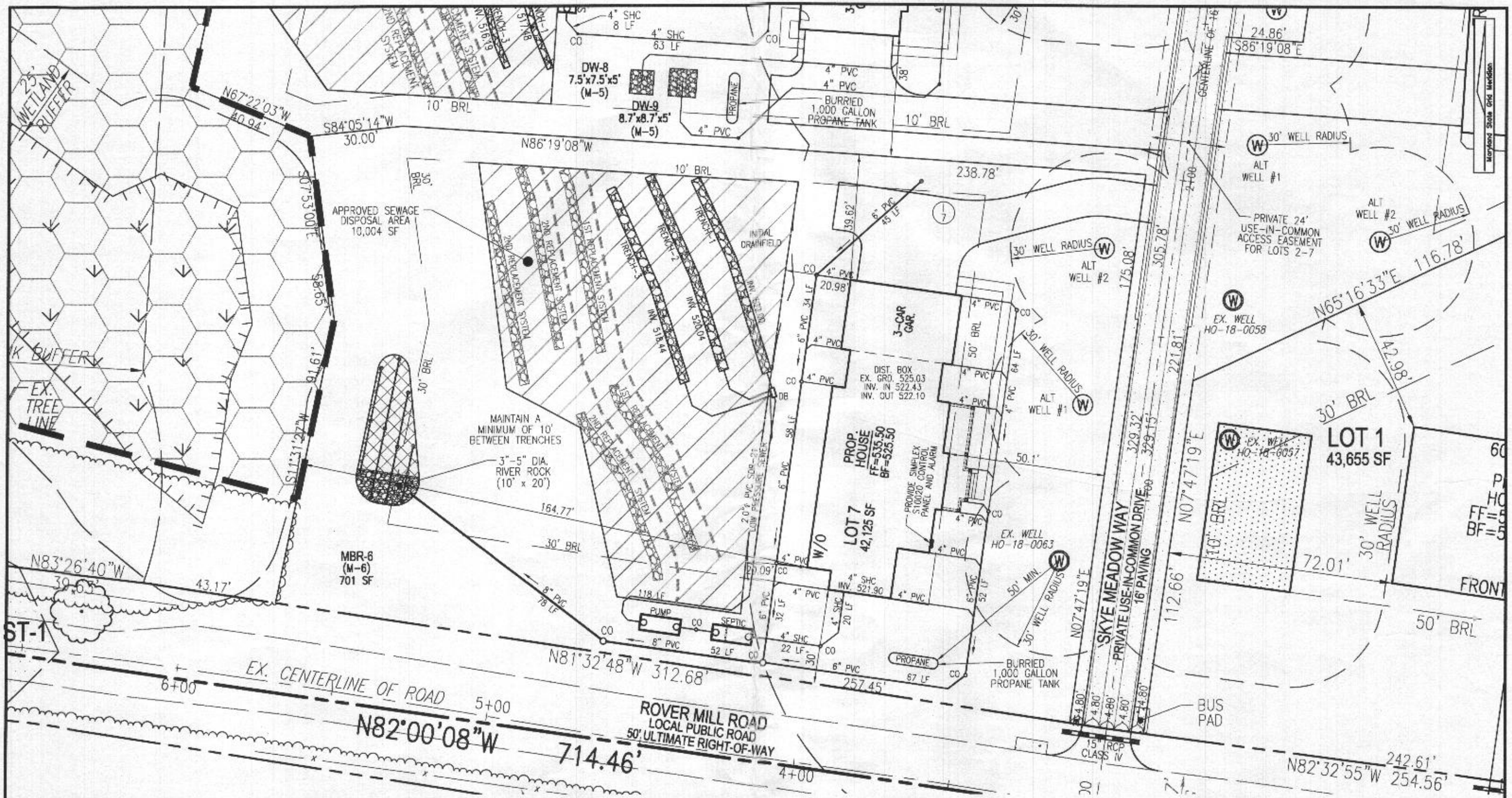


SCALE	1"=30'
DRAWN BY	JMR
CHECKED BY	RHV
DATE	01/11/21
W. O. #	15-36
SHEET#	1 OF 4

PARCEL: 169
TAX MAP: 15 GRID: 14
3RD ELECTION DISTRICT

PLOT PLAN

ROVER MILL ESTATES

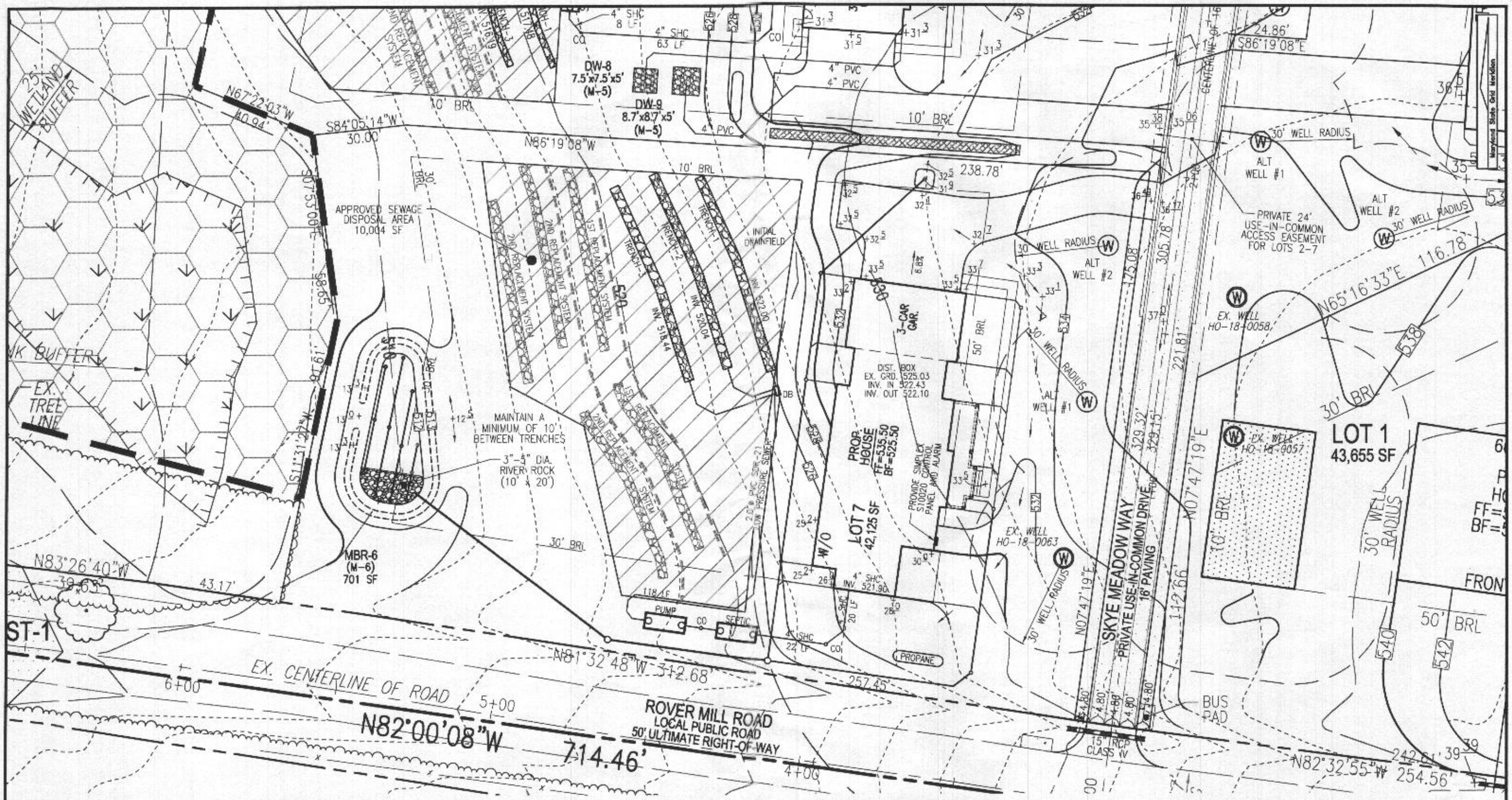
LOT 7

3001 SKYE MEADOW WAY

REF: F-19-056

ZONED: RR-DEO
L. 19082 / F. 490
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



SCALE	1"=30'
DRAWN BY	JMR
CHECKED BY	RHV
DATE	01/11/21
W. O. #	15-36
SHEET#	2 OF 4

PLOT PLAN

ROVER MILL ESTATES

LOT 7

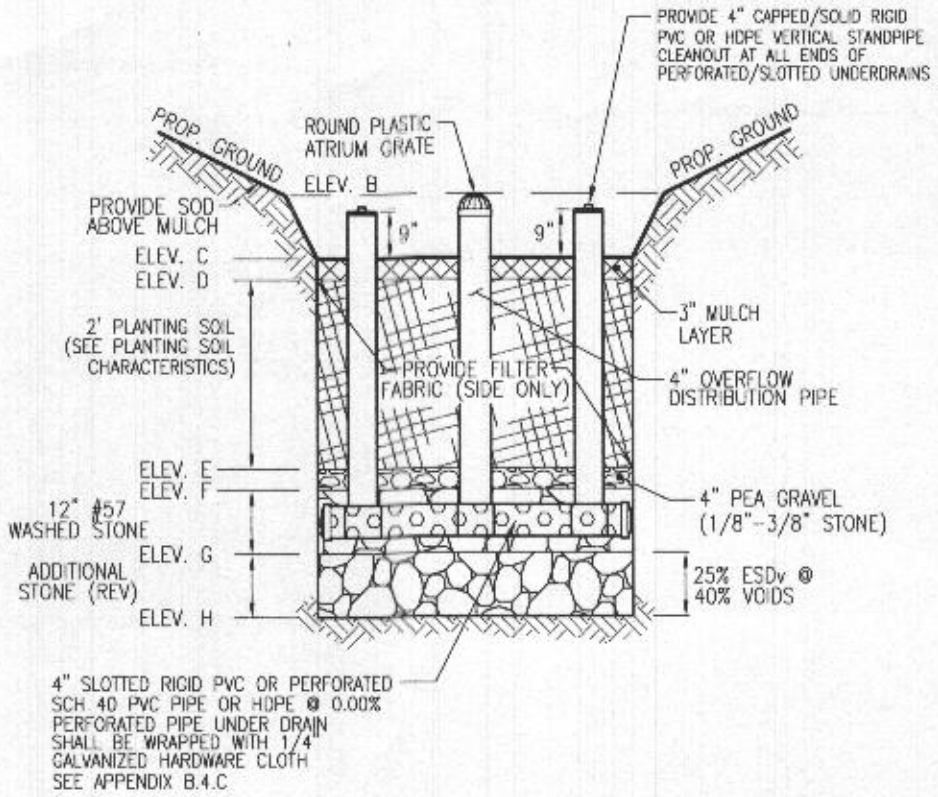
3001 SKYE MEADOW WAY

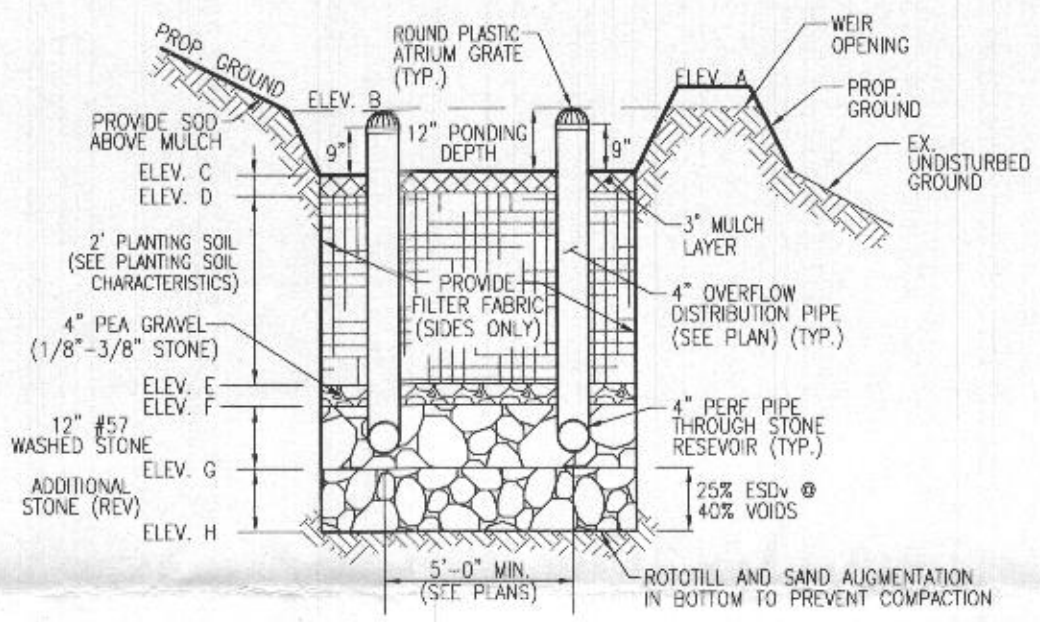
PARCEL: 169
TAX MAP: 15 GRID: 14
3RD ELECTION DISTRICT

REF: F-19-056

ZONED: RR-DEO
L. 19082 / F. 490
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





MICRO-BIORETENTION

(MBR-6)

W/ WEIR ONLY

NOT TO SCALE

MICRO-BIORETENTION FACILITY ELEVATIONS (M-6)											
FACILITY	A	B	C	D	E	F	G	H	WEIR ELEV.	UNDERDRAIN INVERT	FACILITY SIZE
MBR-6	513.30	513.00	512.00	511.75	509.75	509.42	508.42	507.59	513.00	508.75	701 SF

OPERATION AND MAINTENANCE SCHEDULE FOR (M-6) MICROBIORETENTION AREAS

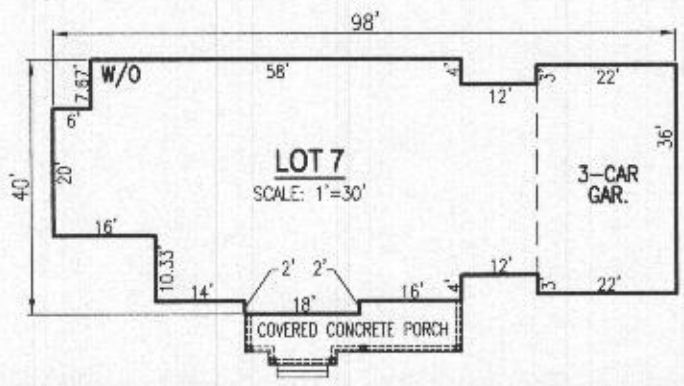
1. ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOL. II, TABLE A.4.1 AND 2.
2. SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, TREATMENT OF ALL DISEASED TREES AND SHRUBS AND REPLACEMENT OF ALL DEFICIENT STAKES AND WIRES.
3. MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.
4. SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

MICROBIORETENTION NOTES:

1. ONLY THE SIDES OF MICROBIORETENTION ARE TO BE WRAPPED IN FILTER FABRIC. FILTER FABRIC BETWEEN LAYER OR AT THE BOTTOM OF THE MICROBIORETNTION WILL CAUSE THE MBR TO FAIL, AND THERFORE SHALL NOT BE INSTALLED.
2. WRAP THE PERFORATED MBR UNDERDRAIN PIPE WITH 1/4" MESH (4x4) OR SMALLER GALVANIZED HARDWARE CLOTH.
3. PROVIDE 5' MINIMUM SPACING BETWEEN UNDER DRAIN AND PERFERATED PIPE THROUGH STONE RESIVOIR OR SPACE PIPE EQUALLY ACROSS BOTTOM FOR SMALL BIOS. (SEE PLANS)

MBR-6

D.A.=6,534 SF IMP=5,227 I=80
Rv=0.05+(0.009)(80)=.77
ESDv=(6,534)(2.2)(0.77)/12=922 CF (MIN.)
AREA ABOVE MULCH=(922 CF)(0.75)=692 SF (MIN.)
AREA PROVIDED 701 SF
ESDv PROVIDED 593 SF/.75 = 935 CF



SCALE	1"=30'
DRAWN BY	JMR
CHECKED BY	RHV
DATE	01/11/21
W. O. #	15-36
SHEET#	3 OF 4

PLOT PLAN

ROVER MILL ESTATES

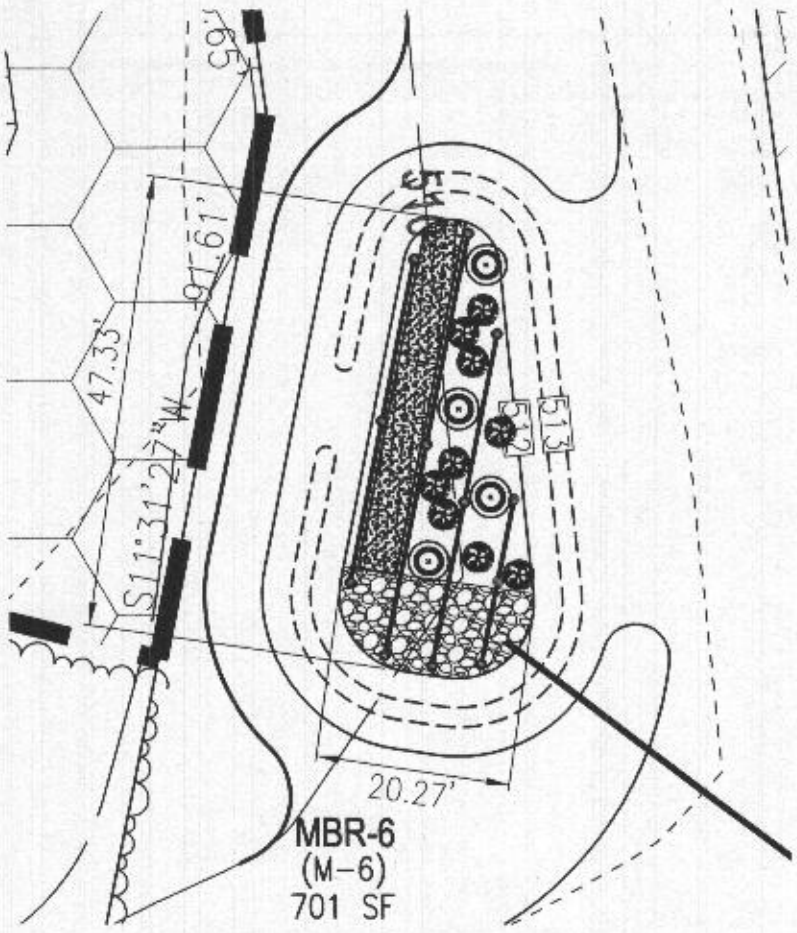
LOT 7

3001 SKYE MEADOW WAY

PARCEL: 169
TAX MAP: 15 GRID: 14
3RD ELECTION DISTRICT

REF: F-19-056

ZONED: RR-DEO
L. 19082 / F. 490
HOWARD COUNTY, MARYLAND



MBR-6 PLANTING DETAIL (701 SF)

SCALE: 1"=20'

MICRO-BIORETENTION PLANTING SCHEDULE (MBR-6)				
	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
	4	LINDERA BENZOIN SPICEBUSH	3 GALLON	CONT
	9	ILEX GLABRA INKBERRY	3 GALLON	CONT
	150 SF	LOBELIA CARDINALIS CARDINAL FLOWER	2" POT	1" O.C.

1. SF x 0.0229 STEMS PER SQUARE FOOT = PLANTS REQUIRED
2. PLANTINGS REQUIRED: 16
3. (50 SF) CARDINAL FLOWER = 1 PLANTING UNIT

"MICRO-BIORETENTION" PLANTING SCHEDULE NOTES:

1. ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AAN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HOWARD COUNTY PLANTING SPECIFICATIONS.
2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
3. FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
4. CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.
5. MICROBIORETENTION AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (.0229 STEMS PER SQUARE FOOT). ABOVE PLANTING RATIOS ARE TO BE APPLIED TO THE AREAS PROVIDED IN THE ESDv SUMMARY.
6. FILTER AREA SHALL BE 50% COVERED BY PLANTINGS AT FULL GROWTH

1. TABLE A.4 IS TAKEN FROM THE "2000 MARYLAND STORMWATER MANUAL, VOLUME II – APPENDIX A.
2. CONTRACTOR SHALL BE FAMILIAR WITH APPENDIX B.4.C "CONSTRUCTION SPECIFICATIONS", AND TABLE B.4.1 "MATERIAL SPECIFICATIONS". IN ADDITION, THE "2000 MARYLAND STORMWATER DESIGN MANUAL, VOULME II – APPENDIX A, OFFERS ADDITIONAL HELPFUL INFORMATION.
3. NO TREES SHALL BE PLANTED WITHIN A MICRO-BIORETENTION FACILITY. USE ONLY SHRUB OR HERBACEOUS SPECIES.
4. ABOVE TABLE A.4 IS FOR INFORMATIONAL PURPOSES ONLY. LANDSCAPE CONTRACTOR SHALL INSTALL PLANTINGS SPECIFIED IN THE PLANTING SCHEDULES SHOWN HEREON. CHOOSE FROM THE ABOVE TABLE, OR USE APPROVED EQUAL SPECIES WHICH ARE TOLERANT TO FLUCTUATING WATER LEVELS. IF SUBSTITUTIONS ARE CHOSEN, APPROVAL FROM THE ENGINEER IS REQUIRED.
5. PLANTINGS SHOWN HEREON ARE THE RESPONSIBILITY OF THE DEVELOPER TO INSTALL DURING THE CONSTRUCTION OF THIS FINAL PLAN.

Table A.4 Commonly Used Species for Bioretention Areas

Trees	Shrubs	Herbaceous Species
Acer rubrum Red Maple	*Aesculus pariviflora* Bottlebrush Buckeye	*Andropogon virginicus* Broomsedge
Betula nigra River Birch	*Cephalanthus occidentalis* Buttonbush	*Eupatorium perpurea* Joe Pye Weed
Juniperus virginiana Eastern Red Cedar	*Hamemelis virginiana* Witch Hazel	*Scirpus pungens* Three Square Bulrush
Chionanthus virginicus Fringe-tree	*Vaccinium corymbosum* Highbush Blueberry	*Iris versicolor* Blue Flag
Nyssa sylvatica Black Gum	*Ilex glabra* Inkberry	*Lobelia cardinalis* Cardinal Flower
Diospyros virginiana Persimmon	*Ilex verticillata* Winterberry	*Panicum virgatum* Switchgrass
Platanus occidentalis Sycamore	*Viburnum dentatum* Arrowwood	*Dichanthelium scoparium* Broom Panic Grass
Quercus palustris Pin Oak	*Lindera benzoin* Spicebush	*Rudbeckia laciniata* Tall Coneflower
Quercus phellos Willow Oak	*Myrica pennsylvanica* Bayberry	*Scirpus cyperinus* Woolgrass
Salix nigra Black willow		*Vernonia noveboracensis* New York Ironweed

Note 1: For more options on plant selection for bioretention, consult Bioretention Manual (ETAB, 1993) or the Design of Stormwater Filtering Systems (Claytor and Schueler, 1997).

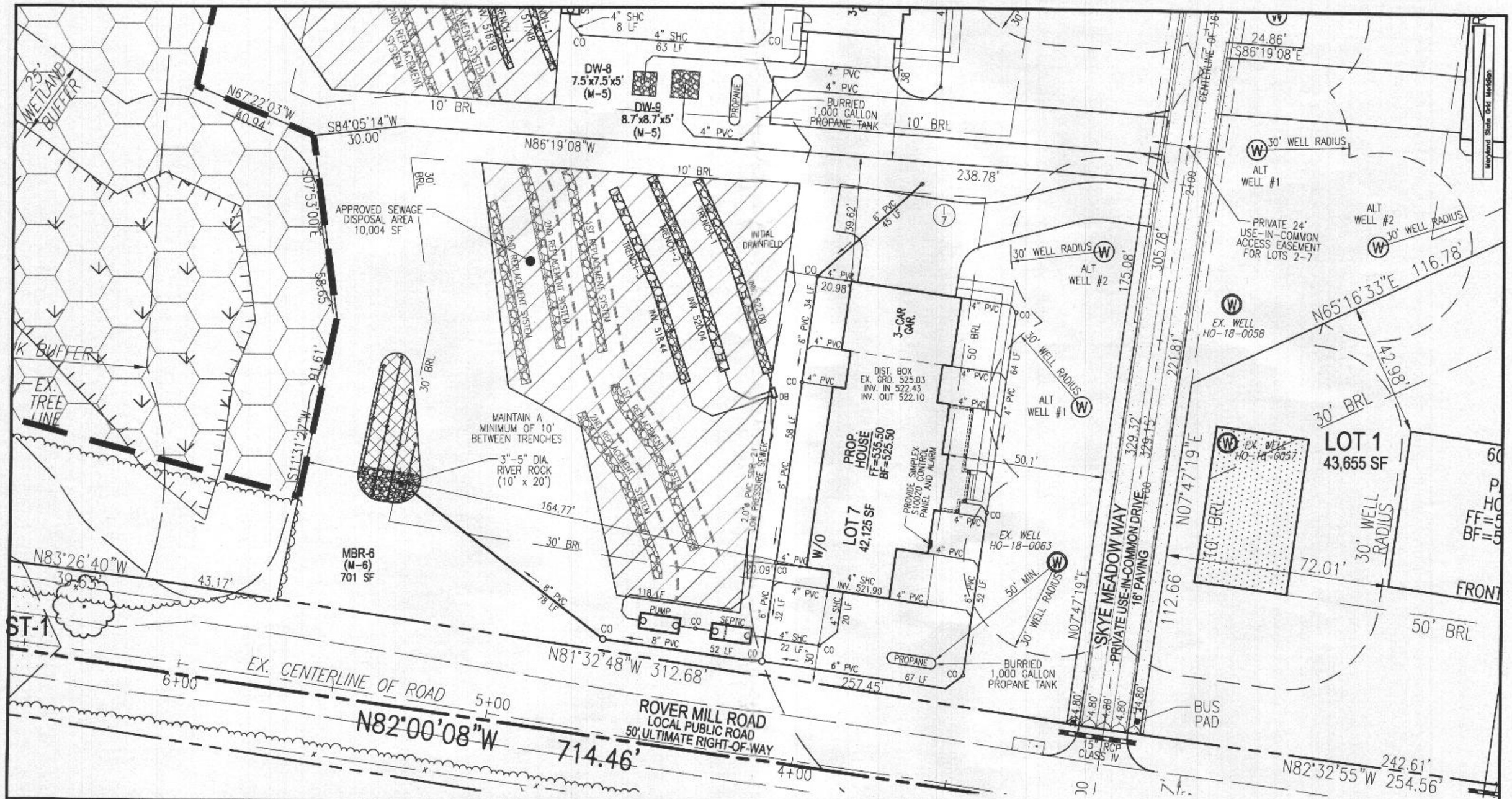
SCALE	1"=30'
DRAWN BY	JMR
CHECKED BY	RHV
DATE	01/11/21
W. O. #	15-36
SHEET#	4 OF 4

PARCEL: 169
TAX MAP: 15 GRID: 14
3RD ELECTION DISTRICT

PLOT PLAN
ROVER MILL ESTATES
LOT 7
3001 SKYE MEADOW WAY

REF: F-19-056

ZONED: RR-DEO
L. 19082 / F. 490
HOWARD COUNTY, MARYLAND



SCALE	1"=30'
DRAWN BY	JMR
CHECKED BY	RHV
DATE	01/11/21
W. O. #	15-36
SHEET#	1 OF 4

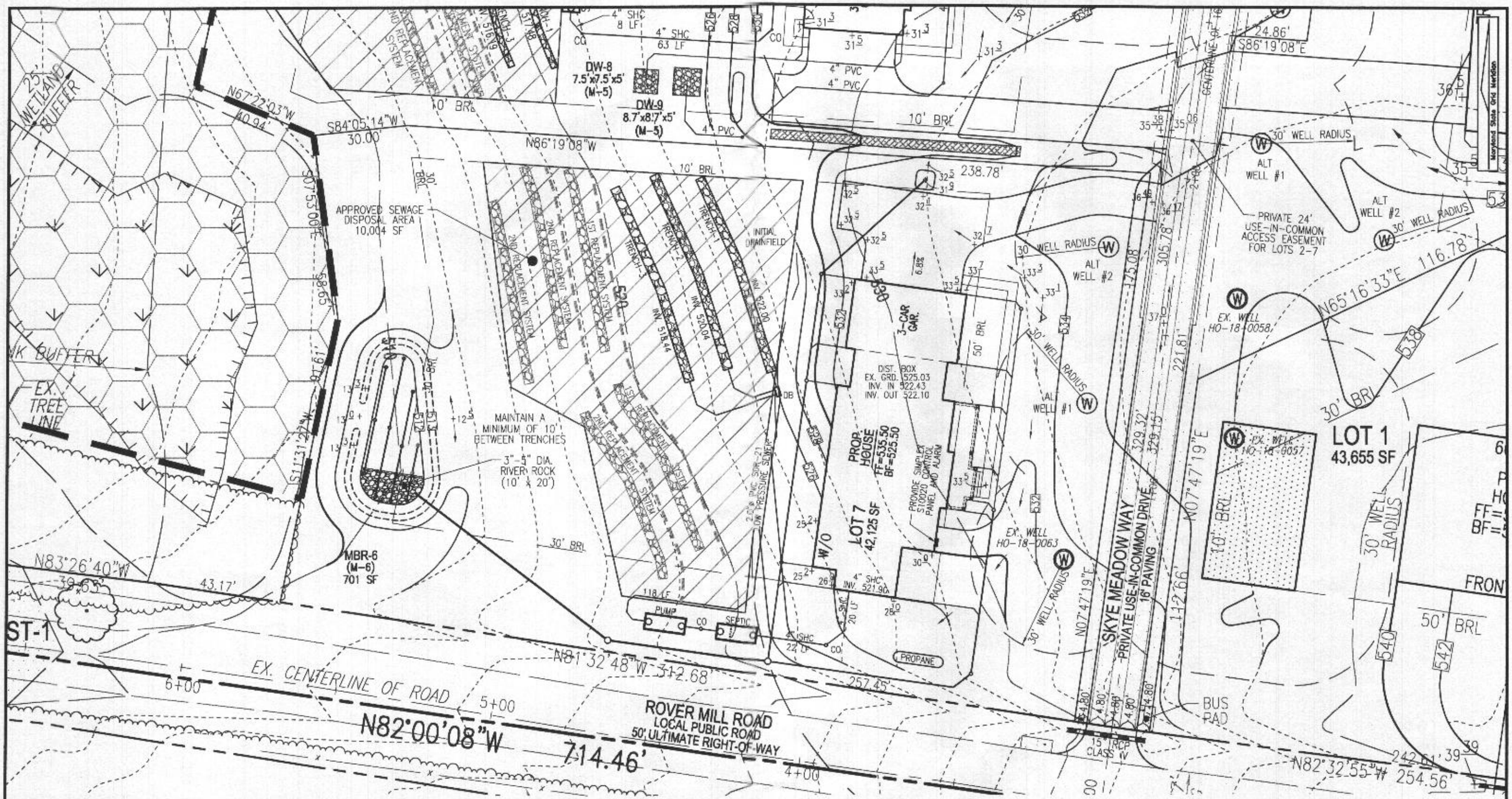
PARCEL: 169
TAX MAP: 15 GRID: 14
3RD ELECTION DISTRICT

PLOT PLAN
ROVER MILL ESTATES
LOT 7
3001 SKYE MEADOW WAY

REF: F-19-056

ZONED: RR-DEO
L. 19082 / F. 490
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



SCALE	1"=30'
DRAWN BY	JMR
CHECKED BY	RHV
DATE	01/11/21
W. O. #	15-36
SHEET#	2 OF 4

PLOT PLAN

ROVER MILL ESTATES

LOT 7

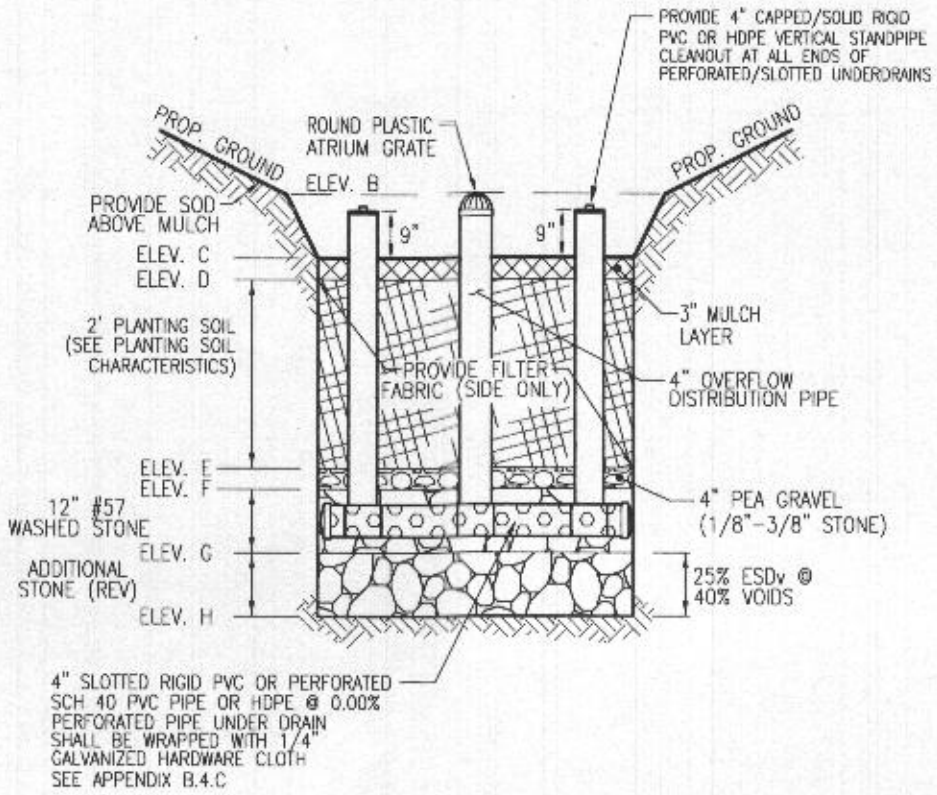
3001 SKYE MEADOW WAY

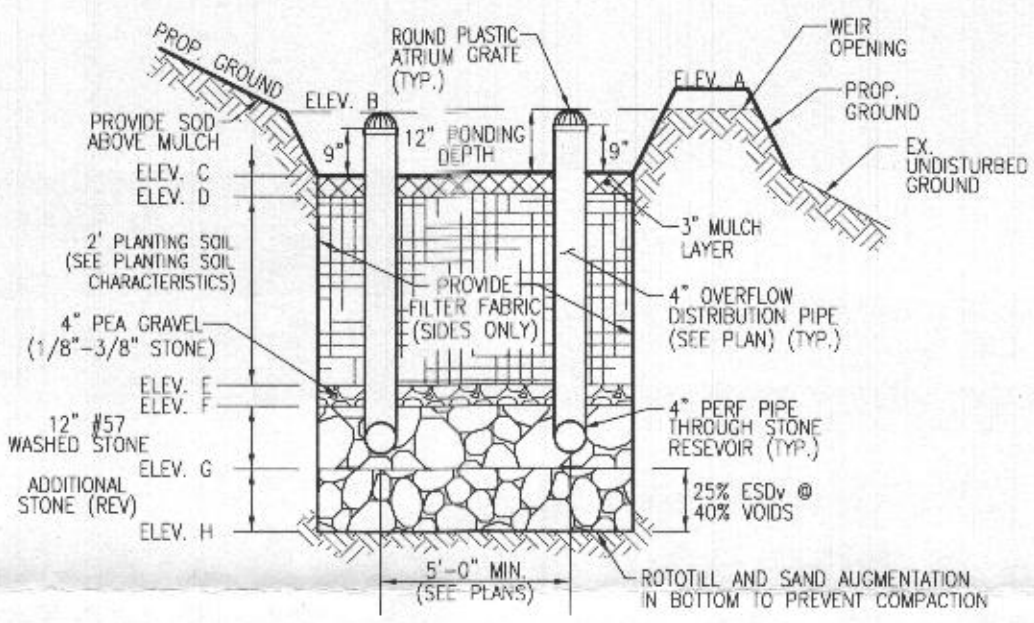
PARCEL: 169
TAX MAP: 15 GRID: 14
3RD ELECTION DISTRICT

REF: F-19-056

ZONED: RR-DEO
L. 19082 / F. 490
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





MICRO-BIORETENTION

(MBR-6)

W/ WEIR ONLY

NOT TO SCALE

MICRO-BIORETENTION FACILITY ELEVATIONS (M-6)											
FACILITY	A	B	C	D	E	F	G	H	WEIR ELEV.	UNDERDRAIN INVERT	FACILITY SIZE
MBR-6	513.30	513.00	512.00	511.75	509.75	509.42	508.42	507.59	513.00	508.75	701 SF

OPERATION AND MAINTENANCE SCHEDULE FOR (M-6) MICROBIORETENTION AREAS

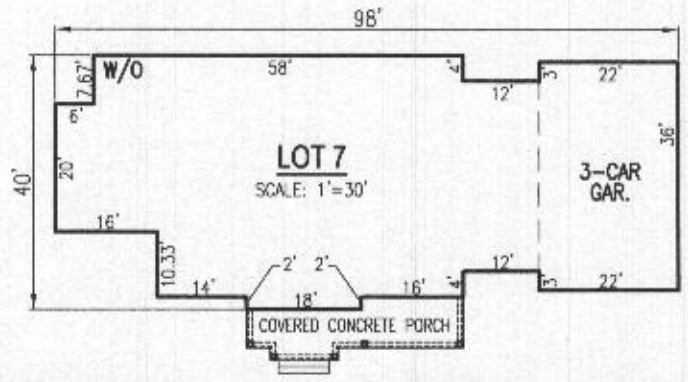
1. ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOL. II, TABLE A.4.1 AND 2.
2. SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, TREATMENT OF ALL DISEASED TREES AND SHRUBS AND REPLACEMENT OF ALL DEFICIENT STAKES AND WIRES.
3. MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.
4. SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

MICROBIORETENTION NOTES:

1. ONLY THE SIDES OF MICROBIORETENTION ARE TO BE WRAPPED IN FILTER FABRIC. FILTER FABRIC BETWEEN LAYER OR AT THE BOTTOM OF THE MICROBIORETNTION WILL CAUSE THE MBR TO FAIL, AND THERFORE SHALL NOT BE INSTALLED.
2. WRAP THE PERFORATED MBR UNDERDRAIN PIPE WITH 1/4" MESH (4x4) OR SMALLER GALVANIZED HARDWARE CLOTH.
3. PROVIDE 5' MINIMUM SPACING BETWEEN UNDER DRAIN AND PERFERATED PIPE THROUGH STONE RESIVOIR OR SPACE PIPE EQUALLY ACROSS BOTTOM FOR SMALL BIOS. (SEE PLANS)

MBR-6

D.A.=6,534 SF IMP=5,227 I=80
Rv=0.05+(0.009)(80)=.77
ESDv=(6,534)(2.2)(0.77)/12=922 CF (MIN.)
AREA ABOVE MULCH=(922 CF)(0.75)=692 SF (MIN.)
AREA PROVIDED 701 SF
ESDv PROVIDED 593 SF/.75 = 935 CF



SCALE	1"=30'
DRAWN BY	JMR
CHECKED BY	RHV
DATE	01/11/21
W. O. #	15-36
SHEET#	3 OF 4

PLOT PLAN

ROVER MILL ESTATES

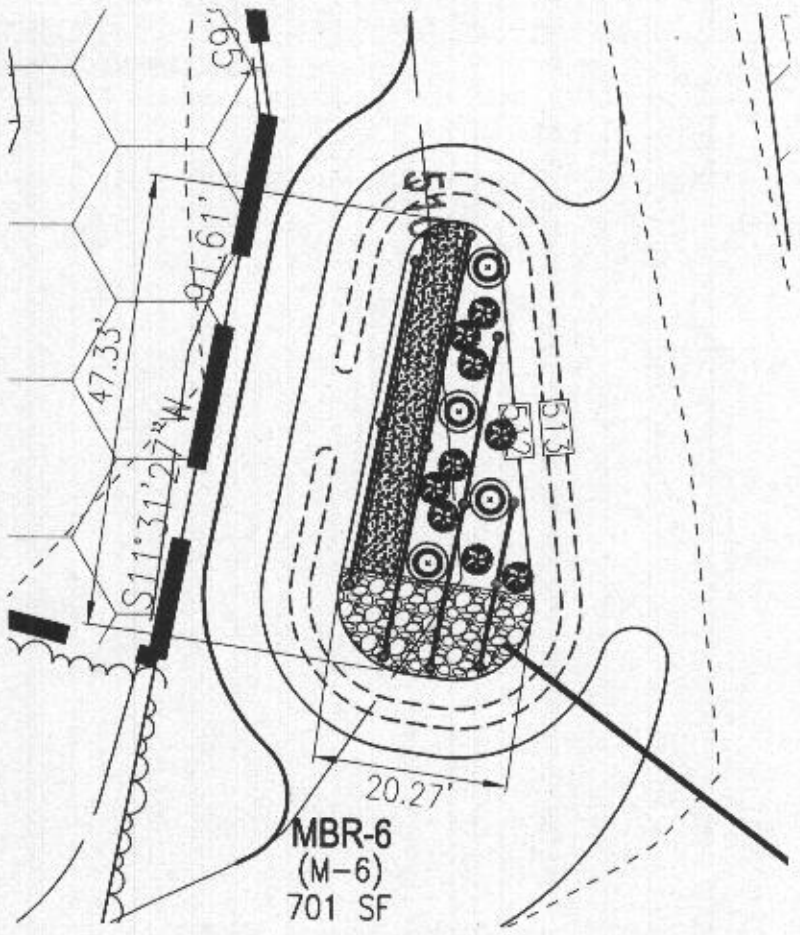
LOT 7

3001 SKYE MEADOW WAY

PARCEL: 169
TAX MAP: 15 GRID: 14
3RD ELECTION DISTRICT

REF: F-19-056

ZONED: RR-DEO
L. 19082 / F. 490
HOWARD COUNTY, MARYLAND



MBR-6 PLANTING DETAIL (701 SF)

SCALE: 1"=20'

MICRO-BIORETENTION PLANTING SCHEDULE (MBR-6)				
	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
	4	LINDERA BENZOIN SPICEBUSH	3 GALLON	CONT
	9	ILEX GLABRA INKBERRY	3 GALLON	CONT
	150 SF	LOBELIA CARDINALIS CARDINAL FLOWER	2" POT	1" O.C.

1. SF x 0.0229 STEMS PER SQUARE FOOT = PLANTS REQUIRED
2. PLANTINGS REQUIRED: 16
3. (50 SF) CARDINAL FLOWER = 1 PLANTING UNIT

"MICRO-BIORETENTION" PLANTING SCHEDULE NOTES:

1. ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AAN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HOWARD COUNTY PLANTING SPECIFICATIONS.
2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
3. FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
4. CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.
5. MICROBIORETENTION AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (.0229 STEMS PER SQUARE FOOT). ABOVE PLANTING RATIOS ARE TO BE APPLIED TO THE AREAS PROVIDED IN THE ESDv SUMMARY.
6. FILTER AREA SHALL BE 50% COVERED BY PLANTINGS AT FULL GROWTH

1. TABLE A.4 IS TAKEN FROM THE "2000 MARYLAND STORMWATER MANUAL, VOLUME II – APPENDIX A.
2. CONTRACTOR SHALL BE FAMILIAR WITH APPENDIX B.4.C "CONSTRUCTION SPECIFICATIONS", AND TABLE B.4.1 "MATERIAL SPECIFICATIONS". IN ADDITION, THE "2000 MARYLAND STORMWATER DESIGN MANUAL, VOULME II – APPENDIX A, OFFERS ADDITIONAL HELPFUL INFORMATION.
3. NO TREES SHALL BE PLANTED WITHIN A MICRO-BIORETENTION FACILITY. USE ONLY SHRUB OR HERBACEOUS SPECIES.
4. ABOVE TABLE A.4 IS FOR INFORMATIONAL PURPOSES ONLY. LANDSCAPE CONTRACTOR SHALL INSTALL PLANTINGS SPECIFIED IN THE PLANTING SCHEDULES SHOWN HEREON. CHOOSE FROM THE ABOVE TABLE, OR USE APPROVED EQUAL SPECIES WHICH ARE TOLERANT TO FLUCTUATING WATER LEVELS. IF SUBSTITUTIONS ARE CHOSEN, APPROVAL FROM THE ENGINEER IS REQUIRED.
5. PLANTINGS SHOWN HEREON ARE THE RESPONSIBILITY OF THE DEVELOPER TO INSTALL DURING THE CONSTRUCTION OF THIS FINAL PLAN.

Table A.4 Commonly Used Species for Bioretention Areas

Trees	Shrubs	Herbaceous Species
Acer rubrum Red Maple	*Aesculus pariviflora* Bottlebrush Buckeye	*Andropogon virginicus* Broomsedge
Betula nigra River Birch	*Cephalanthus occidentalis* Buttonbush	*Eupatorium perpurea* Joe Pye Weed
Juniperus virginiana Eastern Red Cedar	*Hamemelis virginiana* Witch Hazel	*Scirpus pungens* Three Square Bulrush
Chionanthus virginicus Fringe-tree	*Vaccinium corymbosum* Highbush Blueberry	*Iris versicolor* Blue Flag
Nyssa sylvatica Black Gum	*Ilex glabra* Inkberry	*Lobelia cardinalis* Cardinal Flower
Diospyros virginiana Persimmon	*Ilex verticillata* Winterberry	*Panicum virgatum* Switchgrass
Platanus occidentalis Sycamore	*Viburnum dentatum* Arrowwood	*Dichanthelium scoparium* Broom Panic Grass
Quercus palustris Pin Oak	*Lindera benzoin* Spicebush	*Rudbeckia laciniata* Tall Coneflower
Quercus phellos Willow Oak	*Myrica pennsylvanica* Bayberry	*Scirpus cyperinus* Woolgrass
Salix nigra Black willow		*Vernonia noveboracensis* New York Ironweed

Note 1: For more options on plant selection for bioretention, consult Bioretention Manual (ETAB, 1993) or the Design of Stormwater Filtering Systems (Claytor and Schueler, 1997).

SCALE	1"=30'
DRAWN BY	JMR
CHECKED BY	RHV
DATE	01/11/21
W. O. #	15-36
SHEET#	4 OF 4

PARCEL: 169
TAX MAP: 15 GRID: 14
3RD ELECTION DISTRICT

PLOT PLAN
ROVER MILL ESTATES
LOT 7
3001 SKYE MEADOW WAY

REF: F-19-056

ZONED: RR-DEO
L. 19082 / F. 490
HOWARD COUNTY, MARYLAND

GENERAL NOTES:

1. THE EXISTING TOPOGRAPHY SHOWN HEREON IS TAKEN FROM FIELD RUN SURVEY WITH 2' CONTOUR INTERVALS PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED OCTOBER 2017. INFORMATION IS SUPPLEMENTED WITH HOWARD COUNTY GIS DATA.
2. ANY CHANGES TO A PRIVATE SEWAGE AREA SHALL REQUIRE A REVISED PERCOLATION CERTIFICATION PLAN.
3. 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 USING ALL REASONABLE EFFORTS.
4. THE LOT SHOWN HEREON COMPLIES WITH THE MINIMUM OWNERSHIP, WIDTH, AND LOT AREA AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT.
5. 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.
6. THE MAXIMUM EARTH COVER OVER THE TANK IS THREE FEET. GREATER EARTH COVER WILL REQUIRE A HEAVY LOAD BEARING TANK.

SYSTEM CALCULATIONS:

INITIAL SYSTEM:

5 BEDROOMS AT 750gpd / 0.8 ABSORPTION RATE = 938 SQ. FT.

938 SQ. FT. / 3 (TRENCH WIDTH) x .63 (SIDEWALL REDUCTION) = 197 LINEAR FEET

198 TOTAL LINEAR FEET OF TRENCH ARE PROVIDED WITH THE INITIAL SYSTEM.
(3 TRENCHES OF 66 FEET IN LENGTH)

FIRST REPLACEMENT SYSTEM:

5 BEDROOMS AT 750gpd / 1.2 ABSORPTION RATE = 625 SQ. FT.

625 SQ. FT. / 3 (TRENCH WIDTH) x .56 (SIDEWALL REDUCTION) = 117 LINEAR FEET

118 TOTAL LINEAR FEET OF TRENCH ARE PROVIDED WITH THE FIRST REPLACEMENT SYSTEM.
(2 TRENCHES OF 59 FEET IN LENGTH)

SECOND REPLACEMENT SYSTEM:

5 BEDROOMS AT 750gpd / 0.8 ABSORPTION RATE = 938 SQ. FT.

938 SQ. FT. / 3 (TRENCH WIDTH) x .56 (SIDEWALL REDUCTION) = 175 LINEAR FEET

177 TOTAL LINEAR FEET OF TRENCH ARE PROVIDED WITH THE SECOND REPLACEMENT SYSTEM.
(3 TRENCHES OF 59 FEET IN LENGTH)

INITIAL SYSTEM TRENCH INFO.

TRENCH	TRENCH LENGTH	INV. INTO TRENCH	BOTTOM OF TRENCH	EXISTING GROUND
1	66'	522.00	519.00	525.00
2	66'	520.04	517.04	523.04
3	66'	518.44	515.44	521.44

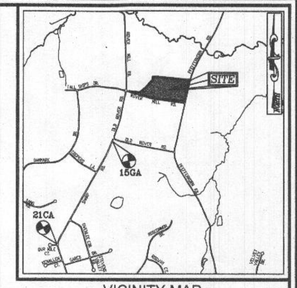
THIS AREA DESIGNATES A PRIVATE SEWAGE AREA OF AT LEAST 10,000 SQUARE FEET AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWAGE DISPOSAL. IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWERAGE IS AVAILABLE. THESE AREAS SHALL BECOME NULL AND VOID UPON 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.

WELL LOCATION CERTIFICATION:

THE EXISTING WELL SHOWN ON THIS PLAN (HO-18-0063) HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN

OSDS PLAN VIEW

SCALE: 1"=30'



VICINITY MAP

SCALE: 1"=2000'
ADC MAP: PAGE: 17 BLOCK: D4 & E4

BENCHMARKS

HOWARD COUNTY BENCHMARK 15GA (CONC. MON.)
N 591743.48 E 1312790.80 ELEV. 587.64
LOCATION: NEAR NORTH END OF SHARP ROAD (CUL DE SAC)

HOWARD COUNTY BENCHMARK 21CA (CONC. MON.)
N 588897.36 E 1311235.79 ELEV. 612.60
LOCATION: CORNER OF SHARP RD. & OUR MILE CT.

LEGEND:

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- RIGHT-OF-WAY LINE
- EXISTING EDGE OF PAVING
- EXISTING STREAM
- EXISTING STREAM BUFFER
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- PUBLIC 100-YEAR FLOODPLAIN, DRAINAGE & UTILITY EASEMENT
- PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
- EXISTING METAL FENCE
- 330 EXISTING 10' CONTOUR
- 328 EXISTING 2' CONTOUR
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- APPROVED SEWAGE DISPOSAL AREA
- APPROVED WELL AREA
- (W) EXISTING WELL LOCATION
- (W) ALTERNATE WELL LOCATION
- PASSED PERC. TEST
- (F) FAILED PERC. TEST

Approved Septic System Plan
Howard County Health Department
Dave Bowell 1-27-21
Signature Date

OWNER
SECURITY DEVELOPMENT, LLC
8480 BALTIMORE NATIONAL PIKE, SUITE 415
ELLICOTT CITY, MD 21043
(410) 465-4244

BUILDER
CATONSVILLE HOMES
11175 STRATFIELD COURT
MARRIOTTSVILLE, MD 21104
(410) 489-7800

NO.	REVISION	DATE

ONSITE SEWAGE DISPOSAL SYSTEM DESIGN PLAN

ROVER MILL ESTATES - LOT 7
3001 SKYE MEADOW WAY
WEST FRIENDSHIP, MD 21794

PARCEL: 189
TAX MAP: 15 GRID: 14
3RD ELECTION DISTRICT

ZONED: RR-DEO
L. 19082 / F. 490
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

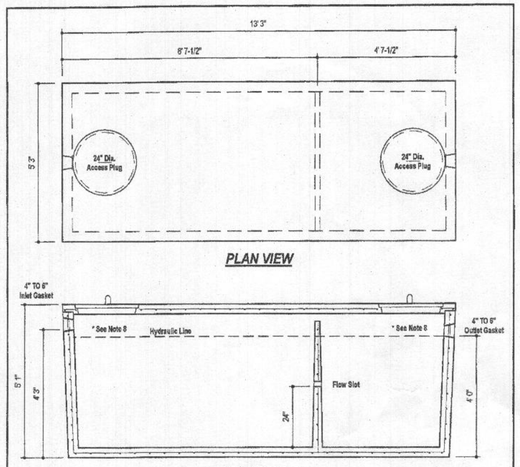
STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE No.16193

DESIGN BY:	RHV
DRAWN BY:	JMR
CHECKED BY:	RHV
DATE:	JANUARY 2021
SCALE:	AS SHOWN
W.O. NO.:	15-36

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: 09-27-2022

SHEET 1 OF 2

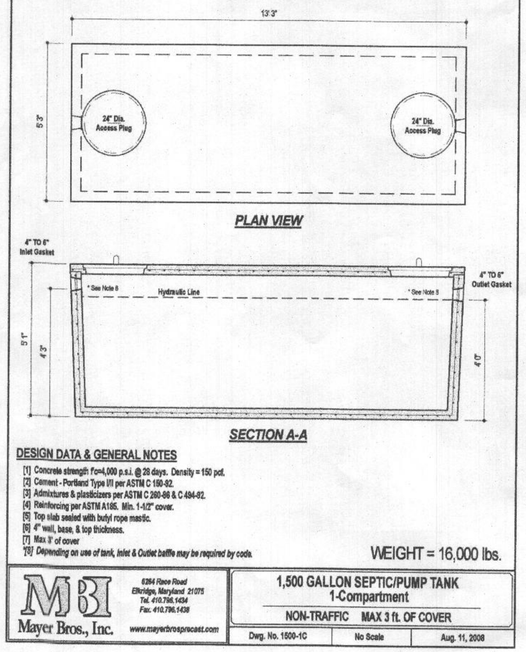


DESIGN DATA & GENERAL NOTES

[1] Concrete strength f'c=4,000 p.s.i. @ 28 days. Density = 150 pcf.
[2] Cement - Portland Type I/II per ASTM C 150-92.
[3] Admixtures & plasticizers per ASTM C 260-86 & C 494-92.
[4] Reinforcing per ASTM A185. Min. 1-1/2" cover.
[5] Top slab sealed with butyl rope mastic.
[6] 4" wall, base, & top thickness.
[7] Max 3' of cover
[*8] Depending on use of tank, Inlet & Outlet baffle may be required by code.

WEIGHT = 16,750 lbs.

MBI Mayer Bros., Inc.	6364 Race Road Elkridge, Maryland 21075 Tel. 410.796.1434 Fax. 410.796.1438 www.mayerbrosprecast.com	1,500 GALLON TANK (Non-Traffic) 2-Compartment Stock Item	
		Dwg. No. 1600-2C	No Scale	Aug. 11, 2008



DESIGN DATA & GENERAL NOTES

[1] Concrete strength f'c=4,000 p.s.i. @ 28 days. Density = 150 pcf.
[2] Cement - Portland Type I/II per ASTM C 150-92.
[3] Admixtures & plasticizers per ASTM C 260-86 & C 494-92.
[4] Reinforcing per ASTM A185. Min. 1-1/2" cover.
[5] Top slab sealed with butyl rope mastic.
[6] 4" wall, base, & top thickness.
[7] Max 3' of cover
[*8] Depending on use of tank, inlet & Outlet baffle may be required by code.

WEIGHT = 16,000 lbs.

MBI Mayer Bros., Inc.	6364 Race Road Elkridge, Maryland 21075 Tel. 410.796.1434 Fax. 410.796.1438 www.mayerbrosprecast.com	1,500 GALLON SEPTIC/PUMP TANK 1-Compartment NON-TRAFFIC MAX 3 ft. OF COVER	
		Dwg. No. 1600-1C	No Scale	Aug. 11, 2008

Wastewater

Goulds Water Technology

APPLICATIONS

Specifically designed for the following uses:

- Homes, Farms, Trailer Courts, Motels, Schools, Hospitals, Industry, Effluent Systems

SPECIFICATIONS

Pump

- Solids handling capabilities: ¾" 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 ½ - 1½ HP models.
- Class F insulation on 2 HP models.

Single phase (60 Hz):

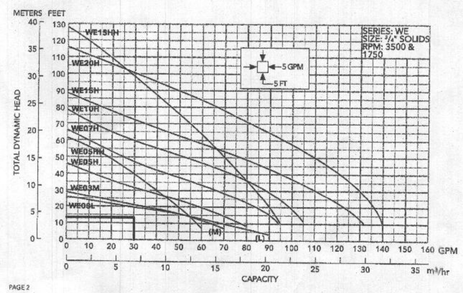
- Capacitor start motors for maximum starting torque.
- Built-in overload with automatic reset.
- SJTOW or STOW severe duty oil and water resistant power cords.
- ½ - 1 HP models have NEMA three prong grounding plugs.
- 1½ HP and larger units have bare lead cord ends.

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 ratings 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.

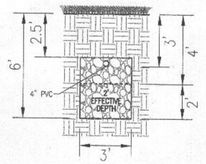
AGENCY LISTINGS

Tested to UL 778 and CSA 22.2 108 Standards By Canadian Standards Association File #LR38549

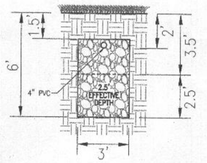


PAGE 2

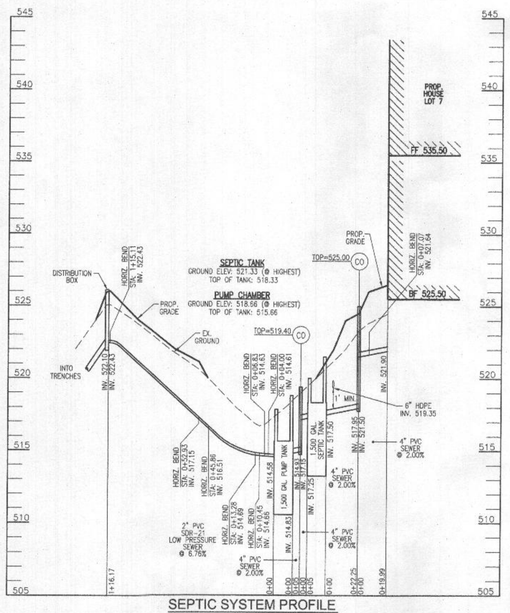
FLOW: 30 GPM
H=13.41'
USE GOULDS WE03 (OR EQUIVALENT)



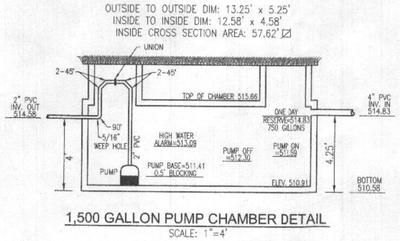
INITIAL SYSTEM TRENCH DETAIL
NOT TO SCALE



FIRST & SECOND REPLACEMENT SYSTEM TRENCH DETAIL
NOT TO SCALE



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



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

NO. BEDROOMS = 5
DESIGN FLOW = 5(150 GPD) = 750 GPD
DOSE: 1/6 DESIGN FLOW = 125 GPD
125 GALLONS/7.48 FT^3/GAL. = 16.71 FT^3
16.71 FT^3/57.62 SF = 0.29'
ONE DAY RESERVE: 750 GALLONS/7.48 FT^3/GAL = 100.27 FT^3
100.27 FT^3/57.62 SF = 1.74 FT

TDH (FRICTION + STATIC)
FRICTION FITTINGS: UNION: 1x2 = 2
45° ELBOW (H+V): 11x8 = 88
90° ELBOW: 1x7 = 7
FITTING EQ. LENGTH: 97.0 LF
PIPE LENGTH: 116.2 LF
TOTAL LENGTH: 213.2 LF

FRICTION LOSS (30 GPM): (1.54)(213.2)/100 = 3.28'
STATIC: 522.43–512.30 (PUMP OFF) = 10.13'
TDH: 10.13+3.28 = 13.41'
USE GOULDS WE03 (OR EQUIVALENT)

SCALE 1"=30'
15' 0' 30'

OWNER
SECURITY DEVELOPMENT, LLC
8480 BALTIMORE NATIONAL PIKE, SUITE 415
ELLICOTT CITY, MD 21043
(410) 465-4244

BUILDER
CATONSVILLE HOMES
11175 STRATFIELD COURT
MARRIOTTSVILLE, MD 21104
(410) 489-7800

NO.	REVISION	DATE

ONSITE SEWAGE DISPOSAL SYSTEM DESIGN PLAN

ROVER MILL ESTATES - LOT 7
3001 SKYE MEADOW WAY
WEST FRIENDSHIP, MD 21794

PARCEL: 169
TAX MAP: 15 GRID: 14
3RD ELECTION DISTRICT

ZONED: RR-DEO
L. 19082 / F. 490
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

STATE OF MARYLAND · ROBERT HARRIS VOGEL · No. 16193 · PROFESSIONAL ENGINEER · 5/12/21

ROBERT H. VOGEL, PE No.16193

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: 09-27-2022

DESIGN BY:	R-HV
DRAWN BY:	JMR
CHECKED BY:	RHV
DATE:	JANUARY 2021
SCALE:	AS SHOWN
W.O. NO.:	15-38

SHEET 2 OF 2