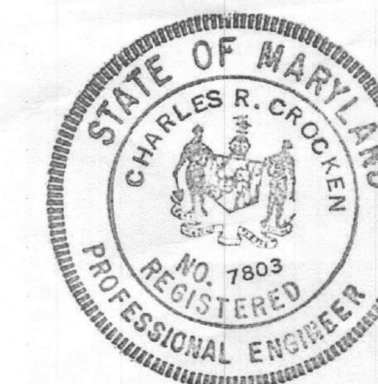
Design input		Calculations
Static hydraulic profile (with invert elevations)		
maximum daily flow (MDF) (gpd)	600	
average daily flow (ADF) (gpd)	300	
influent invert elev. (feet msl)	558.64	
processor bottom elev. (feet msl)	554.64	
pump tank bottom elev. (feet msl)	549.62	*6" fall between influent pipes, and 6" pump tank thickness
dose pump elev. (feet msl)	550.62	*Pump suction is 6" above tank bottom
Cell A lateral elev. (feet msl)	556.00	Cell A in-service lift for dose pump (feet) 5.4
Pumping and Dosing		
cell A flow (gpm)	48	force main velocity (feet/second) 4.6
Cell A force main length (feet)	30	Cell A force main friction loss (feet) 3.4
Cell A minor loss equivalent lengths (feet)	40.8	Cell A max. total dynamic head (feet) 12.2
		Cell A main volume (gals) 5
		Cell A total lateral volume (gals) 19
		Cell A dose vol. @ main + 5x lateral (gals) 102
dose tank length (inches)	60	dose tank capacity (gals) 1,500
dose tank width (inches)	60	dose tank capacity (gals per inch) 16
dose tank height to invert (inches)	96	design dose volume (gals) 102
		volume below enable float (gals) 405
high water alarm height (inches)	58	min # daily doses @ ADF 3.0
timer enable height (inches)	42	average dose time (minutes) 2.1
low water cutoff height (inches)	16	pump off time setting (hours) 8.1
simplex pump (Goulds)	WS03B	residual setting volume (gals) 249
recirculation rate at MDF (%)	30%	normal equalization above enable (gals) 845
tank height above invert (inches)	9	volume above high water alarm (gals) 600
Notes		
gpd = gallons per day		design distal head (feet) = 3.0
gpm = gallons per minute		friction C factor for plastic pipes = 130
msl = mean sea level in feet		force main ID (2" dia sch40PVC, in) = 2.067
calculated values in italics		lateral inside diameter (1.5" dia sch40PVC, in) = 1.610
set floats based on weight +/- 3"		
duplex control panel has individual hand/off/auto switches for each dose pump		
one cell is always in service, with the other resting		

DESIGN CALCULATIONS

Approved Septic System Plan
Howard County Health Department

Signature: [Signature]
Date: 12/21/16

DEVELOPER/ PURCHASER:
TAYLOR PROPERTIES, LLC
8321 SPRING WATER PATH
JESSUP, MD, 20794
PHONE: 443-631-2070



NO.	DATE	REVISION
2		
1		

B.A.T. SYSTEM DETAILS
3461 DAISY RD
SINGLE FAMILY DETACHED
GLENWOOD
DEED REF: LIBER 16913 / FOLIO 094
ZONED RC-DEO

FOURTH ELECTION DISTRICT TAX MAP #22, GRID 04, PARCEL 18
HOWARD COUNTY, MARYLAND

Prepared by:
CHARLES R. CROCKEN AND ASSOCIATES, INC.
902 LEE AVE.
SYKESVILLE, MARYLAND 21157
Tel. (410) 549-2708

SCALE: 1" = 30' DATE: 08/10/16 SHEET 2 OF 3

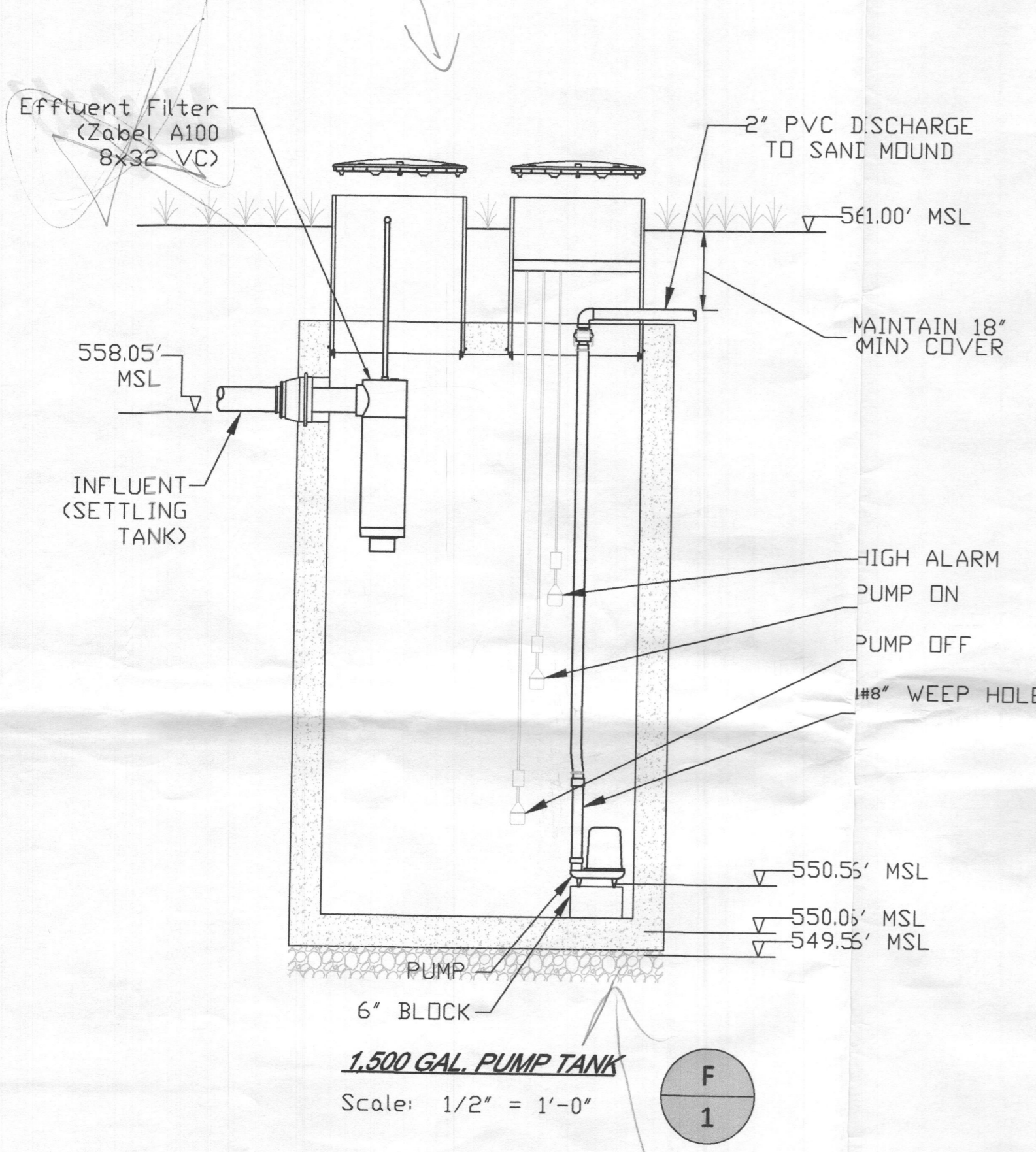
APPROVED FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS
HOWARD COUNTY HEALTH DEPARTMENT

HOWARD COUNTY HEALTH OFFICER DATE

I HEREBY CERTIFY THAT THE PERCOLATION TEST LOCATIONS SHOWN
HEREON ARE TO THE BEST OF MY KNOWLEDGE ARE CORRECT AS SHOWN.

CHARLES R. CROCKEN, PE, MD, LICENSE REG. NO. 7803 (EXPIRATION DATE 4-23-2017) DATE

Tank Spec for Vertical Tank (Kitchen Tank)
 1/4" pump set inside float.
 Told contractor 'OK' to use
 1500 G P.F. from Relay Unit



PUMP TANK FLOAT	SETTING (Inches from Tank Bottom)
HIGH ALARM	58
PUMP ON	42
PUMP OFF	16

Float settings are based upon tank dimensions indicated, if different tanks are used, float settings will need to be adjusted accordingly.

Time closed
 OK to do Demand Dose

Notes

- All inspection, viewing and pump out ports shall be secured to prevent accidental or unauthorized access.
- No more than 4 FT of fill shall be placed anywhere over tank lid(s).
- Tank measurements and elevations are based on septic tanks and pump chambers as manufactured by Gillespie Precast, LLC (1-800-638-6884) an equal manufacturer may be accepted with shop drawing submittal and engineer approval.
- Dose Pump control panel shall have event counters and elapsed time meters.
- Minimum Force Main bury depth shall be 2'-6" (30") to top of pipe and shall maintain a positive or zero slope in the direction of flow.
- All tanks shall be tested for water tightness prior to service.
- All tanks shall be set upon 6"-8" of gravel bedding.

Dose 3x Daily @ 2.1m
 (1225 Dose)

INSTALLER FRIENDLY SERIES® - IFS Single Phase Simplex (Demand/TD)

Single phase, simplex demand dose or timed dose, float or C-Level™ controlled system for pump control and system monitoring.

The IFS simplex control panel is designed to control one 120, 208, 240 VAC single phase pump in water and sewage installations. The panel features an easy-to-use touch pad with display on the inner door for programming and system monitoring. The panel configuration can be easily converted in the field to either a timed dose or demand dose.

The optional C-Level™ sensor is a pressure transducer that senses the liquid level in the tank and sends a signal to the IFS panel. Pump activation levels can be adjusted by using the panel touch pad. C-Level™ CL40 sensor operating range is 3-38.9 inches (7.6-101.3 cm). C-Level™ CL100 operating range is 3-99.5 inches (7.6-252.7 cm).

TOUCH PAD FEATURES

- Level Status Indicators** illuminate when floats or set points are activated. Alarm will activate if a float operates out of sequence.
- HOA (Hand-Off-Automatic) Buttons** control pump mode with indication. Hand mode defaults to Automatic when stop level or redundant off level is reached.
- Pump Run Indicator** illuminates when pump is called to run.
- LED Display** shows system information including: level in inches or centimeters (C-Level™ only), mode, pump elapsed time (h:mm), events (cycles), alarm counter, float error count, timed dose override counter (timed dose only), and ON/OFF times (timed dose only).
- NEXT Push Button** toggles display.
- UP and SET Push Buttons** set pump ON/OFF times (timed dose only) or activation levels (C-Level™ only).

PANEL COMPONENTS

- Enclosure base measures 10 X 8 X 4 inches (25.4 X 20.32 X 10.16 cm), NEMA 4X (ultraviolet stabilized) thermoplastic with removable mounting feet for outdoor or indoor use. Note: Options, voltage, and amp range selected may change enclosure size and component layout.
- Red Alarm Beacon** provides 360° visual check of alarm condition.
- Exterior Alarm Test/Normal/Silence Switch** allows horn and light to be tested and horn to be silenced in an alarm condition. Alarm automatically resets once alarm condition is cleared.
- Alarm Horn** provides audio warning of alarm condition (83 to 85 decibel rating).
- Circuit Breaker** (optional) provides pump disconnect and branch circuit protection.
- Power Relay** controls pump by switching electrical lines. Definite purpose contactor used when pump full load amps are above 15.
- Float Connection Terminal Block**
- Incoming Control/Alarm Power & Pump Terminal Block**
- Control Panel Indicator/Fuse** indicator light illuminates if control power is present in panel. Alarm will activate if control fuse is blown.
- Alarm Power Indicator/Fuse** indicator light illuminates if alarm power is present in panel.
- Ground Lug**

NOTE: Schematic/Wiring Diagram and Pump Specification Label are located inside the panel on enclosure cover.

OPTIONAL FEATURE

- 34" (86.38cm) Panel Mounting Post (Factory Installed). Includes Duplex Installation Kit (Enclosure up sized to 10" x 8" x 6" (25.4 x 20.32 x 15.24 cm). Max. Enclosure size 4" x 12" x 6" (35.56 x 30.48 x 15.24 cm).

Model Shown IFS11W114X8AC

Reg. Con. Pat. & TM Off.
 C-Level™ Sensor US Patent No. 6,336,385; 6,967,242; 6,650,849

FEATURES

- Entire control system is UL Listed to meet and/or exceed industry safety standards.
- Dual safety certification for the United States and Canada.
- Standard package includes: Demand Dose - three 20' SJE MilliAmpMaster™ control switches; Timed Dose - two 20' SJE MilliAmpMaster™ control switches.
- Complete with step-by-step installation instructions.
- Five-year limited warranty.

SJE Rhombus

PO Box 1708, Detroit Lakes, MN 56502
 1-888-DIAL-SJE • 1-218-847-1317
 1-218-847-4617 Fax
 email: customer.service@sjerhombus.com
 www.sjerhombus.com

DOSE PUMP CONTROL PANEL

APPROVED FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS
 HOWARD COUNTY HEALTH DEPARTMENT

HOWARD COUNTY HEALTH OFFICER _____ DATE _____

I HEREBY CERTIFY THAT THE PERCOLATION TEST LOCATIONS SHOWN
 HEREON ARE TO THE BEST OF MY KNOWLEDGE ARE CORRECT AS SHOWN.

CHARLES R. CROCKEN, PE MD. LICENSE REG. NO. 7803 (EXPIRATION DATE 4-22-2017) DATE _____

Approved Septic System Plan
 Howard County Health Department

Signature _____ Date 12/22/16

DEVELOPER/PURCHASER:
 TAYLOR PROPERTIES, LLC
 9351 SPRING WATER PATH
 JESSUP, MD. 20794
 PHONE: 443-631-2070

NO.	DATE	REVISION
2		
1		

B.A.T. SYSTEM DETAILS
3461 DAISY RD
 SINGLE FAMILY DETACHED
 GLENWOOD
 DEED REF. LIBER 16813 / FOLIO 084
 ZONED RC-020

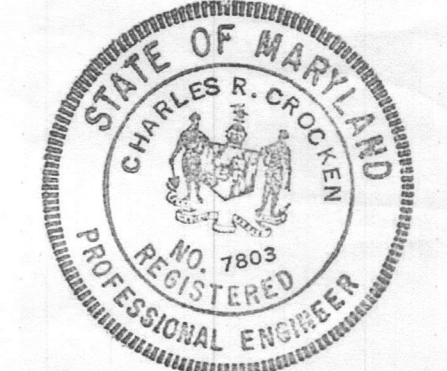
FOURTH ELECTION DISTRICT TAX MAP #20, GRID 06, PARCEL 18
 HOWARD COUNTY, MARYLAND

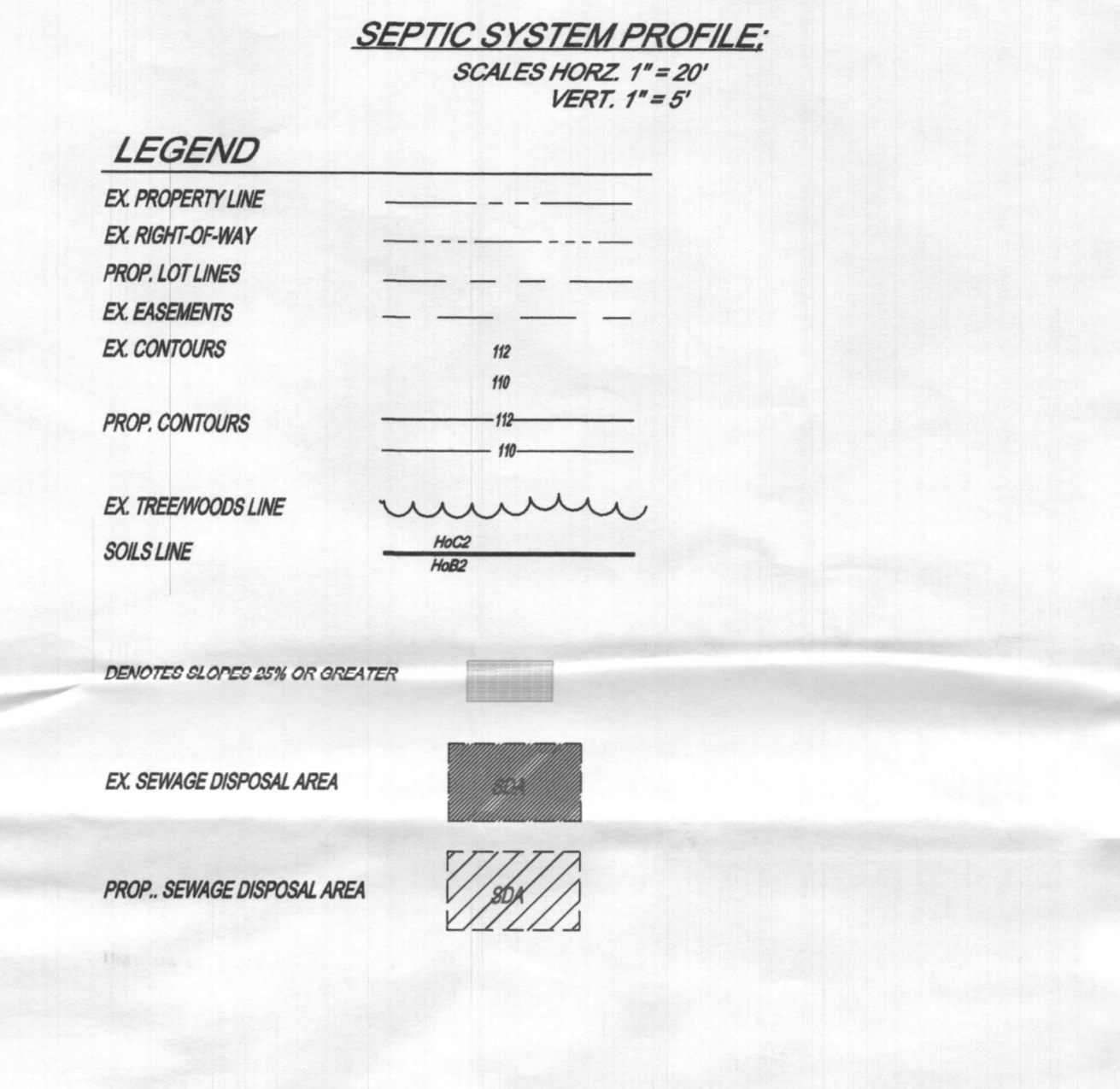
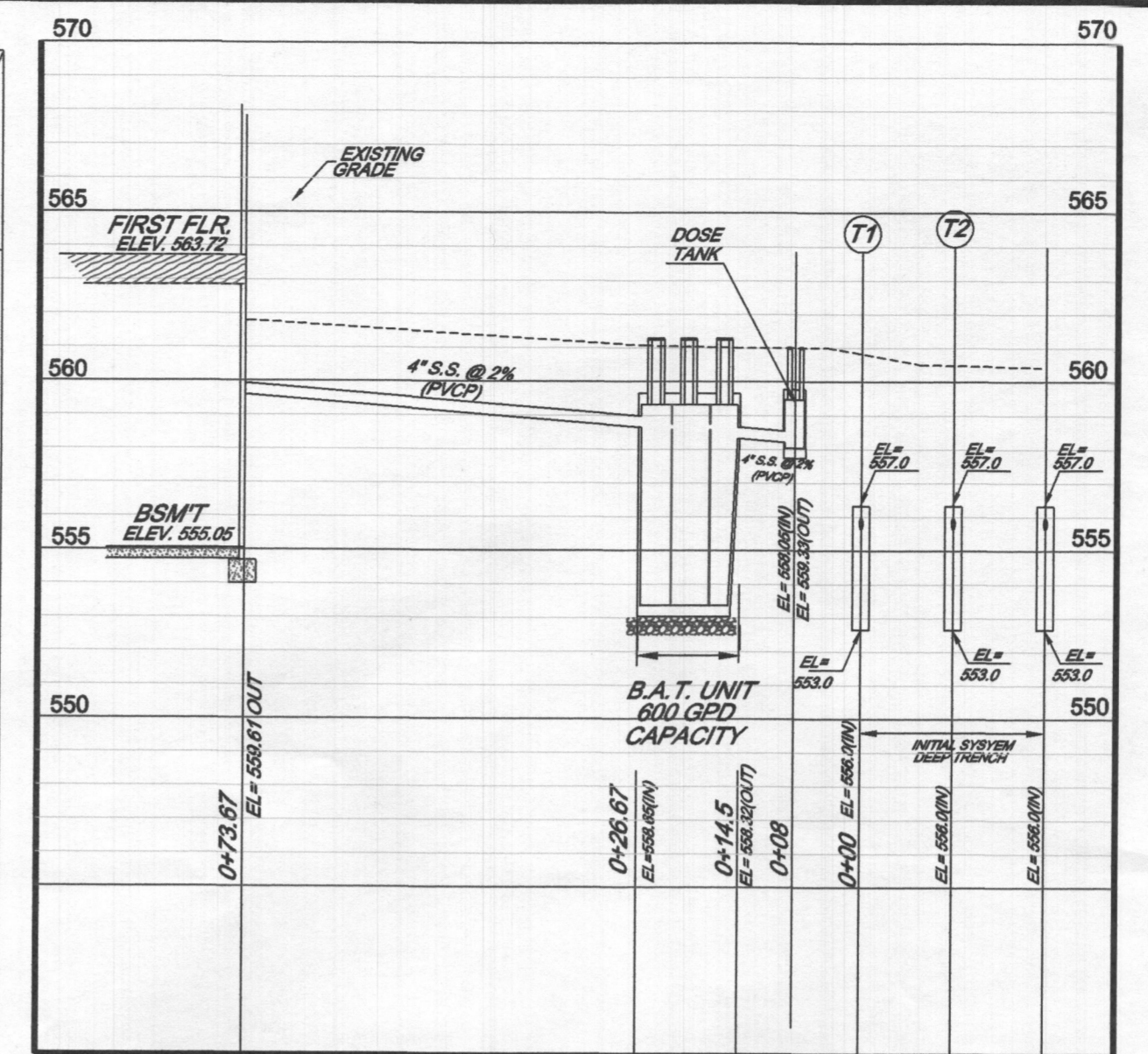
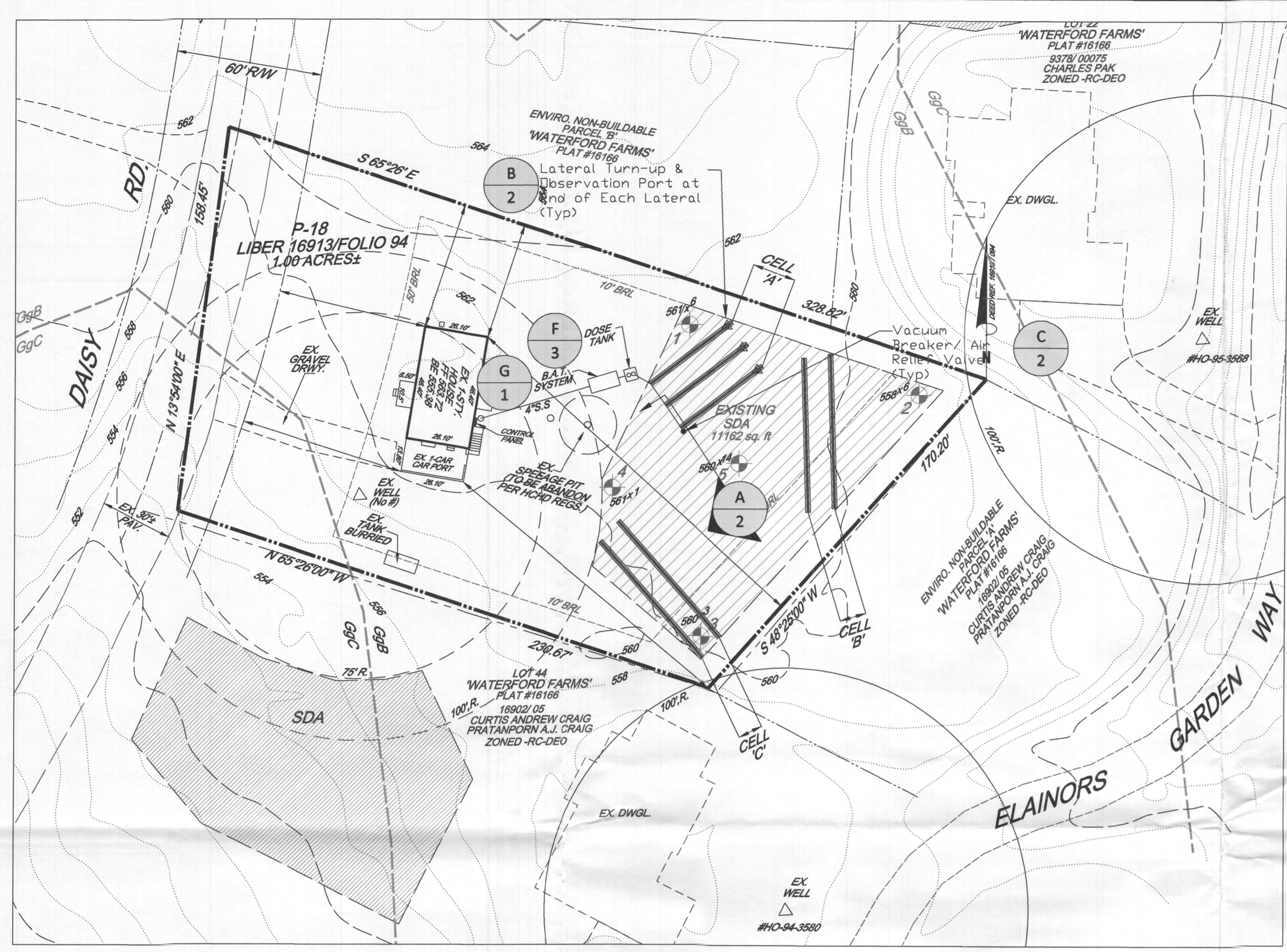
Prepared by:
CHARLES R. CROCKEN AND ASSOCIATES, INC.
 902 LEE AVE.
 SYKESVILLE, MARYLAND 21157
 Tel. (410) 545-2708

SCALE: 1"=30' DATE: 08/10/16 SHEET 3 OF 3

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. 7803 EXPIRATION DATE 4-22-2017

Charles R. Crocken 12-13-2016
 CHARLES R. CROCKEN, PE MD. LICENSE REG. NO. 7803 DATE

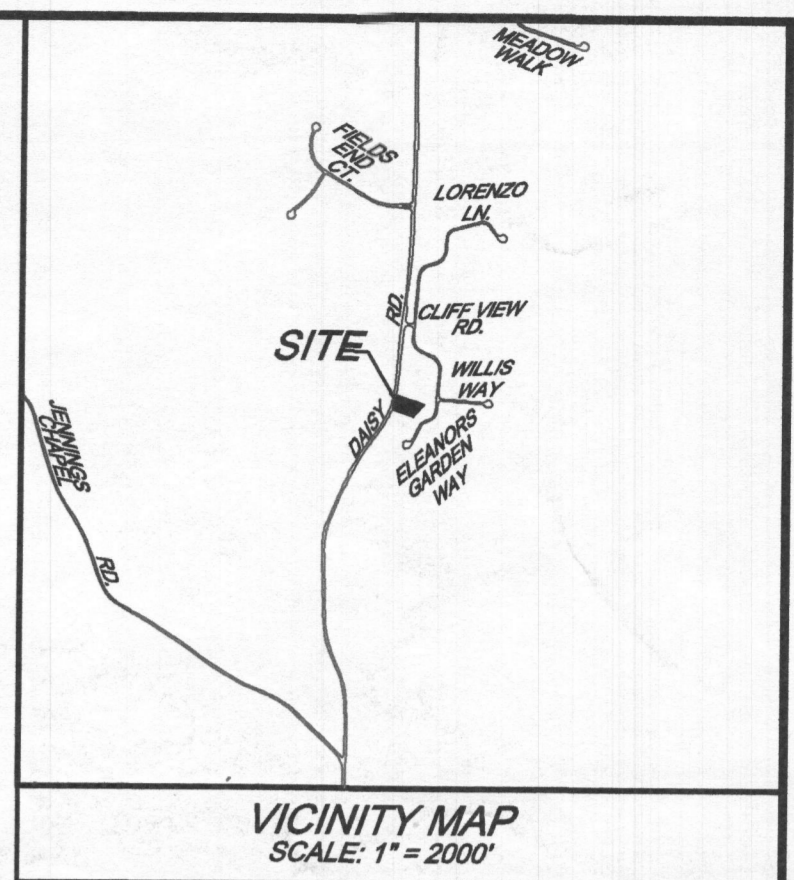




SOILS LEGEND					
SYMBOL	NAME/DESCRIPTION	SOIL GROUP	K-VALUE	K-VALUE	HYDRIC GROUP
GgA	Glenely loam, 0 to 3 percent slopes	B	0.28	+	NOT HYDRIC
GgB	Glenely loam, 3 to 8 percent slopes	C	0.28	+	NOT HYDRIC
GgC	Glenely loam, 8 to 15 percent slopes	B	0.28	+	NOT HYDRIC

SOIL TYPES BASED ON HOWARD COUNTY SOIL SURVEY MAP # 1 DAMASCUS NE, MARYLAND

- GENERAL NOTES:**
- OWNERS: THE BANK OF NEW YORK MELLON, 8742 LUCENT BLVD / SUITE 300, HIGHLANDS RANCH CO 80129. DEED REFERENCE: LIBER 16913, FOLIO 94. DATE: APRIL 20, 1998. GRANITOR: LEONA C. JENSON.
 - TAX MAP 020, GRID 06, PARCEL 18.
 - THE BOUNDARY SHOWN HEREON IS BASED UPON LIBER 16913, FOLIO 94.
 - SOILS BASED UPON NRCS - SOIL WEB MAPS.
 - WATER SERVICE IS PRIVATE, SEWER SERVICE IS PRIVATE.
 - THERE IS NO 100 YEAR FLOOD PLAIN LOCATED ON THIS PROPERTY BASED ON FEMA INSURANCE RATE MAP COMMUNITY PANEL #240044013B ZONE 'X'.
 - TOPOGRAPHY SHOWN HEREON IS FIELD RUN BASED UPON HOWARD COUNTY GIS DATA NAVD83, CONTOUR INTERVAL = 2 FT. CHECKED BY CRC & ASSOC., INC. AND IS AN ACCURATE REPRESENTATION OF FIELD CONDITIONS.
 - THERE ARE NO WELLS OR SEPTIC SYSTEMS WITHIN 100 FEET UNLESS SHOWN HEREON.
 - SUBJECT PROPERTY IS ZONED RC-DEO.
 - THE PURPOSE OF THIS PLAN IS TO ESTABLISH A SEWAGE DISPOSAL AREA.
 - THERE ARE NO STREAMS, WETLANDS, STEEP SLOPES, FLOOD PLAINS OR FORESTED AREAS LOCATED ON THE LOT.

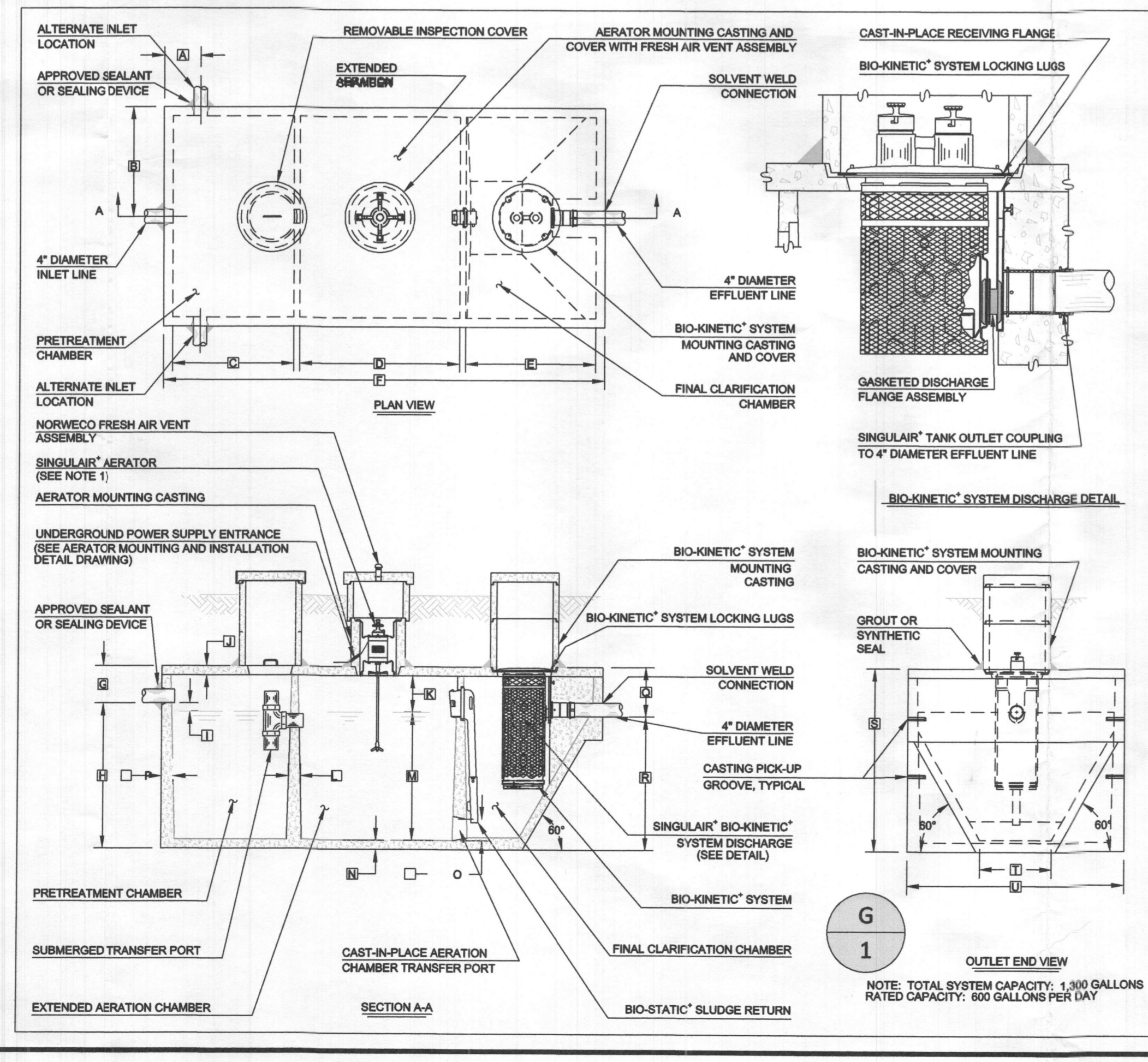


Use Projections		
properties served	1	
bedrooms per property	4	
flow per bedroom (gpd)	150	
MDF (gpd)	600	
ADF (gpd)	300	

Treatment Loadings		
	loading	overall treatment criteria
flow (gpd)	600	600
biochemical oxygen demand (BOD, mg/l)	220	30 mg/l
total suspended solids (TSS, mg/l)	220	30 mg/l
total nitrogen (TN, mg/l)	60	30 mg/l

Notes: calculated values in *italics*. ADF = average daily flow. MDF = maximum daily flow. Unit rates from Howard County Well and Septic memo Nov 2014 concentrations from previous residential experience and studies.

USE PROJECTIONS



- GENERAL NOTES:**
- SINGULARAIR AERATOR, AS TESTED AND ACCEPTED BY NSF, OPERATING 60 MINUTES ON / 60 MINUTES OFF.
 - FALL THROUGH SINGULARAIR 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 SINGULARAIR DISTRIBUTOR FOR ELECTRICAL REQUIREMENTS.

PROJECT ENGINEERS 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'-6"
F 12'-2"	S 0'-0"
G 1'-0"	T 2'-0"
H 4'-0"	U 6'-0"
I 0'-3"	V 0'-0"
J 0'-3"	W 0'-0"
K 1'-0"	X 10'-5.00"
L 0'-2"	Y 0'-0"
M 5'-6"	Z 0'-0"

norweco 3-26-07 L.B.
 LOW-PROFILE SINGULARAIR BIO-KINETIC WATERWATER TREATMENT SYSTEM MODEL TWT150-600 GPD NTS PC-57081

- This area designates a private sewage area as required by the Maryland State Department of the Environment for individual sewage disposal. For lots created prior to March of 1972 it provides at least enough area to accommodate an initial and two replacement systems as required by the Howard County Health Department. Improvements of any nature in this area are restricted until public sewerage is available. This area 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 sewage area. Recordation of a modified sewage area shall not be necessary.
- The lot shown hereon complies with the minimum ownership, width, and lot area as required by the Maryland State Department of the Environment.
- 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 perc certification plan.
- Pretreatment is proposed: An advanced pre-treatment system, which utilizes best available technology to perform nitrogen reduction, must be installed on the septic system located on subject property LIBER 12638, FOLIO 389 in accordance with MDE regulations. A supplemental site plan with all of the necessary details for installation of the system will be required prior to the release of the building permit (if applicable) and septic system installation permit. In addition, an operation and maintenance contract agreement must be filed with Howard County Land Records prior to release of the septic system permit.

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. 7893 EXPIRATION DATE 4-22-2017

Charles R. Crocken 12-13-2016
 CHARLES R. CROCKEN, PE, MD LICENSE REG. NO. 7893 DATE

- BAT SYSTEM NOTES (HCHD)**
- ANY CHANGE TO THE LOCATIONS OR DEPTHS TO ANY COMPONENTS MUST BE APPROVED BY THE ENGINEER AND THE HOWARD COUNTY HEALTH DEPARTMENT (HCHD) PRIOR TO INSTALLATION. A REVISED SITE PLAN MAY BE REQUIRED.
 - THE MAXIMUM DEPTH OF THE BAT PER HCHD SPECIFICATIONS IS 3 FT.
 - THE BLOWER MAY NOT BE LOCATED MORE THAN 10 FEET FROM THE TANK BASED ON THE MANUFACTURER'S SPECIFICATIONS.
 - THE BAT SYSTEM SHALL BE MAINTAINED AND OPERATED FOR THE LIFE OF THE SEPTIC SYSTEM.
 - THE BAT SHALL BE OPERATED AND MAINTAINED BY A CERTIFIED SERVICE PROVIDER.
 - WITHIN ONE MONTH OF INSTALLATION, THE CONTRACTOR 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 AND MANUFACTURER OF THE BAT UNIT INSTALLED.
 - ALL 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 THE LAND RECORDS OF HOWARD COUNTY.
 - THE HOWARD COUNTY HEALTH DEPARTMENT (HCHD) REQUIRES DOCUMENTATION FOR THE START-UP CERTIFICATION FROM THE MANUFACTURER PRIOR TO FINAL APPROVAL OF THE INSTALLATION.

Approved Septic System Plan
 Howard County Health Department

Signature _____ Date _____

DEVELOPER/PURCHASER:
 TAYLOR PROPERTIES, LLC.
 8321 SPRING WATER PATH
 JESSUP, MD 20794
 PHONE: 443-631-2070

NO.	DATE	REVISION

B.A.T. SYSTEM SITE PLAN
 3461 DAISY RD
 SINGLE FAMILY DETACHED
 GLENWOOD
 DEED REF. LIBER 16913 / FOLIO 094
 ZONED RC-DEO

FOURTH ELECTION DISTRICT TAX MAP #20, GRID 06, PARCEL 18
 HOWARD COUNTY, MARYLAND

Prepared by:
CHARLES R. CROCKEN AND ASSOCIATES, INC.
 902 LEE AVE.
 SYKESVILLE, MARYLAND 21157
 Tel. (410) 549-2708

SCALE: 1" = 30' DATE: 06/10/16 SHEET 1 OF 3

APPROVED FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS
 HOWARD COUNTY HEALTH DEPARTMENT

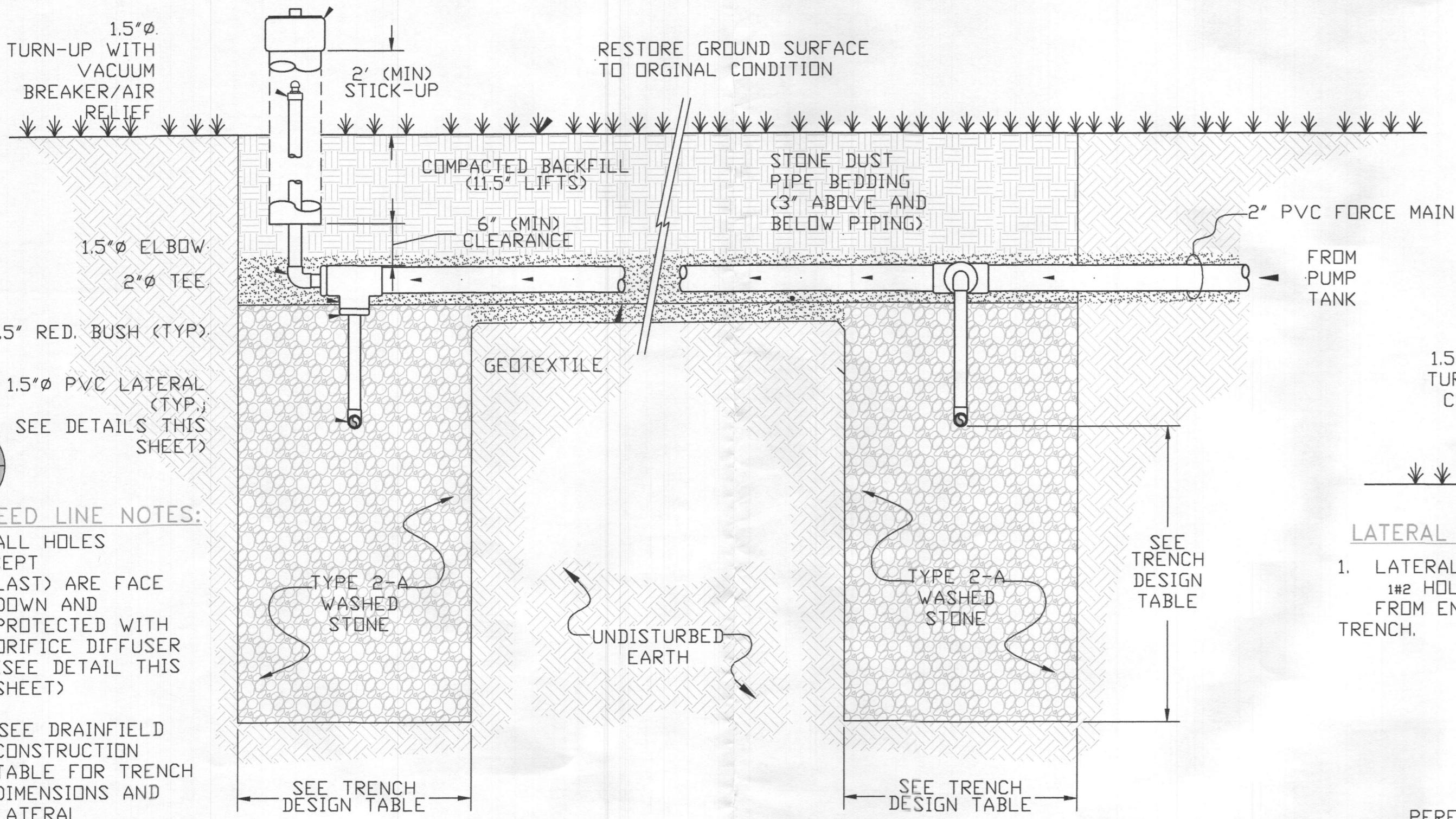
HOWARD COUNTY HEALTH OFFICER _____ DATE _____

I HEREBY CERTIFY THAT THE PERCOLATION TEST LOCATIONS SHOWN HEREON ARE TO THE BEST OF MY KNOWLEDGE ARE CORRECT AS SHOWN.

CHARLES R. CROCKEN, PE MD LICENSE REG. NO. 7893 (EXPIRATION DATE 4-22-2017) DATE _____

TURN-UP (END OF FORCE MAIN)
4" SCH. 40 PROTECTOR PIPE W/
VENTED REMOVABLE CAP/PLUG
FOR INSPECTION/ CLEANOUT

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2



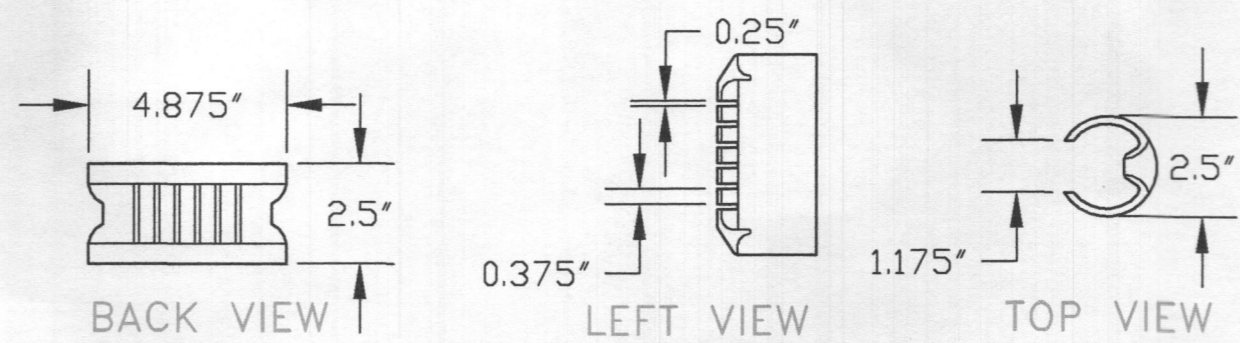
FEED LINE/DEEP TRENCH DETAIL (TYP)

NOT TO SCALE

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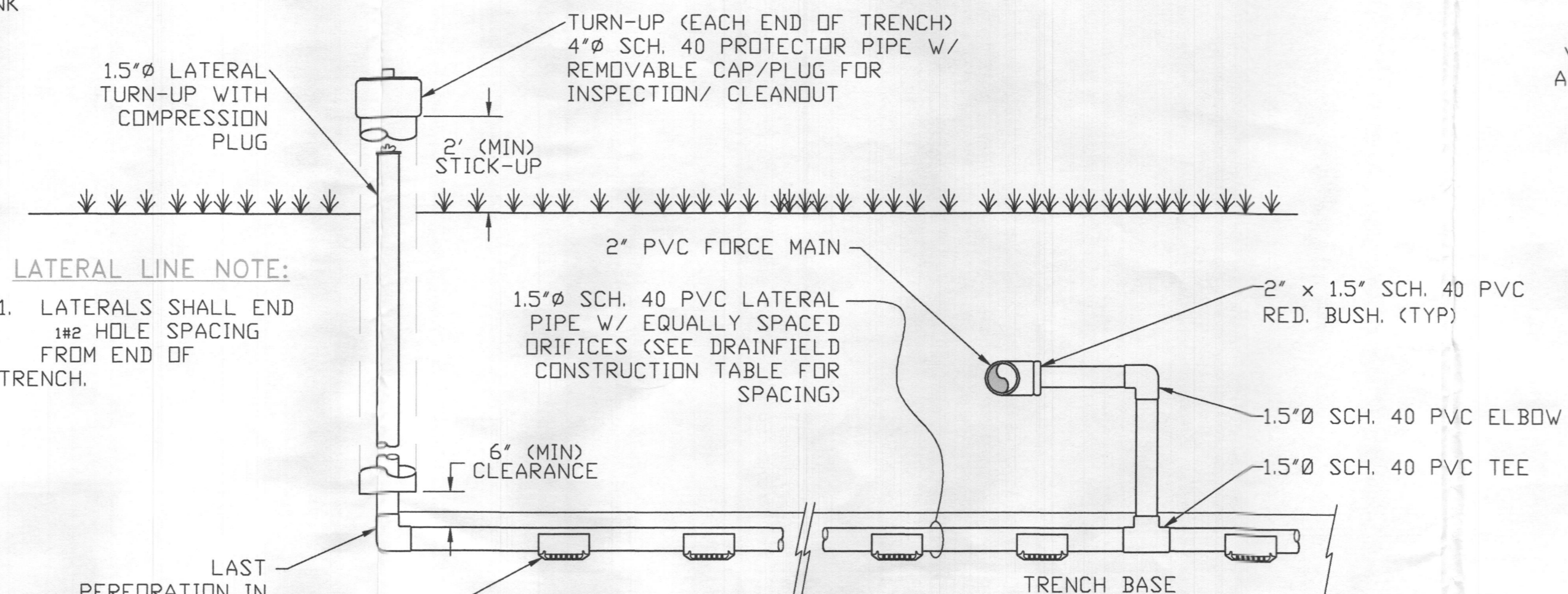
FEED LINE NOTES:

- ALL HOLES (EXCEPT LAST) ARE FACE DOWN AND PROTECTED WITH DRIFICE DIFFUSER (SEE DETAIL THIS SHEET)
- SEE DRAINFIELD CONSTRUCTION TABLE FOR TRENCH DIMENSIONS AND LATERAL PERFORATIONS NOT SHOWN.



SIM TECH ORIFICE SHIELD 1.5 (STF-106-1.5)

NOT TO SCALE



DISTRIBUTION LATERAL DETAIL

NOT TO SCALE

LATERAL LINE NOTE:

- LATERALS SHALL END 1/2 HOLE SPACING FROM END OF TRENCH.

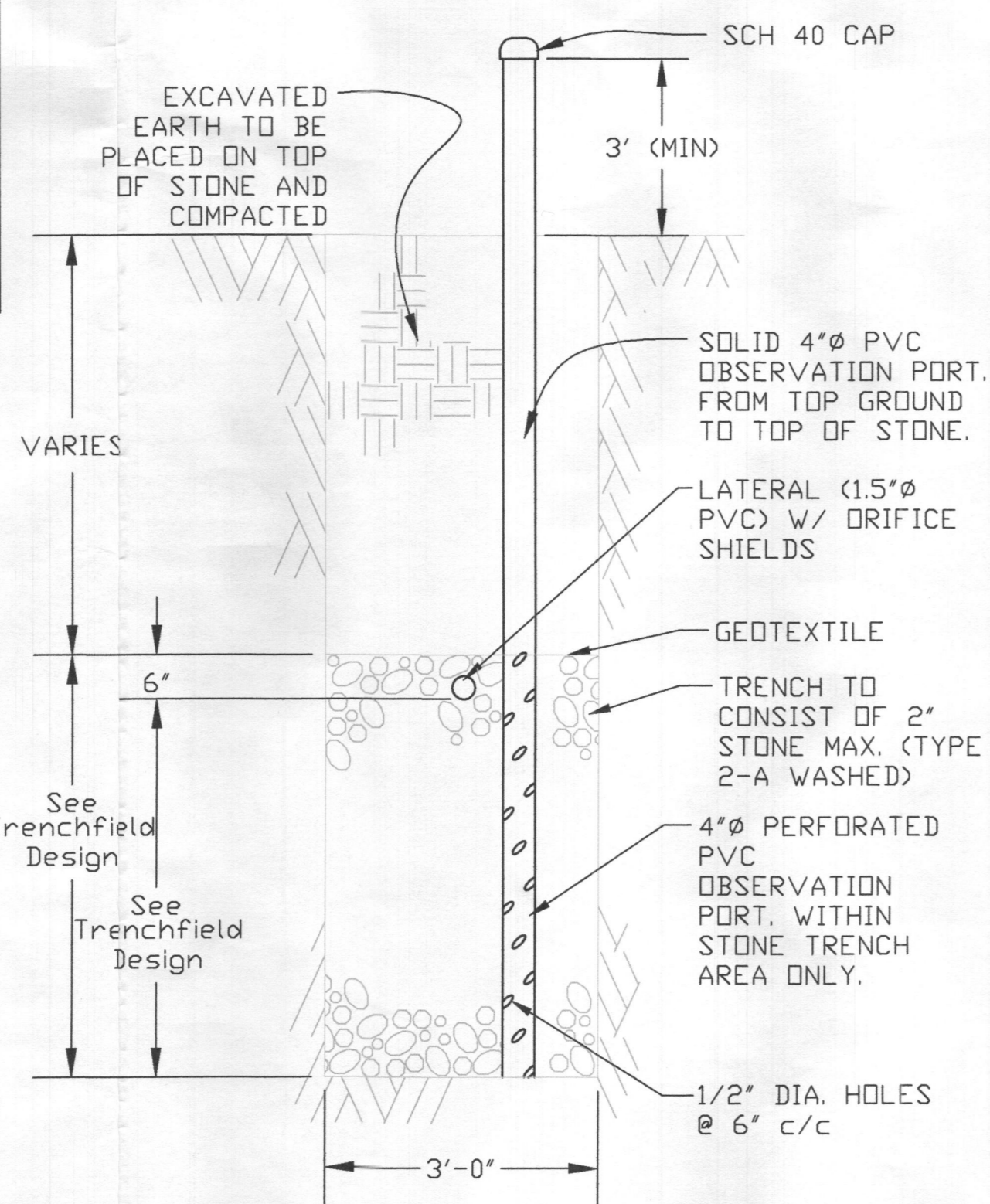
100% capacity build-out with low pressure distribution system

Cell	Trench	Existing Ground Elevation (feet msl)	perc ID's	Sidewall Top Elevation (feet msl)	Sidewall Height (feet)	Trench Bottom Elevation (feet msl)	Trench Bottom Depth (feet)	Trench Length (feet)	Trench Width (feet)	Application Rate (gpd/ft ²)	Capacity (gpd, L*W*AppR/ft)
A	1	561.50	1	556.00	5.5	553.0	8.5	42	3	0.8	200
	2	561.25	1	556.00	5.25	553.0	8.25	42	3	0.8	200
	3	561.00	1	556.00	5.0	553.0	8.0	42	3	0.8	200
B	4	561.00	3,4	555.00	6.0	552.0	9.0	63	3	0.8	300
	5	560.50	3,4	555.00	5.5	552.0	8.5	63	3	0.8	300
C	6	560.50	5,2	555.00	5.5	552.0	8.5	63	3	0.8	300
	7	560.25	5,2	555.00	5.25	552.0	8.25	63	3	0.8	300

300% total capacity (gpd) 1,800
100% capacity (gpd) 600
primary capacity, 200% (gpd) 600
reserve capacity, 100% (gpd) 1,200

calculated values in italics
msl = mean sea level in feet
laterals in each trench are at same elevation
NA = not available

TRENCHFIELD DESIGN



TYPICAL OBSERVATION PORT

NOT TO SCALE

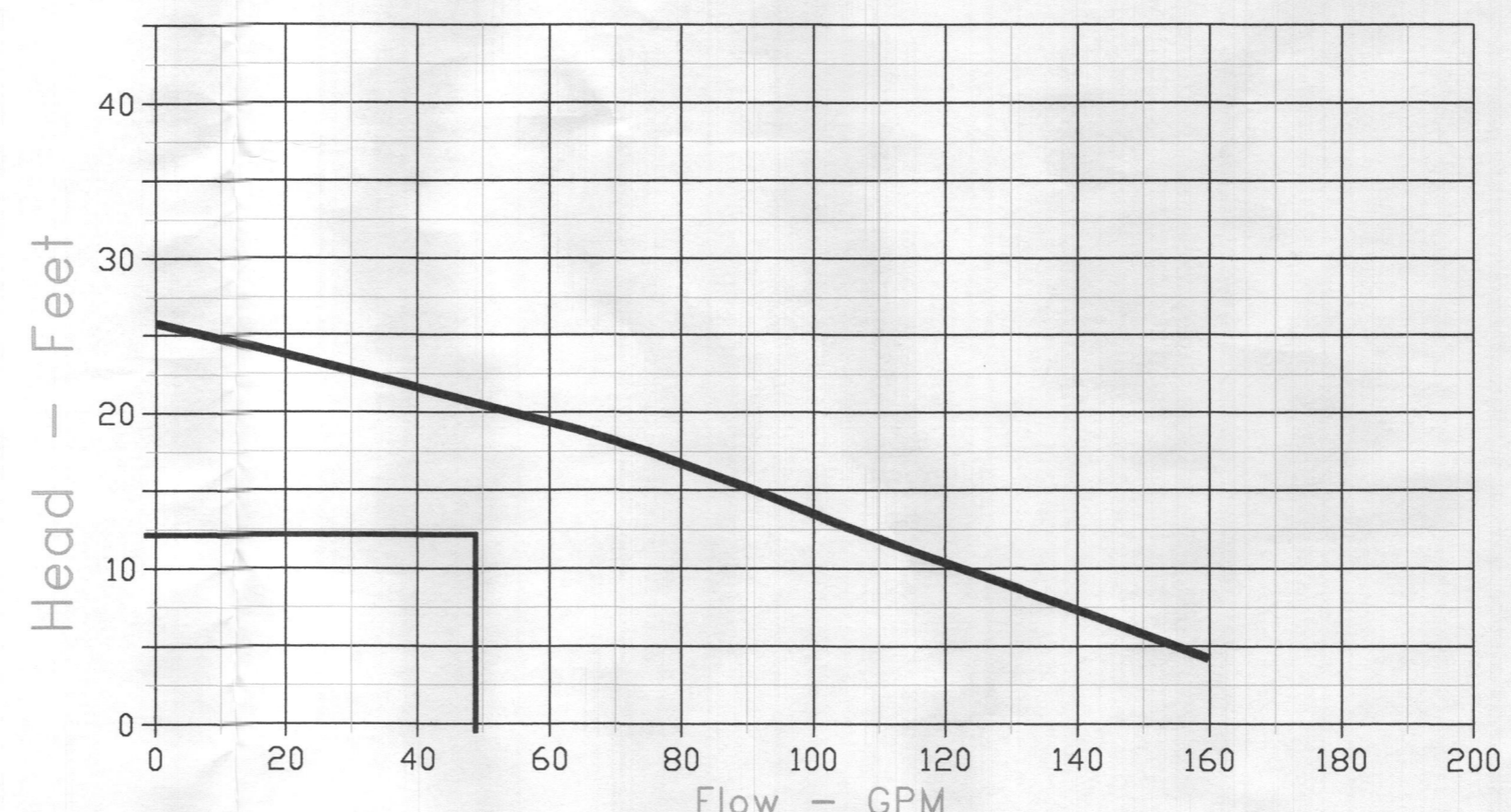
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Distribution Design for initial build-out

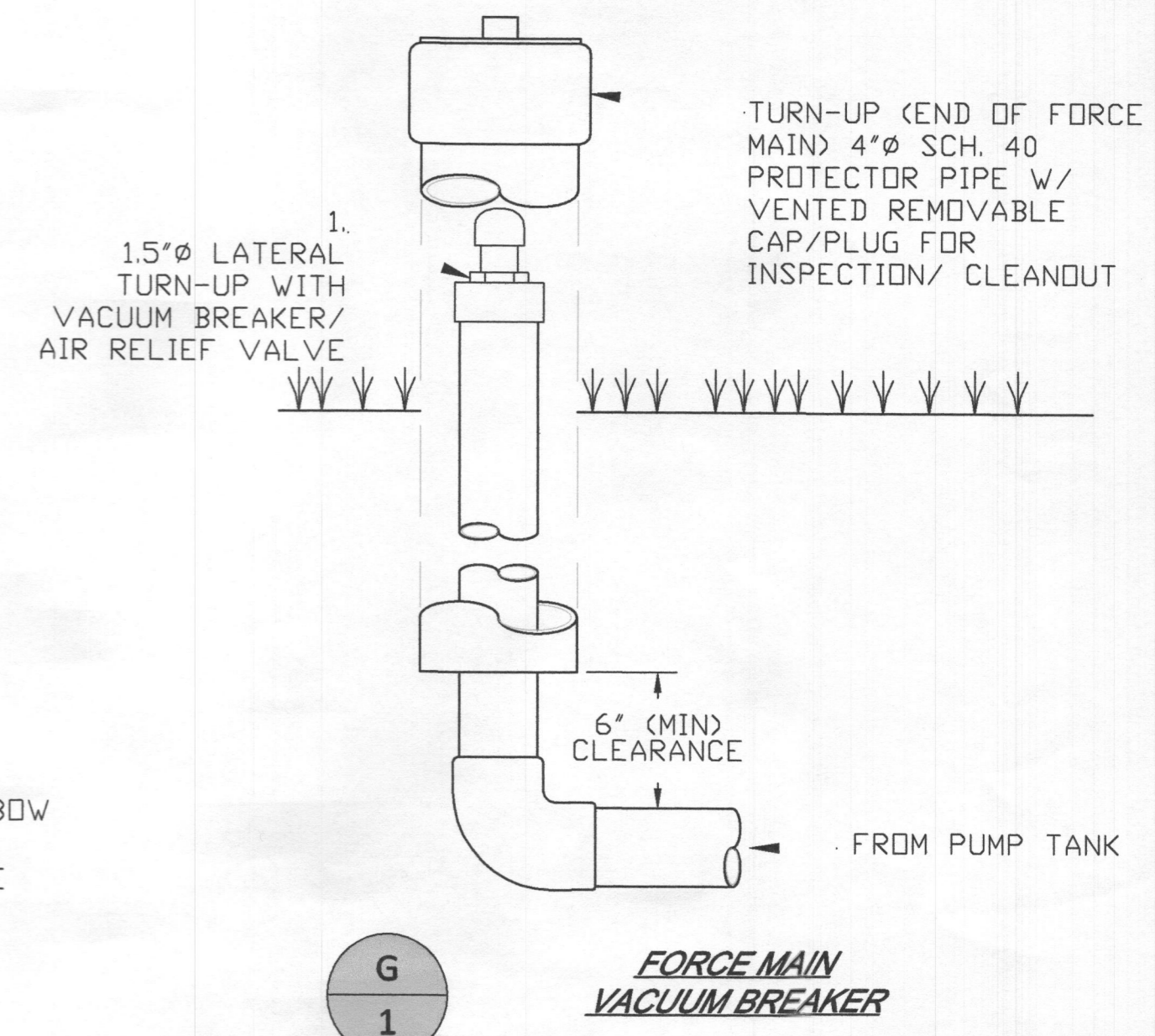
Cell	Trench	Sidewall Top Elevation (feet msl)	Lateral Elevation (feet msl)	Trench Length (feet)	# Holes - Each Lateral	Perf Spacing (feet)	Lateral Length (feet)	Perf Dia (inches)	Perf Flow (gpm)	Lateral Flow (gpm)	Dose Rate (gpm/foot of trench)	Max. Lateral Friction Loss (feet)	Lateral Velocity (feet/second)	Cell Flow (gpm)
A	1	556.0	556.0	42	8	5.21	18.2	5/16	2.00	16.0	0.38	0.4	2.5	48
	2	556.0	556.0	42	8	5.21	18.2	5/16	2.00	16.0	0.38	0.4	2.5	48
	3	556.0	556.0	42	8	5.21	18.2	5/16	2.00	16.0	0.38	0.4	2.5	48

Notes
calculated values in italics
gpm = gallons per minute
msl = mean sea level in feet
design distal head (feet) = 3.0
friction C factor for plastic pipe = 130
lateral inside diameter (1.5" dia sch40PVC, in) = 1.610

DISTRIBUTION DESIGN



EQUALIZATION PUMP CURVE GOULDS MODEL WS03B



FORCE MAIN VACUUM BREAKER

G
1

Design input Calculations

Static hydraulic profile (with invert elevations)	
maximum daily flow (MDF) (gpd)	600
average daily flow (ADF) (gpd)	300
influent invert elev. (feet msl)	558.64
processor bottom elev. (feet msl)	554.64
pump tank bottom elev. (feet msl)	549.62
dose pump elev. (feet msl)	550.62
Cell A lateral elev. (feet msl)	556.00
*6" fall between influent pipes, and 6" pump tank thickness *Pump suction is 6" above tank bottom Cell A in-service lift for dose pump (feet) 5.4	
Pumping and Dosing	
cell A flow (gpm)	48
cell A force main length (feet)	30
cell A minor loss equivalent lengths (feet)	40.8
force main velocity (feet/second)	4.6
cell A force main friction loss (feet)	3.4
cell A max. total dynamic head (feet)	12.2
cell A main volume (gals)	5
cell A total lateral volume (gals)	19
cell A dose vol. @ main + 5x lateral (gals)	102
dose tank length (inches)	60
dose tank width (inches)	60
dose tank height to invert (inches)	96
dose tank capacity (gals)	1,500
dose tank capacity (gals per inch)	16
design dose volume (gals)	102
volume below enable float (gals)	405
min # daily doses @ ADF	3.0
timer enable height (inches)	42
low water cutoff height (inches)	16
simplex pump (Goulds)	WS03B
recirculation rate at MDF (%)	30%
tank height above invert (inches)	9
average dose time (minutes)	2.1
pump off time setting (hours)	8.1
residual settling volume (gals)	249
normal equalization above enable (gals)	845
volume above high water alarm (gals)	600

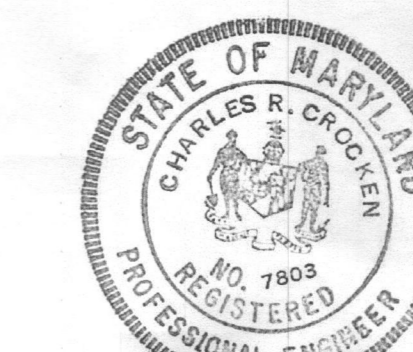
Notes
gpd = gallons per day
gpm = gallons per minute
msl = mean sea level in feet
calculated values in italics
set floats based on weight +/- 3"
duplex control panel has individual hand/off/auto switches for each dose pump
one cell is always in service, with the other resting
design distal head (feet) = 3.0
friction C factor for plastic pipe = 130
force main ID (2" dia sch40PVC, in) = 2.067
lateral inside diameter (1.5" dia sch40PVC, in) = 1.610

DESIGN CALCULATIONS

DEVELOPER/PURCHASER:
TAYLOR PROPERTIES, LLC
8321 SPRING WATER PATH
JESSUP, MD, 20794
PHONE: 443-631-2070

Approved Septic System Plan
Howard County Health Department

Signature _____ Date _____



NO.	DATE	REVISION

B.A.T. SYSTEM DETAILS
3461 DAISY RD
SINGLE FAMILY DETACHED
GLENNWOOD
DEED REF. LIBER 16913 / FOLIO 094
ZONED RC-020

FOURTH ELECTION DISTRICT TAX MAP 820, GRID 06, PARCEL 18
HOWARD COUNTY, MARYLAND

Prepared by:
CHARLES R. CROCKEN AND ASSOCIATES, INC.
802 LEE AVE.
SYKESVILLE, MARYLAND 21157
Tel: (410) 549-2708

SCALE: 1"=30' DATE: 06/10/16 SHEET 2 OF 3

APPROVED FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS
HOWARD COUNTY HEALTH DEPARTMENT

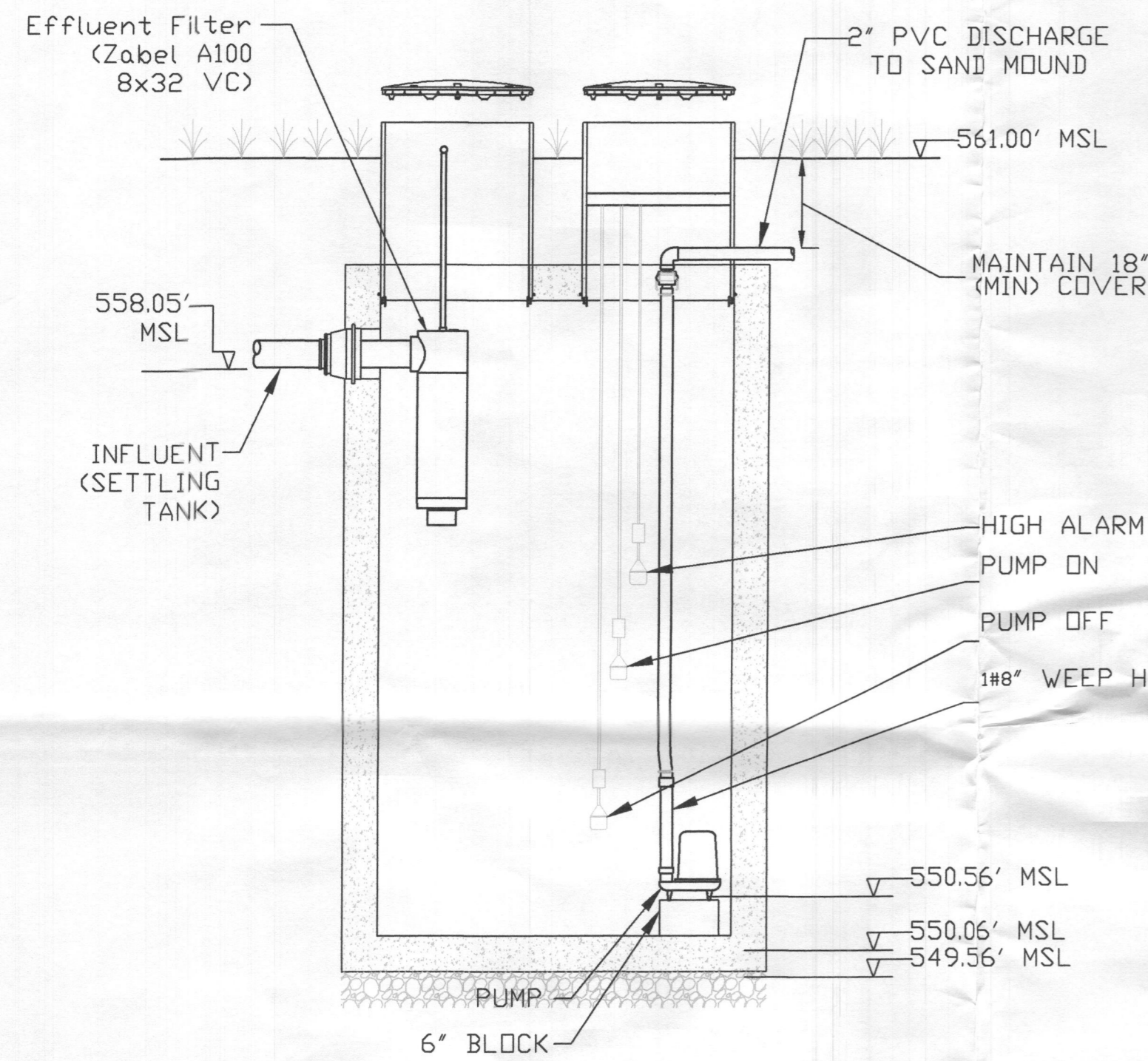
HOWARD COUNTY HEALTH OFFICER _____ DATE _____

I HEREBY CERTIFY THAT THE PERCOLATION TEST LOCATIONS SHOWN
HEREON ARE TO THE BEST OF MY KNOWLEDGE ARE CORRECT AS SHOWN.

CHARLES R. CROCKEN, PE MD, LICENSE REG. NO. 7803 (EXPIRATION DATE 4-22-2017) 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. 7803 EXPIRATION DATE 4-22-2017

Charles R. Crocken 12-19-2016
CHARLES R. CROCKEN, PE MD, LICENSE REG. NO. 7803 DATE _____



1.500 GAL. PUMP TANK
Scale: 1/2" = 1'-0"
F
1

PUMP TANK FLOAT	SETTING (Inches from Tank Bottom)
HIGH ALARM	58
PUMP ON	42
PUMP OFF	16

Float settings are based upon tank dimensions indicated, if different tanks are used, float settings will need to be adjusted accordingly.

Notes

- All inspection, viewing and pump out ports shall be secured to prevent accidental or unauthorized access.
- No more than 4 FT of fill shall be placed anywhere over tank lid(s).
- Tank measurements and elevations are based on septic tanks and pump chambers as manufactured by Gillespie Precast, LLC (1-800-638-6884) an equal manufacturer may be accepted with shop drawing submittal and engineer approval.
- Dose Pump control panel shall have event counters and elapsed time meters.
- Minimum Force Main bury depth shall be 2'-6" (30") to top of pipe and shall maintain a positive or zero slope in the direction of flow.
- All tanks shall be tested for water tightness prior to service.
- All tanks shall be set upon 6"-8" of gravel bedding.

line down

INSTALLER FRIENDLY SERIES® - IFS Single Phase Simplex (Demand/TD) controlled system for pump control and system monitoring.

The IFS simplex control panel is designed to control one 120, 208, 240 VAC single phase pump in water and sewage installations. The panel features an easy-to-use touch pad with display on the inner door for programming and system monitoring. The panel configuration can be easily converted in the field to either a timed dose or demand dose.

The optional C-Level™ sensor is a pressure transducer that senses the liquid level in the tank and sends a signal to the IFS panel. Pump activation levels can be adjusted by using the panel touch pad C-Level™ CL40 sensor operating range is 3-39.9 inches (7.6-101.3 cm). C-Level™ C.100 operating range is 3-99.5 inches (7.6-252.7 cm).

TOUCH PAD FEATURES

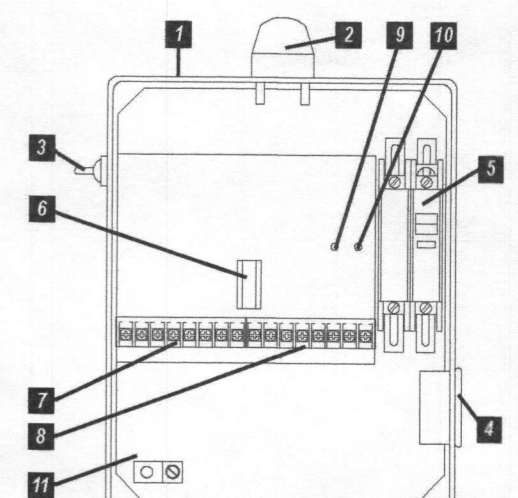
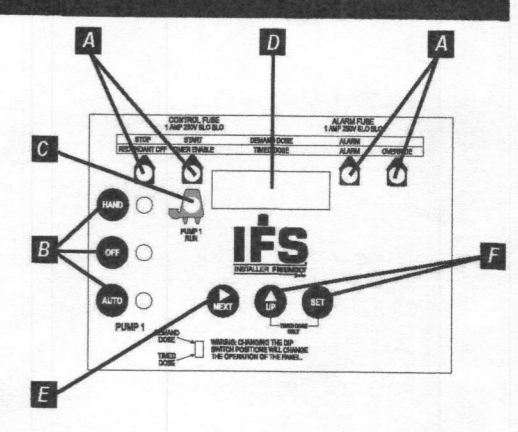
- Level Status Indicators** illuminate when floats or set points are activated. Alarm will activate if a float operates out of sequence.
- HOA (Hand-Off-Automatic) Buttons** control pump mode with indication. Hand mode defaults to Automatic when stop level or redundant out level is reached.
- Pump Run Indicator** illuminates when pump is called to run.
- LED Display** shows system information including: level in inches or centimeters (C-Level™ only), mode, pump elapsed time (hh:mm), events (cycles), alarm counter, float error count, timed dose override counter (timed dose only), and ON/OFF times (timed dose only).
- NEXT Push Button** toggles display.
- UP and SET Push Buttons** set pump ON/OFF times (timed dose only) or activation levels (C-Level™ only).

PANEL COMPONENTS

- Enclosure base measures 10 X 8 X 4 inches (25.4 X 20.32 X 10.16 cm). NEMA 4X (ultraviolet stabilized thermoplastic with removable mounting feet for outdoor or indoor use). Note: Options, voltage, and amp range selected may change enclosure size and component layout.
- Red Alarm Beacon provides 360° visual check of alarm condition.
- Exterior Alarm Test/Normal/Silence Switch allows horn and light to be tested and horn to be silenced in an alarm condition. Alarm automatically resets once alarm condition is cleared.
- Alarm Horn provides audio warning of alarm condition (83 to 85 decibel rating).
- Circuit Breaker (optional) provides pump disconnect and branch circuit protection.
- Power Relay controls pump by switching electrical lines. Definite purpose contactor used when pump full load amps are above 15.
- Float Connection Terminal Block
- Incoming Control/Alarm Power & Pump Terminal Block
- Control Power Indicator/Fuse indicator light illuminates if control power is present in signal. Alarm will activate if control fuse is blown.
- Alarm Power Indicator/Fuse indicator light illuminates if alarm power is present in panel.
- Ground Lug

OPTIONAL FEATURE

- 34" (86.36cm) Panel Mounting Post (Factory Installed). Includes Duplex Installation Kit (Enclosure upsized to 10" x 8" x 6" (25.4 x 20.32 x 15.24 cm). Max. Enclosure size 14" x 6" (35.56 x 30.48 x 15.24 cm).



Model Shown IFS11W114X8AC
Reg. Cir. Pat. & TM Off
C-Level™ Sensor US Patent No. 8,336,385; 8,567,242; 8,650,648

FEATURES

- Entire control system is UL Listed to meet and/or exceed industry safety standards
- Dual safety certification for the United States and Canada
- Standard package includes: Demand Dose - three 20' SJE MilliAmpMaster™ control switches
Timed Dose - two 20' SJE MilliAmpMaster™ control switches
- Complete with step-by-step installation instructions
- Five-year limited warranty

SJE Rhombus
UL LISTED
PO Box 1708, Detroit Lakes, MN 56502
1-888-DIAL-SJE • 1-219-847-1317
1-219-847-4617 Fax
email: customer.service@sjerhombus.com
www.sjerhombus.com

DOSE PUMP CONTROL PANEL

APPROVED FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS
HOWARD COUNTY HEALTH DEPARTMENT

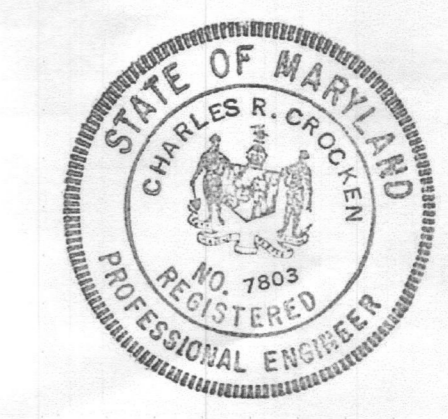
HOWARD COUNTY HEALTH OFFICER DATE

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HEREON ARE TO THE BEST OF MY KNOWLEDGE ARE CORRECT AS SHOWN.

CHARLES R. CROCKEN, PE MD. LICENSE REG. NO. 7803 (EXPIRATION DATE 4-22-2017) DATE

Approved Septic System Plan
Howard County Health Department
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. 7803 EXPIRATION DATE 4-22-2017
Charles R. Crocken 12-13-2016
CHARLES R. CROCKEN, PE MD. LICENSE REG. NO. 7803 DATE



DEVELOPER/PURCHASER:
TAYLOR PROPERTIES, LLC.
3521 SPRING WATER PATH
JESSUP, MD. 20794
PHONE: 443-631-2070

NO.	DATE	REVISION
2		
1		

B.A.T. SYSTEM DETAILS
3461 DAISY RD
SINGLE FAMILY DETACHED
GLENWOOD
DEED REF: LIBER 16913 / FOLIO 094
ZONED RC-200

FOURTH ELECTION DISTRICT TAX MAP #20, GRID 06, PARCEL 18
HOWARD COUNTY, MARYLAND

Prepared by:
CHARLES R. CROCKEN AND ASSOCIATES, INC.
802 LEE AVE.
SYKESVILLE, MARYLAND 21157
Tel. (410) 549-2708

SCALE: 1"=30' DATE: 08/10/16 SHEET 3 OF 3

Williams, Jeffrey

From: Williams, Jeffrey
Sent: Thursday, December 22, 2016 10:29 AM
To: 'Jennifer Taylor'
Subject: RE: 3461 Daisy Rd Plans

You can come pay for the permit (\$396). We have to issue it to someone who is certified to install the BAT unit. Your chosen contractor can come pick it up. I have a 3rd copy of the design plan for you or your engineer to come pick up as well. If you pay for the permit now, we will sign off on the building permit. Thanks
Jeff

From: Jennifer Taylor [<mailto:jentaylor1105@gmail.com>]
Sent: Thursday, December 22, 2016 10:06 AM
To: Williams, Jeffrey
Subject: Re: 3461 Daisy Rd Plans

Hi Jeff,

We do already have an electrical permit pulled for the house. If these plans will be approved with the few minor changes I will contact the septic companies and see if I can get more accurate install numbers and decide. Until then I believe you stated that we could pull the septic permit ourselves correct?

Are we able to come in and pull the septic permit now and have the building permit signed off on at this point?

On Thu, Dec 22, 2016 at 9:57 AM, Williams, Jeffrey <jewilliams@howardcountymd.gov> wrote:

Hello Jennifer. We're nearing the point where we can approve the BAT plan. There were a few errors that need to be redlined. Have you lined up a septic contractor to do the work yet? Please note that this system has an electrical component to it with the pump system, so an electrical permit will be needed. If you are pulling one for the house, you can piggyback the work onto that, but we will need the electrical permit number to put on the septic permit. Once we sign off on the building permit, we will be conditioning it that no final inspection can be conducted until the sewage disposal system has been installed and approved. Thanks

Jeff

From: Jennifer Taylor [<mailto:jentaylor1105@gmail.com>]
Sent: Monday, December 19, 2016 9:29 AM
To: Williams, Jeffrey
Subject: 3461 Daisy Rd Plans

Morning Jeff,

I just wanted to confirm that you received the plans that were dropped off last week by my contractor.

**CHARLES R. CROCKEN
& ASSOCIATES, INC.**
Civil Engineering and Land Planning
902 Lee Avenue Sykesville, MD 21784
Tel. 410-549-2708 Fax. 410-549-9063

LETTER OF TRANSMITTAL

DATE 12-14-2016	JOB NO. —
ATTENTION JEFF WILLIAMS.	
RE: 3461 DAISY ROAD	

TO HOWARD CO HEALTH DEPT.
ENVIRONMENTAL HEALTH
8930 STANFORD BLVD.
COLUMBIA, MD. 21045

GENTLEMEN:

WE ARE SENDING YOU Attached Under separate cover via _____ the following items:
 Shop drawings Prints Plans Samples Specifications
 Copy of letter Change order _____

COPIES	DATE	NO.	DESCRIPTION
3	12/14	3	LOW DOSEAGE BAT PLAN

THESE ARE TRANSMITTED as checked below:

- For approval
- For your use
- As requested
- For review and comment
- FOR BIDS DUE _____ 19 _____
- Approved as submitted
- Approved as noted
- Returned for corrections
- _____
- Resubmit _____ copies for approval
- Submit _____ copies for distribution
- Return _____ corrected prints
- PRINTS RETURNED AFTER LOAN TO US

REMARKS _____

COPY TO FILE / JEN TAYLOR.

SIGNED: Charles Crocken

Williams, Jeffrey

From: Williams, Jeffrey
Sent: Wednesday, November 16, 2016 10:23 AM
To: 'Charles R. Crocken'
Cc: Jennifer Taylor (jentaylor1105@gmail.com)
Subject: RE: 3461 DAISY RD
Attachments: 3461 Daisy Rd_BAT plan memo.pdf

I've reviewed the perc cert plan and BAT plan for 3461 Daisy Rd. The Perc cert plan has been sent up for Health Officer signature. There are corrections needed on the BAT design plan. See the attached memo with comments for revision.

Thanks

Jeff

From: Charles R. Crocken [<mailto:crcengr2@comcast.net>]
Sent: Monday, November 07, 2016 2:55 PM
To: Williams, Jeffrey
Subject: 3461 DAISY RD

Attached for your review and comment. Hard copies to follow

Thanks

Charles Crocken

Charles R. Crocken and Associates, Inc.
902 Lee Ave.
Sykesville, Maryland 21784
Phone: 410- 549-2708

ZONED

ENVIRO. NON-BUILDABLE
PARCEL 'B'
WATERFORD FARMS'
PLAT #16166

564

564

562

560

EX. DWGL.

DEED REF. 16902/004

328.82'

P-18

LIBER 16913/FOLIO 94
1.00 ACRES±

10' BRL

561

DISTRB.
BOX

4" S.S.

B.A.T.
SYSTEM

4" S.S.

CONTROL
PANEL

EX.
SPEEAGE PIT
(TO BE ABANDON
PER HCHO REGS.)

EXISTING
SDA
11162 sq. ft

558x6

(2) TRENCHES L=56' wa

(3) TRENCHES L=56' wa

560x14

(2) TRENCHES L=56' wa

30" BRL

170.20'

100' R.

10' BRL

132±

560

230.67'

558

S 48° 25' 00" W

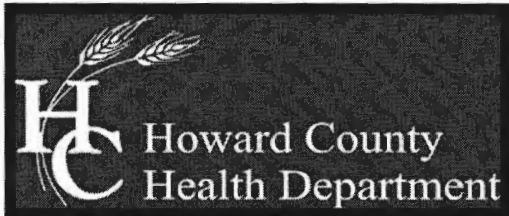
Use
this
layout for
3rd system

ENVIRO. NON-BUILDABLE
PARCEL 'A'
WATERFORD FARMS'
PLAT #16166
16902/05
CURTIS ANDREW CRAIG
PRATANPORN A.J. CRAIG
ZONED -RC-DEO

LOT 44
ATERFORD FARMS'
PLAT #16166
16902/05
CURTIS ANDREW CRAIG
PRATANPORN A.J. CRAIG
ZONED -RC-DEO

EX. DWGL.

ELAINO



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

Twitter: HowardCoHealthDep

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

MEMORANDUM

TO: Charles Crocken, Charles R. Crocken and Associates, Inc.

CC: Jennifer Taylor, homeowner

FROM: Jeff Williams
Program Manager, Well & Septic Program

RE: 3461 Daisy Road BAT plan

DATE: November 16, 2016

I have reviewed the BAT plan for the above referenced property and have the following comments for revision:

- The sewage disposal system must utilize a low pressure dosed drainfield as a condition of the downgrade well variance. The BAT plan shows a gravity trench design. The design plan must show all details necessary to install a low pressure dosed system, including detailed calculations of the number of perforations, perforation spacing, lateral diameter and length, lateral flow, etc. A diagram of the force main, manifold, and lateral network must be shown. A detail of the lateral turn-ups must be shown. Details of the dosing and total dynamic head including calculations of friction head must be shown. A pump curve and a specific pump model must be shown. A cross section of a properly sized pump tank and details of the pump float positioning and calculations of appropriate emergency storage must be shown.
- The trench positioning is not ideal based on the existing contour. A more acceptable positioning would be to place the distribution box closer to test hole 1 and run 3 trenches of 38' or 2 trenches of 42' at 3' wide along a contour similar to the 562' contour line. See attached mark up.
- The invert is listed as 5'. The maximum allowed invert depth is 4' below grade, even if effective area starts below that depth. Correct depths in the system design details accordingly.
- Remove note 10 and health officer signature block.
- Correct the legend to only include symbols being used in the diagram.

If you would like to schedule a meeting to discuss the requirements and design considerations for a low pressure dosed drainfield, feel free to contact me at 410-313-4261 or jewilliams@howardcountymd.gov