SITE DEVELOPMENT PLAN
HOWARD COMMUNITY COLLEGE
PROPOSED MATHEMATICS & ATHLETICS COMPLEX
HOWARD COUNTY, MD
SDP 21-028

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
2. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" (800-257-7777) AT LEAST FIVE (5) WORKING DAYS PRIOR TO STARTING ANY WORK.
3. 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.
4. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN, INCLUDING EXISTING UTILITIES IS BASED UPON A SURVEY CONDUCTED BY KCI TECHNOLOGIES, INC. IN JANUARY 2020 AND AERIAL TOPO FROM VIRGINIA RESOURCE MAPPING IN APRIL 27, 2009.
5. OBSTRUCTIONS SHOWN ON THESE DRAWINGS ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. KCI TECHNOLOGIES, INC. DOES NOT WARRANT OR GUARANTEE THE CORRECTNESS OR THE COMPLETENESS OF THE INFORMATION GIVEN. THE CONTRACTOR MUST VERIFY ALL SUCH INFORMATION TO HIS OWN SATISFACTION. IN THE EVENT THAT INFORMATION IS IN CONFLICT WITH INFORMATION OUTLINED, THE CONTRACTOR SHALL IMMEDIATELY BRING IT TO THE ATTENTION OF THE ARCHITECT PRIOR TO STARTING ANY WORK.
6. CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES SHOWN HEREON BEFORE STARTING ANY WORK ON THESE PLANS. CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR THE COST OF ANY AND ALL DAMAGES WHICH OCCUR AS A RESULT OF A FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL EXISTING UTILITIES TO REMAIN.
7. CONTRACTOR SHALL REMOVE DRIVEWAY ENTRANCES, STRUCTURES, AND CONCRETE WALKS TO LIMITS INDICATED ON THE DRAWING.
8. CONTRACTOR SHALL NOT PROCEED WITH ANY DEMOLITION WORK UNTIL ALL UTILITY DISCONNECTIONS ARE COMPLETED AND VERIFIED IN WRITING.
9. BURNING OF COMBUSTIBLE MATERIALS FROM DEMOLISHED STRUCTURES WILL NOT BE PERMITTED ON SITE.
10. CONTRACTOR SHALL INSURE THAT ALL MATERIAL REMOVED FROM DEMOLISHED STRUCTURES ARE LEGALLY DISPOSED OF OFF-SITE.
11. SEE DEMOLITION PLAN FOR APPROXIMATE LIMITS OF SIDEWALK AND PAVING REMOVAL.
12. EXISTING CONCRETE SIDEWALK SHALL BE REMOVED TO THE NEAREST JOINT. NO PATCHING SHALL BE PERMITTED.
13. A GEOTECHNICAL STUDY WAS PREPARED BY FROEHLING & ROBERTSON, INC., DATED MAY 2020.
14. IT SHALL BE DISTINCTLY UNDERSTOOD THAT FAILURE TO MENTION SPECIFICALLY ANY WORK WHICH WOULD NORMALLY BE REQUIRED TO COMPLETE THIS PROJECT SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY TO COMPLETE SUCH WORK.
15. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE ENGINEER OF ANY DEVIATION FROM THIS PLAN PRIOR TO ANY CHANGE BEING MADE. ANY DEVIATION FROM THIS PLAN WITHOUT WRITTEN AUTHORIZATION FROM THE ENGINEER WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
16. SEE ARCHITECTURAL PLANS FOR ADDITIONAL BUILDING INFORMATION.
17. SEE MECHANICAL/ELECTRICAL/PLUMBING PLANS FOR ADDITIONAL MECHANICAL/ELECTRICAL/PLUMBING DEMOLITION AND CONSTRUCTION INFORMATION.
18. TRAFFIC CONTROL DEVICES:
    A. ALL STOP AND YIELD SIGNS AS WELL AS ANY STREET NAME SIGNS (SNS) MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPLETED.
    B. ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES MDMUTCD).
    C. ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS 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.
19. ALL PLAN DIMENSIONS ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
20. CONTRACTOR TO ADJUST TOP OF CURB GRADES AS NECESSARY TO PROVIDE SMOOTH TRANSITION TO EXISTING.
21. SAW CUT EXISTING PAVEMENT AS NEEDED TO INSTALL NEW CONSTRUCTION.
22. THE CONTRACTOR SHALL NOTE THAT IN CASE OF A DISCREPANCY BETWEEN THE SCALED AND THE FIGURED DIMENSIONS SHOWN ON THESE PLANS, THE FIGURED DIMENSIONS SHALL GOVERN.
23. TRENCH BACKFILL IN GRASS AREAS SHALL BE COMPACTED TO A MINIMUM 90% OF MAXIMUM DRY DENSITY IN ACCORDANCE WITH A.A.S.H.T.O. VERIFY DESIGNATION T-180, METHOD C. TRENCH BACKFILL IN STRUCTURAL AND PAVEMENT AREAS SHALL BE PLACED IN EIGHT INCH LOOSE LIFTS AND COMPACTED TO AT LEAST 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY (ASTM D-1557). IN PAVED AREAS, FILL BELOW THE TOP 12 INCHES SHOULD BE COMPACTED TO 97%.
24. CONTRACTOR SHALL ADJUST ALL EXISTING UTILITIES, I.E. MANHOLE FRAMES AND COVERS, ETC. WITHIN THE LIMITS OF THE CONTRACT TO PROPOSED GRADES AS REQUIRED.
25. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM BUILDING STRUCTURES AT ALL TIMES.
26. CONTRACTOR SHALL COORDINATE ALL DISCONNECTIONS AND REMOVAL OF EXISTING GAS, ELECTRIC AND TELEPHONE SERVICES AND EQUIPMENT WITH BALTIMORE GAS & ELECTRIC AND VERIZON.
27. CONTRACTOR SHALL INSTALL SEDIMENT CONTROLS PRIOR TO BEGINNING ANY WORK AND MAINTAIN SEDIMENT CONTROLS THROUGHOUT THE ENTIRE DURATION OF DEMOLITION AND CONSTRUCTION ACTIVITIES.
28. ALL EXCAVATION SHALL BE BACKFILLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. IN THE EVENT THAT A PORTION OF A UTILITY IS TO BE REMOVED THE CONTRACTOR SHALL TERMINATE AND CAP TO THE LIMITS INDICATED IN ACCORDANCE WITH ALL STATE AND LOCAL REQUIREMENTS.
29. SHOULD THE CONTRACTOR DISCOVER DISCREPANCIES BETWEEN THE PLANS AND FIELD CONDITIONS, THE ENGINEER IS TO BE NOTIFIED IMMEDIATELY TO RESOLVE THE SITUATION. SHOULD THE CONTRACTOR MAKE FIELD CORRECTIONS OR ADJUSTMENTS WITHOUT NOTIFYING THE ENGINEER, THEN THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR THOSE CHANGES.
30. THIS PROJECT WILL FOLLOW LANDSCAPING REQUIREMENTS IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY LANDSCAPE MANUAL SHALL BE SHOWN ON THE LANDSCAPE PLAN SHEETS OF THIS SITE PLAN. NO SURETY IS REQUIRED SINCE THIS IS AN EDUCATIONAL USE.
31. STORM WATER MANAGEMENT WATER QUALITY HAS BEEN PROVIDED IN ACCORDANCE WITH 2010 MARYLAND STORMWATER MANAGEMENT ORDINANCE AND REVISED 2010 STORMWATER MANAGEMENT DESIGN MANUAL. THERE IS TWO (2) PRACTICE F-6 BIORETENTION AREA AND THREE (3) PRACTICE M-6 MICRO-BIORETENTION AREA. ALL PRACTICES WILL BE PRIVATELY OWNED AND/OR MAINTAINED IN THEIR ENTIRETY BY HOWARD COMMUNITY COLLEGE.
32. 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. 35C5 AND 35C5 WERE USED FOR THIS PROJECT.
33. WATER IS PRIVATE IN THIS PROJECT AREA.
34. SEWER IS PUBLIC, CONTRACT NO. 299-W&S SEWER DRAINAGE AREA: PATUXENT TREATMENT PLANT: LITTLE PATUXENT WWTP
35. SUBJECT PROPERTY ZONED POR & NT PER 10/6/13 COMPREHENSIVE ZONING PLAN AND FDP-72-A.
36. FOREST CONSERVATION OBLIGATIONS FOR THE ENTIRE CAMPUS, IN ACCORDANCE WITH SECTION 161.202 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION MANUAL, HAVE BEEN MET BY THE PLACEMENT OF 21.318 ACRES OF ON-SITE FOREST CONSERVATION EASEMENTS AND 2.61 ACRES OF OFF-SITE FOREST CONSERVATION EASEMENTS AT THE BELMONT CENTER (SDP-06-106FC / PLAT NO'S. 21640 & 21641.
37. A FIRE DEPARTMENT CONNECTION FOR FIRE PROTECTION SYSTEMS SHALL BE LOCATED: (A.) ON THE SIDE OF THE STRUCTURE DISPLAYING THE ADDRESS CLEARLY VISIBLE TO THE RESPONDING UNITS; (B.) WITHIN 100 FT. OF A FIRE HYDRANT;(II) THE APPROPRIATE SIGN SHALL BE MOUNTED ON THE BUILDING'S WALL BETWEEN 8 AND 12 FEET ABOVE THE FIRE DEPARTMENT CONNECTION; (III) A FREE-STANDING FIRE DEPARTMENT CONNECTION SHALL HAVE THE SIGN MOUNTED ON A POLE DIRECTLY BEHIND THE CONNECTION APPROXIMATELY 6 FEET HIGH; (IV) SIGNS SHALL HAVE A WHITE REFLECTIVE BACKGROUND WITH A RED REFLECTIVE BORDER, RED REFLECTIVE LETTERS AND A RED REFLECTIVE ARROW. THE BORDER SHALL HAVE A 3/8" STROKE. THE LETTERS SHALL BE 6" HIGH WITH A 1" STROKE. THE ARROW SHALL HAVE A STROKE NOT LESS THAN 2". THE OVERALL SIGN MEASUREMENTS SHALL BE 12" BY 18". (V) ANY OBSTRUCTION OR CONDITION THAT DETERS OR HINDERS ACCESS TO A FDC IS PROHIBITED. A MINIMUM CLEAR SPACE OF 15 FEET (7.5 FEET ON ALL SIDES) SHALL.
38. KNOX BOXES SHALL BE LOCATED WITHIN 6' TO THE RIGHT OF THE MAIN ENTRANCE AT A RANGE OF 4-5' IN HEIGHT. THE CONTRACTOR SHOULD CONTACT THE OFFICE OF THE FIRE MARSHAL PRIOR TO PURCHASING AND INSTALLING KNOX BOXES TO DETERMINE IF ADDITIONAL KNOX BOXES WILL BE REQUIRED AS WELL AS TO VERIFY THE LOCATION(S) WHERE THEY ARE TO BE MOUNTED.
39. ALL ELEVATIONS SHOWN ARE BASED ON THE U.S.C. AND G.S. MEAN SEA LEVEL DATUM, 1929.
40. SEE DEPARTMENT OF PLANNING AND ZONING FILE NO. SDP-75-46, SDP-87-95, SDP-76-30, PB-229, SDP-68-12, SDP-75-32, SDP-00-56, SDP-01-58, WP-01-98, SDP-01-123, SDP-03-11, FDP-72-A, F-07-010, SDP-06-106/FC, AND ECP-21-011.
41. THIS PROJECT IS EXEMPT FROM ADEQUATE PUBLIC FACILITIES ORDINANCE (APFO) REQUIREMENTS.
42. THERE ARE NO FLOODPLAINS WITHIN THIS DEVELOPMENT AREA.
43. THERE ARE NO WETLANDS WITHIN THIS DEVELOPMENT AREA.
44. EXISTING PARKING CALCULATIONS BASED ON ENROLLMENT FISCAL YEAR 2020

STUDENTS: 1 SPACE / 3 STUDENTS (PER HOWARD COUNTY ZONING REGULATIONS 10/6/2014) 4,008 FULL TIME STUDENTS x (1/3) = 1,336 SPACES

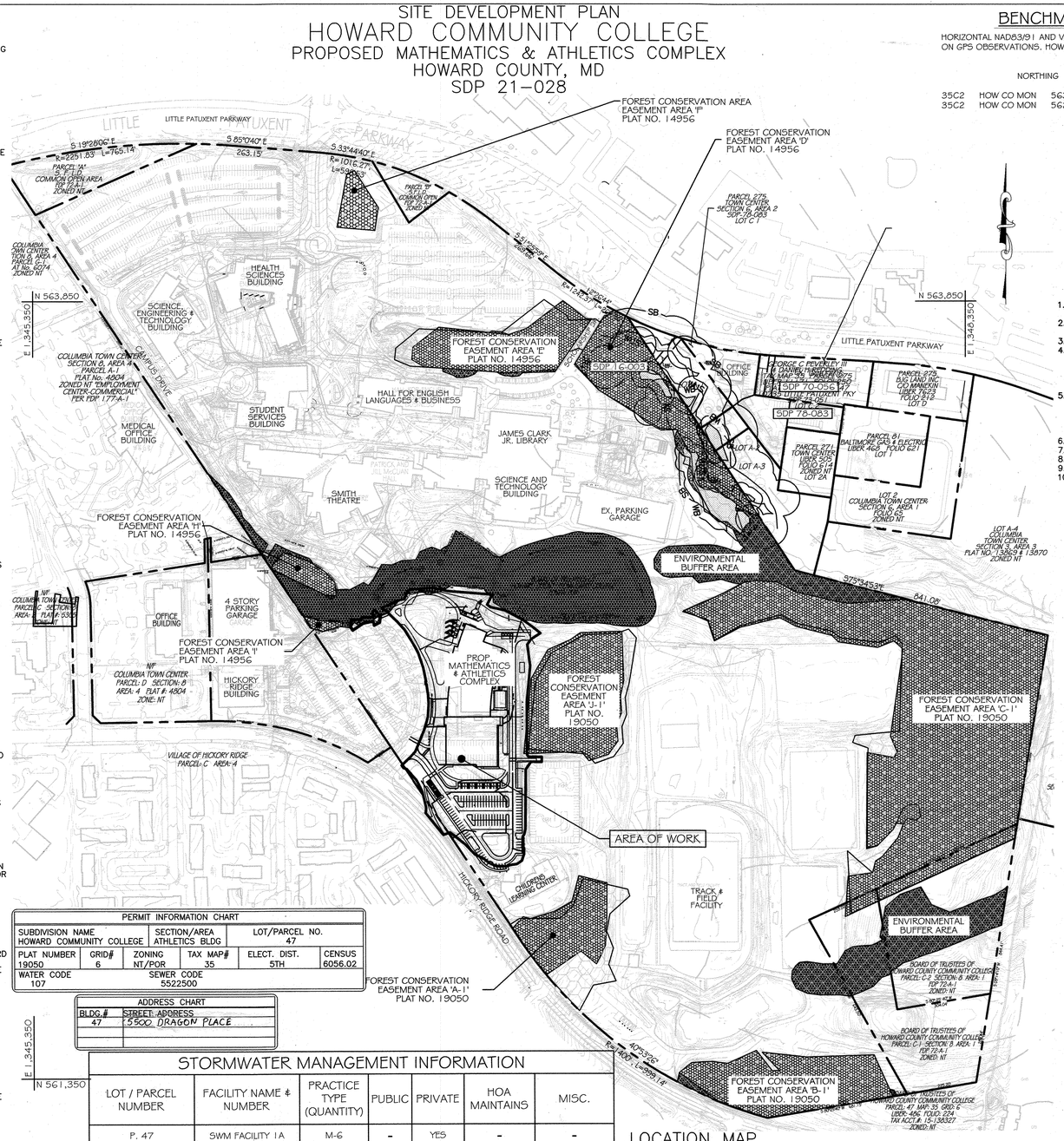
COLLEGE EMPLOYEES: 1 SPACE / EMPLOYEE 1,350 EMPLOYEES x 1 = 1,350 SPACES

DAYCARE SPACES: 3 / 1000 S.F. 12,700 S.F. x 3 /1000 = 39 SPACES (PER SDP-03-11)

TOTAL REQUIRED SPACES: 1,336 + 1,350 + 39 = 2,725 SPACES

PARKING CALCULATIONS:

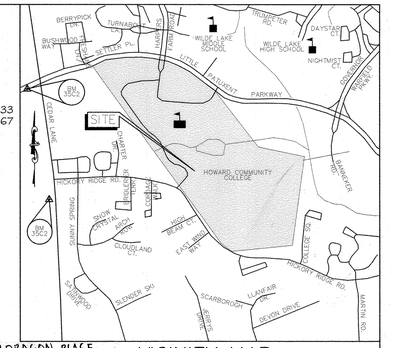
EXISTING SURFACE PARKING	1,387 SPACES
EXISTING GARAGE PARKING	1,994 SPACES
TOTAL EXISTING PARKING	3,381 SPACES
SURFACE PARKING REMOVED	99 SPACES
TOTAL ON-SITE PROVIDED	3,282 SPACES
TOTAL ON-SITE REQUIRED	2,725 SPACES
EXISTING BICYCLE SPACES:	40 SPACES
PROPOSED BICYCLE SPACES:	20 SPACES



BENCHMARK DATA

HORIZONTAL NAD83/91 AND VERTICAL (NGVD29) CONTROL BASED ON GPS OBSERVATIONS. HOWARD COUNTY BENCH MARK NO.'S

		NORTHING	EASTING	ELEV.
35C2	HOW CO MON	563920.830	1344204.150	464.133
35C2	HOW CO MON	562148.450	1344554.472	452.267



VICINITY MAP
SCALE 1" = 1000'
ADC MAP: 4934 GRID K7

SITE ANALYSIS DATA SHEET

1. SITE ADDRESS: 5500 DRAGON PLACE COLUMBIA, MD 21044
2. OWNER/APPLICANT: BOARD OF TRUSTEES OF HOWARD COUNTY COMMUNITY COLLEGE
3. TAX ACCOUNT NO. : 15-045868
4. PROPERTY REFERENCE: MAP 35, PLAT 16125, PARCEL 47, ELECTION DISTRICT NO. 5
5. ZONING: NT/POR (ENTIRE WORK AREA IS LOCATED IN THE POR ZONING AREA)
   EXISTING USE: ATHLETICS CENTER
   PROPOSED USE: MATHEMATICS & ATHLETICS CENTER
6. TOTAL AREA OF SITE: 117.84 ACRES
7. TOTAL PROJECT AREA (SDP-21-028): 292,395 S.F. (6.71 AC.)
8. LIMIT OF DISTURBANCE (SDP-21-028): 292,395 S.F. (6.71 AC.)
9. OPEN SPACE WITHIN PROJECT AREA: 5.26 AC.
10. PROPOSED BUILDING AREA: 1.45 AC.

INDEX OF DRAWINGS

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5	C1.05	STORM DRAIN DRAINAGE AREA MAP
6	C1.06	SITE UTILITY PLAN - PHASE 1
7	C1.07	SITE GRADING PLAN - PHASE 1
8	C1.08	PAVING, STRIPING & SIGNAGE PLAN - PHASE 1
9	C1.09	UTILITY PROFILES - PHASE 1
10	C1.10	UTILITY PROFILES - PHASE 1
11	C1.11	EXISTING CONDITIONS/DEMOLITION PLAN - PHASE 2
12	C1.12	SITE UTILITY PLAN - PHASE 2
13	C1.13	SITE GRADING PLAN - PHASE 2
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17	C1.16A	SITE DETAILS
18	C1.17	HARDSCAPE DETAILS
19	C1.18	STAIR AND RAILING DETAILS
20	C1.18A	SITE WALL PLAN
21	C1.19	SITE WALL DETAILS - NW STAIR
22	C1.20	SITE WALL DETAILS - NORTH APPROACH
23	C1.20A	SITE WALL DETAILS - SERVICE YARD SCREEN
24	C1.20B	SITE WALL DETAILS - EAST TRAINING
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51	C1.47	PLANTING DETAILS
52	C1.48	SITE RETAINING WALL SECTIONS AND ELEVATIONS
53	C1.49	BUILDING ELEVATIONS

PERMIT INFORMATION CHART					
SUBDIVISION NAME: HOWARD COMMUNITY COLLEGE		SECTION/AREA: ATHLETICS BLDG		LOT/PARCEL NO.: 47	
PLAT NUMBER: 19050	GRID#: 6	ZONING: NT/POR	TAX MAP#: 35	ELECT. DIST.: 5TH	CENSUS: 6056.02
WATER CODE: 107		SEWER CODE: 5522500			

ADDRESS CHART	
BLDG.#	STREET ADDRESS
47	5500 DRAGON PLACE

STORMWATER MANAGEMENT INFORMATION

LOT / PARCEL NUMBER	FACILITY NAME & NUMBER	PRACTICE TYPE (QUANTITY)	PUBLIC	PRIVATE	HOA MAINTAINS	MISC.
P. 47	SWM FACILITY 1A	M-6	-	YES	-	-
P. 47	SWM FACILITY 1B	F-6	-	YES	-	-
P. 47	SWM FACILITY 1C	F-6	-	YES	-	-
P. 47	SWM FACILITY 1D	M-6	-	YES	-	-
P. 47	SWM FACILITY 1E	M-6	-	YES	-	-
P. 47	SWM GR-1	A-2	-	YES	-	-
P. 47	SWM GR-2	A-2	-	YES	-	-
P. 47	SWM GR-3	A-2	-	YES	-	-
P. 47	SWM GR-4	A-2	-	YES	-	-

LOCATION MAP
SCALE: 1"=200'

STORMWATER MANAGEMENT TABLE

AREA OF DISTURBANCE (AC.)	PROPOSED IMPERVIOUS (AC.)	% I	PE	QE	ESDv REQUIRED (CF)	ESDv PROVIDED (CF)
6.71	3.98	59	1.3	1.2	9,087	9,849

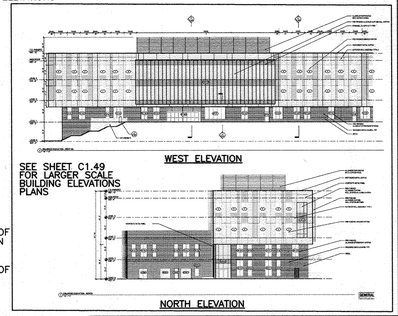
LEGEND
- PROPERTY LINE
- APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENTS
- APPROXIMATE LIMITS OF ENVIRONMENTAL BUFFER AREA

CONTRACTOR NOTE:
CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO DAMAGE ANY EXISTING PAVING, CURB & GUTTER, SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN. SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO ORIGINAL CONDITION AT CONTRACTOR'S EXPENSE.

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 inch = 50ft.

SETBACK REQUIREMENTS	
MAX BLDG. HEIGHT	50'
MIN. SETBACK	30'
PROP. BLDG. HEIGHT	67'-10"
ADDITIONAL SETBACK REQ.	35'-8"
TOTAL SETBACK REQ.	85'-8"
SETBACK PROVIDED	116'-0"

BUILDING ELEVATIONS
NOT TO SCALE



SEE SHEET C1.49 FOR LARGER SCALE BUILDING ELEVATIONS PLANS

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. 33772 EXPIRATION DATE: 06/15/2023

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
11830 WEST MARKET PLACE, SUITE F, FULTON, MD 20759
TELEPHONE: (410) 792-9286 FAX: (410) 792-7419

AYERS SAINT GROSS — ARCHITECTS + PLANNERS
1040 Hull Street, Suite 100, Baltimore, MD 21230
p-410.347.8500 f.410.347.8419

APPROVED: Howard County Department of Planning & Zoning

Director	Date 9-8-21
Chief, Division of Land Development	Date 9/7/21
Chief, Development Engineering Division	Date 8.18.21

Rev:	Date:	Description:	By:
1	04/03/23	PLANTING BUFFER REVISIONS	AT/MH
2			
3			
4			
5			

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

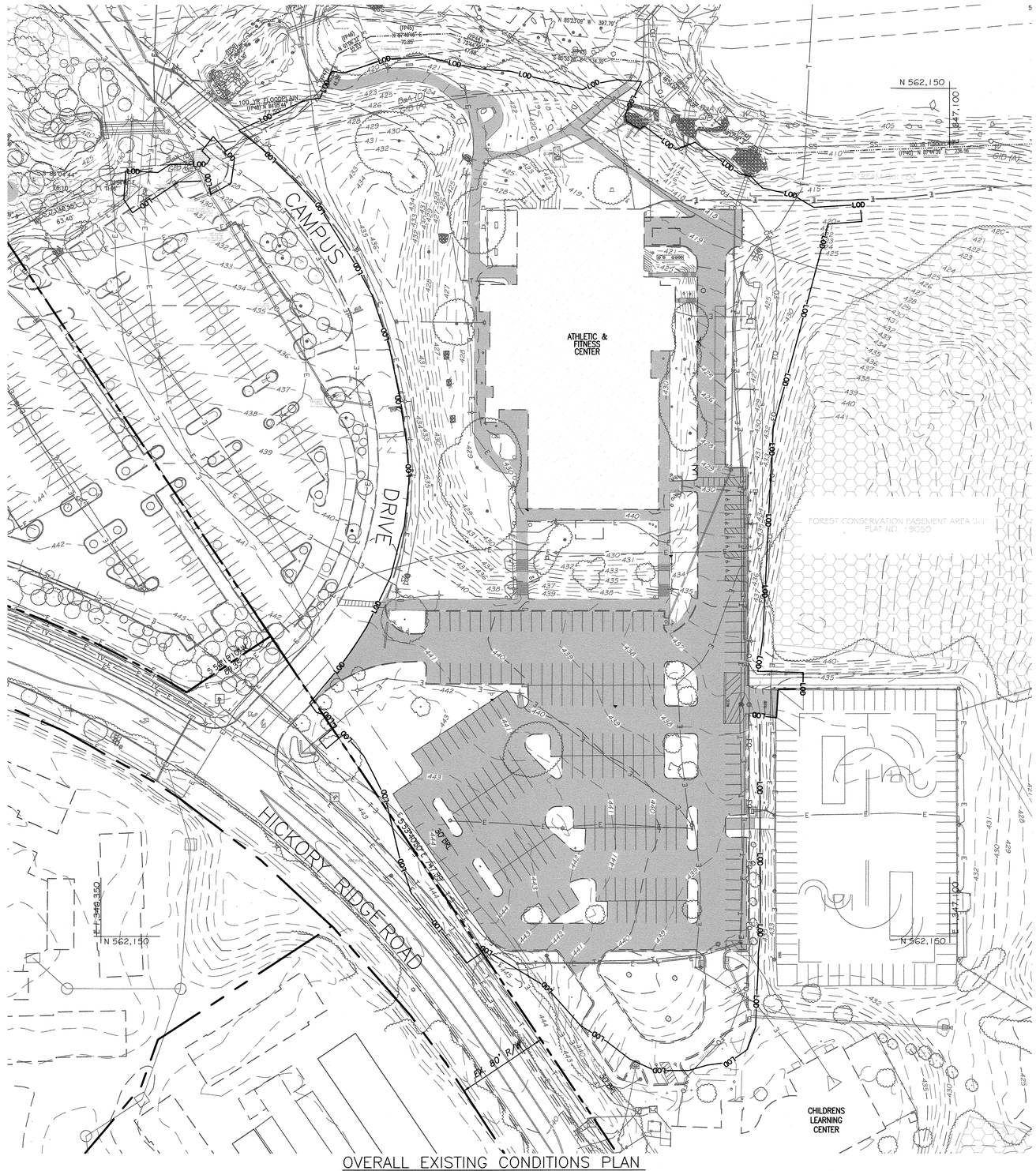
Date:	04-30-2021	Scale:	AS SHOWN
Drawn By:	F.F.W.	Designed By:	F.F.W.
Approved By:	N.A.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title: **TITLE SHEET**

Discipline Number: C1.01

Sheet Number: 01 OF 53

SDP-21-028



GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 inch = 50ft.

OVERALL EXISTING CONDITIONS PLAN
SCALE: 1"=50'

LEGEND

- PROPERTY LINE
- 450 EX. INDEX CONTOUR
- 451 EX. INTERMEDIATE CONTOUR
- EX. SANITARY MANHOLE
- EX. STORM DRAIN MANHOLE
- EX. ELECTRIC MANHOLE
- EX. LIGHT POLE
- EX. WATER METER
- EX. SIGN
- EX. UTILITY POLE
- EX. BOLLARD POST
- EX. DECIDUOUS TREE
- EX. CONIFEROUS TREE
- EX. GAS VALVE
- EX. GUY WIRE
- EX. WATER VALVE
- EX. FIRE HYDRANT
- EX. CLEANOUT
- EX. 15" DRAIN — EX. STORM DRAIN
- EX. GAS — EX. GAS LINE
- EX. 6" SANITARY — EX. SANITARY
- EX. ELECTRIC — EX. ELECTRIC
- EX. TELEPHONE — EX. TELEPHONE
- EX. CABLE TV — EX. CABLE TV
- EX. 8" WATER — EX. WATER
- AREA OF PROPOSED WORK
- APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT
- APPROXIMATE LIMITS OF ENVIRONMENTAL BUFFER AREA
- EXISTING IMPERVIOUS AREA

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AYERS SAINT GROSS
ARCHITECTS + PLANNERS
1040 Hull Street, Suite 100
Baltimore, MD 21230
p 410.347.8500 f 410.347.8419

APPROVED: Howard County Department of Planning & Zoning

Director	9-8-21 Date
Chief, Division of Land Development	9/7/21 Date
Chief, Development Engineering Division	8/18/21 Date

Rev:	Date:	Description:	By:
1			
2			
3			
4			
5			

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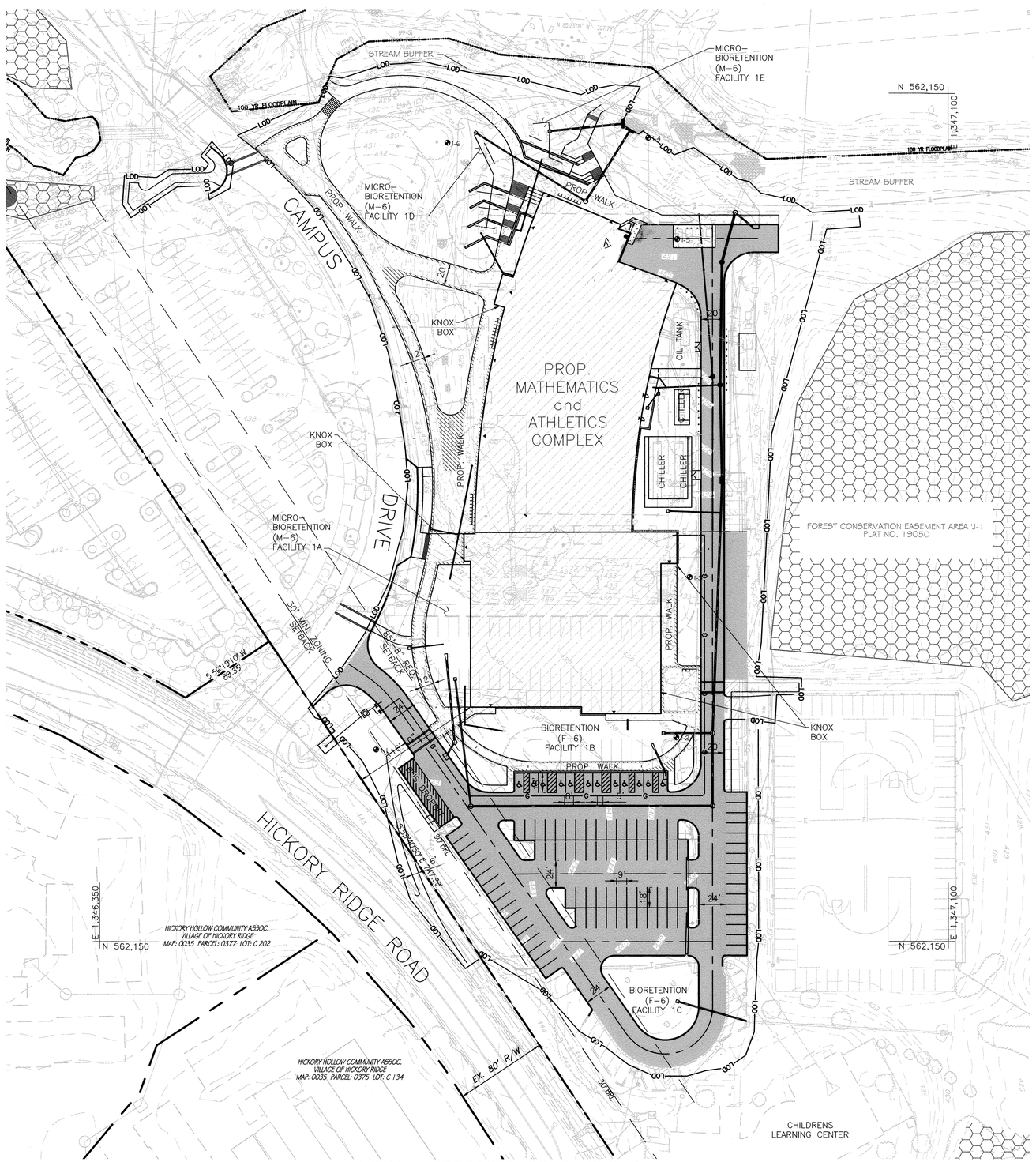
Date:	04-30-2021	Scale:	1" = 50'
Drawn By:	F.F.W.	Designed By:	F.F.W.
Approved By:	N.A.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title:
OVERALL EXISTING CONDITIONS PLAN

STATE OF MARYLAND — NICHOLAS A. BARRA — 33772 — PROFESSIONAL ENGINEER — 6/23/21

Discipline Number: C1.02

Sheet Number: 02 OF 53



GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 inch = 50ft.

OVERALL PROPOSED CONDITIONS PLAN
SCALE: 1"=50'

SHEET NOTES

1. SEE SHEETS C1.29 – C1.41 FOR STORMWATER MANAGEMENT PLANS & DETAILS
2. SEE SHEETS C1.19 – C1.28 FOR SEDIMENT & EROSION CONTROL PLANS & DETAILS
3. SEE SHEETS C1.05, C1.08, C1.09, C1.11 & C1.14 FOR UTILITY PLANS & PROFILES
4. SEE SHEETS C1.07 & C1.13 FOR PAVEMENT, STRIPING AND SIGNAGE PLANS

NOTE:
FIRE LANE MUST REMAIN ACCESIBLE DURING ALL PHASES CONSTRUCTIONS.

LEGEND

- PROPERTY LINE
- 450 EX. INDEX CONTOUR
- 451 EX. INTERMEDIATE CONTOUR
- EX. SANITARY MANHOLE
- EX. STORM DRAIN MANHOLE
- EX. ELECTRIC MANHOLE
- EX. LIGHT POLE
- EX. WATER METER
- EX. SIGN
- EX. UTILITY POLE
- EX. BOLLARD POST
- EX. DECIDUOUS TREE
- EX. CONIFEROUS TREE
- EX. GAS VALVE
- EX. GUY WIRE
- EX. WATER VALVE
- EX. FIRE HYDRANT
- EX. CLEANOUT
- EX. 15" DRAIN — EX. STORM DRAIN
- EX. GAS — EX. GAS LINE
- EX. 6" SANITARY — EX. SANITARY
- EX. ELECTRIC — EX. ELECTRIC
- EX. TELEPHONE — EX. TELEPHONE
- EX. CABLE TV — EX. CABLE TV
- EX. 8" WATER — EX. WATER
- LOD LOD — AREA OF PROPOSED WORK
- APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT
- APPROXIMATE LIMITS OF ENVIRONMENTAL BUFFER AREA

CONTRACTOR NOTE:
CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO DAMAGE ANY EXISTING PAVING, CURB AND GUTTER, SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN. SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO ORIGINAL CONDITION AT CONTRACTORS EXPENSE.

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. 33772 EXPIRATION DATE: 06/16/2023.

KCI TECHNOLOGIES
ENGINEERS
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11830 WEST MARKET PLACE
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APPROVED: Howard County Department of Planning & Zoning

Director	9-8-21 Date
Chief, Division of Land Development	9/7/21 Date
Chief, Development Engineering Division	8/18/21 Date

Rev:	Date:	Description:	By:
1	10/05/21	ADD INTERNAL STORMWELL-TO BUILDING	EC1
2			
3			
4			
5			

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

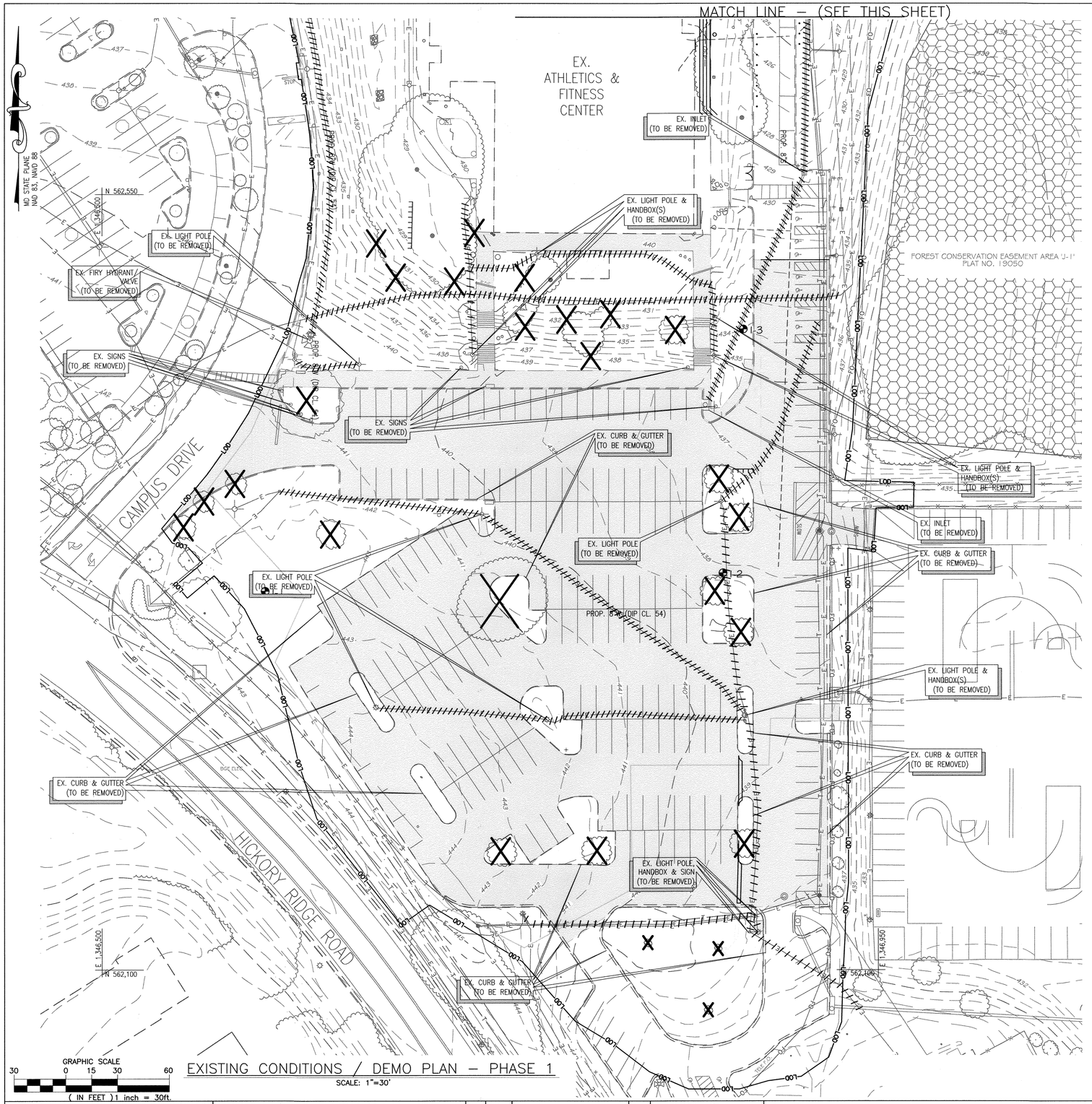
Date:	04-30-2021	Scale:	1" = 50'
Drawn By:	F.F.W.	Designed By:	F.F.W.
Approved By:	N.A.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

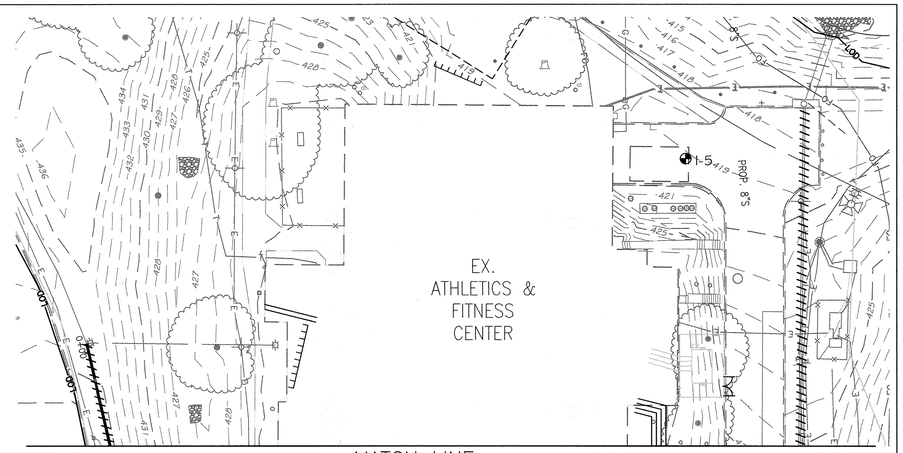
Sheet Title:
OVERALL PROPOSED CONDITIONS PLAN

6/28/21

Discipline Number: C1.03

Sheet Number: 03 OF 53





MATCH LINE – (SEE THIS SHEET)

GRAPHIC SCALE
30 0 15 30 60
(IN FEET) 1 inch = 30ft.

EXISTING CONDITIONS / DEMO PLAN – PHASE 1
SCALE: 1"=30'

DEMOLITION NOTES

1. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" (800–257–7777) AT LEAST FIVE (5) WORKING DAYS PRIOR TO STARTING ANY WORK.
2. NO WORK SHALL BEGIN UNTIL THE PROPER PERMITS HAVE BEEN RELEASED BY HOWARD COUNTY.
3. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN IS BASED UPON A SURVEY CONDUCTED BY KCI TECHNOLOGIES, INC. JANUARY 2020 AND AERIAL TOPO FROM VIRGINIA RESOURCE MAPPING APRIL 27, 2009.
4. OBSTRUCTIONS SHOWN ON THIS DRAWING ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. KCI TECHNOLOGIES, INC. DOES NOT WARRANT OR GUARANTEE THE CORRECTNESS OR THE COMPLETENESS OF THE INFORMATION GIVEN. THE CONTRACTOR MUST VERIFY ALL SUCH INFORMATION TO HIS OWN SATISFACTION.
5. CONTRACTOR SHALL NOT PROCEED WITH ANY DEMOLITION WORK UNTIL ALL UTILITY COMPANIES HAVE VERIFIED IN WRITING THAT DISCONNECTIONS HAVE BEEN COMPLETED.
6. CONTRACTOR WILL INSTALL A TEMPORARY CONSTRUCTION FENCE AROUND THE CONSTRUCTION AREA WHILE MAINTAINING ACCESS TO THE ADJACENT PUBLIC SIDEWALKS.
7. CONTRACTOR WILL SECURE THE CONSTRUCTION AREA AT THE END OF EACH WORKING DAY AND WILL INSPECT THE SECURITY FENCING TO INSURE ITS INTEGRITY.
8. CONTRACTOR IS RESPONSIBLE TO COMPLY WITH MDSHA AND OSHA REGULATIONS AS THEY PERTAIN TO EXISTING ADJACENT BUILDING WALLS AND PUBLIC SIDEWALKS AND PROVIDING "SAFE" PASSAGE TO THEM.
9. CONTRACTOR WILL INSPECT AND TAKE PICTURES OF ADJACENT BUILDING WALLS AND RETAINING WALLS PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION ON THE SITE. EXISTING WALL CRACKS (IF ANY) WILL BE NOTED.
10. CONTRACTOR WILL CONTINUALLY MONITOR THE WALLS OF THE ADJACENT BUILDINGS AND RETAINING WALLS FOR ANY SIGNS OF STRUCTURAL DISTRESS. IF ANY DISTRESS IS NOTED, CONTRACTOR SHALL STOP WORK IMMEDIATELY AND NOTIFY OWNER, KCI TECHNOLOGIES, INC. AND ASG ARCHITECTS.
11. CONTRACTOR WILL NOT EXPOSE, UNDERMINE, OR IMPACT THE ZONE OF INFLUENCE FOR FOOTINGS AND FOUNDATIONS OF ADJACENT BUILDINGS. CONTRACTOR WILL BE RESPONSIBLE FOR THE COST TO REPAIR ADJACENT BUILDINGS THAT ARE DAMAGED DUE TO HIS OPERATION.
12. CONTRACTOR WILL PROVIDE THE NECESSARY MEANS TO CONTROL DUST AND AIR QUALITY DURING THE DEMOLITION PROCESS.
13. CONTRACTOR WILL SAWCUT EXISTING PAVING TO MINIMIZE DAMAGE TO EXISTING PAVING REMAINING.
14. IN CONJUNCTION WITH THE REMOVAL OF CONCRETE APRONS AND WALKS, THE CONTRACTOR IS RESPONSIBLE TO ADJUST ALL PUBLIC UTILITIES (I.E. MANHOLE FRAMES & COVERS, ELECTRIC HAND BOXES, VALVE COVERS) TO BE FINISHED SIDEWALK GRADES.
15. ANY EXISTING CURB AND GUTTER & CONCRETE SIDEWALK SHALL BE REMOVED TO THE NEAREST JOINT.
16. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING ALL WORK SHOWN ON THESE DRAWINGS UNLESS OTHERWISE NOTED.
17. THE DEMOLITION INFORMATION SHOWN ON THIS DRAWING IS FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT LIMITS OF DEMOLITION AND REMOVAL OF AFFECTED SITE ITEMS.
18. CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES SHOWN HEREON BEFORE STARTING ANY WORK ON THESE PLANS. CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR THE COST OF ANY AND ALL DAMAGES WHICH OCCUR AS A RESULT OF A FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL EXISTING UTILITIES TO REMAIN.
19. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AT ALL TIMES.
20. CONTRACTOR SHALL INSTALL SEDIMENT CONTROLS PRIOR TO BEGINNING ANY WORK AND MAINTAIN SEDIMENT CONTROLS THROUGHOUT THE ENTIRE DURATION OF DEMOLITION AND CONSTRUCTION ACTIVITIES.
21. ALL UTILITY LINES, ELECTRICAL DUCT BANKS, STRUCTURES, ETC. ARE TO BE REMOVED IN THEIR ENTIRETY UNLESS OTHERWISE INDICATED. ALL EXCAVATION SHALL BE BACKFILLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. IN THE EVENT THAT A PORTION OF A UTILITY IS TO BE REMOVED THE CONTRACTOR SHALL TERMINATE & CAP TO THE LIMITS INDICATED IN ACCORDANCE WITH ALL STATE & LOCAL REQUIREMENTS AND THE PROJECT REQUIREMENTS.
22. IT SHALL BE DISTINCTLY UNDERSTOOD THAT FAILURE TO MENTION SPECIFICALLY ANY WORK WHICH WOULD NORMALLY BE REQUIRED TO COMPLETE THIS PROJECT SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY TO COMPLETE SUCH WORK.
23. SHOULD THE CONTRACTOR DISCOVER DISCREPANCIES BETWEEN THE PLANS AND FIELD CONDITIONS, THE A/E IS TO BE NOTIFIED IMMEDIATELY TO RESOLVE THE SITUATION. SHOULD THE CONTRACTOR MAKE FIELD CORRECTIONS OR ADJUSTMENTS WITHOUT NOTIFYING THE A/E, THEN THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR THOSE CHANGES.
24. CONTRACTOR SHALL CAP EXISTING UTILITY CONNECTIONS AND PROVIDE THEIR HORIZONTAL AND VERTICAL LOCATIONS TO THE OWNER AND THE ENGINEER.
25. CONTRACTOR SHALL REMOVE ALL CONSTRUCTION DEBRIS FROM THE SITE AND DISPOSE OF IT AT AN APPROVED, PERMITTED DISPOSAL FACILITY. NO RUBBLE IS TO BE LEFT ON SITE.
26. BURNING OF COMBUSTIBLE MATERIALS FROM DEMOLISHED STRUCTURES WILL NOT BE PERMITTED.
27. NO EXPLOSIVES WILL BE USED IN THE SITE DEMOLITION.
28. ALL TREES WITHIN THE LOD ARE TO BE REMOVED UNLESS OTHERWISE NOTED.

LEGEND

- PROPERTY LINE
- 450 EX. INDEX CONTOUR
- 451 EX. INTERMEDIATE CONTOUR
- EX. SANITARY MANHOLE
- EX. STORM DRAIN MANHOLE
- EX. ELECTRIC MANHOLE
- EX. LIGHT POLE
- EX. WATER METER
- EX. SIGN
- EX. UTILITY POLE
- EX. BOLLARD POST
- EX. DECIDUOUS TREE
- EX. CONIFEROUS TREE
- EX. GAS VALVE
- EX. GUY WIRE
- EX. WATER VALVE
- EX. FIRE HYDRANT
- CO EX. CLEANOUT
- EX. 15" DRAIN — EX. STORM DRAIN
- EX. GAS — EX. GAS LINE
- EX. 6" SANITARY — EX. SANITARY
- EX. ELECTRIC — EX. ELECTRIC
- EX. TELEPHONE — EX. TELEPHONE
- EX. CABLE TV — EX. CABLE TV
- EX. 8" WATER — EX. WATER
- EX. UTILITY (TO BE REMOVED OR ABANDONED)
- EX. TREE (TP BE REMOVED)
- LOD LOD — AREA OF PROPOSED WORK
- APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT
- APPROXIMATE LIMITS OF ENVIRONMENTAL BUFFER AREA

CONTRACTOR NOTE:
CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO DAMAGE ANY EXISTING PAVING, CURB AND GUTTER, SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN. SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO ORIGINAL CONDITION AT CONTRACTORS EXPENSE.

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APPROVED: Howard County Department of Planning & Zoning

Director	9-8-21 Date
Chief, Division of Land Development	9/7/21 Date
Chief, Development Engineering Division	8/18/21 Date

Rev:	Date:	Description:	By:
1			
2	6/18/21	Addendum #2	KCI
3			
4			
5			

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

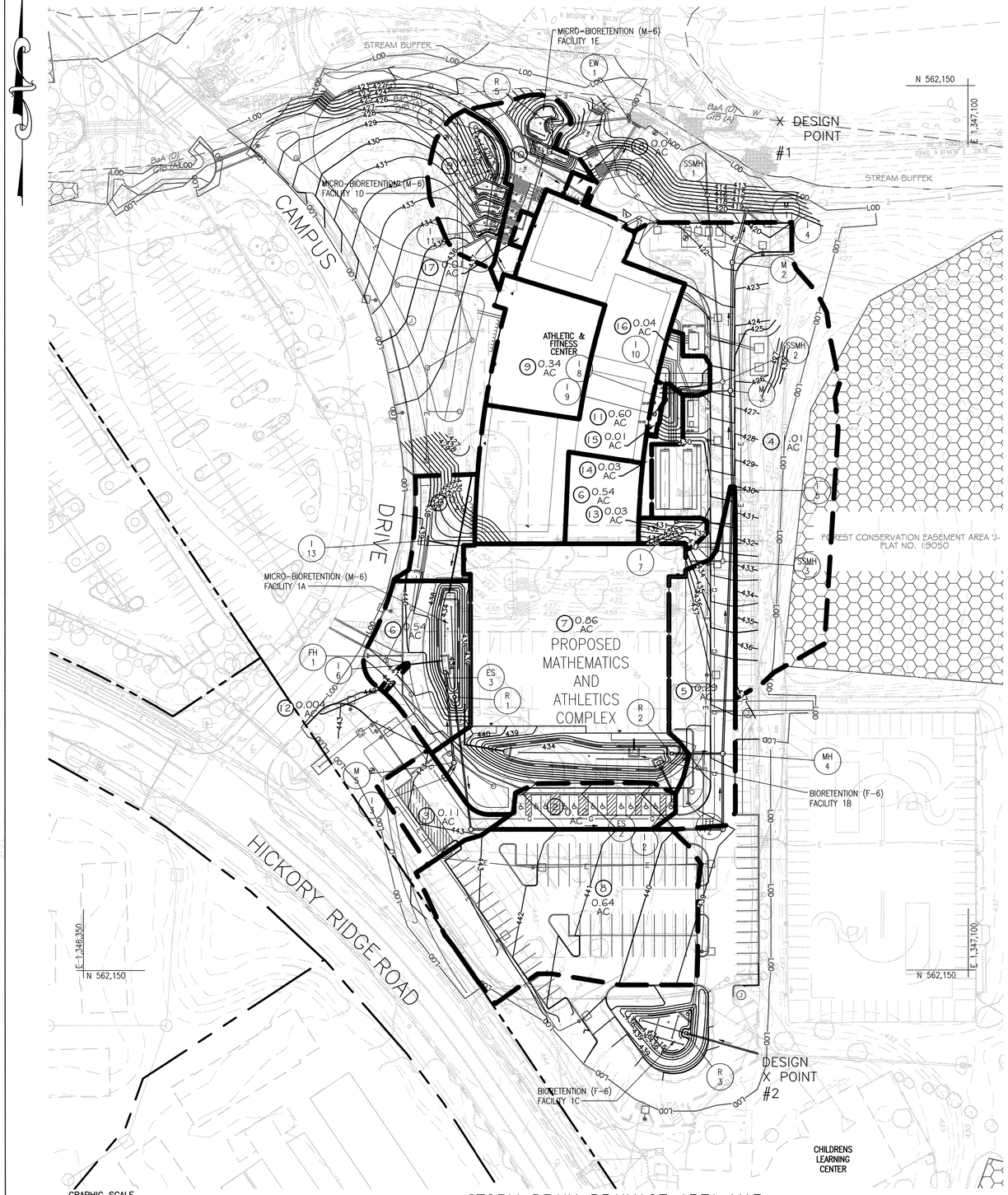
Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

Date:	04-30-2021	Scale:	1" = 30'
Drawn By:	F.F.W.	Designed By:	F.F.W.
Approved By:	N.A.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title:
EXISTING CONDITIONS & DEMOLITION PLAN PHASE 1

Discipline Number: C1.04

Sheet Number: 04 OF 53



GRAPHIC SCALE
50 0 50 100 200
(IN FEET) 1 inch = 50ft.

STORM DRAIN DRAINAGE AREA MAP
SCALE: 1" = 50'

LEGEND

- PROPERTY LINE
- 450 EX. INDEX CONTOUR
- 451 EX. INTERMEDIATE CONTOUR
- EX. SANITARY MANHOLE
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- EX. CABLE TV — EX. CABLE TV
- EX. 8" WATER — EX. WATER
- LOD — LOD — AREA OF PROPOSED WORK
- DRAINAGE AREA
- APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT
- APPROXIMATE LIMITS OF ENVIRONMENTAL BUFFER AREA

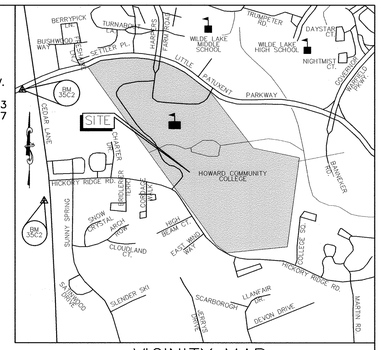
DRAINAGE AREA SUMMARY TABLE

WATERSHED	D.A. NO.	AREA (AC)	C-VALUE (TABLE)
LITTLE PATUXENT	1	NOT USED	
	2	0.12	0.86
	3	0.11	0.79
	4	1.01	0.36
	5	0.29	0.66
	6	0.43	0.53
	7	0.86	0.70
	8	0.64	0.71
	9	0.34	0.53
	10	0.16	0.58
	11	0.60	0.86
	12	0.004	0.12
	13	0.03	0.12
	14	0.03	0.12
	15	0.01	0.86
	16	0.04	0.31
	17	0.01	0.86
	18	0.01	0.86
	19	0.10	0.79
TOTAL AREA (AC) = 4.794			

BENCHMARK DATA

HORIZONTAL NAD83/91 AND VERTICAL (NGVD29) CONTROL BASED ON GPS OBSERVATIONS. HOWARD COUNTY BENCH MARK NO.'S

		NORTHING	EASTING	ELEV.
35C2	HOW CO MON	563920.830	1344204.150	464.133
35C2	HOW CO MON	562148.450	1344554.472	452.267



VICINITY MAP

SCALE 1" = 1000'
ADC MAP: 4934 GRID K7

SOILS TABLE

SOIL UNIT	SOIL UNIT NAME	HYDROLIC SOIL GROUP
BaA	Baile Silt Loam, 0 to 3 percent slopes	D
GfB	Gladstone-Urban Land Complex, 0 to 8 percent slopes	A

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STATE OF MARYLAND — CHUCK NIGHTINGALE — 33772 — PROFESSIONAL ENGINEER — 10/15/21

KCI TECHNOLOGIES
ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
11830 WEST MARKET PLACE, SUITE F, FULTON, MD 20759
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APPROVED: Howard County Department of Planning & Zoning

Director		9-8-21 Date
Chief, Division of Land Development		9/7/21 Date
Chief, Development Engineering Division		8.18.21 Date

Rev:	Date:	Description:	By:
1	10/05/21	ADD INTERNAL STANDPIPE TO BUILDING	KCI
2			
3			
4			
5			

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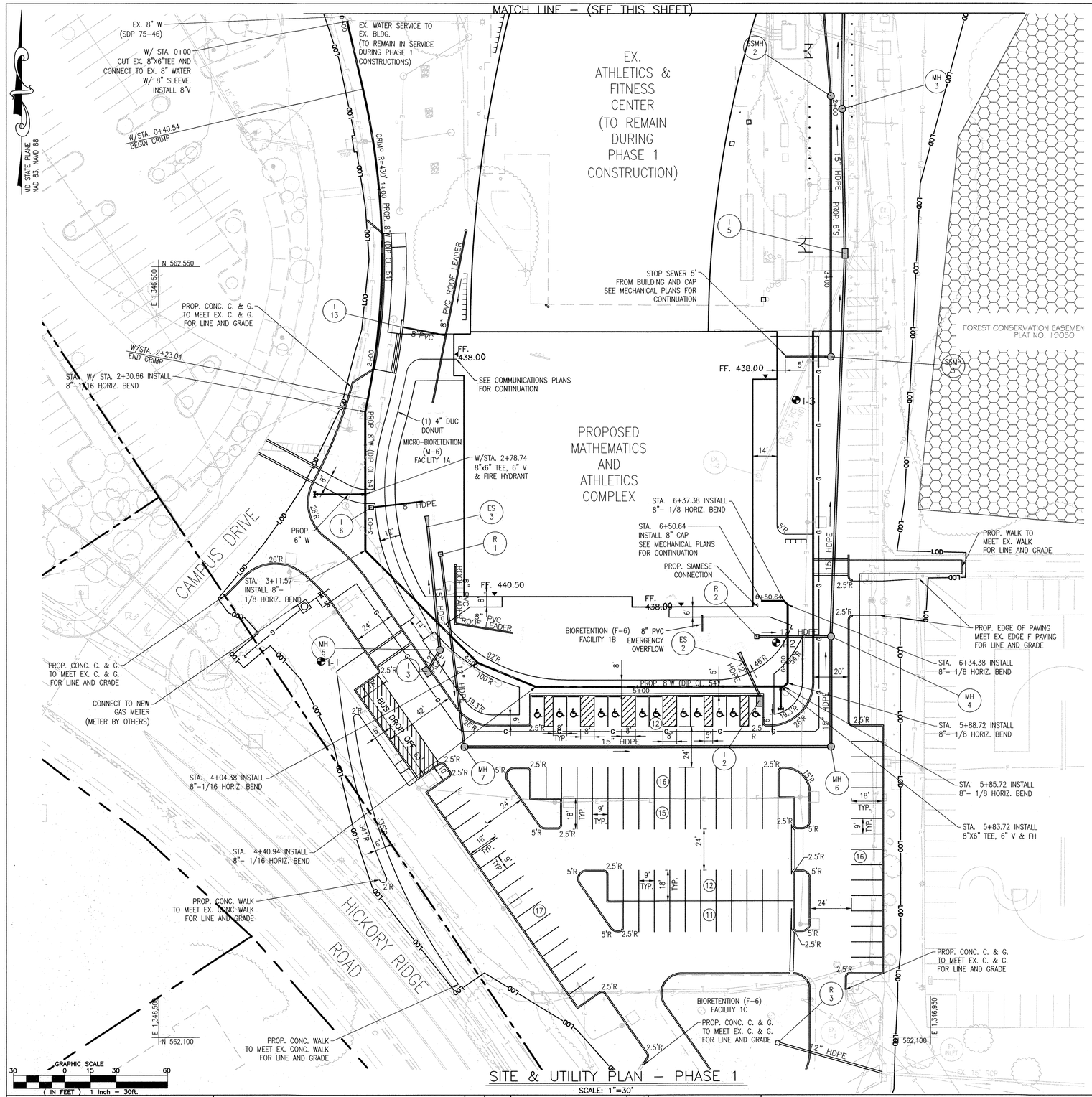
Approved By: N.A.B.	Project No: 271906728
Tax Map-Grid: 35-6	Zoning: POR & NT

Sheet Title:
STORM DRAIN DRAINAGE AREA MAP

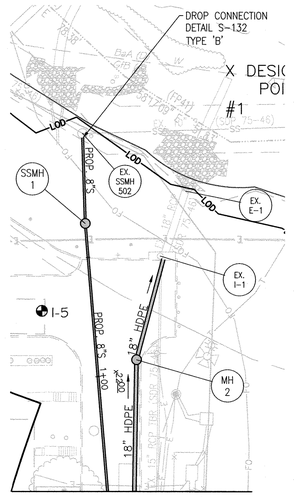
STATE OF MARYLAND — CHUCK NIGHTINGALE — 33772 — PROFESSIONAL ENGINEER — 10/15/21

Discipline Number: C1.05
Sheet Number: 05 OF 53



SITE & UTILITY PLAN – PHASE 1

SCALE: 1"=30'



UTILITY NOTES

1. APPROXIMATE LOCATIONS OF EXISTING MAINS ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY ALL WATER MAINS SHALL BE D.I.P. CLASS 54 UNLESS OTHERWISE NOTED.
2. TOPS OF ALL WATER MAINS SHALL HAVE A MINIMUM OF 3'–6" OF COVER UNLESS OTHERWISE NOTED.
3. VALVES ADJACENT TO TEES SHALL BE STRAPPED TO TEES.
4. ALL FITTINGS SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH STANDARD DETAILS UNLESS OTHERWISE PROVIDED FOR ON THE DRAWINGS.
5. FIRE HYDRANTS SHALL BE SET TO THE BURY LINE ELEVATIONS SHOWN ON THE DRAWINGS. ALL FIRE HYDRANTS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD DETAILS. THE SOIL AROUND THE FIRE HYDRANT SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 1000 AND SECTION 1005 OF THE STANDARD SPECIFICATIONS.
6. THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM.
7. TRACER WIRE AND CONTINUITY TEST STATIONS SHALL BE INSTALLED ON ALL DIP AND PVC WATER MAINS IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL.
8. UNLESS OTHERWISE NOTED ON THE PLANS OR IN THE SPECIFICATIONS, SACRIFICIAL ANODES SHALL BE INSTALLED IN ALL VALVES AND METALLIC FITTINGS USED WITH PVC WATER MAINS IN ACCORDANCE WITH VOLUMN IV STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION. 17 POUND MAGNESIUM ANODES SHALL BE INSTALLED ON ALL VALVES AND DUCTILE IRON FITTINGS INCLUDING RESTRAINTS AND HARNESSES. 12 POUND ZINC ANODES SHALL BE INSTALLED ON ALL STAINLESSS STEEL FITTINGS AND SADDLES USED WITH PVC MAINS. ALL "TEES" USED WITH PVC MAINS SHALL BE DUCTILE IRON.
9. ALL SEWER MAINS BE PVC UNLESS OTHERWISE NOTED.
10. ALL MANHOLES SHALL BE 4'–0" INSIDE DIAMETER UNLESS OTHERWISE NOTED.
11. MANHOLES DESIGNATED W.T. IN PLAN AND PROFILE SHALL GHAVE WATERTIGHT FRAME AND COVER. STANDARD DETAILS G5.52 WHERE WATERTIGHT MANHOLE FRAMES AND COVERS ARE USED, SET TOP OF FRAME 1'–6" ABOVE FINISHED GRADE UNLESS OTHERWISE NOTED ON THE DRAWINGS.
    PRECAUTIONS TO PROTECT EXISTING MAINS AND SERVICES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF TEH ENGINEER AT THE CONTRACTOR'S EXPENSE.
12. TOPOGRAPHIC FIELD SURVEYS WERE PERFORMED ON JANUARY, 2020 BY KCI TECHNOLOGIES, INC.

    HORIZONTAL AND VERTICAL SURVEY CONTROLS:
    THE COORDINATES SHOWN ON THE DRAWINGS ARE BASED ON MARYLAND STATE REFERENCE SYSTEM NAD 83/91 AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS No. 35C2 AND No. 35C2. ALL VERTICAL CONTROLS ARE BASED ON NAVD 88. VERTICAL CONTROLS PROVIDED ON THE DRAWING ARE
13. ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON THE PLANS.
14. CLEAR ALL UTILITES BY A MINIMUM OF 12 INCHES. CLEAR ALL POLES BY 5'–0" MINIMUM OR TUNNEL AS REQUIRES UNLESS OTHERWISE NOTED. THE OWNER HAS CONTACTED THE UTILITY COMPANIES AND HAS MADE ARRANGEMENTS FOR BRACING OF POLES AS SHOWN ON THE DRAWINGS. IN THE EVENT THE CONTRATOR'S WORK REQUIRES THE BRACING OF ADDITIONAL POLES, ANY COST INCURREC BY THE OWNER FOR THE BRACING OF ADDITIONAL POLES OR DAMAGES SHALL BE DEDUCTED FROM MONIES OWED THE CONTRACTOR. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES TO SCHEDULE THE BRACING OF POLES.
15. FOR DETAILS NOT SHOWN ON THE DRAWINGS , AND FOR MATERIALS AND CONSTRUCTION METHODS , USE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION. THE CONTRACTOR SHALL HAVE A COPY OF VOLUME IV ON THE JOB.
16. WHERE TEST PITS HAVE BEEN MADE ON EXISTING UTILITIES, THEY ARE NOTED BY THE SYMBOL AT THE LOCATION OF THE TEST PITS. A NOTE OR NOTES CONTAINING THE RESULTS OF THE TEST PIT OR PITS IS INCLUDED ON THE DRAWINGS. EXISTING UTILITIES IN THE VICINITY OF THE PROPOSED WORK FOR WHICH TEST PITS HAVE NOT BEEN DUG SHALL BE LOCATED BY THE CONTRACTOR TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS AT HIS OWN EXPENSE.
17. THE CONTRATOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENSIES AT LEAST FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:

AT&T	800-252-1133
BGE (CONTRACTOR SERVICES)	410-687-8713
BGE (EMERGENCY)	410-685-0123
BUREAU OF UTILITES	410-313-4900
COLONIAL PIPELINE Co.	410-795-1390
MISS UTILITY	800-257-7777
STATE HIGHWAY ADMINISTRATION	410-531-5533
VERIZON	800-743-0033

18. TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO THE MAXIMUM EXTENT. TREES AND SHRUBS LOCATED WITHIN THE CONTRUCTION STRIP ARE NOT TO BE REMOVED OR DAMAGED BY THE CONTRACTOR.
19. THE CONTRACTOR SHALL REMOVE TREES, STUMPS AND ROOTS ALONG THE EXCAVATION. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONSTRUCTION OF THE MAIN.
20. THE CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, HOWARD COUNTY, AT 410–313–7450 AT LEAST FIVE WORKING DAYS BEFORE OPEN CUTTING OR BORING/JACKING OF ANY COUNTY ROADS FOR LAYING WATER/SEWER MAINS OF HOUSE CONNECTIONS. THE APPROVAL OF THESE DRAWINGS WILL CONSTITUTE COMPLIANCE WITH DPW REQUIREMENTS FOR SECTION 18.114(a) OF THE HOWARD COUNTY CODE.
21. PROPOSED WATER METER TO BE LOCATED INSIDE THE BUILDING AND A MECHANICAL ROOM.
22. PROPOSED WATER MAINS WILL BE PRIVATE AND NOT REQUIRE EASEMENTS.

SEWER HOUSE CONNECTIONS AS–BUILT LOCATION TABLE

LOT NUMBER	ADDRESS	LOCATION DIMENSION 1	LOCATION DIMENSION 2

WATER HOUSE CONNECTIONS AS–BUILT LOCATION TABLE

LOT NUMBER	ADDRESS	LOCATION DIMENSION 1	LOCATION DIMENSION 2

CONTRACTOR NOTE:
CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO DAMAGE ANY EXISTING PAVING, CURB AND GUTTER, SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN. SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO ORIGINAL CONDITION AT CONTRACTORS EXPENSE.

LEGEND

- PROPERTY LINE
- EX. SANITARY MANHOLE
- EX. STORM DRAIN MANHOLE
- EX. ELECTRIC MANHOLE
- EX. LIGHT POLE
- EX. WATER METER
- EX. SIGN
- EX. UTILITY POLE
- EX. BOLLARD POST
- EX. DECIDUOUS TREE
- EX. CONIFEROUS TREE
- EX. GAS VALVE
- EX. GUY WIRE
- EX. WATER VALVE
- EX. FIRE HYDRANT
- EX. CLEANOUT
- EX. 15" DRAIN — EX. STORM DRAIN
- EX. GAS — EX. GAS LINE
- EX. 6" SANITARY — EX. SANITARY
- EX. ELECTRIC — EX. ELECTRIC
- EX. TELEPHONE — EX. TELEPHONE
- EX. CABLE TV — EX. CABLE TV
- EX. 8" WATER — EX. WATER
- LOD — LOD — AREA OF PROPOSED WORK
- APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT

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. 33772 EXPIRATION DATE: 06/16/2023

KCI TECHNOLOGIES
ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
11830 WEST MARKET PLACE, SUITE F, FULTON, MD 20759
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AYERS SAINT GROSS
ARCHITECTS + PLANNERS
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p.410.347.8500 f.410.347.8419

APPROVED: Howard County Department of Planning & Zoning

Director	9-8-21 Date
Chief, Division of Land Development	9/7/21 Date
Chief, Development Engineering Division	8/18/21 Date

Rev:	Date:	Description:	By:
1			
2	6/18/21	Addendum #2	KCI
3			
4			
5			

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

Date: 04-30-2021	Scale: 1" = 30'
Drawn By: F.F.W.	Designed By: F.F.W.
Approved By: N.A.B.	Project No: 271906728
Tax Map-Grid: 35-6	Zoning: POR & NT

Sheet Title:
SITE UTILITY PLAN PHASE 1

Discipline Number: C1.06
Sheet Number: 06 OF 53

MD STATE PLANE
NAD 83, NAVD 88

N 562,550
E 1,346,500

MATCH LINE – (SEE THIS SHEET)

EX.
ATHLETICS &
FITNESS
CENTER

PROPOSED
MATHEMATICS
AND
ATHLETICS
COMPLEX

CAMPUS DRIVE

HICKORY RIDGE ROAD

PROPOSED STEPS
(SEE SHEET 18)

MICRO-BIORETENTION
(M-6)
FACILITY 1A

BIORETENTION (F-6)
FACILITY 1B

BIORETENTION
(F-6)
FACILITY 1C

FOREST CONSERVATION EASEMENT AREA 'J-1'
PLAT NO. 19050

SAWCUT EX. ASPHALT
FOR PHASE 1 TIE-IN

I-1

I-2

I-3

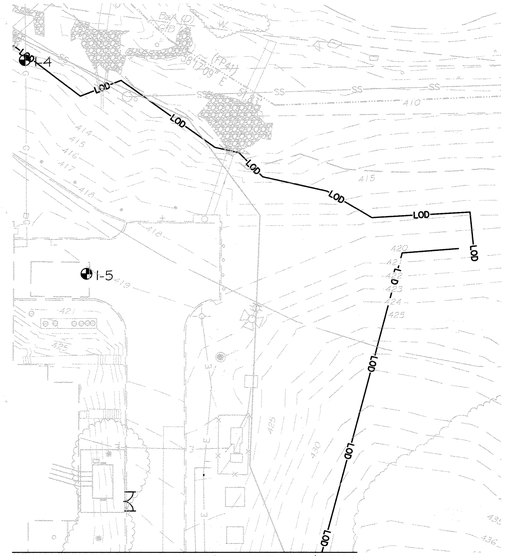
I-4

I-5

BUS DROP
OFF

E 1,346,650
N 562,100

E 1,346,950
N 562,100



LEGEND

- PROPERTY LINE
- 450 EX. INDEX CONTOUR
- 451 EX. INTERMEDIATE CONTOUR
- EX. SANITARY MANHOLE
- EX. STORM DRAIN MANHOLE
- EX. ELECTRIC MANHOLE
- EX. LIGHT POLE
- EX. WATER METER
- EX. SIGN
- EX. UTILITY POLE
- EX. BOLLARD POST
- EX. DECIDUOUS TREE
- EX. CONIFEROUS TREE
- EX. GAS VALVE
- EX. GUY WIRE
- EX. WATER VALVE
- EX. FIRE HYDRANT
- EX. CLEANOUT
- EX. 15" DRAIN — EX. STORM DRAIN
- EX. GAS — EX. GAS LINE
- EX. 6" SANITARY — EX. SANITARY
- EX. ELECTRIC — EX. ELECTRIC
- EX. TELEPHONE — EX. TELEPHONE
- EX. CABLE TV — EX. CABLE TV
- EX. 8" WATER — EX. WATER
- LOD — LOD — AREA OF PROPOSED WORK
- APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT
- APPROXIMATE LIMITS OF ENVIRONMENTAL BUFFER AREA

GRAPHIC SCALE
30 0 15 30 60
(IN FEET) 1 inch = 30ft.

SITE GRADING PLAN – PHASE 1

SCALE: 1"=30'

CONTRACTOR NOTE:
CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO DAMAGE ANY EXISTING PAVING, CURB AND GUTTER, SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN. SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO ORIGINAL CONDITION AT CONTRACTORS EXPENSE.

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APPROVED: Howard County Department of Planning & Zoning

Director — Date 9-8-21

Chief, Division of Land Development — Date 9/7/21

Chief, Development Engineering Division — Date 8.13.21

Rev:	Date:	Description:	By:
1			
2			
3			
4			
5			

Prepared For and Owner:
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10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College -
MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

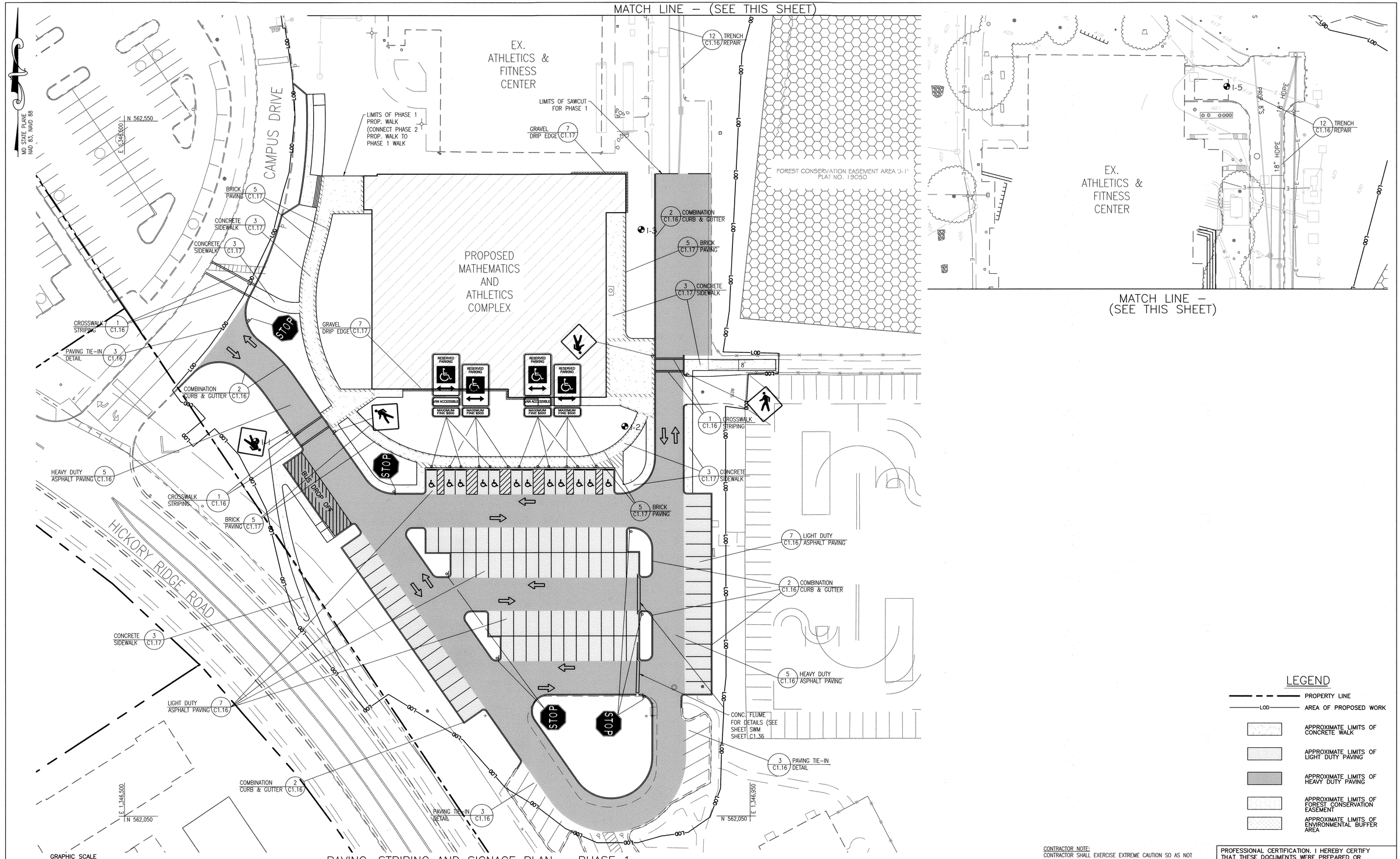
Date:	04-30-2021	Scale:	1" = 30'
Drawn By:	F.F.W.	Designed By:	F.F.W.
Approved By:	N.A.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title:
SITE & GRADING PLAN PHASE 1

33772 — PROFESSIONAL ENGINEER — 6/25/21

Discipline Number: C1.07

Sheet Number: 07 OF 53



GRAPHIC SCALE
30 0 15 30 60
(IN FEET) 1 inch = 30ft.

PAVING, STRIPING AND SIGNAGE PLAN – PHASE 1

SCALE: 1"=30'

LEGEND

- PROPERTY LINE
- LOD — AREA OF PROPOSED WORK
- APPROXIMATE LIMITS OF CONCRETE WALK
- APPROXIMATE LIMITS OF LIGHT DUTY PAVING
- APPROXIMATE LIMITS OF HEAVY DUTY PAVING
- APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT
- APPROXIMATE LIMITS OF ENVIRONMENTAL BUFFER AREA

CONTRACTOR NOTE:
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APPROVED: Howard County Department of Planning & Zoning

Director	9-8-21 Date
Chief, Division of Land Development	9/7/21 Date
Chief, Development Engineering Division	9/8/21 Date

Rev:	Date:	Description:	By:
1			
2			
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5			

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

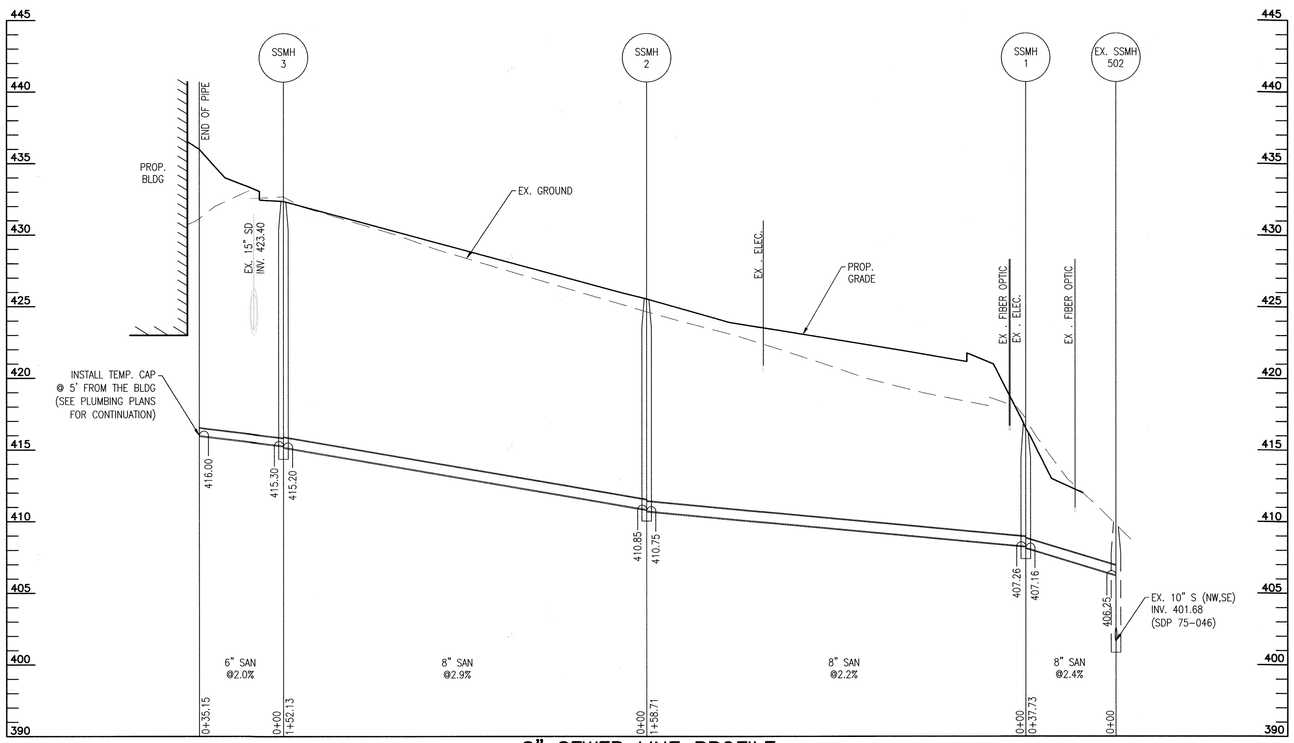
Date: 04-30-2021		Scale: 1" = 30'	
Drawn By: F.F.W.		Designed By: F.F.W.	
Approved By: N.A.B.		Project No: 271906728	
Tax Map-Grid: 35-6		Zoning: POR & NT	

Sheet Title: **PAVING, STRIPING & SIGNAGE PLAN PHASE 1**

Discipline Number: C1.08

Sheet Number: 08 OF 53

SDP-21-028



8" SEWER LINE PROFILE

SCALE: HORIZ.: 1" = 30'
VERT.: 1" = 5'

SEWER PIPE SCHEDULE

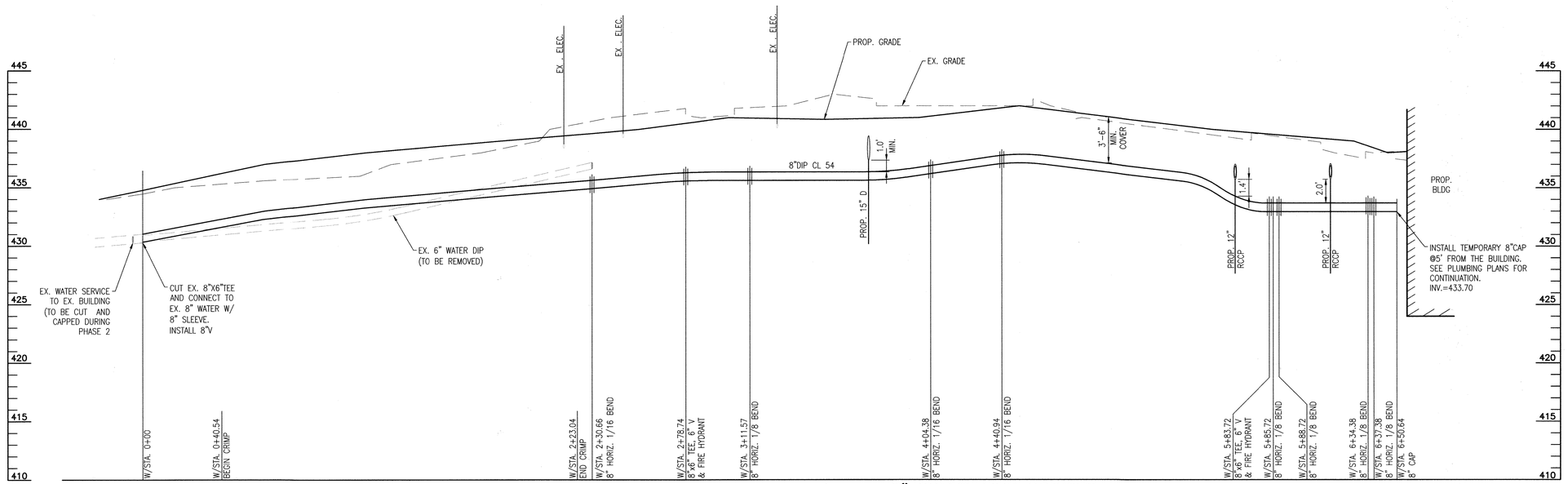
ITEM	UNIT	ESTIMATE	AS-BUILT
6" PVC (SDR-35)	L.F.	35	
8" PVC (SDR-35)	L.F.	349	

WATER PIPE SCHEDULE

ITEM	UNIT	ESTIMATE	AS-BUILT
6" DIP CL 54	L.F.	39	
8" DIP CL 54	L.F.	644	
8" SLEEVE AND SPACER	EA	1	
8" 22.5° HORIZ.	EA	3	
8" 45° HORIZ.	EA	1	
8" 90° HORIZ.	EA	2	
8" VALVE	EA	1	
6" VALVE	EA	2	
FIRE HYDRANT	EA	2	
8"X6" TEE	EA	2	

SEWER STRUCTURE SCHEDULE

STRUCTURE NAME	TOP ELEVATION	INVERT IN	INVERT OUT	NORTHING	EASTING	DESCRIPTION
SSMH-1	416.50	407.26	407.16	562807.51	1346878.92	4' PRECAST CONCRETE MANHOLE
SSMH-2	425.55	410.85	410.75	562649.34	1346892.00	4' PRECAST CONCRETE MANHOLE
SSMH-3	432.37	414.30	414.20	562497.21	1346892.02	4' PRECAST CONCRETE MANHOLE
EX.SSMH 502	409.80	406.25	401.68	562845.23	1346877.73	INSTALL DROP CONNECTION (TYP 'B')



8" WATER LINE PROFILE

SCALE: HORIZ.: 1" = 30'
VERT.: 1" = 5'

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ARCHITECTS + PLANNERS
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Baltimore, MD 21230
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APPROVED: Howard County Department of Planning & Zoning

Director	9-8-21 Date
Chief, Division of Land Development	9/7/21 Date
Chief, Development Engineering Division	8.18.21 Date

Rev:	Date:	Description:	By:
1			
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Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

Date: 04-30-2021	Scale: AS SHOWN
Drawn By: F.F.W.	Designed By: F.F.W.
Approved By: N.A.B.	Project No: 271906728
Tax Map-Grid: 35-6	Zoning: POR & NT

Sheet Title:
UTILITY PROFILES PHASE 1

Discipline Number: C1.09

Sheet Number: 09 OF 53

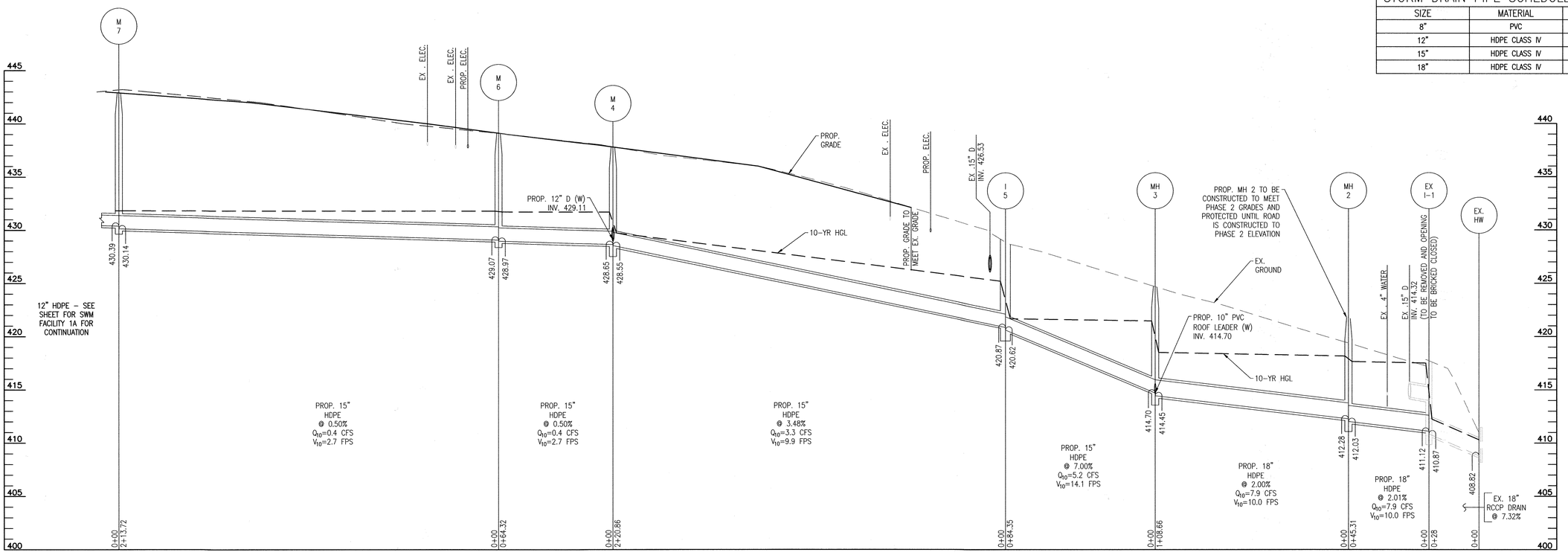
STORM DRAIN STRUCTURE SCHEDULE – PHASE 1

NO.	TYPE	SIZE IN	ELEV. IN	SIZE OUT	ELEV. OUT	TOP ELEV.	RFERENCES/HOWARD COUNTY STD. DETAIL	COORDINATES	
								NORTHING	EASTING
MH–2	48" STANDARD PRECAST MANHOLE	18"	412.28	18"	412.03	421.68	G–5.12	N 562,750.52	E 1,346,900.32
MH–3	48" STANDARD PRECAST MANHOLE	8", 15"	414.70, 414.70	18"	414.45	424.69*	G–5.12	N 562,641.87	E 1,346,898.56
MH–4	48" STANDARD PRECAST MANHOLE	12", 15"	429.11, 428.65	15"	428.55	437.83	G–5.12	N 562,333.97	E 1,346,891.98
MH–5	48" SHALLOW PRECAST MANHOLE	12"	438.00	15"	437.75	442.09	G–5.12	N 562,326.33	E 1,346,663.96
MH–6	48" STANDARD PRECAST MANHOLE	15"	429.07	15"	428.97	439.20	G–5.12	N 562,269.65	E 1,346,891.98
MH–7	48" STANDARD PRECAST MANHOLE	12"	430.39	15"	430.14	442.90	G–5.12	N 562,269.65	E 1,346,678.26
I–2	DOUBLE 'WR' INLET	–	–	12"	436.03	439.51	D–4.31	N 562,296.82	E 1,346,841.31
I–3	TYPE 'S' COMBO INLET	–	–	12"	438.69	441.75	D–4.26	N 562,313.73	E 1,346,656.46
I–5	TYPE 'S' COMBO INLET	15"	420.87	15"	420.62	428.88*	D–4.26	N 562,557.51	E 1,346,900.32
I–6	TYPE 'D' INLET	–	–	8"	434.60	440.54	D–4.11	N 562,409.49	E 1,346,623.90
I–13	TYPE 'D' INLET	–	–	8"	435.29	437.34	SEE DETAIL ON SHT C1.16B	N 562,514.77	E1,346,641.82
R–1	TYPE 'D' INLET	4"	431.09	12"	431.99	GRATE INV. 435.50	D–4.11	N 562,388.22	E 1,346,663.69
R–2	TYPE 'D' INLET	4"	431.08	12"	430.98	GRATE INV. 435.50	D–4.11	N 562,333.98	E 1,346,841.37
R–3	TYPE 'D' INLET	4"	433.84	12"	433.74	GRATE INV. 436.30	D–4.11	N 562,097.48	E 1,346,858.45
ES–1	12" CONC END SECTION	12"	435.23	–	–	–	D–5.51	N 562,129.39	E 1,346,861.22
ES–2	12" CONC END SECTION	12"	434.47	–	–	–	D–5.51	N 562,316.42	E 1,346,836.93
ES–3	15" CONC END SECTION	15"	434.30	–	–	–	D–5.51	N 562,398.30	E 1,346,656.99

*TOPS OF STRUCTURES TO BE RAISED DURING PHASE 2 TO MEET FINAL GRADES.

STORM DRAIN PIPE SCHEDULE – PHASE 1

SIZE	MATERIAL	LENGTH
8"	PVC	235 LF
12"	HDPE CLASS IV	262 LF
15"	HDPE CLASS IV	659 LF
18"	HDPE CLASS IV	154 LF



STORM DRAIN PROFILE

SCALE: HORIZ.: 1" = 30'
VERT.: 1" = 5'

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APPROVED: Howard County Department of Planning & Zoning

Director		9-8-21 Date
Chief, Division of Land Development		9/7/21 Date
Chief, Development Engineering Division		8-18-21 Date

Rev:	Date:	Description:	By:
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Howard Community College - MATHEMATICS & ATHLETICS COMPLEX

SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 0458868

ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date:	04-30-2021	Scale:	AS SHOWN
Drawn By:	F.F.W.	Designed By:	F.F.W.
Approved By:	N.A.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

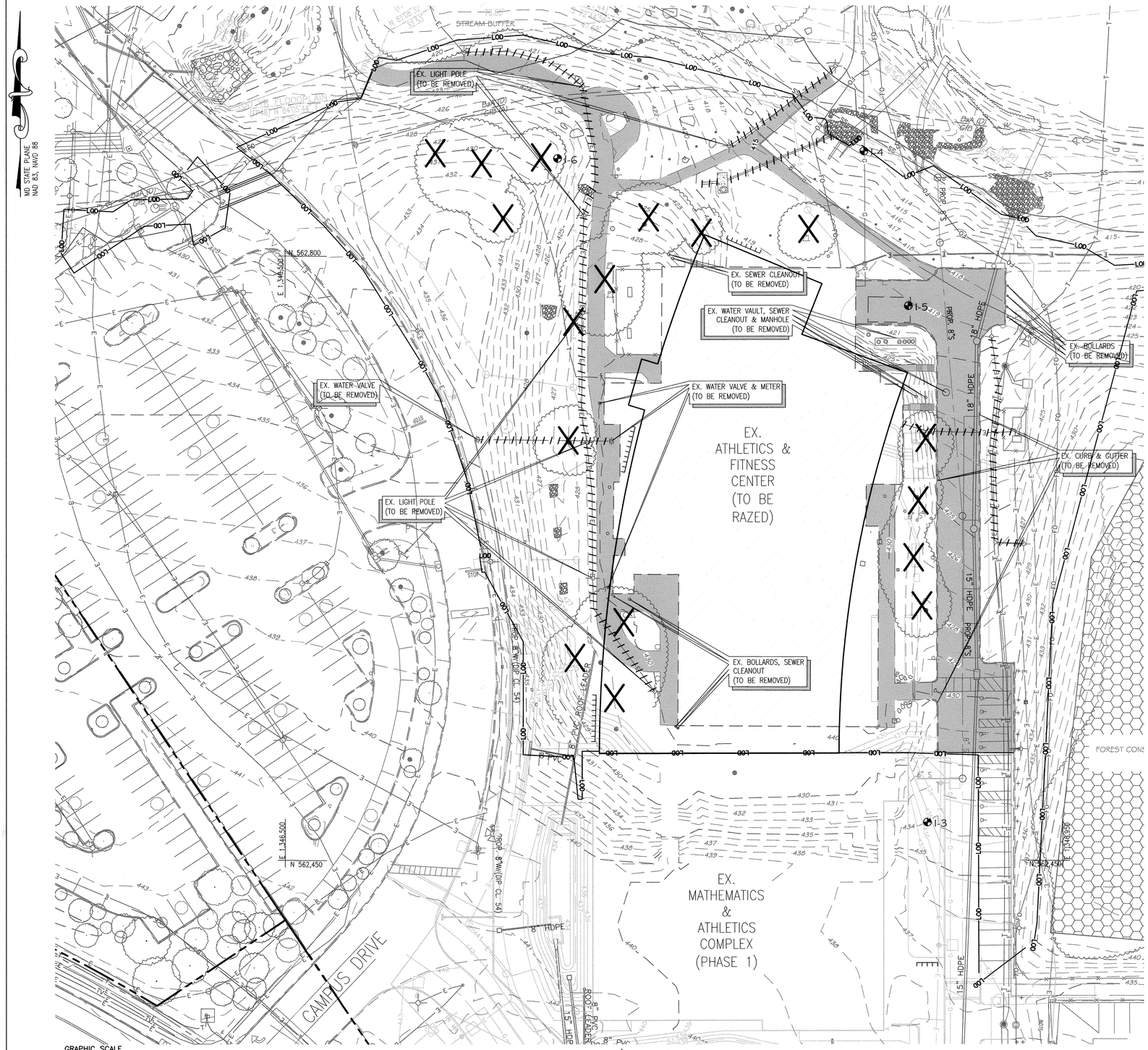
Sheet Title:

UTILITY PROFILES PHASE 1

6/28/21

Discipline Number: C1.10

Sheet Number: 10 OF 53



DEMOLITION NOTES

1. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" (800-257-7777) AT LEAST FIVE (5) WORKING DAYS PRIOR TO STARTING ANY WORK.
2. NO WORK SHALL BEGIN UNTIL THE PROPER PERMITS HAVE BEEN RELEASED BY HOWARD COUNTY.
3. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN IS BASED UPON A SURVEY CONDUCTED BY KCI TECHNOLOGIES, INC. JANUARY 2020 AND AERIAL TOPO FROM VIRGINIA RESOURCE MAPPING APRIL 27, 2009.
4. OBSTRUCTIONS SHOWN ON THIS DRAWING ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. KCI TECHNOLOGIES, INC. DOES NOT WARRANT OR GUARANTEE THE CORRECTNESS OR THE COMPLETENESS OF THE INFORMATION GIVEN. THE CONTRACTOR MUST VERIFY ALL SUCH INFORMATION TO HIS OWN SATISFACTION.
5. CONTRACTOR SHALL NOT PROCEED WITH ANY DEMOLITION WORK UNTIL ALL UTILITY COMPANIES HAVE VERIFIED IN WRITING THAT DISCONNECTIONS HAVE BEEN COMPLETED.
6. CONTRACTOR WILL INSTALL A TEMPORARY CONSTRUCTION FENCE AROUND THE CONSTRUCTION AREA WHILE MAINTAINING ACCESS TO THE ADJACENT PUBLIC SIDEWALKS.
7. CONTRACTOR WILL SECURE THE CONSTRUCTION AREA AT THE END OF EACH WORKING DAY AND WILL INSPECT THE SECURITY FENCING TO INSURE ITS INTEGRITY.
8. CONTRACTOR IS RESPONSIBLE TO COMPLY WITH MDSHA AND OSHA REGULATIONS AS THEY PERTAIN TO EXISTING ADJACENT BUILDING WALLS AND PUBLIC SIDEWALKS AND PROVIDING "SAFE" PASSAGE TO THEM.
9. CONTRACTOR WILL INSPECT AND TAKE PICTURES OF ADJACENT BUILDING WALLS AND RETAINING WALLS PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION ON THE SITE. EXISTING WALL CRACKS (IF ANY) WILL BE NOTED.
10. CONTRACTOR WILL CONTINUALLY MONITOR THE WALLS OF THE ADJACENT BUILDINGS AND RETAINING WALLS FOR ANY SIGNS OF STRUCTURAL DISTRESS. IF ANY DISTRESS IS NOTED, CONTRACTOR SHALL STOP WORK IMMEDIATELY AND NOTIFY OWNER, KCI TECHNOLOGIES, INC. AND ASG ARCHITECTS.
11. CONTRACTOR WILL NOT EXPOSE, UNDERMINE, OR IMPACT THE ZONE OF INFLUENCE FOR FOOTINGS AND FOUNDATIONS OF ADJACENT BUILDINGS. CONTRACTOR WILL BE RESPONSIBLE FOR THE COST TO REPAIR ADJACENT BUILDINGS THAT ARE DAMAGED DUE TO HIS OPERATION.
12. CONTRACTOR WILL PROVIDE THE NECESSARY MEANS TO CONTROL DUST AND AIR QUALITY DURING THE DEMOLITION PROCESS.
13. CONTRACTOR WILL SAWCUT EXISTING PAVING TO MINIMIZE DAMAGE TO EXISTING PAVING REMAINING.
14. IN CONJUNCTION WITH THE REMOVAL OF CONCRETE APRONS AND WALKS, THE CONTRACTOR IS RESPONSIBLE TO ADJUST ALL PUBLIC UTILITIES (I.E. MANHOLE FRAMES & COVERS, ELECTRIC HAND BOXES, VALVE COVERS) TO BE FINISHED SIDEWALK GRADES.
15. ANY EXISTING CURB AND GUTTER & CONCRETE SIDEWALK SHALL BE REMOVED TO THE NEAREST JOINT.
16. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING ALL WORK SHOWN ON THESE DRAWINGS UNLESS OTHERWISE NOTED.
17. THE DEMOLITION INFORMATION SHOWN ON THIS DRAWING IS FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT LIMITS OF DEMOLITION AND REMOVAL OF AFFECTED SITE ITEMS.
18. CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES SHOWN HEREON BEFORE STARTING ANY WORK ON THESE PLANS. CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR THE COST OF ANY AND ALL DAMAGES WHICH OCCUR AS A RESULT OF A FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL EXISTING UTILITIES TO REMAIN.
19. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AT ALL TIMES.
20. CONTRACTOR SHALL INSTALL SEDIMENT CONTROLS PRIOR TO BEGINNING ANY WORK AND MAINTAIN SEDIMENT CONTROLS THROUGHOUT THE ENTIRE DURATION OF DEMOLITION AND CONSTRUCTION ACTIVITIES.
21. ALL UTILITY LINES, ELECTRICAL DUCT BANKS, STRUCTURES, ETC. ARE TO BE REMOVED IN THEIR ENTIRETY UNLESS OTHERWISE INDICATED. ALL EXCAVATION SHALL BE BACKFILLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. IN THE EVENT THAT A PORTION OF A UTILITY IS TO BE REMOVED THE CONTRACTOR SHALL TERMINATE & CAP TO THE LIMITS INDICATED IN ACCORDANCE WITH ALL STATE & LOCAL REQUIREMENTS AND THE PROJECT REQUIREMENTS.
22. IT SHALL BE DISTINCTLY UNDERSTOOD THAT FAILURE TO MENTION SPECIFICALLY ANY WORK WHICH WOULD NORMALLY BE REQUIRED TO COMPLETE THIS PROJECT SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY TO COMPLETE SUCH WORK.
23. SHOULD THE CONTRACTOR DISCOVER DISCREPANCIES BETWEEN THE PLANS AND FIELD CONDITIONS, THE A/E IS TO BE NOTIFIED IMMEDIATELY TO RESOLVE THE SITUATION. SHOULD THE CONTRACTOR MAKE FIELD CORRECTIONS OR ADJUSTMENTS WITHOUT NOTIFYING THE A/E, THEN THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR THOSE CHANGES.
24. CONTRACTOR SHALL CAP EXISTING UTILITY CONNECTIONS AND PROVIDE THEIR HORIZONTAL AND VERTICAL LOCATIONS TO THE OWNER AND THE ENGINEER.
25. CONTRACTOR SHALL REMOVE ALL CONSTRUCTION DEBRIS FROM THE SITE AND DISPOSE OF IT AT AN APPROVED, PERMITTED DISPOSAL FACILITY. NO RUBBLE IS TO BE LEFT ON SITE.
26. BURNING OF COMBUSTIBLE MATERIALS FROM DEMOLISHED STRUCTURES WILL NOT BE PERMITTED.
27. NO EXPLOSIVES WILL BE USED IN THE SITE DEMOLITION.
28. ALL TREES WITHIN THE LOD ARE TO BE REMOVED UNLESS OTHERWISE NOTED.

LEGEND

- PROPERTY LINE
- 450 EX. INDEX CONTOUR
- 451 EX. INTERMEDIATE CONTOUR
- EX. SANITARY MANHOLE
- EX. STORM DRAIN MANHOLE
- EX. ELECTRIC MANHOLE
- EX. LIGHT POLE
- EX. WATER METER
- EX. SIGN
- EX. UTILITY POLE
- EX. BOLLARD POST
- EX. DECIDUOUS TREE
- EX. CONIFEROUS TREE
- EX. GAS VALVE
- EX. GUY WIRE
- EX. WATER VALVE
- EX. FIRE HYDRANT
- EX. CLEANOUT
- EX. 15" DRAIN — EX. STORM DRAIN
- EX. GAS — EX. GAS LINE
- EX. 6" SANITARY — EX. SANITARY
- EX. ELECTRIC — EX. ELECTRIC
- EX. TELEPHONE — EX. TELEPHONE
- EX. CABLE TV — EX. CABLE TV
- EX. 8" WATER — EX. WATER
- EX. UTILITY (TO BE REMOVED OR ABANDONED)
- EX. TREE (TP BE REMOVED)
- LOD LOD AREA OF PROPOSED WORK
- APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT
- APPROXIMATE LIMITS OF ENVIRONMENTAL BUFFER AREA

GRAPHIC SCALE
50 0 25 50 100
(IN FEET) 1 inch = 50ft.

EXISTING CONDITIONS / DEMO PLAN – PHASE 2

SCALE: 1"=30'

CONTRACTOR NOTE:
CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO DAMAGE ANY EXISTING PAVING, CURB AND GUTTER, SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN. SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO ORIGINAL CONDITION AT CONTRACTORS EXPENSE.

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APPROVED: Howard County Department of Planning & Zoning

Director — Date 9-8-21

Chief, Division of Land Development — Date 9/7/21

Chief, Development Engineering Division — Date 8/18/21

Rev:	Date:	Description:	By:
1			
2			
3			
4			
5			

Prepared For and Owner:
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10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College -
MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

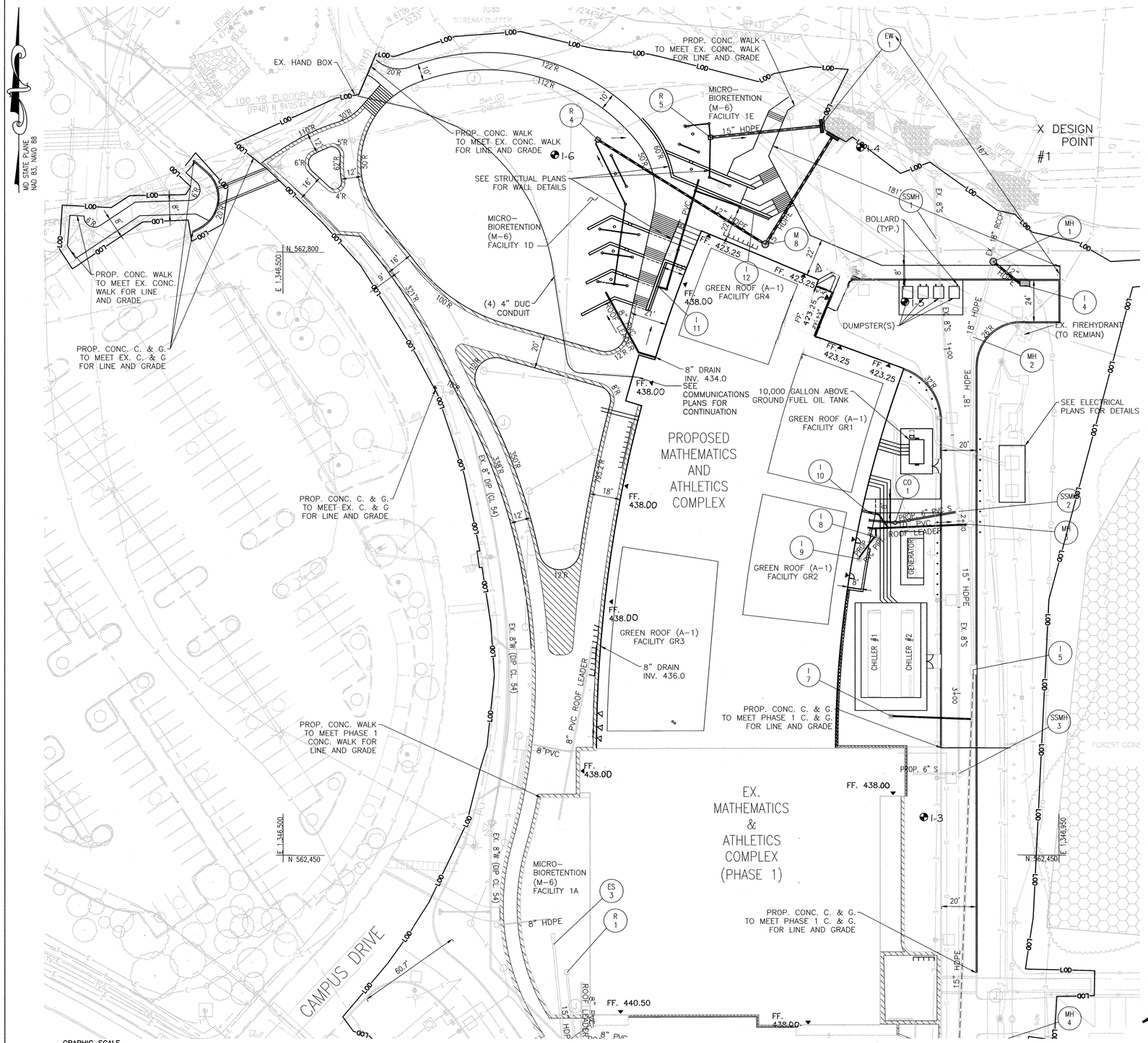
Date: 04-30-2021	Scale: 1" = 30'
Drawn By: F.F.W.	Designed By: F.F.W.
Approved By: N.A.B.	Project No: 271906728
Tax Map-Grid: 35-6	Zoning: POR & NT

Sheet Title:
EXISTING CONDITIONS & DEMOLITION PLAN PHASE 2

STATE OF MARYLAND — NICHOLAS A. BARBERA — 33772 — PROFESSIONAL ENGINEER

Discipline Number: C1.11

Sheet Number: 11 OF 53



GRAPHIC SCALE
30 0 15 30 60
(IN FEET) 1 inch = 50ft.

SITE & UTILITY PLAN – PHASE 2
SCALE: 1"=30'

UTILITY NOTES

1. APPROXIMATE LOCATIONS OF EXISTING MAINS ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY ALL WATER MAINS SHALL BE D.I.P. CLASS 54 UNLESS OTHERWISE NOTED.
2. TOPS OF ALL WATER MAINS SHALL HAVE A MINIMUM OF 3'–6" OF COVER UNLESS OTHERWISE NOTED.
3. VALVES ADJACENT TO TEES SHALL BE STRAPPED TO TEES.
4. ALL FITTINGS SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH STANDARD DETAILS UNLESS OTHERWISE PROVIDED FOR ON THE DRAWINGS.
5. FIRE HYDRANTS SHALL BE SET TO THE BURY LINE ELEVATIONS SHOWN ON THE DRAWINGS. ALL FIRE HYDRANTS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD DETAILS. THE SOIL AROUND THE FIRE HYDRANT SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 1000 AND SECTION 1005 OF THE STANDARD SPECIFICATIONS.
6. THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM.
7. TRACER WIRE AND CONTINUITY TEST STATIONS SHALL BE INSTALLED ON ALL DIP AND PVC WATER MAINS IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL.
8. UNLESS OTHERWISE NOTED ON THE PLANS OR IN THE SPECIFICATIONS, SACRIFICIAL ANODES SHALL BE INSTALLED IN ALL VALVES AND METALLIC FITTINGS USED WITH PVC WATER MAINS IN ACCORDANCE WITH VOLUMN IV STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION. 17 POUND MAGNESIUM ANODES SHALL BE INSTALLED ON ALL VALVES AND DUCTILE IRON FITTINGS INCLUDING RESTRAINTS AND HARNESSES. 12 POUND ZINC ANODES SHALL BE INSTALLED ON ALL STAINLESSS STEEL FITTINGS AND SADDLES USED WITH PVC MAINS. ALL "TEES" USED WITH PVC MAINS SHALL BE DUCTILE IRON.
9. ALL SEWER MAINS BE PVC UNLESS OTHERWISE NOTED.
10. ALL MANHOLES SHALL BE 4'–0" INSIDE DIAMETER UNLESS OTHERWISE NOTED.
11. MANHOLES DESIGNATED W.T. IN PLAN AND PROFILE SHALL GHAVE WATERTIGHT FRAME AND COVER. STANDARD DETAILS G5.52 WHERE WATERTIGHT MANHOLE FRAMES AND COVERS ARE USED, SET TOP OF FRAME 1'–6" ABOVE FINISHED GRADE UNLESS OTHERWISE NOTED ON THE DRAWINGS.
    PRECAUTIONS TO PROTECT EXISTING MAINS AND SERVICES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF TEH ENGINEER AT THE CONTRACTOR'S EXPENSE.
12. TOPOGRAPHIC FIELD SURVEYS WERE PERFORMED ON JANUARY, 2020 BY KCI TECHNOLOGIES, INC.

    HORIZONTAL AND VERTICAL SURVEY CONTROLS:
    THE COORDINATES SHOWN ON THE DRAWINGS ARE BASED ON MARYLAND STATE REFERENCE SYSTEM NAD 83/91 AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS No. 35C2 AND No. 35C2. ALL VERTICAL CONTROLS ARE BASED ON NAVD 88. VERTICAL CONTROLS PROVIDED ON THE DRAWING ARE
13. ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON THE PLANS.
14. CLEAR ALL UTILITES BY A MINIMUM OF 12 INCHES. CLEAR ALL POLES BY 5'–0" MINIMUM OR TUNNEL AS REQUIRES UNLESS OTHERWISE NOTED. THE OWNER HAS CONTACTED THE UTILITY COMPANIES AND HAS MADE ARRANGEMENTS FOR BRACING OF POLES AS SHOWN ON THE DRAWINGS. IN THE EVENT THE CONTRATOR'S WORK REQUIRES THE BRACING OF ADDITIONAL POLES, ANY COST INCURREC BY THE OWNER FOR THE BRACING OF ADDITIONAL POLES OR DAMAGES SHALL BE DEDUCTED FROM MONIES OWED THE CONTRACTOR. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES TO SCHEDULE THE BRACING OF POLES.
15. FOR DETAILS NOT SHOWN ON THE DRAWINGS , AND FOR MATERIALS AND CONSTRUCTION METHODS , USE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION. THE CONTRACTOR SHALL HAVE A COPY OF VOLUME IV ON THE JOB.
16. WHERE TEST PITS HAVE BEEN MADE ON EXISTING UTILITIES, THEY ARE NOTED BY THE SYMBOL AT THE LOCATION OF THE TEST PITS. A NOTE OR NOTES CONTAINING THE RESULTS OF THE TEST PIT OR PITS IS INCLUDED ON THE DRAWINGS. EXISTING UTILITIES IN THE VICINITY OF THE PROPOSED WORK FOR WHICH TEST PITS HAVE NOT BEEN DUG SHALL BE LOCATED BY THE CONTRACTOR TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS AT HIS OWN EXPENSE.
17. THE CONTRATOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENSIES AT LEAST FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:
    AT&T----------800-252-1133
    BGE (CONTRACTOR SERVICES)----------410-687-8713
    BGE (EMERGENCY)----------410-685-0123
    BUREAU OF UTILITES----------410-313-4900
    COLONIAL PIPELINE Co.----------410-795-1390
    MISS UTILITY----------800-257-7777
    STATE HIGHWAY ADMINISTRATION----------410-531-5533
    VERIZON----------800-743-0033
18. TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO THE MAXIMUM EXTENT. TREES AND SHRUBS LOCATED WITHIN THE CONTRUCTION STRIP ARE NOT TO BE REMOVED OR DAMAGED BY THE CONTRACTOR.
19. THE CONTRACTOR SHALL REMOVE TREES, STUMPS AND ROOTS ALONG THE EXCAVATION. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONSTRUCTION OF THE MAIN.
20. THE CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, HOWARD COUNTY, AT 410-313-7450 AT LEAST FIVE WORKING DAYS BEFORE OPEN CUTTING OR BORING/JACKING OF ANY COUNTY ROADS FOR LAYING WATER/SEWER MAINS OF HOUSE CONNECTIONS. THE APPROVAL OF THESE DRAWINGS WILL CONSTITUTE COMPLIANCE WITH DPW REQUIREMENTS FOR SECTION 18.114(a) OF THE HOWARD COUNTY CODE.

SEWER HOUSE CONNECTIONS AS-BUILT LOCATION TABLE			
LOT NUMBER	ADDRESS	LOCATION DIMENSION 1	LOCATION DIMENSION 2

LEGEND

- PROPERTY LINE
- EX. SANITARY MANHOLE
- EX. STORM DRAIN MANHOLE
- EX. ELECTRIC MANHOLE
- EX. LIGHT POLE
- EX. WATER METER
- EX. SIGN
- EX. UTILITY POLE
- EX. BOLLARD POST
- EX. DECIDUOUS TREE
- EX. CONIFEROUS TREE
- EX. GAS VALVE
- EX. GUY WIRE
- EX. WATER VALVE
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- EX. 15" DRAIN — EX. STORM DRAIN
- EX. GAS — EX. GAS LINE
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- EX. ELECTRIC — EX. ELECTRIC
- EX. TELEPHONE — EX. TELEPHONE
- EX. CABLE TV — EX. CABLE TV
- EX. 8" WATER — EX. WATER
- AREA OF PROPOSED WORK
- APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT

STATE OF MARYLAND — FRANCIS J. MARKEY — 33772 — PROFESSIONAL ENGINEER — 06/15/21

CONTRACTOR NOTE:
CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO DAMAGE ANY EXISTING PAVING, CURB AND GUTTER, SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN. SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO ORIGINAL CONDITION AT CONTRACTORS EXPENSE.

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APPROVED: Howard County Department of Planning & Zoning

Director — Date 9-8-21

Chief, Division of Land Development — Date 9/7/21

Chief, Development Engineering Division — Date 8/18/21

Rev:	Date:	Description:	By:
1	10/05/21	ADD INTERNAL STAIRWELL TO BUILDING	KCI
2			
3			
4			
5			

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ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
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MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

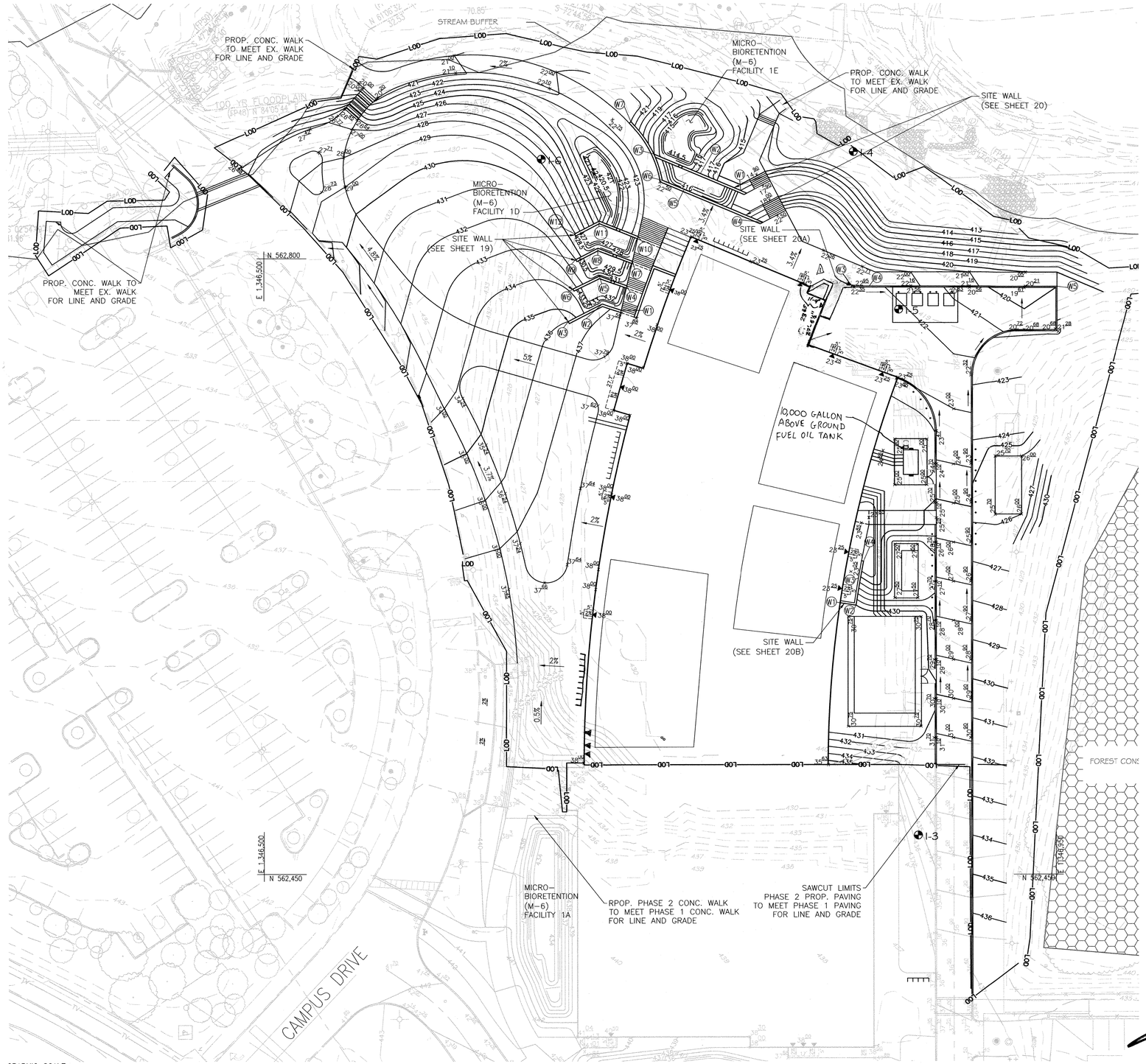
Date: 04-30-2021	Scale: 1" = 30'
Drawn By: F.F.W.	Designed By: F.F.W.
Approved By: N.A.B.	Project No: 271906728
Tax Map-Grid: 35-6	Zoning: POR & NT

Sheet Title:
SITE & UTILITY PLAN PHASE 2

STATE OF MARYLAND — FRANCIS J. MARKEY — 33772 — PROFESSIONAL ENGINEER — 06/15/21

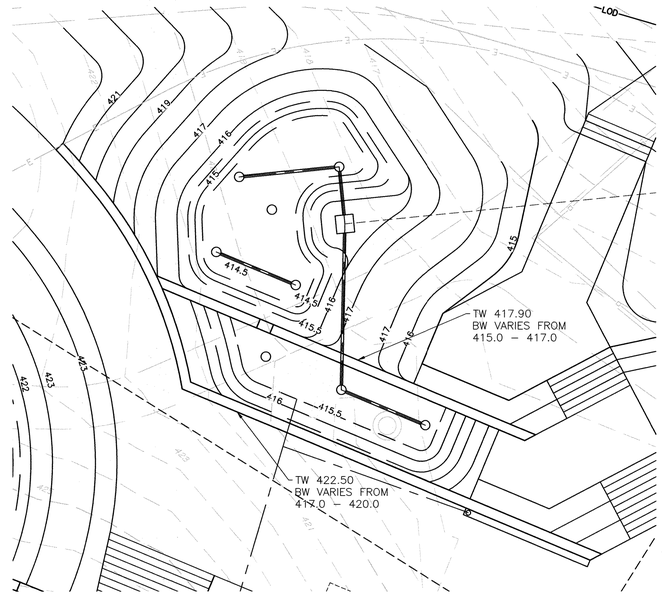
Discipline Number: C1.12

Sheet Number: 12 OF 53



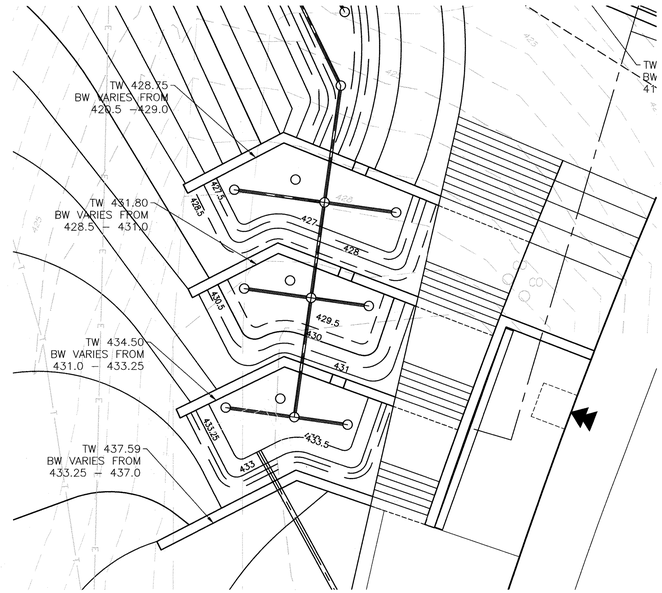
GRAPHIC SCALE
30 0 15 30 60
(IN FEET) 1 inch = 30ft.

SITE GRADING PLAN – PHASE 2
SCALE: 1"=30'



SWM FACILITY STEPPED RETAINING WALL DETAIL
SCALE: 1"=10'

NOTE:
SEE SEE SHEET C1.48 FOR SITE/RETAIING WALL SECTIONS AND ELEVATIONS



SWM FACILITY STEPPED RETAINING WALL DETAIL
SCALE: 1"=10'

NOTE:
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STATE OF MARYLAND · SCHOLAS A. BARRIE · 33772 · PROFESSIONAL ENGINEER
10/5/21

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Scientists
Construction Managers
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APPROVED: Howard County Department of Planning & Zoning

Director	9-8-21 Date
Chief, Division of Land Development	9/7/21 Date
Chief, Development Engineering Division	9/8/21 Date

Rev:	Date:	Description:	By:
1			
2	10/05/21	ADD INTERNAL STAIRWELL TO BUILDING	KCI
3			
4			
5			

Prepared For and Owner:
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Project Name:
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MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

Date:	04-30-2021	Scale:	AS SHOWN
Drawn By:	F.F.W.	Designed By:	F.F.W.
Approved By:	N.A.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title:
SITE GRADING PLAN PHASE 2

STATE OF MARYLAND · SCHOLAS A. BARRIE · 33772 · PROFESSIONAL ENGINEER
6/26/21

Discipline Number: C1.13

Sheet Number: 13 OF 53

MD STATE PLANE
NAD 83, NAVD 88

70.85'
STREAM BUFFER

100 YR FLOODPLAIN
(FP48) N 84°05'44" W
77.50'

BaA (D)
GrB (A)

SEE SHEET C1.18
FOR STAIR DETAILS

SEE ARCHITECTURAL
SHEET C1.18 FOR
STAIR DETAILS

SEE SHEETS C1.19 AND
C1.20 FOR RETAINING
WALL DETAILS

SWM FACILITY
SEE SHEETS C1.19 AND
1.20 FOR WALL DETAILS

SEE ARCHITECTURAL
SHEET C1.18 FOR
STAIR DETAILS

BRICK PAVING 5 C1.17
CONCRETE SIDEWALK 4 C1.16 I-6
BIKE RACK 4 C1.18
CONCRETE SIDEWALK 3 C1.17
PIPE BOLLARD 9 C1.17 TYP.
MOUNTABLE CURB & GUTTER 10 C1.16
COMBINATION CURB & GUTTER 2 C1.17
COMBINATION CURB & GUTTER 2 C1.16
DUMPSTER CONC. PAD R-803 C1.16A
CONC. CURB 10 C1.16
REINFORCED CONC. PAD 2 C1.17
HEAVY DUTY ASPHALT PAVING 5 C1.16
BRICK PAVING 10 C1.17
BIKE RACK 4 C1.18
CONCRETE SIDEWALK 9 C1.17
GRAVEL DRIP EDGE 7 C1.17
PAVING TIE-IN DETAIL 3 C1.16

I-1 I-2 I-3 I-4 I-5

N 562,800
E 1,346,500
N 562,450
E 1,346,350

PROPOSED
MATHEMATICS
AND
ATHLETICS
COMPLEX

EXISTING
MATHEMATICS
AND
ATHLETICS
COMPLEX

PROP. WALK TO MEET
PHASE 1 WALK FOR
LINE AND GRADE

FOREST CONSERVATION EASEMENT
PLAT NO. 19C

STREAM BUFF

CAMPUS DRIVE

GRAPHIC SCALE
30 0 15 30 60
(IN FEET) 1 inch = 30ft.

PAVING, STRIPING & SIGNAGE PLAN – PHASE 2

SCALE: 1"=30'

LEGEND

- PROPERTY LINE
- AREA OF PROPOSED WORK
- APPROXIMATE LIMITS OF CONCRETE WALK
- APPROXIMATE LIMITS OF LIGHT DUTY PAVING
- APPROXIMATE LIMITS OF HEAVY DUTY PAVING
- APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT
- APPROXIMATE LIMITS OF ENVIRONMENTAL BUFFER AREA

CONTRACTOR NOTE:
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Rev:	Date:	Description:	By:
1	10/05/21	ADD INTERNAL SIDEWALK TO BUILDING	ECS
2			
3			
4			
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Tax Map-Grid: 35-6	Zoning: POR & NT

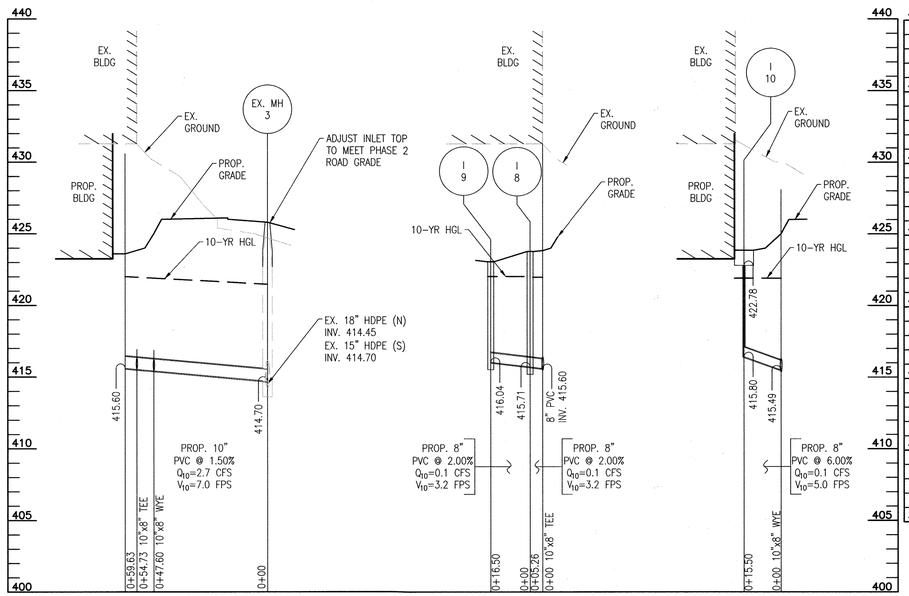
Sheet Title:
PAVING, STRIPING & SIGNAGE PLAN PHASE 2

STATE OF MARYLAND · 33772 · PROFESSIONAL ENGINEER
10/5/21

Discipline Number: C1.14

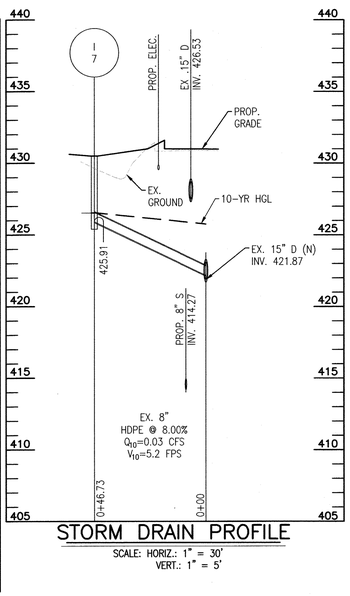
Sheet Number: 14 OF 53

SDP-21-028



STORM DRAIN PROFILE

SCALE: HORIZ.: 1" = 30'
VERT.: 1" = 5'



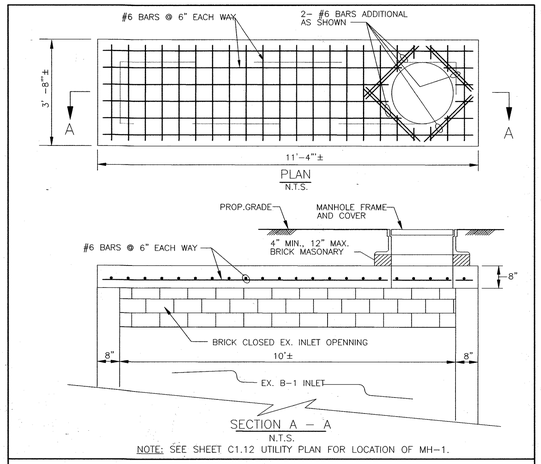
STORM DRAIN PROFILE

SCALE: HORIZ.: 1" = 30'
VERT.: 1" = 5'

STORM DRAIN STRUCTURE SCHEDULE – PHASE 2

NO.	TYPE	SIZE IN	ELEV. IN	SIZE OUT	ELEV. OUT	TOP ELEV.	REFERENCES/HOWARD COUNTY STD. DETAIL	COORDINATES NORTHING	COORDINATES EASTING
M-1	INLET CONVERSION TO 48" MANHOLE	15", 18"	411.37, 411.12	EX 18"	410.87	420.00	G-5.12	E 562,794.29	N 1,346,912.02
M-3	48" STANDARD PRECAST MANHOLE	8", 15"	415.56, 415.56	18"	415.31	425.79*	G-5.12	N 562,641.87	E 1,346,898.56
I-4	TYPE "S" COMBO INLET	–	–	15"	413.22	419.70	D-4.26	N 562,780.66	E 1,346,930.32
I-5	TYPE 'S' COMBO INLET	15"	420.87	15"	420.62	429.57*	D-4.26	N 562,557.51	E 1,346,900.32
I-7	TYPE 'D' INLET	–	–	8"	425.91	430.50	D-4.11	N 562,530.62	E 1,346,852.64
I-8	TYPE 'D' INLET	8"	415.71	8"	415.71	423.77	D-4.11	N 562,634.26	E 1,346,844.10
I-9	TYPE 'D' INLET	–	–	8	416.04	423.05	D-4.11	N 562,621.72	E 1,346,834.30
I-10	TRENCH DRAIN	–	–	8"	415.80	423.85	SEE DETAIL ON SHT C1.16B	N 562,648.90	E1,346,839.75
I-11	TRENCH DRAIN	–	–	8"	429.50	437.88	SEE DETAIL ON SHT C1.16B	N 562,779.94	E1,346,712.30
I-12	TRENCH DRAIN	–	–	8"	419.74	422.50	SEE DETAIL ON SHT C1.16B	N 562,826.16	E 1,346,765.13
R-4	TYPE 'D' INLET	4"	417.58	12"	417.36	GRATE INV. 422.00	D-4.11	N 562,857.40	E 1,346,686.87
R-5	TYPE 'D' INLET	4", 4", 12"	412.60, 411.60, 411.60	15"	411.35	GRATE INV. 416.00	D-4.11	N 562,865.09	E 1,346,734.33
EW-1	TYPE 'C' ENDWALL	15"	410.23	–	–	–	D-5.21	N 562,872.88	E 1,346,812.08

*TOPS OF STRUCTURES TO BE RAISED FROM PHASE 1 ELEVATIONS.



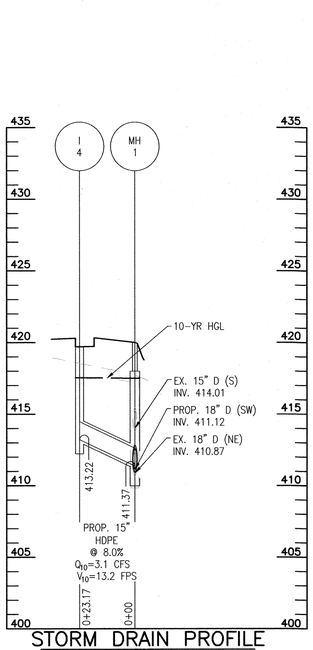
MANHOLE 1 OVER EXISTING INLET DETAIL SCALE: N.T.S.

SEWER PIPE SCHEDULE

ITEM	UNIT	ESTIMATE	AS-BUILT
6" PVC (SDR-35)	L.F.	53	

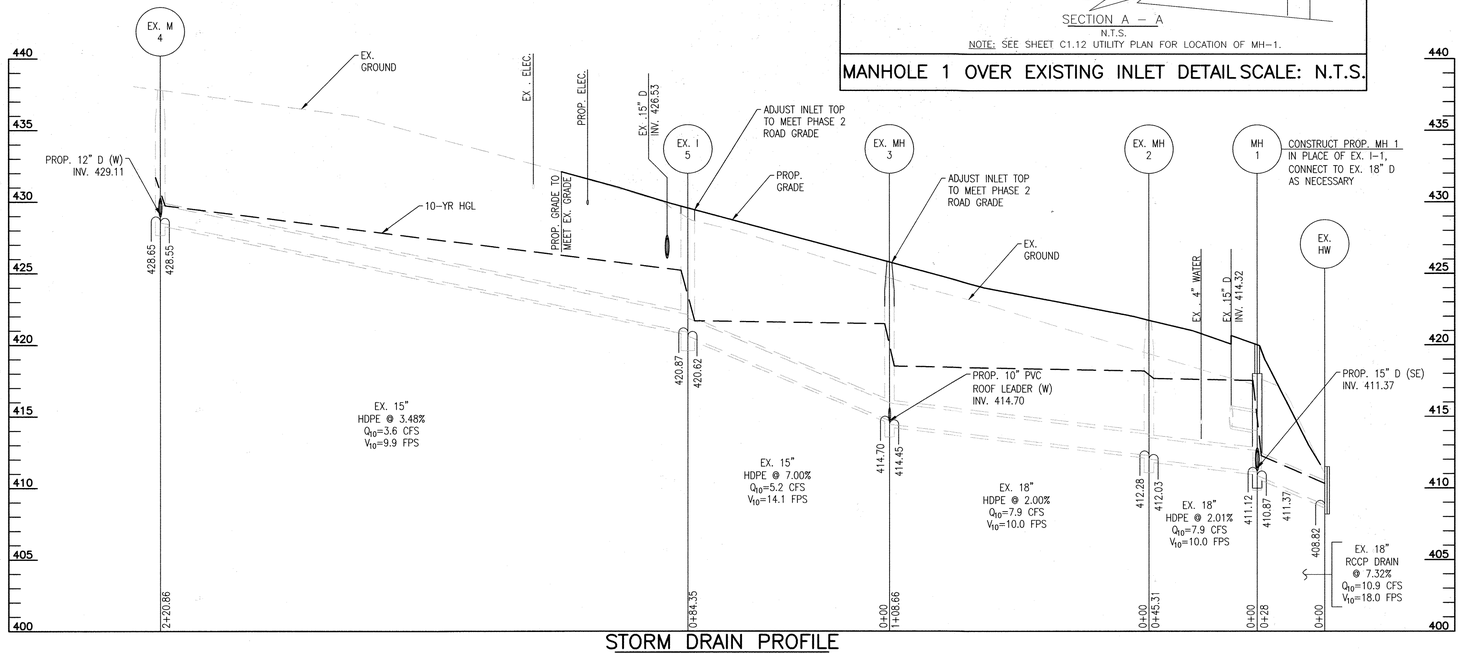
STORM DRAIN PIPE SCHEDULE – PHASE 2

SIZE	MATERIAL	LENGTH
8"	PVC	341 LF
12"	HDPE CLASS IV	72 LF
15"	HDPE CLASS IV	79 LF



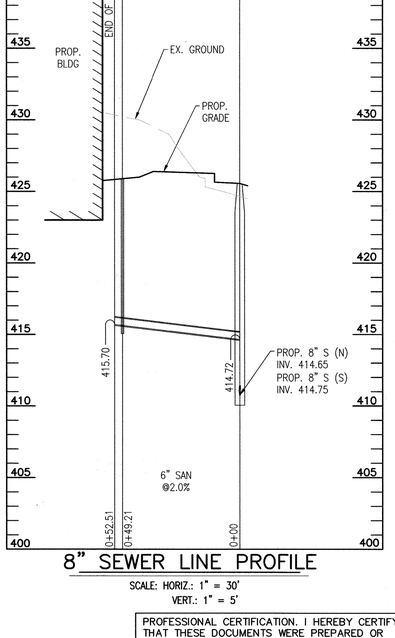
STORM DRAIN PROFILE

SCALE: HORIZ.: 1" = 30'
VERT.: 1" = 5'



STORM DRAIN PROFILE

SCALE: HORIZ.: 1" = 30'
VERT.: 1" = 5'



8" SEWER LINE PROFILE

SCALE: HORIZ.: 1" = 30'
VERT.: 1" = 5'

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. 33772 EXPIRATION DATE: 06/16/2023

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APPROVED: Howard County Department of Planning & Zoning

Director — Date 9-8-21

Chief, Division of Land Development — Date 9/7/21

Chief, Development Engineering Division — Date 8/18/21

Rev:	Date:	Description:	By:
1			
2			
3			
4			
5			

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

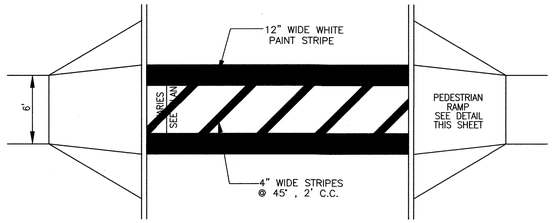
Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date: 04-30-2021	Scale: AS SHOWN
Drawn By: F.F.W.	Designed By: F.F.W.
Approved By: N.A.B.	Project No: 271906728
Tax Map-Grid: 35-6	Zoning: POR & NT

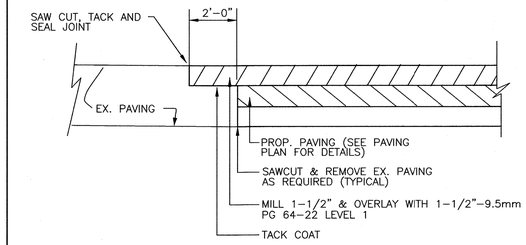
Sheet Title:
UTILITY PROFILES PHASE 2

Discipline Number: C1.15

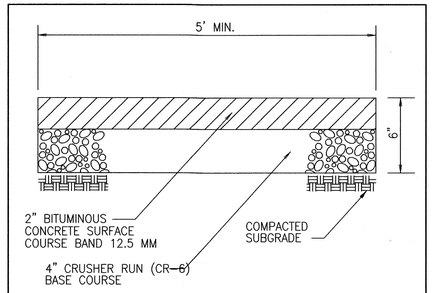
Sheet Number: 15 OF 53



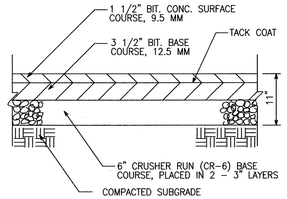
1 CROSSWALK PAINT STRIPING SCALE: N.T.S.



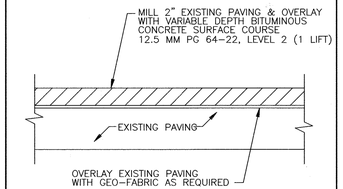
3 PAVING TIE-IN DETAIL SCALE: N.T.S.



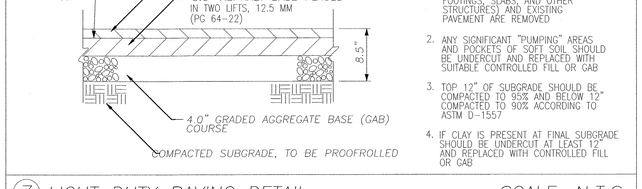
4 BITUMINOUS CONC. WALK SCALE: N.T.S.



5 HEAVY DUTY ASPHALT PAVING DETAIL SCALE: N.T.S.

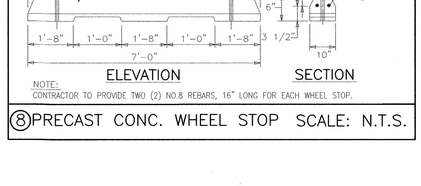


6 MILL & OVERLAY SCALE: N.T.S.



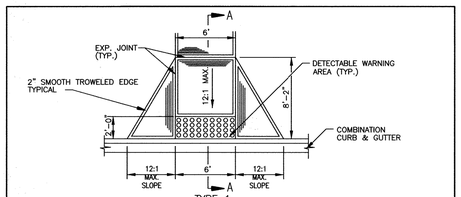
NOTES:
1. PROOFROLLING TO BE PREFORMED AFTER THE BUILDING (INCLUDING FOOTINGS, SLABS, AND OTHER STRUCTURES) AND EXISTING PAVEMENT ARE REMOVED
2. ANY SIGNIFICANT "PUMPING" AREAS AND POCKETS OF SOFT SOIL SHOULD BE UNDERCUT AND REPLACED WITH SUITABLE CONTROLLED FILL OR GAB
3. TOP 12" OF SUBGRADE SHOULD BE COMPACTED TO 95% AND BELOW 12" COMPACTED TO 90% ACCORDING TO ASTM D-1557
4. IF CLAY IS PRESENT AT FINAL SUBGRADE SHOULD BE UNDERCUT AT LEAST 12" AND REPLACED WITH CONTROLLED FILL OR GAB

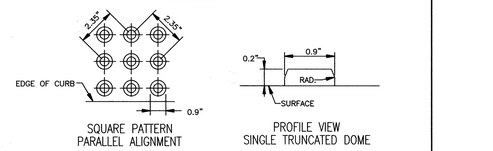
7 LIGHT DUTY PAVING DETAIL SCALE: N.T.S.



NOTE: CONTRACTOR TO PROVIDE TWO (2) NO.8 REBARS, 16" LONG FOR EACH WHEEL STOP.

8 PRECAST CONC. WHEEL STOP SCALE: N.T.S.



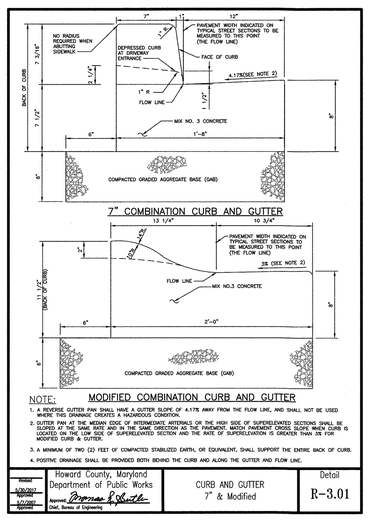


DETECTABLE WARNING DETAIL

NOTES:
1. SURFACE TEXTURE OF RAMPS SHALL BE COARSE BROOMING OR NON SKID SURFACE.
2. DETECTABLE WARNINGS SHALL BE SQUARE PATTERN, PARALLEL ALIGNMENT.
3. SEE DEPRESSED CURB AND GUTTER AT PEDESTRIAN RAMP DETAIL 9 FOR SECTION A-A.
4. SEE PAVING PLAN, SHEET C4.00, FOR TYPE 1 RAMP TAPERED CURB LENGTHS.

1. A DETECTABLE WARNING IS A STANDARDIZED SURFACE FEATURE BUILT IN OR APPLIED TO WALKING SURFACES (OR OTHER ELEMENTS) TO WARN VISUALLY IMPAIRED PEOPLE OF HAZARDS ON A CIRCULATION PATH.
2. DETECTABLE WARNINGS SHALL CONSIST OF RAISED TRUNCATED DOMES WITH NOMINAL DIMENSIONS AS SHOWN AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT. THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE INTEGRAL WITH THE WALKING SURFACE.
3. DETECTABLE WARNING AREAS SHALL EXTEND 24" BACK FROM THE REAR OF THE CURB WITHIN THE RAMP ITSELF. THEY SHALL NOT BE USED ELSEWHERE ON A PEDESTRIAN RAMP.
4. DETECTABLE WARNINGS MAY BE APPLIED USING BRICK OR BLOCK PAVERS OR EXTRUDED TINTED CONCRETE.
5. PAVERS MAY BE SPLAYED AS REQUIRED TO MATCH A CURVED CURB RADIUS.
6. COMMERCIAL PRODUCTS MAY VARY IN SPACING, DIMENSION AND CONFIGURATION OF DOMES. CERTIFICATION OF COMPLIANCE WITH CURRENT A.D.A.A.G. (AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINE REQUIREMENTS) SHALL BE REQUIRED OF ALL PRODUCTS BEFORE INSTALLATION.
7. MANUFACTURED PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

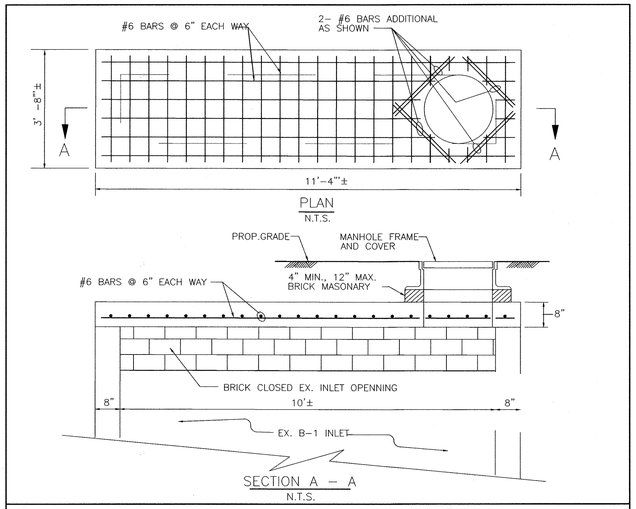
9 PEDESTRIAN RAMPS SCALE: N.T.S.



MODIFIED COMBINATION CURB AND GUTTER

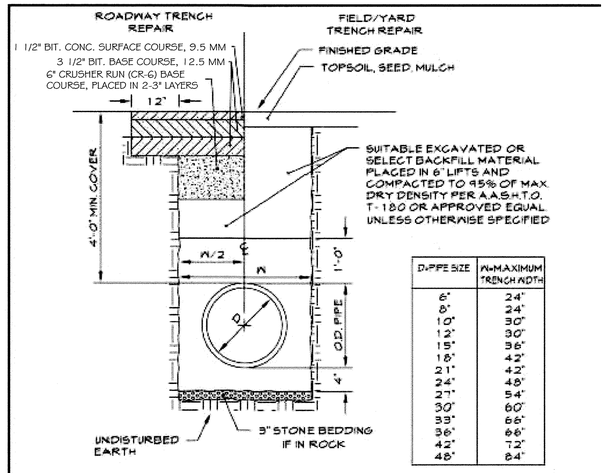
NOTE:
1. A REVERSE GUTTER PAN SHALL HAVE A GUTTER SLOPE OF 4.17% AWAY FROM THE FLOW LINE, AND SHALL NOT BE USED WHERE THIS DRAINAGE CREATES A HAZARDOUS CONDITION.
2. GUTTER PAN AT THE MEDIAN EDGE OF INTERMEDIATE ARTERIALS OR THE HIGH SIDE OF SUPERELEVATED SECTIONS SHALL BE SLOPED AT THE SAME RATE AND IN THE SAME DIRECTION AS THE PAVEMENT. MATCH PAVEMENT CROSS SLOPE. WHEN CURB IS LOCATED ON THE LOW SIDE OF SUPERELEVATED SECTION AND THE RATE OF SUPERELEVATION IS GREATER THAN 3% FOR MODIFIED CURB & GUTTER.
3. A MINIMUM OF TWO (2) FEET OF COMPACTED STABILIZED EARTH, OR EQUIVALENT, SHALL SUPPORT THE ENTIRE BACK OF CURB.
4. POSITIVE DRAINAGE SHALL BE PROVIDED BOTH BEHIND THE CURB AND ALONG THE GUTTER AND FLOW LINE.

Revised 4/26/2007	Howard County, Maryland Department of Public Works	CURB AND GUTTER 7" & Modified	Detail R-3.01
Revised 1/1/2008	Approved: Director, Bureau of Engineering		
Approved 1/1/2008	Approved: Chief, Bureau of Engineering		



11 MANHOLE OVER EXISTING INLET DETAIL SCALE: N.T.S.

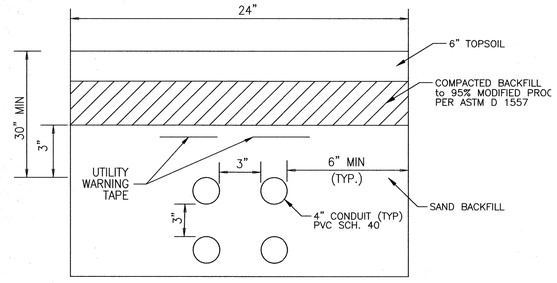
G-5.12 P.626?



PIPE SIZE	W=MAXIMUM TRENCH WIDTH
6"	24"
8"	24"
10"	30"
12"	30"
15"	36"
18"	42"
21"	42"
24"	48"
27"	54"
30"	60"
33"	66"
36"	66"
42"	72"
48"	84"

12 TRENCH DETAIL

G-2.11 P.618?



CONDUIT TRENCH DETAIL
SCALE: N.T.S.

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APPROVED: Howard County Department of Planning & Zoning

Director — Date 9-8-21
Chief, Division of Land Development — Date 9/7/21
Chief, Development Engineering Division — Date 8.18.21

Rev:	Date:	Description:	By:
1			
2			
3			
4			
5			

Prepared For and Owner:
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10901 Little Patuxent Parkway
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ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

Date: 04-30-2021		Scale: AS SHOWN	
Drawn By: F.F.W.		Designed By: F.F.W.	
Approved By: N.A.B.		Project No: 271906728	
Tax Map-Grid: 35-6	Zoning: POR & NT		

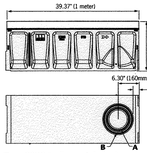
Sheet Title: SITE DETAILS

Discipline Number: C1.16
Sheet Number: 16 OF 53

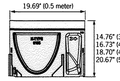
ACO DRAIN

KlassikDrain - K300 Galvanized steel edge rail channel system

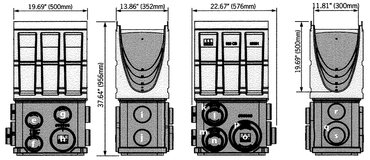
One meter channel



Half meter channel



Type 903G In-line catch basin



Total capacity = 15.59 gallons

Outlet flow rates

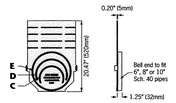
Outlet	Product	Outlet size (Sch. 40)	Invert Depth	GPM	CFS
A	Bottom outlet - K3-00	6" round	11.81"	421	0.94
A	Bottom outlet - K3-040	6" round	19.69"	544	1.21
B	Bottom outlet - K3-00	8" round	11.81"	748	1.67
B	Bottom outlet - K3-040	8" round	19.69"	966	2.15
C	End outlet - K3-00	6" round	11.81"	364	0.81
C	End outlet - K3-40	6" round	19.69"	500	1.11
D	End outlet - K3-10	8" round	13.78"	681	1.52
D	End outlet - K3-40	8" round	19.69"	863	1.92
E	End outlet - K3-20	10" round	15.75"	1116	2.49
E	End outlet - K3-40	10" round	19.69"	1304	2.91
F	Type K3-903G	4" round	29.80"	287	0.64
G	Type K3-903G	4" round	36.29"	319	0.71
H	Type K3-903G	4" round	28.22"	279	0.62
I	Type K3-903G	6" round	36.29"	707	1.57
J	Type K3-903G	4" round	28.37"	280	0.62
K	Type K3-903G	4" round	34.87"	312	0.70
L	Type K3-903G	6" round	29.15"	626	1.40
M	Type K3-903G	4" round	28.59"	281	0.63
N	Type K3-903G	6" round	36.28"	707	1.57
O	Type K3-903G	4" round	35.72"	316	0.70
P	Type K3-903G	6" round	35.72"	701	1.56
Q	Type K3-903G	8" round	36.28"	1237	2.76
R	Type K3-903G	6" round	34.78"	690	1.54
S	Type K3-903G	4" round	27.65	276	0.61
T	Type K3-903G	4" round	34.36	310	0.69

Note: These are the pipe flow rates at the specified outlet, **NOT** channel flow rates. "Catch basin flow rates are without trash bucket - using trash bucket reduces flow.

Type 904G In-line catch basin

Notes:
1. Riser can be cut down in 1" (25mm) increments.
2. Maximum capacity including riser 27.82 gallons.
3. Add 12" (300mm) to all heights if using riser.
4. Outlet flow rates will be higher due to increased depth - contact ACO Sales Office for more details.

End Cap



ACO Specification Information

April 2018

www.ACODrain.us

ACO DRAIN

KlassikDrain - K300 Galvanized steel edge rail channel system

Description	Part No.	Invert Inches[D]	Invert mm[D]	Weight Lbs.
K3-00 Neutral channel - 39.37" (1m)[D]	**76041**	**11.81**	**300**	**132.6**
K3-1 Sloped channel - 39.37" (1m)	**76001**	12.01	305	132.6
K3-2 Sloped channel - 39.37" (1m)	**76002**	12.20	310	133.8
K3-3 Sloped channel - 39.37" (1m)	**76003**	12.40	315	135.0
K3-4 Sloped channel - 39.37" (1m)	**76004**	12.60	320	136.2
K3-5 Sloped channel - 39.37" (1m)[D]	**76005**	12.80	325	137.4
K3-6 Sloped channel - 39.37" (1m)	**76006**	12.99	330	138.6
K3-7 Sloped channel - 39.37" (1m)	**76007**	13.19	335	139.8
K3-8 Sloped channel - 39.37" (1m)	**76008**	13.39	340	141.0
K3-9 Sloped channel - 39.37" (1m)	**76009**	13.58	345	142.2
K3-10 Sloped channel - 39.37" (1m)[D]	**76010**	13.78	350	143.4
K3-010 Neutral channel - 39.37" (1m)[D]	**76043**	**13.78**	**350**	**143.4**
K3-0103 Neutral channel - 19.69" (0.5m)[D]	**76044**	**13.78**	**350**	**75.3**
K3-11 Sloped channel - 39.37" (1m)	**76011**	13.98	355	144.6
K3-12 Sloped channel - 39.37" (1m)	**76012**	14.17	360	145.8
K3-13 Sloped channel - 39.37" (1m)	**76013**	14.37	365	147.0
K3-14 Sloped channel - 39.37" (1m)	**76014**	14.57	370	148.2
K3-15 Sloped channel - 39.37" (1m)[D]	**76015**	14.76	375	149.4
K3-16 Sloped channel - 39.37" (1m)	**76016**	14.96	380	150.6
K3-17 Sloped channel - 39.37" (1m)	**76017**	15.16	385	151.8
K3-18 Sloped channel - 39.37" (1m)	**76018**	15.35	390	153.0
K3-19 Sloped channel - 39.37" (1m)	**76019**	15.55	395	154.2
K3-20 Sloped channel - 39.37" (1m)[D]	**76020**	15.75	400	155.4
K3-020 Neutral channel - 39.37" (1m)[D]	**76045**	**15.75**	**400**	**155.4**
K3-0203 Neutral channel - 19.69" (0.5m)[D]	**76046**	**15.75**	**400**	**82.3**
K3-21 Sloped channel - 39.37" (1m)	**76021**	15.94	405	156.7
K3-22 Sloped channel - 39.37" (1m)	**76022**	16.14	410	157.9
K3-23 Sloped channel - 39.37" (1m)	**76023**	16.34	415	159.1
K3-24 Sloped channel - 39.37" (1m)	**76024**	16.54	420	160.3
K3-25 Sloped channel - 39.37" (1m)[D]	**76025**	16.73	425	161.5
K3-26 Sloped channel - 39.37" (1m)	**76026**	16.93	430	162.7
K3-27 Sloped channel - 39.37" (1m)	**76027**	17.13	435	163.9
K3-28 Sloped channel - 39.37" (1m)	**76028**	17.32	440	165.1
K3-29 Sloped channel - 39.37" (1m)	**76029**	17.52	445	166.3
K3-30 Sloped channel - 39.37" (1m)[D]	**76030**	17.72	450	167.5
K3-030 Neutral channel - 39.37" (1m)[D]	**76047**	**17.72**	**450**	**167.5**
K3-0303 Neutral channel - 19.69" (0.5m)[D]	**76048**	**17.72**	**450**	**89.5**
K3-31 Sloped channel - 39.37" (1m)	**76031**	17.91	455	168.7
K3-32 Sloped channel - 39.37" (1m)	**76032**	18.11	460	169.9
K3-33 Sloped channel - 39.37" (1m)	**76033**	18.31	465	171.1
K3-34 Sloped channel - 39.37" (1m)	**76034**	18.50	470	172.3
K3-35 Sloped channel - 39.37" (1m)[D]	**76035**	18.70	475	173.5
K3-36 Sloped channel - 39.37" (1m)	**76036**	18.90	480	174.7
K3-37 Sloped channel - 39.37" (1m)	**76037**	19.09	485	175.9
K3-38 Sloped channel - 39.37" (1m)	**76038**	19.29	490	177.1
K3-39 Sloped channel - 39.37" (1m)	**76039**	19.49	495	178.3
K3-40 Sloped channel - 39.37" (1m)[D]	**76040**	19.69	500	179.5
K3-040 Neutral channel - 39.37" (1m)[D]	**76049**	**19.69**	**500**	**179.5**
K3-0403 Neutral channel - 19.69" (0.5m)[D]	**76050**	**19.69**	**500**	**97.7**
K3-903G In-line catch basin - 19.69" (0.5m)[D]	**94614**	37.40	950	88.0
K3-904G In-line catch basin - 19.69" (0.5)[D]	**94635**	37.40	950	98.0
K3-Series 600 Optional plastic riser	**99902**	-	-	10.0
Foul air trap - fits both 900 & 600 series basins	**90854**	-	-	1.2
Universal end cap	**96826**	15.71	399	2.5
K3installation device	**97479**	-	-	4.9
Grate removal tool	**01318**	-	-	0.3
K3QuickLok locking bar	**10458**	-	-	0.7

Notes:
1. This channel offers a bottom knockout feature; 6" & 8" round
2. Inverts shown are for the male end; for female invert depth subtract 5mm (–0.2") from the male invert (except for neutral channels, where it will be same as male invert). To calculate the overall channel depth add 20mm (–0.8") to invert depth.
3. This catch basin kit includes a polymer concrete top, removable Quicklok locking bar, trash bucket and plastic base. Select an appropriate grate.
4. This catch basin kit includes a polymer concrete top, removable Quicklok locking bar, deep trash bucket, plastic riser and plastic base. Select an appropriate grate.

Specifications

General
The surface drainage system shall be ACO Drain K300 complete with gratings secured with 'QuickLok' locking as manufactured by ACO, Inc. or approved equal.

Materials
The trench system bodies shall be manufactured from polyester polymer concrete with the minimum properties as follows:

Compressive strength:	14,000 psi
Flexural strength:	4,000 psi
Water absorption	0.07%
Frost proof	YES
Salt proof	YES
Dilute acid and alkali resistant	YES

The nominal clear opening shall be 12" (300mm) with overall width of 14.17" (360mm). Pre-cast units shall be manufactured with either an invert slope of 0.5% or with neutral invert and have a wall thickness of at least 0.50" (13mm). Each unit will feature a partial radius in the trench bottom and a male to female interconnecting end profile. Units shall have horizontal cast in anchoring keys on the outside wall to ensure maximum mechanical bond to the surrounding bedding material and pavement surface. The galvanized steel edge rail will be integraly cast in by the manufacturer to ensure maximum homogeneity between polymer concrete body and edge rail. Each edge rail shall be at least 3/32" (4mm) thick.

Grates
Grates shall be specified. See separate ACO Spec Info grate sheets for details. After removal of grates and 'QuickLok' bar there shall be uninterrupted access to the trench to aid maintenance.

Installation
The trench drain system shall be installed in accordance with the manufacturer's installation instructions and recommendations.

ACO, Inc.
Northeast Sales Office
9470 Pinecone Drive
Mentor, OH 44060
Tel: (440) 639-7230
Toll free: (800) 543-4764
Fax: (440) 639-7235

West Sales Office
825 W. Beechcraft St.
Casa Grande, AZ 85122
Tel: (520) 421-9988
Toll Free: (888) 490-9552
Fax: (520) 421-9899

Southeast Sales Office
4211 Pleasant Road
Fort Mill, SC 29708
Toll free: (800) 543-4764
Fax: (803) 802-1063

Electronic Contact:
info@ACODrain.us
www.ACODrain.us

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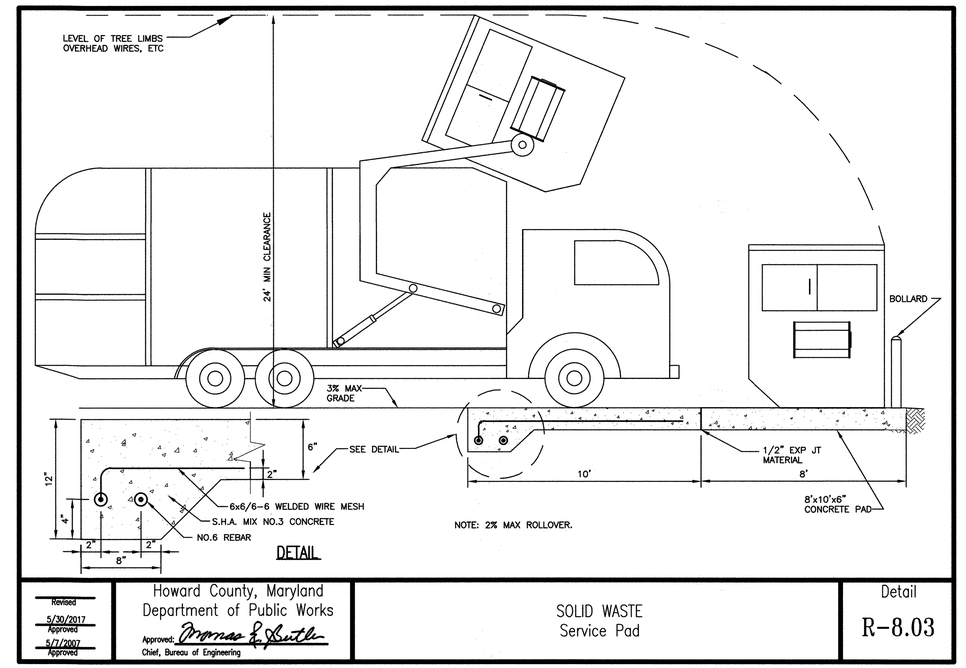
ACO Specification Information

April 2018

www.ACODrain.us



Revised	Howard County, Maryland Department of Public Works		Detail
5/30/2017 Approved	Approved: Chief, Bureau of Engineering	SOLID WASTE Service Pad	R-8.03
5/1/2007 Approved			

KCI TECHNOLOGIES
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ARCHITECTS + PLANNERS
1040 Hull Street, Suite 100
Baltimore, MD 21230
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APPROVED: Howard County Department of Planning & Zoning

Director	9-8-21 Date
Chief, Division of Land Development	9/7/21 Date
Chief, Development Engineering Division	8.27.21 Date

Rev:	Date:	Description:	By:
1			
2			
3			
4			
5			

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

Date:	04-30-2021	Scale:	AS SHOWN
Drawn By:	F.F.W.	Designed By:	F.F.W.
Approved By:	N.A.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

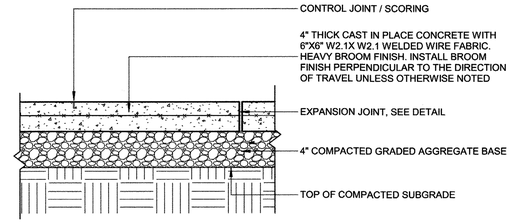
Sheet Title: **SITE DETAILS**

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. 33772 EXPIRATION DATE: 06/16/2023

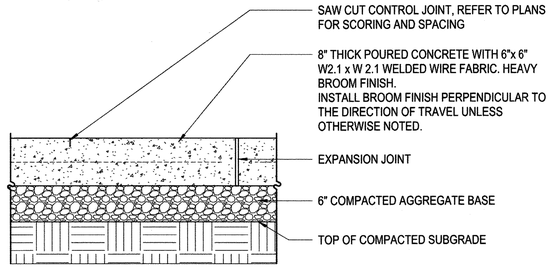
6/28/21

Discipline Number: C1.16A

Sheet Number: 17 OF 53



1 CONCRETE PAVING-PEDESTRIAN
1" = 1'-0"



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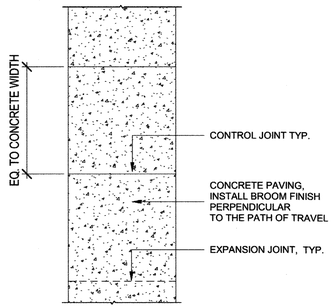

3 CONCRETE SIDEWALK
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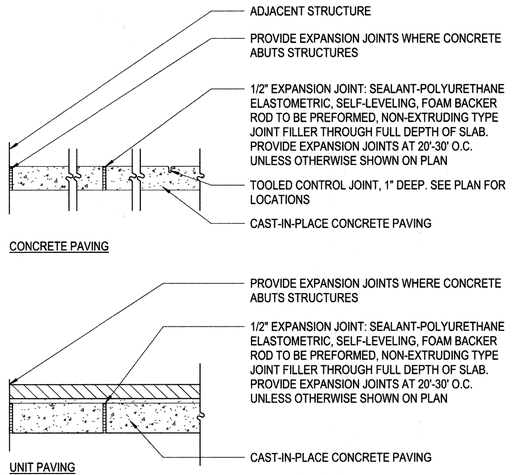

4 PAVING JOINTS
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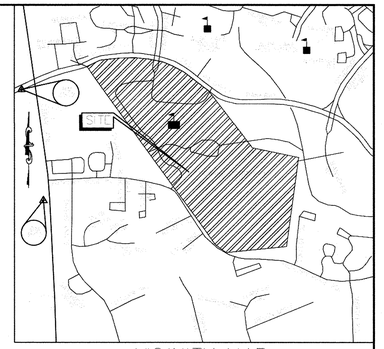

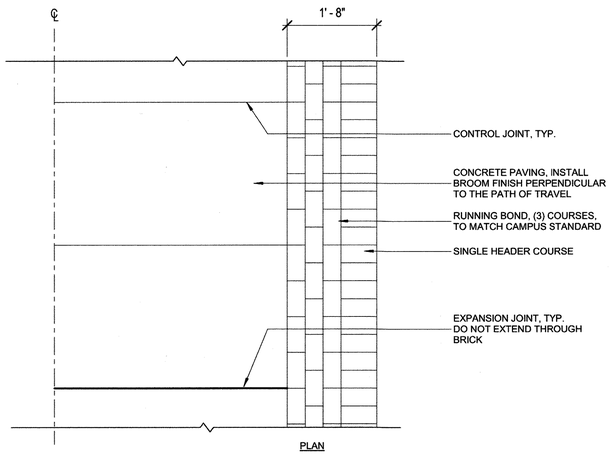

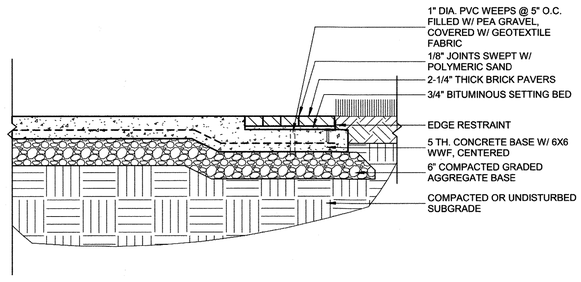

5 BRICK PAVING - PEDESTRIAN
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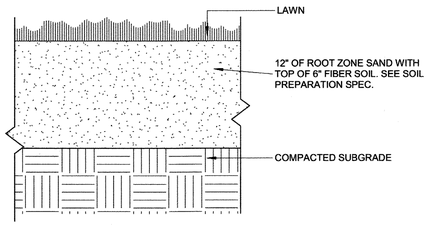
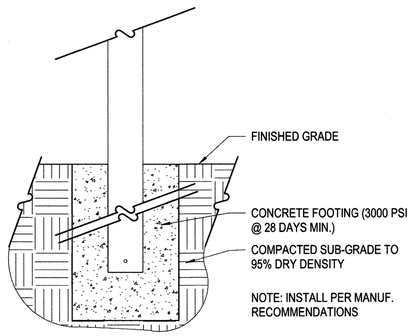
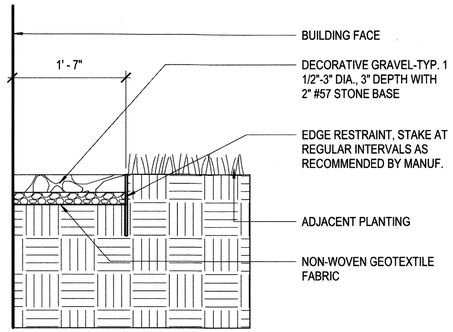


6 REINFORCED TURF
1 1/2" = 1'-0"



9 UTILITY BOLLARD Copy 1
1" = 1'-0"



7 GRAVEL DRIP EDGE
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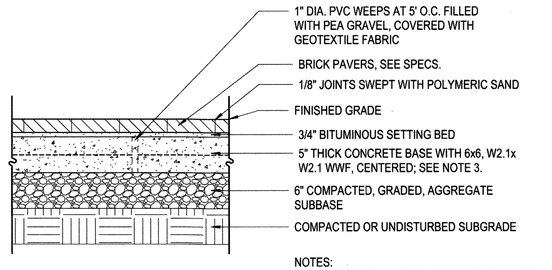

10 BRICK PAVING-PEDESTRIAN
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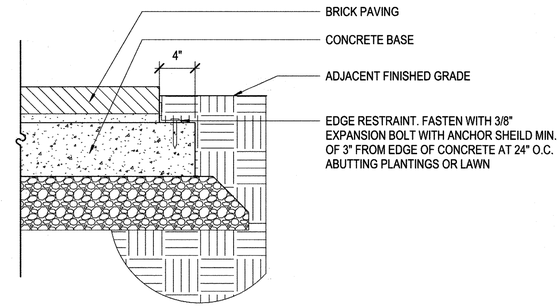

8 METAL EDGE RESTRAINT
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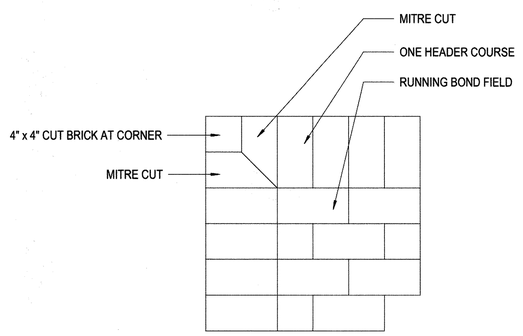

11 BRICK PAVING @ CORNER
1 1/2" = 1'-0"

KCI TECHNOLOGIES
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APPROVED: Howard County Department of Planning & Zoning

Director — Date 9-8-21
Chief, Division of Land Development — Date 9/7/21
Chief, Development Engineering Division — Date 8.18.21

Rev:	Date:	Description:	By:

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

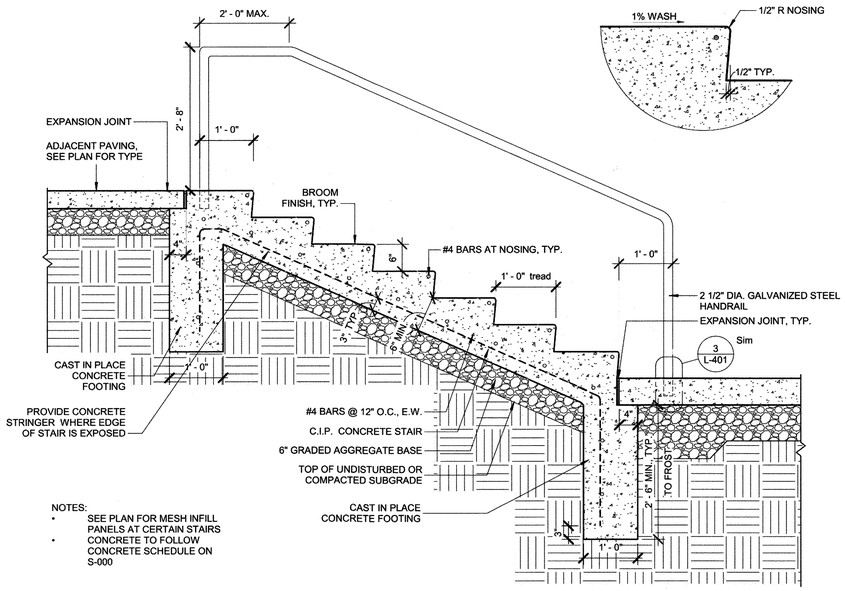
Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date:	03/24/2021	Scale:	As indicated
Drawn By:	A.T.	Designed By:	A.R. / A.T.
Approved By:	J.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

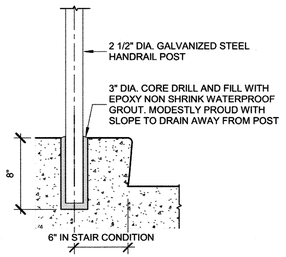
Sheet Title: **HARDSCAPE DETAILS**

STATE OF MARYLAND — STEVEN BURKHART — 21135 — LANDSCAPE ARCHITECT — 6-28-21

Discipline Number: C1.17
Sheet Number: 18 OF 53



1 C.I.P. CONCRETE STAIR WITH TUBULAR HANDRAIL
3/4" = 1'-0"



2 HANDRAIL (TUBULAR) EMBEDMENT
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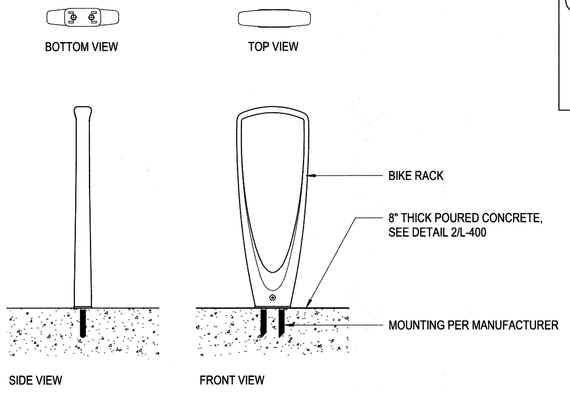
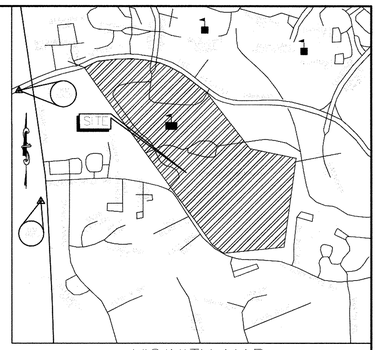
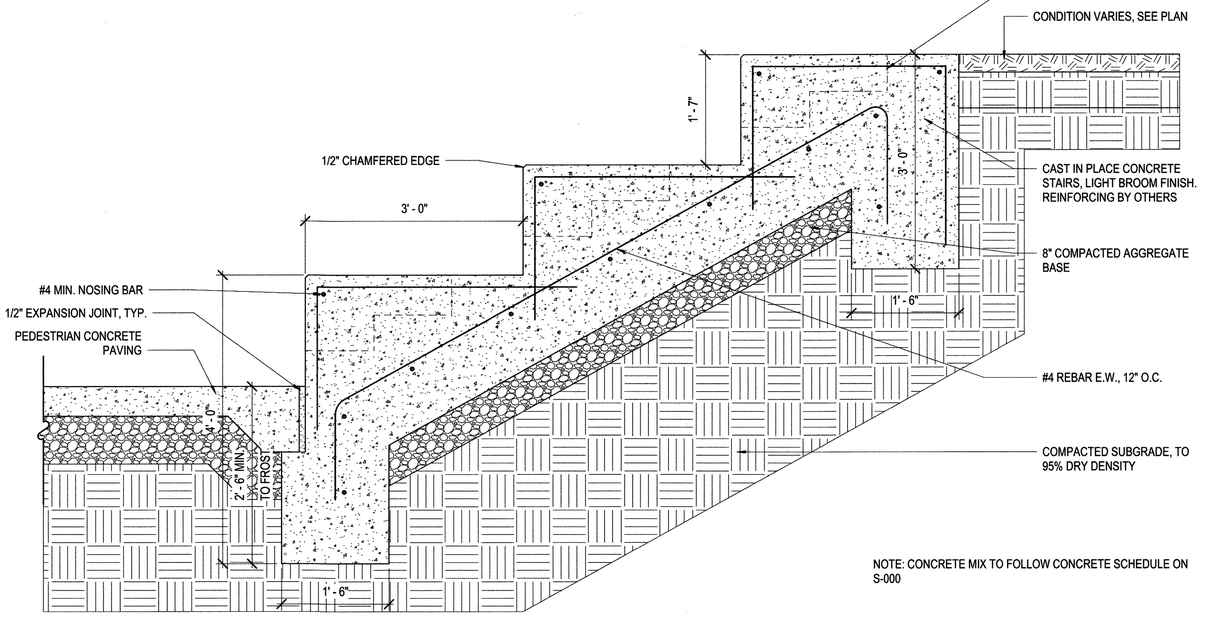
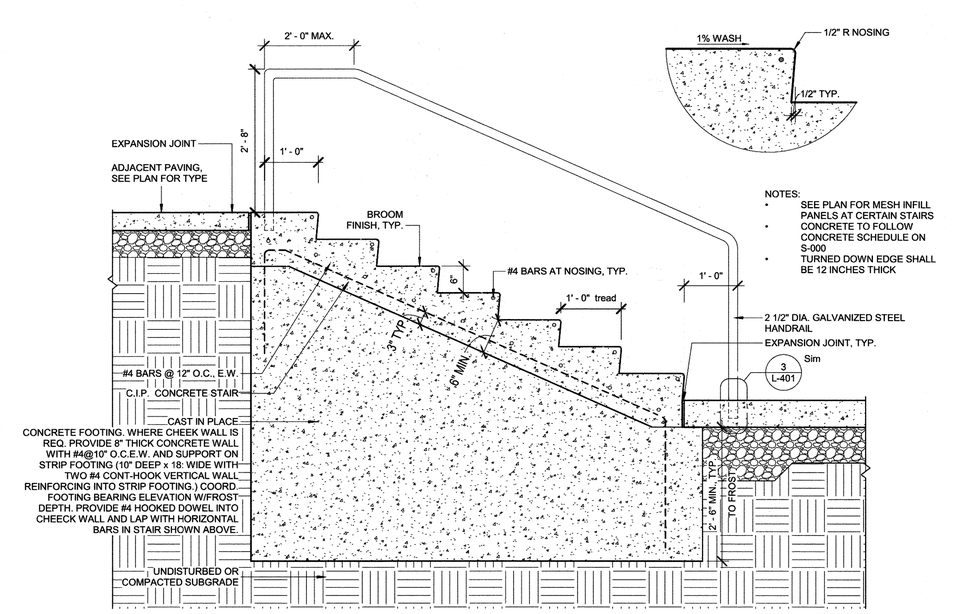


4 BIKE RACK
1" = 1'-0"





3 CONCRETE STADIUM SEATING
1" = 1'-0"



5 CONCRETE STAIRS AT EXPOSED EDGE
3/4" = 1'-0"

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11830 WEST MARKET PLACE SUITE F FULTON, MD 20759
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APPROVED: Howard County Department of Planning & Zoning

Director — Date 9-8-21
Chief, Division of Land Development — Date 9/7/21
Chief, Development Engineering Division — Date 8/18/21

Rev:	Date:	Description:	By:

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College -
MATHEMATICS & ATHLETICS COMPLEX
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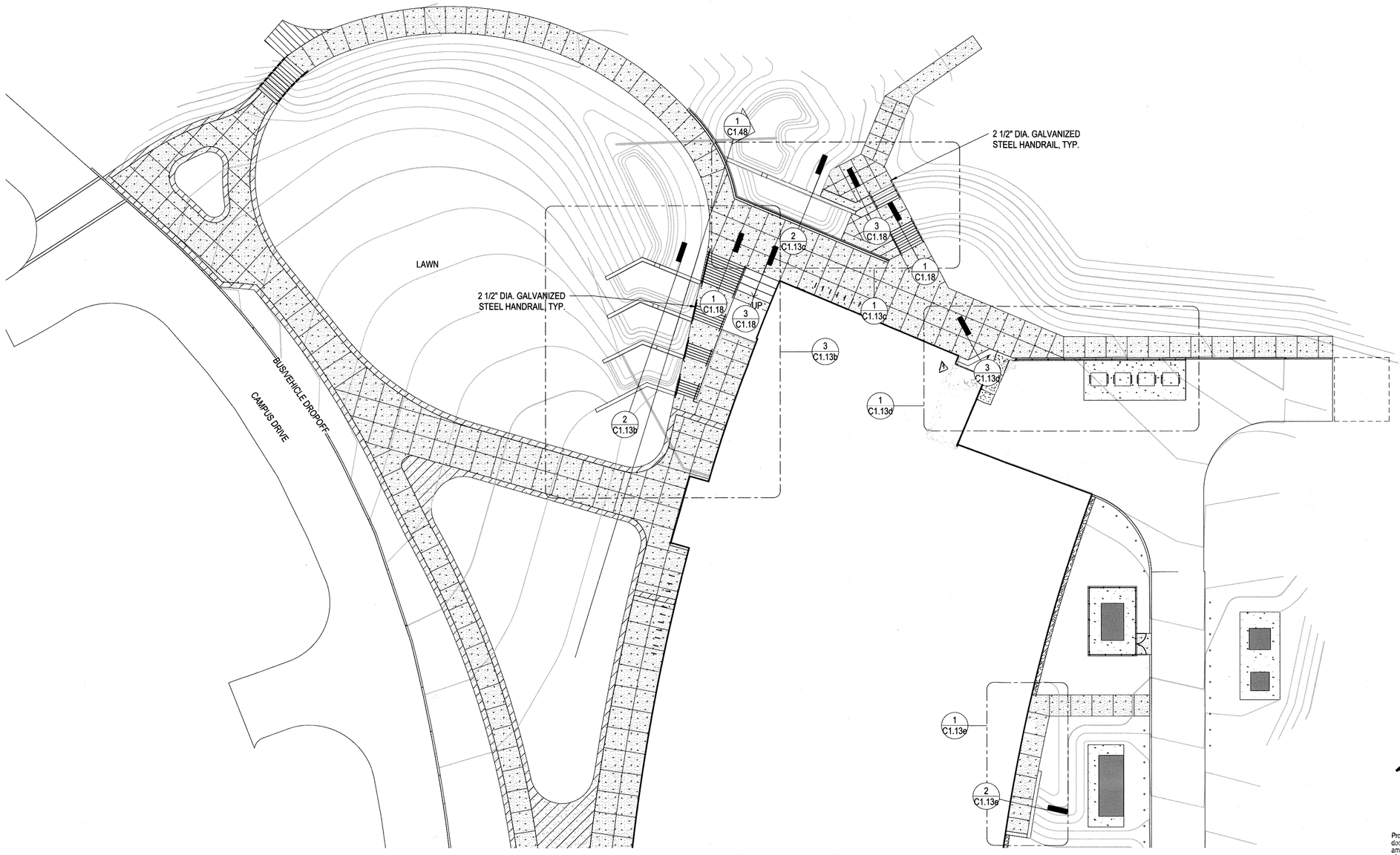
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date:	03/24/21	Scale:	As indicated
Drawn By:	A.T.	Designed By:	A.R. / A.T.
Approved By:	J.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

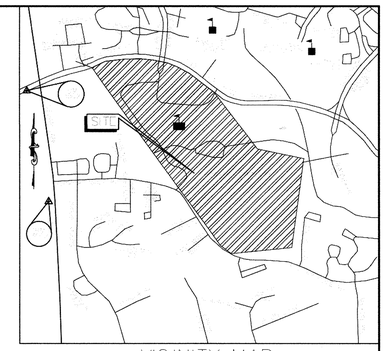
Sheet Title:
STAIR & RAILING DETAILS

STATE OF MARYLAND — 1136 — ROBERT BURNETT — LANDSCAPE ARCHITECT
6.25.21

Discipline Number: C1.18
Sheet Number: 19 OF 53



1 SITE WALL PLAN
1" = 20'-0"



VICINITY MAP
SCALE: 1" = 1000'
ADC MAP: 4934 GRID: K7

1

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. 33792, Expiration Date: 6/16/23

KCI TECHNOLOGIES
ENGINEERS
PLANNERS
SURVEYORS
CONSTRUCTION MANAGERS
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APPROVED: Howard County Department of Planning & Zoning

Director — Date 9-8-21

Chief, Division of Land Development — Date 9/2/21

Chief, Development Engineering Division — Date 8.18.21

Rev:	Date:	Description:	By:
1	10/05/21	ADD INTEGRAL STAIRWELL TO BUILDING	KCI

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College -
MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

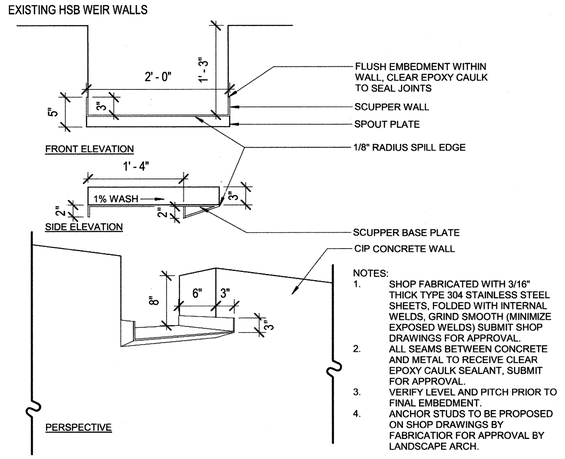
Date:	04/20/21	Scale:	1" = 20'-0"
Drawn By:	A.T.	Designed By:	A.R. / A.T.
Approved By:	J.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title:
SITE WALL PLAN

STATE OF MARYLAND
JOSEPH BURGESS
21336
REGISTERED
LANDSCAPE ARCHITECT
6.28.21

Discipline Number: C1.18A

Sheet Number: 20 OF 53



1 WALL SCUPPER
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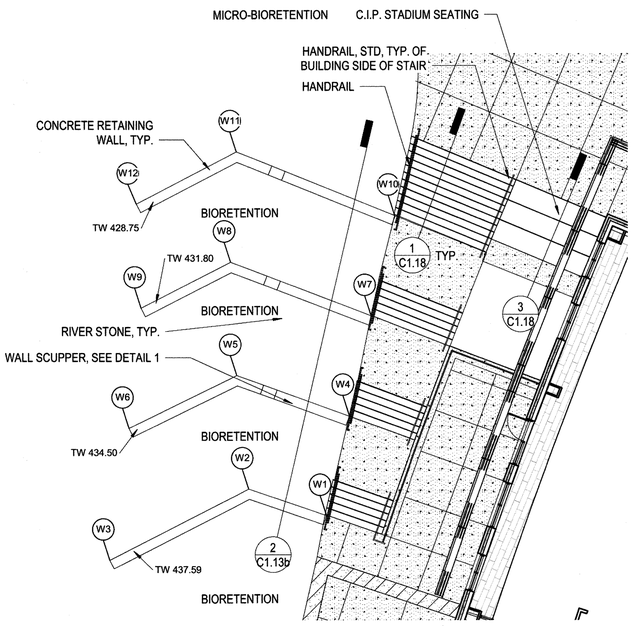
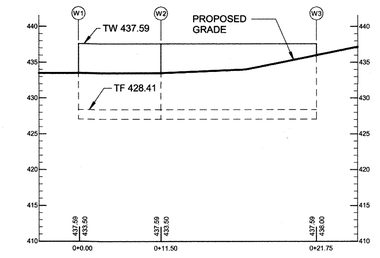


3 ENLARGED SITE WALL PLAN - NW STAIR
1" = 10'-0"



4 WALL PROFILE - NW STAIR WALL 1
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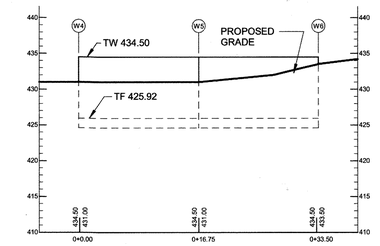
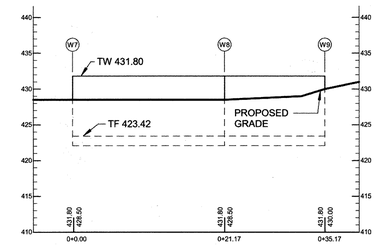
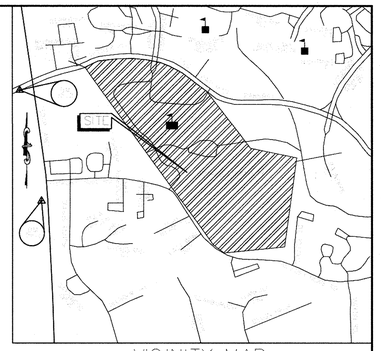


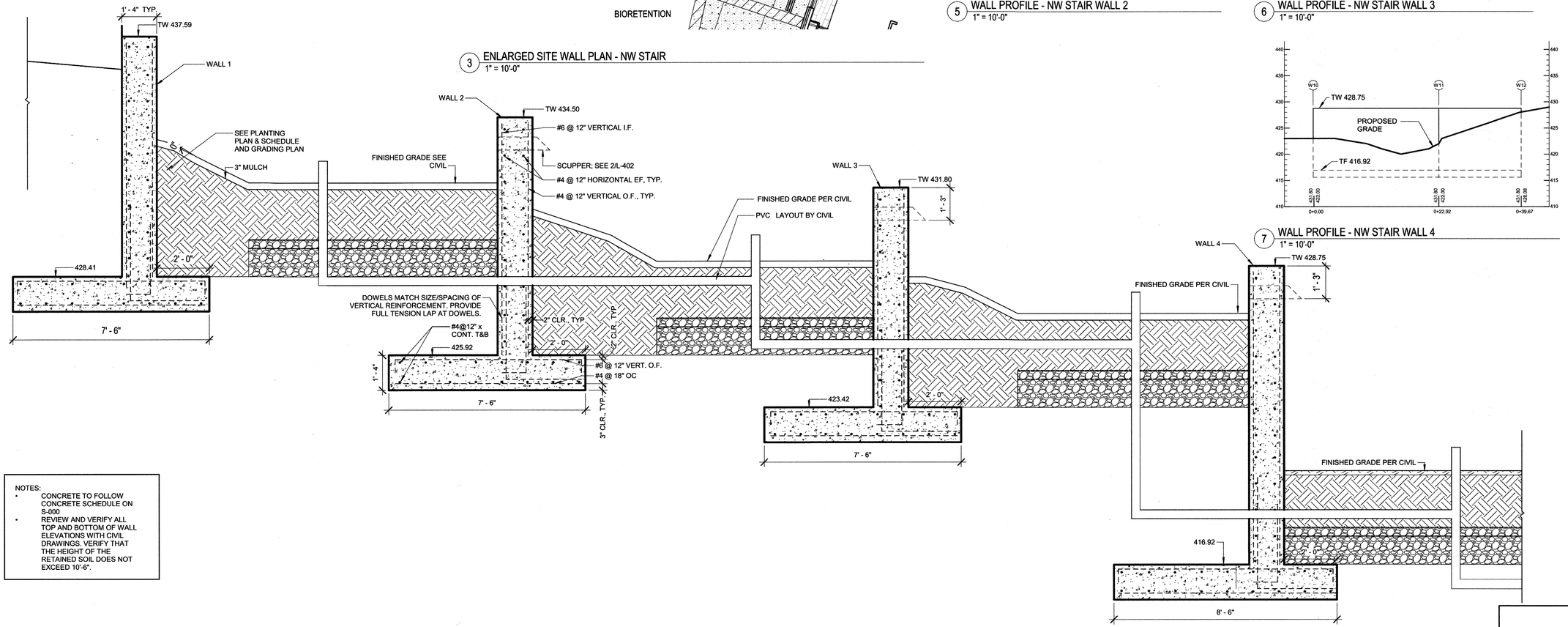
5 WALL PROFILE - NW STAIR WALL 2
1" = 10'-0"



6 WALL PROFILE - NW STAIR WALL 3
1" = 10'-0"

7 WALL PROFILE - NW STAIR WALL 4
1" = 10'-0"





NOTES:
- CONCRETE TO FOLLOW CONCRETE SCHEDULE ON S-000
- REVIEW AND VERIFY ALL TOP AND BOTTOM OF WALL ELEVATIONS WITH CIVIL DRAWINGS. VERIFY THAT THE HEIGHT OF THE RETAINED SOIL DOES NOT EXCEED 10'-6".

2 NW STAIR BIORETENTION PLANTER
1/2" = 1'-0"

KCI TECHNOLOGIES
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PLANNERS
SURVEYORS
CONSTRUCTION MANAGERS
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FULTON, MD 20759
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FAX: (410) 792-7419

AYERS SAINT GROSS
1040 Hull Street, Suite 100
Baltimore, MD 21230
p 410.347.8500 f 410.347.8419

APPROVED: Howard County Department of Planning & Zoning

Director	9-8-21 Date
Chief, Division of Land Development	9/7/21 Date
Chief, Development Engineering Division	8-18-21 Date

Rev:	Date:	Description:	By:

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

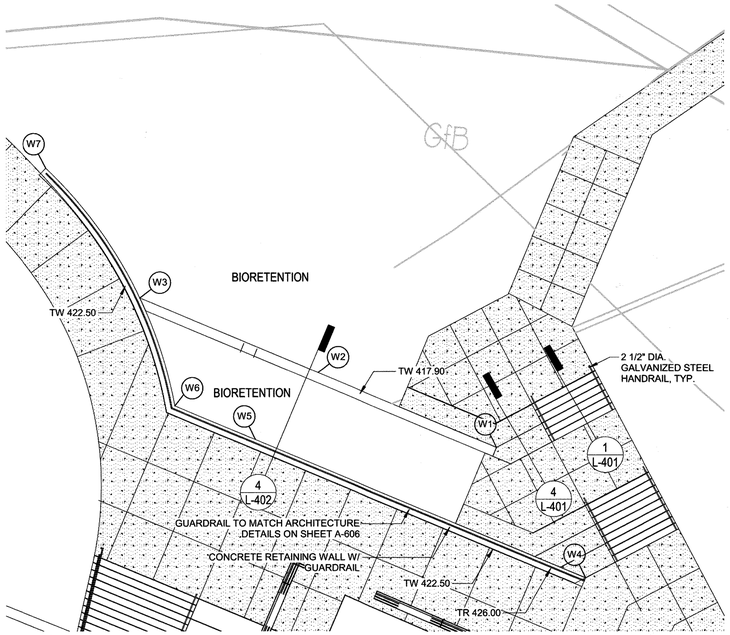
Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date:	04/21/21	Scale:	As indicated
Drawn By:	A.T.	Designed By:	A.R. / A.T.
Approved By:	J.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

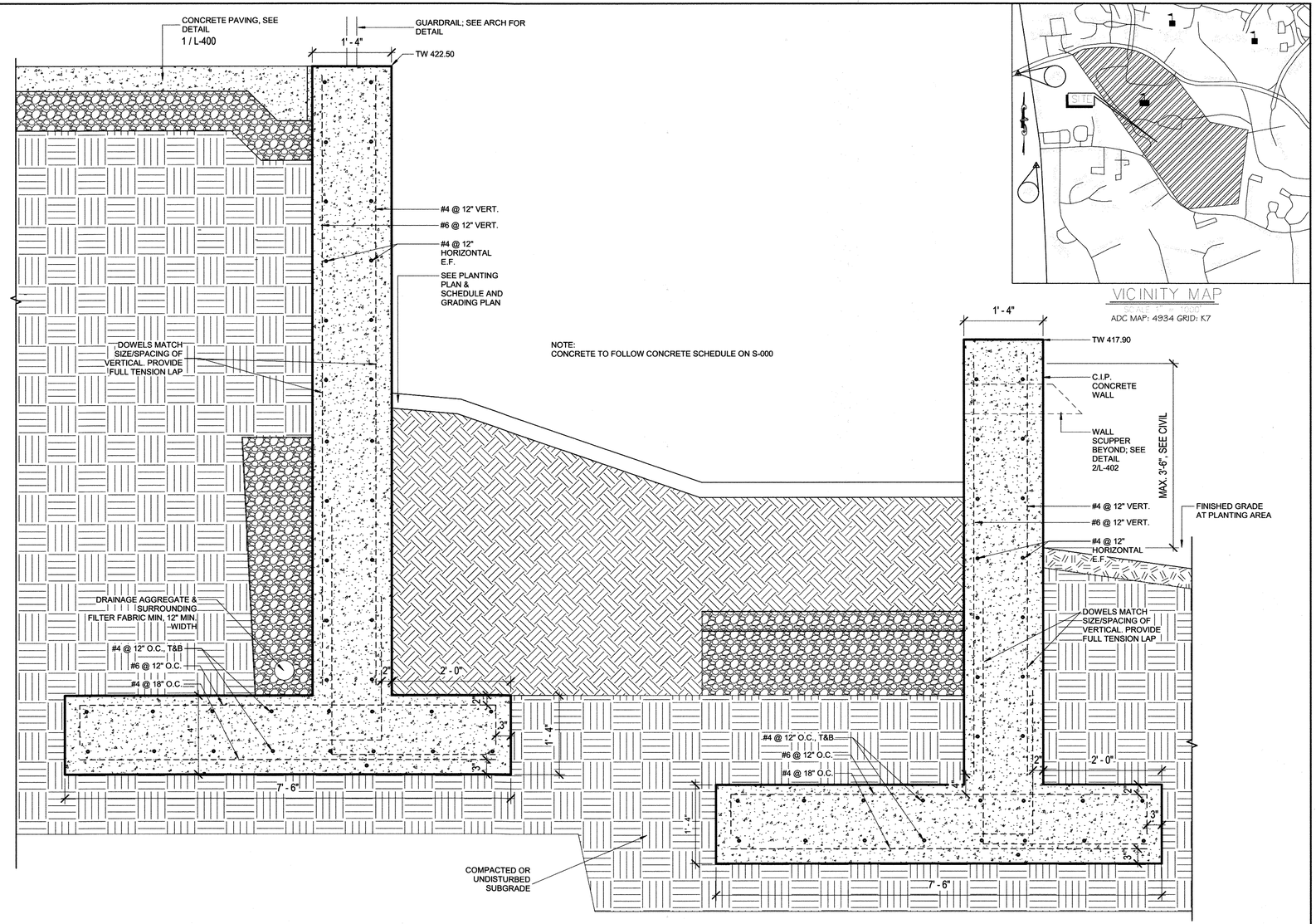
Sheet Title:
SITE WALL DETAILS - NW STAIR

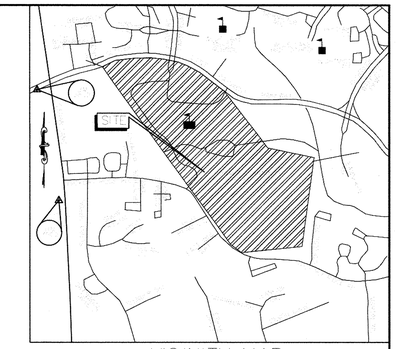
STATE OF MARYLAND — JOSEPH BURATTI — 1736 — LANDSCAPE ARCHITECT
6.28.21

Discipline Number: C1.19
Sheet Number: 21 OF 53



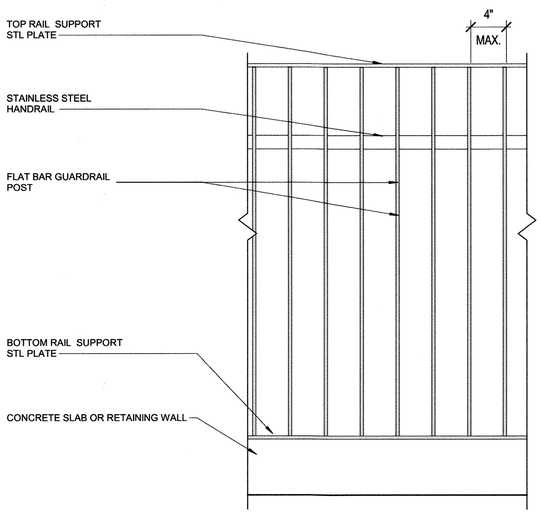
1 ENLARGED SITE WALL PLAN - NORTH APPROACH
1" = 10'-0"



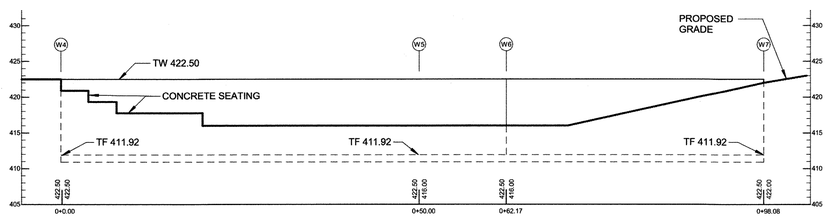


VICINITY MAP
SCALE 1" = 1000'
ADC MAP: 4934 GRID: K7

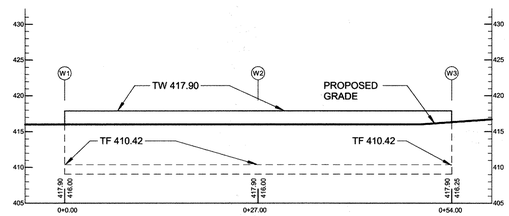
2 RETAINING WALL WITH GUARDRAIL
1" = 1'-0"



3 SITE STAIR RAIL
1 1/2" = 1'-0"



4 WALL PROFILE - NORTH APPROACH UPPER WALL
1" = 10'-0"



5 WALL PROFILE - NORTH APPROACH LOWER WALL
1" = 10'-0"

KCI TECHNOLOGIES
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AYERS SAINT GROSS
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APPROVED: Howard County Department of Planning & Zoning

Director	Amy Gross	9-8-21 Date
Chief, Division of Land Development		9/7/21 Date
Chief, Development Engineering Division		6/18/21 Date

Rev:	Date:	Description:	By:

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

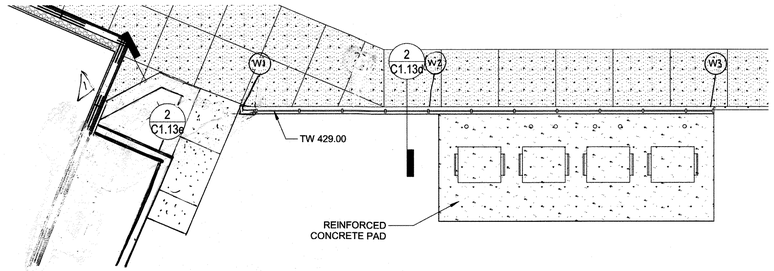
Date:	04/27/21	Scale:	As indicated
Drawn By:	A.T.	Designed By:	A.R. / A.T.
Approved By:	J.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title:
SITE WALL DETAILS - NORTH APPROACH

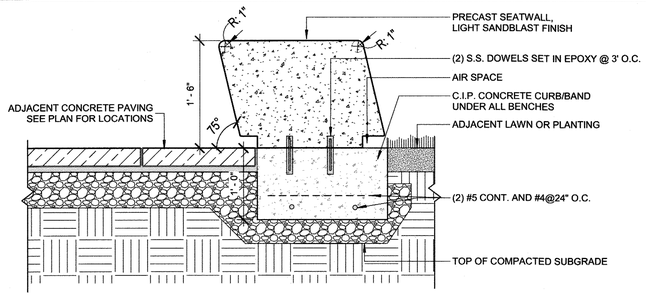
STATE OF MARYLAND JOSEPH BURKHART 1136 LANDSCAPE ARCHITECT
6.28.21

Discipline Number: C1.20

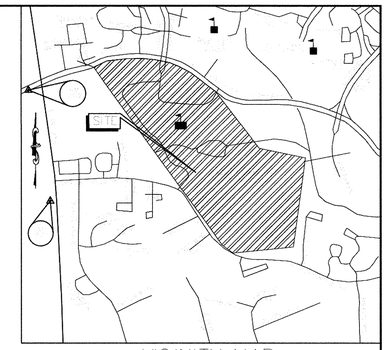
Sheet Number: 22 OF 53



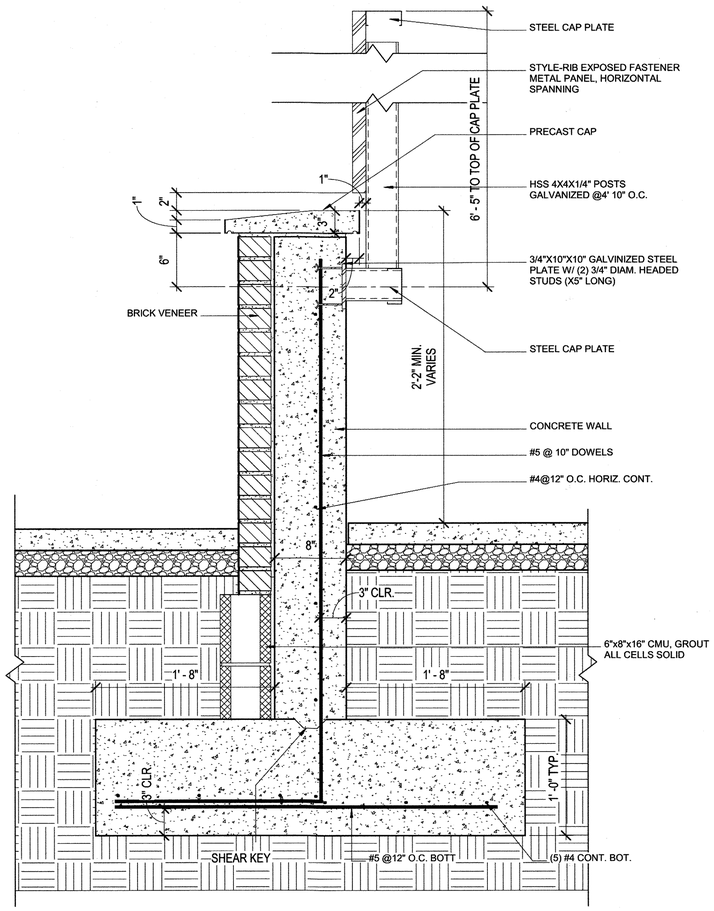
1 ENLARGED SITE WALL PLAN - SERVICE YARD SCREEN
1" = 10'-0"



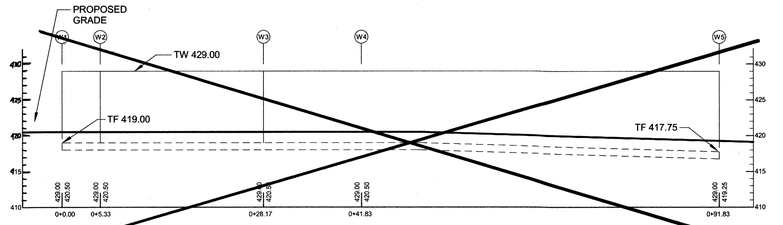
3 PRECAST CONCRETE BENCH
1" = 1'-0"



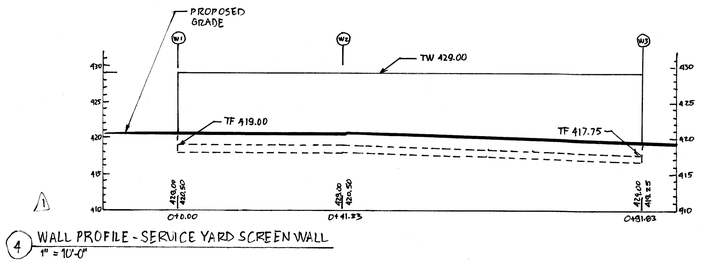
VICINITY MAP
SCALE: 1" = 1000'
ADC MAP: 4934 GRID: K7



2 SERVICE YARD SCREEN WALL
1 1/2" = 1'-0"



4 WALL PROFILE - SERVICE YARD SCREEN WALL
1" = 10'-0"



4 WALL PROFILE - SERVICE YARD SCREEN WALL
1" = 10'-0"

10/5/21

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. 33772, Expiration Date: 6/16/23

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APPROVED: Howard County Department of Planning & Zoning

Director — Date: 9-8-21

Chief, Division of Land Development — Date: 9/7/21

Chief, Development Engineering Division — Date: 8-18-21

Rev:	Date:	Description:	By:
1	10/05/21	ADD INTERNAL STAIRWELL TO BUILDING	KCI

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

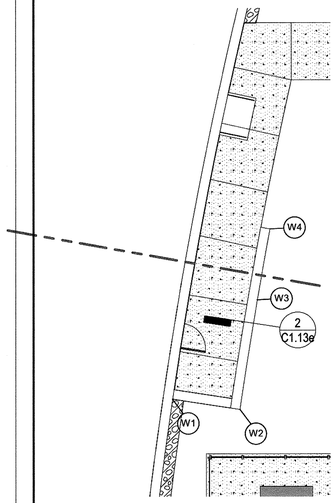
Date:	04/27/21	Scale:	As indicated
Drawn By:	A.T.	Designed By:	A.R. / A.T.
Approved By:	J.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title:
SITE WALL DETAILS - SERVICE YARD SCREEN

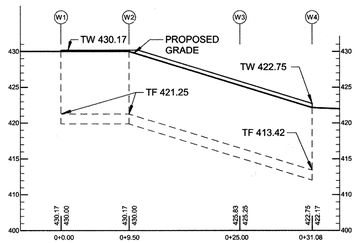
STATE OF MARYLAND — JOSEPH BURKHARDT — 1136 — LANDSCAPE ARCHITECT
6.28.21

Discipline Number: C1.20A

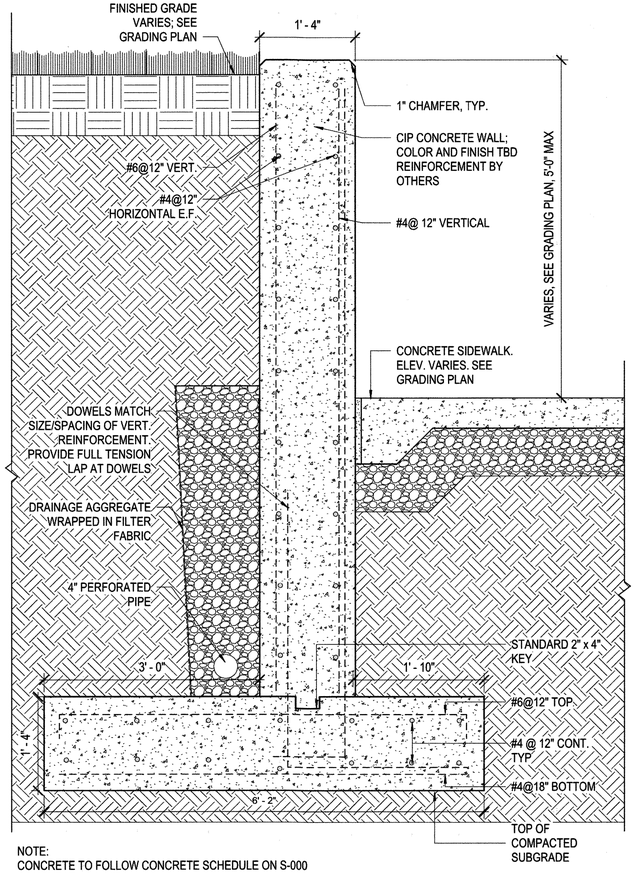
Sheet Number: 23 OF 53



1 ENLARGED SITE WALL PLAN - EAST TRAINING
1" = 10'-0"

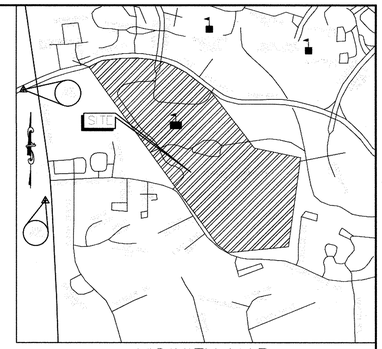


3 WALL PROFILE - EAST TRAINING
1" = 10'-0"



NOTE:
CONCRETE TO FOLLOW CONCRETE SCHEDULE ON S-000

2 C.I.P. CONCRETE RETAINING WALL
1" = 1'-0"



VICINITY MAP
SCALE: 1" = 1000'
ADC MAP: 4934 GRID: K7

KCI TECHNOLOGIES
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APPROVED: Howard County Department of Planning & Zoning

Director — Date 9-8-21
Chief, Division of Land Development — Date 9/7/21
Chief, Development Engineering Division — Date 8/18/21

Rev:	Date:	Description:	By:

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MATHEMATICS & ATHLETICS COMPLEX
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TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date:	04/27/21	Scale:	As indicated
Drawn By:	A.T.	Designed By:	A.R. / A.T.
Approved By:	J.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title:
SITE WALL DETAILS - EAST TRAINING

STATE OF MARYLAND — JOSEPH BURGESS — 1136 — LANDSCAPE ARCHITECT
6.28.21

Discipline Number: C1.20B
Sheet Number: 24 OF 53

MATCH LINE – (SEE THIS SHEET)

PHASE 1 –SEQUENCE OF CONSTRUCTION

1. NOTIFY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS CONSTRUCTION INSPECTION DIVISION AT 410–313–1855, MARYLAND DEPARTMENT OF THE ENVIRONMENT SEDIMENT AND STORMWATER ADMINISTRATION AT 410–313–6444 AND MISS UTILITY AT 1–800–237–7777, AT LEAST 48 HOURS PRIOR TO BEGINNING ANY WORK ON SITE.
2. INSTALL STABILIZED CONSTRUCTION ENTRANCE, SUPER SILT FENCE, SILT FENCE, AND INLET BLOCKING SHOWN ON SHEET C1.30. NO CLEARING OR GRADING IS TO BE DONE EXCEPT WHERE NECESSARY FOR INSTALLATION OF SEDIMENT CONTROLS FOR PHASE 1. ONCE SEDIMENT CONTROLS HAVE BEEN INSTALLED, CONTACT INSPECTOR FOR APPROVAL OF SEDIMENT CONTROL INSTALLATION. INSPECTIONS AND PERMITS MAY REQUIRE THAT AN INSPECTION AND CERTIFICATION OF THE INSTALLATION OF SEDIMENT CONTROL ALSO BE PERFORMED BY A DESIGN PROFESSIONAL PRIOR TO CONSTRUCTION COMMENCING. (2 DAYS)
3. BEGIN SITE DEMOLITION PER SHEET C1.04 FOR PHASE 1, AND HAUL ALL DEBRIS TO A SITE WITH AN APPROVED SEDIMENT AND EROSION CONTROL PLAN. (±13 DAYS)
4. THE CONTRACTOR SHALL AT ALL TIMES PROTECT AGAINST SEDIMENT OR DEBRIS LADEN RUNOFF OR WIND LEAVING THE SITE. PERIMETER CONTROLS SHOULD BE CHECKED DAILY AND ADJUSTED AND/OR REPAIRED TO FULLY CONTAIN AND CONTROL SEDIMENTATION ON THE SITE. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT HAS REACHED HALF OF THE EFFECTIVE CAPACITY OF THE CONTROL. IN ADDITION, THE SITE MAY NEED TO ADJUST OR REPAIR MEASURES IN TIMES OF ADVERSE WEATHER CONDITIONS, AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR.(DAILY)
5. BEGIN REMOVAL OF TOPSOIL, STOCKPILE REMOVED TOPSOIL IN DESIGNATED AREA, TEMPORARILY STABILIZE AND PROTECT WITH SILT FENCE. BEGIN ROUGH GRADING ENTIRE SITE. (±18 DAYS)
6. INSTALL WATER, SEWER, STORMDRAIN AND ASSOCIATED UTILITIES, AS SHOWN ON SHEET C1.06. (±20 DAYS)
7. WITH THE INSPECTORS APPROVAL, CONSTRUCT PROPOSED FOUNDATION AND ASSOCIATED IMPROVEMENTS. BUILDING CONSTRUCTION MAY NOT PROCEED PAST THE GROUND FLOOR UNTIL ALL REMAINING DISTURBED AREAS HAVE BEEN PERMANENTLY OR TEMPORARILY STABILIZED AT THE END OF EACH BUSINESS DAY. A CERTIFICATE MUST BE PROVIDED TO THE INSPECTOR VERIFYING THE GRADES AND DRAINAGE PATTERNS SHOWN ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN HAVE BEEN OBTAINED. (±8 DAYS)
8. INSTALL CURB & GUTTER, AND PARKING AREAS AND PLACE STONE BASE COURSE. ANY SEDIMENT CONTROLS DAMAGED MUST BE REPLACED BY THE END OF EACH WORK DAY. STABILIZE ALL AFFECTED AREAS BY THE END OF EACH DAY. (±18 DAYS)
9. ROUGH GRADE BIORETENTION FACILITIES 1B & 1C AND MICRO–BIORETENTION FACILITY 1A; DO NOT ADD BIO–RETENTION SOILS, STONE OR UNDERDRAIN AT THIS TIME. (±4 DAYS)
10. ONCE THE SITE IS PERMANENTLY STABILIZED, WITH THE GRADING INSPECTORS APPROVAL, BUILDING WALL CONSTRUCTION MAY COMMENCE. DURING BUILDING CONSTRUCTION, ALL DISTURBED AREAS MUST BE STABILIZED AT THE END OF EACH BUSINESS DAY. ALL AREAS ARE TO BE VEGETATIVELY STABILIZED PER THE SOIL CONSERVATION DISTRICT'S DETAILS AND SPECIFICATIONS FOR VEGETATIVE ESTABLISHMENT.
11. FINE GRADE, INSTALL WALK, SURFACE COURSE AND LANDSCAPING AND STABILIZE PER THE SOIL CONSERVATION DISTRICT'S DETAILS AND SPECIFICATIONS. (±15 DAYS)
12. ONCE THE UPSTREAM AREAS ARE 95% STABILIZED AND WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, INSTALL MICRO–BIO RETENTION SWM FACILITY #1A AS SHOWN ON SHEET C1.34. (SEDIMENT IS TO BE PREVENTED FROM ENTERING THE FACILITY DURING CONSTRUCTION: SURROUND FACILITY WITH REINFORCED SILT FENCE). THE TESTING AND INSPECTION AGENT MUST CERTIFY SWM INSTALLATION. (±6 DAYS)
13. ONCE THE UPSTREAM AREAS ARE 95% STABILIZED AND WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, INSTALL BIORETENTION SWM FACILITY #1B AS SHOWN ON SHEET C1.35. (SEDIMENT IS TO BE PREVENTED FROM ENTERING THE FACILITY DURING CONSTRUCTION: SURROUND FACILITY WITH REINFORCED SILT FENCE). THE TESTING AND INSPECTION AGENT MUST CERTIFY SWM INSTALLATION. (±9 DAYS
14. ONCE THE UPSTREAM AREAS ARE 95% STABILIZED AND WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, COMPLETE BIORETENTION FACILITY #1C AS SHOWN ON SHEET C1.36. (SEDIMENT IS TO BE PREVENTED FROM ENTERING THE FACILITY DURING CONSTRUCTION: SURROUND FACILITY WITH REINFORCED SILT FENCE). THE TESTING AND INSPECTION AGENT MUST CERTIFY SWM INSTALLATION. (±9 DAYS)
15. INSTALL LANDSCAPING IN MICRO–BIORETENTION FACILITIES #1A AND BIO–RETENTION FACILITIES #1B & #1C, AS SHOWN ON SHEETS C1.43. (±3 DAYS)
16. WITH THE GRADING INSPECTOR'S APPROVAL, REMOVE ANY SEDIMENT CONTROLS.

MATCH LINE – (SEE THIS SHEET)

LEGEND

PROPERTY LINE	EX. GAS LINE
450 EX. INDEX CONTOUR	EX. SANITARY LINE
451 EX. INTERMEDIATE CONTOUR	EX. ELECTRIC
EX. SANITARY MANHOLE	EX. TELEPHONE
EX. STORM DRAIN MANHOLE	EX. CABLE TV
EX. ELECTRIC MANHOLE	EX. WATER
EX. LIGHT POLE	PROP. INDEX CONTOUR
EX. WATER METER	PROP. INTERMEDIATE CONTOUR
EX. SIGN	LIMIT OF DISTURBANCE
EX. UTILITY POLE	DIVERSION FENCE
EX. BOLLARD POST	SILT FENCE
EX. DECIDUOUS TREE	SUPER SILT FENCE
EX. CONIFEROUS TREE	DRAINAGE AREA
EX. GAS VALVE	APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT
EX. GUY WIRE	SOIL STABILIZATION MATTING
EX. WATER VALVE	
EX. FIRE HYDRANT	
EX. CLEANOUT	
EX. STORM DRAIN	

CONTRACTOR NOTE:
CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO DAMAGE ANY EXISTING PAVING, CURB AND GUTTER, SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN. SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO ORIGINAL CONDITION AT CONTRACTORS EXPENSE.

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

Alexander Bratchie — 08/04/21
HOWARD SOIL CONSERVATION DISTRICT — DATE

ENGINEER'S CERTIFICATE

"I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

Nicholas Banicki — 6/28/21
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) — DATE

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS 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."

Charles Daidakulo — 6/28/21
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) — DATE

EROSION & SEDIMENT CONTROL PLAN – PHASE 1
SCALE: 1"=30'

GRAPHIC SCALE
30 0 15 30 60
(IN FEET) 1 inch = 30ft.

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. 33772 EXPIRATION DATE: 06/16/2023

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
11830 WEST MARKET PLACE SUITE F, FULTON, MD 20759
TELEPHONE: (410) 792-8086 FAX: (410) 792-7419

AYERS SAINT GROSS — ARCHITECTS + PLANNERS
1040 Hull Street, Suite 100, Baltimore, MD 21230
p 410.347.8500 f 410.347.8419

APPROVED: Howard County Department of Planning & Zoning

Director — 9-8-21 Date
Chief, Division of Land Development — 9/1/21 Date
Chief, Development Engineering Division — 8/18/21 Date

Rev:	Date:	Description:	By:
1			
2			
3			
4			
5			

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
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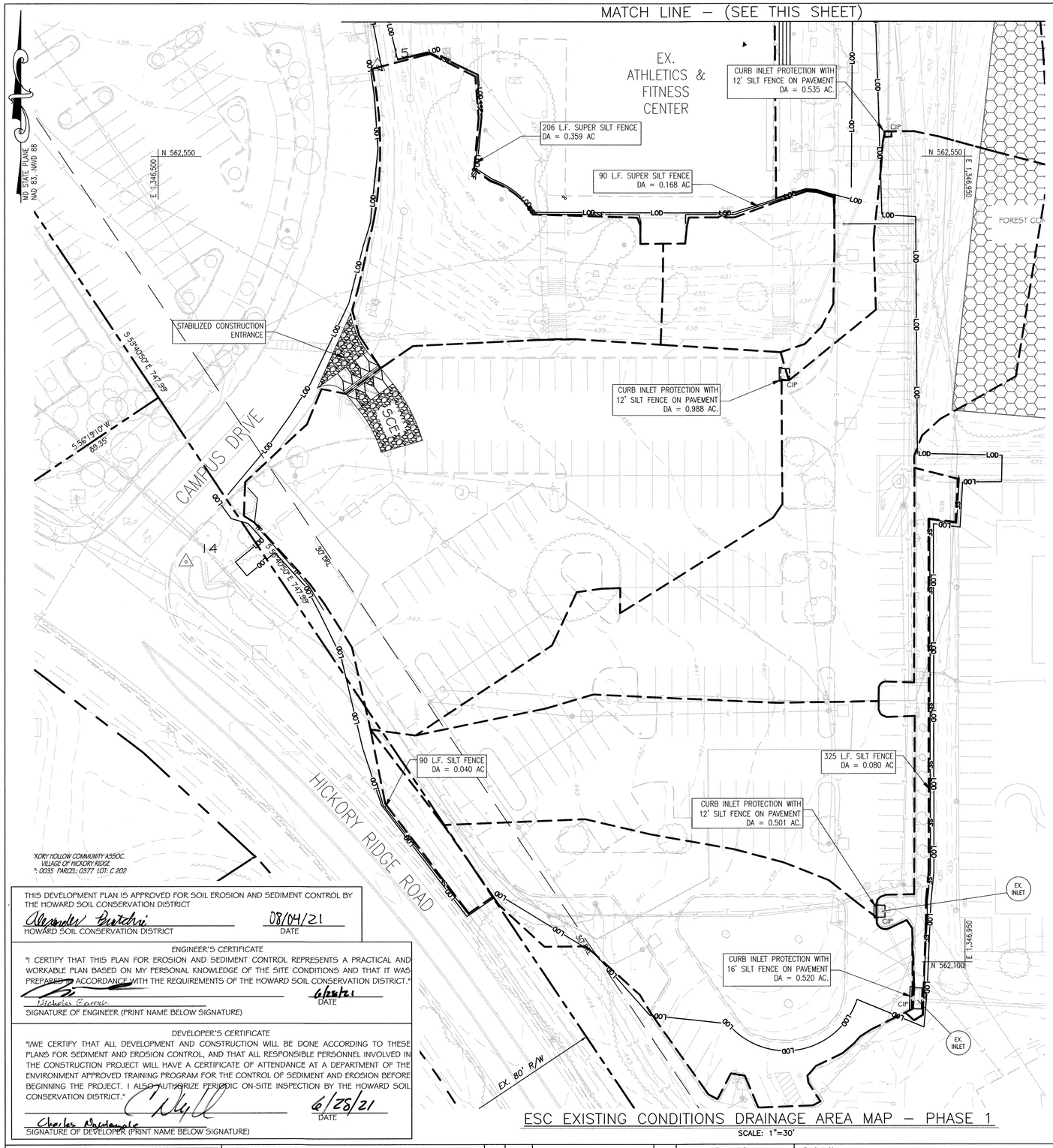
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

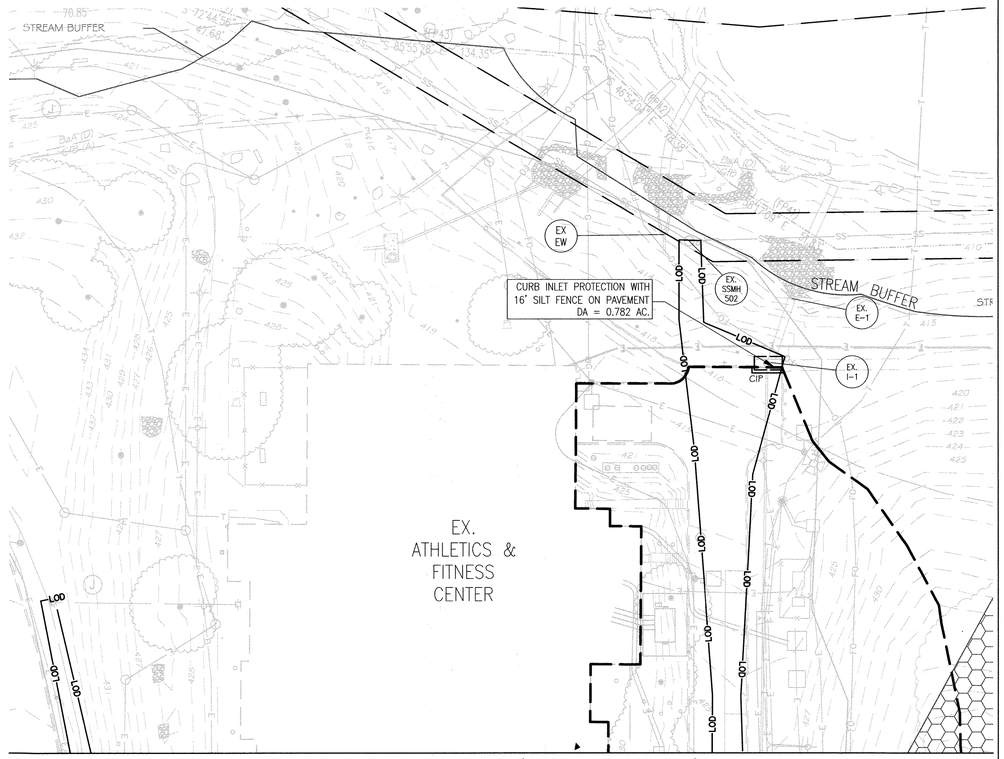
Date:	04-30-2021	Scale:	1" = 30'
Drawn By:	F.F.W.	Designed By:	F.F.W.
Approved By:	N.A.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title:
EROSION AND SEDIMENT CONTROL PLAN PHASE 1

Discipline Number: C1. 21
Sheet Number: 25 OF 53

MATCH LINE – (SEE THIS SHEET)





MATCH LINE – (SEE THIS SHEET)

ESC EXISTING CONDITIONS DRAINAGE AREA MAP – PHASE 1

SCALE: 1"=30'

LEGEND

PROPERTY LINE	EX. GAS LINE
450 EX. INDEX CONTOUR	EX. SANITARY
451 EX. INTERMEDIATE CONTOUR	EX. ELECTRIC
EX. SANITARY MANHOLE	EX. TELEPHONE
EX. STORM DRAIN MANHOLE	EX. CABLE TV
EX. ELECTRIC MANHOLE	EX. WATER
EX. LIGHT POLE	PROP. INDEX CONTOUR
EX. WATER METER	PROP. INTERMEDIATE CONTOUR
EX. SIGN	LIMIT OF DISTURBANCE
EX. UTILITY POLE	DIVERSION FENCE
EX. BOLLARD POST	PROP. SILT FENCE
EX. DECIDUOUS TREE	PROP. SUPER SILT FENCE
EX. CONIFEROUS TREE	DRAINAGE AREA
EX. GAS VALVE	APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT
EX. GUY WIRE	
EX. WATER VALVE	
EX. FIRE HYDRANT	
EX. CLEANOUT	
EX. 15" DRAIN	EX. STORM DRAIN

GRAPHIC SCALE
30 0 15 30 60
(IN FEET) 1 inch = 30ft.

"KORY HOLLOW COMMUNITY ASSOC.
VILLAGE OF HICKORY RIDGE
P. 0035 PARCEL: 0377 LOT: C 202

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

Alexander Bratchi — 08/04/21
HOWARD SOIL CONSERVATION DISTRICT — DATE

ENGINEER'S CERTIFICATE

"I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

Michelle Farrell — 6/28/21
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) — DATE

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS 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."

Charles Nightingale — 6/28/21
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) — DATE

CONTRACTOR NOTE:
CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO DAMAGE ANY EXISTING PAVING, CURB AND GUTTER, SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN. SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO ORIGINAL CONDITION AT CONTRACTORS EXPENSE.

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. 33772 EXPIRATION DATE: 06/16/2023

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
11830 WEST MARKET PLACE SUITE F, FULTON, MD 20759
TELEPHONE: (410) 792-8086 FAX: (410) 792-7419

AYERS SAINT GROSS — ARCHITECTS + PLANNERS
1040 Hull Street, Suite 100, Baltimore, MD 21230
p 410.347.8500 f 410.347.8419

APPROVED: Howard County Department of Planning & Zoning

Director — 9-8-21 Date

Chief, Division of Land Development — 9/7/21 Date

Chief, Development Engineering Division — 8/18/21 Date

Rev:	Date:	Description:	By:
1			
2			
3			
4			
5			

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date:	04-30-2021	Scale:	1" = 30'
Drawn By:	F.F.W.	Designed By:	F.F.W.
Approved By:	N.A.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title: **ESC EXISTING CONDITIONS DRAINAGE AREA MAP - PHASE 1**

Discipline Number: C1. 22

Sheet Number: 26 OF 53

MATCH LINE – (SEE THIS SHEET)

EX. ATHLETICS & FITNESS CENTER

PROPOSED MATHEMATICS AND ATHLETICS COMPLEX

FOREST CONSERVATION EASEMENT PLAT NO.

STREAM BUFFER

CAMPUS DRIVE

HICKORY RIDGE ROAD

STAGING AREA

STOCKPILE AREA

BUS PROP. ST.

MD STATE PLANE NAD 83, NAVD 88

N 562,550
E 1,346,500

N 562,050
E 1,346,950

90 L.F. SUPER SILT FENCE DA = 0.027 AC

206 L.F. SUPER SILT FENCE DA = 0.164 AC

AT GRADE INLET PROTECTION DA = 0.585 AC.

163 L.F. SILT FENCE DA = 0.158 AC.

STABILIZED CONSTRUCTION ENTRANCE

S 55°40'50" E 747.99

S 55° 19' 10" W 89.35

84' SILT FENCE ON PAVEMENT DA = 0.122 AC.

STANDARD INLET PROTECTION TYPE "A" DA = 0.074 AC.

STANDARD INLET PROTECTION TYPE "B" DA = 0.753 AC.

248 L.F. SILT FENCE DA = 0.144 AC

184 L.F. SILT FENCE DA = 0.051 AC.

CURB INLET PROTECTION DA = 0.165 AC.

145 L.F. SILT FENCE DA = 0.061 AC.

90 L.F. SILT FENCE DA = 0.051 AC.

HICKORY HOLLOW COMMUNITY ASSOC.
VILLAGE OF HICKORY RIDGE
MAP: 0035 PARCEL: 0377 LOT: C 202

242 L.F. SILT FENCE AROUND FACILITY

EX. 80' R/W

CURB INLET PROTECTION DA = 0.125 AC.

325 L.F. SILT FENCE DA = 0.103 AC.

CURB INLET PROTECTION WITH 20' SILT FENCE ON PAVEMENT DA = 0.543 AC.

CURB INLET PROTECTION WITH 12' SILT FENCE ON PAVEMENT DA = 0.162 AC.

CURB INLET PROTECTION WITH 16' SILT FENCE ON PAVEMENT DA = 0.285 AC.

STANDARD INLET PROTECTION TYPE "B" DA = 0.628 AC.

CURB INLET PROTECTION WITH 16' SILT FENCE ON PAVEMENT DA = 0.728 AC.

DAILY STABILIZATION REQUIRED FOR INSTALLATION OF 8" WATER LINE

MATCH LINE – (SEE THIS SHEET)

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

Alexander Brotchie — 08/04/21
HOWARD SOIL CONSERVATION DISTRICT — DATE

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Nicholas Bortolomeo — 6/28/21
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) — DATE

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Charles Nightingale — 6/28/21
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) — DATE

ESC PROPOSED CONDITIONS DRAINAGE AREA MAP – PHASE 1
SCALE: 1"=30'

LEGEND

PROPERTY LINE	EX. GAS LINE
450 EX. INDEX CONTOUR	EX. 6" SANITARY EX. SANITARY
451 EX. INTERMEDIATE CONTOUR	EX. ELECTRIC EX. ELECTRIC
EX. SANITARY MANHOLE	EX. TELEPHONE EX. TELEPHONE
EX. STORM DRAIN MANHOLE	EX. CABLE TV EX. CABLE TV
EX. ELECTRIC MANHOLE	EX. 8" WATER EX. WATER
EX. LIGHT POLE	450 PROP. INDEX CONTOUR
EX. WATER METER	451 PROP. INTERMEDIATE CONTOUR
EX. SIGN	LOD LIMIT OF DISTURBANCE
EX. UTILITY POLE	DF DIVERSION FENCE
EX. BOLLARD POST	SF PROP. SILT FENCE
EX. DECIDUOUS TREE	SSF PROP. SUPER SILT FENCE
EX. CONIFEROUS TREE	DRAINAGE AREA
EX. GAS VALVE	APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT
EX. GUY WIRE	SOIL STABILIZATION MATTING
EX. WATER VALVE	
EX. FIRE HYDRANT	
EX. CLEANOUT	
EX. 15" DRAIN EX. STORM DRAIN	

GRAPHIC SCALE
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(IN FEET) 1 inch = 30ft.

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APPROVED: Howard County Department of Planning & Zoning

Director — 9-8-21 Date

Chief, Division of Land Development — 9/7/21 Date

Chief, Development Engineering Division — 8.18.21 Date

Rev:	Date:	Description:	By:
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ATTN: Mr. Chuck Nightingale
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Project Name:
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MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date:	04-30-2021	Scale:	1" = 30'
Drawn By:	F.F.W.	Designed By:	F.F.W.
Approved By:	N.A.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title:
ESC PROPOSED CONDITIONS DRAINAGE AREA MAP - PHASE 1

STATE OF MARYLAND — NICHOLAS A. BARTOLOMEO — 33772 — PROFESSIONAL ENGINEER — 6/16/21

Discipline Number: C1.23

Sheet Number: 27 OF 53

PHASE 2 –SEQUENCE OF CONSTRUCTION

1. NOTIFY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS CONSTRUCTION INSPECTION DIVISION AT 410–313–1855, MARYLAND DEPARTMENT OF THE ENVIRONMENT SEDIMENT AND STORMWATER ADMINISTRATION AT 410–313–6444 AND MISS UTILITY AT 1–800–237–7777, AT LEAST 48 HOURS PRIOR TO BEGINNING ANY WORK ON SITE.

2. INSTALL STABILIZED CONSTRUCTION ENTRANCE, SUPER SILT FENCE, SILT FENCE, AND INLET PROTECTION SHOWN ON SHEET C1.30. NO CLEARING OR GRADING IS TO BE DONE EXCEPT WHERE NECESSARY FOR INSTALLATION OF SEDIMENT CONTROLS FOR PHASE 2. ONCE SEDIMENT CONTROLS HAVE BEEN INSTALLED, CONTACT INSPECTOR FOR APPROVAL OF SEDIMENT CONTROL INSTALLATION. INSPECTIONS AND PERMITS MAY REQUIRE THAT AN INSPECTION AND CERTIFICATION OF THE INSTALLATION OF SEDIMENT CONTROL ALSO BE PERFORMED BY A DESIGN PROFESSIONAL PRIOR TO CONSTRUCTION COMMENCING. (±2 DAYS)

3. REMOVE PAVEMENT AND UTILITIES NECESSARY TO INSTALL DIKES DIRECTING AROUND FUTURE ESD FACILITIES.(±10 DAYS)

4. BEGIN SITE DEMOLITION PER SHEET C1.04 FOR PHASE 2, AND HAUL ALL DEBRIS TO A SITE WITH AN APPROVED SEDIMENT AND EROSION CONTROL PLAN.(±20 DAYS)

5. THE CONTRACTOR SHOULD CONSTRUCT SEDIMENT TRAP #1 PRIOR TO AND BUILDING OR ROADWAY CONSTRUCTION. THIS INCLUDES GRADING, INSTALLATION OF INLET, AND INSTALLATION OF ALL STORMDRAIN AND DRAW DOWN DEVICES.(±5 DAYS)

6. THE CONTRACTOR SHALL AT ALL TIMES PROTECT AGAINST SEDIMENT OR DEBRIS LADEN RUNOFF OR WIND LEAVING THE SITE. PERIMETER CONTROLS SHOULD BE CHECKED DAILY AND ADJUSTED AND/OR REPAIRED TO FULLY CONTAIN AND CONTROL SEDIMENTATION ON THE SITE. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT HAS REACHED HALF OF THE EFFECTIVE CAPACITY OF THE CONTROL. IN ADDITION, THE SITE MAY NEED TO ADJUST OR REPAIR MEASURES IN TIMES OF ADVERSE WEATHER CONDITIONS, AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR.(DAILY)

7. BEGIN REMOVAL OF TOPSOIL, STOCKPILE REMOVED TOPSOIL IN DESIGNATED AREA, TEMPORARILY STABILIZE AND PROTECT WITH SILT FENCE. BEGIN ROUGH GRADING PHASE 2 SIDE OF SITE.(±20 DAYS)

8. INSTALL WATER, SEWER, STORMDRAIN AND ASSOCIATED UTILITIES, AS SHOWN ON SHEET C1.12.(±30 DAYS)

9. WITH THE INSPECTORS APPROVAL, CONSTRUCT PROPOSED FOUNDATION AND ASSOCIATED IMPROVEMENTS. BUILDING CONSTRUCTION MAY NOT PROCEED PAST THE GROUND FLOOR UNTIL ALL REMAINING DISTURBED AREAS HAVE BEEN PERMANENTLY OR TEMPORARILY STABILIZED AT THE END OF EACH BUSINESS DAY. A CERTIFICATE MUST BE PROVIDED TO THE INSPECTOR VERIFYING THE GRADES AND DRAINAGE PATTERNS SHOWN ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN HAVE BEEN OBTAINED.(±15 DAYS)

10. INSTALL CURB & GUTTER, AND PARKING AREAS AND PLACE STONE BASE COURSE. ANY SEDIMENT CONTROLS DAMAGED MUST BE REPLACED BY THE END OF EACH WORK DAY. STABILIZE ALL AFFECTED AREAS BY THE END OF EACH DAY.(±30 DAYS)

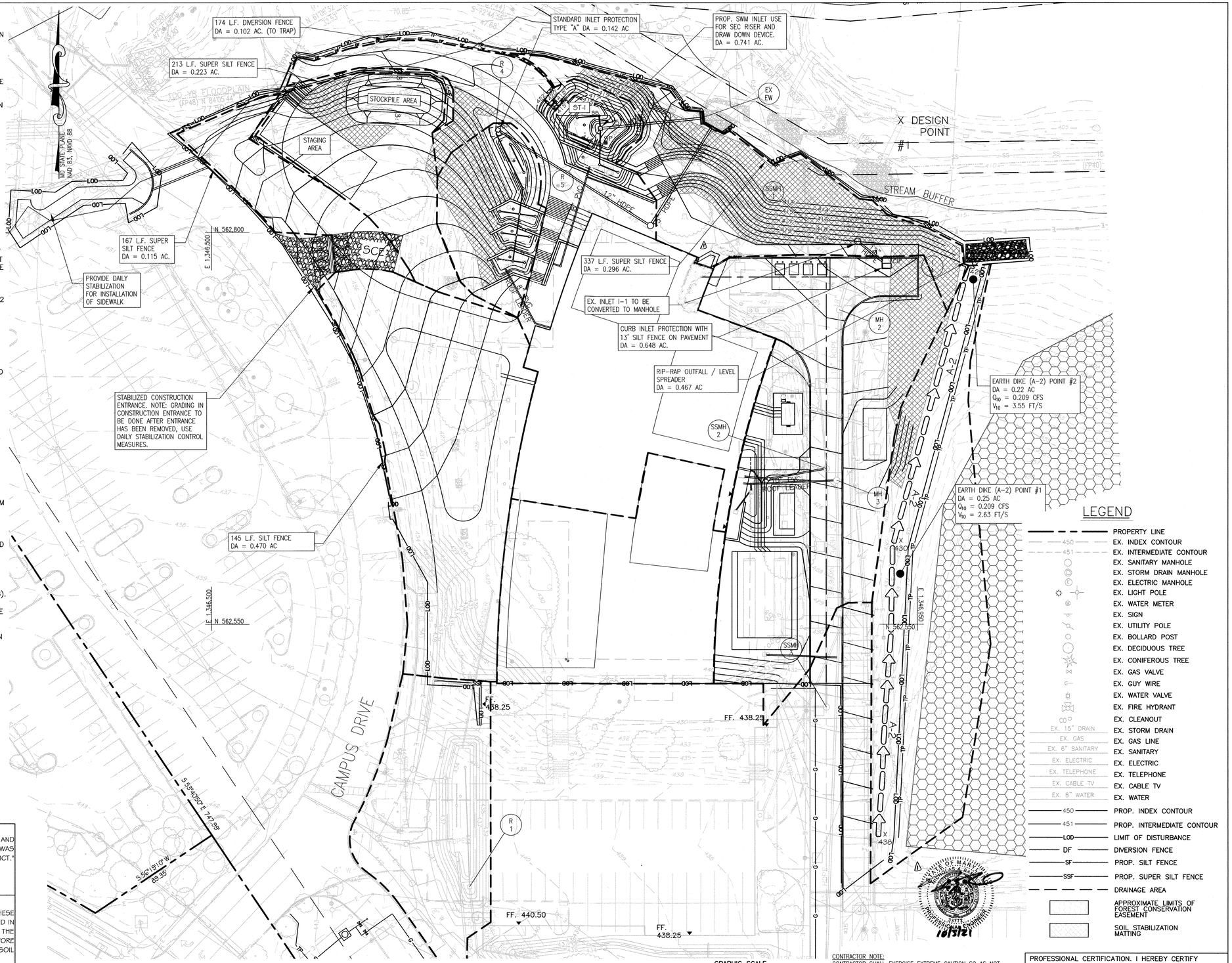
11. ONCE THE SITE IS PERMANENTLY STABILIZED, WITH THE GRADING INSPECTORS APPROVAL, BUILDING WALL CONSTRUCTION MAY COMMENCE. DURING BUILDING CONSTRUCTION, ALL DISTURBED AREAS MUST BE STABILIZED AT THE END OF EACH BUSINESS DAY. ALL AREAS ARE TO BE VEGETATIVELY STABILIZED PER THE SOIL CONSERVATION DISTRICT'S DETAILS AND SPECIFICATIONS FOR VEGETATIVE ESTABLISHMENT.(±14 DAYS)

12. FINE GRADE, INSTALL WALK, SURFACE COURSE AND LANDSCAPING AND STABILIZE PER THE SOIL CONSERVATION DISTRICT'S DETAILS AND SPECIFICATIONS. NOTE: SIDEWALK TO THE EAST OF SEDIMENT TRAP #1 SHALL BE CONSTRUCTED AFTER THE CONVERSION FROM SEDIMENT TRAP TO SWM MANAGEMENT FACILITY.(±18 DAYS)

13. ONCE THE UPSTREAM AREAS ARE 95% STABILIZED AND WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, CONVERT SEDIMENT TRAP #1 TO MICRO–BIO RETENTION SWM FACILITY 1–E (M–6). AS SHOWN ON SHEET C1.39. (SEDIMENT IS TO BE PREVENTED FROM ENTERING THE FACILITY DURING CONSTRUCTION: SURROUND FACILITY WITH REINFORCED SILT FENCE). THE TESTING AND INSPECTION AGENT MUST CERTIFY SWM INSTALLATION.(±12 DAYS)

14. ONCE THE UPSTREAM AREAS ARE 95% STABILIZED AND WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, INSTALL MICRO–BIO RETENTION SWM FACILITY 1–D (M–6). AS SHOWN ON SHEET C1.38. (SEDIMENT IS TO BE PREVENTED FROM ENTERING THE FACILITY DURING CONSTRUCTION: SURROUND FACILITY WITH REINFORCED SILT FENCE). THE TESTING AND INSPECTION AGENT MUST CERTIFY SWM INSTALLATION.(±12 DAYS)

15. INSTALL LANDSCAPING IN MICRO–BIORETENTION FACILITIES #1–D & #1–E, AS SHOWN ON SHEET C1.43.(±2 DAYS)



LEGEND

- PROPERTY LINE
- 450 EX. INDEX CONTOUR
- 451 EX. INTERMEDIATE CONTOUR
- EX. SANITARY MANHOLE
- EX. STORM DRAIN MANHOLE
- EX. ELECTRIC MANHOLE
- EX. LIGHT POLE
- EX. WATER METER
- EX. SIGN
- EX. UTILITY POLE
- EX. BOLLARD POST
- EX. DECIDUOUS TREE
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- EX. FIRE HYDRANT
- EX. CLEANOUT
- EX. 15" DRAIN — EX. STORM DRAIN
- EX. GAS — EX. GAS LINE
- EX. 6" SANITARY — EX. SANITARY
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- EX. TELEPHONE — EX. TELEPHONE
- EX. CABLE TV — EX. CABLE TV
- EX. 8" WATER — EX. WATER
- 450 PROP. INDEX CONTOUR
- 451 PROP. INTERMEDIATE CONTOUR
- LOD LIMIT OF DISTURBANCE
- DF DIVERSION FENCE
- SF PROP. SILT FENCE
- SSF PROP. SUPER SILT FENCE
- DRAINAGE AREA
- APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT
- SOIL STABILIZATION MATTING

EROSION & SEDIMENT CONTROL PLAN – PHASE 2

SCALE: 1"=30'

GRAPHIC SCALE
30 0 15 30 60
(IN FEET) 1 inch = 30ft.

CONTRACTOR NOTE:
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Alexander Bratchie — 08/04/21
HOWARD SOIL CONSERVATION DISTRICT — DATE

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Nicholas Barcik — 6/28/21
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) — DATE

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Charles Nightingale — 6/28/21
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STATE OF MARYLAND — NICHOLAS JOSEPH BARCIK — 33772 — PROFESSIONAL ENGINEER — 10/5/21

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
11830 WEST MARKET PLACE SUITE F, FULTON, MD 20759
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APPROVED: Howard County Department of Planning & Zoning

Director — 9-8-21 — Date
Chief, Division of Land Development — 9/7/21 — Date
Chief, Development Engineering Division — 8.8.21 — Date

Rev:	Date:	Description:	By:
1	10/05/21	ADD INTERNAL STAIRWELL TO BUILDING	KCI
2			
3			
4			
5			

Prepared For and Owner:
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ATTN: Mr. Chuck Nightingale
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Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
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PARCEL 47, TAX MAP 35, GRID 6
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ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

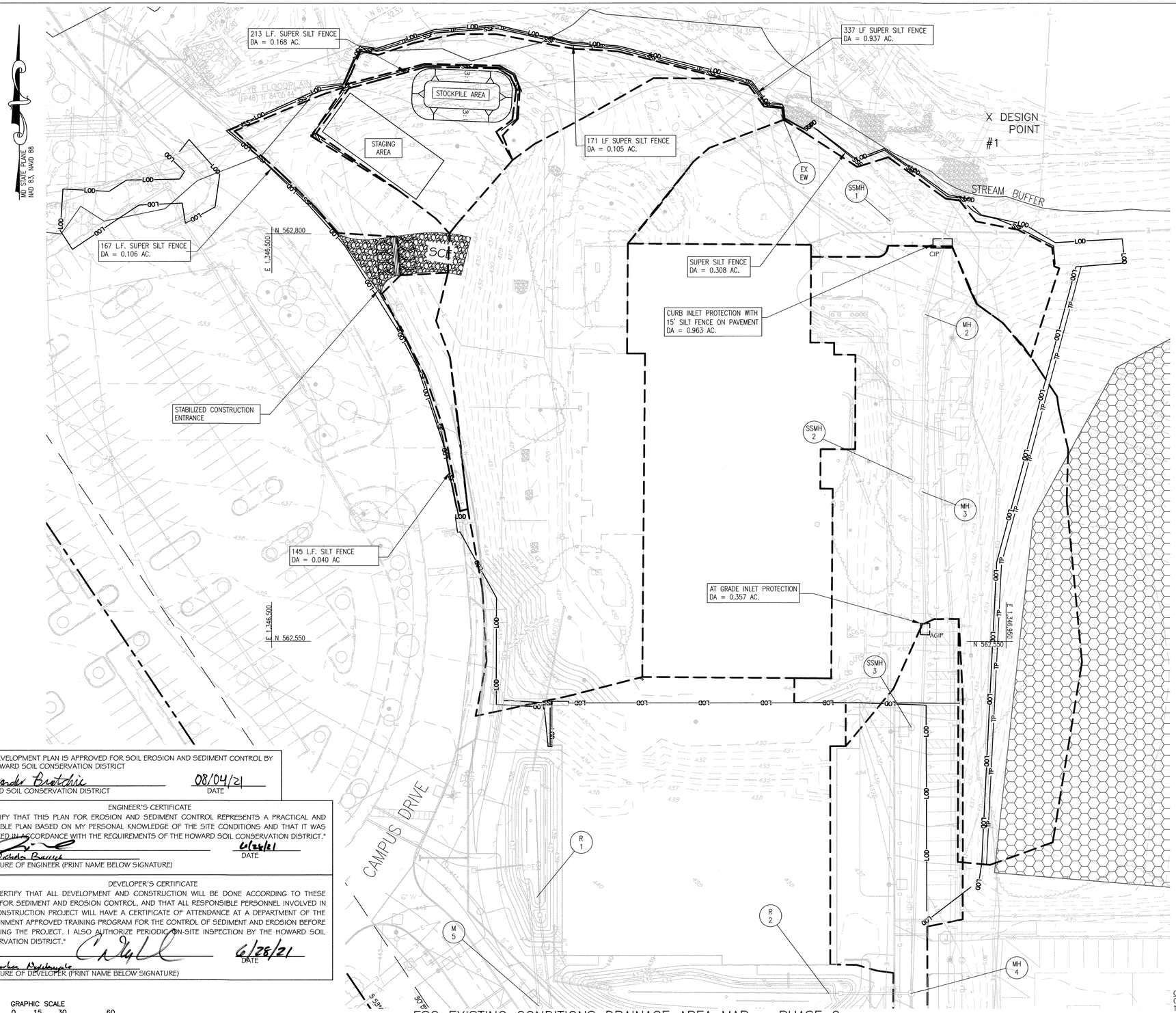
Date: 04-30-2021		Scale: 1" = 30'	
Drawn By: F.F.W.		Designed By: F.F.W.	
Approved By: N.A.B.		Project No: 271906728	
Tax Map-Grid: 35-6		Zoning: POR & NT	

Sheet Title:
EROSION AND SEDIMENT CONTROL PLAN PHASE 2

STATE OF MARYLAND — NICHOLAS JOSEPH BARCIK — 33772 — PROFESSIONAL ENGINEER — 10/5/21

Discipline Number: C1.24

Sheet Number: 28 OF 53



LEGEND

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Richard Bauccio — 6/28/21
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) — DATE

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GRAPHIC SCALE
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(IN FEET) 1 inch = 60ft.

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SCALE: 1"=30'

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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. 33772 EXPIRATION DATE: 06/16/2023

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APPROVED: Howard County Department of Planning & Zoning

Director — 9-8-21 Date
Chief, Division of Land Development — 9/7/21 Date
Chief, Development Engineering Division — 8/8/21 Date

Rev:	Date:	Description:	By:
1			
2			
3			
4			
5			

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

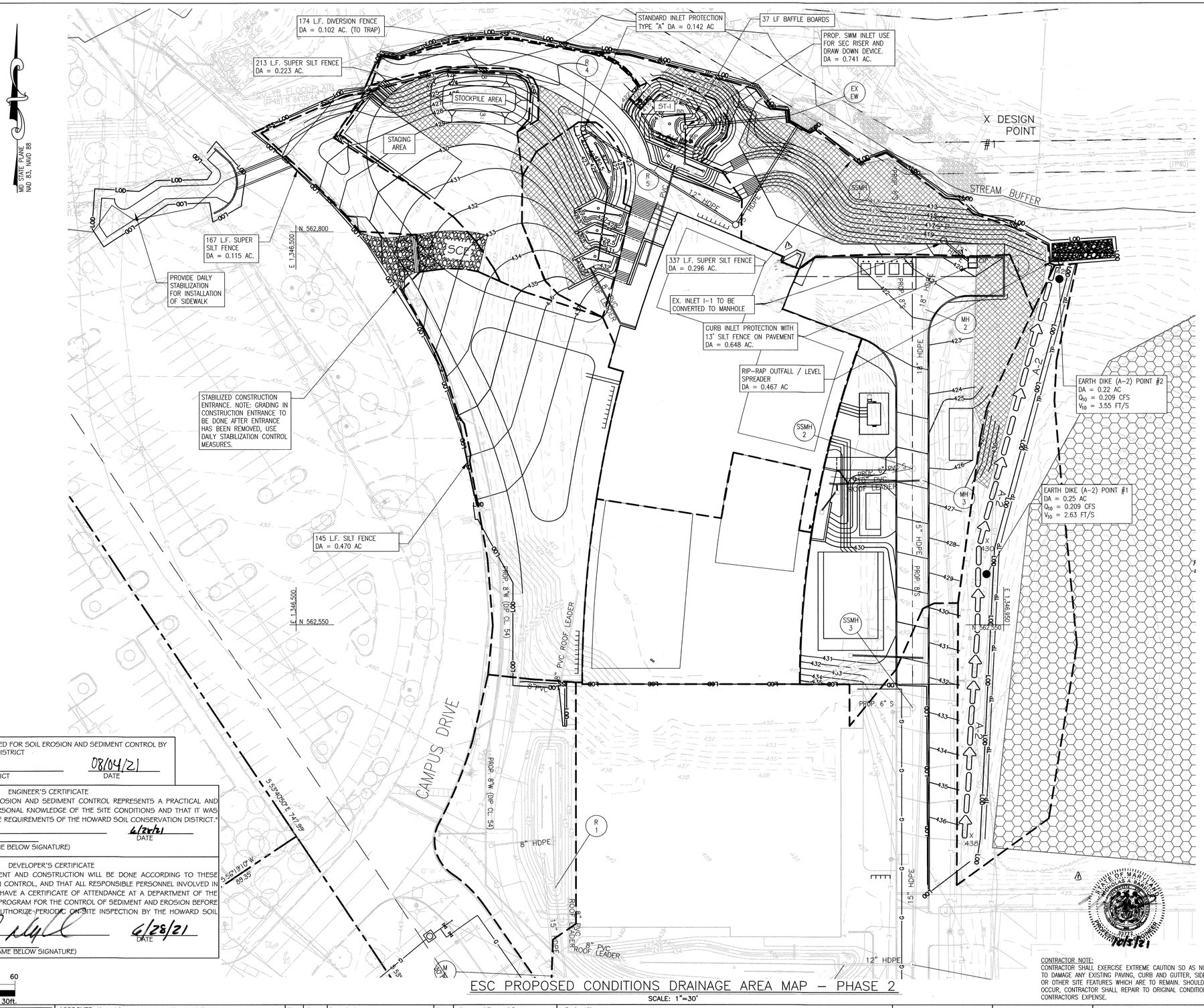
Date: 04-30-2021	Scale: 1" = 30'
Drawn By: F.F.W.	Designed By: F.F.W.
Approved By: N.A.B.	Project No: 271906728
Tax Map-Grid: 35-6	Zoning: POR & NT

Sheet Title:
ESC EXISTING COND. DRAINAGE AREA MAP PHASE 2

STATE OF MARYLAND — RICHARD A. BAUCCIO — 33772 — PROFESSIONAL ENGINEER — 6/28/21

Discipline Number: C1.25

Sheet Number: 29 OF 53



LEGEND

- PROPERTY LINE
- 450 EX. INDEX CONTOUR
- 451 EX. INTERMEDIATE CONTOUR
- EX. SANITARY MANHOLE
- EX. STORM DRAIN MANHOLE
- EX. ELECTRIC MANHOLE
- EX. LIGHT POLE
- EX. WATER METER
- EX. SIGN
- EX. UTILITY POLE
- EX. BOLLARD POST
- EX. DECIDUOUS TREE
- EX. CONIFEROUS TREE
- EX. GAS VALVE
- EX. GUY WIRE
- EX. WATER VALVE
- EX. FIRE HYDRANT
- EX. CLEANOUT
- EX. 15" DRAIN — EX. STORM DRAIN
- EX. GAS — EX. GAS LINE
- EX. 6" SANITARY — EX. SANITARY
- EX. ELECTRIC — EX. ELECTRIC
- EX. TELEPHONE — EX. TELEPHONE
- EX. CABLE TV — EX. CABLE TV
- EX. 8" WATER — EX. WATER
- 450 PROP. INDEX CONTOUR
- 451 PROP. INTERMEDIATE CONTOUR
- LOD LIMIT OF DISTURBANCE
- DF DIVERSION FENCE
- SF PROP. SILT FENCE
- SSF PROP. SUPER SILT FENCE
- DRAINAGE AREA
- APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT
- SOIL STABILIZATION MATTING

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

Alexander Bratchie — 08/04/21
HOWARD SOIL CONSERVATION DISTRICT — DATE

ENGINEER'S CERTIFICATE

"I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

Nicholas Barrell — 6/28/21
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) — DATE

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS 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."

Charles Robertson — 6/28/21
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) — DATE

GRAPHIC SCALE
30 0 15 30 60
(IN FEET) 1 inch = 30ft.

ESC PROPOSED CONDITIONS DRAINAGE AREA MAP – PHASE 2
SCALE: 1"=30'

CONTRACTOR NOTE:
CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO DAMAGE ANY EXISTING PAVING, CURB AND GUTTER, SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN. SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO ORIGINAL CONDITION AT CONTRACTORS EXPENSE.

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APPROVED: Howard County Department of Planning & Zoning

Director — 9-8-21 Date

Chief, Division of Land Development — 9/7/21 Date

Chief, Development Engineering Division — 8/18/21 Date

Rev:	Date:	Description:	By:
1	10/05/21	ADD INTERIM STAIRWELL TO BUILDING	KCI
2			
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4			
5			

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Sheet Title:
ESC PROPOSED CONDITIONS DRAINAGE AREA MAP - PHASE 2

Discipline Number: C1.26

Sheet Number: 30 OF 53

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 RESEEDINGS WITHIN THE PLANTING SEASON.
1. ADEQUATE VEGETATIVE STABILIZATION REQUIRES 95 PERCENT GROUNDCOVER.
2. IF AN AREA HAS LESS THAN 40 PERCENT GROUNDCOVER, RESTABILIZE FOLLOWING THE ORIGINAL RECOMMENDATIONS FOR LIME, FERTILIZER, SEEDBED PREPARATION, AND SEEDING.
3. IF AN AREA HAS BETWEEN 40 AND 94 PERCENT GROUNDCOVER, OVER-SEED AND FERTILIZE USING HALF OF THE RATES ORIGINALLY SPECIFIED.
4. 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

A. INCREMENTAL STABILIZATION – CUT SLOPES
  1. 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.
  2. CONSTRUCTION SEQUENCE EXAMPLE (REFER TO FIGURE B.1):
    a. CONSTRUCT AND STABILIZE ALL TEMPORARY SWALES OR DIKES THAT WILL BE USED TO CONVEY RUNOFF AROUND THE EXCAVATION.
    b. PERFORM PHASE 1 EXCAVATION, PREPARE SEEDBED, AND STABILIZE.
    c. PERFORM PHASE 2 EXCAVATION, PREPARE SEEDBED, AND STABILIZE. OVERSEED PHASE 1 AREAS AS NECESSARY.
    d. 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.

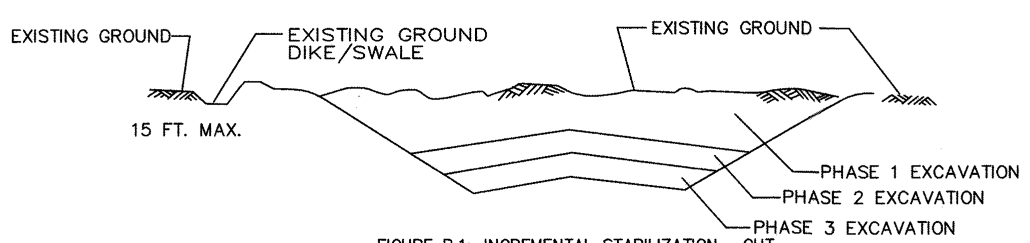

FIGURE B.1: INCREMENTAL STABILIZATION . CUT

B. INCREMENTAL STABILIZATION – FILL SLOPES
  1. CONSTRUCT AND STABILIZE FILL SLOPES IN INCREMENTS NOT TO EXCEED 15 FEET IN HEIGHT. PREPARE SEEDBED AND APPLY SEED APPLY SEED AND MULCH ON ALL SLOPES AS THE WORK PROGRESSES.
  2. STABILIZE SLOPES IMMEDIATELY WHEN THE VERTICAL HEIGHT OF A LIFT REACHES 15 FEET, OR WHEN THE GRADING OPERATION CEASES AS PRESCRIBED IN THE PLANS.
  3. 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.
  4. CONSTRUCTION SEQUENCE EXAMPLE (REFER TO FIGURE B.2):
    a. 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.
    b. 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.
    c. PLACE PHASE 1 FILL, PREPARE SEEDBED, AND STABILIZE.
    d. PLACE PHASE 2 FILL, PREPARE SEEDBED, AND STABILIZE.
    e. 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.

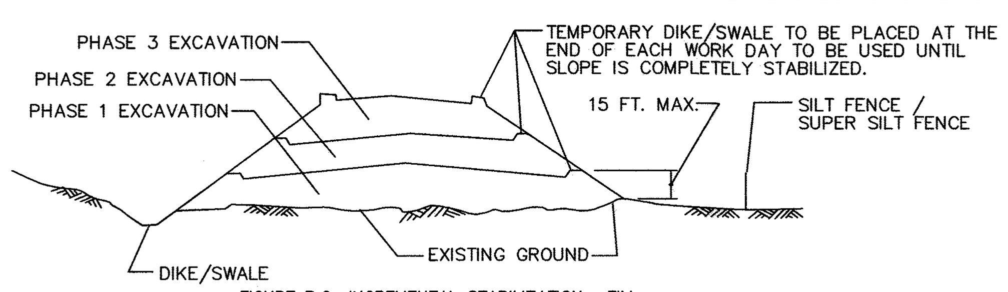

FIGURE B.2: INCREMENTAL STABILIZATION . FILL

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

Alexander Bratchic — 08/04/21
HOWARD SOIL CONSERVATION DISTRICT — DATE

ENGINEER'S CERTIFICATE

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Nicholas Barrick — 6/28/21
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) — DATE

DEVELOPER'S CERTIFICATE

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Charles Nightingale — 6/28/21
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) — DATE

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

DEFINITION

THE PROCESS OF PREPARING THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

PURPOSE

TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH.

CONDITIONS WHERE PRACTICE APPLIES

WHERE VEGETATIVE STABILIZATION IS TO BE ESTABLISHED.

CRITERIA

A. SOIL PREPARATION
  1. TEMPORARY STABILIZATION
    A. SEEDBED PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DI SC 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 ARE TO BE TRACKED WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE.
    B. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.
    C. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.
  2. PERMANENT STABILIZATION
    A. A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:
      I. SOIL PH BETWEEN 6.0 AND 7.0.
      II. SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM).
      III. 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.
      IV. SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT.
      V. SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.
    B. APPLICATION OF AMENDMENTS OR TOPSOIL IS RE QUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS.
    C. 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.
    D. APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST.
    E. MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. RAKE LAWN AREAS TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS 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.

B. TOPSOILING
  1. 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.
  2. 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.
  3. TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
    A. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
    B. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.
    C. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
    D. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.
  4. AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN.
  5. TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:
    A. 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 1½ INCHES IN DIAMETER.
    B. 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.
    C. 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.
  6. TOPSOIL APPLICATION
    A. EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL.
    B. UNIFORMLY DISTRIBUTE TOPSOIL IN A 5 TO 8 INCH LAYER AND LIGHTLY COMPACT TO A MINIMUM THICKNESS OF 4 INCHES. SPREADING IS TO BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS MUST BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.
    C. 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.

C. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)
  1. SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OF 5 ACRES OR MORE. SOIL ANALYSIS MAY BE PERFORMED BY A RECOGNIZED PRIVATE OR COMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSES.
  2. FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FREE FLOWING AND SUITABLE FOR ACCURATE APPLICATION BY APPROPRIATE EQUIPMENT. MANURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR APPROVAL FROM THE APPROPRIATE APPROVAL AUTHORITY. FERTILIZERS MUST ALL BE DELIVERED TO THE SITE FULLY LABELED ACCORDING TO THE APPLICABLE LAWS AND MUST BEAR THE NAME, TRADE NAME OR TRADEMARK AND WARRANTY OF THE PRODUCER.
  3. LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING) 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.
  4. 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.
  5. 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.

DAILY STABILIZATION NOTE

CONTRACTOR SHALL ONLY DISTURB THAT AREA WHICH CAN BE STABILIZED BY THE END OF EACH WORK DAY. STABILIZATION SHALL BE AS FOLLOWS: FOR SIDEWALK AREAS OR AREAS TO BE PAVED, THE APPLICATION OF STONE. FOR AREAS TO BE VEGETATIVELY STABILIZED, PERMANENT SEED, EROSION CONTROL MATTING FOR SWALES AND PERMANENT SEED AND MULCH FOR ALL OTHER AREAS.

B.3 PLANT HARDNESS ZONE

PLANT HARDINESS ZONE	6b
IF AREA TO BE VEGETATIVELY STABILIZED EXCEEDS 5 ACRES, THE FOLLOWING APPLIES: AT THE TIME OF FINAL GRADING SOILS TEST TO BE PERFORMED TO DETERMINE FERTILIZER AND LIME RATE	

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 CONTROLS, SLOPES, AND ANY DISTURBED AREA NOT UNDER ACTIVE GRADING.

CRITERIA

A. SEEDING
  1. SPECIFICATIONS
    A. 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 TAGS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE.
    B. 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.
    C. INOCULANTS: THE INOCULANT FOR TREATING LEGUME SEED 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 HYDROSEEDING. 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.
    D. SOD OR SEED MUST NOT 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 PHYTO-TOXIC MATERIALS.
  2. APPLICATION
    A. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS.
      I. 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.
      II. 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.
    B. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL.
      I. CULTIPACKING 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.
      II. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.
    C. HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER).
      I. 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 (PHOSPHOROUS), 200 POUNDS PER ACRE; K20 (POTASSIUM), 200 POUNDS PER ACRE.
      II. LIME: USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING). NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.
      III. MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.
      IV. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

B. MULCHING
  1. MULCH MATERIALS (IN ORDER OF PREFERENCE)
    A. 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, CAKED, DECAYED, OR EXCESSIVELY DUSTY. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED.
    B. WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.
      I. 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.
      II. WCFM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.
      III. 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.
      IV. WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC.
      V. 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.
  2. APPLICATION
    A. APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.
    B. 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.
    C. 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.
  3. ANCHORING
    A. PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE), DEPENDING UPON THE SIZE OF THE AREA AND EROSION HAZARD:
      I. A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE 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.
      II. 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.
      III. SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRO-TACK), DCA-70, PETROSET, 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.
      IV. 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

1. 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.
2. FOR SITES HAVING SOIL TESTS PERFORMED, USE AND SHOW THE RECOMMENDED RATES BY THE TESTING AGENCY. SOIL TESTS ARE NOT REQUIRED FOR TEMPORARY SEEDING.
3. WHEN STABILIZATION IS REQUIRED OUTSIDE OF A SEEDING SEASON, APPLY SEED AND MULCH OR STRAW MULCH ALONE AS PRESCRIBED IN SECTION B-4-3.A.1.B AND MAINTAIN UNTIL THE NEXT SEEDING SEASON.

B.1 Temporary Seeding Rates, Depths, and Dates

PLANT SPECIES	SEEDING RATE LB/AC	SEEDING RATE LB/100 FT²	SEEDING DEPTH (INCHES)	SEEDING RATE 5B AND 6A	SEEDING RATE 6B	SEEDING RATE 7A AND 7B
COOL-SEASON GRASSES						
ANNUAL RYEGRASS (LOLIUM PERENNE SSP. MULTIFORM)	40	1.0	0.5	MAR 15 TO MAY 31; AUG 1 TO SEP 30	MAR 1 TO MAY 15; AUG 1 TO OCT 15	FEB 15 TO APR 30; AUG 15 TO NOV 30
BARLEY (HORDEUM VULGARE)	96	2.2	1.0	MAR 15 TO MAY 31; AUG 1 TO SEP 30	MAR 1 TO MAY 15; AUG 1 TO OCT 15	FEB 15 TO APR 30; AUG 15 TO NOV 30
OATS (AVENA SATIVA)	72	1.7	1.0	MAR 15 TO MAY 31; AUG 1 TO SEP 30	MAR 1 TO MAY 15; AUG 1 TO OCT 15	FEB 15 TO APR 30; AUG 15 TO NOV 30
WHEAT (TRITICUM AESTIVUM)	120	2.8	1.0	MAR 15 TO MAY 31; AUG 1 TO SEP 30	MAR 1 TO MAY 15; AUG 1 TO OCT 15	FEB 15 TO APR 30; AUG 15 TO NOV 30
CEREAL RYE (SECALE CEREALE)	112	2.8	1.0	MAR 15 TO MAY 31; AUG 1 TO OCT 31	MAR 1 TO MAY 15; AUG 1 TO OCT 15	FEB 15 TO APR 30; AUG 15 TO DEC 15
WARM-SEASON GRASSES						
FOXTAIL MILLET (SETARIA ITALICA)	30	0.7	0.5	JUN 1 TO JUL 31	MAY 16 TO JUL 31	MAY 1 TO AUG 14
PEARL MILLET (PENNISETUM GLAUCUM)	20	0.5	0.5	JUN 1 TO JUL 31	MAY 16 TO JUL 31	MAY 1 TO AUG 14

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

NOTES: 1. SEEDING RATES FOR WARM-SEASON GRASSES ARE IN POUNDS OF PURE LIVE SEED (PLS). ACTUAL PLANTING RATES SHALL BE ADJUSTED TO REFLECT PERCENT SEED GERMINATION AND PURITY, AS TESTED. ADJUSTMENT ARE USUALLY NOT NEEDED FOR THE COOL-SEASON GRASSES.

SEEDING RATES LISTED ABOVE ARE FOR TEMPORARY SEEDING, WHEN PLANTED ALONE. WHEN PLANTED AS A NURSE CROP WITH PERMANENT SEED MIXES, USE 1/3 OF THE SEEDING RATE LISTED ABOVE FOR BARLEY, OATS AND WHEAT. FOR – SMALLER – SEEDED GRASSES (ANUAL RYEGRASS, PEARL MILLET, FOXTAIL MILLET), DO NOT EXCEED MORE THAN 5% (BY WEIGHT) OF THE OVERALL PERMANENT SEEDING MIX. CEREAL RYE GENERALLY SHOULD NOT BE USED AS A NURSE CROP, UNLESS PLANTING WILL OCCUR IN THE VERY LATE FALL BEYOND THE SEEDING DATE FOR OTHER TEMPORARY SEEDINGS. CEREAL RYE HAS ALLELOPATHIC PROPERTIES THAT INHIBIT THE GERMINATION AND GROWTH OF OTHER PLANTS IF IT MUST BE USED AS NURSE CROP, SEED AS1/3 OF THE RATE LISTED ABOVE. OATS ARE THE RECOMMENDED NURSE CROP FOR WARM-SEASON GRASSES.

2. FOR SANDY SOILS, PLANT SEEDS AT TWICE THE DEPTH LISTED ABOVE.

3. THE PLANTING DATES LISTED ARE AVERAGES FOR EACH ZONE AND MAY REQUIRE ADJUSTMENTS TO REFLECT LOCAL CONDITIONS, ESPECIALLY NEAR THE BOUNDARIES OF THE ZONE.

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

A. SEED MIXTURES
  1. GENERAL USE
    A. 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.
    B. 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.
    C. FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY.
    D. 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.
  2. TURFGRASS MIXTURES
    A. AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.
    B. 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.
      I. KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN AREAS THAT RECEIVE INTESIVE 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.
      II. 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.
      III. TALL FESCUE/KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN DROUGHT PRONE AREAS AND/OR FOR UPLAND 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.
      IV. 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.
    C. 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)
    D. TILL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES, LEVEL AND RAKE THE AREAS TO PREPARE A PROPER SEEDBED. REMOVE STONES AND DEBRIS OVER 1½ INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL POSE NO DIFFICULTY.

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. 33772 EXPIRATION DATE: 06/16/2023

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

E. IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (½ TO 1 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TEXTURE) UNTIL THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.

PERMANENT SEEDING SUMMARY FOR UPLAND AREAS

HARDINESS ZONE (from figure B.3): 6b SEED MIXTURE (from table B.1):				FERTILIZER RATE (10-20-20)			LIME RATE
NO.	SPECIES	APPLICATION RATE (lb/ac)	SEEDING DATES	SEEDING DEPTHS	N	P_2O	K_2O	
	KENTUCKY BLUEGRASS 10% TURF-TYPE TALL FESCUE 40% GRADE TALL FESCUE 30% PERENNIAL RYEGRASS 20%	250	3/15 – 5/15 OR 8/15 – 11/15	1/4 – 1/2 in.	45 POUNDS PER ACRE (1.0 lb/ 1000 sf)	90 lb/ac (2 lb/ 1000 sf)	90 lb/ac (2 lb/ 1000 sf)	2 tons/ac (90 lb/1000 sf)
	KENTUCKY BLUEGRASS 10% TURF-TYPE TALL FESCUE 40% GRADE TALL FESCUE 30% PERENNIAL RYEGRASS 20%	350	3/15 – 5/15 OR 8/15 – 11/15	1/4 – 1/2 in.				

B. SOD: TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).

1. GENERAL SPECIFICATIONS

A. CLASS OF TURFGRASS SOD MUST BE MARYLAND STATE CERTIFIED. SOD LABELS MUST BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR.

B. SOD MUST BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4", PLUS OR MINUS 1/4 INCH, AT THE TIME OF CUTTING. MEASUREMENT FOR THICKNESS MUST EXCLUDE TOP GROWTH AND THATCH. BROKEN PADS AND TORN OR UNEVEN ENDS WILL NOT BE ACCEPTABLE.

C. STANDARD SIZE SECTIONS OF SOD MUST BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP ON THE UPPER 10 PERCENT OF THE SECTION.

D. SOD MUST NOT BE HARVESTED OR TRANSPLANTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL.

E. SOD MUST BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOD NOT TRANSPLANTED WITHIN THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST OR SOIL SCIENTIST PRIOR TO ITS INSTALLATION.

2. SOD INSTALLATION

A. DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOD.

B. LAY THE FIRST ROW OF SOD IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO IT AND TIGHTLY WEDGED AGAINST EACH OTHER. STAGGER LATERAL JOINTS TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE AIR DRYING OF THE ROOTS.

C. WHEREVER POSSIBLE, LAY SOD WITH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERING JOINTS, ROLL AND TAMP, PEG OR OTHERWISE SECURE THE SOD TO PREVENT SLIPPAGE ON SLOPES. ENSURE SOLID CONTACT EXISTS BETWEEN SOD ROOTS AND THE UNDERLYING SOIL SURFACE.

D. WATER THE SOD IMMEDIATELY FOLLOWING ROLLING AND TAMPING UNTIL THE UNDERSIDE OF THE NEW SOD PAD AND SOIL SURFACE BELOW THE SOD ARE THOROUGHLY WET. COMPLETE THE OPERATIONS OF LAYING, TAMPING AND IRRIGATING FOR ANY PIECE OF SOD WITHIN EIGHT HOURS.

3. SOD MAINTENANCE

A. IN THE ABSENCE OF ADEQUATE RAINFALL, WATER DAILY DURING THE FIRST WEEK OR AS OFTEN AND SUFFICIENTLY AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF 4 INCHES. WATER SOD DURING THE HEAT OF THE DAY TO PREVENT WILTING.

B. AFTER THE FIRST WEEK, SOD WATERING IS REQUIRED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE CONTENT.

C. DO NOT MOW UNTIL THE SOD IS FIRMLY ROOTED. NO MORE THAN 1/3 OF THE GRASS LEAF MUST BE REMOVED BY THE INITIAL CUTTING OR SUBSEQUENT CUTTINGS. MAINTAIN A GRASS HEIGHT OF AT LEAST 3 INCHES UNLESS OTHERWISE SPECIFIED.

B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

DEFINITION

A MOUND OR PILE OF SOIL PROTECTED BY APPROPRIATELY DESIGNED EROSION AND SEDIMENT CONTROL MEASURES

PURPOSE

TO PROIVDE A DESIGNATED LOCATION FOR THE TEMPORARY STORAGE OF SOIL THAT CONTROLS THE POTENTIAL FOR EROSION, SEDIMENTATION, AND CHANGES TO DRAINAGE PATTERNS.

CONDITIONS WHERE PRACTICE APPLIES

STOCKPILE AREAS ARE UTILIZED WHEN IT IS NECESSARY TO SALVAGE AND STORE SOIL FOR LATER USE.

CRITERIA

1. THE STOCKPILE LOCATION AND ALL RELATED SEDIMENT CONTROL PRACTICES MUST BE CLEARLY INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN.
2. THE FOOTPRINT OF THE STOCKPILE MUST BE SIZED TO ACCOMMODATE THE ANTICIPATED VOLUME OF MATERIAL AND BASED ON A SIDE SLOPE RATIO NO STEEPER THAN 2:1. BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING.
3. RUNOFF FROM THE STOCKPILE AREA MUST DRAIN TO A SUITABLE SEDIMENT CONTROL PRACTICE.
4. ACCESS THE STOCKPILE AREA FROM THE UPGRADE SIDE.
5. CLEAR WATER RUNOFF INTO THE STOCKPILE AREA MUST BE MINIMIZED BY USE OF A DIVERSION DEVICE SUCH AS AN EARTH DIKE, TEMPORARY SWALE OR DIVERSION FENCE. PROVISIONS MUST BE MADE FOR DISCHARGING CONCENTRATED FLOW IN A NON-EROSIVE MANNER.
6. WHERE RUNOFF CONCENTRATES ALONG THE TOE OF THE STOCKPILE FILL, AN APPROPRIATE EROSION/SEDIMENT CONTROL PRACTICE MUST BE USED TO INTERCEPT THE DISCHARGE.
7. STOCKPILES MUST BE STABLIZED IN ACCORDANCE WITH THE 3/7 DAY STABILIZATION REQUIREMENT AS WELL AS STANDARD B-4-1 INCREMENTAL STABILIZATION AND STANDARD B-4-4 TEMPORARY STABILIZATION.
8. IF THE STOCKPILE IS LOCATED ON AN IMPERVIOUS SURFACE, A LINER SHOULD BE PROVIDED BELOW THE STOCKPILE TO FACILITATE CLEANUP. STOCKPILES CONTAINING CONTAMINATED MATERIAL MUST BE COVERED WITH IMPERMEABLE SHEETING.

MAINTENANCE

THE STOCKPILE AREA MUST CONTINUOUSLY MEET THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABILISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. SIDE SLOPES MUST BE MAINTAINED AT NO STEEPER THAN A 2:1 RATIO. THE STOCKPILE AREA MUST BE KEPT FREE OF EROSION. IF THE VERTICAL HEIGHT OF A STOCKPILE EXCEEDS 20 FEET FOR 2:1 SLOPES, 30 FEET FOR 3:1 SLOPES, OR 40 FEET FOR 4:1 SLOPES, BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING.

NOTE:
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 THERETO

HOWARD SOIL CONSERVATION DISTRICT (HSCD) STANDARD SEDIMENT CONTROL NOTES

1. A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS,CONSTRUCTION INSPECTION DIVISION (CID), 410-313-1855 AFTER THE FUTURE LOD AND PROTECTED AREAS ARE MARKED CLEARLY IN THE FIELD. A MINIMUM OF 48 HOUR NOTICE TO CID MUST BE GIVEN AT THE FOLLOWING STAGES:
   a. PRIOR TO THE START OF EARTH DISTURBANCE,
   b. UPON COMPLETION OF THE INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING,
   c. PRIOR TO THE START OF ANOTHER PHASE OF CONSTRUCTION OR OPENING OF ANOTHER GRADING UNIT,
   d. PRIOR TO THE REMOVAL OR MODIFICATION OF SEDIMENT CONTROL PRACTICES. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE. OTHER RELATED STATE AND FEDERAL PERMITS SHALL BE REFERENCED, TO ENSURE COORDINATION AND TO AVOID CONFLICTS WITH THIS PLAN.
2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION IS REQUIRED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED AREAS ON THE PROJECT SITE EXCEPT FOR THOSE AREAS UNDER ACTIVE GRADING.
4. 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 TOPSOIL (SEC. B-4-2), PERMANENT SEEDING (SEC. B-4-5), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-3). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES IF THE GROUND IS FROZEN. INCREMENTAL STABILIZATION (SEC. B-4-1) SPECIFICATIONS SHALL BE ENFORCED IN AREAS WITH >15'OF CUT AND/OR FILL. STOCKPILES (SEC. B-4-8) IN EXCESS OF 20 FT. MUST BE BENCHED WITH STABLE OUTLET. ALL CONCENTRATED FLOW, STEEP SLOPE, AND HIGHLY ERODIBLE AREAS SHALL RECEIVE SOIL STABILIZATION MATTING (SEC. B-4-6).
5. 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 CID.
6. SITE ANALYSIS:

TOTAL AREA OF SITE:	117.84 ACRES
AREA DISTURBED:	6.71 ACRES
AREA TO BE ROOFED OR PAVED:	3.98 ACRES
AREA TO BE VEGETATIVELY STABILIZED:	2.73 ACRES
TOTAL CUT PHASE 1:	21287 CU. YDS.
TOTAL FILL PHASE 1:	317 CU. YDS.
TOTAL CUT PHASE 2:	20628 CU. YDS.
TOTAL FILL PHASE 2:	7189 CU. YDS.
OFFSITE WASTE/BORROW AREA LOCATION:	SITE WITH APPROVED SED. CONTROL PLAN

7. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
8. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE CID. THE SITE AND ALL CONTROLS SHALL BE INSPECTED BY THE CONTRACTOR WEEKLY; AND THE NEXT DAY AFTER EACH RAIN EVENT. A WRITTEN REPORT BY THE CONTRACTOR, MADE AVAILABLE UPON REQUEST, IS PART OF EVERY INSPECTION AND SHOULD INCLUDE:
   - INSPECTION DATE
   - INSPECTION TYPE (ROUTINE, PRE-STORM EVENT, DURING RAIN EVENT)
   - NAME AND TITLE OF INSPECTOR
   - WEATHER INFORMATION (CURRENT CONDITIONS AS WELL AS TIME AND AMOUNT OF LAST RECORDED PRECIPITATION)
   - BRIEF DESCRIPTION OF PROJECT'S STATUS (E.G., PERCENT COMPLETE) AND/OR CURRENT ACTIVITIES
   - EVIDENCE OF SEDIMENT DISCHARGES
   - IDENTIFICATION OF PLAN DEFICIENCIES
   - IDENTIFICATION OF SEDIMENT CONTROLS THAT REQUIRE MAINTENANCE
   - IDENTIFICATION OF MISSING OR IMPROPERLY INSTALLED SEDIMENT CONTROLS
   - COMPLIANCE STATUS REGARDING THE SEQUENCE OF CONSTRUCTION AND STABILIZATION REQUIREMENTS
   - PHOTOGRAPHS
   - MONITORING/SAMPLING
   - MAINTENANCE AND/OR CORRECTIVE ACTION PERFORMED
   - OTHER INSPECTION ITEMS AS REQUIRED BY THE GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES (NPDES, MDE).
9. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH CAN AND SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.
10. ANY MAJOR CHANGES OR REVISIONS TO THE PLAN OR SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE HSCD PRIOR TO PROCEEDING WITH CONSTRUCTION. MINOR REVISIONS MAY ALLOWED BY THE CID PER THE LIST OF HSCD-APPROVED FIELD CHANGES.
11. DISTURBANCE SHALL NOT OCCUR OUTSIDE THE L.O.D. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 AC. PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE CID. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE HSCD, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.
12. WASH WATER FROM ANY EQUIPMENT, VEHICLES, WHEELS, PAVEMENT, AND OTHER SOURCES MUST BE TREATED IN A SEDIMENT BASIN OR OTHER APPROVED WASHOUT STRUCTURE.
13. TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE FOR REDISTRIBUTION ONTO FINAL GRADE.
14. ALL SILT FENCE AND SUPER SILT FENCE SHALL BE PLACED ON-THE-CONTOUR, AND BE IMBRICATED AT 25' MINIMUM INTERVALS, WITH LOWER ENDS CURLED UPHILL BY 2'IN ELEVATION.
15. STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUSIVE):
   - USE I AND IP MARCH 1 – JUNE 15
   - USE III AND IIIP OCTOBER 1 – APRIL 30
   - USE IV MARCH 1 – MAY 31
16. A COPY OF THIS PLAN, THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND ASSOCIATED PERMITS SHALL BE ON-SITE AND AVAILABLE WHEN THE SITE IS ACTIVE.

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

Alexander Butchis — 08/04/21
HOWARD SOIL CONSERVATION DISTRICT — DATE

ENGINEER'S CERTIFICATE

"I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

6/28/21
DATE
Nicholas Bauch
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE)

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS 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."

6/28/21
DATE
Charles Dobbyn
SIGNATURE OF DEVELOPER (PRINT NAME BELOW 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. 33772 EXPIRATION DATE: 06/16/2023

KCI TECHNOLOGIES
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APPROVED: Howard County Department of Planning & Zoning

Director — 9-3-21 Date
Chief, Division of Land Development — 9/1/21 Date
Chief, Development Engineering Division — 8/6/21 Date

Rev:	Date:	Description:	By:
1			
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3			
4			
5			

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

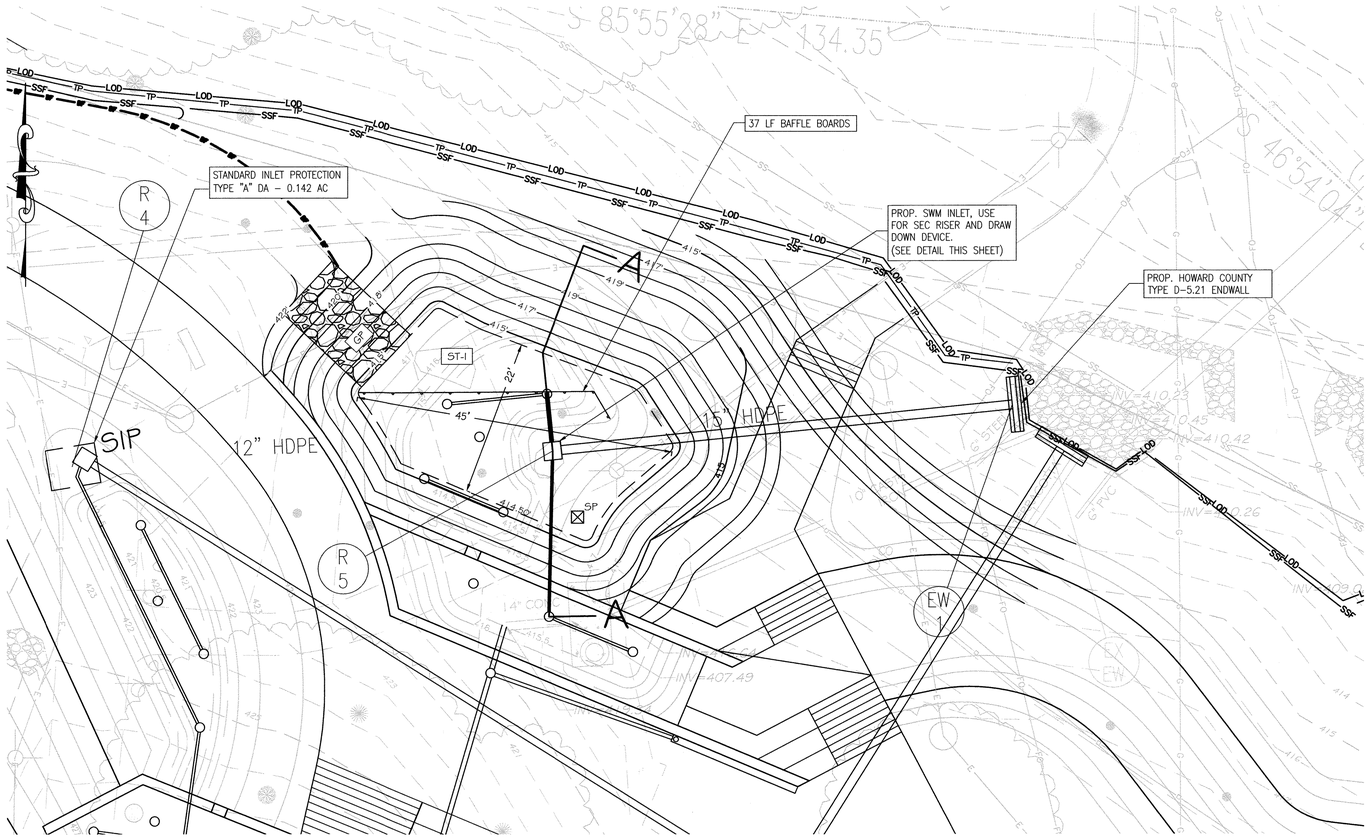
Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date:	04-30-2021	Scale:	AS SHOWN
Drawn By:	F.F.W.	Designed By:	F.F.W.
Approved By:	N.A.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title:
EROSION AND SEDIMENT CONTROL NOTES

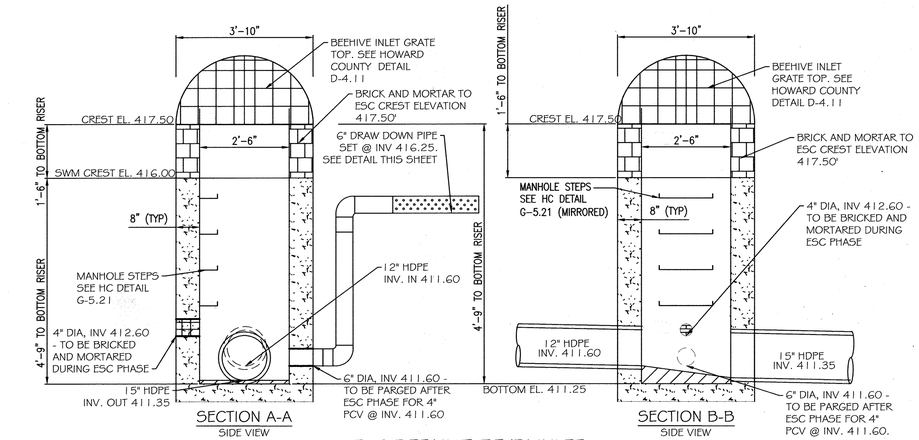
STATE OF MARYLAND — NICHOLAS A. BAUCH — 33772 — PROFESSIONAL ENGINEER

Discipline Number: C1.28
Sheet Number: 32 OF 53



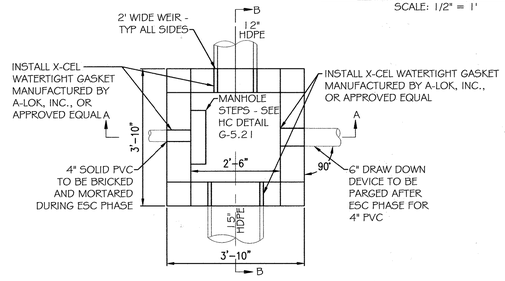
SEDIMENT TRAP 1 DETAIL - PHASE 2

SCALE: 1"=10'



R-5 DETAIL TYPE 'D' INLET

SCALE: 1/2" = 1'

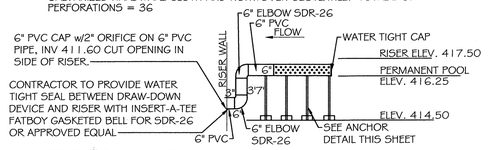


TOP VIEW

BEEHIVE GRATE REMOVED FOR CLARITY

NOTES:

1. SEE HOWARD COUNTY PLATE D-4.11 FOR ADDITIONAL STRUCTURE INFORMATION.
2. SEE DETAIL THIS SHEET FOR DRAW-DOWN DEVICE FOR 6" ORIFICE.

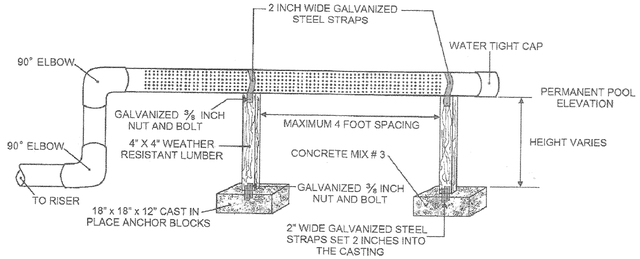


CONSTRUCTION SPECIFICATIONS

1. PERFORATE PIPE WITH 1 INCH DIAMETER PERFORATIONS SPACED 6 INCHES APART LONGITUDINALLY AND RADIALLY OR IN ACCORDANCE WITH APPROVED PLAN.
2. WRAP THE PERFORATED PORTION OF THE DRAW-DOWN DEVICE FIRST WITH 1-4 INCH GALVANIZED HARDWARE CLOTH, THEN WITH NONWOVEN GEOTEXTILE. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS. DO NOT WRAP WITH MORE THAN ONE LAYER OF GEOTEXTILE.
3. AS AN ALTERNATE TO STONE ANCHORING, SEE HORIZONTAL DRAW-DOWN DETAIL (SEE THIS SHEET FOR DETAIL)
4. REMOVE SEDIMENT WHEN IT ACCUMULATES TO CLEANOUT ELEVATION (50% OF THE WET STORAGE DEPTH). DEPOSIT REMOVED SEDIMENT IN AN APPROVED AREA IN A SUCH A MANNER THAT IT WILL NOT ERODE. MAINTAIN WATER TIGHT CONNECTIONS. REPLACE GEOTEXTILE AROUND PERFORATED RISER IF DRY STORAGE VOLUME DOES NOT DRAW DOWN WITHIN 10 HOURS.

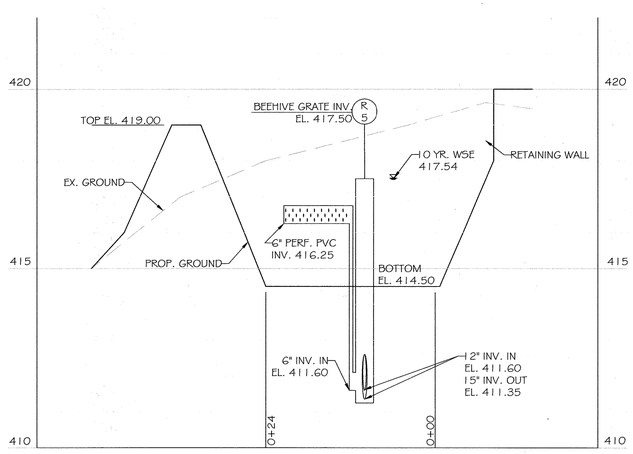
SEDIMENT TRAP #1 DRAW-DOWN DEVICE

NOT TO SCALE



HORIZONTAL DRAW-DOWN DEVICE ANCHOR DETAIL

NOT TO SCALE



SECTION A-A THROUGH SEDIMENT TRAP #1

SCALE: H: 1"=10'
V: 1" = 2'

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

Alexander Bratchie — 08/04/21
HOWARD SOIL CONSERVATION DISTRICT — DATE

ENGINEER'S CERTIFICATE

"I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

6/28/21 — DATE
Richard Bourdo
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE)

DEVELOPER'S CERTIFICATE

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6/28/21 — DATE
Charles Nightingale
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE)

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APPROVED: Howard County Department of Planning & Zoning

Director — 9-8-21 Date
Chief, Division of Land Development — 9/7/21 Date
Chief, Development Engineering Division — 8/18/21 Date

Rev:	Date:	Description:	By:
1			
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4			
5			

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 0458868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date: 04-30-2021		Scale: AS SHOWN	
Drawn By: F.F.W.		Designed By: F.F.W.	
Approved By: N.A.B.		Project No: 271906728	
Tax Map-Grid: 35-6	Zoning: POR & NT		

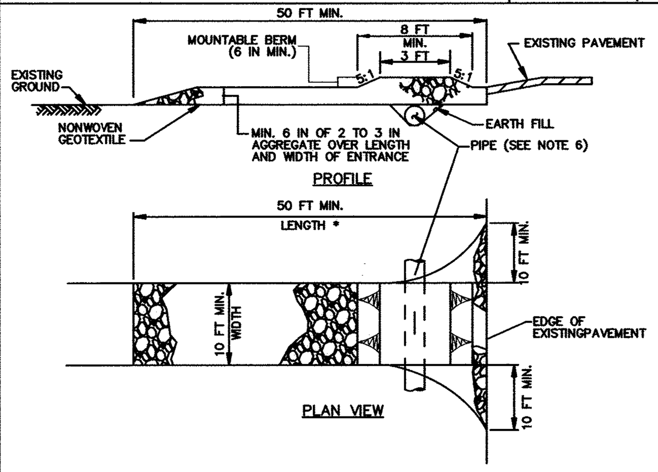
Sheet Title:
EROSION AND SEDIMENT CONTROL DETAILS

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. 33772 EXPIRATION DATE: 06/16/2023

Discipline Number: C1.29
Sheet Number: 33 OF 53

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS

1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.

2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.

3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.

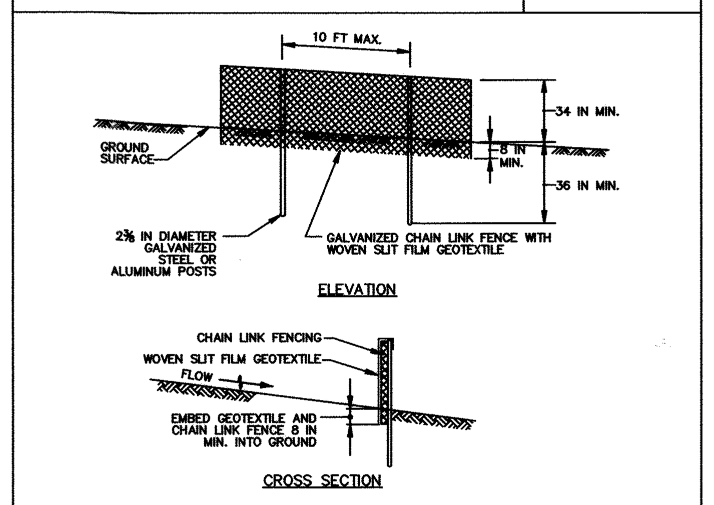
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.

5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

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

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL: SSF



CONSTRUCTION SPECIFICATIONS

1. INSTALL 2⅜ 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 (2⅜ 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 SEDIMENT BY PASS.

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 GOING AROUND THE ENDS OF THE SUPER SILT FENCE.

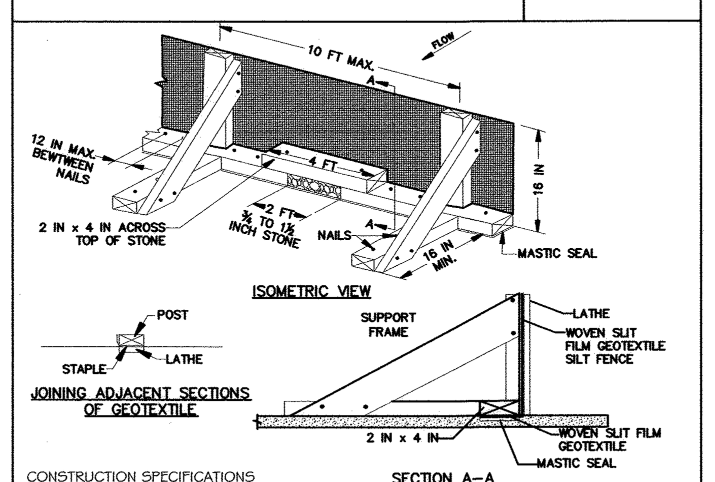
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.

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.

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

DETAIL E-2 SILT FENCE ON PAVEMENT

STANDARD SYMBOL: SFOP



CONSTRUCTION SPECIFICATIONS

1. USE NOMINAL 2 INCH X 4 INCH LUMBER.

2. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.

3. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.

4. SPACE UPRIGHT SUPPORTS NO MORE THAN 10 FEET APART.

5. PROVIDE A TWO FOOT OPENING BETWEEN EVERY SET OF SUPPORTS AND PLACE STONE IN THE OPENING OVER GEOTEXTILE.

6. KEEP SILT FENCE TAUT AND SECURELY STAPLE TO THE UPSLOPE SIDE OF UPRIGHT SUPPORTS. EXTEND GEOTEXTILE UNDER 2x4.

7. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, FOLD, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL. ATTACH LATHE.

8. PROVIDE A MASTIC SEAL BETWEEN PAVEMENT, GEOTEXTILE, AND 2x4 TO PREVENT SEDIMENT-LADEN WATER FROM ESCAPING BENEATH SILT FENCE INSTALLATION.

9. SECURE BOARDS TO PAVEMENT WITH 40D 5 INCH MINIMUM LENGTH NAILS.

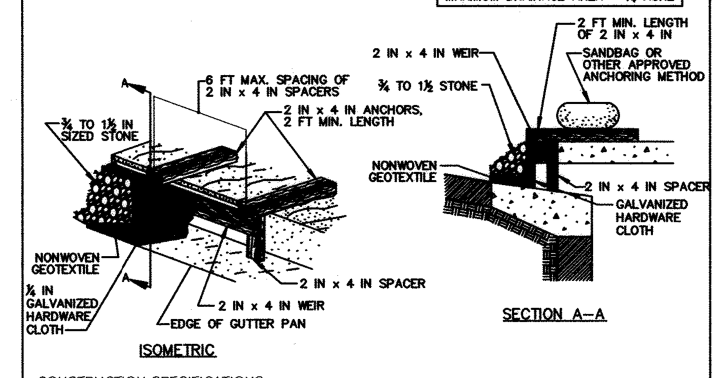
10. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. MAINTAIN WATER TIGHT SEAL ALONG BOTTOM. REPLACE STONE IF DISPLACED.

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

DETAIL E-9-3 CURB INLET PROTECTION

STANDARD SYMBOL: CIP

MAXIMUM DRAINAGE AREA = ¼ ACRE



CONSTRUCTION SPECIFICATIONS

1. USE NOMINAL 2 INCH x 4 INCH LUMBER

2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.

3. NAIL THE 2x4 WEIR TO 9 INCH LONG VERTICAL SPACERS (MAXIMUM 6 FEET APART).

4. ATTACH A CONTINUOUS PIECE OF ¼ INCH GALVANIZED HARDWARE CLOTH, WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING IT 2 FEET BEYOND THROAT ON EACH SIDE.

5. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH TO THE 2x4 WEIR.

6. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FEET LENGTH). EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.

7. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.

8. FORM THE HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND FACE OF CURB TO SPAN THE INLET OPENING. COVER THE HARDWARE CLOTH AND GEOTEXTILE WITH CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE.

9. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.

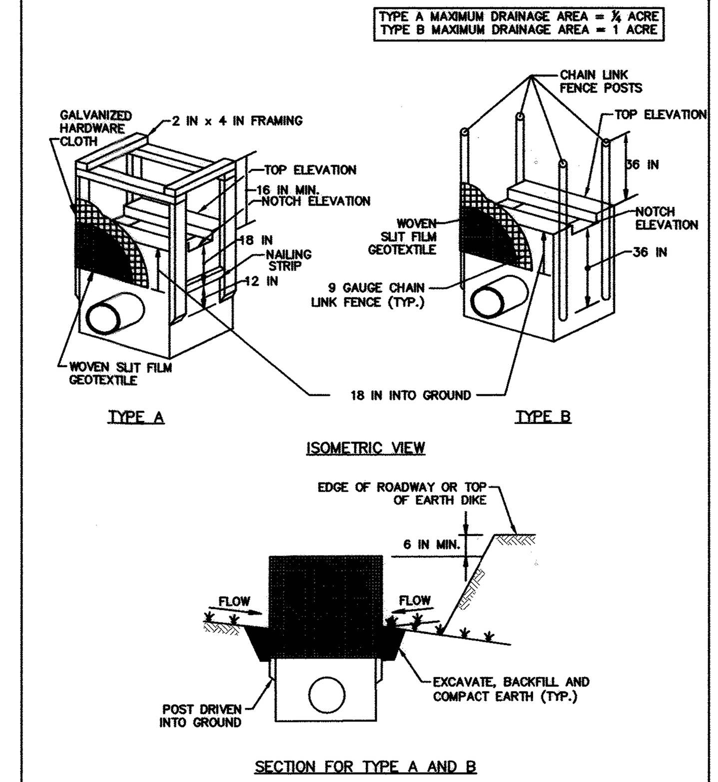
10. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

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

DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL: SIP

TYPE A MAXIMUM DRAINAGE AREA = ¼ ACRE
TYPE B MAXIMUM DRAINAGE AREA = 1 ACRE



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DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL: SIP

CONSTRUCTION SPECIFICATIONS

1. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.

2. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.

3. FOR TYPE A, USE NOMINAL 2 INCH X 4 INCH CONSTRUCTION GRADE LUMBER POSTS, DRIVEN 1 FOOT INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2X4 FRAME AS SHOWN. STRETCH ¼ INCH GALVANIZED HARDWARE CLOTH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. FASTEN GEOTEXTILE SECURELY TO THE HARDWARE CLOTH WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18 INCHES BELOW THE WEIR CREST. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED TO THE POST.

FOR TYPE B, USE 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND 6 FOOT LENGTH, DRIVEN A MINIMUM OF 36 INCHES BELOW THE WEIR CREST AT EACH CORNER OF THE STRUCTURE. FASTEN 9 GAUGE OR HEAVIER CHAIN LINK FENCE, 42 INCHES IN HEIGHT, SECURELY TO THE FENCE POSTS WITH WIRE TIES. FASTEN GEOTEXTILE SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 18 INCHES BELOW THE WEIR CREST.

4. BACKFILL AROUND THE INLET IN LOOSE 4 INCH LIFTS AND COMPACT UNTIL SOIL IS LEVEL WITH THE NOTCH ELEVATION ON THE ENDS AND TOP ELEVATION ON THE SIDES.

5. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. 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.

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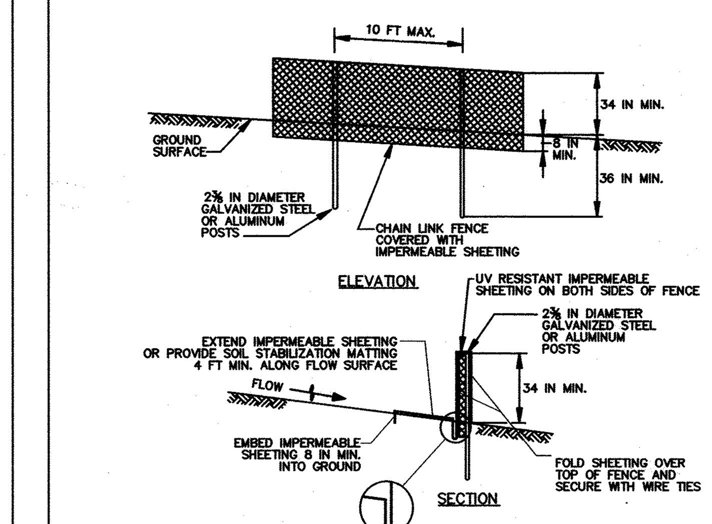
DETAIL C-9 DIVERSION FENCE

STANDARD SYMBOL: DF

MAXIMUM DRAINAGE AREA = 2 ACRES



CONSTRUCTION SPECIFICATIONS

1. USE 42 INCH HIGH, 9 GAUGE OR THICKER CHAIN LINK FENCING (2⅜ INCH MAXIMUM OPENING).

2. USE 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. THE POSTS DO NOT NEED TO BE SET IN CONCRETE.

3. FASTEN CHAIN LINK FENCE SECURELY TO THE FENCE POSTS WITH WIRE TIES.

4. SECURE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING TO CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT TOP, MID SECTION, AND BELOW GROUND SURFACE.

5. EXTEND SHEETING A MINIMUM OF 4 FEET ALONG FLOW SURFACE AND EMBED END A MINIMUM OF 8 INCHES INTO GROUND. SOIL STABILIZATION MATTING MAY BE USED IN LIEU OF IMPERMEABLE SHEETING ALONG FLOW SURFACE.

6. WHEN TWO SECTIONS OF SHEETING ADJOIN EACH OTHER, OVERLAP BY 6 INCHES AND FOLD WITH SEAM FACING DOWNGRADE.

7. KEEP FLOW SURFACE ALONG DIVERSION FENCE AND POINT OF DISCHARGE FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE. REPLACE IMPERMEABLE SHEETING IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

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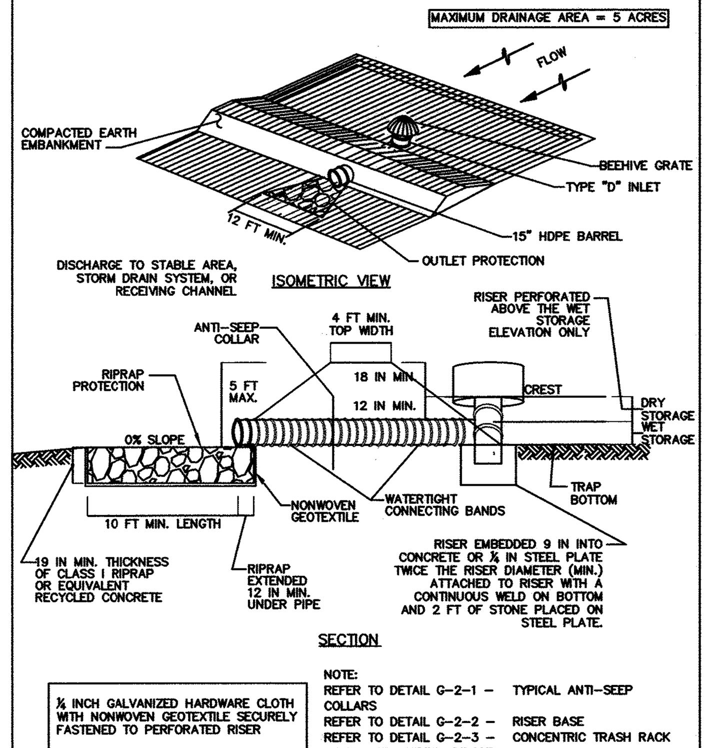
DETAIL G-1-1 PIPE OUTLET SEDIMENT TRAP ST-I

STANDARD SYMBOL: ST-I

MAXIMUM DRAINAGE AREA = 5 ACRES



¼ INCH GALVANIZED HARDWARE CLOTH WITH NONWOVEN GEOTEXTILE SECURELY FASTENED TO PERFORATED RISER
- NONWOVEN GEOTEXTILE
- GALVANIZED HARDWARE CLOTH
- RISER

NOTE:
REFER TO DETAIL G-2-1 – TYPICAL ANTI-SEEP COLLARS
REFER TO DETAIL G-2-2 – RISER BASE
REFER TO DETAIL G-2-3 – CONCENTRIC TRASH RACK AND ANTI-VORTEX DEVICE

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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
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DETAIL G-1-1 PIPE OUTLET SEDIMENT TRAP ST-I

STANDARD SYMBOL: ST-I

CONSTRUCTION SPECIFICATIONS

1. CONSTRUCT TRAP IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE AVOIDED.

2. CLEAR, GRUB, AND STRIP ANY VEGETATION AND ROOT MAT FROM THE AREA UNDER THE EMBANKMENT AND TRAP BOTTOM.

3. PERFORATE THE RISER WITH 1 INCH DIAMETER HOLES SPACED 6 INCHES ON CENTER WITH THE LOWEST PERFORATIONS AT THE WET STORAGE ELEVATION OR PROVIDE A HORIZONTAL OR VERTICAL DRAW-DOWN DEVICE PERFORATED ACCORDING TO APPROVED PLAN. DO NOT PERFORATE THE RISER WITHIN 6 INCHES OF THE TOP OF THE HORIZONTAL BARREL.

4. SET RISER/BARREL ASSEMBLY PRIOR TO EMBANKMENT CONSTRUCTION. MAKE ALL PIPE CONNECTIONS WATERTIGHT. OFFSET RISER FROM EMBANKMENT TO ACCOMODATE PLACEMENT OF THE TRASH RACK. ANCHOR THE RISER WITH EITHER A REINFORCED CONCRETE BASE OR STEEL PLATE BASE TO PREVENT FLOTATION. MAKE CONCRETE BASES AT LEAST TWICE THE RISER DIAMETER AND 18 INCHES THICK WITH THE RISER EMBEDDED 9 INCHES.

5. USE FILL MATERIAL FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL FOR THE EMBANKMENT.

6. HAND COMPACT IN 4 INCH LAYERS FILL MATERIAL AROUND THE PIPE SPILLWAY. PLACE A MINIMUM OF 2 FEET OF HAND COMPACTED BACKFILL OVER THE PIPE SPILLWAY BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT.

7. CONSTRUCT TOP OF EMBANKMENT 1 FOOT MINIMUM ABOVE RISER CREST. COMPACT THE EMBANKMENT BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.

8. MAKE ALL CUT AND FILL SLOPES 2:1 OR FLATTER.

9. WRAP THE RISER WITH ¼ INCH GALVANIZED HARDWARE CLOTH THEN WRAP WITH NONWOVEN GEOTEXTILE. DO NOT WRAP WITH MORE THAN ONE LAYER OF GEOTEXTILE. EXTEND HARDWARE CLOTH AND GEOTEXTILE AT LEAST 6 INCHES ABOVE THE HIGHEST PERFORATIONS AND AT LEAST 6 INCHES BELOW THE LOWEST PERFORATIONS. OVERLAP, FOLD AND FASTEN WHERE ENDS OF GEOTEXTILE COME TOGETHER TO PREVENT BYPASS. REPLACE GEOTEXTILE AS NECESSARY TO PREVENT CLOGGING.

10. USE STRAPS OR CONNECTING BANDS AT THE TOP AND BOTTOM OF THE GEOTEXTILE TO HOLD THE GEOTEXTILE AND HARDWARE CLOTH IN PLACE.

11. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.

12. STABILIZE THE EMBANKMENT AND INTERIOR SLOPES WITH SEED AND MULCH. STABILIZE POINTS OF CONCENTRATED INFLOW AS SHOWN ON APPROVED PLAN.

13. CONSTRUCT AND MAINTAIN THE OUTLET ACCORDING TO THE APPROVED PLAN AND IN SUCH A MANNER THAT EROSION AT OR BELOW THE OUTLET DOES NOT OCCUR.

14. REMOVE SEDIMENT AND RESTORE TRAP TO ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO CLEANOUT ELEVATION (50% OF WET STORAGE DEPTH). DEPOSIT REMOVED SEDIMENT IN AN APPROVED AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE. KEEP POINTS OF INFLOW AND OUTFLOW AS WELL AS INTERIOR OF THE TRAP FREE FROM EROSION, AND REMOVE ACCUMULATED DEBRIS. MAINTAIN EMBANKMENTS TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. REMOVE ANY TREES, BRUSH, OR OTHER WOODY VEGETATION GROWING ON EMBANKMENT OR NEAR PRINCIPAL SPILLWAY. MAINTAIN LINE, GRADE, AND CROSS SECTION. MAINTAIN WATER TIGHT CONNECTIONS. REPLACE GEOTEXTILE AROUND PERFORATED RISER IF DRY STORAGE VOLUME DOES NOT DRAW DOWN WITHIN 10 HOURS.

15. WHEN DEWATERING TRAP, PASS REMOVED WATER THROUGH AN APPROVED SEDIMENT CONTROL PRACTICE.

16. UPON REMOVAL, GRADE AND STABILIZE THE AREA OCCUPIED BY TRAP.

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DETAIL G-1-1 PIPE OUTLET SEDIMENT TRAP ST-I

STANDARD SYMBOL: ST-I

PIPE OUTLET SEDIMENT TRAP ST-I, TRAP NO. 1		
DRAINAGE AREA – INTIAL	0.9343	ACRES
DRAINAGE AREA – INTERIM		ACRES
DRAINAGE AREA – FINAL	0.7850	ACRES
TOTAL STORAGE REQUIRED	3363.39	CF
TOTAL STORAGE PROVIDED	3566.00	CF
WET STORAGE REQUIRED	1681.69	CF
WET STORAGE PROVIDED	1782.30	CF
DRY STORAGE REQUIRED	1681.69	CF
DRY STORAGE PROVIDED	1783.70	CF
TRAP BOTTOM ELEVATION	414.50	FT
TRAP BOTTOM DIMENSIONS	45 x 22	FT x FT
RISER CREST (DRY STORAGE) ELEVATION	417.50	FT
OUTLET (WET STORAGE) ELEVATION	416.25	FT
CLEANOUT ELEVATION	415.38	FT
TOP OF EMBANKMENT ELEVATION	419.00	FT
SIDE SLOPE	2 : 1	H:V RATIO
EMBANKMENT TOP WIDTH	4.0	FT
PRINCIPAL SPILLWAY MATERIAL (BARREL, RISER, ANTI-SEEP COLLAR)	BARREL–HDPE RISER–TYPE D INLET	
RISER DIAMETER	24	IN
BARREL DIAMETER	24	IN
TRASH RACK DIAMETER	SEE DETAIL	IN
TRASH RACK HEIGHT	SEE DETAIL	IN
ANTI-SEEP COLLAR DIMENSIONS	N/A	FT
OUTLET PROTECTION – LENGTH	USE EX. – 22'	FT
OUTLET PROTECTION – WIDTH	USE EX. – 8.8'	FT
OUTLET PROTECTION – DEPTH	USE EX. ± 19"	IN

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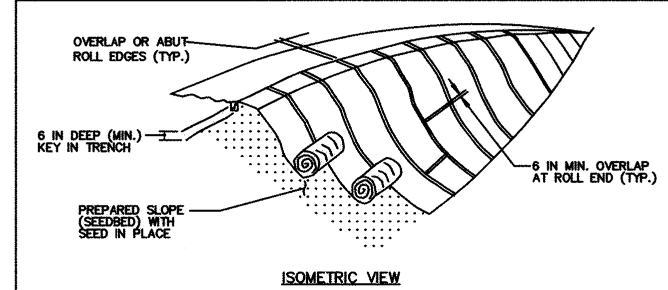
DETAIL B-4-6-B TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL: TSSMS – 1.5 lb/ft² (* INCLUDE SHEAR STRESS)



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 TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 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, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. 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 A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.

4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED 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 & SEDIMENT CONTROL PLAN.

5. UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.

6. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.

7. KEY IN THE UPSLOPE 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 (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.

9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

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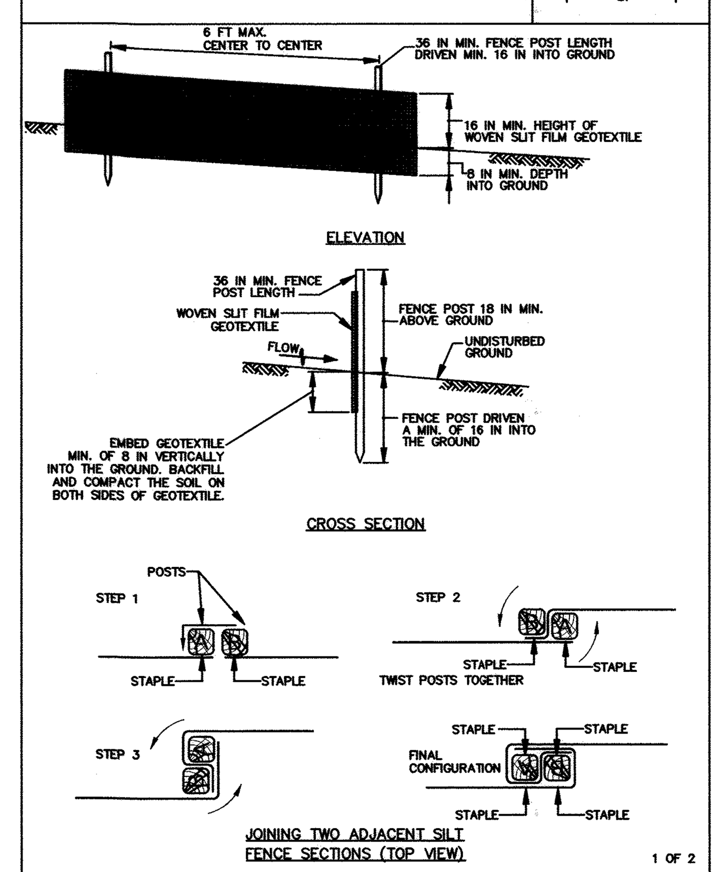
DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF



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DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± ⅟₁₆ INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.

2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.

3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.

4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.

5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.

6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.

7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.

8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

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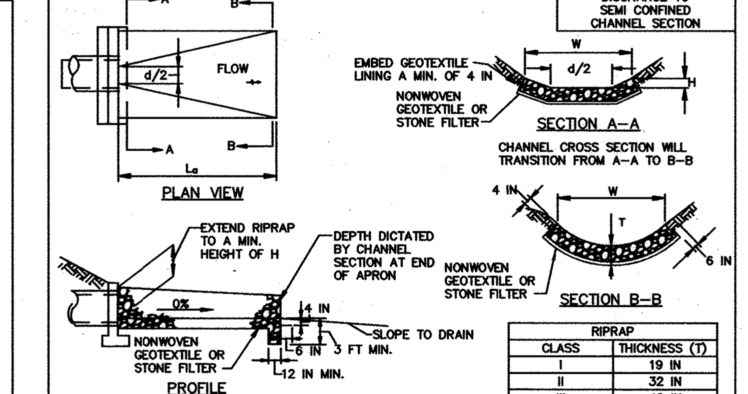
DETAIL D-4-1-A ROCK OUTLET PROTECTION I

STANDARD SYMBOL: ROP1

DISCHARGE TO SEMI CONFINED CHANNEL SECTION



RIPRAP	
CLASS	THICKNESS (T)
I	19 IN
II	32 IN
III	46 IN

CONSTRUCTION SPECIFICATIONS

1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.

2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.

3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (⅜ TO 1½ INCH STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.

4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF THE RIPRAP.

5. CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE STONE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.

6. WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.

7. CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.

8. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

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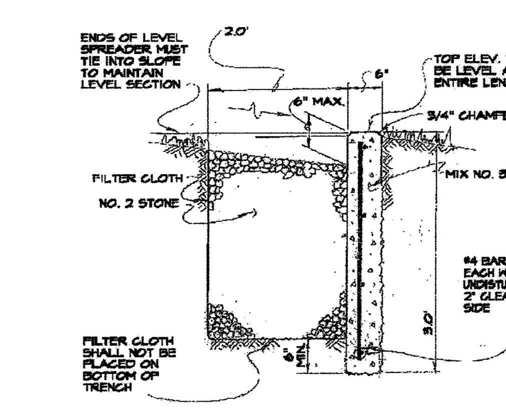
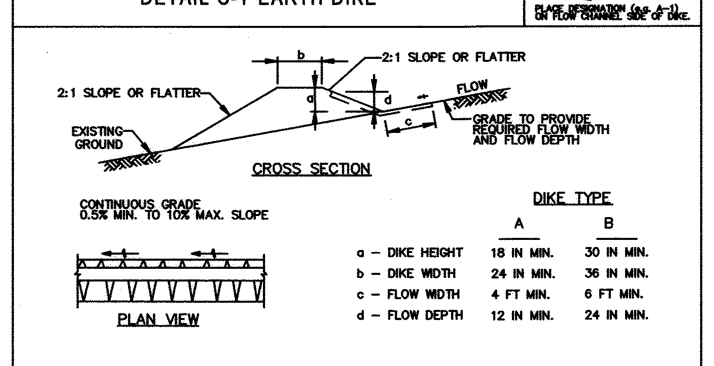


LEVEL SPREADER DETAIL
N.T.S.

DETAIL C-1 EARTH DIKE

STANDARD SYMBOL: A-2 (PLACE DESIGNATION (e.g. A-1) ON FLOW CHANNEL SIDE OF DIKE.)



	DIKE TYPE A	DIKE TYPE B
a – DIKE HEIGHT	18 IN MIN.	30 IN MIN.
b – DIKE WIDTH	24 IN MIN.	36 IN MIN.
c – FLOW WIDTH	4 FT MIN.	6 FT MIN.
d – FLOW DEPTH	12 IN MIN.	24 IN MIN.

FLOW CHANNEL STABILIZATION

- A-1 SEED WITH STRAW MULCH AND TACK. (NOT ALLOWED FOR CLEAR WATER DIVERSION.)
- A-2/B-2 SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD.
- A-3/B-3 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND.

CONSTRUCTION SPECIFICATIONS

1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF EARTHDIKE.

2. EXCAVATE OR SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.

3. COMPACT FILL.

4. CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.

5. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.

6. STABILIZE EARTH DIKE WITHIN THREE DAYS OF INSTALLATION. STABILIZE FLOW CHANNEL FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.

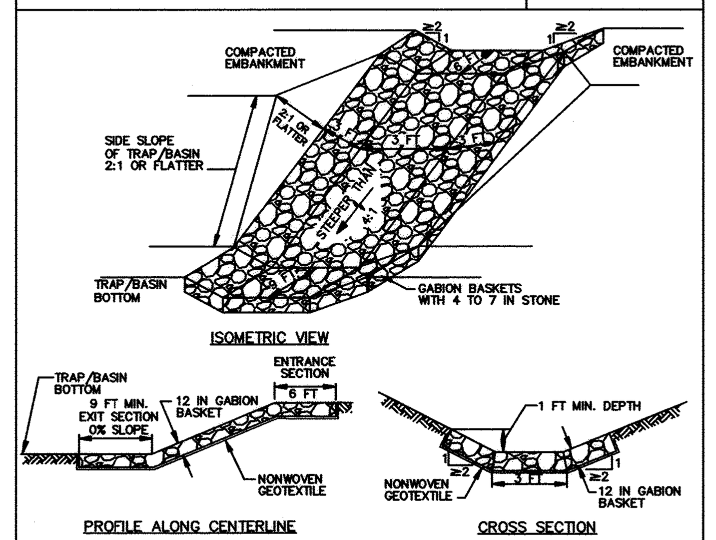
7. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP EARTH DIKE AND POINT OF DISCHARGE FREE OF EROSION, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

8. UPON REMOVAL OF EARTH DIKE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

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

DETAIL D-3-2 GABION INFLOW PROTECTION

STANDARD SYMBOL: GP



CONSTRUCTION SPECIFICATIONS

1. PROVIDE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER THE BOTTOM AND ALONG SIDES OF ALL GABION BASKETS.

2. USE BASKETS MADE OF MINIMUM 11 GAUGE WIRE.

3. CONSTRUCT GABION INFLOW PROTECTION BY ARRANGING 9 X 3 X 1 FOOT GABION BASKETS TO FORM A TRAPEZOIDAL SECTION WITH A 3 FOOT BOTTOM WIDTH, 1 FOOT MINIMUM DEPTH, 3 FOOT SIDE WALLS, AND 2:1 OR FLATTER SIDE SLOPES. FILL GABION BASKETS WITH 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE WITHOUT REBAR OR WEIR MESH.

4. INSTALL ENTRANCE AND EXIT SECTIONS AS SHOWN ON THE PROFILE.

5. INSTALL GABIONS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

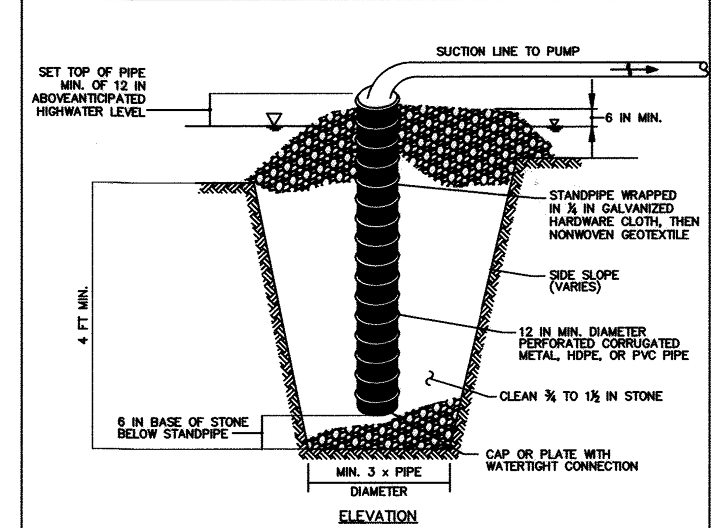
6. BLEND GABIONS INTO EXISTING GROUND.

7. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. KEEP POINTS OF INFLOW AND OUTFLOW FREE OF EROSION

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

DETAIL F-2 SUMP PIT

STANDARD SYMBOL: SP



CONSTRUCTION SPECIFICATIONS

1. USE 12 INCH OR LARGER DIAMETER CORRUGATED METAL, HDPE, OR PVC PIPE WITH 1 INCH DIAMETER PERFORATIONS, 6 INCHES ON CENTER. BOTTOM OF PIPE MUST BE CAPPED WITH WATERTIGHT SEAL.

2. WRAP PIPE WITH ¼ INCH GALVANIZED HARDWARE CLOTH AND WRAP NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE HARDWARE CLOTH.

3. EXCAVATE PIT TO THREE TIMES THE PIPE DIAMETER AND FOUR FEET IN DEPTH. PLACE ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE, 6 INCHES IN DEPTH PRIOR TO PIPE PLACEMENT.

4. SET TOP OF PIPE MINIMUM 12 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.

5. BACKFILL PIT AROUND THE PIPE WITH ¾ TO 1½ INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE AND EXTEND STONE A MINIMUM OF 6 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.

6. DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.

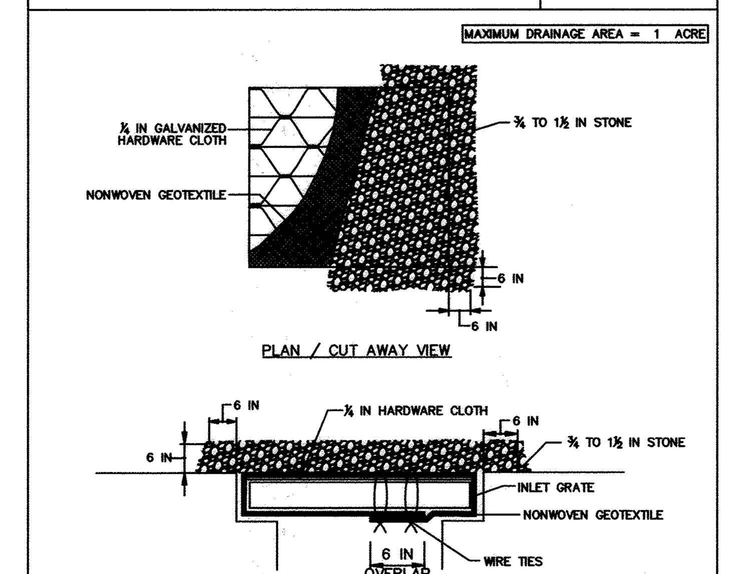
7. A SUMP PIT REQUIRES FREQUENT MAINTENANCE. IF SYSTEM CLOGS, REMOVE PERFORATED PIPE AND REPLACE GEOTEXTILE AND STONE. KEEP POINT OF DISCHARGE FREE OF EROSION.

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

DETAIL E-9-2 AT-GRADE INLET PROTECTION

STANDARD SYMBOL: AGIP

MAXIMUM DRAINAGE AREA = 1 ACRE



CONSTRUCTION SPECIFICATIONS

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.

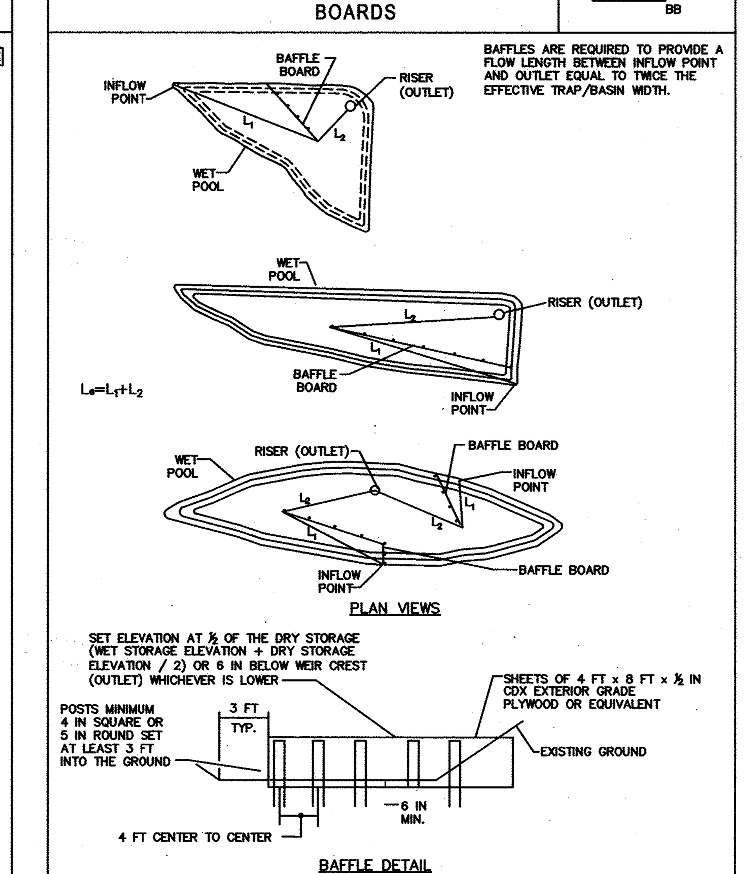
4. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

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

DETAIL G-2-4 BAFFLE BOARDS

STANDARD SYMBOL: BB

BAFFLES ARE REQUIRED TO PROVIDE A FLOW LENGTH BETWEEN INFLOW POINT AND OUTLET EQUAL TO TWICE THE EFFECTIVE TRAP/BASIN WIDTH.



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

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

[signature] 08/04/21
HOWARD SOIL CONSERVATION DISTRICT — DATE

ENGINEER'S CERTIFICATE

"I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

[signature] 6/28/21 DATE
Nicholas Barrick
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE)

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS 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] 6/28/21 DATE
Charles Nightingale
SIGNATURE OF DEVELOPER (PRINT NAME BELOW 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. 33772 EXPIRATION DATE: 06/16/2023

KCI TECHNOLOGIES
ENGINEERS · PLANNERS · SCIENTISTS · CONSTRUCTION MANAGERS
11830 WEST MARKET PLACE, SUITE F, FULTON, MD 20759
TELEPHONE: (410) 792-8086 FAX: (410) 792-7419

AYERS SAINT GROSS
ARCHITECTS + PLANNERS
1040 Hull Street, Suite 100, Baltimore, MD 21230
p 410.347.8500 f 410.347.8419

APPROVED: Howard County Department of Planning & Zoning
Director — [signature] — Date 9-8-21
Chief, Division of Land Development — [signature] — Date 9/7/21
Chief, Development Engineering Division — [signature] — Date 8-18-21

Rev:	Date:	Description:	By:
1			
2			
3			
4			
5			

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

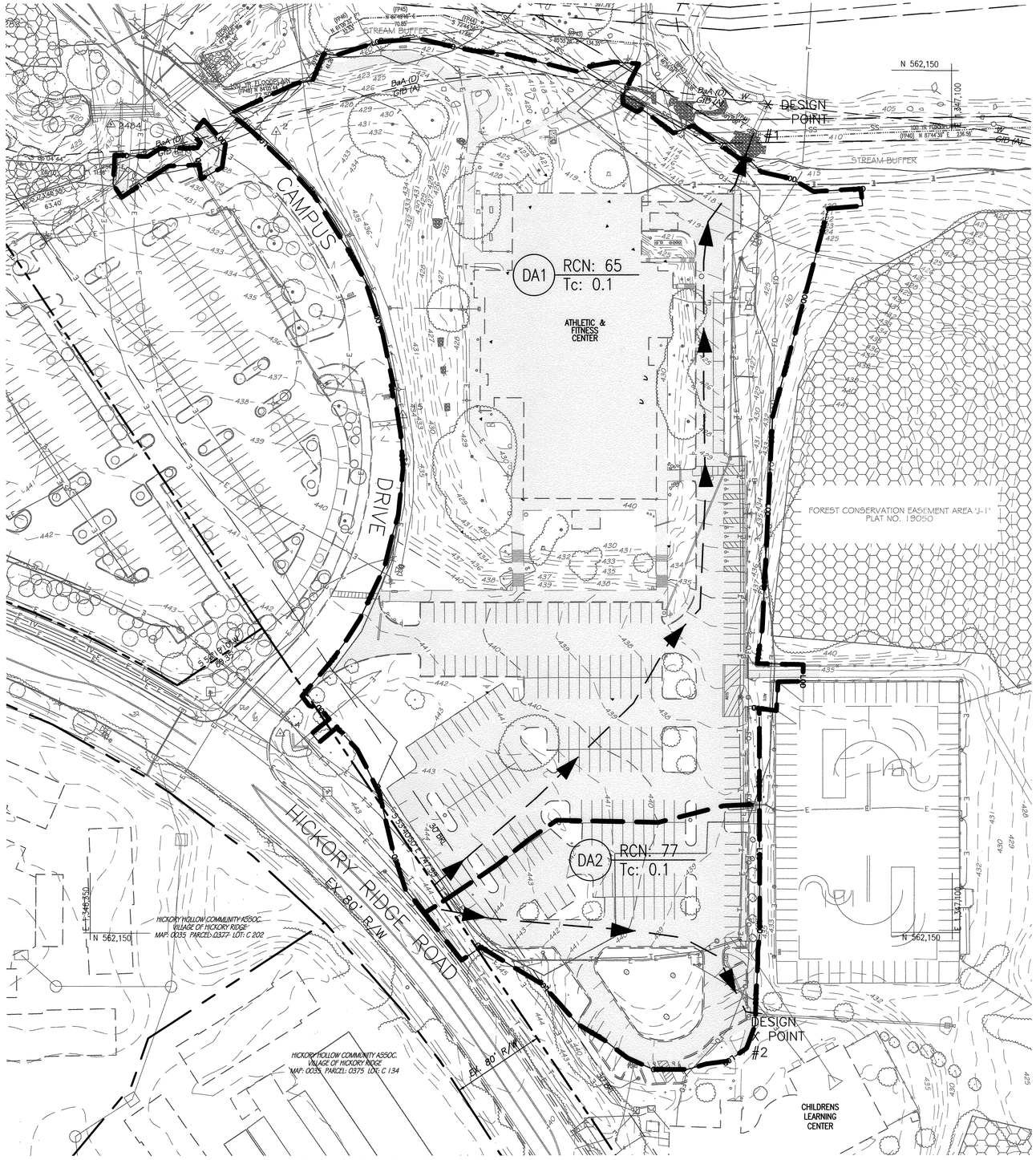
Date:	04-30-2021	Scale:	AS SHOWN
Drawn By:	F.F.W.	Designed By:	F.F.W.
Approved By:	N.A.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title: EROSION AND SEDIMENT CONTROL DETAILS

Discipline Number: C1. 30

Sheet Number: 34 OF 53

MD STATE PLANE
NAD 83, NAVD 88



SWM EXISTING CONDITIONS DRAINAGE AREA MAP
SCALE: 1" = 50'

GRAPHIC SCALE
50 0 50 100 200
(IN FEET) 1 inch = 50ft.

EXISTING DRAINAGE AREA SUMMARY TABLE				
DA	AREA (ACRES)	%IMPERVIOUS	Tc	RCN
DA1	5.69	49.9%	0.1	65
DA2	1.02	69.6%	0.1	77

SOILS TABLE		
SOIL UNIT	SOIL UNIT NAME	HYDROLIC SOIL GROUP
GfB (A)	Gladstone-Urban land complex, 8 to 15 percent slopes	A
BaA (D)	Baile Silt Loam, 0 to 3 percent slopes	D

SUMMARY TABLE		
DESIGN POINT	Q_i	Q_o
1	1.9 CFS	11.9 CFS
2	1.1 CFS	3.5 CFS

SITE ANALYSIS

TOTAL SITE AREA = 120.83 ACRES
LIMIT OF DISTURBANCE = 6.71 ACRES
PROP. IMPERVIOUS AREA DP1 = 2.84 ACRES (WITHIN LOD)
PROP. IMPERVIOUS AREA DP2 = 0.71 ACRES (WITHIN LOD)

LEGEND

- PROPERTY LINE
- EX. INDEX CONTOUR
- EX. INTERMEDIATE CONTOUR
- EX. SANITARY MANHOLE
- EX. STORM DRAIN MANHOLE
- EX. ELECTRIC MANHOLE
- EX. LIGHT POLE
- EX. WATER METER
- EX. SIGN
- EX. UTILITY POLE
- EX. BOLLARD POST
- EX. DECIDUOUS TREE
- EX. CONIFEROUS TREE
- EX. GAS VALVE
- EX. GUY WIRE
- EX. WATER VALVE
- EX. FIRE HYDRANT
- EX. CLEANOUT
- EX. STORM DRAIN
- EX. GAS LINE
- EX. SANITARY
- EX. ELECTRIC
- EX. TELEPHONE
- EX. CABLE TV
- EX. WATER
- APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT
- DRAINAGE AREA LINE
- TC PATH
- PROPOSED IMPERVIOUS AREA

CONTRACTOR NOTE:
CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO DAMAGE ANY EXISTING PAVING, CURB AND GUTTER, SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN. SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO ORIGINAL CONDITION AT CONTRACTORS EXPENSE.

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. 33772 EXPIRATION DATE: 06/16/2023

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APPROVED: Howard County Department of Planning & Zoning

Director	9-8-21 Date
Chief, Division of Land Development	9/7/21 Date
Chief, Development Engineering Division	8/18/21 Date

Rev:	Date:	Description:	By:
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2			
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Date:	04-30-2021	Scale:	1" = 50'
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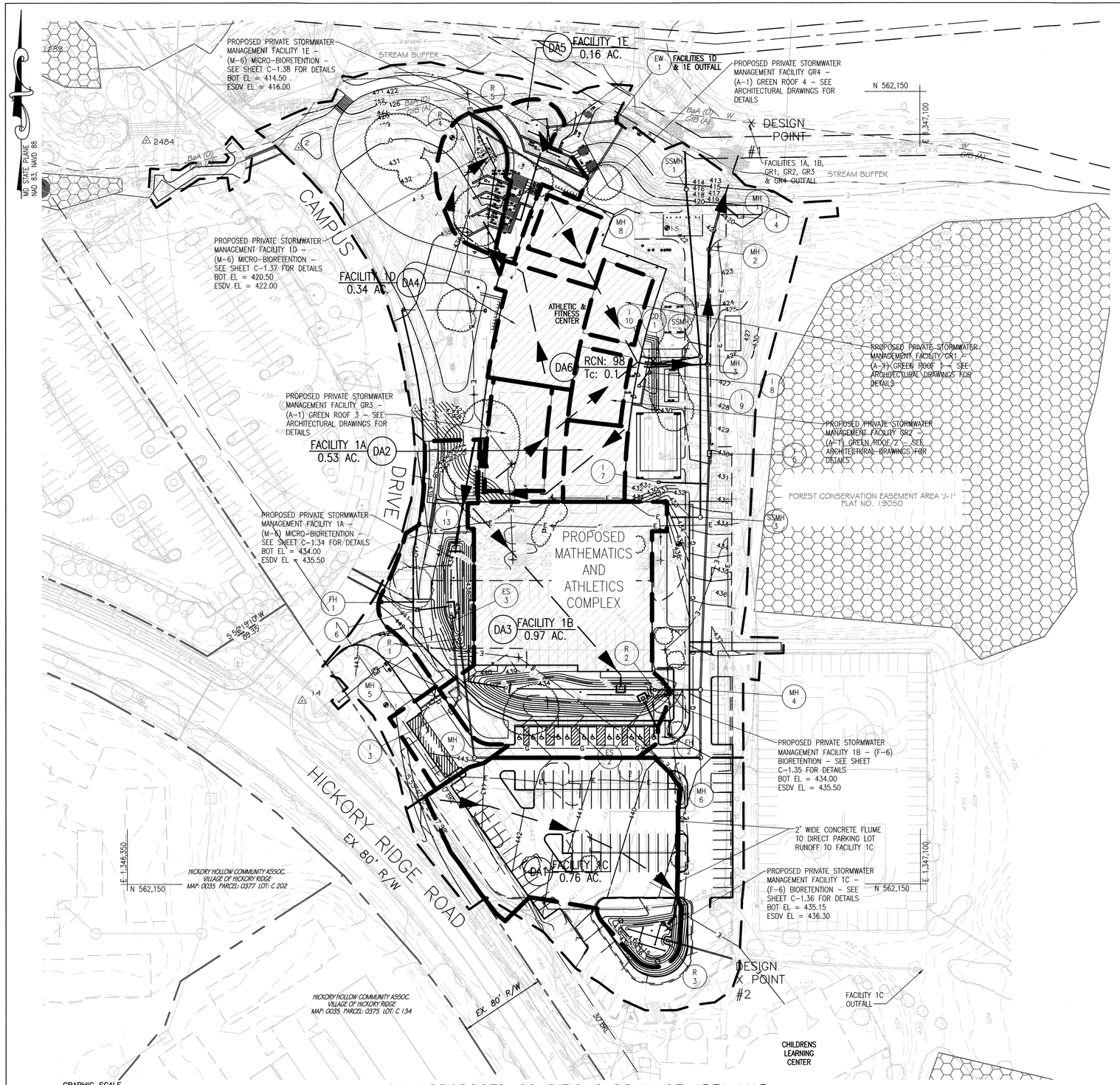
Approved By:	N.A.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title:
STORMWATER MANAGEMENT EXISTING CONDITIONS DRAINAGE AREA MAP

STATE OF MARYLAND · NICHOLAS A. BARONE · 33772 · PROFESSIONAL ENGINEER
6/22/21

Discipline Number: C1.31

Sheet Number: 35 OF 53



SWM PROPOSED CONDITIONS DRAINAGE AREA MAP

SCALE: 1"=50'

STORMWATER MANAGEMENT SUMMARY TABLE

WATERSHED	DA #	FACILITY NO.	FACILITY TYPE	ESDv TARGET Pe	ESDv TARGET ESDv(CF)	ESDv PROVIDED Pe	ESDv PROVIDED ESDv(CF)	ESDv TREATED ESDv(CF)	ESDv REQUIRED ESDv(CF)	DISCHARGE (cfs) CPv (Q1) EX.	CPv (Q1) PROP.	Q10 EX.	Q10 PROP.	Q100 EX.	Q100 PROP.
LITTLE PATUXENT	DA1	1C	BIORETENTION F-6	1.2	1,276	0.6	1,149	1,149	-	-	-	-	-	-	-
	DA2	1A	MICRO-BIORETENTION M-6	1.2	690	1.5	1,637	1,637	-	-	-	-	-	-	-
	DA3	1B	BIORETENTION F-6	1.4	2,379	1.3	3,498	3,498	-	-	-	-	-	-	-
	DA4	1D	MICRO-BIORETENTION M-6	1.0	121	1.8	1,239	1,239	-	-	-	-	-	-	-
	DA5	1E	MICRO-BIORETENTION M-6	1.9	655	2.2	859	859	-	-	-	-	-	-	-
	DA6	GR1	GREEN ROOF A-1	1.0	138	1.2	331	331	-	-	-	-	-	-	-
	DA6	GR2	GREEN ROOF A-1	1.0	138	1.2	331	331	-	-	-	-	-	-	-
	DA6	GR3	GREEN ROOF A-1	1.0	379	1.2	538	538	-	-	-	-	-	-	-
	DA6	GR4	GREEN ROOF A-1	1.0	103	1.2	269	269	-	-	-	-	-	-	-
			TOTAL =		5,879	-	9,851	9,851	-	3.0	1.8	15.4	13.1	-	-

SUMMARY: TO ACHIEVE ENVIRONMENTAL SITE DESIGN REQUIREMENTS, THREE (3) MICRO-BIORETENTION (M-6) FACILITIES, TWO (2) BIORETENTION (F-6) FACILITIES, AND FOUR (4) GREEN ROOF (A-1) FACILITIES HAVE BEEN USED. THE DISCHARGE EVENTUALLY FLOWS TO THE LITTLE PATUXENT RIVER.

CONCLUSION: THE TREATED ESDv (9,851 CF) IS GREATER THAN THE REQUIRED (5,879 CF). THEREFORE, ENVIRONMENTAL SITE DESIGN HAS BEEN ACHIEVED.

DRAINAGE AREA SUMMARY TABLE

WATERSHED	FACILITY NO.	ACRES	IMP. AC.	PERVIOUS AREA	WOODS	FACILITY TYPE
LITTLE PATUXENT	1A	0.53	0.31	0.22	0.00	MICRO-BIORETENTION M-6
	1B	0.97	0.78	0.19	0.00	BIORETENTION F-6
	1C	0.76	0.53	0.23	0.00	BIORETENTION F-6
	1D	0.34	0.19	0.15	0.00	MICRO-BIORETENTION M-6
	1E	0.16	0.11	0.05	0.00	MICRO-BIORETENTION M-6
	GR1	0.08	0.08	0.00	0.00	GREEN ROOF A-1
	GR2	0.08	0.08	0.00	0.00	GREEN ROOF A-1
	GR3	0.13	0.13	0.00	0.00	GREEN ROOF A-1
	GR4	0.06	0.06	0.00	0.00	GREEN ROOF A-1
	BYPASS DP#1	3.09	1.33	1.76	0.00	-
	BYPASS DP#2	0.51	0.38	0.13	0.00	-
	TOTAL AREA = 6.71 ACRES					

PROPOSED CONDITION DRAINAGE AREA DISCHARGE SUMMARY

WATERSHED	AREA	ACRES	Tc	RCN	DISCHARGE (SEE TR-20) Q1	Q10	Q100
LITTLE PATUXENT	1A	0.53	0.10	74	0.0	0.4	N/A
	1B	0.97	0.10	86	0.0	2.9	N/A
	1C	0.76	0.10	80	0.0	1.7	N/A
	1D	0.34	0.10	72	0.0	0.8	N/A
	1E	0.16	0.10	80	0.0	0.1	N/A
	GR1	0.08	0.10	98	0.0	0.0	N/A
	GR2	0.08	0.10	98	0.0	0.0	N/A
	GR3	0.13	0.10	98	0.0	0.0	N/A
	GR4	0.06	0.10	98	0.0	0.0	N/A
	BYPASS DP#1	3.09	0.10	66	1.2	6.8	N/A
	BYPASS DP#2	0.51	0.10	83	0.8	2.1	N/A
				TOTAL	2.0	13.1	N/A

SOILS TABLE

SOIL UNIT	SOIL UNIT NAME	HYDRIC (Y/N)	K-VALUE
GfB (A)	Gladstone-Urban land complex, 8 to 15 percent slopes	NO	0.28
BaA (D)	Baile Silt Loam, 0 to 3 percent slopes	YES	0.37

SITE ANALYSIS

TOTAL SITE AREA = 120.83 ACRES
LIMIT OF DISTURBANCE = 6.71 ACRES
PROP. IMPERVIOUS AREA DP1 = 2.94 ACRES (WITHIN LOD)
PROP. IMPERVIOUS AREA DP2 = 0.91 ACRES (WITHIN LOD)

LEGEND

- PROPERTY LINE
- EX. INDEX CONTOUR
- EX. INTERMEDIATE CONTOUR
- EX. SANITARY MANHOLE
- EX. STORM DRAIN MANHOLE
- EX. ELECTRIC MANHOLE
- EX. LIGHT POLE
- EX. WATER METER
- EX. SIGN
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APPROVED: Howard County Department of Planning & Zoning

Director — Date 9-8-21
Chief, Division of Land Development — Date 8/7/21
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Rev:	Date:	Description:	By:
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Drawn By: F.F.W.		Designed By: F.F.W.	
Approved By: N.A.B.		Project No: 271906728	
Tax Map-Grid: 35-6		Zoning: POR & NT	

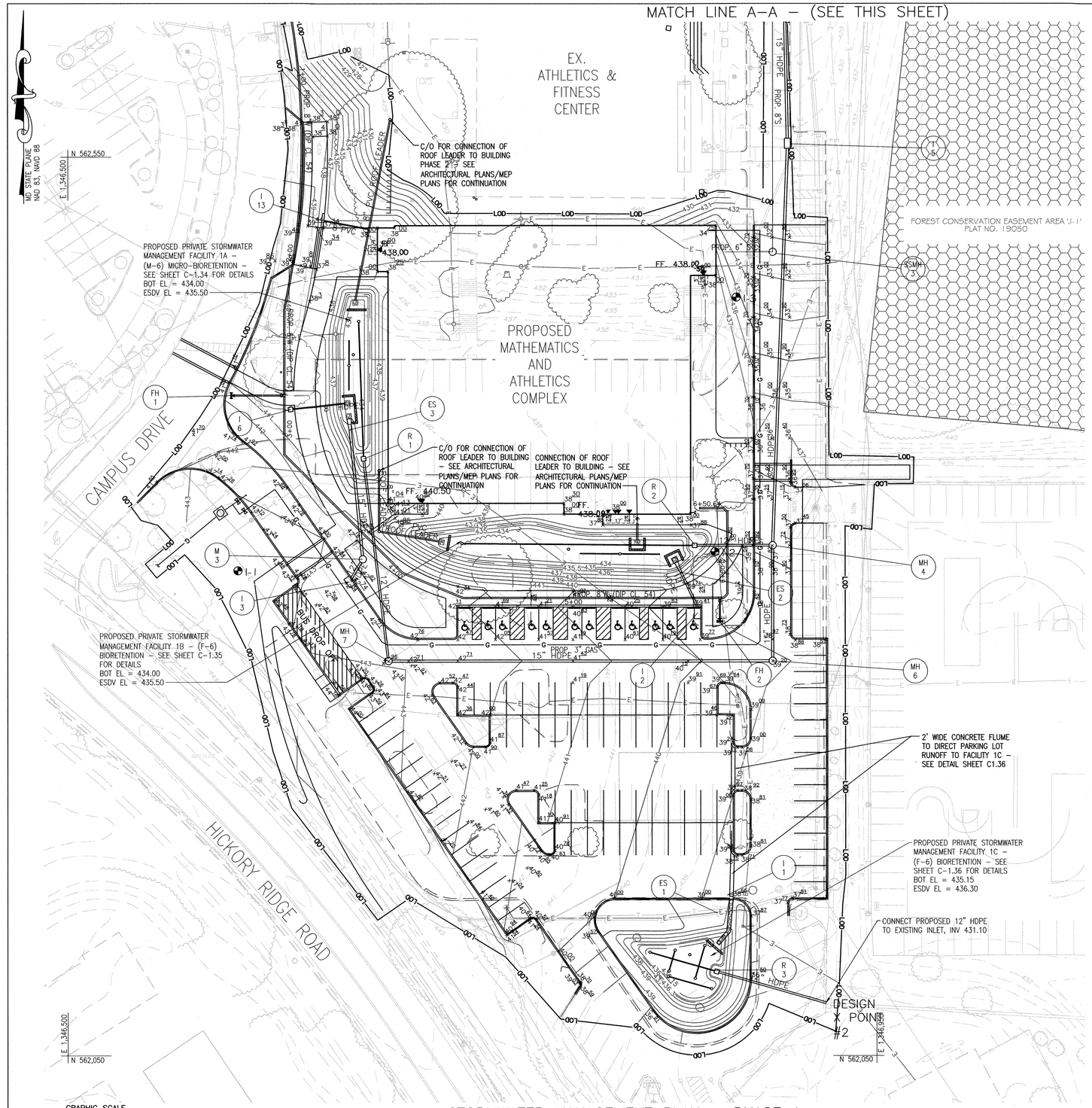
Sheet Title:
STORMWATER MANAGEMENT PROPOSED CONDITIONS DRAINAGE AREA MAP

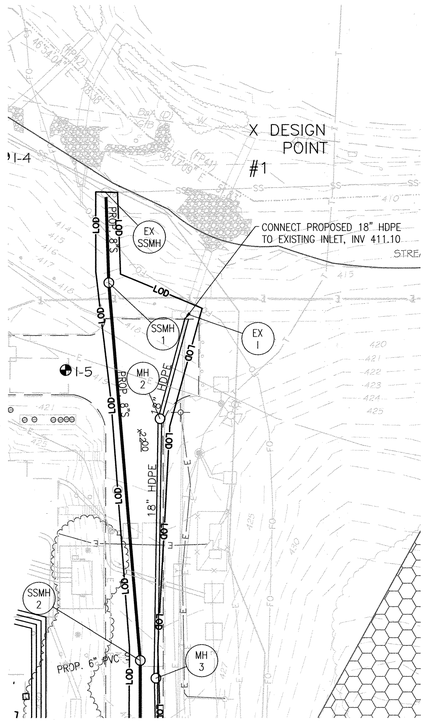
33772 PROFESSIONAL ENGINEER

Discipline Number: C1.32

Sheet Number: 36 OF 53

MATCH LINE A–A – (SEE THIS SHEET)





MATCH LINE A–A – (SEE THIS SHEET)

ESDv Summary Table Phase 1											
Watershed	Drainage Area Data					Facility	Target		Provided		Treated ESDv (C.F.)	Total Site Required ESDv (C.F.)
	Area	Acres	RCN	Tc	% Impervious		Pe	ESDv (C.F.)	Pe	ESDv (C.F.)		
Little Patuxent	1A	.53	74	0.10	58	(M-6) MICRO-BIORETENTION	1.0	690	1.5	1,637	2,183	
	1B	.97	86	0.10	80	(F-6) BIORETENTION	1.0	2,379	1.3	3,498	4,664	
	1C	0.76	80	0.10	70%	(F-6) BIORETENTION	1.0	1,276	0.6	1,149	1,532	
	SITE											9,087
						Total Phase 1 ESDv =				6,284	8,379	

LEGEND

- PROPERTY LINE
- 450 EX. INDEX CONTOUR
- 451 EX. INTERMEDIATE CONTOUR
- EX. SANITARY MANHOLE
- EX. STORM DRAIN MANHOLE
- EX. ELECTRIC MANHOLE
- EX. LIGHT POLE
- EX. WATER METER
- EX. SIGN
- EX. UTILITY POLE
- EX. BOLLARD POST
- EX. DECIDUOUS TREE
- EX. CONIFEROUS TREE
- EX. GAS VALVE
- EX. GUY WIRE
- EX. WATER VALVE
- EX. FIRE HYDRANT
- EX. CLEANOUT
- EX. 15" DRAIN — EX. STORM DRAIN
- EX. GAS — EX. GAS LINE
- EX. 6" SANITARY — EX. SANITARY
- EX. ELECTRIC — EX. ELECTRIC
- EX. TELEPHONE — EX. TELEPHONE
- EX. CABLE TV — EX. CABLE TV
- EX. 8" WATER — EX. WATER
- PROP. STORM DRAIN
- G PROP. GAS LINE
- PROP. SANITARY
- E PROP. ELECTRIC
- PROP. WATER
- 450 PROP. INDEX CONTOUR
- 451 PROP. INTERMEDIATE CONTOUR
- LOD LIMIT OF DISTURBANCE
- APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT

GRAPHIC SCALE
50 0 50 100 200
(IN FEET) 1 inch = 50ft.

STORMWATER MANAGEMENT PLAN – PHASE 1

SCALE: 1"=30'

CONTRACTOR NOTE:
CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO DAMAGE ANY EXISTING PAVING, CURB AND GUTTER, SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN. SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO ORIGINAL CONDITION AT CONTRACTORS EXPENSE.

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Fax: (410) 792-7419

AYERS SAINT GROSS
ARCHITECTS + PLANNERS
1040 Hull Street, Suite 100
Baltimore, MD 21230
p 410.347.8500 f 410.347.8419

APPROVED: Howard County Department of Planning & Zoning

Director — 9-8-21 Date

Chief, Division of Land Development — 9/8/21 Date

Chief, Development Engineering Division — 8.8.21 Date

Rev:	Date:	Description:	By:
1			
2			
3			
4			
5			

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College -
MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

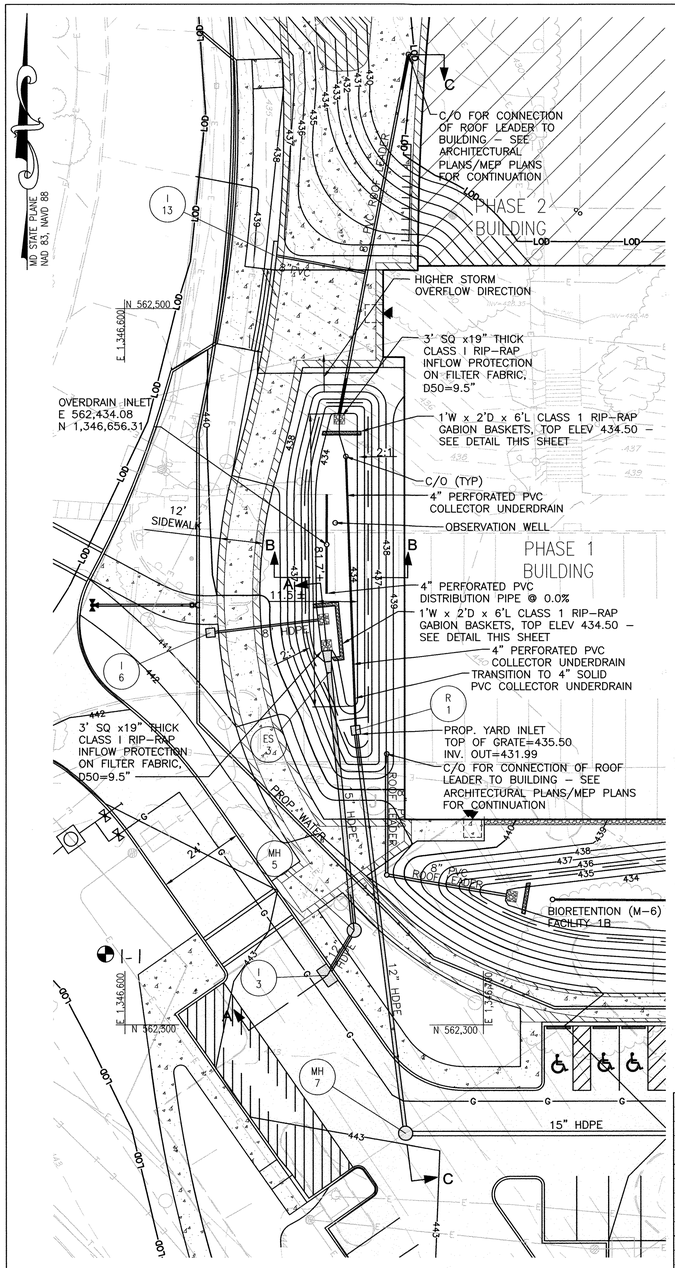
Date:	04-30-2021	Scale:	1" = 30'
Drawn By:	F.F.W.	Designed By:	F.F.W.
Approved By:	N.A.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title:
STORMWATER MANAGEMENT PLAN PHASE 1

STATE OF MARYLAND — FRANCIS W. FLANIGAN — 33772 — REGISTERED PROFESSIONAL ENGINEER

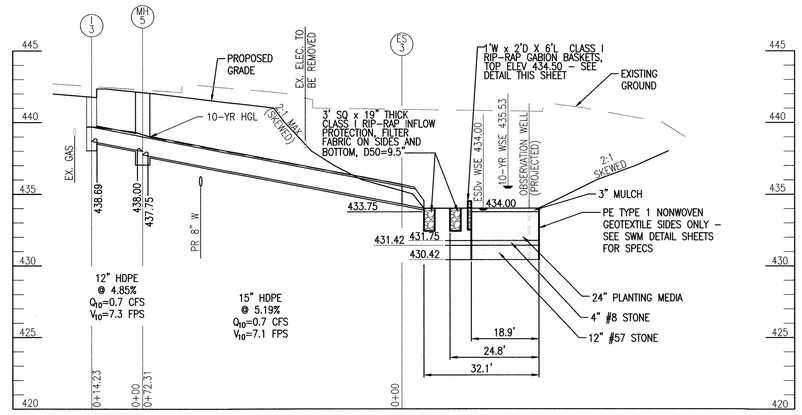
Discipline Number: C1.33

Sheet Number: 37 OF 53



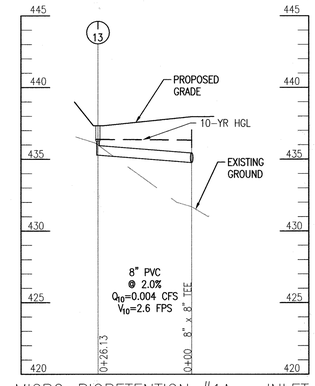
MICRO-BIORETENTION (M-6) – FACILITY 1A – PHASE 1

SCALE: 1" = 20'



MICRO-BIORETENTION #1A – PROFILE A-A

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

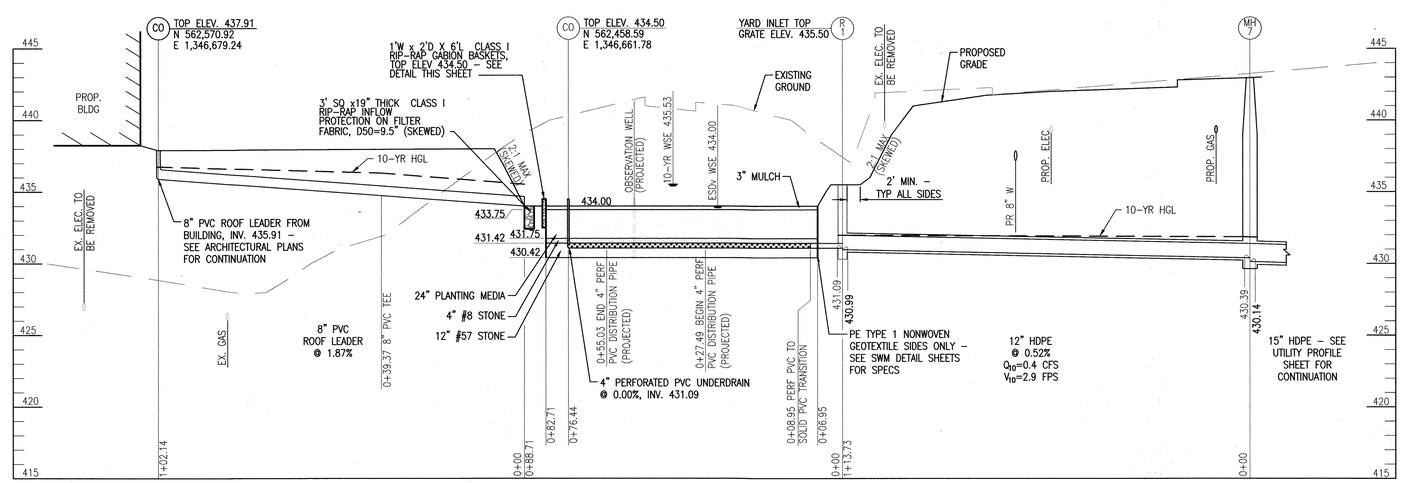


MICRO-BIORETENTION #1A – INLET

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

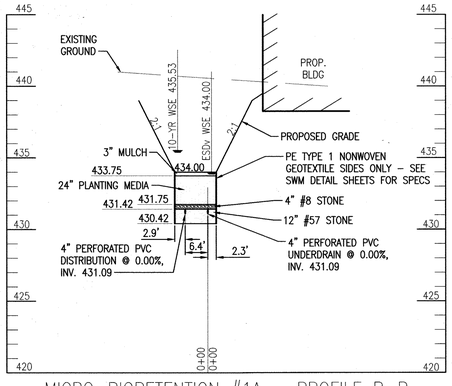
DESIGN SUMMARY

1. FACILITY NUMBER: FC-1A
2. FACILITY TYPE: M-6 MICRO-BIORETENTION FACILITY
3. DRAINAGE AREA: 23,087 SQ. FT
4. BOTTOM ELEVATION: 434.00
5. TOP OF BANK ELEVATION: 438.50
6. STORAGE VOLUME PROVIDED: 1,637 CU. FT
7. WATER SURFACE ELEVATION:
   10-YEAR: 435.53
8. DISCHARGE:
   10-YEAR: 0.4 cfs
9. OVERFLOW INLET SIZE & TYPE: YARD INLET.
10. CLEANOUT 6" ABOVE GRADE WITH WATERTIGHT SCREW LID.
11. FILTER FABRIC ADDED ON SIDES OF FACILITY ONLY.
12. MAINTENANCE RESPONSIBILITY: THIS IS A PRIVATE FACILITY TO BE OWNED & MAINTAINED BY THE OWNER.
13. THIS FACILITY IS EXEMPT FROM MD378 GUIDELINES IN THAT THE IMPOUNDED DESIGN HIGHWATER DEPTH IS LESS THAN 3 FEET AT THE EMBANKMENT.
14. SEE SHEETS C1.42 THRU C1.46 FOR PLANTING INFORMATION.



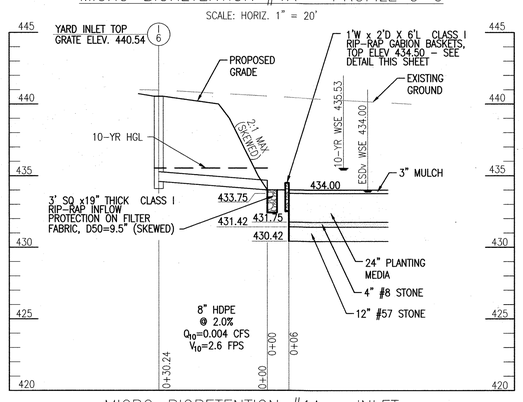
MICRO-BIORETENTION #1A – PROFILE C-C

SCALE: HORIZ. 1" = 20'



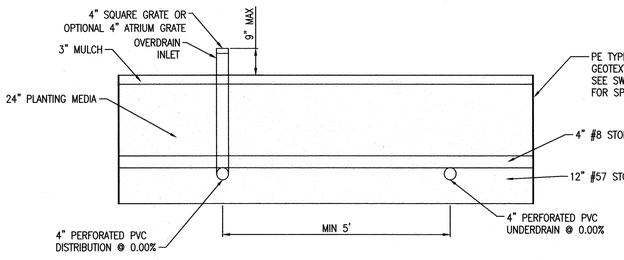
MICRO-BIORETENTION #1A – PROFILE B-B

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'



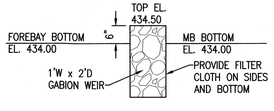
MICRO-BIORETENTION #1A – INLET

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'



MICRO-BIORETENTION TYPICAL SECTION

SCALE: 1" = 1'



GABION FOREBAY WEIR

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

GRAPHIC SCALE
20 0 10 20 40
(IN FEET) 1 inch = 20ft.

LEGEND

- PROPERTY LINE
- 450 EX. INDEX CONTOUR
- 451 EX. INTERMEDIATE CONTOUR
- EX. SANITARY MANHOLE
- EX. STORM DRAIN MANHOLE
- E EX. ELECTRIC MANHOLE
- EX. LIGHT POLE
- EX. WATER METER
- EX. SIGN
- EX. UTILITY POLE
- EX. BOLLARD POST
- EX. DECIDUOUS TREE
- EX. CONIFEROUS TREE
- EX. GAS VALVE
- EX. GUY WIRE
- EX. WATER VALVE
- EX. FIRE HYDRANT
- CO EX. CLEANOUT
- EX. 15" DRAIN — EX. STORM DRAIN
- EX. GAS — EX. GAS LINE
- EX. 6" SANITARY — EX. SANITARY
- EX. ELECTRIC — EX. ELECTRIC
- EX. TELEPHONE — EX. TELEPHONE
- EX. CABLE TV — EX. CABLE TV
- EX. 8" WATER — EX. WATER
- PROP. STORM DRAIN
- G PROP. GAS LINE
- PROP. SANITARY
- E PROP. ELECTRIC
- PROP. WATER
- 450 PROP. INDEX CONTOUR
- 451 PROP. INTERMEDIATE CONTOUR
- LOD LIMIT OF DISTURBANCE
- APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT
- PROPOSED IMPERVIOUS AREA

CONTRACTOR NOTE:
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APPROVED: Howard County Department of Planning & Zoning

Director	9-8-21 Date
Chief, Division of Land Development	9/1/21 Date
Chief, Development Engineering Division	8/18/21 Date

Rev:	Date:	Description:	By:
1			
2			
3			
4			
5			

Prepared For and Owner:
Howard Community College
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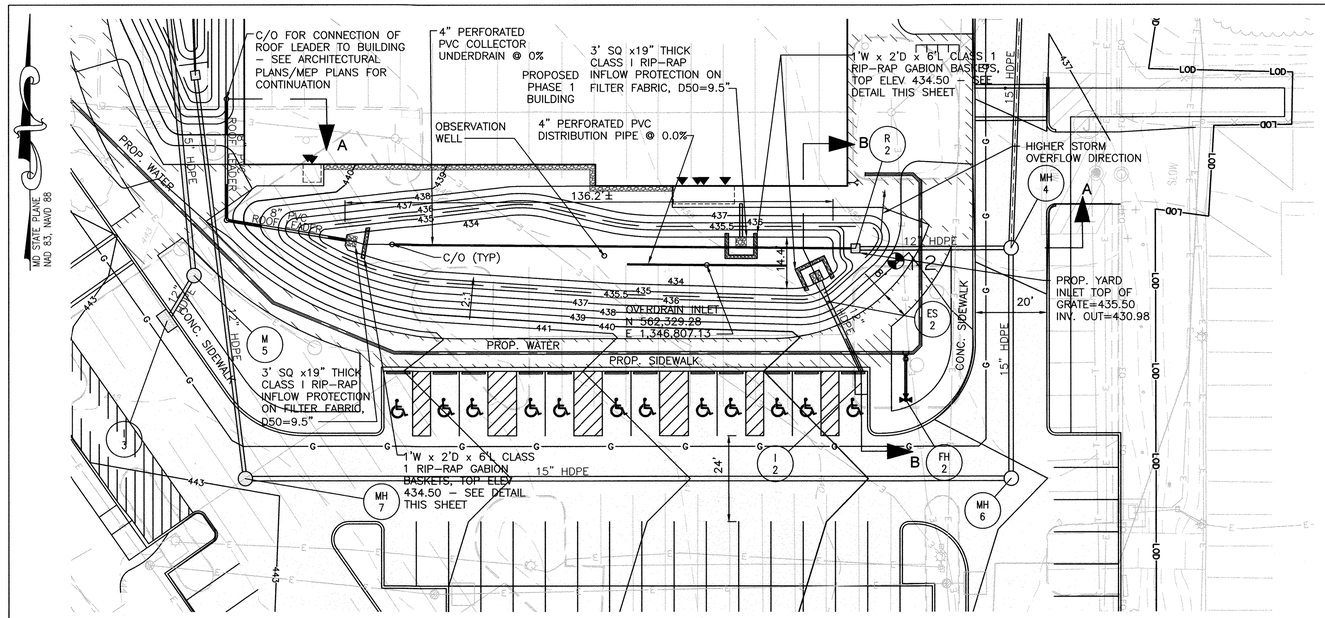
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

Date: 04-30-2021	Scale: AS SHOWN
Drawn By: F.F.W.	Designed By: F.F.W.
Approved By: N.A.B.	Project No: 271906728
Tax Map-Grid: 35-6	Zoning: POR & NT

Sheet Title:
STORMWATER MANAGEMENT PLAN FACILITY 1A - PHASE 1

Discipline Number: C1.34
Sheet Number: 38 OF 53

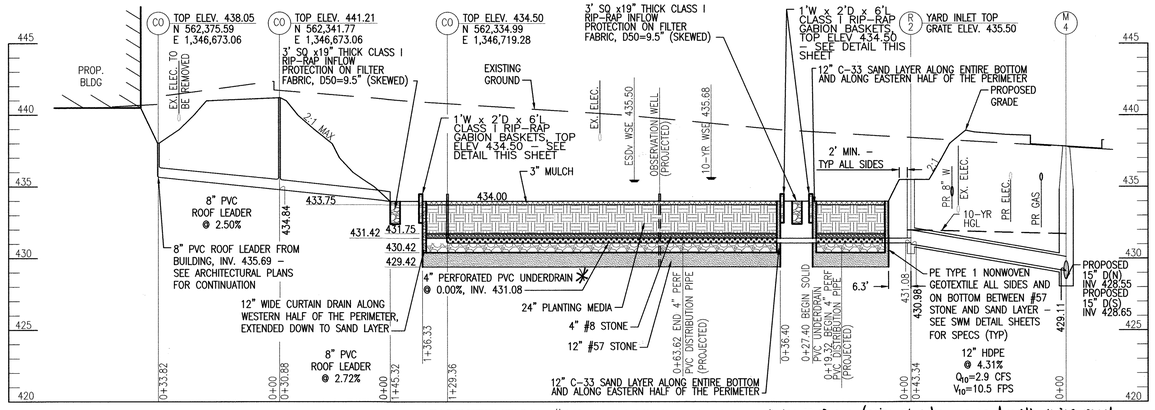


BIORETENTION (F-6) – FACILITY 1B – PHASE 1

SCALE: 1" = 20'

DESIGN SUMMARY

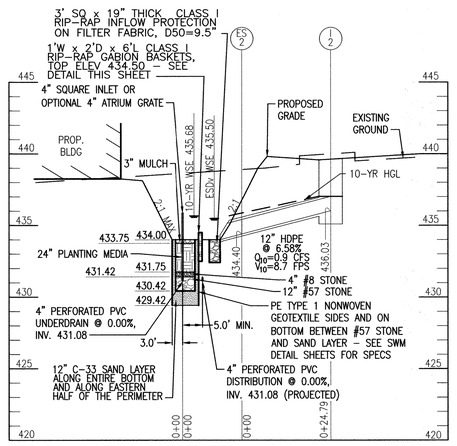
1. FACILITY NUMBER: 1B
2. FACILITY TYPE: F-6 BIORETENTION FACILITY
3. DRAINAGE AREA: 42,253 SQ. FT
4. BOTTOM ELEVATION: 434.00
5. TOP OF BANK ELEVATION: 438.00
6. STORAGE VOLUME PROVIDED: 3,498 CU. FT
7. WATER SURFACE ELEVATION:
   10-YEAR: 435.68
8. DISCHARGE:
   10-YEAR: 2.9 cfs
9. OVERFLOW INLET SIZE & TYPE: YARD INLET.
10. CLEANOUT 6" ABOVE GRADE WITH WATERTIGHT SCREW LID.
11. FILTER FABRIC ADDED ON ALL SIDES OF FACILITY AND ON BOTTOM BETWEEN #57 STONE AND SAND.
12. MAINTENANCE RESPONSIBILITY: THIS IS A PRIVATE FACILITY TO BE OWNED & MAINTAINED BY THE OWNER.
13. THIS FACILITY IS EXEMPT FROM MD378 GUIDELINES IN THAT THE IMPOUNDED DESIGN HIGHWATER DEPTH IS LESS THAN 3 FEET AT THE EMBANKMENT.
14. SEE SHEETS C1.42 THRU C1.46 FOR PLANTING INFORMATION.



BIORETENTION #1B – PROFILE A-A

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

* All Perforated pipe shall be wrapped with wire mesh.

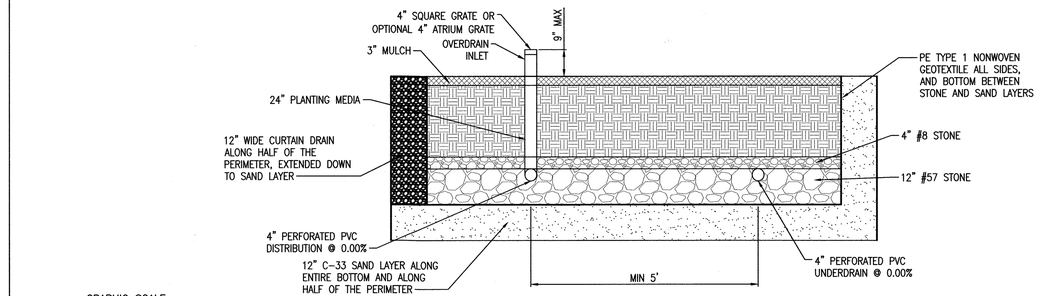


BIORETENTION #1B – SECTION B-B

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

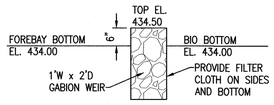
LEGEND

- PROPERTY LINE
- EX. INDEX CONTOUR
- EX. INTERMEDIATE CONTOUR
- EX. STORM DRAIN MANHOLE
- EX. ELECTRIC MANHOLE
- EX. LIGHT POLE
- EX. WATER METER
- EX. SIGN
- EX. UTILITY POLE
- EX. BOLLARD POST
- EX. DECIDUOUS TREE
- EX. CONIFEROUS TREE
- EX. GAS VALVE
- EX. GUY WIRE
- EX. WATER VALVE
- EX. FIRE HYDRANT
- EX. CLEANOUT
- EX. 15" DRAIN — EX. STORM DRAIN
- EX. GAS — EX. GAS LINE
- EX. 6" SANITARY — EX. SANITARY
- EX. ELECTRIC — EX. ELECTRIC
- EX. TELEPHONE — EX. TELEPHONE
- EX. CABLE TV — EX. CABLE TV
- EX. 8" WATER — EX. WATER
- PROP. STORM DRAIN
- PROP. GAS LINE
- PROP. SANITARY
- PROP. ELECTRIC
- PROP. WATER
- 450 — PROP. INDEX CONTOUR
- 451 — PROP. INTERMEDIATE CONTOUR
- LOD — LIMIT OF DISTURBANCE
- APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT
- DRAINAGE AREA LINE
- TC PATH
- PROPOSED IMPERVIOUS AREA



BIORETENTION TYPICAL SECTION

SCALE: 1" = 1'



GABION FOREBAY WEIR

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

GRAPHIC SCALE
5 0 5 10 20
(IN FEET) 1 inch = 20ft.

CONTRACTOR NOTE:
CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO DAMAGE ANY EXISTING PAVING, CURB AND GUTTER, SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN. SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO ORIGINAL CONDITION AT CONTRACTORS EXPENSE.

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APPROVED: Howard County Department of Planning & Zoning

Director	9-8-21	Date
Chief, Division of Land Development	8/17/21	Date
Chief, Development Engineering Division	8/18/21	Date

Rev:	Date:	Description:	By:
1			
2			
3			
4			
5			

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
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ATTN: Mr. Chuck Nightingale
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Project Name:
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PARCEL 47, TAX MAP 35, GRID 6
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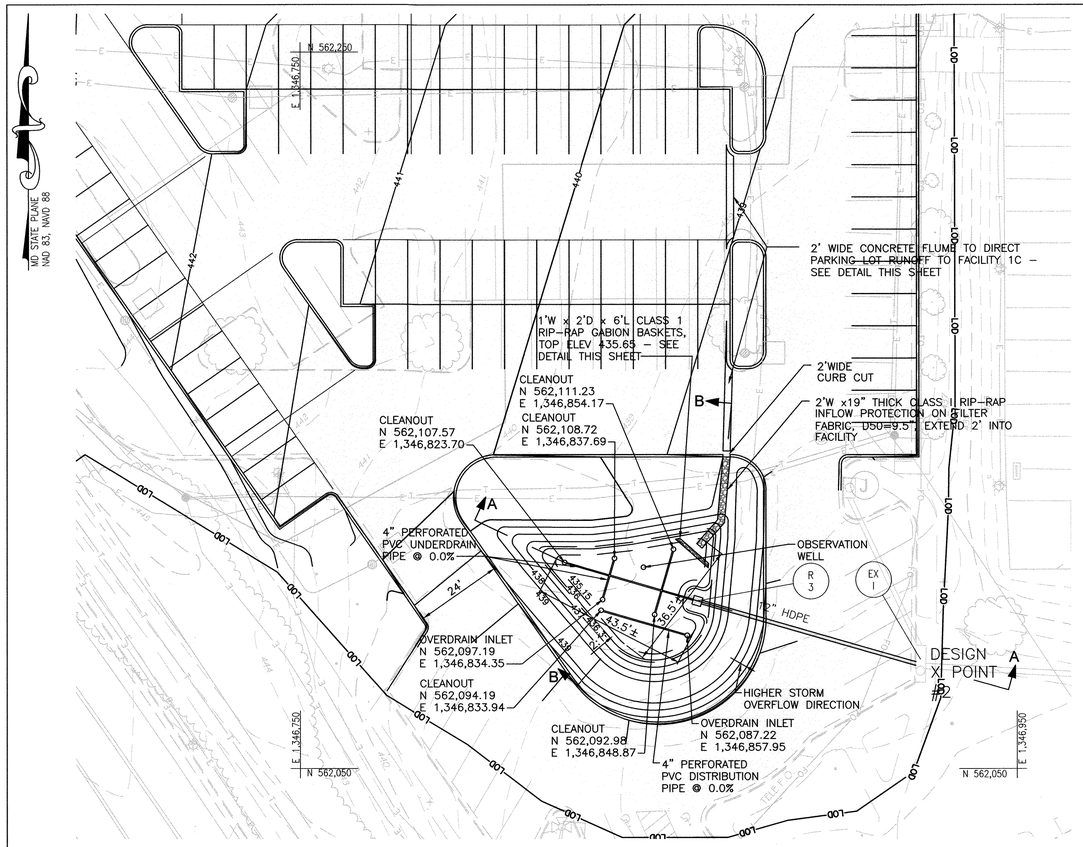
ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

Date:	04-30-2021	Scale:	AS SHOWN
Drawn By:	F.F.W.	Designed By:	F.F.W.
Approved By:	N.A.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title:
STORMWATER MANAGEMENT PLAN FACILITY 1B - PHASE 1

Discipline Number: C1.35
Sheet Number: 39 OF 53

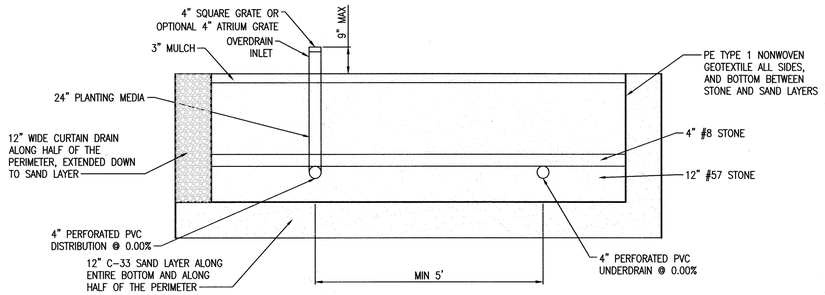


BIORETENTION (F-6) – FACILITY 1C – PHASE 1

SCALE: 1" = 20'

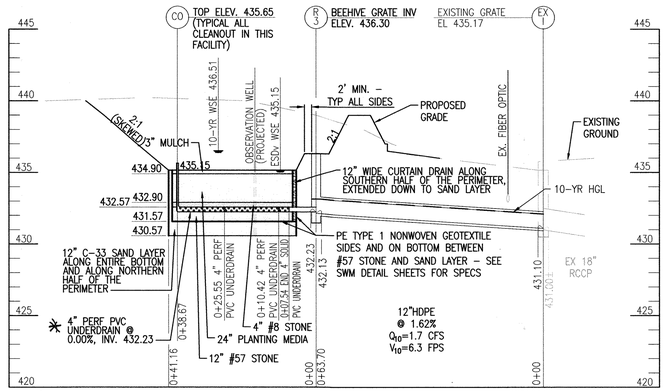
DESIGN SUMMARY

1. FACILITY NUMBER: 1C
2. FACILITY TYPE: F-6 BIORETENTION FACILITY
3. DRAINAGE AREA: 33,106 SQ. FT
4. BOTTOM ELEVATION: 435.15
5. TOP OF BANK ELEVATION: 439.00
6. STORAGE VOLUME PROVIDED: 1,149 CU. FT
7. WATER SURFACE ELEVATION:
   10-YEAR: 436.51
8. DISCHARGE:
   10-YEAR: 1.7 cfs
9. OVERFLOW INLET SIZE & TYPE: YARD INLET.
10. CLEANOUT 6" ABOVE GRADE WITH WATERTIGHT SCREW LID.
11. FILTER FABRIC ADDED ON SIDES OF FACILITY ONLY.
12. MAINTENANCE RESPONSIBILITY: THIS IS A PRIVATE FACILITY TO BE OWNED & MAINTAINED BY THE OWNER.
13. THIS FACILITY IS EXEMPT FROM MD378 GUIDELINES IN THAT THE IMPOUNDED DESIGN HIGHWATER DEPTH IS LESS THAN 3 FEET AT THE EMBANKMENT.
14. SEE SHEETS C1.42 THRU C1.46 FOR PLANTING INFORMATION.



BIORETENTION TYPICAL SECTION

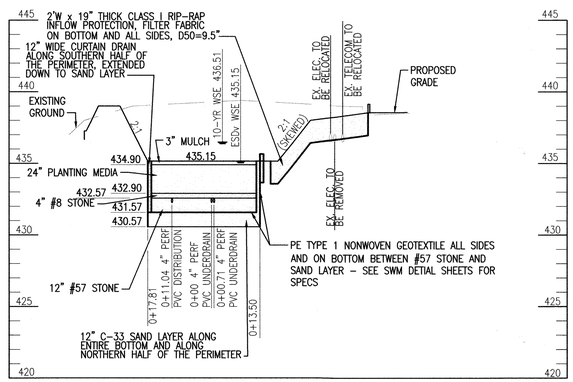
SCALE: 1" = 1'



* All Perf pipe shall be wrapped with wire mesh.

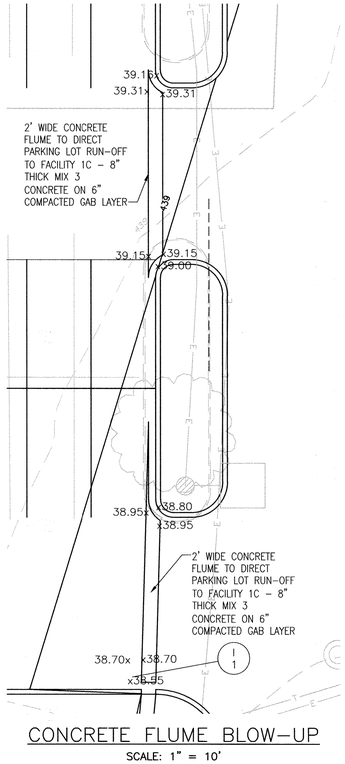
BIORETENTION #1C
PROFILE A-A

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'



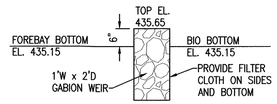
BIORETENTION #1C
PROFILE B-B

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'



CONCRETE FLUME BLOW-UP

SCALE: 1" = 10'



GABION FOREBAY WEIR

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

LEGEND

- PROPERTY LINE
- EX. INDEX CONTOUR (450)
- EX. INTERMEDIATE CONTOUR (451)
- EX. SANITARY MANHOLE
- EX. STORM DRAIN MANHOLE
- EX. ELECTRIC MANHOLE
- EX. LIGHT POLE
- EX. WATER METER
- EX. SIGN
- EX. UTILITY POLE
- EX. BOLLARD POST
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- EX. WATER VALVE
- EX. FIRE HYDRANT
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- EX. 15" DRAIN — EX. STORM DRAIN
- EX. GAS — EX. GAS LINE
- EX. 6" SANITARY — EX. SANITARY
- EX. ELECTRIC — EX. ELECTRIC
- EX. TELEPHONE — EX. TELEPHONE
- EX. CABLE TV — EX. CABLE TV
- EX. 8" WATER — EX. WATER
- PROP. STORM DRAIN
- PROP. GAS LINE (G)
- PROP. SANITARY
- PROP. ELECTRIC (E)
- PROP. WATER
- PROP. INDEX CONTOUR (450)
- PROP. INTERMEDIATE CONTOUR (451)
- LIMIT OF DISTURBANCE (LOD)
- APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT
- PROPOSED IMPERVIOUS AREA

GRAPHIC SCALE
20 0 10 20 40
(IN FEET) 1 inch = 20ft.

CONTRACTOR NOTE:
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TELEPHONE: (410) 792-9086 FAX: (410) 792-7419

AYERS SAINT GROSS
ARCHITECTS + PLANNERS
1040 Hull Street, Suite 100, Baltimore, MD 21230
p 410.347.8500 f 410.347.8419

APPROVED: Howard County Department of Planning & Zoning

Director — Date 9-8-21
Chief, Division of Land Development — Date 9/8/21
Chief, Development Engineering Division — Date 9/8/21

Rev:	Date:	Description:	By:
1			
2			
3			
4			
5			

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date: 04-30-2021	Scale: AS SHOWN
Drawn By: F.F.W.	Designed By: F.F.W.
Approved By: N.A.B.	Project No: 271906728
Tax Map-Grid: 35-6	Zoning: POR & NT

Sheet Title:
STORMWATER MANAGEMENT PLAN FACILITY 1C - PHASE 1

STATE OF MARYLAND — FRANCIS F. WILLIAMS — 21172 — REGISTERED PROFESSIONAL ENGINEER

Discipline Number: C1.36
Sheet Number: 40 OF 53

MD STATE PLANE
NAD 83, NAVD 88

GRAPHIC SCALE
50 0 50 100 200
(IN FEET) 1 inch = 50ft.

SITE GRADING PLAN – PHASE 2

SCALE: 1"=30'

ESDv Summary Table Phase 2												
Watershed	Drainage Area Data					Facility	Target		Provided		Treated ESDv (C.F.)	Total Site Required ESDv (C.F.)
	Area	Acres	RCN	Tc	% Impervious		Pe	ESDv (C.F.)	Pe	ESDv (C.F.)		
LITTLE PATUXENT	1D	.34	72	0.10	56	(M-6) MICRO-BIORETENTION	1.0	121	1.8	1,239	1,652	
	1E	0.16	80	0.10	69%	(M-6) MICRO-BIORETENTION	1.9	655	2.20	859	1,145	
	GR1	0.08	30	0.10	0%	(A-2) GREEN ROOF	1.0	138	1.2	331	441	
	GR2	0.08	30	0.10	0%	(A-2) GREEN ROOF	1.0	138	1.20	331	441	
	GR3	0.13	30	0.10	0%	(A-2) GREEN ROOF	1.0	379	1.2	538	717	
	GR4	0.06	30	0.10	0%	(A-2) GREEN ROOF	1.0	103	1.2	269	359	
	SITE											9,087
						Total Phase 2 ESDv =				3,569	4,755	

LEGEND

- PROPERTY LINE
- 450 EX. INDEX CONTOUR
- 451 EX. INTERMEDIATE CONTOUR
- EX. SANITARY MANHOLE
- EX. STORM DRAIN MANHOLE
- E EX. ELECTRIC MANHOLE
- EX. LIGHT POLE
- EX. WATER METER
- EX. SIGN
- EX. UTILITY POLE
- EX. BOLLARD POST
- EX. DECIDUOUS TREE
- EX. CONIFEROUS TREE
- EX. GAS VALVE
- EX. GUY WIRE
- EX. WATER VALVE
- EX. FIRE HYDRANT
- CO EX. CLEANOUT
- EX. 15" DRAIN EX. STORM DRAIN
- EX. GAS EX. GAS LINE
- EX. 6" SANITARY EX. SANITARY
- EX. ELECTRIC EX. ELECTRIC
- EX. TELEPHONE EX. TELEPHONE
- EX. CABLE TV EX. CABLE TV
- EX. 8" WATER EX. WATER
- PROP. STORM DRAIN
- G PROP. GAS LINE
- PROP. SANITARY
- E PROP. ELECTRIC
- PROP. WATER
- 450 PROP. INDEX CONTOUR
- 451 PROP. INTERMEDIATE CONTOUR
- LOD LIMIT OF DISTURBANCE
- APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT

STATE OF MARYLAND
CHRISTOPHER A. BATTAGLIA
33772
REGISTERED PROFESSIONAL ENGINEER
10/5/21

CONTRACTOR NOTE:
CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO DAMAGE ANY EXISTING PAVING, CURB AND GUTTER, SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN. SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO ORIGINAL CONDITION AT CONTRACTORS EXPENSE.

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. 33772 EXPIRATION DATE: 06/16/2023

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Scientists
Construction Managers
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APPROVED: Howard County Department of Planning & Zoning

Director	9-8-21 Date
Chief, Division of Land Development	9/1/21 Date
Chief, Development Engineering Division	8/18/21 Date

Rev:	Date:	Description:	By:
1	10/5/21	ADD INITIAL SIGNATURE TO BUILDING	MCL
2			
3			
4			
5			

Prepared For and Owner:
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ATTN: Mr. Chuck Nightingale
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SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

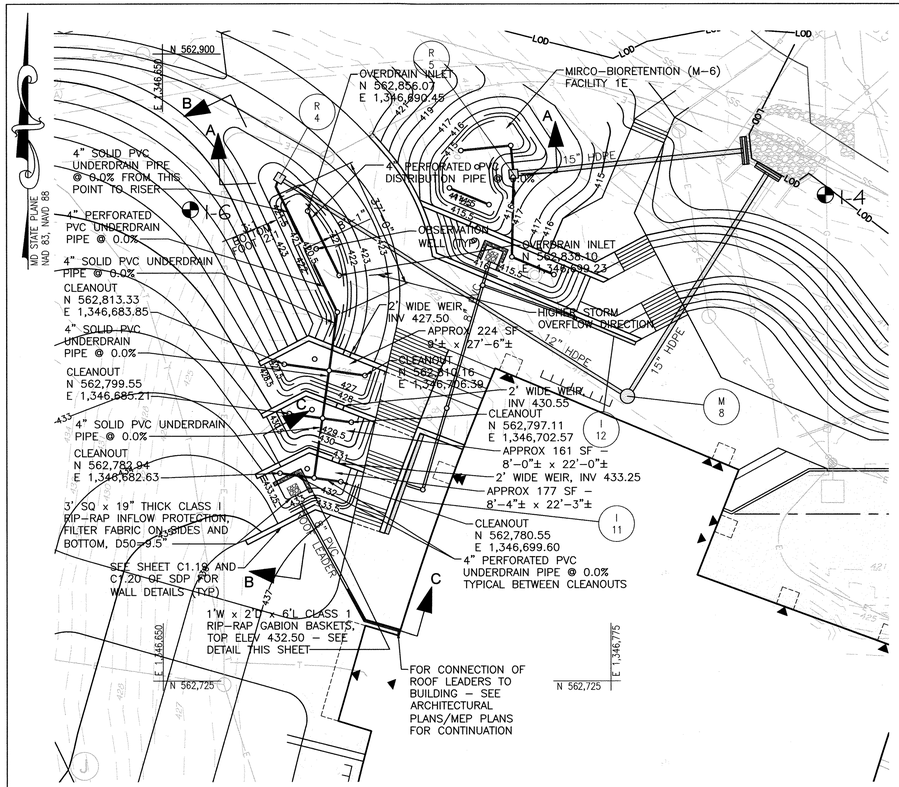
Date:	04-30-2021	Scale:	1" = 30'
Drawn By:	F.F.W.	Designed By:	F.F.W.
Approved By:	N.A.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title:
STORMWATER MANAGEMENT PLAN PHASE 2

STATE OF MARYLAND
CHRISTOPHER A. BATTAGLIA
33772
REGISTERED PROFESSIONAL ENGINEER
10/5/21

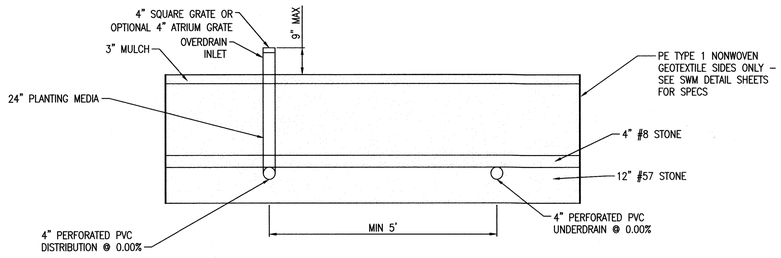
Discipline Number: C1.37

Sheet Number: 41 OF 53



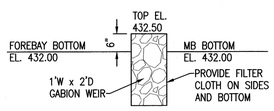
MICRO-BIORETENTION (M-6) - FACILITY 1D - PHASE 2

SCALE: 1" = 20'



MICRO-BIORETENTION TYPICAL SECTION

SCALE: 1" = 1'

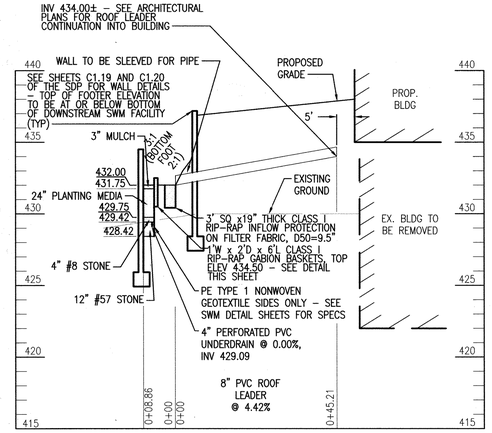


GABION FOREBAY WEIR

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

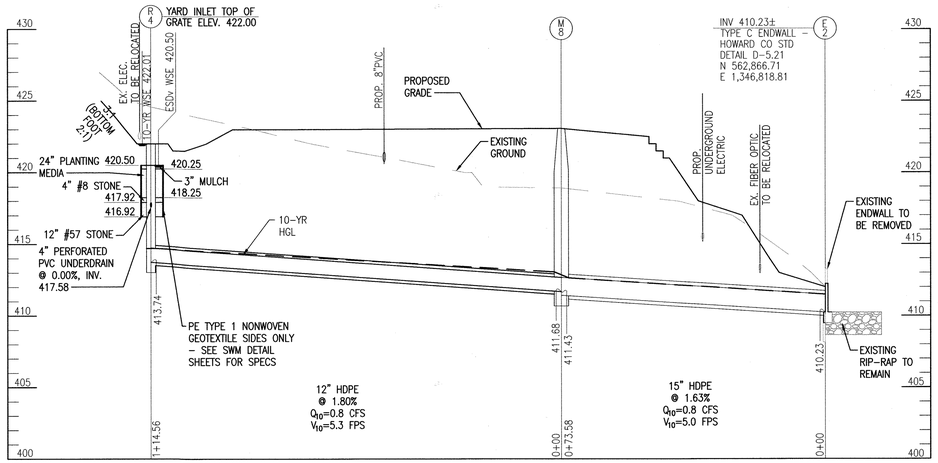
DESIGN SUMMARY

1. FACILITY NUMBER: FC-1D
2. FACILITY TYPE: M-6 MICRO-BIORETENTION FACILITY
3. DRAINAGE AREA: 14,810 SQ. FT
4. BOTTOM ELEVATION: 432.00, 429.50, 427.00, AND 420.50
5. TOP OF BANK ELEVATION: 423.00
6. STORAGE VOLUME PROVIDED: 1239 CU. FT
7. WATER SURFACE ELEVATION:
   10-YEAR: 422.05
8. DISCHARGE:
   10-YEAR: 0.8 cfs
9. OVERFLOW INLET SIZE & TYPE: YARD INLET.
10. CLEANOUT 6" ABOVE GRADE WITH WATERTIGHT SCREW LID.
11. FILTER FABRIC ADDED ON SIDES OF FACILITY ONLY.
12. MAINTENANCE RESPONSIBILITY: THIS IS A PRIVATE FACILITY TO BE OWNED & MAINTAINED BY THE OWNER.
13. THIS FACILITY IS EXEMPT FROM MD378 GUIDELINES IN THAT THE IMPOUNDED DESIGN HIGHWATER DEPTH IS LESS THAN 3 FEET AT THE EMBANKMENT.
14. SEE SHEETS C1.42 THRU C1.46 FOR PLANTING INFORMATION.
15. SEE SHEETS C1.19 AND C1.20 FOR WALL DETAILS.



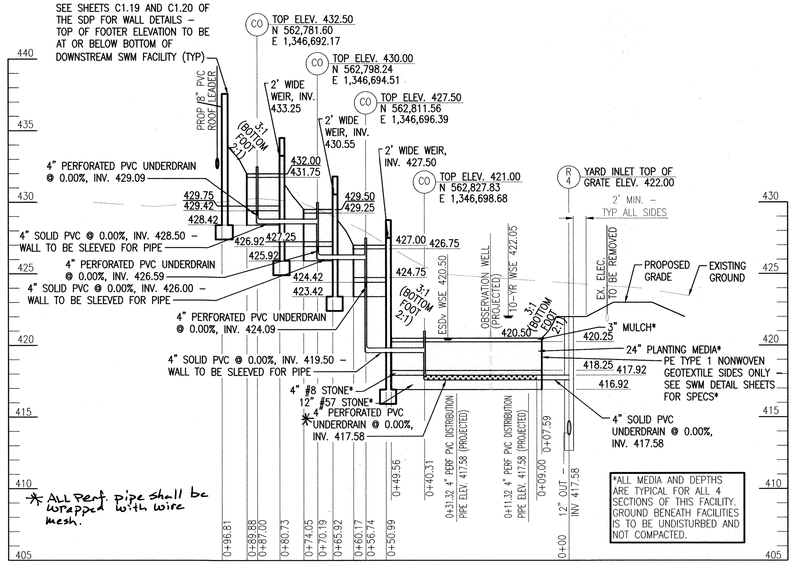
MICRO-BIORETENTION #1D PROFILE C-C

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'



MICRO-BIORETENTION #1D PROFILE A-A

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'



MICRO-BIORETENTION #1D PROFILE B-B

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

LEGEND

- PROPERTY LINE
- EX. INDEX CONTOUR (450)
- EX. INTERMEDIATE CONTOUR (451)
- EX. SANITARY MANHOLE
- EX. STORM DRAIN MANHOLE
- EX. ELECTRIC MANHOLE
- EX. LIGHT POLE
- EX. WATER METER
- EX. SIGN
- EX. UTILITY POLE
- EX. BOLLARD POST
- EX. DECIDUOUS TREE
- EX. CONIFEROUS TREE
- EX. GAS VALVE
- EX. GUY WIRE
- EX. WATER VALVE
- EX. FIRE HYDRANT
- EX. CLEANOUT
- EX. 15" DRAIN — EX. STORM DRAIN
- EX. GAS — EX. GAS LINE
- EX. 6" SANITARY — EX. SANITARY
- EX. ELECTRIC — EX. ELECTRIC
- EX. TELEPHONE — EX. TELEPHONE
- EX. CABLE TV — EX. CABLE TV
- EX. 8" WATER — EX. WATER
- PROP. STORM DRAIN
- PROP. GAS LINE
- PROP. SANITARY
- PROP. ELECTRIC
- PROP. WATER
- PROP. INDEX CONTOUR (450)
- PROP. INTERMEDIATE CONTOUR (451)
- LIMIT OF DISTURBANCE (LOD)
- APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT
- DRAINAGE AREA LINE
- TC PATH
- PROPOSED IMPERVIOUS AREA

GRAPHIC SCALE
20 0 10 20 40
(IN FEET) 1 inch = 20ft.

CONTRACTOR NOTE:
CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO DAMAGE ANY EXISTING PAVING, CURB AND GUTTER, SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN. SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO ORIGINAL CONDITION AT CONTRACTORS EXPENSE.

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APPROVED: Howard County Department of Planning & Zoning

Director		9-8-21 Date
Chief, Division of Land Development		9/7/21 Date
Chief, Development Engineering Division		8/18/21 Date

Rev:	Date:	Description:	By:
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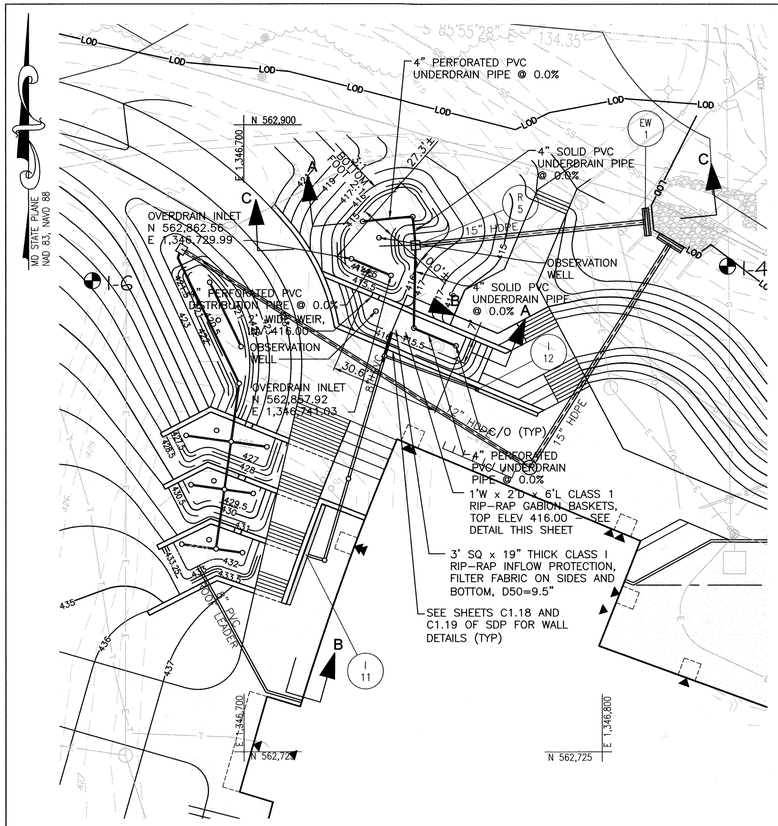
Tax Map-Grid:	35-6	Zoning:	POR & NT

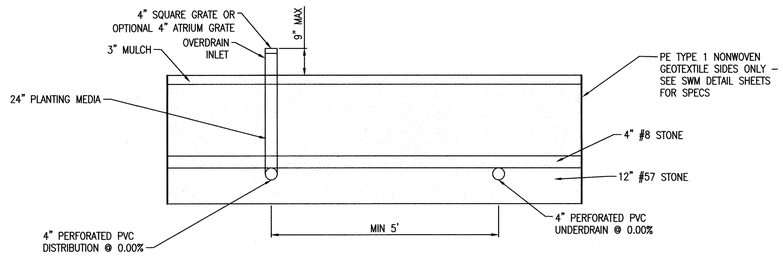
Sheet Title:
STORMWATER MANAGEMENT PLAN FACILITY 1D - PHASE 2

Discipline Number: C1.38
Sheet Number: 42 OF 53



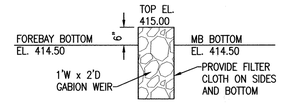
MICRO-BIORETENTION (M-6) - FACILITY 1E - PHASE 2

SCALE: 1" = 20'



MICRO-BIORETENTION TYPICAL SECTION

SCALE: 1" = 1'

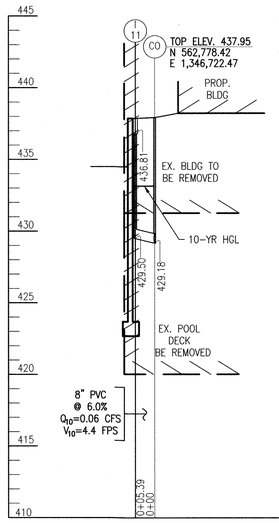


GABION FOREBAY WEIR

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

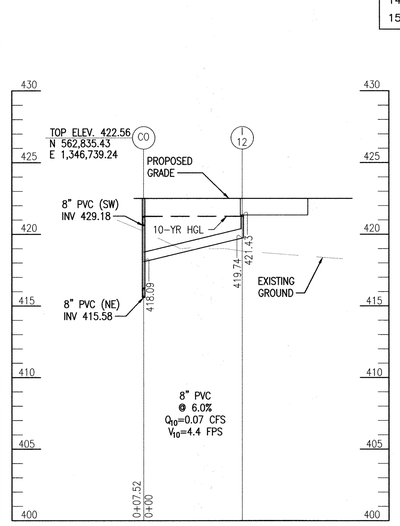
DESIGN SUMMARY

1. FACILITY NUMBER: FC-1E
2. FACILITY TYPE: M-6 MICRO-BIORETENTION FACILITY
3. DRAINAGE AREA: 6,970 SQ. FT
4. BOTTOM ELEVATION: 414.50 AND 415.50
5. TOP OF BANK ELEVATION: 417.00
6. STORAGE VOLUME PROVIDED: 859 CU. FT
7. WATER SURFACE ELEVATION:
   10-YEAR: 416.01
8. DISCHARGE:
   10-YEAR: 0.1 cfs
9. OVERFLOW INLET SIZE & TYPE: YARD INLET.
10. CLEANOUT 6" ABOVE GRADE WITH WATERTIGHT SCREW LID.
11. FILTER FABRIC ADDED ON SIDES OF FACILITY ONLY.
12. MAINTENANCE RESPONSIBILITY: THIS IS A PRIVATE FACILITY TO BE OWNED & MAINTAINED BY THE OWNER.
13. THIS FACILITY IS EXEMPT FROM MD378 GUIDELINES IN THAT THE IMPOUNDED DESIGN HIGHWATER DEPTH IS LESS THAN 3 FEET AT THE EMBANKMENT.
14. SEE SHEETS C1.42 THRU C1.46 FOR PLANTING INFORMATION.
15. SEE SHEETS C1.19 AND C1.20 FOR WALL DETAILS



TRENCH DRAIN

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'



TRENCH DRAIN

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

LEGEND

- PROPERTY LINE
- 450 EX. INDEX CONTOUR
- 451 EX. INTERMEDIATE CONTOUR
- EX. SANITARY MANHOLE
- EX. STORM DRAIN MANHOLE
- E EX. ELECTRIC MANHOLE
- EX. LIGHT POLE
- EX. WATER METER
- EX. SIGN
- EX. UTILITY POLE
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- EX. DECIDUOUS TREE
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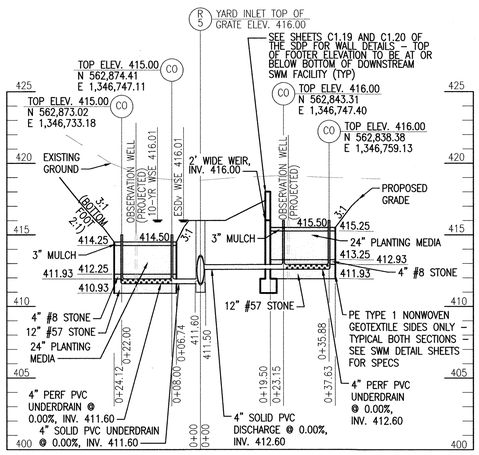
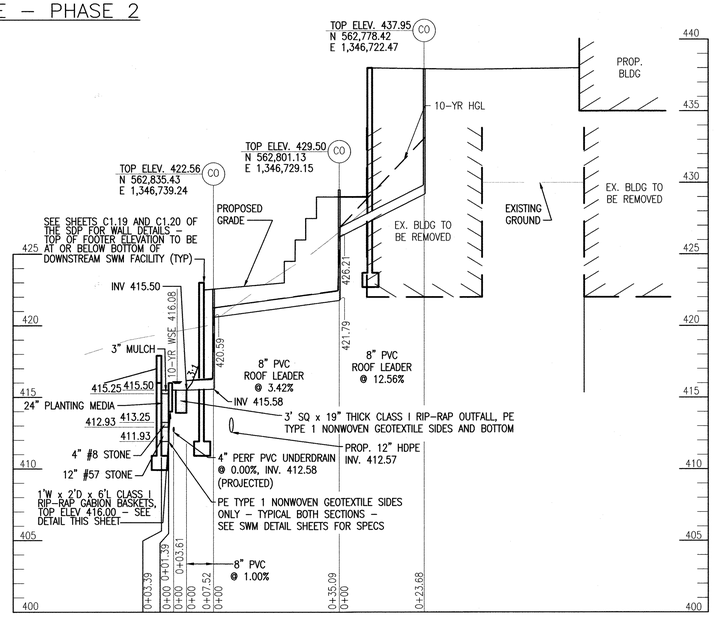
- EX. 6" SANITARY — EX. SANITARY
- EX. ELECTRIC — EX. ELECTRIC
- EX. TELEPHONE — EX. TELEPHONE
- EX. CABLE TV — EX. CABLE TV
- EX. 8" WATER — EX. WATER
- PROP. STORM DRAIN
- G PROP. GAS LINE
- PROP. SANITARY
- E PROP. ELECTRIC
- PROP. WATER
- 450 PROP. INDEX CONTOUR
- 451 PROP. INTERMEDIATE CONTOUR
- LOD LIMIT OF DISTURBANCE
- APPROXIMATE LIMITS OF FOREST CONSERVATION EASEMENT
- PROPOSED IMPERVIOUS AREA



* ALL PERF PIPE shall be wrapped with wire mesh.

MICRO-BIORETENTION #1E PROFILE A-A

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'



MICRO-BIORETENTION #1E PROFILE B-B

SCALE: HORIZ. 1" = 20'
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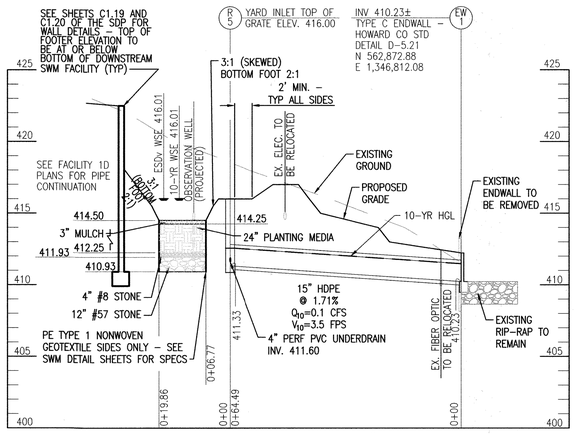

MICRO-BIORETENTION #1E PROFILE C-C

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

GRAPHIC SCALE
50 0 50
(IN FEET) 1 inch = 50ft.

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Tax Map-Grid: 35-6		Zoning: POR & NT	

Sheet Title:
STORMWATER MANAGEMENT PLAN FACILITY 1E - PHASE 2

STATE OF MARYLAND — FRANCIS F. WINKELMANN — 33772 — REGISTERED PROFESSIONAL ENGINEER — 6/22/21

Discipline Number: C1.39

Sheet Number: 43 OF 53

MAIN CONSTRUCTION SPECIFICATIONS

GENERAL

ALL STORMWATER MANAGEMENT FACILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOWARD COUNTY'S "STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (2000)" AND THE N.R.C.S. MARYLAND "STANDARDS AND SPECIFICATIONS FOR PONDS" (MARYLAND CODE 378 POND – JANUARY 2000)

THESE SPECIFICATIONS ARE APPROPRIATE TO ALL PONDS WITHIN THE SCOPE OF THE STANDARD FOR PRACTICE MD–378. ALL REFERENCES TO ASTM AND AASHTO SPECIFICATIONS APPLY TO THE MOST RECENT VERSION.

SITE PREPARATION

AREAS DESIGNATED FOR BORROW AREAS, EMBANKMENT, AND STRUCTURAL WORKS SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL. ALL TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED. CHANNEL BANKS AND SHARP BREAKS SHALL BE SLOPED TO NO STEEPER THAN 1:1. ALL TREES SHALL BE CLEARED AND GRUBBED WITHIN 15 FEET OF THE TOE OF THE EMBANKMENT.

AREAS TO BE COVERED BY THE RESERVOIR WILL BE CLEARED OF ALL TREES, BRUSH, LOGS, FENCES, RUBBISH AND OTHER OBJECTIONABLE MATERIAL UNLESS OTHERWISE DESIGNATED ON THE PLANS. TREES, BRUSH, AND STUMPS SHALL BE CUT APPROXIMATELY LEVEL WITH THE GROUND SURFACE. FOR DRY STORMWATER MANAGEMENT PONDS, A MINIMUM OF A 25–FOOT RADIUS AROUND THE INLET STRUCTURE SHALL BE CLEARED.

ALL CLEARED AND GRUBBED MATERIAL SHALL BE DISPOSED OF OUTSIDE AND BELOW THE LIMITS OF THE DAM AND RESERVOIR AS DIRECTED BY THE OWNER OR HIS REPRESENTATIVE. WHEN SPECIFIED, A SUFFICIENT QUANTITY OF TOPSOIL WILL BE STOCKPILED IN A SUITABLE LOCATION FOR USE ON THE EMBANKMENT AND OTHER DESIGNATED AREAS.

EARTH FILL

MATERIAL – THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS. IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 6", FROZEN OR OTHER OBJECTIONABLE MATERIALS. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT AND CUTOFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE #200 SIEVE. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGNED BY A GEOTECHNICAL ENGINEER. SUCH SPECIAL DESIGNS MUST HAVE CONSTRUCTION SUPERVISED BY A GEOTECHNICAL ENGINEER. MATERIALS USED IN THE OUTER SHELL OF THE EMBANKMENT MUST HAVE THE CAPABILITY TO SUPPORT VEGETATION OF THE QUALITY REQUIRED TO PREVENT EROSION OF THE EMBANKMENT. IF REQUIRED, CUTOFF TRENCH WILL BE SHOWN ON PLANS.

PLACEMENT – AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL. FILL MATERIALS SHALL BE PLACED IN MAXIMUM 8 INCH THICK (BEFORE COMPACTION) LAYERS WHICH ARE TO BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE FILL. THE MOST PERMEABLE BORROW MATERIAL SHALL BE PLACED IN THE DOWNSTREAM PORTIONS OF THE EMBANKMENT. THE PRINCIPAL SPILLWAY MUST BE INSTALLED CONCURRENTLY WITH FILL PLACEMENT AND NOT EXCAVATED INTO THE EMBANKMENT.

COMPACTION – THE MOVEMENT OF THE HAULING AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE TRAVERSED BY NOT LESS THAN ONE TREAD TRACK OF HEAVY EQUIPMENT OR COMPACTION SHALL BE ACHIEVED BY A MINIMUM OF FOUR COMPLETE PASSES OF A SHEEPSFOOT, RUBBER TIRED OR VIBRATORY ROLLER. FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SUCH THAT THE REQUIRED DEGREE OF COMPACTION WILL BE OBTAINED WITH THE EQUIPMENT USED. THE FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SO THAT IF FORMED INTO A BALL IT WILL NOT CRUMBLE, YET NOT BE SO WET THAT WATER CAN BE SQUEEZED OUT.

THE MINIMUM REQUIRED DENSITY SHALL NOT BE LESS THE 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN +/– 2% OF THE OPTIMUM. EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY, AND IS TO BE CERTIFIED BY THE GEOTECHNICAL ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T–99 (STANDARD PROCTOR).

STRUCTURE BACKFILL

BACKFILL ADJACENT TO PIPES OR STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. THE FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL NEEDS TO FILL COMPLETELY ALL SPACES UNDER AND ADJACENT TO THE PIPE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A CONCRETE STRUCTURE OR PIPE, UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE.

STRUCTURE BACKFILL MAY BE FLOWABLE FILL MEETING THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 313 AS MODIFIED. THE MIXTURE SHALL HAVE A 100–200 PSI, 28 DAY UNCONFINED COMPRESSIVE STRENGTH. THE FLOWABLE FILL SHALL HAVE A MINIMUM PH OF 4.0 AND A MINIMUM RESISTIVITY OF 2,000 OHM–CM. MATERIAL SHALL BE PLACED SUCH THAT A MINIMUM OF 6" (MEASURED PERPENDICULAR TO THE OUTSIDE OF THE PIPE) OF FLOWABLE FILL SHALL BE UNDER (BEDDING), OVER AND ON THE SIDES OF THE PIPE. IT ONLY NEEDS TO EXTEND UP TO THE SPRING LINE FOR RIGID CONDUITS. AVERAGE SLUMP OF THE FILL SHALL BE 7" TO ASSURE FLOWABILITY OF THE MATERIAL. ADEQUATE MEASURES SHALL BE TAKEN TO PREVENT FLOATING THE PIPE. WHEN USING FLOWABLE FILL, ALL METAL PIPE SHALL BE BITUMINOUS COATED. ANY ADJOINING SOIL FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL SHALL COMPLETELY FILL ALL VOIDS ADJACENT TO THE FLOWABLE FILL ZONE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A STRUCTURE OR PIPE UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE. BACKFILL MATERIAL OUTSIDE THE STRUCTURAL BACKFILL (FLOWABLE FILL) ZONE SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE CORE OF THE EMBANKMENT OR OTHER EMBANKMENT MATERIALS.

REMOVAL AND REPLACEMENT OF DEFECTIVE FILL

FILL PLACED AT DENSITIES LOWER THAN SPECIFIED MINIMUM DENSITY OR AT MOISTURE CONTENTS OUTSIDE THE SPECIFIED ACCEPTABLE RANGE OF MOISTURE CONTENT OR OTHERWISE NOT CONFORMING TO THE REQUIREMENTS OF THE SPECIFICATIONS SHALL BE REWORKED TO MEET THE REQUIREMENTS OR REMOVED AND REPLACED BY ACCEPTABLE FILL. THE BOTTOMS OF SUCH EXCAVATIONS SHALL BE FINISHED FLAT OR GENTLY CURVING AND AT THE SIDES OF SUCH EXCAVATIONS, THE ADJACENT SOUND FILL SHALL BE TRIMMED TO A SLOPE NOT STEEPER THAN 3 FEET HORIZONTALLY TO 1 FOOT VERTICALLY EXTENDING FROM THE BOTTOM OF THE EXCAVATION TO THE FILL SURFACE.

PIPE CONDUITS

ALL PIPES SHALL BE CIRCULAR IN CROSS SECTION.

ALL PERFORATED PIPES SHALL HAVE A MINIMUM OF 3.31 SQUARE INCHES OF OPENING PER SQUARE FOOT OF PIPE SURFACE AREA. (EXAMPLE: 30 3/8" DIA. HOLES PER SQUARE FOOT) PERFORATIONS ARE TO BE UNIFORMLY SPACED AROUND THE FULL PERIPHERY OF THE PIPE.

PLASTIC PIPE

PLASTIC PIPE SHALL BE AS SPECIFIED UNDER "BIORETENTION" AND "MICRO–BIORETENTION" SPECIFICATIONS.

REINFORCED CONCRETE PIPE – ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR REINFORCED CONCRETE PIPE:

1. MATERIALS – REINFORCED CONCRETE PIPE SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS AND SHALL EQUAL AND EXCEED ASTM DESIGNATION C–361.
2. BEDDING – ALL REINFORCED CONCRETE PIPE CONDUITS SHALL BE LAID IN CONCRETE BEDDING/CRADLE FOR THEIR ENTIRE LENGTH. THIS BEDDING/CRADLE SHALL CONSIST OF HIGH SLUMP CONCRETE PLACED UNDER THE PIPE AND UP THE SIDES OF THE PIPE AT LEAST 50% OF ITS OUTSIDE DIAMETER WITH A MINIMUM THICKNESS OF 6 INCHES, OR AS SHOWN ON THE DRAWINGS. WHERE A CONCRETE CRADLE IS NOT NEEDED FOR STRUCTURAL REASONS, FLOWABLE FILL MAY BE USED AS DESCRIBED IN THE "STRUCTURE BACKFILL" SECTION OF THIS STANDARD. GRAVEL BEDDING IS NOT PERMITTED.
3. LAYING PIPE – BELL AND SPIGOT PIPE SHALL BE PLACED WITH THE BELL END UPSTREAM. JOINTS SHALL BE MADE IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL. AFTER THE JOINTS ARE SEALED FOR THE ENTIRE LINE, THE BEDDING SHALL BE PLACED SO THAT ALL SPACES UNDER THE PIPE ARE FILLED. CARE SHALL BE EXERCISED TO PREVENT ANY DEVIATION FROM THE ORIGINAL LINE AND GRADE OF THE PIPE. THE FIRST JOINT MUST BE LOCATED WITHIN 4 FEET FROM THE RISER.
4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL."
5. OTHER DETAILS (ANTI–SEEP COLLARS, VALVES, ETC.) SHALL BE SHOWN ON THE DRAWINGS.

CAST–IN–PLACE CONCRETE STRUCTURES (RISER STRUCTURE)

1. SPECIFICATIONS: MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, LATEST EDITION.

AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, LATEST EDITION, FOR DESIGN. CONCRETE DESIGN BY THE "SERVICE LOAD DESIGN METHOD".

2. CONCRETE: SHALL MEET THE REQUIREMENTS OF THE MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 420 AND 920, MIX NO. 3.

CAST–IN–PLACE CONCRETE STRUCTURES (RISER STRUCTURE) (cont)

3. CONTRACTOR MAY ADD COLOR MIX (IF SPECIFIED ON PLAN) AT PLANT IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATION "C–12 MESA BEIGE" AS MANUFACTURED BY M. SCOFIELD COMPANY (213) 723–5285.

CONTRACTOR SHALL SUPPLY MIX DESIGN FOR APPROVAL PRIOR TO APPLICATION. LOAD AND MIX TICKETS SHALL BE SUPPLIED FOR EACH TRUCK DELIVERY. NO PARTIAL FIELD MIXES SHALL BE ALLOWED.

ALL CONCRETE SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 3,500 PSI AT 28 DAYS. DESIGN FC = 1,200 PSI.

ALL CONSTRUCTION KEYS SHALL BE 3/4" UNLESS OTHERWISE NOTED. ALL CONSTRUCTION KEYS ARE SHOWN NOMINAL SIZE.

4. REINFORCING STEEL: REINFORCING STEEL SHALL CONFORM TO ASTM A–615, GRADE 60. WHERE NOT INDICATED, BAR LAP SPLICES SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATIONS. THE MINIMUM CONCRETE COVER SHALL BE 2 INCHES UNLESS OTHERWISE NOTED. DESIGN FS = 24,000 PSI.
5. FOUNDATION: PRESUMED SOIL BEARING CAPACITY = 2,500 PSF. THE ENGINEER MUST APPROVE ALL FOUNDATIONS PRIOR TO CONCRETE PLACEMENT. IF UNSUITABLE MATERIAL IS ENCOUNTERED, THE MATERIAL SHALL BE UNDERCUT AND BACKFILLED WITH STRUCTURAL BACKFILL.
6. STRUCTURAL BACKFILL: CAST–IN–PLACE CONCRETE STRUCTURES AND PIPE SHALL BE BACKFILLED WITH MATERIAL OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. STRUCTURAL FILL SHALL BE PLACED IN LOOSE LIFTS OF APPROXIMATELY 6 INCHES, AND COMPACTED TO 95 PERCENT OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY IN ACCORDANCE WITH AASHTO T=180.

THE STATIC WEIGHT OF EQUIPMENT USED ADJACENT TO WALLS SHALL NOT EXCEED 3,000 POUNDS. NO BACKFILL SHALL BE PLACED AGAINST THE CAST–IN–PLACE WALLS UNTIL THE CONCRETE HAS ATTAINED THE SPECIFIED 28 DAY STRENGTH.

PRE–CAST CONCRETE STRUCTURES

SHOP DRAWINGS FOR PRE–CAST STRUCTURES MEETING ASTM REQUIREMENTS FOR PRE–CAST STRUCTURES WITH SUPPORTING STRUCTURAL COMPUTATIONS (SIGNED AND SEALED BY A MARYLAND REGISTERED PROFESSIONAL ENGINEER) MUST BE SUBMITTED TO THE ENGINEER, AND THE APPROVING AGENCY (BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND RESOURCE MANAGEMENT) FOR APPROVAL PRIOR TO FABRICATION.

ROCK RIPRAP

ROCK RIPRAP SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 311.

THE RIP–RAP SHALL BE PLACED TO THE REQUIRED THICKNESS IN ONE OPERATION. THE ROCK SHALL BE DELIVERED AND PLACED IN A MANNER THAT WILL INSURE THE RIP–RAP IN PLACE SHALL BE REASONABLY HOMOGENEOUS WITH THE LARGE ROCKS UNIFORMLY DISTRIBUTED AND FIRMLY IN CONTACT ONE TO ANOTHER WITH THE SMALLER ROCKS FILLING THE VOIDS BETWEEN THE LARGER ROCKS.

GEOTEXTILE

GEOTEXTILE SHALL BE PLACED UNDER ALL RIPRAP AND SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 921.09, CLASS C.

GABIONS

ALL GABIONS SHALL BE PVC COATED WOVEN WIRE BASKETS. STONE SIZE SHALL BE 4 INCHES TO 7 INCHES (CLASS IV GABIONS).

FENCE AND GATE (48–INCH HEIGHT)

CONSTRUCT FENCING IN ACCORDANCE WITH THE STATE HIGHWAY ADMINISTRATION STANDARD DETAILS 690.01 AND 690.02. USE SPECIFICATIONS FOR A 6–FOOT FENCE, SUBSTITUTING 48–INCH FABRIC AND 6–FOOT 8–INCH LINE POSTS. CONSTRUCT THE GATE IN ACCORDANCE WITH STATE HIGHWAY ADMINISTRATION STANDARD DETAIL 692.01 WITH 48–INCH FABRIC. THE FABRIC USED FOR THE FENCE AND GATE MUST CONFORM TO AASHTO DESIGNATION M181.74. BLACK PVC COATING IS REQUIRED FOR THE WIRE FABRIC IN ACCORDANCE WITH THE LANDSCAPE MANUAL ADOPTED BY RESOLUTION 56–90, OCTOBER 1, 1990.

CARE OF WATER DURING CONSTRUCTION

ALL WORK ON PERMANENT STRUCTURES SHALL BE CARRIED OUT IN AREAS FREE FROM WATER. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL TEMPORARY DIKES, LEVEES, COFFERDAMS, DRAINAGE CHANNELS, AND STREAM DIVERSIONS NECESSARY TO PROTECT THE AREAS TO BE OCCUPIED BY THE PERMANENT WORKS. THE CONTRACTOR SHALL ALSO FURNISH, INSTALL, OPERATE, AND MAINTAIN ALL NECESSARY PUMPING AND OTHER EQUIPMENT REQUIRED FOR REMOVAL OR WATER FROM VARIOUS PARTS OF THE WORK AND FOR MAINTAINING THE EXCAVATIONS, FOUNDATION, AND OTHER PARTS OF THE WORK FREE FROM WATER AS REQUIRED BY THE ENGINEER FOR CONSTRUCTING EACH PART OF THE WORK. AFTER HAVING SERVED THEIR PURPOSE, ALL TEMPORARY PROTECTIVE WORKS SHALL BE REMOVED OR LEVELED AND GRADED TO THE EXTENT REQUIRED TO PREVENT OBSTRUCTION IN ANY DEGREE WHATSOEVER OF THE FLOW OF WATER TO THE SPILLWAY OR OUTLET WORKS AND SO AS NOT TO INTERFERE IN ANY WAY WITH THE OPERATION OR MAINTENANCE OF THE STRUCTURE. STREAM DIVERSIONS SHALL BE MAINTAINED UNTIL THE FULL FLOW CAN BE PASSED THROUGH THE PERMANENT WORKS. THE REMOVAL OF WATER FROM THE REQUIRED EXCAVATION AND THE FOUNDATION SHALL BE ACCOMPLISHED IN A MANNER AND TO THE EXTENT THAT WILL MAINTAIN STABILITY OF THE EXCAVATED SLOPES AND BOTTOM REQUIRED EXCAVATIONS AND WILL ALLOW SATISFACTORY PERFORMANCE OF ALL CONSTRUCTION OPERATIONS. DURING THE PLACING AND COMPACTING OF MATERIAL IN REQUIRED EXCAVATIONS, THE WATER LEVEL AT THE LOCATIONS BEING REFILLED SHALL BE MAINTAINED BELOW THE BOTTOM OF THE EXCAVATION AT SUCH LOCATIONS WHICH MAY REQUIRE DRAINING THE WATER SUMPS FROM WHICH THE WATER SHALL BE PUMPED.

STABILIZATION

ALL BORROW AREAS SHALL BE GRADED TO PROVIDE PROPER DRAINAGE AND LEFT IN A SIGHTLY CONDITION. ALL EXPOSED SURFACES OF THE EMBANKMENT, SPILLWAY, SPOIL AND BORROW AREAS, AND BERMS SHALL BE STABILIZED BY SEEDING, FERTILIZING AND MULCHING IN ACCORDANCE WITH THE NATURAL RESOURCES CONSERVATION SERVICE STANDARDS AND SPECIFICATIONS FOR CRITICAL AREA PLANTING (MD–342) OR AS SHOWN ON THE ACCOMPANYING DRAWINGS.

CONSTRUCTION INSPECTION BY DESIGNATED ENGINEERS

THE CONSTRUCTION OF THE POND AND EMBANKMENT, AND CERTIFICATION THAT THE POND AND EMBANKMENT HAVE BEEN BUILT IN ACCORDANCE WITH THE PLANS SHALL BE UNDER THE SUPERVISION OF A REGISTERED PROFESSIONAL ENGINEER. THE ENGINEER SHALL BE NOTIFIED SUFFICIENTLY IN ADVANCE OF CONSTRUCTION IN ORDER THAT ARRANGEMENTS CAN BE MADE FOR (1) INSPECTION OF PIPE TRENCH AND BEDDING, (2) INSPECTION OF RISER AND ANTI–SEEP COLLARS AND (3) SUPERVISION OF EMBANKMENT CONSTRUCTION AND COMPACTION TESTING. THE ENGINEER SHALL DIRECT THE HANDLING OF WATER DURING CONSTRUCTION, MINOR CHANGES NOT AFFECTING THE INTEGRITY OF THE DAM IN ORDER TO COMPENSATE FOR UNUSUAL SOIL CONDITIONS, AND THE REMOVAL AND REPLACEMENT OF DEFECTIVE FILL.

PLANT HARDINESS ZONE 7A

IF AREA TO BE VEGETATIVELY STABILIZED EXCEEDS 5 ACRES, THE FOLLOWING APPLIES: AT THE TIME OF FINAL GRADING, SOILS TEST TO BE PERFORMED TO DETERMINE FERTILIZER AND LIME RATE.

PERMANENT SEEDING

THE FACILITIES SHALL BE PLANTED WITH THE BELOW WATER QUALITY SEED MIX. SEEDING, FERTILIZING AND MULCHING SHALL BE AS FOLLOWS:

SEED MIX: (40%) PANICUM VIRGATUM/SWITCHGRASS
(35%) ASTER NOVAE–ANGLIAE/NEW ENGLAND ASTER
(10%) ASTER PUNICEUS/PURPLE STEMMED ASTER
(10%) ASCEPIAS INCARNATA/SWAMP MILKWEED
(5%) LABELIA CARDINALIS/CARDINAL FLOWER

SEED RATE: 1/2 LB/1000 SF

LIME: 2 TONS PER ACRE

FERTILIZER: 10–20–20 @ 440 LBS/AC.

MULCH: STRAW AT 4,000LBS. PER ACRE.

ANCHORING: MULCHING TOOL OR WOOD CELLULOSE FIBER AT A NET DRY BINDER RATE OF 750 LBS. PER ACRE. THE WOOD CELLULOSE FIBER SHALL BE MIXED WITH CELLULOSE FIBER PER 100 GALLONS OF WATER OR AT A RATE RECOMMENDED BY THE MANUFACTURER.

TEMPORARY SEEDING (IF REQUIRED)

SEED MIX: BARLEY OR RYE PLUS FOXTAIL MILLET

SEED RATE: 150 LBS/ACRE

EROSION AND SEDIMENT CONTROL

CONSTRUCTION OPERATIONS WILL BE CARRIED OUT IN SUCH A MANNER THAT EROSION WILL BE CONTROLLED AND WATER AND AIR POLLUTION MINIMIZED. STATE AND LOCAL LAWS CONCERNING POLLUTION ABATEMENT WILL BE FOLLOWED. CONSTRUCTION PLANS SHALL DETAIL EROSION AND SEDIMENT CONTROL MEASURES. ALL DISTURBED AREAS SHALL BE CONTROLLED BY AN EROSION AND SEDIMENT CONTROL PLAN WHICH HAS BEEN APPROVED BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT. (HCSCD)

FILTER CLOTH

ALL FILTER CLOTH SHALL CONFORM TO THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, OR THE LATEST EDITION. USE MIRAFI 140N FILTER FABRIC OR APPROVED EQUAL.

BIORETENTION FACILITY MAINTENANCE INSPECTION SCHEDULE

IT IS THE OWNER'S RESPONSIBILITY PERFORM THE FOLLOWING MAINTENANCE AND INSPECTION ITEMS:

ROUTINE MAINTENANCE

1. REGULARLY INSPECT FOR SIGNS OF EROSION, OBSTRUCTIONS, OR UNHEALTHY VEGETATION. REPAIR EROSION AND REMOVE ANY OBSTRUCTIONS OR UNHEALTHY VEGETATION AS NECESSARY.
2. REMOVE WEEDS AND INVASIVE PLANTINGS.
3. REMOVE ANY TRASH IN THE BIORETENTION AREA OR INLET CHANNELS OR PIPES.
4. CHECK THE FACILITY 48 HOURS AFTER A RAIN STORM TO MAKE SURE THERE IS NO STANDING WATER.

NON–ROUTINE MAINTENANCE

1. CUT BACK DEAD STEMS FROM HERBACEOUS PLANTINGS IN THE BEGINNING OF THE SPRING SEASON.
2. WATER NEW PLANTINGS FREQUENTLY TO PROMOTE PLANT GROWTH AND ALSO DURING EXTREME DROUGHTS.
3. REPLENISH AND DISTRIBUTE MULCH TO A DEPTH OF 3 INCHES.
4. REMOVE FALLEN LEAVES IN THE FALL SEASON.
5. REPLANT/REPLACE DEAD PLANTS (BEST TIME IN THE FALL).

MICRO–BIORETENTION FACILITY MAINTENANCE INSPECTION SCHEDULE

IT IS THE OWNER'S RESPONSIBILITY PERFORM THE FOLLOWING MAINTENANCE AND INSPECTION ITEMS:

ROUTINE MAINTENANCE

1. REGULARLY INSPECT FOR SIGNS OF EROSION, OBSTRUCTIONS, OR UNHEALTHY VEGETATION. REPAIR EROSION AND REMOVE ANY OBSTRUCTIONS OR UNHEALTHY VEGETATION AS NECESSARY.
2. REMOVE WEEDS AND INVASIVE PLANTINGS.
3. REMOVE ANY TRASH IN THE MICRO–BIORETENTION AREA OR INLET CHANNELS OR PIPES.
4. CHECK THE FACILITY 48 HOURS AFTER A RAIN STORM TO MAKE SURE THERE IS NO STANDING WATER.

NON–ROUTINE MAINTENANCE

1. CUT BACK DEAD STEMS FROM HERBACEOUS PLANTINGS IN THE BEGINNING OF THE SPRING SEASON.
2. WATER NEW PLANTINGS FREQUENTLY TO PROMOTE PLANT GROWTH AND ALSO DURING EXTREME DROUGHTS.
3. REPLENISH AND DISTRIBUTE MULCH TO A DEPTH OF 3 INCHES.
4. REMOVE FALLEN LEAVES IN THE FALL SEASON.
5. REPLANT/REPLACE DEAD PLANTS (BEST TIME IN THE FALL).

OPERATION AND MAINTENANCE SCHEDULE FOR BIORETENTION (F–6)

A. ANNUAL MAINTENANCE OF PLAT MATERIAL, MULCH LAYER, SAND MEDIA AND SOIL LAYER IS REQUIRED. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTION AREAS OF EROSION OR WASHOUT. CHECK FOR DEWATERING WITHIN 48 HOURS. WHEN NECESSARY, REPLACE FILTER MEDIA PER PLAN.

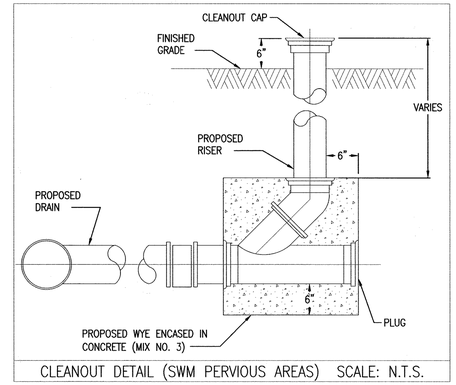
B. SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD DISEASED AND EXCESSIVE VEGETATION CONSIDERED BEYOND TREATMENT. REPLACEMENT OF ALL DISEASED TREES, SHRUBS, DEFICIENT STAKE AND WIRES WILL BE REMOVED.

C. MULCH LAYER SHALL BE INSPECTED EACH SPRING. ONCE EVERY 2 TO 3 YEARS, REMOVE PREVIOUS MULCH LAYER AND APPLY NEW 2 TO 3 INCH LAYER.

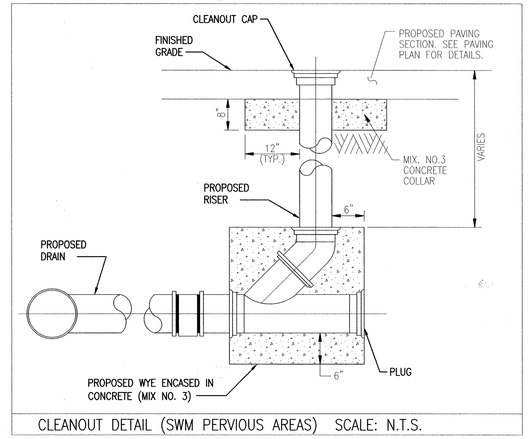
D. SOIL EROSION AND FLOW BLOCKAGES TO BE ADDRESSED ON AN AS NEEDED BASIS WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORMS. INSPECT CLEAN OUTS AND OVSERVATION WELLS ALONG WITH OVERFLOW/OUTFALL/EXIT PIPES.

OPERATION AND MAINTENANCE SCHEDULE FOR MICRO–BIORETENTION AREA (M–6)

1. 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.
2. THE OWNER SHALL PERFORM A PLANT 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.
3. 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.
4. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.



CLEANOUT DETAIL (SWM PERVIOUS AREAS) SCALE: N.T.S.



CLEANOUT DETAIL (SWM PERVIOUS AREAS) SCALE: N.T.S.

CONTRACTOR NOTE:
CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO DAMAGE ANY EXISTING PAVING, CURB AND GUTTER, SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN. SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO ORIGINAL CONDITION AT CONTRACTORS EXPENSE.

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. 33772 EXPIRATION DATE: 06/16/2023

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APPROVED: Howard County Department of Planning & Zoning

Director — Date 9-8-21
Chief, Division of Land Development — Date 9/7/21
Chief, Development Engineering Division — Date 8/31/21

Rev:	Date:	Description:	By:
1			
2			
3			
4			
5			

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Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

Date: 04-30-2021		Scale: AS SHOWN	
Drawn By: F.F.W.		Designed By: F.F.W.	
Approved By: N.A.B.		Project No: 271906728	
Tax Map-Grid: 35-6		Zoning: POR & NT	

Sheet Title:
STORMWATER MANAGEMENT NOTES AND DETAILS

Discipline Number: C1.40
Sheet Number: 44 OF 53

B.3.B. SPECIFICATIONS FOR BIORETENTION

1. Material Specifications
The allowable materials to be used in bioretention area are detailed in Table B.3.2.

2. 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 bioretention area 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:
– pH range – Should be between 5.2 – 7.0.
– organic matter – 1.5% – 4% (by weight)
– magnesium – 35 lb./ac
– phosphorus (phosphate – P_2O_5) – 75 lb./ac
– potassium (potash – K_2O) – 85 lb./ac
– soluble salts – not to exceed 500 ppm

All bioretention areas shall have a minimum of one test. Each test shall consist of both the standard soil test for pH, phosphorus, and potassium 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.

Since different labs calibrate their testing equipment differently, all testing results shall come from the same testing facility.

Should the pH fall out of the acceptable range, it may be modified (higher) with lime or (lower) with iron sulfate plus sulfur.

3. Compaction

It is very important to minimize compaction of both the base of bioretention area and the required backfill. When possible, use excavation hoes to remove original soil. If bioretention areas 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 bioretention areas can be found in Appendix A, Section A.2.3.

5. Plant Installation

Mulch should be placed to a uniform thickness of 2" to 3". Shredded 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.

Root stock 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 are to be placed on a 3'–0" wide section of filter cloth. Pipe is placed next, followed by the gravel bedding. The ends of underdrain pipes not terminating in an observation well shall be capped.

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
The bioretention facility may not be constructed until all contributing drainage area has been stabilized.

TABLE B.3.2 MATERIALS SPECIFICATIONS FOR BIORETENTION

MATERIAL	SPECIFICATION	SIZE	NOTES
PLANTINGS	SEE APPENDIX A, TABLE A.4	N/A	PLANTINGS ARE SITE–SPECIFIC
PLANTING SOIL (2.5' TO 4' DEEP]	SHA BIORETENTION SOIL MIX PER CATEGORY 900, SECTION 920.02.05(b) SHA SPECIFICATIONS	N/A	SHA BIORETENTION SOIL MIX TO BE USED IN BOTH MICRO–BIORETENTION FACILITIES
MULCH	SHREDDED HARDWOOD		AGED 6 MONTHS, MINIMUM; NO PINE OR WOOD CHIPS
PEA GRAVEL DIAPHRAGM	PEA GRAVEL: ASTM–D–448	NO. 6	
CURTAIN DRAIN	ORNAMENTAL STONE: WASHED COBBLES	STONE: 2" TO 5"	
GEOTEXTILE	CLASS "C" – APPARENT OPENING SIZE (ASTM–D–4751), GRAB TENSILE STRENGTH (ASTM–D–4632), PUNCTURE RESISTANCE (ASTM–D–4833)	N/A	PE TYPE I NONWOVEN – FOR USE AS NECESSARY BENEATH UNDERDRAINS ONLY
UNDERDRAIN GRAVEL	AASHTO M–43	NO. 57 OR NO. 6 AGGREGATE (3/8" TO 3/4")	
UNDERDRAIN PIPING	F–758, TYPE PS 28 OR AASHTO M–278	4" TO 6" RIGID SCHEDULE 40 PVC OR SDR35	SLOTTED OR PERFORATED PIPE; 3/8" PERF. @ 6" ON CENTER, 4 HOLES PER ROW; MINIMUM OF 3" OF GRAVEL OVER PIPES; NOT NECESSARY UNDERNEATH PIPES. PERFORATED PIPE SHALL BE WRAPPED WITH 1/4–INCH GALVANIZED HARDWARE CLOTH
POURED IN PLACE CONCRETE (IF REQUIRED)	MSHA MIX NO. 3; F'c = 3500 PSI @ 28 DAYS, NORMAL WEIGHT, AIR–ENTRAINED; REINFORCING TO MEET ASTM–615–60	N/A	ON–SITE TESTING OF POURED–IN–PLACE CONCRETE REQUIRED: 28 DAY STRENGTH AND SLUMP TEST; ALL CONCRETE DESIGN (CAST–IN–PLACE OR PRE–CAST) *NOT USING PREVIOUSLY APPROVED STATE OR LOCAL STANDARDS* REQUIRES DESIGN DRAWINGS SEALED AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND – DESIGN TO INCLUDE MEETING ACI CODE 350.R/89; VERTICAL LOADING [H10 OR H–20]; ALLOWABLE HORIZONTAL LOADING (BASED ON SOIL PRESSURES); AND ANALYSIS OF POTENTIAL CRACKING
SAND (1' DEEP)	AASHTO–M–6 OR ASTM–C–33	0.02" TO 0.04"	SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE (AASHTO) #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND.

TABLE B4.1 MATERIALS SPECIFICATIONS FOR MICRO–BIORETENTION, RAIN GARDENS & LANDSCAPE INFILTRATION

MATERIAL	SPECIFICATION	SIZE	NOTES
PLANTINGS	SEE APPENDIX A, TABLE A.4	N/A	PLANTINGS ARE SITE–SPECIFIC
PLANTING SOIL ([' TO 4' DEEP]	SHA BIORETENTION SOIL MIX PER CATEGORY 900, SECTION 920.02.05(b) SHA SPECIFICATIONS	N/A	SHA BIORETENTION SOIL MIX TO BE USED IN BOTH MICRO–BIORETENTION FACILITIES
ORGANIC CONTENT	MIN. 1.5% BY DRY WEIGHT		PER SHA BIORETENTION SOIL MIX SPECIFICATIONS
MULCH	SHREDDED HARDWOOD		AGED 6 MONTHS, MINIMUM; NO PINE OR WOOD CHIPS
PEA GRAVEL DIAPHRAGM	PEA GRAVEL: ASTM–D–448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
CURTAIN DRAIN	ORNAMENTAL STONE: WASHED COBBLES	STONE: 2" TO 5"	
GEOTEXTILE		N/A	PE TYPE I NONWOVEN
GRAVEL (UNDERDRAINS AND INFILTRATION BERMS)	AASHTO M–43	NO. 57 OR NO. 6 AGGREGATE (3/8" TO 3/4")	
UNDERDRAIN & DISTRIBUTION PIPING	F–758, TYPE PS 28 OR AASHTO M–278	4" TO 6" RIGID SCHEDULE 40 PVC OR SDR35	SLOTTED OR PERFORATED PIPE; 3/8" PERF. @ 6" ON CENTER, 4 HOLES PER ROW; MINIMUM OF 3" OF GRAVEL OVER PIPES; NOT NECESSARY UNDERNEATH PIPES. PERFORATED PIPE SHALL BE WRAPPED WITH 1/4–INCH GALVANIZED HARDWARE CLOTH
POURED IN PLACE CONCRETE (IF REQUIRED)	MSHA MIX NO. 3; F'c = 3500 PSI @ 28 DAYS, NORMAL WEIGHT, AIR–ENTRAINED; REINFORCING TO MEET ASTM–615–60	N/A	ON–SITE TESTING OF POURED–IN–PLACE CONCRETE REQUIRED: 28 DAY STRENGTH AND SLUMP TEST; ALL CONCRETE DESIGN (CAST–IN–PLACE OR PRE–CAST) NOT USING PREVIOUSLY APPROVED STATE OR LOCAL STANDARDS REQUIRES DESIGN DRAWINGS SEALED AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND– DESIGN TO INCLUDE MEETING ACI CODE 350.R/89; VERTICAL LOADING [H10 OR H–20]; ALLOWABLE HORIZONTAL LOADING (BASED ON SOIL PRESSURES); AND ANALYSIS OF POTENTIAL CRACKING
SAND	AASHTO–M–6 OR ASTM–C–33	0.02" TO 0.04"	SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE (AASHTO) #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND.
WETLAND PLANTING MIX	LOW HYDRAULIC CONDUCTIVITY (0.1–0.01 FT/DAY). MIXTURE OF COMPOST, SAND, SILT & CLAY. CLAY < 15% BY VOLUME SILT LOAM WITH 10–20% MASS ORGANIC MATTER.		WETLAND SOIL BLEND TO BE USED IN SUBMERGED GRAVEL WETLAND FACILITY #1.

B.4.C. SPECIFICATIONS FOR MICRO–BIORETENTION, RAIN GARDENS, LANDSCAPE INFILTRATION & LANDSCAPE 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 1/8th 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.

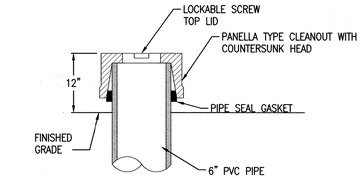
6. Underdrains

Underdrains should meet the following criteria:

– Pipe – Should be 4" to 6" diameter, slotted or perforated rigid plastic pipe (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 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 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".

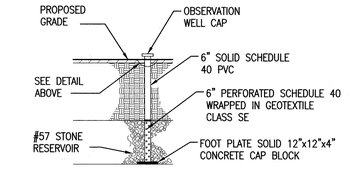
The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean–out pipes must be provided (one minimum per every 1000 square feet of surface area).

7. Miscellaneous
These practices may not be constructed until all contributing drainage area has been stabilized.



SCREW TOP CAP
NOT TO SCALE

NOTE:
THE TUBE SHALL HAVE A FACTORY ATTACHED CAST IRON, OR HIGH IMPACT PLASTIC COLLAR WITH RIBS TO PREVENT ROTATION WHEN REMOVING SCREW TOP LID. THE SCREW TOP LID SHALL BE CAST IRON OR HIGH IMPACT PLASTIC THAT WILL WITHSTAND ULTRA–VIOLET RAYS.



OBSERVATION WELL DETAIL
NOT TO SCALE

BIORETENTION AND MICRO–BIORETENTION INSPECTION SCHEDULE

1. THE DEVELOPER SHALL NOTIFY THE COUNTRY AT LEAST 48 HOURS BEFORE COMMENCING ANY WORK IN CONJUNCTION WITH THE STORMWATER MANAGEMENT PLAN AND UPON COMPLETION OF A PROJECT WHEN A FINAL INSPECTION WILL BE CONDUCTED.

2. AT A MINIMUM, REGULAR INSPECTIONS SHALL BE MADE AND DOCUMENTED AT THE FOLLOWING SPECIFIED STAGES OF CONSTRUCTION.

(A) DURING EXCAVATION TO SUBGRADE;

(B) DURING PLACEMENT AND BACKFILL OF UNDERDRAIN SYSTEM:

(C) DURING PLACEMENT OF GEOTEXTILES AND ALL FILTER MEDIA:

(D) DURING CONSTRUCTION OF APPURTENANT CONVEYANCE SYSTEMS SUCH AS DIVERSION STRUCTURES, PRE–FILTERS, FILTERS, OUTLETS AND FLOW DISTRIBUTION STRUCTURES; AND

(E) UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

3. INSPECTIONS SHALL BE CONDUCTED BY THE DEPARTMENT OF PUBLIC WORKS OR ITS AUTHORIZED REPRESENTATIVE. WRITTEN INSPECTION REPORTS SHALL BE MADE OF THE PERIODIC INSPECTIONS NECESSARY DURING CONSTRUCTION OF STORMWATER MANAGEMENT SYSTEMS TO ENSURE COMPLIANCE WITH THE APPROVED PLANS.

4. WRITTEN INSPECTION REPORTS SHALL INCLUDE:

(A) DATE AND LOCATION OF THE INSPECTION;

(B) WHETHER CONSTRUCTION WAS IN COMPLIANCE WITH THE APPROVED STORMWATER MANAGEMENT PLAN;

(C) ANY VARIATIONS FROM THE APPROVED CONSTRUCTION SPECIFICATIONS; AND

(D) ANY VIOLATIONS THAT EXIST.

5. ONCE CONSTRUCTION IS COMPLETE, AN AS–BUILT PLAN CERTIFICATION SHALL BE SUBMITTED BY THE APPROPRIATE DESIGN PROFESSIONAL LICENSED IN THE STATE OF MARYLAND TO ENSURE THE CONSTRUCTED STORMWATER MANAGEMENT PRACTICE AND CONVEYANCE SYSTEMS COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE APPROVED PLANS. AT A MINIMUM, AS–BUILT CERTIFICATION SHALL INCLUDE A SET OF DRAWINGS COMPARING THE APPROVED STORMWATER MANAGEMENT PLAN WITH WHAT WAS CONSTRUCTED.

CONTRACTOR NOTE:
CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO DAMAGE ANY EXISTING PAVING, CURB AND GUTTER, SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN. SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO ORIGINAL CONDITION AT CONTRACTORS EXPENSE.

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. 33772 EXPIRATION DATE: 06/16/2023

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APPROVED: Howard County Department of Planning & Zoning

Director		9-8-21 Date
Chief, Division of Land Development		9/7/21 Date
Chief, Development Engineering Division		8-12-21 Date

Rev:	Date:	Description:	By:
1			
2			
3			
4			
5			

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

Date:	04-30-2021	Scale:	AS SHOWN
Drawn By:	F.F.W.	Designed By:	F.F.W.
Approved By:	N.A.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title:
STORMWATER MANAGEMENT NOTES AND DETAILS

Discipline Number: C1.41

Sheet Number: 45 OF 53

Froehling & Robertson, Inc.

BORING LOG
Boring: I-1 (1 of 1)

Project No: 68Y-0014
Client: Howard County Community College
Project: MAC
City/State: Columbia, Maryland

Elevation: 442 ±
Total Depth: 10.0'
Boring Location: See Boring Location Plan

Drilling Method: 3.25" ID HSA
Hammer Type: Automatic
Date Drilled: 4/17/20
Driller: T.North

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
		FILL Orange-brown, Damp, Firm, Clayey SILT (ML-FILL)	1-2-3 -2	0.0	5	
			4-5-6 -8	2.0	11	
			2-10-10 -13	4.0	20	
			3-4-4 -7	6.0	8	
			4-4-4 -7	8.0	8	
432.0	10.0	Boring terminated at 10 feet. Boring backfilled with auger cuttings upon completion. Elevations were estimated from Ayers Saint Gross's Boring Plan date 20200324.		10.0		

*Number of Blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.

Froehling & Robertson, Inc.

BORING LOG
Boring: I-2 (1 of 1)

Project No: 68Y-0014
Client: Howard County Community College
Project: MAC
City/State: Columbia, Maryland

Elevation: 442 ±
Total Depth: 10.0'
Boring Location: See Boring Location Plan

Drilling Method: 3.25" ID HSA
Hammer Type: Automatic
Date Drilled: 4/14/20
Driller: T.North

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
441.5	0.5	6 inches of asphalt pavement	2-3-5	0.5	8	
		FILL Orange-brown, Damp, Medium Dense, Clayey SILT (ML-FILL)	3-3-5 -8	2.0	8	
438.0	4.0	**Piedmont - Guilford Granite** Orange-white, Dry, Medium Dense, fine to coarse SAND, Some Silt (SM)		4.0	8	
			5-5-5 -6	6.0	10	
			3-4-4 -6	8.0	8	
432.0	10.0	Boring terminated at 10 feet. Boring backfilled with auger cuttings upon completion. Elevations were estimated from Ayers Saint Gross's Boring Plan date 20200324.	4-5-9 -10	10.0	14	
				12.0		

*Number of Blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.

Froehling & Robertson, Inc.

BORING LOG
Boring: I-3 (1 of 1)

Project No: 68Y-0014
Client: Howard County Community College
Project: MAC
City/State: Columbia, Maryland

Elevation: 435 ±
Total Depth: 10.0'
Boring Location: See Boring Location Plan

Drilling Method: 3.25" ID HSA
Hammer Type: Automatic
Date Drilled: 4/15/20
Driller: T.North

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
		FILL Orange-white, Damp, Stiff, micaceous Sandy CLAY (CL-FILL)	2-4-4 -5	0.0	8	
			4-5-6 -5	2.0	11	
			5-9-8 -7	4.0	17	
			7-10-11 -8	6.0	21	
			8-6-8 -10	8.0	14	
425.0	10.0	Boring terminated at 10 feet. Boring backfilled with auger cuttings upon completion. Elevations were estimated from Ayers Saint Gross's Boring Plan date 20200324.		10.0		

*Number of Blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.

Froehling & Robertson, Inc.

BORING LOG
Boring: I-4 (1 of 1)

Project No: 68Y-0014
Client: Howard County Community College
Project: MAC
City/State: Columbia, Maryland

Elevation: 418 ±
Total Depth: 10.0'
Boring Location: See Boring Location Plan

Drilling Method: 3.25" ID HSA
Hammer Type: Automatic
Date Drilled: 4/20/20
Driller: T.North

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
		FILL Red-brown, Damp, Soft to Firm, Clayey SILT, little sand (FILL-ML)	3-3-3 -6	0.0	6	
			2-1-2 -3	2.0	3	
			2-3-5 -8	4.0	8	
			2-2-2 -3	6.0	4	
			3-4-3 -3	8.0	7	
408.0	10.0	Boring terminated at 10 feet. Boring backfilled with auger cuttings upon completion. Elevations were estimated from Ayers Saint Gross's Boring Plan date 20200324.		10.0		

*Number of Blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.

Froehling & Robertson, Inc.

BORING LOG
Boring: I-5 (1 of 1)

Project No: 68Y-0014
Client: Howard County Community College
Project: MAC
City/State: Columbia, Maryland

Elevation: 412 ±
Total Depth: 10.0'
Boring Location: See Boring Location Plan

Drilling Method: 3.25" ID HSA
Hammer Type: Automatic
Date Drilled: 4/14/20
Driller: T.North

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
410.0	2.0	**Piedmont - Guilford Granite** Gray-brown , Dry, Loose, Sand, trace Clay (SP)	2-3-4 -3	0.0	7	
		Piedmont - Guilford Granite Orange-black, Dry, Loose to Medium Dense, micaceous SILT, little fine Sand (SP)	3-4-3 -7	2.0	7	
			8-8-7 -8	4.0	15	
			6-6-7 -7	6.0	13	
			7-6-6 -8	8.0	12	
402.0	10.0	Boring terminated at 10 feet. Boring backfilled with auger cuttings upon completion. Elevations were estimated from Ayers Saint Gross's Boring Plan date 20200324.		10.0		

*Number of Blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.

Froehling & Robertson, Inc.

BORING LOG
Boring: I-6 (1 of 1)

Project No: 68Y-0014
Client: Howard County Community College
Project: MAC
City/State: Columbia, Maryland

Elevation: 421 ±
Total Depth: 10.0'
Boring Location: See Boring Location Plan

Drilling Method: 3.25" ID HSA
Hammer Type: Automatic
Date Drilled: 4/10/20
Driller: T.North

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
		FILL Orange-white and brown, Damp, Medium Dense, micaceous Silty SAND (SP-FILL)	2-3-5 -7	0.0	8	
			4-4-7 -7	2.0	11	
417.0	4.0	**Piedmont** Orange-black and brown, Dry, Loose to Medium Dense, micaceous SAND, little Silt (SP)	5-5-5 -7	4.0	10	
			4-3-2 -4	6.0	5	
			7-8-8 -10	8.0	16	
411.0	10.0	Boring terminated at 10 feet. Boring backfilled with auger cuttings upon completion. Offset borehole received 5" I.D. casing set at . Elevations were estimated from Ayers Saint Gross's Boring Plan date 20200324.		10.0		

*Number of Blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.

PRODUCT DATA SHEET

STANDARD SEMPERGREEN SEDUM-MIX BLANKET

STANDARD SEMPERGREEN SEDUM-MIX BLANKET

100 % biodegradable vegetation blanket produced on a coir mat, a Sempergreen® substrate mix and a plant mix consisting out 12 to 16 varieties of succulents. Sempergreen® vegetation blankets are produced in accordance with FLL guidelines and ANSI-SPRI compliant.

- Sedum spurius 'Fuldaglut'
- Sedum spurius 'John Creech'
- Sedum spurius 'Red Carpet'
- Sedum kamtschaticum 'Variegatum'
- Sedum kamtschaticum
- Sedum kamtschaticum var. floriferum 'Weihenstephaner Gold'
- Sedum takesimensis 'Golden Carpet'
- Sedum x Immergrunchen
- Sedum subsp. rupestre 'Angelina'
- Sedum subsp. rupestre 'Blue Spruce'
- Sedum acre 'Aureum'
- Sedum acre 'Goldmoss'
- Sedum album 'Coral Carpet'
- Sedum album 'Murale'
- Sedum hispanicum
- Sedum sexangulare
- Sedum stefco

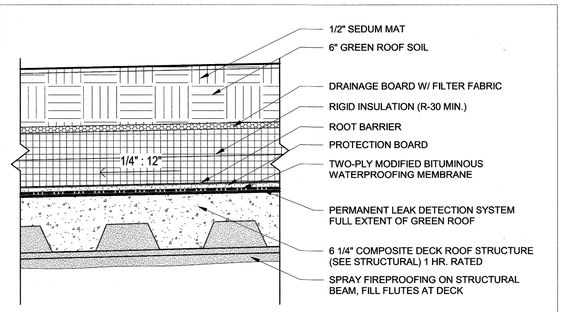
TECHNICAL DATA

Coverage:	85% - 95%
Weight dry:	Approx. 3 ½ -4 lbs/sq.ft
Weight saturated:	Approx. 4 ½ - 5 lbs/sq.ft
	Approx. 22-24 ½ kg/m²
Tensile strength:	N/A
Thickness:	0.50 – 0.75 inch (1.3 cm – 1.9 cm)
Sq.ft per roll:	25 sq.ft (2.32257 m²)
Width roll:	Approx 47" (119.38 cm)
Length roll:	Approx 77" (195.58 cm)
Square footage per pallet:	15-16 rolls per pallet space = 375-400 sft per pallet space

Maximum square footage per truck: Approx 9000 sft

Actual sft per truck depends on the moisture content (=weight) at the time of harvesting.

Moerings USA, LLC
P.O. Box 60
Lignum, VA 22726
T: (540) 399-5055
F: (540) 399-9085
E: sales@moeringsusa.com
W: www.sempergreen.com

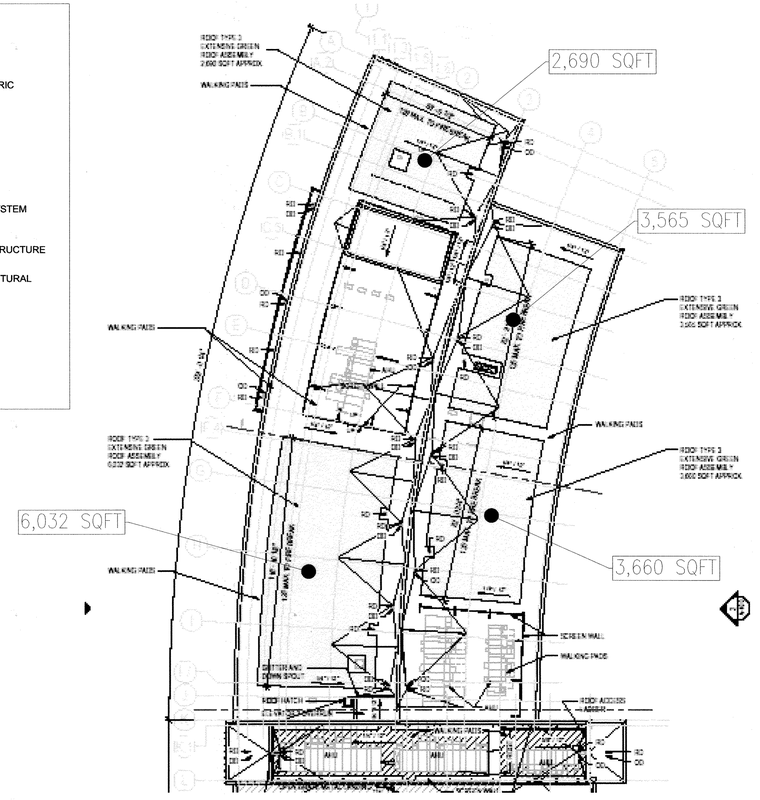


ROOF TYPE 3
EXTENSIVE GREEN ROOF ASSEMBLY

OPERATION AND MAINTENANCE SCHEDULE FOR
PRIVATELY OWNED AND MAINTAINED
Green Roof (A-1)

The following Operation and Maintenance Schedule shall be implemented to the function of the Green Roof System in accordance with the recommendations of the "Green Roof System Distributor"*:

Weed - On an annual basis remove unwanted plant material.
Replace - Replace failed plant material when the failed plant area exceeds five percent (5%) of the roof area.
Irrigate - A newly installed roof should be irrigated during the first growing season. Saturate the Green Roof at least once a week during this first growing season. After vegetation is established, irrigation may be required periodically during dry periods.
Nutrient - The application of a slow-release fertilizer in the spring is recommended on an annual basis.
Inspect for Drainage - After each significant rainfall inspect downspouts or drainage channels/courses for clogs.
Inspect for Leaks - After each significant rainfall inspect the Green Roof for leaks.



CONTRACTOR NOTE:
CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO DAMAGE ANY EXISTING PAVING, CURB AND GUTTER, SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN. SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO ORIGINAL CONDITION AT CONTRACTORS EXPENSE.

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. 33772 EXPIRATION DATE: 06/16/2023

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AYERS SAINT GROSS
ARCHITECTS + PLANNERS
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Baltimore, MD 21230
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APPROVED: Howard County Department of Planning & Zoning

Director — Date 9-8-21
Chief, Division of Land Development — Date 9/7/21
Chief, Development Engineering Division — Date 8.18.21

Rev:	Date:	Description:	By:
1			
2			
3			
4			
5			

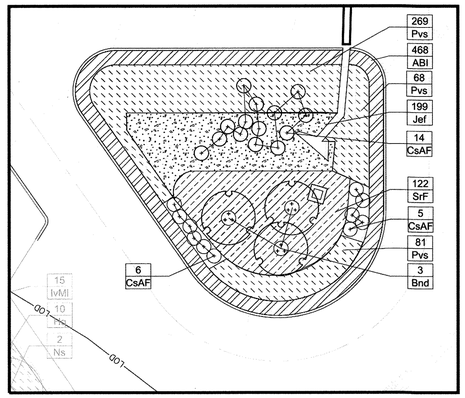
Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College - MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date:	04-30-2021	Scale:	AS SHOWN
Drawn By:	F.F.W.	Designed By:	F.F.W.
Approved By:	N.A.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

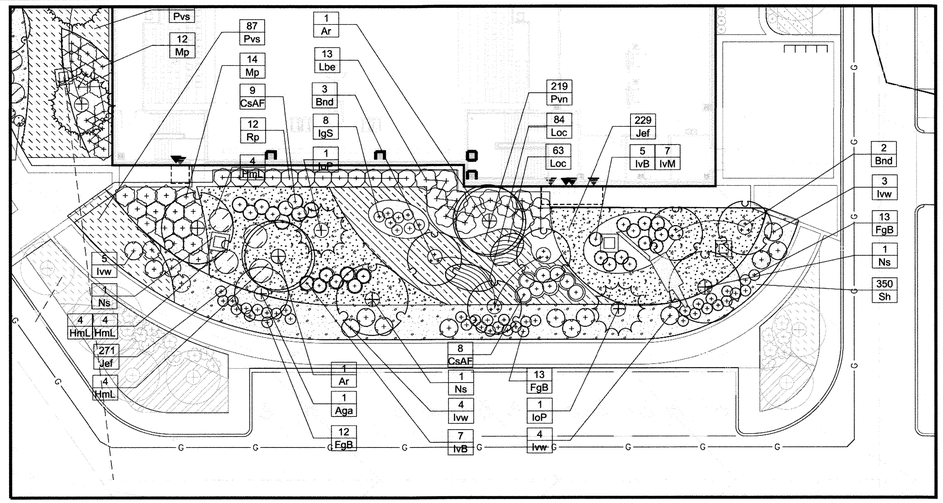
Sheet Title:
STORMWATER MANAGEMENT NOTES AND DETAILS

Discipline Number: C1.42
Sheet Number: 46 OF 53



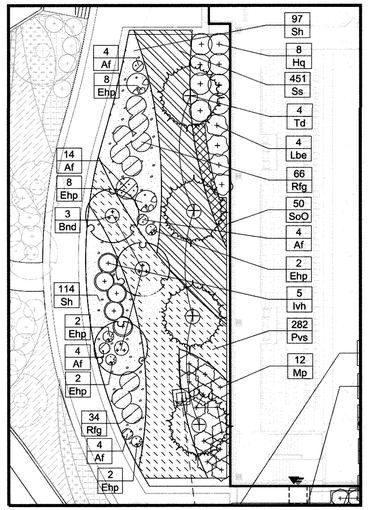
1 BIORETENTION - AREA 1

1" = 20'-0"



2 BIORETENTION - AREA 2

1" = 20'-0"



3 BIORETENTION - AREA 3

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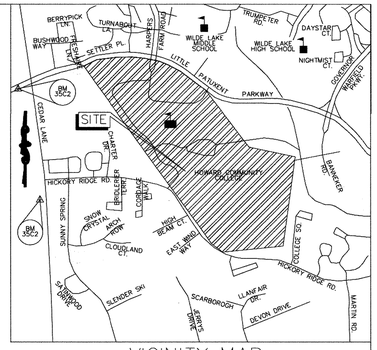
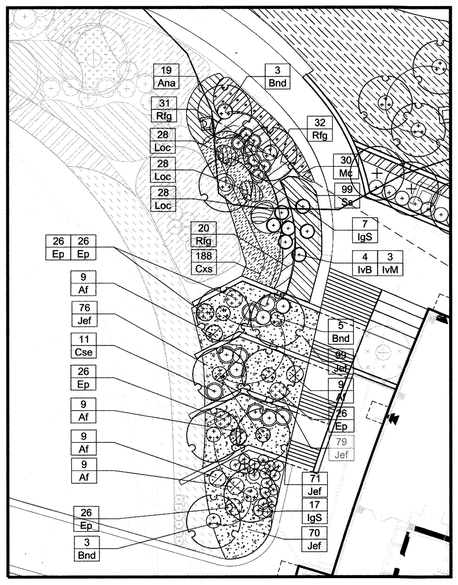


VICINITY MAP

SCALE 1" = 1000'
ADC MAP: 4934 GRID K7



4 BIORETENTION - AREA 4

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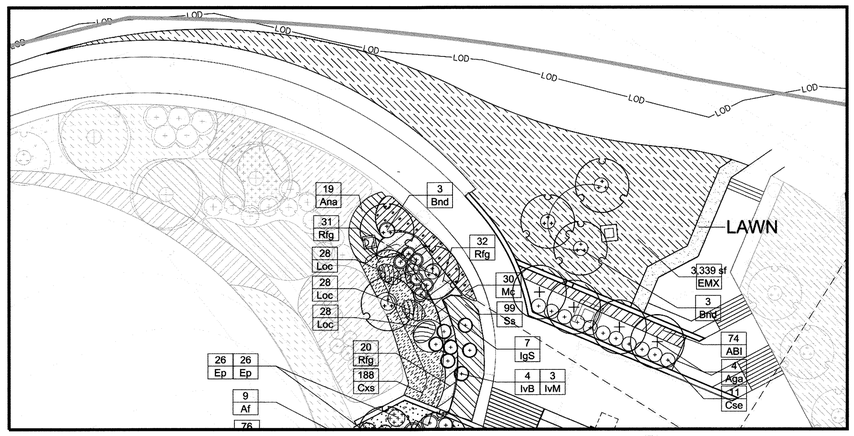

5 BIORETENTION - AREA 5

1" = 20'-0"

NORTH

0 10' 20' 40' 60'

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APPROVED: Howard County Department of Planning & Zoning

Director — Date: 9-8-21

Chief, Division of Land Development — Date: 9/7/21

Chief, Development Engineering Division — Date: 8.18.21

Rev:	Date:	Description:	By:
1			
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Prepared For and Owner:

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10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:

Howard Community College -
MATHEMATICS & ATHLETICS COMPLEX

SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868

ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

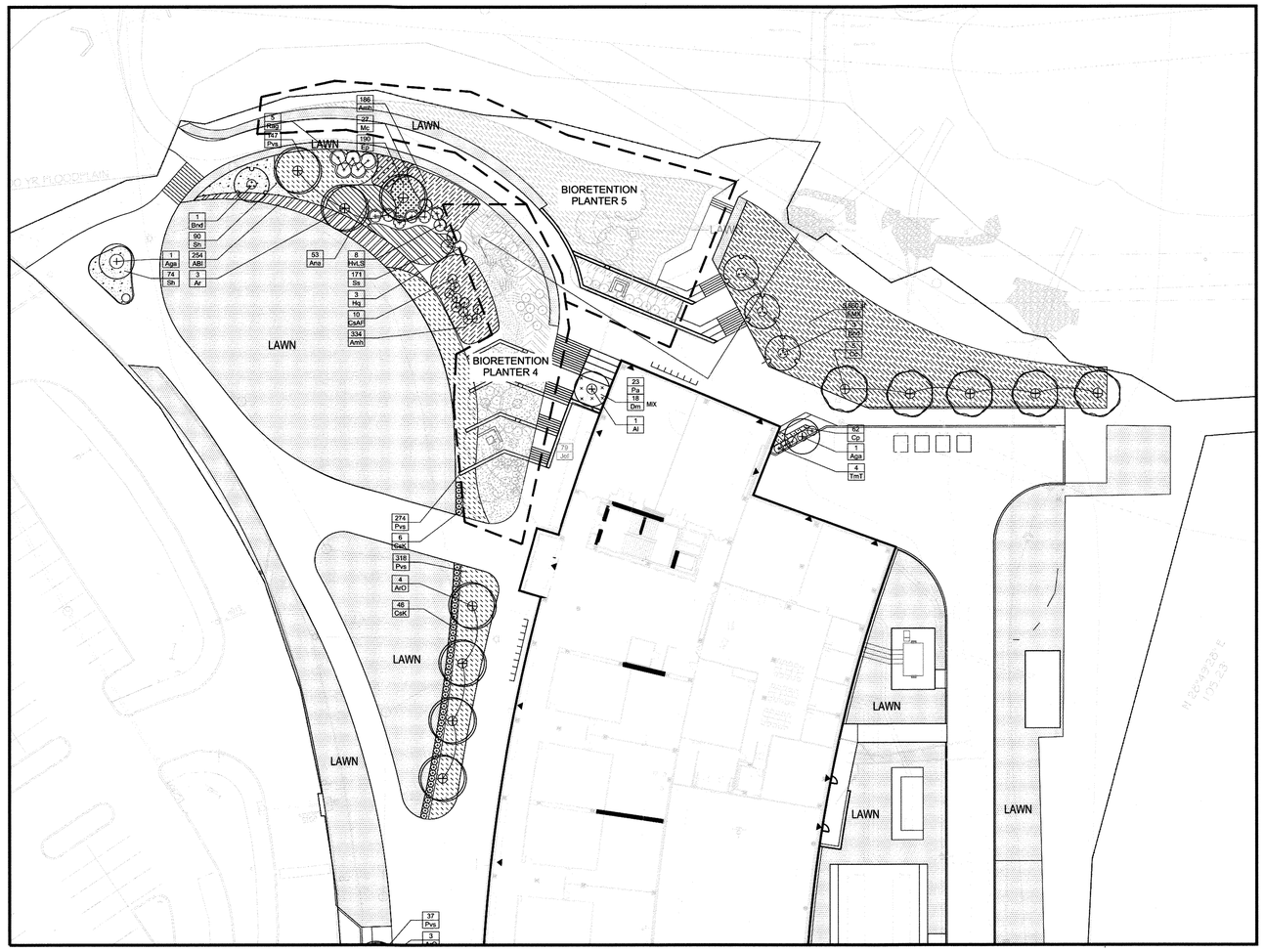
Date:	04-30-2021	Scale:	
Drawn By:	A.T.	Designed By:	A.R. / A.T.
Approved By:	J.B.	Project No:	
Tax Map-Grid:	35-6	Zoning:	POR & NT

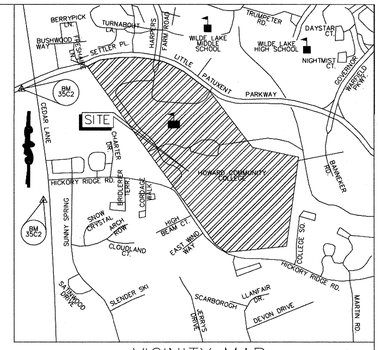
Sheet Title: LANDSCAPE PLAN - BIORETENTION

STATE OF MARYLAND — JOSH BURKEN — 1135 — LANDSCAPE ARCHITECT — 6.29.21

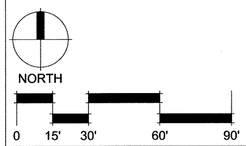
Discipline Number: C1.43

Sheet Number: 47 OF 53





VICINITY MAP
SCALE 1" = 1000'
ADC MAP: 4934 GRID K7



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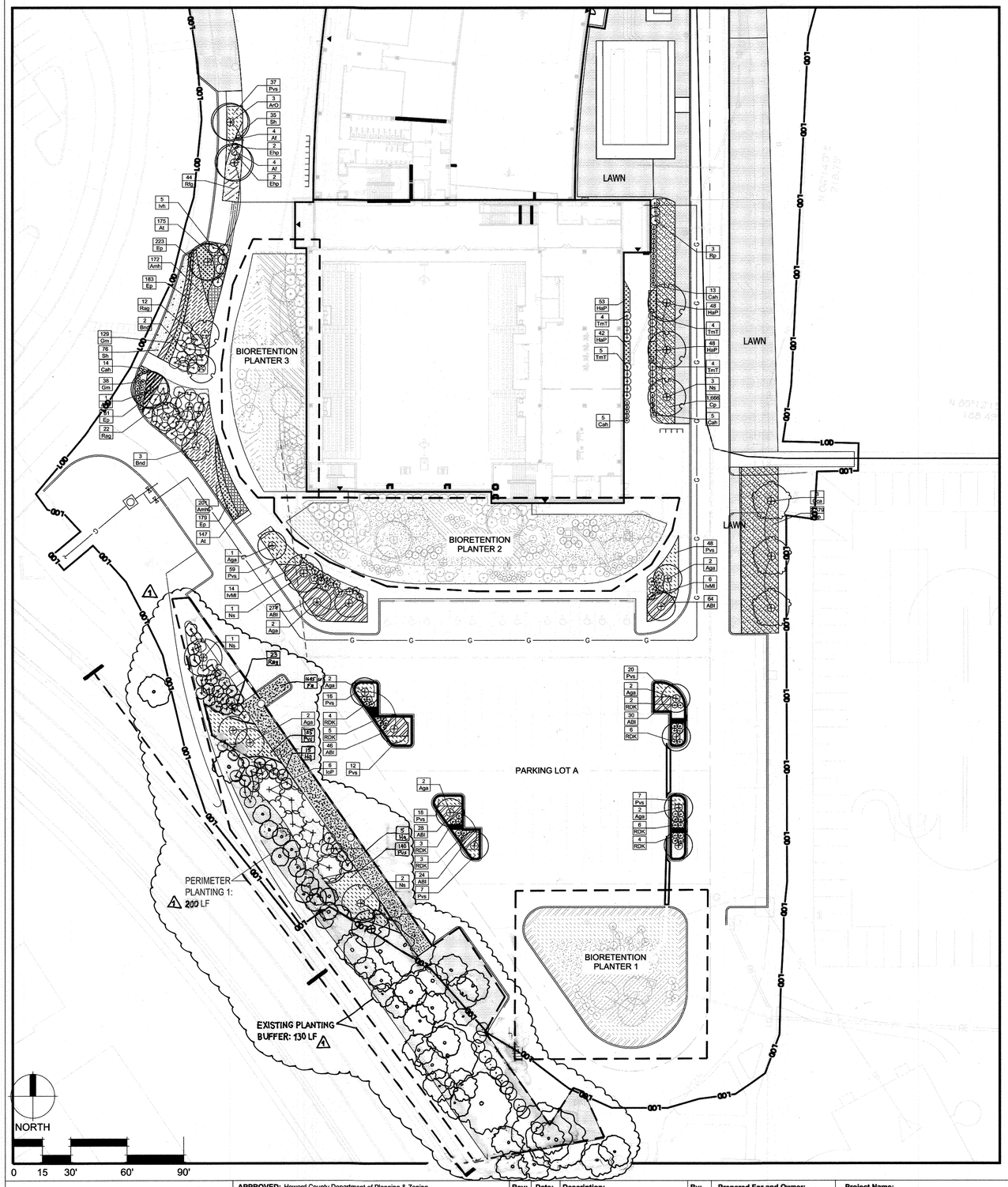
Approved By:	J.B.	Project No:	
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title: LANDSCAPE PLAN - NORTH

STATE OF MARYLAND — JOSEPH BURKHARDT — 1136 — LANDSCAPE ARCHITECT
6.28.21

Discipline Number: C1.44

Sheet Number: 48 OF 53

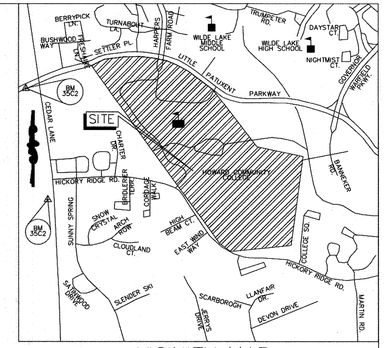


SCHEDULE A: PERIMETER LANDSCAPE EDGE		
PERIMETER 1		
CATEGORY	ADJ. TO ROADWAYS	ADJ. TO PERIMETER PROPERTIES
LANDSCAPE TYPE	E	N/A
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	330 LF	N/A
CREDIT FOR EXISTING VEGETATION	YES, 130 LF	N/A
CREDIT FOR WALL, FENCE, OR BERM	NO	N/A
NUMBER OF PLANTS REQUIRED: SHADE TREES EVERGREEN TREES SHRUBS	5 SHADE TREES 2:1 SMALL DECIDUOUS FOR SHADE TREES 2:1 EVERGREEN FOR SHADE TREES 50 SHRUBS	N/A
NUMBER OF PLANTS PROVIDED: SHADE TREES EVERGREEN TREES SHRUBS	3 SHADE TREES 2 SMALL DECIDUOUS TREES 6 EVERGREEN TREES (2:1) 43 SHRUBS	N/A

NOTE: SUBSTITUTIONS: INCLUDE 6 EVERGREEN TREES SUBSTITUTED FOR 3 SHADE TREES @ 2:1 (1)

SCHEDULE B: PARKING LOT INTERNAL LANDSCAPING	
PARKING LOT A	
NUMBER OF PARKING SPACES	99
NUMBER OF TREES REQUIRED (1 PER 20 SPACES)	5
NUMBER OF TREES PROVIDED: SHADE TREES OTHER TREES (2:1 SUBSTITUTION)	0 10 (2:1)

NOTE: SUBSTITUTIONS: 10 "OTHER TREES" SUBSTITUTED FOR 5 SHADE TREES @ 2:1



VICINITY MAP
SCALE 1" = 1000'
ADC MAP: 49.34 GRID K7

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APPROVED: Howard County Department of Planning & Zoning

Director	9-8-21 Date
Chief, Division of Land Development	9/7/21 Date
Chief, Development Engineering Division	8.18.21 Date

Rev:	Date:	Description:	By:
1	04|03|23	PLANTING BUFFER REVISIONS	AT/MM
2			
3			
4			
5			

Prepared For and Owner:
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ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

Date:	04-30-2021	Scale:	
Drawn By:	A.T.	Designed By:	A.R. / A.T.
Approved By:	J.B.	Project No:	
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title: LANDSCAPE PLAN - SOUTH

STATE OF MARYLAND JOSEPH BURKARD 3730 LANDSCAPE ARCHITECT
04.03.2023
Seal for revision #1 only

STATE OF MARYLAND JOSEPH BURKARD 7136 LANDSCAPE ARCHITECT
6.28.21

Discipline Number: C1.45
Sheet Number: 49 OF 53

PLANT SCHEDULE

CANOPY TREES	QTY	BOTANICAL / COMMON NAME	HEIGHT	CALIPER	SPREAD			
Ar	3	Acer rubrum Red Maple	14`-16`	3"-3 1/2"				
ArO	8	Acer rubrum `October Glory` October Glory Red Maple	14`-16`	3" min.				
Bnd	9	Betula nigra `Dura Heat` Dura Heat River Birch	10`-12`	2" min.				B&B, multi-stem, 3 trunk min., full uniform crown, symmetrical branching, full specimen
Cc	5	Carpinus caroliniana American Hornbeam	14`-16`	3" min.				B&B, full uniform crown, symmetrical branching, full specimen
Ns	△1 7	Nyssa sylvatica Sour Gum	14`-16`	3"-3 1/2"	8`-10`			B&B, full uniform crown, symmetrical branching, full specimen

EVERGREEN TREES	QTY	BOTANICAL / COMMON NAME	HEIGHT	CALIPER	SPREAD
IoP	△1 6	Ilex opaca `Jersey Princess` Jersey Princess American Holly	10`-12`		10`-12`

ORNAMENTAL TREES	QTY	BOTANICAL / COMMON NAME	HEIGHT	CALIPER	SPREAD			
Aga	17	Amelanchier x grandiflora `Autumn Brilliance` Autumn Brilliance Apple Serviceberry	8`-10`	2" min.				B&B, uniform branching, full specimen
Al	1	Amelanchier laevis Allegheny Serviceberry	8`-10`	2" min.	6`-8`			
Cca	3	Cercis canadensis `Alba` White Eastern Redbud	8`-10`	2" min.				B&B, uniform branching, full specimen

SHRUBS	QTY	BOTANICAL / COMMON NAME	HEIGHT	SPREAD	SIZE	SPACING	REMARKS
Cah	37	Clethra alnifolia `Hummingbird` Hummingbird Summersweet	18"-24"	18"-24"	3 gal.	3` O.C.	Full specimen, healthy, vigorous, well-rooted & established in container
CsAF	10	Cornus stolonifera `Arctic Fire` Red Twig Dogwood `Arctic Fire`	24"-36"	24"-36"	5 gal.	4` O.C.	Full specimen, healthy, vigorous, well-rooted & established in container
CsK	52	Cornus sericea `Kelseyi` Kelsey`s Dwarf Red Twig Dogwood	12"-18"	12"-18"	3 gal.	3` O.C.	
Hq	△1 23	Hydrangea quercifolia Oakleaf Hydrangea	36"-48"	36"-48"	7 gal.	5` O.C.	
HvLS	8	Hamamelis virginiana `Little Suzie` Little Suzie Witch Hazel	24"-36"	24"-36"	5 gal.	4` O.C.	
Ivh	5	Itea virginica `Henry`s Garnet` Henry`s Garnet Sweetspire	24"-36"	24"-36"	5 gal.	5` O.C.	healthy vigorous, well-rooted & established in container
IvMl	△1 20	Itea virginica `Merlot` Short n Sweet Sweetspire	24"-36"	24"-36"	5 gal.	4` O.C.	
Rag	△1 62	Rhus aromatica `Gro-Low` Gro-Low Fragrant Sumac	12"-18"	16"-18"	3 gal.	4` O.C.	healthy, vigorous, well-rooted & established in container
RDK	33	Rosa x `Double Knockout` Rose	12"-18"	12"-18"	3 gal.	3` O.C.	
Rp	3	Rhododendron periclymenoides Pink Azalea	24"-36"	24"-36"	5 gal.	5` O.C.	
TmT	21	Taxus x media `Taunton` Taunton`s Yew	24"-36"	24"-36"	5 gal.	4` O.C.	

FERNS	QTY	BOTANICAL / COMMON NAME	CONT.	COLOR	SPACING
Dm	18	Dryopteris marginalis Marginal Shield Fern	1 gal.	Green	24" O.C.
Pa	23	Polystichum acrostichoides Christmas Fern	1 gal.	Green	24" O.C.

GRASSES	QTY	BOTANICAL / COMMON NAME	CONT.	COLOR	SPACING	
Cp	△1 3,548	Carex pensylvanica Pennsylvania Sedge	1 qt.	Green	10" O.C.	
Mc	27	Muhlenbergia capillaris Pink Muhly Grass	2 gal.	Lavender	30" O.C.	
Pvs	△1 1,239	Panicum virgatum `Shenandoah` Shenandoah Switch Grass	3 gal.		24" O.C.	full specimen, healthy, vigorous, well-rooted and established
Sh	275	Sporobolus heterolepis Prairie Dropseed	1 gal.		24" O.C.	full specimen, healthy, vigorous, well-rooted and established
Ss	171	Schizachyrium scoparium Little Bluestem	2 gal.			

PERENNIALS	QTY	BOTANICAL / COMMON NAME	CONT.	COLOR	SPACING	
ABl	720	Amsonia x `Blue Ice` Blue Ice Bluestar	2 gal.	Purple	18" O.C.	
Af	8	Agastache foeniculum Blue Giant Hyssop	2 gal.	Lavender	18" O.C.	
Amh	893	Amsonia hubrichtii Arkansas Bluestar	1 gal.		18" O.C.	full specimen, healthy, vigorous, well-rooted and established
Ana	53	Aster novae-angliae New England Aster	2 gal.	Purple	30" O.C.	
At	322	Asclepias tuberosa Butterfly Milkweed	1 gal.	Orange	12" O.C.	
Ehp	4	Echinacea x `Hot Papaya` Hot Papaya Echinacea	1 gal.	Red	24" O.C.	full specimen, healthy, vigorous, well-rooted and established
Ep	856	Echinacea purpurea Coneflower	1 gal.		10" O.C.	full specimen, healthy, vigorous, well-rooted and established
Gm	167	Geranium maculatum Wild Geranium	1 gal.	Lavender	12" O.C.	
HaP	191	Heuchera americana `Palace Purple` Rock Geranium	1 gal.	Purple	12" O.C.	
Rfg	44	Rudbeckia fulgida sullivantii `Goldsturm` Goldsturm Coneflower	3 gal.		18" O.C.	full specimen, healthy, vigorous, well-rooted and established

SOD/SEED	QTY	BOTANICAL / COMMON NAME	CONT.	COLOR	SPACING	
EMX	5,860 sf	ERNMX-168 Ernst Northeast Annual & Perennial Wildf	seed			Seeding Rate at 7-10 lb per acre
Fa	△1 41,615 sf	Festuca arundinacea Tall Fescue	sod			

PLANT SCHEDULE - BIORETENTION

CANOPY TREES	QTY	BOTANICAL / COMMON NAME	HEIGHT	CALIPER	SPREAD	REMARKS
Ar	2	Acer rubrum Red Maple	14`-16`	3"-3 1/2"		
Bnd	25	Betula nigra `Dura Heat` Dura Heat River Birch	10`-12`	2" min.		B&B, multi-stem, 3 trunk min., full uniform crown, symmetrical branching, full specimen
Ns	3	Nyssa sylvatica Sour Gum	14`-16`	3"-3 1/2"	8`-10`	B&B, full uniform crown, symmetrical branching, full specimen

EVERGREEN TREES	QTY	BOTANICAL / COMMON NAME	HEIGHT	CALIPER	SPREAD	REMARKS
IoP	2	Ilex opaca `Jersey Princess` Jersey Princess American Holly	10`-12`		10`-12`	
Td	4	Taxodium distichum Bald Cypress	12`-15`	3" min.	10`-12`	

ORNAMENTAL TREES	QTY	BOTANICAL / COMMON NAME	HEIGHT	CALIPER	SPREAD	REMARKS
Aga	5	Amelanchier x grandiflora `Autumn Brilliance` Autumn Brilliance Apple Serviceberry	8`-10`	2" min.		B&B, uniform branching, full specimen

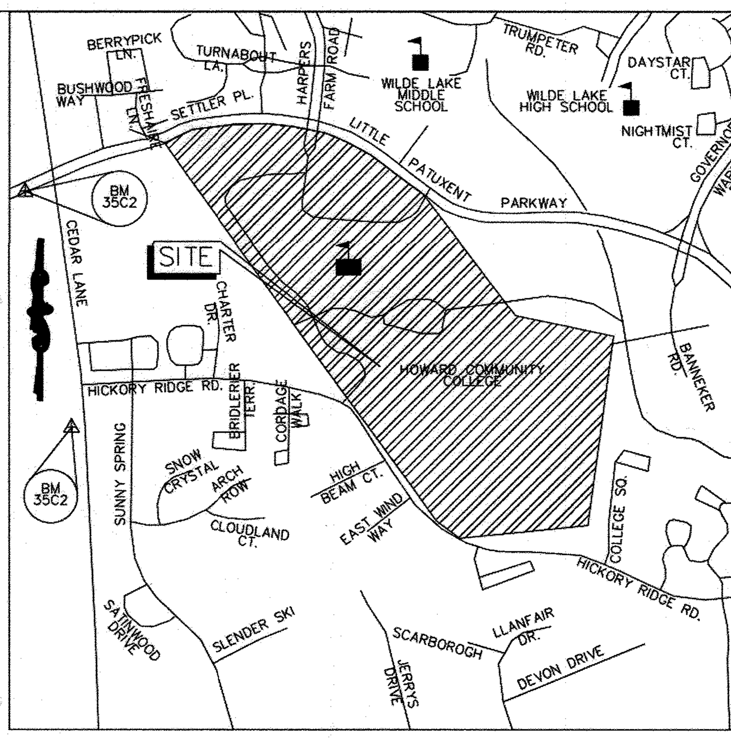
SHRUBS	QTY	BOTANICAL / COMMON NAME	HEIGHT	SPREAD	SIZE	SPACING	REMARKS
CsAF	42	Cornus stolonifera `Arctic Fire` Red Twig Dogwood `Arctic Fire`	24"-36"	24"-36"	5 gal.	4` O.C.	Full specimen, healthy, vigorous, well-rooted & established in container
Cse	22	Cornus sericea Red Twig Dogwood	24"-36"	24"-36"	5 gal.	4` O.C.	Full specimen, healthy, vigorous, well-rooted & established in container
FgB	38	Fothergilla gardenii `Blue Mist` Blue Mist Fothergilla	12"-18"	12"-18"	3 gal.	3` O.C.	
Hq	8	Hydrangea quercifolia Oakleaf Hydrangea	36"-48"	36"-48"	7 gal.	5` O.C.	
IgS	32	Ilex glabra `Shamrock` Shamrock Inkberry Holly	18"-24"	18"-24"	3 gal.	3` O.C.	
IvB	16	Ilex verticillata `Berry Poppins` Winterberry `Berry Poppins`	24"-36"	24"-36"	5 gal.	4` O.C.	
Ivh	5	Itea virginica `Henry`s Garnet` Henry`s Garnet Sweetspire	24"-36"	24"-36"	5 gal.	5` O.C.	healthy vigorous, well-rooted & established in container
IvM	10	Ilex verticillata Mr.Poppins` Winterberry `Mr.Poppins`	24"-36"	24"-36"	5 gal.	4` O.C.	
Ivw	16	Ilex verticillata `Winter Gold` Winter Gold Winterberry	24"-36"	24"-36"	3 gal.	5` O.C.	healthy vigorous, well-rooted & established in container
Lbe	15	Lindera benzoin Spicebush	24"-36"	24"-36"	5 gal.	6` O.C.	full specimen, healthy, vigorous, well-rooted and established
Mp	26	Myrica pensylvanica Northern Bayberry	30"-36"	24"-36"	5 gal.	6` O.C.	

GRASSES	QTY	BOTANICAL / COMMON NAME	CONT.	COLOR	SPACING	REMARKS
Mc	30	Muhlenbergia capillaris Pink Muhly Grass	2 gal.	Lavender	30" O.C.	
Pvn	219	Panicum virgatum `Northwind` Northwind Switch Grass	2 gal.		24" O.C.	full specimen, healthy, vigorous, well-rooted and established
Pvs	645	Panicum virgatum `Shenandoah` Shenandoah Switch Grass	3 gal.		24" O.C.	full specimen, healthy, vigorous, well-rooted and established
Sh	558	Sporobolus heterolepis Prairie Dropseed	1 gal.		24" O.C.	full specimen, healthy, vigorous, well-rooted and established
Ss	666	Schizachyrium scoparium Little Bluestem	2 gal.			

PERENNIALS	QTY	BOTANICAL / COMMON NAME	CONT.	COLOR	SPACING	REMARKS
ABl	542	Amsonia x `Blue Ice` Blue Ice Bluestar	2 gal.	Purple	18" O.C.	
Af	75	Agastache foeniculum Blue Giant Hyssop	2 gal.	Lavender	18" O.C.	
Ana	29	Aster novae-angliae New England Aster	2 gal.	Purple	30" O.C.	
Ehp	24	Echinacea x `Hot Papaya` Hot Papaya Echinacea	1 gal.	Red	24" O.C.	full specimen, healthy, vigorous, well-rooted and established
Ep	130	Echinacea purpurea Coneflower	1 gal.		10" O.C.	full specimen, healthy, vigorous, well-rooted and established
HmL	16	Hibiscus moscheutos `Lord Baltimore` Lord Baltimore Rose Mallow	3 gal.	Red	36" O.C.	
Rfg	100	Rudbeckia fulgida sullivantii `Goldsturm` Goldsturm Coneflower	3 gal.		18" O.C.	full specimen, healthy, vigorous, well-rooted and established
SoO	54	Symphyotrichum oblongifolium `October Skies` October Skies Fall Aster	2 gal.	Purple	18" O.C.	

SOD/SEED	QTY	BOTANICAL / COMMON NAME	CONT.	COLOR	SPACING	REMARKS
EMX	3,339 sf	ERNMX-168 Ernst Northeast Annual & Perennial Wildf	seed			Seeding Rate at 7-10 lb per acre
Fa	211 sf	Festuca arundinacea Tall Fescue	sod			

WETLAND PLANTS	QTY	BOTANICAL / COMMON NAME	CONT.	COLOR	SPACING	REMARKS
Cxs	99	Carex stricta Tussock Sedge	1 gal.		18" O.C.	full specimen, healthy, vigorous, well-rooted and established
Jef	1,207	Juncus effusus Soft Rush	1 gal.		24" O.C.	full specimen, healthy, vigorous, well-rooted and established
Loc	147	Lobelia cardinalis Cardinal Flower	1 gal.	Red	12" O.C.	
SrF	122	Solidago rugosa `Fireworks` Fireworks Wrinkleleaf Goldenrod	2 gal.	Yellow	36" O.C.	



VICINITY MAP
SCALE 1" = 1000'
ADC MAP: 4934 GRID K7

LANDSCAPE NOTES

1. PLANT LIST SHOWN ON THE PLANT SCHEDULE 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 PRECEDENT.
2. ALL PLANT MATERIAL SHALL BE FULL, HEAVY, WELL FORMED, SYMMETRICAL, AND CONFORM TO THE A.A.N SPECIFICATIONS. ALL PLANT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS ON THIS PLAN.
3. NO SUBSTITUTION SHALL BE MADE WITHOUT PRIOR APPROVAL FROM HOWARD COUNTY DPZ AND THE OWNER OR THEIR REPRESENTATIVE.
4. ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES BUT NOT OTHERWISE PLANTED, PAVED, OR MULCHES SHALL BE SODDED OR SEEDED IN ACCORDANCE WITH THE PERMANENT SEED SPECIFICATION. A MINIMUM OF 6" OF TOPSOIL SHALL BE PROVIDED TO ALL PANTING AREAS.
5. THE CONTRACTOR SHALL NOTIFY THE OWNER IN WRITING IF HE/SHE ENCOUNTERS SOIL DRAINAGE CONDITIONS THAT MAY BE DETRIMENTAL TO THE GROWTH OF THE PLANTS.
6. ALL EXPOSED EARTH WITHIN THE LIMITS OF THE PLANTING BEDS SHALL BE MULCHED WITH TRIPLE SHREDDED PINE BARK MULCH PER THE PLANTING DETAILS.
7. THE OWNER, TENANT AND OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING, INCLUDING BOTH PLANTED MATERIALS, BIORETENTION, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION AND WHEN NECESSARY BE REPLACED WITH NEW MATERIALS TO INSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION AND WHEN NECESSARY, REPAIRED AND REPLACED.
8. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR AND EQUIPMENT TO COMPETE ALL LANDSCAPE WORK AS SHOWN ON THE PLANS AND SUPPORTING TEXT.
9. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND BASE INFORMATION PRIOR TO INITIATING PLANTING INSTALLATION. ALL EXISTING PLANTING SHALL REMAIN INTACT AND UNDISTURBED UNLESS OTHERWISE NOTED ON THE PLANS.
10. IN THE EVENT OF A DISCREPANCY BETWEEN THE PLANT QUANTITIES SHOWN ON THE PLAN AND QUANTITIES SHOWN ON THE PLANT LIST, THE QUANTITIES ON THE PLAN SHALL APPLY. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL PLANT QUANTITIES PRIOR TO THE COMMENCEMENT OF WORK. SEED OR SOD QUANTITY TAKEOFFS ARE THE RESPONSIBILITY OF THE CONTRACTOR. ALL DISCREPANCIES SHALL BE REPORTED TO THE LANDSCAPE ARCHITECT AND OWNER'S REPRESENTATIVE PRIOR TO BED PREPARATION.
11. LANDSCAPE CONTRACTOR SHALL COORDINATE ALL WORK WITH RELATED CONTRACTORS AND WITH THE GENERAL CONSTRUCTION OF THE PROJECT IN ORDER NOT TO IMPEDE THE PROGRESS OF THE WORK OF OTHERS OR THE CONTRACTOR'S OWN WORK.
12. CONTRACTOR SHALL BE RESPONSIBLE TO REPLACE ALL PORTIONS OF EXISTING LAWN AREAS DAMAGED WHILE COMPLETING PLANTING INSTALLATION WITH THE SAME GRASS SPECIES TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE.
13. CONTRACTOR SHALL BEAR ALL COSTS OF TESTING OF SOILS, AMENDMENTS, ETC. ASSOCIATED WITH THE WORK AND INCLUDED IN THE SPECIFICATIONS. PRIOR TO COMMENCEMENT OF THE LANDSCAPE PLANTING WORK. THE CONTRACTOR SHALL PROVIDE COMPLETE SOIL TESTS FOR AT LEAST TWO ON-SITE AREAS.
14. ALL SHADE TREES SHALL HAVE SIX FEET (6') CLEAR TRUNK UNLESS OTHERWISE SPECIFIED. CLEAR TRUNK IS NOT REQUIRED FOR FLOWERING TREES/ ORNAMENTALS.
15. ALL CONTAINER SIZES NOTED ON PLANT LIST ARE MINIMUM. INCREASE SIZE IF NECESSARY TO CONFORM TO PLANT SIZE AND SPECIFICATIONS.
16. ALL TREE CALIPER SIZES NOTED ON PLANT LIST ARE MINIMUM. INCREASE SIZE IF NECESSARY TO CONFORM TO PLANT SIZE AND SPECIFICATIONS.
17. EROSION CONTROL FABRIC SHALL BE INSTALLED IN ALL SHRUB AND GROUND COVER PLANTING AREAS AS PER SPECIFICATIONS FOR ALL SLOPES THAT EXCEED 3:1. SEE CIVIL ENGINEER'S GRADING PLANS FOR LOCATION OF SLOPES GREATER THAN 3:1.
18. TYPICALLY, SHRUB AND GROUND COVER PLANTINGS ARE SHOWN AS MASS PLANTING BEDS. PLANTS SHALL BE PLACED ON A TRIANGULAR SPACING CONFIGURATION (STAGGERED SPACING). PLANT CENTER TO CENTER DIMENSIONS (O.C.) IS LISTED UNDER "SPACING" ON THE PLANT LIST.
19. LANDSCAPE CONTRACTOR SHALL FIELD STAKE THE LOCATION OF ALL PLANT MATERIAL PRIOR TO INITIATING INSTALLATION FOR THE REVIEW AND APPROVAL OF THE OWNER'S REPRESENTATIVE AND/ OR LANDSCAPE ARCHITECT.
20. LANDSCAPE CONTRACTOR SHALL FIELD ADJUST LOCATIONS OF PLANT MATERIAL AS NECESSARY TO AVOID DAMAGE TO EXISTING UNDERGROUND UTILITIES AND /OR EXISTING ABOVE GROUND ELEMENTS. ALL CHANGES REQUIRED SHALL BE COMPLETED AT THE CONTRACTOR'S EXPENSE AND SHALL BE COORDINATED WITH THE OWNER'S REPRESENTATIVE AND THE LANDSCAPE ARCHITECT.
21. ANY CURVILINEAR PLANTING OR UNCLEAR PLANTING LAYOUT IS TO BE STAKED IN THE FIELD AND APPROVED BY THE PROJECT LANDSCAPE ARCHITECT AND OWNER'S REPRESENTATIVE PRIOR TO PLANTING
22. ANY SUBSTITUTIONS IN SIZE AND/OR PLANT MATERIAL MUST BE APPROVED BY LANDSCAPE ARCHITECT AND/OR OWNER'S REPRESENTATIVE BEFORE PLANTING CAN BEGIN.

GENERAL NOTES

1. NO SURETY IS REQUIRED SINCE THIS SITE IS AN EDUCATIONAL USE.
2. THIS PLAN IS FOR LANDSCAPING PURPOSES ONLY
3. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL

DEVELOPER'S/BUILDER'S CERTIFICATE:

I/WE CERTIFY THAT THE LANDSCAPING SHOWN IN THIS PLAN WILL BE DONE ACCORDING TO THE PAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

SIGNATURE [signature] DATE 6/28/21

STATE OF MARYLAND — Amelie Marie Schultz — LANDSCAPE ARCHITECT — 3130 [seal, signature]
04.03.2023
Seal for revision
#1 only

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
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AYERS SAINT GROSS
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APPROVED: Howard County Department of Planning & Zoning

Director [signature] Date 9-8-21
Chief, Division of Land Development [signature] DD Date 9/7/21
Chief, Development Engineering Division [signature] Date 8/18/21

Rev:	Date:	Description:	By:
1	04/03/23	PLANTING BUFFER REVISIONS	AT/MM
2			
3			
4			
5			

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:

Howard Community College - MATHEMATICS & ATHLETICS COMPLEX

SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

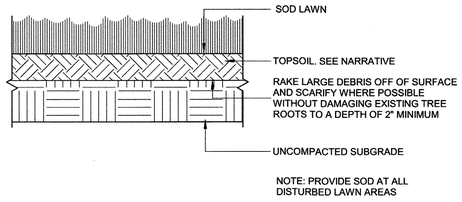
Date:	04-30-2021	Scale:	AS SHOWN
Drawn By:	A.T.	Designed By:	A.R. / A.T.
Approved By:	J.B.	Project No:	
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title: LANDSCAPE PLAN - SCHEDULE & NOTES

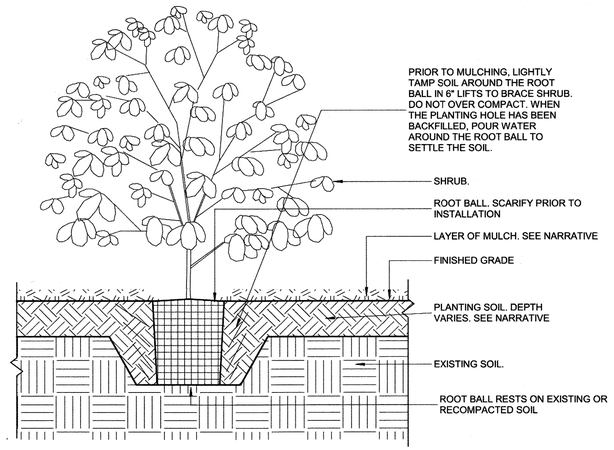
STATE OF MARYLAND — JOSEPH BURKHARDT — LANDSCAPE ARCHITECT — 1136 [seal, signature] 6.28.21

Discipline Number: C1.46

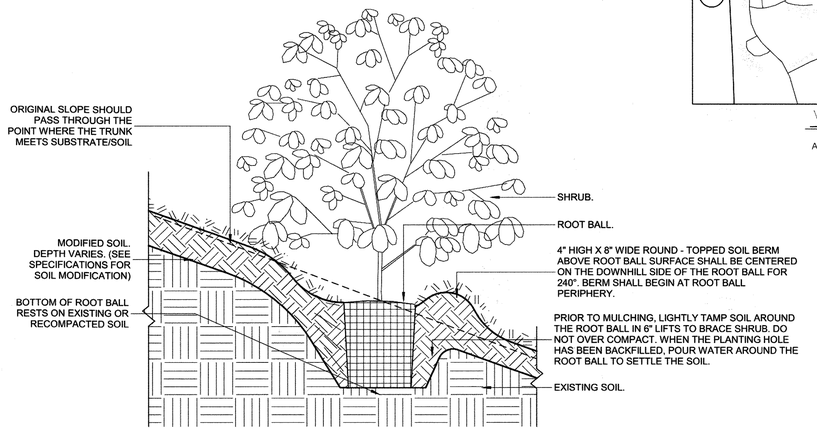
Sheet Number: 50 OF 53



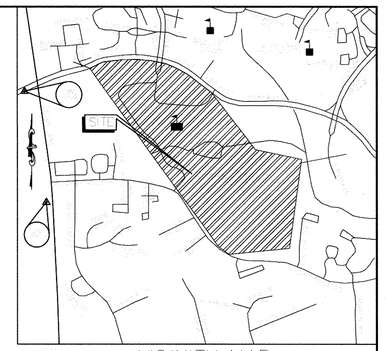
1 LAWN
1 1/2" = 1'-0"



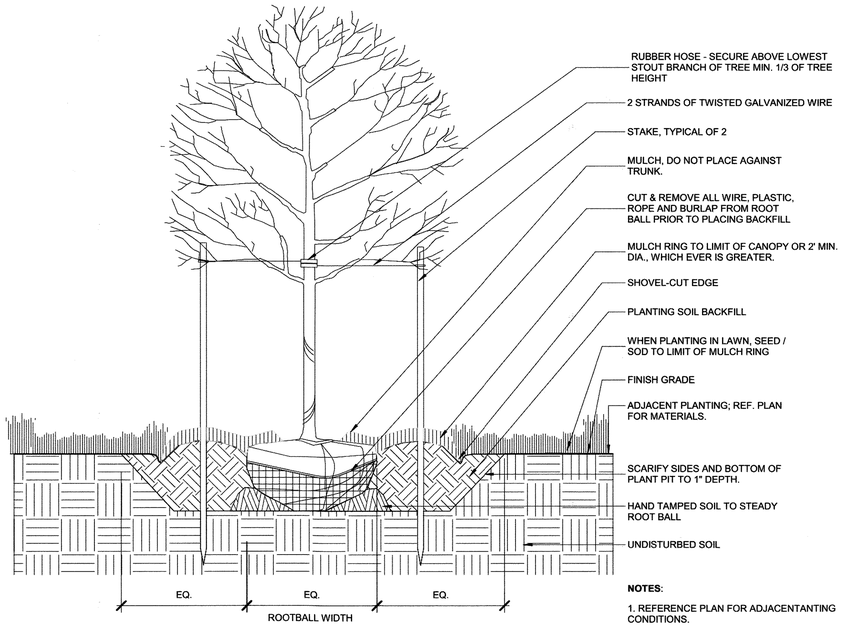
2 SHRUB
1" = 1'-0"



3 SHRUB ON SLOPE
1" = 1'-0"



VICINITY MAP
SCALE 1" = 1000'
ADC MAP: 4934 GRID: K7



NOTES:

1. REFERENCE PLAN FOR ADJACENTANTING CONDITIONS.
2. DO NOT CUT CENTRAL LEADER.
3. SET TREE WITH 1/8 OR 2" MAX. ROOTBALL ABOVE FINISH GRADE.

4 TREE
3/4" = 1'-0"

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APPROVED: Howard County Department of Planning & Zoning

Director — Date 9-8-21
Chief, Division of Land Development — Date 9/9/21
Chief, Development Engineering Division — Date 8.18.21

Rev:	Date:	Description:	By:

Prepared For and Owner:

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ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:

Howard Community College -
MATHEMATICS & ATHLETICS COMPLEX

SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868

ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

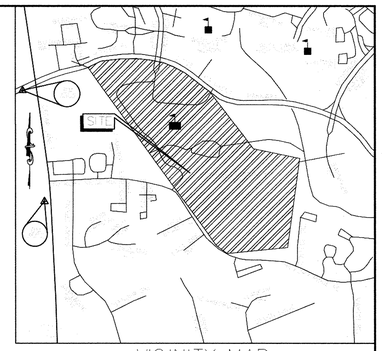
Date:	03/24/21	Scale:	As indicated
Drawn By:	A.T.	Designed By:	A.R. / A.T.
Approved By:	J.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title: **PLANTING DETAILS**

STATE OF MARYLAND — JOSEPH BURROUGHS — 1135 — LANDSCAPE ARCHITECT
6.28.21

Discipline Number: C1.47

Sheet Number: 51 OF 53



VICINITY MAP
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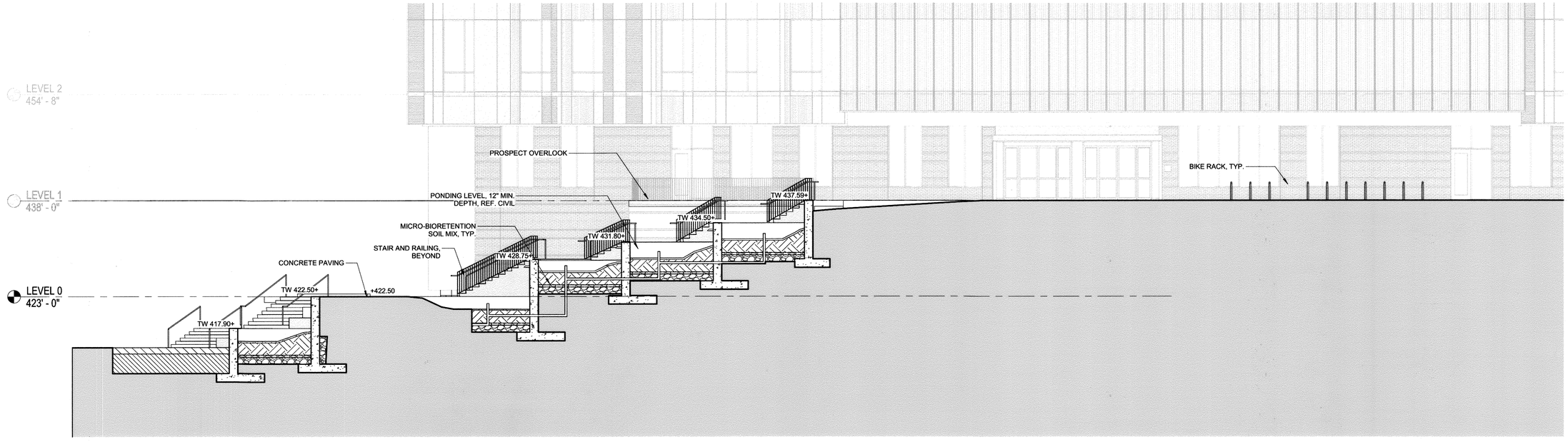
ADC MAP: 4934 GRID: K7



1 Northwest Stairs and Planting
1/8" = 1'-0"

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APPROVED: Howard County Department of Planning & Zoning

Director	9-8-21 Date
Chief, Division of Land Development	9/7/21 Date
Chief, Development Engineering Division	8/18/21 Date

Rev:	Date:	Description:	By:

Prepared For and Owner:
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10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College -
MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

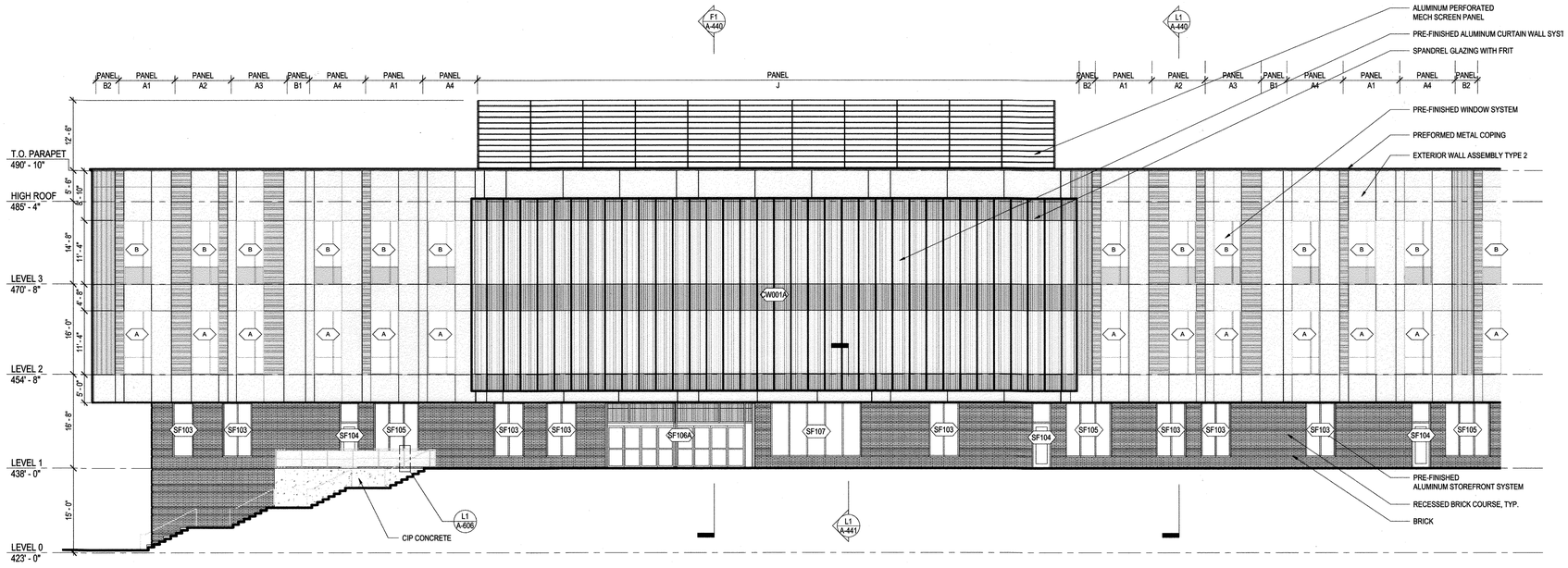
Date:	01/21/21	Scale:	1/8" = 1'-0"
Drawn By:	A.T.	Designed By:	A.R. / A.T.
Approved By:	J.B.	Project No:	271906728
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title:
SITE / RETAINING WALL SECTION AND ELEVATIONS

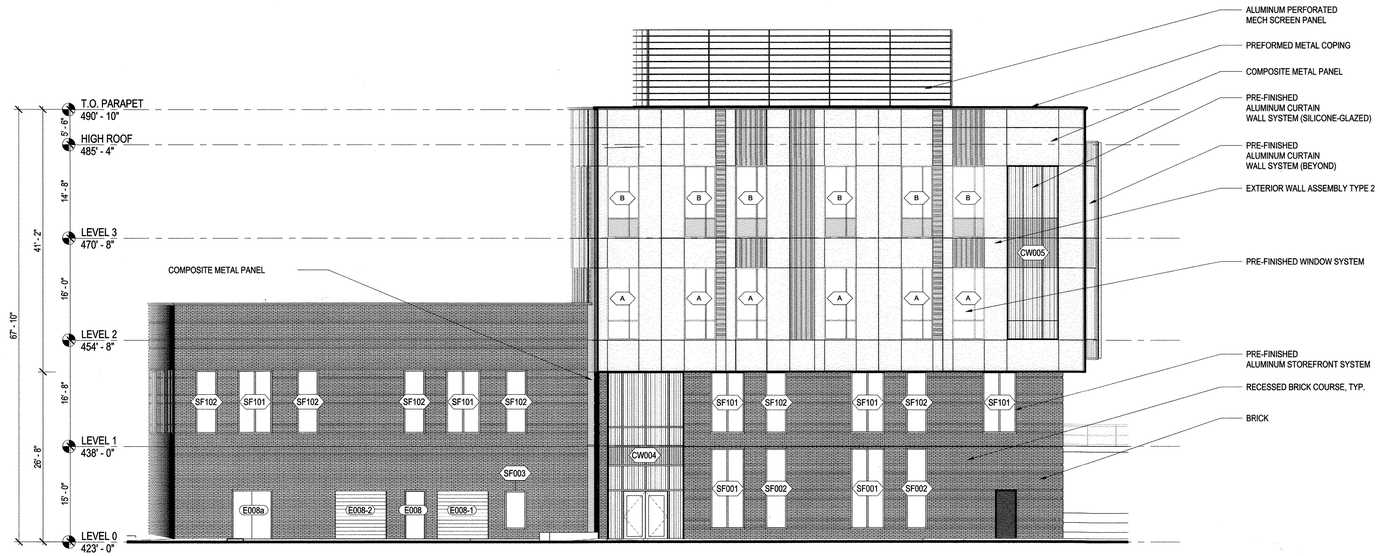
STATE OF MARYLAND
JOSEPH BURKHARDT
7136
LANDSCAPE ARCHITECT
6.28.21

Discipline Number:
C1.48

Sheet Number:
52 OF 53



WEST ELEVATION



NORTH ELEVATION

SETBACK REQUIREMENTS	
MAX BLDG. HEIGHT	50'
MIN. SETBACK	30'
PROP. BLDG. HEIGHT	67'–10"
ADDITIONAL SETBACK REQ.	35'–8"
TOTAL SETBACK REQ.	85'–8"
SETBACK PROVIDED	116'–0"

BUILDING ELEVATIONS

SCALE: NOT TO SCALE

CONTRACTOR NOTE:
CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO DAMAGE ANY EXISTING PAVING, CURB & GUTTER, SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN. SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO ORIGINAL CONDITION AT CONTRACTOR'S EXPENSE.

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APPROVED: Howard County Department of Planning & Zoning

Director		9-8-21 Date
Chief, Division of Land Development		9/2/21 Date
Chief, Development Engineering Division		8.18.21 Date

Rev:	Date:	Description:	By:
1			
2			
3			
4			
5			

Prepared For and Owner:
Howard Community College
10901 Little Patuxent Parkway
Columbia, Maryland 21044
ATTN: Mr. Chuck Nightingale
410-772-4296

Project Name:
Howard Community College -
MATHEMATICS & ATHLETICS COMPLEX
SITE DEVELOPMENT PLAN
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868
ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

Date: 04-30-2021	Scale: AS SHOWN
Drawn By: F.F.W.	Designed By: F.F.W.
Approved By: N.A.B.	Project No: 271906728
Tax Map-Grid: 35-6	Zoning: POR & NT

Sheet Title:
BUILDING ELEVATIONS

STATE OF MARYLAND — NICHOLAS A. BOSLEY — No. 1136 — LANDSCAPE ARCHITECT
6.28.21

Discipline Number: C1.49
Sheet Number: 53 OF 53

SDP-21-028