

MPEA SITE IMPROVEMENTS

HOWARD COUNTY, MARYLAND

CAPITAL PROJECT NO. N-3965

SITE DEVELOPMENT PLAN SDP-14-055

GENERAL NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY SPECIFICATIONS AND DETAILS FOR CONSTRUCTION PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- THE SUBJECT PROPERTY IS ZONED NT AND R20 PER THE COMPREHENSIVE ZONING PLAN, EFFECTIVE OCTOBER 6, 2013.
- NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING OR NEW STRUCTURES SHALL BE PERMITTED WITHIN WETLANDS, STREAMS, WETLAND OR STREAM BUFFERS, 100-YEAR FLOODPLAIN, OR FOREST CONSERVATION EASEMENTS UNLESS APPROVED BY THE DEPARTMENT OF PLANNING AND ZONING.
- WATER IS PROVIDED BY CONTRACT 34-4170-D.
- SEWER IS PROVIDED BY CONTRACT 34-4345.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM: HORIZONTAL NAD'83/91 VERTICAL NAVD'88.
- THERE ARE NO FLOODPLAINS ON THE SITE AS SHOWN ON NFIP FIRM PANEL 240044 0033B, DATE 12/4/1986.
- THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH ONE FOOT CONTOUR INTERVALS PREPARED BY KCI DATED 2007. ADDITIONAL UTILITY INFORMATION WAS PROVIDED BY HOWARD COUNTY RECORDS AND MAY NOT REFLECT CURRENT CONDITIONS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY CURRENT TOPOGRAPHIC AND UTILITY INFORMATION.
- APPROXIMATE LOCATION AND INVERTS OF EXISTING UTILITIES ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN AN UNINTERRUPTED SERVICE. THE CONTRACTOR IS ULTIMATELY RESPONSIBLE FOR THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES BY TEST PIT OR OTHER MEANS OF INVESTIGATION APPROVED BY THE OWNER WELL IN ADVANCE OF CONSTRUCTION. ANY DAMAGE BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
- TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
- ENVIRONMENTAL SITE DESIGN (ESD) IS INCORPORATED INTO THE DEVELOPMENT AT THE MAXIMUM EXTENT POSSIBLE. ESD FACILITIES INCLUDE AN M-6 MICRO-BIORETENTION AND A-2 PERVIOUS CONCRETE. NON-STRUCTURAL PRACTICES INCLUDE N-1 DISCONNECTION OF ROOFTOP RUNOFF. HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS WILL BE RESPONSIBLE FOR MAINTENANCE OF ALL STORMWATER MANAGEMENT FACILITIES.
- A PERENNIAL STREAM AND 100-FOOT BUFFER ARE LOCATED TO THE SOUTH OF THE PROJECT. THE PROJECT WILL DISTURB THE 100-FOOT BUFFER AND WILL THEREFORE REQUIRE A WAIVER.
- WAIVER PETITION WP-14-052 HAS BEEN APPROVED ON NOVEMBER 22, 2013. REQUIREMENTS OF SECTION 16.116(A)(2)(ii) HAVE BEEN WAIVED PENDING THESE CONDITIONS:
 - THE APPLICANT SHALL ACQUIRE ALL REQUIRED STATE AND/OR CORPS OF ENGINEERS PERMITS FOR DISTURBANCE WITHIN THE 100-FOOT STREAM BUFFER.
 - FOREST CONSERVATION FOR THE LIMIT OF DISTURBANCE (LOD) MUST BE ADDRESSED ONLY FOR THE R-20 ZONED PORTION OF THIS ENVIRONMENTAL AREA ON THE FORTHCOMING SDP SUBMISSION AND AREAS IDENTIFIED AS HIGH PRIORITY FOR FOREST RETENTION MUST BE DELINEATED AND PROTECTED FROM DISTURBANCE TO THE MAXIMUM EXTENT POSSIBLE.
 - NO DISTURBANCE IS PERMITTED BEYOND THE LIMIT OF DISTURBANCE SHOWN ON THE WAIVER PETITION PLAN EXHIBIT UNLESS IT CAN SUFFICIENTLY BE DEMONSTRATED TO BE NECESSARY OR ESSENTIAL.
 - ON THE FORTHCOMING SITE DEVELOPMENT PLAN, PROVIDE A BRIEF DESCRIPTION OF THE WAIVER PETITION (WP-14-052), AS A GENERAL NOTE TO INCLUDE REQUEST(S), SECTION(S) OF THE REGULATIONS, ACTION AND DATE.
 - ALL DISTURBED AREAS MUST BE STABILIZED AND REPLANTED

- AS APPROPRIATE IMMEDIATELY UPON COMPLETION OF THE PROJECT.
- A PRE-SUBMISSION COMMUNITY MEETING AS REQUIRED UNDER SECTION 16.156(A)(2) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS MUST BE HELD TO PROVIDE RESIDENTIALLY ZONED PROPERTY OWNERS THAT ARE ADJACENT TO THIS ENVIRONMENTAL AREA THE OPPORTUNITY TO HEAR AND COMMENT ON THIS PROPOSAL.
- TO THE BEST OF OUR KNOWLEDGE THERE ARE NO CEMETERIES LOCATED ON THIS SITE.
- THE REQUIRED PERIMETER PLANTINGS AND PARKING LOT PLANTINGS ARE PROVIDED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.
- THE FOREST CONSERVATION OBLIGATION FOR THIS PLAN HAS BEEN MET BY PROVIDING A FEE IN LIEU TOTAL OF \$3,920.40. THE FEE-IN-LIEU AMOUNT IS BASED ON A TOTAL AFFORESTATION REQUIREMENT OF 5,227 SQUARE FEET X 0.75 PER SQUARE FOOT. THE FOREST CONSERVATION OBLIGATION IS ONLY FOR THE R-20 PORTION OF THE SITE. THE NT ZONED PORTION OF THE SITE IS EXEMPT FROM FOREST CONSERVATION OBLIGATIONS ACCORDING TO SECTION 16.1202(b)(v) OF THE HOWARD COUNTY CODE FOR A PLANNED UNIT DEVELOPMENT APPROVED PRIOR TO 12/31/92.
- ALL OUTDOOR LIGHTING SHALL COMPLY WITH THE REQUIREMENTS OF ZONING SECTION 134. ALL PROPOSED EXTERIOR LIGHTING SHALL BE DIRECTED/REFLECTED AWAY FROM ALL ADJACENT PUBLIC ROADS AND RESIDENTIAL ZONING DISTRICTS. LIGHT TRESPASS ONTO ANY PROPERTY ZONED OR USED FOR RESIDENTIAL PURPOSES SHALL BE LIMITED TO 0.5 FOOT CANDLES.
- STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLE SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (1993) AND AS MODIFIED BY "GUIDELINES FOR STREET LIGHTS IN RESIDENTIAL DEVELOPMENTS (JUNE 1993)" A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREETLIGHT AND ANY TREE.
- 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 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) 3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
- ALL PLAN DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
- THERE ARE NO WETLANDS ON THIS SITE.
- NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT.
- THIS PLAN IS IN ACCORDANCE WITH SECTION 128.0A.10 AND 11 OF THE ZONING REGULATIONS WHEN 2 OR MORE CONTIGUOUS LOTS OR PARCELS ARE TREATED AS A SINGLE PARCEL FOR DEVELOPMENT PURPOSES. THE ZONING STRUCTURE AND USE SETBACKS FROM INTERNAL LOT LINES SHALL NOT APPLY AND IF THE DEVELOPMENT PLAN SHOWS AN INTEGRATED DESIGN, THAT INCORPORATES MORE THAN ONE ZONING DISTRICT, THERE IS NO REQUIRED SETBACK FROM AN INTERNAL ZONING DISTRICT BOUNDARY.
- A COMMUNITY MEETING WAS HELD ON JUNE 25, 2014 TO PROVIDE THE COMMUNITY WITH INFORMATION ON THIS PROPOSED PROJECT.
- ON AUGUST 21, 2014, THIS SDP WAS APPROVED BY THE PLANNING BOARD WITHOUT ANY CONDITIONS.
- THIS SDP IS SUBJECT TO FDP-201-A-1, WHICH WAS AMENDED AND APPROVED BY THE HOWARD COUNTY PLANNING BOARD ON JULY 17, 2014.
- THE FOLLOWING DESIGN MANUAL WAIVERS WERE APPROVED BY DPW ON JUNE 24, 2014: MATCH CROWN OF PIPES (SECTION 4.1.1.D.9), CRITERIA FOR ESD PRACTICES (SECTION 5.2.4), EXISTING ROADWAY WIDENING STRIP (DETAIL R-1.08), TROTTER ROAD CENTERLINE STATION TIE IN.
- ALL TRASH AND REFUSE WILL BE THE RESPONSIBILITY OF THE DEPARTMENT OF RECREATION AND PARKS. DURING CONSTRUCTION, ALL TRASH AND REFUSE WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

DESIGN MANUAL WAIVERS

- 35AA: N 560767.7, E 1335483.83, ELEV. 430.95
 35BB: N 560790.42, E 1336537.22, ELEV. 394.26
 KCI 5: N 562367.39, E 1335373.4, ELEV. 380.99
 KCI 6: N 562794.28, E 1335445.76, ELEV. 371.28
 KCI 11: N 562850.49, E 1336162.86, ELEV. 363.65
- NOTE: KCI BENCHMARKS USED TO ESTABLISH THE PROJECT CONTROL

SITE ANALYSIS DATA CHART*

TOTAL PROPERTY AREA: 648.98 AC
 AREA OF PLAN SUBMISSION: 2.44 AC
 LIMIT OF DISTURBED AREA: 2.44 AC
 PROPOSED IMPERVIOUS COVER: 0.75 AC

PRESENT ZONING DESIGNATION: NT & R-20, PER THE COMPREHENSIVE ZONING PLAN, EFFECTIVE OCTOBER 8, 2013

EXISTING/PROPOSED USES: TRAILHEAD - FOR INDIVIDUALS TO PARK AND GATHER PRIOR TO ENTERING THE PARK.

FLOOR SPACE:
 STORAGE BUILDING: 1520 SF;
 COMFORT STATION: 302 SF

PARKING SPACES PROVIDED AS DETERMINED BY THE DEPARTMENT OF RECREATION AND PARKS
 PARKING SPACES PROVIDED: 36 SPACES,
 2 HANDICAP (38 TOTAL)

AREA OF RIGHT OF WAY: 0.00 AC
 AREA OF WETLANDS/BUFFER: N/A
 AREA OF FLOODPLAINS/BUFFER: N/A
 AREA OF STREAM BUFFER IMPACT: 0.80 AC
 AREA OF STEEP SLOPES >15%: 0.71 AC
 AREA OF ERODIBLE SOILS: 1.86 AC
 AREA OF GREEN OPEN SPACE: 1.62 AC

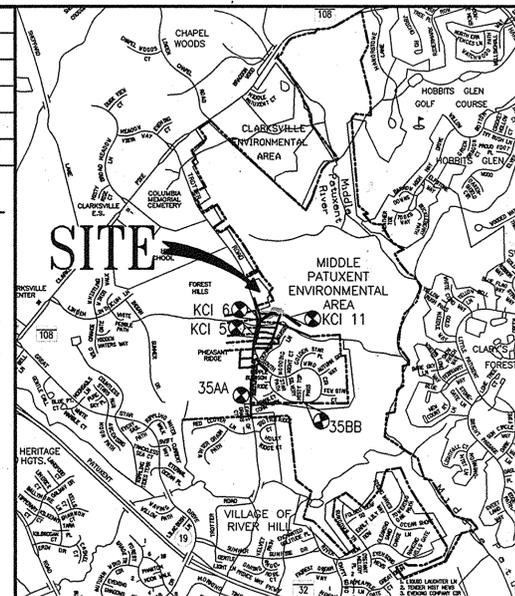
APPLICABLE DPZ FILE NUMBERS: ECP-14-031, WP-14-052, FDP PHASE 201-A MIDDLE PATUXENT ENVIRONMENTAL AREA (APPROVED 5/6/1999), FDP PHASE 201-A-1 (APPROVED 7/17/2014)

*NOTE: THIS PLAN AND ALL AREAS IN THIS SITE ANALYSIS DATA CHART ARE WITHIN THE 2.44 ACRES THAT THIS SUBMISSION COVERS, NOT THE ENTIRE 648.98 ACRE PROPERTY.

REVISIONS	

BENCHMARK DATA

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 35BB: N 560790.42, E 1336537.22, ELEV. 394.26
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ADC MAP: 4934
 GRID: DB

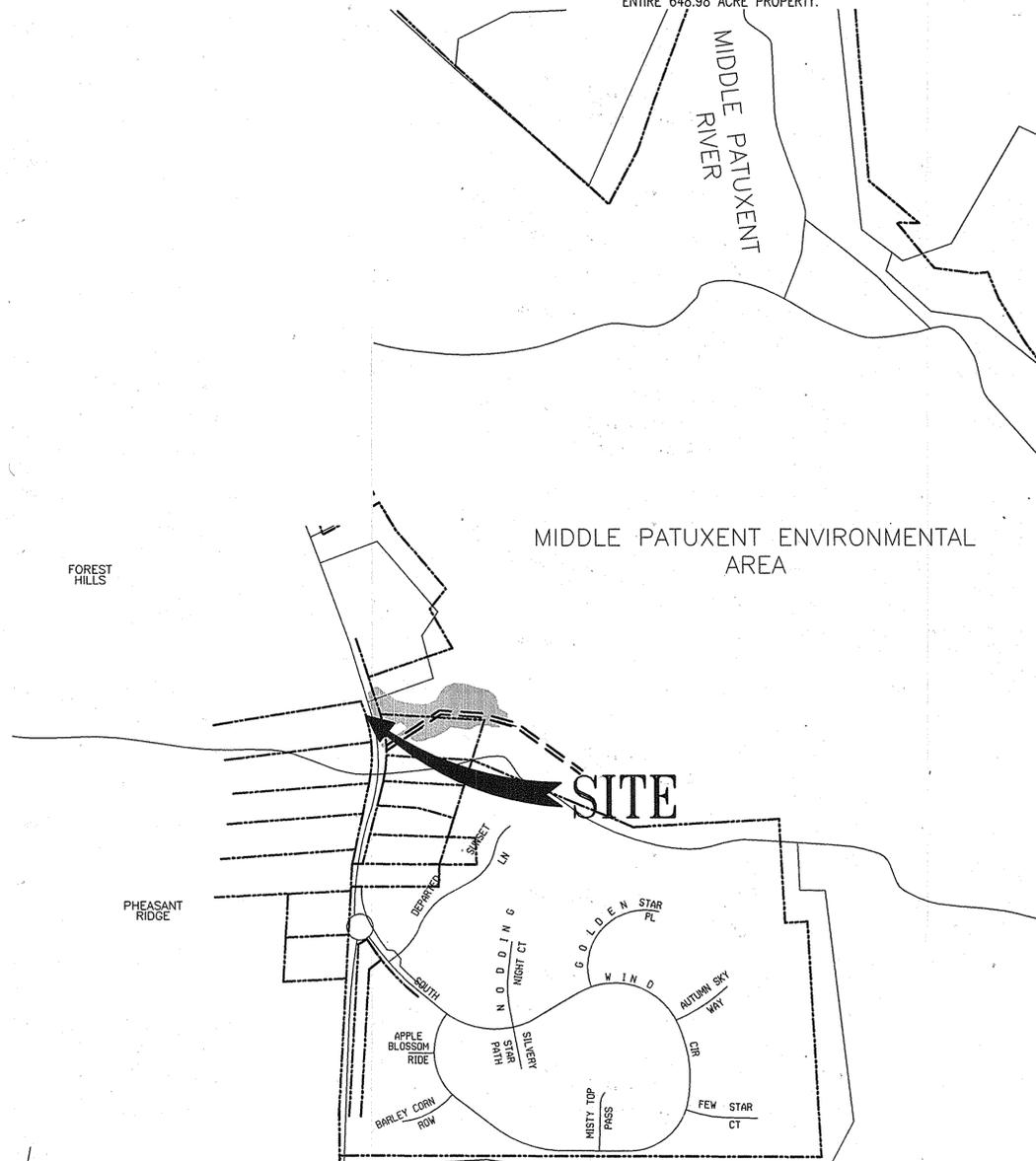
VICINITY MAP

1" = 2000'



LIST OF DRAWINGS

- CIVIL**
- C0.1 COVER SHEET
 - C0.2 ABBREVIATIONS, NOTES, AND LEGENDS
 - C1.0 EXISTING SITE PLAN
 - C1.1 SITE DEMOLITION PLAN
 - C1.2 SITE AND UTILITY PLAN
 - C1.3 STAKEOUT PLAN
 - C1.4 GRADING AND STORMWATER MANAGEMENT PLAN
 - C1.5 EROSION AND SEDIMENT CONTROL PLAN
 - C2.1 STORM DRAIN PROFILES
 - C3.1 ENLARGED SITE PLANS
 - C4.1 SITE DETAILS
 - C4.2 SITE DETAILS
 - C4.3 STORMWATER MANAGEMENT DETAILS AND NOTES
 - C5.1 EROSION AND SEDIMENT CONTROL - NOTES
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 - C5.3 SOIL BORING LOGS
 - C6.1 OVERALL DRAINAGE AREA MAP
 - C6.2 STORMWATER DRAINAGE AREA MAP
 - C6.3 INLET DRAINAGE AREA MAP
 - C6.4 EROSION AND SEDIMENT CONTROL DRAINAGE AREA MAP
- LANDSCAPE**
- L1.0 LANDSCAPE PLAN
 - L1.1 MINIMUM LANDSCAPE REQUIREMENTS
 - L1.2 PLANTING DETAILS
- FOREST CONSERVATION**
- F2.1 FOREST CONSERVATION COVER SHEET
 - F2.2 FOREST CONSERVATION PLAN
 - F2.3 FOREST CONSERVATION NOTES AND DETAILS



LOCATION MAP

1" = 400'

ADDRESS CHART	
PARCEL #	STREET ADDRESS
512/467/427	STORAGE BUILDING: 5787 TROTTER ROAD COMFORT STATION: 5791 TROTTER ROAD

OWNER:		DEVELOPER:		PERMIT INFORMATION CHART			
HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS 7120 OAKLAND HILLS ROAD COLUMBIA, MD 21046 ATTN: MR. RAUL DELERME VOICE 410-313-4689 FAX 410-313-4646		HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9250 BENDIX ROAD COLUMBIA, MD 21045 ATTN: MR. TOM AUYEUNG VOICE 410-313-6142 FAX 410-313-6161		WATER CODE:	SEWER CODE:	BUILDING:	
PUBLIC		PUBLIC		N/A			
PROJECT NAME: MPEA SITE IMPROVEMENTS		SECTION/AREA: N/A		PARCEL: 512/467/427			
L/F: 4718/06 4718/41	GRD #3.9,2	ZONING: NT & R-20	TAX MAP BLOCK: 35	ELEC. DIST.:		CENSUS TRACT:	605505

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division: 10-2-14
 Chief, Division of Land Development: 10-10-14
 Director: 10/12/14

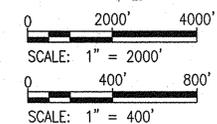
APPROVED: PLANNING BOARD OF HOWARD COUNTY

08/21/2014



WHITMAN, REQUARDT & ASSOCIATES, LLP
 801 South Caroline Street, Baltimore, Maryland 21231
 Phone: 410-255-9450 Fax: 410-243-5716

GRAPHIC SCALES



SIGNATURE



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. 19376
 EXPIRATION DATE: 09/12/2015

MPEA SITE IMPROVEMENTS

COVER SHEET

Drawing No.

C0.1

Scale: AS SHOWN

Date: 09/12/2014 Sheet 1 of 26

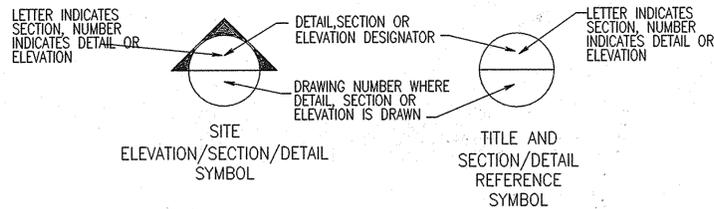
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ABBREVIATIONS

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS	OD	OUTSIDE DIAMETER
ABAN, ABAND	ABANDON	OHE	OVERHEAD ELECTRIC
APPROX	APPROXIMATELY	OHT	OVERHEAD TELEPHONE
ASTM	ASSOCIATION FOR STANDARD TESTING METHODS	PC	POINT OF CURVATURE
BLDG	BUILDING	PCC	POINT OF COMPOUND CURVATURE
BIT	BITUMINOUS	PERF	PERFORATED
B.M.	BENCH MARK	PI	POINT OF INTERSECTION, POST INDICATOR
CFS	CUBIC FEET PER SECOND	POB	POINT OF BEGINNING
C.I.	CAST IRON	POC	POINT ON CURVE
C.I.P.	CAST IRON PIPE	POE	POINT OF END
C/L	CENTERLINE	POT	POINT ON TRAVERSE
CO	CLEAN OUT	PT	POINT OF TANGENCY
COMM	COMMUNICATION	PVC	POLYVINYL CHLORIDE, POINT OF VERTICAL CURVE
CONTR. JT	CONTRACTION JOINT	PVI	POINT OF VERTICAL INTERSECTION
CONC	CONCRETE	PVMT	PAVEMENT
CMP	CORRUGATED METAL PIPE	PVT	POINT OF VERTICAL TANGENCY
DEMO	DEMOLITION	PP	POWER POLE
DIP	DUCTILE IRON PIPE	PIV	POST INDICATOR VALVE
DIA, DIAM	DIAMETER	PROP	PROPOSED
DWG, DRWG	DRAWING	R	RADIUS, RIGHT
E	EAST	RD	ROAD
EL, ELEV	ELEVATION	RCCP	REINFORCED CONCRETE CULVERT PIPE
ELECT, ELEC	ELECTRICAL	RCP	REINFORCED CONCRETE PIPE
EMBED	EMBEDDED	REIN, REINF	REINFORCED
EX	EXISTING	RR	RAILROAD
EXP JT	EXPANSION JOINT	S	SOUTH, SLOPE, SANITARY
EW	EACH WAY	SAN	SANITARY
F&C	FRAME AND COVER	SCE	STABILIZED CONSTRUCTION ENTRANCE
FH	FIRE HYDRANT	SCH	SCHEDULE
FIN, FL, F.F.	FINISHED FLOOR	SD	STORM DRAIN
FT	FEET	SDR	STANDARD DIMENSION RATIO
FPS	FEET PER SECOND	SE	SOUTHEAST
HB	HORIZONTAL BEND	SF	SILT FENCE
HO, CO.	HOWARD COUNTY	SHT	SHEET
HC	HANDICAPPED	SP	STUDY POINT
HP	HIGH POINT	SS	STAINLESS STEEL
IN	INCH	STA	STATION
INV	INVERT	STD	STANDARD
IP	INLET PROTECTION	STRUCT, STR	STRUCTURAL
JT	JOINT	SW	SOUTHWEST
LT	LEFT	TEL	TELEPHONE
LOD	LIMIT OF DISTURBANCE	TS&V	TAPPING SLEEVE & VALVE
LP	LOW POINT	T/C	TOP OF CURB
MAX	MAXIMUM	TC	TOP OF COVER
MECH	MECHANICAL	TG	TOP OF GRATE
MH	MANHOLE	TW	TOP OF WALL
MIN	MINIMUM	TYP	TYPICAL
MW	MONITORING WELL	UG	UNDERGROUND
N	NORTH	UD	UNDERDRAIN
NE	NORTHEAST	UE	UNDERGROUND ELECTRIC DUCT
NIC	NOT IN CONTRACT	UMH	UNKNOWN MANHOLE
NTS	NOT TO SCALE	UT	UNDERGROUND TELEPHONE DUCT
NW	NORTHWEST	UFA	UNDERGROUND FIRE ALARM
OC, O/C	ON CENTER	VB	VERTICAL BEND
		VC	VERTICAL CURVE
		W	WEST, WATT, WATER, WIDE
		W/	WITH
		WWF	WELDED WIRE FABRIC

LEGEND

EXISTING	PROPOSED	DESCRIPTION	EXISTING	PROPOSED	DESCRIPTION
		CONTOUR			LIMIT OF DISTURBANCE
		SPOT ELEVATION			SILT FENCE
		STORM DRAIN			SUPER SILT FENCE
		WATER			TREE PROTECTION FENCE
		SANITARY SEWER			DIVERSION FENCE
		UNDERGROUND ELECTRIC			INLET PROTECTION
		UNDERGROUND TELEPHONE			TEMPORARY STONE OUTLET STRUCTURE
		CONCRETE CURB AND GUTTER			LIMITS OF WET MEADOW AND RAIN GARDEN
		FENCE			STABILIZED CONSTRUCTION ENTRANCE
		BUILDING			SOIL DIVIDE
		GRAVEL PAVEMENT			
		ASPHALT PAVEMENT			
		ROADWAY PERVIOUS CONCRETE			
		PARKING PERVIOUS CONCRETE			
		CONCRETE SIDEWALK			
		WATER VALVE			
		WATER METER			
		FIRE HYDRANT			
		STORM DRAIN INLET			
		STORM DRAIN MANHOLE			
		STORM DRAIN END SECTION			
		STORM DRAIN END WALL			
		RAIN BARREL			
		SANITARY SEWER MANHOLE			
		ELECTRIC MANHOLE			
		TELEPHONE MANHOLE			
		LIGHT POLE			
		UTILITY POLE			
		TRANSFORMER			
		GUY WIRE			
		SIGN			
		EVERGREEN TREE			
		DECIDUOUS TREE			
		WOODSLINE/CLEARING LIMITS			
		RIPRAP			
		STREAM			
		100' STREAM BUFFER			
		SURVEY TRAVERSE MONUMENT			
		PROPERTY LINE			
		35' SCENIC ROADS BUFFER			
		EASEMENT LINE			
		SOIL BORING LOCATION			
		REMOVE TREES			
		REMOVE GRAVEL ROADWAY			
		15-24.9% SLOPES			
		>25% SLOPES			



REVISIONS	

HOWARD COUNTY

DEPARTMENT OF RECREATION AND PARKS
7120 OAKLAND MILLS ROAD
COLUMBIA, MD 21046

DEPARTMENT OF PUBLIC WORKS
9250 BENDIX ROAD
ELLICOTT CITY, MD 21043

WR&A

WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231
Phone: 410-235-3450 Fax: 410-243-5716

PROPERTY

TAX MAP 35, GRID 3, PARCEL 512
TAX MAP 35, GRID 2, PARCEL 427

ZONING: NEWTOWN & R-20
ELECTION DISTRICT 05

GRAPHIC SCALES

SIGNATURE

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. 19376
EXPIRATION DATE: 09/22/2015

MPEA - SITE IMPROVEMENTS

ABBREVIATIONS, NOTES AND LEGENDS

Drawing No.
C0.2

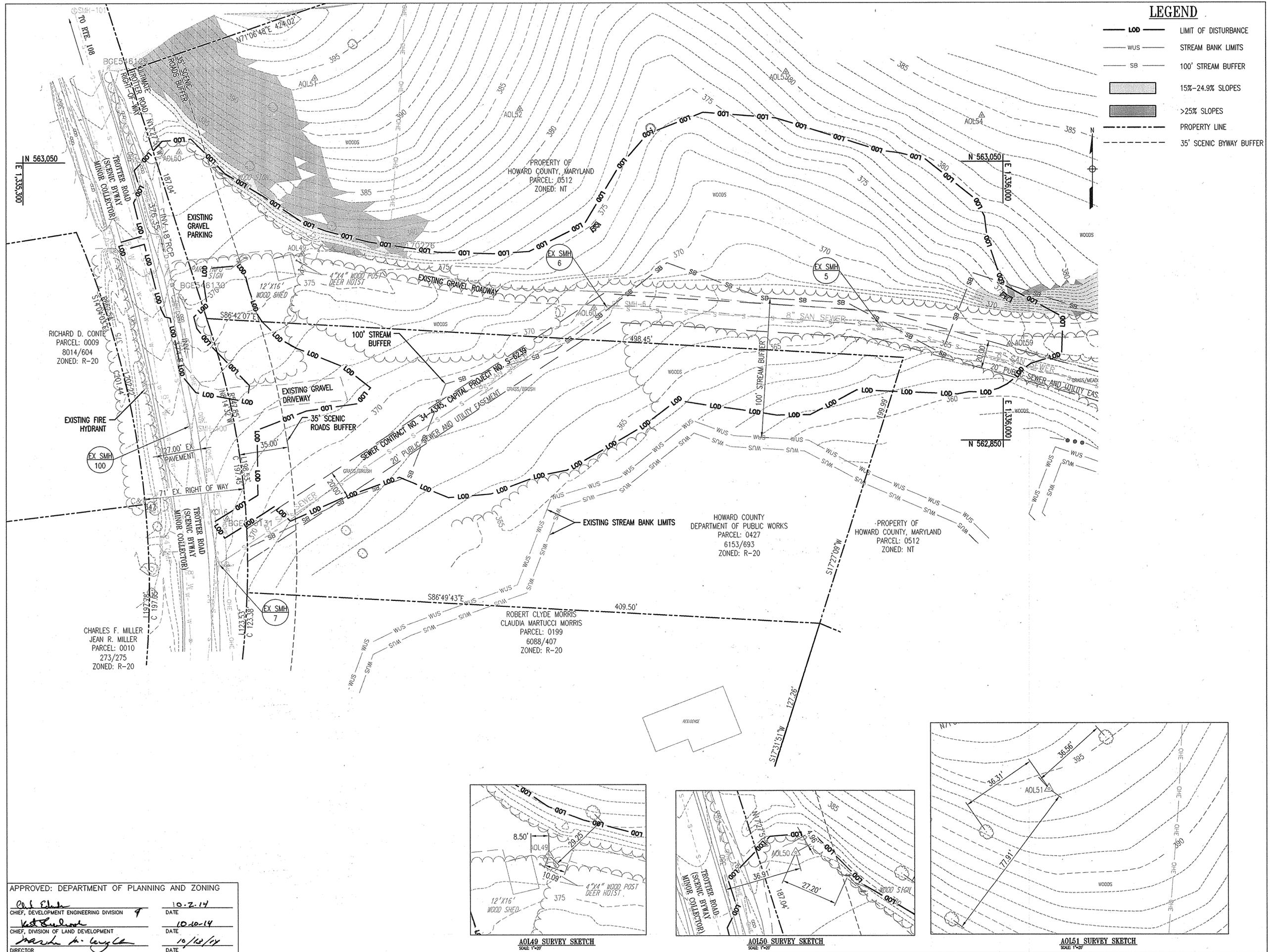
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Date: 09/12/2014 Sheet 2 of 26
Des: BWJ/SAD Drawn: SAD Check: AUO

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Col. P. ... 10-2-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION 4 DATE

... 10-10-14
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

... 10/10/14
DIRECTOR DATE



LEGEND

- LOD LIMIT OF DISTURBANCE
- WUS STREAM BANK LIMITS
- SB 100' STREAM BUFFER
- 15%-24.9% SLOPES
- >25% SLOPES
- PROPERTY LINE
- 35' SCENIC BYWAY BUFFER

REVISIONS	

HOWARD COUNTY
 DEPARTMENT OF RECREATION AND PARKS
 7120 OAKLAND MILLS ROAD
 COLUMBIA, MD 21046

DEPARTMENT OF PUBLIC WORKS
 9250 BENDIX ROAD
 ELLICOTT CITY, MD 21043

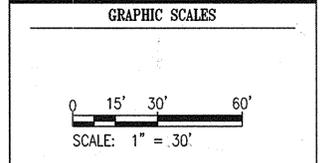
WR&A

WHITMAN, REQUARDT & ASSOCIATES, LLP
 801 South Caroline Street, Baltimore, Maryland 21231
 Phone: 410-235-3450 Fax: 410-243-5716

PROPERTY

TAX MAP 35, GRID 3, PARCEL 512
 TAX MAP 35, GRID 2, PARCEL 427

ZONING: NEWTOWN & R-20
 ELECTION DISTRICT 05



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 EXPIRATION DATE: 09/22/2015

MPEA - SITE IMPROVEMENTS

EXISTING SITE PLAN

Drawing No.
C1.0

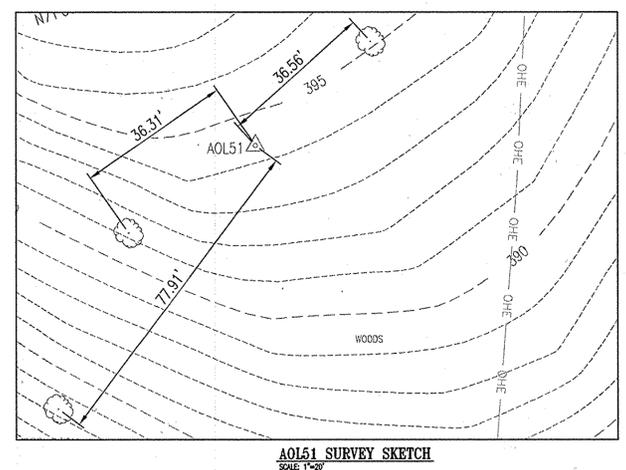
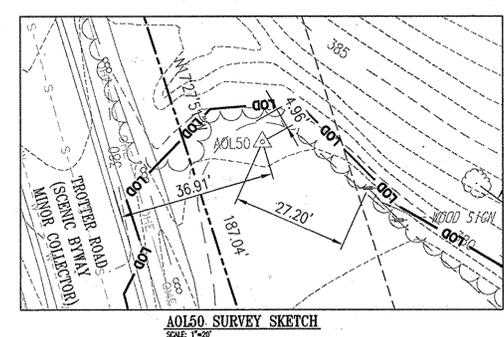
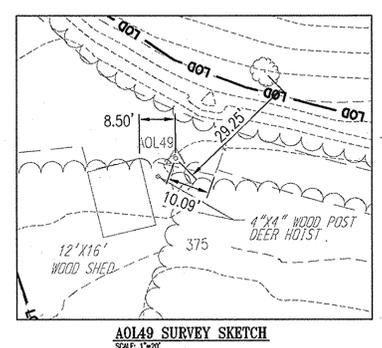
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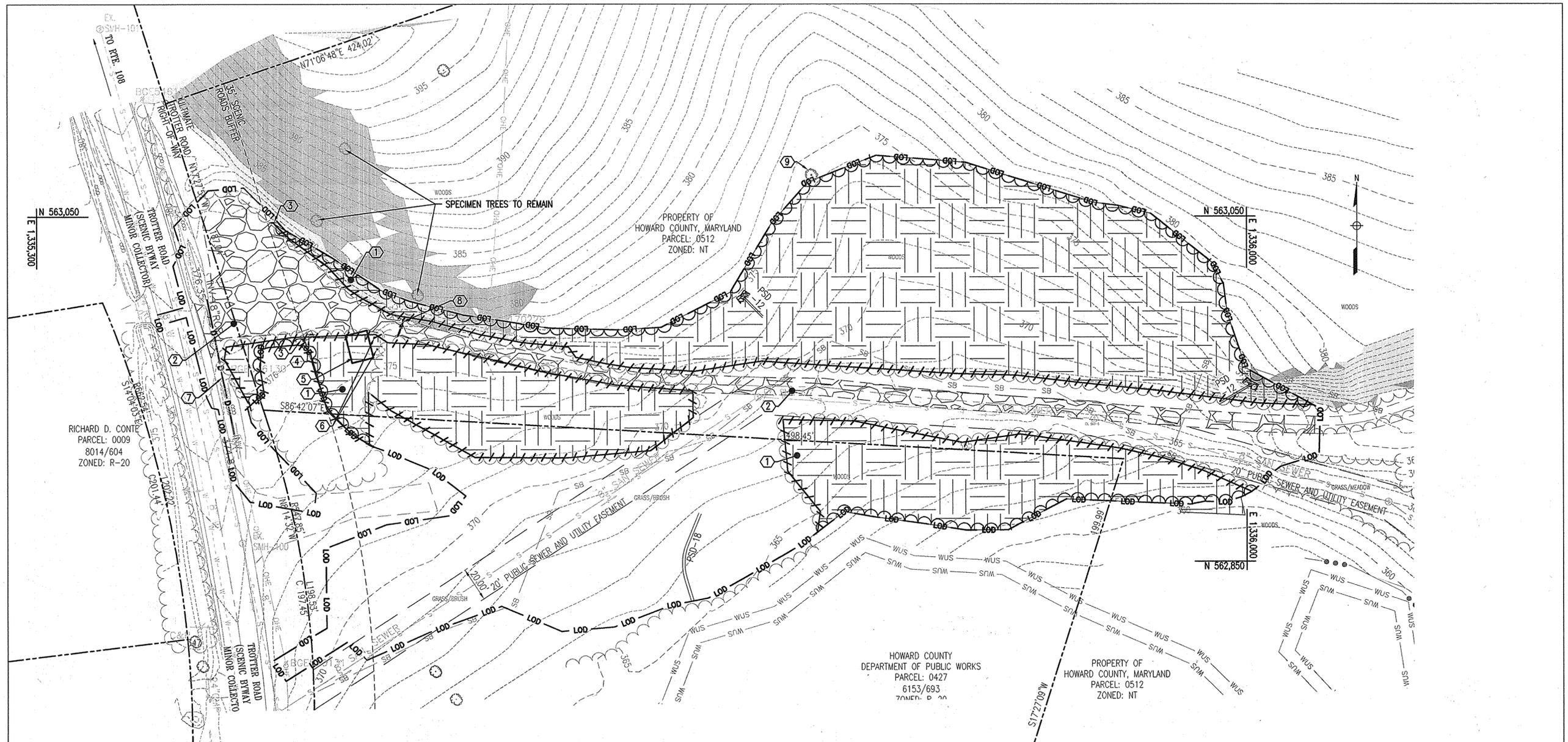
APPROVED: DEPARTMENT OF PLANNING AND ZONING

Rob E. Fisher 10-2-14
 CHIEF, DEVELOPMENT ENGINEERING DIVISION 9 DATE

Victor R. ... 10-10-14
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Mark A. ... 10/12/14
 DIRECTOR DATE





RICHARD D. CONTE
PARCEL: 0009
8014/604
ZONED: R-20

CHARLES F. MILLER
JEAN R. MILLER
PARCEL: 0010
273/275
ZONED: R-20

PROPERTY OF
HOWARD COUNTY, MARYLAND
PARCEL: 0512
ZONED: NT

HOWARD COUNTY
DEPARTMENT OF PUBLIC WORKS
PARCEL: 0427
6153/693
ZONED: R-20

PROPERTY OF
HOWARD COUNTY, MARYLAND
PARCEL: 0512
ZONED: NT

DEMOLITION NOTES

- ① REMOVE TREE(S)
- ② REMOVE APPROXIMATELY 12" THICK GRAVEL ROADWAY
- ③ REMOVE SIGN
- ④ REMOVE 8" THICK CONCRETE PAD
- ⑤ 12'X16' WOOD SHED TO BE RELOCATED BY OTHERS PRIOR TO CONSTRUCTION SEE SHEET C1.2 FOR PROPOSED RELOCATION
- ⑥ REMOVE 4"x4" WOOD POST-DEER HOIST, HOWARD COUNTY TO SALVAGE. COORDINATE WITH OWNER.
- ⑦ REMOVE 18" RCP CULVERT
- ⑧ REMOVE METAL SECURITY GATE
- ⑨ APPROXIMATE LOCATION OF EXISTING 31" TULIP POPLAR. AFTER STAKING OUT CLEARING LIMITS NOTIFY OWNER AND ATTEMPT TO SAVE EXISTING TREE. PERMITTING WILL ALLOW FOR TREE TO BE REMOVED.

LEGEND

- LOD — LIMIT OF DISTURBANCE
- WUS — STREAM
- SB — 100' STREAM BUFFER
- [Symbol] TREE REMOVAL
- [Symbol] GRAVEL ROADWAY REMOVAL
- [Symbol] PROPOSED TREELINE
- [Symbol] EXISTING TREELINE
- [Symbol] LIMITS OF TREE REMOVAL
- [Symbol] EXISTING CONTOUR
- [Symbol] 15%-24.9% SLOPES
- [Symbol] >25% SLOPES

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 10-2-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 10-10-14
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 11/10/14
DIRECTOR DATE

REVISIONS	

HOWARD COUNTY

DEPARTMENT OF
RECREATION AND PARKS
7120 OAKLAND MILLS ROAD
COLUMBIA, MD 21046

DEPARTMENT OF
PUBLIC WORKS
9250 BENDIX ROAD
ELLCOTT CITY, MD 21043

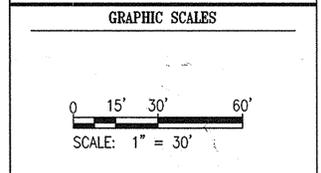
WR&A

WHITMAN, REQUARDT
& ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231
Phone: 410-235-3450 Fax: 410-243-5716

PROPERTY

TAX MAP 35, GRID 3, PARCEL 512
TAX MAP 35, GRID 2, PARCEL 427

ZONING: NEWTOWN & R-20
ELECTION DISTRICT 05



SIGNATURE

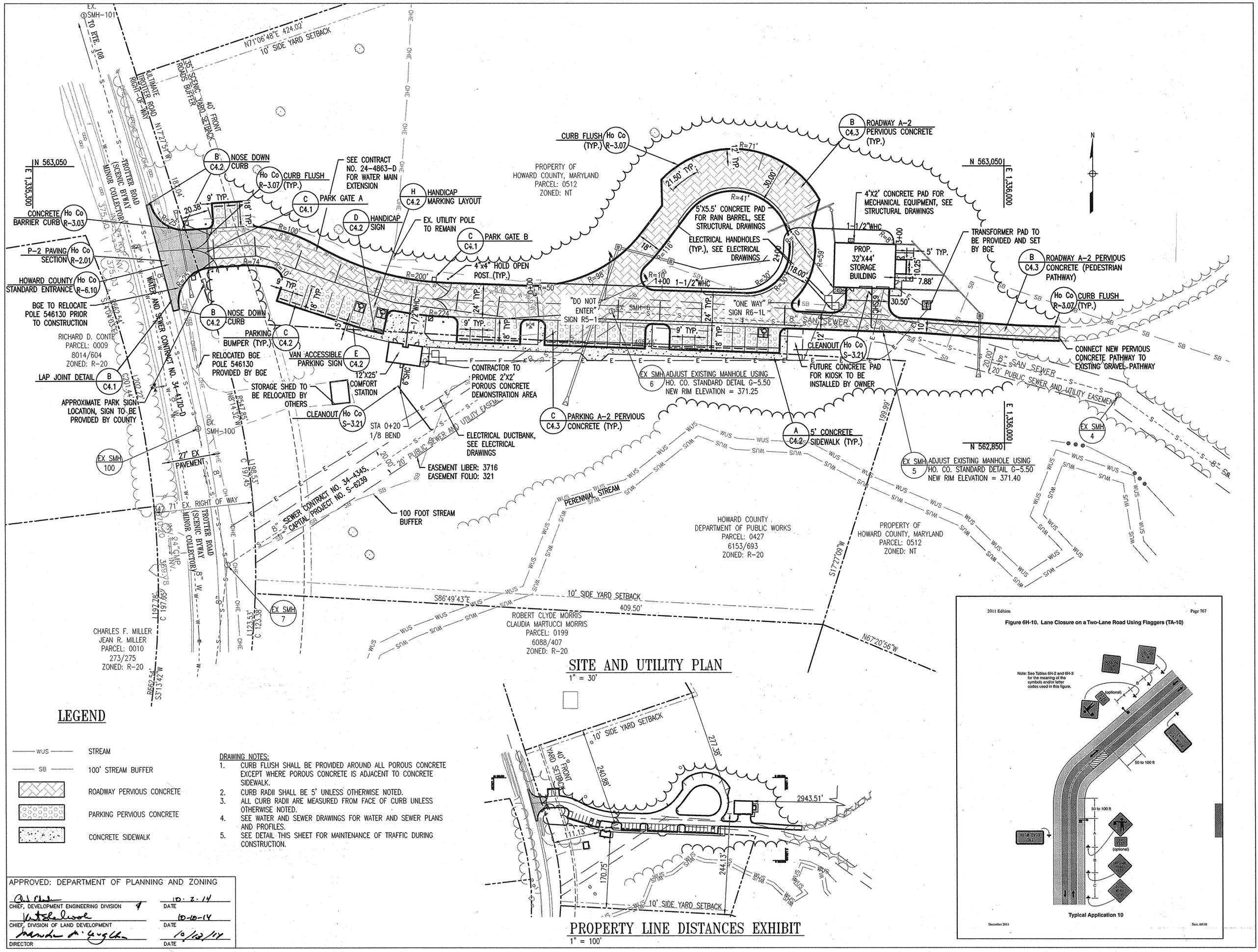
PROFESSIONAL CERTIFICATION.
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE
PREPARED OR APPROVED BY ME, AND THAT I AM A DULY
LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF
THE STATE OF MARYLAND, LICENSE NO. 19376
EXPIRATION DATE: 09/22/2015

**MPEA - SITE
IMPROVEMENTS**

SITE DEMOLITION PLAN

Drawing No.
C1.1

Scale: 1" = 30'
Date: 09/12/2014 Sheet 4 of 26
Des: BWJ/SAD Drawn: SAD Check: AUO



REVISIONS	

HOWARD COUNTY
DEPARTMENT OF RECREATION AND PARKS
7120 OAKLAND MILLS ROAD
COLUMBIA, MD 21046

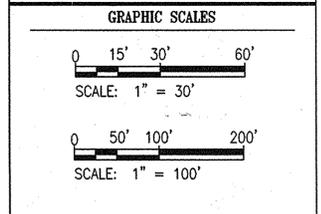
DEPARTMENT OF PUBLIC WORKS
9250 BENDIX ROAD
ELLICOTT CITY, MD 21043

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801 South Caroline Street, Baltimore, Maryland 21203
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PROPERTY

TAX MAP 35, GRID 3, PARCEL 512
TAX MAP 35, GRID 2, PARCEL 427

ZONING: NEWTOWN & R-20
ELECTION DISTRICT 05



SIGNATURE

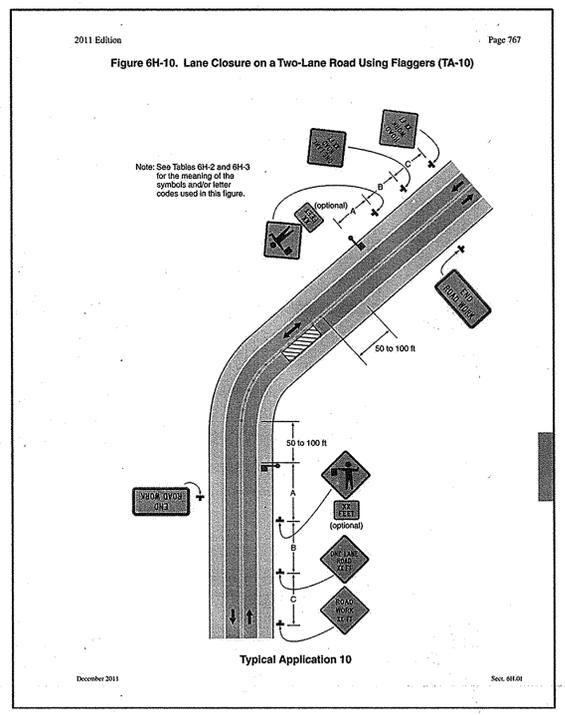
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EXPIRATION DATE: 09/22/2015

MPEA - SITE IMPROVEMENTS

SITE AND UTILITY PLAN

Drawing No.
C1.2

Scale: 1" = 30'
Date: 09/12/2014 Sheet 5 of 26
Des: BWJ/SAD Drawn: SAD Check: AUO



LEGEND

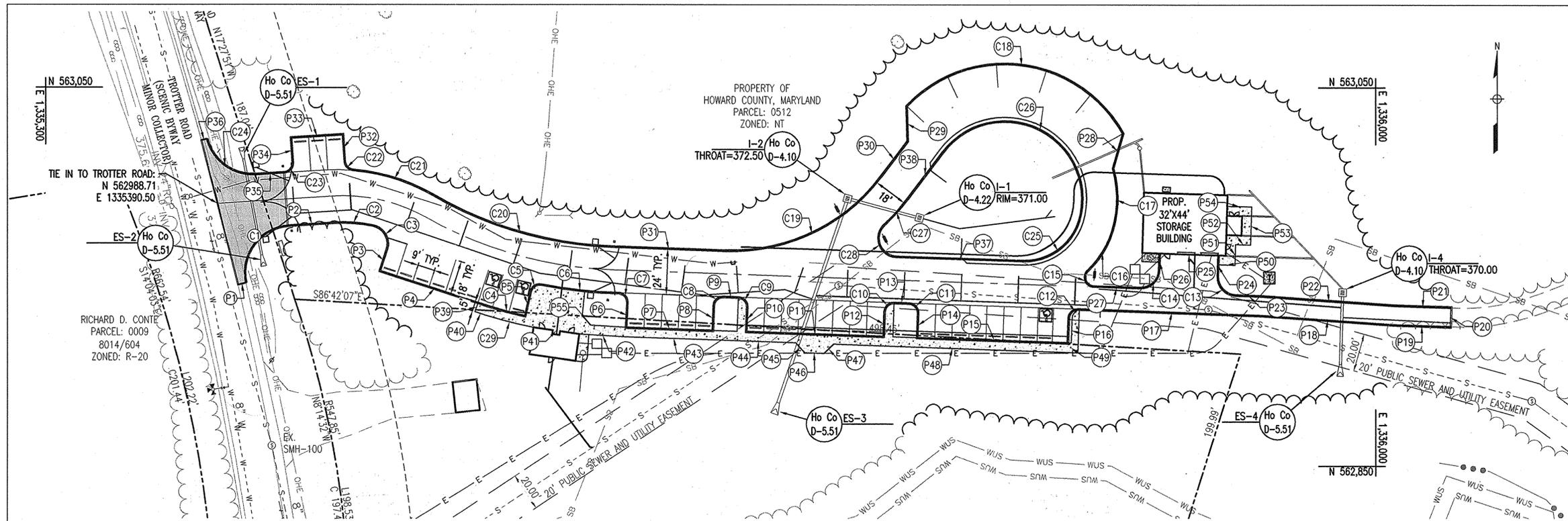
- WUS STREAM
- SB 100' STREAM BUFFER
- ROADWAY PERVIOUS CONCRETE
- PARKING PERVIOUS CONCRETE
- CONCRETE SIDEWALK

DRAWING NOTES:

- CURB FLUSH SHALL BE PROVIDED AROUND ALL POROUS CONCRETE EXCEPT WHERE POROUS CONCRETE IS ADJACENT TO CONCRETE SIDEWALK.
- CURB RADII SHALL BE 5' UNLESS OTHERWISE NOTED. ALL CURB RADII ARE MEASURED FROM FACE OF CURB UNLESS OTHERWISE NOTED.
- SEE WATER AND SEWER DRAWINGS FOR WATER AND SEWER PLANS AND PROFILES.
- SEE DETAIL THIS SHEET FOR MAINTENANCE OF TRAFFIC DURING CONSTRUCTION.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division 10-2-14
Chief, Division of Land Development 10-10-14
Director 10/12/14



REVISIONS	

HOWARD COUNTY
 DEPARTMENT OF RECREATION AND PARKS
 7120 OAKLAND MILLS ROAD
 COLUMBIA, MD 21046

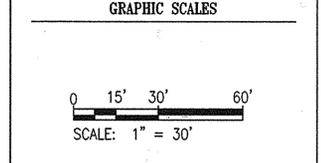
DEPARTMENT OF PUBLIC WORKS
 9250 BENDIX ROAD
 ELLICOTT CITY, MD 21043

WR&A
 WHITMAN, REQUARDT & ASSOCIATES, LLP
 801 South Caroline Street, Baltimore, Maryland 21231
 Phone: 410-235-3450 Fax: 410-243-5716

PROPERTY

TAX MAP 35, GRID 3, PARCEL 512
 TAX MAP 35, GRID 2, PARCEL 427

ZONING: NEWTOWN & R-20
 ELECTION DISTRICT 05



SIGNATURE

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. 19376.
 EXPIRATION DATE: 09/22/2015

MPEA - SITE IMPROVEMENTS

STAKEOUT PLAN

Drawing No.
C1.3

Scale: 1" = 30'
 Date: 09/12/2014 Sheet 6 of 26
 Des: BWJ/SAD Drawn: SAD Check: AUO

ROADWAY STAKEOUT					
POINT	NORTHING	EASTING	R	Δ	T
C1	562,975.24	1,335,399.14	25.00'	098°47'25"	29.16'
C2	562,979.34	1,335,462.30	74.00'	015°50'53"	10.30'
C3	562,974.85	1,335,483.21	10.00'	095°52'04"	11.08'
C4	562,931.60	1,335,542.57	242.09'	004°40'22"	9.88'
C5	562,946.95	1,335,556.14	5.00'	088°44'56"	4.89'
C6	562,941.91	1,335,581.14	224.00'	010°30'56"	20.61'
C7	562,941.18	1,335,606.57	5.00'	088°04'13"	4.83'
C8	562,939.79	1,335,651.55	5.00'	090°00'00"	5.00'
C9	562,939.16	1,335,669.54	5.00'	090°00'00"	5.00'
C10	562,936.62	1,335,741.50	5.00'	090°00'00"	5.00'
C11	562,935.98	1,335,759.48	5.00'	090°00'00"	5.00'
C12	562,933.13	1,335,840.43	5.00'	090°00'00"	5.00'
C13	562,940.46	1,335,916.36	10.00'	090°00'00"	10.00'
C14	562,943.63	1,335,885.94	10.00'	090°00'00"	10.00'
C15	562,945.16	1,335,839.75	5.00'	134°31'07"	11.93'
C16	562,962.09	1,335,857.61	48.00'	029°35'37"	12.68'
C17	562,990.77	1,335,866.35	59.00'	032°41'09"	17.30'
C18	563,110.46	1,335,819.95	71.00'	107°27'05"	96.75'
C19	562,961.79	1,335,708.63	98.00'	055°00'00"	51.02'
C20	562,967.47	1,335,547.74	200.00'	028°18'47"	50.45'
C21	563,004.44	1,335,484.55	100.00'	025°38'36"	22.76'
C22	563,006.65	1,335,457.57	5.00'	081°35'56"	4.32'
C23	563,005.65	1,335,430.58	5.00'	086°20'00"	4.69'
C24	563,002.70	1,335,390.03	24.98'	079°32'06"	20.79'
C25	562,957.46	1,335,837.38	30.00'	074°56'50"	23.00'

ROADWAY STAKEOUT					
POINT	NORTHING	EASTING	R	Δ	T
C26	563,201.04	1,335,911.60	41.00'	159°55'31"	231.64'
C27	562,984.16	1,335,748.05	116.00'	009°17'31"	9.43'
C28	562,961.21	1,335,724.02	10.00'	134°25'11"	23.80'
P1	562,945.75	1,335,401.42	-	-	-
P2	562,977.13	1,335,428.24	-	-	-
P3	562,964.31	1,335,479.78	-	-	-
P4	562,953.07	1,335,476.13	-	-	-
P5	562,929.44	1,335,552.21	-	-	-
P6	562,936.35	1,335,606.32	-	-	-
P7	562,923.37	1,335,605.65	-	-	-
P8	562,921.80	1,335,650.92	-	-	-
P9	562,939.61	1,335,656.55	-	-	-
P10	562,934.16	1,335,669.36	-	-	-
P11	562,921.17	1,335,668.91	-	-	-
P12	562,918.63	1,335,740.86	-	-	-
P13	562,936.44	1,335,746.49	-	-	-
P14	562,930.99	1,335,759.31	-	-	-
P15	562,917.99	1,335,758.85	-	-	-
P16	562,915.14	1,335,839.80	-	-	-
P17	562,932.95	1,335,845.43	-	-	-
P18	562,929.61	1,335,940.07	-	-	-
P19	562,924.69	1,336,009.44	-	-	-
P20	562,923.80	1,336,039.14	-	-	-
P21	562,933.80	1,336,039.43	-	-	-
P22	562,934.67	1,336,010.03	-	-	-

ROADWAY STAKEOUT					
POINT	NORTHING	EASTING	R	Δ	T
P23	562,939.60	1,335,940.65	-	-	-
P24	562,950.45	1,335,916.72	-	-	-
P25	562,961.44	1,335,917.10	-	-	-
P26	562,962.34	1,335,886.55	-	-	-
P27	562,943.95	1,335,875.94	-	-	-
P28	563,007.42	1,335,861.65	-	-	-
P29	563,040.28	1,335,753.36	-	-	-
P30	563,021.75	1,335,753.85	-	-	-
P31	562,963.59	1,335,657.65	-	-	-
P32	563,010.96	1,335,457.29	-	-	-
P33	563,025.05	1,335,456.37	-	-	-
P34	563,023.31	1,335,429.43	-	-	-
P35	563,005.05	1,335,425.93	-	-	-
P36	563,022.85	1,335,384.93	-	-	-
P37	562,960.42	1,335,747.81	-	-	-
P38	563,016.10	1,335,772.13	-	-	-

SIDEWALK STAKEOUT					
POINT	NORTHING	EASTING	R	Δ	T
C29	562,925.92	1,335,544.00	247.00'	006°00'24"	12.96'
P39	562,936.38	1,335,527.49	-	-	-
P40	562,931.62	1,335,525.94	-	-	-
P41	562,923.37	1,335,556.70	-	-	-
P42	562,919.87	1,335,580.82	-	-	-
P43	562,918.37	1,335,605.48	-	-	-
P44	562,916.63	1,335,655.74	-	-	-
P45	562,915.25	1,335,694.71	-	-	-
P46	562,910.08	1,335,699.53	-	-	-
P47	562,909.72	1,335,709.52	-	-	-
P48	562,914.55	1,335,714.71	-	-	-
P49	562,910.14	1,335,839.62	-	-	-
P50	562,956.42	1,335,916.93	-	-	-
P51	562,956.15	1,335,925.95	-	-	-
P52	562,967.05	1,335,926.28	-	-	-
P53	562,966.81	1,335,934.20	-	-	-
P54	562,987.10	1,335,934.81	-	-	-
P55	562,924.52	1,335,586.69	-	-	-

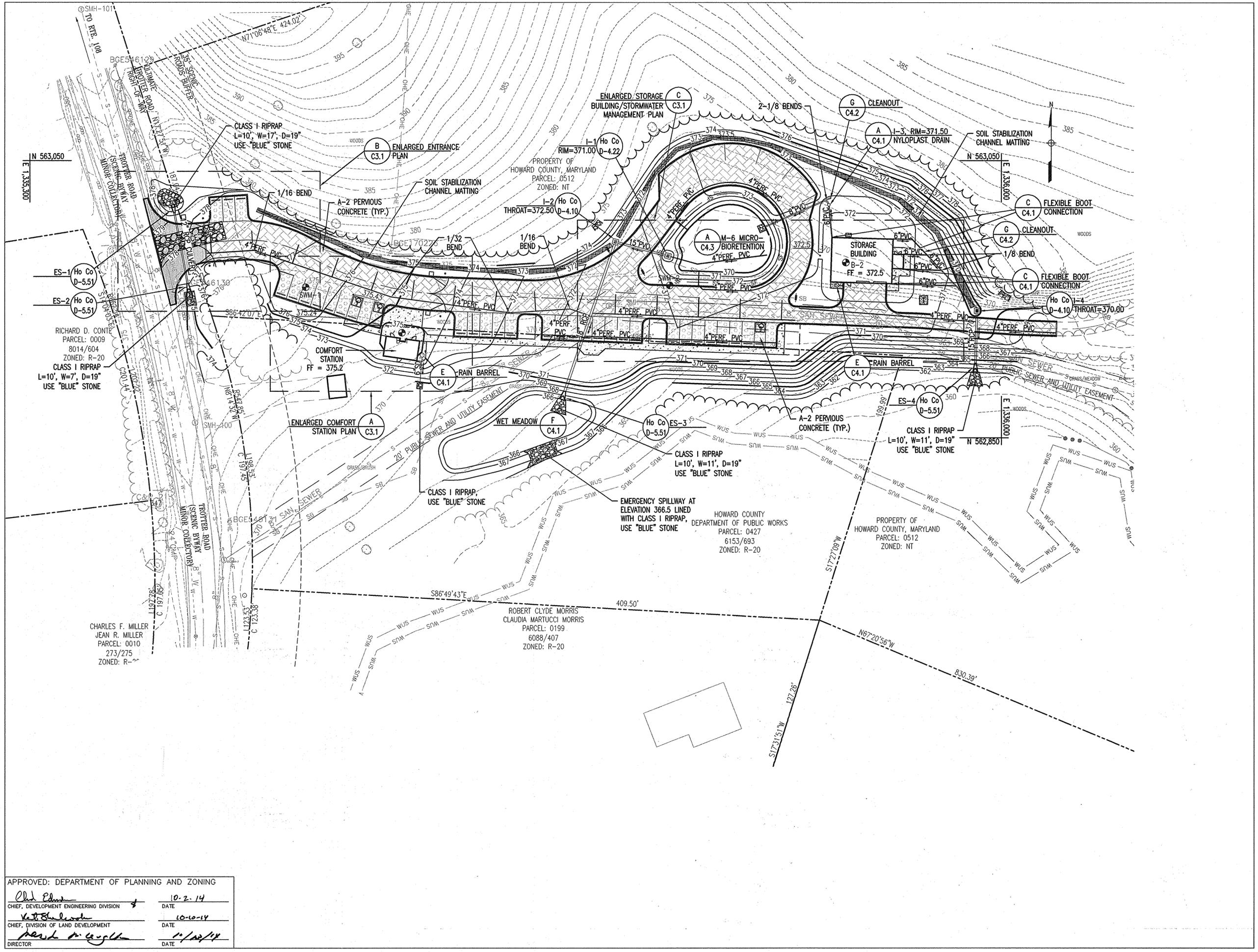
UTILITY STAKEOUT			
POINT	NORTHING	EASTING	
ES-1	563,012.23	1,335,404.23	
ES-2	562,961.39	1,335,413.71	
ES-3	562,883.60	1,335,685.38	
ES-4	562,903.81	1,335,981.38	

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chad E. ... 10-2-14
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

W. B. ... 10-10-14
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

David A. ... 10/22/14
 DIRECTOR DATE



REVISIONS	

HOWARD COUNTY

DEPARTMENT OF
RECREATION AND PARKS
7120 OAKLAND MILLS ROAD
COLUMBIA, MD 21046

DEPARTMENT OF
PUBLIC WORKS
9250 BENDIX ROAD
ELLCOTT CITY, MD 21043

WR&A

WHITMAN, REQUARDT
& ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231
Phone: 410-235-3450 Fax: 410-243-9716

PROPERTY

TAX MAP 35, GRID 3, PARCEL 512
TAX MAP 35, GRID 2, PARCEL 427

ZONING: NEWTOWN & R-20
ELECTION DISTRICT 05

GRAPHIC SCALES

0 15' 30' 60'

SCALE: 1" = 30'

SIGNATURE

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THE STATE OF MARYLAND, LICENSE NO. 19376
EXPIRATION DATE: 09/22/2015

**MPEA - SITE
IMPROVEMENTS**

**GRADING AND STORMWATER
MANAGEMENT PLAN**

Drawing No.
C1.4

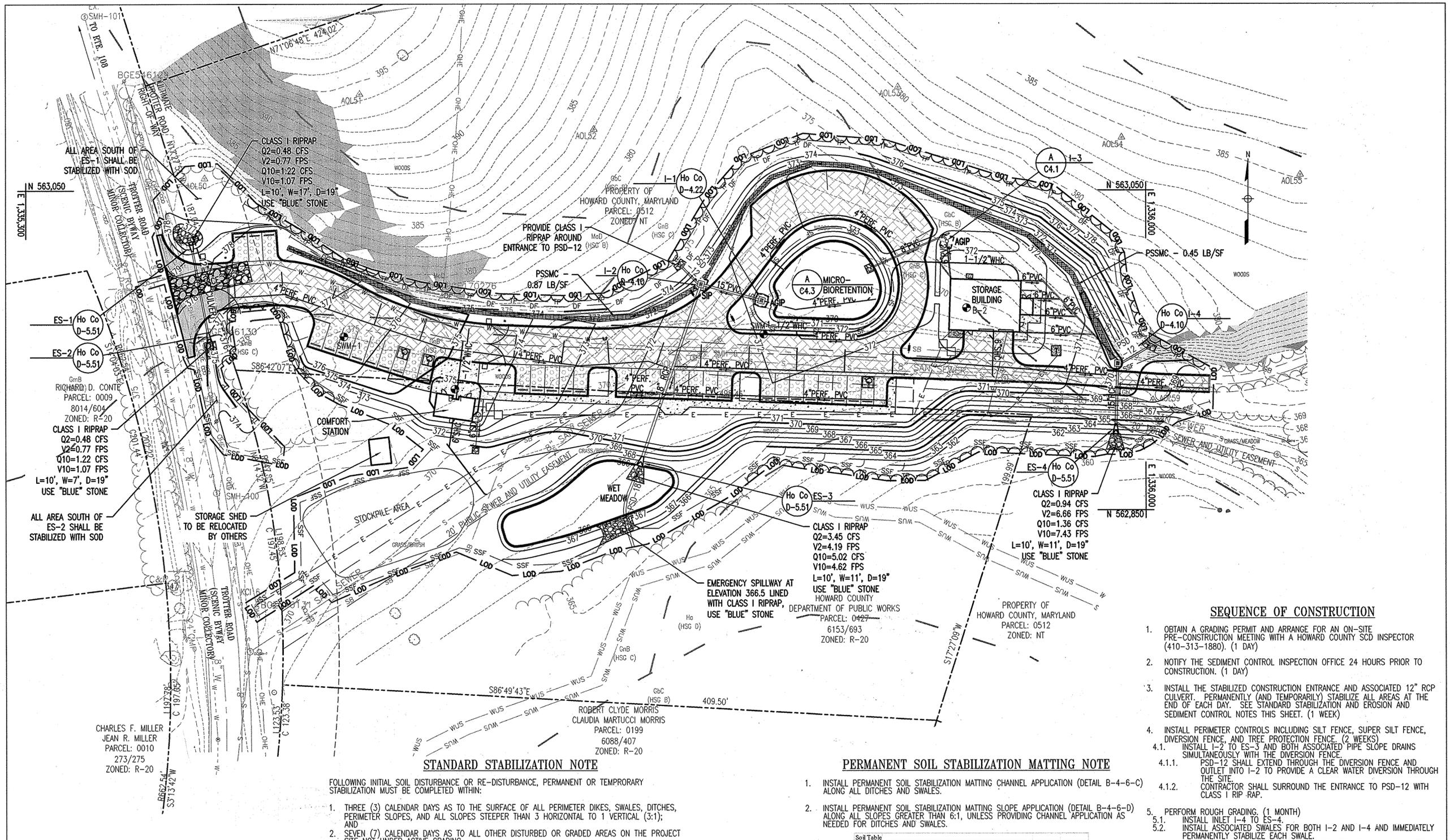
Scale: 1" = 30'
Date: 09/12/2014 Sheet 7 of 26
Des: BWJ/SAD Drawn: SAD Check: AUO

APPROVED: DEPARTMENT OF PLANNING AND ZONING

10-2-14
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

10-10-14
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

10/10/14
 DIRECTOR DATE



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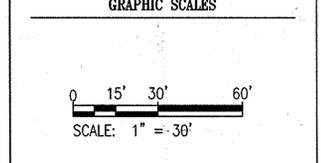
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ZONING: NEWTOWN & R-20
ELECTION DISTRICT 05



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EXPIRATION DATE: 09/22/2015

MPEA - SITE IMPROVEMENTS

EROSION AND SEDIMENT CONTROL PLAN

Drawing No.
C1.5

Scale: 1" = 30'
Date: 09/12/2014 Sheet 8 of 26
Des: BWJ/SAD Drawn: SAD Check: AUO

STANDARD STABILIZATION NOTE

FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN:

- THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND
- SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

NOTE TO CONTRACTOR:
EROSION AND SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED.

EROSION AND SEDIMENT CONTROL NOTES

- NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS RUNOFF IS DIRECTED TO AN MDE APPROVED SEDIMENT CONTROL DEVICE.
- CLEAR WATER DISCHARGE FROM DEWATERING DEVICES (PORTABLE SEDIMENT TANK) SHALL BE DISCHARGED TO A STABILIZED OUTFALL AT A NON-EROSIVE VELOCITY.
- EITHER TEMPORARY OR PERMANENT STABILIZATION MATTING IS TO BE PROVIDED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR WITHIN THE TIME FRAMES REQUIRED BY THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, WHICHEVER IS MORE STRINGENT.

DEVELOPER'S CERTIFICATION

"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."

Signature: *A. U. Olson* Date: 10/10/14

PERMANENT SOIL STABILIZATION MATTING NOTE

- INSTALL PERMANENT SOIL STABILIZATION MATTING CHANNEL APPLICATION (DETAIL B-4-6-C) ALONG ALL DITCHES AND SWALES.
- INSTALL PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION (DETAIL B-4-6-D) ALONG ALL SLOPES GREATER THAN 6:1, UNLESS PROVIDING CHANNEL APPLICATION AS NEEDED FOR DITCHES AND SWALES.

Soil Type	Map Unit	Soil Name	K Factor	HSG
GnB	Glenville-Balls silt loams, 0 to 8 percent slopes		0.37	C
MaD	Manor loam, 15 to 25 percent slopes		0.24	B
GbC	Gladstone loam, 8 to 15 percent slopes		0.20	B
Ha	Hatboro-Codors silt loams, 0 to 3 percent slopes		0.37	D
GnB	Glenville silt loam, 3 to 8 percent slopes		0.37	C

***ALL ROOT PRUNING SHALL BE COMPLETED PRIOR TO ANY CONSTRUCTION ACTIVITIES

***NO CLEARING OR GRUBBING SHALL COMMENCE PRIOR TO THE INSTALLATION OF THE TREE PROTECTION FENCING AND SIGNAGE ADJACENT TO THE CLEARING/GRUBBING AREA WHERE APPLICABLE.

***TREE PROTECTION FENCING AND SIGNAGE SHOULD BE INSTALLED SIMULTANEOUSLY WITH SUPER SILT FENCE. (STEP 3)

***ALL TREE PROTECTION FENCING AND SIGNAGE AS INDICATED ON FOREST CONSERVATION PLAN SHEET F2.2 SHALL BE INSTALLED IN STEPS 1 THROUGH 3, BEFORE BEGINNING ROUGH GRADING OF THE ENTIRE SITE.

***TREE PROTECTION FENCING AND SPECIMEN TREE SIGNAGE SHALL BE REMOVED UPON PERMANENT STABILIZATION OF ALL DISTURBED AREAS. FOREST RETENTION SIGNAGE SHALL REMAIN. (STEP 11)

***IF STOCKPILE AREA EXCEEDS 15 FEET IN HEIGHT, BENCHING WILL BE REQUIRED.

- SEQUENCE OF CONSTRUCTION**
- OBTAIN A GRADING PERMIT AND ARRANGE FOR AN ON-SITE PRE-CONSTRUCTION MEETING WITH A HOWARD COUNTY SCD INSPECTOR (410-313-1880). (1 DAY)
 - NOTIFY THE SEDIMENT CONTROL INSPECTION OFFICE 24 HOURS PRIOR TO CONSTRUCTION. (1 DAY)
 - INSTALL THE STABILIZED CONSTRUCTION ENTRANCE AND ASSOCIATED 12" RCP CULVERT. PERMANENTLY (AND TEMPORARILY) STABILIZE ALL AREAS AT THE END OF EACH DAY. SEE STANDARD STABILIZATION AND EROSION AND SEDIMENT CONTROL NOTES THIS SHEET. (1 WEEK)
 - INSTALL PERIMETER CONTROLS INCLUDING SILT FENCE, SUPER SILT FENCE, DIVERSION FENCE, AND TREE PROTECTION FENCE. (2 WEEKS)
 - INSTALL 1-2 TO ES-3 AND BOTH ASSOCIATED PIPE SLOPE DRAINS SIMULTANEOUSLY WITH THE DIVERSION FENCE.
 - PSD-12 SHALL EXTEND THROUGH THE DIVERSION FENCE AND OUTLET INTO 1-2 TO PROVIDE A CLEAR WATER DIVERSION THROUGH THE SITE.
 - CONTRACTOR SHALL SURROUND THE ENTRANCE TO PSD-12 WITH CLASS I RIP-RAP.
 - PERFORM ROUGH GRADING. (1 MONTH)
 - INSTALL INLET 1-4 TO ES-4.
 - INSTALL ASSOCIATED SWALES FOR BOTH 1-2 AND 1-4 AND IMMEDIATELY PERMANENTLY STABILIZE EACH SWALE.
 - DO NOT INSTALL MICRO-BIORETENTION OR WET MEADOW UNTIL LATER IN SEQUENCE AS DESCRIBED BELOW.
 - INSTALL ALL UTILITIES AND COORDINATE WITH GRADING OPERATION, INSTALL INLET PROTECTION UPON INSTALLATION OF INLETS AS INDICATED. (1 MONTH)
 - INSTALL ALL CURB AND SIDEWALKS. (1 MONTH)
 - STABILIZE ALL OTHER AREAS WITH PERMANENT SEEDING, MULCH, AND LANDSCAPING. COMPLETE UTILITY, BUILDING AND REMAINING SITE CONSTRUCTION. (1 MONTH)
 - UPON STABILIZATION OF ALL CONTRIBUTING AREAS, INSTALL MICRO-BIORETENTION. (1 WEEK)
 - UPON STABILIZATION OF ALL CONTRIBUTING DRAINAGE AREAS, INSTALL ALL PERVIOUS PAVEMENT AND ASPHALT PAVING OF PARKING LOT. INSTALLATION OF THE FINAL PAVEMENT COURSE MUST BE INSPECTED BY THE ON-SITE GEO-TECHNICAL ENGINEER. (1 MONTH)
 - INSTALL WET MEADOW GRADING. (1 WEEK)
 - FLUSH AND PUMP CLEAN THE STORM DRAIN SYSTEM. (1 DAY)
 - INSTALL LANDSCAPING AS SHOWN ON LANDSCAPE PLAN. (2 WEEKS)
 - UPON PERMANENT STABILIZATION OF ALL DISTURBED AREAS AND WITH APPROVAL OF SEDIMENT CONTROL INSPECTOR, REMOVE ANY REMAINING SEDIMENT CONTROL DEVICES AND ALL NON-NATURAL ITEMS FROM FORESTS, FLOODPLAIN, STREAMS, WETLANDS AND THEIR BUFFERS.

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

Signature: *John L. Robertson* Date: 9/25/14
HOWARD SOIL CONSERVATION DISTRICT

ENGINEER'S CERTIFICATION

"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."

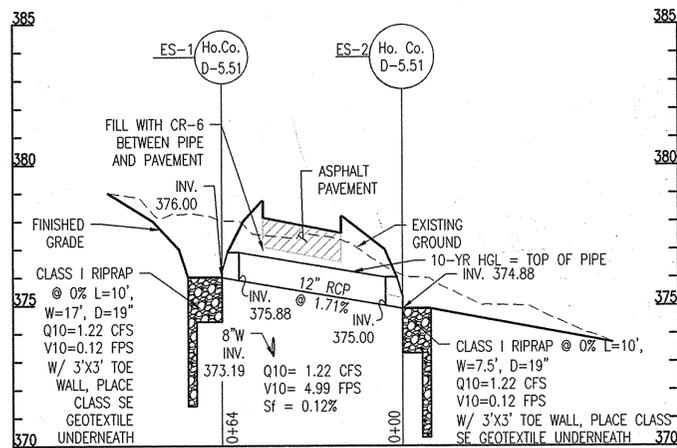
Signature: *Anthony U. Olson* Date: 9/11/14
SIGNATURE OF ENGINEER DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Signature: *Chad E. ...* Date: 10-2-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

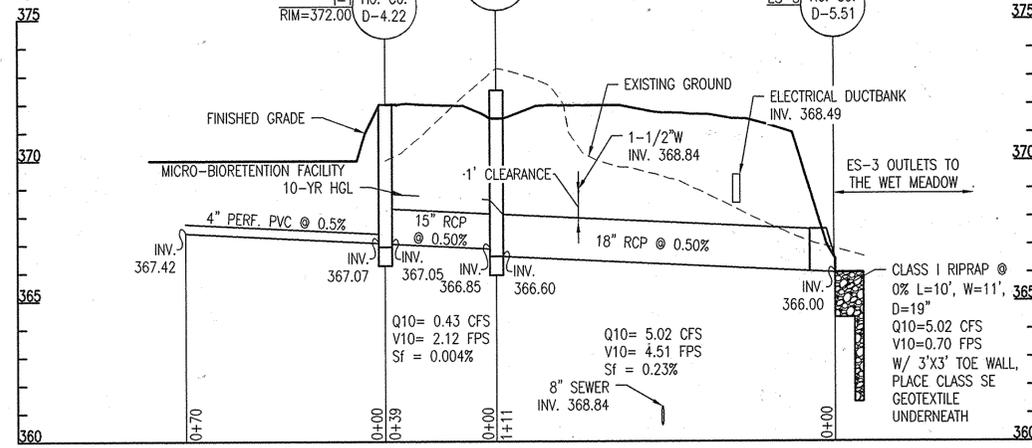
Signature: *...* Date: 10-10-14
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Signature: *...* Date: 11/11/14
DIRECTOR DATE



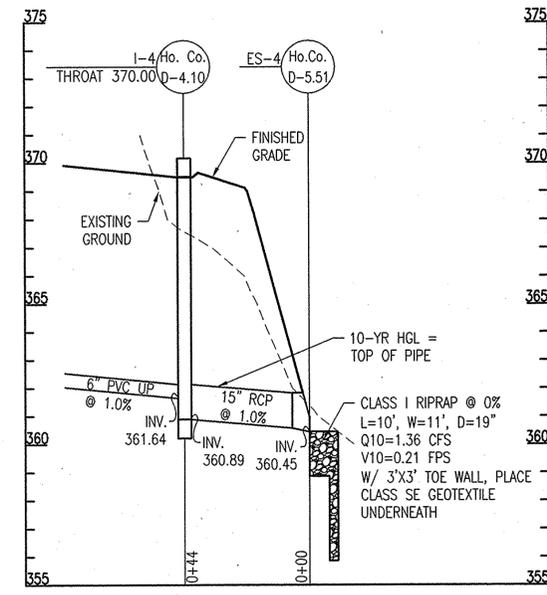
ES-1 TO ES-2 STORM DRAIN PROFILE

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



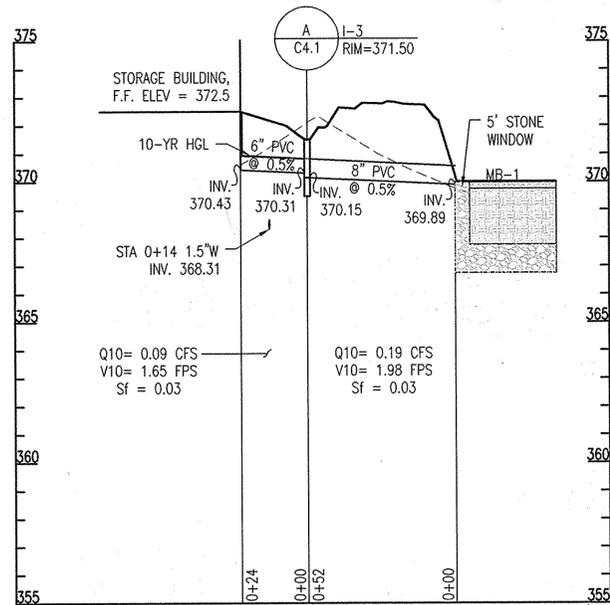
I-1 TO ES-3 STORM DRAIN PROFILE

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



I-4 to ES-4 STORM DRAIN PROFILE

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



STORAGE BUILDING TO MB-1 STORM DRAIN PROFILE

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

STORM DRAIN STRUCTURE SCHEDULE				
NO.	TYPE	STANDARD DETAIL	THROAT ELEV.	
I-1	TYPE 'S' INLET	HO.CO. D-4.22	372.00	
I-2	TYPE 'D' INLET	HO.CO. D-4.10	372.50	
I-3	24" NYLOPLAST DRAIN	Detail A/C4.1	371.50	
I-4	TYPE 'D' INLET	HO.CO. D-4.10	370.00	
ES-1	TYPE 'D' INLET	HO.CO. D-4.10	-	
ES-2	TYPE 'D' INLET	HO.CO. D-4.10	-	
ES-3	TYPE 'D' INLET	HO.CO. D-4.10	-	

STORM DRAIN PIPE SCHEDULE				
FROM	TO	SIZE	TYPE	LENGTH
CAP	I-1	4	PERF. PVC	72
I-1	I-2	15	RCP	39
I-2	ES-3	18	RCP	111
I-4	ES-4	15	RCP	44
BLDG	I-3	6	PVC	24
I-3	MB-1	8	PVC	52
ES-1	ES-2	12	RCP	64
BLDG	I-4	6	PVC	97
UNDERDRAIN		4	PERF. PVC	1170

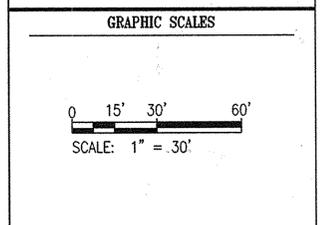
APPROVED: DEPARTMENT OF PLANNING AND ZONING
 10-2-14
 10-10-14
 10/10/14
 DIRECTOR

REVISIONS	

HOWARD COUNTY
 DEPARTMENT OF RECREATION AND PARKS
 7120 OAKLAND MILLS ROAD
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 DEPARTMENT OF PUBLIC WORKS
 9250 BENDIX ROAD
 ELLICOTT CITY, MD 21043

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 WHITMAN, REQUARDT & ASSOCIATES, LLP
 801 South Caroline Street, Baltimore, Maryland 21231
 Phone: 410-235-3450 Fax: 410-243-5716

PROPERTY
 TAX MAP 35, GRID 3, PARCEL 512
 TAX MAP 35, GRID 2, PARCEL 427
 ZONING: NEWTOWN & R-20
 ELECTION DISTRICT 05

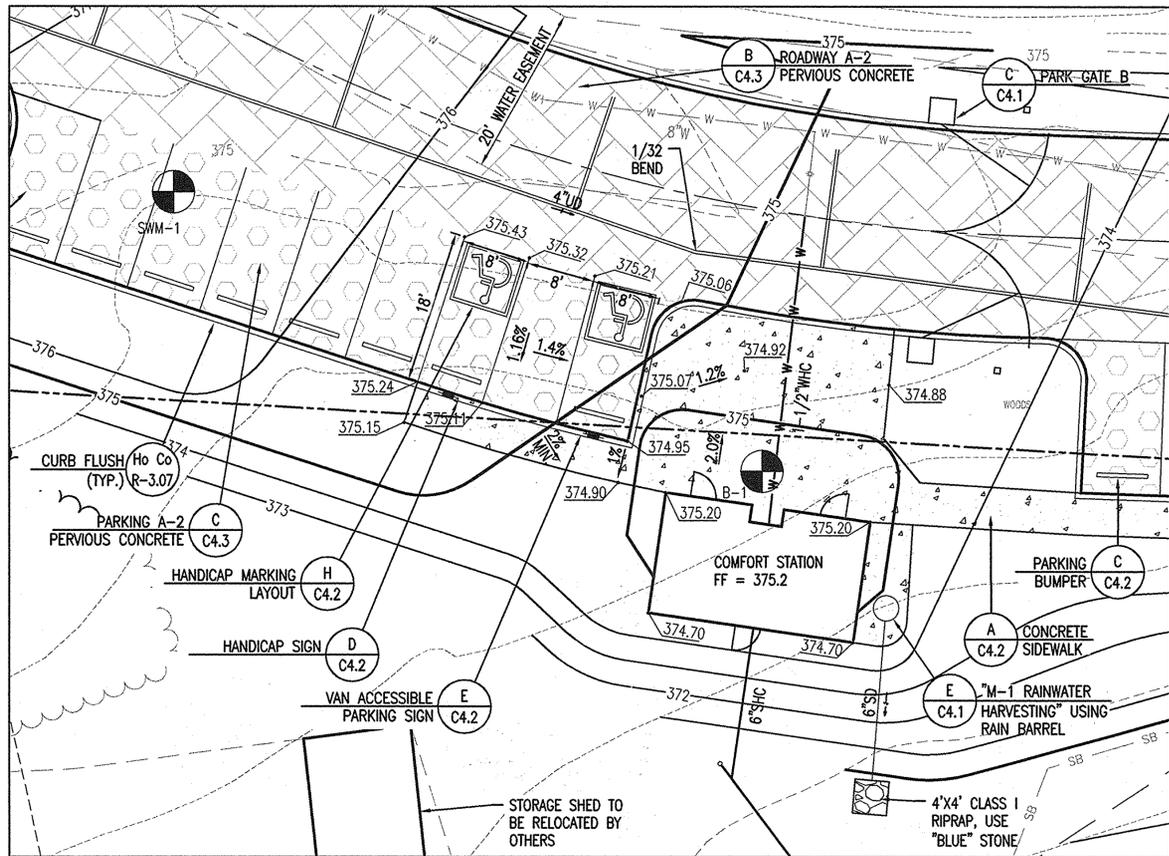


SIGNATURE

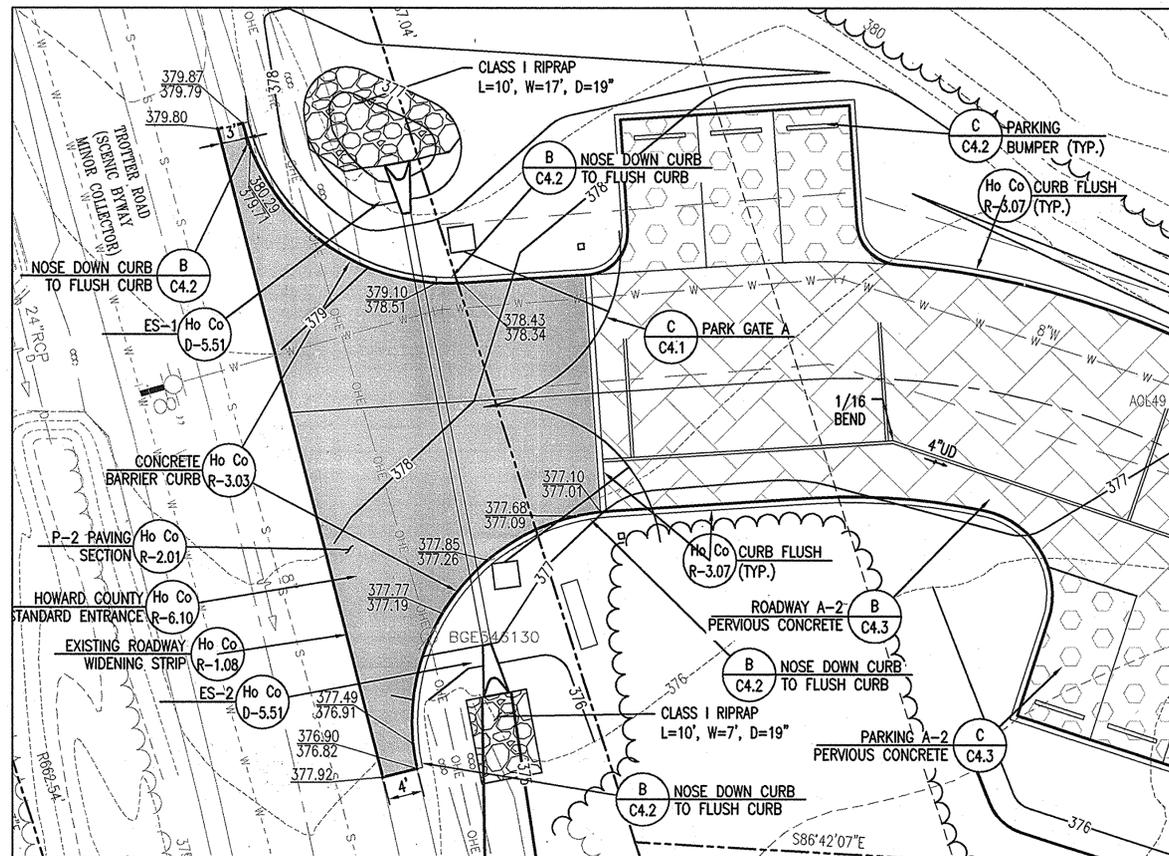
 PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19376, EXPIRATION DATE: 09/22/2015.

MPEA - SITE IMPROVEMENTS

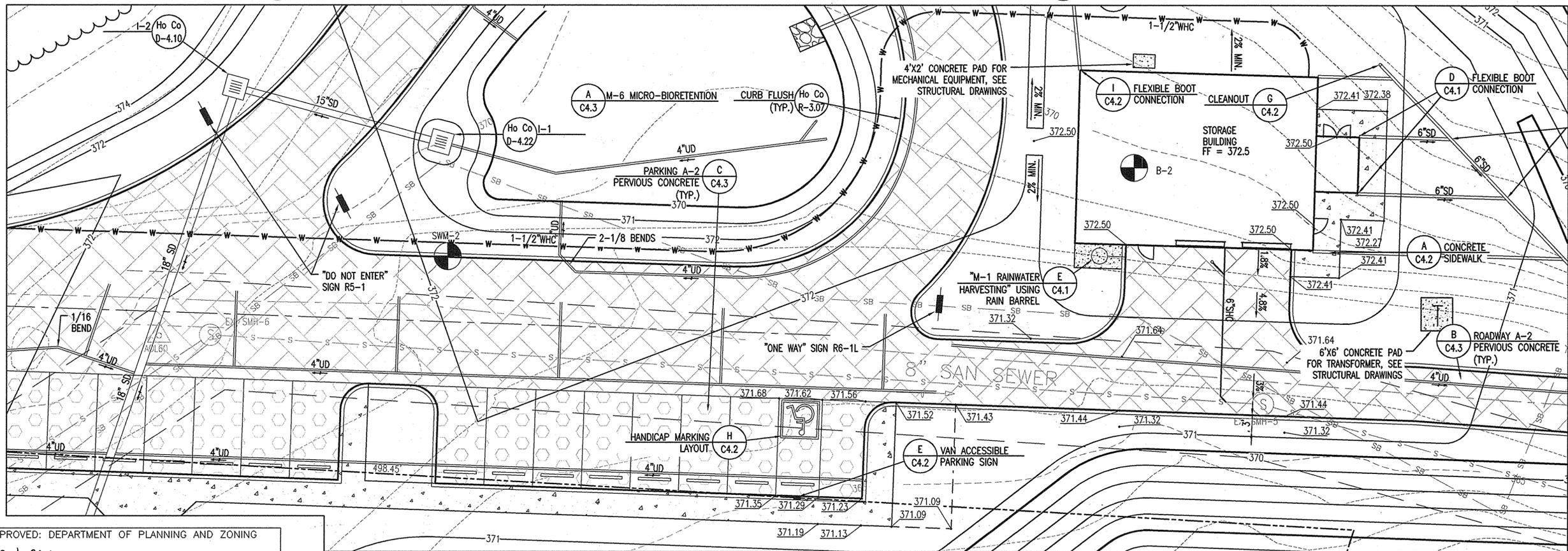
STORM DRAIN PROFILES
 Drawing No.
C2.1
 Scale: 1" = 30'
 Date: 09/12/2014 Sheet 9 of 26
 Des: BWJ/SAD Drawn: SAD Check: AVO
 SDP-14-056



A ENLARGED COMFORT STATION PLAN
C3.1 SCALE: 1" = 10'



B ENLARGED ENTRANCE PLAN
C3.1 SCALE: 1" = 10'



C ENLARGED STORAGE BUILDING/STORMWATER MANAGEMENT PLAN
C3.1 SCALE: 1" = 10'

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 Chief, Development Engineering Division 10-2-14
 Chief, Division of Land Development 10-10-14
 Director 10/12/14

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 ZONING: NEWTOWN & R-20
 ELECTION DISTRICT 05

GRAPHIC SCALES

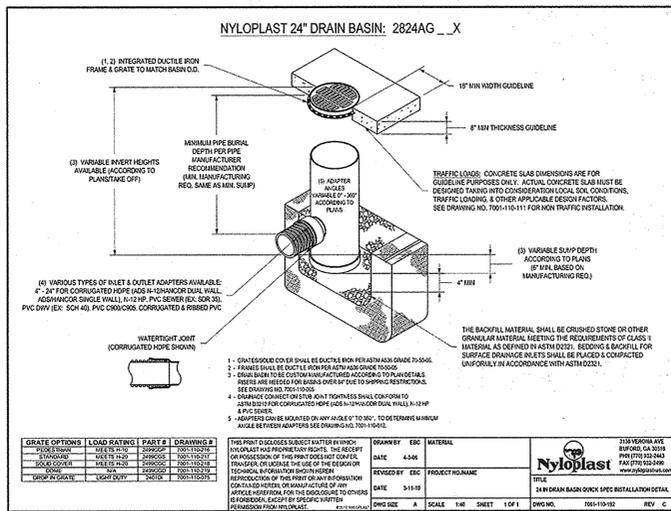
 SCALE: 1" = 10'

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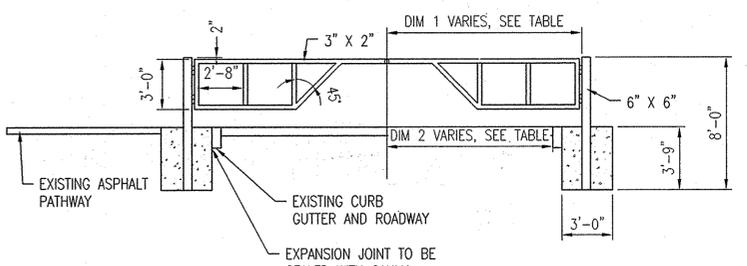
MPEA - SITE IMPROVEMENTS

ENLARGED SITE PLANS
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C3.1
 Scale: 1"=10'
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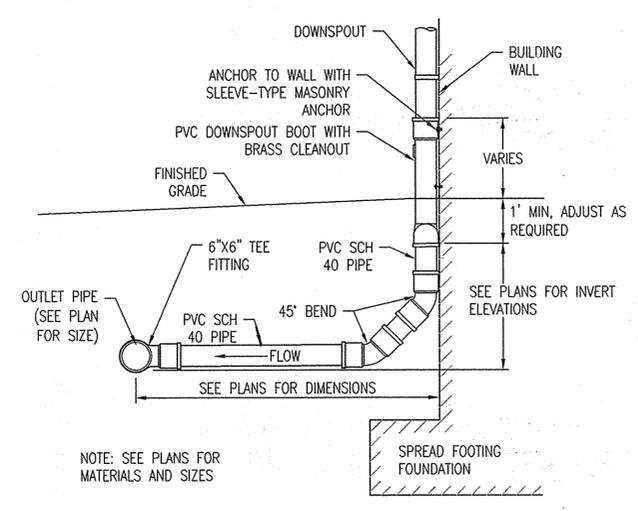


A 24" NYLOPLAST DRAIN
C4.1 N.T.S.

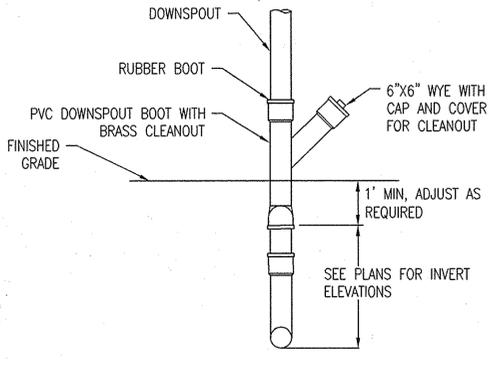
- NOTES:
- GATE SHALL SWING IN TOWARDS PARK.
 - ALL WELDING TO BE CLEANED AND GROUND SMOOTH.
 - WELD FLANGES AT ENDS OF TOP RAILS, ONE SIDE TO HAVE SLOT OPENING TO FIT OVER WELDED U-BOLT ON OTHER SIDE FOR PADLOCK ATTACHMENT.
 - INSTALL 4"x4" HOLD-OPEN POSTS ON EACH SIDE OF GATE, 2 FT. 7 IN FROM EDGE OF ROADWAY, AND APPROPRIATE DISTANCE FROM GATEPOSTS.
 - GREASE ALL FITTINGS.
 - ATTACH U-BOLT WITH STAINLESS STEEL CLIP TO HOLD OPEN POST AND WELD U-BOLT TO GATE FOR EASY ATTACHMENT AND RELEASE OF GATE.
 - USE 7" BARREL HINGES WITH STAINLESS PIN, AND WELD PADS 3"x1-1/2"x3/8" THICK. GATE HINGES TO BE PLUMB AND SQUARE WITH GATE POST.



B PARK GATE DETAIL
C4.1 NOT TO SCALE

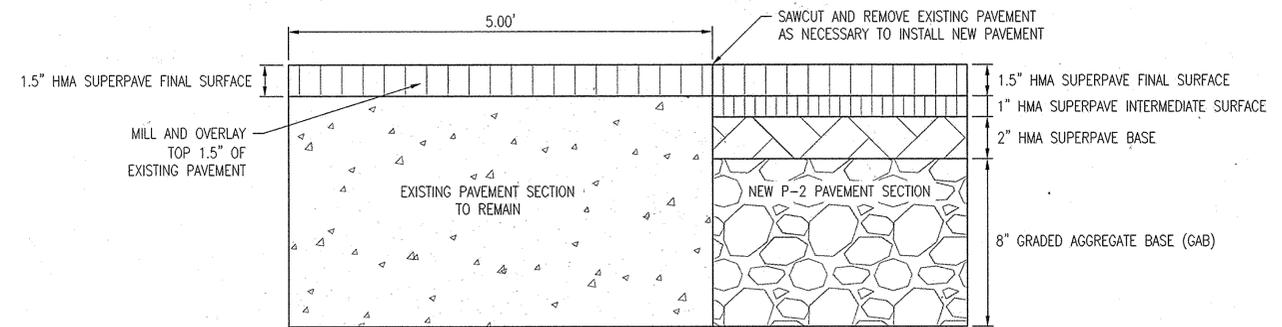


SIDE VIEW

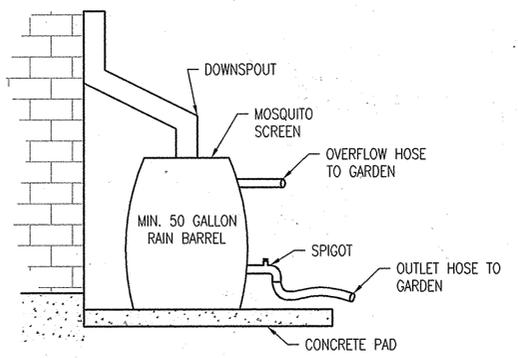


FRONT VIEW

C FLEXIBLE BOOT CONNECTION
C4.1 NOT TO SCALE



B LAP JOINT DETAIL
C4.1 NOT TO SCALE



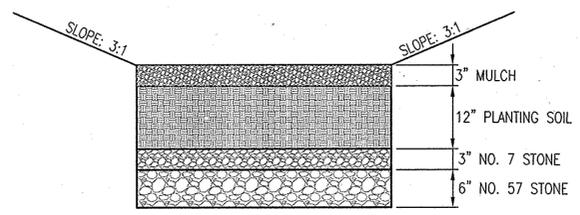
E RAIN BARREL
C4.1 NOT TO SCALE

NOTE: CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF 50 GALLON RAIN BARREL AND ALL CONNECTIONS FOR APPROVAL BY ENGINEER

OPERATION AND MAINTENANCE SCHEDULE FOR RAIN BARRELS

- LEAF SCREENS, GUTTERS, AND DOWNSPOUTS SHOULD BE CLEANED TO PREVENT CLOGGING. BUILT-UP DEBRIS CAN ALSO FOSTER BACTERIAL GROWTH IN GUTTERS AND DOWNSPOUTS.
- STORAGE TANK LIDS AND MOSQUITO SCREENS SHOULD BE INSPECTED AND CLEANED.
- DAMAGED COMPONENTS SHOULD BE REPLACED AS NEEDED.
- TO AVOID FREEZING OF COMPONENTS, ABOVE GROUND SYSTEMS SHOULD BE DISCONNECTED, DRAINED, AND CLEANED AT THE START OF THE WINTER SEASON.
- UNDERGROUND SYSTEM CONNECTIONS SHOULD BE CHECKED FOR FROZEN LINES AND ICE BLOCKAGES DURING WINTER.
- INDOOR SYSTEMS MAY REQUIRE MORE SPECIFIC MAINTENANCE.

GATE	DIM 1	DIM 2
A	20.00'	16.88'
B	14.14'	11.97'



F WET MEADOW SECTION
C4.1 NOT TO SCALE

OPERATION AND MAINTENANCE SCHEDULE FOR WET MEADOW

- THE TOP FEW INCHES OF THE PLANTING SOIL SHOULD BE REMOVED AND REPLACED WHEN WATER PONDS FOR MORE THAN 48 HOURS. SILTS AND SEDIMENT SHOULD BE REMOVED FROM THE SURFACE OF THE BED AS NEEDED.
- WHERE PRACTICES ARE USED TO TREAT AREAS WITH HIGHER CONCENTRATIONS OF HEAVY METALS (E.G., PARKING LOTS, ROADS), MULCH SHOULD BE REPLACED ANNUALLY. OTHERWISE, THE TOP TWO TO THREE INCHES SHOULD BE REPLACED AS NECESSARY.
- OCCASIONAL PRUNING AND REPLACEMENT OF DEAD VEGETATION IS NECESSARY. IF SPECIFIC PLANTS ARE NOT SURVIVING, MORE APPROPRIATE SPECIES SHOULD BE USED. WATERING MAY BE REQUIRED DURING PROLONGED DRY PERIODS.

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Chad Smith 10-2-14
 CHIEF, DEVELOPMENT ENGR. DIVISION & DATE
Kevin O'Neil 10-10-14
 CHIEF, DIVISION OF LAND DEV. DATE
Merida M. Lay 10/10/14
 DIRECTOR DATE

REVISIONS	

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 ELECTION DISTRICT 05

GRAPHIC SCALES

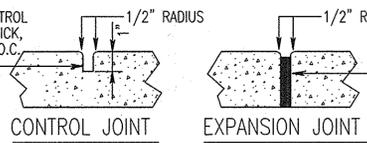
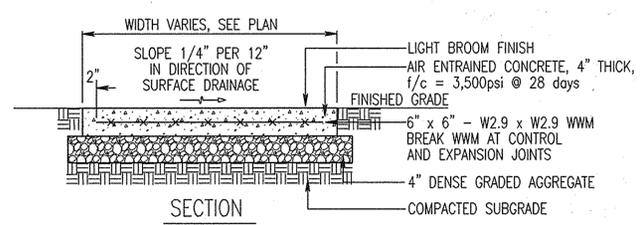
SIGNATURE

STATE OF MARYLAND
 ANNE ARUNDEL COUNTY
 PROFESSIONAL ENGINEER
William J. ...
 PROFESSIONAL CERTIFICATION
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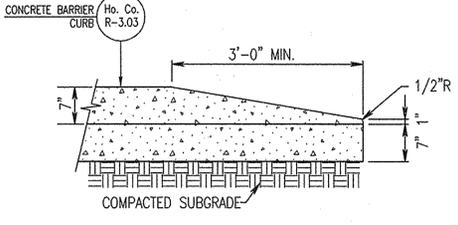
MPEA - SITE IMPROVEMENTS

SITE DETAILS
 Drawing No.
C4.1

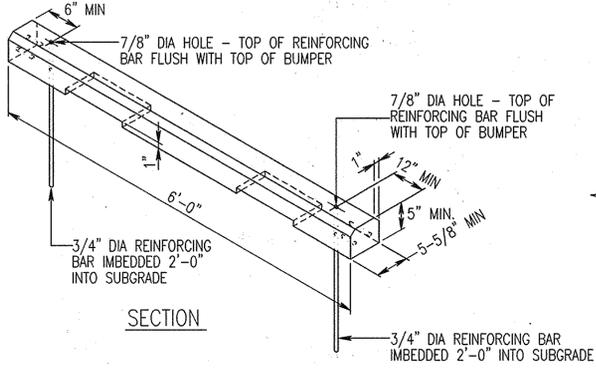
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 Date: 09/12/2014 Sheet: 11 of 28
 Des: BWJ/SAD Drawn: SAD Check: AUO



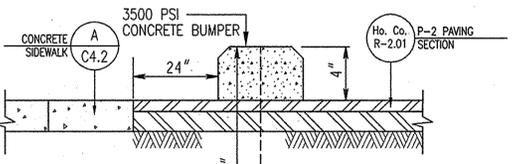
A CONCRETE SIDEWALK
C4.2 NOT TO SCALE



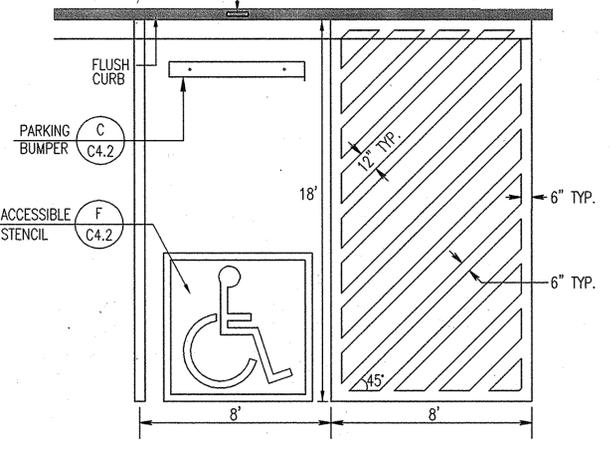
B NOSE DOWN CURB
C4.2 NOT TO SCALE



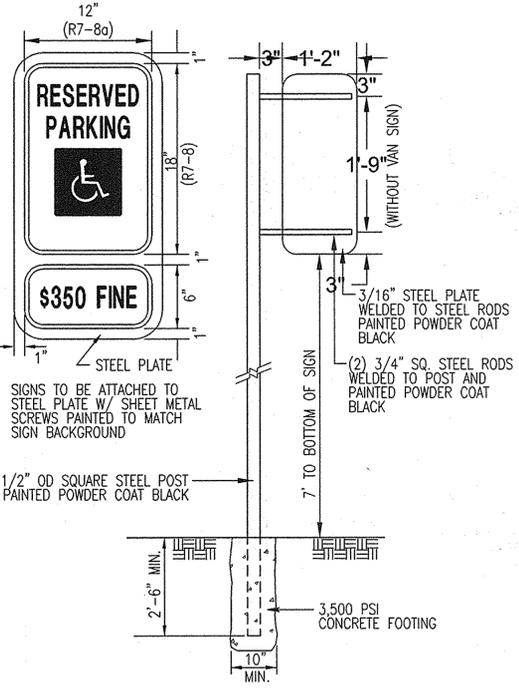
C PARKING BUMPER
C4.2 NOT TO SCALE



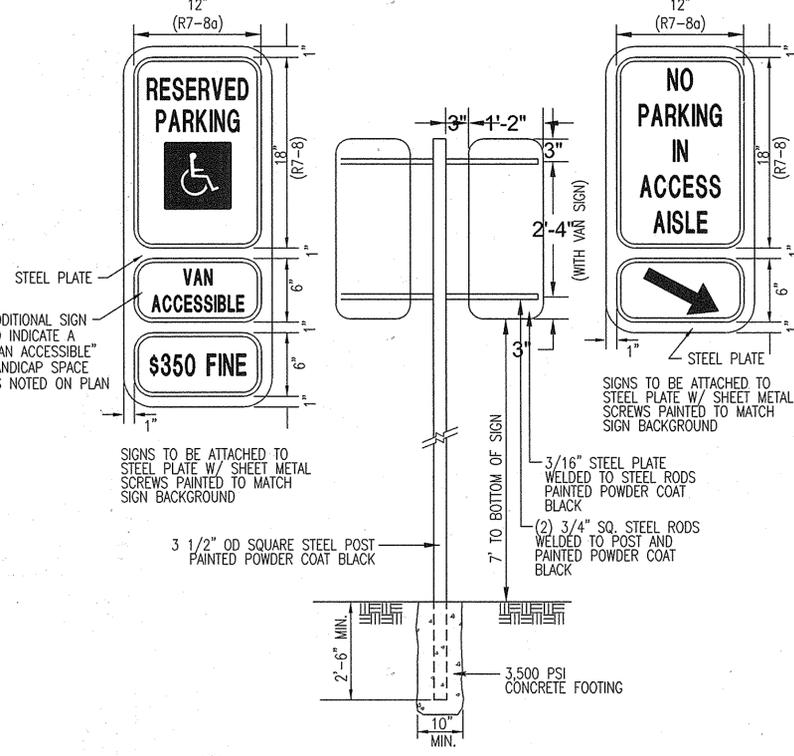
D HANDICAP SIGN
C4.2



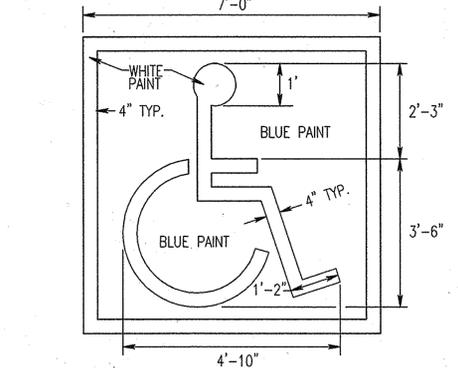
H HANDICAP MARKING LAYOUT
C4.2 NOT TO SCALE



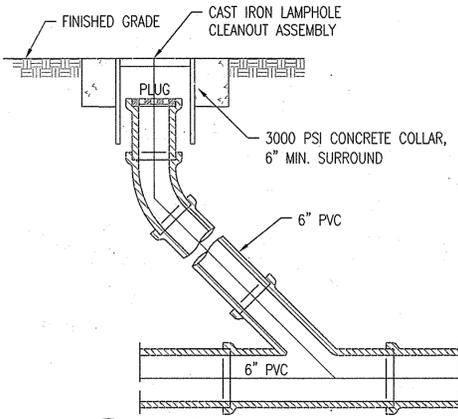
D HANDICAP SIGN
C4.2 NOT TO SCALE



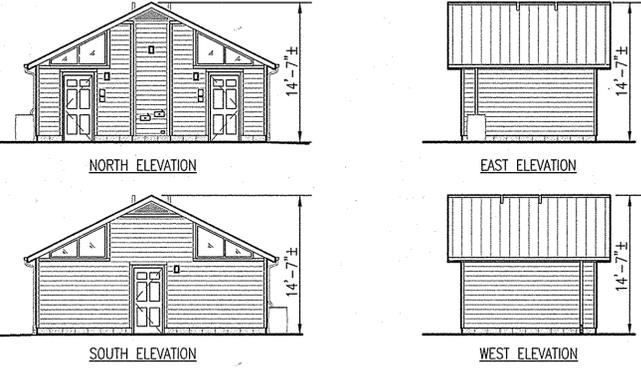
E VAN ACCESSIBLE HANDICAP SIGN
C4.2 NOT TO SCALE



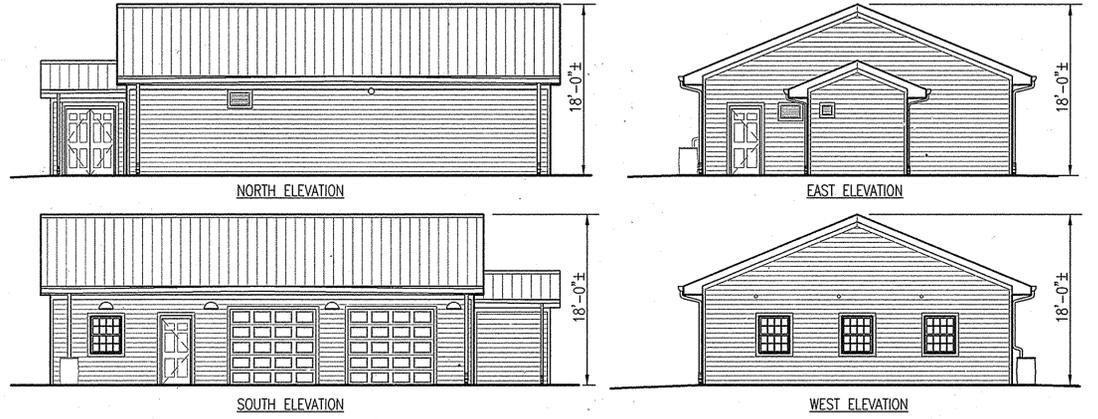
F ACCESSIBLE STENCIL
C4.2 NOT TO SCALE



G CLEANOUT
C4.2 NOT TO SCALE



I COMFORT STATION ELEVATIONS
C4.2 NOT TO SCALE



J STORAGE BUILDING ELEVATIONS
C4.2 NOT TO SCALE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 Chief Engineer
 SUPERVISOR OF PLANNING & ZONING
 DATE 10-2-14
 DATE 10-10-14
 DATE 10/13/14

REVISIONS	

HOWARD COUNTY
 DEPARTMENT OF RECREATION AND PARKS
 7120 OAKLAND MILLS ROAD
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 DEPARTMENT OF PUBLIC WORKS
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PROPERTY
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 TAX MAP 35, GRID 2, PARCEL 427
 ZONING: NEWTOWN & R-20
 ELECTION DISTRICT 05

GRAPHIC SCALES

SIGNATURE



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 EXPIRATION DATE: 09/22/2015

MPEA - SITE IMPROVEMENTS

SITE DETAILS
 Drawing No.
C4.2

Scale: NOT TO SCALE
 Date: 09/12/2014 Sheet 12 of 26
 Des: BWJ/SAD Drawn: SAD Check: AUO

B.4.C SPECIFICATIONS FOR MICRO-BIORETENTIONS

1. MATERIAL SPECIFICATIONS

THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.

2. FILTERING MEDIA OR PLANTING SOIL

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

THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:

- SOIL COMPONENT - LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION)
- ORGANIC CONTENT - MINIMUM 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60%-65%) AND COMPOST (35% TO 40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).
- CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.
- PH RANGE - SHOULD BE BETWEEN 5.5 - 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED INTO THE SOIL TO INCREASE OR DECREASE PH.

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

3. COMPACTION

IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE

EXCAVATED USING A LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TYPE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH-PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.

COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS A CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REFRACATURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.

ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY PONDED WATER BEFORE PREPARING (ROTOTILLING) BASE.

WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE.

WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.

4. PLANT MATERIAL

SEE LANDSCAPING PLANS.

5. PLANT INSTALLATION

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

ROOTSTOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION.

TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL.

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

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

6. UNDERDRAINS

UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:

-PIPE- SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F 758, TYPE PS 28, OR AASHTO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OR HDPE).

-PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1/4" (NO. 4 OR 4X4) GALVANIZED HARDWARE CLOTH.

-GRAVEL - THE GRAVEL LAYER (NO. 57 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.

-THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.

-A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.

-A 4" LAYER OF PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".

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

7. MISCELLANEOUS

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

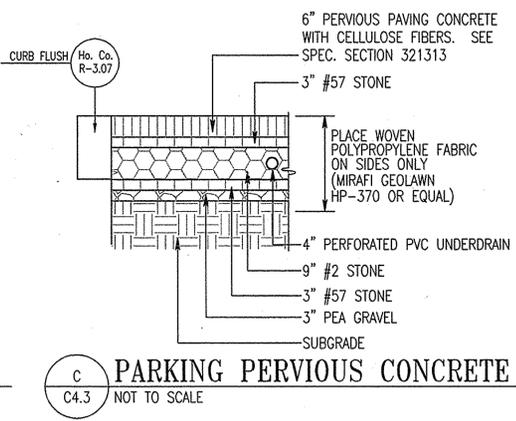
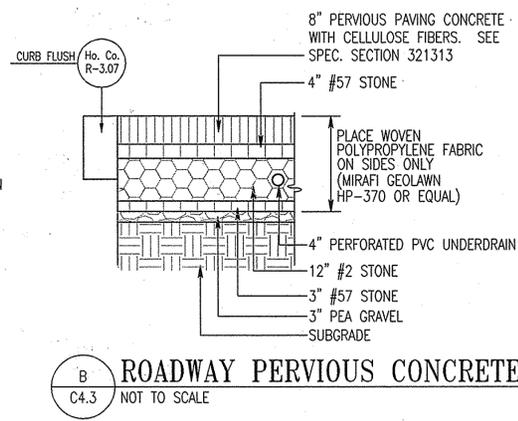
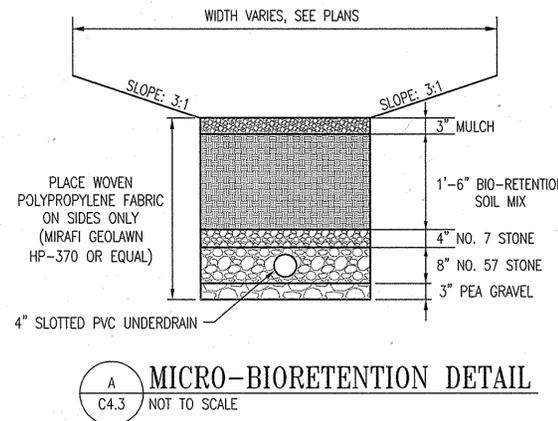


Table B.4.1 Materials Specifications for Micro-Biorententions

Material	Specification	Size	Notes
Planting soil [2' to 4' deep]	SHA BIO-RETENTION SOIL MIX	n/a	SPECIFICATION 920.01.05 (SEE BELOW)
Organic content	Min. 10% by dry weight (ASTM D 2974)		
Mulch	shredded hardwood		aged 6 months, minimum; no pine or wood chips
Pea Gravel	ASTM-D-448	No. 8 or No. 9 (1/8" or 3/8")	
Geotextile		n/a	PE Type 1 nonwoven
Gravel (underdrains)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE	
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" rigid schedule 40 PVC or as shown on plan	Maximum slot length or diameter = 0.875" Maximum Slot Width = 0.125"

OPERATION AND MAINTENANCE SCHEDULE FOR MICRO-BIORETENTIONS

- 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.
- THE OWNER SHALL PERFORM A PLANT INSPECTION IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL, TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRES.
- THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
- THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

SHA BIO-RETENTION SOIL MIX SPECIFICATION

920.01.05 Bioretention Soil Mix (BSM). A homogeneous mixture composed by loose volume of 5 parts Coarse Sand, 3 parts Base Soil, and 2 parts Fine Bark. BSM shall conform to the following:

(a) **Components.** Components of BSM shall be sampled, tested and approved before mixing as follows:

(1) **Coarse Sand.** MSMT 356. Coarse Sand shall be washed silica sand or crushed glass that conforms to ASTM Fine Aggregate C-33. Coarse Sand shall include less than 1% by weight of clay or silt size particles, and less than 5% by weight of any combination of diabase, greystone, calcareous or dolomitic sand.

(2) **Base Soil.** Base Soil shall be tested and certified by the producer to conform to the following requirements:

TEST PROPERTY		TEST METHOD	TEST VALUE AND AMENDMENT	
Prohibited Weeds	—	—	Free of seed and viable plant parts of species in 920.06.02(a)(b)(c) when inspected.	
Debris	—	—	No observable content of cement, concrete, asphalt, crushed gravel or construction debris when inspected.	
Grading Analysis	T 87	Particle Size	Passing by Weight Minimum %	
		2 in.	100	
		No. 4	90	
		No. 10	80	
Textural Analysis	T 88	Particle	% Passing by Weight	
		Size mm	Minimum	Maximum
		Sand 2.0 - 0.050	50	85
		Silt 0.050 - 0.002	5	45
Clay less than 0.002	5	10		
Soil pH	D 4972	pH of 5.7 to 6.9.		
Organic Matter	T 194	1.0 to 10.0 % by weight.		
Soluble Salts	EC1:2 (V:V)	500 ppm (1.25 mmhos/cm) or less.		
Harmful Materials	—	920.01.01(a)		

(3) **Fine Bark.** Fine Bark shall be the bark of hardwood trees that is milled and screened to a uniform particle size of 2 in. or less. Fine Bark shall be composted and aged for 6 months or longer, and be free from sawdust and foreign materials.

A 1 to 2 lb sample of Fine Bark shall be submitted to the Landscape Operations Division for examination.

(b) **Composition.** BSM shall be sampled and tested according to the requirements of MSMT 356 and conform to the following:

TEST PROPERTY		TEST METHOD	TEST VALUE AND AMENDMENT			
Weeds	—	—	Free of seed and viable plant parts of species in 920.06.02(a)(b)(c) when inspected.			
Debris	—	—	920.01.05(a)(2)			
Textural Analysis	T 88	Particle	% Passing by Weight			
		Size mm	Minimum	Maximum		
		Sand 2.0 - 0.050	55	85		
		Silt 0.050 - 0.002	—	20		
Clay less than 0.002	1	8				
Soil pH	D 4972	pH of 5.7 to 7.1.				
Organic Matter	T 194	Minimum 1.5 % by weight.				
Nutrient Analysis and Soluble Salts	Mohlich-3	Element	Concentration			
			Minimum	Maximum		
		Calcium (Ca)	32	25	no limit	no limit
		Magnesium (Mg)	15	25	no limit	no limit
		Phosphorus (P)	18	25	92	100
		Potassium (K)	22	25	no limit	no limit
		Sulfur (SO ₄)	25	n/a	no limit	no limit
EC1:2 (V:V)	Soluble Salts	40	n/a	500	n/a	
Harmful Materials	—	920.01.01(a)				

(c) **Amendment or Failure.** BSM that does not conform to composition requirements for pH or nutrient analysis shall be amended as specified by the NMP. BSM that exceeds maximum phosphorus concentration or fails other composition requirements will not be accepted, and shall not be delivered or used as BSM.

(d) **Storage.** 920.01.02(b). BSM shall be stored in a stockpile that is protected from weather under tarp or shed. BSM stored for 6 months or longer shall be resampled, retested, and reapproved before use.

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 10-2-14
 10-10-14
 10-10-14

REVISIONS	

HOWARD COUNTY
 DEPARTMENT OF RECREATION AND PARKS
 7120 OAKLAND MILLS ROAD
 COLUMBIA, MD 21046
 DEPARTMENT OF PUBLIC WORKS
 9250 BENDIX ROAD
 ELLICOTT CITY, MD 21043

WR&A
 WHITMAN, REQUARDT & ASSOCIATES, LLP
 801 South Caroline Street, Baltimore, Maryland 21231
 Phone: 410-235-3450 Fax: 410-243-5716

PROPERTY
 TAX MAP 35, GRID 3, PARCEL 512
 TAX MAP 35, GRID 2, PARCEL 427
 ZONING: NEWTOWN & R-20
 ELECTION DISTRICT 05

GRAPHIC SCALES

SIGNATURE

MPEA - SITE IMPROVEMENTS

STORMWATER MANAGEMENT DETAILS AND NOTES

Drawing No.
C4.3
 Scale: NOT TO SCALE
 Date: 09/12/2014 Sheet 13 of 26
 Des: BWJ/SAD Drawn: SAD Check: AUO

**HOWARD SOIL CONSERVATION DISTRICT
STANDARD SEDIMENT CONTROL NOTES**

- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (410-313-1855).
- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THEREOF.
- FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN A 3 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1. BY 7 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL 1, CHAPTER 12 OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC. 51), SOD (SEC. 54), TEMPORARY SEEDING (SEC. 50) AND MULCHING (SEC. 52). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SITE ANALYSIS:
TOTAL AREA OF SITE: 2.34 ACRES
AREA DISTURBED: 2.34 ACRES
AREA TO BE ROOFED OR PAVED ACRES: 0.72 ACRES
AREA TO BE VEGETATIVELY STABILIZED ACRES: 1.62 ACRES
TOTAL CUT CU. YDS.: 4,078 CU. YDS.
TOTAL FILL: 4,839 CU. YDS.
OFFSITE WASTE/BORROW AREA LOCATION: TO BE DETERMINED BY CONTRACTOR
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
- TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORK DAY, WHICHEVER IS SHORTER.

**HOWARD SOIL CONSERVATION DISTRICT
TEMPORARY SEEDING NOTES**

- APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE RE-DISTURBED WHERE A SHORT-TERM VEGETATIVE COVER IS NEEDED.
- SEEDBED PREPARATION: -- LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.
- SOIL AMENDMENTS: -- APPLY 600 IBS/ACRE 10-10-10 FERTILIZER (14 IBS/1000 SQ. FT.).
- SEEDING: -- FOR PERIODS MARCH 1 -- APRIL 30 AND FROM AUGUST 15 -- OCTOBER 15, SEED WITH 2-1/2 BUSHEL PER ACRE OF ANNUAL RYE (3.2 IBS/1000 SQ. FT.). FOR THE PERIOD MAY 1 -- AUGUST 14, SEED WITH 3 IBS/ACRE OF WEEPING LOVEGRASS (.07 IBS/1000 SQ. FT.). FOR THE PERIOD NOVEMBER 16 -- FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS/ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.
- MULCHING: -- APPLY 1-1/2 TO 2 TONS/ACRE (70 TO 90 IBS/1000 SQ. FT.) OF UNROTTED WOOD-FREE, SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ. FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS, ON SLOPE 8 FT. OR HIGHER, USE 348 GAL. PER ACRE (8 GAL/1000 SQ. FT.) FOR ANCHORING.
- REFER TO THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR ADDITIONAL RATES AND METHODS NOT COVERED.

ENGINEER'S CERTIFICATION

"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."

Anthony U. Olson 9/9/14
SIGNATURE OF ENGINEER DATE
(PRINT NAME BELOW SIGNATURE) Anthony U. Olson

DEVELOPER'S CERTIFICATION

"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."

Anthony U. Olson 9/9/14
SIGNATURE OF DEVELOPER DATE
(PRINT NAME BELOW SIGNATURE)

APPROVED: DEPARTMENT OF PLANNING AND ZONING

John R. Roberts 10-2-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
John R. Roberts 10-10-14
CHIEF, DIVISION OF LAND DEVELOPMENT DATE
John R. Roberts 10/20/14
DIRECTOR DATE

**HOWARD SOIL CONSERVATION DISTRICT
PERMANENT SEEDING NOTES**

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:

- PREFERRED -- APPLY 2 TONS/ACRE DOLOMITIC LIMESTONE (92 IBS/1000 SQ. FT.) AND 600 IBS/ACRE 10-10-10 FERTILIZER (14 IBS/1000 SQ. FT.) BEFORE SEEDING. HARROW OR DISK INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 IBS/ACRE 30-0-0 UREAFORM FERTILIZER (9 IBS/1000 SQ. FT.).
 - ACCEPTABLE -- APPLY 2 TONS/ACRE DOLOMITIC LIMESTONE (92 IBS/1000 SQ. FT.) AND 1000 IBS/ACRE 10-10-10 FERTILIZER (23 IBS/1000 SQ. FT.) BEFORE SEEDING. HARROW OR DISK INTO UPPER THREE INCHES OF SOIL.
- SEEDING: -- FOR THE PERIODS MARCH 1 -- APRIL 30, AND AUGUST 1 -- OCTOBER 15, SEED WITH 60 IBS/ACRE (1.4 IBS/1000 SQ. FT.) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD MAY 1 -- JULY 31, SEED WITH 60 IBS KENTUCKY 31 TALL FESCUE PER ACRE AND 2 IBS/ACRE (.05 IBS/1000 SQ. FT.) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 -- FEBRUARY 28, PROTECT SITE BY:
OPTION 1 -- TWO TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING.
OPTION 2 -- USE SOD.
OPTION 3 -- SEED WITH 60 IBS/ACRE KENTUCKY 30 TALL FESCUE AND MULCH WITH 2 TONS/ACRE WELL ANCHORED STRAW.

MULCHING -- APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 IBS/1000 SQ. FT.) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ. FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS, ON SLOPE 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL/1000 SQ. FT.) FOR ANCHORING.

MAINTENANCE -- INSPECT ALL SEEDING AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

**B-4 STANDARDS AND SPECIFICATIONS
FOR
VEGETATIVE STABILIZATION**

- Definition**
Using vegetation as cover to protect exposed soil from erosion.
- Purpose**
To promote the establishment of vegetation on exposed soil.
- Conditions Where Practice Applies**
On all disturbed areas not stabilized by other methods. This specification is divided into sections on incremental stabilization; soil preparation, soil amendments and topsoiling; seeding and mulching; temporary stabilization; and permanent stabilization.
- Effects on Water Quality and Quantity**
Stabilization practices are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and runoff to downstream areas.

Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Over time, vegetation will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth.

Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone.

Sediment control practices must remain in place during grading, seedbed preparation, seeding, mulching, and vegetative establishment.

Adequate Vegetative Establishment
Inspect seeded areas for vegetative establishment and make necessary repairs, replacements, and reseeding within the planting season.

- Adequate vegetative stabilization requires 95 percent groundcover.
- If an area has less than 40 percent groundcover, restabilize following the original recommendations for lime, fertilizer, seedbed preparation, and seeding.
- If an area has between 40 and 94 percent groundcover, over-seed and fertilize using half of the rates originally specified.
- Maintenance fertilizer rates for permanent seeding are shown in Table B.6.

**B-4-1 STANDARDS AND SPECIFICATIONS
FOR
INCREMENTAL STABILIZATION**

- Definition**
Establishment of vegetative cover on cut and fill slopes.
- Purpose**
To provide timely vegetative cover on cut and fill slopes as work progresses.
- Conditions Where Practice Applies**
Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles.
- Criteria**
- Incremental Stabilization - Cut Slopes**
 - Excavate and stabilize cut slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all cut slopes as the work progresses.
 - Construction sequence example (Refer to Figure B.1)
 - Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation.
 - Perform Phase 1 excavation, prepare seedbed, and stabilize.
 - Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as necessary.
 - Perform final phase excavation, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.
- Note: Once excavation has begun, the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

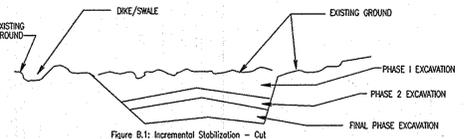


Figure B.1: Incremental Stabilization - Cut

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

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

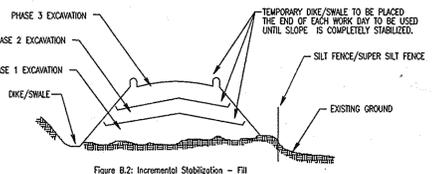


Figure B.2: Incremental Stabilization - Fill

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

- Definition**
The process of preparing the soils to sustain adequate vegetative stabilization.
- Purpose**
To provide a suitable soil medium for vegetative growth.
- Conditions Where Practice Applies**
Where vegetative stabilization is to be established.
- Criteria**
- Soil Preparation**
 - Temporary Stabilization.**
 - Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter or to be tracked with ridges running parallel to the contour of the slope.
 - Apply fertilizer and lime as prescribed on the plans.
 - Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
 - Permanent Stabilization**
 - A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
 - Soil pH between 6.0 and 7.0.
 - Soluble salts less than 500 parts per million (ppm).
 - Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
 - Soil contains 1.5 percent minimum organic matter by weight.
 - Soil contains sufficient pore space to permit adequate root penetration.
 - Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
 - Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.
 - Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
 - Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Take lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.
 - Topsoiling**
 - Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
 - Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
 - Topsoiling is limited to areas having 2:1 or flatter slopes where:
 - The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
 - The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
 - The original soil to be vegetated contains material toxic to plant growth.
 - The soil is so acidic that treatment with limestone is not feasible.
 - Areas having slopes steeper than 2:1 require special consideration and design.
 - Topsoil specifications: Soil to be used as topsoil must meet the following criteria:
 - Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1 1/2 inches in diameter.
 - Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.
 - Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
 - Soil Application**
 - Erosion and sediment control practices must be maintained when applying topsoil.
 - Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Seeding is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
 - Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

- Soil Amendments (Fertilizer and Lime Specifications)**
 - Soil tests must be performed to determine the exact rates and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
 - Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully lobbed according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.
 - Lime materials must be ground limestone (hydrated or burnt lime) may be substituted except when hydrosedding which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve.

- Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.
- Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

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

Definition
The application of seed and mulch to establish vegetative cover.

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

Conditions Where Practice Applies
To the surface of all perimeter contours, slopes, and any disturbed area not under active grading.

Criteria

- Seeding**
 - Specifications**
 - All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tests must be available upon request to the inspector to verify type of seed and seeding rate.
 - Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.
 - Inoculants: The inoculant for treating legume seeds in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydrosedding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.
 - Sod or seed must be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phytotoxic materials.
 - Application**
 - Dry Seeding:** This includes use of conventional drop or broadcast spreaders.
 - Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.
 - Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.
 - Drill or Cultipacker Seeding:** Mechanized seeders that apply and cover seed with soil.
 - Cultipacker seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.
 - Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction.
 - Hydrosedding:** Apply seed uniformly with hydroseder (slurry includes seed and fertilizer).
 - If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P205 (phosphorus), 200 pounds per acre; K2O (potassium), 200 pounds per acre.
 - Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydrosedding). Normally, not more than 2 tons are applied by hydrosedding at any one time. Do not use burnt or hydrated lime when hydrosedding.
 - Mix seed and fertilizer on site and seed immediately and without interruption.
 - When hydrosedding do not incorporate seed into the soil.
 - Mulching**
 - Mulch Materials (in order of preference)**
 - Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color. Straw is to be free of noxious weed seeds as specified in the Maryland Seed Law and not musty, moldy, coated, decayed, or excessively dusty. Note: Use only sterile straw mulch in areas where no species of grass is desired.
 - Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.
 - WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
 - WCFM, including dye, must contain no germination or growth inhibiting factors.
 - WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a blotter-like ground cover, on application, having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
 - WCFM material must not contain elements or compounds at concentration levels that will be phytotoxic.
 - WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.

- Application**
 - Apply mulch to all seeded areas immediately after seeding.
 - When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches. Apply mulch to achieve a uniform distribution and depth so that the soil surface is not exposed. When using a mulch anchoring tool, increase the application rate to 2.5 tons per acre.
 - Wood cellulose fiber used as mulch must be applied at a net dry weight of 1500 pounds per acre. Mix the wood cellulose fiber with water to attain a mixture with a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
- Anchorings**
 - Perform mulch anchoring immediately following application of mulch to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon the size of the area and erosion hazard:
 - A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of 2 inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should follow the contour.
 - Wood cellulose fiber may be used for anchoring straw. Apply the fiber binder at a net dry weight of 750 pounds per acre. Mix the wood cellulose fiber with water at a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
 - Synthetic binders such as Acrylic DLR (Agra-Tack), DCA-70, Petrosol, Terra Tax II, Terra Tack AR or other approved equal may be used. Follow application rates as specified by the manufacturer. Application of liquid binders needs to be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. Use of asphalt binders is strictly prohibited.
 - Lightweight plastic netting may be stapled over the mulch according to manufacturer recommendations. Netting is usually available in rolls 4 to 15 feet wide and 300 to 3,000 feet long.

**B-4-4 STANDARDS AND SPECIFICATIONS
FOR
TEMPORARY STABILIZATION**

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

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

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

Criteria

- Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plant Hardiness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If this Summary is not put on the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan.

- For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.
- When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3A.1.b and maintain until the next seeding season.

Temporary Seeding Summary

Hardiness Zone (from Figure B.3): 6b		Seed Mixture (from Table B.1): 11		Fertilizer Rate (10-20-20)			Lime Rate
No.	Species	Application Rate (lb/acre)	Seeding Dates	N	P205	K2O	
	Annual Ryegrass	40	3/1-5/15				
	Foxtail Millet	30	8/1-10/15				
				45 lb/acre (10lb/1000sf)	90 lb/acre (2lb/1000sf)	90 lb/acre (2lb/1000sf)	2 tons/acre (90 lb/1000sf)

**B-4-5 STANDARDS AND SPECIFICATIONS
FOR
PERMANENT STABILIZATION**

Definition
To stabilize disturbed soils with permanent vegetation.

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

Conditions Where Practice Applies
Exposed soils where ground cover is needed for 6 months or more.

Criteria

- Seed Mixtures**
 - General Use**
 - Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
 - Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.
 - For sites having disturbed area over 5 acres, use and show the rates recommended by the soil testing agency.
 - For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 1/2 pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary.
 - Turfgrass Mixtures**
 - Areas where turfgrass may be desired include lawns, parks, playground, and commercial sites which will receive a medium to high level of maintenance.
 - Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.
 - Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
 - Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
 - Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes: Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
 - Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes: Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1 1/2 to 3 pounds per 1000 square feet. Notes: Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77, "Turfgrass Cultivar Recommendations for Maryland"

Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line.

Ideal Times of Seeding for Turf Grass Mixtures
Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6a)
Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b)
Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)

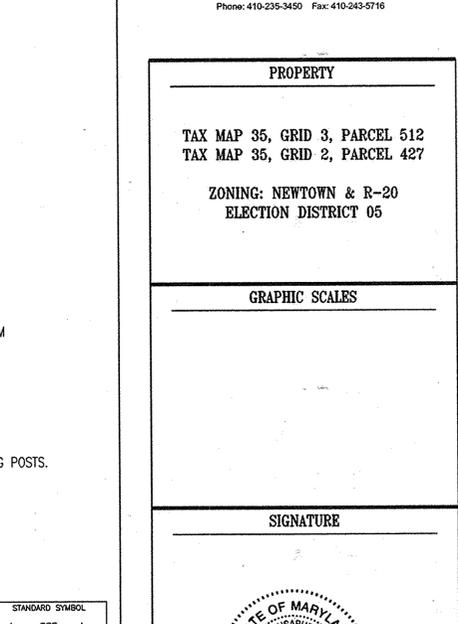
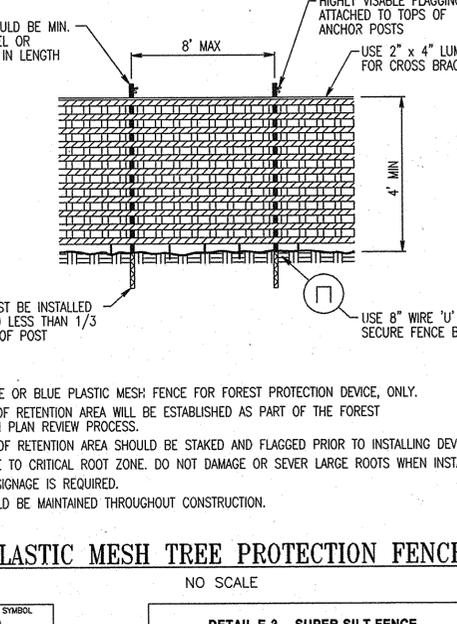
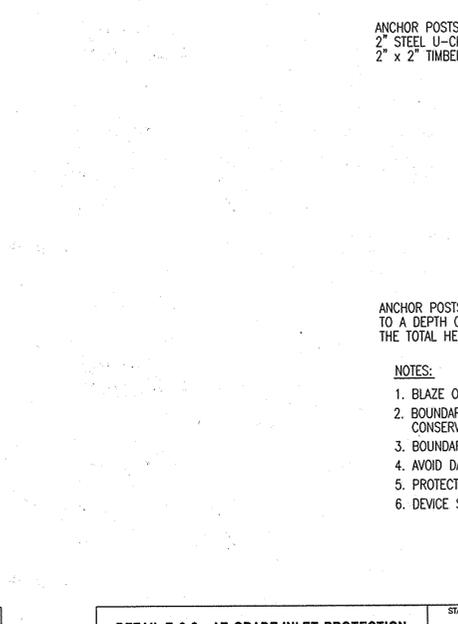
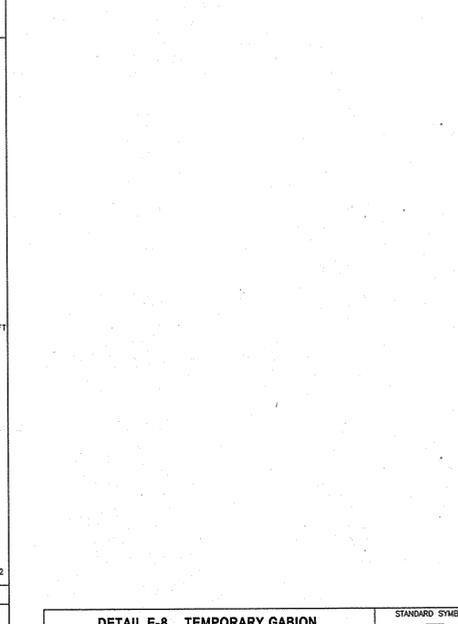
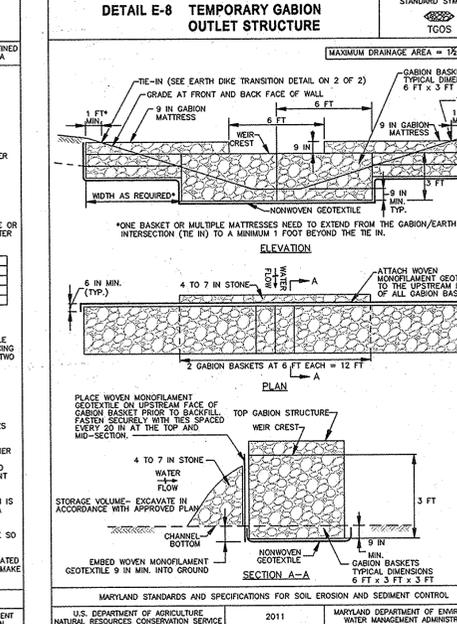
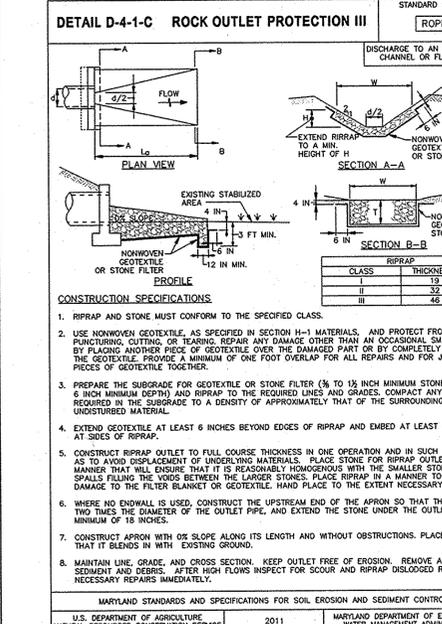
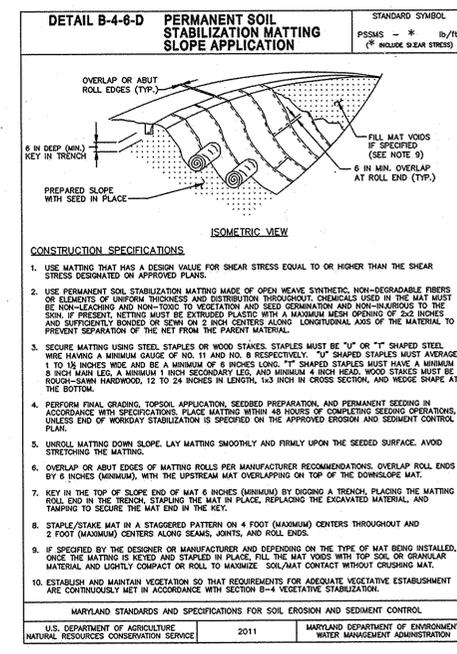
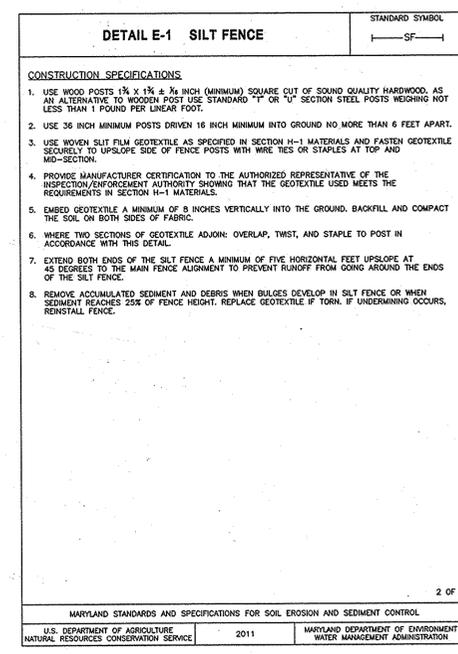
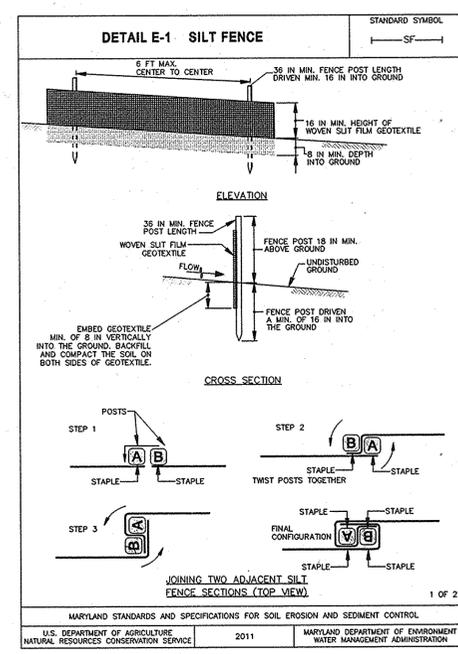
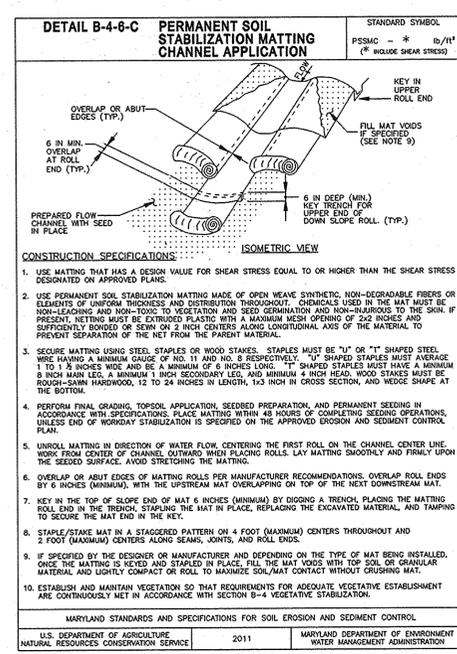
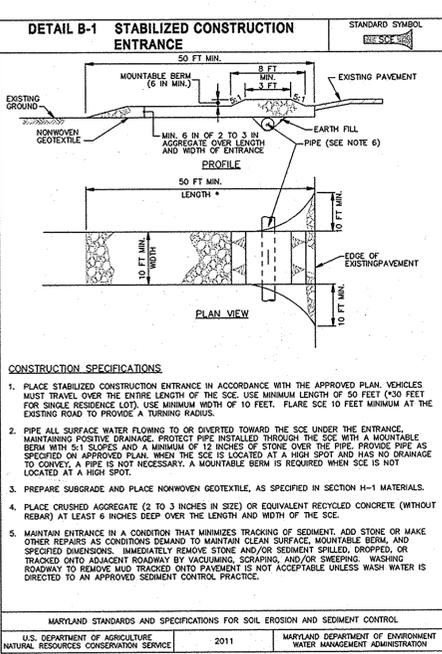
Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1 1/2 inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.

If soil moisture is deficient, supply new seedings with adequate water for plant growth (1/2 to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedlings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

Permanent Seeding Summary

Hardiness Zone (from Figure B.3): 6b		Seed Mixture (from Table B.1): 11		Fertilizer Rate (10-20-20)			Lime Rate
Species	Application Rate (lb/acre)	Seeding Dates	N	P205	K2O		
Creeping Red Fescue	30	3/1-10/15	1/2-1/2"				
Chewings Fescue	30	3/1-10/15	1/2-1/2"	45 lb/acre (10lb/1000sf)	90 lb/acre (2lb/1000sf)	90 lb/acre (2lb/1000sf)	
Kentucky Bluegrass	15	3/1-10/15	1/2-1/2"			2 tons/acre (90 lb/1000sf)	

- Seeding**
 - Apply mulch to all seeded areas immediately after seeding.
 - When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per



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

John R. Roberts 9/25/14
 HOWARD SOIL CONSERVATION DISTRICT DATE

ENGINEER'S CERTIFICATION
 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.

Anthony M. Davis 9/9/14
 SIGNATURE OF ENGINEER DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chad Edwards 10-2-14
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Mark A. Leugel 10-10-14
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Mark A. Leugel 10-12-14
 DIRECTOR DATE

DEVELOPER'S CERTIFICATION
 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.

Anthony M. Davis 9/9/14
 SIGNATURE OF DEVELOPER DATE

DETAIL E-8 TEMPORARY GABION OUTLET STRUCTURE

NOTES:
 1. PROVIDE TRANSITION LENGTH AND HEIGHT AS SPECIFIED ON PLAN. HEIGHT OF TRANSITION EARTH DIKE MUST EXCEED 4 INCH MINIMUM FREEDRAGE ABOVE TOP OF GABION AND EXTEND AT THIS ELEVATION UNTIL IT INTERCEPTS THE TOP OF ADJOINING EARTH DIKE.
 2. PROVIDE POSITIVE DRAINAGE ALONG EARTH DIKE TO GABION OUTLET STRUCTURE.
 3. COMPACT FILL.
 4. SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED ON PLAN. BANK PROJECTIONS OR IRREGULARITIES ARE NOT ALLOWED.

CONSTRUCTION SPECIFICATIONS
 1. PROVIDE STORAGE VOLUME AS SPECIFIED ON APPROVED PLANS.
 2. USE BASKETS MADE OF 11 GAUGE WIRE OR HEAVIER.
 3. USE NONWOVEN AND WOVEN MONOLAMINANT GEOTEXTILES AS SPECIFIED IN SECTION H-1 MATERIALS.
 4. INSTALL GABIIONS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
 5. EMBED THE GABION OUTLET STRUCTURE INTO THE SOIL A MINIMUM OF 9 INCHES. PROVIDE NONWOVEN GEOTEXTILE UNDER ALL GABIIONS.
 6. FILL GABION BASKETS WITH CLEAN 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE WITHOUT REBAR OR WIRE MESH.
 7. MAKE THE WEIR CREST OF THE GABION OUTLET STRUCTURE 9 INCHES LOWER THAN THE TOP OF THE ADJACENT GABIIONS.
 8. PROVIDE A MINIMUM WEIR CREST OF 6 FEET.
 9. ATTACH WOVEN MONOLAMINANT GEOTEXTILE TO THE UPSTREAM FACE OF GABION BASKETS AND COVER WITH 4 TO 7 INCH STONE.
 10. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO WITHIN 12 INCHES OF THE WEIR CREST. REPLACE GEOTEXTILE AND STONE FACING WHEN STRUCTURE CEASES TO FUNCTION. MAINTAIN LINE, GRADE, AND CROSS SECTION.
 11. UPON REMOVAL OF GABION OUTLET STRUCTURE, GRADE AREA FLUSH WITH EXISTING GROUND, WITHIN 24 HOURS ESTABLISH DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

DETAIL E-9-2 AT-GRADE INLET PROTECTION

NOTES:
 1. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
 2. LIFT GRATE AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS. SECURE WITH WIRE TIES AND SET GRATE BACK IN PLACE.
 3. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE 6 INCHES THICK ON THE GRATE.
 4. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOSING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

DETAIL E-3 SUPER SILT FENCE

CONSTRUCTION SPECIFICATIONS
 1. INSTALL 2½ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
 2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2½ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
 3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
 4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEPARATION BY PASSES.
 5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM COMING AROUND THE ENDS OF THE SUPER SILT FENCE.
 6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
 7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

DETAIL E-3 SUPER SILT FENCE

CONSTRUCTION SPECIFICATIONS
 1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
 2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-HARMFUL TO THE SOIL. IF PRESENT, NETTING MUST BE EXTENDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2.0 INCHES AND SUBSTITUTED BONDED OR SEWED 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
 3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1½ INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
 4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDING PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
 5. UNROLL MATTING DOWN SLOPE. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDING SURFACE. AVOID STRETCHING THE MATTING.
 6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE DOWNSTREAM MAT.
 7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
 8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MINIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
 9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEPT AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
 10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

REVISIONS	

HOWARD COUNTY
 DEPARTMENT OF RECREATION AND PARKS
 7120 OAKLAND MILLS ROAD
 COLUMBIA, MD 21046

DEPARTMENT OF PUBLIC WORKS
 9250 BENDIX ROAD
 ELLICOTT CITY, MD 21043

WR&A
 WHITMAN, REQUARDT & ASSOCIATES, LLP
 801 South Caroline Street, Baltimore, Maryland 21213
 Phone: 410-235-3450 Fax: 410-243-5716

PROPERTY

TAX MAP 35, GRID 3, PARCEL 512
 TAX MAP 35, GRID 2, PARCEL 427

ZONING: NEWTOWN & R-20
 ELECTION DISTRICT 05

GRAPHIC SCALES

SIGNATURE

STATE OF MARYLAND
 PROFESSIONAL ENGINEER
 No. 19375
Anthony M. Davis

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. 19375. EXPIRATION DATE: 09/22/2015.

MPEA - SITE IMPROVEMENTS

EROSION AND SEDIMENT CONTROL - NOTES/DETAILS

Drawing No. C5.2

Scale: NOT TO SCALE
 Date: 09/12/2014 Sheet: 15 of 26
 Des: BWJ/SAD Drawn: SAD Check: AUO

SOIL BORING LOG

Client: Whitman, Requardt & Associates, LLP Boring # B-1
 Project Name: Middle Patuxent Environmental Area Job # HRSA M.O.# 31760
 Location: 5795 Trotter Road - Clarksville Maryland 21029

Date: _____ Date Started: 09/12/2013 Date Completed: 09/12/2013
 Driver: Dane Loomis Inspector: Mr. G. G. G.
 Hammer Type: Safety 140 LBS Sampler Type: SPT Borehole Diameter: 8" In.
 Rig Type: Mobil B-57 Rock Core Size: 3/8"

ELEV. (FEET)	SOIL DESCRIPTION Color, Moisture, Density, Size, Lithology	DEPTH (FEET)	SPT	REMARKS	BORING & SAMPLING NOTES
372.5	Brown, dry, very loose to medium dense, fine, sandy silty, with trace of clay, gravel and glass fragments, FILL.	0.0	1 SPT 1-1-2 10"		1) No water encountered.
369.5	Brown, dry, medium dense, SANDY SILT, with trace of clay and mica.	3.0	2 SPT 3-7-14 15"		2) Boring grouted from 0.0 to 10.0 ft with portland cement at completion.
357.5	Brown, dry, medium dense, silty SAND, with sand and gravel.	15.0	5 SPT 6-7-5 10"		
357.5	Bottom of test boring 15.0 feet.	15.0			

BORING METHOD HSA - HOLLOW STEEL AUGERS
SAMPLER TYPE SPT - STANDARD PENETRATION TEST SPLIT SPOON
GROUNDWATER DEPTH AT COMPLETION: _____ FT. AFTER 24 HRS: _____ FT. CAVED AT _____ FT.
Geometric Drilling Info: 410-242-9220

BORING METHOD HSA - HOLLOW STEEL AUGERS
SAMPLER TYPE SPT - STANDARD PENETRATION TEST SPLIT SPOON
GROUNDWATER DEPTH AT COMPLETION: _____ FT. AFTER 24 HRS: _____ FT. CAVED AT _____ FT.
Geometric Drilling Info: 410-242-9220

SOIL BORING LOG

Client: Whitman, Requardt & Associates, LLP Boring # B-2
 Project Name: Middle Patuxent Environmental Area Job # HRSA M.O.# 31760
 Location: 5795 Trotter Road - Clarksville Maryland 21029

Date: _____ Date Started: 09/12/2013 Date Completed: 09/12/2013
 Driver: Dane Loomis Inspector: Mr. G. G. G.
 Hammer Type: Safety 140 LBS Sampler Type: SPT Borehole Diameter: 8" In.
 Rig Type: Mobil B-57 Rock Core Size: 3/8"

ELEV. (FEET)	SOIL DESCRIPTION Color, Moisture, Density, Size, Lithology	DEPTH (FEET)	SPT	REMARKS	BORING & SAMPLING NOTES
372.5	Brown, dry to damp, loose to medium dense, fine, silty SAND with trace of gravel, clay and mica.	0.0	1 SPT 3-4-4 8"		1) Water encountered at 8.0 feet.
372.5	Brown, dry, very dense to medium dense, fine, silty SAND with trace of gravel, clay and mica.	3.0	2 SPT 3-3-4 14"		2) Boring offset 6.0 feet south of location.
357.5	Brown, dry to moist, medium dense, sandy SILT, with a little mica.	15.0	5 SPT 10-12-9 10"		3) Boring grouted from 0.0 to 10.0 feet at completion with portland cement.
357.5	Bottom of test boring 15.0 feet.	15.0			4) Slight sliding of auger from 13.0 to 13.5 feet.

BORING METHOD HSA - HOLLOW STEEL AUGERS
SAMPLER TYPE SPT - STANDARD PENETRATION TEST SPLIT SPOON
GROUNDWATER DEPTH AT COMPLETION: _____ FT. AFTER 24 HRS: _____ FT. CAVED AT _____ FT.
Geometric Drilling Info: 410-242-9220

BORING METHOD HSA - HOLLOW STEEL AUGERS
SAMPLER TYPE SPT - STANDARD PENETRATION TEST SPLIT SPOON
GROUNDWATER DEPTH AT COMPLETION: _____ FT. AFTER 24 HRS: _____ FT. CAVED AT _____ FT.
Geometric Drilling Info: 410-242-9220

SOIL BORING LOG

Client: Whitman, Requardt & Associates, LLP Boring # SHM-1
 Project Name: Middle Patuxent Environmental Area Job # HRSA M.O.# 31760
 Location: 5795 Trotter Road - Clarksville Maryland 21029

Date: _____ Date Started: 09/12/2013 Date Completed: 09/12/2013
 Driver: Dane Loomis Inspector: Mr. G. G. G.
 Hammer Type: Safety 140 LBS Sampler Type: SPT Borehole Diameter: 8" In.
 Rig Type: Mobil B-57 Rock Core Size: 3/8"

ELEV. (FEET)	SOIL DESCRIPTION Color, Moisture, Density, Size, Lithology	DEPTH (FEET)	SPT	REMARKS	BORING & SAMPLING NOTES
372.5	Brown, moist, loose, SANDY SILT.	0.0	1 SPT 1-1-2 10"		1) No water encountered.
372.5	Brown, dry, very dense to medium dense, fine, silty SAND with trace of clay and mica.	3.0	2 SPT 9-21-45 12"		2) Infiltration pipe set to 8.0 feet, located 5.0 feet south of SHM-1 spot reserved and boring grouted after test completed.
357.2	Brown, dry to moist, medium dense, sandy SILT, with a little mica.	15.0	3 SPT 38-24-15 10"		3) Boring grouted from 0.0 to 6.0 feet at completion with portland cement.
357.2	Bottom of test boring 15.0 feet.	15.0			

BORING METHOD HSA - HOLLOW STEEL AUGERS
SAMPLER TYPE SPT - STANDARD PENETRATION TEST SPLIT SPOON
GROUNDWATER DEPTH AT COMPLETION: _____ FT. AFTER 24 HRS: _____ FT. CAVED AT _____ FT.
Geometric Drilling Info: 410-242-9220

BORING METHOD HSA - HOLLOW STEEL AUGERS
SAMPLER TYPE SPT - STANDARD PENETRATION TEST SPLIT SPOON
GROUNDWATER DEPTH AT COMPLETION: _____ FT. AFTER 24 HRS: _____ FT. CAVED AT _____ FT.
Geometric Drilling Info: 410-242-9220

SOIL BORING LOG

Client: Whitman, Requardt & Associates, LLP Boring # SHM-2
 Project Name: Middle Patuxent Environmental Area Job # HRSA M.O.# 31760
 Location: 5795 Trotter Road - Clarksville Maryland 21029

Date: _____ Date Started: 09/12/2013 Date Completed: 09/12/2013
 Driver: Dane Loomis Inspector: Mr. G. G. G.
 Hammer Type: Safety 140 LBS Sampler Type: SPT Borehole Diameter: 8" In.
 Rig Type: Mobil B-57 Rock Core Size: 3/8"

ELEV. (FEET)	SOIL DESCRIPTION Color, Moisture, Density, Size, Lithology	DEPTH (FEET)	SPT	REMARKS	BORING & SAMPLING NOTES
372.5	Brown, dry, medium dense, silty fine SAND, with gravel.	0.0	1 SPT 7-9-9 6"		1) No water encountered.
359.8	Brown, dry, medium dense to loose, fine SILTY SAND TO SANDY SILT with clay and mica.	3.0	2 SPT 8-6-5 5"		2) Infiltration pipe set to 3.0 feet, located 5.0 feet west of SW-2 spot reserved and boring grouted after test completed.
359.8	Brown, dry, medium dense, fine, silty SAND, with gravel & trace of clay.	8.0	3 SPT 3-4-3 12"		3) Boring grouted from 0.0 to 7.0 feet at completion with portland cement.
357.8	Bottom of test boring 10.0 feet.	10.0			

BORING METHOD HSA - HOLLOW STEEL AUGERS
SAMPLER TYPE SPT - STANDARD PENETRATION TEST SPLIT SPOON
GROUNDWATER DEPTH AT COMPLETION: _____ FT. AFTER 24 HRS: _____ FT. CAVED AT _____ FT.
Geometric Drilling Info: 410-242-9220

BORING METHOD HSA - HOLLOW STEEL AUGERS
SAMPLER TYPE SPT - STANDARD PENETRATION TEST SPLIT SPOON
GROUNDWATER DEPTH AT COMPLETION: _____ FT. AFTER 24 HRS: _____ FT. CAVED AT _____ FT.
Geometric Drilling Info: 410-242-9220

REVISIONS

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DEPARTMENT OF PUBLIC WORKS
 9250 BENDIX ROAD
 ELLICOTT CITY, MD 21043

WR&A
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 801 South Caroline Street, Baltimore, Maryland 21231
 Phone: 410-235-3450 Fax: 410-245-5716

PROPERTY

TAX MAP 35, GRID 3, PARCEL 512
 TAX MAP 35, GRID 2, PARCEL 427

ZONING: NEWTOWN & R-20
 ELECTION DISTRICT 05

GRAPHIC SCALES

SIGNATURE



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. 19376
 EXPIRATION DATE: 09/22/2015

MPEA - SITE IMPROVEMENTS

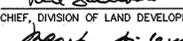
SOIL BORING LOGS

Drawing No. **C5.3**

Scale: NOT TO SCALE
 Date: 09/12/2013 Sheet 16 of 26
 Des: BWJ/SAD Drawn: SAD Check: AUO

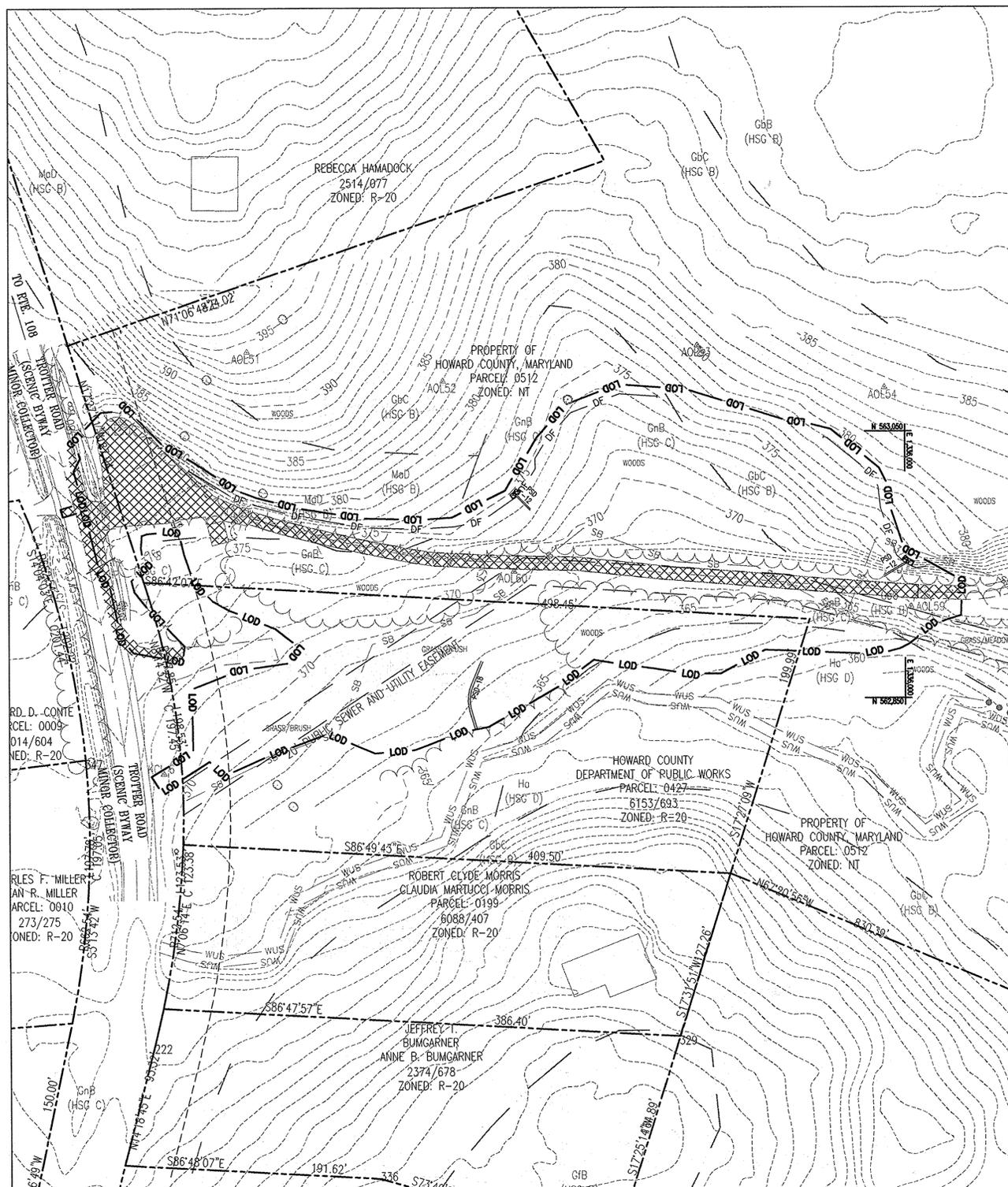
APPROVED: DEPARTMENT OF PLANNING AND ZONING

 10-2-14
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

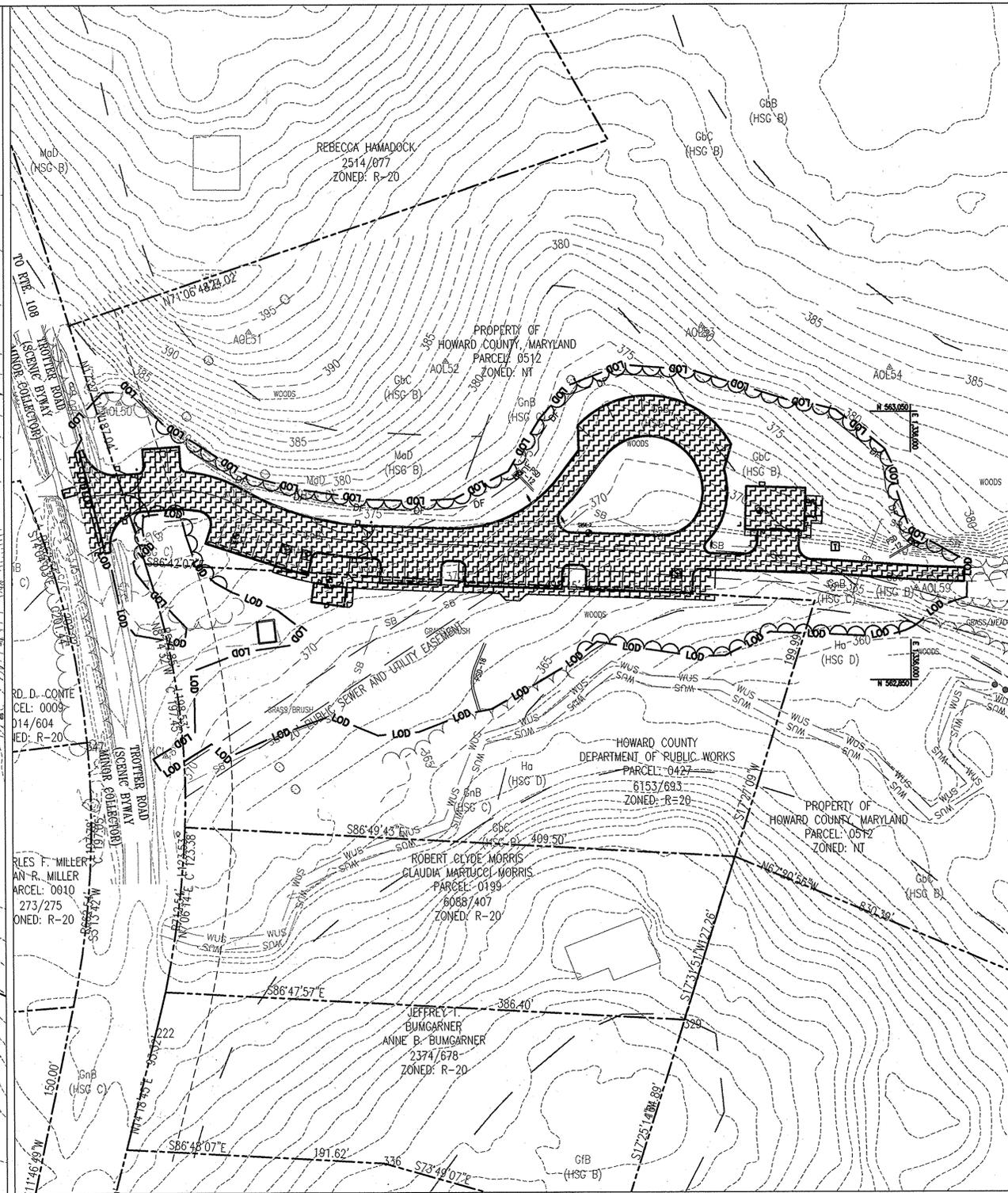
 10-10-14
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

 10/13/13
 DIRECTOR DATE

FILENAME: W:\31760-005\CADD\31760005C-03.DWG



EXISTING DRAINAGE AREA
1" = 50'



PROPOSED DRAINAGE AREA
1" = 50'

LEGEND

	SOIL DIVIDE
	EXISTING IMPERVIOUS AREA
	PROPOSED IMPERVIOUS AREA

ESD Requirement						
LOD (sf)	Target RCN	Existing Imp. Area (sf)	Proposed Imp. Area (sf)	Target Pe	Rv	ESD Requirement (cf)
107,354	67	12,529	31,968	1.6	0.318	4,552

DRAWING NOTES

- THE PROPOSED IMPERVIOUS SHOWN ON THIS MAP IS ONLY USED FOR CALCULATING ESD VOLUME REQUIREMENTS. ALTERNATIVE SURFACES HAVE BEEN INCLUDED AS PART OF THE IMPERVIOUS AREAS SHOWN FOR CALCULATING OVERALL ESDv REQUIREMENTS ONLY. THE INDIVIDUAL DRAINAGE AREAS FOR EACH ESD FEATURE SHALL INDICATE TRUE CHARACTERISTICS OF THE ALTERNATIVE SURFACES.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

	10.2.14
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE
	10-10-14
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE
	10/13/14
DIRECTOR	DATE

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7120 OAKLAND MILLS ROAD
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9250 BENDIX ROAD
ELLICOTT CITY, MD 21043

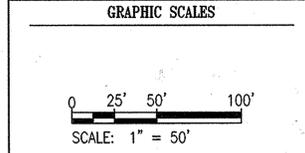
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801 South Caroline Street, Baltimore, Maryland 21231
Phone: 410-235-3450 Fax: 410-243-5716

PROPERTY

TAX MAP 35, GRID 3, PARCEL 512
TAX MAP 35, GRID 2, PARCEL 427

ZONING: NEWTOWN & R-20
ELECTION DISTRICT 05



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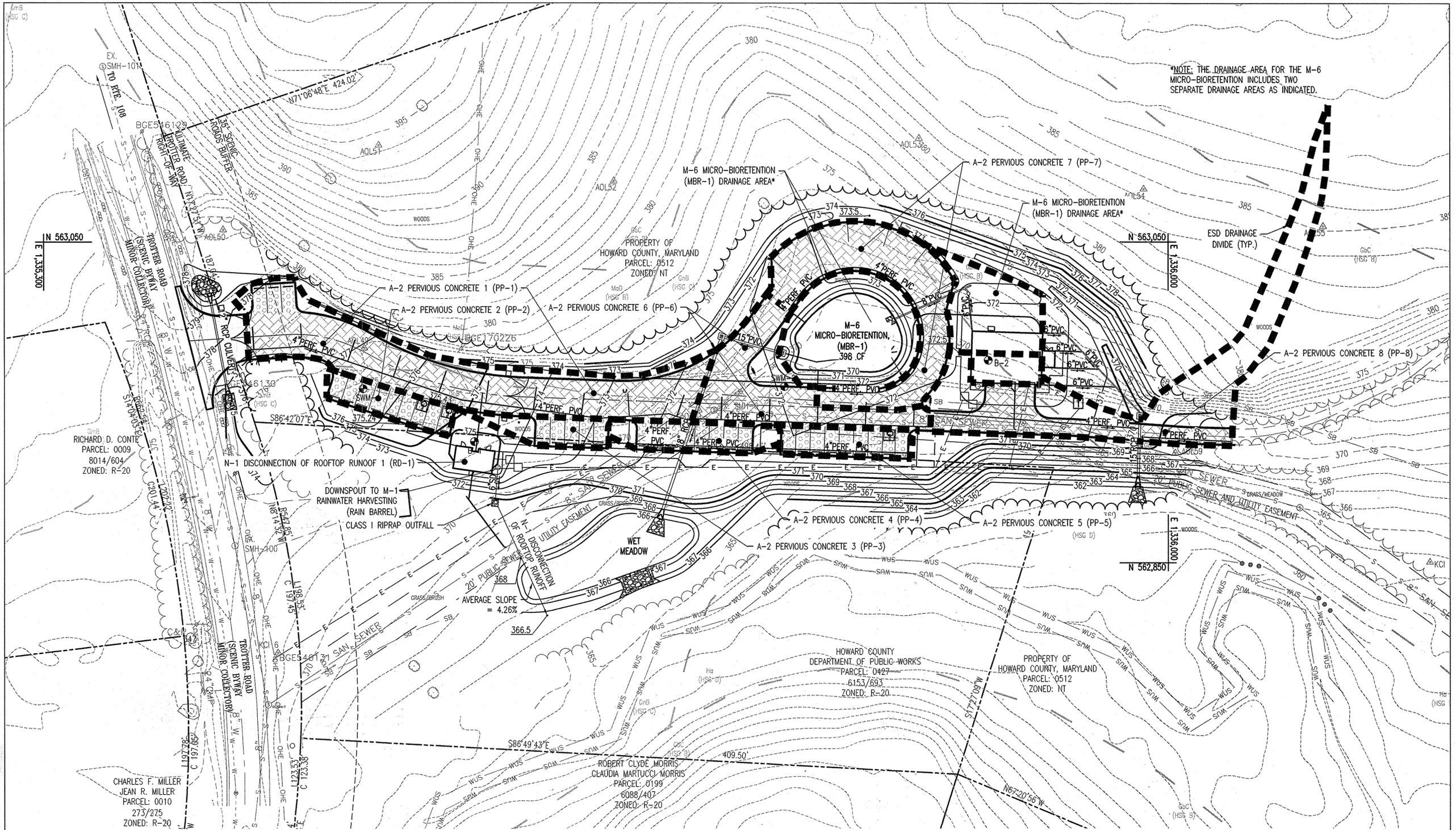
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MPEA - SITE IMPROVEMENTS

OVERALL ESD DRAINAGE AREA MAP

Drawing No.
C6.1

Scale: 1" = 100'
Date: 09/12/2014 Sheet 17 of 26
Des: BWJ/SAD Drawn: SAD Check: AUO



*NOTE: THE DRAINAGE AREA FOR THE M-6 MICRO-BIORETENTION INCLUDES TWO SEPARATE DRAINAGE AREAS AS INDICATED.

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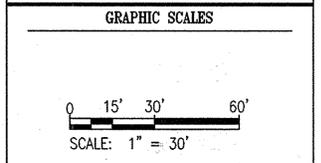
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TAX MAP 35, GRID 3, PARCEL 512
 TAX MAP 35, GRID 2, PARCEL 427

ZONING: NEWTOWN & R-20
 ELECTION DISTRICT 05



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Anthony J. Whelan
 PROFESSIONAL ENGINEER

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 EXPIRATION DATE: 09/22/2015.

MPEA - SITE IMPROVEMENTS

STORMWATER DRAINAGE AREA MAP

Drawing No.
C6.2

Scale: 1" = 30'
 Date: 09/12/2014 Sheet 18 of 26
 Des: BWJ/SAD Drawn: SAD Check: AUO

LEGEND

- SOIL DIVIDE
- ESD DRAINAGE DIVIDE
- IMPERVIOUS AREA
- PERVIOUS CONCRETE AREA

APPROVED: DEPARTMENT OF PLANNING AND ZONING

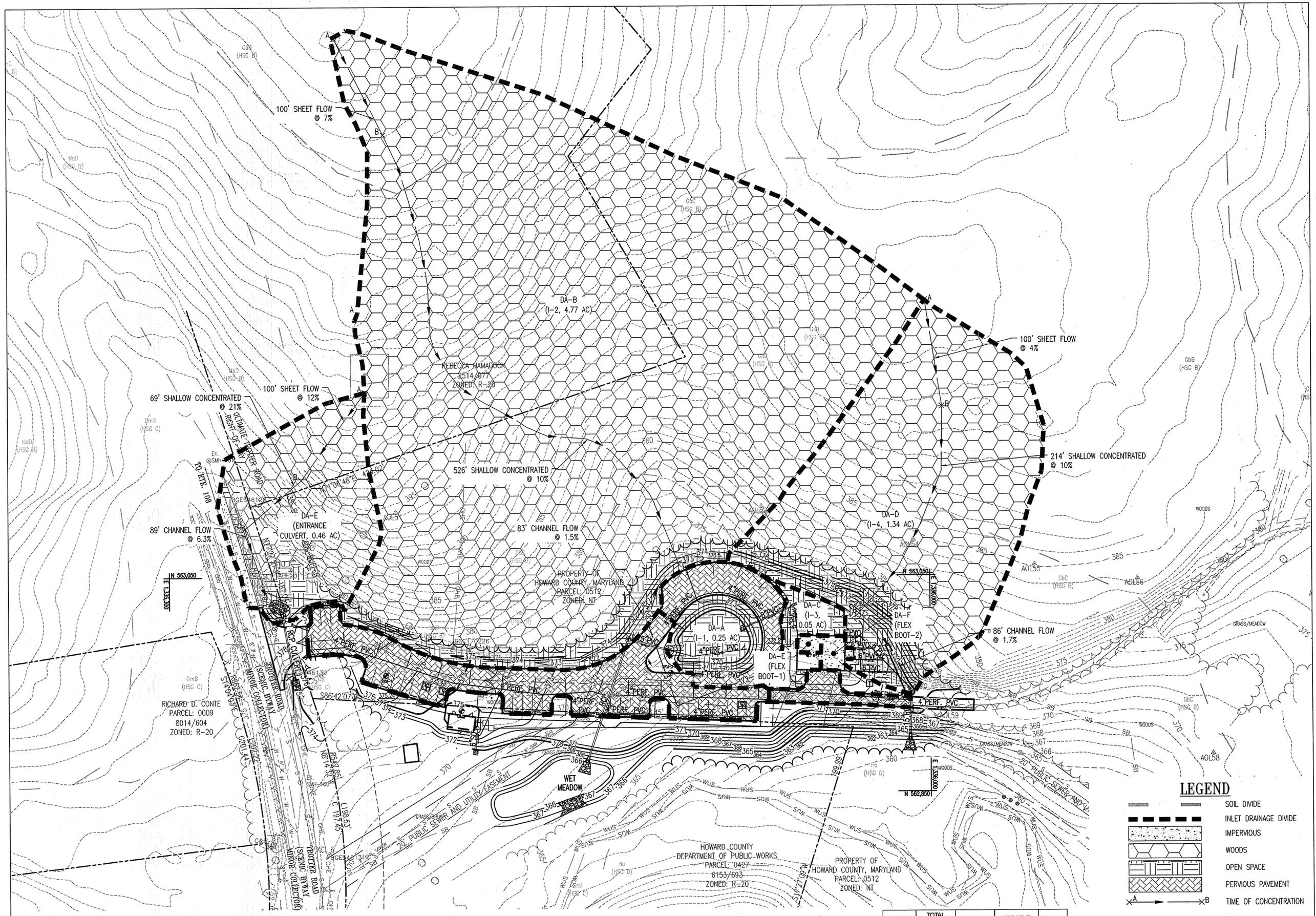
10-2-14
 DATE

10-12-14
 DATE

11/12/14
 DATE

Facility ID	Facility Type	ESDv Provided (sq)	Rev Provided (sq)	Imp Area Treated (sq)	Pc Treated (sq)
MBR-1	M-6 Micro-Bioretentation	373	0	0.03	2.6
PP-1	A-2 Pervious Concrete	1680	607	0.19	2.6
PP-2	A-2 Pervious Concrete	294	107	0.03	2.6
PP-3	A-2 Pervious Concrete	194	62	0.02	2.6
PP-4	A-2 Pervious Concrete	305	98	0.03	2.6
PP-5	A-2 Pervious Concrete	302	110	0.03	2.6
PP-6	A-2 Pervious Concrete	948	293	0.11	2.6
PP-7	A-2 Pervious Concrete	1185	432	0.13	2.6
PP-8	A-2 Pervious Concrete	638	197	0.07	2.6
RD-1	N-1 Disconnection of Rooftop Runoff	24	0	0.01	1.0
	Wet Meadow*	1578			
	M-1 Rainwater Harvesting*	7			
Sub Total =		5944	1905	0.66	2.04

NOTE: WET MEADOW AND M-1 RAINWATER HARVESTING ARE SHOWN FOR PRESENTATION PURPOSES ONLY. THEY ARE NOT BEING COUNTED TOWARDS THE ESDv PROVIDED.



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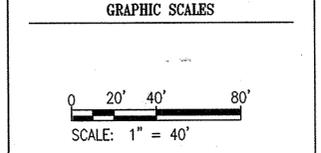
WR&A

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801 South Caroline Street, Baltimore, Maryland 21231
Phone: 410-235-3450 Fax: 410-243-5716

PROPERTY

TAX MAP 35, GRID 3, PARCEL 512
TAX MAP 35, GRID 2, PARCEL 427

ZONING: NEWTOWN & R-20
ELECTION DISTRICT 05



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MPEA - SITE IMPROVEMENTS

INLET DRAINAGE AREA MAP

Drawing No.
C6.3

Scale: 1" = 40'
Date: 09/12/2014 Sheet 19 of 26
Des: BWJ/SAD Drawn: SAD Check: AUO

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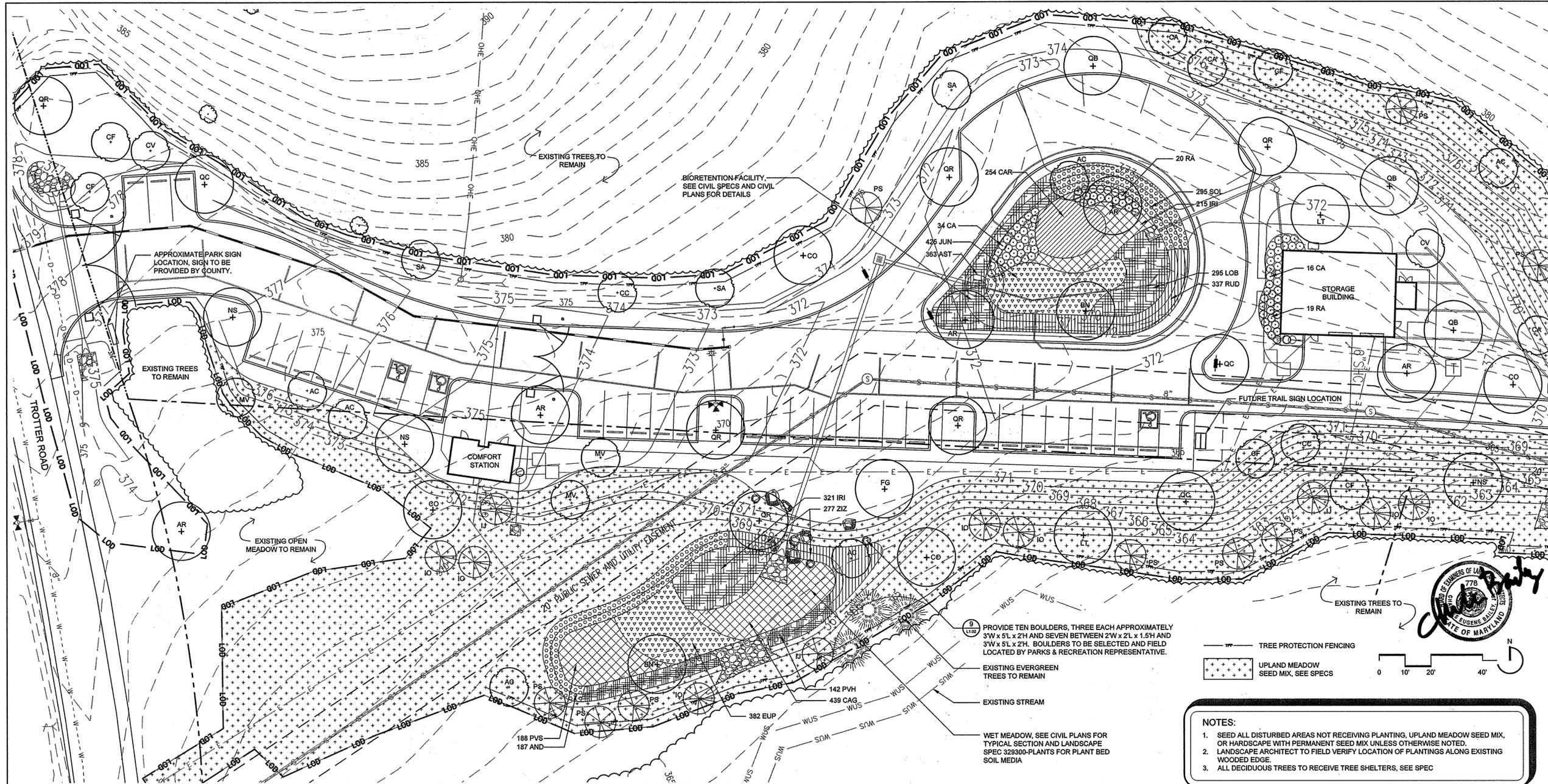
Chris E. ...
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 10-2-14

Kate ...
CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 10-10-14

Manda M. ...
DIRECTOR DATE: 10/12/14

DRAINAGE AREA	TOTAL DRAINAGE AREA (AC)	IMP. AREA	PERCENT IMPERVIOUS	C _w
A	0.24	0.003	1.31%	0.23
B	5.05	0.00	0.00%	0.18
C	0.05	0.00	0.00%	0.25
D	1.39	0.00	0.32%	0.19
E	0.01	0.01	100.00%	0.90
F	0.02	0.02	100.00%	0.90

- LEGEND**
- SOIL DIVIDE
 - INLET DRAINAGE DIVIDE
 - IMPERVIOUS
 - WOODS
 - OPEN SPACE
 - PERVIOUS PAVEMENT
 - TIME OF CONCENTRATION



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TAX MAP 35, GRID 3, PARCEL 512
 TAX MAP 35, GRID 9, PARCEL 467
 TAX MAP 35, GRID 2, PARCEL 427

ZONING: NEWTOWN & R-20
 ELECTION DISTRICT 05

GRAPHIC SCALES

SIGNATURE

100% CONSTRUCTION DRAWINGS

MPEA - SITE IMPROVEMENTS

Landscape Plan

Drawing No. **L1.0**

Scale: As Shown
 Date: 09/12/2014 Sheet 21 of 26
 Des: CB/CO Drawn: CO Check: CB

PLANT SCHEDULE (THIS SHEET ONLY)

QTY.	KEY	BOTANICAL/Common Name	SIZE	ROOT	COMMENTS
TREES					
5	AR	Acer rubrum 'October Glory' / October Glory Red Maple	2 1/2" Cal.	B&B	Full Central Leader
2	BN	Betula nigra 'Dura Heat' / Dura Heat River Birch	2 1/2" Cal.	B&B	Full
4	CO	Carya ovata / Shagbark Hickory	2 1/2" Cal.	B&B	Full
1	FG	Fagus grandifolia / American Beech	2 1/2" Cal.	B&B	Full
2	LT	Liriodendron tulipifera / Tuliptree	2 1/2" Cal.	B&B	Full Central Leader
3	NS	Nyssa sylvatica / Black Gum	2 1/2" Cal.	B&B	Full Central Leader
3	QB	Quercus bicolor / Swamp White Oak	2 1/2" Cal.	B&B	Full Central Leader
3	QC	Quercus coccinea / Scarlet Oak	2 1/2" Cal.	B&B	Full Central Leader
6	QR	Quercus rubra / Northern Red Oak	2 1/2" Cal.	B&B	Full Central Leader

EVERGREEN TREES

7	IO	Ilex opaca 'Miss Helen' / Miss Helen American Holly	6' Ht.	B&B	Full to Base Single Leader
3	IJ	Ilex opaca 'Jersey Knight' / Jersey Knight American Holly	6' Ht.	B&B	Full to Base Single Leader
9	PS	Pinus strobus / Eastern White Pine	5' Ht.	B&B	Full to Base Single Leader
UNDERSTORY TREES					
6	AC	Amelanchier canadensis / Serviceberry	6' Ht.	B&B	Multi-Stem 3-5 Canes, Matched
3	CA	Carpinus caroliniana / American Hornbeam	6' Ht.	Cont.	Multi-Stem, 3-5 Canes
2	CC	Cercis canadensis / Eastern Redbud	6' Ht.	Cont.	Multi-Stem, 3-5 Canes
5	CF	Cornus florida / Flowering Dogwood	6' Ht.	B&B	Multi-Stem, 3-5 Canes, Matched
2	CV	Chionanthus virginicus / White Fringetree	6' Ht.	B&B	Multi-Stem, 3-5 Canes, Matched
3	MV	Magnolia virginiana / Sweetbay Magnolia	6' Ht.	B&B	Multi-Stem 3-5 Canes, Matched
3	SA	Sassafras albidum / Sassafras	2" Cal.	Cont.	Full to Base

SHRUBS

50	CA	Clethra alnifolia 'Hummingbird' / Hummingbird Summersweet	#3	Cont.	24" Ht.
39	RA	Rhus aromatica 'Gro-low' / Gro-Low Fragrant Sumac	#3	Cont.	24" Spd.

- PROVIDE TEN BOULDERS, THREE EACH APPROXIMATELY 3'W x 5'L x 2'H AND SEVEN BETWEEN 2'W x 2'L x 1.5'H AND 3'W x 5'L x 2'H. BOULDERS TO BE SELECTED AND FIELD LOCATED BY PARKS & RECREATION REPRESENTATIVE.
- EXISTING EVERGREEN TREES TO REMAIN
- EXISTING STREAM
- WET MEADOW, SEE CIVIL PLANS FOR TYPICAL SECTION AND LANDSCAPE SPEC 329300-PLANTS FOR PLANT BED SOIL MEDIA

NOTES:

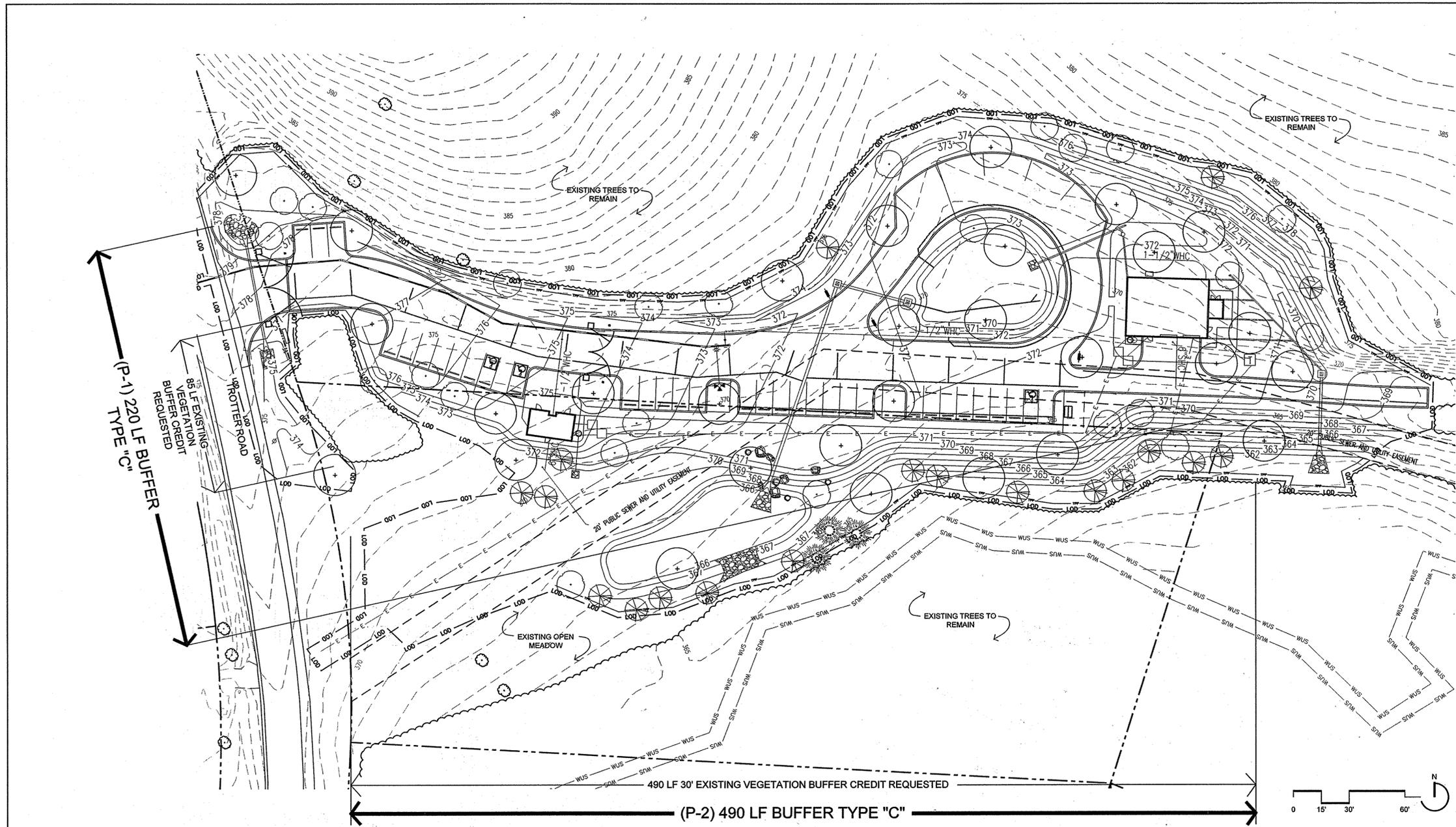
- SEED ALL DISTURBED AREAS NOT RECEIVING PLANTING, UPLAND MEADOW SEED MIX, OR HARDSCAPE WITH PERMANENT SEED MIX UNLESS OTHERWISE NOTED.
- LANDSCAPE ARCHITECT TO FIELD VERIFY LOCATION OF PLANTINGS ALONG EXISTING WOODED EDGE
- ALL DECIDUOUS TREES TO RECEIVE TREE SHELTERS, SEE SPEC

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division
 Chief, Division of Land Development

10-2-14
 10-10-14
 10/12/14

MAHAN RYKIEL
 ASSOCIATES INC
 The Steff Silver Building, 800 Wyman Park Drive,
 Suite 100, Baltimore, MD 21211 410.235.6001



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PROPERTY

TAX MAP 35, GRID 3, PARCEL 512
TAX MAP 35, GRID 9, PARCEL 467
TAX MAP 35, GRID 2, PARCEL 427

ZONING: NEWTOWN & R-20
ELECTION DISTRICT 05

GRAPHIC SCALES

SIGNATURE

John D. Dwyer
STATE OF MARYLAND
EUGENE BLAIR, III
7/13/14

100% CONSTRUCTION DRAWINGS

MPEA - SITE IMPROVEMENTS

Minimum Landscape Requirements

Drawing No.
L1.1

Scale: As Shown
Date: 09/12/2014 Sheet 22 of 26
Des: CB/CO Drawn: CO Check: CB

CATEGORY	SCHEDULE A PERIMETER LANDSCAPE EDGE	
	ADJACENT TO PERIMETER AND ROADWAYS	
Perimeter	P-1	P-2
Perimeter/Frontage Designation Landscape Type	C	C
Linear Feet of Roadway Frontage/Perimeter	220	490
Credit for Existing Vegetation (Yes, No, Linear Feet Describe below if needed)	YES 85	YES 490
Credit for Wall, Fence or Berm (Yes, No, Linear Feet Describe below if needed)	NO	NO
Subtotal (linear feet of perimeter - credits)	135	0
Number of Plants Required		
Shade Trees	1:40=3	1:40=0
Evergreen Trees	1:20=7	1:20=0
Shrubs	-	-
Number of Plants Provided		
Shade Trees	3	0
Evergreen Trees	7	0
Other Trees (2:1 Substitution)	-	-
Shrubs (10:1 Substitution)	-	-
Describe Plant Substitution Credits Below if needed		

SCHEDULE B PARKING LOT INTERNAL LANDSCAPING	
Number of parking spaces	38
Number of trees required (1 TREE: 20 SPACES)	2
Number of trees provided	
Shade Trees	2
Other Trees (2:1 Substitution)	-

Developer's/Owner's Landscape Certificate

I/we certify that the landscaping shown on this plan will be done according to the plan, Section 16.124 of the Howard County Code and the Landscape Manual. I/we further certify that upon completion 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.

Howard County Department of Public Works, Developer
Howard County Department of Recreation and Parks, Owner
Developer's/Owner's Name
A.R. [Signature] 10/10/14

At the time of plant installation, all shrubs and trees listed and approved on the Landscape Plan, shall comply with the proper height requirement in accordance with the Howard County Landscape Manual. In addition, no substitutions or relocations of the required plantings may be made without prior review and approval from the Department of Planning and Zoning. Any deviation from the approved Landscape Plan may result in denial or delay in the final release of the landscape plan until such time as all required materials are planted and/or revisions are made to the applicable plans.

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.

This plan has been prepared in accordance with Section 16.124 of the Howard County Code and Landscape Manual with 29 shade trees, 24 ornamental trees, 19 evergreen trees and 89 shrubs.

LEGEND:

- ⊕ SHADE TREE
- ⊗ EVERGREEN TREE
- UNDERSTORY TREE

NOTE:
SEE L1.0 FOR PLANTING PLAN

APPROVED: DEPARTMENT OF PLANNING AND ZONING

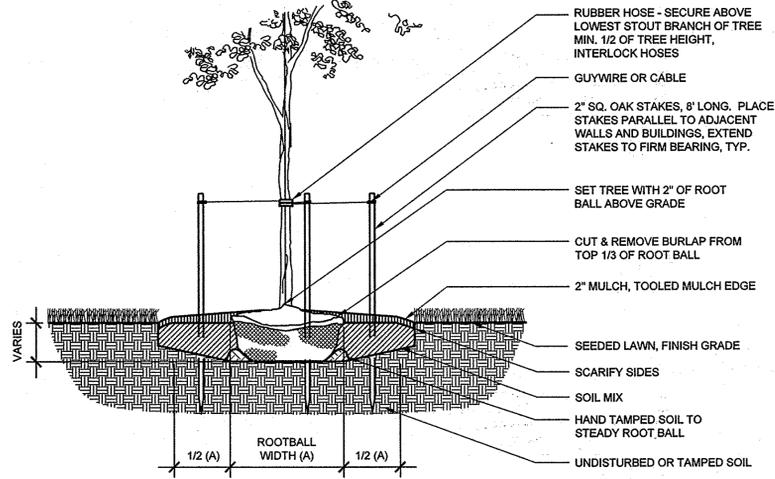
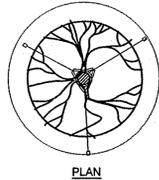
Phil Chan 10-2-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Kate E. Deane 10-10-14
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Mark A. Laughlin 10/12/14
DIRECTOR DATE

MAHAN RYKIEL ASSOCIATES INC
The Stieff Silver Building, 800 Wyman Park Drive., Suite 100, Baltimore, MD 21211 410.235.6001

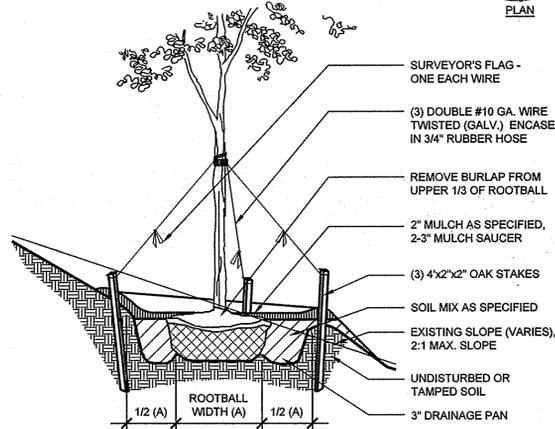
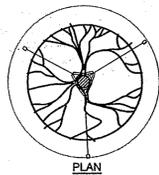
- NOTES:
 1. DO NOT CUT CENTRAL LEADER.
 2. FOR PLANTS IN WIRE BASKETS, REFER TO SPECIFICATIONS.
 3. DO NOT PLACE MULCH AGAINST TRUNK.
 4. TREES TO HAVE SINGLE LEADER.
 5. CUT AND REMOVE TOP HALF OF WIRE BASKETS.



1 Typical Deciduous Tree Planting

Scale: 1/2" = 1'-0"

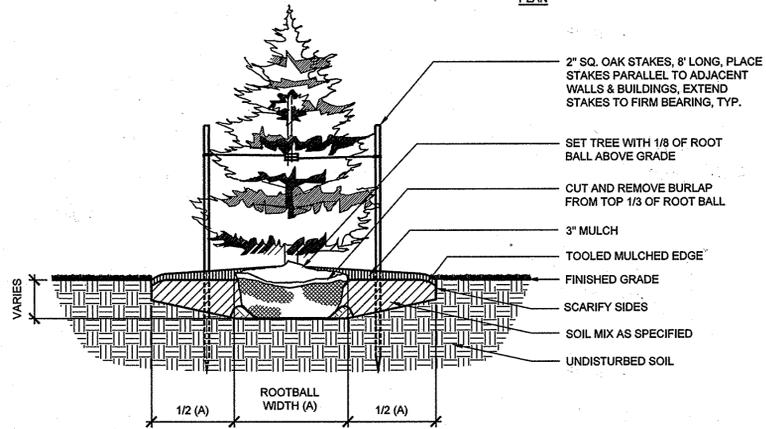
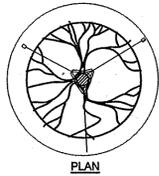
- NOTES:
 1. DECIDUOUS AND EVERGREEN TREES TO HAVE CENTRAL LEADER. NEVER CUT CENTRAL LEADER.
 2. DO NOT PLACE MULCH AGAINST TRUNK.
 3. SET TREE WITH 1/8 OF ROOT BALL ABOVE GRADE.
 4. STAKES, WIRES, AND HOSES SHALL BE REMOVED AFTER ONE YEAR.
 5. SCARIFY SUBSOIL AND SIDES OF TREE PIT TO A MIN. OF 4" DEPTH.
 6. TREES UNDER 2-1/2" CAL.: 10" x 2" x 2" STAKES SET VERTICAL, MIN. TWO FEET INTO COMPACTED SUBGRADE.
 7. TREES TO HAVE SINGLE LEADER.
 8. CUT AND REMOVE TOP HALF OF WIRE BASKETS.



4 Typical Tree Planting on Slope

Scale: 1/2" = 1'-0"

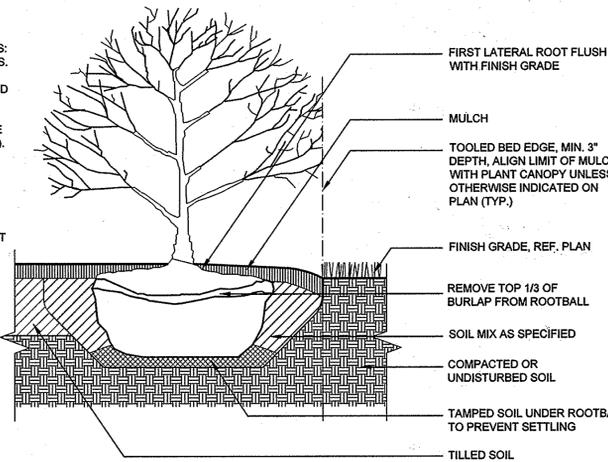
- NOTES:
 1. NEVER CUT CENTRAL LEADER.
 2. FOR PLANTS IN WIRE BASKETS, REFER TO SPECIFICATIONS.
 3. TREES TO HAVE SINGLE LEADER.
 4. CUT AND REMOVE TOP HALF OF WIRE BASKETS.
 5. DO NOT PLACE MULCH AGAINST TRUNK.



2 Typical Evergreen Tree Planting

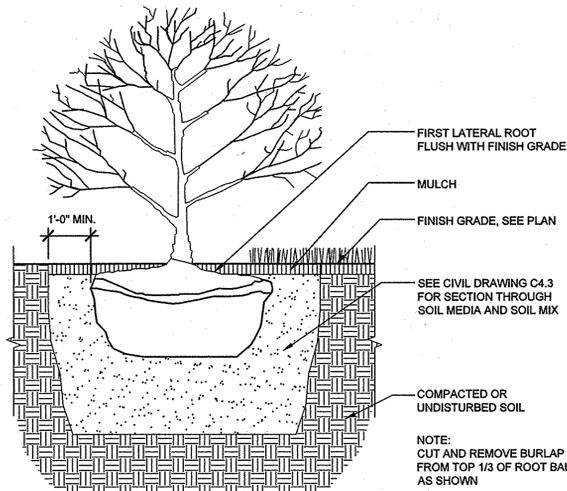
Scale: 1/2" = 1'-0"

- SEQUENCE OF CONSTRUCTION (GENERAL), REFER TO SPECIFICATIONS:
 1. STAKE OUT PLANT/BED LOCATIONS.
 2. CUT EDGE OF PLANT BED.
 3. TILL SOIL TO DEPTH SPECIFIED AND APPLY AMENDMENTS TO ENTIRE PLANTING AREA.
 4. APPLY PRE-EMERGENT HERBICIDE (TWO WEEKS PRIOR TO PLANTING).
 5. INSTALL PLANTS.
 6. INSTALL FERTILIZER TABLETS IN EACH PLANT PIT.
 7. PLACE BACKFILL.
 8. WATER EACH INDIVIDUAL PLANT THOROUGHLY.
 9. PLACE MULCH OVER ENTIRE PLANT BED.
 10. WATER ENTIRE PLANT BED THOROUGHLY.



5 Typical Shrub Planting

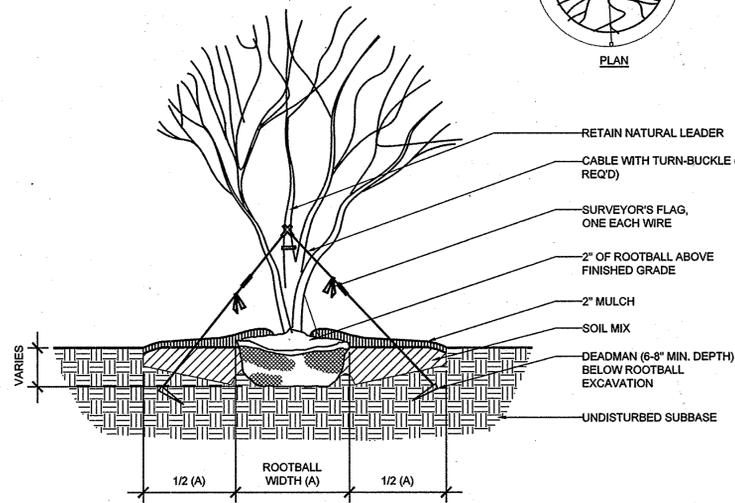
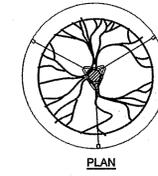
Scale: 1" = 1'-0"



7 Rain Garden Shrub Planting

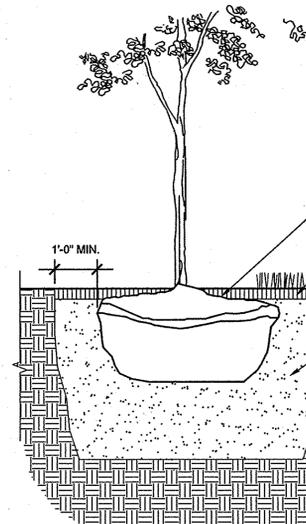
Scale: 1/2" = 1'-0"

- NOTES:
 1. FOR B&B TREES, REMOVE TOP 1/3 OF BALL WRAP.
 2. CUT WIRE BASKET IN AT LEAST FOUR LOCATIONS CIRCLING ROOTBALL.
 3. DO NOT PLACE MULCH AGAINST TRUNK.



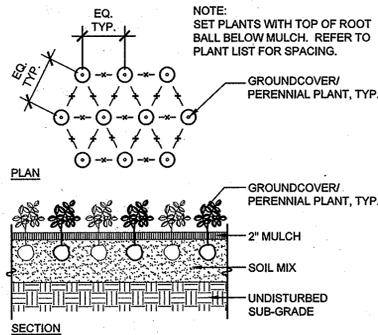
3 Typical Multi-Stem Tree Planting

Scale: 1/2" = 1'-0"



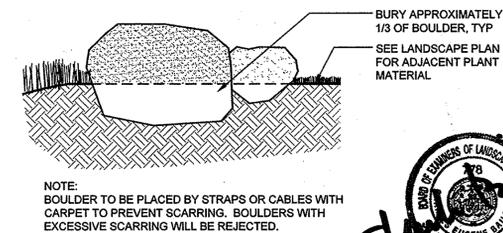
6 Rain Garden Tree Planting

Scale: 1/2" = 1'-0"



8 Typical Triangular Groundcover & Plug Spacing

Scale: 1/2" = 1'-0"



9 Boulder Setting

Scale: 3/4" = 1'-0"

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division
 Chief, Division of Land Development

DATE: 10-2-14
 DATE: 10-10-14
 DATE: 11/12/14

MAHAN RYKIEL
 ASSOCIATES INC
 The Steiff Silver Building, 800 Wyman Park Drive., Suite 100, Baltimore, MD 21211 410.235.6001

REVISIONS	

HOWARD COUNTY

DEPARTMENT OF RECREATION AND PARKS
 7120 OAKLAND MILLS ROAD
 COLUMBIA, MD 21046

DEPARTMENT OF PUBLIC WORKS
 9250 BENDIX ROAD
 ELLICOTT CITY, MD 21043



WHITMAN, REQUARDT & ASSOCIATES, LLP
 801 South Caroline Street, Baltimore, Maryland 21231
 Phone: 410-235-3450 Fax: 410-243-5716

PROPERTY

TAX MAP 35, GRID 3, PARCEL 512
 TAX MAP 35, GRID 9, PARCEL 467
 TAX MAP 35, GRID 2, PARCEL 427

ZONING: NEWTOWN & R-20
 ELECTION DISTRICT 05

GRAPHIC SCALES

SIGNATURE

100% CONSTRUCTION DRAWINGS

MPEA - SITE IMPROVEMENTS

Landscape Details

Drawing No.

L1.2

Scale: As Shown
 Date: 09/12/2014 Sheet 23 of 26
 Des: CB/CO Drawn: CO Check: CB

MIDDLE PATUXENT ENVIRONMENTAL AREA FOREST STAND DELINEATION AND FOREST DATA SUMMARY

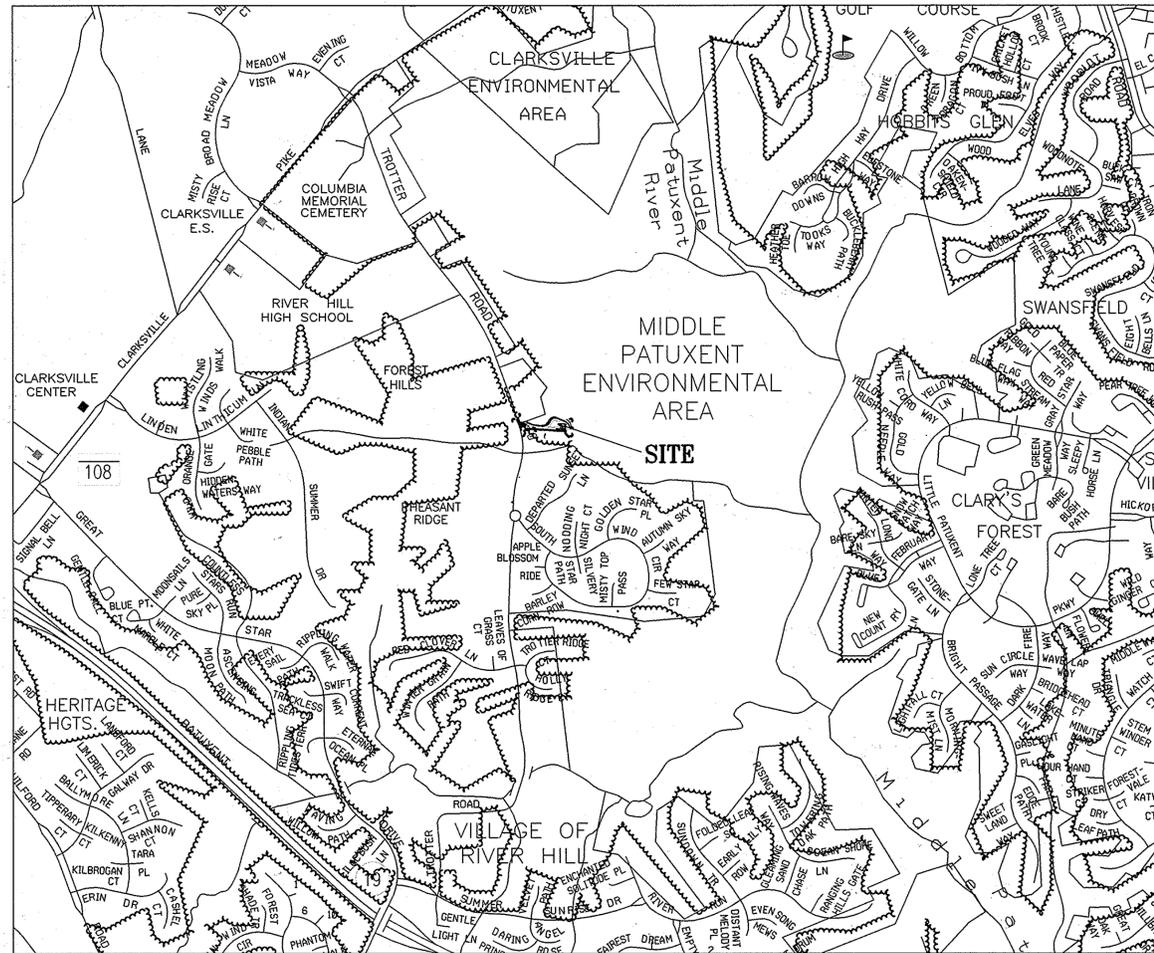
GENERAL NOTES

- FOR THIS PROJECT THE LIMIT OF DISTURBANCE (LOD) HAS BEEN USED TO DEFINE THE PROJECT AREA. A LARGER STUDY AREA WAS USED TO GATHER ADDITIONAL INFORMATION ABOUT THE AREAS SURROUNDING THE PROJECT LIMITS.
- TOPOGRAPHIC FIELD SURVEYS WERE PERFORMED IN 2007 BY JOHNSON, MIRMIRAN & THOMPSON (JMT) AND KCI COMMUNICATIONS INFRASTRUCTURE.
- THERE ARE NO NON-TIDAL WETLAND SYSTEMS IN THE PROJECT AREA.
- ACCORDING TO FEMA MAP 2400440033B, DATED 12/4/1986 THERE ARE NO FLOODPLAINS IN THE PROJECT AREA.
- THROUGH U.S. FISH AND WILDLIFE'S ONLINE CERTIFICATION PROCESS IT WAS DETERMINED THAT EXCEPT FOR THE OCCASIONAL TRANSIENT INDIVIDUALS, THERE ARE NO STATE OR FEDERAL RECORDS FOR RARE, THREATENED OR ENDANGERED SPECIES WITHIN THE CLARKSVILLE USGS GRID.
- THERE ARE 4 SPECIMEN TREES LOCATED IN OR NEAR THE STUDY AREA. ALL TREES WERE FIELD SURVEYED.
- THIS SITE DOES NOT LIE WITHIN A COUNTY GREEN INFRASTRUCTURE EVALUATION AREA.
- ACCORDING TO MERLIN ONLINE DATABASE NO HISTORIC PROPERTIES ARE LOCATED WITHIN 1000 FEET OF THE PROJECT AREA.
- THE PROJECT AREA AND THE SURROUNDING PARCELS ARE CONSIDERED NT (NEWTOWN) & R-20 (RESIDENTIAL-SINGLE 20,000 SF).
- THIS PROJECT LIES WITHIN THE MIDDLE PATUXENT RIVER BRANCH MARYLAND WATERSHED AND IS ASSOCIATED WITH HUC CODE 02131106(0959).
- THERE ARE STEEP SLOPES WITHIN THE 15-25% RANGE OF NOTABLE SIZE (GREATER THAN OR EQUAL TO 10,000 SQUARE FEET) WITHIN THE STUDY AREA.
- A FOREST STAND ANALYSIS TABLE WAS NOT COMPLETED, DUE TO NO PRESENCE OF A FOREST STAND IN THE R-20 ZONE.

Soil Map Unit	Soil Name	K-Factor Whole Soil	Hydric Soils	Hydrologic Soil Group	Drainage Class
GbC	Gladstone loam, 8-15% slopes	0.24	Not Hydric	B	Well drained
GmB	Glenville silt loam, 3-8% slopes	0.43	Partially Hydric (5%)	C	Moderately well drained
GnB	Glenville-Baile silt loams, 0-8% slopes	0.43	Partially Hydric (35%)	C/D	Moderately well drained
Ha	Harboro-Codorus silt loam, 0-3% slopes	0.37	Dominantly Hydric (60%)	D/C	Poorly drained
MaD	Manor loam, 15-25% slopes	0.28	Not Hydric	B	well drained

SPECIMEN TREE CHART

TREE #	SPECIES	SIZE (inches)	CONDITION
1	TULIP POPLAR (<i>LIRIODENDRON TULIPIFERA</i>)	30 dbh	GOOD
2	WHITE OAK (<i>QUERCUS ALBA</i>)	33 dbh	GOOD
3	SCARLET OAK (<i>QUERCUS COCCINEA</i>)	37 dbh	GOOD
4	SCARLET OAK (<i>QUERCUS COCCINEA</i>)	33 dbh	POOR



VICINITY MAP
SCALE: 1" = 1000'

TOTAL TRACT AREA	2.46 ACRES
AREA IN THE NT ZONE	1.66 ACRES
NET TRACT AREA	0.80 ACRES
FOREST IN NET TRACT	0.00 ACRES
FOREST CLEARING	0.00 ACRES
FOREST RETENTION	0.00 ACRES
AFFORESTATION REQUIREMENT	0.12 ACRES

SITE DESCRIPTION

ON BEHALF OF THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS (DPW), WHITMAN, REQUARDT & ASSOCIATES, LLP (WR&A) IS PROVIDING DESIGN SERVICES FOR THE DESIGN PHASE OF THE MIDDLE PATUXENT ENVIRONMENTAL AREA SITE IMPROVEMENTS PROJECT. HOWARD COUNTY IS PLANNING TO EXPAND THE TROTTER ROAD PARKING LOT AND PARK ENTRANCE ROAD TO THE MIDDLE PATUXENT ENVIRONMENTAL AREA INCLUDING SITE AMENITIES TO ADDRESS THE EXPANDING OUTREACH PROGRAMS OFFERED BY THE COUNTY.

THE STUDY AREA FOR THIS PROJECT HAS BEEN EXTENDED BEYOND THE LIMIT OF DISTURBANCE (LOD) TO ENSURE THE MAPPING OF ALL ENVIRONMENTAL FEATURES WITHIN AND IN CLOSE PROXIMITY TO THE PROJECT AREA. THE PROJECT AREA CONSISTS OF TWO ZONING DESIGNATIONS. THE NEWTOWN (NT) ZONING DESIGNATION IS EXEMPT FROM FOREST CONSERVATION REQUIREMENTS AND ONLY REQUIRES A FOREST STAND DATA SUMMARY; WHICH INCLUDES A BRIEF DESCRIPTION OF THE FOREST ON-SITE AND SPECIMEN TREE MAPPING. THE NEWTOWN ZONING IS LOCATED ON THE NORTHERN PORTION OF THE PROJECT AREA. THE SOUTHERN PORTION OF THE PROJECT AREA IS ZONED RESIDENTIAL 20 (R-20) AND IS SUBJECT TO STANDARD FOREST CONSERVATION REGULATIONS.

WITHIN THE STUDY AREA THERE ARE 2 FOREST STANDS AND 3 HEDGEROWS. THE DESCRIPTIONS OF THESE AREAS CAN BE FOUND ON SHEETS FCP-2 THROUGH FCP-6 AS THEY APPEAR ON EACH PLAN SHEET. THE STUDY AREA ALSO CONTAINS 3 NON-TIDAL WETLANDS AND A 100-YEAR FLOODPLAIN.

METHODOLOGY

USING THE SAMPLE PLOT METHOD AS DEFINED IN THE STATE FOREST CONSERVATION TECHNICAL MANUAL 3RD EDITION (MDNR, 1997), A MINIMUM 67% CONFIDENCE LEVEL WAS MAINTAINED BY USING RANDOMLY LOCATED 1/10TH ACRE SAMPLE PLOTS. ONE SAMPLE PLOT WAS COMPLETED EVERY 4 ACRES OF FOREST STAND AREA, WITH A MINIMUM OF TWO SAMPLE PLOTS FOR EACH FOREST STAND AND A MINIMUM OF THREE PLOTS TOTAL.

FOR EACH PLOT, DATA WAS RECORDED USING THE "FOREST SAMPLING DATA WORKSHEET" FROM THE STATE FOREST CONSERVATION TECHNICAL MANUAL (DNR, 1997). BASAL AREA WAS CALCULATED USING A 10-FACTOR WEDGE PRISM. FOREST STAND SUMMARY INFORMATION WAS RECORDED ON THE "FOREST STAND SUMMARY WORKSHEET" FROM THE STATE FOREST CONSERVATION TECHNICAL MANUAL.

CLEARING NARRATIVE

ALL FOREST STAND CLEARING IS GOING TO TAKE PLACE IN THE NEWTOWN (NT) ZONE WHICH IS EXEMPT FROM FOREST CONSERVATION. CLEARING IN THE RESIDENTIAL (R-20) ZONE IS BEING LIMITED TO HEDGEROWS AND OPEN MEADOW. THE PROJECT WAS SOMEWHAT CONSTRAINED BY THE LOCATION OF THE EXISTING PATH, GATE AND PARKING AREA. THERE HAS BEEN AN EFFORT TO AVOID AND MINIMIZE REMOVAL OF SPECIMEN TREES AND WOODED STREAM BUFFER.

LEGEND

- TREELINE/BUSHLINE
- LOD LIMIT OF DISTURBANCE (PROJECT AREA/NET TRACT)
- SOILS
- WUS WATERS OF THE U.S. (STREAM)
- SB STREAM BUFFER
- 15-25% SLOPES
- GREATER THAN 25% SLOPES
- SPECIMEN TREE

REVISIONS	

HOWARD COUNTY

DEPARTMENT OF RECREATION AND PARKS
7120 OAKLAND MILLS ROAD
COLUMBIA, MD 21046

DEPARTMENT OF PUBLIC WORKS
9250 BENDIX ROAD
ELLICOTT CITY, MD 21043

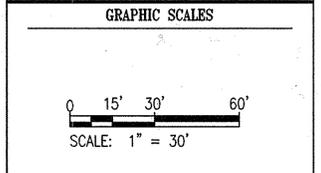
WR&A

WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231
Phone: 410-235-3450 Fax: 410-243-5716

PROPERTY

TAX MAP 35, GRID 3, PARCEL 512
TAX MAP 35, GRID 2, PARCEL 427

ZONING: NEWTOWN & R-20
ELECTION DISTRICT 05



SIGNATURE

TIMOTHY B. HESS
 MD DNR QUALIFIED PROFESSIONAL
 3/5/14
 DATE

MPEA - SITE IMPROVEMENTS

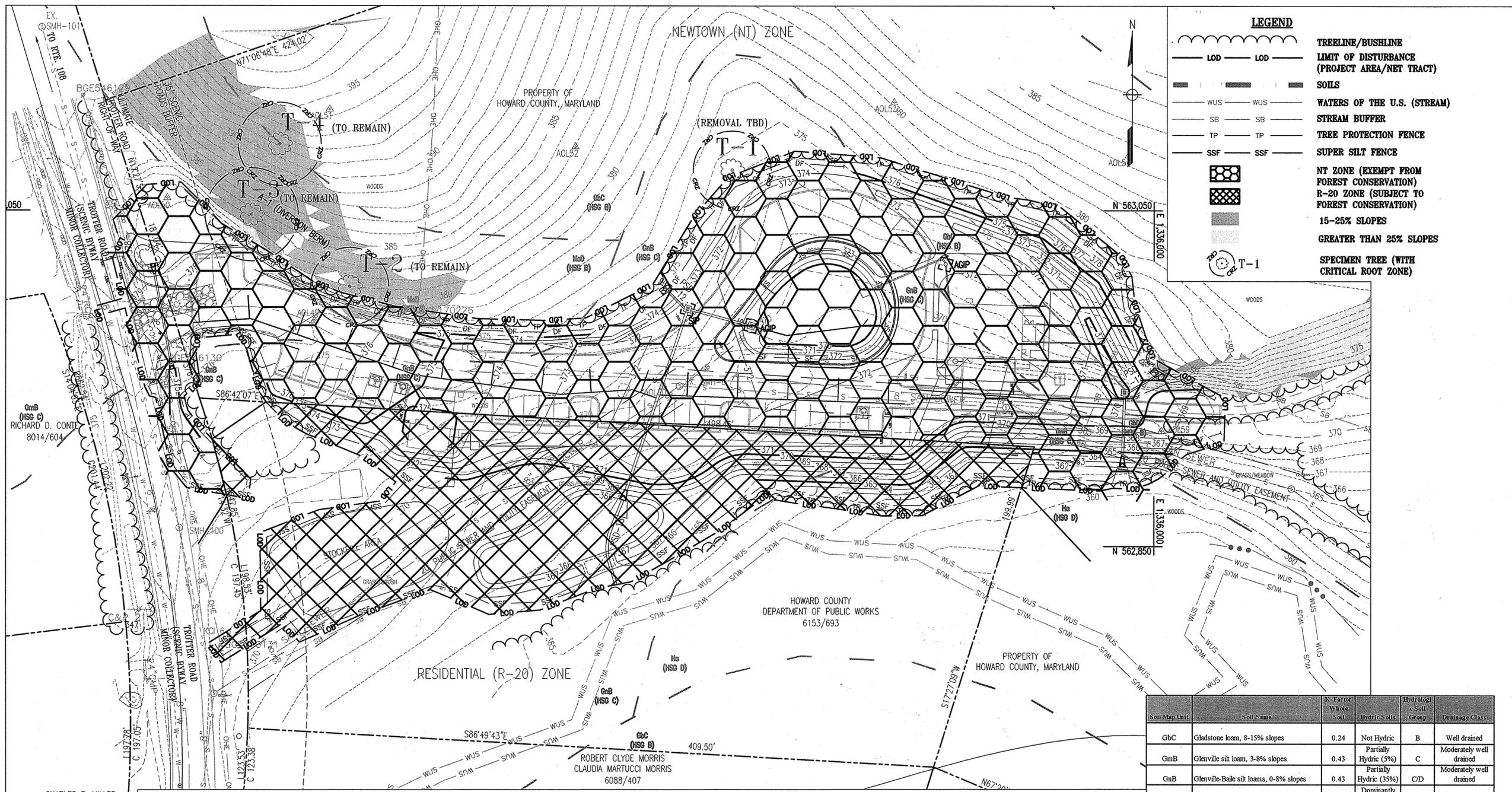
FOREST CONSERVATION COVER SHEET

Drawing No.
F2.1

Scale: 1" = 30'
Date: 09/12/2014 Sheet 24 of 26
Des: TRH Drawn: TRH Check: JNA

APPROVED: DEPARTMENT OF PLANNING AND ZONING

	10-2-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE
	10-10-14
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE
	10/13/14
DIRECTOR	DATE



LEGEND

- TREELINE/BUSHLINE
- LIMIT OF DISTURBANCE (PROJECT AREA/NET TRACT)
- SOILS
- WATERS OF THE U.S. (STREAM)
- STREAM BUFFER
- TREE PROTECTION FENCE
- SUPER SILT FENCE
- NT ZONE (EXEMPT FROM FOREST CONSERVATION)
- R-20 ZONE (SUBJECT TO FOREST CONSERVATION)
- 15-25% SLOPES
- GREATER THAN 25% SLOPES
- SPECIMEN TREE (WITH CRITICAL ROOT ZONE)

REVISIONS

HOWARD COUNTY
 DEPARTMENT OF RECREATION AND PARKS
 7120 OAKLAND MILLS ROAD
 COLUMBIA, MD 21046

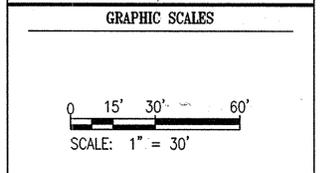
DEPARTMENT OF PUBLIC WORKS
 9250 BENDIX ROAD
 ELLICOTT CITY, MD 21043

WR&A
 WHITMAN, REQUARDT & ASSOCIATES, LLP
 801 South Caroline Street, Baltimore, Maryland 21231
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PROPERTY

TAX MAP 35, GRID 3, PARCEL 512
 TAX MAP 35, GRID 2, PARCEL 427

ZONING: NEWTOWN & R-20
 ELECTION DISTRICT 05



SIGNATURE

[Signature]
 TIMOTHY R. HESS
 MD DNR QUALIFIED PROFESSIONAL
 9/5/14 DATE

MPEA - SITE IMPROVEMENTS

FOREST CONSERVATION PLAN

Drawing No.
F2.2

Scale: 1" = 30'
 Date: 09/12/2014 Sheet 25 of 26
 Des: TRH Drawn: TRH Check: JNA

Soil Map Unit	Soil Name	K-Factor Whole Soil	Hydric Soils	Hydrologic Soil Group	Drainage Class
GbC	Gladstone loam, 8-15% slopes	0.24	Not Hydric	B	Well drained
GmB	Glenville silt loam, 3-8% slopes	0.43	Partially Hydric (5%)	C	Moderately well drained
GnB	Glenville-Baile silt loams, 0-8% slopes	0.43	Hydric (35%)	C/D	Moderately well drained
Ha	Hatboro-Codorus silt loam, 0-3% slopes	0.37	Dominantly Hydric (60%)	D/C	Poorly drained
MaD	Manor loam, 15-25% slopes	0.28	Not Hydric	B	well drained

FOREST DATA SUMMARY (REQUIRED FOR NEWTOWN ZONE)

FOREST STAND 1 IS LOCATED ENTIRELY WITHIN THE NEWTOWN (NT) ZONE. FULL DATA SHEETS ARE NOT REQUIRED FOR THE NT ZONED AREA, HOWEVER THE CANOPY IS DOMINATED BY WHITE OAK (*Quercus alba*), NORTHERN RED OAK (*Quercus rubra*), TULIP POPLAR (*Liriodendron tulipifera*), AND BLACK LOCUST (*Robinia pseudoacacia*). THE AVERAGE SIZE FOR THE DOMINANT TREES IN THIS AREA IS APPROXIMATELY 12-15" dbh. THE UNDERSTORY AND HERBACEOUS LAYERS ARE DOMINATED BY JAPANESE HONEYSUCKLE (*Lonicera japonica*), LOWBUSH BLUEBERRY (*Vaccinium angustifolium*), AMERICAN HORNBEEAM (*Carpinus caroliniana*), POISON IVY (*Toxicodendron radicans*), BLACK CHERRY (*Prunus serotina*), VIRGINIA CREEPER (*Parthenocissus quinquefolia*) AND AMERICAN BEECH (*Fagus grandifolia*). THERE ARE 4 SPECIMEN TREES WITHIN THE STUDY AREA. OTHER THAN A SMALL SECTION OF 100 FT STREAM BUFFER THERE ARE NO OTHER ENVIRONMENTAL CONSTRAINTS (STREAMS, WETLANDS, OR FLOODPLAINS) WITHIN FOREST STAND 1. THERE ARE SEVERAL INVASIVE SPECIES PRESENT INCLUDING JAPANESE HONEYSUCKLE (*Lonicera japonica*), SERICEA LESPEDEZA (*Lespedeza cuneata*), MILE-A-MINUTE (*Polygonum perfoliatum*), AND MULTIFLORA ROSE (*Rosa multiflora*). EDGEROW 2 IS PRIMARILY LOCATED IN THE GmB, GbC, MaD AND Ha SOIL TYPES, WHICH IS ASSOCIATED WITH THE WOODLAND SUSTAINABILITY GROUPS 1, 2, 12, 44 AND GbC IS NOT LISTED IN THE SOIL SURVEY. THESE FOUR GROUPS TYPICALLY ARE OCCUPIED BY A VARIETY OF PINES, OAKS, SWEET GUM AND YELLOW POPLAR. SEASONAL WETNESS, SLOPES AND FLOODING CAN SEVERELY LIMIT THE USE OF EQUIPMENT IN THESE AREAS. GIVEN THE PRESENCE OF SPECIMEN TREES AND THE STREAM BUFFER THIS AREA IS DETERMINED TO HAVE A HIGH RETENTION VALUE.

TREE #	SPECIES	SIZE (Inches)	CONDITION
1	TULIP POPLAR (<i>LIRIODENDRON TULIPIFERA</i>)	31 dbh	GOOD
2	WHITE OAK (<i>QUERCUS ALBA</i>)	33 dbh	GOOD
3	SCARLET OAK (<i>QUERCUS COCCINEA</i>)	37 dbh	GOOD
4	SCARLET OAK (<i>QUERCUS COCCINEA</i>)	33 dbh	POOR

HEDGEROW 1

HEDGEROW 1 IS LOCATED IN BOTH THE NEWTOWN (NT) AND RESIDENTIAL (R-20) ZONES. THIS AREA IS DOMINATED BY RED MAPLE (*Acer rubrum*), BLACK LOCUST (*Robinia pseudoacacia*), NORTHERN SPICEBUSH (*Lindera benzoin*), MULTIFLORA ROSE (*Rosa multiflora*) AND ALLEGHENY BLACKBERRY (*Rubus allegheniensis*). THE AVERAGE SIZE FOR THE DOMINANT TREES IN THIS AREA IS APPROXIMATELY 8-10" dbh. THERE ARE NO SPECIMEN TREES WITHIN THE STUDY AREA OF HEDGEROW 1. WHILE HEDGEROW 1 DOES CONTAIN A 100 FT STREAM BUFFER THERE ARE NO OTHER ENVIRONMENTAL CONSTRAINTS (STREAMS, WETLANDS, OR FLOODPLAINS). THERE ARE SEVERAL INVASIVE SPECIES PRESENT INCLUDING JAPANESE HONEYSUCKLE (*Lonicera japonica*) AND MULTIFLORA ROSE (*Rosa multiflora*). HEDGEROW 1 IS PRIMARILY LOCATED IN THE GmB SOIL TYPE, WHICH IS ASSOCIATED WITH THE WOODLAND SUSTAINABILITY GROUPS 1 AND 12. THESE TWO GROUPS TYPICALLY ARE OCCUPIED BY A VARIETY OF PINES, SWEET GUM AND YELLOW POPLAR. SEASONAL WETNESS AND FLOODING CAN SEVERELY LIMIT THE USE OF EQUIPMENT IN THESE AREAS. GIVEN THE PRESENCE OF THE STREAM BUFFER THIS AREA IS DETERMINED TO HAVE A HIGH RETENTION VALUE.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 10-2-14
 CHIEF, DEVELOPMENT ENGINEERING DIVISION #

[Signature] 10-10-14
 CHIEF, DIVISION OF LAND DEVELOPMENT

[Signature] 10/12/14
 DIRECTOR

HEDGEROW 2

HEDGEROW 2 IS LOCATED IN BOTH THE NEWTOWN (NT) AND RESIDENTIAL (R-20) ZONES. THIS AREA IS DOMINATED BY RED MAPLE (*Acer rubrum*), BLACK LOCUST (*Robinia pseudoacacia*), BOXELDER (*Acer negundo*), MULTIFLORA ROSE (*Rosa multiflora*) AND ALLEGHENY BLACKBERRY (*Rubus allegheniensis*). THE AVERAGE SIZE FOR THE DOMINANT TREES IN THIS AREA IS APPROXIMATELY 10-12" dbh. THERE ARE NO SPECIMEN TREES WITHIN THE STUDY AREA OF HEDGEROW 2. WHILE HEDGEROW 2 DOES CONTAIN A 100 FT STREAM BUFFER THERE ARE NO OTHER ENVIRONMENTAL CONSTRAINTS WITHIN THE PROPOSED LIMIT OF DISTURBANCE (STREAMS, WETLANDS, OR FLOODPLAINS). THERE ARE SEVERAL INVASIVE SPECIES PRESENT INCLUDING JAPANESE HONEYSUCKLE (*Lonicera japonica*) AND MULTIFLORA ROSE (*Rosa multiflora*). HEDGEROW 2 IS PRIMARILY LOCATED IN THE GmB AND Ha SOIL TYPES, WHICH IS ASSOCIATED WITH THE WOODLAND SUSTAINABILITY GROUPS 1, 2 AND 12. THESE THREE GROUPS TYPICALLY ARE OCCUPIED BY A VARIETY OF PINES, OAKS, SWEET GUM AND YELLOW POPLAR. SEASONAL WETNESS AND FLOODING CAN SEVERELY LIMIT THE USE OF EQUIPMENT IN THESE AREAS. GIVEN THE PRESENCE OF THE STREAM BUFFER THIS AREA IS DETERMINED TO HAVE A HIGH RETENTION VALUE.

OPEN MEADOW 1

OPEN MEADOW 1 IS LOCATED IN BOTH THE NEWTOWN (NT) AND RESIDENTIAL (R-20) ZONES BETWEEN HEDGEROW 1 AND HEDGEROW 2. THIS AREA IS DOMINATED BY BLACK CHERRY (*Prunus serotina*), JAPANESE HONEYSUCKLE (*Lonicera japonica*), MULTIFLORA ROSE (*Rosa multiflora*) AND MILE-A-MINUTE (*Polygonum perfoliatum*). WHILE OPEN MEADOW 1 DOES CONTAIN A 100 FT STREAM BUFFER THERE ARE NO OTHER ENVIRONMENTAL CONSTRAINTS WITHIN THE PROPOSED LIMIT OF DISTURBANCE (STREAMS, WETLANDS, OR FLOODPLAINS). THERE ARE SEVERAL INVASIVE SPECIES PRESENT INCLUDING JAPANESE HONEYSUCKLE (*Lonicera japonica*), MILE-A-MINUTE (*Polygonum perfoliatum*) AND MULTIFLORA ROSE (*Rosa multiflora*). OPEN MEADOW 1 IS PRIMARILY LOCATED IN THE GmB SOIL TYPE, WHICH IS ASSOCIATED WITH THE WOODLAND SUSTAINABILITY GROUPS 1 AND 12. THESE TWO GROUPS TYPICALLY ARE OCCUPIED BY A VARIETY OF PINES, SWEET GUM AND YELLOW POPLAR. SEASONAL WETNESS AND FLOODING CAN SEVERELY LIMIT THE USE OF EQUIPMENT IN THESE AREAS. GIVEN THE PRESENCE OF THE STREAM BUFFER THIS AREA IS DETERMINED TO HAVE A HIGH RETENTION VALUE.

NET TRACT AREA:

A. Total tract area.....=	2.46
B. Area within NT Zone.....=	1.66
C. Area to remain in agricultural production.....=	0.00
D. Net tract area.....=	0.80

LAND USE CATEGORY: (from table 3.2.1, page 40, Manual)

Input the number "1" under the appropriate land use zoning, and limit to only one entry.

ARA	MDR	IDA	HDR	MPD	CIA
0	0	1	0	0	0

E. Afforestation Threshold.....	15% x D =	0.12
F. Conservation Threshold.....	20% x D =	0.16

EXISTING FOREST COVER:

G. Existing forest cover (excluding Critical Area).....=	0.00
H. Area of forest above afforestation threshold.....=	0.00
I. Area of forest above conservation threshold.....=	0.00

BREAK EVEN POINT:

J. Forest retention above threshold with no mitigation.....=	0.00
K. Clearing permitted without mitigation.....=	0.00

PROPOSED FOREST CLEARING:

L. Total area of forest to be cleared.....=	0.00
M. Total area of forest to be retained.....=	0.00

PLANTING REQUIREMENTS:

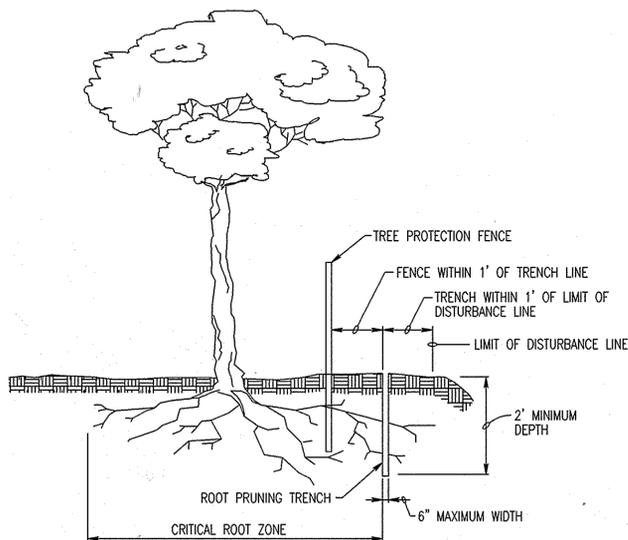
N. Reforestation for clearing above conservation threshold...=	0.00
P. Reforestation for clearing below conservation threshold...=	0.00
Q. Credit for retention above conservation threshold.....=	0.00
R. Total reforestation required.....=	0.00
S. Total afforestation required.....=	0.12
T. Total reforestation and afforestation required.....=	0.12

FOREST MITIGATION OBLIGATION

DUE TO THE MINIMAL AFFORESTATION OBLIGATION AND TO PREVENT RESTRICTION FOR FUTURE EXPANSION HOWARD COUNTY HAS ELECTED TO FULFILL THE REFORESTATION OBLIGATION FOR THIS PROJECT VIA THE FEE-IN-LIEU PROGRAM. AT A REQUIREMENT OF 0.12 ACRES (5,227 SQ. FT.) AND A FOREST CONSERVATION FEE-IN-LIEU OF \$0.75 A SQUARE FOOT HOWARD COUNTY WILL HAVE A FOREST CONSERVATION OBLIGATION OF \$3,920.

SURETY

BY COMPLETING THE FOREST MITIGATION OBLIGATION VIA THE FEE-IN-LIEU PROGRAM A SURETY DEPOSIT IS NOT REQUIRED.

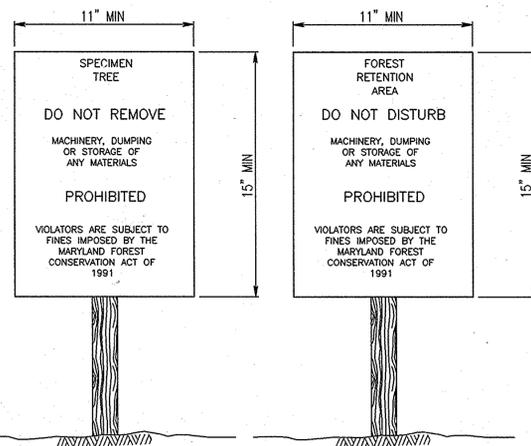


NOTES:

1. RETENTION AREAS TO BE ESTABLISHED AS PART OF THE FOREST CONSERVATION PLAN REVIEW PROCESS.
2. BOUNDARIES OF RETENTION AREAS TO BE STAKED AND FLAGGED PRIOR TO TRENCHING.
3. EXACT LOCATION OF TRENCH SHALL BE IDENTIFIED.
4. TRENCH SHOULD BE IMMEDIATELY BACKFILLED WITH SOIL REMOVED OR OTHER HIGH ORGANIC SOIL.
5. ROOTS SHOULD BE CLEANLY CUT USING VIBRATORY KNIFE OR OTHER ACCEPTABLE EQUIPMENT.

ROOT PRUNING

NO SCALE



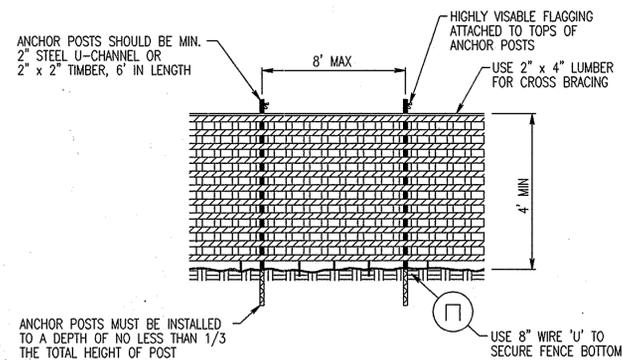
NOTES:

1. BOTTOM OF SIGN TO BE HIGHER THAN TOP OF TREE PROTECTION FENCE.
2. SIGNS TO BE PLACED APPROXIMATELY 50' APART. CONDITIONS ON SITE AFFECTING VISIBILITY MAY WARRANT PLACING SIGNS CLOSER OR FARTHER APART.
3. ATTACHMENT OF SIGNS TO TREES IS PROHIBITED.

CONSTRUCTION SIGNS

NO SCALE

AT THIS TIME IT HAS BEEN DETERMINED THAT NO SIGNS ARE NEEDED AS THERE ARE NO FOREST CONSERVATION EASEMENTS. IF DURING CONSTRUCTION IT IS DETERMINED THAT ANY ARE REQUIRED THIS DETAIL HAS BEEN INCLUDED.



NOTES:

1. BLAZE ORANGE OR BLUE PLASTIC MESH FENCE FOR FOREST PROTECTION DEVICE, ONLY.
2. BOUNDARIES OF RETENTION AREA WILL BE ESTABLISHED AS PART OF THE FOREST CONSERVATION PLAN REVIEW PROCESS.
3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
4. AVOID DAMAGE TO CRITICAL ROOT ZONE. DO NOT DAMAGE OR SEVER LARGE ROOTS WHEN INSTALLING POSTS.
5. PROTECTION SIGNAGE IS REQUIRED.
6. DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.

PLASTIC MESH TREE PROTECTION FENCE

NO SCALE

CONSTRUCTION PERIOD PROTECTION PROGRAM

1. PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL LOCATE THE LIMITS OF DISTURBANCE (LOD) IN THE FIELD.
2. PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITIES, BLAZE ORANGE FENCING SHALL BE INSTALLED AS PER DETAIL THIS SHEET ALONG ALL LIMITS OF DISTURBANCE ADJACENT TO WOODLANDS AND AS INDICATED ON FOREST CONSERVATION PLAN SHEETS FCP02.
3. TREES TO BE REMOVED SHALL BE TAKEN OUT WITHOUT DAMAGING PROTECTED TREES.
4. ALL EQUIPMENT AND MACHINERY SHALL BE KEPT INSIDE THE BLAZE ORANGE FENCING AND WITHIN THE LOD.
5. ANY TYPE OF DISTURBANCE BEYOND THE LOD IS STRICTLY PROHIBITED.
6. PLACEMENT OF EXCAVATED/BACKFILL MATERIAL AND STORAGE OF EQUIPMENT/MACHINERY SHALL BE AVOIDED WITHIN THE CRITICAL ROOT ZONE AREAS OF SPECIMEN TREES IN ORDER TO MINIMIZE SOIL COMPACTION IN THESE SENSITIVE AREAS.
7. ROOT PRUNING AS PER DETAIL THIS SHEET SHALL BE UTILIZED FOR PROTECTION OF SPECIMEN TREES IN AREAS WHERE SPECIMEN TREE CRITICAL ROOT ZONES ARE LOCATED INSIDE THE LOD.

POST-CONSTRUCTION PERIOD PROTECTION PROGRAM

TYPICALLY A POST CONSTRUCTION PROTECTION PROGRAM IS REQUIRED TO GIVE THE FOREST RESOURCES SAVED OR PLANTED AS PART OF THE DEVELOPMENT PROPOSAL A HIGH PROBABILITY OF ACHIEVING THE SURVIVAL RATES REQUIRED FOR RELEASE OF SURETY, AS WELL AS LONG-TERM SURVIVAL. THE POST-CONSTRUCTION PROTECTION PROGRAM PERIOD TYPICALLY SHALL BE FOR A MINIMUM OF TWO GROWING SEASONS, AS SPECIFIED IN THE HOWARD COUNTY FOREST CONSERVATION MANUAL. HOWEVER THERE ARE NO PLANTING AREAS ASSOCIATED WITH THIS PROJECT AND THEREFORE NO SURETY IS REQUIRED.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

<i>Col. G. ...</i>	10-2-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE
<i>V. ...</i>	10-10-14
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE
<i>David M. ...</i>	12/22/14
DIRECTOR	DATE

REVISIONS	

HOWARD COUNTY

DEPARTMENT OF RECREATION AND PARKS
7120 OAKLAND MILLS ROAD
COLUMBIA, MD 21046

DEPARTMENT OF PUBLIC WORKS
9250 BENDIX ROAD
ELLCOTT CITY, MD 21043

WR&A

WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231
Phone: 410-235-3450 Fax: 410-243-5716

PROPERTY

TAX MAP 35, GRID 3, PARCEL 512
TAX MAP 35, GRID 2, PARCEL 427

ZONING: NEWTOWN & R-20
ELECTION DISTRICT 05

GRAPHIC SCALES

SCALE: 1" = 30'

SIGNATURE

TIMOTHY R. HESS
MD DNR QUALIFIED PROFESSIONAL

3/5/14
DATE

MPEA - SITE IMPROVEMENTS

FOREST CONSERVATION NOTES AND DETAILS

Drawing No.
F2.3

Scale: 1" = 30'

Date: 09/12/2014 Sheet 26 of 26

Des: TRH Drawn: TRH Check: JNA