

GENERAL NOTES

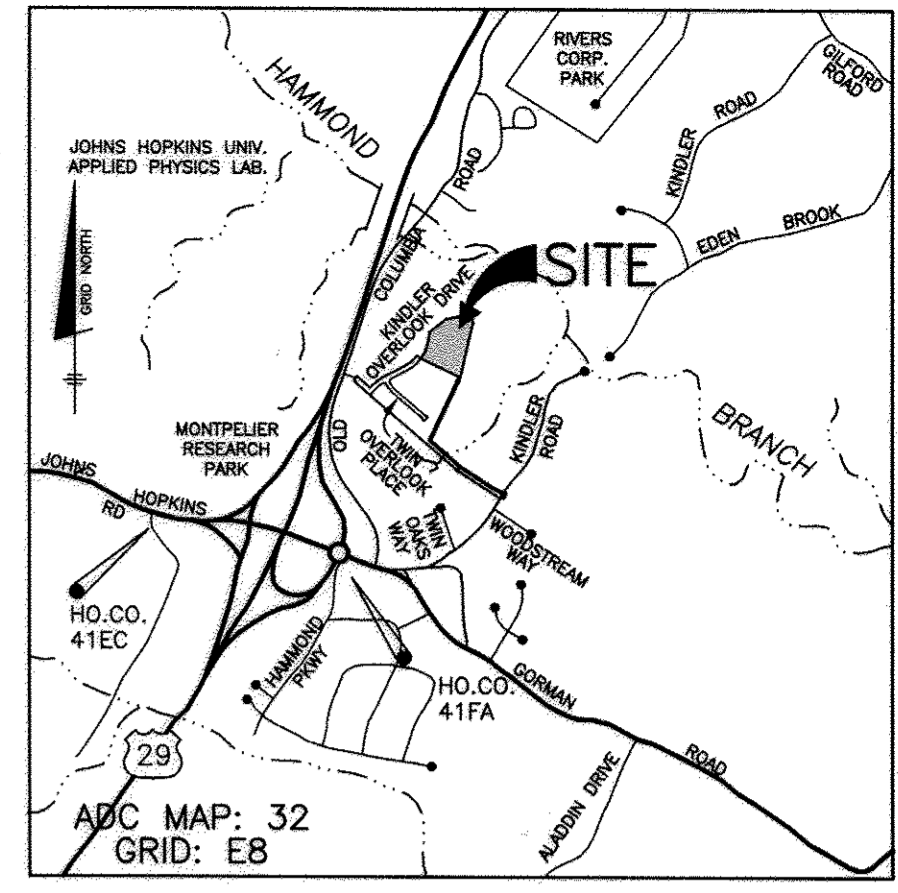
- THIS PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- THE SUBJECT PROPERTY IS ZONED R-20 PER THE 2-20-2004 COMPREHENSIVE ZONING PLAN AND THE "COMP LITE" ZONING AMENDMENTS EFFECTIVE 7-28-2006.
- COORDINATES BASED ON NAD '83, MARYLAND COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS 41EC AND 41FA.
- TRACT BOUNDARY IS BASED ON A FIELD RUN BOUNDARY SURVEY PERFORMED ON OR ABOUT OCTOBER, 2008 BY BENCHMARK ENGINEERS, INC.
- A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
- WETLAND DELINEATION/CERTIFICATION PROVIDED BY WILDMAN ENVIRONMENTAL SERVICES DATED DECEMBER 17, 2006 AND REVISED IN JULY, 2007. AN ADDITIONAL WETLAND STUDY WAS PERFORMED FOR THE SEWER ALIGNMENT DECEMBER, 2008 BY ECO-SCIENCE PROFESSIONALS, INC.
- FOREST STAND DELINEATION PROVIDED BY WILDMAN ENVIRONMENTAL SERVICES DATED DECEMBER 17, 2006 AND SUPPLEMENTED IN JULY, 2007.
- THE APFO TRAFFIC STUDY WAS PREPARED BY MARS GROUP, INC. DATED JANUARY, 2007.
- THE FLOODPLAIN STUDY FOR THIS PROJECT WAS PREPARED BY BENCHMARK ENGINEERING, INC., DATED DECEMBER 18, 2002 AND APPROVED UNDER SP-03-001 (KINDLER OVERLOOK II). NO ADDITIONAL STUDY WAS PERFORMED FOR THIS PROJECT. KINDLER OVERLOOK AS THE FLOODPLAIN IS ONLY ACROSS THE PROPERTY ALONG THE LONG FLAGSTEM. NO IMPROVEMENTS ARE BEING PROPOSED IN THIS AREA.
- THIS PROPERTY WAS INCORPORATED INTO THE METROPOLITAN DISTRICT ON FEBRUARY 5, 2007 AS ADMINISTRATIVE DECISION #4-2007.
- WATER IS PUBLIC. THE CONTRACT NUMBER IS 34-4613-D.
- SEWER IS PUBLIC. THE CONTRACT NUMBER IS 34-4613-D.
- WATER AND SEWER SERVICE TO THESE LOTS WILL BE GRANTED UNDER THE PROVISIONS OF SECTION 18.1221B OF THE HOWARD COUNTY CODE.
- PUBLIC WATER AND SEWAGE ALLOCATIONS WILL BE GRANTED AT THE TIME OF ISSUANCE OF THE BUILDING PERMIT IF CAPACITY IS AVAILABLE AT THAT TIME.
- NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAMS, OR THEIR REQUIRED BUFFERS, 100-YEAR FLOODPLAIN, 25% OR GREATER STEEP SLOPES THAT ARE AT LEAST 20,000 S.F. OF CONTIGUOUS AREA, OR FOREST CONSERVATION RETENTION AREAS.
- STORMWATER MANAGEMENT IS PROVIDED IN BASED ON GUIDELINES ESTABLISHED BY THE 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUMES I & II AS AMENDED BY THE STORMWATER MANAGEMENT ACT OF 2007. ENVIRONMENTAL SITE DESIGN METHODS SHALL BE USED AS FOLLOWS: HOUSES, DRIVEWAYS AND ROADS SHALL BE TREATED IN ON-LOT AND OPEN SPACE MICRO-BIOTENTION FACILITIES. ON-LOT STORMWATER FACILITIES ARE SUBJECT TO DECLARATIONS OF COVENANTS, WHICH SHALL BE RECORDED IN THE HOWARD COUNTY LAND RECORDS AT THE TIME OF PLAT RECORDATION. ON-LOT FACILITIES SHALL BE OWNED AND MAINTAINED BY INDIVIDUAL LOT OWNERS. OPEN SPACE FACILITY MB-A SHALL BE JOINTLY MAINTAINED. MB-B SHALL BE OWNED AND FULLY MAINTAINED BY THE HOA.
- THE EXISTING TOPOGRAPHY SHOWN IS BASED ON A FIELD SURVEY BY BEI IN OCTOBER, 2008 EXCEPT THE PORTION ALONG THE "FLAG" WHICH IS TAKEN FROM HOWARD COUNTY GIS WITH 2 FOOT CONTOUR INTERVALS INTERPOLATED.
- LANDSCAPING IS PROVIDED IN ACCORDANCE WITH A CERTIFIED LANDSCAPE PLAN INCLUDED IN THIS ROAD CONSTRUCTION PLAN SET IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE REQUIRED PERIMETER LANDSCAPING SHALL BE POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$5,700.00 FOR 19 SHADE TREES.
- MINIMUM BUILDABLE LOT SIZE SHALL BE 18,000 SQUARE FEET.
- TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO CEMETERY LOCATIONS ON-SITE.
- STREET LIGHTS SHALL BE PROVIDED PER DESIGN MANUAL REQUIREMENTS.
- ALL EXISTING WELLS AND SEPTICS IF LOCATED ON THIS PROPERTY SHALL BE ABANDONED AND VERIFICATION OF THE ABANDONMENT SHALL BE SUBMITTED TO THE HEALTH DEPARTMENT PRIOR TO RECORDATION OF THE PLAT OF SUBDIVISION.
- FOR FLAG OR PIPESTEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE PROVIDED TO THE JUNCTION OF THE FLAG OR PIPESTEM AND ROAD RIGHT OF WAY LINE AND NOT THE FLAG OR PIPESTEM LOT DRIVEWAY.
- DRIVEWAYS SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:
 - WIDTH - 12' (16' SERVING MORE THAN ONE RESIDENCE).
 - SURFACE - 6" OF COMPACT CRUSHER RUN BASE WITH TAR AND CHIP COATING (1-1/2" MIN.)
 - GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE AND MINIMUM 45' TURNING RADIUS.
 - STRUCTURES (CULVERTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS (H2S LOADING).
 - DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOODPLAIN WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY.
 - STRUCTURE CLEARANCES - MINIMUM 12 FEET.
 - MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE.
- THE PROPOSED EXTENSION OF KINDLER OVERLOOK DRIVE IS BEING PLACED WITHIN AN AREA RESERVED FOR ROADWAY CONSTRUCTION PER DECLARATION OF COVENANTS RECORDED IN LIBER 647, FOLIO 551.
- THE EXISTING DWELLING ON THIS SITE SHALL BE REMOVED PRIOR TO RECORDATION OF THE SUBDIVISION PLAT.
- WAIVER PETITION (WP-07-068) A REQUEST TO WAIVE SECTION 16.147, REQUIRING A SUBDIVISION PLAT AND CONSTRUCTION PLANS FOR THE PURPOSE OF COMBINING TWO SEPARATE PARCELS INTO ONE PARCEL (I.E. PARCEL 386 AND P/O PARCEL 401) WAS VOIDED ON JULY 8, 2008.
- WAIVER PETITION (WP-08-048) A REQUEST TO WAIVE SECTION 16.147, REQUIRING A SUBDIVISION PLAT AND CONSTRUCTION PLANS FOR THE PURPOSE OF COMBINING TWO SEPARATE PARCELS INTO ONE PARCEL (I.E. PARCEL 386 AND P/O PARCEL 401) WAS APPROVED ON JULY 30, 2008 SUBJECT TO THE FOLLOWING CONDITIONS:
 - THE PETITIONER SHALL PROCEED WITH THE SKETCH PLAN (S-07-003), FOR THE PROPOSED SUBDIVISION, AND CONTINUE PROCESSING ALL REQUIRED ADDITIONAL PLANS THROUGH THE FINAL PLAN STAGE AND RECORDATION OF A PLAT. IF THE PETITIONER FAILS TO MEET ALL DEADLINES AND MILESTONES, OR FAILS TO RECORD THE PLAT, THEN THE PORTION OF PARCEL 401 MERGED INTO PARCEL 386 BY DEED ADJOINER, AS ALLOWED BY THIS WAIVER, MAY BE DEEDED BACK TO THE OWNER OF PARCEL 401 BY ANOTHER DEED ADJOINER WITHOUT THE NEED OF ANOTHER WAIVER, AS LONG AS THE EXISTING RIGHT-OF-WAY RESERVATION IS MAINTAINED FOR ACCESS TO ALL RELEVANT PARCELS.
 - BOTH ROBERT MOWREY AND EDWARD JEAN WELKER, PERSONAL REPRESENTATIVE OF THE ESTATE OF JEAN EDWARD WELKER, DECEASED (OWNER OF PARCEL 401) SHALL SIGN THE WAIVER APPLICATION FOR WP-08-048.
 - ACCESS THROUGH THE EXISTING RIGHT-OF-WAY RESERVATION SHALL BE MAINTAINED FOR ALL RELEVANT PARCELS (PARCELS 245, 313, 401, AND 386) AT ALL TIMES AND MAY NOT BE OBSTRUCTED DURING THE SUBDIVISION PROCESS OR CONSTRUCTION PERIOD.
 - THROUGH THE ADJOINER DEED PROCESS, PARCELS 386 AND A PORTION OF PARCEL 401 (0.32 ACRES) SHALL BE CONSOLIDATED TO CREATE A NEW 6.11 ACRE PARCEL 386. EDWARD JEAN WELKER, PERSONAL REPRESENTATIVE OF THE ESTATE OF JEAN EDWARD WELKER, DECEASED, SHALL SIGN THE DEED ADJOINER AND ANY OTHER DOCUMENTATION RELATED TO THE COMPLETION OF THE DEED ADJOINER.
 - THE APPLICANT MUST RECORD THE NEW DEED OF CONSOLIDATION IN THE LAND RECORDS OFFICE OF HOWARD COUNTY, MD. A COPY OF THE CONSOLIDATION DEED SHALL BE SUBMITTED TO THIS DEPARTMENT FOR FILE RETENTION PURPOSES WITHIN 60 DAYS OF THE DATE OF THIS WAIVER APPROVAL (BY SEPTEMBER 28, 2014).
 - THIS PLAN IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND NEW ZONING REGULATIONS, AS AMENDED BY COUNCIL BILL 50-2001.
 - THERE ARE NO HISTORIC SITES/FEATURES LOCATED ON THIS SITE.
 - THE GEOTECHNICAL REPORT WAS PREPARED BY HILLIS-CARNES ENGINEERING ASSOCIATES, INC. DATED OCTOBER 22, 2008 AND WAS APPROVED APRIL 23, 2014. AN ADDITIONAL GEOTECHNICAL INVESTIGATION WAS PERFORMED MARCH, 2014 BY GEO-LABS, INC. AND WILL BE APPROVED WITH THIS PLAN.
 - THE TOTAL FOREST CONSERVATION OBLIGATION AMOUNT OF 2.83 ACRES SHALL BE MET BY THE ON-SITE RETENTION OF 0.97 AC. OF NET TRACT AREA FOREST WITHIN A FOREST CONSERVATION EASEMENT AND THE OFFSITE PLANTING OF 1.86 ACRES WITHIN THE FOREST MITIGATION BANK LOCATED WITHIN THE MCKENDREE SPRINGS SUBDIVISION (F-09-108). FINANCIAL SURETY FOR THE OFF-SITE PLANTING WAS POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT FOR MCKENDREE SPRINGS (F-09-108). AN ADDITIONAL 0.74 ACRES WILL BE RETAINED ON OPEN SPACE LOT 8 AS A FOREST BANK.
 - THE FOREST CONSERVATION EASEMENTS HAVE BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION ACT. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENTS. FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.
 - 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 ANY 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, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE COMMENCEMENT OF ANY ASPHALT.
- ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-3/4" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
- EXISTING UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEY OR APPROVED CONSTRUCTION DRAWINGS.
- A PRIVATE RANGE OF ADDRESS SIGN ASSEMBLY SHALL BE FABRICATED AND INSTALLED BY HOWARD COUNTY BUREAU OF HIGHWAYS AT THE DEVELOPERS/OWNERS EXPENSE WHERE NEEEDED. CONTACT HOWARD COUNTY TRAFFIC DIVISION AT 410-313-5752 FOR DETAILS AND COST ESTIMATES.
- STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLES SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (2006), SECTION 5.5.A. A MINIMUM OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
- 95% COMPACTION IN ALL FILLED AREAS SHALL BE IN ACCORDANCE WITH AASHTO T-180 STANDARDS.
- WP-10-165 WAIVING SECTIONS 16.144(c), (p) AND (q) TO REESTABLISH PROJECT DEADLINES WAS APPROVED JUNE 23, 2010 AND WAS SUPERCEDED BY WP-11-090.
- WP-11-090 WAIVING SECTIONS 16.144(c), (p) AND (q) TO REESTABLISH PROJECT DEADLINES WAS APPROVED DECEMBER 14, 2010 AND WAS SUPERCEDED BY WP-12-055.
- WP-12-055 WAIVING SECTIONS 16.144(c), (p) AND (q) TO REESTABLISH PROJECT DEADLINES WAS APPROVED OCTOBER 20, 2011 AND WAS SUPERCEDED BY WP-13-151.
- WP-13-151 WAIVING SECTIONS SECTION 16.144 (r)(5) AND (6); AND SECTIONS 16.144(c), (p) AND (q) TO REESTABLISH PROJECT DEADLINES WAS APPROVED APRIL 9, 2013 AND WAS SUPERCEDED BY WP-14-036.

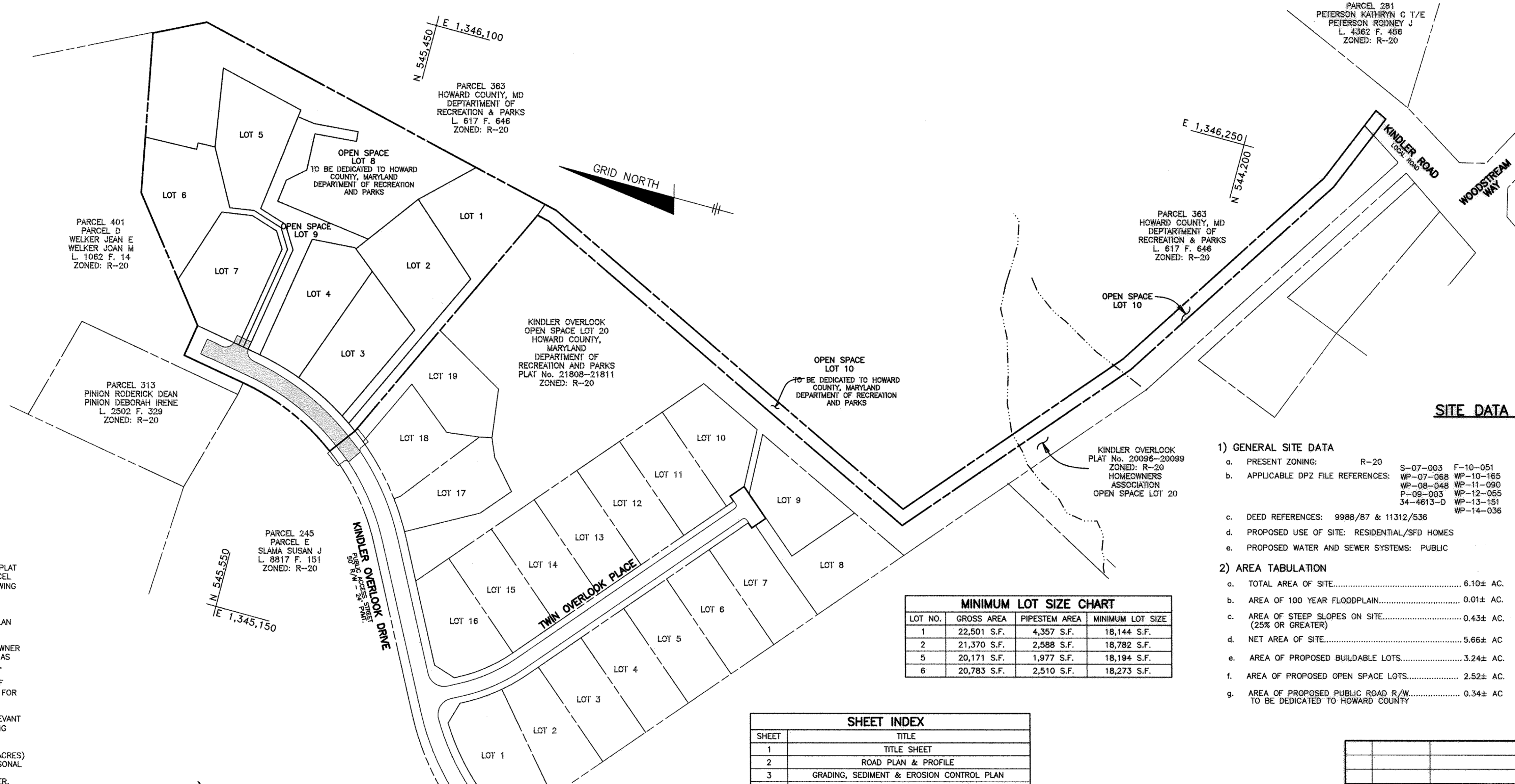
- WP-14-036 A REQUEST TO WAIVE SECTION 16.144 (r)(5) AND (6), WHICH STATE THAT EXCEPT WHERE DELAY IS CAUSED BY GOVERNMENTAL DELAY, FAILURE TO PAY FEES, SIGN DEVELOPER AGREEMENTS, PROVIDED SURETY AND TO SUBMIT A FINAL PLAT ORIGINAL FOR RECORDING SHALL VOID PREVIOUS APPROVALS AND THE APPLICATION SHALL BE CONSIDERED WITHDRAWN. AND A REQUEST TO WAIVE SECTIONS 16.144 (c), (p) AND (q), WHICH ESTABLISH DEADLINE DATES TO SUBMIT FINAL CONSTRUCTION DRAWINGS, PAYMENT OF FEES, POST FINANCIAL OBLIGATIONS AND TO SUBMIT FINAL PLATS WAS APPROVED ON NOVEMBER 22, 2013 SUBJECT TO THE FOLLOWING CONDITIONS:
 - DEVELOPER MUST REDESIGN THE PROJECT USING ESD METHODS AND SUBMIT AN ECP BEFORE FEBRUARY 20, 2014.
 - DEVELOPER MUST SUBMIT A REDLINE REVISION TO THE FINAL CONSTRUCTION DRAWINGS, F-10-051, ON OR BEFORE MAY 21, 2014.
 - DEVELOPER MUST COMPLETE ANY APPLICABLE DEVELOPERS AGREEMENTS AND PAY ANY FEES IN ASSOCIATION WITH F-10-051 ON OR BEFORE AUGUST 19, 2014.
 - THE DEVELOPER MUST SUBMIT FINAL PLAT ORIGINALS IN ASSOCIATION WITH F-10-051 FOR RECORDATION ON OR BEFORE NOVEMBER 22, 2014.
- OPEN SPACE LOT 9 SHALL BE OWNED AND MAINTAINED BY THE HOMEOWNER'S ASSOCIATION. OPEN SPACE LOTS 8 AND 10 SHALL BE DEDICATED TO HOWARD COUNTY, MARYLAND, AND MAINTAINED BY THE DEPARTMENT OF RECREATION AND PARKS.
- SECTION 16.144(q), WHICH ESTABLISHED THE DEADLINE TO COMPLETE THE FINAL SUBDIVISION PLAT ORIGINALS. THE APPROVAL WAS SUBJECT TO COMPLETION OF THE REDLINE REVISION TO THE ROAD CONSTRUCTION DRAWINGS BY DECEMBER 22, 2014. SUBMISSION OF THE FINAL PLAT ORIGINALS BY JANUARY 6, 2015, AND PAYMENT OF ANY ADDITIONAL PROCESSING FEES.

BENCH MARKS--(NAD'83)

HO.CO. 41EC	ELEV. 430.34
STAMPED DISC SET ON TOP OF 3" DEEP COLUMN OF CONCRETE	
N 543,588.8040	E 1,342,628.7800
HO.CO. 41FA	ELEV. 407.60
STAMPED DISC SET ON TOP OF 3" DEEP COLUMN OF CONCRETE	
N 545210.7590'	E 1344786.9530'



VICINITY MAP
SCALE: 1" = 2000'



MINIMUM LOT SIZE CHART

LOT NO.	GROSS AREA	PIPESTEM AREA	MINIMUM LOT SIZE
1	22,501 S.F.	4,357 S.F.	18,144 S.F.
2	21,370 S.F.	2,588 S.F.	18,782 S.F.
5	20,171 S.F.	1,977 S.F.	18,194 S.F.
6	20,783 S.F.	2,510 S.F.	18,273 S.F.

SITE DATA ANALYSIS

- GENERAL SITE DATA**
 - PRESENT ZONING: R-20
 - APPLICABLE DPZ FILE REFERENCES:

S-07-003	F-10-051
WP-07-068	WP-10-165
WP-08-048	WP-11-090
P-09-003	WP-12-055
34-4613-D	WP-13-151
	WP-14-036
 - DEED REFERENCES: 9988/87 & 11312/536
 - PROPOSED USE OF SITE: RESIDENTIAL/SFD HOMES
 - PROPOSED WATER AND SEWER SYSTEMS: PUBLIC
 - AREA TABULATION**
 - TOTAL AREA OF SITE: 6.10± AC.
 - AREA OF 100 YEAR FLOODPLAIN: 0.01± AC.
 - AREA OF STEEP SLOPES ON SITE (25% OR GREATER): 0.43± AC.
 - NET AREA OF SITE: 5.66± AC.
 - AREA OF PROPOSED BUILDABLE LOTS: 3.24± AC.
 - AREA OF PROPOSED OPEN SPACE LOTS: 2.52± AC.
 - AREA OF PROPOSED PUBLIC ROAD R/W TO BE DEDICATED TO HOWARD COUNTY: 0.34± AC.
 - LOT TABULATION**
 - TOTAL NUMBER OF RESIDENTIAL LOTS PROPOSED ON THIS SUBMISSION: 7
 - TOTAL NUMBER OF OPEN SPACE LOTS PROPOSED: 3
 - OPEN SPACE DATA**
 - MINIMUM RESIDENTIAL LOT SIZE SELECTED: 18,000 S.F.*
 - OPEN SPACE REQUIRED (10% OF 6.10 AC.): 0.61± AC
 - OPEN SPACE PROVIDED (41.5% OF 6.10 AC.): 2.52± AC
NON-CREDITED (LESS THAN 35' IN WIDTH): 0.85± AC
CREDITED (27.4% OF 6.10 AC.): 1.67± AC
 - AREA OF RECREATION OPEN SPACE REQUIRED: NA (LESS THAN 10 UNITS)
 - AREA OF RECREATION OPEN SPACE PROVIDED: NA
- * SINCE OPEN SPACE IS BEING DEDICATED TO HOWARD COUNTY (LOTS 8 & 10) THIS PROJECT IS ALLOWED TO USE THE OPTIONAL REDUCED LOTS SIZE OF 18,000 S.F. PER SECTION 16.121(G)(2) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.

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6	LANDSCAPE PLAN
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*NOTE: TO REVISE TITLE BLOCK, GENERAL NOTES, LANDSCAPING AND SURETY, ADD ENVIRONMENTAL SITE DESIGN SWM AND FOREST CONSERVATION BANK AND CHART



THERE IS NO AS-BUILT INFORMATION PROVIDED ON THIS SHEET

APPROVED: DEPARTMENT OF PUBLIC WORKS

Michael J. ... 12/10/2014
CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Keith S. ... 12-15-14
CHIEF, DIVISION OF LAND DEVELOPMENT

Ch... 12-15-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION

2 NOV, 2014 REVISION BY SHEET REPLACEMENT TO REVISE TEE-TURNAROUND

1 JULY, 2014 REVISION BY SHEET REPLACEMENT * SEE NOTE THIS SHEET

BENCHMARK ENGINEERING, INC.
ENGINEERS & LAND SURVEYORS & PLANNERS
8480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043
(P) 410-485-6105 (F) 410-485-8644
WWW.BEI-ENGLNDRNG.COM

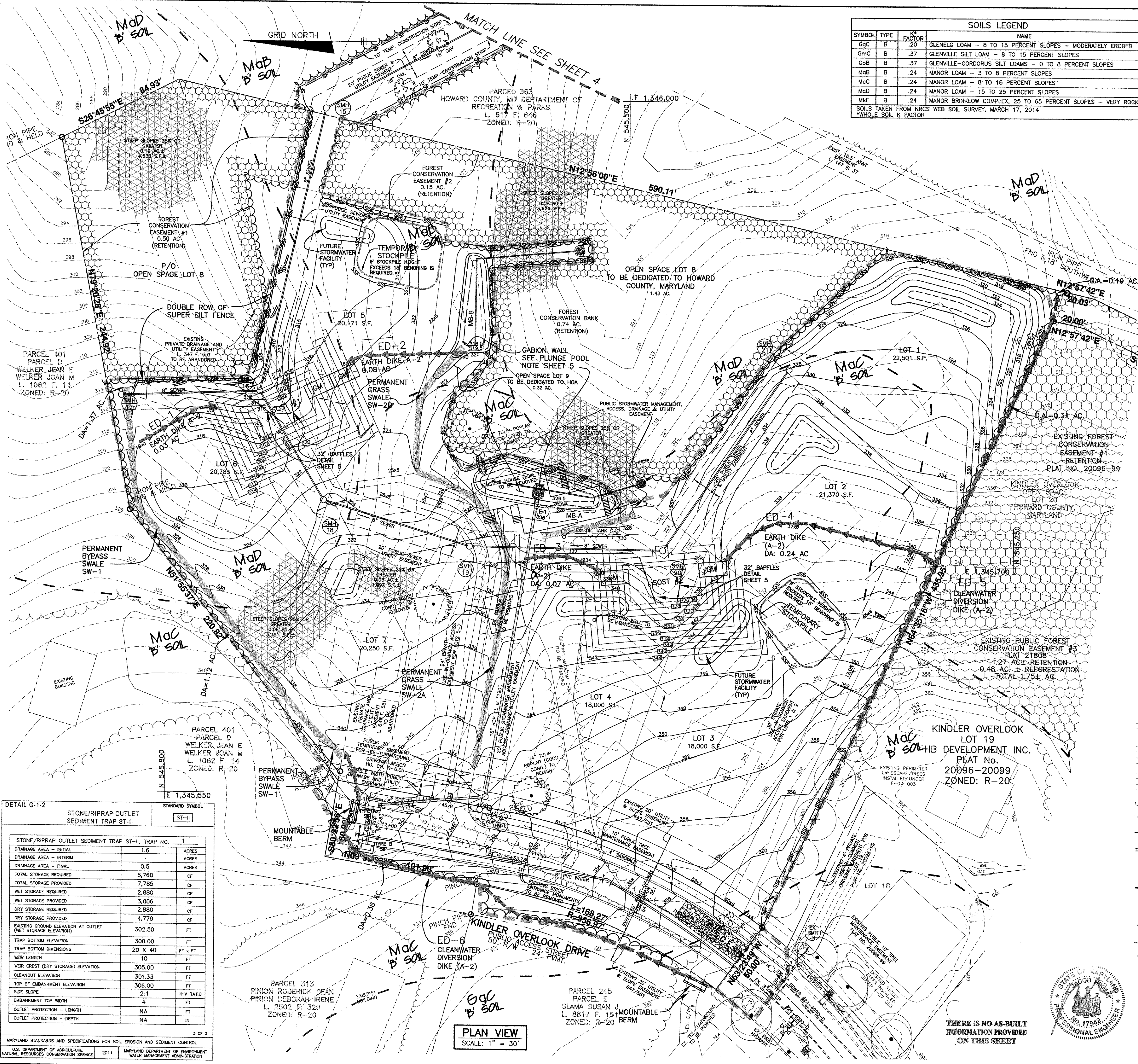
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 29376 Expiration Date: 1-1-15.

OWNER/DEVELOPER: ROBERT MOWREY, 826 FROG MORTAR ROAD, MIDDLE RIVER, MARYLAND 21220, 443-955-3043

REVISED FINAL ROAD CONSTRUCTION PLANS
KINDLER OVERLOOK II
LOTS 1 thru 7 AND
OPEN SPACE LOTS 8 thru 10 and
0.74 ACRE FOREST CONSERVATION BANK (RETENTION)

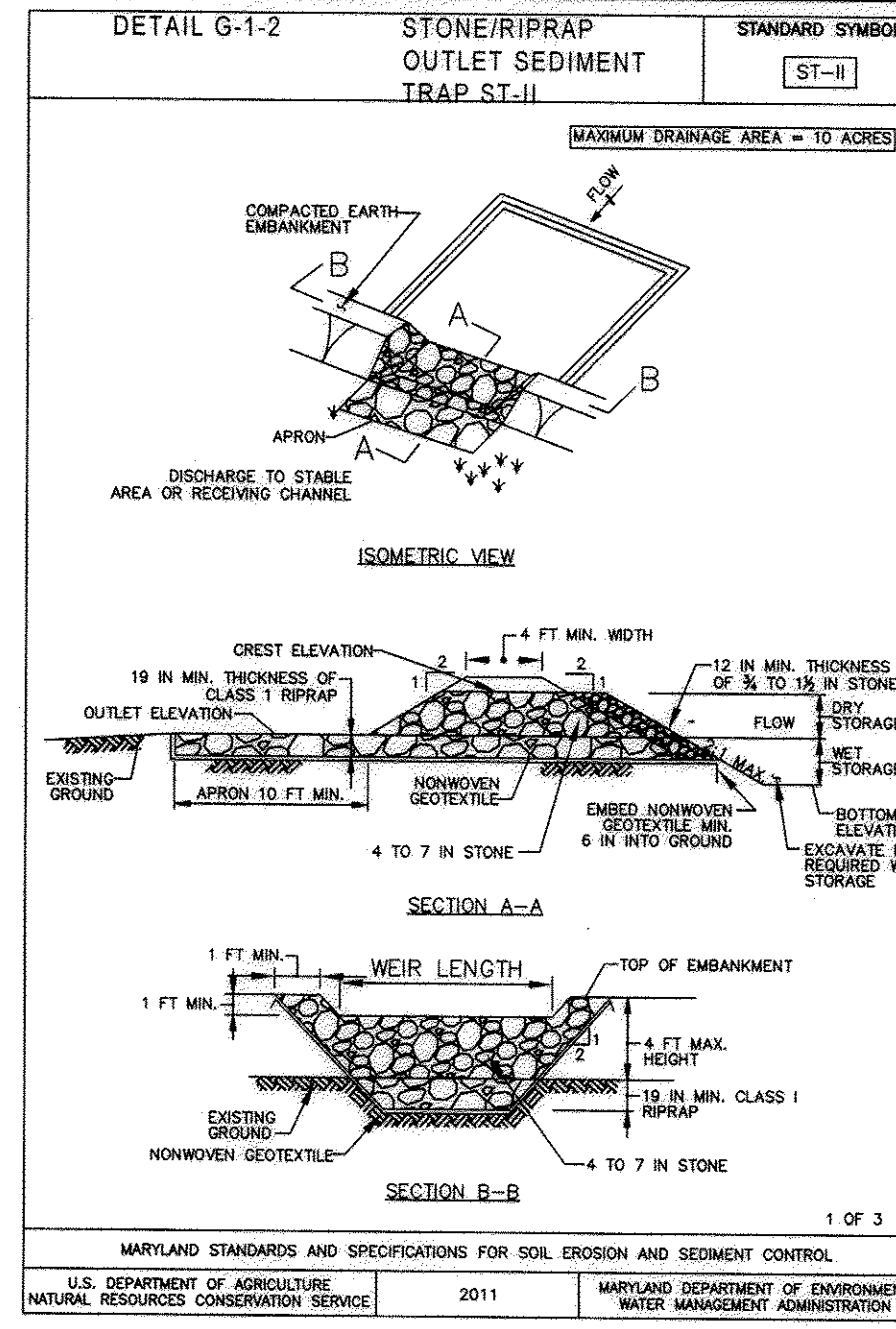
TAX MAP: 41 GRID: 18 PARCEL: 386
ZONED: R-20
ELECTION DISTRICT NO. 6
HOWARD COUNTY, MARYLAND

TITLE SHEET
DATE: NOVEMBER, 2014 BEI PROJECT NO. 1962
SCALE: AS SHOWN SHEET 1 OF 15



SOILS LEGEND		
SYMBOL	TYPE	NAME
GmC	B	.20 GLENELG LOAM - 8 TO 15 PERCENT SLOPES - MODERATELY ERODED
GmB	B	.37 GLENVILLE SILT LOAM - 8 TO 15 PERCENT SLOPES
GoB	B	.37 GLENVILLE-CORDORUS SILT LOAMS - 0 TO 8 PERCENT SLOPES
MaB	B	.24 MANOR LOAM - 3 TO 8 PERCENT SLOPES
MaC	B	.24 MANOR LOAM - 8 TO 15 PERCENT SLOPES
MoB	B	.24 MANOR LOAM - 15 TO 25 PERCENT SLOPES
MkF	B	.24 MANOR BRINKLOW COMPLEX, 25 TO 65 PERCENT SLOPES - VERY ROCKY

SOILS TAKEN FROM NRCS WEB SOIL SURVEY, MARCH 17, 2014
*WHOLE SOIL K FACTOR



- CONSTRUCTION SPECIFICATIONS
- CONSTRUCT TRAP IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE AVOIDED.
 - CLEAR, GRUB, AND STRIP ANY VEGETATION AND ROOT MAT FROM THE AREA UNDER THE EMBANKMENT AND TRAP BOTTOM.
 - USE FILL MATERIAL FREE OF ROOTS, WOODY VEGETATION, OVERIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL FOR THE EMBANKMENT.
 - CONSTRUCT TOP OF EMBANKMENT 1 FOOT MINIMUM ABOVE WEIR CREST. COMPACT THE EMBANKMENT BY TRACKING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
 - MAKE ALL CUT AND FILL SLOPES 2:1 ON FLATTER.
 - PLACE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION II-1 MATERIALS, OVER THE BOTTOM AND SIDES OF OUTLET AND APRON PRIOR TO EMBANKMENT OF RIPRAP. OVERLAP SECTIONS OF GEOTEXTILE AT LEAST 1 FOOT WITH SECTION NEAREST TO THE TRAP PLACED ON TOP. LAID GEOTEXTILE AT LEAST 4 INCHES INTO EXISTING GROUND AT ENTRANCE OF OUTLET CHANNEL.
 - USE CLEAN A TO 7 NON RIPRAP TO CONSTRUCT THE WEIR. USE CLASS I RIPRAP FOR THE APRON. USE OF RECYCLED CONCRETE EQUIVALENT IS ACCEPTABLE.
 - PLACE 1 FOOT OF CLEAN 3/4 TO 1 1/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE ON THE UPSTREAM FACE OF THE WEIR.
 - CONSTRUCT AND MAINTAIN THE OUTLET ACCORDING TO APPROVED PLAN, AND IN SUCH A MANNER THAT EROSION AT OR BELOW THE OUTLET DOES NOT OCCUR.
 - STABILIZE THE EMBANKMENT AND INTERIOR SLOPES WITH SEED AND MULCH. STABILIZE POINTS OF CONCENTRATED FLOW AS SHOWN OR APPROVED PLAN.
 - REMOVE SEDIMENT AND RESTORE TRAP TO ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO CLEANOUT ELEVATION (SIDE OF WEIR STORAGE DEPTH). DEPOSIT REMOVED SEDIMENT IN AN APPROVED AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE. KEEP POINTS OF MAIN AND OUTFLOW WELL AS INTERIOR OF THE TRAP FREE FROM EROSION, AND REMOVE ACCUMULATED SEDIMENT. MAINTAIN EMBANKMENTS IN CONTINUOUSLY BEST REQUIREMENTS FOR ADEQUATE VEGETATIVE STABILIZATION. WITH SECTION II-4 VEGETATIVE STABILIZATION REMOVE ANY TREES, BRUSH, OR OTHER WOODY VEGETATION GROWING ON EMBANKMENT OR NEAR PRINCIPAL SPILLWAY.
 - MULCH DEBRASSING TRAP, PASS REMOVED WATER THROUGH AN APPROVED SEDIMENT CONTROL PRACTICE.
 - UPON REMOVAL, GRADE AND STABILIZE THE AREA OCCUPIED BY TRAP.
- MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011

DETAIL G-1-2 STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II

STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II, TRAP NO.	1	2
DRAINAGE AREA - INITIAL	1.07	ACRES
DRAINAGE AREA - INTERIM	-	ACRES
DRAINAGE AREA - FINAL	0.69	ACRES
TOTAL STORAGE REQUIRED	3,852	CF
TOTAL STORAGE PROVIDED	3,894	CF
WET STORAGE REQUIRED	1,926	CF
WET STORAGE PROVIDED	1,928	CF
DRY STORAGE REQUIRED	1,926	CF
DRY STORAGE PROVIDED	1,966	CF
EXISTING GROUND ELEVATION AT OUTLET (WET STORAGE ELEVATION)	327.85	FT
TRAP BOTTOM ELEVATION	326.35	FT
TRAP BOTTOM DIMENSIONS	23 X 46	FT x FT
WEIR LENGTH	8	FT
WEIR CREST (DRY STORAGE) ELEVATION	329.00	FT
CLEANOUT ELEVATION	328.45	FT
TOP OF EMBANKMENT ELEVATION	330.00	FT
SIDE SLOPE	2:1	H:V RATIO
EMBANKMENT TOP WIDTH	4	FT
OUTLET PROTECTION - LENGTH	NA	FT
OUTLET PROTECTION - DEPTH	NA	IN

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

NOTE:

- ANY SEDIMENT CONTROL PRACTICE THAT IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- TEMPORARY OR PERMANENT STABILIZATION IS TO BE PERFORMED AS DIRECTED BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR OR AT THE TIME FRAMES REQUIRED BY THE 2001 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL WHICHEVER IS MORE RESTRICTIVE.

ENGINEER'S CERTIFICATE

I HEREBY 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.

Alice A. Miller 11-17-14
ENGINEER - ALICE A. MILLER, P.E. 28376 DATE

DEVELOPER'S CERTIFICATE

I HAVE CERTIFIED THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT 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 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.

John R. Robertson 11/19/14
DEVELOPER DATE

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

John R. Robertson 11/25/14
HOWARD SCD DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

M. Mcinerney 12/10/2014
CHIEF, BUREAU OF HIGHWAYS DATE

V. St. John 12-15-14
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

John E. Clark 12-15-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*NOTE: TO REVISE TITLE BLOCK, GENERAL NOTES, LANDSCAPING AND SURETY, ADD ENVIRONMENTAL SITE DESIGN SWM AND FOREST CONSERVATION BANK AND CHART

- LEGEND
- EXISTING CONTOURS
 - PROPOSED CONTOURS
 - EXISTING STEEP SLOPES 25% OR GREATER
 - EXISTING STEEP SLOPES 18% TO 24.9%
 - EXISTING TREELINE
 - PROPOSED TREELINE
 - PROJECT BOUNDARY
 - PROPOSED STORM DRAIN
 - FOREST CONSERVATION EASEMENT
 - SOILS DELINEATION LINE
 - MID2 B' SOIL
 - SSF
 - SILT FENCE
 - LIMIT OF DISTURBANCE
 - STABILIZED CONSTRUCTION ENTRANCE
 - TEMPORARY EROSION CONTROL MATTING
 - GABION MAT INFILTRATION PROTECTION
 - EARTH DIKES
 - STONE OUTLET SEDIMENT TRAP
 - STANDARD INLET PROTECTION

DETAIL G-1-2 STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II

STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II, TRAP NO.	1	
DRAINAGE AREA - INITIAL	1.6	ACRES
DRAINAGE AREA - INTERIM	-	ACRES
DRAINAGE AREA - FINAL	0.5	ACRES
TOTAL STORAGE REQUIRED	5,760	CF
TOTAL STORAGE PROVIDED	7,785	CF
WET STORAGE REQUIRED	2,880	CF
WET STORAGE PROVIDED	3,006	CF
DRY STORAGE REQUIRED	2,880	CF
DRY STORAGE PROVIDED	4,779	CF
EXISTING GROUND ELEVATION AT OUTLET (WET STORAGE ELEVATION)	302.50	FT
TRAP BOTTOM ELEVATION	300.00	FT
TRAP BOTTOM DIMENSIONS	20 X 40	FT x FT
WEIR LENGTH	10	FT
WEIR CREST (DRY STORAGE) ELEVATION	305.00	FT
CLEANOUT ELEVATION	301.33	FT
TOP OF EMBANKMENT ELEVATION	306.00	FT
SIDE SLOPE	2:1	H:V RATIO
EMBANKMENT TOP WIDTH	4	FT
OUTLET PROTECTION - LENGTH	NA	FT
OUTLET PROTECTION - DEPTH	NA	IN

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

2 NOV., 2014 REVISION BY SHEET REPLACEMENT TO REVISE TEE-TURNAROUND

1 JULY, 2014 REVISION BY SHEET REPLACEMENT * SEE NOTE THIS SHEET

NO.	DATE	REVISION
2	NOV., 2014	REVISION BY SHEET REPLACEMENT TO REVISE TEE-TURNAROUND
1	JULY, 2014	REVISION BY SHEET REPLACEMENT * SEE NOTE THIS SHEET

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. 28376, Registration No. 1-1-15.

BENCHMARK ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE & SUITE 315 A ELICOTT CITY, MARYLAND 21043
(P) 410-485-6105 (F) 410-485-8844
WWW.BED-CIVILENGINEERING.COM

OWNER/DEVELOPER:
ROBERT MOWREY
826 FROG MORTAR ROAD
MIDDLE RIVER, MARYLAND 21220
443-955-3043

REVISED FINAL ROAD CONSTRUCTION PLANS
KINDLER OVERLOOK II
LOTS 1 thru 7 AND
OPEN SPACE LOTS 8 thru 10 and
0.74 ACRE FOREST CONSERVATION BANK (RETENTION)

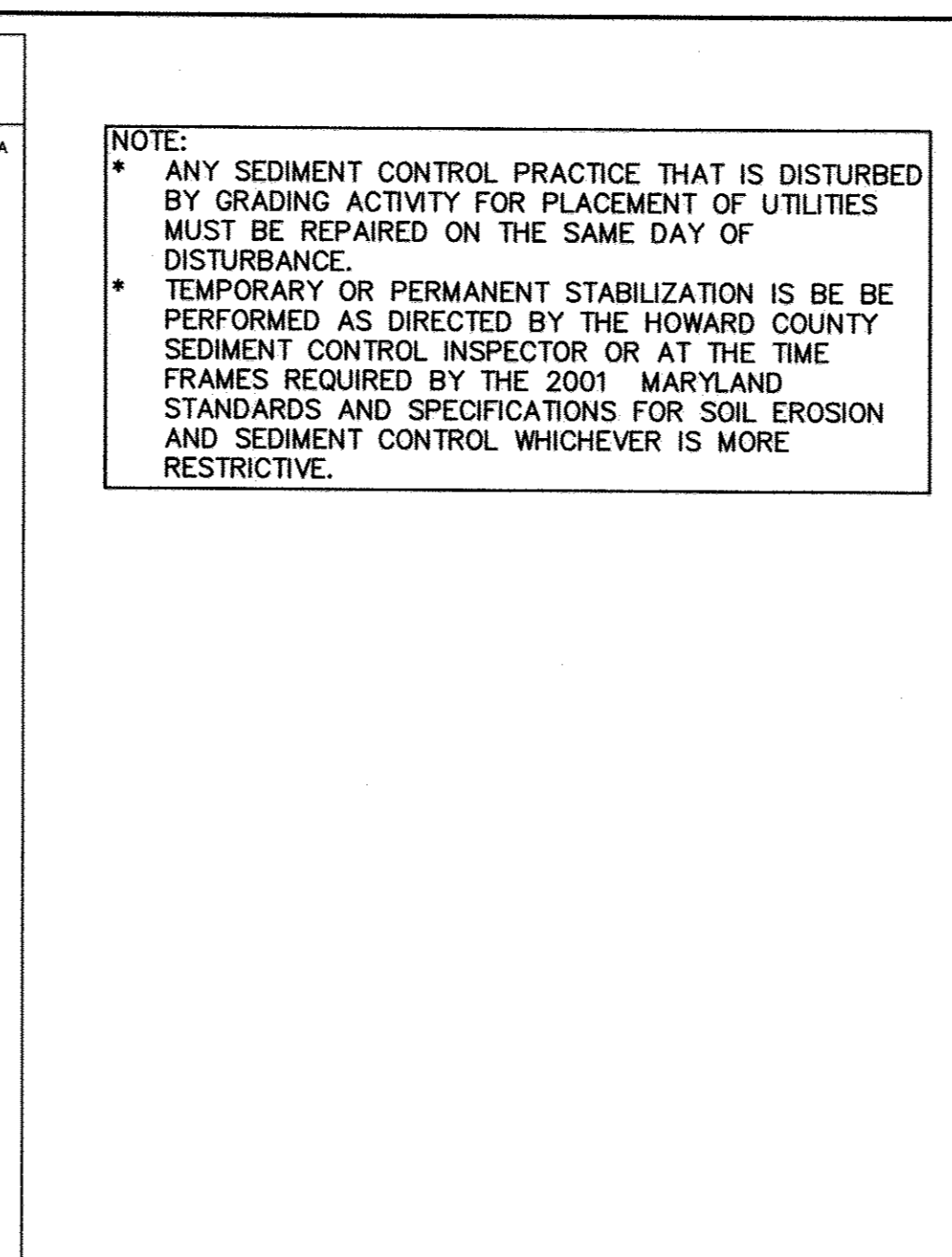
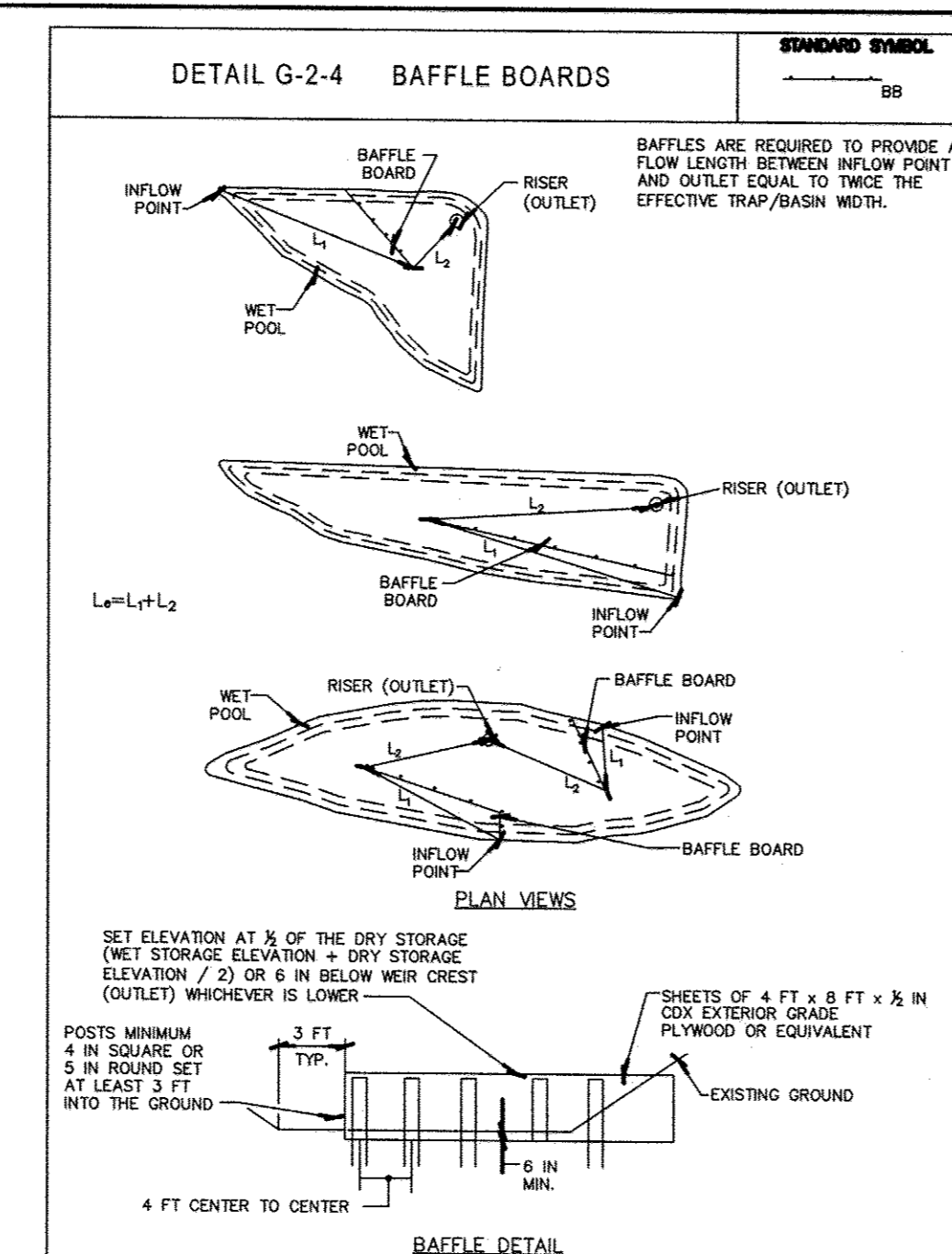
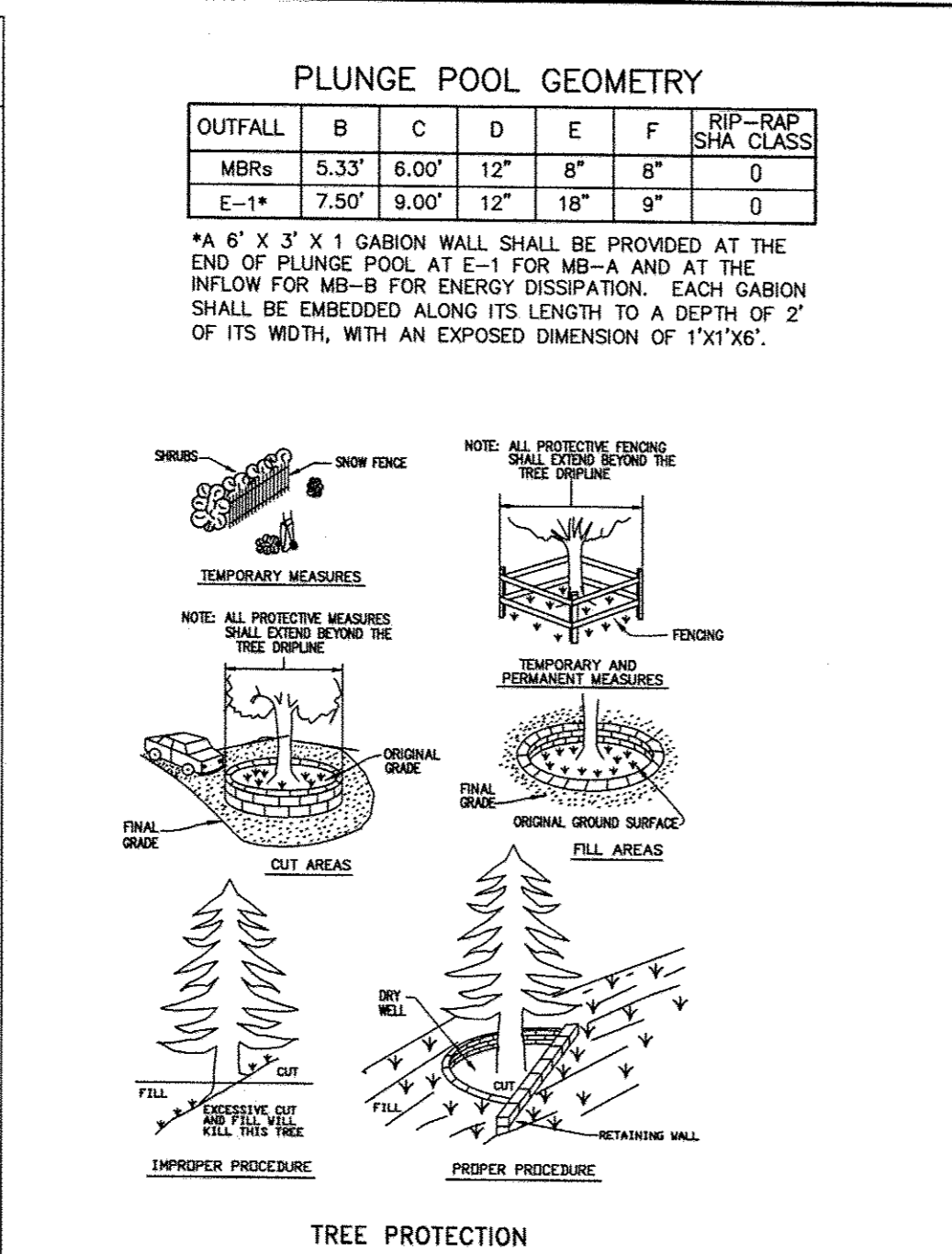
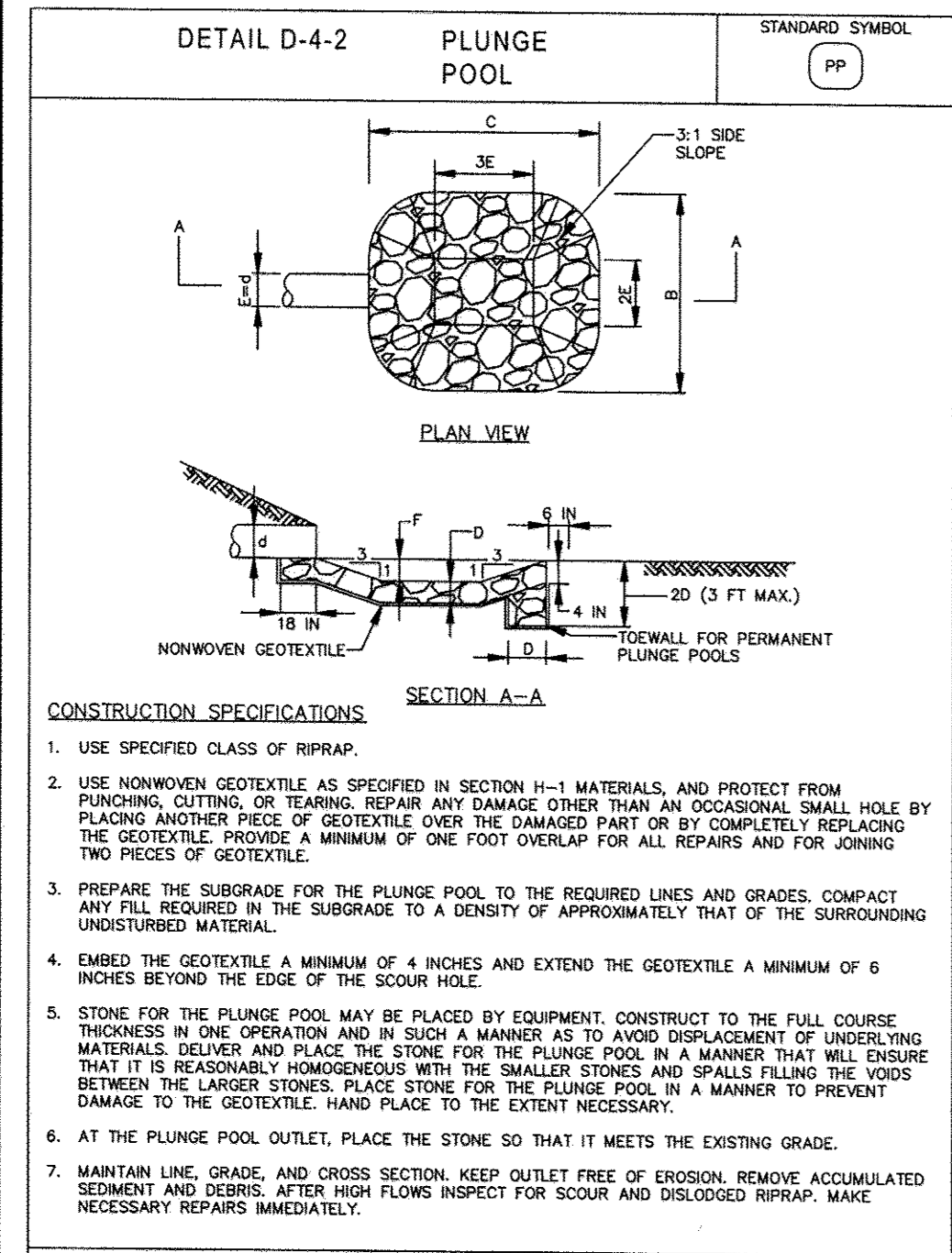
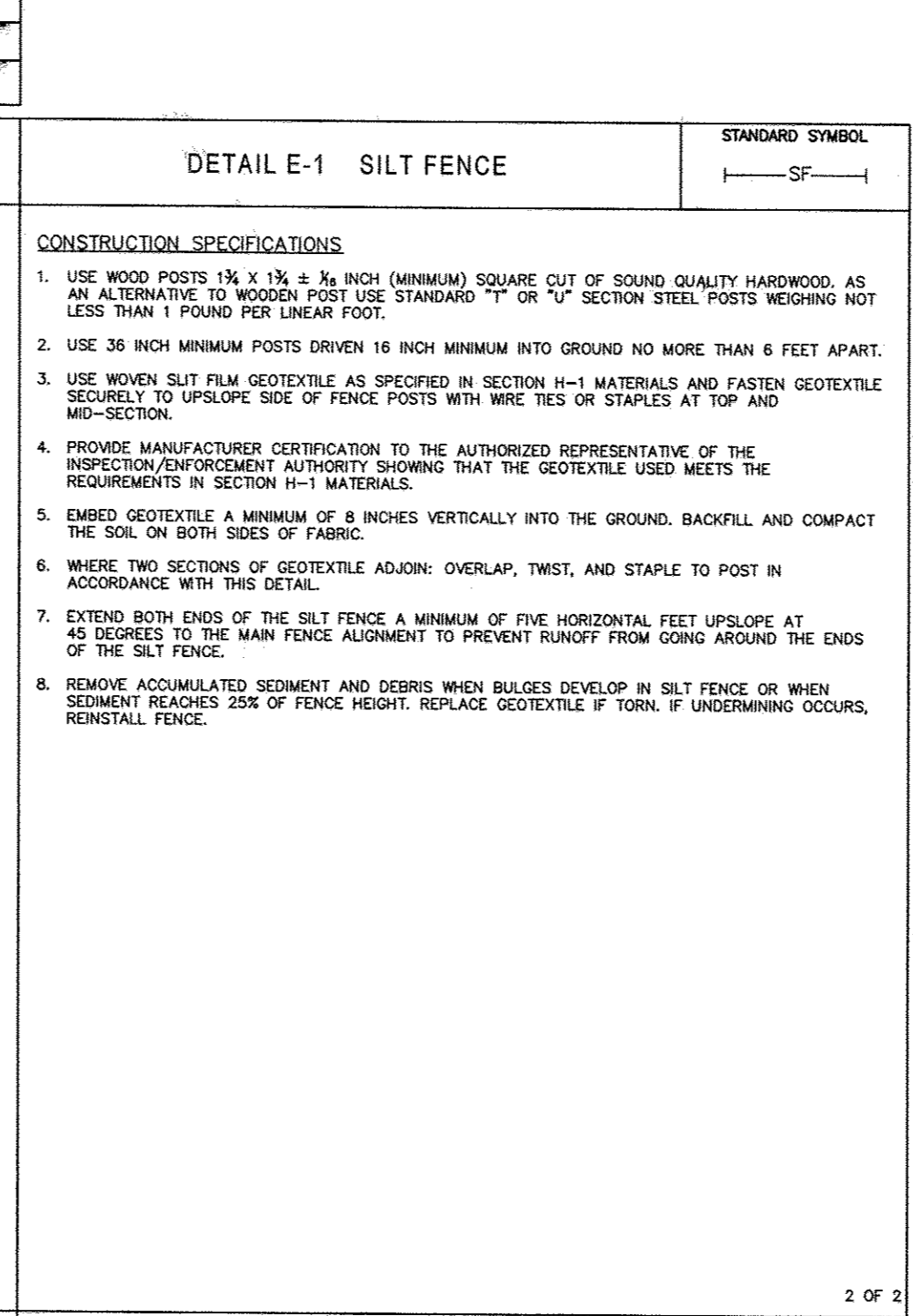
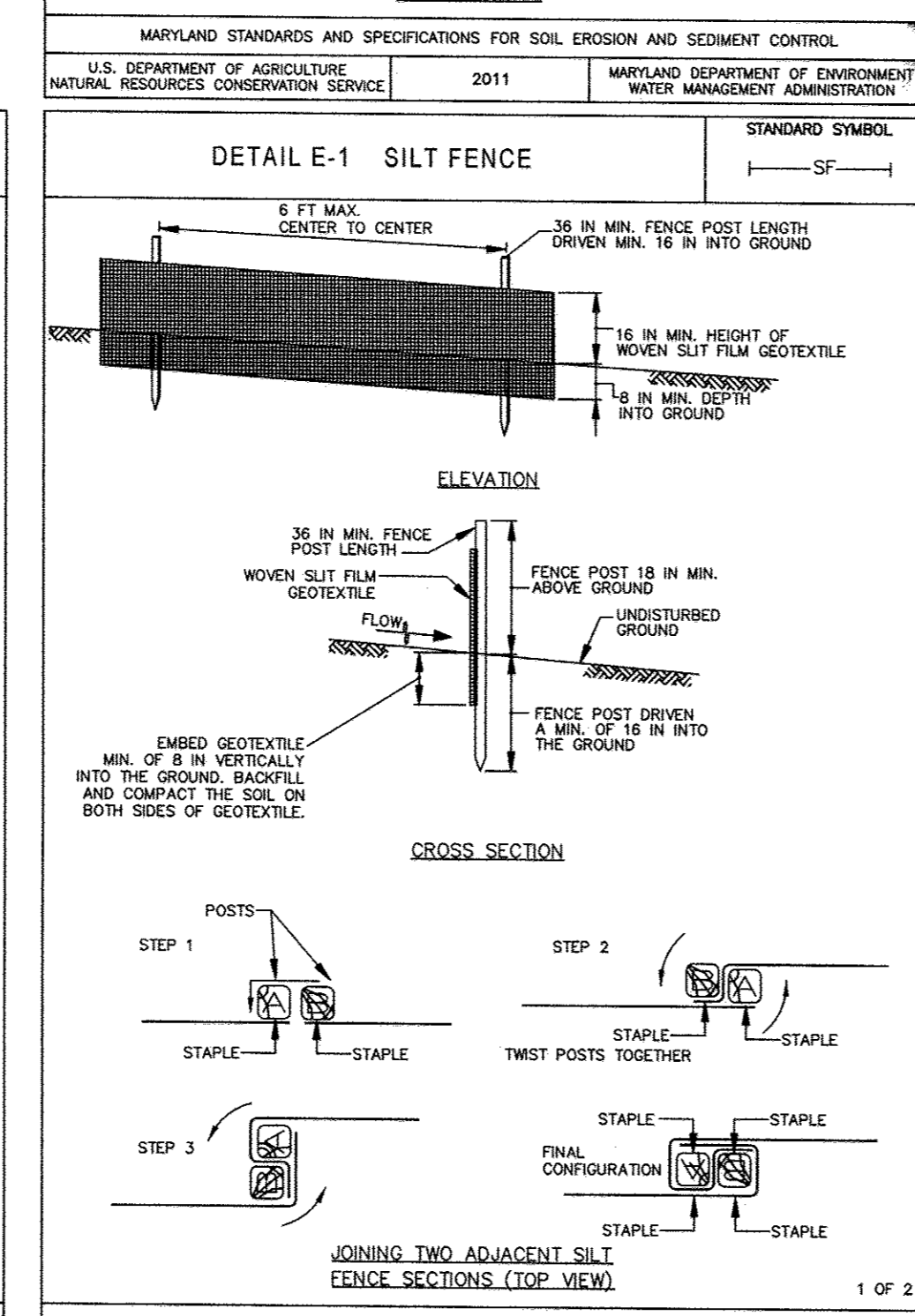
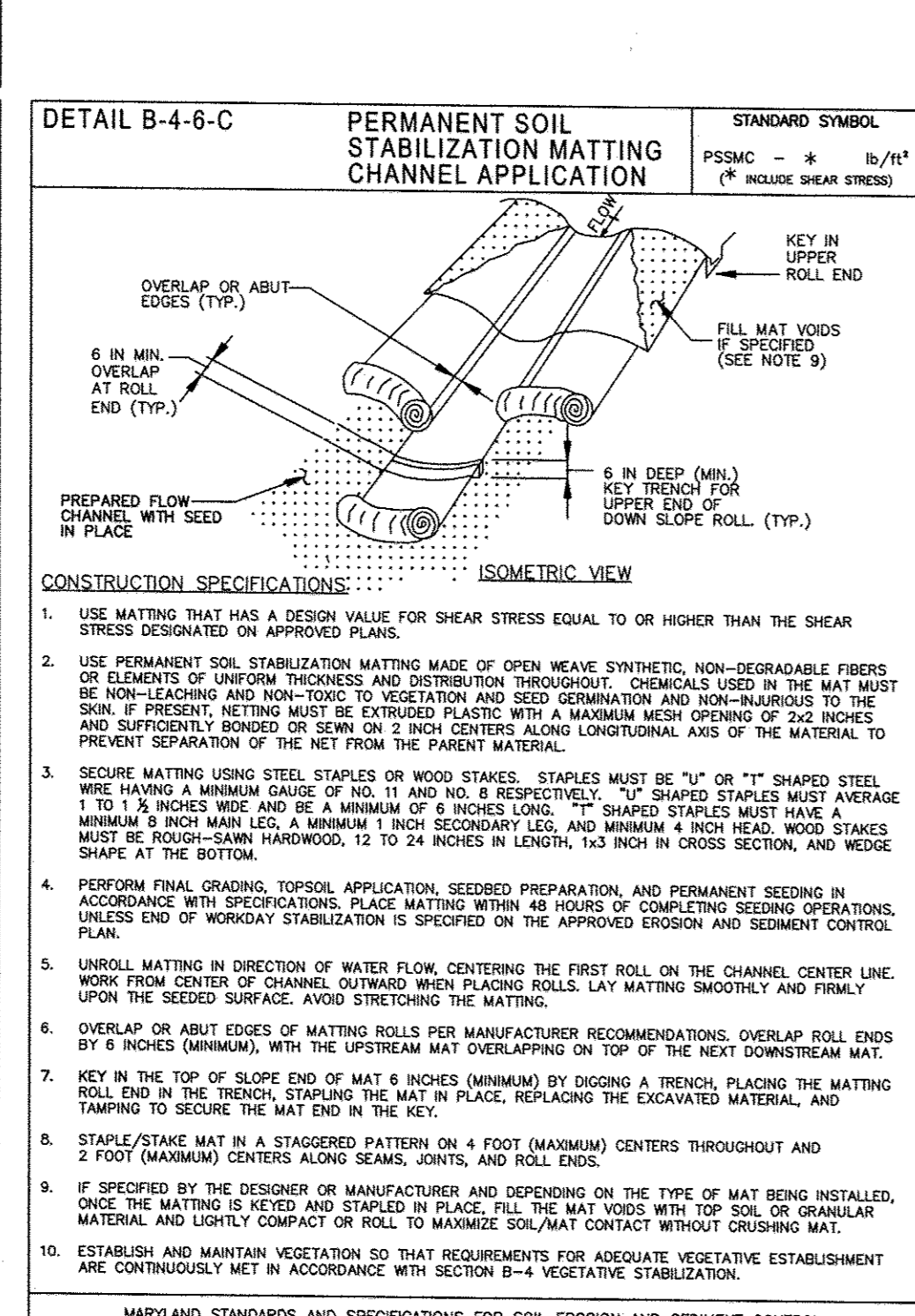
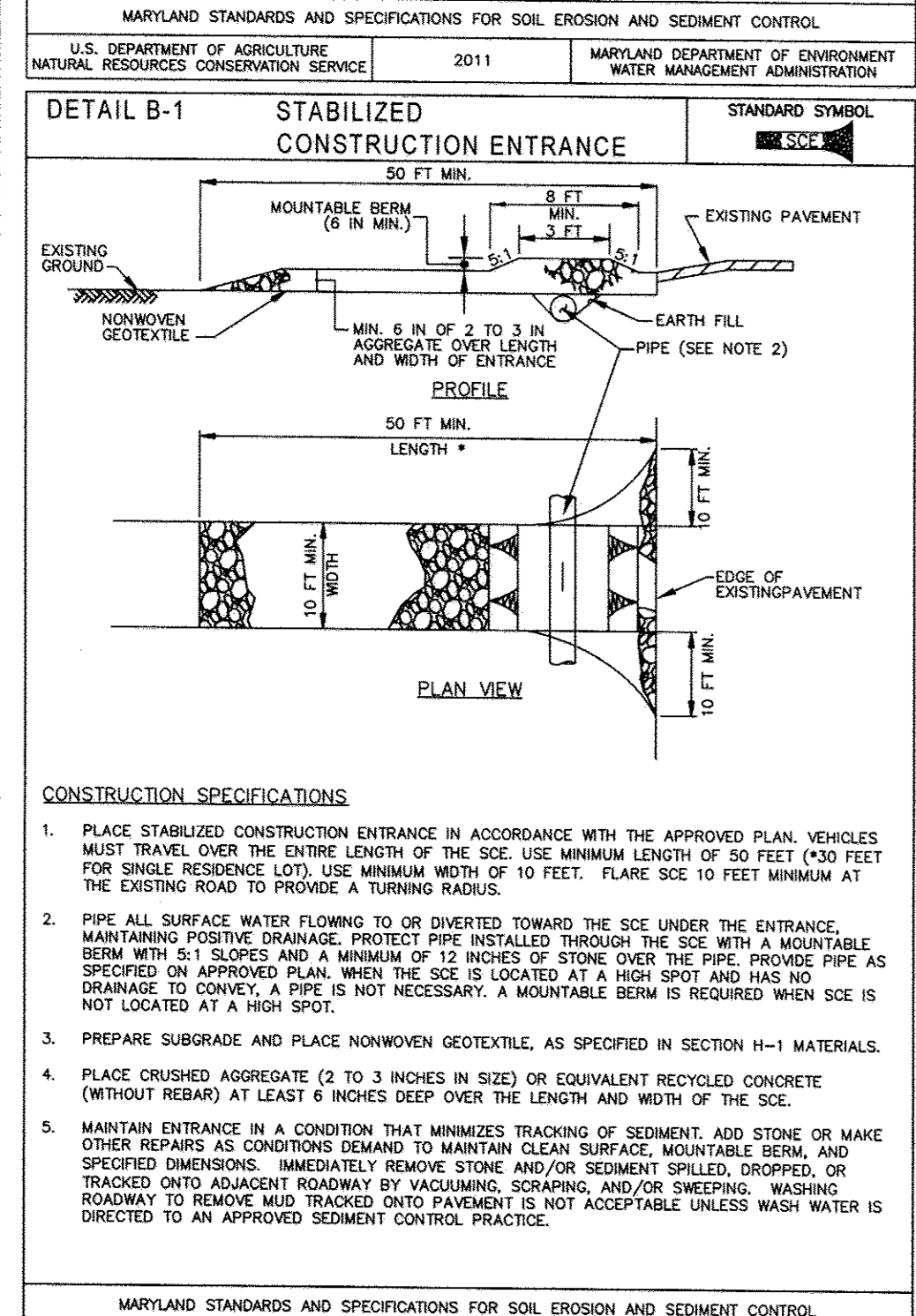
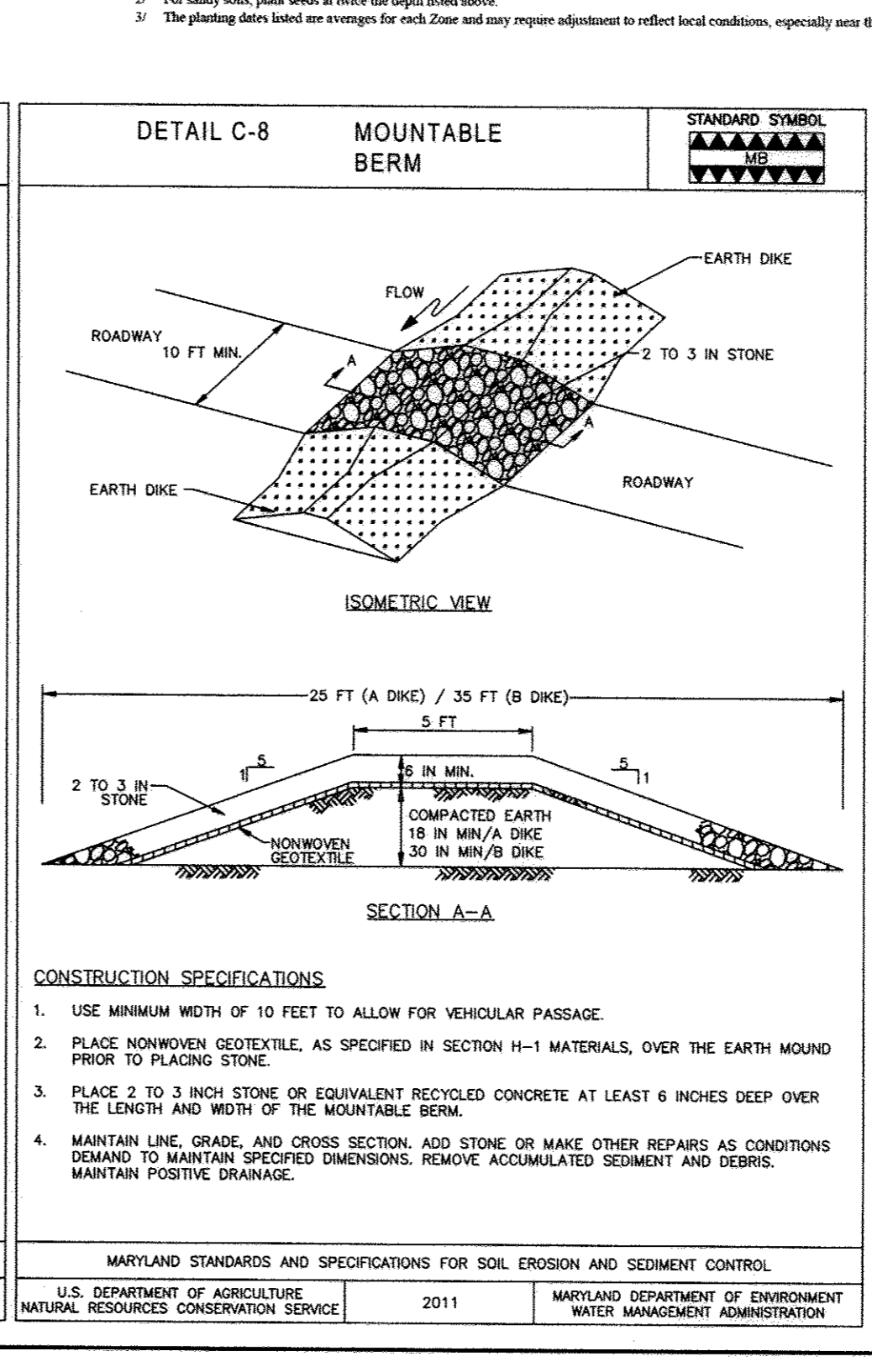
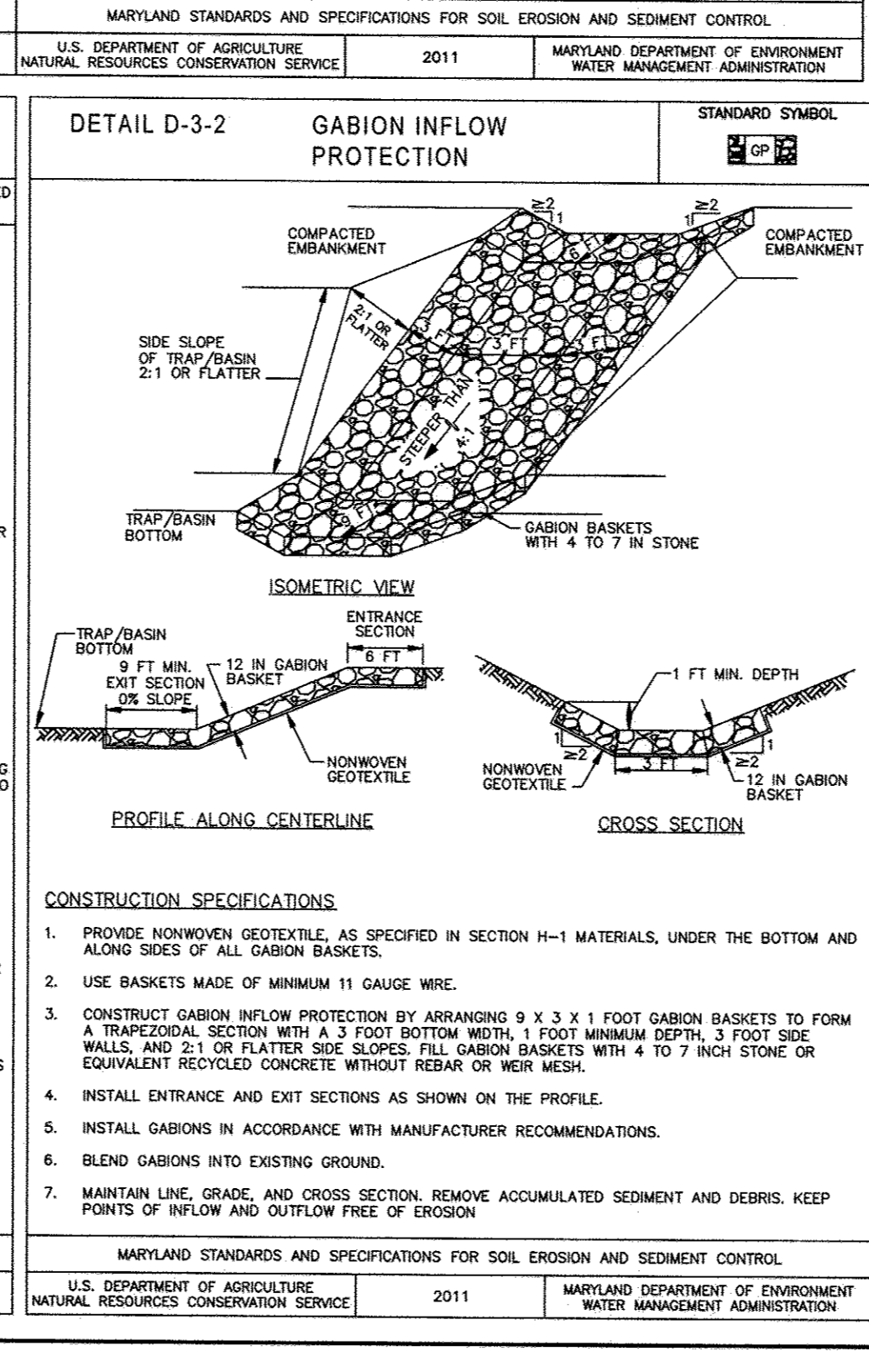
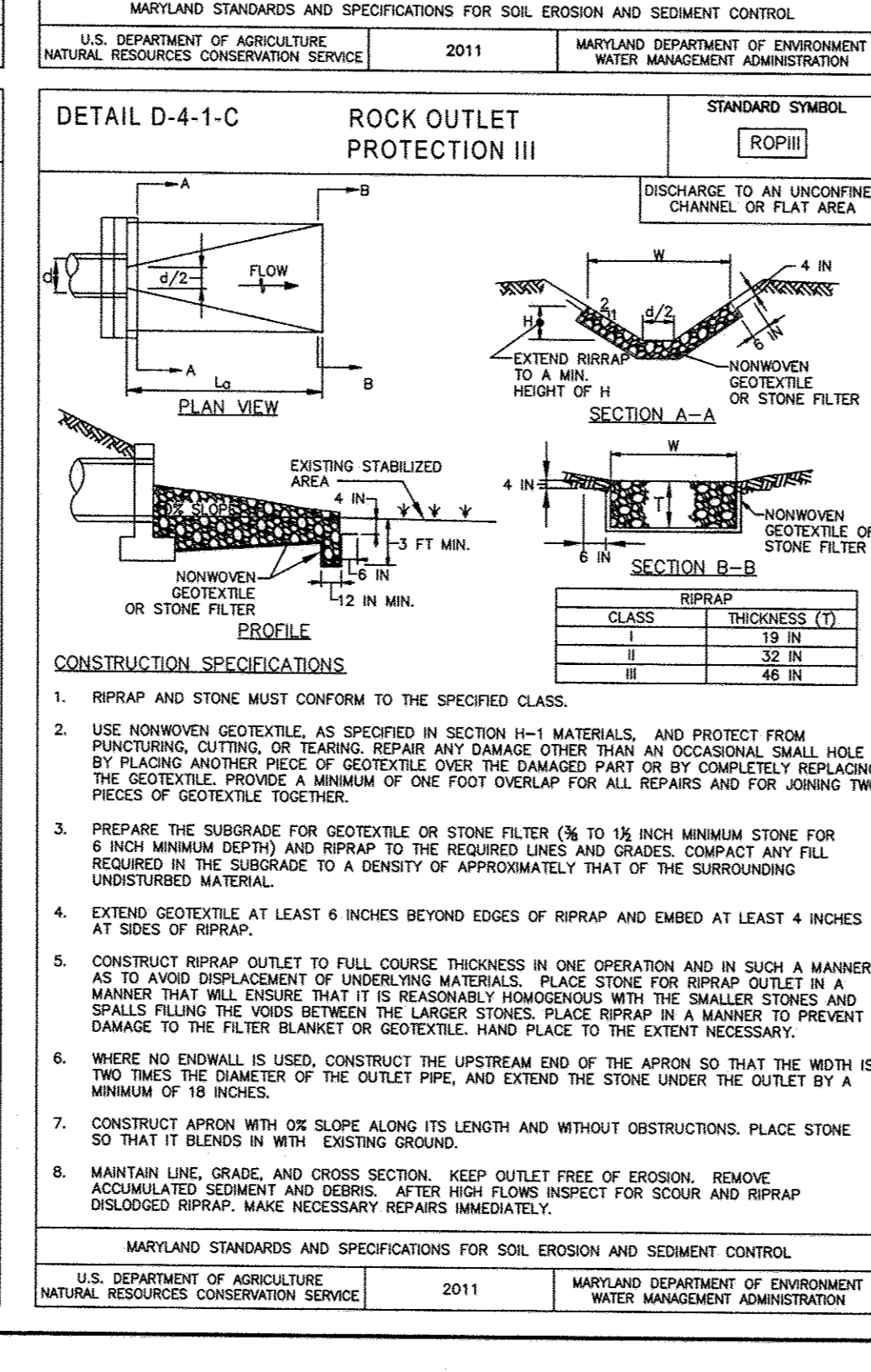
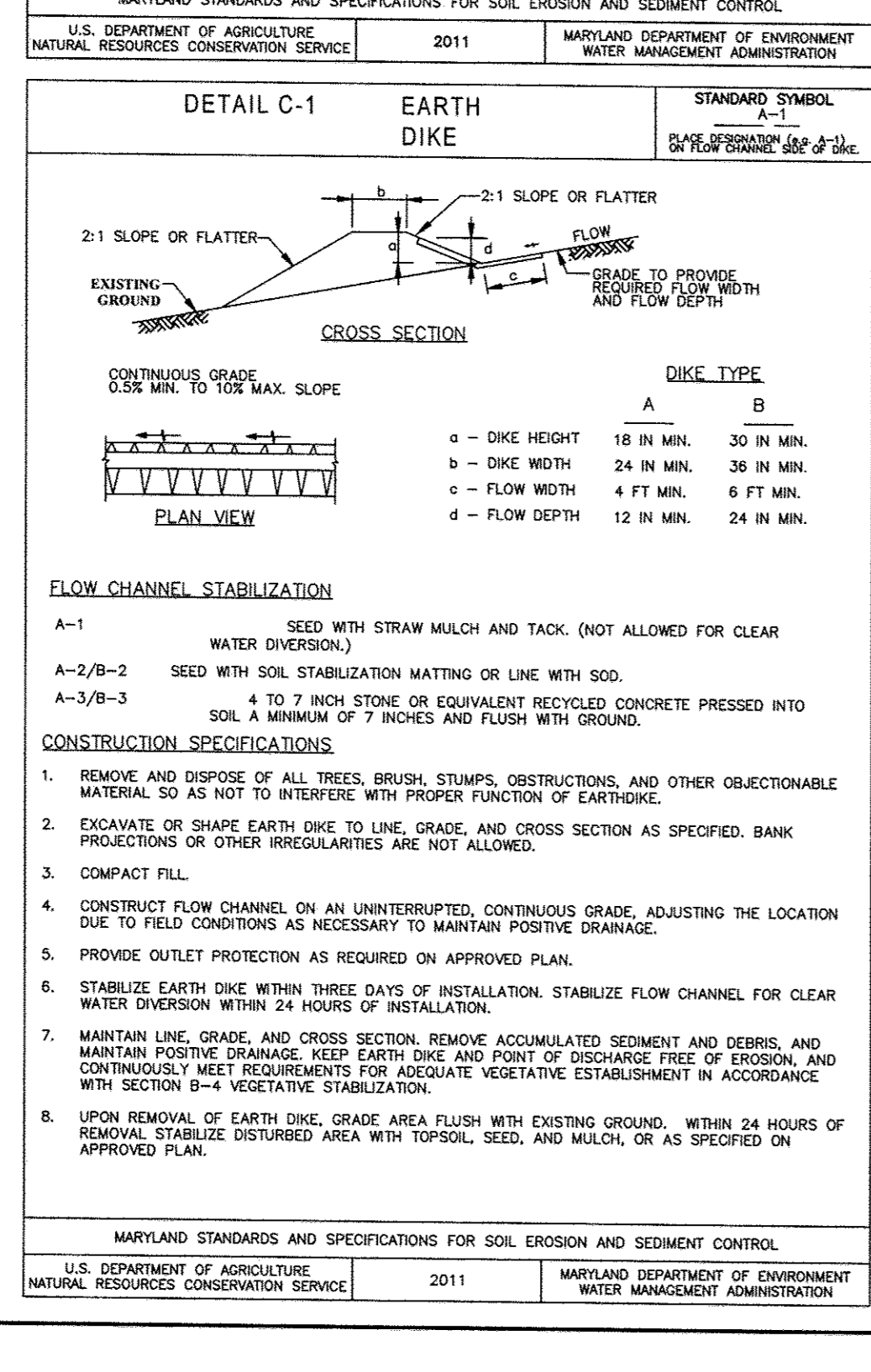
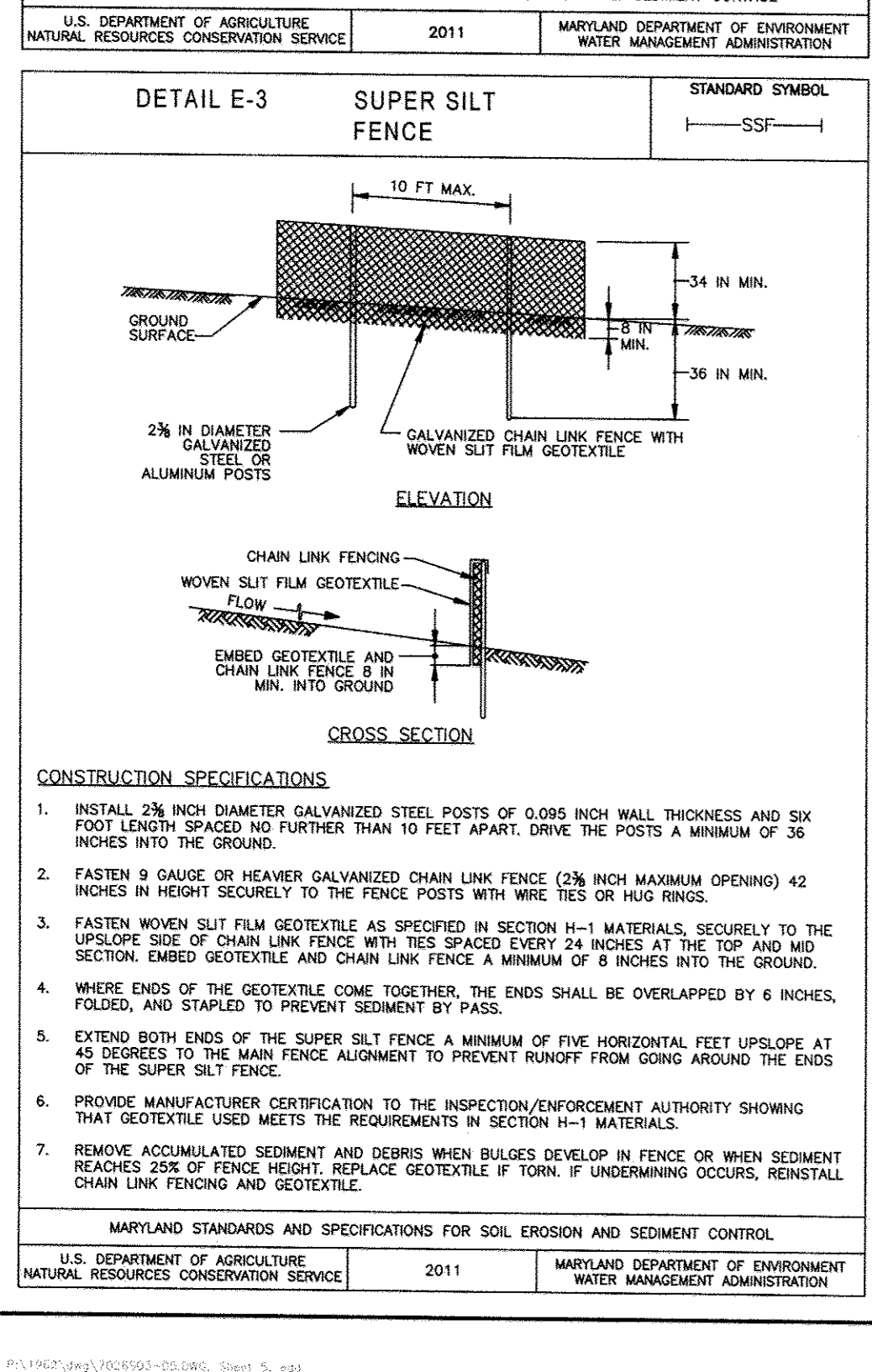
TAX MAP: 41 GRID: 18 PARCEL: 386
ZONED: R-20
ELECTION DISTRICT NO. 6
HOWARD COUNTY, MARYLAND

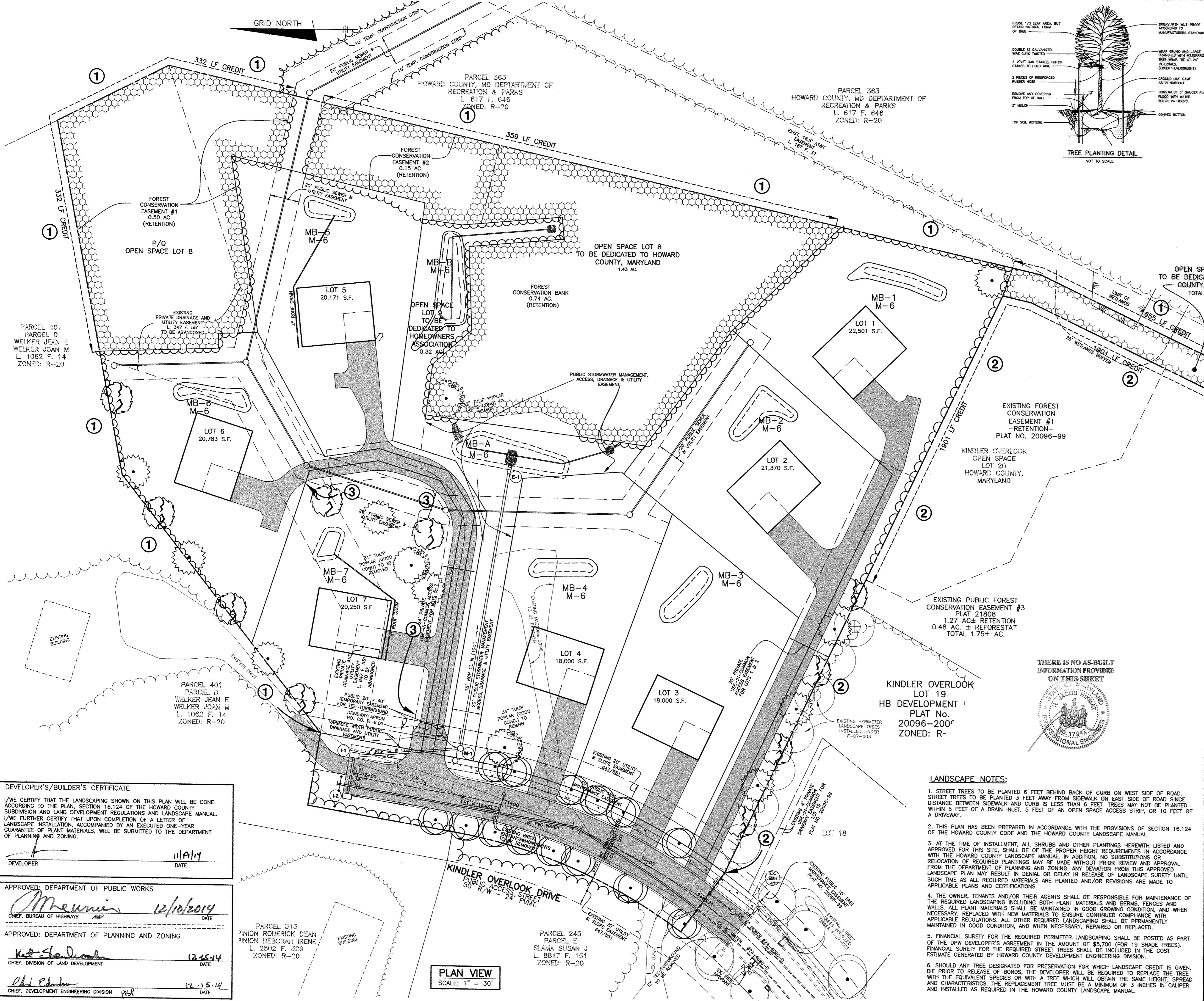
GRADING, SEDIMENT & EROSION CONTROL PLAN

DATE: NOVEMBER, 2014 BEI PROJECT NO. 1962
SCALE: AS SHOWN SHEET 3 OF 15

F-10-051





STREET TREE SCHEDULE			
ROAD NAME	PERIMETER	TREES REQ.	SIZE
KINDLER OVERLOOK DRIVE	565'	14	LARGE

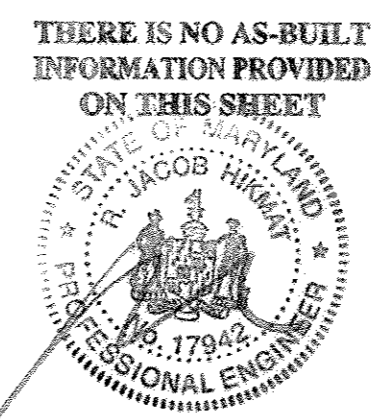
PUBLIC STREET TREE PLANTING LIST				
SYMBOL	QUANTITY	NAME	REMARKS	DESCRIPTION
(Symbol)	14	ACER RUBRUM 'OCTOBER GLORY' (October Glory Red Maple)	2 1/2" - 3" cal.	TO BE PROVIDED BY THE DEVELOPER

SCHEDULE A PERIMETER LANDSCAPE EDGE				
CATEGORY	ADJACENT TO PERIM. PROPERTY		ADJACENT TO PERIM. PROPERTY	
	①	②	③	④**
LANDSCAPE TYPE	A	A	A	A
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	2796 LF	2122 LF	238 LF	
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	YES 2346 LF	YES 1901 LF	NO	
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	NO	NO	
NUMBER OF PLANTS REQUIRED SHADE TREES	450 LF	221 LF	238 LF	
EVERGREEN TREES	8	4	4	
OTHER TREES (2:1 SUBSTITUTE) SHRUBS	-	-	-	
NUMBER OF PLANTS PROVIDED	8	7*	4	
SHADE TREES	-	-	-	
EVERGREEN TREES	-	-	-	
OTHER TREES (2:1 SUBSTITUTE) SHRUBS	-	-	-	

*ADDITIONAL TREES PROVIDED TO HELP BUFFER USE-IN-COMMON DRIVE TO ADJACENT PROPERTY.
 **PERIMETER 3 ADDED TO HELP BUFFER USE-IN-COMMON DRIVE TO HOUSE ON LOT 7.

LANDSCAPE PLANTING LIST				
SYMBOL	QUANTITY	NAME	REMARKS	DESCRIPTION
(Symbol)	10	PLATANUS X ACERIFOLIA 'BLOODGOOD' (Bloodgood London Plane)	2-1/2" - 3" cal.	SHADE TREES ALONG PERIMETER TO BE PROVIDED BY THE DEVELOPER
(Symbol)	9	TILEA CORDATA 'GREENPINE' (Greenspire Littleleaf Linden)	2-1/2" - 3" cal.	SHADE TREES ALONG PERIMETER TO BE PROVIDED BY THE DEVELOPER

*NOTE: TO REVISE TITLE BLOCK, GENERAL NOTES, LANDSCAPING AND SURETY, ADD ENVIRONMENTAL SITE DESIGN SWM AND FOREST CONSERVATION BANK AND CHART



- LANDSCAPE NOTES:**
- STREET TREES TO BE PLANTED 6 FEET BEHIND BACK OF CURB ON WEST SIDE OF ROAD. STREET TREES TO BE PLANTED 3 FEET AWAY FROM SIDEWALK ON EAST SIDE OF ROAD SINCE DISTANCE BETWEEN SIDEWALK AND CURB IS LESS THAN 6 FEET. TREES MAY NOT BE PLANTED WITHIN 5 FEET OF A DRAIN INLET, 5 FEET OF AN OPEN SPACE ACCESS STRIP, OR 10 FEET OF A DRIVEWAY.
 - THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL.
 - AT THE TIME OF INSTALLMENT, ALL SHRUBS AND OTHER PLANTINGS HEREWITH LISTED AND APPROVED FOR THIS SITE, SHALL BE OF THE PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THIS APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS AND CERTIFICATIONS.
 - THE OWNER, TENANTS AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
 - FINANCIAL SURETY FOR THE REQUIRED PERIMETER LANDSCAPING SHALL BE POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$5,700 (FOR 19 SHADE TREES). FINANCIAL SURETY FOR THE REQUIRED STREET TREES SHALL BE INCLUDED IN THE COST ESTIMATE GENERATED BY HOWARD COUNTY DEVELOPMENT ENGINEERING DIVISION.
 - SHOULD ANY TREE DESIGNATED FOR PRESERVATION FOR WHICH LANDSCAPE CREDIT IS GIVEN, DIE PRIOR TO RELEASE OF BONDS, THE DEVELOPER WILL BE REQUIRED TO REPLACE THE TREE WITH THE EQUIVALENT SPECIES OR WITH A TREE WHICH WILL OBTAIN THE SAME HEIGHT, SPREAD AND CHARACTERISTICS. THE REPLACEMENT TREE MUST BE A MINIMUM OF 3 INCHES IN CALIPER AND INSTALLED AS REQUIRED IN THE HOWARD COUNTY LANDSCAPE MANUAL.

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION OF A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE-YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

DEVELOPER: *[Signature]* DATE: 11/9/14

APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] 12/10/2014
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 12-15-14
 CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 12-15-14
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

2	NOV, 2014	REVISION BY SHEET REPLACEMENT TO REVISE TEE-TURNAROUND
1	JULY, 2014	REVISION BY SHEET REPLACEMENT * SEE NOTE THIS SHEET
NO.	DATE	REVISION

BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS, INC.
 8480 BALTIMORE NATIONAL PIKE SUITE 315 & ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6844
 WWW.BEI-CVLENGINEERING.COM

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 28575, dated 1-1-15.

STATE OF MARYLAND PROFESSIONAL ENGINEER 1-17-14

OWNER/DEVELOPER:
 ROBERT MOWREY
 826 FROG MORTAR ROAD
 MIDDLE RIVER, MARYLAND 21220
 443-955-3043

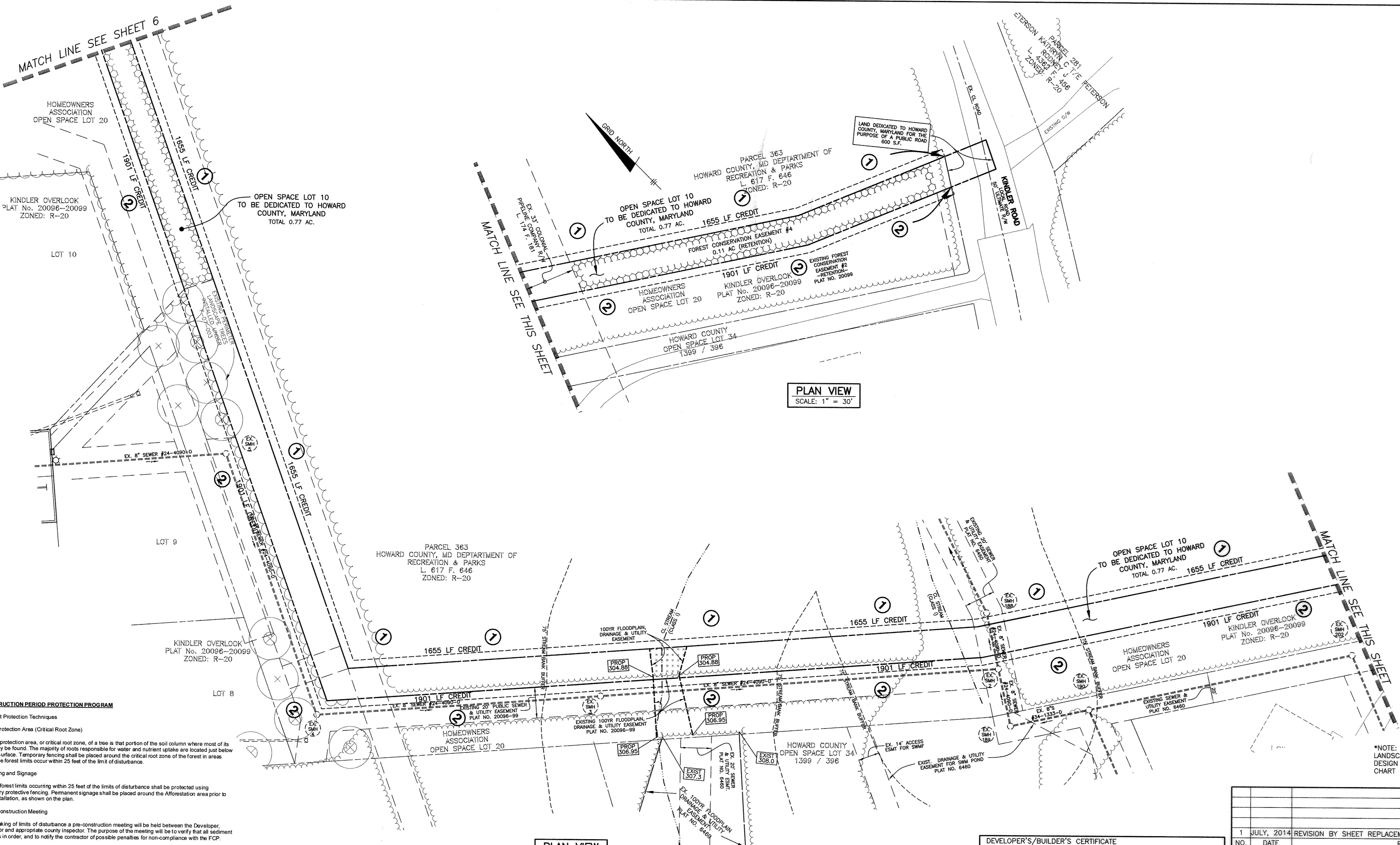
REVISED FINAL ROAD CONSTRUCTION PLANS
KINDLER OVERLOOK II
 LOTS 1 thru 7 AND
 OPEN SPACE LOTS 8 thru 10 and
 0.74 ACRE FOREST CONSERVATION BANK (RETENTION)

TAX MAP: 41 GRID: 18 PARCEL: 366
 ZONED: R-20
 ELECTION DISTRICT NO. 6
 HOWARD COUNTY, MARYLAND

LANDSCAPE PLAN

DATE: NOVEMBER, 2014 BEI PROJECT NO. 1962
 SCALE: AS SHOWN SHEET 6 OF 15

PLAN VIEW
 SCALE: 1" = 30'

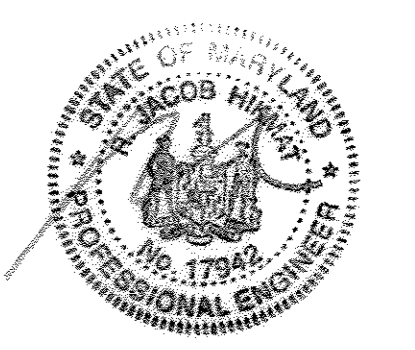


PLAN VIEW
SCALE: 1" = 30'

PLAN VIEW
SCALE: 1" = 30'

CONSTRUCTION PERIOD PROTECTION PROGRAM

- A. Forest Protection Techniques**
- 1. Soil Protection Area (Critical Root Zone)**
The soil protection area, or critical root zone, of a tree is that portion of the soil column where most of its roots may be found. The majority of roots responsible for water and nutrient uptake are located just below the soil surface. Temporary fencing shall be placed around the critical root zone of the forest in areas where the forest limits occur within 25 feet of the limit of disturbance.
 - 2. Fencing and Signage**
Existing forest limits occurring within 25 feet of the limits of disturbance shall be protected using temporary protective fencing. Permanent signage shall be placed around the Afforestation area prior to plant installation, as shown on the plan.
- B. Pre-Construction Meeting**
- Upon staking of limits of disturbance a pre-construction meeting will be held between the Developer, contractor and appropriate county inspector. The purpose of the meeting will be to verify that all sediment control is in order, and to notify the contractor of possible penalties for non-compliance with the FCP.
- C. Storage Facilities/Equipment Cleaning**
- All equipment storage, parking, sanitary facilities, material stockpiling, etc. associated with construction of the project will be restricted to those areas outside of the proposed Forest Conservation Easement. Cleaning of equipment will be limited to areas within the LOD of the proposed homesites. Wastewater resulting from equipment cleaning will be controlled to prevent runoff into environmentally sensitive areas.
- D. Sequence of Construction**
- The following timetable represents the proposed timetable for development of the subject property. The items outlined in the Forest Conservation Plan will be enacted within two (2) years of subdivision approval.
- Below find a proposed sequence of construction:
1. Install all signage and sediment control devices.
 2. Hold pre-construction meeting between developer, contractor and county inspector.
 3. Build access roads, install water and sewer, and construct houses. Stabilize all disturbed areas accordingly.
 4. Remove sediment control.
 5. Hold post-construction meeting with county inspectors to assure compliance with FCP, Submit Certification of Retention.
- E. Construction Monitoring**
- Eco-Science Professionals, Inc. or another qualified professional designated by the developer, will monitor construction of the project to ensure that all activities are in compliance with the Forest Conservation Plan.
- F. Post-Construction Meeting**
- Upon completion of construction, Eco-Science Professionals, Inc. or another qualified professional designated by the developer will notify the County that construction has been completed and arrange for



THERE IS NO AS-BUILT INFORMATION PROVIDED ON THIS SHEET

*NOTE: TO REVISE TITLE BLOCK, GENERAL NOTES, LANDSCAPING AND SURETY, ADD ENVIRONMENTAL SITE DESIGN SWM AND FOREST CONSERVATION BANK AND CHART

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION OF A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE-YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

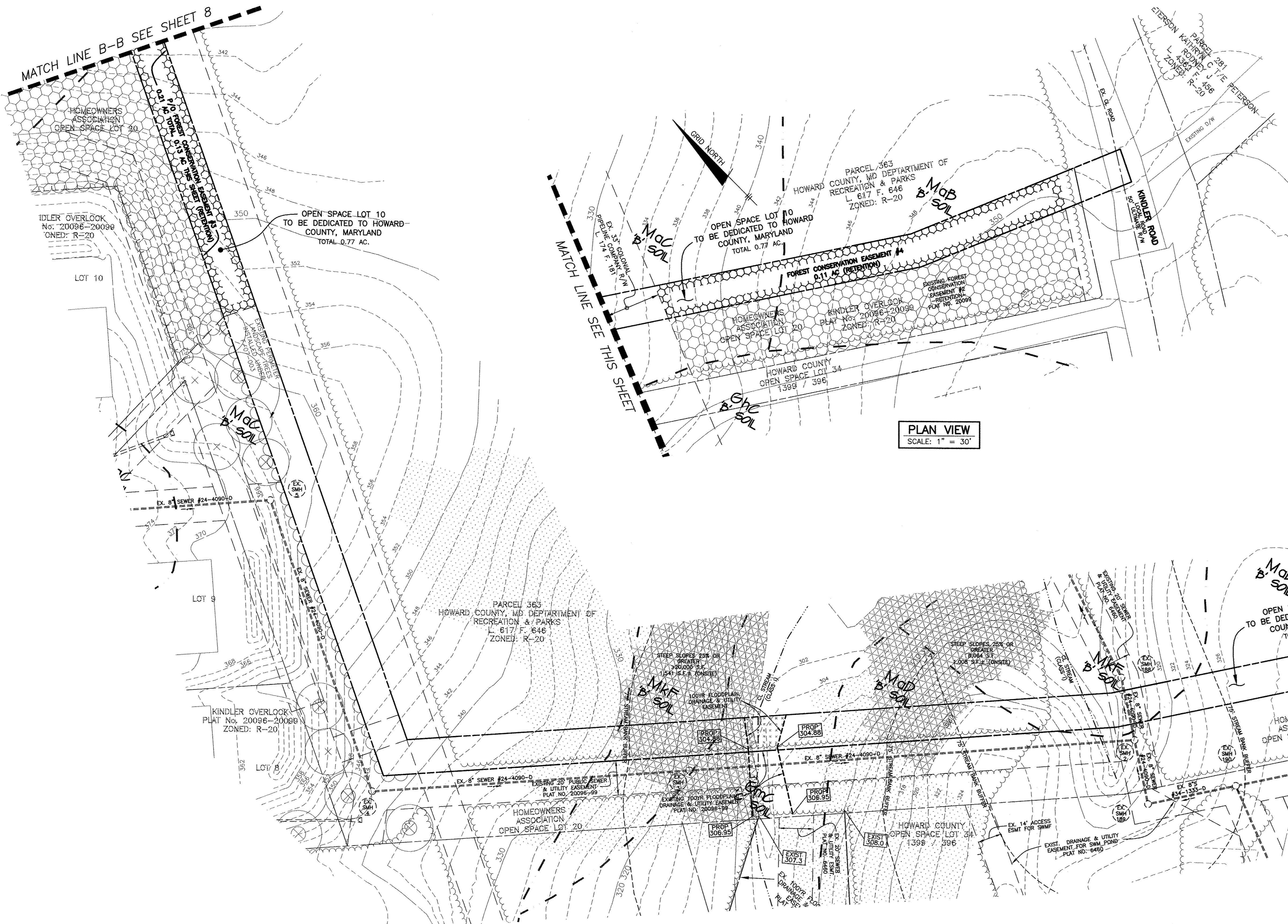
DEVELOPER: *[Signature]* DATE: 7/17/14

APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] 7.21.14
 CHIEF, BUREAU OF HIGHWAYS DATE

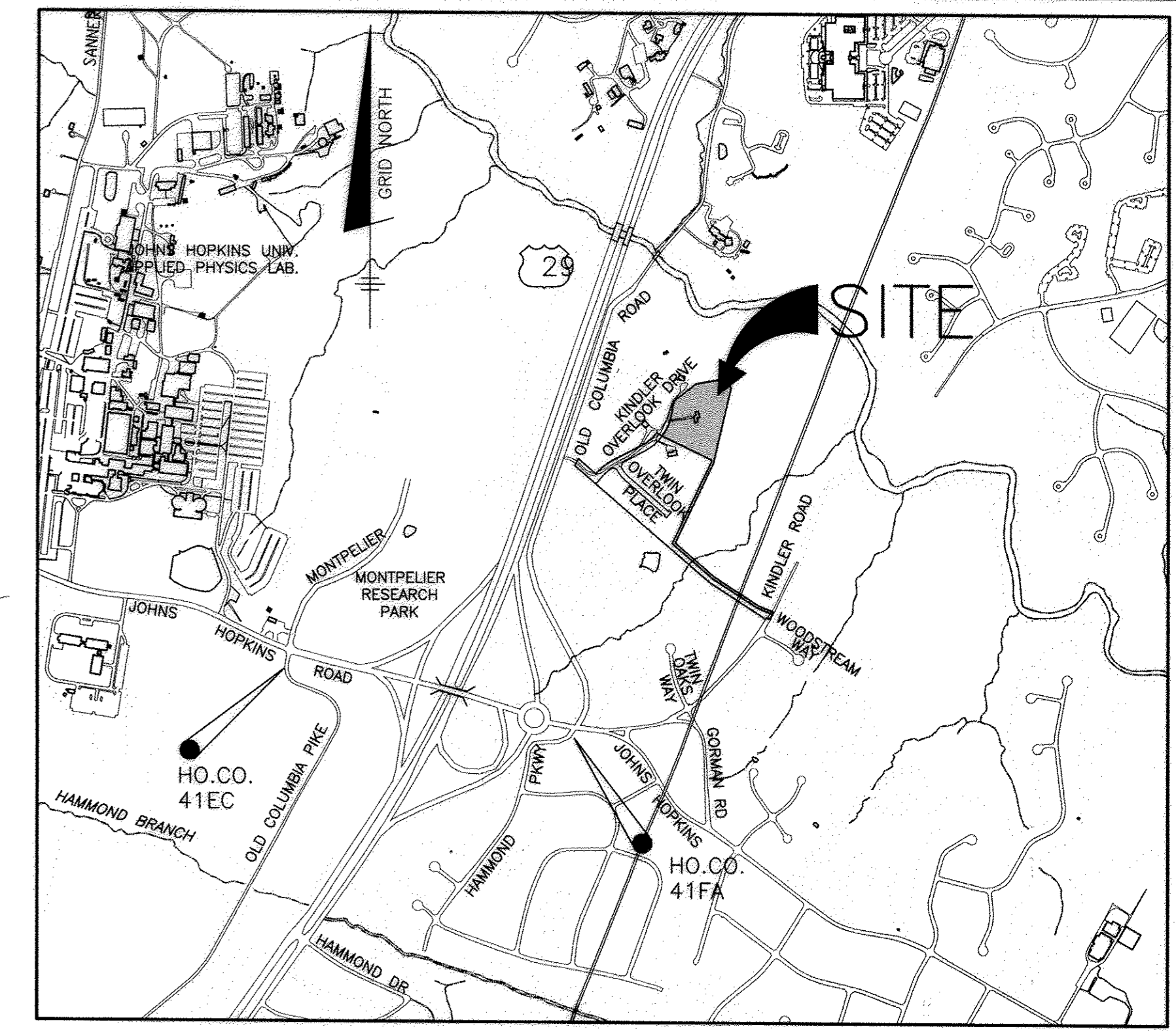
APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 8.20.14
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 8.19.14
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

1 JULY, 2014 REVISION BY SHEET REPLACEMENT * SEE NOTE THIS SHEET	
NO.	REVISION
BENCHMARK ENGINEERING, INC. 6480 BALTIMORE NATIONAL PIKE SUITE 315 & ELIJAH CITY, MARYLAND 21043 (P) 410-465-8105 (F) 410-465-6644 WWW.BEI-CVLENGINEERING.COM	
OWNER/DEVELOPER:	REVISED FINAL ROAD CONSTRUCTION PLANS
ROBERT MOWREY 828 FROG MORTAR ROAD MIDDLE RIVER, MARYLAND 21220 443-955-3043	KINDLER OVERLOOK II LOTS 1 thru 7 AND OPEN SPACE LOTS 8 thru 10 and 0.74 ACRE FOREST CONSERVATION BANK (RETENTION)
TAX MAP: 41 GRID: 18 PARCEL: 386 ZONED: R-20 ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND	LANDSCAPE PLAN
DATE: JULY, 2014	BEI PROJECT NO. 1962
SCALE: AS SHOWN	SHEET 7 OF 15



PLAN VIEW
SCALE: 1" = 30'



VICINITY MAP
SCALE: 1" = 1000'

LEGEND

- EXISTING CONTOURS
- PROPOSED CONTOURS
- EXISTING STEEP SLOPES 25% OR GREATER
- EXISTING STEEP SLOPES 15% TO 24.9%
- EXISTING TREELINE
- PROPOSED TREELINE
- PROJECT BOUNDARY
- PROPOSED STORM DRAIN
- FOREST CONSERVATION EASEMENT
- SOILS DELINEATION LINE
- SOILS TYPE



THERE IS NO AS-BUILT INFORMATION PROVIDED ON THIS SHEET

APPROVED: DEPARTMENT OF PUBLIC WORKS
Alan Sencus 7.21.14
CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
V. [Signature] 8.20.14
CHIEF, DIVISION OF LAND DEVELOPMENT

Chad [Signature] 8.19.14
CHIEF, DEVELOPMENT ENGINEERING DIVISION

FOREST CONSERVATION NOTES:

1. THE TOTAL FOREST CONSERVATION OBLIGATION AMOUNT OF 2.83 ACRES SHALL BE MET BY THE ON-SITE RETENTION OF 0.97 AC. OF NET TRACT AREA FOREST WITHIN A FOREST CONSERVATION EASEMENT AND THE OFFSITE PLANTING OF 1.86 ACRES WITHIN THE FOREST MITIGATION BANK LOCATED WITHIN THE MCKENDREE SPRINGS SUBDIVISION (F-09-108). FINANCIAL SURETY FOR THE OFF-SITE PLANTING WAS POSTED AS PART OF THE DPW DEVELOPERS AGREEMENT FOR MCKENDREE SPRINGS (F-09-108). AN ADDITIONAL 0.74 ACRES WILL BE RETAINED ON OPEN SPACE LOT 8 AS A FOREST BANK.
2. ANY FOREST CONSERVATION EASEMENT (FCE) AREA SHOWN HEREON IS SUBJECT TO PROTECTIVE COVENANTS WHICH MAY BE FOUND IN THE LAND RECORDS OF HOWARD COUNTY WHICH RESTRICT THE DISTURBANCE AND USE OF THESE AREAS.
3. THE FOREST CONSERVATION EASEMENTS HAVE BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 18.1200 OF THE HOWARD COUNTY CODE, FOREST CONSERVATION ACT. NO CLEARING, GRADING, OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENTS; HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.
4. LIMITS OF DISTURBANCE SHALL BE RESTRICTED TO AREAS OUTSIDE THE LIMIT OF TEMPORARY FENCING OR THE FCE BOUNDARY, WHICHEVER IS GREATER.
5. THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST CONSERVATION EASEMENT, EXCEPT AS PERMITTED BY HOWARD COUNTY DPZ.
6. NO STOCKPILES, PARKING AREAS, EQUIPMENT CLEANING AREAS, ETC. SHALL OCCUR WITHIN AREAS DESIGNATED AS FOREST CONSERVATION EASEMENTS.
7. TEMPORARY FENCING SHALL BE USED TO PROTECT FOREST RESOURCES DURING CONSTRUCTION. THE FENCING SHALL BE PLACED ALONG ALL FCE RETENTION BOUNDARIES WHICH OCCUR WITHIN 50 FEET OF THE PROPOSED LIMITS OF DISTURBANCE THAT DOES NOT ALREADY HAVE A SUPER SILT FENCE PROPOSED.
8. PERMANENT SIGNAGE SHALL BE PLACED 50'-100' APART ALONG THE BOUNDARIES OF ALL AREAS INCLUDED IN FOREST CONSERVATION EASEMENTS.
9. PORTIONS OF THE SITE OCCURRING WITHIN THE 100-YEAR FLOODPLAIN ARE NOT INCLUDED AS PART OF THE NET TRACT AREA OF THE SITE. AREAS OF FLOODPLAIN FOREST OCCURRING WITHIN THE LIMITS OF A FOREST CONSERVATION EASEMENT WILL BE PROTECTED BY THE EASEMENT RESTRICTIONS BUT HAVE NOT BEEN CREDITED TOWARD THE PROJECTS FCA OBLIGATIONS.
10. THE FOREST CONSERVATION WATERSHED FOR THIS PROJECT IS THE MIDDLE PATUXENT RIVER #2131106.
11. THERE ARE NO RARE, THREATENED OR ENDANGERED SPECIES LOCATED ON THIS SITE. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO HISTORIC STRUCTURES LOCATED ON THIS SITE. THERE ARE 3 SPECIMEN TREES LOCATED ON THIS SITE. TWO ARE TO BE RETAINED, AND ONE IS TO BE REMOVED.
12. THE PROTECTIVE SIGNAGE SHALL STAY ON-SITE IN PERPETUITY.

PLAN VIEW
SCALE: 1" = 30'

*NOTE: TO REVISE TITLE BLOCK, GENERAL NOTES, LANDSCAPING AND SURETY, ADD ENVIRONMENTAL SITE DESIGN SWM AND FOREST CONSERVATION BANK AND CHART

1 JULY, 2014 REVISION BY SHEET REPLACEMENT * SEE NOTE THIS SHEET	
NO.	DATE REVISION
BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE & SUITE 315 • ELlicOTT CITY, MARYLAND 21043 (P) 410-465-0105 (F) 410-465-0644 WWW.BEI-CIVILENGINEERING.COM	
OWNER/DEVELOPER:	REVISED FINAL ROAD CONSTRUCTION PLANS
ROBERT MOWREY 826 FROG MORTAR ROAD MIDDLE RIVER, MARYLAND 21220 443-955-3043	KINDLER OVERLOOK II LOTS 1 thru 7 AND OPEN SPACE LOTS 8 thru 10 and 0.74 ACRE FOREST CONSERVATION BANK (RETENTION)
TAX MAP: 41 GRID: 18 PARCEL: 386 ZONED: R-20 ELECTION DISTRICT NO. 8 HOWARD COUNTY, MARYLAND	
FOREST CONSERVATION PLAN	
DATE: JULY, 2014	BEI PROJECT NO. 1962
SCALE: AS SHOWN	SHEET 9 OF 15

Eco-Science Professionals, Inc.
CONSULTING ECOLOGISTS
P.O. Box 5006 Glen Arm, MD 21057 (410) 592-6752

MD DNR Qualified Professional
USACOE Wetland Delimitator
Certification # WDCTPA0006104432
[Signature]
John F. Canoles

CONSTRUCTION PERIOD PROTECTION PROGRAM

A. Forest Protection Techniques

1. Soil Protection Area (Critical Root Zone)

The soil protection area, or critical root zone, of a tree is that portion of the soil column where most of its roots may be found. The majority of roots responsible for water and nutrient uptake are located just below the soil surface. Temporary fencing shall be placed around the critical root zone of the forest in areas where the forest limits occur within 50 feet of the limit of disturbance.

2. Fencing and Signage

Existing forest limits occurring within 50 feet of the limits of disturbance shall be protected using temporary protective fencing. Permanent signage shall be placed around the afforestation area prior to plant installation, as shown on the plan.

B. Pre-Construction Meeting

Upon staking of limits of disturbance a pre-construction meeting will be held between the developer, contractor and appropriate County inspector. The purpose of the meeting will be to verify that all sediment control is in order, and to notify the contractor of possible penalties for non-compliance with the FCP.

C. Storage Facilities/Equipment Cleaning

All equipment storage, parking, sanitary facilities, material stockpiling, etc. associated with construction of the project will be restricted to those areas outside of the proposed Forest Conservation Easement. Cleaning of equipment will be limited to area within the LOD of the proposed homesites. Wastewater resulting from equipment cleaning will be controlled to prevent runoff into environmentally sensitive areas.

D. Sequence of Construction

The following timetable represents the proposed timetable for development. The items outlined in the Forest Conservation Plan will be enacted within two (2) years of subdivision approval.

Below find a proposed sequence of construction.

1. Install all signage and sediment control devices.
2. Hold pre-construction meeting between developer, contractor and County inspector.
3. Build access roads, install well and septic systems, and construct houses. Stabilize all disturbed areas accordingly.

4. Begin multiflora rose/invasive species removal, as needed. Install permanent protective signage for Easements and initiate plantings in accordance with Forest Conservation Plan. Plantings will be completed within two (2) years of subdivision approval.
5. Remove sediment control.
6. Hold post-construction meeting with County inspectors to assure compliance with FCP. Submit Certification of Installation.
7. Monitor and maintain plantings for 2 years.

E. Construction Monitoring

Eco-Science Professionals, or another qualified professional designated by the developer, will monitor construction of the project to ensure that all activities are in compliance with the Forest Conservation Plan.

F. Post-Construction Meeting

Upon completion of construction, Eco-Science Professionals, or another qualified professional designated by the developer, will notify the County that construction has been completed and arrange for a post-construction meeting to review the project site. The meeting will allow the County inspector to verify that afforestation plantings have been installed.

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 of completion by the County. Eco-Science Professionals, or another qualified professional designated by the developer, will be responsible for implementation of the post-construction management plan.

The following items will be incorporated into the plan:

A. Fencing and Signage

Permanent signage indicating the limits of the retention/afforestation area shall be maintained.

B. General Site Inspections/Maintenance of Plantings

Site inspections will be performed a minimum of three times during the growing season. The purpose of the inspections will be to assess the health of the afforestation plantings. Appropriate measures will be taken to rectify any problems which may arise.

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

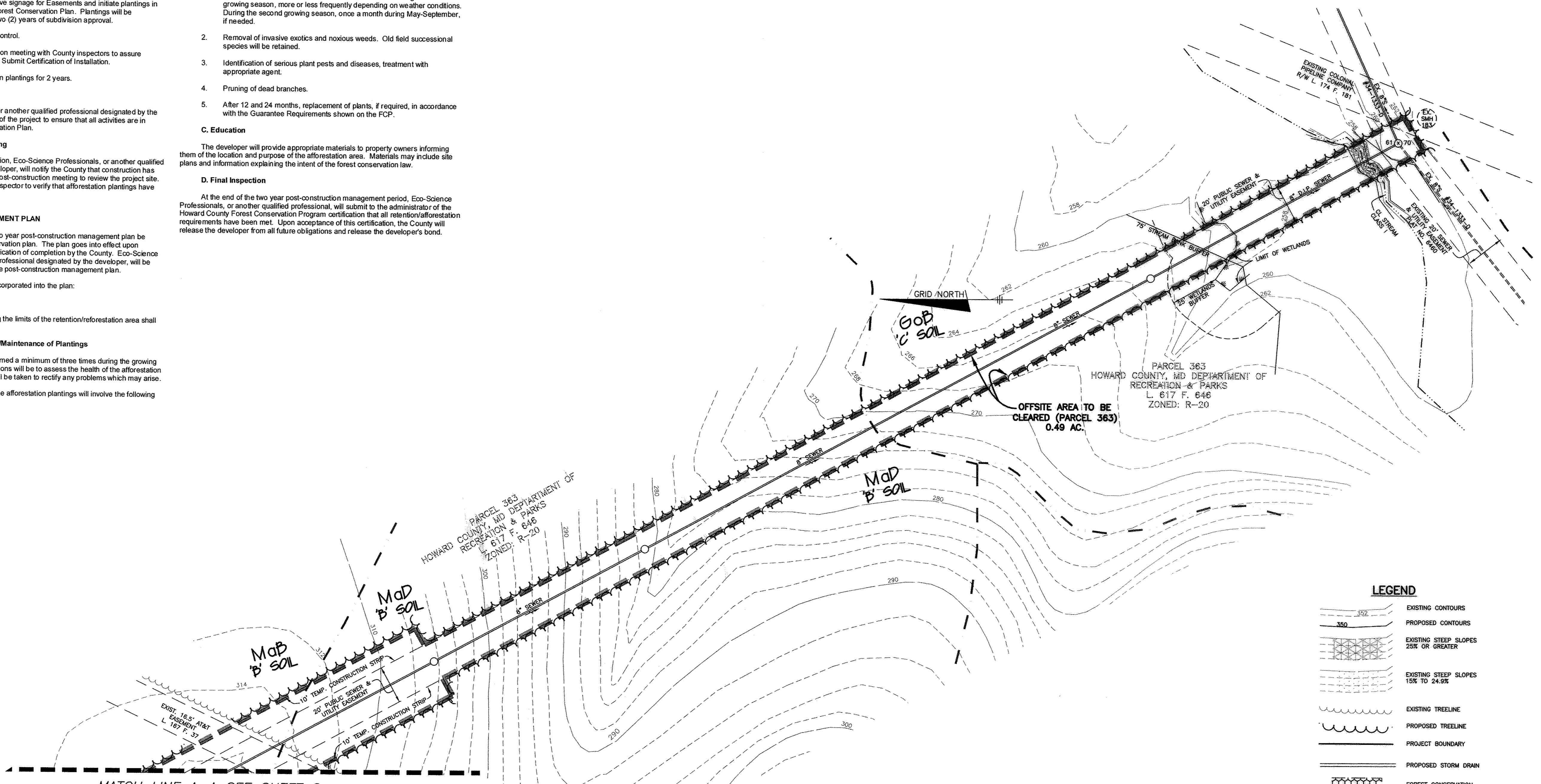
1. Watering - All plant material shall be watered twice a month during the 1st growing season, more or less frequently depending on weather conditions. During the second growing season, once a month during May-September, if needed.
2. Removal of invasive exotics and noxious weeds. Old field successional species will be retained.
3. Identification of serious plant pests and diseases, treatment with appropriate agent.
4. Pruning of dead branches.
5. After 12 and 24 months, replacement of plants, if required, in accordance with the Guarantee Requirements shown on the FCP.

C. Education

The developer will provide appropriate materials to property owners informing them of the location and purpose of the afforestation area. Materials may include site plans and information explaining the intent of the forest conservation law.

D. Final Inspection

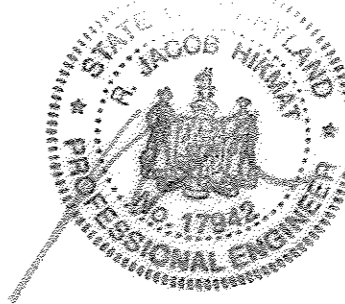
At the end of the two year post-construction management period, Eco-Science Professionals, or another qualified professional, will submit to the administrator of the Howard County Forest Conservation Program certification that all retention/afforestation requirements have been met. Upon acceptance of this certification, the County will release the developer from all future obligations and release the developer's bond.



PLAN VIEW
SCALE: 1" = 30'

LEGEND

- EXISTING CONTOURS
- PROPOSED CONTOURS
- EXISTING STEEP SLOPES 25% OR GREATER
- EXISTING STEEP SLOPES 15% TO 24.9%
- EXISTING TREELINE
- PROPOSED TREELINE
- PROJECT BOUNDARY
- PROPOSED STORM DRAIN
- FOREST CONSERVATION EASEMENT
- SOILS DELINEATION LINE
- MID2 B' SOIL



THERE IS NO AS-BUILT INFORMATION PROVIDED ON THIS SHEET

2-1/2"

FOREST CONSERVATION AREA

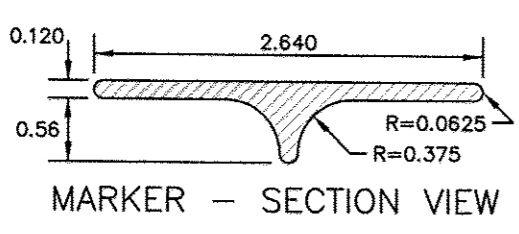
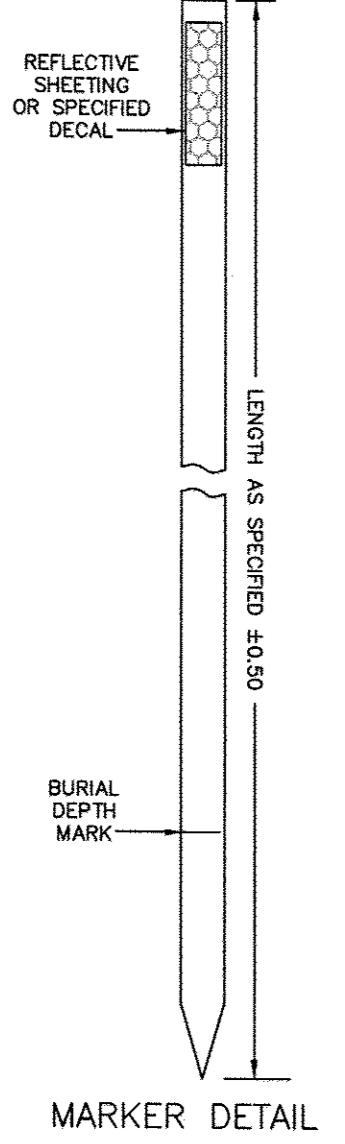
TREES FOR YOUR FUTURE

DUMPING, MACHINERY, OR STORAGE OF MATERIALS, CUTTING OR DISTURBANCE OF VEGETATION OR SOIL IN THIS AREA IS STRICTLY PROHIBITED

VIOLATORS ARE SUBJECT TO FINES AS IMPOSED BY THE HOWARD COUNTY FOREST CONSERVATION ACT

For more information or to report violations, please call Howard County Department of Recreation and Parks, Natural Resources Division 410-313-4725 TTY 410-313-4685

Howard County MARYLAND

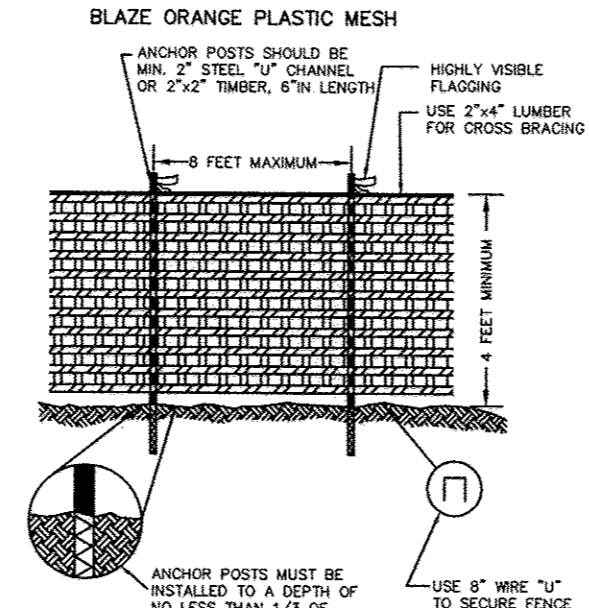


DECAL SPECIFICATIONS

Material: Number 3690 Scotcheal non-reflective substrate.

Color: Dark green text and border on beige background.

FCF CARSONITE MARKER
NOT TO SCALE



- NOTES:**
1. FOREST PROTECTION DECIDE ONLY
 2. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
 3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DECALS.
 4. AVOID ROOT DAMAGE WHEN PLACING ANCHOR POSTS.
 5. DECALS SHOULD BE PROPERLY MAINTAINED DURING CONSTRUCTION.
 6. PROTECTIVE SIGNAGE IS ALSO REQUIRED.

TREE PROTECTION FENCING

*NOTE: TO REVISE TITLE BLOCK, GENERAL NOTES, LANDSCAPING AND SURETY, ADD ENVIRONMENTAL SITE DESIGN SWM AND FOREST CONSERVATION BANK AND CHART

APPROVED: DEPARTMENT OF PUBLIC WORKS

Adrian Serrano 7.21.14
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Katrina L. ... 8.20.14
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Chad ... 8.19.14
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Eco-Science Professionals, Inc.

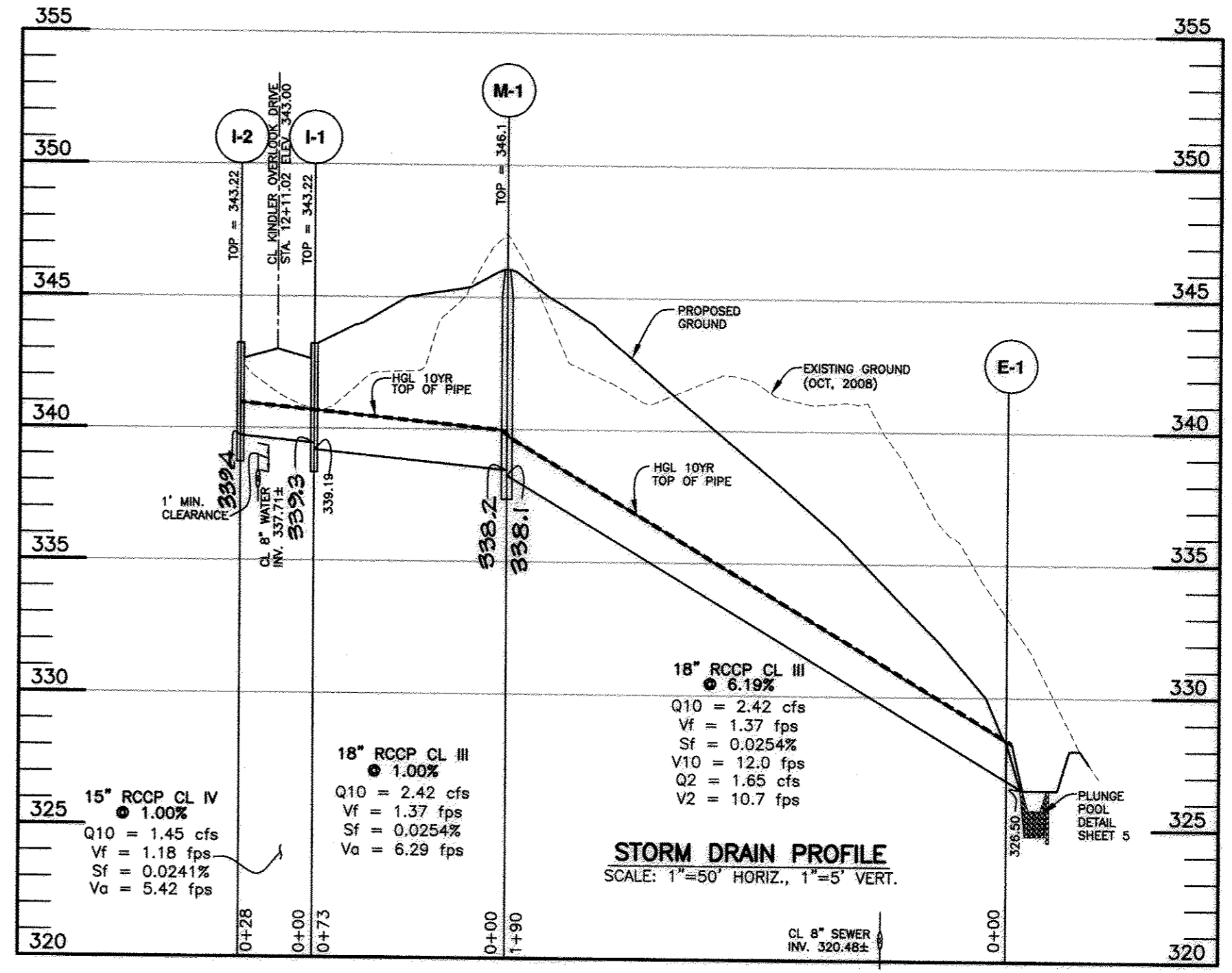
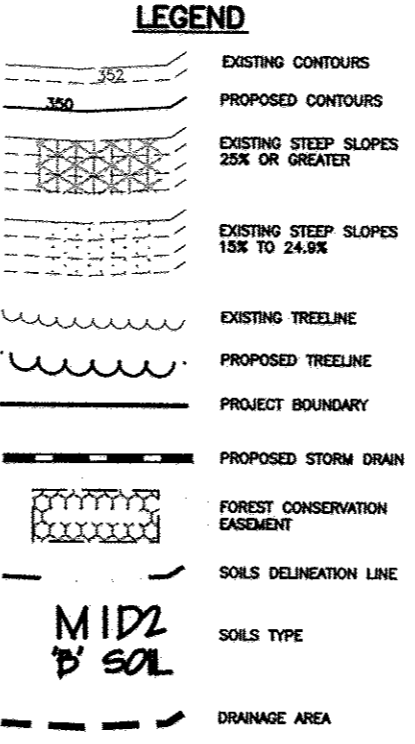
CONSULTING ECOLOGISTS

P.O. Box 5006 Glen Arm, MD 21057 (410) 592-6752

MD DNR Qualified Professional
USACOE Wetland Delineator
CERTIFICATION # WJDCR000MD061004102

John F. Canoles

1 JULY, 2014 REVISION BY SHEET REPLACEMENT * SEE NOTE THIS SHEET	
NO.	DATE
REVISION	
BENCHMARK ENGINEERING, INC.	
8480 BALTIMORE NATIONAL PIKE & SUITE 315 • ELLICOTT CITY, MARYLAND 21043 (P) 410-485-8105 (F) 410-485-8844 WWW.BE-CIVILENGINEERING.COM	
OWNER/DEVELOPER:	
ROBERT MOWREY 826 FROG MORTAR ROAD MIDDLE RIVER, MARYLAND 21220 443-955-3043	
REVISED FINAL ROAD CONSTRUCTION PLANS	
KINDLER OVERLOOK II	
LOTS 1 thru 7 AND OPEN SPACE LOTS 8 thru 10 and 0.74 ACRE FOREST CONSERVATION BANK (RETENTION)	
TAX MAP: 41	GRID: 18
PARCEL: 386	ZONED: R-20
ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND	
FOREST CONSERVATION PLAN	
DATE: JULY, 2014	BEI PROJECT NO. 1962
SCALE: AS SHOWN	SHEET 10 OF 15



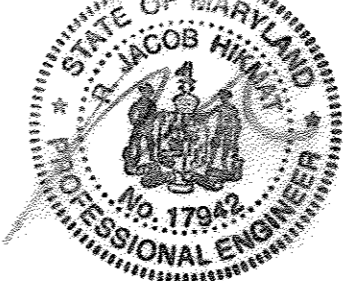
STRUCTURE SCHEDULE							
NO.	TYPE	LOCATION	PIPE INV. IN	PIPE INV. OUT	TOP ELEV.	OWNERSHIP	HO. CO. STD.
E-1	18" CONC. END SECT.	N 545,559.13 E 1,345,742.19	NA	326.50	NA	PUBLIC	D-5.51
I-1	A-5 width=2.5'	CL STA. 12+11.02 KINDLER OVERLOOK DRIVE, OFFSET 12.43' RIGHT	339.3	339.19	343.22	PUBLIC	D-4.01
I-2	A-5 width=2.5'	CL STA. 12+11.02 KINDLER OVERLOOK DRIVE, OFFSET 12.43' LEFT	NA	339.4	343.22	PUBLIC	D-4.01
M-1	4'-0" MANHOLE	N 545,591.84 E 1,345,549.14	338.2	338.1	346.10	PUBLIC	G-5.12

- 1) STRUCTURE LOCATION FOR MANHOLES IS AT THE CENTER OF THE MANHOLE.
- 2) STRUCTURE LOCATION FOR INLETS IS AT THE CENTER FACE OF CURB.
- 3) STRUCTURE ELEVATION AND LOCATION FOR ENDSECTIONS IS AT THE MIDPOINT OF THE END OF STRUCTURE.
- 4) PRECAST STRUCTURES MEETING HS-20 LOADING MAY BE USED.
- 5) WIDTH LISTED FOR 'A' TYPE INLETS IS THE INTERIOR WALL WIDTH.

PIPE SCHEDULE			
PIPE SIZE	LENGTH	TYPE	OWNERSHIP
15"	28'	RCP CLASS IV	PUBLIC
18"	263'	RCP CLASS III	PUBLIC

*NOTE: TO REVISE TITLE BLOCK, GENERAL NOTES, LANDSCAPING AND SURETY, ADD ENVIRONMENTAL SITE DESIGN SWM AND FOREST CONSERVATION BANK AND CHART

I hereby certify that the facility shown on this plan was constructed as shown on the 'As-Built' plans and meets with the approved plans and specifications.



APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] 12/10/14
 CHIEF, BUREAU OF HIGHWAYS
 DATE

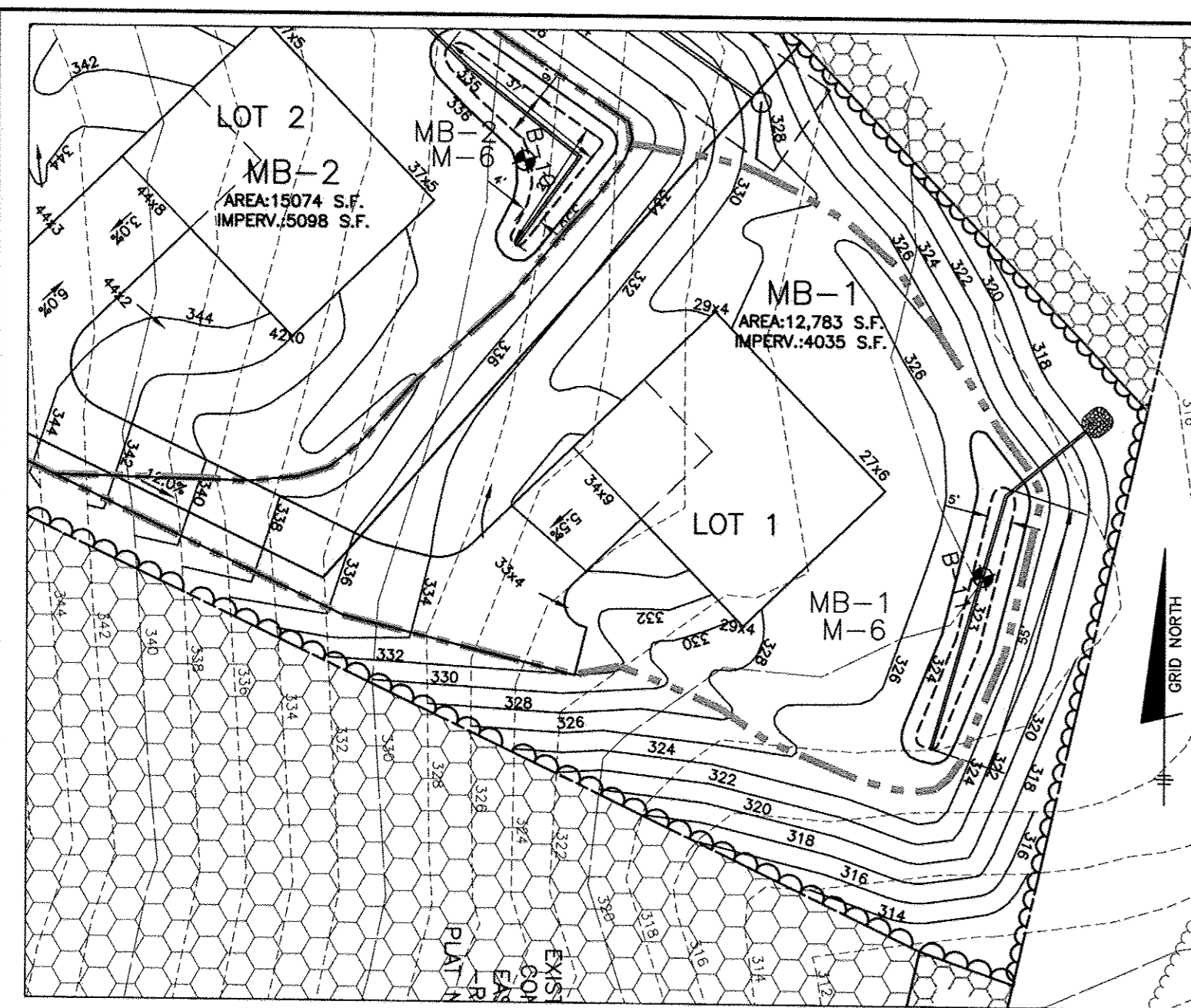
APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 12-15-14
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE

BENCHMARK ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE SUITE 315 ELLICOTT CITY, MARYLAND 21043 (P) 410-465-8105 (F) 410-465-6644 WWW.BE-CIVILENGINEERING.COM		REVISIONS: 3 JAN 2018 ADD AS-BUILT DATA 2 NOV, 2014 REVISION BY SHEET REPLACEMENT TO REVISE TEE-TURNAROUND 1 JULY, 2014 REVISION BY SHEET REPLACEMENT * SEE NOTE THIS SHEET
OWNER/DEVELOPER: ROBERT MOWREY 826 FROG MORTAR ROAD MIDDLE RIVER, MARYLAND 21220 443-955-3043	REVISED FINAL ROAD CONSTRUCTION PLANS KINDLER OVERLOOK II LOTS 1 thru 7 AND OPEN SPACE LOTS 8 thru 10 and 0.74 ACRE FOREST CONSERVATION BANK (RETENTION)	
TAX MAP: 41 GRID: 18 PARCEL: 366 ZONED: R-20 ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND		
STORM DRAIN DRAINAGE AREA MAP AND STORM DRAIN PROFILES		
DATE: NOVEMBER, 2014	BEI PROJECT NO. 1962	
SCALE: AS SHOWN	SHEET	11 OF 15

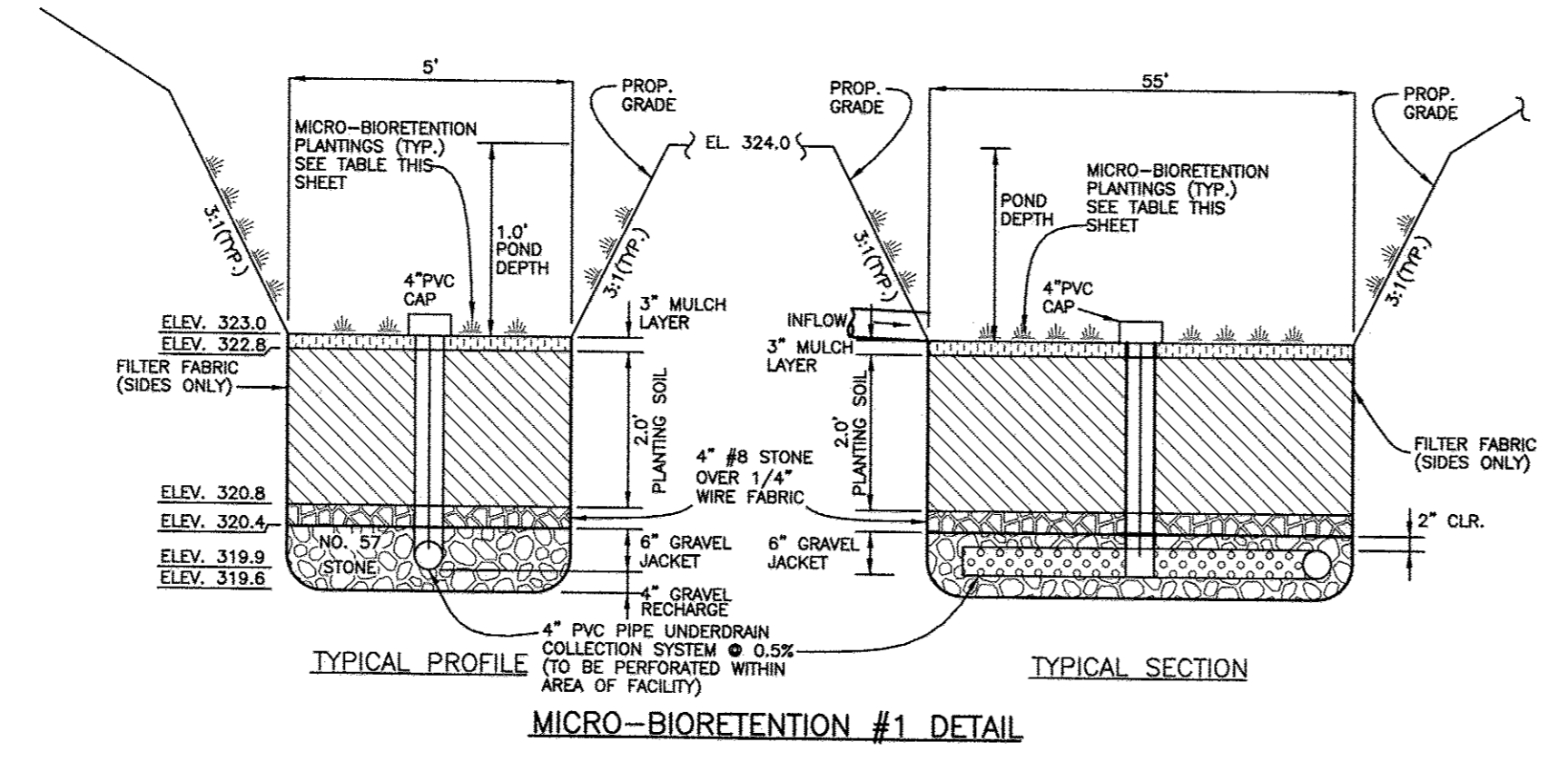
SOILS LEGEND		
SYMBOL	TYPE	NAME
GgC	B .20	GLENELO LOAM - 8 TO 15 PERCENT SLOPES - MODERATELY ERODED
GmC	B .37	GLENVILLE SILT LOAM - 8 TO 15 PERCENT SLOPES
Gob	B .37	GLENVILLE-CORDORUS SILT LOAMS - 0 TO 8 PERCENT SLOPES
MgB	B .24	MANOR LOAM - 3 TO 8 PERCENT SLOPES
McB	B .24	MANOR LOAM - 8 TO 15 PERCENT SLOPES
MoD	B .24	MANOR LOAM - 15 TO 25 PERCENT SLOPES
MkF	B .24	MANOR BRINKLOW COMPLEX, 25 TO 65 PERCENT SLOPES - VERY ROCKY

SOILS TAKEN FROM NRCS WEB SOIL SURVEY, MARCH 17, 2014
 *WHOLE SOIL, K FACTOR

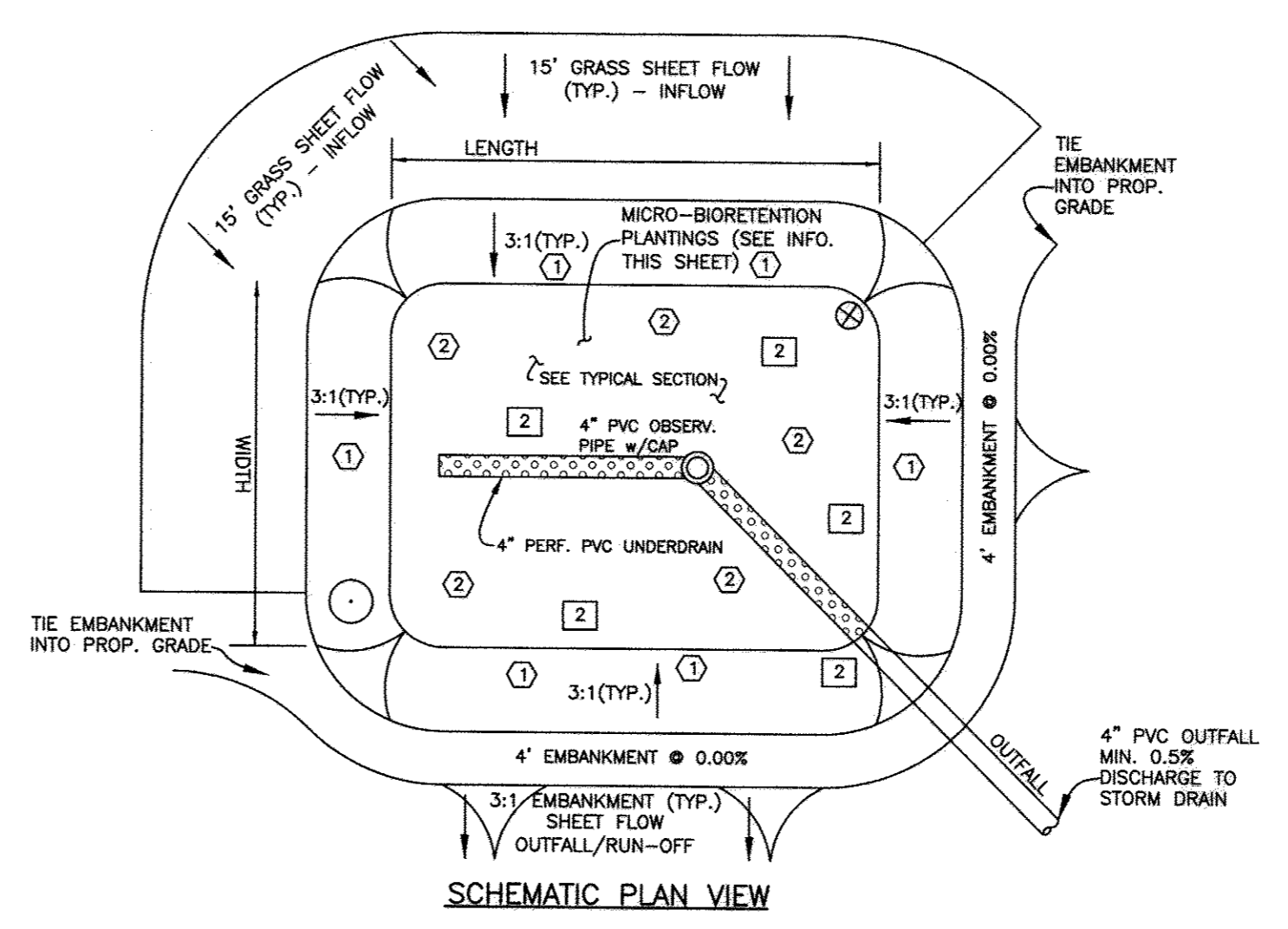
PLAN VIEW
 SCALE: 1" = 40'



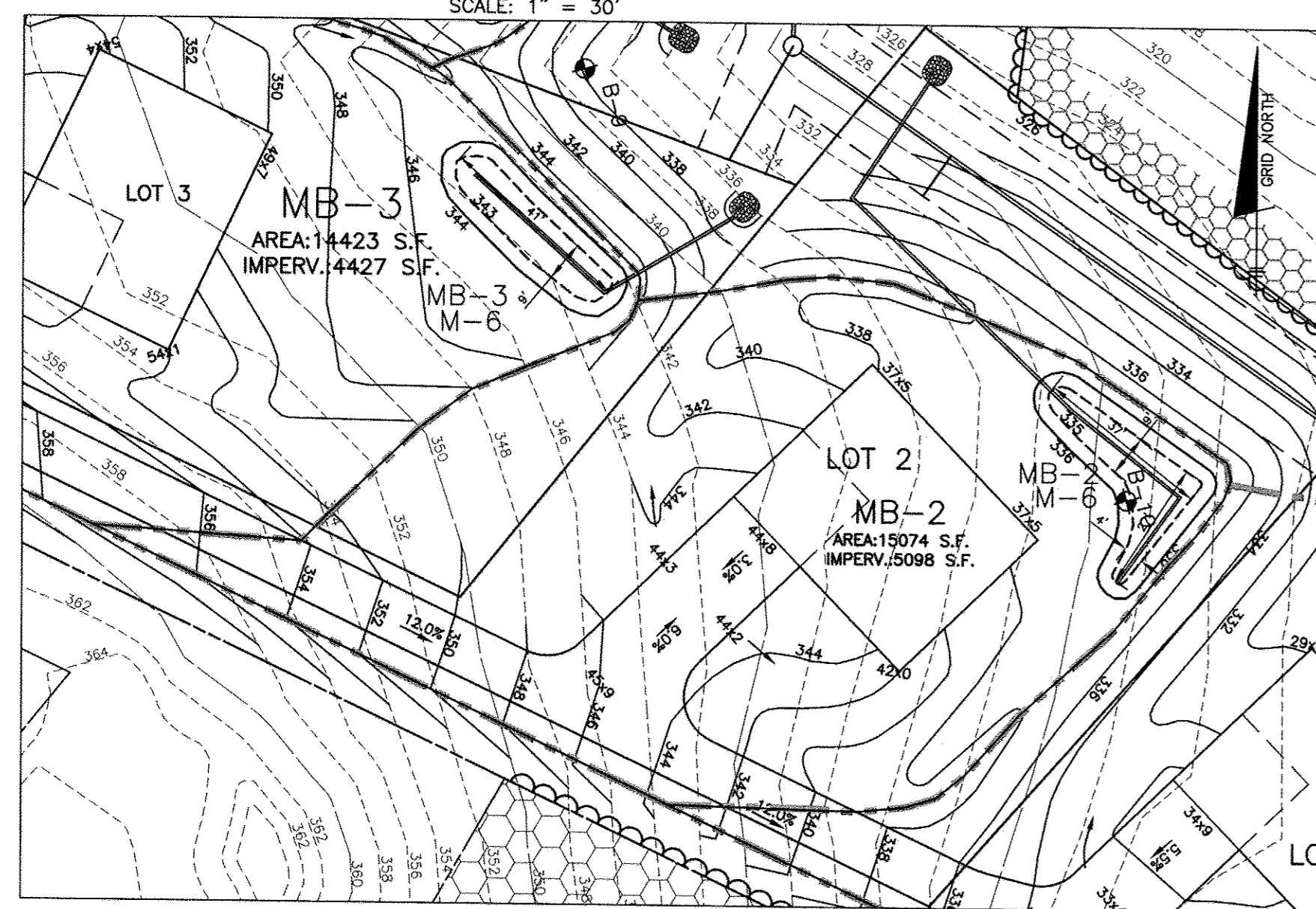
MICRO-BIORETENTMENT #1 - PLAN VIEW
SCALE: 1" = 30'



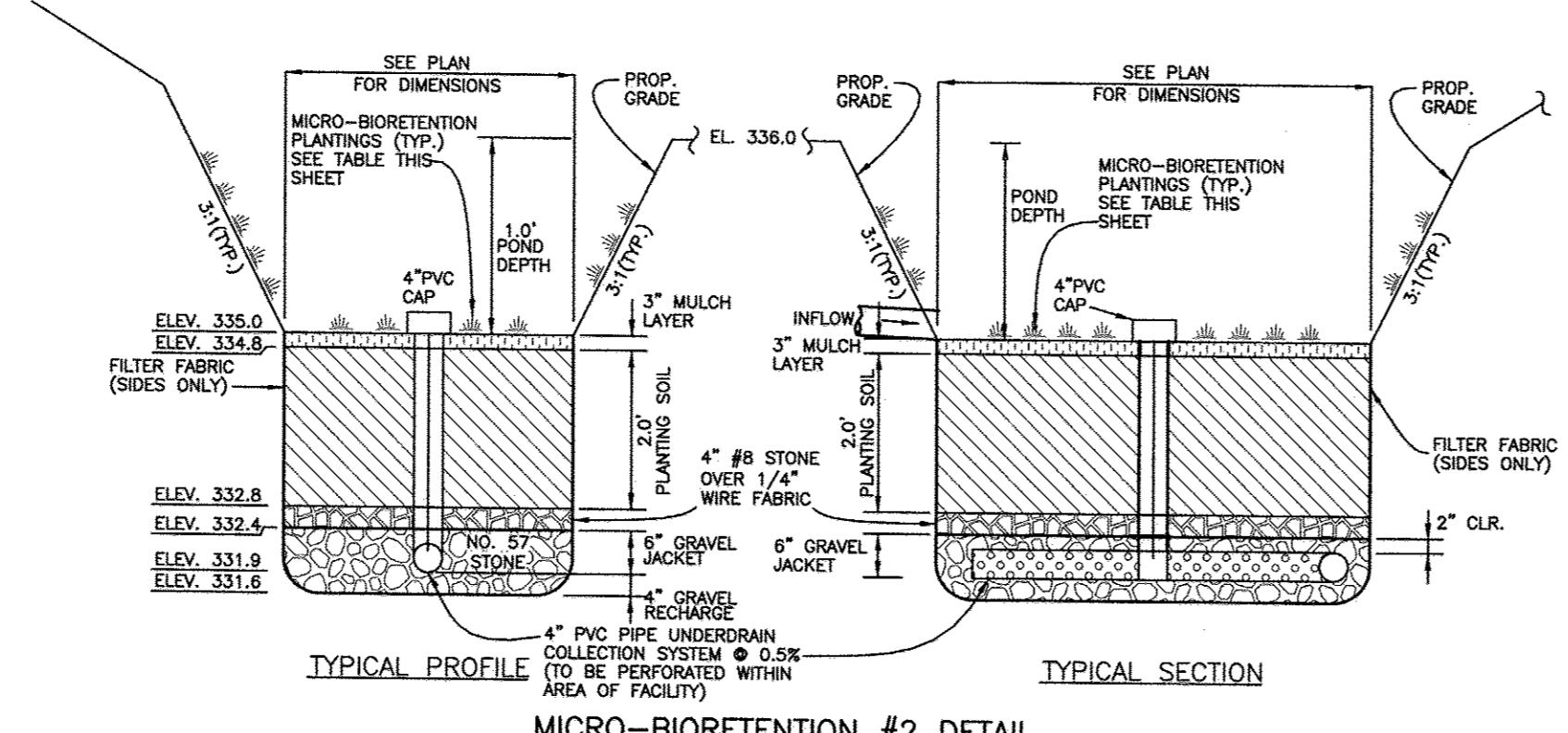
MICRO-BIORETENTMENT #1 DETAIL



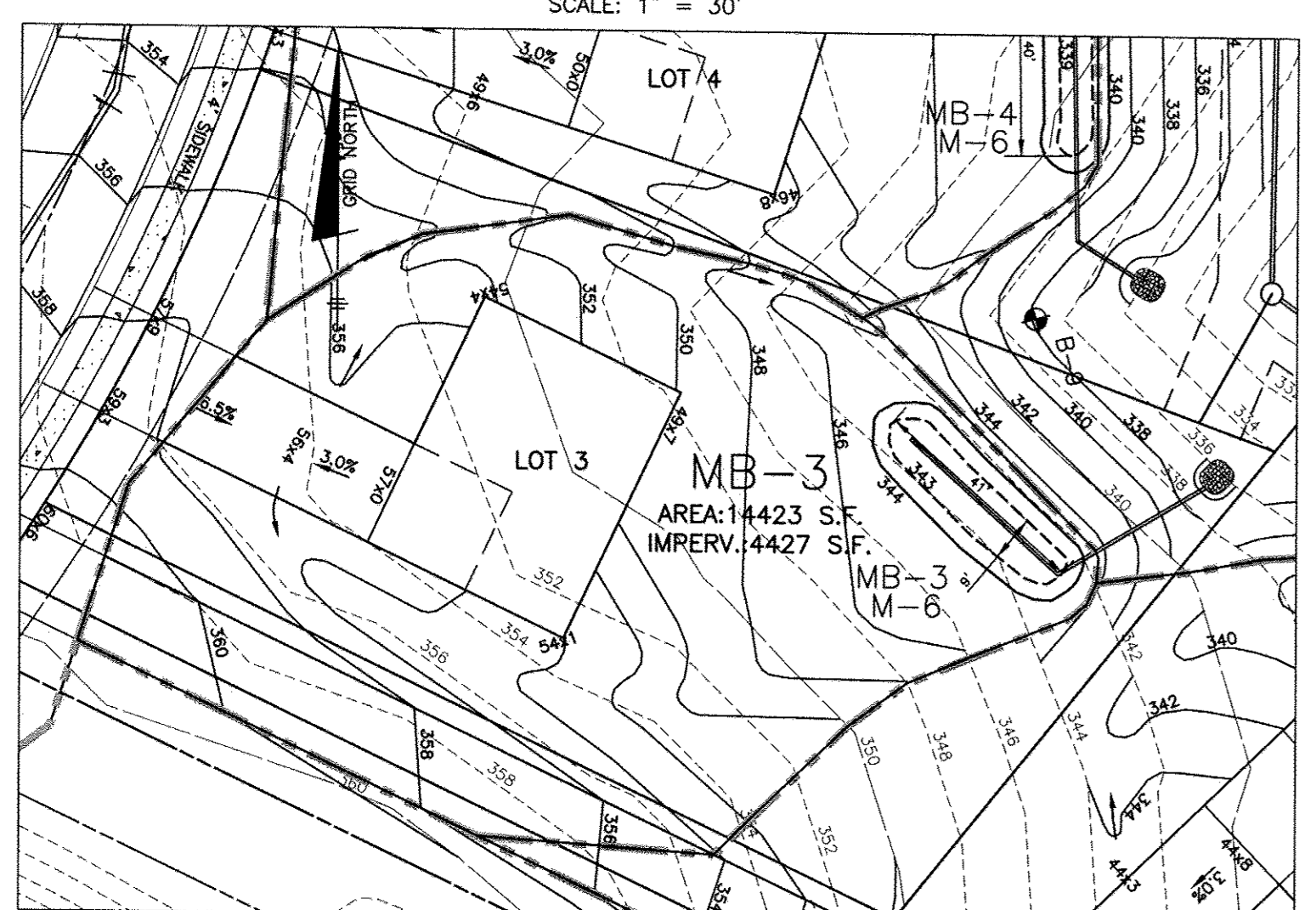
MICRO-BIORETENTMENT #1 DETAIL



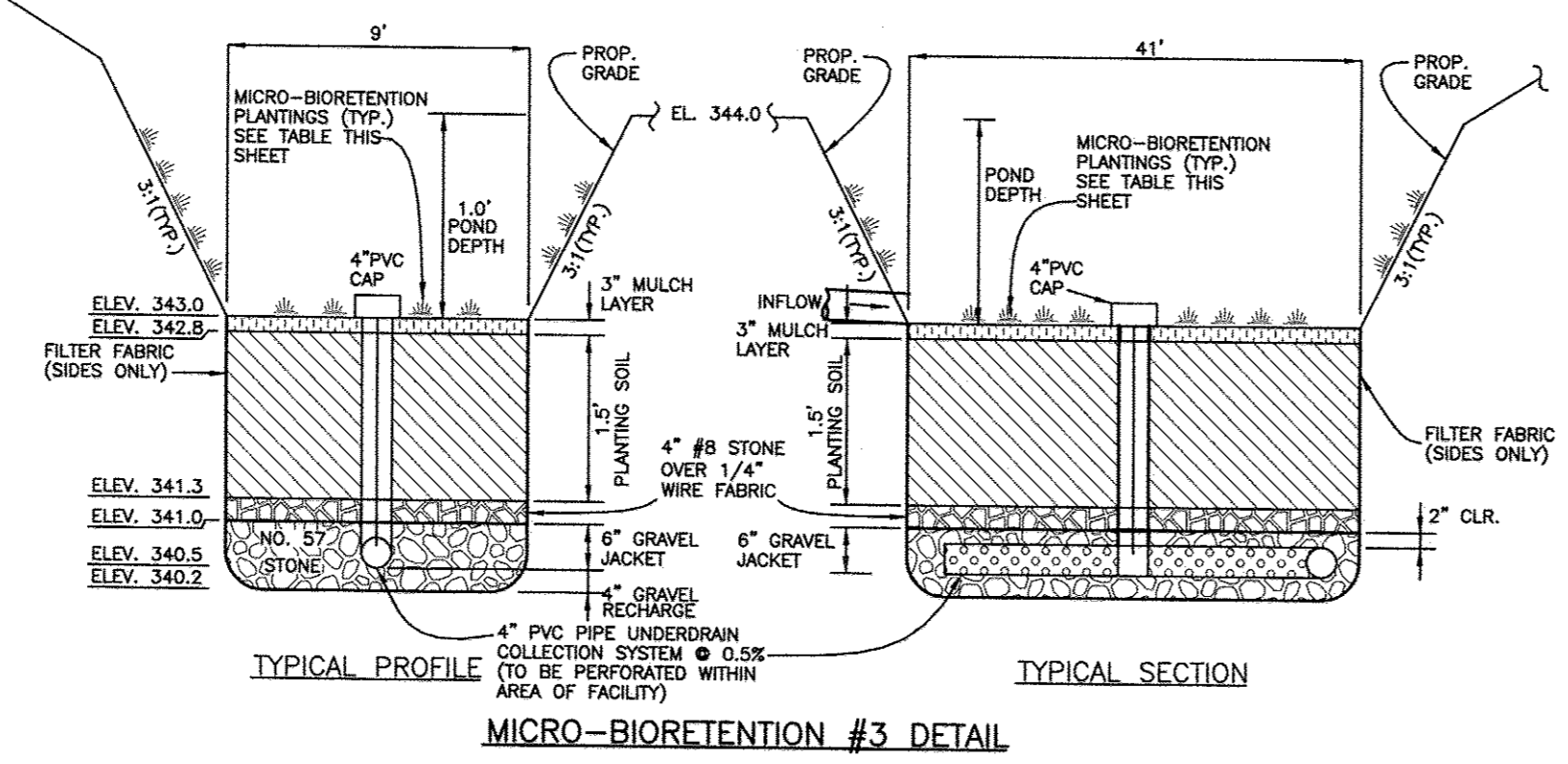
MICRO-BIORETENTMENT #2 - PLAN VIEW
SCALE: 1" = 30'



MICRO-BIORETENTMENT #2 DETAIL



MICRO-BIORETENTMENT #3 - PLAN VIEW
SCALE: 1" = 30'



MICRO-BIORETENTMENT #3 DETAIL

- LEGEND**
- EXISTING CONTOURS
 - PROPOSED CONTOURS
 - EXISTING TREELINE
 - PROPOSED TREELINE
 - PROJECT BOUNDARY
 - PROPOSED STORM DRAIN
 - FOREST CONSERVATION EASEMENT
 - DRAINAGE AREA
 - MICRO-BIORETENTMENT FACILITY AND OUTFALL

MATERIAL	SPECIFICATION	SIZE	PLANTINGS ARE SITE SPECIFIC	NOTES:
PLANTINGS	SEE APPENDIX A, TABLE A.4	N/A		
PLANTING SOIL (2.0' TO 4.0' 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			
MULCH	SHREDDED HARDWOOD	N/A		AGED 6 MONTHS, MINIMUM, NO PINE OR WOOD CHIPS
GEOTEXTILE (CLASS "C")	ASTM D 2974	N/A		PE TYPE 1 NONWOVEN
GEOTEXTILE (1/4" WIRE MESH)		1/4" WIRE MESH		
UNDERDRAIN GRAVEL	AASHTO M-43	NO. 57 OR NO. 6 0.375" TO 0.750"		
UNDERDRAIN PIPING	F758, TYPE PS28 OR AASHTO M-278	4" TO 6" RIGID		3/8" PERF. Ø 6" O/C, 4 HOLES PER ROW; MINIMUM SCH. 40 PVC. SDR335 OR HDPE. 1/4" GALVANIZED HARDWARE CLOTH
GEOTEXTILE (BELOW IMPERV. LINER)	ASTM-D-4833 (PUNCTURE STRENGTH 125LB) ASTM-D-4832 (TENSILE STRENGTH 300 LB)			

MICRO-BIORETENTMENT PLANTING SCHEDULE

- 1 IRIS VERSICOLOR - IRIS
- 2 RUDEBECKIA SUBTOMENTOSA - SWEET CONEFLOWER
- 3 LOBELIA CARDINALIS - CARDINAL FLOWER
- 4 CALLUNA VULGARIS (HEATHER)
- 5 ACER RUBRUM - RED MAPLE

PLANTING DATA

FACILITY	PLANTING SCHEDULE		
	(1)	(2)	(3)
LOT OWNER OWNED AND MAINTAINED:			
MB-1	12	9	9
MB-2	18	13	13
MB-3	15	11	11

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

1. PLANTINGS WITHIN THE PONDING AREA OF THE FACILITY ARE TO BE OF A MEDIUM TO HIGH WATER TOLERANCE.
2. PLANTINGS ALONG THE PERIMETER (BERM) AREA OF THE FACILITY ARE TO BE OF A LOW TO MEDIUM WATER TOLERANCE.
3. AVOID PLANTINGS WITH EXCESSIVE ROOT MASS IN POND AREA OF THE FACILITY NEAR OBSERVATION PIPE AND UNDERDRAIN.
4. THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A.4-1 AND 2.
5. 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.
6. 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.
7. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONE PER MONTH AND AFTER EACH HEAVY STORM.

Drainage Area MB-1: Micro-Bioretentment (M-6)		Storage Computation:					
Total Drainage Area:	12783 s.f.	Elevation	Area	Average Area	Contour Interval	Incremental Volume	Total Volume
Impervious:	4035 s.f.	(ft)	(sf)	(sf)	(ft)	(ft ³)	(ft ³)
Rv =	0.324	323.00	272	461.5	1.00	461.5	0
ESDV =	569.4 c.f.	324.0	651				462
75% Req'd Storage:	427	Min. Area of Filter (@ 2% DA):					255.66 OK

Drainage Area MB-2: Micro-Bioretentment (M-6)		Storage Computation:					
Total Drainage Area:	15074 s.f.	Elevation	Area	Average Area	Contour Interval	Incremental Volume	Total Volume
Impervious:	5098 s.f.	(ft)	(sf)	(sf)	(ft)	(ft ³)	(ft ³)
Rv =	0.354	335.00	396	581.5	1.00	581.5	0
ESDV =	712.3 c.f.	336.0	767				582
75% Req'd Storage:	534	Min. Area of Filter (@ 2% DA):					301.48 OK

Drainage Area MB-3: Micro-Bioretentment (M-6)		Storage Computation:					
Total Drainage Area:	14423 s.f.	Elevation	Area	Average Area	Contour Interval	Incremental Volume	Total Volume
Impervious:	4427 s.f.	(ft)	(sf)	(sf)	(ft)	(ft ³)	(ft ³)
Rv =	0.326	343.00	341	494.0	1.00	494.0	0
ESDV =	627.4 c.f.	344.0	647				494
75% Req'd Storage:	471	Min. Area of Filter (@ 2% DA):					288.46 OK

ENGINEER'S CERTIFICATE
I HEREBY 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.

Brian F. Gharry 7-7-14
ENGINEER - BRIAN F. GHARRY
DATE

DEVELOPER'S CERTIFICATE
I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT 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.

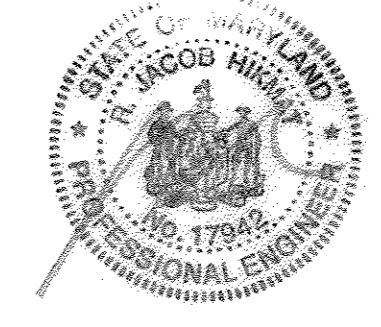
John R. Hantel 7/9/14
DEVELOPER
DATE

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

Holger Seligman 7-21-14
APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS
DATE

Karl Schulze 8-20-14
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE

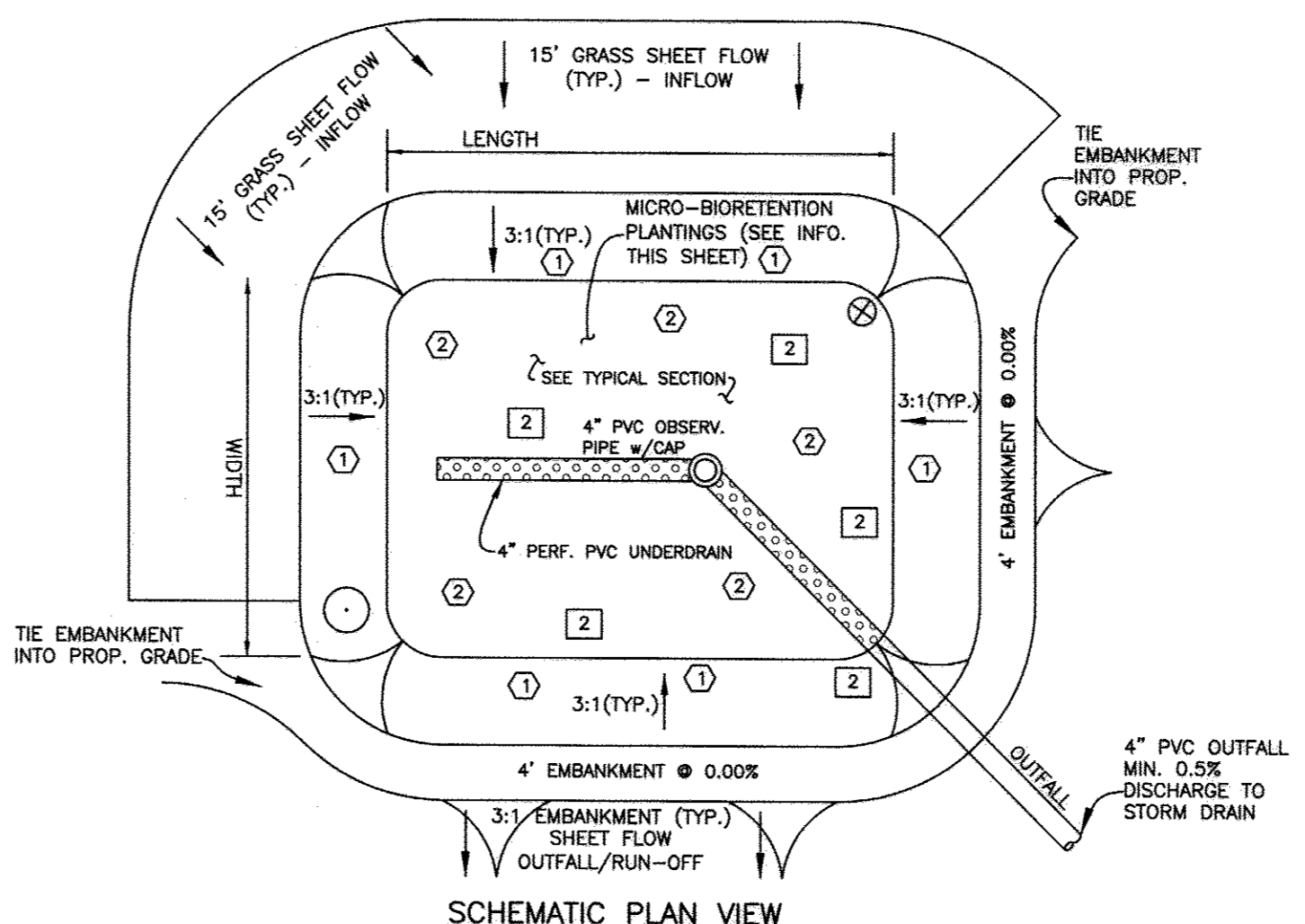
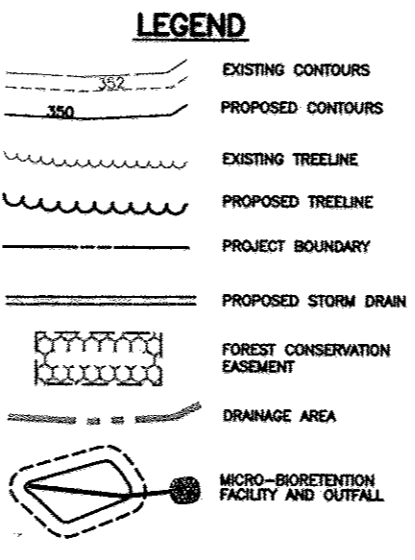
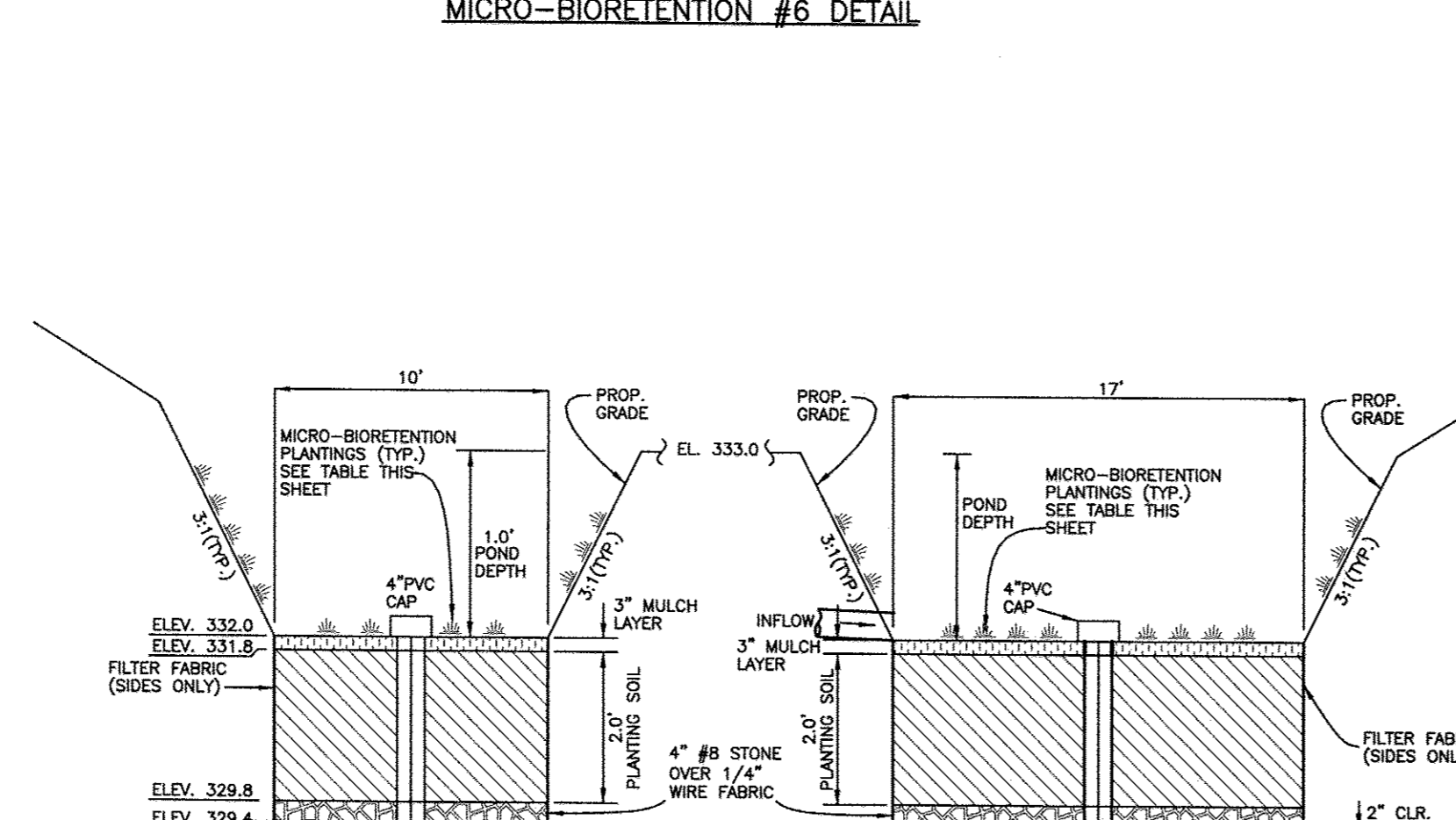
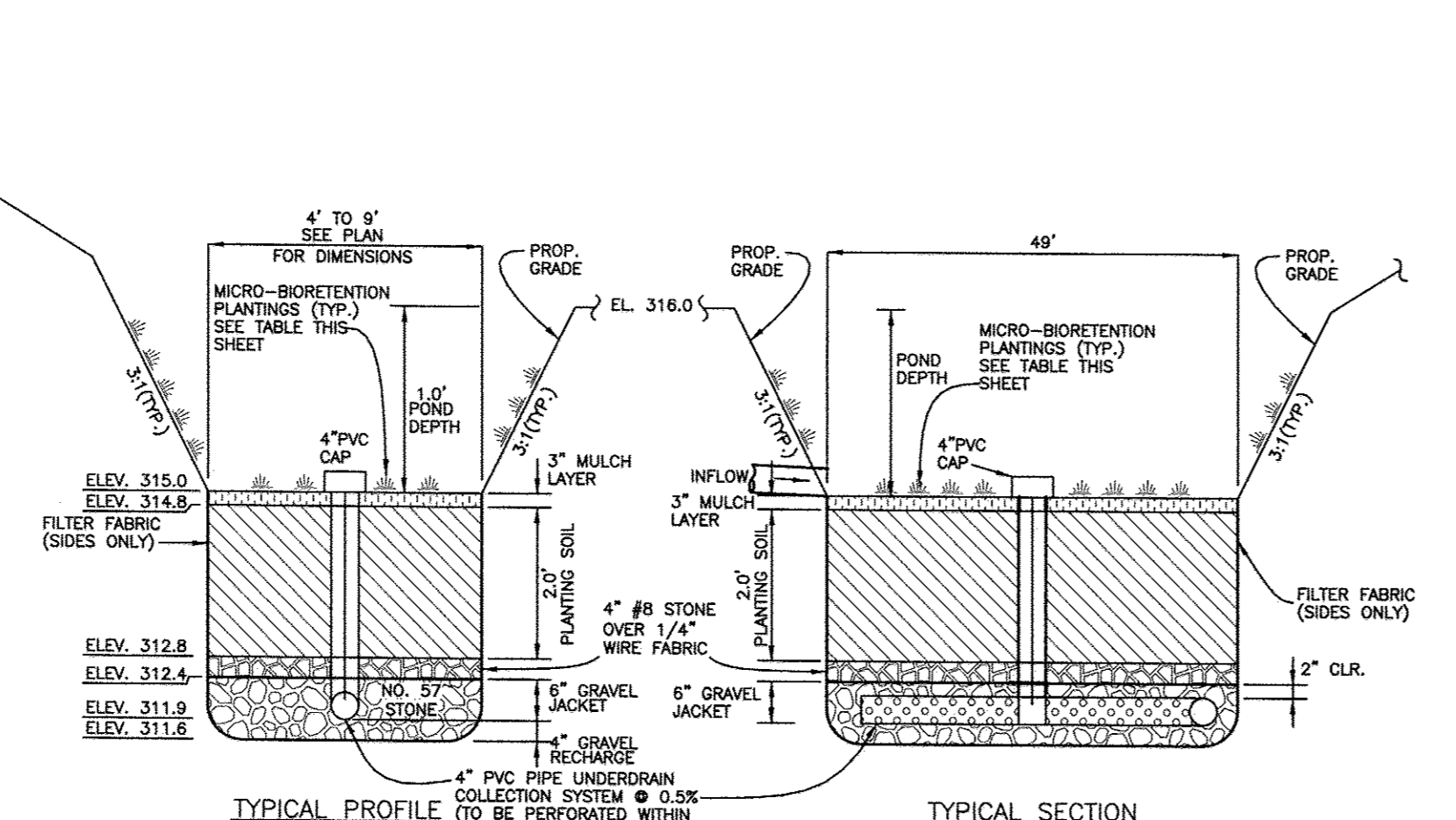
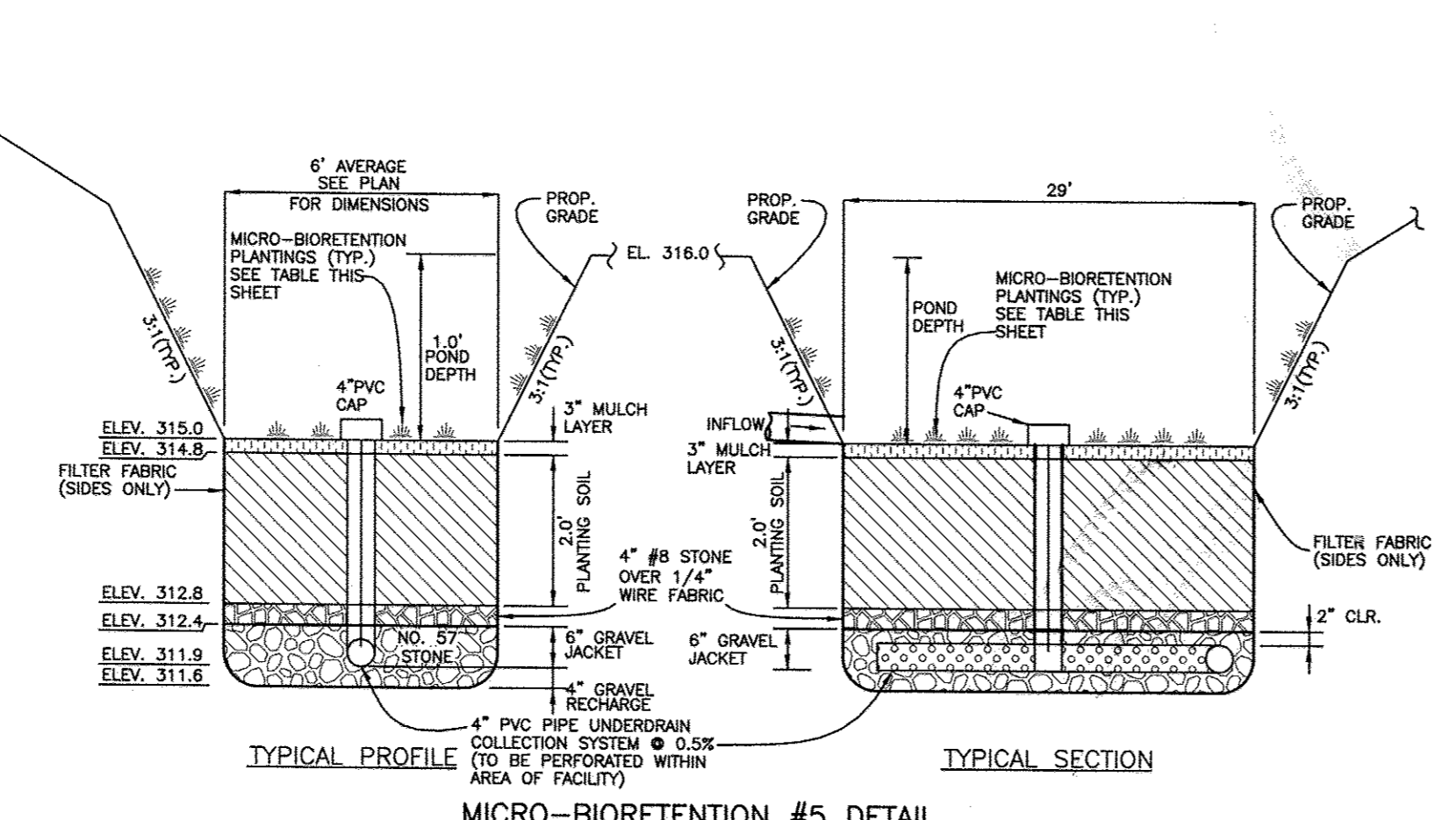
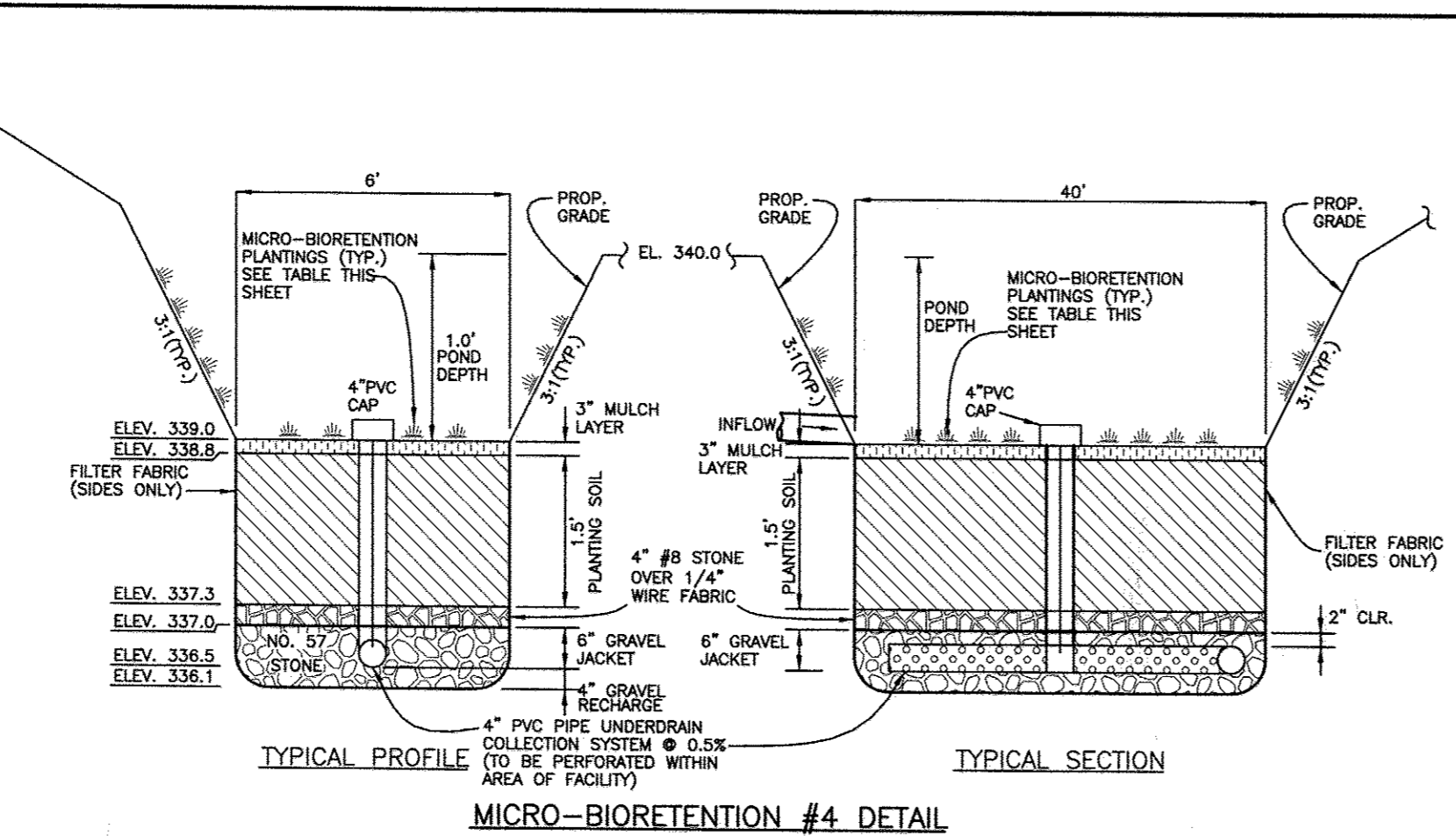
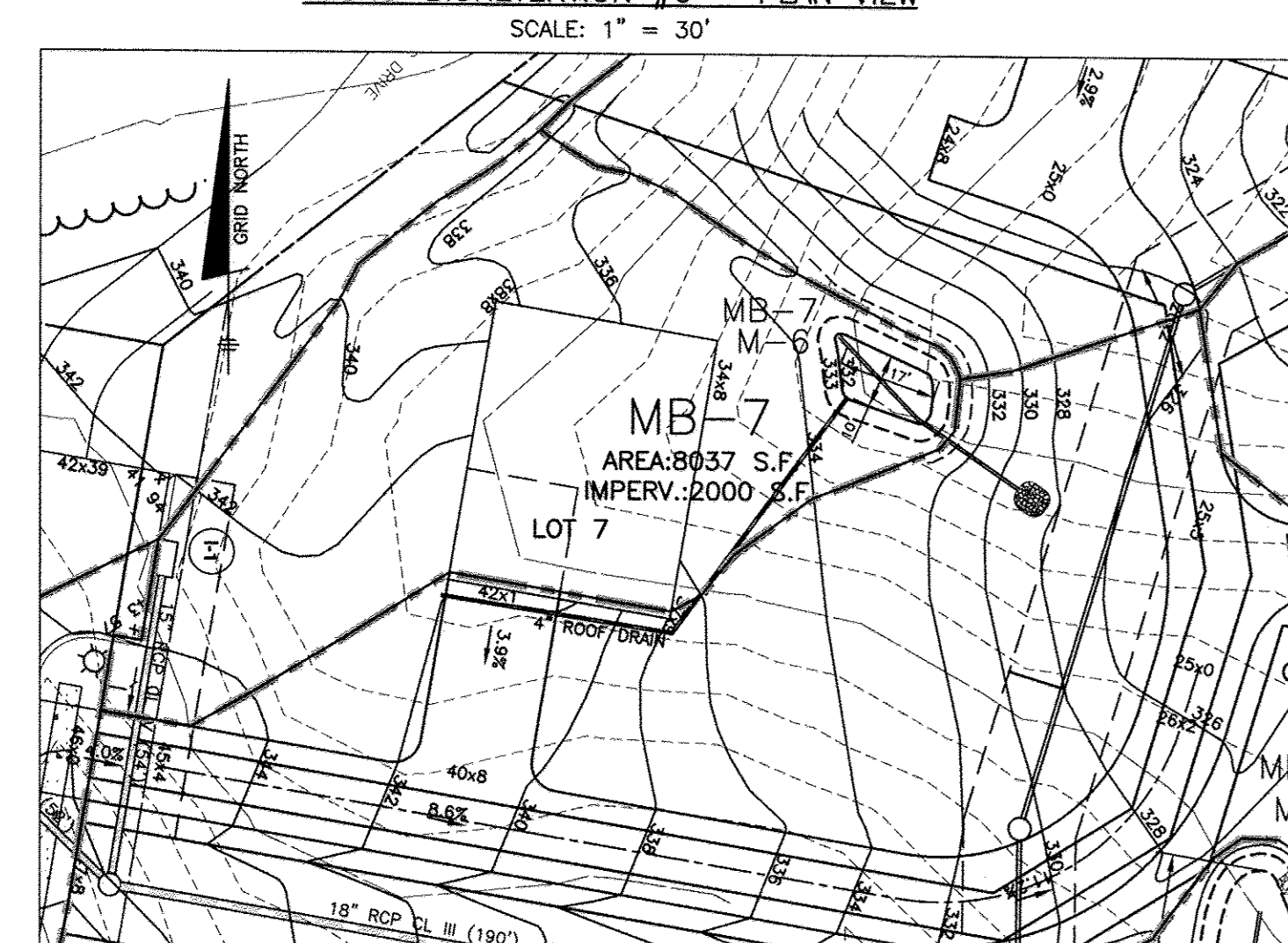
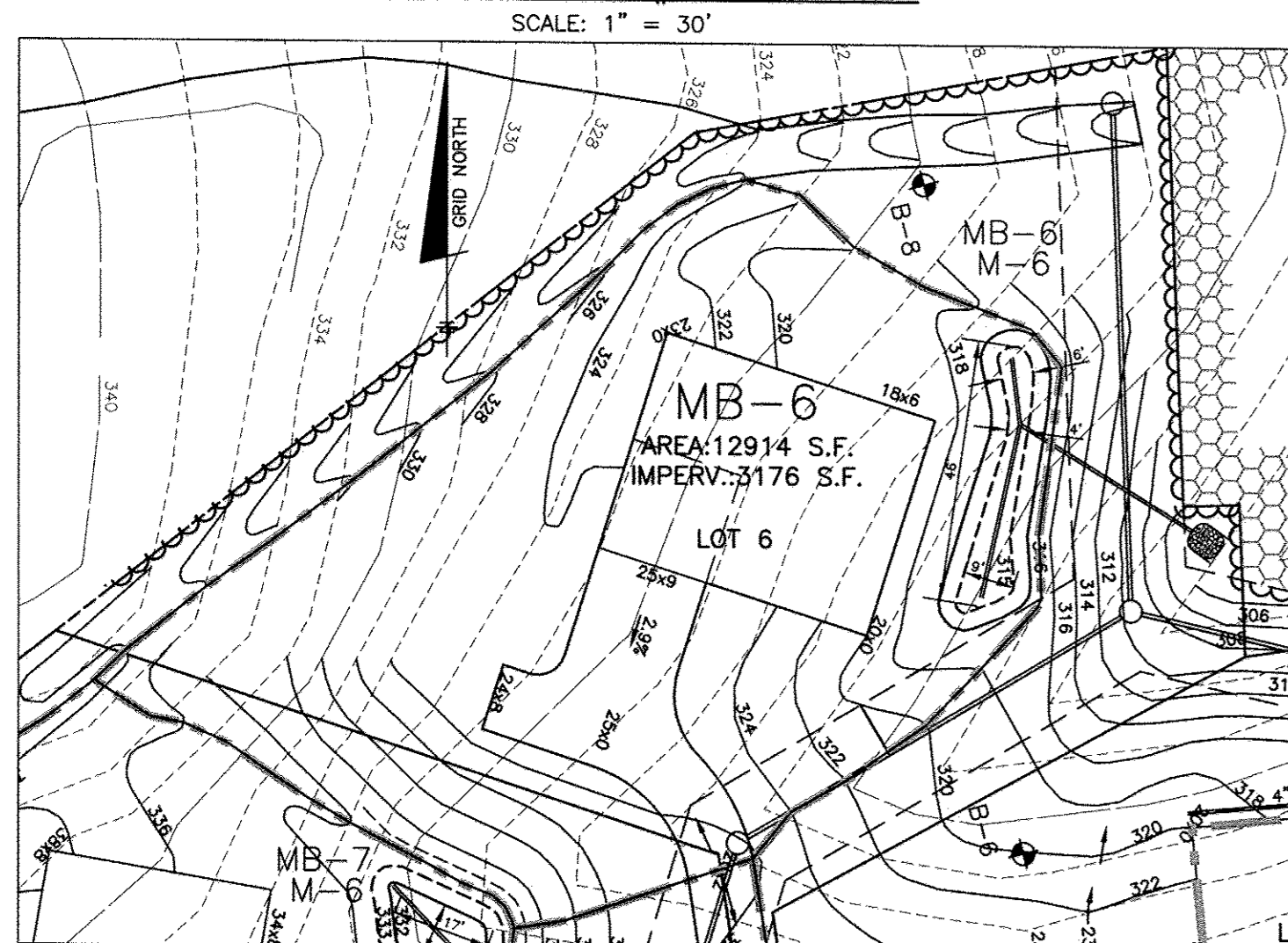
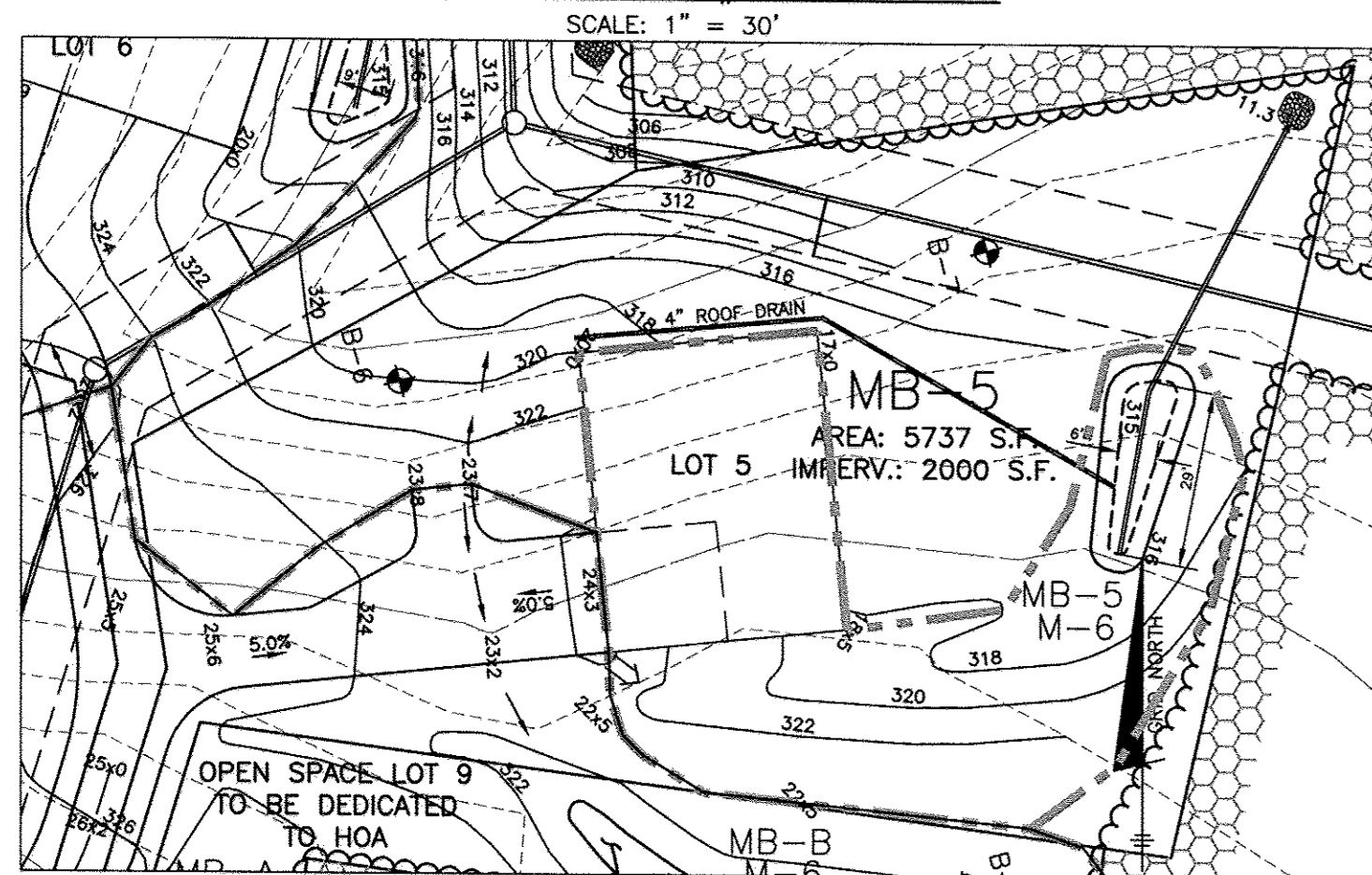
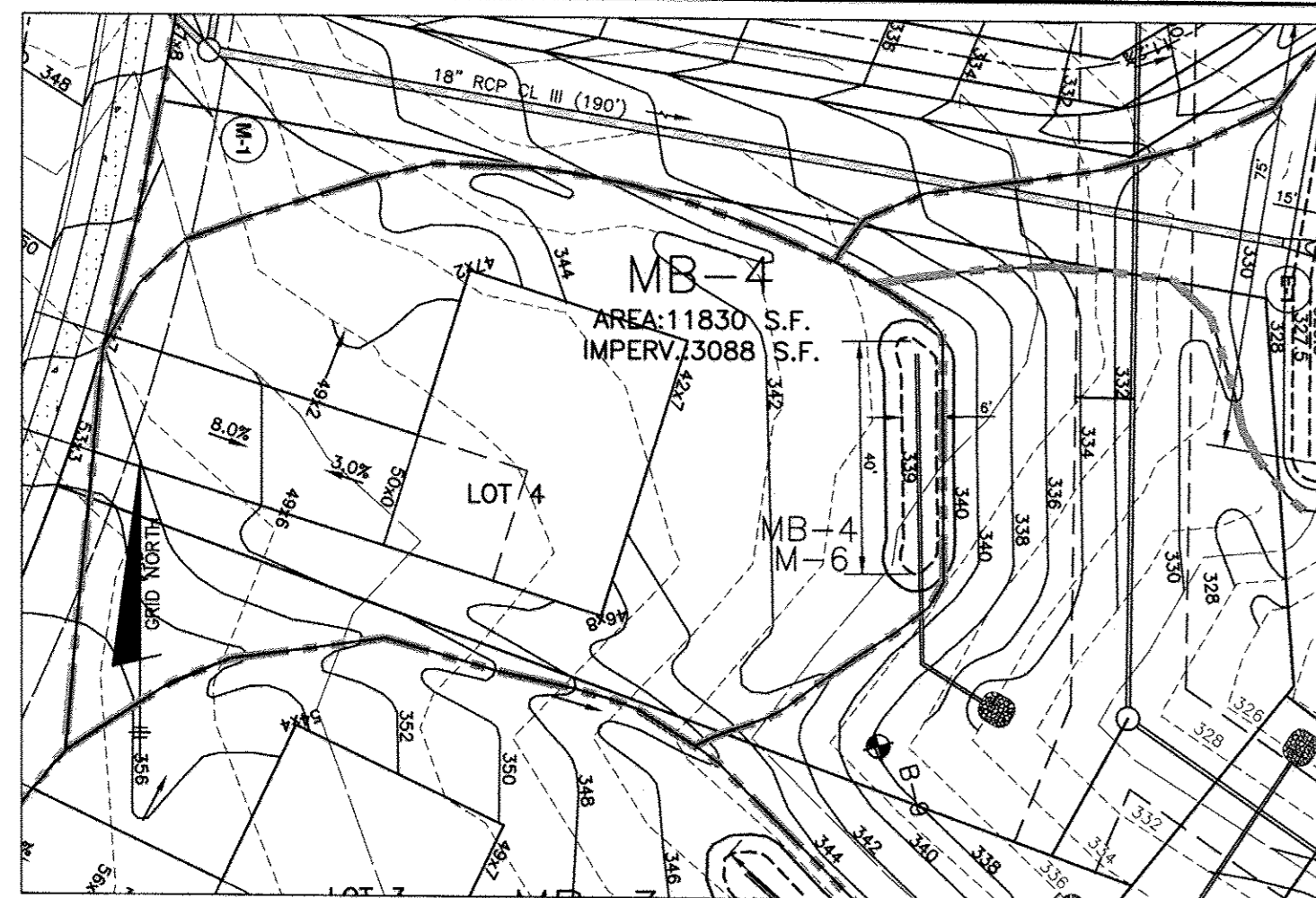
Paul E. Hantel 8-19-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE



THERE IS NO AS-BUILT INFORMATION PROVIDED ON THIS SHEET

*NOTE: TO REVISE TITLE BLOCK, GENERAL NOTES, LANDSCAPING AND SURETY, ADD ENVIRONMENTAL SITE DESIGN SWM AND FOREST CONSERVATION BANK AND CHART

1	JULY, 2014	REVISION BY SHEET REPLACEMENT * SEE NOTE THIS SHEET
NO.	DATE	REVISION
		Professional Certification. I hereby certify that these documents were prepared or approved by me and that I am a duly licensed professional engineer and member of the State of Maryland, License No. 28576.
OWNER/DEVELOPER:		REVISED FINAL ROAD CONSTRUCTION PLANS
ROBERT MOWREY 826 FROG MORTAR ROAD MIDDLE RIVER, MARYLAND 21220 443-855-3043		KINDLER OVERLOOK II LOTS 1 thru 7 AND OPEN SPACE LOTS 8 thru 10 and 0.74 ACRE FOREST CONSERVATION BANK (RETENTION)
TAX MAP: 41 GRID: 18 PARCEL: 386 ZONED: R-20 ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND		STORMWATER MANAGEMENT DETAILS
DATE: JULY, 2014 BEI PROJECT NO. 1962		
SCALE: AS SHOWN SHEET 12 OF 15		



PLANTING SCHEDULE

FACILITY	(1)	(2)	(3)
MB-4	11	8	8
MB-5	8	6	6
MB-6	12	9	9
MB-7	7	6	6

Drainage Area MB-4: Micro-Bioretentment (M-6)

Total Drainage Area:	11830 s.f.
Impervious Area:	3088 s.f.
Impervious:	26%
Rv =	0.285
ESDV =	449.4 c.f.
75% Req'd Storage:	337
Rev Required:	73 c.f.

Storage Computation:

Elevation	Area	Average Area	Contour Interval	Incremental Volume	Total Volume
(ft)	(sf)	(sf)	(ft)	(ft ³)	(ft ³)
339.0	237	384.0	1.00	384.0	0
340.0	531	236.6			384

Drainage Area MB-5: Micro-Bioretentment (M-6)

Total Drainage Area:	5737 s.f.
Impervious Area:	2000 s.f.
Impervious:	35%
Rv =	0.364
ESDV =	278.2 c.f.
75% Req'd Storage:	209
Rev Required:	45 c.f.

Storage Computation:

Elevation	Area	Average Area	Contour Interval	Incremental Volume	Total Volume
(ft)	(sf)	(sf)	(ft)	(ft ³)	(ft ³)
315.00	173	289.0	1.00	289.0	0
316.0	405	114.74			289

Drainage Area MB-6: Micro-Bioretentment (M-6)

Total Drainage Area:	12914 s.f.
Impervious Area:	3176 s.f.
Impervious:	25%
Rv =	0.271
ESDV =	467.2 c.f.
75% Req'd Storage:	350
Rev Required:	76 c.f.

Storage Computation:

Elevation	Area	Average Area	Contour Interval	Incremental Volume	Total Volume
(ft)	(sf)	(sf)	(ft)	(ft ³)	(ft ³)
315.00	260	433.5	1.00	433.5	0
316.0	607	258.28			434

Drainage Area MB-7: Micro-Bioretentment (M-6)

Total Drainage Area:	8037 s.f.
Impervious Area:	2000 s.f.
Impervious:	25%
Rv =	0.274
ESDV =	293.6 c.f.
75% Req'd Storage:	220
Rev Required:	48 c.f.

Storage Computation:

Elevation	Area	Average Area	Contour Interval	Incremental Volume	Total Volume
(ft)	(sf)	(sf)	(ft)	(ft ³)	(ft ³)
331.00	168	262.5	1.00	262.5	0
332.0	357	160.74			263

MATERIALS & SPECIFICATIONS FOR MICRO-BIORETENTION

MATERIAL	SPECIFICATION	SIZE	NOTES:
PLANTINGS	SEE APPENDIX A: TABLE A	N/A	PLANTINGS ARE SITE SPECIFIC
PLANTING SOIL (2.0' TO 4.0' 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	N/A	AGED 6 MONTHS, MINIMUM, NO PINE OR WOOD CHIPS
GEOTEXTILE (CLASS "C")		N/A	PE TYPE 1 NONWOVEN
GEOTEXTILE (1/4" WIRE MESH)		1/4" WIRE MESH	
UNDERDRAIN GRAVEL	AASHTO M-43	NO. 57 OR NO. 6 0.375" TO 0.750"	
UNDERDRAIN PIPING	F750, TYPE #528 OR AASHTO M-278	4" TO 6" RIGID OR 3" OF GRAVEL OVER PIPES; NOT NECESSARY UNDERNEATH PIPES. PIPE SHALL BE WRAPPED WITH 1/4"-INCH GALVANIZED HARDWARE CLOTH	
GEOTEXTILE (BELOW IMPERV. LINER)	ASTM-D-4833 (PUNCTURE STRENGTH 120LB) ASTM-D-4832 (TENSILE STRENGTH 300 LB)		

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

PLANTING SCHEDULE

1. PLANTINGS WITHIN THE PONDING AREA OF THE FACILITY ARE TO BE A MEDIUM TO HIGH WATER TOLERANCE

2. PLANTINGS ALONG THE PERIMETER (BERM) AREA OF THE FACILITY ARE TO BE OF A LOW TO MEDIUM WATER TOLERANCE

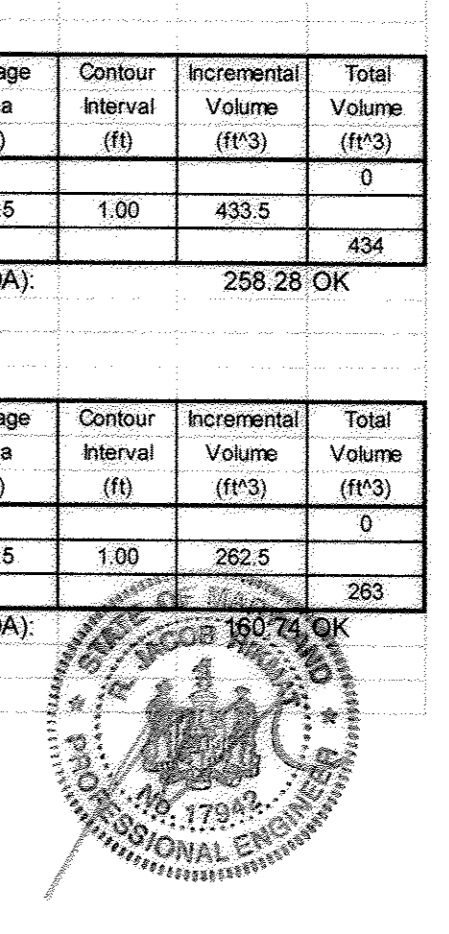
3. AVOID PLANTINGS WITH EXCESSIVE ROOT MASS IN POND AREA OF THE FACILITY NEAR OBSERVATION PIPE AND UNDERDRAIN.

4. THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING ACCEPTABLE. REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A.4.1 AND 2.

5. 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.

6. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

*NOTE: TO REVISE TITLE BLOCK, GENERAL NOTES, LANDSCAPING AND SURETY, ADD ENVIRONMENTAL SITE DESIGN SWM AND FOREST CONSERVATION BANK AND CHART



ENGINEER'S CERTIFICATE

I HEREBY 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.

ENGINEER - *Brian F. Cleary* *Alisa A. Miller* 7-7-14
DATE

DEVELOPER'S CERTIFICATE

I, THE DEVELOPER, CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT 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.

DEVELOPER *John Klinton* 7/7/14
DATE

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

John Klinton 7/8/14
HOWARD SCD DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS
Helen Searns 7-21-14
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Kevin Stalder 8-20-14
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Chris Edler 8-19-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

1 JULY, 2014 REVISION BY SHEET REPLACEMENT * SEE NOTE THIS SHEET

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
8480 BALTIMORE PIKE & SUITE 315 4 ELLICOTT CITY, MARYLAND 21143
(P) 410-465-8105 (F) 410-465-8644
WWW.BE-ENGINEERING.COM

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 28376, Registration Date 1-1-15.

Alisa A. Miller 7/14
PROFESSIONAL ENGINEER

OWNER/DEVELOPER: ROBERT MOWREY
826 FROG MORTAR ROAD
MIDDLE RIVER, MARYLAND 21220
443-955-3043

REVISED FINAL ROAD CONSTRUCTION PLANS
KINDLER OVERLOOK II
LOTS 1 thru 7 AND
OPEN SPACE LOTS 8 thru 10 and
0.74 ACRE FOREST CONSERVATION BANK (RETENTION)

TAX MAP: 41 GRID: 18 PARCEL: 386
ZONED: R-20
ELECTION DISTRICT NO. 6
HOWARD COUNTY, MARYLAND

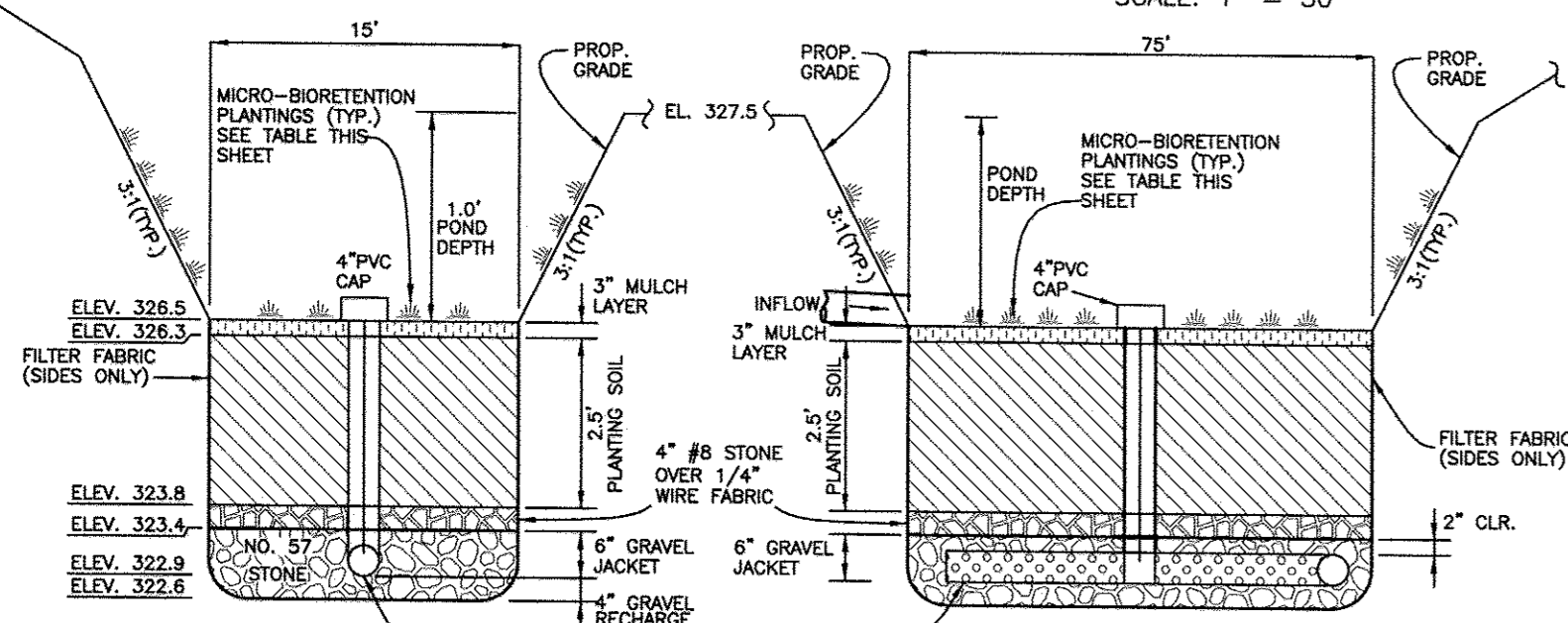
STORMWATER MANAGEMENT DETAILS

DATE: JULY, 2014 BEI PROJECT NO. 1962
SCALE: AS SHOWN SHEET 13 OF 15



MICRO-BIORETENTION A - PLAN VIEW

SCALE: 1" = 30'



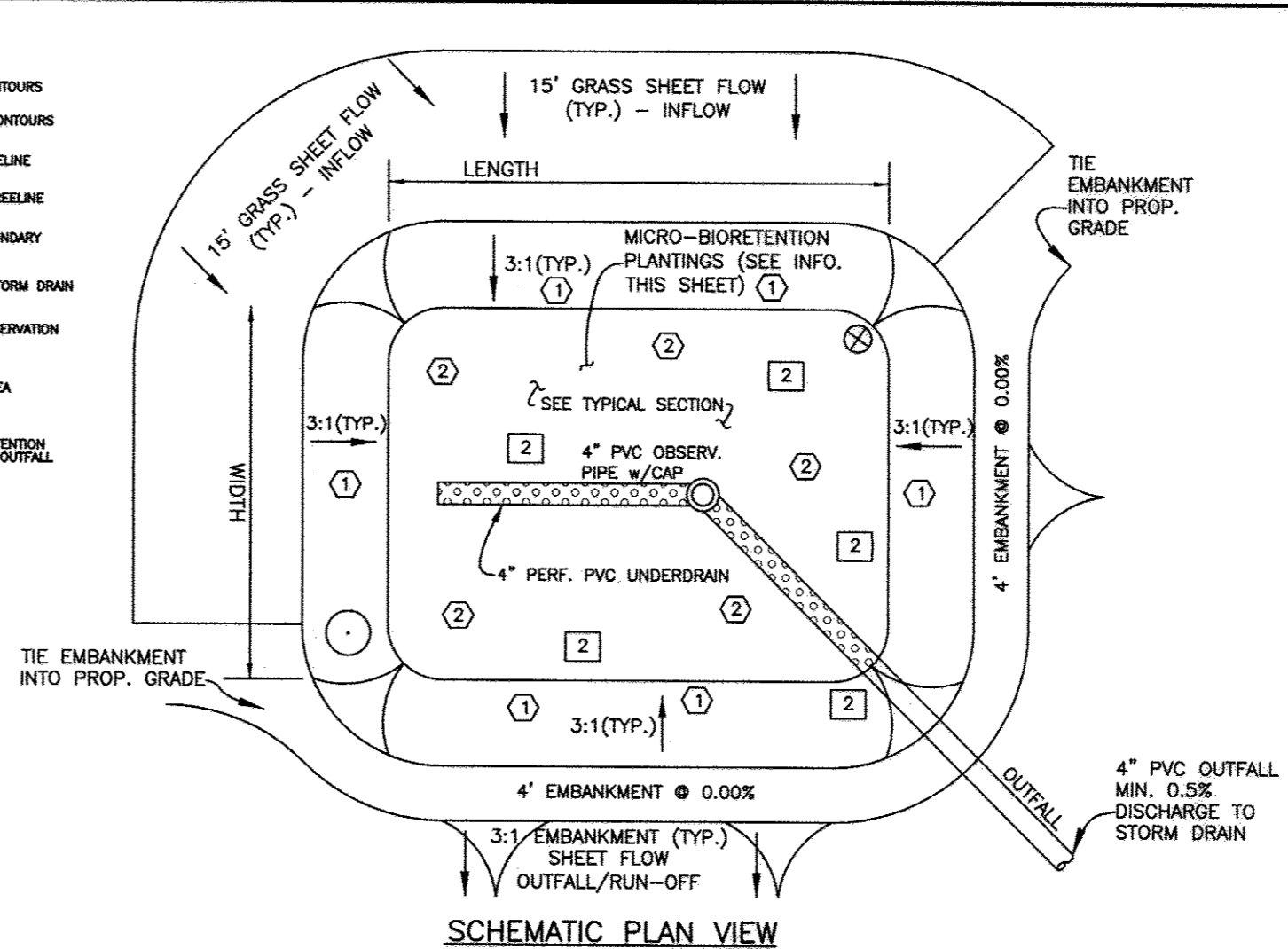
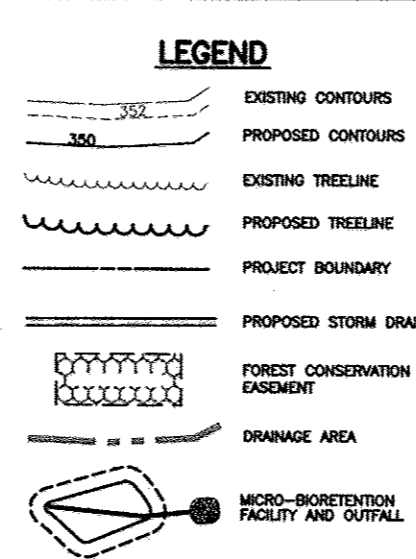
MICRO-BIORETENTION A DETAIL

NOTE: THE HOA WILL BE RESPONSIBLE FOR MAINTENANCE OF THE MULCHING, PLANTINGS, CLEANING AND MOVING OF THE FACILITY. HOWARD COUNTY SHALL BE RESPONSIBLE FOR STRUCTURAL COMPONENTS OF THE FACILITY.

JOINTLY MAINTAINED MICRO-BIORETENTION FACILITY

HOA MAINTENANCE RESPONSIBILITY:
 THE HOA SHALL BE RESPONSIBLE FOR MAINTAINING THE PLANTINGS, MULCH, UNDERDRAINS, EMBANKMENT AND RIPRAP OUT FALL.

COUNTY MAINTENANCE RESPONSIBILITY:
 THE COUNTY SHALL BE RESPONSIBLE FOR MAINTAINING STORM DRAIN INFLOW, END SECTION AND RIPRAP.



SCHEMATIC PLAN VIEW

PLANTING SCHEDULE			
FACILITY	(1)	(2)	(3)
MB-A	42	32	32
MB-B	25	19	19

Drainage Area MB-A:		Storage Computation:						
Micro-Bioretentation (M-6)		Elevation	Area	Average	Contour	Incremental	Total	
Total Drainage Area:	39690 s.f.	(ft)	(sf)	(sf)	(ft)	(ft ³)	(ft ³)	(ft ³)
Impervious Area:	11114 s.f.	326.50	953					0
Impervious:	28%							
Rv =	0.302			1213.5	1.00	1213.5		
ESDV =	1598.3 c.f.	327.50	1474					1214
75% Req'd Storage:	1199	Min. Area of Filter (@ 2% DA):		793.8 OK				

Drainage Area MB-B:		Storage Computation:						
Micro-Bioretentation (M-6)		Elevation	Area	Average	Contour	Incremental	Total	
Total Drainage Area:	25791 s.f.	(ft)	(sf)	(sf)	(ft)	(ft ³)	(ft ³)	(ft ³)
Impervious Area:	6448 s.f.	318.50	558					0
Impervious:	25%							
Rv =	0.275			785.5	1.00	785.5		
ESDV =	945.7 c.f.	319.50	1013					786
75% Req'd Storage:	709	Min. Area of Filter (@ 2% DA):		515.82 OK				

MATERIALS & SPECIFICATIONS FOR MICRO-BIORETENTION			
MATERIAL	SPECIFICATION	SIZE	NOTES:
PLANTINGS	SEE APPENDIX A, TABLE A.4	N/A	PLANTINGS ARE SITE SPECIFIC
PLANTING SOIL (2.0' TO 4.0' DEEP)	LOAMY SAND 60-85% 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		
MULCH	SHREDDED HARDWOOD	N/A	AGED 6 MONTHS, MINIMUM, NO PINE OR WOOD CHIPS
GEOTEXTILE (CLASS 'C')		N/A	PE TYPE 1 NONWOVEN
GEOTEXTILE (1/4" WIRE MESH)		1/4" WIRE MESH	1/4" WIRE MESH
UNDERDRAIN GRAVEL	AASHTO M-43	NO. 57 OR NO. 5	
UNDERDRAIN PIPING	F758, TYPE PS28 OR AASHTO M-278	4" TO 6" RIGID SCH.40 PVC, SDR35 OR HDPE	3/8" PERF. 6" O.C. 4 HOLES PER ROW; MINIMUM OF 3" OF GRAVEL OVER PIPES; NOT NECESSARY UNDERNEATH PIPES; PIPE SHALL BE WRAPPED WITH 1/4"-INCH GALVANIZED HARDWARE CLOTH
GEOTEXTILE (BELOW IMPERV. LINER)	ASTM-D-4833 (PUNCTURE STRENGTH 125LB) ASTM-D-4832 (TENSILE STRENGTH 300 LB)		

MICRO-BIORETENTION PLANTING SCHEDULE

- 1 IRIS VERSICOLOR - IRIS
- 2 RUDEBECKIA SUBTUMTOSA - SWEET CONEFLOWER
- 3 LOBELIA CARDINALIS - CARDINAL FLOWER
- 4 CALLUNA VULGARIS (HEATHER)
- 5 ACER RUBRUM - RED MAPLE

PLANTING SCHEDULE

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

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

- 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 ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A.4.1 AND 2.
- THE HOA 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 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 COUNTY SHALL BE RESPONSIBLE FOR MAINTAINING STORM DRAIN INFLOW, END SECTION AND RIPRAP.

AS-BUILT CERTIFICATION

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.

ENGINEER - *[Signature]* PE NO. _____ DATE _____

CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ON-SITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ON-SITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY A COMMONLY ACCEPTED ENGINEERING STANDARD. CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

ENGINEER'S CERTIFICATE
 I HEREBY 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.

ENGINEER - *[Signature]* PE NO. *20876* DATE *11-17-14*

DEVELOPER'S CERTIFICATE
 I HAVE CERTIFIED THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT 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 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.

DEVELOPER - *[Signature]* DATE *11/17/14*

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
 HOWARD SCD
[Signature] DATE *11/25/14*

APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] DATE *12/10/2014*

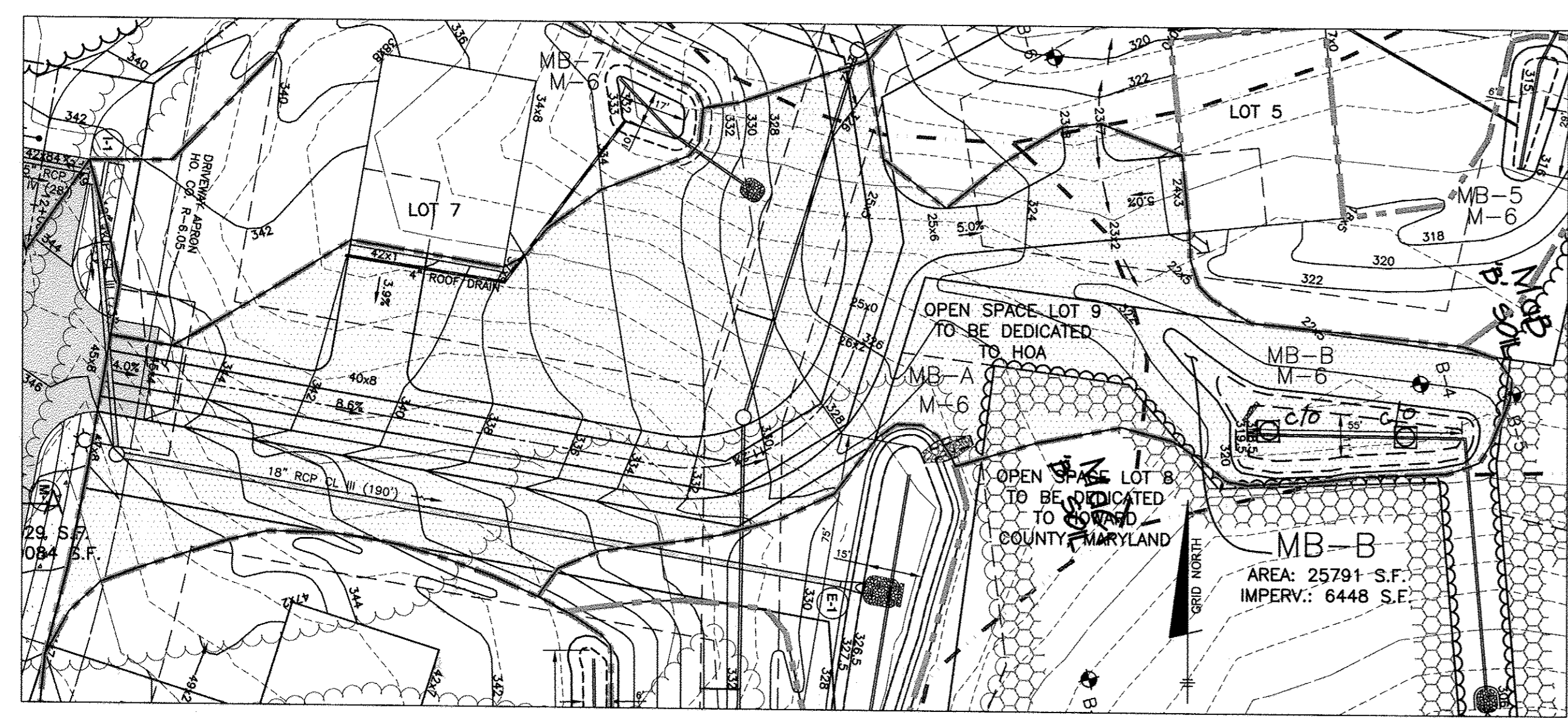
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] DATE *12-25-14*

CHIEF, DIVISION OF LAND DEVELOPMENT

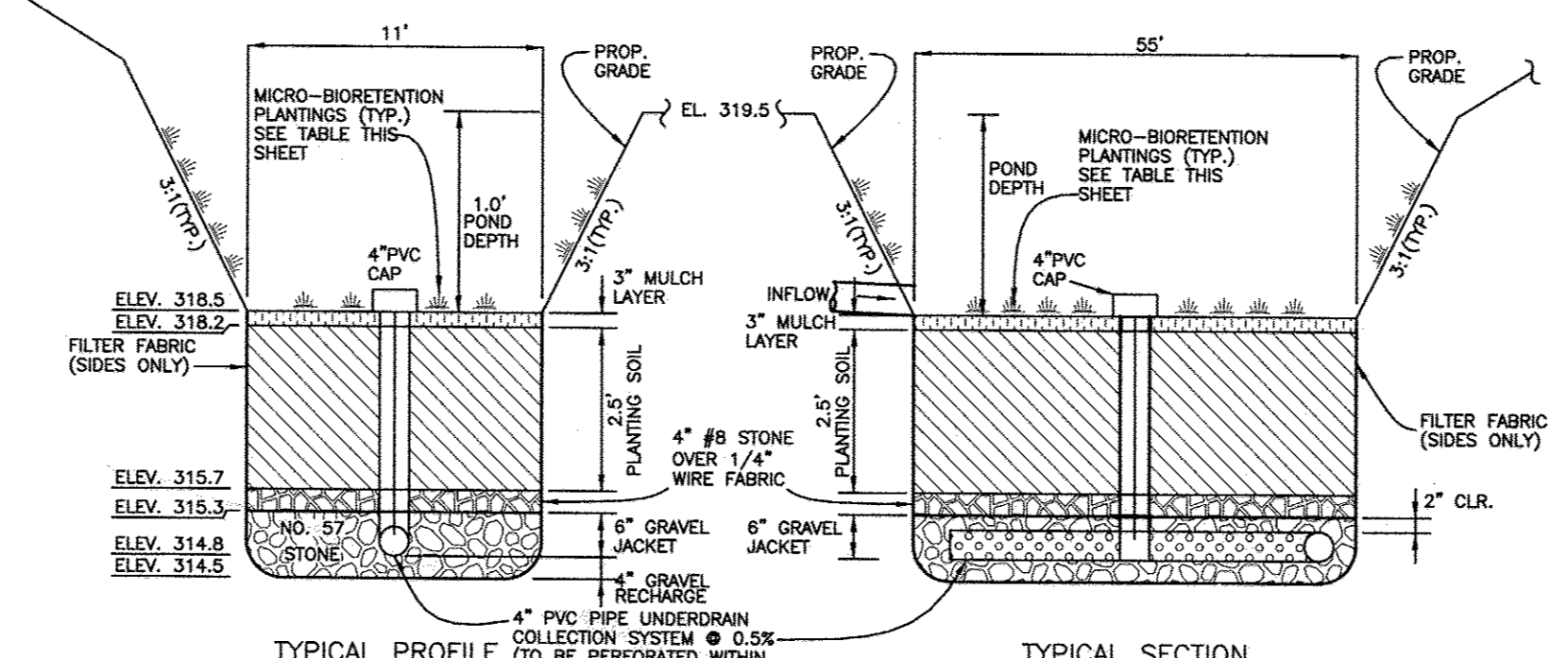
[Signature] DATE *12-15-14*

CHIEF, DEVELOPMENT ENGINEERING DIVISION



MICRO-BIORETENTION B - PLAN VIEW

SCALE: 1" = 30'



MICRO-BIORETENTION B DETAIL

*NOTE: TO REVISE TITLE BLOCK, GENERAL NOTES, LANDSCAPING AND SURETY, ADD ENVIRONMENTAL SITE DESIGN SWM AND FOREST CONSERVATION BANK AND CHART



I hereby certify that the facility shown on this plan was constructed as shown on the "As-Built" plans and meets with the approved plans and specifications.

NO.	DATE	REVISION
3	JAN 2018	ADD AS-BUILT DATA
2	NOV, 2014	REVISION BY SHEET REPLACEMENT TO REVISE TEE-TURNAROUND
1	JULY, 2014	REVISION BY SHEET REPLACEMENT * SEE NOTE THIS SHEET

BENCHMARK ENGINEERING, INC.
 ENGINEERS & LAND SURVEYORS & DESIGNERS
 8480 BALTIMORE NATIONAL PIKE SUITE 315 • ELICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6644
 WWW.BEI-CIVILENGINEERING.COM

OWNER/DEVELOPER:		REVISED FINAL ROAD CONSTRUCTION PLANS	
ROBERT MOWREY 825 FROG MORTYAR ROAD MIDDLE RIVER, MARYLAND 21220 443-955-3043		KINDLER OVERLOOK II LOTS 1 thru 7 AND OPEN SPACE LOTS 8 thru 10 and 0.74 ACRE FOREST CONSERVATION BANK (RETENTION)	
TAX MAP: 41 GRID: 18 PARCEL: 386 ZONED: R-20 ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND		STORMWATER MANAGEMENT DETAILS	
DATE: NOVEMBER, 2014		BEI PROJECT NO. 1962	
SCALE: AS SHOWN		SHEET 14 OF 15	

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION

Project Name: Kindler Overlook II SWM Boring No. B-1
 Location: Howard County, Maryland Job # 08514A

Date: 10/13/08 Hammer Vt. 140 Hole Diameter 6" Foreman L. Smith
 Surf. Elev. 5.07 Ft. Hammer Drop 30 In. Rock Core Diameter Inspector
 Date Started 10/13/08 Pipe Size 2 In. Boring Method HSA Date Completed 10/13/08

Elevation/Depth	SOIL STRATIGRAPHY SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	RM	SPT Blows	SPT Blows/Foot	
							N	Curve
0.0		Topsoil-0"				2-1-1	2	10
0.5		medium dense, micaceous silty SAND (SM)	No groundwater encountered while drilling.			3-4-4	8	10
1.0						3-3-4	7	10
1.5						3-5-6	11	10

Bottom of Boring at 9.0'

Bottom of Boring at 9.0'

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION

Project Name: Kindler Overlook II SWM Boring No. B-2
 Location: Howard County, Maryland Job # 08514A

Date: 10/13/08 Hammer Vt. 140 Hole Diameter 6" Foreman L. Smith
 Surf. Elev. 5.11 Ft. Hammer Drop 30 In. Rock Core Diameter Inspector
 Date Started 10/13/08 Pipe Size 2 In. Boring Method HSA Date Completed 10/13/08

Elevation/Depth	SOIL STRATIGRAPHY SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	RM	SPT Blows	SPT Blows/Foot	
							N	Curve
0.0		Topsoil-0"				1-2-2	4	10
0.5		loose to medium dense, micaceous silty SAND, no trace rock fragments (SM)	No groundwater encountered while drilling.			7-9-7	16	10
1.0						7-6-7	13	10
1.5						3-5-6	14	10
2.0						9-11-9-15	20	10

Bottom of Boring at 12.0'

Bottom of Boring at 12.0'

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION

Project Name: Kindler Overlook II SWM Boring No. B-3
 Location: Howard County, Maryland Job # 08514A

Date: 10/13/08 Hammer Vt. 140 Hole Diameter 6" Foreman L. Smith
 Surf. Elev. 5.16 Ft. Hammer Drop 30 In. Rock Core Diameter Inspector
 Date Started 10/13/08 Pipe Size 2 In. Boring Method HSA Date Completed 10/13/08

Elevation/Depth	SOIL STRATIGRAPHY SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	RM	SPT Blows	SPT Blows/Foot	
							N	Curve
0.0		Topsoil-0"				1-2-2	4	10
0.5		Reddish brown, moist, loam to medium dense, micaceous silty SAND, no trace rock fragments (SM)	No groundwater encountered while drilling.			9-9-11	20	10
1.0						8-9-11	20	10
1.5						5-5-6	10	10
2.0						15-28-51*	100	100

Bottom of Boring at 16.0'

Bottom of Boring at 16.0'

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION

Project Name: Kindler Overlook II SWM Boring No. B-4
 Location: Howard County, Maryland Job # 08514A

Date: 10/13/08 Hammer Vt. 140 Hole Diameter 6" Foreman L. Smith
 Surf. Elev. 5.24 Ft. Hammer Drop 30 In. Rock Core Diameter Inspector
 Date Started 10/13/08 Pipe Size 2 In. Boring Method HSA Date Completed 10/13/08

Elevation/Depth	SOIL STRATIGRAPHY SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	RM	SPT Blows	SPT Blows/Foot	
							N	Curve
0.0		Topsoil-0"				1-2-3	5	10
0.5		Reddish brown, moist, loam to medium dense, micaceous silty SAND, silty clay (ML)	No groundwater encountered while drilling.			6-5-7	12	10
1.0						7-5-6	14	10
1.5						4-5-6	14	10
2.0						7-6-9	15	10
2.5						6-12-15-16	25	10

Bottom of Boring at 14.0'

Bottom of Boring at 14.0'

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION

Project Name: Kindler Overlook II SWM Boring No. B-5
 Location: Howard County, Maryland Job # 08514A

Date: 10/13/08 Hammer Vt. 140 Hole Diameter 6" Foreman L. Smith
 Surf. Elev. 5.25 Ft. Hammer Drop 30 In. Rock Core Diameter Inspector
 Date Started 10/13/08 Pipe Size 2 In. Boring Method HSA Date Completed 10/13/08

Elevation/Depth	SOIL STRATIGRAPHY SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	RM	SPT Blows	SPT Blows/Foot	
							N	Curve
0.0		Topsoil-0"				1-2-1	3	10
0.5		Reddish brown, moist, loam to medium dense, micaceous silty SAND (SM)	No groundwater encountered while drilling.			4-5-7	12	10
1.0						4-4-4	8	10
1.5						2-4-5	6	10
2.0						4-5-6	11	10
2.5						6-7-6	15	10

Bottom of Boring at 13.0'

Bottom of Boring at 13.0'

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION

Project Name: Kindler Overlook II SWM Boring No. B-6
 Location: Howard County, Maryland Job # 08514A

Date: 10/13/08 Hammer Vt. 140 Hole Diameter 6" Foreman L. Smith
 Surf. Elev. 5.12 Ft. Hammer Drop 30 In. Rock Core Diameter Inspector
 Date Started 10/13/08 Pipe Size 2 In. Boring Method HSA Date Completed 10/13/08

Elevation/Depth	SOIL STRATIGRAPHY SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	RM	SPT Blows	SPT Blows/Foot	
							N	Curve
0.0		Topsoil-0"				1-2-2	4	10
0.5		Brown, moist, very loose to medium dense, micaceous silty SAND, some rock fragments (SM)	No groundwater encountered while drilling.			4-5-8	11	10
1.0						4-5-8	11	10
1.5						5-10*	100	100

Bottom of Boring at 8.0'

Bottom of Boring at 8.0'

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION

Project Name: Kindler Overlook II SWM Boring No. B-7
 Location: Howard County, Maryland Job # 08514A

Date: 10/13/08 Hammer Vt. 140 Hole Diameter 6" Foreman L. Smith
 Surf. Elev. 5.15 Ft. Hammer Drop 30 In. Rock Core Diameter Inspector
 Date Started 10/13/08 Pipe Size 2 In. Boring Method HSA Date Completed 10/13/08

Elevation/Depth	SOIL STRATIGRAPHY SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	RM	SPT Blows	SPT Blows/Foot	
							N	Curve
0.0		Topsoil-4"				1-0-1	1	10
0.5		Brown, moist, very loose to medium dense, micaceous silty SAND (SM)	No groundwater encountered while drilling.			3-3-4	7	10
1.0						3-2-4	6	10
1.5						3-4-5	9	10

Bottom of Boring at 9.0'

Bottom of Boring at 9.0'

HILLIS - CARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION

Project Name: Kindler Overlook II SWM Boring No. B-8
 Location: Howard County, Maryland Job # 08514A

Date: 10/13/08 Hammer Vt. 140 Hole Diameter 6" Foreman L. Smith
 Surf. Elev. 5.19 Ft. Hammer Drop 30 In. Rock Core Diameter Inspector
 Date Started 10/13/08 Pipe Size 2 In. Boring Method HSA Date Completed 10/13/08

Elevation/Depth	SOIL STRATIGRAPHY SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	RM	SPT Blows	SPT Blows/Foot	
							N	Curve
0.0		Topsoil-4"				1-1-2	3	10
0.5		Brown, moist, very loose to medium dense, micaceous silty SAND (SM)	No groundwater encountered while drilling.			5-5-5	10	10
1.0						7-7-6	15	10
1.5						3-4-5	9	10

Bottom of Boring at 9.0'

Bottom of Boring at 9.0'

BORING LOG GEOLAB, INC. BORING LOG

Client: Kindler Overlook II, LLC Date: 3/18/2014
 Project: Kindler Overlook II Project No. 114-025
 Boring No. B-9 (1 of 1) Log No. 6 (Rev. 337.0 +/-)
 Date: 3/13/2014 Location: See Boring Location Plan

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	Remarks
329.8	0.0	Forest litter, root (organic) matter and organic soil	Boring dry during drilling and at completion.
329.1	0.7	Tan-brown fine to medium SAND with some silt and some gravel, moist (SM, USDA-Loam)	
324.7	5.1	Tan to Brown micaceous fine to medium SAND with little gravel, moist (SP, USDA-SAND)	
322.7	7.1	End of Boring - Auger Refusal	

BORING LOG GEOLAB, INC. BORING LOG

Client: Kindler Overlook II, LLC Date: 3/18/2014
 Project: Kindler Overlook II Project No. 114-025
 Boring No. B-10 (1 of 1) Log No. 6 (Rev. 329.0 +/-)
 Date: 3/13/2014 Location: See Boring Location Plan

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	Remarks
329.8	0.0	Forest litter, root (organic) matter and organic soil	Boring dry during drilling and at completion.
329.1	0.7	Tan-brown fine to medium SAND with some silt and some gravel, moist (SM, USDA-Loam)	
324.7	5.1	Tan to Brown micaceous fine to medium SAND with little gravel, moist (SP, USDA-SAND)	
322.7	7.1	End of Boring	

BORING LOG GEOLAB, INC. BORING LOG

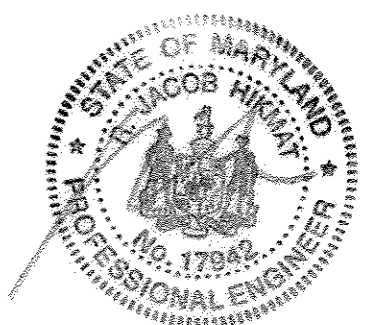
Client: Kindler Overlook II, LLC Date: 3/18/2014
 Project: Kindler Overlook II Project No. 114-025
 Boring No. B-11 (1 of 1) Log No. 6 (Rev. 320.0 +/-)
 Date: 3/13/2014 Location: See Boring Location Plan

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	Remarks
329.8	0.0	Forest litter, root (organic) matter and organic soil	Boring dry during drilling and at completion.
329.1	0.7	Tan to Brown micaceous fine to medium SAND with little gravel, moist (SP, USDA-SAND)	
322.7	7.1	End of Boring	

BORING LOG GEOLAB, INC. BORING LOG

Client: Kindler Overlook II, LLC Date: 3/18/2014
 Project: Kindler Overlook II Project No. 114-025
 Boring No. B-12 (1 of 1) Log No. 6 (Rev. 320.0 +/-)
 Date: 3/13/2014 Location: See Boring Location Plan

Elevation	Depth	DESCRIPTION OF MATERIALS (Classification)	Remarks
329.8	0.0	Forest litter, root (organic) matter and organic soil	Boring dry during drilling and at completion.
329.1	0.7	Tan to Brown micaceous fine to medium SAND with little gravel, moist (SP, USDA-SAND)	
322.7	7.1	End of Boring	



THERE IS NO AS-BUILT INFORMATION PROVIDED ON THIS SHEET

*NOTE: TO REVISE TITLE BLOCK, GENERAL NOTES, LANDSCAPING AND SURETY, ADD ENVIRONMENTAL SITE DESIGN SWM AND FOREST CONSERVATION BANK AND CHART

1 JULY, 2014 REVISION BY SHEET REPLACEMENT * SEE NOTE THIS SHEET	
NO.	DATE
REVISION	
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. 17842, dated 1-1-15.	
 8480 BALTIMORE NATIONAL PIKE & SUITE 315 A ELIJAH CITY, MARYLAND 21043 (P) 410-465-8100 (F) 410-465-6644 WWW.BE-CIVILENGINEERING.COM	
OWNER/DEVELOPER:	REVISED FINAL ROAD CONSTRUCTION PLANS
ROBERT MOWREY 826 FROG MORTAR ROAD MIDDLE RIVER, MARYLAND 21220 443-955-3043	KINDLER OVERLOOK II LOTS 1 thru 7 AND OPEN SPACE LOTS 8 thru 10 and 0.74 ACRE FOREST CONSERVATION BANK (RETENTION)
TAX MAP: 41 GRID: 18 PARCEL: 386 ZONED: R-20 ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND	SOIL BORINGS
DATE: JULY, 2014	BEI PROJECT NO. 1962
SCALE: AS SHOWN	SHEET 15 OF 15

APPROVED: DEPARTMENT OF PUBLIC WORKS
Halger Serrano 7.27.14
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
K. A. DeLoach 8-20-14
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Ch. E. Smith 8.19.14
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE