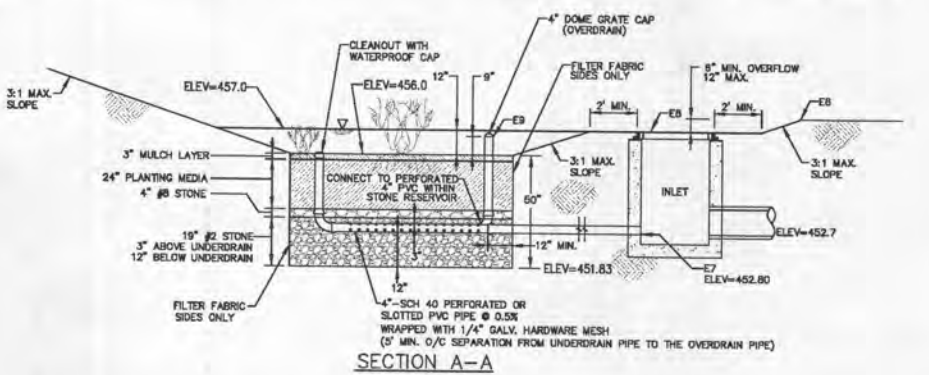
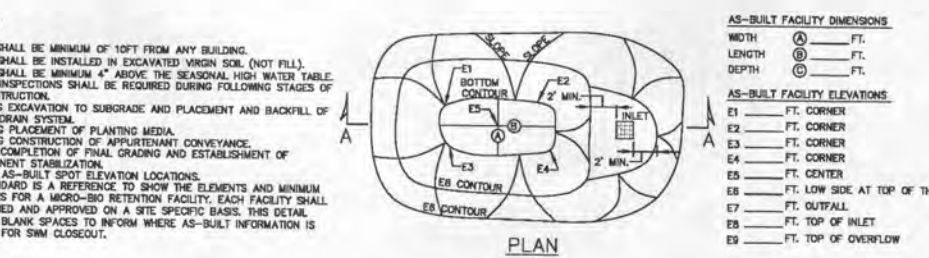


Table B.4.1 Materials Specifications for Micro-Bioretention, Rain Gardens & Landscape Infiltration			
Material	Specification	Size	Notes
Planting soil	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil (2' to 4' deep)	loamy sand (60-65%) & compost (35-40%) or sandy loam (30%), coarse sand (30%) & compost (40%)	n/a	USDA soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)		
Mulch	shredded hardwood		aged 6 months, minimum; no pine or wood chips
Pea gravel diaphragm	pea gravel; ASTM-D-448	NO. 8 OR NO. 9 (1.8" TO 3/8")	
Curbside drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile		n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" to 3/4")	
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe; 3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary undercurb pipes. Perforated pipe shall be wrapped with 1/2-inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; $f'_c = 3500$ psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved State or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 350.R.89; vertical loading [H-10 or H-20]; allowable horizontal loading (based on soil pressures); and analysis of potential cracking
Sand	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Gneiss (AASHTO) #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand

B.4.7 Supp. 1



MICRO-BIORETENTION (M-6) DETAIL (NOT TO SCALE)

SIMPLIFIED ENVIRONMENTAL CONCEPT PLAN

STORMWATER MANAGEMENT NOTES AND DETAILS

PARCEL 274

TAX MAP 40, GRID 6

LIBER 20485, FOLIO 116

12370 HALL SHOP ROAD, HIGHLAND, MARYLAND 20777

5TH ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

SCALE: 1" = 40'

JOB NO.: 3550

DATE: FEB. 10, 2021

SHEET: 2 OF 4

DETAIL D-4-1-C ROCK OUTLET PROTECTION III

STANDARD SYMBOL

ROPIII

DISCHARGE TO AN UNCONFINED CHANNEL OR FLAT AREA

PLAN VIEW

SECTION A-A

SECTION B-B

CONSTRUCTION SPECIFICATIONS

1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.

2. USE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.

3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (1/2 TO 1 1/2 INCH MINIMUM STONE FOR 8 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.

4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.

5. CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS PLACED IN THE SUBGRADE. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.

6. WHERE NO EXHIBIT IS USED, CONSTITUTE THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.

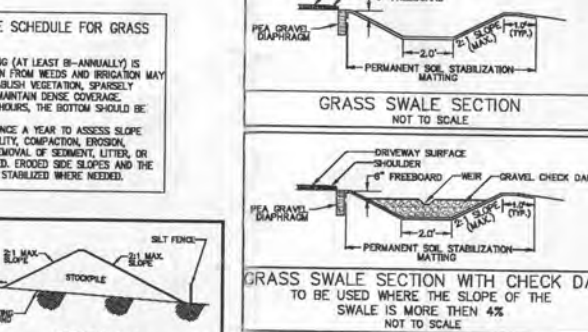
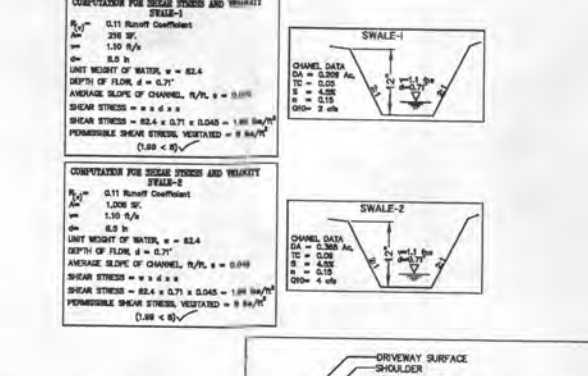
7. CONSTRUCT APRON WITH 0.5 SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GRASSLAND.

8. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND RIPRAP DISLOOSED. RIPRAP, MAKE NECESSARY REPAIRS IMMEDIATELY.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011

MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



TEMPORARY STOCKPILE DETAIL

DEVELOPER'S CERTIFICATE

APPROVED: HOWARD SOIL CONSERVATION DISTRICT

THIS PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

NJR & ASSOCIATES

Land Surveying and Planning

2770 TERRAPIN RUN

WEST FRIENDSHIP, MD 21794

TEL: (240) 558-3500

Email: ROSEAN@NJRAI.COM

APRIL 15, 2022

COMPUTATION OF THE REQUIRED ESDv:

PROPERTY SIZE = 319,869 SF (7.3385)

LIMITS OF DISTURBANCE (L.O.D.) = 61,349 SF

PROPOSED IMPERVIOUS AREA = 17,522 SF

SOIL = HYDROLOGIC SERIES "A", 92% OF L.O.D.

TARGET P_e:

% IMPERVIOUS AREA (I) = $\frac{17,522}{61,349} = 28.56\%$ (USE 30%)

PROP. IMPERVIOUS AREA = 17,522

PROP. L.O.D. = 61,349

USING TABLE 5.3 FOR "A" SOILS & 1% OF 30:

PE = 1.6"

TARGET RCN FOR WOODS IN GOOD CONDITION:

"A" SOILS = 57

TARGET ESDv:

PE = 1.6"

I = 28.56%

Rv = 0.05 + (0.009)(I) = 0.03070

Rv = 0.05 + (0.009)(28.56) = 0.3070

A = 81,349 SF

ESDv = $\frac{PE \times Rv \times A}{12}$

ESDv = $\frac{1.6 \times 0.3070 \times 81,349}{12} = 2,511$ CF

PROPOSED IMPERVIOUS	
BUILDING	= 3,252 SF
ASPHALT DRIVEWAY	= 8,497 SF
GRAVEL DRIVEWAY	= 7,499 SF
PORCH & WALK	= 274 SF
TOTAL	= 17,522 SF

COMPUTATION OF THE PROPOSED ESDv:

MICRO-BIO RETENTION (M-6)

APPROX. DRAINAGE AREA (DA) = 10,428 SF

IMPERVIOUS IN DA = 8,817 (81.53%)

PE = 2.6"

I = 81.53%

Rv = 0.05 + (0.009)(81.53) = 0.7838

A = 10,815 SF

ESDv = $\frac{PE \times Rv \times A}{12}$

ESDv = $\frac{2.6 \times 0.7838 \times 10,815}{12} = 1,837$ CF

NON-ROOFTOP DISCONNECTS (N-2)

APPROX. DRAINAGE AREA, DRAINWAY (DA) = 1,821 SF

IMPERVIOUS IN DA = 100%

PE = 1.0"

I = 100%

Rv = 0.05 + (0.009)(100) = 0.95

A = 1,534 SF

ESDv = $\frac{PE \times Rv \times A}{12}$

ESDv = $\frac{1.0 \times 0.95 \times 1,534}{12} = 121$ CF

GRASS SWALE-1

APPROX. DRAINAGE AREA, GRAVEL DRIVEWAY (DA) = 9,119 SF

APPROX. IMPERVIOUS AREA, DRIVEWAY (DA) = 2,008 SF

I = 22%

PE = 1.0"

Rv = 0.05 + (0.009)(22) = 0.248

A = 9,119 SF

ESDv = $\frac{PE \times Rv \times A}{12}$

ESDv = $\frac{1.0 \times 0.248 \times 9,119}{12} = 188$ CF

GRASS SWALE-2

APPROX. DRAINAGE AREA, GRAVEL DRIVEWAY (DA) = 16,021 SF

APPROX. IMPERVIOUS AREA, DRIVEWAY (DA) = 5,493 SF

I = 34%

PE = 1.0"

Rv = 0.05 + (0.009)(34) = 0.358

A = 16,021 SF

ESDv = $\frac{PE \times Rv \times A}{12}$

ESDv = $\frac{1.0 \times 0.358 \times 16,021}{12} = 475$ CF

STORMWATER MANAGEMENT SUMMARY			
FACILITY	ESDv CREDIT	TARGET P _e	REQUIRED P _e
MICRO-BIO RETENTION (M-6)	1,837 CF	1.6"	2.6"
NON-ROOFTOP DISCONNECT (N-2)	121 CF	1.6"	1.0"
GRASS SWALE-1 (M-6)	188 CF	1.6"	1.0"
GRASS SWALE-2 (M-6)	475 CF	1.6"	1.0"
TOTAL	2,621 CF		

ESDv PROVIDED = 2,621 CF

ESDv REQUIRED = 2,511 CF

ESDv SURPLUS = +110 CF

MICRO-BIO RETENTION ELEVATION CHART			
NUMBER	TOP POND	TOP MULCH	BOTTOM PIT
1	457.0	458.0	451.83

PLANTING SCHEDULE - MICRO-BIORETENTION & RAINGARDEN

BOTANICAL NAME	COMMON NAME	CONDITION	SIZE	REMARKS
SHRUB	LEX GARRA	ANNUARY	12"	PLANT 3' APART
SHRUB	HAMELIS VIRGINIANA	WITCH HAZEL	CONTAINER	12"-24" PLANT 3' APART
PERENNIAL	IRS VERSICOLOR	BLUE FLAG	SEEDLINGS	PLANT 15" APART, TRIANGULAR GRID
PERENNIAL	GERANIUM MACULATUM	CRANESBILL	SEEDLINGS	PLANT 15" APART, TRIANGULAR GRID
PERENNIAL	SOLIDAGO SPICULATA	GOLDEN FLEECE	SEEDLINGS	PLANT 15" APART, TRIANGULAR GRID

PLANTING NOTES:

- PLANT A MIX OF SHRUBS AND PERENNIALS.
- REFERENCE STANDARDS: COMPLY WITH THOSE LISTED BELOW.
 - a. NOMENCLATURE FOR PLANT MATERIALS SHALL BE IN ACCORDANCE WITH HORTUS II, BY THE STAFF OF L.H. BAILEY HORTORUM.
 - b. AMERICAN STANDARD FOR NURSERY STOCK, ANSI Z60.1, LATEST EDITION, AMERICAN NURSERY & LANDSCAPE ASSOCIATION (ANLA).
 - c. LANDSCAPE SPECIFICATION GUIDELINES, LATEST EDITION, LANDSCAPE CONTRACTORS ASSOCIATION.
- PROCEED WITH PLANTING ONLY WHEN EXISTING AND FORECAST WEATHER CONDITIONS ARE SUITABLE FOR WORK. PERFORM ACTUAL PLANTING WHEN GROUND IS WORKABLE, I.E., MOIST, NOT WET OR FROZEN.

OPERATION AND MAINTENANCE SCHEDULE FOR MICRO-BIO RETENTION (M-6)

- The Owner shall maintain the plant material, mulch layer and soil layer annually. Maintenance of mulch and soil is limited to correcting areas of erosion or wash out. Any mulch replacement shall be done in the spring. Plant material shall be checked for disease and insect infestation and maintenance will address dead material and pruning. Acceptable replacement plant material is limited to the following: 2000 Maryland Stormwater Design Manual Volume II, Table A.4.1 and 2.
- The Owner shall perform a plant in the spring and in the fall of each year. During the inspection, the Owner shall remove dead and diseased vegetation considered beyond treatment, replace dead plant material with acceptable replacement plant material, treat diseased trees and shrubs, and replace all deficient stakes and wires.
- The Owner shall inspect the mulch each spring. The mulch shall be replaced every two to three years. The previous mulch layer shall be removed before the new layer is applied.
- The Owner shall correct soil erosion on an as needed basis, with a minimum of once per month and after each heavy storm.

OPERATION AND MAINTENANCE SCHEDULE FOR DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2)

MAINTENANCE OF AREA RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THEN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE OWNER SHALL ENSURE THE AREA RECEIVING RUNOFF IS PROTECTED FROM FUTURE COMPACTION OR DEVELOPMENT OF IMPERVIOUS AREA.

I. BIORETENTION AREA SOIL SPECIFICATION

A. PLANTING SOIL:

THE BIORETENTION AREA SHALL CONSIST OF A PLANTING SOIL HAVING A HOMOGENEOUS MIX OF SOIL CONSTRUCTION SAND, 20-30% TOPSOIL WITH AN ALLOWABLE 5% MAXIMUM CLAY CONTENT, AND 20-30% ORGANIC COMPOST OR MULCH TO PROVIDE A SOIL MEDIUM WITH HIGH HYDROLOGIC CAPACITY.

THE PLANTING SOIL SHALL BE FREE OF PLANTS OR PLANT PARTS OF BERMUDA GRASS, QUACK GRASS, JOHNSON GRASS, MUDDWART, NUTSEDGE, POISON IVY, CANADIAN THISTLE OR OTHER AS SPECIFIED.

IT SHALL NOT CONTAIN TOXIC SUBSTANCES HARMFUL TO PLANT GROWTH.

THE PLANTING SOIL SHALL BE TESTED AND MEET THE FOLLOWING CRITERIA:

PH RANGE: 5.5 - 6.5

ORGANIC MATTER: 15 - 30%

THE FOLLOWING TESTING FREQUENCIES SHALL APPLY TO THE ABOVE SOILS:

PH ORGANIC MATTER: 1 TEST PER 90 CUBIC YARDS, BUT NOT MORE THAN 1 TEST PER BIORETENTION AREA.

ONE GRAIN SIZE ANALYSIS SHALL BE PERFORMED PER 90 CUBIC YARDS OF PLANTING SOIL, BUT NO LESS THAN 1 TEST PER BIORETENTION AREA.

B. MULCH LAYER SPECIFICATION:

A MULCH LAYER SHALL BE PROVIDED ON TOP OF PLANTING SOIL. AN ACCEPTABLE MULCH LAYER SHALL INCLUDE SHREDDED HARDWOOD OR SHREDDED WOOD CHIPS OR OTHER SIMILAR PRODUCTS APPROVED BY THE HOWARD COUNTY DEPARTMENT OF ENVIRONMENTAL RESOURCES.

OF THE APPROVED MULCH PRODUCTS, ALL MUST BE WELL AGED, UNIFORM IN COLOR, AND FREE OF FOREIGN MATERIALS, INCLUDING PLANT MATERIAL. WELL AGED MULCH IS DEFINED AS MULCH THAT HAS BEEN STOCK PILED OR STORED FOR AT LEAST TWELVE (12) MONTHS.

C. SAND SPECIFICATION:

THE SAND SHALL BE FREE OF DELETERIOUS MATERIAL AND ROCKS GREATER THAN ONE INCH IN DIAMETER.

D. COMPACTION:

SOIL SHALL BE PLACED IN LIFTS LESS THAN 18 INCHES AND LIGHTLY COMPACTED.

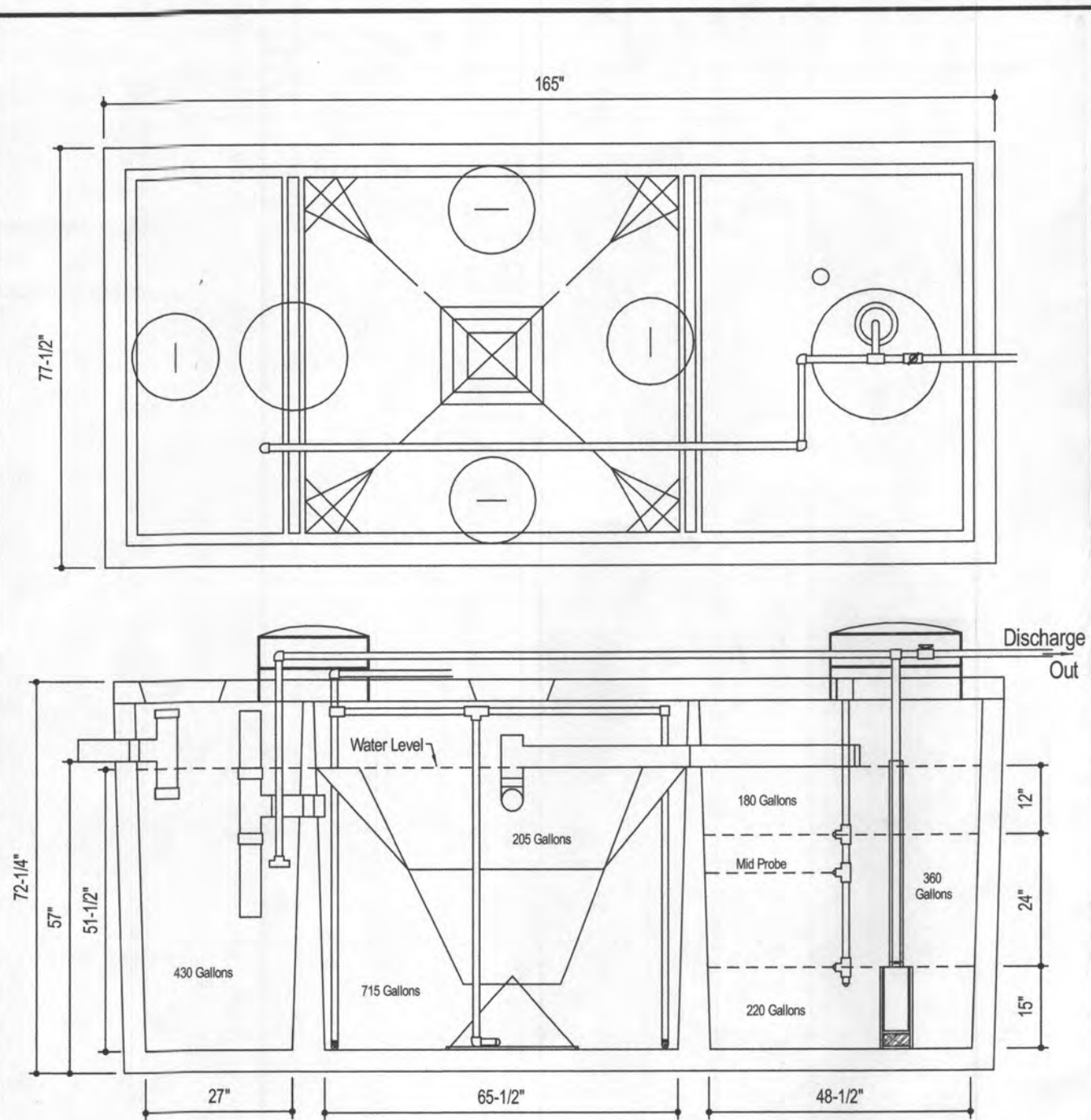
II. BIORETENTION AREA PLANT SPECIFICATION

GENERAL PLANTING:

- ROOT STOCK OF PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT FROM SOURCE TO THE JOB SITE AND UNTIL PLANTED.
- WALLS OF PLANTING PIT SHALL BE DUG SO THAT THEY ARE VERTICAL.
- THE DIAMETER OF PLANTING PIT MUST BE A MINIMUM OF SIX INCHES LARGER THAN THE DIAMETER OF THE ROOT BALL.
- THE PLANTING PIT SHALL BE DEEP ENOUGH TO ALLOW 1/4 OF THE BALL TO BE ABOVE THE EXISTING GRADE. LOOSE SOIL AT THE BOTTOM OF THE PIT SHALL BE TAMPED BY HAND.
- THE APPROPRIATE AMOUNT OF FERTILIZER IS TO BE PLACED AT THE BOTTOM OF THE PIT.
- THE PLANT SHALL BE REMOVED FROM THE CONTAINER AND PLACED AT THE BOTTOM OF THE PLANTING PIT BY LIFTING AND CARRYING THE PLANT BY ITS BALL. NEVER LIFT THE PLANT BY THE BRANCHES OR TRUNK.
- SET THE PLANT STRAIGHT AND IN THE CENTER OF THE PIT SO THE CENTER OF THAT THE BALL IS APPROXIMATELY 1/4 ABOVE THE FINAL GRADE.
- BACKFILL PLANTING PIT WITH EXISTING SOIL.
- MAKE SURE PLANT REMAINS STRAIGHT DURING BACKFILLING PROCEDURE.
- NEVER COVER THE TOP OF THE BALL WITH SOIL. MOUND SOIL AROUND THE EXPOSED SIDE OF THE BALL.
- MAKE SURE MULCH DOES NOT CONTACT TREE'S TRUNK.
- TREE SHALL BE BRACED USING 2" X 2" WHITE OAK STAKES. STAKES SHALL BE BRACED PARALLEL TO WALKWAYS AND BUILDINGS. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE.
- BALL, THE TREE IS BRACED TO THE STAKES UTILIZING HOSE AND WINES.
- FERTILIZER:
- TREE AND SHRUB FERTILIZER SHALL BE A 21 gm. TIGHTLY COMPRESSED, LONG LASTING, SLOW RELEASE (2-YEAR) FERTILIZER TABLET WITH MINIMUM GUARANTEED ANALYSIS OF 20-10-5:
- TOTAL NITROGEN (N) - 20%
- WATER SOLUBLE ORGANIC NITROGEN - 7%
- WATER IN SOLUBLE ORGANIC NITROGEN - 13%
- AVAILABLE PHOSPHORIC ACID (P2 O5) - 10%
- SOLUBLE POTASH (K2O) - 5%
- FOR CONTAINERIZED TREES AND SHRUBS, PLACE THE SPECIFIED FERTILIZER TABLET(S) IN THE BOTTOM OF THE PLANTING PIT ACCORDING TO THE FOLLOWING RATES:
- 1 GAL. CONTAINER 1 ea. 21 gm. TABLETS.
- 3 GAL. CONTAINER 2 ea. 21 gm. TABLETS.
- 5 GAL. CONTAINER 3 ea. 21 gm. TABLETS.
- 7 GAL. CONTAINER 5 ea. 21 gm. TABLETS.
- PLANTING NON-GRASS GROUND COVER:
- THE GROUND COVER PLANTING HOLES SHALL BE DUG THROUGH THE MULCH WITH ONE OF THE FOLLOWINGS: HAND TROWEL, SHOVEL, BULB PLANTER, OR HOE (THIS DOES NOT APPLY TO GRASS OR LEGUMES).
- BEFORE PLANTING BIODEGRADABLE POTS, THEY SHALL BE SPLIT, AND NON BIODEGRADABLE POTS SHALL BE REMOVED. ROOT SYSTEMS OF THE POTTED PLANTS SHALL BE SPLIT OR CRUMBLIED.
- THE GROUND COVER SHALL BE PLANTED SO THAT ROOTS ARE SURROUNDED BY THE SOIL BELOW THE MULCH. POTTED PLANTS SHALL BE SET SO THAT THE TOP OF THE POT IS EVEN WITH THE EXISTING GRADE. THE ROOTS OF BARE-ROOT PLANTS SHALL BE COVERED TO THE CROWN.
- THE MULCH AND PLANTED GROUND COVER BED SHOULD BE SHOULD BE COVERED WITH A PRE-EMERGENT HERBICIDE.
- THE ENTIRE GROUND COVER BED SHALL BE THOROUGHLY WATERED.

OPERATION AND MAINTENANCE SCHEDULE FOR DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2)

MAINTENANCE OF AREA RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THEN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE OWNER SHALL ENSURE THE AREA RECEIVING RUNOFF IS PROTECTED FROM FUTURE COMPACTION OR DEVELOPMENT OF IMPERVIOUS AREA.



DESIGN DATA & GENERAL NOTES

- Concrete strength $f'c=4,000$ p.s.i. @ 28 days. Density = 150 p.c.
- Cement - Portland Type III per ASTM C 150-92.
- Admixtures & plasticizers per ASTM C 260-86 & C 494-92.
- Reinforcing per ASTM A185. Min. 1-1/2" cover.
- Top slab sealed with butyl rope mastic.
- 4" wall, base, & top thickness.
- Max 3' of cover.
- Depending on use of tank, Inlet & Outlet baffles may be required by code.

Mayer Brothers, Inc.

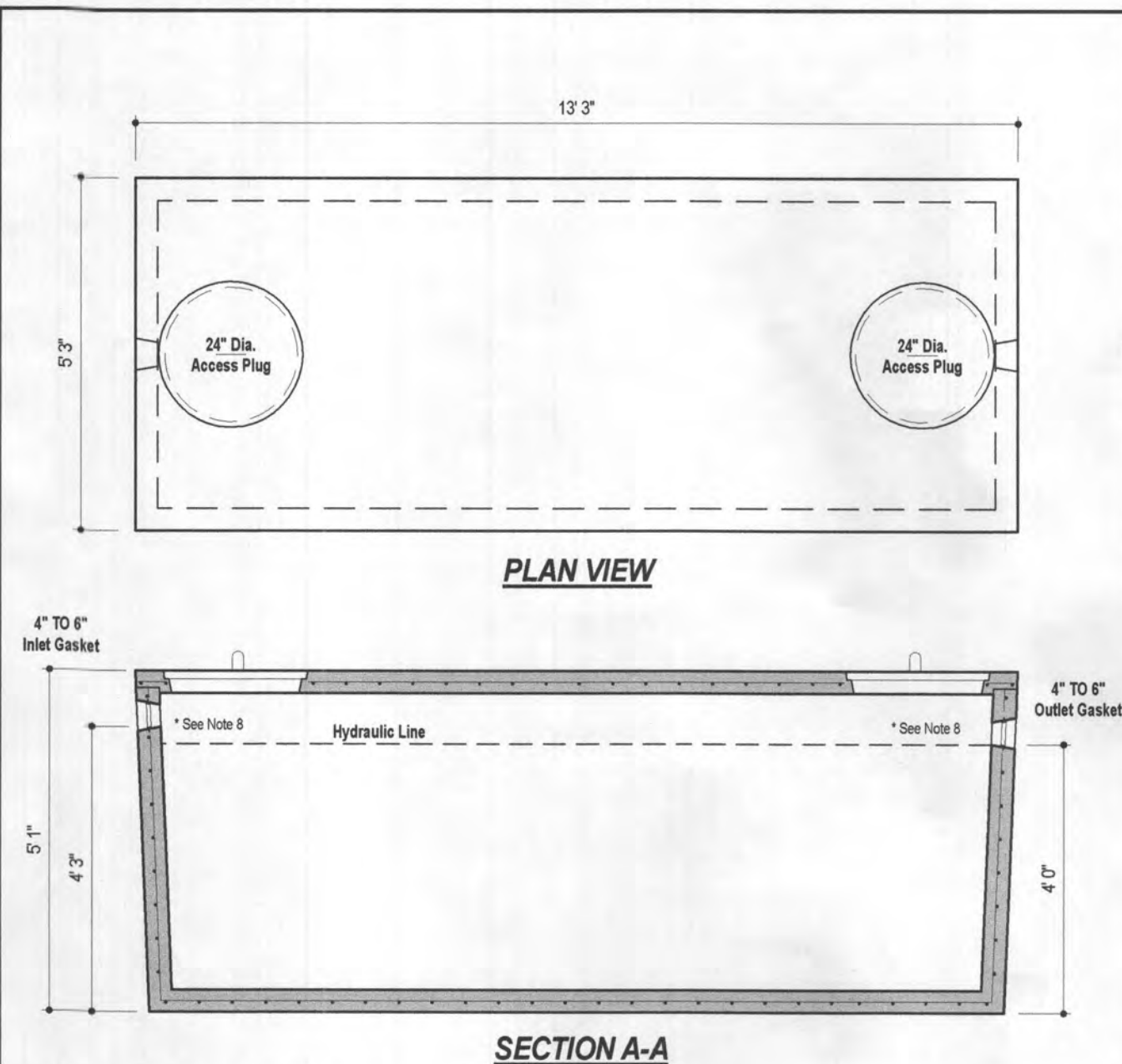
6264 Race Road
Elkridge, Maryland 21075
Tel. 410.796.1454
Fax. 410.796.1438
www.mayerbroscast.com



600 GPD BNR SYSTEM
H-600 BNR

with 750 GALLON PUMP CHAMBER

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



DESIGN DATA & GENERAL NOTES

- Concrete strength $f'c=4,000$ p.s.i. @ 28 days. Density = 150 p.c.
- Cement - Portland Type III per ASTM C 150-92.
- Admixtures & plasticizers per ASTM C 260-86 & C 494-92.
- Reinforcing per ASTM A185. Min. 1-1/2" cover.
- Top slab sealed with butyl rope mastic.
- 4" wall, base, & top thickness.
- Max 3' of cover.
- Depending on use of tank, Inlet & Outlet baffles may be required by code.



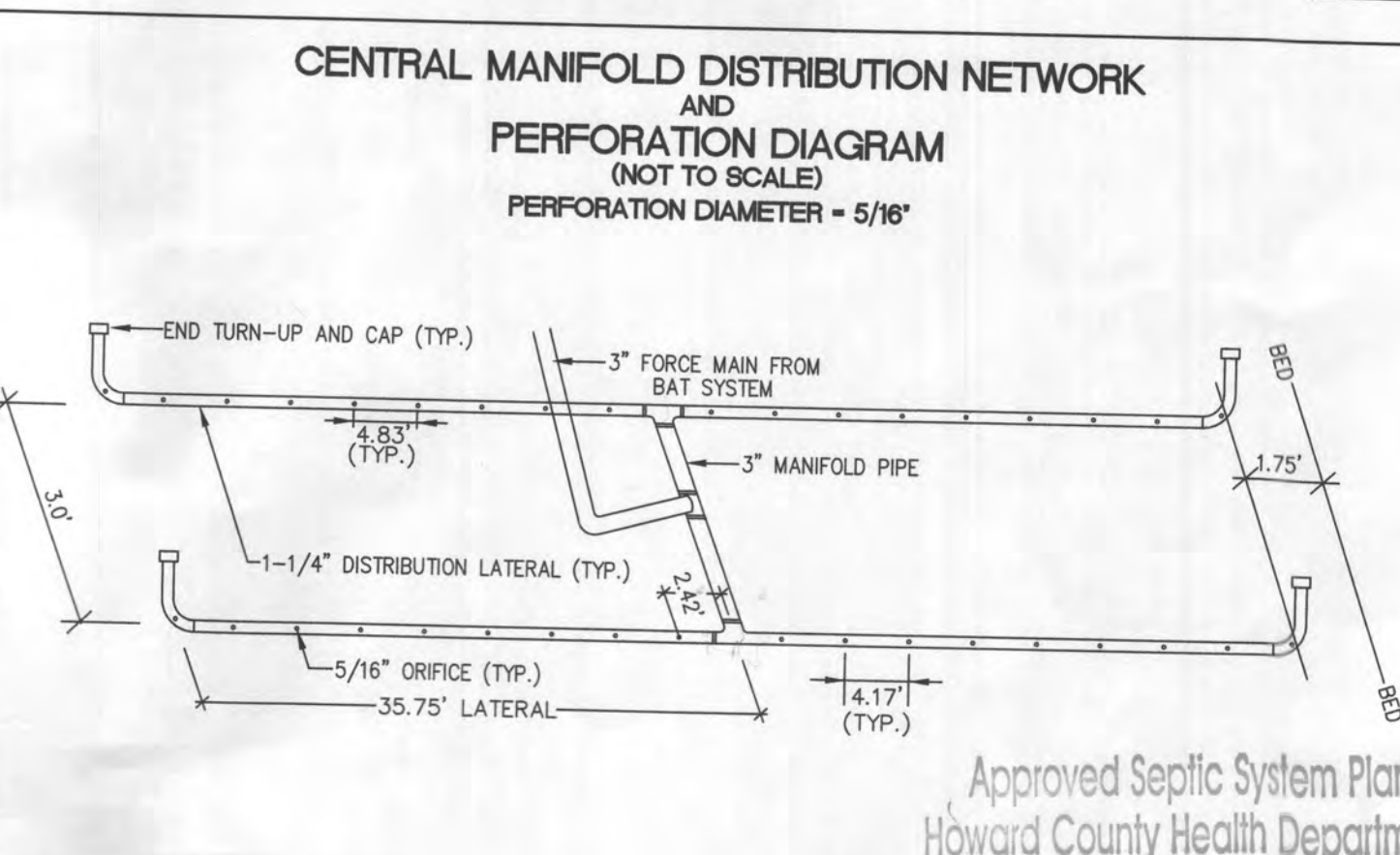
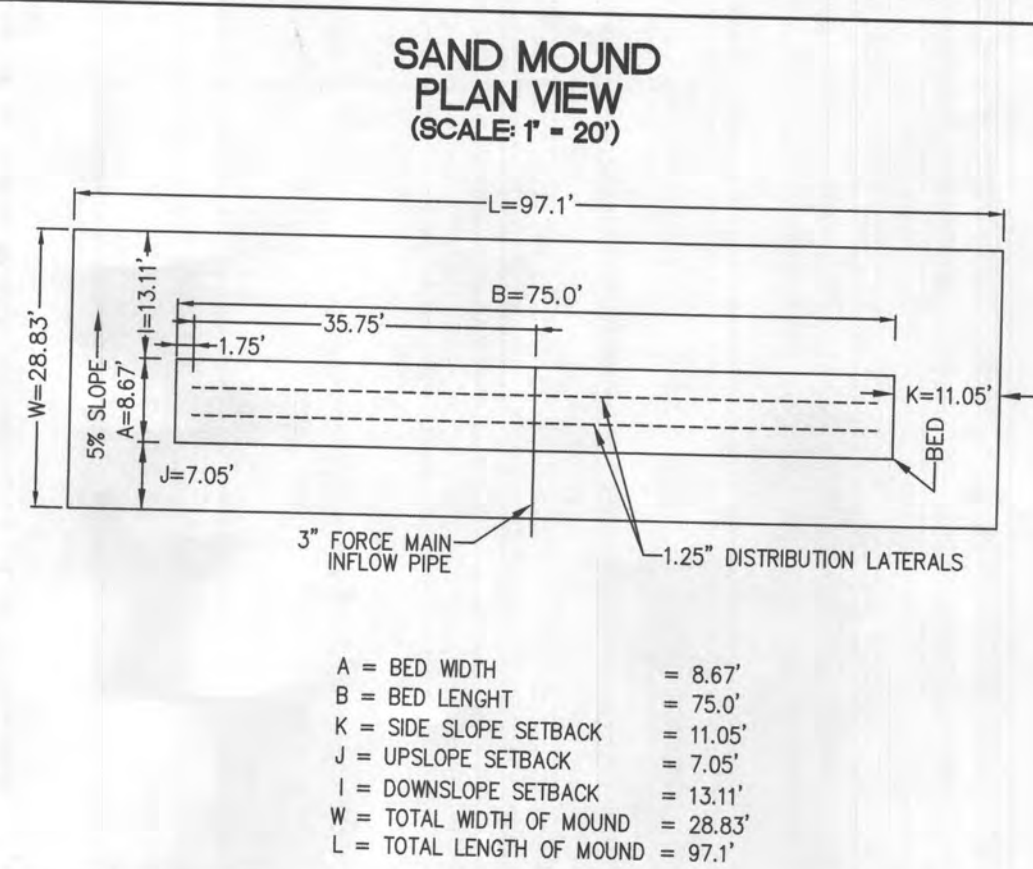
6264 Race Road
Elkridge, Maryland 21075
Tel. 410.796.1454
Fax. 410.796.1438
www.mayerbroscast.com

1,500 GALLON SEPTIC/PUMP TANK
1-Compartment

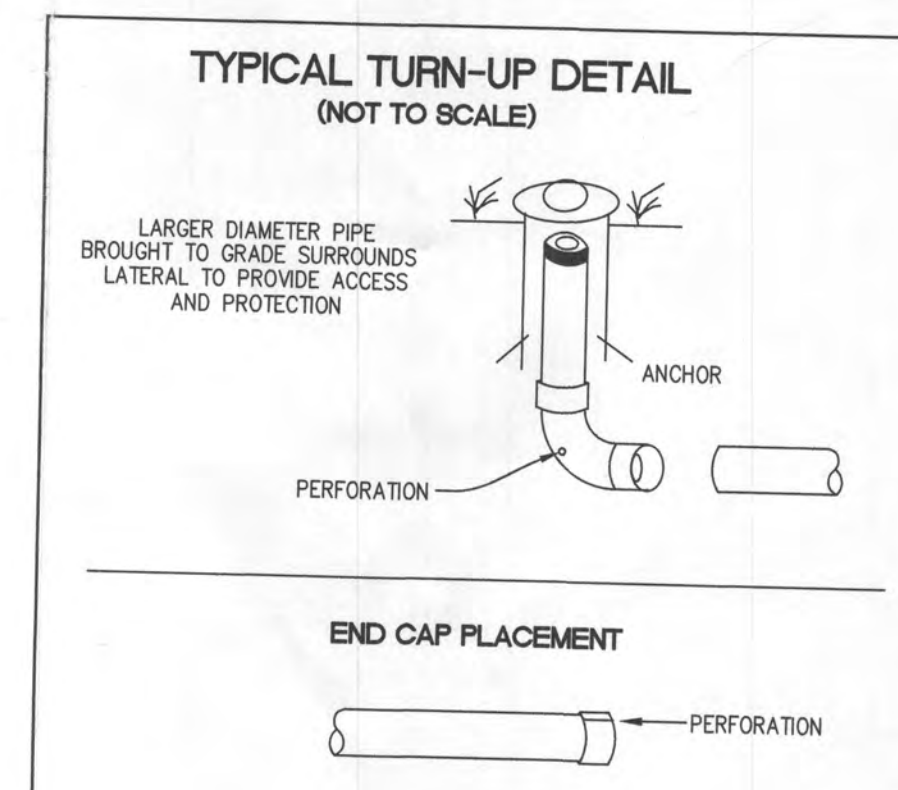
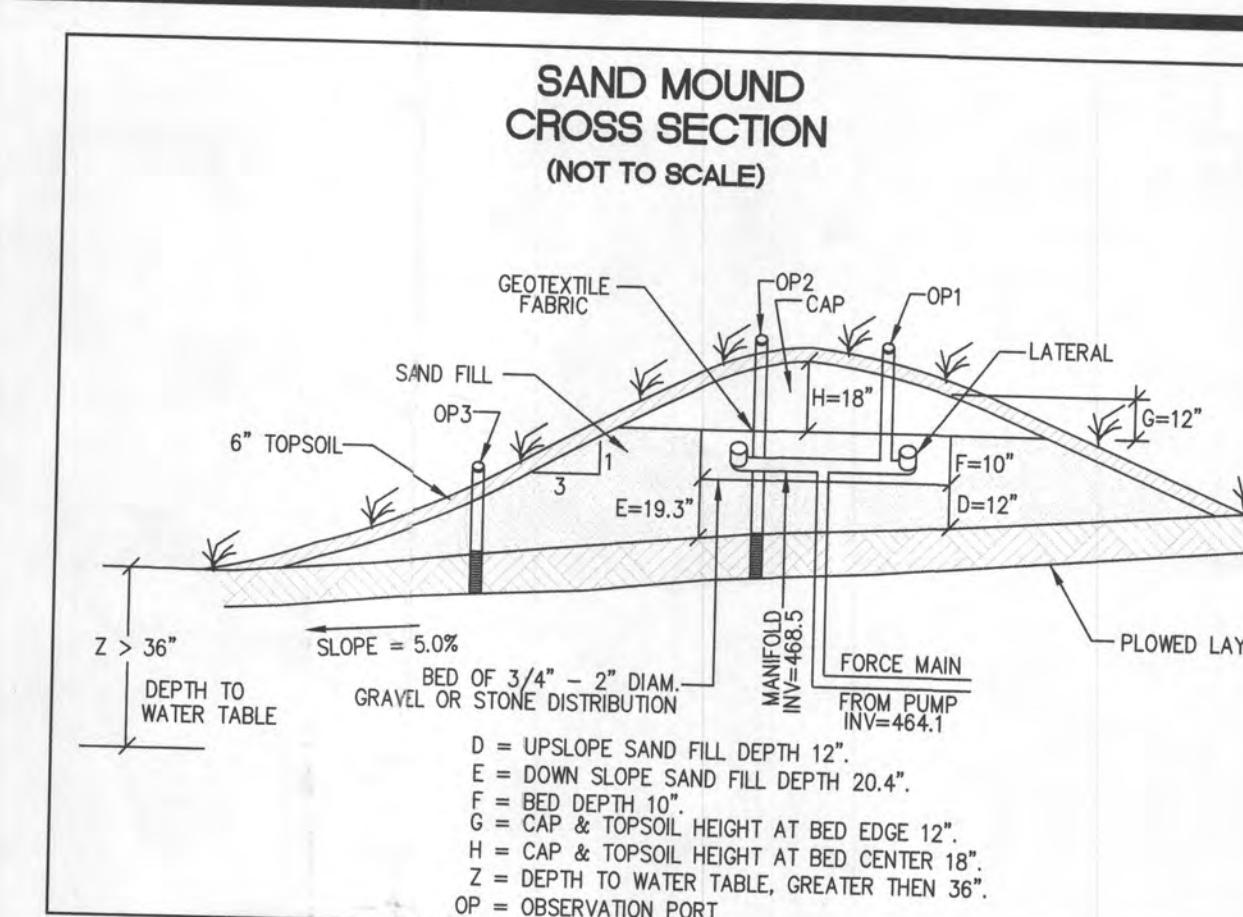
NON-TRAFFIC MAX 3 ft. OF COVER

Dwg. No. 1500-1C No Scale Aug. 11, 2008

WEIGHT = 16,000 lbs.



Approved Septic System Plan
Howard County Health Department
Sand mound as described below
using SAND per COMAR
26.04.02.05.0. (K) (i)
Signature: [Signature] Date: 5/13/2022
12370 Hall Shop Road

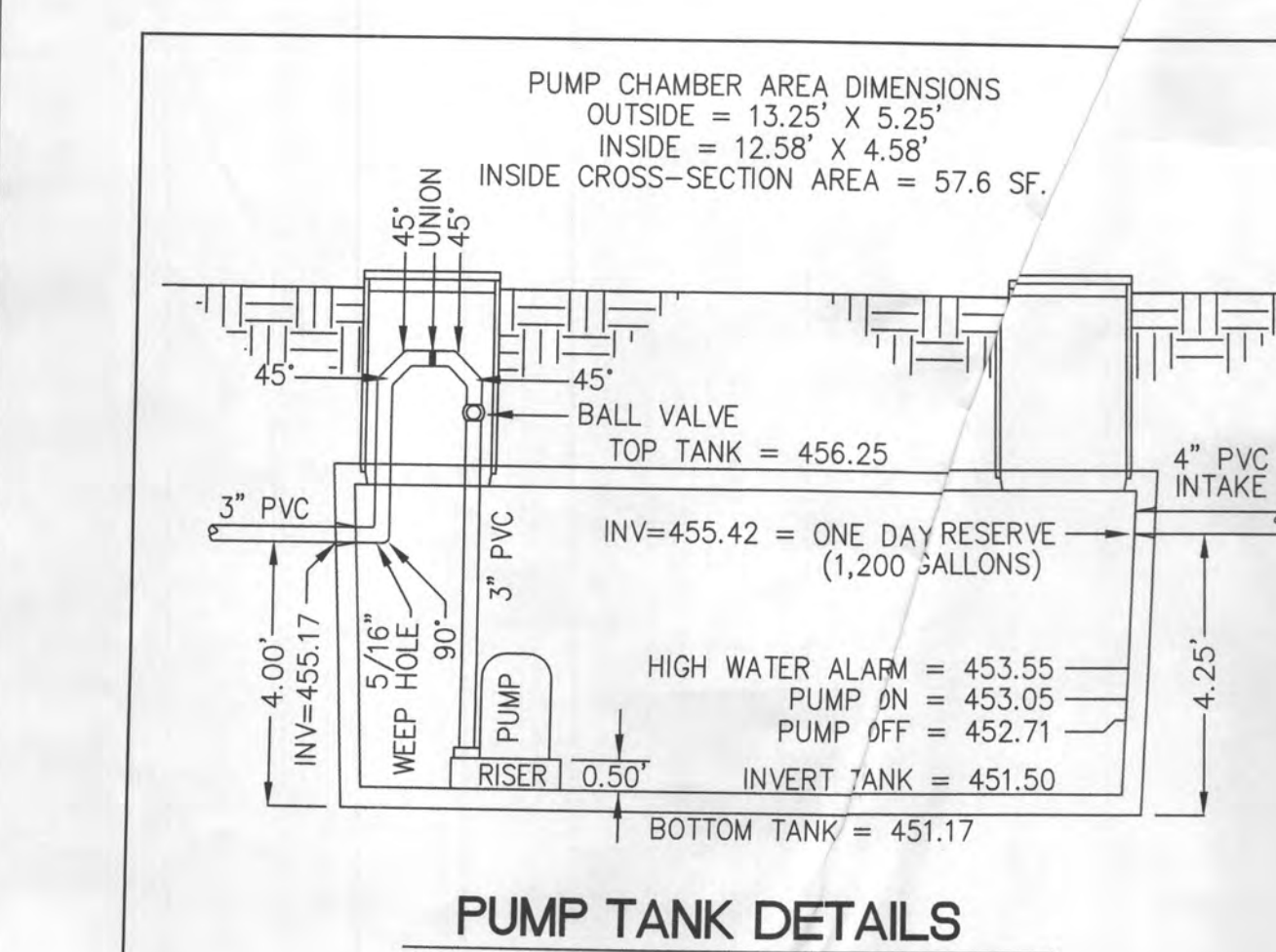
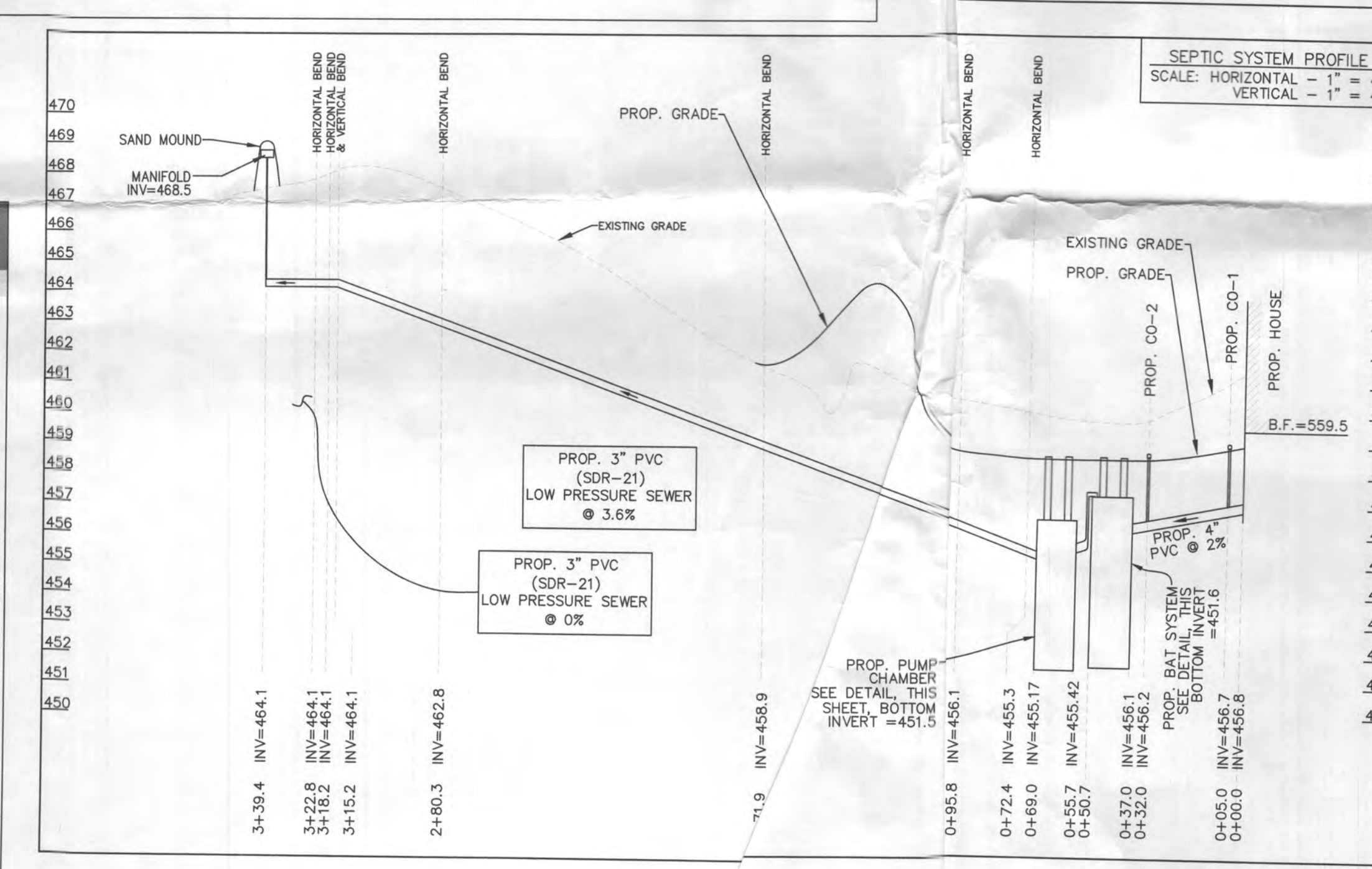
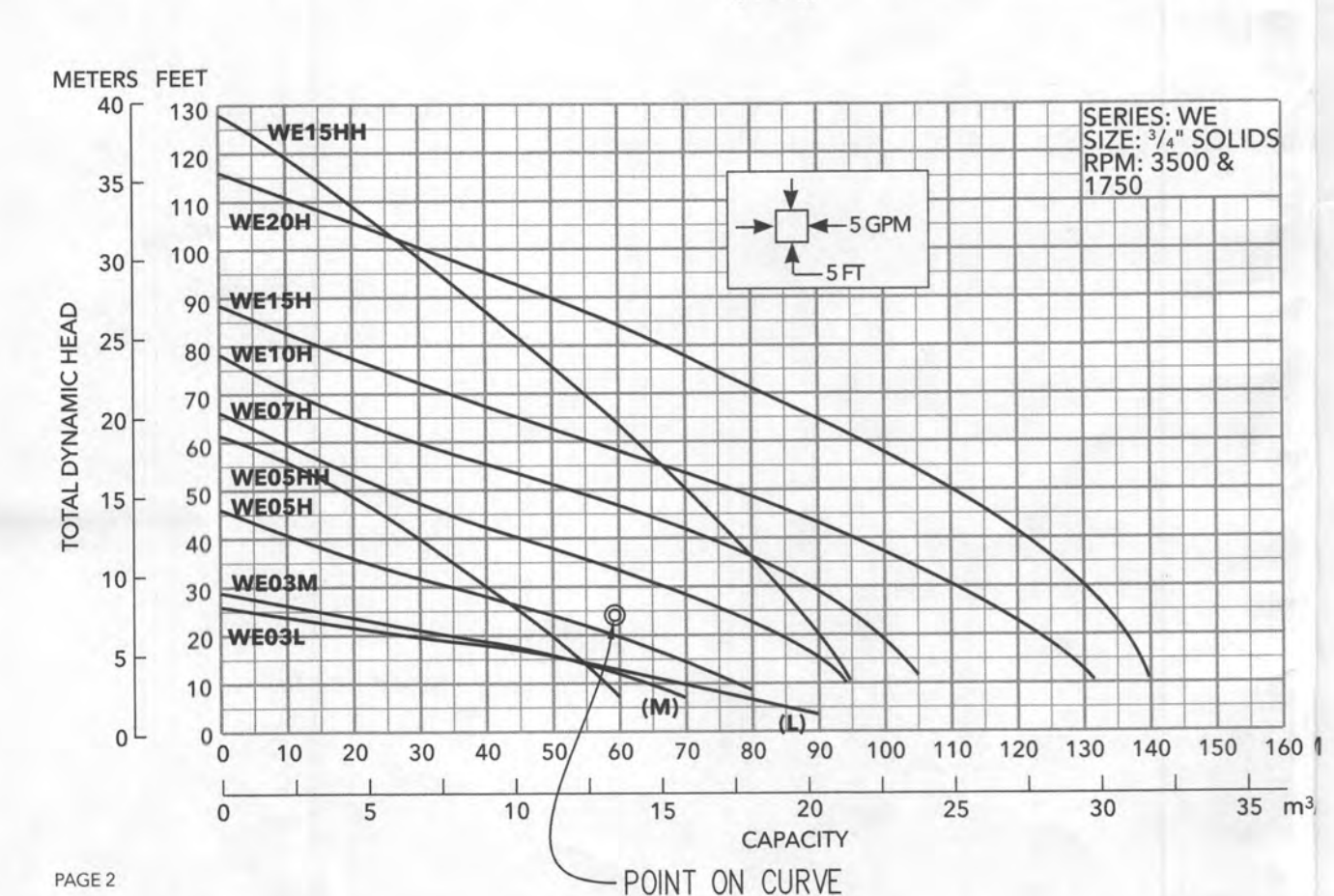


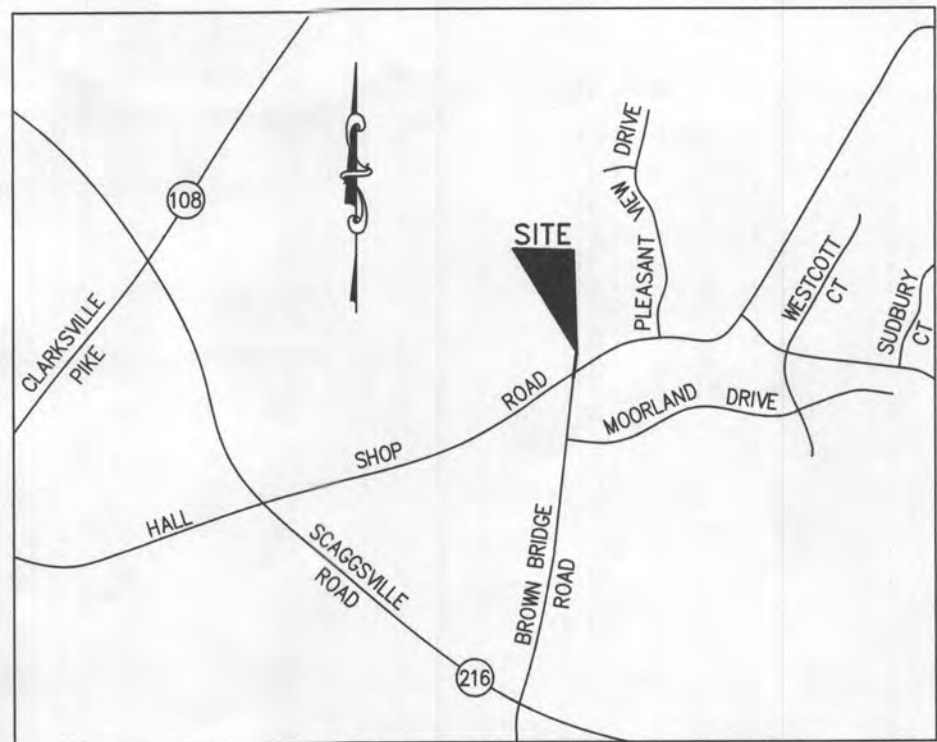
- #### SAND MOUND CONSTRUCTION PROCEDURES
- ##### 5.1 GENERAL
- Proper construction is extremely important if the sand mound is to function as designed. Installation of a sand mound system is prohibited when soils are frozen. Construction of the mound should not occur if the soil is too wet. Compaction and puddling of the soil in the location of the mound and downslope should be avoided. Soil is too wet for construction if a sample taken anywhere within the upper 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:
- A small track-type tractor with blade for plowing and grading the sand fill.
 - A cordless drill for drilling holes in the pipe on site.
 - A moldboard or chisel plow for plowing the soil within the perimeter of the mound. A rototiller may be used on structureless soils with USDA sand textures.
 - A rod and level for determining bed elevations, slopes on pipes, outlet elevations of the septic tank, slope of the site, etc.
- ##### 5.3 MATERIALS
- The following materials are required:
- Sand fill material must be approved by the local Approving Authority prior to hauling to the site. Submit a sample to the local Authority for analysis at least three weeks in advance of construction or select a sand fill from the list of potential sand suppliers. If a sample is submitted for analysis a fee will be charged. Sand fill shall have an effective with a uniformity coefficient of 3.5 or less. A copy of the results from the sand supplier showing the company name, address, phone number, date and product name will be required.
 - Aggregate shall be clean aggregate free of fines and between 3/4" to 2" in diameter.
 - Geotextile fabric shall be of a type approved by the Approving Authority.
 - Cap material shall be soil relatively free of coarse fragments and preferably a clay loam or silt loam texture.
- ##### 5.4 TANK INSTALLATION AND SITE PREPARATION
- Locate and 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 should be prohibited to avoid soil compaction.
 - Install septic tank(s) and pumping chamber(s) and pumps as shown on the drawings. Call for inspection.
 - Stakeout the initial and recovery mound perimeters in their proper orientation as shown on the drawing(s). Reference stakes offset from the mound corners and stakes are recommended. Locate the upslope edge of the absorption bed within the mound and determine the ground elevation at the highest benchmark for future use. This is necessary to determine the bottom elevation of the absorption bed.
 - Excess vegetation should be cut and removed. Trees should be cut at ground level and stumps left in place.
 - Determine the location where the force main from the pumping chamber will connect to the distribution network manifold within the mound.
 - Install the force main to the proper location pumping chamber to the proper location within the mound. Pipe should be laid with uniform slope back to the chamber so that in 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.
 - Flow the soil within the perimeter of the mound to a depth of about eight inches if the soil is not too wet. Moldboard or chisel plow may be used. Plowing should be done along the contour, throwing soil upslope. Use a two bottom or larger moldboard plow. In wooded areas with stumps, roughen the surface to a depth of four to six inches. However, all work should be done from the upslope or sides of the mound if at all possible. Rototilling may be used on soils with USDA textures of sand. After plowing, all foot and vehicular traffic shall be kept off the plowed area.
- ##### 5.5 FILL PLACEMENT
- Retrace and extend the force main several feet above the ground surface.
 - Place the approved sand fill material on the upslope edge(s) of the plowed area. Keep delivery trucks off the plowed area. Plowing should be done immediately after plowing. Move the fill material in 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 material beneath the tracks of the tractor 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.
 - With the blade of the tractor, form the absorption bed. Hand level the bottom of the bed and check it for proper elevation. The bed should be level for proper functioning of the mound. Call for inspection.
 - Shape the sides of the sand fill to design slope 3:1 or flatter.
- ##### 5.6 BED AND DISTRIBUTION NETWORK
- Carefully place the coarse aggregate in the bed. Do not create ruts in the bottom of the bed. Level the aggregate to a minimum depth of six inches.
 - 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 directly downwards. Call for inspection. Test the pumping chamber and distribution network with clean water.
 - Place additional aggregate to a depth of at least two inches over the crown of the pipe.
 - Place the approved geotextile fabric over the aggregate bed. The fabric may extend beyond the bed over the sand fill.
- ##### 5.7 COVER MATERIAL
- Place a finer textured soil material such as sandy clay loam, clay loam, or silt loam on top of the fabric over the bed. The minimum depth of this cap shall be six inches at the outer edges of the bed and 12 inches along the center line of the bed.
 - Place a minimum of six inches of good quality topsoil over the entire mound surface including the sideslopes. Call for final inspection.
- ##### 5.8 VEGETATION
- 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 of Soil Conservation Service for recommendations.

Goulds Water Technology

Wastewater

- #### APPLICATIONS
- Specifically designed for the following uses:
- Homes, Farms, Trailer Courts, Motels, Schools, Hospitals, Industry, Effluent Systems
- #### SPECIFICATIONS
- ##### Pump
- Solids handling capabilities: 3/4" maximum.
 - Discharge size: 2" NPT.
 - Capacities: up to 140 GPM.
 - Total heads: up to 128 feet TDH.
 - Temperature: 104°F (40°C) continuous, 140°F (60°C) intermittent.
 - See order numbers 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 B insulation on 1/2 - 1 1/2 HP models.
 - Class F insulation on 2 HP models.
- ##### Single phase (60 Hz):
- Capacitor start motors for maximum starting torque.
 - Built-in overload with automatic reset.
- SJTOW or STOW severe duty oil and water resistant power cords.
 - 1/2 - 1 HP models have NEMA three prong grounding plugs.
 - 1 1/2 HP and larger units have bare lead cord ends.
- ##### Three phase (60 Hz):
- Class 10 overload protection must be provided in separately ordered starter unit.
 - STOW power cords all have bare lead cord ends.
 - Designed for Continuous Operation: Pump rating are within the motor manufacturer's recommended working limits, can be operated continuously without damage when fully submerged.
 - Bearings: Upper and lower heavy duty ball bearing construction.
 - Power Cable: Severe duty rated, oil and water resistant. Epoxy seal on motor end provides secondary moisture barrier in case of outer jacket damage and to prevent oil wicking. Standard cord is 20'. Optional lengths are available.
 - O-ring: Assures positive sealing against contaminants and oil leakage.
- #### AGENCY LISTINGS
- Tested to UL 778 and CSA 22.2 108 Standards By Canadian Standards Association File #R38549





VICINITY MAP
SCALE: 1" = 2000'
ADC MAP PAGE 31, D-6

GENERAL NOTES

1. PARCEL 274, TAX MAP 40, GRID 6.
2. DEED REF. L11905, F. 107.
3. ELECTION DISTRICT: 5.
4. ZONING: RR-DEO.
5. PROPOSED SEWER - PRIVATE; PROPOSED WATER - PRIVATE.
6. THE PLAN IS BASED ON A FIELD RUN BOUNDARY AND TOPOGRAPHIC SURVEY PERFORMED BY NJR & ASSOCIATES IN JULY OF 2020.
7. THERE IS NO FLOODPLAIN ON THIS SITE.
8. THERE IS A STREAM AND A 100 FOOT STREAM BANK BUFFER ON SITE AS SHOWN.
9. THERE ARE NO CRITICAL HABITATS OF RARE, THREATENED OR ENDANGERED SPECIES ON SITE.
10. TOTAL AREA WITHIN LOD = 61,349 SQ.FT.
11. WATERSHED = PATUXENT RIVER.
12. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 ATLEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
13. CONTRACTOR TO MAINTAIN POSITIVE SLOPE AWAY FROM THE FOUNDATION OF THE HOUSE.
14. APPO ROAD TEST IS NOT REQUIRED FOR THIS DEVELOPMENT, THE HOWARD COUNTY ADEQUATE PUBLIC FACILITIES TRAFFIC REQUIREMENTS DO NOT NEED A TRAFFIC IMPACT ANALYSIS FOR ANY DEVELOPMENT GENERATING FEWER THAN 5 PEAK HOUR TRIPS.
15. TO THE BEST OF OUR INFORMATION, NO CEMETERY OR HISTORIC STRUCTURE EXIST ON THIS SITE.
16. NO NOISE STUDY IS REQUIRED FOR THIS PROJECT.
17. THE FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED UNDER SECTION 16.1200 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION ACT. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENTS, HOWEVER FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT.
18. THE FLAGS FOR THE DELINEATED STREAM BANKS AND THE CENTERLINE OF THE INTERMITTENT STREAM ARE FIELD LOCATED BY NJR & ASSOC., LLC. AND ARE SHOWN ACCURATELY ON THIS PLAN.
19. THE LOT SHOWN HEREON COMPLIES WITH THE MINIMUM OWNERSHIP WIDTH, AND LOT AREA AS REQUIRED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT.

Required BAT Site Plan Notes:

1. Any change to the locations or depths to any components must be approved by the engineer and the Howard County Health Department prior to installation. A revised site plan may be required.
2. The maximum depth of the BAT per the manufacturer's specification is 6 feet.
3. The blower may not be located 50 feet more than manufacturer's specifications.
4. The BAT system shall be maintained and operated for the life of the system.
5. The BAT shall be operated by and maintained by a certified service provider.
6. Within one month of installation, a person installing the BAT system shall report to the Maryland Department of the Environment (MDE) in a manner acceptable to MDE, the address and date of completion of the BAT installation and the type of BAT installed.
7. Electrical work for the BAT installation must be performed by a licensed electrician.
8. An Agreement and Easement must be completed and signed by all applicable parties, and recorded in Land Records of Howard County.
9. The Health Department requires documentation for the start-up certification from the manufacturer prior to final approval of the installation.
10. THE EXISTING WELL (TAG # HO-20-0075 HAS BEEN FIELD LOCATED AND ACCURATELY SHOWN ON THIS PLAN.
11. ALL EXISTING 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 ON THIS PLAN.
12. THE TOPOGRAPHY SHOWN ON THIS PLAT IS BASED ON AN ACTUAL FIELD RUN SURVEY BY NJR & ASSOCIATES PERFORMED ON JULY OF 2020.
13. THIS SURVEY IS TIED TO MARYLAND STATE PLANE NAD 83/91 COORDINATE SYSTEM.
14. THE LOT SHOWN HEREON COMPLY WITH THE MINIMUM OWNERSHIP WIDTH AND LOT AREA AS REQUIRED BY THE MARYLAND DEPARTMENT OF ENVIRONMENT.
15. TRACER TAPE SHALL BE INSTALLED ALONG THE PROPOSED WATER TAP LINE AND THE SEPTIC LINE.
16. BOTH BAT AND PUMP TANKS MUST BE WATER TIGHT TESTED AT THE TIME OF INSTALLATION.
17. THE SAND MOUNT MUST BE STAKED AND A FIELD REVIEW CONDUCTED PRIOR TO THE BUILDING PERMIT APPROVAL.
18. THE BAT UNIT HAS BEEN APPROVED BY THE DESIGNATED AUTHORITY AS REQUIRED COMPONENT FOR THE OSDS IN LIEU OF THE REQUIRED 2ND REPLACEMENT DRAINFIELD.
19. THE WATER PIPE FROM THE WELL TO THE RESIDENCE MUST BE SLEEVED AS IT PASSES UNDER THE DRIVEWAY AND THE SLEEVE SHALL EXTEND TO TEN FEET ON EACH SIDE OF THE DRIVEWAY.
20. THIS AREA DESIGNATES A PRIVATE SEWAGE AREA AS REQUIRED BY THE MARYLAND 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 SEPTIC SYSTEMS AS REQUIRED BY THE HOWARD COUNTY HEALTH DEPARTMENT. IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWAGE IS AVAILABLE. THIS AREA SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWAGE SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWAGE AREA. RECORDED OF A MODIFIED SEWAGE AREA SHALL NOT BE NECESSARY.

SITE ANALYSIS DATA CHART

TOTAL LOT AREA	= 7.3385 ACRES (319,665)
LOT AREA "PROP. TO BE DISTURBED"	= 1.408 ACRE (61,349 SF.)
TOTAL LOT IMPERVIOUS AREA PROPOSED	= 0.402 ACRE (17,522 SF.)
TOTAL PROPOSED GREEN AREA	= 6.936 ACRES (302,143 SF.)
SITE AREA WITHIN WETLAND	= 0 ACRE
SITE AREA WITHIN 25' WETLAND BUFFER	= 0 ACRE
SITE AREA OF STEEP SLOPES	= 0 ACRE
SITE AREA OF ERODIBLE SOILS	= 0 ACRE
SITE AREA WITHIN 100-YR FLOODPLAIN	= 0 ACRE
SITE AREA WITHIN 100' STREAM BUFFER	= 2.364 ACRE

SOIL DESCRIPTION CHART		
UNIT SYMBOL	UNIT NAME	HYDROLOGIC SOIL GROUP
GbB	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	A
GbC	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	A
GnB	GLENNVILLE-BALIE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C

LEGEND

EX. STREET SIGN	EX. DECIDUOUS TREE
EX. WOOD POST	EX. DECORATIVE BUSH
EX. GAS VALVE	PROP. SPOT ELEVATION
EX. MAIL BOX	EX. CONTOUR
EX. UTILITY POLE	PROP. CONTOUR
EX. GUY WIRE ANCHOR	PROP. SUPER SILT FENCE
EX. IRRIGATION VALVE	PROP. SILT FENCE
EX. GAS LINE POST	PROP. CLEAN WATER DIVERSION FENCE
EX. DECIDUOUS TREE	PROP. LIMIT OF DISTURBANCE
EX. DECORATIVE BUSH	DENOTES (BUILDING RESTRICTION LINE)
PROP. SPOT ELEVATION	PROP. STABILIZED CONSTRUCTION ENTRANCE
EX. CONTOUR	EX. SEWAGE DISPOSAL AREA
PROP. CONTOUR	EX. WELL RESERVE BOX
PROP. SUPER SILT FENCE	PROP. NON-ROOFTOP DISCONNECT
PROP. SILT FENCE	PROP. FOREST CONSERVATION EASEMENT
PROP. CLEAN WATER DIVERSION FENCE	EX. SOIL TYPE BORDER
PROP. LIMIT OF DISTURBANCE	PROP. DRAINAGE AREA LIMIT
DENOTES (BUILDING RESTRICTION LINE)	PROP. SURFACE FLOW DIRECTION
PROP. STABILIZED CONSTRUCTION ENTRANCE	EXISTING EDGE OF WOODS
EX. SEWAGE DISPOSAL AREA	PROPOSED EDGE OF WOODS
EX. WELL RESERVE BOX	EXISTING STREAM LINE
PROP. NON-ROOFTOP DISCONNECT	PASSED INFILTRATOR TEST
PROP. FOREST CONSERVATION EASEMENT	FILED INFILTRATOR TEST
EX. SOIL TYPE BORDER	FILED PERCOLATION TEST
PROP. DRAINAGE AREA LIMIT	
PROP. SURFACE FLOW DIRECTION	
EXISTING EDGE OF WOODS	
PROPOSED EDGE OF WOODS	
EXISTING STREAM LINE	
PASSED INFILTRATOR TEST	
FILED INFILTRATOR TEST	
FILED PERCOLATION TEST	

MISS UTILITY
CALL "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO THE START OF WORK. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDERGROUND FACILITIES IN THE AREA OF PROPOSED EXCAVATION AND HAVE THOSE FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION. THE EXCAVATOR IS RESPONSIBLE FOR COMPLIANCE WITH REQUIREMENTS OF CHAPTER 36A OF THE MONTGOMERY COUNTY CODE.

APPROVED SEPTIC SYSTEM PLAN HOWARD COUNTY HEALTH DEPARTMENT

SIGNATURE

DATE

PLAN PREPARED BY:

NJR & ASSOCIATES

Land Surveying and Planning

2770 TERRAPIN RUN
WEST FRIENDSHIP, MD 21794
TEL: (240) 508-3200
Email: ROSHANJ@AOL.COM



I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE # 11049, EXPIRATION DATE: 2/10/2023.

APRIL 5, 2022
DATE

DEVELOPER:
CARUSO HOMES
2120 BALDWIN AVENUE,
Ste 200
CROFTON, MD 21114
(301) 261-0277

OWNER:
RICARDO PALAIOS
1808 GREENWICH WOOD DRIVE
SILVER SPRING, MD 20903
(304) 292-9676

ONSITE SEWAGE DISPOSAL PLAN FOR A BAT AND SAND MOUND SYSTEM

PARCEL 274

TAX MAP 40, GRID 6
LIBER 20690, FOLIO 201
12370 HALL SHOP ROAD, HIGHLAND, MARYLAND 20777
5TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE: 1" = 40'

JOB NO.: 3560

DATE: FEB. 10, 2021

SHEET: 1 OF 2