

Bureau of Environmental Health

8930 Stanford Boulevard, Columbia, MD 21045

Main: 410-313-2640 | Fax: 410-313-2648

TDD 410-313-2323 | Toll Free 1-866-313-6300

www.hchealth.org

Facebook: www.facebook.com/hocohealth

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

RECEIPT DATE: 4/3/25 **ONSITE SEWAGE DISPOSAL SYSTEM** P 589025

APPROVAL DATE: 5/14/25 **PERMIT: SAND MOUND** A _____

PROPERTY ADDRESS: 6820 Koandah Gardens

SUBDIVISION: McDaniel Property LOT: 9 TAX ID: _____

CONTRACTOR: Hotfields EMAIL: _____

CONTRACTOR ADDRESS: _____ PHONE: _____

CONTRACTOR SAND MOUND CERTIFIED: MDE

PROPERTY OWNER: John P. McDaniel EMAIL: _____

OWNER ADDRESS: 13032 Highland Rd Highland, MD 20777 PHONE: 443 367-0422

SEPTIC TANK: 1500 GAL (Mayer) PUMP SIZE: WE15H(G PUMP TANK CAPACITY: 1500 GAL
ould's)

DISTRIBUTION SYSTEM: GRAVITY PRESSURE DOSED BEDROOMS: 5 APPLICATION RATE: 0.5

LOCATION: PER APPROVED DESIGN PLAN. MOUND AREA AND 25' DOWNSLOPE AREA MUST BE FENCED AT ALL TIMES DURING CONSTRUCTION AND GRADING. HEAVY EQUIPMENT MUST BE KEPT OFF OF SANDMOUND AREA OR AREA MAY BE RENDERED UNSUITABLE FOR INSTALLATION. SEWAGE DISPOSAL AREA AND TANK LOCATION MUST BE STAKED BY LICENSED SURVEYOR PRIOR TO PRE-CONSTRUCTION INSPECTION.

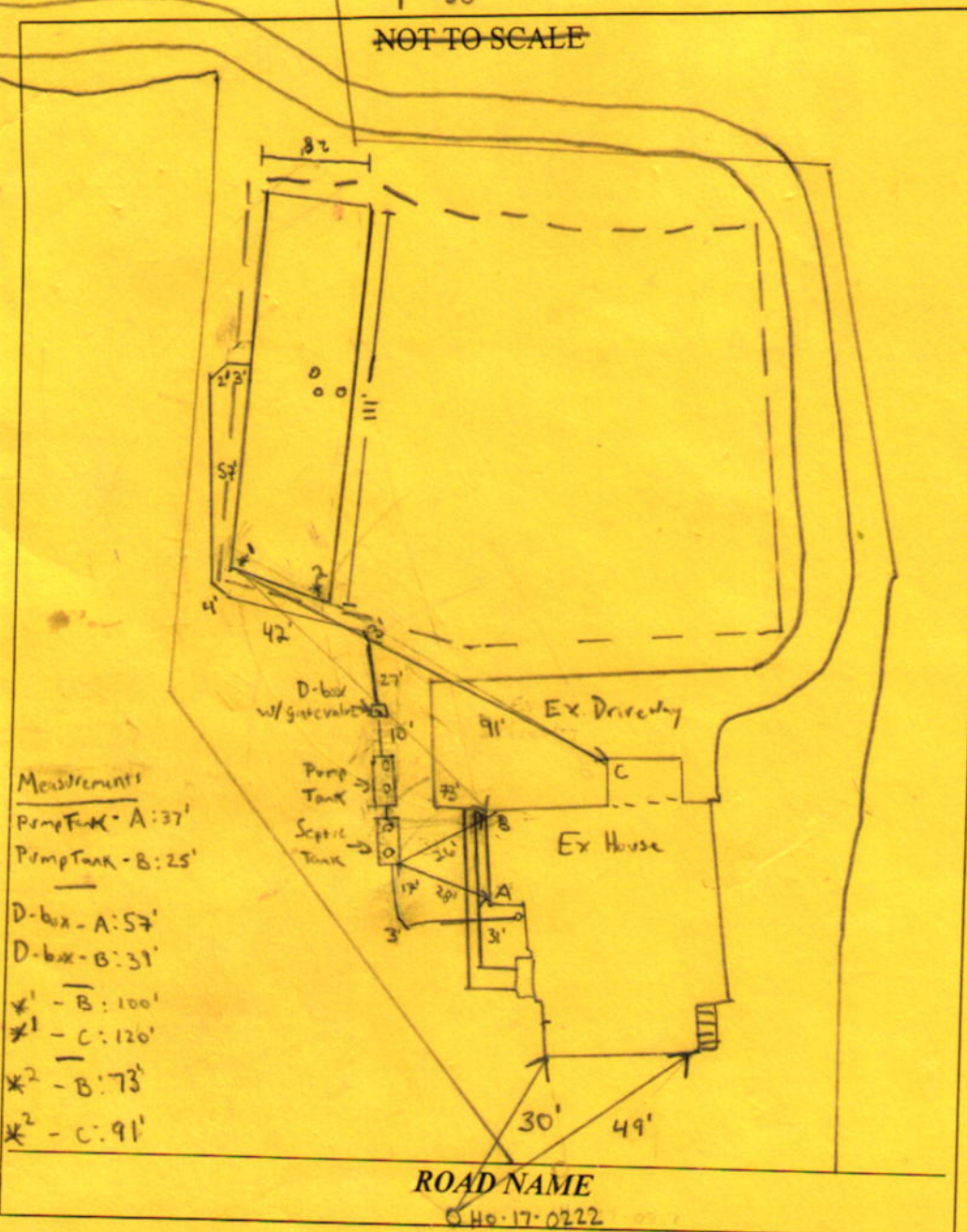
NOTES: SANDMOUND AREA MUST BE INSPECTED AND APPROVED FOR MOISTURE CONTENT BEFORE ANY PREPARATION IS BEGUN. CONTRACTOR MUST SCHEDULE INSPECTION FOLLOWING BED PREPARATION PRIOR TO APPLYING SAND. MDE CERTIFIED SAND MOUND INSTALLER MUST BE ONSITE AT ALL TIMES DURING INSTALLATION. SAND MUST MEET HOWARD COUNTY SPECIFICATIONS AND MUST BE APPROVED BY SANITARIAN. SAND TICKET MUST BE RETAINED FOR INSPECTION. *SAND MUST HAVE AN EFFECTIVE SIZE BETWEEN 0.25mm AND 0.5mm WITH A UNIFORMITY COEFFICIENT OF 3.5 OR LESS. GRAVEL MUST BE WASHED, FREE OF FINES, and be 0.75- 2.0 inches IN DIAMETER*
REQUIRED- Effluent filter to be installed inside 1500 GAL Tank
FOLLOW DESIGN CRITERIA LAID OUT IN PLAN: PUMP, ALARM, and ELECTRICAL INSPECTIONS REQUIRED

ISSUED BY: Zack Silvast ISSUE DATE: 4/3/25 EXPIRATION DATE: 4/3/26

- 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 25002220 or E25002002
- 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.

1" = 50'
NOT TO SCALE



- Measurements
- Pump Tank - A: 37'
 - Pump Tank - B: 25'
 - D-box - A: 57'
 - D-box - B: 31'
 - *1 - B: 100'
 - *1 - C: 120'
 - *2 - B: 73'
 - *2 - C: 91'

TRENCH/DRAINFIELD DATA		
WIDTH	INLET	BOTTOM
_____	_____	_____
NUMBER OF TRENCHES _____		
TOTAL LENGTH _____		
ABSORPTION AREA _____		
DISTRIBUTION BOX LEVEL <u>Yes</u>		
DISTRIBUTION BOX BAFFLE <u>Gate Valve installed</u>		
DISTRIBUTION BOX PORT <u>Yes</u>		

SEPTIC TANK DATA	
SEPTIC TANK 1 LEVEL	<u>Yes</u>
MANUFACTURER	<u>Babylon</u>
CAPACITY	<u>1500</u> GAL
SEAM LOC	<u>Top</u>
TANK LID DEPTH	<u>2'</u>
BAFFLES	<u>6" Front / 4" Back</u>
BAFFLE FILTER	<u>BAFFLE FILTER</u>
MANHOLE LOC	<u>Front/Back</u>
6" PORT LOC	<u>---</u>
WATERTIGHT TEST	<u>---</u>
SLOTTED	<u>Yes</u>
DATE ON LID	<u>4-21-25</u>
PUMP/SEPTIC TANK LEVEL <u>Yes</u>	
MANUFACTURER	<u>Babylon</u>
CAPACITY	<u>1500</u> GAL
SEAM LOC	<u>Top</u>
TANK LID DEPTH	<u>2.5'</u>
BAFFLES	<u>---</u>
BAFFLE FILTER	<u>---</u>
MANHOLE LOC	<u>Front/Back</u>
6" PORT LOC	<u>---</u>
WATERTIGHT TEST	<u>---</u>
SLOTTED	<u>No</u>
DATE ON LID	<u>5-3-25</u>

SEPTIC CONTRACTOR ONSITE INSTALLING SYTEM: Ken Hatfield Jr.
 SEPTIC CONTRACTOR ONSITE LICENSED WITH THE STATE OF MD: YES/NO

PRE-CONSTRUCTION NOTES:
7/2/25 Met with Contractor on site. Soil dry enough to start lower end of mound. Sand mound is not entirely on center. Moved bottom two ends of sand mound area up 2'. Contractor to mow grass and remove tree. Contractor will also need to run a test of the pumping chamber with clean water once laterals are installed. (MB)

INSTALLATION NOTES:
7/2/25 Contractor has force main dug from center of mound to 14' just inside of MA. Area is muddy. Tree not yet removed, chainsaw dired. Will be cutting down tomorrow. Contractor sacrificed about 64' x 84' (about half) of the trench with a back hoe that had two plug teeth installed. Contractor then back filled area with sand. Stopped for the day. (MB)
7/3/25 Contractor removed tree and has entire area sacrificed with sand on top. Contractor using laser level to shoot 14" downslope and 12" upslope. Perforated holes measured and drilled while on site. (MB)
7/3/25 Contractor lotted sand and shaped mound. Absorption bed formed. Using laser level to grade bottom. Bed stabilized w/ stakes and boards. Absorption bed is 10". Gravel being added to 10". Distribution network added. Will resume on Monday. (MB/SP)

CONTROL PANEL DATA	
CONTROL PANEL HEIGHT	<u>30"</u>
(MIN 30")	
INSPECTION DATE	<u>8/14/25</u>
INSPECTION: PASS/FAIL (CIRCLE ONE)	

FINAL INSPECTOR M Burns DATE OF APPROVAL 8/14/25

Inspection Date/Inspection Notes/Inspector's Initials & Others Present:

7/7/25 Contractor added 2' river gravel over pipe. Observation ports added to lateral ends, at manifold, and tube to original grade. Geotextile fabric was then added. A clay loam was placed on top of the fabric. Contractor got the clay loam from where they dug up the propane gas line. 18" of fill added to center of mound. Contractor used a laser level. Sides had fill added and were graded using a backhoe/Bobcat, then rakes & shovels.

7/8/25 Contractor has front line in and connected to septic and pump tanks. 1/2 fill achieved. ST and PT level. Effluent filter not yet added. PT has load-bearing lid. Front line bedded in 57 stone and house connection sealed with groutcrete. Tanks are 100' from well. OK to backfill front line. Contractor will be adding stone to tank hole due to over dig. (MB)

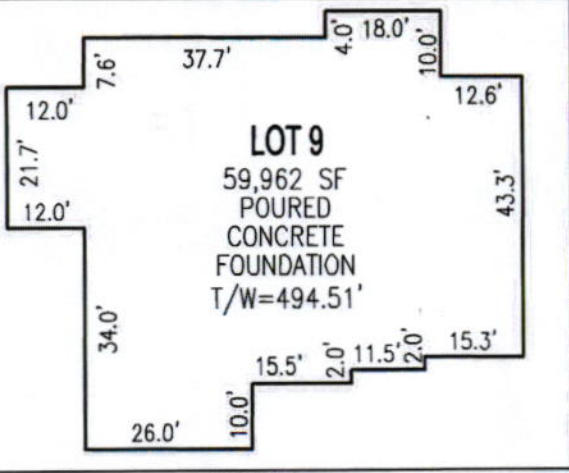
7/9/25 Contractor completed connection from d-box to sand mound manifold. Sch. 40 3" pipe was used @ 260 PPT. Contractor bedded pipe near d-box. Gate valve and riser also added to d-box. OK to backfill. (MB)

8/1/2025 Pump and alarm test. 1.25^{HP} Goulds pump used. Pump, flow tree, and gorex disconnect installed per plan. Pump and alarm set on separate breakers. Audio + visual alarms functioning. Pump test showed that the first row's distal head was 2'6". Rows 2 and 3 had a distal head of 22", 2" below the plan's 24" distal head requirement. The control panel was 27.5" above grade. Contractor to tell builder that the front yard re-grade will need to have 7 1/2" taken off the control panel mount area. (MB)

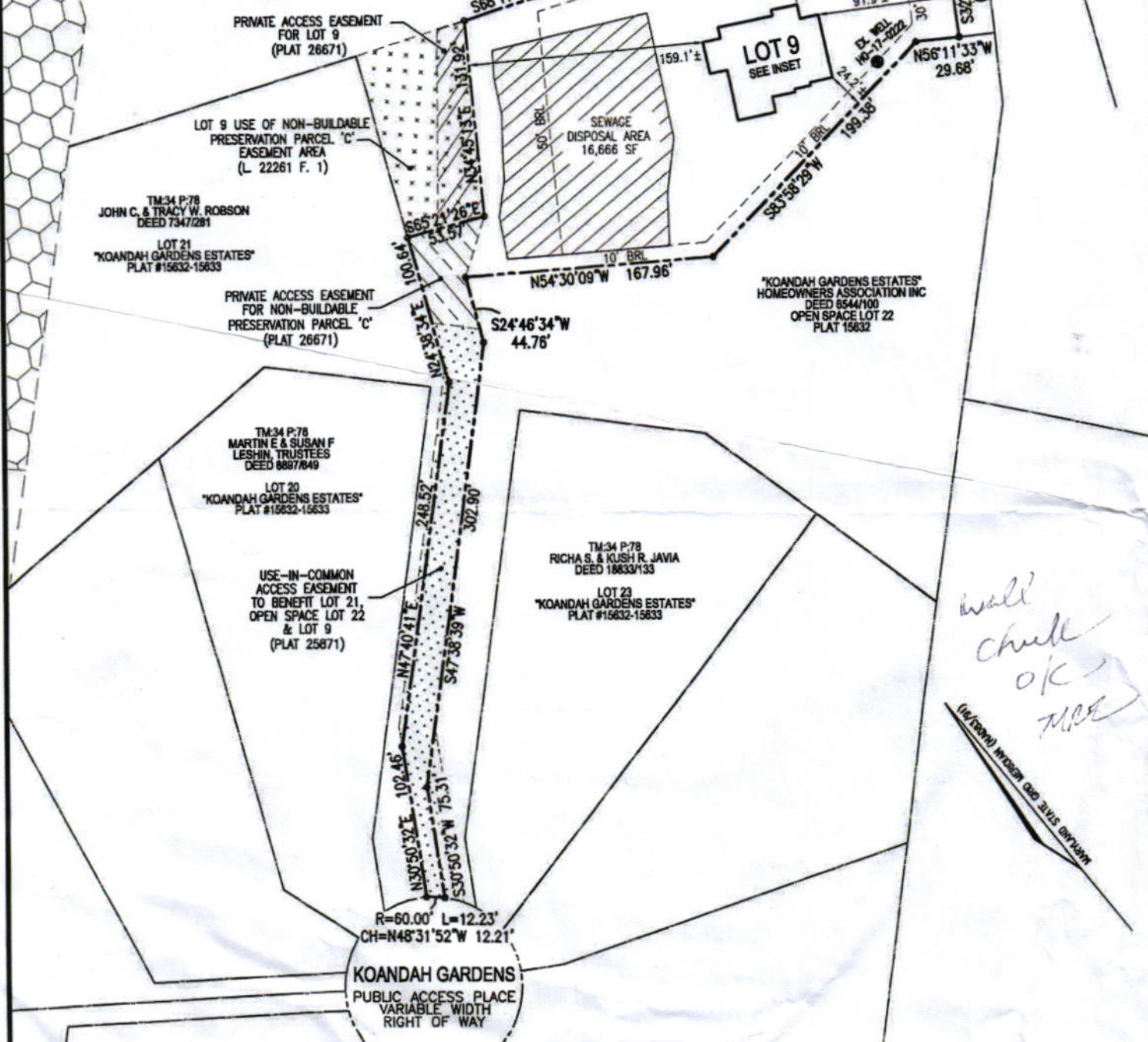
8/14/25 Distal heads each > 2'. Control panel @ 30". Contractor used air to blow out lines per Engineer's suggestion. (B)

DATE SYSTEM
APPROVED

THIS WALL CHECK DRAWING CONTAINS A HORIZONTAL TOLERANCE IN ACCURACY OF 0.1' AND A VERTICAL TOLERANCE IN ACCURACY OF 0.2'



INSET
1"=30'



*wall
check
ok
T.M.H.*

(if found) please call state engineer

I HEREBY CERTIFY TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF THAT THE IMPROVEMENTS ARE LOCATED AS SHOWN AND THAT THERE ARE NO ENCROACHMENTS EXCEPT AS SHOWN; THAT THIS DOCUMENT WAS 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.

Thomas M. Hoffman Jr.

4/1/25
DATE

THOMAS M. HOFFMAN JR.
PROPERTY LINE SURVEYOR
LICENSE NO. 267
EXP. DATE: JULY 28, 2026



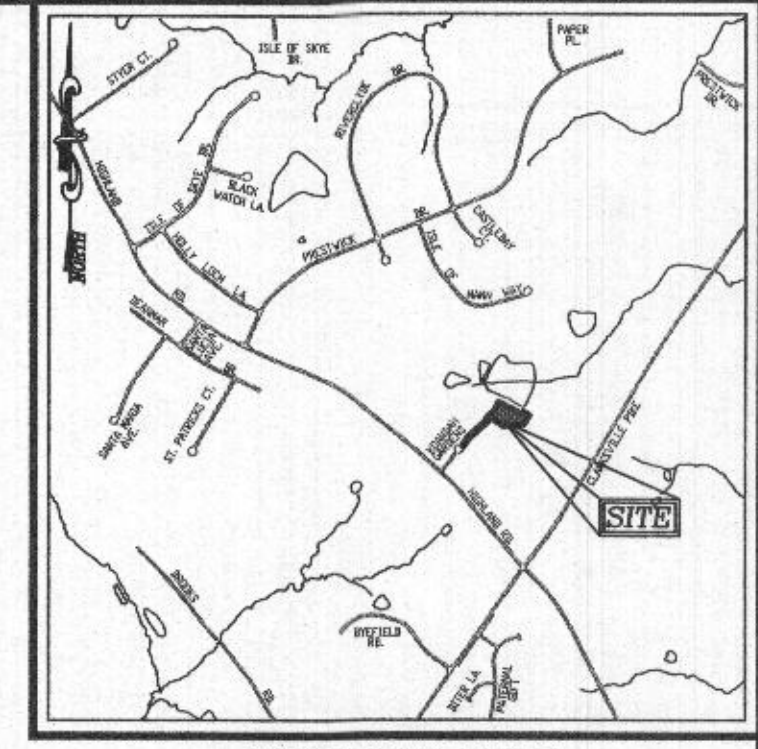
SCALE 1" = 100'	DATE 03/11/2025
DRAWN BY J.M.M.	CHECKED BY T.M.H.
PLAT NUMBER 26670-26672	JOB NUMBER 08-43.00

VOGEL ENGINEERING

TIMMONS GROUP

3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
P: 410.461.7666 F: 410.461.8961 www.timmons.com

WALL CHECK DRAWING
6820 KOANDAH GARDENS
LOT 9
KOANDAH GARDENS ESTATES
PLAT NO. 26671
FIFTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND



VICINITY MAP
SCALE: 1"=2,000'
ADC MAP COORDINATE: 5051, F&G 1



- LEGEND**
- EXISTING CONTOURS: 382, 390
 - EXISTING TREES TO REMAIN: [Symbol]
 - SOIL BOUNDARY: [Symbol]
 - STREAM: [Symbol]
 - 100 YEAR FLOODPLAIN: [Symbol]
 - PASSED PERC TEST LOCATIONS (P01-003): [Symbol]
 - FAILED PERC TEST LOCATIONS (P01-003): [Symbol]
 - EXISTING WELL: [Symbol]
 - PROPERTY LINE: [Symbol]
 - PROP. WELL BOX LOCATION: [Symbol]
 - EXISTING SEPTIC RESERVE AREA (P01-003): [Symbol]
 - EXISTING SEPTIC RESERVE AREA SAND MOUND LOCATION (P01-003): [Symbol]
 - PROPOSED SEPTIC RESERVE AREA SAND MOUND LOCATION: [Symbol]
 - PRIVATE DRIVEWAY EASEMENT FOR LOT 9: [Symbol]
 - PRIVATE STORMWATER MANAGEMENT MAINTENANCE, ACCESS, DRAINAGE & UTILITY EASEMENT: [Symbol]
 - PASSED SAND MOUND TEST LOCATION (P01-003) (INFILTRATION RATES LESS THAN 60 MIN PER INCH): [Symbol]
 - PASSED SAND MOUND TEST LOCATION (P01-003) (INFILTRATION RATES GREATER THAN 60 MIN PER INCH): [Symbol]

MINIMUM LOT SIZE CHART

LOT #	GROSS AREA	PIPESTEM AREA	NET AREA
9	50,063 SF	9,737 SF	59,800 SF

PLAN SCALE
SCALE: 1"=100'

MAPPED SOILS TYPES

SYMBOL	NAME / DESCRIPTION	GROUP	HYDRIC	PERCENT INCLUSION	K-FACTOR	PERCENT PERMEABLE	PERCENT POTENTIAL
GbA	GLADSTONE LOAM, 0 TO 3 PERCENT SLOPES	B	NO	0.20	YES	NO	
GbB	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	B	NO	0.20	YES	NO	
GbC	GLENVILLE-BAILE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	PARTIALLY*	0.37	NO	PARTIALLY*	
W	WATER						

TAKEN FROM: USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY
*SABLE COMPONENT OF GbC, ERODIBILITY FACTOR IS 0.32 AND IS CONSIDERED HYDRIC

PURPOSE:

THE PURPOSE OF THIS PLAN IS TO:

1. TO CREATE BUILDABLE LOT 9 AROUND THE PREVIOUSLY APPROVED (P01-03) WELL AND SEPTIC AREA A51371D. THE RECONFIGURED LOT REMOVES THE BUILDABLE ENTITY OF PREVIOUS PRESERVATION PARCEL A.
2. VERIFY SEPTIC AREA A51371D MEETS CURRENT CODE REQUIREMENTS.
3. DEMONSTRATE THAT A PROPOSED DRIVEWAY LEADING TO A PROPOSED HOUSE LOCATION ON THE RECONFIGURED LOT CAN BE INSTALLED WITHOUT CONFLICTING WITH THE APPROVED SAND MOUND LOCATION.

NO.	REVISION	DATE

REVISED PERCOLATION CERTIFICATION PLAN

MCDANIEL PROPERTY
LOT 9
AND NON-BUILDABLE PRESERVATION PARCEL C

A RE-SUBDIVISION OF NON-BUILDABLE PRESERVATION PARCEL B, "MCDANIEL PROPERTY" (PLATS 2340-2341) AND A RE-SUBDIVISION OF BUILDABLE PRESERVATION PARCEL A, "KOANDAH GARDENS ESTATES" (PLATS 15631-15634)

ZONED: RR-DEO

TAX MAP 40 BLOCK 5TH ELECTION DISTRICT P/O PARCEL 78 HOWARD COUNTY, MARYLAND

OWNER / DEVELOPER

JOHN P. MCDANIEL
13032 HIGHLAND ROAD
HIGHLAND, MARYLAND 20777
ATtn: MR. JOE BUTTER
443-367-0422

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET ELLICOTT CITY, MD 21043 TEL: 410.461.7666 FAX: 410.461.8961

DESIGN BY: EDS
DRAWN BY: EDS
CHECKED BY: RHY
DATE: MAY, 2016
SCALE: AS SHOWN
W.O. NO.: 08-43

PROFESSIONAL CERTIFICATE
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. 16193 EXPIRATION DATE: 09-27-2014

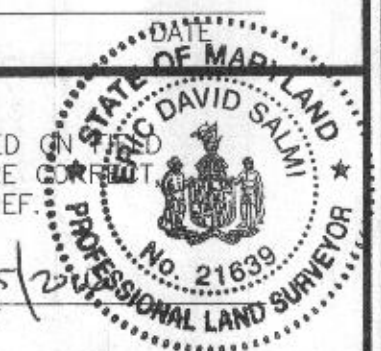
2 SHEET OF 2

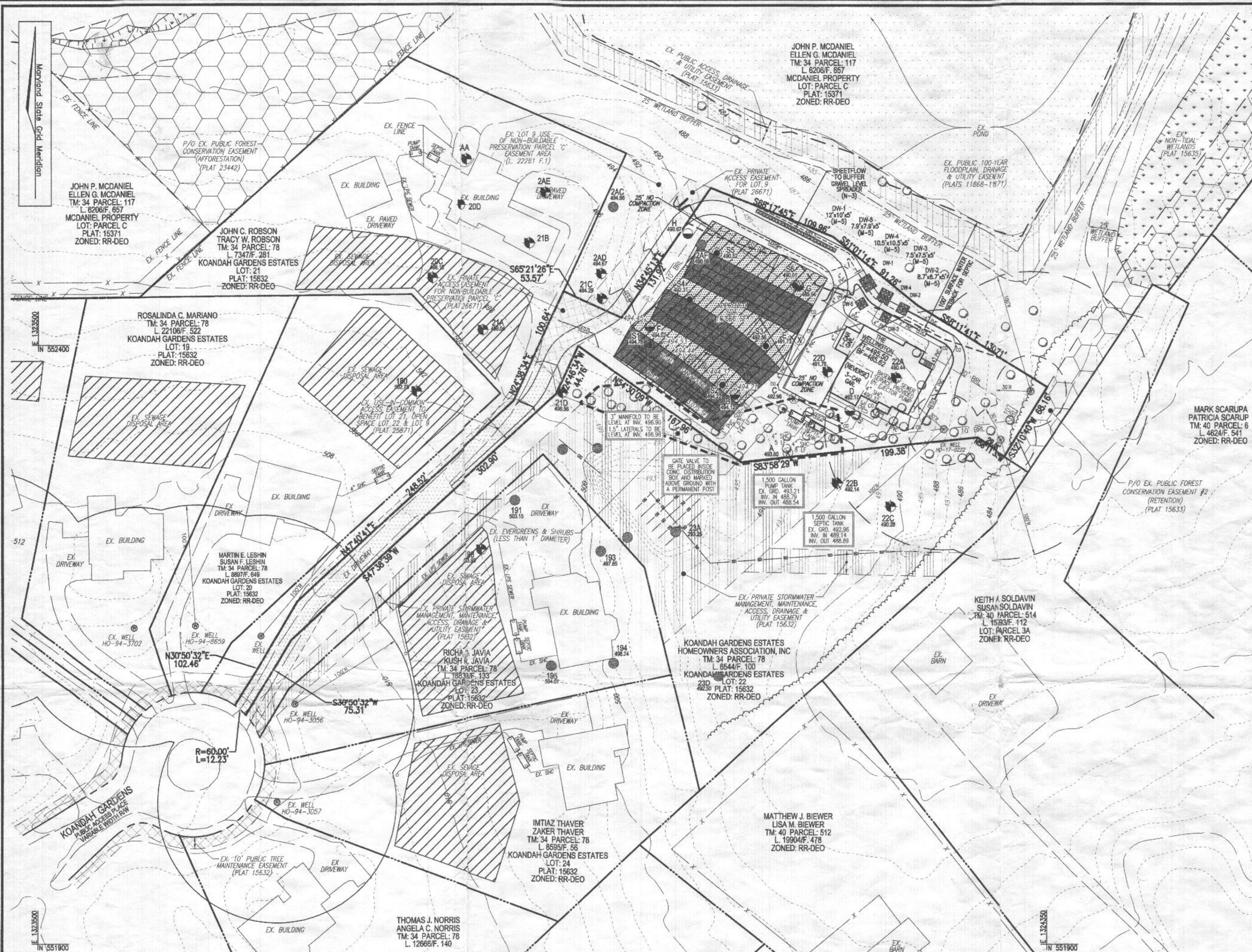
APPROVED: FOR PRIVATE WATER AND PRIVATE SEWAGE SYSTEMS.

COUNTY HEALTH OFFICER

PERCOLATION CERTIFICATION:
I CERTIFY THAT THE LOCATIONS SHOWN HEREON ARE BASED ON LOCATIONS DONE UNDER MY DIRECT SUPERVISION, AND ARE TO THE BEST OF MY PROFESSIONAL KNOWLEDGE AND BELIEF.

ERIC D. SALMI
PROFESSIONAL LAND SURVEYOR No. 21639

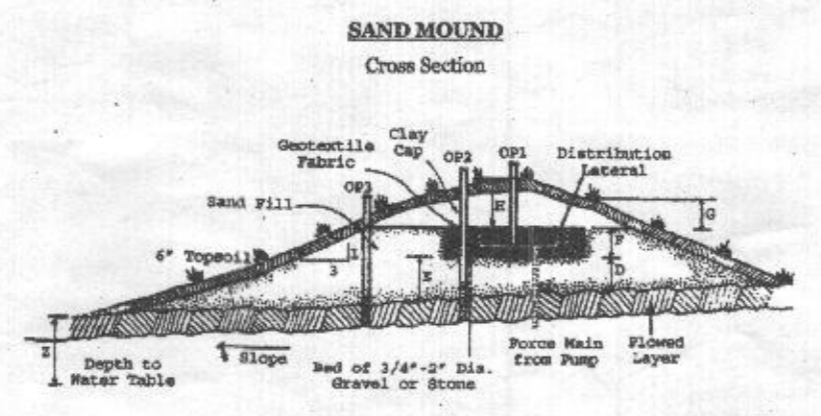




THIS AREA DESIGNATES A PRIVATE SEWAGE DISPOSAL AREA OF AT LEAST 10,000 SQUARE FEET AS REQUIRED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWAGE DISPOSAL IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWERAGE IS AVAILABLE. THIS AREA SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWERAGE SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWAGE DISPOSAL AREA. RECONSTRUCTION OF A MODIFIED SEWAGE DISPOSAL AREA SHALL NOT BE NECESSARY.

- GENERAL 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 EARTH COVER OVER THE TANK IS 3 FEET. GREATER EARTH COVER WILL REQUIRE A HEAVY LOAD BEARING TANK.
 - ELECTRICAL WORK FOR THE INSTALLATION MUST BE PERFORMED BY A LICENSED ELECTRICIAN.
 - THE WELL (NO-17-0222) HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN.
 - ALL WELLS AND SEPTIC SYSTEMS LOCATED WITHIN 100' OF THE PROPERTY BOUNDARIES AND 200' DOWN GRADIENT OF ANY WELLS AND/OR SEPTIC SYSTEMS HAVE BEEN SHOWN.
 - ANY CHANGE TO A PRIVATE SEWAGE DISPOSAL AREA SHALL REQUIRE A REVISED PERCOLATION CERTIFICATION PLAN.
 - AS REQUIRED FOR MOUND SYSTEMS, THE TOPOGRAPHY SHOWN ON LOT 9 IS AT 1' INTERVALS, BASED ON A FIELD PLAN TOPOGRAPHICAL SURVEY PREPARED BY VOGEL ENGINEERING, INC., DATED MAY 2016.
 - THE LIMITATIONS OF AVAILABLE AREA AND SOIL PROPERTIES ARE SUCH THAT A HOUSE WITH NO MORE THAN 5 BEDROOMS CAN BE SUPPORTED WITHIN THE ILLUSTRATED SEWAGE DISPOSAL AREA ON LOT 9.
 - A 25' WIDE NO COMPACTION ZONE HAS BEEN ADDED BELOW THE DOWNSLOPE OF EACH MOUND SITE SHOWN AND SHALL BE FREE OF STRUCTURES AND DRIVEWAYS.
 - THE SAND MOUND AREA(S) DELINEATED AND IDENTIFIED ON LOT 9 MUST BE PROTECTED BY A FIXED BARRIER AT ALL TIMES DURING DEMOLITION, GRADING AND CONSTRUCTION ACTIVITIES. THEREAFTER, PROTECTIVE MEASURES SHOULD BE IMPLEMENTED TO PROTECT THESE AREAS FROM EROSION AND ENCROACHMENT BY WHEELED VEHICLES. SUBSEQUENT BUILDING PERMIT APPLICATIONS MAY BE DENIED SHOULD THE SAND MOUND AREAS BE EVALUATED AND FOUND TO BE UNSATISFACTORY FOR THE INTENDED USE. DISBURSANCE OF ANY PORTION OF THE SEWAGE DISPOSAL AREA IS NOT PERMITTED.
 - THERE ARE NO TREES WITH A DIAMETER OF 1" OR LARGER IN OR IMMEDIATELY ADJACENT TO, THE SDA. ALL EXISTING TREES AND SHRUBS LOCATED WITHIN THE SDA SHALL BE CUT FLUSH TO GRADE.
 - THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASUREMENTS TO ASSURE PROPER FABRICATIONS AND INSTALLATION OF THE WORK SHOWN. A SAND MOUND MAY ONLY BE INSTALLED BY A CERTIFIED INSTALLER.
 - ALL WORK TO BE PERFORMED IN ACCORDANCE WITH APPLICABLE REGULATIONS OF THE HOWARD COUNTY HEALTH DEPARTMENT AND DESIGN AND CONSTRUCTION MANUAL FOR SAND MOUND SYSTEMS, LATEST EDITION. THE CONTRACTOR THAT IS RESPONSIBLE FOR THE WORK SHOWN ON THIS PLAN SHALL BE CERTIFIED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT TO INSTALL SAND MOUND SYSTEMS.
 - AN EFFLUENT FILTER IS REQUIRED TO BE ADDED TO THE 1,500 GALLON SEPTIC TANK.

PLAN VIEW
SCALE: 1"=50'



- SAND MOUND**
Cross Section
- D = Upslope Sand Fill Depth (in.) = 12"
 - E = Downslope Sand Fill Depth (in.) = 18"
 - F = Bed Depth (in.) = 10"
 - G = Cap and Topsoil Height at Bed Edge (in.) = 12"
 - H = Cap and Topsoil Height at Bed Center (in.) = 18"
 - Z = Depth to Water Table (in.) (1)
 - OP = Observation Posts (recommended)

FIGURE 1.1 - DESIGN WORKSHEET CROSS SECTION
(1) 6.7' BELOW TEST S-6

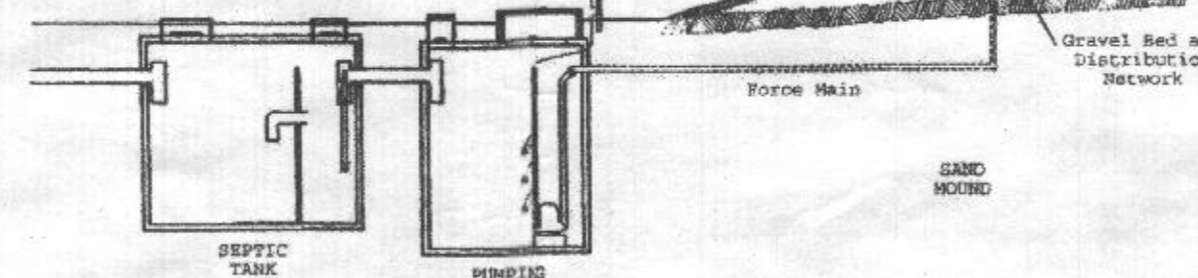


FIGURE 1.2 - TYPICAL CROSS SECTION OF A SAND MOUND SYSTEM
(not to scale)

SAND MOUND DIMENSIC
Initial & Replacement Systems - L

USE ALTERNATE SAND MEDIA = 1.0 gpd/ft²

1. Absorption Bed (sq. ft.)	a x b = Design Flow	750 gpd
	1.0 gpd/ft ² =	750 sqft min
		937.5 sqft max
2. Bed Length (B)		42 to 104 depends on site conditions
3. Bed width (A)	= Bed Area / Bed Length	= 79 sqft or 600 sqft
		= 84 ft
		= 7.1 FEET USE 9
4. Upslope sand fill depth (D)		= 48 in. min.
		= 12 in min.
5. Downslope sand fill depth (E)	= (12 A % slope) + D in	
	A = 8.9	= 1'36" USE 18
	% Slope = 0.05	
6. Cap + topsoil at bed center (H)		= 1' inches
7. Cap + topsoil at bed edge (G)		= 1' inches
8. Total bed depth (F)		= 1' inches
9. Sideslope setback (K)	= ((D+E)/2)+28 inches x 3	
	D = 12	= 128.05/143 inches
	E = 17.36	= 10.67 ft
10. Upslope setback (J)	= (22 in / D) x 3 x Upslope Corr Factor	
	D = 12	= 89.25 inches
		= 7.44 ft

%	Factor
0	1
2	0.94
4	0.89
6	0.86
8	0.8
10	0.77
12	0.73

11. Downslope setback (I)	= (22 in / E) x 3 x Downslope Corr Factor	
	E = 17.36714	= 139.242857 inches
		= 11.61 ft

%	Factor
0	1
2	1.05
4	1.14
6	1.22
8	1.32
10	1.44
12	1.57

12. Total Width of Mound (W)	= (12 A + J + I)	
	A = 8.93	= 135.72 inches
	J = 89.25	= 27.98 ft
	I = 139.32	

13. Total Length of Mound (L)	= (12 B + K + K)	
	B = 84.00	= 105.07 inches
	K = 128.04	= 105.34 ft

SAND MOUND DIMENSIC
Initial & Replacement Systems - L

TEST RESULTS	TEST S1	53.33 MIN	TEST S4	40 MIN
	TEST S2	53.33 MIN	TEST S5	40 MIN
	TEST S3	40 MIN	TEST S6	40 MIN

Basal Area Sloping Site = ((A + I) X B)

Basal Area Required = 750 gpd
0.5 gpd/ft² = Perc Rate between 45 MIN - 60 MIN

Basal Area Required = 1500 sf Required

Basal Area Provided = (A + E) = 27.01
B = 84.00

Basal Area Provided = 2266 sf Provided Design OK

SYSTEM COMPUTATIONS:

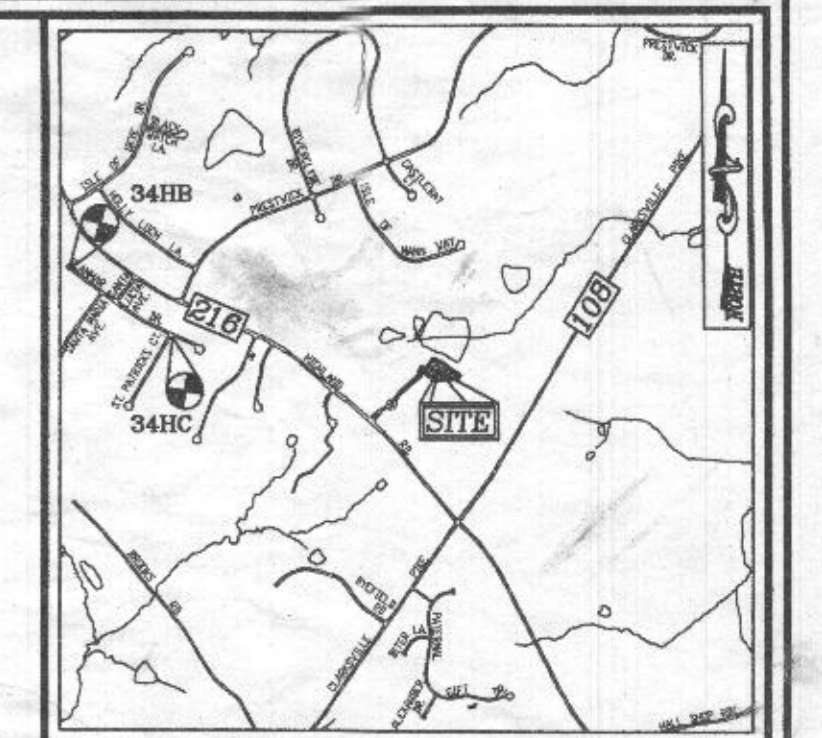
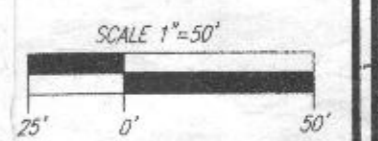
BED LENGTH: 84'
CENTRAL MANIFOLD SYSTEM: 1/2 BED-1/2 PERFORATION RATING
(0.5)(84)-(0.5)(3.5) = 42-1.75' = 40.25' LATERAL LENGTH
NO. OF PERFORATIONS: 12
PERFORATION SPACING: 3.5
PERFORATION SIZE: 5/16"
TABLE 4-1: FOR 13' PERFORATION SPACING AND L=40.25', USE DIAMETER LATERAL
PUMP SIZE: 6 (NO. OF LATERALS) x 12 (NO. OF PERFORATIONS) = 72 HOLES
5/16" DIAMETER PERFORATIONS = 1.64 GPM/HOLE @ 2' HEAD
72 HOLES @ 1.64 GPM/HOLE = 118 GPM @ 2' HEAD
MANIFOLD & LATERAL INVERT: 495.10+1.44+0.42 (HALF OF BED HEIGHT) = 96.96

WELL LOCATION CERTIFICATION:
THE EXISTING WELL SHOWN ON THIS PLAN (NO-17-0222) HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN

WET SEASON* TESTING RESULTS

TEST NO.	PERCOLATION RATE	TEST DEPTH	GROUND ELEV.
S1 / S2	53.33 MIN / INCH	18" / 18"	495.0 / 494.4
S3 / S4	40 MIN / INCH	18" / 17"	493.1 / 492.7
S5 / S6	40 MIN / INCH	18" / 19"	490.9 / 490.5

* APRIL 2017



VICINITY MAP
SCALE 1"=2000'
ADC MAP: 31 GRID NO: B5

- LEGEND:**
- BOUNDARY LINE
 - RIGHT-OF-WAY LINE
 - RIGHT-OF-WAY LINE
 - EDGE OF EXISTING PAVING
 - WOOD FENCE LINE
 - 10' CONTOUR
 - 2' CONTOUR
 - EX. PUBLIC 100-YR FLOODPLAIN, DRAINAGE & UTILITY EASEMENT (PLATS 11868-11871)
 - EX. PUBLIC ACCESS, DRAINAGE & UTILITY EASEMENT (PLAT 15633)
 - EX. WETLANDS (PLATS 15633 & 24442)
 - EX. SEWAGE DISPOSAL AREA (PLAT 25871)
 - EX. PUBLIC FOREST CONSERVATION EASEMENT (PLAT 15633)
 - EX. USE-IN-COMMON ACCESS EASEMENT TO BENEFIT LOT 21, OPEN SPACE LOT 22 & LOT 9 (PLAT 25871)
 - EX. 10' PUBLIC TREE MAINTENANCE EASEMENT (PLAT 15632)
 - EX. PRIVATE STORMWATER MANAGEMENT, MAINTENANCE, ACCESS, DRAINAGE & UTILITY EASEMENT (PLAT 15632)
 - EX. LOT 9 USE OF NON-BUILDABLE PRESERVATION PARCEL C EASEMENT AREA (L. 22261 F.1)
 - EX. PRIVATE ACCESS EASEMENT FOR LOT 9 (PLAT 26671)
 - EX. PRIVATE ACCESS EASEMENT FOR NON-BUILDABLE PRESERVATION PARCEL C (PARCEL 26671)
 - 25' NO COMPACTION ZONE SETBACK TO SAND MOUNDS
 - EX. WELL LOCATION
 - FAILED PERC. TEST (P-01-003)
 - PASSED PERC. TEST (P-01-003)
 - FAILED SAND MOUND TEST (P-01-003)
 - PASSED SAND MOUND TEST (P-01-003)
 - PASSED SAND MOUND TEST (APRIL 2017)

Approved Septic System Plan
Howard County Health Department
Signature: [Signature] Date: 4/10/17
OWNER/DEVELOPER: JOHN P. MCDANIEL, 15032 HIGHLAND ROAD, HIGHLAND, MD 20777, ATTN: MR. JOE RUTTER

ONSITE SAND MOUND SEWAGE DISPOSAL SYSTEM DESIGN PLAN

KOANDAH GARDENS ESTATES - LOT 9
6820 KOANDAH GARDENS
HIGHLAND, MD 20777

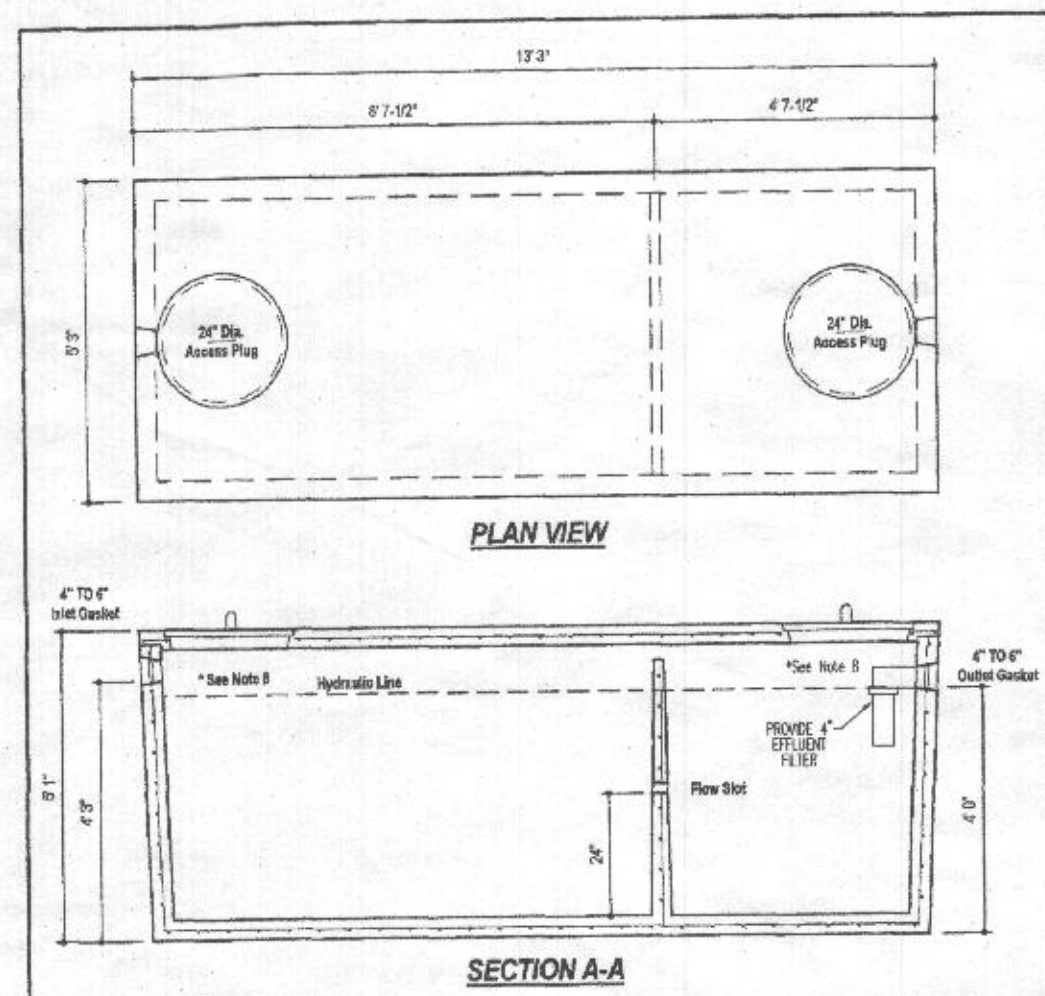
BUILDING PERMIT # _____

VOGEL ENGINEERING
TIMMONS GROUP
3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
P: 410.461.7666 F: 410.461.8961 www.timmons.com

DESIGN BY: RHY
DRAWN BY: JMR.
CHECKED BY: RHY
DATE: FEBRUARY 2025
SCALE: AS SHOWN
W.O. NO.: OB-43

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16183, EXPIRATION DATE: 09-27-2028

1 SHEET OF 3

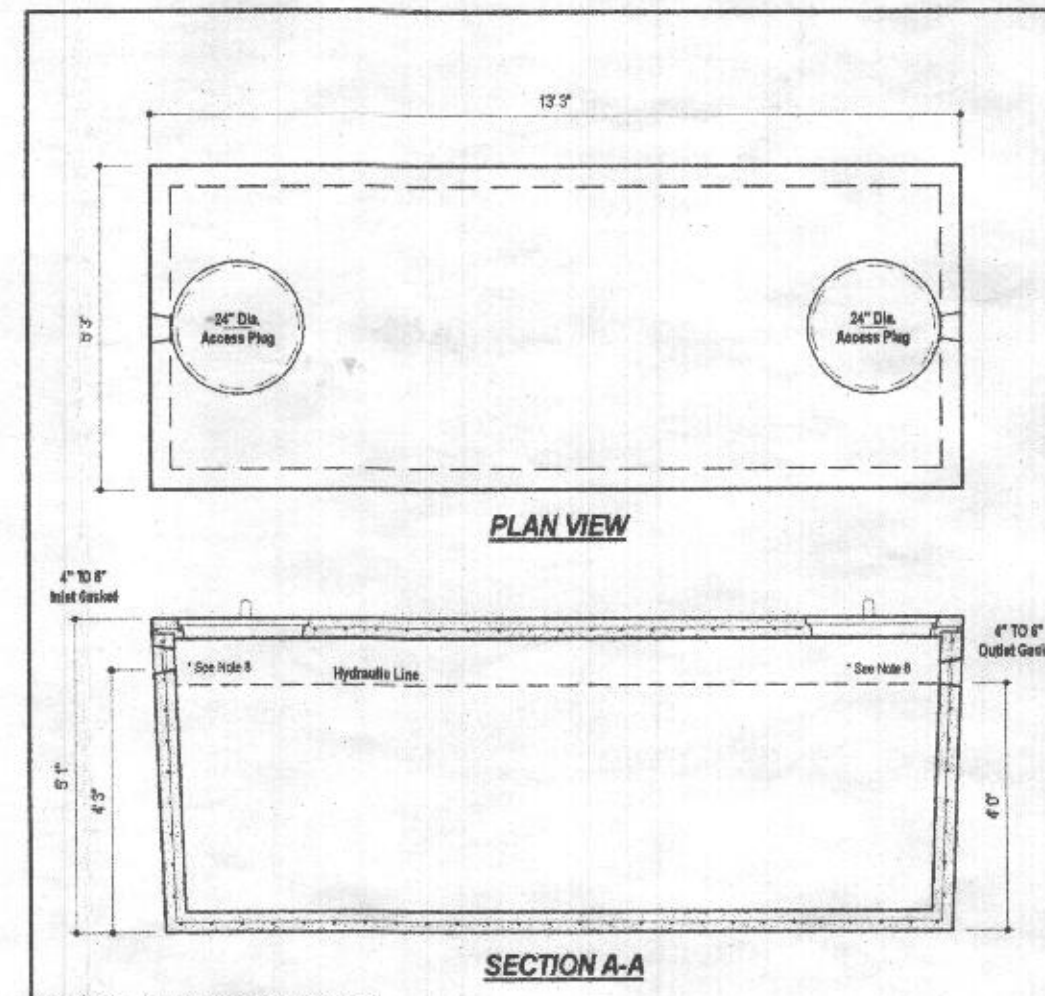


DESIGN DATA & GENERAL NOTES

- Concrete strength 4000 psi @ 28 days. Density = 150 pcf.
- Concrete: Portland Type II per ASTM C 150.
- Reinforcing steel: #4 per ASTM A 618.
- Reinforcing per ASTM A 618. Min. 1-1/2" cover.
- Top side sealed with liquid rope sealant.
- 1/2" wall, base, & top thickness.
- Max. 1/2" cover.
- Depending on use of tank, inlet & outlet baffles may be required by code.

WEIGHT = 16,750 lbs.

1,500 GALLON TANK (Non-Traffic) 2-Compartment
Stock Item
Mayer Bros., Inc. **Aug. 11, 2008**



DESIGN DATA & GENERAL NOTES

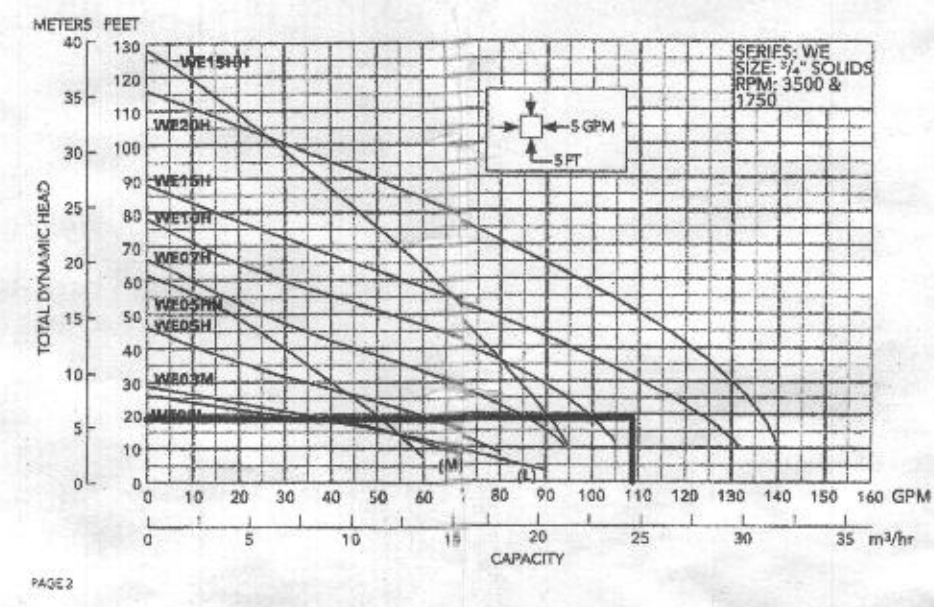
- Concrete strength 4000 psi @ 28 days. Density = 150 pcf.
- Concrete: Portland Type II per ASTM C 150.
- Reinforcing steel: #4 per ASTM A 618.
- Reinforcing per ASTM A 618. Min. 1-1/2" cover.
- Top side sealed with liquid rope sealant.
- 1/2" wall, base, & top thickness.
- Max. 1/2" cover.
- Depending on use of tank, inlet & outlet baffles may be required by code.

WEIGHT = 16,000 lbs.

1,500 GALLON SEPTIC/PUMP TANK 1-Compartment
NON-TRAFFIC MAX 3 FL. OF COVER
Mayer Bros., Inc. **Aug. 11, 2008**

Wastewater

- APPLICATIONS**
Specifically designed for the following uses:
• Homes, Farms, Trailer Courts, Motels, Schools, Hospitals, Industry, Effluent Systems
- SPECIFICATIONS**
- Pump**
- Solid handling capabilities: 1/2" maximum
 - Discharge size: 2" NPT
 - Capacities: up to 140 GPM
 - Total head: up to 125 feet TDH
 - Temperature: 104°F (40°C) continuous, 140°F (60°C) intermittent
 - See our number on reverse side for specific HP, voltage, phase and RPM's available.
- MOTORS**
- Fully submerged in high-grade turbine oil for lubrication and efficient heat transfer.
 - Class II insulation on 1/2-1 1/2 HP models.
 - Class II insulation on 2-HP models.
- Single phase (60 Hz)**
- Capacitor start motors for maximum starting torque
 - Built-in overload with automatic reset.
- AGENCY LISTINGS**
Listed to UL 778 and CSA 32.108 Standards
By Canadian Standards Association (CSA) and UL



FLOW: 108 GPM
H=18.35'
USE GOULDS WE15H (OR EQUIVALENT)

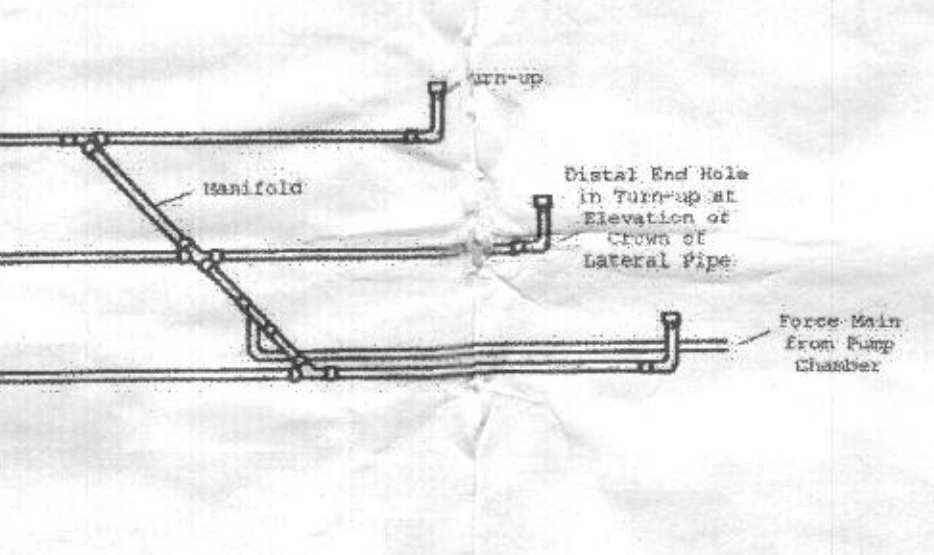
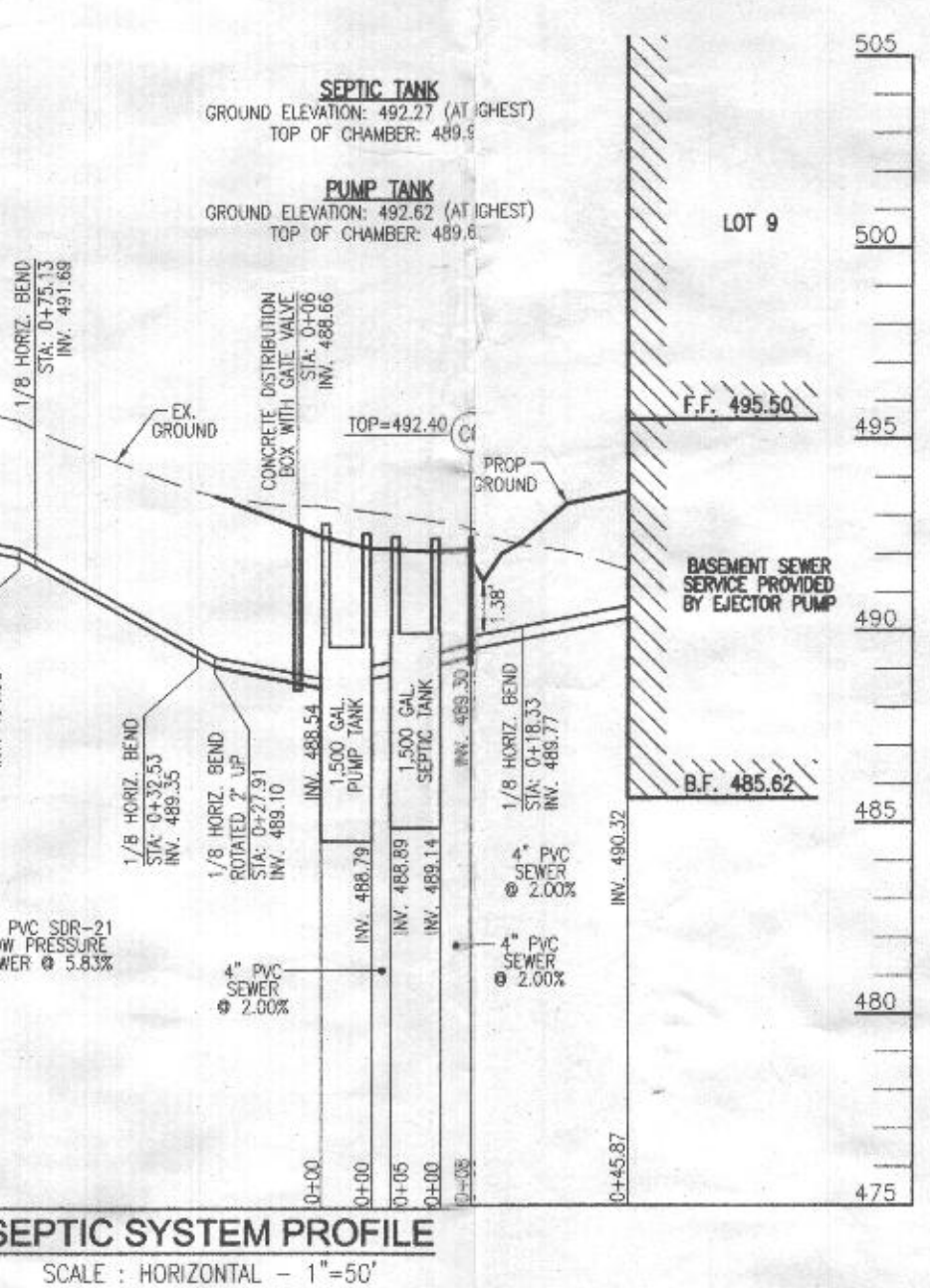
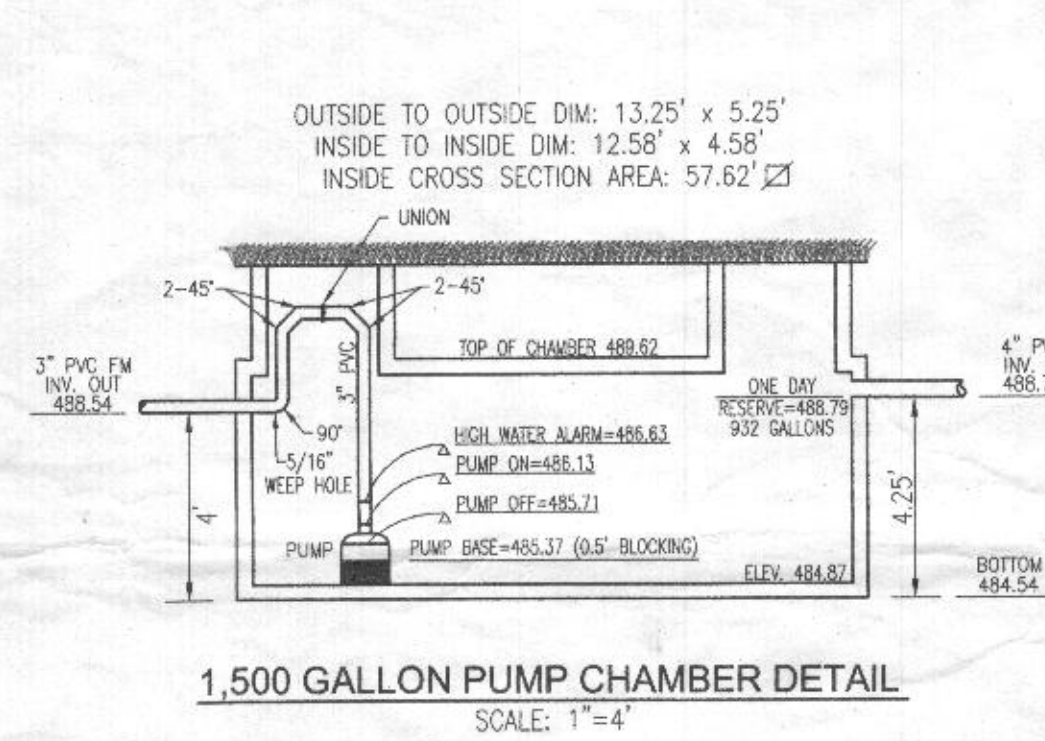


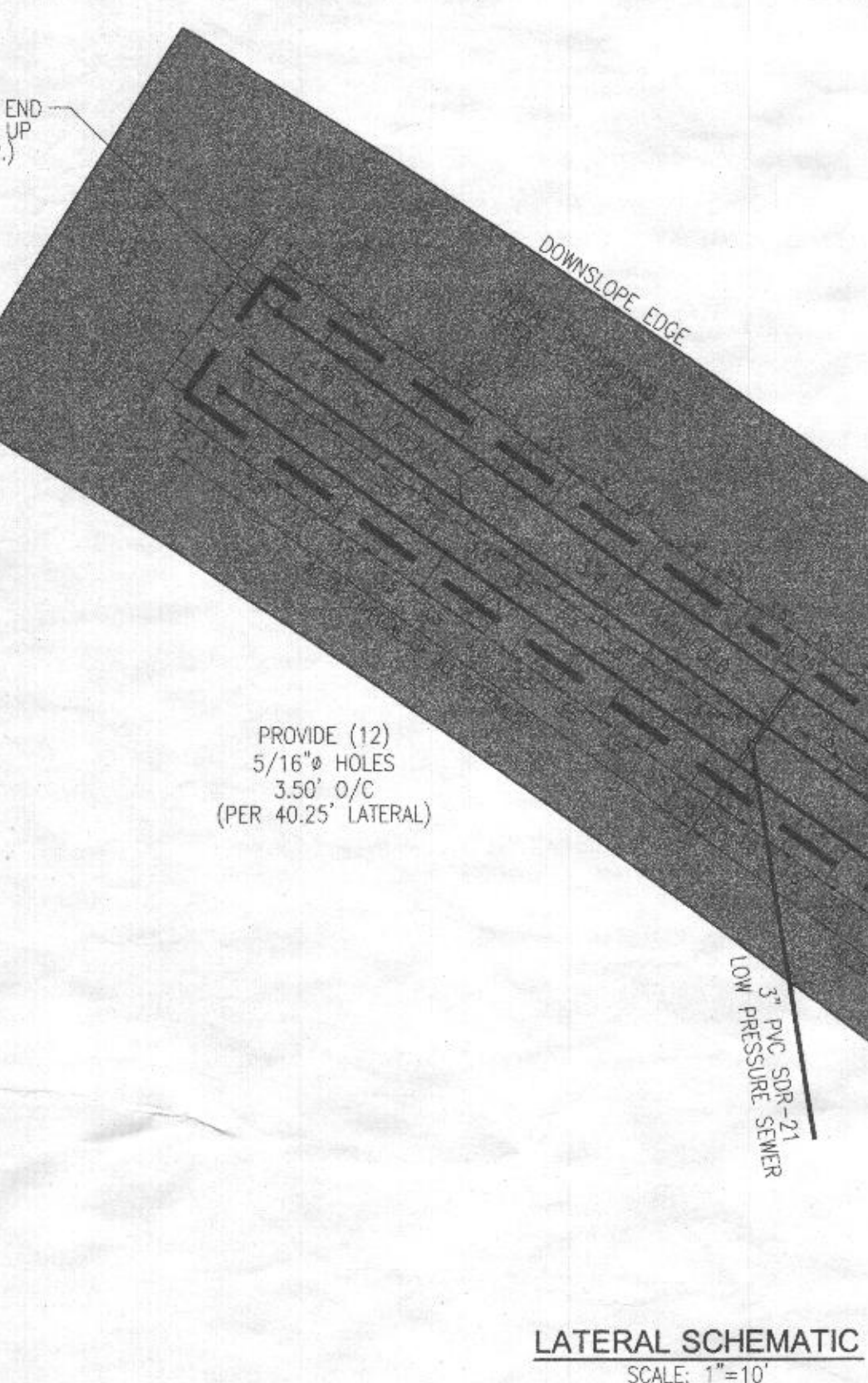
FIGURE 4.2 - CENTRAL MANIFOLD DISTRIBUTION NETWORK WITH 3 LATERAL ROWS AND 6 TOTAL LATERALS



SEPTIC SYSTEM PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



1,500 GALLON PUMP CHAMBER DETAIL
SCALE: 1"=4'



LATERAL SCHEMATIC
SCALE: 1"=10'

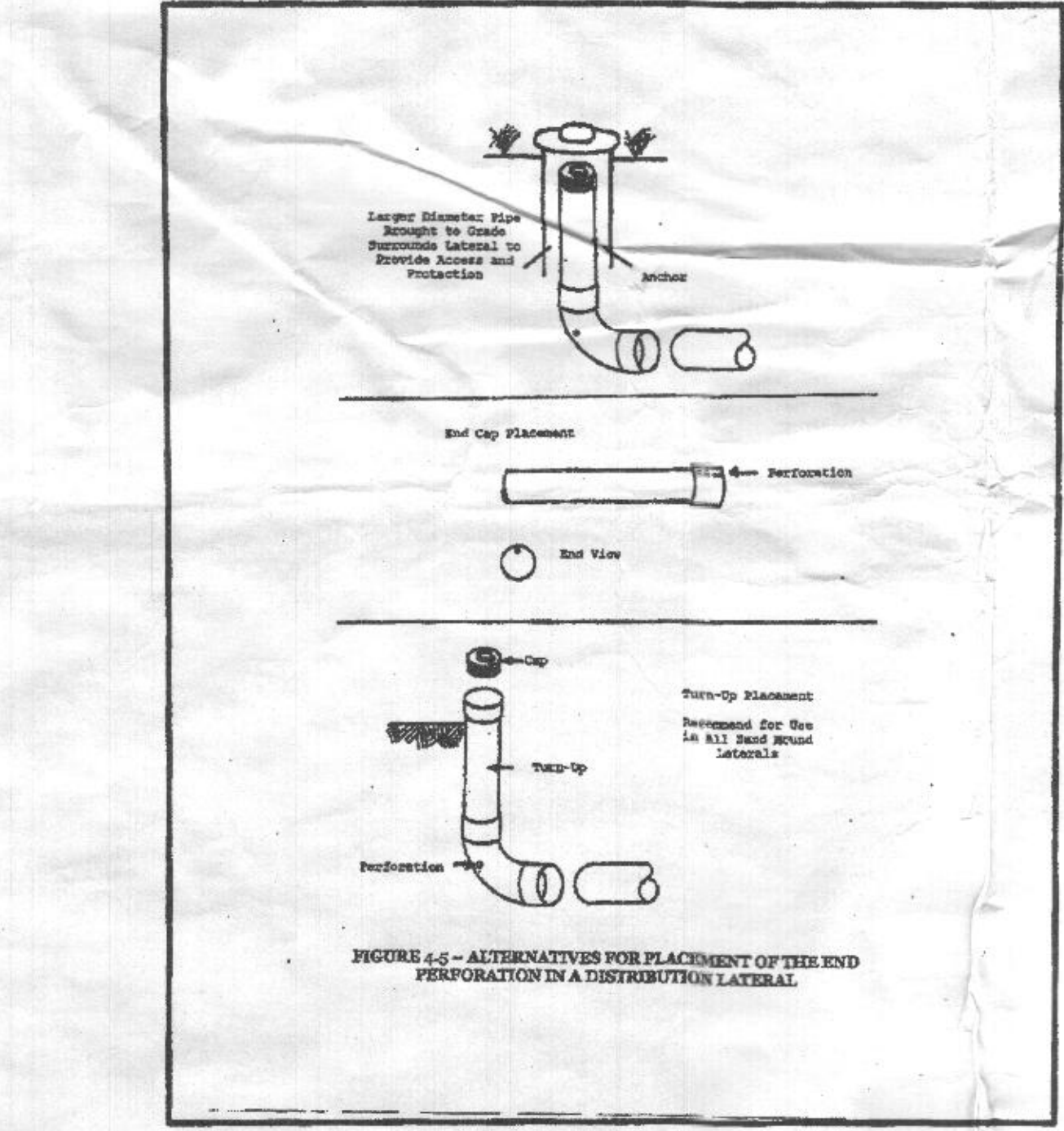
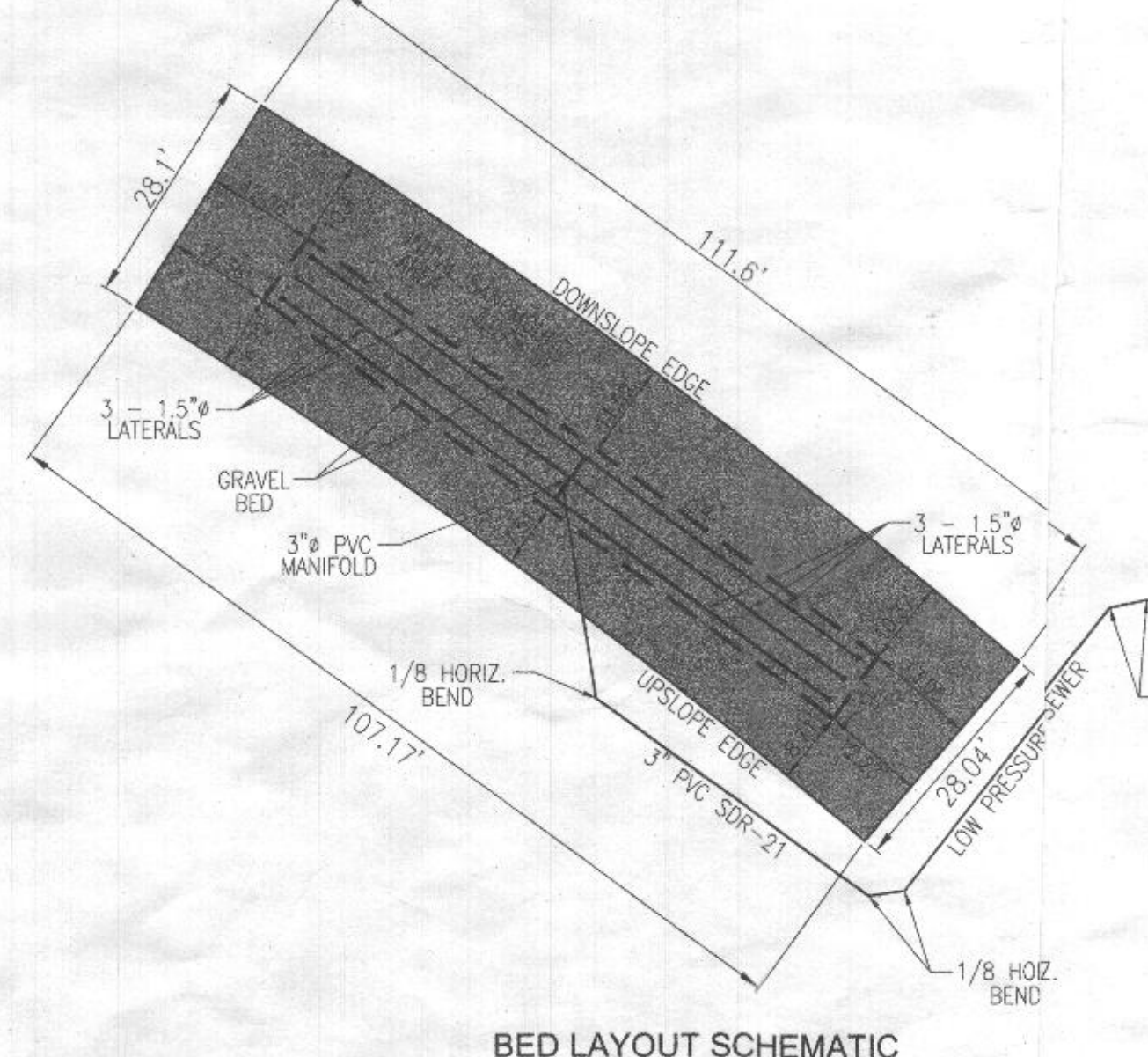


FIGURE 4.4 - ALTERNATIVES FOR PLACEMENT OF THE END PERFORATION IN A DISTRIBUTION LATERAL

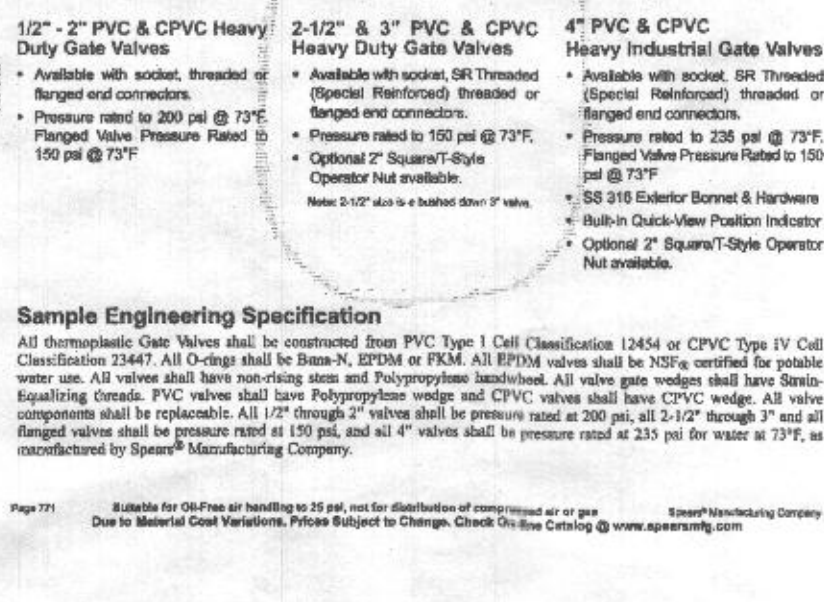


BED LAYOUT SCHEMATIC
SCALE: 1"=20'

Goolds Water Technology

Thermoplastic Valves Product Guide & Engineering Specifications Gate Valves

- Features - PVC, CPVC**
- This solid, proven design is well suited for a variety of chemical, industrial and engine applications. Spore® Gate Valves are designed with a variety of end connection options. Individual special features are listed in each size range 1/2" through 2", 2-1/2" & 3", and in the full featured Heavy Industrial Gate Valve. See Spore® Gate Valve for 4" size.
 - Heavy Rugged PVC & CPVC Construction
 - Tapered Wedge with Specially Designed Sealing Surface
 - Non-Rising Stem Design
 - Painted Steel-Backing Shock-Wedge Thread
 - Cutting Stem Bevel Instead of Notching-No Notching Required
 - Buna-N, EPDM, or PFM O-Ring Seals
 - Positive Grip, High Impact Polypropylene Handwheel Operator
 - Fully Detachable, Handicam Components - Accessible Without Valve Removal
 - CPVC Gate Valves NSF, Certified for Potable Water use
 - Suitable for Vacuum Service
 - Assembled with Silicone-Free, Water Soluble Lubricants
 - Metric Sizing and ISO Thread Available, 1/2" - 2"

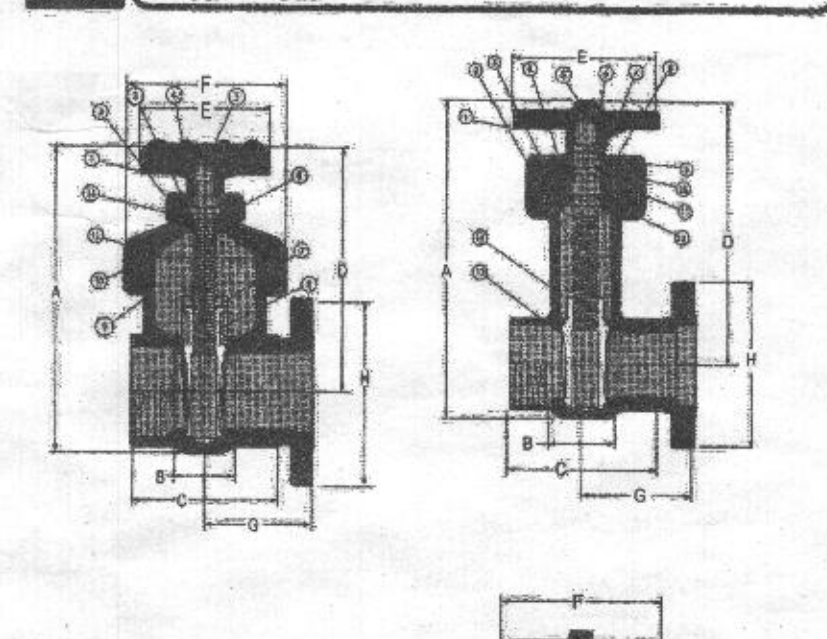


1/2" - 2" PVC & CPVC Heavy Duty Gate Valves
2-1/2" & 3" PVC & CPVC Heavy Duty Gate Valves
4" PVC & CPVC Heavy Industrial Gate Valves

Sample Engineering Specification

All Thermoplastic Gate Valves shall be constructed from PVC Type I Cell Classification 1244 or CPVC Type IV Cell Classification 12447. All O-rings shall be Buna-N, EPDM or PFM. All EPDM valves shall be NSF, certified for potable water use. All valves shall have non-toxic stem and polypropylene handwheel. All stem nuts shall have Buna-N. Equipping details, PVC valves shall have Polypropylene wedge and CPVC valves shall have CPVC wedge. All valve components shall be rotatable. All 1/2" through 2" valves shall be pressure rated at 200 psi at 100°F. 2" end all flanged valves shall be pressure rated at 150 psi, and all 4" valves shall be pressure rated at 25 psi for water at 100°F, as manufactured by Spore® Manufacturing Company.

Thermoplastic Valves Product Guide & Engineering Specifications Gate Valves



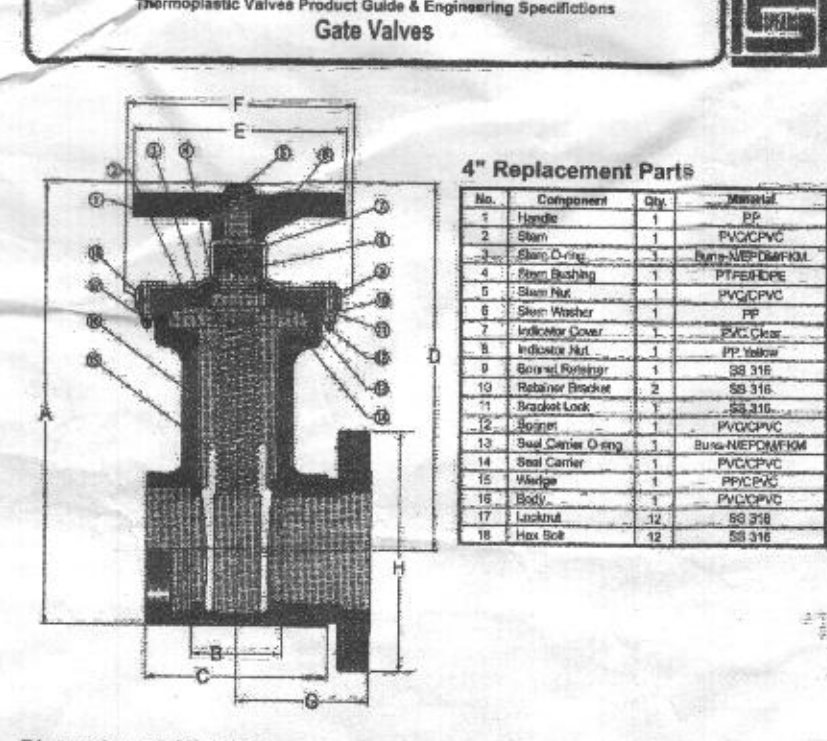
1/2" - 2" Replacement Parts

Part No.	Description	Qty.	Material
1	Wedge	1	PVC/CPVC
2	Stem Nut	1	PVC/CPVC
3	Stem Seal	1	BUNA-N/EPDM/PTFE
4	Stem Seal	1	PVC/CPVC
5	Stem Seal	1	PVC/CPVC
6	Stem Seal	1	PVC/CPVC
7	Stem Seal	1	PVC/CPVC
8	Stem Seal	1	PVC/CPVC
9	Stem Seal	1	PVC/CPVC
10	Stem Seal	1	PVC/CPVC
11	Stem Seal	1	PVC/CPVC
12	Stem Seal	1	PVC/CPVC
13	Stem Seal	1	PVC/CPVC
14	Stem Seal	1	PVC/CPVC
15	Stem Seal	1	PVC/CPVC
16	Stem Seal	1	PVC/CPVC
17	Stem Seal	1	PVC/CPVC
18	Stem Seal	1	PVC/CPVC
19	Stem Seal	1	PVC/CPVC
20	Stem Seal	1	PVC/CPVC

2-1/2" & 3" Replacement Parts

Part No.	Description	Qty.	Material
1	Wedge	1	PVC/CPVC
2	Stem Nut	1	PVC/CPVC
3	Stem Seal	1	BUNA-N/EPDM/PTFE
4	Stem Seal	1	PVC/CPVC
5	Stem Seal	1	PVC/CPVC
6	Stem Seal	1	PVC/CPVC
7	Stem Seal	1	PVC/CPVC
8	Stem Seal	1	PVC/CPVC
9	Stem Seal	1	PVC/CPVC
10	Stem Seal	1	PVC/CPVC
11	Stem Seal	1	PVC/CPVC
12	Stem Seal	1	PVC/CPVC
13	Stem Seal	1	PVC/CPVC
14	Stem Seal	1	PVC/CPVC
15	Stem Seal	1	PVC/CPVC
16	Stem Seal	1	PVC/CPVC
17	Stem Seal	1	PVC/CPVC
18	Stem Seal	1	PVC/CPVC
19	Stem Seal	1	PVC/CPVC
20	Stem Seal	1	PVC/CPVC

Thermoplastic Valves Product Guide & Engineering Specifications Gate Valves



4" Replacement Parts

Part No.	Description	Qty.	Material
1	Wedge	1	PVC/CPVC
2	Stem Nut	1	PVC/CPVC
3	Stem Seal	1	BUNA-N/EPDM/PTFE
4	Stem Seal	1	PVC/CPVC
5	Stem Seal	1	PVC/CPVC
6	Stem Seal	1	PVC/CPVC
7	Stem Seal	1	PVC/CPVC
8	Stem Seal	1	PVC/CPVC
9	Stem Seal	1	PVC/CPVC
10	Stem Seal	1	PVC/CPVC
11	Stem Seal	1	PVC/CPVC
12	Stem Seal	1	PVC/CPVC
13	Stem Seal	1	PVC/CPVC
14	Stem Seal	1	PVC/CPVC
15	Stem Seal	1	PVC/CPVC
16	Stem Seal	1	PVC/CPVC
17	Stem Seal	1	PVC/CPVC
18	Stem Seal	1	PVC/CPVC
19	Stem Seal	1	PVC/CPVC
20	Stem Seal	1	PVC/CPVC

Dimensions & Weights

Pressure Rating	Size	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Weight (lbs)
150	1/2"	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
150	3/4"	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
150	1"	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
150	1 1/2"	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
150	2"	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
150	2 1/2"	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
150	3"	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
150	4"	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10

2" Square / T-Style Operator Nuts

Size	Part Number
1/2"	071001
3/4"	071002
1"	071003
1 1/2"	071004
2"	071005
2 1/2"	071006
3"	071007
4"	071008

OWNER/DEVELOPER
JOHN P. MCDANIEL
13032 HIGHLAND ROAD
HIGHLAND, MD 20777
ATTN: MR. JOE RUTTER
(443) 367-0422

ONSITE SAND MOUND SEWAGE DISPOSAL SYSTEM DESIGN PLAN

KOANDAH GARDENS ESTATES - LOT 9
6820 KOANDAH GARDENS
HIGHLAND, MD 20777

BUILDING PERMIT #

VOGEL ENGINEERING
3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
P: 410.461.7666 F: 410.461.8961 www.timmons.com

TIMMONS GROUP
PROFESSIONAL CERTIFICATE

DESIGN BY: RHV
DRAWN BY: JMR
CHECKED BY: RHV
DATE: FEBRUARY 2025
SCALE: AS SHOWN
W.O. NO.: 08-43

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. 161943, EXPIRATION DATE: 09-27-2028

2 SHEET OF 3

SECTION FIVE CONSTRUCTION PROCEDURES

5.1 GENERAL

Proper construction is extremely important if the sand mound is to function as designed. Installation of a sand mound system is prohibited when soils are frozen. Construction of the mound should also not occur if the soils are wet. Compaction and smearing of the soil in the location of the mound and downslope should be avoided. Soil is too wet for construction of the mound if a sample, taken anywhere within the uppermost eight inches, when rolled between the hands forms a wire. If the sample crumbles, the soil is dry enough for construction to proceed.

5.2 EQUIPMENT

The following special equipment is recommended:

1. A small track machine (low ground pressure) with blade for placing and spreading the sand fill.
2. A cordless drill with a sharp drill bit for drilling holes in the pipe on-site.
3. A chisel plow or chisel plow attachment mounted to a small tracked machine with low ground pressure tracks for plowing the soil within the perimeter of the mound is preferred over a moldboard plow. Other scarification equipment (preferably on tracks) may be used but must be approved in advance by the inspector.
4. A rod and level for determining bed elevations, slope on pipes, outlet elevation of the septic tank or BAT units, slope of site, etc.

5.3 MATERIALS

The following specifications are required:

1. Sand fill material must be approved by the local Approving Authority prior to hauling to the site. Sand fill shall have an effective size between 0.25 mm and 0.5 mm with a uniformity coefficient of 3.5 or less or an effective size between 0.15 and 0.3 mm and have a uniformity coefficient between 4 and 6 and contain less than 20 percent of material larger than 2.0 mm and less than 5 percent of material less than 0.053 mm. A copy of the receipt and the material certification from the sand supplier showing

the company name, address, phone number, date and product name will be required.

2. Washed river gravel aggregate shall be clean and free off fines and between ¾ and 2 inches in diameter. Crushed limestone must not be used.
3. Geotextile fabric shall be spun filter fabric, not woven.
4. Cap material shall be soil relatively free of coarse fragments and preferably a loam, silt loam or finer texture. Clay texture should not be used for the cap.
5. Topsoil shall be of good quality, and free of debris such as rocks and trash. A silt loam or other medium textured soil is recommended.

5.4 TANK INSTALLATION AND SITE PREPARATION

- 5.4.1 Locate, fence or rope-off the entire sewage disposal area to prevent damage to the area during other construction activity on the site. Vehicular traffic over the disposal area and directly downslope of the disposal area is prohibited to avoid soil compaction.
- 5.4.2 Install septic tank or BAT unit treatment tanks with pumping chamber and pumps as shown on the approved design plan and drawings. Access risers should terminate 6 inches above finished grade. **Call for inspection.**
- 5.4.3 Stake out the initial and recovery mound perimeters in their proper orientation as shown in the drawings. Reference stakes offset from the mound corner stakes are recommended. Locate the upslope edge of the absorption bed within the mound and determine the ground elevation at the highest location. Reference this elevation to a benchmark for future use. This is necessary to determine the bottom elevation of the absorption bed. Excess vegetation should be cut and removed with minimal machine disturbance. Trees should be cut at ground level and stumps left in place.
- 5.4.4 Determine the location where the force main from the pumping chamber will connect to the distribution network manifold within the mound.
- 5.4.5 Install the force main from the pumping chamber to the proper location within the mound. Pipe should be laid with uniform slope back to the chamber so that it drains after dosing. Cut and stub off pipe one foot below existing grade within the proposed perimeter of the initial mound. Backfill trench and compact to prevent seepage along the trench.
- 5.4.6 Plow or scarify the soil within the perimeter of the mound to a depth of about eight inches, if the soil is not too wet. Chisel plows are preferred. Plowing should be done along the contour. If using a moldboard plow use a two bottom or larger plow and throw the soil upslope leaving a dead furrow at the bottom. Rototilling may not be used. In wooded

areas with stumps, roughening the surface to a depth of four to six inches with bucket teeth with extensions may be satisfactory. However, all work should be done from the upslope or sides of the mound if at all possible. After plowing, all foot and vehicular traffic shall be kept off the plowed area. **Call for inspection.**

5.5 FILL PLACEMENT

- 5.5.1 Relocate and extend the force main several feet above the ground surface.
- 5.5.2 Place the approved sand fill material on the upslope edge(s) of the plowed area. Keep delivery trucks off the plowed area. No traffic on the downslope side. Fill should be placed and spread immediately after plowing. Move the fill material into place using a small track-type tractor with a blade. Work from the end and upslope side. Always keep a minimum of six inches of sand beneath the tracks of the machine to minimize compaction of the natural soil. The fill material should be worked in this manner until the height of the fill reaches the elevation of the top of the absorption bed.
- 5.5.3 With the blade of a machine, form the absorption bed. Hand level the bottom of the bed and check it for proper elevation. The bed must be level for proper functioning of the mound. **Call for inspection.**
- 5.5.4 Shape the sides of the sand fill to design slope (i.e., 3:1 or flatter).

5.6 BED AND DISTRIBUTION NETWORK

- 5.6.1 Carefully place the washed coarse river gravel aggregate in the bed. Do not create ruts in the bottom of the bed. Level the aggregate to a minimum depth of six inches.
- 5.6.2 The distribution network is assembled in place setting the manifold to ensure draining the laterals between doses. The laterals should be laid level with the holes directed downward. **Call for inspection.** Test the pumping chamber and distribution network with clean water.
- 5.6.3 Place additional aggregate to a depth of at least two inches over the crown of the pipe.
- 5.6.4 Place the spun filter fabric over the aggregate bed. The fabric may extend beyond the bed over the sand fill by a few inches. Do not use woven fabric.

5.7 COVER MATERIAL

- 5.7.1 Place a finer textured soil material such as sandy clay loam, clay loam, silt loam or loam on top of the fabric over the bed. The minimum depth of this cap shall be six inches at the

- 5.7.2 outer edges of the bed and 12 inches along the center. Place a minimum of six inches of good quality topsoil over the entire mound surface including sideslopes. Final grading should divert surface water away from the site. **Call for final inspection.**

5.8 VEGETATION

- 5.8.1 Fertilize, lime, seed and mulch the entire surface of the mound. Grass mixtures adapted to the area should be used. Consult the county extension agent or Soil Conservation Service for recommendations.
- 5.8.2 Irrigate the seeded mound sufficient to establish growth in a timely manner.

OWNER/DEVELOPER

JOHN P. MCDANIEL
13032 HIGHLAND ROAD
HIGHLAND, MD 20777
ATTN: MR. JOE RUTTER
(443) 367-0422

ONSITE SAND MOUND SEWAGE DISPOSAL SYSTEM DESIGN PLAN

KOANDAH GARDENS ESTATES - LOT 9
6820 KOANDAH GARDENS
HIGHLAND, MD 20777

BUILDING PERMIT

PLATS: 26670-26672
TAX MAP: 34 GRID: 22
5TH ELECTION DISTRICT

PARCEL: 117
ZONED: RR-DEO
HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING

TIMMONS GROUP

3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
P: 410.461.7666 F: 410.461.8961 www.timmons.com



DESIGN BY: RHY
DRAWN BY: JMR
CHECKED BY: RHY
DATE: FEBRUARY 2025
SCALE: AS SHOWN
W.O. NO.: 08-43

PROFESSIONAL CERTIFICATE
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. 16193, EXPIRATION DATE 09-27-2026.

ROBERT H. VOGEL, PE No. 16193

$$S1 - S2 = 0.5$$

rate

$$S3 - S6 = 0.75$$

rate