

**GENERAL NOTES**

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY, PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE. UNLESS ALTERNATIVE COMPLIANCE REQUESTS HAVE BEEN APPROVED.
- THE CONTRACTOR IS TO NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE DAYS BEFORE STARTING WORK ON THESE DRAWINGS:
  - MISS UTILITY 1-800-257-7777
  - VERIZON TELEPHONE COMPANY 410-410-954-6281
  - HOWARD COUNTY BUREAU OF UTILITIES 410-313-0366
  - AT&T CABLE LOCATION DIVISION 1-800-393-3553
  - B.G.&E. CO. CONTRACTOR SERVICES 410-850-2333
  - B.G.&E. CO. UNDERGROUND DAMAGE CONTROL 410-787-4620
  - STATE HIGHWAY ADMINISTRATION 410-531-5533
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO START OF WORK.
- THE EXISTING TOPOGRAPHY ON A TOPOGRAPHIC SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., PERFORMED IN JUNE, 2018 OFFSITE TOPOGRAPHY IS FROM HOWARD COUNTY GIS.
- THE PROJECT PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED MAY, 2018, TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO CEMETERIES OR GRAVE SITES LOCATED ON THE SUBJECT PROPERTY OR THE COUNTY'S CEMETERY SITE MAP.
- THIS SITE IS NOT LOCATED WITHIN A HISTORIC DISTRICT.
- THERE IS AN EXISTING HOME LOCATED ON PARCEL 0385.
- STORM WATER MANAGEMENT TO BE PROVIDED FOR THIS DEVELOPMENT BY ENVIRONMENTAL SITE DESIGN UTILIZING MICRO-BIORETENTION FACILITIES (M-6) AND DRY WELLS (M-5).
- ON LOT MICRO-BIORETENTION FACILITIES (M-6) AND DRY WELLS (M-5) WILL BE OWNED AND MAINTAINED BY THE HOMEOWNERS.
- THE (M-6) MICRO-BIORETENTION FACILITY #8 WILL BE OWNED BY HOWARD COUNTY AND JOINTLY MAINTAINED BY HOWARD COUNTY AND THE HOMEOWNERS ASSOCIATION (H.O.A.).
- HOWARD COUNTY WILL MAINTAIN OUTLET STRUCTURES AND PIPES WHILE THE H.O.A. SHALL MAINTAIN MULCH, WEEDING, PLANTINGS, PERFORATED UNDERDRAINS, FEEDER PIPES, AND ROUTINE SOIL REPLACEMENT.
- THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
  - WATER PROVIDED FOR THIS PROJECT IS TO BE A PUBLIC EXTENSION OF CONTRACT NO. 71-W. (SEE CONTRACT 24-5092-D).
  - SEWER PROVIDED FOR THIS PROJECT IS TO BE A PUBLIC EXTENSION OF CONTRACT NO. 20-10E1-D (SEE CONTRACT 24-5092-D).
- THE SUBJECT PROPERTY IS ZONED "R-20" IN ACCORDANCE WITH THE 10/06/2013 COMPREHENSIVE ZONING PLAN (SECTION 108.0 OF THE HOWARD COUNTY ZONING REGULATIONS) AND IS SUBJECT TO THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS EFFECTIVE 10/2/03 PER COUNCIL BILL 75-29-003.
- EXISTING UTILITIES ARE BASED ON HOWARD COUNTY GIS AND FIELD SURVEYS. APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN FOR THE CONTRACTOR'S INFORMATION. CONTRACTOR SHALL LOCATE EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
- ANY DAMAGE INCURRED TO THE EXISTING UTILITIES, DUE TO CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
- ANY DAMAGE TO PUBLIC RIGHT-OF-WAY, PAVING, OR EXISTING UTILITIES WILL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NO. 17GA AND 17GB WERE USED FOR THIS PROJECT.
- THE ONLY DISTURBANCE TO THE 100-YR FLOODPLAIN LOCATED ON-SITE IS THAT PREVIOUSLY APPROVED. SEE GENERAL NOTE 39.
- FOREST CONSERVATION EASEMENTS HAVE BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.100 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT. HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEEP OF FOREST CONSERVATION EASEMENT ARE ALLOWED.
  - TOTAL FOREST CONSERVATION OBLIGATION OF THIS PROJECT TO BE FULFILLED BY:
    1. CREDITED ONSITE RETENTION: 0.80 AC.
    2. CREDITED AFFORESTATION OF 0.10 AC.
- FINANCIAL SURETY (\$2,178) SHALL BE POSTED WITH THE DEVELOPER AGREEMENT AS PART OF THIS SUBDIVISION PLAN.
- WETLANDS DELINEATION AND FOREST STAND DELINEATION REPORT PREPARED BY ECO-SCIENCE PROFESSIONALS, INC. ON SEPTEMBER 10, 2018 AND AMENDED DECEMBER 5, 2018.
  - TWO PERMANENT STREAMS ARE LOCATED ONSITE. THEIR BUFFERS DO NOT IMPACT THE DEVELOPMENT AREA.
  - SIX (6) SPECIMEN TREES WERE FOUND ONSITE. THE PROPOSAL INCLUDES THE REMOVAL OF 4 TREES.
  - REFER TO ALTERNATIVE COMPLIANCE WP-19-064. SEE NOTE 38.
- NO GRADING, REMOVAL, OR RESTORATION OF STREAMS SHALL BE PERMITTED WITHIN THE WETLANDS, STREAMS, OR THEIR REQUIRED BUFFERS, FOREST CONSERVATION EASEMENT AREAS, AND 100-YEAR FLOODPLAIN.
- THERE ARE NO WETLANDS, STREAMS OR BUFFERS WITHIN THE LIMIT OF DISTURBANCE BESIDES THOSE APPROVED AS NECESSARY DISTURBANCES. SEE GENERAL NOTE 39.
- A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
- GERMAN ROAD IS CLASSIFIED AS A PUBLIC ROAD.
- PROPOSED IS A PUBLIC CUL-DE-SAC EXTENSION AND A PRIVATE USE-IN-COMMON DRIVEWAY.
- UTILIZE HOWARD COUNTY STANDARD DETAIL NO. R-6.02 FOR THE USE-IN-COMMON DRIVEWAY ENTRANCE AT GERMAN ROAD.
- DRIVEWAYS SHALL BE IMPROVED PRIOR TO ISSUANCE OF A USE AND OCCUPANCY PERMIT FOR ANY NEW DWELLINGS TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES FOR THE FOLLOWING MINIMUM REQUIREMENTS:
  - A) WIDTH - 12 FEET (16 FEET SERVING MORE THAN ONE RESIDENCE)
  - B) SURFACE - 6 INCHES OF COMPACTED CRUSH WITH TAR AND CHIP COATING (1-1 1/2" MIN.)
  - C) GEOMETRY - MAXIMUM 10% GRADE, MAXIMUM 10% CHANGE AND MINIMUM OF 45-FOOT TURNING RADIUS.
  - D) STRUCTURES (CULVERTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS (H2S LOADING)
  - E) DRAINAGE ELEMENTS-CAPABLE OF SAFELY PAVING 100-YEAR FLOOD WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE.
  - F) STRUCTURE CLEARANCES-MINIMUM 12 FEET.
  - G) MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE.
- LOTS 3-7 WILL UTILIZE A PRIVATE USE-IN-COMMON DRIVEWAY.
- A USE-IN-COMMON MAINTENANCE AGREEMENT FOR THE SHARED DRIVEWAY SHALL BE RECORDED SIMULTANEOUSLY WITH THE FINAL PLAN.
- THE PRE-SUBMISSION COMMUNITY MEETING WAS HELD FOR THIS PROJECT AT LINDEN HALL IN ELLICOTT CITY, MARYLAND ON SEPTEMBER 10, 2018.
- IN ACCORDANCE WITH SECTION 16.121(A)(2) OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, THE OPEN SPACE REQUIREMENTS FOR THIS R-20 PROJECT IS 10% OF THE GROSS AREA WHEN USING THE OPTIONAL MINIMUM LOT SIZE OF 18,000 SF. SEE OPEN SPACE TABULATION.
- IN ACCORDANCE WITH SECTION 16.121(A)(1) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS RECREATION OPEN SPACE IS NOT REQUIRED FOR "RIVER BIRCH MANOR", RESIDENTIAL SUBDIVISIONS WITH LESS THAN 10 LOTS/UNITS.
- THE ENVIRONMENTAL CONCEPT PLAN (ECP-19-010) WAS APPROVED ON NOVEMBER 21, 2018.
- THE SKETCH PLAN (S-19-003) WAS APPROVED ON MARCH 28, 2019.
- THE PRELIMINARY PLAN (P-20-001) WAS APPROVED ON DECEMBER 19, 2019.
- THE TRAFFIC STUDY FOR THIS PROJECT WAS PREPARED BY THE TRAFFIC GROUP, INC., DATED AUGUST 9, 2018.
- THE PROPOSED UNITS SHALL HAVE AN AUTOMATIC FIRE PROTECTION SPRINKLER SYSTEM.
- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE LANDSCAPE MANUAL. A FINANCIAL SURETY IN THE AMOUNT OF \$9,600.00 SHALL BE POSTED WITH THE DEVELOPER AGREEMENT AS PART OF THIS SUBDIVISION PLAN.
- PERMETER PLANTINGS IN THE AMOUNT OF \$7,200.00 FOR THE REQUIRED 24 SHADE TREES.
- SPECIMEN TREE REPLACEMENT IN THE AMOUNT OF \$2,400.00 FOR THE REQUIRED 8 SPECIMEN TREES.
- PRIVATE STREET TREES ARE PROVIDED FOR THIS PROJECT IN ACCORDANCE WITH SECTION 16.124(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL. FINANCIAL SURETY (\$ 3,000.00) SHALL BE POSTED AS PART OF THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS COST ESTIMATE FOR THE REQUIRED 10 STREET TREES.
- TRASH PAD PLANTINGS ARE PROVIDED FOR THIS PROJECTS USE-IN-COMMON DRIVEWAYS.
- FINANCIAL SURETY (\$150) SHALL BE POSTED AS PART OF THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS COST ESTIMATE FOR THE REQUIRED 5 SHRUBS.
- IN ACCORDANCE WITH SECTION 2.2 AND THE DESIGN MANUAL - VOLUME 3, CHAPTER 2 AND THE HOWARD COUNTY ZONING REGULATIONS SECTION 133.0.2.2, OFF-STREET PARKING IS REQUIRED AT 2.0 SPACES PER UNIT. VISITOR PARKING IS REQUIRED AT 0.5 SPACES PER UNIT. SEE TABULATION THIS SHEET.
- THIS PROJECT WILL REQUIRE STREET LIGHTING IN ACCORDANCE WITH SECTION 16.135 OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE HOWARD COUNTY DESIGN MANUAL. STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURES AND POLES SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME II (2017). SECTION 2.13. A MINIMUM OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
- MODERATE INCOME HOUSING UNITS (MIHU) ARE REQUIRED FOR THIS PROJECT.
  - IN ACCORDANCE WITH SECTION 108.0.E OF THE 10/06/13 COMPREHENSIVE ZONING REGULATIONS, SECTION 6 IS SUBJECT TO MODERATE INCOME HOUSING UNITS. THE MIHU OBLIGATION WILL BE PROVIDED BY A PAYMENT OF FEE-IN-LIEU TO THE HOWARD COUNTY HOUSING DEPARTMENT FOR EACH UNIT OR PORTION OF THE UNITS REQUIRED BY THE DEVELOPMENT.
  - REFER TO THE MIHU TRACKING CHART SHOWN HEREON.
  - THE MIHU AGREEMENT WILL BE RECORDED IN THE LAND RECORDS OF HOWARD COUNTY WITH THE RECORDING OF THE FINAL PLAN.
  - A PRIVATE RANGE OF ADDRESS SIGN ASSEMBLY SHALL BE FABRICATED AND INSTALLED BY HOWARD COUNTY BUREAU OF HIGHWAYS AT THE DEVELOPER'S/OWNERS EXPENSE. CONTACT HOWARD COUNTY TRAFFIC DIVISION AT 410-313-5752 FOR DETAILS AND COST ESTIMATES.
  - FLAG AND PIPESTEM LOTS; REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE FOR LOTS 3-7 ARE PROVIDED TO THE JUNCTION OF FLAG OR PIPESTEM AND ROAD RIGHT-OF-WAY LINE AND NOT ONTO THE PIPESTEM LOT DRIVEWAY.
- TRAFFIC CONTROL DEVICES:
  - A. THE R1-1(STOP) SIGNS AND STREET NAME SIGN (SNS) ASSEMBLIES FOR THIS DEVELOPMENT MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPLETE.
  - B. THE TRAFFIC CONTROL DEVICE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-313-2430) PRIOR TO THE INSTALLATION OF ANY OF THE TRAFFIC CONTROL DEVICES.
  - C. ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD).
  - D. ALL SIGN POST USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, ("DUCK PUNCH") SQUARE TUBE POST (1 1/2 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (1/2 GAUGE - 3' LONG). THE ANCHOR SHALL NOT EXTEND MORE THAN TWO "DUCK PUNCH" HOLES ABOVE GROUND LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON THE TOP OF EACH POST.
- THE REMOVAL OF FOUR SPECIMEN TREES WAS APPROVED WITH WP-19-064 ON JANUARY 30, 2019. THIS IS AN ALTERNATIVE COMPLIANCE TO SECTION 16.100(6)(7) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. APPROVAL IS SUBJECT TO THE FOLLOWING CONDITIONS:
  1. THE REMOVAL OF THE FOUR SPECIMEN TREES (ST #1-4) IS PERMITTED AS SHOWN ON THE PLAN EXHIBIT. THE REMOVAL OF ANY ADDITIONAL SPECIMEN TREES IS NOT PERMITTED UNDER THIS ALTERNATIVE COMPLIANCE REQUEST UNLESS IT CAN BE SUFFICIENTLY DEMONSTRATED BY THE APPLICANT TO BE JUSTIFIED.
  2. THE DEVELOPER SHALL PLANT EIGHT (8) MINIMUM-CALIPER NATIVE SHADE TREES IN ADDITION TO THE REQUIRED PERMETER PLANTINGS TO MITIGATE THE REMOVAL OF THE FOUR SPECIMEN TREES. IT IS RECOMMENDED THAT THE EIGHT TREES BE PLANTED WITHIN THE PROPOSED FOREST CONSERVATION EASEMENT ON OPEN SPACE LOT 8 TO ENSURE LONG-TERM PROTECTION. REFERENCE THE ADDITIONAL TREES ON S-19-003 AND INCLUDE PLANTING DETAILS ON ALL SUBSEQUENT SUBDIVISION AND DEVELOPMENT PLANS. THESE TREES WILL BE BONDED ALONG WITH THE REQUIRED PERMETER PLANTINGS AS PART OF THE FINAL SUBDIVISION PLAN.
- IN ACCORDANCE WITH SECTION 16.116(C) OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS A NECESSARY DISTURBANCE WAS SUBMITTED TO THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING ON DECEMBER 31, 2018 AND APPROVED IN A LETTER DATED FEBRUARY 4, 2019 AND APPROVED UNDER S-19-003. THIS NECESSARY DISTURBANCE ALLOWS MINOR DISTURBANCES TO THE STREAM BUFFER FOR THE CONSTRUCTION OF THE STORM DRAIN OUTFALL AND SEWER CONNECTION FOR THE PROPOSED SUBDIVISION. THE PURPOSE OF THESE DISTURBANCES IS TO ALLOW GRAVITY SEWER SERVICE TO THE PROPOSED DWELLINGS AND TO OUTFALL THE STORM DRAIN ON SLOPES LESS THAN 10%.
- CERTIFIED TEST PITS HAVE BEEN PROVIDED TO VERIFY THE LOCATIONS OF GROUNDWATER AND/OR ROCK ORIGIN TEST PITS WERE OBSERVED BY ROBERT H. VOGEL ENGINEERING ON JUNE 27, 2018.
- FLOODPLAINS ARE LOCATED ONSITE.
- THE FLOODPLAIN SHOWN ON THE SUBJECT PROPERTY (LITTLE PATENT RIVER) IS PER HOWARD COUNTY DFRM.
- STEEP SLOPES OVER 20.0% CONTIGUOUS ARE SHOWN HEREON.
- ALL SIDEWALKS ADJACENT TO PUBLIC STORMWATER MANAGEMENT EASEMENTS SHALL BE REQUIRING FOR THE LIMITS OF THE PUBLIC EASEMENT.
- REINFORCEMENT SHALL BE IN ACCORDANCE WITH HOWARD COUNTY DETAIL 16-603.
- THE FOLLOWING STANDARDS (CONSTRUCTION AND TEMPORARY TRAFFIC CONTROL) ARE REQUIRED FOR THIS PROJECT:
  - a. MD-104-02-02 - SHOULDER WORK/2 LANE, 2 WAY - EOL, LESS THAN 40 MPH.
  - FOR ALL STANDARDS REFERRED TO ON THIS PLAN THE CONTRACTOR MUST GO TO THE BOOK OF STANDARDS WHICH WILL HAVE THE MOST CURRENT VERSION.
  - THE BOOK OF STANDARDS CAN BE ACCESSSED AT:
    - HTTP://APPS.Roads.MARYLAND.GOV/BUSINESS/MSHA/BZ22/SPEC/DESIGN/STANDARDS/PUBLICATIONS/ONLINE/OHD/BOOKSD/INDEX.ASP
  - ALL ITEMS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT VERSION OF THE REFERENCED STANDARD AT THE TIME OF CONSTRUCTION.
  - IF ANY WELL OR SEPTIC SYSTEMS ARE FOUND DURING ANY STAGE OF THE PROCESS THE HEALTH DEPARTMENT MUST BE NOTIFIED AND THE SYSTEMS MUST BE PROPERLY ABANDONED WITH DOCUMENTATION SENT TO THE HEALTH DEPARTMENT.

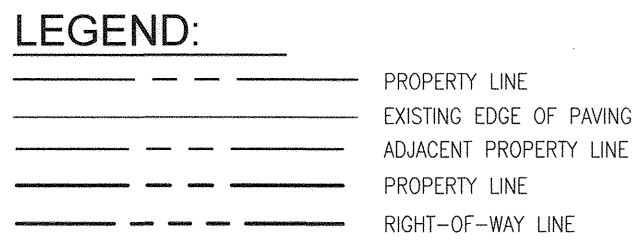
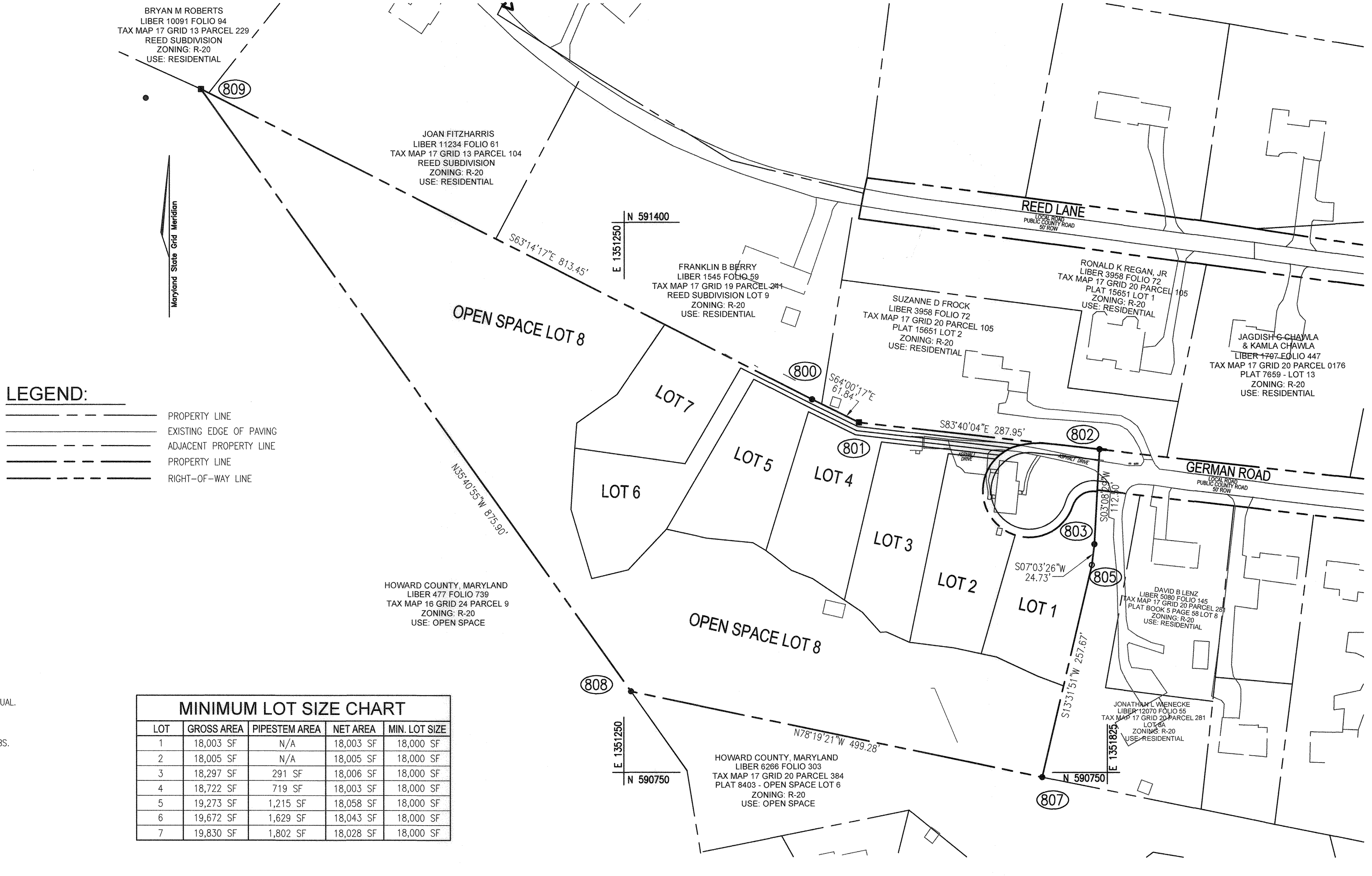
# FINAL ROAD CONSTRUCTION PLAN

## RIVER BIRCH MANOR

### LOTS 1-7 AND OPEN SPACE LOT 8

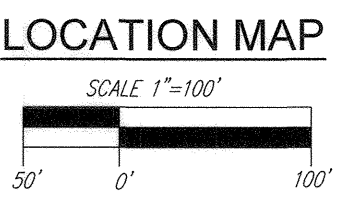
#### A SUBDIVISION OF TAX MAP 17 - PARCEL 385

10039 GERMAN ROAD  
HOWARD COUNTY, MD



**MINIMUM LOT SIZE CHART**

LOT	GROSS AREA	PIPESTEM AREA	NET AREA	MIN. LOT SIZE
1	18,003 SF	N/A	18,003 SF	18,000 SF
2	18,005 SF	N/A	18,005 SF	18,000 SF
3	18,297 SF	291 SF	18,006 SF	18,000 SF
4	18,722 SF	719 SF	18,003 SF	18,000 SF
5	18,273 SF	1,215 SF	18,058 SF	18,000 SF
6	19,972 SF	1,829 SF	18,043 SF	18,000 SF
7	19,830 SF	1,802 SF	18,028 SF	18,000 SF



**SITE DATA**

DEED REFERENCE: PARCEL 0385: L 18205 / F 247  
ELECTION DISTRICT: 2ND  
LOCATION: 10039 GERMAN ROAD SOUTH OF REED LANE

EXISTING ZONING: R-20 LOW DENSITY RESIDENTIAL  
GROSS AREA: 7.54 AC ±  
AREA OF 100 YEAR FLOODPLAIN: 2.09 AC ± (SEE NOTE #1)

AREA OF STEEP SLOPES (25% & GREATER): 0.00 AC.  
AREA OF WETLANDS & WETLAND BUFFER AREA: 1.99 AC ±  
AREA OF STREAM & STREAM BUFFER AREA: 3.15 AC ±  
NET AREA (GROSS-STEEP SLOPES & FLOODPLAIN): 5.45 AC ±

NUMBER OF PROPOSED RESIDENTIAL LOTS: 7 SFD / 1 O.S.  
AREA OF PROPOSED RESIDENTIAL LOTS: 3.03 AC ±  
AREA OF ROAD RIGHT OF WAY (ON-SITE): 0.27 AC ±

OPEN SPACE PROVIDED: SEE TABULATION  
OPEN SPACE REQUIRED: SEE TABULATION  
LIMIT OF DISTURBANCE: 3.72 AC ±  
EXISTING USE OF SITE: RESIDENTIAL, SFD  
PROPOSED USE OF SITE: RESIDENTIAL, SFD  
PROPOSED WATER SYSTEM: PUBLIC  
PROPOSED SEWER SYSTEM: PUBLIC  
MINIMUM LOT AREA: 18,000 SF  
DPZ REFERENCE: ECP-19-010, WP-19-064, S-19-003, P-20-001

**OPEN SPACE TABULATION**

IN ACCORDANCE WITH SECTION 16.121(A)(2) OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS THE OPEN SPACE REQUIREMENTS FOR THIS R-20 PROJECT IS 10% OF GROSS AREA WHEN USING THE OPTIONAL MINIMUM LOT SIZE OF 18,000 SQUARE FEET.

(7.54 AC. GROSS AREA x 10% = 0.76 AC.)

OPEN SPACE PROVIDED IS 4.24 ACRES±  
CREDITED 4.21 ACRES±  
NON-CREDITED 0.03 ACRES±

**WATER NOTE**

ALL WATER CONNECTIONS SHALL BE 1-1/2" WITH 1" OUTSIDE WATER METERS UNLESS OTHERWISE NOTED. REFER TO HOWARD COUNTY DETAILS W-3.28 OUTSIDE METERS SETTINGS.

**PARKING TABULATION**

TOTAL NUMBER OF DWELLING UNITS PROPOSED: 7  
SINGLE FAMILY DETACHED (SFD) = 7 LOTS

1. OFF-STREET PARKING:  
SPACES PROVIDED: 2 SPACES PER UNIT  
PARKING SPACES PROVIDED:  
2 SPACES IN GARAGE = 14 SPACES (FOR 7 UNITS)  
2 SPACES ON DRIVEWAY = 14 SPACES (FOR 7 UNITS)  
TOTAL PARKING PROVIDED = 28 SPACES OFF-STREET

2. OVERFLOW / GUEST PARKING:  
SPACES REQUIRED: 0.5 SPACES PER SFD UNIT x 7 UNITS = 4 SPACES  
SPACES PROVIDED: TOTAL OVERFLOW PROVIDED = 7 SPACES (DRIVEWAY)  
REFER TO OFF-STREET EXCESS.

**Stormwater Management Information**

Lot/Parcel Number	Facility Name & Number	Practice Type (Quantity)	Public	Private	HOA Maintains
Lot 1 10039 German Road	MBR 1	M-6 MICRO-BIORETENTION	NO	YES	NO
	DW 1A	M-5 Dry Well	NO	YES	NO
	DW 1B	M-5 Dry Well	NO	YES	NO
Lot 2 10043 German Road	DW 2A	M-5 Dry Well	NO	YES	NO
	DW 2B	M-5 Dry Well	NO	YES	NO
	DW 2C	M-5 Dry Well	NO	YES	NO
Lot 3 10047 German Road	DW 3A	M-6 MICRO-BIORETENTION	NO	YES	NO
	DW 3B	M-5 Dry Well	NO	YES	NO
	DW 3C	M-5 Dry Well	NO	YES	NO
Lot 4 10051 German Road	MBR 4	M-6 MICRO-BIORETENTION	NO	YES	NO
	DW 4A	M-5 Dry Well	NO	YES	NO
	DW 4B	M-5 Dry Well	NO	YES	NO
Lot 5 10055 German Road	MBR 5	M-6 MICRO-BIORETENTION	NO	YES	NO
	DW 5A	M-5 Dry Well	NO	YES	NO
	DW 5B	M-5 Dry Well	NO	YES	NO
Lot 6 10059 German Road	MBR 6	M-6 MICRO-BIORETENTION	NO	YES	NO
	DW 6A	M-5 Dry Well	NO	YES	NO
	DW 6B	M-5 Dry Well	NO	YES	NO
Lot 7 10063 German Road	MBR 7	M-6 MICRO-BIORETENTION	NO	YES	NO
	DW 7A	M-5 Dry Well	NO	YES	NO
	DW 7B	M-5 Dry Well	NO	YES	NO

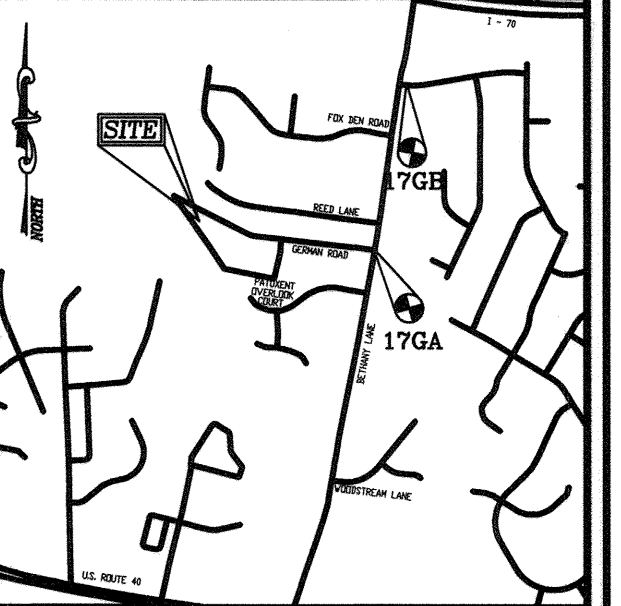
**BENCHMARKS**

HOWARD COUNTY BENCHMARK - 17GA (CONC. MONUMENT)  
N 591048.52 E 1352732.11  
LOCATION: NORTHWEST CORNER OF BETHANY LANE AND GERMAN ROAD

HOWARD COUNTY BENCHMARK - 17GB (CONC. MONUMENT)  
N 592856.77 E 1353019.98  
LOCATION: NORTHEAST CORNER OF BETHANY LANE AND POSTWICK DRIVE

**COORDINATE TABLE**

NO.	NORTH	EAST
800	591190.7833	1351473.9867
801	591163.6786	1351529.5703
802	591131.9200	1351815.7630
803	591019.5900	1351809.5980
805	590995.0452	1351806.5595
807	590744.5490	1351747.5110
808	590645.6050	1351726.9580



**VICINITY MAP**  
SCALE: 1"=2000'  
ADC MAP 11 GRID G/5

**SHEET INDEX**

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**MODERATE INCOME HOUSING UNITS (MIHU) ALLOCATION EXEMPTIONS TRACKING**

TOTAL NUMBER OF LOTS/UNITS PROPOSED	7
NUMBER OF MIHU REQUIRED	10% OR 1 UNIT
NUMBER OF MIHU PROVIDED ONSITE (EXEMPT FROM AFPO ALLOCATIONS)	0
NUMBER OF AFPO ALLOCATIONS REQUIRED (REMAINING LOTS/UNITS)	6 UNITS *
MIHU FEE-IN-LIEU (INDICATE LOT/UNIT NUMBERS)	LOTS 1-7

\* ONE CREDIT FOR THE EXISTING HOUSE TO BE REMOVED

**MIHU AGREEMENT**

PLEASE NOTE THAT ALL NEW LOTS/RESIDENTIAL UNITS IN THIS SUBDIVISION (LOTS 1-7) ARE SUBJECT TO THE MIHU FEE-IN-LIEU REQUIREMENT THAT IS TO BE CALCULATED AND PAID TO THE DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS AT THE TIME OF BUILDING PERMIT ISSUANCE BY THE PERMIT APPLICANT.

**OWNER**  
MARANATHA MAC. MANOR LLC  
3675 PARK AVE., SUITE 301  
ELLICOTT CITY, MD 21043  
(410) 480-0023

**DEVELOPER**  
TRINITY HOMES MARY LAND, LLC  
3675 PARK AVE., SUITE 301  
ELLICOTT CITY, MD 21043  
(410) 480-0023

NO.	REVISION	DATE

**FINAL ROAD CONSTRUCTION PLANS**

COVER SHEET

## RIVER BIRCH MANOR

LOTS 1-7 AND OPEN SPACE LOT 8  
A SUBDIVISION OF TAX MAP 17 - PARCEL 385

L 18205 / F 247  
TAX MAP: 17 GRID 20 PARCEL 385  
2ND DISTRICT  
DPZ REFERENCE: SEE SITE DATA

10039 GERMAN ROAD  
ELLICOTT CITY, MD 21042  
HOWARD COUNTY, MARYLAND

ZONED: R-20  
PARCEL 385

**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

PROFESSIONAL CERTIFICATE

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 09-27-2023.

DESIGN BY: RHV  
DRAWN BY: ES/MVP  
CHECKED BY: RHV  
DATE: SEPT. 2020  
SCALE: AS SHOWN  
W.O. NO.: 41656

1 SHEET OF 15

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

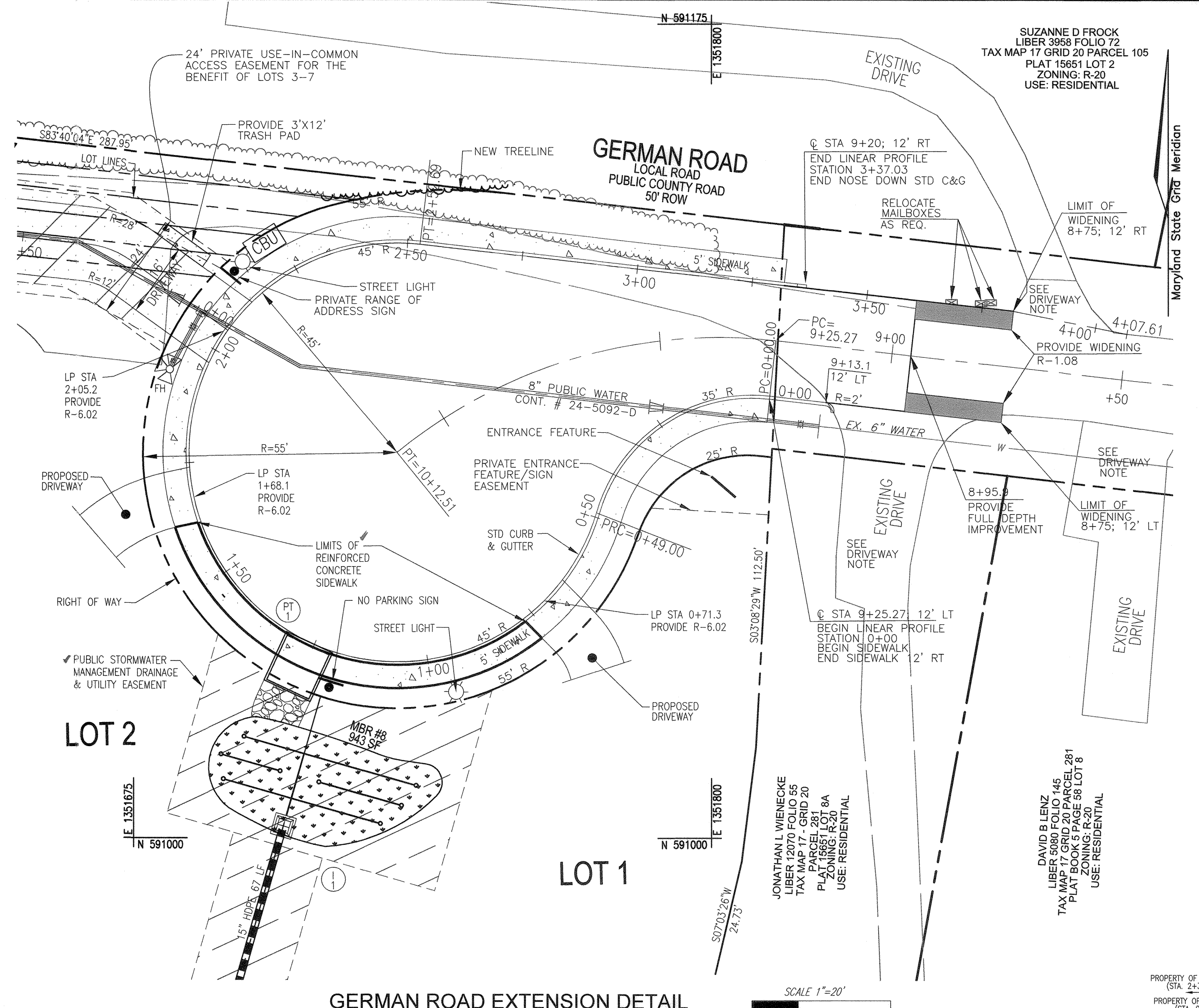
*[Signature]* 12.4.20  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

*[Signature]* 12/4/20  
CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

*[Signature]* 11/23/20  
CHIEF, BUREAU OF HIGHWAYS





GERMAN ROAD EXTENSION DETAIL  
SCALE: 1"=20'

**CENTERLINE CURVE TABLE - R-5.03**

ROAD	STATIONS	LENGTH	RADIUS	DELTA ANGLE	TANGENT	CHORD DIRECTION	CHORD LENGTH
GERMAN ROAD	9+25.27 + 10+12.95	87.68'	110.50'	45°27'47"	46.29'	N73°35'59"E	85.40'

**TRAFFIC CONTROL SIGNAGE SCHEDULE**

ROAD NAME	STATION	OFFSET	TYPE
GERMAN ROAD CUL-DE-SAC	2+14.7	7.5 LT	PRIVATE ADDRESS SIGN
GERMAN ROAD CUL-DE-SAC	1+19.4	7.5 LT	R7-1 NO PARKING SIGN
USE-IN-COMMON DRIVEWAY	SEE PLAN (LOT 6)		R7-1 NO PARKING SIGN
USE-IN-COMMON DRIVEWAY	SEE PLAN (LOT 7)		R7-1 NO PARKING SIGN

ALL SIGN LOCATIONS ARE APPROXIMATE. HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS - BUREAU OF HIGHWAYS - TRAFFIC ENGINEERING DIVISION SHALL FIELD APPROVE OR MARK ALL SIGN LOCATIONS PRIOR TO ANY SIGNS BEING INSTALLED. CALL 410-313-2430.

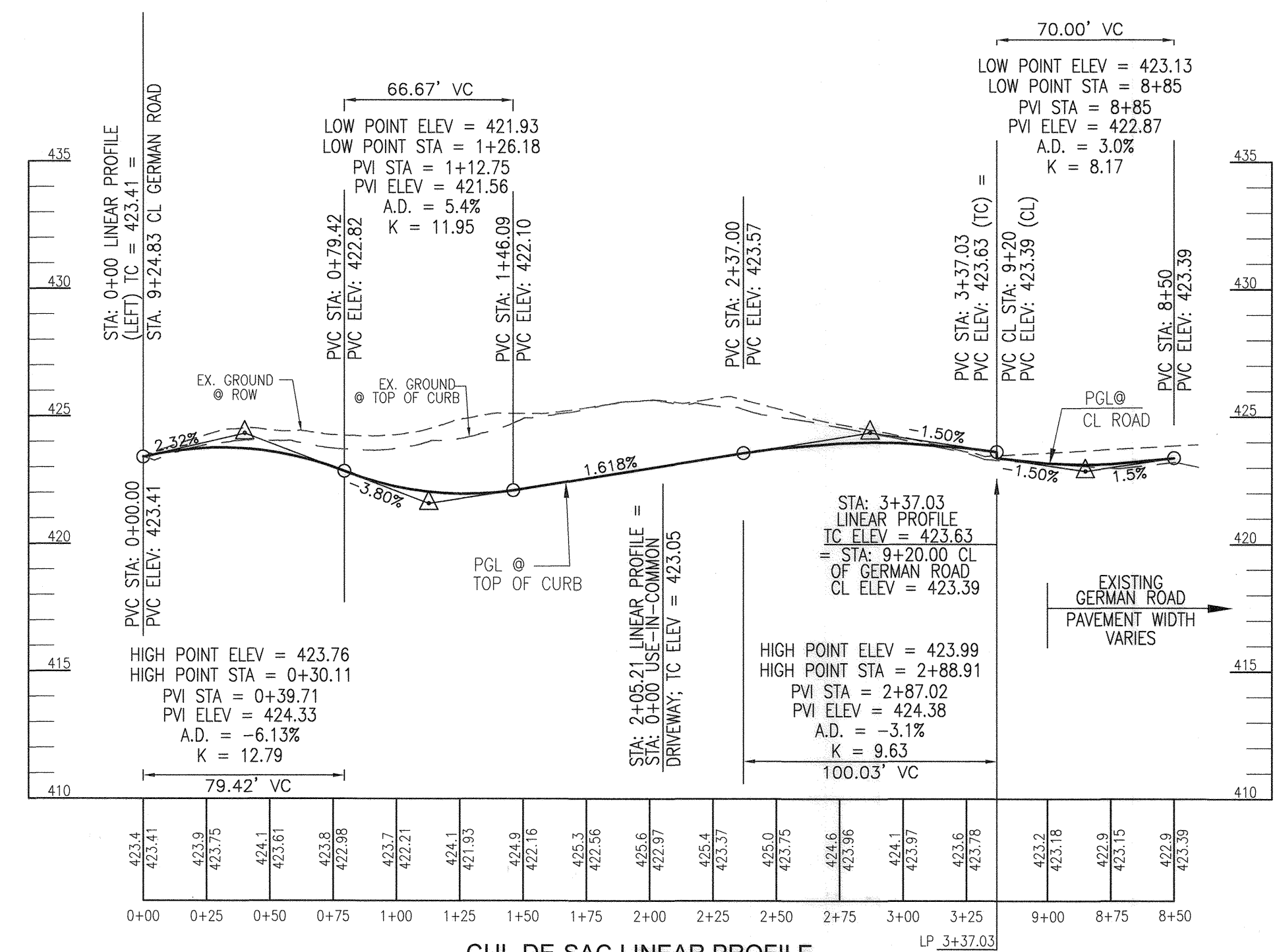
**STREET LIGHT LOCATION**

ROAD NAME	LIN. PROF. STATION	LIN. PROF. OFFSET	FIXTURE/POLE TYPE
GERMAN ROAD CUL-DE-SAC	0+95.69	8.00' L	LED-150 WATT COLONIAL POST TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE
GERMAN ROAD CUL-DE-SAC	2+17.18	8.00' L	LED-150 WATT COLONIAL POST TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE

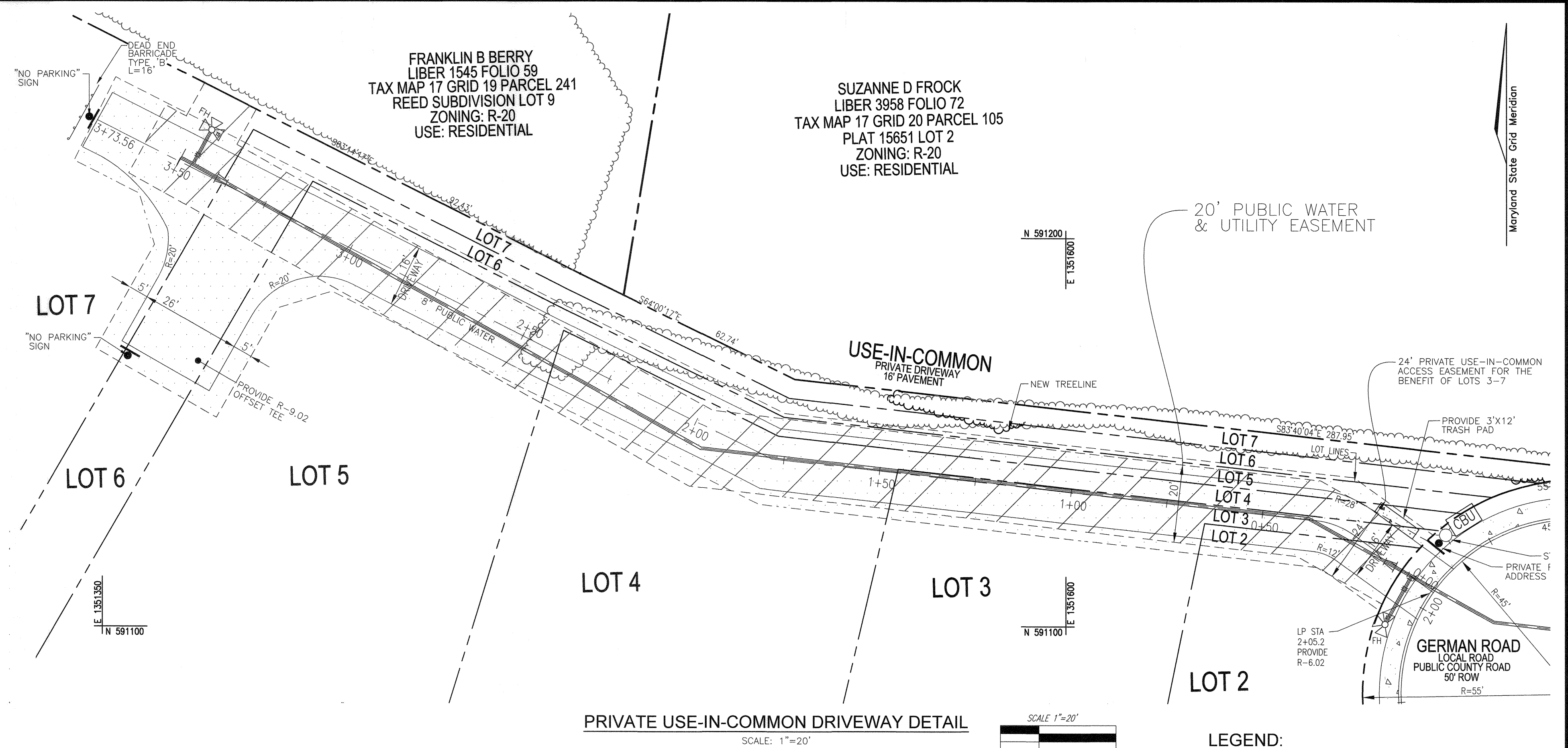
- GENERAL NOTES**
- ANY DAMAGE INCURRED TO THE EXISTING UTILITIES, DUE TO CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S/DEVELOPER'S EXPENSE.
  - ANY DAMAGE TO PUBLIC RIGHT-OF-WAY, PAVING, OR EXISTING UTILITIES WILL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
  - IN THE DIRECTION FACING A TRAFFIC CONTROL SIGN:
    - THERE SHALL BE A MINIMUM OF 40' BETWEEN THE SIGN FACE AND CLOSEST TREE FOR ALL SIGNS OTHER THAN A STOP SIGN.
    - THERE SHALL BE A MINIMUM OF 35' BETWEEN THE SIGN FACE AND CLOSEST TREE FOR ALL SIGNS OTHER THAN A STOP SIGN.
    - A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
  - REFER TO SHEET 3 FOR GERMAN ROAD IMPROVEMENT DETAILS.
  - REFER TO SHEET 3 FOR DETAIL OF REINFORCED CONCRETE SIDEWALK.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 12.4.20  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 [Signature] 12/12/20  
 CHIEF, DIVISION OF LAND DEVELOPMENT

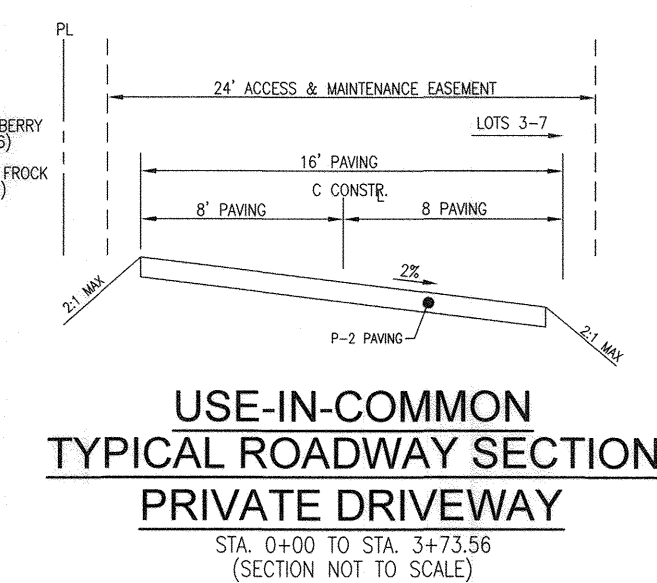
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 [Signature] 11/23/20  
 CHIEF, BUREAU OF HIGHWAYS



CUL-DE-SAC LINEAR PROFILE  
 GERMAN ROAD EXTENSION  
 PUBLIC ACCESS STREET  
 DESIGN SPEED: 35 MPH  
 SCALE: 1"=50' HORIZONTAL  
 1"=5' VERTICAL

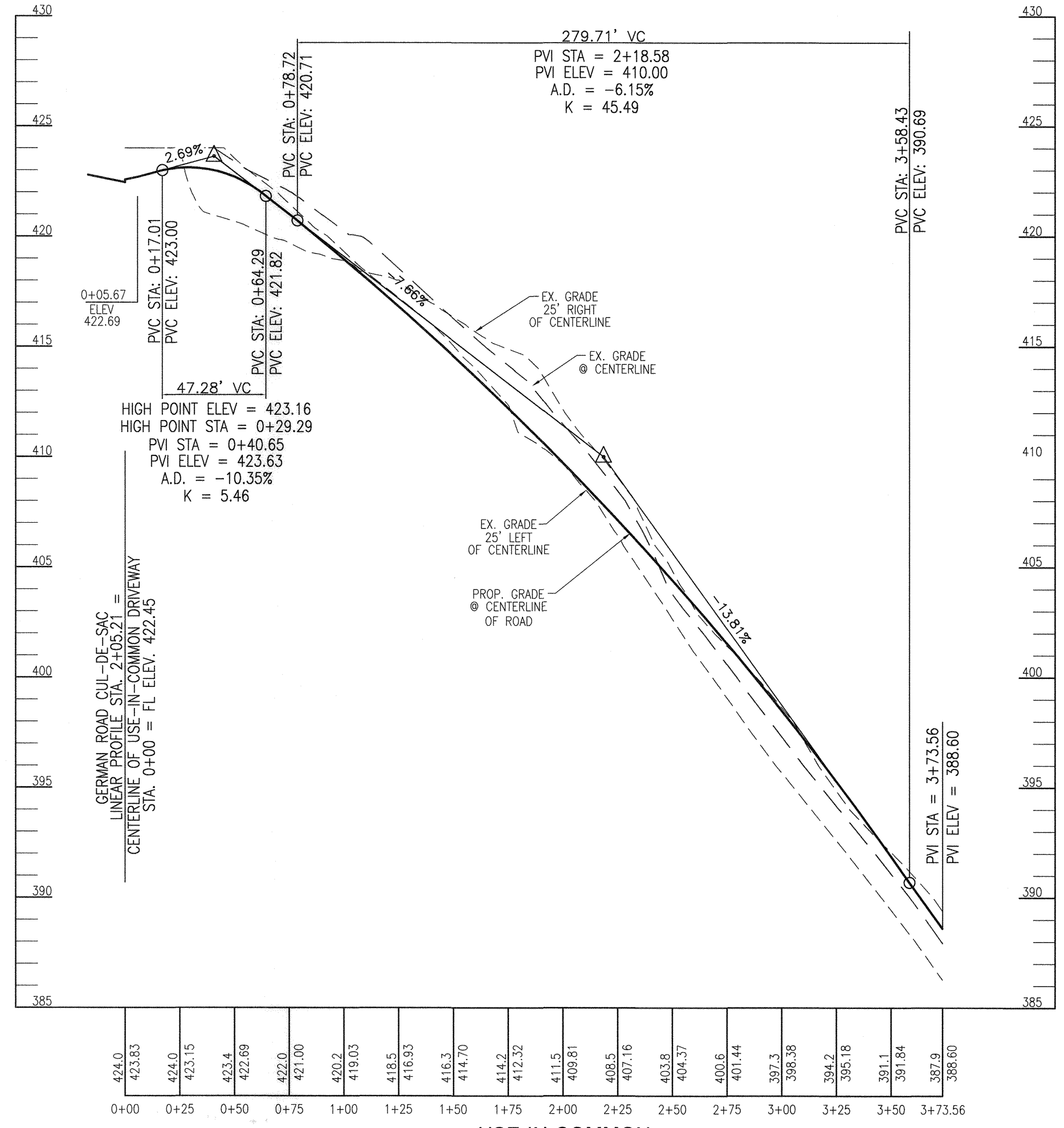


PRIVATE USE-IN-COMMON DRIVEWAY DETAIL  
 SCALE: 1"=20'



USE-IN-COMMON TYPICAL ROADWAY SECTION  
 PRIVATE DRIVEWAY  
 STA. 0+00 TO STA. 3+73.56  
 (SECTION NOT TO SCALE)

**USE-IN-COMMON DRIVEWAY NOTE**  
 1. INDIVIDUAL HOUSE SITES SHALL PROVIDE PRIVATE DRIVEWAYS A MINIMUM 18 FOOT DEPTH FROM THE FACE OF GARAGE TO THE EDGE OF THE USE-IN-COMMON DRIVEWAY SO THAT A CAR IF PARKED IN THE DRIVEWAY, WILL NOT OVERHANG INTO THE PAVED AREA OF THE SHARED DRIVEWAY. THE SHARED DRIVEWAY SHALL PROVIDE ADEQUATE UNOBSTRUCTED ACCESS TO ALL DWELLINGS AT ALL TIMES AS REQUIRED BY HOWARD COUNTY DEPARTMENT OF FIRE & RESCUE.



USE-IN-COMMON PRIVATE DRIVEWAY  
 DESIGN SPEED: 15 MPH  
 SCALE: 1"=50' HORIZONTAL  
 1"=5' VERTICAL

**LEGEND:**

- EXISTING: PROPERTY LINE, ADJACENT PROPERTY LINE, RIGHT-OF-WAY LINE, EXISTING TREETLINE, EX. EDGE OF PAVING, UTILITY, FENCE, OVERHEAD ELECTRIC LINES, EDGE OF PAVEMENT, CURB & GUTTER, TREETLINE, MICRO-BIRETENTION FACILITY (M-6), SIDEWALK, STORM DRAIN, 24' PRIVATE USE-IN-COMMON ACCESS EASEMENT, 20' PUBLIC WATER, SEWER & UTILITY EASEMENT, PUBLIC STORMWATER MANAGEMENT, DRAINAGE & UTILITY EASEMENT, PROPOSED STREET LIGHT & SIGN.

**OWNER:** MARANATHA MAG. MANOR LLC, 3675 PARK AVE., SUITE 301, ELLICOTT CITY, MD 21043, (410) 480-0023

**DEVELOPER:** TRINITY HOMES MARY LAND, LLC, 3675 PARK AVE., SUITE 301, ELLICOTT CITY, MD 21043, (410) 480-0023

NO.	REVISION	DATE

**FINAL ROAD CONSTRUCTION PLANS**  
 GERMAN ROAD EXTENSION AND  
 PRIVATE USE-IN-COMMON DRIVEWAY  
 PLAN VIEWS & ROAD PROFILES  
**RIVER BIRCH MANOR**  
 LOTS 1-7 AND OPEN SPACE LOT 8  
 A SUBDIVISION OF TAX MAP 17 - PARCEL 385

L. 18205 / F. 247  
 TAX MAP: 17 GRID: 20  
 2ND ELECTION DISTRICT  
 UPR2 REFERENCE: SEE SITE DATA

10039 GERMAN ROAD  
 ELLICOTT CITY, MD 21042

ZONED: R-20  
 PARCEL: 0385  
 HOWARD COUNTY, MARYLAND

**VOGEL ENGINEERING**  
 TIMMONS GROUP  
 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043  
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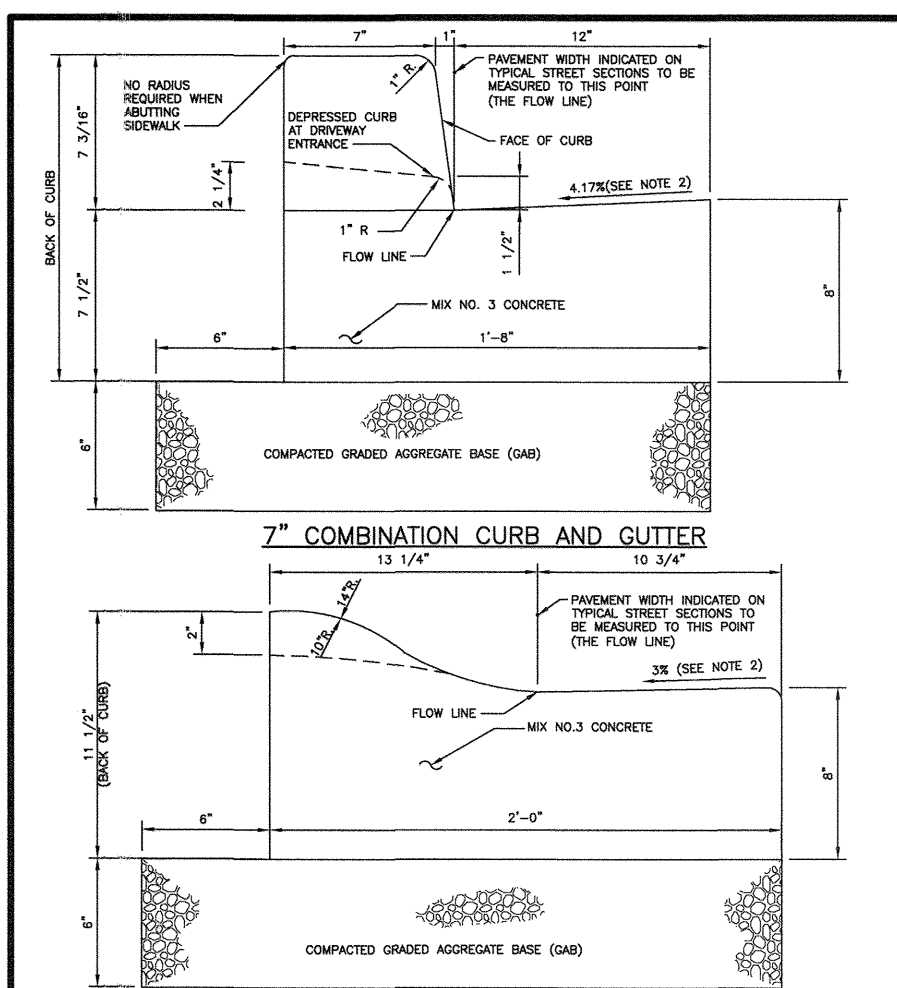
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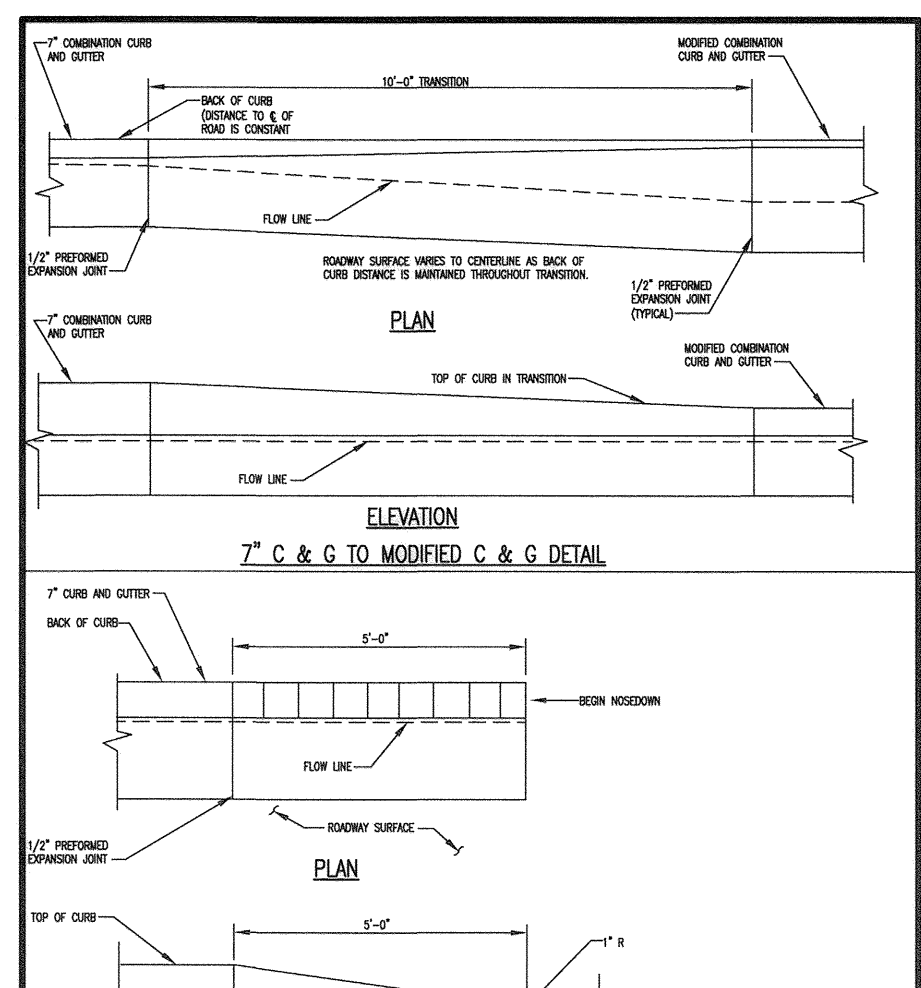
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DAY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND LICENSE NO. 16193 EXPIRATION DATE 09-27-2022

2 SHEET OF 15

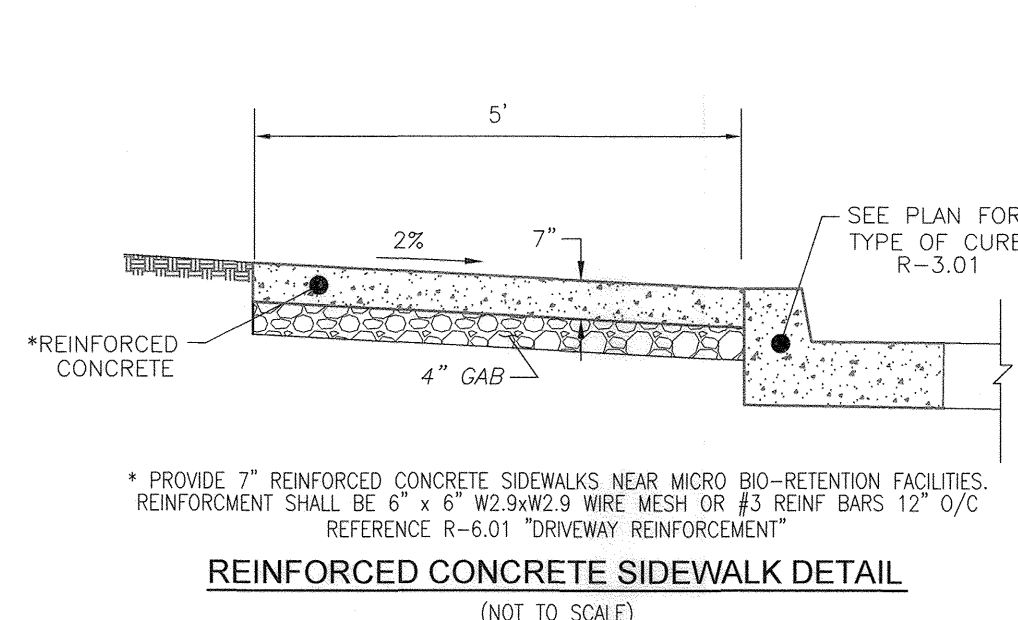




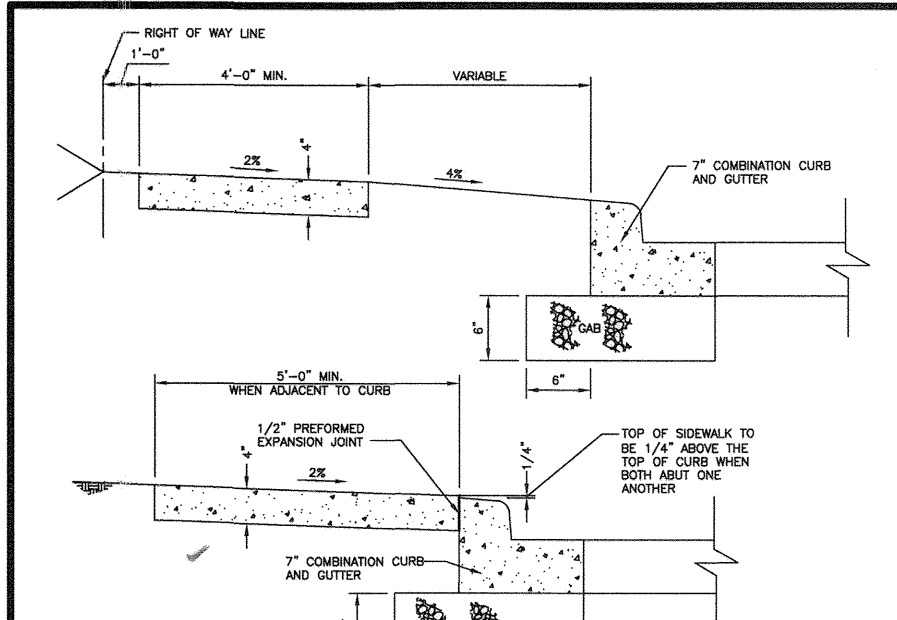
HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS APPROVED: <i>[Signature]</i> DATE: 12/4/20	<b>CURB AND GUTTER</b> <b>7\"/&gt; </b>	Detail <b>R-3.01</b>
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HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS APPROVED: <i>[Signature]</i> DATE: 12/4/20	<b>CURB AND GUTTER</b> <b>7\"/&gt; </b>	Detail <b>R-3.02</b>
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\* PROVIDE 7\"/>

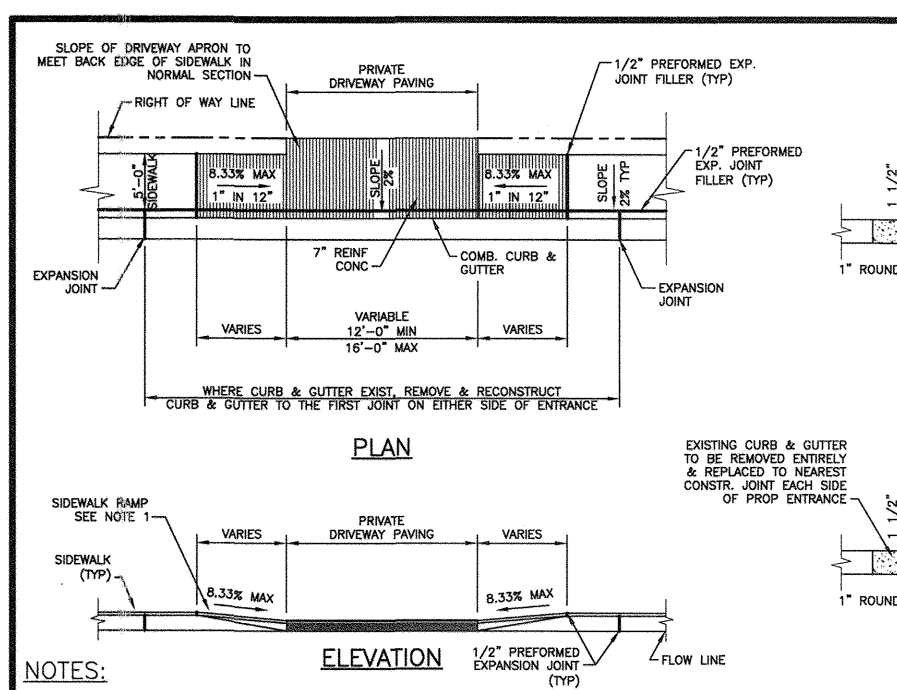


HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS APPROVED: <i>[Signature]</i> DATE: 12/4/20	<b>CONCRETE SIDEWALK</b>	Detail <b>R-3.05</b>
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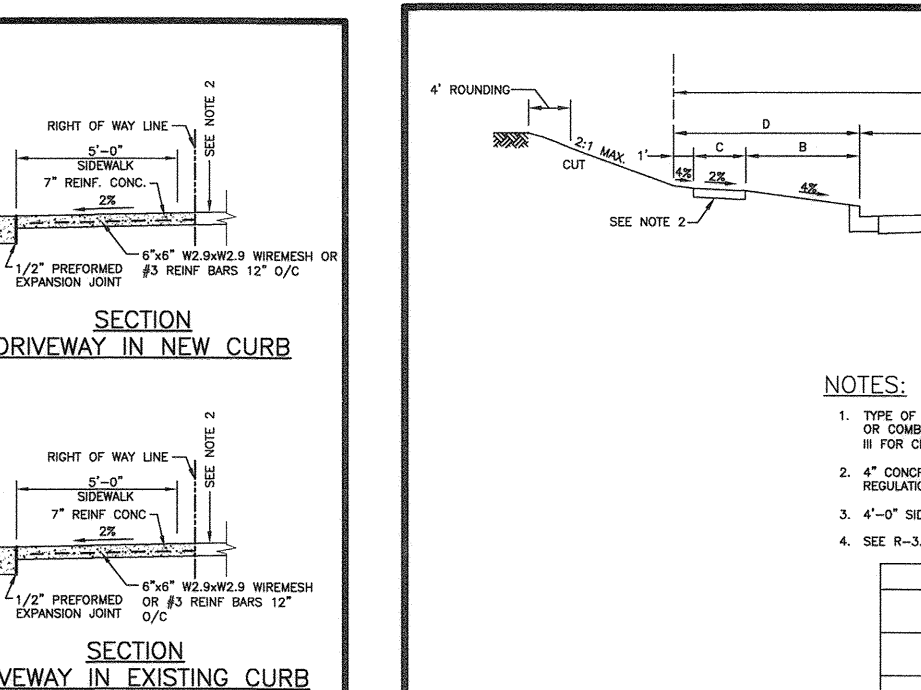
SECTION NUMBER	ROAD AND STREET	CALIFORNIA BEARING RATIO (CBR)	3 TO <5	5 TO <7	7 TO <9	9 TO <12	12 TO <15	15 TO <20	20 TO <30	30 TO <40	40 TO <50	50 TO <60	60 TO <80	80 TO <100
P-1	RESIDENTIAL AND NON-RESIDENTIAL PARKING DRIVE AGENCIES, RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 2 HEAVY TRUCKS PER DAY	SURFACE ASPHALT MIX FINAL SURFACE	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
		SURFACE ASPHALT MIX INTERMEDIATE SURFACE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
P-2	LOCAL, BUSINESS, ACCESS STREET, COLLECTOR, MINOR COLLECTION, NON-RESIDENTIAL	SURFACE ASPHALT MIX FINAL SURFACE	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
		SURFACE ASPHALT MIX INTERMEDIATE SURFACE	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
P-3	LOCAL, BUSINESS, ACCESS STREET, COLLECTOR, MINOR COLLECTION, NON-RESIDENTIAL	SURFACE ASPHALT MIX FINAL SURFACE	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
		SURFACE ASPHALT MIX INTERMEDIATE SURFACE	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
P-4	MINOR COLLECTION, MAJOR COLLECTION	SURFACE ASPHALT MIX FINAL SURFACE	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
		SURFACE ASPHALT MIX INTERMEDIATE SURFACE	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0

HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS APPROVED: <i>[Signature]</i> DATE: 12/4/20	<b>PAVING SECTIONS</b> <b>P-1 to P-4</b>	Detail <b>R-2.01</b>
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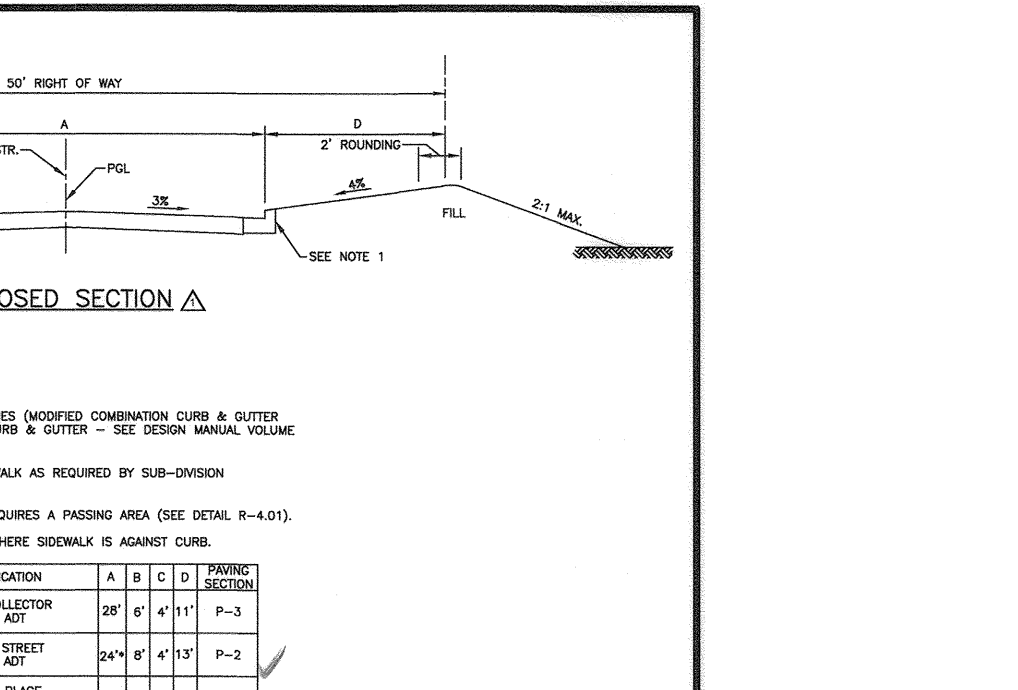
SECTION	ROAD	START STATION	FINISH STATION
P-1	USE-IN-COMMON DRIVEWAY	0+00	3+73.56
P-2	GERMAN ROAD ROAD EXTENSION	8+95.9	9+24.83
P-2	GERMAN ROAD CUL-DE-SAC	L.P. 0+00	L.P. 3+32.17



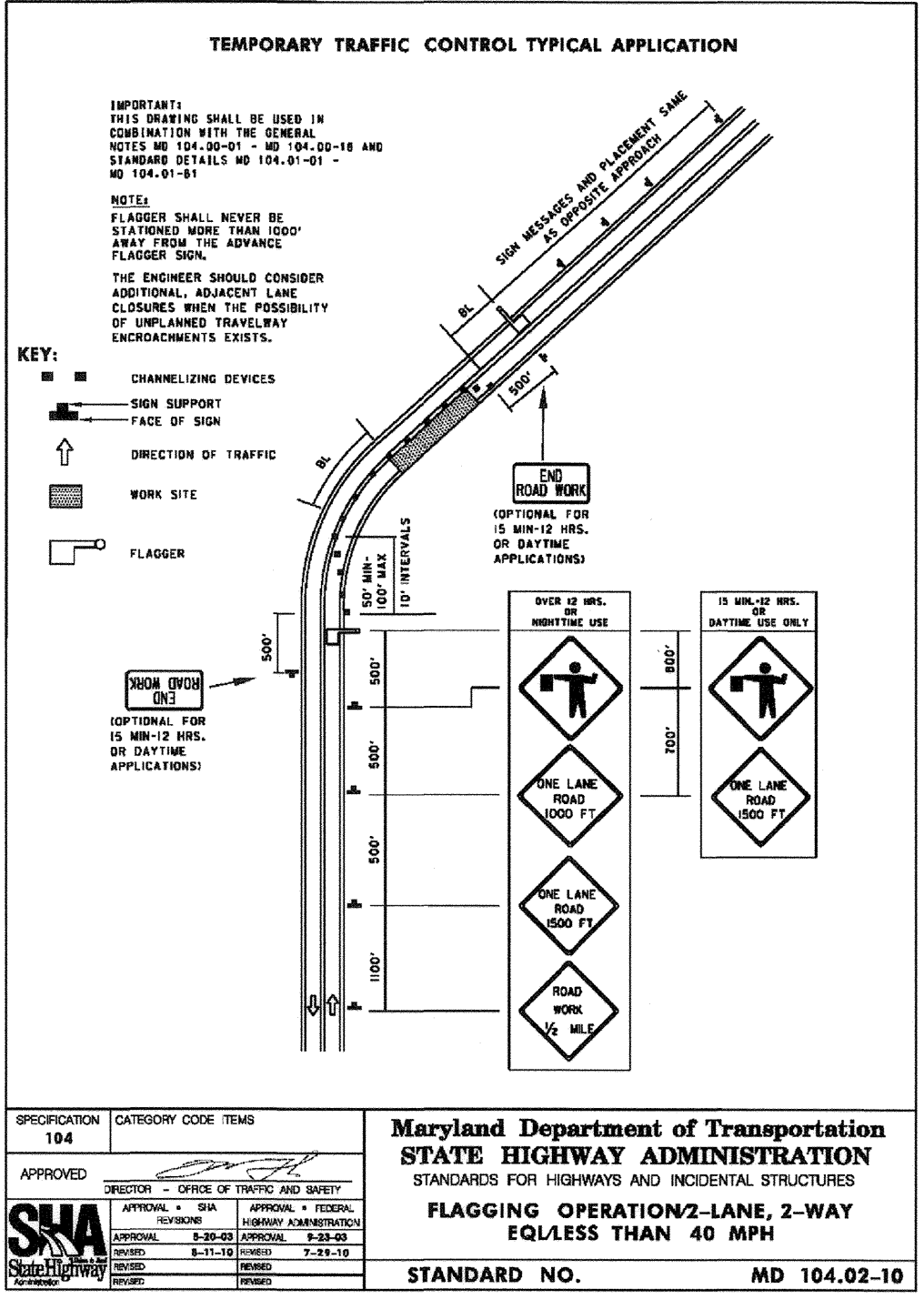
HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS APPROVED: <i>[Signature]</i> DATE: 12/4/20	<b>RESIDENTIAL DRIVEWAY ENTRANCE</b> <b>7\"/&gt; </b>	Detail <b>R-6.02</b>
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HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS APPROVED: <i>[Signature]</i> DATE: 12/4/20	<b>TYPICAL SECTIONS - RESIDENTIAL STREETS</b> <b>Access Place, Access Streets, Minor Collector (Closed Section)</b>	Detail <b>R-1.02</b>
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HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS APPROVED: <i>[Signature]</i> DATE: 12/4/20	<b>TYPICAL SECTIONS - RESIDENTIAL STREETS</b> <b>Access Place, Access Streets, Minor Collector (Closed Section)</b>	Detail <b>R-1.02</b>
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SPECIFICATION: 104 CATEGORY CODE: TIME	<b>Maryland Department of Transportation</b> <b>STATE HIGHWAY ADMINISTRATION</b> STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES <b>FLAGGING OPERATION/2-LANE, 2-WAY</b> <b>EQUALS THAN 40 MPH</b> STANDARD NO. MD 104.02-10
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mailboxes.com Visit us at: www.mailboxes.com

MODEL #3316 CLUSTER BOX UNIT (F SERIES)

AVAILABLE COLORS: SANDSTONE, BROWN, GREEN, BLACK, WHITE OR GRAY (FOR NON-RESIDENTIAL UNITS)

Established in 1936, Salsbury Industries is the industry leader in manufacturing and distributing quality mailboxes.

1300 E. 62ND STREET, LOS ANGELES, CA 90001  
 PHONE: (800) 624-5299  
 FAX: (800) 624-5299  
 email: engineer@mailboxes.com

TYPICAL CENTRAL MAIL DELIVERY BOX (CBU) OR APPROVED EQUAL

SALSBUURY INDUSTRIES MANUFACTURES CBU'S THAT ARE OFFICIALLY LICENSED BY THE U.S.P.S. SALSBUURY 3300 SERIES CLUSTER BOX UNITS ARE MANUFACTURED TO U.S.P.S. "F" SPECIFICATIONS. THEY ARE AN OFFICIALLY LICENSED PRODUCT OF THE U.S. POSTAL SERVICE FOR CENTRALIZED MAIL DELIVERY. LICENSE NUMBER 1CD508-08-B-0026

**CBU BOX LOCATION**  
 SUBJECT TO CHANGE  
 GERMAN ROAD:  
 - ONE 8 UNIT "CLUSTER BOX UNIT" HAS BEEN PROPOSED AT LINEAR PROFILE STATION 2+20 NEAR THE STREET LIGHT NEXT TO THE USE-IN-COMMON DRIVEWAY ENTRANCE.  
 - THIS CBU WILL SERVE THE 7 LOTS.

<b>OWNER</b> MARANTHA MAG. MANOR LLC 3675 PARK AVE., SUITE 301 ELLICOTT CITY, MD 21043 (410) 480-0023	<b>DEVELOPER</b> TRINITY HOMES MARYLAND, LLC 3675 PARK AVE., SUITE 301 ELLICOTT CITY, MD 21043 (410) 480-0023
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**FINAL ROAD CONSTRUCTION PLANS**

SITE DETAILS

**RIVER BIRCH MANOR**

LOTS 1-7 AND OPEN SPACE LOT 8  
 A SUBDIVISION OF TAX MAP 17 - PARCEL 385

L. 18205 / F. 247  
 TAX MAP: 17 GRID: 20  
 2ND ELECTION DISTRICT  
 DPZ REFERENCE: SEE SITE DATA

10039 GERMAN ROAD  
 ELLICOTT CITY, MD 21042

ZONED: R-20  
 PARCEL: 0385  
 HOWARD COUNTY, MARYLAND

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PROFESSIONAL CERTIFICATE

DESIGN BY: RHV  
 DRAWN BY: ES/MVP  
 CHECKED BY: RHV  
 DATE: SEPT. 2020  
 SCALE: AS SHOWN  
 W.O. NO.: 41856

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.

3 SHEET OF 15

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 12.4.20  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 12/4/20  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

*[Signature]* 11/28/20  
 CHIEF, BUREAU OF HIGHWAYS DATE





LEGEND:		ESC LEGEND:	
	EXISTING CONTOUR		LIMIT OF DISTURBANCE
	EXISTING PAVING		SUPER SILT FENCE
	EXISTING UTILITY		CLEAR WATER DIVERSION / EARTHDIKE
	EXISTING SANITARY MANHOLE		TREE PROTECTION FENCE
	EXISTING SANITARY LINE		PROP. TRAP CONTOUR
	EXISTING WATER LINE		DRAINAGE DIVIDE
	EXISTING TREE		GABION PROTECTION
	EXISTING SPECIMEN TREES		STABILIZED CONSTRUCTION ENTRANCE
	EXISTING TREELINE		REMOVABLE PUMP STATION
	EXISTING FENCE PROPERTY LINE (TBA)		BAFFLE BOARD
	ADJACENT PROPERTY LINE		DRAINAGE AREA POINT OF INVESTIGATION
	PROPERTY LINE		
	RIGHT-OF-WAY LINE		
	SOILS BOUNDARY		
	EXISTING WETLAND		
	EXISTING WETLAND BUFFER		
	EXISTING STREAM		
	EXISTING STREAM BUFFER		
	MODERATE SLOPES (1% - 24.99%)		
	STEEP SLOPES (25%+)		
	HIGHLY ERODIBLE SOILS		
	24' PRIVATE USE-IN-COMMON ACCESS EASEMENT		
	100 YEAR FLOODPLAIN		

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE: 11/26/20

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 12/14/20

OWNER/DEVELOPER CERTIFICATION:  
 I/WE CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

OWNER/DEVELOPER SIGNATURE: Michael P. Fawcett  
 DATE: 12/24/20  
 PRINTED NAME & TITLE: Michael P. Fawcett

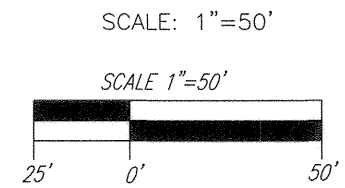
DESIGNER'S SIGNATURE: Robert H. Vogel  
 DATE: 10-6-20  
 MO REGISTRATION NO. 16193  
 R.L.S., OR R.L.A. (Circle one)

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 12/14/20

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 12/14/20

SOILS LEGEND					
HOWARD COUNTY SOILS MAP #13					
SYMBOL	NAME / DESCRIPTION	GROUP	K FACTOR	ERODIBLE	ACREAGE
GnB	GLENVILLE-BAILE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	0.49	YES	0.88
MdD	MANOR LOAM, 15 TO 25 PERCENT SLOPES	B	0.32	YES	0.02
Hs	HATBORO-CODORIUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	D	0.43	NO	2.48
GgC	GLENELG LOAM, 8 TO 15 PERCENT SLOPES	B	0.43	YES	3.71
GgB	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	B	0.37	YES	0.46

SOILS NOTES:  
 1. TAKEN FROM USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY  
 2. HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.  
 3. GnB AND Hs SOILS MAY CONTAIN HYDRIC COMPONENTS.  
 4. K FACTORS OBTAINED FROM THE HOWARD SOIL CONSERVATION DISTRICT WEBSITE  
<https://www.howardscd.org/documents> - DOCUMENT TITLED "K FACTORS (USE KW)



GRADING AND SOIL EROSION AND SEDIMENT CONTROL - PHASE 1

GENERAL NOTES:  
 - SILT FENCE RUNNING DOWNHILL SHALL BE CURLED UPHILL NO MORE THAN 35 FEET APART.  
 - ALL EARTH DIKES ARE TO BE PLACED IN WORKING ORDER AT THE END OF EACH WORKING DAY.  
 - DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.  
 - SEDIMENT CONTROLS INTERRUPTED BY INSTALLATION OF UTILITY LINES ARE TO BE REPAIRED IMMEDIATELY.  
 - STABILIZATION IS TO BE DONE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR AT THE INTERVALS REQUIRED BY THE 2011 STDS. & SPECS. WHICHEVER IS MORE RESTRICTIVE.  
 - FOR SOILS ON SITE THAT WOULD BE CONSIDERED HIGHLY ERODIBLE BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT, MORE STRINGENT SEEDING AND STABILIZATION METHODS MAY BE EXPECTED AT SITE DEVELOPMENT STAGE.  
 - REFER TO PLAN SHEET 06 FOR SEQUENCE OF CONSTRUCTION.  
 - REFER TO PLAN SHEET 07 FOR SEDIMENT TRAP STANDARD DETAILS.  
 - REFER TO PLAN SHEET 06 FOR STABILIZATION STANDARD DETAILS AND NOTES.

NOTE: LOCATE STOCKPILE AS SHOWN HEREON OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. STOCKPILES EXCEEDING 15 FEET IN HEIGHT SHALL BE BENCHED. SEE STABILIZATION SPEC'S SHEET 06.

OWNER: MARANATHA MAC MANOR LLC  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

DEVELOPER: TRINITY HOMES MARYLAND, LLC  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLANS  
 GRADING AND SOIL EROSION AND SEDIMENT CONTROL PLAN - PHASE 1  
 RIVER BIRCH MANOR  
 LOTS 1-7 AND OPEN SPACE LOT 8  
 A SUBDIVISION OF TAX MAP 17 - PARCEL 385  
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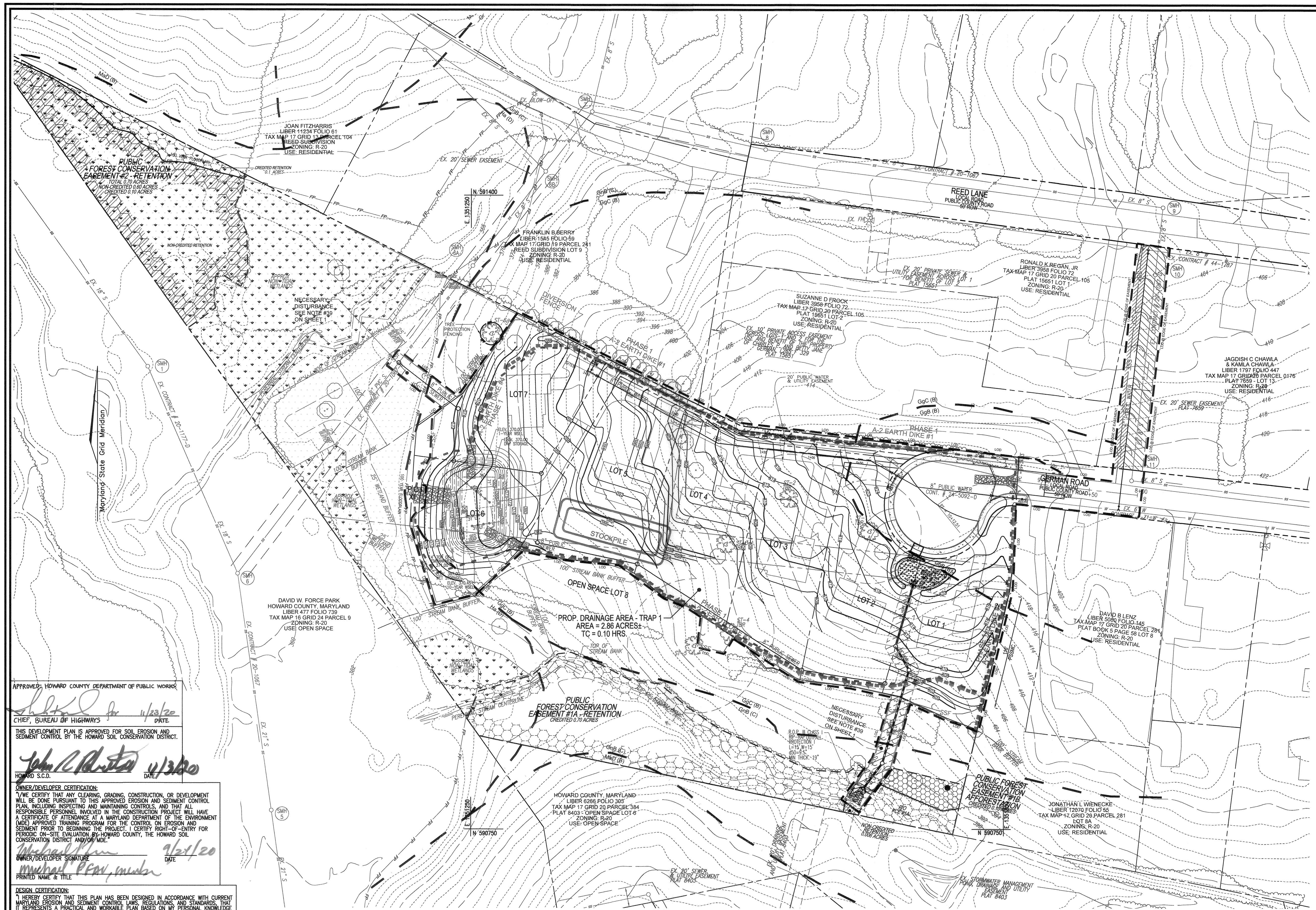
**VOGEL ENGINEERING**  
  
**TIMMONS GROUP**  
 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043  
 P: 410.461.7666 F: 410.461.8961 www.timmons.com

PROFESSIONAL CERTIFICATE  
 DESIGN BY: RHV  
 DRAWN BY: ES/MVP  
 CHECKED BY: RHV  
 DATE: SEPT. 2020  
 SCALE: AS SHOWN  
 W.O. NO.: 41656

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.

4 SHEET OF 15





**LEGEND:**

- EXISTING CONTOUR
- EXISTING PAVING
- EXISTING UTILITY
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING WATER LINE
- EXISTING TREE
- EXISTING SPECIMEN TREES
- EXISTING TREELINE
- EXISTING FENCE
- PROPERTY LINE (TBA)
- ADJACENT PROPERTY LINE
- RIGHT-OF-WAY LINE
- SOILS BOUNDARY
- EXISTING WETLAND
- EXISTING WETLAND BUFFER
- EXISTING STREAM
- EXISTING STREAM BUFFER
- MODERATE SLOPES (15% - 24.99%)
- STEEP SLOPES (25%+)
- 100 YEAR FLOODPLAIN
- EDGE OF PAVEMENT
- CURB & GUTTER
- CONTOUR
- TREELINE
- MICRO-BRETENTION FACILITY (M-6)
- PROPOSED SIDEWALK
- PROPOSED STORM DRAIN

**ESC LEGEND:**

- LOD - LIMIT OF DISTURBANCE
- SSF - SUPER SILT FENCE
- CLEAR WATER DIVERSION / EARTHDIKE
- TPF - TREE PROTECTION FENCE
- PROP. TRAP CONTOUR
- DRAINAGE DIVIDE
- GABION PROTECTION
- STABILIZED CONSTRUCTION ENTRANCE
- REMOVABLE PUMP STATION
- BAFFLE
- DRAINAGE AREA
- POINT OF INVESTIGATION
- SIP - STANDARD INLET PROTECTION

NOTE: LOCATE STOCKPILE AS SHOWN HEREON OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. STOCKPILES EXCEEDING 15 FEET IN HEIGHT SHALL BE BENCHED. SEE STABILIZATION SPEC'S SHEET 06.

NOTE: PHASE 1 CONTROLS (GREYSCALE) SHALL BE RELOCATED AS FOR THEIR CONTINUED USE AS CONSTRUCTION CONTINUES.

**OWNER**  
MARAMATHA MAG. MANOR LLC  
3675 PARK AVE., SUITE 301  
ELLICOTT CITY, MD 21043  
(410) 480-0023

**DEVELOPER**  
TRINITY HOMES MARY LAND, LLC  
3675 PARK AVE., SUITE 301  
ELLICOTT CITY, MD 21043  
(410) 480-0023

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
CHIEF, BUREAU OF HIGHWAYS  
DATE: 4/23/20

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE: 12/4/20

DESIGNER'S SIGNATURE: ROBERT H. VOGEL  
DATE: 10-6-20

DESIGNER'S TITLE: ROBERT H. VOGEL  
MD REGISTRATION NO. 16193  
R.L.S., OR R.L.A. (circle one)

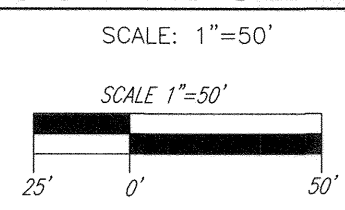
**SOILS LEGEND**  
HOWARD COUNTY SOILS MAP #13

SYMBOL	NAME / DESCRIPTION	GROUP	K FACTOR	ERODIBLE	ACREAGE
GnB	GLENNVILLE-BAILE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	0.49	YES	0.88
MdD	MANOR LOAM, 15 TO 25 PERCENT SLOPES	B	0.32	YES	0.02
Ho	HATBORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	D	0.43	NO	2.48
GgC	GLENELG LOAM, 8 TO 15 PERCENT SLOPES	B	0.43	YES	3.71
GgB	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	B	0.37	YES	0.46

**SOILS NOTES:**

- TAKEN FROM USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY
- HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.
- GnB and Ho SOILS MAY CONTAIN HYDRIC COMPONENTS.
- K FACTORS OBTAINED FROM THE HOWARD SOIL CONSERVATION DISTRICT WEBSITE <https://www.howardscd.org/documents> - DOCUMENT TITLED "K FACTORS (USE KW)

**GRADING AND SOIL EROSION AND SEDIMENT CONTROL - PHASE 2**



**GENERAL NOTES:**

- SILT FENCE RUNNING DOWNHILL SHALL BE CURLED UPHILL NO MORE THAN 35 FEET APART.
- ALL EARTH DIKES ARE TO BE PLACED IN WORKING ORDER AT THE END OF EACH WORKING DAY.
- DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
- SEDIMENT CONTROLS INTERRUPTED BY INSTALLATION OF UTILITY LINES ARE TO BE REPAIRED IMMEDIATELY.
- STABILIZATION IS TO BE DONE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR AT THE INTERVALS REQUIRED BY THE 2011 STDs. & SPECS. WHICHEVER IS MORE RESTRICTIVE.
- FOR SOILS ONSITE THAT WOULD BE CONSIDERED HIGHLY ERODIBLE BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT. MORE STRINGENT SEEDING AND STABILIZATION METHODS MAY BE EXPECTED AT SITE DEVELOPMENT STAGE.
- REFER TO PLAN SHEET 06 FOR SEQUENCE OF CONSTRUCTION.
- REFER TO PLAN SHEET 07 FOR SEDIMENT TRAP STANDARD DETAILS.
- REFER TO PLAN SHEET 06 FOR STABILIZATION STANDARD DETAILS AND NOTES.

NO. \_\_\_\_\_ REVISION \_\_\_\_\_ DATE \_\_\_\_\_

**FINAL ROAD CONSTRUCTION PLANS**  
GRADING AND SOIL EROSION AND SEDIMENT CONTROL PLAN - PHASE 2  
**RIVER BIRCH MANOR**  
LOTS 1-7 AND OPEN SPACE LOT 8  
A SUBDIVISION OF TAX MAP 17 - PARCEL 385

L. 18205 / F. 247  
TAX MAP: 17 GRID: 20  
PARCEL: 0385  
DPZ REFERENCE: SEE SITE DATA  
10039 GERMAN ROAD  
ELLICOTT CITY, MD 21042  
HOWARD COUNTY, MARYLAND  
ZONED: R-20

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PROFESSIONAL CERTIFICATE  
DESIGN BY: R.H.V.  
DRAWN BY: ES/M.V.P.  
CHECKED BY: R.H.V.  
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W.O. NO.: 41656

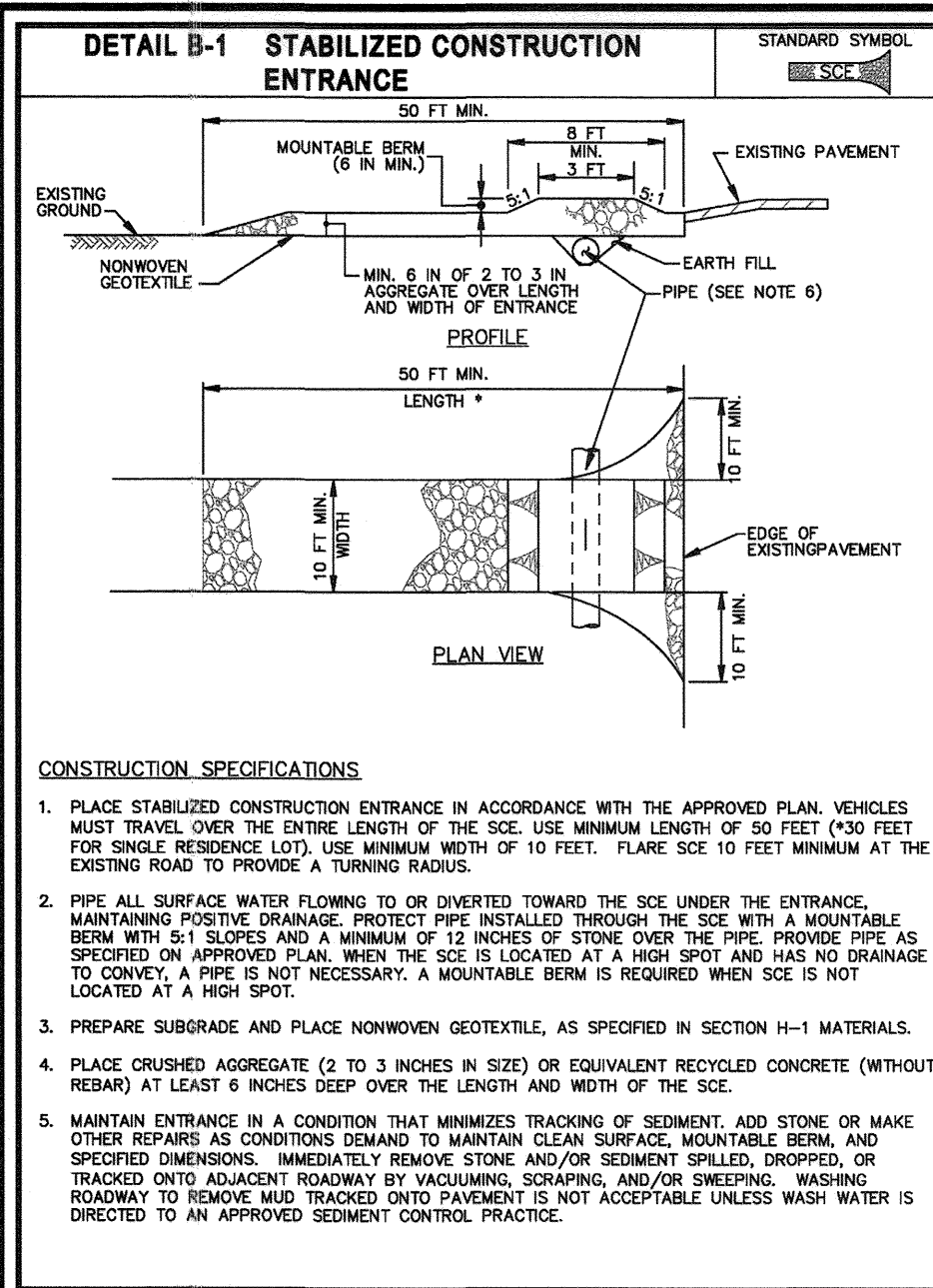
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5 SHEET OF 15



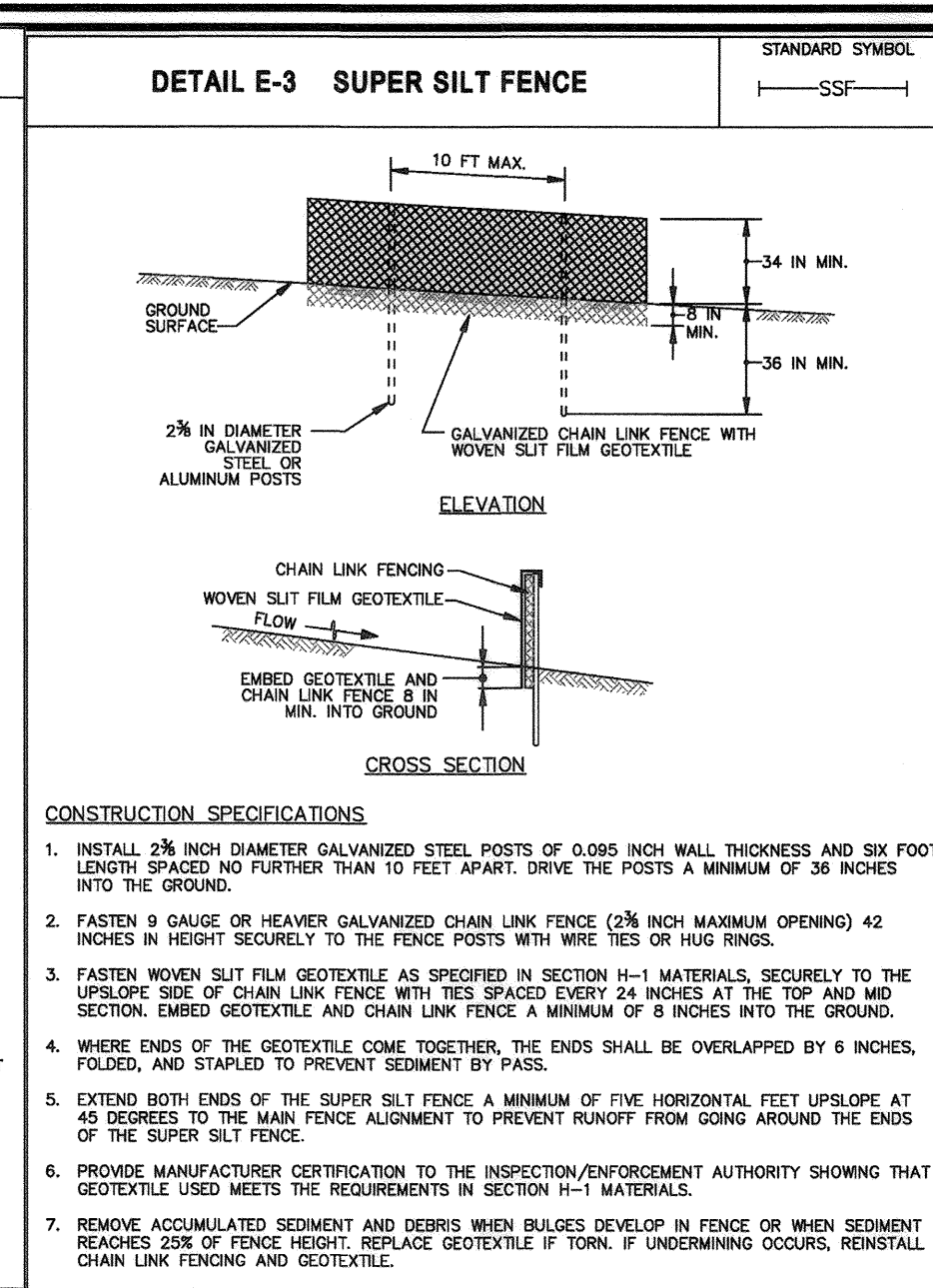






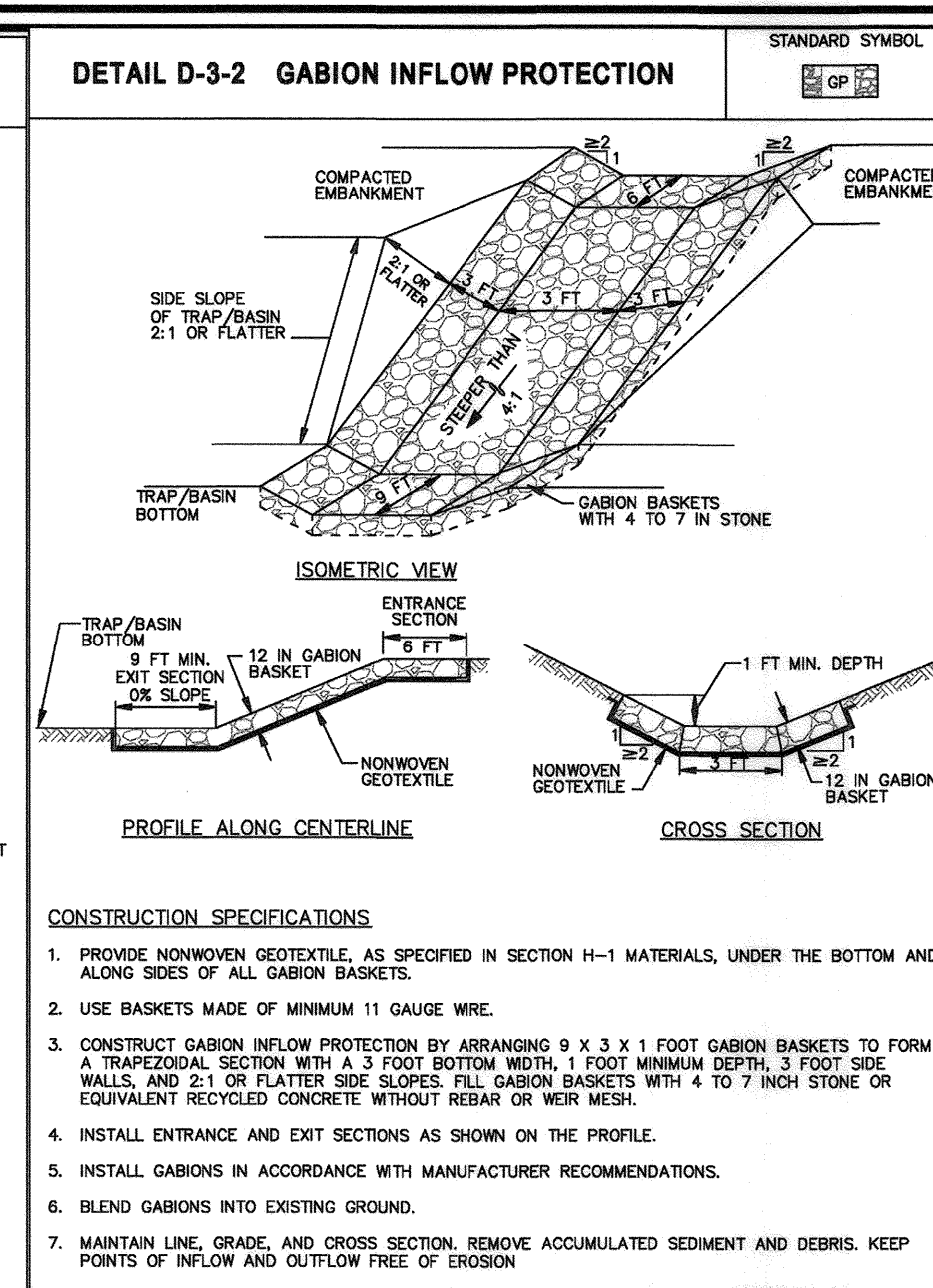
**CONSTRUCTION SPECIFICATIONS**

- PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SIDE. USE MINIMUM LENGTH OF 50 FEET (40 FEET FOR SINGLE RESIDENCE LOTS). USE MINIMUM WIDTH OF 10 FEET. FLARE SIDE TO 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
- PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SIDE UNDER THE ENTRANCE. MAINTAIN POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SIDE WITH A MOUNTABLE BEAM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SIDE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BEAM IS REQUIRED WHEN SIDE IS NOT LOCATED AT A HIGH SPOT.
- PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
- PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SIDE.
- MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT, AND STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE. MAINTAIN AREA BEHIND ENTRANCE TO ADJACENT ROADWAY BY WASHING, SCRAPING, AND/OR SEEDING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.



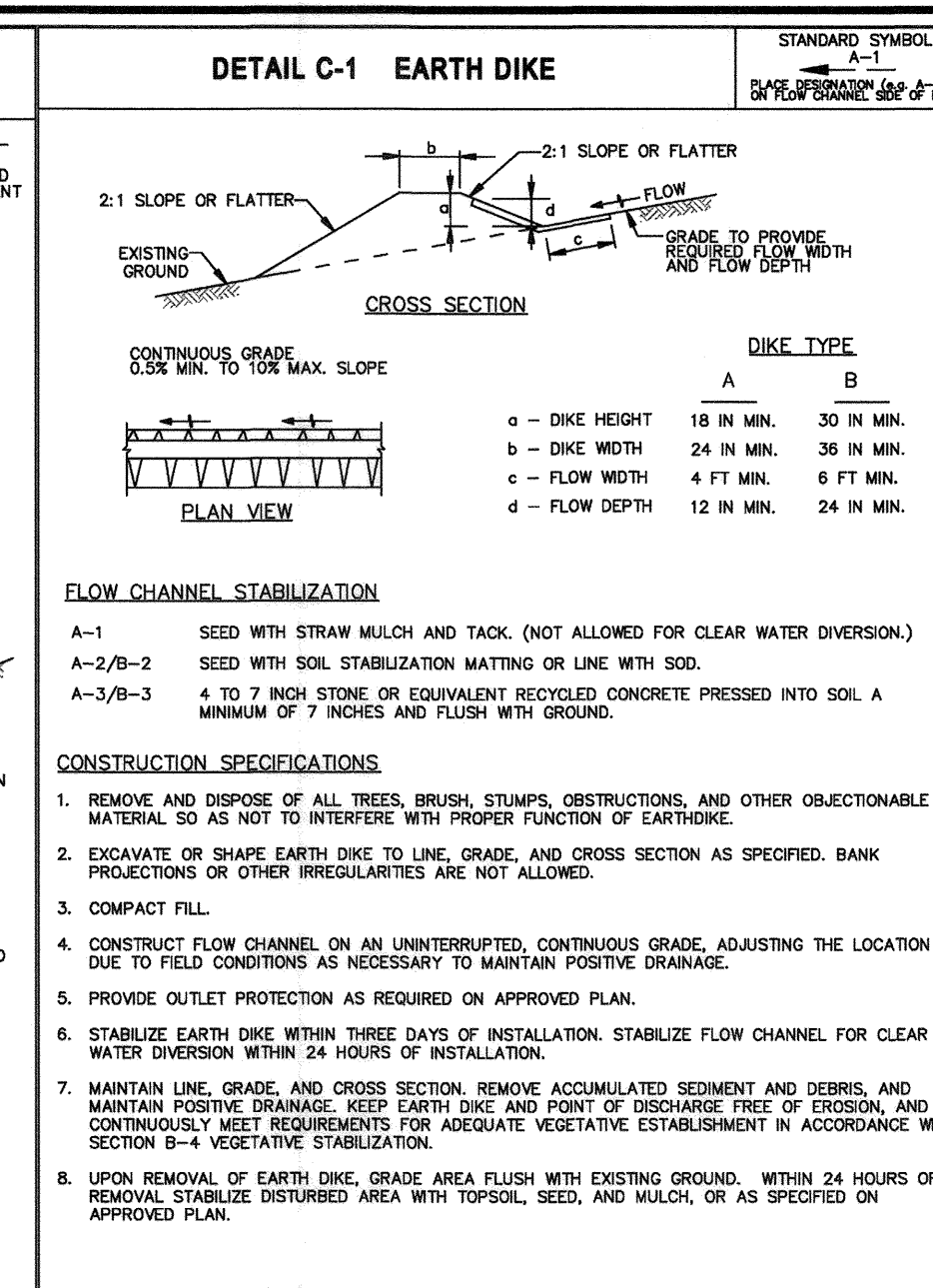
**CONSTRUCTION SPECIFICATIONS**

- INSTALL 2% IN DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
- FASTEN 2% IN GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2% INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
- FASTEN WOVEN SILT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSIDE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
- WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
- EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPLOUSE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
- PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
- REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 20% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.



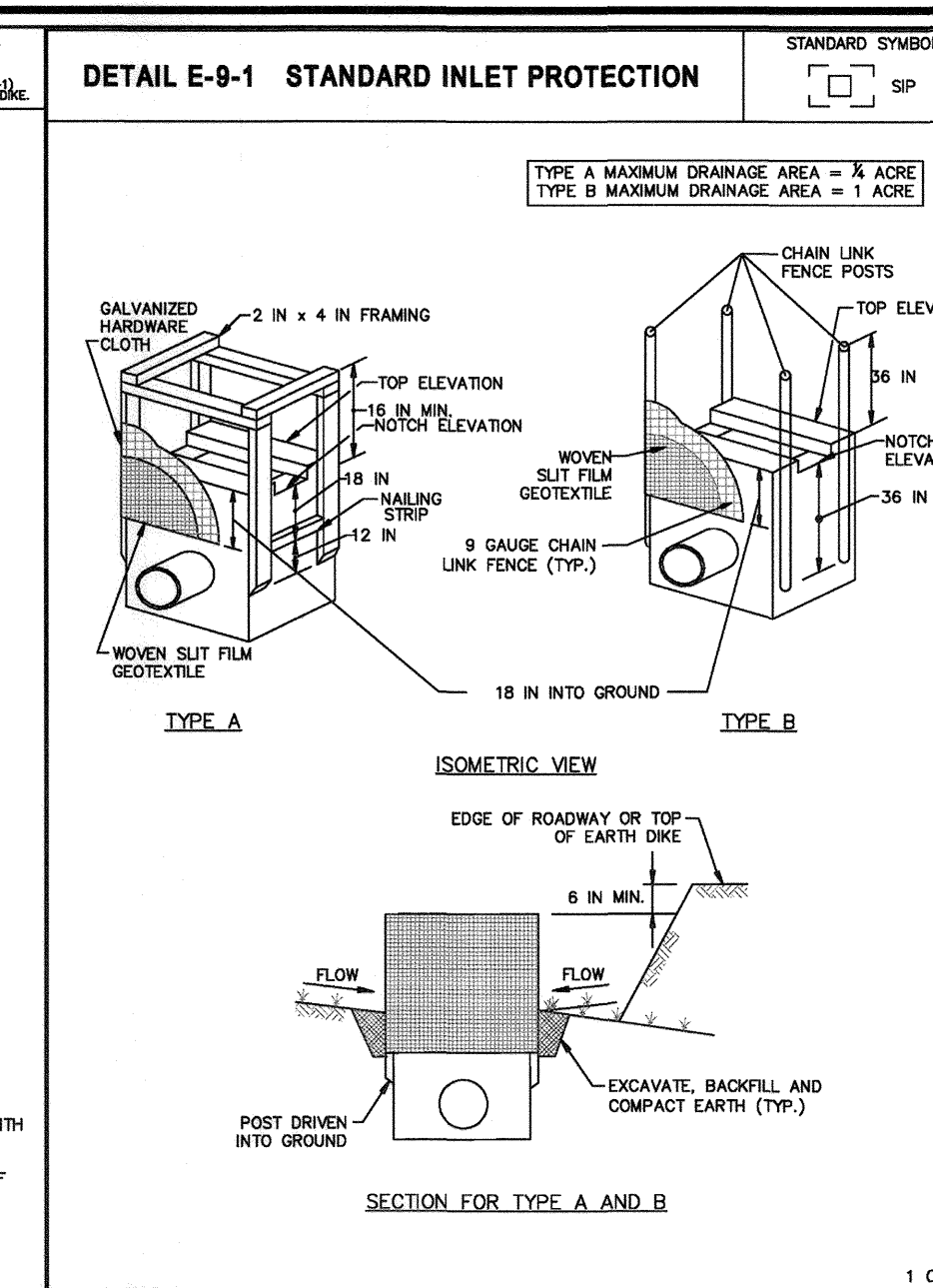
**CONSTRUCTION SPECIFICATIONS**

- PROVIDE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER THE BOTTOM AND ALONG SIDES OF ALL GABION BASKETS.
- USE BASKETS MADE OF MINIMUM 11 GAUGE WIRE.
- CONSTRUCT GABION INFLOW PROTECTION BY ARRANGING 3 X 3 X 1 FOOT GABION BASKETS TO FORM A TRIANGULAR SECTION WITH A 3 FOOT BOTTOM WIDTH, 1 FOOT MINIMUM DEPTH, 3 FOOT SIDE WALLS, AND 2:1 ON FLATTER SIDE SLOPES. FILL GABION BASKETS WITH 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE WITHOUT REBAR OR WIRE MESH.
- INSTALL ENTRANCE AND EXIT SECTIONS AS SHOWN ON THE PROFILE.
- INSTALL GABIONS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
- BLEND GABIONS INTO EXISTING GROUND.
- MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. KEEP POINTS OF INFLOW AND OUTFLOW FREE OF EROSION.



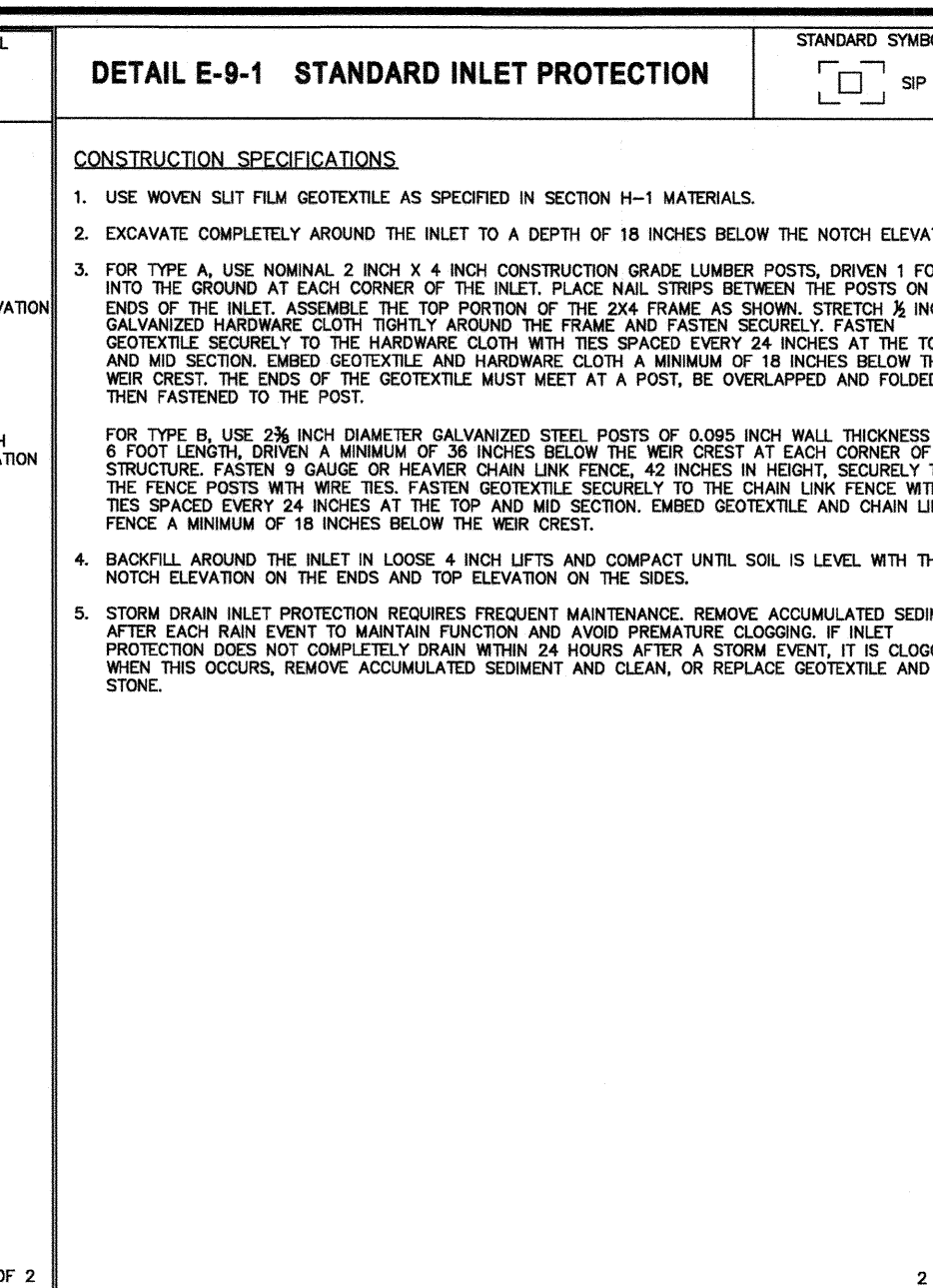
**CONSTRUCTION SPECIFICATIONS**

- REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIALS SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF EARTH DIKE.
- EXCAVATE OR SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
- COMPACT FILL.
- CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
- PROVIDE OUTFLET PROTECTION AS REQUIRED ON APPROVED PLAN.
- STABILIZE EARTH DIKE WITHIN THREE DAYS OF INSTALLATION. STABILIZE FLOW CHANNEL FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.
- MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP EARTH DIKE AND POINT OF DISCHARGE FREE OF OBSTRUCTION, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
- UPON REMOVAL OF EARTH DIKE, GRADE PLANE WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL, STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.



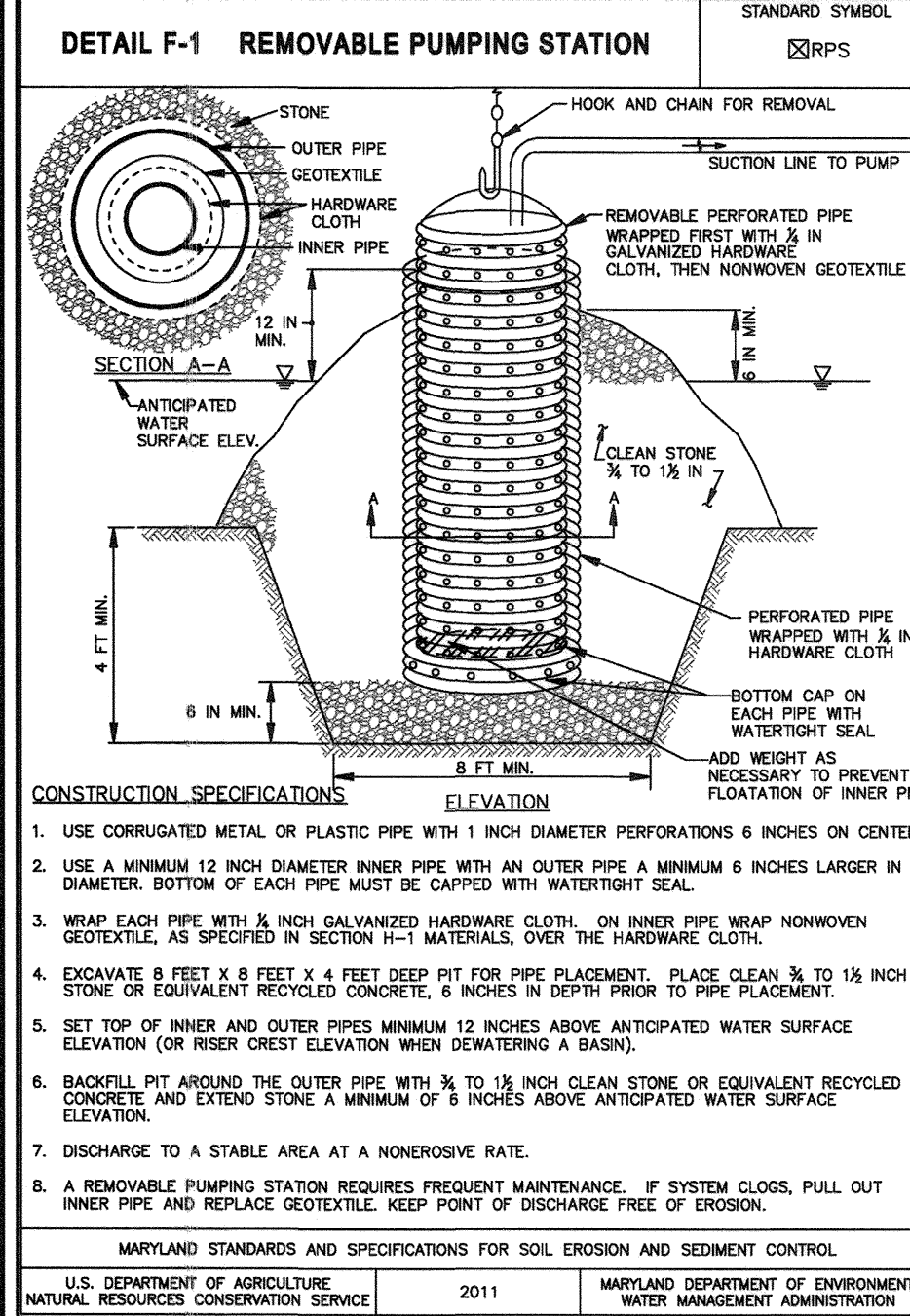
**CONSTRUCTION SPECIFICATIONS**

- USE WOVEN SILT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
- EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
- FOR TYPE A, USE NOMINAL 2 INCH X 4 INCH CONSTRUCTION GRADE LUMBER POSTS, DRIVEN 1 FOOT INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2x4 FRAME AS SHOWN. STRAP 1x4 INCH GALVANIZED HARDWARE CLOTH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. FASTEN GEOTEXTILE SECURELY TO THE HARDWARE CLOTH WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18 INCHES BELOW THE NOTCH ELEVATION. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED TO THE POST.
- BACKFILL AROUND THE INLET IN LOOSE 4 INCH LUMBER AND COMPACT UNTIL SOIL IS LEVEL WITH THE NOTCH ELEVATION ON THE ENDS AND TOP ELEVATION ON THE SIDES.
- STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH MAJOR EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOSING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.



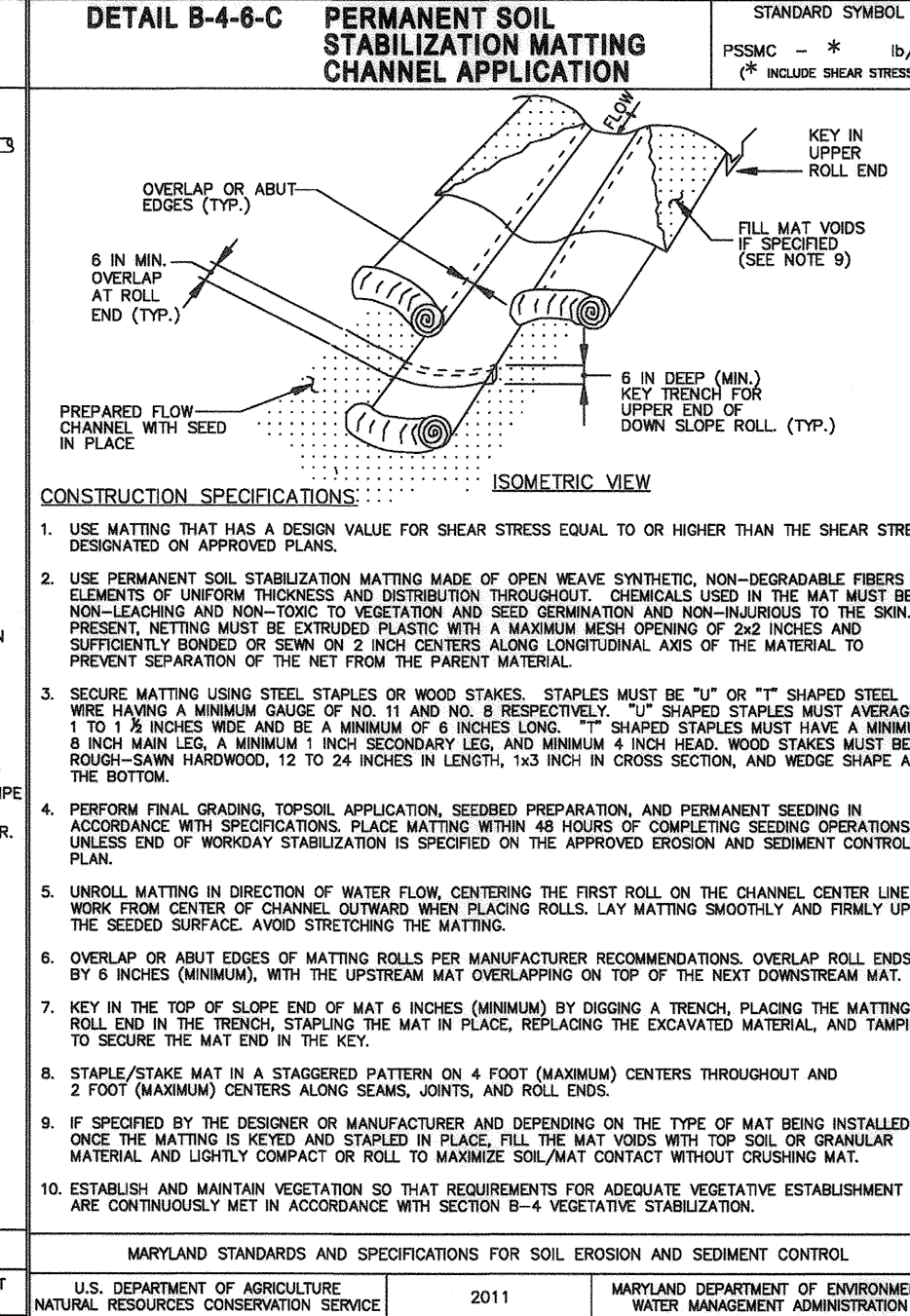
**CONSTRUCTION SPECIFICATIONS**

- CONSTRUCT TRAP IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE AVOIDED.
- CLEAR, GRUB, AND STRIP ANY VEGETATION AND ROOT MAT FROM THE AREA UNDER THE EMBANKMENT AND TRAP BOTTOM.
- USE FILL MATERIAL FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL FOR THE EMBANKMENT.
- CONSTRUCT TOP OF EMBANKMENT 1 FOOT MINIMUM ABOVE WEIR CREST. COMPACT THE EMBANKMENT BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
- MAKE ALL CUT AND FILL SLOPES 2:1 OR FLATTER.
- PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE BOTTOM AND SIDES OF OUTLET AND APRON PRIOR TO PLACEMENT OF RIPRAP. OVERLAP SECTIONS OF GEOTEXTILE AT LEAST 1 FOOT WITH THE SECTION NEARER TO THE TRAP PLACED ON TOP. EMBED GEOTEXTILE AT LEAST 6 INCHES INTO EXISTING GROUND AT ENTRANCE OF OUTLET CHANNEL.
- USE CLEAN 4 TO 7 INCH RIPRAP TO CONSTRUCT THE WEIR. USE CLASS I RIPRAP FOR THE APRON. USE OF RECYCLED CONCRETE EQUIVALENT IS ACCEPTABLE.
- PLACE 1 FOOT OF CLEAN 3/4 TO 1 1/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE ON THE UPSTREAM FACE OF THE WEIR.
- CONSTRUCT AND MAINTAIN THE OUTLET ACCORDING TO APPROVED PLAN, AND IN SUCH A MANNER THAT EROSION AT OR BELOW THE OUTLET DOES NOT OCCUR.
- STABILIZE THE EMBANKMENT AND INTERIOR SLOPES WITH SEED AND MULCH. STABILIZE POINTS OF CONCENTRATED INFLOW AS SHOWN ON APPROVED PLAN.
- REMOVE SEDIMENT AND RESTORE TRAP TO ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO CLEANOUT ELEVATION (50% OF NET STORAGE DEPTH). DEPOSIT REMOVED SEDIMENT IN AN APPROVED AREA AND IN SUCH A MANNER THAT IT WILL NOT DRAIN. KEEP POINTS OF INFLOW AND OUTFLOW AS WELL AS INTERIOR OF THE TRAP FREE FROM EROSION, AND REMOVE ACCUMULATED DEBRIS. MAINTAIN EMBANKMENTS TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. REMOVE ANY TREES, STUMPS, OR OTHER OBSTRUCTIONS GROWING ON EMBANKMENT OR NEAR PRINCIPAL SPILLWAY. MAINTAIN LINE, GRADE, AND CROSS SECTION.
- WHEN DETAHERING TRAP, PASS REMOVED WATER THROUGH AN APPROVED SEDIMENT CONTROL.
- UPON REMOVAL, GRADE AND STABILIZE THE AREA OCCUPIED BY TRAP.



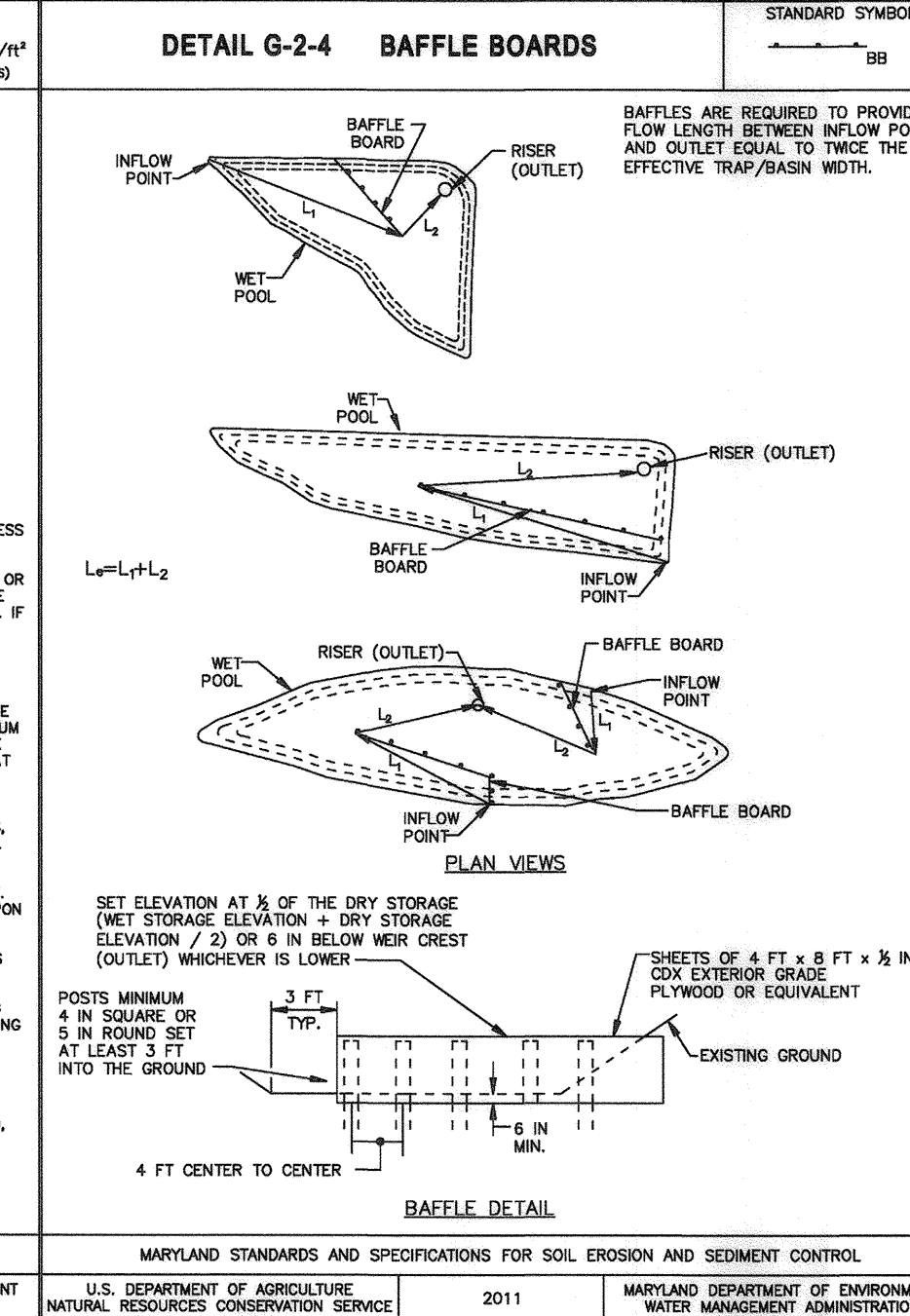
**CONSTRUCTION SPECIFICATION**

- USE CORRUGATED METAL OR PLASTIC PIPE WITH 12 INCH DIAMETER PERFORATIONS 6 INCHES ON CENTER.
- USE A MINIMUM 12 INCH DIAMETER INNER PIPE WITH AN OUTER PIPE A MINIMUM 6 INCHES LARGER IN DIAMETER. BOTTOM OF EACH PIPE MUST BE CAPPED WITH WATERPROOF SEAL.
- WRAP EACH PIPE WITH 1/2 INCH GALVANIZED HARDWARE CLOTH. ON INNER PIPE, WRAP NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS. AVOID STRETCHING THE MATTING.
- EXCAVATE 8 FEET X 8 FEET X 4 FEET DEEP PIT FOR PIPE PLACEMENT. PLACE CLEAN 3/4 TO 1 1/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE, 6 INCHES IN DEPTH PRIOR TO PIPE PLACEMENT.
- SET TOP OF INNER AND OUTER PIPES MINIMUM 12 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION (OR RISER CREST ELEVATION WHEN DETAHERING A BASIN).
- BACKFILL PIT AROUND THE OUTER PIPE WITH 1/2 INCH GALVANIZED STEEL OR EQUIVALENT RECYCLED CONCRETE AND EXTEND STONE A MINIMUM OF 8 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
- DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
- A REMOVABLE PUMPING STATION REQUIRES FREQUENT MAINTENANCE. IF SYSTEM CLOGS, PULL OUT INNER PIPE AND REPLACE GEOTEXTILE. KEEP POINT OF DISCHARGE FREE OF EROSION.



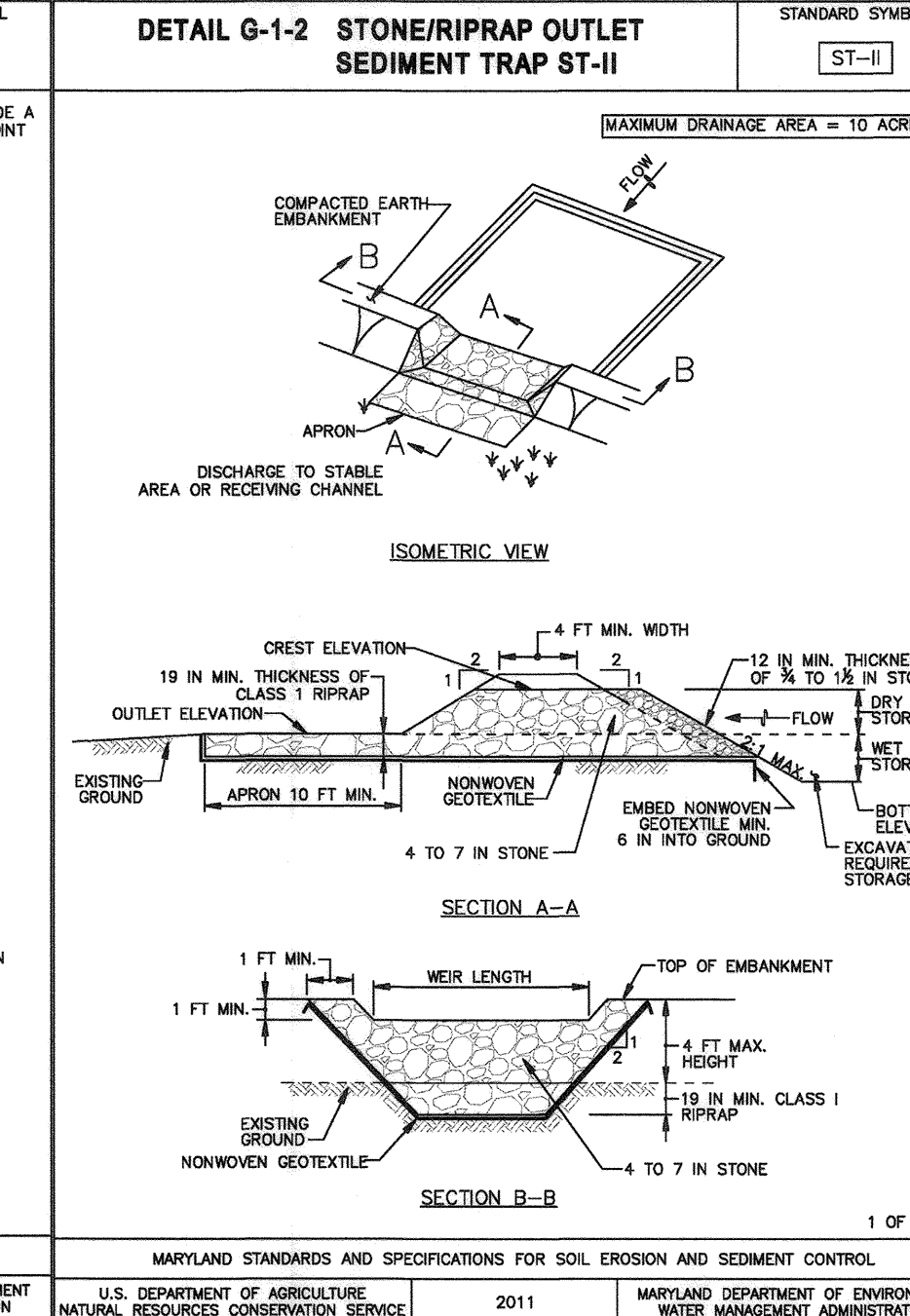
**CONSTRUCTION SPECIFICATIONS**

- USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLAN.
- USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-HARMFUL TO THE SOIL. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2/32 INCHES AND SUFFICIENTLY BONDED OR SOWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXES OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
- SECURE MATTING USING STEEL STAPLES OR WOOD STAPLES. STAPLES MUST BE 1/4" OR 1/8" SHARDED STEEL WIRE HAVING A MINIMUM GAUGE OF 11 AND NO. 10 RESPECTIVELY. SHARDED STAPLES MUST AVERAGE 1 TO 1 1/2 INCHES LONGER THAN THE MATTING. STAPLES MUST BE PLACED AT 12 INCHES ON CENTER AND 8 INCHES MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 1/4 INCH WOOD STAPLES MUST BE ROUGH-SHARDED HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1/32 INCH IN CROSS SECTION, AND WIDE SHAPE AT THE BOTTOM.
- PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDING PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS. UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
- UNROLL MATTING IN DIRECTION OF WATER FLOW. PLACING THE FIRST ROLL ON THE CHANNEL CENTER. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MATTING SHOOTING AND FIRMLY UPON THE SECOND SURFACE. AVOID STRETCHING THE MATTING.
- OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 8 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
- KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
- STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
- IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEPT AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
- ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.



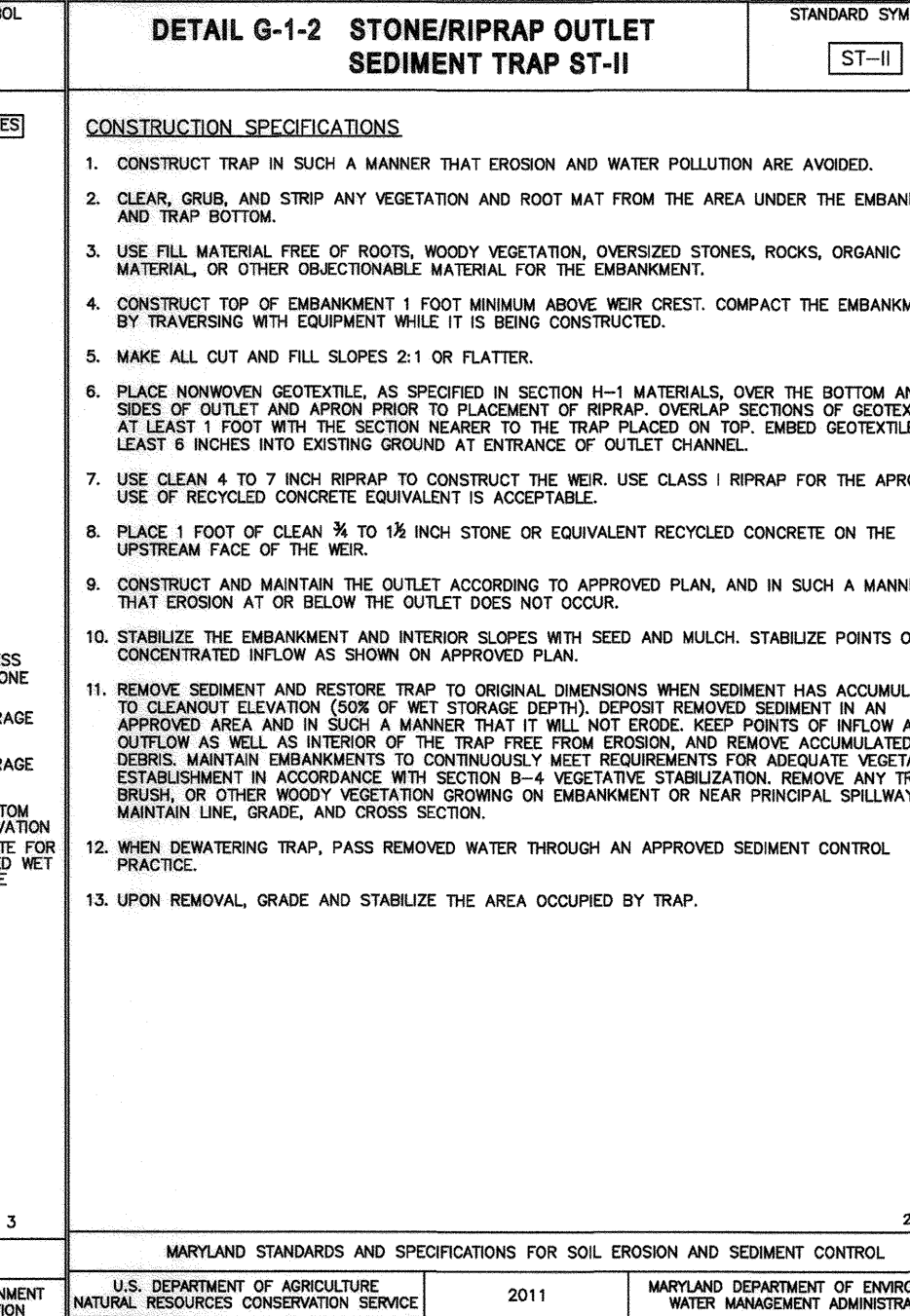
**CONSTRUCTION SPECIFICATIONS**

- BAFFLES ARE REQUIRED TO PROVIDE A FLOW LENGTH BETWEEN INFLOW POINT AND OUTFLET EQUAL TO TWICE THE EFFECTIVE TRAP/BASIN WIDTH.
- SET ELEVATION AT 1/2 OF DRY STORAGE (NET STORAGE) ELEVATION. IF DRY STORAGE ELEVATION 7/32 OR 8/16 BELOW WEIR CREST (OUTLET) WHICHEVER IS LOWER.
- POSTS MINIMUM 4 IN SQUARE OR 2 IN ROUND SET AT LEAST 3 FT INTO THE GROUND.
- BAFFLE DETAIL



**CONSTRUCTION SPECIFICATIONS**

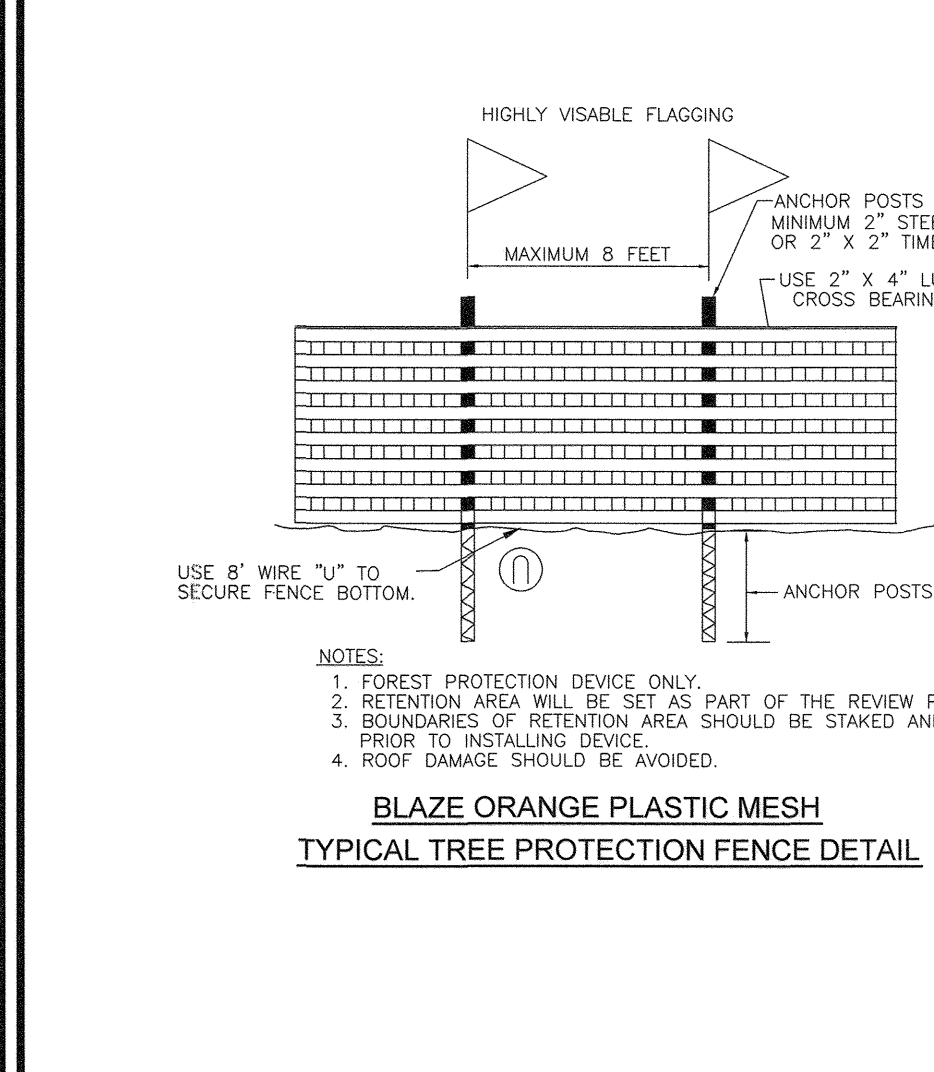
- CONSTRUCT TRAP IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE AVOIDED.
- CLEAR, GRUB, AND STRIP ANY VEGETATION AND ROOT MAT FROM THE AREA UNDER THE EMBANKMENT AND TRAP BOTTOM.
- USE FILL MATERIAL FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL FOR THE EMBANKMENT.
- CONSTRUCT TOP OF EMBANKMENT 1 FOOT MINIMUM ABOVE WEIR CREST. COMPACT THE EMBANKMENT BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
- MAKE ALL CUT AND FILL SLOPES 2:1 OR FLATTER.
- PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE BOTTOM AND SIDES OF OUTLET AND APRON PRIOR TO PLACEMENT OF RIPRAP. OVERLAP SECTIONS OF GEOTEXTILE AT LEAST 1 FOOT WITH THE SECTION NEARER TO THE TRAP PLACED ON TOP. EMBED GEOTEXTILE AT LEAST 6 INCHES INTO EXISTING GROUND AT ENTRANCE OF OUTLET CHANNEL.
- USE CLEAN 4 TO 7 INCH RIPRAP TO CONSTRUCT THE WEIR. USE CLASS I RIPRAP FOR THE APRON. USE OF RECYCLED CONCRETE EQUIVALENT IS ACCEPTABLE.
- PLACE 1 FOOT OF CLEAN 3/4 TO 1 1/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE ON THE UPSTREAM FACE OF THE WEIR.
- CONSTRUCT AND MAINTAIN THE OUTLET ACCORDING TO APPROVED PLAN, AND IN SUCH A MANNER THAT EROSION AT OR BELOW THE OUTLET DOES NOT OCCUR.
- STABILIZE THE EMBANKMENT AND INTERIOR SLOPES WITH SEED AND MULCH. STABILIZE POINTS OF CONCENTRATED INFLOW AS SHOWN ON APPROVED PLAN.
- REMOVE SEDIMENT AND RESTORE TRAP TO ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO CLEANOUT ELEVATION (50% OF NET STORAGE DEPTH). DEPOSIT REMOVED SEDIMENT IN AN APPROVED AREA AND IN SUCH A MANNER THAT IT WILL NOT DRAIN. KEEP POINTS OF INFLOW AND OUTFLOW AS WELL AS INTERIOR OF THE TRAP FREE FROM EROSION, AND REMOVE ACCUMULATED DEBRIS. MAINTAIN EMBANKMENTS TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. REMOVE ANY TREES, STUMPS, OR OTHER OBSTRUCTIONS GROWING ON EMBANKMENT OR NEAR PRINCIPAL SPILLWAY. MAINTAIN LINE, GRADE, AND CROSS SECTION.
- WHEN DETAHERING TRAP, PASS REMOVED WATER THROUGH AN APPROVED SEDIMENT CONTROL.
- UPON REMOVAL, GRADE AND STABILIZE THE AREA OCCUPIED BY TRAP.



**CONSTRUCTION SPECIFICATIONS**

- CONSTRUCT TRAP IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE AVOIDED.
- CLEAR, GRUB, AND STRIP ANY VEGETATION AND ROOT MAT FROM THE AREA UNDER THE EMBANKMENT AND TRAP BOTTOM.
- USE FILL MATERIAL FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL FOR THE EMBANKMENT.
- CONSTRUCT TOP OF EMBANKMENT 1 FOOT MINIMUM ABOVE WEIR CREST. COMPACT THE EMBANKMENT BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
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- UPON REMOVAL, GRADE AND STABILIZE THE AREA OCCUPIED BY TRAP.

STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II, TRAP NO. 1	STANDARD SYMBOL
DRAINAGE AREA - INITIAL	0.51 ACRES
DRAINAGE AREA - INTERIM	2.86 ACRES
DRAINAGE AREA - FINAL	2.86 ACRES
TOTAL STORAGE REQUIRED	10,296 CF
TOTAL STORAGE PROVIDED	17,790 CF
NET STORAGE REQUIRED	5,148 CF
NET STORAGE PROVIDED	5,721 CF
DRY STORAGE REQUIRED	5,148 CF
DRY STORAGE PROVIDED	12,069 CF
EXISTING GROUND ELEVATION AT OUTLET (NET STORAGE ELEVATION)	367.00 FT
TRAP BOTTOM ELEVATION	365.00 FT
TRAP BOTTOM DIMENSIONS	34 x 71 FT x FT
WEIR LENGTH	12 FT
WEIR CREST (DRY STORAGE) ELEVATION	370.00 FT
CLEANOUT ELEVATION	368.00 FT
TOP OF EMBANKMENT ELEVATION	371.00 FT
SIDE SLOPE	2:1 H:V RATIO
EMBANKMENT TOP WIDTH	4' FT
OUTLET PROTECTION - LENGTH	36' FT
OUTLET PROTECTION - DEPTH	19' IN

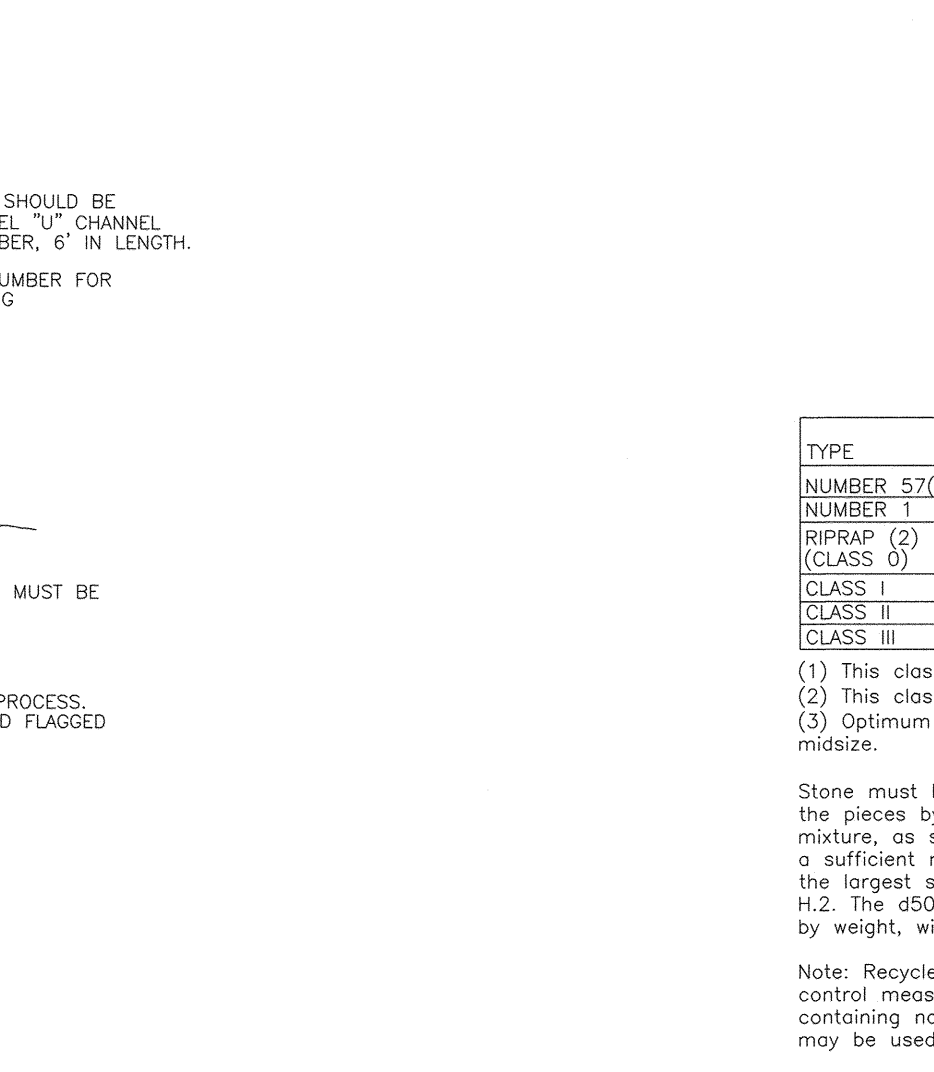


**DESIGN CERTIFICATION:**

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL STANDARDS AND STANDARDS THAT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

DESIGNER'S SIGNATURE: *Robert H. Vogel* DATE: 12/11/20

ROBERT H. VOGEL, MD REGISTRATION NO. 16193, R.L.S., OR R.L.A. (circle one)



**OWNER/DEVELOPER CERTIFICATION:**

I/WE CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING THIS MAINTAINING CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT, AND/OR MDE.

OWNER/DEVELOPER SIGNATURE: *Michael P. Feary* DATE: 12/11/20

MICHAEL P. FEARY, OWNER

**TABLE H.2: STONE SIZE**

TYPE	SIZE RANGE	d50	d100	AASHTO	MIDSIZE WEIGHT (%)
NUMBER 5(1)	1/2 in to 1 in	3/8 in	1/2 in	M-4.3	N/A
NUMBER 1	2 in to 3 in	2 in	3 in	M-4.3	N/A
RIPRAP (2)	4 in to 7 in	5 in	7 in	N/A	N/A
CLASS I	N/A	9 in	15 in	N/A	40lb
CLASS II	N/A	12 in	24 in	N/A	200lb
CLASS III	N/A	18 in	36 in	N/A	900lb

(1) This classification is to be used on the upstream face of stone outlets and check dams.  
 (2) This classification is to be used for gabions.  
 (3) Optimum gradation is 50 percent of the stone being above and 50 percent below the midsize.

Stone must be composed of a well graded mixture of stone sized so that fifty (50) percent of the pieces by weight are larger than the size determined by using the charts. A well graded mixture, as set herein, is defined as a mixture composed primarily of larger sizes but with a sufficient mixture of other sizes to fill the smaller voids between the stones. The diameter of the largest stone in such a mixture must not exceed the respective d100 selected from Table H.2. The d50 refers to the median diameter of the stone. This is the size for which 50 percent, by weight, will be smaller and 50 percent will be larger.

Notes: Recycled concrete equivalent may be substituted for all stone classifications for temporary control measures only. Concrete broken into the sizes meeting the appropriate classification, containing no steel reinforcement, and having a minimum density of 150 pounds per cubic foot may be used as an equivalent.

**CONSTRUCTION SPECIFICATIONS**

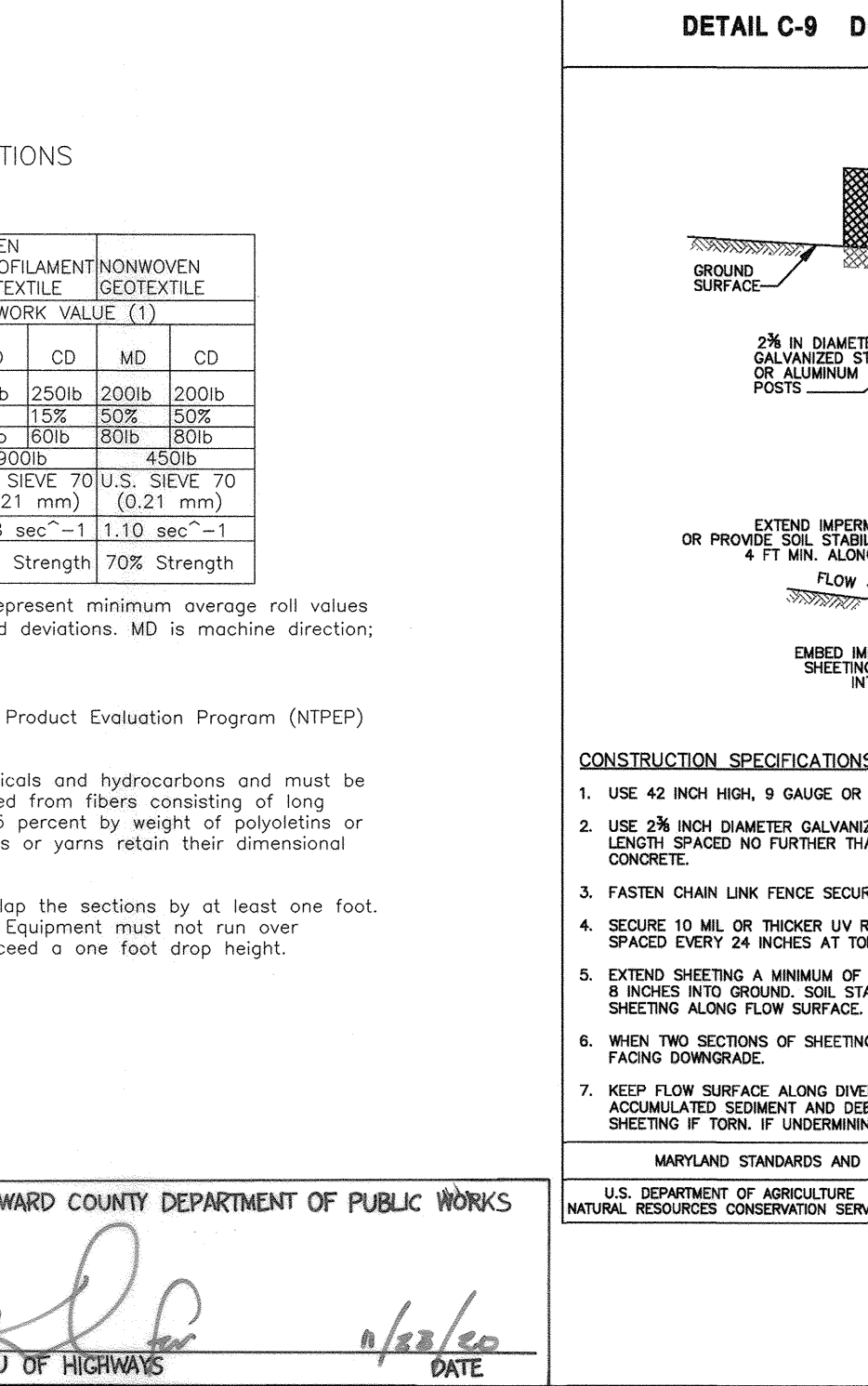
- CONSTRUCT TRAP IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE AVOIDED.
- CLEAR, GRUB, AND STRIP ANY VEGETATION AND ROOT MAT FROM THE AREA UNDER THE EMBANKMENT AND TRAP BOTTOM.
- USE FILL MATERIAL FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL FOR THE EMBANKMENT.
- CONSTRUCT TOP OF EMBANKMENT 1 FOOT MINIMUM ABOVE WEIR CREST. COMPACT THE EMBANKMENT BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
- MAKE ALL CUT AND FILL SLOPES 2:1 OR FLATTER.
- PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE BOTTOM AND SIDES OF OUTLET AND APRON PRIOR TO PLACEMENT OF RIPRAP. OVERLAP SECTIONS OF GEOTEXTILE AT LEAST 1 FOOT WITH THE SECTION NEARER TO THE TRAP PLACED ON TOP. EMBED GEOTEXTILE AT LEAST 6 INCHES INTO EXISTING GROUND AT ENTRANCE OF OUTLET CHANNEL.
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- WHEN DETAHERING TRAP, PASS REMOVED WATER THROUGH AN APPROVED SEDIMENT CONTROL.
- UPON REMOVAL, GRADE AND STABILIZE THE AREA OCCUPIED BY TRAP.

**H-1 STANDARDS AND SPECIFICATIONS FOR MATERIALS**

Table H.1: Geotextile Fabrics

PROPERTY	TEST METHOD	WOVEN SILT FILM GEOTEXTILE		MONOFILAMENT GEOTEXTILE		NONWOVEN GEOTEXTILE	
		MD	CD	MD	CD	MD	CD
Grab Tensile Strength	ASTM D-4632	200lb	200lb	170lb	250lb	200lb	200lb
Grab Tensile Elongation	ASTM D-4632	15%	10%	15%	15%	50%	50%
Trapezoidal Tear Strength	ASTM D-5533	75lb	100lb	80lb	80lb	80lb	80lb
Puncture Strength	ASTM D-5241	450lb	900lb	450lb	900lb	450lb	900lb
Apparent Opening Size (2)	ASTM D-4751	0.59 mm (0.21 mm)		0.59 mm (0.21 mm)		0.59 mm (0.21 mm)	
Permeability	ASTM D-4491	0.05 sec <sup>-1</sup> (1.10 sec <sup>-1</sup> )		0.05 sec <sup>-1</sup> (1.10 sec <sup>-1</sup> )		0.05 sec <sup>-1</sup> (1.10 sec <sup>-1</sup> )	
Ultraviolet Resistance (Retained at 500 Hours)	ASTM D-4355	70% Strength		70% Strength		70% Strength	

(1) All numeric values except apparent opening size (AOS) represent minimum average roll values (MARV). MARV is calculated as the typical minus two standard deviations. MD is machine direction; CD is cross direction.  
 (2) Values for AOS represent the average maximum opening.  
 Geotextiles must be evaluated by the National Transportation Product Evaluation Program (NTPEP) and conform to the values in Table H.1.  
 The geotextile must be inert to commonly encountered chemicals and hydrocarbons and must be rot and mildew resistant. The geotextile must be manufactured from fibers consisting of long chain synthetic polymers and composed of a minimum of 95 percent by weight of polyolefins or polyesters, and formed into a stable network so the filaments or yarns retain their dimensional stability relative to each other, including seepage.  
 When more than one section of geotextile is necessary, overlap the sections by at least one foot. The geotextile must be pulled taut over the applied surface. Equipment must not run over exposed fabric. When placing riprap on geotextile, do not exceed a one foot drop height.



**CONSTRUCTION SPECIFICATIONS**

- USE 42 INCH HIGH, 9 GAUGE OR THICKER CHAIN LINK FENCING (2% INCH MAXIMUM OPENING).
- EXTEND SHEETING A MINIMUM OF 4 FEET ALONG FLOW SURFACE AND BARRIED OVER A MINIMUM OF 8 INCHES INTO GROUND. SOIL STABILIZATION MATTING MAY BE USED IN LIEU OF IMPERMEABLE SHEETING ALONG FLOW SURFACE.
- WHEN TWO SECTIONS OF SHEETING ADJOIN EACH OTHER, OVERLAP BY 6 INCHES AND FOLD WITH SEAM FACING DOWNWARD.
- KEEP FLOW SURFACE ALONG DIVERSION FENCE AND POINT OF DISCHARGE FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE. REPLACE IMPERMEABLE SHEETING IF TORN, IF UNDERMINING OCCURS, REINSTALL FENCE.

**FINAL ROAD CONSTRUCTION PLANS**

**GRADING AND SOIL EROSION AND SEDIMENT CONTROL PLAN - DETAILS**

**RIVER BIRCH MANOR**

LOTS 17 AND OPEN SPACE LOT 8  
 A SUBDIVISION OF TAX MAP 17 - PARCEL 385

L 18205 / F. 247  
 TAX MAP: 17 GRID: 20  
 PARCEL: 0385  
 DPZ REFERENCE: SEE SITE DATA

10039 GERMAN ROAD  
 ELLICOTT CITY, MD 21042

ZONED: R-20  
 PARCEL: 0385  
 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: RHV  
 DRAWN BY: ES/AMP  
 CHECKED BY: RHV  
 DATE: SEPT. 2020  
 SCALE: AS SHOWN  
 W.O. NO.: 41656

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 EXPIRES DATE 09-27-2022

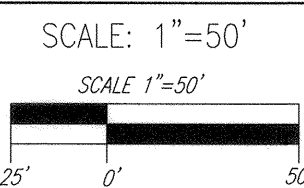
ROBERT H. VOGEL, PE No.16193

NO.	REVISION	DATE





STORM DRAIN DRAINAGE AREA MAP



PUBLIC PIPE SCHEDULE

Size	Class	Total Length
15"	HDPE	67
18"	HDPE	159

\* The total length of pipe is linear feet only.

\*\* If HDPE is specified, Smooth Interior pipe is to be installed. Contractor shall install pipe in accordance with manufacturer's specifications.

STRUCTURE SCHEDULE

STR #	TYPE	INV. IN	INV. OUT	TOP OR UPPER/LOWER	DETAIL	LOCATION	OWNER/MANT.	REMARKS
I-1	TYPE D	415.67	410.92	420.33	D-4.10	N 591002.54 E 1351707.42	PUBLIC	4 THROATS

STRUCTURE SCHEDULE

STR #	TYPE	DEPTH REQUIREMENT	TOP/CL STCR	DETAIL	LOCATION	REMARKS
PT-1	FLOWTHRU	-	421.90	D-4.35	N 591040.02 E 1351718.23	PUBLIC L=11' D=7.5' T=10'

STRUCTURE SCHEDULE

STR #	TYPE	INV. IN	INV. OUT	TOP OR UPPER/LOWER	DETAIL	LOCATION	REMARKS
ES-1	TYPE A	-	389.00	-	D-5.11	N 590793 E 1351656	PUBLIC (2)
MH-1	48" MANHOLE	384.32	389.50	389.50	G-5.12	N 590817.88 E 1351674.96	PUBLIC (1)
MH-2	48" MANHOLE	401.70	396.32	406.70	G-5.12	N 590813.50 E 1351702.54	PUBLIC (1)
MH-3	48" MANHOLE	404.25	404.00	409.00	G-5.12	N 590837.91 E 1351688.77	PUBLIC (1)

(1) Coordinate for Proposed Structure = Centerline of Structure  
 (2) Coordinate for End Section = Centerline of Pipe @ Downstream Face

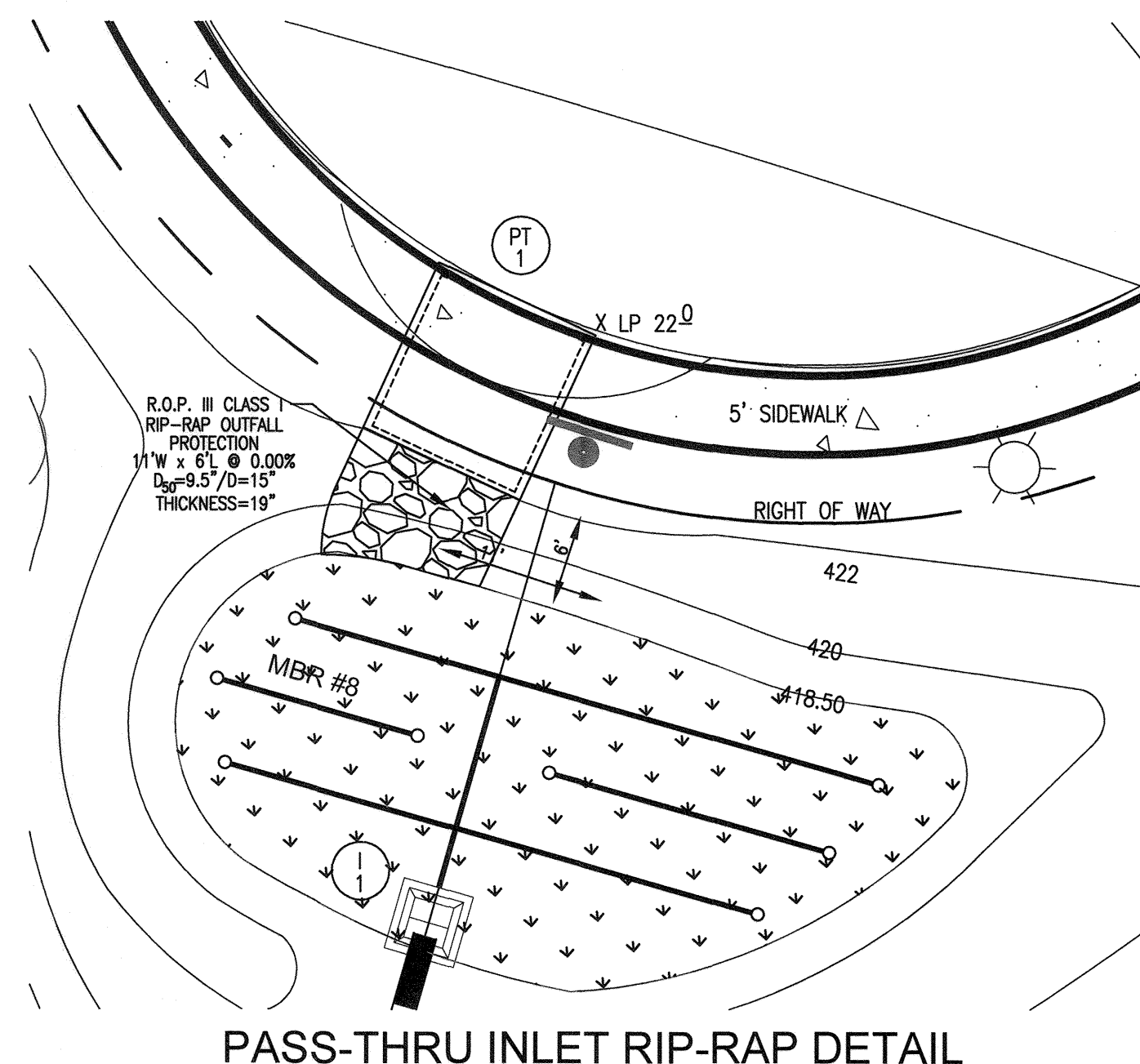
**SOILS LEGEND**  
HOWARD COUNTY SOILS MAP #13

SYMBOL	NAME / DESCRIPTION	GROUP	K FACTOR	ERODIBLE	ACREAGE
GnB	GLENNVILLE-BALE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	0.43	YES	0.58
MaD	MANOR LOAM, 15 TO 25 PERCENT SLOPES	B	0.32	YES	0.02
Ho	HATBORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	D	0.43	NO	2.48
GgC	GLENELG LOAM, 8 TO 15 PERCENT SLOPES	B	0.43	YES	3.71
GgB	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	B	0.37	YES	0.46

**SOILS NOTES:**  
 1. TAKEN FROM USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY  
 2. HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.  
 3. GnB and Ho SOILS MAY CONTAIN HYDRIC COMPONENTS.  
 4. K FACTORS OBTAINED FROM THE HOWARD SOIL CONSERVATION DISTRICT WEBSITE  
<https://www.howardscd.org/documents> - DOCUMENT TITLED "K FACTORS" (USE KW)

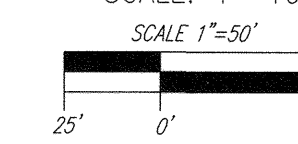
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 CHIEF, DIVISION OF LAND DEVELOPMENT



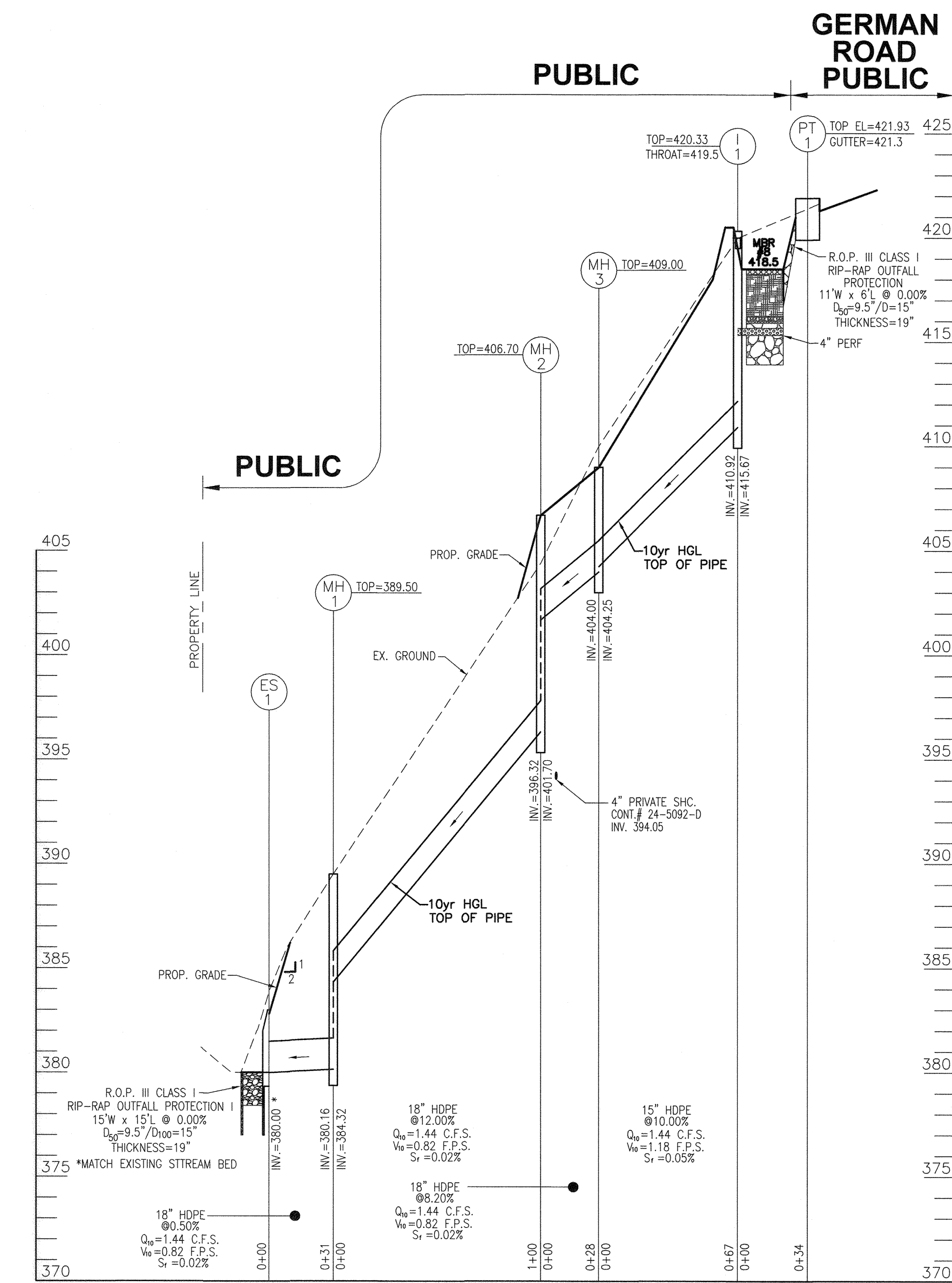
PASS-THRU INLET RIP-RAP DETAIL

SCALE: 1"=10'



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS



STORM DRAIN PROFILE

SCALE: HORIZONTAL - 1"=50'  
 VERTICAL - 1"=5'

LEGEND:

- EXISTING CONTOUR
- EXISTING PAVING
- EXISTING UTILITY
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING WATER LINE
- EXISTING TREE
- EXISTING SPECIMEN TREES
- EXISTING TREELINE
- EXISTING FENCE
- PROPERTY LINE (15A)
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- EXISTING WETLAND
- EXISTING WETLAND BUFFER
- EXISTING STREAM
- EXISTING STREAM BUFFER
- 100 YEAR FLOODPLAIN
- EDGE OF PAVEMENT
- CURB & GUTTER
- CONTOUR
- TREELINE
- MICRO-BIORETENTION FACILITY (M-6)
- DRY WELL
- PROPOSED SIDEWALK
- PROPOSED STORM DRAIN
- DRAINAGE AREA
- PROPOSED STORM DRAIN PASS THRU
- AREA 'C' FACTOR
- INLET #
- ZONING % IMPERVIOUS

**OWNER**  
 MARANATHA MAG. MANOR LLC  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

**DEVELOPER**  
 TRINITY HOMES MARY LAND, LLC  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLANS

STORM DRAIN - DRAINAGE AREA MAP  
 AND STORM DRAIN PROFILES

RIVER BIRCH MANOR

LOTS 1-7 AND OPEN SPACE LOT 8  
 A SUBDIVISION OF TAX MAP 17 - PARCEL 385

L 18205 / F. 247  
 TAX MAP: 17 GRID: 20  
 2ND ELECTION DISTRICT  
 DPZ REFERENCE: SEE SITE DATA

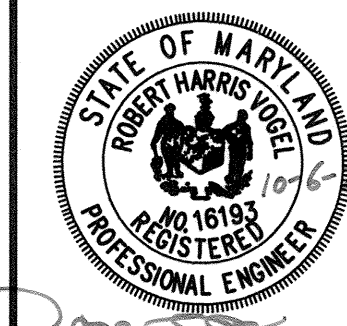
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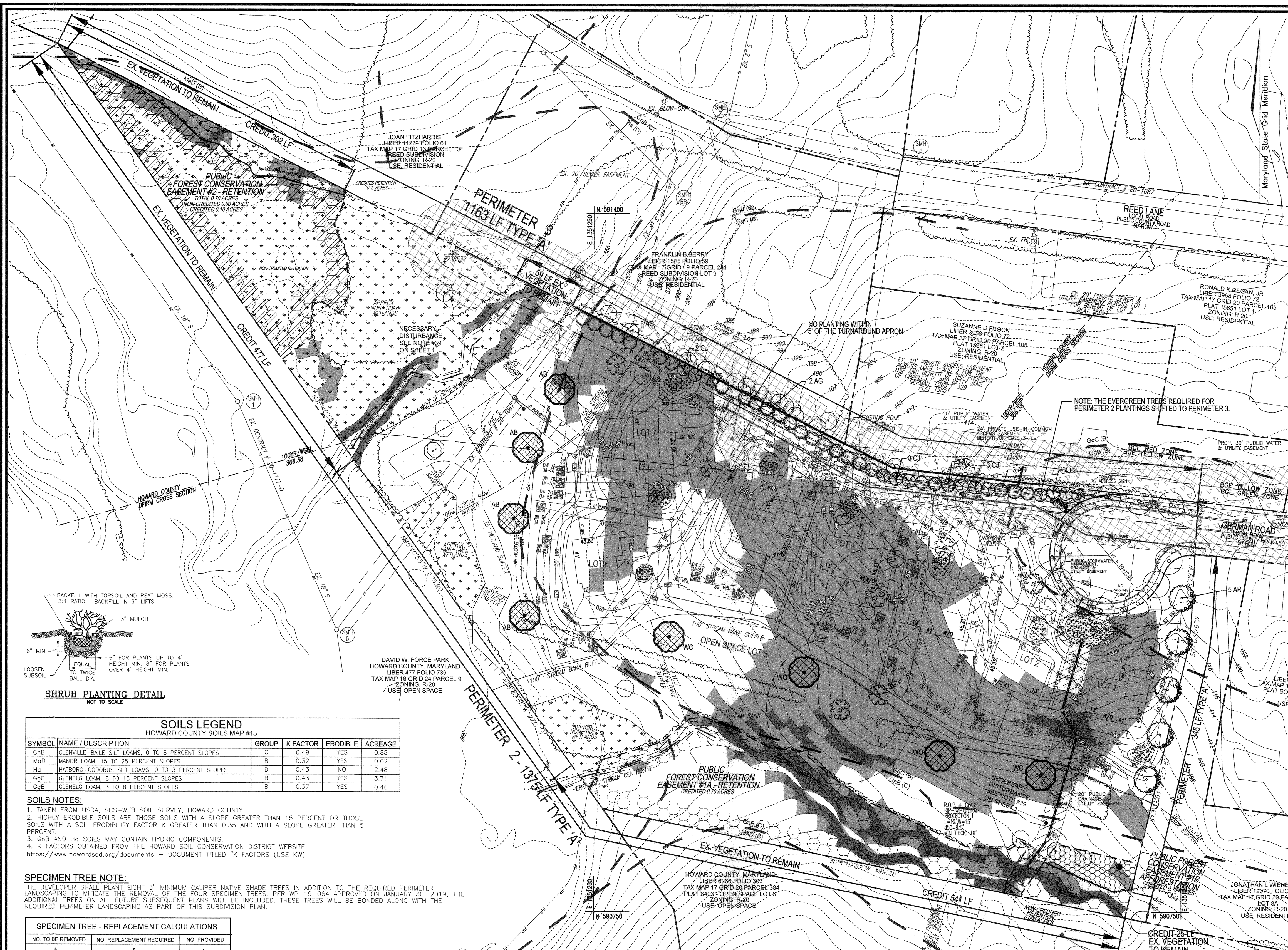


DESIGN BY: RHV  
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 DATE: SEPT. 2020  
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 W.O. NO.: 41656

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. 16193  
 EXPIRATION DATE: 09-27-2022

8 SHEET OF 15





- LANDSCAPE NOTES:**
- AT THE TIME OF PLANT INSTALLATION, ALL SHRUBS AND TREES LISTED AND APPROVED ON THE LANDSCAPE PLAN, SHALL COMPLY WITH THE PROPER HEIGHT REQUIREMENT IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATIONS OF THE REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THE APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO THE APPLICABLE PLANS.
  - THE OWNER, TENANT AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
  - SHOULD ANY TREE DESIGNATED FOR PRESERVATION FOR WHICH LANDSCAPING CREDIT IS GIVEN, DIE PRIOR TO RELEASE OF BONDS, THE OWNER WILL BE REQUIRED TO REPLACE THE TREE WITH THE EQUIVALENT SPECIES OR WITH A TREE WHICH WILL OBTAIN THE SAME HEIGHT, SPREAD AND GROWTH CHARACTERISTICS. THE REPLACEMENT TREE MUST BE A MINIMUM OF 3 INCHES IN CALIPER AND INSTALLED AS REQUIRED IN THE HOWARD COUNTY LANDSCAPE MANUAL.
  - PLANTINGS SHOWN HEREON ARE THE RESPONSIBILITY OF THE DEVELOPER TO INSTALL DURING THE CONSTRUCTION OF THE FINAL PLAN.
  - SURETY FOR THE PROPOSED LANDSCAPING SHALL BE BASED ON THE NUMBER OF PLANTINGS REQUIRED.

**PERIMETER 'A' LANDSCAPE EDGE SCHEDULE**

CATEGORY	ADJACENT TO ROADWAYS AND PERIMETER PROPERTIES	ADJACENT TO ROADWAYS AND PERIMETER PROPERTIES	ADJACENT TO ROADWAYS AND PERIMETER PROPERTIES	TOTAL
PERIMETER/FRONTAGE DESIGNATION	A	B	C	
LANDSCAPE TYPE	346'	1376'	1163'	
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER				
CREDIT FOR EXISTING VEGETATION (YES, NO LINEAR FEET DESCRIBE BELOW IF NEEDED)	YES 28'	YES 1018'	YES 381'	
CREDIT FOR WALL, FENCE OR BERM (NO LINEAR FEET DESCRIBE BELOW IF NEEDED)	NO	NO	NO	
NUMBER OF PLANTS REQUIRED	320'	357'	802'	24
SHRUBS	1,400	1,600	1,600	
EVERGREEN TREES				
NUMBER OF PLANTS PROVIDED				
SHRUBS	5	12'	28	5
EVERGREEN TREES				
OTHER TREES (2-1 SUBSTITUTION)				12'
SHRUBS (10-1 SUBSTITUTION)				28
DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED				

- GENERAL NOTES:**
- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE LANDSCAPE MANUAL. A FINANCIAL SURETY IN THE AMOUNT OF \$9,600.00 SHALL BE POSTED WITH THE DEVELOPER AGREEMENT AS PART OF THIS SUBDIVISION PLAN.
  - PERIMETER PLANTINGS IN THE AMOUNT OF \$7,200.00 FOR THE REQUIRED 24 SHRUB TREES.
  - SPECIMEN TREE REPLACEMENT IN THE AMOUNT OF \$2,400.00 FOR THE REQUIRED 8 TREES.
  - PUBLIC STREET TREES ARE PROVIDED FOR THIS PROJECT IN ACCORDANCE WITH SECTION 16.124(4)(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL. FINANCIAL SURETY (\$3,000.00) SHALL BE POSTED AS PART OF THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS COST ESTIMATE FOR THE REQUIRED 10 STREET TREES.
  - TRASH PAD PLANTINGS ARE PROVIDED FOR THIS PROJECTS USE-IN-COMMON DRIVEWAYS. FINANCIAL SURETY (\$150) SHALL BE POSTED AS PART OF THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS COST ESTIMATE FOR THE REQUIRED 5 SHRUBS.
  - THE REMOVAL OF TREES 30" OR GREATER DBH IS PROHIBITED WITHOUT COUNTY APPROVAL.
  - NO LANDSCAPING TO BE INSTALLED WITHIN ANY PUBLIC EASEMENT FOR WATER, SEWER, OR STORMDRAIN.
  - ANY EXISTING STREET TREES DAMAGED OR DESTROYED DURING CONSTRUCTION WILL BE REPLACED BY THE CONTRACTOR.

**STREET TREE CALCULATION & PLANTING SCHEDULE**

STREET NAME	LINEAR FEET	NO. REQUIRED	NO. PROVIDED
GERMAN ROAD	3000.00	10	10
5 AR			
SYMBOL	QTY	BOTANICAL NAME	SIZE
5 AR	10	ACER RUBRUM 'OCTOBER GLORY'	2 1/2" CAL.
		ACER GINNALA 'AMUR MAPLE (BGE COMPLIANT)'	2 1/2" CAL.

TRASH PAD PLANTINGS ARE PROVIDED FOR THIS PROJECTS USE-IN-COMMON DRIVEWAYS. FINANCIAL SURETY (\$150) SHALL BE POSTED AS PART OF THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS COST ESTIMATE FOR THE REQUIRED 5 SHRUBS.

- STREET TREE NOTES:**
- WHEN THE DISTANCE BETWEEN THE CURB AND SIDEWALK IS 6 FEET OR GREATER, TREES SHALL BE LOCATED WITHIN THE RIGHT OF WAY AND SHALL BE CENTERED BETWEEN THE CURB AND THE SIDEWALK.
  - WHEN THE DISTANCE BETWEEN THE CURB AND THE SIDEWALK IS LESS THAN 6 FEET, AND WHERE TREES ARE PLANTED CLOSER THAN 3 FEET TO THE SIDEWALK, A BIOLOGIC ROOT INHIBITOR BARRIER OR PHYSICAL CONTAINER BARRIER SHALL BE REQUIRED.
  - WHEN THE DISTANCE BETWEEN THE CURB AND THE SIDEWALK IS LESS THAN 6 FEET, TREES SHALL BE PLANTED 3 FEET FROM THE SIDEWALK IN THE DIRECTION AWAY FROM THE ROAD. A 10 FOOT WIDE TREE MAINTENANCE EASEMENT SHALL BE REQUIRED IF THE RIGHT OF WAY IS LIMITED.
  - TREES SHALL BE PLACED A MINIMUM OF 30 FEET FROM ALL SIGNS AND INTERSECTIONS WHEN PLANTING BETWEEN SIDEWALK AND CURB AND BE LOCATED WITH CONSIDERATION OF UNDERGROUND UTILITIES AND STRUCTURES. STREET TREES MAY NOT BE PLANTED WITHIN 5 FEET OF A DRAIN INLET STRUCTURE, 5 FEET OF AN OPEN SPACE ACCESS STRIP, OR 10 FEET OF A DRIVEWAY.
  - ALL STREET TREES AND/OR SIGN SHALL BE LOCATED 5' MIN. FROM PROPOSED DRAINAGE, UTILITY STRUCTURE.
  - THERE SHOULD BE A MINIMUM OF 20' BETWEEN STREET LIGHTS AND STREET TREES.

**LEGEND:**

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- EXISTING PLUMB
- EXISTING UTILITY
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING WATER LINE
- PROPOSED STORM DRAIN
- EXISTING TREE
- EXISTING SPECIMEN TREES
- EXISTING TREE LINE
- EXISTING FENCE
- PROPERTY LINE TO BE ABANDONED
- ADJACENT PROPERTY LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- SOILS BOUNDARY
- 20' PUBLIC WATER & UTILITY EASEMENT
- PUBLIC STORMWATER MANAGEMENT, DRAINAGE & UTILITY EASEMENT
- EXISTING WETLAND
- EXISTING WETLAND BUFFER
- EXISTING STREAM BUFFER
- SPECIMEN TREE MITIGATION PLANTINGS - WP-19-064
- PERIMETER OR STREET TREE PLANTING ORIENTATION
- 2' PRIVATE USE-IN-COMMON ACCESS EASEMENT
- MODERATE SLOPES (15% - 24.99%)
- STEEP SLOPES (25%+)
- BGE RED ZONE
- BGE YELLOW ZONE
- BGE GREEN ZONE

**OWNER**  
 MARANATHA MAG. MANOR LLC  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

**DEVELOPER**  
 TRINITY HOMES MARY LAND, LLC  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

**FINAL ROAD CONSTRUCTION PLANS**  
 LANDSCAPE PLAN, NOTES AND DETAILS  
**RIVER BIRCH MANOR**  
 LOTS 17 AND OPEN SPACE LOT 8  
 A SUBDIVISION OF TAX MAP 17 - PARCEL 385

L 18205 / F. 247  
 TAX MAP 17 GRID: 20  
 2ND ELECTION DISTRICT  
 DPZ REFERENCE: SEE SITE DATA

10039 GERMAN ROAD  
 ELLICOTT CITY, MD 21042  
 HOWARD COUNTY, MARYLAND

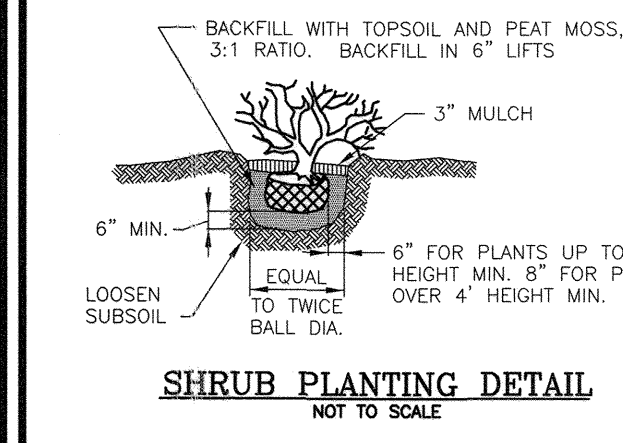
**VOGEL ENGINEERING**  
 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043  
 P: 410.461.7666 F: 410.461.8961 www.timmons.com

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

**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 07-27-2022

DESIGN BY: RHV  
 DRAWN BY: ES/MMP  
 CHECKED BY: RHV  
 DATE: SEPT. 2020  
 SCALE: AS SHOWN  
 W.O. NO.: 41656

9 SHEET OF 15



**SOILS LEGEND**  
 HOWARD COUNTY SOILS MAP #13

SYMBOL	NAME / DESCRIPTION	GROUP	K FACTOR	ERODIBLE	ACREAGE
GnB	GLENVILLE-BAILE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	0.49	YES	0.88
MoD	MANOR LOAM, 15 TO 25 PERCENT SLOPES	B	0.32	YES	0.02
Hg	HATBORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	D	0.43	NO	2.48
GgC	GLENELG LOAM, 8 TO 15 PERCENT SLOPES	B	0.43	YES	3.71
GgB	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	B	0.37	YES	0.46

- SOILS NOTES:**
- TAKEN FROM USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY
  - HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.
  - GnB AND Hg SOILS MAY CONTAIN HYDRIC COMPONENTS.
  - K FACTORS OBTAINED FROM THE HOWARD SOIL CONSERVATION DISTRICT WEBSITE https://www.howardscd.org/documents - DOCUMENT TITLED "K FACTORS (USE KW)

**SPECIMEN TREE NOTE:**  
 THE DEVELOPER SHALL PLANT EIGHT 3" MINIMUM CALIPER NATIVE SHADE TREES IN ADDITION TO THE REQUIRED PERIMETER LANDSCAPING TO MITIGATE THE REMOVAL OF THE FOUR SPECIMEN TREES. PER WP-19-064 APPROVED ON JANUARY 30, 2019, THE ADDITIONAL TREES ON ALL FUTURE SUBSEQUENT PLANS WILL BE INCLUDED. THESE TREES WILL BE BONDED ALONG WITH THE REQUIRED PERIMETER LANDSCAPING AS PART OF THIS SUBDIVISION PLAN.

**SPECIMEN TREE - REPLACEMENT CALCULATIONS**

NO. TO BE REMOVED	NO. REPLACEMENT REQUIRED	NO. PROVIDED
4	8	8
		3" CAL.

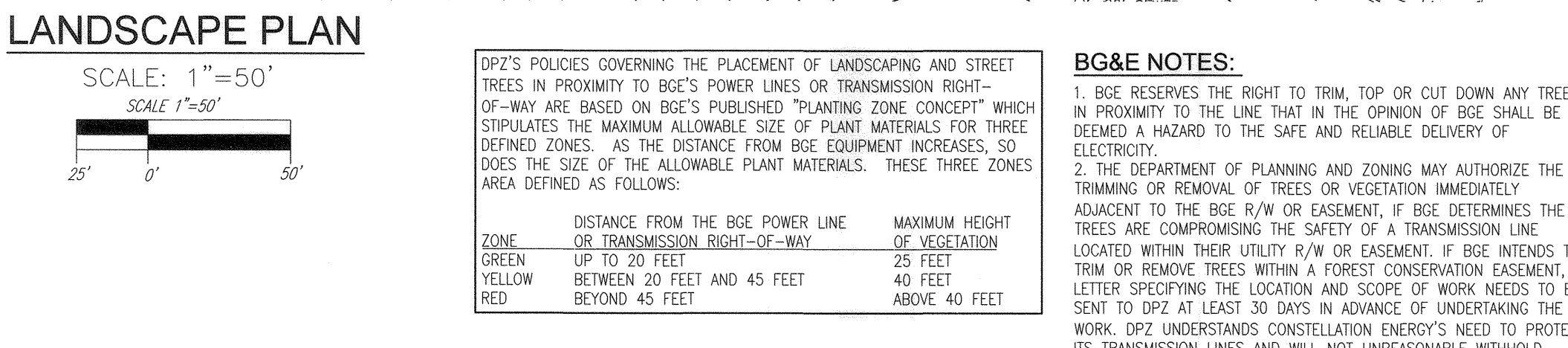
**SPECIMEN TREE REPLACEMENT - PLANTING SCHEDULE**

SYM	KEY	QUAN	BOTANICAL NAME	SIZE	CAT
WO	4	QUERCUS PHELLODES WILLOW OAK	3" CAL.	B & B	
AB	4	ACER RUBRUM 'RED SUNSET' RED SUNSET RED MAPLE	3" CAL.	B & B	

**APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING**  
 [Signature] 12.4.20  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 CHIEF, DIVISION OF LAND DEVELOPMENT

**DEVELOPER'S/BUILDER'S CERTIFICATE**  
 I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.  
 [Signature] 9/29/20  
 SIGNATURE OF DEVELOPER DATE

**APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS**  
 [Signature] 11/23/20  
 CHIEF, BUREAU OF HIGHWAYS DATE



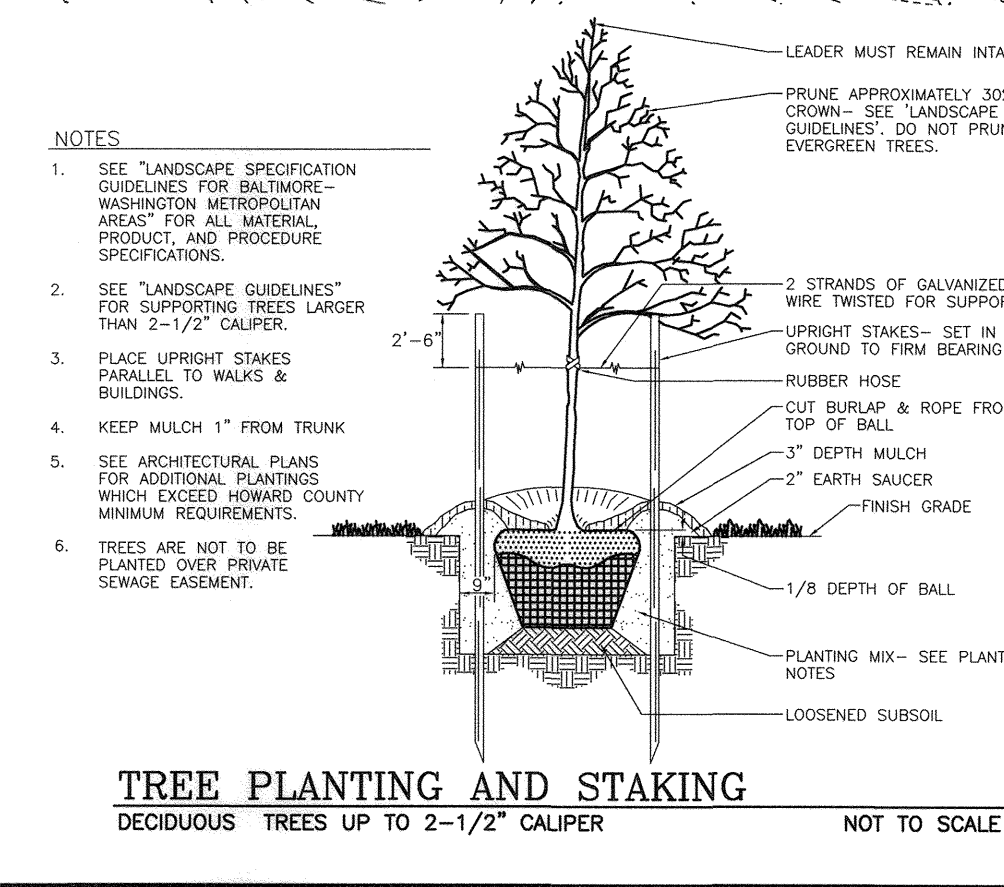
**BPZ'S POLICIES GOVERNING THE PLACEMENT OF LANDSCAPING AND STREET TREES IN PROXIMITY TO BGE'S POWER LINES OR TRANSMISSION RIGHT-OF-WAY ARE BASED ON BGE'S PUBLISHED "PLANTING ZONE CONCEPT" WHICH STIPULATES THE MAXIMUM ALLOWABLE SIZE OF PLANT MATERIALS FOR THREE DEFINED ZONES. AS THE DISTANCE FROM BGE EQUIPMENT INCREASES, SO DOES THE SIZE OF THE ALLOWABLE PLANT MATERIALS. THESE THREE ZONES ARE DEFINED AS FOLLOWS:**

ZONE	DISTANCE FROM THE BGE POWER LINE OR TRANSMISSION RIGHT-OF-WAY	MAXIMUM HEIGHT OF VEGETATION
GREEN	UP TO 20 FEET	25 FEET
YELLOW	BETWEEN 20 FEET AND 45 FEET	40 FEET
RED	BEYOND 45 FEET	ABOVE 40 FEET

**BG&E NOTES:**

- BGE RESERVES THE RIGHT TO TRIM, TOP OR CUT DOWN ANY TREE IN PROXIMITY TO THE LINE THAT IN THE OPINION OF BGE SHALL BE DEEMED A HAZARD TO THE SAFE AND RELIABLE DELIVERY OF ELECTRICITY.
- THE DEPARTMENT OF PLANNING AND ZONING MAY AUTHORIZE THE TRIMMING OR REMOVAL OF TREES OR VEGETATION IMMEDIATELY ADJACENT TO THE BGE R/W OR EASEMENT, IF BGE DETERMINES THE TREES ARE COMPROMISING THE SAFETY OF A TRANSMISSION LINE LOCATED WITHIN THEIR UTILITY R/W OR EASEMENT. IF BGE INTENDS TO TRIM OR REMOVE TREES WITHIN A FOREST CONSERVATION EASEMENT, A LETTER SPECIFYING THE LOCATION AND SCOPE OF WORK NEEDS TO BE SENT TO DPZ AT LEAST 30 DAYS IN ADVANCE OF UNDERKING THE WORK. DPZ UNDERSTANDS CONSTELLATION ENERGY'S NEED TO PROTECT ITS TRANSMISSION LINES AND WILL NOT UNREASONABLE WITHOUT PERMISSION.
- CALL MESS UTILITY TO MARK UP THE LOCATION OF EXISTING GAS LINE BEFORE PLANTING STREET TREES ALONG GERMAN ROAD & PLANT STREET 10' AWAY FROM EXISTING GASLINE AS REQUIRED TREES.

**TREE PLANTING AND STAKING**  
 DECIDUOUS TREES UP TO 2-1/2" CALIPER  
 NOT TO SCALE



**LEGEND:**

- PRUNE APPROXIMATELY 50% OF CROWN - SEE "LANDSCAPE GUIDELINES" - DO NOT PRUNE EVERGREEN TREES.
- 2 STRANDS OF GALVANIZED WIRE TWISTED FOR SUPPORT.
- UPRIGHT STAKES - SET IN GROUND TO FIRM BEARING.
- RUBBER HOSE.
- 3" DEPTH MALCH.
- 2" DRAIN SAUCER.
- FINISH GRADE.
- 1/8" DEPTH OF BALL.
- LOOSENEE SUBSOIL.





### LEGEND:

--- 20' ---	EXISTING CONTOUR	▨	MODERATE SLOPES (15% - 24.9%)
--- 40' ---	PROPOSED CONTOUR	▩	STEEP SLOPES (25%+)
+	EXISTING SPOT ELEVATION	▧	MICRO-BORRENTION (M-6)
○	EXISTING UTILITY	▦	20' PUBLIC WATER & UTILITY EASEMENT
○	EXISTING SANITARY MANHOLE	▥	PUBLIC STORMWATER MANAGEMENT, DRAINAGE & UTILITY EASEMENT
---	EXISTING SANITARY LINE	▤	EXISTING WETLAND
---	EXISTING WATER LINE	▣	EXISTING WETLAND BUFFER
---	PROPOSED STORM DRAIN	▢	EXISTING STREAM
○	EXISTING TREE	▧	EXISTING STREAM BUFFER
○	EXISTING SPECIMEN TREES WITH CRZ TO REMAIN	▦	100 YEAR FLOODPLAIN
○	EXISTING SPECIMEN TREES WITH CRZ TO BE REMOVED	▥	
---	EXISTING TREELINE	---	
---	EXISTING FENCE	---	
---	ADJACENT PROPERTY LINE	---	
---	PROPERTY LINE	---	
---	RIGHT-OF-WAY LINE	---	
---	SOILS BOUNDARY	---	

### GENERAL NOTES

WATERSHED NAME: LITTLE PATUXENT RIVER  
 WATERSHED NUMBER: 2131105

A. GROSS SITE AREA: 7.54 AC.  
 NET SITE AREA: (GROSS-FLOODPLAIN-STEEP SLOPES) 5.45 AC.  
 B. AREA OF 100-YEAR FLOODPLAIN: 2.09 AC.  
 C. AREA OF WETLANDS AND BUFFERS(ONSITE): 1.99 AC.  
 AREA OF STREAM AND BUFFERS(ONSITE): 3.15 AC.  
 D. AREA OF > 25% STEEP SLOPES: 0.00 AC.  
 E. EXISTING FOREST (FSD): 0.8 AC.  
 F. ZONED: R-20  
 G. EXISTING USE: RESIDENTIAL  
 H. PROPOSED USE: RESIDENTIAL

### FOREST STAND DELINEATION NOTES

- NO RARE, THREATENED OR ENDANGERED SPECIES OR THEIR HABITATS WERE OBSERVED ON THE PROPERTY.
- NO CEMETARIES OR HISTORIC PROPERTIES ARE KNOWN TO OCCUR ON THE PROPERTY.
- SURROUNDING LAND USE IS PRIMARILY HIGH DENSITY RESIDENTIAL DEVELOPMENT.
- APPROXIMATELY 3.7 ACRES OF FOREST IS PRESENT WITHIN 100 FEET OF THE SUBJECT PROPERTY. MOST OF THIS FOREST IS WITHIN THE 100 YEAR FLOODPLAIN.
- ALL OF THE WETLANDS AND STREAMS ARE PART OF THE LITTLE PATUXENT RIVER WATERSHED (02-13-11). THESE STREAMS ARE CLASSIFIED AS USE IV-P WATERS.
- APPROXIMATELY 2.1 ACRES OF 100 YEAR FLOODPLAIN IS PRESENT ON THE PROPERTY.
- NO STEEP SLOPES >25% ARE PRESENT ON THE PROPERTY.
- SPECIMEN TREES ARE PRESENT ON THE PROPERTY.

### Forest Stand Data

Key	Community Type	Acreage (Ac)	Dominant Vegetation	General Condition	Priority Acreage
F1	Oak-Maple	0.8	Liriodendron tulipifera Quercus velutina, Quercus rubra, Fraxinus pennsylvanica, Prunus serotina	Good	0.8 acres w/ buffer slopes

See accompanying report for complete stand descriptions.

### SPECIMEN TREE CHART

KEY (X#)	SPECIES	SIZE (IN DBH)	CRZ (FEET RADIUS)	COMMENTS
1	NORWAY MAPLE	35.5	53.25	FAIR CONDITION TO BE REMOVED
2	BLACK CHERRY	30.5	45.75	FAIR CONDITION TO BE REMOVED
3	PIN OAK	N/A	N/A	STUMP ONLY TO BE REMOVED
4	ASH	31	46.5	DEAD TO BE REMOVED
5	RED MAPLE	46	69	FAIR CONDITION, SOME DIEBACK NOTED TO REMAIN
6	BLACK OAK	33	49.5	GOOD CONDITION TO REMAIN

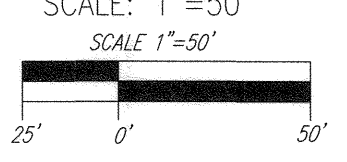
NOTE: CHART AMENDED PER MYRA BROSIUS 9/28/2020

**OWNER:** MARANATHA MAG. MANOR LLC  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

**DEVELOPER:** TRINITY HOMES MARY LAND, LLC  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

NO.	REVISION	DATE

## FOREST CONSERVATION PLAN



### SOILS LEGEND

HOWARD COUNTY SOILS MAP #13

SYMBOL	NAME / DESCRIPTION	GROUP	K FACTOR	ERODIBLE	ACREAGE
GnB	GLENVILLE-BAILE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	0.49	YES	0.88
MaD	MANOR LOAM, 15 TO 25 PERCENT SLOPES	B	0.32	YES	0.02
Hg	HATBORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	D	0.43	NO	2.48
GgC	GLENELG LOAM, 8 TO 15 PERCENT SLOPES	B	0.43	YES	3.71
GgB	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	B	0.37	YES	0.46

### SOILS NOTES:

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- HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.
- GnB AND Hg SOILS MAY CONTAIN HYDRIC COMPONENTS.
- K FACTORS OBTAINED FROM THE HOWARD SOIL CONSERVATION DISTRICT WEBSITE: <https://www.howarddcd.org/documents> - DOCUMENT TITLED "K FACTORS (USE KW)

### FOREST CONSERVATION LEGEND:

	FOREST CONSERVATION SIGN
	FOREST CONSERVATION AFFORESTATION EASEMENT
	FOREST CONSERVATION CREDITED RETENTION EASEMENT
	FOREST CONSERVATION NON-CREDITED RETENTION EASEMENT

**Myra Brosius**  
 ISA Certified Arborist #145411A  
 MD DNR FCA Qualified Professional  
 Myra.brosius@gmail.com

FORCED TREES TO BE REMOVED BY MYRA BROSIUS - CERTIFIED ARBORIST  
  
 9/30/20

**Eco-Science Professionals, Inc.**  
 CONSULTING ECOLOGISTS  
 11400 WOODBURN RD., SUITE 100, WOODBURN, MD 21797  
 TEL: 410.461.7666 FAX: 410.461.8961

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
  
 CHIEF, BUREAU OF HIGHWAYS DATE: 11/22/20

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 12-4-20  
  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 12/14/20

### FINAL ROAD CONSTRUCTION PLANS

#### FOREST CONSERVATION PLAN

## RIVER BIRCH MANOR

LOTS 1-7 AND OPEN SPACE LOT 8  
 A SUBDIVISION OF TAX MAP 17 - PARCEL 385

L 18205 / F 247  
 TAX MAP: 17 GRID: 20  
 2ND ELECTION DISTRICT  
 DPZ REFERENCE: SEE SITE DATA

10039 GERMAN ROAD  
 ELLICOTT CITY, MD 21042

ZONED: R-20  
 PARCEL: 0385  
 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

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. MY LICENSE NO. IS 16193. EXPIRATION DATE: 09-27-2022

DESIGN BY: RHV  
 DRAWN BY: ES/MVP  
 CHECKED BY: RHV  
 DATE: SEPT. 2020  
 SCALE: AS SHOWN  
 W.O. NO.: 41656

10 SHEET OF 15



**REFORESTATION AND AFFORESTATION PLANTING PLANS**

**A. PLANTING PLAN AND METHODS**  
 PLANT SPECIES SELECTION WAS BASED ON OUR KNOWLEDGE REGARDING PLANT COMMUNITIES IN MARYLAND'S PIEDMONT PLATEAU AND INFORMATION PROVIDED IN THE SOIL SURVEY ON TYPICAL VEGETATION FOR THE SOIL TYPE ON THE PLANTING SITE. SPECIES SELECTION WAS ALSO BASED ON OUR KNOWLEDGE OF PLANT AVAILABILITY IN THE NURSERY INDUSTRY.  
 REFORESTATION AND AFFORESTATION WILL BE ACCOMPLISHED THROUGH A MIXED PLANTING OF WHIPS AND BRANCHED TRANSPLANTS. CONTAINER GROWN STOCK IS RECOMMENDED BUT BAREROOT STOCK MAY BE USED TO HELP CONTROL REFORESTATION AND AFFORESTATION COSTS. BAREROOT STOCK IS USED THE ROOT SYSTEMS OF ALL PLANTS WILL BE DIPPED IN AN ANTI-DESICCANT GEL PRIOR TO PLANTING TO IMPROVE MOISTURE RETENTION IN THE ROOT SYSTEMS.  
 PRIOR TO PLANTING THE PROPOSED FOREST CONSERVATION EASEMENTS ALL MULTIFLORA ROSE IN THE PLANTING AREA SHALL BE REMOVED. REMOVAL OF THE ROSE MAY BE PERFORMED WITH MOWING AND HERBICIDE TREATMENTS. PHYSICAL REMOVAL OF ALL TOP GROWTH FOLLOWING BY A PERIODIC HERBICIDE TREATMENT OF STUMP SPROUTS IS RECOMMENDED. NATIVE TREE AND SHRUB SPECIES OCCURRING WITHIN THE ROSE THICKETS SHOULD BE RETAINED WHEREVER POSSIBLE. HERBICIDES TREATMENTS SHALL OCCUR ON 2 MONTH INTERVALS DURING THE FIRST GROWING SEASON AND ONCE EACH IN THE SPRING AND FALL FOR SUBSEQUENT YEARS. HERBICIDES USED SHALL BE MADE SPECIFICALLY TO ADDRESS WOODY PLANT MATERIAL AND SHALL BE APPLIED AS PER MANUFACTURER'S SPECIFICATIONS. CARE SHOULD BE TAKEN NOT TO SPRAY PLANTED TREES OR NATURALLY OCCURRING NATIVE TREE/SHRUB SEEDLINGS. IT IS RECOMMENDED THAT INITIATION OF ROSE REMOVAL BEGIN AT LEAST SIX MONTHS PRIOR TO PLANTING.

**B. PLANTING AND SOIL SPECIFICATIONS**  
 PLANT MATERIAL WILL BE INSTALLED IN ACCORDANCE WITH THE PLANTING DETAIL AND PLANTING SPECIFICATIONS SHOWN ON THE FOREST CONSERVATION PLAN. SOIL DISTURBANCE WILL BE LIMITED TO INDIVIDUAL PLANTING LOCATIONS.  
 AMENDMENTS TO EXISTING SOIL WILL BE IN ACCORDANCE WITH THE PLANTING SPECIFICATIONS SHOWN ON THE FOREST CONSERVATION PLAN. SOIL DISTURBANCE WILL BE LIMITED TO INDIVIDUAL PLANTING LOCATIONS.  
**C. MAINTENANCE OF PLANTINGS**  
 FOR INFORMATION REGARDING MAINTENANCE OF THE REFORESTATION AND AFFORESTATION PLANTINGS, SEE SECTION VIII B.  
**D. GUARANTEE REQUIREMENTS**  
 A 90 PERCENT SURVIVAL RATE OF THE REFORESTATION AND AFFORESTATION PLANTINGS WILL BE REQUIRED AFTER ONE GROWING SEASON. ALL PLANT MATERIAL BELOW THE 90 PERCENT SURVIVAL THRESHOLD WILL BE REPLACED AT THE BEGINNING OF THE SECOND GROWING SEASON. AT THE END OF THE SECOND GROWING SEASON, A 75 PERCENT SURVIVAL RATE WILL BE REQUIRED. ALL PLANT MATERIAL BELOW THE 75 PERCENT SURVIVAL THRESHOLD WILL BE REPLACED BY THE BEGINNING OF THE NEXT GROWING SEASON.  
**E. SECURITY FOR REFORESTATION AND AFFORESTATION**  
 SECTION 16-1209 OF THE HOWARD COUNTY FOREST CONSERVATION ACT REQUIRES THAT A DEVELOPER SHALL POST A SECURITY (BOND, LETTER OF CREDIT, ETC.) WITH THE COUNTY TO INSURE THAT ALL WORK IS DONE IN ACCORDANCE WITH THE FCP.

**CONSTRUCTION PERIOD PROTECTION PROGRAM**  
**A. FOREST PROTECTION TECHNIQUES**  
**1. SOIL PROTECTION AREA (CRITICAL ROOT ZONE)**  
 THE SOIL PROTECTION AREA OR CRITICAL ROOT ZONE OF A TREE IS THAT PORTION OF THE SOIL COLUMN WHERE MOST OF ITS ROOTS WILL BE FOUND. THE MAJORITY OF ROOTS RESPONSIBLE FOR WATER AND NUTRIENT UPTAKE ARE LOCATED JUST BELOW THE SOIL SURFACE. TEMPORARY FENCING SHALL BE PLACED AROUND THE CRITICAL ROOT ZONE OF THE FOREST IN AREAS WHERE THE FOREST LIMITS OCCUR WITHIN 25 FEET OF THE LIMIT OF DISTURBANCE.  
**2. FENCING AND SIGNAGE**  
 EXISTING FOREST LIMITS OCCURRING WITHIN 25 FEET OF THE LIMITS OF DISTURBANCE SHALL BE PROTECTED USING TEMPORARY PROTECTIVE FENCING. PERMANENT SIGNAGE SHALL BE PLACED AROUND THE AFFORESTATION AREA PRIOR TO PLANT INSTALLATION AS SHOWN ON THE PLAN.  
**B. PRE-CONSTRUCTION MEETING**  
 UPON STAKING OF LIMITS OF DISTURBANCE A PRE-CONSTRUCTION MEETING WILL BE HELD BETWEEN THE DEVELOPER, CONTRACTOR AND APPROPRIATE COUNTY INSPECTOR. THE PURPOSE OF THE MEETING WILL BE TO VERIFY THAT ALL SEDIMENT CONTROL IS IN ORDER, AND TO NOTIFY THE CONTRACTOR OF POSSIBLE PENALTIES FOR NON-COMPLIANCE WITH THE FCP.  
**C. STORAGE FACILITIES/EQUIPMENT CLEANING**  
 ALL EQUIPMENT STORAGE, PARKING, SANITARY FACILITIES, MATERIAL STOCKPILING, ETC. ASSOCIATED WITH CONSTRUCTION OF THE PROJECT WILL BE RESTRICTED TO THOSE AREAS OUTSIDE OF THE PROPOSED FOREST CONSERVATION EASEMENT. CLEANING OF EQUIPMENT WILL BE LIMITED TO AREA WITHIN THE LOD OF THE PROPOSED HOMESITES. WASTEWATER RESULTING FROM EQUIPMENT CLEANING WILL BE CONTROLLED TO PREVENT RUNOFF INTO ENVIRONMENTALLY SENSITIVE AREAS.  
**D. SEQUENCE OF CONSTRUCTION**  
 THE FOLLOWING TIMETABLE REPRESENTS THE PROPOSED TIMETABLE FOR DEVELOPMENT. THE ITEMS OUTLINED IN THE FOREST CONSERVATION PLAN WILL BE ENACTED WITHIN TWO (2) YEARS OF SUBDIVISION APPROVAL.  
 BELOW FIND A PROPOSED SEQUENCE OF CONSTRUCTION.  
 1. INSTALL ALL SIGNAGE AND SEDIMENT CONTROL DEVICES.  
 2. HOLD PRE-CONSTRUCTION MEETING BETWEEN DEVELOPER, CONTRACTOR AND COUNTY INSPECTOR.  
 3. BUILD ACCESS ROADS, INSTALL UTILITIES, AND CONSTRUCT HOME. STABILIZE ALL DISTURBED AREAS ACCORDINGLY.  
 4. BEGIN MULTIFLORA ROSE REMOVAL, AS NEEDED. INSTALL PERMANENT PROTECTIVE SIGNAGE FOR EASEMENTS AND INITIATE PLANTINGS IN ACCORDANCE WITH FOREST CONSERVATION PLAN. PLANTINGS WILL BE COMPLETED WITHIN TWO (2) YEARS OF SUBDIVISION APPROVAL.  
 5. REMOVE SEDIMENT CONTROL.  
 6. HOLD POST-CONSTRUCTION MEETING WITH COUNTY INSPECTORS TO ASSURE COMPLIANCE WITH FCP. SUBMIT CERTIFICATION OF INSTALLATION.  
 7. MONITOR AND MAINTAIN PLANTINGS FOR 2 YEARS.  
**E. CONSTRUCTION MONITORING**  
 GEO-TECHNOLOGY ASSOCIATES, INC. OR ANOTHER QUALIFIED PROFESSIONAL DESIGNATED BY THE DEVELOPER, WILL MONITOR CONSTRUCTION OF THE PROJECT TO ENSURE THAT ALL ACTIVITIES ARE IN COMPLIANCE WITH THE FOREST CONSERVATION PLAN.  
**F. POST-CONSTRUCTION MEETING**  
 UPON COMPLETION OF CONSTRUCTION, GEO-TECHNOLOGY ASSOCIATES, INC. OR ANOTHER QUALIFIED PROFESSIONAL DESIGNATED BY THE DEVELOPER, WILL NOTIFY THE COUNTY THAT CONSTRUCTION HAS BEEN COMPLETED AND ARRANGE FOR A POST-CONSTRUCTION MEETING TO REVIEW THE PROJECT SITE. THE MEETING WILL ALLOW THE COUNTY INSPECTOR TO VERIFY THAT REFORESTATION / AFFORESTATION PLANTINGS HAVE BEEN INSTALLED.  
**POST-CONSTRUCTION MANAGEMENT PLAN**  
 HOWARD COUNTY REQUIRES A TWO YEAR POST-CONSTRUCTION MANAGEMENT PLAN TO BE PREPARED AS PART OF THE FOREST CONSERVATION PLAN. THE PLAN SHALL BE PREPARED UPON ACCEPTANCE OF THE CONSTRUCTION CERTIFICATION OF COMPLETION BY THE COUNTY. GEO-TECHNOLOGY ASSOCIATES, INC. OR ANOTHER QUALIFIED PROFESSIONAL DESIGNATED BY THE DEVELOPER, WILL BE RESPONSIBLE FOR IMPLEMENTATION OF THE POST-CONSTRUCTION MANAGEMENT PLAN.  
 THE FOLLOWING ITEMS WILL BE INCORPORATED INTO THE PLAN:  
**A. FENCING AND SIGNAGE**  
 PERMANENT SIGNAGE INDICATING THE LIMITS OF THE RETENTION/REFORESTATION/AFFORESTATION AREA SHALL BE MAINTAINED.  
**B. GENERAL SITE INSPECTIONS/MAINTENANCE OF PLANTINGS**  
 SITE INSPECTIONS WILL BE PERFORMED A MINIMUM OF THREE TIMES DURING THE GROWING SEASON. THE PURPOSE OF THE INSPECTIONS WILL BE TO ASSESS THE HEALTH OF THE REFORESTATION/AFFORESTATION PLANTINGS. APPROPRIATE MEASURES WILL BE TAKEN TO RECTIFY ANY PROBLEMS WHICH MAY ARISE.  
**C. EDUCATION**  
 THE DEVELOPER WILL PROVIDE APPROPRIATE MATERIALS TO PROPERTY OWNERS INFORMING THEM OF THE LOCATION AND PURPOSE OF THE REFORESTATION/AFFORESTATION AREA. MATERIALS MAY INCLUDE SITE PLANS AND INFORMATION EXPLAINING THE INTENT OF THE FOREST CONSERVATION LAW.  
**D. FINAL INSPECTION**  
 AT THE END OF THE TWO YEAR POST-CONSTRUCTION MANAGEMENT PERIOD, GEO-TECHNOLOGY ASSOCIATES, INC. OR ANOTHER QUALIFIED PROFESSIONAL WILL SUBMIT TO THE ADMINISTRATOR OF THE HOWARD COUNTY FOREST CONSERVATION PROGRAM CERTIFICATION THAT ALL RETENTION/REFORESTATION/AFFORESTATION REQUIREMENTS HAVE BEEN MET. UPON ACCEPTANCE OF THIS CERTIFICATION, THE COUNTY WILL RELEASE THE DEVELOPER FROM ALL FUTURE OBLIGATIONS AND RELEASE THE DEVELOPER'S BOND.

**PLANTING NOTES:**  
 - PLANTING DENSITY BASED SPACING REQUIREMENTS.  
 - PLANTING MAY BE MADE IN A CURVILINEAR FASHION ALONG CONTOUR. THE PLANTING SHOULD AVOID A GRID APPEARANCE BUT SHOULD BE SPACED TO FACILITATE MAINTENANCE.  
 - MULTIFLORA ROSE/HEAVY BRUSH REMOVAL/CONTROL MAY BE REQUIRED PRIOR TO INSTALLATION OF PLANTING.  
 - ALL WHIPS ARE REQUIRED TO BE INSTALLED WITH TREE SHELTERS PER HOWARD COUNTY FCA REQUIREMENTS.  
 - PLANTING UNITS DEFINED BY THE SPACING REQUIREMENTS ESTABLISHED IN THE FCA MANUAL. ONE PLANT UNIT IS DEFINED AS 200 1" CALIPER TREES, OR 100 2" CALIPER TREES. BY CONVERSION IT HAS BEEN DETERMINED THAT A SEEDLING OR WHIP WITHOUT SHELTER = 1 UNIT, WHIP WITH SHELTER = 2 UNITS, 1" CALIPER TREE = 3.5 UNITS AND 2" CALIPER TREE = 7 UNITS. THE USE OF PLANT UNITS SIMPLIFIES THE PLANT DENSITY CALCULATIONS WHEN MIXING STOCK SIZE.  
**PLANTING/SOIL SPECIFICATIONS**  
 1. INSTALLATION OF BAREROOT/PLUG PLANT STOCK SHALL TAKE PLACE BETWEEN MARCH 15 - APRIL 30; B&B/CONTAINER STOCK MARCH 15 -MAY 30 OR SEPTEMBER 15 - NOVEMBER 15. FALL PLANTING OF B&B STOCK IS NOT RECOMMENDED.  
 2. DISTURBED AREAS SHALL BE SEEDED AND STABILIZED AS PER GENERAL CONSTRUCTION PLAN FOR PROJECT. PLANTING AREAS NOT IMPACTED BY SITE GRADING SHALL HAVE NO ADDITIONAL TOPSOIL INSTALLED.  
 3. BAREROOT PLANTS SHALL BE INSTALLED SO THAT THE TOP OF ROOT MASS IS LEVEL WITH THE TOP OF EXISTING GRADE. ROOTS SHALL BE DIPPED IN AN ANTI-DESICCANT GEL PRIOR TO PLANTING. BACKFILL IN THE PLANTING PITS SHALL CONSIST OF 3 PARTS EXISTING SOIL TO 1 PART PINE FINES OR EQUIVALENT.  
 4. FERTILIZER SHALL CONSIST OF AGIFORM 22-8-2, OR EQUIVALENT, APPLIED AS PER MANUFACTURER'S SPECIFICATIONS, FOR WOODY PLANTS. HERBACEOUS PLANT SHALL BE FERTILIZED WITH OSMOCOTE 8-6-12.  
 5. PLANT MATERIAL SHALL BE TRANSPORTED TO THE SITE IN A TARPED OR COVERED TRUCK. PLANTS SHALL BE KEPT MOIST PRIOR TO PLANTING.  
 6. THE CONTRACTOR SHALL REMOVE ALL NON-ORGANIC DEBRIS ASSOCIATED WITH THE PLANTING OPERATION FROM THE SITE.  
**SEQUENCE OF CONSTRUCTION**  
 1. SEDIMENT CONTROL SHALL BE INSTALLED IN ACCORDANCE WITH GENERAL CONSTRUCTION PLAN FOR PROJECT.  
 2. PLANTS SHALL BE INSTALLED AS PER PLANT SCHEDULE AND THE PLANTING/SOIL SPECIFICATIONS FOR THE PROJECT.  
 3. UPON COMPLETION OF PLANTING, SIGNAGE SHALL BE INSTALLED AS SHOWN.  
 4. PLANTINGS SHALL BE MAINTAINED AND GUARANTEED IN ACCORDANCE WITH THE MAINTENANCE AND GUARANTEE REQUIREMENTS FOR PROJECT.  
**MAINTENANCE OF PLANTINGS**  
 1. MAINTENANCE OF PLANTINGS SHALL LAST FOR A PERIOD OF TWO YEARS.  
 2. PLANTINGS MUST RECEIVE 2 GALLONS OF WATER, EITHER THROUGH PRECIPITATION OR WATERING, DURING THE 1ST GROWING SEASON, AS NEEDED. DURING SECOND GROWING SEASON, ONCE A MONTH DURING MAY-SEPTEMBER, IF NEEDED.  
 3. INVASIVE EXOTICS AND NOXIOUS WEEDS WILL BE REMOVED, AS REQUIRED, FROM PLANTING AREAS MECHANICALLY AND/OR WITH LIMITED HERBICIDE. OLD FIELD SUCCESSIONAL SPECIES WILL BE RETAINED.  
 4. PLANTS SHALL BE EXAMINED A MINIMUM TWO TIMES DURING THE GROWING SEASON FOR SERIOUS PLANT PESTS AND DISEASES. SERIOUS PROBLEMS WILL BE TREATED WITH THE APPROPRIATE AGENT.  
 5. DEAD BRANCHES WILL BE PRUNED FROM PLANTINGS.  
**GUARANTEE REQUIREMENTS**  
 1. THE DEVELOPER SHALL PROVIDE EDUCATIONAL INFORMATION TO ALL PROPERTY OWNERS WITHIN THE NEW DEVELOPMENT/HOME ABOUT THE PROPER USE OF FOREST CONSERVATION AREAS.  
**FINAL INSPECTION AND RELEASE OF OBLIGATION**  
 1. AT THE END OF THE POST-CONSTRUCTION MANAGEMENT AND PROTECTION PERIOD THE DEVELOPER SHALL SUBMIT A CERTIFICATION TO THE COUNTY THAT ALL FOREST CONSERVATION AREAS HAVE REMAINED INTACT OR HAVE BEEN RESTORED TO APPROPRIATE CONDITION, THAT THE STIPULATED SURVIVAL RATES HAVE BEEN ACHIEVED, AND THAT ANY PERMANENT PROTECTION MEASURES REQUIRED BY THE PLAN ARE IN PLACE UPON REVIEW AND ACCEPTANCE. THE COUNTY WILL INFORM THE DEVELOPER OF THEIR RELEASE THE DEVELOPMENT OF FUTURE OBLIGATIONS RELATED TO THE FOREST CONSERVATION ACT.

**SEQUENCE OF CONSTRUCTION FOREST CONSERVATION**  
 1. PRECONSTRUCTION MEETING /SITE WALK WITH CONTRACTORS AND OTHER RESPONSIBLE PARTIES TO DEFINE PROTECTION MEASURES TO BE UTILIZED AND TO POINT OUT PARTICULAR TREES TO BE SAVED.  
 2. STAKE OUT LIMITS OF DISTURBANCE AND TREE PROTECTION FENCING LOCATIONS.  
 3. INSTALL TREE PROTECTION FENCING; FENCING TO BE INSPECTED BY THE PROJECT ENGINEER OR THE PROJECT ECOLOGIST AND HOWARD COUNTY PLANNING AND ZONING.  
 4. PROCEED WITH TREE REMOVAL AND SITE IMPROVEMENTS AS PER APPROVED SEDIMENT CONTROL PLAN - TO BE INSPECTED BY HOWARD COUNTY PLANNING AND ZONING.  
 5. TEMPORARY TREE PROTECTION DEVICES SHALL BE REMOVED AFTER ALL FINISHED GRADING AND UTILITY CONSTRUCTION HAS OCCURRED AND WITH APPROVAL FROM THE HOWARD COUNTY OFFICE OF PLANNING AND ZONING.

**CONSTRUCTION PERIOD PROTECTION AND MANAGEMENT NOTES FOR FOREST CONSERVATION**  
**PRE-CONSTRUCTION PHASE**  
 1. FOR ALL DISTURBANCE OR DUMPING IS ALLOWED INSIDE THE TREE RETENTION AREA.  
 2. NO EQUIPMENT SHALL BE OPERATED INSIDE THE TREE RETENTION AREA INCLUDING TREE CANOPIES.  
 3. IN THE EVENT OF DEBRIS AT THE PROTECTED TREES SHALL BE MONITORED FOR SIGNS OF STRESS AND WATERED AS NEEDED.  
**CONSTRUCTION PHASE**  
 1. NO DISTURBANCE OR DUMPING IS ALLOWED INSIDE THE TREE RETENTION AREA.  
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**POST-CONSTRUCTION PHASE**  
 1. AT THE DIRECTION OF A QUALIFIED TREE CARE EXPERT, DAMAGES TO RETAINED TREES SHALL BE REPAIRED BY THE CONTRACTOR.  
 2. FENCE REMOVAL AND STABILIZATION SHALL BE AS PER THE SEDIMENT AND EROSION CONTROL PLAN.  
 3. DO NOT REMOVE SIGNS.

**CONSTRUCTION PERIOD PROTECTION PROGRAM**  
**A. FOREST PROTECTION TECHNIQUES**  
**1. SOIL PROTECTION AREA (CRITICAL ROOT ZONE)**  
 THE SOIL PROTECTION AREA OR CRITICAL ROOT ZONE OF A TREE IS THAT PORTION OF THE SOIL COLUMN WHERE MOST OF ITS ROOTS WILL BE FOUND. THE MAJORITY OF ROOTS RESPONSIBLE FOR WATER AND NUTRIENT UPTAKE ARE LOCATED JUST BELOW THE SOIL SURFACE. TEMPORARY FENCING SHALL BE PLACED AROUND THE CRITICAL ROOT ZONE OF THE FOREST IN AREAS WHERE THE FOREST LIMITS OCCUR WITHIN 25 FEET OF THE LIMIT OF DISTURBANCE.  
**2. FENCING AND SIGNAGE**  
 EXISTING FOREST LIMITS OCCURRING WITHIN 25 FEET OF THE LIMITS OF DISTURBANCE SHALL BE PROTECTED USING TEMPORARY PROTECTIVE FENCING. PERMANENT SIGNAGE SHALL BE PLACED AROUND THE AFFORESTATION AREA PRIOR TO PLANT INSTALLATION AS SHOWN ON THE PLAN.  
**B. PRE-CONSTRUCTION MEETING**  
 UPON STAKING OF LIMITS OF DISTURBANCE A PRE-CONSTRUCTION MEETING WILL BE HELD BETWEEN THE DEVELOPER, CONTRACTOR AND APPROPRIATE COUNTY INSPECTOR. THE PURPOSE OF THE MEETING WILL BE TO VERIFY THAT ALL SEDIMENT CONTROL IS IN ORDER, AND TO NOTIFY THE CONTRACTOR OF POSSIBLE PENALTIES FOR NON-COMPLIANCE WITH THE FCP.  
**C. STORAGE FACILITIES/EQUIPMENT CLEANING**  
 ALL EQUIPMENT STORAGE, PARKING, SANITARY FACILITIES, MATERIAL STOCKPILING, ETC. ASSOCIATED WITH CONSTRUCTION OF THE PROJECT WILL BE RESTRICTED TO THOSE AREAS OUTSIDE OF THE PROPOSED FOREST CONSERVATION EASEMENT. CLEANING OF EQUIPMENT WILL BE LIMITED TO AREA WITHIN THE LOD OF THE PROPOSED HOMESITES. WASTEWATER RESULTING FROM EQUIPMENT CLEANING WILL BE CONTROLLED TO PREVENT RUNOFF INTO ENVIRONMENTALLY SENSITIVE AREAS.  
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 THE FOLLOWING TIMETABLE REPRESENTS THE PROPOSED TIMETABLE FOR DEVELOPMENT. THE ITEMS OUTLINED IN THE FOREST CONSERVATION PLAN WILL BE ENACTED WITHIN TWO (2) YEARS OF SUBDIVISION APPROVAL.  
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 SITE INSPECTIONS WILL BE PERFORMED A MINIMUM OF THREE TIMES DURING THE GROWING SEASON. THE PURPOSE OF THE INSPECTIONS WILL BE TO ASSESS THE HEALTH OF THE REFORESTATION/AFFORESTATION PLANTINGS. APPROPRIATE MEASURES WILL BE TAKEN TO RECTIFY ANY PROBLEMS WHICH MAY ARISE.  
**C. EDUCATION**  
 THE DEVELOPER WILL PROVIDE APPROPRIATE MATERIALS TO PROPERTY OWNERS INFORMING THEM OF THE LOCATION AND PURPOSE OF THE REFORESTATION/AFFORESTATION AREA. MATERIALS MAY INCLUDE SITE PLANS AND INFORMATION EXPLAINING THE INTENT OF THE FOREST CONSERVATION LAW.  
**D. FINAL INSPECTION**  
 AT THE END OF THE TWO YEAR POST-CONSTRUCTION MANAGEMENT PERIOD, GEO-TECHNOLOGY ASSOCIATES, INC. OR ANOTHER QUALIFIED PROFESSIONAL WILL SUBMIT TO THE ADMINISTRATOR OF THE HOWARD COUNTY FOREST CONSERVATION PROGRAM CERTIFICATION THAT ALL RETENTION/REFORESTATION/AFFORESTATION REQUIREMENTS HAVE BEEN MET. UPON ACCEPTANCE OF THIS CERTIFICATION, THE COUNTY WILL RELEASE THE DEVELOPER FROM ALL FUTURE OBLIGATIONS AND RELEASE THE DEVELOPER'S BOND.

**CONSTRUCTION PERIOD PROTECTION AND MANAGEMENT NOTES FOR FOREST CONSERVATION**  
**PRE-CONSTRUCTION PHASE**  
 1. FOR ALL DISTURBANCE OR DUMPING IS ALLOWED INSIDE THE TREE RETENTION AREA.  
 2. NO EQUIPMENT SHALL BE OPERATED INSIDE THE TREE RETENTION AREA INCLUDING TREE CANOPIES.  
 3. IN THE EVENT OF DEBRIS AT THE PROTECTED TREES SHALL BE MONITORED FOR SIGNS OF STRESS AND WATERED AS NEEDED.  
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**POST-CONSTRUCTION PHASE**  
 1. AT THE DIRECTION OF A QUALIFIED TREE CARE EXPERT, DAMAGES TO RETAINED TREES SHALL BE REPAIRED BY THE CONTRACTOR.  
 2. FENCE REMOVAL AND STABILIZATION SHALL BE AS PER THE SEDIMENT AND EROSION CONTROL PLAN.  
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 1. FOR ALL DISTURBANCE OR DUMPING IS ALLOWED INSIDE THE TREE RETENTION AREA.  
 2. NO EQUIPMENT SHALL BE OPERATED INSIDE THE TREE RETENTION AREA INCLUDING TREE CANOPIES.  
 3. IN THE EVENT OF DEBRIS AT THE PROTECTED TREES SHALL BE MONITORED FOR SIGNS OF STRESS AND WATERED AS NEEDED.  
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**POST-CONSTRUCTION PHASE**  
 1. AT THE DIRECTION OF A QUALIFIED TREE CARE EXPERT, DAMAGES TO RETAINED TREES SHALL BE REPAIRED BY THE CONTRACTOR.  
 2. FENCE REMOVAL AND STABILIZATION SHALL BE AS PER THE SEDIMENT AND EROSION CONTROL PLAN.  
 3. DO NOT REMOVE SIGNS.

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 3. DO NOT REMOVE SIGNS.

**HOWARD COUNTY FOREST CONSERVATION WORKSHEET**

**ZONED R-20 NET TRACT AREA:**  
 TOTAL TRACT AREA \_\_\_\_\_ 7.5 AC  
 AREA WITHIN 100 YEAR FLOODPLAIN \_\_\_\_\_ 2.1 AC  
 AREA TO REMAIN IN AGRICULTURAL PRESERVATION \_\_\_\_\_ 0.0 AC  
 NET TRACT AREA \_\_\_\_\_ 5.4 AC

**LAND USE CATEGORY:**  
 INPUT THE NUMBER "1" UNDER THE APPROPRIATE LAND USE ZONING, AND LIMIT TO ONLY ONE ENTRY. ZONED R-20  
 ARA MDR IDA HDR MPD CIA  
 0 0 0 1 0 0

**AFFORESTATION THRESHOLD \_\_\_\_\_ 15% X 5.4 = 0.8 AC**  
**CONSERVATION THRESHOLD \_\_\_\_\_ 20% X 5.4 = 1.1 AC**

**EXISTING FOREST COVER:**  
 EXISTING FOREST COVER (EXCLUDING FLOODPLAIN) (FSD REPORT) \_\_\_\_\_ = 0.8 AC  
 AREA OF FOREST ABOVE AFFORESTATION THRESHOLD \_\_\_\_\_ = 0.0 AC  
 AREA OF FOREST ABOVE CONSERVATION THRESHOLD \_\_\_\_\_ = 0.0 AC

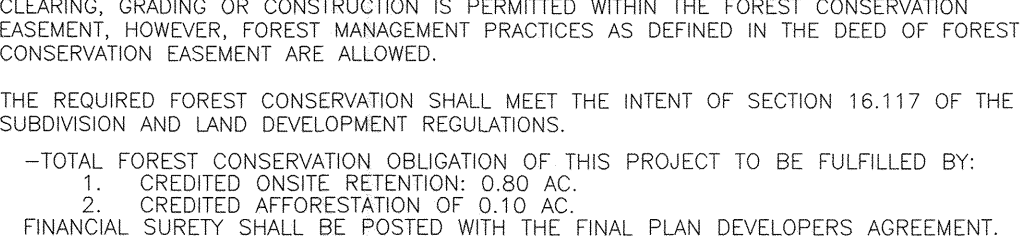
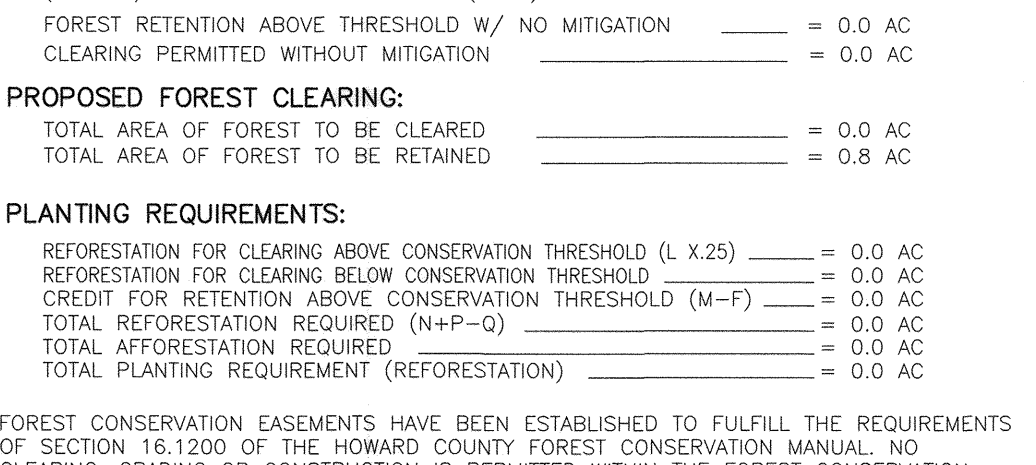
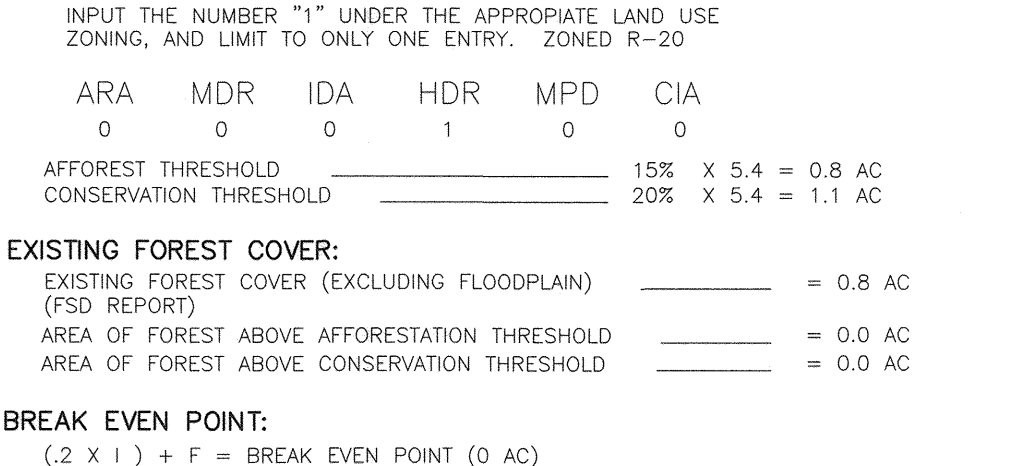
**BREAK EVEN POINT:**  
 (2 X 1) + F = BREAK EVEN POINT (0 AC)  
 FOREST RETENTION ABOVE THRESHOLD W/ NO MITIGATION \_\_\_\_\_ = 0.0 AC  
 CLEARING PERMITTED WITHOUT MITIGATION \_\_\_\_\_ = 0.0 AC

**PROPOSED FOREST CLEARING:**  
 TOTAL AREA OF FOREST TO BE CLEARED \_\_\_\_\_ = 0.0 AC  
 TOTAL AREA OF FOREST TO BE RETAINED \_\_\_\_\_ = 0.8 AC

**PLANTING REQUIREMENTS:**  
 REFORESTATION FOR CLEARING ABOVE CONSERVATION THRESHOLD (L X 25) \_\_\_\_\_ = 0.0 AC  
 REFORESTATION FOR CLEARING BELOW CONSERVATION THRESHOLD \_\_\_\_\_ = 0.0 AC  
 CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD (M-F) \_\_\_\_\_ = 0.0 AC  
 TOTAL REFORESTATION REQUIRED (N+P-Q) \_\_\_\_\_ = 0.0 AC  
 TOTAL AFFORESTATION REQUIRED \_\_\_\_\_ = 0.0 AC  
 TOTAL PLANTING REQUIREMENT (REFORESTATION) \_\_\_\_\_ = 0.0 AC

FOREST CONSERVATION EASEMENTS HAVE BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY FOREST CONSERVATION MANUAL. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT, HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.

THE REQUIRED FOREST CONSERVATION SHALL MEET THE INTENT OF SECTION 16.117 OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.  
 -TOTAL FOREST CONSERVATION OBLIGATION OF THIS PROJECT TO BE FULFILLED BY:  
 1. CREDITED ONSITE RETENTION: 0.80 AC.  
 2. CREDITED AFFORESTATION OF 0.10 AC.  
 FINANCIAL SURETY SHALL BE POSTED WITH THE FINAL PLAN DEVELOPERS AGREEMENT.  
 FINANCIAL SURETY FOR THE REQUIRED AFFORESTATION = \$ 2,178 (0.1 AC OR 4,356 SF @ \$0.50/SF)



**Making Transparent Shrub**

1. Remove all shrubs and small trees within the retention area.  
 2. Apply herbicide to the remaining shrub stems.  
 3. Monitor for regrowth and re-apply herbicide as needed.





**LEGEND:**

- SBF- EXISTING CONTOUR
- E00- PROPOSED CONTOUR
- +02.68 PROPOSED SPOT ELEVATION
- +02.68 EXISTING SPOT ELEVATION
- EXISTING UTILITY
- EXISTING SANITARY MANHOLE
- SS EXISTING SANITARY LINE
- W EXISTING WATER LINE
- - - - - PROPOSED STORM DRAIN
- EXISTING TREE
- EXISTING SPECIMEN TREES
- EXISTING TREELINE
- - - - - EXISTING FENCE
- - - - - PROPERTY LINE TO BE ABANDONED
- - - - - ADJACENT PROPERTY LINE
- - - - - PROPERTY LINE
- - - - - RIGHT-OF-WAY LINE
- M1B2 SOILS BOUNDARY
- MTD3 SOILS BOUNDARY
- Micro-Bioretenation (M-B)
- Public Stormwater Management, Drainage & Utility Easement
- EXISTING WETLAND
- EXISTING WETLAND BUFFER
- EXISTING STREAM
- EXISTING STREAM BUFFER
- DA# 2 DRAINAGE AREA DESCRIPTION
- DRAINAGE AREA DIVIDE
- B-1 TEST PIT

**OWNER**  
 MARANATHA MAG. MANOR LLC  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

**DEVELOPER**  
 TRINITY HOMES MARY LAND, LLC  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 [Signature] 11/22/20  
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 12-4-20  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION JR DATE

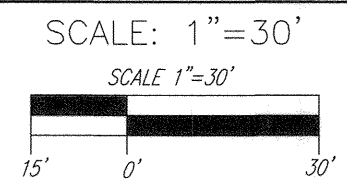
[Signature] 12/18/20  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

**SOILS LEGEND**  
 HOWARD COUNTY SOILS MAP #13

SYMBOL	NAME / DESCRIPTION	GROUP	K FACTOR	ERODIBLE	ACREAGE
GnB	GLENVILLE-SMILE SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	0.49	YES	0.86
MoD	MANOR LOAM, 15 TO 25 PERCENT SLOPES	B	0.32	YES	0.02
Ho	HATBORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	D	0.43	NO	2.48
GgC	GLENELG LOAM, 8 TO 15 PERCENT SLOPES	B	0.43	YES	3.71
GgB	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	B	0.37	YES	0.46

**SOILS NOTES:**

- TAKEN FROM USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY
- HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.
- GnB AND Ho SOILS MAY CONTAIN HYDRIC COMPONENTS.
- K FACTORS OBTAINED FROM THE HOWARD SOIL CONSERVATION DISTRICT WEBSITE <https://www.howardscd.org/documents> - DOCUMENT TITLED "K FACTORS" (USE KW)



**STORMWATER MANAGEMENT DRAINAGE AREA MAP**

NO. REVISION DATE

**FINAL ROAD CONSTRUCTION PLANS**  
 STORMWATER MANAGEMENT  
 DRAINAGE AREA MAP  
**RIVER BIRCH MANOR**  
 LOTS 1-7 AND OPEN SPACE LOT 8  
 A SUBDIVISION OF TAX MAP 17 - PARCEL 385

L 18205 / F. 247  
 TAX MAP: 17 GRID: 20  
 2ND ELECTION DISTRICT  
 GPZ REFERENCE: SEE SITE DATA

10039 GERMAN ROAD  
 ELLICOTT CITY, MD 21042

ZONED: R-20  
 PARCEL: 0385  
 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

PROFESSIONAL CERTIFICATE

DESIGN BY: RHV  
 DRAWN BY: ES/MVP  
 CHECKED BY: RHV  
 DATE: SEPT. 2020  
 SCALE: AS SHOWN  
 W.O. NO.: 41656

12 SHEET OF 15



**APPENDIX B.4.C SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDEN, LANDSCAPE INFILTRATION & INFILTRATION BERMS**

**1. MATERIAL SPECIFICATIONS**  
THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.

**2. FILTERING MEDIA OR PLANTING SOIL**

THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR LOADED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE AN OBSTACLE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BENZINA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05. THE PLANTING SOIL SHALL MEET THE FOLLOWING CRITERIA:

- SOIL COMPONENT - LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURE CLASSIFICATION)
- ORGANIC CONTENT - MINIMUM 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60%-65%) AND COMPOST (35% TO 40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).
- CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 3%.
- PH RANGE - SHOULD BE BETWEEN 5.5 - 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED IN TO THE SOIL TO INCREASE OR DECREASE PH.

THERE SHALL BE AT LEAST ONE SOIL TEST PER PROJECT. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, AND ADDITIONAL TESTS OF ORGANIC MATTER, AND SOLUBLE SALTS. A TEXTURAL ANALYSIS IS REQUIRED FROM THE SITE STOCKPILED TOPSOIL IF TOPSOIL IS IMPORTED, THEN A TEXTURE ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOPSOIL WAS EXCAVATED.

**3. COMPACTION**  
IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF THE BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING LOADERS, THE CONTRACTOR SHOULD USE WIDE TRACK OR WASH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TIRE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH-PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.

COMPACTION CAN BE AVOIDED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REFRACTURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT. ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY PONDED WATER BEFORE PREPARING (ROTOTILLING) BASE.

WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE. DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE AVOIDED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REFRACTURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.

**4. PLANT MATERIAL**  
RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.

**5. PLANT INSTALLATION**  
COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED OR CHIPPED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE.

ROOTS OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION. TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL.

GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLOWS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS.

THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS, DEFATS, OR AT A MINIMUM, IMPEDES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.

**6. UNDERDRAINS**  
UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:

- PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM 758, TYPE PS 28, OR AASHTO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PVC (E.G., PVC OF HOPE).
- PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 17/8" (NO. 4 OR 4+4) GALVANIZED HARDWARE CLOTH.
- GRAVEL - THE GRAVEL LAYER (NO. 57 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.
- THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.
- A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.
- A 4" LAYER OF PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES IN TO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".

THIS MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1000 SQUARE FEET OF SURFACE AREA).

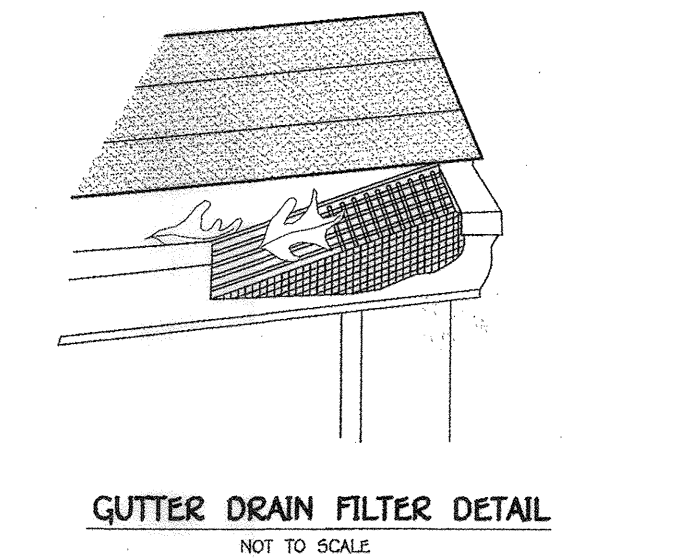
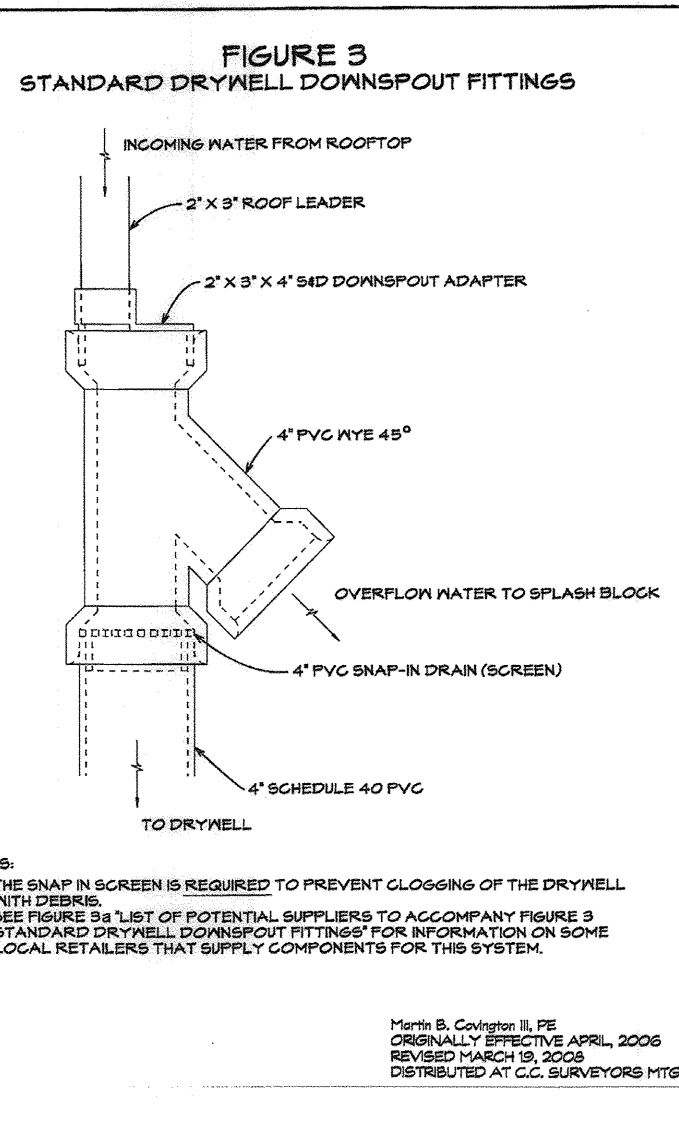
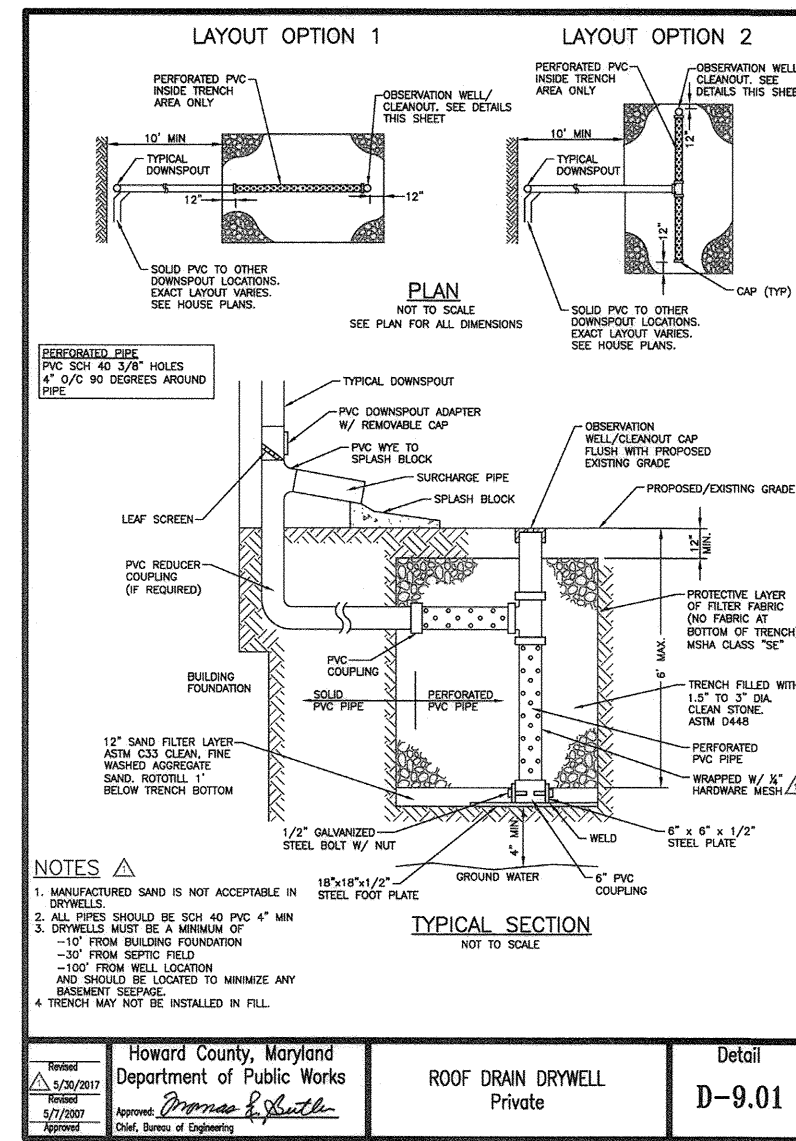
**7. MISCELLANEOUS**  
THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

**OPERATION AND MAINTENANCE SCHEDULE FOR LANDSCAPE INFILTRATION (M-3), MICRO-BIORETENTION (M-6), RAIN GARDENS (M-7), BIORETENTION SWALE (M-8), AND ENHANCED FILTERS (M-9)**

1. 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 PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUME 1, TABLE A-4.1 AND 2.
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 CONSISTENTLY BEYOND TREATMENT. REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL. TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRES.
3. 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.
4. 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 PRIVATELY OWNED AND MAINTAINED STORMWATER DRY WELLS (M-5)**

1. THE MONITORING WELLS AND STRUCTURES SHALL BE INSPECTED ON A QUARTERLY BASIS AND AFTER EVERY LARGE STORM EVENT.
2. WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS SHALL BE RECORDED OVER A PERIOD OF SEVERAL DAYS TO INSURE TRENCH DRAINAGE.
3. A LOG BOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
4. WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN THE 72 HOUR TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.
5. THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
6. ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION FACILITY HAVE BEEN VERIFIED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN ANNUAL BASIS UNLESS THE PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED.



**ON-LOT DRYWELL - SIZING CHART**

ESD	DA	LOT #	LOCATION	DW NUMBER	SURFACE			STONE DEPTH	SAND DEPTH
					FT	X	FT		
DA-2	1	R & F	3	8.00	X	8.00	3	1	
DA-5	2	R	4	8.00	X	8.00	3	1	
DA-7	3	R & F	4	8.00	X	8.00	3	1	
DA-9	4	R & F	4	8.00	X	8.00	3	1	
DA-11	5	R & F	4	8.00	X	8.00	3	1	
DA-13	6	R	4	8.00	X	8.00	3	1	
DA-15	7	R	1	8.00	X	8.00	3	1	
DA-15	7	R	2	8.00	X	8.00	3	1	

R=REAR OF LOT  
F=FRONT OF LOT

**RIVER BIRCH MANOR - FINAL ESDv COMPUTATIONS**

DA #	% IMPERV	Rv	DA (SF)	DA (AC)	MINIMUM VOLUME	MAXIMUM VOLUME	1.60' VOLUME PROVIDED*	IMPERV (SF)	IMPERV (AC)	GREEN AREA	REMARKS	
SITE DEVELOPABLE AREA: 3.45 AC 150466 SF												
TARGET Pe: 1.60 IN												
SITE IMPERVIOUS: 26.22865 PERCENT												
SITE Rv: 0.2850												
SITE ESDv: 5738 CF +/-												
Rv=0.05+0.009K V min=1.07*rainfall Vmax=1yr rainfall*2.6"												
(1.0x0.95KA)/12 (2.6x0.95KA)/12												
LOT 1 DA# 1 DRIVEWAY & 1/4 HOUSE	18.22	0.2140	8337	0.19	149	387	239	253	1519.3	0.03	0.16	MICROSCALE MICRO-BIO RETENTION (M-6) 253 190 SF MULCH AREA
LOT 1 DA# 2 HOUSE	100.00	0.9500	1637	0.04	130	337	154	230	1637	0.04	0.00	Drywell 3 @ 8"Wx8"Lx3"D 230 76.8 CF EA
DA #3 ROW	72.01	0.6981	10992	0.25	639	1663	1029	1244	7915	0.38	0.07	MICROSCALE MICRO-BIO RETENTION (M-6) 1244 933 SF MULCH AREA
LOT 2 DA# 4 DRIVEWAY	38.71	0.3984	3325	0.08	110	287	178	227	1287	0.03	0.05	MICROSCALE MICRO-BIO RETENTION (M-6) 227 170 SF MULCH AREA
LOT 2 DA# 5 HOUSE	100.00	0.9500	2150	0.05	170	443	203	307	2150	0.05	0.00	Drywell 4 @ 8"Wx8"Lx3"D 307 76.8 CF EA
LOT 3 DA# 6 DRIVEWAY	36.66	0.3800	5673	0.13	180	467	289	436	2080	0.05	0.08	MICROSCALE MICRO-BIO RETENTION (M-6) 436 327 SF MULCH AREA
LOT 3 DA# 7 HOUSE	100.00	0.9500	2150	0.05	170	443	203	307	2150	0.05	0.00	Drywell 4 @ 8"Wx8"Lx3"D 307 76.8 CF EA
LOT 4 DA# 8 DRIVEWAY	40.08	0.4107	3373	0.08	115	300	186	300	1352	0.03	0.05	MICROSCALE MICRO-BIO RETENTION (M-6) 361 271 SF MULCH AREA
LOT 4 DA# 9 HOUSE	100.00	0.9500	2150	0.05	170	443	203	307	2150	0.05	0.00	Drywell 4 @ 8"Wx8"Lx3"D 307 76.8 CF EA
LOT 5 DA# 10 DRIVEWAY	37.58	0.3882	6841	0.16	221	575	356	280	2571	0.06	0.10	MICROSCALE MICRO-BIO RETENTION (M-6) 280 210 SF MULCH AREA
LOT 5 DA# 11 HOUSE	100.00	0.9500	2150	0.05	170	443	203	307	2150	0.05	0.00	Drywell 4 @ 8"Wx8"Lx3"D 307 76.8 CF EA
LOT 6 DA# 12 DRIVEWAY	29.98	0.3198	3916	0.09	104	271	168	271	1174	0.03	0.06	MICROSCALE MICRO-BIO RETENTION (M-6) 276 207 SF MULCH AREA
LOT 6 DA# 13 HOUSE	100.00	0.9500	2150	0.05	170	443	203	307	2150	0.05	0.00	Drywell 4 @ 8"Wx8"Lx3"D 307 76.8 CF EA
LOT 7 DA# 14 DRIVEWAY	39.80	0.4082	5686	0.13	193	503	311	367	2263	0.05	0.08	MICROSCALE MICRO-BIO RETENTION (M-6) 367 275 SF MULCH AREA
LOT 7 DA# 15 HOUSE	100.00	0.9500	2150	0.05	170	443	203	250	2150	0.05	0.00	Drywell 1 @ 8"Wx8"Lx3"D 250 76.8 CF EA 2 @ 9"Wx8"Lx3"D 86.4 CF EA
LOT 7 DA# 16 DRIVEWAY	30.09	0.3208	5142	0.12	137	357	221	357	1547	0.04	0.08	MICROSCALE MICRO-BIO RETENTION (M-6) 435 326 SF MULCH AREA
<b>PROJECT TOTALS</b>	53.4		67822	1.56				<b>5752</b>	36245.3	0.83	0.72	

**Appendix B.4. Construction Specifications for Environmental Site Design Practices**

**Table B.4.1 Materials Specifications for Micro-Bioretenion, Rain Gardens & Landscape Infiltration-**

Material	Specification	Size	Notes
Plantings	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")	
Curtain 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 underneath 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 pour-and-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 properties) and analysis of potential cracking. Sand substitutions such as Diabase and Gneystone (AASHTO #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.
Sand	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	

**TEST PIT LOG**

TEST PIT #	DEPTH	NOTES
B-1	11 FT	NO ROCK OR WATER
B-2	11 FT	NO ROCK OR WATER
B-3	11 FT	NO ROCK OR WATER
B-4	11 FT	NO ROCK OR WATER
B-5	11 FT	NO ROCK OR WATER
B-6	11 FT	NO ROCK OR WATER
B-7	11 FT	NO ROCK OR WATER
B-8	11 FT	NO ROCK OR WATER
B-9	11 FT	NO ROCK OR WATER
B-10	11 FT	NO ROCK OR WATER
B-11	11 FT	NO ROCK OR WATER
B-12	11 FT	NO ROCK OR WATER
B-13	11 FT	NO ROCK OR WATER
B-14	11 FT	NO ROCK OR WATER
B-15	11 FT	NO ROCK OR WATER

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION 12-4-20 DATE

*[Signature]*  
CHIEF, DIVISION OF LAND DEVELOPMENT 12/10/20 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

*[Signature]*  
CHIEF, BUREAU OF HIGHWAYS 11/23/20 DATE

**OWNER**  
MARANATHA MAG. MANOR LLC  
3675 PARK AVE., SUITE 301  
ELLICOTT CITY, MD 21043  
(410) 480-0023

**DEVELOPER**  
TRINITY HOMES MARY LAND, LLC  
3675 PARK AVE., SUITE 301  
ELLICOTT CITY, MD 21043  
(410) 480-0023

**FINAL ROAD CONSTRUCTION PLANS**

**STORMWATER MANAGEMENT NOTES AND DETAILS**

**RIVER BIRCH MANOR**

LOTS 1-7 AND OPEN SPACE LOT 8  
A SUBDIVISION OF TAX MAP 17 - PARCEL 385

L 18205 / F. 247  
TAX MAP: 17 GRD: 20  
2ND ELECTION DISTRICT  
DPZ REFERENCE: SEE SITE DATA

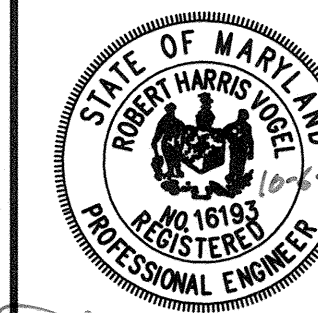
10039 GERMAN ROAD  
ELLICOTT CITY, MD 21042

ZONED: R-20  
PARCEL: 0385  
HOWARD COUNTY, MARYLAND

**VOGEL ENGINEERING**

**TIMMONS GROUP**

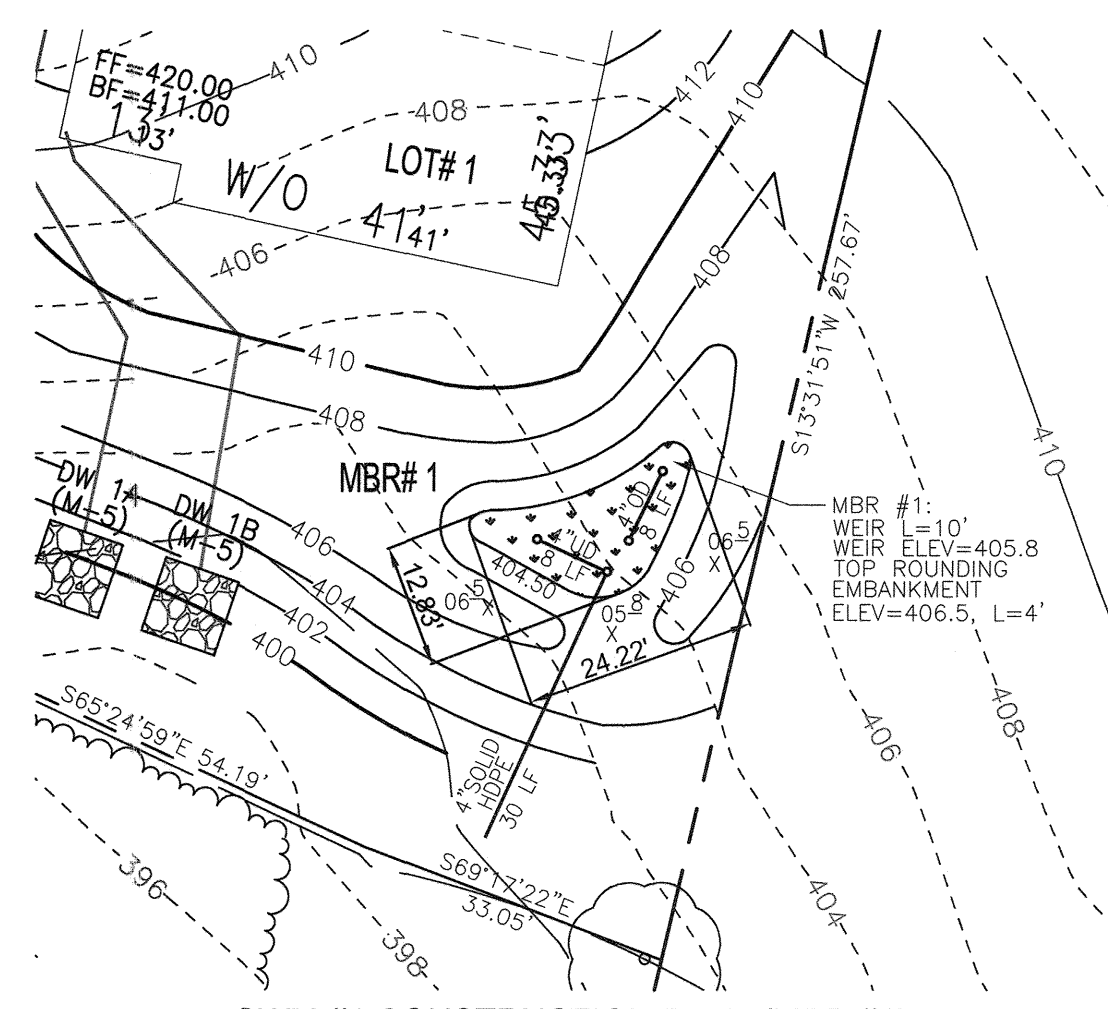
3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043  
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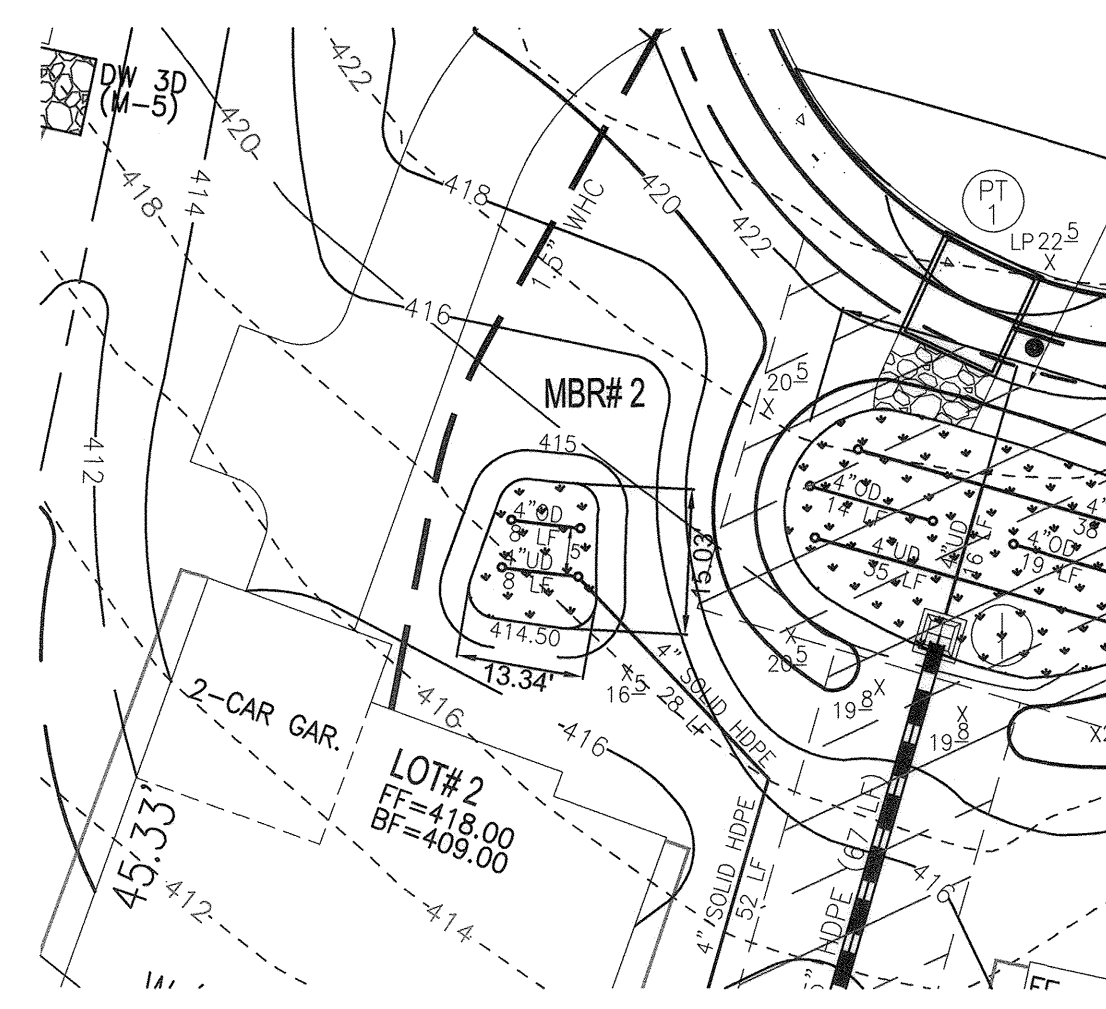
DESIGN BY: RHV  
DRAWN BY: ES/MVP  
CHECKED BY: RHV  
DATE: SEPT. 2020  
SCALE: AS SHOWN  
W.O. NO.: 41656

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, EXPIRES DATE: 09-27-2022.

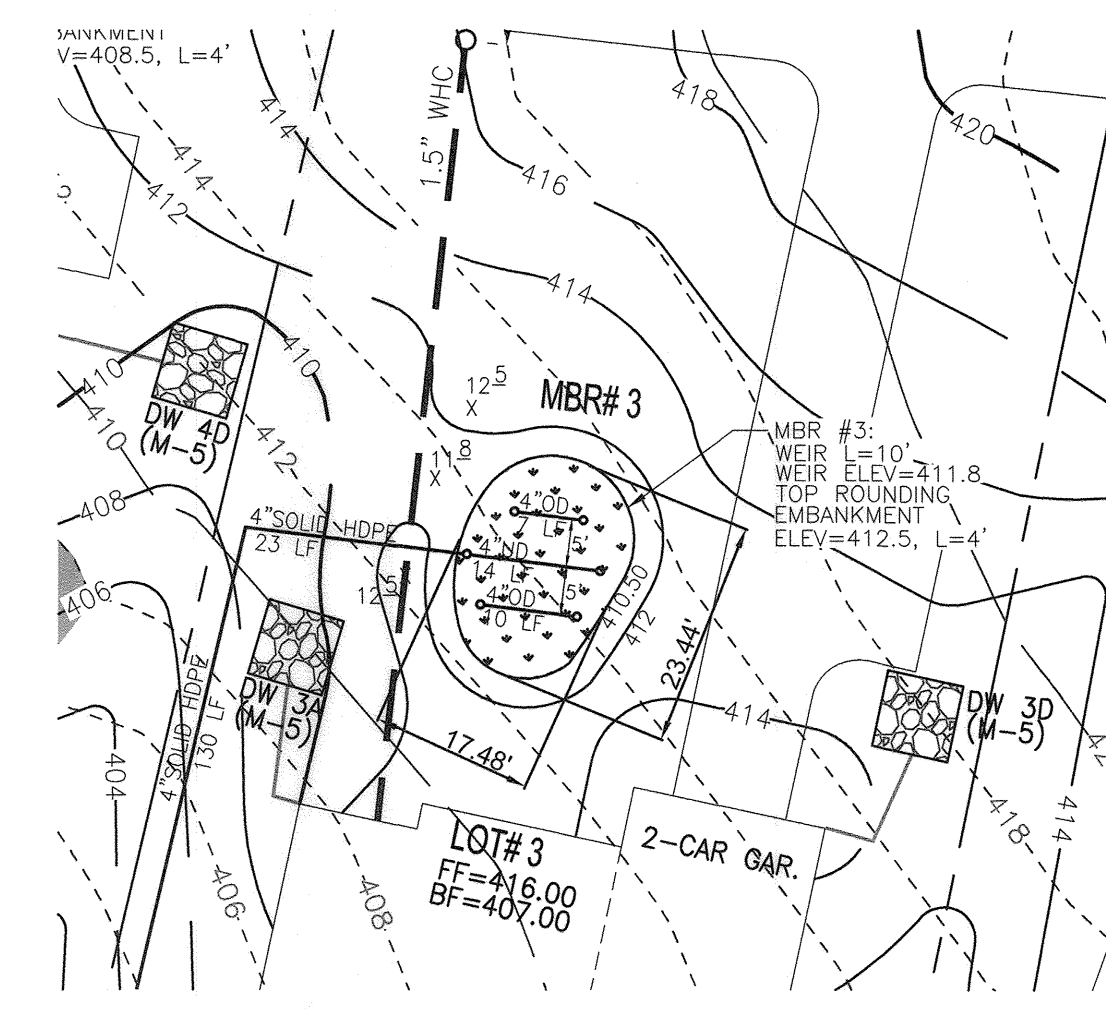




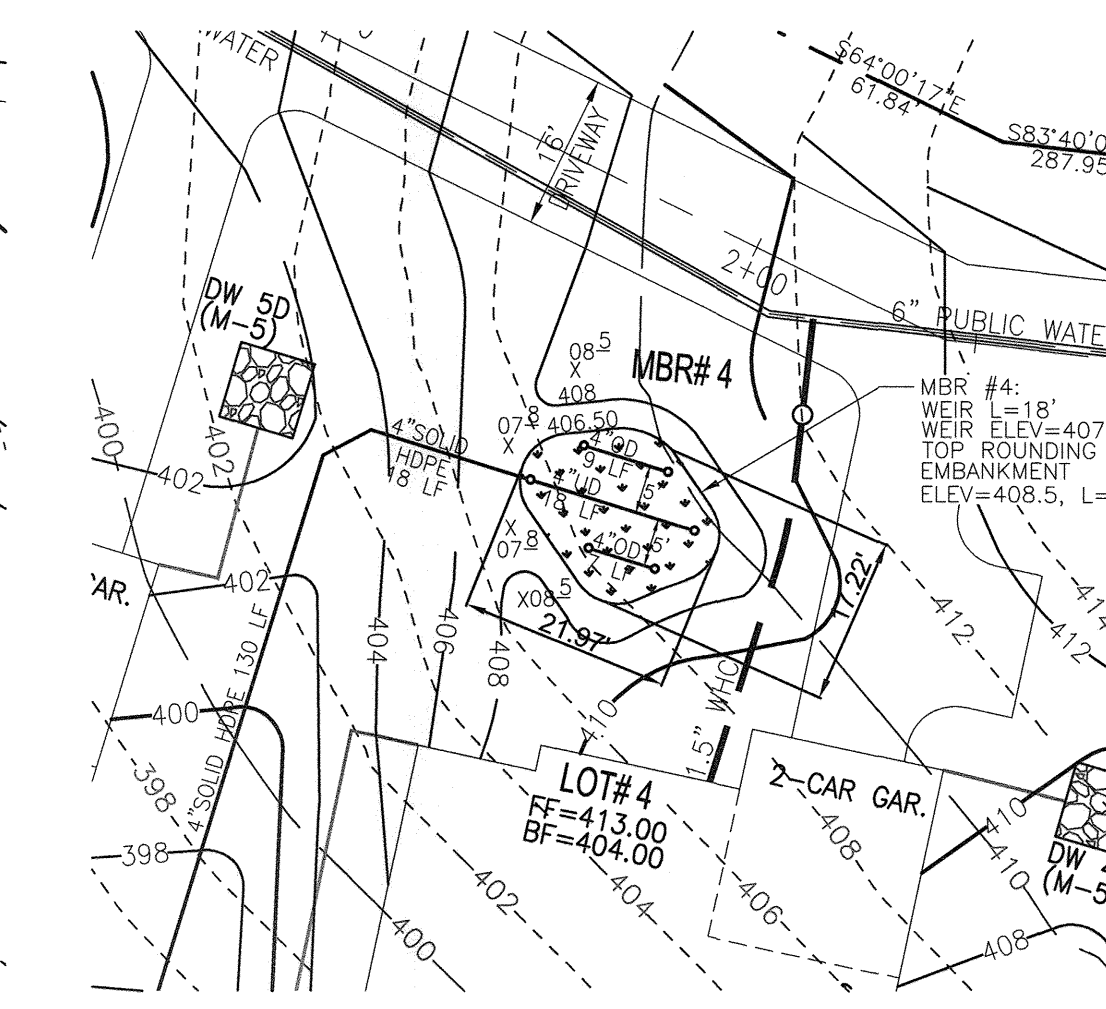
**SWM #1 CONSTRUCTION PLAN (MBR #1)**  
SCALE: 1" = 20'



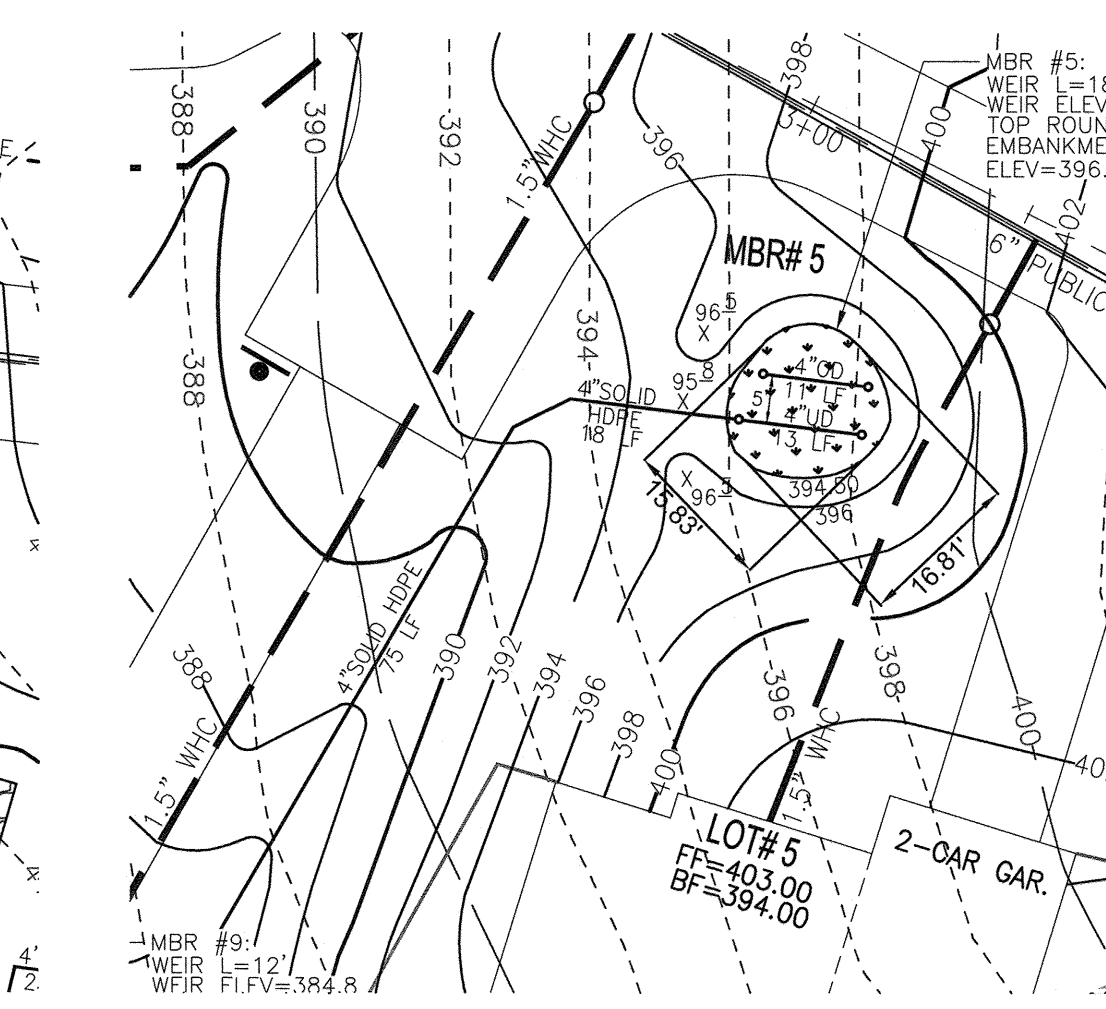
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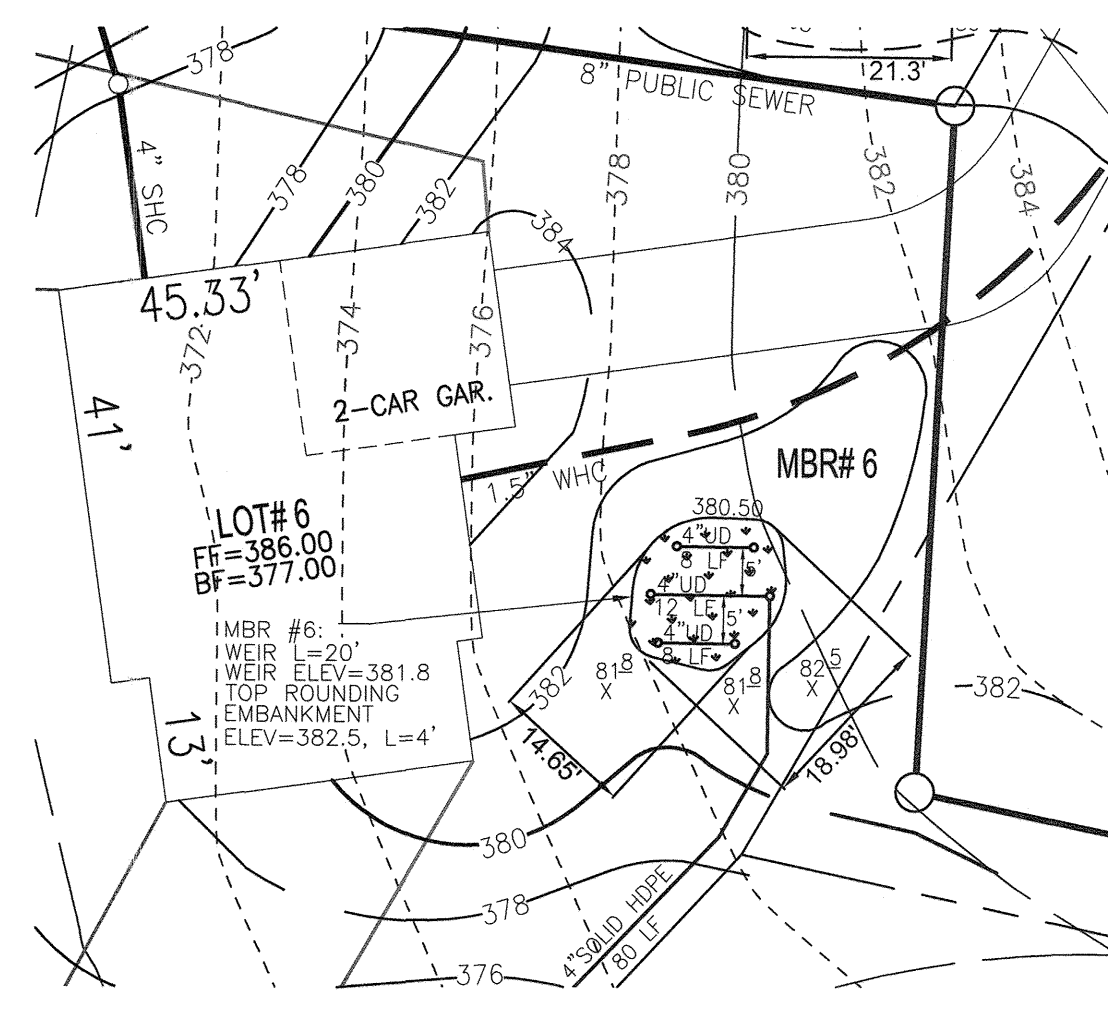
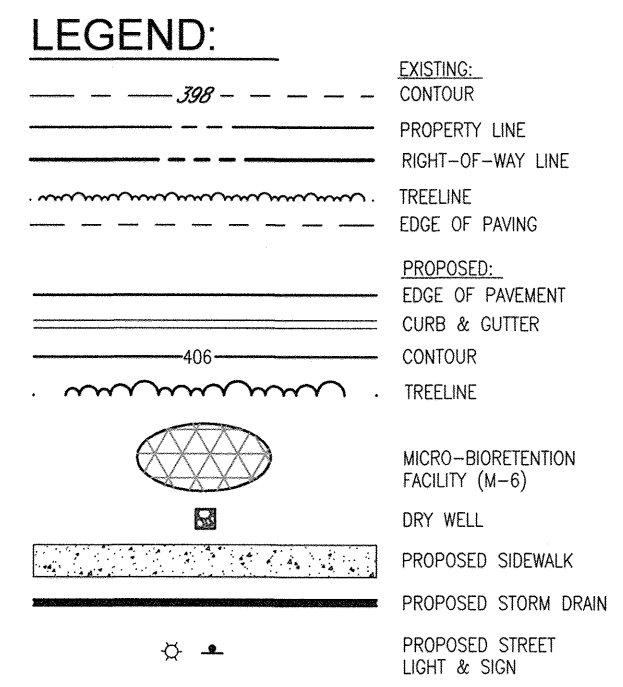
**SWM #3 CONSTRUCTION PLAN (MBR #3)**  
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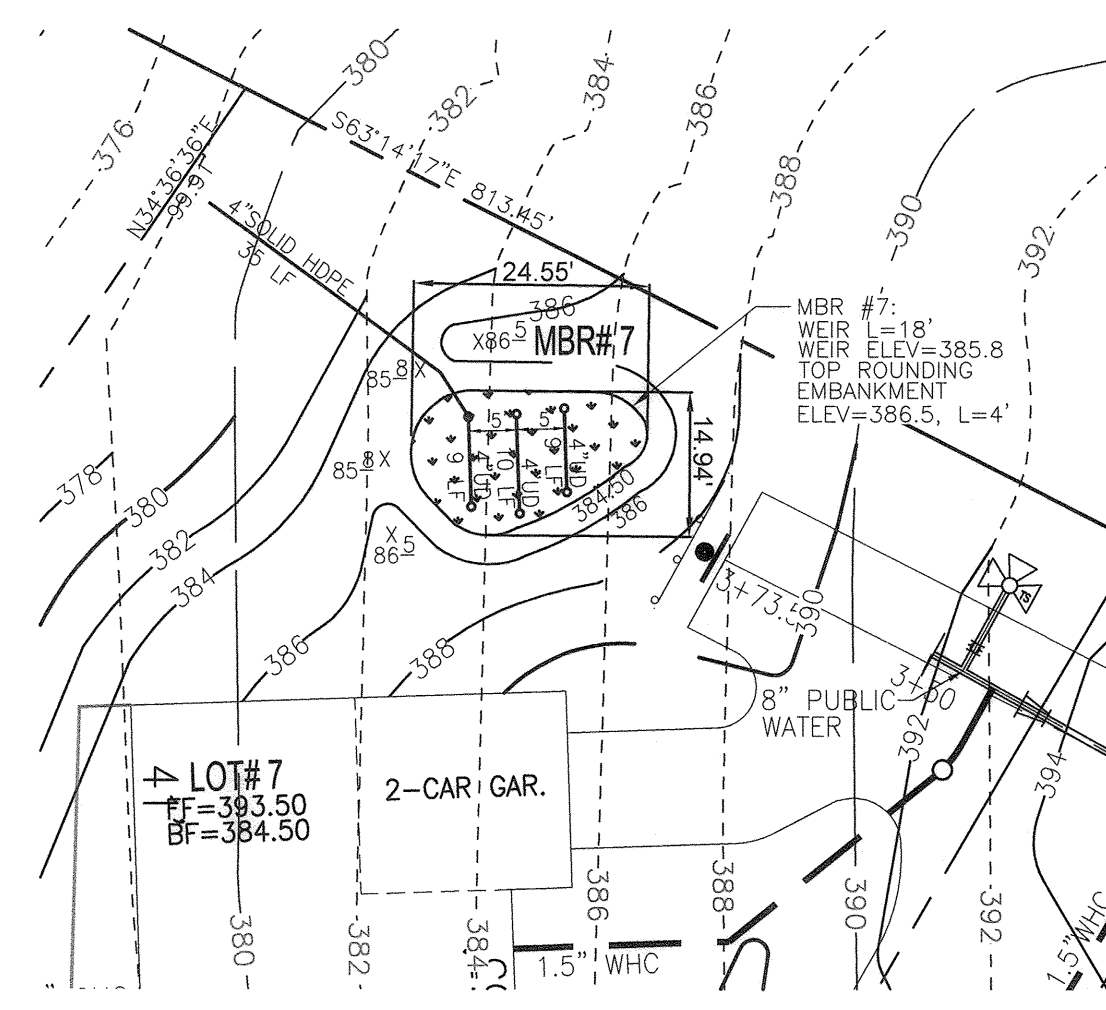
**SWM #4 CONSTRUCTION PLAN (MBR #4)**  
SCALE: 1" = 20'



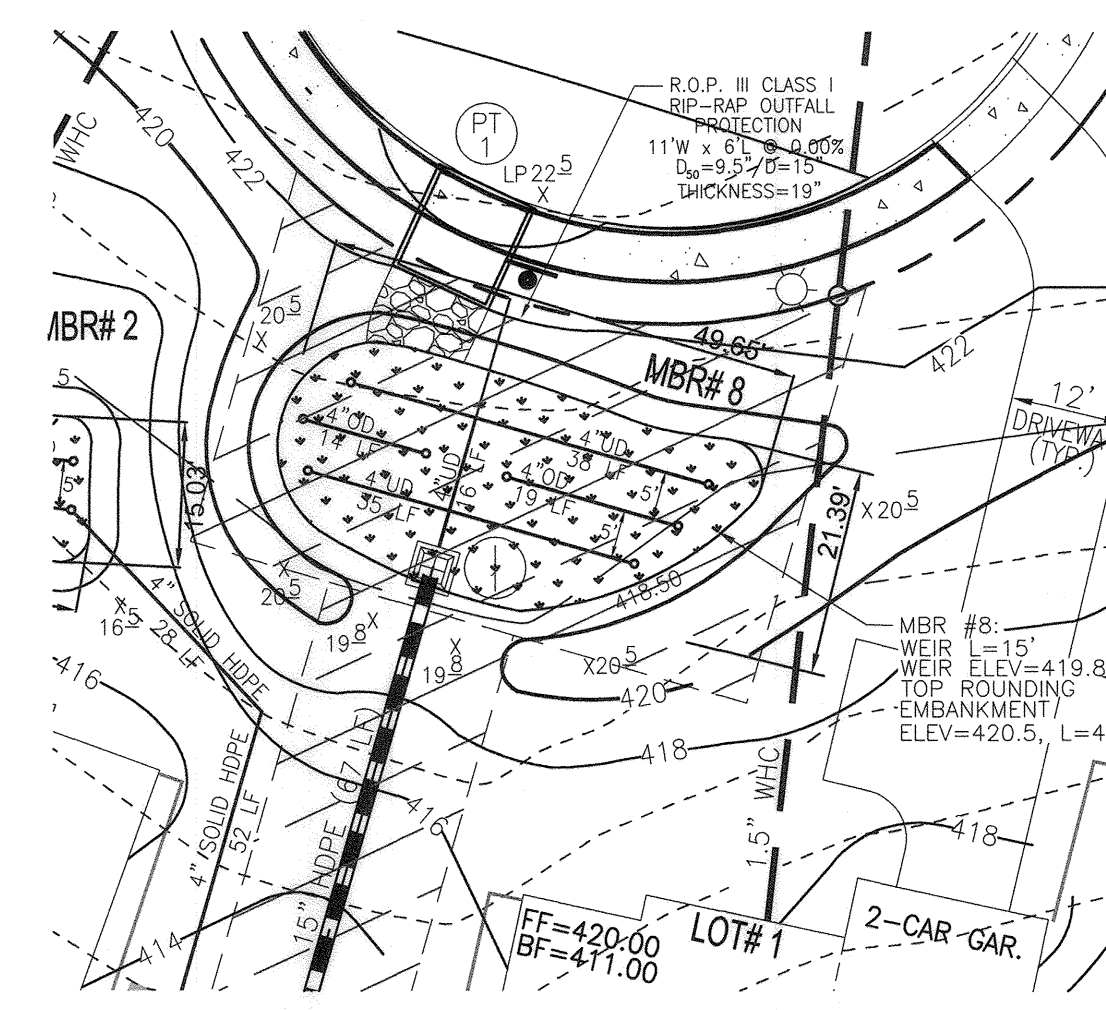
**SWM #5 CONSTRUCTION PLAN (MBR #5)**  
SCALE: 1" = 20'



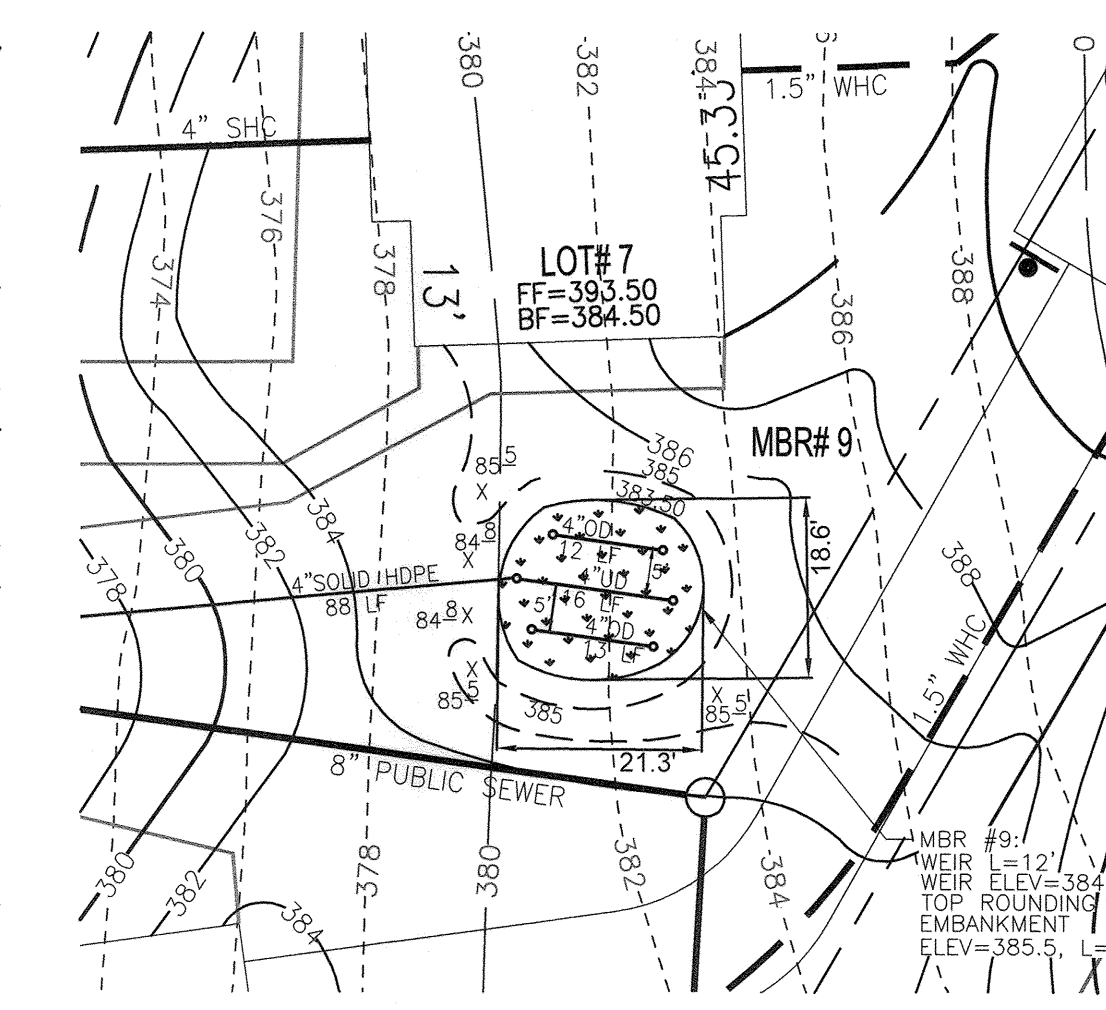
**SWM #6 CONSTRUCTION PLAN (MBR #6)**  
SCALE: 1" = 20'



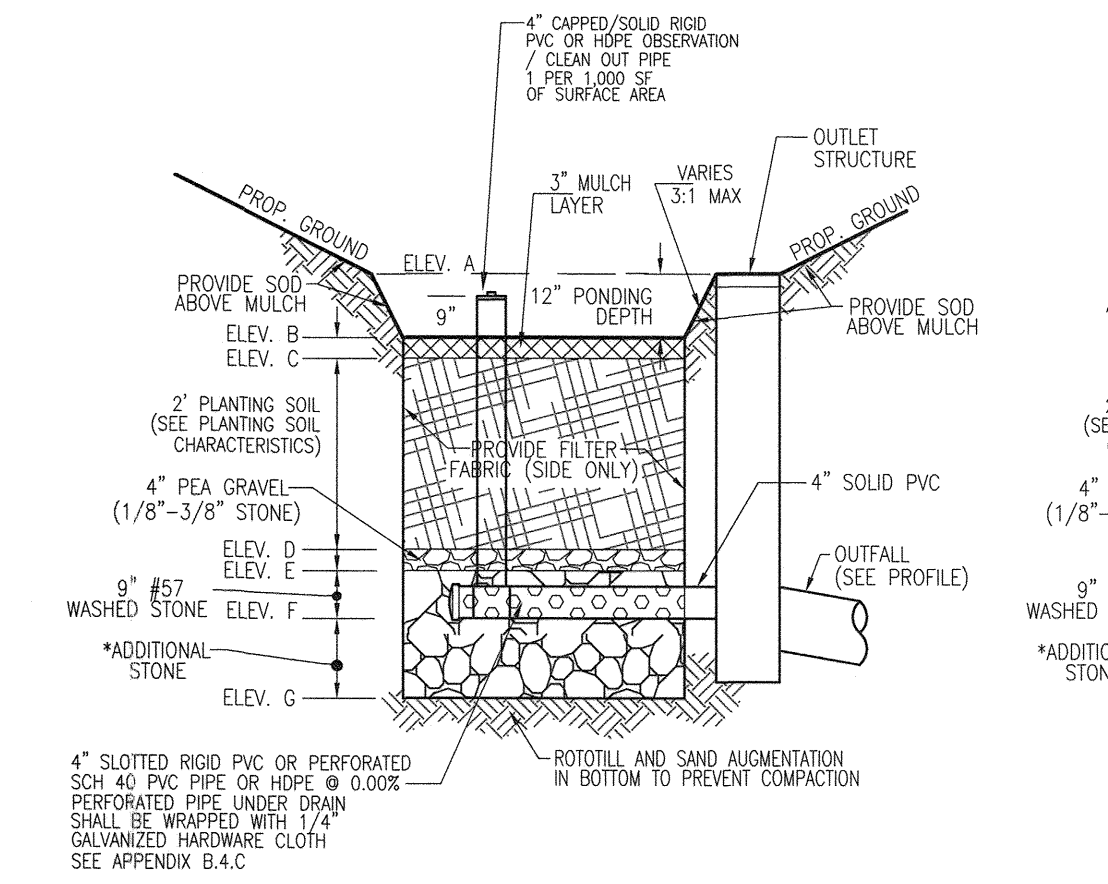
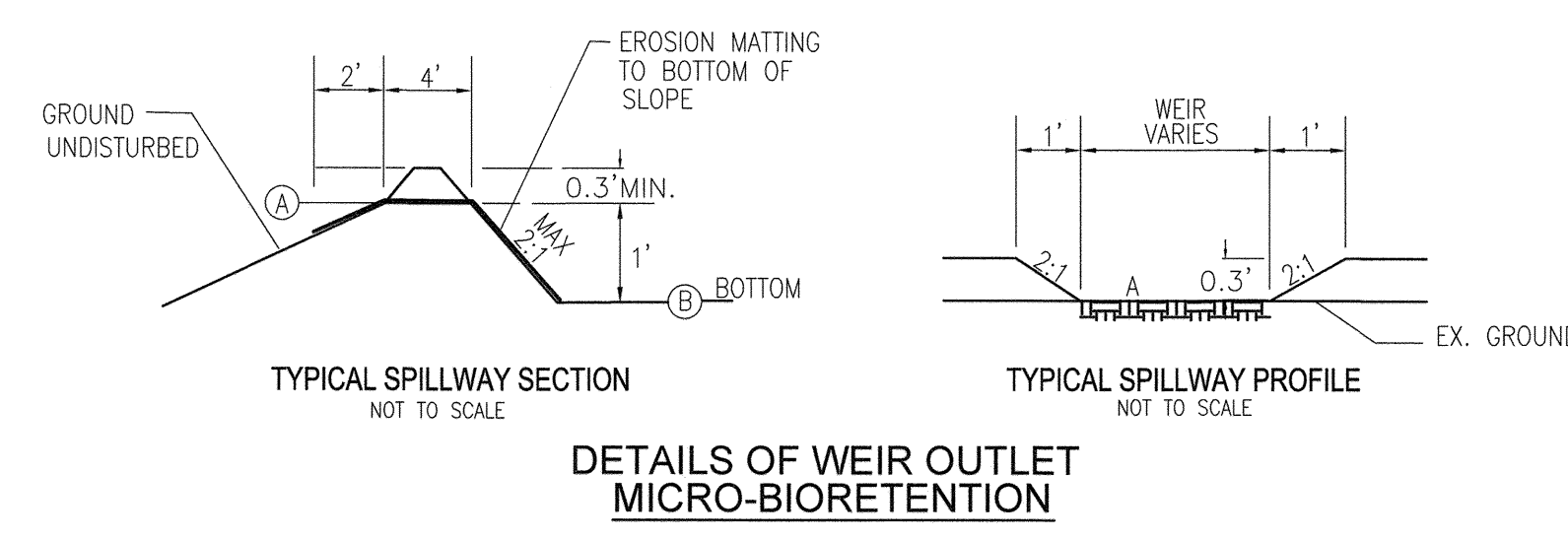
**SWM #7 CONSTRUCTION PLAN (MBR #7)**  
SCALE: 1" = 20'



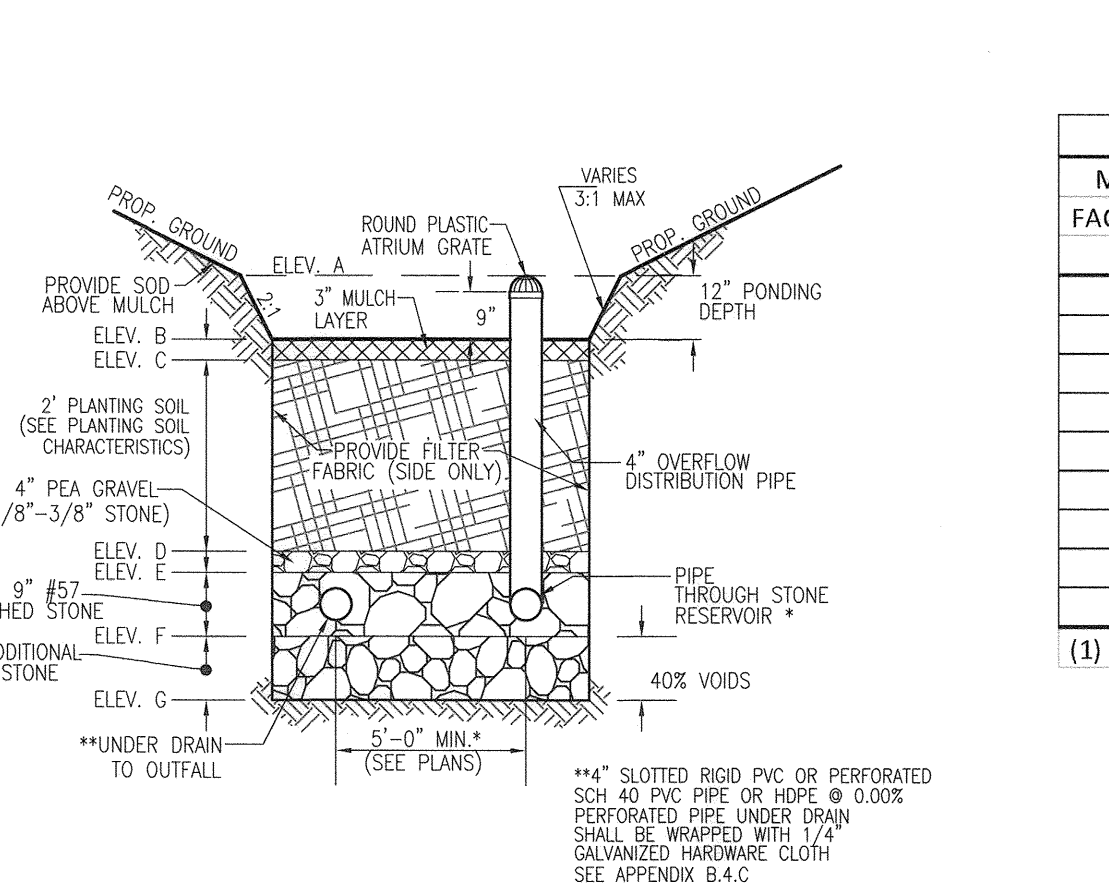
**SWM #8 CONSTRUCTION PLAN (MBR #8)**  
SCALE: 1" = 20'



**SWM #9 CONSTRUCTION PLAN (MBR #9)**  
SCALE: 1" = 20'



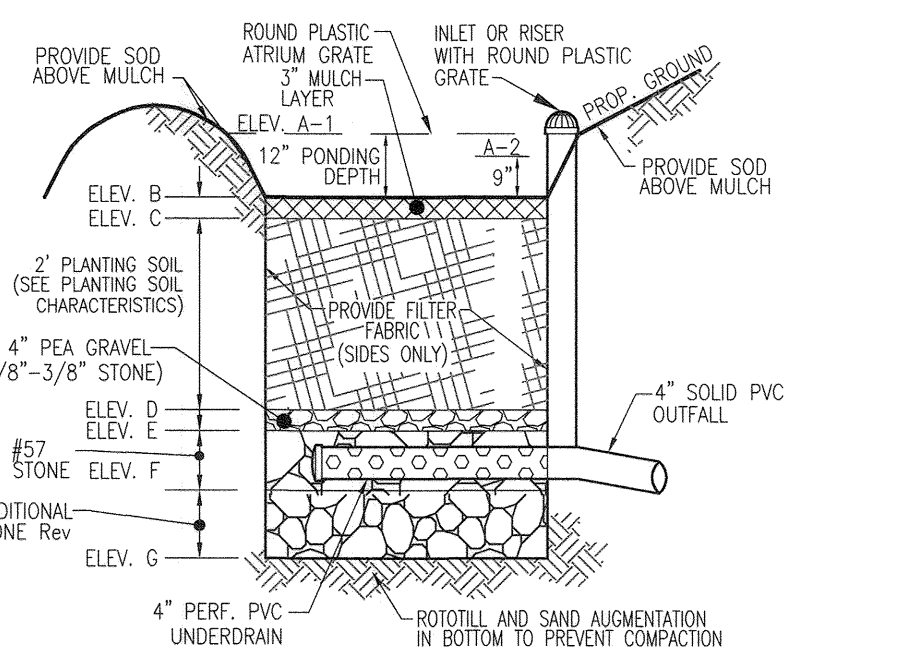
**MICRO-BIORETENTION #8 (UNDERDRAIN)**  
NOT TO SCALE  
\*ADDITIONAL STONE AS APPLICABLE



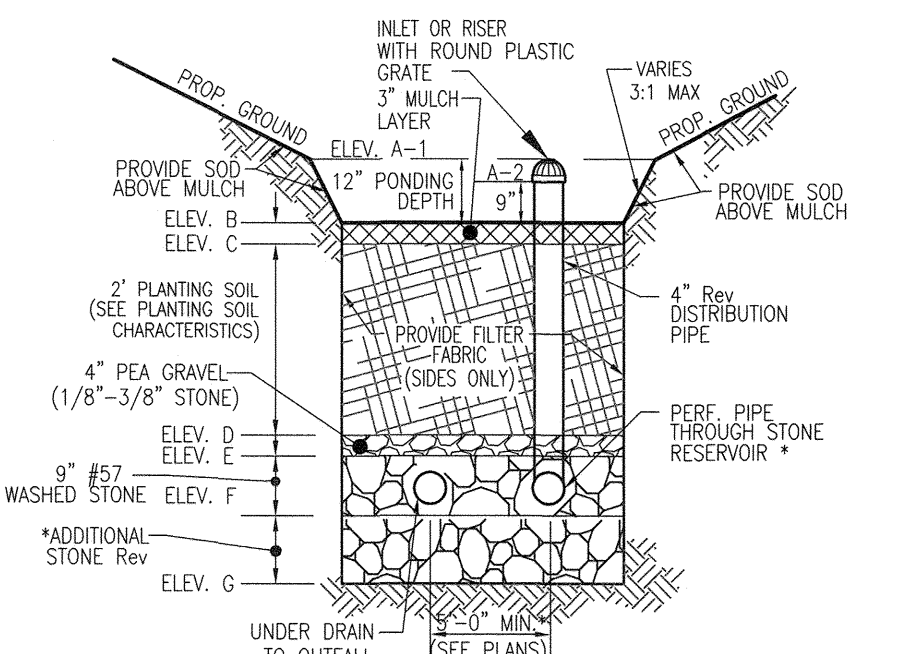
**MICRO-BIORETENTION #8 (OVERFLOW)**  
NOT TO SCALE  
\*ADDITIONAL STONE AS APPLICABLE

MICRO-BIORETENTION FACILITY - DESIGN ELEVATION CHART												
MBR FACILITY #	ESD	TOP		BOTTOM		INV PIPE (1)	INV SURFACE AREA	APPROX DIM	OWNER PRIVATE/PUBLIC	MAINTENANCE PRIVATE/PUBLIC/JOINT		
		MULCH	PLANT SOIL	PLANT SOIL	PEA GRAVEL					PRIVATE/	PUBLIC/JOINT	
1	405.50	404.50	404.25	402.25	401.92	401.17	400.92	190	SEE PLAN	PRIVATE	PRIVATE HOA	
2	415.50	414.50	414.25	412.25	411.92	411.17	410.92	170	SEE PLAN	PRIVATE	PRIVATE HOA	
3	411.50	410.50	410.25	408.25	407.92	407.17	406.92	327	SEE PLAN	PRIVATE	PRIVATE HOA	
4	407.50	406.50	406.25	404.25	403.92	403.17	402.92	271	SEE PLAN	PRIVATE	PRIVATE HOA	
5	395.50	394.50	394.25	392.25	391.92	391.17	390.92	210	SEE PLAN	PRIVATE	PRIVATE HOA	
6	381.50	380.50	380.25	378.25	377.92	377.17	376.92	207	SEE PLAN	PRIVATE	PRIVATE HOA	
7	385.50	384.50	384.25	382.25	381.92	381.17	380.92	275	SEE PLAN	PRIVATE	PRIVATE HOA	
8	419.50	418.50	418.25	416.25	415.92	415.17	414.92	933	SEE PLAN	PRIVATE	PRIVATE HOA	
9	384.50	383.50	383.25	381.25	380.92	380.17	379.92	326	SEE PLAN	PRIVATE	PRIVATE HOA	

(1) UNDERDRAIN PIPE AND OVERFLOW DISTRIBUTION PIPE



**SMALL ON LOT MICRO-BIORETENTION (UNDERDRAIN)**  
NOT TO SCALE  
\*ADDITIONAL STONE AS APPLICABLE



**SMALL ON LOT MICRO-BIORETENTION (OVERFLOW)**  
NOT TO SCALE

**MICRO BIORETENTION NOTES:**  
1. ONLY THE SIDES OF MICRO BIORETENTION ARE TO BE WRAPPED IN FILTER FABRIC. FILTER FABRIC BETWEEN LAYER OR AT THE BOTTOM OF THE MICRO BIORETENTION WILL CAUSE THE MBR TO FAIL, AND THEREFORE SHALL NOT BE INSTALLED.  
2. WRAP THE PERFORATED MBR UNDERDRAIN PIPE WITH 1/4\"/>

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*[Signature]* 12.4.20  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*[Signature]* 11/23/20  
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PROFESSIONAL CERTIFICATE  
DESIGN BY: RHV  
DRAWN BY: ES/MVP  
CHECKED BY: RHV  
DATE: SEPT. 2020  
SCALE: AS SHOWN  
W.O. NO.: 41656

STATE OF MARYLAND  
ROBERT H. VOGEL  
REGISTERED PROFESSIONAL ENGINEER  
NO. 16193  
EXPIRES: 09-27-2022

14 SHEET OF 15



