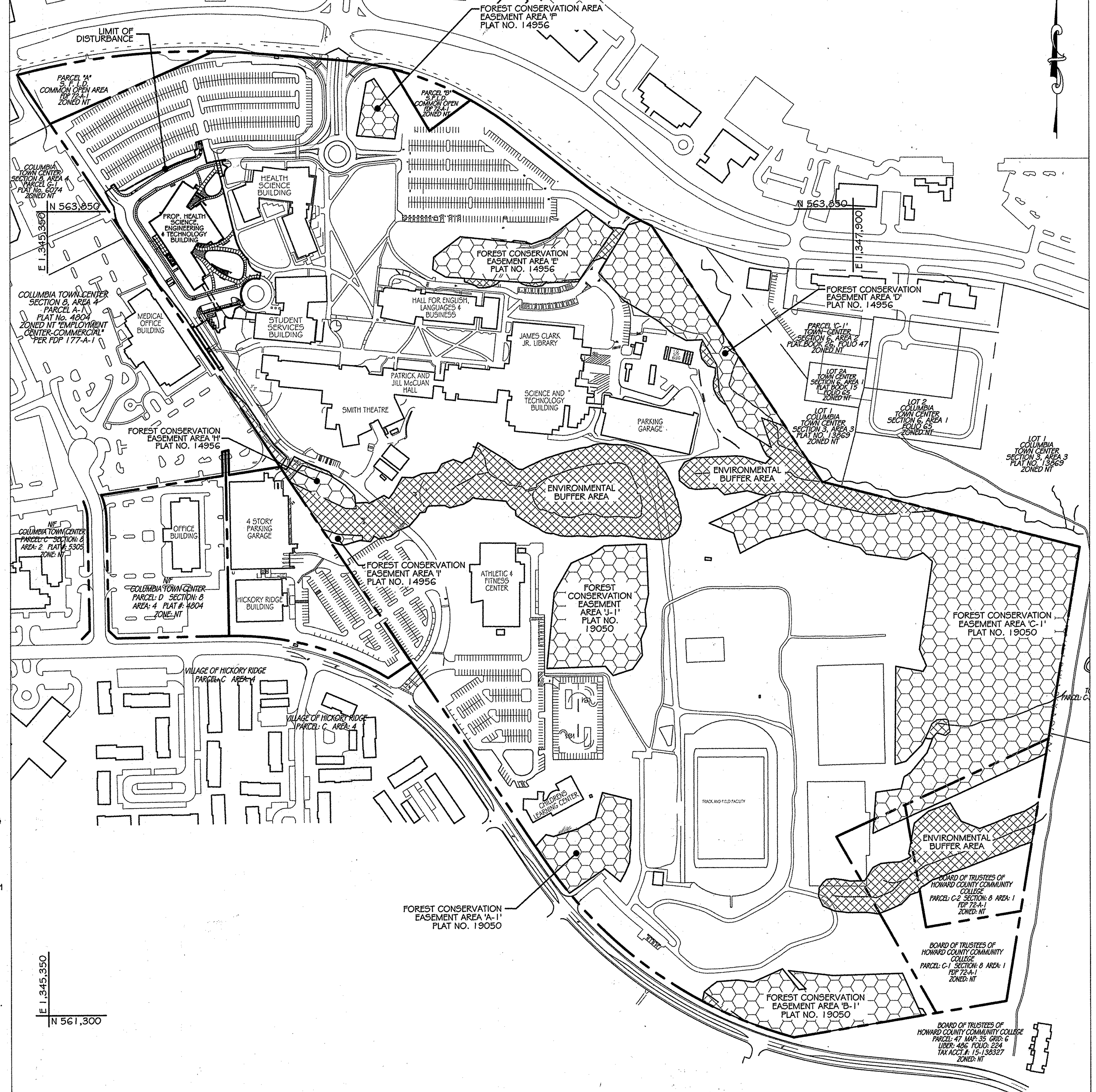
SITE DEVELOPMENT PLAN
HOWARD COMMUNITY COLLEGE
PROPOSED SCIENCE, ENGINEERING, AND TECHNOLOGY BUILDING
5TH ELECTION DISTRICT
HOWARD COUNTY, MD
SDP 14-066

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 IS BASED UPON A SURVEY CONDUCTED BY MERCADO CONSULTANTS, INC. IN JANUARY 2012 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 2014.
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.) THE TRAFFIC CONTROL DEVICE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-312-5752) PRIOR TO THE INSTALLATION OF ANY OF THE TRAFFIC CONTROL DEVICES.
    - C.) 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).
    - D.) ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAYSHALL 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 ARE THREE (3) PRACTICE M-6 MICRO-BIORETENTION AREAS AND ALL PRACTICES WILL BE PRIVATELY OWNED AND 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. ALL ELEVATIONS SHOWN ARE BASED ON THE U.S.C. AND G.S. MEAN SEA LEVEL DATUM, 1929.
38. 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 AND SDP-06-106/FC.
39. ROADWAY LIGHTS MUST REMAIN IN SERVICE DURING THE DURATION OF THE PROJECT, EXCEPT DURING CAMPUS DRIVE RE-CONSTRUCTION.
40. THIS PROJECT IS EXEMPT FROM ADEQUATE PUBLIC FACILITIES ORDINANCE (APFO) REQUIREMENTS.
41. THERE ARE NO WETLANDS OR 100 YR. FLOODPLAIN LIMITS WITHIN THE PROPOSED LIMIT OF DISTURBANCE.
42. THIS SITE COMPLIES WITH THE HOWARD COUNTY GREEN BUILDING LAW SET FORTH UNDER TITLE 3, SUBTITLE 10 OF THE HOWARD COUNTY CODE AND SECTION 3.1005(A) OF THE CODE. REGISTRATION WITH THE U.S. GREEN BUILDING COUNCIL AND THE APPLICABLE LEED FOR NEW CONSTRUCTION CHECKLIST PREPARED, SIGNED AND DATED BY THE PROJECT LEED ACCREDITED PROFESSIONAL AND WAS REQUIRED BY DPZ ON AUGUST 8, 2014. THE PROPOSED BUILDING IS TENTATIVELY CERTIFIED BY THE USGBC WITH A GOLD RATING.

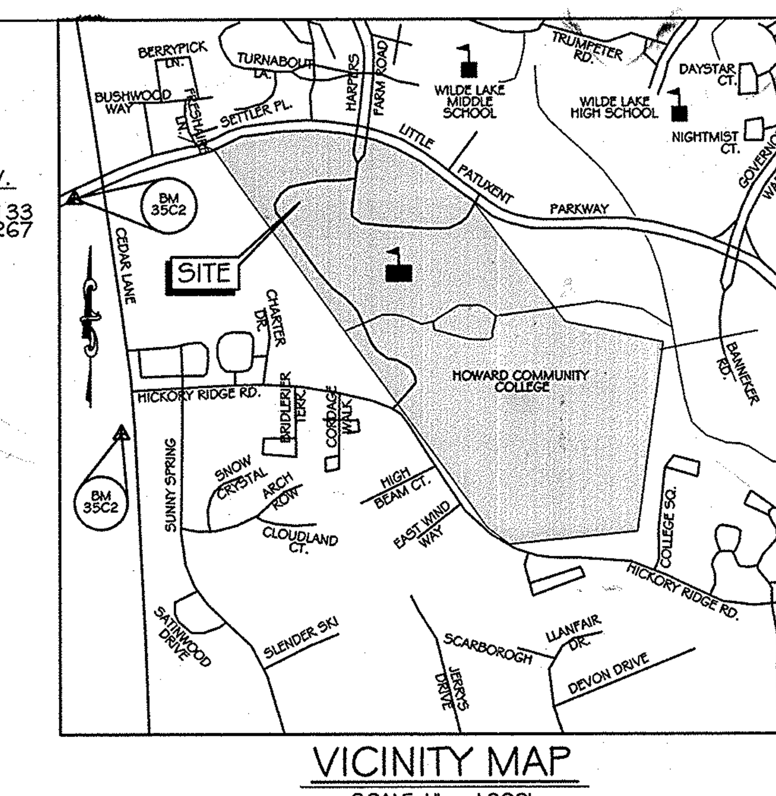


LOCATION MAP
SCALE: 1"=200'

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: 15 GRID: D6

LEGEND

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

SITE ANALYSIS DATA SHEET

1. SITE ADDRESS: 10901 LITTLE PATUXENT PKWY 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 BLOCK 6 PARCEL 47 ELECTION DISTRICT NO. 5
5. ZONING: POR & NT
   EXISTING USE: PARKING LOT
   PROPOSED USE: EDUCATIONAL BUILDING
6. TOTAL AREA OF CAMPUS: 117.84 ACRES
7. TOTAL PROJECT AREA (SDP-14-066): 276,170 S.F. (6.34 AC.)
8. LIMIT OF DISTURBANCE (SDP-14-066): 154,214 S.F. (3.54 AC.)
9. OPEN SPACE WITHIN PROJECT AREA: 2.99 AC.
10. PROPOSED BUILDING AREA: 0.79 AC.
11. RELATED DPZ FILE REFERENCES: ECP-14-073
12. EXISTING PARKING CALCULATIONS:

STUDENTS: 1 SPACE / 3 STUDENTS (PER HOWARD COUNTY ZONING REGULATIONS 10/6/2014) 5900 FULL TIME STUDENTS x (1/3) = 1967 SPACES

COLLEGE EMPLOYEES: 1 SPACE / EMPLOYEE
671 EMPLOYEES x 1 = 671 SPACES

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

TOTAL REQUIRED SPACES: 1967 + 671 + 39 = 2677 SPACES

PARKING CALCULATIONS:

EXISTING PARKING:	3135 SPACES
NO. OF SPACES TO BE REMOVED:	254 +/- SPACES
TOTAL ON-SITE PROVIDED:	2881 SPACES
TOTAL ON-SITE REQUIRED:	2677 SPACES

INDEX OF DRAWINGS

NO.	SHEET	DESCRIPTION
1	C1.00	TITLE SHEET
2	C2.00	EXISTING CONDITIONS / DEMOLITION PLAN
3	C3.00	SITE DEVELOPMENT & GRADING PLAN
4	C4.00	PAVING PLAN
5	C5.00	STRIPING & SIGNAGE PLAN
6	C5.01	GEOMETRY PLAN
7	C5.02	ROAD PLAN / PROFILE SHEET
8	C6.00	SITE DETAILS
9	C7.00	SITE DETAILS
10	C8.00	SITE DETAILS
11	C8.01	SITE DETAILS
12	C9.00	UTILITY PLAN
13	C10.00	WATER & SANITARY SEWER PROFILES
14	C10.01	STORM DRAIN PROFILES
15	C10.02	STORM DRAIN PROFILES
16	C11.00	EROSION & SEDIMENT CONTROL PLAN PHASE 1
17	C11.01	EROSION & SEDIMENT CONTROL PLAN PHASE 2
18	C11.02	EROSION & SEDIMENT CONTROL PLAN PHASE 3
19	C11.03	EROSION & SEDIMENT CONTROL PLAN PHASE 4
20	C11.04	EROSION & SEDIMENT CONTROL DETAIL SHEET
21	C11.05	EROSION & SEDIMENT CONTROL NOTES
22	C11.06	EROSION & SEDIMENT CONTROL NOTES
23	C11.07	EROSION & SEDIMENT CONTROL PLAN EXISTING DRAINAGE AREA MAP
24	C11.08	EROSION & SEDIMENT CONTROL PLAN INTERMEDIATE DRAINAGE AREA MAP
25	C11.09	EROSION & SEDIMENT CONTROL PLAN PROPOSED DRAINAGE AREA MAP
26	C12.00	STORM WATER MANAGEMENT EXISTING CONDITIONS DRAINAGE AREA MAP
27	C12.01	STORM WATER MANAGEMENT DEVELOPED CONDITIONS DRAINAGE AREA MAP
28	C12.02	STORM WATER MANAGEMENT PLAN
29	C12.03	STORM WATER MANAGEMENT FACILITY 1A
30	C12.04	STORM WATER MANAGEMENT FACILITY 1B
31	C12.05	STORM WATER MANAGEMENT FACILITY 2A
32	C12.06	STORM DRAIN DRAINAGE AREA MAP
33	C12.07	STORM WATER MANAGEMENT NOTES
34	C12.08	STORM WATER MANAGEMENT BORING LOGS
35	L1.00	OVERALL LANDSCAPE PLAN & NOTES
36	L1.10	SITE SECTIONS
37	L2.00	DETAILS
38	L2.01	PLANTING DETAILS
39	E5.01	ELECTRICAL LEGEND, SCHEDULE AND DETAILS
40	E5.1	SITE PLAN - REMOVAL WORK - ELECTRICAL
41	E5.2	SITE PLAN - NEW WORK - ELECTRICAL
42	E5.3	LIGHTING FIXTURE SCHEDULES

NOTE:
SEE SHEET C5.01 FOR BUILDING HEIGHT PROFILES.

PERMIT INFORMATION CHART					
SUBDIVISION NAME HOWARD COMMUNITY COLLEGE		SECTION/AREA S.E.T. BUILDING		LOT/PARCEL NO. 47	
PLAT NUMBER 16125	GRID# 35-6	ZONING POR & NT	TAX MAP# 35	ELECT. DISTR. 5TH	CENSUS 6056.02
WATER CODE 107			SEWER CODE 5522500		

ADDRESS CHART	
BLDG.#	STREET ADDRESS
S.E.T. BLDG.	4950 CAMPUS DRIVE

GRAPHIC SCALE
200 0 100 200 400
(IN FEET)
1 inch = 200ft.

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. 31089 EXPIRATION DATE: 11/21/14

KCI TECHNOLOGIES
ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS
936 Ridgebrook Road
Sparks, MD 21152
Phone (410)316-7800
Fax (410)316-7853
www.kci.com

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

Signature	Date
Director	1/6/15
Chief, Division of Land Development	1-06-15
Chief, Development Engineering Division	12-18-14

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

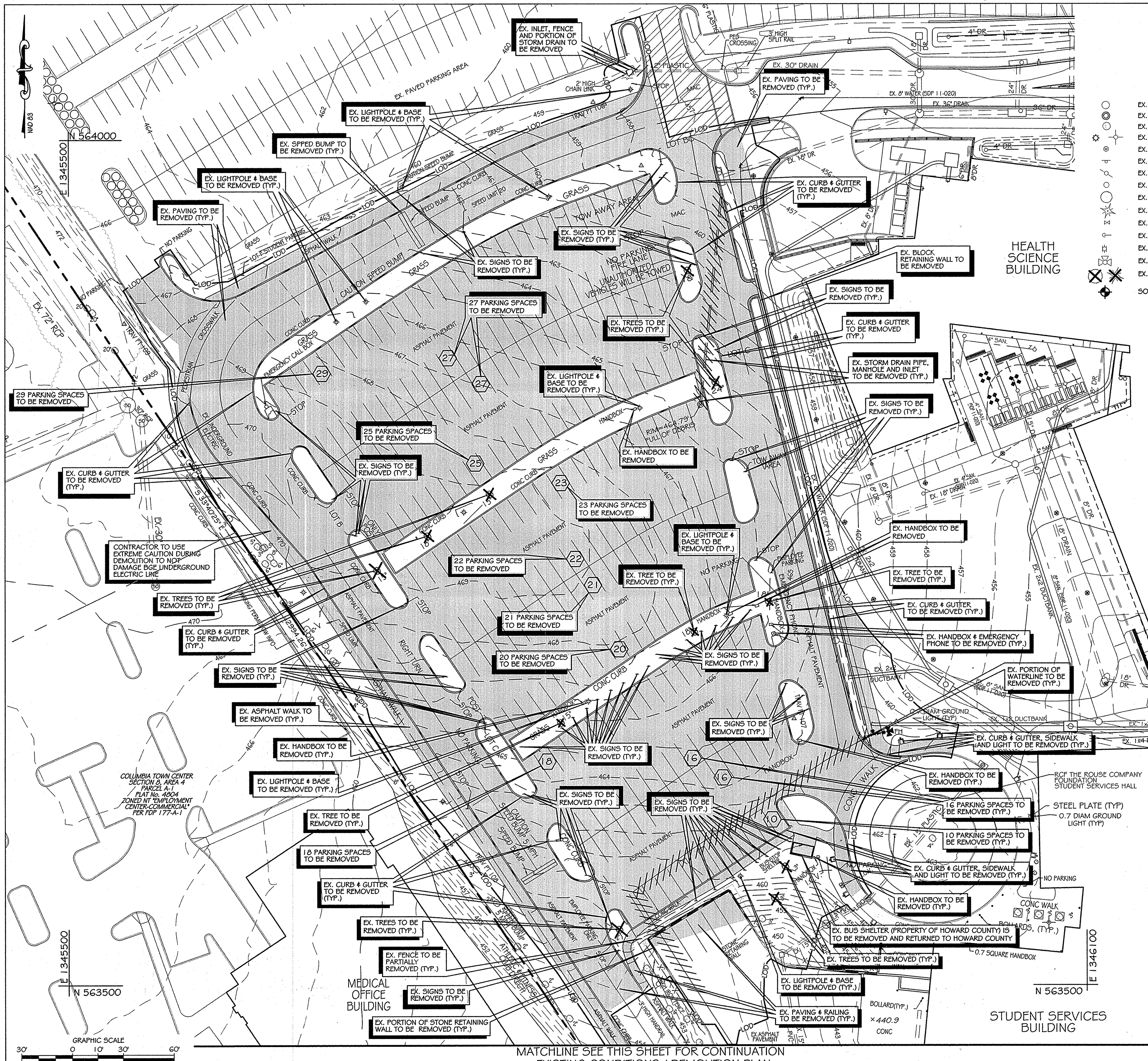
Project Name:
Howard Community College -
Science, Engineering & Technology Building
SITE PACKAGE GREEN BUILDING SEE NOTE NO. 42
PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 045868
ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

Date:	10-1-2014	Scale:	1" = 200'
Drawn By:	C.T.B	Designed By:	B.S.
Approved By:	R.T.B	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title:
SITE DEVELOPMENT PLAN COVER SHEET

STATE OF MARYLAND RICHARD L. BUTT No. 031089 PROFESSIONAL ENGINEER 11-11-14

Discipline Number: C1.00



MATCHLINE SEE THIS SHEET FOR CONTINUATION

EXISTING CONDITIONS / DEMOLITION PLAN

SCALE: 1" = 30'

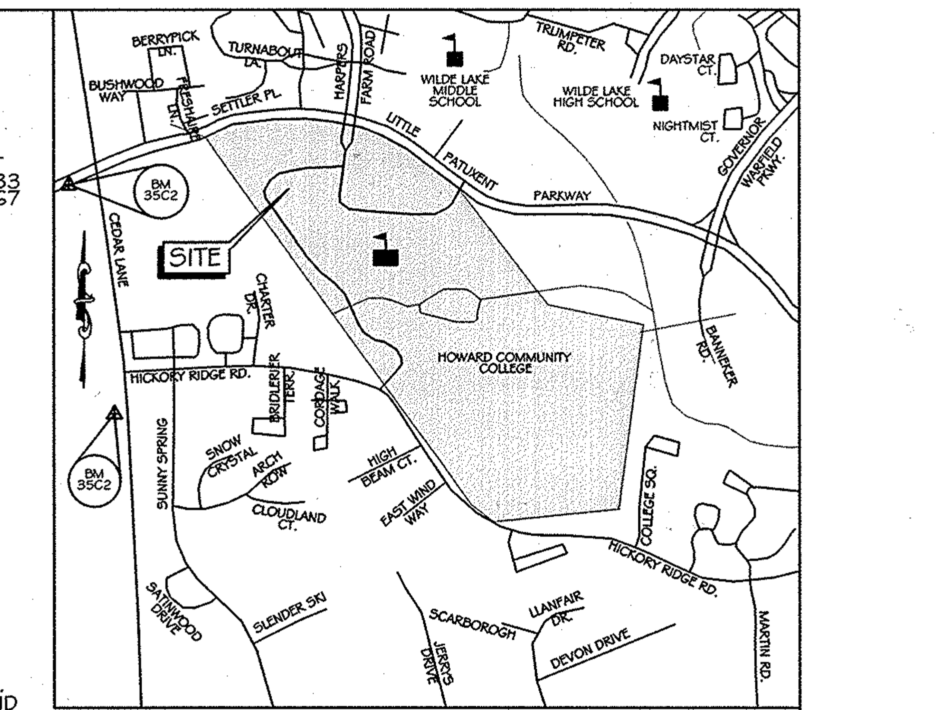
BENCHMARK DATA

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

LEGEND

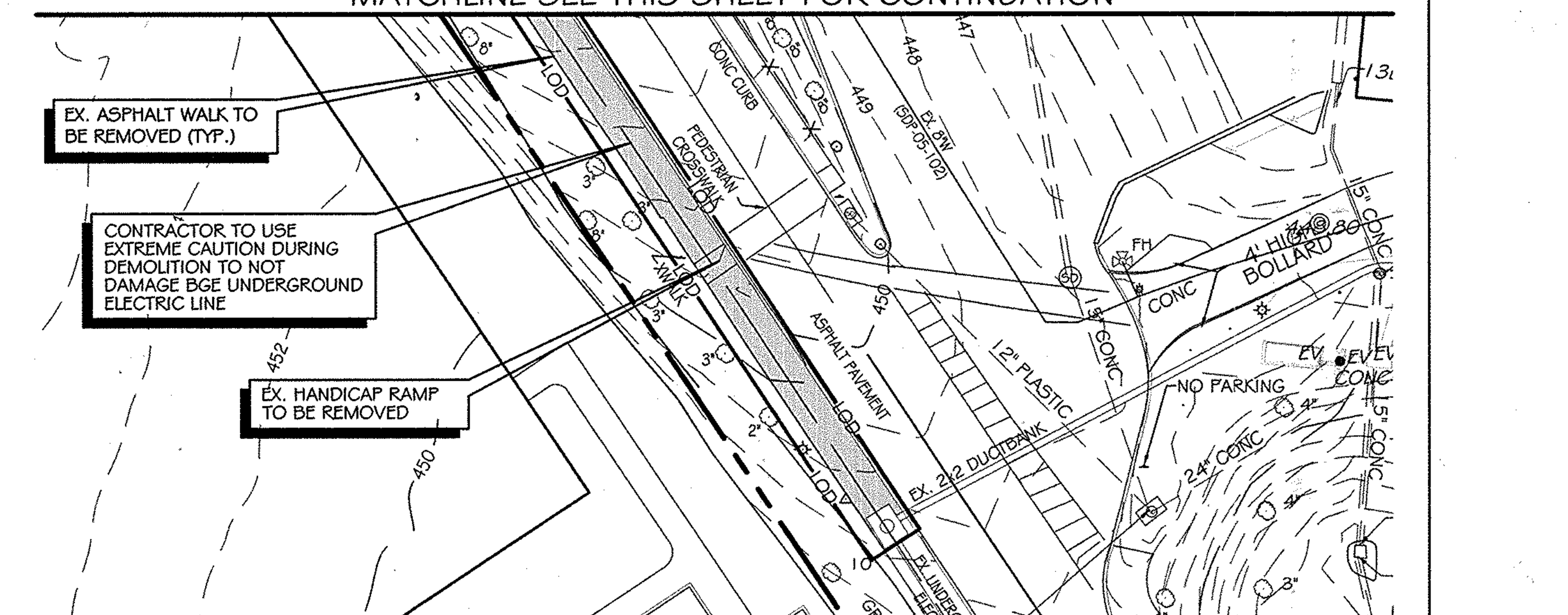
○	EX. SANITARY MANHOLE	CO○	EX. CLEANOUT
◎	EX. STORM DRAIN MANHOLE	PA	EX. PLANTING AREA
	EX. ELECTRIC MANHOLE	EB	EX. ELECTRIC BOX
	EX. LIGHT POLE	— EX. 15" D —	EX. STORM DRAIN
	EX. WATER METER	— G —	EX. GAS LINE
	EX. SIGN	— SS PRIVATE 6"S SS —	EX. SANITARY
	EX. UTILITY POLE	— E — E —	EX. ELECTRIC
	EX. BOLLARD POST	— T — T —	EX. TELEPHONE
	EX. DECIDUOUS TREE	— TV —	EX. CABLE TV
	EX. CONIFEROUS TREE	— W 8"WATER W —	EX. WATER
	EX. GAS VALVE	— LOD —	LIMIT OF DISTURBANCE
	EX. GUY WIRE	(shaded)	APPROXIMATE LIMITS OF EX. PAVING, CURB & GUTTER AND SIDEWALKS TO BE REMOVED
	EX. WATER VALVE	(hatched)	APPROXIMATE LIMITS OF MILL & OVERLAY
	EX. FIRE HYDRANT		
	EX. TREE TO BE REMOVED	/////////	LIMITS OF UTILITIES TO BE REMOVED
	SOIL BORING		



VICINITY MAP

SCALE 1" = 1000'
ADC MAP: 15 GRID: D6

MATCHLINE SEE THIS SHEET FOR CONTINUATION



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 MERCADO CONSULTANTS, INC. SEPTEMBER 2010 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 DESMAN ASSOCIATES.
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.

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.

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. 31089 EXPIRATION DATE: 11/21/14

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
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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

Signature	Date
Director (signed)	1/6/15
Chief, Division of Land Development (signed) BB	1-06-15
Chief, Development Engineering Division (signed)	12-18-14

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 - Science, Engineering & Technology Building

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

Date:	10-1-2014	Scale:	1" = 30'
Drawn By:	C.T.B	Designed By:	B.S.
Approved By:	R.T.B	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

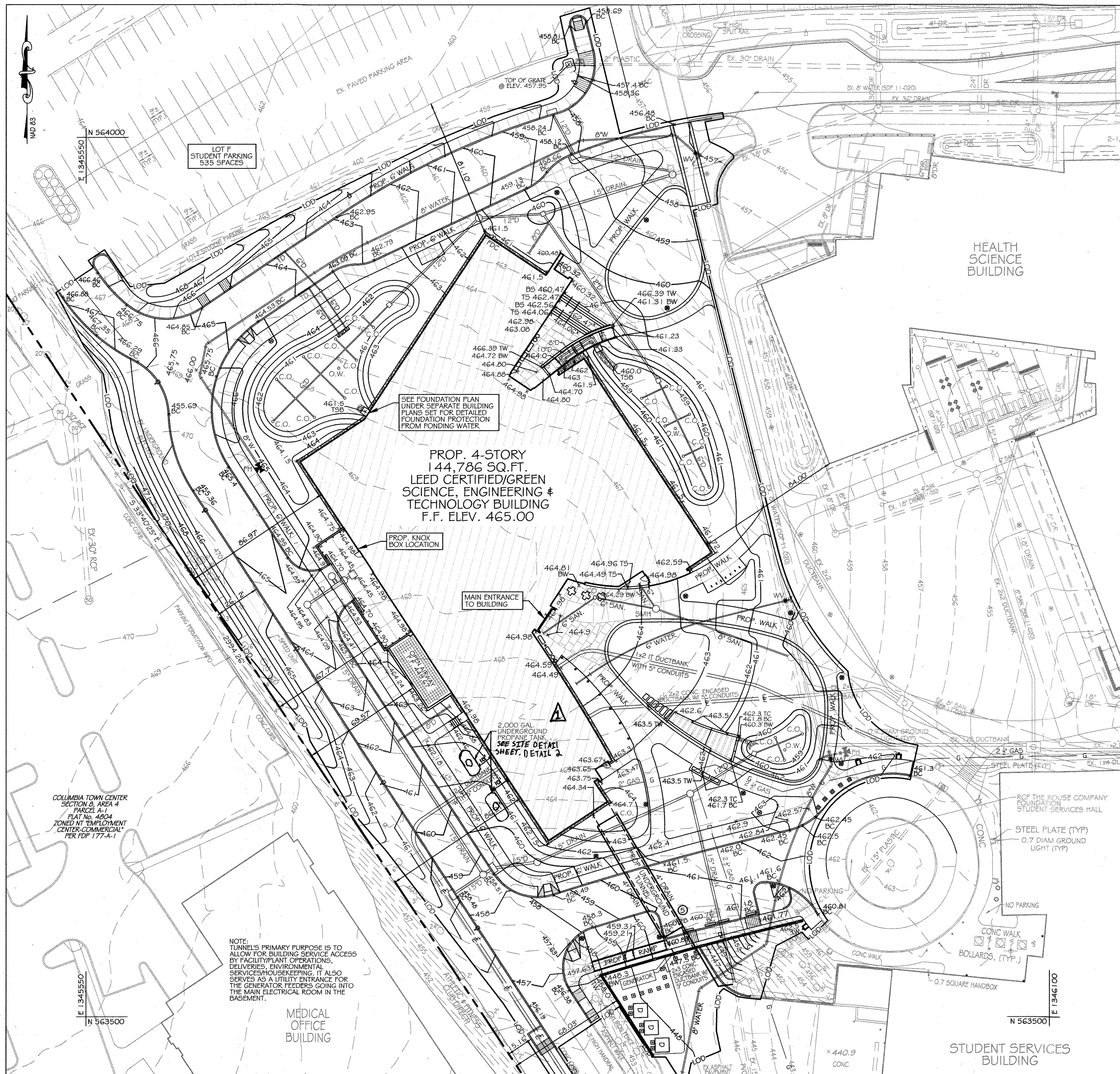
Sheet Title: EXISTING CONDITIONS / DEMOLITION PLAN

STATE OF MARYLAND — RICHARD L. BUTT — No. 031089 — PROFESSIONAL ENGINEER — 11-11-14

Discipline Number: C2.00

Sheet Number: 2 OF 42

SDP 14-066



MATCHLINE SEE THIS SHEET FOR CONTINUATION

SITE GRADING PLAN

SCALE: 1" = 30'

GRAPHIC SCALE
30' 0 10' 30' 60'
(IN FEET)
SCALE: 1"= 30'

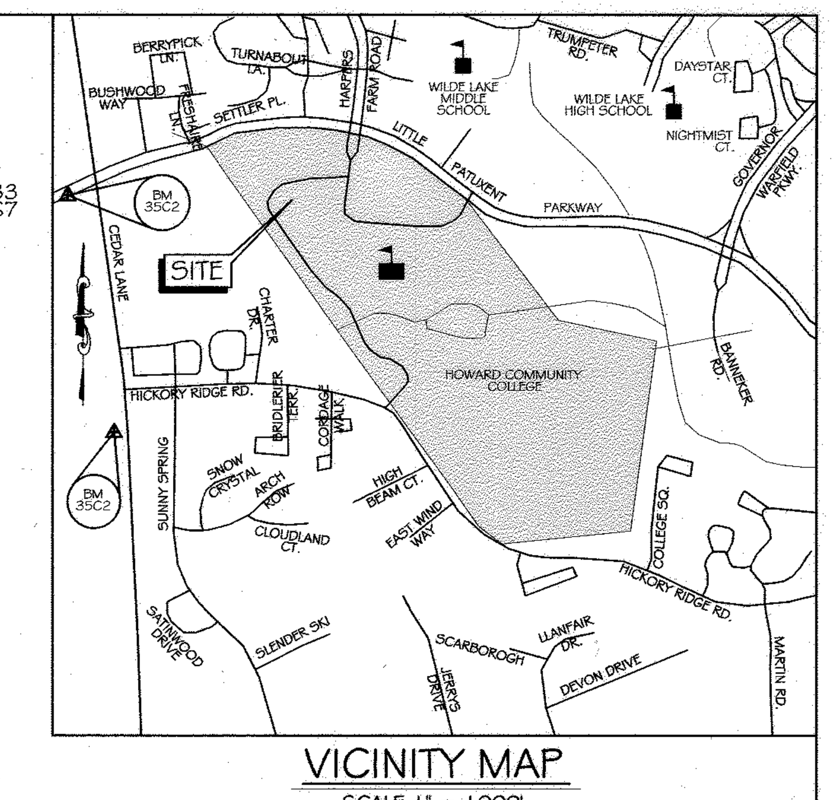
BENCHMARK DATA

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

LEGEND

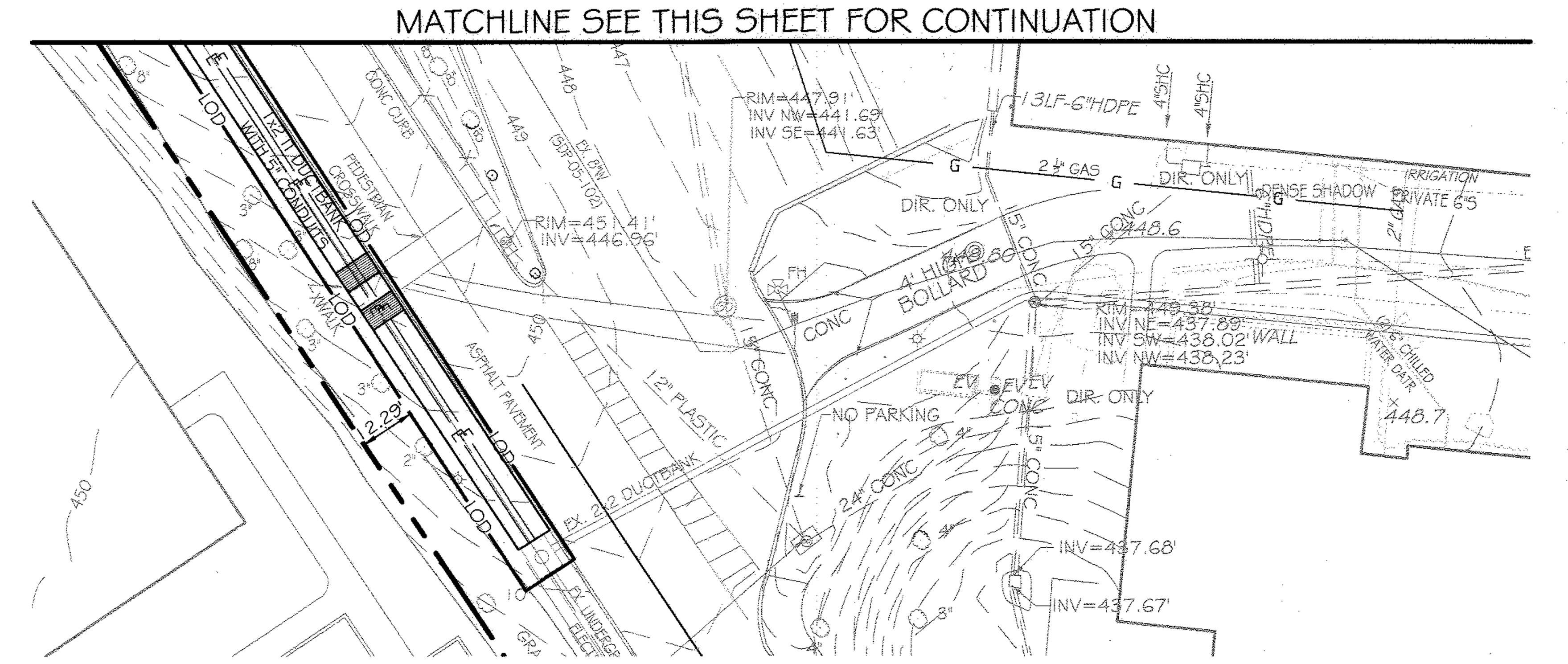
- PROPERTY LINE
- EX. INDEX CONTOUR (450)
- EX. INTERMEDIATE CONTOUR (451)
- EX. LIGHT POLE
- EX. STORM DRAIN (EX. 15" DRAIN)
- EX. GAS LINE (EX. GAS)
- EX. SANITARY (EX. 6" SANITARY)
- EX. ELECTRIC
- EX. TELEPHONE
- EX. CABLE TV
- EX. WATER (EX. 8" WATER)
- PROP. CONTOUR (460)
- PROP. SPOT ELEVATION (460.70 x)
- PROP. ELECTRIC
- PROP. GAS
- PROP. SANITARY (8" SANITARY)
- PROP. STORM DRAIN (12" DRAIN)
- PROP. WATER (8" WATER)
- PROP. FIRE HYDRANT (FH)
- PROP. WATER VALVE (WV)
- PROP. MANHOLE
- PROP. CLEANOUT (C.O.)
- PROP. OBSERVATION WELL (O.W.)
- PROP. INLET
- LIMIT OF DISTURBANCE (LOD)
- APPROXIMATE LIMITS OF PROPOSED BUILDING



VICINITY MAP

SCALE 1" = 1000'
ADC MAP: 15 GRID: D6

MATCHLINE SEE THIS SHEET FOR CONTINUATION



GENERAL NOTES

1. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN IS BASED UPON A SURVEY CONDUCTED BY MERCADO CONSULTANTS, INC. IN SEPTEMBER 2010 AND AERIAL TOPO FROM VIRGINIA RESOURCE MAPPING IN APRIL 27, 2009.
2. THE CONTRACTOR SHALL PROVIDE PRIVATE SUBSURFACE UTILITY LOCATION SERVICE, TO LOCATE AND MARK ANY AND ALL EXISTING UNDERGROUND UTILITIES, PRIOR TO THE START OF ANY CONSTRUCTION.
3. CONTRACTOR SHALL TEST PIT, AS REQUIRED, ALL EXISTING UTILITIES WITHIN THE LIMITS OF CONSTRUCTION TO DETERMINE THE EXACT LOCATION AND DEPTH. CONTRACTOR SHALL REPORT ANY DISCREPANCIES BETWEEN WHAT IS FOUND IN THE FIELD AND THAT INDICATED ON THE PLAN TO KCI TECHNOLOGIES, INC. ALL UTILITIES SHALL BE RETAINED UNLESS INDICATED OTHERWISE. DAMAGE TO EXISTING CONSTRUCTION AND UTILITIES TO REMAIN SHALL BE REPAIRED AS REQUIRED, TO THE OWNERS SATISFACTION, AT THE EXPENSE OF THE CONTRACTOR.
4. CONTRACTOR SHALL REMOVE AND REPLACE ALL DAMAGED CURB AND GUTTER, UTILITIES, SIDEWALKS, PAVEMENT, ETC., THAT ARE NOT INDICATED TO BE DEMOLISHED, AS REQUIRED FOR TIE-IN TO NEW CONSTRUCTION.
5. CONTRACTOR SHALL REPAIR AND MAINTAIN SEDIMENT CONTROL DEVICES UNTIL ALL AREAS WITHIN LIMITS OF CONSTRUCTION ARE STABILIZED. WITH THE APPROVAL OF INSPECTOR, ALL SEDIMENT CONTROL DEVICES SHALL BE REMOVED AND DISTURBED AREAS RESTORED AND STABILIZED.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COST AND WORK REQUIRED TO ADJUST EXISTING AND PROPOSED UTILITIES AND APPURTENANCES TO FINISHED GRADES WITHIN THE LIMITS OF WORK.
7. OBSTRUCTIONS SHOWN ON THESE DRAWINGS ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. KCI TECHNOLOGIES DOES NOT WARRANT OR GUARANTEE THE CORRECTNESS OR THE COMPLETENESS OF THE INFORMATION GIVEN. THE CONTRACTOR MUST VERIFY SUCH INFORMATION TO HIS OWN SATISFACTION.
8. CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN WORKING NEAR OR OVER EXISTING UTILITIES.
9. 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.
10. 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.
11. SHOULD THE CONTRACTOR DISCOVER DISCREPANCIES BETWEEN THE PLANS AND THE 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.
12. EXISTING CURB, GUTTER, AND SIDEWALK SHALL BE REMOVED TO THE NEAREST JOINT.
13. DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
14. ALL CONSTRUCTION SHALL FOLLOW LATEST HOWARD COUNTY DEPT. OF PUBLIC WORKS STANDARD SPECIFICATIONS & DETAILS OF CONSTRUCTION OR AS DETAILED ON THE DRAWINGS.
15. THIS SHEET IS FOR PURPOSE OF REFERENCING SITE, GRADING, DRAINAGE AND SWM FEATURES TO THEIR LOCATION ON THE OVERALL SITE. FOR DETAILED GRADING, STORM DRAIN INFORMATION AND ENLARGEMENT INFORMATION SEE SHEETS, C9.00 & C10.00 THRU C10.02, FOR DETAILED SWM INFORMATION SEE SHEETS C12.00 THRU C12.08.
16. ROADWAY LIGHTS MUST REMAIN IN SERVICE DURING THE DURATION OF THE PROJECT, EXCEPT DURING CAMPUS DRIVE RE-CONSTRUCTION.

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APPROVED: Howard County Department of Planning & Zoning

Signature	Title	Date
[signature]	Director	1/6/15
[signature]	Chief, Division of Land Development	1-06-15
[signature]	Chief, Development Engineering Division	12-18-14

Rev:	Date:	Description:	By:
1	10/25/16	Revised underground Propane tank	KCI
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 - Science, Engineering & Technology Building
SITE PACKAGE
PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 045868
ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

Date: 10-1-2014	Scale: 1" = 30'		
Drawn By: C.T.B	Designed By: B.S.		
Approved By: R.T.B	Project No: 27111245		
Tax Map-Grid: 35-6	Zoning: POR & NT		

Sheet Title: SITE DEVELOPMENT & GRADING PLAN

STATE OF MARYLAND RICHARD L. BUTT No. 031089 PROFESSIONAL ENGINEER 11-11-14

Discipline Number: C3.00

Sheet Number: 3 OF 42

SDP 14-066

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	563920.630	1344204.150	464.133
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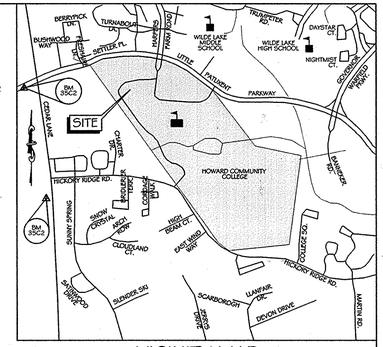
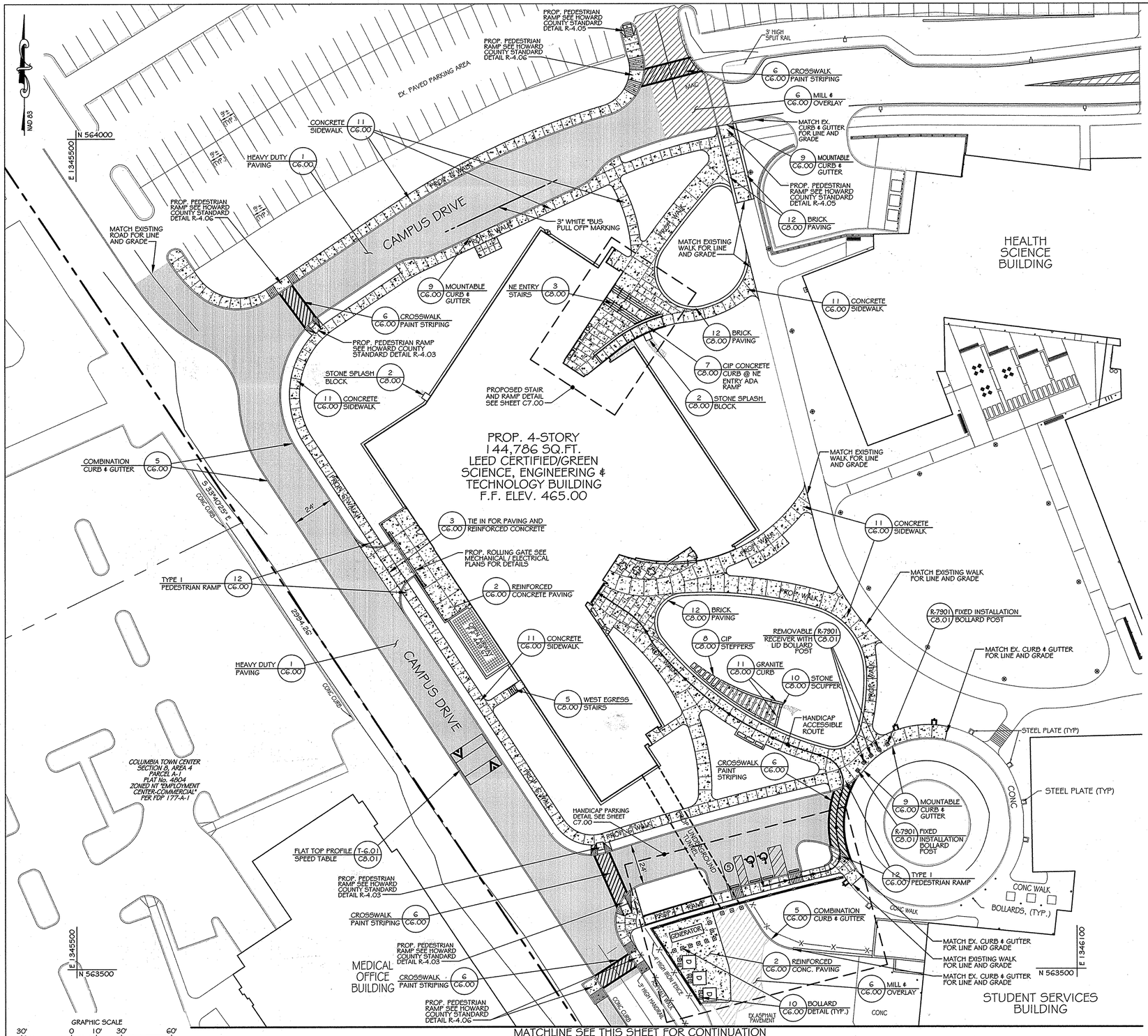


VICINITY MAP

SCALE 1" = 1000'
ADC MAP: 15 GRID: D6

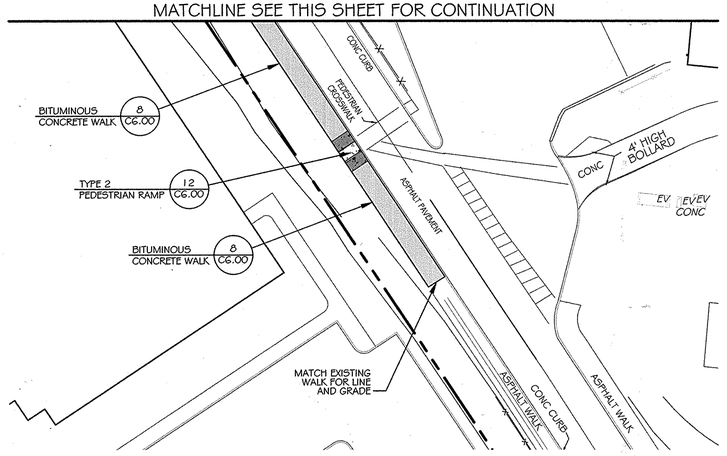


MATCHLINE SEE THIS SHEET FOR CONTINUATION

MATCHLINE SEE THIS SHEET FOR CONTINUATION

PAVING PLAN

SCALE: 1" = 30'



LEGEND

- EX. LIGHT POLE
- EX. SIGN
- EX. FENCE
- PROP. CURB & GUTTER
- PROP. FENCE
- PROP. SIGN
- PROP. LIGHT POLE
- APPROXIMATE LIMITS OF ASPHALT PAVING
- APPROXIMATE LIMITS OF CONCRETE
- APPROXIMATE LIMITS OF 2" MILL AND OVERLAY

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APPROVED: Howard County Department of Planning & Zoning

Director	1/6/15 Date
Chief, Division of Land Development	1-06-15 Date
Chief, Development Engineering Division	12-18-14 Date

Rev:	Date:	Description:	By:
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ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

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Drawn By:	C.T.B	Designed By:	B.S.
Approved By:	R.T.B	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

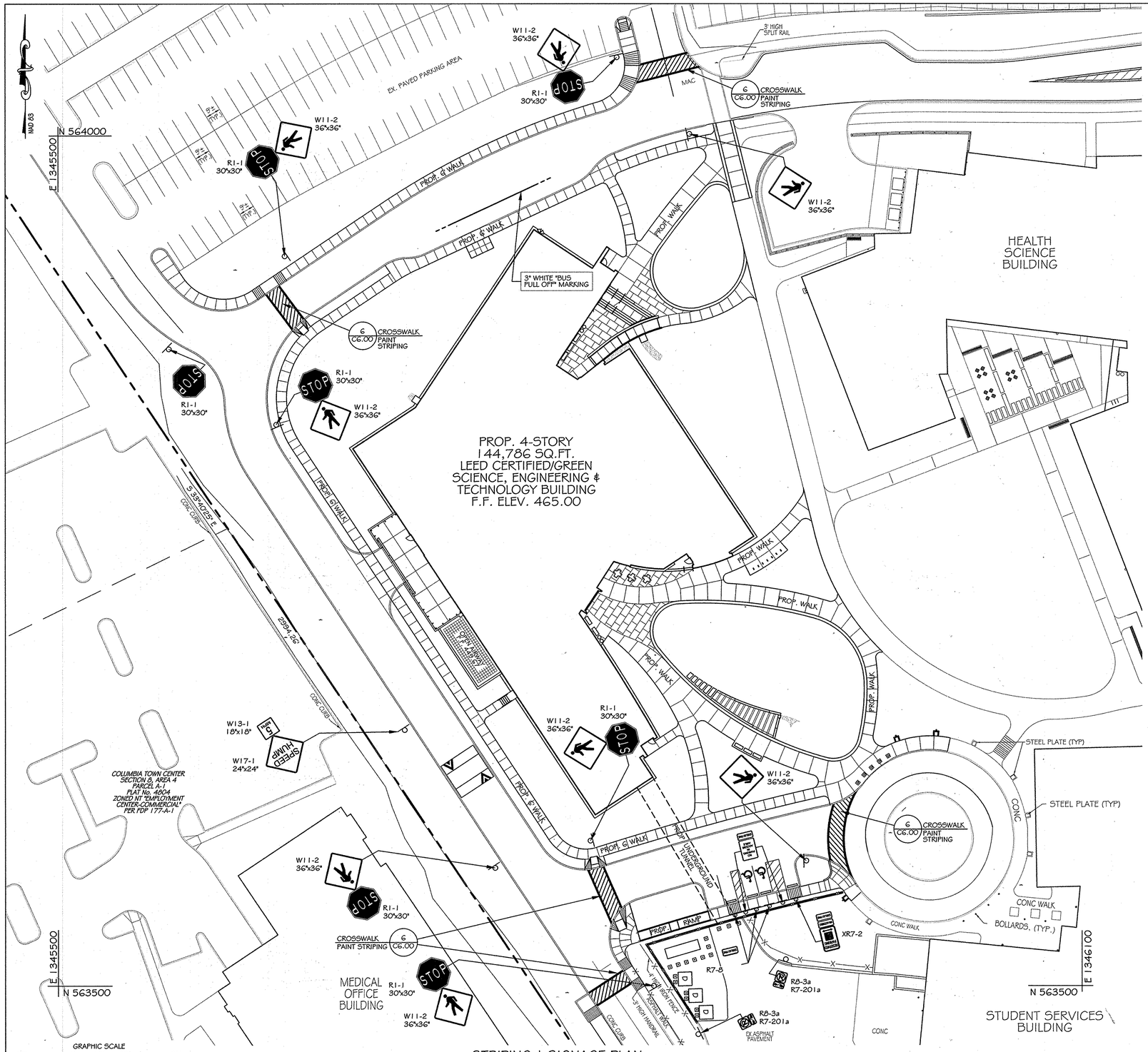
Sheet Title: PAVING PLAN

STATE OF MARYLAND — RICHARD T. BOLLINGER — No. 031089 — PROFESSIONAL ENGINEER — 11-21-14

Discipline Number: C4.00

Sheet Number: 4 OF 42

SDP 14-066



STRIPING & SIGNAGE PLAN

SCALE: 1" = 30'

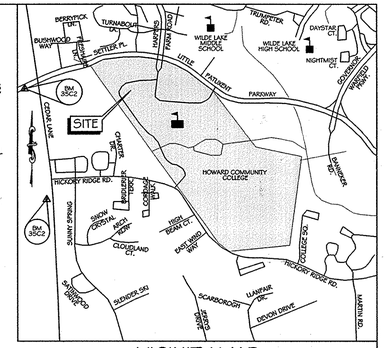
BENCHMARK DATA

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

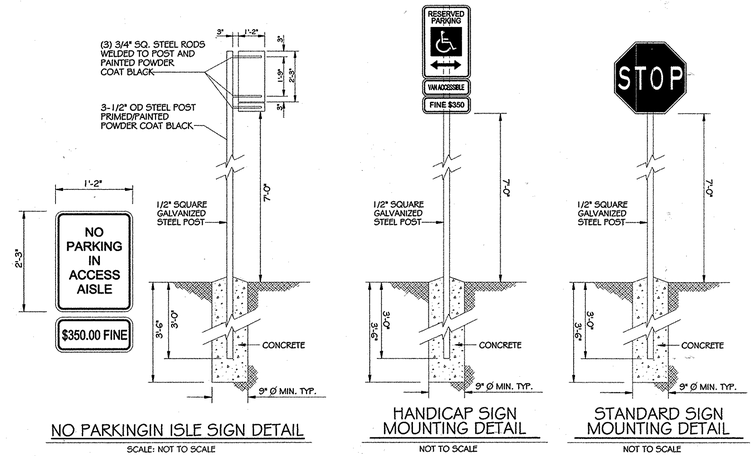
GENERAL NOTES

1. ALL SIGNS SHALL BE MOUNTED ON A 2" SQUARE GALVANIZED METAL TUBE POSTS (14 GAUGE) INSERTED INTO A 2 1/2" SQUARE GALVANIZED METAL TUBE SLEEVE, 3' LONG (12 GAUGE). A GALVANIZED POLE CAP SHALL BE MOUNTED ON TOP.
2. ALL SIGN LOCATIONS ARE APPROXIMATE. EXACT LOCATIONS WILL BE FIELD MARKED BY TRAFFIC ENGINEER.
3. ALL MARKINGS WILL BE MARKED AND APPROVED BY TRAFFIC ENGINEER, PRIOR TO INSTALLATION.
4. THE "YIELD LINE" AND 3' WHITE SKIP MARKINGS SHALL BE HEAT APPLIED TAPE.
5. SINGLE SIGN ON POST - 5' TO BOTTOM OF SIGN: TWO SIGNS/PANELS - 4' TO BOTTOM OF SIGN: HEIGHT MEASURED FROM ROAD SURFACE, EXCEPT WHERE THERE ARE SIDEWALKS.
6. FOR REFERENCE REFER TO HOWARD COUNTY DETAILS T-7.02, T-7.03, W9G-9, AND OM-3C.
7. ALL SITE SIGNAGE SHALL BE IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREET AND HIGHWAY" REVISION NUMBER 1 & 2, DATED NOVEMBER 2004 AND DECEMBER 2007.



VICINITY MAP

SCALE 1" = 1000'
ADC MAP: 15 GRID: D6



NO PARKINGIN ISLE SIGN DETAIL

SCALE: NOT TO SCALE

HANDICAP SIGN MOUNTING DETAIL

NOT TO SCALE

STANDARD SIGN MOUNTING DETAIL

NOT TO SCALE

LEGEND

- EX. LIGHT POLE
- EX. SIGN
- EX. FENCE
- PROP. CURB & GUTTER
- PROP. CONCRETE WALK
- PROP. FENCE
- PROP. SIGN
- PROP. LIGHT POLE

SIGNAGE SCHEDULE

SIGN DESCRIPTION	MUTCD CODE	QUANTITY	MINIMUM	SIGN MATERIAL
STOP	R1-1	7	30"x30"	SHEET ALUMINUM (ASTM B209)
TOW AWAY ZONE	R7-201a	2	12"x6"	SHEET ALUMINUM (ASTM B209)
NO PARKING	R8-3a	2	24"x24"	SHEET ALUMINUM (ASTM B209)
CROSSWALK	W11-2	8	36"x36"	SHEET ALUMINUM (ASTM B209)
5 MPH	W13-1	1	18"x18"	SHEET ALUMINUM (ASTM B209)
SPEED HUMP	XR7-2	1	24"x24"	SHEET ALUMINUM (ASTM B209)
RESERVED PARKING	R7-8	2	12"x18"	SHEET ALUMINUM (ASTM B209)
VAN ACCESIBLE	R-7-8a	1	18"x9"	SHEET ALUMINUM (ASTM B209)

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APPROVED: Howard County Department of Planning & Zoning

Director		1/6/15 Date
Chief, Division of Land Development		1-06-15 Date
Chief, Development Engineering Division		12-18-14 Date

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Drawn By:	C.T.B	Designed By:	B.S.
Approved By:	R.T.B	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

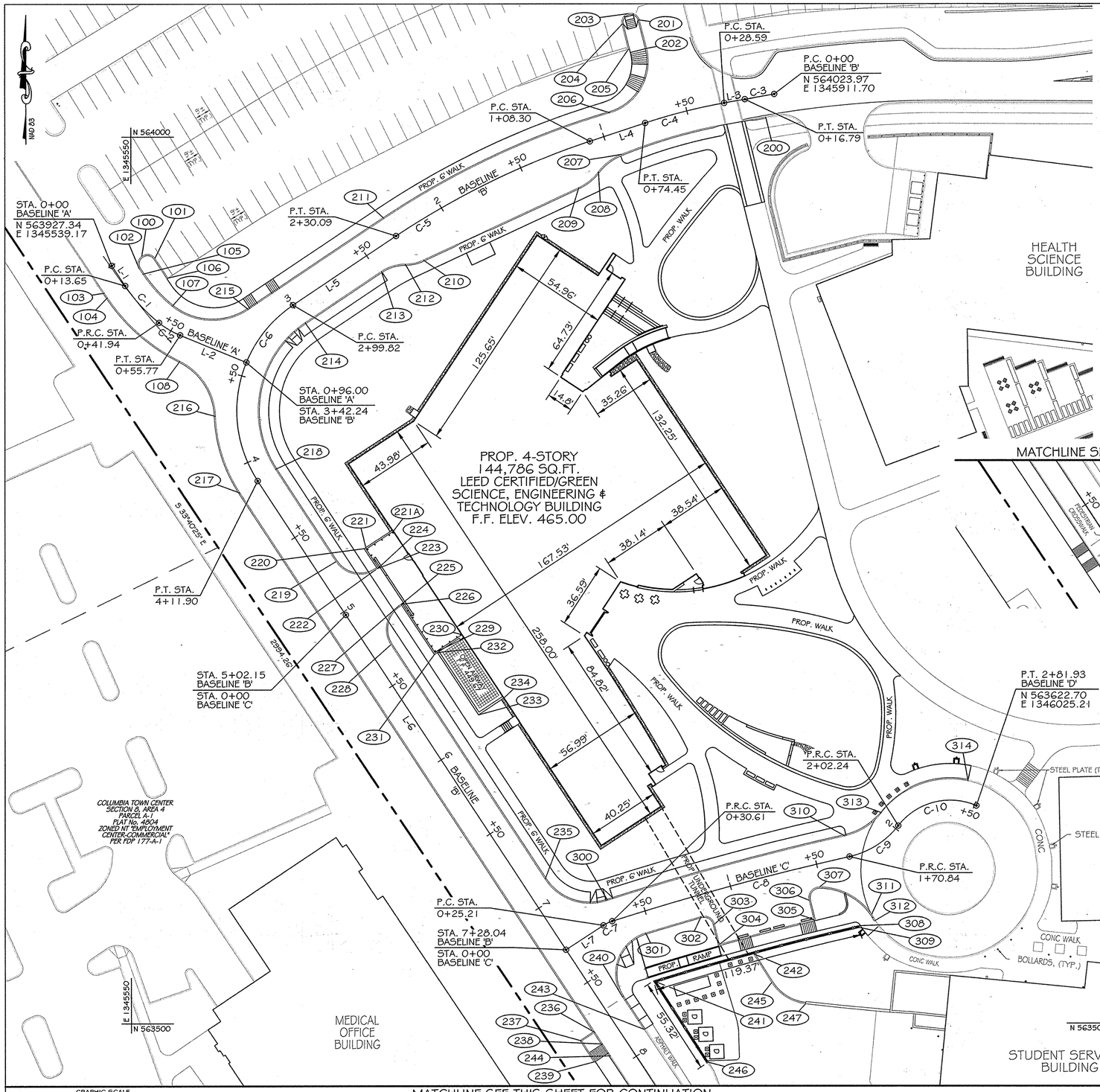
Sheet Title: STRIPING & SIGNAGE PLAN

STATE OF MARYLAND RICHARD L. BAUER No.031089 PROFESSIONAL ENGINEER 11/21/14

Discipline Number: C5.00

Sheet Number: 5 OF 42

SDP 14-066



BENCHMARK DATA

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CURVE DATA

NO.	FROM	TO	Δ	RADIUS	TANGENT	LENGTH	CHORD BEARING & LENGTH
C-1	0+13.65	0+41.94	N 72°34'09" E	93'	14.13'	28.29'	N 42°25'23" W 28.18'
C-2	0+41.94	0+55.77	N 73°30'01" E	48'	6.91'	13.82'	S 59°23'14" E 13.77'
C-3	0+00	0+16.79	N 89°59'02" E	59582.68'	8.40'	16.79'	N 79°57'05" E 16.79'
C-4	0+28.59	0+74.45	N 61°34'41" W	312'	22.93'	45.86'	N 75°34'54" E 45.82'
C-5	1+08.30	2+30.09	N 74°25'26" E	448'	60.85'	121.79'	N 63°55'48" E 121.42'
C-6	2+99.82	4+11.90	N 0°48'23" E	72'	54.63'	112.08'	N 11°22'42" E 101.10'
C-7	0+25.21	0+30.61	N 74°12'35" W	20'	2.70'	5.41'	N 64°32'14" E 5.39'
C-8	0+30.61	1+70.84	N 84°57'51" E	1574.58'	69.19'	140.22'	N 74°48'07" E 138.35'
C-9	1+70.84	2+33.08	N 50°19'30" E	48.00'	16.54'	33.24'	N 57°28'55" E 32.58'
C-10	2+33.08	2+81.93	N 14°04'00" E	36.86'	23.98'	48.85'	N 75°36'41" E 45.36'

BASELINE 'A' DATA

NO.	STATION	NORTHING	EASTING	BEARING	LENGTH
L-1	0+00	563927.34	1345539.17	S 33°42'25" E	13.36'
L-2	0+55.77	563888.17	1345577.62	S 67°38'14" E	40.23'

BASELINE 'B' DATA

NO.	STATION	NORTHING	EASTING	BEARING	LENGTH
L-3	0+16.79	564021.04	1345895.16	N 56°47'25" E	11.80'
L-4	0+74.45	564007.69	1345839.14	S 79°56'33" W	32.75'
L-5	2+30.09	563944.05	1345698.98	S 71°43'05" W	69.73'
L-6	4+11.90	563806.03	1345621.17	S 56°04'30" W	488.10'

BASELINE 'C' DATA

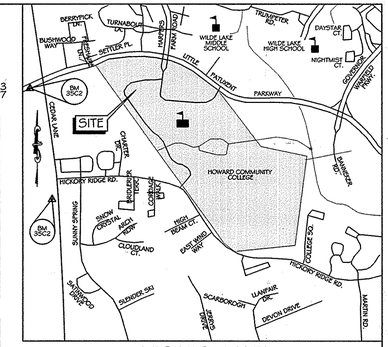
NO.	STATION	NORTHING	EASTING	BEARING	LENGTH
L-7	0+00	563541.53	1345794.34	N 56°47'25" E	25.21'

BASELINE 'A'

NO.	STATION	OFFSET
100	0+05.00	17.00' LT
101	0+10.00	22.50' LT
102	0+10.00	12.00 LT
103	0+10.50	12.00 RT
104	0+13.65	12.00' RT
105	0+13.65	12.00' LT
106	0+26.30	21.84' LT
107	0+41.94	12.00' LT
108	0+61.20	13.60' RT

BASELINE 'C'

NO.	STATION	OFFSET
300	0+31.70	12.00' LT
301	0+46.63	12.00' RT
302	0+79.41	12.00' RT
303	0+85.48	18.20' RT
304	0+85.48	30.20' RT
305	1+41.13	30.00' RT
306	1+41.13	18.78' RT
307	1+48.66	12.92' RT
308	1+65.60	39.14' RT
309	1+65.60	40.14' RT
310	1+70.84	12.00' LT
311	1+73.71	34.61' RT
312	1+74.28	38.38' RT
313	2+02.24	12.00' LT
314	2+43.59	12.00' LT



VICINITY MAP

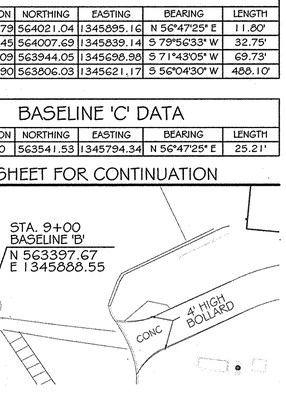
SCALE 1" = 1000'
ADC MAP: 15 GRID: D6

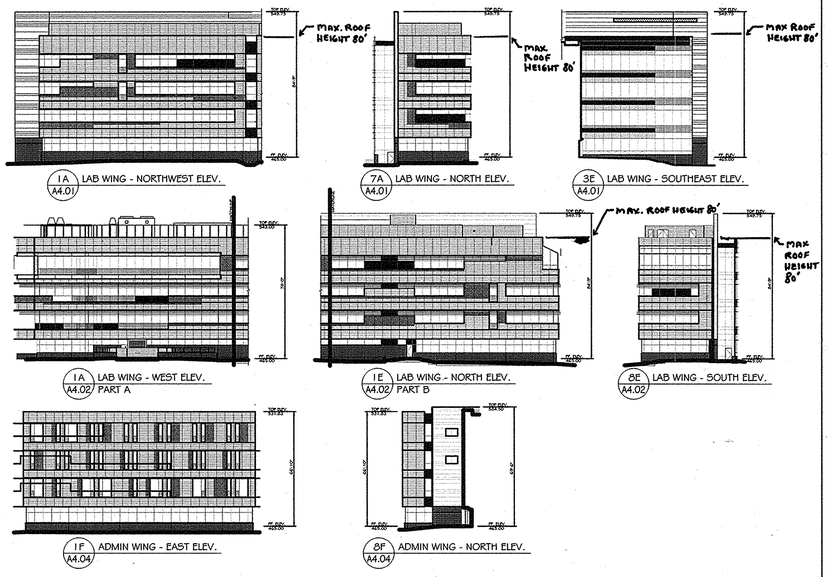
BASELINE 'B'

NO.	STATION	OFFSET
200	0+06.91	11.94 LT
201	0+61.51	56.37 RT
202	0+62.00	39.61 RT
203	0+65.55	61.57 RT
204	0+69.97	56.84 RT
205	0+70.74	42.33 RT
206	0+91.50	11.73 RT
207	0+92.57	12.62 LT
208	1+09.13	17.78 LT
209	1+23.17	22.53 LT
210	2+24.66	19.85 LT
211	2+30.09	12.00 RT
212	2+34.64	16.09 LT
213	2+48.03	12.00 LT
214	2+99.82	12.00 LT
215	3+18.39	14.91 RT
216	3+72.67	12.00 RT
217	4+11.90	12.00 RT
218	4+11.90	12.00 LT
219	4+74.02	12.00 LT
220	4+76.60	29.12 LT
221	4+77.43	48.20 LT
221A	4+77.43	29.95 LT
222	4+90.02	28.04 LT
223	4+90.02	29.16 LT

BASELINE 'B'

NO.	STATION	OFFSET
224	4+90.02	30.00 LT
225	5+14.14	27.94 LT
226	5+14.14	29.25 LT
227	5+14.14	30.00 LT
228	5+30.15	12.00 LT
229	5+47.39	30.20 LT
230	5+47.39	46.44 LT
231	5+48.23	29.36 LT
232	5+48.23	31.36 LT
233	5+90.33	31.50 LT
234	5+90.33	48.59 LT
235	6+88.36	12.00 LT
236	7+75.90	12.00 RT
237	7+75.90	21.00 RT
238	7+83.82	12.00 RT
239	7+89.82	21.00 RT
240	7+67.73	12.00 LT
241	7+71.02	32.49 LT
242	7+87.75	86.99 LT
243	7+89.78	12.00 LT
244	7+91.78	12.00 RT
245	8+06.88	86.62 LT
246	8+25.02	32.12 LT
247	8+27.42	96.06 LT





BUILDING ELEVATIONS

SCALE: 1"=500'

GRAPHIC SCALE
30' 0 10' 30' 60'
(IN FEET)
SCALE: 1" = 30'

MATCHLINE SEE THIS SHEET FOR CONTINUATION

GEOMETRY PLAN

SCALE: 1" = 30'

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.

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. 31089 EXPIRATION DATE: 11/21/14

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AYERS SAINT GROSS
ARCHITECTS + PLANNERS
1040 Hull Street, Suite 100 Baltimore, MD 21230 p 410.347.8000 f 410.347.8419

APPROVED: Howard County Department of Planning & Zoning

Director — 1/6/15 Date
Chief, Division of Land Development — 1-06-15 Date
Chief, Development Engineering Division — 12-18-14 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 - Science, Engineering & Technology Building
SITE PACKAGE
PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date:	10-1-2014	Scale:	1" = 30'
Drawn By:	C.T.B	Designed By:	B.S.
Approved By:	R.T.B	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

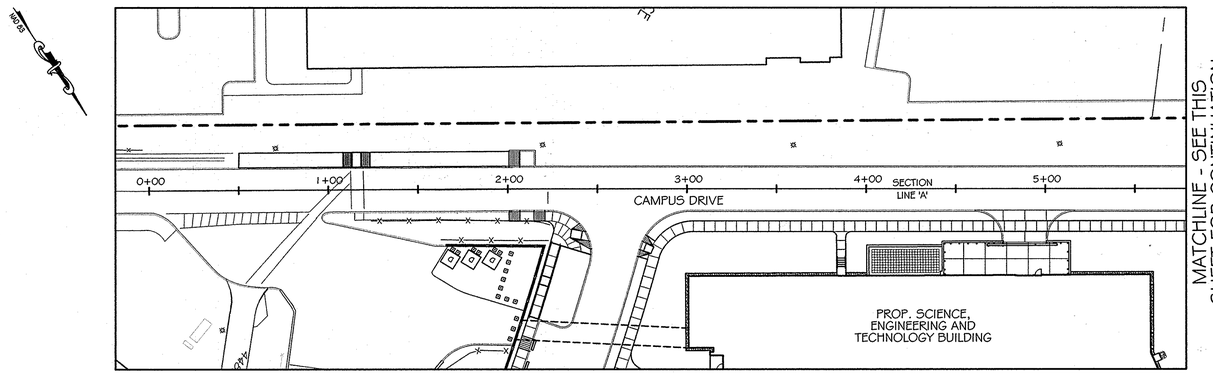
Sheet Title: GEOMETRY PLAN

STATE OF MARYLAND RICHARD L. REED No. 031089 PROFESSIONAL ENGINEER

Discipline Number: C5.01

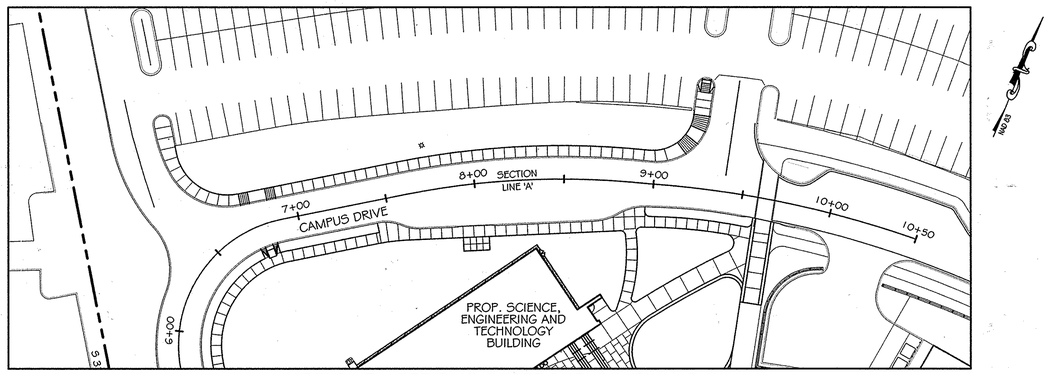
Sheet Number: 6 OF 42

SDP 14-066



CAMPUS DRIVE PLAN - SECTION LINE A

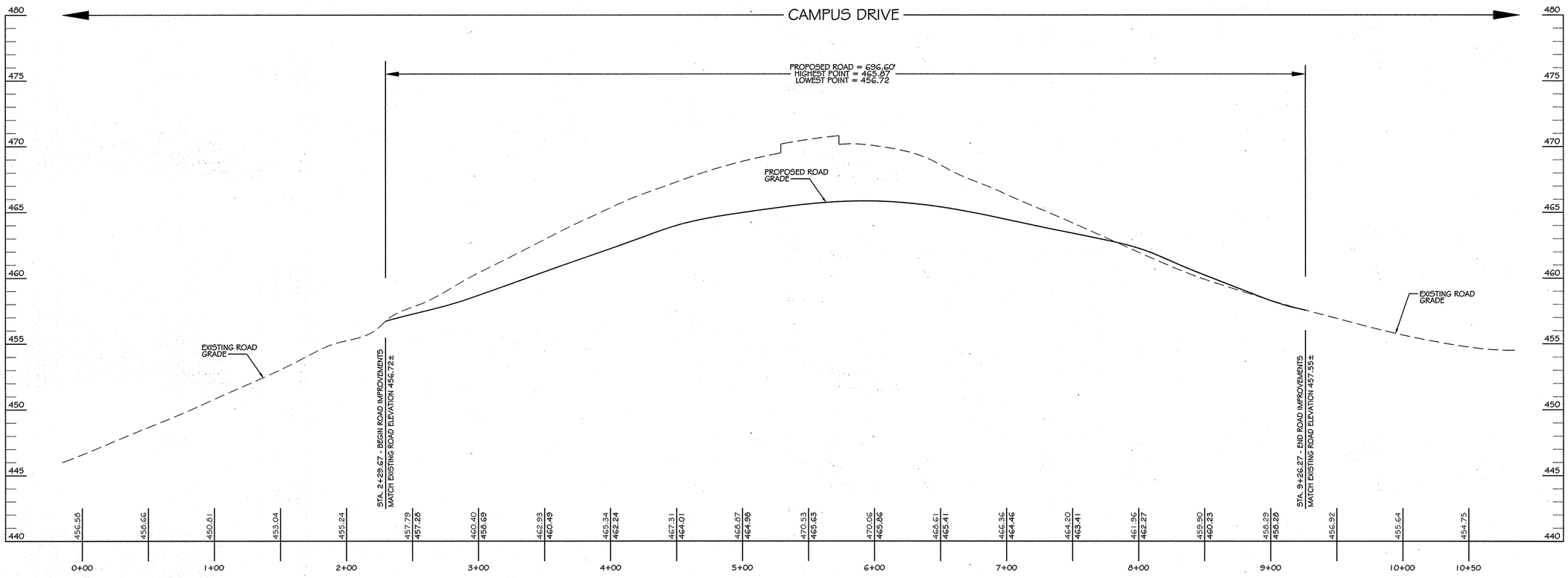
SCALE: 1" = 40'



MATCHLINE - SEE THIS SHEET FOR CONTINUATION

CAMPUS DRIVE PLAN - SECTION LINE A

SCALE: 1" = 40'



SECTION LINE 'A' PROFILE (CAMPUS DRIVE)

SCALE: HORZ.: 1" = 40'
VERT.: 1" = 4'

GRAPHIC SCALE
40' 0 20' 40' 80'
(IN FEET)
SCALE: 1"= 40'

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Rev:	Date:	Description:	By:
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5			

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ATTN: Mr. Chuck Nightingale
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Project Name:
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Science, Engineering & Technology Building
SITE PACKAGE
PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 045888
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date:	10-1-2014	Scale:	1" = 30'
Drawn By:	C.T.B	Designed By:	B.S.
Approved By:	R.T.B	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

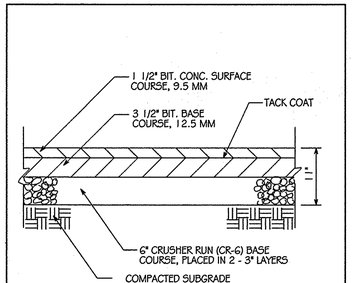
Sheet Title:
ROAD PLAN & PROFILE SHEET

STATE OF MARYLAND — RICHARD L. TOMS — No. 031089 — PROFESSIONAL ENGINEER — 11-11-14

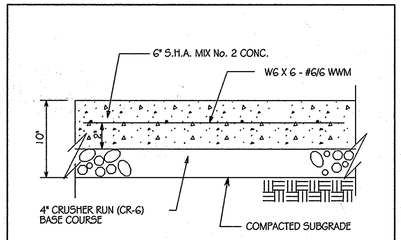
Discipline Number: C5.02

Sheet Number: 7 OF 42

SDP 14-066

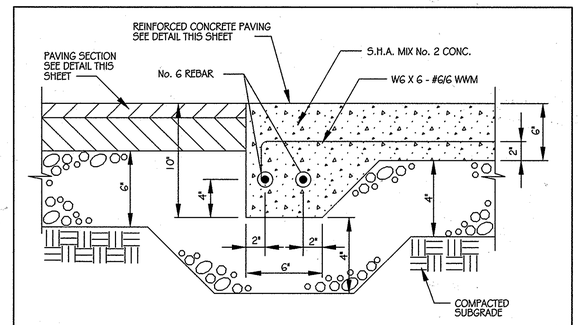


1 HEAVY DUTY ASPHALT PAVING DETAIL SCALE: N.T.S.



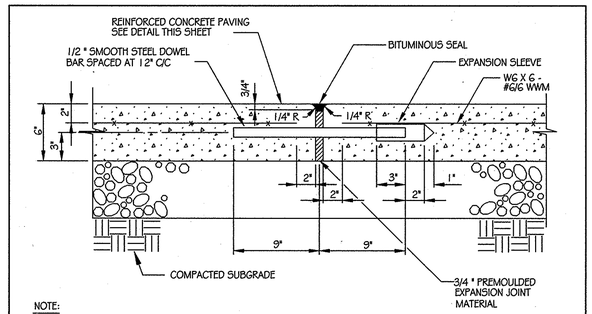
NOTE: 1. EXPANSION JOINTS SHALL BE AT THE LOCATIONS SHOWN ON THE PLANS.
2. MINIMUM 28 DAY COMPRESSION STRENGTH 4000psi.

2 REINFORCED CONCRETE PAVING DETAIL SCALE: N.T.S.



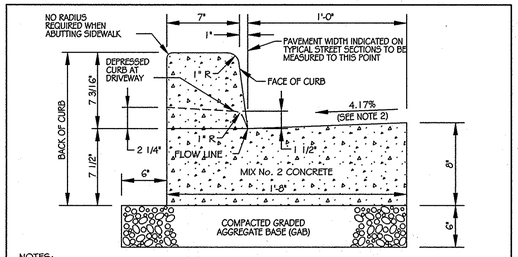
NOTE: MINIMUM 28 DAY COMPRESSION STRENGTH 4000psi.

3 TIE IN FOR PAVING AND REINFORCED CONCRETE PAVING SCALE: N.T.S.



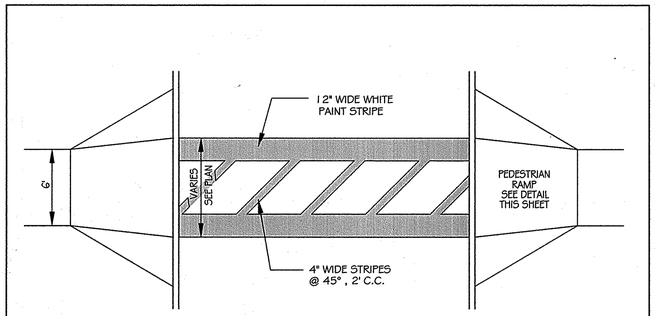
NOTE:
1. SMOOTH DOWELS SHALL BE PAINTED WITH APPROVED RED LEAD BEFORE DELIVERY AND FREE END SHALL BE GREASED BEFORE INSTALLATION.

4 TIE IN AT EXPANSION JOINT SCALE: N.T.S.

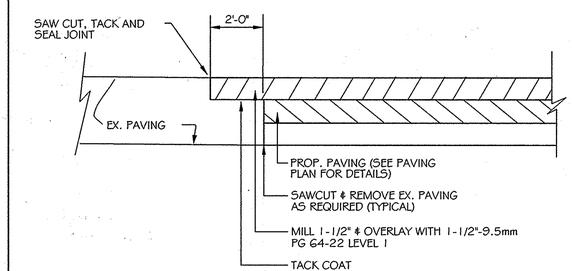


NOTES:
1. A REVERSE GUTTER PAN SHALL HAVE A GUTTER SLOPE OF 4.17% AWAY FROM THE FLOW LINE, AND SHALL NOT BE USED WHERE THIS DRAINAGE CREATES A HAZARDOUS CONDITION.
2. GUTTER PAN AT THE MEDIAN EDGE OF INTERMEDIATE ARTERIALS OR THE HIGH SIDE OF SUPER ELEVATED SECTIONS SHALL BE SLOPED AT THE SAME RATE AND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

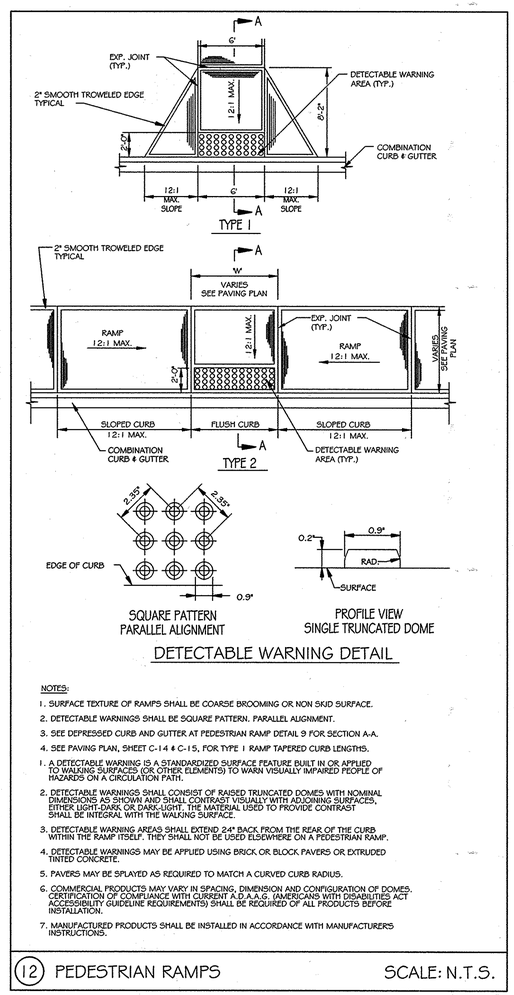
5 COMBINATION CURB AND GUTTER SCALE: N.T.S.



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



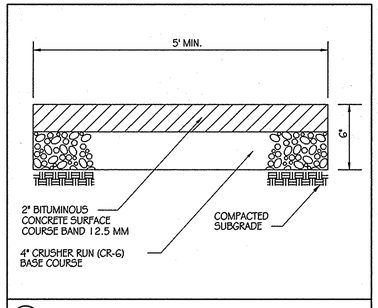
7 PAVING TIE-IN DETAIL SCALE: N.T.S.



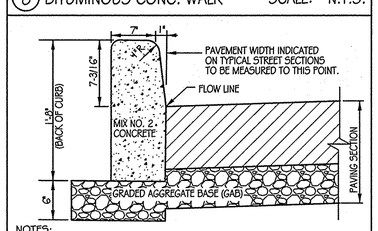
NOTES:
1. SURFACE TEXTURE OF RAMPS SHALL BE COARSE BROOMING OR NON SKID SURFACE.
2. DETECTABLE WARNINGS SHALL BE SQUARE PATTERN. PARALLEL ALIGNMENT.
3. SEE DEPRESSED CURB AND GUTTER AT PEDESTRIAN RAMP DETAIL 9 FOR SECTION A-A.
4. SEE PAVING PLAN, SHEET C-14 & C-15, FOR TYPE 1 RAMP TAPERED CURB LENGTHS.

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-DARK OR DARK-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 MANUFACTURERS INSTRUCTIONS.

12 PEDESTRIAN RAMPS SCALE: N.T.S.

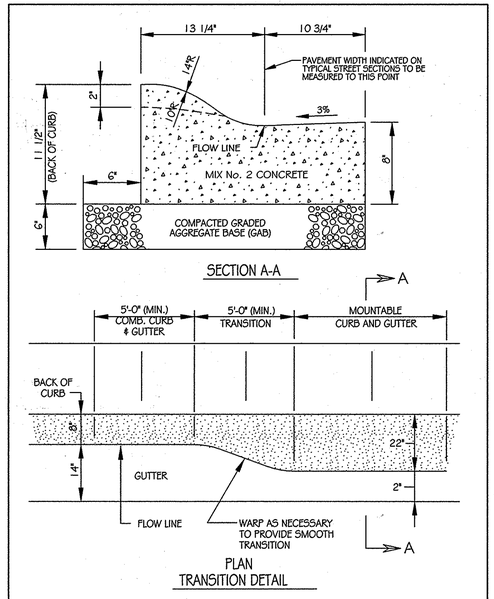


8 BITUMINOUS CONC. WALK SCALE: N.T.S.

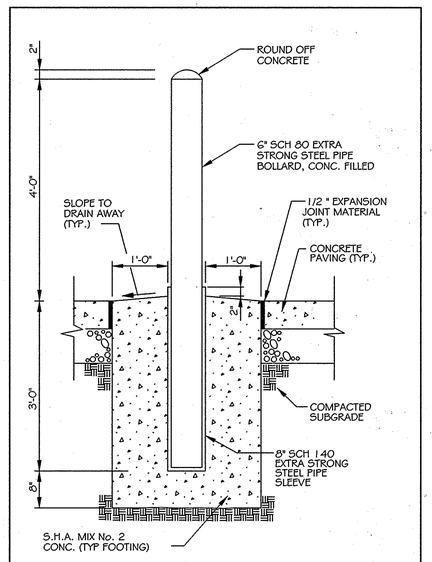


NOTES:
1. A MINIMUM OF TWO (2) FEET OF COMPACTED STABILIZED EARTH OR EQUIVALENT SHALL SUPPORT THE ENTIRE BACK OF CURB.
2. POSITIVE DRAINAGE SHALL BE PROVIDED BOTH BEHIND CURB AND ALONG THE GUTTER AND FLOW LINE.

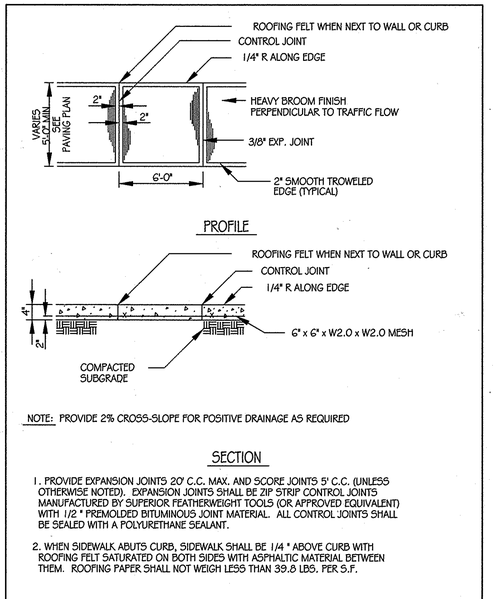
13 CONCRETE BARRIER CURB SCALE: N.T.S.



9 MOUNTABLE CURB AND GUTTER SCALE: N.T.S.



10 REMOVEABLE PIPE BOLLARD SCALE: N.T.S.



NOTE: PROVIDE 2% CROSS-SLOPE FOR POSITIVE DRAINAGE AS REQUIRED

SECTION

1. PROVIDE EXPANSION JOINTS 20' C.C. MAX. AND SCORE JOINTS 5' C.C. (UNLESS OTHERWISE NOTED). EXPANSION JOINTS SHALL BE ZIP STRIP CONTROL JOINTS MANUFACTURED BY SUPERIOR FEATHERWEIGHT TOOLS (OR APPROVED EQUIVALENT) WITH 1/2" PREMOLDED BITUMINOUS JOINT MATERIAL. ALL CONTROL JOINTS SHALL BE SEALED WITH A POLYURETHANE SEALANT.
2. WHEN SIDEWALK ABUTS CURB, SIDEWALK SHALL BE 1/4" ABOVE CURB WITH ROOFING FELT SATURATED ON BOTH SIDES WITH ASPHALTIC MATERIAL BETWEEN THEM. ROOFING PAPER SHALL NOT WEIGH LESS THAN 39.6 LBS. PER S.F.

11 CONCRETE SIDEWALK SCALE: N.T.S.

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APPROVED: Howard County Department of Planning & Zoning

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10901 Little Patuxent Parkway
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SITE PACKAGE
PARCEL: 47, TAX MAP: 35, GRID: 6
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Approved By:	R.T.B	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title: SITE DETAILS

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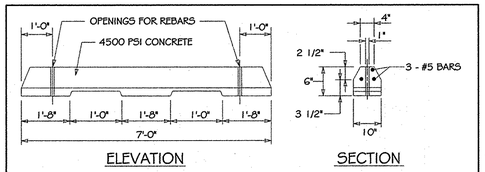
STATE OF MARYLAND — RICHARD C. NIGHTINGALE — No. 031089 — PROFESSIONAL ENGINEER — 11-6-14

Discipline Number: C6.00

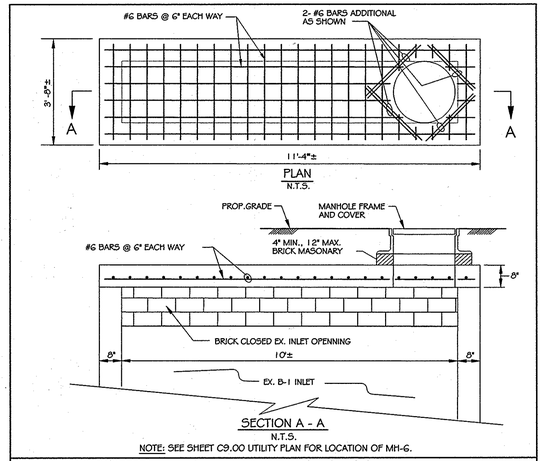
Sheet Number: 8 OF 42

SDP 14-066



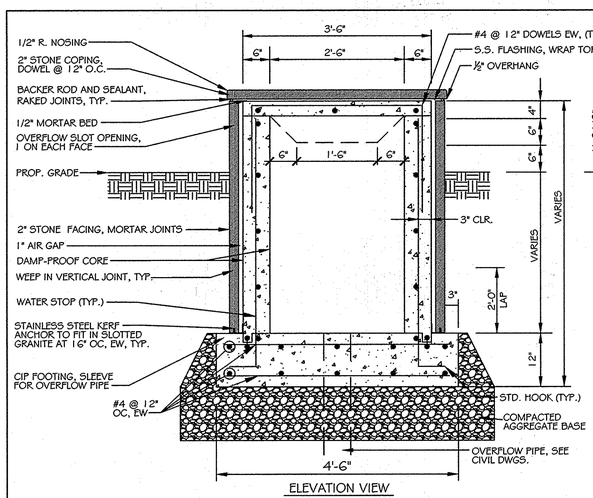
NOTE:
CONTRACTOR TO PROVIDE TWO (2) NO.8 REBARS, 16" LONG FOR EACH WHEEL STOP.

① PRECAST CONCRETE WHEEL STOP SCALE: N.T.S

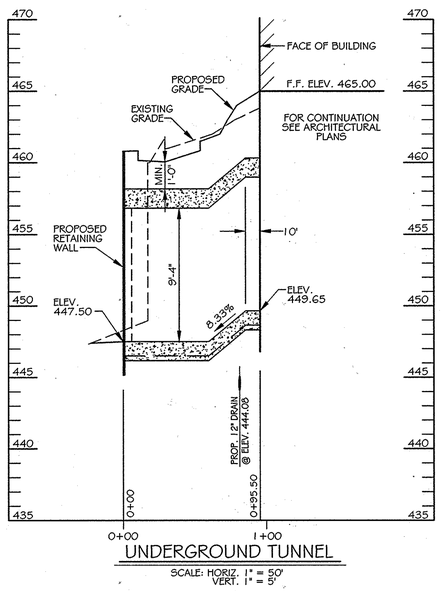


NOTE: SEE SHEET C9.00 UTILITY PLAN FOR LOCATION OF MH-6.

② MANHOLE 6 OVER EXISTING INLET DETAIL SCALE: N.T.S.

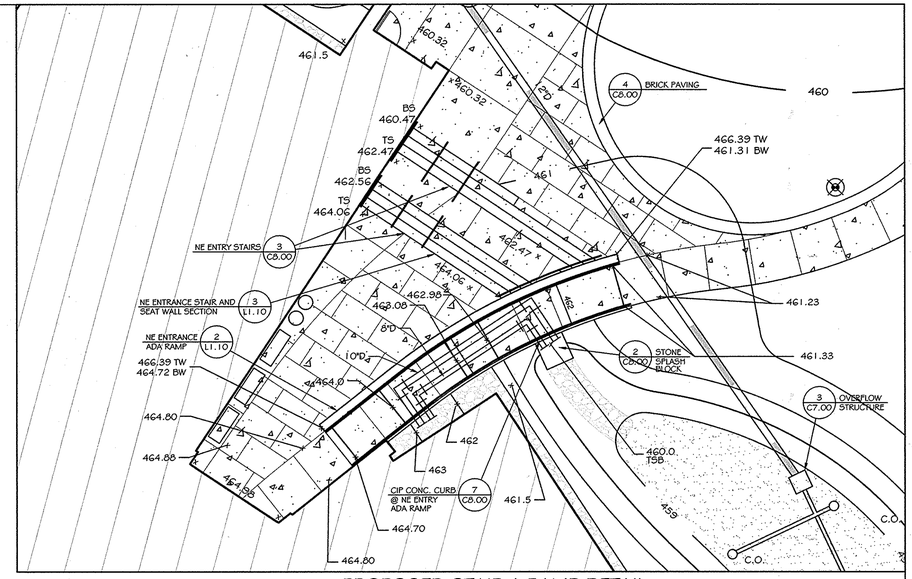


③ OVERFLOW STRUCTURE DETAIL SCALE: 3/4" = 1'-0"



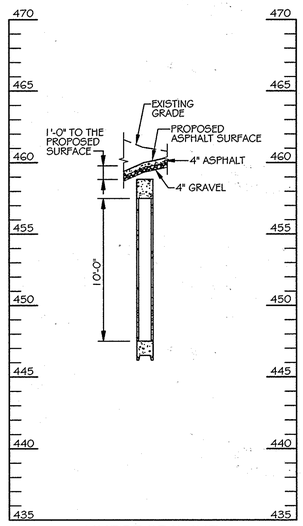
UNDERGROUND TUNNEL

SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'



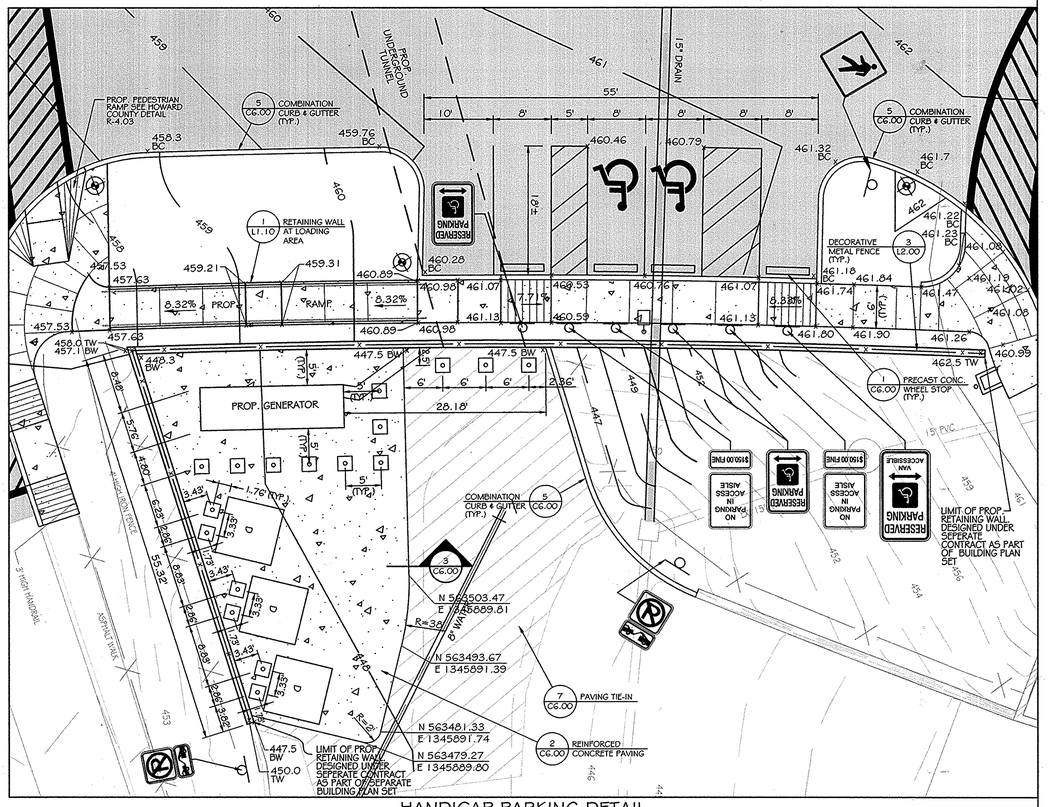
PROPOSED STAIR & RAMP DETAIL

SCALE: 1" = 10'



UNDERGROUND TUNNEL SECTION

SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'



HANDICAP PARKING DETAIL

SCALE: 1" = 10'

CONTRACTOR NOTE:
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936 Ridgebrook Road
Sparks, MD 21152
Phone (410)316-7800
Fax (410)316-7853
www.kci.com

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 — 4/4/15 Date

Chief, Division of Land Development — 1-06-15 Date

Chief, Development Engineering Division — 12-18-14 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 - Science, Engineering & Technology Building
SITE PACKAGE
PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 045868
ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

Date: 10-1-2014		Scale: AS SHOWN	
Drawn By: C.T.B		Designed By: B.S.	
Approved By: R.T.B		Project No: 27111245	
Tax Map-Grid: 35-6		Zoning: POR & NT	

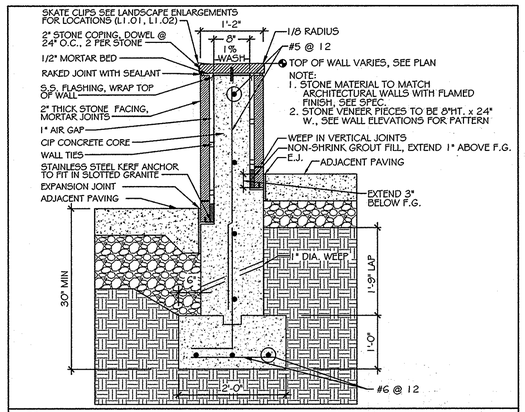
Sheet Title: SITE DETAILS

STATE OF MARYLAND — RICHARD L. TRUMBO — No. 031089 — PROFESSIONAL ENGINEER — 11-21-14

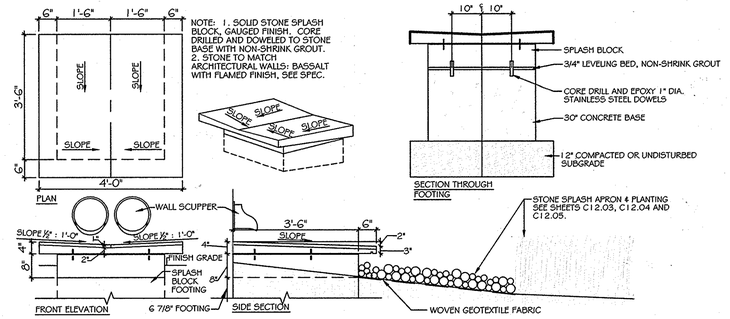
Discipline Number: C7.00

Sheet Number: 9 OF 42

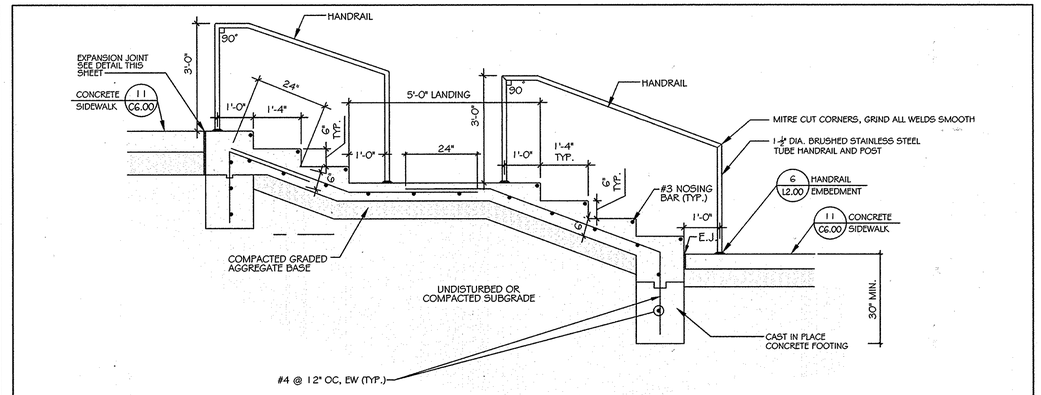
SDP 14-066



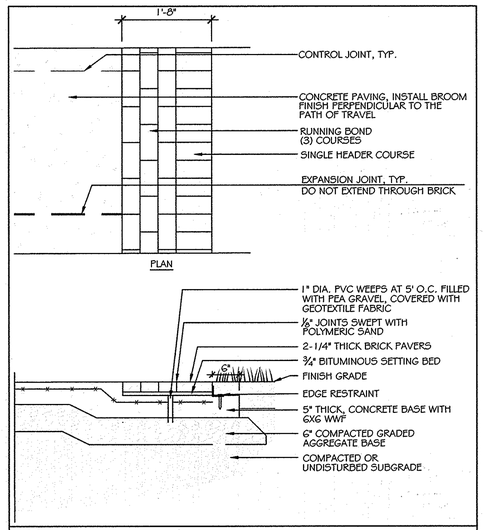
1 SITE WALL SCALE: 3/4"= 1'-0"



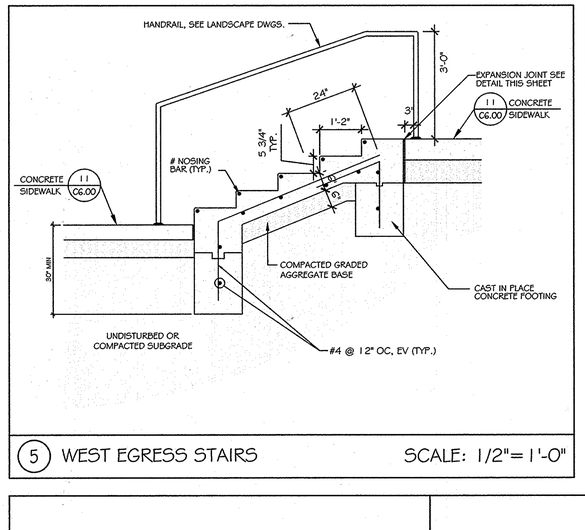
2 STONE SPLASH BLOCK SCALE: 1/2"= 1'-0"



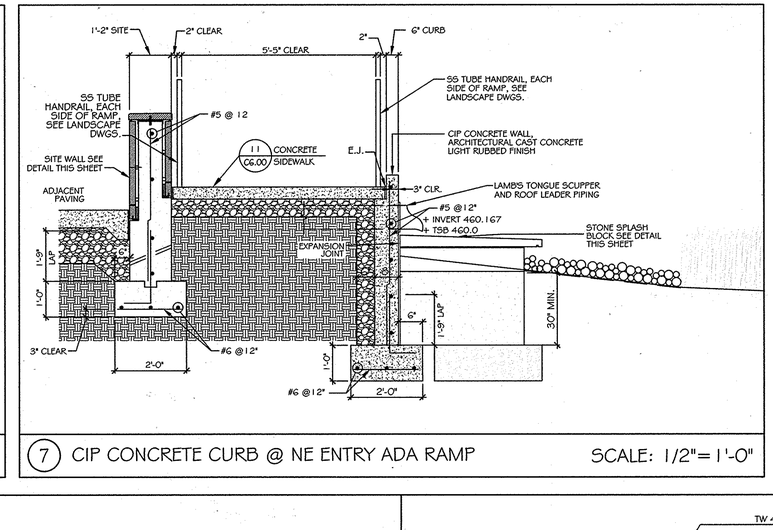
3 NE ENTRY STAIRS SCALE: 1/2"= 1'-0"



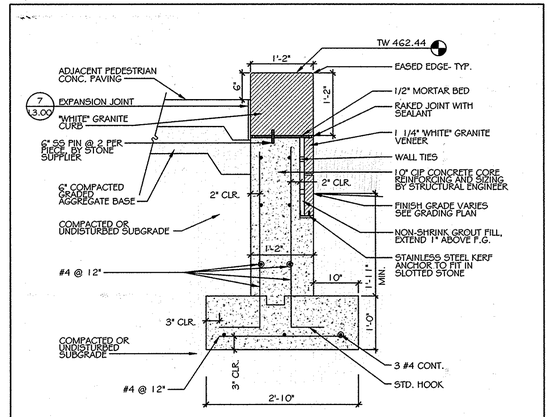
4 BRICK PAVING SCALE: 3/4"= 1'-0"



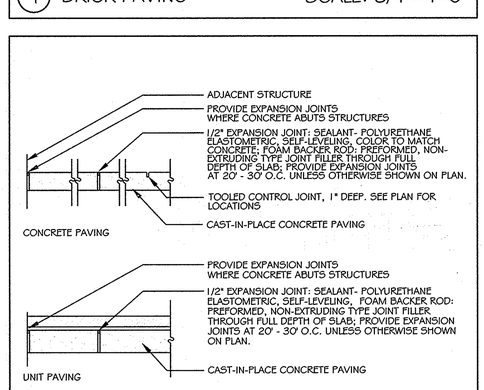
5 WEST EGRESS STAIRS SCALE: 1/2"= 1'-0"



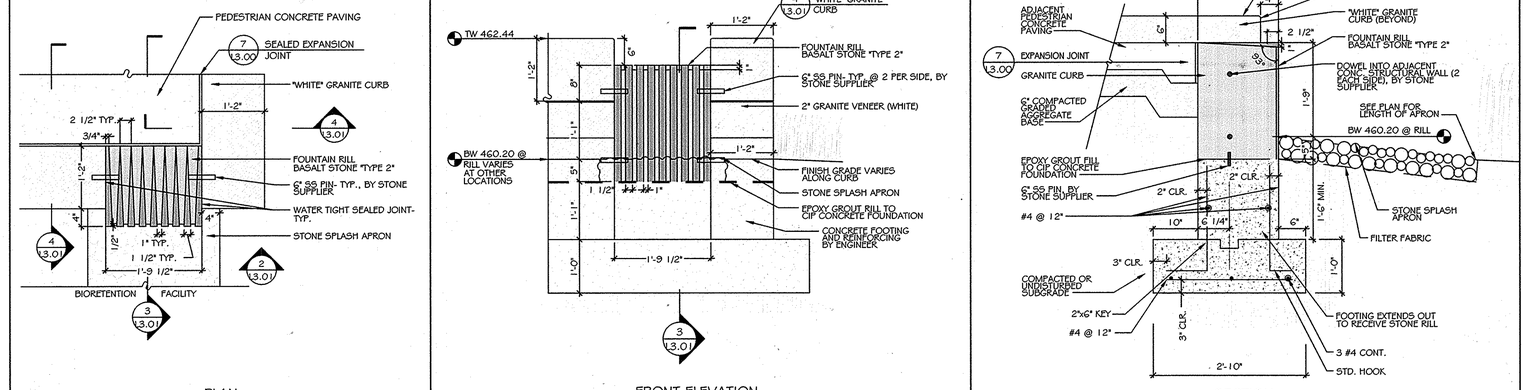
7 CIP CONCRETE CURB @ NE ENTRY ADA RAMP SCALE: 1/2"= 1'-0"



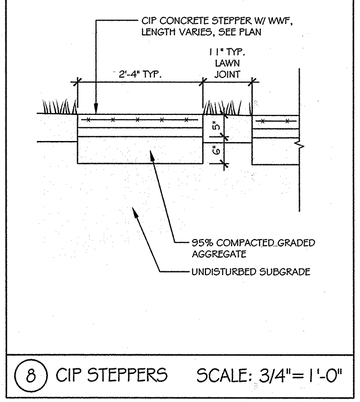
11 GRANITE CURB SCALE: 3/4" = 1'-0"



9 PAVING JOINTS SCALE: 3/4" = 1'-0"



10 STONE SCUPPER SCALE: 3/4" = 1'-0"



8 CIP STEPPERS SCALE: 3/4"= 1'-0"

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. 31089 EXPIRATION DATE: 11/21/14

KCI TECHNOLOGIES
Engineers
Planners
Scientists
Construction Managers
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APPROVED: Howard County Department of Planning & Zoning

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Sheet Title:
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STATE OF MARYLAND RICHARD L. FISHER No. 031089 PROFESSIONAL ENGINEER

Discipline Number: C8.00

Sheet Number: 10 OF 42

SDP 14-066

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED BAYSAVER WATER QUALITY DEVICE

A. THE BAYSAVER WATER QUALITY SHALL BE PERIODICALLY INSPECTED AND CLEANED TO MAINTAIN OPERATION AND FUNCTION. THE OWNER SHALL INSPECT THE BAYSAVER UNIT YEARLY AT A MINIMUM, UTILIZING THE BAYSAVER INSPECTION/MONITORING FORM. INSPECTIONS SHALL BE DONE BY USING A GRADE STICK OR SIMILAR DEVICE. WHEN THE SEDIMENT DEPTHS EXCEED 2 FEET, THE UNIT MUST BE CLEANED.

B. THE BAYSAVER WATER QUALITY STRUCTURE SHALL BE CHECKED AND CLEANED IMMEDIATLY AFTER PETROLEUM SPILLS. THE OWNER SHALL CONTRACT THE APPROPRIATE REGULATORY AGENCIES.

C. THE MAINTENANCE OF THE BAYSAVER UNIT SHALL BE DONE USING A VACUUM TRUCK WHICH WILL REMOVE THE WATER, SEDIMENT, DEBRIS, FLOATING HYDROCARBONS AND OTHER MATERIALS IN THE UNIT. PROPER CLEANING AND DISPOSAL OF THE REMOVED MATERIALS AND LIQUID MUST BE FOLLOWED BY THE OWNER.

D. THE INLET AND OUTLET PIPES SHALL BE CHECKED FOR ANY OBSTRUCTIONS AT LEAST ONCE EVERY SIX MONTHS. IF OBSTRUCTIONS ARE FOUND THE OWNER SHALL HAVE THEM REMOVED. STRUCTURAL PARTS OF THE BAYSAVER UNIT SHALL BE REPAIRED AS NEEDED.

E. THE OWNER SHALL RETAIN AND MAKE THE BAYSAVER INSPECTION/ MONITORING FORMS AVAILABLE TO HOWARD COUNTY OFFICIALS UPON THEIR REQUEST.

BAYSAVER INSTALLATION INSTRUCTIONS

1. EXCAVATION MUST PROVIDE ADEQUATE SPACE TO CONNECT INLET AND OUTLET PIPES TO SEPARATOR MANHOLE AND BAYSAVER UNIT. INSTALL PRECAST DROP STRUCTURES ON SOLID GROUND AS VERIFIED BY A GEOTECHNICAL ENGINEER.

2. VERIFY THE SUBGRADE ELEVATION AGAINST THE MANHOLE DIMENSIONS AND CONNECTING STORM DRAIN INVERTS.

3. MAKING SURE THE BASES ARE LEVEL AND THE STORAGE MANHOLE OPENINGS ARE ALIGNED WITH THE SEPERATOR UNIT, INSTALL PRIMARY AND STORAGE MANHOLES. INSTALL RUBBER GASKETS ON BASE UNITS AND COAT WITH LUBRICATING GREASE. INSTALL ADDITIONAL MANHOLE SECTION AS REQUIRED. SEAL LIFT HOLES WITH NON-SHRINK GROUT.

4. BACKFILL BASE SECTIONS OF MANHOLES TO INVERT OF STORAGE MANHOLE CONNECTING PIPES. USING APPROVED BACKFILL MATERIAL, BACKFILL AND COMPACT IN 8 INCH LIFTS. BACKFILL AND COMPACTION SHOULD BE MONITORED BY A GEOTECHNICAL ENGINEER.

5. INSTALL BAYSAVER SEPARATOR UNIT AND CONNECTING PIPES. SEAL ALL CONNECTING JOINTS AND INSTALL SEPARATOR UNIT/STORM DRAIN JOINT COLLAR. CU EXCESS LENGTH OFF CONNECTING PIPES INSIDE STORAGE MANHOLE.

6. BACKFILL SEPARATOR UNIT AND MANHOLES. AREAS NOT ACCESSIBLE TO COMPACTION EQUIPMENT MUST BE BACKFILLED WITH LEAN CONCRETE OR FLOWABLE FILL.

7. INSTALL AND SET MANHOLE COVER GRADE ADJUSTMENT RINGS AS NECESSARY.

8. INSTALL AND SET MANHOLE FRAME AND COVER UNITS.

BAYSAVER MAINTENANCE

INSPECTION IS MADE BY CHECKING THE DEPTH OF SEDIMENT IN EACH MANHOLE WITH A GRADE STICK OR SIMILAR DEVICE. MAINTENANCE IS REQUIRED WHEN THE SEDIMENT DEPTH IN EITHER MANHOLE EXCEEDS 2 FEET.

MAINTENANCE CONSISTS OF THE FOLLOWING:

A. CONTAMINANT STORAGE MANHOLE

1. REMOVE THE ENTIRE VOLUME OF THE CONTAMINATED WATER BY VACUUM TRUCK.

2. CLEAN THE MANHOLE WALLS AND FLUSH OUT THE MANHOLE USING A HIGH PRESSURE HOSE AND REMOVE FLUSHING WATER BY VACUUM TRUCK. MAKE CERTAIN MANHOLE IS CLEAN.

B. PRIMARY SEPARATION MANHOLE

1. USING A SUBMERSIBLE PUMP, PUMP THE CLEAN WATER FROM THE CENTER OF THE MANHOLE DIRECTLY INTO THE EMPTY STORAGE MANHOLE UNTIL THE WATER LEVEL FALLS TO 1 FOOT ABOVE THE SEDIMENT LAYER.

2. REMOVE THE SETTLED SEDIMENT AND REMAINING WATER BY VACUUM TRUCK.

3. CLEAN THE MANHOLE WALLS AND FLUSH OUT THE MANHOLE USING A HIGH PRESSURE HOSE AND REMOVE FLUSHING WATER BY VACUUM TRUCK. MAKE CERTAIN MANHOLE IS CLEAN.

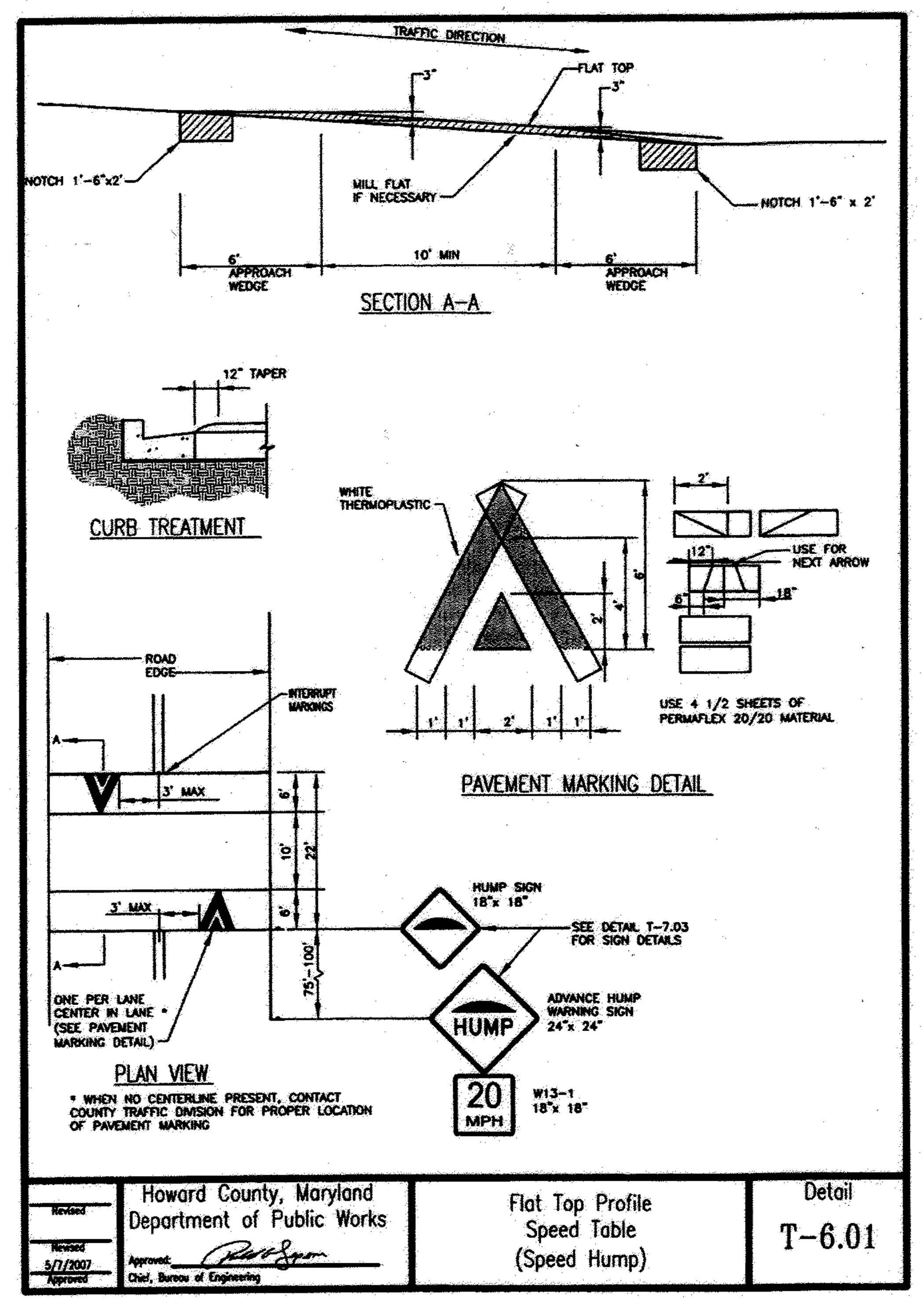
4. CONTAMINATED MATERIAL REMOVED FROM THE MANHOLES MUST BE DISPOSED OF RESPONSIBLY AND LEGALLY BY THE OPERATOR OF THE VACUUM TRUCK.

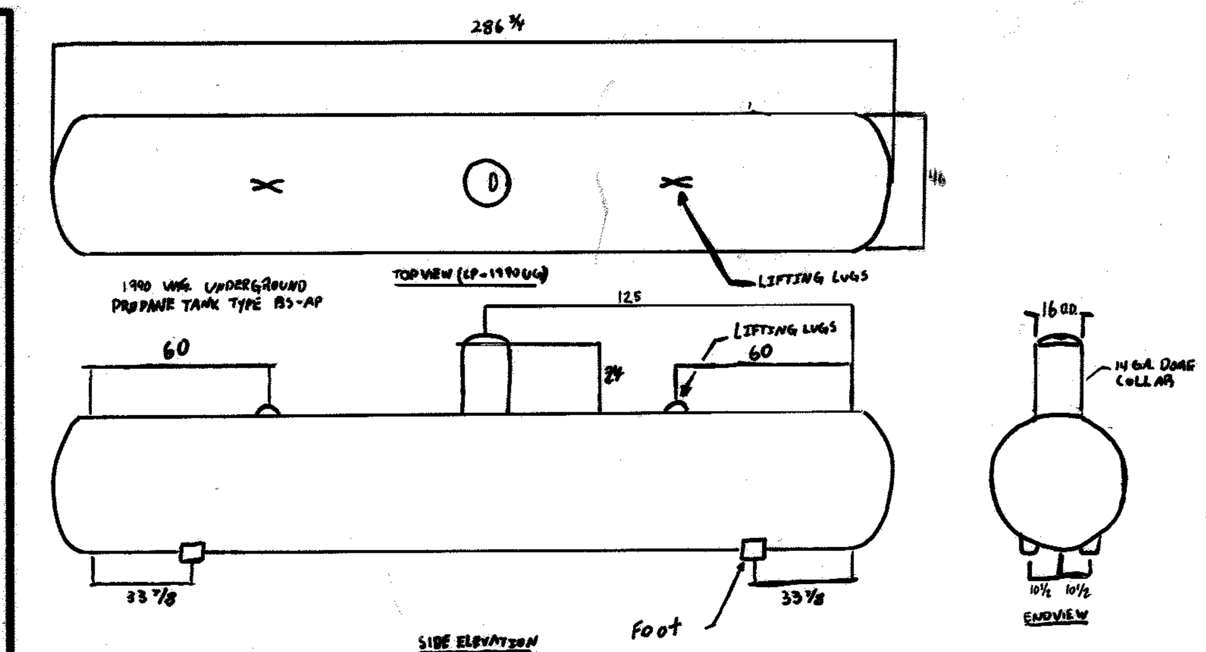
NOTE:

BAYSAVERS ARE TO BE INSTALLED WITH THE STORM DRAIN SYSTEM AND MAY FUNCTION AS SECONDARY SEDIMENT CONTROL DEVICES.

UPON COMPLETION OF THE SITE STABILIZATION, EACH BAYSAVER SYSTEM SHALL BE FLUSHED & CLEANED OUT AND REFILLED WITH CLEAN WATER.

NOTE: DIMENSIONAL SHOP DRAWINGS ARE TO BE APPROVED BY THE DESIGN ENGINEER.





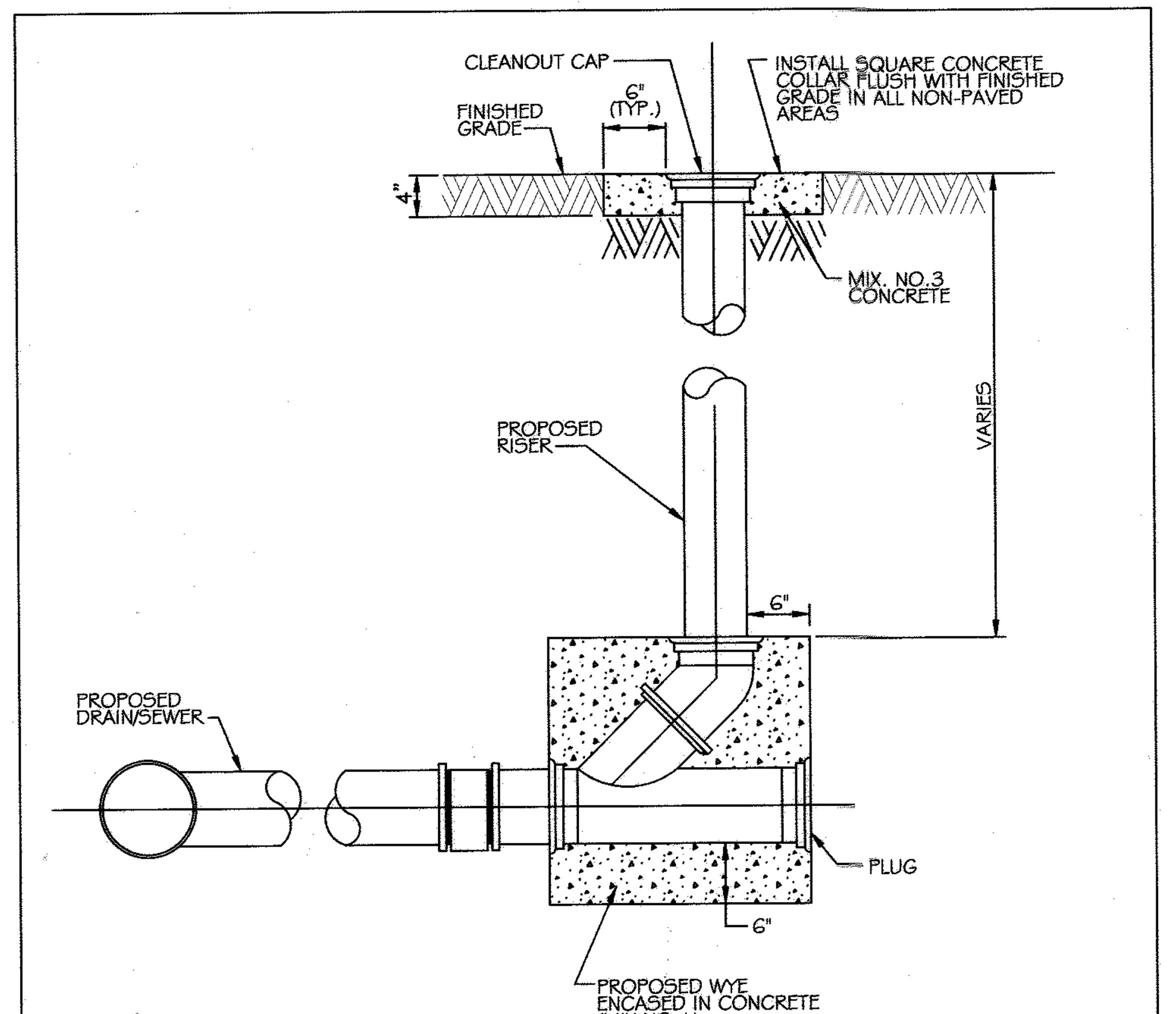
GENERAL SPECIFICATIONS

WATER CAPACITY (GALLONS)	1990
ALLOWABLE WORKING PRESSURE	250
JOINT EFFICIENCY ASME VIII-FILL DAVIS SEAM	100%
ASME VIII-HEAD TO SHELL	100%
HYDROSTATIC TEST PRESSURE (PSIG)	325
SURFACE AREA (SQ. FT.)	294
RELIEF VALVE SETTING (PSIG)	250
HEAT TREATMENT NOT REQUIRED	
CODE: ASME SECTION VIII DIV. 1	
STANDARDS UNDERWRITERS LABORATORIES INC. MH-7203	
N.F.P.A. 58 LP-GAS CODE	
MATERIAL SPECS COUPLINGS SA-105	
TANK FLANGES SA-105 or SA-181	
ADAPTOR SA-105	
PIPE SA-53B or SA-106B	

(2) UNDERGROUND PROPANE TANK DETAIL

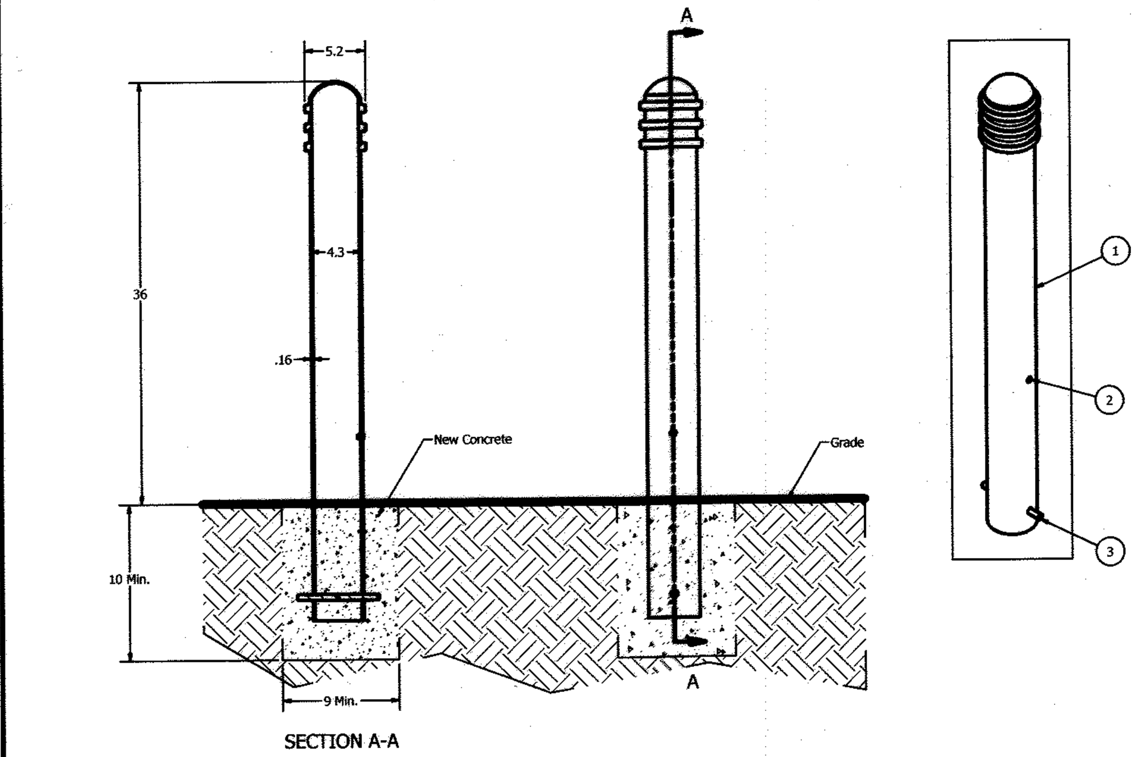
GENERAL NOTES

1. LIFTING LUGS DESIGNED FOR TOTAL LIFTING WEIGHT OF 6000#
2. TOTAL EMPTY WEIGHT IS 3640#
3. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED
4. COMPLETE TANK DRIED TO REMOVE ALL MOISTURE
5. EXTERIOR OF TANK TO BE GRIT BLASTED
6. PAINT PER SHOP ORDER
7. VACUUM PURGE TANK
8. DIMENSIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE (NON-PRESSURE RETAINING COMPONENTS ONLY)
9. 10. THREADS OF ALL FITTINGS TO BE COATED WITH COMPOUND SUITABLE FOR USE WITH PROPANE GAS
10. FLOAT GAUGE TO BE INSTALLED WITH FLOAT ARM 45° OFF LONGITUDINAL CENTERLINE OF TANK.
11. ALL WEIGHT AND CAPACITIES ARE APPROXIMATE
12. BOLT HOLES TO STRADDLE NATURAL CENTER LINES.
13. VESSEL TO BE THOROUGHLY CLEANED
14. ALL OPENINGS CLOSED FOR SHIPMENT
15. LIFTING LUGS FOR TARE WEIGHT ONLY



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

Bollard Post, Model R-7901



Fixed Installation in New Concrete

General Description:

Clearly communicate intended routes and access regulations on your streetscape with the model R-7901 steel bollard from Reliance Foundry. Composed of standard steel and finished with a durable powder-coating, it is an aesthetically versatile device that will complement the architecture of almost any site. The R-7901 can be installed with a standard fixed mounting or with a removable or fold down mountings that allow temporary access to maintenance, delivery or emergency vehicles. Seven powder coating color options are available and the model R-7901 is kept in stock, available for immediate shipment. For more information on bollard post installation, please visit: http://www.reliance-foundry.com/bollard/installation-bollards

Specifications:

Height: 36"

Base Diameter: 4.3"

Weight: 38 lbs (Bollard Post)

Material: Steel (ASTM A36)

Finish Options:
- ✓ Polyester Powdercoated
  See Reliance Foundry's standard color options at http://www.reliance-foundry.com/bollard/colors-bollards

Mount Options:
- o Removable Receiver with Lid (see sheet 2 of 7)
- o Removable Receiver with Chain (see sheet 3 of 7)
- ✓ Fixed Embedded Mount (see sheet 4 of 7)
- o Flanged Surface Mount (see sheet 5 of 7)
- o Fold Down Mount (see sheet 6 of 7)
- o Optional Chain Accessory (see sheet 7 of 7)

Notes:
- Embedment details are for reference illustration only. Minimum foundation sizes depend on local soil conditions, weather conditions, and engineering requirements.
- Bollard post is provided as shown, with material detailed in legend below. Concrete, foundation and/or installation ordered separately or provided by others.
- This drawing is not drawn to scale. Dimensions provided herein is for reference only. Please consult Reliance Foundry sales professionals if any dimension is critical to your particular installation.
- Reliance Foundry reserves the right to amend design and specifications without prior notice for product improvement.

PARTS LIST					
ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
1	1	R-7901	Bollard Post	Steel (ASTM A36)	38 lbs
2	1	Plug	Plastic Hole Plug	Plastic	
3	1	Rebar	Concrete Rebar Anchor	Steel	

Unit 207, 6450 - 148 Street, Surrey, BC V3S 7G7, Canada
1-888-735-5680 info@reliance-foundry.com
http://www.reliance-foundry.com

TITLE: Bollard Post, Model R-7901

SIZE: C DWG NO: R-7901 REV: B

NOT TO SCALE SHEET 4 OF 7

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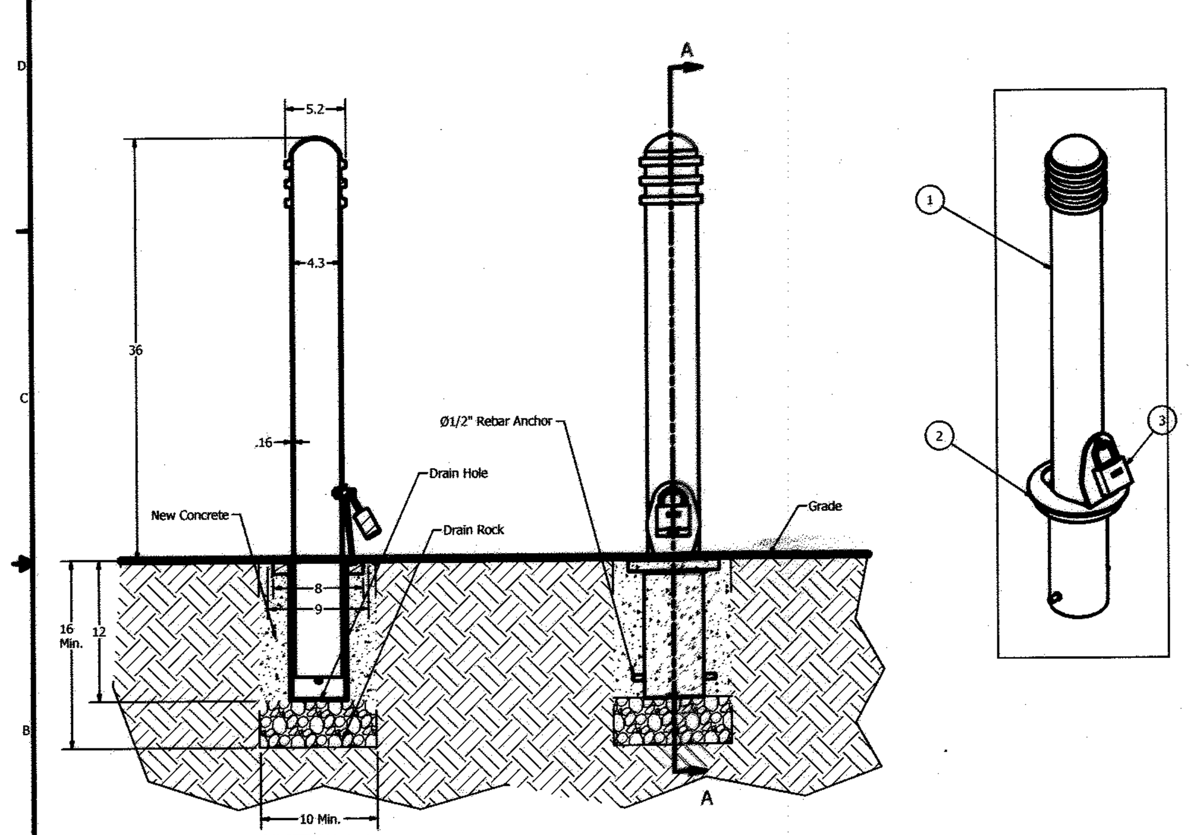
Bollard Post, Model R-7901



Removable Receiver with Lid

(For important detail regarding installation with OPTIONAL bollard chain accessories, refer to sheet 7 of 7)

General Description:

Clearly communicate intended routes and access regulations on your streetscape with the model R-7901 steel bollard from Reliance Foundry. Composed of standard steel and finished with a durable powder-coating, it is an aesthetically versatile device that will complement the architecture of almost any site. The R-7901 can be installed with a standard fixed mounting or with a removable or fold down mountings that allow temporary access to maintenance, delivery or emergency vehicles. Seven powder coating color options are available and the model R-7901 is kept in stock, available for immediate shipment. For more information on bollard post installation, please visit: http://www.reliance-foundry.com/bollard/installation-bollards

Specifications:

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Mount Options:
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- o Removable Receiver with Chain (see sheet 3 of 7)
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- Embedment details are for reference illustration only. Minimum foundation sizes depend on local soil conditions, weather conditions, and engineering requirements.
- Bollard post is provided as shown, with material detailed in legend below. Concrete, foundation and/or installation ordered separately or provided by others.
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- Reliance Foundry reserves the right to amend design and specifications without prior notice for product improvement.

PARTS LIST					
ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	WEIGHT
1	1	R-7901	Bollard Post	Steel (ASTM A36)	38 lbs
2	1	R-7901-R	Removable Receiver with Lid	Galvanized Steel, c/w SAE 304 Stainless Steel Cover	22 lbs
3	1	Padlock (Optional)	Optional Padlock (Regular or Marine Grade)	Regular=Brass, Marine=Brass w/ Chrome Plating	

Unit 207, 6450 - 148 Street, Surrey, BC V3S 7G7, Canada
1-888-735-5680 info@reliance-foundry.com
http://www.reliance-foundry.com

TITLE: Bollard Post, Model R-7901

SIZE: C DWG NO: R-7901 REV: B

NOT TO SCALE SHEET 2 OF 7

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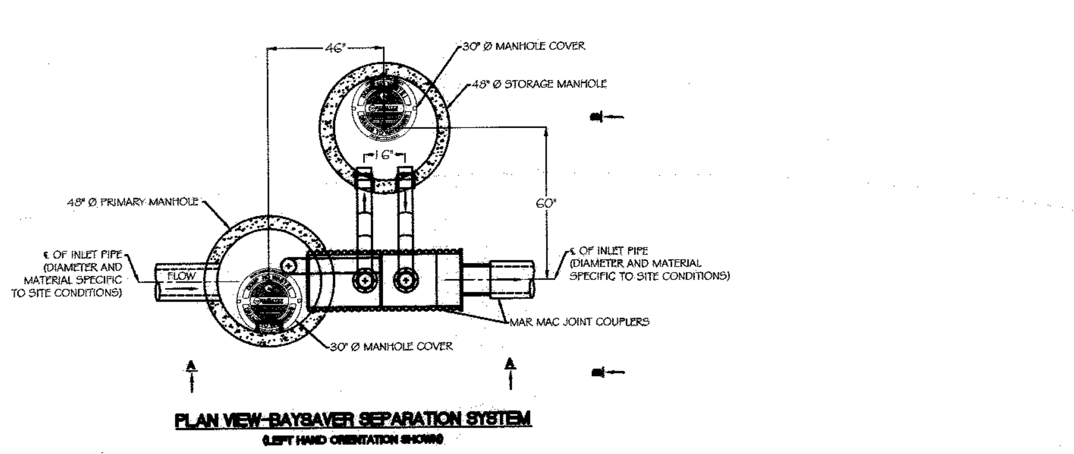
INLET PIPE INVERT:	458.71	
INLET PIPE ID AND MATERIAL:	12" PVC	
OUTLET PIPE INVERT:	458.61	
OUTLET PIPE ID AND MATERIAL:	15" RCCP	
PRIMARY MANHOLE RIM ELEVATION:	464.47	
STORAGE MANHOLE RIM ELEVATION:	464.55	
ORIENTATION (RIGHT OR LEFT):	R L	

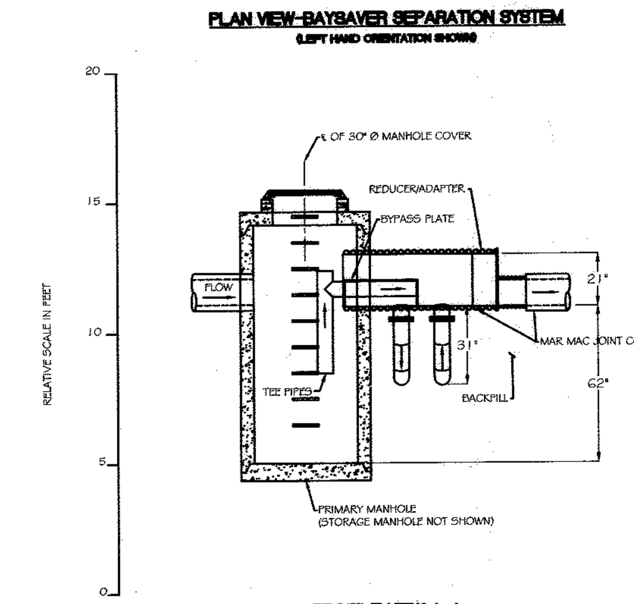
GENERAL NOTES:

1. MANHOLES SHOWN REPRESENT STANDARD PRECAST STRUCTURES PROVIDED BY OTHERS.
2. SEAL THE CONNECTING PIPES INTO THE STORAGE MANHOLE USING RUBBER BOOTS/GASKETS.
3. THE BAYSAVER SEPARATION SYSTEM INCLUDES THE SEPARATOR UNIT, (2) CONNECTING PIPES, (2) FERNCO COUPLERS, (1) REDUCER ADAPTER, AND (2) MARMAC JOINT COUPLERS.
4. LEFT HAND ORIENTATION SHOWN. FOR RIGHT HAND ORIENTATION ROTATE STORAGE MANHOLE AND CONNECTING PIPES 180°.
5. SEE BAYSAVER SPECIFICATIONS AND INSTALLATION INSTRUCTIONS FOR FURTHER DETAIL.
6. USE NON-SHRINK GROUT TO SEAL THE INLET PIPE AND BAYSEPARATOR IN TO THE PRIMARY MANHOLE.
7. BACKFILL: CLASS I, II OR III BACKFILL SHOULD BE USED TO AN ELEVATION OF AT LEAST 6" OVER THE CROWN OF THE SEPARATOR UNIT.
8. 12" COVER REQUIRED FOR TRAFFIC RATED SURFACE.
9. BAYSEPARATOR IS PROTECTED BY US PATENT NO. 5,746,911

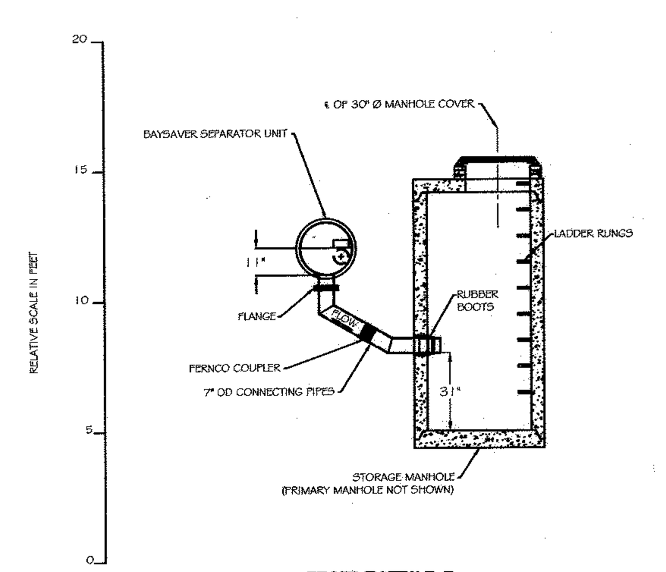


PLAN VIEW-BAYSAVER SEPARATION SYSTEM

(LEFT HAND ORIENTATION SHOWN)



PROFILE VIEW A-A



PROFILE VIEW B-B

REV	DESCRIPTION	DATE	APPR	NOTES:

BAYSAVER TECHNOLOGIES 800-829-7283 WWW.BAYSAVER.COM

DESIGNED:	TEP	DATE:	7/15/13
DRAWN:	EKH	SCALE:	N.T.S.
CHECKED:	PR	DWG NO:	½K

½K BAYSEPARATOR™ GENERAL SYSTEM DETAILS

SEQUENCE OF CONSTRUCTION AND INSPECTOR'S CHECK-OFF LIST FOR DUAL MANHOLE SEPERATORS

STAGE (X = APPROVAL REQUIRED)	DEVELOPER/ENGINEER APPROVAL		INSPECTOR		GEOTECHNICAL ENGINEER	
	INITIALS	DATE	INITIALS	DATE	INITIALS	DATE
1. PRE-CONSTRUCTION MEETING.	X		X		X	
2. INSTALL MANHOLES AND ASSOCIATED STORM DRAINAGE: a. OBTAIN APPROVAL OF SUBGRADE FROM GEOTECHNICAL ENGINEER. (SUBGRADE TO HAVE A MINIMUM OF 95% COMPACTION)					X	
b. INSTALLATION OF PRECAST BASE, LOWER TANK AND LOWER PIPING.	X		X			
c. BACKFILL AND MIN. 95% COMPACTION AROUND LOWER TANK AND LOWER PIPING					X	
d. INSTALLATION OF PRECAST MIDDLE SECTION(S) WITH SEPARATOR UNIT AND REMAINING PIPING.	X		X			
e. INSTALLATION OF PRECAST TOP SLAB.	X		X			
f. INSTALLATION OF ADJUSTMENT RINGS AND FRAME AND COVER.	X		X			
g. INSTALLATION OF FLOWABLE FILL OR CONCRETE BACKFILL.					X	
3. BACKFILLING OPERATION AND COMPACTION.					X	
4. SITE IS PERMANENTLY STABILIZED. SEDIMENT CONTROL MEASURES REMOVED AND ALL SEDIMENT DEBRIS REMOVED FROM DUAL MANHOLE SEPARATORS.			X			
5. FINAL INSPECTION.			X			

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.

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. 31089 EXPIRATION DATE: 11/21/14

STATE OF MARYLAND RICHARD L. BUTT No. 031089 PROFESSIONAL ENGINEER 11-11-14

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
936 Ridgebrook Road Sparks, MD 21152 Phone (410)316-7800 Fax (410)316-7853 www.kci.com

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 1/6/15
Chief, Division of Land Development	Date 1-06-15
Chief, Development Engineering Division	Date 12 · 18 · 14

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 - Science, Engineering & Technology Building

SITE PACKAGE
PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 045868

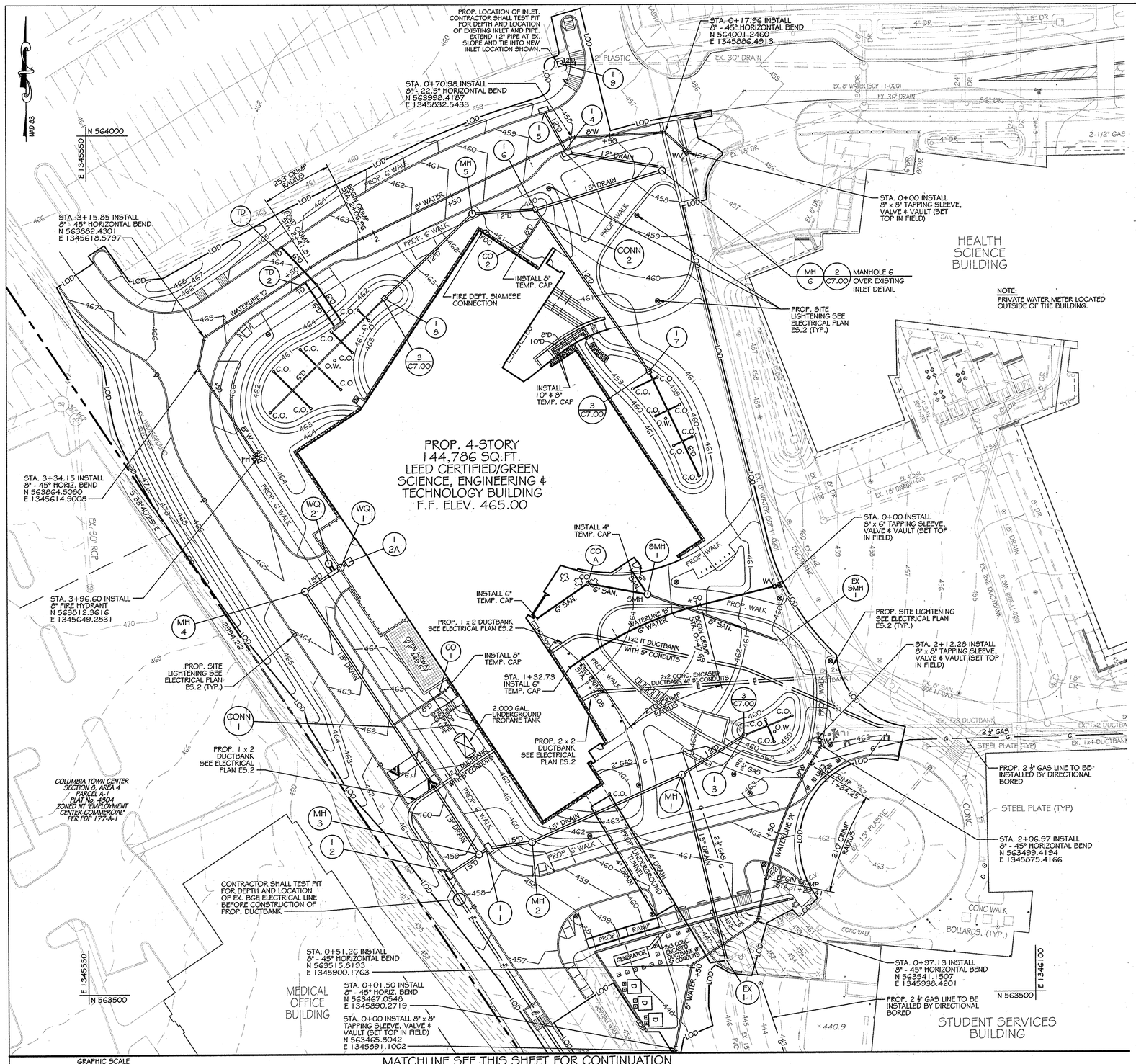
ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

Date:	10-1-2014	Scale:	N.T.S
Drawn By:	C.T.B	Designed By:	B.S.
Approved By:	R.T.B	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title: SITE DETAILS

Discipline Number: C8.01

Sheet Number: 11 OF 42



MATCHLINE SEE THIS SHEET FOR CONTINUATION

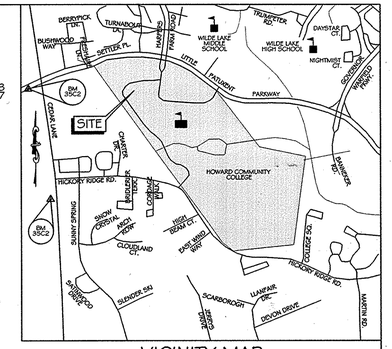
UTILITY PLAN

SCALE: 1" = 30'

BENCHMARK DATA

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

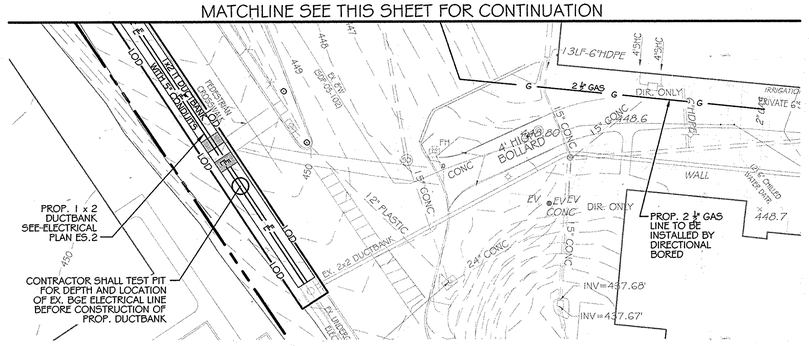
		NORTHING	EASTING	ELEV.
35C2	HOW CO MON	563920.630	1344204.150	464.133
35C2	HOW CO MON	562148.450	1344554.472	452.267



VICINITY MAP

SCALE 1" = 1000'
ADC MAP: 15 GRID: D6

MATCHLINE SEE THIS SHEET FOR CONTINUATION



UTILITY NOTES

1. CONSTRUCTION OF THE PROPOSED UTILITIES WILL BE IN ACCORDANCE WITH THE HOWARD COUNTY PLUMBING CODE, BY A QUALIFIED CONTRACTOR.
2. NO WORK IS TO COMMENCE UNTIL ALL PERMITS HAVE BEEN OBTAINED.
3. EXISTING CURB AND GUTTER AND CONCRETE SIDEWALK SHALL BE REMOVED TO THE NEAREST JOINT. NO PATCHING SHALL BE PERMITTED.
4. ALL NON-PAVED DISTURBED AREAS WILL BE STABILIZED WITH 4" TOPSOIL, SEED AND MULCH UNLESS OTHERWISE NOTED.
5. ALL CONSTRUCTION SHALL FOLLOW LATEST HOWARD COUNTY DEPT. OF PUBLIC WORKS STANDARD SPECIFICATIONS AND DETAILS OF CONSTRUCTION OR AS DETAILED ON THE DRAWINGS.
6. GRAVEL CRADLE IS REQUIRED UNDER ALL PIPE.
7. ALL BACKFILL SHALL BE MECHANICALLY TAMPED.
8. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING ALL WORK SHOWN ON THESE DRAWINGS UNLESS OTHERWISE NOTED.
9. ALL CHANNELS IN MANHOLES MUST BE CONSTRUCTED TO CONFORM AS CLOSE AS POSSIBLE TO THE STANDARD CHANNELS CALLED FOR IN THE PROFILES.
10. CLEANOUTS LOCATED IN PAVED AREAS SHALL HAVE COUNTERSUNK LIDS.
11. ALL SANITARY SEWER CONSTRUCTION SHALL BE DONE UNDER A PERMIT AND PLAN ISSUED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, WATER AND WASTEWATER ENGINEERING DIVISION.
12. FOR UTILITY WORK OUTSIDE THE LOD SHOWN ON THIS PLAN, CONTRACTOR SHOULD OPEN ONLY THAT SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED EACH DAY. IF TRENCH MUST REMAIN OPEN LONGER THAN ONE DAY, SILT FENCE SHALL BE PLACED BELOW (DOWNSLOPE) THE TRENCH.
13. PLACE ALL EXCAVATED MATERIAL ON UPHILL SIDE OF TRENCH.
14. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.
15. SEE SHEET C10.00 FOR WATER & SANITARY PROFILES AND SCHEDULES.
16. SEE SHEETS C10.01 & C10.02 FOR STORM DRAIN PROFILES AND SCHEDULES.
17. CONTRACTOR TO COORDINATE WITH VERIZON FOR THE REMOVAL AND/OR RELOCATION OF EXISTING TELEPHONE LINE.
18. ALL WATER LINES SHALL HAVE A MINIMUM 3'-6" OF COVER.
19. ROADWAY LIGHTS MUST REMAIN IN SERVICE DURING THE DURATION OF THE PROJECT, EXCEPT DURING CAMPUS DRIVE RE-CONSTRUCTION.

LEGEND

○	EX. SANITARY MANHOLE	EX. 18" DRAIN	EX. STORM PIPE
◎	EX. STORM DRAIN MANHOLE	E	EX. ELECTRIC
○	EX. ELECTRIC MANHOLE	G	EX. GAS
☼ ⊹	EX. LIGHT POLE	TV	EX. CABLE TV
◎	EX. WATER METER	E	PROP. ELECTRIC
▫	EX. SIGN	G	PROP. GAS LINE
⊹	EX. UTILITY POLE	PROP. 18" DRAIN	PROP. STORM DRAIN
○	EX. BOLLARD POST	PROP. 4" SAN.	PROP. SANITARY
⋈	EX. GAS VALVE	PROP. 8" WATER	PROP. WATER
G	EX. GUY WIRE	FH	PROP. FIRE HYDRANT
☼	EX. WATER VALVE	WV	PROP. WATER VALVE
	EX. FIRE HYDRANT	□	PROP. INLET
CO	EX. CLEANOUT	○	PROP. MANHOLE
EX. 8" WATER	EX. WATER PIPE	CO	PROP. CLEANOUT
EX. 8" SAN.	EX. SANITARY PIPE	□ ⊗ ⊗	PROP. LIGHT FIXTURES

CONTRACTOR NOTE:
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Science, Engineering & Technology Building
SITE PACKAGE
PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date: 10-1-2014	Scale: 1" = 30'	Sheet Title: UTILITY PLAN	Discipline Number: C9.00
Drawn By: C.T.B	Designed By: B.S.		
Approved By: R.T.B	Project No: 27111245		Sheet Number: 12 OF 42
Tax Map-Grid: 35-6	Zoning: POR & NT		

STATE OF MARYLAND — RICHARD L. HOLTZ — No. 031089 — PROFESSIONAL ENGINEER

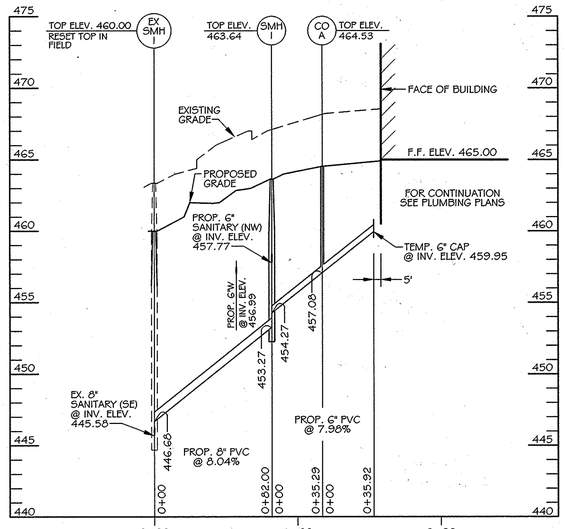
SDP 14-066

SANITARY SEWER PIPE SCHEDULE

SIZE	MATERIAL	LENGTH
6"	PVC (SDR-35)	100 L.F.
8"	PVC (SDR-35)	82 L.F.

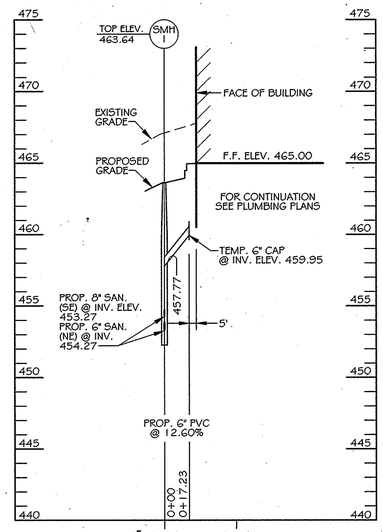
SANITARY SEWER STRUCTURE SCHEDULE

NO.	TYPE	SIZE IN	INV. IN	SIZE OUT	INV. OUT	TOP ELEV.	NORTHING	EASTING	HOWARD COUNTY STD. DETAIL
SMH-1	STD. PRE-CAST MANHOLE	8"	454.27	8"	453.27	463.64	563732.1315	1345875.4617	G-5.12
CO-1	MAINLINE CLEANOUT	8"	457.08	8"	457.08	464.53	563738.5260	1345840.7525	S-3.21



SANITARY SEWER PROFILE

SCALE: HORIZ.: 1" = 50'
VERT.: 1" = 5'



SANITARY SEWER PROFILE

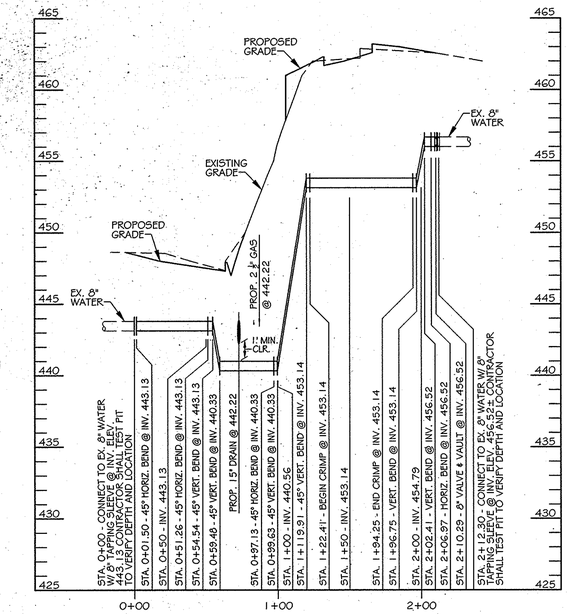
SCALE: HORIZ.: 1" = 50'
VERT.: 1" = 5'

WATER PIPE SCHEDULE

ITEM	UNIT	ESTIMATE	AS-BUILT
6"	EA.	PVC (AWWA C900-DR18)	140 LF
8"	EA	PVC (AWWA C900-DR18)	630 LF

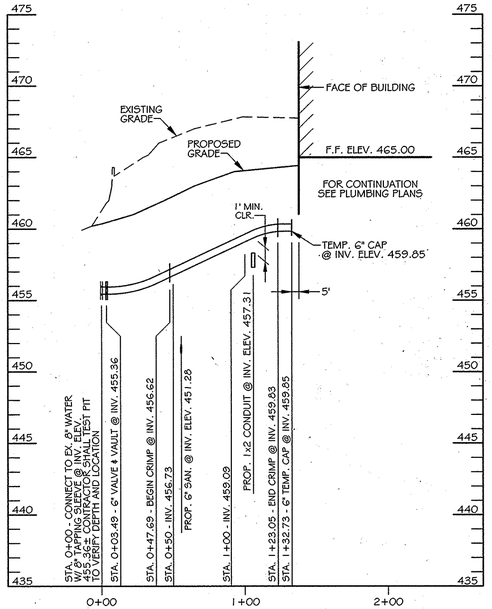
WATER PIPE SCHEDULE

ITEM	UNIT	ESTIMATE	AS-BUILT
8" x 8" TAPPING SLEEVE	EA	2	
8" 45° HORIZ. BEND	EA	7	
8" 45° VERT. BEND	EA	6	
8" 22.5° HORIZ.	EA	1	
8" FIRE HYDRANT	EA	1	
8" WATER VALVE	EA	2	
8" x 6" TAPPING SLEEVE	EA	1	
6" VALVE & VAULT	EA	1	
6" CAP	EA	1	



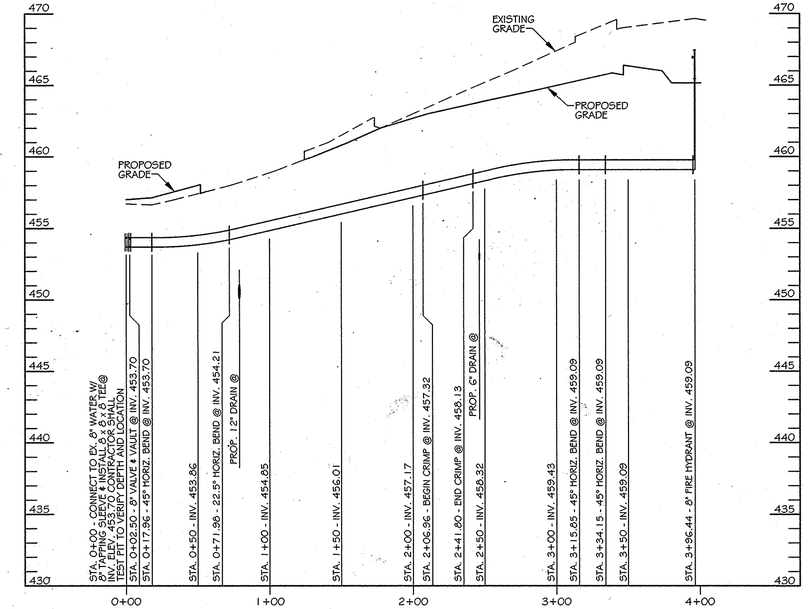
WATERLINE 'A' PROFILE

SCALE: HORIZ.: 1" = 50'
VERT.: 1" = 5'



WATERLINE 'B' PROFILE

SCALE: HORIZ.: 1" = 50'
VERT.: 1" = 5'



WATERLINE 'C' PROFILE

SCALE: HORIZ.: 1" = 50'
VERT.: 1" = 5'

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PARCEL: 47, TAX MAP: 35, GRID: 6
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ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date:	10-1-2014	Scale:	AS SHOWN
Drawn By:	C.T.B	Designed By:	B.S.
Approved By:	R.T.B	Project No:	27111245
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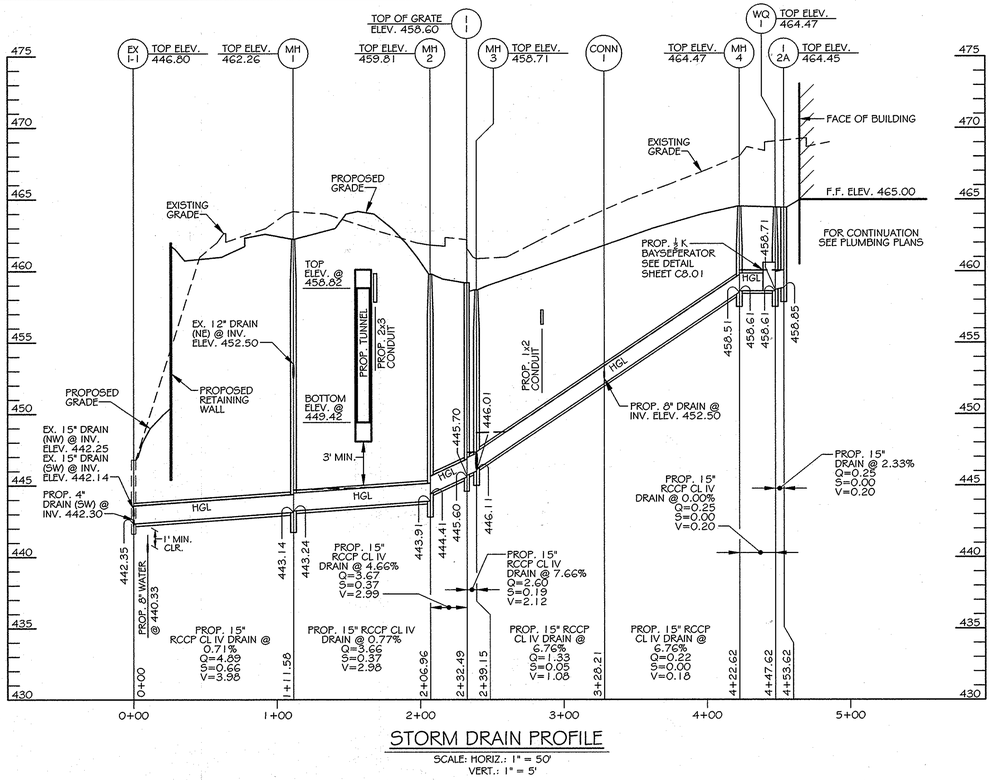
Sheet Title: WATER & SANITARY PROFILE SHEET

STATE OF MARYLAND — RICHARD T. BOND — No. 031089 — PROFESSIONAL ENGINEER — 11/21/14

Discipline Number: C10.00

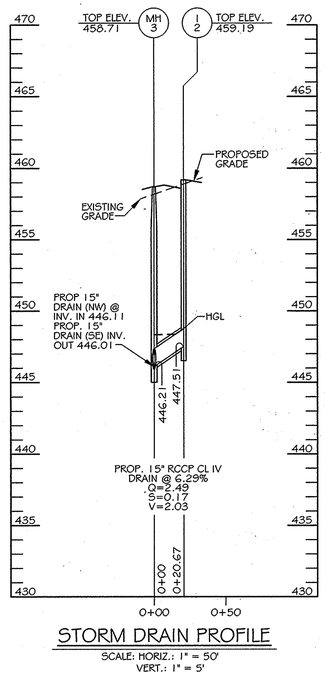
Sheet Number: 13 OF 42

SDP 14-066



STORM DRAIN PROFILE

SCALE: HORIZ.: 1" = 50'
VERT.: 1" = 5'



STORM DRAIN PROFILE

SCALE: HORIZ.: 1" = 50'
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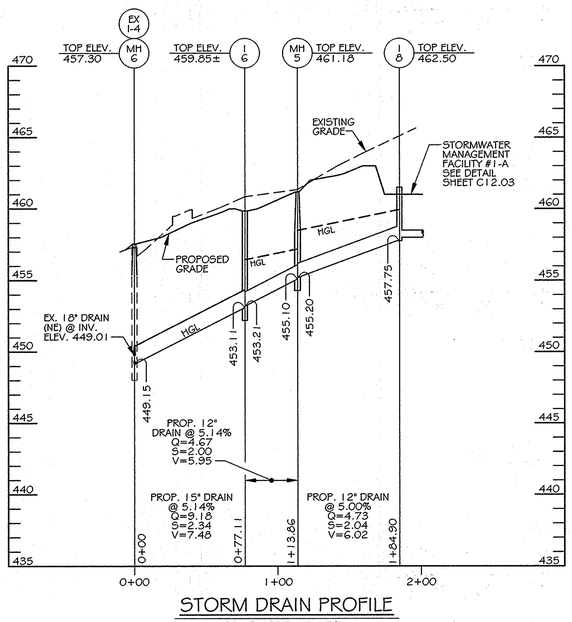
STORM DRAIN STRUCTURE SCHEDULE

NO.	TYPE	SIZE IN.	ELEV. IN	SIZE OUT	ELEV. OUT	TOP ELEV.	REFERENCES / HOWARD COUNTY STD. DETAIL	NORTHING	EASTING
MH-1	48" STD. BRICK MANHOLE	12" / 15"	452.50 / 443.24	15"	443.14	462.26	G-5.01	563,626.8564	1,345,894.8995
MH-2	48" STD. BRICK MANHOLE	15"	444.41	15"	443.91	459.81	G-5.01	563,588.0322	1,345807.7744
MH-3	48" STD. PRECAST MANHOLE	15" / 15"	446.11 / 446.21	15"	446.01	458.71	G-5.11	563,580.9268	1,345,776.9077
MH-4	48" STD. PRECAST MANHOLE	15"	458.61	15"	458.51	464.53	G-5.11	563,734.4238	1,345,676.4140
MH-5	48" STD. BRICK MANHOLE	12"	455.20	12"	455.10	461.18	G-5.01	563,954.2696	1,345,774.3126
MH-6	MANHOLE OVER EX. INLET	15" / 12"	449.15 / 449.25	18"	449.01	457.30	DETAIL 2 SHEET C7.00	563,979.0001	1,345,884.7825
I-1	TYPE 'A-5' INLET	15"	445.70	15"	445.60	458.60	D-4.01	563,583.6656	1,345,781.0909
I-2	TYPE 'A-5' INLET	-	-	15"	447.51	459.19	D-4.01	563,570.5196	1,345,761.0115
I-2A	TYPE 'S'	-	-	12"	458.85	464.45	D-4.22	563,751.5294	1,345,702.2969
I-3	YARD INLET	6"	455.55	12"	455.30	459.50	DETAIL 3 SHEET C7.00	563,649.7057	1,345,931.1862
I-4	TYPE 'A-5' INLET	12"	451.17	12"	451.07	458.88	D-4.01	563,991.1708	1,345,828.7368
I-5	TYPE 'A-5' INLET	-	-	12"	451.93	458.86	D-4.01	564,012.6611	1,345,816.5514
I-6	TYPE 'D' INLET	12" / 12"	453.21 / 453.31	15"	453.11	459.85	D-4.10	563,956.6285	1,345,810.9922
I-7	YARD INLET	6"	456.00	12"	455.75	459.50	DETAIL 3 SHEET C7.00	563,861.9040	1,345,876.8316
I-8	YARD INLET	6"	459.00	12"	458.75	462.50	DETAIL 3 SHEET C7.00	563,905.0265	1,345,723.1155
I-9	PRECAST TYPE 'D' INLET	-	-	12"	453.35	457.50	D-4.10	564,041.4371	1,345,825.6745
TD-1	6" CURB DRAIN	-	-	6"	463.04	463.70	ACO USA CURBDRAIN STANDARD	563,932.9528	1,345,660.9736
TD-2	6" CURB DRAIN	-	-	6"	463.05	463.71	ACO USA CURBDRAIN STANDARD	563,913.0074	1,345,674.3222
WQ-1	48" STD. PRECAST MANHOLE	12"	458.71	15"	458.61	464.47	G-5.11	563,748.1979	1,345,697.2825
WQ-1	48" STD. PRECAST MANHOLE					464.55	G-5.11	563,913.0074	1,345,674.3222
CO-1	CLEANOUT	6"	454.39	8"	454.39	458.71	DETAIL 1 SHEET C8.01	563,673.9036	1,345,753.8078
CO-2	CLEANOUT	6"	455.50	8"	455.50	460.74	DETAIL 1 SHEET C8.01	563,938.3395	1,345,805.6099

STORM DRAIN PIPE SCHEDULE

SIZE	MATERIAL	LENGTH
6"	HDPE (SDR-35)	151 L.F.
8"	PVC (SDR-35)	145 L.F.
10"	PVC (SDR-35)	85 L.F.
12"	PVC (SDR-35)	385 L.F.
15"	PVC (SDR-35)	78 L.F.
15"	RCCP CL IV	450 L.F.



STORM DRAIN PROFILE

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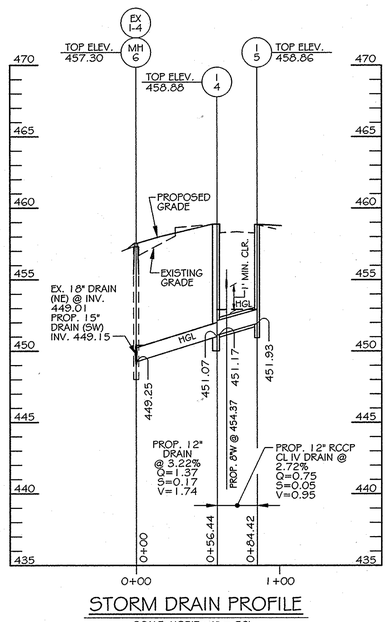
VERT.: 1" = 5'



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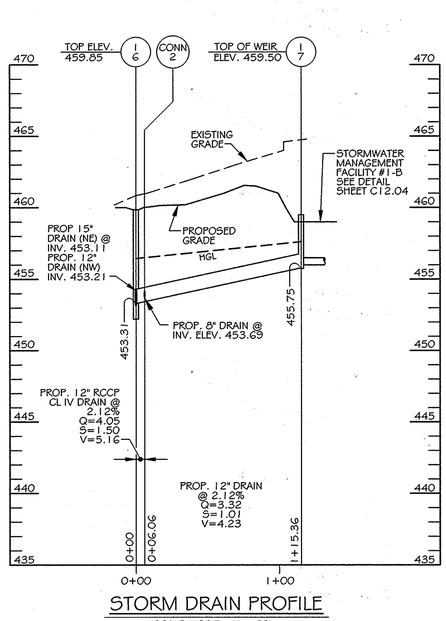

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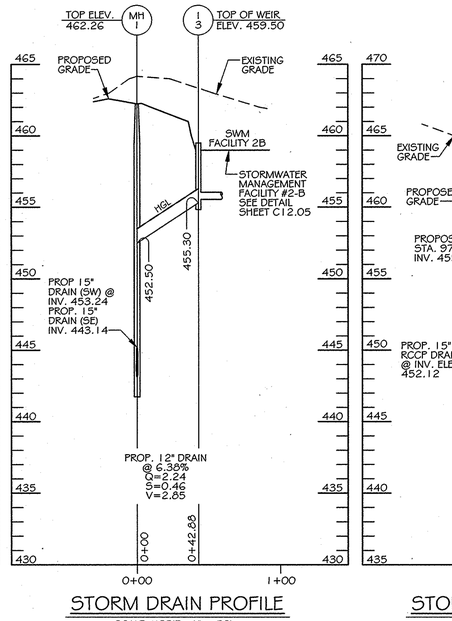

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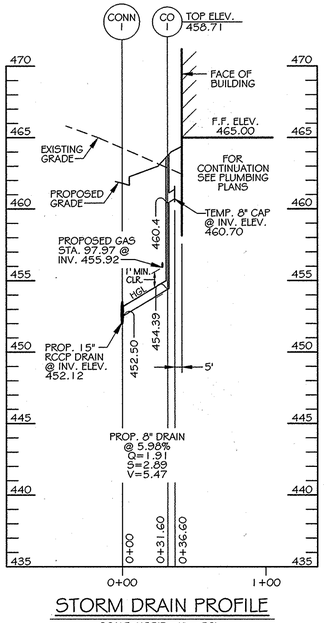

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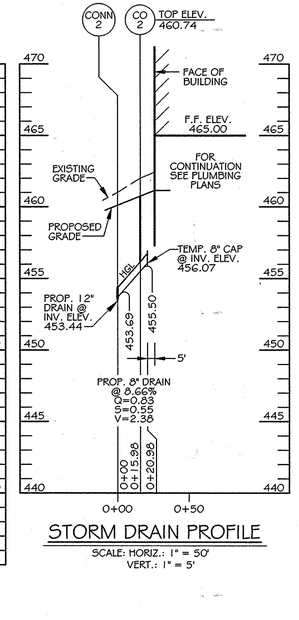

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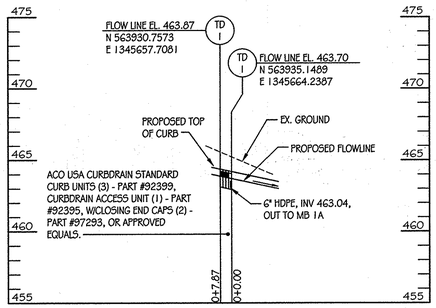
Sheet Title:
STORM DRAIN PROFILE SHEET

STATE OF MARYLAND — RICHARD L. BUCH — No. 031089 — PROFESSIONAL ENGINEER — 11-11-14

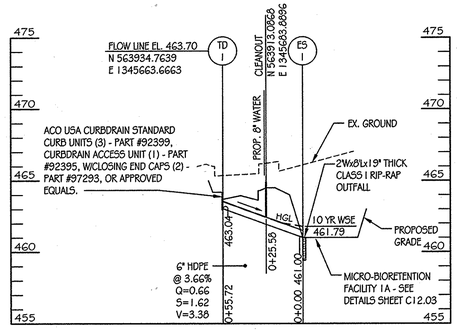
Discipline Number: C10.01
Sheet Number: 14 OF 42

SDP 14-066



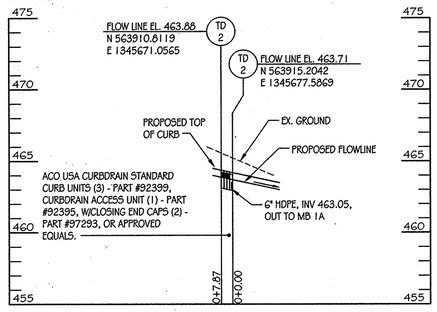
STORM DRAIN PROFILES

SCALE: HORIZ.: 1" = 50'
VERT.: 1" = 5'



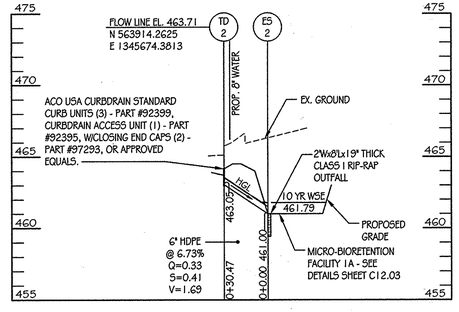
STORM DRAIN PROFILES

SCALE: HORIZ.: 1" = 50'
VERT.: 1" = 5'



STORM DRAIN PROFILES

SCALE: HORIZ.: 1" = 50'
VERT.: 1" = 5'



STORM DRAIN PROFILES

SCALE: HORIZ.: 1" = 50'
VERT.: 1" = 5'

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.

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. 31089 EXPIRATION DATE: 11/21/14

KCI TECHNOLOGIES
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APPROVED: Howard County Department of Planning & Zoning

Director		11/6/15 Date
Chief, Division of Land Development	BB	11-06-15 Date
Chief, Development Engineering Division		12-18-14 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 - Science, Engineering & Technology Building

SITE PACKAGE
PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 045868

ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date:	10-1-2014	Scale:	SCALE: AS SHOWN
Drawn By:	C.T.B	Designed By:	B.S.
Approved By:	R.T.B	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title:

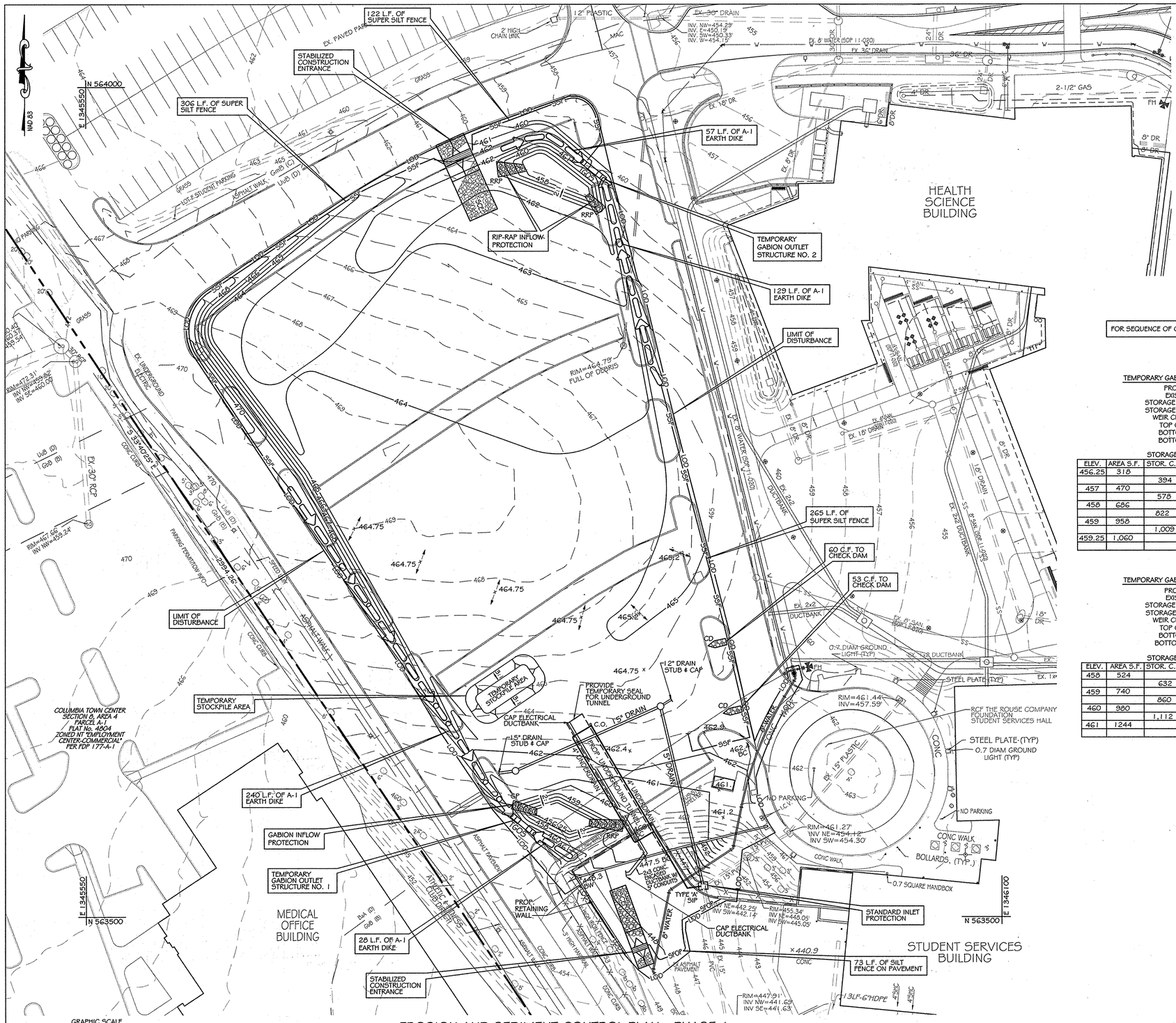
UTILITY STORM DRAIN PROFILE SHEET

STATE OF MARYLAND — RICHARD L. BOSS — No. 031089 — PROFESSIONAL ENGINEER — 11-21-14

Discipline Number: C10.02

Sheet Number: 15 OF 42

SDP 14-066



EROSION AND SEDIMENT CONTROL PLAN - PHASE 1

SCALE: 1" = 30'

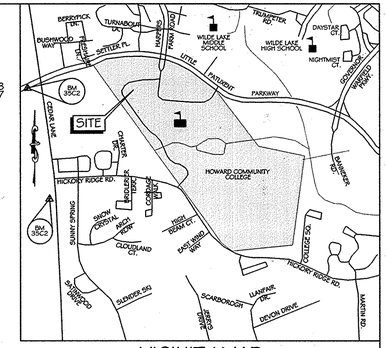
BENCHMARK DATA

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

LEGEND

- CIP — CURB INLET PROTECTION
- SIP — STANDARD INLET PROTECTION
- LOD — LIMIT OF DISTURBANCE
- DIVERSION DIKE
- SSF — SUPER SILT FENCE
- SFOP — SILT FENCE ON PAVEMENT
- TGOS — TEMPORARY GABION OUTLET STRUCTURE
- TSOS — TEMPORARY STONE OUTLET STRUCTURE
- SCE — STABILIZED CONSTRUCTION ENTRANCE
- CD — CHECK DAM



VICINITY MAP

SCALE 1" = 1000'
ADC MAP: 15 GRID: D6

FOR SEQUENCE OF CONSTRUCTION SEE SHEET C11.01

TEMPORARY GABION OUTLET STRUCTURE NO. 1

PROP D.A. = 0.53 AC
EXIST. DA = 0.76 AC
STORAGE REQUIRED = 1,368 C.F.
STORAGE PROVIDED = 2,604 C.F.
WEIR CREST ELEV. = 459.25
TOP OF TGOS = 460.75
BOTTOM ELEV. = 456.25
BOTTOM DIM. = 25' x 16'

STORAGE VS. ELEVATION CHART

ELEV.	AREA S.F.	STOR. C.F.	DEPTH	STOR.	CUM DEPTH	CUM STOR.
456.25	318					
		394	0.75	296	0.75	296
457	470					
		578	1.0	578	1.75	874
458	686					
		822	1.0	822	2.75	1,696
459	958					
		1,009	0.25	252	3.0	1,948
459.25	1,060					
					TOTAL STOR. = 1,948	

TEMPORARY GABION OUTLET STRUCTURE NO. 2

PROP D.A. = 1.31 AC
EXIST. DA = 0.89 AC
STORAGE REQUIRED = 2,358 C.F.
STORAGE PROVIDED = 2,677C.F.
WEIR CREST ELEV. = 461.00
TOP OF TGOS = 461.75
BOTTOM ELEV. = 458.00
BOTTOM DIM. = IRREGULAR

STORAGE VS. ELEVATION CHART

ELEV.	AREA S.F.	STOR. C.F.	DEPTH	STOR.	CUM DEPTH	CUM STOR.
458	524					
		632	1.0	632	1.0	632
459	740					
		860	1.0	860	2.0	1,492
460	980					
		1,112	1.0	1,112	3.0	2,604
461	1244					
					TOTAL STOR. = 2,604	

HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

1. A MINIMUM OF 48 HOURS MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION, (313-1855).
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 MOST CURRENT "MARYLAND STANDARDS AND SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL" AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETE WITHIN: A) 3 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, B) 7 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
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 PERMANENT SEEDINGS (SEC. B-4-5), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-3). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
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 HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
6. SITE ANALYSIS:

TOTAL AREA OF SITE	117.84 ACRES
AREA DISTURBED	3.54 ACRES
AREA TO BE ROOFED OR PAVED	2.16 ACRES
AREA TO BE VEGETATIVELY STABILIZED	1.38 ACRES
TOTAL CUT	1400 CY
TOTAL FILL	1300 CY
OFFSITE WASTE AREA LOCATION	SITE WITH APPROVED SED. CONTROL PLAN

7. ANY SEDIMENT CONTROL PRACTICE THAT 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 HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
9. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING, OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THE INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
10. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.
11. ANY CHANGES OR REVISIONS TO THE SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE PLAN APPROVAL AUTHORITY PRIOR TO PROCEEDING WITH CONSTRUCTION.
12. 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 BE STABILIZED AND APPROVED BY THE ENFORCEMENT AUTHORITY. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE APPROVAL AUTHORITY, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.

John R Robertson — 11/13/14
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."

RICHARD L. BOTT — 11-11-14
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."

C. RICHTNGALE — 11-12-14
Signature of Developer (print name below signature) — Date

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 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. 31089 EXPIRATION DATE: 11/21/14

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www.kci.com

AYERS SAINT GROSS — ARCHITECTS + PLANNERS
1040 Hull Street, Suite 100, Baltimore, MD 21230
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APPROVED: Howard County Department of Planning & Zoning

Director	Marsha S. McLaughlin	1/6/15 Date
Chief, Division of Land Development	Kent Sheubrooks	1-06-15 Date
Chief, Development Engineering Division	Chad Edmondson	12-15-14 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
410-772-4298

Project Name:
Howard Community College - Science, Engineering & Technology Building
SITE PACKAGE
PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 0459868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date:	10-1-2014	Scale:	1" = 30'
Drawn By:	C.T.B	Designed By:	B.S.
Approved By:	R.T.B	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

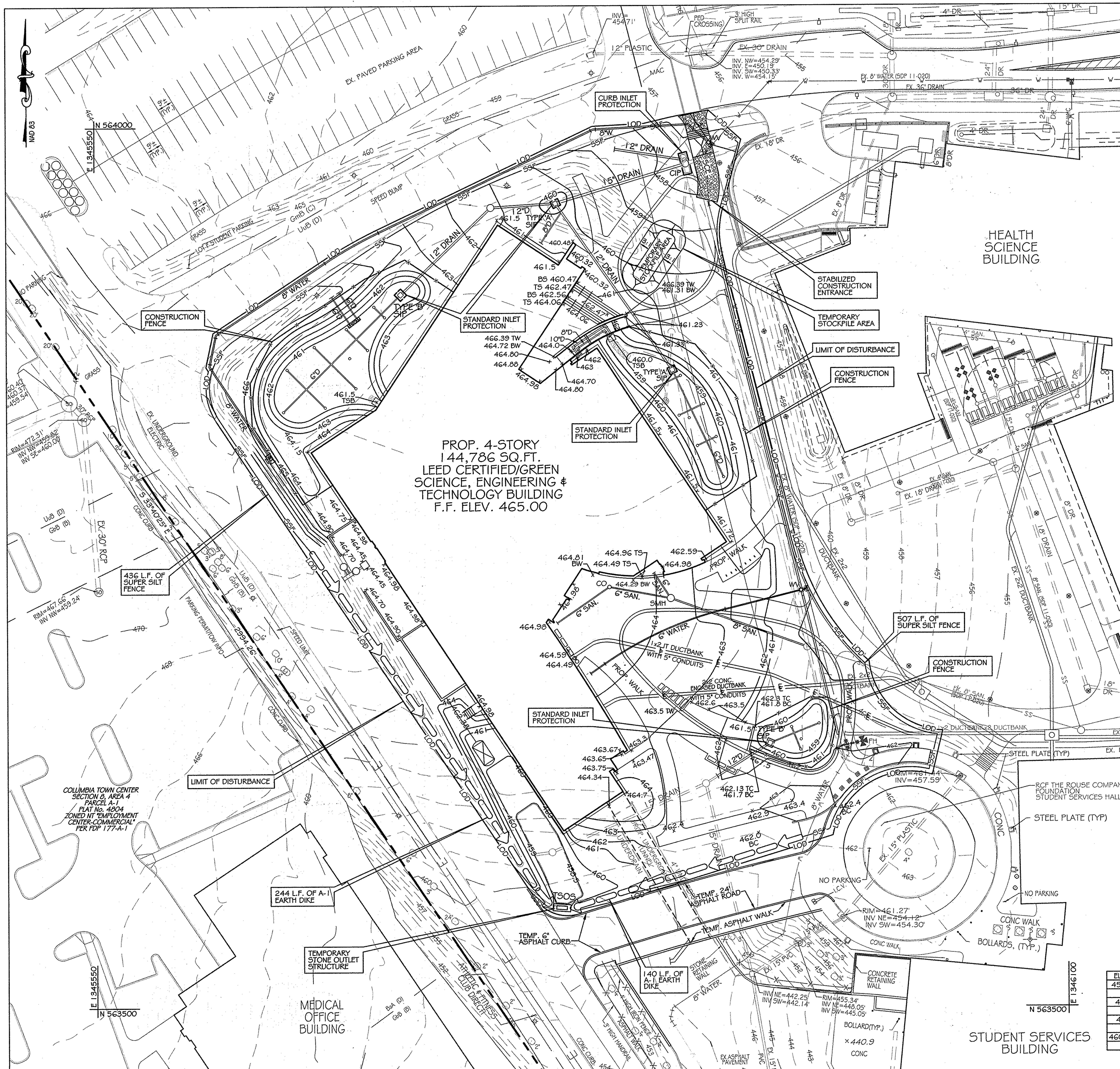
Sheet Title: EROSION AND SEDIMENT CONTROL PLAN PHASE 1

STATE OF MARYLAND — RICHARD L. BOTT — No. 031089 — PROFESSIONAL ENGINEER — 11-11-14

Discipline Number: C11.00

Sheet Number: 16 OF 42

SDP 14-066



GRAPHIC SCALE

30' 0 10' 30' 60'

(IN FEET)
SCALE: 1"= 30'

EROSION AND SEDIMENT CONTROL PLAN - PHASE 2

SCALE: 1" = 30'

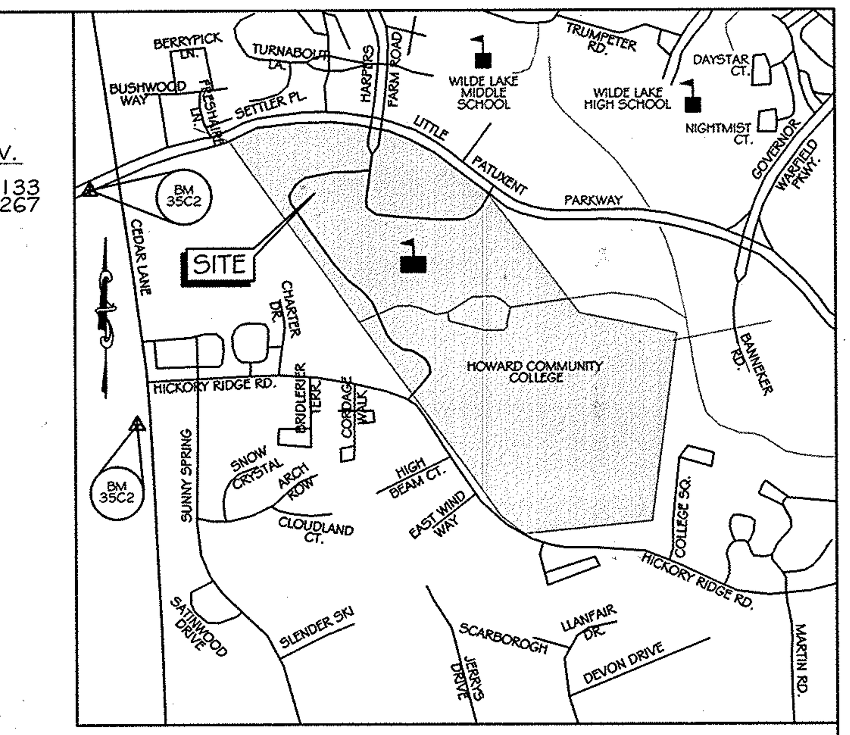
BENCHMARK DATA

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

LEGEND

CIP	CURB INLET PROTECTION
SIP	STANDARD INLET PROTECTION
——LOD——	LIMIT OF DISTURBANCE
	DIVERSION DIKE
——SSF——	SUPER SILT FENCE
TGOS	TEMPORARY GABION OUTLET STRUCTURE
TSOS	TEMPORARY STONE OUTLET STRUCTURE
SCE	STABILIZED CONSTRUCTION ENTRANCE



VICINITY MAP

SCALE 1" = 1000'
ADC MAP: 15 GRID: D6

SEQUENCE OF CONSTRUCTION

2 WEEKS 1. OBTAIN GRADING PERMIT. CONTACT THE HOWARD COUNTY CID INSPECTOR AT 410-313-2433 A MINIMUM OF 2 WEEKS PRIOR TO THE START OF CONSTRUCTION TO SCHEDULE A PRE-CONSTRUCTION MEETING. THE CONTRACTOR IS TO SUBMIT A SCHEDULE OF WORK ACTIVITIES TO THE DEPARTMENT OF PUBLIC WORKS PRIOR TO INITIATION OF ANY GRADING ACTIVITIES.

PHASE 1

2 DAYS 2. INSTALL STABILIZED CONSTRUCTION ENTRANCES AT LOCATIONS SHOWN AND INSTALL INLET PROTECTION AND BLOCKING WHERE SPECIFIED FOR EXISTING INLETS.

2 DAYS 3. INSTALL THE PERIMETER SILT FENCE ON PAVEMENT, SUPER SILT FENCE AT LOCATIONS SHOWN ON SHEET C11.00. MAKE SURE ALL NECESSARY SEDIMENT CONTROLS ARE IN PLACE PRIOR TO STRIPPING THE TOPSOIL.

21 DAYS 4. STRIP THE TOPSOIL, REMOVE EXISTING PAVING, CURB & GUTTER AND OTHER EXISTING SURFACE FEATURES TO INSTALL SEDIMENT TRAP NO 1 & 2, EARTH DIKES AND PROTECTION AS SPECIFIED ON SHEET C11.00 OR AS DIRECTED BY OWNER.

8 DAYS 5. STRIP THE REMAINING TOPSOIL AND GRADE SITE AS SHOWN ON EROSION & SEDIMENT CONTROL PLAN - PHASE 1 (C11.00) TO BRING SITE TO SUBGRADE WITHIN LIMITS OF DISTURBANCE.

32 DAYS 6. INSTALL PORTION OF WATER, STORM DRAIN, UNDERGROUND TUNNEL, RETAINING WALLS AND SITE ELECTRICAL UTILITIES AS SHOWN ON C11.00.

8 DAYS 7. INSTALL TEMPORARY ASPHALT ROAD AND WALKS AS SHOWN ON SHEET C11.00.

3 DAYS 8. STABILIZE ALL DISTURBED AREAS WITH TEMPORARY SEED & MULCH.

PHASE 2

12 DAYS 9. ADJUST/REPAIR PERIMETER EROSION & SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THIS SHEET.

2 DAYS 10. INSTALL STABILIZED CONSTRUCTION ENTRANCES AT LOCATIONS SHOWN AND PROVIDE ADDITIONAL INLET PROTECTION PER THE PLAN OR AS DIRECTED BY THE HOWARD COUNTY CID INSPECTOR.

32 DAYS 11. INSTALLING SITE STORM DRAIN, WATER, SANITARY, ELECTRIC, GAS AND INLET PROTECTION WHERE INDICATED. DO NOT REMOVE EXISTING STORM DRAIN UNTIL NEW STORM DRAIN IS FULLY FUNCTIONAL.

17 MONTHS 13. CONSTRUCT BUILDING, RETAINING WALLS, SIDEWALK AND STAIRS. GRADE SITE AS SHOWN ON THIS SHEET.

18 DAYS 14. INSTALL MICRO-SCALE STORMWATER MANAGEMENT DEVICES. STABILIZE ALL DISTURBED AREAS AS NECESSARY. INSTALL CONSTRUCTION FENCE AS SHOWN ON THIS PLAN AROUND MICRO-SCALE STORMWATER MANAGEMENT DEVICES TO ENSURE PROTECTION DURING CONSTRUCTION.

10 DAYS 15. BEGIN FINAL GRADING OF SITE IN ACCORDANCE WITH THIS SHEET.

3 DAYS 16. STABILIZE ALL DISTURBED AREAS WITH TEMPORARY SEED & MULCH.

PHASE 3

2 DAYS 17. INSTALL STABILIZED CONSTRUCTION ENTRANCE & MOUNTABLE BERM AT LOCATIONS SHOWN ON EROSION AND SEDIMENT CONTROL PLAN - PHASE 3 (C11.02). PROVIDE ADDITIONAL INLET PROTECTION PER PLAN OR AS DIRECTED BY HOWARD COUNTY CID INSPECTOR.

10 DAYS 18. INSTALL STORM DRAIN AND ELECTRIC.

15 DAYS 19. BRING ROADS TO SUB-GRADE. PLACE CR-6 BASE COURSE

10 DAYS 20. BEGIN FINAL GRADING OF SITE IN ACCORDANCE WITH THE EROSION & SEDIMENT CONTROL PLAN - PHASE 3 (C11.02).

30 DAYS 21. INSTALL CURB & GUTTER, SURFACE PAVING, SIDEWALK & SIGNAGE.

3 DAYS 22. STABILIZE ALL DISTURBED AREAS WITH TEMPORARY SEED & MULCH.

PHASE 4

2 DAYS 23. INSTALL STABILIZED CONSTRUCTION ENTRANCE & MOUNTABLE BERM AT LOCATIONS SHOWN ON EROSION AND SEDIMENT CONTROL PLAN PHASE 4 (C11.03). PROVIDE ADDITIONAL INLET PROTECTION PER PLAN OR AS DIRECTED BY HOWARD COUNTY CID INSPECTOR.

15 DAYS 24. BRING ROADS TO SUB-GRADE. PLACE CR-6 BASE COURSE.

10 DAYS 20. BEGIN FINAL GRADING OF SITE IN ACCORDANCE WITH THE EROSION & SEDIMENT CONTROL PLAN - PHASE 3 (C11.02).

30 DAYS 21. INSTALL CURB & GUTTER, SURFACE PAVING, SIDEWALK & SIGNAGE.

3 DAYS 22. STABILIZE ALL DISTURBED AREAS WITH TOPSOIL, SEED & MULCH. INSTALL SITE LANDSCAPING.

14 DAYS 23. UPON APPROVAL FROM THE HOWARD COUNTY CID INSPECTOR, REMOVE ALL TEMPORARY SEDIMENT AND EROSION CONTROL DEVICES. REPAIR CURB & GUTTER AND PAVING AS REQUIRED AFTER REMOVAL OF SEDIMENT CONTROL MEASURES. STABILIZE ALL AREAS DISTURBED DURING REMOVAL OF SEDIMENT CONTROL DEVICES. PROVIDE COPY OF HSCD LETTER OF APPROVAL FOR POND AS-BUILT TO INSPECTOR.

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

[signature] 11/13/14

Howard Soil Conservation District — *Date*

TEMPORARY STONE OUTLET STRUCTURE NO. 1

PROP D.A. = 0.20 AC
EXIST. DA = 0.76 AC
STORAGE REQUIRED = 1,368 C.F.
STORAGE PROVIDED = 2,784 C.F.
WEIR CREST ELEV. = 459.25
TOP OF TSOS = 460.00
BOTTOM ELEV. = 458.50
BOTTOM DIM. = 58' x 16'

STORAGE VS. ELEVATION CHART

ELEV.	AREA S.F.	STOR. C.F.	DEPTH	STOR.	CUM DEPTH	CUM STOR.
458.5	864					
		899	0.50	450	0.50	450
459	935					
		1,473	1.0	1,473	1.50	1,923
460	2,088					
		2,143	0.25	536	1.75	2,459
460.25	2,198					
					TOTAL STOR. = 2,459	

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] 11-11-14

RICHARD L. BUTT

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."

[signature] 11-12-14

C NIGHTINGALE

Signature of Developer (print name below signature) — *Date*

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p 410.347.8500 f 410.347.8419

APPROVED: Howard County Department of Planning & Zoning

Signature	Date
[signature] Director	1/6/15
[signature] Chief, Division of Land Development	1-06-15
[signature] Chief, Development Engineering Division	12-18-14

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 - Science, Engineering & Technology Building

SITE PACKAGE
PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 045868

ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date:	10-1-2014	Scale:	1" = 30'
Drawn By:	C.T.B	Designed By:	B.S.
Approved By:	R.T.B	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title:
EROSION AND SEDIMENT CONTROL PLAN PHASE 2

STATE OF MARYLAND — RICHARD L. BUTT — No. 031089 — PROFESSIONAL ENGINEER — 11-11-14

Discipline Number: C11.01

Sheet Number: 17 OF 42

SDP 14-066

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
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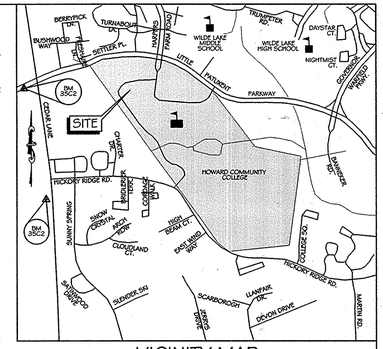
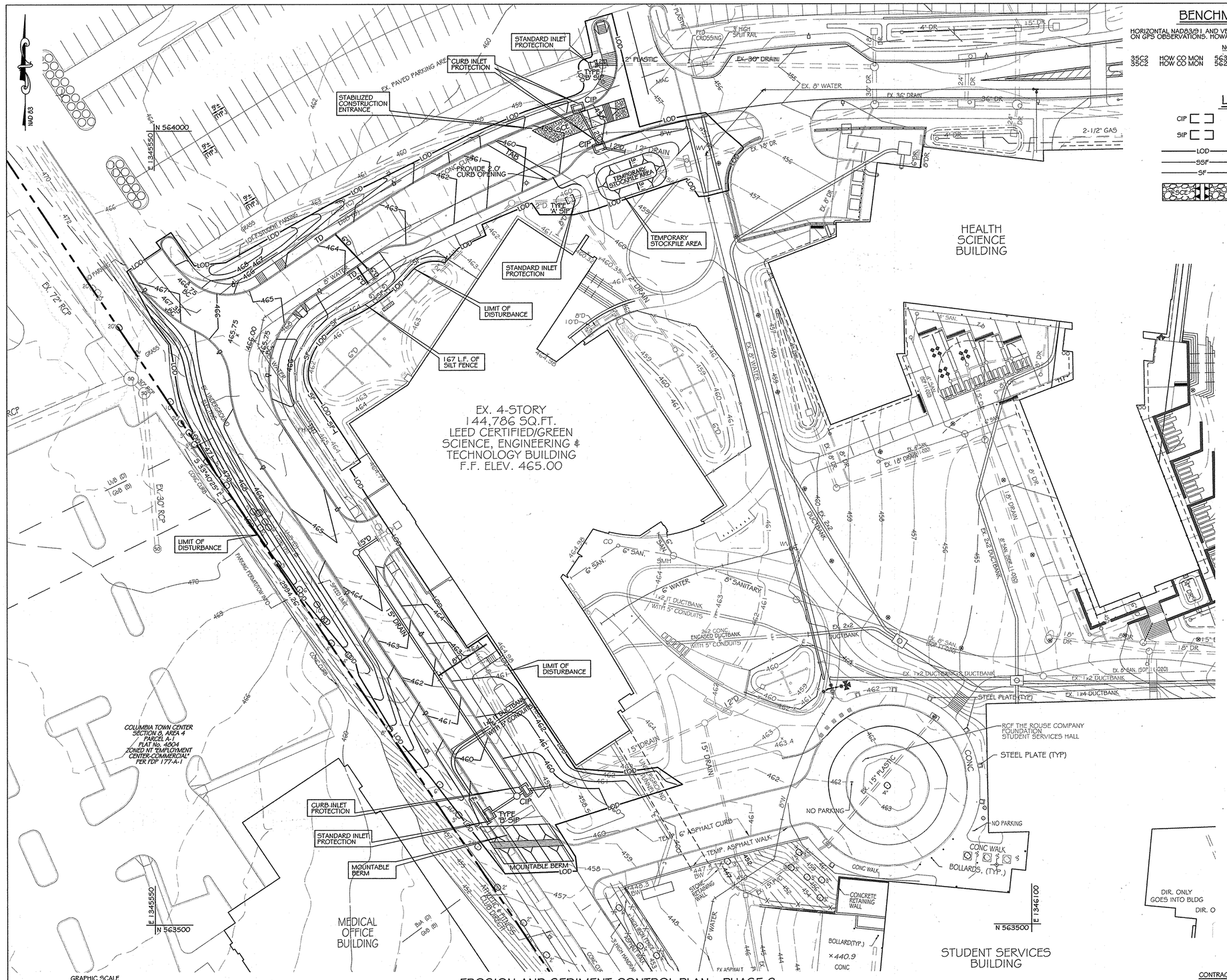
LEGEND

- CIP — CURB INLET PROTECTION
- SIP — STANDARD INLET PROTECTION
- LOD — LIMIT OF DISTURBANCE
- SSF — SUPER SILT FENCE
- SF — SILT FENCE
- STABILIZED CONSTRUCTION ENTRANCE



VICINITY MAP

SCALE 1" = 1000'
ADC MAP: 15 GRID: D6



EROSION AND SEDIMENT CONTROL PLAN - PHASE 3

SCALE: 1" = 30'

FOR SEQUENCE OF CONSTRUCTION SEE SHEET C11.01

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.

Howard Soil Conservation District — Date 11/13/14

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."

RICHARD L. BUTT — Signature of Engineer (print name below signature) — Date 11-11-14

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."

C. WAINWRIGHT DALE — Signature of Developer (print name below signature) — Date 11-12-14

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.

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. 31089 EXPIRATION DATE: 11/2/14

KCI TECHNOLOGIES — Engineers, Planners, Scientists, Construction Managers
695 Ridgebrook Road, Sparks, MD 21152
Phone (410)316-7800, Fax (410)316-7803
www.kci.com

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		1/6/15
Chief, Division of Land Development		1-06-15
Chief, Development Engineering Division		12-18-14

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 - Science, Engineering & Technology Building
SITE PACKAGE
PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date:	10-1-2014	Scale:	1" = 30'
Drawn By:	C.T.B	Designed By:	B.S.
Approved By:	R.T.B.	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

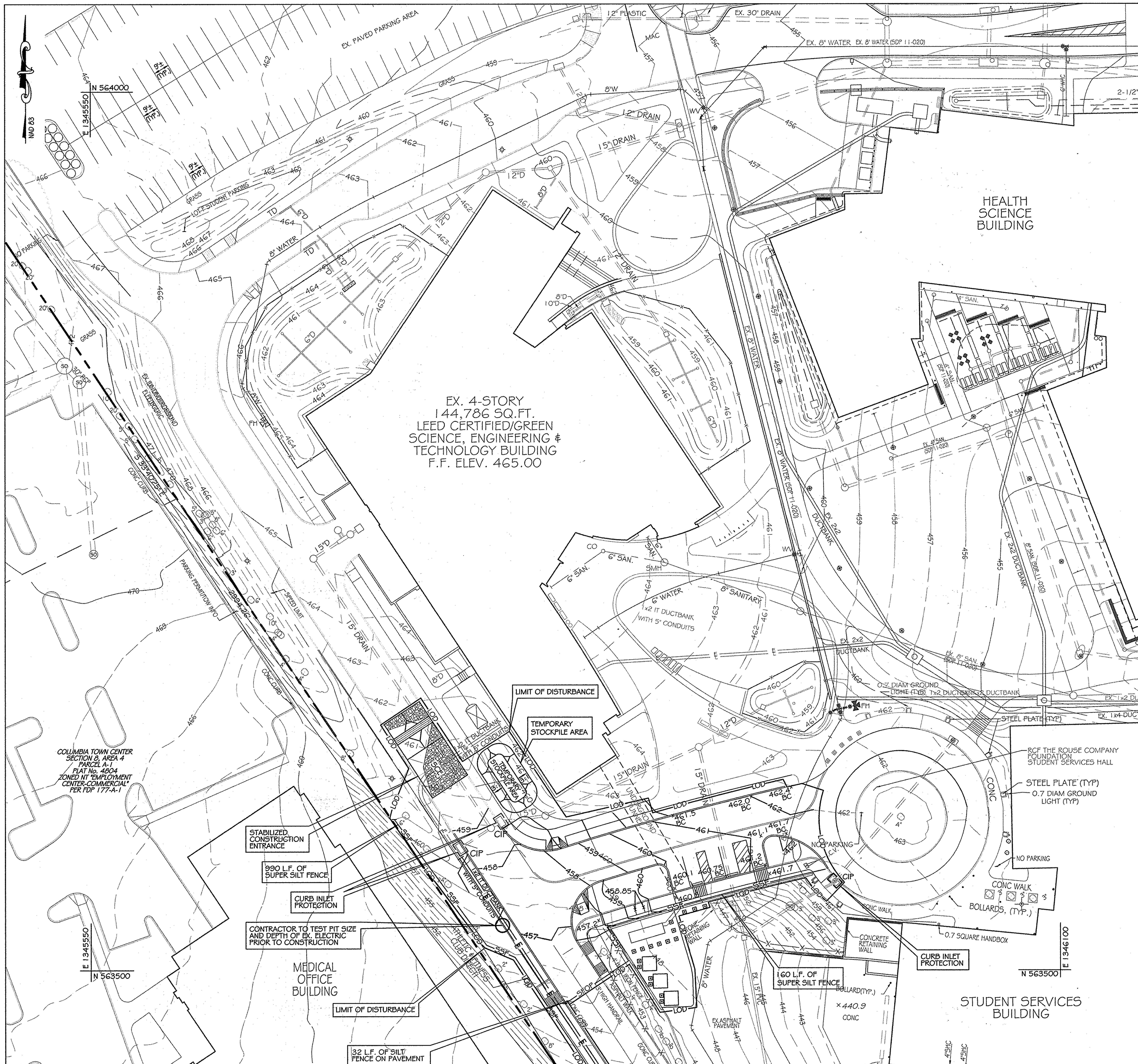
Sheet Title: EROSION AND SEDIMENT CONTROL PLAN PHASE 3

STATE OF MARYLAND — RICHARD L. BUTT — No. 031089 — PROFESSIONAL ENGINEER

Discipline Number: C11.02

Sheet Number: 18 OF 42

SDP 14-066



MATCHLINE SEE THIS SHEET FOR CONTINUATION

GRAPHIC SCALE
30' 0 10' 30' 60'
(IN FEET)
SCALE: 1"= 30'

EROSION AND SEDIMENT CONTROL PLAN - PHASE 4

SCALE: 1" = 30'

FOR SEQUENCE OF CONSTRUCTION SEE SHEET C11.01

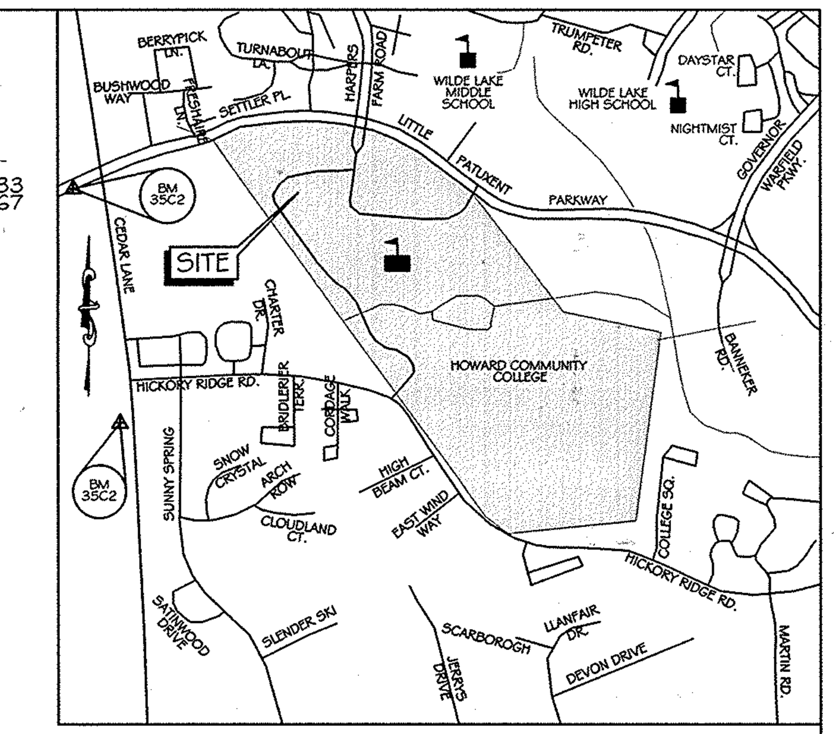
BENCHMARK DATA

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

LEGEND

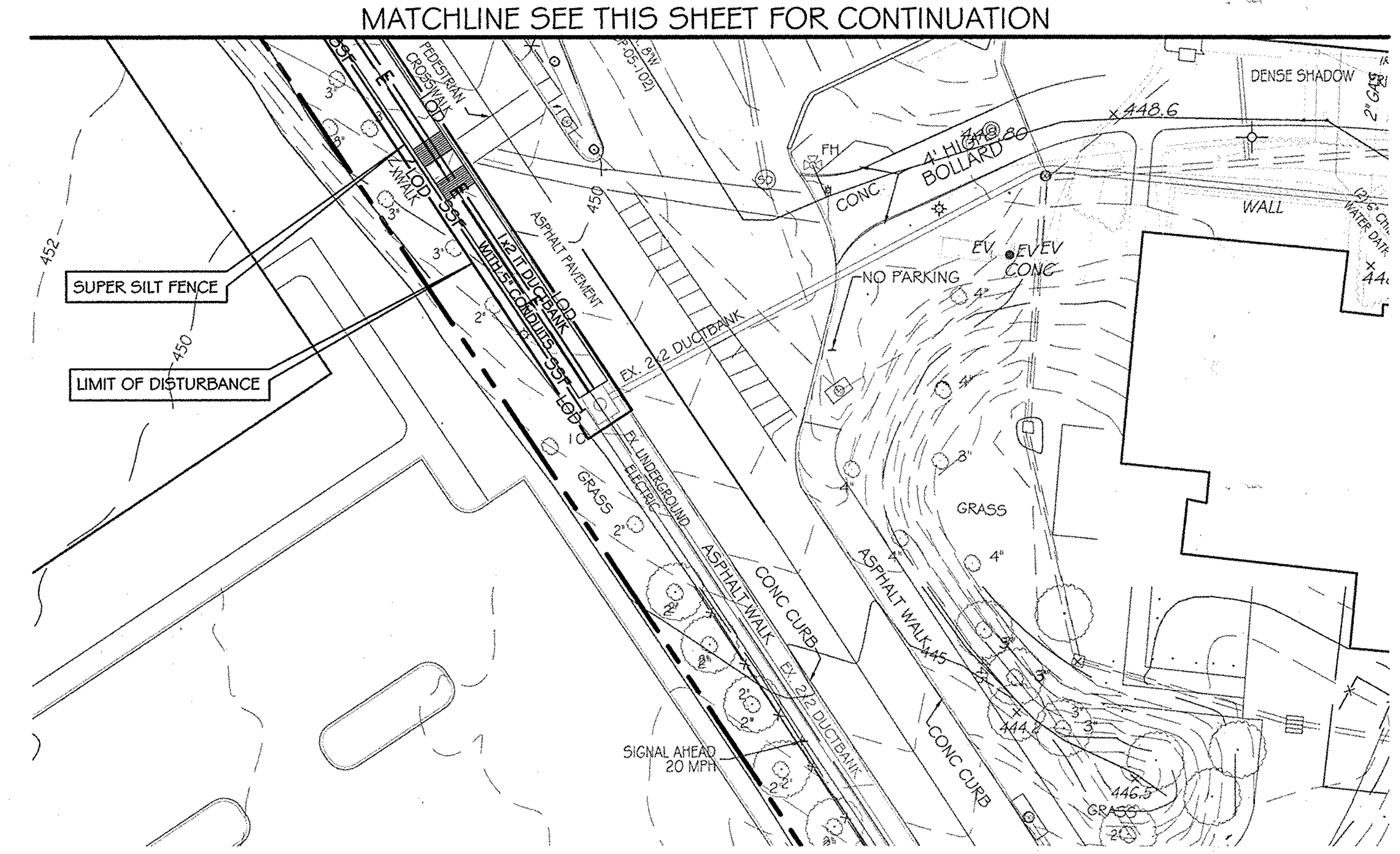
C.I.P.	CURB INLET PROTECTION
——LOD——	LIMIT OF DISTURBANCE
——SSF——	SUPER SILT FENCE
SCE	STABILIZED CONSTRUCTION ENTRANCE



VICINITY MAP

SCALE 1" = 1000'
ADC MAP: 15 GRID: D6

MATCHLINE SEE THIS SHEET FOR CONTINUATION



This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

[signature] 11/13/14
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] RICHARD L. BUTT 11-11-2014
Signature of Engineer (print name below signature) *Date*

DEVELOPER'S CERTIFICATE

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[signature] C. NIGHTINGALE 11-12-14
Signature of Developer (print name below signature) *Date*

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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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KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
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APPROVED: Howard County Department of Planning & Zoning

Signature	Date
[signature] Director	1/6/15
[signature] Chief, Division of Land Development	1-06-15
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Rev:	Date:	Description:	By:
1			
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PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date: 10-1-2014	Scale: 1" = 30'		
Drawn By: C.T.B	Designed By: B.S.		
Approved By: R.T.B	Project No: 27111245		
Tax Map-Grid: 35-6	Zoning: POR & NT		

Sheet Title: **EROSION AND SEDIMENT CONTROL PLAN PHASE 4**

STATE OF MARYLAND — RICHARD L. BUTT — No. 031089 — PROFESSIONAL ENGINEER 11-11-14

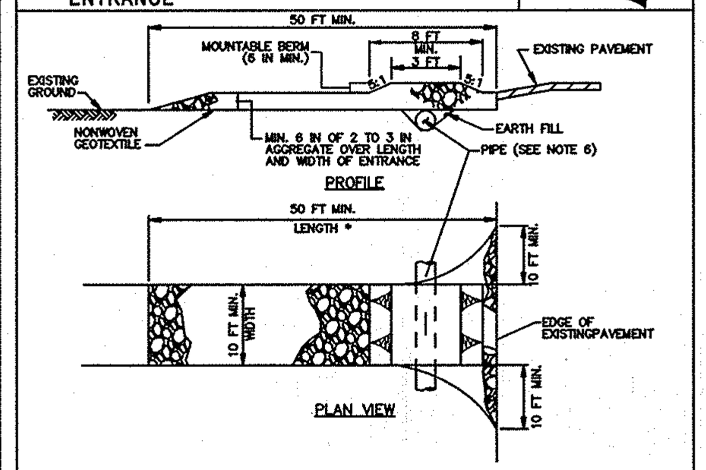
Discipline Number: **C11.03**

Sheet Number: **19 OF 42**

SDP 14-066

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.

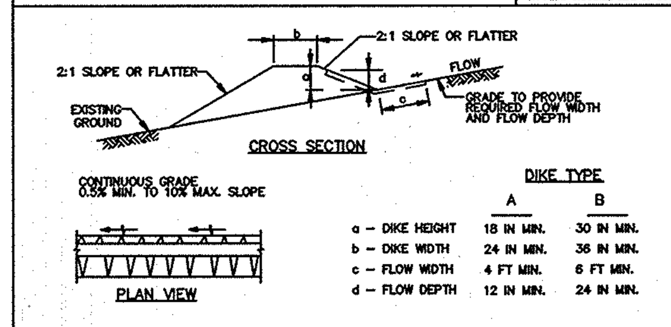
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, 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 C-1 EARTH DIKE

STANDARD SYMBOL: A-1 — 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.

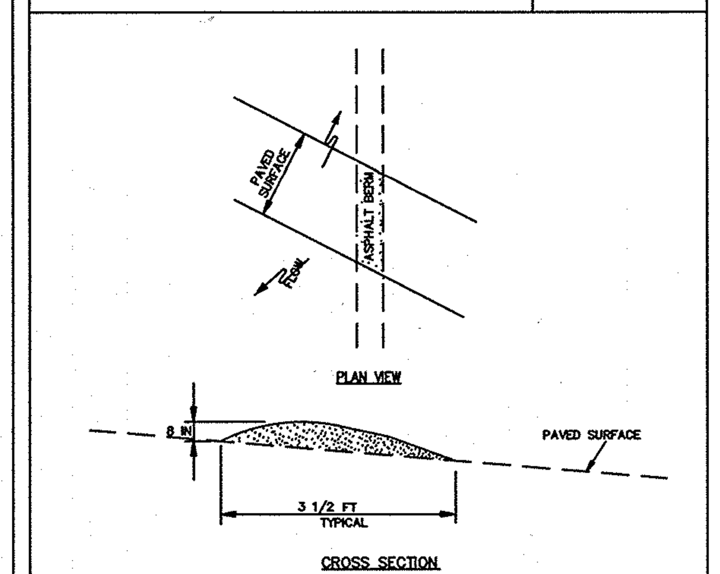
8. UPON REMOVAL OF EARTH DIKE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

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 C-5 TEMPORARY ASPHALT BERM

STANDARD SYMBOL: TAB



CONSTRUCTION SPECIFICATIONS

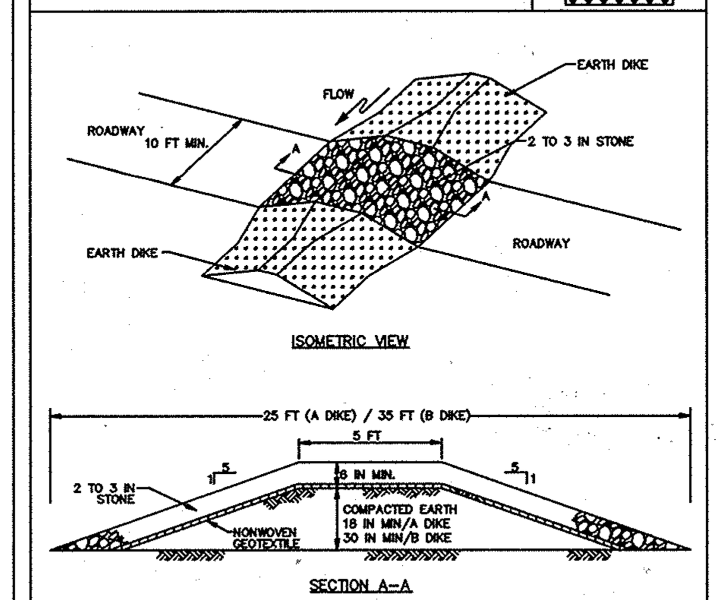
1. CONSTRUCT BERM ON AN UNINTERRUPTED, CONTINUOUS GRADE.
2. INSTALL BERM TO CONFORM TO CROSS SECTION DIMENSIONS OF A UNIFORM HEIGHT OF 8 INCHES MINIMUM AND APPROXIMATE WIDTH OF 3½ FEET.
3. PROVIDE OUTLET PROTECTION AS REQUIRED ON PLAN.
4. COMPACT ASPHALT BERM.
5. REPAIR DAMAGED ASPHALT. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE.
6. UPON REMOVAL OF ASPHALT BERM, RETURN TO ORIGINAL CONDITIONS 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 C-8 MOUNTABLE BERM

STANDARD SYMBOL: MB



CONSTRUCTION SPECIFICATIONS

1. USE MINIMUM WIDTH OF 10 FEET TO ALLOW FOR VEHICULAR PASSAGE.

2. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE EARTH MOUND PRIOR TO PLACING STONE.

3. PLACE 2 TO 3 INCH STONE OR EQUIVALENT RECYCLED CONCRETE AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE MOUNTABLE BERM.

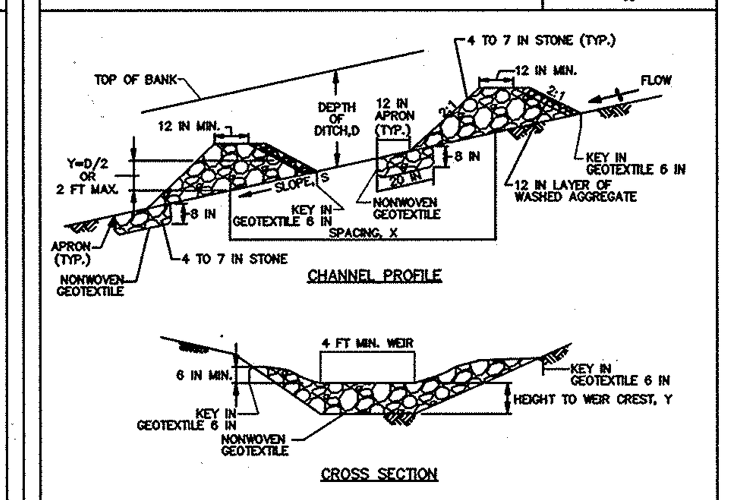
4. MAINTAIN LINE, GRADE, AND CROSS SECTION. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN SPECIFIED DIMENSIONS. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE.

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-2 STONE CHECK DAM

STANDARD SYMBOL: CD



CONSTRUCTION SPECIFICATIONS

1. PREPARE SWALES IN ACCORDANCE WITH THE CONSTRUCTION SPECIFICATIONS DESCRIBED IN SECTION C-2, STANDARDS AND SPECIFICATIONS FOR TEMPORARY SWALE, OR AS SPECIFIED ON PLAN.

2. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER THE BOTTOM AND SIDES OF THE DAM PRIOR TO PLACEMENT OF STONE. CONSTRUCT THE CHECK DAM WITH WASHED 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) WITH SIDE SLOPES OF 2:1 OR FLATTER AND A MINIMUM TOP WIDTH OF 12 INCHES. PLACE THE STONE SO THAT IT COMPLETELY COVERS THE WIDTH OF THE CHANNEL AND CHANNEL BANKS. FORM THE WEIR SO THAT TOP OF THE OUTLET CREST IS APPROXIMATELY 6 INCHES LOWER THAN THE OUTER EDGES. LINE THE UPSTREAM FACE OF THE DAM WITH A 1 FOOT THICK LAYER OF WASHED AGGREGATE (¾ TO 1½ INCH).

3. SET THE HEIGHT FOR THE WEIR CREST EQUAL TO ONE-HALF THE DEPTH OF THE CHANNEL OR DITCH. TO AVOID SCOUR THE MAXIMUM HEIGHT OF THE WEIR CREST MUST NOT EXCEED 2.0 FEET.

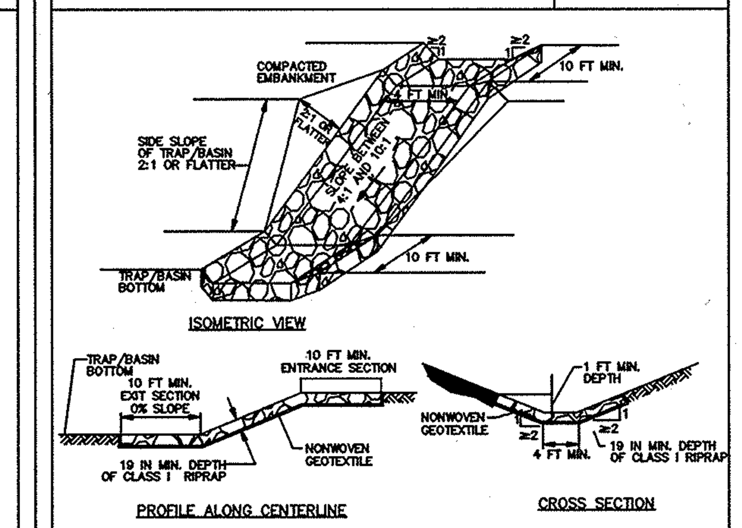
4. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES ONE-HALF OF THE HEIGHT OF THE WEIR CREST. MAINTAIN LINE, GRADE, AND CROSS SECTION.

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-3-1 RIPRAP INFLOW PROTECTION

STANDARD SYMBOL: RRP



CONSTRUCTION SPECIFICATIONS

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

2. CONSTRUCT INFLOW CHANNEL WITH CLASS I RIPRAP OR EQUIVALENT RECYCLED CONCRETE LINING TO A MINIMUM DEPTH OF 19 INCHES (2 x D_{50}) AND A 1 FOOT DEEP FLOW CHANNEL. INFLOW RIPRAP PROTECTION CHANNEL MUST HAVE A TRAPEZOIDAL CROSS SECTION WITH 2:1 OR FLATTER SIDE SLOPES AND A 4 FOOT MINIMUM BOTTOM WIDTH.

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

4. BLEND RIPRAP INTO EXISTING GROUND.

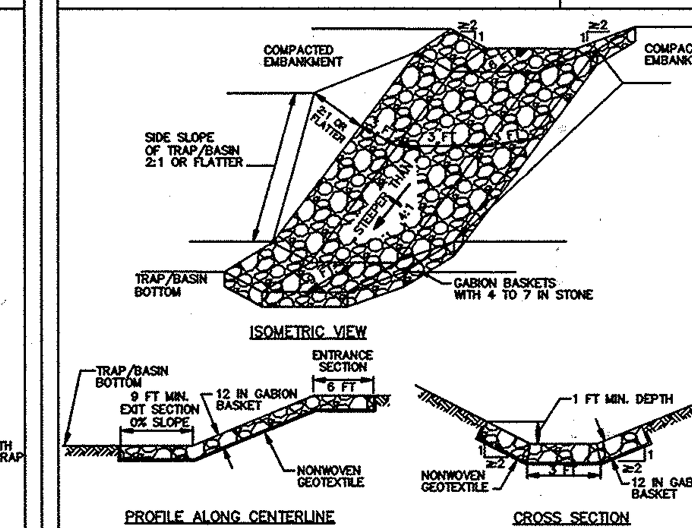
5. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. KEEP POINTS OF INFLOW AND OUTFLOW FREE OF EROSION.

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 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.

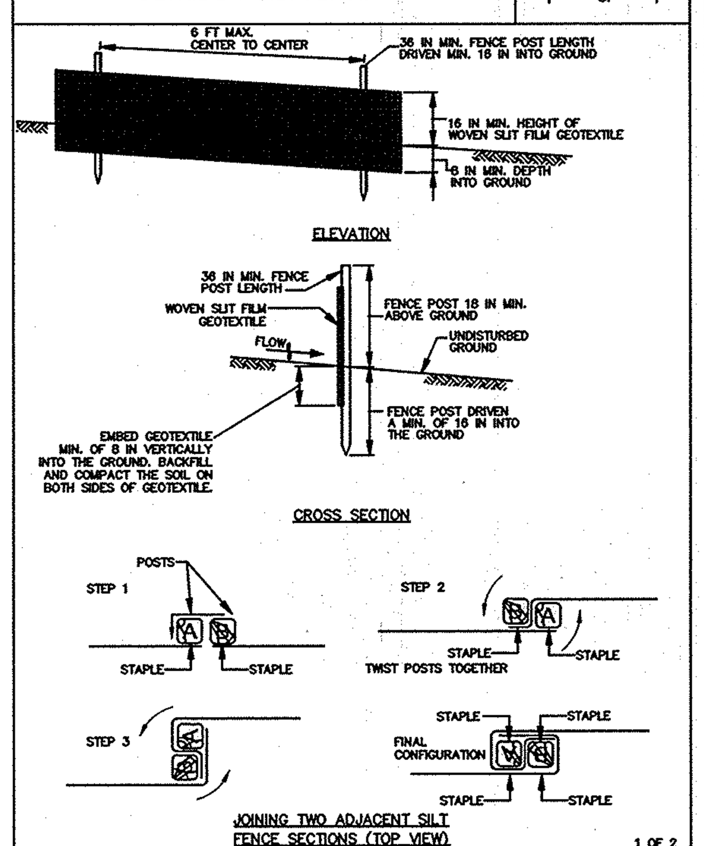
7. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. KEEP POINTS OF INFLOW AND OUTFLOW FREE OF EROSION

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 E-1 SILT FENCE

STANDARD SYMBOL: SF



1 OF 2

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-1 SILT FENCE

STANDARD SYMBOL: SF

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± ⅙ 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.

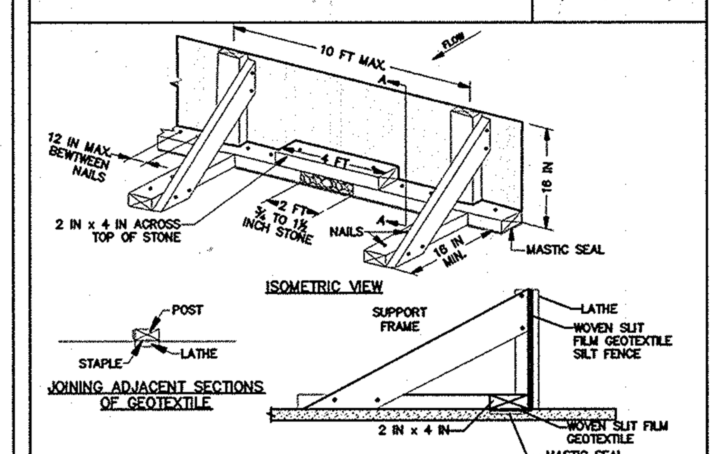
2 OF 2

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

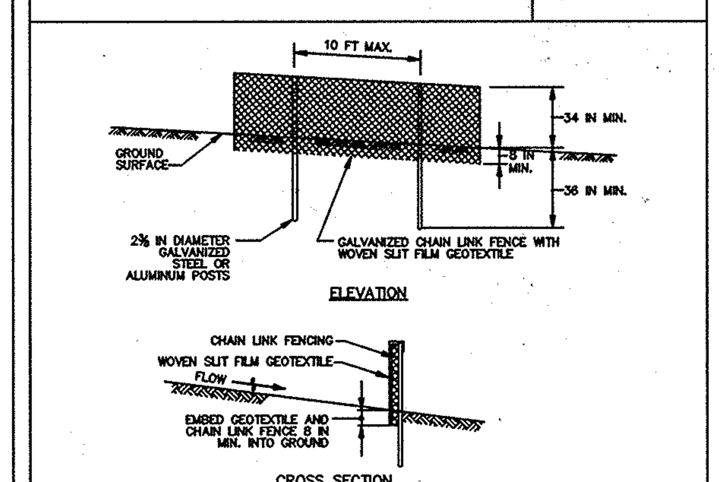
1. USE NOMINAL 2 INCH X 4 INCH LUMBER.
2. USE WOVEN SLIT FILM GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
3. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
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-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.

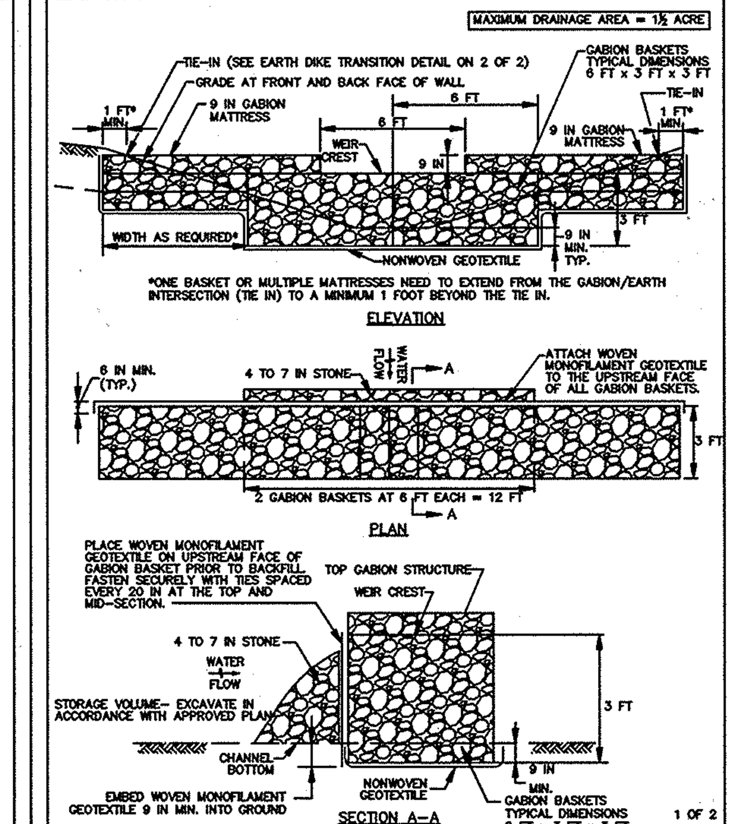
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-8 TEMPORARY GABION OUTLET STRUCTURE

STANDARD SYMBOL: TGOS

MAXIMUM DRAINAGE AREA = 1½ ACRE



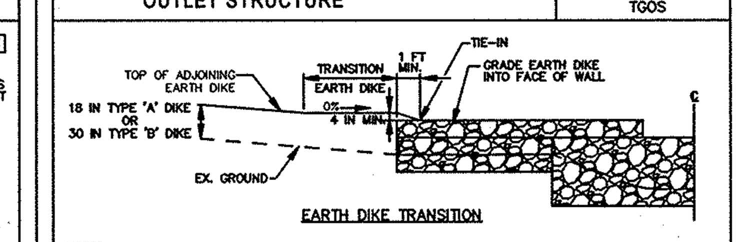
1 OF 2

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-8 TEMPORARY GABION OUTLET STRUCTURE

STANDARD SYMBOL: TGOS



NOTES:

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

CONSTRUCTION SPECIFICATIONS

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

2 OF 2

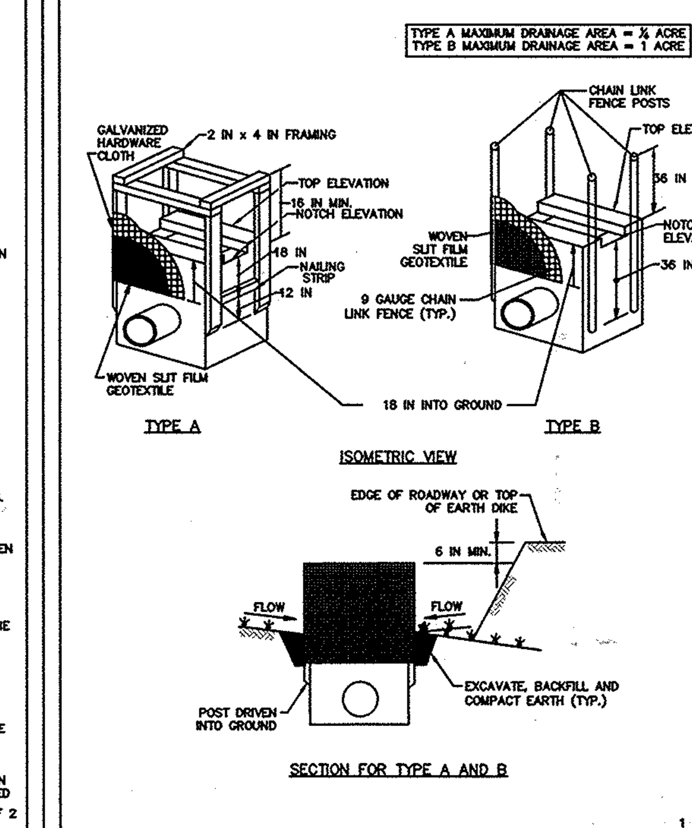
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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



1 OF 2

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

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 ½ 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.

2 OF 2

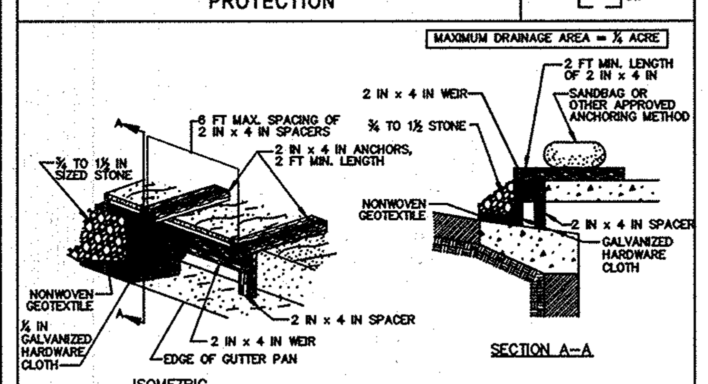
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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 ½ 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.

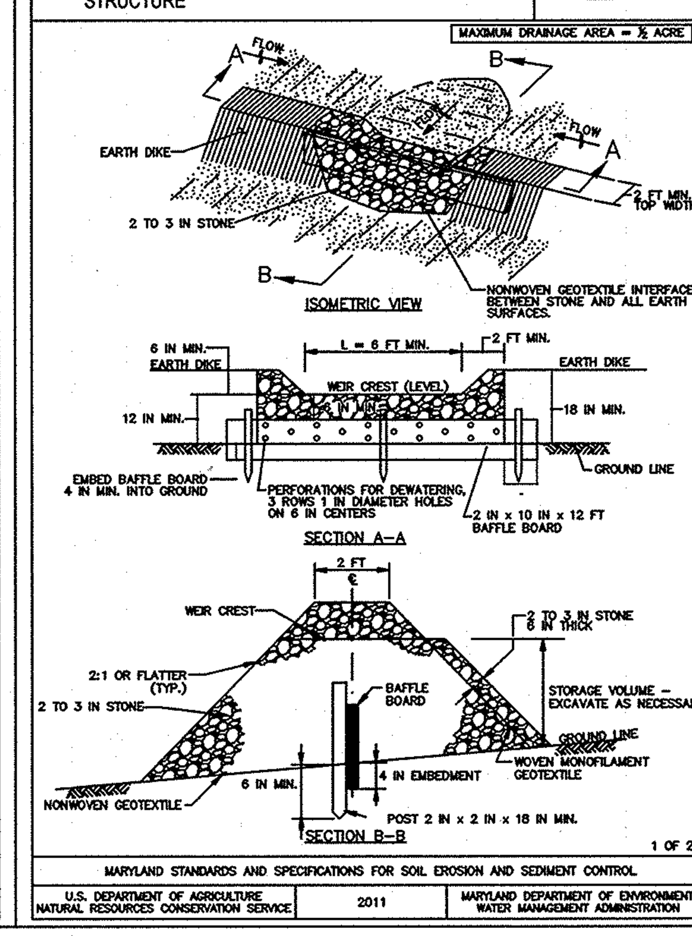
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E- 7 TEMPORARY STONE OUTLET STRUCTURE

STANDARD SYMBOL: TSOS

MAXIMUM DRAINAGE AREA = ½ ACRE



1 OF 2

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- 7 TEMPORARY STONE OUTLET STRUCTURE

STANDARD SYMBOL: TSOS

CONSTRUCTION SPECIFICATIONS

1. PROVIDE STORAGE VOLUME AS SPECIFIED ON APPROVED PLANS.
2. USE NONWOVEN GEOTEXTILE ON INTERFACE BETWEEN GROUND AND STONE.
3. PERFORATE BAFFLE BOARD WITH 3 ROWS OF 1 INCH DIAMETER HOLES 6 INCHES ON CENTER, EMBED A MINIMUM OF 4 INCHES INTO GROUND, AND EXTEND BAFFEL BOARD MINIMUM OF 12 INCHES INTO EARTH DIKE.
4. USE CLEAN 2 TO 3 INCH STONE OR EQUIVALENT RECYCLED CONCRETE. PLACE WOVEN MONOFILAMENT GEOTEXTILE ON UPSTREAM FACE AND COVER WITH A MINIMUM OF 6 INCHES OF ADDITIONAL STONE.
5. USE NONWOVEN AND WOVEN MONOFILAMENT GEOTEXTILES AS SPECIFIED IN SECTION H-1 MATERIALS.
6. SET WEIR CREST OF STONE 6 INCHES LOWER THAN THE TOP OF EARTH DIKE. USE MINIMUM LENGTH OF 6 FEET FOR WEIR CREST.
7. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO WITHIN 6 INCHES OF WEIR CREST. REPLACE GEOTEXTILE AND STONE FACING WHEN STRUCTURE CEASES TO DRAIN. MAINTAIN LINE, GRADE, AND CROSS SECTION.
8. UPON REMOVAL OF STONE OUTLET STRUCTURE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

2 OF 2

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] 11/13/14
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] 11-11-2014
RICHARD L. BUTT
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."

[signature] 11-12-14
C. NIGHTINGALE
Signature of Developer (print name below signature) — *Date*

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.

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. 31089 EXPIRATION DATE: 11/21/14

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
936 Ridgebrook Road
Sparks, MD 21152
Phone (410)316-7800
Fax (410)316-7853
www.kci.com

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

Signature	Date
Director	1/6/15
Chief, Division of Land Development	1-06-15
Chief, Development Engineering Division	12-18-14

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 - Science, Engineering & Technology Building
SITE PACKAGE
PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date:	10-1-2014	Scale:	N.T.S.
Drawn By:	C.T.B	Designed By:	B.S.
Approved By:	R.T.B	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title: EROSION AND SEDIMENT CONTROL DETAIL SHEET

STATE OF MARYLAND — RICHARD L. BUTT — No. 031089 — PROFESSIONAL ENGINEER — 11-11-14

Discipline Number: C11.04

Sheet Number: 20 OF 42

SDP 14-066

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.

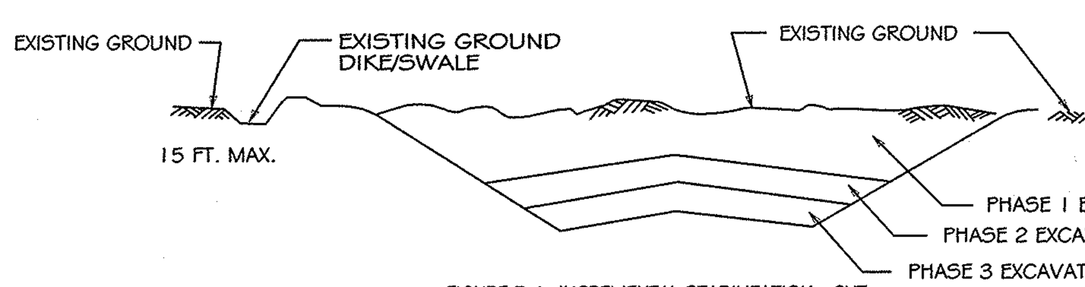


FIGURE B.1: INCREMENTAL STABILIZATION . CUT

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.

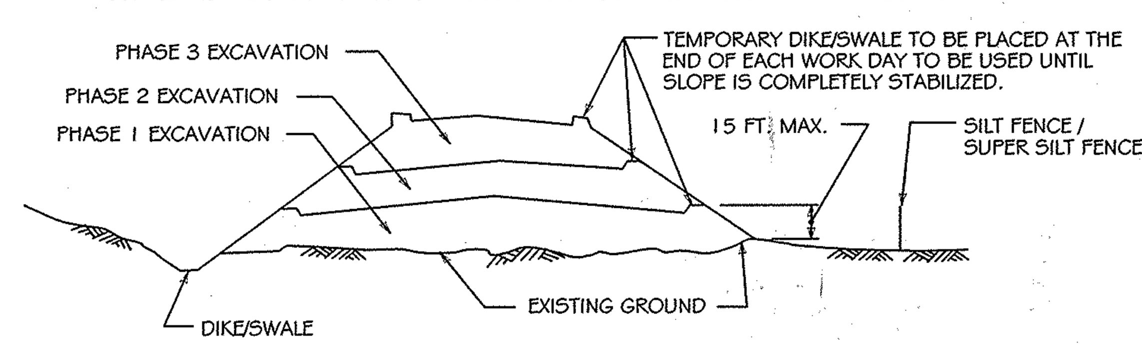


FIGURE B.2: INCREMENTAL STABILIZATION . FILL

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

[signature] 11/13/14
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] 11-11-14
RICHARD L. BUTT
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."

[signature] 11-12-14
C NIGHTINGALE
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.

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; P2O5 (PHOSPHOROUS), 200 POUNDS PER ACRE; K2O (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.

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-4-4 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

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 IN HIBIT THE GERMINATION AND GROWTH OF OTHER PLANTS IF IT MUST BE USED AS NURSE CROP, SEED AS 1/3 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.

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.

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. 31089 EXPIRATION DATE: 11/21/14

STATE OF MARYLAND · RICHARD L. BUTT · No. 031089 · PROFESSIONAL ENGINEER · 11-11-14

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS — 936 Ridgebrook Road, Sparks, MD 21152, Phone (410)316-7800, Fax (410)316-7853, www.kci.com

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

Signature	Title	Date
[signature]	Director	1/6/15
[signature] BB	Chief, Division of Land Development	1-06-15
[signature]	Chief, Development Engineering Division	12.18.14

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 - Science, Engineering & Technology Building
SITE PACKAGE
PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 045868
ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

Date:	10-1-2014	Scale:	N.T.S.
Drawn By:	C.T.B	Designed By:	B.S.
Approved By:	R.T.B	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title: EROSION AND SEDIMENT CONTROL NOTES SHEET

Discipline Number: C11.05

Sheet Number: 21 OF 42

SDP 14-066

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.

21.0 STANDARD AND SPECIFICATIONS FOR TOPSOIL

DEFINITION

PLACEMENT OF TOPSOIL OVER A PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION.

PURPOSE

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.

CONDITIONS WHERE PRACTICE APPLIES

I. THIS PRACTICE 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 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.

II. FOR THE PURPOSE OF THESE STANDARDS AND SPECIFICATIONS, AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN FOR ADEQUATE STABILIZATION. AREAS HAVING SLOPES STEEPER THAN 2:1 SHALL HAVE THE APPROPRIATE STABILIZATION SHOWN ON THE PLANS.

CONSTRUCTION AND MATERIAL SPECIFICATIONS

I. TOPSOIL SALVAGED FROM THE EXISTING SITE MAY BE USED PROVIDED THAT 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-SCS IN COOPERATION WITH MARYLAND AGRICULTURAL EXPERIMENTAL STATION.

II. TOPSOIL SPECIFICATIONS - SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:

A. TOPSOIL SHALL BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. REGARDLESS, TOPSOIL SHALL NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND SHALL CONTAIN LESS THAN 5% BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1 1/2" IN DIAMETER.
B. TOPSOIL MUST BE FREE OF PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACKGRASS, JOHNSONGRASS, NUTSEDGE, POISON, IVY, THISTLE, OR OTHERS AS SPECIFIED.
C. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, GROUND LIMESTONE SHALL BE SPREAD AT THE RATE OF 4-8 TONS/ACRE (200-400 POUNDS PER 1,00 SQUARE FEET) PRIOR TOT HE PLACEMENT OF TOPSOIL. LIME SHALL BE DISTURBED UNIFORMLY OVER DESIGNATE AREAS AND WORKED INTO THE SOIL IN CONJUNCTION WITH TILLAGE OPERATIONS AS DESCRIBED IN THE FOLLOWING PROCURES.

III. FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES:

A. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION - SECTION 1 - VEGETATIVE STABILIZATION METHODS AND MATERIALS.

I(TYP.) FOR SITE HAVING DISTURBED AREAS OVER 5 ACRES:

A. ON SOIL MEETING TOPSOIL SPECIFICATIONS, OBTAIN TEST RESULTS DICTATING FERTILIZER AND LIME AMENDMENTS REQUIRE TO BRING THE SOIL INTO COMPLIANCE WITH THE FOLLOWING:

I(TYP.) CONTINUED....

1. PH FOR TOPSOIL SHALL BE BETWEEN 6.0 AND 7.5. IF THE TESTED SOIL DEMONSTRATES A PH OF LESS THAN 6.0, SUFFICIENT LIME SHALL BE PRESCRIBED TO RAISE THE PH TO 6.5 OR HIGHER.
2. ORGANIC CONTENT OF TOPSOIL SHALL BE NOT LESS THAN 1.5 PERCENT BY WEIGHT.
3. TOPSOIL HAVING SOLUBLE SALT CONTENT GREATER THAN 500 PARTS PER MILLION SHALL NOT BE USED.
4. NO SOD OR SEED SHALL BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME AS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.

NOTE: 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.

II. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION - SECTION 1 - VEGETATIVE STABILIZATION METHODS AND MATERIALS.

(TYP.) TOPSOIL APPLICATION

I. WHEN TOPSOILING, MAINTAIN NEEDED EROSION AND SEDIMENT CONTROL PRACTICES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, EARTH DIKES, SLOPE SILT FENCE AND SEDIMENT TRAPS AND BASINS.

II. GRADES ON THE AREAS TO BE TOPSOILED, WHICH HAVE BEEN PREVIOUSLY ESTABLISHED, SHALL BE MAINTAINED, ALBEIT 4"-8" HIGHER IN ELEVATION.

III. TOPSOIL SHALL BE UNIFORMLY DISTURBED IN A 4"-8" LAYER AND LIGHTLY COMPACTED TO A MINIMUM THICKNESS OF 4". SPREADING SHALL 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 SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.

IV. TOPSOIL SHALL NOT BE PLACED WHILE THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.

(TYP)I. ALTERNATIVE FOR PERMANENT SEEDING - INSTEAD OF APPLYING THE FULL AMOUNTS OF LIME AND COMMERCIAL FERTILIZER, COMPOSTED SLUDGE AND AMENDMENTS MAY BE APPLIED AS SPECIFIED BELOW:

I. COMPOSTED SLUDGE MATERIAL FOR USE AS A SOIL CONDITIONER FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES SHALL BE TESTED TO PERSCRIBE AMENDMENTS AND FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

A. COMPOSTED SLUDGE SHALL BE SUPPLIED BY, OR ORIGINATE FROM, A PERSON OR PERSONS THAT ARE PERMITTED (AT THE TIME OF ACQUISITION OF THE COMPOST) BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENTAL UNDER COMAR 26.04.06.
B. COMPOSTED SLUDGE SHALL CONTAIN AT LEAST 1 PERCENT NITROGEN, 1.5 PERCENT PHOSPHORUS, AND 0.2 PERCENT POTASSIUM AND HAVE A PH OF 7.0 TO 8.0. IF COMPOST DOES NOT MEET THESE REQUIREMENTS, THE APPROPRIATE CONSTITUENTS MUST BE ADDED TO MEET THE REQUIREMENTS PRIOR TO USE.
C. COMPOSTED SLUDGE SHALL BE APPLIED AT A RATE OF 1 TON / 1,000 SF.

II. COMPOSTED SLUDGE SHALL BE AMENDED WITH POTASSIUM FERTILIZER APPLIED AT THE RATE OF 4 LB. / 1,000 SF. AND 1/3 THE NORMAL LIME APPLICATION RATE.

HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

1. A MINIMUM OF 48 HOURS MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION, (313-1850).
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 MOST CURRENT "MARYLAND STANDARDS AND SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL" AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETE WITHIN: A) 3 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, B) 7 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
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 PERMANENT SEEDINGS (SEC. B-4-5), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-3). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
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 HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
6. SITE ANALYSIS:

TOTAL AREA OF SITE	117.84 ACRES
AREA DISTURBED	3.54 ACRES
AREA TO BE ROOFED OR PAVED	2.16 ACRES
AREA TO BE VEGETATIVELY STABILIZED	1.38 ACRES
TOTAL CUT	1400 CY
TOTAL FILL	1300 CY
OFFSITE WASTE AREA LOCATION	SITE WITH APPROVED SED. CONTROL PLAN

7. ANY SEDIMENT CONTROL PRACTICE THAT 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 HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
9. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING, OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THE INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
10. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.
11. ANY CHANGES OR REVISIONS TO THE SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE PLAN APPROVAL AUTHORITY PRIOR TO PROCEEDING WITH CONSTRUCTION.
12. 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 BE STABILIZED AND APPROVED BY THE ENFORCEMENT AUTHORITY. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE APPROVAL AUTHORITY, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.

1. DEVELOPER'S CERTIFICATION:

I (WE) CERTIFY THAT:

A) ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE IN ACCORDANCE WITH THIS SEDIMENT AND EROSION CONTROL PLAN, AND FURTHER, AUTHORIZE THE RIGHT OF ENTRY FOR PERIODIC ON-SITE EVALUATION BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT BOARD OF SUPERVISORS OR THEIR AUTHORIZED AGENTS.

B) ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE FROM THE MARYLAND DEPARTMENT OF THE ENVIRONMENTS APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT.

RESPONSIBLE PERSON ON THE SITE: ______________________

2. THE DEVELOPER IS RESPONSIBLE FOR THE ACQUISITION OF ALL EASEMENTS, RIGHTS, AND/OR RIGHTS OF WAY THAT MAY BE REQUIRED FOR THE SEDIMENT AND EROSION CONTROL PRACTICES. STORMWATER MANAGEMENT PRACTICES AND THE DISCHARGE OF STORMWATER ONTO OR ACROSS ADJACENT OR DOWNSTREAM PROPERTIES INCLUDED IN THIS PLAN. HE IS ALSO RESPONSIBLE FOR THE ACQUISITION OF ALL EASEMENTS, RIGHTS AND/OR RIGHTS OF WAY THAT MAY BE REQUIRED FOR GRADING AND/OR WORK ON ADJACENT PROPERTIES INCLUDED IN THIS PLAN.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN SEVEN CALENDAR DAYS FOR THE SURFACE OF PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAT 3 HORIZONTAL TO 1 VERTICAL (3:1) AND FOURTEEN DAYS FOR ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
4. THE SEDIMENT CONTROL APPROVALS ON THE PLAN EXTEND ONLY TO AREAS AND PRACTICES IDENTIFIED AS PROPOSED WORK.
5. THE APPROVAL OF THIS PLAN FOR SEDIMENT AND EROSION CONTROL DOES NOT RELIEVE THE DEVELOPER/CONSULTANT FROM COMPLYING WITH ANY FEDERAL/STATE/COUNTY REQUIREMENTS APPERTAINING TO ENVIRONMENTAL ISSUES.
6. THE DEVELOPER MUST REQUEST THAT THE DEPARTMENT OF INSPECTIONS AND PERMITS APPROVE WORK COMPLETED IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENT CONTROL PLAN. THE GRADING OR BUILDING PERMIT AND THE ORDINANCE.
7. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE DEPARTMENT OF INSPECTIONS AND PERMITS SHALL BE REQUIRED ON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THE INITIAL APPROVAL BY THE DEPARTMENT OF INSPECTIONS AND PERMITS IS GIVEN.
8. APPROVAL SHALL BE REQUESTED ON FINAL STABILIZATION OF ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES BEFORE REMOVAL OF CONTROLS.

[signature] 11-12-14
SIGNATURE OF DEVELOPER / APPLICANT — DATE:

Charles Nightingale — Executive Director Facilities/ Capital Projects
PRINT NAME: — TITLE:

10901 Little Patuxent Pkwy Columbia MD 21044
ADDRESS:

443-518-4615
TELEPHONE:

THE DEVELOPER'S PLAN TO CONTROL SILT AND EROSION IS ADEQUATE TO CONTAIN THE SILT AND EROSION PROPERTY COVERED BY THE PLAN. I CERTIFY THAT THIS PLAN OF EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THIS SITE, AND WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD COUNTY SOIL CONSERVATION DISTRICT PLAN SUBMITTAL GUIDELINES AND THE CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SEDIMENT AND EROSION CONTROL. I HAVE REVIEWED THIS EROSION AND SEDIMENT CONTROL PLAN WITH THE OWNER/DEVELOPER.

[signature] — 31089 — 11-11-14
SIGNATURE: — MD. LICENSE NO. — DATE:

RICHARD L. BUTT — KCI TECHNOLOGIES INC.
PRINT NAME: — FIRM NAME:

ADDRESS: 936 RIDGEBROOK ROAD SPARKS, MD 21152

TELEPHONE: (410) 316-7931

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 DETAILS AND SPECIFICATIONS FOR VEGETATIVE ESTABLISHMENT

FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN SEVEN CALENDAR DAYS FOR THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1) AND FOURTEEN DAYS FOR ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.

1. PERMANENT SEEDING:

A. SOIL TESTS: LIME AND FERTILIZER WILL BE APPLIED PER SOIL TESTS RESULTS FOR SITES GREATER THAN 5 ACRES. SOIL TESTS WILL BE DONE AT COMPLETION OF ROUGH GRADING. RATES AND ANALYSES WILL BE PROVIDED TO THE GRADING INSPECTOR AS WELL AS THE CONTRACTOR.

1. OCCURRENCE OF ACID SULFATE SOILS (GRAYISH BLACK COLOR) WILL REQUIRE COVERING WITH A MINIMUM OF 12 INCHES OF CLEAN SOIL WITH 6 INCHES MINIMUM CAPPING OF TOP SOIL. NO STOCKPILING OF MATERIAL IS ALLOWED. IF NEEDED, SOIL TESTS SHOULD BE DONE BEFORE AND AFTER A 6 WEEK INCUBATION PERIOD TO ALLOW OXIDATION OF SULFATES.

B. SEEDBED PREPARATION: AREA TO BE SEEDED SHALL BE LOOSE AND FRIABLE TO A DEPTH OF AT LEAST 3 INCHES. THE TOP LAYER SHALL BE LOOSENED BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING OCCURS. FOR SITES LESS THAN 5 ACRES, APPLY 100 POUNDS OF DOLOMITIC LIMESTONE AND 21 POUNDS OF 10-20-20 FERTILIZER PER 1,000 SQUARE FEET. HARROW OR DISK LIME AND FERTILIZER INTO THE SOIL TO A DEPTH OF AT LEAST 3 INCHES ON SLOPES FLATTER THAN 3:1.

C. SEEDING: APPLY 5-6 POUNDS PER 1,000 SQUARE FEET OF TALL FESCUE BETWEEN FEBRUARY 1 AND APRIL 30 OR BETWEEN AUGUST 15 AND OCTOBER 31. APPLY SEED UNIFORMLY ON A MOIST FIRM SEEDBED WITH A CYCLONE SEEDED DRILL, CULTIPACKER SEEDER OR HYDROSEEDER (SLURRY INCLUDES SEEDS AND FERTILIZER, RECOMMENDED ON STEEP SLOPES ONLY). MAXIMUM SEED DEPTH SHOULD BE 1/4 INCH IN CLAYEY SOILS AND 1/2 INCH IN SANDY SOILS WHEN USING OTHER THAN THE HYDROSEEDER METHOD. IRRIGATE IF SOIL MOISTURE IS DEFICIENT TO SUPPORT ADEQUATE GROWTH UNTIL VEGETATION IS FIRMLY ESTABLISHED. IF OTHER SEED MIXES ARE TO BE USED, SELECT FROM TABLE 25, ENTITLED "PERMANENT SEEDING FOR LOW MAINTENANCE AREAS" FROM THE 1994 STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. MIXES SUITABLE FOR THIS AREA ARE 1, 3, AND 5-7. MIXES 5-7 ARE SUITABLE IN NON-MOWABLE SITUATIONS.

D. MULCHING: MULCH SHALL BE APPLIED TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING. DURING THE TIME PERIODS WHEN SEEDING IS NOT PERMITTED. MULCH SHALL BE APPLIED IMMEDIATELY AFTER GRADING. MULCH SHALL BE UNROTTED, UNCHOPPED, SMALL GRAIN STRAW APPLIED AT A RATE OF 2 TONS PER ACRE OR 90 POUNDS PER 1,000 SQUARE FEET (2 BALES). IF A MULCH ANCHORING TOOL IS USED APPLY 2.5 TONS PER ACRE. MULCH MATERIALS SHALL BE RELATIVELY FREE OF ALL KINDS OF WEEDS AND SHALL BE COMPLETELY FREE OF PROHIBITED NOXIOUS WEEDS. SPREAD MULCH UNIFORMLY, MECHANICALLY OR BY HAND, TO A DEPTH OF 1-2 INCHES.

E. SECURING STRAW MULCH: STRAW MULCH SHALL BE SECURED IMMEDIATELY FOLLOWING MULCH APPLICATION TO MINIMIZE MOVEMENT BY WIND OR WATER. THE FOLLOWING METHODS ARE PERMITTED:

(I) USE A MULCH ANCHORING TOOL WHICH IS DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE TO A MINIMUM DEPTH OF 2 INCHES. THIS IS THE MOST EFFECTIVE METHOD FOR SECURING MULCH, HOWEVER, IT IS LIMITED TO RELATIVELY FLAT AREAS WHERE EQUIPMENT CAN OPERATE SAFELY.

(II) WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. IF MIXED WITH WATER, USE 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.

(III) LIQUID BINDERS MAY BE USED AND APPLIED HEAVIER AT THE EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF SLOPES. THE REMAINDER OF THE AREA SHOULD APPEAR UNIFORM AFTER BINDER APPLICATION. BINDERS LISTED IN THE 1994 STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL OR APPROVED EQUAL SHALL BE APPLIED AT RATES RECOMMENDED BY THE MANUFACTURERS.

(IV) LIGHTWEIGHT PLASTIC NETTING MAY BE USED TO SECURE MULCH. THE NETTING WILL BE STAPLED TO THE GROUND ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

2. TEMPORARY SEEDING:

LIME:	100 POUNDS OF DOLOMITIC LIMESTONE PER 1,000 SQUARE FEET.
FERTILIZER:	15 POUNDS OF 10-10-10 PER 1,000 SQUARE FEET.
SEED:	PERENNIAL RYE - 0.92 POUNDS PER 1,000 SQUARE FEET (FEBRUARY 1 THROUGH APRIL 30 OF AUGUST 15 THROUGH NOVEMBER 1). MILLET - 0.92 POUNDS PER 1,000 SQUARE FEET (MAY 1 THROUGH AUGUST 15).
MULCH:	SAME AS 1 D AND E ABOVE.

3. NO FILLS MAY BE PLACED ON FROZEN GROUND. ALL FILL TO BE PLACED IN APPROXIMATELY HORIZONTAL LAYERS, EACH LAYER HAVING A LOOSE THICKNESS OF NOT MORE THAN 8 INCHES. ALL FILL IN ROADWAYS AND PARKING AREAS IS TO BE CLASSIFIED TYPE 2 AS PER ANNE ARUNDEL COUNTY CODE - ARTICLE 21, SECTION 2-308, AND COMPACTED TO 90% DENSITY; COMPACTION TO BE DETERMINED BY ASTM D-1557-66T (MODIFIED PROCTOR). ANY FILL WITHIN THE BUILDING AREA TO BE COMPACTED TO A MINIMUM OF 95% AS DETERMINED BY METHODS PREVIOUSLY MENTIONED. FILLS FOR POND EMBANKMENTS SHALL BE COMPACTED AS PER MD-378 CONSTRUCTION SPECIFICATIONS. ALL OTHER FILLS SHALL BE COMPACTED SUFFICIENTLY SO AS TO BE STABLE AND PREVENT EROSION AND SLIPPAGE.

4. PERMANENT SOD:

INSTALLATION OF SOD SHOULD FOLLOW PERMANENT SEEDING DATES. PERMANENT SOD IS TO BE TALL FESCUE, STATE APPROVED SOD; LIME AND FERTILIZER PER PERMANENT SEEDING SPECIFICATIONS AND LIGHTLY IRRIGATE SOIL PRIOR TO LAYING SOD. SOD IS TO BE LAID ON THE CONTOUR WITH ALL ENDS TIGHTLY ABUTTING. JOINTS ARE TO BE STAGGERED BETWEEN ROWS. WATER AND ROLL OR TAMP SOD TO INSURE POSITIVE ROOT CONTACT WITH THE SOIL. ALL SLOPES STEEPER THAN 3:1, AS SHOWN, ARE TO BE PERMANENTLY SODDED OR PROTECTED WITH AN APPROVED EROSION CONTROL NETTING. ADDITIONAL WATERING FOR ESTABLISHMENT MAY BE REQUIRED. SOD IS NOT TO BE APPLIED ON FROZEN GROUND. SOD SHALL NOT BE HARVESTED OR TRANSPLANTED WHEN MOISTURE CONTENT (DRY OR WET) AND/OR EXTREME TEMPERATURE MAY ADVERSELY AFFECT ITS SURVIVAL. IN THE ABSENCE OF ADEQUATE RAINFALL, IRRIGATION SHOULD BE PERFORMED TO INSURE ESTABLISHED SOD.

5. MINING OPERATIONS:

SEDIMENT CONTROL PLANS FOR MINING OPERATIONS MUST INCLUDE THE FOLLOWING SEEDING DATES AND MIXTURES:

FOR SEEDING DATES OF:

FEBRUARY 1 THROUGH APRIL 30 AND AUGUST 15 THROUGH OCTOBER 31, USE SEED MIXTURE OF TALL FESCUE AT THE RATE OF 2 POUNDS PER 1,000 SQUARE FEET AND SERICEA LESPEDEZA AT THE RATE OF 0.5 POUNDS PER 1,000 SQUARE FEET

FOR SEEDING DATES OF MAY 1 THROUGH AUGUST 14, USE SEED MIXTURE OF TALL FESCUE AT THE RATE OF 2 POUNDS PER 1,000 SQUARE FEET AND WEEPING LOVEGRASS AT THE RATE OF 0.1 POUND PER 1,000 SQUARE FEET.

NOTE: USE OF THIS INFORMATION DOES NOT PRECLUDE MEETING ALL OF THE REQUIREMENTS OF THE "1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL".

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

[signature] 11/13/14
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] 11-11-14
RICHARD L. BUTT
Signature of Engineer (print name below signature) — *Date*

DEVELOPER'S CERTIFICATE

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[signature] 11-12-14
C NIGHTINGALE
Signature of Developer (print name below signature) — *Date*

CONTRACTOR NOTE:
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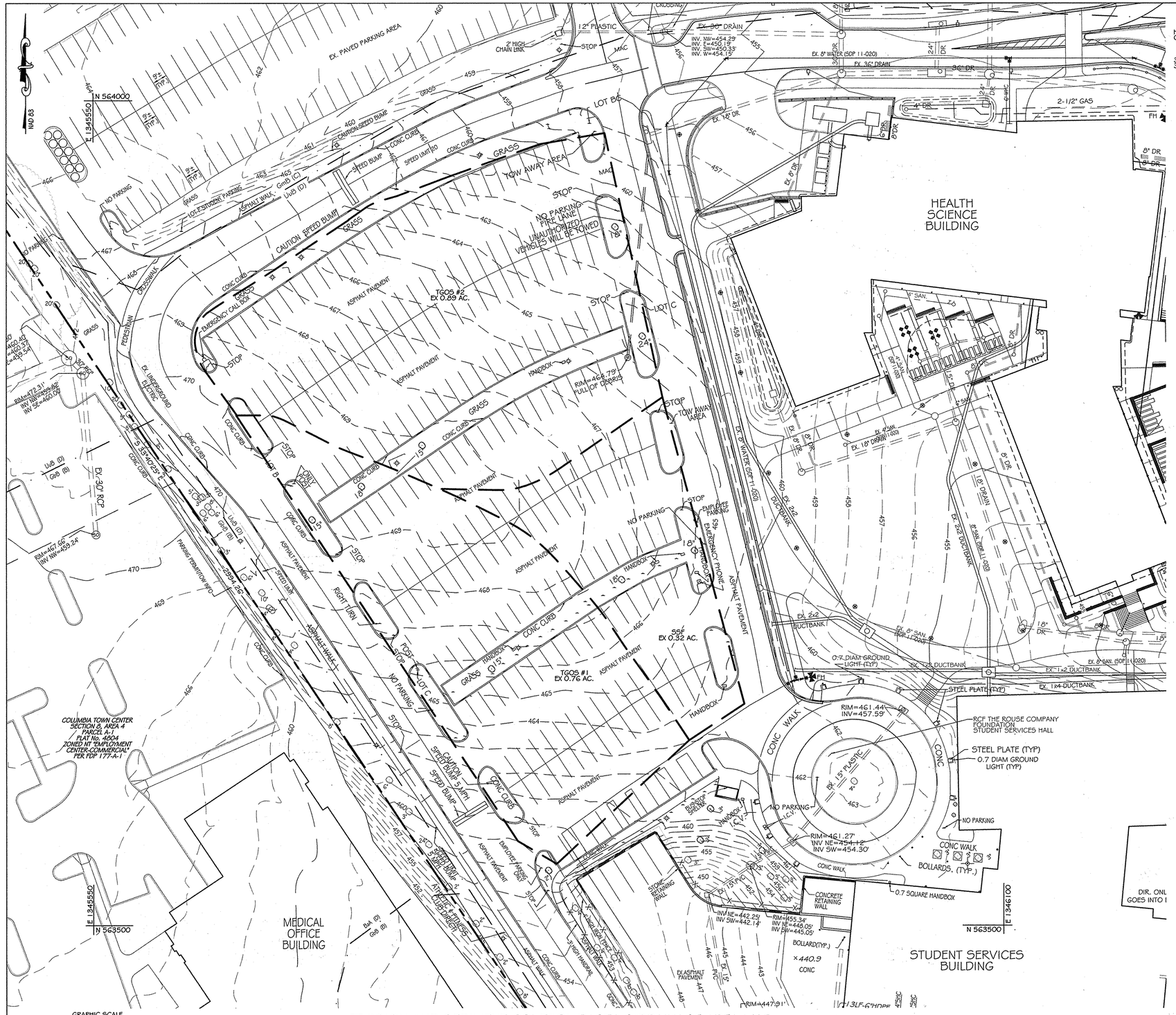
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 31089 EXPIRATION DATE: 11/21/14



GRAPHIC SCALE
30' 0 10' 30' 60'
(IN FEET)
SCALE: 1"= 30'

EROSION AND SEDIMENT CONTROL EXISTING DRAINAGE AREA MAP

SCALE: 1" = 30'

BENCHMARK DATA

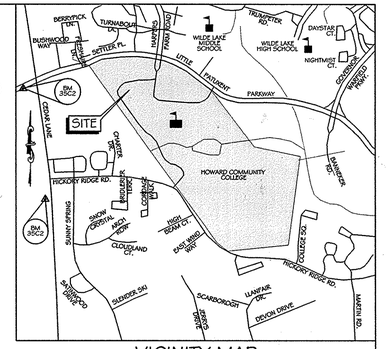
HORIZONTAL NAD83/91 AND VERTICAL (NGVD29) CONTROL BASED ON GPS OBSERVATIONS. HOWARD COUNTY BENCH MARK NO.'S

		NORTHING	EASTING	ELEV.
35C2	HOW CO MON	563920.630	1344204.150	464.133
35C2	HOW CO MON	562148.450	1344554.472	452.267

LEGEND

DRAINAGE AREA LINE

GmB (C) UuB (D) SOILS LINE



VICINITY MAP

SCALE 1" = 1000'
ADC MAP: 15 GRID: D6

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RICHARD L. BUTT — Signature of Engineer (print name below signature) — Date 11-11-14

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C. NIGHTINGALE — Signature of Developer (print name below signature) — Date 11-12-14

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STATE OF MARYLAND — RICHARD L. BUTT — No. 031089 — PROFESSIONAL ENGINEER — 11/11/14

KCI TECHNOLOGIES — Engineers, Planners, Scientists, Construction Managers
936 Ridgebrook Road, Sparks, MD 21152
Phone (410)316-7800
Fax (410)316-7863
www.kci.com

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		1/6/15 Date
Chief, Division of Land Development		1-06-15 Date
Chief, Development Engineering Division		12. 18. 14 Date

Rev:	Date:	Description:	By:
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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 - Science, Engineering & Technology Building
SITE PACKAGE
PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

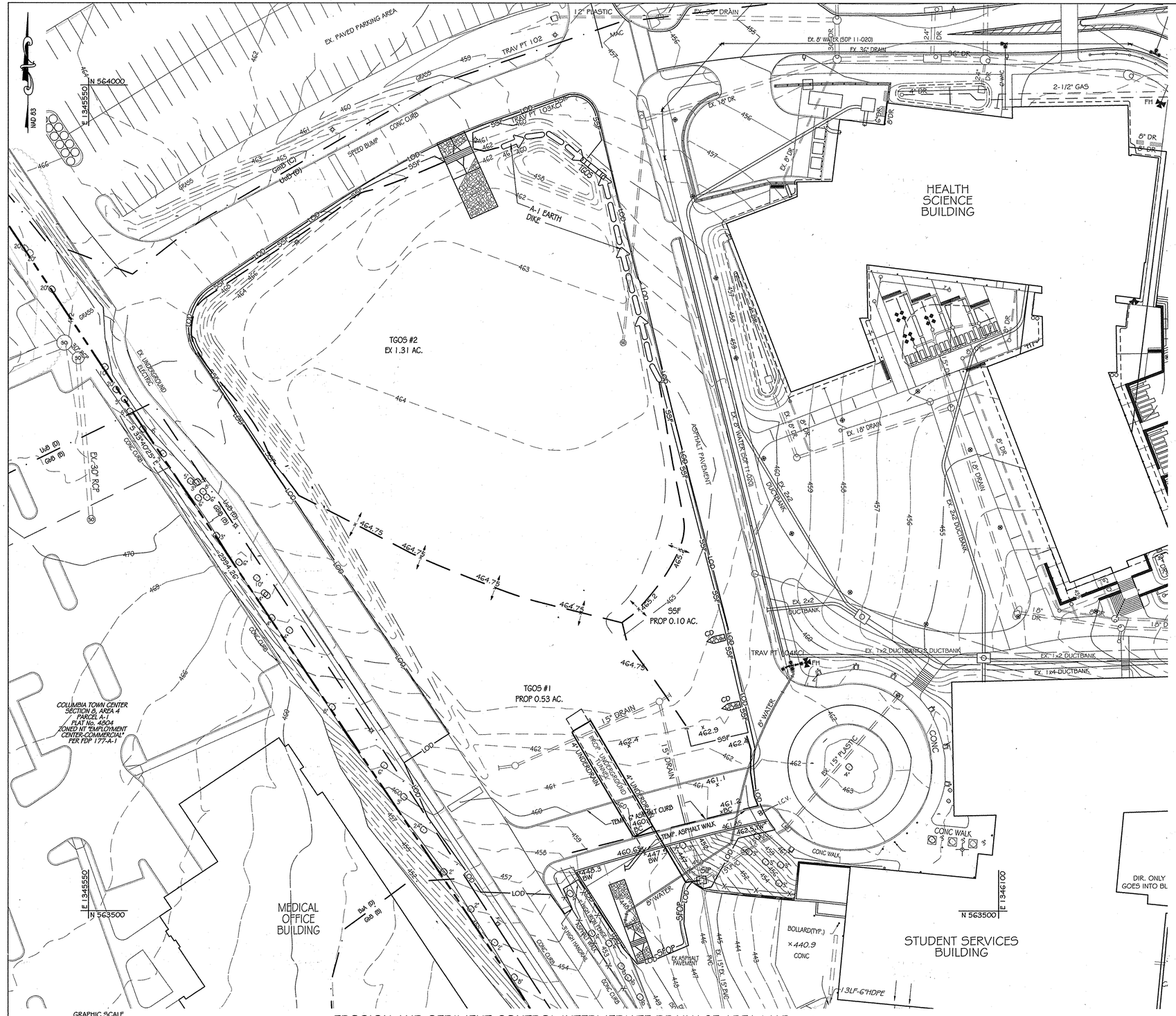
Date:	10-1-2014	Scale:	1" = 30'
Drawn By:	C.T.B	Designed By:	B.S.
Approved By:	R.T.B	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title: EROSION AND SEDIMENT CONTROL EXISTING DRAINAGE AREA MAP

Discipline Number: C11.07

Sheet Number: 23 OF 42

SDP 14-066



GRAPHIC SCALE
30' 0 10' 30' 60'
(IN FEET)
SCALE: 1"= 30'

EROSION AND SEDIMENT CONTROL INTERMEDIATE DRAINAGE AREA MAP

SCALE: 1" = 30'

BENCHMARK DATA

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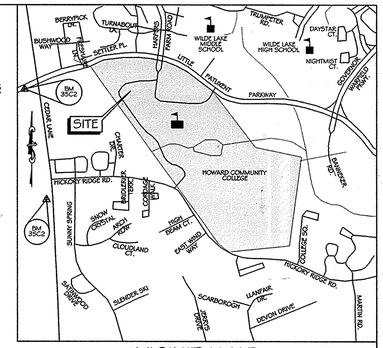
LEGEND

- CIP — CURB INLET PROTECTION
- SIP — STANDARD INLET PROTECTION
- DRAINAGE AREA LINE
- LOD — LIMIT OF DISTURBANCE
- DIVERSION DIKE
- 55F — SUPER SILT FENCE
- SFOP — SILT FENCE ON PAVEMENT
- GmB (C), UuB (D) — SOILS LINES
- TGOS — TEMPORARY GABION OUTLET STRUCTURE
- TSOS — TEMPORARY STONE OUTLET STRUCTURE
- STABILIZED CONSTRUCTION ENTRANCE



VICINITY MAP

SCALE 1" = 1000'
ADC MAP: 15 GRID: D6

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Howard Soil Conservation District — Date 11/13/14

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RICHARD L. BUTT — Signature of Engineer (print name below signature) — Date 11-11-14

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C. D. NIGHTINGALE — Signature of Developer (print name below signature) — Date 11-12-14

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STATE OF MARYLAND — RICHARD L. BUTT — No. 031089 — PROFESSIONAL ENGINEER — 11-11-14

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APPROVED: Howard County Department of Planning & Zoning

Director — Date 1/6/15
Chief, Division of Land Development — Date 1-06-15
Chief, Development Engineering Division — Date 12-18-14

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 - Science, Engineering & Technology Building
SITE PACKAGE
PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 0458868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

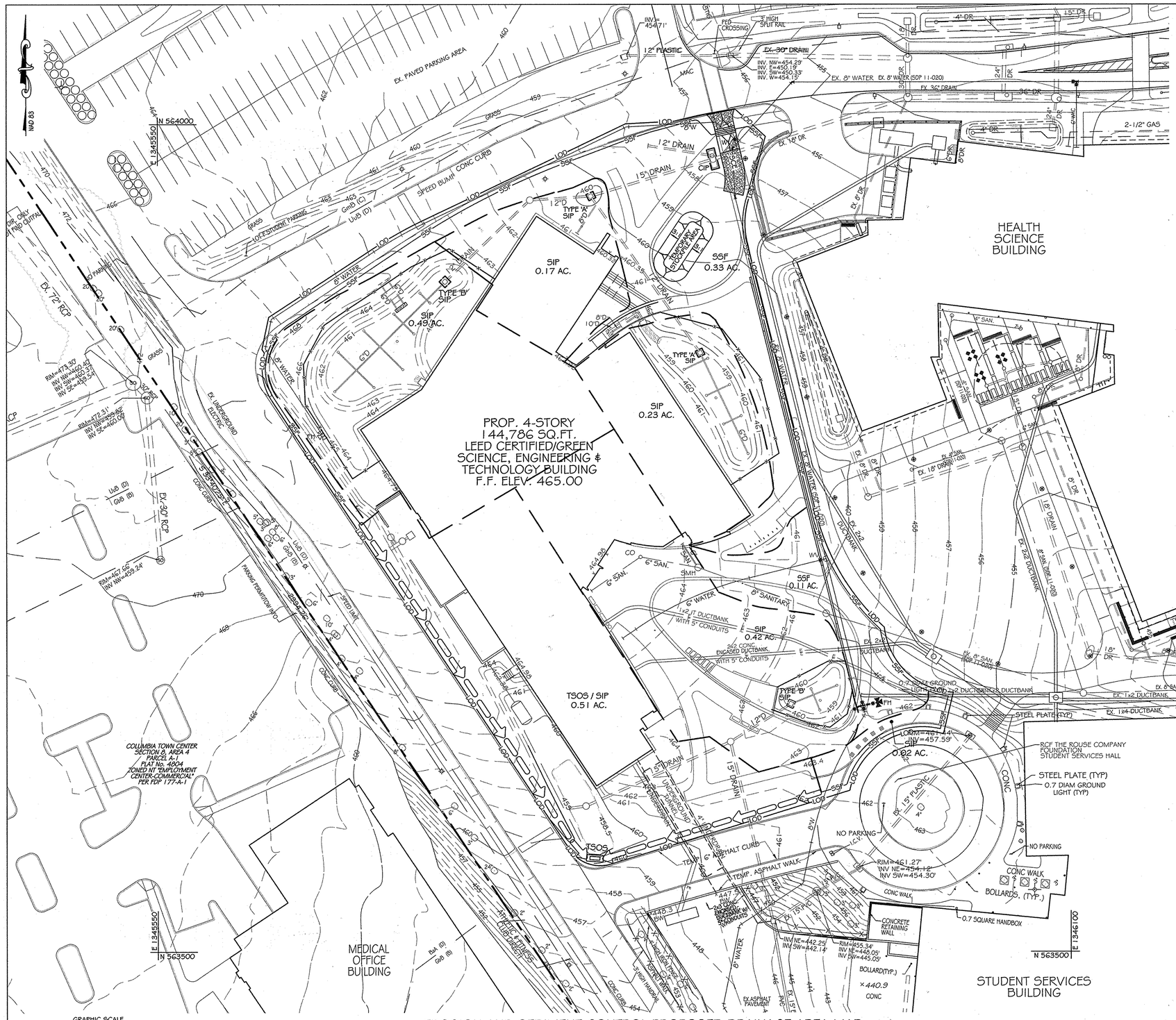
Date:	10-1-2014	Scale:	1" = 30'
Drawn By:	C.T.B	Designed By:	B.S.
Approved By:	R.T.B	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title: EROSION AND SEDIMENT CONTROL INTERMEDIATE DRAINAGE AREA MAP

Discipline Number: C11.08

Sheet Number: 24 OF 42

SDP 14-066



EROSION AND SEDIMENT CONTROL PROPOSED DRAINAGE AREA MAP

SCALE: 1" = 30'

BENCHMARK DATA

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

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LEGEND

- CIP — CURB INLET PROTECTION
- SIP — STANDARD INLET PROTECTION
- DRAINAGE AREA LINE
- LOD — LIMIT OF DISTURBANCE
- DIVERSION DIKE
- SSF — SUPER SILT FENCE
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- TSOS — TEMPORARY STONE OUTLET STRUCTURE
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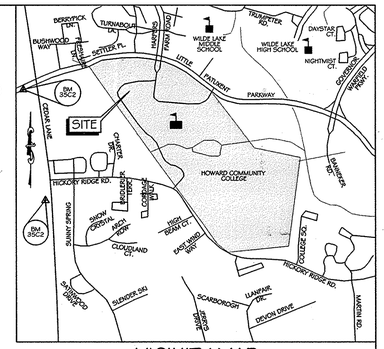

VICINITY MAP

SCALE 1" = 1000'
ADC MAP: 15 GRID: D6

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John R. Robertson — 11/13/14

Howard Soil Conservation District — Date

ENGINEER'S CERTIFICATE

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Richard L. Butt — 11-11-14

RICHARD L. BUTT — Date

Signature of Engineer (print name below signature)

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C. Nightingale — 11-12-14

C. NIGHTINGALE — Date

Signature of Developer (print name below signature)

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APPROVED: Howard County Department of Planning & Zoning

Director — 1/6/15 Date

Chief, Division of Land Development — 1-06-15 Date

Chief, Development Engineering Division — 12 · 18 · 14 Date

Rev:	Date:	Description:	By:
1			
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ATTN: Mr. Chuck Nightingale
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Project Name:
Howard Community College - Science, Engineering & Technology Building

SITE PACKAGE
PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 045868

ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date:	10-1-2014	Scale:	1" = 30'
Drawn By:	C.T.B	Designed By:	B.S.
Approved By:	R.T.B	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title: EROSION AND SEDIMENT CONTROL PROPOSED DRAINAGE AREA MAP

STATE OF MARYLAND — RICHARD L. BUTT — No. 031089 — PROFESSIONAL ENGINEER — 11/21/14

Discipline Number: C11.09

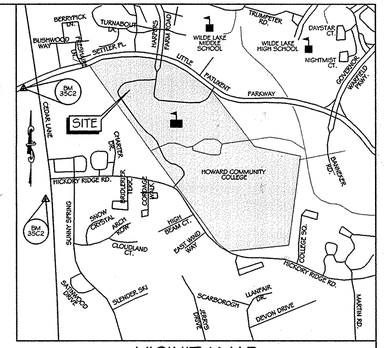
Sheet Number: 25 OF 42

SDP 14-066

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: 15 GRID: D6

LEGEND

- PROPERTY LINE
- 450 EX. INDEX CONTOUR
- 451 EX. INTERMEDIATE CONTOUR
- EX. LIGHT POLE
- 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 — LIMIT OF DISTURBANCE
- SOILS LINE
- DRAINAGE AREA DIVIDE
- (A) DRAINAGE AREA DESIGNATION
- SOIL BORING

SOILS TABLE

SOIL UNIT	SOIL UNIT NAME	HYDROLIC SOIL GROUP
UuB (D)	Urban land-Udorthents complex, 0 to 8 percent slopes	D
GmB (C)	Glenville Silt Loam, 3 to 8 percent slopes	C
GbB (B)	Glandstone Loam, 3 to 8 percent slopes	B
BaA (D)	Baile Silt Loam, 0 to 3 percent slopes	D

STORMWATER MANAGEMENT EXISTING CONDITIONS DRAINAGE AREA MAP

SCALE: 1" = 30'

GRAPHIC SCALE
30' 0 10' 30' 60'
(IN FEET)
SCALE: 1" = 30'

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John R. Robertson — 11/13/14
Howard Soil Conservation District — Date

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Richard L. Butt — 11-11-14
RICHARD L. BUTT — Date
Signature of Engineer (print name below signature)

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C. Nightingale — 11-12-14
C. NIGHTINGALE — Date
Signature of Developer (print name below signature)

CONTRACTOR NOTE:
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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. 31089 EXPIRATION DATE: 11/21/14

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ENGINEERS
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Fax (410)316-7803
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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		1/6/15 Date
Chief, Division of Land Development	BG	1-06-15 Date
Chief, Development Engineering Division		12-18-14 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 -
Science, Engineering & Technology Building
SITE PACKAGE
PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date:	10-1-2014	Scale:	1" = 30'
Drawn By:	C.T.B	Designed By:	B.S.
Approved By:	R.T.B	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

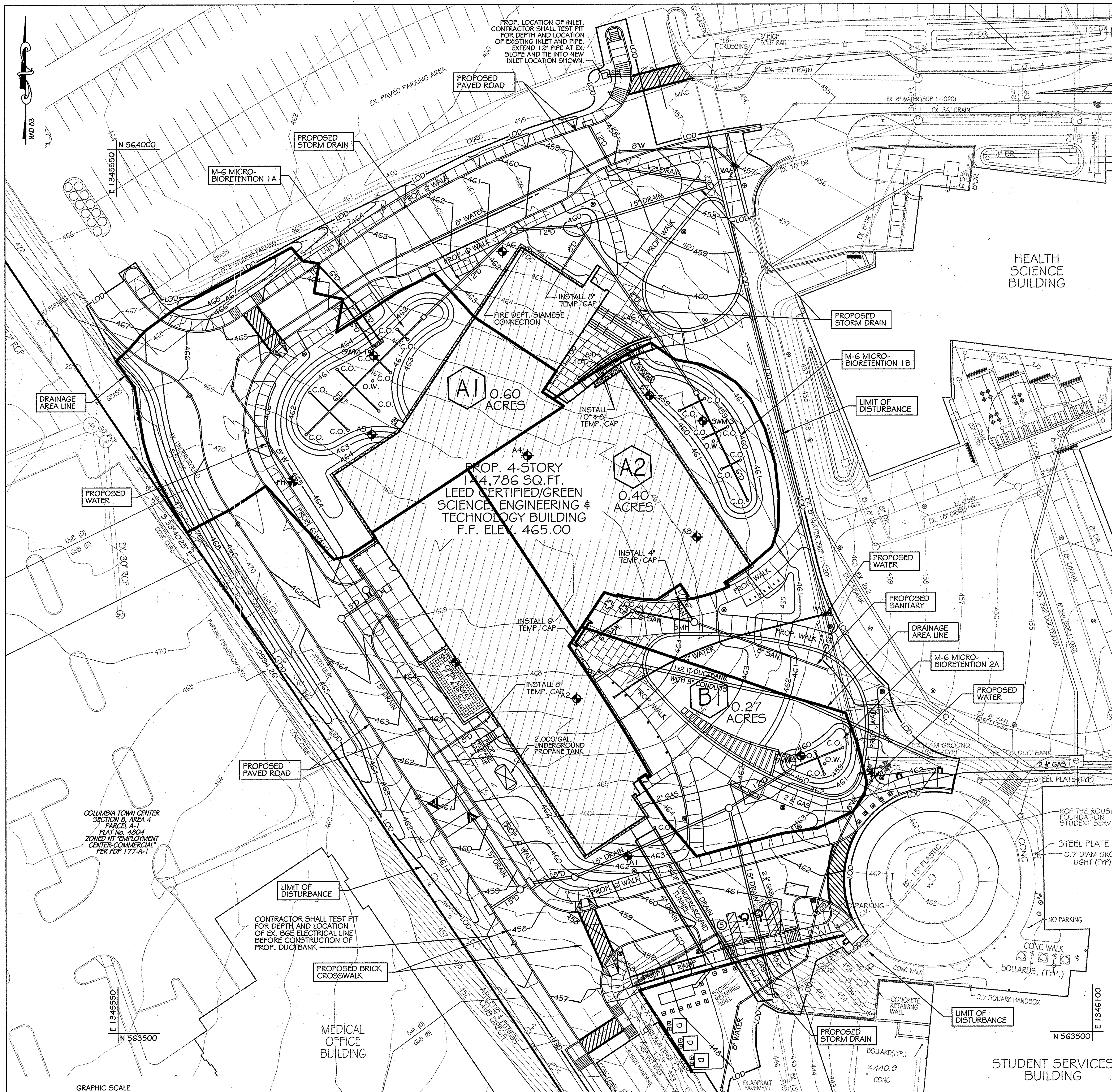
Sheet Title:
EXISTING CONDITIONS STORMWATER MANAGEMENT DRAINAGE AREA MAP

STATE OF MARYLAND — RICHARD T. ROOT — No. 031089 — PROFESSIONAL ENGINEER — 11-21-14

Discipline Number: C12.00

Sheet Number: 26 OF 42

SDP 14-066



STORMWATER MANAGEMENT DEVELOPED CONDITIONS DRAINAGE AREA MAP
SCALE: 1" = 30'

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
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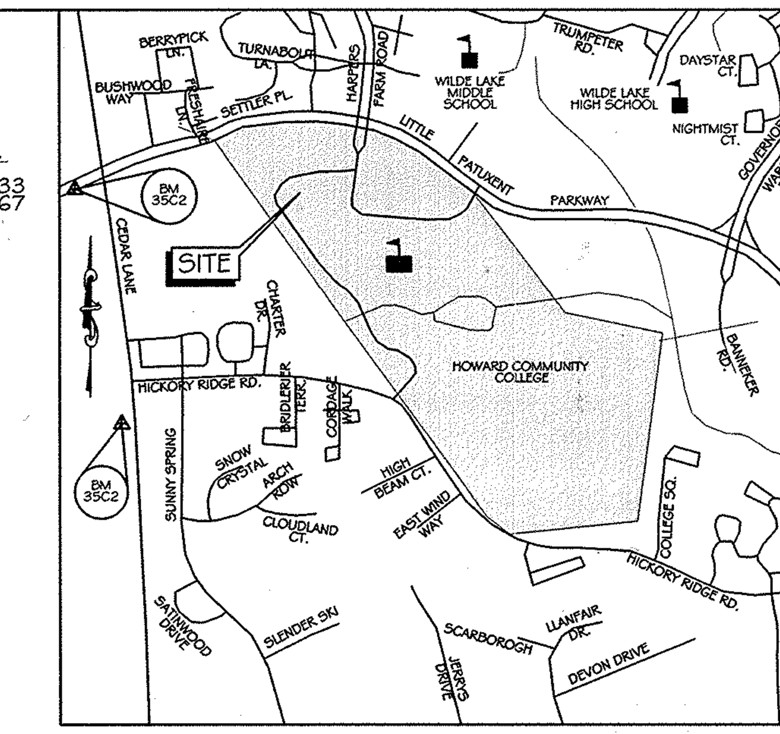

VICINITY MAP

SCALE 1" = 1000'
ADC MAP: 15 GRID: D6

LEGEND

- 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. MINOR CONTOUR
- EX. MAJOR CONTOUR
- EX. FIRE HYDRANT
- CO EX. CLEANOUT
- PA EX. PLANTING AREA
- EB EX. ELECTRIC BOX
- EX. SANITARY PIPE
- EX. STORM PIPE
- EX. ELECTRIC
- EX. TELEPHONE
- EX. CABLE TV
- LOD LIMIT OF DISTURBANCE
- (A) DRAINAGE AREA DESIGNATION
- DRAINAGE AREA DIVIDE
- PROP. TEE CONNECTION
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MINOR CONTOUR
- PROP. MAJOR CONTOUR
- PROP. BUILDING
- PROP. EDGE OF PAVEMENT
- GmB(C) / UuB(D) SOILS LINE AND DESIGNATION
- C.O. PROP. CLEANOUT
- O.W. PROP. OBSERVATION WELL

PROPOSED CONDITION DRAINAGE AREA DISCHARGE SUMMARY

WATERSHED	AREA	ACRES	Tc	RCN	DISCHARGE (SEE TR-20)		
					Q1	Q10	Q100
LITTLE PATUXENT	A1	0.60	0.10	90	1.5	3.5	5.2
	A2	0.41	0.10	92	1.1	2.5	3.6
	BYPASS A	0.25	0.10	94	0.7	1.6	2.3
	B1	0.27	0.10	88	0.6	1.5	2.3
	BYPASS B	0.65	0.10	93	1.8	4.0	5.8
				TOTAL	5.7	13.1	19.2

DRAINAGE AREA SUMMARY TABLE

WATERSHED	FACILITY NO.	ACRES	IMP. AC.	PERVIOUS AREA	WOODS	FACILITY TYPE
LITTLE PATUXENT	1A	0.60	0.32	0.28	0.00	MICRO-BIORETENTION M-6
	1B	0.41	0.28	0.13	0.00	MICRO-BIORETENTION M-6
	BYPASS A	0.25	0.20	0.05	0.00	-
	2A	0.27	0.12	0.15	0.00	MICRO-BIORETENTION M-6
	BYPASS B	0.65	0.48	0.17	0.00	-
	TOTAL AREA = 2.18 ACRES					

STORMWATER MANAGEMENT SUMMARY TABLE

WATERSHED	DA #	FACILITY NO.	FACILITY TYPE	ESDv						DISCHARGE (cfs)					
				TARGET		PROVIDED		TREATED	REQUIRED	CPv (Q1)		Q10		Q100	
				Pe	ESDv(CF)	Pe	ESDv(CF)	ESDv(CF)	ESDv(CF)	EX.	PROP.	EX.	PROP.	EX.	PROP.
LITTLE PATUXENT	A1	1A	MICRO-BIORETENTION M-6	2.0	2,267	2.6	3,046	3,046	-	-	-	-	-	-	-
	A2	1B	MICRO-BIORETENTION M-6	1.9	1,911	2.6	2,659	2,659	-	-	-	-	-	-	-
	B1	2A	MICRO-BIORETENTION M-6	0.7	293	2.6	1,119	1119	-	-	--	-	-	-	-
			TOTAL =		4,471	-	6,824	6,824	-	5.7	5.7	13	13.1	19.1	19.2

SUMMARY: TO ACHIEVE ENVIRONMENTAL SITE DESIGN REQUIREMENTS, THREE (3) MICRO-BIORETENTION (M-6) FACILITIES HAVE BEEN USED. THE DISCHARGE EVENTUALLY FLOWS TO THE LITTLE PATUXENT RIVER.

CONCLUSION: THE TREATED ESDv (6,024 CF) IS GREATER THAN THE REQUIRED (4,471 CF). THEREFORE, ENVIRONMENTAL SITE DESIGN HAS BEEN ACHIEVED.

SOILS TABLE

KEY	DESCRIPTION	HYDRIC (Y/N)	K-VALUE
UuB(D)	Urban land-Udorthents complex, 0 to 8 percent slopes	N	0.22

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.

[signature] 11/13/14

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] 11-11-14

RICHARD L. BUTT

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."

[signature] 11-12-14

C NIGHTINGALE

Signature of Developer (print name below signature) Date

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APPROVED: Howard County Department of Planning & Zoning

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[signature] Director	1/6/15
[signature] Chief, Division of Land Development	1-06-15
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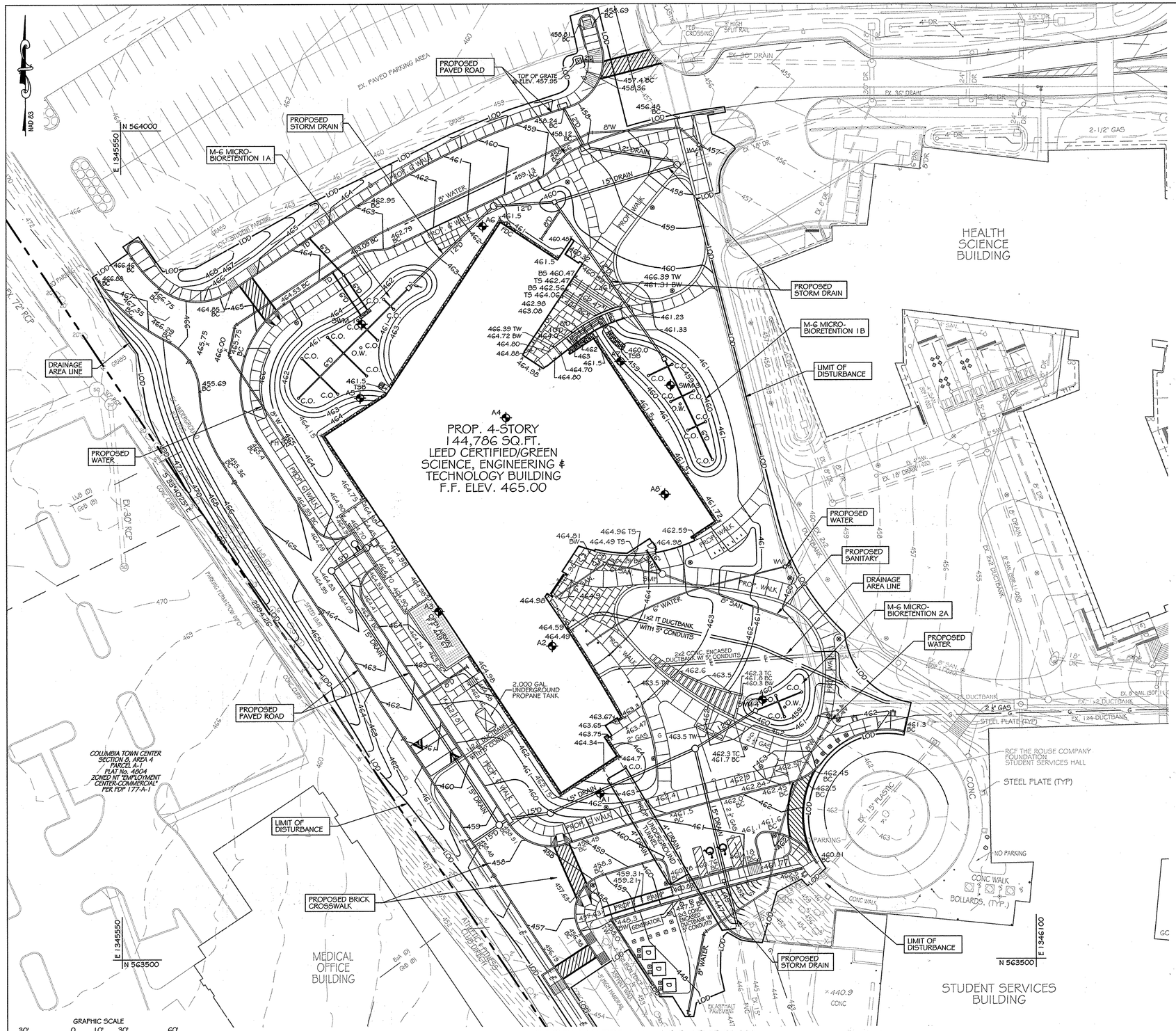
Drawn By: C.T.B	Designed By: B.S.		
Approved By: R.T.B	Project No: 27111245		
Tax Map-Grid: 35-6	Zoning: POR & NT		

Sheet Title: ESD STORMWATER MANAGEMENT DRAINAGE AREA MAP

STATE OF MARYLAND — RICHARD L. BUTT — No. 031089 — PROFESSIONAL ENGINEER — 11-11-14

Discipline Number: C12.01

SDP 14-066



STORMWATER MANAGEMENT PLAN

SCALE: 1" = 30'

BENCHMARK DATA

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

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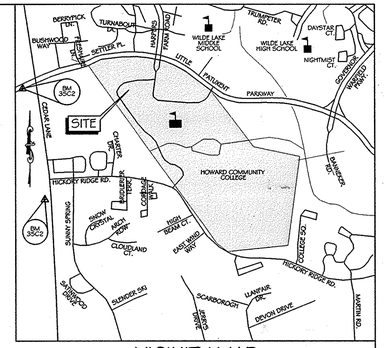
35C2	HOW CO MON	562148.450	1344554.472	452.267

LEGEND

- PROPERTY LINE
- 450 — EX. INDEX CONTOUR
- 451 — EX. INTERMEDIATE CONTOUR
- EX. LIGHT POLE
- 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
- 460 — PROP. CONTOUR
- 460.70 x — PROP. SPOT ELEVATION
- 8" SANITARY — PROP. SANITARY
- 12" DRAIN — PROP. STORM DRAIN
- 8" WATER — PROP. WATER
- FH — PROP. FIRE HYDRANT
- WV — PROP. WATER VALVE
- PROP. MANHOLE
- C.O. — PROP. CLEANOUT
- O.W. — PROP. OBSERVATION WELL
- PROP. INLET
- LOD — LIMIT OF DISTURBANCE
- SOIL BORING



VICINITY MAP

SCALE 1" = 1000'
ADC MAP: 15 GRID: D6

GENERAL NOTES

1. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN IS BASED UPON A SURVEY CONDUCTED BY MERCADO CONSULTANTS, INC. IN SEPTEMBER 2010 AND AERIAL TOPO FROM VIRGINIA RESOURCE MAPPING IN APRIL 27, 2009.
2. THE CONTRACTOR SHALL PROVIDE PRIVATE SUBSURFACE UTILITY LOCATION SERVICE, TO LOCATE AND MARK ANY AND ALL EXISTING UNDERGROUND UTILITIES, PRIOR TO THE START OF ANY CONSTRUCTION.
3. CONTRACTOR SHALL TEST PIT, AS REQUIRED, ALL EXISTING UTILITIES WITHIN THE LIMITS OF CONSTRUCTION TO DETERMINE THE EXACT LOCATION AND DEPTH. CONTRACTOR SHALL REPORT ANY DISCREPANCIES BETWEEN WHAT IS FOUND IN THE FIELD AND THAT INDICATED ON THE PLAN TO KCI TECHNOLOGIES, INC. ALL UTILITIES SHALL BE RETAINED UNLESS INDICATED OTHERWISE. DAMAGE TO EXISTING CONSTRUCTION AND UTILITIES TO REMAIN SHALL BE REPAIRED AS REQUIRED, TO THE OWNERS SATISFACTION, AT THE EXPENSE OF THE CONTRACTOR.
4. CONTRACTOR SHALL REMOVE AND REPLACE ALL DAMAGED CURB AND GUTTER, UTILITIES, SIDEWALKS, PAVEMENT, ETC., THAT ARE NOT INDICATED TO BE DEMOLISHED, AS REQUIRED FOR TIE-IN TO NEW CONSTRUCTION.
5. CONTRACTOR SHALL REPAIR AND MAINTAIN SEDIMENT CONTROL DEVICES UNTIL ALL AREAS WITHIN LIMITS OF CONSTRUCTION ARE STABILIZED. WITH THE APPROVAL OF INSPECTOR, ALL SEDIMENT CONTROL DEVICES SHALL BE REMOVED AND DISTURBED AREAS RESTORED AND STABILIZED.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COST AND WORK REQUIRED TO ADJUST EXISTING AND PROPOSED UTILITIES AND APPURTENANCES TO FINISHED GRADES WITHIN THE LIMITS OF WORK.
7. OBSTRUCTIONS SHOWN ON THESE DRAWINGS ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. KCI TECHNOLOGIES DOES NOT WARRANT OR GUARANTEE THE CORRECTNESS OR THE COMPLETENESS OF THE INFORMATION GIVEN. THE CONTRACTOR MUST VERIFY SUCH INFORMATION TO HIS OWN SATISFACTION.
8. CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN WORKING NEAR OR OVER EXISTING UTILITIES.
9. 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.
10. 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.
11. SHOULD THE CONTRACTOR DISCOVER DISCREPANCIES BETWEEN THE PLANS AND THE 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.
12. EXISTING CURB, GUTTER, AND SIDEWALK SHALL BE REMOVED TO THE NEAREST JOINT.
13. DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
14. ALL CONSTRUCTION SHALL FOLLOW LATEST HOWARD COUNTY DEPT. OF PUBLIC WORKS STANDARD SPECIFICATIONS & DETAILS OF CONSTRUCTION OR AS DETAILED ON THE DRAWINGS.
15. THIS SHEET IS FOR PURPOSE OF REFERENCING SITE, GRADING, DRAINAGE AND SWM FEATURES TO THEIR LOCATION ON THE OVERALL SITE. FOR DETAILED GRADING, STORM DRAIN INFORMATION AND ENLARGEMENT INFORMATION SEE SHEETS, C-3.00 THRU C-10.02, FOR DETAILED SWM INFORMATION SEE SHEETS C-12.00 THRU C-12.10.

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

John R Robertson — 4/13/14
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."

Richard L. Butt — 11-11-14
Richard L. Butt — Date
Signature of Engineer (print name below signature)

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C Nightingale — 11-12-14
C Nightingale — Date
Signature of Developer (print name below signature)

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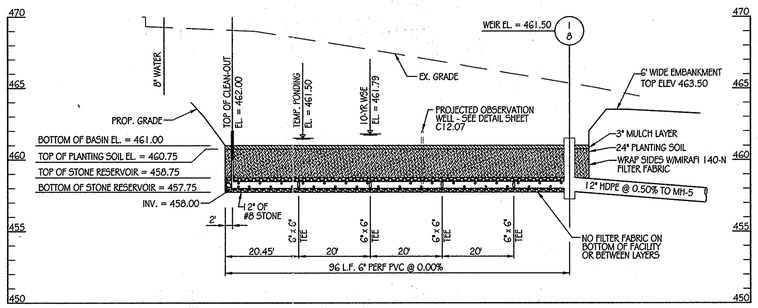
Sheet Title: STORMWATER MANAGEMENT PLAN

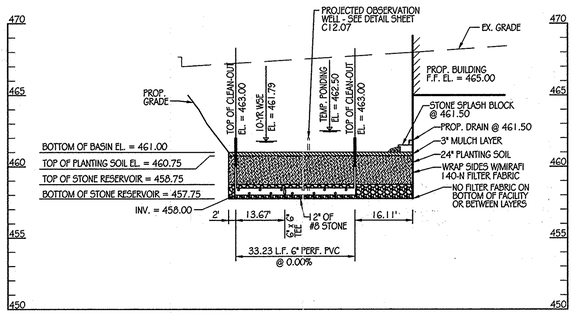
STATE OF MARYLAND — RICHARD L. BUTT — No. 031089 — PROFESSIONAL ENGINEER — 11-11-14

Discipline Number: C12.02
Sheet Number: 28 OF 42

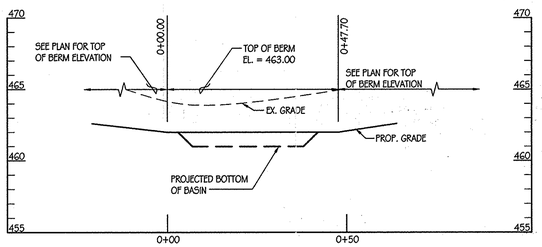
SDP 14-066



MICRO-BIORETENTION FACILITY #1A
SECTION A-A
SCALE: 1" = 20' HORIZONTAL
1" = 5' VERTICAL



MICRO-BIORETENTION FACILITY #1A
SECTION B-B
SCALE: 1" = 20' HORIZONTAL
1" = 5' VERTICAL



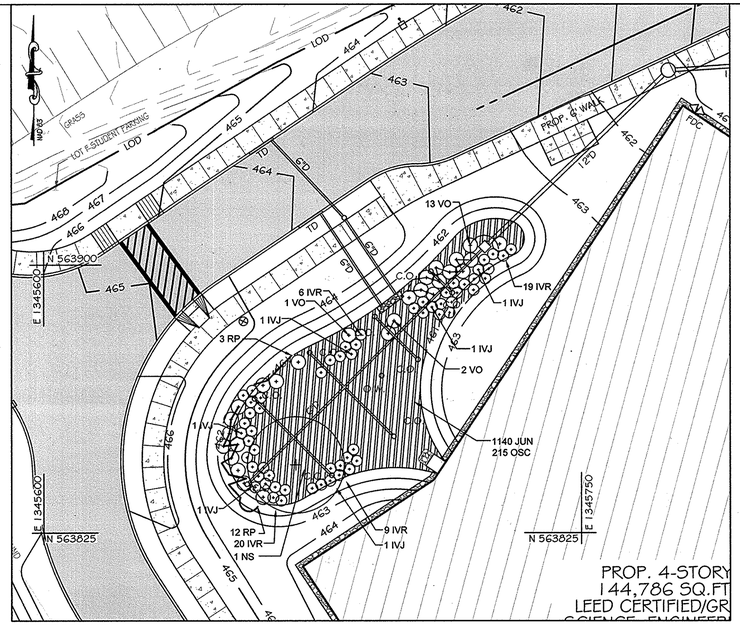
CENTERLINE BERM SWM FACILITY #1A
SCALE: 1" = 20' HORIZONTAL
1" = 5' VERTICAL

℄ BERM DATA

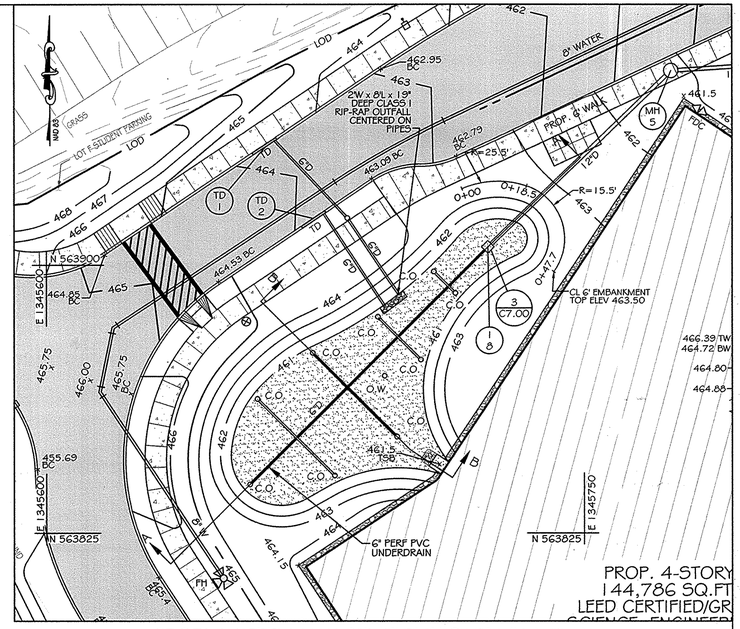
STATION	BEARING/ RADIUS	DISTANCE / ARC LENGTH	CHORD
0+00			
	25.5'	18.5'	N67°30'19"E 18.10'
0+18.5			
	15.5'	29.2'	S17°41'12"E 25.09'
0+47.7			

LEGEND

- 440 — EX. CONTOURS
- EX. WATER LINE
- FIRE HYDRANT
- 440 — PROP. MAJOR CONTOUR
- 441 — PROP. MINOR CONTOUR
- 12" DRAIN — PROP. STORM DRAIN
- 6" WATER — PROP. WATER LINE
- LIMIT OF PLANTING SOIL
- PROP. INLET
- PROP. MANHOLE
- C.O. — PROP. CLEANOUT



STORMWATER MANAGEMENT FACILITY #1A LANDSCAPE PLAN
SCALE: 1" = 20'



STORMWATER MANAGEMENT FACILITY #1A PLAN
SCALE: 1" = 20'

PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME / COMMON NAME	SIZE	ROOT	COMMENTS
NS	1	Nyssa sylvatica / Blackgum	3" cal.	B&B	Straight Central Leader, Full Canopy
IVR	54	Ilex verticillata 'Red Sprite' / Red Sprite Winterberry (Female)	#5	cont.	18" Ht., Full, Spaced as shown
IVJ	6	Ilex verticillata 'Jim Dandy' / Jim Dandy Winterberry (Male)	#5	cont.	18" Ht., Full, Spaced as shown
RP	12	Rhododendron periclymenoides / Pinxterbloom Azalea	#5	cont.	30" Ht., Full, Spaced as shown
VO	15	Viburnum opulus var.americanum / American Cranberrybush Viburnum	#5	cont.	36" Ht., Full, Spaced as shown
JUN	850	Juncus effusus / Soft Rush	#5P-4	cont.	15" O.C.
OSC	175	Osmunda cinnamomea / Cinnamon Fern	#5P-4	cont.	24" O.C.

FACILITY #1A TREATMENT SUMMARY TABLE

DRAINAGE AREA	TARGET		PROVIDED		TREATED ESD_V
	P_E	ESD_V	P_E	ESD_V	
0.60 AC.	2.0	2,267 C.F.	2.6	3,046 C.F.	3,046 C.F.

DESIGN SUMMARY

1. FACILITY NUMBER: 1A
2. FACILITY TYPE: MICRO-BIORETENTION (M-6)
3. DRAINAGE AREA = 0.60 AC.
4. BOTTOM ELEVATION = 462.00
5. TOP OF DAM ELEVATION = 463.50
6. STORAGE VOLUME PROVIDED: 3,046 C.F.
7. WATER SURFACE ELEV.: 1 YEAR = 462.66
   10 YEAR = 462.79
8. DISCHARGE: 1 YEAR = 1.49 CFS
   10 YEAR = 3.53 CFS
9. RISER TYPE: YARD INLET
10. BARREL TYPE: 12" HDPE
11. MAINTENANCE RESPONSIBILITY: THIS IS A PRIVATE FACILITY TO BE OWNED & MAINTAINED BY THE OWNER
12. THIS FACILITY IS EXEMPT FROM MD378 GUIDELINES IN THAT THE IMPOUNDED DESIGN HIGH WATER DEPTH IS LESS THAN 3 FEET AT THE EMBANKMENT.

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.

STORMWATER MANAGEMENT FACILITY SEQUENCE OF CONSTRUCTION

1. NOTIFY CERTIFYING ENGINEER FIVE (5) WORKING DAYS PRIOR TO BEGINNING STORM WATER MANAGEMENT FACILITY CONSTRUCTION.
2. NOTIFY HOWARD COUNTY AT LEAST 48 HOURS PRIOR TO DOING ANY WORK.
3. CLEAR, GRUB & INSTALL PERIMETER SEDIMENT CONTROL MEASURES AS SHOWN ON THE SEDIMENT CONTROL PLAN.
4. STORM DRAIN OUTFALL FROM I-3 TO MH-1 MUST BE INSTALLED PRIOR TO BEGINNING EXCAVATION OF FACILITY. EXCAVATION BELOW ELEVATION 462.00 (MIN. 460.00) SHALL NOT OCCUR UNTIL AREA DRAINING TO FACILITY IS PERMANENTLY STABILIZED. (1-DAY)
5. UPON STABILIZATION OF DRAINAGE AREA EXCAVATE FOR INSTALLATION OF STONE RESERVOIR AND PLANTING SOIL. (1-DAY)
6. INSTALL STONE RESERVOIR, UNDERDRAINS AND PLANTING SOIL. (2-DAYS)
7. FINE GRADE AND PERMANENTLY STABILIZE DISTURBED AREA. (1-DAY)

OPERATION AND MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION AREAS (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.

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.

Howard Soil Conservation District — *Date* 11/13/14

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."

RICHARD L. BUTT — *Signature of Engineer (print name below signature)* — *Date* 11-11-14

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."

C. NICHOLSON — *Signature of Developer (print name below signature)* — *Date* 11-12-14

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 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. 31089 EXPIRATION DATE: 11/21/14

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
936 Ridgebrook Road, Sparks, MD 21152 | Phone (410)316-7800 | Fax (410)316-7803 | www.kci.com

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	1/6/15 Date
Chief, Division of Land Development	1-06-15 Date
Chief, Development Engineering Division	12-18-14 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 - Science, Engineering & Technology Building
SITE PACKAGE
PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

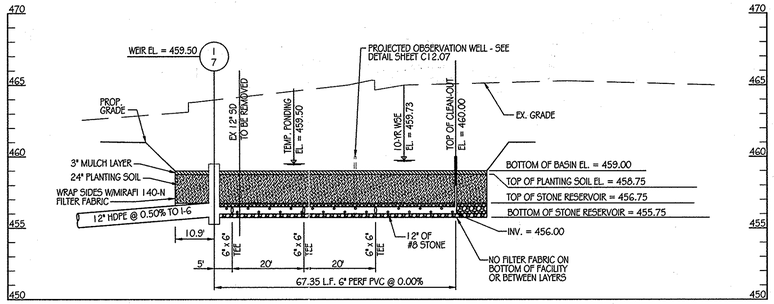
Date:	10-1-2014	Scale:	AS SHOWN
Drawn By:	C.T.B	Designed By:	B.S.
Approved By:	R.T.B	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title: STORMWATER MANAGEMENT FACILITY 1A

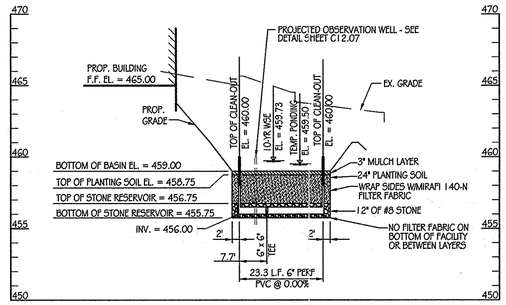
STATE OF MARYLAND — RICHARD L. BUTT — No. 031089 — PROFESSIONAL ENGINEER — 11/21/14

Discipline Number: C12.03
Sheet Number: 29 OF 42

SDP 14-066



MICRO-BIORETENTION FACILITY #1B
SECTION E-E
SCALE: 1" = 20' HORIZONTAL
1" = 5' VERTICAL



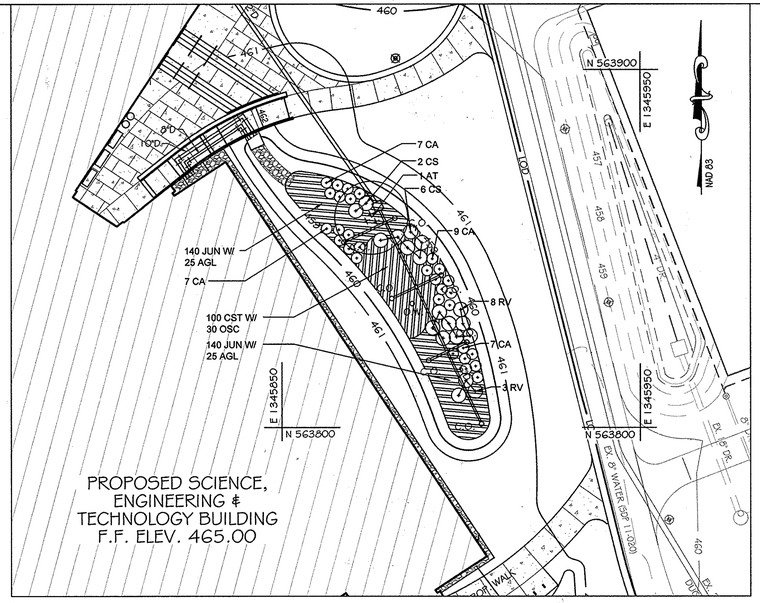
MICRO-BIORETENTION FACILITY #1B
SECTION F-F
SCALE: 1" = 20' HORIZONTAL
1" = 5' VERTICAL

℄ BERM DATA

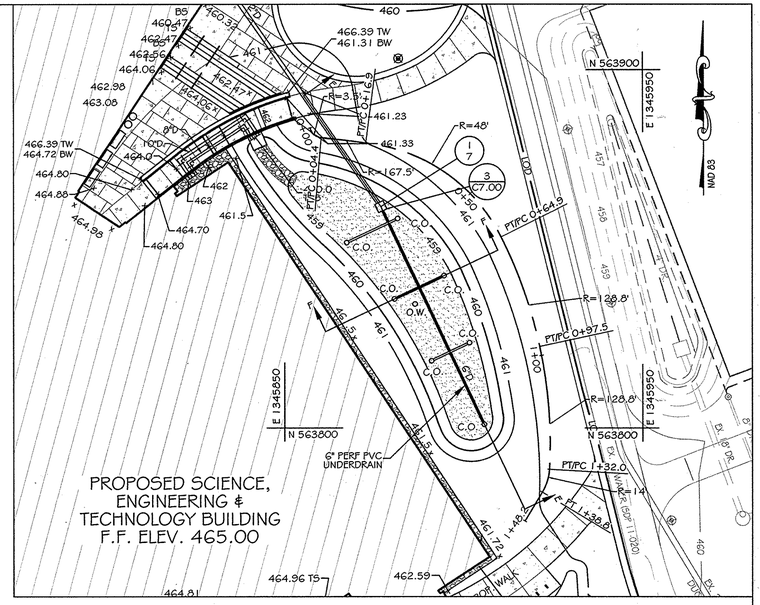
STATION	BEARING/ RADIUS	DISTANCE / ARC LENGTH	CHORD
0+00			
	3.5'	4.4'	S49°01'59"E 4.13'
0+07.4			
	167.5'	12.5'	S83°01'22"E 12.49'
0+16.9			
	48.0'	48.0'	S55°14'10"E 46.0'
0+64.9			
	128.8'	32.6'	S19°21'50"E 32.5'
0+97.5			
	128.8'	34.6'	S04°25'58"E 34.5'
1+32			
	14.0'	6.8'	S17°07'50"W 6.7'
1+38.8			
	S31°00'29"W	9.4'	
1+48.2			

LEGEND

- 440 — EX. CONTOURS
- EX. WATER LINE
- FIRE HYDRANT
- 440 — PROP. MAJOR CONTOUR
- 441 — PROP. MINOR CONTOUR
- 12" DRAIN — PROP. STORM DRAIN
- 6" WATER — PROP. WATER LINE
- LIMIT OF PLANTING SOIL
- PROP. INLET
- PROP. MANHOLE
- C.O. — PROP. CLEANOUT



STORMWATER FACILITY MANAGEMENT #1B LANDSCAPE PLAN
SCALE: 1" = 20'



STORMWATER FACILITY #1B PLAN
SCALE: 1" = 20'

FACILITY #1C TREATMENT SUMMARY TABLE

DRAINAGE AREA	TARGET		PROVIDED		TREATED ESD_V
	P_E	ESD_V	P_E	ESD_V	
0.41 AC.	1.9	1,911 C.F.	2.6	2,659 C.F.	2,659 C.F.

PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME / COMMON NAME	SIZE	ROOT	COMMENTS
AT	1	Asimina triloba / Paw-Paw	6' Ht.	B&B	Single Leader
CA	30	Clethra alnifolia 'Hummingbird' / Summersweet Clethra	#3	Cont.	24" Ht., Full, Spaced as shown
CS	8	Cornus sericea 'Isanti' / Redosier Dogwood	#5	Cont.	30" Ht., Full, Spaced as shown
RV	11	Rhododendron viscosum / Swamp Azalea	#5	Cont.	30" Ht., Full, Spaced as shown
AGL	50	Andropogon glomeratus / Bushy Beardgrass	#5P.-4	Cont.	Random spacing interspersed among species mix
CST	100	Carex stricta / Tussock Sedge	#5P.-4	Cont.	18" O.C.
JUN	280	Juncus effusus / Soft Rush	#5P.-4	Cont.	15" O.C.
OSC	30	Osmunda cinnamomea / Cinnamon Fern	#5P.-4	Cont.	24" O.C.

OPERATION AND MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION AREAS (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. INSPECTIONS SHALL BE PERFORMED A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

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.

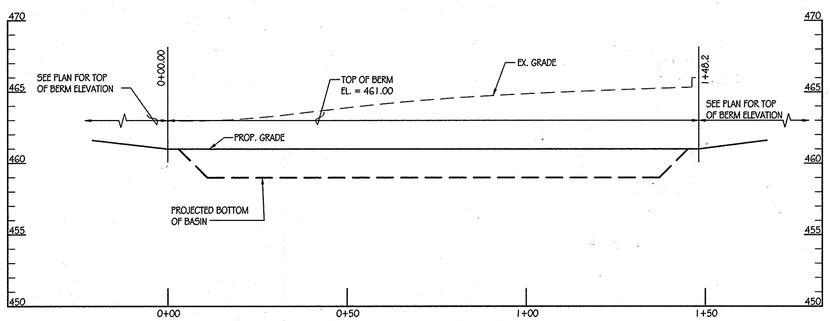
3. INSPECTIONS SHALL BE CONDUCTED BY THE DEPARTMENT OF PUBLIC WORKS OR ITS AUTHORIZED REPRESENTATIVE. WRITTEN INSPECTION REPORTS SHALL BE MADE OF THE PERIODIC INSPECTIONS NECESSARY DURING CONSTRUCTION OF STORMWATER MANAGEMENT SYSTEMS TO ENSURE COMPLIANCE WITH THE APPROVED PLANS.
4. WRITTEN INSPECTION 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.

DESIGN SUMMARY

1. FACILITY NUMBER: 1C
2. FACILITY TYPE: MICRO-BIORETENTION (M-6)
3. DRAINAGE AREA = 0.41 AC.
4. BOTTOM ELEVATION = 459.00
5. TOP OF DAM ELEVATION = 461.00
6. STORAGE VOLUME PROVIDED: 2,659 C.F.
7. WATER SURFACE ELEV.: 1 YEAR = 459.64
   10 YEAR = 459.73
8. DISCHARGE: 1 YEAR = 1.11 CFS
   10 YEAR = 2.49 CFS
9. RISER TYPE: YARD INLET
10. BARREL TYPE: 12" HDPE
11. MAINTENANCE RESPONSIBILITY: THIS IS A PRIVATE FACILITY TO BE OWNED & MAINTAINED BY THE OWNER
12. THIS FACILITY IS EXEMPT FROM MD378 GUIDELINES IN THAT THE IMPOUNDED DESIGN HIGH WATER DEPTH IS LESS THAN 3 FEET AT THE EMBANKMENT.



CENTERLINE BERM SWM FACILITY #1B
SCALE: 1" = 20' HORIZONTAL
1" = 5' VERTICAL

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

Howard Soil Conservation District — *Date* 11/13/14

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."

RICHARD L. BUTT — 11-11-14

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."

C NIGHTINGALE — 11-12-14

Signature of Developer (print name below signature) — *Date*

STORMWATER MANAGEMENT FACILITY SEQUENCE OF CONSTRUCTION

1. NOTIFY CERTIFYING ENGINEER FIVE (5) WORKING DAYS PRIOR TO BEGINNING STORM WATER MANAGEMENT FACILITY CONSTRUCTION.
2. NOTIFY HOWARD COUNTY AT LEAST 48 HOURS PRIOR TO DOING ANY WORK.
3. CLEAR, GRUB & INSTALL PERIMETER SEDIMENT CONTROL MEASURES AS SHOWN ON THE SEDIMENT CONTROL PLAN.
4. STORM DRAIN OUTFALL FROM I-2 TO I-1 MUST BE INSTALLED PRIOR TO BEGINNING EXCAVATION OF FACILITY. BELOW ELEVATION 460.00 (MIN. 458.00) SHALL NOT OCCUR UNTIL AREA DRAINING TO FACILITY IS PERMANENTLY STABILIZED. (1-DAY)
5. UPON STABILIZATION OF DRAINAGE AREA EXCAVATE FOR INSTALLATION OF STONE RESERVOIR AND PLANTING SOIL. (1-DAY)
6. INSTALL STONE RESERVOIR, UNDERDRAINS AND PLANTING SOIL. (2-DAYS)
7. FINE GRADE AND PERMANENTLY STABILIZE DISTURBED AREA. (1-DAY)

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 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. 31089 EXPIRATION DATE: 11/21/14

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

APPROVED: Howard County Department of Planning & Zoning

Director — 1/6/15 Date

Chief, Division of Land Development — 1-06-15 Date

Chief, Development Engineering Division — 12-18-14 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 - Science, Engineering & Technology Building
SITE PACKAGE
PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date: 10-1-2014		Scale: AS SHOWN	
Drawn By: C.T.B		Designed By: B.S.	
Approved By: R.T.B		Project No: 27111245	
Tax Map-Grid: 35-6		Zoning: POR & NT	

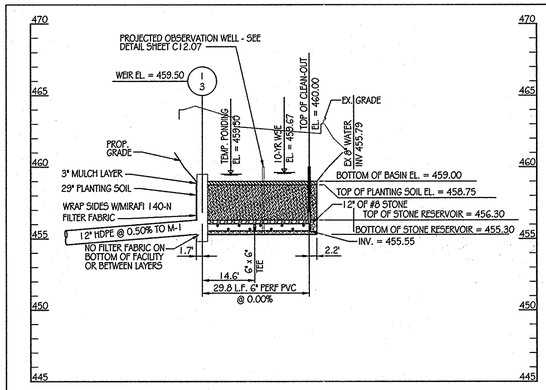
Sheet Title:
STORMWATER MANAGEMENT FACILITY 1B

STATE OF MARYLAND — RICHARD L. BUTT — No. 031089 — PROFESSIONAL ENGINEER — 11/21/14

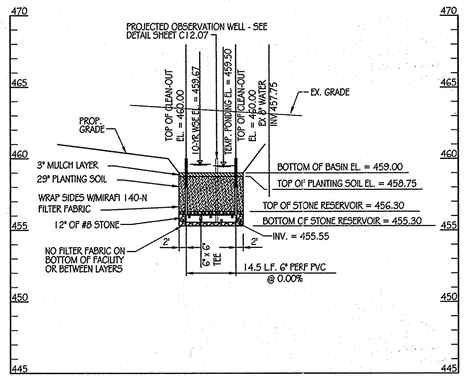
Discipline Number: C12.04

Sheet Number: 30 OF 42

SDP 14-066



MICRO-BIORETENTION FACILITY #2A
SECTION I-I
SCALE: 1" = 20' HORIZONTAL
1" = 5' VERTICAL



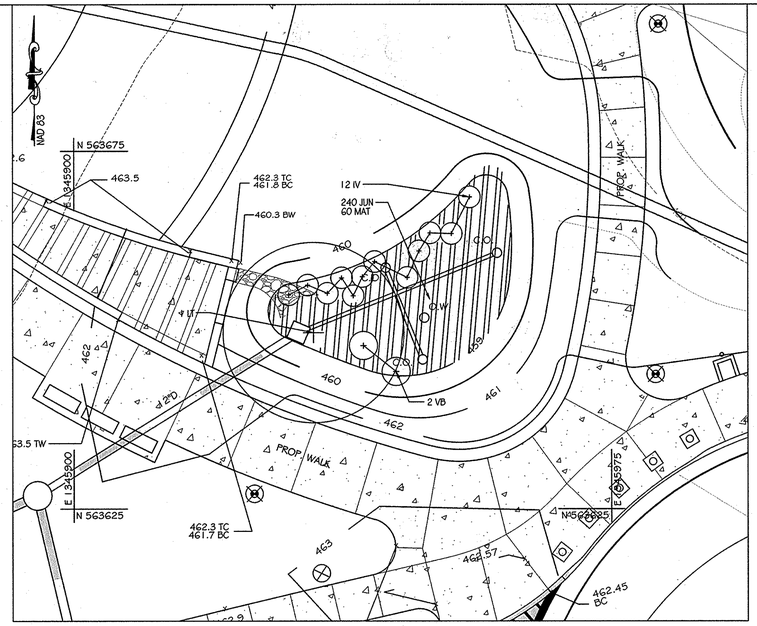
MICRO-BIORETENTION FACILITY #2A
SECTION J-J
SCALE: 1" = 20' HORIZONTAL
1" = 5' VERTICAL

℄ BERM DATA

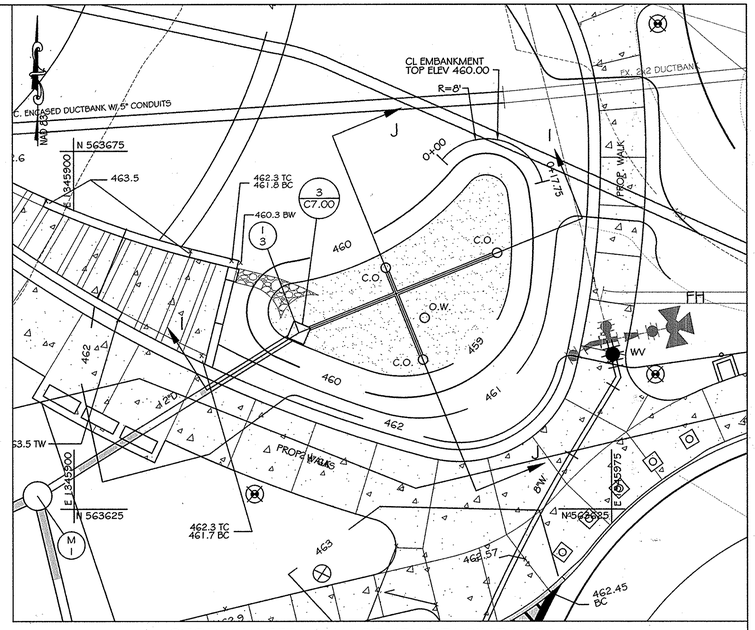
STATION	BEARING/ RADIUS	DISTANCE / ARC LENGTH	CHORD
0+00			
	34.7'	1.8'	N38°42'18"E 1.8'
0+01.8			
	8'	18.3'	S77°27'09"E 14.5'
0+20.1			

LEGEND

- EX. CONTOURS
- EX. WATER LINE
- FIRE HYDRANT
- PROP. MAJOR CONTOUR
- PROP. MINOR CONTOUR
- PROP. STORM DRAIN
- PROP. WATER LINE
- LIMIT OF PLANTING SOIL
- PROP. INLET
- PROP. MANHOLE
- PROP. CLEANOUT



STORMWATER MANAGEMENT FACILITY #2A LANDSCAPE PLAN
SCALE: 1" = 10'



STORMWATER MANAGEMENT FACILITY #2A PLAN
SCALE: 1" = 10'

PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME / COMMON NAME	SIZE	ROOT	COMMENTS
LT	1	Linodendron tulipifera / Tulip Poplar	4"	Cal.	Straight Central Leader, Full Canopy, Limbed up to 7' Ht.
IV	12	Itea virginica 'Henry's Garnet' / Henry's Garnet Sweetspire	#5	Cont.	30" Ht., Full, Spaced as shown
VB	2	Viburnum dentatum 'Blue Muffin' / Blue Muffin Arrowwood Viburnum	#5	Cont.	30" Ht., Full, Spaced as shown
JUN	240	Juncus effusus / Soft Rush	#5P-4	Cont.	15" O.C.
MAT	60	Matteuccia struthioptens / Ostrich Fern	#5P-4	Cont.	18" O.C.

DESIGN SUMMARY

1. FACILITY NUMBER: 2B
2. FACILITY TYPE: MICRO-BIORETENTION (M-6)
3. DRAINAGE AREA = 0.27 AC.
4. BOTTOM ELEVATION = 459.00
5. TOP OF DAM ELEVATION = 460.00
6. STORAGE VOLUME PROVIDED: 1,119 C.F.
7. WATER SURFACE ELEV.: 1 YEAR = 459.59
   10 YEAR = 459.67
8. DISCHARGE: 1 YEAR = 0.61 CFS
   10 YEAR = 1.51 CFS
9. RISER TYPE: YARD INLET
10. BARREL TYPE: 12" HDPE
11. MAINTENANCE RESPONSIBILITY: THIS IS A PRIVATE FACILITY TO BE OWNED & MAINTAINED BY THE OWNER
12. THIS FACILITY IS EXEMPT FROM MD378 GUIDELINES IN THAT THE IMPOUNDED DESIGN HIGH WATER DEPTH IS LESS THAN 3 FEET AT THE EMBANKMENT.

STORMWATER MANAGEMENT FACILITY SEQUENCE OF CONSTRUCTION

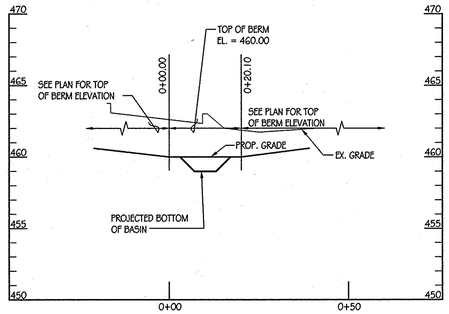
1. NOTIFY CERTIFYING ENGINEER FIVE (5) WORKING DAYS PRIOR TO BEGINNING STORM WATER MANAGEMENT FACILITY CONSTRUCTION.
2. NOTIFY HOWARD COUNTY AT LEAST 48 HOURS PRIOR TO DOING ANY WORK.
3. CLEAR, GRUB & INSTALL PERIMETER SEDIMENT CONTROL MEASURES AS SHOWN ON THE SEDIMENT CONTROL PLAN.
4. STORM DRAIN OUTFALL FROM I-4 TO M-12 MUST BE INSTALLED PRIOR TO BEGINNING EXCAVATION OF FACILITY BELOW ELEVATION 459.00 (MIN. 457.00) SHALL NOT OCCUR UNTIL AREA DRAINING TO FACILITY IS PERMANENTLY STABILIZED. (1-DAY)
5. UPON STABILIZATION OF DRAINAGE AREA EXCAVATE FOR INSTALLATION OF STONE RESERVOIR AND PLANTING SOIL. (1-DAY)
6. INSTALL STONE RESERVOIR, UNDERDRAINS AND PLANTING SOIL. (2-DAYS)
7. FINE GRADE AND PERMANENTLY STABILIZE DISTURBED AREA. (1-DAY)

FACILITY #2A TREATMENT SUMMARY TABLE

DRAINAGE AREA	TARGET		PROVIDED		TREATED ESD_V
	P_E	ESD_V	P_E	ESD_V	
0.27 AC.	0.7	293 C.F.	2.6	1,119 C.F.	1,119 C.F.

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.



CENTERLINE BERM SWM FACILITY #2A
SCALE: 1" = 20' HORIZONTAL
1" = 5' VERTICAL

OPERATION AND MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION AREAS (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.

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.

Howard Soil Conservation District — Date 11/13/14

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."

RICHARD L. BUTT — Date 11-11-14

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."

C. NIGHTINGALE — Date 11-12-14

Signature of Developer (print name below signature)

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 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. 31089 EXPIRATION DATE: 11/21/14

KCI TECHNOLOGIES — Engineers, Planners, Surveyors, Construction Managers
936 Ridgebrook Road, Sparks, MD 21152, Phone (410)316-7800, Fax (410)316-7853, www.kci.com

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 1/6/15
Chief, Division of Land Development — Date 1-06-15
Chief, Development Engineering Division — Date 12-18-14

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 - Science, Engineering & Technology Building
SITE PACKAGE
PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date:	10-1-2014	Scale:	AS SHOWN
Drawn By:	C.T.B	Designed By:	B.S.
Approved By:	R.T.B	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

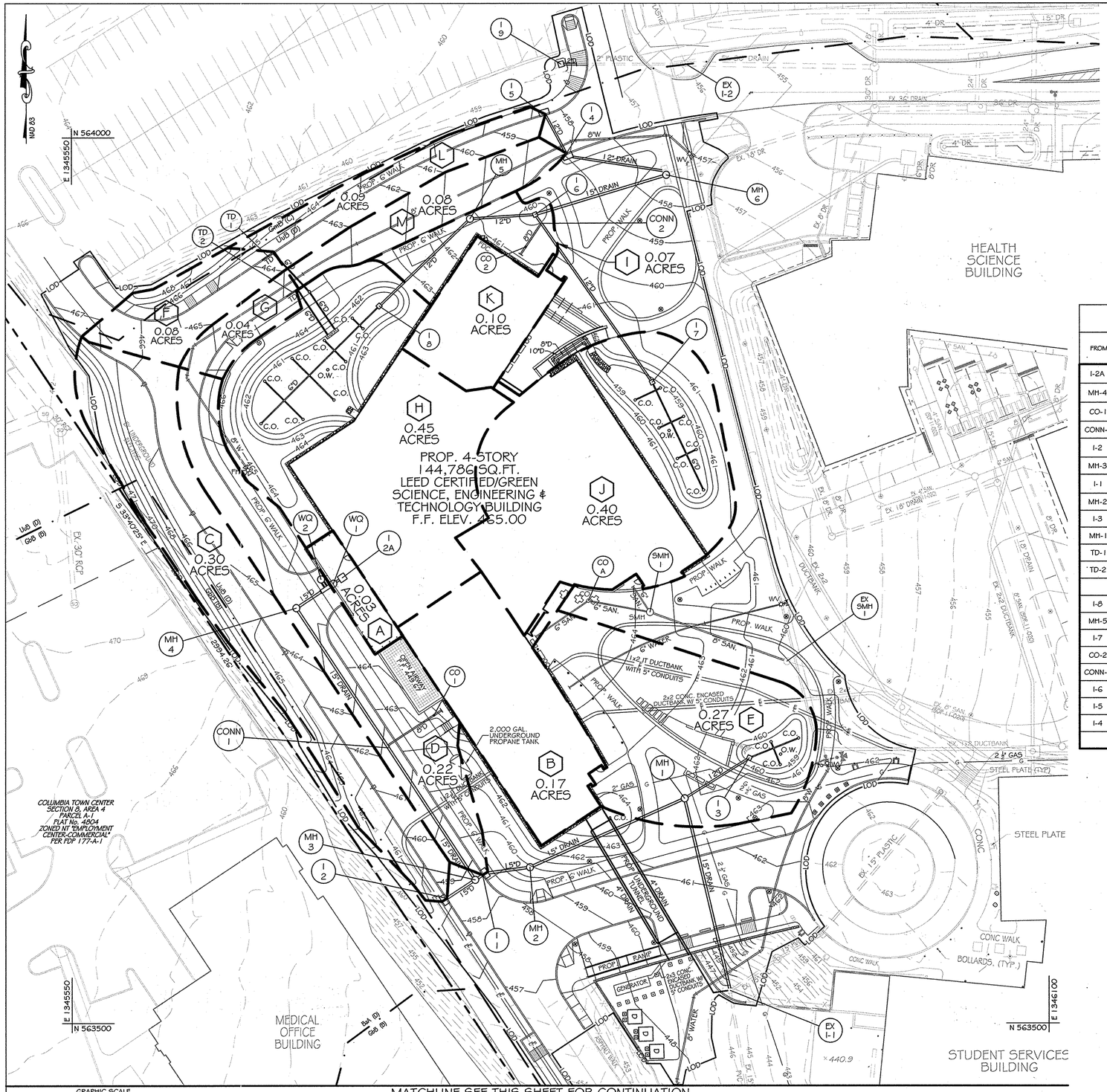
Sheet Title: STORMWATER MANAGEMENT FACILITY 2A

STATE OF MARYLAND — RICHARD L. BUTT — No. 031089 — PROFESSIONAL ENGINEER — 11-11-14

Discipline Number: C12.05

Sheet Number: 31 OF 42

SDP 14-066



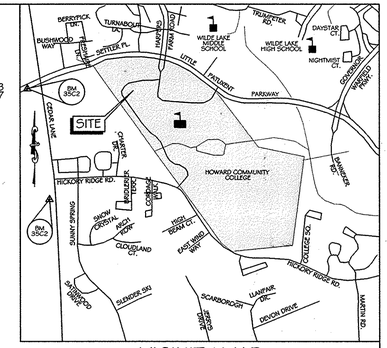
BENCHMARK DATA

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

LEGEND

- SOILS LINE
- DRAINAGE AREA LINE
- 462 PROP. CONTOUR
- PROP. 18" DRAIN — PROP. STORM DRAIN
- PROP. INLET
- PROP. MANHOLE
- (A) DRAINAGE AREA



VICINITY MAP

SCALE 1" = 1000'
ADC MAP: 15 GRID: D6

STORM DRAIN DESIGN DATA

FROM	TO	C	AREA (ACRES)	RUNOFF COEF.	CA	ΣA	ΣCA	TC (MIN.)	RAINFALL INTENSITY (I/HR.)	Q (CFS.)	SIZE (IN.)	TYPE	N	So SLOPE (%)	L LENGTH (FT.)	Vo VOLUME (FT./SEC.)	TIME IN PIPE MIN.	REMARKS
I-2A	MH-4	A	0.03	0.85	0.03			5.00	8.50	0.25	15"	RCP	0.014	0.00%	31.00'	0.20	2.55	
MH-4	CONN-1	A	0.03	0.85	0.03			7.55	7.40	0.22	15"	RCP	0.014	0.00	94.41'	0.18	8.91	
CO-1	CONN-1	B	0.23	0.85	0.22			5.00	8.50	1.91	8"	HDPE	0.014	2.89%	41.50'	5.47	0.13	
CONN-1	MH-3	A-B				0.26	0.25	16.46	5.23	1.33	15"	RCP	0.014	0.05%	89.06'	1.08	1.37	
I-2	MH-3	C	0.30	0.85	0.29			5.00	8.50	2.49	15"	RCP	0.014	0.17%	20.62'	2.03	0.17	
MH-3	I-1	A-C				0.56	0.52	17.83	5.03	2.60	15"	RCP	0.014	0.19%	6.66'	2.12	0.05	
I-1	MH-2	A-D	0.22	0.85	0.73	0.78		17.89	5.02	3.67	15"	RCP	0.014	0.37%	25.53	2.99	0.14	
MH-2	MH-1	A-D				0.78	0.73	18.03	5.00	3.66	15"	RCP	0.014	0.37%	95.38'	2.98	0.53	
I-3	MH-1	E	0.27	0.85	0.26			5.00	8.50	2.24	12"	HDPE	0.014	0.46%	42.88'	2.85	0.25	SEE SWM PLAN C12.06
MH-1	EX. I-1	A-E				1.05	1.00	18.56	4.91	4.89	15"	RCP	0.014	0.66%	111.58'	3.98	0.47	
TD-1	ES-1	F	0.08	0.85	0.08			5.0	8.50	0.66	6"	HDPE	0.014	1.62%	46.95	3.38	0.23	SEE SWM PLAN C12.03
TD-2	ES-1	G	0.04	0.85	0.04			5.0	8.50	0.33	6"	HDPE	0.014	0.41%	22.17	1.69	0.22	SEE SWM PLAN C12.03
I-8	MH-5	F-H	0.57	0.85	0.56			5.0	8.50	4.73	12"	HDPE	0.014	2.04%	71.04'	6.02	0.20	
MH-5	I-6	I	0.57	0.85	0.56			5.2	8.40	4.67	12"	HDPE	0.014	2.00%	36.76'	5.95	0.10	
I-7	CONN-2	J	0.40	0.85	0.39			5.0	8.50	3.32	12"	HDPE	0.014	1.01%	109.30'	4.23	0.43	SEE SWM PLAN C12.04
CO-2	CONN-2	K	0.10	0.85	0.10			5.0	8.50	0.83	8"	HDPE	0.014	0.55%	20.98'	2.38	0.15	
CONN-2	I-6	J+K				0.50	0.49	5.43	8.20	4.05	12"	HPE	0.014	1.50%	6.06'	5.16	0.02	
I-6	MH-6	F-K				1.14	1.11	5.45	8.25	9.18	15"	HDPE	0.014	2.34%	77.11'	7.48	0.17	
I-5	I-4	L	0.09	0.85	0.09			5.0	8.5	0.75	12"	RCP	0.014	0.05%	27.98'	0.95	0.49	
I-4	MH-6	L+M	0.08	0.85	0.07	0.17	0.17	5.49	8.25	1.37	12"	RCP	0.014	0.17%	56.44'	1.74	0.54	

SOILS TABLE

SOIL UNIT	SOIL UNIT NAME	HYDROLIC SOIL GROUP
UuB (D)	Urban land-Udorthents complex, 0 to 8 percent slopes	D
GmB (C)	Glenville Silt Loam, 3 to 8 percent slopes	C
GbB (B)	Glandstone Loam, 3 to 8 percent slopes	B
BaA (D)	Baile Silt Loam, 0 to 3 percent slopes	D

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.

John L. Robertson — Howard Soil Conservation District — 4/13/14 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."

Richard L. Butt — RICHARD L. BUTT — Signature of Engineer (print name below signature) — 11-11-14 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."

C. Nightingale — Signature of Developer (print name below signature) — 11-12-14 Date

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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ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date: 10-1-2014	Scale: 1" = 30'
Drawn By: C.T.B	Designed By: B.S.
Approved By: R.T.B	Project No: 27111245
Tax Map-Grid: 35-6	Zoning: POR & NT

Sheet Title: STORM DRAIN DRAINAGE AREA MAP

STATE OF MARYLAND — RICHARD L. BUTT — No. 031089 — PROFESSIONAL ENGINEER — 11/11/14

Discipline Number: C12.06

Sheet Number: 32 OF 42

SDP 14-066

SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDENS, LANDSCAPE INFILTRATION & INFILTRATION BERMS

1. Material Specifications
The allowable materials to be used in these practices are detailed in Table B.4.1.

2. 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

CONSTRUCTION SPECIFICATIONS

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 FOR 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. THE MOST IMPERVIOUS SOIL AVAILABLE ON-SITE (AND AS APPROVED BY THE GEOTECHNICAL ENGINEER) SHALL BE USED AS FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT AND CORE TRENCH. MATERIALS USED IN THE OUTER SHELLS OF THE EMBANKMENT MUST HAVE THE CAPABILITY TO SUPPORT VEGETATION OF THE QUALITY REQUIRED TO PREVENT EROSION OF THE EMBANKMENT.

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 THAN 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 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 (SAND BAGS, ETC.) 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 AND HAVE WATER TIGHT JOINTS. CORRUGATED METAL PIPE SHALL BE 14 GAUGE, INSTALLED IN ACCORDANCE WITH ALL APPLICABLE BALTIMORE CITY STANDARD SPECIFICATIONS AND DETAILS.

PLASTIC PIPE - THE FOLLOWING CRITERIA SHALL APPLY FOR PLASTIC PIPE:.

1. MATERIAL - PVC PIPE SHALL BE PVC-1120 OR PVC-1220 CONFORMING TO ASTM D-1785 OR ASTM D-2241. CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE, COUPLINGS AND FITTINGS SHALL CONFORM TO THE FOLLOWING: 4"-10" INCH PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M252 TYPE S, AND 12" THROUGH 24" INCH SHALL MEET THE REQUIREMENTS OF AASHTO M294 TYPE S.
2. JOINTS AND CONNECTIONS TO ANTI-SEEP COLLARS SHALL BE COMPLETELY WATERTIGHT.
3. BEDDING - THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSUITABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.
4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".
5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

CUT OFF TRENCH - THE CUTOFF TRENCH SHALL BE EXCAVATED INTO IMPERVIOUS MATERIAL ALONG OR PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE BOTTOM WIDTH OF THE TRENCH SHALL BE GOVERNED BY THE EQUIPMENT USED FOR EXCAVATION, WITH THE MINIMUM WIDTH BEING FOUR FEET. THE DEPTH SHALL BE AT LEAST FOUR FEET BELOW EXISTING GRADE OR AS SHOWN ON THE PLANS. THE SIDE SLOPES OF THE TRENCH SHALL BE 1 TO 1 OR FLATTER. THE BACKFILL SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY.

CONCRETE

CONCRETE SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 414, MIX NO. 3.

FILTER CLOTH

ALL FILTER CLOTH SHALL CONFORM TO BALTIMORE CITY STANDARDS UNLESS OTHERWISE NOTED AS SHA OR THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, OR THE LATEST EDITION.

CAST-IN-PLACE CONCRETE STRUCTURES

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".

CONCRETE: SHALL MEET THE REQUIREMENTS OF THE MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 414 AND 902, MIX NO. 3.

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 F'C = 1,200 PSI.

ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4 " X 3/4 ". ALL CONSTRUCTION KEYS ARE SHOWN NOMINAL SIZE.

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.

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.

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 CONCRETE RISERS WITH SUPPORTING STRUCTURAL COMPUTATIONS (SIGNED AND SEALED BY A MARYLAND REGISTERED PROFESSIONAL ENGINEER) MEETING ASTM REQUIREMENTS FOR PRE-CAST STRUCTURES MUST BE SUBMITTED TO THE ENGINEER, AND THE APPROVING AGENCY (BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND RESOURCE MANAGEMENT) FOR APPROVAL PRIOR TO FABRICATION. IF ANY STRUCTURE DIMENSIONS VARY FROM WHAT WAS ORIGINALLY REVIEWED/APPROVED, THEN THE HYDRAULICS, FLOTATION AND STRUCTURAL INTEGRITY WILL HAVE TO BE RE-ANALYZED.

ROCK RIPRAP

ROCK RIPRAP SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 311. GEOTEXTILE SHALL BE PLACED UNDER ALL RIP RAP AND SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 921.09, CLASS C.

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.

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 OF 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, LIMING, 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.

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.

PERFORATED PIPE

PVC PIPE SHALL BE PVC-1120 OR 1220 CONFORMING TO ASTMD-1785 OR ASTM D-2241. PERFORATED PVC SHALL PROVIDE AT LEAST 1.90 SQ. IN. OF OPEN AREA PER LINEAR FOOT.

SAND

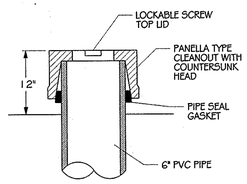
SAND SHALL BE CLEAN AASHTO M-6 OR ASTM C-33 CONCRETE SAND, SIZE 0.02" TO 0.04". SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND.

MATERIALS SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDENS & LANDSCAPE INFILTRATION

MATERIAL	SPECIFICATION	SIZE	NOTES
PLANTINGS	SEE APPENDIX A, TABLE A.4 IN MD 2000 SWM REGS	N/A	PLANTINGS ARE SITE SPECIFIC
PLANTING SOIL (2' TO 4' DEEP)	LOAMY SAND (60 - 65%) & COMPOST (35 - 40%) OR SANDY LOAM (30%), COARSE SAND (30%) & COMPOST (40%)	N/A	USDA SOIL TYPES LOAMY SAND OR SANDY LOAM; CLAY CONTENT < 5%
ORGANIC CONTENT	MIN. 10% BY DRY WEIGHT (ASTM D 2974)		
MULCH	SHREDDED HARDWOOD		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 1 NONWOVEN
GRAVEL (UNDERDRAINS & INFILTRATION BERMS	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; MIN OF 3" OF GRAVEL OVER PIPES; NOT NECESSARY UNDERNEATH PIPES. PERFORATED PIPE SHALL BE WRAPPED WITH 1/4" 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 MD - DESIGN TO INCLUDE MEETING ACI CODE 350.R(89): VERTICAL LOADING (H-10 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 NOT ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND.

WATER QUALITY SEEDMIX

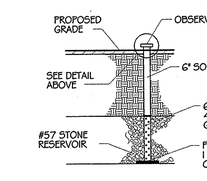
APPLICATION RATE: 1/2 lb/1000 s.f.
Panicum virgatum/Switchgrass (40%)
Aster novae-angliae/New England Aster (35%)
Aster puniceus/Purple Stemmed ASter (10%)
Ascepias incarnata/Swamp Milkweed (10%)
Labelia cardinalis/Cardinal Flower (5%)



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

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.

Howard Soil Conservation District — *Date* 11/13/14

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."

RICHARD L. BUTT — *Signature of Engineer (print name below signature)* — *Date* 11-11-14

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."

C. NIGHTINGALE — *Signature of Developer (print name below signature)* — *Date* 11-12-14

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 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. 31089 EXPIRATION DATE: 11/21/14

KCI TECHNOLOGIES — Engineers, Planners, Surveyors, Construction Managers — 936 Ridgebrook Road, Sparks, MD 21152, Phone (410)316-7800, Fax (410)316-7803, www.kci.com

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	1/6/15	Date
Chief, Division of Land Development	1-06-15	Date
Chief, Development Engineering Division	12-18-14	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
410-772-4286

Project Name:
Howard Community College - Science, Engineering & Technology Building
SITE PACKAGE
PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date: 10-1-2014	Scale: N.T.S.
Drawn By: C.T.B	Designed By: B.S.
Approved By: R.T.B	Project No: 27111245
Tax Map-Grid: 35-6	Zoning: POR & NT

Sheet Title: STORMWATER MANAGEMENT NOTES

STATE OF MARYLAND — RICHARD L. BUTT — No. 031089 — PROFESSIONAL ENGINEER — 11/14/14

Discipline Number: C12.07

Sheet Number: 33 OF 42

SDP 14-066

BORING LOG
Boring: A-1 (1 of 1)

Project No: 68P-0079
Client: Ayers Saint Gross, Inc.
Project: HCC-SET
City/State: Columbia, Maryland

Elevation: 462.5 ±
Total Depth: 39.7'
Boring Location: See Boring Location Plan

Drilling Method: 3.25" I.D. HSA
Hammer Type:
Date Drilled: 11/28/12
Driller: S. Foster

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
462.0	0.5	6 inches of Asphalt				
461.5	1.0	6 inches of Graded Aggregate Base	6-6-4	1.0	10	
		POSSIBLE FILL:Brown, orange-brown, yellow-brown, stiff, Elastic SILT with Sand (MH-Possible Fill)		2.5		
459.0	3.5		3-4-5	3.5	9	
		RESIDUUM:Red-brown, moist, loose, Sandy SILT (ML)		5.0		
456.5	6.0		6-7-13	6.0	20	
		Yellow-brown, pale yellow, olive-brown, red-brown, orange-brown, brown, moist, medium dense to dense, Silty SAND with Gravel (SM)		7.5		
			5-9-14	8.5	23	
				10.0		
			4-6-8	13.5	14	
				15.0		
			6-12-19	18.5	31	
				20.0		
439.0	23.5	DECOMPOSED ROCK:Dark brown, dark olive, red-brown, black, moist, very dense, micaceous Silty SAND with Rock Fragments (SM)	50/5"	23.5	100+	
				25.0		
			15-20-32	28.5	52	
				30.0		
			50/4"	33.5	100+	
				35.0		
			12-32-50/2"	38.5	100+	Subsurface water at 36.0 ft upon completion
422.8	39.7	Boring Terminated at 39.7 feet. Auger Refusal at 39.7 feet.		39.7		Cave-in depth at 37.0 ft upon completion

*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.

BORING LOG
Boring: A-2 (1 of 1)

Project No: 68P-0079
Client: Ayers Saint Gross, Inc.
Project: HCC-SET
City/State: Columbia, Maryland

Elevation: 467.5 ±
Total Depth: 37.6'
Boring Location: See Boring Location Plan

Drilling Method: 3.25" I.D. HSA
Hammer Type:
Date Drilled: 11/29/12
Driller: S. Foster

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
467.1	0.4	4.8 inches of Asphalt				
466.5	1.0	7.2 inches of Graded Aggregate Base	4-5-6	1.0	11	
		RESIDUUM:Red-brown, orange-brown, pale yellow, moist, loose, Clayey SAND(SC)		2.5		
			3-3-5	3.5	10	
				5.0		
461.5	6.0	Red-brown, orange-brown, pale yellow, moist, firm, Sandy Lean CLAY (CL)	3-4-4	6.0	8	
				7.5		
459.0	8.5	Yellow-brown, pale yellow, orange-brown, brown, moist, loose to dense, Silty SAND with Gravel (SM)	7-6-4	8.5	10	
				10.0		
			5-4-5	13.5	9	
				15.0		
			4-12-33	18.5	45	
				20.0		
444.0	23.5	DECOMPOSED ROCK:Dark brown, grey, black, moist, very dense, Silty SAND with Rock Fragments (SCM)	50/2"	23.5	100+	Subsurface water at 25.0 ft upon completion
				25.0		
			30-50/0"	28.5	100+	Cave-in depth at 29.0 ft upon completion
				30.0		
434.9	32.6	ROCK:Grey, slightly fractured, slightly weathered, moderately hard, GNEISS	50/1"	32.6	100+	Auger Refusal at 32.6 ft, Rock Coring begins at 32.6
433.9	33.6	Grey-Brown, highly fractured, moderately to highly weathered, soft to moderately hard, SCHIST	REC=93% RQD=41%	33.5		
429.9	37.6	Boring/Rock Coring Terminated at 37.6 feet.		37.6		

*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.

BORING LOG
Boring: A-3 (1 of 1)

Project No: 68P-0079
Client: Ayers Saint Gross, Inc.
Project: HCC-SET
City/State: Columbia, Maryland

Elevation: 468.5 ±
Total Depth: 37.6'
Boring Location: See Boring Location Plan

Drilling Method: 3.25" I.D. HSA
Hammer Type:
Date Drilled: 11/28/12
Driller: S. Foster

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
468.1	0.4	4.8 inches of Asphalt				
467.5	1.0	7.2 inches of Graded Aggregate Base	10-4-5	1.0	9	
		POSSIBLE FILL:Dark brown, moist, loose, Silty SAND		2.5		
465.0	3.5		4-5-6	3.5	11	
		(SM-Possible Fill)		5.0		
462.5	6.0	RESIDUUM:Orange to red-brown, moist, medium dense, Sandy SILT with Gravel (ML)	3-4-4	6.0	8	
				7.5		
		Dark-brown, orange-brown, yellow-brown, grey brown, pale yellow, moist, loose to dense, Silty SAND with Gravel (SM)	5-5-5	8.5	10	
				10.0		
			5-5-7	13.5	12	
				15.0		
			2-4-6	18.5	10	
				20.0		
			23-15-17	23.5	36	
				25.0		
440.0	28.5	DECOMPOSED ROCK:Olive, grey, black, moist, very dense, Silty SAND with Rock Fragments. (SM)	10-50/0"	28.5	100+	
				30.0		
			50/2"	33.5	100+	Subsurface water at 34.0 ft upon completion Cave-in depth at 34.5 ft upon completion
				35.0		
430.9	37.6	Boring Terminated at 37.6 feet. Auger & Spoon Refusal at 37.6 feet.	50/1"	37.5	100+	

*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.

BORING LOG
Boring: A-4 (1 of 1)

Project No: 68P-0079
Client: Ayers Saint Gross, Inc.
Project: HCC-SET
City/State: Columbia, Maryland

Elevation: 467.5 ±
Total Depth: 39.9'
Boring Location: See Boring Location Plan

Drilling Method: 3.25" I.D. HSA
Hammer Type:
Date Drilled: 11/21/12
Driller: S. Foster

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
467.0	0.5	6 inches of Asphalt				
466.5	1.0	6 inches of Graded Aggregate Base	5-3-3	1.0	6	
		POSSIBLE FILL:Brown, moist, loose, Silty SAND		2.5		
464.0	3.5		3-3-6	3.5	9	
		(SM-Possible Fill)		5.0		
461.5	6.0	RESIDUUM:Brown, red-brown, moist, stiff, Sandy Lean CLAY with Gravel (CL)	6-4-4	6.0	8	
				7.5		
		Red-brown, orange-brown, yellow-brown, moist, loose to medium dense, Silty SAND with Rock Fragments (SM)	5-9-7	8.5	16	
				10.0		
			6-11-18	13.5	29	
				15.0		
449.0	18.5	DECOMPOSED ROCK:Brown, yellow-brown, red-brown, moist, very dense, Silty SAND with Gravel (SM)	25-22-47	18.5	69	
				20.0		
			50/4"	23.5	100+	
				25.0		
			50/4"	28.5	100+	
				30.0		
434.0	33.5	SAPROLITE:Grey-brown, dark brown, moist to very moist, medium dense, Silty SAND with Rock Fragments(SM)	10-6-10	33.5	16	Subsurface water at 32.0 ft upon completion Subsurface water at 33.7 ft while drilling Cave-in depth at 35.0 ft upon completion
432.5	35.0			35.0		
		DECOMPOSED ROCK:Brown, dark brown, wet, very dense, Silty SAND with Rock Fragments (SM)				
			50/4"	38.5	100+	
427.6	39.9	Boring Terminated at 39.9 feet. Auger Refusal at 39.9 feet.		39.9		

*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.

BORING LOG
Boring: A-5 (1 of 1)

Project No: 68P-0079
Client: Ayers Saint Gross, Inc.
Project: HCC-SET
City/State: Columbia, Maryland

Elevation: 468.5 ±
Total Depth: 40.0'
Boring Location: See Boring Location Plan

Drilling Method: 3.25" I.D. HSA
Hammer Type:
Date Drilled: 11/26/12
Driller: S. Foster

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
468.1	0.4	4.8 inches of Asphalt				
467.5	1.0	7.2 inches of Graded Aggregate Base	4-4-4	1.0	8	
		POSSIBLE FILL:Light brown, brown, moist, loose, Silty SAND with Gravel		2.5		
465.0	3.5		3-3-4	3.5	7	
		(SM-Possible Fill)		5.0		
462.5	6.0	RESIDUUM:Red-brown, moist, loose, Sandy SILT with Gravel (ML)	3-3-6	6.0	9	
				7.5		
		Red-brown, orange-brown, yellow-brown, black, olive, grey, moist, loose to medium dense, micaceous Silty SAND with Gravel, trace Rock Fragments (SM)	3-3-4	8.5	7	
				10.0		
			3-4-6	13.5	10	
				15.0		
			5-6-8	18.5	14	
				20.0		
			7-7-8	23.5	15	
				25.0		
			4-8-12	28.5	20	Subsurface water at 31.0 ft upon completion
				30.0		
			5-5-9	33.5	14	Cave-in depth at 33.5 ft upon completion Subsurface water at 34.0 ft while drilling
				35.0		
			4-8-8	38.5	16	
428.5	40.0	Boring Terminated at 40.0 feet.		40.0		

*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.

BORING LOG
Boring: A-6 (1 of 1)

Project No: 68P-0079
Client: Ayers Saint Gross, Inc.
Project: HCC-SET
City/State: Columbia, Maryland

Elevation: 462 ±
Total Depth: 40.0'
Boring Location: See Boring Location Plan

Drilling Method: 3.25" I.D. HSA
Hammer Type:
Date Drilled: 11/19/12
Driller: S. Foster

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
461.7	0.3	3.6 inches of Asphalt				
461.0	1.0	8.4 inches of Graded Aggregate Base	4-4-4	1.0	8	
		POSSIBLE FILL:Brown, moist, loose, Clayey SAND		2.5		
458.5	3.5		3-3-3	3.5	6	
		(SC-Possible Fill)		5.0		
		RESIDUUM:Red-brown, brown, grey-brown, yellow-brown, olive, moist, loose to medium dense, micaceous Silty SAND with Gravel, trace Rock Fragments (SM)	2-3-3	6.0	6	
				7.5		
			6-7-11	8.5	18	
				10.0		
448.5	13.5	Dark brown, grey-brown, black, grey, moist, medium dense, micaceous Well-graded SAND with Silt, trace Rock Fragments (SW-SM)	5-5-8	13.5	13	
				15.0		
			8-13-21	18.5	49	
				20.0		
			16-20-30	23.5	50	
				25.0		
443.5	18.5	Grey-brown, olive, grey, black, moist, medium dense to very dense, micaceous Silty SAND with Gravel, trace Rock Fragments (SM)	12-12-12	28.5	24	Subsurface water at 29.0 ft upon completion Subsurface water at 30.5 ft while drilling
				30.0		
			50/2"	33.5	100+	
				35.0		
						Cave-in depth at 37.0 ft upon completion
			9-12-25	38.5	37	
422.0	40.0	Boring Terminated at 40.0 feet.		40.0		

*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.

BORING LOG
Boring: A-7 (1 of 1)

Project No: 68P-0079
Client: Ayers Saint Gross, Inc.
Project: HCC-SET
City/State: Columbia, Maryland

Elevation: 465.5 ±
Total Depth: 30.0'
Boring Location: See Boring Location Plan

Drilling Method: 3.25" I.D. HSA
Hammer Type:
Date Drilled: 11/21/12
Driller: S. Foster

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
465.0	0.5	6 inches of Asphalt				
464.5	1.0	6 inches of Graded Aggregate Base	7-3-3	1.0	6	
		POSSIBLE FILL:Red-brown, brown, moist, loose, Silty SAND with Gravel		2.5		
462.0	3.5		3-4-4	3.5	8	
		(SM-Possible Fill)		5.0		
		RESIDUUM:Brown, dark brown, olive-brown, light brown,red-brown, moist, loose to very dense, Silty SAND with Gravel (SM)	3-3-5	6.0	8	
				7.5		
			3-4-7	8.5	11	
				10.0		
			9-23-30	13.5	53	
				15.0		
			2-5-7	18.5	12	
				20.0		
442.0	23.5	DECOMPOSED ROCK:Brown, light brown, orange-brown, moist, very dense, Silty SAND with Rock Fragments (SM)	10-35-50/5"	23.5	100+	Subsurface water at 'DRY' while drilling
				25.0		
			50/4"	28.5	100+	
				30.0		
435.5	30.0	Boring Terminated at 30.0 feet. Boring Terminated early due to Auger Breaking Off in Hole				

*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.

BORING LOG
Boring: A-8 (1 of 1)

Project No: 68P-0079
Client: Ayers Saint Gross, Inc.
Project: HCC-SET
City/State: Columbia, Maryland

Elevation: 466.8 ±
Total Depth: 38.9'
Boring Location: See Boring Location Plan

Drilling Method: 3.25" I.D. HSA
Hammer Type:
Date Drilled: 11/26/12
Driller: S. Foster

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
466.3	0.5	6 inches of Asphalt				
465.8	1.0	6 inches of Graded Aggregate Base	4-5-10	1.0	15	
		POSSIBLE FILL:Red-brown, moist, medium dense, Clayey SAND with Gravel		2.5		
463.3	3.5		13-14-17	3.5	31	
		(GC-Possible Fill)		5.0		
		RESIDUUM:Light brown, yellow-brown, orange-brown, moist, medium dense to very dense, micaceous Poorly-graded SAND with Silt and Gravel (SP-SM)	11-14-27	6.0	41	
				7.5		
			4-8-12	8.5	20	
				10.0		
			8-26-27	13.5	53	
				15.0		
448.3	18.5	Light brown, yellow-brown, moist, dense, micaceous Silty SAND with Gravel (SM)	7-9-24	18.5	33	
				20.0		
443.3	23.5	DECOMPOSED ROCK:Olive-brown, grey, moist, very dense, Silty SAND with Rock Fragments (SM)	14-35-50/5"	23.5	100+	
				25.0		
438.3	28.5	Grey-brown,olive-brown, black, moist, very dense, Silty SAND, trace Rock fragments (SM)	30-30-25	28.5	55	Subsurface water at 'DRY' while drilling
				30.0		
433.3	33.5	Brown, dark brown, wet, very dense, Silty SAND with Rock Fragments (SM)	50/4"	33.5	100+	
				35.0		Cave-in depth at 36.5 ft upon completion
427.9	38.9	Boring Terminated at 38.9 feet, Auger Refusal at 38.9 feet	50/5"	38.5	100+	

*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.

BORING LOG
Boring: SWM-1 (1 of 1)

Project No: 68P-0079
Client: Ayers Saint Gross, Inc.
Project: HCC-SET
City/State: Columbia, Maryland

Elevation: 466 ±
Total Depth: 18.0'
Boring Location: See Boring Location Plan

Drilling Method: 3.25" I.D. HSA
Hammer Type:
Date Drilled: 5/23/14
Driller: J. Rice

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
465.4	0.6	7" of Asphalt	2-3-5	1.0	8	GROUNDWATER DATA Dry while drilling and upon completion
465.2	0.8	5" of Aggregate Base		2.5		
		Residual Soil:Reddish brown, Moist, Loose-Stiff, Sandy Silt with clay (ML)	2-2-4	3.5	6	
				5.0		
			2-2-3	6.0	5	
				7.5		
			2-2-3	8.5	5	
456.0	10.0	Tan to white, Moist, Loose-Firm, Sandy Silt with clay (ML)		10.0		
			4-6-6	13.5	12	Cave in at 14.5 feet upon completion
				15.0		
			3-7-7	16.5	14	
448.0	18.0	Boring Terminated at 18 feet		18.0		

*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.

BORING LOG
Boring: SWM-3 (1 of 1)

Project No: 68P-0079
Client: Ayers Saint Gross, Inc.
Project: HCC-SET
City/State: Columbia, Maryland

Elevation: 465 ±
Total Depth: 18.0'
Boring Location: See Boring Location Plan

Drilling Method: 3.25" I.D. HSA
Hammer Type:
Date Drilled: 5/23/14
Driller: J. Rice

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
464.7	0.3	4" of Surficial Soil-Roots	1-1-1	1.0	2	GROUNDWATER DATA Dry while drilling and upon completion
		Residual Soil:Reddish brown, Moist, Loose-Stiff, Sandy Silt with clay (ML)	1-3-5	2.5		
			4-5-6	3.5	10	
				5.0		
			2-4-4	6.0	11	
				7.5		
457.5	7.5	Tan to white, Moist, Loose-Stiff Sandy Silt with clay (ML)	3-4-6	8.5	10	
				10.0		
			7-9-12	13.5	21	Cave in at 15.5 feet upon completion
				15.0		
			3-2-2	16.5	4	
447.0	18.0	Boring Terminated at 18 feet		18.0		

*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.

BORING LOG
Boring: SWM-4 (1 of 1)

Project No: 68P-0079
Client: Ayers Saint Gross, Inc.
Project: HCC-SET
City/State: Columbia, Maryland

Elevation: 464 ±
Total Depth: 18.0'
Boring Location: See Boring Location Plan

Drilling Method: 3.25" I.D. HSA
Hammer Type:
Date Drilled: 5/23/14
Driller: J. Rice

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
463.3	0.7	8" of Asphalt				
463.0	1.0	4" of Aggregate Base	2-3-4	1.0	7	GROUNDWATER DATA Dry while drilling and upon completion
		Residual Soil:Reddish brown, Moist, Loose-Stiff, Sandy Silt with clay (ML)		2.5		
			2-3-7	3.5	10	
				5.0		
			5-6-7	6.0	13	
				7.5		
455.5	8.5	Tan to white, Moist, Loose-Stiff Sandy Silt with clay (ML)	3-3-8	8.5	11	
				10.0		
			3-6-7	13.5	15	
				15.0		
			6-13-14	16.5	27	Cave in at 15.5 feet upon completion
446.0	18.0	Boring Terminated at 18 feet		18.0		

*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.

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.

Howard Soil Conservation District — Date: 11/13/14

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."

RICHARD L. BUTT — Date: 11-11-14

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."

C. DIENTINGALE — Date: 11-12-14

Signature of Developer (print name below signature)

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.

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. 31089 EXPIRATION DATE: 11/21/14

KCI TECHNOLOGIES — Engineers, Planners, Scientists, Construction Managers
936 Ridgebrook Road, Sparks, MD 21152
Phone (410)316-7800 Fax (410)316-7803
www.kci.com

AYERS SAINT GROSS
ARCHITECTS + PLANNERS
1040 Hull Street, Suite 100
Baltimore, MD 21230
p 410.347.8000 f 410.347.8419

APPROVED: Howard County Department of Planning & Zoning

Director — Date: 1/6/15

Chief, Division of Land Development — Date: 1-06-15

Chief, Development Engineering Division — Date: 12-18-14

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 - Science, Engineering & Technology Building
SITE PACKAGE
PARCEL: 47, TAX MAP: 38, GRID: 6
TAX ACCOUNT #: 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date:	10-1-2014	Scale:	N.T.S.
Drawn By:	C.T.B	Designed By:	B.S.
Approved By:	R.T.B	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

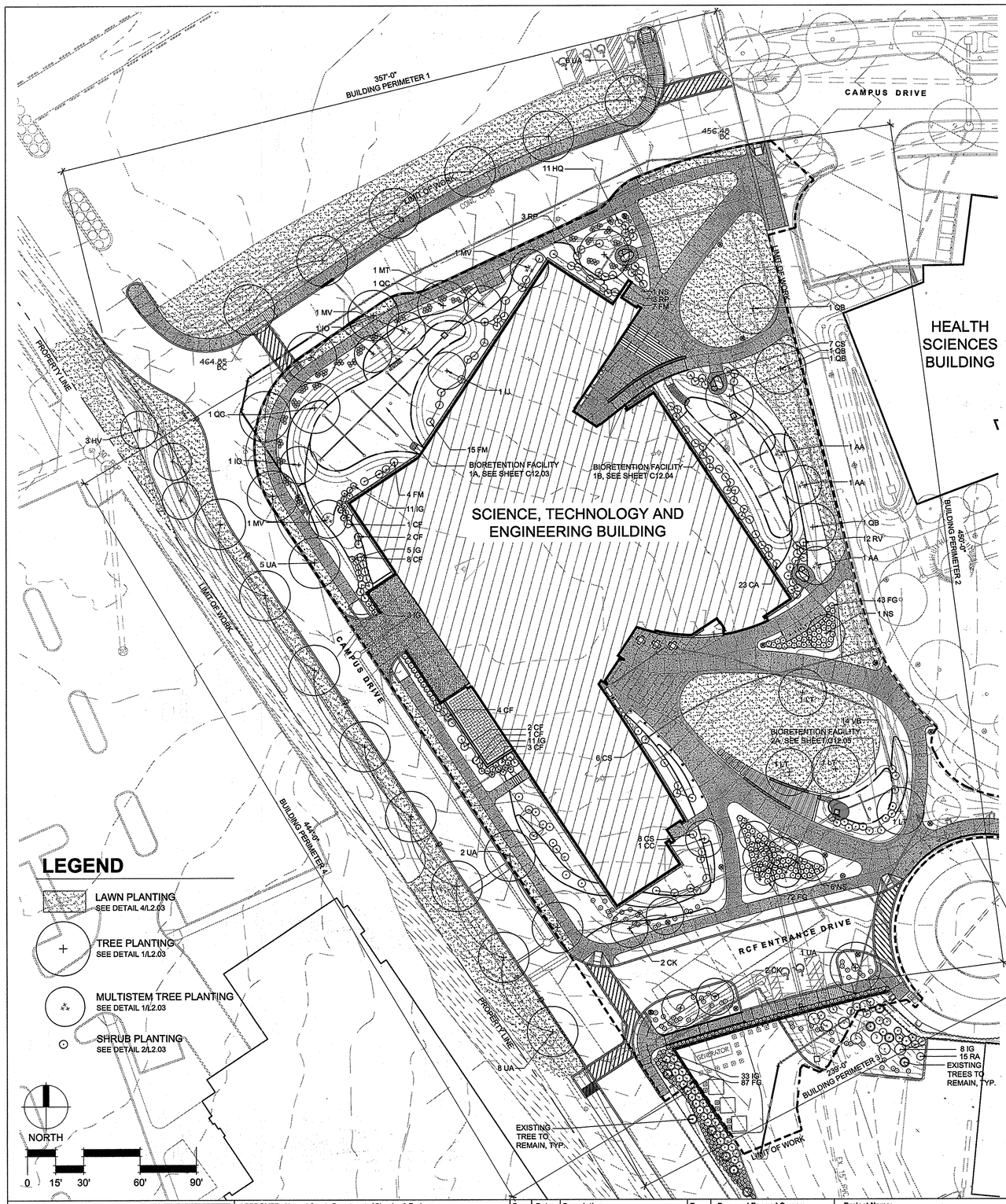
Sheet Title: STORMWATER MANAGEMENT BORING LOGS

STATE OF MARYLAND — RICHARD L. BUTT — No. 031089 — PROFESSIONAL ENGINEER — 11-11-14

Discipline Number: C12.08

Sheet Number: 34 OF 42

SDP 14-066



LEGEND

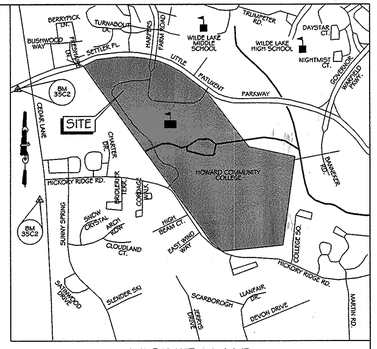
- LAWN PLANTING — SEE DETAIL 4/L2.03
- TREE PLANTING — SEE DETAIL 1/L2.03
- MULTISTEM TREE PLANTING — SEE DETAIL 1/L2.03
- SHRUB PLANTING — SEE DETAIL 2/L2.03

NORTH

0 15' 30' 60' 90'

PLANT SCHEDULE (THIS SHEET ONLY)

QTY.	KEY	BOTANICAL/COMMON NAME	SIZE	ROOT	COMMENTS
		SHADE TREES			
1	CC	Carpinus caroliniana American Hornbeam	3" Cal	B&B	Single Leader, Full Canopy Limbed up to 6' Ht. Min.
2	CK	Cladastris kentuckea American Yellowwood	3" Cal	B&B	Straight Central Leader, Full Canopy Limbed up to 6' Ht. Min.
4	LT	Liriodendron tulipifera Tulip Poplar	4" Cal	B&B	Straight Central Leader, Full Canopy Limbed up to 7' Ht.
8	NS	Nyssa sylvatica Blackgum	3" Cal	B&B/ Cont.	Straight Central Leader, Full Canopy Limbed up to 6' Ht.
3	QB	Quercus bicolor Swamp White Oak	3" Cal	B&B	Straight Central Leader, Full Canopy Limbed up to 7' Ht.
2	QC	Quercus coccinea Scarlet Oak	3" Cal	B&B	Straight Central Leader, Full Canopy Limbed up to 7' Ht.
21	UA	Ulmus americana 'Accolade' Accolade Elm	3" Cal	B&B	Straight Central Leader, Full Canopy Limbed up to 7' Ht.
		ORNAMENTAL TREES			
3	AA	Amelanchier arborea Common Serviceberry	8' Ht.	B&B	Multistem, 3 trunks
3	HV	Hamamelis virginiana Witchhazel	8' ht.	B&B	Multi-trunk, Full
3	MV	Magnolia virginiana 'Moonglow' Moonglow Sweetbay Magnolia	10' ht.	B&B	Multi-trunk, 3 Stems, Full Canopy
1	MT	Magnolia tripetala Umbrella Tree	2' Cal.	B&B/Cont.	Single Stem, Full Canopy
		EVERGREEN TREES			
2	IO	Ilex opaca 'Jersey Princess' American Holly	9' ht.	B&B	Single Trunk Full to base
1	IJ	Ilex opaca 'Jersey Knight' American Holly	9' Ht.	B&B	Single Trunk Full to base
		SHRUBS			
23	CA	Clethra alnifolia 'Hummingbird' Summersweet Clethra	#3	Cont.	24" Ht., Full Spaced as Shown
21	CF	Calycanthus floridus Eastern Sweetshrub	#5	Cont.	36" Ht., Full Spaced as Shown
21	CS	Cornus sericea 'Isanti' / Redosier Dogwood	#5	Cont.	30" Ht., Full Spaced as Shown
115	FG	Fothergilla gardenii Dwarf Fothergilla	#5	Cont.	24" Ht., Full Spaced as Shown
26	FM	Fothergilla major 'Mt. Airy' Mount Airy Fothergilla	#7	Cont.	36" Ht., Full Spaced as Shown
11	HQ	Hydrangea quercifolia 'Sikes Dwarf' Oakleaf Hydrangea	#5	Cont.	30" Ht., Full Spaced as Shown
30	IG	Ilex glabra 'Nigra' Inkberry Holly	#5	Cont.	24" Ht., Full Spaced as Shown
6	RP	Rhododendron periclymenoides Pinxterbloom Azalea	#5	Cont.	30" Ht., Full Spaced as Shown
12	RV	Rhododendron viscosum Swamp Azalea	#5	Cont.	30" Ht., Full Spaced as Shown
14	VB	Viburnum dentatum 'Blue Muffin' Blue Muffin Arrowwood Viburnum	#5	Cont.	30" Ht., Full Spaced As Shown



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

SCHEDULE A - PERIMETER LANDSCAPE EDGE				
BUILDING PERIMETER	1	2	3	4
LINEAR FEET OF PERIMETER	357'	450'	239'	444'
CREDIT FOR EXISTING VEGETATION	NO	NO	NO	NO
CREDIT FOR WALL,FENCE, OR BERM	NO	NO	NO	NO
NUMBER OF PLANTS REQUIRED	0	0	0	7 Shade Trees
NUMBER OF PLANTS PROVIDED				
SHADE TREES	8	8	12	13
EVERGREEN TREES	3	0	0	1
ORNAMENTAL TREES	4	3	0	3
SHRUBS	44	99	221	62

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 — DATE 1-6-2015

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936 Ridgebrook Road, Sparks, MD 21152
Phone (410)316-7800 Fax (410)316-7803
www.kci.com

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		1/6/15 Date
Chief, Division of Land Development		1-06-15 Date
Chief, Development Engineering Division		12-18-14 Date

Rev:	Date:	Description:	By:
1	10/06/14	ADDENDUM #2	AR
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 - Science, Engineering & Technology Building
SITE PACKAGE
PARCEL: 47, TAX MAP: 35, GRID: 6
TAX ACCOUNT #: 045868
ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

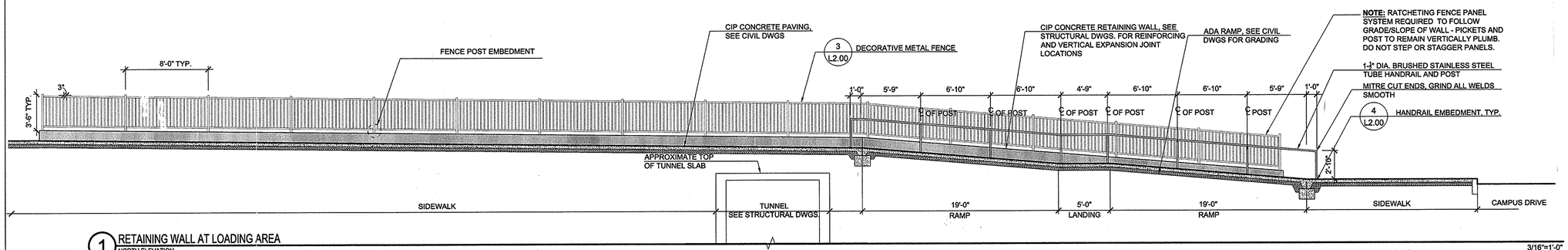
Date:	10-01-2014	Scale:	1"=30'
Drawn By:	ASG	Designed By:	ASG
Approved By:	JC	Project No:	21183
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title: OVERALL LANDSCAPE PLAN AND NOTES

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. 31083, EXPIRATION DATE: 9/21/14
License #3523
JONATHAN M. CECI
STATE OF MARYLAND
11.13.14

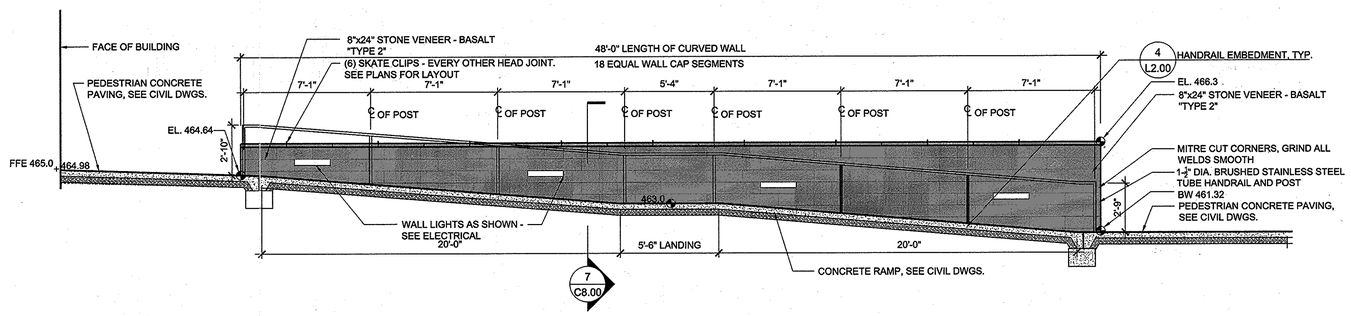
Discipline Number: L1.00
Sheet Number: 35 OF 42

SDP 14-066



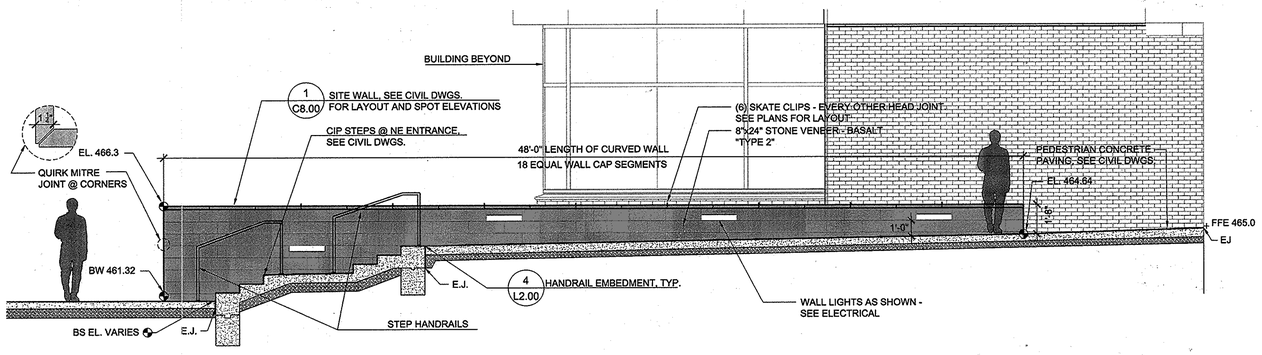
1 RETAINING WALL AT LOADING AREA
NORTH ELEVATION

3/16"=1'-0"



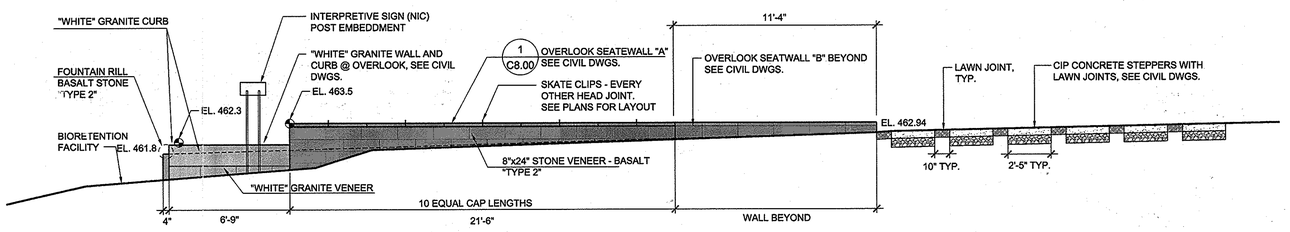
2 NE ENTRANCE ADA RAMP
FLATTENED SECTION/ELEVATION

1/4"=1'-0"



3 NE ENTRANCE STAIR AND SEAT WALL
FLATTENED SECTION/ELEVATION

1/4"=1'-0"



4 OVERLOOK SEATWALL "A"
ELEVATION

1/4"=1'-0"

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

APPROVED: Howard County Department of Planning & Zoning

Director — 1/6/15 Date

Chief, Division of Land Development — 1-06-15 Date

Chief, Development Engineering Division — 12.18.14 Date

Rev:	Date:	Description:	By:
1	10/06/14	ADDENDUM #2	AR
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ELECTION DISTRICT NO.5 HOWARD COUNTY, MARYLAND

Date:	10-01-2014	Scale:	AS SHOWN
Drawn By:	ASG	Designed By:	ASG
Approved By:	JC	Project No:	21183
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title: SITE SECTIONS

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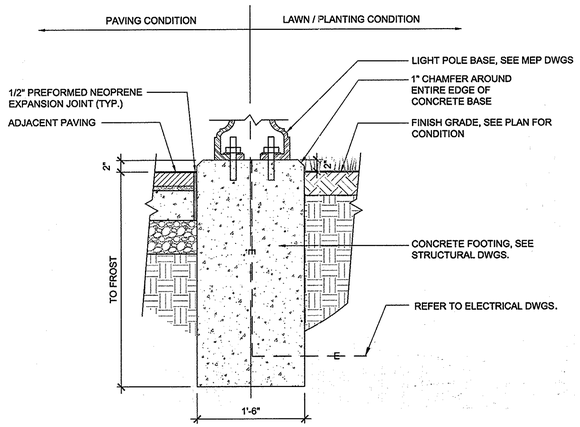
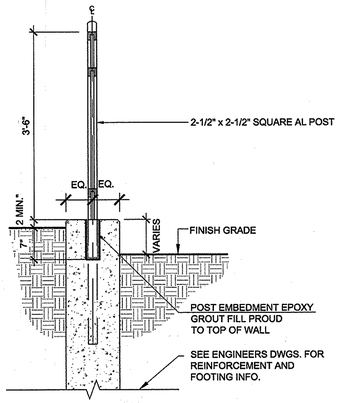
STATE OF MARYLAND
11.13.14

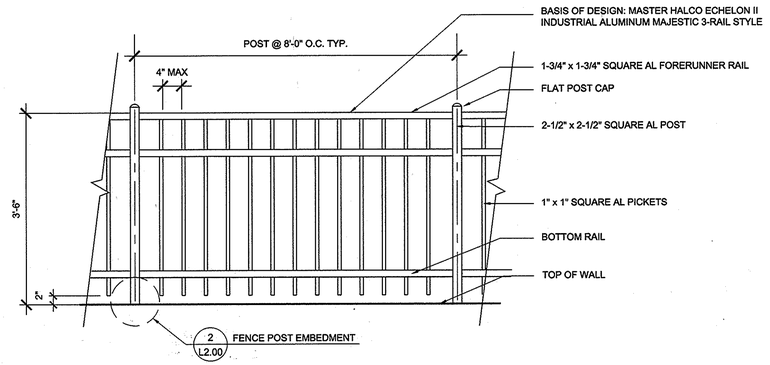
Discipline Number: L1.10
Sheet Number: 36 OF 42
SDP 14-066



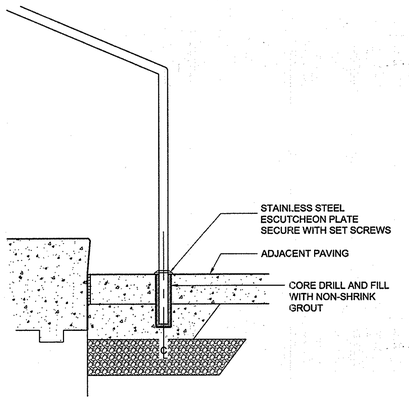
1 PEDESTRIAN LIGHT POLE FOOTING
SECTION 1"=1'-0"



2 FENCE POST EMBEDMENT
SECTION 3/4"=1'-0"



3 DECORATIVE METAL FENCE
ELEVATION 3/4"=1'-0"



4 HANDRAIL EMBEDMENT
SECTION 1"=1'-0"

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LANDSCAPE ARCHITECT License #3523 STATE OF MARYLAND JONATHAN M. CECI

11.13.14

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APPROVED: Howard County Department of Planning & Zoning

Director	1/6/15 Date
Chief, Division of Land Development	1-06-15 Date
Chief, Development Engineering Division	12-18-14 Date

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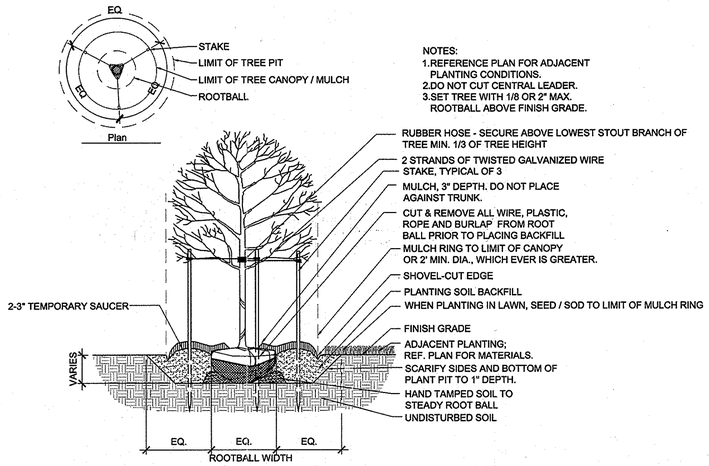
Approved By:	JC	Project No:	21183
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title: DETAILS

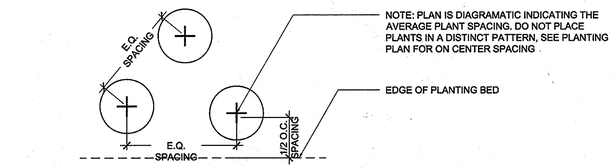
Discipline Number: L2.00

Sheet Number: 37 OF 42

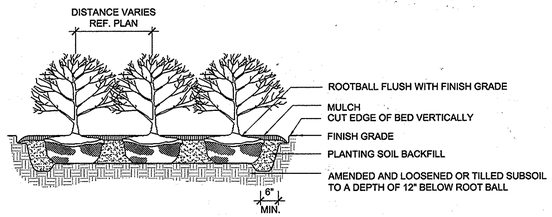
SDP 14-066



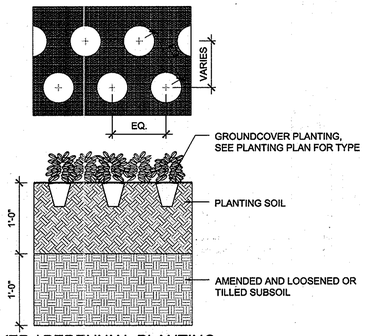
1 TREE PLANTING
SECTION 3/8"=1'-0"



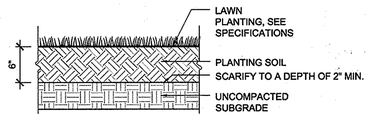
PLAN VIEW - TRIANGULAR SPACING: NOT TO SCALE



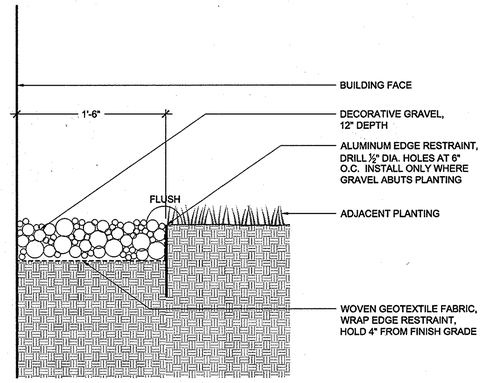
2 SHRUB PLANTING
SECTION 3/8"=1'-0"



3 GROUND COVER / PERENNIAL PLANTING
SECTION 1" =1'-0"



4 LAWN PLANTING
SECTION 1"=1'-0"



5 GRAVEL DRIP EDGE
SECTION 1"=1'-0"

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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 11/6/14

Chief, Division of Land Development — Date 1-06-15

Chief, Development Engineering Division — Date 12.18.14

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Approved By:	JC	Project No:	21183
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Sheet Title: PLANTING DETAILS

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License # 23523

LANDSCAPE ARCHITECT
JONATHAN M. CEDI
STATE OF MARYLAND
11.13.14

Discipline Number: L2.01

Sheet Number: 38 OF 42

SDP 14-066

ELECTRICAL LEGEND

SYMBOLS	DESCRIPTION
	POLE MOUNTED PATH LIGHT
	WALL MOUNTED INCANDESCENT/FLUORESCENT OR H.I.D. LIGHTING FIXTURE
	LIGHTING FIXTURE ON EMERGENCY CIRCUIT
	POLE MOUNTED SITE LIGHT
J	JUNCTION BOX
	BRANCH CIRCUIT - CONCEALED IN SLAB OR BELOW GRADE

ABBREVIATIONS

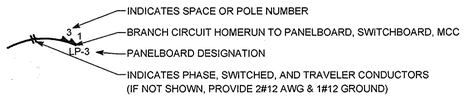
A	AMPS OR AMPERE
AC	ALTERNATING CURRENT
AFG	ABOVE FINISHED GRADE
AIC	AMPERES INTERRUPTING CAPACITY
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
DWG	DRAWING
ECB	ENCLOSED CIRCUIT BREAKER
EMT	ELECTRICAL METALLIC TUBING
ETR	EXISTING TO REMAIN
EX.	EXISTING
GRD	GROUND
KV	KILOVOLT
KVA	KILOVOLT-AMPERE
KW	KILOWATT
LTG	LIGHTING
MCB	MAIN CIRCUIT BREAKER
MTD	MOUNTED
MTG	MOUNTING
N	NEUTRAL
NEC	NATIONAL ELECTRICAL CODE
RX	REMOVE EXISTING
UON	UNLESS OTHERWISE NOTED
V	VOLTS OR VOLTAGE
W	WITH
WP	WEATHERPROOF
#	NUMBER
Ø	PHASE

CONVENTIONS

ELECTRICAL EQUIPMENT DENOTED BY DASHED, HEAVY LINEWEIGHT SHALL BE DISPOSED OF, UNLESS INDICATED TO BE REUSED OR TURNED OVER TO THE OWNER

ELECTRICAL EQUIPMENT DENOTED BY LIGHT, SOLID LINEWEIGHT INDICATES EXISTING TO REMAIN, UNLESS INDICATED OTHERWISE

ELECTRICAL EQUIPMENT DENOTED BY HEAVY, SOLID LINEWEIGHT SHALL BE NEW WORK PROVIDED BY CONTRACTOR

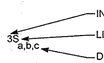


INDICATES SPACE OR POLE NUMBER

BRANCH CIRCUIT HOMERUN TO PANELBOARD, SWITCHBOARD, MCC

PANELBOARD DESIGNATION

INDICATES PHASE, SWITCHED, AND TRAVELER CONDUCTORS (IF NOT SHOWN, PROVIDE 2#12 AWG & 1#12 GROUND)



INDICATES NUMBER OF SWITCHES IN GROUP

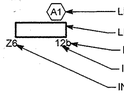
LIGHTING TOGGLE SWITCH

DENOTES SWITCH DESIGNATION

DRAWING NOTE

G 3

GENERAL NOTE - APPLIES TO ALL SHEETS WITHIN THE ELECTRICAL DRAWING SET



LIGHTING FIXTURE TYPE (REFER TO SCHEDULE)

LIGHTING FIXTURE

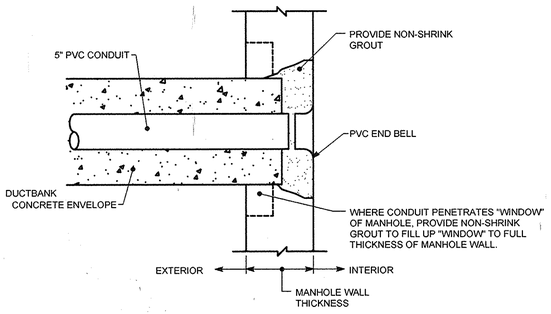
INDICATES SWITCH DESIGNATION

INDICATES CIRCUIT DESIGNATION

INDICATES SWITCHING ZONE DESIGNATION (ZP# REFERS TO ZONE CONTROLLED BY PHOTOCELL)

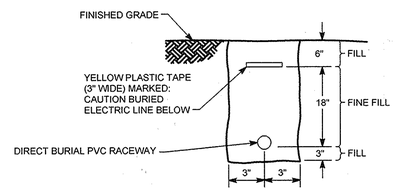
FEEDER NUMBER (REFER TO SCHEDULE)

CONNECT TO EXISTING



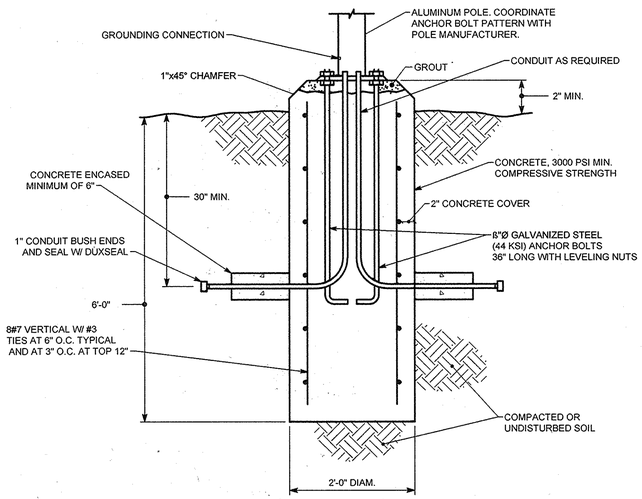
DETAIL - CONDUIT/MANHOLE PENETRATION

NOT TO SCALE



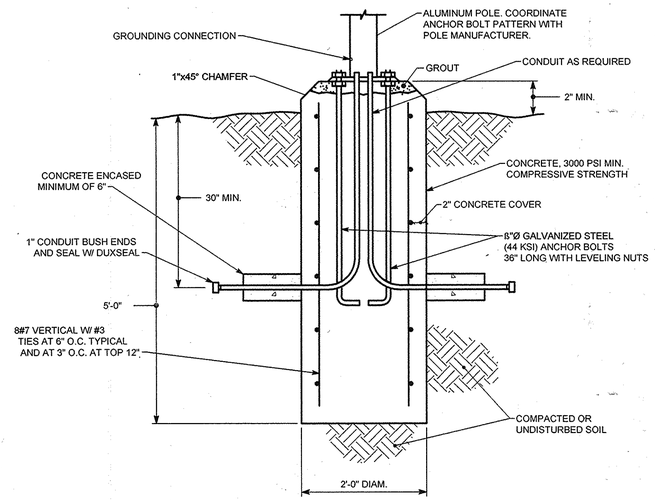
DETAIL - DIRECT BURIAL CONDUIT INSTALLATION

NOT TO SCALE



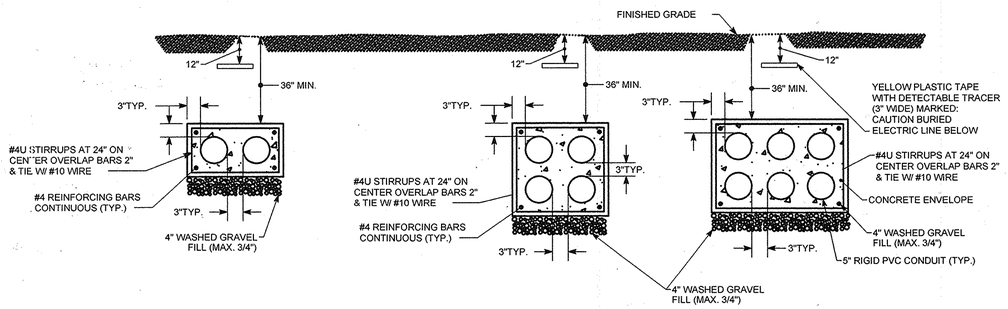
DETAIL - SITE LIGHTING POLE BASE - TYPE B1

NOT TO SCALE



DETAIL - SITE LIGHTING POLE BASE - TYPE B2

NOT TO SCALE



DETAIL - ELECTRICAL DUCTBANKS

NOT TO SCALE

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. 39234 EXPIRATION DATE: 6/26/14

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ENGINEERS
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CONSTRUCTION MANAGERS
10 Bellebrook Road
Suite 310
Hunt Valley, MD 21030
Phone (410)329-7920
Fax (410)329-7922
www.kci.com

Consulting Engineers
6522 Meadowridge Road
Elkridge, MD 21075
(410) 579-9100
FAX (410) 540-9041

APPROVED: Howard County Department of Planning & Zoning

Director — 1/6/15 Date

Chief, Division of Land Development — 1.06.15 Date

Chief, Development Engineering Division — 12.18.14 Date

Rev:	Date:	Description:	By:
1			
2			
3			
4			
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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 - Science, Engineering & Technolgy Building

SITE PACKAGE
PARCEL 47, TAX MAP 35, GRID 6
TAX ACCOUNT # 045868

ELECTION DISTRICT NO.5 — HOWARD COUNTY, MARYLAND

Date:	05-12-2014	Scale:	NTS
Drawn By:	PEM	Designed By:	PEM
Approved By:	DED	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

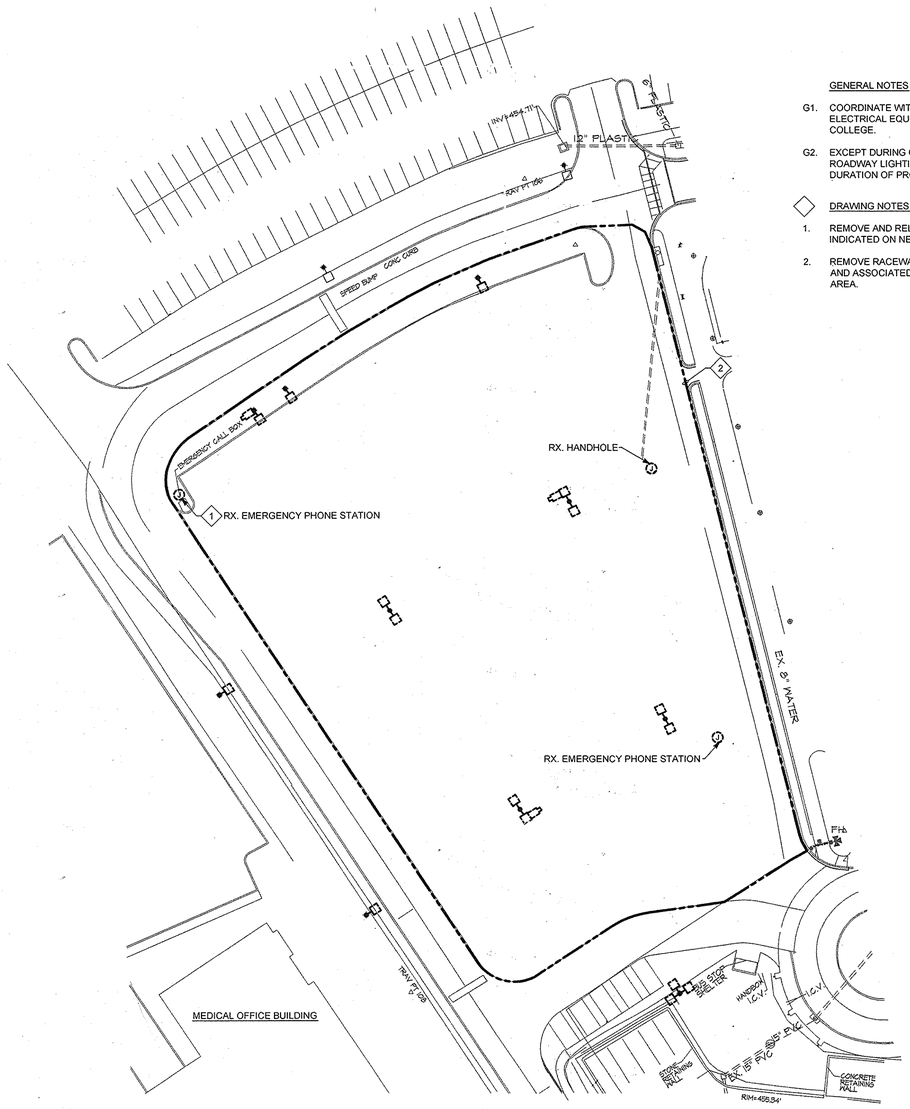
Sheet Title: ELECTRICAL LEGEND AND DETAILS

STATE OF MARYLAND — PHILIP EVANS HACKER — No. 39234 — PROFESSIONAL ENGINEER

Discipline Number: ES.0

Sheet Number: 39 OF 42

SDP 14-066



GENERAL NOTES:

G1. COORDINATE WITH OWNER FOR REMOVAL OF ELECTRICAL EQUIPMENT TO BE RETURNED TO COLLEGE.

G2. EXCEPT DURING CAMPUS DRIVE RECONSTRUCTION, ROADWAY LIGHTING MUST REMAIN IN SERVICE FOR DURATION OF PROJECT.

DRAWING NOTES:

1. REMOVE AND RELOCATE ELECTRICAL DEVICE AS INDICATED ON NEW WORK PLAN.
2. REMOVE RACEWAYS, POLE BASES, ANCHOR BOLTS AND ASSOCIATED ELECTRICAL EQUIPMENT IN THIS AREA.

N

SITE PLAN - REMOVAL WORK - ELECTRICAL

SCALE: 1" = 40'-0"

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. 39234 EXPIRATION DATE: 6/28/14

KCI TECHNOLOGIES
Engineers
Planners
Scientists
Construction Managers
5151 Rickenbacker Road
Seattle, WA 98108
Phone: (410) 296-7800
Fax: (410) 296-7803
www.kci.com

DW
Consulting Engineers
6522 Meadowridge Road
Elkridge, MD 21075
(410) 579-8100
FAX (410) 540-9041

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Approved By:	DED	Project No:	27111245
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Sheet Title:

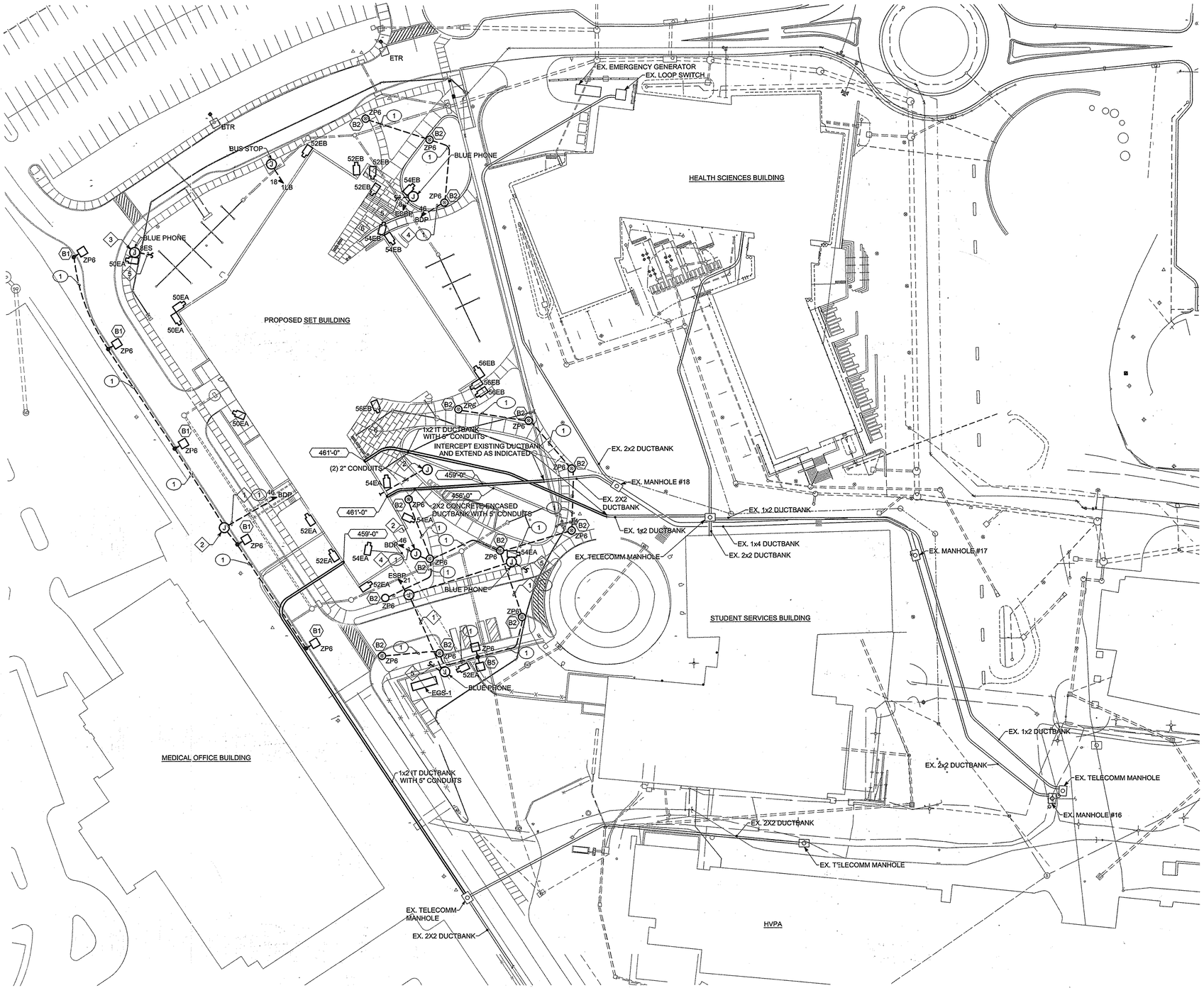
SITE PLAN - REMOVAL WORK - ELECTRICAL

STATE OF MARYLAND PHILIP EVANS MACKEY No. 39234 PROFESSIONAL ENGINEER

Discipline Number: ES.1

Sheet Number: 40 OF 42

SDP 14-066



SITE PLAN - NEW WORK - ELECTRICAL

SCALE: 1" = 40'-0"

CIRCUIT LEGEND:

(E) PANEL E1P
(EA) PANEL E3SA
(EB) PANEL E3SB
(ES) PANEL ESBP

GENERAL NOTES:

G1. EXCEPT DURING CAMPUS DRIVE RECONSTRUCTION, ROADWAY LIGHTING MUST REMAIN IN SERVICE FOR DURATION OF PROJECT.

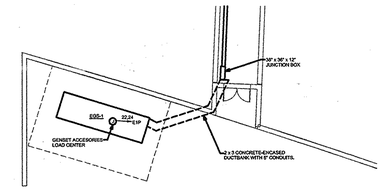
G2. REFER TO ARCHITECTURAL AND LANDSCAPE DRAWINGS FOR EXACT LOCATION OF LIGHTING FIXTURES.

DRAWING NOTES:

1. PROVIDE PORTION OF BRANCH CIRCUIT DIRECTLY UNDER ROADWAY ENCASED IN CONCRETE.
2. PROVIDE HANDHOLE LABELED "ELEC".
3. RELOCATE EXISTING EMERGENCY PHONE STATION TO THIS LOCATION.
4. PARTIAL BRANCH CIRCUIT. CIRCUIT SERVES ADDITIONAL LIGHTING ON THIS SHEET.
5. PROVIDE (1) 2" CONDUIT TO ACCESSIBLE CEILING SPACE OF BASEMENT FOR COMMUNICATION WIRING BY OTHERS.
6. REFER TO PART PLAN, THIS DRAWING FOR LIGHTING IN THIS AREA.

FEEDER SCHEDULE

FEEDER NUMBER	CONDUIT	WIRE	GROUND
1	1"	2#10	1#10



PART SITE PLAN - NEW WORK - ELECTRICAL

SCALE: 1/16" = 1'-0"

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Approved By:	DED	Project No:	27111245
Tax Map-Grid:	35-6	Zoning:	POR & NT

Sheet Title: SITE PLAN - NEW WORK - ELECTRICAL

STATE OF MARYLAND — STEVE EVANS MACKEY — No. 39234 — PROFESSIONAL ENGINEER

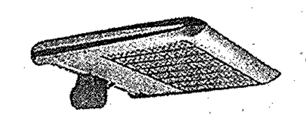
Discipline Number: ES.2

Sheet Number: 41 OF 42

SDP 14-066

ARE-EHO-3MB/3MP-DM

Cree Edge™ High Output Area Luminaire Featuring TrueWhite® Technology – Type III Medium w/ Backlight Control – Direct/Surface Mount



Product Description

Cree Edge™ High Output area luminaire is designed to deliver high lumen packages with precise optical control. Upgrade friendly unit features a slim, low profile design that minimizes wind load requirements. Luminaire mounts directly to 5" (127mm) or larger customer-drilled square poles using 5/16 (8mm) mounting hardware and anchor plate provided. Luminaire can also be surface-mounted and wired by removing two available NPT plugs and mounted directly to vertical or horizontal surfaces. Also, available with Cree TrueWhite Technology, the Cree Edge High Output, helps to beautifully render true colors and deliver value beyond energy savings.

Performance Summary

Utilizes BetaLED® Technology

Utilizes Cree TrueWhite® Technology on 5000K Luminaires

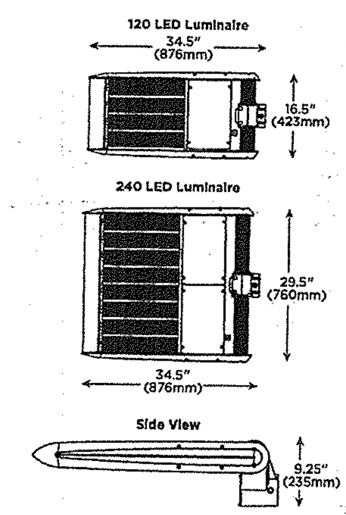
Patented NanoOptic® Product Technology

Made in the U.S.A. of U.S. and imported parts

CRI: Minimum 70 CRI (4000K & 5700K); 90 CRI (5000K)

CCT: 5700K (+ / - 500K) Standard, 5000K (+ / - 300K), 4000K (+ / - 300K)

Limited Warranty†: 10 years on luminaire / 10 years on Colorfast DeltaGuard® finish



Accessories

Field Installed Accessories
XA-BRDSPKXXAK12 Bird Spikes for 120 LED luminaires
XA-BRDSPKXXAK24 Bird Spikes for 240 LED luminaires

Ordering Information

Example: ARE-EHO-3MB-DM-12-E-UL-SV-700-OPTIONS

ARE-EHO		DM		E				
Product	Optic	Mounting	LED Count (x10)	Series	Voltage	Color Options	Drive Current	Options
ARE-EHO	3MB Type III Medium w/BLS 3MP Type III Medium w/ Partial BLS	DM Direct /Surface	12 24	E	UL Universal 120-277V UH Universal 347-480V	SV Silver (Standard) BK Black BZ Bronze PB Platinum Bronze WH White	700 700mA 1000* 1000mA	40K 4000K Color Temperature - Minimum 70 CRI - Color temperature per luminaire 50K 5000K Color Temperature - Minimum 90 CRI - Utilizes Cree TrueWhite® Technology - Color temperature per luminaire DIM 0-10V Dimming - Control by others - Refer to dimming spec sheet for details - Can't exceed specified drive current F Fuse - When code dictates fusing, use time delay fuse ML Multi-Level - Refer to ML spec sheet for details - Intended for downlight applications at 0° tilt UP Uplight Configuration - Product will be shipped orientated for uplight installation

† See www.cree.com/lighting/products/warranty for warranty terms
* Not available with UH voltage

BetaLED® TECHNOLOGY cULus CREE TRUEWHITE TECHNOLOGY Rev. Date: 10/18/13 CREE

www.cree.com/lighting T (800) 236-6800 F (262) 504-5415

ARE-EHO-3MB/3MP-DM

Product Specifications

BETALED TECHNOLOGY®

Cree Edge™ High Output area luminaires are powered by BetaLED® Technology delivering outstanding illumination, lasting performance and optimum energy efficiency. Patented NanoOptic® product technology optimizes target illumination, performance and offers flexibility with over 20 optic choices.

CONSTRUCTION & MATERIALS

- Slim, low profile, minimizing wind load requirements
- Luminaire sides are rugged die cast aluminum with internal, weathertight LED driver compartments and high performance heat sinks
- Comes with two NPT plugs for surface wiring
- Extruded aluminum adjustable mounting shaft
- Luminaire is adjustable 90° up from horizontal in 5° increments
- Exclusive Colorfast DeltaGuard® finish features an E-Coat epoxy primer with an ultra-durable powder topcoat, providing excellent resistance to corrosion, ultraviolet degradation and abrasion. Standard is silver. Bronze, black, white, and platinum bronze are also available

ELECTRICAL SYSTEM

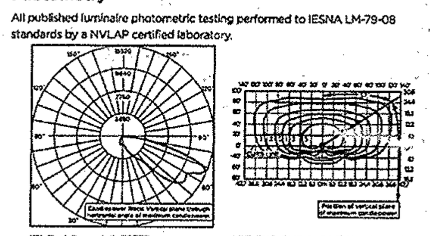
- Input Voltage: 120-277V or 347-480V, 50 / 60Hz, Class 1 drivers
- Power Factor: > 0.9 at full load
- Total Harmonic Distortion: < 20% at full load
- Integral 10kV surge suppression protection standard
- To address inrush current, slow blow fuse or type C / D breaker should be used

REGULATORY & VOLUNTARY QUALIFICATIONS

- cULus
- Suitable for wet locations
- Consult factory for CE Certified products
- Certified to ANSI C136.31-2001, 3G bridge and overpass vibration standards
- 10kV surge suppression protection tested in accordance with IEEE / ANSI C62.41.2
- Luminaire and finish are endurance tested to withstand 5,000 hours of elevated ambient salt fog conditions as defined in ASTM Standard B 117
- Meets Buy American requirements within ARRA

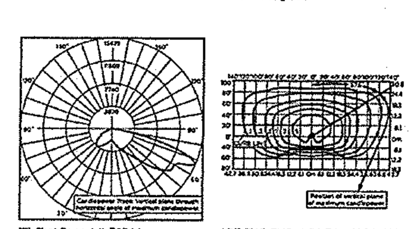
Photometry

All published luminaire photometric testing performed to IESNA LM-79-08 standards by a NVLAP certified laboratory.



ITL Test Report #: 78733
ARE-EHO-3MB-**-12-E-UL-1000-40K
Initial Delivered Lumens: 23,622

ARE-EHO-3MB-**-24-E-UL-1000-40K
Mounting Height: 25' (7.6m)
Initial Delivered Lumens: 43,026
Initial FC at grade



ITL Test Report #: 78544
ARE-EHO-3MP-**-12-E-UL-1000-40K
Initial Delivered Lumens: 25,997

ARE-EHO-3MP-**-24-E-UL-1000-40K
Mounting Height: 25' (7.6m)
Initial Delivered Lumens: 50,994
Initial FC at grade

IES Files
To obtain an IES file specific to your project consult:
http://www.Cree.com/Lighting/tools-and-support/exterior-ies-configuration-tool

Lumen Output, Electrical, and Lumen Maintenance Data

Type III Medium Distribution w/ BLS

LED Count (x10)	5700K Initial Delivered Lumens w/ Full BLS*	5700K BUG Ratings**	5700K Initial Delivered Lumens w/ Partial BLS*	5700K BUG Ratings**	5000K Initial Delivered Lumens w/ Full BLS*	5000K BUG Ratings**	5000K Initial Delivered Lumens w/ Partial BLS*	5000K BUG Ratings**	4000K Initial Delivered Lumens w/ Full BLS	4000K BUG Ratings**	4000K Initial Delivered Lumens w/ Partial BLS*	4000K BUG Ratings**	System Watts 120-480V	120V	208V	240V	277V	347V	480V	50K Hours Projected Lumen Maintenance Factor
700mA @ 25°C (77°F)																				
12	16,626	B2 U1 G3	19,705	B3 U1 G3	12,665	B1 U1 G1	15,034	B2 U1 G2	16,090	B2 U1 G3	18,975	B3-U1-G3	267	2.24	1.29	1.12	0.99	0.80	0.58	91%
24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
1000mA @ 25°C (77°F)																				
12	22,326	B2 U1 G4	26,451	B3 U1 G4	17,034	B2 U1 G3	20,189	B3 U1 G3	21,459	B2 U1 G4	25,480	B3-U1-G4	421	3.61	2.05	1.80	1.61	N/A	N/A	86%
24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	N/A	N/A	

* Actual production yield may vary between -4 and +10% of initial delivered lumens.
** For recommended lumen maintenance factor data see TD-13. Calculated L₇₀ based on 6,000 hours LM-80-08 testing: > 150,000 hours.

Weight and EPA

LED Count (x10)	Weight	EPA (Mounting Angle) 0°	10°	20°	30°	45°	60°	70°	80°	90°
12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	80 lbs (36.3kg)	1.25	1.95	3.09	4.18	5.67	6.64	7.39	7.72	7.83

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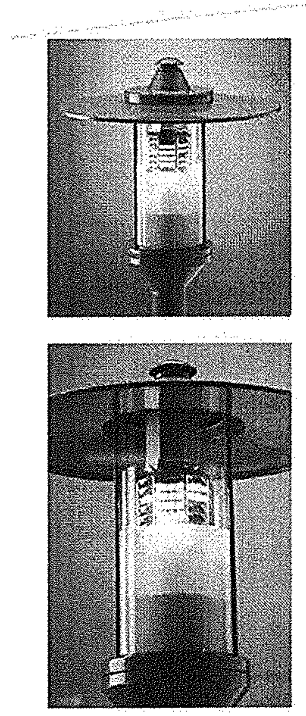
FIXTURE (B1)

New Product News
K551 Luminaire

THE STRESSCRETE GROUP JUNE 30, 2011



King Luminaire is pleased to introduce the newest addition to its post top LED product line– the K551 luminaire. This fixture is offered with a Rotolock system which consists of a tool-less removal of the globe assembly, allowing for easy access to the driver. Composed of rugged cast aluminum, the K551 combines a pleasing aesthetic look with a high quality, well engineered luminaire. Finished with King's durable "KingCoat" powder coat paint finish, it provides superior outdoor exposure qualities.

The streamlined appearance of the K551 adds to its modern appeal, making it an ideal fixture for a variety of applications. From parking lots, to waterfronts, to streetscapes, this is an impressive looking fixture that is sure to please.

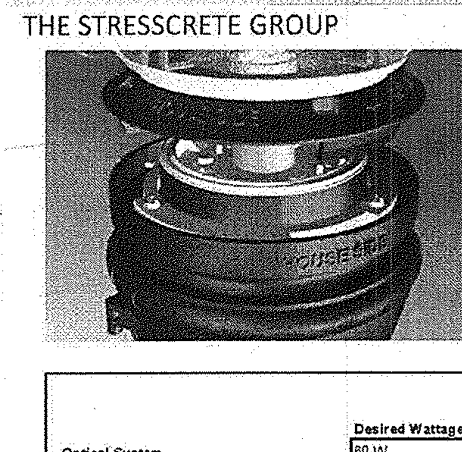
With LED technology as with HID technology, King Luminaire continues to provide outstanding optical performance in terms of output and distribution. Our product development team is dedicated to continuous improvement of the this technology to ensure that all LED products we produce continue to overcome all inherent obstacles delivering superior optical performance and substantial operating costs savings

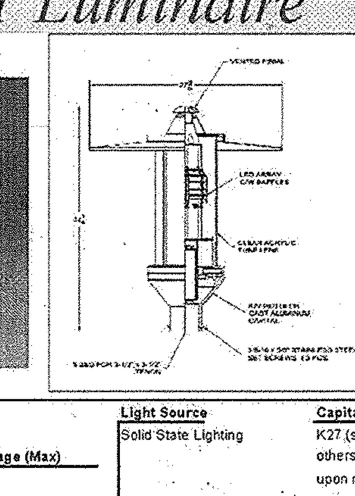
www.stresscretegroup.com

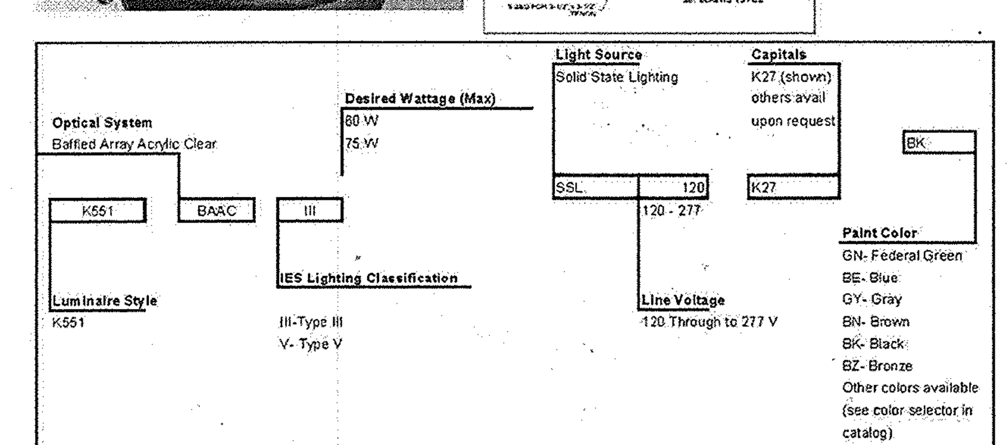
9200 Energy Lane, Northport, AL 35476-3442, (205) 339-0711, 1-800-435-6563, Fax: (205) 339-4840
1153 State Route 46 North, P.O Box 266, Jefferson, OH 44047, 1-800-268-7809, Fax: (905) 632-8116
STRESSCRETE GROUP — Quality People • Quality Products
14503 Wallick Road, Atchison, KS 66002, (913) 255-3112, 1-800-837-1024, Fax: (913) 255-3124
840 Walkers Line, P.O. Box 7, Burlington, ON L7R 3X9, (905) 632-9301, 1-800-268-7809, Fax: (905) 632-8116

How to Catalog
K551 Luminaire

THE STRESSCRETE GROUP JUNE 30, 2011







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FIXTURE (B2)

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER / CATALOG NO.	LAMPS	VOLTAGE	NOTES
B1	SINGLE HEAD, ARM MOUNT, BLACK FINISH TYPE III, MEDIUM DISTRIBUTION, HOUSE SIDE SHIELD, 700mA DRIVE CURRENT, 120 HIGH OUTPOUT LED ARRAY, 30' OVERALL HEIGHT	CREE ARE-EHO	LED (INCLUDED) 4000K 70+ CRI	MVOLT	280 FW
B2	SINGLE HEAD, ALUMINUM HOUSING, POLE TOP MOUNT, BAFFLED ARRAY ACRYLIC CLEAR LENS, TYPE III DISTRIBUTION, BLACK FINISH, 12' OVERALL HEIGHT	STRESSCRETE K551	LED (INCLUDED) 4000K 70+ CRI	MVOLT	75 FW

NOTES:
FW = TOTAL FIXTURE WATTS

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Sheet Title: LIGHTING FIXTURE CUTSHEETS

STATE OF MARYLAND — PHILIP EVANS MACKEY — No. 39234 — PROFESSIONAL ENGINEER

Discipline Number: ES.3

Sheet Number: 42 OF 42