

GENERAL NOTES

- 1. SUBJECT PROPERTY ZONED R-ED IN ACCORDANCE WITH THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN...
2. PROPERTY ADDRESS (PRIOR TO SUBDIVISION): 4707 BEECHWOOD ROAD, ELLICOTT CITY, MD 21043
3. GROSS AREA OF PROPERTY = 5.8680 AC.±
4. NET AREA OF PROJECT = 3.76 AC.
5. NUMBER OF PROPOSED BUILDABLE LOTS = 6
6. AREA OF PROPOSED BUILDABLE LOTS = 2.21 AC.±
7. NUMBER OF PROPOSED OPEN SPACE LOTS = 5
8. AREA OF PROPOSED OPEN SPACE LOTS = 3.12 AC.±
9. AREA OF PROPOSED ROAD RIGHT-OF-WAY = 0.83 AC.±
10. OPEN SPACE REQUIRED: 5.8680 X 50% = 2.934 AC.±
11. TOTAL OPEN SPACE PROVIDED: 3.12 AC.±, 2.93 AC.± CREDITED, 0.19 AC.± NON-CREDITED.
12. DEED REFERENCE: LIBER 12616, FOLIO 91
13. PREVIOUS HOWARD COUNTY FILE NUMBERS: ECP-15-007, WP-16-047, WP-17-124, SP-17-006, PB 433, WP-21-007.
14. PUBLIC WATER AND SEWER WILL BE USED WITHIN THIS SITE. THE WATER AND SEWER CONTRACT NUMBER TO PROVIDE PUBLIC WATER AND SEWER SERVICE WITHIN THIS PROPERTY IS 14-0000-D.
15. THE BOUNDARY SHOWN HEREON IS BASED ON A FIELD RUN BOUNDARY SURVEY PREPARED BY SILL, ADCOCK & ASSOCIATES, LLC ON FEBRUARY 27, 2012.
16. THE TOPOGRAPHY SHOWN HEREON HAS BEEN FIELD RUN BY SILL, ADCOCK & ASSOCIATES, LLC. ON APRIL 13, 2012. THE EXISTING TOPOGRAPHY SHOWN OUTSIDE THE SITE IS BASED ON HOWARD COUNTY AERIAL PHOTOGRAPHY FROM 2004. FIELD RUN TOPOGRAPHY FOR BEECHWOOD ROAD WAS RUN BY ADCOCK & ASSOCIATES ON MARCH 30, 2016.
17. THE SOILS SHOWN HAVE BEEN TAKEN FROM THE US DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE, WEB SOIL SURVEY WEBSITE. HOWARD COUNTY SOILS GRID 15, SUB-GRID 028.
18. A WETLAND AND STREAM STUDY HAS BEEN PREPARED BY ECO-SCIENCE PROFESSIONALS, INC. IN JULY 2014 AND WAS APPROVED UNDER ECP-15-007. ACCORDING TO THE WETLAND AND STREAM STUDY THERE ARE TWO STREAMS, A WETLAND, AND THEIR BUFFERS LOCATED ON SITE. SEE NOTE 52 FOR ADDITIONAL INFORMATION.
19. THERE ARE NO FLOODPLAINS ON-SITE.
20. THERE ARE NO CEMETERIES ON-SITE.
21. THERE IS A HISTORIC HOUSE ON LOT 1. ADVISORY COMMENTS FROM HPC ARE NOT REQUIRED BECAUSE THE HOUSE WILL REMAIN INTACT ON ITS OWN LOT (LOT 1).
22. NO NOISE STUDY IS REQUIRED FOR THIS PROJECT.
23. THE TRAFFIC STUDY FOR THIS PROJECT WAS PREPARED BY MARS GROUP, DATED FEBRUARY 2016.
24. THE LOTS SHOWN HEREON COMPLY WITH THE MINIMUM OWNERSHIP, WIDTH AND LOT AREA AS REQUIRED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT.
25. EXISTING UTILITIES ARE LOCATED BY THE USE OF ANY ALL OF THE FOLLOWING: ROAD CONSTRUCTION PLANS, FIELD SURVEYS, PUBLIC WATER AND SEWER PLANS AND OTHER AVAILABLE RECORD DRAWINGS. APPROXIMATE LOCATION OF THE EXISTING UTILITIES ARE SHOWN FOR THE CONTRACTORS INFORMATION. CONTRACTOR SHALL LOCATE EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO THE CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
26. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED ON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENTS NUMBERS 0081 AND 31EC WERE USED FOR THIS PROJECT.
27. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE WETLANDS, STREAMS, OR 25' BUFFER BUFFERS, FLOODPLAIN AND FOREST CONSERVATION EASEMENT AREAS, UNLESS WAIVERS HAVE BEEN APPROVED OR ACTIVITIES HAVE BEEN DETERMINED ESSENTIAL BY THE DEPARTMENT OF PLANNING AND ZONING.
28. THE 10-YEAR STORMWATER MANAGEMENT OBLIGATIONS FOR THIS SITE WILL BE MET BY MICRO-BIORETENTION FACILITIES (M-6), OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION, AND DRYWELLS (M-5) ON THE LOTS. ON LOT FACILITIES SHALL BE OWNED AND MAINTAINED BY THE LOT OWNERS. ALL ON-LOT STORMWATER MANAGEMENT DEVICES WILL BE SUBJECT TO THE REQUIREMENTS OF A RECORDATION DECLARATION OF COVENANTS.
29. ALL SWALES TO HAVE EROSION CONTROL MATTING.
30. THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
31. WP-16-047, A REQUEST TO WAIVE SECTIONS 16.144(b) AND 16.145(a) OF THE SUBDIVISION REGULATIONS WAS DENIED ON NOVEMBER 6, 2015.
32. THERE IS AN EXISTING HOUSE AND DETACHED GARAGE ON LOT 1 TO REMAIN. ANY NEW ADDITIONS OR NEW CONSTRUCTION TO THE EXISTING HOUSE SHALL CONFORM TO SETBACKS AS SHOWN ON THE FINAL PLAN FOR THIS SUBDIVISION.
33. THE FOREST RETENTION ACT REQUIREMENTS FOR THIS PROJECT WILL BE MET THROUGH THE 1.9 ACRES OF RETENTION THAT MEETS THE BREAK EVEN POINT, THEREFORE, NO SURETY IS REQUIRED FOR THE FOREST RETENTION AREA. 0.05 ACRES WILL BE CLEARED, 0.04 WHICH IS IN FACE 9, TO MEET THE SITE DISTANCE REQUIREMENT. THE AREA WILL BE REFORESTED.
34. THIS PLAN HAS BEEN PREPARED WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING WILL BE POSTED AS PART OF THE DPW DEVELOPERS AGREEMENT IN THE AMOUNT OF \$8,240.00 FOR THE REQUIRED LANDSCAPING, 1 SHADE TREE, AND 18 SHADE TREES REQUIRED PER WP-17-124 FOR THE MITIGATION OF REMOVAL OF 9 SPECIMEN TREES, AND 2 EVERGREEN AND 8 SHRUBS PER WP-21-007.
35. THE PROPOSED SUBDIVISION FRONTS ON A SCENIC ROAD - BEECHWOOD ROAD - AND SHALL BE SUBJECT TO THOSE REQUIREMENTS OF SECTION 16.125 OF THE SUBDIVISION REGULATIONS. DRIVEWAYS SHALL BE PROVIDED PRIOR TO ISSUANCE OF A USE AND OCCUPANCY PERMIT FOR AN NEW DWELLINGS TO ENSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING REQUIREMENTS:
36.A. WIDTH - 12 FEET (16 FEET SERVING MORE THAN ONE RESIDENCE);
36.B. SURFACE - SIX (6) INCHES OF COMPACTED CRUSHED RUN BASE WITH TAR AND CHIP COATING (1-1/2" MINIMUM);
36.C. GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE AND 45-FOOT TURNING RADIUS;
36.D. STRUCTURES (CULVERTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS (425-LOADING);
36.E. DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOOD WITH NO MORE THAN ONE FOOT DEPTH OVER DRIVEWAY SURFACE.
36.F. MAINTENANCE - SUFFICIENT TO ENSURE ALL WEATHER USE
37. ALL LOTS/RESIDENTIAL UNITS IN THIS SUBDIVISION ARE SUBJECT TO THE MIHU REQUIREMENT THAT IS TO BE APPROVED BY THE DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT.
38. IN ACCORDANCE WITH SECTION 16.128 OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, A PRE-SUBMISSION COMMUNITY MEETING WAS HELD ON NOVEMBER 2, 2016 AT BONNIE BRANCH MIDDLE SCHOOL.
39. ALL WELL AND SEPTIC SYSTEMS MUST BE PROPERLY ABANDONED WITH DOCUMENTATION SENT TO THE HEALTH DEPARTMENT PRIOR TO SIGNATURE OF THE RECORD PLAN.
40. THERE ARE 21 SPECIMEN TREES ON THE PROPERTY. NINE SPECIMEN TREES ARE PROPOSED TO BE REMOVED TO FACILITATE DRIVEWAY OR HOUSE FOUNDATION PRIOR TO INSTALLATION.
41. THE EXISTING STORAGE BUILDING AND SHED ARE TO REMAIN ON LOT 1 AND ARE CONSIDERED NON-CONFORMING STRUCTURES TO THE 30' SETBACK FROM THE PROJECT BOUNDARY SINCE IT PRE-DATES THE NEW APPLICATION OF THE R-ED SETBACKS FROM AN EXISTING PROPERTY LINE ON FEBRUARY 26, 2018 AN ALTERNATIVE COMPLIANCE PETITION WP-17-124 TO WAIVE DURING 16.116(A)(1)&(2), SECTION 16.116(B)(1) AND SECTION 16.120(A)(7) OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, TO PERMIT GRADING, REMOVAL OF VEGETATIVE COVER AND TREES, PAVING AND NEW STRUCTURES WITHIN 25' OF WETLANDS, WITHIN 50' OF AN INTERMITTENT STREAM BANK AND ON LANDS WITH EXISTING STEEP SLOPES, AND TO PERMIT THE REMOVAL OF SPECIMEN TREES, WAS APPROVED BY THE DIRECTOR OF PLANNING AND ZONING SUBJECT TO THE FOLLOWING CONDITIONS:
42. COMPLIANCE WITH SRC COMMENTS SP-17-006 AND PLANNING BOARD APPROVAL PB CASE 433 FOR THE PROPOSED SUBDIVISION PLAN DESIGN, LAYOUT AND LOCATION OF LOTS, SHARED DRIVEWAY AND UTILITIES.
43. NO ADDITIONAL DISTURBANCE OR GRADING SHALL OCCUR BEYOND THE LIMITS OF DISTURBANCE (LOD) OF THE 25% STEEP SLOPES THAT ARE DETAILED ON THE PRELIMINARY GRADING PLAN AND AS APPROVED BY THE PLANNING BOARD, UNLESS IT CAN BE SUFFICIENTLY DEMONSTRATED TO BE WARRANTED OR JUSTIFIED BY THE PETITIONER AS NECESSARY DISTURBANCE OR THROUGH THE FILING OF AN ADDITIONAL ALTERNATIVE COMPLIANCE PETITION.
44. THE AFFECTED STEEP SLOPE AREAS MUST BE SUFFICIENTLY STABILIZED BY SOIL STABILIZATION TECHNIQUES THAT SHALL LESSEN THE ERODIBILITY OF SOILS AND RUNOFF. THE IMPACTED STEEP SLOPE AREAS MUST BE REVEGETATED OR STABILIZED WITH SUITABLE NATIVE SPECIES THAT WILL BIND THE SURFACE TIGHTLY. THESE STABILIZATION TECHNIQUES MUST BE CLEARLY DEMONSTRATED ON THE SITE DEVELOPMENT PLAN.
45. THE REMOVAL OF NINE (9) SPECIMEN TREES WILL REQUIRE THE INSTALLATION OF 21 REPLACEMENT TREES (18 TOTAL) WITH A MINIMUM OF 3" CALIBER NATIVE PLANT SPECIES. THE REPLACEMENT TREES SHALL BE PROPOSED WITHIN A REASONABLE LOCATION ON THE SITE, BONDED AND SHOWN ON THE LANDSCAPE PLAN WITH THE FORTHCOMING FINAL PLAN.
46. THE REMAINING TWELVE (12) SPECIMEN TREES SHALL BE SAVED AND PROTECTED DURING CONSTRUCTION ACTIVITIES. ANY ADDITIONAL REMOVAL OF SPECIMEN TREES SHALL REQUIRE THE SUBMITTAL OF A NEW ALTERNATIVE COMPLIANCE PETITION APPLICATION.
47. PROVIDE TREE PROTECTION FENCING AT THE TREES DRIP LINE, OR FARTHER OUT, TO PREVENT TREE DAMAGE FROM EXCAVATION, SOIL COVER ROOTS, THE EXISTING STEEP SLOPES, AND TO PROTECTION TECHNIQUES MUST BE DEMONSTRATED ON EH SITE DEVELOPMENT PLAN.
48. PROVIDE A NOTE ON THE SP PLAN (SP-17-006), THE FINAL PLAN AND THE SITE DEVELOPMENT PLAN REGARDING THIS ALTERNATIVE COMPLIANCE PETITION APPROVAL. THIS NOTE SHALL INCLUDE THOSE SUBDIVISION REGULATIONS PETITIONED, THE DATE OF THE ALTERNATIVE COMPLIANCE APPROVAL, AND THE CONDITIONS OF APPROVAL.
49. A PRIVATE ROAD STREET NAME SIGN ASSEMBLY SHALL BE FABRICATED AND INSTALLED BY HOWARD COUNTY BUREAU OF HIGHWAYS AT THE DEVELOPERS/OWNERS EXPENSE. CONTACT HOWARD COUNTY TRAFFIC DIVISION AT 410-313-5751 FOR DETAILS AND COST ESTIMATES.
50. ON THE APPROACH SIDE OF A STOP SIGN, NO STREET TREE TO BE PLANTED WITHIN 30' OF THE SIGN.

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46. NO ADDITIONAL DISTURBANCE OR GRADING SHALL OCCUR BEYOND THE LIMITS OF DISTURBANCE (LOD) OF THE 25% STEEP SLOPES THAT ARE DETAILED ON THE PRELIMINARY GRADING PLAN AND AS APPROVED BY THE PLANNING BOARD, UNLESS IT CAN BE SUFFICIENTLY DEMONSTRATED TO BE WARRANTED OR JUSTIFIED BY THE PETITIONER AS NECESSARY DISTURBANCE OR THROUGH THE FILING OF AN ADDITIONAL ALTERNATIVE COMPLIANCE PETITION.
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51. PROVIDE A NOTE ON THE SP PLAN (SP-17-006), THE FINAL PLAN AND THE SITE DEVELOPMENT PLAN REGARDING THIS ALTERNATIVE COMPLIANCE PETITION APPROVAL. THIS NOTE SHALL INCLUDE THOSE SUBDIVISION REGULATIONS PETITIONED, THE DATE OF THE ALTERNATIVE COMPLIANCE APPROVAL, AND THE CONDITIONS OF APPROVAL.
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53. ON THE APPROACH SIDE OF A STOP SIGN, NO STREET TREE TO BE PLANTED WITHIN 30' OF THE SIGN.

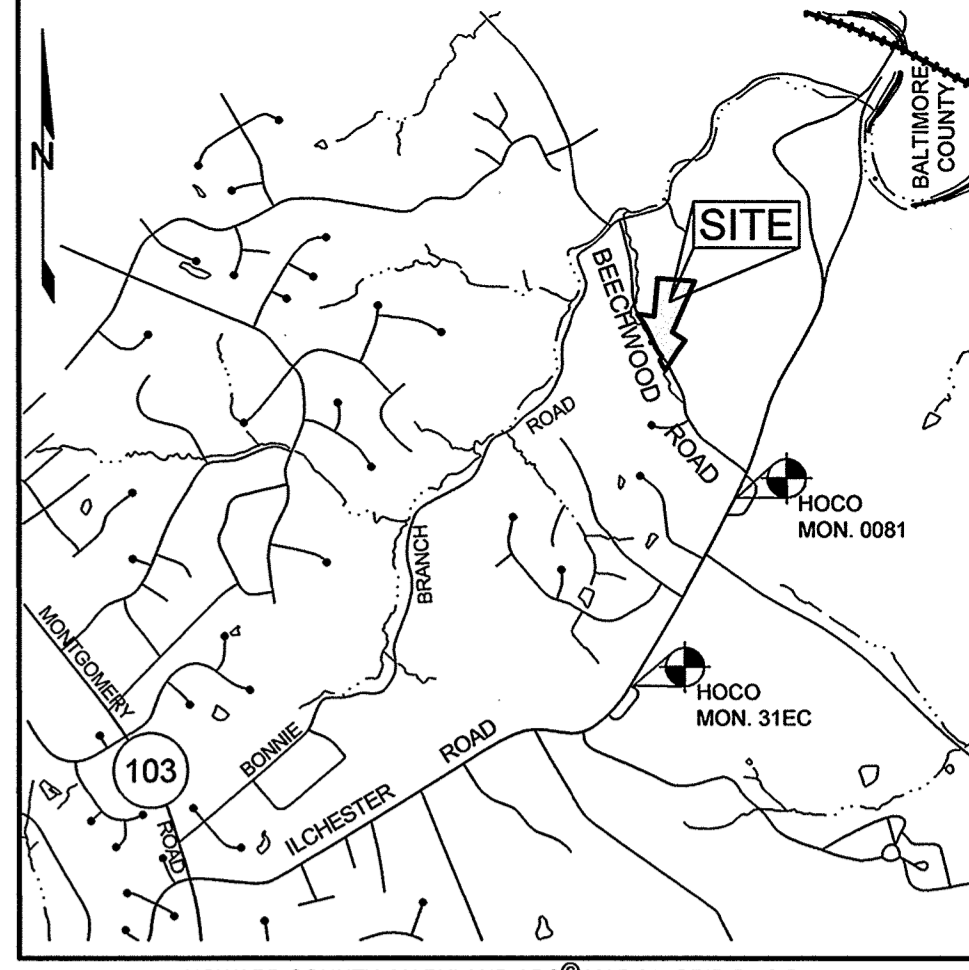
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 02/07/2021

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
CHIEF, BUREAU OF HIGHWAYS
DATE: 02/07/2021

SUPPLEMENTAL INFORMATION PLAN
PENKUSKY PROPERTY
LOTS 1, 3 THRU 7 AND OPEN SPACE LOTS 2, 8 THRU 11
HOWARD COUNTY, MARYLAND

LEGEND

- EXISTING CONTOUR
PROPOSED CONTOUR
EXISTING SPOT ELEVATION
PROPOSED SPOT ELEVATION
DIRECTION OF FLOW
EXISTING TREELINE
PROPOSED TREELINE
SOIL BOUNDARY
EXISTING STREAM
100' STREAM BUFFER
25' WETLAND BUFFER
FOREST CONSERVATION EASEMENT
EXISTING WETLAND



BENCHMARKS table with columns: NUMBER, NORTHING, EASTING, ELEVATION, DESCRIPTION. Includes benchmarks 0081 and 31EC.

ROAD CLASSIFICATION table with columns: ROAD NAME, CLASSIFICATION, PAVING TYPE, DESIGN SPEED, LIMITS OF CONSTRUCTION, R/W. Shows Poplar Ridge Lane as a Private Road.

MINIMUM LOT SIZE CHART table with columns: LOT NUMBER, GROSS AREA (SF), PIPESTEM AREA (SF), NET AREA (SF), MINIMUM LOT SIZE (SF). Lists requirements for lots 1 through 7.

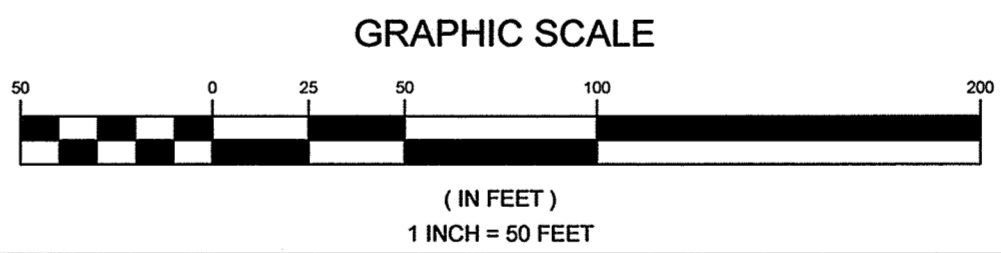
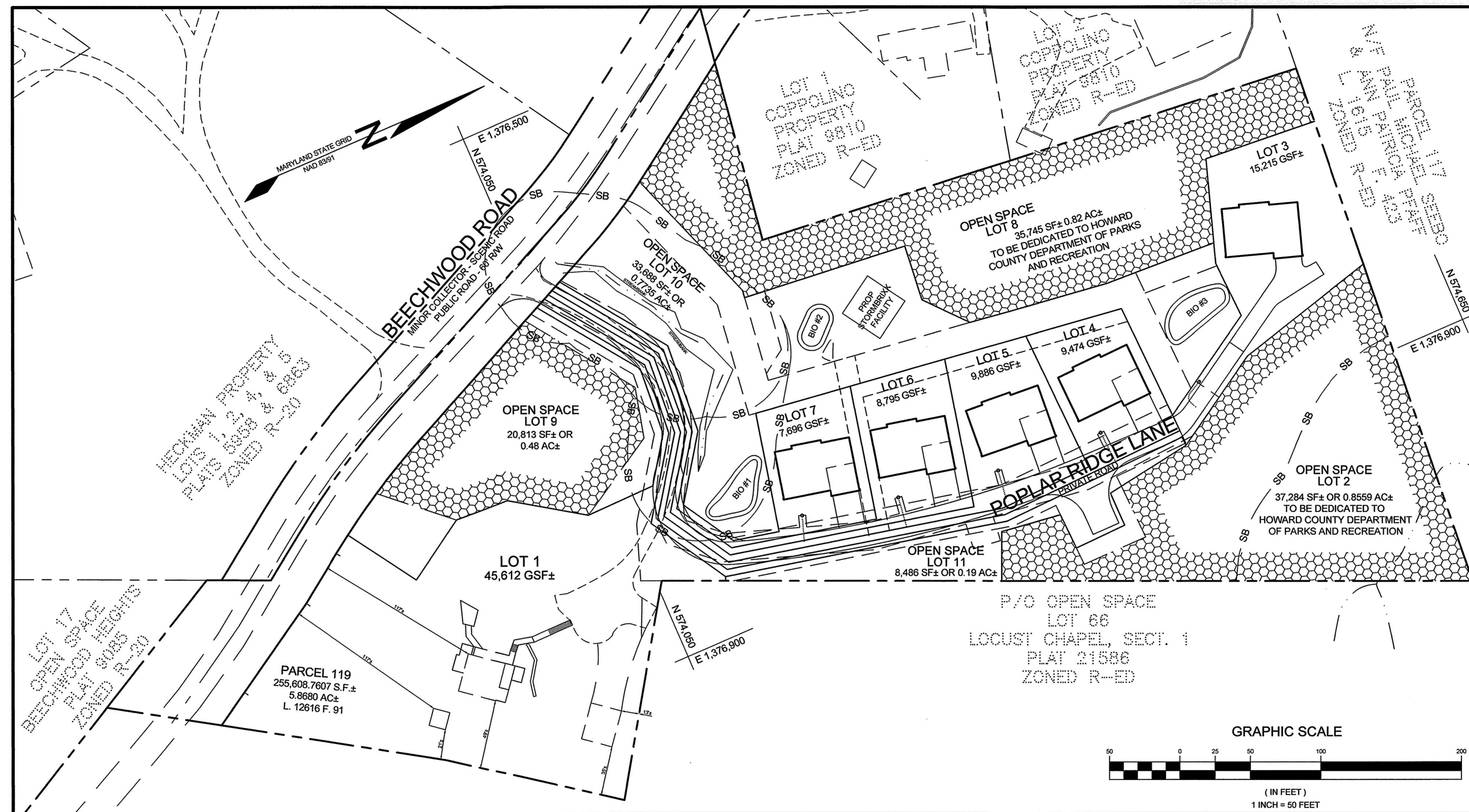
STORMWATER MANAGEMENT ON-LOT PRACTICES table with columns: LOT #, ADDRESS, DRY-WELL M-5 (NUMBER). Lists practices for lots 3 through 7.

SHEET INDEX table with columns: SHEET NO., DESCRIPTION. Lists sheets 1 through 17, including Cover Sheet, Road Plan and Profile, Site Layout, Grading Plan, etc.

OWNER/DEVELOPER
JOSEPH C. & LISA ANN PENKUSKY
4707 BEECHWOOD ROAD
ELLICOTT CITY, MD 21043
443-324-4807

COVER SHEET
PENKUSKY PROPERTY
LOTS 1, 3 THRU 7, AND OPEN SPACE LOTS 2, 8 THRU 11
TAX MAP 31 GRID 4
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
PARCEL 119

Professional Engineer seal for Sill Engineering Group, LLC, License No. 202057320-NT-3081, State of Maryland.



- GENERAL NOTES CONTINUED:
45. TRAFFIC CONTROL DEVICES:
a. THE R-1 ("STOP") SIGN AND THE STREET NAME SIGN (SNS) ASSEMBLY FOR THIS DEVELOPMENT MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPLETED.
b. TRAFFIC CONTROL DEVICE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD TRAFFIC DIVISION (410-313-2430) PRIOR TO INSTALLATION.
47. THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING, IN A LETTER DATED AUGUST 13, 2018, HAS DETERMINED THE DISTURBANCE, TO ALLOW A PUBLIC SEWER LINE CONNECTION AND GRADING FOR THE REQUIRED SIGHT DISTANCE, IN THE WETLAND AND STREAM BUFFERS, IS NECESSARY SUBJECT TO THE FOLLOWING MITIGATION METHODS:
47.A. THE APPLICANT SHALL OBTAIN ANY REQUIRED PERMITS FOR THE PUBLIC SEWER LINE CONNECTION.
47.B. DURING CONSTRUCTION, THE PROPOSED WORK AREA WITHIN THE 50' STREAM BANK BUFFER SHALL BE ADEQUATELY PROTECTED BY A SILT FENCE TO CONTROL WATER RUN-OFF.
47.C. THE 50' STREAM BANK BUFFER AND THE 25% STEEP SLOPE AREAS DISTURBED SHALL BE STABILIZED AND RE-VEGETATED UPON COMPLETION OF THE SEWER LINE AND THE USE-IN-COMMON DRIVEWAY CONSTRUCTION BACK TO ITS ORIGINAL PRE-CONSTRUCTION CONDITION. THE DISTURBED AREA SURROUNDING THE PUBLIC SEWER EASEMENT SHALL BE RESTORED WITH NATIVE TREES ALONG THE STREAM BANK EDGE TO CREATE A RIPARIAN BUFFER AND NATIVE TREES ARE TO BE PLANTED WITHIN A FOREST CONSERVATION EASEMENT ADJACENT TO THE ROADWAY DISTURBANCE AS PROPOSED.
47.D. THE APPLICANT SHALL OBTAIN ANY REQUIRED PERMITS AND AUTHORIZATIONS FROM THE MARYLAND DEPARTMENT OF THE ENVIRONMENT AND U.S. ARMY CORPS OF ENGINEERS FOR ACTIVITIES IN REGULATED STREAM BUFFER AREAS PRIOR TO SUBMISSION OF ANY GRADING PERMIT APPLICATIONS, IF APPLICABLE AND REFERENCE THE APPLICABLE MDE OR USAGE PERMITS OR TRACKING NUMBERS ON ANY ASSOCIATED PERMITS, IF APPLICABLE.
48. SEE NOTE 37 FOR MIHU REQUIREMENTS.
49. PRIOR TO FINAL SUBDIVISION ACCEPTANCE (AFTER CONSTRUCTION IS COMPLETE), IT IS A REQUIREMENT THAT TRAFFIC ENGINEERING REVIEW THE PROPOSED EMBANKMENT GRADING TO ENSURE ADEQUATE SIGHT DISTANCE HAS BEEN PROVIDED.
50. THIS SUPPLEMENTAL PLAN IS NOT SUBJECT TO COUNCIL BILLS 61-2019, 62-2019, AND 63-2019 BECAUSE THE PRELIMINARY EQUIVALENT SKETCH PLAN, SP-17-006, WAS SIGNED ON MAY 8, 2018 WHICH IS PRIOR TO THE FEBRUARY 5, 2020 ENACTMENT DATE OF THESE BILLS, PER SECTION 16.102(b)(1) OF THE SUBDIVISION REGULATIONS.
51. A PERMIT TO THE MARYLAND DEPARTMENT OF ENVIRONMENT AND ARMY CORPS OF ENGINEERS TO DISTURB THE STREAM BUFFER SYSTEM HAS BEEN APPROVED BY THOSE AGENCIES. THE PERMIT NO IS 2020057320-NT-3081. APPROVAL OF THE PERMIT IS REQUIRED PRIOR TO SUBMISSION OF ANY GRADING PERMIT TO HOWARD COUNTY.
52. ALTHOUGH THE WETLAND AND STREAM STUDY IDENTIFIED A WETLAND AREA ON SITE, THE MARYLAND DEPARTMENT OF THE ENVIRONMENT HAS DETERMINED THAT THE WETLAND AREA IN OPEN SPACE 10 IS A REGULATED STREAM. THIS PLAN SHOWS THE STREAM AND ITS BUFFER.
53. LOT 1 CONTAINS STEEP SLOPES THAT ARE 25% OR GREATER. PER SECTION 16.120(b)(4)(iii)(B), STEEP SLOPES MAY BE LOCATED ON A RESIDENTIAL LOT THATS 20,000 SF OR GREATER IF THE SLOPES ARE LOCATED NO CLOSER THAN 35 FEET FROM THE BUILDING ENVELOPE.

- GENERAL NOTES CONTINUED:
47. THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING, IN A LETTER DATED AUGUST 13, 2018, HAS DETERMINED THE DISTURBANCE, TO ALLOW A PUBLIC SEWER LINE CONNECTION AND GRADING FOR THE REQUIRED SIGHT DISTANCE, IN THE WETLAND AND STREAM BUFFERS, IS NECESSARY SUBJECT TO THE FOLLOWING MITIGATION METHODS:
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51. A PERMIT TO THE MARYLAND DEPARTMENT OF ENVIRONMENT AND ARMY CORPS OF ENGINEERS TO DISTURB THE STREAM BUFFER SYSTEM HAS BEEN APPROVED BY THOSE AGENCIES. THE PERMIT NO IS 2020057320-NT-3081. APPROVAL OF THE PERMIT IS REQUIRED PRIOR TO SUBMISSION OF ANY GRADING PERMIT TO HOWARD COUNTY.
52. ALTHOUGH THE WETLAND AND STREAM STUDY IDENTIFIED A WETLAND AREA ON SITE, THE MARYLAND DEPARTMENT OF THE ENVIRONMENT HAS DETERMINED THAT THE WETLAND AREA IN OPEN SPACE 10 IS A REGULATED STREAM. THIS PLAN SHOWS THE STREAM AND ITS BUFFER.
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- GENERAL NOTES CONTINUED:
54. THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING, IN A LETTER DATED AUGUST 24, 2020, HAS DETERMINED THE DISTURBANCE, IN THE STREAM BUFFER, IS APPROVED UNDER WP-21-007 SUBJECT TO THE FOLLOWING MITIGATION METHODS:
54.A. THE DISTURBANCE TO THE STREAM AND ITS BUFFER SHALL BE LIMITED TO THE GRADING REQUIRED TO WIDEN THE DRIVEWAY AND TO CONSTRUCT THE STORM DRAIN SYSTEM AND BIORETENTION FACILITY.
54.B. ANY NATURAL VEGETATION DISTURBED DURING THE GRADING IN THE STREAM BUFFER MUST BE RESTORED TO ITS NATURAL CONDITION ONCE THE CONSTRUCTION IS COMPLETED.
54.C. THE ULTIMATE LOWER STREAM CHANNEL AND ITS BUFFER MUST BE DELINEATED ON THE PLAN AND MUST BE LOCATED ENTIRELY WITHIN OPEN SPACE, EXCEPT THE STREAM BUFFER MAY BE WITHIN THE PIPESTEM AREAS OF THE RESIDENTIAL LOTS.
54.D. A COPY OF THE MARYLAND DEPARTMENT OF ENVIRONMENT PERMIT APPROVAL FOR THE DISTURBANCE TO THE STREAM CHANNEL MUST BE PROVIDED TO DPZ PRIOR TO THE RECORDATION OF THE FINAL PLAN AND REFERENCED AS A NOTE ON THE PLAN.
54.E. ADDITIONAL LANDSCAPING THAT INCLUDES A MIX OF AT LEAST 2 TREES AND 8 SHRUBS TO HELP SLOW STORMWATER RUNOFF, CONTROL EROSION AND REDUCE SEDIMENTATION TO THE STREAM MUST BE PROVIDED IN THE STREAM BUFFER. THIS ADDITIONAL LANDSCAPING MUST BE SHOWN ON THE FINAL LANDSCAPE PLAN AND BONDED WITH THE FINAL PLAN.
54.F. INCLUDE THIS ALTERNATIVE COMPLIANCE PETITION DECISION AS A GENERAL NOTE ON THE PLAN AND SITE DEVELOPMENT PLAN. THIS NOTE SHALL INCLUDE THE PETITION'S FILE NUMBER, THE REGULATORY SECTIONS, THE DECISION DATE, AND THE CONDITIONS OF APPROVAL.
THIS ALTERNATIVE COMPLIANCE IS FOR THE FOLLOWING SECTIONS: PAR WP-21-007
\*SECTION 16.116(a)(2)(i) - GRADING, REMOVAL OF VEGETATIVE COVER AND TREES, PAVING, AND NEW STRUCTURES SHALL NOT BE PERMITTED WITHIN FIFTY FEET OF AN INTERMITTENT STREAM BANK.
\*SECTION 16.116(a)(3) - IN RESIDENTIAL SUBDIVISIONS, A PERMIT TO THE MARYLAND DEPARTMENT OF ENVIRONMENT AND ARMY CORPS OF ENGINEERS TO DISTURB THE STREAM BUFFER SYSTEM HAS BEEN APPROVED BY THOSE AGENCIES. THE PERMIT NO IS 2020057320-NT-3081. APPROVAL OF THE PERMIT IS REQUIRED PRIOR TO SUBMISSION OF ANY GRADING PERMIT TO HOWARD COUNTY.

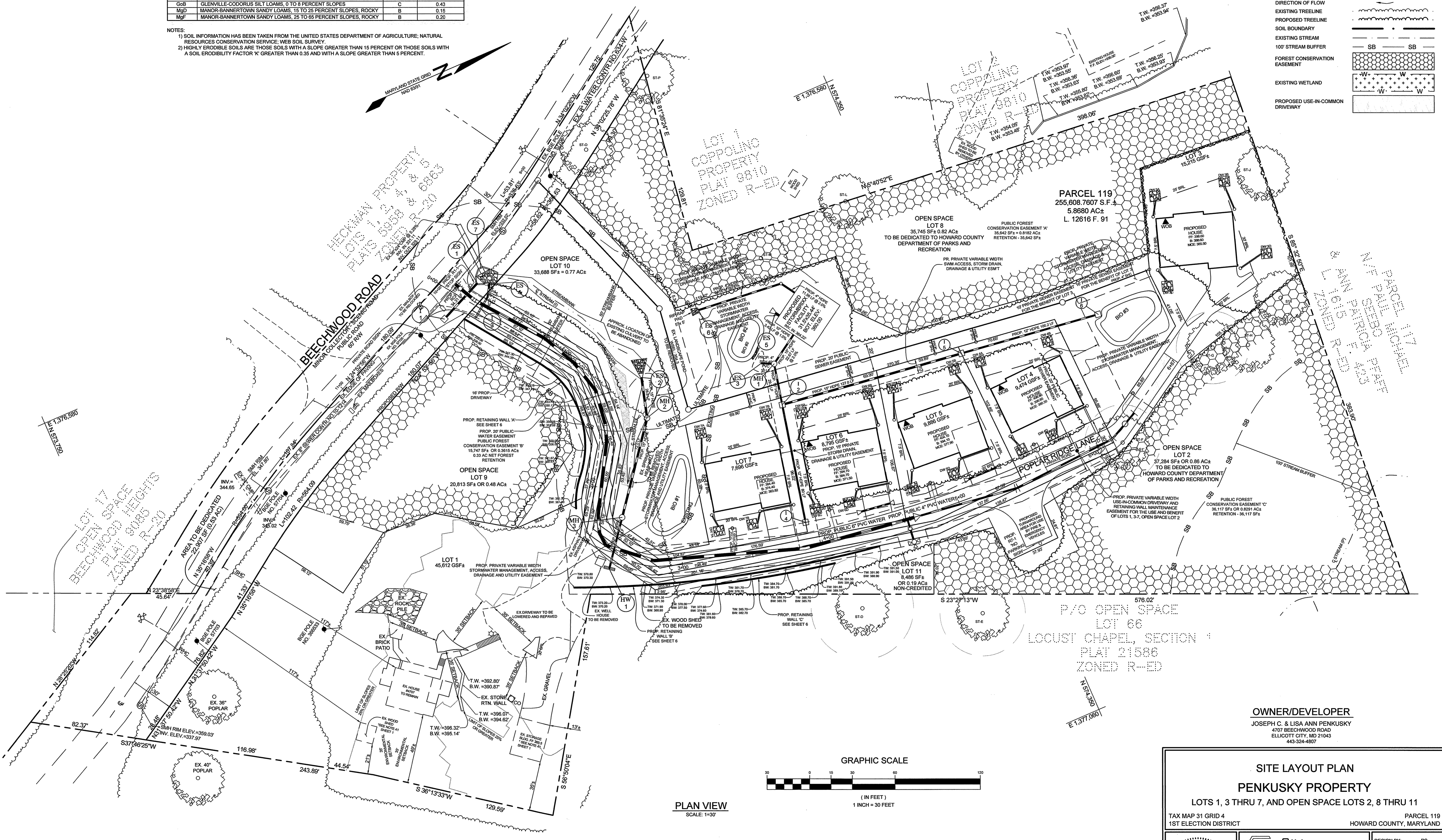
REVISIONS table with columns: NO., DESCRIPTION, DATE.



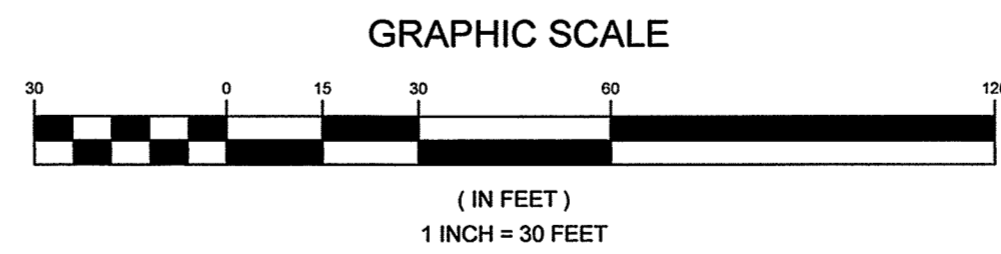
SOILS LEGEND			
SYMBOL	NAME / DESCRIPTION	GROUP	'K' FACTOR
G2C	GLADSTONE-LEGORE COMPLEX, 8 TO 15 PERCENT SLOPES	A	0.28
G2C	GLENVILLE SILT LOAM, 8 TO 15 PERCENT SLOPES	C	0.43
G2B	GLENVILLE-CODORUS SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	0.43
M2D	MANOR-BANNERTOWN SANDY LOAMS, 15 TO 25 PERCENT SLOPES, ROCKY	B	0.15
M2F	MANOR-BANNERTOWN SANDY LOAMS, 25 TO 65 PERCENT SLOPES, ROCKY	B	0.20

NOTES:  
 1) SOIL INFORMATION HAS BEEN TAKEN FROM THE UNITED STATES DEPARTMENT OF AGRICULTURE; NATURAL RESOURCES CONSERVATION SERVICE; WEB SOIL SURVEY.  
 2) HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR 'K' GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.

LEGEND	
EXISTING CONTOUR	
PROPOSED CONTOUR	
EXISTING SPOT ELEVATION	
PROPOSED SPOT ELEVATION	
DIRECTION OF FLOW	
EXISTING TREELINE	
PROPOSED TREELINE	
SOIL BOUNDARY	
EXISTING STREAM	
100' STREAM BUFFER	
FOREST CONSERVATION EASEMENT	
EXISTING WETLAND	
PROPOSED USE-IN-COMMON DRIVEWAY	



PLAN VIEW  
SCALE: 1"=30'



**OWNER/DEVELOPER**  
 JOSEPH C. & LISA ANN PENKUSKY  
 4707 BEECHWOOD ROAD  
 ELLICOTT CITY, MD 21043  
 443-324-4807

**SITE LAYOUT PLAN**  
**PENKUSKY PROPERTY**  
 LOTS 1, 3 THRU 7, AND OPEN SPACE LOTS 2, 8 THRU 11  
 TAX MAP 31 GRID 4  
 1ST ELECTION DISTRICT  
 PARCEL 119  
 HOWARD COUNTY, MARYLAND

DESIGN BY: PS  
 DRAWN BY: JC  
 CHECKED BY: PS  
 SCALE: AS SHOWN  
 DATE: DECEMBER 16, 2020  
 PROJECT #: 15-028  
 SHEET #: 3 of 17

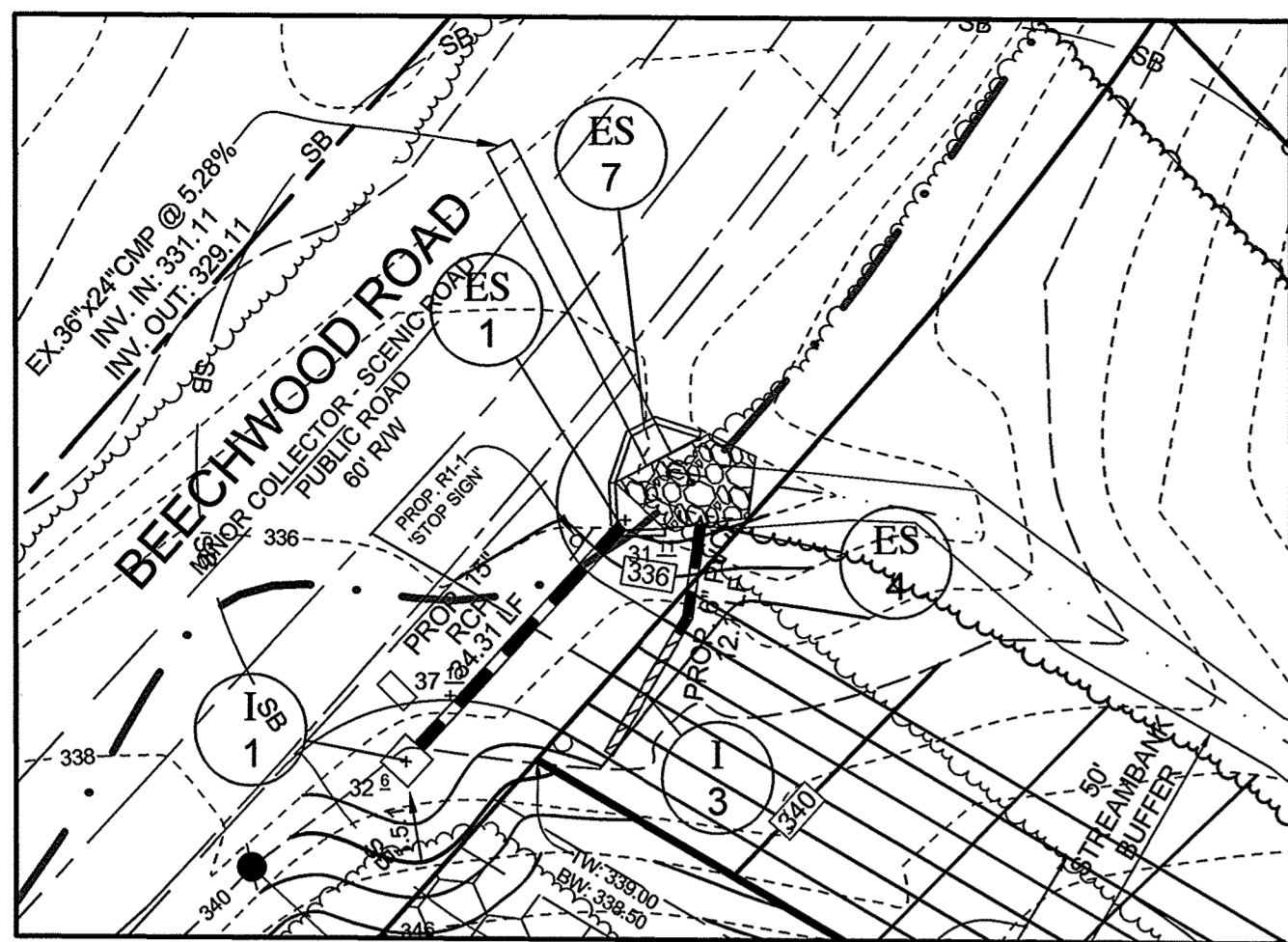
**SILL ENGINEERING GROUP, LLC**  
 16005 Frederick Road, 2nd Floor  
 Woodbine, Maryland 21797  
 Phone: 443.325.5076  
 Fax: 410.696.2022  
 Email: info@sillengineering.com  
 Civil Engineering for Land Development

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. 32025, EXPIRATION DATE: JUNE 20, 2021

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.  
 DATE: 02/07/2021  
 CHIEF, BUREAU OF HIGHWAYS

NO.	DESCRIPTION	DATE

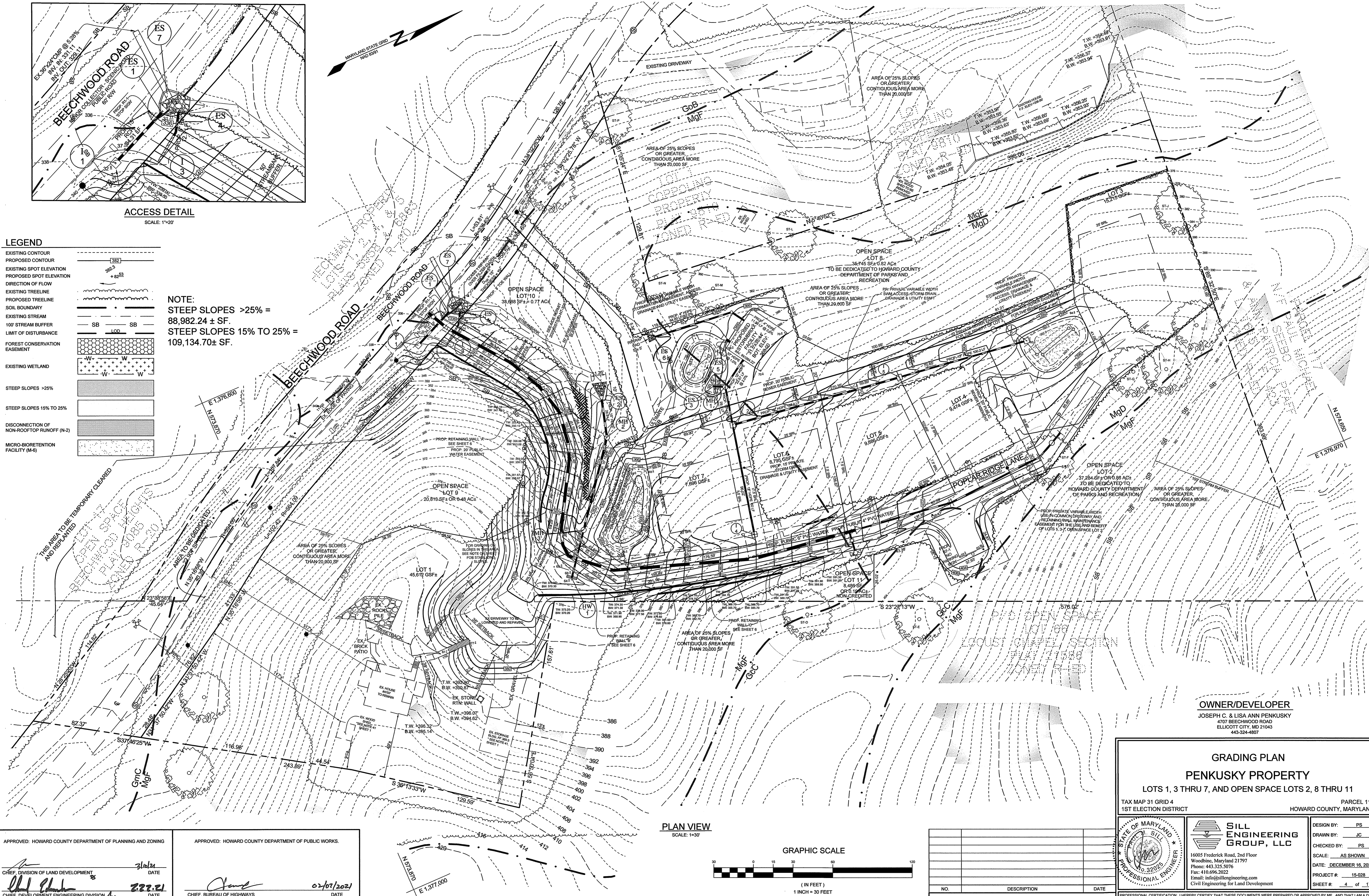


**ACCESS DETAIL**  
SCALE: 1"=20'

**LEGEND**

- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- DIRECTION OF FLOW
- EXISTING TREELINE
- PROPOSED TREELINE
- SOIL BOUNDARY
- EXISTING STREAM
- 100' STREAM BUFFER
- LIMIT OF DISTURBANCE
- FOREST CONSERVATION EASEMENT
- EXISTING WETLAND
- STEEP SLOPES >25%
- STEEP SLOPES 15% TO 25%
- DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2)
- MICRO-BIORETENTION FACILITY (M-6)

**NOTE:**  
 STEEP SLOPES >25% =  
 88,982.24 ± SF.  
 STEEP SLOPES 15% TO 25% =  
 109,134.70 ± SF.



**OWNER/DEVELOPER**  
 JOSEPH C. & LISA ANN PENKUSKY  
 4707 BEECHWOOD ROAD  
 ELLICOTT CITY, MD 21043  
 443-324-0807

**GRADING PLAN**  
**PENKUSKY PROPERTY**

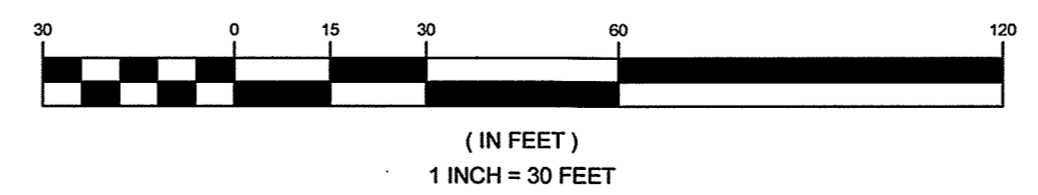
LOTS 1, 3 THRU 7, AND OPEN SPACE LOTS 2, 8 THRU 11  
 TAX MAP 31 GRID 4 1ST ELECTION DISTRICT PARCEL 119 HOWARD COUNTY, MARYLAND

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 3/16/21  
 DATE: 2/22/21

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE: 02/07/2021

**PLAN VIEW**  
SCALE: 1"=30'

**GRAPHIC SCALE**



NO.	DESCRIPTION	DATE

**SILL ENGINEERING GROUP, LLC**  
 16005 Frederick Road, 2nd Floor  
 Woodbine, Maryland 21797  
 Phone: 443.325.9076  
 Fax: 410.696.2022  
 Email: info@sillengineering.com  
 Civil Engineering for Land Development

DESIGN BY: PS  
 DRAWN BY: JC  
 CHECKED BY: PS  
 SCALE: AS SHOWN  
 DATE: DECEMBER 16, 2020  
 PROJECT #: 15-028  
 SHEET #: 4 of 17

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. 32023, EXPIRATION DATE: JUNE 30, 2021

SOILS LEGEND			
SYMBOL	NAME / DESCRIPTION	GROUP	'K' FACTOR
GcC	GLADSTONE-LEGORE COMPLEX, 8 TO 15 PERCENT SLOPES	A	0.28
GmC	GLENNVILLE SILT LOAM, 8 TO 15 PERCENT SLOPES	C	0.43
GoB	GLENNVILLE-CODORUS SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	0.43
MgD	MANOR-BANNERTOWN SANDY LOAMS, 15 TO 25 PERCENT SLOPES, ROCKY	B	0.15
MgF	MANOR-BANNERTOWN SANDY LOAMS, 25 TO 85 PERCENT SLOPES, ROCKY	B	0.20

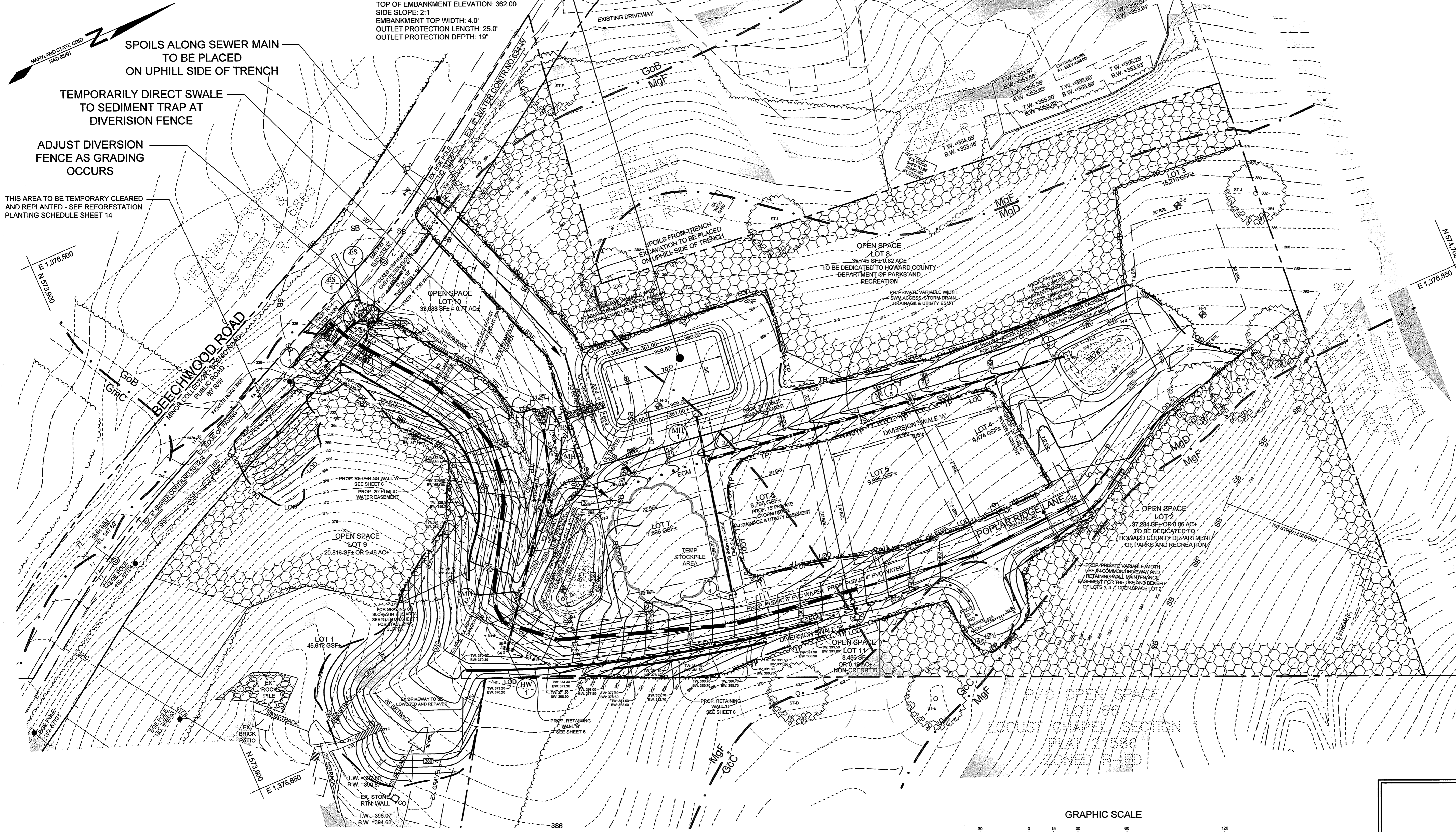
NOTES:  
 1) SOIL INFORMATION HAS BEEN TAKEN FROM THE UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, WEB SOIL SURVEY.  
 2) HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR 'K' GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.

SPOILS ALONG SEWER MAIN TO BE PLACED ON UPHILL SIDE OF TRENCH

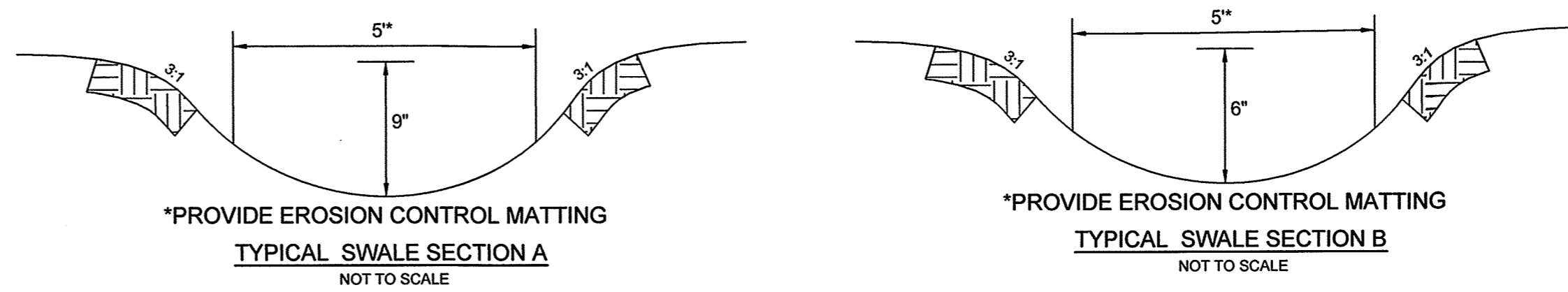
TEMPORARILY DIRECT SWALE TO SEDIMENT TRAP AT DIVERSION FENCE

ADJUST DIVERSION FENCE AS GRADING OCCURS

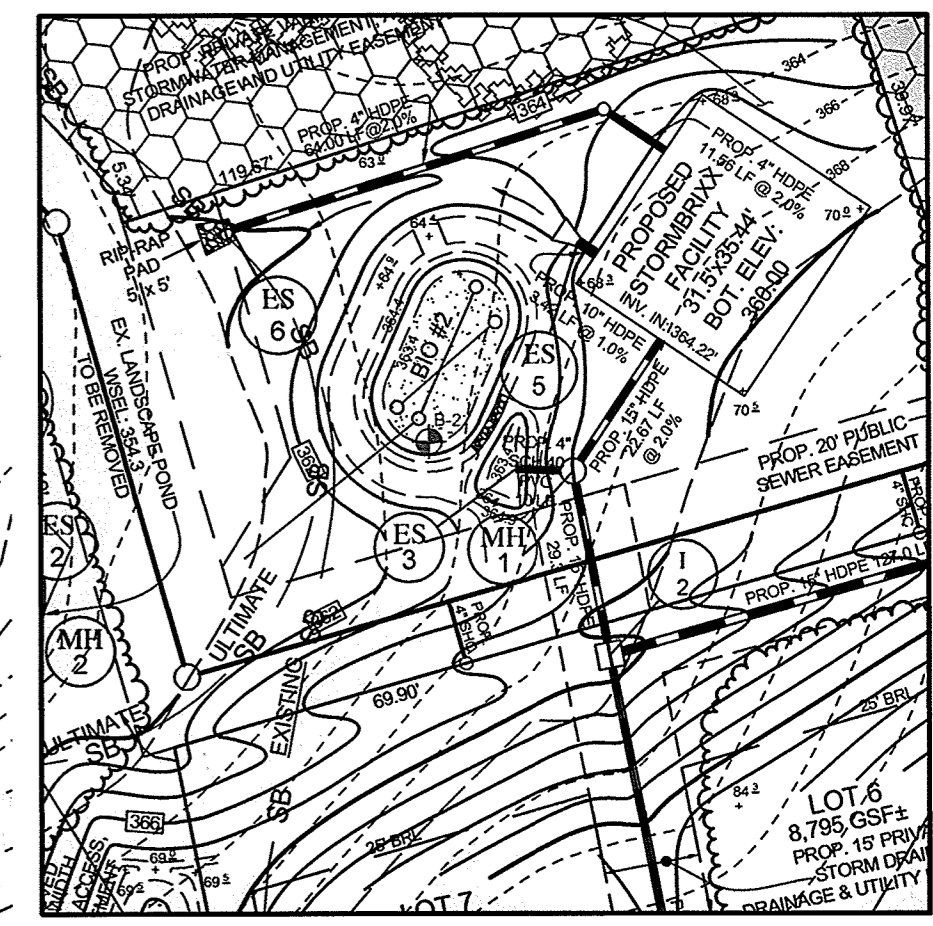
THIS AREA TO BE TEMPORARILY CLEARED AND REPLANTED - SEE REFORESTATION PLANTING SCHEDULE SHEET 14



**SEDIMENT TRAP #1 (ST-II)**  
 EXISTING DRAINAGE AREA: 1.15 AC;  
 PROPOSED DRAINAGE AREA: 0.91 AC;  
 TOTAL STORAGE REQUIRED: 7,200CF  
 TOTAL STORAGE PROVIDED: 7,293CF  
 WET STORAGE REQUIRED: 3,600CF  
 WET STORAGE PROVIDED: 3,628CF  
 DRY STORAGE REQUIRED: 3,600CF  
 DRY STORAGE PROVIDED: 3,668CF  
 EXISTING GROUND AT OUTLET: 359.00  
 TRAP BOTTOM ELEVATION: 358.50  
 TRAP BOTTOM DIMENSIONS: 70'x34'  
 WEIR LENGTH: 4.0'  
 WEIR CREST ELEVATION: 361.00  
 CLEANOUT ELEVATION: 359.20  
 TOP OF EMBANKMENT ELEVATION: 362.00  
 SIDE SLOPE: 2:1  
 EMBANKMENT TOP WIDTH: 4.0'  
 OUTLET PROTECTION LENGTH: 25.0'  
 OUTLET PROTECTION DEPTH: 19"

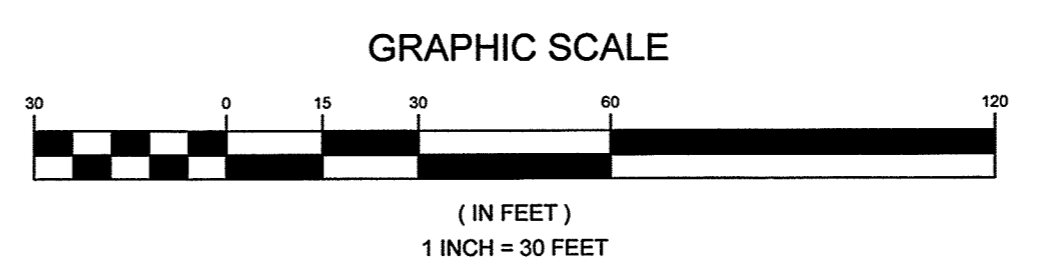


LEGEND	
EXISTING CONTOUR	(Dashed line)
PROPOSED CONTOUR	(Solid line)
EXISTING SPOT ELEVATION	(Number with dot)
PROPOSED SPOT ELEVATION	(Number with dot)
DIRECTION OF FLOW	(Arrow)
EXISTING TREELINE	(Wavy line)
PROPOSED TREELINE	(Dashed wavy line)
SOIL BOUNDARY	(Dotted line)
EXISTING STREAM	(Thick solid line)
100' STREAM BUFFER	(SB)
FOREST CONSERVATION EASEMENT	(Hatched pattern)
EXISTING WETLAND	(Wavy pattern)
SILT FENCE	(SF)
SUPER SILT FENCE	(SSF)
SILT FENCE DIVERSION	(SFD)
LIMIT OF DISTURBANCE	(LOD)
BORING TEST HOLE, PASSED	(BTH)
HYDROLOGIC SOIL GROUP 'A'	(Light gray box)
HYDROLOGIC SOIL GROUP 'B'	(Medium gray box)
HYDROLOGIC SOIL GROUP 'C'	(Dark gray box)
STEEP SLOPES >25%	(Stippled box)
STEEP SLOPES 15% TO 25%	(Horizontal line box)
DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2)	(Dotted box)
MICRO-BIORETENTION FACILITY (M-6)	(Patterned box)



ULTIMATE PLAN VIEW AT STORM-WATER MANAGEMENT BIO 2  
 SCALE: 1"=30'

PLAN VIEW  
 SCALE: 1"=30'



OWNER/DEVELOPER  
 JOSEPH C. & LISA ANN PENKUSKY  
 4707 BEECHWOOD ROAD  
 ELLICOTT CITY, MD 21043  
 443-324-4807

**SEDIMENT AND EROSION CONTROL PLAN**  
**PENKUSKY PROPERTY**

LOTS 1, 3 THRU 7, AND OPEN SPACE LOTS 2, 8 THRU 11  
 TAX MAP 31 GRID 4 PARCEL 119  
 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 3/16/21  
 DATE: 2/22/21

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE: 02/07/2021

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT  
 HOWARD SCD  
 DATE: 1/25/21

DEVELOPER'S CERTIFICATE  
 "I ME CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."  
 SIGNATURE OF DEVELOPER: [Signature]  
 DATE: 12/22/20

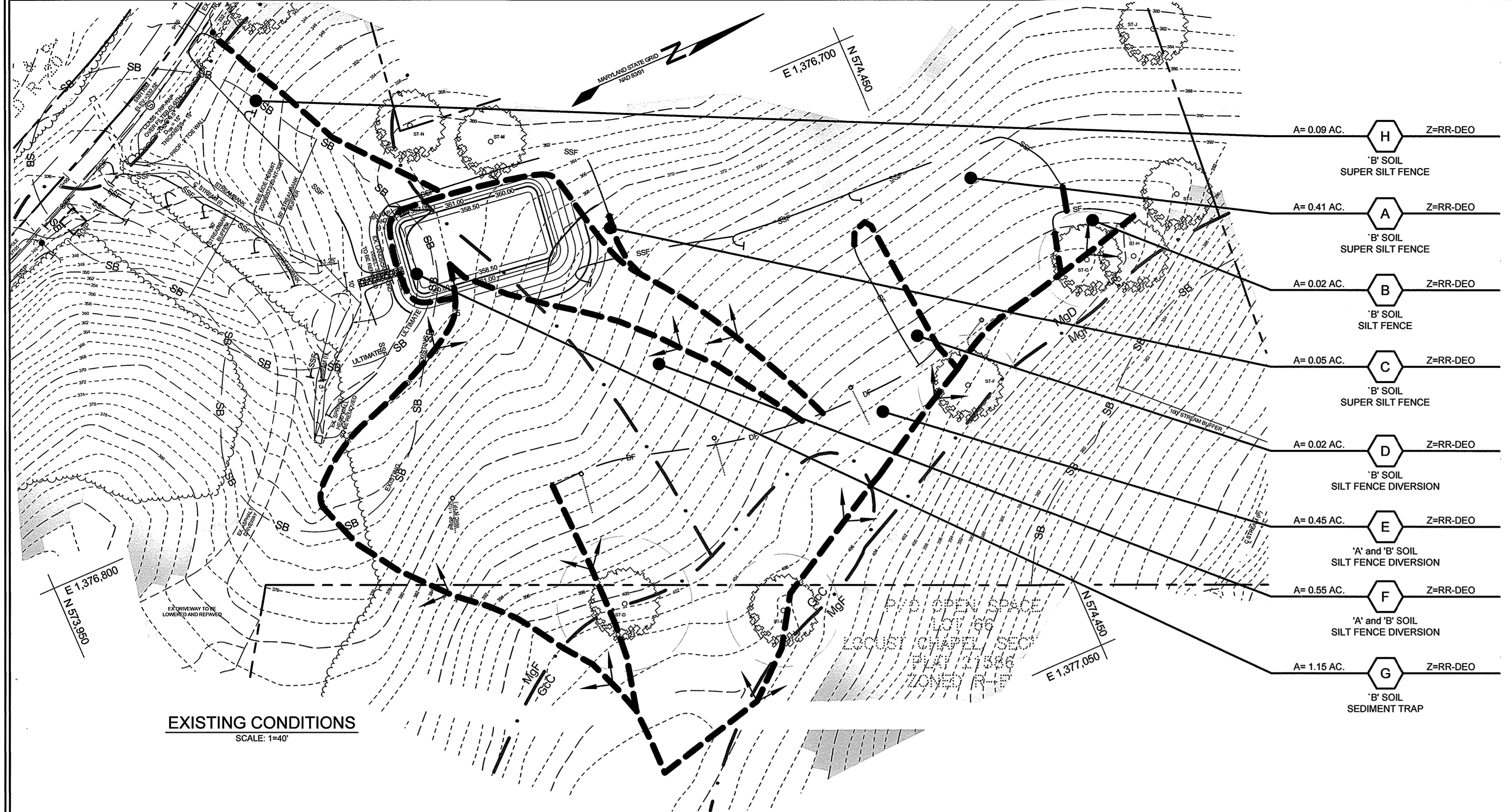
ENGINEER'S CERTIFICATE  
 "I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."  
 SIGNATURE OF ENGINEER: [Signature]  
 DATE: 12/16/20

NO.	DESCRIPTION	DATE

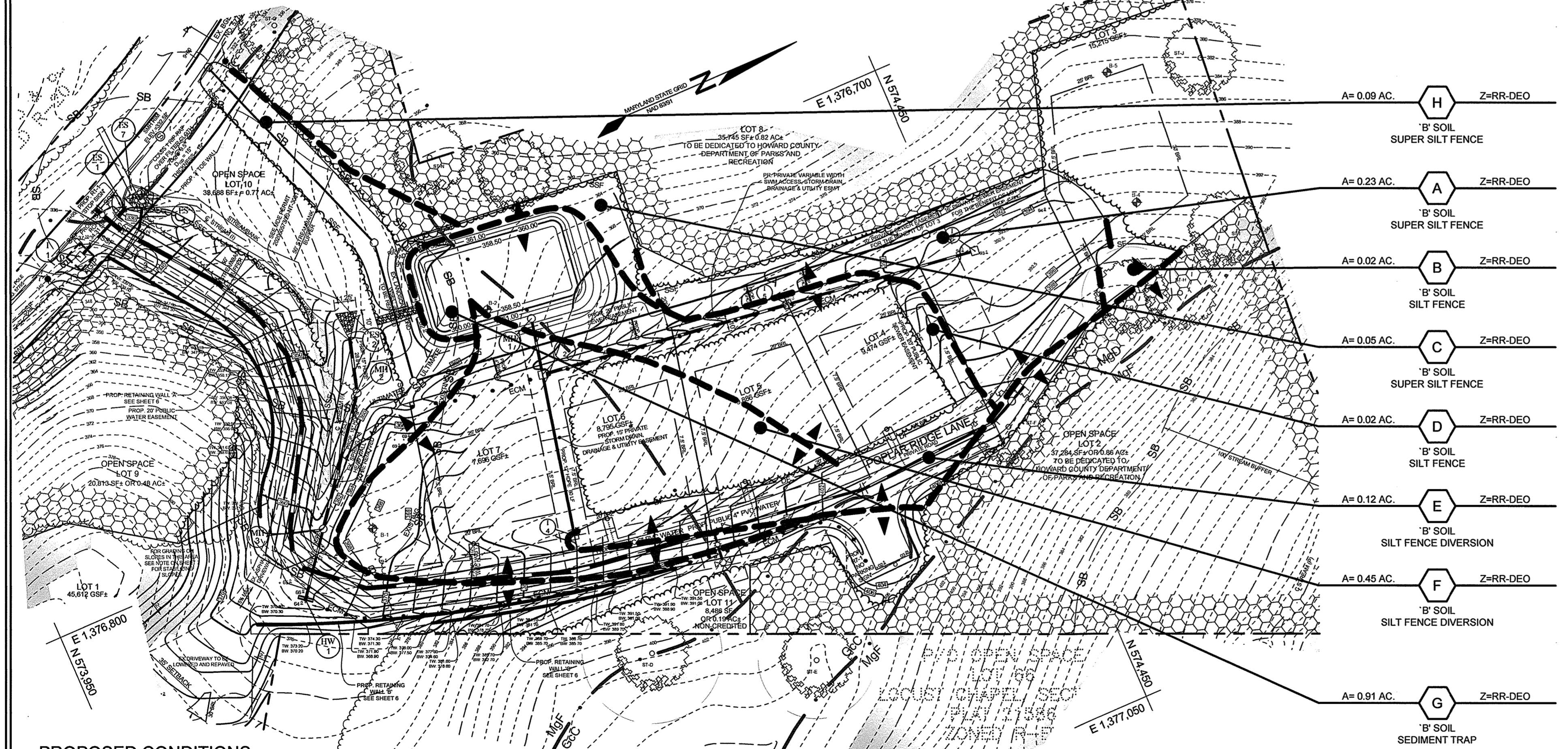
DESIGN BY: PS  
 DRAWN BY: JC  
 CHECKED BY: PS  
 SCALE: AS SHOWN  
 DATE: DECEMBER 16, 2020  
 PROJECT #: 15-028  
 SHEET #: 5 of 17

**SILL ENGINEERING GROUP, LLC**  
 16005 Frederick Road, 2nd Floor  
 Woodbine, Maryland 21797  
 Phone: 413.325.5076  
 Fax: 410.696.2022  
 Email: info@sillengineering.com  
 Civil Engineering for Land Development

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. 32025, EXPIRATION DATE: JUNE 20, 2021



**EXISTING CONDITIONS**  
SCALE: 1"=40'

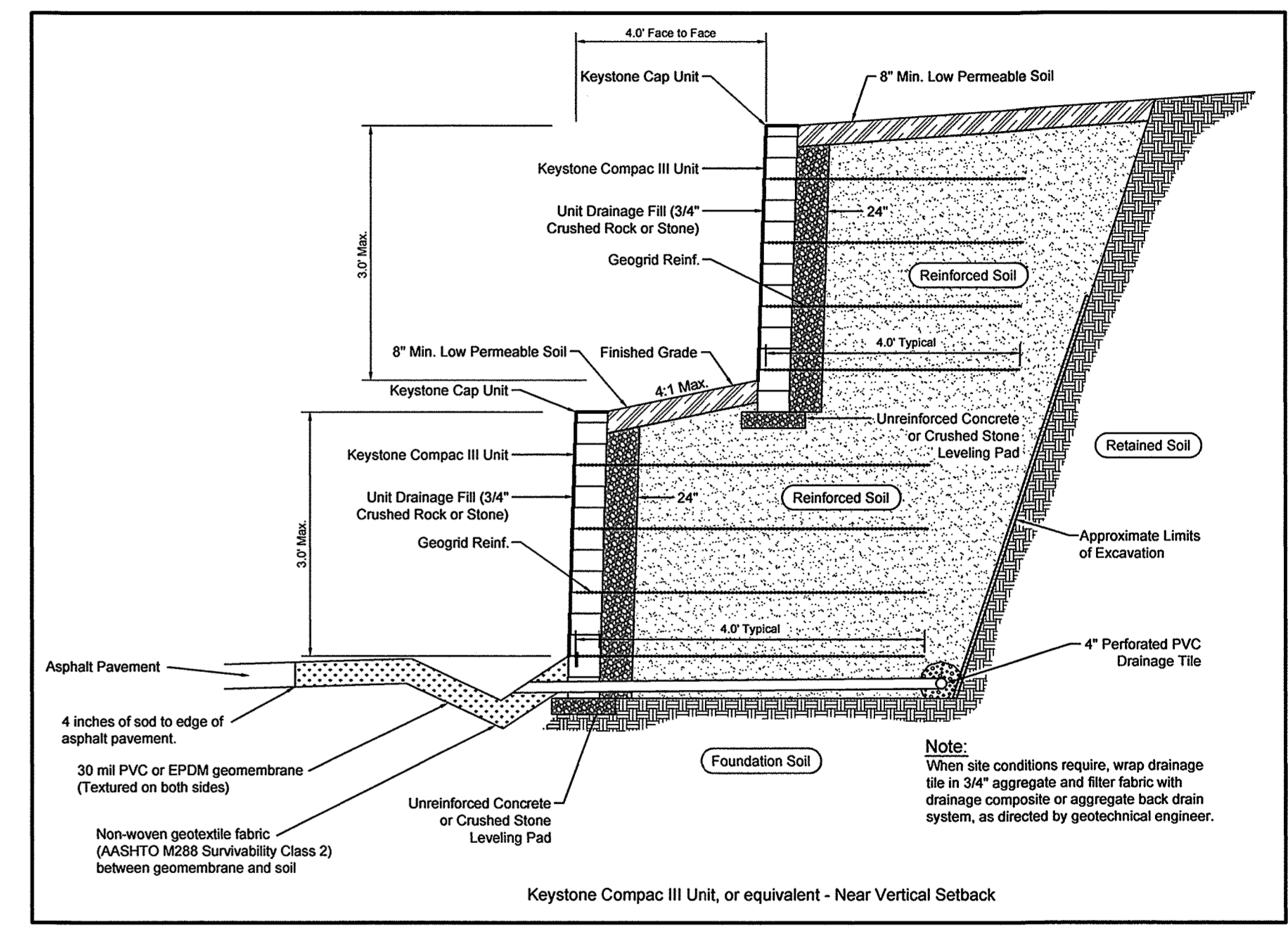


**PROPOSED CONDITIONS**  
SCALE: 1"=40'

SOILS LEGEND			
SYMBOL	NAME / DESCRIPTION	GROUP	'K' FACTOR
GcC	GLADSTONE-LEGORE COMPLEX, 8 TO 15 PERCENT SLOPES	A	0.28
GmC	GLENVILLE SILT LOAM, 8 TO 15 PERCENT SLOPES	C	0.43
GcB	GLENVILLE-CODORUS SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	0.43
MgD	MANOR-BANNERTOWN SANDY LOAMS, 15 TO 25 PERCENT SLOPES, ROCKY	B	0.15
MgF	MANOR-BANNERTOWN SANDY LOAMS, 25 TO 65 PERCENT SLOPES, ROCKY	B	0.20

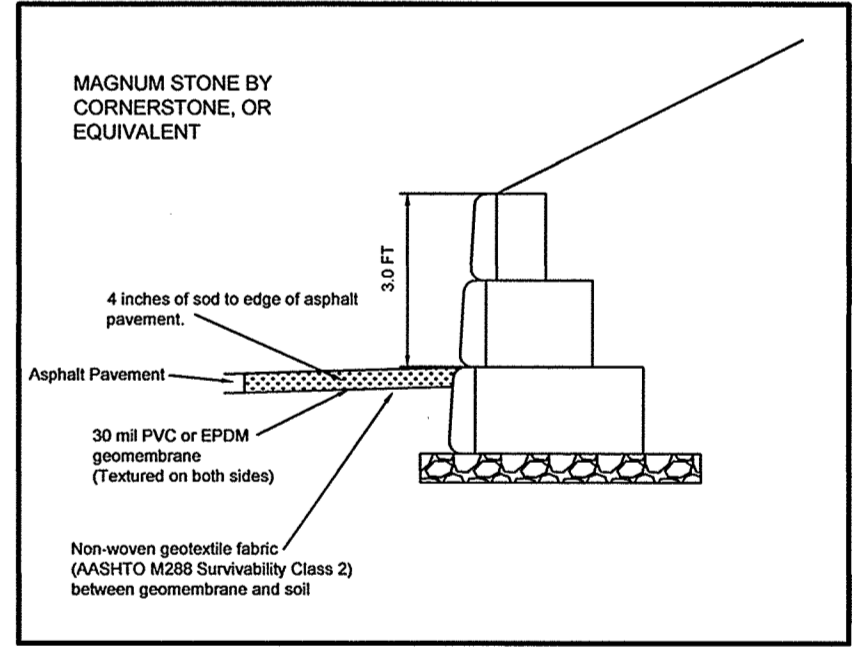
NOTES:  
 1) SOIL INFORMATION HAS BEEN TAKEN FROM THE UNITED STATES DEPARTMENT OF AGRICULTURE; NATURAL RESOURCES CONSERVATION SERVICE; WEB SOIL SURVEY.  
 2) HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR 'K' GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.

LEGEND	
EXISTING CONTOUR	
PROPOSED CONTOUR	
EXISTING SPOT ELEVATION	
PROPOSED SPOT ELEVATION	
DIRECTION OF FLOW	
EXISTING TREELINE	
PROPOSED TREELINE	
SOIL BOUNDARY	
EXISTING STREAM	
100' STREAM BUFFER	
FOREST CONSERVATION EASEMENT	
EXISTING WETLAND	
SILT FENCE	
SUPER SILT FENCE	
SILT FENCE DIVERSION	
LIMIT OF DISTURBANCE	
BORING TEST HOLE, PASSED	
HYDROLOGIC SOIL GROUP 'A'	
HYDROLOGIC SOIL GROUP 'B'	
HYDROLOGIC SOIL GROUP 'C'	
STEEP SLOPES >25%	
STEEP SLOPES 15% TO 25%	
DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2)	
MICRO-BIORETENTION FACILITY (M-6)	



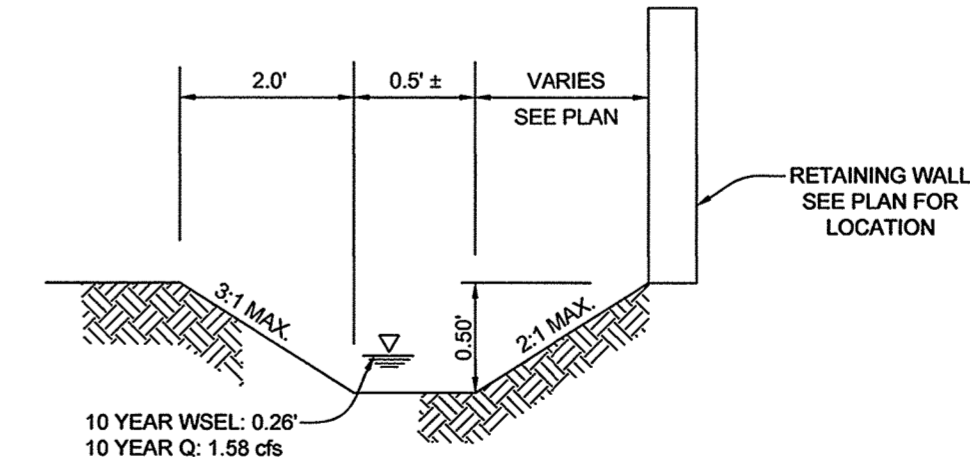
**TYPICAL TIERED RETAINING WALL DETAIL**  
NOT TO SCALE

NOTES:  
 1) RETAINING WALLS TO BE OWNED AND MAINTAINED BY THE HOA.  
 2) ANY TIERED RETAINING WALLS SEPERATED BY A DISTANCE EQUAL TO OR LESS THAN THE HEIGHT OF THE LOWER WALL MUST BE DESIGNED BY A MARYLAND LICENSED ENGINEER.



**TYPICAL SINGLE RETAINING WALL DETAIL**  
NOT TO SCALE

NOTES:  
 1) RETAINING WALLS TO BE OWNED AND MAINTAINED BY THE HOA.  
 2) ANY RETAINING WALLS OVER 3' HIGH MUST BE DESIGNED BY A MARYLAND LICENSED ENGINEER.



**GRASS CHANNEL SECTION TO HW-1**  
NOT TO SCALE

**OWNER/DEVELOPER**  
 JOSEPH C. & LISA ANN PENKUSKY  
 4707 BEECHWOOD ROAD  
 ELLICOTT CITY, MD 21043  
 443-524-4807

**SEDIMENT AND EROSION CONTROL DRAINAGE AREA MAP**  
**PENKUSKY PROPERTY**  
 LOTS 1, 3 THRU 7, AND OPEN SPACE LOTS 2, 8 THRU 11  
 TAX MAP 31 GRID 4 PARCEL 119  
 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 12/22/21

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE: 02/07/2021

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT  
 HOWARD SCD  
 DATE: 1/25/21

DEVELOPER'S CERTIFICATE  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.  
 SIGNATURE OF DEVELOPER: [Signature]  
 DATE: 12-22-2020

ENGINEERS CERTIFICATE  
 I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
 SIGNATURE OF ENGINEER: [Signature]  
 DATE: 12/16/20

NO.	DESCRIPTION	DATE

STATE OF MARYLAND PROFESSIONAL ENGINEER  
 SILL ENGINEERING GROUP, LLC  
 16005 Frederick Road, 2nd Floor  
 Woodbine, Maryland 21797  
 Phone: 443.325.5076  
 Fax: 410.696.2022  
 Email: info@sillengineering.com  
 Civil Engineering for Land Development

DESIGN BY: PS  
 DRAWN BY: JC  
 CHECKED BY: PS  
 SCALE: AS SHOWN  
 DATE: DECEMBER 16, 2020  
 PROJECT #: 15-028  
 SHEET #: 6 of 17

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. 32025, EXPIRATION DATE: JUNE 20, 2021

**SEDIMENT CONTROL NOTES**

- A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID), 410-313-1856 AFTER THE FUTURE LOD AND PROTECTED AREAS ARE MARKED CLEARLY IN THE FIELD. A MINIMUM OF 48 HOURS 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 GRADING 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.
- ALL VEGETATION 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 THERE TO.
- 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.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED 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-4-3), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-5). 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 MENCED WITH STABLE OUTLET, ALL CONCENTRATED FLOW, STEEP SLOPE, AND HIGHLY ERODIBLE AREAS SHALL RECEIVE SOIL STABILIZATION MATTING (SEC. B-4-6).
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE, AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMITS FOR THEIR REMOVAL HAS BEEN OBTAINED FROM CID.
- SITE ANALYSIS:
 

TOTAL AREA:	5,870 ACRES
AREA DISTURBED:	1,838 ACRES
AREA TO BE ROOFED OR PAVED:	0.583 ACRES
AREA TO BE VEGETATIVELY STABILIZED:	1,278 ACRES
TOTAL CUT:	5,922 CY
TOTAL FILL:	1,281 CY
OFFSITE WASTEWATER AREA LOCATION:	**

- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEEDING 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)
- TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPES LENGTHS OR THAT WHICH CAN AND SHALL BE BACKFILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.
- 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 BE ALLOWED BY THE CID PER THE LIST OF HSCD-APPROVED FIELD CHANGES.
- DISTURBANCE SHALL NOT OCCUR OUTSIDE THE I.O.D. A PROJECT IS TO BE SEQUENCED SO THAT GRADING PROCEEDS ON ONE GRADING UNIT (MAXIMUM 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 HSCD, UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE HSCD. NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.
- WASH WATER FROM ANY EQUIPMENT, VEHICLES, WHEELS, PAVEMENT, AND OTHER SOURCES MUST BE TREATED IN A SEDIMENT BASIN OR OTHER APPROVED WASHOUT STRUCTURE.
- TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE FOR REDISTRIBUTION ONTO FINAL GRADE.
- ALL SILT FENCE AND SUPER SILT FENCE SHALL BE PLACED ON THE CONTOUR, AND BE IMBERICATED AT 25' MINIMUM INTERVALS, WITH LOWER ENDS CURLED UPHILL BY 12" IN ELEVATION.
- STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUSIVE):
  - USE I AND II: OCTOBER 1 - JUNE 15
  - USE III AND III\*: OCTOBER 1 - APRIL 30
  - USE IV: MARCH 1 - MAY 31
- 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.
- EARTHWORK QUANTITIES ARE SOLELY FOR THE PURPOSE OF CALCULATING FEES. CONTRACTOR TO VERIFY ALL QUANTITIES PRIOR TO THE START OF CONSTRUCTION.
- BEFORE ANY CONSTRUCTION, THE CONTRACTOR SHALL BE APPROVED BY THE SEDIMENT CONTROL INSPECTOR WITH AN APPROVED AND ACTIVE GRADING PERMIT.

- 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**
- THE STOCKPILE LOCATION AND ALL RELATED SEDIMENT CONTROL PRACTICES MUST BE CLEARLY INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN.
  - 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.
  - RUNOFF FROM THE STOCKPILE AREA MUST DRAIN TO A SUITABLE SEDIMENT CONTROL PRACTICE.
  - ACCESS THE STOCKPILE AREA FROM THE UPGRADE SIDE.
  - 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.
  - WHERE RUNOFF CONCENTRATES ALONG THE TOE OF THE STOCKPILE FILL, AN APPROPRIATE EROSION/SEDIMENT CONTROL PRACTICE MUST BE USED TO INTERCEPT THE DISCHARGE.
  - STOCKPILES MUST BE STABILIZED IN ACCORDANCE WITH THE 37 DAY STABILIZATION REQUIREMENT AS WELL AS STANDARD B-4-1 INCREMENTAL STABILIZATION AND STANDARD B-4-4 TEMPORARY STABILIZATION.
  - IF THE STOCKPILE IS LOCATED ON AN IMPERVIOUS SURFACE, A LINER SHOULD BE PROVIDED BELOW THE STOCKPILE TO FACILITATE CLEANING. 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 FOR 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.

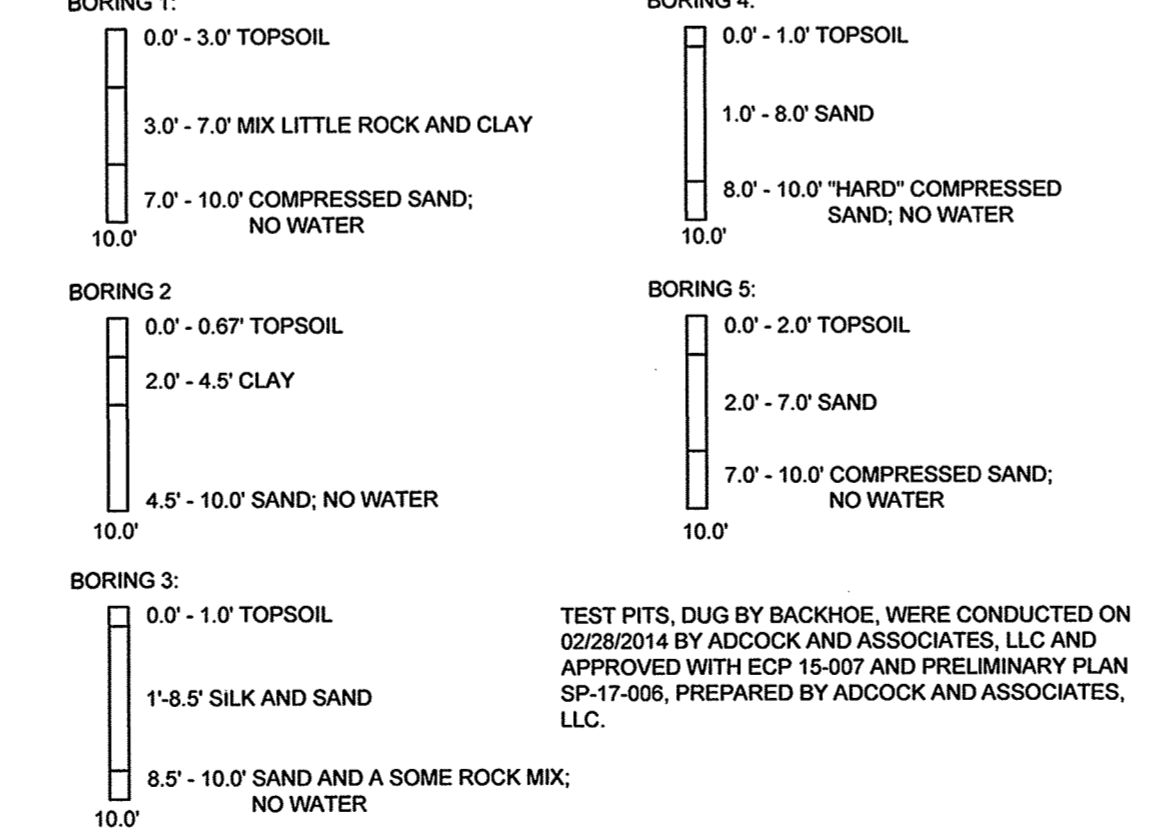
- STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION**
- TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS.
- PURPOSE**
- TO USE FAST GROWING VEGETATION THAT PROVIDES COVER ON DISTURBED SOILS.
- CONDITIONS WHERE PRACTICE APPLIES**
- EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION PRACTICES ARE REQUIRED.
- CRITERIA**
- SELECT ONE OR MORE OF THE SPECIES OR SEED MIXTURES LISTED IN TABLE B.1 FOR THE APPROPRIATE PLANT HARDNESS 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.
  - FOR SITES HAVING SOIL TESTS PERFORMED, USE AND SHOW THE RECOMMENDED RATES BY THE TESTING AGENCY. SOIL TESTS ARE NOT REQUIRED FOR TEMPORARY SEEDING.
  - 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.

- STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION**
- TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION.
- PURPOSE**
- TO USE LONG-LEAFED 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
- GENERAL NOTE
    - SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR THE APPROPRIATE PLANT HARDNESS ZONE (FROM FIGURE B.3) AND BASED ON THE SITE CONDITION OR PURPOSE FOUND IN TABLE B.1.
  - ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
  - 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 GUIDE, SECTION 342 - CRITICAL AREA PLANTING.
  - FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY.
  - FOR AREAS RECEIVING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 3% 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.
- B. TURFGRASS MIXTURES
- AREAS WHERE TURF GRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.
  - 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.
  - KENTUCKY BLUEGRASS: FULL SUN MIXTURE; FOR USE IN AREAS THAT RECEIVE INTENSIVE MAINTENANCE. 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.
  - TALL FESCUE/KENTUCKY BLUEGRASS: FULL SUN MIXTURE; FOR USE IN DROUGHT PRONE AREAS AND/OR FOR AREAS RECEIVING LOW TO MEDIUM MAINTENANCE 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: 6 TO 8 POUNDS PER 1000 SQUARE FEET. ONE OR MORE CULTIVARS MAY BE BLENDED.
  - KENTUCKY BLUEGRASS/FINE FESCUE: SHADE MIXTURE; FOR USE IN AREAS WITH SHADE IN BLUEGRASS LAWNS. FOR ESTABLISHMENT IN HIGH QUALITY, INTENSIVELY MANAGED TURF AREAS. MIXTURE INCLUDES: CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 30 TO 40 PERCENT AND CERTIFIED FINE FESCUE AND 60 TO 70 PERCENT. SEEDING RATE: 1/2 TO 3 POUNDS PER 1000 SQUARE FEET.
- NOTES: SELECT TURFGRASS MIXTURES FROM THOSE LISTED IN THE MOST CURRENT VERSION 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 MAY 15, AUGUST 15 TO OCTOBER 15 (HARDNESS ZONES: 5B, 6A)
  - CENTRAL MD: MARCH 15 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDNESS ZONES: 5B)
  - SOUTHERN MD, EASTERN SHORE: MARCH 15 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDNESS 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 1/2 INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL BE WITHOUT DIFFICULTY.
- E. IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (1/2 TO 1 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TEXTURE) UNTIL THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.
- F. SOD: TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).
- G. GENERAL SPECIFICATIONS
- CLASS OF TURFGRASS SOD MUST BE MARYLAND STATE CERTIFIED. SOD LABELS MUST BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR.
  - SOD MUST BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4 INCH, PLUS OR MINUS 1/8 INCH, AT THE TIME OF CUTTING. MEASUREMENT FOR THICKNESS MUST EXCLUDE TOP GROWTH AND THATCH. BROKEN PADS AND TORN OR UNEVEN EDGES WILL NOT BE ACCEPTABLE.
  - 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.
  - SOD MUST NOT BE HARVESTED OR TRANSPORTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL.
  - SOD MUST BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOD NOT BE INSTALLED WITHIN THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST OR SOIL SCIENTIST PRIOR TO ITS INSTALLATION.
- H. SOD INSTALLATION
- DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOD.
  - LAY THE FIRST ROW OR 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.
  - 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.
  - 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.
- I. SOD MAINTENANCE
- 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.
  - AFTER THE FIRST WEEK, SOD WATERING IS REQUIRED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE CONTENT.
  - 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.

- 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. PREPARATION
- TEMPORARY STABILIZATION
    - SEEDBED PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 6 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC, HARROWS OR CHISEL PLOWS OR RIPPER MOUNTED ON CONSTRUCTION EQUIPMENT.
    - AFTER THE SOIL IS LOOSENEED, 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.
    - APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.
    - INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.
  - PERMANENT STABILIZATION
    - A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:
      - SOIL PH BETWEEN 5.0 AND 7.0
      - SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM)
      - 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 LOW GRASS WILL BE PLANTED, THEN A SANDY SOIL (LESS THAN 30 PERCENT SILT PLUS CLAY) WOULD BE ACCEPTABLE.
      - SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT.
      - SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.
    - APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS.
    - GRADED AREAS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON THE APPROVED PLAN, THEN SCARIFIED OR OTHERWISE LOOSENEED TO A DEPTH OF 3 TO 5 INCHES.
    - APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY CULTIVARS SEEDING RATE.
    - 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 AND READY THE AREA FOR SEED APPLICATION. DISK AND SEED APPLICATION TO ROUGHEN THE SURFACE WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDBED EQUIPMENT. 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 FRABLE. SEEDBED LOOSENING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.
- B. TOPSOILING
- 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 PH, AND/OR UNACCEPTABLE SOIL GRADATIONS WILL BE PLANTED. 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.
  - TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
    - THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
    - 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.
    - THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
    - THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.
  - AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN.
  - TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:
    - TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, OR LOAM SAND. OTHER SOILS MAY BE USED IF RECOGNIZED BY A STATE OR FEDERAL AGRICULTURAL 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 CHEDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1/2 INCHES IN DIAMETER.
    - 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.
    - 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.
    - EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL.
    - 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.
    - 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 PREPARATION AND SEEDING PREPARATION.
- C. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)
- 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 ANALYSIS.
  - 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.
  - LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHERE SPECIFIED) WHICH CONTAINS AT LEAST 50 PERCENT TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE MUST BE GROUND TO SUCH FINENESS THAT AT LEAST 90 PERCENT WILL PASS THROUGH A #100 MESH SIEVE AND 98 TO 100 PERCENT WILL PASS THROUGH A #20 MESH SIEVE.
  - 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.
  - WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE RATE OF 4 TO 5 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

**STORMWATER MANAGEMENT TEST BORINGS**



**TABLE B.1: TEMPORARY SEEDING FOR SITE STABILIZATION**

PLANT SPECIES	SEEDING RATE		SEEDING DEPTH (INCHES)	RECOMMENDED SEEDING DATES BY PLANT HARDNESS ZONE		
	LB/AC	LB/1000 FT <sup>2</sup>		5b & 6a	6b	7a & 7b
<b>COOL-SEASON GRASSES</b>						
ANNUAL RYEGRASS (LOLIUM PERENNIS SSP. MULTIFLORUM)	40	1.0	0.5	MARCH 15 TO MAY 31; AUG 1 TO SEP 30	MARCH 1 TO MAY 15; AUG 1 TO OCT 15	FEB 15 TO APR 30; AUG 15 TO NOV 30
BARLEY (HORDEUM VULGARE)	96	2.2	1.0	MARCH 15 TO MAY 31; AUG 1 TO SEP 30	MARCH 1 TO MAY 15; AUG 1 TO OCT 15	AUG 15 TO NOV 30
OATS (Avena SATIVA)	72	1.7	1.0	MARCH 15 TO MAY 31; AUG 1 TO SEP 30	MARCH 1 TO MAY 15; AUG 1 TO OCT 15	FEB 15 TO APR 30; AUG 15 TO NOV 30
WHEAT (TRITICUM AESTIVUM)	120	2.8	1.0	MARCH 15 TO MAY 31; AUG 1 TO SEP 30	MARCH 1 TO MAY 15; AUG 1 TO OCT 15	FEB 15 TO APR 30; AUG 15 TO NOV 30
CEREAL RYE (SECALE CEREBALE)	112	2.8	1.0	MARCH 15 TO MAY 31; AUG 1 TO OCT 31	MARCH 1 TO MAY 15; AUG 1 TO NOV 15	FEB 15 TO APR 30; AUG 15 TO DEC 15
<b>WARM-SEASON GRASSES</b>						
FOXTAIL MILLET (SETARIA ITALICA)	30	0.7	0.5	JUN 1 TO JUL 31	MAY 16 TO JUL 31	MAY 1 TO AUG 14
PEARL MILLET (PENNISETUM GLAUCUM)	20	0.5	0.5	JUN 1 TO JUL 31	MAY 16 TO JUL 31	MAY 1 TO AUG 14

- FERTILIZER RATE (10-20-20): 436 LB/AC (10LB/1000SF) LIME RATE: 2 TONS/AC (60LB/1000SF)
- NOTES:
- 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 IN VERY LATE FALL BEFORE 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.
  - FOR SANDY SOILS, PLANT SEEDS AT TWICE THE DEPTH LISTED ABOVE.
  - THE PLANTING DATES LISTED ARE AVERAGES FOR EACH ZONE AND MAY REQUIRE ADJUSTMENT TO REFLECT LOCAL CONDITIONS, ESPECIALLY NEAR THE BOUNDARIES OF THE ZONE.

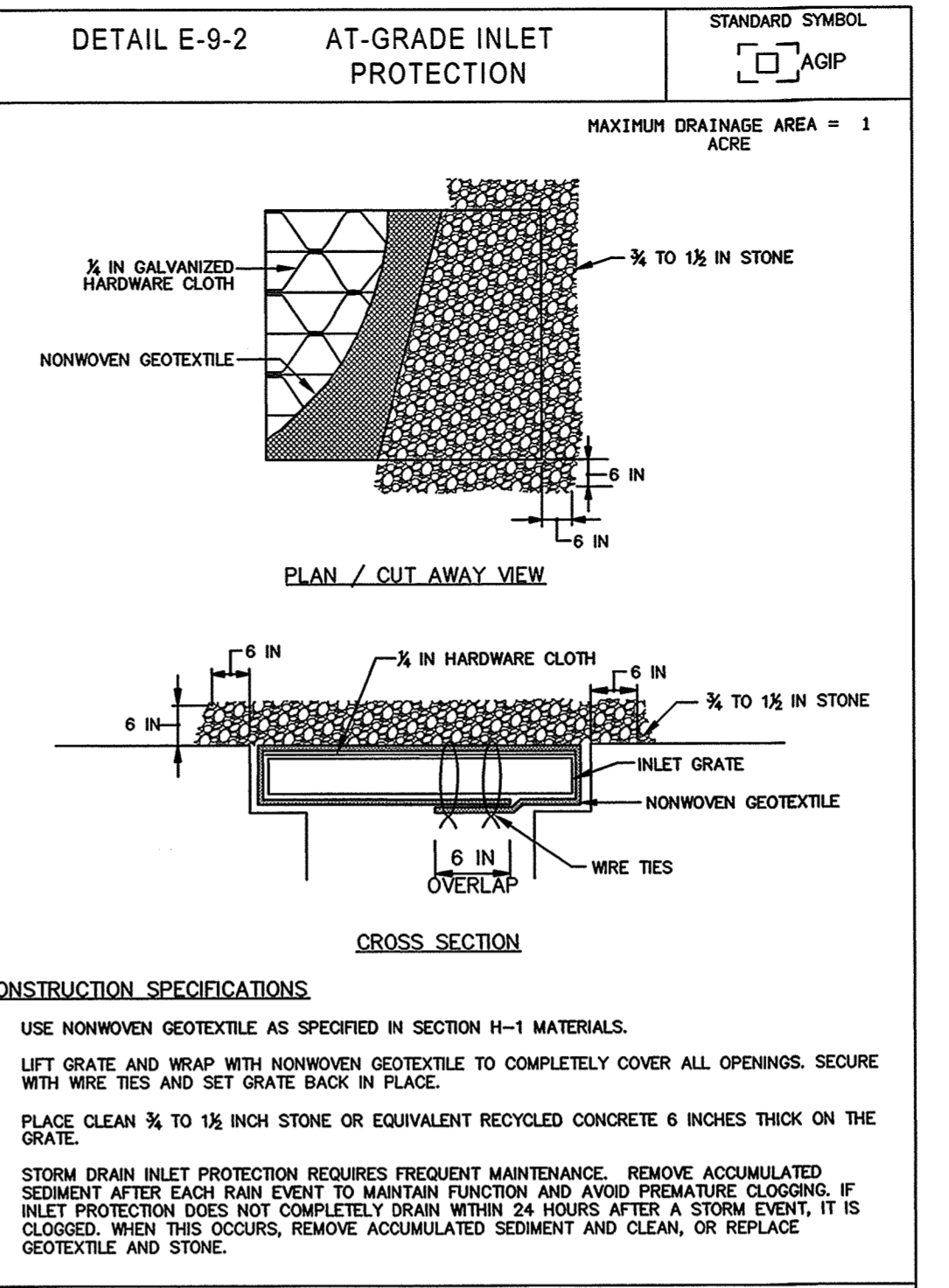
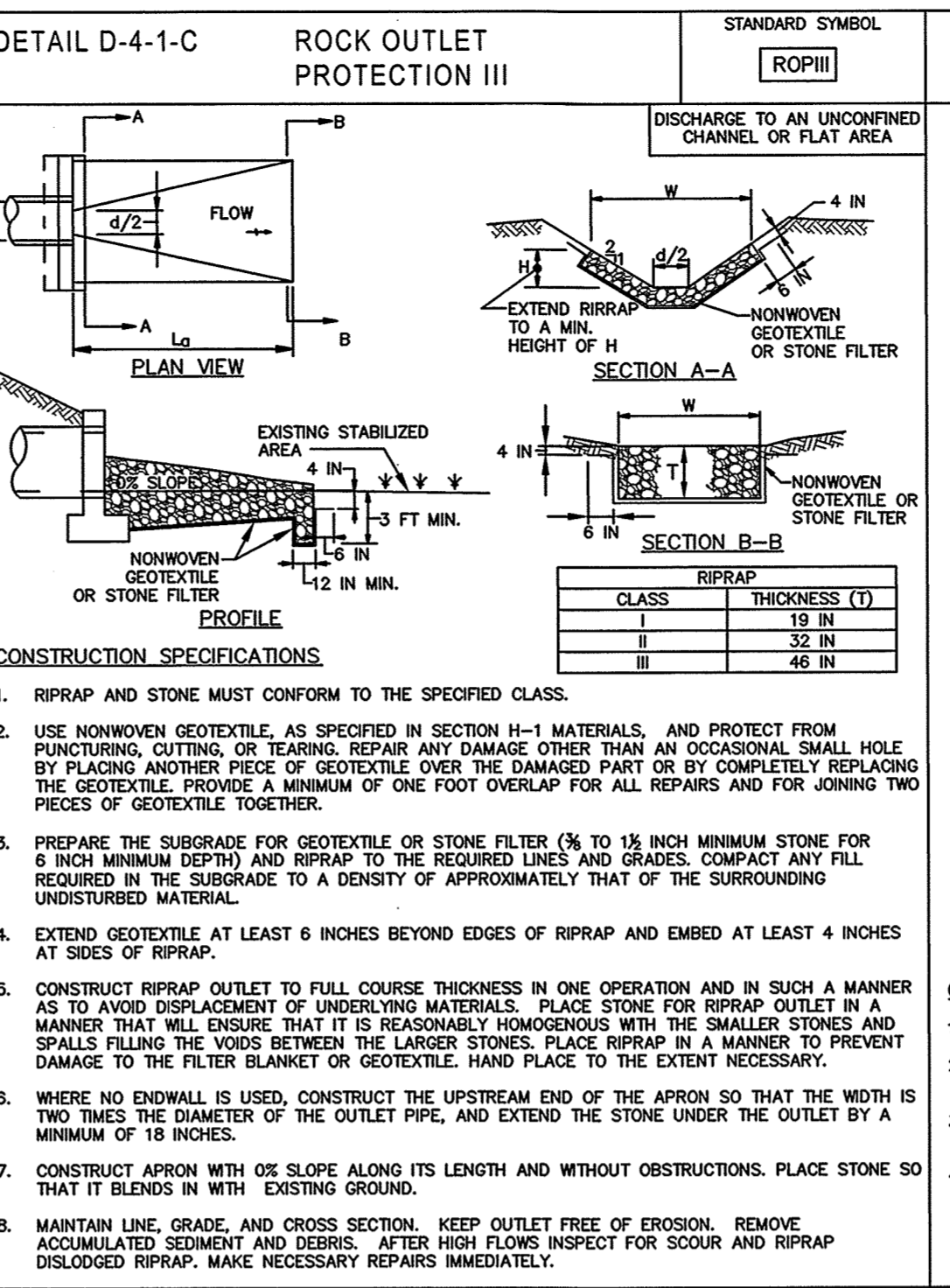
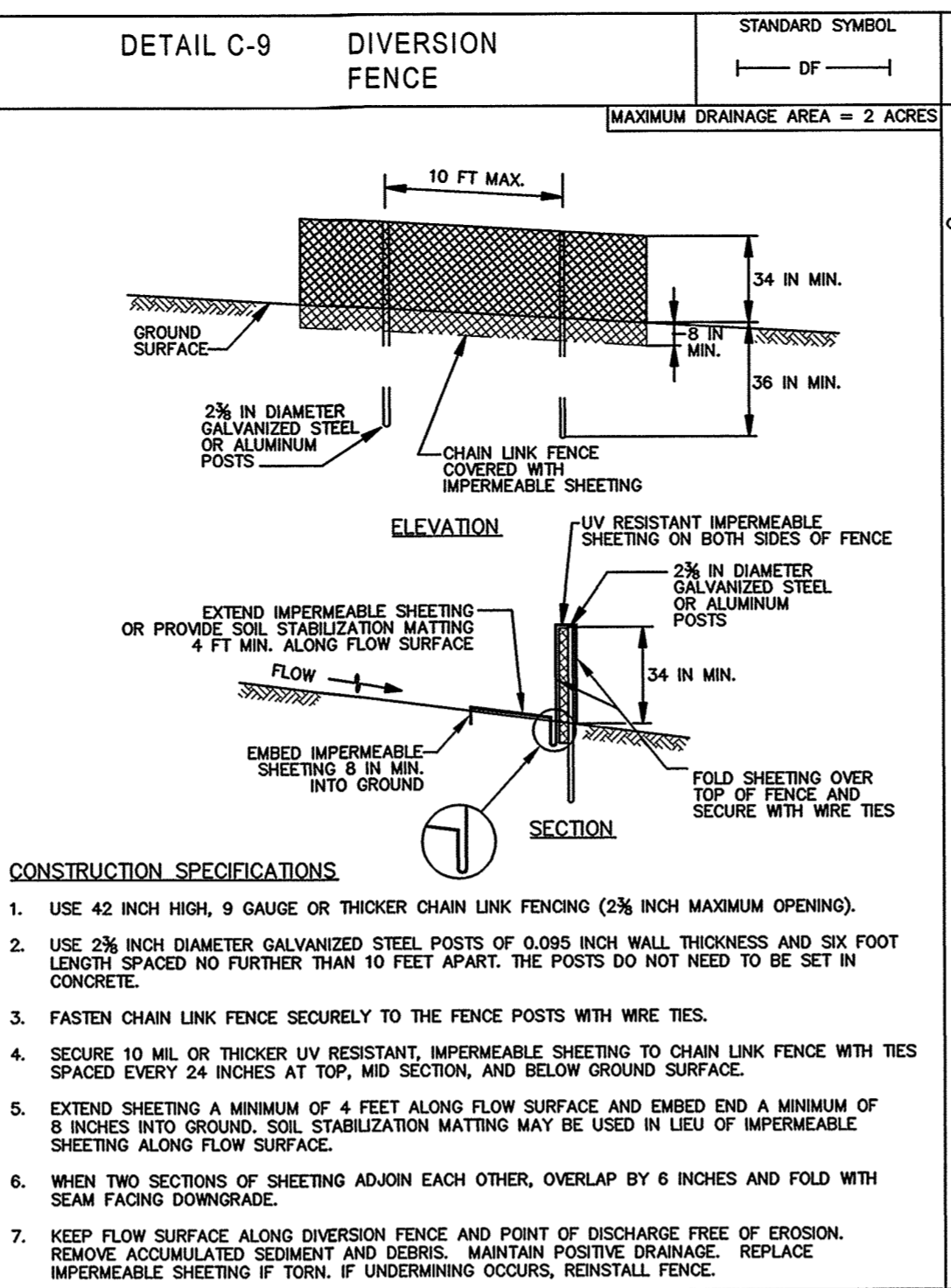
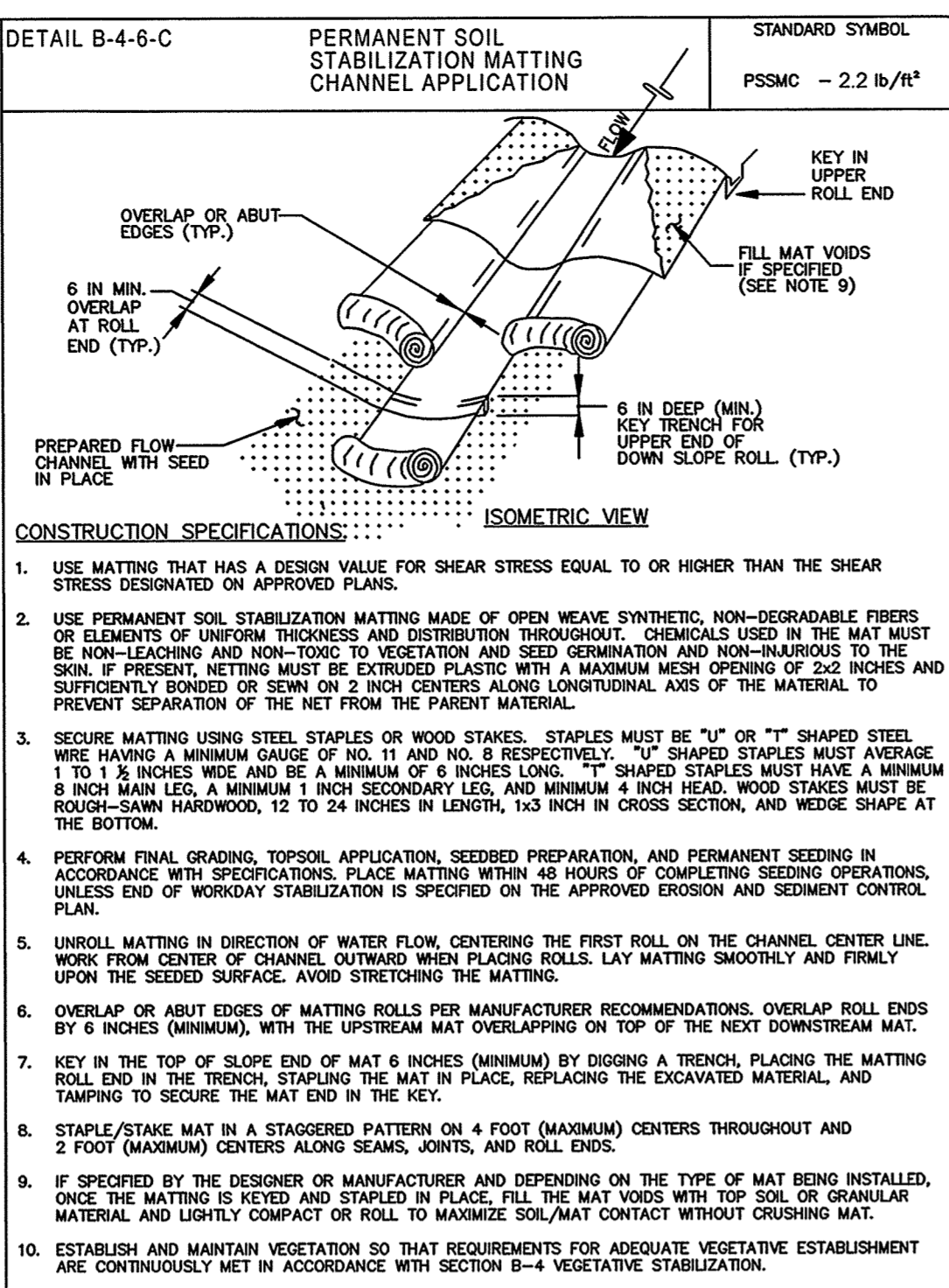
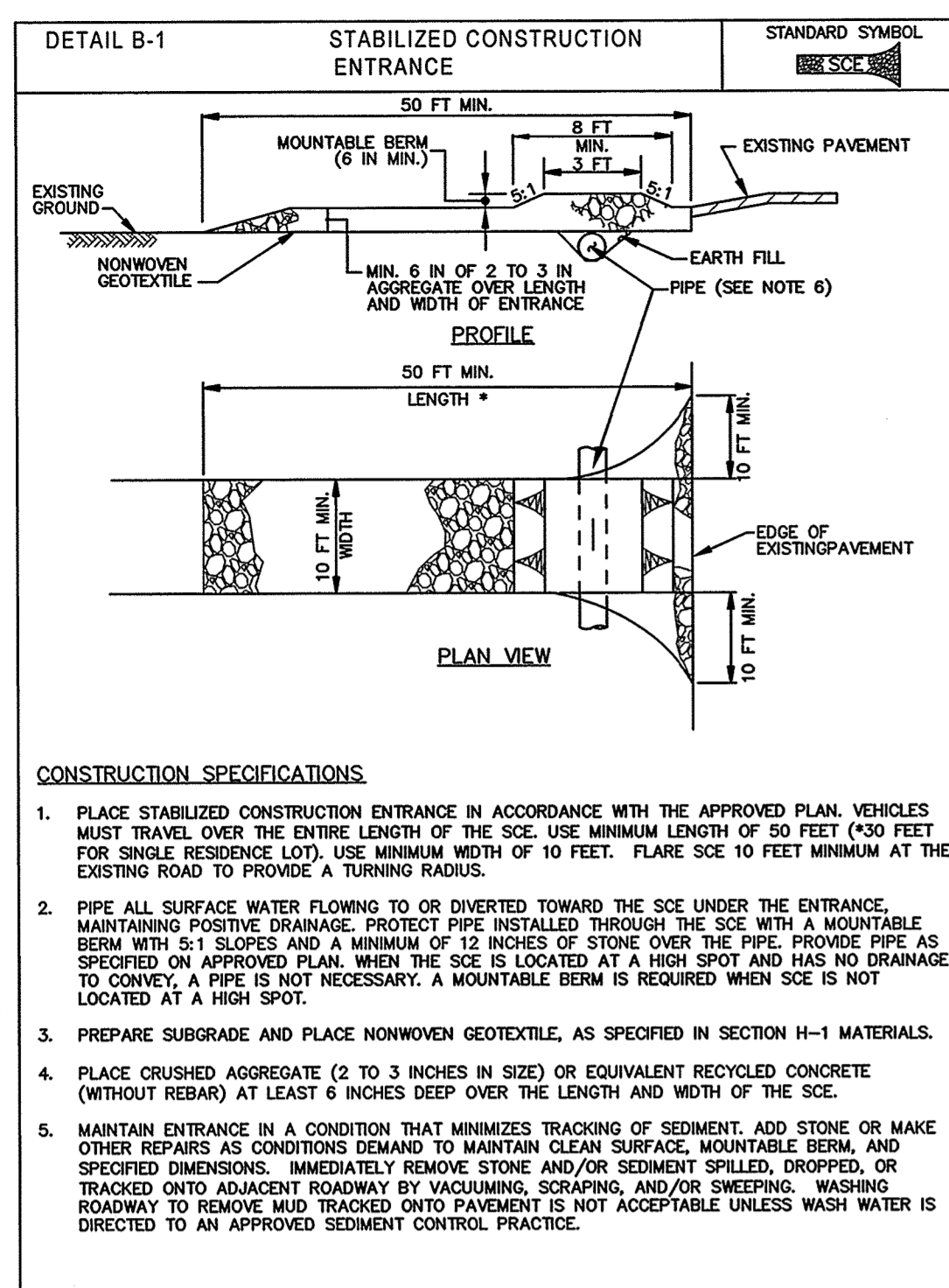
**TABLE B.5: RECOMMENDED PLANTING DATES FOR PERMANENT COVER IN MARYLAND**

TYPE OF PLANT MATERIAL	PLANT HARDNESS ZONES		
	5b & 6a	6b	7a & 7b
SEEDS - COOL-SEASON GRASSES (INCLUDES MIXES WITH FORBS AND/OR LEGUMES)	MAR 15 TO MAY 31 AUG 1 TO SEP 30	MAR 1 TO MAY 15 AUG 1 TO OCT 15	FEB 15 TO APR 30 AUG 15 TO OCT 30 NOV 1 TO NOV 30
SEEDS - WARM-SEASON COOL-SEASON GRASS MIXES (INCLUDES MIXES WITH FORBS AND/OR LEGUMES)	MAR 15 TO MAY 31** JUN 1 TO JUN 15*	MAR 1 TO MAY 15** MAY 16 TO JUN 15*	FEB 15 TO APR 30** MAY 1 TO MAY 31*
SOD - COOL-SEASON	MAR 15 TO MAY 31 JUN 1 TO JUN 31* SEP 15 TO NOV 15*	MAR 1 TO MAY 15 MAY 16 TO SEP 15**	FEB 15 TO APR 30** MAY 1 TO SEP 30** OCT 1 TO DEC 1**
UNROOTED WOODY MATERIALS; BARE-ROOT PLANTS; BULBS, RHIZOMES, CORNS AND TUBERS?	MARCH 15 TO MAY 31 JUN 1 TO JUN 30*	MARCH 1 TO MAY 15 MAY 16 TO JUN 30*	FEB 15 TO APR 30* MAY 1 TO JUN 30*
CONTAINERIZED STOCK; BALLED AND BURLAPPED STOCK	MAR 15 TO MAY 31 JUN 1 TO JUN 30* SEP 1 TO NOV 15**	MAR 1 TO MAY 15 MAY 16 TO JUN 30* SEP 15 TO NOV 30**	FEB 15 TO APR 30* OCT 1 TO DEC 15**

- NOTES:
- THE PLANTING DATES LISTED ARE AVERAGES FOR EACH ZONE. THESE DATES MAY REQUIRE ADJUSTMENT TO REFLECT LOCAL CONDITIONS, ESPECIALLY NEAR THE BOUNDARIES OF THE ZONES. WHEN SEEDING TOWARD THE END OF THE LISTED PLANTING DATES, OR WHEN CONDITIONS ARE EXPECTED TO BE LESS THAN OPTIMAL, SELECT AN APPROPRIATE NURSE CROP FROM TABLE B.1 TEMPORARY SEEDING FOR SITE STABILIZATION AND PLANT TOGETHER WITH THE PERMANENT SEEDING MIX.
  - WHEN PLANTED DURING THE GROWING SEASON, MOST OF THESE MATERIALS MUST BE PURCHASED AND KEPT IN A DORMANT CONDITION UNTIL PLANTING. BARE-ROOT GRASSES ARE THE EXCEPTION—THEY MAY BE SUPPLIED AS GROWING (NON-DORMANT) PLANTS.
  - ADDITIONAL PLANTING DATES FOR THE LOWER COASTAL PLAIN, DEPENDENT ON ANNUAL RAINFALL AND TEMPERATURE TRENDS, RECOMMEND ADDING A NURSE CROP, AS NOTED ABOVE, IF PLANTING DURING THIS PERIOD.
  - WARM-SEASON GRASSES NEED A SOIL TEMPERATURE OF AT LEAST 50 DEGREES F IN ORDER TO GERMINATE. IF SOIL TEMPERATURES ARE COLDER THAN 50 DEGREES, OR MOISTURE IS NOT ADEQUATE, THE SEEDS WILL REMAIN DORMANT UNTIL CONDITIONS ARE FAVORABLE. IN GENERAL, PLANTING DURING THE LATTER PORTION OF THIS PERIOD ALLOWS MORE TIME FOR WEED EMERGENCE AND WEED CONTROL PRIOR TO PLANTING. WHEN SELECTING A PLANTING DATE, CONSIDER THE NEED FOR WEED CONTROL VS. THE LIKELIHOOD OF HAVING SUFFICIENT MOISTURE FOR LATER PLANTINGS, ESPECIALLY ON DROUGHTY SITES.
  - ADDITIONAL PLANTING DATES DURING WHICH SUPPLEMENTAL WATERING MAY BE NEEDED TO ENSURE PLANT ESTABLISHMENT.
    - FREQUENT FREEZING AND THAWING OF WET SOILS MAY RESULT IN FROST-HEAVING OF MATERIALS PLANTED IN LATE FALL. IF PLANTS HAVE NOT SUFFICIENTLY ROOTED IN PLACE, SOD USUALLY NEEDS 4 TO 6 WEEKS TO BECOME SUFFICIENTLY ROOTED. LARGE CONTAINERIZED AND BALLED-AND-BURLAPPED STOCK MAY BE PLANTED INTO THE WINTER MONTHS AS LONG AS THE GROUND IS NOT FROZEN AND SOIL MOISTURE IS ADEQUATE.

**PERMANENT SEEDING SUMMARY**

NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	FERTILIZER RATE (10-20-20)				LIME RATE
					N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	AC	



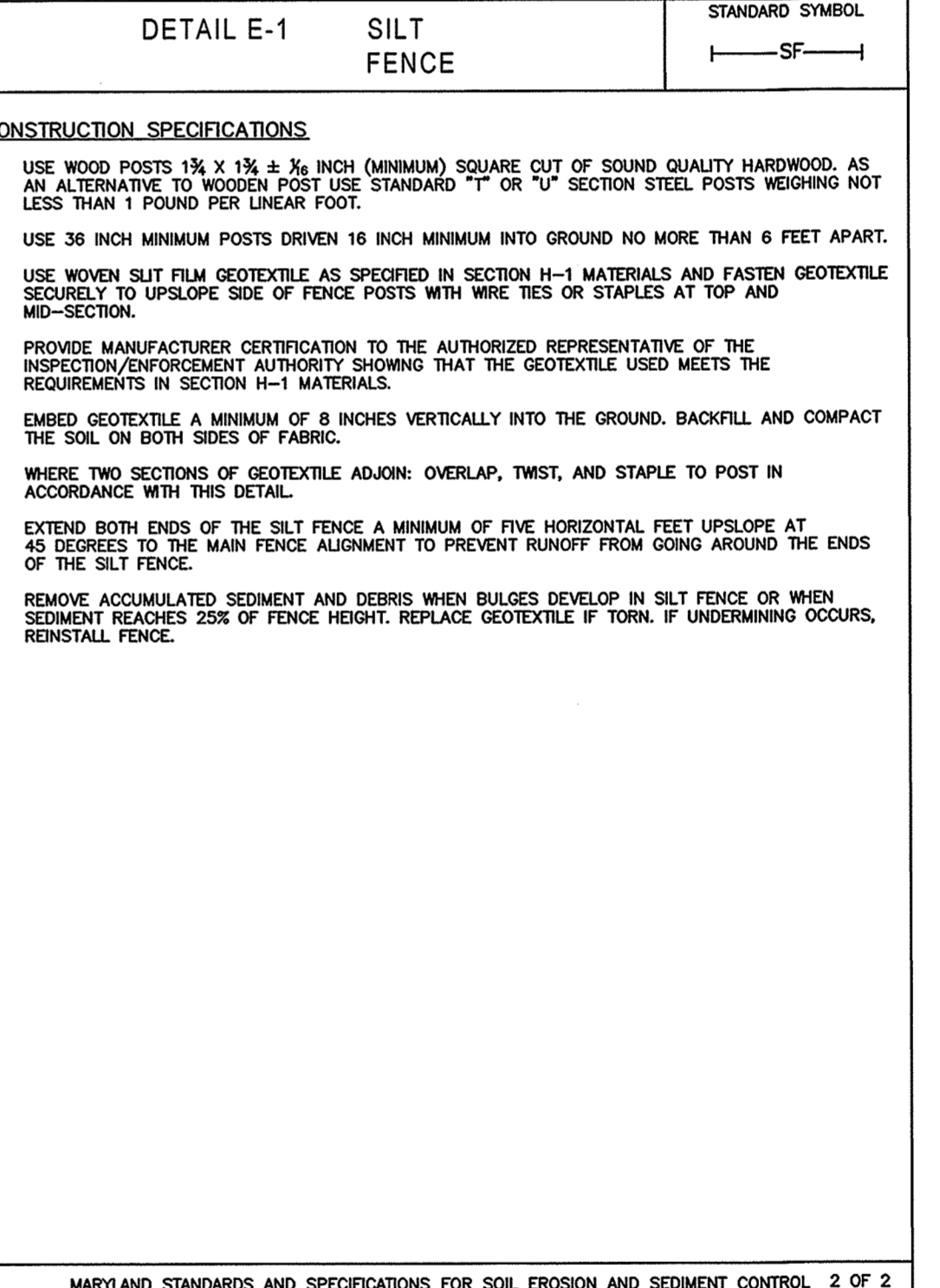
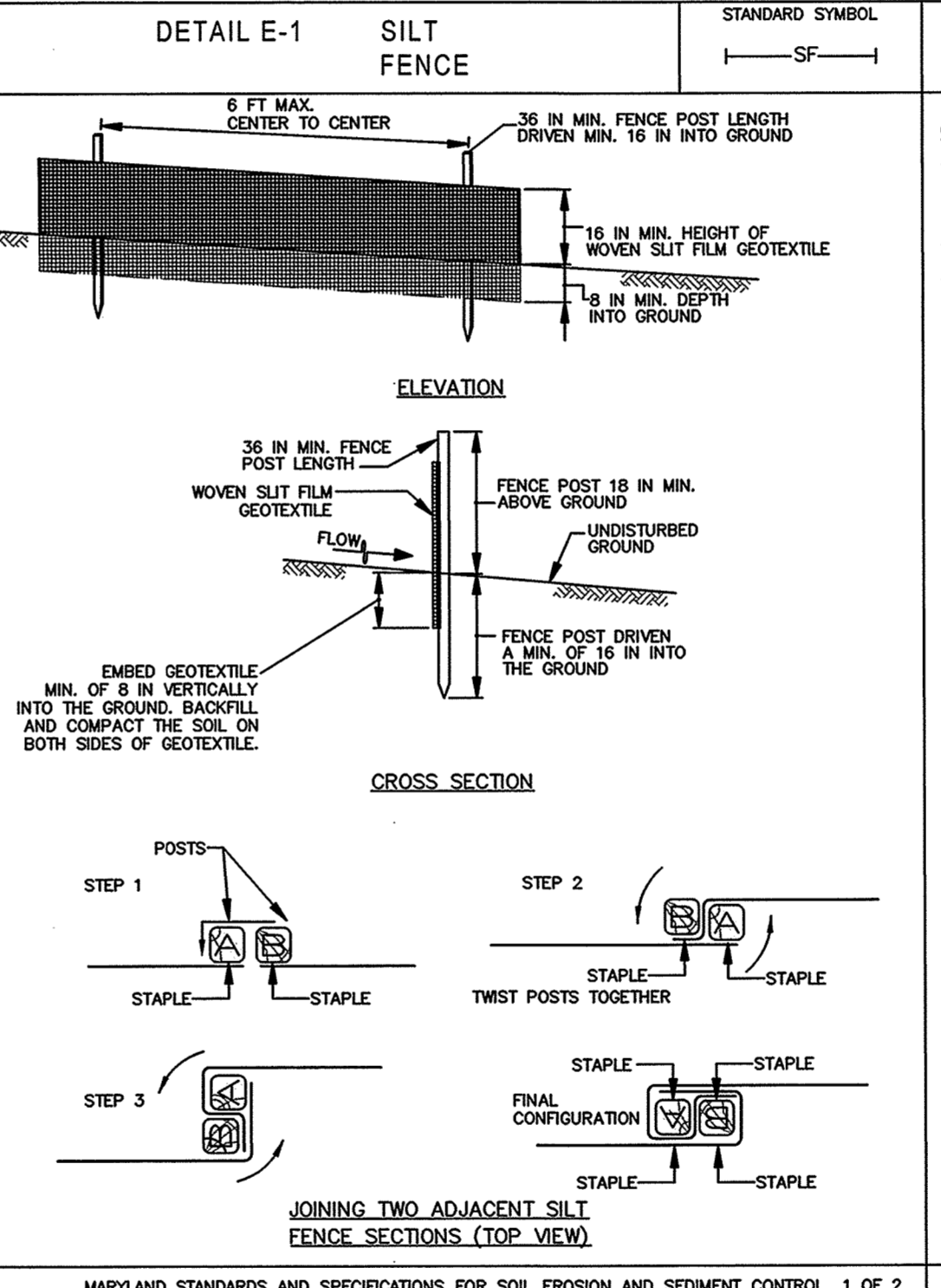
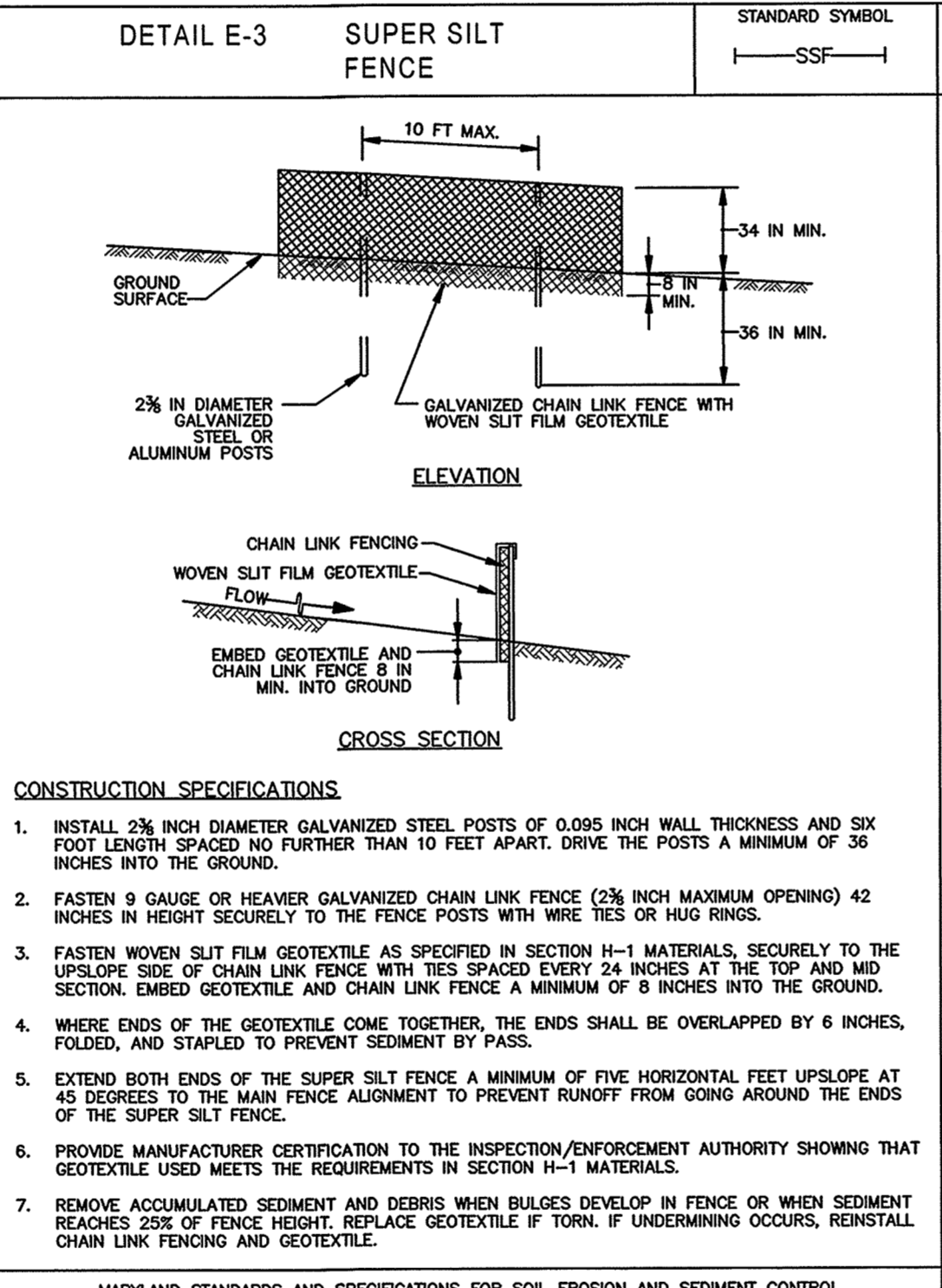
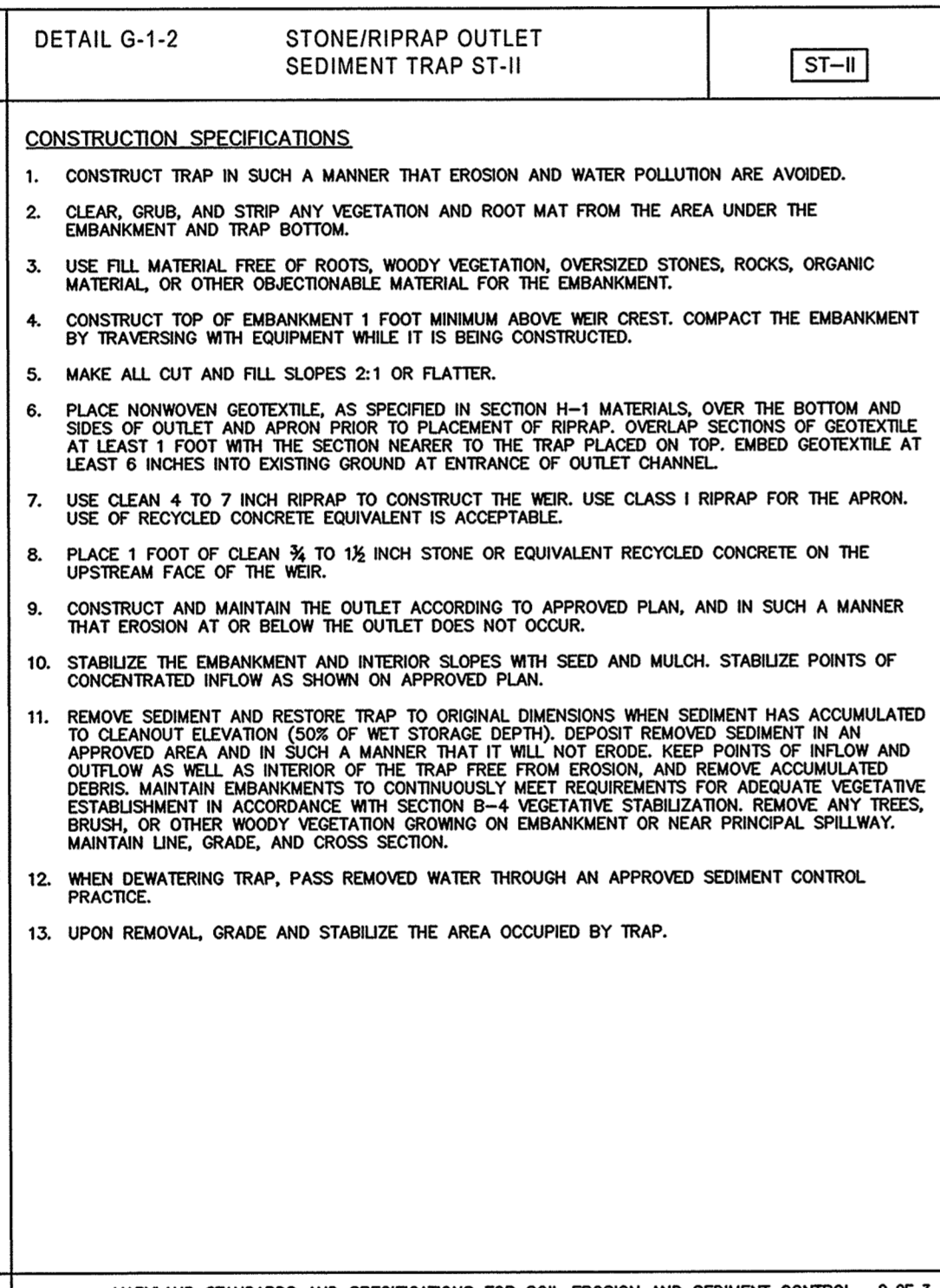
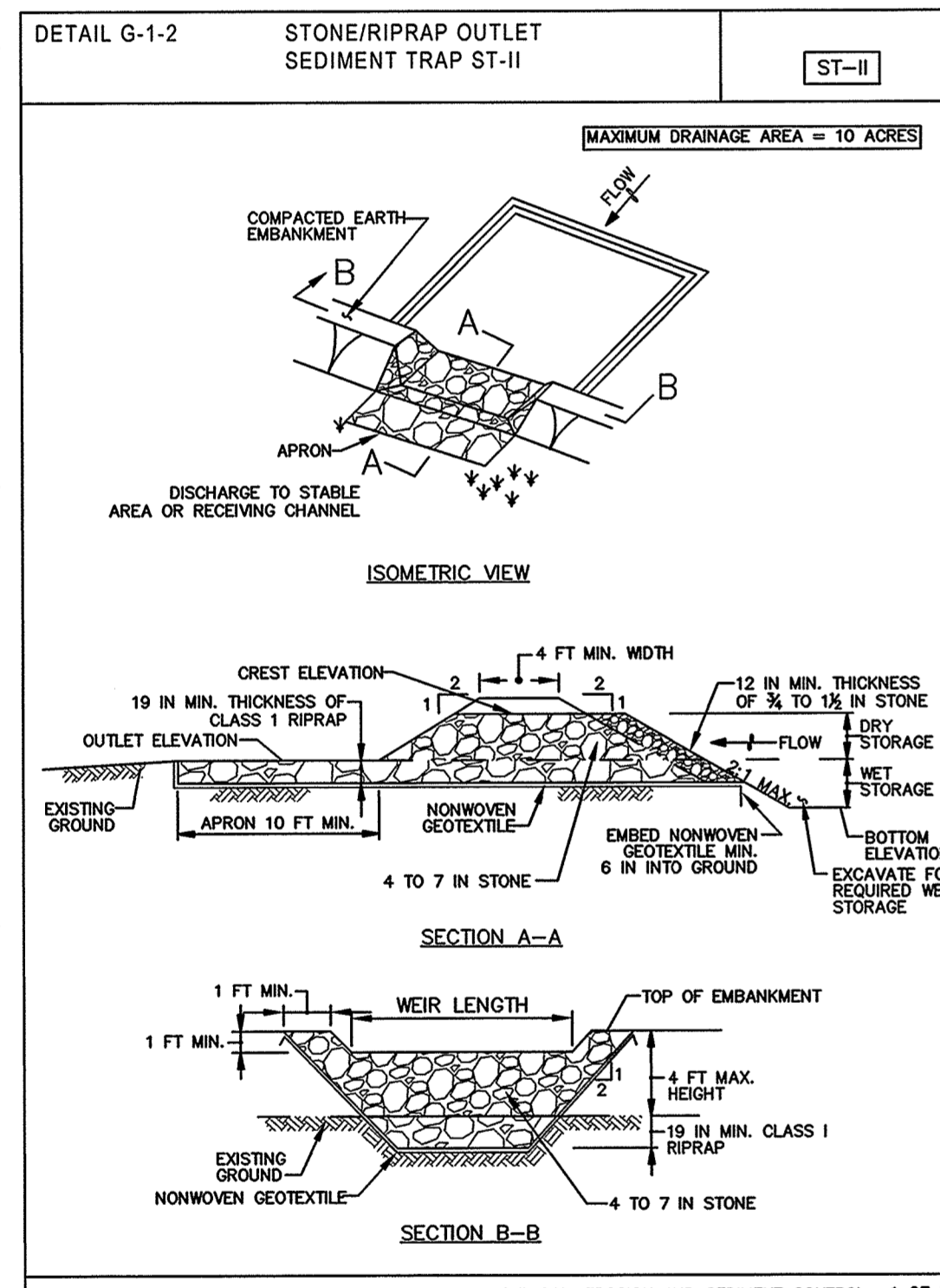
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL  
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011

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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL 1 OF 3  
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL 2 OF 3  
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011

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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL 1 OF 2  
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL 2 OF 2  
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
3/16/21  
DATE  
CHIEF, DIVISION OF LAND DEVELOPMENT  
2/22/21  
DATE  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.  
07/07/2021  
DATE  
CHIEF, BUREAU OF HIGHWAYS

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT  
12/21  
DATE  
HOWARD SCD

DEVELOPER'S CERTIFICATE  
"I ME CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC VISITATION BY THE HOWARD SOIL CONSERVATION DISTRICT."  
12/22/2020  
DATE  
SIGNATURE OF DEVELOPER

ENGINEERS CERTIFICATE  
"I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."  
12/16/20  
DATE  
SIGNATURE OF ENGINEER  
PAUL M. SILL, P.E.

NO.	DESCRIPTION	DATE

**OWNER/DEVELOPER**  
JOSEPH C. & LISA ANN PENKUSKY  
4707 BEECHWOOD ROAD  
ELLCOTT CITY, MD 21043  
443-324-4807

**SEDIMENT & EROSION CONTROL NOTES & DETAILS**  
**PENKUSKY PROPERTY**  
LOTS 1, 3 THRU 7, AND OPEN SPACE LOTS 2, 8 THRU 11  
TAX MAP 31 GRID 4  
1ST ELECTION DISTRICT  
PARCEL 119  
HOWARD COUNTY, MARYLAND

DESIGN BY: PS  
DRAWN BY: JC  
CHECKED BY: PS  
SCALE: AS SHOWN  
DATE: DECEMBER 16, 2020  
PROJECT #: 15-028  
SHEET #: 8 of 17

**SILL ENGINEERING GROUP, LLC**  
16005 Frederick Road, 2nd Floor  
Woodbine, Maryland 21797  
Phone: 443-325-5076  
Fax: 410-696-2022  
Email: info@sillengineering.com  
Civil Engineering for Land Development

PROFESSIONAL ENGINEER  
STATE OF MARYLAND  
LICENSE NO. 32025  
EXPIRES 12/31/2025

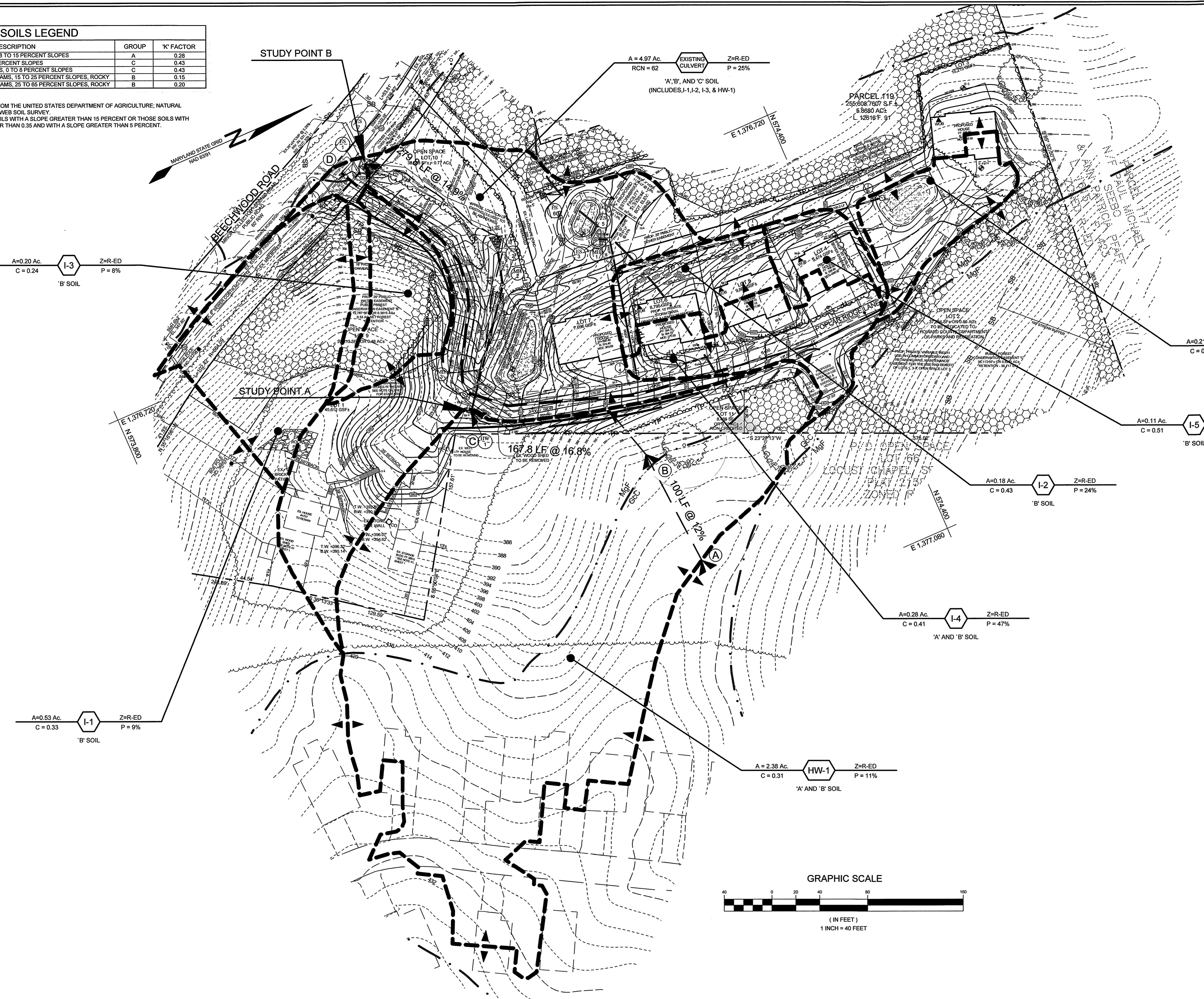
PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 32025, EXPIRATION DATE: JUNE 20, 2021



SOILS LEGEND			
SYMBOL	NAME / DESCRIPTION	GROUP	'K' FACTOR
GcC	GLADSTONE-LEGORE COMPLEX, 8 TO 15 PERCENT SLOPES	A	0.28
GmC	GLENVILLE SILT LOAM, 8 TO 15 PERCENT SLOPES	C	0.43
Gsb	GLENVILLE-CODORUS SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	0.43
MgD	MANOR-BANNERTOWN SANDY LOAMS, 15 TO 25 PERCENT SLOPES, ROCKY	B	0.15
MgF	MANOR-BANNERTOWN SANDY LOAMS, 25 TO 65 PERCENT SLOPES, ROCKY	B	0.20

NOTES:  
 1) SOIL INFORMATION HAS BEEN TAKEN FROM THE UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, WEB SOIL SURVEY.  
 2) HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR 'K' GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.

LEGEND	
EXISTING CONTOUR	
PROPOSED CONTOUR	
EXISTING SPOT ELEVATION	
PROPOSED SPOT ELEVATION	
DIRECTION OF FLOW	
EXISTING TREELINE	
PROPOSED TREELINE	
SOIL BOUNDARY	
EXISTING STREAM	
100' STREAM BUFFER	
LIMIT OF DISTURBANCE	
FOREST CONSERVATION EASEMENT	
EXISTING WETLAND	
HYDROLOGIC SOIL GROUP 'A'	
HYDROLOGIC SOIL GROUP 'B'	
HYDROLOGIC SOIL GROUP 'C'	
MICRO-BIORETENTION FACILITY (M-6)	
PROPOSED DRAINAGE AREA LINE	



EXISTING CULVERT INFORMATION								
DESIGN STORM	Q (cfs)*		V (fps)		HWE ELEV.		FREEBOARD	
	PRE	POST	PRE	POST	PRE	POST	PRE	POST
1-YEAR	0.8	1.2	3.21	3.66	331.42	331.49	0.31'	0.38'
10-YEAR	6.7	6.9	6.56	6.57	332.13	332.13	1.02'	1.02'
25-YEAR	11.1	10.8	7.68	7.61	332.51	332.51	1.40'	1.37'
100-YEAR	20.2	20.0	9.23	9.20	333.28	333.28	2.17'	2.15'

\* Q DERIVED FROM TR-20, AND PROVIDED IN THE STORMWATER MANAGEMENT REPORT.

**OWNER/DEVELOPER**  
 JOSEPH C. & LISA ANN PENKUSKY  
 4707 BEECHWOOD ROAD  
 ELLICOTT CITY, MD 21043  
 443-324-4807

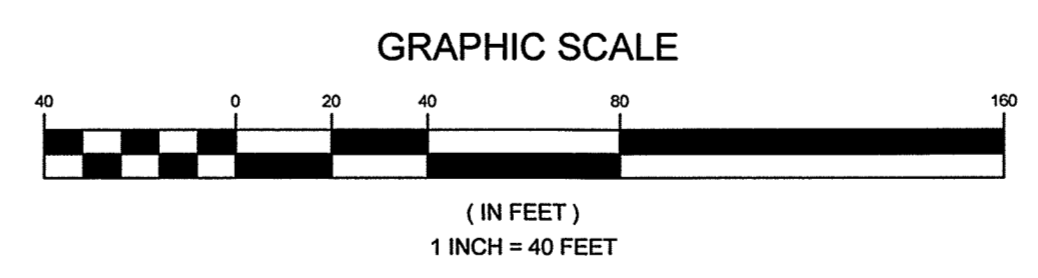
**STORM DRAIN DRAINAGE AREA MAP**  
**PENKUSKY PROPERTY**  
 LOTS 1, 3 THRU 7, AND OPEN SPACE LOTS 2, 8 THRU 11  
 TAX MAP 31 GRID 4 PARCEL 119  
 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND



**SILL ENGINEERING GROUP, LLC**  
 16005 Frederick Road, 2nd Floor  
 Woodbine, Maryland 21797  
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 Fax: 410.696.2022  
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 Civil Engineering for Land Development

DESIGN BY: PS  
 DRAWN BY: JC  
 CHECKED BY: PS  
 SCALE: AS SHOWN  
 DATE: DECEMBER 16, 2020  
 PROJECT #: 15-028  
 SHEET #: 9 of 17

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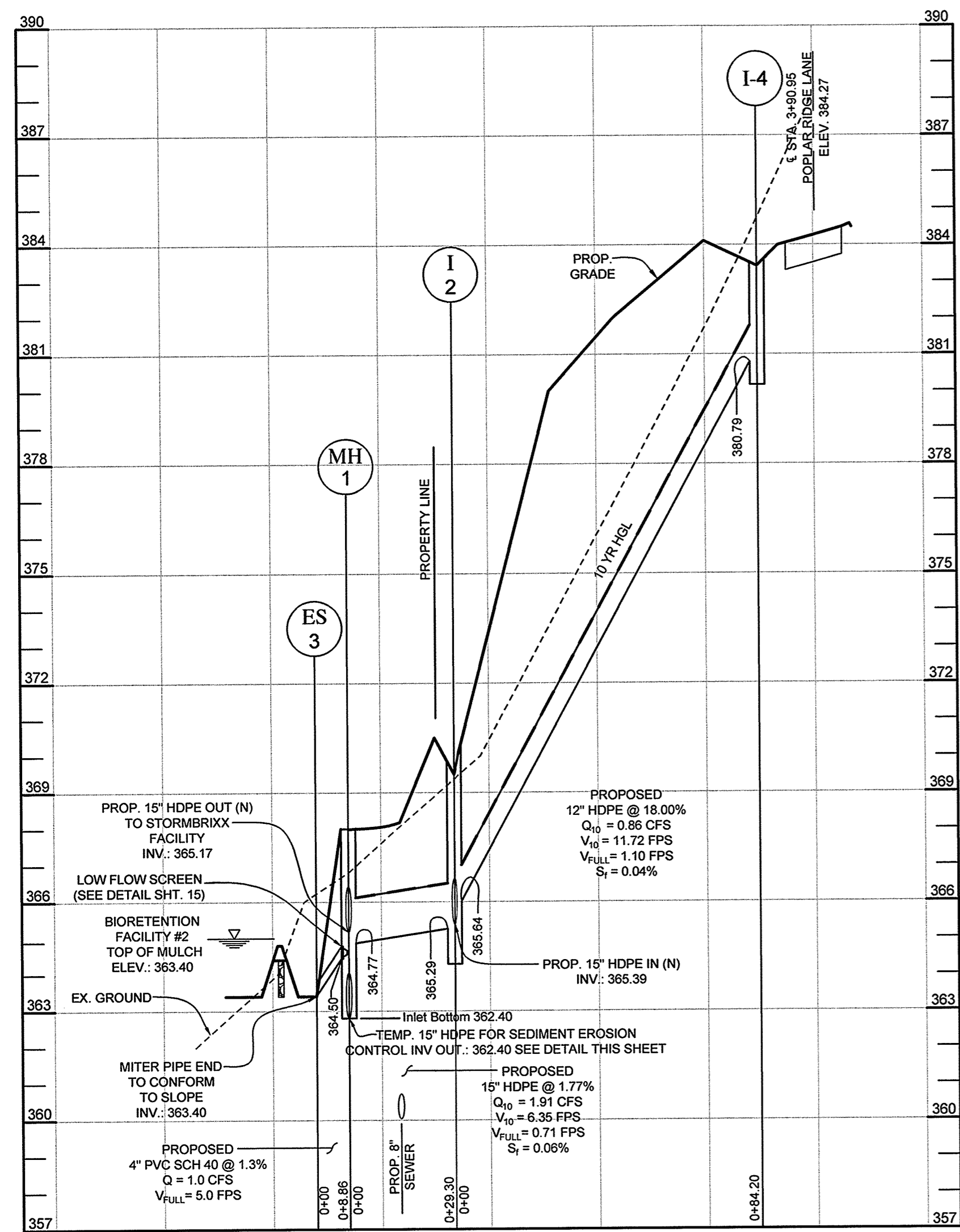
**PLAN VIEW**  
 SCALE: 1"=40'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

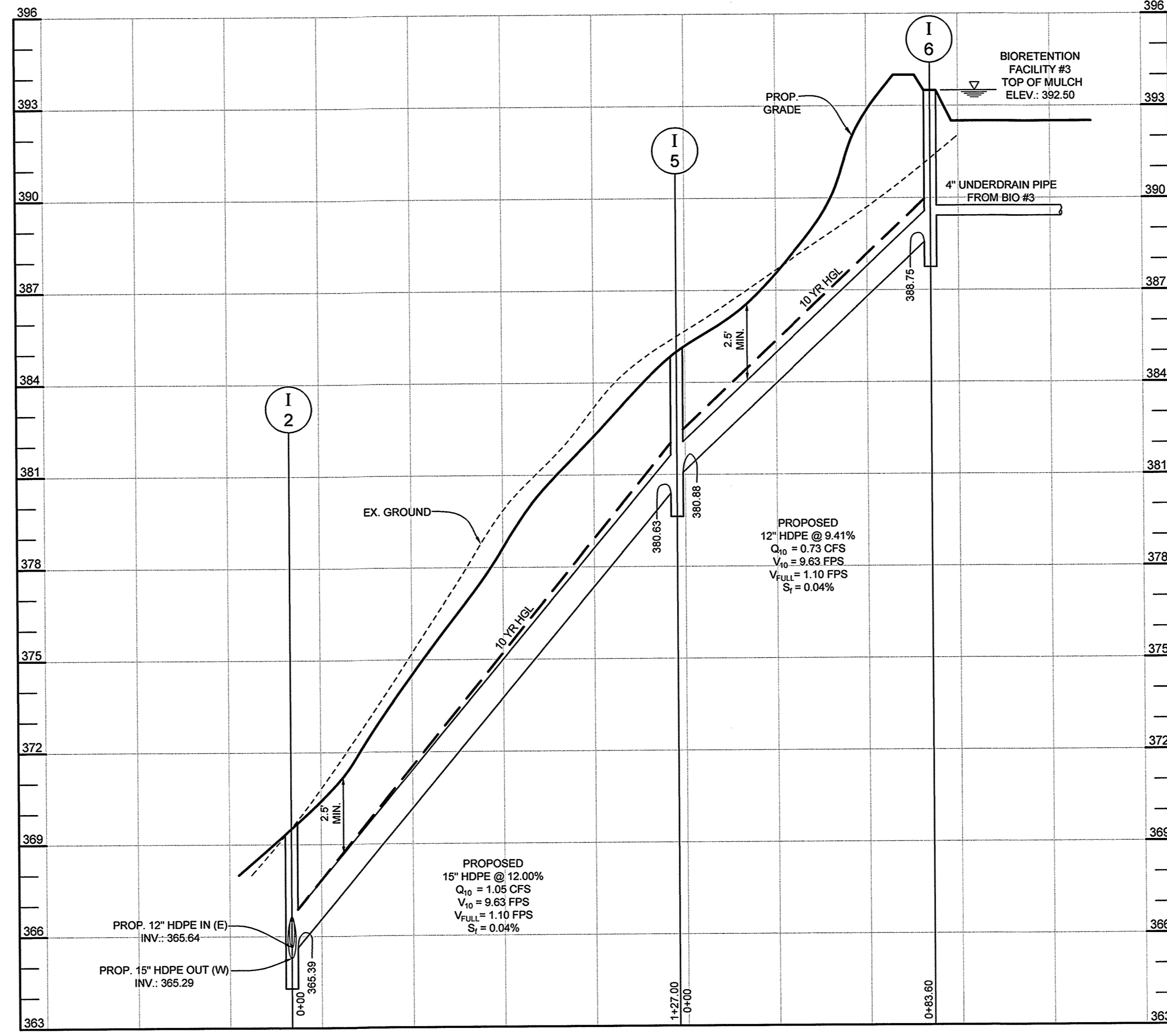
CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 3/16/21  
 DATE: 2/22/21

CHIEF, BUREAU OF HIGHWAYS  
 DATE: 02/07/2021

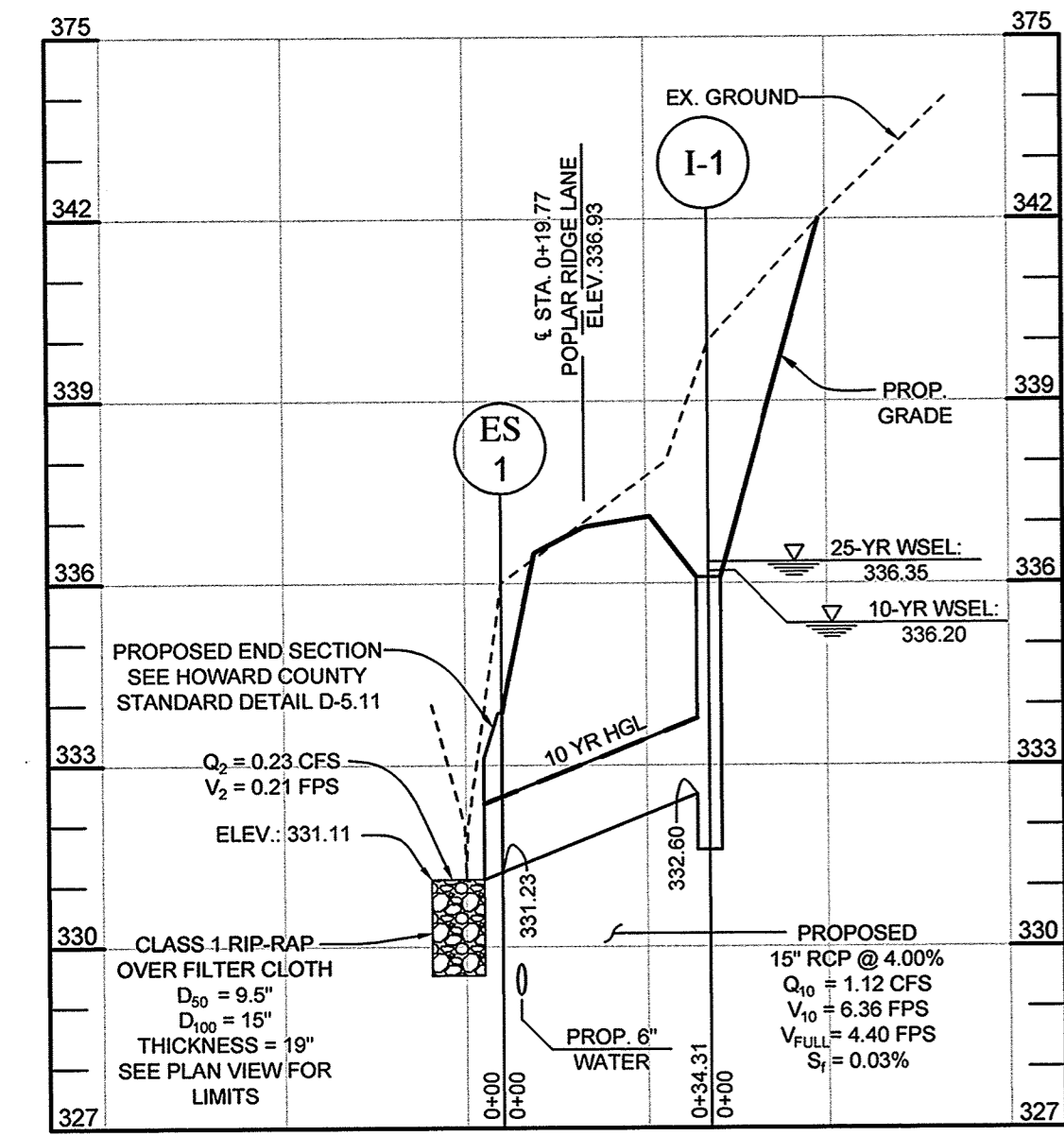
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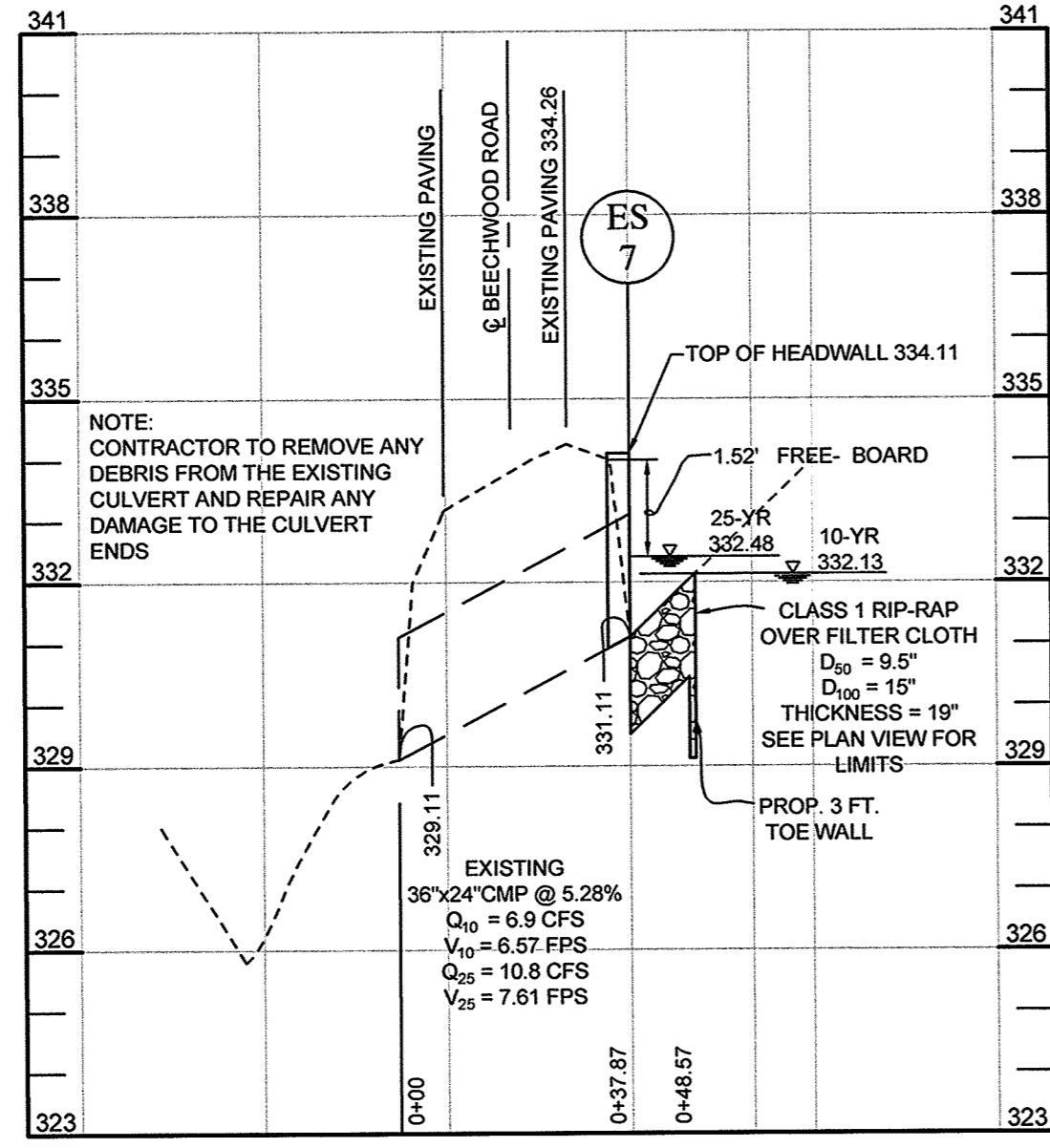
**STORMDRAIN PROFILE ES-3 TO I-4**  
HORIZONTAL SCALE: 1" = 30'  
VERTICAL SCALE: 1" = 3'



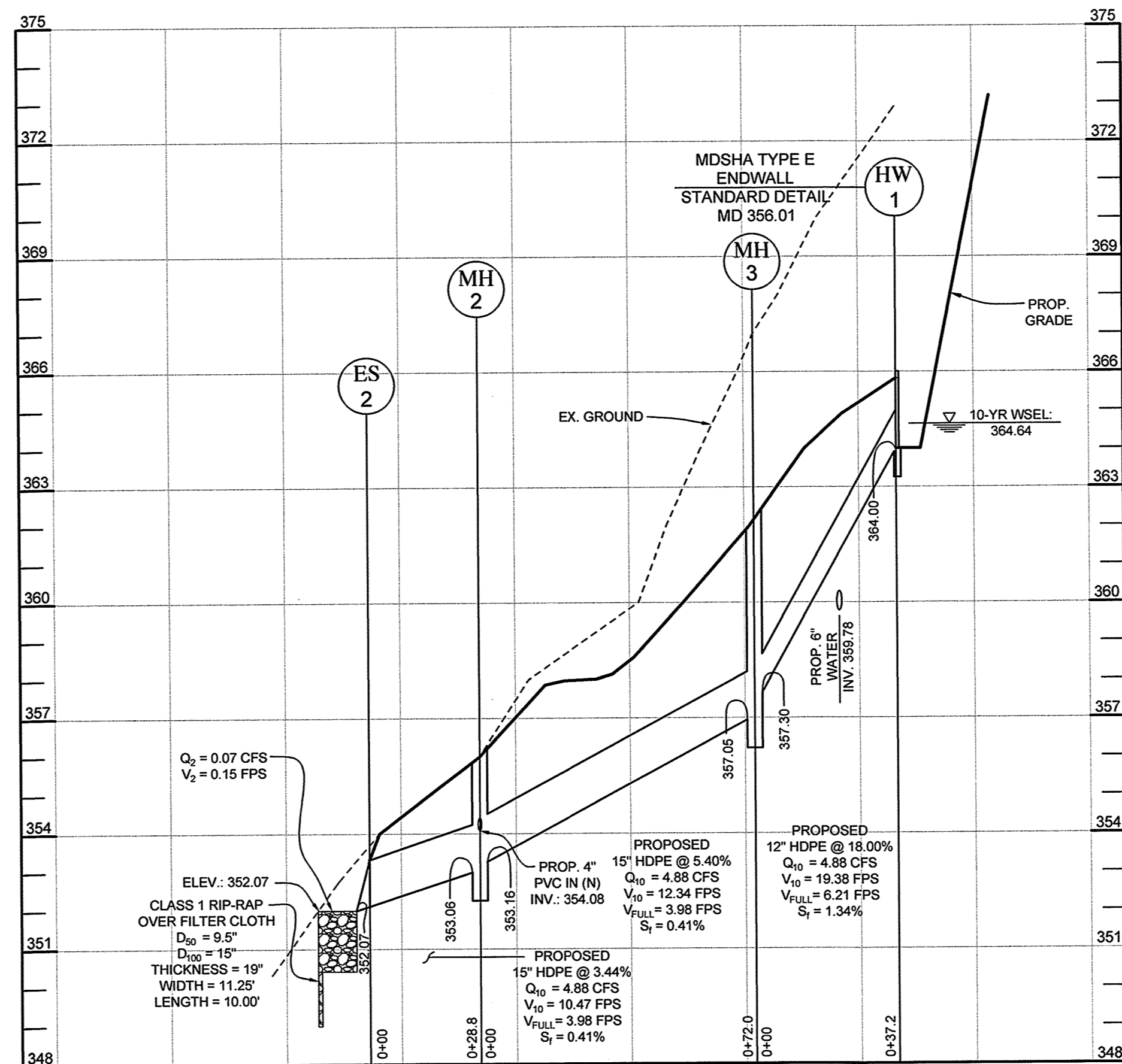
**STORMDRAIN PROFILE I-2 TO I-6**  
HORIZONTAL SCALE: 1" = 30'  
VERTICAL SCALE: 1" = 3'



**STORMDRAIN PROFILE I-1 TO ES-1**  
HORIZONTAL SCALE: 1" = 30'  
VERTICAL SCALE: 1" = 3'



**EXISTING CULVERT BEECHWOOD ROAD**  
HORIZONTAL SCALE: 1" = 30'  
VERTICAL SCALE: 1" = 3'

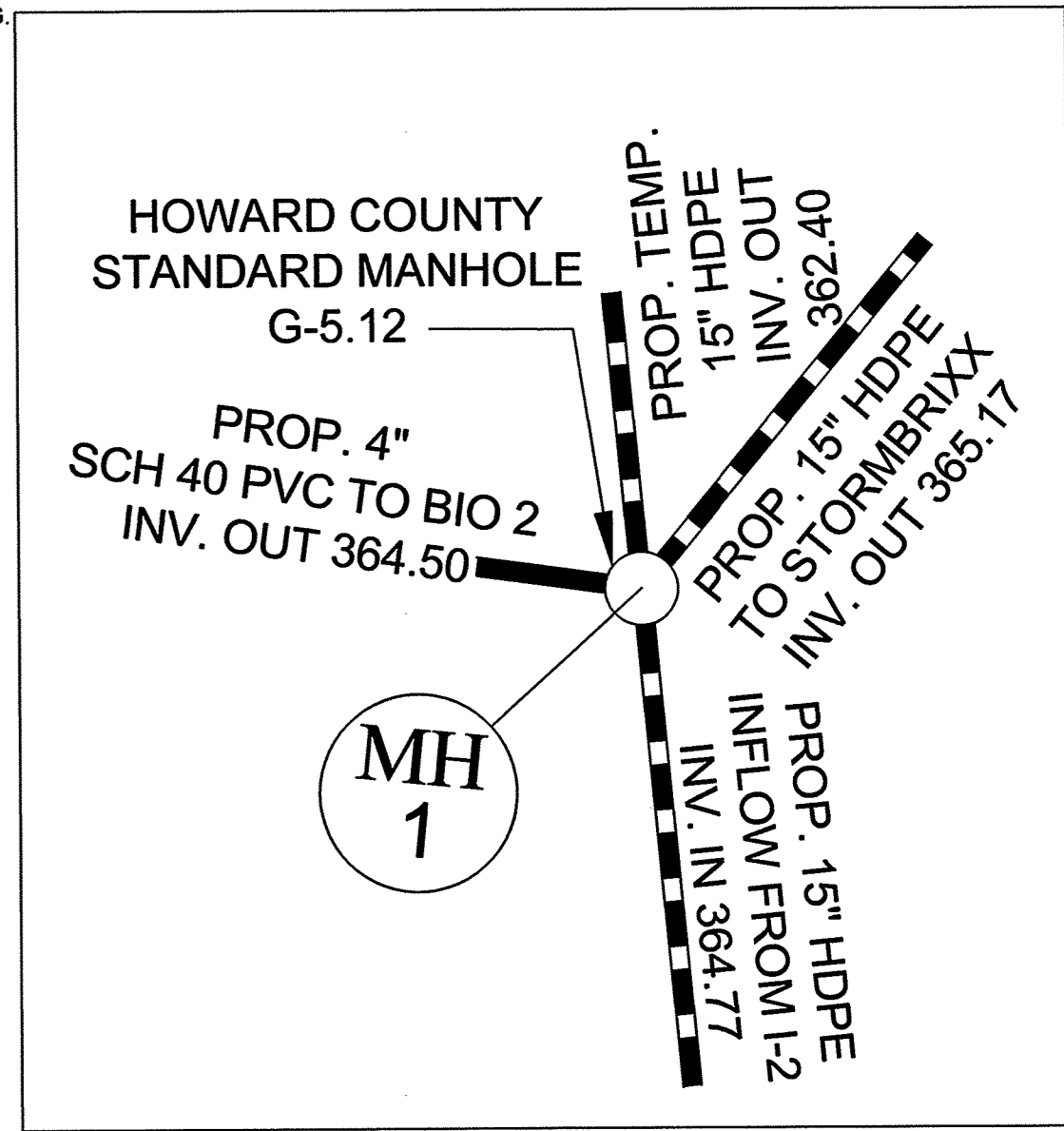


**STORMDRAIN PROFILE HW-1 TO ES-2**  
HORIZONTAL SCALE: 1" = 30'  
VERTICAL SCALE: 1" = 3'

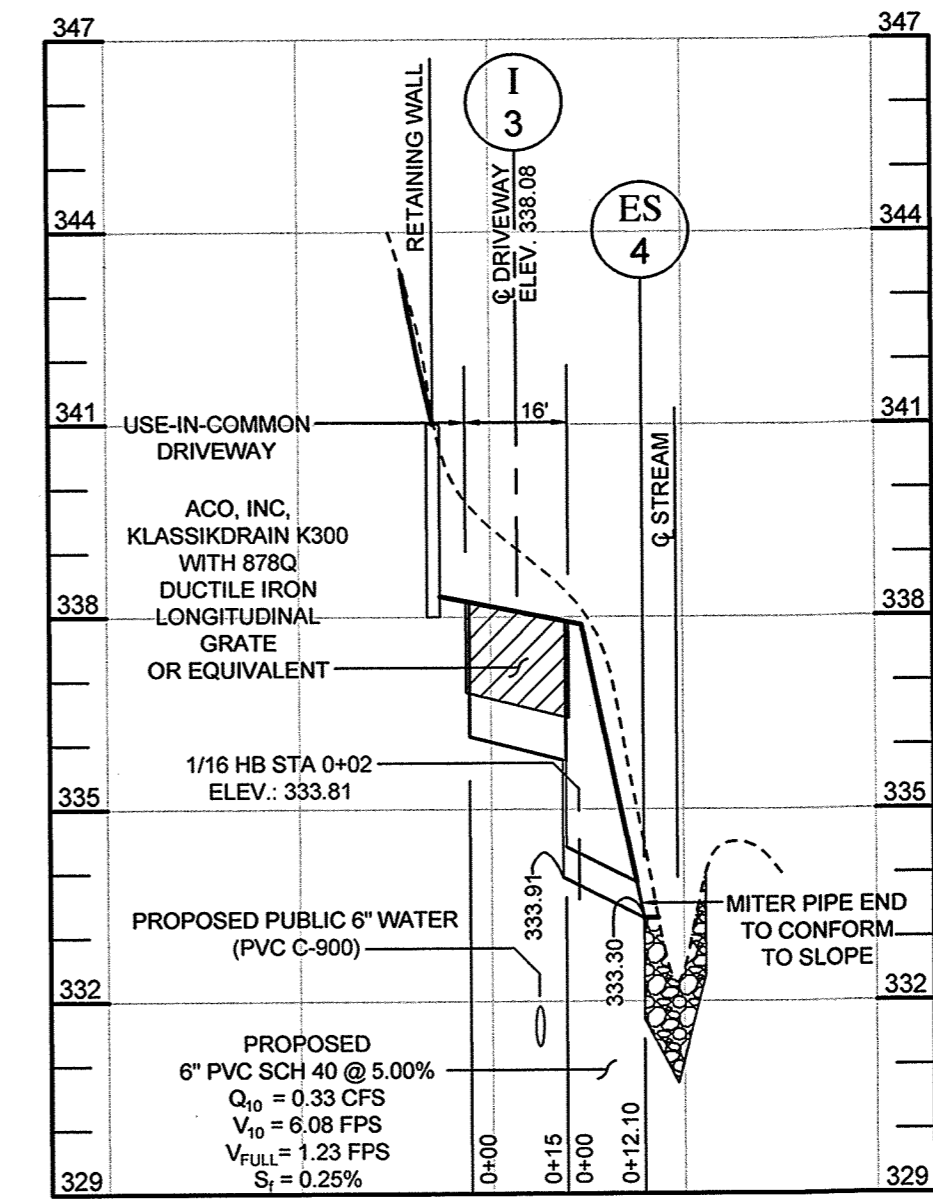
STRUCTURE SCHEDULE						
NO.	TYPE & OWNERSHIP	LOCATION	TOP ELEV.	INV. IN	INV. OUT	REMARKS
ES-1	TYPE 'A' HEADWALL PUBLIC	N 574,088.47 E 1,376,611.17	333.86	331.23	331.11	HO CO DTL. D-5.11
ES-2	15" HDPE END SECTION PRIVATE	N 574,099.99 E 1,376,794.90	-	-	352.07	HANCOR OR EQUIVALENT
ES-3	MITERED PIPE END PRIVATE	N 574,227.18 E 1,376,730.69	-	-	363.40	MITER TO SLOPE
ES-4	MITERED PIPE END PRIVATE	N 574,076.46 E 1,376,614.42	-	-	333.30	MITER TO SLOPE
ES-5	MITERED PIPE END PRIVATE	N 574,252.34 E 1,376,713.99	-	-	365.15	MITER TO SLOPE
ES-6	MITERED PIPE END PRIVATE	N 574,203.40 E 1,376,690.64	-	-	369.00	MITER TO SLOPE
ES-7	TYPE 'A' HEADWALL PUBLIC	N 574,088.47 E 1,376,611.17	334.11	331.11	-	HO CO DTL. D-5.11
HW-1	TYPE 'C' ENDWALL PRIVATE	N 574,073.33 E 1,376,832.27	366.00	364.00	-	HO CO DTL. D-5.21
I-1	TYPE 'S' INLET PUBLIC	N 574,037.12 E 1,376,625.04	336.10	-	332.60	HO CO DTL. D-4.24
I-2	TYPE 'S' INLET PRIVATE	N 574,231.06 E 1,376,775.11	369.50	365.30 (15' W) 365.84 (12' E)	365.29	HO CO DTL. D-4.24
I-3	ACO KLASSIKDRAIN K300 PRIVATE	N 574,232.56 E 1,376,768.24	338.00	-	336.42	OR EQUIVALENT
I-4	TYPE 'S' INLET PRIVATE	N 574,213.14 E 1,376,857.36	383.42	-	380.79	HO CO DTL. D-4.24
I-5	TYPE 'S' INLET PRIVATE	N 574,361.00 E 1,376,792.21	385.10	380.88	380.63	HO CO DTL. D-4.24
I-6	TYPE 'S' INLET PRIVATE	N 574,447.81 E 1,376,804.13	393.50	389.42	388.75	HO CO DTL. D-4.24
MH-1	PRECAST 4' MANHOLE PRIVATE	N 574,237.30 E 1,376,746.46	368.00	364.77	365.17 (15' W) 364.95 (12' E)	HO CO DTL. G-5.12
MH-2	PRECAST 4' MANHOLE PRIVATE	N 574,140.04 E 1,376,745.77	366.00	363.06	363.16	HO CO DTL. G-5.12
MH-3	PRECAST 4' MANHOLE PRIVATE	N 574,096.06 E 1,376,802.74	362.15	357.30	357.05	HO CO DTL. G-5.12

- NOTES:
1. TOP ELEVATIONS AND LOCATION COORDINATES FOR "S" INLETS ARE TO THE CENTER OF THE INLET TOP OF GRADE.
  2. TOP ELEVATIONS AND LOCATION COORDINATES FOR PRECAST MANHOLES ARE TO THE CENTER, TOP OF MANHOLE COVER.
  3. LOCATION COORDINATES FOR END SECTIONS ARE TO THE JUNCTION OF THE END SECTION WITH THE PIPE.
  4. LOCATION COORDINATES FOR TYPE 'C' ENDWALL ARE AT THE INVERT OF THE PIPE, FACE OF ENDWALL.
  5. LOCATION COORDINATES FOR TYPE 'A' HEADWALL ARE AT THE INVERT OF THE PIPE, FACE OF HEADWALL.
  6. TOP SLOPE OF STRUCTURES TO CONFORM TO SLOPE OF PAVING/GRADING.

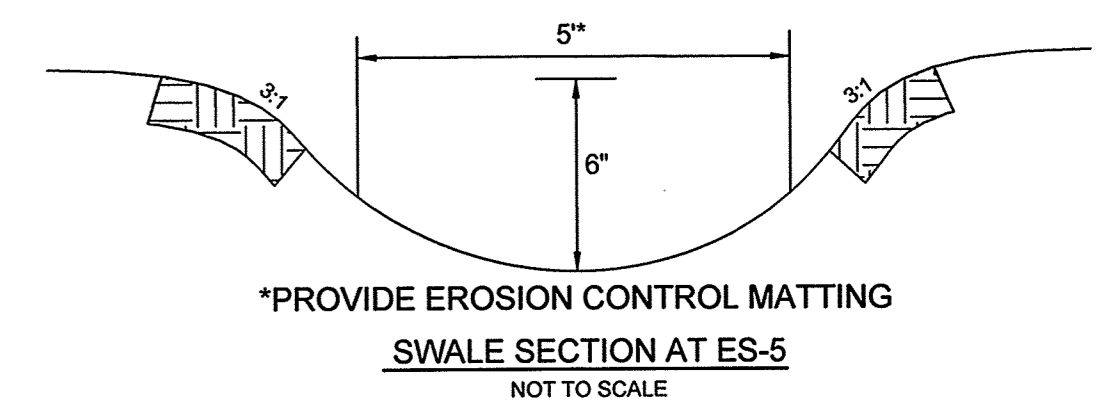
PIPE SCHEDULE		
SIZE	TYPE	LENGTH
4" PRIVATE	PVC	85.80 LF
6" PRIVATE	PVC	12.1 LF
10" PRIVATE	PVC	3.42 LF
12" PRIVATE	HDPE	217.4 LF
15" PRIVATE	HDPE	279.8 LF
15" PUBLIC	RCP CLASS III	34.31 LF



**DETAIL AT FLOW SPLITTER**  
SCALE: 1" = 10'



**STORMDRAIN PROFILE I-3**  
HORIZONTAL SCALE: 1" = 30'  
VERTICAL SCALE: 1" = 3'

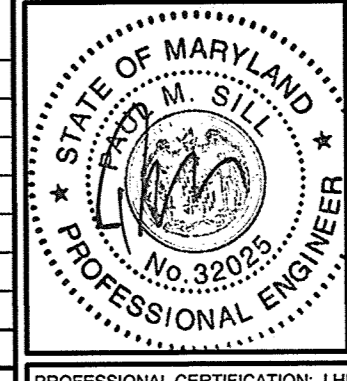


**\*PROVIDE EROSION CONTROL MATTING SWALE SECTION AT ES-5**  
NOT TO SCALE

**OWNER/DEVELOPER**  
JOSEPH C. & LISA ANN PENKUSKY  
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ELICOTT CITY, MD 21043  
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**STORM DRAIN PROFILES AND DETAILS**  
**PENKUSKY PROPERTY**  
LOTS 1, 3 THRU 7, AND OPEN SPACE LOTS 2, 8 THRU 11

TAX MAP 31 GRID 4  
1ST ELECTION DISTRICT  
PARCEL 119  
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DESIGN BY: PS  
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APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DATE: 12/22/21

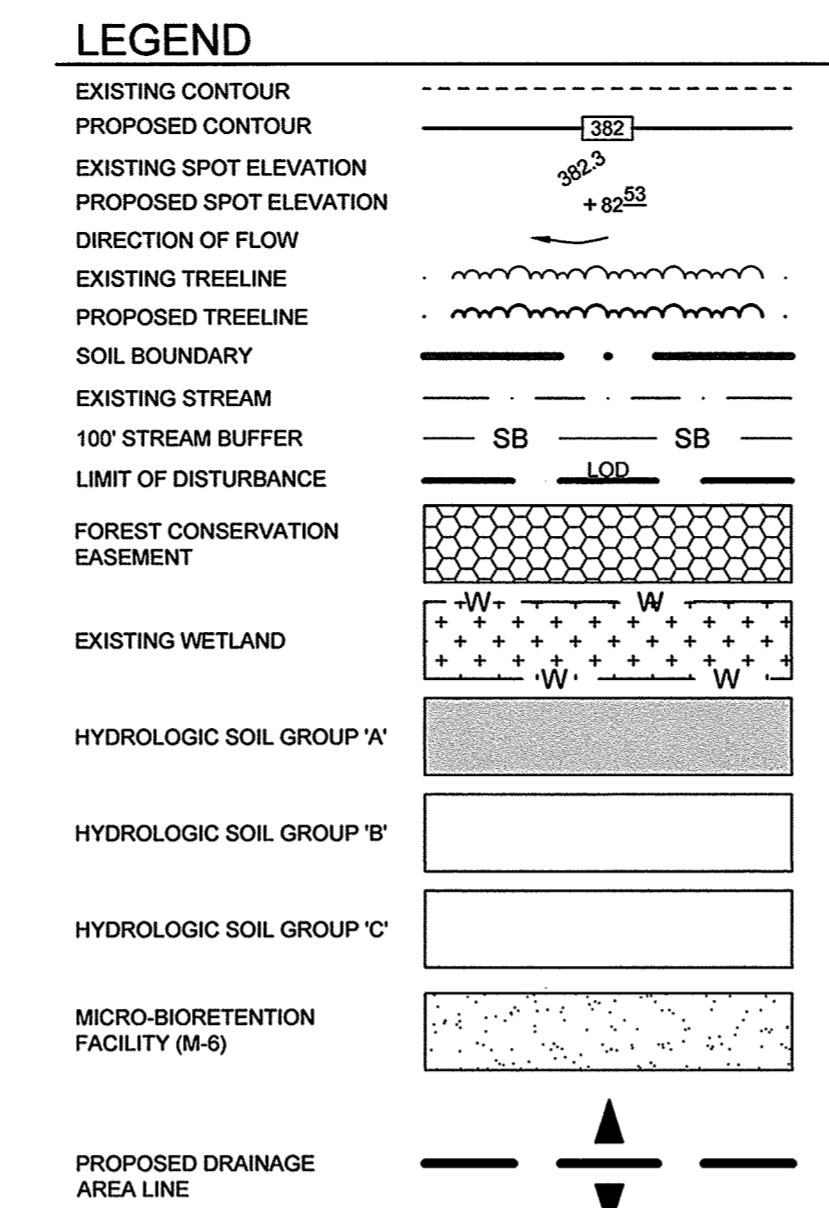
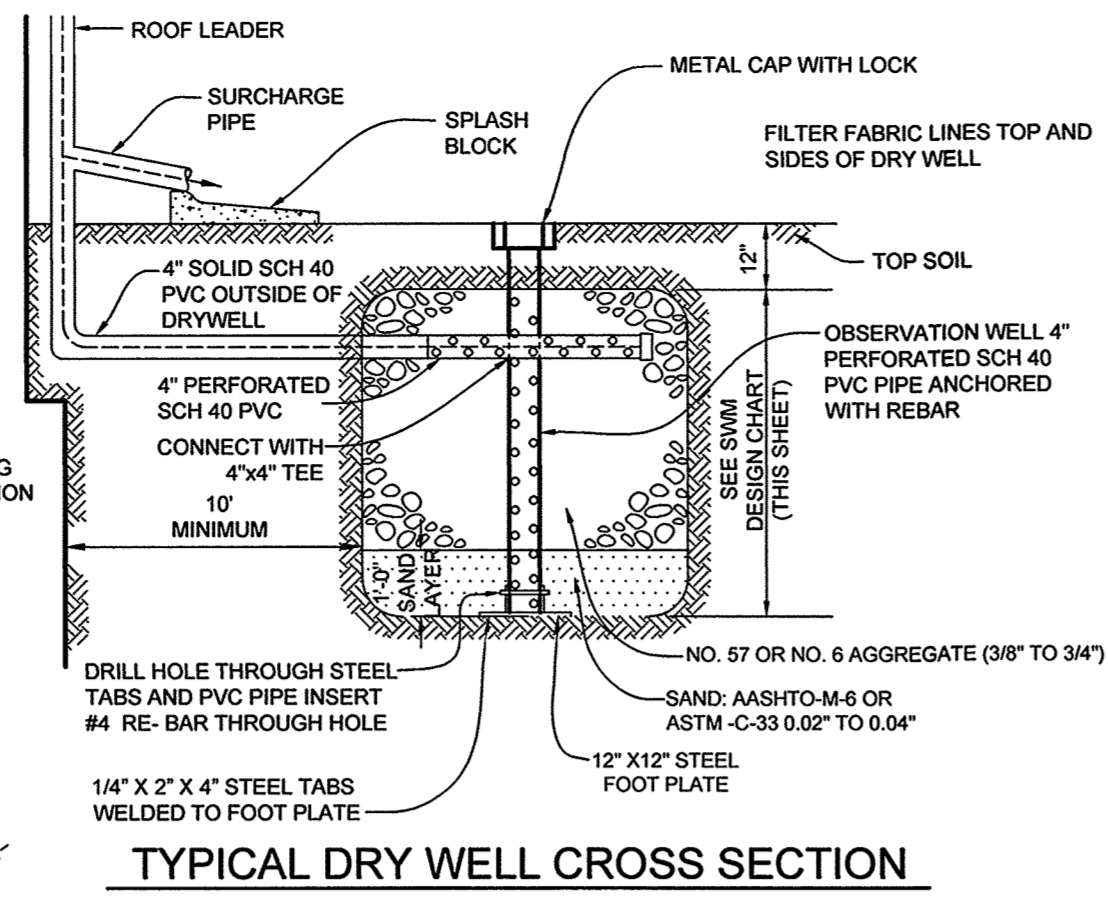
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
CHIEF, BUREAU OF HIGHWAYS  
DATE: 02/07/2021

NO.	DESCRIPTION	DATE

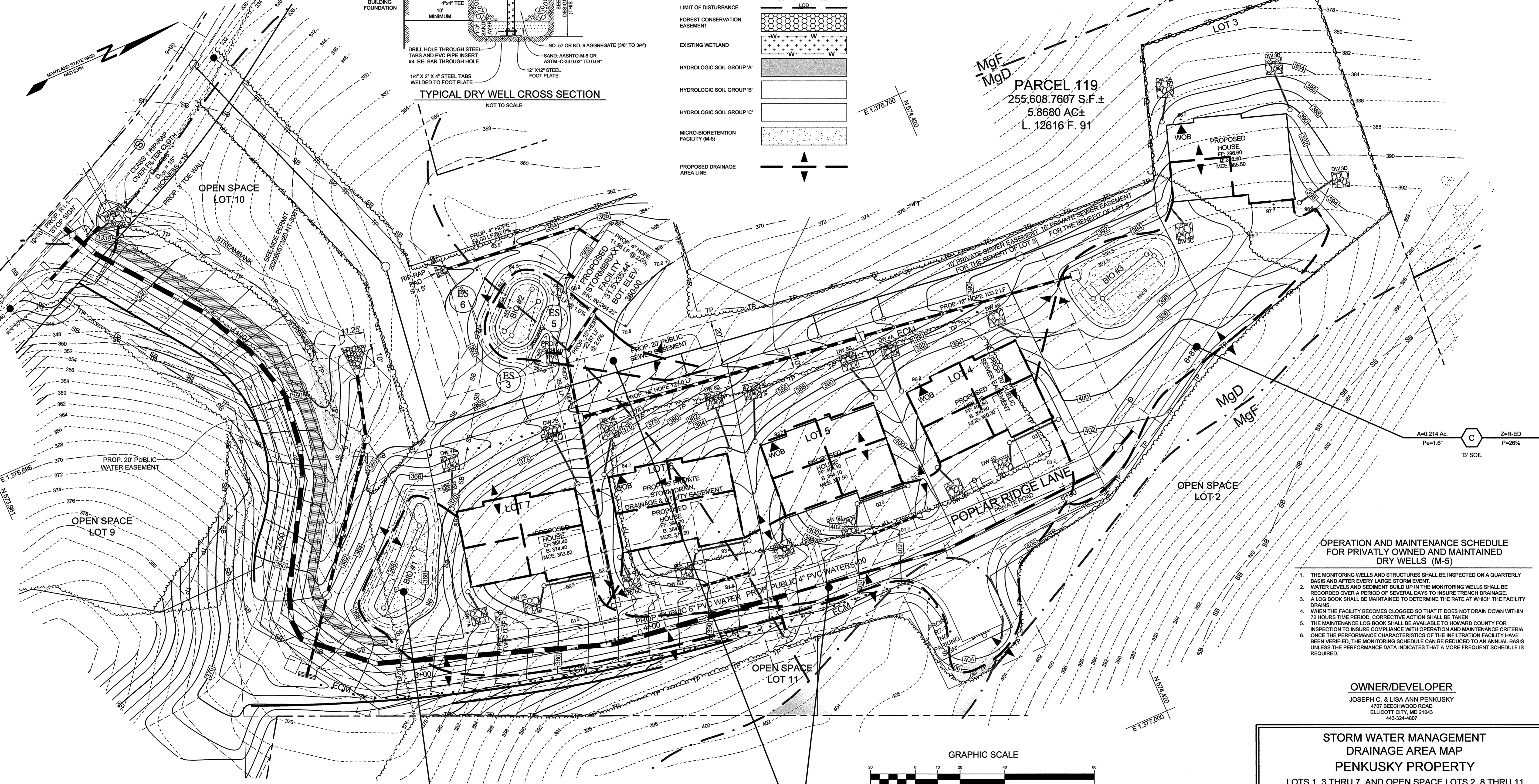
PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A QUALIFIED LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 32253, EXPIRATION DATE: JUNE 20, 2021

SOILS LEGEND			
SYMBOL	NAME / DESCRIPTION	GROUP	'K' FACTOR
GcC	GLADSTONE-LEGORE COMPLEX, 8 TO 15 PERCENT SLOPES	A	0.28
GmC	GLENVILLE SILT LOAM, 8 TO 15 PERCENT SLOPES	C	0.43
GcB	GLENVILLE-CODORUS SILT LOAMS, 0 TO 9 PERCENT SLOPES	C	0.43
MgD	MANOR-BANNERTOWN SANDY LOAMS, 15 TO 25 PERCENT SLOPES, ROCKY	B	0.16
MgF	MANOR-BANNERTOWN SANDY LOAMS, 25 TO 65 PERCENT SLOPES, ROCKY	B	0.20

NOTES:  
 1) SOIL INFORMATION HAS BEEN TAKEN FROM THE UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, WEBB SOIL SURVEY.  
 2) HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR 'K' GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.



DRY WELL CHART				
LOT NO.	VOLUME REQUIRED	VOLUME PROVIDED	NO. WELLS	SIZE WELLS
3	405 CF	420 CF	4	7.50' X 7.00' X 5.0' DEEP
4	405 CF	420 CF	4	7.50' X 7.00' X 5.0' DEEP
5	405 CF	420 CF	4	7.50' X 7.00' X 5.0' DEEP
6	405 CF	420 CF	4	7.50' X 7.00' X 5.0' DEEP
7	405 CF	420 CF	4	7.50' X 7.00' X 5.0' DEEP



**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 72 HOURS 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. 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.

**OWNER/DEVELOPER**  
 JOSEPH C. & LISA ANN PENKUSKY  
 4707 BEECHWOOD ROAD  
 ELLICOTT CITY, MD 21043  
 443-324-4897

**STORM WATER MANAGEMENT DRAINAGE AREA MAP**  
**PENKUSKY PROPERTY**  
 LOTS 1, 3 THRU 7, AND OPEN SPACE LOTS 2, 8 THRU 11

TAX MAP 31 GRID 4 PARCEL 119  
 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

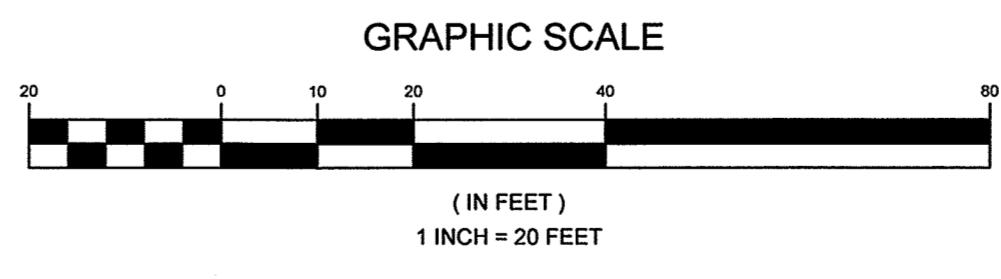
**SILL ENGINEERING GROUP, LLC**  
 16005 Frederick Road, 2nd Floor  
 Woodbine, Maryland 21797  
 Phone: 443.325.5076  
 Fax: 410.696.2022  
 Email: info@sillengineering.com  
 Civil Engineering for Land Development

DESIGN BY: PS  
 DRAWN BY: JC  
 CHECKED BY: PS  
 SCALE: AS SHOWN  
 DATE: DECEMBER 16, 2020  
 PROJECT #: 15-028  
 SHEET #: 11 of 17

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 3/1/21  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 2.22.21

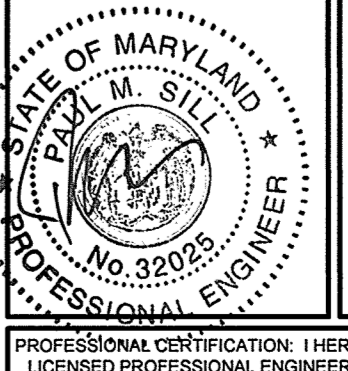
CHIEF, BUREAU OF HIGHWAYS DATE: 02/07/2021



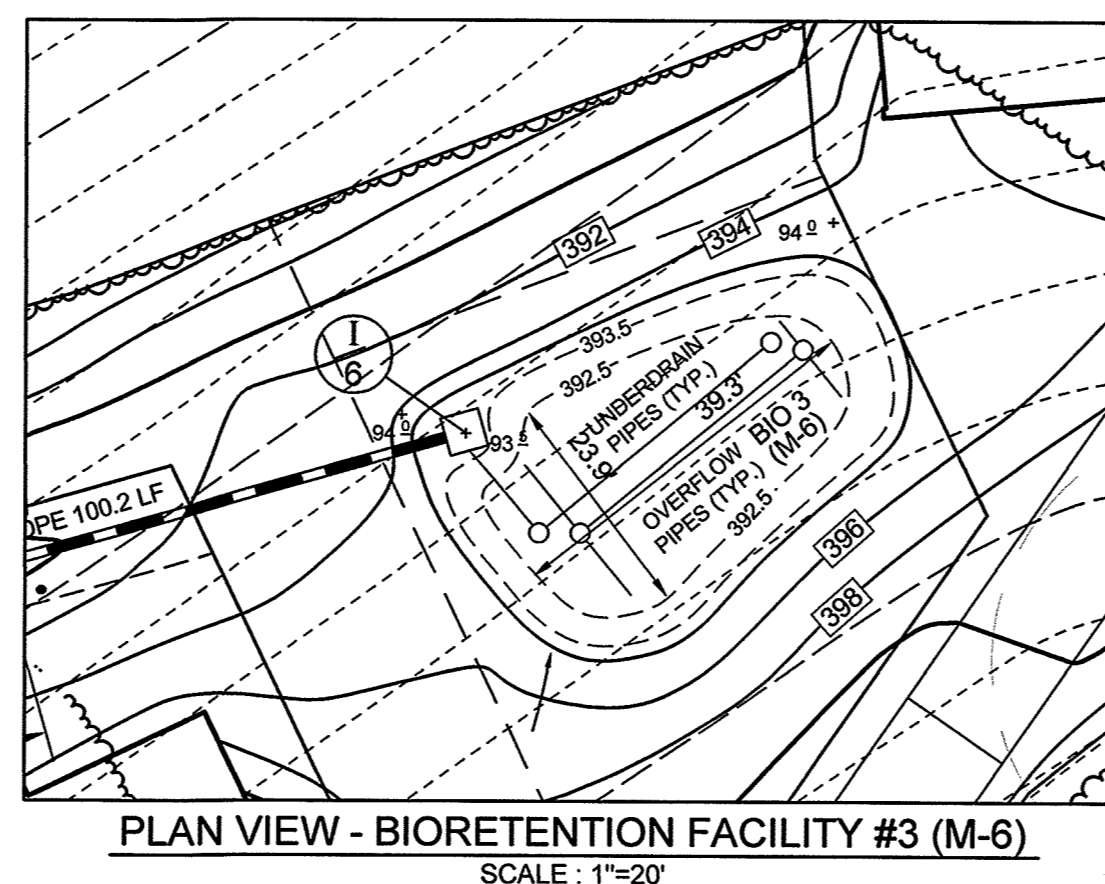
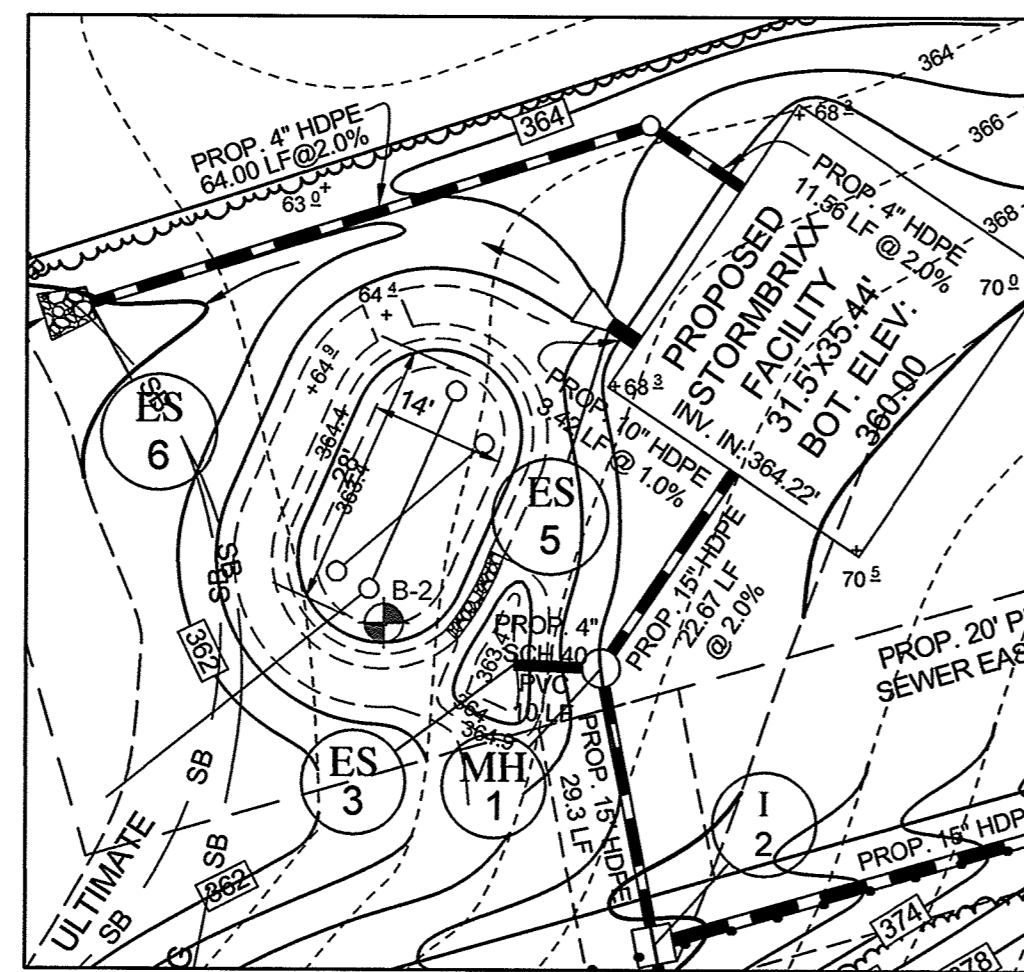
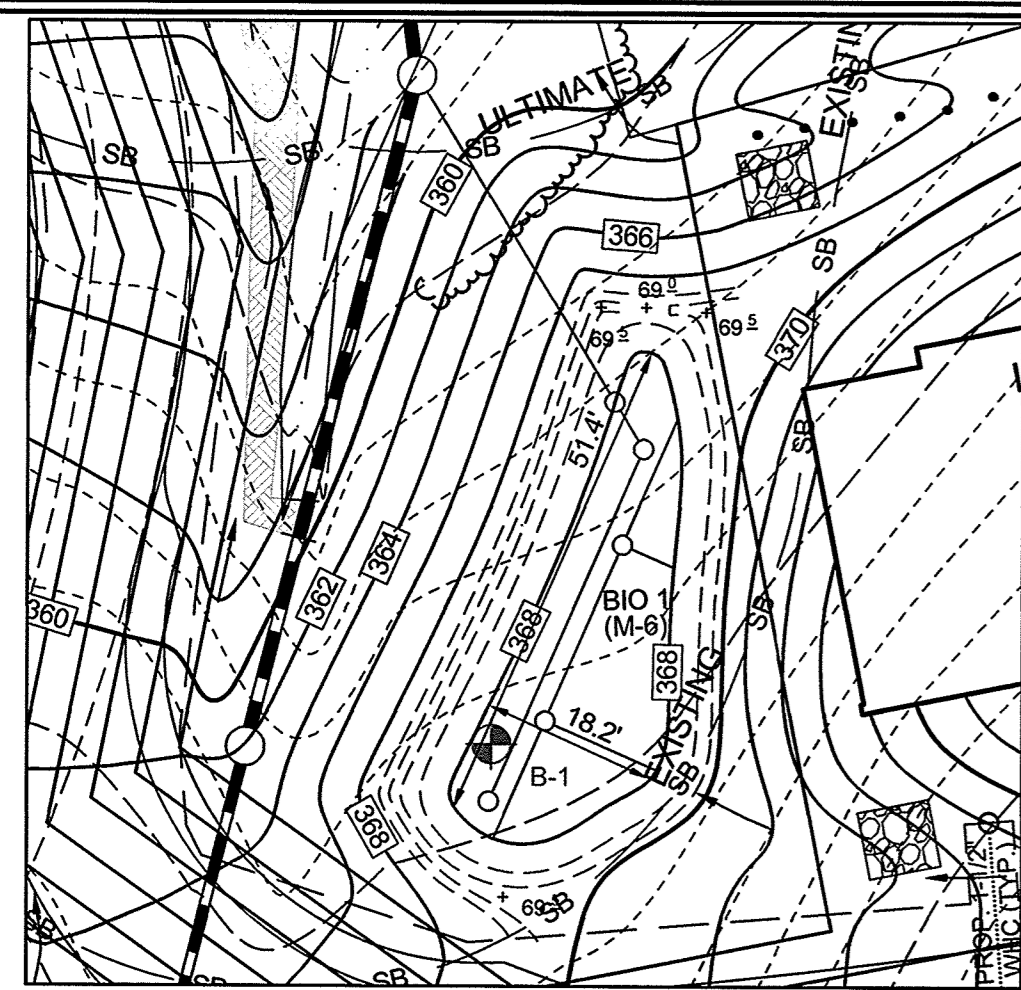
A=0.143 Ac. Z=R-ED  
 Pe=1.6% 'B' SOIL P=37%

A=0.278 Ac. Z=R-ED  
 Pe=1.0% 'B' SOIL P=43%

NO.	DESCRIPTION	DATE



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MATERIALS SPECIFICATIONS FOR BIORETENTION FACILITIES			
MATERIAL PLANTINGS	SPECIFICATION	SIZE	NOTES
	SEE PLANT LIST THIS SHEET	N/A	PLANTINGS ARE SITE-SPECIFIC. SEE PLANT LIST THIS SHEET.
PLANTING SOIL [2'-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 (IF REQUIRED)	ORNAMENTAL STONE: WASHED COBBLES	STONE: 2" TO 5"	
GEOTEXTILE		N/A	PE TYPE 1 NONWOVEN
UNDERDRAIN GRAVEL	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" PER FOR. @ 6" ON CENTER. 4 HOLES PER ROW, MINIMUM OF 3" OF GRAVEL OVER PIPES; NOT NECESSARY UNDERNEATH PIPES. PERFORATED PIPE SHALL BE WRAPPED WITH 14" GALVANIZED HARDWARE CLOTH.

#### B.4.C SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDENS, LANDSCAPE INFILTRATION & INFILTRATION BERMS

- MATERIAL SPECIFICATIONS**  
THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.
- 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 BERMIUDA 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 SAND (60%-65%) AND COMPOST (35% TO 40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).
  - CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.
  - PH RANGE - SHOULD BE BETWEEN 5.5 - 7.0. AMENDMENTS (E.G. LIME, ION 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 ORGANIC SOIL. IF PRACTICES ARE EXCAVATED USING A LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TIRE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH-PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.

COMPACTION CAN BE ALLEVATED 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 REFLECTURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE. 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 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 THROUGH 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 PLOTS 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, DEFOLIANTS, 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.

- UNDERDRAINS**  
UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:
  - PIPE - SHOULD BE 4" TO 6" DIAMETER. SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F 758, TYPE PS28, 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 1/2" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1/2" (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 1,000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.
  - A 4" LAYER OF PEA GRAVEL (NO. 8 OR 9) 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

#### OPERATION AND MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION (M-6), FACILITIES 1, 2 & 3

- THE HOA 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 INCLUDE MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUME II, TABLE A.4.1 AND 2.
- THE HOA SHALL PERFORM A PLANT INSPECTION IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION THE HOA SHALL REMOVE DEAD OR DISEASED VEGETATION CONSIDERED BEYOND TREATMENT. REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE PLANT MATERIAL. TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRES.
- THE HOA SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
- THE HOA SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.
- THE HOA SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE UNDERDRAINS WITHIN THE BIO-RETENTION LAYERS.
- THE HOA SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL STORM DRAIN PIPES AND STRUCTURES WITHIN PRIVATE EASEMENTS.

#### OWNER/DEVELOPER

JOSEPH C. & LISA ANN PENKUSKY  
4707 BEECHWOOD ROAD  
ELLICOTT CITY, MD 21043  
443-324-8807

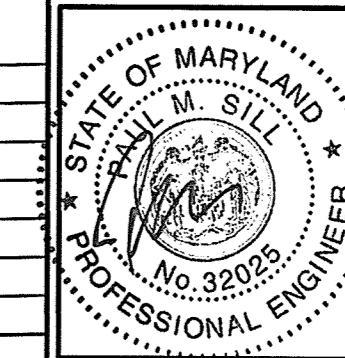
#### BIORETENTION PLAN, PROFILES, DETAILS & NOTES

#### PENKUSKY PROPERTY

LOTS 1, 3 THRU 7, AND OPEN SPACE LOTS 2, 8 THRU 11

TAX MAP 31 GRID 4  
1ST ELECTION DISTRICT

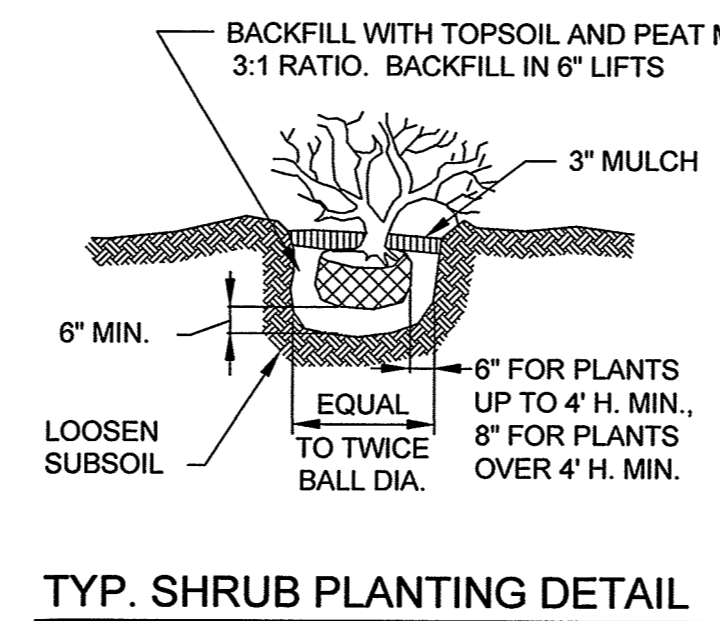
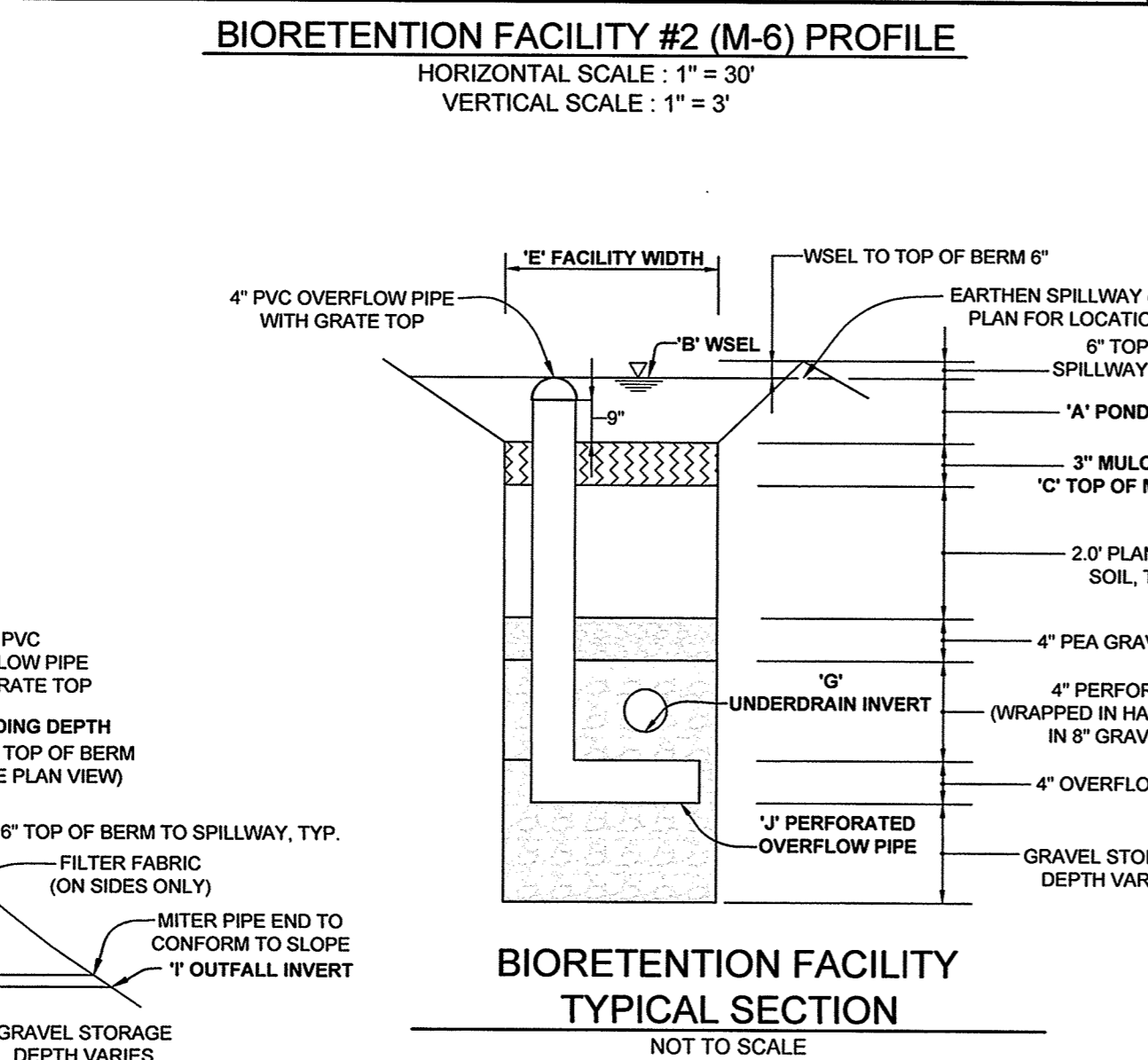
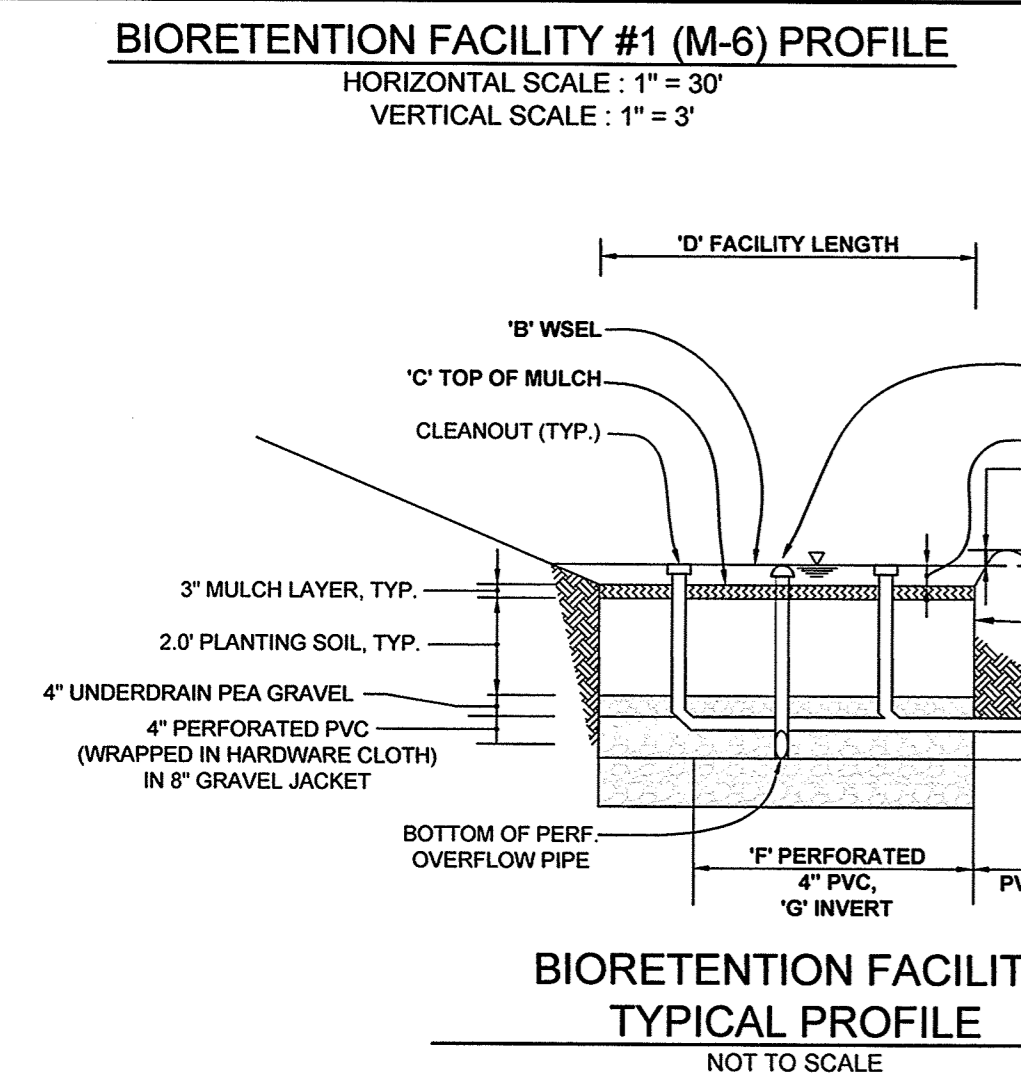
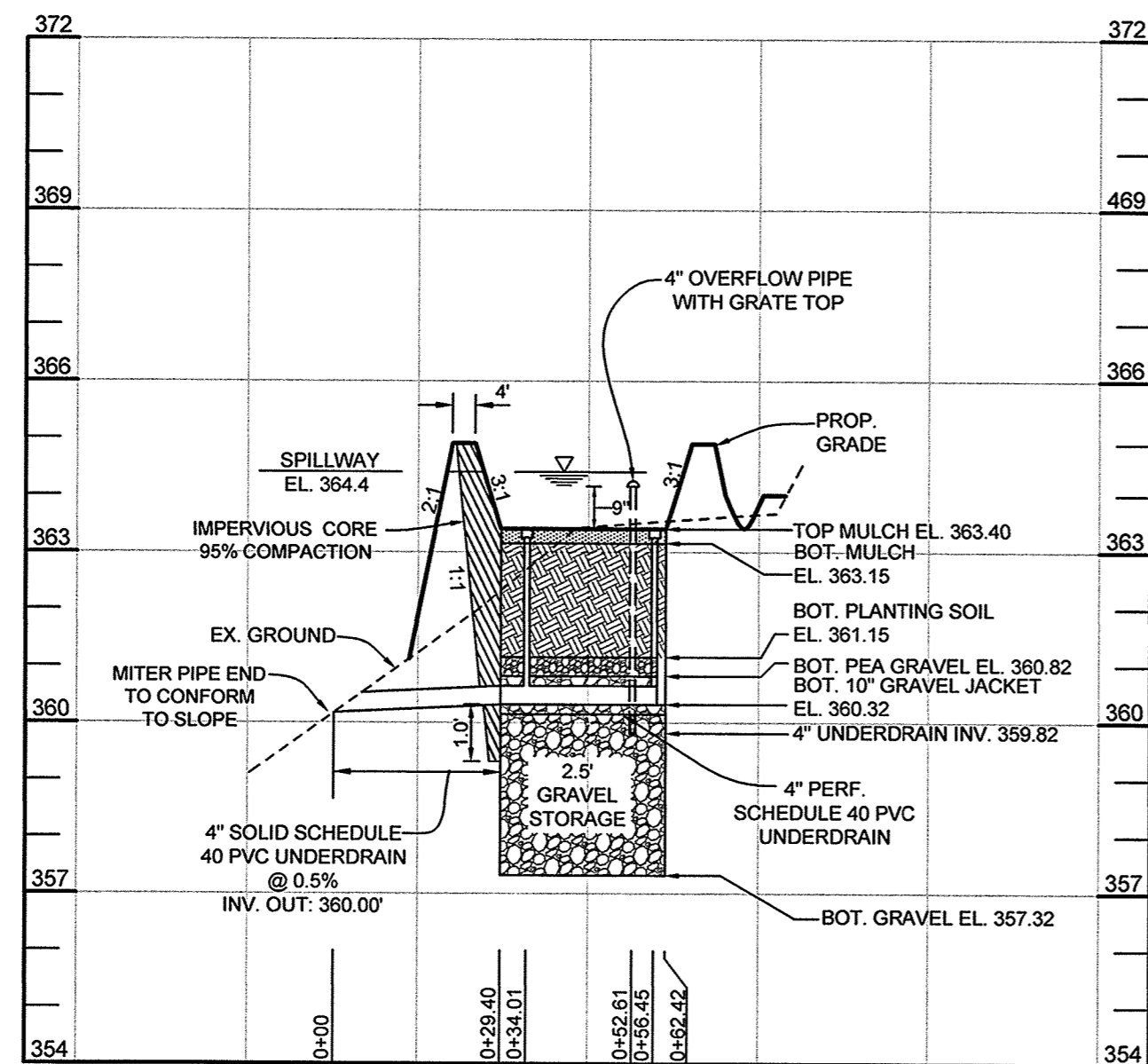
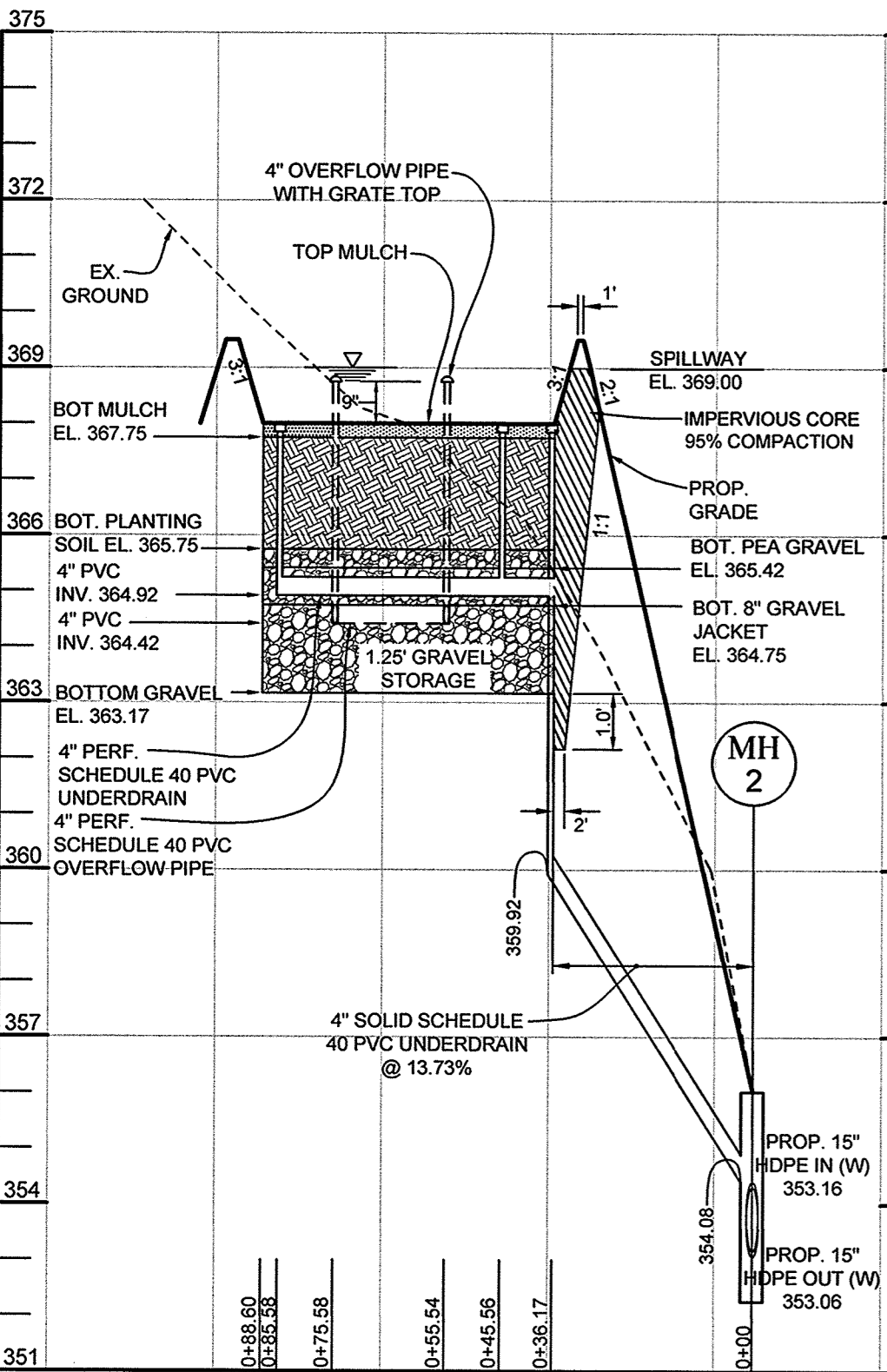
PARCEL 119  
HOWARD COUNTY, MARYLAND



**SILL ENGINEERING GROUP, LLC**  
16005 Frederick Road, 2nd Floor  
Woodbine, Maryland 21797  
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Fax: 410.696.2022  
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Civil Engineering for Land Development

DESIGN BY: PS  
DRAWN BY: JC  
CHECKED BY: PS  
SCALE: AS SHOWN  
DATE: DECEMBER 16, 2020  
PROJECT #: 15-028  
SHEET #: 12 of 17

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. 32028, EXPIRATION DATE: JUNE 30, 2021



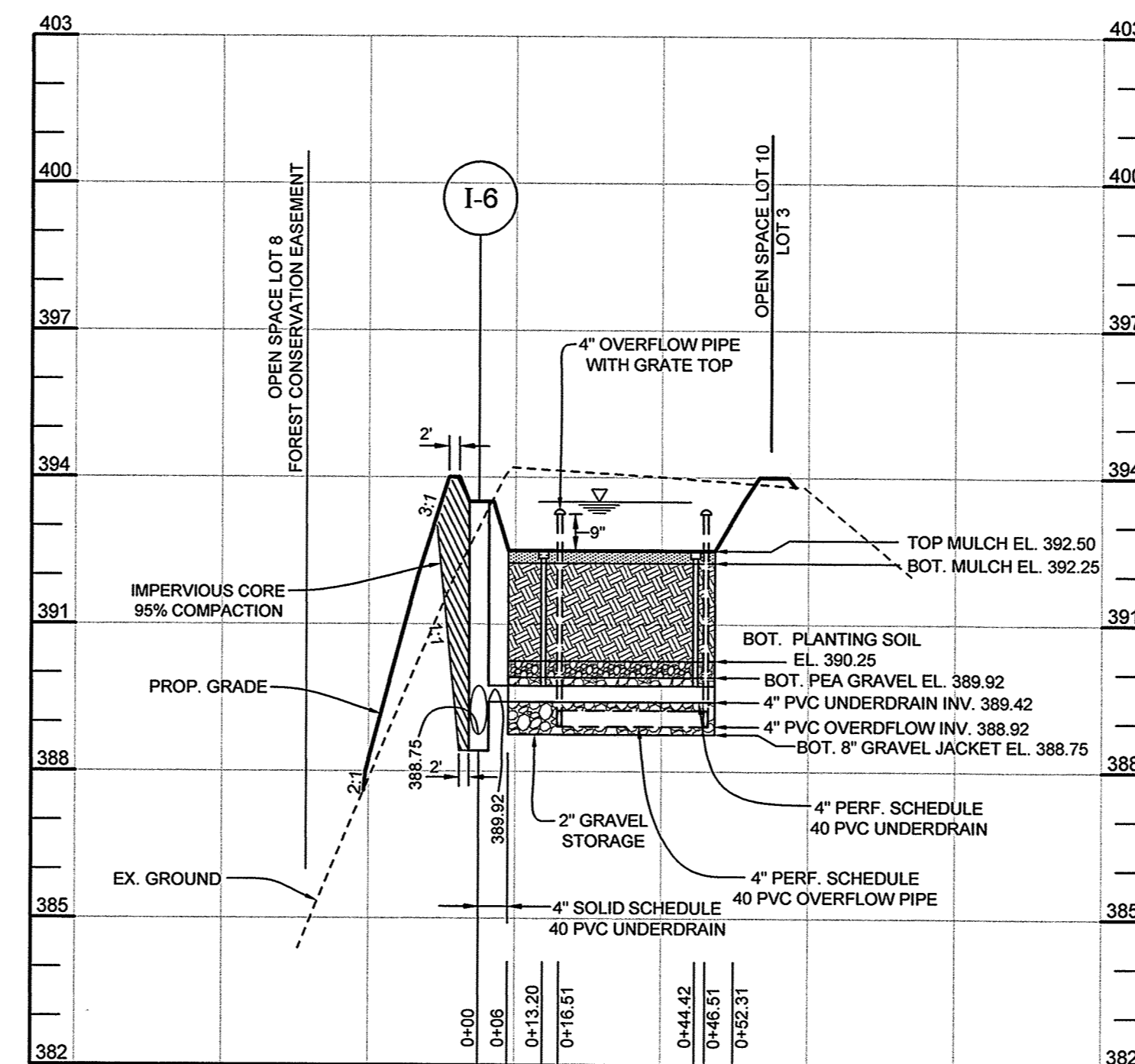
TYP. SHRUB PLANTING DETAIL

NOTE: PLANT MATERIAL MUST COVER 50% OF THE MULCH AREA AT MATURE GROWTH.

BIO 1 - BIORETENTION AREA = 660 S.F. OR 0.015 AC.

BIO 2 - BIORETENTION AREA = 350 S.F. OR 0.031 AC.

BIO 3 - BIORETENTION AREA = 731 S.F. OR 0.017 AC.



BIORETENTION FACILITY #3 (M-6) PROFILE

HORIZONTAL SCALE: 1" = 30'  
VERTICAL SCALE: 1" = 3'

#### BIORETENTION ELEVATIONS AND DIMENSIONS

DESCRIPTION	BIO 1	BIO 2	BIO 3
'A' PONDING DEPTH	1.0'	1.0'	1.0'
'B' WSEL	369.00	364.40	393.50
'C' TOP OF MULCH	368.00	363.40	392.50
'D' FACILITY LENGTH	51.40'	28.00'	39.30'
'E' FACILITY WIDTH	18.20'	14.00'	23.90'
'F' PERFORATED UNDERDRAIN DIMENSION	45.43'	22.44'	42.0'
'G' UNDERDRAIN INVERT	364.92	360.32	389.42
'H' SOLID UNDERDRAIN DIMENSION	37.62'	34.53'	6.0'
'T' OUTFALL INVERT	MH 2	359.82'	1-6"
'J' OVERFLOW PIPE	364.42	360.42	388.92

\* SEE PROFILE THIS SHEET

NOTE: FOR SWM BORING LOGS SEE SHEET 7

SWM PIPE SCHEDULE		
SIZE	TYPE	LENGTH
4" PERFORATED	SCH 40 PVC	109.87 LF
4" SOLID	SCH 40 PVC	76.15 LF

NO.	DESCRIPTION	DATE

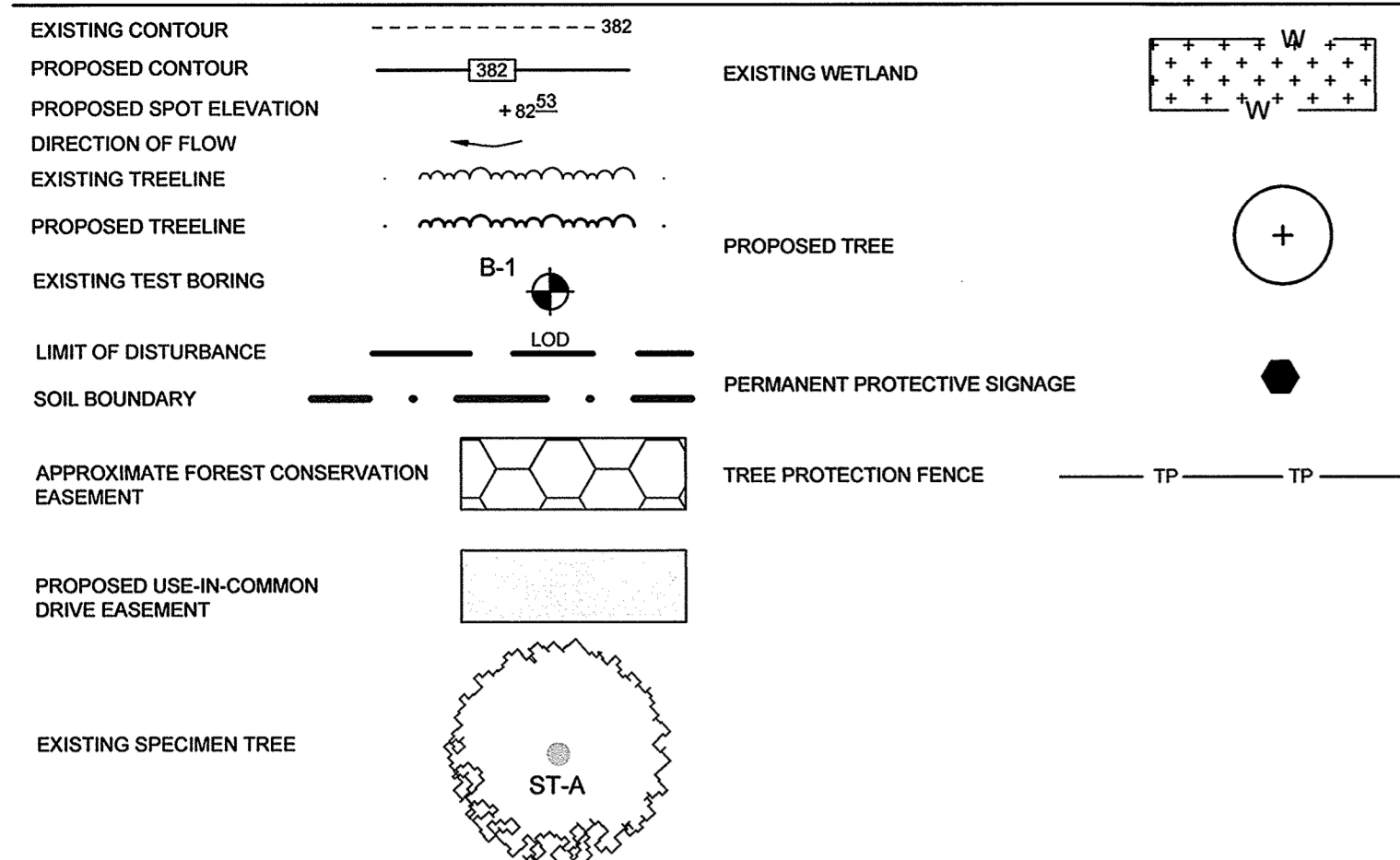
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

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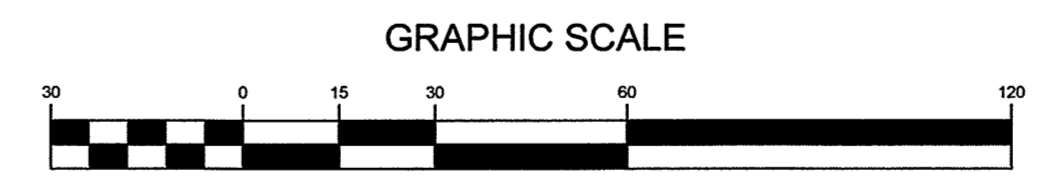
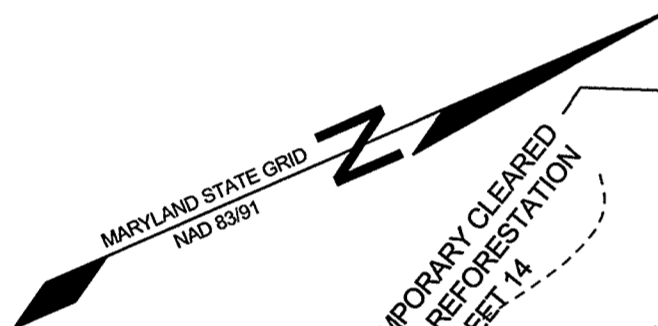
CHIEF, BUREAU OF HIGHWAYS  
DATE: 02/07/2022

**LEGEND**



SOILS LEGEND			
SYMBOL	NAME / DESCRIPTION	GROUP	'K' FACTOR
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Gob	GLENVILLE-CODORUS SILT LOAMS, 5 TO 8 PERCENT SLOPES	C	0.43
MdD	MANOR-BANNERTOWN SANDY LOAMS, 15 TO 25 PERCENT SLOPES, ROCKY	B	0.15
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PLAN VIEW  
 SCALE: 1"=30'

**OWNER/DEVELOPER**  
 JOSEPH C. & LISA ANN PENKUSKY  
 4707 BEECHWOOD ROAD  
 ELLICOTT CITY, MD 21043  
 443-324-4807

**LANDSCAPE AND FOREST CONSERVATION PLAN**  
**PENKUSKY PROPERTY**  
 LOTS 1, 3 THRU 7, AND OPEN SPACE LOTS 2, 8 THRU 11  
 TAX MAP 31 GRID 4  
 1ST ELECTION DISTRICT  
 PARCEL 119  
 HOWARD COUNTY, MARYLAND

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 12/22/2020

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE: 02/07/2021

**DEVELOPER'S CERTIFICATE**  
 I 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 FURTHER CERTIFY THAT UPON COMPLETION, A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXPEDITED ONE(1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.  
 DEVELOPER: [Signature]  
 DATE: 12-22-2020

NO.	DESCRIPTION	DATE

**SILL ENGINEERING GROUP, LLC**  
 16005 Frederick Road, 2nd Floor  
 Woodbine, Maryland 21797  
 Phone: 443.325.5076  
 Fax: 410.696.2022  
 Email: info@sillengineering.com  
 Civil Engineering for Land Development

DESIGN BY: PS  
 DRAWN BY: JC  
 CHECKED BY: PS  
 SCALE: AS SHOWN  
 DATE: DECEMBER 16, 2020  
 PROJECT #: 15-028  
 SHEET #: 13 of 17

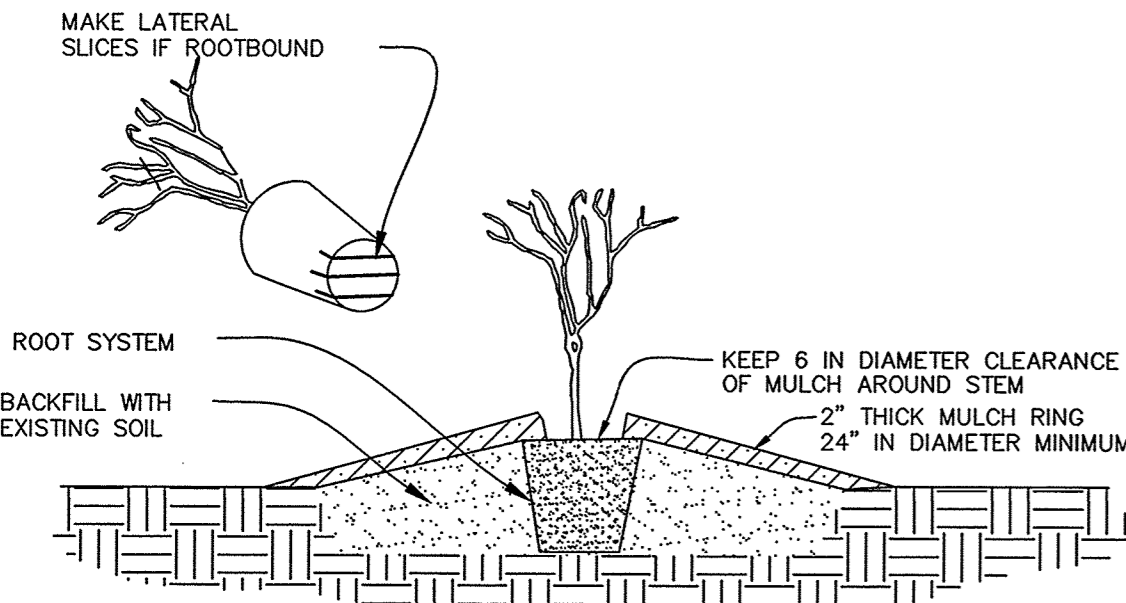
PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 32025, EXPIRATION DATE: JUNE 20, 2021

NOTE: PLANTING REQUIRED TO OFFSET TEMPORARY GRADING TO SATISFY SITE DISTANCE REQUIREMENT AND TO ACHIEVE NECESSARY FOREST RETENTION SIZE STANDARD. A TOTAL OF 2,468 SF IS TO BE GRADED, WITH 1,647 SF IN FCE B.

Table: REFORESTATION PLANTING SCHEDULE. Columns: QUANTITY, SPECIES, SIZE, SPACING, TOTAL FCA UNITS. Rows include Acer rubrum, Liriodendron tulipifera, Prunus serotina, Quercus alba, and summary rows for total credit.

PLANTING NOTES:

- PLANTING DENSITY BASED ON 700 PLANTING UNITS PER ACRE, 1" CALIPER TREE = 3.5 UNITS, WHIPS WITH SHELTER = 2 PLANTING UNITS. PLANTING SHALL BE MADE IN A CURVILINEAR FASHION ALONG CONTOUR...

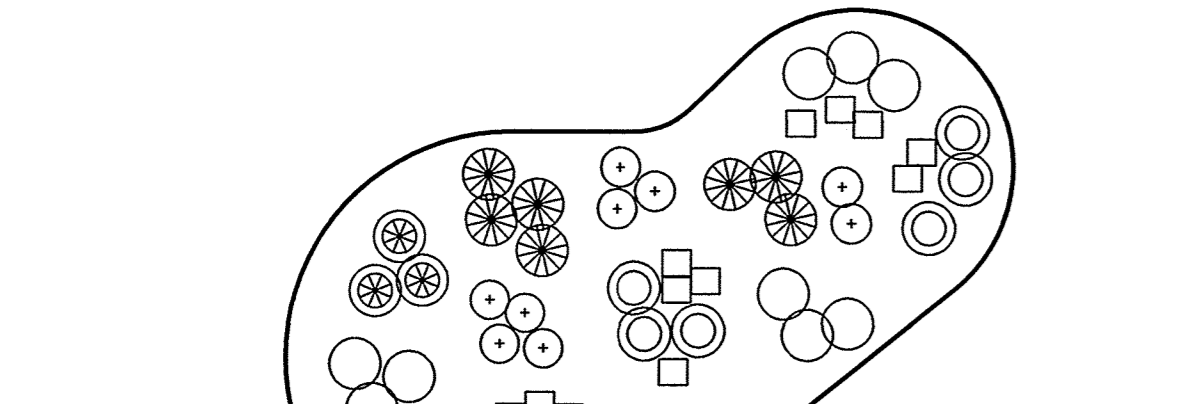


CONTAINER PLANTING DETAIL

- 1. REMOVE THE PLANT EITHER BY CUTTING OR INVERTING THE CONTAINER. 2. USE A KNIFE TO CUT THROUGH BOTTOM HALF OF THE ROOT BALL. 3. PLANT SHRUBS ON FORMED UP MOUNDS 4" ABOVE THE EXISTING GRADE...

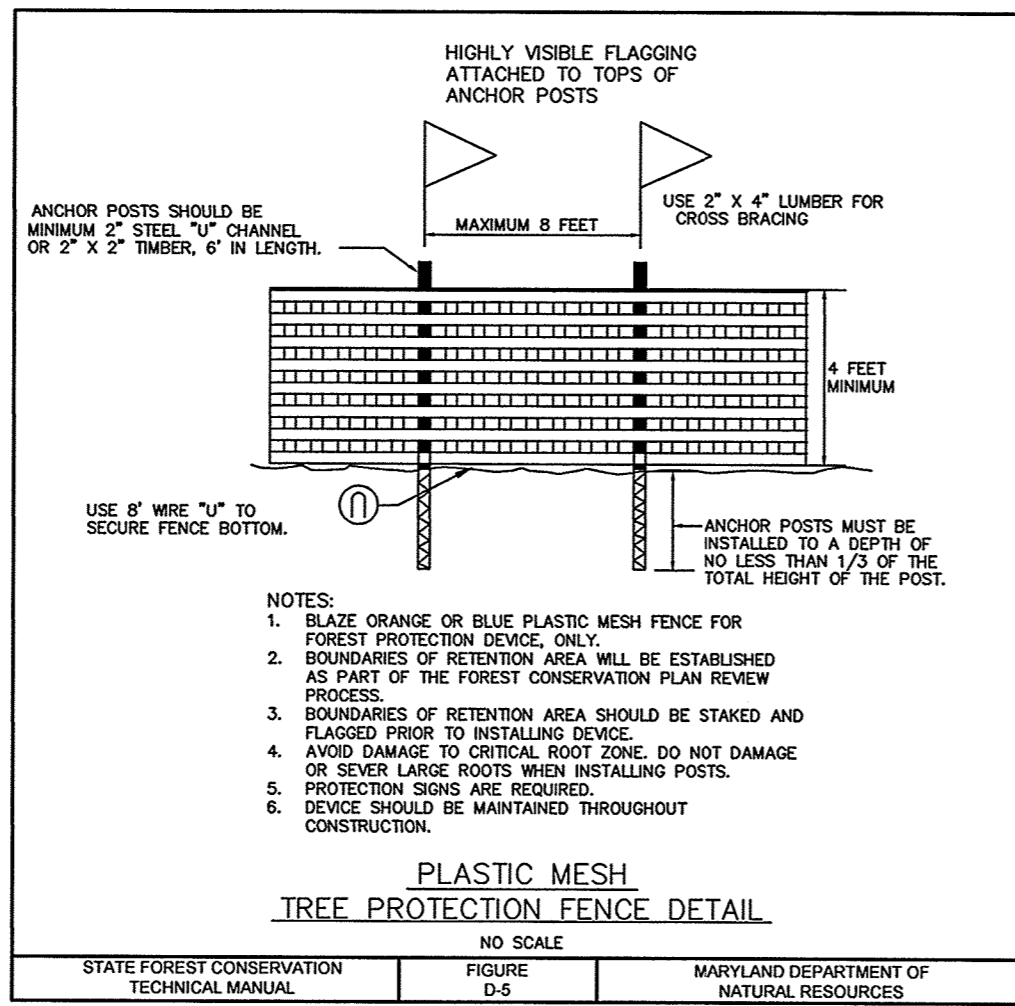
PLANTING/SOIL SPECIFICATIONS

- 1. INSTALLATION OF 88B / CONTAINER STOCK SHALL BE PERFORMED MARCH 15 - MAY 30 OR SEPTEMBER 15 - NOVEMBER 15. 2. DISTURBED AREAS SHALL BE SEEDED AND STABILIZED AS PER GENERAL CONSTRUCTION PLAN FOR PROJECT...



REFORESTATION RANDOM PLANTING DISTRIBUTION PLAN

NOT TO SCALE

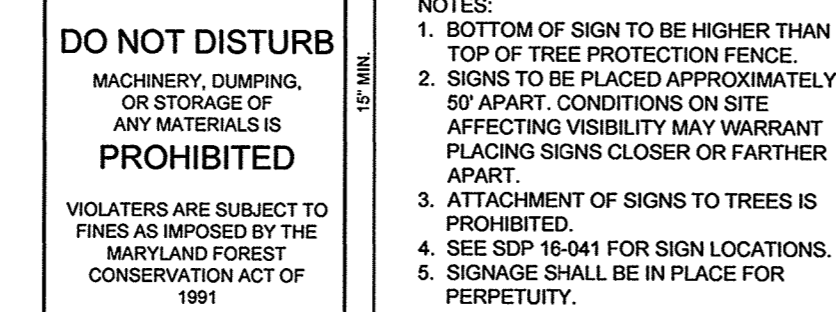


TREE PROTECTION FENCE DETAIL

NOT TO SCALE

FOREST CONSERVATION SIGN DETAIL

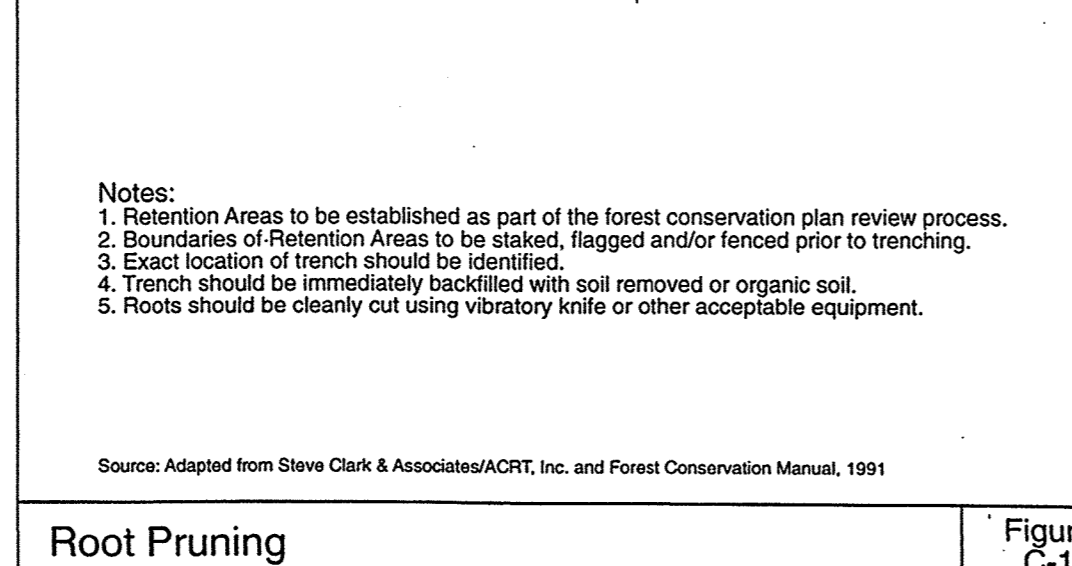
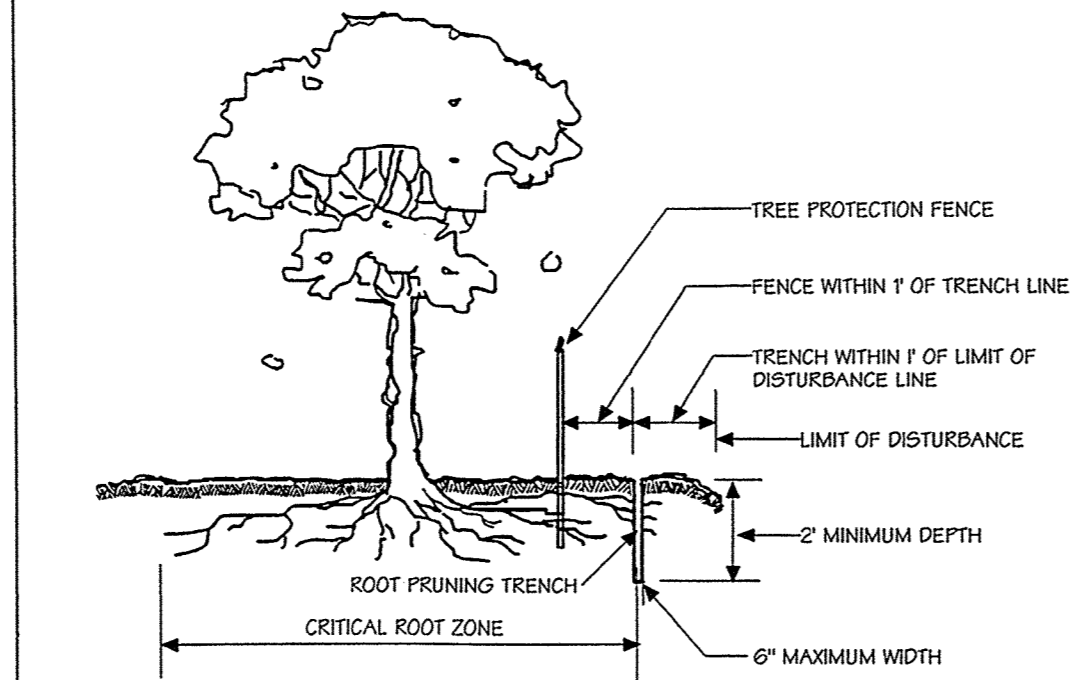
NOT TO SCALE



FOREST CONSERVATION SIGN DETAIL

NOT TO SCALE

State Forest Conservation Manual Appendix C: Sample Details and Specifications



Root Pruning Figure C-1 Final Draft 170 July 1995

Table: FOREST CONSERVATION WORKSHEET. Summary of land area, existing forest cover, proposed clearing, and planting requirements.

NOTE: PLANTING REQUIRED TO OFFSET TEMPORARY GRADING TO SATISFY SITE DISTANCE REQUIREMENT AND TO ACHIEVE NECESSARY FOREST RETENTION SIZE STANDARD. A TOTAL OF 2,468 SF IS TO BE GRADED, WITH 1,647 SF IN FCE B.

FOREST CONSERVATION PLAN NOTES

- 1. NO RARE, THREATENED OR ENDANGERED SPECIES, OR THEIR HABITATS WERE OBSERVED ON THE PROPERTY. 2. SURROUNDING LAND USE IS PRIMARILY MEDIUM DENSITY RESIDENTIAL DEVELOPMENT...

FOREST CONSERVATION EASEMENTS

- 1. CONSULT INTERNATIONAL SOCIETY OF ARBORETCULTURE GUIDELINES FOR FURTHER DETAILS OF PLANTING SPECIFICATIONS, OR CONSULT WITH A QUALIFIED PROFESSIONAL. 2. EACH TREE SHALL BE PLANTED SUCH THAT THE TRUNK FLARE IS VISIBLE AT THE TOP OF THE ROOT BALL...

TYPICAL TREE PLANTING AND STAKING

NOT TO SCALE

DECIDUOUS TREES UP TO 2-1/2" CALIPER

CONSTRUCTION PERIOD PROTECTION PROGRAM

- A. FOREST PROTECTION TECHNIQUES: SOIL PROTECTION AREA (CRITICAL ROOT ZONE), FENCING AND SIGNAGE, STORAGE FACILITIES/EQUIPMENT CLEANING. B. SEQUENCE OF CONSTRUCTION: TIMETABLE REPRESENTS THE PROPOSED TIMETABLE FOR THE PROJECT...

POST-CONSTRUCTION MANAGEMENT PLAN

- HOWARD COUNTY REQUIRES A TWO YEAR POST-CONSTRUCTION MANAGEMENT PLAN BE PREPARED AS PART OF THE FOREST CONSERVATION PLAN. THE PLAN GOES INTO EFFECT UPON ACCEPTANCE OF THE CONSTRUCTION CERTIFICATION BY THE COUNTY. ECO-SCIENCE PROFESSIONALS, OR ANOTHER QUALIFIED PROFESSIONAL DESIGNATED BY THE DEVELOPER, WILL BE RESPONSIBLE FOR IMPLEMENTATION...

FOREST CONSERVATION EASEMENTS

- EASEMENTS ARE A LEGAL MEANS OF PROVIDING PERMANENT PROTECTION OF FORESTS, FARMLAND AND OPEN SPACE. IN ACCORDANCE WITH THE CRITERIA OUTLINED IN THE HOWARD COUNTY FOREST CONSERVATION MANUAL, A FOREST CONSERVATION EASEMENT WILL BE RECORDED FOR THE RETENTION AREAS THE SUBJECT PROPERTY...

TYPICAL EVERGREEN TREE PLANTING DETAIL

NOT TO SCALE

REVISIONS

LANDSCAPE PLAN NOTES

- 1. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. IN ADDITION TO THE REQUIRED PERIMETER LANDSCAPING TREES THE DEVELOPER SHALL PLANT EIGHTEEN (18) SHADE TREES... 2. EVERGREEN TREES AND EIGHT (8) SHRUBS ARE TO BE PLANTED IN THE STREAM BUFFER...

Table: SCHEDULE A: PERIMETER LANDSCAPE EDGE. Columns: CATEGORY, ADJACENT TO ROADWAYS (1-4), ADJACENT TO PERIMETER PROPERTIES (1-4). Rows: PERIMETER/FRONTAGE DESIGNATION, LINEAR FEET OF ROADWAY, CREDIT FOR EXISTING VEGETATION, etc.

- NOTE: 1. LOT 1 WILL BE OCCUPIED BY AN EXISTING HOUSE AND, THEREFORE, NO PERIMETER LANDSCAPING IS REQUIRED. 2. TWO OF THE THREE PROVIDED SHADE TREES IN PERIMETER 4 COUNT TOWARD THE REQUIRED 18 SHADE TREES FOR THE SPECIMEN TREE MITIGATION...

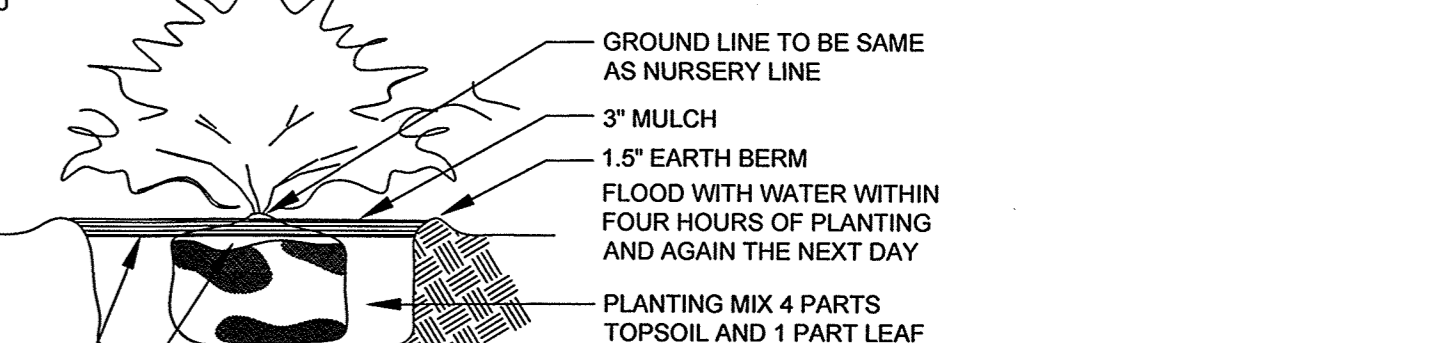
LANDSCAPE PLANT LIST

Table: LANDSCAPE PLANT LIST. Columns: KEY, QUANTITY, BOTANICAL NAME, SIZE, NOTE. Lists plants like Platanus x acerifolia, Liquidambar styraciflua, Cercis canadensis, Quercus alba, etc.

SPECIMEN TREE TABLE

Table: SPECIMEN TREE TABLE. Columns: KEY, SIZE, SPECIES, CRZ, REMARKS, RETAINED/REMOVED. Lists trees like Tulip Poplar, White Oak, Red Oak, etc.

NOTE: THE NINE SPECIMEN TREES TO BE REMOVED WERE APPROVED BY WP-17-124.



TYP. SHRUB PLANTING DETAIL

NOT TO SCALE

OWNER/DEVELOPER

JOSEPH C. & LISA ANN PENKUSKY 4707 BEECHWOOD ROAD ELLICOTT CITY, MD 21043 443-324-4807

LANDSCAPE AND FOREST CONSERVATION DETAILS AND NOTES

PENKUSKY PROPERTY

LOTS 1, 3 THRU 7, AND OPEN SPACE LOTS 2, 8 THRU 11

TAX MAP 31 GRID 4 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

Professional Engineer Seal for Sill Engineering Group, LLC. Includes details like 'DESIGN BY: PS', 'DRAWN BY: JC', 'CHECKED BY: PS', 'DATE: DECEMBER 16, 2020'.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING. Chief, Division of Land Development: [Signature] DATE: 3/1/21

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS. Chief, Bureau of Highways: [Signature] DATE: 02/07/2021

DEVELOPER'S CERTIFICATE. I CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE... DEVELOPER: [Signature] DATE: 12-22-2020

Eco-Science Professionals, Inc. Consulting Ecologists. P.O. Box 5086 Glen Artnu, Maryland 21057 Telephone (410) 832-3480 Fax (410) 832-1488

M.D. DING, Qualified Professional USACE Wetland Designer. Certification # 17453311000000000048181 John P. Canale

REVISIONS table with columns for NO., DESCRIPTION, DATE.

REVISIONS table with columns for NO., DESCRIPTION, DATE.

**GENERAL NOTES**

- IT IS THE CUSTOMERS RESPONSIBILITY THAT EACH PRODUCT IS FIT FOR ITS INTENDED PURPOSE AND THAT THE ACTUAL CONDITIONS ARE SUITABLE.
- IT IS THE CUSTOMERS RESPONSIBILITY TO FOLLOW ACO, INC. INSTALLATION INSTRUCTIONS FOR EACH PRODUCT. SEEK ENGINEERING ADVICE FOR INSTALLATIONS NOT ILLUSTRATED IN THE INSTALLATION GUIDELINES.
- CONTRACTOR TO CONTACT MANUFACTURER WELL IN ADVANCE OF CONSTRUCTION TO RECEIVE SPECIFIC DETAILS ON STORMBRIX UNIT CONSTRUCTION.
- ALL FABRICATIONS TO BE COMPLETED BY INSTALLING CONTRACTOR.
- DIMENSIONS ARE FROM OUTSIDE TO OUTSIDE
- FOR FURTHER PRODUCT INFORMATION, CUT SHEETS, SPECIFICATIONS AND INSTALLATION INSTRUCTIONS, PLEASE VISIT US AT OUR WEBSITE: WWW.ACOUSA.COM/PRODUCTS/SURFACE-WATER-MANAGEMENT/ACO-STORMBRIX.

**STORMBRIX MAINTENANCE**

**General:**

ACO StormBrix is a unique and patented geocellular stormwater management system for detention and infiltration usage. Its versatile design allows the system to be used in configurations and applications across all construction environments as a standalone solution or as part of an integrated LID (Low Impact Development) or BMP (Best Management Practices). Systems may or may not include pre-treatment to remove sediment and/or contaminants prior to entering the storage area. Those without pre-treatment require greater attention to system functionality and may require additional maintenance. In order to sustain proper system functionality, ACO offers the following general maintenance guidelines for the StormBrix product.

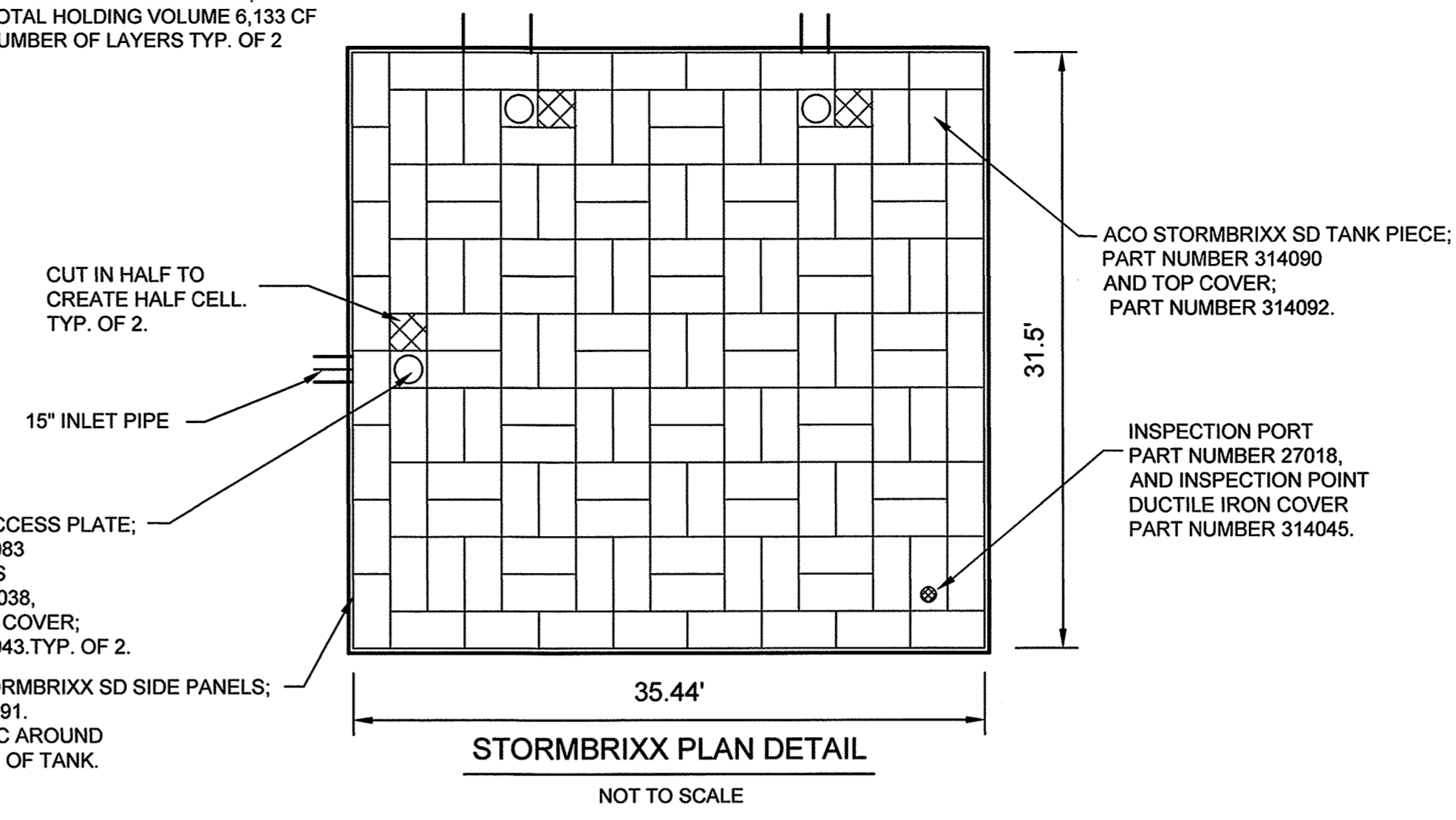
**Prevention Measures:**

- Prior to & During Construction - Siltation prevention of the stormwater system.
  - Conform to all local, state and federal regulations for sediment and erosion control during construction.
  - Install site erosion and sediment BMP's (Best Management Practices) required to prevent siltation of the stormwater system.
  - Inspect and maintain erosion and sediment BMP's during construction.
- Post Construction - Prior to commissioning to ACO StormBrix system
  - Remove and properly dispose of construction erosion and sediment BMP's per all local, state and federal regulations. Care should be taken during removal of the BMP's as not to allow collected sediment or debris into the stormwater system.
  - Flush the ACO StormBrix system to remove any sediment or construction debris immediately after the BMP's removal. Follow the maintenance procedure outlined.

**Inspections:**

- Follow all local, state and federal regulations regarding stormwater BMP inspection requirements. ACO INC. makes the following recommendations:
- During the first service year a visual inspection should be completed during and after each major rainfall event, in addition to every 6 month period, to monitor and establish each sediment and debris buildup occurs. Each ACO StormBrix system is unique to the application and multiple criteria can affect maintenance frequency such as:
    - System Design: pre-treatment/no-pre-treatment, inlet protection, stand-alone device.
    - Surface Area collecting from: hardscape, gravel, soil or any other surface
    - Adjacent Area: soil runoff, gravel, trash.
  - Second year; establish an annual inspection frequency based on the information collected during the first year. At a minimum an inspection should be performed at 6 month intervals.
  - Inspect:
    - ACO StormBrix access chambers & inspection ports.
    - Inflow and outflow points.
    - Discharge area.
  - Identify and Report maintenance required:
    - Sediment and debris accumulation.
    - System backing up.

ACO STORMBRIX SD TANK  
TANK STRUCTURAL AREA 6,323 CF  
TOTAL HOLDING VOLUME 6,133 CF  
NUMBER OF LAYERS TYP. OF 2

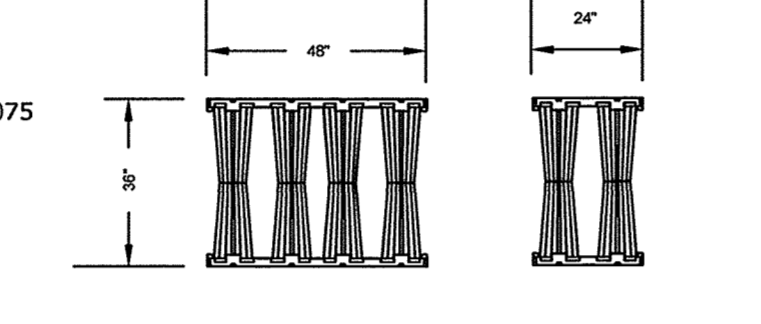


Installation depths of ACO StormBrix SD	
Installation Location	Minimum cover depth <sup>(4)</sup> ft (m)
Non-trafficked areas i.e. landscaping <sup>(2)</sup>	1.65 (0.5)
Parking lots, vehicles up to 5,512lbs gross mass <sup>(1)</sup>	1.8 (0.55)
Parking lots, occasional vehicles greater than 5,512lbs gross mass <sup>(3)</sup>	2.0 (0.6)
Occasional heavy truck traffic up to HS-20 loading	Please consult with ACO
Maximum cover depth of ACO StormBrix SD	6.5 (2)
Maximum depth to invert of ACO StormBrix SD two layer system	12.56 (3.8)

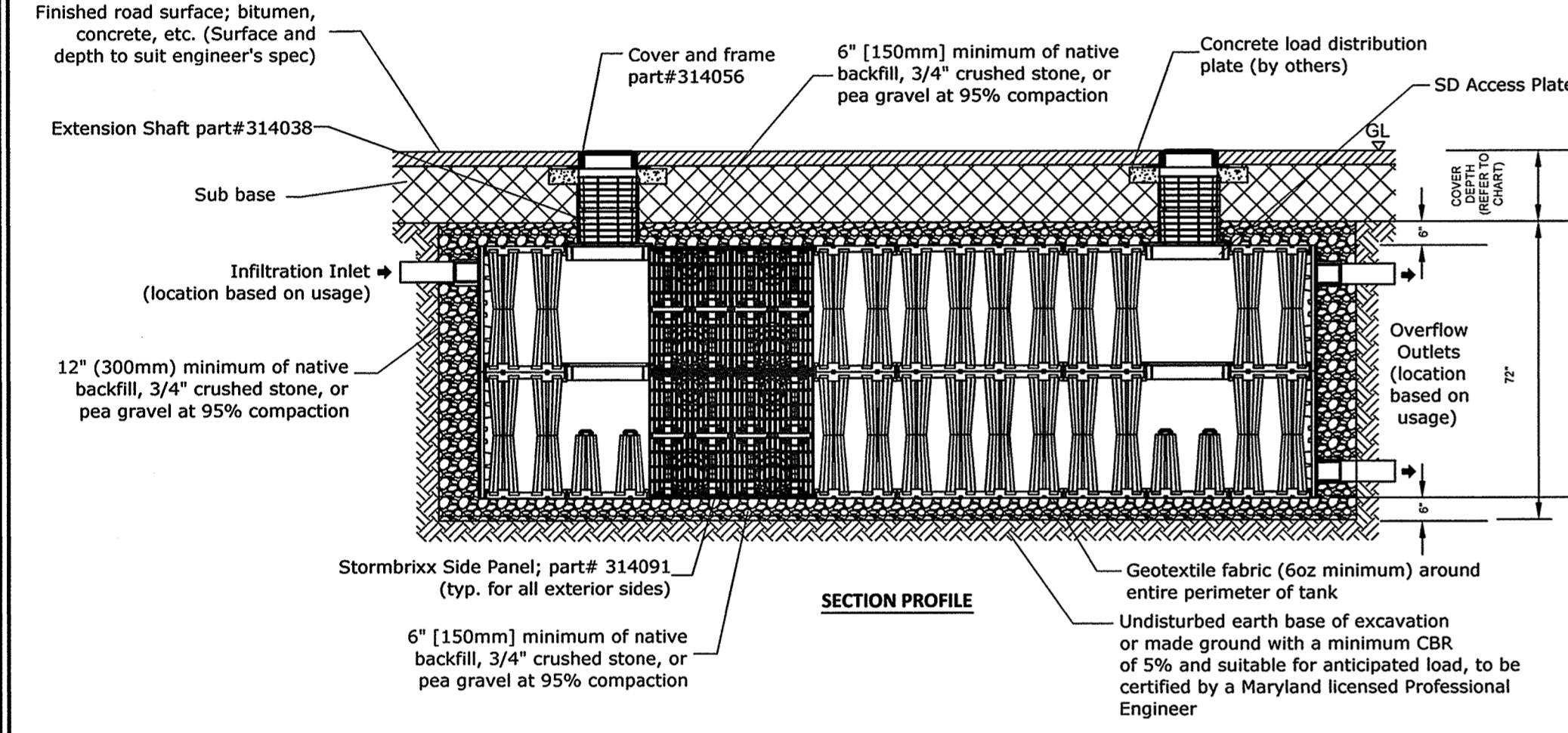
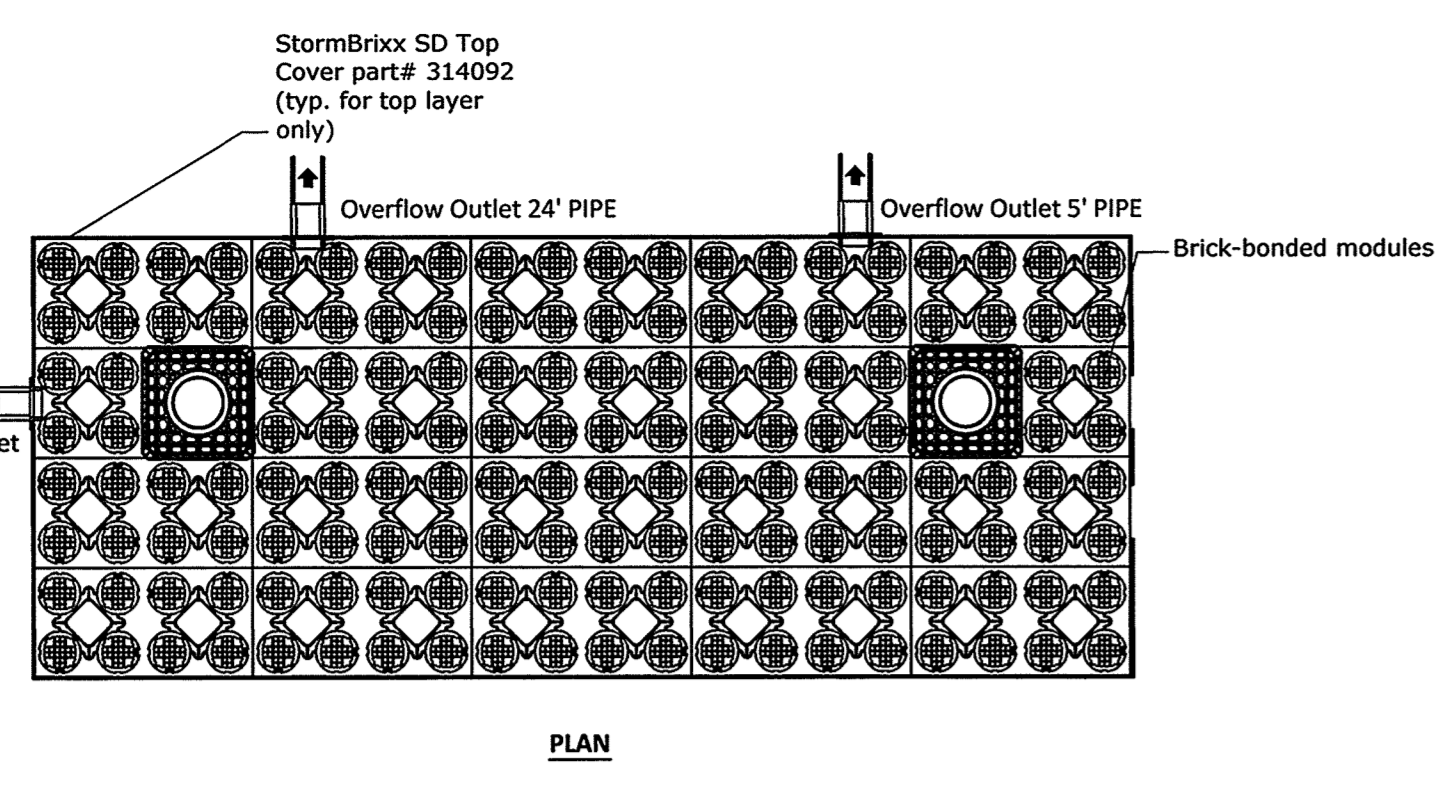
**Notes**

- Assumes 27 degree load distribution through fill material and overlying surface asphalt or block paving
- Minimum cover depth to avoid accidental damage from gardening/landscaping work
- Occasional sanitation trucks or similar vehicles (typically one per week)
- Please check minimum frost cover depths and water table heights for geographical location

**ACO StormBrix SD Module**  
48"x24"x36" [1200x602.5x914mm (H)]  
22.54cuft net volume per completed module  
Brick or Cross Bonded (where applicable)  
part# 314090



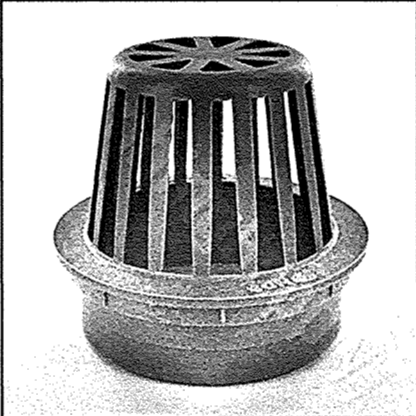
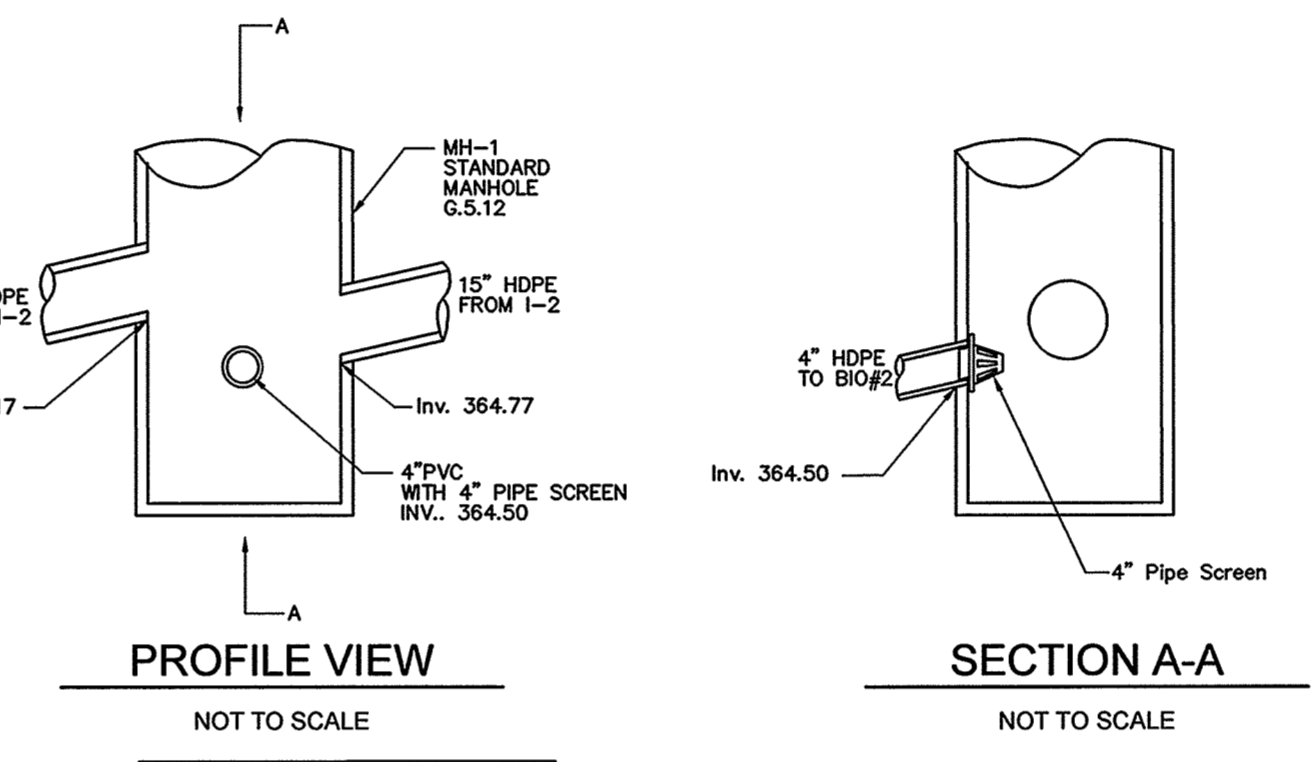
\*All systems must be designed and installed to meet or exceed ACO StormBrix minimum requirements. Although ACO StormBrix offers support during the design, review, and construction phases of the module system, it is the ultimate responsibility of the Engineer of Record to design the system in full compliance with all applicable engineering practices, laws, and regulations.



\* FOR INSTALLATION GUIDE, SEE SHEET 16 OF 17.

**INFILTRATION - STORMBRIX SD TWO LAYERS WITH ACCESS PLATES**

NOT TO SCALE



**LOW FLOW PIPE SCREEN DETAIL FOR MH-1**  
NOT TO SCALE

**LOW FLOW SCREEN MAINTENANCE**

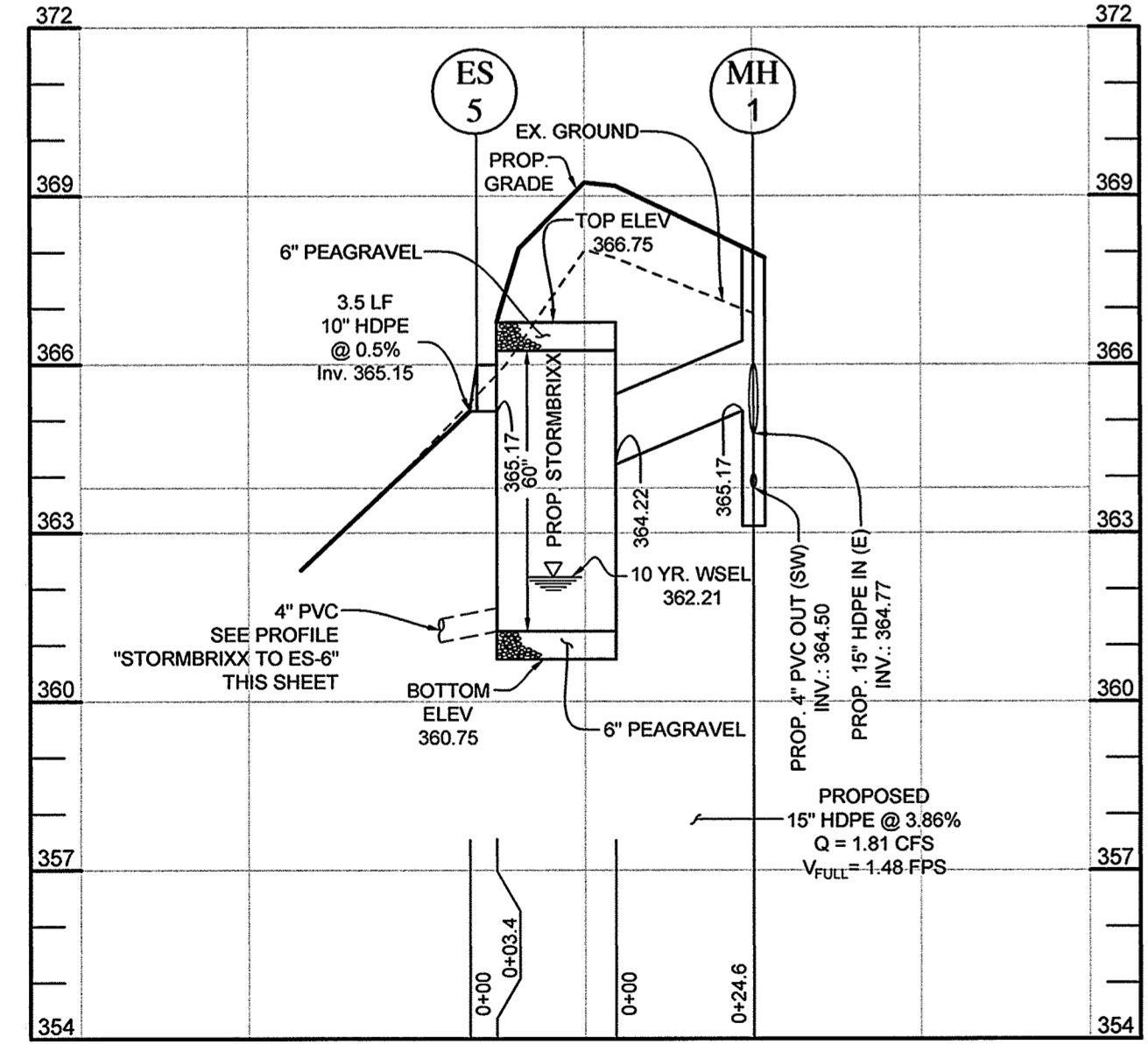
- Visually inspect Low Flow Screen after each major storm event (2-year event or greater) but not less than 2 times per year. All debris and trash shall be removed from the screen and manhole. any damage to the screen shall be repaired.
- During the bi-annual inspection, sediment and other eroded materials shall be removed when accumulated to a depth of 1 foot.

**Maintenance Procedures:**

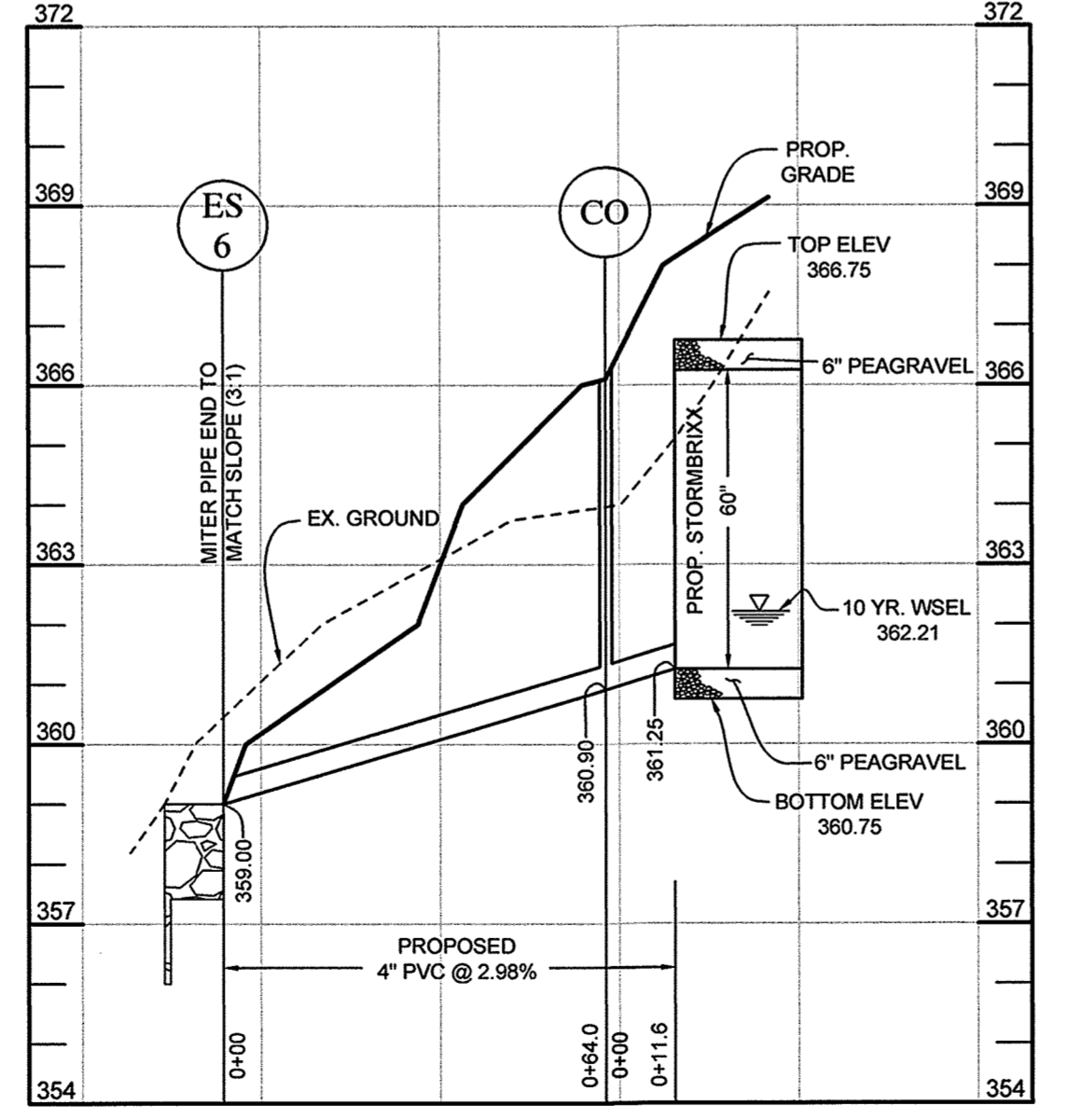
- Conform to all local, state and federal regulations.
- Determine if maintenance is required. If a pre-treatment device is installed, follow manufacturer recommendations.
- Flush with clean water forcing debris from the system using high-pressure jet/nozzle.
- Use a vacuum pump truck to evacuate debris from the inflow and outflow points.
- Repeat steps 3 and 4 until no debris is evident.

**Cleaning Procedures:**

- The frequency of cleaning is site specific and is affected mainly by the land use and pollutants that may enter the system. It's recommended that the ACO StormBrix system be inspected at minimum every six months. The ACO StormBrix system is inspected and cleaned through the access chambers or inspection ports by simply opening or removing the ductile iron cover.
- Complete a visual inspection to evaluate the silt and debris accumulation within the system, if the area cannot be fully observed insert an inspection camera to view the entirety of the tank. If the level silt and debris within the system is greater than 3 inches then maintenance is required.
- Maintenance is achieved using high-pressure jet/nozzle to loosen and suspend debris and build up that can be removed with a vacuum hose. Once debris and build up has been removed, remove any cleaning equipment (be sure to close and secure if needed any access chamber covers or inspection port covers) We also recommend cleaning of any upstream manholes or devices that connect to the StormBrix system. Nearly all municipalities own or work closely with private companies who have vacuum equipment with the combined capability to both break up and removed build up and debris.



**STORM DRAIN PROFILE MH-1 TO ES-5**  
HORIZONTAL SCALE : 1" = 30'  
VERTICAL SCALE : 1" = 3'



**STORMBRIX TO ES-6**  
HORIZONTAL SCALE : 1" = 30'  
VERTICAL SCALE : 1" = 3'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING	APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 11/02/21	 CHIEF, BUREAU OF HIGHWAYS DATE: 02/07/2021

NO.	DESCRIPTION	DATE

**STORMWATER MANAGEMENT DETAILS**  
**STORMBRIX SYSTEM**  
**PENKUSKY PROPERTY**  
LOTS 1, 3 THRU 7, AND OPEN SPACE LOTS 2, 8 THRU 11

TAX MAP 31 GRID 4  
1ST ELECTION DISTRICT

PARCEL 119  
HOWARD COUNTY, MARYLAND

**OWNER/DEVELOPER**  
JOSEPH C. & LISA ANN PENKUSKY  
4707 BEECHWOOD ROAD  
ELLICOTT CITY, MD 21043  
443-324-4807

**SILL ENGINEERING GROUP, LLC**  
16005 Frederick Road, 2nd Floor  
Woodbine, Maryland 21797  
Phone: 443.325.5076  
Fax: 410.696.2022  
Email: info@sillengineering.com  
Civil Engineering for Land Development

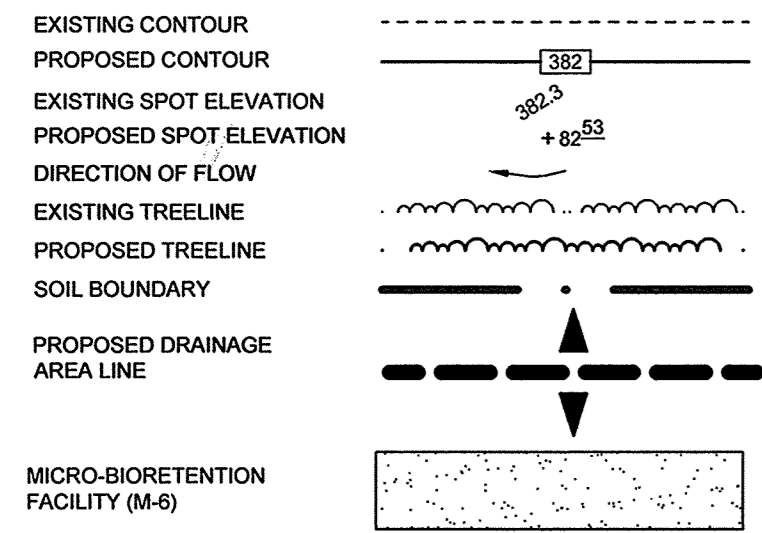
DESIGN BY: PS  
DRAWN BY: JC  
CHECKED BY: PS  
SCALE: AS SHOWN  
DATE: DECEMBER 16, 2020  
PROJECT #: 15-028  
SHEET #: 15 OF 17

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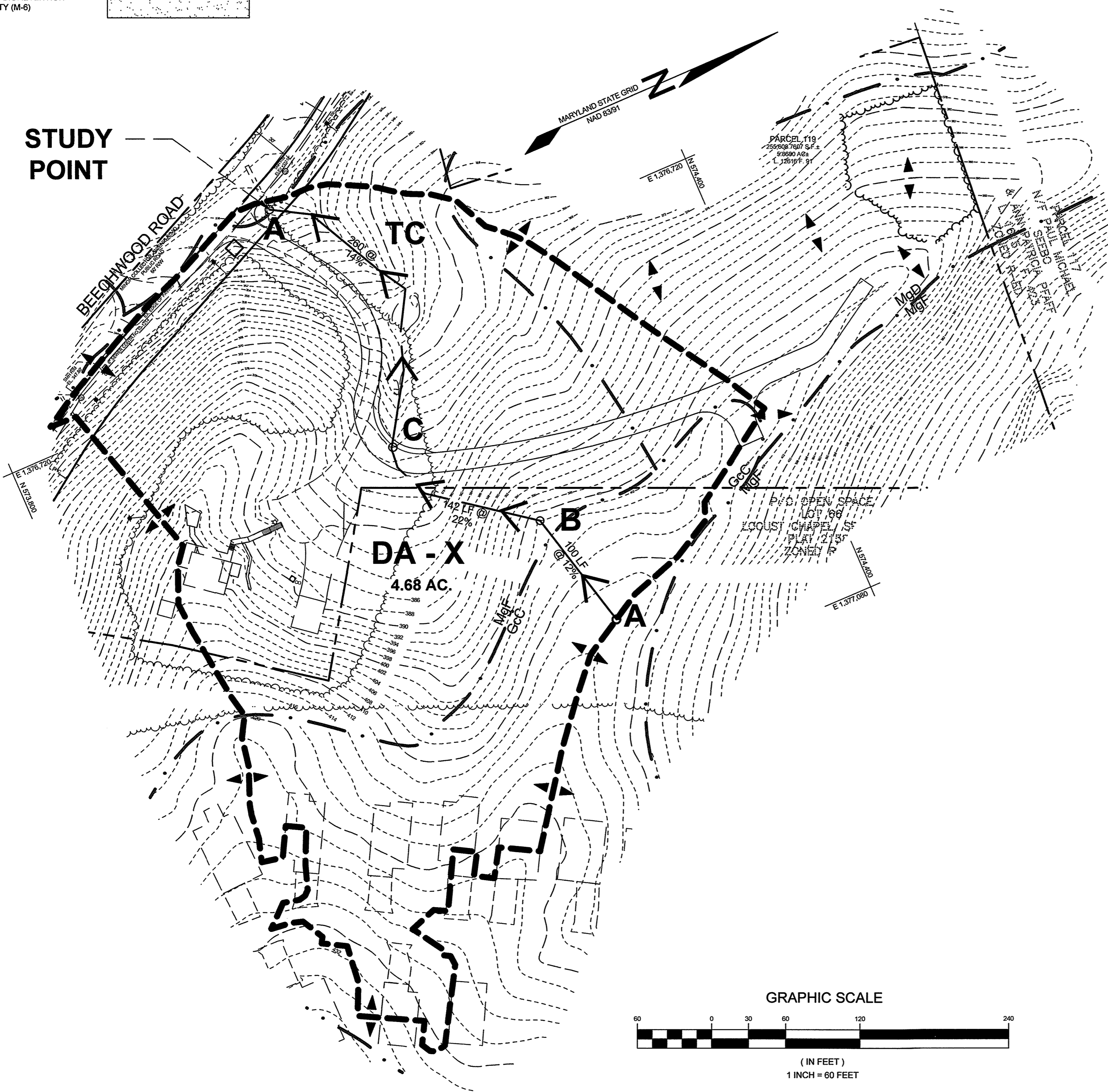




**LEGEND**

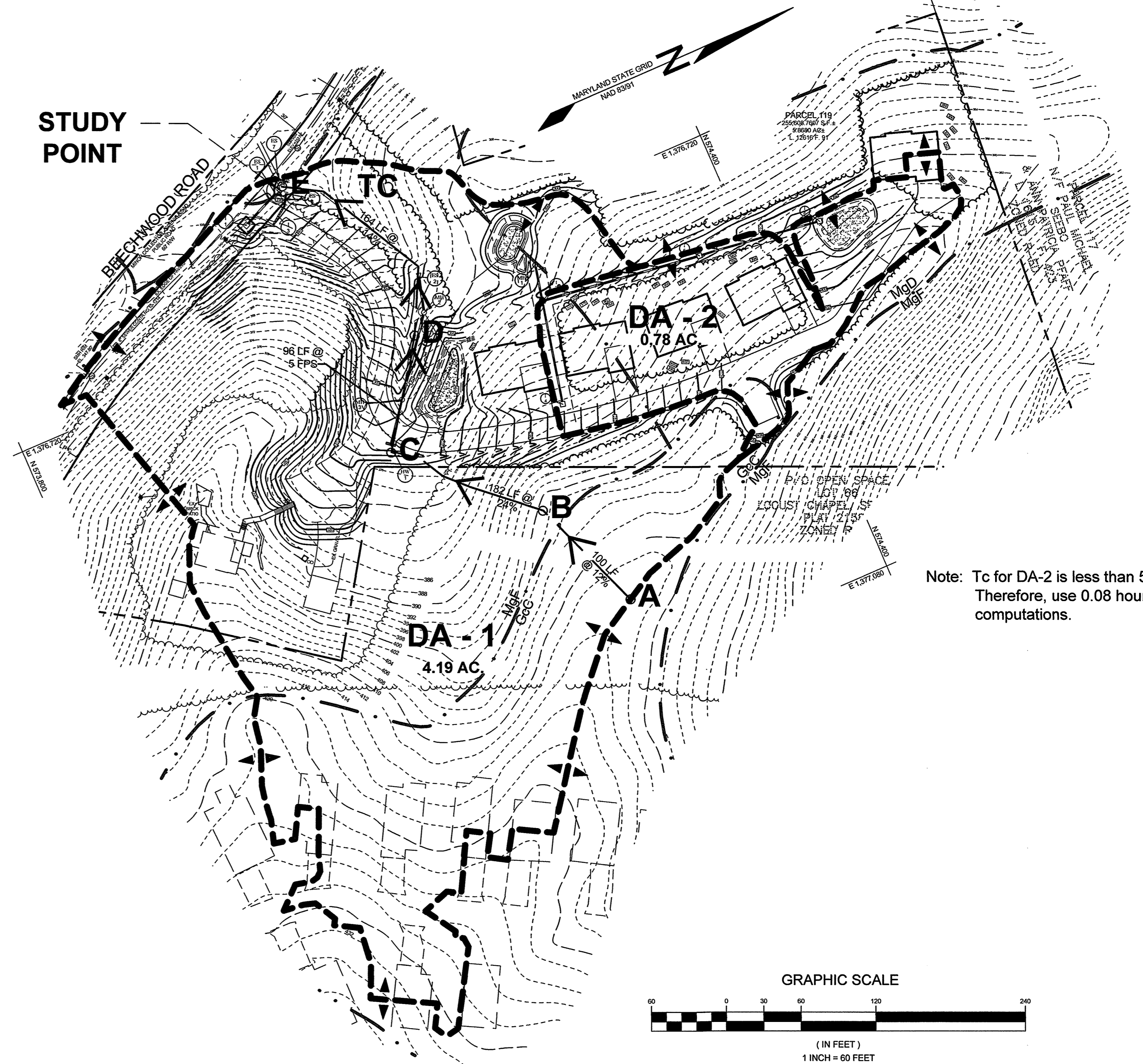


**STUDY POINT**



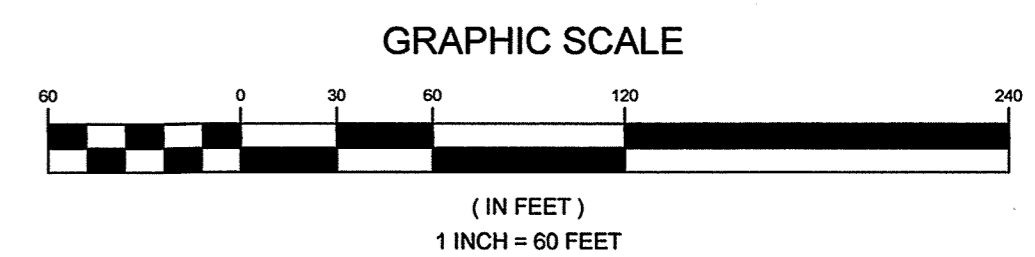
**EXISTING CONDITIONS**  
SCALE: 1"=60'

**STUDY POINT**



**DEVELOPED CONDITIONS**  
SCALE: 1"=60'

Note: Tc for DA-2 is less than 5 minutes. Therefore, use 0.08 hours for computations.



**OWNER/DEVELOPER**  
JOSEPH C. & LISA ANN PENKUSKY  
4707 BEECHWOOD ROAD  
ELLCOTT CITY, MD 21043  
443-324-4807

**STORMWATER MANAGEMENT  
STORMBRIXX - DRAINAGE AREA MAP  
PENKUSKY PROPERTY**

LOTS 1, 3 THRU 7, AND OPEN SPACE LOTS 2, 8 THRU 11  
TAX MAP 31 GRID 4 PARCEL 119  
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SOILS LEGEND				
SYMBOL	NAME / DESCRIPTION	GROUP	"K" FACTOR	
GcC	GLADSTONE-LEGORE COMPLEX, 8 TO 15 PERCENT SLOPES	A	0.28	
GmC	GLENVILLE SILT LOAM, 8 TO 15 PERCENT SLOPES	C	0.43	
GcB	GLENVILLE-CODORUS SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	0.43	
MgD	MANOR-BANNERTOWN SANDY LOAMS, 15 TO 25 PERCENT SLOPES, ROCKY	B	0.15	
MgF	MANOR-BANNERTOWN SANDY LOAMS, 25 TO 65 PERCENT SLOPES, ROCKY	B	0.20	

NOTES:  
1) SOIL INFORMATION HAS BEEN TAKEN FROM THE UNITED STATES DEPARTMENT OF AGRICULTURE; NATURAL RESOURCES CONSERVATION SERVICE; WEB SOIL SURVEY.  
2) HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR "K" GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, DIVISION OF LAND DEVELOPMENT  
*[Signature]* 2/16/21  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
*[Signature]* 2/22/21

CHIEF, BUREAU OF HIGHWAYS  
*[Signature]* 02/07/2021

NO.	DESCRIPTION	DATE

DESIGN BY: PS  
DRAWN BY: JC  
CHECKED BY: PS  
SCALE: AS SHOWN  
DATE: DECEMBER 16, 2020  
PROJECT #: 15-028  
SHEET #: 17 of 17

**SILL ENGINEERING GROUP, LLC**  
16005 Frederick Road, 2nd Floor  
Woodbine, Maryland 21797  
Phone: 443-325-5076  
Fax: 410-696-2022  
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Civil Engineering for Land Development

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. 32025, EXPIRATION DATE: JUNE 20, 2021