

SUPPLEMENTAL PLANS

PERCIVAL PROPERTY

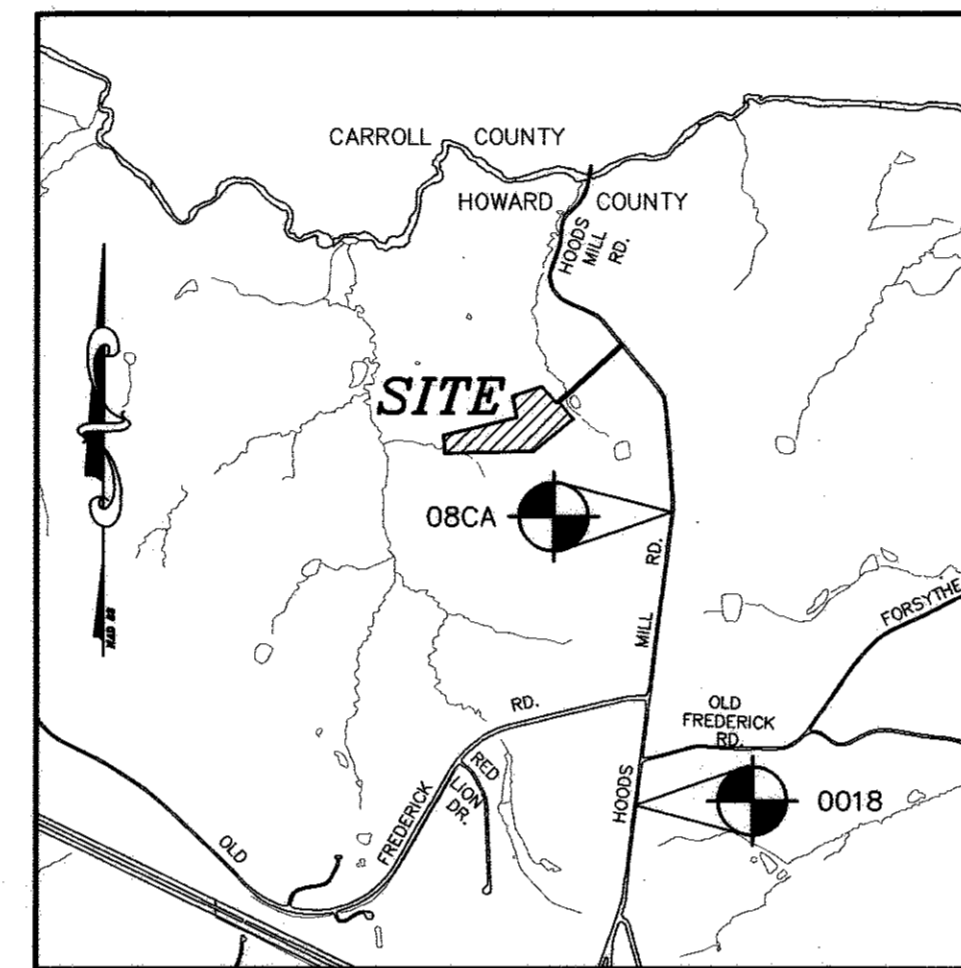
LOTS 1 THRU 3 AND NON-BUILDABLE BULK PARCEL 'A'

FOURTH ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

SHEET INDEX

SHEET NO.	TITLE
1	SUPPLEMENTAL PLAN - COVER SHEET
2	SUPPLEMENTAL GRADING & SEDIMENT CONTROL PLAN FOR DRIVEWAY CONSTRUCTION
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4	EROSION AND SEDIMENT CONTROL NOTES AND DETAILS
5	SWM DETAILS
6	STREAM CROSSING DETAILS



VICINITY MAP

SCALE: 1"=200'
ADC MAP: 10 GRID: B-4

GENERAL NOTES:

- THIS SUBJECT PROPERTY IS ZONED RC-DEO PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
- THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- TOPOGRAPHY WITHIN 200' OF SITE BOUNDARY SHOWN HEREON IS BASED ON FIELD RUN SURVEY PERFORMED BY MILDENBERG, BOENDER & ASSOC., INC. ON OR ABOUT DECEMBER 2014. OTHER TOPOGRAPHY SHOWN IS BASED ON HOWARD COUNTY GIS.
- BOUNDARY SHOWN HEREON IS BASED ON A FIELD RUN MONUMENTED BOUNDARY SURVEY PERFORMED ON OR ABOUT DECEMBER 2014 BY MILDENBERG, BOENDER & ASSOC., INC.
- COORDINATES BASED ON NAD '83 (HORIZONTAL) AND NAD '88 (VERTICAL) MARYLAND COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS
STA. No. 08CA N 610521.247 E 1308742.138 ELEV. 625.025
STA. No. 0018 N 607697.318 E 1308424.256 ELEV. 626.856
- PROJECT BACKGROUND:**
ADDRESS: 854 RTE 97, COOKSVILLE, MD 21723
LOCATION: TAX MAP : 8 PARCEL: 237 GRID: 5
ELECTION DISTRICT: FOURTH
DEED REFERENCE : 06157/00647
PREVIOUS PROJECT NUMBERS: ECP-15-059
- SITE AREA TABULATION**
TOTAL AREA: 11.14 AC±
MINIMUM LOT SIZE PROPOSED: 3.0 AC
NUMBER OF BUILDABLE LOTS: 3
NUMBER OF PARCELS: 1
TYPE OF PROPOSED UNIT: SFD
AREA OF BUILDABLE LOTS 9.53 AC±
AREA OF ROAD DEDICATION: 999 SF 0.02 AC±
- PRIVATE WELL AND SEPTIC WILL BE UTILIZED.
- THIS AREA DESIGNATES A PRIVATE SEWAGE EASEMENT OF AT LEAST 10,000 SQ. FT. AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF ENVIRONMENT FOR INDIVIDUAL SEWAGE DISPOSAL IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWAGE IS AVAILABLE. THIS EASEMENT SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWAGE SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWAGE EASEMENT. RECORDATION OF A MODIFIED EASEMENT SHALL NOT BE NECESSARY.
- ANY CHANGES TO PRIVATE SEWER EASEMENT SHALL REQUIRE A REVISED PERC CERTIFICATION PLAN.
- THE WELL SHALL BE DRILLED PRIOR TO HEALTH DEPARTMENT APPROVAL OF THE BUILDING PERMIT. IT IS THE DEVELOPER'S RESPONSIBILITY TO SCHEDULE THE WELL DRILLING PRIOR TO APPLYING FOR A BUILDING PERMIT. IT WILL NOT BE CONSIDERED "GOVERNMENT DELAY" IF THE WELL DRILLING HOLDS UP HEALTH DEPARTMENT APPROVAL OF THE BUILDING PERMIT.
- STORM WATER MANAGEMENT IS PROVIDED BY (M-6) MICRO-BIORETENTION FACILITIES IN ACCORDANCE WITH THE 2007 MARYLAND STORM WATER DESIGN MANUAL. MICRO-BIORETENTION FACILITIES (M-6) WILL BE PRIVATELY OWNED AND MAINTAINED.
- WETLANDS, STREAM AND ITS BUFFER EXIST ON SITE AS CERTIFIED IN THE WETLAND REPORT PREPARED BY ECO-SCIENCE PROFESSIONALS, INC. IN JUNE 2015.
- FOREST STAND DELINEATION PERFORMED BY ECO-SCIENCE PROFESSIONALS, INC. IN JUNE 2015. A TOTAL OF 4 SPECIMEN TREES EXIST ON SITE.
- APFO ROAD TEST IS NOT REQUIRED FOR THIS PROJECT. THIS IS A MINOR SUBDIVISION.
- NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT. LOT AREA IS OUTSIDE OF THE NOISE ZONE.
- NO HISTORIC STRUCTURES, CEMETERIES, OR GRAVE SITES EXIST ON-SITE.
- SITE IS NOT ADJACENT TO A DESIGNATED SCENIC ROAD.
- ALL EXISTING STRUCTURES ARE TO REMAIN UNLESS OTHERWISE NOTED.
- FOREST CONSERVATION OBLIGATIONS IN ACCORDANCE WITH SECTION 16.1200 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION ACT FOR THIS SUBDIVISION WILL BE FULFILLED BY ON-SITE RETENTION OF A TOTAL OF 3.24 ACRES OF FOREST ON EASEMENTS "A" (1.85 ACRES), "B" (0.44 ACRES) AND "C" (0.95 ACRES). NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT; HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.
- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.
- FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING (28 SHADE TREES) IN THE AMOUNT OF \$8,400 TO BE POSTED WITH THE GRADING PERMIT.
- A PRE-SUBMISSION COMMUNITY MEETING FOR THIS PROJECT WAS HELD ON JUNE 22, 2015 AT 6:00 PM AT THE GLENWOOD LIBRARY.
- DEVELOPMENT REGULATIONS PER COUNCIL BILL 45-2003 AND THE ZONING REGULATIONS AS AMENDED BY COUNCIL BILL 75-2003. DEVELOPMENT OR CONSTRUCTION ON LOTS MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF THE BUILDING / GRADING PERMIT.
- ALL LOTS/RESIDENTIAL UNITS IN THIS SUBDIVISION ARE SUBJECT TO THE MHU FEE-IN-LIEU REQUIREMENT THAT IS TO BE CALCULATED AND PAID TO THE DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS AT THE TIME OF BUILDING PERMIT ISSUANCE BY THE PERMIT APPLICANT.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS / BUREAU OF ENGINEERING, CONSTRUCTION INSPECTION DIVISION AT (410)313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- TRAFFIC CONTROL DEVICES:
A. THE R1-1 ("STOP") SIGN AND THE STREET NAME SIGN (SNS) ASSEMBLY FOR THIS DEVELOPMENT MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPLETED.
B. THE TRAFFIC CONTROL DEVICE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-313-2430) PRIOR TO THE INSTALLATION OF ANY TRAFFIC CONTROL DEVICES.
C. ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST ADDITION OF THE "MARYLAND MANUAL ON UNIFORM TRAFFIC DEVICES" (MUMUTCD).
D. ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON 2" GALVANIZED STEEL, PERFORATED ("QUICK PUNCH"), SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2.5" GALVANIZED STEEL, PERFORATED TUBE SLEEVE (12 GAUGE) - 3' LONG. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO (2) HOLES ABOVE GROUND LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
- STREET LIGHT PLACEMENT AND TYPE OF FIXTURE AND POLE SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (1993) AND AS MODIFIED BY GUIDELINES FOR STREET LIGHTS IN RESIDENTIAL DEVELOPMENTS (JUNE 1993). A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
- THIS DEVELOPMENT IS WITHIN THE "TIER IV" GROWTH AREA. ONLY MINOR SUBDIVISIONS ARE PERMITTED.
- THERE IS A FLOODPLAIN ON THIS SITE.
- OPEN SPACE REQUIREMENTS HAVE BEEN SATISFIED VIA THE PAYMENT OF A FEE-IN-LIEU IN THE AMOUNT OF \$3,000.00.
- THIS PROJECT IS SUBJECT TO ALTERNATIVE COMPLIANCE WP-16-146 TO THE SECTIONS 16.120(b)(4)(i) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS WHICH REQUIRES THAT RESIDENTIAL LOTS SHALL HAVE REGULAR, RECTANGULAR SHAPE AND SECTION 16.120(b)(4)(ii) WHICH PROHIBITS ENVIRONMENTAL FEATURES AND FOREST CONSERVATION EASEMENTS ON RESIDENTIAL LOTS LESS THAN 10 ACRES IN SIZE. WAIVER WAS APPROVED ON JULY 12, 2016 SUBJECT TO THE FOLLOWING CONDITIONS:
- 35' SETBACK SHALL BE PROVIDED FROM ENVIRONMENTAL BUFFERS AND FOREST CONSERVATION EASEMENTS.
- NO GRADING, REMOVAL OF VEGETATIVE COVER, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE ENVIRONMENTAL AREAS FOR ALL LOTS EXCEPT THE ESSENTIAL MD. RT. 97 ENTRANCE DRIVEWAY.
- AT THE BUILDING PERMIT STAGE, THE APPLICANT SHOULD MAKE REASONABLE EFFORT TO KEEP THE DISTANCE BETWEEN PROPOSED HOUSE SITE AND FOREST CONSERVATION EASEMENT AREA AT THE MAXIMUM TO AVOID POSSIBLE FUTURE ENCROACHMENTS BY HOMEOWNERS.

STORMWATER MANAGEMENT PRACTICES

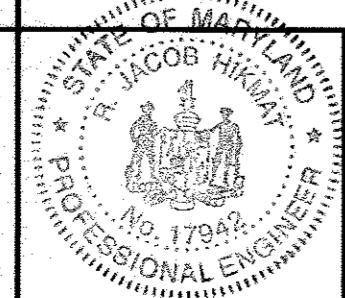
LOT #	ADDRESS	GREEN ROOF PAVEMENTS A-1 (Y/N)	PERMEABLE PAVEMENTS A-2 (Y/N)	REINFORCED TURF A-3 (Y/N)	DISCONNECTION OF ROOFTOP RUNOFF N-1 (NUMBER)	DISCONNECTION OF NON-ROOFTOP RUNOFF N-2 (Y/N)	SHEETFLOW TO CONSERVATION AREAS N-3 (Y/N)	RAINWATER HARVESTING M-1 (NUMBER)	SUBMERGED GRAVEL WETLANDS M-2 (NUMBER)	LANDSCAPE INFILTRATION M-3 (NUMBER)	INFILTRATION BERMS M-4 (NUMBER)	DRY WELLS M-5 (NUMBER)	MICRO-BIORETENTION M-6 (NUMBER)	RAIN GARDENS M-7 (NUMBER)	SWALES M-8 (NUMBER)	ENHANCED FILTERS M-9 (NUMBER)
1		N	N	N	0	N	N	0	0	0	0	0	1	0	0	0
2		N	N	N	0	N	N	0	0	0	0	0	1	0	0	0
3		N	N	N	0	N	N	0	0	0	0	0	1	0	0	0

OWNER

MARILYN AND STEVE PERCIVAL
C/O MILDENBERG, BOENDER & ASSOC., INC.
7350-B GRACE DRIVE
COLUMBIA, MARYLAND 21044
410-997-0296

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. 17942, EXP. DATE 09/03/18.

R. JACOB HIKMAT, P.E.



ENGINEER'S CERTIFICATE
I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT 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.

R. Jacob Hikmat 10/31/16
SIGNATURE OF ENGINEER DATE

R. JACOB HIKMAT, PE
PRINTED NAME OF ENGINEER

DEVELOPER'S CERTIFICATE
I CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY 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. HOWARD SOIL CONSERVATION DISTRICT IS AUTHORIZED TO CONDUCT PERIODIC ON-SITE INSPECTION.

John R. K... Inc. 10/31/16
SIGNATURE OF DEVELOPER DATE

GREENBERRY INC.
PRINTED NAME OF DEVELOPER

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

John R. K... 11/10/16
SIGNATURE OF HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

John R. K... 11-14-16
SIGNATURE OF CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

John R. K... 11-24-16
SIGNATURE OF CHIEF, DIVISION OF LAND DEVELOPMENT DATE

project	date
14-020	NOV. 2016
illustration	engineering
MMM	MMM
scale	approval
1"=50'	RJH

no.	description	date
	revisions	

PERCIVAL PROPERTY
LOTS 1 THRU 3 AND NON-BUILDABLE BULK PARCEL 'A'
TAX MAP 08, GRID 05, PARCEL 237
FOURTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
SUPPLEMENTAL PLAN - COVER SHEET

**MILDENBERG,
BOENDER & ASSOC., INC.**
Engineers Planners Surveyors
7350-B Grace Drive, Columbia, MD 21044
(410) 997-0296 Fax

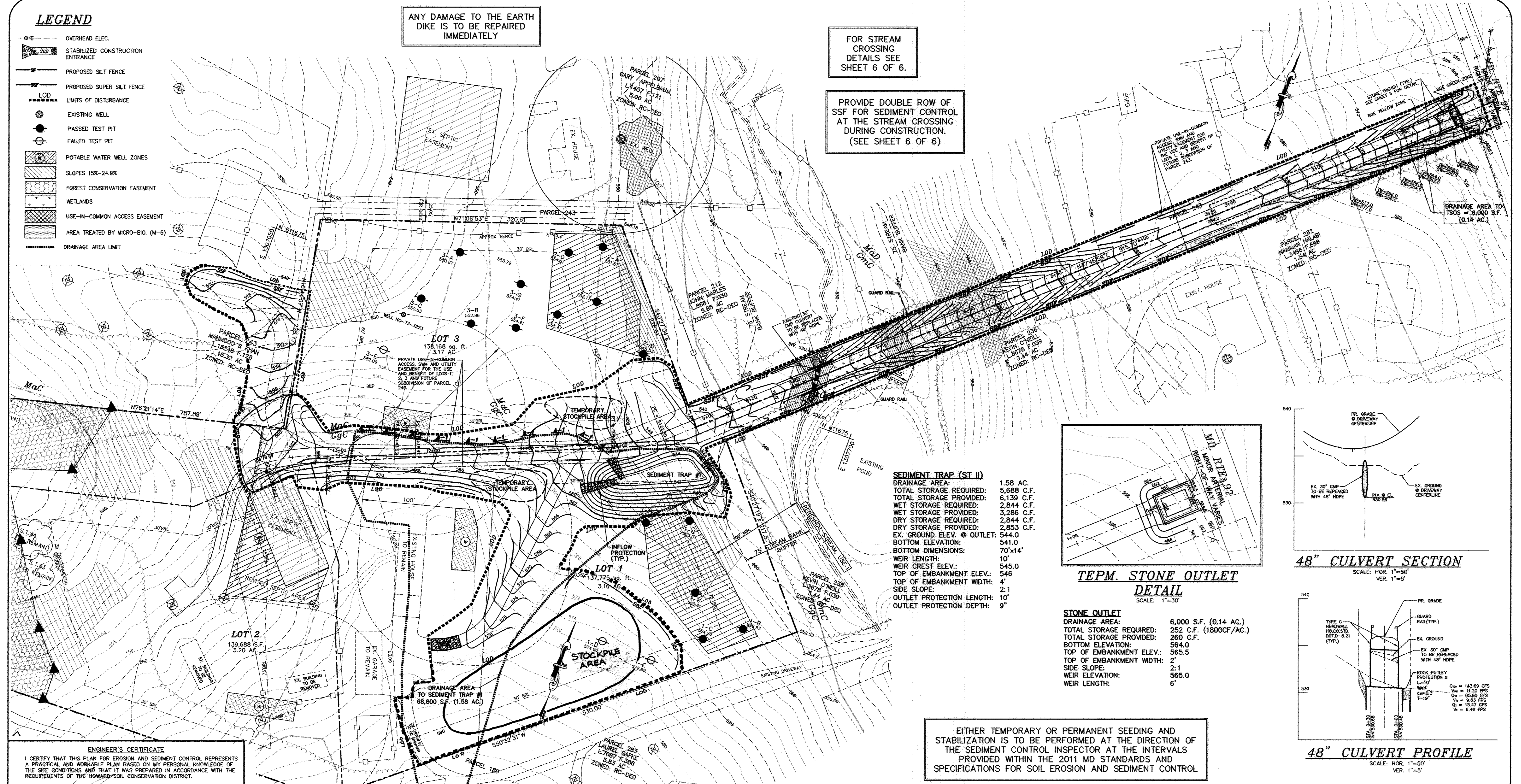
LEGEND

- OHE — OVERHEAD ELEC.
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED SILT FENCE
- PROPOSED SUPER SILT FENCE
- LOD — LIMITS OF DISTURBANCE
- EXISTING WELL
- PASSED TEST PIT
- FAILED TEST PIT
- POTABLE WATER WELL ZONES
- ▨ SLOPES 15%-24.9%
- ▨ FOREST CONSERVATION EASEMENT
- ▨ WETLANDS
- ▨ USE-IN-COMMON ACCESS EASEMENT
- ▨ AREA TREATED BY MICRO-BIO (M-6)
- DRAINAGE AREA LIMIT

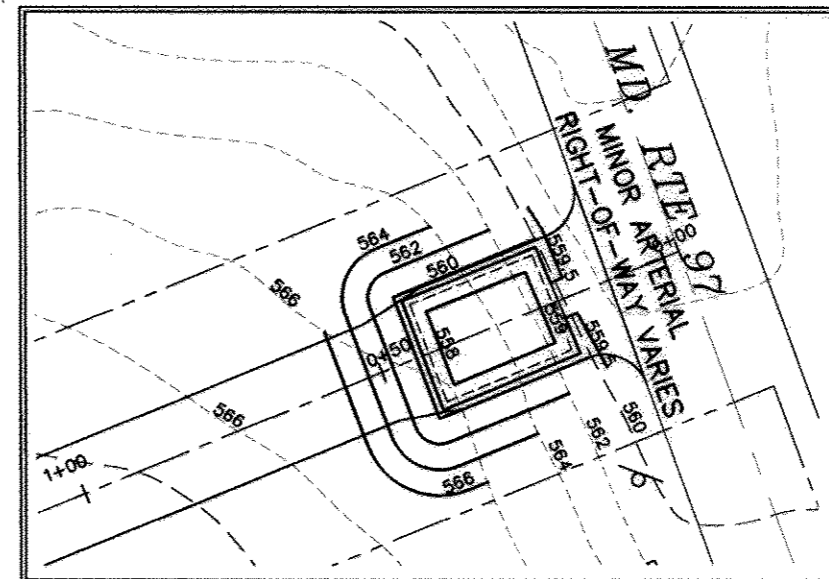
ANY DAMAGE TO THE EARTH DIKE IS TO BE REPAIRED IMMEDIATELY

FOR STREAM CROSSING DETAILS SEE SHEET 6 OF 6.

PROVIDE DOUBLE ROW OF SSF FOR SEDIMENT CONTROL AT THE STREAM CROSSING DURING CONSTRUCTION. (SEE SHEET 6 OF 6)

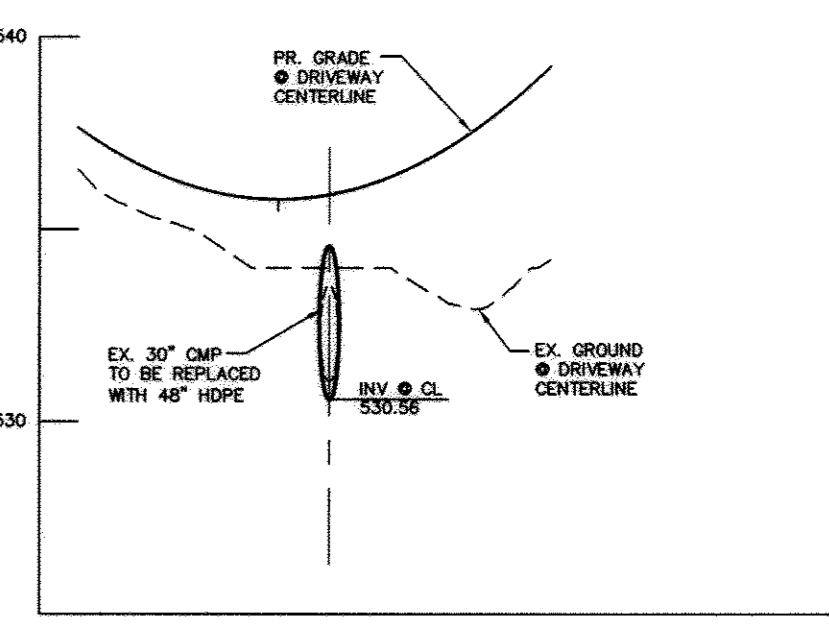


SEDIMENT TRAP (ST II)
 DRAINAGE AREA: 1.58 AC.
 TOTAL STORAGE REQUIRED: 5,688 C.F.
 TOTAL STORAGE PROVIDED: 6,139 C.F.
 WET STORAGE REQUIRED: 2,844 C.F.
 WET STORAGE PROVIDED: 3,286 C.F.
 DRY STORAGE REQUIRED: 2,844 C.F.
 DRY STORAGE PROVIDED: 2,853 C.F.
 EX. GROUND ELEV. @ OUTLET: 544.0
 BOTTOM ELEVATION: 541.0
 BOTTOM DIMENSIONS: 70'x14'
 WEIR LENGTH: 10'
 WEIR CREST ELEV.: 545.0
 TOP OF EMBANKMENT ELEV.: 546
 TOP OF EMBANKMENT WIDTH: 4'
 SIDE SLOPE: 2:1
 OUTLET PROTECTION LENGTH: 10'
 OUTLET PROTECTION DEPTH: 9'

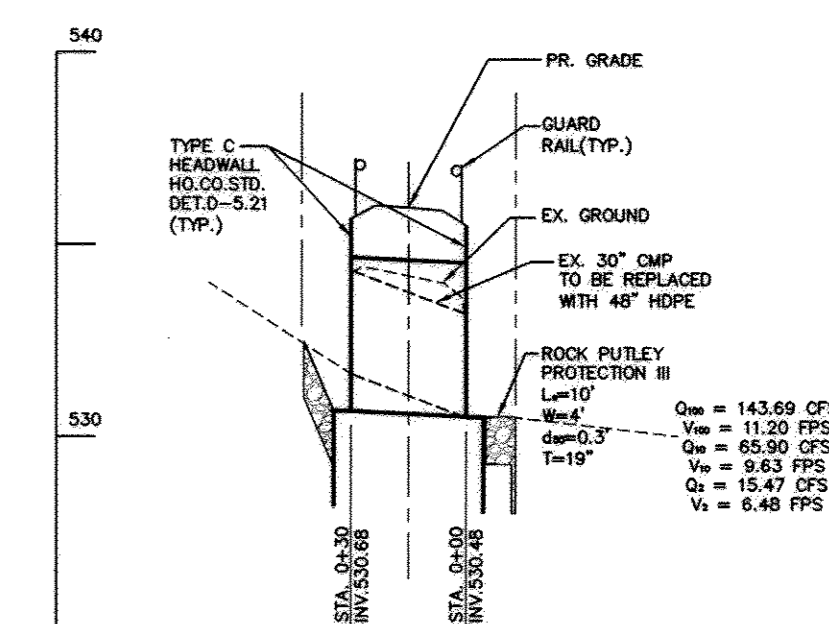


TEPM. Stone Outlet Detail
 SCALE: 1"=30'

STONE OUTLET
 DRAINAGE AREA: 6,000 S.F. (0.14 AC.)
 TOTAL STORAGE REQUIRED: 252 C.F. (1800CF/AC.)
 TOTAL STORAGE PROVIDED: 260 C.F.
 BOTTOM ELEVATION: 564.0
 TOP OF EMBANKMENT ELEV.: 565.5
 TOP OF EMBANKMENT WIDTH: 2'
 SIDE SLOPE: 2:1
 WEIR ELEVATION: 565.0
 WEIR LENGTH: 6'

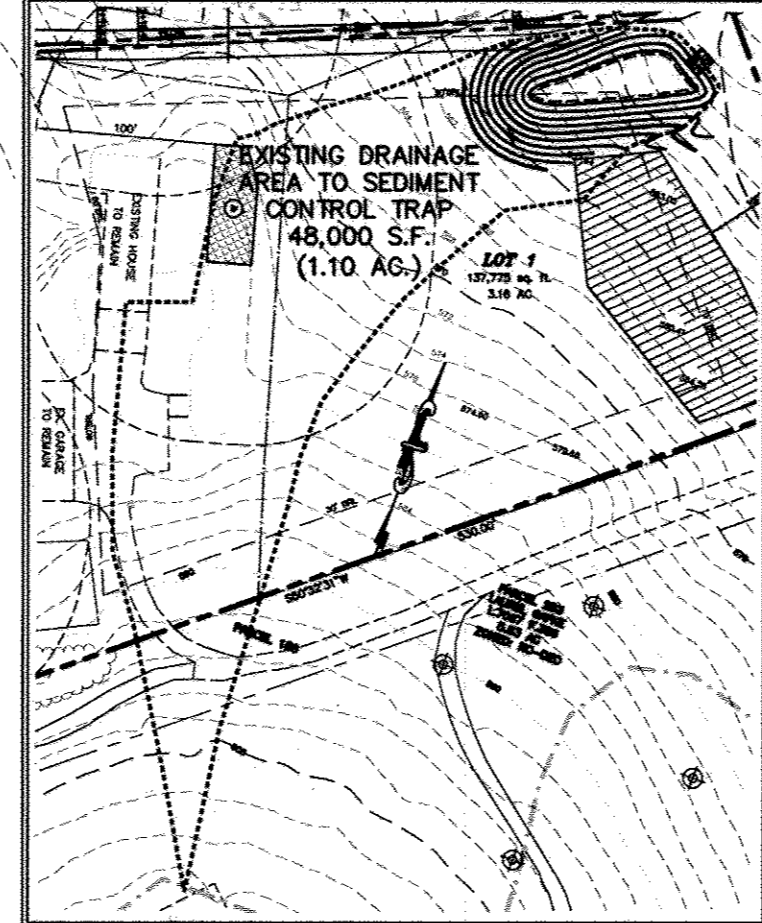
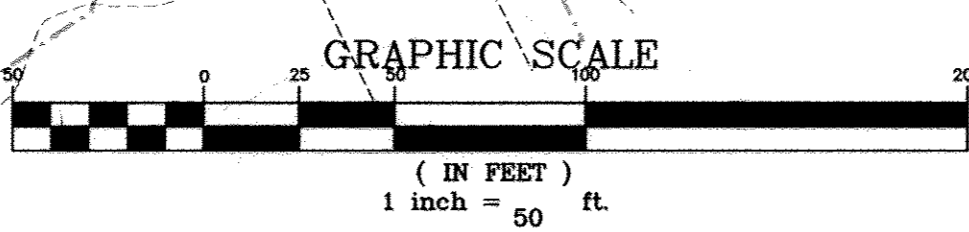


48" CULVERT SECTION
 SCALE: HOR. 1"=50'
 VER. 1"=5'

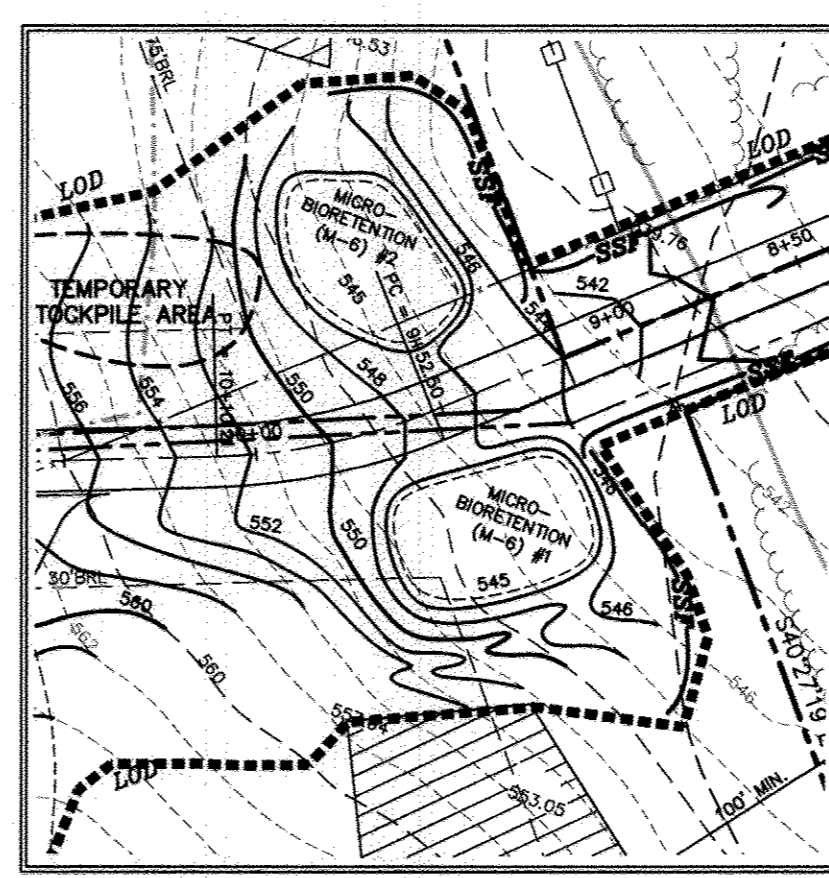


48" CULVERT PROFILE
 SCALE: HOR. 1"=50'
 VER. 1"=5'

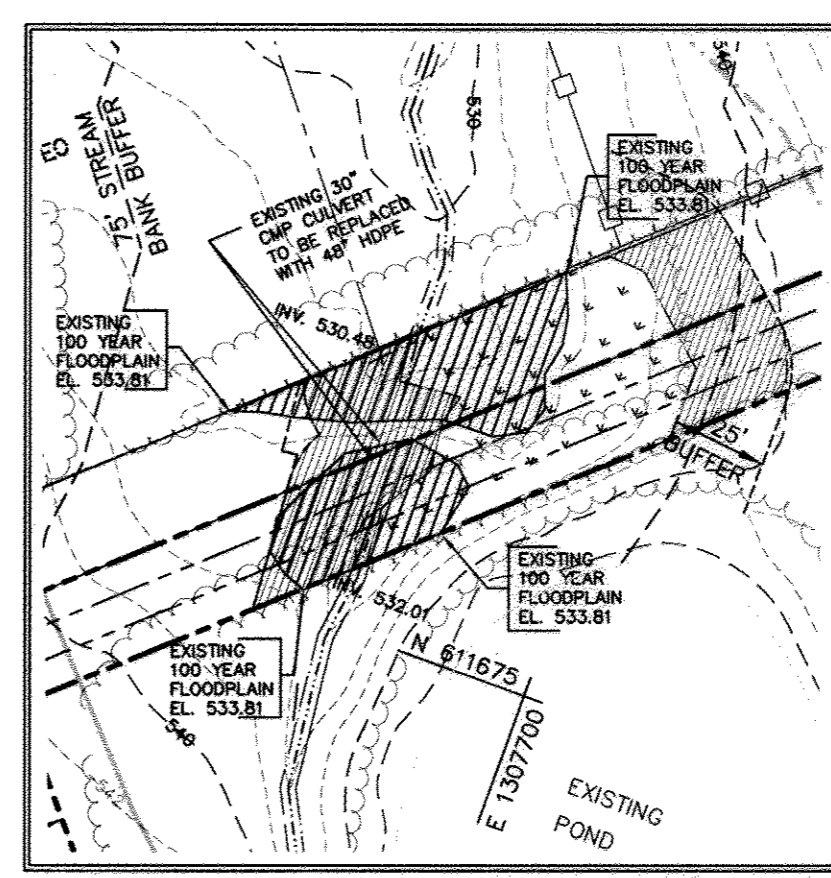
EITHER TEMPORARY OR PERMANENT SEEDING AND STABILIZATION IS TO BE PERFORMED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR AT THE INTERVALS PROVIDED WITHIN THE 2011 MD STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL



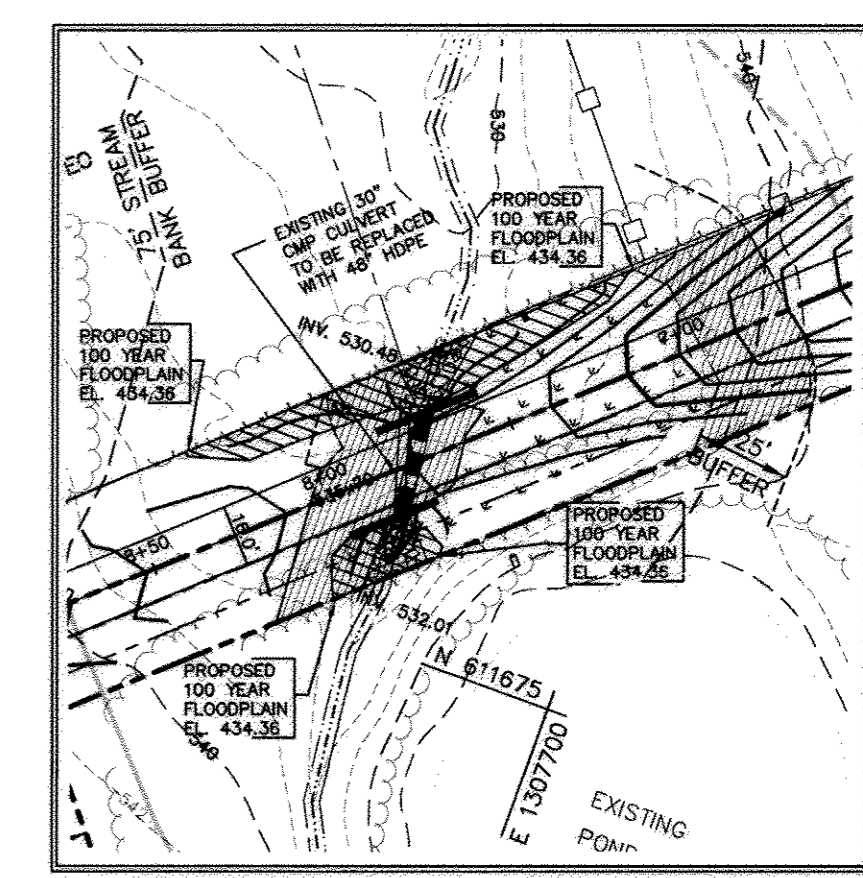
SEDIMENT CONTROL TRAP DRAINAGE AREA
 SCALE: 1"=100'



MICRO-BIORETENTION PLAN
 SCALE: 1"=50'



EXISTING 100 YEAR FLOODPLAIN PLAN
 SCALE: 1"=50'

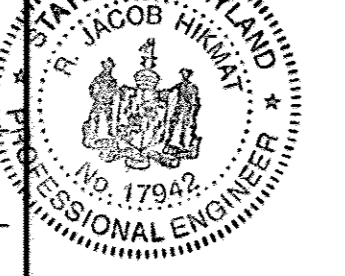


PROPOSED 100 YEAR FLOODPLAIN PLAN
 SCALE: 1"=50'

ENGINEER'S CERTIFICATE
 I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT 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: *R. Jacob Hikmat* DATE: 10/31/16
 PRINTED NAME OF ENGINEER: R. JACOB HIKMAT, PE

DEVELOPERS CERTIFICATE
 I CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY 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. HOWARD SOIL CONSERVATION DISTRICT IS AUTHORIZED TO CONDUCT PERIODIC ON-SITE INSPECTION.
 SIGNATURE OF DEVELOPER: *John R. Boender* DATE: 10/31/16
 PRINTED NAME OF DEVELOPER: GREENBERRY INC.

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
 SIGNATURE: *John R. Boender* DATE: 11/14/16
 CHIEF, DIVISION OF LAND DEVELOPMENT



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. 17942, EXP. DATE 09/03/18.
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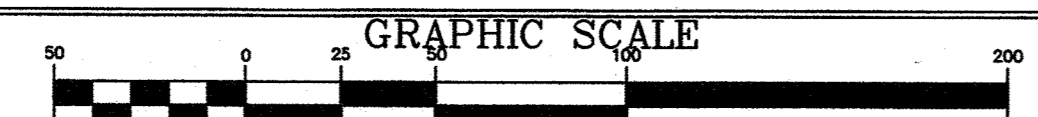
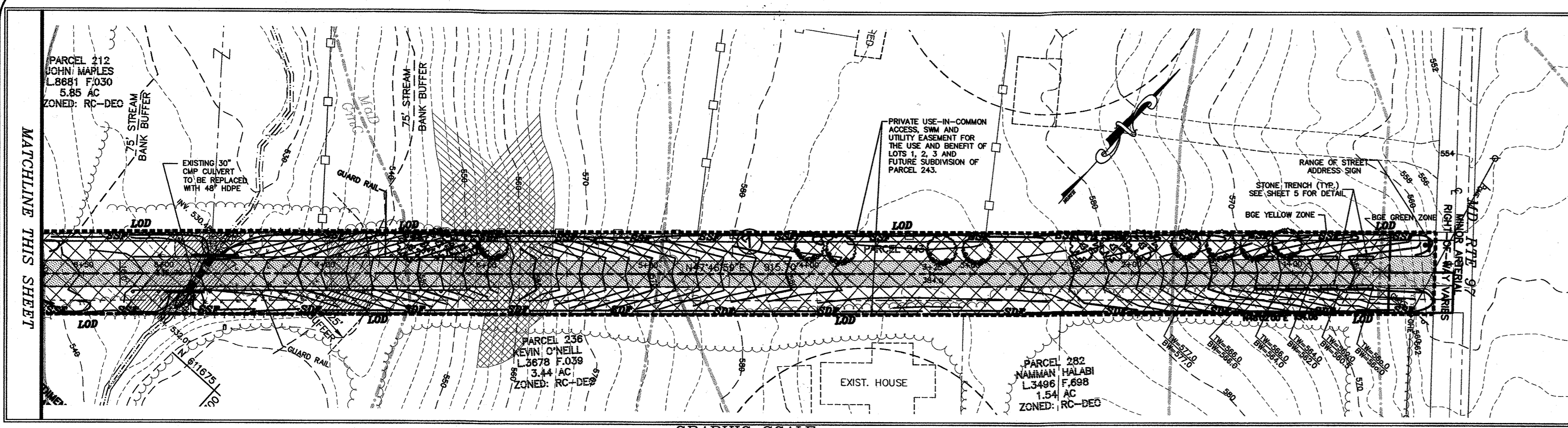
OWNER
 MARILYN AND STEVE PERCIVAL
 C/O MILDENBERG, BOENDER & ASSOC., INC.
 7350-B GRACE DRIVE
 COLUMBIA, MARYLAND 21044
 410-997-0296

Project	14-020	date	NOC. 2016
Illustration	MMM	illustration	engineering
Scale	1"=50'	approval	MMM
date	MAY 2017	revisions	

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Illustration	MMM	illustration	engineering
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date	MAY 2017	revisions	

PERCIVAL PROPERTY
 LOTS 1 THRU 3 AND NON-BUILDABLE BULK PARCEL 'A'
 TAX MAP 08, GRID 05, PARCEL 237
 FOURTH ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND
 SUPPLEMENTAL GRADING & SEDIMENT CONTROL PLAN FOR DRIVEWAY CONSTRUCTION

MILDENBERG, BOENDER & ASSOC., INC.
 Engineers Planners Surveyors
 7350-B Grace Drive, Columbia, MD 21044
 (410) 997-0296 Tel. (410) 997-0298 Fax.



FOREST CONSERVATION DATA

NET TRACT AREA:
 A. Total tract area.....=11.40
 B. Area within 100 year floodplain.....=0.00
 C. Area to remain in agricultural production.....=0.00
 D. Net tract area.....=11.40

LAND USE CATEGORY: (from table 3.2.1, page 40, Manual)
 Input the number "1" under the appropriate land use zoning, and limit to only one entry.
 ARA MDR IDA HDR MPD CIA
 0 1 0 0 0 0

E. Afforestation Threshold.....20% x D = 2.28
 F. Conservation Threshold.....25% x D = 2.85

EXISTING FOREST COVER:
 G. Existing forest cover (excluding floodplain).....=4.80
 H. Area of forest above afforestation threshold.....=2.52
 I. Area of forest above conservation threshold.....=1.95

BREAK EVEN POINT:
 J. Forest retention above threshold with no mitigation.....=3.24
 K. Clearing permitted without mitigation.....=1.56

PROPOSED FOREST CLEARING:
 L. Total area of forest to be cleared.....=1.56
 M. Total area of forest to be retained.....=3.24

PLANTING REQUIREMENTS:
 N. Reforestation for clearing above conservation threshold.....=0.39
 O. Reforestation for clearing below conservation threshold.....=0.00
 P. Credit for retention above conservation threshold.....=0.39
 R. Total reforestation required.....=0.00
 S. Total afforestation required.....=0.00
 T. Total reforestation and afforestation required.....=0.00

SOILS TABLE

SYMBOL	RATING	NAME	K FACTOR
GgB	(B)	GLENELG LOAM, 3-8% SLOPES.	.20
GgC	(B)	GLENELG LOAM, 8-15% SLOPES.	.20
GmC	(C)	GLENVILLE SILT LOAM, 8-15% SLOPES.	.37
MaC	(B)	MANOR LOAM, 8-15% SLOPES.	.24
MaD	(B)	MANOR LOAM, 15-25% SLOPES.	.24

GENERAL NOTES

- FOREST PROTECTION**
- ALL FOREST RETENTION AREAS SHALL BE TEMPORARILY PROTECTED BY WELL ANCHORED BLAZE ORANGE PLASTIC MESH FENCING AND SIGNS AS INDICATED ON THE PLANS. THE DEVICES SHALL BE INSTALLED ALONG THE FOREST RETENTION BOUNDARY PRIOR TO ANY LAND CLEARING, GRUBBING, OR GRADING ACTIVITIES. THE FOREST PROTECTION DEVICES SHALL BE INSTALLED SUCH THAT THE CRITICAL ROOT ZONES OF ALL TREES WITHIN THE RETENTION AREA NOT OTHERWISE PROTECTED WILL BE WITHIN FOREST PROTECTION DEVICES.
 - ALL PROTECTION DEVICES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION, INCLUDING SELF FENCE BEING USED AS PROTECTIVE FENCING. ALL DEVICES SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION HAS CEASED IN THE IMMEDIATE VICINITY.
 - ATTACHMENT OF SIGNS, OR ANY OTHER OBJECTS TO TREES IS PROHIBITED. NO EQUIPMENT, MACHINERY, VEHICLES, MATERIALS OR EXCESSIVE PEDESTRIAN TRAFFIC SHALL BE ALLOWED WITHIN THESE PROTECTED AREAS. INSTALLATION AND MAINTENANCE OF PROTECTIVE FENCING AND SIGNS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THE GENERAL CONTRACTOR SHALL TAKE THE UTMOST CARE TO PROTECT TREE ROOT SYSTEMS DURING ALL CONSTRUCTION ACTIVITIES. TREE ROOT SYSTEMS SHALL BE PROTECTED FROM SMOTHERING, FLOODING, EXCESSIVE WETTING FROM DE-WATERING OPERATIONS, OFF-SITE RUN OFF, SPILLAGE AND DRAINING OF MATERIALS THAT MAY BE HARMFUL TO TREES.
 - THE GENERAL CONTRACTOR SHALL PREVENT PILING OF CONSTRUCTION VEHICLES AND EQUIPMENT, AND THE STORING OF BUILDING SUPPLIES OR STOCKPILING OF EARTH WITHIN FOREST CONSERVATION EASEMENTS. REMOVAL OF TOPSOIL OR ROOT MAT WITHIN THE TREE PRESERVATION AREA SHALL BE PROHIBITED.
 - THE GENERAL CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY TREES DAMAGED OR DESTROYED WITHIN THE FOREST CONSERVATION EASEMENTS. ROOT PRUNING SHALL BE USED AT THE LIMIT OF DISTURBANCE OR LIMIT OF GRADING WITHIN AND ADJACENT TO ALL PRESERVATION AREAS, AS NECESSARY.
- PRE-CONSTRUCTION MEETING**
- AFTER THE BOUNDARIES OF THE FOREST RETENTION AREAS HAVE BEEN FIELD LOCATED AND MARKED, AND AFTER THE FOREST PROTECTION DEVICES HAVE BEEN INSTALLED, BUT BEFORE ANY OTHER DISTURBANCE HAS TAKEN PLACE ON SITE, A PRE-CONSTRUCTION MEETING SHALL TAKE PLACE ON SITE. THE DEVELOPER, CONTRACTOR OR PROJECT MANAGER, AND HOWARD COUNTY INSPECTORS SHALL ATTEND. THE PURPOSE OF THIS MEETING WILL BE:
 - TO IDENTIFY THE LOCATIONS OF THE FOREST RETENTION AREAS, SPECIMEN TREES WITHIN 50 FEET OF THE LIMIT OF DISTURBANCE, LIMITS OF CONSTRUCTION, EMPLOYEE PARKING AREAS AND EQUIPMENT STAGING AREAS;
 - INSPECT ALL FLAGGED BOUNDARIES AND PROTECTION DEVICES; MAKE ALL NECESSARY ADJUSTMENTS;
 - ASSIGN RESPONSIBILITIES AS APPROPRIATE AND DISCUSS PENALTIES.
- CONSTRUCTION MONITORING**
- THE SITE SHALL BE INSPECTED PERIODICALLY DURING THE CONSTRUCTION PHASE OF THE PROJECT. A QUALIFIED PROFESSIONAL SHALL BE RESPONSIBLE FOR IDENTIFYING DAMAGE TO PROTECTED FOREST AREAS OR INDIVIDUAL TREES WHICH MAY HAVE BEEN CAUSED BY CONSTRUCTION ACTIVITIES, SUCH AS SOIL COMPACTION, ROOT INJURY, TRUNK WOUNDS, LIMB INJURY, OR STRESS CAUSED BY FLOODING OR BROUGHT CONDITIONS. ANY SUCH DAMAGE THAT MAY OCCUR SHALL BE REMEDIATED IMMEDIATELY USING APPROPRIATE MEASURES. SEVERE PROBLEMS MAY REQUIRE CONSULTATION WITH A PROFESSIONAL ARBORIST.
 - THE CONSTRUCTION PROCEDURE SHALL NOT DAMAGE AREAS OUTSIDE OF THE LIMITS OF DISTURBANCE AS DENOTED ON THE PLANS. ANY DAMAGE SHALL BE RESTORED BY THE CONTRACTOR AT HIS EXPENSE AND TO THE SATISFACTION OF THE DESIGN TEAM OR ENGINEER.

SCHEDULE A : PERIMETER LANDSCAPED EDGE

CATEGORY	ADJACENT TO PERIMETER PROPERTIES				ADJACENT TO PERIMETER PROPERTIES				TOTAL
	A (PERIMETER 1)	A (PERIMETER 2)	A (PERIMETER 3)	A (PERIMETER 4)	A (PERIMETER 5)	A (PERIMETER 6)	A (PERIMETER 7)		
LANDSCAPE TYPE	A (PERIMETER 1)	A (PERIMETER 2)	A (PERIMETER 3)	A (PERIMETER 4)	A (PERIMETER 5)	A (PERIMETER 6)	A (PERIMETER 7)		
LINEAR FEET OF PERIMETER	915.17 LF	228.61 LF	320.61 LF	225.77 LF	787.88 LF	187.49 LF	938.38 LF		
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET)	NO	NO	NO	NO	YES, 787.88 LF OF EX. TREES	YES, 187.49 LF OF EX. TREES	YES, 938.38 LF OF EX. TREES		
CREDIT FOR WALL, FENCE, OR BERM (YES, NO, LINEAR FEET)	NO	NO	NO	NO	NO	NO	NO		
NUMBER OF PLANTS REQUIRED									
SHADE TREES	15 SHADE TREES	4 SHADE TREES	5 SHADE TREES	4 SHADE TREES	0 SHADE TREES	0 SHADE TREES	0 SHADE TREES	28 SHADE TREES	
EVERGREEN TREES	0 EVERGREEN TREES	0 EVERGREEN TREES	0 EVERGREEN TREES	0 EVERGREEN TREES	0 EVERGREEN TREES	0 EVERGREEN TREES	0 EVERGREEN TREES	0 EVERGREEN TREES	
SHRUBS	0 SHRUBS	0 SHRUBS	0 SHRUBS	0 SHRUBS	0 SHRUBS	0 SHRUBS	0 SHRUBS	0 SHRUBS	
NUMBER OF PLANTS PROVIDED									
SHADE TREES	15 SHADE TREES	4 SHADE TREES	5 SHADE TREES	4 SHADE TREES	0 SHADE TREES	0 SHADE TREES	0 SHADE TREES	28 SHADE TREES	
EVERGREEN TREES	0 EVERGREEN TREES	0 EVERGREEN TREES	0 EVERGREEN TREES	0 EVERGREEN TREES	0 EVERGREEN TREES	0 EVERGREEN TREES	0 EVERGREEN TREES	0 EVERGREEN TREES	
OTHER TREES (2:1 SUBSTITUTION)	0 SUBSTITUTION TREES	0 SUBSTITUTION TREES	0 SUBSTITUTION TREES	0 SUBSTITUTION TREES	0 SUBSTITUTION TREES	0 SUBSTITUTION TREES	0 SUBSTITUTION TREES	0 SUBSTITUTION TREES	
SHRUBS (0:1 SUBSTITUTION)	0 SHRUBS	0 SHRUBS	0 SHRUBS	0 SHRUBS	0 SHRUBS	0 SHRUBS	0 SHRUBS	0 SHRUBS	

LEGEND

- POTABLE WATER WELL ZONES 28 TREES
- SLOPES 15%-24.9%
- FOREST CONSERVATION EASEMENT
- WETLANDS
- USE-IN-COMMON ACCESS EASEMENT
- AREA TREATED BY MICRO-BIO. (M-6)
- PASSED TEST PIT
- FAILED TEST PIT
- OVERHEAD ELEC.
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED SUPER SILT FENCE
- LIMITS OF DISTURBANCE
- EXISTING WELL
- FOREST CONSERVATION SIGNAGE

LANDSCAPE REQUIREMENT PLANTING SCHEDULE

QUANTITY	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE
14		ACER RUBRUM 'RED SUNSET'	RED SUNSET RED MAPLE	2 1/2" - 3" CAL.
14		ACER SACCHARUM 'GREEN MOUNTAIN'	GREEN MOUNTAIN SUGAR MAPLE	2 1/2" - 3" CAL.

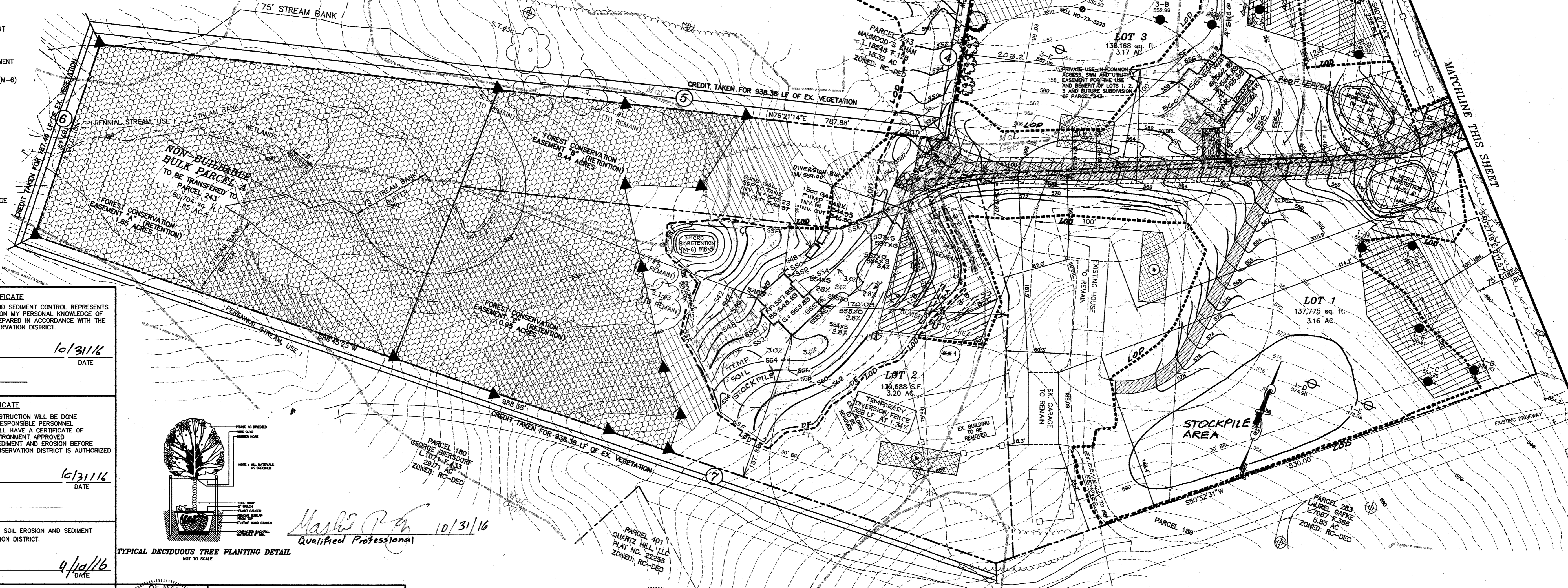
SWALE AT SECTION A-A CALCULATION

TR-55 METHODOLOGY

DRAINAGE AREA = DA = 77365 SF
 IMPERVIOUS AREA = IA = 6272 SF
 IMPERVIOUS PCT = I = 8.11 %
 $R_v = 0.009 \times I + 0.05 = 0.123$
 $P_{10YR} = 0.604$
 $Q_p = P_{10YR} \times V = 58$
 $Q_{10YR} = 1.173$
 $Q_{2YR} = 0.453$

$Q_{10YR} = (CSM \text{ IN FROM EXHIBIT 4-11, TR-55})$
 $Q_{10YR} = 1.07 \text{ CFS}$
 $Q_{2YR} = 0.36 \text{ CFS}$
 $Q_{0.6 \text{ CFS}} = 0.6 \text{ CFS}$
 $Q_{0.6 \text{ FPS}} = 0.6 \text{ FPS}$
 $Q_{0.6 \text{ FPS}} = 15 \text{ NON EROSIVE}$

CHANNEL: 4 FT FLAT BOTTOM 9.5:1 AVG. SIDE SLOPE
 $Q = A \times V = A \times (1.49 / n) \times (A \times S)^{0.487} \times S^{0.5}$
 $b = WDT + A$
 $d = \text{DEPTH}$
 $A_w = \text{AVG. SIDE SLOPE} \times d^2 + b \times d$
 $P_w = (2 \times \text{SIDE SLOPE} \times d + b) \times d$
 $S = 0.05 \text{ FT/FT LONGITUDINAL SLOPE}$
 $d = 0.28 \text{ FT}$
 $A_w = 1.97 \text{ SF}$
 $P_w = 4.56 \text{ FT}$
 $Q_{10YR} = 1.18 \text{ CFS}$
 $V_{10YR} = 0.6 \text{ FPS}$
 $Q_{0.6 \text{ FPS}} = 0.6 \text{ FPS}$
 $Q_{0.6 \text{ FPS}} = 15 \text{ NON EROSIVE}$



FOREST RETENTION AREA

MACHINERY, DUMPING OR STORAGE OF ANY MATERIALS IS PROHIBITED

VIOLATORS ARE SUBJECT TO FINES AS IMPOSED BY THE MARYLAND FOREST CONSERVATION ACT OF 1981

SIGNAGE DETAIL

NOT TO SCALE

ENGINEER'S CERTIFICATE

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT 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.

10/31/16

SIGNATURE OF ENGINEER
 R. JACOB HIKMAT, PE

PRINTED NAME OF ENGINEER

DEVELOPER'S CERTIFICATE

I CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY 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. HOWARD SOIL CONSERVATION DISTRICT IS AUTHORIZED TO CONDUCT PERIODIC ON-SITE INSPECTION.

10/31/16

SIGNATURE OF DEVELOPER
 GREENBERRY INC.

PRINTED NAME OF DEVELOPER

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

10/31/16

SIGNATURE OF APPROVING OFFICIAL
 HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PLANNING AND ZONING

TYPICAL DECIDUOUS TREE PLANTING DETAIL

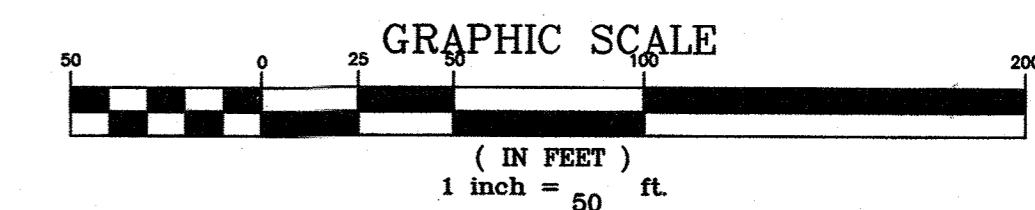
NOT TO SCALE

OWNER

MARILYN AND STEVE PERCIVAL
 C/O MILDENBERG, BOENDER & ASSOC., INC.
 7350-B GRACE DRIVE
 COLUMBIA, MARYLAND 21044
 410-997-0296

STATE OF MARYLAND
 PROFESSIONAL ENGINEER
 R. JACOB HIKMAT, P.E.
 10/31/16

RAINFIELD TRENCHES 3-A AND 2-A NOT TO BE BUILT AT THE SAME TIME



date NOV. 2016

project engineering

14-020 illustration

MMM approval

1"=50'

REV. HOUSE D/W GRADING LOT 2

2. REV. HOUSE, GRADING, LOT 2

1. REVISE LOC., ADJ STOCKPILE AREA

no. description

revisions

date

PERCIVAL PROPERTY

LOTS 1 THRU 3 AND NON-BUILDABLE BULK PARCEL 'A'

TAX MAP 08, GRID 05, PARCEL 237

FOURTH ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

SUPPLEMENTAL, GRADING, LANDSCAPE & FOREST CONSERVATION PLAN

MILDENBERG, BOENDER & ASSOC., INC.

Engineers Planners Surveyors

7350-B Grace Drive, Columbia, MD 21044

(410) 997-0296 Fax (410) 997-0298 Fax

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

DEFINITION: THE PROCESS OF PREPARING THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION. PURPOSE: TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH.

- 1. TEMPORARY STABILIZATION
a. SEEDING PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT...

- 2. PERMANENT STABILIZATION
a. A SOIL TEST IS REQUIRED FOR EVERY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL SAMPLES REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:
i. SOIL PH BETWEEN 6.0 AND 7.0

- 3. TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
a. THE SOIL TO BE TOPSOILED IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
b. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS...

- 4. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)
a. 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...

ENGINEER'S CERTIFICATE: I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT 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: B. JACOB HIKMAT, PE
DATE: 10/31/16

DEVELOPERS CERTIFICATE: I CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A RECORDING MEETING...

SIGNATURE OF DEVELOPER: GREENBERY INC.
DATE: 10/31/16

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
SIGNATURE: Howard Soil Conservation District
DATE: 10/31/16

APPROVED: DEPARTMENT OF PLANNING AND ZONING
DATE: 11-14-16
DATE: 11-21-16

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

DEFINITION: THE APPLICATION OF SEED AND MULCH TO ESTABLISH VEGETATIVE COVER. PURPOSE: TO PROTECT DISTURBED SOIL FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

- 1. SEEDING
a. SEEDS MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON ANY PROJECT...

- 2. APPLICATION
a. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS. INCORPORATE SEED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE B.1. PERMANENT SEEDING TABLE B.3, OR SITE-SPECIFIC SEEDING SUMMARIES...

- 3. ANCHORING
a. PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE), DEPENDING ON THE SIZE OF THE AREA AND EROSION HAZARD:
i. A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE...

SEQUENCE OF CONSTRUCTION:
1. OBTAIN GRADING PERMIT (1 DAY).
2. PERFORM CLEARING AND GRUBBING AS NECESSARY FOR THE INSTALLATION OF PERIMETER CONTROLS (5 DAYS).

- 3. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE AT LOCATION INDICAT (1 DAY).
4. CONSTRUCT PERIMETER CONTROLS: SILT FENCES (SF), SUPER SILT FENCE (SSF) AND DIVERSIONS/FENCES (7 DAYS).
5. CONSTRUCT SEDIMENT TRAP (5 DAYS).
6. CONSTRUCT EARTH DIKE (5 DAYS).
7. CLEAR AND GRUB SITE (5 DAYS).

NOTE: SEE SHEET 6 OF 6 FOR STREAM CROSSING AND CULVERT REPLACEMENT DETAILS.
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. 17942, EXP. DATE 09/03/18.

OWNER: MARILYN AND STEVE PERVAL
C/O MILDENBERG, BOENDER & ASSOC., INC.
1350-B GRACE DRIVE, COLUMBIA, MARYLAND 21044
410-997-0296

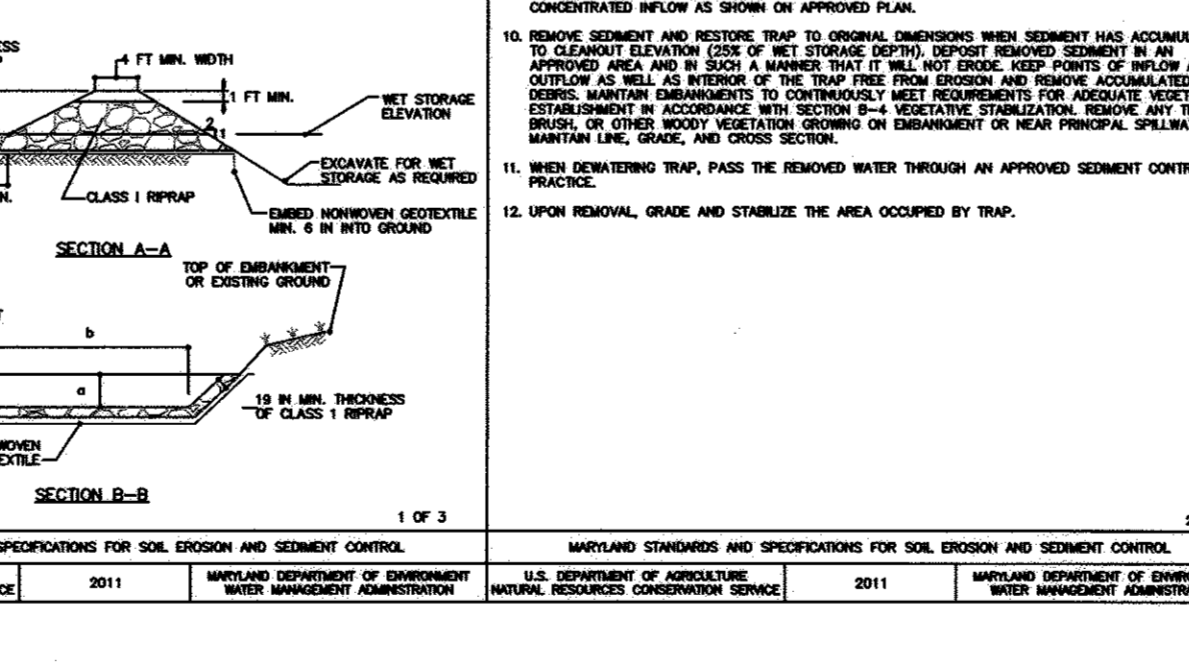
(B-4-6) STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

DEFINITION: TO STABILIZE DISTURBED SOIL WITH PERMANENT VEGETATION. PURPOSE: TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER OF DISTURBED AREAS.

- 1. SEED MIXTURES
a. SELECT ONE OR MORE OF THE SPECIES OF MIXTURES LISTED IN TABLE B.3 FOR THE APPROPRIATE PLANT HARDNESS ZONE (FROM FIGURE B.3) AND BASED IN THE SITE CONDITION OR PURPOSE FOUND ON TABLE B.2. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY.

(B-4-8) STANDARDS AND SPECIFICATION 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.

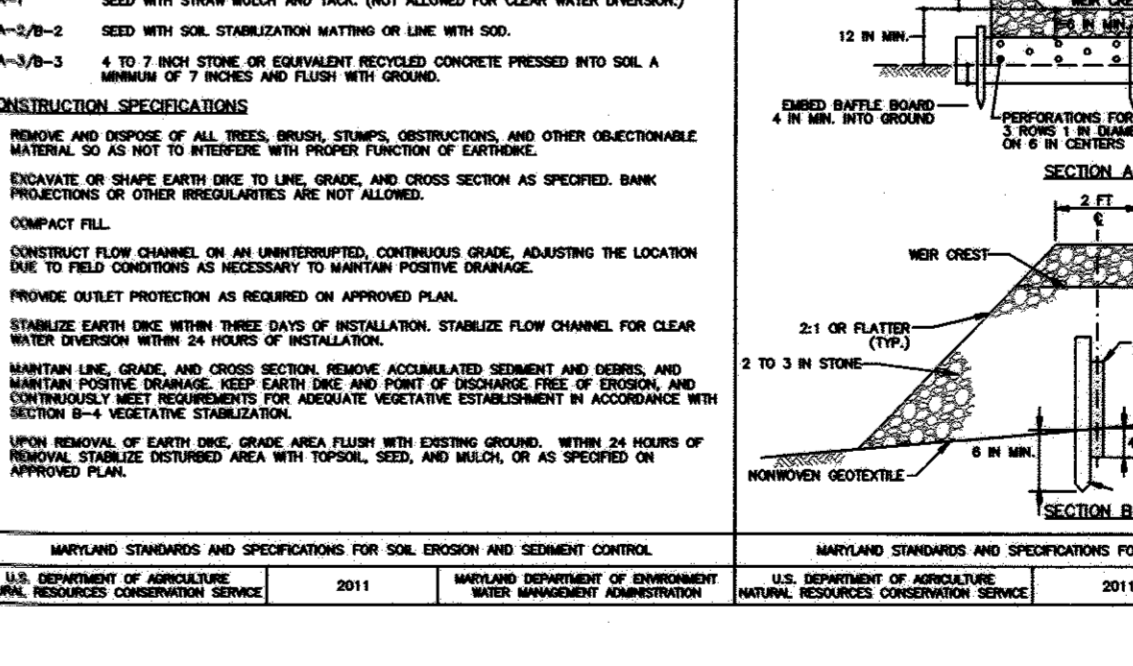
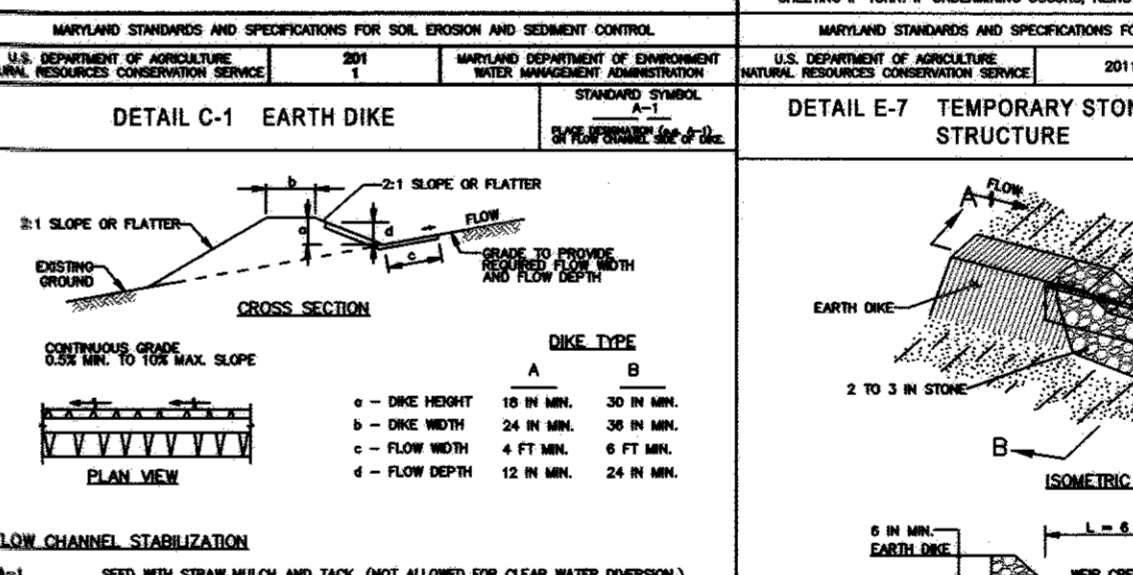
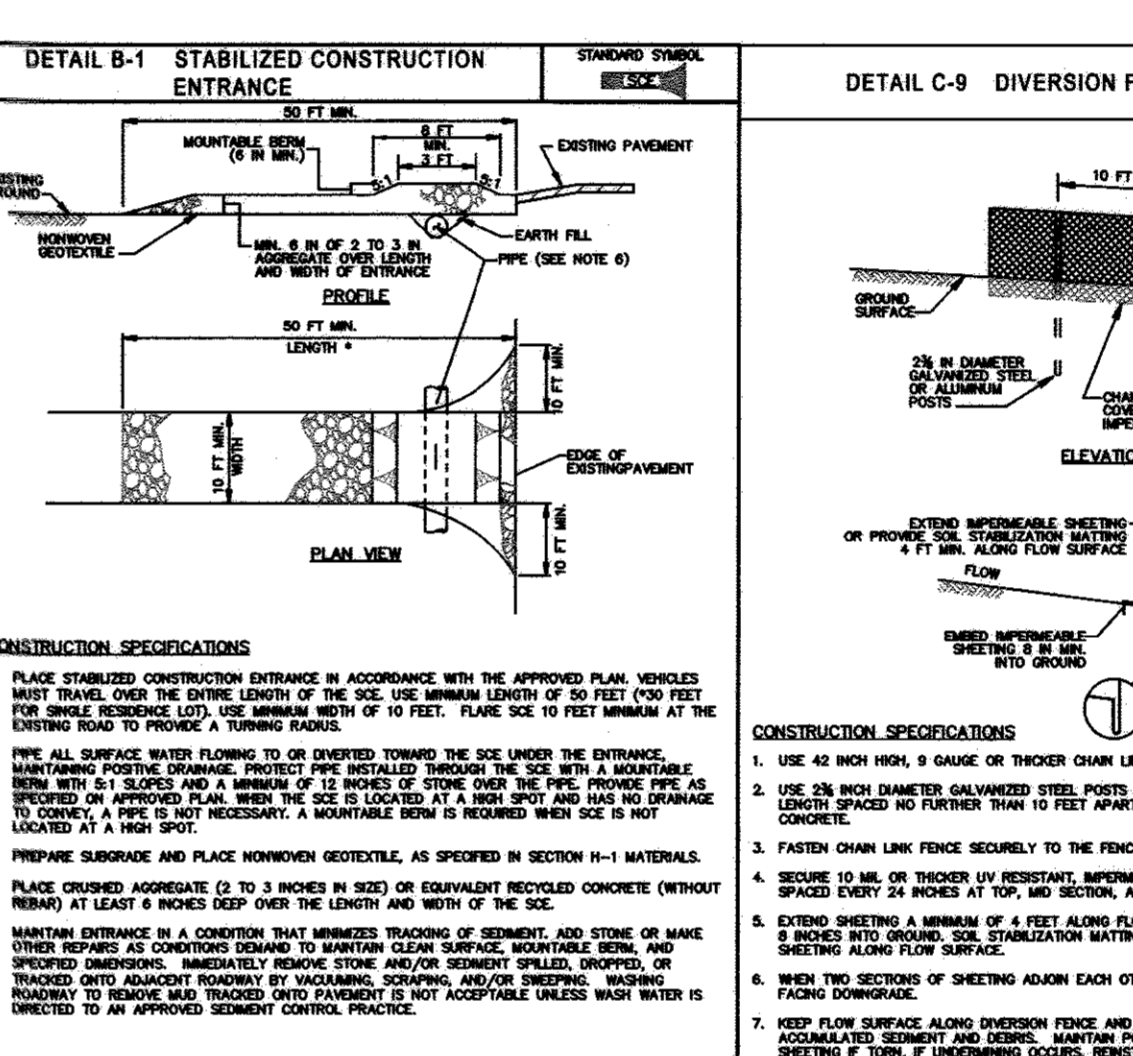
- 1. THE STOCKPILE LOCATION AND ALL RELATED SEDIMENT CONTROL PRACTICES MUST BE CLEARLY INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN.
2. THE FOOTPRINT OF STOCKPILE MUST BE SIZED TO ACCOMMODATE THE ANTICIPATED VOLUME OF MATERIAL AND BASED ON A SIDE SLOPE RATIO NO STEEPER THAN 2:1. BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3-3 LAND GRADING.



PERMANENT SEEDING SUMMARY table with columns for NO., SPECIES, APPLICATION RATE (LB/AC), SEEDING DATES, SEEDING DEPTHS, and FERTILIZER RATE (N, P2O5, K2O, LIME RATE).

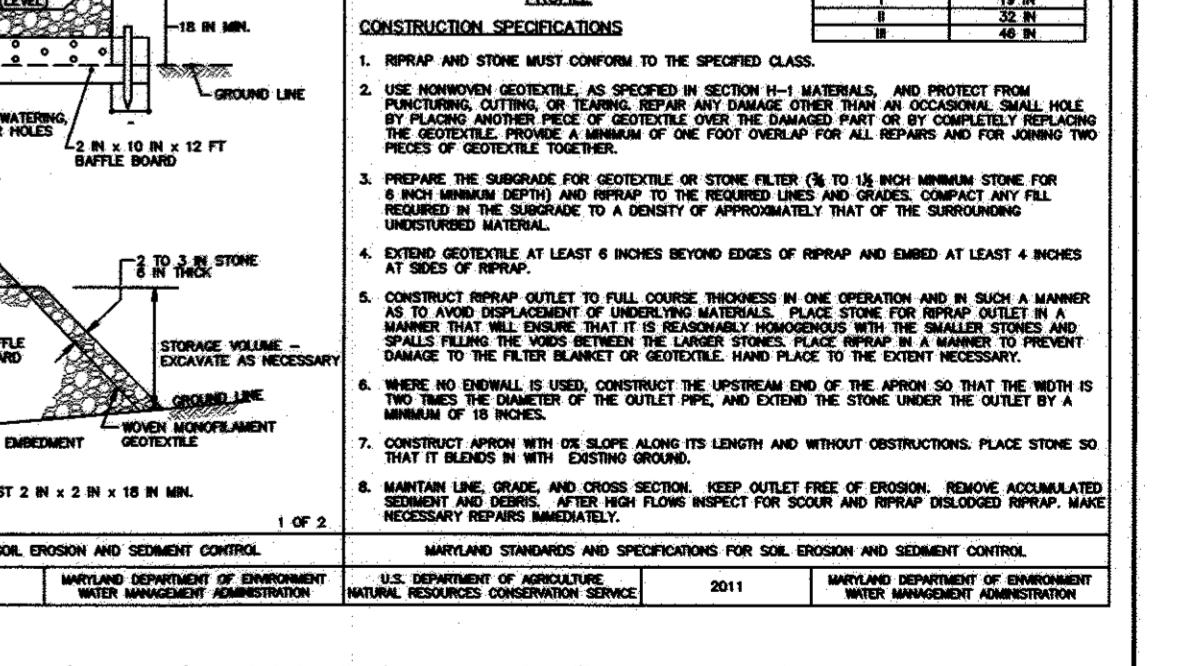
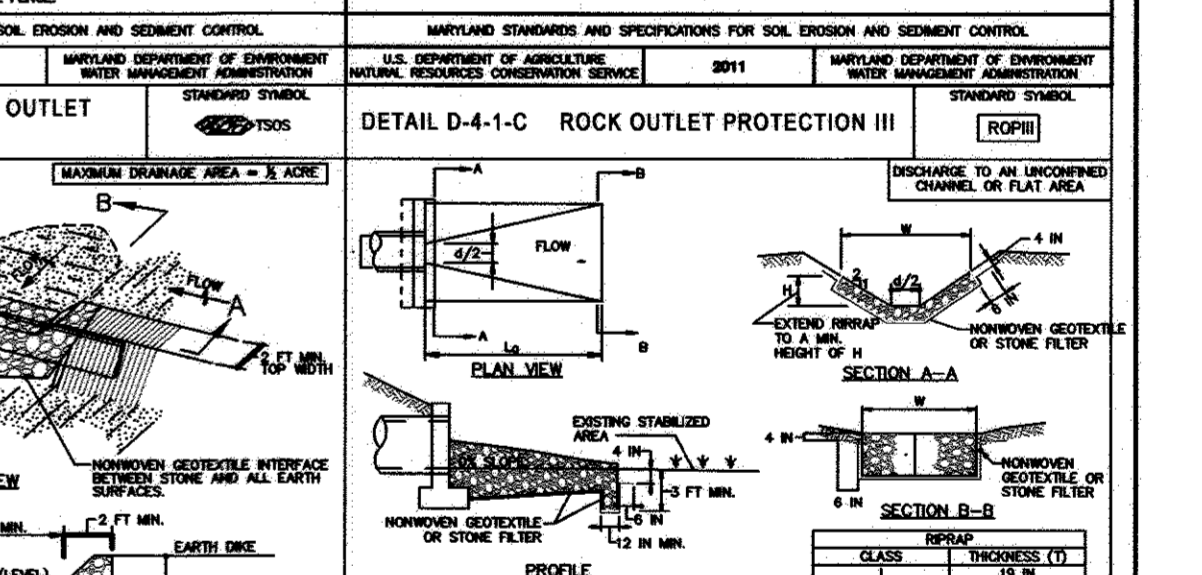
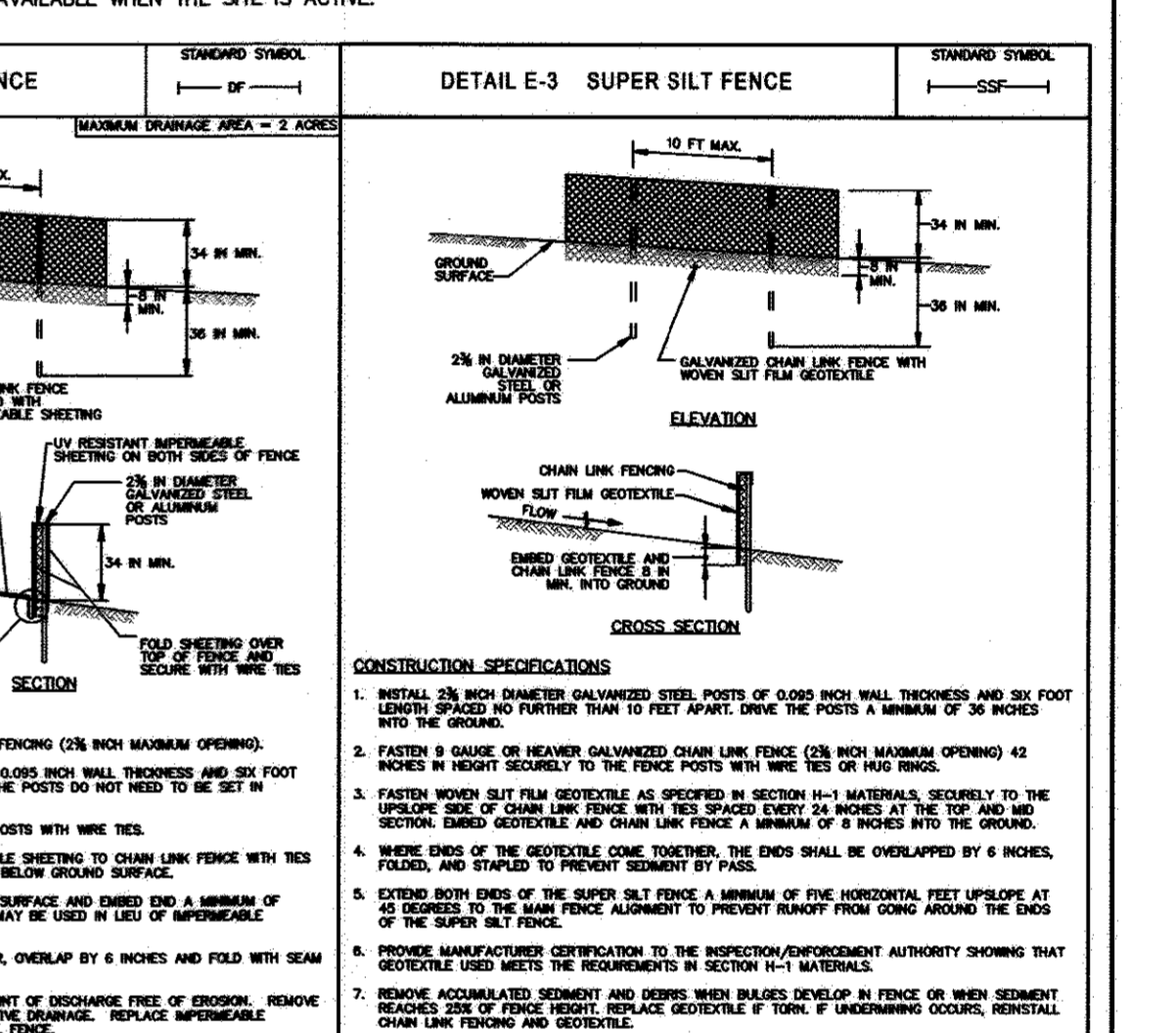
STANDARD SEDIMENT CONTROL NOTES

- 1. A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID), 410-313-1855 AFTER THE FUTURE LOD AND PROTECTED AREAS ARE MARKED CLEARLY IN THE FIELD. A MINIMUM OF 48 HOUR NOTICE TO CID MUST BE GIVEN AT THE FOLLOWING STAGES:
a. PRIOR TO THE START OF EARTH DISTURBANCE.
b. UPON COMPLETION OF THE INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING.
c. PRIOR TO THE START OF ANOTHER PHASE OF CONSTRUCTION OR OPENING OF ANOTHER GRADING LINE.



TEMPORARY SEEDING FOR SITE STABILIZATION table with columns for PLANT SPECIES, SEEDING RATE (LB/AC), SEEDING DEPTH (INCHES), and RECOMMENDED SEEDING DATES BY PLANT HARDNESS ZONE.

- 7. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
8. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY, BY THE CID. THE SITE AND ALL CONTROLS SHALL BE INSPECTED BY THE CONTRACTOR WEEKLY, AT LEAST ONCE EACH DAY AFTER EACH RAIN EVENT. A WRITTEN REPORT BY THE CONTRACTOR, MADE AVAILABLE UPON REQUEST, IS PART OF EVERY INSPECTION AND SHOULD INCLUDE:
a. INSPECTION DATE
b. INSPECTION TIME (ROUTINE, PRE-STOREM, DURING RAIN EVENT)
c. NAME AND TITLE OF INSPECTOR
d. WEATHER INFORMATION (CURRENT CONDITIONS AS WELL AS TIME AND AMOUNT OF LAST RECORDED PRECIPITATION)



(B-4-4) STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION
DEFINITION: TO STABILIZE DISTURBED SOIL WITH VEGETATION FOR UP TO 6 MONTHS. PURPOSE: TO USE FAST GROWING VEGETATION THAT PROVIDES COVER ON DISTURBED SOIL.

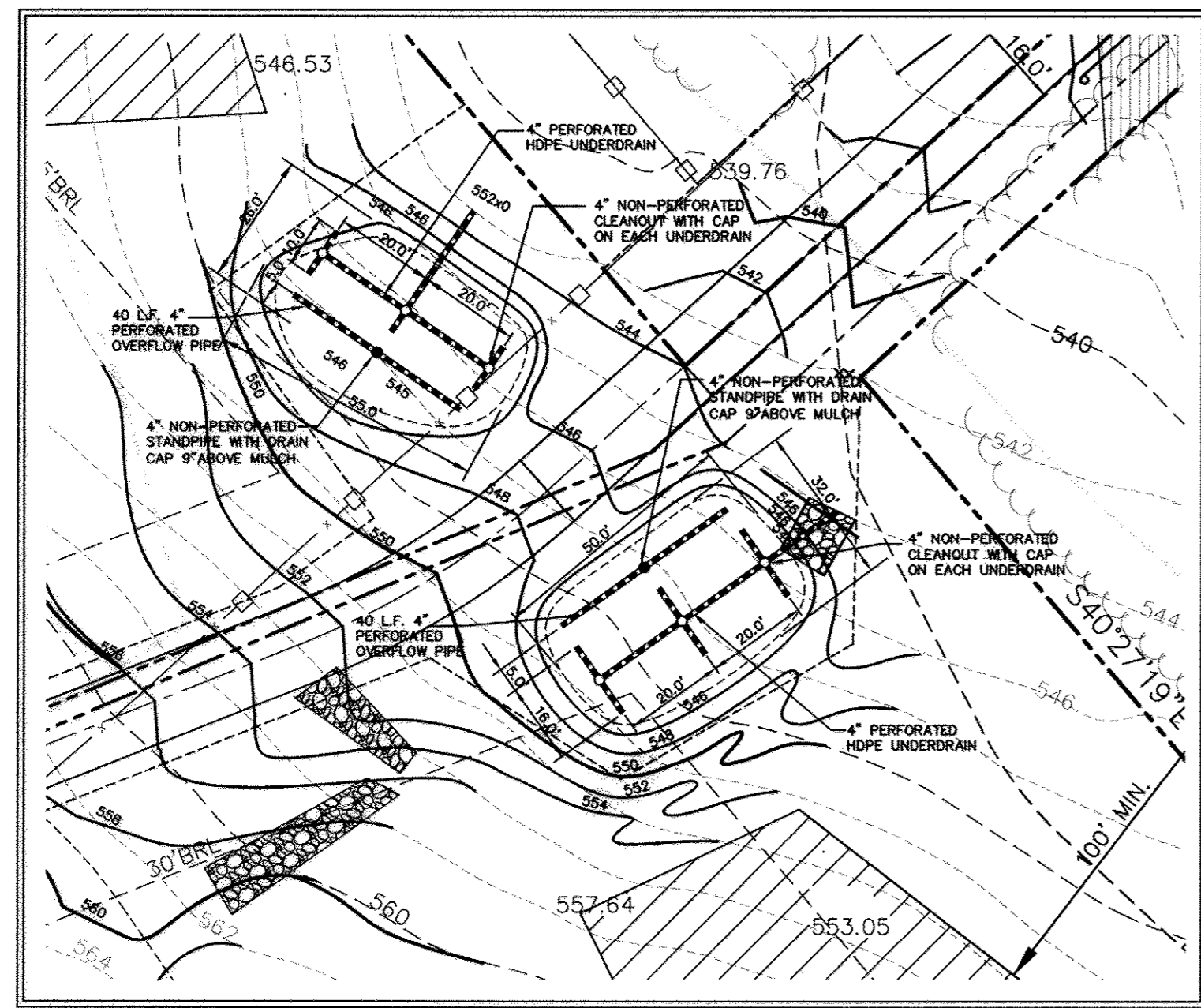
CONDIIONS WHERE PRACTICE APPLIES: EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS, FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION PRACTICES ARE REQUIRED.

Project information table with columns for date, project name, scale, and approval.

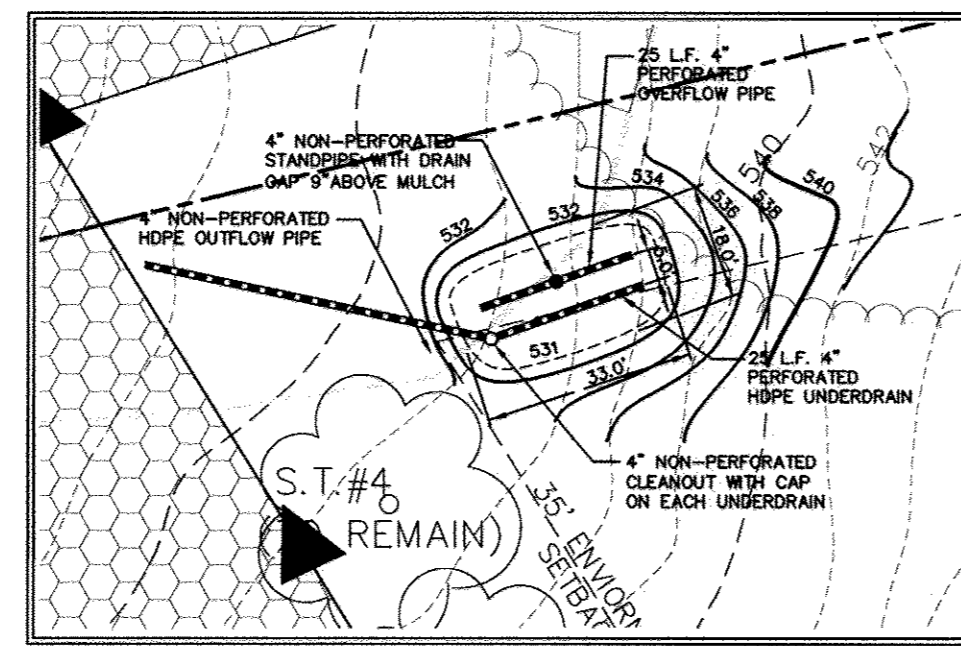
Revisions table with columns for no., description, and date.

PERVAL PROPERTY TAX MAP 08, GRID 05, PARCEL 237
LOT 1 THRU 3 AND NON-BUILDABLE BULK PARCEL 'A'
FOURTH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
SEDIMENT CONTROL NOTES AND DETAILS

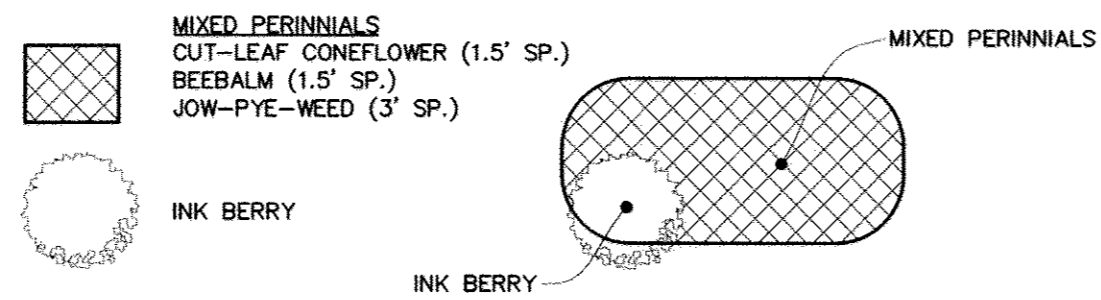
MILDENBERG, BOENDER & ASSOC., INC.
Engineers Planners Surveyors
7350-B Grace Drive, Columbia, MD 21044
(410) 997-0296 Tel. (410) 997-0296 Fax.



MICRO-BIORETENTION (MB-1 AND MB-2) PLAN
SCALE: 1"=30'

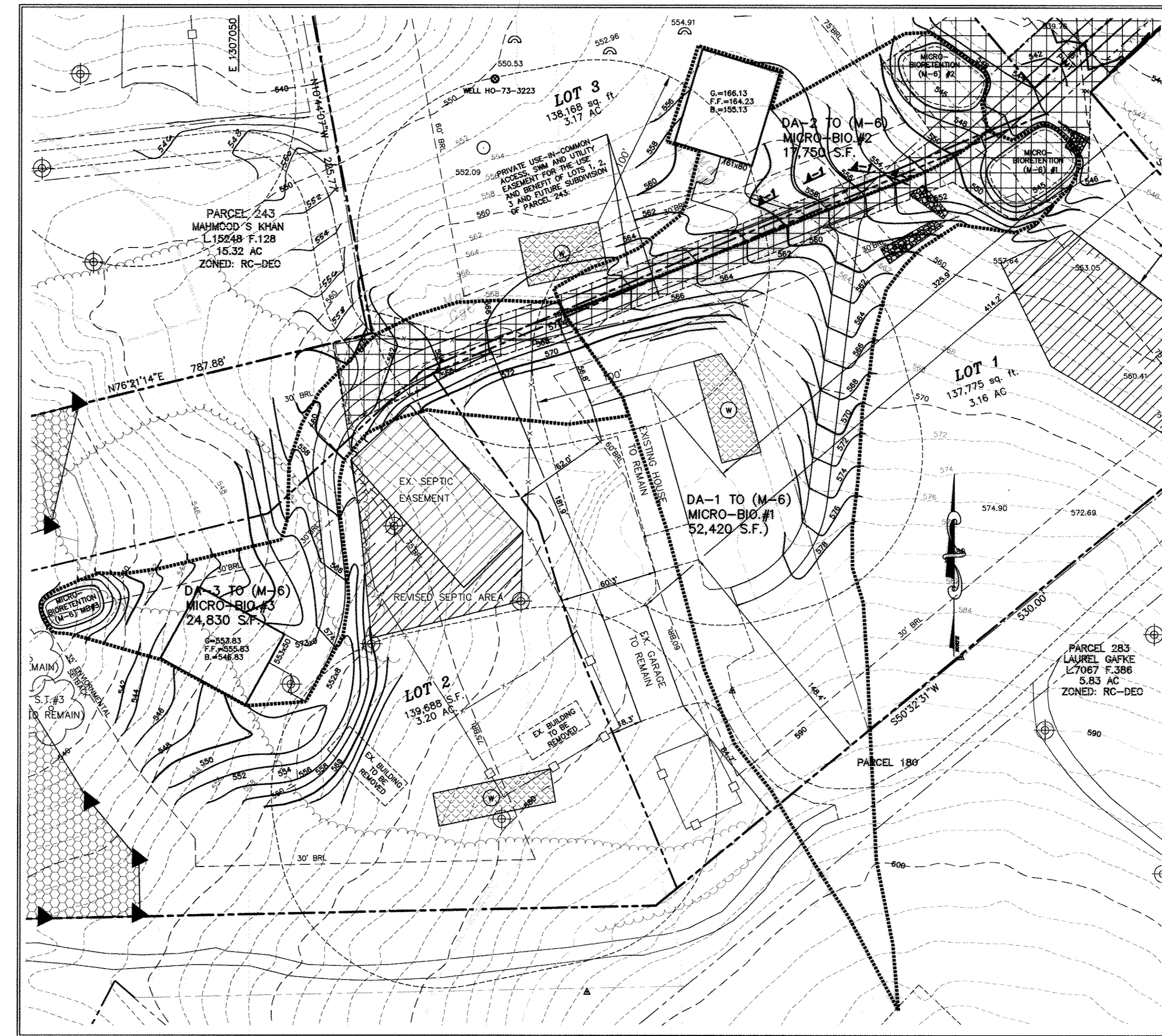


MICRO-BIORETENTION (MB-3) PLAN
SCALE: 1"=30'



TYP. MICRO-BIORETENTION (M-6) DETAIL
SCALE: NTS

NOTE: PLANT MATERIAL MUST COVER AT LEAST 50% OF THE SURFACE AREA OF THE MICRO-BIORETENTION



MICRO-BIORETENTION DRAINAGE AREA MAP
SCALE: 1"=50'

SWM SUMMARY

FACILITY#	AREA	REQUIRED ESDV	PROVIDED ESDV
MB #1	LOT 1 LIC DRIVEWAY	1,249 C.F.	1,782 C.F.
MB #2	LOT 3 LIC DRIVEWAY	1,340 C.F.	1,948 C.F.
MB #3	LOT 2 LIC DRIVEWAY	797 C.F.	825 C.F.
STONE TRENCHES	Rev DRIVEWAY	206 C.F.	208 C.F.
TOTAL		3,592 C.F.	4,763 C.F.

MICRO-BIORETENTION SCHEDULE

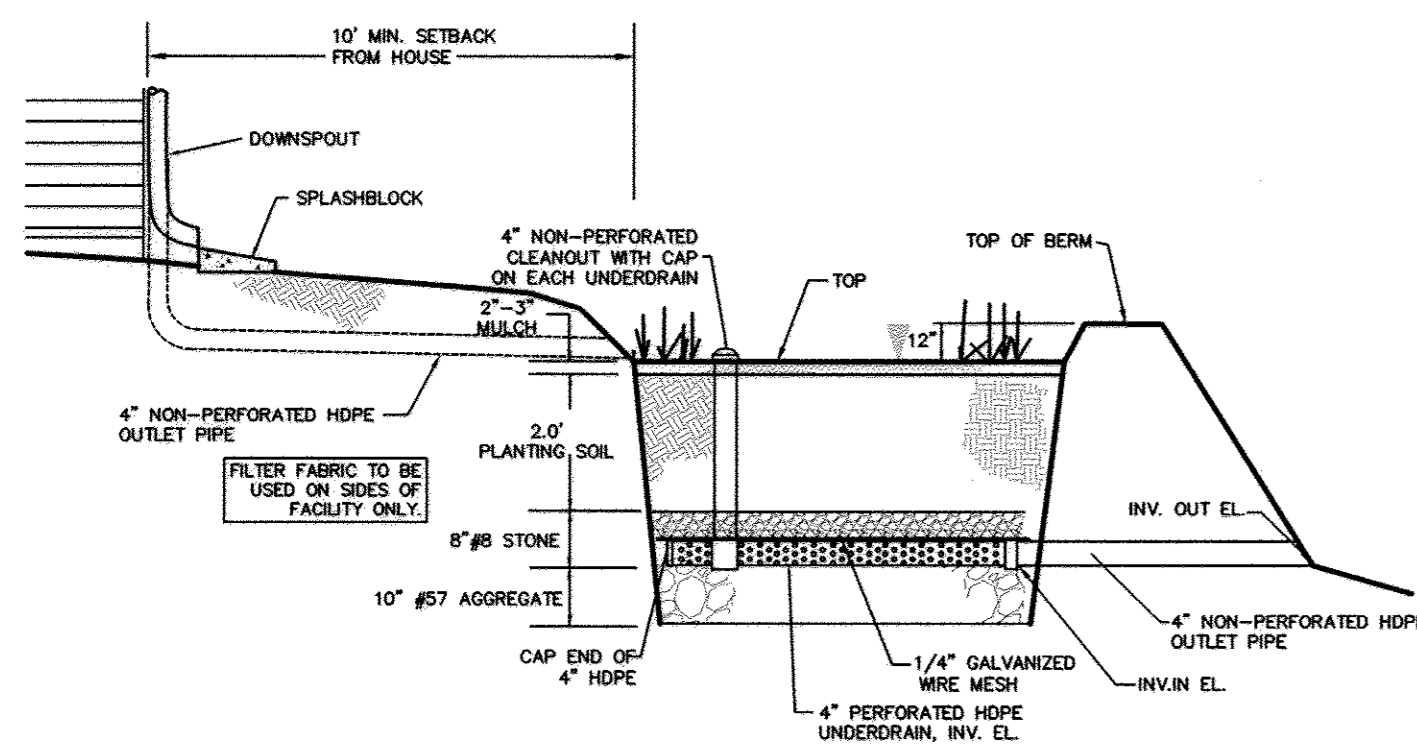
FACILITY	TOP EL.	TOP OF BERM	INV. IN UNDERDRAIN	INV. OUT UNDERDRAIN	AREA AT TOP EL.	AREA AT BERM EL.	INV. EL OVERFLOW PIPE
MB #1	545.00	546.00	544.00	543.50	1,180 SF	1,458 SF	544.00
MB #2	545.00	546.00	544.00	543.50	1,290 SF	1,615 SF	544.00
MB #3	531.00	532.00	528.00	527.50	525 SF	7.28 SF	528.00

OPERATION AND MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION (M-6)

- THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A-6.1 AND 2.
- THE OWNER SHALL PERFORM A PLANT INSPECTION IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT. REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL. TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRES.
- THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
- THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

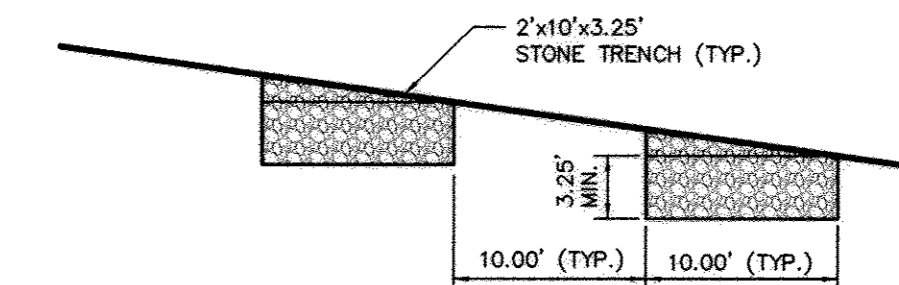
OWNER

MARILYN AND STEVE PERCIVAL
C/O MILDENBERG, BOENDER & ASSOC., INC.
7350-B GRACE DRIVE
COLUMBIA, MARYLAND 21044
410-997-0296

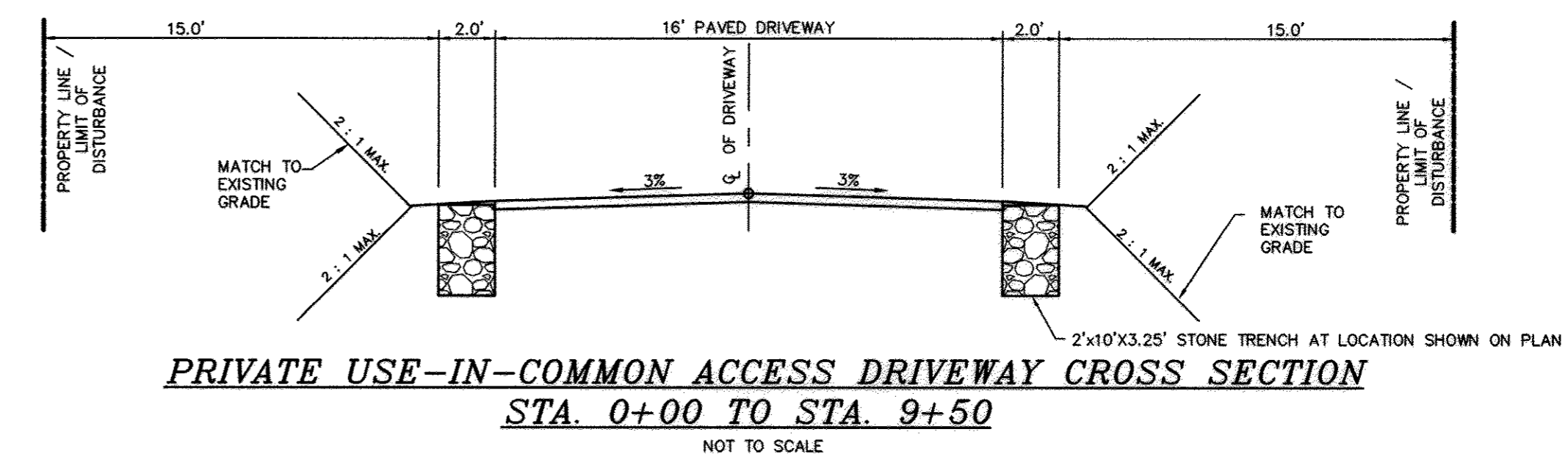


TYP. MICRO-BIORETENTION (M-6) DETAIL
NOT TO SCALE

TYP. SECTION MICRO-BIORETENTION (M-6)
NOT TO SCALE



STONE TRENCH DETAIL
NOT TO SCALE



PRIVATE USE-IN-COMMON ACCESS DRIVEWAY CROSS SECTION
STA. 0+00 TO STA. 9+50
NOT TO SCALE

ENGINEER'S CERTIFICATE
I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT 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: 10/31/16
R. JACOB HIKMAT, PE
PRINTED NAME OF ENGINEER

DEVELOPERS CERTIFICATE
I CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY 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. HOWARD SOIL CONSERVATION DISTRICT IS AUTHORIZED TO CONDUCT PERIODIC ON-SITE INSPECTION.
SIGNATURE OF DEVELOPER: [Signature] DATE: 10/31/16
GREENBERRY INC.
PRINTED NAME OF DEVELOPER

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
SIGNATURE OF HOWARD SOIL CONSERVATION DISTRICT: [Signature] DATE: 4/16/16
HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PLANNING AND ZONING
SIGNATURE OF CHIEF: [Signature] DATE: 11.14.16
CHIEF, DEVELOPMENT ENGINEERING DIVISION NY
SIGNATURE OF CHIEF: [Signature] DATE: 11-21-16
CHIEF, DIVISION OF LAND DEVELOPMENT NH



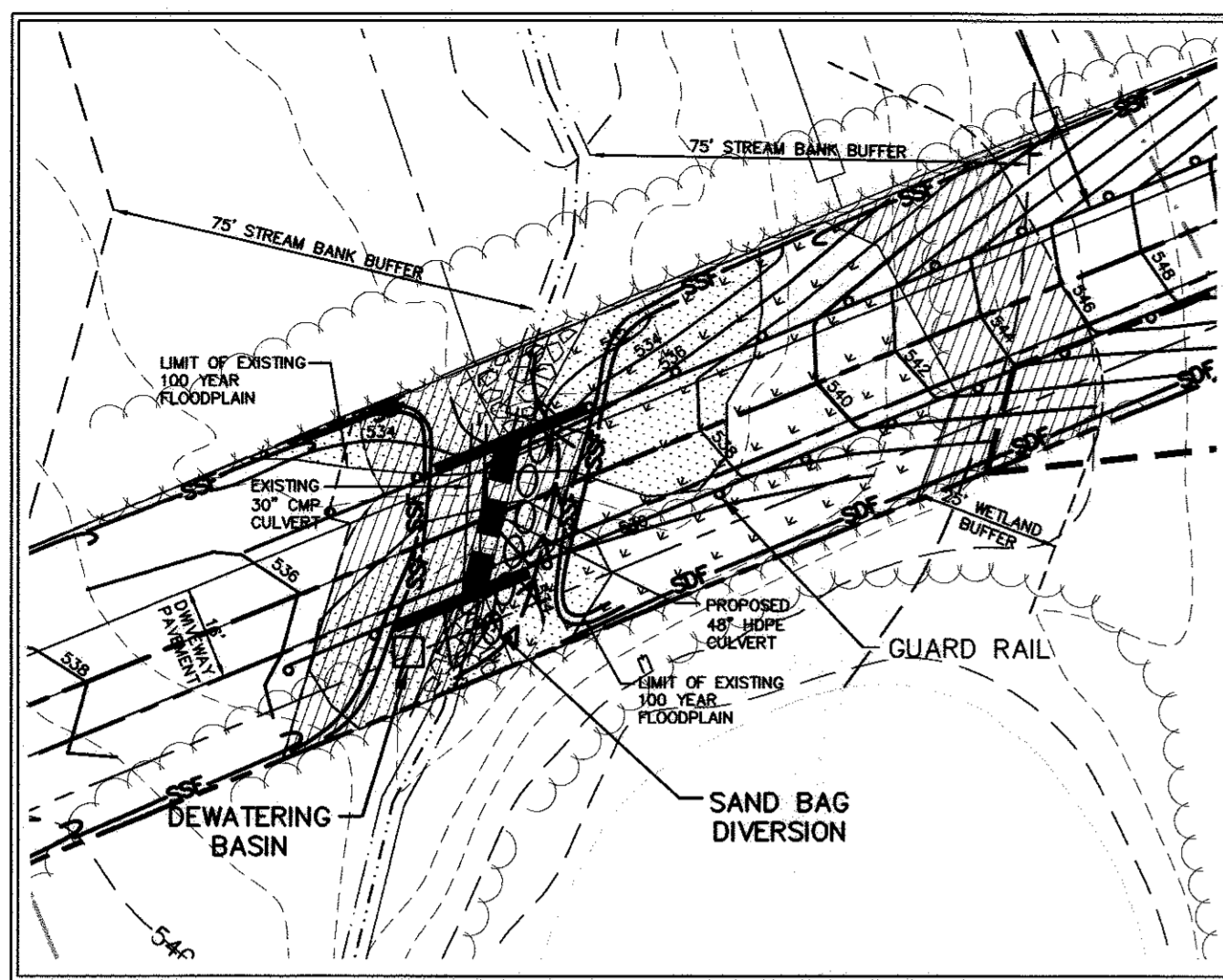
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 17942, EXP. DATE 09/03/18.
SIGNATURE OF ENGINEER: [Signature] DATE: 10/31/16
R. JACOB HIKMAT, P.E.

Project	14-020	date	NOV. 2016
Illustration	MMM	engineering	MMM
scale	AS SHOWN	approval	RJH

NO.	1	DATE	7/17/2017
DESCRIPTION	ADD OFF SITE GRADING		
REVISIONS			

PERCIVAL PROPERTY
LOTS 1 THRU 3 AND NON-BUILDABLE BULK PARCEL 'A'
TAX MAP 08, GRID 05, PARCEL 237
HOWARD COUNTY, MARYLAND
FOURTH ELECTION DISTRICT
SWM DETAILS

MILDENBERG, BOENDER & ASSOC., INC.
Engineers Planners Surveyors
7350-B Grace Drive, Columbia, MD 21044
(410) 997-0296 Tel. (410) 997-0298 Fax.



BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS AND 100-YEAR FLOODPLAINS

- NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS OR 100-YEAR FLOODPLAIN.
- PLACE MATERIALS ON A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR 100-YEAR FLOODPLAIN.
- DO NOT USE EXCAVATED MATERIALS AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIALS, OR OTHER DELETERIOUS SUBSTANCE.
- PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR 100-YEAR FLOODPLAIN.
- REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, OR WATERWAYS, OR PERMANENT MODIFICATION OF THE 100-YEAR FLOODPLAIN IN EXCESS OF THAT LOST UNDER ORIGINALLY AUTHORIZED STRUCTURE OR FILL.
- RECTIFY ANY NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, OR 100-YEAR FLOODPLAIN TEMPORARILY IMPACTED BY ANY CONSTRUCTION.
- ALL STABILIZATION IN THE NONTIDAL WETLANDS AND NONTIDAL WETLAND BUFFER SHALL CONSIST OF THE FOLLOWING SPECIES: ANNUAL RYEGRASS (LOLIUM MULTIFLORUM), MILLET (SETARIA ITALICA) BARLEY (HORDEUM SP.) OATS (UNIOLA SP.) /OR RYE (SECALE CEREALE). THESE SPECIES WILL ALLOW FOR THE STABILIZATION OF THE SITE WHILE ALSO ALLOWING FOR THE VOLUNTARY REVEGETATION OF NATURAL WETLAND SPECIES. OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE NONTIDAL WETLANDS AND WATERWAYS DIVISION. KENTUCKY 31 FESCUE SHALL NOT BE UTILIZED IN WETLAND OR BUFFER AREAS. THE AREA SHOULD BE SEEDED AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
- AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST-CONSTRUCTION GRADES AND ELEVATIONS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.
- TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM:
 - USE I WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
 - USE III WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD OCTOBER 1 THROUGH APRIL 30, INCLUSIVE, DURING ANY YEAR.
 - USE IV WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH MAY 31, INCLUSIVE, DURING ANY YEAR.
- STORMWATER RUNOFF FROM IMPERVIOUS SURFACE SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.
- CULVERTS SHALL BE CONSTRUCTED AND ANY RIP RAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF ACTIVITY IS TO IMPOUND WATER.

ENGINEER'S CERTIFICATE
 I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT 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.

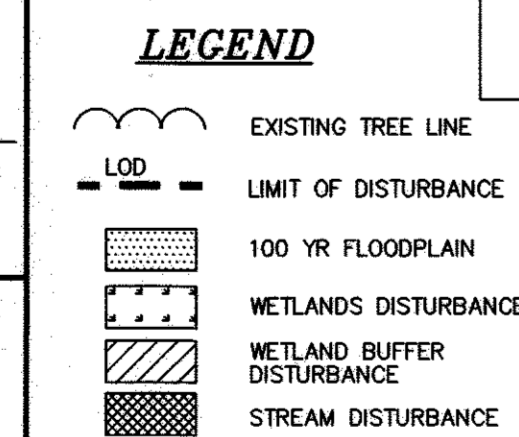
[Signature] 10/31/16
 SIGNATURE OF ENGINEER DATE
 R. JACOB HIKMAT, PE
 PRINTED NAME OF ENGINEER

DEVELOPERS CERTIFICATE
 I CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY 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 EROSION AND SEDIMENT BEGINSING THE PROJECT. HOWARD SOIL CONSERVATION DISTRICT IS AUTHORIZED TO CONDUCT PERIODIC ON-SITE INSPECTION.

[Signature] 10/31/16
 SIGNATURE OF DEVELOPER DATE
 GREENBERRY INC.
 PRINTED NAME OF DEVELOPER

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
[Signature] 11/14/16
 JOHN K. KALUTAN
 HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 11/14/16
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
[Signature] 11-21-16
 CHIEF, DIVISION OF LAND DEVELOPMENT/AV DATE



OWNER

MARILYN AND STEVE PEROVAL
 C/O MILDENBERG, BOENDER & ASSOC., INC.
 7350-B GRACE DRIVE
 COLUMBIA, MARYLAND 21044
 410-997-0296

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. 17842, EXP. DATE 09/03/18.
[Signature] 10/31/16
 R. JACOB HIKMAT, P.E.

MGWC 4.3: CULVERT INSTALLATION

Proposed installation sequence for culverts

DESCRIPTION
 The following is a typical installation sequence for culverts which details the minimum requirements to be incorporated into the project.

EFFECTIVE USES & LIMITATIONS
 This method has been chosen in order to illustrate a general sequence of construction and is not suitable for all projects. Therefore, the construction sequence should be reviewed and modified as necessary to meet specific project needs. Consideration of a bridge or bottomless trestle should be made prior to selecting a culvert.

CONSTRUCTION SEQUENCE
 All erosion and sediment control devices, including dewatering basins, should be implemented as the first order of business according to plans approved by the WMA or local authority. (See the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control.) A construction sequence, such as the proposed one listed below, should then be followed (refer to Detail 4.3).

- A diversion pipe as shown in MGWC 1.4; Diversion Pipe or other measure should be installed and a sandbag or stone barrier as shown in MGWC 1.5; Sandbag/Stone Barrier should be constructed according to specifications to divert the streamflow into the diversion.
- A sandbag or stone barrier should be placed downstream to prevent the flow from backing into the construction area.
- Culverts should be installed such that the following requirements are met:
 - The culvert slope should match the streambed slope while not exceeding 3%.
 - Culverts should be depressed then possible to encourage natural flow passage as shown in MGWC 4.5; Depressed Culverts.
 - For non-depressed culverts, the outlet height should not exceed 5 inches (12 centimeters), and concrete aprons should be avoided whenever possible.
 - The stable width/depth ratio of the bankfull stage stream channel should be maintained with the culvert design. Use of elliptical pipe may help attain the proper channel dimensions especially for B, C, and E stream types.
 - A low flow channel shall be constructed through the riprap placements across the stream bed.
- The disturbed portions of the channel, including the slopes and streambed, should be stabilized with methods approved by the WMA.
- Finally, the dewatering basin(s) should be restored to the original grade, the silt fence removed, and all disturbed areas seeded and mulched.

TEMPORARY INSTREAM CONSTRUCTION MEASURES REVISIONS NOVEMBER 2000
 MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES
 PAGE 4.3 - 1

Maryland's Guidelines To Waterway Construction
DETAIL 4.3: CULVERT INSTALLATION-STAGES 1&2

STAGE 1
 Installation Guidelines:
 1. provide sandbags or stones to divert the channel
 2. remove the portion of pier and the southeast abutment and headwall
 3. install the first segment of pipe and build the headwall
 4. stabilize the stream bed inlet with Class 1 riprap

STAGE 2
 Installation Guidelines:
 1. divert the channel as shown
 2. remove the northeast abutment and headwall
 3. install the pipe and build the headwall
 4. stabilize the remaining stream inlet with Class 1 riprap

TEMPORARY INSTREAM CONSTRUCTION MEASURES REVISIONS NOVEMBER 2000
 MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES
 PAGE 4.3 - 2

Maryland's Guidelines To Waterway Construction
DETAIL 4.3: CULVERT INSTALLATION-STAGES 3&4

STAGE 3
 Installation Guidelines:
 1. divert the channel as shown
 2. remove the remaining abutment and wingwall
 3. build the last portion of pipe and headwall
 4. stabilize the outlet with riprap
 5. restore the road surface

STAGE 4
 Installation Guidelines:
 1. remove traffic barriers
 2. stabilize all disturbed areas with seed and mulch
 3. remove sediment control devices

TEMPORARY INSTREAM CONSTRUCTION MEASURES REVISIONS NOVEMBER 2000
 MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES
 PAGE 4.3 - 3

MGWC 1.1: DEWATERING BASINS

Temporary measure for filtering sediment-laden water

DESCRIPTION
 The work should consist of installing dewatering basins jointly with channel diversion measures to filter sediment-laden water from in-stream construction sites before the water re-enters the downstream reach.

EFFECTIVE USES & LIMITATIONS
 Undersized dewatering basins will not adequately filter sediment-laden water from the construction site.

MATERIAL SPECIFICATIONS
 Materials for dewatering basins should meet the following requirements:
 • **Riprap:** Riprap should be washed and have a diameter ranging from 4 to 6 inches (10 to 15 centimeters).
 • **Filter Cloth:** Filter cloth should be a woven or non-woven fabric consisting only of continuous chain polymers (filaments or yarns of polyester). The fabric should be inert to commonly encountered chemicals, hydrocarbons, ultraviolet light, and mildew and should be rot resistant.
 • **Straw Bales/Cell Fence:** Straw bales should meet the criteria as specified in the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control.

INSTALLATION GUIDELINES
 Due to the danger of overtopping by events greater than the design flow, dewatering basins require a vegetative buffer strip to filter sediment-laden overflow. A 50-foot (15-meter) minimum grass-covered buffer width is required for slopes less than 20 degrees (1:2.7) when right-of-way is not limited. For slopes greater than 20 degrees, basins should have a 100-foot (30-meter) minimum buffer width when practical.

All erosion and sediment control devices should be installed as the first order of business according to a plan approved by the Water Management Administration (WMA) or local authority. Dewatering basins should be constructed as follows (refer to Detail 1.1):

- Excavated soil and topsoil should be stored separately and replaced in their natural order. Additionally, the excavated soil should be prevented from entering the waterway by using sediment protection controls or other measures.
- The dewatering basin should have a minimum depth of 3 feet (1 meter) where basin depth is measured from the top of the straw bales to the bottom of the excavation.
- Once the dewatering basin becomes filled to one-half of the excavated depth, accumulated sediment should be removed and disposed of in an approved area outside the 100-year floodplain unless otherwise authorized by the WMA.
- Sediment control devices should remain in place until all disturbed areas are stabilized and the inspecting authority approves their removal. All disturbed ground contours should be returned to their original condition unless otherwise approved by the WMA or local authority.

TEMPORARY INSTREAM CONSTRUCTION MEASURES REVISIONS NOVEMBER 2000
 MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES
 PAGE 1.1 - 1

MGWC 1.2: PUMP-AROUND PRACTICE

Temporary measure for dewatering in-channel construction sites

DESCRIPTION
 The work should consist of installing a temporary pump around and supporting measures to divert flow around in-stream construction sites.

IMPLEMENTATION SEQUENCE
 Sediment control measures, pump-around practice, and associated channel and bank construction should be completed in the following sequence (refer to Detail 1.2):

- Construction activities including the installation of erosion and sediment control measures should not begin until all necessary easements and/or right-of-ways have been acquired. All existing utilities should be marked in the field prior to construction. The contractor is responsible for any damage to existing utilities that may result from construction and should repair the damage at his/her own expense to the county's or utility company's satisfaction.
- The contractor should notify the Maryland Department of the Environment or WMA sediment control inspector at least 5 days before beginning construction. Additionally, the contractor should inform the local environmental protection and resource management inspection and enforcement division and the provider of local utilities a minimum of 48 hours before starting construction.
- The contractor should conduct a pre-construction meeting on site with the WMA sediment control inspector, the county project manager, and the engineer to review limits of disturbance, erosion and sediment control requirements, and the sequence of construction. The contractor should stake out all limits of disturbance prior to the pre-construction meeting so they may be reviewed. The participants will also designate the contractor's staging areas that all trees within the limit of disturbance which will be removed for construction areas. Trees should not be removed within the limit of disturbance without approval from the WMA or local authority.
- Construction should not begin until all sediment and erosion control measures have been installed and approved by the engineer and the sediment control inspector. The contractor should stay within the limits of the disturbance as shown on the plans and minimize disturbance within the work area whenever possible.
- Upon installation of all sediment control measures and approval by the sediment control inspector and the local environmental protection and resource management inspection and enforcement division, the contractor should begin work at the upstream section and proceed downstream beginning with the establishment of stabilized construction cutbanks. In some cases, work may begin downstream if appropriate. The sequence of construction must be followed unless the contractor gets written approval for deviations from the WMA or local authority. The contractor should only begin work in an area which can be completed by the end of the day including grading adjacent to the channel. At the end of each work day, the work area must be stabilized and the pump around removed from the channel. Work should not be conducted in the channel during rain events.
- Sandbag dikes should be situated at the upstream and downstream ends of the work area as shown on the plans, and stream flow should be pumped around the work area. The pump should discharge onto a stable velocity dissipater made of riprap or sandbags.

TEMPORARY INSTREAM CONSTRUCTION MEASURES REVISIONS NOVEMBER 2000
 MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES
 PAGE 1.2 - 1

Maryland's Guidelines To Waterway Construction
DETAIL 1.2: PUMP-AROUND PRACTICE

PLAN VIEW

SECTION A-A
 1.5 ft (0.45 m) minimum
 6-ft (1.8-m) minimum
 6-ft (1.8-m) minimum
 3 ft (0.9-m) minimum
 4-in (10-cm) minimum depth

SECTION B-B
 2 to 3-ft (0.6 to 0.9-m) rebar or stakes for straw bales
 6 inches (15 cm)
 3-ft (0.9-m) minimum

TEMPORARY INSTREAM CONSTRUCTION MEASURES REVISIONS NOVEMBER 2000
 MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES
 PAGE 1.2 - 2

Maryland's Guidelines To Waterway Construction
DETAIL 1.1: DEWATERING BASINS

PLAN VIEW

SECTION A-A
 1.5 ft (0.45 m)
 2:1 (H:V)
 4 to 6-in (10 to 15 cm) riprap

SECTION B-B
 2 to 3-ft (0.6 to 0.9-m) rebar or stakes for straw bales
 6 inches (15 cm)
 3-ft (0.9-m) minimum

TEMPORARY INSTREAM CONSTRUCTION MEASURES REVISIONS NOVEMBER 2000
 MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES
 PAGE 1.1 - 2

SEQUENCE OF CONSTRUCTION FOR 48" HDPE CULVERT INSTALLATION

- EXCAVATE AROUND EXISTING 30" CMP CULVERT. DO NOT DISTURB THE STREAM. CHECK WEATHER REPORT, TO BE SURE THAT IT WILL BE A MINIMUM TEN (10) DAYS WITHOUT RAIN.
- REMOVE EXISTING 30" CMP PIPE. (MUST BE DONE PRIOR TO MARCH 1, OR AFTER JUNE 15.) (1 DAY)
- INSTALL 48" HDPE CULVERT (1 DAY)
- CONSTRUCT WINGWALLS. (6 DAYS)
- STABILIZE DISTURBED AREAS PER BEST MANAGEMENT PRACTICES.

PROJECT DATE: 14-020 OCT. 2016
 ILLUSTRATION: MMM
 SCALE: 1" = 30'
 APPROVAL: RJK

PERCIVAL PROPERTY
 LOTS 1 THRU 3 AND NON-BUILDABLE BULK PARCEL 'A'
 TAX MAP 08, GRID 05, PARCEL 237
 HOWARD COUNTY, MARYLAND
 FOURTH ELECTION DISTRICT
 STREAM CROSSING DETAILS

MILDENBERG, BOENDER & ASSOC., INC.
 Engineers Planners Surveyors
 7350-B Grace Drive, Columbia, MD 21044
 (410) 997-0296 Tel. (410) 997-0298 Fax

6 OF 6
 F-16-088