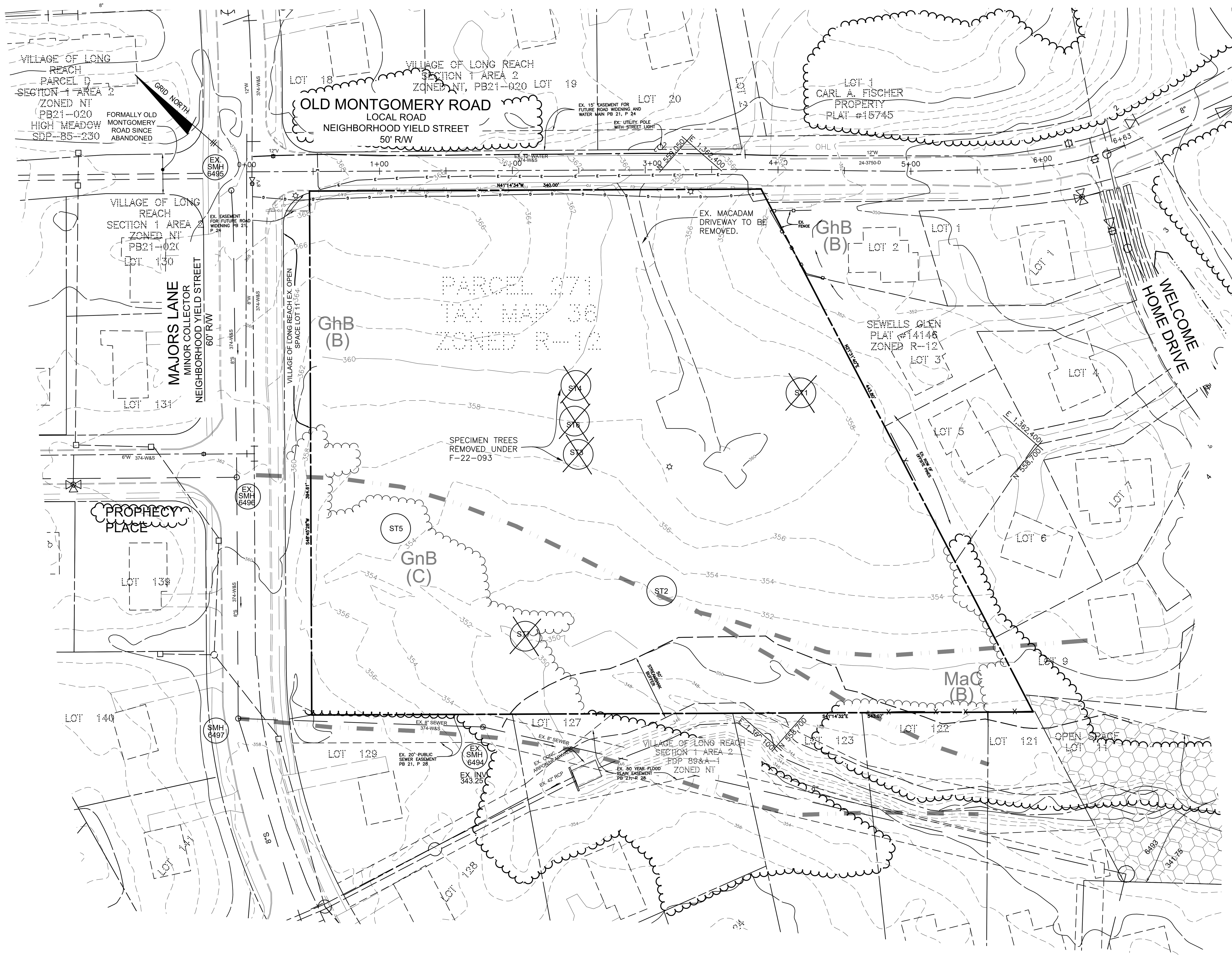
SHEET INDEX	
NO.	DESCRIPTION
1	COVER SHEET AND EXISTING CONDITIONS PLAN
2	ROAD CONSTRUCTION AND PROFILE
3	GRADING & SEDIMENT CONTROL PLAN
4	GRADING & SEDIMENT CONTROL NOTES AND DETAILS
5	FOREST CONSERVATION AND LANDSCAPE PLAN
6	FOREST CONSERVATION AND LANDSCAPE PLAN
7	STORM DRAIN DRAINAGE AREA MAP
8	STORM DRAIN AND STORMWATER MANAGEMENT PROFILES
9	STORMWATER MANAGEMENT DRAINAGE AREA MAP

FINAL CONSTRUCTION PLANS
OLD MONTGOMERY MEADOWS

11 RESIDENTIAL SINGLE FAMILY LOTS

6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND



(IN FEET)
1 inch = 50 ft.

LEGEND

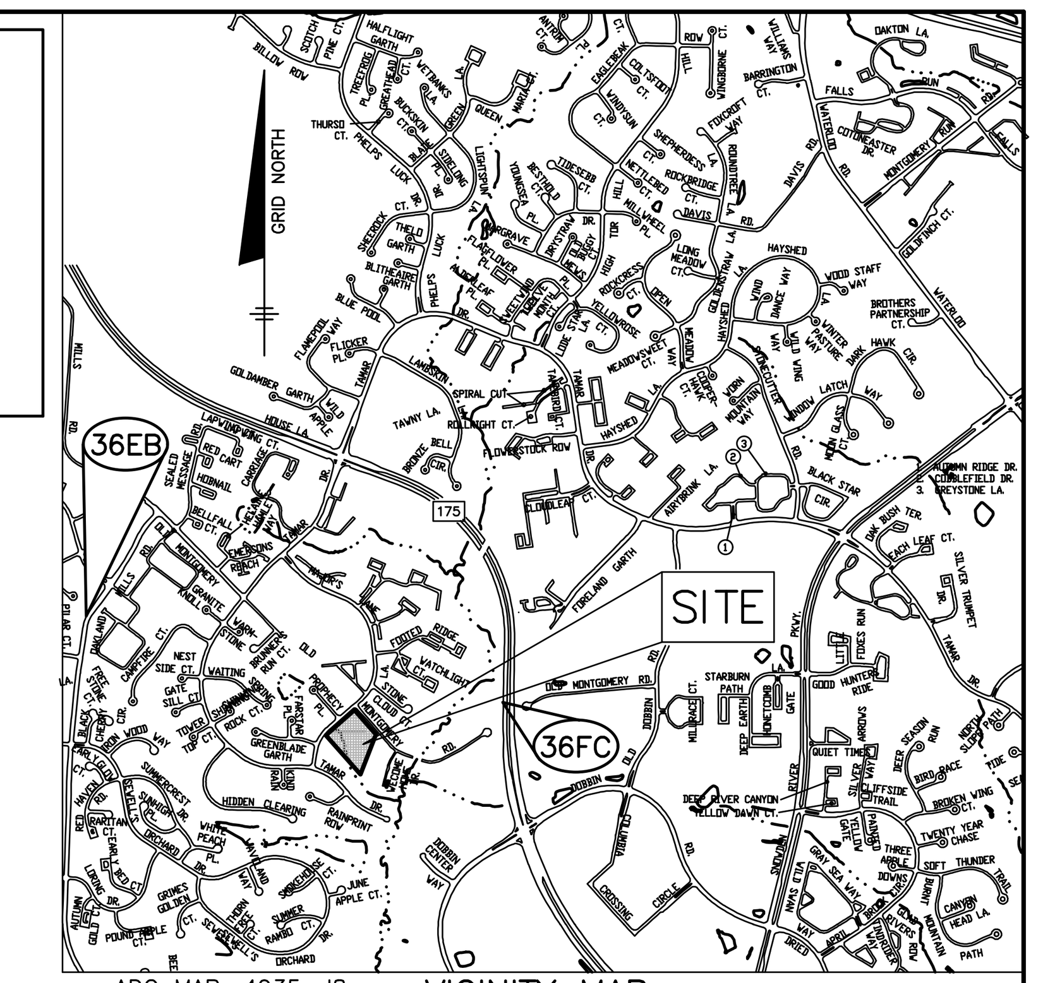
- EXISTING CONTOURS
- PROPOSED CONTOURS
- PROPOSED HOUSE
- APPROXIMATE 100 YEAR FLOOPLAIN
- LIMIT OF DISTURBANCE
- PROP. MICRO BIORETENTION FACILITY
- PROP. DRYWELL
- TREE PROTECTION FENCING
- ESD DRAINAGE AREA
- SOIL DIVIDES
- SPECIMEN TREE (TO REMAIN)
- PRIVATE USE-IN-COMMON ACCESS EASEMENT
- PUBLIC SEWER & UTILITY EASEMENT
- PUBLIC SWM, DRAINAGE & UTILITY EASEMENT
- FCE (RETENTION)
- FCE (REFORESTATION)
- EX. UNDERGROUND ELECTRIC
- EX. UNDERGROUND GAS
- EX. UNDERGROUND FIBER OPTIC/CABLE

BENCH MARKS-(NAD'83)

36FC EL.375.747
DISC SET ON TOP OF CONCRETE COLUMN SOUTH SIDE OF RTE 175, WEST OF DOBBIN ROAD.
N 559312.559 E 1363698.217

36EB EL.411.469
DISC SET ON TOP OF CONCRETE COLUMN OAKLAND MILLS RD. ±400'S OF KILIMANJARO
N 560210.015 E 1359365.326

ADDRESS CHART	
LOT NO.	ADDRESS
LOT 1	9005 OLD MONTGOMERY ROAD
LOT 2	9001 OLD MONTGOMERY ROAD
LOT 3	6400 MEADOWS LANE
LOT 4	6404 MEADOWS LANE
LOT 5	6408 MEADOWS LANE
LOT 6	6412 MEADOWS LANE
LOT 7	6416 MEADOWS LANE
LOT 8	6413 MEADOWS LANE
LOT 9	6417 MEADOWS LANE
LOT 10	6409 MEADOWS LANE
LOT 11	6405 MEADOWS LANE



ADC MAP: 4935-J8

VICINITY MAP

SCALE: 1" = 2000'

MINIMUM LOT SIZE CHART			
LOT	GROSS AREA(sf)	PIPESTEM AREA(sf)	MINIMUM LOT SIZE(sf)
6	8,281	1,083	7,201
7	9,900	1,935	7,965
9	8,590	1,390	7,200

SITE DATA TABULATION

1) TOTAL PROJECT AREA....3.99 AC.±
2) AREA OF 100-YR. FLOODPLAIN....0.01 AC.±
3) AREA OF STEEP SLOPES (15% OR GREATER)....0.00 AC.±
4) AREA OF EXISTING FOREST....0.57 AC.±
5) AREA OF ERODIBLE SOILS....3.81 AC.
6) AREA OF WETLANDS (INCLUDING BUFFER)....N/A
7) AREA OF STREAM BUFFER....0.49 AC.±
8) NET AREA OF SITE....3.98 AC.±
9) MINIMUM RESIDENTIAL DENSITY....N/A
10) NUMBER OF LOTS PROPOSED....11
11) APPROXIMATE LIMIT OF DISTURBANCE....3.0 AC.±
12) PRESENT ZONING DESIGNATION....R-12
13) PROPOSED USES FOR THE SITE & STRUCTURES....RESIDENTIAL
14) MINIMUM LOT SIZE....7,200 SF
15) AREA OF TOTAL ROAD DEDICATION....0.40 AC.±
16) OPEN SPACE AREA REQUIRED....40% OR 1.60 AC.±
17) OPEN SPACE AREA PROPOSED....1.60 AC.±
18) RECREATIONAL OPEN SPACE REQUIRED....2,200 SF (200sf/LOT)
19) RECREATIONAL OPEN SPACE PROVIDED....3,985 SF±
20) NUMBER OF PARKING SPACES REQUIRED....28 SPACES (2.5/UNIT)
21) NUMBER OF PARKING SPACES PROVIDED....33 SPACES (EACH HOUSE HAS 2 IN GARAGE AND 1 IN THE DRIVEWAY)
22) TOTAL IMPERVIOUS AREA....0.82 AC.±

GENERAL NOTES

1. THE SUBJECT PROPERTY IS ZONED R-12 PER THE 10.6.2013 COMPREHENSIVE ZONING PLAN.
2. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAMS, OR THEIR BUFFERS, FLOODPLAIN AND FOREST CONSERVATION EASEMENT AREAS.
3. FLAG AND PIPESTEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINREMNANCE ARE PROVIDED TO THE JUNCTION OF THE FLAG OR PIPESTEM AND ROAD RIGHT-OF-WAY LINE AND NOT ONTO THE PIPESTEM LOT DRIVEWAY.
4. ROAD DEDICATION FOR OLD MONTGOMERY ROAD TO BE DEDICATED TO HOWARD COUNTY MARYLAND FOR THE PURPOSES OF S PUBLIC ROAD: 0.08AC.
5. THIS SUBDIVISION IS SUBJECT TO SECTION 18.122B OF THE HOWARD COUNTY CODE.
6. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
7. 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 THE START OF WORK.
8. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
9. TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
10. STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLE SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (2022). A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREETLIGHT AND ANY TREE.
11. TOPOGRAPHY SHOWN HEREON BASED ON A FIELD RUN SURVEY PREPARED BY BENCHMARK ENGINEERING, INC. DATED SEPTEMBER 2021 AND ARE 2' CONTOUR INTERVALS. EXISTING UTILITIES ARE BASED ON FIELD RUN AND HOWARD COUNTY GIS AND AS-BUILT DOCUMENTS.
12. THE COORDINATES SHOWN HEREON ARE BASED UPON HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. BENCHMARKS FOR THIS SITE ARE 36E5 AND 36EB.
13. THERE ARE NO STEEP SLOPES LOCATED ON THIS SITE.
14. WATER IS PUBLIC CONTRACT NO. 374 W&S, DRAINAGE AREA IS PATUXENT
15. SEWER IS PUBLIC CONTRACT NO. 274 W&S, DRAINAGE AREA IS PATUXENT
16. THE STORMWATER MANAGEMENT METHODS FOR THIS DEVELOPMENT ARE DRYWELLS FOR THE HOUSES AND MICRO-BIORETENTION FACILITIES FOR THE DRIVEWAYS AND PROPOSED ROAD. THE DRYWELLS, MICRO-BIORETENTION FACILITY MBR-3 AND RAINGARDEN RG-4 ARE TO BE PRIVATELY OWNED AND MAINTAINED BY THE HOMEOWNER. BIORETENTION FACILITY BR-1 IS TO BE OWNED BY THE HOA AND JOINTLY MAINTAINED BY THE HOA AND HOWARD COUNTY. MICRO-BIORETENTION FACILITY MBR-2 IS THE BE OWNED AND MAINTAINED BY THE HOA.
17. FLOODPLAIN STUDY WAS PREPARED FOR THE OFFSITE INTERMITTENT STREAM BY BENCHMARK ENGINEERING, INC. DATED DECEMBER 2022 AND APPROVED UNDER P-23-003 DATED FEBRUARY 21, 2023.
18. THE FOREST STAND DELINEATION AND WETLANDS STUDY WAS PREPARED BY ECO-SCIENCE PROFESSIONALS, INC DATED JANUARY 2022 AND APPROVED OCTOBER 2022 UNDER S-22-006. THERE ARE NO STREAMS OR WETLANDS LOCATED ON THE PROPERTY BASED ON A SITE ANALYSIS BY ECO-SCIENCE PROFESSIONALS DATED JANUARY 2022.
19. THE TRAFFIC STUDY FOR THIS PROJECT WAS PREPARED BY MARS GROUP DATED JUNE 13, 2022 AND APPROVED OCTOBER 19, 2022.
SUMMARY OF FINDINGS FOR APFO TRAFFIC ANALYSIS:
A. DATE OF REPORT: JUNE 2022
B. DATE OF COUNTS: JUNE 2022
C. REPORT SUBMITTED AS PART OF PLAN NUMBER: S-22-006
D. COUNTS WERE TAKEN WHEN HOWARD COUNTY SCHOOLS WERE IN SESSION
E. LIST INTERSECTIONS STUDIED, IDENTIFY INTERSECTION AS STATE OR COUNTY JURISDICTION AND LABEL LOS FOR THE HORIZON YEAR OF EACH INTERSECTION: MD 175 @ TAMAR DRIVE (A/D 2025) AND TAMAR DRIVE @ OLD MOTGOMERY ROAD (A/A 2025)
F. PROVIDE STATEMENT AS TO WHETHER MITIGATION IS REQUIRED AND EXPLAIN THE METHOD OF MITIGATION/IN LIEU FEE: NO MITIGATION/IN LIEU FEE IS REQUIRED.
20. A SIGHT DISTANCE ANALYSIS FOR THIS DEVELOPMENT WAS PREPARED BY BENCHMARK ENGINEERING. INC. AND APPROVED UNDER S-22-006.
21. TWO RANGE OF ADDRESS SIGNS SHALL BE FABRICATED BY HOWARD COUNTY HIGHWAYS FOR THIS PROJECT. THESE SIGNS SHALL BE PAID FOR BY THE DEVELOPER. PLEASE CONTACT HOWARD COUNTY TRAFFIC AT 410-313-5752 FOR DETAILS.
22. THIS DEVELOPMENT IS MEETS SECTION 16.121 OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS BY PROVIDING THE MINIMAL LOT SIZE OF 7,200SF AND A MINIMUM OF 40% OPEN SPACE.
23. A GEOTECHNICAL ANALYSIS PREPARED BY GEOTECHNICAL LABORATORIES, INC DATED NOVEMBER 25, 2022 AND APPROVED UNDER THIS PLAN.
24. AN ALTERNATIVE COMPLIANCE TO SECTION 16.1205(a) WAS APPROVED DATED OCTOBER 17, 2022 FOR THE REMOVAL OF SPECIMEN TREES ST1 THRU ST4, ST6 AND ST7, REFERENCE WP-22-093. NO OTHER ALTERNATIVE COMPLIANCES OR DESIGN MANUAL WAIVER REQUESTS ARE CURRENTLY ANTICIPATED FOR THIS DEVELOPMENT AT THIS STAGE OF THE DESIGN.
25. THIS DEVELOPMENT WAS PRESENTED AT A VIRTUAL COMMUNITY INPUT MEETING DATED 1.12.22.
26. EXISTING SEPTIC AND WELL HAVE BEEN ABANDONED PER THE HOWARD COUNTY HEALTH DEPARTMENT REQUIREMENTS.
27. AN ALTERNATIVE COMPLIANCE TO SECTION 16.1205(a) WAS APPROVED DATED OCTOBER 17, 2022 FOR THE REMOVAL OF SPECIMEN TREES ST1 THRU ST4, ST6 AND ST7, REFERENCE WP-22-093.
CONDITIONS OF APPROVAL TO WP-22-093 PER THE DIRECTOR OF PLANNING AND ZONING, THE DIRECTOR OF THE DEPARTMENT OF RECREATION AND PARKS AND THE ADMINISTRATOR OF THE OFFICE OF COMMUNITY SUSTAINABILITY:
1. REMOVAL OF THE SIX SPECIMEN TREES IS TO BE MITIGATED AT 2:1 BY THE PLANTING OF 12 NATIVE TREES WITH A DBH OF 3". THE LOCATION OF THE MITIGATION TREES SHALL BE CLEARLY SHOWN AND LABELED ON SUBSEQUENT SUBDIVISION AND SITE PLANS.
2. APPROVAL IS FOR REMOVAL OF SPECIMEN TREES 1-4 AND 6 AND 7 AS SHOWN ON THE EXHIBIT PROVIDED WITH THE ALTERNATIVE COMPLIANCE APPLICATION.
3. INCLUDE A GENERAL NOTE WITH THE ALTERNATIVE PLAN FILE NUMBER, SUMMARY OF REQUEST, DECISION, DATE OF DECISION AND CONDITIONS OF APPROVAL ON ALL PLANS SUBMITTED TO THE COUNTY FOR REVIEW
4. S-22-006 AND SUBSEQUENT PLAN SUBMITTALS SHALL MINIMIZE LOD ENCROACHMENT INTO THE CRZ OF SPECIMEN TREE 5 TO LESS THAN 30% AND ST-5 SHALL BE PROTECTED WITHIN THE FOREST CONSERVATION EASEMENT AS SHOWN ON THE REVISED ALTERNATIVE COMPLIANCE APPLICATION EXHIBIT DATED SEPTEMBER 2022.
5. APPROVAL OF WP-22-093 IS FOR REMOVAL OF CITED SPECIMEN TREES ONLY. THE APPLICANT MUST COMPLY WITH COMMENTS AT PLAN REVIEW THAT MAY REQUIRE LAYOUT CHANGES IN ORDER TO MEET THE REGULATIONS.
6. SUBSEQUENT PLAN SUBMISSIONS SHOULD EXPLORE METHODS OF REMOVING THE BAMBOO THAT MAY PRESERVE ST-2. HOWEVER, COMPLETE REMOVAL OF THE BAMBOO IS THE PRIORITY IN ORDER TO PROTECT THE PROPOSED FOREST CONSERVATION AREAS FROM ENCROACHMENT.
28. A NOISE STUDY IS NOT REQUIRED FOR THIS DEVELOPMENT PER SECTION 5.2.G.2 OF VOLUME III, COMPLETE STREETS AND BRIDGES.
29. THE FOREST CONSERVATION OBLIGATIONS FOR THIS SITE ARE PROVIDED THROUGH THE CREATION OF CONSERVATION EASEMENTS FOR 0.3 ACRES OF ONSITE FOREST TO BE RETAINED AND 0.6 ACRES OF PLANTING. SURETY FOR THE 0.6 ACRES OF PLANTING, $13.068.00, WAS PAID UNDER THE DEVELOPER'S AGREEMENT FOR THIS SITE. THE FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION ACT. 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.
30. DEVELOPER RESERVES UNTO ITSELF, ITS SUCCESSORS AND ASSIGNS, ALL EASEMENTS SHOWN ON THIS PLAN FOR WATER, SEWER, STORM DRAINAGE AND OTHER PUBLIC UTILITIES AND FOREST CONSERVATION (DESIGNATED AS "FOREST CONSERVATION AREA") LOCATED IN, ON, OVER AND THROUGH LOTS/PARCELS, ANY CONVEYANCES OF THE AFORESAID LOTS/PARCELS SHALL BE SUBJECT TO THE EASEMENTS HEREIN RESERVED, WHETHER OR NOT EXPRESSLY STATED IN THE DEED(S) CONVEYING SAID LOTS/PARCELS. DEVELOPER SHALL EXECUTE AND DELIVER DEEDS FOR THE EASEMENTS HEREIN RESERVED TO HOWARD COUNTY. UPON COMPLETION OF THE PUBLIC UTILITIES AND THEIR ACCEPTANCE BY HOWARD COUNTY, AND IN THE CASE OF THE FOREST CONSERVATION EASEMENTS, UPON COMPLETION OF THE DEVELOPER'S OBLIGATIONS UNDER THE FOREST CONSERVATION INSTALLATION AND MAINTENANCE AGREEMENT EXECUTED BY THE DEVELOPER AND THE COUNTY, AND THE RELEASE OF DEVELOPER'S SURETY POSTED WITH SAID AGREEMENT. THE COUNTY SHALL ACCEPT THE EASEMENTS AND RECORD THE DEEDS OF EASEMENT IN THE LAND RECORDS OF HOWARD COUNTY.
31. THE LANDSCAPING FOR THIS PROJECT IS DESIGNED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. SURETY SHALL BE PROVIDED WITH THE DEVELOPER'S AGREEMENT, IN THE AMOUNT OF $11,250.00 FOR 24 PERIMETER SHADE TREES, 3 PERIMETER EVERGREEN TREES AND 12 MITIGATED TREES FOR THE REMOVED SPECIMEN TREES.
32. DRIVEWAYS SHALL BE PROVIDED PRIOR TO ISSUANCE OF A USE AND OCCUPANCY PERMIT FOR ANY NEW DWELLINGS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:
A) WIDTH - 12' (16' SERVING MORE THAN ONE RESIDENCE).
B) SURFACE - 6" OF CRUSHER RUN BASE WITH TAR AND CHIP COATING (1.5" MIN)
C) GEOMETRY - MAX 15% GRADE, MAX 10% GRADE CHANGE & MIN. 45' TURNING RADIUS.
D) STRUCTURES (CULVERTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS (H25 LOAD)
E) DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOODPLAIN WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY.
F) STRUCTURE CLEARANCES - MINIMUM 12 FEET
G) MAINTENANCE - SUFFICIENT TO ENSURE ALL WEATHER USE
33. PER SECTION 16.116 OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AN ESSENTIAL DISTURBANCE REQUEST HAS BEEN APPROVED ON MARCH 17, 2023 FOR THE SWM OUTFALLS AND REMOVAL OF THE BAMBOO WITHIN THE STREAM BUFFER. APPROVAL IS SUBJECT TO THE FOLLOWING:
1. THE INSTALLATION OF THE SWM OUTFALL AND INVASIVE BAMBOO CLEARING SHALL ONLY DISTURB THOSE ENVIRONMENTAL AREAS AS STATED IN THE REQUEST AND AS DELINEATED ON THE OLD MONTGOMERY MEADOWS DEVELOPMENT, P-23-003. ANY DISTURBANCES TO REGULATED ENVIRONMENTAL FEATURES BEYOND THIS REQUEST ARE NOT PERMITTED UNLESS THE APPLICANT SUBMITS A FORMAL REQUEST TO THE DEPARTMENT OF PLANNING & ZONING IN ACCORDANCE WITH SECTION 16.116(C).
2. THE DISTURBED AREAS SHALL BE STABILIZED AND SEEDED OR PLANTED WITH NATIVE VEGETATION IN ACCORDANCE WITH THE DESIGN PLANS.
3. THE APPLICANT WILL BE REQUIRED TO OBTAIN ALL NECESSARY APPROVALS AND AUTHORIZATIONS BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) AND THE U.S. ARMY CORPS OF ENGINEERS (USACE) FOR ACTIVITIES IN REGULATED AREAS PRIOR TO BEGINNING CONSTRUCTION.

Stormwater Management Information							
Lot/Parcel Number	Facility Name & Number	Practice Type (Quantity)	Public	Private	Maintaned By	Misc.
13	BR-1	BIORETENTION (F-6)		YES	HO. CO. AND HOA	
13	MBR-2	MICRO-BIORETENTION (M-6)		YES	HOA	

THE REMAINING STORMWATER MANAGEMENT FEATURES ARE ON THE LOTS AND ARE PROVIDED UNDER THE SITE DEVELOPMENT PLAN (SDP-23-051)

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	k-VALUE Whole Soil
GhB		B	D	GLENELG URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	0.43
GnB*	YES	C	D	GLENVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.49
MaC		B		MANOR LOAM, 8 TO 15 PERCENT SLOPES	0.32

MAP 18

STORMWATER MANAGEMENT PRACTICES

LOT NUMBER	ADDRESS	GREEN ROOFS A-1 (Y/N)	PERMEABLE PAVEMENTS A-2 (Y/N)	REINFORCED TURF A-3 (Y/N)	DISCONNECTION OF ROOFTOP RUNOFF N-1 (NUMBER)	DISCONNECTION OF NON-ROOFTOP RUNOFF N-2 (Y/N)	SHEETFLOW TO CONSERVATION AREAS N-3 (Y/N)	RAINWATER HARVESTING M-1 (NUMBER)	SUBMERGED GRAVEL WETLANDS M-2 (NUMBER)	LANSCAPE INFILTRATION M-3 (NUMBER)	INFILTRATION BERMS M-4 (NUMBER)	DRYWELLS M-5 (NUMBER)	MICRO-BIORETENTION M-6 (NUMBER)	RAIN GARDENS M-7 (NUMBER)	SWALES M-8 (NUMBER)	ENHANCED FILTERS M-9 (NUMBER)
1	9005 Old Montgomery Road	N	N	N		N	N					2				
2	9001 Old Montgomery Road	N	N	N		N	N					2				
3	6400 Meadows Lane	N	N	N		N	N					2				
4	6404 Meadows Lane	N	N	N		N	N					2				
5	6408 Meadow Lane	N	N	N		N	N					2				
6	6412 Meadows Lane	N	N	N		N	N					2				
7	6416 Meadows Lane	N	N	N		N	N					2				
8	6413 Meadows Lane	N	N	N		N	N					2		1		
9	6417 Meadows Lane	N	N	N		N	N						1			
10	6409 Meadows Lane	N	N	N		N	N					2				
11	6405 Meadows Lane	N	N	N		N	N					2				

APPROVED: DEPARTMENT OF PUBLIC WORKS
DocuSigned by: 2465821AE4DA4C2 — 9/22/2023
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
DocuSigned by: 1FB75478A22B49A — 9/20/2023
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

DocuSigned by: CHAD Edmondson — 9/20/2023
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

TRAFFIC CONTROL DEVICES:
A. THE R1-1 (STOP) SIGN AND THE 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 (MDMUTCD)
D. ALL TRAFFIC CONTROL DEVICE SIGN POSTS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE)-3' LONG. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO HOLES ABOVE THE GROUND LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
E. NO TREE SHALL BE INSTALLED WITHIN 20 FEET OF A PROPOSED STREET LIGHT LOCATION. AND NO TREE SHALL BE INSTALLED WITHIN 30' OF A STOP SIGH APPROACH SIDE. PLEASE CONTACT HOWARD COUNTY TRAFFIC TO MARK STREET LIGHT LOCATIONS BEFORE INSTALLING ANY NEW TREES.

PROJECT BACKGROUND INFORMATION
PRESENT ZONING: R-12
LOCATION: TAX MAP 36 - GRID 17 - PARCEL 271
APPLICABLE DPZ FILE REFERENCES: ECP-22-052, WP-22-093, S-22-006, P-23-003,
DEED REFERENCES: L. 21110 / F. 102
PROPOSED USE OF SITE: RESIDENTIAL SINGLE FAMILY DETACHED
PROPOSED WATER AND SEWER SYSTEMS: PUBLIC WATER & SEWER

MODERATE INCOME HOUSING UNITS (MIHU) ALLOCATION EXEMPTION TRACKING	
TOTAL NUMBER OF LOTS PROPOSED	11
NUMBER OF MIHU REQUIRED	2
NUMBER OF MIHU PROVIDED ONSITE (EXEMPT FROM APFO ALLOCATION)	0
NUMBER OF APFO ALLOCATIONS REQUIRED (REMAINING UNITS)	11
MIHU FEE-IN-LIEU	YES

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
3300 NORTH RIDGE ROAD ▲ SUITE 140 ▲ ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 22390, Expiration Date: 6-30-2025.
STATE OF MARYLAND — CHRISTOPHER A. MALAGARI — 22390 — PROFESSIONAL ENGINEER
09.11.2023

OWNER:
DEVELOPMENT PARTNERS, LLC
9693 GERWIG LANE, SUITE L
COLUMBIA, MD 21046
443-676-2417

DEVELOPER:
DEVELOPMENT PARTNERS, LLC
9693 GERWIG LANE, SUITE L
COLUMBIA, MD 21046
443-676-2417

OLD MONTGOMERY MEADOWS
LOTS 1-11 AND OPEN SPACE LOTS 12 & 13
9005 OLD MONTGOMERY ROAD

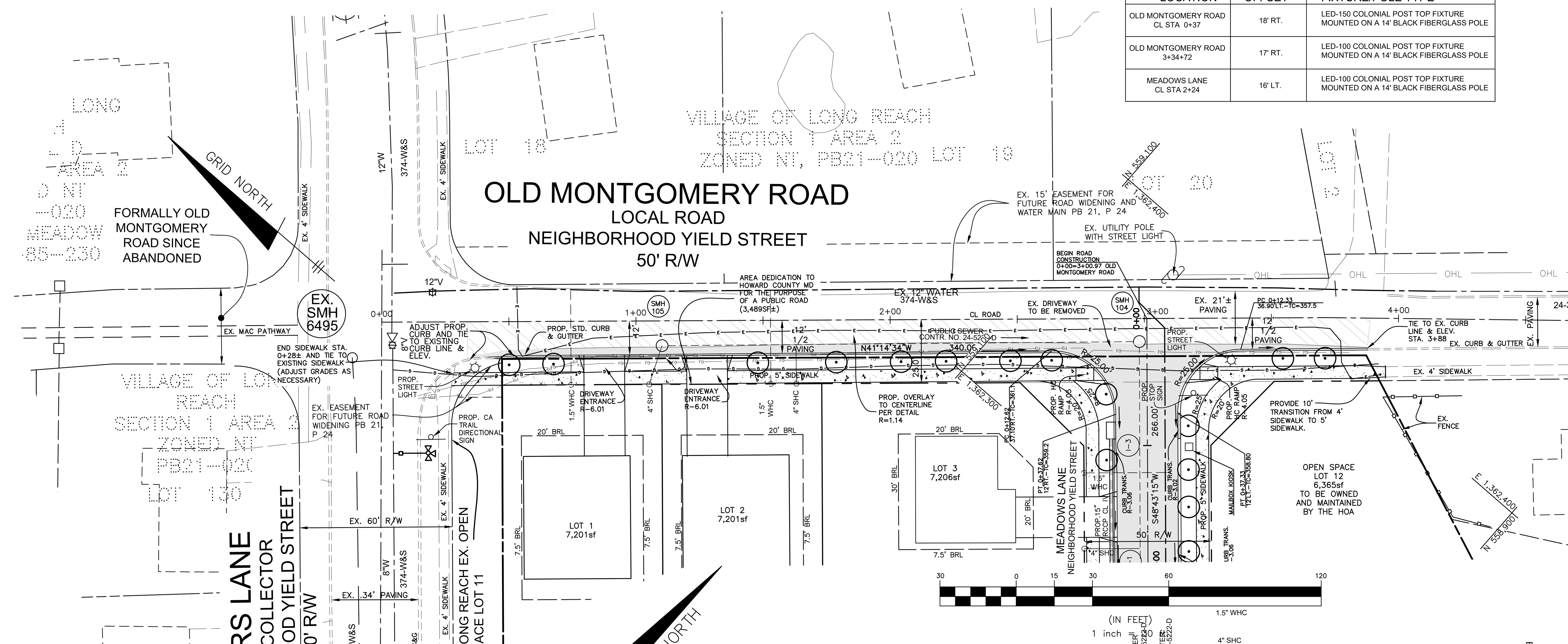
TAX MAP: 36 GRID: 17 PARCEL: 271
ZONED: R-12
ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

RESIDENTIAL
FINAL CONSTRUCTION PLANS
COVER SHEET AND EXISTING CONDITIONS PLAN

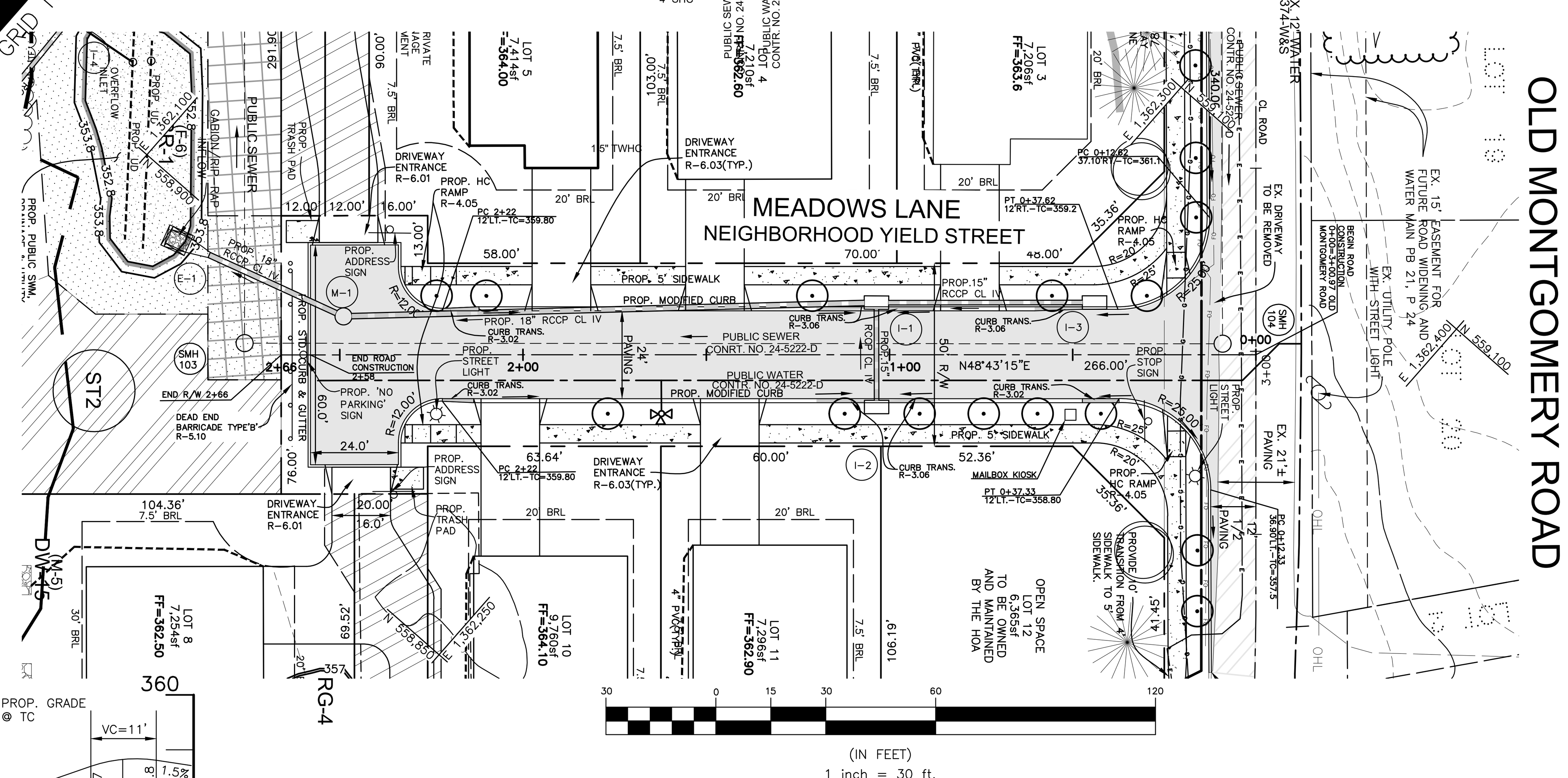
DESIGN: JCO	DRAFT: JCO	DATE: AUGUST 2023	BEI PROJECT NO. 3080
		SCALE: AS SHOWN	SHEET 1 OF 9

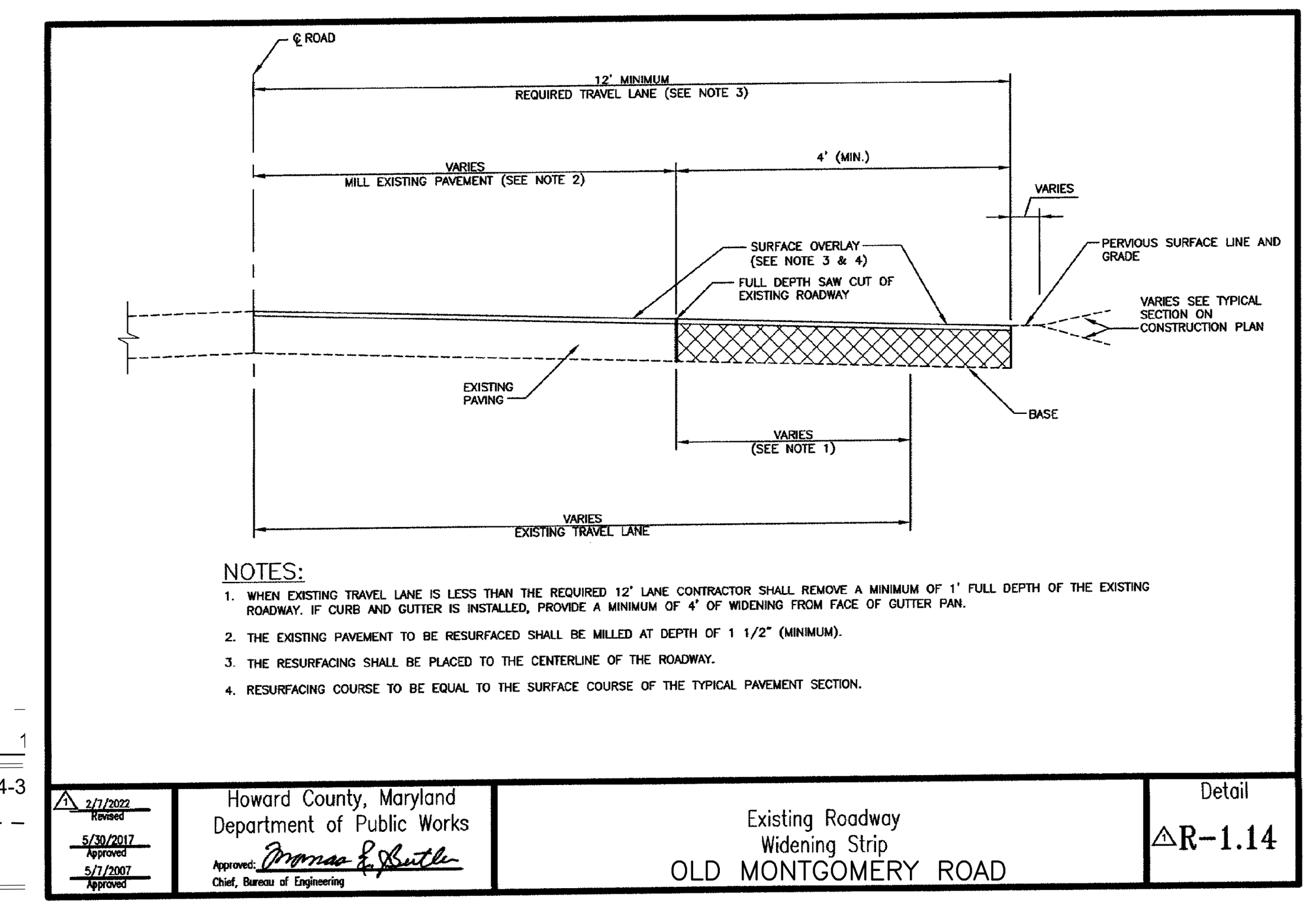
F-23-049

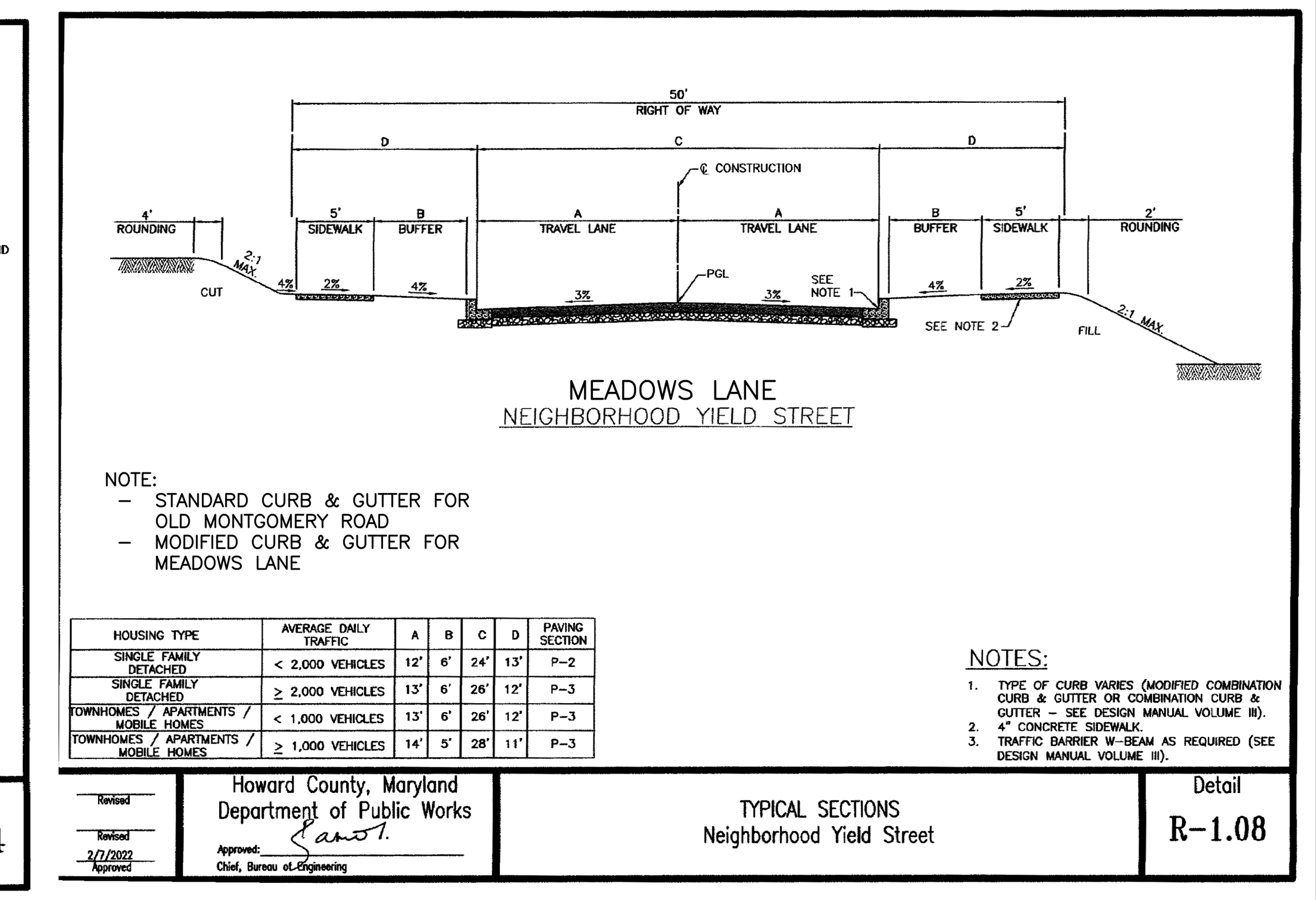
☼ STREET LIGHT LOCATION		
LOCATION	OFFSET	FIXTURE/POLE TYPE
OLD MONTGOMERY ROAD CL STA 0+37	18' RT.	LED-150 COLONIAL POST TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE
OLD MONTGOMERY ROAD 3+34+72	17' RT.	LED-100 COLONIAL POST TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE
MEADOWS LANE CL STA 2+24	16' LT.	LED-100 COLONIAL POST TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE

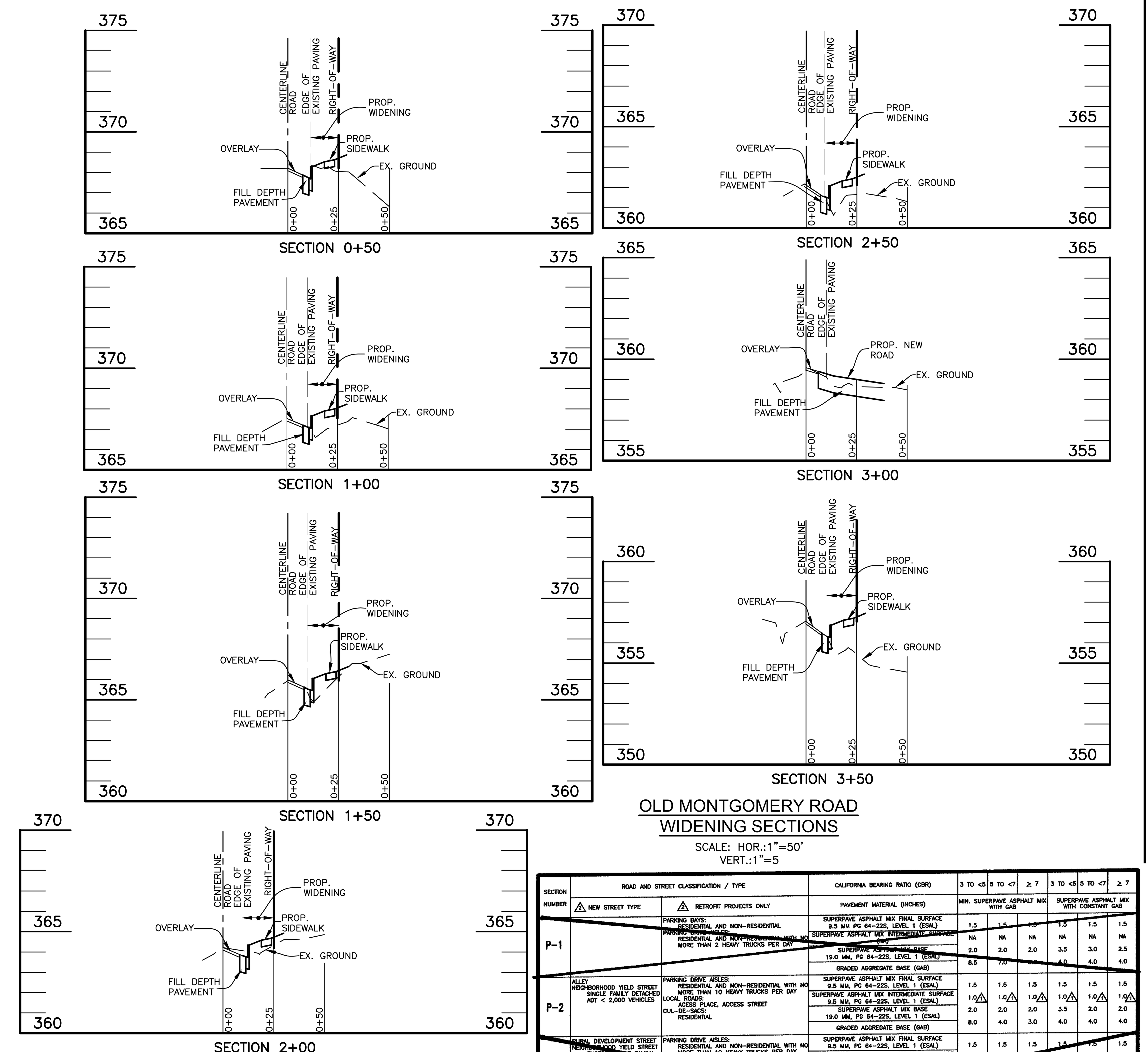


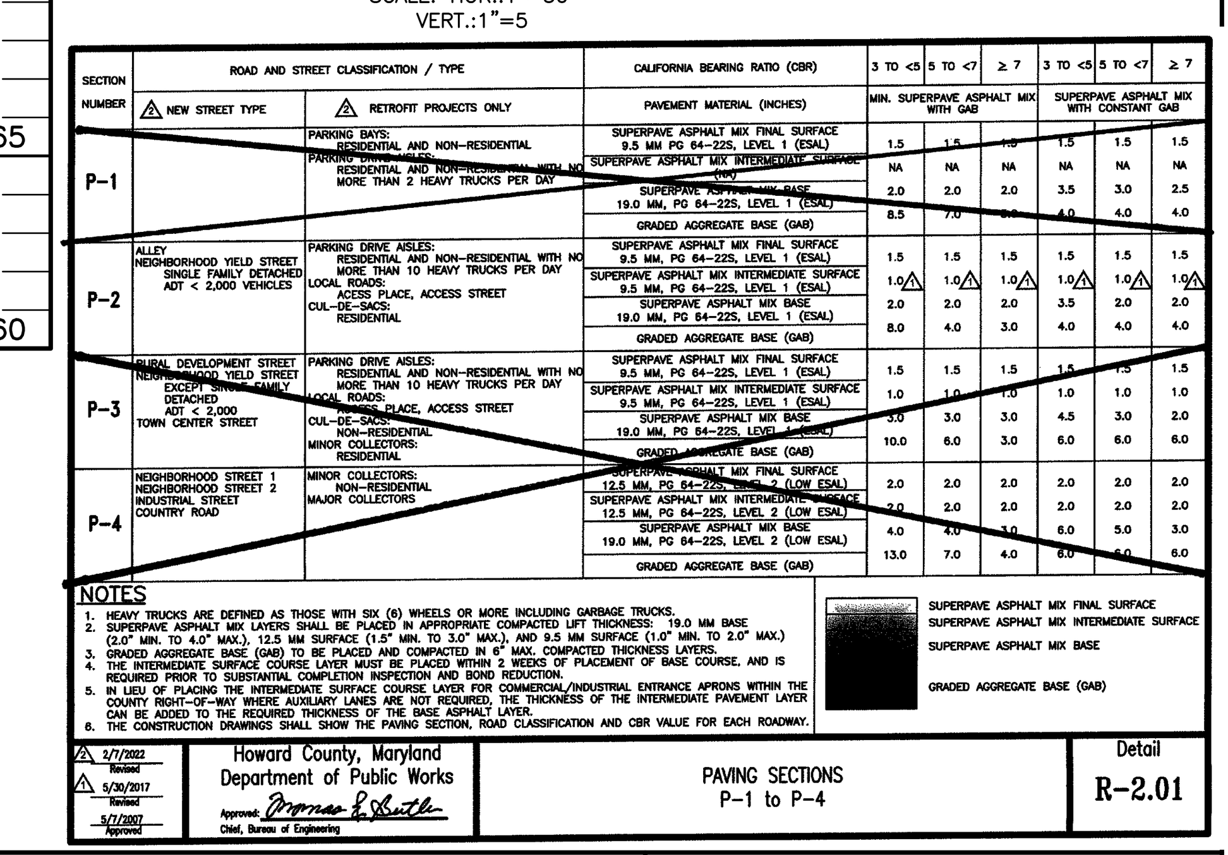
OLD MONTGOMERY ROAD
LOCAL ROAD
NEIGHBORHOOD YIELD STREET
50' R/W
MAJORS LANE
MINOR COLLECTOR
NEIGHBORHOOD YIELD STREET
60' R/W
FORMALLY OLD MONTGOMERY ROAD SINCE ABANDONED
GRID NORTH
VILLAGE OF LONG REACH SECTION 1 AREA 2 ZONED NT, PB21-020 LOT 19
MEADOWS LANE NEIGHBORHOOD YIELD STREET
LOT 1 7,201sf
LOT 2 7,201sf
LOT 3 7,206sf
OPEN SPACE LOT 12 6,365sf TO BE OWNED AND MAINTAINED BY THE HOA
VILLAGE OF LONG REACH EX. OPEN SPACE LOT 11
(IN FEET)
1 inch = 30 ft.



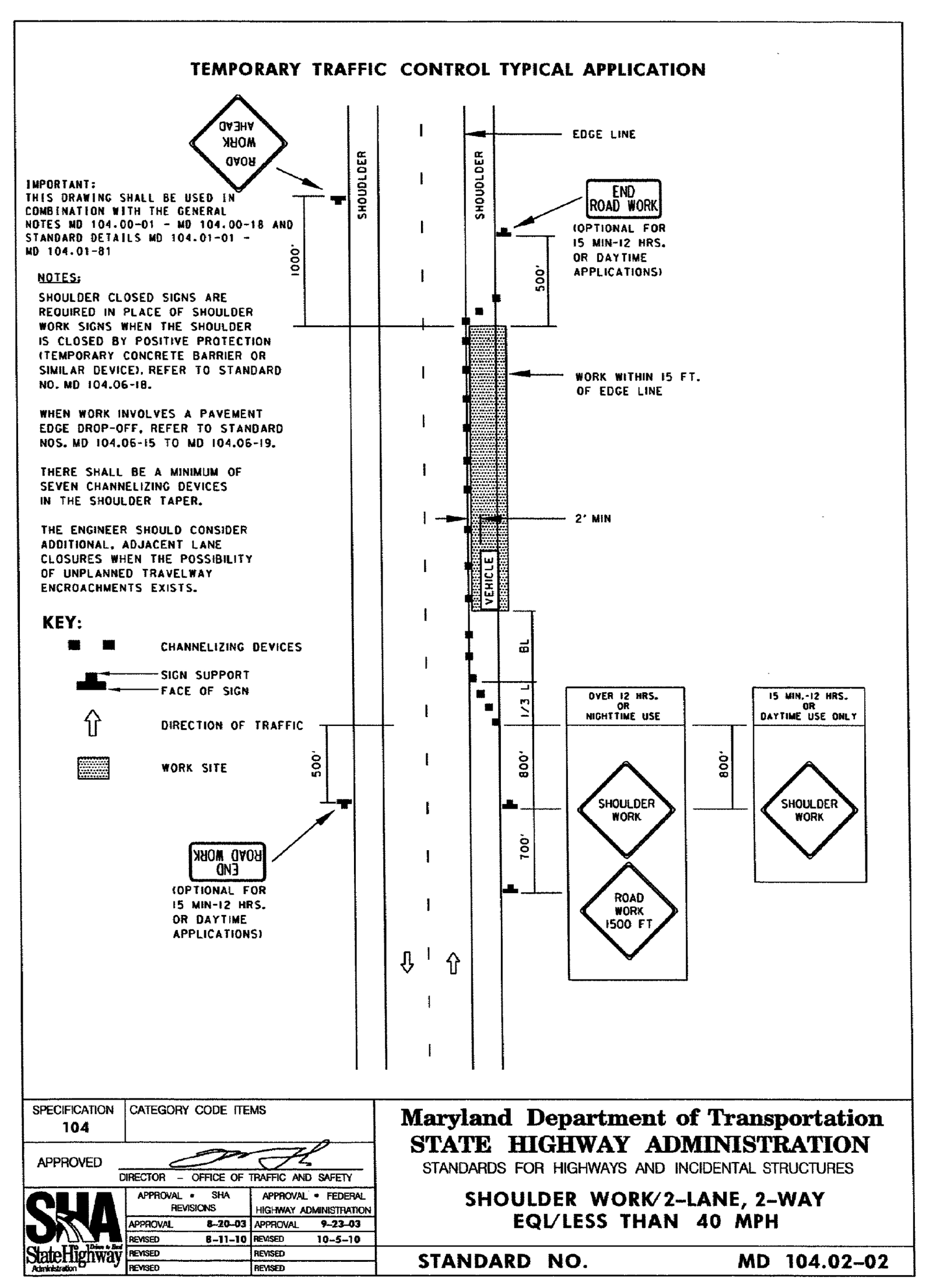








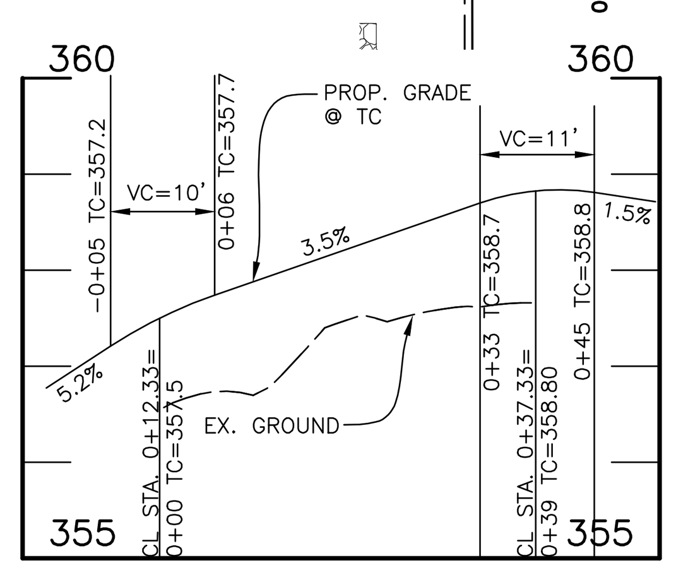
NOTES
1. HEAVY TRUCKS ARE DEFINED AS THOSE WITH SIX (6) WHEELS OR MORE INCLUDING GARBAGE TRUCKS.
2. SUPERPAVE ASPHALT MIX LAYERS SHALL BE PLACED IN APPROPRIATE COMPACTED LIFT THICKNESS: 19.0 MM BASE (2.0" MIN. TO 4.0" MAX.), 12.5 MM SURFACE (1.5" MIN. TO 3.0" MAX.), AND 9.5 MM SURFACE (1.0" MIN. TO 2.0" MAX.)
3. GRADED AGGREGATE BASE (GAB) TO BE PLACED AND COMPACTED IN 6" MAX. COMPACTED THICKNESS LAYERS.
4. THE INTERMEDIATE SURFACE COURSE LAYER MUST BE PLACED WITHIN 2 WEEKS OF PLACEMENT OF BASE COURSE, AND IS REQUIRED PRIOR TO SUBSTANTIAL COMPLETION INSPECTION AND BOND REDUCTION.
5. IN LIEU OF PLACING THE INTERMEDIATE SURFACE COURSE LAYER FOR COMMERCIAL/INDUSTRIAL ENTRANCE APRONS WITHIN THE COUNTY RIGHT-OF-WAY WHERE AUXILIARY LANES ARE NOT REQUIRED, THE THICKNESS OF THE INTERMEDIATE PAVEMENT LAYER CAN BE ADDED TO THE REQUIRED THICKNESS OF THE BASE ASPHALT LAYER.
6. THE CONSTRUCTION DRAWINGS SHALL SHOW THE PAVING SECTION, ROAD CLASSIFICATION AND CBR VALUE FOR EACH ROADWAY.
SUPERPAVE ASPHALT MIX FINAL SURFACE
SUPERPAVE ASPHALT MIX INTERMEDIATE SURFACE
SUPERPAVE ASPHALT MIX BASE
GRADED AGGREGATE BASE (GAB)
2/7/2022 Revised
5/30/2017 Revised
5/7/2007 Approved
Howard County, Maryland
Department of Public Works
Chief, Bureau of Engineering
PAVING SECTIONS
P-1 to P-4
Detail
R-2.01



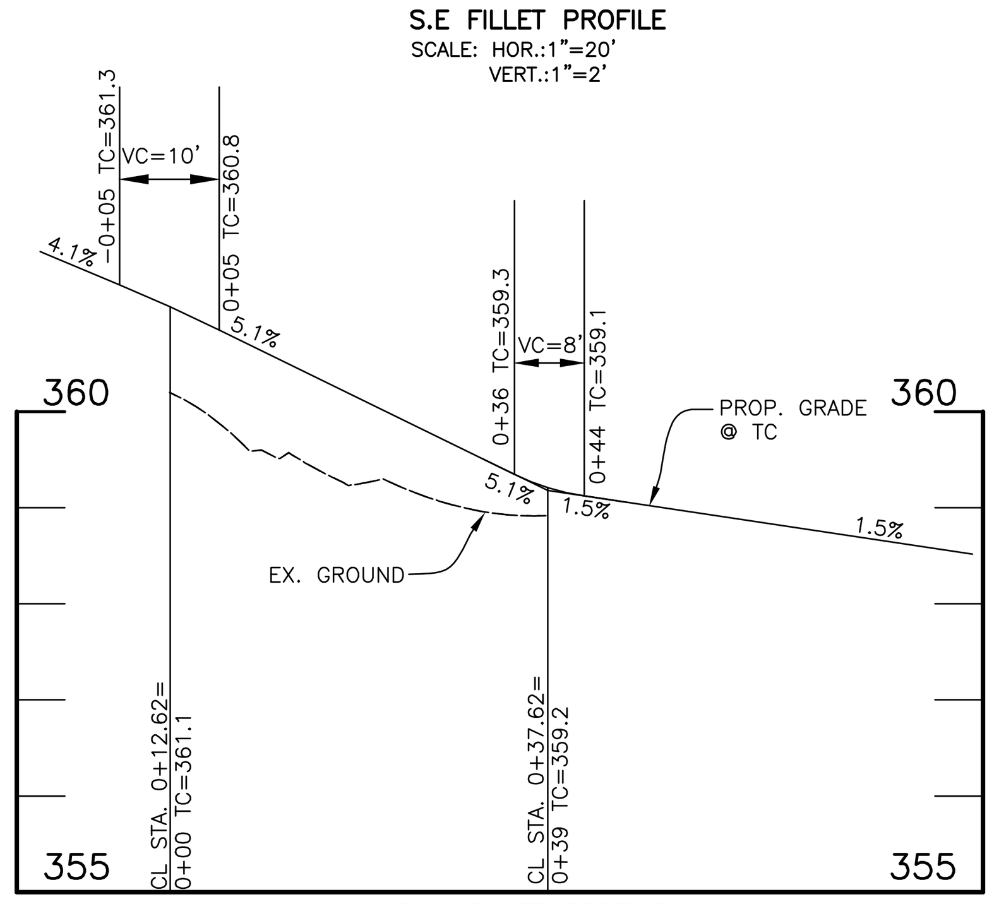
TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
SHOULDER WORK/2-LANE, 2-WAY
EQL/LESS THAN 40 MPH
STANDARD NO. MD 104.02-02

MOT DETAIL

NTS

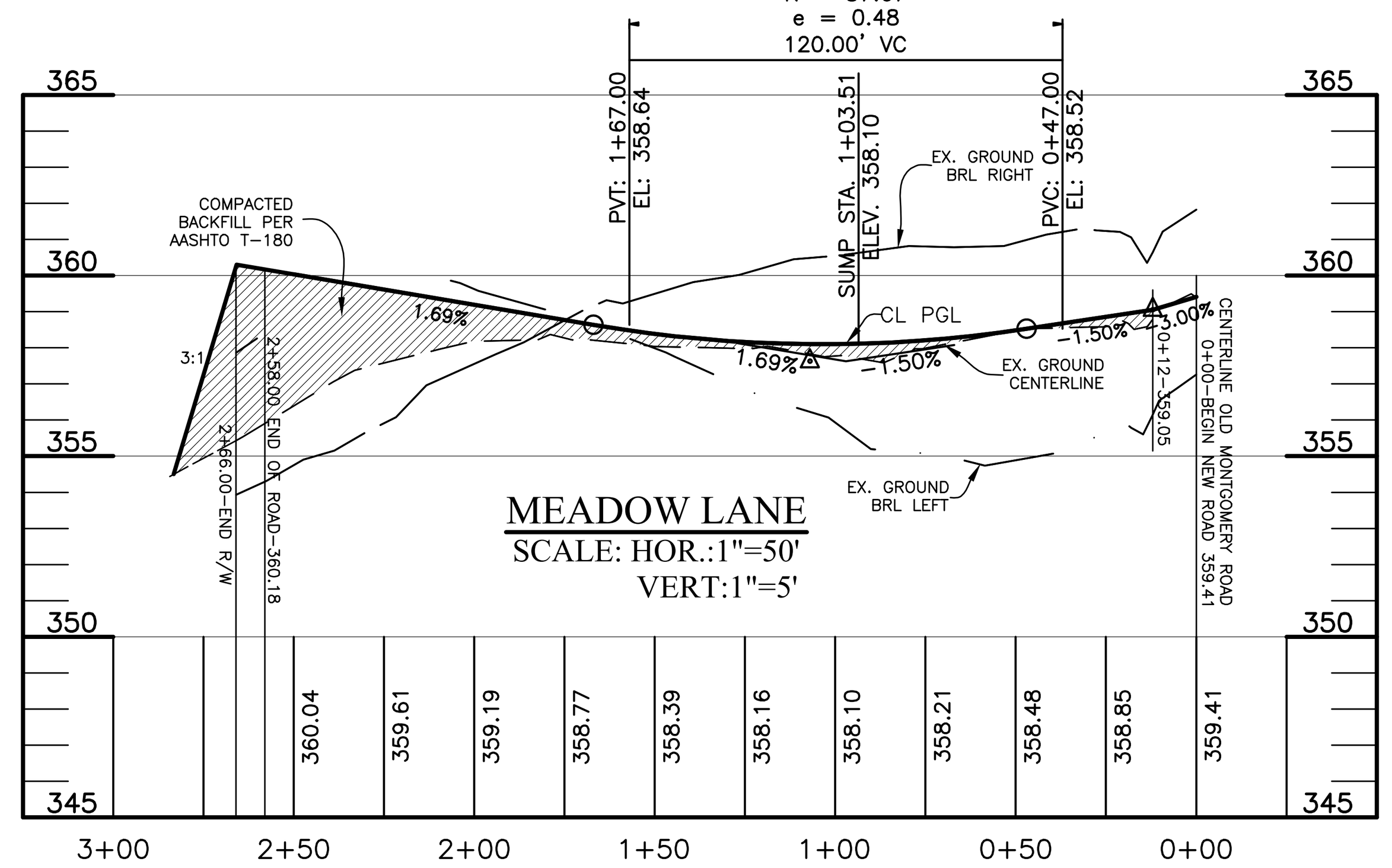


S.E FILLET PROFILE
SCALE: HOR.:1"=20'
VERT.:1"=2'



S.W. FILLET PROFILE
SCALE: HOR.:1"=20'
VERT.:1"=2'

DESIGN SPEED: 25 MPH
NEIGHBORHOOD YIELD STREET
PVI STA = 1+07.00
PVI ELEV = 357.62'
A.D. = 3.19%
K = 37.67
e = 0.48
120.00' VC



MEADOW LANE
SCALE: HOR.:1"=50'
VERT.:1"=5'

(IN FEET)
1 inch = 50 ft.

LEGEND

- EXISTING CONTOURS
- PROPOSED CONTOURS
- PROPOSED HOUSE
- APPROXIMATE 100 YEAR FLOOPLAIN
- SPECIMEN TREE (TO REMAIN)
- PRIVATE USE-IN-COMMON ACCESS EASEMENT
- PUBLIC SEWER & UTILITY EASEMENT
- PUBLIC SWM, DRAINAGE & UTILITY EASEMENT
- FCE (RETENTION)
- FCE (REFORESTATION)
- EX. UNDERGROUND ELECTRIC
- EX. UNDERGROUND GAS
- EX. UNDERGROUND FIBER OPTIC/CABLE
- RECREATIONAL OPEN SPACE

APPROVED: DEPARTMENT OF PUBLIC WORKS
DocuSigned by: 2465821AE4DA4C2... 9/22/2023
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
DocuSigned by: 1EB75478A22B49A... 9/20/2023
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

DocuSigned by: CHAD Edmondson 7063F754EF41499... 9/20/2023
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

BENCHMARK ENGINEERING, INC.
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
3300 NORTH RIDGE ROAD ▲ SUITE 140 ▲ ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 22390, Expiration Date: 6-30-2025.
STATE OF MARYLAND — CHRISTOPHER A. MALAGARI — 22390 — PROFESSIONAL ENGINEER
09.11.2023

OWNER:
DEVELOPMENT PARTNERS, LLC
9693 GERWIG LANE, SUITE L
COLUMBIA, MD 21046
443-676-2417

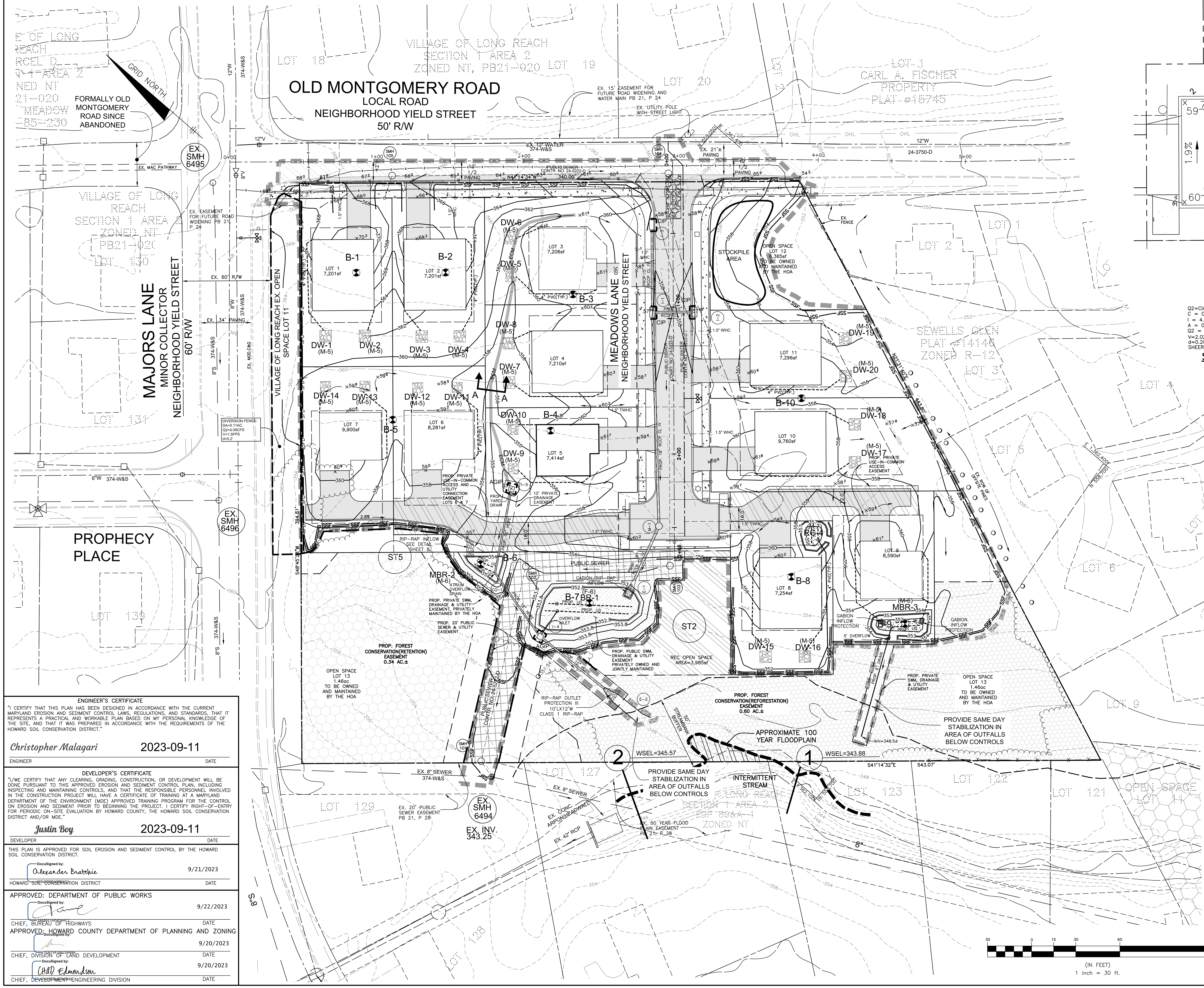
DEVELOPER:
DEVELOPMENT PARTNERS, LLC
9693 GERWIG LANE, SUITE L
COLUMBIA, MD 21046
443-676-2417

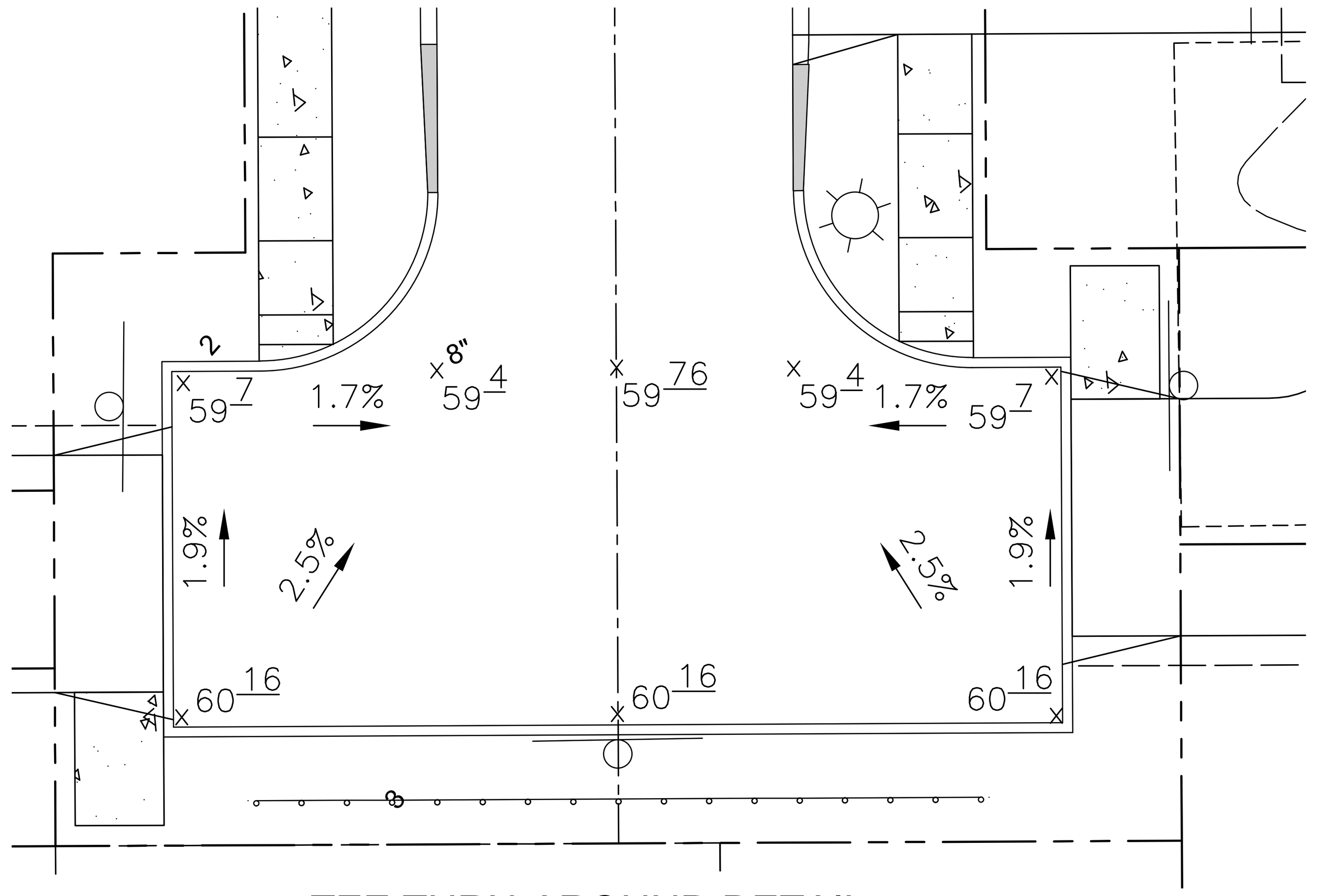
OLD MONTGOMERY MEADOWS
LOTS 1-11 AND OPEN SPACE LOTS 12 & 13
9005 OLD MONTGOMERY ROAD

TAX MAP: 36 GRID: 17 PARCEL: 271
ZONED: R-12
ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

RESIDENTIAL
FINAL CONSTRUCTION PLANS
ROAD CONSTRUCTION AND PROFILE

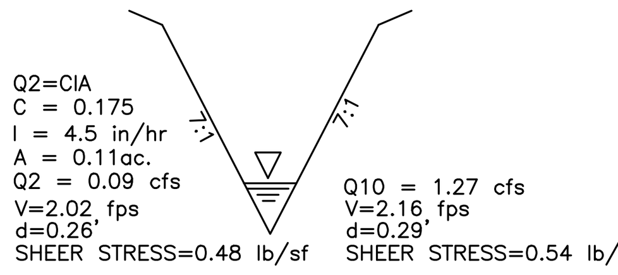
DATE:	AUGUST 2023	BEI PROJECT NO.	3080
DESIGN: JCO	DRAFT: JCO	SCALE: AS SHOWN	SHEET 2 OF 9





TEE TURN-AROUND DETAIL

SCALE: 1"=10'



Q2=CIA
C = 0.175
I = 4.5 in/hr
A = 0.11ac.
Q2 = 0.09 cfs
V=2.02 fps
d=0.26'
SHEER STRESS=0.48 lb/sf

Q10 = 1.27 cfs
V=2.16 fps
d=0.29'
SHEER STRESS=0.54 lb/sf

SWALE SECTION A–A

NOT TO SCALE

LEGEND

EXISTING CONTOURS
PROPOSED CONTOURS
PROPOSED HOUSE
APPROXIMATE 100 YEAR FLOOPLAIN
LIMIT OF DISTURBANCE
PROP. MICRO BIORETENTION FACILITY
PROP. DRYWELL
TREE PROTECTION FENCING
SUPER SILT FENCE
SILT FENCE DIVERSION
STABILIZED CONSTRUCTION ENTRANCE
SPECIMEN TREE (TO BE REMOVED)
SPECIMEN TREE (TO REMAIN)
PRIVATE USE-IN-COMMON ACCESS EASEMENT
PUBLIC SEWER & UTILITY EASEMENT
PUBLIC SWM, DRAINAGE & UTILITY EASEMENT
FCE (RETENTION)
FCE (REFORESTATION)
EX. UNDERGROUND ELECTRIC
EX. UNDERGROUND GAS
SOIL BORING LOCATIONS
RECREATIONAL OPEN SPACE

ENGINEER'S CERTIFICATE

"I CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH THE CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT 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."

Christopher Malagari 2023-09-11

ENGINEER DATE

DEVELOPER'S CERTIFICATE

"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 THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING 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."

Justin Boy 2023-09-11

DEVELOPER DATE

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

DocuSigned by: *Alexander Bratchie* 9/21/2023

HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

DocuSigned by: [signature] 9/22/2023

CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

DocuSigned by: [signature] 9/20/2023

CHIEF, DIVISION OF LAND DEVELOPMENT DATE

DocuSigned by: *CHAD Edmondson* 9/20/2023

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

BENCHMARK
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ENGINEERING, INC.
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Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 22390, Expiration Date: 6-30-2025.

STATE OF MARYLAND — CHRISTOPHER A. MALAGARI — 22390 — PROFESSIONAL ENGINEER

C Malagari 09.11.2023

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OLD MONTGOMERY MEADOWS
LOTS 1-11 AND OPEN SPACE LOTS 12 & 13
9005 OLD MONTGOMERY ROAD

TAX MAP: 36 GRID: 17 PARCEL: 271
ZONED: R-12
ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

RESIDENTIAL
FINAL CONSTRUCTION PLAN
GRADING & SEDIMENT CONTROL PLAN

DATE:	AUGUST 2023	BEI PROJECT NO.	3080
SCALE:	AS SHOWN	SHEET	3 OF 9

DESIGN: JCO DRAFT: JCO

B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

Definition

Using vegetation as cover to protect exposed soil from erosion.

Purpose

To promote the establishment of vegetation on exposed soil.

Conditions Where Practice Applies

On all disturbed areas not stabilized by other methods. This specification is divided into sections on incremental stabilization; soil preparation, soil amendments and topsoiling; seeding and mulching; temporary stabilization; and permanent stabilization.

Effects on Water Quality and Quantity

Stabilization practices are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and runoff to downstream areas.
Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Over time, vegetation will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth.
Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone.
Sediment control practices must remain in place during grading, seedbed preparation, seeding, mulching, and vegetative establishment.

Adequate Vegetative Establishment

Inspect seeded areas for vegetative establishment and make necessary repairs, replacements, and reseedings within the planting season.
1. Adequate vegetative stabilization requires 95 percent groundcover.
2. If an area has less than 40 percent groundcover, restabilize following the original recommendations for lime, fertilizer, seedbed preparation, and seeding.
3. If an area has between 40 and 94 percent groundcover, over-seed and fertilize using half of the rates originally specified.
4. Maintenance fertilizer rates for permanent seeding are shown in Table B.6.

B-4-1 STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION

Definition

Establishment of vegetative cover on cut and fill slopes.

Purpose

To provide timely vegetative cover on cut and fill slopes as work progresses.

Conditions Where Practice Applies

Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles.

Criteria

A. Incremental Stabilization - Cut Slopes
1. Excavate and stabilize cut slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all cut slopes as the work progresses.
2. Construction sequence example (Refer to Figure B.1):
   a. Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation.
   b. Perform Phase 1 excavation, prepare seedbed, and stabilize.
   c. Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as necessary.
   d. Perform final phase excavation, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

B. Incremental Stabilization - Fill Slopes
1. Construct and stabilize fill slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all slopes as the work progresses.
2. Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading operation ceases as prescribed in the plans.
3. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
4. Construction sequence example (Refer to Figure B.2):
   a. Construct and stabilize all temporary swales or dikes that will be used to divert runoff around the fill. Construct silt fence on low side of fill unless other methods shown on the plans address this area.
   b. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
   c. Place Phase 1 fill, prepare seedbed, and stabilize.
   d. Place Phase 2 fill, prepare seedbed, and stabilize.
   e. Place final phase fill, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.
Figure B.

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

Definition

To stabilize disturbed soils with permanent vegetation.

Purpose

To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils.

Conditions Where Practice Applies

Exposed soils where ground cover is needed for 6 months or more.

Criteria

A. Seed Mixtures
1. General Use
   a Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
   b Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guild, Section 342 - Critical Area Planting.
   c For sites having disturbed areas over 5 acres, use and show the rates recommended by the soil testing agency.
   d For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 ½ pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary.
2. Turfgrass Mixtures
   a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
   b. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.
      i. Kentucky Bluegrass: Full sun Mixture: For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky Bluegrass Cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
      ii. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky Bluegrass Cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
      iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes; Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
      iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1 ½ to 3 pounds per 1000 square feet.
      Notes:Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77, "Turfgrass Cultivar Recommendations for Maryland" Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line.
   c. Ideal Times of Seeding for Turf Grass Mixtures
      Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6a)
      Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b)
      Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)
   d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1 ½ inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.
   e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (½ to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is not especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, Or on adverse sites.

A.Sod: to provide quick cover on disturbed areas (2:1 grade or flatter).
1. General Specifications
   a. Class of turfgrass must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.
   b. Sod must be machine cut at a uniform soil thickness of ¾ inch, plus or minus ¼ inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven ends will not be acceptable.
   c. Standard size sections of sod must be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
   d. Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
   e. Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.
2. Sod Installation
   a. During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.
   b. Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
   c. Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface.
   d. Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.
3. Sod Maintenance
   a. In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.
   b. After the first week, sod watering is required as necessary to maintain adequate moisture content.
   c. Do not mow until the sod is firmly rooted. No more than 1/3 of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.

B-4-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

Definition: The process of preparing the soils to sustain adequate vegetative stabilization.
Purpose: To provide a suitable soil medium for vegetative growth.
Conditions Where Practice Applies: Where vegetative stabilization is to be established.

Criteria

A. Soil Preparation
1. Temporary Stabilization
   a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
   b. Apply fertilizer and lime as prescribed on the plans.
   c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
2. Permanent Stabilization
   a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
      i. Soil pH between 6.0 and 7.0.
      ii. Soluble salts less than 500 parts per million (ppm).
      iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
      iv. Soil contains 1.5 percent minimum organic matter by weight.
      v. Soil contains sufficient pore space to permit adequate root penetration.
   b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
   c. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.
   d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
   e. Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

B. Topsoiling
1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
3. Topsoiling is limited to areas having 2:1 or flatter slopes where:
   a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
   b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
   c. The original soil to be vegetated contains material toxic to plant growth.
   d. The soil is so acidic that treatment with limestone is not feasible.
4. Areas having slopes steeper than 2:1 require special consideration and design.
5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
   a. Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1½ inches in diameter.
   b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.
   c. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
6. Topsoil Application
   a. Erosion and sediment control practices must be maintained when applying topsoil.
   b. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
   c. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

C. Soil Amendments (Fertilizer and Lime Specifications)
1. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
2. Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.
3. Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve.
4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.
5. Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABLIZATION

Definition

To stabilize disturbed soils with vegetation for up to 6 months.

Purpose

To use fast growing vegetation that provides cover on disturbed soils.

Conditions Where Practice Applies

Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.

Criteria

1. Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plant Hardiness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If this Summary is not put on the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan.
2. For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.
3. When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.1.b and maintain until the next seeding season.

H-5 STANDARDS AND SPECIFICATIONS FOR DUST CONTROL

Definition

Controlling the suspension of dust particles from construction activities.

Purpose

To prevent blowing and movement of dust from exposed soil surfaces to reduce on and off-site damage including health and traffic hazards.

Conditions Where Practice Applies

Areas subject to dust blowing and movement where on and off-site damage is likely without treatment.

Specifications

1. Mulches: See Section B-4-2 Soil Preparation, Topsoiling, and Soil Amendments, Section B-4-3 Seeding and Mulching, and Section B-4-4 Temporary Stabilization. Mulch must be anchored to prevent blowing.
2. Vegetative Cover: See Section B-4-4 Temporary Stabilization.
3. Tillage: Till to roughen surface and bring clods to the surface. Begin plowing on windward side of site. Chisel-type plows spaced about 12 inches apart, spring-toothed harrows, and similar plows are examples of equipment that may produce the desired effect.
4. Irrigation: Sprinkle site with water until the surface is moist. Repeat as needed. The site must not be irrigated to the point that runoff occurs.
5. Barriers: Solid board fences, silt fences, snow fences, burlap fences, straw bales, and similar material can be used to control air currents and soil blowing.
6. Chemical Treatment: Use of chemical treatment requires approval by the appropriate plan review authority.

B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

Definition

A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

Purpose

To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

Conditions Where Practice Applies

Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

Criteria

1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.
3. Runoff from the stockpile area must drain to a suitable sediment control practice.
4. Access the stockpile area from the upgrade side.
5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
7. Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.
8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

Maintenance

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

Definition

The application of seed and mulch to establish vegetative cover.

Purpose

To protect disturbed soils from erosion during and at the end of construction.

Conditions Where Practice Applies

To the surface of all perimeter controls, slopes, and any disturbed area not under active grading.

Criteria

A. Seeding
1. Specifications
   a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.
   b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.
   c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.
   d. Sod or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.
2. Application
   a. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
      i. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.
      ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.
   b. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
      i. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.
      ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction.
   c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer).
      i. If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P2O5 (phosphorous), 200 pounds per acre; K2O (potassium), 200 pounds per acre.
      ii. Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.
      iii. Mix seed and fertilizer on site and seed immediately and without interruption.
      iv. When hydroseeding do not incorporate seed into the soil.

B. Mulching
1. Mulch Materials (in order of preference)
   a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color. Straw is to be free of noxious weed seeds as specified in the Maryland Seed Law and not musty, moldy, caked, decayed, or excessively dusty. Note: Use only sterile straw mulch in areas where one species of grass is desired.
   b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.
      i. WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
      ii. WCFM, including dye, must contain no germination or growth inhibiting factors.
      iii. WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a blotter-like ground cover, on application, having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
      iv. WCFM material must not contain elements or compounds at concentration levels that will be phyto-toxic.
      v. WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.
2. Application
   a. Apply mulch to all seeded areas immediately after seeding.
   b. When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches. Apply mulch to achieve a uniform distribution and depth so that the soil surface is not exposed. When using a mulch anchoring tool, increase the application rate to 2.5 tons per acre.
   c. Wood cellulose fiber used as mulch must be applied at a net dry weight of 1500 pounds per acre. Mix the wood cellulose fiber with water to attain a mixture with a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
3. Anchoring
   a. Perform mulch anchoring immediately following application of mulch to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon the size of the area and erosion hazard:
      i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of 2 inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should follow the contour.
      ii. Wood cellulose fiber may be used for anchoring straw. Apply the fiber binder at a net dry weight of 750 pounds per acre. Mix the wood cellulose fiber with water at a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
      iii. Synthetic binders such as Acrylic DLR (Agro-Tack), DCA-70, Petroset, Terra Tax II, Terra Tack AR or other approved equal may be used. Follow application rates as specified by the manufacturer. Application of liquid binders needs to be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. Use of asphalt binders is strictly prohibited.
      iv. Lightweight plastic netting may be stapled over the mulch according to manufacturer recommendations. Netting is usually available in rolls 4 to 15 feet wide and 300 to 3,000 feet long.

Table B.1: Temporary Seeding for Site Stabilization

Plant Species	Seeding Rate 1/ lb/ac	Seeding Rate 1/ lb/1000 ft2	Seeding Depth 2/ (inches)	Recommended Seeding Dates by Plant Hardiness Zone 3/ 5b and 6a	6b	7a and 7b
Cool-Season Grasses						
Annual Ryegrass (Lolium perenne ssp. Multiflorum	40	1.0	0.5		**Mar 1 to May 15; Aug 1 to Oct 31**	
Barley (Hordeum vulgare)	96	2.2	1.0		**Mar 1 to May 15; Aug 1 to Oct 31**	
Oats (Avena sativa)	72	1.7	1.0		**Mar 1 to May 15; Aug 1 to Oct 31**	
Wheat (Triticum aestivum)	120	2.8	1.0		**Mar 1 to May 15; Aug 1 to Oct 31**	
Cereal Rye (Secale cereale)	112	2.8	1.0		**Mar 1 to May 15; Aug 1 to Nov 15**	
Warm-Season Grasses						
Foxtail Millet (Serataria italica)	30	0.7	0.5		**May 16 to Jul 31**	
Pearl Millet (Pennisetum glaucum	20	0.5	0.5		**May 16 to Jul 31**	

Notes:
1/ Seeding rates for the warm season grasses are in pounds of Pure Live Seed (PLS). Actual planting rates shall be adjusted to reflect percent seed germination and purity, as tested. Adjustments are usually not needed for the cool-season grasses.

Seeding rates listed above are for temporary seedings, when planted alone. When planted as a nurse crop with permanent seed mixes, use 1/3 of the seeding rate listed above for barley, oats, and wheat. For smaller-seeded grasses (annual ryegrass, pearl millet, foxtail millet), do not exceed more than 5% (by weight) of the overall permanent seeding mix. Cereal rye generally should not be used as a nurse crop, unless planting will occur very late fall beyond the seeding dates for other temporary seedings. Cereal rye has allelopathic properties that inhibit the germination and growth of other plants. If it must be used as a nurse crop, seed at 1/3 of the rate listed above.

Oats are the recommended nurse crop for warm-season grasses.

2/ For sandy soils, plant seeds at twice the depth listed above.
3/ The planting dates listed are averages for each Zone and may require adjustment to reflect local conditions, especially near the boundaries of the zone.

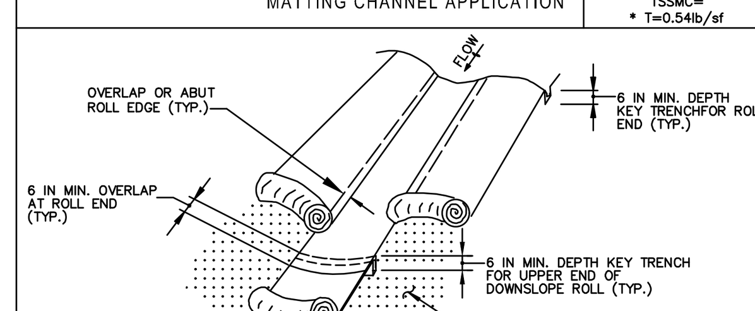
Permanent Seeding Summary

Hardiness Zone (from Figure B.3): 6b
Seed Misture (from Table B.3): Tall Fescue/Kentucky Bluegrass

No.	Species	Application Rate (lb/ac.)	Seeding Dates	Seeding Depths	Fertilizer Rate (10-20-20) N	P2O5	K2O	Lime Rate
9	Fescue, Tall	60	Mar 1 to May 15 Aug 1 to Oct 15	1/4 - 1/2 in	45 pounds per acre (1.0 lb/ 100 sf)	90 lb/ac (2 lb/ 1000 sf)	90 lb/ac 2 lb/ 1000 sf)	2 tons/ac (90lb/ 1000 sf)
	Bluegrass, Kentucky	40	Mar 1 to May 15 Aug 1 to Oct 15	1/4 - 1/2 in				
				1/4 - 1/2 in				

DETAIL B-4-6-A TEMPORARY SOIL STABILIZATION MATTING CHANNEL APPLICATION

STANDARD SYMBOL: SWALE TO INLET I-5 TSSMC= * T=0.54lb/sf



CONSTRUCTION SPECIFICATIONS
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED 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.
5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTERLINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MAT SMOOTHLY AND FIRMLY ON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. KEY-IN UPSTREAM END OF EACH MAT ROLL BY DIGGING A 6 INCH (MINIMUM) TRENCH AT THE UPSTREAM END OF THE MATTING, PLACING THE ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END.
7. OVERLAP OR ABUT THE ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
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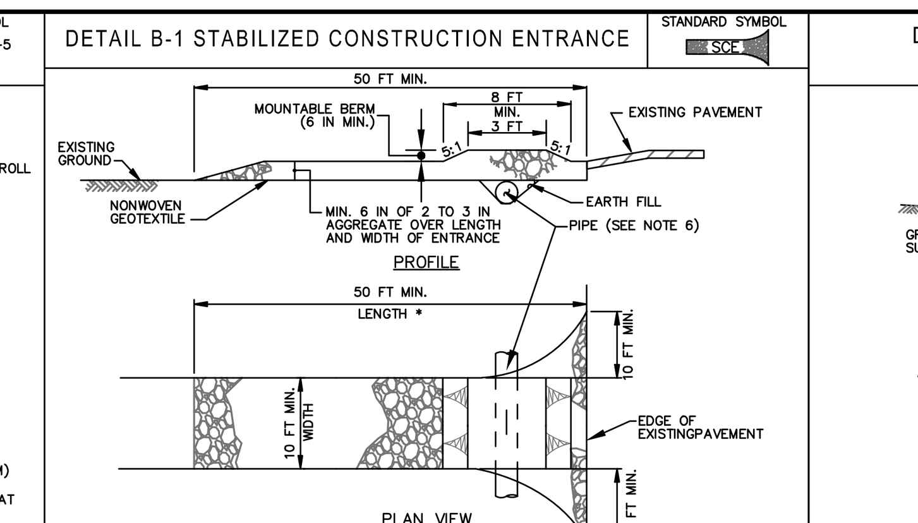
DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS
1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. 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 SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

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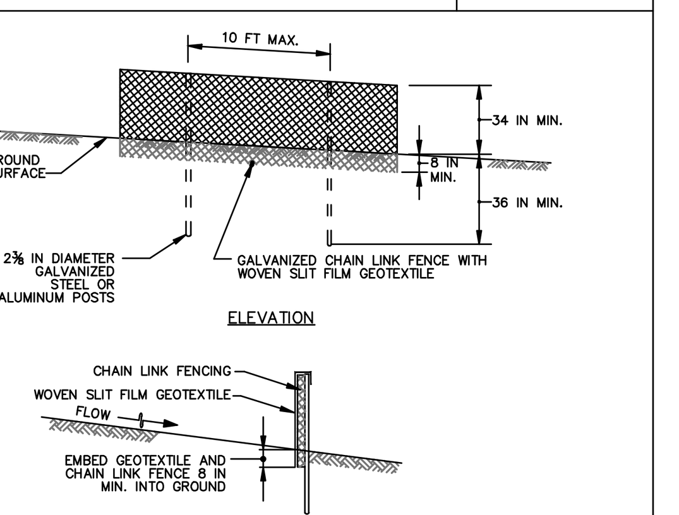
DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL: SSF



CONSTRUCTION SPECIFICATIONS
1. INSTALL 2⅜ INCH 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.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE 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.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
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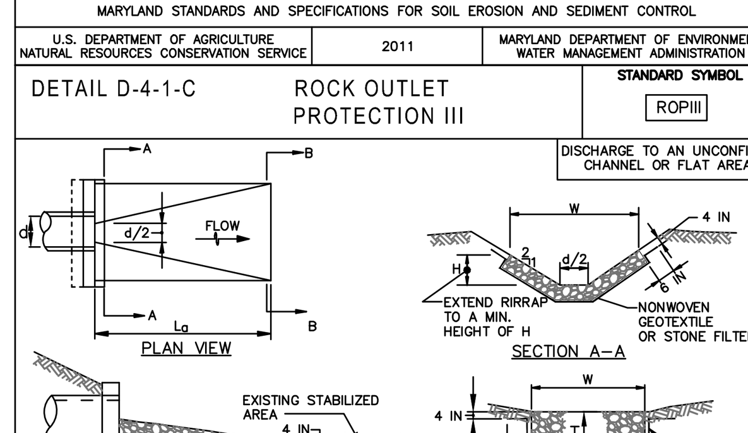
DETAIL D-4-1-C ROCK OUTLET PROTECTION III

STANDARD SYMBOL: ROPIII

DISCHARGE TO AN UNCONFINED CHANNEL OR FLAT AREA



RIPRAP CLASS	THICKNESS (T)
I	19 IN
II	32 IN
III	46 IN

CONSTRUCTION SPECIFICATIONS
1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (⅜ TO 1½ INCH MINIMUM STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.
5. CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
6. WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
7. CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
8. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND RIPRAP DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
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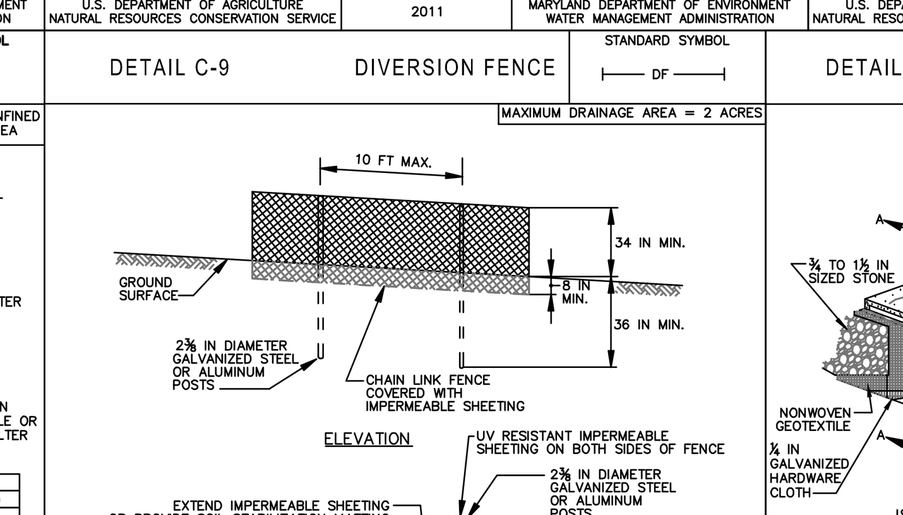
DETAIL C-9 DIVERSION FENCE

STANDARD SYMBOL: DF

MAXIMUM DRAINAGE AREA = 2 ACRES



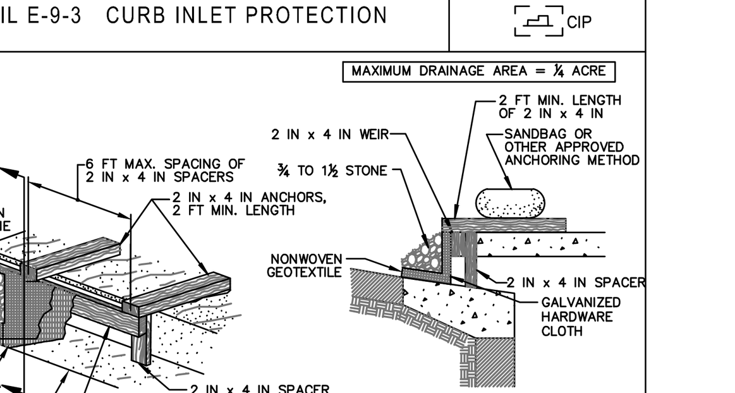
CONSTRUCTION SPECIFICATIONS
1. USE 42 INCH HIGH, 9 GAUGE OR THICKER CHAIN LINK FENCING (2⅜ INCH MAXIMUM OPENING).
2. USE 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. THE POSTS DO NOT NEED TO BE SET IN CONCRETE.
3. FASTEN CHAIN LINK FENCE SECURELY TO THE FENCE POSTS WITH WIRE TIES.
4. SECURE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING TO CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT TOP, MID SECTION, AND BELOW GROUND SURFACE.
5. EXTEND SHEETING A MINIMUM OF 4 FEET ALONG FLOW SURFACE AND EMBED END A MINIMUM OF 8 INCHES INTO GROUND. SOIL STABILIZATION MATTING MAY BE USED IN LIEU OF IMPERMEABLE SHEETING ALONG FLOW SURFACE.
6. WHEN TWO SECTIONS OF SHEETING ADJOIN EACH OTHER, OVERLAP BY 6 INCHES AND FOLD WITH SEAM FACING DOWNGRADE.
7. 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.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-3 CURB INLET PROTECTION

STANDARD SYMBOL: CIP

MAXIMUM DRAINAGE AREA = ¼ ACRE



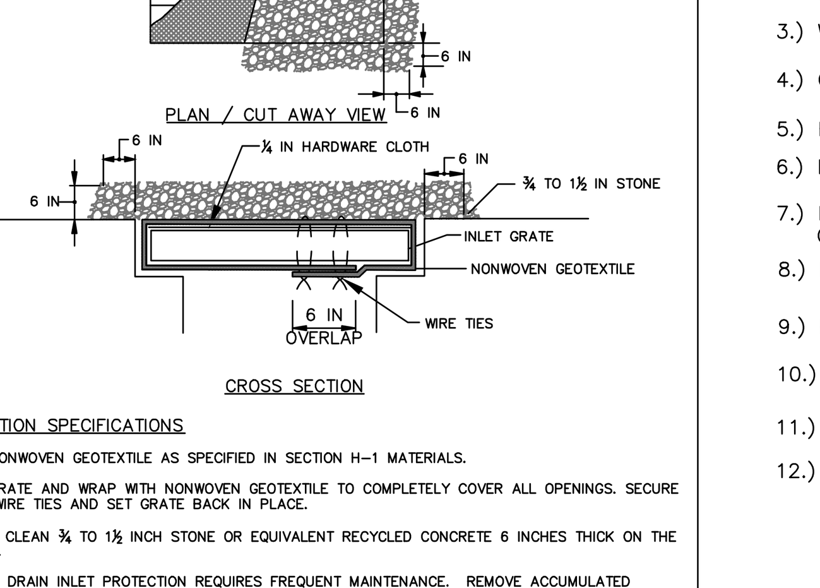
CONSTRUCTION SPECIFICATIONS
1. USE NOMINAL 2 INCH x 4 INCH LUMBER
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
3. NAIL THE 2x4 WEIR TO 9 INCH LONG VERTICAL SPACERS (MAXIMUM 6 FEET APART).
4. ATTACH A CONTINUOUS PIECE OF ¼ INCH GALVANIZED HARDWARE CLOTH, WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING IT 2 FEET BEYOND THROAT ON EACH SIDE.
5. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH TO THE 2x4 WEIR.
6. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FEET LENGTH). EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
7. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.
8. FORM THE HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND FACE OF CURB TO SPAN THE INLET OPENING. COVER THE HARDWARE CLOTH AND GEOTEXTILE WITH CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
9. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
10. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. 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.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-2 AT-GRADE INLET PROTECTION

STANDARD SYMBOL: AGIP

MAXIMUM DRAINAGE AREA = 1 ACRE



CONSTRUCTION SPECIFICATIONS
1. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. LIFT GRATE AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS. SECURE WITH WIRE TIES AND SET GRATE BACK IN PLACE.
3. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE 6 INCHES THICK ON THE GRATE.
4. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. 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.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Detail – SMARTfence® 42

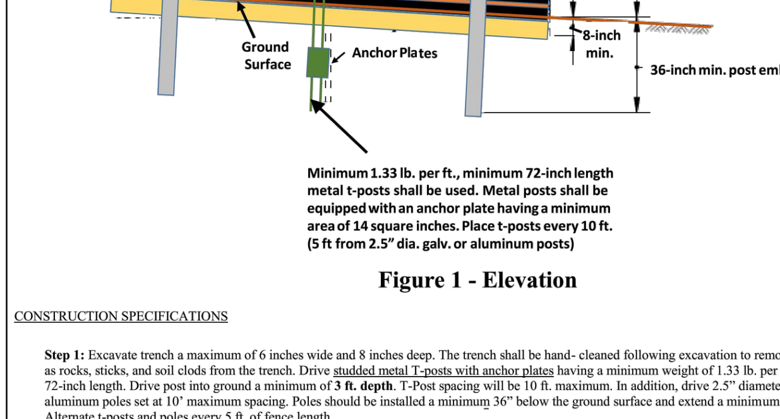


Figure 1 - Elevation

CONSTRUCTION SPECIFICATIONS

Step 1: Excavate trench a maximum of 6 inches wide and 8 inches deep. The trench shall be hand- cleaned following excavation to remove bulky debris such as rocks, sticks, and soil clods from the trench. Drive studded metal T-posts with anchor plates having a minimum weight of 1.33 lb. per ft. and a minimum 72-inch length. Drive post into ground a minimum of **3 ft. depth**. T-Post spacing will be 10 ft. maximum. In addition, drive 2.5" diameter galvanized or aluminum poles set at 10' maximum spacing. Poles should be installed a minimum 36" below the ground surface and extend a minimum of 33" aboveground. Alternate t-posts and poles every 5 ft. of fence length.

Step 2: Layout SMARTfence® 42 along proposed fence line next to anchor trench. Locate one end of the SMARTfence® 42 and position near the initial post. Position SMARTfence® 42 vertically along the initial post.

Step 3: For the initial 2.5"-diameter pole, place the end of SMARTfence® 42 along the pole height and rotate the post 360 degrees, maintaining tension on the fence system. Secure the fence to the post **at all four (4) orange-colored band locations** with minimum 10-inch long nylon ties.

Step 4: For fastening SMARTfence® 42 to metal T-posts and 2.5" poles, use the following method:

Minimum 10-inch nylon heavy-duty, UV-stabilized cable ties (zip-ties) with minimum 120-pound tensile strength. Puncture two 0.25-inch openings, spaced at a width apart that is roughly equivalent to the post width/pole diameter, and secure the fence to the post/pole. Tighten ties against the post/pole.

Step 5: Drive the initial post/pole with the attached fence into the ground to **3-ft. depth**.

Step 6: Drive the all remaining interior posts and poles of the fence system into the ground at least 3 ft., with the exception of the last pole along the fence length.

Step 7: Move to the next post/pole location while pulling SMARTfence® 42 **tightly**. Position the SMARTfence® 42 in front of the adjacent post/pole in preparation for fasteningthe fence to the post/pole. Fasten fence to post/pole **at all four (4) orange-colored band locations** as instructed in Step4.

Step 8: After the interior posts have been fastened to the SMARTfence® 42, secure the fence to the final 2.5"-diameter pole by **pulling the final section of fencing taut**, then rotating the post 360 degrees, maintaining tension on the fence system. Secure the fence to the post **at all four (4) orange-colored band locations** with the nylon ties per Step 4. Drive the final post into the ground to 3-ft. depth.

Step 9: Place the bottom 8 inches of fabric into the trench. Backfill trench (overfill) with soil placed around fabric. Compact soil backfill with either manual tamping (or other manual means) or via mechanical equipment such as the front wheel of a tractor, skid steer, roller, or other device (per Note 5 of ASTM D 6462 *Standard Practice for Silt Fence Installation)*. Do not damage the fabric during compaction (damaged fabric shall be replaced).

1

SMARTfence42 MAY BE USED IN LIEU OF SUPER SILT FENCE AT THE DESCRETION OF THE CONTRACTOR

STANDARD SEDIMENT CONTROL NOTES

1. A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID), 410-313-1855 AFTER THE FUTURE LOD AND PROTECTED AREAS ARE MARKED CLEARLY IN THE FIELD. A MINIMUM OF 48 HOUR NOTICE TO CID MUST BE GIVEN AT THE FOLLOWING STAGES:
   A. PRIOR TO THE START OF EARTH DISTURBANCE,
   B. UPON COMPLETION OF THE INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING,
   C. PRIOR TO THE START OF ANOTHER PHASE OF CONSTRUCTION OR OPENING OF ANOTHER GRADING UNIT,
   D. PRIOR TO THE REMOVAL OR MODIFICATION OF SEDIMENT CONTROL PRACTICES.
   OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE. OTHER RELATED STATE AND FEDERAL PERMITS SHALL BE REFERENCED, TO ENSURE COORDINATION AND TO AVOID CONFLICTS WITH THIS PLAN.
2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION IS REQUIRED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED AREAS ON THE PROJECT SITE EXCEPT FOR THOSE AREAS UNDER ACTIVE GRADING.
4. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR TOPSOIL (SEC. B-4-2), PERMANENT SEEDING (SEC. B-4-5), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-3). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES IF THE GROUND IS FROZEN. INCREMENTAL STABILIZATION (SEC. B-4-1) SPECIFICATIONS SHALL BE ENFORCED IN AREAS WITH >15' OF CUT AND/OR FILL. STOCKPILES (SEC. B-4-8) IN EXCESS OF 20 FT. MUST BE BENCHED WITH STABLE OUTLET. ALL CONCENTRATED FLOW, STEEP SLOPE, AND HIGHLY ERODIBLE AREAS SHALL RECEIVE SOIL STABILIZATION MATTING (SEC. B-4-6).
5. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE, AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE CID.
6. SITE ANALYSIS:

TOTAL AREA OF SITE:	3.99	ACRES
AREA DISTURBED:	2.96	ACRES
AREA TO BE ROOFED OR PAVED:	0.95	ACRES
AREA TO BE VEGETATIVELY STABILIZED:	2.01	ACRES
TOTAL CUT:	1,300 *	CU. YDS.
TOTAL FILL:	1,300 *	CU. YDS.
OFFSITE WASTE/BORROW AREA LOCATION:	SITE WITH ACTIVE GP	

*CUT/FILL NUMBERS ARE FOR SEDIMENT CONTROL PURPOSES ONLY. CONTRACTOR TO VERIFY.

7. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
8. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE CID. THE SITE AND ALL CONTROLS SHALL BE INSPECTED BY THE CONTRACTOR WEEKLY; AND THE NEXT DAY AFTER EACH RAIN EVENT. A WRITTEN REPORT BY THE CONTRACTOR, MADE AVAILABLE UPON REQUEST, IS PART OF EVERY INSPECTION AND SHOULD INCLUDE:
   - INSPECTION DATE
   - INSPECTION TYPE (ROUTINE, PRE-STORM EVENT, DURING RAIN EVENT)
   - NAME AND TITLE OF INSPECTOR
   - WEATHER INFORMATION (CURRENT CONDITIONS AS WELL AS TIME AND AMOUNT OF LAST RECORDED PRECIPITATION)
   - BRIEF DESCRIPTION OF PROJECT'S STATUS (E.G., PERCENT COMPLETE) AND/OR CURRENT ACTIVITIES
   - EVIDENCE OF SEDIMENT DISCHARGES
   - IDENTIFICATION OF PLAN DEFICIENCIES
   - IDENTIFICATION OF SEDIMENT CONTROLS THAT REQUIRE MAINTENANCE
   - IDENTIFICATION OF MISSING OR IMPROPERLY INSTALLED SEDIMENT CONTROLS
   - COMPLIANCE STATUS REGARDING THE SEQUENCE OF CONSTRUCTION AND STABILIZATION REQUIREMENTS
   - PHOTOGRAPHS
   - MONITORING/SAMPLING
   - MAINTENANCE AND/OR CORRECTIVE ACTION PERFORMED
   - OTHER INSPECTION ITEMS AS REQUIRED BY THE GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES (NPDES, MDE).
9. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH CAN AND SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.
10. ANY MAJOR CHANGES OR REVISIONS TO THE PLAN OR SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE HSCD PRIOR TO PROCEEDING WITH CONSTRUCTION. MINOR REVISIONS MAY ALLOWED BY THE CID PER THE LIST OF HSCD-APPROVED FIELD CHANGES.
11. DISTURBANCE SHALL NOT OCCUR OUTSIDE THE L.O.D. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 AC. PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE CID. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE HSCD, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.
12. WASH WATER FROM ANY EQUIPMENT, VEHICLES, WHEELS, PAVEMENT, AND OTHER SOURCES MUST BE TREATED IN A SEDIMENT BASIN OR OTHER APPROVED WASHOUT STRUCTURE.
13. TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE FOR REDISTRIBUTION ONTO FINAL GRADE.
14. ALL SILT FENCE AND SUPER SILT FENCE SHALL BE PLACED ON-THE-CONTOUR, AND BE IMBRICATED AT 25' MINIMUM INTERVALS, WITH LOWER ENDS CURLED UPHILL BY 2' IN ELEVATION.
15. STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUSIVE):
   - USE I AND IP MARCH 1 - JUNE 15
   - USE III AND IIIP OCTOBER 1 - APRIL 30
   - USE IV MARCH 1 - MAY 31
16. A COPY OF THIS PLAN, THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND ASSOCIATED PERMITS SHALL BE ON-SITE AND AVAILABLE WHEN THE SITE IS ACTIVE.

REV. 8/2015

SEQUENCE OF CONSTRUCTION

NOTIFY SEDIMENT CONTROL DIVISION 48 HOUR PRIOR TO START OF CONSTRUCTION

	DURATION
1.) OBTAIN GRADING PERMIT.	DAY 1
2.) INSTALL PERIMETER SEDIMENT CONTROLS (SUPER SILT FENCE AND SILT FENCE DIVERSION) AND STABILIZED CONSTRUCTION ENTRANCE.	DAY 2 – 5
3.) WITH PERIMETER CONTROLS IN PLACE BEGIN REMOVAL EXISTING ONSITE PAVING.	DAY 6 – 13
4.) CLEAR AND GRUB SITE. REMOVE BAMBOO PER INSTRUCTION ON SHEET 6.	DAY 6 – 13
5.) ROUGH GRADE FOR ROAD CONSTRUCTION & MASS GRADE SITE AS NEEDED.	DAY 14 – 21
6.) INSTALL WATER & SEWER MAINS.	DAY 22 – 36
7.) INSTALL STORM DRAIN AND SWM FACILITIES BR-1 & MBR-2. COVER MEDIA WITH SILT CLOTH TO AVOID SOIL CONTAMINATION UNTIL GRADING IS COMPLETED AND STABILIZED.	DAY 37 – 51
8.) INSTALL CURB & GUTTER AND SIDEWALK AS APPLICABLE.	DAY 52 – 59
9.) PAVE USE-IN-COMMON DRIVE AND ROAD AND STABILIZE REMAINING AREAS.	DAY 60 – 67
10.) WITH AREAS STABILIZE COMPLETE SWM FACILITY BR-1 AND MBR-2.	DAY 68 – 71
11.) INSTALL STREET TREES PER LANDSCAPE PLAN.	DAY 72 – 78
12.) WITH THE APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, REMOVE SEDIMENT CONTROL DEVICES AND STABILIZE ANY REMAINING DISTURBED AREAS.	DAY 79 – 82

NOTE:
TEMPORARY EROSION CONTROL MATTING SHALL BE PLACED IN SWALES WHERE DEEMED NECESSARY UNTIL VEGETATION IS ESTABLISHED OR SOLID SOD SHOULD BE USED.

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

DocuSigned by: Alexander Bratchie — 9/21/2023
HOWARD SOIL CONSERVATION DISTRICT — DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS
DocuSigned by: [signature] — 9/22/2023
2465821AE4DA4C2...
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
DocuSigned by: [signature] — 9/20/2023
1EB75478A22B49A...
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

DocuSigned by: CHAD Edmondson — 9/20/2023
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

ENGINEER'S CERTIFICATE

"I CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH THE CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT 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."

Christopher Malagari — 2023-08-17
ENGINEER — DATE

DEVELOPER'S CERTIFICATE

"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 THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING 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."

Justin Boy — 2023-08-17
DEVELOPER — DATE

30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

BENCHMARK ENGINEERING, INC.
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
3300 NORTH RIDGE ROAD ▲ SUITE 140 ▲ ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 22390, Expiration Date: 6-30-2025.
STATE OF MARYLAND — CHRISTOPHER A. MALAGARI — 22390 — PROFESSIONAL ENGINEER
08.17.2023

OWNER:
DEVELOPMENT PARTNERS, LLC
9693 GERWIG LANE, SUITE L
COLUMBIA, MD 21046
443-676-2417

DEVELOPER:
DEVELOPMENT PARTNERS, LLC
9693 GERWIG LANE, SUITE L
COLUMBIA, MD 21046
443-676-2417

OLD MONTGOMERY MEADOWS
LOTS 1-11 AND OPEN SPACE LOTS 12 & 13
9005 OLD MONTGOMERY ROAD

TAX MAP: 36 GRID: 17 PARCEL: 271
ZONED: R-12
ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

RESIDENTIAL
FINAL CONSTRUCTION PLAN
GRADING & SEDIMENT CONTROL NOTES AND DETAILS

DESIGN: JCO	DRAFT: JCO	DATE: AUGUST 2023	BEI PROJECT NO. 3080
		SCALE: AS SHOWN	SHEET 4 OF 9

F-23-049

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	k-VALUE Whole Soil
GhB		B	D	GLENELG URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	0.43
GnB*	YES	C	D	GLENVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.49
MaC		B		MANOR LOAM, 8 TO 15 PERCENT SLOPES	0.32

SPECIMEN TREE IMPACT CALCULATION CHART

Key (X#)	Species	Size (in.dbh)	CRZ (feet radius)	Comments	CRZ Area (SF)	CRZ Impact (SF)	Percent CRZ Impact	To Be Retained (Y/N)	Mitigation Requirement (# replacement 3" trees)
1	Norway maple	35.5	53.25	poor condition, hollow trunk dieback NON-NATIVE	8904	8904	100	N	2
2	Silver maple	33.5	50.25	Some lip dieback noted	7929	2190	28	N	2
3	White pine	32	48	Major scaffold branches 15"+/- dia. damaged from storm removing 20% of canopy. Remaining canopy vigorous	7235	7235	100	N	2
4	White pine	32	48	Two scaffold branches storm damaged removing 20% of the canopy. Remaining canopy vigorous.	7235	7235	100	N	2
5	Pin oak	31	46.5		6789	1906	28	Y	0
6	White pine	33	49.5	Good, some included bark	7694	7694	100	N	2
7	Black cherry	34	51	Very poor, only one small branch surviving, major storm damage	8167	8167	100	N	2
							Mitigation Requirement		12

SPECIMEN TREE 2 NOTE -

SPECIMEN TREE 2 HAS BEEN APPROVED FOR REMOVAL BUT MAY POSSIBLY BE RETAINED DURING THE DEVELOPMENT PROCESS. PROTECTIVE FENCING SHALL BE INSTALLED ALONG THE CRZ AND NO VEHICLES SHALL BE PERMITTED WITHIN THE CRZ DURING THE BAMBOO REMOVAL. HAND HELD, MECHANIZED CUTTING AND SPRAYING TOOLS MAY BE USED WITHIN CRZ BUT NO TRACTORS, MOWERS, SKID STEERS OR OTHER VEHICLES.

MITIGATION WILL BE PROVIDED FOR SPECIMEN TREE 2 EVEN IF THE TREE IS TO BE RETAINED.

A TOTAL OF 12 MITIGATION PLANTINGS HAVE BEEN REQUIRED AS A CONDITION OF THE SPECIMEN TREE REMOVAL ALTERNATIVE COMPLIANCE APPROVAL (WP-22-093).

DEVELOPER'S CERTIFICATION:
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 OF A LETTER OF LANDSCAPE INSTALLATION ACCOMPANIED BY AN EXECUTED ONE-YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

Justin Boy — DEVELOPER — 2023-09-11 — DATE

LEGEND

- EXISTING CONTOURS
- PROPOSED CONTOURS
- PROPOSED HOUSE
- APPROXIMATE 100 YEAR FLOODPLAIN
- LIMIT OF DISTURBANCE
- PROP. MICRO BIORETENTION FACILITY
- PROP. DRYWELL
- TREE PROTECTION FENCING
- SPECIMEN TREE (TO REMAIN) (ST5)
- PRIVATE USE-IN-COMMON ACCESS EASEMENT
- PUBLIC SEWER & UTILITY EASEMENT
- PUBLIC SWM, DRAINAGE & UTILITY EASEMENT
- FCE (RETENTION)
- FCE (REFORESTATION)
- EX. UNDERGROUND ELECTRIC
- EX. UNDERGROUND GAS
- SPECIMEN TREE TO BE REMOVED PER WP-22-093 (X)
- EXISTING TREE 24-29.9"
- SPECIMEN TREE MITIGATION
- BAMBOO REMOVAL AREA
- PERMANENT PROTECTIVE SIGNAGE
- 1" CALIPER TREE PLANTING LOCATION

30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

LANDSCAPING NOTES

1) PERIMETER LANDSCAPING SHALL BE PROVIDED BY THE PLANTINGS AS SHOWN ON THESE PLANS.
2) TREES MUST BE A MINIMUM OF FOUR(4) FEET FROM PAVEMENT AND MUST BE A MINIMUM OF FIVE(5) FEET FROM ANY STORM DRAIN, IF APPLICABLE.
3) TREE MUST BE PLANTED A MINIMUM OF TEN (10) FEET FROM A DRIVEWAY APRON.
4) THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SEC.16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL.
5) THE LANDSCAPING FOR THIS PROJECT IS DESIGNED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. SURETY SHALL BE PROVIDED WITH THE DEVELOPER'S AGREEMENT, IN THE AMOUNT OF $11,250.00 FOR 24 PERIMETER SHADE TREES, 3 PERIMETER EVERGREEN TREES AND 12 MITIGATED TREES FOR THE REMOVED SPECIMEN TREES.
6) TWO SPECIMEN TREES HAVE BEEN IDENTIFIED TO REMAIN ON THIS PLAN. THESE TREES ARE TO BE PRESERVED AND IF ANY CONSTRUCTION IS EXPECTED TO IMPACT THE CRITICAL ROOT ZONE OF ANY SPECIMEN TREES, ROOT PRUNING ALONG THE PROPOSED LIMITS OF DISTURBANCE SHALL BE PROVIDED TO REDUCE IMPACTS.
7) THE OWNER, TENANT AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING, PLANT MATERIALS, 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 REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
8) AT THE TIME OF INSTALLMENT, ALL SHRUBS AND OTHER PLANTINGS HEREWITH IN LISTED AND APPROVED FOR THIS SITE SHALL BE OF THE PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THIS 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 APPLICABLE PLANS AND CERTIFICATES.
9) ALL LANDSCAPING PLANT TYPES SHOWN ON THESE PLANS ARE RECOMMENDED AND MAY BE SUBSTITUTED WITH APPROVED EQUIVALENTS FROM THE HOWARD COUNTY LANDSCAPE MANUAL.

FIVE SPECIMEN TREE MITIGATION PLANTINGS SHALL BE UTILIZED IN THE FOREST RETENTION AREA TO "FILL IN" CANOPY GAPS WITHIN THE EXISTING FOREST. THE APPROXIMATE LOCATION ARE SHOWN HEREON. PLANTING LOCATIONS SHOULD BE FIELD CONFIRMED BY QUALIFIED FCA PROFESSIONAL OR COUNTY PRIOR TO PLANTING. CARE SHOULD BE TAKEN TO MINIMIZE DISTURBANCE TO EXISTING FOREST VEGETATION DURING INSTALLATION

SCHEDULE A PERIMETER LANDSCAPE EDGE

LANDSCAPE TYPE	NA	B	B	A	A	A	TOTAL
PERIMETER	①	②	③	④	⑤	⑥	
LINEAR FEET OF PERIMETER	126 LF	78 LF	36 LF	444 LF	543 LF	395 LF	
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	NO	NO	NO	YES 95 LF	YES 128 LF	
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	NO	NO	NO	NO	NO	
NUMBER OF PLANTS REQUIRED							
SHADE TREES	NA	2	1	8	8	5	24
EVERGREEN TREES	—	2	1	—	—	—	3
OTHER TREES (2:1 SUBSTITUTE)	—	—	—	—	—	—	
SHRUBS	—	—	—	—	—	—	
NUMBER OF PLANTS PROVIDED							
SHADE TREES	NA	2	1	8	8	5	24
EVERGREEN TREES	—	2	1	—	—	—	3
OTHER TREES (2:1 SUBSTITUTE)	—	—	—	—	—	—	
SHRUBS (10:1 SUBSTITUTE) (DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)	—	—	—	—	—	—	

CREDIT IS FOR EXISTING FOREST IN EASEMENT.

STREET TREE REQUIREMENTS

ROADWAY NAME:	OLD MONTGOMERY ROAD	PROPOSED ROAD A
LINEAR FEET OF ROADWAY RIGHT-OF-WAY	340	482
STREET TREES REQUIRED 1:40	9	12
NUMBER OF PLANTS PROVIDED:		
SHADE TREES	9	12
EVERGREEN TREES	—	—
OTHER TREES (2:1 SUBSTITUTE)	—	—
SHRUBS (10:1 SUBSTITUTE) (DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)	—	—

PERIMETER LANDSCAPE PLANTING LIST

SYMBOL	QUANTITY	NAME	REMARKS
	24	ACER SACCHARUM GREEN MOUNTAIN SUGAR MAPLE	2 1/2"-3" CAL
	3	PINUS STROBUS "WHITE PINE"	6' - 8' HT

STREET TREE PLANTING SCHEDULE

SYMBOL	QUANTITY	NAME	REMARKS
	REQUIRED: 1/40LF REQUIRED: 21	ACER RUBRUM 'OCTOBER GLORY' OCTOBER GLORY RED MAPLE	2 1/2"-3" CAL

APPROVED: DEPARTMENT OF PUBLIC WORKS

DocuSigned by: — CHIEF, BUREAU OF HIGHWAYS — 9/22/2023 — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

DocuSigned by: — CHIEF, DIVISION OF LAND DEVELOPMENT — 9/20/2023 — DATE

DocuSigned by: — CHIEF, DEVELOPMENT ENGINEERING DIVISION — 9/20/2023 — DATE

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
3300 NORTH RIDGE ROAD ▲ SUITE 140 ▲ ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 22390, Expiration Date: 6-30-2025.

STATE OF MARYLAND — CHRISTOPHER A. MYERS — 22390 — PROFESSIONAL ENGINEER

09.11.2023

FOR LANDSCAPING ONLY

OWNER:
DEVELOPMENT PARTNERS, LLC
9693 GERWIG LANE, SUITE L
COLUMBIA, MD 21046
443-676-2417

DEVELOPER:
DEVELOPMENT PARTNERS, LLC
9693 GERWIG LANE, SUITE L
COLUMBIA, MD 21046
443-676-2417

OLD MONTGOMERY MEADOWS
LOTS 1-11 AND OPEN SPACE LOTS 12 & 13
9005 OLD MONTGOMERY ROAD

TAX MAP: 36 GRID: 17 PARCEL: 271
ZONED: R-12
ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

RESIDENTIAL
FINAL CONSTRUCTION PLAN
FOREST CONSERVATION AND LANDSCAPE PLAN

DESIGN: JCO	DRAFT: JCO	DATE: AUGUST 2023	BEI PROJECT NO. 3080
		SCALE: AS SHOWN	SHEET 5 OF 9

Eco-Science Professionals, Inc.
CONSULTING ECOLOGISTS
P.O. BOX 5906 GLEN ARM, MARYLAND 21057
Telephone (410) 683-7840
www.ecoscienceprofessionals.com

CERTIFIED ARBORIST — ISA

J. Brody McAllister
J. Brody McAllister
ISA Certified Arborist
Cert ID: MA6471A
MD DNR FCA Qualified Professional

J:\3080_9005 Old Montgomery Road\dwg\7000v2.dwg, 9/8/2023 9:26:18 AM

F-23-049

REFORESTATION PLAN

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 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 afforestation costs. If 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 and bamboo 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. Herbicide used shall be made specifically to address woody plant material and shall be applied as per manufacturers 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.

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 plantings, see Post Construction Management Plans.

D. Guarantee Requirements

A 90 percent survival rate of the reforestation 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

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 a its roots may 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 well and septic systems, and construct houses. Stabilize all disturbed areas accordingly.

4.Begin multiflora rose/bamboo removal. 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

Eco-Science Professionals, 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, Eco-Science Professionals, 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 afforestation plantings have been installed.

plan. The plan goes into effect upon acceptance of the construction certification or completion by the County. Eco-Science Professionals, 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 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 afforestation plantings. Appropriate measures will be taken to rectify any problems which may arise.

In addition, maintenance of the plantings will involve the following steps:

1. Watering - All plant material shall be watered twice a month during the 1st growing season, more or less frequently depending on weather conditions. During the second growing season, once a month during May-September, if needed.

2. Removal of invasive exotics and noxious weeds. Old field successional species will be retained.

3. Identification of serious plant pests and diseases, treatment with appropriate agent.

4. Pruning of dead branches.

5. After inspections, replacement of plants, if required, in accordance with the Guarantee Requirements shown on the FCP.

C. Education

The developer will provide appropriate materials to property owners informing them of the location and purpose of the 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 year post-construction management period, Eco-Science Professionals, or another qualified professional, will submit to the administrator of the Howard County Forest Conservation Program certification that all retention/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.

APPROVED: DEPARTMENT OF PUBLIC WORKS

TENTATIVELY APPROVED: DEPARTMENT OF PLANNING AND ZONING HOWARD COUNTY

CHIEF, BUREAU OF HIGHWAYS — DATE 9/22/2023

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/20/2023

PLANNING DIRECTOR — DATE 9/20/2023

PLANTING SCHEDULE

FCE Reforestation Area – 0.5 acres
Planting Units Required: 350
Planting Units Provided: 350

Qty	Species	Size	Spacing	Total FCA Units
10	Acer rubrum - Red maple	1" caliper	15' oc	
25	Cercis canadensis - Red bud	1" caliper	15' oc	
25	Liriodendron tulipifera - Tulip poplar	1" caliper	15' oc	
15	Liquidambar styraciflua - Sweet gum	1" caliper	15' oc	
15	Pinus strobus - White pine	1" caliper	15' oc	
10	Quercus palustris - Pin oak	1" caliper	15' oc	
100	Total 1" caliper plantings x 3.5 units /tree = FCA unit credit			350
	Total Unit Credit			350

** Trees shall be randomly planting in two rows along the lot lines in locations indicated by
*** Tree shall be randomly intersperse

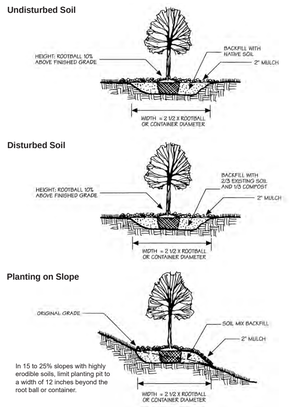
NOTE: Planting schedule to specify a minimum of 5 species is required per section 3.9.2 of the Forest Conservation Manual.

Specimen Tree Mitigation Plantings

Qty	Species	Size	Spacing
12 To be selected from the following list of species based on availability	Acer rubrum - Red maple Liriodendron tulipifera - Tulip poplar Liquidambar styraciflua - Sweet gum Quercus palustris - Pin oak Quercus phellos - Willow oak	3" DBH	as shown species may be randomly interspersed

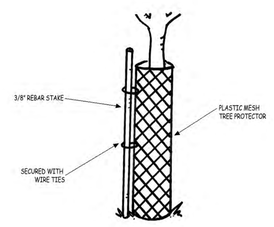
A MINIMUM OF THREE SPECIES SHOULD BE USED FOR SPECIMEN TREE MITIGATION PLANTINGS

Figure E-18:
Plant Installation



Source: Adapted from State Forest Conservation Technical Manual, 1991

Figure E-23:
Plastic Mesh Tree Shelters



Notes:
1. Plastic mesh tree shelter is flexible, easy to install, reusable and UV treated.
2. Shelter is 4' diameter by 48" high.
3. Mesh is 3/4" by 3/4" with each strand about 1/8" by 1/8" by 1/8."
4. Secure shelter to ground with rebar 3/8' diameter by 5' long. Drive rebar into the ground 12" to 18."
5. Secure shelter to rebar with 2 to 3 wire ties.
6. Mesh tree shelters may also be constructed of wire mesh or fencing with dimensions and installation methods as described above.
7. Remove tree shelters per the recommendation by the Department of Recreation and Parks.

Source: Howard County Department of Recreation and Parks

FCP NOTES

1. THE FOREST CONSERVATION OBLIGATIONS FOR THIS SITE WILL BE ADDRESSED THROUGH THE CREATION OF CONSERVATION EASEMENTS FOR 0.3 ACRES OF ONSITE FOREST TO BE RETAINED AND 0.6 ACRES OF PLANTING.

2. BAMBOO REMOVAL SHALL OCCUR AS PART OF THE INITIAL SITE DEVELOPMENT OF THE SITE. THIS SHALL INCLUDE THE REMOVAL OF ALL ABOVE GROUND CANES. THE CANES SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN AN APPROPRIATE FACILITY. DETAILED BAMBOO REMOVAL SPECIFICATIONS ARE PROVIDED BUT MAY BE AMENDED BY THE LANDSCAPE CONTRACTOR BASED ON ACTUAL FIELD CONDITIONS AND BAMBOO RESPONSE TO TREATMENT.

3. THE PROJECT SITE IS LOCATED IN THE USE IV-P WATERSHED OF THE MIDDLE PATUXENT RIVER (021311050953).

4. AN ALTERNATIVE COMPLIANCE REQUEST FOR REMOVAL OF SPECIMEN TREES HAS BEEN APPROVED (WP-22-093). CONDITIONS OF THIS APPROVAL ARE INDICATED BELOW:

Directors Action: Approval of alternative compliance of Section 16.1205(a) is subject to the following conditions:

1. Removal of the six specimen trees is to be mitigated at 2:1 by the planting of 12 native trees with a DBH of 3". The location of the mitigation trees shall be clearly shown and labeled on subsequent subdivision and site plans.
2. Approval is for removal of specimen trees 1-4 and 6 and 7 as shown on the exhibit provided with the alternative compliance application.
3. Include a general note with the alternative plan file number, summary of request, decision, date of decision and conditions of approval on all plans submitted to the County for review
4. S-22-006 and subsequent plan submittals shall minimize LOD encroachment into the CRZ of Specimen tree 5 to less than 30% and ST-5 shall be protected within the forest conservation easement as shown on the revised alternative compliance application exhibit dated September 2022.
5. Approval of WP-22-093 is for removal of cited specimen trees only. The applicant must comply with comments at plan review that may require layout changes in order to meet the regulations.
6. Subsequent plan submissions should explore methods of removing the bamboo that may preserve ST-2. However, complete removal of the bamboo is the priority in order to protect the proposed forest conservation areas from encroachment.

5. A SECURITY FOR THE PROPOSED SPECIMEN TREE MITIGATION PLANTINGS SHALL BE PROVIDED. THE COST OF THIS SECURITY HAS BEEN CALCULATED TO BE $300.00 PER TREE - $3,600.00.

UNIVERSITY OF MD EXTENSION SERVICE GUIDANCE FOR BAMBOO REMOVAL

https://extension.umd.edu/resource/containing-and-removing-bamboo

OVERVIEW

Non-chemical control involves physically removing as much growth as possible. The easiest are the culms (canes, stems) that sprout above-ground. The most difficult are the underground rhizomes, which allow the plant to spread for a hundred or more feet in any unobstructed direction. Rhizome removal is the fastest and most effective approach, but the trade-off is that it will be more disruptive to your landscape and cost significantly more.

Flocks of some bird species will roost in bamboo. For respiratory safety, wear a mask and gloves when cutting and removing culms where large numbers of birds are roosting, due to health hazards from accumulated bird droppings.

CUTTING CULMS

The method of removal with minimal environmental impact is cutting culms. This may also be your only option if the colony is growing among desirable trees or other valuable landscape plants. As with any plant, continual removal of foliage deprives the plant of its way of feeding itself, thus eventually starving it to death. Energy stores are used in re-sprouting, and when they are not allowed to photosynthesize, the plant eventually runs out of energy. With bamboo, this process may take a long time, as much energy is stored in underground tissues. In addition, sprouts that appear outside of your yard, unnoticed or untreated, will continue to feed the root system and circumvent efforts to starve the plant. Therefore, for this method to work well, you must be thorough.

Tender new culms appearing in spring can simply be kicked- or knocked-over. Check for new shoots weekly as they grow rapidly. Culms that re-appear in summer will need to be cut down with loppers or a small folding saw with small razor-sharp teeth.

REMOVING RHIZOMES

Removing the rhizomes is another way to eradicate bamboo without resorting to herbicides. Hand removal is extremely difficult and requires sturdy tools and lots of effort. Some landscaping companies use power equipment, like mini-excavators, to lift rhizomes out of the soil after the culms are cut and removed. Such equipment will need room to maneuver in an established landscape or else plantings may be damaged. There will also be soil compaction during its use and possible regrading needed after removal. Any missed fragments of rhizome can re-sprout, so be prepared to cut new shoots at the soil level as soon as they appear.

For large bamboo patches, check with your local government to see if a permit is needed before excavating. Use erosion control measures to protect nearby surface water.

CHEMICAL CONTROL

Herbicides should be the method of last resort and require non-selective, systemic products that are absorbed by plant tissues and transported down into the roots. (Glyphosate is one example of a systemic active ingredient.) Be careful with applications, as non-selective herbicides will damage desirable plants if spray drifts or drips onto them. Due to the waxy nature of bamboo leaves, herbicides may benefit from the addition of a spreader sticker, which helps the spray adhere to the leaf. If you are in a wetland habitat or near open water, utilize herbicides manufactured for this environment only, with no surfactants.

HERBICIDE APPLICATION

1. Don't attempt to spray a mature stand of running bamboo without first cutting-down as much growth as you can. This greatly reduces the amount of herbicide needed and avoids you having to spray over your head.

2. Small, leafy shoots (under 5 ft. tall) can be sprayed anytime during the growing season. Systemic herbicides are most effective when applied from mid-September to mid-October and repeated in 14 days.

3. Cut culms and spray or paint a non-selective herbicide on the pruning cut within 5 minutes of cutting.

DISPOSAL

Cut culms can be dried and uses for stakes.

All other waste generated from the removal process shall be disposed of offsite in an appropriate disposal facility.

Specimen/Significant Tree Chart

Key (X#)	Species	Size (in.dbh)	CRZ 1:1.5 (feet radius)	Condition (good unless otherwise noted)	Diameter of State Champion for Species (inches)
1	Norway maple	35.5	53.25	poor condition, hollow trunk dieback	66.5
2	Silver maple	33.5	50.25	Some tip dieback noted	94
3	White pine	32	48	Major scaffold branches 15"+/- dia, damaged from storm removing 20% of canopy. Remaining canopy vigorous	53
4	White pine	32	48	Two scaffold branches storm damaged removing 20% of the canopy. Remaining canopy vigorous.	53
5	Pin oak	31	46.5		63.4
6	White pine	33	49.5	Good, some included bark	53
7	Black cherry	34	51	Very poor, only one small branch surviving, major storm damage	64
8	White pine	29.5	44.25	Poor condition, notable included bark, needle loss	53
9	Silver maple	24.5	36.75		94
10	London plane tree	27	40.5		46
11	Tulip poplar	26	39		101
12	White pine	29.5	44.25		53
13	Pin oak	25	37.5		63.4
14	Norway maple	25	37.5	Fair, root damage and included bark	66.5

FOREST CONSERVATION WORKSHEET FOR 9005 OLD MONTGOMERY ROAD

Net Tract Area

A.	Total (Gross) Tract Area	A =	4.0
B.	Area within 100-year Floodplain	B =	0.1
C.	Other Deductions (Identify,)	C =	0
D.	Net Tract Area	D =	3.9

Land Use Category
Insert the number "1" under the appropriate land use (limit to only one entry)

Resid. Rural LD	Resid. Rural MD	Resid. Suburban	Inst./ Linear	Retail/Ind./ Office	Mixed Use/ PUD
0	0	1	0	0	0

E.	Afforestation Threshold	(Net Tract Area x	15%	)	E = 0.6
F.	Reforestation Threshold	(Net Tract Area x	20%	)	F = 0.8

Existing Forest Cover

G.	Existing Forest Cover within the Net Tract Area	G =	0.6
H.	Area of Forest above Afforestation Threshold	H =	0.0
I.	Area of Forest above Reforestation Threshold	I =	0.0

Break Even Point

J.	Break Even Point	J =	0.0
K.	Forest Clearing Permitted without Mitigation	K =	0.0

Proposed Forest Clearing

L.	Total Area of Forest to be Cleared	L =	0.3
M.	Total Area of Forest to be Retained	M =	0.3

Planting Requirements Inside Watershed

N.	Reforestation for Clearing above the Reforestation Threshold	N =	0.0
P	Reforestation for Clearing below the Reforestation Threshold	P =	0.6
Q.	Credit for Retention above the Reforestation Threshold	Q =	0.0
R.	Total Reforestation Required	R =	0.6
S.	Total Afforestation Required	S =	0.0
T	Total Reforestation and Afforestation Requirement	T=	0.6
U	75% of Total Obligation (Retention + Planting)	U=	0.7
V.	Planting Required Onsite to meet 75% Obligation	V=	0.4

Planting Requirements Outside Watershed

W.	Total Planting within Development Site Watershed	W=	0.0
X.	Total Afforestation Required	X=	0.0
Y.	Remaining Planting within Watershed for Reforestation Credit	Y=	0.0
Z.	Reforestation for Clearing above the Reforestation Threshold	Z=	0.0
AA.	Reforestation for Clearing below the Reforestation Threshold	AA=	0.9
BB.	Credit for Retention above the Reforestation Threshold	BB=	0.0
CC.	Total Reforestation Required	CC=	0.9
DD.	Total Afforestation and Reforestation Requirement	DD=	0.9

Date: 2/28/22

BAMBOO REMOVAL IMPLEMENTATION SCHEDULE/SEQUENCE

Year 1 and 2

Early Spring - March/April - cut down all bamboo canes to 6 inch height or less. Remove all vegetative waste and dispose of in landfill.

Late Spring - May/June - cut back any regrowth, remove all vegetative waste and dispose of in landfill

Mid-summer - August - cut back any growth, remove all vegetative waste and dispose of in landfill

Early fall - Following the August cutting of the culms allow plants to reach 12" and treat all top growth with appropriate herbicide. Rodeo or comparable is recommended due to proximity to stream. Control application of herbicide to avoid any desirable vegetation especially Specimen tree 2.

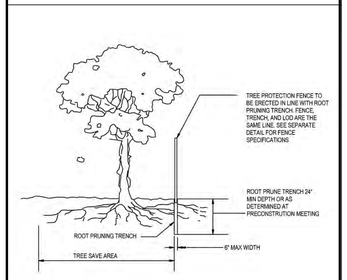
Repeat process through year 2 as needed.

Year 2/3 - Once bamboo has been sufficiently controlled the area may be planted. Spot treatment of any regrowth should be continued during the maintenance period for the FCA plantings.

Sensitive Area -

No vehicular access is permitted within the critical root zone of Specimen tree 2. Bamboo should be removed by hand in this area. Mechanized, hand held cutting and spraying equipment may be used within the critical root zone. Only rubber tired vehicles shall be used within the stream buffer. Vehicle access should only be used when soils are dry and stable.

Figure E-9:
Root Pruning



Notes:
1. Retention areas to be established as part of the Forest Conservation Plan review process.
2. Stake, flag and/or fence boundaries of Retention Areas prior to trenching.
3. Exact location of trench to be identified on site.
4. Immediately backfill trench with excavated soil or replace with organic soil.
5. Cut roots cleanly using vibratory knife or other acceptable equipment.

Source: Adapted from Steve Clark & Associates/ACRT, Inc. and State Forest Conservation Technical Manual 1991

Figure E-2:
Forest Conservation Easement Signs (continued)

FOREST CONSERVATION AREA

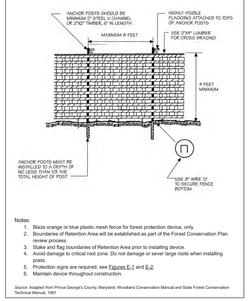
Dumping, Machinery, or Storage of Materials, Cutting or Disturbance of Vegetation or Soil in this Area
IS STRICTLY PROHIBITED

Violators are subject to fines as imposed by the Howard County Forest Conservation Act

For more information or to report violations, please call Howard County Department of Recreation and Parks
410-313-4725
TTY 410-313-4645

Notes:
1. Signs to be a minimum of 11" wide by 15" high.
2. Place signs on metal or wood posts 5' above finished grade.
3. Place forest conservation area signs at 50' to 100' on center and at change of direction around the perimeter of the forest conservation easement.
4. Do not attach signs to trees.

Figure E-3:
Plastic Mesh Tree Protection Fence



Notes:
1. Blaze orange or blue plastic mesh fence for forest protection device, only.
2. Boundaries of Retention Area will be established as part of the Forest Conservation Plan review process.
3. Stake and flag boundaries of Retention Area prior to installing device.
4. Avoid damage to critical root zone. Do not damage or sever large roots when installing posts.
5. Protection signs are required, see Figures E-1 and E-2.
6. Maintain device throughout construction.

Source: Adapted from Prince George's County, Maryland: Woodland Conservation Manual and State Forest Conservation Technical Manual, 1991

FCP PLAN PREPARED BY:

J. Brody McAllister
ISA Certified Arborist
Cert ID: MA6471A
MD DNR FCA Qualified Professional

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COLUMBIA, MD 21046
443-676-2417

DEVELOPER:
DEVELOPMENT PARTNERS, LLC
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COLUMBIA, MD 21046
443-676-2417

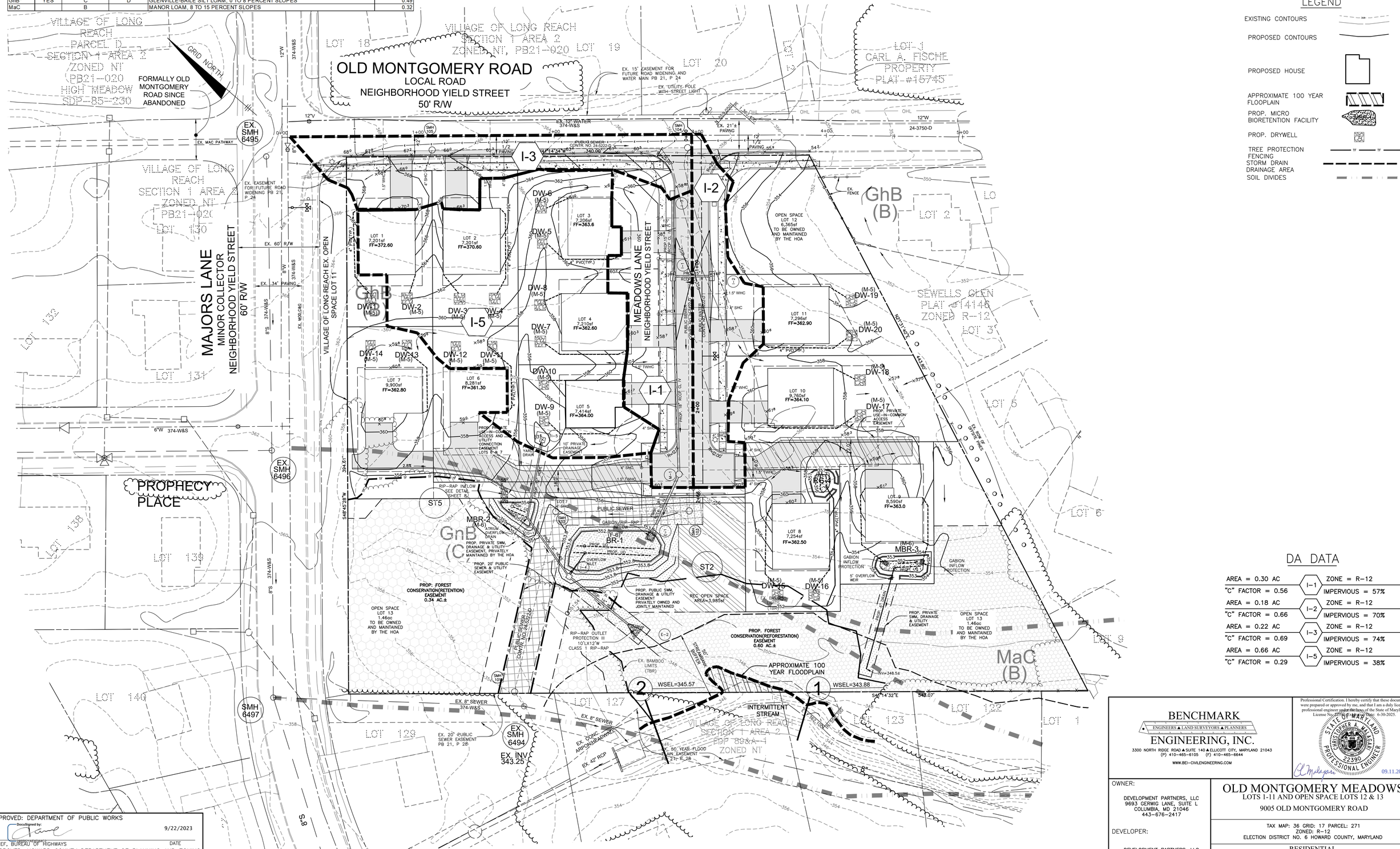
OLD MONTGOMERY MEADOWS
LOTS 1-11 AND OPEN SPACE LOTS 12 & 13
9005 OLD MONTGOMERY ROAD

TAX MAP: 36 GRID: 17 PARCEL: 271
ZONED: R-12
ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

RESIDENTIAL
FINAL CONSTRUCTION PLAN
FOREST CONSERVATION AND LANDSCAPE PLAN

DESIGN: JCO	DRAFT: JCO	DATE: APRIL 2023	BEI PROJECT NO. 3080
		SCALE: AS SHOWN	SHEET 6 OF 9

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	k-VALUE Whole Soil
GhB		B	D	GLENELG URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	0.43
GnB*	YES	C	D	GLENVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.49
MaC		B	D	MANOR LOAM, 8 TO 15 PERCENT SLOPES	0.32



LEGEND

- EXISTING CONTOURS
- PROPOSED CONTOURS
- PROPOSED HOUSE
- APPROXIMATE 100 YEAR FLOODPLAIN
- PROP. MICRO BIORETENTION FACILITY
- PROP. DRYWELL
- TREE PROTECTION FENCING
- STORM DRAIN
- DRAINAGE AREA
- SOIL DIVIDES

DA DATA

AREA = 0.30 AC	I-1	ZONE = R-12
"C" FACTOR = 0.56		IMPERVIOUS = 57%
AREA = 0.18 AC	I-2	ZONE = R-12
"C" FACTOR = 0.66		IMPERVIOUS = 70%
AREA = 0.22 AC	I-3	ZONE = R-12
"C" FACTOR = 0.69		IMPERVIOUS = 74%
AREA = 0.66 AC	I-5	ZONE = R-12
"C" FACTOR = 0.29		IMPERVIOUS = 38%

APPROVED: DEPARTMENT OF PUBLIC WORKS

DocuSigned by: [signature] 9/22/2023

CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

DocuSigned by: [signature] 9/20/2023

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

DocuSigned by: [signature] 9/20/2023

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

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Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 22390, Expiration Date: 6-30-2025.

STATE OF MARYLAND — CHRISTOPHER J. MALAGARI — 22390 — PROFESSIONAL ENGINEER

09.11.2023

OWNER:
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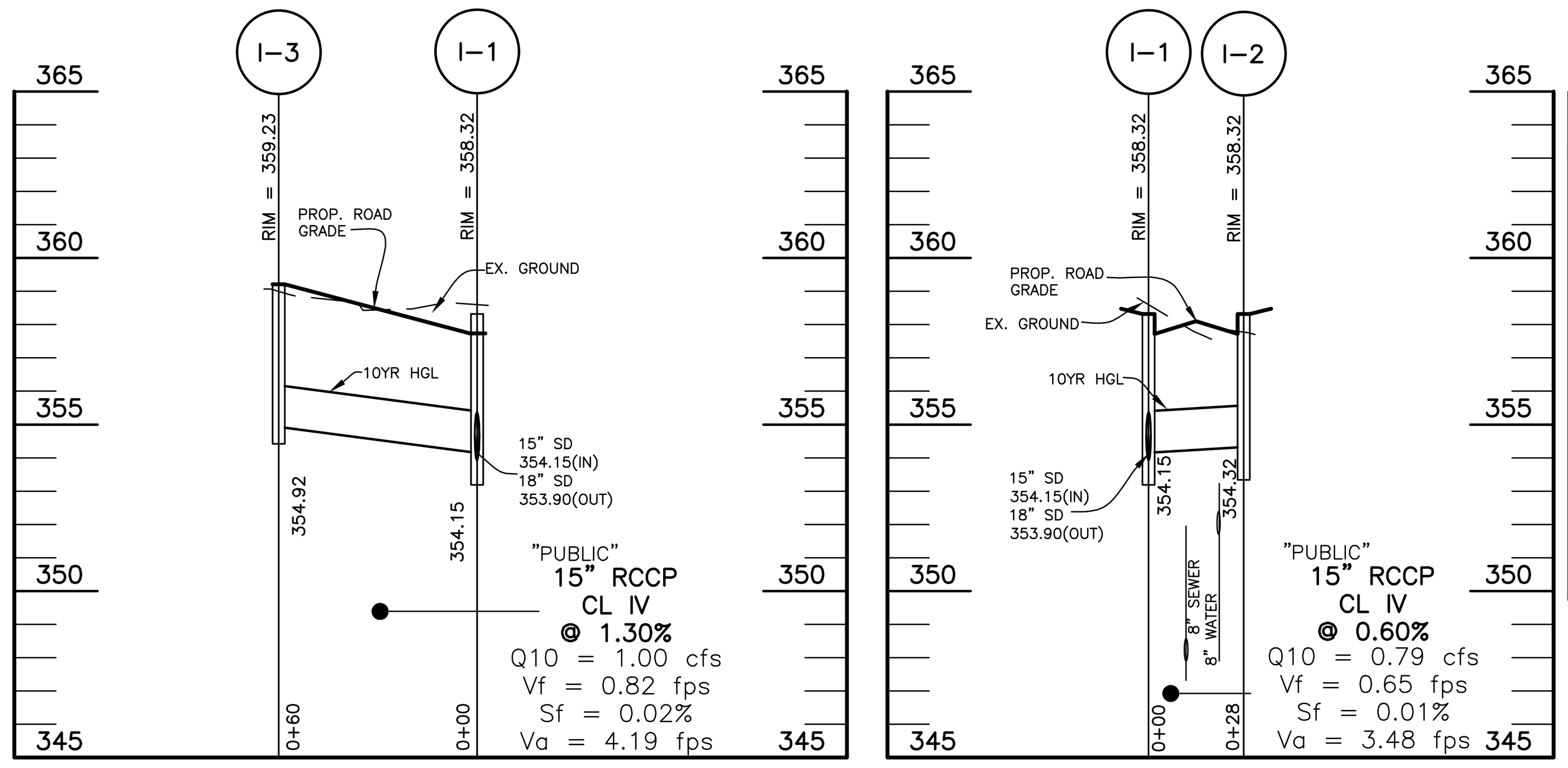
OLD MONTGOMERY MEADOWS
LOTS 1-11 AND OPEN SPACE LOTS 12 & 13
9005 OLD MONTGOMERY ROAD

TAX MAP: 36 GRID: 17 PARCEL: 271
ZONED: R-12
ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

RESIDENTIAL
FINAL CONSTRUCTION PLAN
STORM DRAIN DRAINAGE AREA MAP

DESIGN: JCO	DRAFT: JCO	DATE: AUGUST 2023	BEI PROJECT NO. 3080
		SCALE: AS SHOWN	SHEET 7 OF 9

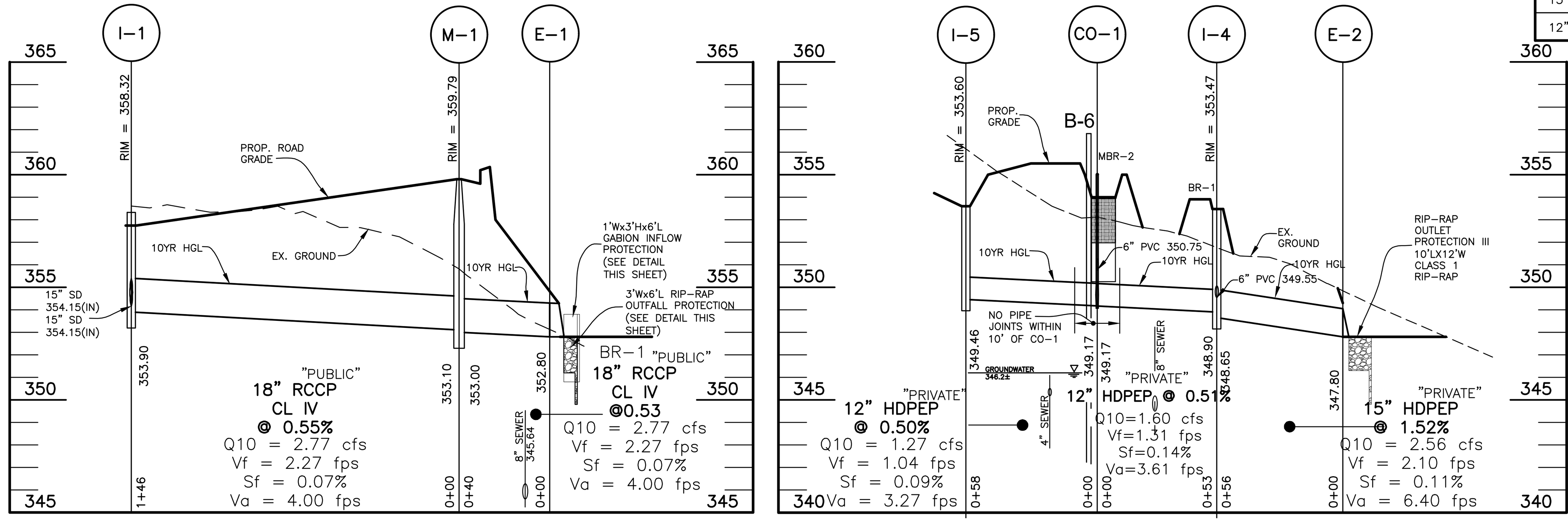
F-23-049



STRUCTURE TABLE							
NUMBER	TYPE	LOCATION	INVERT IN	INVERT OUT	TOP ELEV.	STD. DETAIL	OWNER
CO-1	6" PVC STANDPIPE	N. 558965.4158 E. 1362072.2822	350.75(6") 349.17(12")	349.17(12")	354.00	6" PVC	PRIVATE
I-1	A-5	CL STA. 1+03.51, OFFSET 12.43'RT.	354.15(15") 354.15(15")	353.90(18")	358.32	D-4.02	PUBLIC
I-2	A-5	CL STA. 1+03.51, OFFSET 12.43'LT.		354.32(15")	357.74	D-4.02	PUBLIC
I-3	A-5	CL STA. 0+44.0, OFFSET 12.43'RT.		354.92(15")	359.23	D-4.02	PUBLIC
I-4	YARD	N. 558913.8142 E. 1362059.72	349.55(6") 348.90(12")	348.65(15")	353.47	D-4.11	PRIVATE
I-5	YARD	N. 558994.4873 E. 1362122.7723		349.46(12")	353.60	D-4.11	PRIVATE
M-1	48" MH	CL STA. 2+49.0, OFFSET 10.5',RT.	353.10(18")	353.00(18")	359.79	G-5.12	PUBLIC
E-1	18" CONCRETE END SECTION	N. 558890.6011 E. 1362130.8035		352.80(18")		D-5.51	PUBLIC
E-2	15"HDPE END SECTION	N. 558857.8495 E. 1362061.7129		347.80(15")		HDPE END SECTION	PRIVATE

TOP OF TYPE 'A' INLETS ARE TOP FACE OF CURB
TOP OF 'YARD' INLETS ARE GROUND AT OPENING
TOP OF CLEANOUT IS TOP OF OPENING
TOP OF MANHOLE IS CENTER OF THE MANHOLE

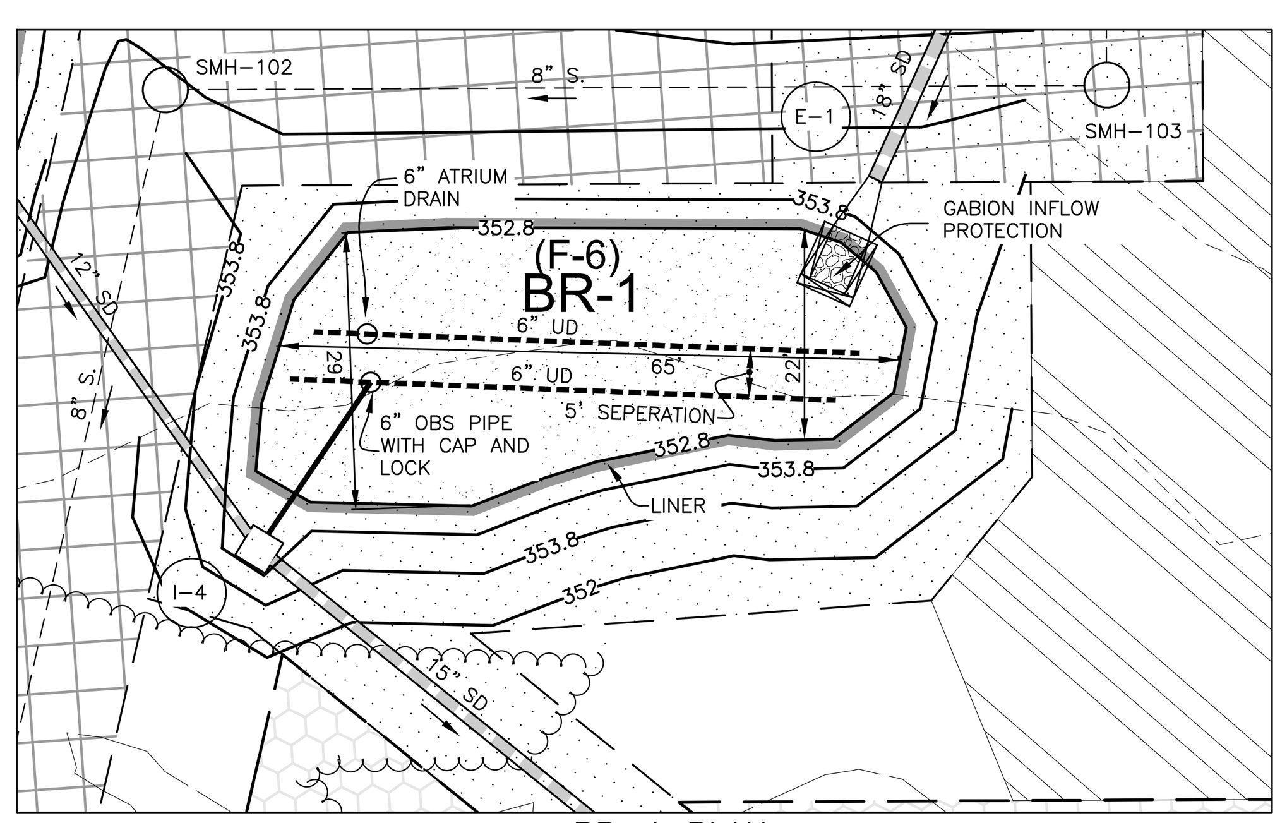
PIPE SCHEDULE		
TYPE	OWNERSHIP	QUANTITY
18" RCCP CL IV	PUBLIC	185LF
15" RCCP CL IV	PUBLIC	88LF
15" HDPEP	PRIVATE	56LF
12" HDPEP	PRIVATE	111LF



STORM DRAIN PROFILES

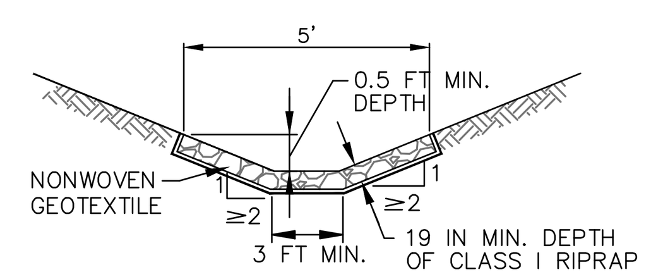
SCALE: HOR. 1"=50'
VERT. 1"=5'

(IN FEET)
1 inch = 50 ft.

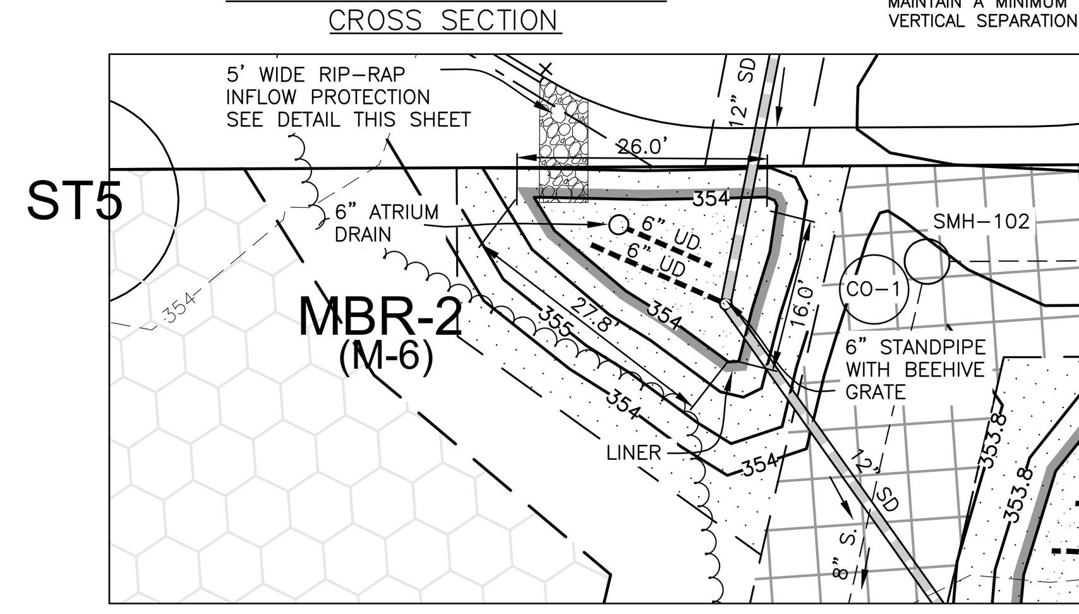


BR-1 PLAN

SCALE: HOR. 1"=20'

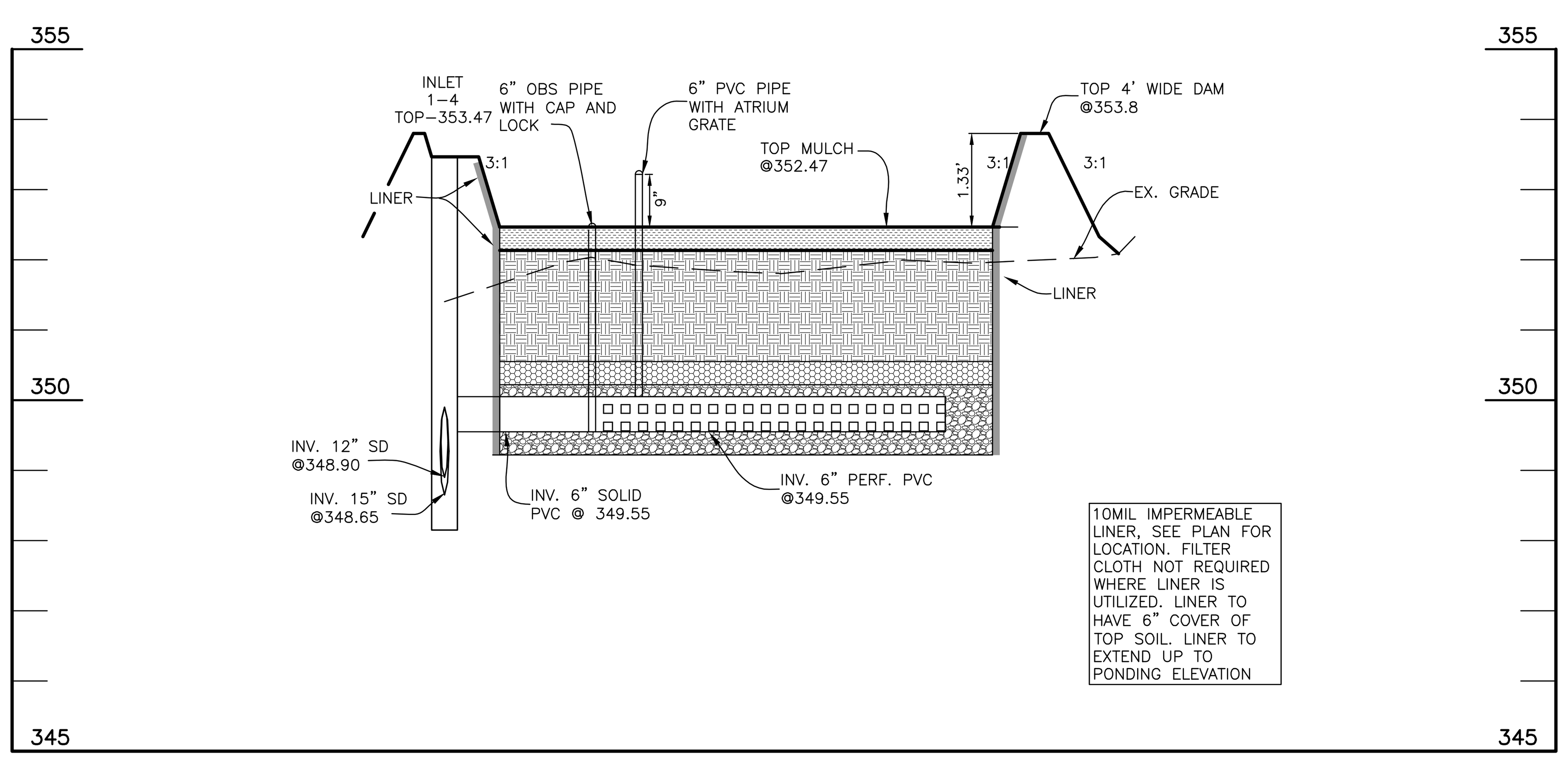


RIP-RAP INFLOW PROTECTION CROSS SECTION



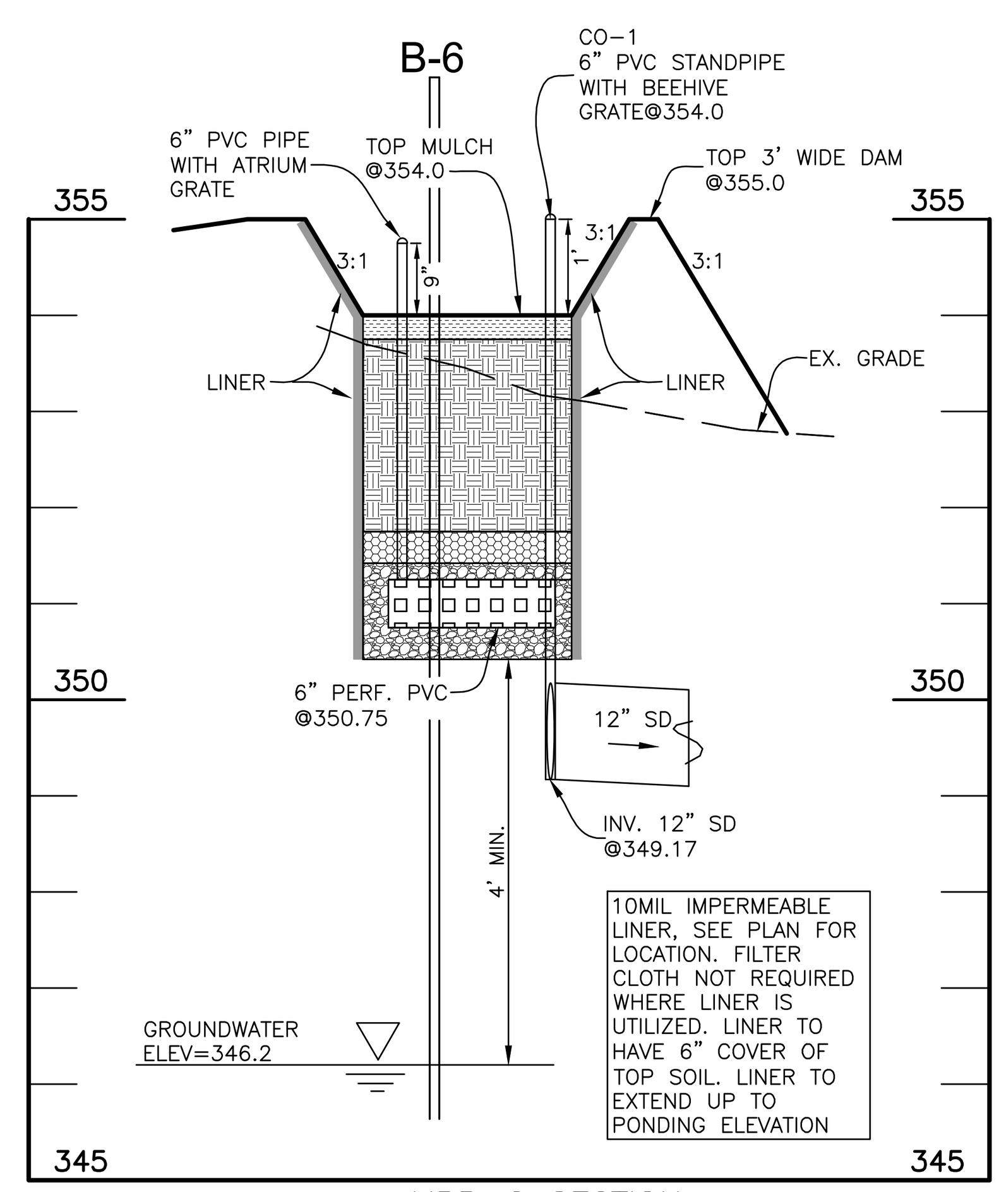
MBR-2 PLAN

SCALE: HOR. 1"=20'



BR-1 SECTION

SCALE: HOR. 1"=20'
VERT. 1"=2'



MBR-2 SECTION

SCALE: HOR. 1"=20'
VERT. 1"=2'

(IN FEET)
1 inch = 20 ft.

ON-LOT BIORETENTION DIMENSIONS														
FACILITY	A	B	C	D	E	F	G	LENGTH	WIDTH	FILTER (Af)	PLANTINGS 1	PLANTINGS 2	PLANTINGS 3	LINER
BR-1	353.8	352.47	352.22	350.55	350.22	349.55	349.22	65'	29'	1,556SF	69	52	52	YES
MBR-2	355.0	354.0	353.75	351.75	351.42	350.75	350.25	26'	16'	248SF	10	8	8	YES
MBR-3	353.0	352.0	351.75	349.75	349.42	348.83	348.42	32'	8'	240SF	11	8	8	NO
RG-4	357.0	356.0	355.75	353.75	353.08	352.66	352.41	13'	10'	226SF	10	8	8	NO

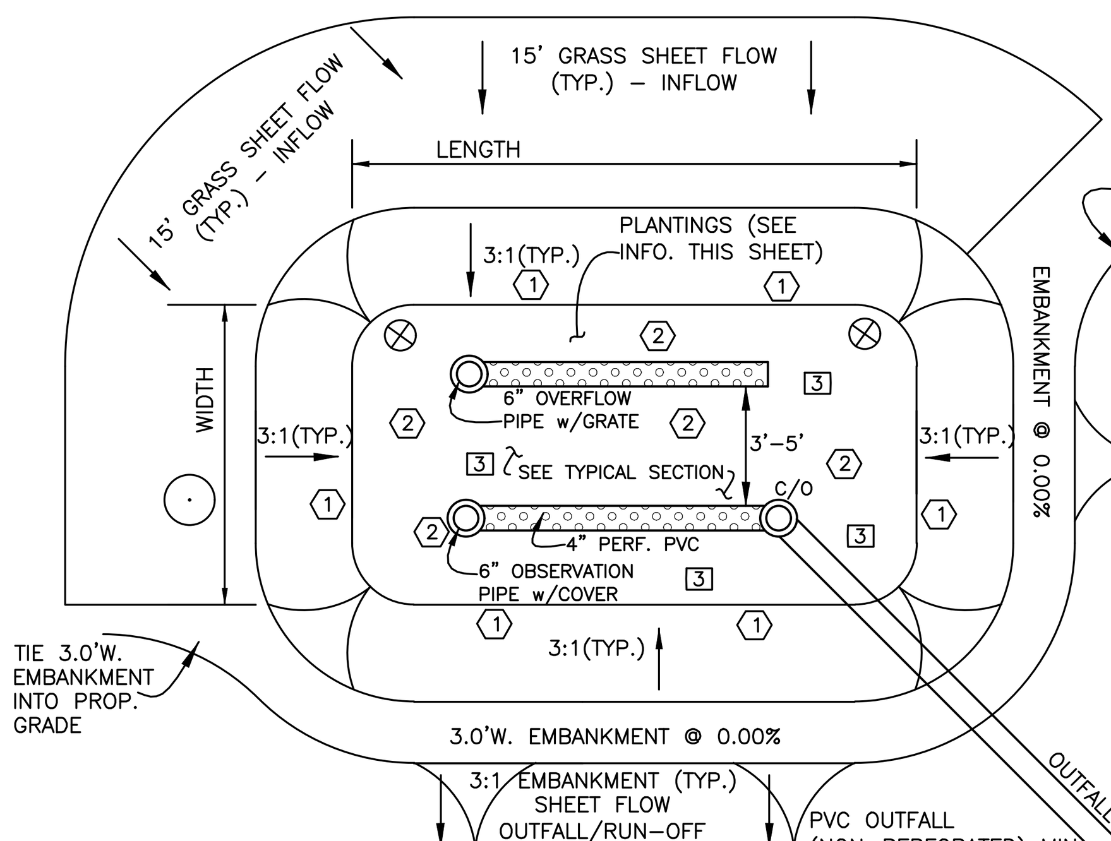
MICROBIORETENTION PLANTING SCHEDULE

(SPECIFIC NUMBER OF PLANTINGS SHALL BE DETERMINED WITH FINAL DESIGN AT PLOT PLAN PHASE)

- (1) IRIS VERSICOLOR (IRIS)
- (2) LOBELIA CARDINALIS CARDINAL FLOWER
- [3] RUDBECKIA SUBTOMENTOSA – SWEET CONEFLOWER
- (⊗) CALLUNA VULGARIS (HEATHER) (2 PER FACILITY)
- (·) SALIX NIGRA (BLACK WILLOW) (1 PER FACILITY)

MICROBIORETENTION PLANTING DATA

1. PLANTINGS WITHIN THE PONDING AREA OF THE MICRO-BIORETENTION FACILITY ARE TO BE OF A MEDIUM TO HIGH WATER TOLERANCE
2. PLANTINGS ALONG THE PERIMETER (BERM) AREA OF THE MICRO-BIORETENTION FACILITY ARE TO BE OF A LOW TO MEDIUM WATER TOLERANCE
3. AVOID PLANTINGS WITH EXCESSIVE ROOT MASS IN POND AREA OF THE MICRO-BIORETENTION FACILITY NEAR O.B. PIPE AND UNDERDRAIN.

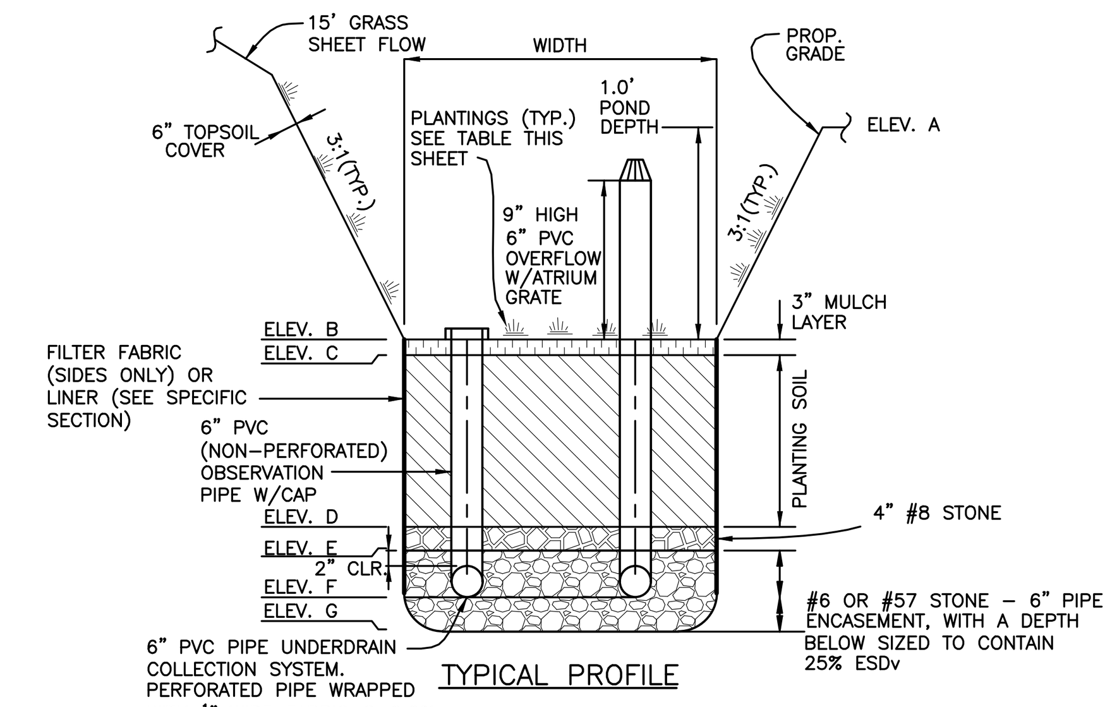


SCHEMATIC PLAN VIEW

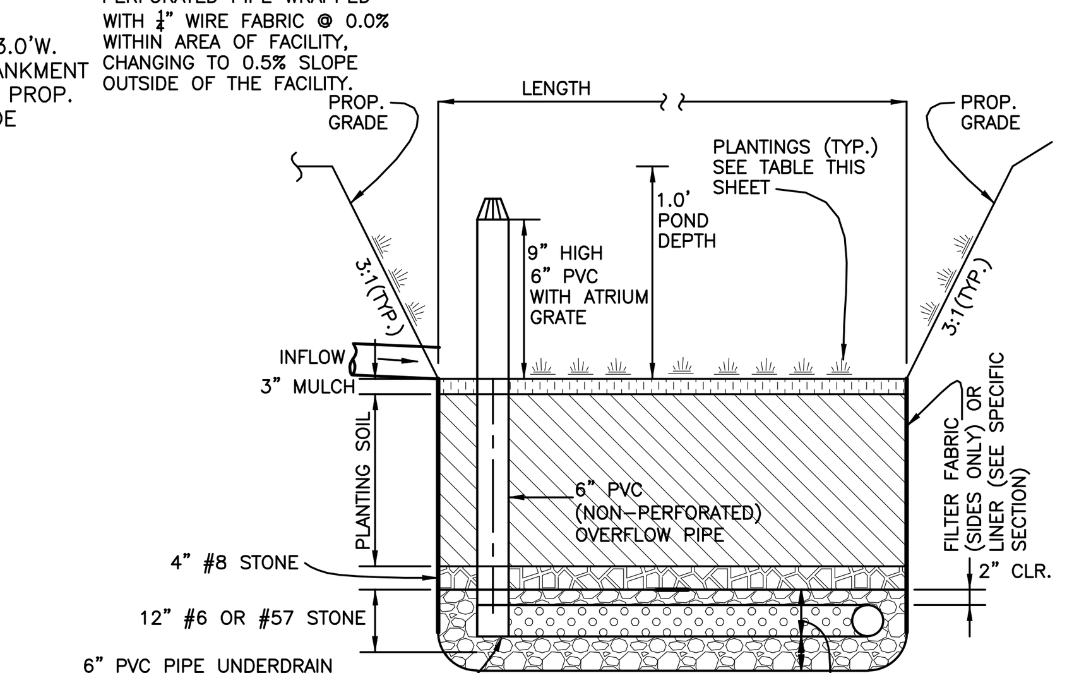
UNDERDRAIN, OVERFLOW AND OUTFALL NOTES

1. THE LAST CLEAN-OUT LOCATION WITHIN EACH MICRO-BIORETENTION FACILITY SHALL BE FITTED WITH A NON-CLOGGING SURFACE DRAIN (EXAMPLE: 6" ABS ROOF DRAIN W/CAST ALUMINUM DOME) AT THE POND SURFACE ELEVATION INDICATED IN THE CORRESPONDING TABLE ELEV. C.
2. THE PVC WITHIN THE FACILITY SHALL BE PERFORATED.
3. THE UNDER-DRAIN AND PIPE TO OUTFALL SHALL BE INSTALLED TO A MINIMUM DEPTH OF 2' BELOW FINISHED GRADE AND SHALL MAINTAIN A MINIMUM 0.5% SLOPE AND MAINTAIN A MINIMUM OF 1' OF VERTICAL SEPARATION AT ALL CROSSINGS.

NTS



TYPICAL PROFILE



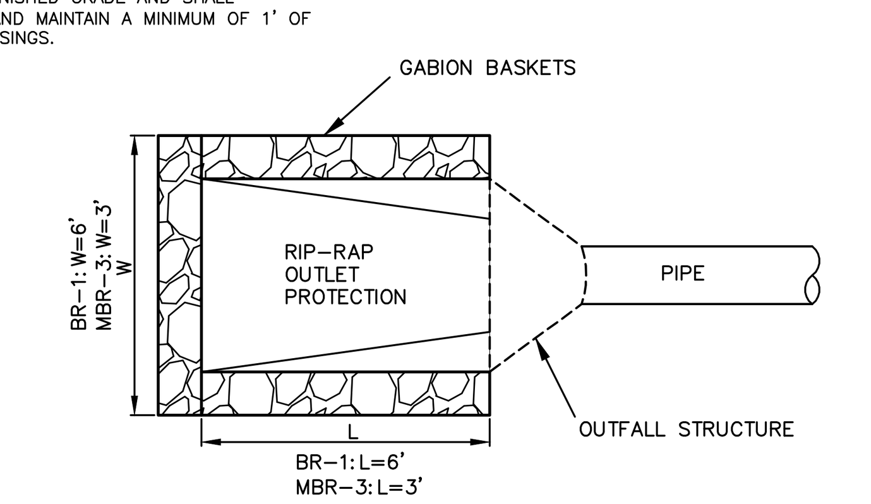
TYPICAL SECTION

BIORETENTION AND MICRO-BIORETENTION DETAILS

NOT TO SCALE

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DRY WELLS (M-5)

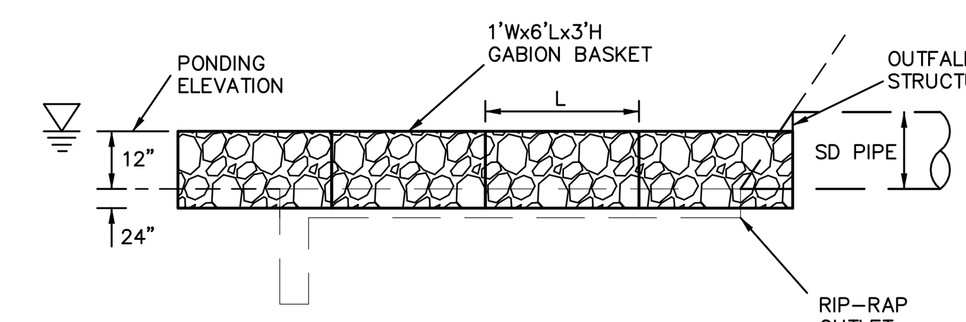
1. THE MONITORING WELLS AND STRUCTURES SHALL BE INSPECTED ON A QUARTERLY BASIS AND AFTER EVERY LARGE STORM EVENT.
2. WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS SHALL BE RECORDED OVER A PERIOD OF SEVERAL DAYS TO INSURE TRENCH DRAINAGE.
3. A LOG BOOK SHALL BE MAINTAINED TO DETERMINE THE 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.



PLAN VIEW

OPERATION AND MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION (M-6), BIORETENTION (F-6), AND RAIN GARDEN (M-7)

A. THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A.4.1 AND 2.
B. THE OWNER SHALL PERFORM A PLANT IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL, TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRES.
C. 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.
D. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.



GABION INLFOW PROTECTION

NOT TO SCALE

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

Table B.4.1 Materials Specifications for Micro-Bioretention, 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 ¼-inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; f'_c = 3500 psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) *not using previously approved State or local standards* requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 350.R/89; vertical loading [H-10 or H-20]; allowable horizontal loading (based on soil pressures); and analysis of potential cracking
Sand	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone (**AASHTO)** #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

B.4.7 Supp. 1

CONSTRUCTION SPECIFICATIONS

B.4.C Specifications for Micro-Bioretention. Rain Gardens, 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 dumped within the micro-bioretention practice that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of Bermuda grass, Quackgrass, Johnson grass, or other noxious weeds as specified under COMAR 15.08.01.05.

The planting soil shall be tested and shall meet the following criteria:

- Soil Component - Loamy Sand or Sandy Loam (USDA Soil Textural Classification)
- Organic Content - Minimum 10% by dry weight (ASTM D 2974). In general, this can be met with a mixture of loamy and(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 5%.
- pH Range - Should be between 5.5 - 7.0. Amendments (e.g., lime, iron sulfate plus sulfur) may be mixed into 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 bioretention practices and the required backfill. When possible, use excavation hoes to remove original soil. If practices are excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf type 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 alleviated at the base of the bioretention facility by using a primary tilling operation such as a 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.

When backfilling the bioretention facility, place soil in lifts 12" to 18". Do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand. Grade bioretention materials with light equipment such as a compact loader or a dozer/loader with marsh tracks.

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.

Rootstock 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 plugs 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 defeats, 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 (ASTMF 758, Type PS 28, or AASHTO-M-278) in a gravel layer. The preferred material is slotted, 4" rigid pipe (e.g., PVC or HDPE).
- Perforations - If perforated pipe is used, perforations should be ⅜" diameter located 6" on center with a minimum of four holes per row. Pipe shall be wrapped with a ¼" (No. 4 or 4x4) 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 1,0000 square feet) to provide a clean-out port and monitor performance of the filter.
- A 4" layer of pea gravel (⅛" to ⅜" stone) shall be located between the filter media and underdrain to prevent migration of fines into the underdrain. This layer may be considered part of the filter bed when bed thickness exceeds 24".

The 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

Stormwater Management Design Recommendations

The "2000 Maryland Stormwater Design Manual", published by the Maryland Department of the Environment, states that stormwater management facilities utilizing infiltration, such as the proposed drywells, micro-bioretention, bioretention and rain garden facilities, shall have a Hydrologic Soil Group classification (HSG) of A or B. If the bottom of the proposed facilities will be located within soils of HSG C or D, drywells should not be used, however underdrains can be incorporated into the design of the micro-bioretention, bioretention & rain garden facilities. The bottom of any SWM facility utilizing infiltration should also be located at least four feet above any groundwater or bedrock.

The following table summarizes the minimum depths and elevations until soils suitable for infiltration are encountered at each test boring. Additionally the table provides the lowest elevation that the bottom of the SWM facility should be located to allow for the four-foot clearance between groundwater and bedrock.

Test Boring No.	Shallowest depth to soils suitable for infiltration (feet)	Shallowest elevation to soils suitable for infiltration	Recommended lowest elevation for bottom of SWM facilities	FACILITY	PROP. FACILITY BOTTOM
B-1	3.5	361.5	354.0	DW-1 DW-2	356.0 356.0
B-2	4.5	361.5	355.0	DW-3 DW-4	355.0 355.0
B-3	1.5	360.5	351.0	DW-5 DW-6 DW-8	353.0 353.5 352.0
B-4	3.0	355.0	347.3	DW-7 DW-9 DW-10	351.0 348.0 349.5
B-5	6.5	351.5	351.5	DW-11 DW-12 DW-13 DW-14	352.0 352.5 353.5 353.5
B-6	4.5	348.5	350.2	MBR-2	350.25*
B-7	3.0	349.0	346.5	BR-1	349.7*
B-8	3.0	353.0	347.0	DW-15 DW-16 RG-1	347.0 347.0 353.0*
B-9	7.0	347.0	344.1	MBR-3	348.9*
B-10	3.0	355.0	347.0	DW-17 DW-18 DW-19 DW-20	351.5 351.5 351.5 350.0

*–UNDERDRAIN PROVIDED

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
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Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 22390, Expiration Date: 6-30-2025.

STATE OF MARYLAND · CHRISTOPHER A. MALAGARI · 22390 · PROFESSIONAL ENGINEER
09.18.2023

OWNER:
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443-676-2417

DEVELOPER:
DEVELOPMENT PARTNERS, LLC
9693 GERWIG LANE, SUITE L
COLUMBIA, MD 21046
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OLD MONTGOMERY MEADOWS
LOTS 1-11 AND OPEN SPACE LOTS 12 & 13

9005 OLD MONTGOMERY ROAD

TAX MAP: 36 GRID: 17 PARCEL: 271
ZONED: R-12
ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

RESIDENTIAL
FINAL CONSTRUCTION PLAN
STORM DRAIN AND STORMWATER MANAGEMENT PROFILES

DESIGN: JCO	DRAFT: JCO	DATE: AUGUST 2023	BEI PROJECT NO. 3080
		SCALE: AS SHOWN	SHEET 8 OF 9

APPROVED: DEPARTMENT OF PUBLIC WORKS

DocuSigned by: 2465821AE4DA4C2...
CHIEF, BUREAU OF HIGHWAYS — DATE 9/22/2023

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

DocuSigned by: 1EB75478A22B49A...
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/20/2023

DocuSigned by: CHAD Edmondson 7063F754EF41499...
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 9/20/2023

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	k-VALUE Whole Soil
GhB		B	D	GLENELG URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	0.43
GnB*	YES	C	D	GLENVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.49
MaC		B		MANOR LOAM, 8 TO 15 PERCENT SLOPES	0.32

ESD SUMMARY TABLE

Pe= 1.6 inches

D.A.	SIZE	MDE Type	Total DA	Impervious Area	Qe	Af Required	Af Provided	2% DA	Depth	ESDv Required	ESDv Provided	75% ESDv	RV	Pe
BR 1	65'X29'	(F-6)	34,098	18,240	0.54	682	1555	PASS	1.0	1812	1821	PASS	0.53	1.21
MBR 2	26'x16'	(M-6)	10,940	3,500	0.54	219	226	PASS	1.0	370	349	fail	0.34	1.13
MBR 3	32'X8'	(M-6)	9,600	2,270	0.42	192	240	PASS	1.0	134	186	PASS	0.26	0.88
RG 4	13'X10'	(M-7)	2,890	1,330	0.74	58	110	PASS	1.0	134	186	PASS	0.46	1.66
DW-1	8'x8'	(M-5)	1,015	1,015	1.52	121	128	PASS	5.0	121	128	PASS	0.95	1.59
DW-2	8'x8'	(M-5)	1,015	1,015	1.52	121	128	PASS	5.0	121	128	PASS	0.95	1.59
DW-3	8'x8'	(M-5)	1,015	1,015	1.52	121	128	PASS	5.0	121	128	PASS	0.95	1.59
DW-4	8'x8'	(M-5)	1,015	1,015	1.52	121	128	PASS	5.0	121	128	PASS	0.95	1.59
DW-5	7'X7'	(M-5)	753	753	1.52	89	98	PASS	5.0	89	98	PASS	0.95	1.64
DW-6	7'X7'	(M-5)	753	753	1.52	89	98	PASS	5.0	89	98	PASS	0.95	1.64
DW-7	8'x8'	(M-5)	1,015	1,015	1.52	121	128	PASS	5.0	121	128	PASS	0.95	1.59
DW-8	8'x8'	(M-5)	1,015	1,015	1.52	121	128	PASS	5.0	121	128	PASS	0.95	1.59
DW-9	7'X7'	(M-5)	700	700	1.52	83	98	PASS	5.0	83	98	PASS	0.95	1.77
DW-10	7'X7'	(M-5)	700	700	1.52	83	98	PASS	5.0	83	98	PASS	0.95	1.77
DW-11	7'X7'	(M-5)	753	753	1.52	89	98	PASS	5.0	89	98	PASS	0.95	1.64
DW-12	7'X7'	(M-5)	753	753	1.52	89	98	PASS	5.0	89	98	PASS	0.95	1.64
DW-13	7'X7'	(M-5)	753	753	1.52	89	98	PASS	5.0	89	98	PASS	0.95	1.64
DW-14	7'X7'	(M-5)	753	753	1.52	89	98	PASS	5.0	89	98	PASS	0.95	1.64
DW-15	8'x8'	(M-5)	1,015	1,015	1.52	121	128	PASS	5.0	121	128	PASS	0.95	1.59
DW-16	8'x8'	(M-5)	1,015	1,015	1.52	121	128	PASS	5.0	121	128	PASS	0.95	1.59
DW-17	8'x8'	(M-5)	1,015	1,015	1.52	121	128	PASS	5.0	121	128	PASS	0.95	1.59
DW-18	8'x8'	(M-5)	1,015	1,015	1.52	121	128	PASS	5.0	121	128	PASS	0.95	1.59
DW-19	8'x8'	(M-5)	1,015	1,015	1.52	121	128	PASS	5.0	121	128	PASS	0.95	1.59
DW-20	8'x8'	(M-5)	1,015	1,015	1.52	121	128	PASS	5.0	121	128	PASS	0.95	1.59
Totals/Average			75,626	43,438		3,300	4,451			4,599	4,861			1.70
									REV	755 cf	1119 cf*			

* REV = 25% OF THE PROVIDED ESDv

NOTE– MBR–3, RG–4 AND THE DRYWELLS ARE TO BE PART OF THE SDP.

Drywell No.	Length (ft)	Width (ft)	Stone Depth (ft)	Grade	Top of Stone	Bottom of Stone
DW-1	8.00	8.00	5.00	362.0	361.0	356.0
DW-2	8.00	8.00	5.00	362.0	361.0	356.0
DW-3	8.00	8.00	5.00	361.0	360.0	355.0
DW-4	8.00	8.00	5.00	361.0	360.0	355.0
DW-5	7.00	7.00	5.00	359.0	358.0	353.0
DW-6	7.00	7.00	5.00	359.5	358.5	353.5
DW-7	8.00	8.00	5.00	357.0	356.0	351.0
DW-8	8.00	8.00	5.00	358.0	357.0	352.0
DW-9	7.00	7.00	5.00	354.0	353.0	348.0
DW-10	7.00	7.00	5.00	355.5	354.5	349.5
DW-11	7.00	7.00	5.00	358.0	357.0	352.0
DW-12	7.00	7.00	5.00	358.5	357.5	352.5
DW-13	7.00	7.00	5.00	359.5	358.5	353.5
DW-14	7.00	7.00	5.00	359.5	358.5	353.5
DW-15	8.00	8.00	5.00	353.0	352.0	347.0
DW-16	8.00	8.00	5.00	353.0	352.0	347.0
DW-17	8.00	8.00	5.00	357.5	356.5	351.5
DW-18	8.00	8.00	5.00	357.5	356.5	351.5
DW-19	8.00	8.00	5.00	357.5	356.5	351.5
DW-20	8.00	8.00	5.00	356.0	355.0	350.0

* FINAL DRYWELL DESIGN TO BE PROVIDED AT THE SDP PLAN STAGE

PRIVATE USE–IN–COMMON ACCESS EASEMENT

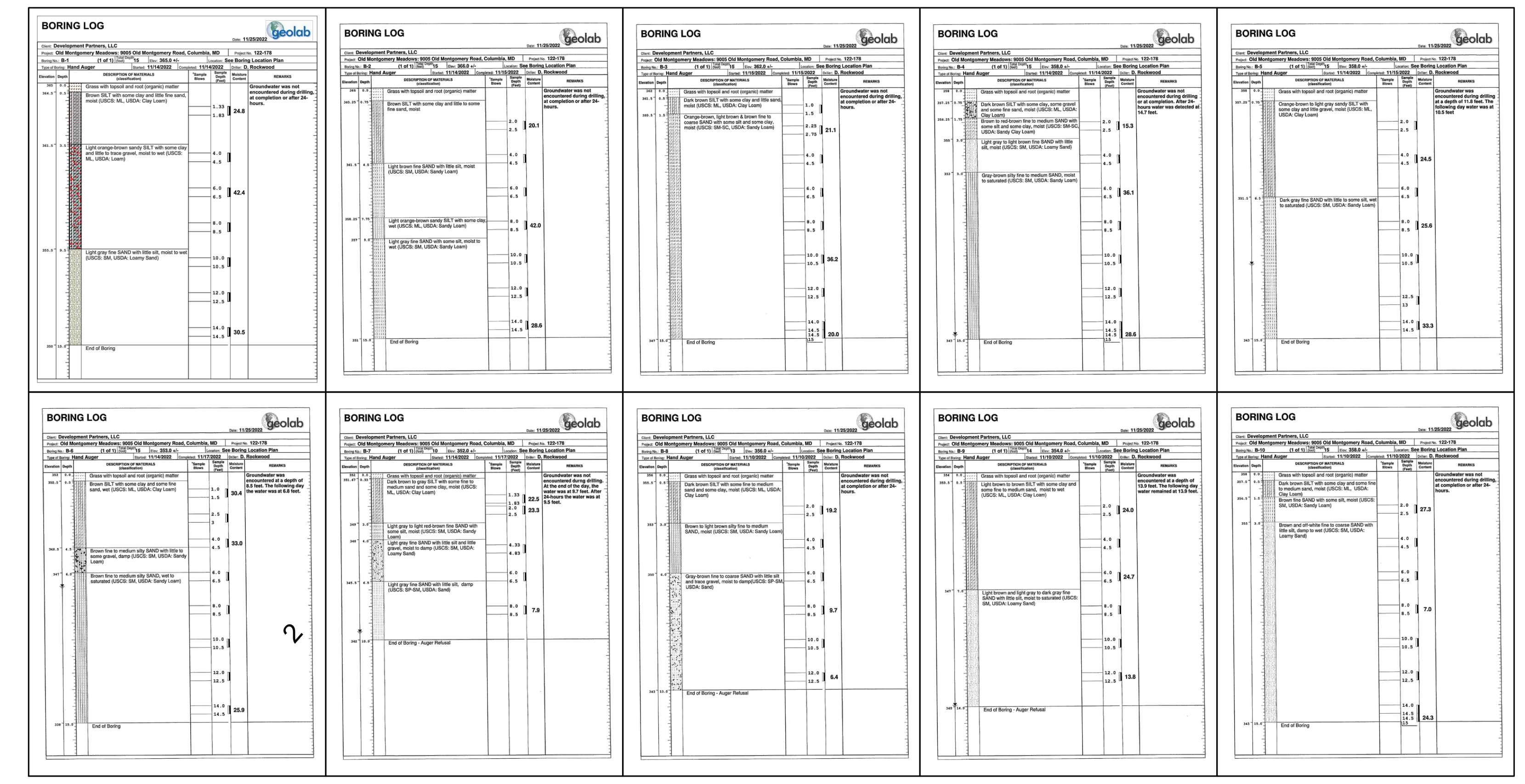
PUBLIC SEWER & UTILITY EASEMENT

PUBLIC SWM, DRAINAGE & UTILITY EASEMENT

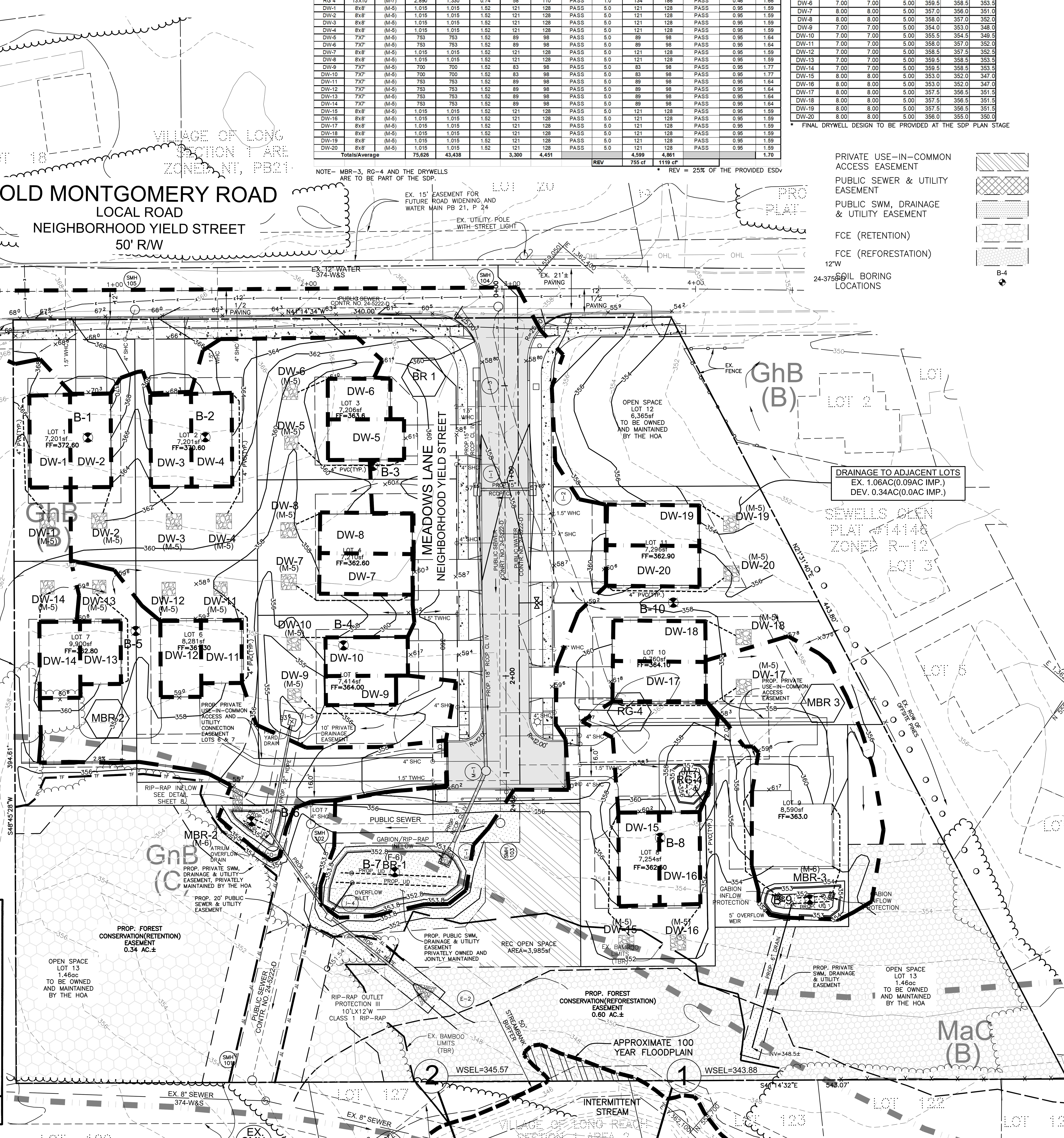
FCE (RETENTION)

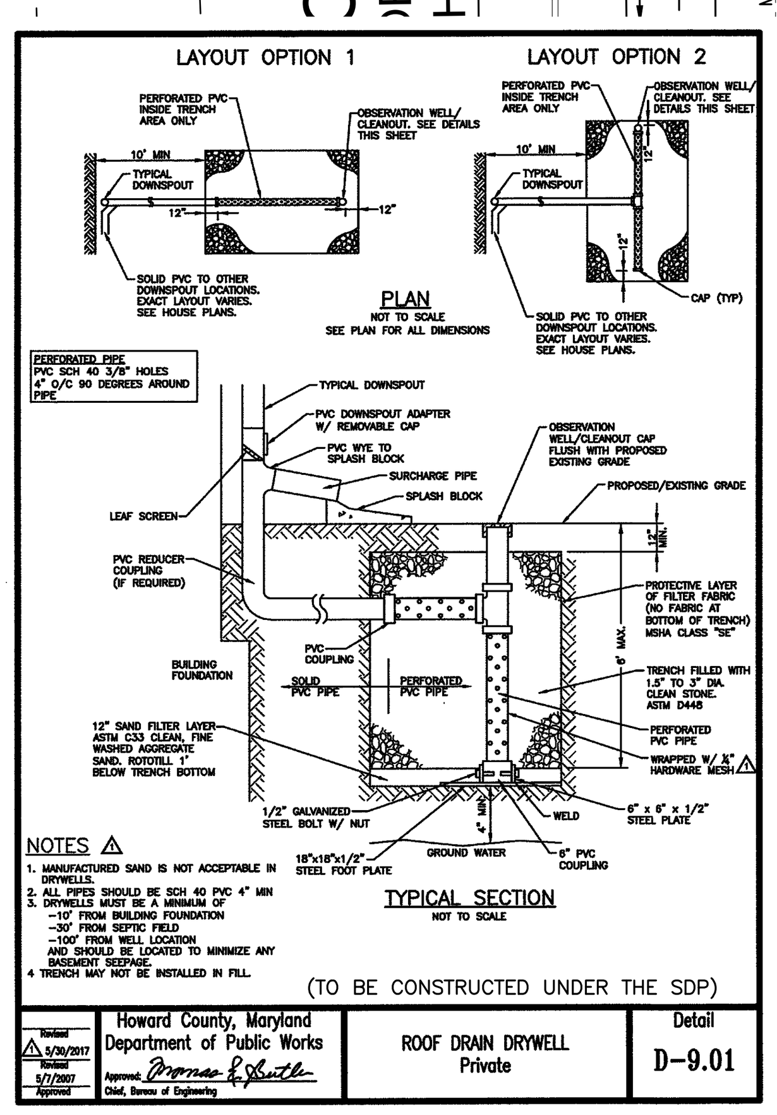
FCE (REFORESTATION)

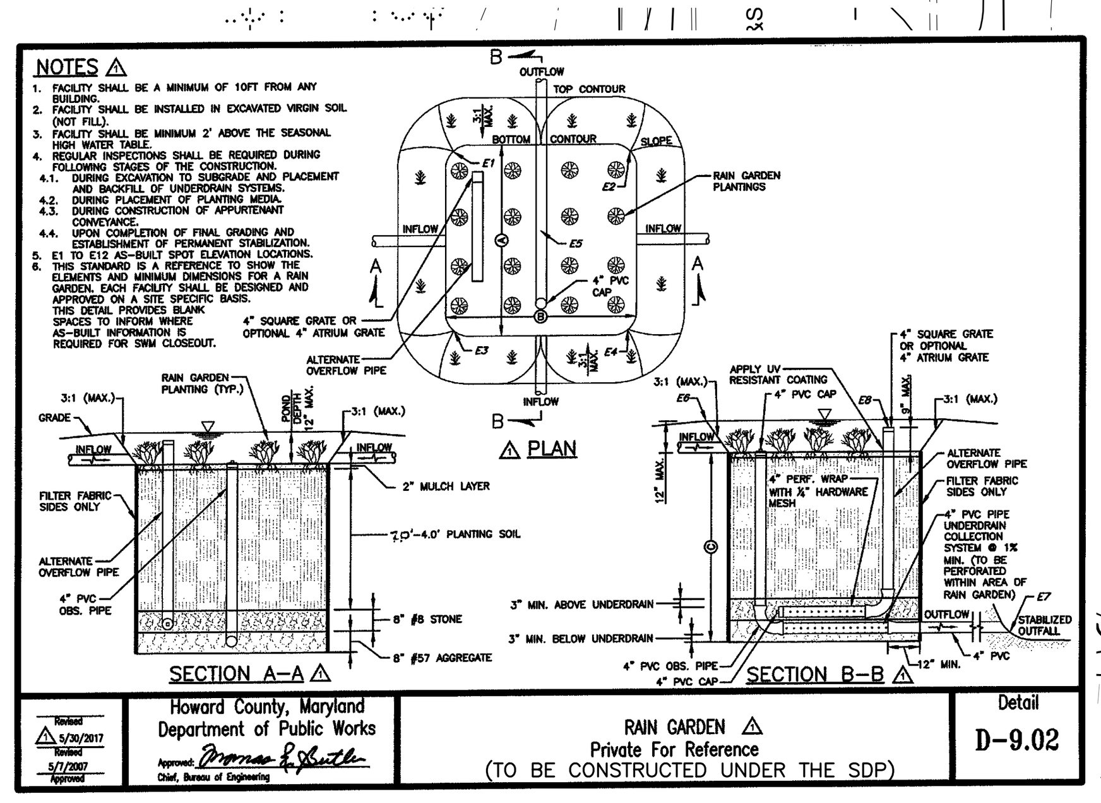
SOIL BORING LOCATIONS B-4

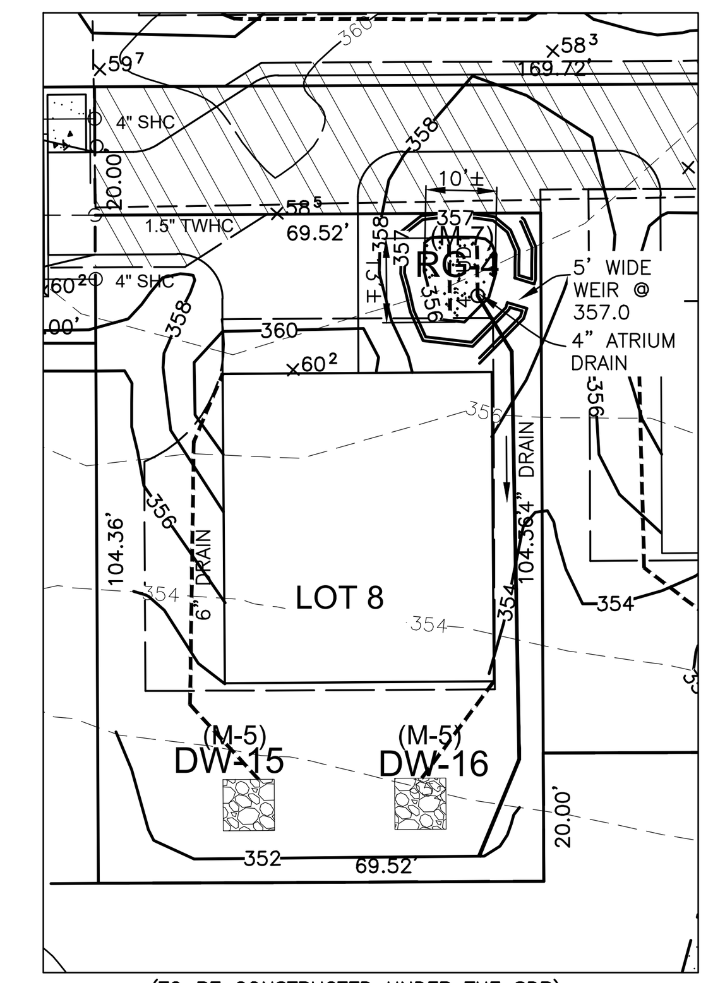


GEOTECHNICAL INFORMATION PROVIDED BY OTHERS.





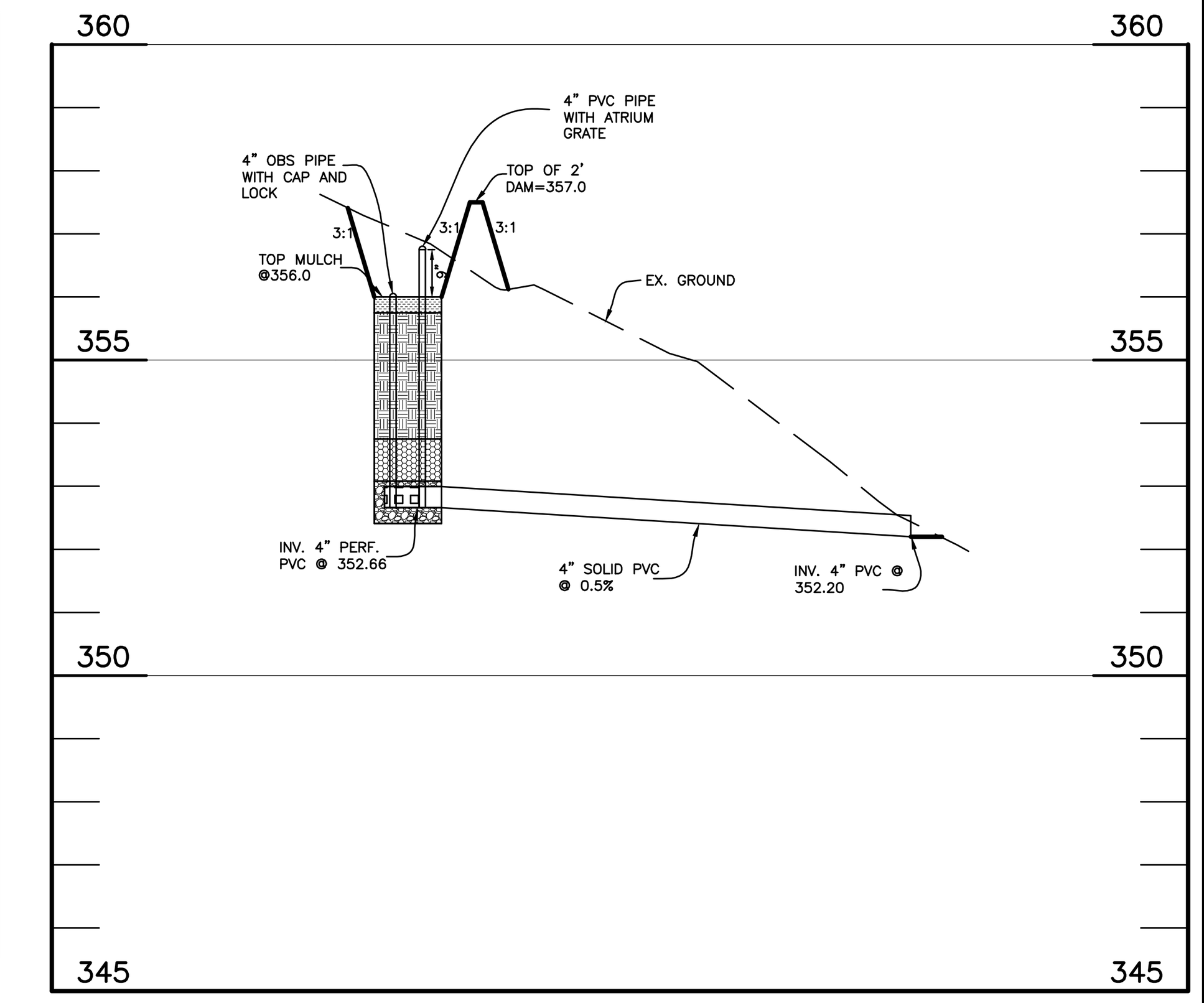




(TO BE CONSTRUCTED UNDER THE SDP)

RG–4 PLAN

SCALE: 1"=30'

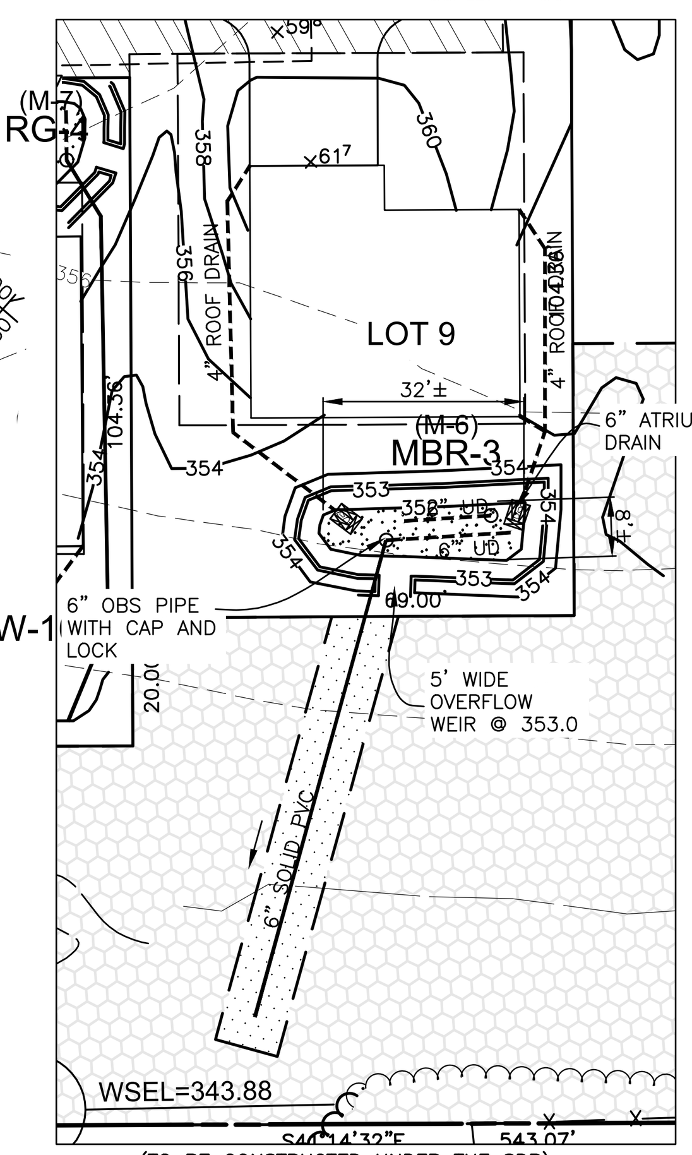


(TO BE CONSTRUCTED UNDER THE SDP)

RG–4 SECTION

SCALE: HOR. 1"=30' VERT. 1"=3'

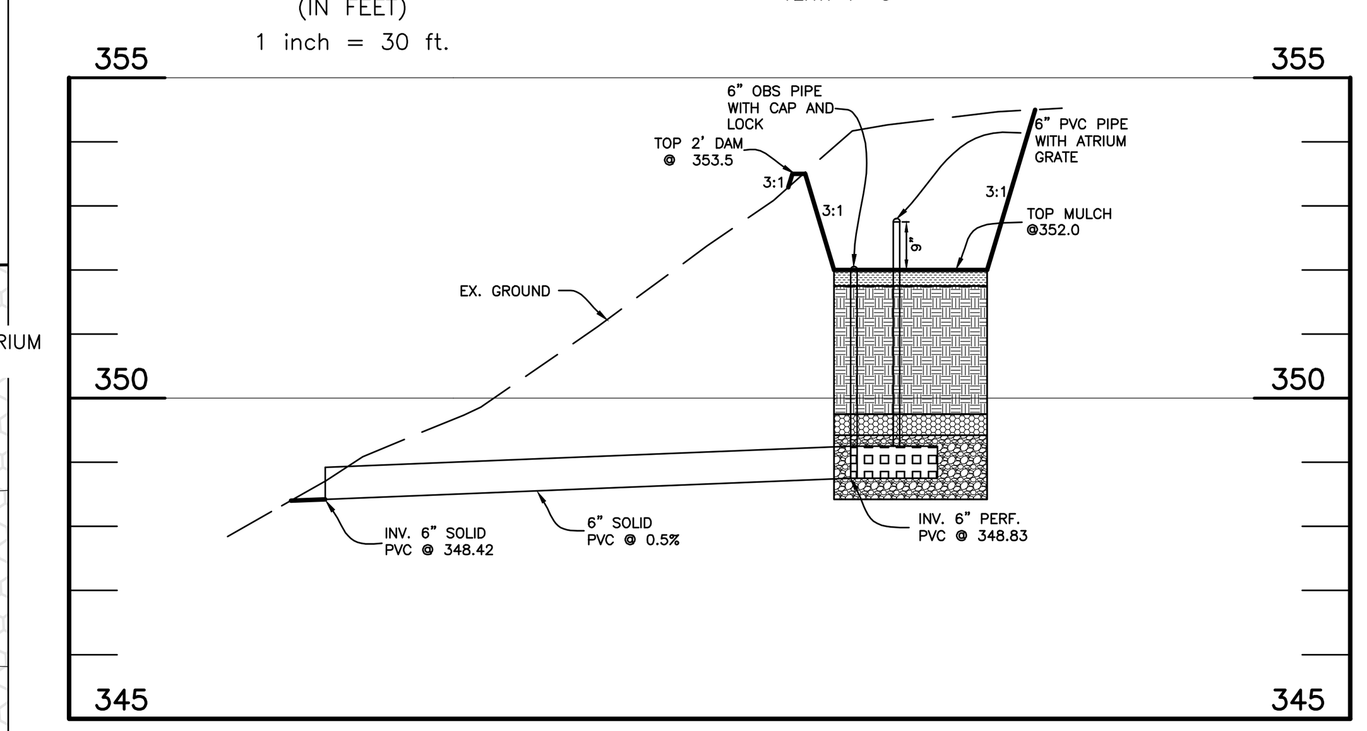
(IN FEET) 1 inch = 30 ft.



(TO BE CONSTRUCTED UNDER THE SDP)

MBR–3 PLAN

SCALE: 1"=30'



(TO BE CONSTRUCTED UNDER THE SDP)

MBR–3 SECTION

SCALE: HOR. 1"=30' VERT. 1"=3'

(IN FEET) 1 inch = 30 ft.

APPROVED: DEPARTMENT OF PUBLIC WORKS

DocuSigned by: 9/22/2023

CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

DocuSigned by: 9/20/2023

CHIEF, DIVISION OF LAND DEVELOPMENT DATE

DocuSigned by: CHAD Edmondson 9/20/2023

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

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Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 22390, Expiration Date: 6-30-2025.

STATE OF MARYLAND CHRISTOPHER A. MALAGARI 22390 PROFESSIONAL ENGINEER 09.11.2023

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OLD MONTGOMERY MEADOWS

LOTS 1-11 AND OPEN SPACE LOTS 12 & 13

9005 OLD MONTGOMERY ROAD

TAX MAP: 36 GRID: 17 PARCEL: 271
ZONED: R–12
ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

RESIDENTIAL
FINAL ROAD PLAN
STORMWATER MANAGEMENT DRAINAGE AREA MAP

DATE: AUGUST 2023	BEI PROJECT NO. 3080
SCALE: AS SHOWN	SHEET 9 OF 9

DESIGN: JCO DRAFT: JCO

J:\3080_9005 Old Montgomery Road\dwg\7000v2.dwg, 9/12/2023 9:01:09 AM

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