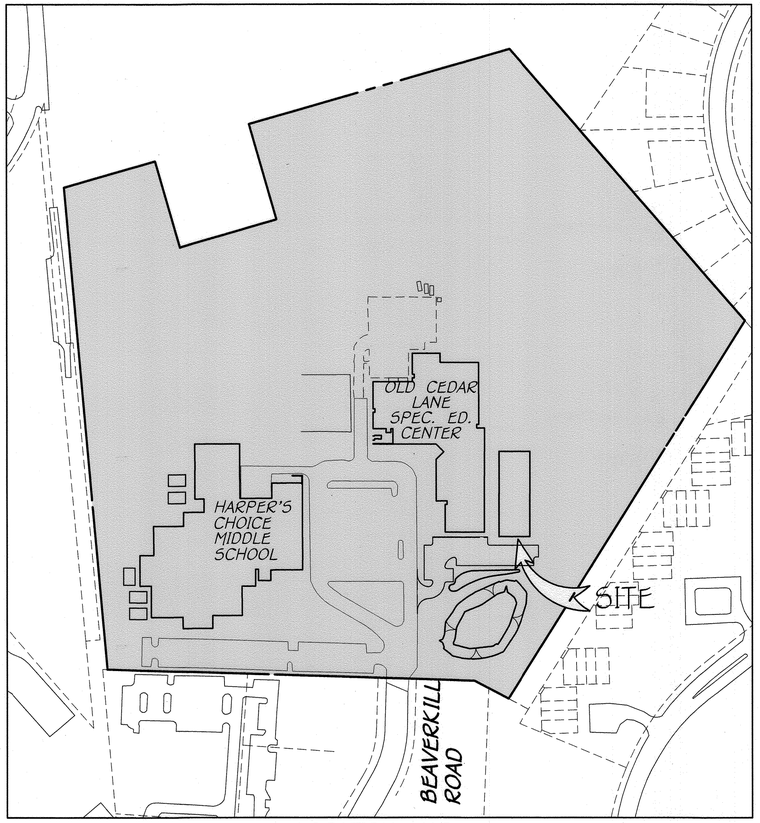
SHEET INDEX	
SHEET NO.	DESCRIPTION
1	ENVIRONMENTAL CONCEPT PLAN TITLE SHEET
2	ENVIRONMENTAL CONCEPT PLAN AND DEMO PLAN
3	ECP SEDIMENT AND EROSION CONTROL PLAN AND SWM DRAINAGE AREA MAP
4	ECP LANDSCAPE PLAN, DETAILS AND NOTES
5	ECP DETAIL SHEET

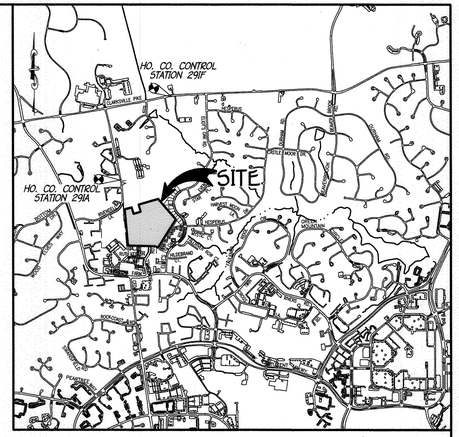
LEGEND – EX. CONDITIONS	
SYMBOL	DESCRIPTION
472	EXISTING CONTOUR 2' INTERVAL
470	EXISTING CONTOUR 10' INTERVAL
S	EXISTING SAN. SEWER LINE
D	EXISTING STORM DRAIN LINE
W	EXISTING WATER LINE
UGE	EXISTING UNDERGROUND ELECTRIC LINE
C/TV	EXISTING CABLE/TV LINE
OHE	EXISTING OVERHEAR ELECTRIC LINE
G	EXISTING GAS LINE
	EXISTING MACADAM PAVING
	EXISTING TREELINE
	DEMOLITION AREA
	EXISTING TREES

LEGEND – PROP. CONDITIONS	
SYMBOL	DESCRIPTION
472	PROPOSED CONTOUR 2' INTERVAL
470	PROPOSED CONTOUR 10' INTERVAL
+ 470.50	PROPOSED SPOT ELEVATION
	PROPOSED CONCRETE WALK
	PROPOSED MACADAM PAVING
8" W	PROPOSED PRIVATE WATER
18" HDPE	PROPOSED STORMDRAIN
	PROPOSED BUILDING

ENVIRONMENTAL CONCEPT PLAN
OLD CEDAR LANE SPECIAL EDUCATION CENTER
VILLAGE OF HARPER'S CHOICE
SECTION 6 AREA 2



LOCATION MAP
SCALE: 1" = 150'
0' 150' 300' 450'



VICINITY MAP
SCALE: 1" = 2000'
0' 2000' 4000' 6000'
ADC STREET MAP 26, GRID C7

DESIGN NARRATIVE

INTRODUCTION:
THIS REPORT WILL DEMONSTRATE HOW THE CRITERIA SET FORTH IN THE MARYLAND STORMWATER DESIGN MANUAL, VOLUMES I AND II (EFFECTIVE OCTOBER 2000, REVISED MAY 2009) WILL BE SATISFIED FOR THE PROPERTY. THE GOAL OF CREATING HYDROLOGY SIMILAR TO THAT OF "WOODS IN GOOD CONDITION" WILL BE ACCOMPLISHED THROUGH THE USE OF FILTERRAS (2), AS SUGGESTED WITHIN CHAPTER 5 OF PREVIOUSLY MENTIONED MANUAL. THE ACHIEVEMENT OF THIS GOAL WILL REMOVE THE REQUIREMENT OF PROVIDING CHANNEL PROTECTION VOLUME.

GENERAL SITE CONDITIONS:
THE MODULAR BUILDING PROJECT IS ZONED NEWTOWN AND LOCATED ON TAX MAP 25, PARCEL NO. 69 OF THE HOWARD COUNTY, MARYLAND TAX MAP DATABASE SYSTEM. THIS PROPERTY CONSISTS OF 30.67 ACRES OF WHICH NO ACRES ARE ENCUMBERED WITH A PRESERVATION EASEMENT DEDICATED TO HOWARD COUNTY MARYLAND AGRICULTURAL LAND PRESERVATION PROGRAM.

I. NATURAL RESOURCE PROTECTION:
TO ENSURE THE PROTECTION OF NATURAL RESOURCES LOCATED ON THIS SITE, ALL BUFFERS WILL BE HONORED AND ALL IMPROVEMENTS WILL BE LOCATED OUTSIDE OF ENVIRONMENTALLY SENSITIVE AREAS. THERE ARE NO DEFINED SPECIMEN TREES LOCATED ON THIS PROPERTY.

II. MAINTENANCE OF NATURAL FLOW PATTERNS:
THE PROPOSED DEVELOPMENT IS DESIGNED WITH THE INTENT OF CREATING DRAINAGE DIVIDES SIMILAR TO THOSE OF THE NATURAL FLOW PATTERNS IN THE PROJECT AREA.

III. REDUCTION OF IMPERVIOUS AREAS THROUGH BETTER SITE DESIGN, ALTERNATIVE SURFACES AND NONSTRUCTURAL PRACTICES
THIS SITE PROPOSES THE MINIMUM IMPERVIOUS AREAS NECESSARY TO PROVIDE ADEQUATE ACCESS TO THE PROPOSED BUILDINGS. ALL PROPOSED IMPERVIOUS SURFACES ARE RECEIVING TREATMENT THROUGH THE USE OF ESD STORMWATER MANAGEMENT FACILITIES. WE ARE PROVIDING FOR 1 MICRO BIORETENTION AND 12 DRYWELLS TO TREAT THE PAVING AND ROOF.

IV. INTEGRATION OF EROSION AND SEDIMENT CONTROLS INTO STORMWATER STRATEGY:
THIS SUBMISSION ONLY PROPOSES ON-LOT SEDIMENT CONTROLS SUCH AS SUPER SILT FENCE, A STOCKPILE AND A STABILIZED CONSTRUCTION ENTRANCE.

V. IMPLEMENTATION OF ESD PLANNING TECHNIQUES AND PRACTICES TO THE MAXIMUM EXTENT PRACTICABLE (MEP)
THIS SUBMISSION PROPOSES 1 MICRO BIORETENTION FACILITY AND 12 DRYWELLS TO MEET AND EXCEED ENVIRONMENTAL SITE DESIGN TO THE MAXIMUM EXTENT PRACTICABLE (ESD TO THE MEP). ADDITIONALLY, THE EXISTING SITE CONTAINS LESS THAN 40% OF IMPERVIOUS COVER QUALIFYING FOR NEW DEVELOPMENT. 100% OF THE EXISTING IMPERVIOUS WILL BE TREATED FOR WQv. THE SITE HAS BEEN DIVIDED INTO INDIVIDUAL DRAINAGE AREAS.

VI. REQUEST FOR DESIGN MANUAL WAIVER:
NO WAIVERS ARE EXPECTED TO BE REQUESTED ON THIS PROJECT RELATING TO SWM REQUIREMENTS.

STORMWATER MANAGEMENT INFORMATION AND PRACTICES

AREA ID OR LOCATION	PERMEABLE PAVING (A-2)	DISCONNECT OR ROOFTOP RUNOFF (N-1)	DISCONNECT OR NON-ROOFTOP RUNOFF (N-2)	FILTERRA INLETS	MICRO BIO-RETENTION (M-6)	BIO-RETENTION (M-6)	SUBMERGED GRAVEL WETLANDS (M-2)	DRYWELL (M-5)
PORT. CLASSROOM & PARKING LOT	N	N	N	N	Y (1)	N	N	Y (12)

STORMWATER MANAGEMENT SUMMARY

AREA ID OR LOCATION	FACILITY NAME & NUMBER	PUBLIC	PRIVATE	HOA MAINTAINED	OWNER MAINTAINED	DRAINAGE AREA (SF)	IMPERVIOUS AREA (SF)	ESDv PROVIDED (CF)	SURFACE AREA (SF)	OVERALL SITE INFORMATION
5451 BEAVERKILL RD	MICRO BIO #1	N	Y	N	Y	16,451	16,451	2,300	1,140	ESDv REQUIRED = 4,473 CF *
5451 BEAVERKILL RD	DW-1,6,7,12	N	Y	N	Y	682 *	682 *	594	1,140	ESDv PROVIDED = 1,730 CF (BMP #1) = 570 CF RECHARGE = 2,222 CF (DRYWELLS)
5451 BEAVERKILL RD	DW-2-5, 8-11	N	Y	N	Y	983 *	983 *	1,628	1,140	ESDv TOTAL = 4,522 CF *
										Pe REQUIRED = 1.80"
										Pe PROVIDED = 1.90"

* PER DRYWELL

SITE ANALYSIS DATA CHART

A. TOTAL AREA OF THIS SUBMISSION = 1,336,026 SF (30.67 AC.)
B. LIMIT OF DISTURBED AREA = 56,673 SQFT. OR 1.30 AC±.
C. PRESENT ZONING DESIGNATION = NEWTOWN (PER 10/06/13 COMPREHENSIVE ZONING PLAN)
D. CURRENT USE: OLD CEDAR LANE SPECIAL EDUCATION CENTER
E. PROPOSED USE: MODULAR BUILDING FOR OFFICE USE
F. OPEN SPACE ON SITE: N/A
G. RECREATIONAL AREA PROVIDED: N/A
H. EXISTING BUILDING COVERAGE OF SITE:
HARPER'S CHOICE MIDDLE SCHOOL: 77,565± SQ. FT.
OLD CEDAR LANE SPECIAL ED. CENTER: 51,552± SQ.FT.
MODULAR BUILDING: 11,792 SQ.FT.
I. PARKING REQUIREMENTS:
EXISTING PARKING: 242 SPACES INCLUDING 7 HC SPACES
REQUIRED: OFFICE 3.3 SPACES PER 1000 SQ.FT.
MODULAR AREA 11,792 SQ. FT. x 3.3 SP./1000 SQ.FT. = 39 SPACES
PROVIDED: 41 SPACES (INCLUDING 2 HC SPACES)
J. PREVIOUS HOWARD COUNTY FILES: SDP-72-076, SDP-79-125, FDP123-A, WP-23-065,, pb23-064, F-80-57c, ~~F-24-____~~ (PLAT).
K. TOTAL AREA OF EX. FLOODPLAIN LOCATED ON SITE: 0 AC.
L. TOTAL AREA OF SLOPES IN EXCESS OF 15% = 0 AC.
M. TOTAL AREA OF WETLANDS (INCLUDING BUFFER) = 0 AC±
N. TOTAL AREA OF EX. FOREST (RETENTION) = 0 AC.±
O. TOTAL GREEN OPEN AREA = N/A
P. TOTAL IMPERVIOUS AREA = N/A
Q. AREA OF ERODIBLE SOILS = 0 AC.±

GENERAL NOTES

1. THE SUBJECT PROPERTY IS ZONED NEWTOWN (PER 10/06/04 COMPREHENSIVE ZONING PLAN)
2. EXISTING TOPOGRAPHY SHOWN IS FROM A FIELD RUN SURVEY PERFORMED BY FISHER, COLLINS AND CARTER, INC. AND DATED AUGUST 2010.
3. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 23CA AND 24AC WERE USED FOR THIS PROJECT.
23EF N 571,309.766 E 1,345,093.245 ELEV. 444.451
29A N 568,986.067 E 1,343,640.177 ELEV. 482.155
4. STORM WATER MANAGEMENT IS IN ACCORDANCE WITH THE M.D.E. STORM WATER DESIGN MANUAL, VOLUMES I & II, REVISED 2009 TO MEET THE NEW DEVELOPMENT CRITERIA. PROVIDED STORMWATER MANAGEMENT INCLUDES THE USE OF DRYWELLS AND A MICRO BIORETENTION FACILITY.
5. THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT. PUBLIC WATER AND SEWER WILL BE UTILIZED FOR THIS PROJECT.
6. THIS PROJECT IS EXEMPT FROM THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION BECAUSE THE PROPERTY IS OWNED BY HCPSS AND IS PART OF A PLANNED UNIT DEVELOPMENT WHICH HAS PRELIMINARY DEVELOPMENT PLAN APPROVAL AND 50% OR MORE OF THE LAND RECORDED AND SUBSTANTIALLY DEVELOPED BEFORE DECEMBER 31, 992 PER SECTION 16.1202(b)(1)(ii) OF THE COUNTY CODE.
7. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE REQUIRED WETLANDS, STREAM(S) OR THEIR BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100 YEAR FLOODPLAIN.
8. MINIMUM BUILDING SETBACK RESTRICTIONS FROM PROPERTY LINES AND THE PUBLIC RIGHT-OF-WAY LINES TO BE IN ACCORDANCE WITH FDP-123-A CRITERIA
9. REVIEW OF THIS PROJECT FOR COMPLIANCE WITH THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE HOWARD COUNTY ZONING REGULATIONS SHALL OCCUR AT THE SITE PLAN STAGES, THEREFORE, THE APPLICANT AND CONSULTANT SHOULD EXPECT ADDITIONAL AND MORE DETAILED COMMENTS (INCLUDING THOSE THAT MAY ALTER OVERALL SITE DESIGN) AS THIS PROJECT PROGRESSES.
10. SOIL BORING INFORMATION WILL BE PROVIDED AT THE SDP STAGE OF THIS PROJECT.
11. APPROVAL OF THIS ECP DOES NOT CONSTITUTE APPROVAL OF SUBSEQUENT OR ASSOCIATED SUBDIVISION OR SITE DEVELOPMENT PLANS OR RED-LINE REVISIONS. REVIEW OF THIS PROJECT FOR COMPLIANCE WITH THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE HOWARD COUNTY ZONING REGULATIONS SHALL OCCUR AT THE SUBDIVISION PLAN, SITE DEVELOPMENT PLAN, OR RED-LINE REVISION PROCESSES. THE APPLICANT AND CONSULTANT SHOULD EXPECT ADDITIONAL AND MORE DETAILED REVIEW COMMENTS (INCLUDING COMMENTS THAT MAY ALTER THE OVERALL SITE DESIGN) AS THE PROJECT PROGRESSES THROUGH THE PLAN REVIEW PROCESS.
12. THERE ARE NO WETLAND AREAS ON THIS PROJECT.
13. THERE ARE NO 100-YEAR FLOODPLAIN AREAS ON THIS PROJECT.
14. WP-23-065 SPECIAL EDUCATION CENTER – PORTABLE CLASSROOM WAS APPROVED DATED FEBRUARY 28, 2023 AND IS SUBJECT TO THE FOLLOWING CONDITIONS:
1.ONCE THE TEMPORARY PORTABLE CLASSROOM UNIT IS REMOVED AND CONSTRUCTION IS COMPLETE, THE SITE SHALL BE STABILIZED AS NECESSARY WITH SEED, SOD, OR ANOTHER GROUND COVER.
2. HOWARD COUNTY PUBLIC SCHOOL SYSTEM (HCPSS) SHALL COMPLY WITH ALL APPLICABLE COUNTY AND STATE REGULATIONS AND OBTAIN ALL NECESSARY PERMITS.
3. THE TEMPORARY PORTABLE CLASSROOM UNIT SHALL COMPLY WITH THE BUILDING SETBACKS FOR THE ZONING DISTRICT IN WHICH THE NEW TEMPORARY PORTABLE UNIT WILL BE INSTALLED.
4. THE APPLICANT SHALL SUBMIT A DETAILED PLOT PLAN FOR THE SITE, SIMILIAR TO THE ALTERNATIVE COMPLIANCE PLAN EXHIBIT, WITH THE BUILDING PERMIT APPLICATION AS REQUESTED BY THE DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, FOR THE TEMPORARY PORTABLE CLASSROOM UNIT.
5. THIS ALTERNATIVE COMPLIANCE REQUEST IS ONLY FOR THE RELOCATION OF THE TEMPORARY 12-UNIT PORTABLE CLASSROOM FROM HAMMOND HIGH SCHOOL TO THE SPECIAL EDUCATION CENTER AS SUBMITTED UNDER THIS ALTERNATIVE COMPLIANCE.

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY 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. 27020, EXPIRATION DATE: 01/25/24."

PAUL EDGARD CAVANAUGH — DATE: 5/31/2023

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — Date: 7/6/23

Chief, Development Engineering Division — Date: 7.13.23

PREPARED FOR
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
9020 MENDENHALL COURT
SUITE 'C'
COLUMBIA, MARYLAND 21045
Attention: DANIEL LUBELEY
410-313-8203

OLD CEDAR LANE SPECIAL ED CENTER
5451 BEAVERKILL ROAD
COLUMBIA, MARYLAND 21044
410-313-6977

PROJECT			SECTION/AREA		PARCEL
OLD CEDAR LANE SPECIAL ED CENTER			6/2		69
PLAT NOS.	BLOCK NO.	ZONE	TAX MAP	ELEC. DIST.	CENSUS TR.
4576-4577	17,23	NT	29	FIFTH	605502
WATER CODE	----		SEWER CODE	----	

ENVIRONMENTAL CONCEPT PLAN
TITLE SHEET

OLD CEDAR LANE SPECIAL EDUCATION CENTER
VILLAGE OF HARPER'S CHOICE
SECTION 6 AREA 2
ZONED: NEW TOWN
TAX MAP No.: 29 GRID No.: 17, 23 PARCEL No.: 69
FIFTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: JUNE, 2023
SHEET 1 OF 5

ECP-23-041

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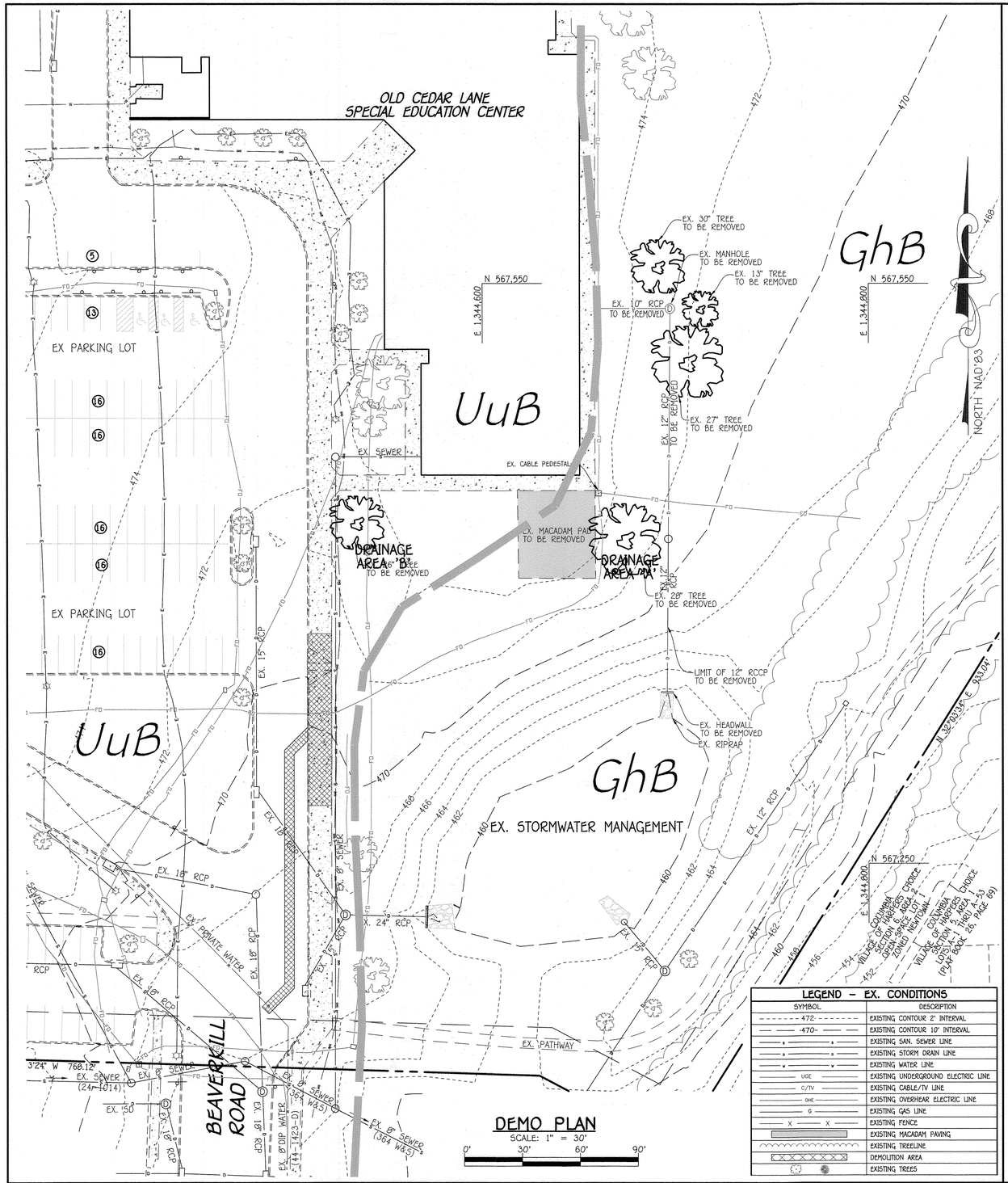
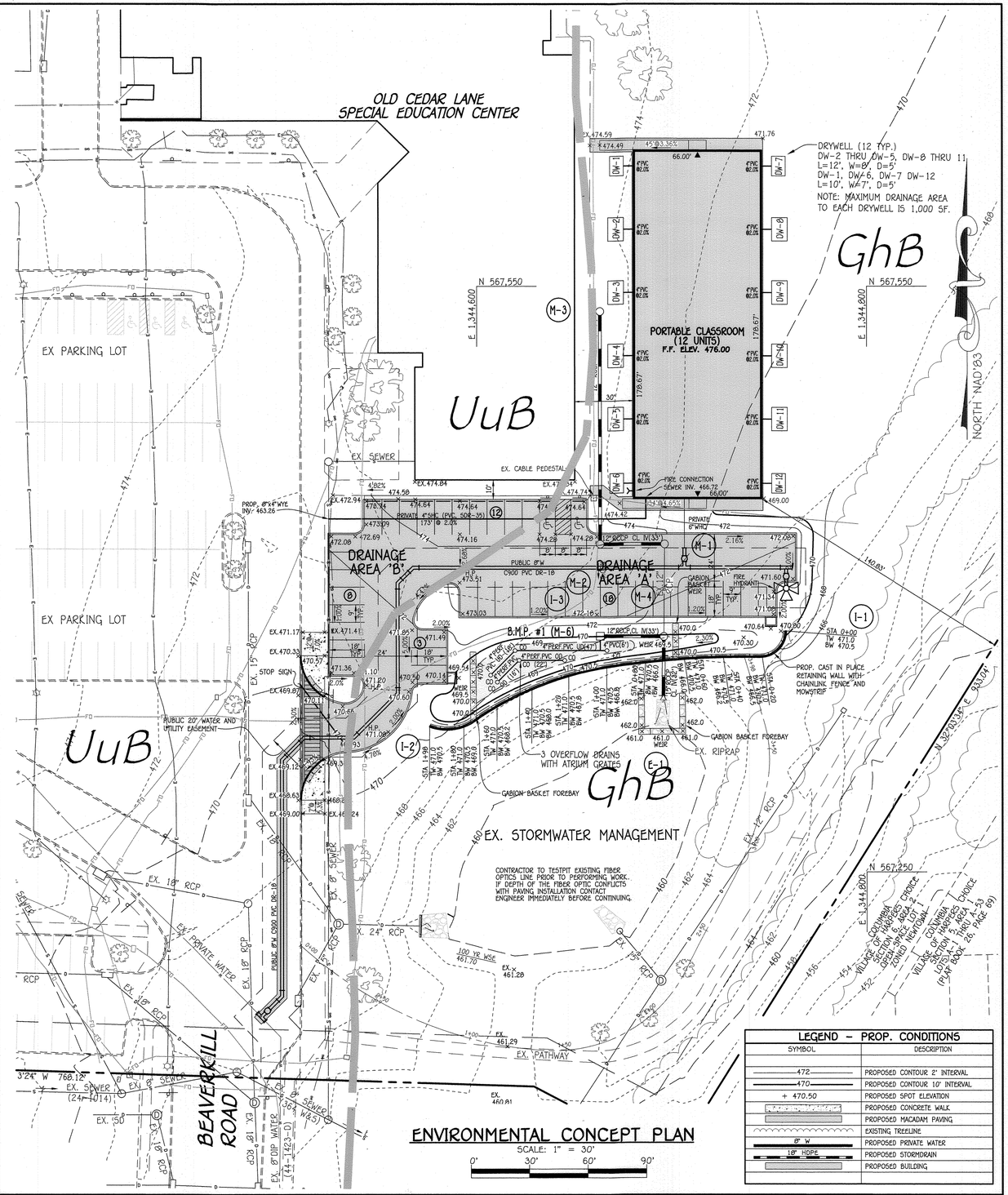


DEMO PLAN

SCALE: 1" = 30'

0' 30' 60' 90'



ENVIRONMENTAL CONCEPT PLAN

SCALE: 1" = 30'

0' 30' 60' 90'

LEGEND – EX. CONDITIONS

SYMBOL	DESCRIPTION
472	EXISTING CONTOUR 2' INTERVAL
470	EXISTING CONTOUR 10' INTERVAL
S	EXISTING SAN. SEWER LINE
D	EXISTING STORM DRAIN LINE
W	EXISTING WATER LINE
UGE	EXISTING UNDERGROUND ELECTRIC LINE
C/TV	EXISTING CABLE/TV LINE
OHE	EXISTING OVERHEAR ELECTRIC LINE
G	EXISTING GAS LINE
X X	EXISTING FENCE
	EXISTING MACADAM PAVING
	EXISTING TREELINE
	DEMOLITION AREA
	EXISTING TREES

LEGEND – PROP. CONDITIONS

SYMBOL	DESCRIPTION
472	PROPOSED CONTOUR 2' INTERVAL
470	PROPOSED CONTOUR 10' INTERVAL
+ 470.50	PROPOSED SPOT ELEVATION
	PROPOSED CONCRETE WALK
	PROPOSED MACADAM PAVING
	EXISTING TREELINE
8" W	PROPOSED PRIVATE WATER
18" HDPE	PROPOSED STORMDRAIN
	PROPOSED BUILDING

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5/31/2023
DATE

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OLD CEDAR LANE SPECIAL ED CENTER
5451 BEAVERKILL ROAD
COLUMBIA, MARYLAND 21044
410-313-6977

PROJECT			SECTION/AREA		PARCEL
OLD CEDAR LANE SPECIAL ED CENTER			6/2		69
PLAT NOS.	BLOCK NO.	ZONE	TAX MAP	ELEC. DIST.	CENSUS TR.
4576-4577	17,23	NT	29	FIFTH	605502
WATER CODE			SEWER CODE		
____			____		

ENVIRONMENTAL CONCEPT PLAN AND DEMO PLAN

OLD CEDAR LANE SPECIAL EDUCATION CENTER

VILLAGE OF HARPER'S CHOICE
SECTION 6 AREA 2
ZONED: NEW TOWN
TAX MAP No.: 29 GRID No.: 17, 23 PARCEL No.: 69
FIFTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: JUNE, 2023
SHEET 2 OF 5

ECP-23-041

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STRUCTURE SCHEDULE

STRUCTURE NO.	OWNERSHIP AND MAINTENANCE	TOP ELEVATION	INV.IN	INV.OUT	COORDINATES	INTERIOR WIDTH	TYPE	REMARKS
I-1	PRIVATE	471.74	471.08	470.81	N 567,380.95 E 1,344,750.87	4'x5'	FLOW THROUGH	D-4.35
I-2	PRIVATE	470.80	470.14	469.87	N 567,349.43 E 1,344,584.38	4'x5'	FLOW THROUGH	D-4.35
I-3	PRIVATE	470.83	466.00 (4")	465.34 (12")	N 567,370.83 E 1,344,663.38	2.5'	TYPE 'D'	D-4.10

SOILS LEGEND

SOIL	NAME	GROUP
GhB	Glenelg-urban land complex, 0 to 8 percent slopes, K VALUE = 0.43	B
UuB	Urban land-Udorthents complex, 0 to 8 percent slopes	D

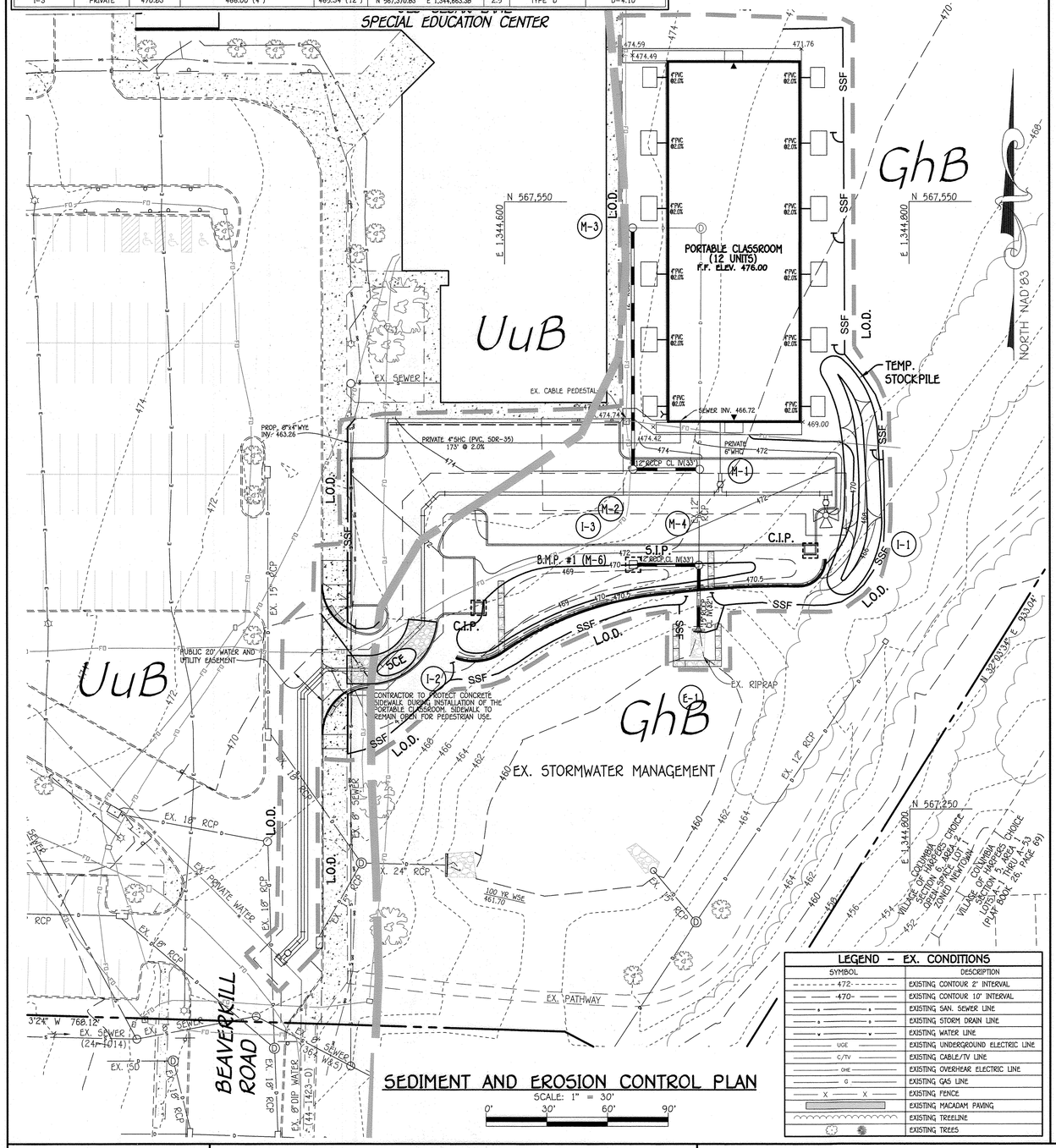
NOTES:
* Hydric soils and/or contains hydric inclusions
** May contain hydric inclusions

DRAINAGE AREA DATA

SWM BMP	AREA	IMP. AREA
M-5 DRYWELLS (2-5, 8-11)	983 SF	983 SF
M-5 DRYWELLS (1,6,7,12)	682 SF	682 SF
M-6 MICRO BIO (BMP#1)	16,451 SF	16,451 SF

DRAINAGE AREA DATA

STRUCTURE NO.	DRAINAGE AREA	AREA	'C' FACTOR	% IMP.
I-1	A	9,576 SF	0.83	95%
I-2	B	6,875 SF	0.80	90%
I-3	C	16,451 SF	0.81	92%



SEDIMENT AND EROSION CONTROL PLAN

SCALE: 1" = 30'

0' 30' 60' 90'

SWM DRAINAGE AREA MAP

SCALE: 1" = 30'

0' 30' 60' 90'

LEGEND - EX. CONDITIONS

SYMBOL	DESCRIPTION
472	EXISTING CONTOUR 2' INTERVAL
470	EXISTING CONTOUR 10' INTERVAL
	EXISTING SAN. SEWER LINE
	EXISTING STORM DRAIN LINE
	EXISTING WATER LINE
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	EXISTING MACADAM PAVING
	EXISTING TREELINE
	EXISTING TREES

LEGEND - PROP. CONDITIONS

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5451 BEAVERKILL ROAD
COLUMBIA, MARYLAND 21044
410-313-6977

PROJECT			SECTION/AREA		PARCEL
OLD CEDAR LANE SPECIAL ED CENTER			6/2		69
PLAT NOS.	BLOCK NO.	ZONE	TAX MAP	ELEC. DIST.	CENSUS TR.
4576-4577	17,23	NT	29	FIFTH	605502
WATER CODE	----		SEWER CODE	----	

ECP SEDIMENT AND EROSION CONTROL PLAN AND SWM DRAINAGE AREA MAP

OLD CEDAR LANE SPECIAL EDUCATION CENTER

VILLAGE OF HARPER'S CHOICE
SECTION 6 AREA 2
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SCALE: AS SHOWN DATE: JUNE, 2023
SHEET 3 OF 5

ECP-23-041

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PLANTING SPECIFICATIONS

PLANTS, RELATED MATERIAL, AND OPERATIONS SHALL MEET THE DETAILED DESCRIPTION AS GIVEN ON THE PLANS AND AS DESCRIBED HEREIN.

ALL PLANT MATERIAL, UNLESS OTHERWISE SPECIFIED, SHALL BE NURSERY GROWN, UNIFORMLY BRANCHED, HAVE A VIGOROUS ROOT SYSTEM, AND SHALL CONFORM TO THE SPECIES, SIZE, ROOT AND SHAPE SHOWN ON THE PLANT LIST AND THE AMERICAN ASSOCIATION OF NURSERYMEN (AAN) STANDARDS. PLANT MATERIAL SHALL BE HEALTHY, VIGOROUS, FREE FROM DEFECTS, DECAY, DISFIGURING ROOTS, SUN SCALD INJURIES, ABRASIONS OF THE BARK, PLANT DISEASE, INSECT PEST EGGS, BORERS AND ALL FORMS OF INSECT INFESTATIONS OR OBJECTIONABLE DISFIGUREMENTS. PLANT MATERIAL THAT IS WEAK OR WHICH HAS BEEN CUT BACK FROM LARGER GRADES TO MEET SPECIFIED REQUIREMENTS WILL BE REJECTED. TREES WITH FORKED LEADERS WILL NOT BE ACCEPTED. ALL PLANTS SHALL BE FRESHLY DUG; NO HEALED-IN PLANTS FROM COLD STORAGE WILL BE ACCEPTED.

UNLESS OTHERWISE SPECIFIED, ALL GENERAL CONDITIONS, PLANTING OPERATIONS, DETAILS AND PLANTING SPECIFICATION SHALL CONFORM TO "LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREAS", (HEREINAFTER "LANDSCAPE GUIDELINES") APPROVED BY THE LANDSCAPE CONTRACTORS ASSOCIATION OF METROPOLITAN WASHINGTON AND THE POTOMAC CHAPTER OF THE AMERICAN SOCIETY OF LANDSCAPE ARCHITECT, LATEST EDITION, INCLUDING ALL AGENDA.

CONTRACTOR SHALL BE REQUIRED TO GUARANTEE ALL PLANT MATERIAL FOR A PERIOD OF ONE YEAR AFTER DATE OF ACCEPTANCE IN ACCORDANCE WITH THE APPROPRIATE SECTION OF THE LANDSCAPE GUIDELINES CONTRACTOR'S ATTENTION IS DIRECTED TO THE MAINTENANCE REQUIREMENTS FOUND WITHIN THE ONE YEAR SPECIFICATIONS INCLUDING WATERING AND REPLACEMENT OF SPECIFIED PLANT MATERIAL.

BID SHALL BE BASED ON ACTUAL SITE CONDITIONS. NO EXTRA PAYMENT SHALL BE MADE FOR WORK ARISING FROM SITE CONDITIONS DIFFERING FROM THOSE INDICATED ON DRAWINGS AND SPECIFICATIONS

ALL SHRUBS SHALL BE PLANTED IN CONTINUOUS TRENCHES OR PREPARED PLANTING BEDS AND MULCHED WITH COMPOSTED HARDWOOD MULCH AS DETAILS AND SPECIFIED EXCEPT WHERE NOTED ON PLANS.

POSITIVE DRAINAGE SHALL BE MAINTAINED IN PLANTING BEDS 2 PERCENT SLOPE).

PLANTING MIX SHALL BE AS FOLLOWS: DECIDUOUS PLANTS – TWO PARTS TOPSOIL, ONE PART WELL-ROTTED COW OR HORSE MANURE. ADD 3 LBS. OF STANDARD FERTILIZER PER CUBIC YARD OF PLANTING MIX. EVERGREEN PLANTS – TWO PARTS TOPSOIL, ONE PART HUMUS OR OTHER APPROVED ORGANIC MATERIAL. ADD 3 LBS. OF EVERGREEN (ACIDIC) FERTILIZER PER CUBIC YARD OF PLANTING MIX. TOPSOIL SHALL CONFORM TO THE LANDSCAPE GUIDELINES.

WEED CONTROL: INCORPORATE A PRE-EMERGENT HERBICIDE INTO THE PLANTING BED FOLLOWING RECOMMENDED RATES ON THE LABEL. CAUTION: BE SURE TO CAREFULLY CHECK THE CHEMICAL USED TO ASSURE ITS ADAPTABILITY TO THE SPECIFIC GROUND COVER TO BE TREATED.

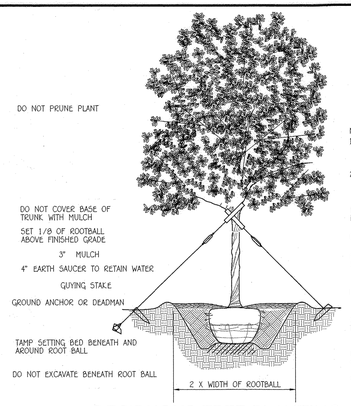
ALL AREAS WITHIN CONTRACT LIMITS DISTURBED DURING OR PRIOR TO CONSTRUCTION NOT DESIGNATED TO RECEIVE PLANTS AND MULCH SHALL BE FINE GRADED AND SEEDED.

PLANTING NOTES:

1. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 16.124 OF HOWARD COUNTY CODE AND LANDSCAPE MANUAL AND IS TO BE USED FOR PLANTING ONLY. LANDSCAPING SHALL BE PROVIDED AS SHOWN ON THIS PLAN SHEET. NO SURETY IS REQUIRED SINCE THIS IS A HOWARD COUNTY BOARD OF EDUCATION PROJECT.
2. CONTRACTOR SHALL NOTIFY ALL UTILITIES AT LEAST FIVE (5) DAYS BEFORE STARTING WORK. ALL GENERAL NOTES FROM SHEET 1, SHALL APPLY.
3. FIELD VERIFY UNDERGROUND UTILITY LOCATIONS AND EXISTING CONDITIONS BEFORE STARTING PLANTING WORK, EVEN WHERE PLANT LOCATIONS ARE DIMENSIONED. CONTACT CONSTRUCTION MANAGER IF ANY RELOCATION ARE REQUIRED.
4. PLANT QUANTITIES SHOWN ON PLANT LIST ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. IF DISCREPANCIES EXIST BETWEEN QUANTITIES SHOWN ON THE PLAN AND THOSE SHOWN ON THE PLANT LIST, THE QUANTITIES ON THE PLAN SHALL TAKE PERCEDENCE.
5. ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE A.A.N. SPECIFICATIONS, AND BE INSTALLED IN ACCORDANCE WITH PROJECT SPECIFICATIONS.
6. ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES BUT NOT OTHERWISE PLANTED, PAVED OR MULCHED SHALL BE SEEDED IN ACCORDANCE WITH PROJECT SPECIFICATIONS.
7. ALL EXPOSED EARTH WITHIN THE LIMITS OF THE PLANTING BEDS SHALL BE MULCHED WITH SHREDDED HARDWOOD MULCH PER PLANTING DETAILS.
8. THE CONTRACTOR SHALL NOTIFY THE OWNER IN WRITING IF SOIL OR DRAINAGE CONDITIONS ARE ENCOUNTERED WHICH MAY BE DETRIMENTAL TO THE GROWTH OF PLANTS.
9. NO SUBSTITUTION SHALL BE MADE WITHOUT WRITTEN CONSENT OF THE OWNER OR HIS REPRESENTATIVE.
10. "AT THE TIME OF PLANT INSTALLATION, ALL 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 SUBTITUTIONS OR RELOCATIONS OF THE REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATIONS FROM THE APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO THE ROAD DRAWING PLANS".
11. "THE OWNER, TENANTS AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENACE OF THE REQUIRED PERIMETER LANDSCAPING. 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 THE OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED".

CONSTRUCTION MONITORING

1. THE SITE SHALL BE INSPECTED PERIODICALLY DURING THE CONSTRUCTION PHASE OF THE PROJECT. A QUALIFIED PROFESSIONAL SHALL BE RESPONSIBLE FOR IDENTIFYING DAMAGE TO PROTECTED FOREST AREAS OR INDIVIDUAL TREES WHICH MAY HAVE BEEN CAUSED BY CONSTRUCTION ACTIVITIES, SUCH AS SOIL COMPACTION, ROOT INJURY, TRUNK WOUNDS, LIMB INJURY, OR STRESS CAUSED BY FLOODING OR DROUGHT CONDITIONS.
2. ANY SUCH DAMAGE THAT MAY OCCUR SHALL BE REMEDIED IMMEDIATELY USING APPROPRIATE MEASURES. SEVERE PROBLEMS MAY REQUIRE CONSULTATION WITH A MARYLAND LICENSED TREE EXPERT.
3. THE CONSTRUCTION PROCEDURE SHALL NOT DAMAGE AREAS OUTSIDE OF THE LIMITS OF DISTURBANCE AS DESIGNATED ON THE PLANS. ANY DAMAGE SHALL BE RESTORED BY THE CONTRACTOR AT HIS EXPENSE AND TO THE SATISFACTION OF THE DESIGN TEAM OR LANDSCAPE ARCHITECT.



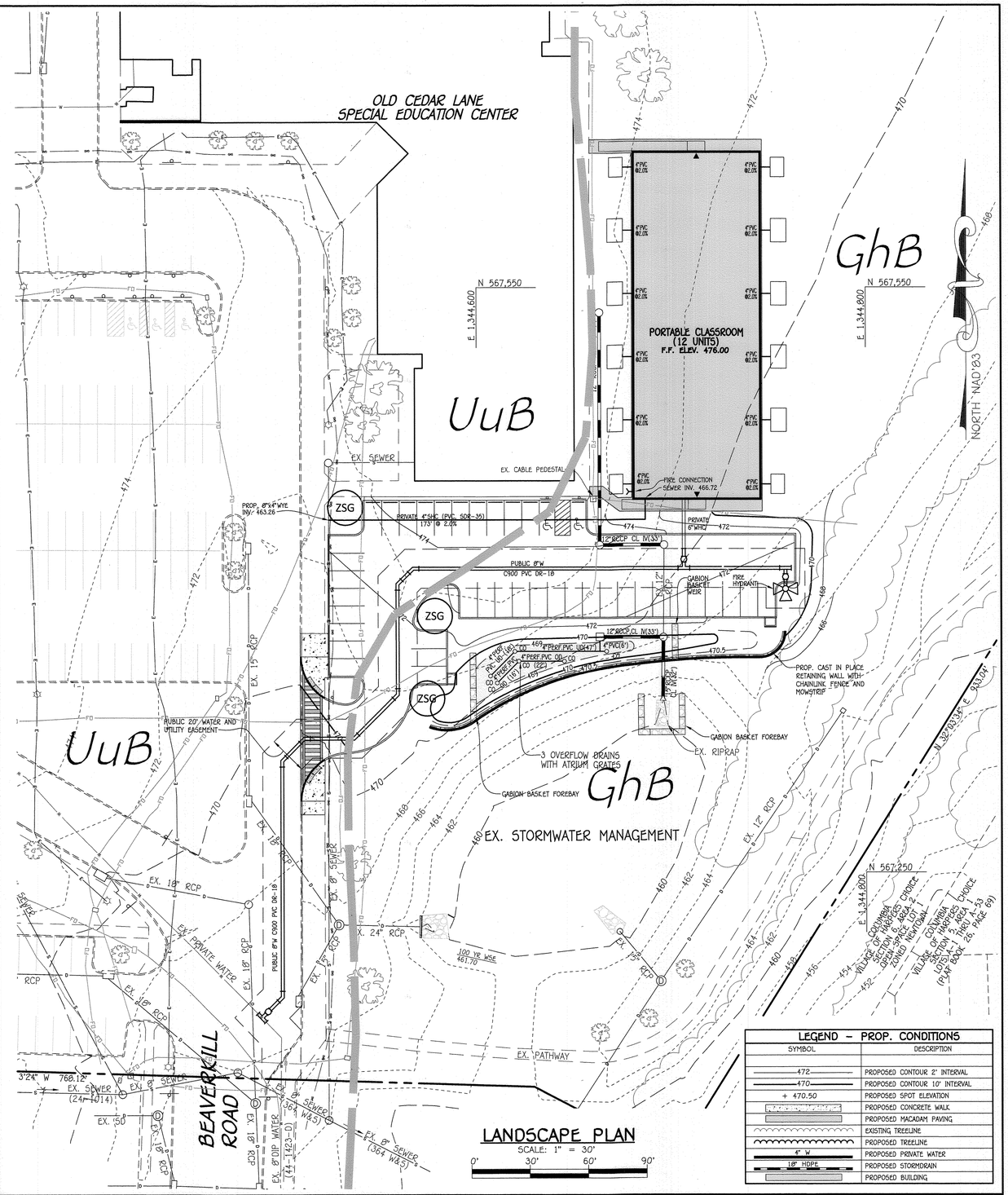
DECIDUOUS TREE PLANTING - TYPICAL

NO SCALE

SCHEDULE B PARKING LOT INTERNAL LANDSCAPING	
NUMBER OF PARKING SPACES	41
NUMBER OF TREES REQUIRED (1/20 SP)	3
NUMBER OF TREES PROVIDED	BOTANICAL AND COMMON NAME
SHADE TREES – 3	Zelkova serrata var. 'Greenvase'
OTHER TREES (2:1 SUBSTITUTION)	N/A

NOTE: TREE AND SHRUB TYPES ARE ONLY AN RECOMMENDATION, THESE MAY BE REVISED TO A COUNTY APPROVED EQUIVALENT FROM THE HOWARD COUNTY LANDSCAPE MANUAL. "THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL."

PLANT LIST					
QTY.	KEY	BOTANICAL NAME COMMON NAME	SIZE	CONT.	REMARKS
TREES - DECIDUOUS SHADE					
3	ZSG	Zelkova serrata var. 'Greenvase'	2-1/2" - 3" cal.	B & B	
		Green Vase Zelkova			



LEGEND – PROP. CONDITIONS	
SYMBOL	DESCRIPTION
472	PROPOSED CONTOUR 2' INTERVAL
470	PROPOSED CONTOUR 10' INTERVAL
+ 470.50	PROPOSED SPOT ELEVATION
	PROPOSED CONCRETE WALK
	PROPOSED MACADAM PAVING
	EXISTING TREELINE
	PROPOSED TREELINE
4" W	PROPOSED PRIVATE WATER
18" HDPE	PROPOSED STORMDRAIN
	PROPOSED BUILDING

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY 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. 27020, EXPIRATION DATE: 01/25/24."

PAUL GERARD CAVANAUGH — DATE: May 31, 2023

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — Date: 7/6/23

Chief, Development Engineering Division — Date: 7.13.23

PREPARED FOR
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
9020 MENDENHALL COURT
SUITE 'C'
COLUMBIA, MARYLAND 21045
Attention: DANIEL LUBELEY
410-313-8203

OLD CEDAR LANE SPECIAL ED CENTER
5451 BEAVERKILL ROAD
COLUMBIA, MARYLAND 21044
410-313-6977

PROJECT			SECTION/AREA		PARCEL	
OLD CEDAR LANE SPECIAL ED CENTER			6/2		69	
PLAT NOS.	BLOCK NO.	ZONE	TAX MAP	ELEC. DIST.	CENSUS TR.	
4576-4577	17,23	NT	29	FIFTH	605502	
WATER CODE	----		SEWER CODE	----		

ECP LANDSCAPE PLAN, DETAILS AND NOTES

OLD CEDAR LANE SPECIAL EDUCATION CENTER

VILLAGE OF HARPER'S CHOICE
SECTION 6 AREA 2
ZONED: NEW TOWN
TAX MAP No.: 29 GRID No.: 17, 23 PARCEL No.: 69
FIFTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: JUNE, 2023
SHEET 4 OF 5

ECP-23-041

I:\2022\22080\Engineering\Dwgs\ECP\22080 ECP-04 LAND AND DETAILS.dwg, PLAN, 5/31/2023 11:04:35 AM, 1:1

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

1. MATERIAL SPECIFICATIONS

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

2. FILTERING MEDIA OR PLANTING SOIL

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

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

SOIL COMPONENT – LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION)

ORGANIC CONTENT – MINIMUM 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY 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 REFRACTURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.

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

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

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

4. PLANT MATERIAL

RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.

5. PLANT INSTALLATION

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

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

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

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

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

6. UNDERDRAINS

UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:

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

PERFORATIONS – IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON 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 (1/4" 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.

INFILTRATION AND FILTER SYSTEM CONSTRUCTION SPECIFICATIONS

INFILTRATION AND FILTER SYSTEMS EITHER TAKE ADVANTAGE OF EXISTING PERMEABLE SOILS OR CREATE A PERMEABLE MEDIUM SUCH AS SAND FOR WQ, AND REV. IN SOME INSTANCES WHERE PERMEABILITY IS GREAT, THESE FACILITIES MAY BE USED FOR QP AS WELL. THE MOST COMMON SYSTEMS INCLUDE INFILTRATION TRENCHES, INFILTRATION BASINS, SAND FILTERS, AND ORGANIC FILTERS.

WHEN PROPERLY PLANTED, VEGETATION WILL THRIVE AND ENHANCE THE FUNCTIONING OF THESE SYSTEMS. FOR EXAMPLE, PRE-TREATMENT BUFFERS WILL TRAP SEDIMENTS THAT OFTEN ARE BOUND WITH PHOSPHOROUS AND METALS. VEGETATION PLANTED IN THE FACILITY WILL AID IN NUTRIENT UPTAKE AND WATER STORAGE. ADDITIONALLY, PLANT ROOTS WILL PROVIDE ARTERIES FOR STORMWATER TO PERMEATE SOIL FOR GROUNDWATER RECHARGE. FINALLY, SUCCESSFUL PLANTINGS PROVIDE AESTHETIC VALUE AND WILDLIFE HABITAT MAKING THESE FACILITIES MORE DESIRABLE TO THE PUBLIC.

DESIGN CONSTRAINTS:

> PLANTING BUFFER STRIPS OF AT LEAST 20 FEET WILL CAUSE SEDIMENTS TO SETTLE OUT BEFORE REACHING THE FACILITY, THEREBY REDUCING THE POSSIBILITY OF CLOGGING.
> DETERMINE AREAS THAT WILL BE SATURATED WITH WATER AND WATER TABLE DEPTH SO THAT APPROPRIATE PLANTS MAY BE SELECTED (HYDROLOGY WILL BE SIMILAR TO BIORETENTION FACILITIES, SEE FIGURE A.5 AND TABLE A.4 FOR PLANTING MATERIAL GUIDANCE).
> PLANTS KNOWN TO SEND DOWN DEEP TAPROOTS SHOULD BE AVOIDED IN SYSTEMS WHERE FILTER FABRIC IS USED AS PART OF FACILITY DESIGN.
> TEST SOIL CONDITIONS TO DETERMINE IF SOIL AMENDMENTS ARE NECESSARY.
> PLANTS SHALL BE LOCATED SO THAT ACCESS IS POSSIBLE FOR STRUCTURE MAINTENANCE.
> STABILIZE HEAVY FLOW AREAS WITH EROSION CONTROL MATS OR SOD.
> TEMPORARILY DIVERT FLOWS FROM SEEDED AREAS UNTIL VEGETATION IS ESTABLISHED.
> SEE TABLE A.5 FOR ADDITIONAL DESIGN CONSIDERATIONS.

BIO-RETENTION SOIL BED CHARACTERISTICS

THE CHARACTERISTICS OF THE SOIL FOR THE BIORETENTION FACILITY ARE PERHAPS AS IMPORTANT AS THE FACILITY LOCATION, SIZE, AND TREATMENT VOLUME. THE SOIL MUST BE PERMEABLE ENOUGH TO ALLOW RUNOFF TO FILTER THROUGH THE MEDIA, WHILE HAVING CHARACTERISTICS SUITABLE TO PROMOTE AND SUSTAIN A ROBUST VEGETATIVE COVER CROP. IN ADDITION, MUCH OF THE NUTRIENT POLLUTANT UPTAKE (NITROGEN AND PHOSPHORUS) IS ACCOMPLISHED THROUGH ABSORPTION AND MICROBIAL ACTIVITY WITHIN THE SOIL PROFILE. THEREFORE, SOILS MUST BALANCE THEIR CHEMICAL AND PHYSICAL PROPERTIES TO SUPPORT BIOTIC COMMUNITIES ABOVE AND BELOW GROUND.

THE PLANTING SOIL SHOULD BE A SANDY LOAM, LOAMY SAND, LOAM (USDA), OR A LOAM/SAND MIX (SHOULD CONTAIN A MINIMUM 35 TO 60% SAND, BY VOLUME). THE CLAY CONTENT FOR THESE SOILS SHOULD BE LESS THAN 25% BY VOLUME (ENVIRONMENTAL QUALITY RESOURCES (EQR), 1996; ENGINEERING TECHNOLOGY INC. AND BIOHABITATS, INC. (ETAB), 1993). SOILS SHOULD FALL WITHIN THE SM, ML, SC CLASSIFICATIONS OR THE UNIFIED SOIL CLASSIFICATION SYSTEM (USCS). A PERMEABILITY OF AT LEAST 1.0 FEET PER DAY (0.5"/HR) IS REQUIRED (A CONSERVATIVE VALUE OF 0.5 FEET PER DAY IS USED FOR DESIGN). THE SOIL SHOULD BE FREE OF STONES, STUMPS, ROOTS, OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER. BRUSH OR SEEDS FROM NOXIOUS WEEDS (E.G., JOHNSON GRASS, MUGWORT, NUTSEDGE, AND CANADA THISTLE OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05.) SHOULD NOT BE PRESENT IN THE SOILS. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN 12 TO 18 LIFTS THAT ARE LOOSELY COMPACTED (TAMPED LIGHTLY WITH A BACKHOE BUCKET OR TRAVERSED BY DOZER TRACKS). THE SPECIFIC CHARACTERISTICS ARE PRESENTED IN TABLE A.3.

TABLE A.3 PLANTING SOIL CHARACTERISTICS

PARAMETER	VALUE
PH RANGE	5.2 TO 7.00
ORGANIC MATTER	1.5 TO 4.0% (BY WEIGHT)
MAGNESIUM	35 LBS. PER ACRE, MINIMUM
PHOSPHORUS (PHOSPHATE – P2O5)	75 LBS. PER ACRE, MINIMUM
POTASSIUM (POTASH –1(K2O)	85 LBS. PER ACRE, MINIMUM
SOLUBLE SALTS	500 PPM
CLAY	0 TO 5%
SILT	30 TO 55%
SAND	35 TO 60%

MULCH LAYER

THE MULCH LAYER PLAYS AN IMPORTANT ROLE IN THE PERFORMANCE OF THE BIORETENTION SYSTEM. THE MULCH LAYER HELPS MAINTAIN SOIL MOISTURE AND AVOIDS SURFACE SEALING, WHICH REDUCES PERMEABILITY. MULCH HELPS PREVENT EROSION, AND PROVIDES A MICROENVIRONMENT SUITABLE FOR SOIL BIOTA AT THE MULCH/SOIL INTERFACE. IT ALSO SERVES AS A PRETREATMENT LAYER, TRAPPING THE FINER SEDIMENTS, WHICH REMAIN SUSPENDED AFTER THE PRIMARY PRETREATMENT.

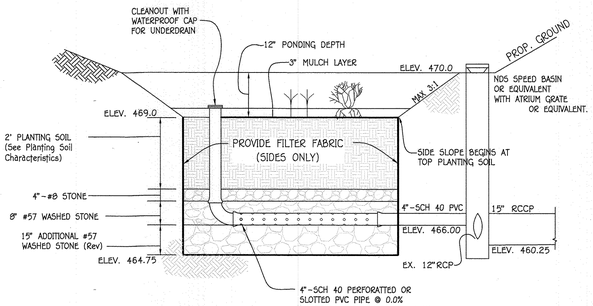
THE MULCH LAYER SHOULD BE STANDARD LANDSCAPE STYLE, SINGLE OR DOUBLE SHREDDED HARDWOOD MULCH OR CHIPS. THE MULCH LAYER SHOULD BE WELL AGED (STOCKPILED OR STORED FOR AT LEAST 12 MONTHS), UNIFORM IN COLOR, AND FREE OF OTHER MATERIALS, SUCH AS WEED SEEDS, SOIL, ROOTS, ETC. THE MULCH SHOULD BE APPLIED TO A MAXIMUM DEPTH OF THREE INCHES. GRASS CLIPPINGS SHOULD NOT BE USED AS A MULCH MATERIAL.

PLANTING GUIDANCE

PLANT MATERIAL SELECTION SHOULD BE BASED ON THE GOAL OF SIMULATING A TERRESTRIAL FORESTED COMMUNITY OF NATIVE SPECIES. BIORETENTION SIMULATES AN UPLAND-SPECIES ECOSYSTEM. THE COMMUNITY SHOULD BE DOMINATED BY TREES, BUT HAVE A DISTINCT COMMUNITY OF UNDERSTORY TREES, SHRUBS AND HERBACEOUS MATERIALS. BY CREATING A DIVERSE, DENSE PLANT COVER, A BIORETENTION FACILITY WILL BE ABLE TO TREAT STORMWATER RUNOFF AND WITHSTAND URBAN STRESSES FROM INSECTS, DISEASE, DROUGHT, TEMPERATURE, WIND, AND EXPOSURE. THE PROPER SELECTION AND INSTALLATION OF PLANT MATERIALS IS KEY TO A SUCCESSFUL SYSTEM. THERE ARE ESSENTIALLY THREE ZONES WITHIN A BIORETENTION FACILITY (FIGURE A.5). THE LOWEST ELEVATION SUPPORTS PLANT SPECIES ADAPTED TO STANDING AND FLUCTUATING WATER LEVELS. THE MIDDLE ELEVATION SUPPORTS PLANTS THAT LIKE DRIER SOIL CONDITIONS, BUT CAN STILL TOLERATE OCCASIONAL INUNDATION BY WATER. THE OUTER EDGE IS THE HIGHEST ELEVATION AND GENERALLY SUPPORTS PLANTS ADAPTED TO DRYER CONDITIONS. A SAMPLE OF APPROPRIATE PLANT MATERIALS FOR BIORETENTION FACILITIES ARE INCLUDED IN TABLE A.4. THE LAYOUT OF PLANT MATERIAL SHOULD BE FLEXIBLE, BUT SHOULD FOLLOW THE GENERAL PRINCIPALS DESCRIBED IN TABLE A.5. THE OBJECTIVE IS TO HAVE A SYSTEM, WHICH RESEMBLES A RANDOM, AND NATURAL PLANT LAYOUT, WHILE MAINTAINING OPTIMAL CONDITIONS FOR PLANT ESTABLISHMENT AND GROWTH. FOR A MORE EXTENSIVE BIORETENTION PLAN, CONSULT ETAB, 1993 OR CLAYTOR AND SCHUELER, 1997.

OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS (M-6)

1. ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED. MAINTENANCE OF 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.
2. SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDER BEYOND TREATMENT. TREATMENT OF ALL DISEASED TREES AND SHRUBS AND REPLACEMENT OF ALL DEFICIENT STAKES AND WIRES.
3. MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.
4. SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS. WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

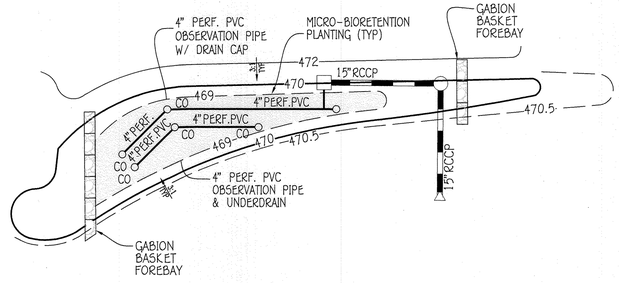


MICRO-BIORETENTION (UNDERDRAIN)(M-6)

NO SCALE

MICRO-BIORETENTION NOTES

1. ONLY THE SIDES OF THE MICRO-BIORETENTION ARE TO BE WRAPPED IN FILTER FABRIC. FILTER FABRIC BETWEEN LAYER OR AT THE BOTTOM OF THE MICRO-BIORETENTION WILL CAUSE THE MBR TO FAIL, AND THEREFORE SHALL NOT BE INSTALLED.
2. WRAP THE PERFORATED MBR UNDER DRAIN PIPE WITH 1/4" MESH (4x4) OR SMALLER GALVANIZED HARDWARE CLOTH.
3. PROVIDE 5' MINIMUM SPACING BETWEEN UNDER DRAIN AND PERFORATED PIPE THROUGH STONE RESERVOIR OR SPACE. PIPE EQUALLY ACROSS BOTTOM FOR SMALL BIOS. (SEE PLAN)



TYPICAL SECTION – BIO-RETENTION FACILITY (M-6)

SCALE: 1" = 20'

PLANT MATERIAL– BIO-RETENTION M-6 (1)

QUANTITY	NAME	MAXIMUM SPACING (FT.)
380 (1,140 sq.ft.)	GRASSES	36" o.c.
4	SHRUBS	36"-40" o.c.

SHRUBS

BAYBERRY
SPICEBUSH
ARROWWOOD
WINTERBERRY
INKBERRY
WITCH HAZEL
BUTTONBRUSH BUCKEYE
BOTTLEBRUSH BUCKEYE

ANY OF THE SHRUBS LISTED MAY BE USED

GRASS

SWITCHGRASS
HEAVY METAL SWITCHGRASS

ANY OF THE GRASS LISTED MAY BE USED

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK – 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 – 2855

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY 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. 27020, EXPIRATION DATE: 01/25/24."

PAUL GERARD CAVANAUGH — DATE: 5/31/2023

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — Date: 7/6/23

Chief, Development Engineering Division — Date: 7.13.23

PREPARED FOR
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
9020 MENDENHALL COURT
SUITE 'C'
COLUMBIA, MARYLAND 21045
Attention: DANIEL LUBELEY
410-313-8203

OLD CEDAR LANE SPECIAL ED CENTER
5451 BEAVERKILL ROAD
COLUMBIA, MARYLAND 21044
410-313-6977

PROJECT			SECTION/AREA		PARCEL
OLD CEDAR LANE SPECIAL ED CENTER			6/2		69
PLAT NOS.	BLOCK NO.	ZONE	TAX MAP	ELEC. DIST.	CENSUS TR.
4576-4577	17,23	NT	29	FIFTH	605502
WATER CODE	----		SEWER CODE	----	

ECP DETAIL SHEET

OLD CEDAR LANE SPECIAL EDUCATION CENTER
VILLAGE OF HARPER'S CHOICE
SECTION 6 AREA 2
ZONED: NEW TOWN
TAX MAP No.: 29 GRID No.: 17, 23 PARCEL No.: 69
FIFTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: JUNE, 2023
SHEET 5 OF 5

ECP-23-041

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