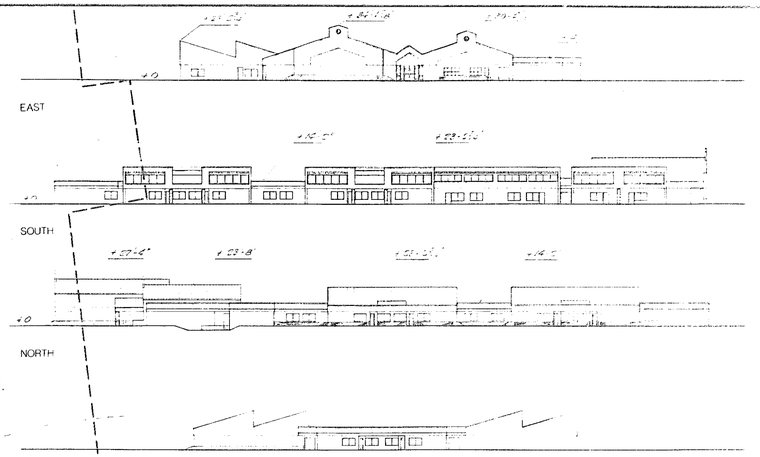


SOUTHEASTERN ELEMENTARY SCHOOL
HOWARD COUNTY PUBLIC SCHOOLS

BUILDING ELEVATIONS

NOTE:

WAIVER PETITION WP-87-147 WAS SUBMITTED TO HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING ON NOVEMBER 14, 1986. ON FEBRUARY 2, 1987 THE HOWARD COUNTY PLANNING BOARD DECIDED TO GRANT THE WAIVER PETITION WITH THE FOLLOWING RESTRICTIONS:

1. THE PROJECT MUST COMPLY WITH THE FOREST CONSERVATION ACT OF 1991 AND THE FOREST CONSERVATION MANUAL. APPROVAL LETTER DATED MAR. 5, 1987 FROM THE DEPARTMENT OF PLANNING AND ZONING STATES THAT WP-87-147 ALLOWS THE USE OF DISCRETIONARY PLANS AS ALLOWED TO BE USED TO COMPUTE THE FOREST CONSERVATION OBLIGATION FOR THIS PROJECT.

2. THE FOREST CONSERVATION OBLIGATION FOR THE SITE PLAN IS TO BE THE FOREST CONSERVATION OBLIGATION FOR THE PRELIMINARY SUBMISSION OF MARCH 1986. THE AREA OF FOREST CLEARING AND ITS MITIGATION MUST BE PAID A FEE-IN-LIEU PAYMENT OF $23,562.00 PRIOR TO THE APPROVAL OF THE FINAL FOREST CONSERVATION PLAN.

SEE SHEET 10 OF 33 FOR REVISED SITE PLAN. THIS PHASE OF PROJECT IS CLOSED OUT.

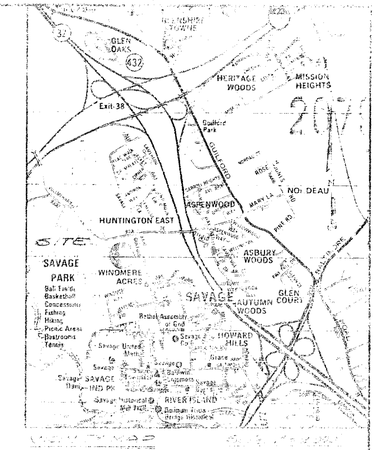
SCALE IN FEET

SITE ANALYSIS

1. Land area = 46.95 Ac.
2. Zoning R-20
3. Proposed use - Public Elem. School
4. Floor area = 65,500 s.f.
5. Building height = 1 story, 35' max
6. Parking spaces provided = 71
   67 std spaces (10' Wide)
   4 H/C spaces
7. Bus loading spaces provided = 13 (12' x 44')
8. Building coverage = 3.2%
9. Vehicular area = 67,950 s.f.
10. Open space = 93.48%

INDEX TO PLANNING PLANS

SHEET	TITLE
1	SITE PLAN (PHASE I)
1A	SITE PLAN
1B	DETAIL SHEET
2	SITE PLAN (PHASE I)
3	SITE DETAILS
4	UTILITY PROFILES
5	STORMWATER MANAGEMENT DETAILS
6	PLAN OF EROSION & SEDIMENT CONTROL
7	SEDIMENT CONTROL DETAILS
8	LANDSCAPE PLAN
9	OUTLINE OF INDUSTRIAL DEMOLITION PLAN
10	SITE AND GRADING PLAN
11	SITE DETAILS
12	UTILITY PROFILES
13	STORMWATER MANAGEMENT DETAILS
14	PLAN OF EROSION & SEDIMENT CONTROL
15	SEDIMENT CONTROL DETAILS
16	LANDSCAPE SEDIMENT CONTROL PLAN
17	SEDIMENT CONTROL DETAILS
18	SEDIMENT CONTROL NOTES AND DETAILS
19	SWM AND TREE PLANTING PLANS AREA MAP
20	STORMWATER MANAGEMENT PLAN
21	STORMWATER MANAGEMENT DETAILS
22	STORMWATER MANAGEMENT DETAILS
23	STORMWATER MANAGEMENT DETAILS
24	STORMWATER MANAGEMENT DETAILS
25	STORMWATER MANAGEMENT DETAILS - SITE ANALYSIS
26	PLAN OF EROSION & SEDIMENT CONTROL
27	PLAN OF EROSION & SEDIMENT CONTROL
28	PLAN OF EROSION & SEDIMENT CONTROL
29	PLAN OF EROSION & SEDIMENT CONTROL
30	PLAN OF EROSION & SEDIMENT CONTROL
31	PLAN OF EROSION & SEDIMENT CONTROL
32	PLAN OF EROSION & SEDIMENT CONTROL
33	PLAN OF EROSION & SEDIMENT CONTROL
34	STORMWATER MANAGEMENT
35	STORMWATER MANAGEMENT BIORETENTION FACILITY #4
36	SWM BIORETENTION FACILITY #4 EROSION & SEDIMENT CONTROL PLAN
37	SWM BIORETENTION FACILITY #4 PROFILES & TYPICAL EMBANKMENT SECTION
38	SWM BIORETENTION FACILITY #4 WEIR WALL DETAILS
39	SWM BIORETENTION FACILITY #4 CONSTRUCTION DETAILS & SPECIFICATIONS
40	SWM BIORETENTION FACILITY #4 PLANTING PLAN & BORING LOGS



APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.

COUNTY HEALTH OFFICER	4-22-87 DATE

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING.

PLANNING DIRECTOR	4-24-87 DATE
ACTING CHIEF, DIVISION OF LAND DEVELOPMENT	4-23-87 DATE

APPROVED: FOR PUBLIC WATER, PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS.

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

DIRECTOR	DATE
CHIEF, BUREAU OF ENGINEERING	4-21-87 DATE

BY THE DEVELOPER:

"I CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL, AND I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY."

DEVELOPER Howard County Board of Education	DATE

35. STORMWATER MANAGEMENT BIORETENTION FACILITY #4
36. SWM BIORETENTION FACILITY #4 EROSION & SEDIMENT CONTROL PLAN
37. SWM BIORETENTION FACILITY #4 PROFILES & TYPICAL EMBANKMENT SECTION
38. SWM BIORETENTION FACILITY #4 WEIR WALL DETAILS
39. SWM BIORETENTION FACILITY #4 CONSTRUCTION DETAILS & SPECIFICATIONS
40. SWM BIORETENTION FACILITY #4 PLANTING PLAN & BORING LOGS

SITE PLAN
BELLMAN BRIDGE ELEMENTARY SCHOOL
PARCEL 25, TAX MAP 47
SIXTH ELECTION DISTRICT
HOWARD COUNTY, MD.

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHWEST CORNER OF THE PROJECT.

OWNER - DEVELOPER
HOWARD COUNTY BD. OF EDUC.
10910 BT. 108
ELLICOTT CITY, MD 21043
992-0500
ATTN: MR. HENRY HORNUNG

3-5-87

Subdivision Name			Sect / Area	Lot / Parcel #
Bellman Bridge Elem. School				25
Plat or L/F	Block #	Zone	Tax / Zone Map	Elec. Dist.	Census Tract
572/380	5	R-20	47	6	6066
Water Code			Sewer Code	
E 16			0000000	

5	REVISED SHEET NO. & SHEET INDEX	
4	[illegible]	
3	[illegible]	
2	3/26/86 Remove SWM Basin #1	
1	[illegible]	

REVISIONS

Address Chart
Lot # Street Address
[illegible] Evans-Guilford Rd.

PENKIUNAS & ASSOCIATES
Engineers
8855 ANNAPOLIS RD
LANHAM, MD. 20706
301-577-5053

DATE	Nov. 26, 1986
SCALE	1" = 50'
JOB NO	8817

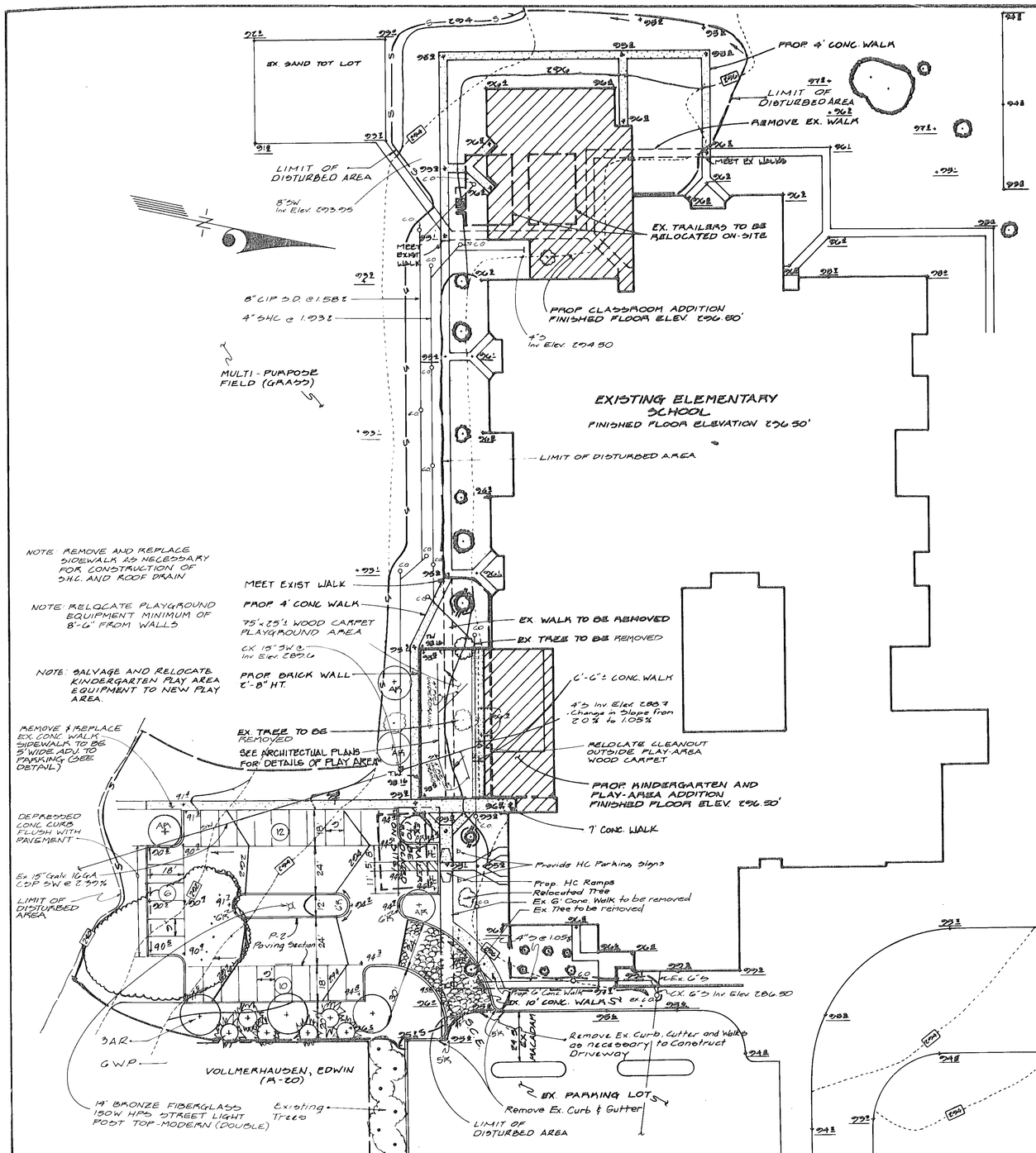
DRAWING 1 OF 40

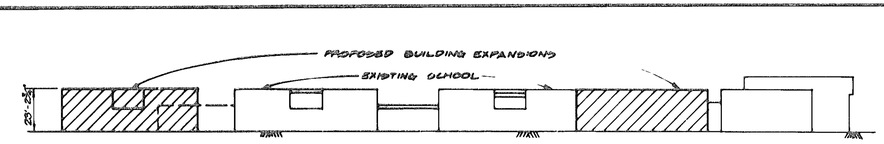
STATE OF MARYLAND — JAMES C. HANNAGAN — No. 36361 — PROFESSIONAL ENGINEER

4/16/87

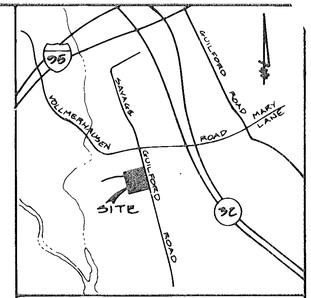
THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

SDP-87-96





BUILDING ELEVATION
SCALE: 1"=40'



VICINITY MAP
SCALE: 1"=2000'

PLANT SCHEDULE

KEY	PLANT NAME	SIZE	QNTY	REMARKS
AR	ACER RUBRUM "RED SUNSET" RED SUNSET MAPLE	2½"-3" CAL.	8	B&B HEAVY
WP	PINUS STROBUS WHITE PINE	6'-8' HT.	6	B&B

LANDSCAPE REQUIREMENTS:
1. PARKING LOT: 1 TREE/20 SPACES x 26 = 1.9 OR 2 SHADE TREES
2. PERIMETER EDGE: ±120' OF 'C' TYPE 3 SHADE TREES, 6 EVERGREENS

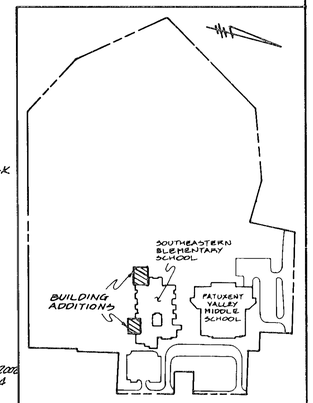
NOTES:
1. ALL PLANTING SHALL BE DONE IN ACCORDANCE WITH ATTACHED SPECIFICATIONS
2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.

LEGEND

Contour Interval	1 ft.
Existing Contour	
Proposed Contour	
Drainage Flow	
Ex. Tree to Remain	
Tree Protection Fence	
Retaining Wall	
Existing Spot Elev	96±
Proposed Spot Elev.	96±
Silt Fence	S
Tree Protective Fence	

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 the Department of Public Works/Construction Inspection Division at (410) 313-1880 at least five (5) working days prior to the start of work.
3. The contractor shall notify "Miss Utility" at 1-800-257-7777 at least 48 hours prior to any excavation work at.
4. See Ho. Co OPZ Files SDP 88-50, and SDP 87-96.
5. Traffic control devices, markings, and signing shall be in accordance with the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD). All street and regulatory signs shall be in place prior to the placement of any asphalt
6. All plan dimensions are to the face of curb unless otherwise noted.
7. Topography from field run survey by C.F.&S. June 1993.
8. Horizontal and Vertical Control based on Ho. Co. Mon. 204 2006 Elev. 259.11; Mon 204 2009, Elev. 291.82; Mon. 204 2004, Elev. 288.84
9. Public Water and Sewer to be utilized.
10. Stormwater Management provided in existing infiltration and extended detention facilities on previously approved plans SDP 88-50 and SDP 87-96.



AREA MAP
SCALE: 1"=400'

Reviewed for HOWARD S.C.D.
Name
and meets Technical Requirements
Signature Date
US Soil Conservation Service

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

Approved

Cathleen Conley Young — Signature — 9/2/93 — Date

DEVELOPER'S/BUILDER'S CERTIFICATE

"I/We certify that all development and construction will be done according to this plan of development and plan 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 or their authorized agents, as are deemed necessary".

SITE ANALYSIS

		SHEET 1 of 8	SHEET 1A of 8	TOTAL
1.	TOTAL AREA OF TRACT			46.95 Ac.
2.	ZONING			RA-20
3.	PROPOSED USE		Public Elementary School	
4.	AREA TABULATION			
a)	Floor Area	65,500 s.f.	9,305 s.f.	74,805 s.f.
b)	Building Height	1 Story	1 Story	1 Story (33'±)
c)	Parking Spaces Prov.	70 (6 handi., 7 hc)	30 (28 std., 2 Hc)	100 (91 std., 9 Hc)
d)	Bus Loading Spaces	15 (12'x44')		15
e)	Building Coverage	3.2%	0.45%	3.65%
f)	Vehicular Area	67,950 s.f.		67,950 s.f.
g)	Open Space			93%

ZONING CERTIFICATION FOR ITEM 2
[illegible]
CHARLES J. CIKOND, SR. NO. 19204

STATE OF MARYLAND — JAMES C. HANKINSON — No. 26381 — PROFESSIONAL ENGINEER

ENGINEER'S CERTIFICATE

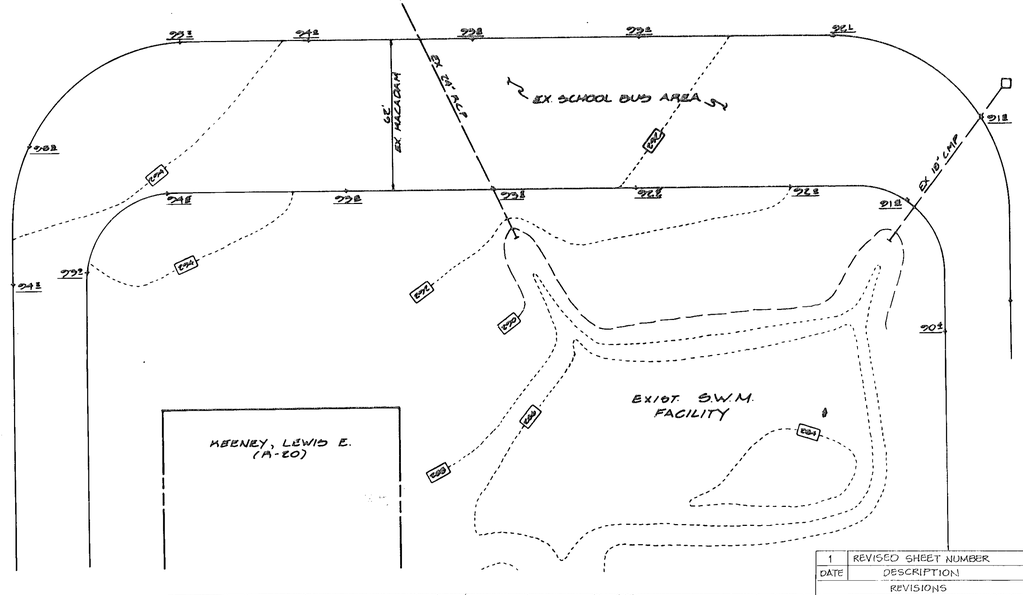
I hereby certify that this plan for Sediment and Erosion Control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District.

Signature of G. Nelson Clark — Date 8-31-93

THIS PLAN IS FOR PROJECT CLOSEOUT ONLY

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

NOTE: THIS PLAN IS TO BE ADDED TO SDP 87-96



APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS. HOWARD COUNTY HEALTH DEPARTMENT
COUNTY HEALTH OFFICER — DATE 9-29-93

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
DIRECTOR — DATE 10/5/93
CHIEF DIVISION OF LAND DEVELOPMENT AND REGULATION — DATE 10/4/93

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
DIRECTOR — DATE 9-22-93
CHIEF BUREAU OF ENGINEERING — DATE 3/24/93

8-31-93

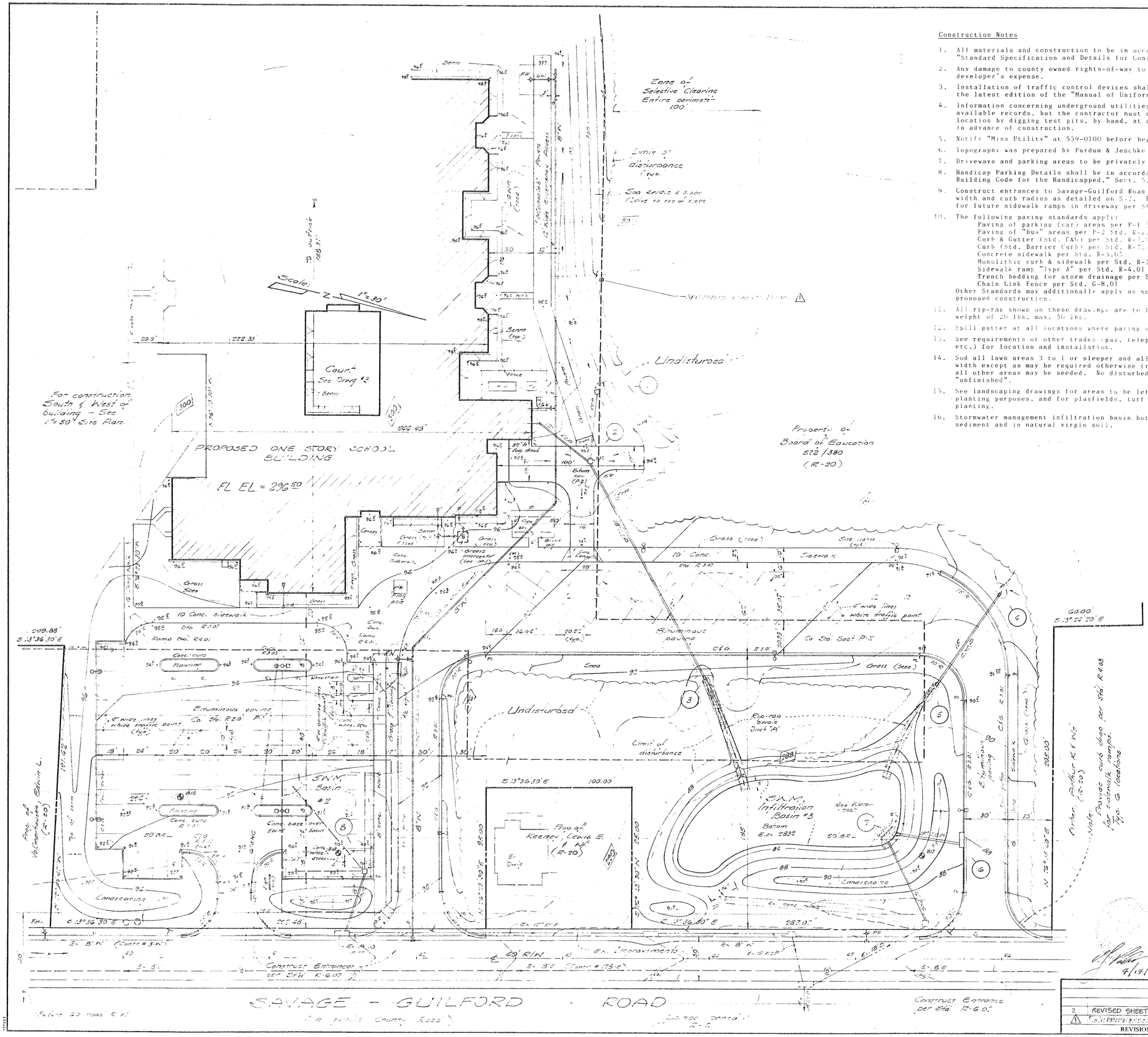
1	REVISED SHEET NUMBER
DATE	DESCRIPTION
	REVISIONS

CLARK • FINEFROCK & SACKETT, INC.
ENGINEERS • PLANNERS • SURVEYORS
7135 MINSTREL WAY • COLUMBIA MD 21045 • (301) 381-7500 BALTO • (301) 621-8100 – WASH

DESIGNED MJP	SITE DEVELOPMENT, LANDSCAPE & SEDIMENT AND EROSION CONTROL PLAN FOR BUILDING AND PARKING ADDITIONS		SCALE 1"=30'
DRAWN MCR	BOLLMAN BRIDGE ELEMENTARY SCHOOL		JOB No. 93-122X
CHECKED JLS	PARCEL: 25 TAX MAP: 47 6th ELECTION DISTRICT HOWARD COUNTY, MARYLAND		DRAWING 1A
DATE 7-21-93	OWNER: HOWARD CO. BOARD of EDUCATION 10910 ROUTE 108 ELLICOTT CITY, MD 21043		1A OF 40

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

SDP-87-96



Construction Notes

1. All materials and construction to be in accordance with Howard County "Standard Specification and Details for Construction".
2. Any damage to county owned rights-of-way to be corrected at the developer's expense.
3. Installation of traffic control devices shall be in accordance with the latest edition of the "Manual of Uniform Traffic Control."
4. Information concerning underground utilities was obtained from available records, but the contractor must determine the exact location by digging test pits, by hand, at all utility crossings, well in advance of construction.
5. Notify "Miss Utility" at 559-0100 before beginning construction.
6. Topography was prepared by Purdum & Jeschke dated 07/29/86.
7. Driveways and parking areas to be privately maintained.
8. Handicap Parking Details shall be in accordance with the "Maryland Building Code for the Handicapped." Sect. 5.01-7.05.
9. Construct entrances to Savage-Guilford Road per Std. R-6.07 of the width and curb radius as detailed on S-2. Provide curb depressions for future sidewalk ramps in driveway per Std. G-2.01.
10. The following paving standards apply:
    - Paving of parking (car) areas per P-1 Std. R-3.01
    - Paving of "bus" areas per P-2 Std. R-2.01
    - Curb & Gutter (Std. C&G) per Std. R-3.01
    - Curb (Std. Barrier Curb) per Std. R-3.01
    - Concrete sidewalk per Std. R-3.05
    - Monolithic curb & sidewalk per Std. R-3.07
    - Sidewalk ramp "Type A" per Std. R-4.01
    - Trench bedding for storm drainage per Std. G-2.01
    - Chain Link Fence per Std. G-8.01

    Other Standards may additionally apply as needed to complete the proposed construction.
11. All rip-rap shown on these drawings are to be of stone with minimum weight of 20 lbs. max. 50 lbs.
12. Spill gutter at all locations where paving slopes away from the curb.
13. See requirements of other trades (gas, telephone, electricity, cable, etc.) for location and installation.
14. Sod all lawn areas 3 to 1 or sleeper and all swale flow lines for 8' width except as may be required otherwise (rip-rap, landscaping, etc.). all other areas may be seeded. No disturbed area may be left "unfinished".
15. See landscaping drawings for areas to be left not grassed for planting purposes, and for playfields, turf bed preparation, and planting.
16. Stormwater management infiltration basin bottoms to be left clean of sediment and in natural virgin soil.

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.

COUNTY HEALTH OFFICER — DATE 4-22-87

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING

PLANNING DIRECTOR — DATE 4-21-87

CHIEF, DIVISION OF LAND DEVELOPMENT AND [illegible] — DATE 4-23-87

APPROVED: FOR PUBLIC WATER, PUBLIC SEWERAGE, STORM DRAINAGE SYSTEM AND PUBLIC ROADS

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

DIRECTOR — DATE 4-21-87

CHIEF, BUREAU OF ENGINEERING — DATE 4-21-87

BY THE DEVELOPER:

"I CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL, AND I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY."

DEVELOPER — DATE 4/14/87

3-5-87

AS-BUILT CERTIFICATION FOR BOND RELEASE

CHARLES J. CRONO, PE. NO. 19204 — DATE 5/1/91

SEE SHEET 10 OF 33 FOR REVISED SITE PLAN. THIS PHASE OF PROJECT IS CLOSED OUT.

STATE OF MARYLAND — JAMES C. HARMON — NO. 3881 — PROFESSIONAL ENGINEER

SITE PLAN
BOLLMAN BRIDGE ELEMENTARY SCHOOL
PARCEL 25, TAX MAP 47
SIXTH ELECTION DISTRICT
HOWARD COUNTY, MD

REVISION 2 — FINISH GRADING & CHANGE IN SWM

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

4/14/87

OWNER - DEVELOPER
HOWARD COUNTY BD. OF EDUC.
10910 RT. 108
ELLICOTT CITY, MD 21043
992-6500
ATTN: MR. HENRY HORNUNG

2	REVISED SHEET NUMBER	
1	F.S.D. REVISE EQ. DIST., PARKING, & SWM	
	REVISIONS	

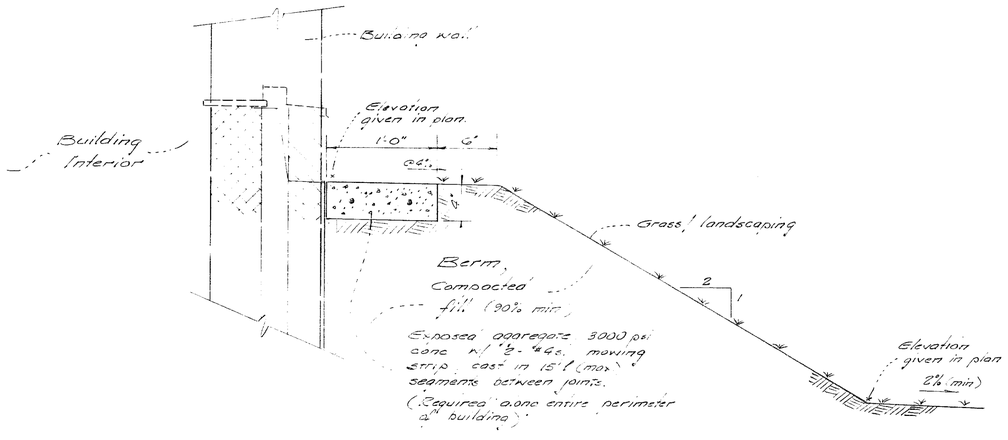
PENKIUNAS & ASSOCIATES
Engineers
8855 ANNAPOLIS RD
LANHAM, MD. 20706
301-577-5053

DATE: [illegible]
SCALE: [illegible]
JOB NO: [illegible]

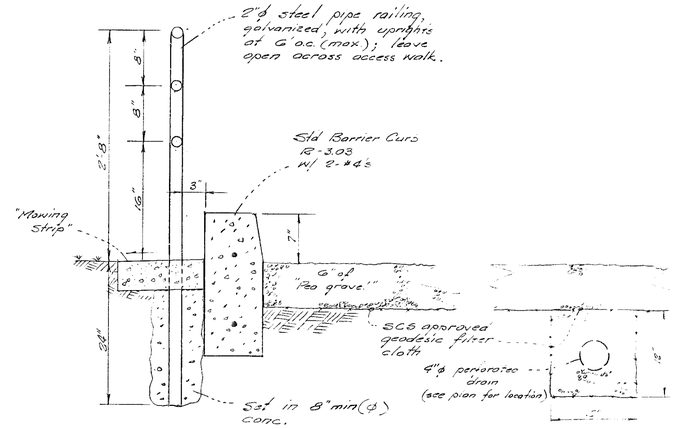
DRAWING 2 OF 40

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

SDP-87-96

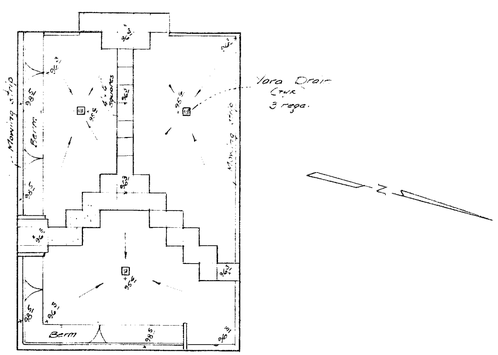


1 BERM - MOWING STRIP DETAIL
No Scale

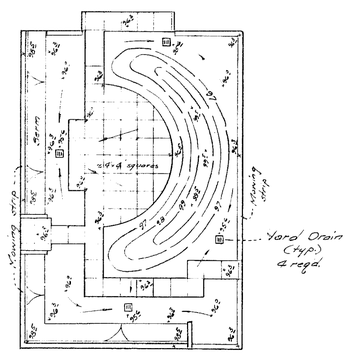


5 PLAYGROUND SECTION
Scale: 1"=10"

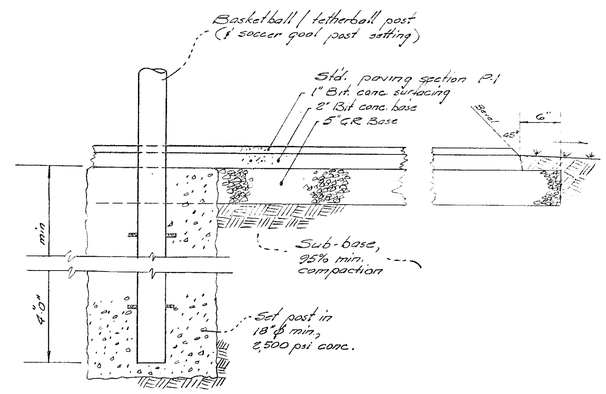
SEE SHEET 11 FOR DETAILS 1



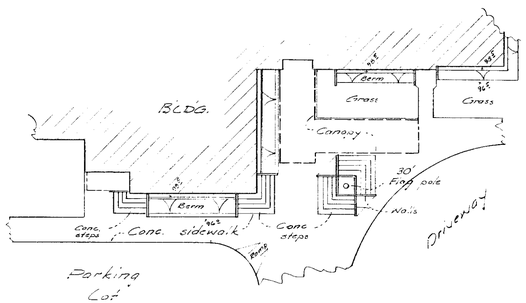
2 COURTYARD PLAN
(Base Bid)
Scale: 1/16"=1'-0"



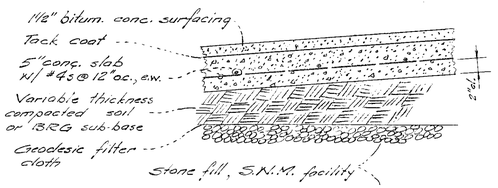
3 COURTYARD PLAN
(Alternate #12)
Scale 1/16" = 1'-0"



6 SECTION
BITUMINOUS PAVED COURT
Scale: 1"=10"



4 ALTERNATE AT FRONT OF BLDG.
Scale: 1"=30'



7 SECTION
SPECIAL PAVING OVER
S.W.M. FACILITY #2
Scale: 1"=10"

SEE SHEET 11 OF 33 FOR NEW & REVISED SITE DETAILS. THIS PHASE OF PROJECT IS CLOSED OUT.

3-5-87

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.

COUNTY HEALTH OFFICER — DATE 4-22-87

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING.

PLANNING DIRECTOR — DATE 4-23-87

ACTING CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 4-23-87

APPROVED: FOR PUBLIC WATER, PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS.

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

DIRECTOR — DATE

CHIEF, BUREAU OF ENGINEERING — DATE 4-21-87

BY THE DEVELOPER:

"I CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL, AND I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY."

DEVELOPER — DATE

CHARLES J. CROVO, JR. NO. 19204

SITE DETAILS
BOLLMAN BRIDGE ELEMENTARY SCHOOL
PARCEL 25, TAX MAP 47
SIXTH ELECTION DISTRICT
HOWARD COUNTY, MD

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

STATE OF MARYLAND — JAMES C. HANNON — No. 26361 — PROFESSIONAL ENGINEER

4/17/87

OWNER - DEVELOPER
HOWARD COUNTY BD. OF EDUC.
10910 RT. 108
ELLICOTT CITY, MD 21043
992-0500
ATTN: MR. HENRY HORNUNG

2	REVISED SHEET NUMBER
1	4/9/87 REVISE BUILDING, PARKING & SWM

REVISIONS

PENKIUNAS & ASSOCIATES
Engineers
8855 ANNAPOLIS RD
LANHAM, MD. 20706
301 577 5053

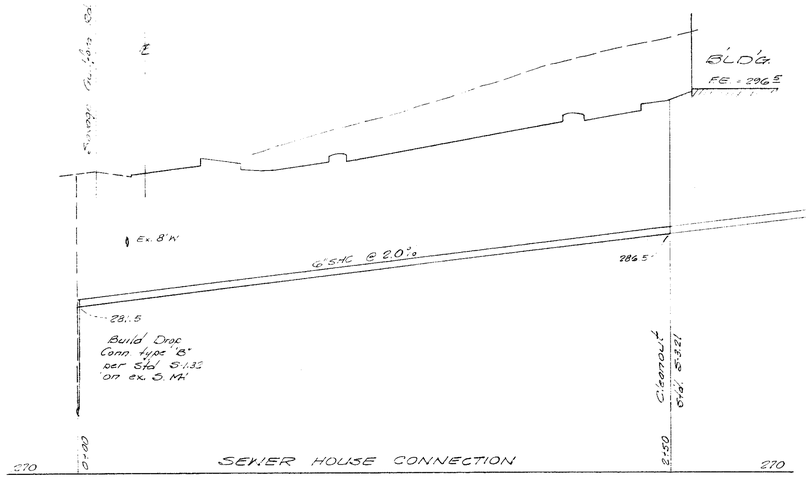
DATE FEB 12 1987
SCALE AS SHOWN
JOB NO.

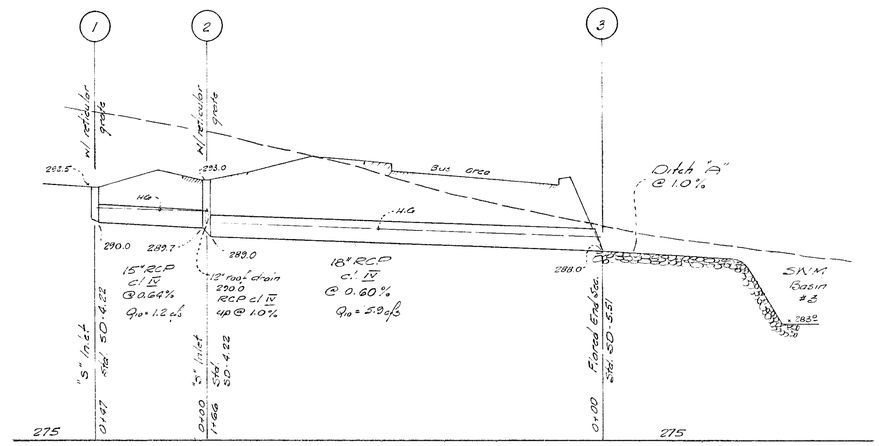
DRAWING 5 OF 40

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

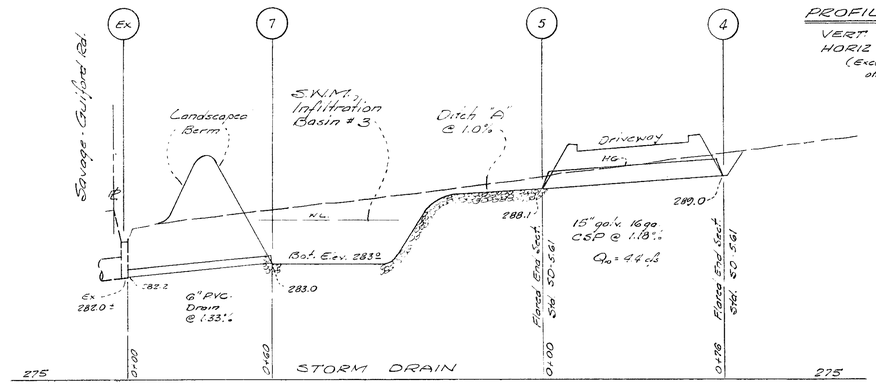
SDP-87-96

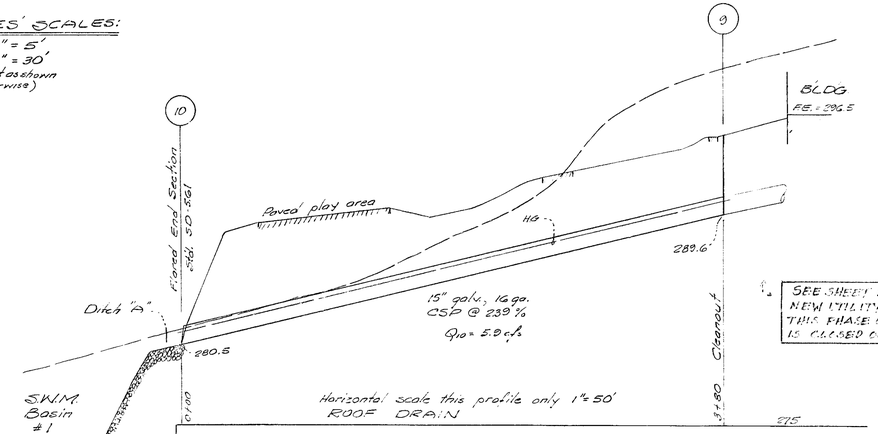
STORM DRAIN STRUCTURE SCHEDULE					
No.	Structure	Std	Top Elev	Inv Elev	Remarks
1	"S" Inlet	SD-4.22	292.5	290.0	w/ retic. grate
2	"S" Inlet	SD-4.22	293.0	289.0	w/ retic. grate
3	Flared End Sect.	SD-5.51			
4	" " "	SD-5.61			
5	" " "	SD-5.61			
6	A-10 Inlet	SD-4.02	288.4	285.0	N=2.6'
7	Flared End Sect.	SD-5.51			
8	S Inlet	SD-4.22	290.0	287.25	w/ reticular grate
9	Cleanout				
10	Flared End Sect.	SD-5.61			



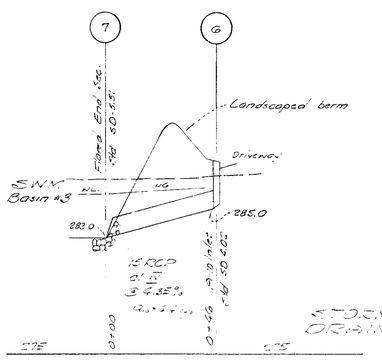


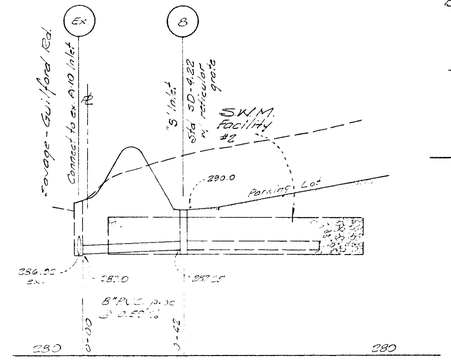
PROFILES' SCALES:
VERT. 1" = 5'
HORIZ. 1" = 30'
(Except as shown otherwise)

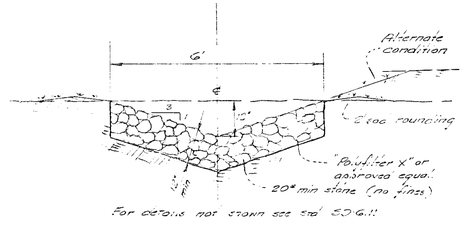




SEE SHEET 12 OF 33 FOR NEW UTILITY PROFILES. THIS PHASE OF PROJECT IS CLOSED OUT.







Utility Construction Notes

1. All construction methods and materials shall be per current edition of H.C. Std. Dets. and Specs.
2. All structures are Howard County Standard per detail as designated.
3. All service connections to be to 5' from the face of building unless otherwise shown.
4. All permanent storm drains shall be RCP per ASTM C-76 of the class as shown in profile.
5. SHC to be PVC, CSPX, VCPX, or ACP cl. 2400.

AUTHORITY: PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT

COUNTY HEALTH OFFICER — DATE 4-22-87

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING

PLANNING DIRECTOR — DATE 4-21-87

ACTING CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 4-23-87

APPROVED: FOR PUBLIC WATER, PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS.

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

DIRECTOR

CHIEF, BUREAU OF ENGINEERING — 4-21-87

BY THE DEVELOPER:

"I CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL, AND I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY."

DEVELOPER — DATE

3-5-87 F.H.D.

STATE OF MARYLAND — CHARLES J. CROVO, JR. — No. 13204 — PROFESSIONAL ENGINEER

UTILITY PROFILES
BELLMAN BRIDGE ELEMENTARY SCHOOL
PARCEL 25, TAX MAP 47
SIXTH ELECTION DISTRICT
HOWARD COUNTY, MD.

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

4/14/87

OWNER - DEVELOPER
HOWARD COUNTY BD. OF EDUC.
10910 RT. 108
ELLICOTT CITY, MD 21043
992-0500
ATTN: MR. HENRY HORNUNG

REVISIONS	
2	REVISE SHEET NUMBER
1	4/14/87 REVISE BUILDING, PARKING & ETC.

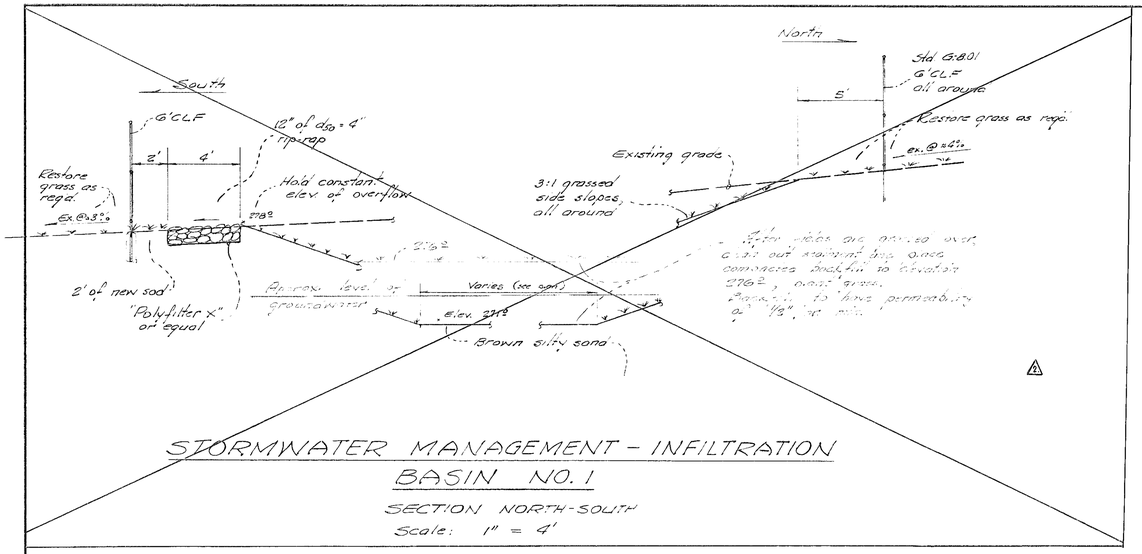
PENKIUNAS & ASSOCIATES
Engineers
8855 ANNAPOLIS RD
LANHAM, MD. 20706
301-577-5053

DATE: 3-10-86
SCALE: 1" = 50'
JOB NO.: 86-240

DRAWING 40 — 9 OF 40

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

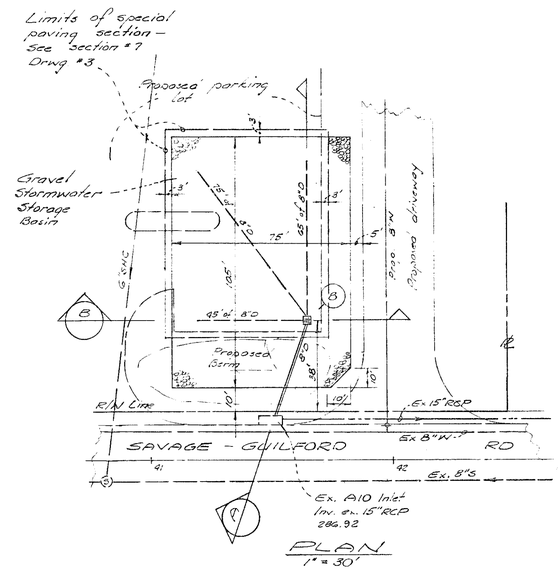
SDP-87-96



STORMWATER MANAGEMENT - INFILTRATION BASIN NO. 1

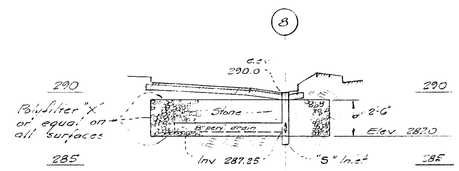
SECTION NORTH-SOUTH

Scale: 1" = 4'

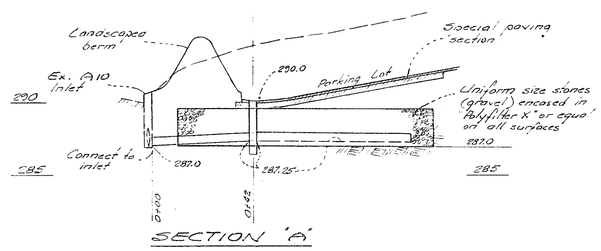


PLAN

1" = 30'



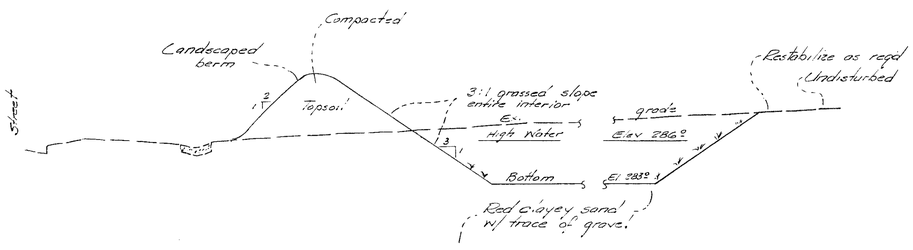
SECTION "B"



SECTION "A"

SECTIONS' SCALES:
Horiz. 1" = 30'
Vert. 1" = 5'

STORMWATER MANAGEMENT FACILITY NO. 2



STORMWATER MANAGEMENT - INFILTRATION BASIN NO. 3

Scales: Horiz. 1" = 10'
Vert. 1" = 5'

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.

COUNTY HEALTH OFFICER — DATE 4-22-87

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING.

PLANNING DIRECTOR — DATE 4-27-87

ACTING CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 4-23-87

APPROVED: FOR PUBLIC WATER, PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS.

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

DIRECTOR — DATE

CHIEF, BUREAU OF ENGINEERING — DATE 4-21-87

BY THE DEVELOPER:

"I CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL, AND I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY."

DEVELOPER — DATE

3-5-87

SEE SHEETS 20 & 21 OF 33 FOR NEW STORMWATER MANAGEMENT DETAILS. THIS PHASE OF PROJECT IS CLOSED OUT.

STATE OF MARYLAND — CHARLES J. GROVO, JR. — No. 19204 — PROFESSIONAL ENGINEER

CHARLES J. GROVO, JR. No. 19204

4/14/87

STORMWATER MANAGEMENT DETAILS
BELLMAN BRIDGE ELEMENTARY SCHOOL
PARCEL 25, TAX MAP 47
SIXTH ELECTION DISTRICT
HOWARD COUNTY, MD

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

OWNER - DEVELOPER HOWARD COUNTY BD. OF EDUC. 10910 RT. 108 ELLICOTT CITY, MD 21043 992-0500 ATTN: MR. HENRY HORNUNG	REVISIONS 4 REVISED SHEET NUMBER 3 REVISE BUILDING, PARKING & SWM 2 Shifts Remove SWM BASIN #1
PENKIUNAS & ASSOCIATES Engineers 8855 ANNAPOLIS RD LANHAM, MD. 20706 301-577-5053	DATE FEB 20 1987 SCALE AS SHOWN JOB NO.
DRAWING 5 OF 40	

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

SDP-87-96

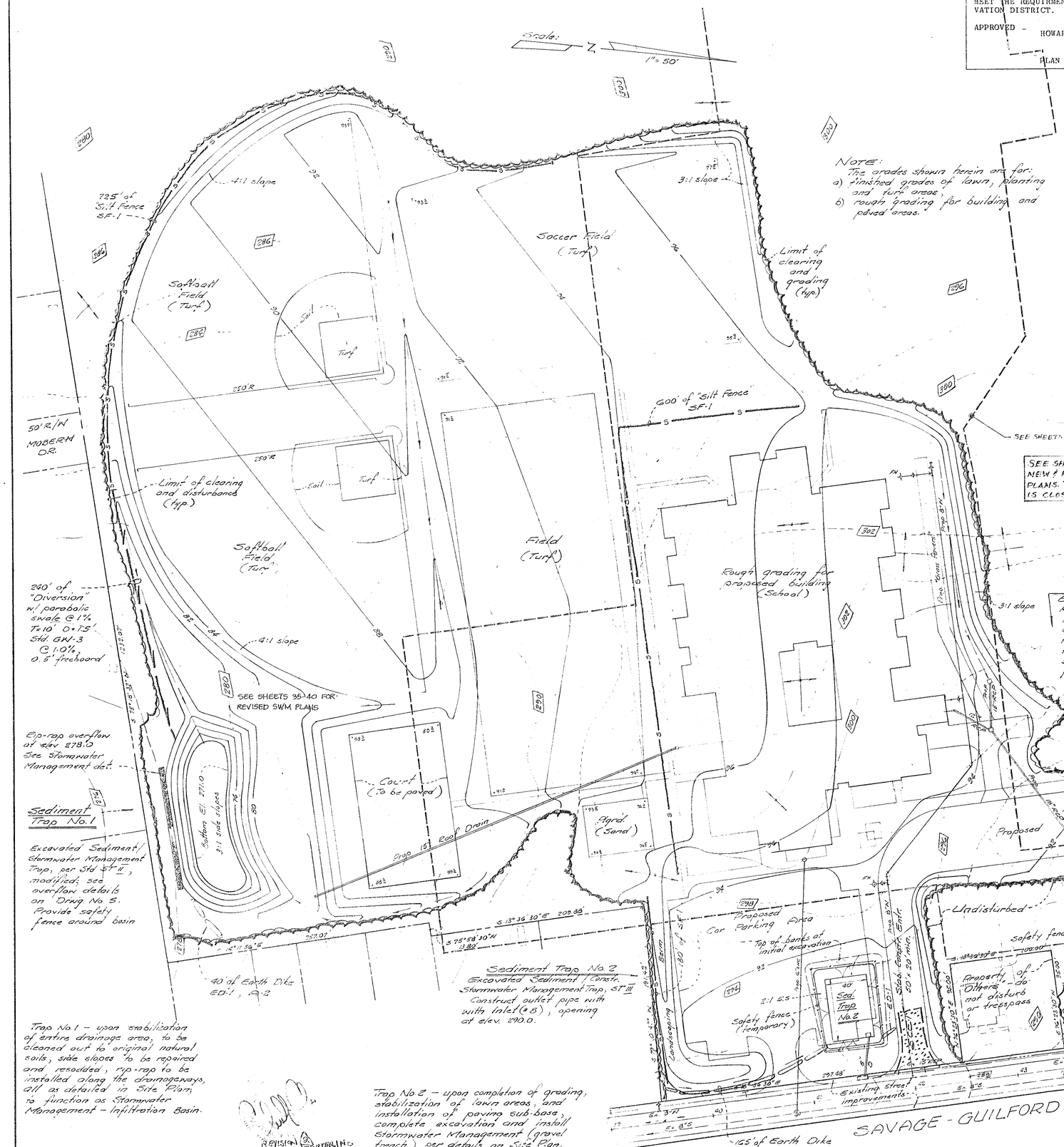
THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIRMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

APPROVED _ HOWARD S.C.D. DATE

PLAN NUMBER

REVIEWED FOR _ S.C.D.
NAME
AND MEETS TECHNICAL REQUIREMENTS

SIGNATURE DATE
U.S. SOIL CONSERVATION SERVICE



Engineer's Certification:

"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."

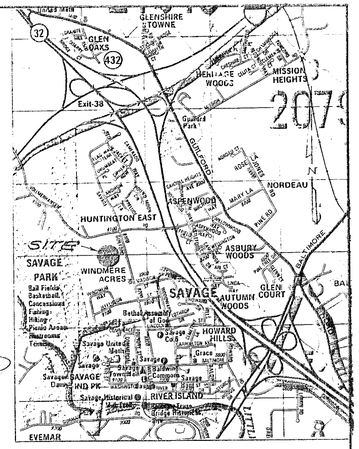
V. J. Penkiunas, P.E. Date

Developer's Certification:

"I/We certify that all developrent and construction will be done according to this plan, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of Natural Resources Approved Training Program for the Control of Sediment and Erosion before beginning the project."

Date

OWNER - DEVELOPER
HOWARD COUNTY BD. OF EDUC.
10910 RT. 108
ELLICOTT CITY, MD 21043
992-0500
ATTN: MR. HENRY HORNUNG



VICINITY MAP Scale: 1" = 2,000'

SEDIMENT TRAP SCHEDULE

Trap No	Type	Drainage Area	Storage Reqd.	Storage Provided	Bottom Dims./Size	Bottom Elev.	Outlet Elev.	Cleanout Elev.
1	Modif. ST II	11.1 Ac.	67,070 c.f. (19,940 c.f.)	68,425 c.f.	Irregular 5,575 s.f.	271.0	278.0	273.0
2	ST III	1.1 Ac.	8,241 c.f. (1,908 c.f.)	9,216 c.f.	40' x 60'	287.0	290.0	287.5
3 *	ST II	6.8 Ac.	26,620 c.f. (12,280 c.f.)	31,000 c.f.	Irregular 7,960 s.f.	283.0	286.0	284.0

* Overflow Crest elev. = 286.0
a = 1.5', b = 16'

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.

COUNTY HEALTH OFFICER — DATE 4-22-87

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING.

PLANNING DIRECTOR — DATE 4-21-87

ACTING CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 4-23-87

APPROVED: FOR PUBLIC WATER, PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS.

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

DIRECTOR — DATE

CHIEF, BUREAU OF ENGINEERING — DATE 4-21-87

BY THE DEVELOPER:

"I CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL, AND I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY."

DEVELOPER — DATE

NOTE

SEE PLAN OF "SEDIMENT CONTROL DETAILS" FOR SEQUENCE OF CONSTRUCTION.

3-5-87

5/31/87

CHARLES J. CROVO, SR. NO 19104

PLAN OF SEDIMENT CONTROL BOLLMAN BRIDGE ELEMENTARY SCHOOL

PARCEL 25, TAX MAP 47
SIXTH ELECTION DISTRICT
HOWARD COUNTY, MD.

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

STATE OF MARYLAND — JAMES C. HANNUSCH — No. 36394 — PROFESSIONAL ENGINEER

5/13/87

Trap No.1 - upon stabilization of entire drainage area, to be cleaned out to original natural soils, side slopes to be repaired and resodded, rip-rap to be installed along the drainageways, all as detailed in Site Plan, to function as Stormwater Management - Infiltration Basin.

Trap No 2 - upon completion of grading, stabilization of lawn areas, and installation of paving sub-base, complete excavation and install Stormwater Management (gravel trench) per details on Site Plan.

REVISION (2) FISHER COLLINS & CARTER, INC. 6/1/86

2	REVISE SHEET NUMBER	
1	5/13/87 REVISE BUILDING, PARKING & SWM	
	REVISIONS	

PENKIUNAS & ASSOCIATES
Engineers
8855 ANNAPOLIS RD.
LANHAM, MD. 20706
301-577-5053

DATE: Nov. 24, 1986
SCALE: 1" = 50'
JOB NO. 1619

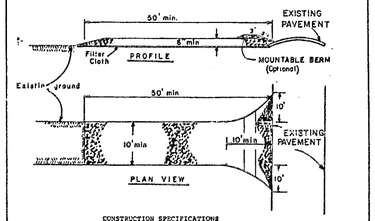
DRAWING 6 of 40

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

SDP 87-96

STABILIZED CONSTRUCTION ENTRANCE
not to scale

STANDARD SYMBOL SCE



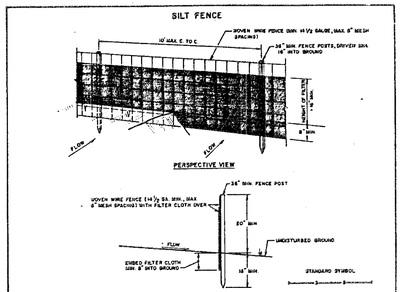
CONSTRUCTION SPECIFICATIONS

1. Stone Size - Use 2" stone, or reclaimed or recycled concrete equivalent.
2. Length - As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum length would apply).
3. Thickness - Not less than six (6) inches.
4. Width - Ten (10) foot minimum, but not less than the full width at points where ingress or egress occurs.
5. Filter Cloth - Will be placed over the entire area prior to placing of stone. Filter will not be required on a single family residence lot.
6. Surface Water - All surface water flowing or diverted toward construction entrances shall be piped across the entrance. If piping is impractical, a mountable berm with 5:1 slopes will be permitted.
7. Maintenance - The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed or tracked onto public rights-of- way must be removed immediately.
8. Washing - Wheels shall be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with stone and which drains into an approved sediment trapping device.
9. Periodic inspection and needed maintenance shall be provided after each rain.

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE College Park, MD.	STABILIZED CONSTRUCTION ENTRANCE	Standard Drawing SCE-1

14.03

SILT FENCE



CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

POSTS: STEEL EITHER T OR U TYPE OR HARDWOOD

FENCE: WIRE MESH 14½ GA. OR THICKER WITH 6" OPENING

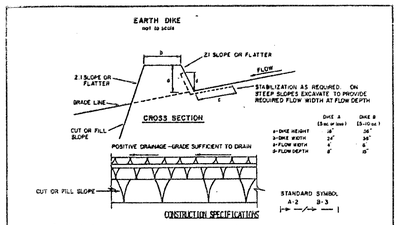
FILTER CLOTH: FILTER X, PENTEX, LOIX, STABILINA 1120N OR APPROVED EQUAL

FABRICATED UNIT: GEOFAB, ENVIROFENCE, OR APPROVED EQUAL

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE COLLEGE PARK, MARYLAND	SILT FENCE	STANDARD DRAWING ST-1

12.03

EARTH DIKE
not to scale



CONSTRUCTION SPECIFICATIONS

1. ALL DIKES SHALL BE COMPACTED BY EARTH-MOVING EQUIPMENT.
2. ALL DIKES SHALL HAVE POSITIVE DRAINAGE TO AN OUTLET.
3. TOP WIDTH MAY BE WIDER AND SIDE SLOPES MAY BE FLATTER IF DESIRED TO FACILITATE CROSSING BY CONSTRUCTION TRAFFIC.
4. FIELD LOCATION SHOULD BE ADJUSTED AS NEEDED TO UTILIZE A STABILIZED SAFE OUTLET.
5. EARTH DIKES SHALL HAVE AN OUTLET THAT FUNCTIONS WITH A MINIMUM OF EROSION. FLAPPY SHALL BE CONSIDERED TO A SEDIMENT TRAPPING DEVICE SUCH AS A SEDIMENT TRAP OR SEDIMENT BASIN WHERE EITHER THE DIKE CHANNEL OR THE DRAINAGE AREA ABOVE THE DIKE ARE NOT ADEQUATELY STABILIZED.
6. STABILIZATION SHALL BE: (A) IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR SEED AND STRAW MULCH OR STRAW MULCH IF NOT IN SEEDING SEASON, (B) FLOW CHANNEL AS PER THE CHART BELOW.

FLOW CHANNEL STABILIZATION

TYPE OF MATERIAL	CHANNEL GRADE	DIKE A	DIKE B
1	0-3.0%	SEED AND STRAW MULCH	SEED AND STRAW MULCH
2	3.1-5.0%	SEED AND STRAW MULCH	SEED USING JUTE OR EXCELSIOR; SOD; 2" STONE
3	5.1-8.0%	SEED WITH JUTE, OR SOD; 2" STONE	LINED RIP-RAP 4-8"
4	8.1-20%	LINED RIP-RAP 4-8"	ENGINEERING DESIGN

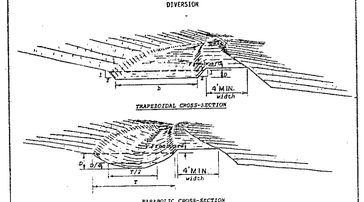
A. STONE TO BE 2 INCH STONE, OR RECYCLED CONCRETE EQUIVALENT, IN A LAYER AT LEAST 3 INCHES IN THICKNESS AND BE PRESSED INTO THE SOIL WITH CONSTRUCTION EQUIPMENT.
B. RIP-RAP TO BE 4-8 INCHES IN A LAYER AT LEAST 8 INCHES THICKNESS AND PRESSED INTO THE SOIL.
C. APPROVED EQUIVALENTS CAN BE SUBSTITUTED FOR ANY OF THE ABOVE MATERIALS.
7. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE COLLEGE PARK, MARYLAND	EARTH DIKE	STANDARD DRAWING ED-1

12.03

USDA-SCS-16E

DIVERSION



Construction Specifications

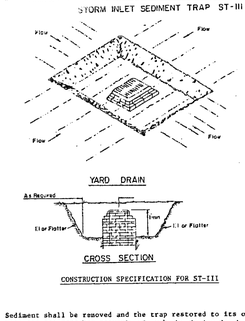
1. All trees, brush, stumps, obstructions, and other objectionable material shall be removed and disposed of so as not to interfere with the proper functioning of the diversion.
2. The diversion shall be excavated or shaped to line, grade, and cross section as required to meet the criteria specified herein, and be free of irregularities which will impede normal flow.
3. Fills shall be compacted as needed to prevent unequal settlement that would cause damage in the completed diversion.
4. All earth removed and not needed in construction shall be spread or disposed of so that it will not interfere with the functioning of the diversion.
5. Stabilization shall be done according to the appropriate Standard and Specifications for Vegetative Practices.
   A. For design velocities of less than 3.5 ft. per sec., seeding and mulching may be used for the establishment of the vegetation. It is recommended that, when conditions permit, temporary diversions or other means be used to prevent water from entering the diversion during the establishment of the vegetation.
   B. For design velocities of more than 3.5 ft. per sec., the diversion shall be stabilized with sod, with seeding protected by jute or excelsior matting or with seeding and mulching including temporary diversion of water until the vegetation is established. See the Standard and Specifications for Protective Materials.

Standard Symbol

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE College Park, Md.	DIVERSION	STANDARD DRAWING DW-3

15.04

STORM INLET SEDIMENT TRAP ST-III



CONSTRUCTION SPECIFICATION FOR ST-III

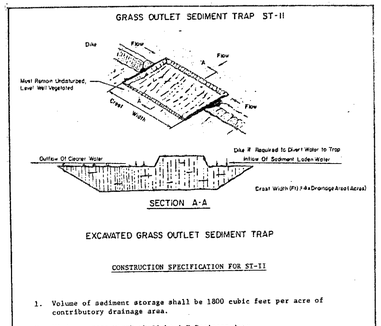
1. Sediment shall be removed and the trap restored to its original dimensions when the sediment has accumulated to ½ the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
2. The volume of sediment storage shall be 1800 cubic feet per acre of contributory drainage.
3. The structure shall be inspected after each rain and repairs made as needed.
4. Construction operations shall be carried out in such a manner that erosion and water pollution shall be minimized.
5. The sediment trap shall be removed and the area stabilized when the constructed drainage area has been properly stabilized.
6. All cut slopes shall be 1:1 or flatter.

Maximum Drainage Area: 3 Acres

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE COLLEGE PARK, MARYLAND	STORM INLET SEDIMENT TRAP	STANDARD DRAWING ST-III

16.10

GRASS OUTLET SEDIMENT TRAP ST-II



EXCAVATED GRASS OUTLET SEDIMENT TRAP

CONSTRUCTION SPECIFICATION FOR ST-II

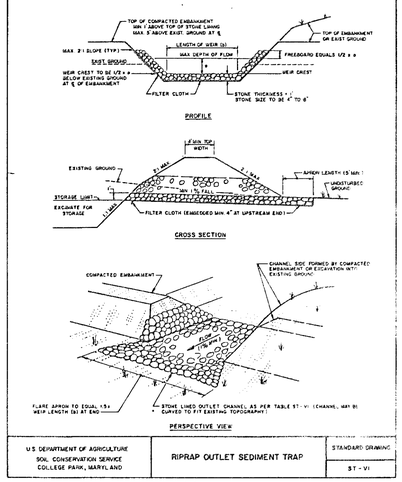
1. Volume of sediment storage shall be 1800 cubic feet per acre of contributory drainage area.
2. Minimum crest width shall be 4 X Drainage Area.
3. Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to ½ the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
4. The structure shall be inspected after each rain and repairs made as needed.
5. Construction operations shall be carried out in such a manner that erosion and water pollution shall be minimized.
6. The sediment trap shall be removed and area stabilized when the remaining drainage area has been properly stabilized.
7. All cut slopes shall be 1:1 or flatter.

Maximum Drainage Area: 5 Acres

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	GRASS OUTLET SEDIMENT TRAP	STANDARD DRAWING ST-II

16.09

RIPRAP OUTLET SEDIMENT TRAP ST-VI



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE COLLEGE PARK, MARYLAND	RIPRAP OUTLET SEDIMENT TRAP	STANDARD DRAWING ST-VI

16.13

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.

COUNTY HEALTH OFFICER — DATE 4-24-87

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING.

PLANNING DIRECTOR — DATE 4/24/87

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 4-23-87

APPROVED: FOR PUBLIC WATER, PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS.

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

DIRECTOR — DATE

CHIEF, BUREAU OF ENGINEERING — DATE 4-21-87

BY THE DEVELOPER:

"I CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL, AND I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY."

DEVELOPER — DATE 4/13/87

OWNER - DEVELOPER
HOWARD COUNTY BD. OF EDUC.
10910 RT. 108
ELLICOTT CITY, MD 21043
992-0500
ATTN: MR. HENRY HORNUNG

THESE PLANS FOR SOIL EROSION AND SEDIMENT CONTROL MSEET THE REQUIRMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

APPROVED — HOWARD S.C.D. — DATE

PLAN NUMBER

REVIEWED FOR — NAME — S.C.D.

AND MEETS TECHNICAL REQUIREMENTS

SIGNATURE — DATE

U.S. SOIL CONSERVATION SERVICE

PERMANENT SEEDING NOTES

Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed. Recreational fields to receive "turf" treatment in accordance with Landscaping Drawings.

Seedbed Preparation: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding.

Soil Amendments: In lieu of soil test recommendations, use one of the following schedules:

1) Preferred - Apply 2 tons per acre dolomitic limestone (92 lbs/1000 sq. ft.) and 600 lbs. per acre 10-10-10 fertilizer (14 lbs/ sq. ft.) before seeding. Harrow or disc into upper three inches of soil. At time of seeding, apply 400 lbs. per acre 30-0-0 ureaform fertilizer (9 lbs/1000 sq. ft.).

2) Acceptable - Apply 2 tons per acre dolomitic limestone (92 lbs/1000 sq. ft.) and 1000 lbs. per acre 10-10-10 fertilizer (23 lbs/1000 sq. ft.) before seeding. Harrow or disc into upper three inches of soil.

Seeding - For the periods March 1 thru April 30, and August 1 thru October 15, seed with 60 lbs. per acre (1.4 lbs/1000 sq. ft.) of Kentucky 31 Tall Fescue. For the period May 1 thru July 31, seed with 60 lbs. Kentucky 31 Tall Fescue per acre and 2 lbs. per acre (.05 lbs/ 1000sq. ft.) of weeping lovegrass. During the period of October 16 thru February 28, protect site by: Option (1) 2 tons per acre of well anchored straw mulch and seek as soon as possible in the spring. Option (2) Use sod. Option (3) Seed with 60 lbs/acre Kentucky 31 Tall Fescue and mulch with 2 tons/acre well anchored straw.

Mulching - Apply 1½ to 2 tons per acre (70 to 90 lbs/1000 sq. ft.) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5 gal/1000 sq. ft.) of emulsified asphalt on flat areas. On slopes 8 feet or higher, use 348 gallons per acre (8 gal/1000 sq. ft.) for anchoring.

Matinenance - Inspect all seeded areas and make needed repairs, replacements and reseedings.

TEMPORARY SEEDING NOTES

Apply to graded or cleared areas likely to be redisturbed where a short-term vegetative cover is needed.

Seedbed Preparation: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding.

Soil Amendments: Apply 600 lbs per acre 10-10-10 fertilizer (14 lbs/ 1000 sq. ft.)

Seeding: For periods March 1 thru April 30 and from August 15 thru November 15, seed with 2½ bushel per acre of annual rye (3.2 lbs/1000 sq. ft.). For the period May 1 thru August 14, seed with 3 lbs. per acre of weeping lovegrass (.07 lbs/1000 sq. ft.). For the period November 16 thru February 28, protect site by applying 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring, or use sod.

Mulching: Apply 1½ to 2 tons per acre 70 to 90 lbs/1000 sq. ft.) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gal. per acre (5 gal/1000 sq. ft.) of emulsified asphalt on flat areas. On slopes, 8 ft. or higher, use 348 gal per acre (8 gal/1000 sq. ft.) for anchoring.

Refer to the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for rate and methods not covered.

CHARLES J. GROVO, JR. NO. 19204 — 5/31/87

SEE SHEETS 16 & 17 OF 33 FOR NEW & REVISED SEDIMENT CONTROL NOTES AND DETAILS. THIS PHASE OF PROJECT IS CLOSED OUT.

Sequence of Construction

(Accumulative calendar days to start of:)

1. Obtain grading permit.
2. Construct stabilized construction entrances. 0d.
3. Clear only as necessary to install & install sediment control measures. 1d.
4. Clear balance of designated area and rough grade site. 14d.
5. Start with building construction. 46d.
6. Prepare recreational fields for turf establishment. As soon as prepared, seed (as prescribed by landscaping drawings & specs). 46d.
7. Construct storm drains and W & S. 50d.
8. Fine grade vehicular areas and install base. 75d.
9. As soon as entire area, except for building construction is stabilized, convert sediment traps into stormwater management basins as detailed. 100d.
10. Remove perimeter sediment controls and restabilize. 120d.
11. When building is under roof, fine grade and stabilize plant around the building.

STATE OF MARYLAND — JAMES C. SIMMONS — No. 36361 — PROFESSIONAL ENGINEER

3-5-87

GENERAL

SEDIMENT CONTROL NOTES

1) A minimum of 24 hours notice must be given to the Howard County Office of Inspection and Permits prior to the start of any construction. (992-2437).

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 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, or later revisions.

3) Following initial soil disturbance or redisturbance, permanent or temporary stabilization shall be completed within: a) 7 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 14 days as to all other disturbed or graded areas on the project site.

4) All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol. 1, Chapter 12, of the HOWARD COUNTY DESIGN MANUAL, Storm Drainage.

5) All disturbed areas must be stabilized within the time period specified above in accordance with the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seedings (Sec. 51) sod (Sec. 54), temporary seeding (Sec. 50) and mulching (Sec. 52.) Temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.

6) 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.

7) Site Analysis:

Total Area of Site	46.95 Acres
Area Disturbed	15.0 Acres
Area to be roofed or paved	3.4 Acres
Area to be vegetatively stabilized	11.6 Acres
Total Cut	36,720 Cu. yds.
Total Fill	33,820 Cu. yds.
Offsite waste/borrow area location	Approved site

8) Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.

9) Additional sediment controls must be provided, if deemed necessary by the Howard County DPW sediment control inspector.

10) On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.

11) Notify "Miss Utility" at 559-0100 before beginning the construction.

SPECIAL

Sediments Control Notes

1. All work shall be in accordance with "1983 MD standards and specifications for soil erosion and sediment control".
2. All site work to be per sequence of construction given herein.
3. Stabilize the perimeter dikes by seeding and mulching.
4. Only the area of immediate construction to be distrubed.
5. Periodic inspection and maintenance of all sediment control structures must be provided to insure intended purpose is accomplished.
6. At the end of each working day check all sediment control measures for integrity and operation.
7. All surface run-off to be directed into the silt traps, no sediment must be allowed to leave the site.
8. Silt traps shall be cleaned out when sediment reaches prescribed elevation.
9. All sediment control plans shall include the following general notes:
   A. The developer is responsible for the acquisition of all required easements, right, and/or right-of-way pursuant to the discharge from the sediment and erosion control practices, storm water management practices and the discharge of storm water onto or across and grading or other work to be performed on adjacent or downstream properties affected by this plan.
   B. Following initial soil disturbance or redisturbance, permanent or temporary stabilization shall be completed within: a). Seven calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than 2 horizontal to 1 vertical (3:1) and b). Fourteen days as to all other disturbed of graded areas on the project site. The inplace sediment control measures will be maintained on a continuing basis until the site is permanently stabilized and all permit requirements are met.
   C. 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 approval by the inspection agency is made; and
   D. Approval shall be requested upon final stabilization of all site with disturbance areas in excess of 2 acres before removal or controls.
10. All borrow or spoil to be at a source with an approved sediment control plan.
11. Use mulch only during non-seeding periods.

SEDIMENT CONTROL DETAILS
BOLLMAN BRIDGE ELEMENTARY SCHOOL
PARCEL 23, TAX MAP 47
SIXTH ELECTION DISTRICT
HOWARD COUNTY, MD

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY

2	REVISED SHEET NUMBER		
1	5/13/11 REVISE BUILDING, PARKING & SWM		
REVISIONS			

PENKIUNAS & ASSOCIATES
Engineers
8855 ANNAPOLIS RD.
LANHAM, MD. 20706
301-577-5053

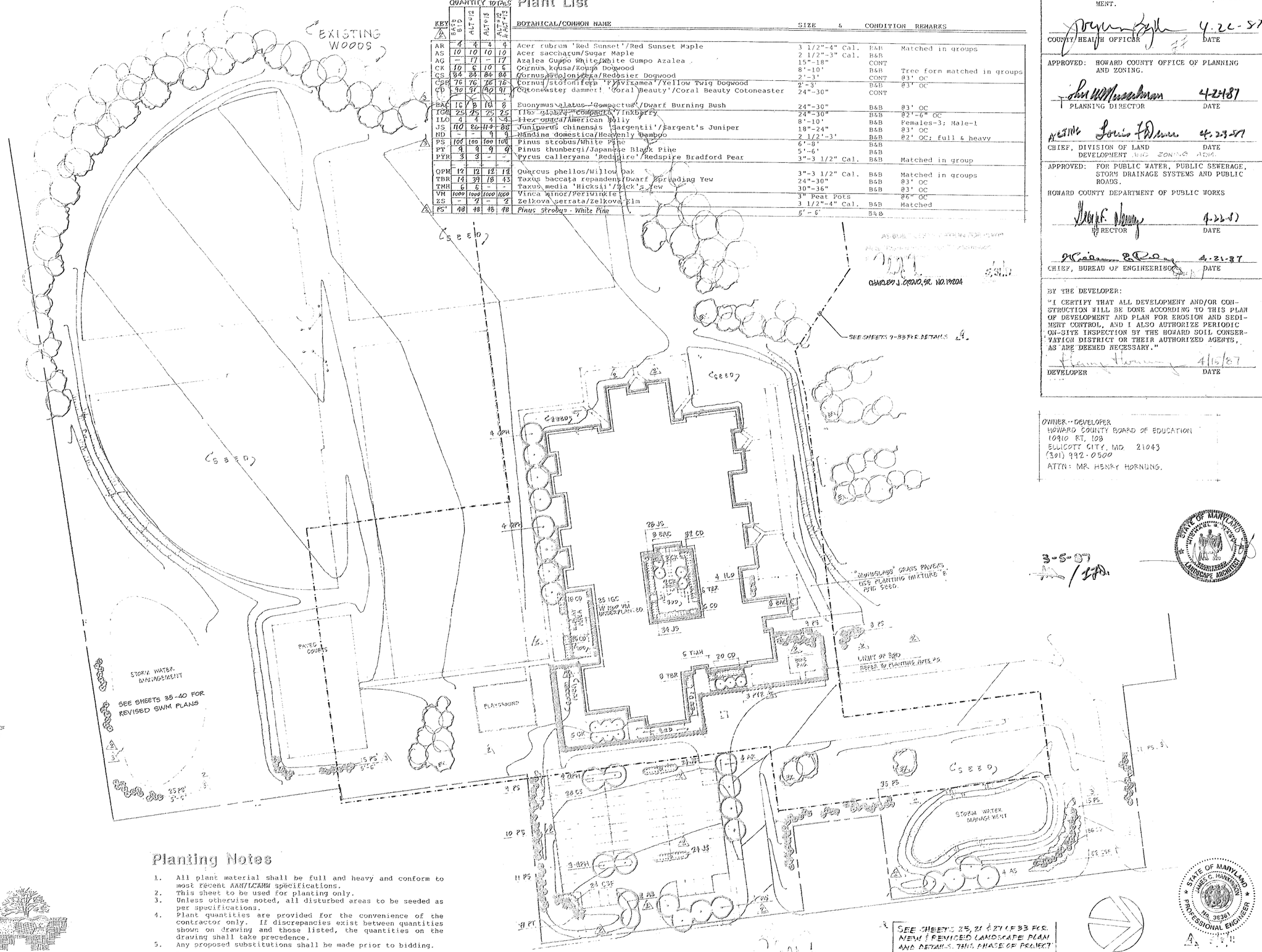
DATE Nov. 25 1986	SCALE As Shown	DRAWING 7
	JOB NO. 8619	7 OF 40

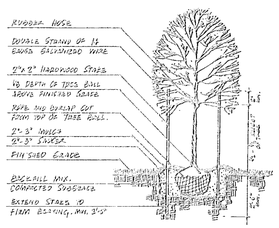
THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

SDP-87-96

Plant List

KEY	QUANTITY TOTALS BASE BID	ALT #2	ALT #3	ALT #2 & ALT #3	BOTANICAL/COMMON NAME	SIZE & CONDITION	REMARKS
AR	4	4	4	4	Acer rubrum 'Red Sunset'/Red Sunset Maple	3 1/2"-4" Cal. B&B	Matched in groups
AS	10	10	10	10	Acer saccharum/Sugar Maple	2 1/2"-3" Cal. B&B	
AG	–	17	–	17	Azalea Gumpo White/White Gumpo Azalea	15"-18" CONT	
CK	10	6	10	6	Cornus kousa/Kousa Dogwood	8'-10' B&B	Tree form matched in groups
CS	84	84	84	84	Cornus stolonifera/Redosier Dogwood	2'-3' CONT	@3' OC
CSF	76	76	76	76	Cornus stolonifera 'Flaviramea'/Yellow Twig Dogwood	2'-3' B&B	@3' OC
CD	90	91	90	91	Cotoneaster dammeri 'Coral Beauty'/Coral Beauty Cotoneaster	24"-30" CONT	
~~BAC~~	~~16~~	~~8~~	~~16~~	~~8~~	~~Euonymus alatus 'Compactus'/Dwarf Burning Bush~~	~~24"-30" B&B~~	~~@3' OC~~
ICG	25	25	25	25	Ilex glabra 'Compacta'/Inkberry	24"-30" B&B	@2'-6" OC
ILO	4	4	4	4	Ilex opaca/American Holly	8'-10' B&B	Females-3; Male-1
JS	110	86	110	88	Juniperus chinensis 'Sargentii'/Sargent's Juniper	18"-24" B&B	@3' OC
ND	–	–	9	9	Nandina domestica/Heavenly Bamboo	2 1/2'-3' B&B	@2' OC; full & heavy
PS	100	100	100	100	Pinus strobus/White Pine	6'-8' B&B	
PT	9	9	9	9	Pinus thunbergi/Japanese Black Pine	5'-6' B&B	
PYR	3	3	–	–	Pyrus calleryana 'Redspire'/Redspire Bradford Pear	3"-3 1/2" Cal. B&B	Matched in group
QPH	12	12	12	12	Quercus phellos/Willow Oak	3"-3 1/2" Cal. B&B	Matched in groups
TBR	14	39	18	43	Taxus baccata repandens/Dwarf Spreading Yew	24"-30" B&B	@3' OC
TMH	6	6	–	–	Taxus media 'Hicksii'/Hick's Yew	30"-36" B&B	@3' OC
VM	1000	1000	1000	1000	Vinca minor/Periwinkle	3" Peat Pots	@6" OC
ZS	–	2	–	2	Zelkova serrata/Zelkova Elm	3 1/2"-4" Cal. B&B	Matched
PS'	48	48	48	48	*Pinus strobus - White Pine*	5'-6' B&B	



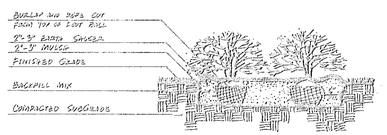


Tree Support Schedule

Size	Support
6'-8' / 1"-1½" Cal.	3' Stake, 2 Req'd, 14 Ga. Wire, 2" Hose.
8'-10' / 1½"-2" Cal.	5'-6' Stake, 2 Req'd, 14 Ga. Wire, 2" Hose.
10'-12' / 2"-2½" Cal.	7'-8' Stake, 2 Req'd, 14 Ga. Wire, 2" Hose.

Tree Staking Detail

NO SCALE



Shrub Planting Detail

NO SCALE

Planting Notes

1. All plant material shall be full and heavy and conform to most recent AAN/LCAMM specifications.
2. This sheet to be used for planting only.
3. Unless otherwise noted, all disturbed areas to be seeded as per specifications.
4. Plant quantities are provided for the convenience of the contractor only. If discrepancies exist between quantities shown on drawing and those listed, the quantities on the drawing shall take precedence.
5. Any proposed substitutions shall be made prior to bidding.
6. SOD ALL SLOPES AT BUILDING FACE.

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT.

COUNTY HEALTH OFFICER — DATE 4-22-87

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING.

PLANNING DIRECTOR — DATE 4-23-87

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 4-23-87

APPROVED: FOR PUBLIC WATER, PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS.

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

DIRECTOR — DATE 4-22-87

CHIEF, BUREAU OF ENGINEERING — DATE 4-21-87

BY THE DEVELOPER:

"I CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL, AND I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY."

DEVELOPER — DATE 4/15/87

OWNER-DEVELOPER
HOWARD COUNTY BOARD OF EDUCATION
10910 RT. 108
ELLICOTT CITY, MD. 21043
(301) 992-0500
ATTN: MR. HENRY HORNUNG.

STATE OF MARYLAND — JAMES C. HANKINSON — LANDSCAPE ARCHITECT

STATE OF MARYLAND — JAMES C. HANKINSON — NO. 9838 — PROFESSIONAL ENGINEER

KILDUFF NAGY-LANDSCAPE ARCHITECTS
10726 Baltimore Avenue Beltsville MD 20705
(301) 595-4955
Land Planning Landscape Architecture Park and Recreation Planning

Howard County Public Schools

BOLLMAN BRIDGE ELEMENTARY SCHOOL

Planting Plan

COMM. NO.	2710
SCALE	AS SHOWN
DWN. BY	CFF
DATE	2-9-87
1	2-23-87
2	3-27-87
4	5-2-11
5	7-1-16

DWG. 8 OF 40

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

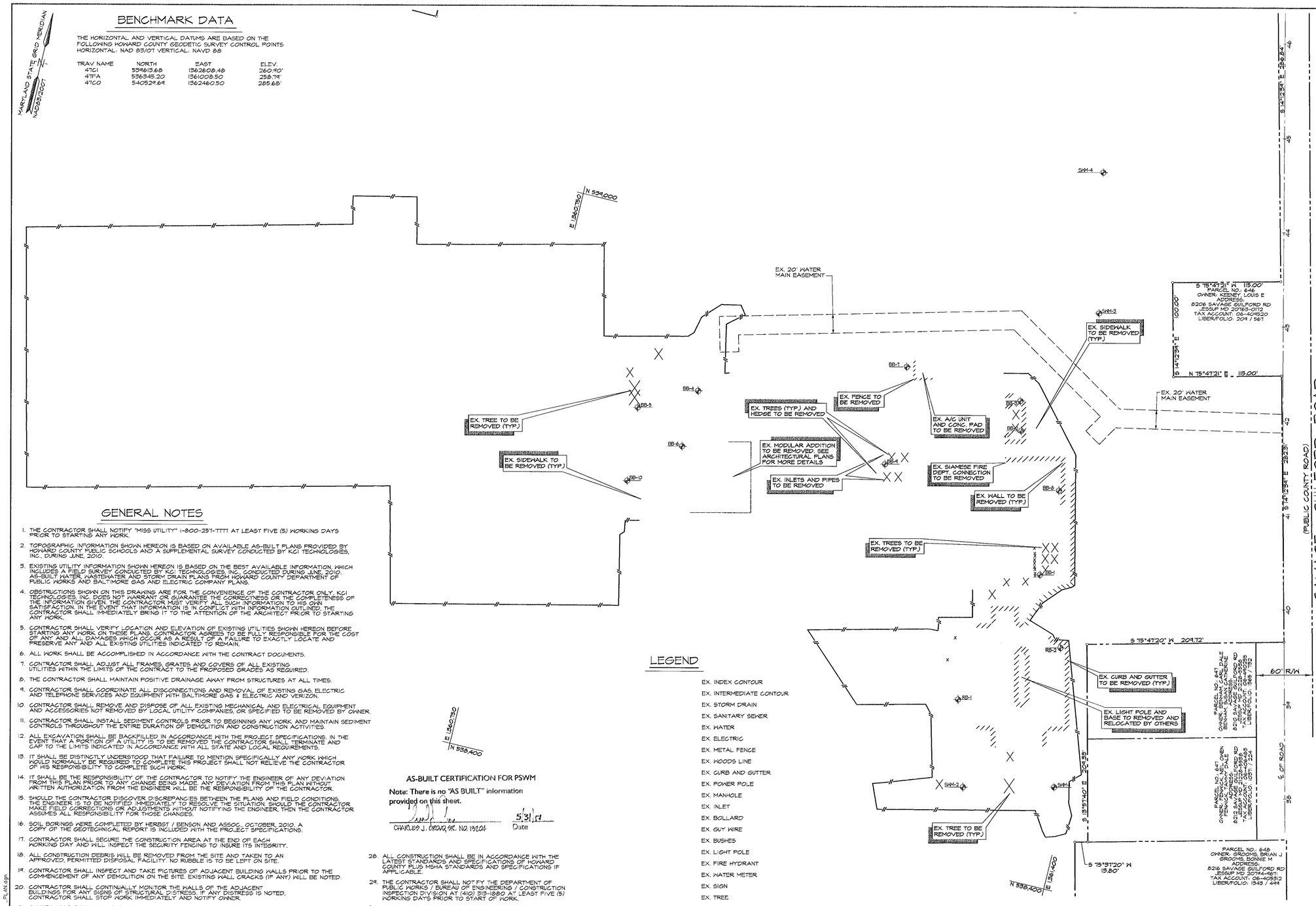
SDP-87-96

BENCHMARK DATA

THE HORIZONTAL AND VERTICAL DATUMS ARE BASED ON THE FOLLOWING HOWARD COUNTY GEODETIC SURVEY CONTROL POINTS
HORIZONTAL: NAD 83/07 VERTICAL: NAVD 88

TRAV NAME	NORTH	EAST	ELEV.
47C1	534613.68	1362608.48	260.90'
47FA	536345.20	1361008.50	258.79'
47C0	540529.69	1362460.50	285.68'

MARYLAND STATE GRID MERIDIAN
NAD83/2001



GENERAL NOTES

1. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" 1-800-257-7777 AT LEAST FIVE (5) WORKING DAYS PRIOR TO STARTING ANY WORK.
2. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON AVAILABLE AS-BUILT PLANS PROVIDED BY HOWARD COUNTY PUBLIC SCHOOLS AND A SUPPLEMENTAL SURVEY CONDUCTED BY KCI TECHNOLOGIES, INC., DURING JUNE, 2010.
3. EXISTING UTILITY INFORMATION SHOWN HEREON IS BASED ON THE BEST AVAILABLE INFORMATION, WHICH INCLUDES A FIELD SURVEY CONDUCTED BY KCI TECHNOLOGIES, INC. CONDUCTED DURING JUNE, 2010 AS-BUILT WATER, WASTEWATER AND STORM DRAIN PLANS FROM HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS AND BALTIMORE GAS AND ELECTRIC COMPANY PLANS.
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. 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.
5. CONTRACTOR SHALL 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 INDICATED TO REMAIN.
6. ALL WORK SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
7. CONTRACTOR SHALL ADJUST ALL FRAMES, GRATES AND COVERS OF ALL EXISTING UTILITIES WITHIN THE LIMITS OF THE CONTRACT TO THE PROPOSED GRADES AS REQUIRED.
8. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM STRUCTURES AT ALL TIMES.
9. CONTRACTOR SHALL COORDINATE ALL DISCONNECTIONS AND REMOVAL OF EXISTING GAS, ELECTRIC AND TELEPHONE SERVICES AND EQUIPMENT WITH BALTIMORE GAS & ELECTRIC AND VERIZON.
10. CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING MECHANICAL AND ELECTRICAL EQUIPMENT AND ACCESSORIES NOT REMOVED BY LOCAL UTILITY COMPANIES, OR SPECIFIED TO BE REMOVED BY OWNER.
11. CONTRACTOR SHALL INSTALL SEDIMENT CONTROLS PRIOR TO BEGINNING ANY WORK AND MAINTAIN SEDIMENT CONTROLS THROUGHOUT THE ENTIRE DURATION OF DEMOLITION AND CONSTRUCTION ACTIVITIES.
12. 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.
13. 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.
14. 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.
15. 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.
16. SOIL BORINGS WERE COMPLETED BY HERBST / BENSON AND ASSOC. OCTOBER, 2010. A COPY OF THE GEOTECHNICAL REPORT IS INCLUDED WITH THE PROJECT SPECIFICATIONS.
17. CONTRACTOR SHALL SECURE THE CONSTRUCTION AREA AT THE END OF EACH WORKING DAY AND WILL INSPECT THE SECURITY FENCING TO INSURE ITS INTEGRITY.
18. ALL CONSTRUCTION DEBRIS WILL BE REMOVED FROM THE SITE AND TAKEN TO AN APPROVED, PERMITTED DISPOSAL FACILITY. NO RUBBLE IS TO BE LEFT ON SITE.
19. CONTRACTOR SHALL INSPECT AND TAKE PICTURES OF ADJACENT BUILDING WALLS PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION ON THE SITE. EXISTING WALL CRACKS (IF ANY) WILL BE NOTED.
20. CONTRACTOR SHALL CONTINUALLY MONITOR THE WALLS OF THE ADJACENT BUILDINGS FOR ANY SIGNS OF STRUCTURAL DISTRESS. IF ANY DISTRESS IS NOTED, CONTRACTOR SHALL STOP WORK IMMEDIATELY AND NOTIFY OWNER.
21. CONTRACTOR SHALL 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.
22. CONTRACTOR SHALL PROVIDE THE NECESSARY MEANS TO CONTROL DUST AND MAINTAIN HOWARD COUNTY AIR QUALITY STANDARDS DURING THE DEMOLITION AND REMOVAL OF SITE DEBRIS AND THE NEW CONSTRUCTION.
23. CONTRACTOR SHALL SAWCUT EXISTING PAVING TO MINIMIZE DAMAGE TO EXISTING PAVING REMAINING.
24. CONTRACTOR SHALL REMOVE EXISTING CURBS & CONCRETE WALKS TO THE NEAREST JOINT. NO PATCHING WILL BE PERMITTED.
25. EXISTING UTILITIES TO BE ABANDONED IN PLACE UNLESS ENCOUNTERED DURING CONSTRUCTION, AT WHICH TIME THEY SHALL BE REMOVED IN THEIR ENTIRETY. IF ABANDONED IN PLACE, UTILITIES SHALL BE BACKFILLED WITH FLOWABLE FILL.
26. THE DEMOLITION INFORMATION SHOWN ON THIS DRAWINGS IS FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT LIMITS OF DEMOLITION AND REMOVAL OF AFFECTED SITE ITEMS.
27. CONTRACTOR SHALL PROVIDE 6' HIGH TEMPORARY CONSTRUCTION FENCE AROUND THE LIMITS OF DISTURBANCE.
28. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
29. 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 START OF WORK.
30. ALL PLAN DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
31. EXISTING 8" WATER IN SAVAGE ROAD IS PUBLIC CONTRACT # 3-W.
32. EXISTING 8" SEWER IN SAVAGE ROAD IS PUBLIC CONTRACT # 128-S.
33. STORMWATER MANAGEMENT WILL BE ADDRESSED BY UTILIZING ENVIRONMENTAL SITE DESIGN TECHNIQUES PER THE 2007 MARYLAND STORMWATER DESIGN MANUAL. THE PROPOSED FACILITIES ARE PRIVATE AND WILL BE OWNED AND MAINTAINED BY HOWARD COUNTY PUBLIC SCHOOLS.
34. THERE IS NO FLOODPLAIN ON THIS SITE.
35. THERE ARE NO WETLANDS ON THIS SITE.
36. NO TRAFFIC STUDY IS REQUIRED FOR THIS SITE.
37. AN ENVIRONMENTAL CONCEPT PLAN WAS APPROVED ON MARCH 15, 2011.

LEGEND

- EX. INDEX CONTOUR
- EX. INTERMEDIATE CONTOUR
- EX. STORM DRAIN
- EX. SANITARY SEWER
- EX. WATER
- EX. ELECTRIC
- EX. METAL FENCE
- EX. WOODS LINE
- EX. CURB AND GUTTER
- EX. POWER POLE
- EX. MANHOLE
- EX. INLET
- EX. BOLLARD
- EX. GUY WIRE
- EX. BUSHES
- EX. LIGHT POLE
- EX. FIRE HYDRANT
- EX. WATER METER
- EX. SIGN
- EX. TREE
- EX. PROPERTY LINE
- APPROXIMATE LIMITS OF CONSTRUCTION FENCE
- APPROXIMATE LIMITS OF EX. WALLS, FENCE, CURB AND GUTTER TO BE REMOVED
- APPROXIMATE LIMITS OF EX. CONC. SIDEWALKS AND PAVING TO BE REMOVED
- APPROXIMATE LIMITS OF EX. MODULAR ADDITION TO BE REMOVED
- EX. TREE TO BE REMOVED
- SB-3 SOIL BORING

E 1360,750
N 538,400

AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet.

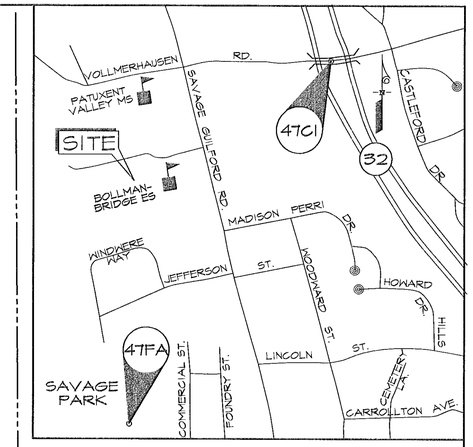
CHARLES J. OBOND, JR. NO. 19204 — 5/31/12 Date

EXISTING CONDITIONS/DEMOLITION PLAN

SCALE: 1" = 50'

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50FT.

REVISION 6 FISHER, COLLINS & CARTER, INC.



VICINITY MAP

SCALE: 1" = 1000'
ADC MAP COORDINATES: 20-B6

SITE DATA

1. SITE ADDRESS: 8200 SAVAGE GUILFORD ROAD JESSUP, MD 20794
2. OWNER/APPLICANT: HOWARD COUNTY PUBLIC SCHOOL SYSTEM
3. TAX ACCOUNT NO.: 06-439281
4. PROPERTY REFERENCE: TAX MAP 47 GRID 5 PARCEL NO. 25
5. TAX ASSESMENT DISTRICT: 06
6. ZONING: R-20
   - EXISTING USE: BOLLMAN BRIDGE ELEMENTARY SCHOOL/ PATUXENT VALLEY MIDDLE SCHOOL
   - PROPOSED USE: BOLLMAN BRIDGE ELEMENTARY SCHOOL/ PATUXENT VALLEY MIDDLE SCHOOL
7. SETBACKS:

	FRONT FROM PUBLIC RIGHT OF WAY	FRONT FROM PROPERTY LINE	SIDE	REAR
SETBACKS REQUIRED:	50'	20'	20'	30'
SETBACKS PROVIDED:	230'±	81'±	520'±	975'±

8. MINIMUM SITE AREA: 20,000 SQUARE FEET
9. AREA OF SITE: 46.569 ACRES TOTAL
10. TOTAL DISTURBED AREA = 299,963 S.F. / 6.88 ACRES.
11. MAXIMUM LOT COVERAGE PERMITTED: 60%
    MAXIMUM LOT COVERAGE PROVIDED: 36%
12. PARKING REQUIRED: NO PARKING REQUIREMENT FER HOWARD COUNTY CODE
    - TOTAL EXISTING PARKING: 98 SPACES
    - TOTAL PROPOSED PARKING: 126 SPACES
13. HANDICAP PARKING:

HANDICAP SPACES REQUIRED:	5 SPACES
HANDICAP SPACES PROVIDED:	5 SPACES
VAN ACCESSIABLE SPACES REQUIRED:	1 SPACE
VAN ACCESSIABLE SPACES PROVIDED:	2 SPACES

14. THIS SITE LIES WITHIN FEMA ZONE C (AREAS OF MINIMAL FLOODING) AS SHOWN ON F.I.R.M. MAP NO. 240044-0043-B AND DATED DECEMBER 4, 1986

NOTE: THE PURPOSE OF THE REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	6/2/11 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT	6/06/11 DATE
DIRECTOR	6/6/11 DATE

SEAL: STATE OF MARYLAND — JAMES C. HANKINSON — No. 36361 — PROFESSIONAL ENGINEER

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. 36361 EXPIRATION DATE: 10-20-12

(REVISED) EXISTING CONDITIONS/ DEMOLITION PLAN

BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

ZONED R-20
TAX MAP No. 47, GRID 5, PARCEL 25
ELECTION DISTRICT 06
8200 SAVAGE GUILFORD ROAD
JESSUP, MD 20794

9

ISSUE DATE: 03-10-11
SHEET 9 OF 40

	TDB	DATE	REVISIONS
Drafting	TDB	05/20/11	REVISED SITE DEVELOPMENT PLAN
Check	JCH	6-1-16	REVISED SHEET NUMBER
Design	BES		
Check	NCW		

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
936 Ridgebrook Road, Sparks, Maryland 21152
Telephone (410) 316-7800, Fax (410) 316-7818
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626 North Charlotte Street, Lancaster, PA17603, P: 717.291.1077 F: 717.392.3923
29L Atlantic Avenue #150, Ocean View, DE 19970, P: 302.449.2492 F: 302.449.2493

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

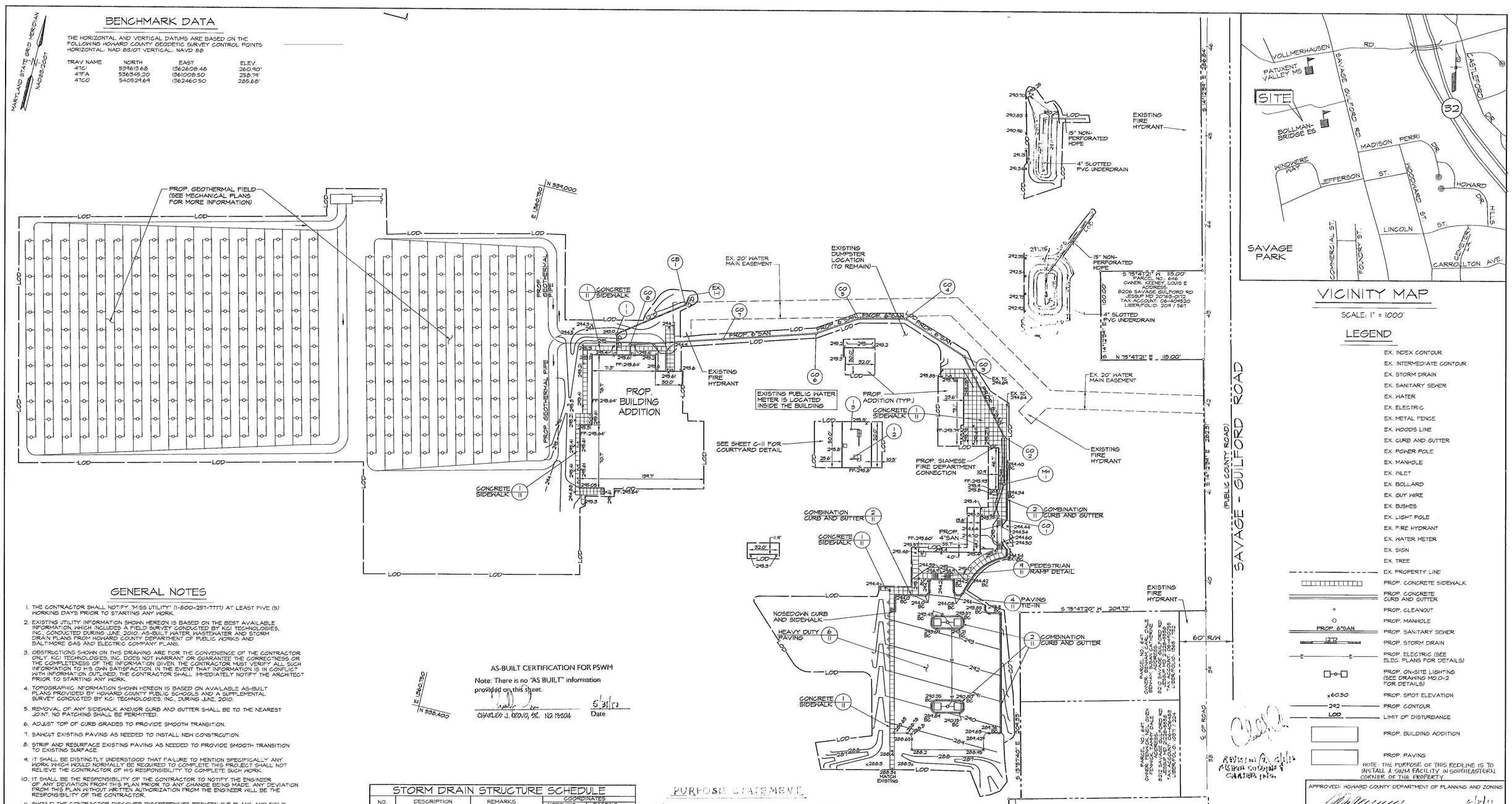
COUNTY FILE # SDP-87-96

PLOTTED: "10:11 AM on Friday, May 20, 2011"
BY: Bernard Spielman, Division: PDSD, Cmd: Develop, GMA Emp.
FILE: M:\2010\210057\drawings\C-01_EXISTING_CONDITIONS_PLAN.dgn

BENCHMARK DATA

THE HORIZONTAL AND VERTICAL DATUMS ARE BASED ON THE FOLLOWING HOWARD COUNTY GEODETIC SURVEY CONTROL POINTS HORIZONTAL: NAD 83/07 VERTICAL: NAVD 88

TRAV NAME	NORTH	EAST	ELEV.
47CI	539613.88	1362608.48	260.90'
47FA	536345.20	1361008.50	258.71'
47CO	540529.69	1362460.50	285.68'



VICINITY MAP

SCALE: 1" = 1000'

LEGEND

- EX. INDEX CONTOUR
- EX. INTERMEDIATE CONTOUR
- EX. STORM DRAIN
- EX. SANITARY SEWER
- EX. WATER
- EX. ELECTRIC
- EX. METAL FENCE
- EX. WOODS LINE
- EX. CURB AND GUTTER
- EX. POWER POLE
- EX. MANHOLE
- EX. INLET
- EX. BOLLARD
- EX. GUY WIRE
- EX. BUSHES
- EX. LIGHT POLE
- EX. FIRE HYDRANT
- EX. WATER METER
- EX. SIGN
- EX. TREE
- EX. PROPERTY LINE
- PROP. CONCRETE SIDEWALK
- PROP. CONCRETE CURB AND GUTTER
- PROP. CLEANOUT
- PROP. MANHOLE
- PROP. SANITARY SEWER
- PROP. STORM DRAIN
- PROP. ELECTRIC (SEE ELEC. PLANS FOR DETAILS)
- PROP. ON-SITE LIGHTING (SEE DRAWING M0.0-2 FOR DETAILS)
- PROP. SPOT ELEVATION
- PROP. CONTOUR
- LIMIT OF DISTURBANCE
- PROP. BUILDING ADDITION
- PROP. PAVING

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

REVISION 2 5/31/12 FISHER COLLINS & CARTER, INC.

GENERAL NOTES

1. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" (1-800-257-7777) AT LEAST FIVE (5) WORKING DAYS PRIOR TO STARTING ANY WORK.
2. EXISTING UTILITY INFORMATION SHOWN HEREON IS BASED ON THE BEST AVAILABLE INFORMATION, WHICH INCLUDES A FIELD SURVEY CONDUCTED BY KCI TECHNOLOGIES, INC., CONDUCTED DURING JUNE, 2010. AS-BUILT WATER, WASTEWATER AND STORM DRAIN PLANS FROM HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS AND BALTIMORE GAS AND ELECTRIC COMPANY PLANS.
3. 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. IN THE EVENT THAT INFORMATION IS IN CONFLICT WITH INFORMATION OUTLINED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT PRIOR TO STARTING ANY WORK.
4. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON AVAILABLE AS-BUILT PLANS PROVIDED BY HOWARD COUNTY PUBLIC SCHOOLS AND A SUPPLEMENTAL SURVEY CONDUCTED BY KCI TECHNOLOGIES, INC., DURING JUNE, 2010.
5. REMOVAL OF ANY SIDEWALK AND/OR CURB AND GUTTER SHALL BE TO THE NEAREST JOINT. NO PATCHING SHALL BE PERMITTED.
6. ADJUST TOP OF CURB GRADES TO PROVIDE SMOOTH TRANSITION.
7. SAWCUT EXISTING PAVING AS NEEDED TO INSTALL NEW CONSTRCUTION.
8. STRIP AND RESURFACE EXISTING PAVING AS NEEDED TO PROVIDE SMOOTH TRANSITION TO EXISTING SURFACE.
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 DISCREPENCIES 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.
12. THE CONTRACTOR SHALL NOTE THAT IN CASE OF ANY DISCREPANCY BETWEEN THE SCALED AND FIGURED DIMENSIONS SHOWN ON THESE PLANS, THE FIGURED DIMENSIONS SHALL GOVERN.
13. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY ALL TIE-IN ELEVATIONS.
14. FILL IN STRUCTURAL AND PAVEMENT AREAS SHALL BE PLACED IN HORIZONTAL, EIGHT-INCH MAXIMUM LOOSE LIFTS AND COMPACTED TO AT LEAST 97 PERCENT OF THE MAXIMUM DRY DENSITY PER AASHTO T-180. SEE THE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION.
15. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PROTECTION OF THE SUB-GRADE UNTIL IT RECEIVES FINAL SURFACE TREATMENT AND SHALL MAINTAIN THE SUB-GRADE AS SUITABLE AND ACCEPTABLE TO THE OWNER OR OWNER'S REPRESENTATIVE AT ALL TIMES. HE SHALL BE COMPLETELY RESPONSIBLE FOR THE RESTORATION OR REPLACEMENT OF THE SUB-GRADE DUE TO MOISTURE, DAMAGE, CONSTRUCTION TRAFFIC, OR ANY OTHER CAUSE. REPAIR OR REPLACEMENT OF THE SUB-GRADE SHALL BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER.
16. ALL CONSTRUCTION SHALL BE COMPLETED IN ACCORDANCE WITH THE LATEST HOWARD COUNTY STANDARD DETAILS AND SPECIFICATIONS AND ALL REVISIONS THERETO, UNLESS OTHERWISE NOTED.
17. CONTRACTOR SHALL ADJUST ALL FRAMES, GRATES AND COVERS OF ALL EXISTING UTILITIES WITHIN THE LIMITS OF THE CONTRACT TO THE PROPOSED GRADES, AS REQUIRED.
18. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE TO SWALES AND/ OR STORM DRAIN SYSTEMS AT ALL TIMES.

AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet.

CHARLES J. GEDVIL, JR. NO. 19204 — 5/31/12 Date

STORM DRAIN STRUCTURE SCHEDULE

NO.	DESCRIPTION	REMARKS	COORDINATES NORTHING	COORDINATES EASTING
EX I-1	TYPE A-1 INLET		N 538,720.02	E 1,360,938.04
I-1	YARD INLET		N 538,860.83	E 1,360,862.84
I-2	YARD INLET		N 538,784.91	E 1,361,157.71
I-3	YARD INLET		N 538,817.45	E 1,361,150.02
CO-A	CLEANOUT		N 538,846.64	E 1,360,871.15

SANITARY SEWER STRUCTURE SCHEDULE

NO.	DESCRIPTION	REMARKS	COORDINATES NORTHING	COORDINATES EASTING
CO-1	CLEANOUT		N 538,754.93	E 1,361,328.83
MH-1	DOGHOUSE MANHOLE	HC STD. DETAIL G-5.14	N 538,749.07	E 1,361,332.19
CO-2	CLEANOUT		N 538,844.84	E 1,361,319.46
CO-3	CLEANOUT		N 538,921.28	E 1,361,284.84
CO-4	CLEANOUT		N 538,952.57	E 1,361,180.60
CO-5	CLEANOUT		N 538,940.16	E 1,361,129.07
CO-6	CLEANOUT		N 538,912.40	E 1,361,086.24
CO-7	CLEANOUT	HC STD. DETAIL S-3.21	N 538,881.28	E 1,360,986.01
CO-8	CLEANOUT		N 538,850.15	E 1,360,885.79

* NOTE: FOR TOP OF STRUCTURE AND INVERT ELEVATIONS SEE WATER AND SANITARY SEWER PROFILE SHEET 12.

PURPOSE STATEMENT

PROPOSED ADDITIONS, UTILITIES, STORM WATER MANAGEMENT FACILITIES, AND PARKING LOT IMPROVEMENTS ARE BEING CONSTRUCTED TO INCREASE CAPACITY OF THE EXISTING SCHOOL BUILDING.

SITE, GRADING AND UTILITY PLAN

SCALE: 1"= 50'

SEE SHEETS 35-40 FOR REVISED SWM PLANS

PIPE SCHEDULE

SIZE	TYPE	TOTAL LENGTH
4"	SDR-35	50'
4"	SLOTTED SCH 40 PVC	121'
4"	HDPE	38'
6"	SDR-35	55"
10"	HDPE	19'
12"	HDPE	46'
15"	HDPE	158'

GRAPHIC SCALE 50 0 25 50 100 (IN FEET) 1 INCH = 50FT.

NOTE: SEE SHEET 13 FOR TRAVELWAY WIDTHS AND PARKING SPACE DIMENSIONS FOR THE NEW PARKING LOT.

CONTRACTOR'S 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.

NOTE:

ALL SPOT SHOTS ARE TO FLOW LINE OF CURB UNLESS OTHERWISE NOTED.
BC = BOTTOM OF CURB
TC = TOP OF CURB

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/2/11
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/06/11
DIRECTOR — DATE 6/6/11

(REVISED)

SITE, GRADING AND UTILITY PLAN

BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

ZONED R-20
TAX MAP No. 47, GRID 5, PARCEL 25
ELECTION DISTRICT 06
8200 SAVAGE GUILFORD ROAD
JESSUP, MD 20794

SEAL: STATE OF MARYLAND — JAMES S. HANKINSON — No. 36361 — PROFESSIONAL ENGINEER

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. 36361 EXPIRATION DATE: 10-20-12

10

ISSUE DATE: 04-14-11
SHEET 10 OF 40

COUNTY FILE # SDP-87-96

Drafting	TDB	DATE	REVISIONS
Check	JCH	05/20/11	REVISED SITE DEVELOPMENT PLAN
Design	BES	6-1-16	2. REVISED SHEET NUMBER
Check	NCW		

PLOTTED: 10:13 AM on Friday, May 20, 2011
BY: Benjamin E. Sheppard, P.E. Date created: May 2, 2011
FILE: M:\2010\2710557\drawings\C-02_SITE_PLAN.dgn

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD, SPARKS, MARYLAND 21152
TELEPHONE (410) 316-7800 FAX (410) 316-7818
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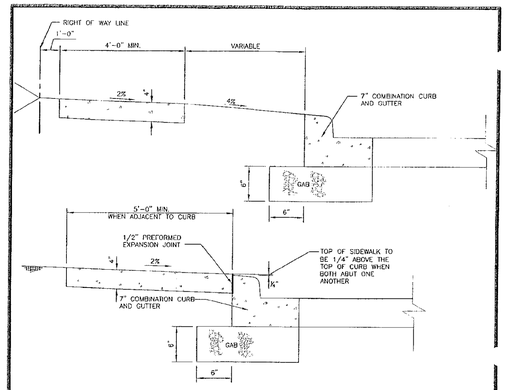
THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

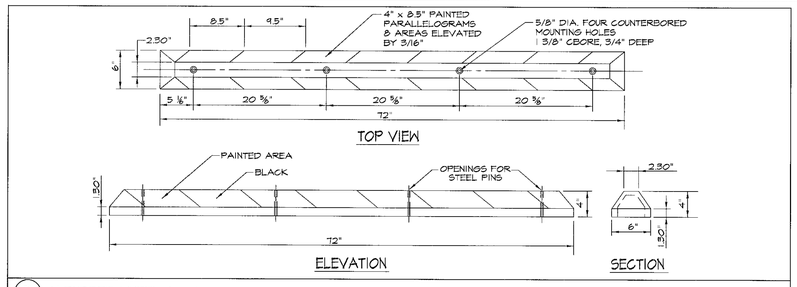


NOTES:

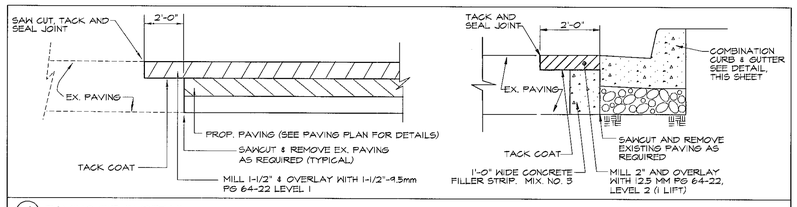
1. SIDEWALK TO BE SCRIBED IN 5'-0" MAXIMUM SQUARES.
2. EXPANSION JOINTS ACROSS THE SIDEWALK NOT TO BE MORE THAN 15' APART.
3. 1/2" PREFORMED EXPANSION MATERIAL IN EXPANSION JOINTS TO BE KEPT 1/4" BELOW SURFACE OF SIDEWALK.
4. CONCRETE TO BE MIX NO.3.
5. WHEN SIDEWALK ABUTS CURB, SIDEWALK SHALL BE 1/4" ABOVE CURB WITH 1/2" PREFORMED EXPANSION JOINT BETWEEN SIDEWALK AND CURB.
6. ON LONGITUDINAL SIDEWALK GRADES OF 5% OR GREATER, A CONCRETE HEADER, 6" THICK AND 6" DEEP BELOW THE NORMAL 4" SIDEWALK THICKNESS SHALL BE CONSTRUCTED FOR THE FULL WIDTH OF THE SIDEWALK AT INTERVALS OF 48 FEET. THE HEADERS SHALL BE PLACED AT THE EXPANSION JOINT LOCATIONS AND SHALL BE MONOLITHIC WITH THE SIDEWALK.
7. SIDEWALK WIDTH ADJACENT TO CURB SHALL BE 5' 0" MINIMUM EXCEPT SIDEWALK ADJACENT TO CURB IN CUL-DE-SAC BULBS MAY BE 4'-0" WIDE.
8. SIDEWALK LOCATED 2' OR MORE FROM CURB MAY BE 4'-0" IN WIDTH WITH A 5'x5' PAVED SECTION PLACED 200' APART.
9. 4'-0" SIDEWALK REQUIRES A PASSING AREA (SEE DETAIL R-4.01).

Revised / Revised / 5/7/2007 / Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	Concrete Sidewalk	Detail R-3.05

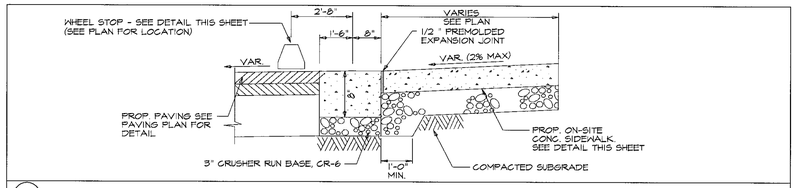
1 CONCRETE SIDEWALK — SCALE: N.T.S.



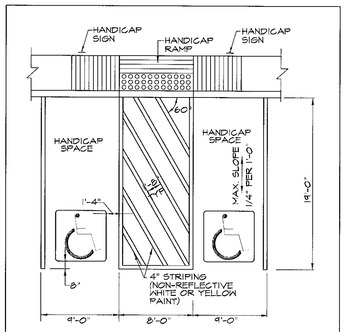
3 6' RUBBER WHEEL STOP — SCALE: N.T.S.



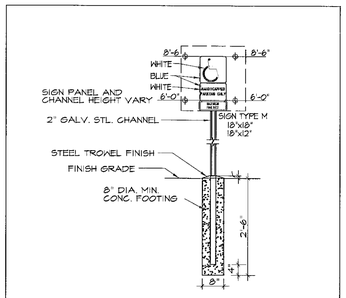
4 PAVING TIE-IN DETAIL — SCALE: N.T.S.



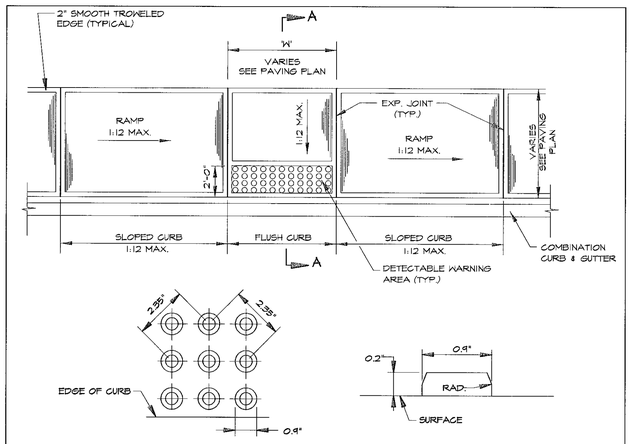
5 DEPRESSED CURB & GUTTER AT PEDESTRIAN RAMP — SCALE: N.T.S.



7 HANDICAP PARKING BAY DETAIL — SCALE: N.T.S.



8 HANDICAP SIGN & POLE — SCALE: N.T.S.

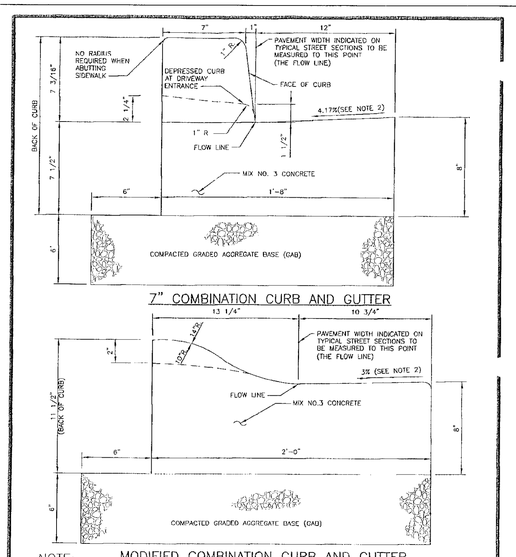


DETECTABLE WARNING DETAIL

NOTES:

1. SURFACE TEXTURE OF RAMPS SHALL BE COARSE BROOMING OR NON SKID SURFACE.
2. DETECTABLE WARNINGS SHALL BE SQUARE PATTERN, PARALLEL ALIGNMENT.
3. SEE DEPRESSED CURB AND GUTTER AT PEDESTRIAN RAMP DETAIL 5 FOR SECTION A-A.
4. SEE SITE & GRADING PLAN, SHEET 10, FOR TYPE I RAMP TAPERED CURB LENGTHS.
5. A DETECTABLE WARNING IS A STANDARD, DISTINCT SURFACE FEATURE BUILT IN OR APPLIED TO WALKING SURFACES (OR OTHER ELEMENTS) TO WARN VISUALLY IMPAIRED PEOPLE OF HAZARDS ON A CIRCULATION PATH.
6. 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.
7. 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.
8. DETECTABLE WARNINGS MAY BE APPLIED USING COMMERCIAL PRODUCT OR EXTRUDED TINTED CONCRETE.
9. PAVERS MAY BE SPLAYED AS REQUIRED TO MATCH A CURVED CURB RADIUS.
10. 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.
11. MANUFACTURED PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
12. SURFACE TEXTURE OF RAMPS SHALL BE COARSE BROOMING OR NON SKID SURFACE.
13. DETECTABLE WARNINGS SHALL BE SQUARE PATTERN, PARALLEL ALIGNMENT.
14. SEE HOWARD COUNTY STANDARD DETAIL R-4.06 AND R-4.07 FOR ADDITIONAL INFORMATION.

9 PEDESTRIAN RAMP — SCALE: N.T.S.



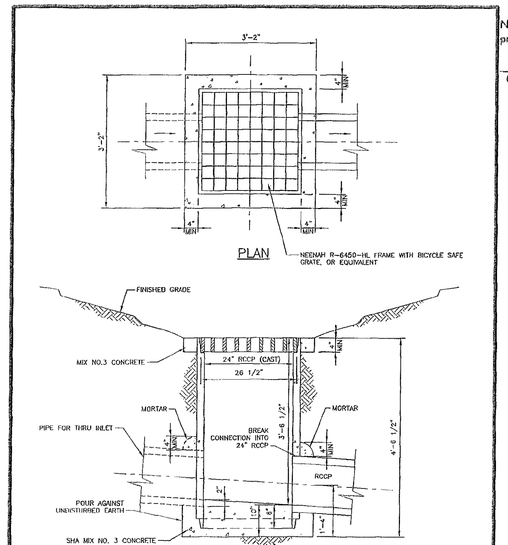
7" COMBINATION CURB AND GUTTER

NOTE: MODIFIED COMBINATION CURB AND GUTTER

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

Revised / Revised / 5/7/2007 / Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	CURB AND GUTTER 7" & Modified	Detail R-3.01

2 7" COMBINATION CURB AND GUTTER — SCALE: N.T.S.



NOTE:

1. INLET TO BE USED IN A SWALE OR SUMP. MAX. CAPACITY UNDER .25"=3 C.F.S. TO BE USED WITH 15" CONN. OR SMALLER. NOT TO BE USED IN ROADWAY OR PARKING AREA.
2. TO BE USED ONLY WHEN APPROVED BY COUNTY.

Revised / Revised / 5/7/2007 / Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	Yard Inlet	Detail D-4.14

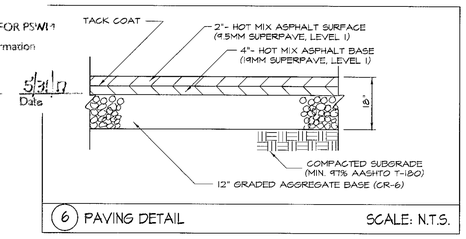
11 YARD INLET DETAIL — SCALE: N.T.S.

AS BUILT CERTIFICATION FOR PSWM

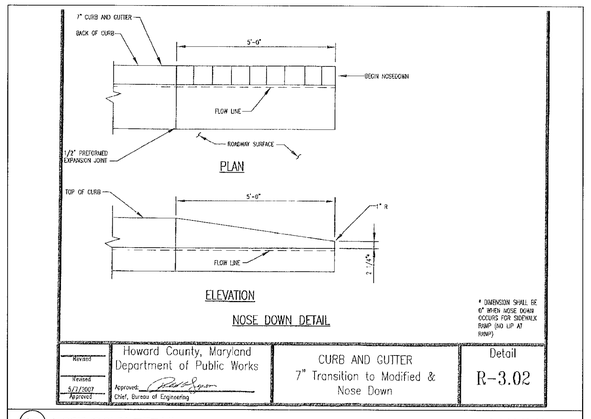
Note: There is no "AS BUILT" information provided on this sheet.

CHARLES J. CROVO, JR. NO. 17204

5/31/11
Date

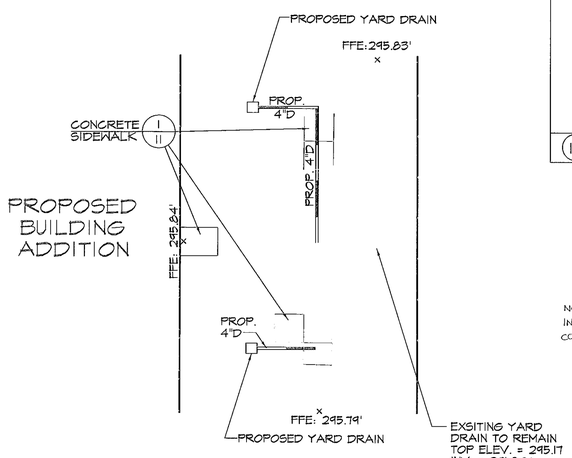


6 PAVING DETAIL — SCALE: N.T.S.



Revised / Revised / 5/7/2007 / Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	CURB AND GUTTER 7" Transition to Modified & Nose Down	Detail R-3.02

10 NOSE DOWN DETAIL — SCALE: N.T.S.



COURTYARD DETAIL

SCALE: 1" = 10'

REVISION 6/1/11
FISHER COLLINS & CARTER INC.

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWIM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6/2/11
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/06/11
DIRECTOR	DATE 6/6/11

SEAL: STATE OF MARYLAND — JAMES C. HANKINS — NO. 36361 — PROFESSIONAL ENGINEER

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. 36361 EXPIRATION DATE: 10-20-12

(REVISED)

SITE DETAILS

BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

ZONED R-20
TAX MAP No. 47, GRID 5, PARCEL 25
ELECTION DISTRICT 06
8200 SAVAGE GUILFORD ROAD
JESSUP, MD 20794

11

ISSUE DATE: 03-10-11
SHEET 11 OF 40

Drafting	TDB	DATE	REVISIONS
Check	JCH	05/20/11	REVISED SITE DEVELOPMENT PLAN
Check	NCW	6-1-16	REVISED SHEET NUMBER
Design	BES		

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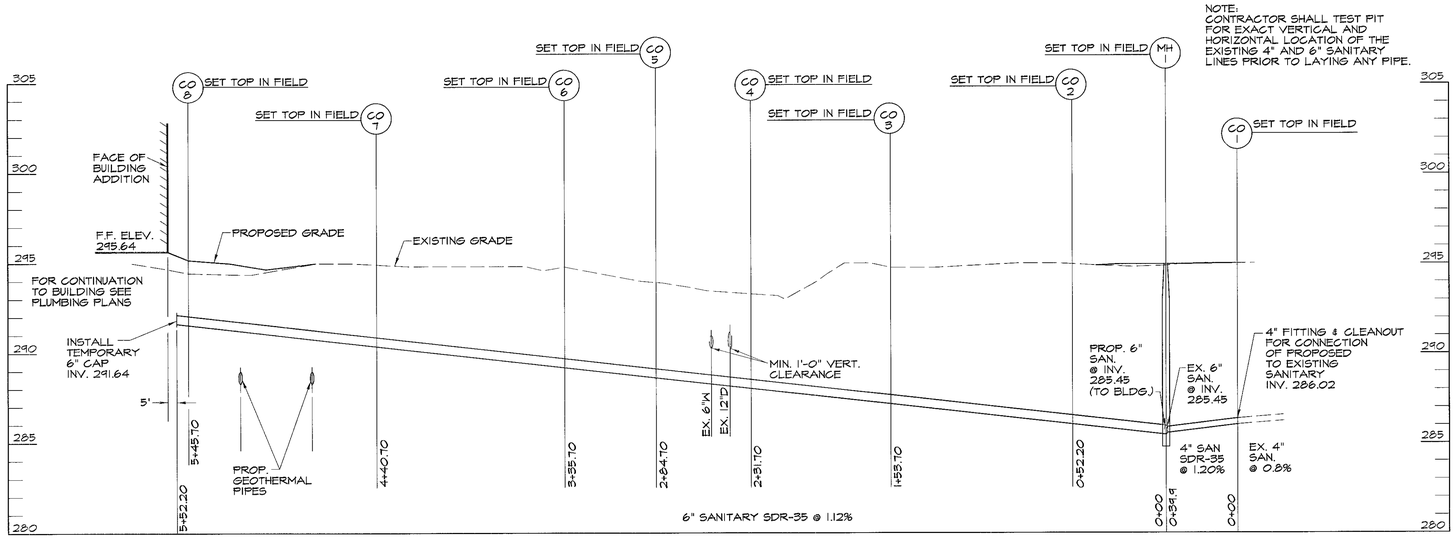
626 North Charlotte Street, Lancaster, PA17603, P: 717.291.1077 F: 717.392.3923
29L Atlantic Avenue #150, Ocean View, DE 19970, P: 302.449.2492 F: 302.449.2493

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

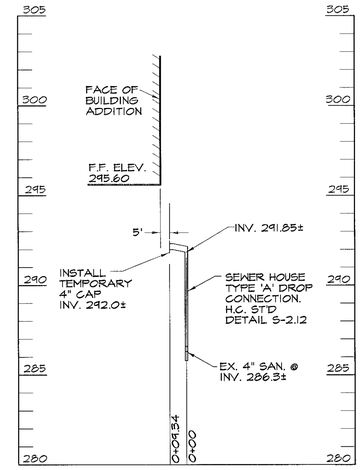
COUNTY FILE # SDP-87-96

PLOTTED: 10:22 AM, on Friday, May 20, 2011
BY: Brian Schoen, KCI Technologies, Inc.
FILE: M:\2005\2700577\drawings\C-03_SITE_DETS.dgn



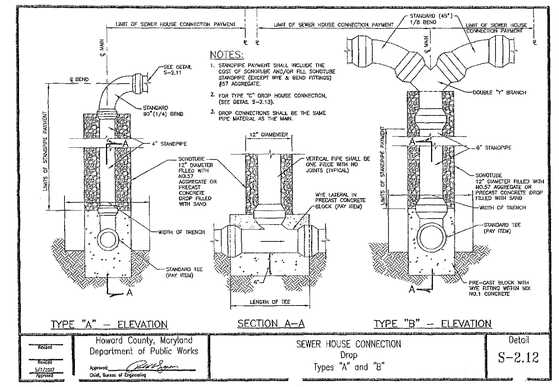
SANITARY SEWER PROFILE

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

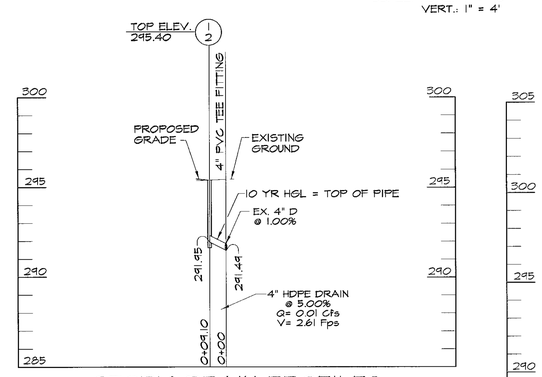


SANITARY SEWER PROFILE

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

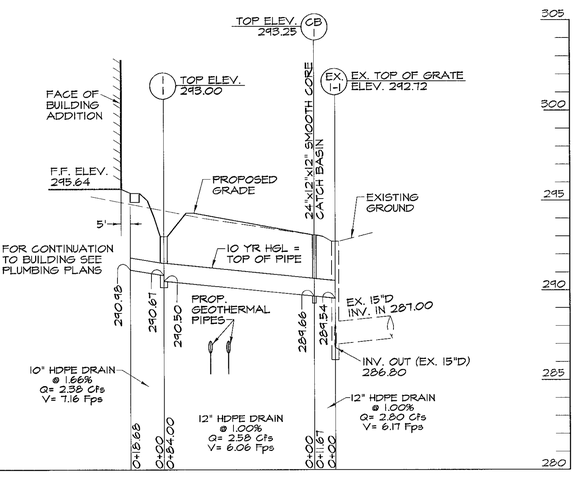


Revised	Howard County, Maryland Department of Public Works	SEWER HOUSE CONNECTION Drop Types "A" and "B"	Detail S-2.12
Revised	Approved: Chief, Bureau of Engineering		
Revised			
Revised			



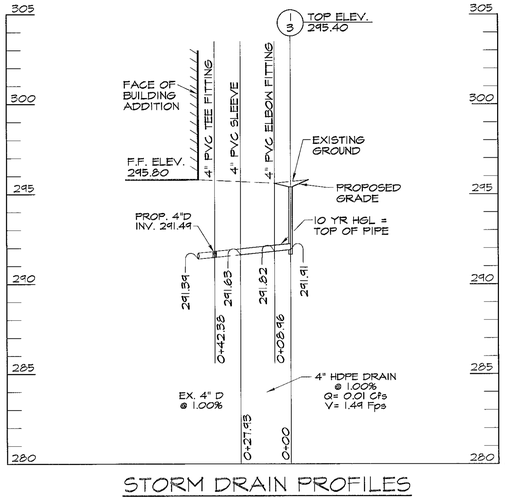
STORM DRAIN PROFILES

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



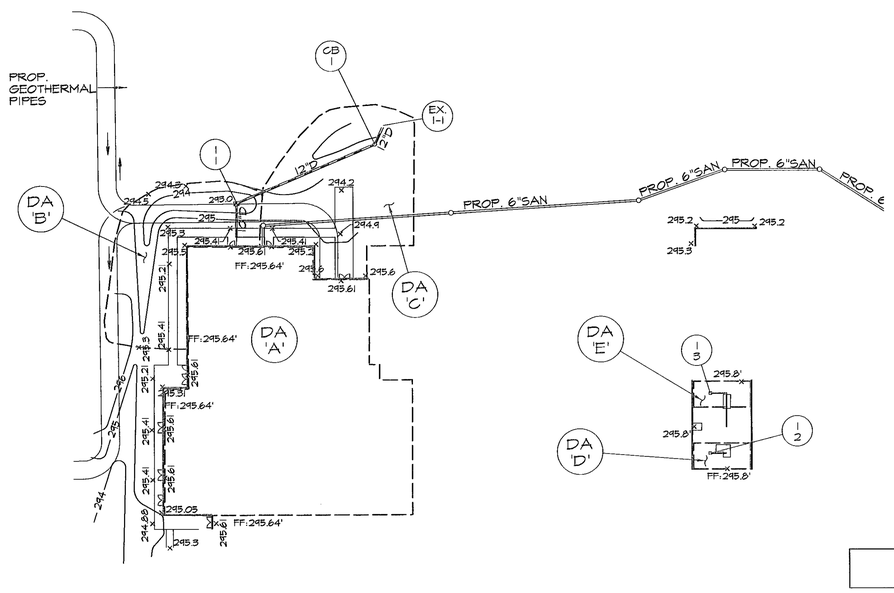
STORM DRAIN PROFILES

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



STORM DRAIN PROFILES

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



STORMDRAIN DRAINAGE AREA MAP

SCALE: 1" = 40'

PROPOSED IMPERVIOUS ROOFTOP ADDITIONS WITHIN DRAINAGE AREA

PROPOSED IMPERVIOUS SIDEWALK AREA WITHIN DRAINAGE AREA

D.A. 'A'

TOTAL AREA = 0.40 AC.
IMPERVIOUS = 0.40 AC.
PERVIOUS = 0.0 AC.
'C' FACTOR = 0.85
PERCENT IMPERVIOUS = 100%

D.A. 'B'

TOTAL AREA = 0.11 AC.
IMPERVIOUS = 0.01 AC.
PERVIOUS = 0.10 AC.
'C' FACTOR = 0.26
PERCENT IMPERVIOUS = 9%

D.A. 'C'

TOTAL AREA = 0.10 AC.
IMPERVIOUS = 0.02 AC.
PERVIOUS = 0.08 AC.
'C' FACTOR = 0.35
PERCENT IMPERVIOUS = 20%

D.A. 'D'

TOTAL AREA = 0.01 AC.
IMPERVIOUS = 0.0 AC.
PERVIOUS = 0.01 AC.
'C' FACTOR = 0.20
PERCENT IMPERVIOUS = 1%

D.A. 'E'

TOTAL AREA = 0.01 AC.
IMPERVIOUS = 0.0 AC.
PERVIOUS = 0.01 AC.
'C' FACTOR = 0.20
PERCENT IMPERVIOUS = 1%

AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet.

CHARLES J. CROND, SR. No. 19204 — 5/31/11 Date

REVISED 6/1/16 FOR NOTE COMMENTS & CERTIFICATION INFO.

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

SEAL: STATE OF MARYLAND — JAMES C. HANNIGAN — No. 36361 — PROFESSIONAL ENGINEER

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6/2/11
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/06/14
DIRECTOR	DATE 6.9.14

(REVISED)

UTILITY PROFILES

BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

ZONED R-20
TAX MAP No. 47, GRID 5, PARCEL 25
ELECTION DISTRICT 06
8200 SAVAGE GUILFORD ROAD
JESSUP, MD 20794

12

ISSUE DATE: 03-10-11
SHEET 12 OF 40

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. 36361 EXPIRATION DATE: 10-20-12

		DATE	REVISIONS
Drafting	TDB		
Check	JCH	05/20/11	REVISED SITE DEVELOPMENT PLAN
Design	BES	6-1-16	REVISED SHEET NUMBER
Check	NCM		

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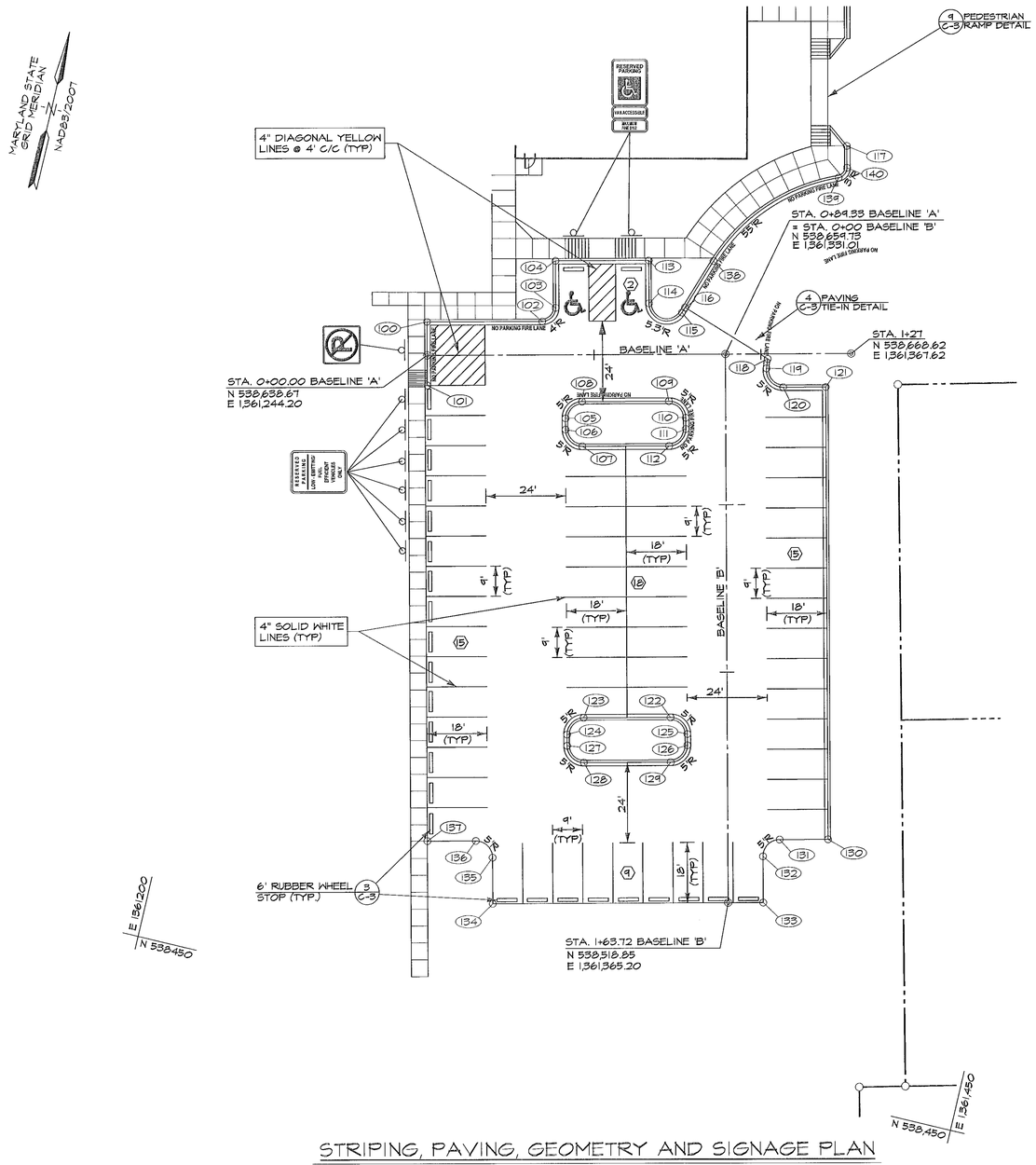
THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

COUNTY FILE # SDP-87-96

PLOTTED: 10:24 AM on Friday, May 20, 2011
BY: Bernard Siberman Division: P086 Land Develop GMA Eng
FILE: K:\2010\2100537\Drawings\C-04_UTILITY_PROFILES.dgn



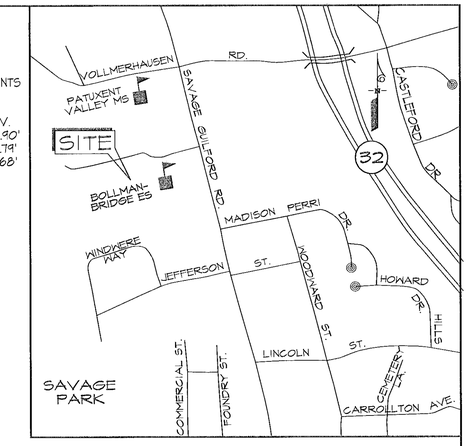
STRIPING, PAVING, GEOMETRY AND SIGNAGE PLAN

SCALE: 1" = 20'

BENCHMARK DATA

THE HORIZONTAL AND VERTICAL DATUMS ARE BASED ON THE FOLLOWING HOWARD COUNTY GEODETIC SURVEY CONTROL POINTS
HORIZONTAL: NAD 83/07 VERTICAL: NAVD 88

TRAV NAME	NORTH	EAST	ELEV.
47C1	539613.68	1362608.48	260.90'
47FA	536345.20	1361008.50	258.79'
47C0	540529.69	1362460.50	285.68'



VICINITY MAP

SCALE: 1" = 1000'

BASELINE "A"		
NO.	STATION	OFFSET
100	0+00.00	10.00' LT
101	0+00.00	9.00' RT
102	0+34.55	10.00' LT
103	0+38.56	14.00' LT
104	0+38.56	28.00' LT
105	0+41.33	19.00' RT
106	0+41.33	22.36' RT
107	0+46.33	27.36' RT
108	0+46.33	14.00' RT
109	0+72.33	14.00' RT
110	0+77.33	19.00' RT
111	0+77.33	22.36' RT
112	0+72.33	27.36' RT
113	0+66.54	28.00' LT
114	0+66.54	15.24' LT
115	0+76.33	12.43' LT
116	0+77.27	13.94' LT
117	1+26.00	61.92' LT
138	0+85.92	27.77' LT
139	1+23.50	52.44' LT
140	1+26.02	55.39' LT

BASELINE "B"		
NO.	STATION	OFFSET
118	0+01.51	12.66' LT
119	0+04.34	12.29' LT
120	0+19.97	17.25' LT
121	0+19.97	30.00' LT
122	1+08.36	17.00' RT
123	1+08.36	43.00' RT
124	1+13.36	48.00' RT
125	1+13.36	12.00' RT
126	1+16.72	12.00' RT
127	1+16.72	48.00' RT
128	1+21.72	43.00' RT
129	1+21.72	17.00' RT
130	1+44.97	30.00' LT
131	1+44.97	15.50' LT
132	1+49.97	10.50' LT
133	1+63.72	10.50' LT
134	1+63.72	70.50' RT
135	1+49.97	70.50' RT
136	1+44.97	75.50' RT
137	1+44.97	90.00' RT

AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet.

CHARLES J. CROUD, JR. NO. 19204 — 5/31/12 Date

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

FIRE LANE MARKING

WHERE A CURB EXISTS ALONG A DESIGNATED FIRE LANE, COMMON "RED TRAFFIC PAINT" WILL BE USED TO PAINT THE ENTIRE TOP AND VERTICAL SURFACE OF THE CURB. THE PAINTED SURFACE WILL EXTEND FOR THE FULL LENGTH OF THE DESIGNATED FIRE LANE. PAINT MAY BE APPLIED BY EITHER BRUSH, ROLLER, OR SPRAYED APPLICATION.

AT EACH END OF THE FIRE LANE, WITHIN THE RED PAINTED AREA, THE LEGEND, "NO PARKING - FIRE LANE" WILL BE PAINTED IN WHITE LETTERS NO LESS THAN THREE INCHES (3") HIGH ON TOP OF THE CURB. THIS LEGEND WILL ALSO BE REPEATEDLY PLACED AT APPROXIMATELY EQUIDISTANT SPACING ALONG THE ENTIRE PAINTED CURB TOP SURFACE AT A SEPARATION DISTANCE OF TWENTY FEET (20'). THIS LEGEND SHALL ALSO BE PLACED ON THE VERTICAL FACE OF THE CURB ON 20 FEET CENTERS OFFSET BY 10 FEET WITH RESPECT TO THE ABOVE MARKING ON THE TOP SURFACE. HOWEVER, IN NO EVENT SHALL THERE BE LESS THAN TWO SUCH MARKINGS ON THE TOP CURB AND ONE ON THE VERTICAL FACE.

LEGEND

- EX. PROPERTY LINE
- PROP. CONCRETE SIDEWALK
- PROP. CURB AND GUTTER
- PROP. REGULAR DUTY PAVING
- APPROXIMATE LIMITS OF PAVING TIE-IN
- PROP. SIGN
- WHEEL STOP
- (130) DENOTES POINT NUMBER
- PROP. PAINTED HANDICAP SYMBOL

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20FT.

REVISED 6/1/11 FISHER COLLINS & CARTER INC.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/2/11
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/6/11
DIRECTOR — DATE 6/6/11

SEAL: STATE OF MARYLAND — JAMES C. HANNINGSON — No. 36361 — PROFESSIONAL ENGINEER

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. 36361 EXPIRATION DATE: 10-20-12

(REVISED)
STRIPING, PAVING, GEOMETRY AND SIGNAGE PLAN
BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

ZONED R-20
TAX MAP No. 47, GRID 5, PARCEL 25
ELECTION DISTRICT 06
8200 SAVAGE GUILFORD ROAD
JESSUP, MD 20794

13

ISSUE DATE: 03-10-11
SHEET 13 OF 40

Drafting	TDB	DATE	REVISIONS
Check	JCH	05/20/11	REVISED SITE DEVELOPMENT PLAN
Design	BES	6-1-16	REVISED SHEET NUMBER
Check	NGW		

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29L Atlantic Avenue #150, Ocean View, DE 19970, P: 302.449.2492 F: 302.449.2493

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

COUNTY FILE # SDP-87-96

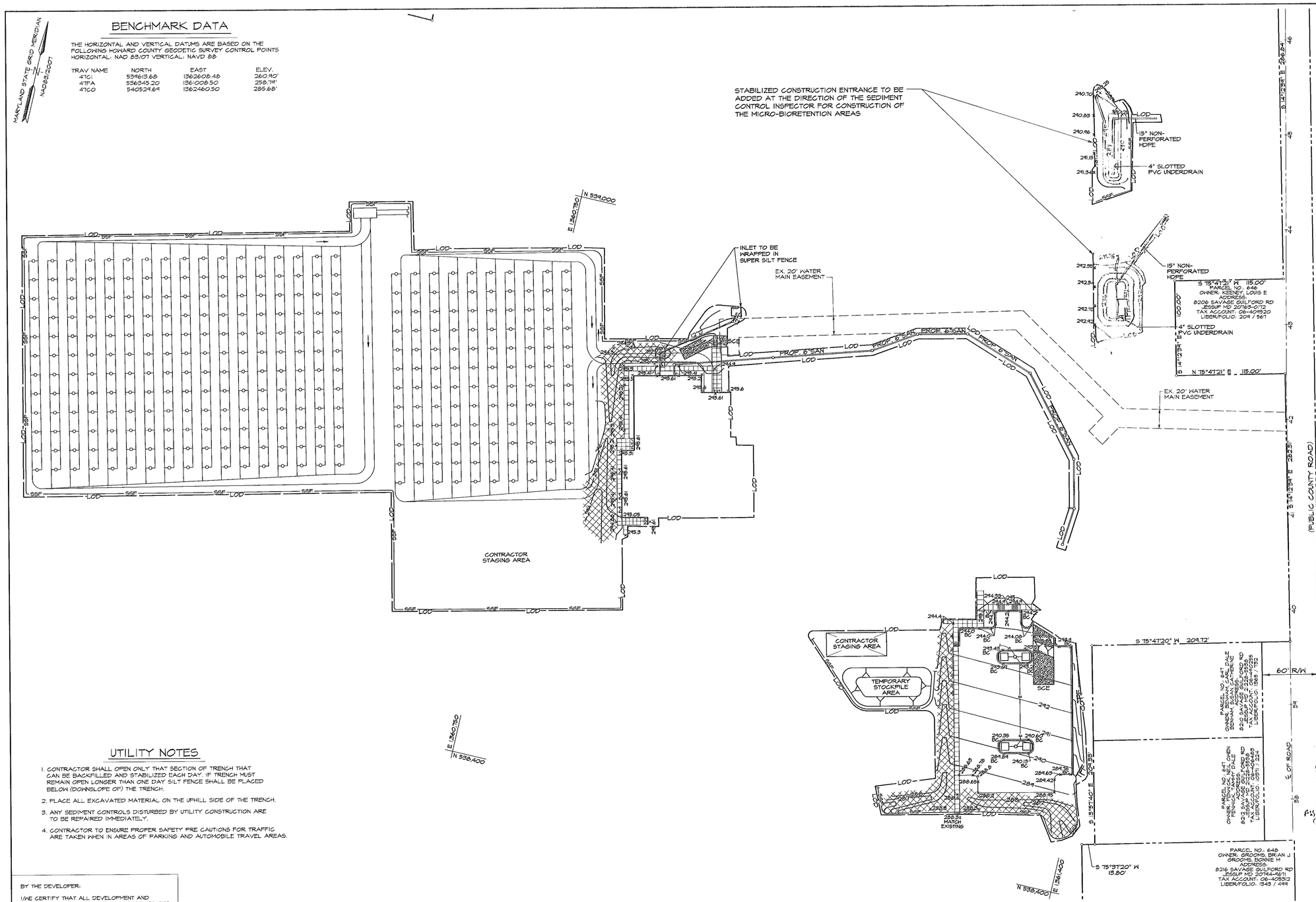
PLOTTED: 10:26 AM on Friday, May 20, 2011
BY: Bernice Stoelmon Division: PDRE Land Develop. Gwp. Emp
FILE: W:\0137100\37-Northwest\C-105-SBO_PAL-SITE-PL-AN.dgn

BENCHMARK DATA

THE HORIZONTAL AND VERTICAL DATUMS ARE BASED ON THE FOLLOWING HOWARD COUNTY GEODETIC SURVEY CONTROL POINTS
HORIZONTAL: NAD 83/01 VERTICAL: NAVD 88

TRAV NAME	NORTH	EAST	ELEV.
47CI	539613.68	1362608.48	260.90'
47FA	538345.20	1361008.50	258.74'
47CO	540529.69	1362460.50	285.68'

MARYLAND STATE GRID MERIDIAN
NAD83/2001



VICINITY MAP

SCALE: 1" = 1000'

LEGEND

- EX. INDEX CONTOUR
- EX. INTERMEDIATE CONTOUR
- EX. STORM DRAIN
- EX. SANITARY SEWER
- EX. WATER
- EX. ELECTRIC
- EX. METAL FENCE
- EX. WOODS LINE
- EX. CURB AND GUTTER
- EX. POWER POLE
- EX. MANHOLE
- EX. INLET
- EX. BOLLARD
- EX. GUY WIRE
- EX. BUSHES
- EX. LIGHT POLE
- EX. FIRE HYDRANT
- EX. WATER METER
- EX. SIGN
- EX. TREE
- EX. PROPERTY LINE
- PROP. CONCRETE SIDEWALK
- PROP. COMBINATION CONCRETE CURB AND GUTTER
- PROP. MANHOLE
- 15"D — PROPOSED STORM DRAIN
- PROPOSED INLET
- 245 — PROPOSED CONTOUR
- SSF — SUPER SILT FENCE
- LOD — LIMIT OF DISTURBANCE
- SCE — STABILIZED CONSTRUCTION ENTRANCE
- ASIP — AT GRADE INLET PROTECTION
- SIP — STANDARD INLET PROTECTION
- TPF — TREE PROTECTION FENCE
- EROSION CONTROL MATTING

NOTE: THE PURPOSE OF THE REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

REVISION (3) CHK ASBUILT CHANGES CHARLES

UTILITY NOTES

1. CONTRACTOR SHALL 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 OF) THE TRENCH.
2. PLACE ALL EXCAVATED MATERIAL ON THE UPHILL SIDE OF THE TRENCH.
3. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.
4. CONTRACTOR TO ENSURE PROPER SAFETY PRE CAUTIONS FOR TRAFFIC ARE TAKEN WHEN IN AREAS OF PARKING AND AUTOMOBILE TRAVEL AREAS.

PHASE I EROSION AND SEDIMENT CONTROL PLAN

SCALE: 1" = 50'

BY THE DEVELOPER:

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, 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 INSPECTIONS BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.

SCOTT WASHINGTON / DATE
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM

BY THE ENGINEER:

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

ENGINEER — DATE 5/20/11

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50FT.

AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet.

CHARLES J. CROVO, SR. NO. 19204 — Date 5/31/17

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
Approved — Howard S.C.D. — Date 5/24/11

SEE SHEET 15 FOR SEQUENCE OF CONSTRUCTION

SEAL: STATE OF MARYLAND — JAMES C. HANKINSON — No. 36361 — PROFESSIONAL ENGINEER

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/2/11
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/06/11
DIRECTOR — DATE 6/6/11

(REVISED)
PHASE 1 EROSION AND SEDIMENT CONTROL PLAN

BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

ZONED R-20
TAX MAP No. 47, GRID 5, PARCEL 25
ELECTION DISTRICT 06
8200 SAVAGE GUILFORD ROAD
JESSUP, MD 20794

14

ISSUE DATE: 03-10-11
SHEET 14 OF 40

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. 36361 EXPIRATION DATE: 10-20-12

		DATE	REVISIONS
Drafting	TDB	05/20/11	2 REVISED SITE DEVELOPMENT PLAN
Check	JCH		1
Design	BES	6-1-16	3 REVISED SHEET NUMBER
Check	NCW		

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD, SPARKS, MARYLAND 21152
TELEPHONE (410) 316-7800 FAX (410) 316-7818
www.kci.com

OWNER
SCOTT WASHINGTON
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
10910 ROUTE 108
ELLICOTT CITY, MD 21042
PHONE: (410) 313-6601

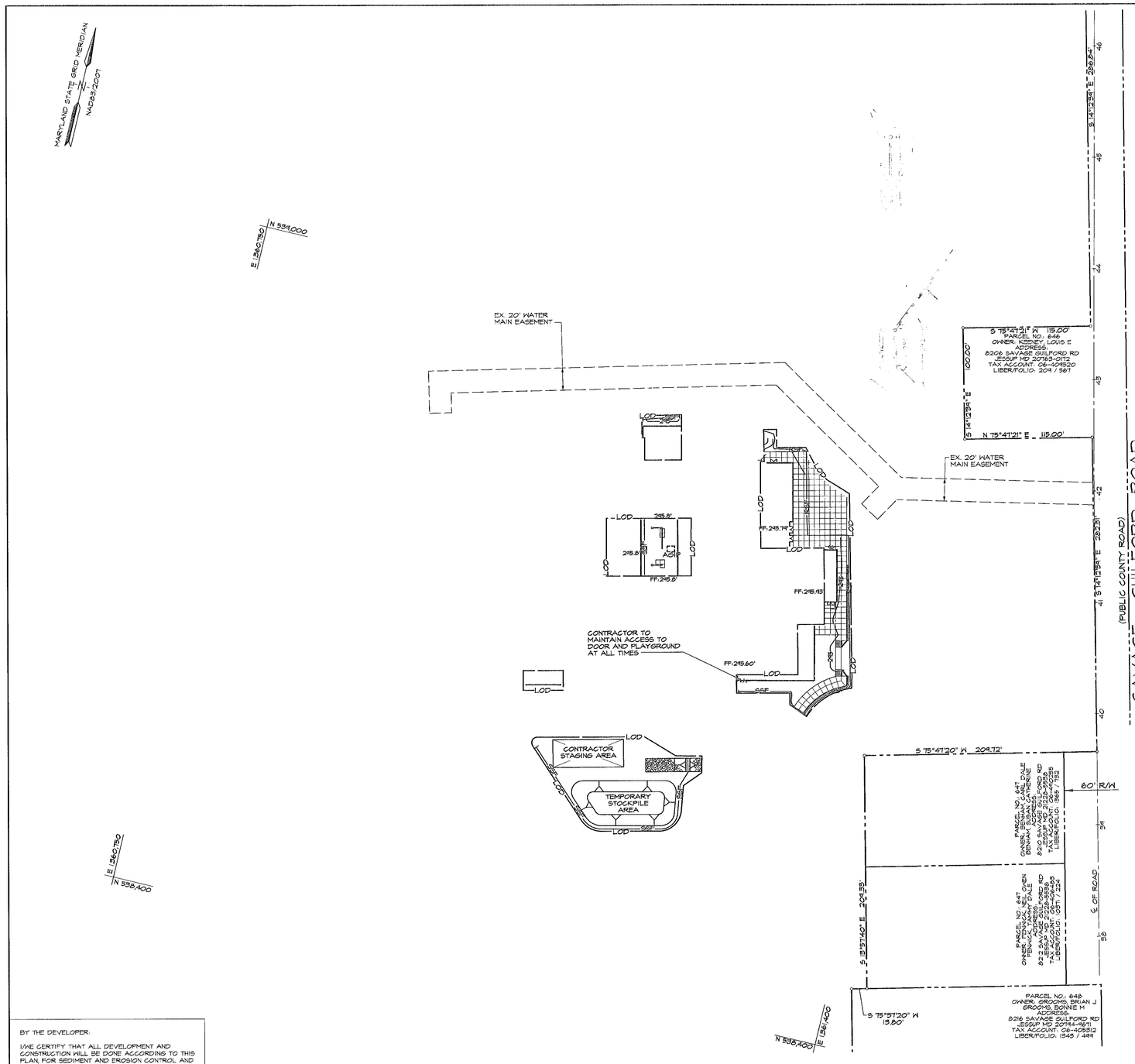
DEVELOPER
SCOTT WASHINGTON
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
10910 ROUTE 108
ELLICOTT CITY, MD 21042
PHONE: (410) 313-6601

gilbert — Gilbert Architects Inc.
10451 Mill Run Circle, Suite 400, Owings Mills, MD 21117, P: 410.356.8856 F: 410.654.8802
626 North Charlotte Street, Lancaster, PA17603, P: 717.291.1077 F: 717.392.3923
29L Atlantic Avenue #150, Ocean View, DE 19970, P: 302.449.2492 F: 302.449.2493

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

COUNTY FILE # SDP-87-96

PLOTTED: 10:28 AM on Friday, May 20, 2011
By: CHARLES J. CROVO, SR. (charlescrovosr@gma.com)
FILE: M:\2005\27005377\drawings\C-05_esc_PLAN.dgn



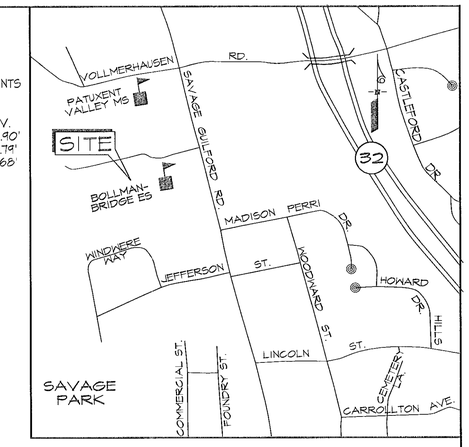
PHASE 2 EROSION AND SEDIMENT CONTROL PLAN

SCALE: 1" = 50'

BENCHMARK DATA

THE HORIZONTAL AND VERTICAL DATUMS ARE BASED ON THE FOLLOWING HOWARD COUNTY GEODETIC SURVEY CONTROL POINTS
HORIZONTAL: NAD 83/07 VERTICAL: NAVD 88

TRAV NAME	NORTH	EAST	ELEV.
47C1	539613.68	1362608.48	260.90'
47FA	536345.20	1361008.50	258.79'
47C0	540529.69	1362460.50	285.68'



VICINITY MAP

SCALE: 1" = 1000'

SEQUENCE OF CONSTRUCTION

PHASE 1

1 DAY 1. PRE-CONSTRUCTION MEETING: NOTIFY HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION AT LEAST 48 HOURS BEFORE COMMENCING WORK (410) 313-1855. WORK MAY NOT COMMENCE UNTIL THE PERMITTEE OR THE RESPONSIBLE PERSONNEL HAVE MET ON SITE WITH THE SEDIMENT AND EROSION CONTROL INSPECTOR TO REVIEW THE APPROVED PLANS.

1 DAY 2. CLEAR FOR INSTALLING STABILIZED CONSTRUCTION ENTRANCE.

2 DAYS 3. CLEAR AND GRUB FOR SEDIMENT AND EROSION CONTROL MEASURES OR DEVICES ONLY.

2 DAYS 4. INSTALL SEDIMENT AND EROSION CONTROL DEVICES SUPER SILT FENCE, AND WRAP EXISTING INLETS WITH SUPER SILT FENCE FOR INLET PROTECTION.

1 DAY 5. OBTAIN CERTIFICATION OF SEDIMENT CONTROL DEVICE PLACEMENT FROM HOWARD COUNTY INSPECTOR PRIOR TO ANY FURTHER CONSTRUCTION.

2 WEEKS 6. WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, BEGIN SITE DEMOLITION PER SHEET C-09 AS REQUIRED, CLEAR AND GRUB AND ROUGH GRADE REMAINDER OF SITE WITHIN LIMITS OF DISTURBANCE OF PHASE 1 CONSTRUCTION, STOCKPILE EXCESS MATERIALS WHERE SHOWN ON PLANS.

4 WEEKS 7. INSTALL STORM DRAINS, GEO-THERMAL FIELD, SANITARY SEWER AND INLET PROTECTION WHERE REQUIRED (SEE UTILITY NOTES ON SHEET 14).

NOTES:
WATER FOR PROPOSED ADDITION SHALL BE PROVIDED FROM EXISTING BUILDING.

1 WEEK 8. INSTALL CONCRETE CURB AND GUTTER AND BASE COURSE FOR PAVED AREAS.

1 WEEK 9. UPON THE COMPLETION OF THE INSTALLATION BASE COURSE AND CURBING FINE GRADE SWALES ON THE SOUTH WEST SIDE OF PARKING LOT AND INSTALL EROSION CONTROL MATTING, AND PERMANENT STABILIZATION.

8 WEEKS 10. CONSTRUCT BUILDING AND COMPLETE UTILITY CONNECTION TO BUILDING AS REQUIRED.

1 WEEK 11. UPON COMPLETION OF THE ABOVE MENTIONED WORK INSTALL CONCRETE WALKS AND PROVIDE PERMANENT STABILIZATION FOR NON-PAVED AREAS.

NOTE:
CONTRACTOR'S STAGING AREA ALONG WITH SUPER SILT FENCE BELOW STOCKPILE AREA SHALL REMAIN IN PLACE FOR PHASE 2 CONSTRUCTION, INSTALL NEW STABILIZED CONSTRUCTION ENTRANCE AS SHOWN ON PHASE 2 SEDIMENT CONTROL PLAN.

2 DAYS 12. WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR BEGIN REMOVAL ALL OTHER PHASE 1 PERIMETER SEDIMENT CONTROL DEVICES AND IMMEDIATELY STABILIZE ALL AREAS DISTURBED DURING THIS PROCESS.

NOTE:
UPON COMPLETION OF THE ABOVE SAID WORK INSTALL SURFACE COURSE, SIGNAGE AND STRIPING.

PHASE 2

1 DAY 13. INSTALL RELOCATED STABILIZED CONSTRUCTION ENTRANCE.

1 DAY 14. CLEAR AND GRUB FOR SEDIMENT AND EROSION CONTROL MEASURES OR DEVICES ONLY.

2 DAYS 15. INSTALL SEDIMENT AND EROSION CONTROL DEVICES SUPER SILT FENCE, AND AGIP FOR EXISTING INLET.

1 DAY 16. OBTAIN CERTIFICATION OF SEDIMENT CONTROL DEVICE PLACEMENT FROM HOWARD COUNTY INSPECTOR PRIOR TO ANY FURTHER CONSTRUCTION.

2 WEEKS 17. WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, COMPLETE SITE DEMOLITION PER SHEET C-09 AS REQUIRED, CLEAR AND GRUB AND ROUGH GRADE REMAINDER OF SITE WITHIN LIMITS OF DISTURBANCE OF PHASE 2 CONSTRUCTION, STOCKPILE EXCESS MATERIALS WHERE SHOWN ON PLANS.

1 WEEK 18. INSTALL CONCRETE CURB AND GUTTER.

47 WEEKS 19. CONSTRUCT PHASE 2 BUILDING ADDITIONS.

NOTE:
ALL PHASE 2 BUILDING ADDITIONS WATER, SEWER AND ROOF DRAINAGE SHALL TIE INTO EXISTING BUILDING.

1 WEEK 20. UPON COMPLETION OF THE ABOVE MENTIONED WORK INSTALL CONCRETE WALKS AND PROVIDE PERMANENT STABILIZATION FOR NON-PAVED AREAS.

2 DAYS 21. WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR BEGIN REMOVAL OF ALL OTHER PERIMETER SEDIMENT CONTROL DEVICES AND IMMEDIATELY STABILIZE ALL AREAS DISTURBED DURING THIS PROCESS.

LEGEND

- EX. INDEX CONTOUR
- EX. INTERMEDIATE CONTOUR
- EX. STORM DRAIN
- EX. SANITARY SEWER
- EX. WATER
- EX. ELECTRIC
- EX. METAL FENCE
- EX. WOODS LINE
- EX. CURB AND GUTTER
- EX. POWER POLE
- EX. MANHOLE
- EX. INLET
- EX. BOLLARD
- EX. GUY WIRE
- EX. BUSHES
- EX. LIGHT POLE
- EX. FIRE HYDRANT
- EX. WATER METER
- EX. SIGN
- EX. TREE
- EX. PROPERTY LINE
- PROP. CONCRETE SIDEWALK
- PROP. COMBINATION CONCRETE CURB AND GUTTER
- PROP. MANHOLE
- 15"D — PROPOSED STORM DRAIN
- PROPOSED INLET
- 245 — PROPOSED CONTOUR
- SSF — SUPER SILT FENCE
- RSF — REINFORCED SUPER SILT FENCE
- LOD — LIMIT OF DISTURBANCE
- STABILIZED CONSTRUCTION ENTRANCE
- AGIP — AT GRADE INLET PROTECTION
- SIP — STANDARD INLET PROTECTION
- BOF — BLAZED ORANGE FENCE
- EROSION CONTROL MATTING

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

FISHER COLLINS & CARTER INC.

BY THE DEVELOPER:

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, 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 INSPECTIONS BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.

SCOTT WASHINGTON — DATE 5/24/11
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM

BY THE ENGINEER:

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

ENGINEER — DATE 5/20/11

AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet.

CHARLES J. CROVO, JR. NO. 19204 — Date 5/31/12

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50FT.

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

Approved: Howard S.C.D. — Date 5/24/11

SEAL: STATE OF MARYLAND — JAMES C. HANNIGAN — No. 36361 — PROFESSIONAL ENGINEER

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/2/11
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/06/11
DIRECTOR — DATE 6/6/11

(REVISED)
PHASE 2 EROSION AND SEDIMENT CONTROL PLAN
BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

ZONED R-20
TAX MAP No. 47, GRID 5, PARCEL 25
ELECTION DISTRICT 06
8200 SAVAGE GUILFORD ROAD
JESSUP, MD 20794

15

ISSUE DATE: 05-10-11
SHEET 15 OF 40

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. 36361
EXPIRATION DATE: 10-20-12

Drafting	TDB	DATE	REVISIONS
Check	JCH	05/20/11	REVISED SITE DEVELOPMENT PLAN
Design	BES	5/24/12	REVISE SWM FACILITIES
Check	NGW	7-1-16	REVISED SHEET NUMBER

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SURVEYORS, CONSTRUCTION MANAGERS
936 RED FORD ROAD, SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800 FAX: (410) 316-7818
www.kci.com

OWNER
SCOTT WASHINGTON
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
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10910 ROUTE 108
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PHONE: (410) 313-6601

DEVELOPER
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PHONE: (410) 313-6601

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29L Atlantic Avenue #150, Ocean View, DE 19970 — P: 302.449.2492 F: 302.449.2493

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

COUNTY FILE # SDP-87-96

PLOTTED: 10:30 AM on Friday, May 20, 2011
BY: Bernard Spielman Division: PBSI_Land Develop_GMA_Emp
FILE: W:\0013-C7100\57-Kitchens\C-07-.esc, PLAN2.dgn

SECTION I - VEGETATIVE STABILIZATION METHODS & MATERIALS

A. SITE PREPARATION

I. INSTALL EROSION AND SEDIMENT CONTROL STRUCTURES (EITHER TEMPORARY OR PERMANENT) SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, BERMS, WATERWAYS, OR SEDIMENT CONTROL BASINS.

II. PERFORM ALL GRADING OPERATIONS AT RIGHT ANGLES TO THE SLOPE. FINAL GRADING AND SHAPING IS NOT USUALLY NECESSARY FOR TEMPORARY SEEDING.

III. SCHEDULE REQUIRED SOIL TEST TO DETERMINE SOIL AMENDMENT COMPOSITION AND APPLICATION RATES FOR SITES HAVING DISTURBED AREA OVER 5 ACRES.

B. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)

I. SOIL TEST MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OVER 5 ACRES. SOIL ANALYSIS MAY BE PREFORMED BY THE UNIVERSITY OF MARYLAND OR A RECOGNIZED COMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSES.

II. FERTILIZERS SHALL BE UNIFORM IN COMPOSITION, FREE FLOWING AND SUITABLE FOR ACCURATE APPLICATION BY APPROVED EQUIPMENT. MANURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR APPROVAL FROM THE APPROPRIATE APPROVAL AUTHORITY. FERTILIZERS SHALL ALL BE DELIVERED TO THE SITE FULLY LABELED ACCORDING TO THE APPLICABLE STATE FERTILIZER LAWS AND SHALL BEAR THE NAME, TRADE NAME OR TRADEMARK AND WARRANTEE OF THE PRODUCER.

III. LIME MATERIALS SHALL BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED) WHICH CONTAINS AT LEAST 50% TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE SHALL BE GROUND TO SUCH FINENESS THAT AT LEAST 50% WILL PASS THROUGH A #100 MESH SIEVE AND 98 - 100% WILL PASS THROUGH A #20 MESH SIEVE.

IV. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 - 5" OF SOIL BY DISKING OR OTHER SUITABLE MEANS.

C. SEEDBED PREPARATION

I. TEMPORARY SEEDING

A. SEEDBED PREPARATION SHALL CONSIST OF LOOSENING SOIL TO A DEPTH OF 3" TO 5" BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS OR CHISEL PLOWS OR RIPPERS MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENED IT SHOULD NOT BE ROLLED OR DRAGGED SMOOTH BUT LEFT IN THE ROUGHENED CONDITION. SLOPED AREAS (GREATER THAN 3:1) SHOULD BE TRACKED LEAVING THE SURFACE IN AN IRREGULAR CONDITION 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 - 5" OF SOIL BY DISKING OR OTHER SUITABLE MEANS.

II. PERMANENT SEEDING

A. MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT:

1. SOIL PH SHALL BE BETWEEN 6.0 AND 7.0
2. SOLUBLE SALTS SHALL BE LESS THAN 500 PARTS PER MILLION (PPM).
3. THE SOIL SHALL CONTAIN LESS THAN 40% CLAY BUT ENOUGH FINE GRAINED MATERIAL (> 30% SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTION IS IF LOVEGRASS OR SERECIA LESPEDEZA IS TO BE PLANTED, THEN AN SANDY SOIL (< 30% SILT PLUS CLAY) WOULD BE ACCEPTABLE.
4. SOIL SHALL CONTAIN 1/5% MINIMUM ORGANIC MATTER OF WEIGHT.
5. SOIL MUST CONTAIN SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.
6. IF THESE CONDITIONS CANNOT BE MET BY SOILS ON SITE, ADDING TOPSOIL IS REQUIRED IN ACCORDANCE WITH SECTION 21 STANDARD AND SPECIFICATION FOR TOPSOIL.

B. AREAS PREVIOUSLY GRADED IN CONFORMANCE WITH THE DRAWINGS SHALL BE MAINTAINED IN A TRUE AND EVEN GRADE, THEN SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 - 5" TO PERMIT BONDING OF THE TOPSOIL TO THE SURFACE AREA AND TO CREATE HORIZONTAL EROSION CHECK SLOTS TO PREVENT TOPSOIL FROM SLIDING DOWN A SLOPE.

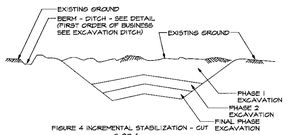


FIGURE 4 INCREMENTAL STABILIZATION - CUT
6-20-6

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.

C. APPLY SOIL AMENDMENTS AS PER SOIL TEST OR AS INCLUDED ON THE PLANS.

D. MIX SOIL AMENDMENTS INTO THE TOP 3 - 5" OF TOPSOIL BY DISKING OR OTHER SUITABLE MEANS. LAWN AREAS SHOULD BE RAKED TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. WHERE SITE CONDITIONS WILL NOTE PERMIT NORMAL SEEDBED PREPARATION, LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THE SURFACE. STEEP SLOPES (STEEPER THAN 3:1) SHOULD BE TRACKED BY A DOZER LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. THE TOP 1 -3" OF SOIL SHOULD BE LOOSE AND FRIABLE. SEEDBED LOOSENING MAY NOT BE NECESSARY ON NEWLY DISTURBED AREAS.

D. SEED SPECIFICATIONS

I. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED SHALL BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED SHALL HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON THIS JOB.

NOTE: SEED TAGS SHALL BE MADE AVAILABLE TO THE INSPECTOR TO VERIFY TYPE AND RATE OF SEED USED.

II. INOCULANT - THE INOCULANT FOR TREATING LEGUME SEED IN THE SEED MIXTURES SHALL BE A PURE CULTURE OF NITROGEN-FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS SHALL NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOCULANT AS DIRECTED ON 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 75-80° F. CAN WEAKEN BACTERIA AND MAKE THE INOCULANT LESS EFFECTIVE.

E. METHODS OF SEEDING

I. HYDROSEEDING: TO BE APPLIED ONLY ON SLOPES STEEPER THAN 3:1. APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER), BROADCAST OR DROP SEEDER, OR A CULTIPACKER SEEDER.

A. IF FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES AMOUNTS WILL NOT EXCEED THE FOLLOWING: NITROGEN; MAXIMUM OF 100 LBS. PER ACRE TOTAL OF SOLUBLE NITROGEN, P205 (PHOSPHOROUS): 200 LBS/AC; K20 (POTASSIUM): 200 LBS/AC.

B. 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.

C. SEED AND FERTILIZER SHALL BE MIXED ON SITE AND SEEDING SHALL BE DONE IMMEDIATELY AND WITHOUT INTERRUPTION.

II. DRY SEEDING: SHALL NOT BE PERMITTED ON THIS SITE.

III. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDER THAT APPLY AND COVER SEED WITH SOIL.

A. 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 PANTING.

B. WHERE PRACTICAL, SEED SHOULD BE APPLIED IN TWO DIRECTIONS PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.

F. MULCH SPECIFICATIONS (IN ORDER OF PREFERENCE)

I. STRAW SHALL CONSIST OF THOROUGHLY THRESHED WHEAT, RYE OR OAT STRAW, REASONABLY BRIGHT IN COLOR, AND SHALL NOT BE MUSTY, MOLDY, CAKED, DECAYED, OR EXCESSIVELY DUSTY AND SHALL BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW.

II. WOOD CELLULOSE FIBER MULCH (WCFM)

A. WCFM SHALL CONSIST OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.

B. WCFM SHALL 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.

C. WCFM, INCLUDING DYE, SHALL CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.

D. WCFM MATERIALS SHALL 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 HOMOGENOUS SLURRY. THE MULCH MATERIAL SHALL FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND SHALL COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.

E. WCFM MATERIAL SHALL CONTAIN NO ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC.

F. WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIRES: FIBER LENGTH TO APPROXIMATELY 10 MM, DIAMETER APPROXIMATELY 1 MM, PH RANGE OF 4.0 TO 8.5, AS CONTENT OF 1.6% MAXIMUM AND WATER HOLDING CAPACITY OF 90% MINIMUM.

NOTE: ONLY STERILE STRAW MULCH SHOULD BE USED IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED.

G. MULCHING SEEDED AREAS - MULCH SHALL BE APPLIED TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.

I. IF GRADING IS COMPLETED OUTSIDE OF THE SEEDING SEASON, MULCH ALONE SHALL BE APPLIED AS PRESCRIBED IN THIS SECTION AND MAINTAINED UNTIL THE SEEDING SEASON RETURNS AND SEEDING CAN BE PERFORMED IN ACCORDANCE WITH THESE SPECIFICATIONS.

II. WHEN STRAW MULCH IS USED, IT SHALL BE SPREAD OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS/ACRES. MULCH SHALL BE APPLIED TO A UNIFORM LOOSE DEPTH OF BETWEEN 1" AND 2". MULCH APPLIED SHALL ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED. IF A MULCH ANCHORING TOOL IS TO BE USED, THE RATE SHOULD BE INCREASED TO 2.5 TONS/ACRE.

III. WOOD CELLULOSE FIBER USED AS A MULCH SHALL BE APPLIED AT A NET DRY WEIGHT OF 1,500 LBS. PER ACRES. THE WOOD CELLULOSE FIBER SHALL BE MIXED WITH WATER, AND THE MIXTURE SHALL CONTAIN A MAXIMUM OF 50 LBS. OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.

H. SECURING STRAW MULCH (MULCH ANCHORING): MULCH ANCHORING SHALL BE PERFORMED IMMEDIATELY FOLLOWING MULCH APPLICATION TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE), DEPENDING UPON SIZE OF 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 TWO (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 BE USED ON THE CONTOUR IF POSSIBLE.

II. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. THE FIBER BINDER SHALL BE APPLIED AT A NET DRY WEIGHT OF 750 POUNDS/ACRES. THE WOOD CELLULOSE FIBER SHALL BE MIXED WITH WATER AND THE MIXTURE SHALL CONTAIN A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.

III. APPLICATION OF LIQUID BINDERS SHOULD BE HEAVIER AT THE EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF BANKS. THE REMAINDER OF AREA SHOULD BE APPEAR UNIFORM AFTER BINDER APPLICATION. SYNTHETIC BINDERS - SUCH AS ACRYLIC DLR (AGRO-TACK), DCA-70, PETROSET, TERRA TAX II, TERRA TACK AR OR OTHER APPROVED EQUAL MAY BE USED AT RATES RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH.

IV. LIGHTWEIGHT: PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4' TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG.

I. INCREMENTAL STABILIZATION - CUT SLOPES

I. ALL CUT SLOPES SHALL BE DRESSED, PREPARED, SEEDED AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE EXCAVATED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 15'.

II. CONSTRUCTION SEQUENCE (REFER TO FIGURE 4, PAGE 6-20-6):

A. EXCAVATE AND STABILIZE ALL TEMPORARY SWALES, SIDE DITCHES, OR BERMS THAT WILL BE USED TO CONVEY RUNOFF FROM THE EXCAVATION.

B. PERFORM PHASE 1 EXCAVATION, DRESS, AND STABILIZE.

C. PERFORM PHASE 2 EXCAVATION, DRESS, AND STABILIZE. OVERSEED PHASE 1 AREAS AS NECESSARY.

D. PERFORM FINAL PHASE EXCAVATION, DRESS, AND STABILIZE. OVERSEED PREVIOUSLY SEEDED AREAS AS NECESSARY.

J. INCREMENTAL STABILIZATION OF EMBANKMENTS - FILL SLOPES

I. EMBANKMENTS SHALL BE CONSTRUCTED IN LIFTS AS PRESCRIBED ON THE PLANS.

II. SLOPES SHALL BE STABILIZED IMMEDIATELY WHEN THE VERTICAL HEIGHT OF THE MULTIPLE LIFTS REACHES 15', OR WHEN THE GRADING OPERATION CEASES AS PRESCRIBED IN THE PLANS.

III. AT THE END OF EACH DAY, TEMPORARY BERMS AND PIPE SLOPE DRAINS SHOULD BE CONSTRUCTED ALONG THE TOP EDGE OF THE EMBANKMENT TO INTERCEPT SURFACE RUNOFF AND CONVEY IT DOWN THE SLOPE IN A NON-EROSIVE MANNER TO A SEDIMENT TRAPPING DEVICE.

IV. CONSTRUCTION SEQUENCE: REFER TO FIGURE 4, PAGE 6-20-7.

A. EXCAVATE AND STABILIZE ALL TEMPORARY SWALES, SIDE DITCHES, OR BERMS THAT WILL BE USED TO DIVERT RUNOFF AROUND THE FILL. CONSTRUCT SLOPE SILT FENCE ON LOW SIDE OF FILL AS SHOWN IN FIGURE 5, UNLESS OTHER METHODS SHOWN ON THE PLANS ADDRESS THIS AREA.

B. PLACE PHASE 1 EMBANKMENT, DRESS AND STABILIZE.

C. PLACE PHASE 2 EMBANKMENT, DRESS AND STABILIZE.

D. PLACE FINAL PHASE EMBANKMENT, DRESS 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.

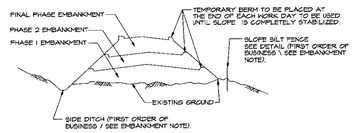


FIGURE 5 INCREMENTAL STABILIZATION - FILL
6-20-7

SECTION II- TEMPORARY SEEDING

VEGETATION - ANNUAL GRASS OR GRAIN USED TO PROVIDE COVER ON DISTURBED AREAS FOR UP 12 MONTHS. FOR LONGER DURATION OF VEGETATIVE COVER, PERMANENT SEEDING IS REQUIRED.

A. SEED MIXTURES - TEMPORARY SEEDING

I. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE 26 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE 5) AND ENTER THEM IN THE TEMPORARY SEEDING SUMMARY, PAGE 6-20-9, ALONG WITH APPLICATION RATES, SEEDING DATES AND SEEDING DEPTHS. IF THIS SUMMARY IS NOT PUT ON THE PLANS AND COMPLETED, THEN TABLE 26 MUST BE PUT ON THE PLANS.

II. FOR SITES HAVING SOIL TESTS PERFORMED, THE RATES SHOWN ON THIS TABLE SHALL BE DELETED AND THE RATES RECOMMENDED BY THE TESTING AGENCY SHALL BE WRITTEN IN. SOIL TESTS ARE NOT REQUIRED FOR TEMPORARY SEEDING.

TEMPORARY SEEDING SUMMARY

SEED MIXTURE (HARDINESS ZONE 7A)					FERTILIZER RATE	LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/1000 SF)	SEEDING DATES	SEEDING DEPTHS		
1	ITALIAN PERENNIAL RYE GRASS, OR MILLET	8	SPRING: MARCH 15- MAY 15 FALL: AUGUST 15- NOVEMBER 15	NOT MORE THAN 1/4"	FERTILIZER SHALL, AT A MINIMUM, CONTAIN THE FOLLOWING PERCENTAGES OF AVAILABLE PLANT NUTRIENTS: 16% N, 24% P, 12% K, 50% SCU APPLIED AT A RATE OF 90 LBS/1000 SQUARE FEET OF LAWN, OR AS DIRECTED IN ACCORDANCE WITH SOIL TEST ANALYSIS	50 LB / 1000 SF, OR AS DIRECTED IN ACCORDANCE WITH SOIL TEST ANALYSIS
2	MARYLAND STATE HIGHWAY TEMPORARY MIXTURE 65% BARLEY OR WINTER RYE 35% MILLET					

SECTION III - PERMANENT SEEDING

SEEDING GRASS AND LEGUMES TO ESTABLISH GROUND COVER FOR A MINIMUM PERIOD OF ONE YEAR ON DISTURBED AREAS GENERALLY RECEIVING LOW MAINTENANCE.

A. SEED MIXTURES - PERMANENT SEEDING

I. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE 25 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE 5) AND ENTER THEM IN THE PERMANENT SEEDING SUMMARY BELOW, ALONG WITH APPLICATION RATES AND SEEDING DATES. SEEDING DEPTHS CAN BE ESTIMATED USING TABLE 26. IF THIS SUMMARY IS NOT PUT ON THE CONSTRUCTION PLANS AND COMPLETED, THEN TABLE 25 MUST BE PUT ON THE PLANS. 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-SCS TECHNICAL FIELD OFFICE GUIDE, SECTION 342 - CRITICAL AREA PLANTING. FOR SPECIAL LAWN MAINTENANCE AREAS, SEE SECTIONS III SOD AND II TURFGRASS.

II. FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, THE RATES SHOWN ON THIS TABLE SHALL BE DELETED AND THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY SHALL BE WRITTEN IN. (46-0-0) AT 3.5 LBS/1000 S.F. (150 LBS/AC), IN ADDITION TO THE ABOVE SOIL AMENDMENTS SHOWN IN THE TABLE, PAGE 6-20-9, TO BE PERFORMED AT THE TIME OF SEEDING.

PERMANENT SEEDING SUMMARY

SEED MIXTURE (HARDINESS ZONE 7A)					FERTILIZER RATE	LIME RATE
NO.	SPECIES	APPLICATION RATE (LB /1000 SF)	SEEDING DATES	SEEDING DEPTHS		
1	TURF TYPE TALL FESCUE (90%-95%) KENTUCKY BLUE GRASS (5%-10%)	8	SPRING: MARCH 15- MAY 15 FALL: AUGUST 15- NOVEMBER 15	NOT MORE THAN 1/4"	FERTILIZER SHALL, AT A MINIMUM, CONTAIN THE FOLLOWING PERCENTAGES OF AVAILABLE PLANT NUTRIENTS: 16% N, 24% P, 12% K, 50% SCU APPLIED AT A RATE OF 90 LBS/1000 SQUARE FEET OF LAWN, OR AS DIRECTED IN ACCORDANCE WITH SOIL TEST ANALYSIS	50 LB / 1000 SF, OR AS DIRECTED IN ACCORDANCE WITH SOIL TEST ANALYSIS

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

A. GENERAL SPECIFICATIONS

I. CLASS OF TURFGRASS SOD SHALL BE MARYLAND OR VIRGINIA STATE CERTIFIED OR APPROVED. SOD LABELS SHALL BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR.

II. SOD SHALL BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3", PLUS OR MINUS 1/2", AT THE TIME OF CUTTING. MEASUREMENT FOR THICKNESS SHALL EXCLUDE TOP GROWTH AND THATCH. INDIVIDUAL PIECES OF SOD SHALL BE CUT TO THE SUPPLIERS WIDTH AND LENGTH. MAXIMUM ALLOWABLE DEVIATION FROM STANDARD WIDTHS AND LENGTHS SHALL BE 5 PERCENT. BROKEN PADS AND TORN OR UNEVEN ENDS WILL NOT BE ACCEPTABLE.

III. STANDARD SIZE SECTIONS OF SOD SHALL 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.

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

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

B. SOD INSTALLATION

I. DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, THE SUBSOIL SHALL BE LIGHTLY IRRIGATED IMMEDIATELY PRIOR TO LAYING THE SOD.

II. THE FIRST ROW OF SOD SHALL BE LAID IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO AND TIGHTLY WEDGED AGAINST EACH OTHER. LATERAL JOINTS SHALL BE STAGGERED 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.

III. WHEREVER POSSIBLE, SOD SHALL BE LAID WITH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERING JOINTS. SOD SHALL BE ROLLED AND TAMPED, PEGGED OR OTHERWISE SECURED TO PREVENT SLIPPAGE ON SLOPES AND TO ENSURE SOLID CONTACT BETWEEN SOD ROOTS AND THE UNDERLYING SOIL SURFACE.

IV. SOD SHALL BE WATERED IMMEDIATELY FOLLOWING ROLLING OR TAMPING UNTIL THE UNDERSIDE OF THE NEW SOD PAD AND SOIL SURFACE BELOW THE SOD ARE THOROUGHLY WET. THE OPERATIONS OF LAYING, TAMPING AND IRRIGATING FOR ANY PIECE OF SOD SHALL BE COMPLETED WITHIN EIGHT HOURS.

C. SOD MAINTENANCE

I. IN THE ABSENCE OF ADEQUATE RAINFALL, WATERING SHALL BE PERFORMED DAILY OR AS OFTEN AS NECESSARY DURING THE FIRST WEEK AND IN SUFFICIENT QUANTITIES TO MAINTAIN MOIST SOIL TO A DEPTH OF 4". WATERING SHOULD BE DONE DURING THE HEAT OF THE DAY TO PREVENT WILTING.

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

III. THE FIRST MOWING OF SHOULD NOT BE ATTEMPTED UNTIL THE SOD IS FIRMLY ROOTED. NO MORE THAN 1/3 OF THE GRASS LEAF SHALL BE REMOVED BY THE INITIAL CUTTING OR SUBSEQUENT CUTTINGS. GRASS HEIGHT SHALL BE MAINTAINED BETWEEN 2" AND 3" UNLESS OTHERWISE SPECIFIED.

SECTION IV- TURFGRASS ESTABLISHMENT

AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANCE. AREAS TO RECEIVE SEED SHALL BE TILLED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES, LEVELED AND RAKED TO PREPARE A PROPER SEEDBED. STONES AND DEBRIS OVER 1.5 INCHES IN DIAMETER SHALL BE REMOVED. THE RESULTING SEEDBED SHALL BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL POSE NO DIFFICULTY.

NOTE: 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.

A. TURFGRASS MIXTURES

I. KENTUCKY BLUEGRASS - FULL SUN MIXTURE - FOR USE IN AREAS THAT RECEIVE INTENSIVE MANAGEMENT. IRRIGATION REQUIRED IN THE AREAS OF CENTRAL MARYLAND AND EASTERN SHORE. RECOMMENDED CERTIFIED KENTUCKY BLUEGRASS CULTIVARS SEEDING RATE: 1.5 TO 2.0 POUNDS/1000 SQUARE FEET. A MINIMUM OF THREE BLUEGRASS CULTIVARS SHOULD BE CHOSEN RANGING FROM A MINIMUM OF 10% TO A MAXIMUM OF 35% OF THE MIXTURE BY WEIGHT.

II. KENTUCKY BLUEGRASS/PERENNIAL RYE - FULL SUN MIXTURE - FOR USE WHEN TURF WILL RECEIVE MEDIUM TO INTENSIVE MANAGEMENT. CERTIFIED PERENNIAL RYEGRASS CULTIVARS/CERTIFIED KENTUCKY BLUEGRASS SEEDING RATE: 2 POUNDS MIXTURE/ 1000 SQUARE FEET. A MINIMUM OF 3 KENTUCKY BLUEGRASS CULTIVARS MUST BE CHOSEN, WITH EACH CULTIVAR RANGING FROM 10% TO 35% OF THE MIXTURE BY WEIGHT.

III. TALL FESCUE/KENTUCKY BLUEGRASS - FULL SUN MIXTURE - FOR USE IN DROUGHT PRONE AREAS AND/OR FOR AREAS RECEIVING LOW TO MEDIUM MANAGEMENT IN FULL SUN TO MEDIUM SHADE. RECOMMENDED MIXTURE INCLUDES; CERTIFIED TALL FESCUE CULTIVARS 95 - 100%, CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 0 - 5%. SEEDING RATE: 5 TO 8 LB/ 1000 S.F. 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 30-40% AND CERTIFIED FINE FESCUE AND 60-70%. SEEDING RATE: 1.5- 3 LBS/1000 SQUARE FEET. A MINIMUM OF 3 KENTUCKY BLUEGRASS CULTIVARS MUST BE CHOSEN, WITH EACH

NOTE: TURFGRASS VARIETIES SHOULD BE SELECTED FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND PUBLICATION, AGRONOMY MIMEO #77, "TURFGRASS CULTIVAR RECOMMENDATIONS FOR MARYLAND".

CULTIVAR RANGING FROM A MINIMUM OF 10% TO A MAXIMUM OF 35% OF THE MIXTURE BY WEIGHT.

B. IDEAL TIMES OF SEEDING

WESTERN MD: MARCH 15-JUNE 1, AUGUST 1- OCTOBER 1 (HARDINESS ZONES - 5B, 6A)
CENTRAL MD: MARCH 1- MAY 15, AUGUST 15 - OCTOBER 15 (HARDINESS ZONE -6B)
SOUTHERN MD EASTERN SHORE: MARCH 1- MAY 15, AUGUST 15 - OCTOBER 15 (HARDINESS ZONE - 7A, 7B)

C. IRRIGATION

IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (1/2" - 1" 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.

D. REPAIRS AND MAINTENANCE

INSPECT ALL SEEDED AREAS FOR FAILURES AND MAKE NECESSARY REPAIRS, REPLACEMENTS, AND RESEEDINGS WITHIN THE PLANTING SEASON.

I. ONCE THE VEGETATION IS ESTABLISHED, THE SITE SHALL HAVE 95% GROUNDCOVER TO BE CONSIDERED ADEQUATELY STABILIZED.

II. IF THE STAND PROVIDES LESS THAT 40% GROUND COVERAGE, REESTABLISH F

TOPSOIL STANDARDS AND SPECIFICATIONS

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 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 TO THE PLACEMENT OF TOPSOIL. LIME SHALL BE DISTURBED
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:
I. 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 1.5" IN DIAMETER.
II. TOPSOIL MUST BE FREE OF PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACKGRASS, JOHNSONGRASS, NUTSEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.
III. 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 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL. LIME SHALL BE DISTRIBUTED UNIFORMLY OVER DESIGNATED AREAS AND WORKED INTO THE SOIL IN CONJUNCTION WITH TILLAGE OPERATIONS AS DESCRIBED IN THE FOLLOWING PROCEDURES.
III. FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES:
I. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION - SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS.
IV. FOR SITE HAVING DISTURBED AREAS OVER 5 ACRES:
I. ON SOIL MEETING TOPSOIL SPECIFICATIONS, OBTAIN TEST RESULTS DICTATING FERTILIZER AND LIME AMENDMENTS REQUIRED TO BRING THE SOIL INTO COMPLIANCE WITH THE FOLLOWING:
A. 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.
B. ORGANIC CONTENT OF TOPSOIL SHALL BE NOT LESS THAN 1.5 PERCENT BY WEIGHT.
C. TOPSOIL HAVING SOLUBLE SALT CONTENT GREATER THAN 500 PARTS PER MILLION SHALL NOT BE USED.
D. 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.
E. 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 I - VEGETATIVE STABILIZATION METHODS AND MATERIALS.

24.0 MATERIALS AND SPECIFICATIONS
TABLE 27 GEOTEXTILE FABRICS

CLASS	APPARENT OPENING SIZE MM. MAX.	GRAB TENSILE STRENGTH LB. MIN.	BURST STRENGTH PSI MIN.
A	0.30**	250	500
B	0.60	200	320
C	0.30	200	320
D	0.60	90	145
E	0.30	90	145
F (SILT FENCE)	0.40 - 0.80 *	90	190

* US STD. SIEVE CW-02215 ** .50 MM. MAX. FOR SUPER SILT FENCE
THE PROPERTIES SHALL BE DETERMINED IN ACCORDANCE WITH THE FOLLOWING PROCEDURES:
- APPARENT OPENING SIZE MSMT 323

-GRAB TENSILE STRENGTH ASTM D 1682 4"x8" SPECIMEN 1"x2" CLAMPS, 12"/ MIM. STRAIN RATE IN BOTH PRINCIPAL DIRECTIONS OF GEOTEXTILE FABRIC.

-BURST STRENGTH ASTM D 3786

THE FABRIC SHALL BE INERT TO COMMONLY ENCOUNTERED CHEMICALS AND HYDRCARBONS, AND WILL BE ROT AND MILDEW RESISTANT. IT SHALL BE MANUFACTTURED FROM FIBERS CONSISTING OF LONG CHAIN SYNTHTIC POLYMERS, AND COMPOSED OF A MINIMUM OF 85% BY WEIGHT OF POLYOLEPHINS, POLYESTERS, OR POLYAMIDES. THE GEOTEXTILE FABRIC SHALL RESIST DETERIORATION FROM ULTRAVIOLET EXPOSURE.
IN ADDITION CLASSES A THROUGH E SHALL HAVE A 0.01 CM/SEC MINIMUM PERMEABILITY WHEN TESTED IN ACCORDANCE WITH MSMT 507, AND AN APPARENT MINIMUM ELONGATION OF 20 PERCENT (20%) WHEN TESTED IN ACCORDANCE WITH THE GRAB TENSILE STRENGTH REQUIREMENTS LISTED ABOVE.
SILT FENCE
CLASS F GEOTEXTILE FABRICS FOR SILT FENCE SHALL HAVE A 50LB./IN. MINIMUM TENSILE STRENTH AND A 20 LB/IN MINIMUM TENSILE MODULUS WHEN TESTED IN ACCORDANCE WITH MSMT 509. MATERIAL SHALL ALSO HAVE A 0.3 GAL./FT.SQUARED/MIN. FLOW RATE AND SEVENTY-FIVE PERCENT (75%) MINIMUM FILTERING EFFICIENCY WHEN TESTED IN ACCORDANCE WITH MSMT 322.
GEOTEXTILE FABRICS USED IN THE CONSTRUCTION OF THE SILT FENCE SHALL RESIST DETERIORATION FROM ULTRAVIOLET EXPOSURE. THE FABRIC SHALL CONTAIN SUFFICIENT AMOUNTS OF ULTRAVIOLET RAY INHIBITORS AND STABILIZERS TO PROVIDE A MINIMUM OF 12 MOUNTHS OF EXPECTED USABLE CONSTRUCTION LIFE AT A TEMPERTURE RANGE OF 0 TO 120 DEGREES F.

V. 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 DISTRIBUTED 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.

VI. 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 PRESCRIBE AMENDMENTS AND FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

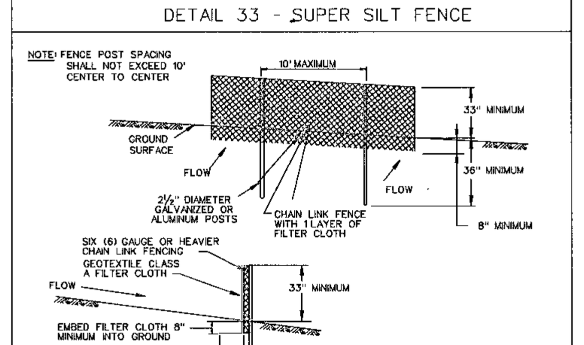
A. COMPOSTED SLUDGE SHALL BE SUPPLIED BY, OR ORIGINATE FROM, A PERSON OR PERSONS THAT ARE PERMITTED (AT THE TIME OF ACQUISITION OF THE COMPOST) BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT UNDER COMAR 26.04.06.

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 SQUARE FEET.

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

DETAIL 33 - SUPER SILT FENCE



Construction Specifications

1. Fencing shall be 42 inches in height and constructed in accordance with the latest Maryland State Highway (SHA) Details for Chain Link Fencing. The (SHA) specification for a 6 foot fence shall be used, substituting 42 inch fabric and 6 foot length posts.

2. The posts do not need to be set in concrete.

3. Chain link fence shall be fastened securely to the fence posts with wire ties or staples. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence. The chain link fencing shall be six (6) gauge or heavier.

4. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.

5. Filter cloth shall be embedded a minimum of 8" into the ground.

6. When two sections of geotextile fabric adjoin each other, they shall be overlapped by 6" and folded.

7. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	MODIFIED	

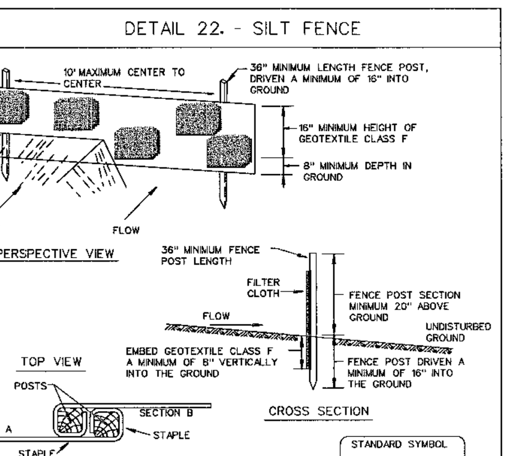
SUPER SILT FENCE

Design Criteria

Slope	Slope Steepness	Slope Length (maximum)	Silt Fence Length (maximum)
0 - 10%	0 - 10:1	Unlimited	Unlimited
10 - 20%	10:1 - 5:1	200 feet	1,500 feet
20 - 33%	5:1 - 3:1	100 feet	1,000 feet
33 - 50%	3:1 - 2:1	100 feet	500 feet
50% +	2:1 +	50 feet	250 feet

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE H - 26 - 3A	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 22. - SILT FENCE



Construction Specifications

1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 1½" x 1½" square (minimum) cut, or 1¾" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighting not less than 1.00 pond per linear foot.

2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft²/ minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.

4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

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SILT FENCE

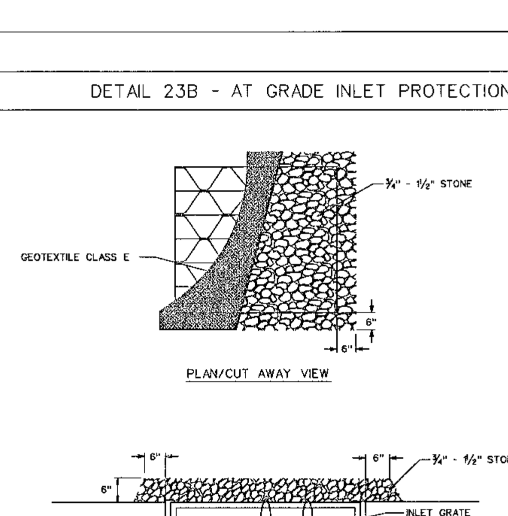
Silt Fence Design Criteria

Slope Steepness	(Maximum) Slope Length	(Maximum) Silt Fence Length
Flatter than 50:1	unlimited	unlimited
50:1 to 10:1	125 feet	1,000 feet
10:1 to 5:1	100 feet	750 feet
5:1 to 3:1	60 feet	500 feet
3:1 to 2:1	40 feet	250 feet
2:1 and steeper	20 feet	125 feet

Note: In areas of less than 2% slope and sandy soils (USDA general classification system, soil Class A) maximum slope length and silt fence length will be unlimited. In these areas a silt fence may be the only perimeter control required.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE E - 45 - 3A	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 23B - AT GRADE INLET PROTECTION



Construction Specifications

1. Lift grate and wrap with Geotextile Class E to completely cover all openings, then set grate back in place.

2. Place ¾" to 1½" stone, 4"-6" thick on the grate to secure the fabric and provide additional filtration.

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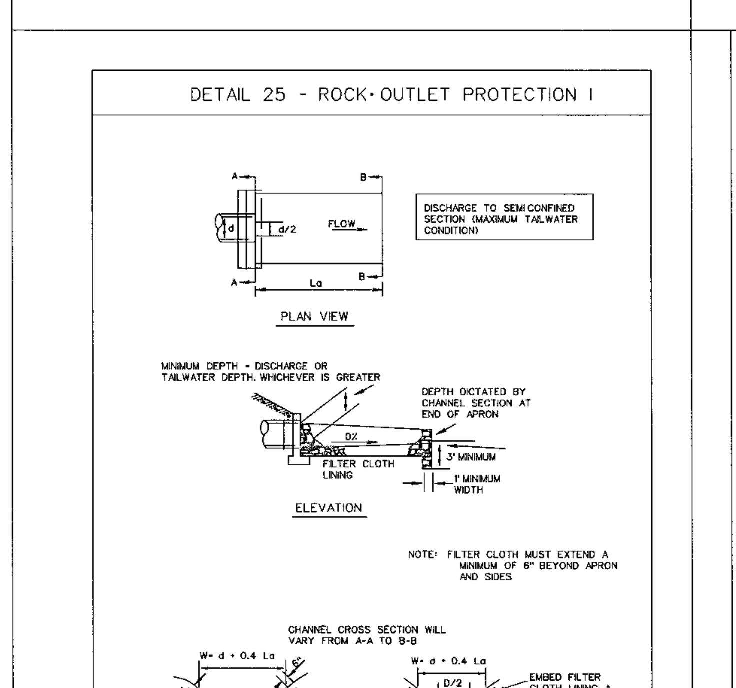
DETAIL 25 - ROCK OUTLET PROTECTION I



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ROCK OUTLET PROTECTION I

Construction Specifications

1. The subgrade for the filter, rip-rap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.

2. The rock or gravel shall conform to the specified grading limits when installed respectively in the rip-rap or filter.

3. Geotextile shall be protected from punching, cutting, or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of geotextile over the damaged part or by completely replacing the geotextile. All overlaps whether for repairs or for joining two pieces of geotextile shall be a minimum of one foot.

4. Stone for the rip-rap or gabion outlets may be placed by equipment. They shall be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The stone for rip-rap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogeneous with the smaller stones and spalls filling the voids between the larger stones. Rip-rap shall be placed in a manner to prevent damage to the filter blanket or geotextile. Hand placement will be required to the extent necessary to prevent damage to the permanent works.

5. The stone shall be placed so that it blends in with the existing ground. If the stone is placed too high then the flow will be forced out of the channel and scour adjacent to the stone will occur.

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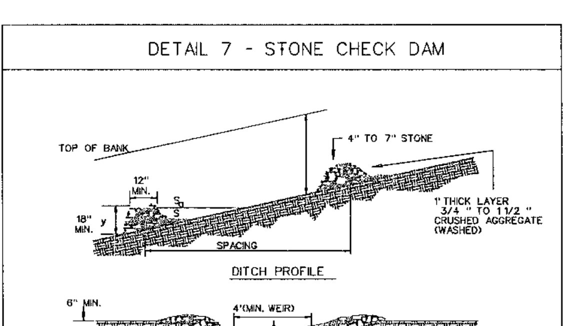
DETAIL 7 - STONE CHECK DAM



STANDARD STONE CHECK DAM DESIGN

SLOPE	SPACING
2% or less	80'
2.1% to 4%	40'
4.1% to 7%	25'
7.1% to 10%	15'
over 10%	use lined waterway design

Construction Specifications

1. Swales and ditches shall be prepared in accordance with the construction specifications described in Section A-2, Standards and Specifications for Temporary Swale.

2. The check dam shall be constructed of 4"-7" stone. The stone shall be placed so that it completely covers the width of the channel and keyed into the channel banks.

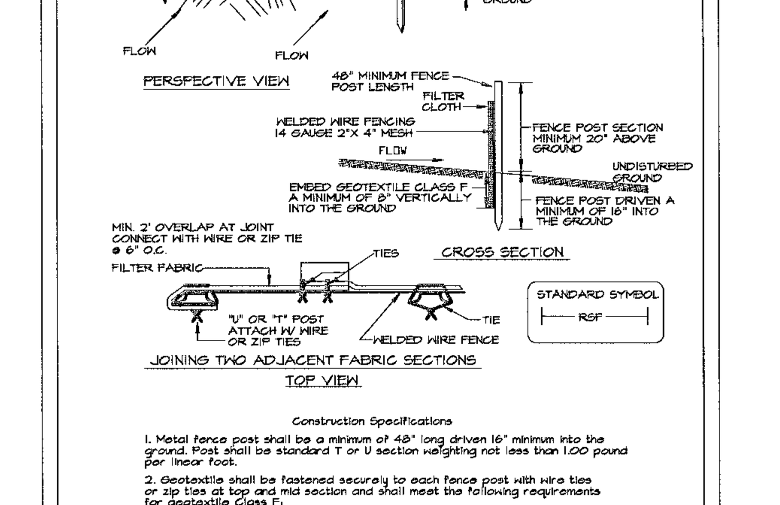
3. The top of the check dam shall be constructed so the the center is approximately 6" lower than the outer edges, forming a weir that water can flow across.

4. The maximum height of the check dam at the center shall not exced 2".

5. The upstream side of the check dam shall be lined with approximately 1" of 3/4 " to 1 1/2 " crushed aggregate.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE B - 8 - 5	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 22A-REINFORCED SILT FENCE APPROVED BY MDE 2-7-05



Construction Specifications

1. Metal fence post shall be a minimum of 48" long driven 16" minimum into the ground. Post shall be standard T or U section weighting not less than 1.00 pound per linear foot.

2. Geotextile shall be fastened securely to each fence post with wire ties or zip ties at top and mid section and shall meet the following requirements for geotextile Class F:

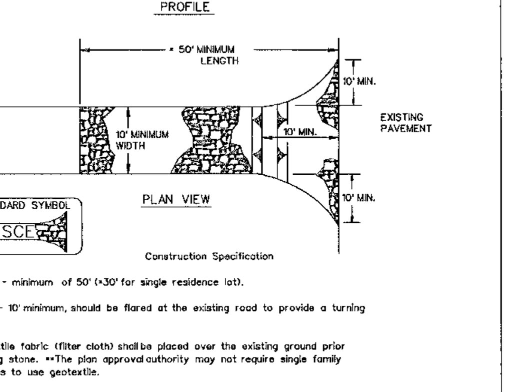
Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft²/ minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and wired tied or zip tied to prevent sediment bypass.

4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE E - 15 - 3B	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



Construction Specification

1. Length - minimum of 50' (*30' for single residence lot).

2. Width - 10' minimum, should be flared at the existing road to provide a turning radius.

3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family residences to use geotextile.

4. Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.

5. Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.

6. Location - A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

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STABILIZED CONSTRUCTION ENTRANCE

Construction Specification

1. Length - minimum of 50' (*30' for single residence lot).

2. Width - 10' minimum, should be flared at the existing road to provide a turning radius.

3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family residences to use geotextile.

4. Stone - crushed aggregate (2" to 3"), or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.

5. Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.

6. Location - A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F - 47 - 3A	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

GENERAL NOTES

1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (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 SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.

3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, B) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.

4. ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL I, CHAPTER 12 OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.

5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC. 51), SOD (SEC. 54), TEMPORARY SEEDING (SEC. 50) AND MULCHING (SEC. 52). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.

6. 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.

7. SITE ANALYSIS:

TOTAL AREA OF SITE:	46.57 ACRES
AREA DISTURBED:	3.74 ACRES
AREA TO BE ROOFED OR PAVED:	0.26 ACRES
AREA TO BE VEGETATIVELY STABILIZED:	1.40ACRES
TOTAL CUT:	2328 CU. YDS.
TOTAL FILL:	2328 CU. YDS.
OFFSITE WASTE/BORROW AREA LOCATION:	0 CU. YDS.

8. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.

9. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

10. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.

11. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORK DAY, WHICHEVER IS SHORTER.

AS-BUILT CERTIFICATION FOR PSWM
Note: There is no "AS BUILT" information provided on this sheet.
CHARLES J. CROVO, SR. NO.13204 5/31/11
Date

BY THE DEVELOPER:

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, 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 INSPECTIONS BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.

5/24/11
SCOTT WASHINGTON DATE
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM

BY THE ENGINEER:

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

5/20/11
ENGINEER DATE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
Approved 5.24.11
Howard S.C.D. Date

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

REVISION 7/1/16
FISHER COLLINS & CARTER INC.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	6/2/11 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT	6/06/11 DATE
DIRECTOR	6/6/11 DATE

SEAL: STATE OF MARYLAND JAMES C. HANKINSON No. 36361 PROFESSIONAL ENGINEER

(REVISED)
EROSION AND SEDIMENT CONTROL NOTES AND DETAILS
BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

ZONED R-20
TAX MAP No. 47, GRID 5, PARCEL 25
ELECTION DISTRICT 06
8200 SAVAGE GUILFORD ROAD
JESSUP, MD 20794

17

ISSUE DATE: 03-10-11
SHEET 17 OF 40

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. 36361 EXPIRATION DATE: 10-20-12

Drafting	TDB	DATE	REVISIONS
Check	JCH	05/20/11	REVISED SITE DEVELOPMENT PLAN
Design	BES	7-1-16	REVISED SHEET NUMBER
Check	NCW		

KCI TECHNOLOGIES
ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818
www.kci.com

OWNER
SCOTT WASHINGTON
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
10910 ROUTE 108
ELLICOTT CITY, MD 21042
PHONE: (410) 313-6807

DEVELOPER
SCOTT WASHINGTON
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
10910 ROUTE 108
ELLICOTT CITY, MD 21042
PHONE: (410) 313-6807

gilbert
Gilbert Architects Inc.
10451 Mill Run Circle , Suite 400
Owings Mills, MD 21117
P: 410.356.8856 F: 410.654.8802
626 North Charlotte Street
Lancaster, PA17603
P: 717.291.1077 F: 717.392.3923
29L Atlantic Avenue #150
Ocean View, DE 19970
P: 302.449.2492 F: 302.449.2493

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

COUNTY FILE # SDP-87-96

PLOTTED: "08:14 AM on Tuesday, May 24, 2011"
BY: Bernard Spielman Division: P086 Land Develop GMA Emp
FILE: M:\2010\27100577\drawings\C-09_ESC_DETS.dgn

SEDIMENT AND EROSION CONTROL NOTES

1. A minimum of 24 hours notice must be given to the Howard County Office of Inspection and Permits 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 1983 MARYLAND STANDARDS AND SPECS. FOR SOIL EROSION AND SEDIMENT CONTROL.
3. Following initial soil disturbance or redisturbance, permanent or temporary stabilization shall be completed within: a) 7 calendar days for all perimeter sediment control stuctures, dikes, perimeter slopes and all slopes greater than 3:1, b) 14 days as to all other disturbed or graded areas on the project site.
4. All sediment traps/basins shown must be fenced and warning signs posted around their perimeters in accordance with Vol.1, Chapter 12, of the HOWARD COUNTY DESIGN MANUAL, Storm Drainage.
5. All disturbed areas must be stabilized within the time period specified above in accordance with the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seedings (Sec.51) sod (Sec.54), temporary seeding (Sec.50) and mulching (Sec 52). Temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.
6. 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.
7. SITE ANALYSIS:

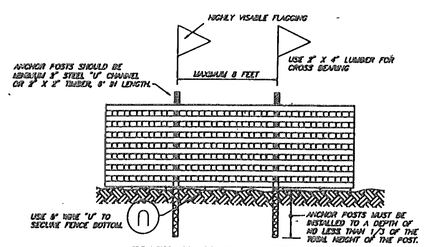
Total Area of Site:	46.05 Ac
Area Disturbed:	1.35 Ac
Area to be roofed or paved:	0.60 Ac
Area to be vegetatively stabilized:	0.75 Ac
Total Cut:	900 c.y.
Total Fill:	900 c.y.
Offsite Waste/Borrow Area Location:	*

8. Any sediment control practice which is disturbed by grading actively for placement of utilities must be repaired on the same day of disturbance.
9. Additional sediment control must be provided, if deamed necessary by the Howard County DPW Sediment Control Inspector.
10. On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.

11. All pipes to be blocked at the end of each day (see detail this sheet)
12. The total amount of silt fence= 600 l.f.

* It is the responsibility of the contractor to identify the spoil/borrow site and notify and gain approval from the sediment control inspector of the site and it's grading permit number at the time of construction.

CONSTRUCTION SEQUENCE:	NO. OF DAYS
1 Obtain grading permit	7
2 Install tree protection fence.	7
3 Install sediment and erosion control devices and stabilize.	14
4 Excavate for foundations, rough grade and temporarily stabilize.	30
5 Construct structures, sidewalks and driveways.	60
6 Final grade and stabilize in accordance with Stds. and Specs.	14
7 Upon approval of the sediment control inspector, remove sediment and erosion control devices and stabilize.	7



BLAZE ORANGE PLASTIC MESH TYPICAL TREE PROTECTION FENCE DETAIL

NO SCALE

NOTES:
1. Forest protection devices only.
2. Retention area will be set as part of the review process.
3. Boundaries of retention area should be staked and flagged prior to installing device.
4. Root damage should be avoided.
5. Protection signage may also be used.
6. Device should be maintained throughout construction.

PERMANENT SEEDING NOTES

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

SEEDBED PREPARATION: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding, if not previously loosened.

SOIL AMENDMENTS: In lieu of soil test recommendations, use one of the following schedules:
1) Preferred- Apply 2 tons per acre dolomitic limestone (92 lbs/1000 sqft.) and 600 lbs per acre 10-10-10 fertilizer (14 lbs./1000 sq.ft.) before seeding. Harrow or disc into upper three inches of soil. At the time of seeding, apply 400 lbs per acre 30-0-0 ureaform fertilizer (9 lbs/1000 sq.ft.)

2) Acceptable- Apply 2 tons per acre dolomatic limestone (92 lbs/1000 sq ft.) and 1000 lbs. per acre 10-10-10- fertilizer (23 lbs./1000 sq ft.) before seeding. Harrow or disc into upper three inches of soil.

SEEDING: For the periods March 1 thru April 30, and August 1 thru October 15, seed with 60lbs per acre (1.4 lbs/1000 sq ft) of Kentucky 31 Tall Fescue. For the period May 1 thru July 31, seed with 60 lbs. Kentucky 31 Tall Fescue per acre and 2 lbs per acre (.05 lbs/1000 sq ft) of weeping lovegrass. During the period of October 16 thru February 28, protect site by: Option (1) 2 tons per acre well anchored straw mulch and seed as soon as possible in the spring. Option (2) Use sod. Option (3) Seed with 60 lbs/acre Kentucky 31 Tall Fescue and mulch with 2 tons/acre well anchored straw.

MULCHING: Apply 1 1/2 to 2 tons per acre (70 to 90 lbs/1000 sq ft) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5 gal/1000 sq ft) of emulsified asphalt on flat areas. On slopes 8 feet or higher, use 348 gallons per acre (8 gal/1000 sq ft) for anchoring.

MAINTENANCE: Inspect all seeded areas and make needed repairs, replacements and reseedings.

TEMPORARY SEEDING NOTES

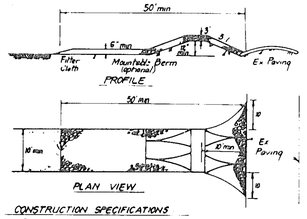
SEEDBED PREPARARTION: Loosen upper three inches of soil by raking, discing,or other acceptable means before seeding, if not previously loosened.

SOIL AMENDMENTS: Apply 600 lbs per acre 10-10-10 fertilizer (14lbs/1000 sq ft).

SEEDING: For periods March 1 thru April 30 and from August 15 thru November 15, seed with 2 1/2 bushel per acre of annual rye (3.2 lbs./1000 sq ft). For the period May 1 thru August 14, seed with 3 lbs per acre of weeping lovegrass (.07 lbs/1000 sq ft). For the period November 16 thru February 28, protect site by applying 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring, or use sod.

MULCHING: Apply 1 1/2 to 2 tons per acre (70 to 90 lbs/1000 sq ft) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5 gal/1000 sq ft) of emulsified asphalt on flat areas. On slopes 8 feet or higher, use 348 gallons per acre (8 gal/1000 sq ft) for anchoring.

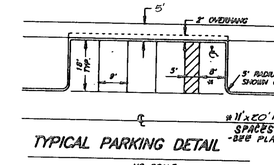
REFER TO THE 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR RATE AND METHODS NOT COVERED



CONSTRUCTION SPECIFICATIONS
1. Stone size - Use 2" stone, or reclaimed or recycled concrete equivalent
2. Length - As required, but not less than 50 feet, except on a single residence lot where a 30 foot minimum length would apply
3. Thickness - Not less than six (6) inches
4. Width - Ten (10) feet minimum, but not less than the full width at points where ingress or egress occurs
5. Filter Cloth - Will be placed over the entire area prior to placing of stone. Filter will not be required on a single family residence lot
6. Surface Water - All surface water flowing or diverted toward construction entrances shall be piped across the entrance. If piping is impractical, a mountable berm with 5:1 slopes will be permitted
7. Maintenance - The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed or tracked onto public rights-of-way must be removed immediately.
8. Washing - Wheels shall be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with stone and which drains into an approved sediment trapping device
9. Periodic inspection and needed maintenance shall be provided after each rain

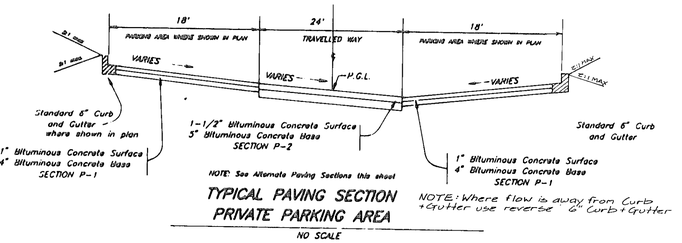
STABILIZED CONSTRUCTION ENTRANCE (SCE)

NO SCALE



TYPICAL PARKING DETAIL

NO SCALE

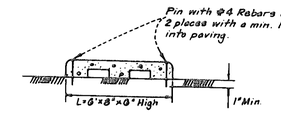


NOTE: See Alternate Paving Sections this sheet

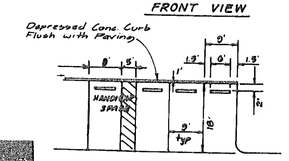
TYPICAL PAVING SECTION PRIVATE PARKING AREA

NOTE: Where flow is away from Curb + Gutter use reverse 6" Curb + Gutter

NO SCALE



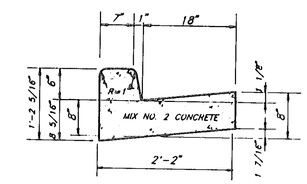
FRONT VIEW



PLAN VIEW

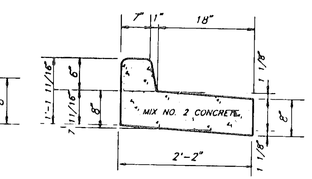
TYPICAL PARKING WITH INSTALLATION OF CURB STOP

No Scale



STANDARD 6" COMBINATION CURB AND GUTTER

NO SCALE



REVERSE 6" COMBINATION CURB AND GUTTER

NO SCALE

1" Bituminous Concrete Base	1"
2" Bituminous Concrete Base	2"
Prime 5" Crusher Run Base Course or 4" Dense Graded Stabilized Aggregate Base Course	4" OR 5"

ALTERNATE PAVING SECTION FOR PARKING AREAS

NO SCALE

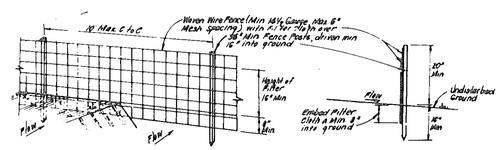
(SECTION P-1)

1-1/2" Bituminous Concrete Base	1-1/2"
2-1/2" Bituminous Concrete Base	2-1/2"
Prime 6" Crusher Run Base Course or 6" Dense Graded Stabilized Aggregate Base Course	6" OR 6"

ALTERNATE PAVING SECTION TRAVELLED WAY

NO SCALE

(SECTION P-2)



CONSTRUCTION SPECIFICATIONS:
1. Woven wire fence to be fastened securely to fence posts with wire ties or staples
2. Filter cloth to be fastened securely to woven wire fence with ties spaced every 24" at top and mid section
3. When 2 sections of filter cloth adjoin each other they shall be overlapped by 6" and folded
4. Maintenance shall be performed as needed and material removed when "bulges" develop in Silt Fence

POSTS: Steel either T or U Type or 2" Hardwood
FENCE: Woven Wire, 14½ Gauge 6" Max. Mesh Opening
FILTER CLOTH: Filter X, Mirafi 100X, Stabinka T1100N or Approv equal
PREFABRICATED UNIT: Geofab, Enviofence, or Approv equal

SILT FENCE DETAIL (9)

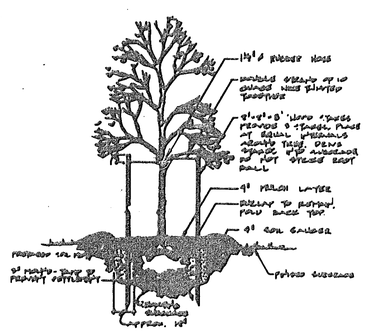
NO SCALE

SCHEDULE A
PERIMETER LANDSCAPE EDGE

Landscape Type		C
Linear Feet of Roadway Frontage/Perimeter		120 L.F.
Credit for Existing Vegetation (Yes, No, Linear Feet) (Describe below if needed)		0
Credit for Wall, Fence or Berm (Yes, No, Linear Feet) (Describe below if needed)		0
Number of Plants Required Shade Trees Evergreen Trees Shrubs		3 6
Number of Plants Provided Shade Trees Evergreen Trees Other Trees (2:1 substitution) Shrubs (10:1 substitution) (Describe plant substitution credits below if needed)		3 6

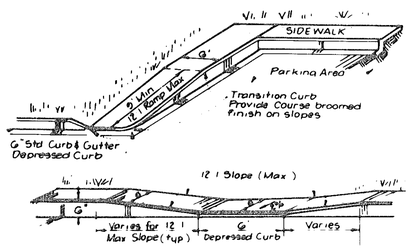
SCHEDULE B
PARKING LOT INTERNAL LANDSCAPING

Number of Parking Spaces (1 for 10)	50
Number of Trees Required (1 tr./20 sp)	15
Number of Trees Provided Shade Trees Other Trees (2:1 substitution)	2



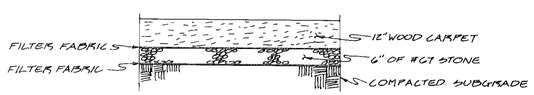
TREE PLANTING DETAIL

NO SCALE



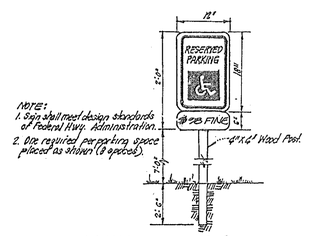
HANDICAP RAMP DETAILS

No Scale



KINDERGARTEN PLAYAREA SURFACE DETAIL

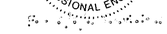
NO SCALE



NOTE:
1. Sign shall meet design standards of Federal Hwy. Administration.
2. Site required parking space placed as shown (8 spaces).

HANDICAP PARKING SIGN DETAIL

NO SCALE



CHARLES J. DRONO, SR. NO. 19204 — 5/31/93

THIS PHASE OF PROJECT CLOSED OUT

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWIM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

NOTE: THIS PLAN IS TO BE ADDED TO SDP 87-96

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT

COUNTY HEALTH OFFICER — DATE 9-29-93

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

DIRECTOR — DATE 10/4/93

CHIEF DIVISION OF LAND DEVELOPMENT AND RESEARCH — DATE 10/4/93

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS AND PUBLIC ROADS HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

DIRECTOR — DATE 9/22/93

CHIEF BUREAU OF ENGINEERING — DATE 9/22/93

Reviewed for HOWARD S.C.D. Name and meets Technical Requirements — Signature — Date 9/13/93 — US Soil Conservation Service

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

Approved 9/13/93

DEVELOPER'S/BUILDER'S CERTIFICATE

"I/We certify that all development and construction will be done according to this plan of development and plan 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 or their authorized agents, as are deemed necessary."

Cathleen Conley Young — Signature — 9/2/93 — Date

ENGINEER'S CERTIFICATE

I hereby certify that this plan for Sediment and Erosion Control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District.

G. Nelson Clark — 8-30-93 — Date

8-30-93

DATE	REVISION NO.	DESCRIPTION
	1	REVISED SHEET NUMBER

REVISIONS

CLARK • FINEFROCK & SACKETT, INC.
ENGINEERS • PLANNERS • SURVEYORS
7135 MINSTREL WAY • COLUMBIA MD 21045 • (301) 381-7500 - BALTO • (301) 621-8100 - WASH

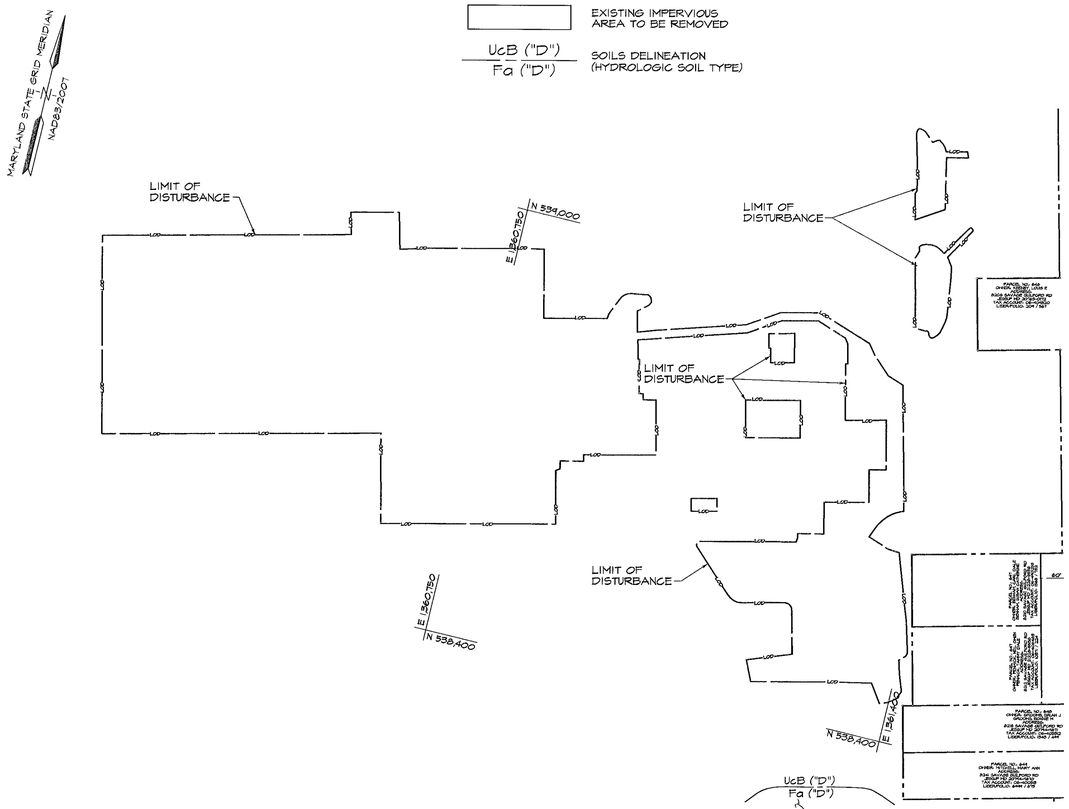
DESIGNED MJP	DETAIL SHEET FOR BUILDING AND PARKING ADDITIONS	SCALE 1"=30'
DRAWN MCR	BOLLMAN BRIDGE ELEMENTARY SCHOOL	JOB No. 93-122X
CHECKED JLS	PARCEL: 25 TAX MAP: 47 6th ELECTION DISTRICT HOWARD COUNTY, MARYLAND	DRAWING 1B
DATE 7-21-93	OWNER: HOWARD CO. BOARD of EDUCATION 10910 ROUTE 108 ELLICOTT CITY, MD 21043	18 OF 40

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET SDP-87-96

LEGEND

EXISTING IMPERVIOUS AREA TO BE REMOVED

UcB ("D") / Fa ("D") — SOILS DELINEATION (HYDROLOGIC SOIL TYPE)



EXISTING DRAINAGE AREA MAP

SCALE: 1" = 100'

LIMIT OF DISTURBANCE

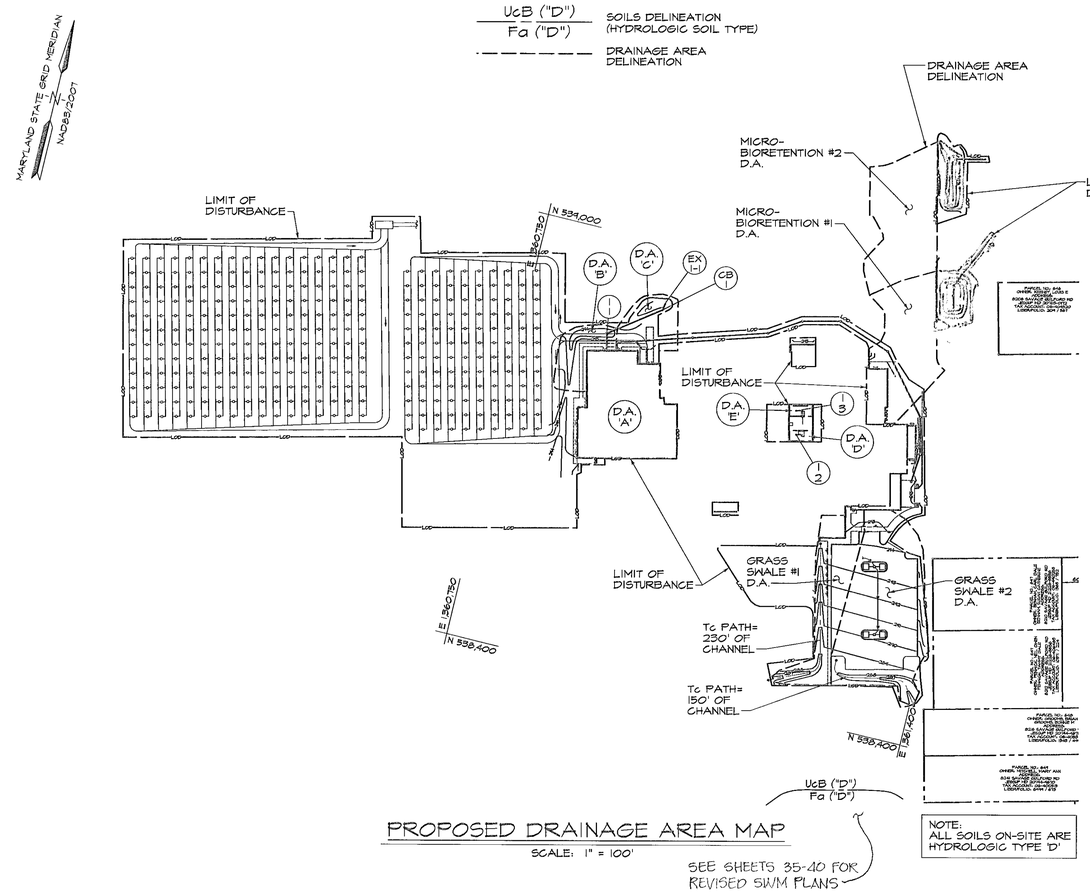
TOTAL LIMITS OF DISTURBED AREA: 299,963 SF OR 6.88 AC±
IMPERVIOUS = 29,621 SF OR 0.68 AC± (9.9% IMPERVIOUS)
PERVIOUS = 270,342 SF OR 6.20 AC±

LEGEND

PROPOSED IMPERVIOUS AREA

UcB ("D") / Fa ("D") — SOILS DELINEATION (HYDROLOGIC SOIL TYPE)

DRAINAGE AREA DELINEATION



PROPOSED DRAINAGE AREA MAP

SCALE: 1" = 100'

NOTE:
ALL SOILS ON-SITE ARE HYDROLOGIC TYPE 'D'

S.W.M. FACILITY DRAINAGE AREAS

MICRO-BIORETENTION #1 : TOTAL DRAINAGE AREA = 0.40 ACRES
PERCENT IMPERVIOUS = 94%
"C" FACTOR = 0.96
Tc PATH = 0.10 HRS

MICRO-BIORETENTION #2 : TOTAL DRAINAGE AREA = 0.36 ACRES
PERCENT IMPERVIOUS = 92%
"C" FACTOR = 0.88
Tc PATH = 0.10 HRS

GRASS SWALE #1 : TOTAL DRAINAGE AREA = 0.27 ACRES
PERCENT IMPERVIOUS = 44%
"C" FACTOR = 0.51
Tc PATH = 0.229 HRS

GRASS SWALE #2 : TOTAL DRAINAGE AREA = 0.59 ACRES
PERCENT IMPERVIOUS = 73%
"C" FACTOR = 0.73
Tc PATH = 0.10 HRS

STORM DRAIN DRAINAGE AREAS

(A) TOTAL DRAINAGE AREA = 0.40 ACRES
PERCENT IMPERVIOUS = 100%
"C" FACOR = 0.85
Tc PATH = 0.10 HRS

(B) TOTAL DRAINAGE AREA = 0.11 ACRES
PERCENT IMPERVIOUS = 9%
"C" FACTOR = 0.26
Tc PATH = 0.10 HRS

(C) TOTAL DRAINAGE AREA = 0.10 ACRES
PERCENT IMPERVIOUS = 20%
"C" FACTOR = 0.33
Tc PATH = 0.10 HRS

(D) TOTAL DRAINAGE AREA = 0.01 ACRES
PERCENT IMPERVIOUS = 1%
"C" FACTOR = 0.20
Tc PATH = 0.10 HRS

(E) TOTAL DRAINAGE AREA = 0.01 ACRES
PERCENT IMPERVIOUS = 1%
"C" FACTOR = 0.20
Tc PATH = 0.10 HRS

LIMIT OF DISTURBANCE

TOTAL LIMITS OF DISTURBED AREA:
299,963 SF OR 6.88 AC±
IMPERVIOUS = 48,352 SF OR 1.11 AC± (16.1% IMPERVIOUS)
PERVIOUS = 251,611 SF OR 5.77 AC±

HYDROLOGIC CRITERIA & FACILITY SUMMARY TABLE

	MICRO-BIORETENTION #1	MICRO-BIORETENTION #2	GRASS SWALE #1	GRASS SWALE #2
ESD STORAGE PROVIDED (AC. FT.)	0.056 AC. FT.	0.051 AC. FT.	0.0015 AC. FT.	0.0025 AC. FT.
WATERSHED	PATUXENT RIVER	PATUXENT RIVER	PATUXENT RIVER	PATUXENT RIVER
STRUCTURE TYPE	M-6 MICRO-BIORETENTION	M-6 MICRO-BIORETENTION	M-8 GRASS SWALE	M-8 GRASS SWALE
STRUCTURE CLASSIFICATION	'A' (NON-378 POND)	'A' (NON-378 POND)	'A' (NON-378 POND)	'A' (NON-378 POND)
DRAINAGE AREA TO FACILITY (ACRES)	0.34 ACRES	0.36 ACRES	0.27 ACRES	0.59 ACRES
LEVEL OF MANAGEMENT REQUIRED	ESD TO THE MEP	ESD TO THE MEP	ESD TO THE MEP	ESD TO THE MEP
LEVEL OF MANAGEMENT PROVIDED	ESD TO THE MEP	ESD TO THE MEP	ESD TO THE MEP	ESD TO THE MEP

BY THE DEVELOPER:

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, 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 INSPECTIONS BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.

Scott W. Washington 5/24/11
SCOTT WASHINGTON DATE
MANAGER OF DESIGN AND
PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM

BY THE ENGINEER:

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

5/20/11
ENGINEER DATE

AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet.

CHARLES J. CROUD, JR. NO. 19704 — 5/31/12 Date

REVISION 2 7/11/16
MINOR CHANGES & CLARIFICATIONS

SEAL: STATE OF MARYLAND — JAMES C. HANNIGAN — No. 36361 — PROFESSIONAL ENGINEER

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. 36361
EXPIRATION DATE: 10-20-12

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHWEST CORNER OF THE PROPERTY.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 6/2/11 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT — 6/06/11 DATE
DIRECTOR — 6/6/11 DATE
(REVISED)

STORMWATER MANAGEMENT AND STORM DRAIN DRAINAGE AREA MAP
BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

ZONED R-20
TAX MAP No. 47, GRID 5, PARCEL 25
ELECTION DISTRICT 06
8200 SAVAGE GUILFORD ROAD
JESSUP, MD 20794

18

ISSUE DATE: 03-10-11
SHEET 18 OF 40

		DATE	REVISIONS
Drafting	TDB	05/20/11	REVISED SITE DEVELOPMENT PLAN
Check	JCH		
Design	BES	7-1-16	(2) REVISED SHEET NUMBER
Check	NCW		

PLOTTED: 10:34 AM on Friday, May 20, 2011
BY: Barbara Sheridan
FILE: M:\2010\2100577\drawings\C-10_SWM_DRAIN.dgn

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
936 ROCKSPRING ROAD, SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818
www.kci.com

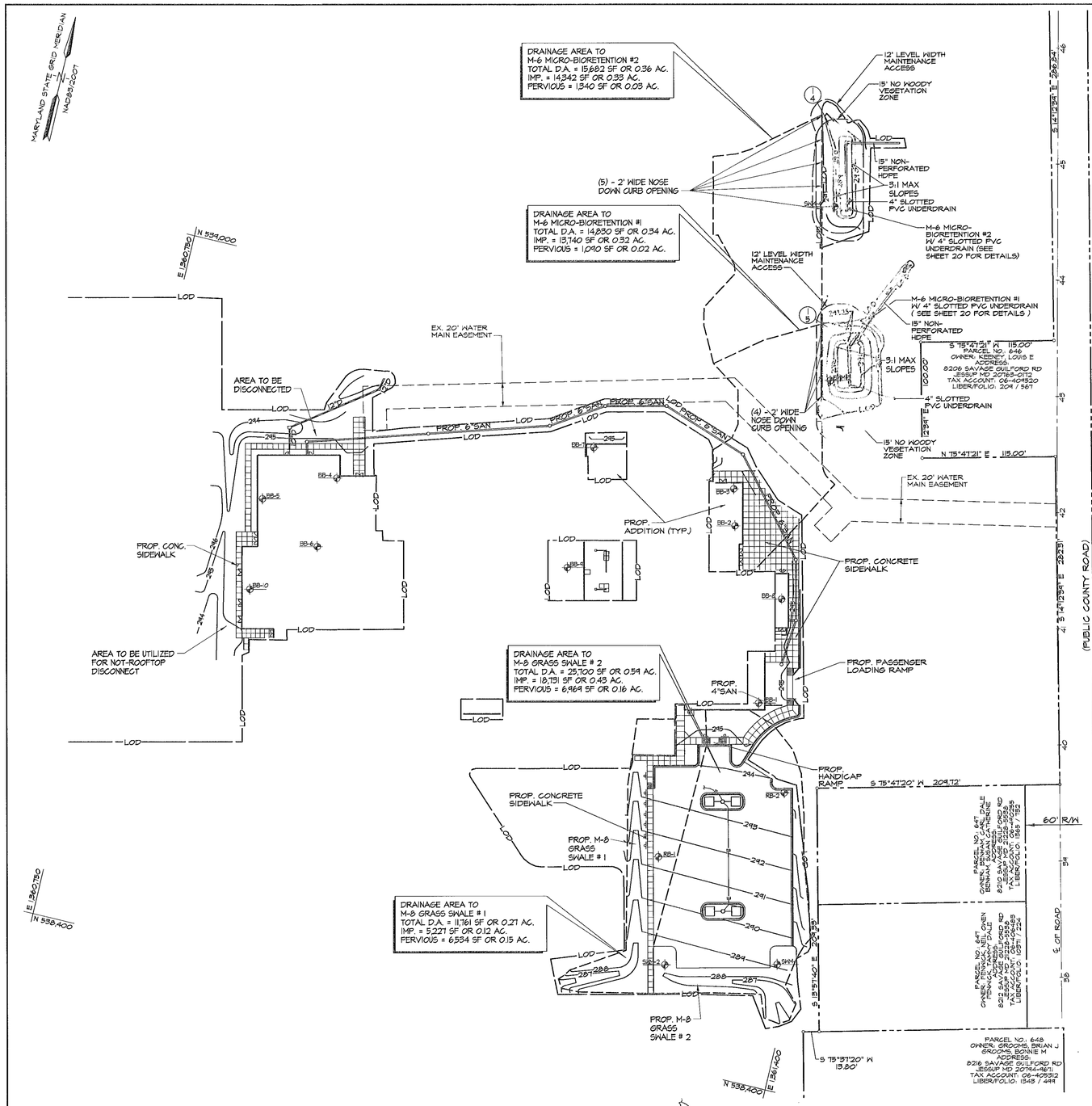
OWNER
SCOTT WASHINGTON
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
10910 ROUTE 108
ELLICOTT CITY, MD 21042
PHONE: (410) 313-6601

DEVELOPER
SCOTT WASHINGTON
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
10910 ROUTE 108
ELLICOTT CITY, MD 21042
PHONE: (410) 313-6601

gilbert — Gilbert Architects Inc.
10451 Mill Run Circle, Suite 400, Owings Mills, MD 21117, P: 410.356.8856 F: 410.654.8802
626 North Charlotte Street, Lancaster, PA17603, P: 717.291.1077 F: 717.392.3923
29L Atlantic Avenue #150, Ocean View, DE 19970, P: 302.449.2492 F: 302.449.2493

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

COUNTY FILE # SDP-87-96



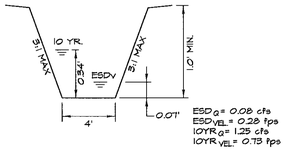
STORMWATER MANAGEMENT PLAN

SCALE: 1" = 50'

BENCHMARK DATA

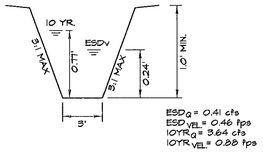
THE HORIZONTAL AND VERTICAL DATUMS ARE BASED ON THE FOLLOWING HOWARD COUNTY GEODETIC SURVEY CONTROL POINTS
HORIZONTAL: NAD 83/07 VERTICAL: NAVD 88

TRAV NAME	NORTH	EAST	ELEV.
47C1	534613.68	1362608.48	260.90'
47FA	536345.20	1361008.50	258.79'
47C0	540529.69	1362460.50	285.68'



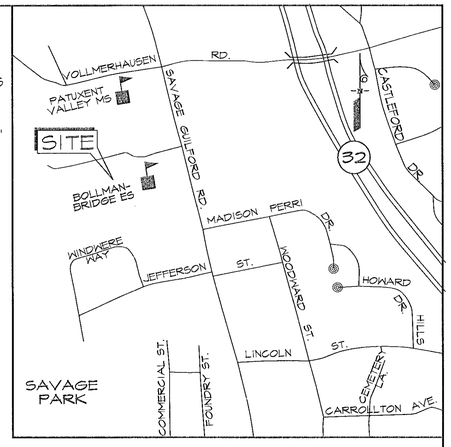
TYPICAL SECTION OF M-8 GRASS SWALE #1

NOT TO SCALE



TYPICAL SECTION OF M-8 GRASS SWALE #2

NOT TO SCALE



VICINITY MAP

SCALE: 1" = 1000'

LEGEND

- EX. INDEX CONTOUR
- EX. INTERMEDIATE CONTOUR
- EX. STORM DRAIN
- EX. SANITARY SEWER
- EX. WATER
- EX. ELECTRIC
- EX. METAL FENCE
- EX. WOODS LINE
- EX. CURB AND GUTTER
- EX. POWER POLE
- EX. MANHOLE
- EX. INLET
- EX. BOLLARD
- EX. GUY WIRE
- EX. BUSHES
- EX. LIGHT POLE
- EX. FIRE HYDRANT
- EX. WATER METER
- EX. SIGN
- EX. TREE
- SWM-3 SOIL BORING
- EX. PROPERTY LINE
- PROP. CONCRETE SIDEWALK
- PROP. COMBINATION CONCRETE CURB AND GUTTER
- PROP. MANHOLE
- PROP. STORM DRAIN
- PROP. BUILDING ADDITION TO BE TREATED BY IMPERVIOUS TRADE OFF AT THE BUS LOOP BY TWO MICRO-BIORETENTIONS
- IMPERVIOUS AREA TO BE TREATED AS A TRADE OFF FOR THE PROPOSED BUILDING ADDITIONS
- PROP. PAVING TO BE TREATED BY TWO GRASS SWALES
- AREA OF NON-ROOFTOP DISCONNECT
- DRAINAGE AREA DIVIDE
- LOD LIMITS OF DISTURBANCE

HYDROLOGIC CRITERIA & FACILITY SUMMARY TABLE

	MICRO-BIORETENTION #1	MICRO-BIORETENTION #2	GRASS SWALE #1	GRASS SWALE #2
ESD STORAGE PROVIDED (AC. FT.)	0.056 AC. FT.	0.051 AC. FT.	0.0015 AC. FT.	0.0025 AC. FT.
WATERSHED	PATUXENT RIVER	PATUXENT RIVER	PATUXENT RIVER	PATUXENT RIVER
STRUCTURE TYPE	M-6 MICRO-BIORETENTION	M-6 MICRO-BIORETENTION	M-8 GRASS SWALE	M-8 GRASS SWALE
STRUCTURE CLASSIFICATION	'A' (NON-STB POND)	'A' (NON-STB POND)	'A' (NON-STB POND)	'A' (NON-STB POND)
DRAINAGE AREA TO FACILITY (ACRES)	0.34 ACRES	0.36 ACRES	0.27 ACRES	0.59 ACRES
LEVEL OF MANAGEMENT REQUIRED	ESD TO THE MEP	ESD TO THE MEP	ESD TO THE MEP	ESD TO THE MEP
LEVEL OF MANAGEMENT PROVIDED	ESD TO THE MEP	ESD TO THE MEP	ESD TO THE MEP	ESD TO THE MEP

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/2/11

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/06/11

DIRECTOR — DATE 6/6/11

AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet.

CHARLES J. CROVO, JR. NO. 19204 — Date 5/31/17

ASSOCIATES & CRAFTSMEN, INC.

SEAL: STATE OF MARYLAND — JAMES C. HANKINSON — No. 36361 — PROFESSIONAL ENGINEER

(REVISED)

STORMWATER MANAGEMENT PLAN

BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

ZONED R-20
TAX MAP No. 47, GRID 5, PARCEL 25
ELECTION DISTRICT 06
8200 SAVAGE GUILFORD ROAD
JESSUP, MD 20794

19

ISSUE DATE: 03-10-11
SHEET 19 OF 40

COUNTY FILE # SDP-87-96

		DATE	REVISIONS
Drafting	TDB		
Check	JCH	05/20/11	REVISED SITE DEVELOPMENT PLAN
Design	BES		
Check	NCW	7-1-10	REVISED SHEET NUMBER

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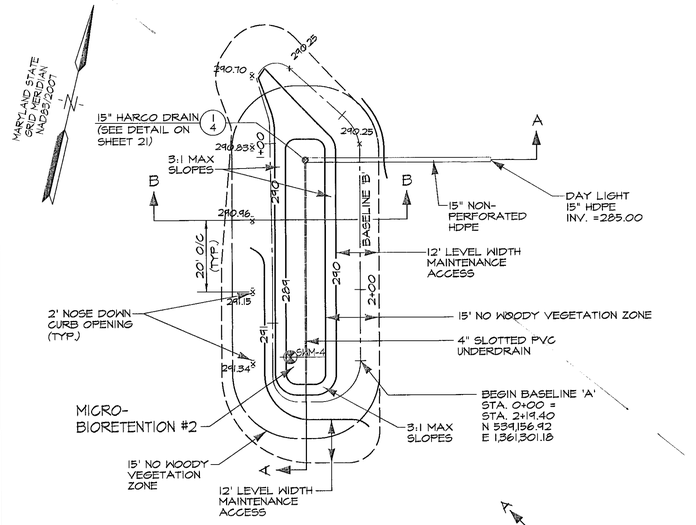
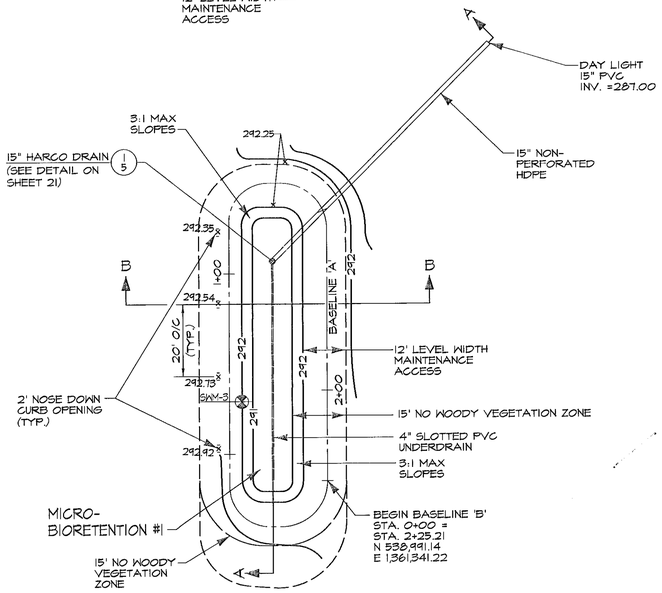
THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

GRAPHIC SCALE: 50 0 25 50 100 (IN FEET) 1 INCH = 50FT.

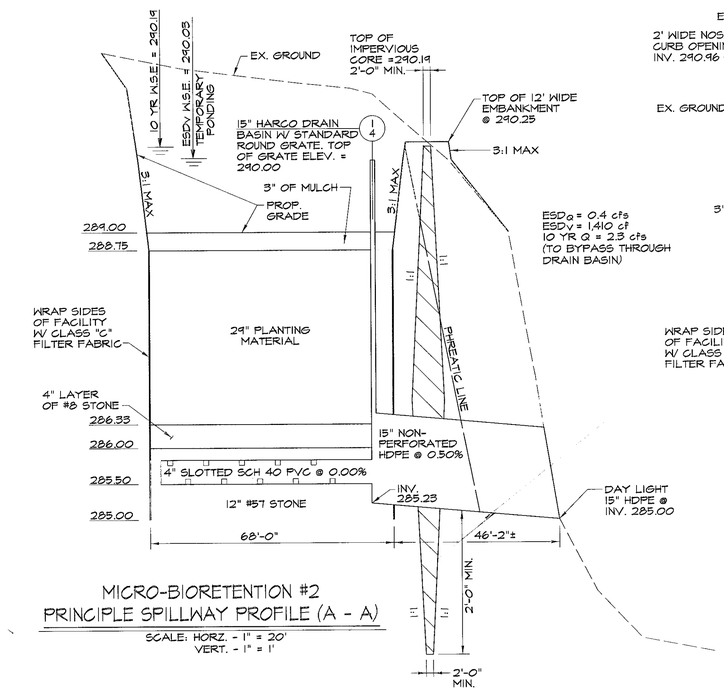
PLOTTED: 10:38 AM on Friday, May 20, 2011
BY: Bernard Solomon Division: P286 User: Gavesp OIM: Emp
File: I:\2007\07-0007\Harwood CT\Sdp\F-Sdp01.dwg





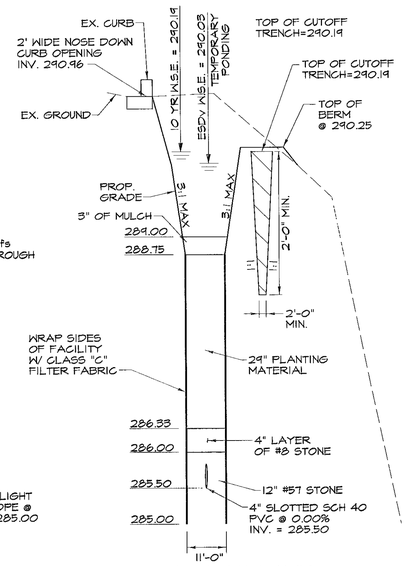
PLAN VIEW

SCALE: 1" = 20'



MICRO-BIORETENTION #2 PRINCIPLE SPILLWAY PROFILE (A - A)

SCALE: HORZ. - 1" = 20'
VERT. - 1" = 1'



MICRO-BIORETENTION #2 SECTION (B - B)

SCALE: HORZ. - 1" = 20'
VERT. - 1" = 1'

AS-BUILT CERTIFICATION FOR PSWM

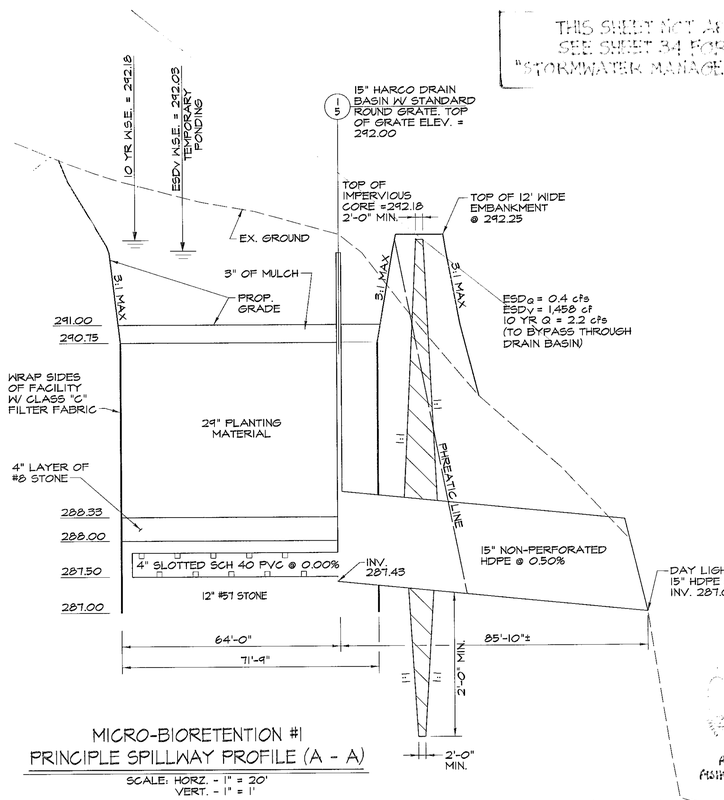
Note: There is no "AS BUILT" information provided on this sheet.

CHARLES J. CROUD, JR. NO. 13204 — 5/31/11 Date

BASELINE 'A' DATA			
STA.	BEARING/ RADIUS	DISTANCE/ ARC LENGTH	CHORD
0+00			
	12.75' R	20.03'	S 31°33'03" W 18.03'
0+20.03			
		3.55'	S 76°33'03" W
0+23.58			
	11' R	17.28'	N 58°26'57" W 15.56'
0+40.86			
		73.50'	N 13°26'57" W
1+14.36			
	11' R	17.28'	N 31°33'03" E 15.56'
1+31.64			
		3.55'	N 76°33'03" E
1+35.19			
	12.75' R	20.03'	S 58°26'57" E 18.03'
1+55.21			
		70.00'	S 13°26'57" E
2+25.21			

BASELINE 'B' DATA			
STA.	BEARING/ RADIUS	DISTANCE/ ARC LENGTH	CHORD
0+00			
	11.50' R	18.06'	S 31°33'03" W 16.26'
0+18.06			
		6.00'	S 76°33'03" W
0+24.06			
	7' R	11.00'	N 58°26'57" W 9.90'
0+35.06			
		30.07'	N 13°26'57" W
0+65.13			
		39.47'	N 14°23'32" W
1+04.60			
	10' R	2.73'	N 22°12'09" W 2.72'
1+07.33			
		11.50'	N 30°00'47" W
1+18.83			
		1.45'	N 14°59'13" E
1+20.28			
	5.5' R	9.92'	N 66°39'23" E 8.63'
1+30.00			
		20.57'	S 61°40'27" E
1+50.57			
	12.75' R	10.73'	S 37°33'42" E 10.42'
1+61.30			
		58.10'	S 13°26'57" E
2+19.40			

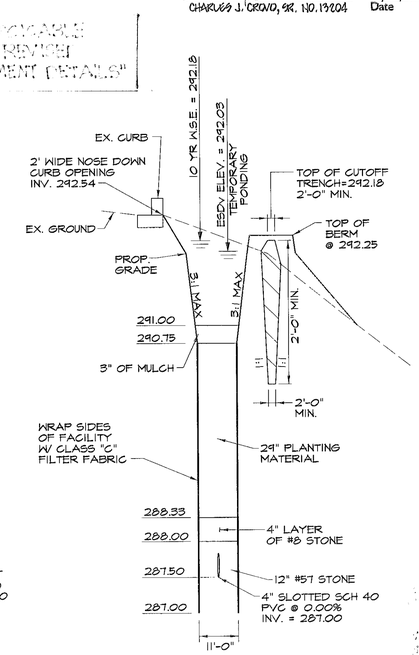
THIS SHEET NOT APPROVABLE
SEE SHEET 34 FOR REVISED
"STORMWATER MANAGEMENT DETAILS"



MICRO-BIORETENTION #1 PRINCIPLE SPILLWAY PROFILE (A - A)

SCALE: HORZ. - 1" = 20'
VERT. - 1" = 1'

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.



MICRO-BIORETENTION #1 SECTION (B - B)

SCALE: HORZ. - 1" = 20'
VERT. - 1" = 1'

NOTE:
SEE SHEET 21 FOR EMBANKMENT PROFILES AND HARCO DRAIN DETAILS

MICRO-BIORETENTION # 1 PLANTING SCHEDULE					
KEY	QTY.	BOTANICAL / COMMON NAME	SIZE	CONDITION	COMMENT
SHRUBS					
MP	8	MYRICA PENSYLVANICA / BAY BERRY	6-12'	CONTAINER	
HERBACEOUS					
	20	EUPATORIUM MACULATUM / SPOTTED JOE-PYE WEED	12-18"	CONTAINER	1' O.C. MIN.
	30	RUDBECKIA LACINIATA / TALL CONE FLOWER	12-18"	CONTAINER	1' O.C. MIN.

MICRO-BIORETENTION # 2 PLANTING SCHEDULE					
KEY	QTY.	BOTANICAL / COMMON NAME	SIZE	CONDITION	COMMENT
SHRUBS					
MP	10	MYRICA PENSYLVANICA / BAY BERRY	6-12	CONTAINER	
HERBACEOUS					
	20	EUPATORIUM MACULATUM / SPOTTED JOE-PYE WEED	12-18"	CONTAINER	1' O.C. MIN.
	30	RUDBECKIA LACINIATA / TALL CONE FLOWER	12-18"	CONTAINER	1' O.C. MIN.

LEGEND

- EX. INDEX CONTOUR
- EX. INTERMEDIATE CONTOUR
- EX. STORM DRAIN
- EX. CURB AND GUTTER
- EX. LIGHT POLE
- EX. TREE
- SWM-3 — SOIL BORING
- 290.70 x — PROP. SPOT ELEVATION
- 290 — PROP. CONTOUR
- PROP. STORM DRAIN
- PROP. HARCO DRAIN
- 15' NO WOODY VEGETATION ZONE
- 12' LEVEL WIDTH MAINTENANCE ACCESS

NOTE:
BOTH M-6 MICRO-BIORETENTIONS WILL UTILIZE THE 15" DRAINS AND 15" HDPE TO BYPASS THE 10 YEAR STORM EVENT. SEE SWM REPORT FOR SUPPORTING COMPUTATIONS.

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20FT.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6/2/11
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/06/11
DIRECTOR	DATE 6/6/11

(REVISED)
STORMWATER MANAGEMENT DETAILS

BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

ZONED R-20
TAX MAP No. 47, GRID 5, PARCEL 25
ELECTION DISTRICT 06
8200 SAVAGE GUILFORD ROAD
JESSUP, MD 20794

SEAL: STATE OF MARYLAND — JAMES C. NEWMAN — No. 36361 — PROFESSIONAL ENGINEER

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. 36361 EXPIRATION DATE: 10-20-12

20

ISSUE DATE: 03-10-11
SHEET 20 OF 40

COUNTY FILE # SDP-87-96

Drafting	TDB	DATE	REVISIONS
Check	JCH	05/20/11	REVISED SITE DEVELOPMENT PLAN
Design	BES	7-1-16	[illegible]
Check	NCW		3 REVISED SHEET NUMBER

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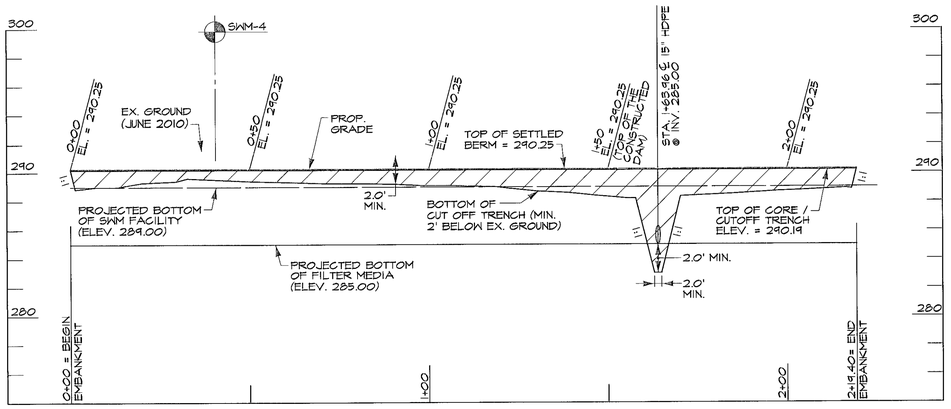
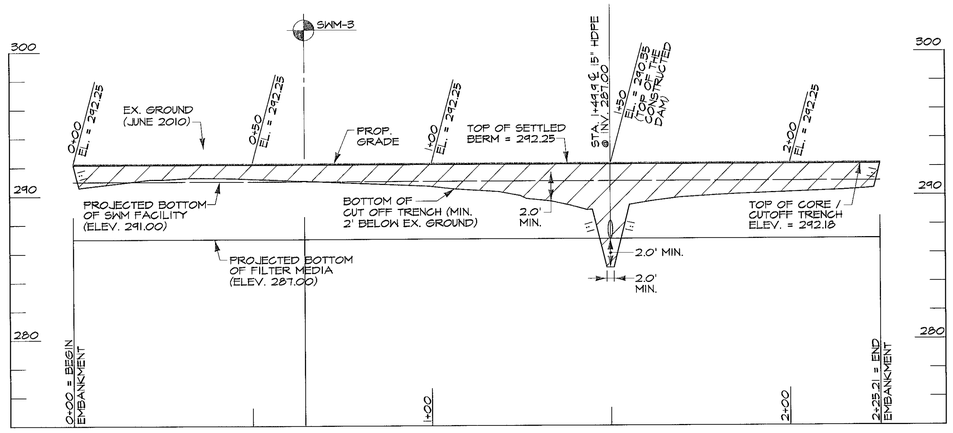
THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

PLOTTED: 10:41 AM on Friday, May 20, 2011
BY: Brian E. Sellers, Division: 1086 Land Develop. GMA Emp
FILE: M:\2010\2710057\drawings\C-12-SWM-DETS.dgn



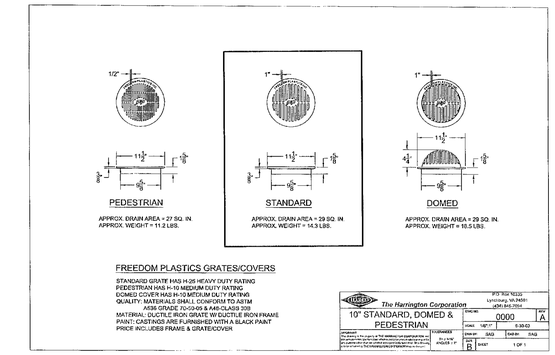
MICRO-BIORETENTION #2 - BASELINE 'B'

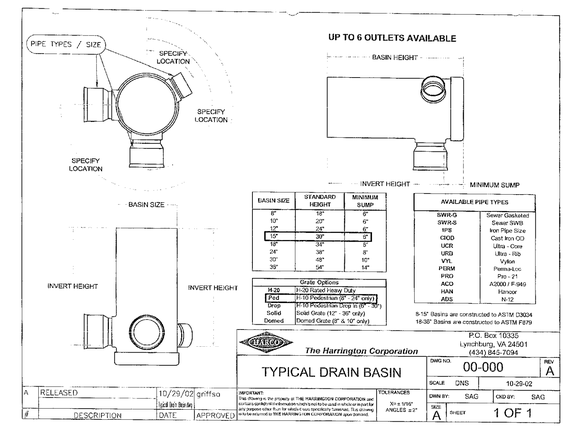
SCALE: 1"=20' HORIZ.
1"=5' VERT.



MICRO-BIORETENTION #1 - BASELINE 'A'

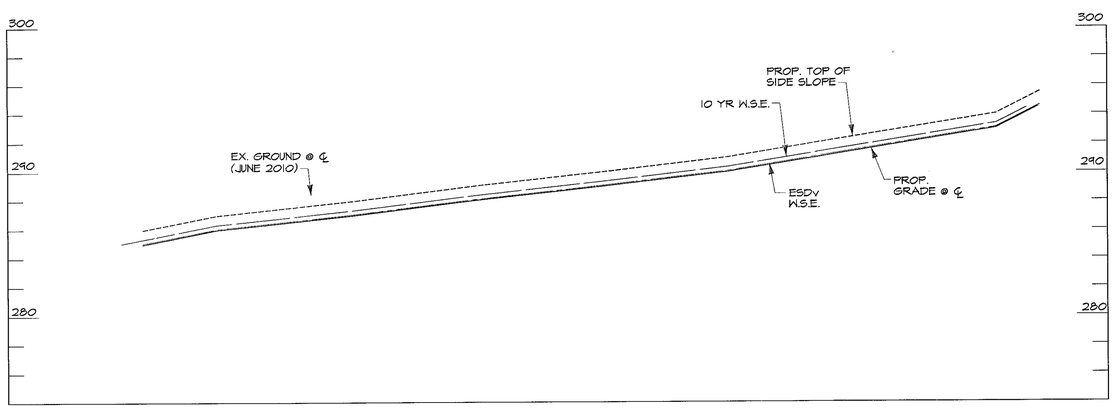
SCALE: 1"=20' HORIZ.
1"=5' VERT.





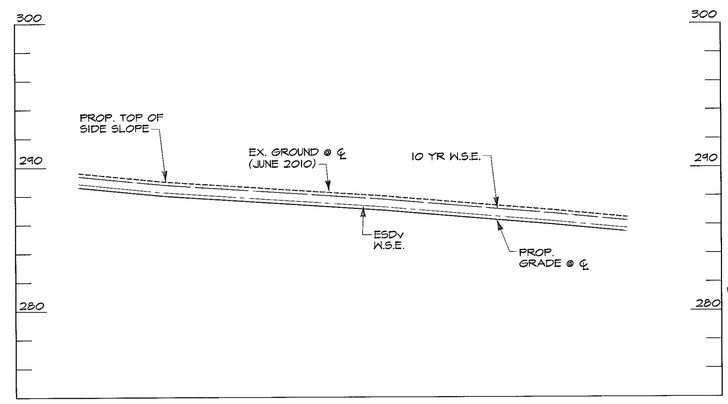
1/4 & 1/5 HARCO DRAIN DETAILS

NOT TO SCALE



GRASS SWALE #1 PROFILE

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



GRASS SWALE #2 PROFILE

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

AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet.

CHARLES J. CROVO, JR. NO. 17204 — 5/31/17 Date

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

REVISED 7/1/16 FISHER BUILDING PORTABLES

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/2/11

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/06/11

DIRECTOR — DATE 6/6/11

SEAL: STATE OF MARYLAND — CHARLES J. CROVO — No. 17204 — PROFESSIONAL ENGINEER

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. 36361 EXPIRATION DATE: 10-20-12

(REVISED)
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ISSUE DATE: 03-10-11
SHEET 21 OF 40

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Design	BES	7-1-16	REVISED SHEET NUMBER
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THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

COUNTY FILE # SDP-87-96

PLOTTED: "10:43 AM on Friday, May 20, 2011"
BY: Barrick, Spencer Division: P:\98_Land Develop_GHA Emp
FILE: M:\2001\270577\drawings\C-12A_SWM_DETS.dgn

SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDENS, LANDSCAPE INFILTRATION AND 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 TEXTURE 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 OF THE MARYLAND 2009 STORMWATER MANAGEMENT MANUAL.

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

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

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

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

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

6. UNDERDRAINS
   UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:
   - PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM: 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 AREAS HAVE BEEN STABILIZED.

TABLE B.4.1

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

MATERIAL	SPECIFICATION	SIZE	NOTES
PLANTINGS	SEE APPENDIX A, TABLE A.4 IN MDE 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")	
CURTIAN DRAIN	ORNAMENTAL STONE; WASHED COBBLES	STONE: 2" TO 5"	
GEOTEXTILE		N/A	PE TYPE I 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. CALCIUM CARBONATED AND/OR DOLOMITIC SAND SUBSTITUTIONS ARE NOT ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND.

MICRO-BIORETENTION #1 CONSTRUCTION INSPECTION CHECKLIST

PHASE	DATE	INITIALS	REMARKS - DESCRIPTION OF ACTION TAKEN
1. EXCAVATION A. SIZE AND LOCATION B. SIDE SLOPE STABILITY C. SOIL PERMEABILITY D. GROUNDWATER / BEADROCK E. SETBACKS PER DESIGN MANUAL			
2. FILTER FABRIC A. FABRIC SPECIFICATIONS B. SIDES AND TOP (INFILTRATION) C. SIDES, TOP, BOTTOM (ATTENUATION)			
3. AGGREGATE MATERIAL A. TYPE (SLAG, # CRUSHED, GRAVEL) B. SIZE C. PLACEMENT			
4. OBSERVATION WELL / ROOF LEADERS A. ROOF LEADERS B. SURCHARGE PIPE(S) C. PIPE SIZE AND TYPE D. MINIMUM COVER (1 FOOT)			
5. SURFACE LAYER A. AGGREGATE SURFACE B. VEGETATIVE SURFACE C. PAVED SURFACE			
6. INLET STRUCTURE A. INVERTS AND ELEVATIONS B. RECEIVES DESIGNED DRAINAGE AREA			
7. FINAL GRADING & PERMANENT STABILIZATION A. FINAL GRADES, PLANTINGS & MULCH			

I HEREBY CERTIFY THAT I PERSONALLY REVIEWED OR A PERSON UNDER MY DIRECT SUPERVISION PROVIDED THE INFORMATION REPORTED ON THIS CHECKLIST AND TO THE BEST OF MY KNOWLEDGE DO HEREBY INSURE THAT THE SUBMITTAL IS COMPLETE AND ACCURATE.

PROFESSIONAL ENGINEER SINGNATURE AND DATE

MICRO-BIORETENTION #2 CONSTRUCTION INSPECTION CHECKLIST

PHASE	DATE	INITIALS	REMARKS - DESCRIPTION OF ACTION TAKEN
1. EXCAVATION A. SIZE AND LOCATION B. SIDE SLOPE STABILITY C. SOIL PERMEABILITY D. GROUNDWATER / BEADROCK E. SETBACKS PER DESIGN MANUAL			
2. FILTER FABRIC A. FABRIC SPECIFICATIONS B. SIDES AND TOP (INFILTRATION) C. SIDES, TOP, BOTTOM (ATTENUATION)			
3. AGGREGATE MATERIAL A. TYPE (SLAG, # CRUSHED, GRAVEL) B. SIZE C. PLACEMENT			
4. OBSERVATION WELL / ROOF LEADERS A. ROOF LEADERS B. SURCHARGE PIPE(S) C. PIPE SIZE AND TYPE D. MINIMUM COVER (1 FOOT)			
5. SURFACE LAYER A. AGGREGATE SURFACE B. VEGETATIVE SURFACE C. PAVED SURFACE			
6. INLET STRUCTURE A. INVERTS AND ELEVATIONS B. RECEIVES DESIGNED DRAINAGE AREA			
7. FINAL GRADING & PERMANENT STABILIZATION A. FINAL GRADES, PLANTINGS & MULCH			

I HEREBY CERTIFY THAT I PERSONALLY REVIEWED OR A PERSON UNDER MY DIRECT SUPERVISION PROVIDED THE INFORMATION REPORTED ON THIS CHECKLIST AND TO THE BEST OF MY KNOWLEDGE DO HEREBY INSURE THAT THE SUBMITTAL IS COMPLETE AND ACCURATE.

PROFESSIONAL ENGINEER SINGNATURE AND DATE

OPERATION AND MAINTENANCE SCHEDULE FOR LANDSCAPE INFILTRATION (M-3), MICRO-BIORETENTION (M-6), RAIN GARDENS (M-7), BIORETENTION SWALE (M-8), ENHANCED FILTERS (M-9)

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

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED OPEN CHANNEL SYSTEMS GRASS SWALES AND WET SWALES, (M-8)

1. THE OPEN CHANNEL SYSTEM SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE FACILITY IS FUNCTIONING PROPERLY.
2. THE OPEN CHANNEL SHALL BE MOWED A MINIMUM OF AS NEEDED DURING THE GROWING SEASON TO MAINTAIN A MAXIMUM GRASS HEIGHT OF LESS THAN 6 INCHES.
3. DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
4. VISIBLE SIGNS OF EROSION IN THE OPEN CHANNEL SYSTEM SHALL BE REPAIRED AS SOON AS IT IS NOTICED.
5. REMOVE SILT IN THE OPEN CHANNEL SYSTEM WHEN IT EXCEEDS 25% OF THE ORIGINAL WQv.
6. INSPECT CHECK DAMS TWICE A YEAR FOR STRUCTURAL INTEGRITY. RESTORE CHECK DAMS TO ORIGINAL CONDITION AS APPLICABLE.

MICRO-BIORETENTION SEQUENCE OF CONSTRUCTION

1. OBTAIN ALL NECESSARY PERMITS FOR CONSTRUCTION.
2. A PRECONSTRUCTION MEETING MUST BE HELD BETWEEN THE CONTRACTOR AND THE INSPECTION AGENCY TO REVIEW THE PLANS AND ANSWER QUESTIONS REGARDING CONSTRUCTION AND/OR INSPECTION PROCEDURES.
3. THE ENGINEER MUST BE NOTIFIED OF THE VARIOUS STAGES OF WORK TO BE DONE ON THE FACILITY. ONCE THE INSPECTION HAS BEEN COMPLETED AND CERTIFIED BY THE ENGINEER IN ACCORDANCE WITH APPROVED PLANS, THE CONTRACTOR MAY PROCEED TO THE NEXT STAGE.
4. NOTIFY THE ENGINEER-IN-CHARGE FOR AS-BUILT INSPECTIONS AT LEAST 48 HOURS PRIOR TO BEGINNING WORK.
5. CLEAR AND GRUB FOR AND INSTALL SEDIMENT CONTROL MEASURES ONLY. COORDINATE ALL WORK WITH THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SEQUENCE OF OPERATIONS.
6. ROUGH GRADE FACILITY AREA AND INSTALL OR REPLACE STORM DRAIN AS REQUIRED. INSTALL SUMP PIT. PRIOR TO COMPLETING FACILITY CONSTRUCTION, THE CONTRIBUTING DRAINAGE AREA MUST BE STABILIZED. ABSOLUTELY NO RUNOFF IS TO ENTER THE FACILITY UNTIL ALL CONTRIBUTING DRAINAGE AREAS HAVE BEEN STABILIZED.
7. EXCAVATE FOR AND INSTALL STONE, UNDERDRAIN, CLEANOUTS, FILTER FABRIC & PLANTING SOIL. CONSTRUCT PEA GRAVEL TRENCH AND SIDE SLOPES. FINE GRADE, PLACE MULCH AND STABILIZE REMAINING DISTURBED AREAS WITH SEED AND MULCH. FINE GRADE FACILITY AREA AND STABILIZE.
8. CONDUCT "AS-BUILT" SURVEY OF FACILITY AND STORM DRAIN AND SUBMIT TO APPROPRIATE AGENCIES WITHIN 30 DAYS OF COMPLETION.

MICRO-BIORETENTION INSPECTION SCHEDULE

IT IS THE OWNER'S / CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE ENGINEER/INSPECTOR OF AN APPROXIMATE TIME FOR INSPECTION OF THE FOLLOWING ITEMS:

1. DURING EXCAVATION TO SUBGRADE AND PLACEMENT AND BACKFILL OF UNDERDRAIN SYSTEM.
2. DURING PLACEMENT OF FILTER MEDIA.
3. DURING CONSTRUCTION OF APPURTENANT CONVEYANCE.
4. UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet.

CHARLES U. CROVO, JR. NO. 13204 — 5/31/11 Date

REVISION NO. — REVISION DATE — CHAPTER NO.

SEAL: STATE OF MARYLAND — CHARLES U. CROVO, JR. — No. 13204 — PROFESSIONAL ENGINEER

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6/2/11
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/2/11
DIRECTOR	DATE 6/6/11

(REVISED)

STORMWATER MANAGEMENT NOTES

BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

ZONED R-20
TAX MAP No. 47, GRID 5, PARCEL 25
ELECTION DISTRICT 06
8200 SAVAGE GUILFORD ROAD
JESSUP, MD 20794

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. 36361 EXPIRATION DATE: 10-20-12

22

ISSUE DATE: 03-10-11
SHEET 22 OF 40

Drafting	TDB	DATE	REVISIONS
Check	JCH	05/20/11	REVISED SITE DEVELOPMENT PLAN
Design	BES	7-1-16	REVISED SHEET NUMBERS
Check	NCW		

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD, SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX (410) 316-7818
www.kci.com

OWNER
SCOTT WASHINGTON
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
10910 ROUTE 108
ELLICOTT CITY, MD 21042
PHONE: (410) 313-6821

DEVELOPER
SCOTT WASHINGTON
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
10910 ROUTE 108
ELLICOTT CITY, MD 21042
PHONE: (410) 313-6821

gilbert
Gilbert Architects Inc.
10451 Mill Run Circle, Suite 400, Owings Mills, MD 21117, P: 410.356.8856 F: 410.654.8802
626 North Charlotte Street, Lancaster, PA17603, P: 717.291.1077 F: 717.392.3923
29L Atlantic Avenue #150, Ocean View, DE 19970, P: 302.449.2492 F: 302.449.2493

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THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

COUNTY FILE # SDP-87-96

POND 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 SHELL 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).

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.

EMBANKMENT CORE

THE CORE SHALL BE PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE TOP WIDTH OF THE CORE SHALL BE A MINIMUM OF FOUR FEET. THE HEIGHT SHALL EXTEND UP TO AT LEAST THE 10 YEAR WATER ELEVATION SHOWN ON THE PLANS. THE SIDE SLOPES SHALL BE 1 TO 1 OR FLATTER. THE CORE SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY. IN ADDITION, THE CORE SHALL BE PLACED CONCURRENTLY WITH THE OUTER SHELL OF THE EMBANKMENT.

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.

CORRUGATED METAL PIPE - ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR CORRUGATED METAL PIPE:

1. MATERIALS - (POLYMER COATED STEEL PIPE) - STEEL PIPES WITH POLYMERIC COATINGS SHALL HAVE A MINIMUM COATING THICKNESS OF 0.01 INCH (10 MIL) ON BOTH SIDES OF THE PIPE. THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATIONS M-245 & M-246 WITH WATERTIGHT COUPLING BANDS OR FLANGES.

   MATERIALS - (ALUMINUM COATED STEEL PIPE) - THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-274 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ALUMINUM COATED STEEL PIPE, WHEN USED WITH FLOWABLE FILL OR WHEN SOIL AND/OR WATER CONDITIONS WARRANT THE NEED FOR INCREASED DURABILITY, SHALL BE FULLY BITUMINOUS COATED PER REQUIREMENTS OF AASHTO SPECIFICATION M-190 TYPE A. ANY ALUMINUM COATING DAMAGED OR OTHERWISE REMOVED SHALL BE REPLACED WITH COLD APPLIED BITUMINOUS COATING COMPOUND. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER OR TWO COATS OF ASPHALT.

   MATERIALS - (ALUMINUM PIPE) - THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-196 OR M-211 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ALUMINUM PIPE, WHEN USED WITH FLOWABLE FILL OR WHEN SOIL AND/OR WATER CONDITIONS WARRANT FOR INCREASED DURABILITY, SHALL BE FULLY BITUMINOUS COATED PER REQUIREMENTS OF AASHTO SPECIFICATION M-190 TYPE A. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER OR TWO COATS OF ASPHALT. HOT DIP GALVANIZED BOLTS MAY BE USED FOR CONNECTIONS. THE PH OF THE SURROUNDING SOILS SHALL BE BETWEEN 4 AND 9.

2. COUPLING BANDS, ANTI-SEEP COLLARS, END SECTIONS, ETC., MUST BE COMPOSED OF THE SAME MATERIAL AND COATINGS AS THE PIPE. METALS MUST BE INSULATED FROM DISSIMILAR MATERIALS WITH USE OF RUBBER OR PLASTIC INSULATING MATERIALS AT LEAST 24 MILS IN THICKNESS.

3. CONNECTIONS - ALL CONNECTIONS WITH PIPES MUST BE COMPLETELY WATERTIGHT. THE DRAIN PIPE OR BARREL CONNECTION TO THE RISER SHALL BE WELDED ALL AROUND WHEN THE PIPE AND RISER ARE METAL. ANTI-SEEP COLLARS SHALL BE CONNECTED TO THE PIPE IN SUCH A MANNER AS TO BE COMPLETELY WATERTIGHT. DIMPLE BANDS ARE NOT CONSIDERED TO BE WATERTIGHT.

   ALL CONNECTIONS SHALL USE A RUBBER OR NEOPRENE GASKET WHEN JOINING PIPE SECTIONS. THE END OF EACH PIPE SHALL BE RE-ROLLED AN ADEQUATE NUMBER OF CORRUGATIONS TO ACCOMMODATE THE BANDWIDTH. THE FOLLOWING TYPE CONNECTIONS ARE ACCEPTABLE FOR PIPES LESS THAN 24 INCHES IN DIAMETER: FLANGES ON BOTH ENDS OF THE PIPE WITH A CIRCULAR 3/8 INCH CLOSED CELL NEOPRENE GASKET, PRE-PUNCHED TO THE FLANGE BOLT CIRCLE, SANDWICHED BETWEEN ADJACENT FLANGES; A 12-INCH WIDE STANDARD LAP TYPE BAND WITH 12-INCH WIDE BY 3/8-INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET, AND A 12-INCH WIDE HUGGER TYPE BAND WITH ORING GASKETS HAVING A MINIMUM DIAMETER OF 1/2 INCH GREATER THAN THE CORRUGATION DEPTH. PIPES 24 INCHES IN DIAMETER AND LARGER SHALL BE CONNECTED BY A 24 INCH LONG ANNULAR CORRUGATED BAND USING A MINIMUM OF 4 (FOUR) RODS AND LUGS, 2 ON EACH CONNECTING PIPE END, A 24-INCH WIDE BY 3/8-INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET WILL BE INSTALLED WITH 12 INCHES ON THE END OF EACH PIPE. FLANGED JOINTS WITH 3/8 INCH CLOSED CELL GASKETS THE FULL WIDTH OF THE FLANGE IS ALSO ACCEPTABLE.

   HELICALLY CORRUGATED PIPE SHALL HAVE EITHER CONTINUOUSLY WELDED SEAMS OR HAVE LOCK SEAMS WITH INTERNAL CAULKING OR A NEOPRENE BEAD.

4. BEDDING - THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

5. BACKFILLING SHALL CONFORM TO @STRUCTURE BACKFILL@.

6. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

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

1. MATERIALS - REINFORCED CONCRETE PIPE SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS AND SHALL EQUAL OR EXCEED ASTM C-361.

2. BEDDING - REINFORCED CONCRETE PIPE CONDUITS SHALL BE LAID IN A CONCRETE BEDDING / CRADLE FOR THEIR ENTIRE LENGTH. THIS BEDDING / CRADLE SHALL CONSIST OF HIGH SLUMP CONCRETE PLACED UNDER THE PIPE AND UP THE SIDES OF THE PIPE AT LEAST 50% OF ITS OUTSIDE DIAMETER WITH A MINIMUM THICKNESS OF 6 INCHES. WHERE A CONCRETE CRADLE IS NOT NEEDED FOR STRUCTURAL REASONS, FLOWABLE FILL MAY BE USED AS DESCRIBED IN THE @STRUCTURE BACKFILL@ SECTION OF THIS STANDARD. GRAVEL BEDDING IS NOT PERMITTED.

3. LAYING PIPE - BELL AND SPIGOT PIPE SHALL BE PLACED WITH THE BELL END UPSTREAM. JOINTS SHALL BE MADE IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL. AFTER THE JOINTS ARE SEALED FOR THE ENTIRE LINE, THE BEDDING SHALL BE PLACED SO THAT ALL SPACES TINDER THE PIPE ARE FILLED. CARE SHALL BE EXERCISED TO PREVENT ANY DEVIATION FROM THE ORIGINAL LINE AND GRADE OF THE PIPE. THE FIRST JOINT MUST BE LOCATED WITHIN 4 FEET FROM THE RISER.

4. BACKFILLING SHALL CONFORM TO @STRUCTURE BACKFILL@.

5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

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.

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 FC = 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.

AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet.

CHARLES J. OROUD, JR. NO. 19204 — 5/31/12 Date

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

BY THE DEVELOPER:

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, 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 INSPECTIONS BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.

SCOTT WASHINGTON — DATE 5/23/11
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM

BY THE ENGINEER:

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

ENGINEER — DATE 5/20/11

(REVISED) 7/11/16
FISHER, COLLINS & CARTER, INC.

SEAL: STATE OF MARYLAND — CHARLES J. OROUD, JR. — No. 19204 — PROFESSIONAL ENGINEER

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6/6/11
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/06/11
DIRECTOR	DATE 6/6/11

(REVISED)
STORMWATER MANAGEMENT MD-378-NOTES

BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

ZONED R-20
TAX MAP No. 47, GRID 5, PARCEL 25
ELECTION DISTRICT 06
8200 SAVAGE GUILFORD ROAD
JESSUP, MD 20794

23

ISSUE DATE: 03-10-11
SHEET 23 OF 40

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. 36361 EXPIRATION DATE: 10-20-12

		DATE	REVISIONS
Drafting	TDB	05/20/11	REVISED SITE DEVELOPMENT PLAN
Check	JCH	7-1-16	REVISED SHEET NUMBER
Design	BES		
Check	NCW		

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD, SPARKS, MARYLAND 21152
TELEPHONE (410) 316-7800 FAX (410) 316-7818
www.kci.com

OWNER
SCOTT WASHINGTON
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
10910 ROUTE 108
ELLICOTT CITY, MD 21042
PHONE: (410) 313-6807

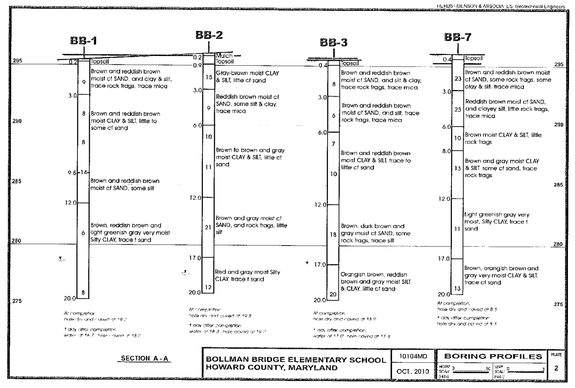
DEVELOPER
SCOTT WASHINGTON
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
10910 ROUTE 108
ELLICOTT CITY, MD 21042
PHONE: (410) 313-6807

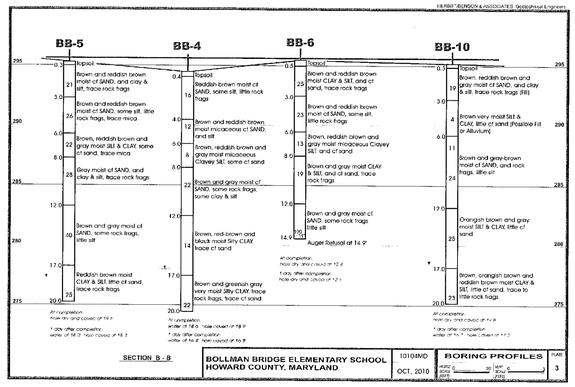
gilbert
Gilbert Architects Inc.
10451 Mill Run Circle, Suite 400, Owings Mills, MD 21117, P: 410.356.8856 F: 410.654.8802
626 North Charlotte Street, Lancaster, PA 17603, P: 717.291.1077 F: 717.392.3923
29L Atlantic Avenue #150, Ocean View, DE 19970, P: 302.449.2492 F: 302.449.2493

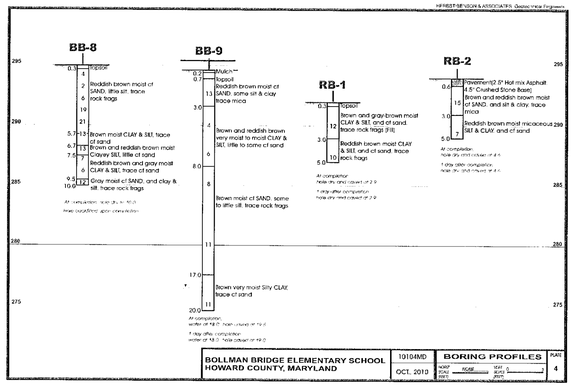
THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

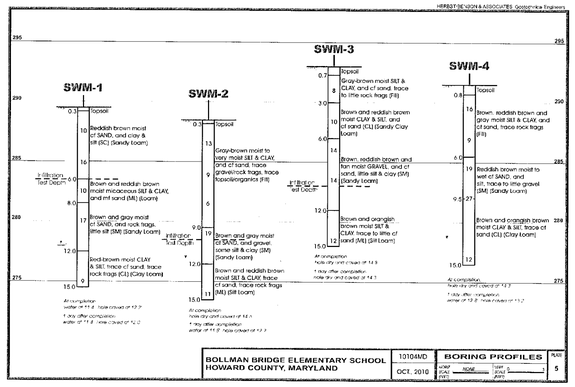
COUNTY FILE # SDP-87-96

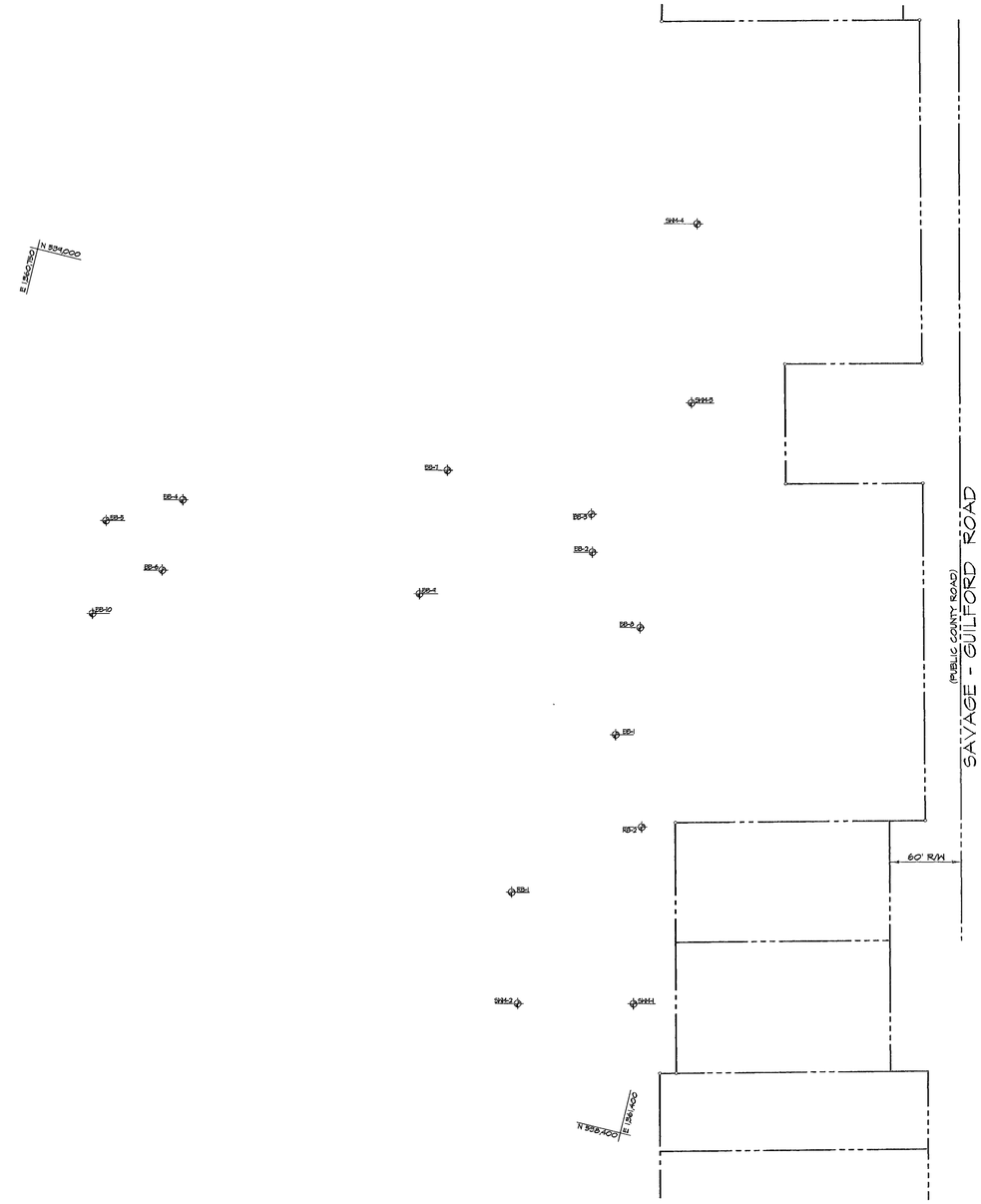
PLOTTED: 7/06/16 AM 01 Friday, May 20, 2011
BY: Bryan E. Sheffield ACAD Version: 18.0s (LMS Tech) Login Name: gma_bes
FILE: M:\2010\2710057\drawings\C-13A_POND-378_NOTES.dgn











BORING LOCATION PLAN
SCALE: 1" = 60'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6/2/11
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/02/11
DIRECTOR	DATE 6/6/11

NOTE: THE PURPOSE OF THE REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet.

CHARLES J. CROVO, JR. NO. 19204 — Date 5/31/12

RBJ Mason 7/11/12
Fallon Crowns & Associates Inc.

SEAL: STATE OF MARYLAND — CHARLES J. CROVO JR. — No. 19204 — PROFESSIONAL ENGINEER

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. 36361 EXPIRATION DATE: 10-20-12

(REVISED)
BORING LOGS

BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

ZONED R-20
TAX MAP No. 47, GRID 5, PARCEL 25
ELECTION DISTRICT 06
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ISSUE DATE: 03-10-11
SHEET 24 OF 40

Drafting	TDB	DATE	REVISIONS
Check	JCH	05/20/11	REVISED SITE DEVELOPMENT PLAN
Design	BES	7-1-10	REVISED SHEET NUMBER
Check	NCW		

KCI TECHNOLOGIES
ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818
www.kci.com

OWNER
SCOTT WASHINGTON
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
10910 ROUTE 108
ELLICOTT CITY, MD 21042
PHONE: (410) 313-6601

DEVELOPER
SCOTT WASHINGTON
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
10910 ROUTE 108
ELLICOTT CITY, MD 21042
PHONE: (410) 313-6601

gilbert
Gilbert Architects Inc.
10451 Mill Run Circle, Suite 400
Owings Mills, MD 21117
P: 410.356.8856 F: 410.654.8802
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Lancaster, PA17603
P: 717.291.1077 F: 717.392.3923
29L Atlantic Avenue #150
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P: 302.449.2492 F: 302.449.2493

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

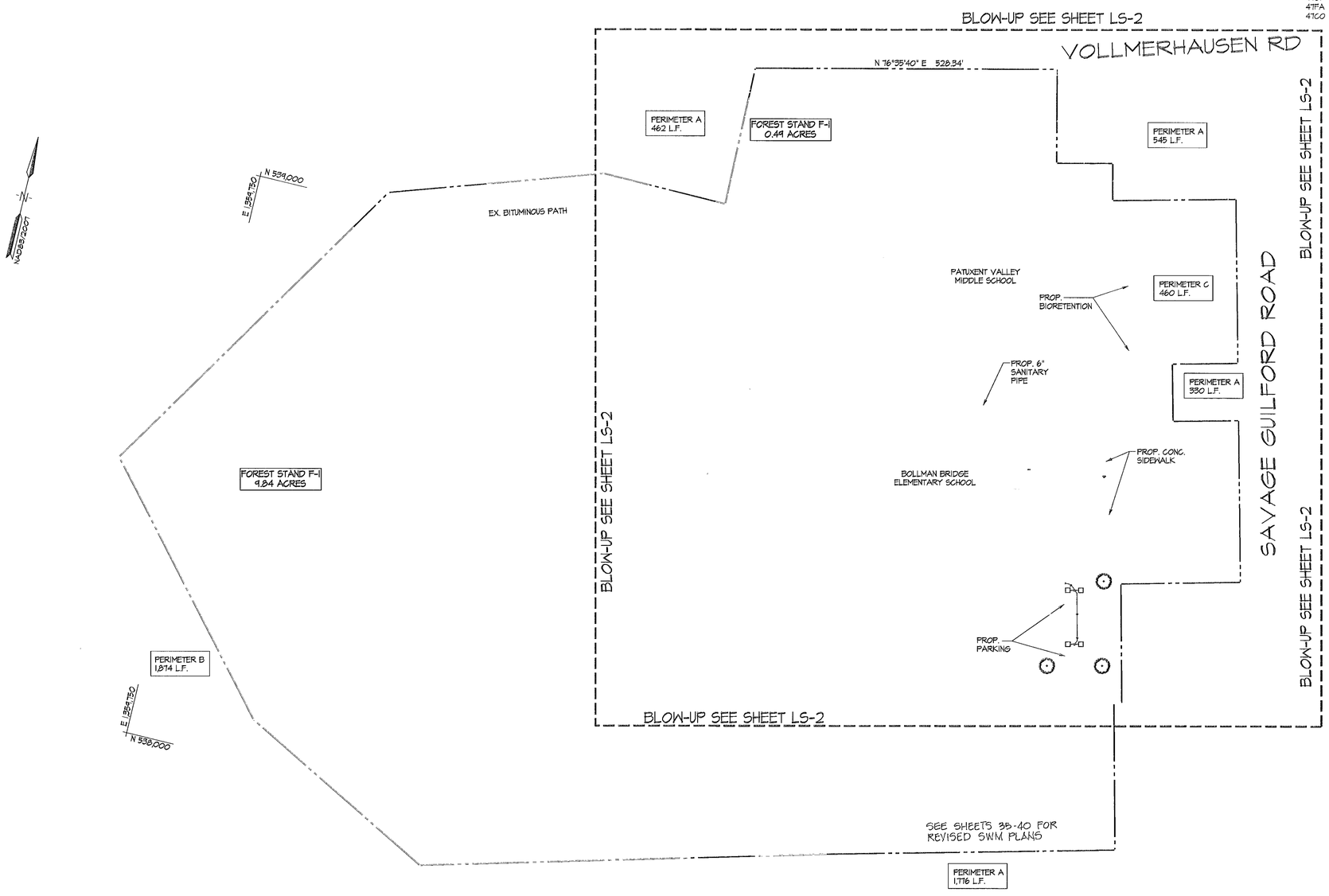
COUNTY FILE # SDP-87-96

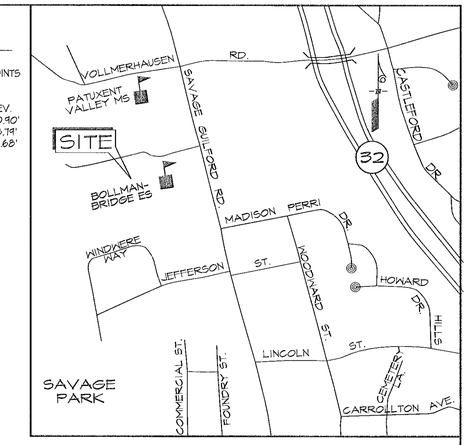
PLOTTED: "10:49 AM on Friday, May 20, 2011"
BY: Bernard Sherman Division: Public Land Develop. GMA Emp
FILE: M:\2010\2710577\drawings\C-14_BORING PLAN.dgn

BENCHMARK DATA

THE HORIZONTAL AND VERTICAL DATUMS ARE BASED ON THE FOLLOWING HOWARD COUNTY GEODETIC SURVEY CONTROL POINTS
HORIZONTAL: NAD 83/07 VERTICAL: NAVD 88

TRAV NAME	NORTH	EAST	ELEV.
47C1	539613.68	1362608.48	260.90'
47FA	536345.20	1361008.50	258.79'
47G0	540529.69	1362460.50	285.68'





VICINITY MAP

SCALE: 1" = 1000'

LEGEND

- EX. INDEX CONTOUR
- EX. INTERMEDIATE CONTOUR
- EX. STORM DRAIN
- EX. SANITARY SEWER
- EX. WATER
- EX. ELECTRIC
- EX. METAL FENCE
- EX. WOODS LINE
- EX. CURB AND GUTTER
- EX. POWER POLE
- EX. MANHOLE
- EX. INLET
- EX. BOLLARD
- EX. GUY WIRE
- EX. BUSHES
- EX. LIGHT POLE
- EX. FIRE HYDRANT
- EX. WATER METER
- EX. SIGN
- EX. TREE
- EX. PROPERTY LINE
- SOIL LINE
- STEEP SLOPES 15% TO 25%
- STEEP SLOPES 25% AND GREATER
- EX. FOREST

PERIMETERS

PERIMETER A: ADJACENT TO EXISTING RESIDENTIAL
PERIMETER B: ADJACENT TO NON-RESIDENTIAL
PERIMETER C: STORMWATER MANAGEMENT FACILITIES

NOTE: THE PURPOSE OF THE REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	6/2/11 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT	6/06/11 DATE
DIRECTOR	6/6/11 DATE

OVERALL LANDSCAPE PLAN

SCALE: 1" = 100'

AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet.

CHARLES J. CROVO, SR. NO. 19204 — 5/31/11 Date

RAMAKRISHNA CORPORATION INC.

SEAL: STATE OF MARYLAND — DAVID E. LOCKE — NO. 654 — REGISTERED LANDSCAPE ARCHITECT

(REVISED)
OVERALL LANDSCAPE PLAN
BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

ZONED R-20
TAX MAP No. 47, GRID 5, PARCEL 25
ELECTION DISTRICT 06
8200 SAVAGE GUILFORD ROAD
JESSUP, MD 20794

LS-1

ISSUE DATE: 03-10-11
SHEET 25 OF 20

Drafting	TDB	DATE	REVISIONS
Check	JCH	05/20/11	REVISED SITE DEVELOPMENT PLAN
Design	BES	7-1-16	REVISED SHEET NUMBER
Check	NCW		

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD, SPARKS, MARYLAND 21152
TELEPHONE (410) 316-7800 FAX (410) 316-7818
www.kci.com

OWNER
SCOTT WASHINGTON
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
10910 ROUTE 108
ELLICOTT CITY, MD 21042
PHONE: (410) 313-6801

DEVELOPER
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MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
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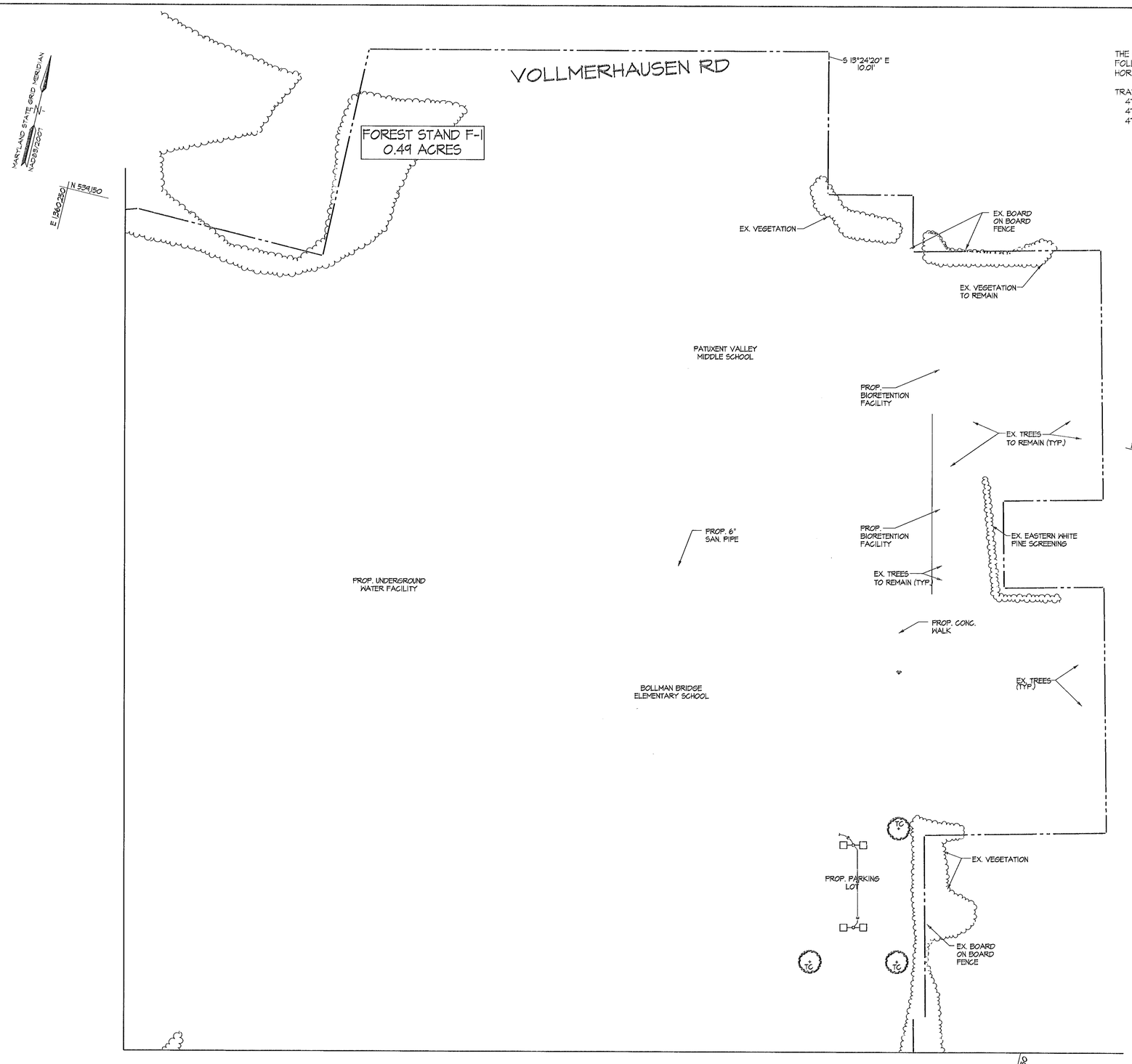
ELLICOTT CITY, MD 21042
PHONE: (410) 313-6801

gilbert — Gilbert Architects Inc.
10451 Mill Run Circle, Suite 400, Owings Mills, MD 21117 — P: 410.356.8856 F: 410.654.8802
626 North Charlotte Street, Lancaster, PA17603 — P: 717.291.1077 F: 717.392.3923
29L Atlantic Avenue #150, Ocean View, DE 19970 — P: 302.449.2492 F: 302.449.2493

PLOTTED: 11:12 AM on Friday, May 20, 2011
FILE: Bemard 20-27105-01 Division Public Lang Devices GLA.Dwg
FILE: Bemard 20-27105-01 Bollman Bridge C.S. Devices GLA.dwg

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

COUNTY FILE # SDP-87-96



LANDSCAPE PLAN

SCALE: 1" = 60'

GRAPHIC SCALE

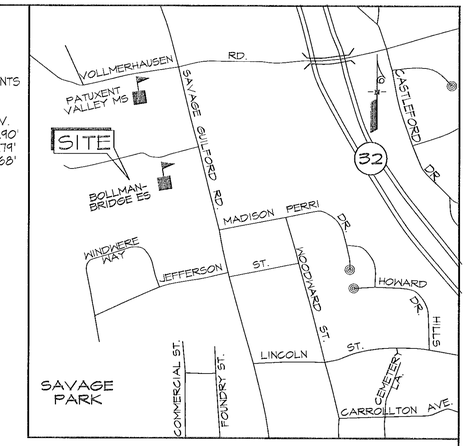
60' 0 60' 120'

(IN FEET)
1 INCH = 60FT.

BENCHMARK DATA

THE HORIZONTAL AND VERTICAL DATUMS ARE BASED ON THE FOLLOWING HOWARD COUNTY GEODETIC SURVEY CONTROL POINTS
HORIZONTAL: NAD 83/07 VERTICAL: NAVD 88

TRAV NAME	NORTH	EAST	ELEV.
47C1	539613.68	1362608.48	260.90'
47FA	536345.20	1361008.50	258.79'
47C0	540529.69	1362460.50	285.68'



VICINITY MAP

SCALE: 1" = 1000'

LEGEND

- EX. INDEX CONTOUR
- EX. INTERMEDIATE CONTOUR
- EX. STORM DRAIN
- EX. SANITARY SEWER
- EX. WATER
- EX. ELECTRIC
- EX. METAL FENCE
- EX. WOODS LINE
- EX. CURB AND GUTTER
- EX. POWER POLE
- EX. MANHOLE
- EX. INLET
- EX. BOLLARD
- EX. GUY WIRE
- EX. BUSHES
- EX. LIGHT POLE
- EX. FIRE HYDRANT
- EX. WATER METER
- EX. SIGN
- EX. TREE
- EX. PROPERTY LINE
- SOIL LINE
- STEEP SLOPES 15% TO 25%
- STEEP SLOPES 25% AND GREATER
- EX. WOODLANDS
- MAJOR DECIDUOUS TREE

AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet.

CHARLES J. CROVO, SR. NO. 17204 — Date 5/31/17

PLANT SCHEDULE

KEY	QUANTITY	BOTANICAL/COMMON NAME	SIZE	ROOT	COMMENTS
MAJOR DECIDUOUS TREES					
TC	3	TILIA AMERICANA 'REDMOND' / REDMOND AMERICAN LINDEN	2 1/2" CAL. MIN.	B&B	FULL CROWN

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/2/11

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/06/11

DIRECTOR — DATE 6/6/11

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEAST CORNER OF THE PROPERTY.

REVISED 7/1/16
ASHER COLLINS & CARTER INC.

SEAL: STATE OF MARYLAND — DAVID E. LOCKE — NO. 654 — REGISTERED LANDSCAPE ARCHITECT

(REVISED)
LANDSCAPE PLAN

BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

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ISSUE DATE: 03-10-11
SHEET 26 OF 40

Drafting	TDB	DATE
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REVISIONS
REVISED SITE DEVELOPMENT PLAN
REVISED SHEET NUMBER

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COUNTY FILE # SDP-87-96

PLOTTED: 7/1/13 AM on Friday, May 20, 2011
BY: Brian Schoen, Kci Technologies, Inc. Linetype: C:\PW_WORK\pw_ad01\wdpw0004\d0027005\77\drawings\LS-2_PLAN.dgn
FILE: MX-2010\27005\77\drawings\LS-2_PLAN.dgn

GENERAL PLANTING NOTES

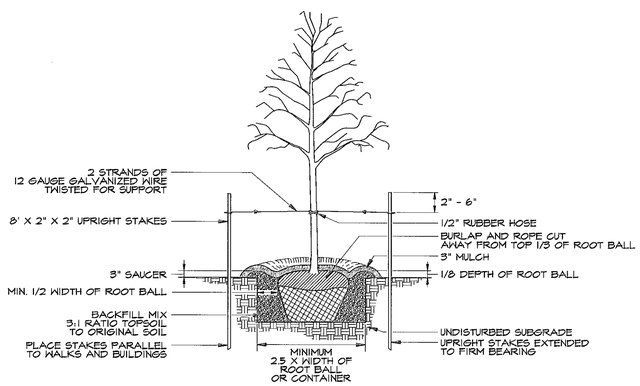
1. THIS PLAN IS FOR LANDSCAPE PURPOSES ONLY.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE ENGINEER OR LANDSCAPE ARCHITECT OF ANY DEVIATION FROM THE PLANS PRIOR TO ANY CHANGE BEING MADE. ANY DEVIATION OF THIS PLAN WITHOUT WRITTEN AUTHORIZATION FROM THE ENGINEER OR LANDSCAPE ARCHITECT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. SHOULD THE CONTRACTOR DISCOVER DISCREPANCIES BETWEEN THE PLANS AND FIELD CONDITIONS, THE ENGINEER OR LANDSCAPE ARCHITECT IS TO BE NOTIFIED IMMEDIATELY TO RESOLVE THE SITUATION. SHOULD THE CONTRACTOR MAKE FIELD CORRECTIONS OR ADJUSTMENTS WITHOUT WRITTEN PERMISSION OF THE ENGINEER OR LANDSCAPE ARCHITECT, THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR THOSE CHANGES.
4. IF A CONFLICT EXISTS BETWEEN DRAWINGS (AND/OR SPECIFICATIONS), THE MORE STRINGENT AND MORE COSTLY REQUIREMENT SHALL APPLY. ITEMS SHOWN ON THE DRAWINGS, BUT NOT SPECIFIED, SHALL APPLY AND BE FURNISHED AND INSTALLED BY THE CONTRACTOR. IF ANY ITEM IS SHOWN ON THE DRAWINGS, BUT NOT INCLUDED IN THE SPECIFICATIONS, PROVIDE ITEM OF QUALITY LEVEL CONSISTENT WITH THE GENERAL QUALITY LEVEL OF THE CONTRACT REQUIREMENTS. BRING CONFLICTS BETWEEN THE DRAWINGS AND SPECIFICATIONS TO THE ATTENTION OF THE ENGINEER OR LANDSCAPE ARCHITECT IMMEDIATELY.
5. THE CONTRACTOR SHALL INSURE THAT HIS WORK DOES NOT INTERRUPT EXISTING OR PROPOSED DRAINAGE PATTERNS.
6. DURING PLANTING OPERATIONS, EXCESS WASTE MATERIALS SHALL BE REMOVED DAILY FROM THE SITE. THE CONTRACTOR SHALL DISPOSE OF STUMPS AND MAJOR ROOTS OF ALL PLANTS TO BE REMOVED. DEPRESSIONS CAUSED BY REMOVAL OPERATIONS SHALL BE REFILLED WITH FERTILE, FRIABLE SOIL REPLACED AND COMPACTED SO AS TO REESTABLISH PROPER GRADE FOR NEW PLANTING.
7. THE CONTRACTOR SHALL CONTACT "MISS UTILITY" FOR UNDERGROUND UTILITY LOCATIONS AT LEAST 72 HOURS PRIOR TO THE LANDSCAPE INSTALLATION.
8. THE CONTRACTOR SHALL NOTIFY THE FACILITY MANAGER, OR OWNER, A MINIMUM OF THREE WORKING DAYS PRIOR TO PLANTING AND CONSTRUCTION FOR AS-BUILT DRAWINGS FOR UNDERGROUND UTILITIES AND IRRIGATION SYSTEM LINES, VALVES, LATERALS AND DRIP TUBING.
9. THE CONTRACTOR IS ADVISED OF THE EXISTENCE OF UNDERGROUND UTILITIES ON THE SITE. THEIR EXACT LOCATION SHALL BE VERIFIED IN THE FIELD WITH THE OWNER OR GENERAL CONTRACTOR PRIOR TO THE COMMENCEMENT OF ANY DIGGING OPERATIONS. IN THE EVENT THEY ARE UNCOVERED, THE LANDSCAPE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ALL DAMAGE TO UTILITIES AND SUCH DAMAGE SHALL NOT RESULT IN ANY ADDITIONAL EXPENSES TO THE OWNER. HAND EXCAVATE TO FULL DEPTH OF INSTALLATION OR UNTIL UTILITY IS FOUND.
10. IF UTILITY LINES ARE ENCOUNTERED IN THE EXCAVATION OF TREE PITS, OTHER LOCATIONS FOR TREES SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL COMPENSATION. NO CHANGES OF LOCATION SHALL BE MADE WITHOUT APPROVAL OF THE LANDSCAPE ARCHITECT.
11. EVERY POSSIBLE SAFEGUARD SHALL BE TAKEN TO PROTECT BUILDING SURFACES, LIGHTING, TRELLISES, EQUIPMENT, AND FURNISHING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE OR INJURY TO PERSONNEL OR PROPERTY WHICH MAY OCCUR AS A CONSEQUENCE OF THE EXECUTION OF THE WORK.
12. THE CONTRACTOR SHALL STAKE ALL INDIVIDUAL SPECIMEN MATERIAL LOCATED ON THE SITE FOR REVIEW AND/OR ADJUSTMENT BY THE LANDSCAPE ARCHITECT PRIOR TO PLANTING. SHRUBS AND TREES SHALL BE STAKED WITH COLOR CODED WIRE SURVEY FLAGS. SURVEYOR GROUND PAINT SHALL BE USED TO MARK OUT GROUNDCOVER BEDS. ALL LOCATIONS ARE TO BE APPROVED BY THE LANDSCAPE ARCHITECT BEFORE PLANTING.
13. PLANTS SHALL CONFORM TO CURRENT "AMERICAN STANDARDS FOR NURSERY STOCK", PARTICULARLY WITH REGARD TO SIZE, GROWTH, SIZE OF BALL, AND DENSITY OF BRANCH STRUCTURE. PLANT MATERIAL SHALL BE TAGGED AT THE SOURCES BY THE LANDSCAPE ARCHITECT UNLESS THIS REQUIREMENT IS SPECIFICALLY WAIVED. REFERENCE "ANSIZ60.1-2004" (OR MOST CURRENT DOCUMENT AVAILABLE AT *WWW.ANLA.ORG*).

TYPE 1 TREE SPECIFICATIONS, MAJOR TREES				
SPECIES EXCEPTIONS OR MODIFICATIONS MUST BE APPROVED				
CALIPER	MINIMUM NUMBER OF BRANCHES OFF OF MAIN STEM	HEIGHT RANGE	WIDTH	CLEARANCE FROM GROUND TO FIRST BRANCH
1 IN.	8	8-10 FT.	3 TO 4 FT.	3 FT
2 IN.	16	12 -14 FT.	5 TO 6 FT.	4 FT.
2.5 IN.	18	12-14 FT.	6 TO 8 FT.	5 FT.
3 IN.	36	14 - 16 FT.	6 TO 8 FT.	5 FT.
4 IN.	45	16-18 FT	8 TO 10 FT	5 FT.
5 IN	SUBJECT TO REVIEW AT PLACE OF GROWTH, OR PHOTOGRAPH			

14. ALL PLANTS (B&B OR CONTAINER) SHALL BE PROPERLY IDENTIFIED BY WEATHER-PROOF LABELS, SECURELY ATTACHED BEFORE DELIVERY TO PROJECT SITE. LABELS SHALL IDENTIFY PLANTS BY NAME, SPECIES, AND SIZE. LABELS SHALL NOT BE REMOVED UNTIL THE FINAL INSPECTION BY THE LANDSCAPE ARCHITECT OR AGENT IN CHARGE. CONTAINERIZED GROUND COVER SHALL BE PROVIDED IN SPECIFIED SIZE CONTAINERS, FULL GROWTH TO AT LEAST CONTAINER SIZE WITH FULLY DEVELOPED, BUT NOT POT BOUND ROOT SYSTEMS AND FREE OF INSECT OR FUNGUS INFESTATIONS.
15. ANY MATERIAL AND/OR WORK MAY BY REJECTED BY THE LANDSCAPE ARCHITECT OR OWNER IF IT DOES NOT MEET THE REQUIREMENTS OF THESE NOTES AND THE PROJECT SCOPE AND SEQUENCE. ALL REJECTED MATERIALS SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR.
15. NO SUBSTITUTIONS SHALL BE MADE WITHOUT WRITTEN CONSENT OF THE LANDSCAPE ARCHITECT.
16. ALL SHRUB AND GROUNDCOVER BEDS SHALL BE PLANTED IN CONTINUOUS PREPARED PLANTING BEDS.
17. ALL SHRUB BEDS AND PERENNIALS SHALL BE MULCHED WITH SHREDDED AND FULLY COMPOSTED HARDWOOD MULCH FREE OF COLOR DYE AS DETAILED AND SPECIFIED EXCEPT WHERE NOTED ON PLANS.
18. INSTALLATION CONTRACTOR MAINTENANCE SHALL BEGIN AFTER EACH PLANT HAS BEEN INSTALLED AND SHALL CONTINUE UNTIL 90 DAYS AFTER FINAL ACCEPTANCE BY THE ARCHITECT OR OWNER REPRESENTATIVE. MAINTENANCE SHALL INCLUDE WATERING, PRUNING, WEEDING, FERTILIZING, MULCHING, REPLACEMENT OF SICK OR DEAD PLANTS, AND ANY OTHER CARE NECESSARY FOR THE PROPER GROWTH OF THE PLANT MATERIAL. THE CONTRACTOR MUST BE ABLE TO PROVIDE CONTINUOUS MAINTENANCE, FOR AN ADDITIONAL COST, FOR A PERIOD OF ONE YEAR AFTER THE DATE OF THE "CERTIFICATE OF SUBSTANTIAL COMPLETION." THE CONTRACTOR WILL BE RESPONSIBLE FOR ITEMS LOST BY THEFT, "ACTS OF GOD," VANDALISM OR ANY CONDITION AFFECTING THE LANDSCAPE PRODUCT NOT SPECIFICALLY RELATED TO THE OWNER OR OTHER SITE CONTRACTOR DAMAGE UP TO DATE OF THE ISSUANCE OF A "CERTIFICATE OF SUBSTANTIAL COMPLETION."
19. UPON COMPLETION OF ALL LANDSCAPING FOR EACH PHASE OF WORK, AN INSPECTION OF THE WORK SHALL BE HELD. THE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT OR OWNER FOR SCHEDULING THE INSPECTION AT LEAST SEVEN (7) DAYS PRIOR TO THE ANTICIPATED INSPECTION DATE.
20. THE CONTRACTOR IS RESPONSIBLE FOR TESTING PROJECT SOILS. THE CONTRACTOR IS TO PROVIDE A CERTIFIED SOILS REPORT TO THE OWNER. THE CONTRACTOR SHALL NOT KNOWINGLY INSTALL PLANTS IN SOIL OR DRAINAGE CONDITIONS THAT ARE NOT CONDUCIVE TO PLANT SURVIVAL. THE CONTRACTOR SHALL VERIFY THAT THE SOILS ON SITE ARE ACCEPTABLE FOR THE PROPER GROWTH OF THE PROPOSED PLANT MATERIAL. THE CONTRACTOR SHALL SUBMIT RECOMMENDATIONS FOR SOIL TEXTURE MODIFICATIONS, SOIL PH MODIFIERS OR ADDITION OF MACRO AND MICRO NUTRIENTS WHICH MAY REQUIRE MODIFICATION OF THE SPECIFIED PLANTING MIX, SPECIFIED HEREIN.
21. QUICK SOIL TESTING AND PLANTING MIX DESIGN CAN BE PROVIDED BY A & L LABORATORIES (800-264-4522), 2790 WHITTEN ROAD, MEMPHIS, TN 38133. PROVIDE SOIL PLANTING MIX FROM SPECS AND ASK FOR COMMENTS FOR ALTERING MIX, IF APPROPRIATE. MULTIPLE SAMPLES MIGHT BE REQUIRED FOR LARGE JOBS WITH VARYING SOIL CONDITIONS. PROVIDE ONE REPORT FOR EACH10,000 SF OF LANDSCAPE, MINIMUM. SOIL SAMPLES SHALL BE TAKEN AT 1 INCH AND 6 INCH DEPTHS FROM AT LEAST 4 LOCATIONS. THESE SAMPLES SHOULD THEN BE MIXED AND SUBMITTED TO THE LAB AS A SINGLE SAMPLE.
22. PLANTING MIX - ADJUST AS RECOMMENDED BY THE SOIL LABORATORY.
    a. PLANTING MIX SHALL BE PREPARED AT APPROVED ON-SITE STAGING AREA USING APPROVED ON-SITE EXISTING SOIL. MIX MINIMUM QUANTITIES OF 20 CUBIC YARDS OR SUFFICIENT MIX FOR ENTIRE JOB IF LESS THEN 20 CUBIC YARDS IS REQUIRED.
    b. THOROUGHLY MIXED IN THE FOLLOWING PROPORTIONS FOR TREE AND SHRUB PLANTING MIX:
       0.5 CY EXISTING SOIL
       0.2 CY SHARP SAND
       0.3 CY WOOD RESIDUALS (MUST BE BROKEN DOWN BY AT LEAST TWO YEARS DECOMPOSITION)
       4.5 LBS TREBLE SUPERPHOSPHATE (0-46-0)
       5.0 LBS DOLOMITIC LIMESTONE (ELIMINATE FOR ACID LOVING PLANTS)
    c. FOR PLANTING BEDS, SHRUB AND GROUNDCOVER INCORPORATE THE FOLLOWING INGREDIENTS PER 20 SF AND INCORPORATE INTO TOP 8 INCHES OF EXISTING SOILS BY ROTOTILLING OR SIMILAR METHOD OF INCORPORATION.
       0.1 CY SHARP SAND
       0.2 CY ORGANIC MATERIAL
       4.5 LBS TREBLE SUPERPHOSPHATE (0-46-0)
       5.0 LBS DOLMONITE LIMESTONE (ELIMINATE FOR ACID LOVING PLANTS)
    d. IF SOIL TESTS RESULTS AND TESTING LAB RECOMMENDATIONS CONFLICT WITH THE SPECIFIED SOIL MIX THE CONTRACTOR SHALL BRING IT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR REVIEW, ALTERATION APPROVAL.
    e. THE LANDSCAPE CONSTRACTOR SHALL PROVIDE THE LANDSCAPE ARCHITECT / OWNER A 1 CF SAMPLE OF SPECIFIED MIXES AND LAB REPORTS PRIOR TO USE.
23. WARRANTY: ALL PLANT MATERIAL SHALL BE GUARANTEED FOR TWELVE MONTHS FROM THE DATE OF ACCEPTANCE IN WRITING BY THE OWNER OR BY ISSUANCE OF AN AIA STANDARD FORM "CERTIFICATE OF SUBSTANTIAL COMPLETION." THIS CERTIFICATE WILL BE ISSUED AFTER FINAL INSPECTION BY THE LANDSCAPE ARCHITECT. IF THE LANDSCAPE ARCHITECT IS SATISFIED THAT THE PROJECT IS SUBSTANTIALLY COMPLETE, THE CERTIFICATE WILL BE PREPARED WITH AN INSPECTION DATE AND CONDITIONS WHICH MUST BE SATISFIED IN A SPECIFIC PERIOD OF TIME (GENERALLY 30 DAYS). IF THESE CONDITIONS ARE NOT MET, THE CERTIFICATE MAY BE REVOKED AND A NEW INSPECTION WILL BE REQUIRED AND THE WARRANTY PERIOD SHALL BE EXTENDED ACCORDINGLY. OTHER INSPECTIONS MAY BE APPROPRIATE TO VERIFY COMPLIANCE WITH THE PUNCH LIST. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR A ONE-TIME REPLACEMENT ONLY. REPLACEMENTS SHALL BE OF THE SAME TYPE, SIZE AND QUALITY AS THE ORIGINAL SPECIES UNLESS OTHER WISE NEGOTIATED.

MINIMUM LANDSCAPE MAINTENANCE REQUIREMENTS

1. LAWN AREAS SHALL BE MOWED TO A HEIGHT OF 2 TO 3 INCHES AND NOT ALLOWED TO REACH A HEIGHT OF 4 INCHES BEFORE MOWING.
2. ALL CURBS AND WALKS SHALL BE EDGED AS NEEDED.
3. ALL LAWN AREAS ADJACENT TO BUILDING FACES OR STRUCTURES SHALL BE TRIMMED.
4. A SLOW RELEASE NITROGEN BALANCED FERTILIZER WITH A 2-1-1 RATIO SHALL BE APPLIED AT A RATE OF 2 POUNDS OF NITROGEN PER 1000 SQUARE FEET IN SEPTEMBER, OCTOBER AND FEBRUARY.
5. LIME SHALL BE APPLIED AT THE RATE DETERMINED BY A SOILS REPORT.
6. IT IS RECOMMENDED THAT THE LAWN AREAS BE TREATED IN MID-MARCH TO EARLY APRIL WITH PRE-EMERGENT HERBICIDE (BETASAN) OR EQUAL APPLIED AT THE MANUFACTURER'S RECOMMENDED RATE.
7. A POST-EMERGENT HERBICIDE (TRIMEC) OR EQUAL IS RECOMMENDED TO BE SPRAYED ON LAWN AREAS IN THE LATE SPRING OR THE EARLY FALL. FOLLOW MANUFACTURER'S RATES AND RECOMMENDATIONS.
8. INSECTICIDES AND FUNGICIDES ARE RECOMMENDED FOR INSECT AND DISEASE CONTROL.
9. RE-SEED BARE AREAS OF LAWN AS NECESSARY. YEARLY AERATION IS RECOMMENDED.
10. ALL TRASH, LITTER, AND DEBRIS SHALL BE REMOVED FROM LAWN AREAS, PARKING LOTS, AND SHRUB BEDS AS NEEDED.
11. MULCH ALL SHRUB BEDS AND TREES YEARLY WITH 3 INCHES OF SHREDDED HARDWOOD BARK MULCH FREE OF COLOR DYE. BARK SHOULD BE PULLED AWAY FROM THE TRUNK / ROOT COLLAR.
12. MULCH ALL PERENNIAL ORNAMENTAL GRASS AND ANNUAL BEDS YEARLY WITH 2 INCHES OF SHREDDED HARDWOOD BARK MULCH FREE OF COLOR DYE.
13. PERMIT SHRUBS AND TREES TO GROW AND ENLARGE TO THEIR DESIGN SIZE. CONSULT PROJECT LANDSCAPE ARCHITECT FOR DETAILS.
14. PRUNE TREES IN ACCORDANCE WITH LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREAS.
15. THE OWNER OF ANY PROPERTY ON WHICH LANDSCAPING HAS BEEN INSTALLED PURSUANT TO THIS CHAPTER SHALL MAINTAIN THE LANDSCAPING IN GOOD CONDITION IN PERPETUITY. A LANDSCAPE MAINTENANCE AGREEMENT SHALL BE REQUIRED. FAILURE TO REPLACE DEAD OR DYING PLS OR THE REMOVAL OF ANY INSTALLED PLS IS A VIOLATION OF THIS CHAPTER.
16. ACCEPTABLE PLANT SURVIVAL SHALL BE DEFINED AS NOT MORE THAN 1/3 MORTALITY. A 12 MONTH INSPECTION WILL BE PERFORMED BY THE COUNTY. NO INSPECTIONS SHALL BE FINALIZED FROM NOVEMBER 1ST TO MARCH 1ST.



DECIDUOUS TREE PLANTING DETAIL

B & B
NOT TO SCALE

SCHEDULE A
PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT TO PERIMETER PROPERTIES	ADJACENT TO PERIMETER PROPERTIES
LANDSCAPE TYPE	A (ADJACENT TO EXISTING NON-RESIDENTIAL)	C (ADJACENT TO EXISTING RESIDENTIAL)
LINEAR FEET OF ROADWAY FRONTAGE / PERIMETER	1,874 LF	3,113 LF
CREDIT FOR EXIST. VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	YES 1,874 LF	YES 2,172 LF
CREDIT FOR WALL, FENCE OF BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	YES 440 LF
NUMBER OF PLANTS REQUIRED SHADE TREES EVERGREEN TREES SHRUBS	 31 NA NA	 78 156 NA
NUMBER OF PLANTS PROVIDED SHADE TREES EVERGREEN TREES SHRUBS OTHER TREES (2:1 SUBSTITUTION) SHRUBS (10:1 SUBSTITUTION) (DESCRIBE PLANT SUBSTITUTIONS CREDITS BELOW IF NEEDED)	 0 0 0 0 0	 0 0 0 0 0
COMMENTS: LANDSCAPE REQUIREMENTS ARE MET FOR BOTH CATEGORIES BY EXISTING LANDSCAPE MATERIAL AND FOREST ALONG THE PERIMETER OF THE PROPERTY. IN ACCORDANCE WITH HOWARD COUNTY LANDSCAPE MANUAL, LANDSCAPE REQUIREMENTS ARE NOT REQUIRED WHERE PROPERTY BOUNDARY CROSSES AN EXISTING RIGHT OF WAY.		

SCHEDULE D
STORMWATER MANAGEMENT AREA LANDSCAPING

LINEAR FEET OF PERIMETER	460 LF
NUMBER OF TREES REQUIRED SHADE TREES EVERGREEN TREES	 10 13
CREDIT FOR EXIST. VEGETATION (NO, YES AND %)	YES 100%
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	NA
NUMBER OF TREES PROVIDED SHADE TREES EVERGREEN TREES SHRUBS	 0 0 0
COMMENTS: THE RESIDENTIAL LOT ADJACENT TO THE PROPOSED LOCATION OF THE STORMWATER MANAGEMENT FACILITY HAS AN EXISTING EASTERN WHITE PINE SCREEN THAT BORDERS THE PROPERTY. EXISTING SHADE TREES TO REMAIN ARE LOCATED AROUND THE PROPOSED SWM FACILITY.	

SCHEDULE B
PARKING LOT INTERNAL LANDSCAPING

NUMBER OF PARKING SPACES	54 SPACES
NUMBER OF TREES REQUIRED	3 SHADE TREES
NUMBER OF TREES PROVIDED SHADE TREES OTHER TREES (2:1) SUBSTITUTION	 3 SHADE TREES

AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet.

CHARLES J. CROVO, JR. NO. 17024 — 5/31/17 Date

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6/2/11
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6/06/11
DIRECTOR	DATE 6/6/11

RAYMOND G. BURKE
PLANNING & LANDSCAPE ARCHITECT

SEAL: STATE OF MARYLAND — DAVID E. LOCKE — NO. 654 — REGISTERED LANDSCAPE ARCHITECT

(REVISED)
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ELLICOTT CITY, MD 21042
PHONE: (410) 313-6807

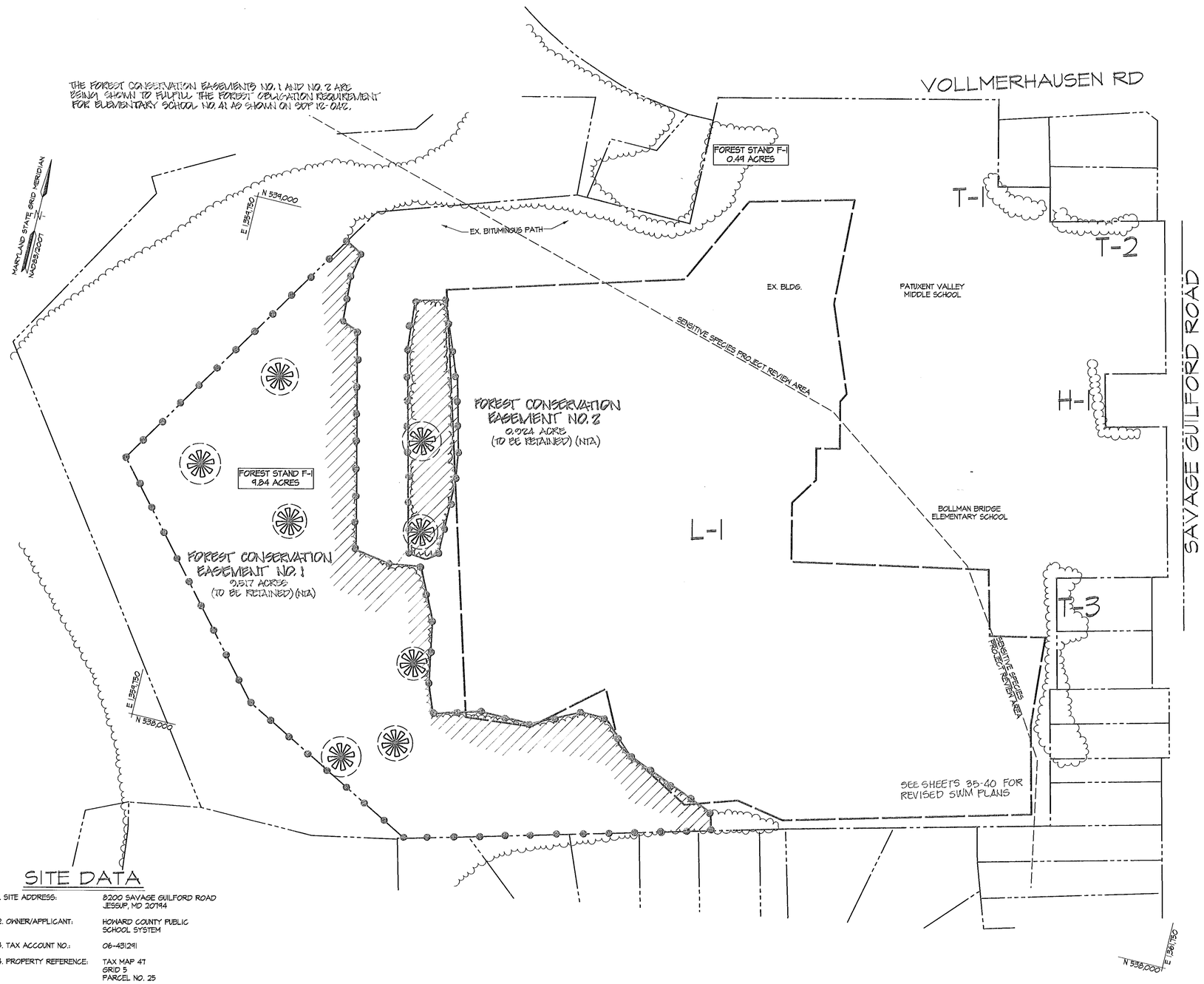
DEVELOPER
SCOTT WASHINGTON
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
10910 ROUTE 108
ELLICOTT CITY, MD 21042
PHONE: (410) 313-6807

gilbert

Gilbert Architects Inc.
10451 Mill Run Circle , Suite 400, Owings Mills, MD 21117, P: 410.356.8856 F: 410.654.8802
626 North Charlotte Street, Lancaster, PA17603, P: 717.291.1077 F: 717.392.3923
29L Atlantic Avenue #150, Ocean View, DE 19970, P: 302.449.2492 F: 302.449.2493

PLOTTED: 11:14 AM on Friday, May 20, 2011
By: Brian Sheridan, Gilbert Architects, Inc.
FILE: M:\2010\2710037\drawings\C.LS.3_NOTES.dgn

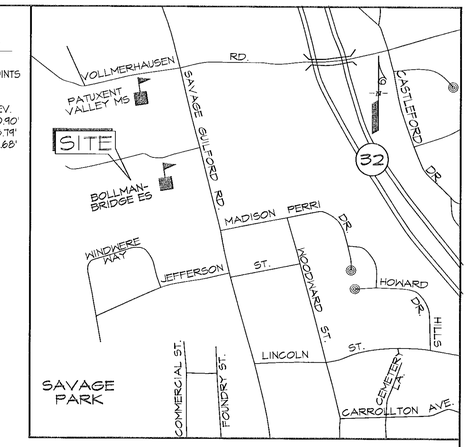
THE FOREST CONSERVATION EASEMENTS NO. 1 AND NO. 2 ARE BEING SHOWN TO FULFILL THE FOREST OBLIGATION REQUIREMENT FOR ELEMENTARY SCHOOL NO. 41 AS SHOWN ON SDP 12-042.



BENCHMARK DATA

THE HORIZONTAL AND VERTICAL DATUMS ARE BASED ON THE FOLLOWING HOWARD COUNTY GEODETIC SURVEY CONTROL POINTS
HORIZONTAL: NAD 83/07 VERTICAL: NAVD 88

TRAV NAME	NORTH	EAST	ELEV.
47G1	539613.68	1362608.48	260.90'
47FA	536345.20	1361008.50	258.79'
47G0	540529.69	1362460.50	285.68'



VICINITY MAP

SCALE: 1" = 1000'

LEGEND

- EX. INDEX CONTOUR
- EX. INTERMEDIATE CONTOUR
- EX. STORM DRAIN
- EX. SANITARY SEWER
- EX. WATER
- EX. ELECTRIC
- EX. METAL FENCE
- EX. WOODS LINE
- EX. CURB AND GUTTER
- EX. POWER POLE
- EX. MANHOLE
- EX. INLET
- EX. BOLLARD
- EX. GUY WIRE
- EX. BUSHES
- EX. LIGHT POLE
- EX. FIRE HYDRANT
- EX. WATER METER
- EX. SIGN
- EX. TREE
- EX. PROPERTY LINE
- SOIL LINE
- STEEP SLOPES 15% TO 25%
- STEEP SLOPES 25% AND GREATER
- EX. FOREST
- SPECIMEN TREES
- CRITICAL ROOT ZONE
- LAWN / FIELD BOUNDARY
- DENOTES FOREST CONSERVATION RETENTION SIGN

AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet.

CHARLES J. ORONO, SR. NO. 19204 — 5/31/11 Date

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

THIS PLAN WAS PREPARED BY:

ANDREA E. LAKE — 5-24-11 DATE
MD DEPARTMENT OF NATURAL RESOURCES
QUALIFIED PROFESSIONAL PER COMAR 08.19.16.01

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 6/2/11 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT — 6/06/11 DATE

DIRECTOR — 6/6/11 DATE

(REVISED)
FOREST STAND DELINEATION
BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

ZONED R-20
TAX MAP No. 47, GRID 5, PARCEL 25
ELECTION DISTRICT 06
8200 SAVAGE GUILFORD ROAD
JESSUP, MD 20794

FSD-1

ISSUE DATE: 03-10-11
SHEET 28 OF 40

SITE DATA

1. SITE ADDRESS: 8200 SAVAGE GUILFORD ROAD JESSUP, MD 20794
2. OWNER/APPLICANT: HOWARD COUNTY PUBLIC SCHOOL SYSTEM
3. TAX ACCOUNT NO.: 06-431291
4. PROPERTY REFERENCE: TAX MAP 47 GRID 5 PARCEL NO. 25
5. TAX ASSESMENT DISTRICT: 06
6. ZONING: R-20
   EXISTING USE: BOLLMAN BRIDGE ELEMENTARY SCHOOL/ PATUXENT VALLEY MIDDLE SCHOOL
7. AREA OF SITE: 46.364 ACRES TOTAL
8. LIMIT OF DISTURBANCE: 299,963 SF / 6.88 ACRES
9. THIS SITE LIES WITHIN FEMA ZONE C (AREAS OF MINIMAL FLOODING) AS SHOWN ON F.I.R.M. MAP NO. 240044-0043-B AND DATED DECEMBER 4, 1986.

FISHER COLLINS AND CARTER INC.
REVISION 7/16/16
REVISION 7/1/16

OVERALL FOREST STAND DELINEATION

SCALE: 1" = 100'
100' 0 100' 200'
SCALE: 1" = 100'

Drafting	TDB	DATE	REVISIONS
Check	JGH	05/20/11	REVISED SITE DEVELOPMENT PLAN
		7/16/16	REVISED FOREST CONSERVATION EASEMENT
Design	BES	7-1-16	REVISED SHEET NUMBER
Check	NCW		

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
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ELLICOTT CITY, MD 21042
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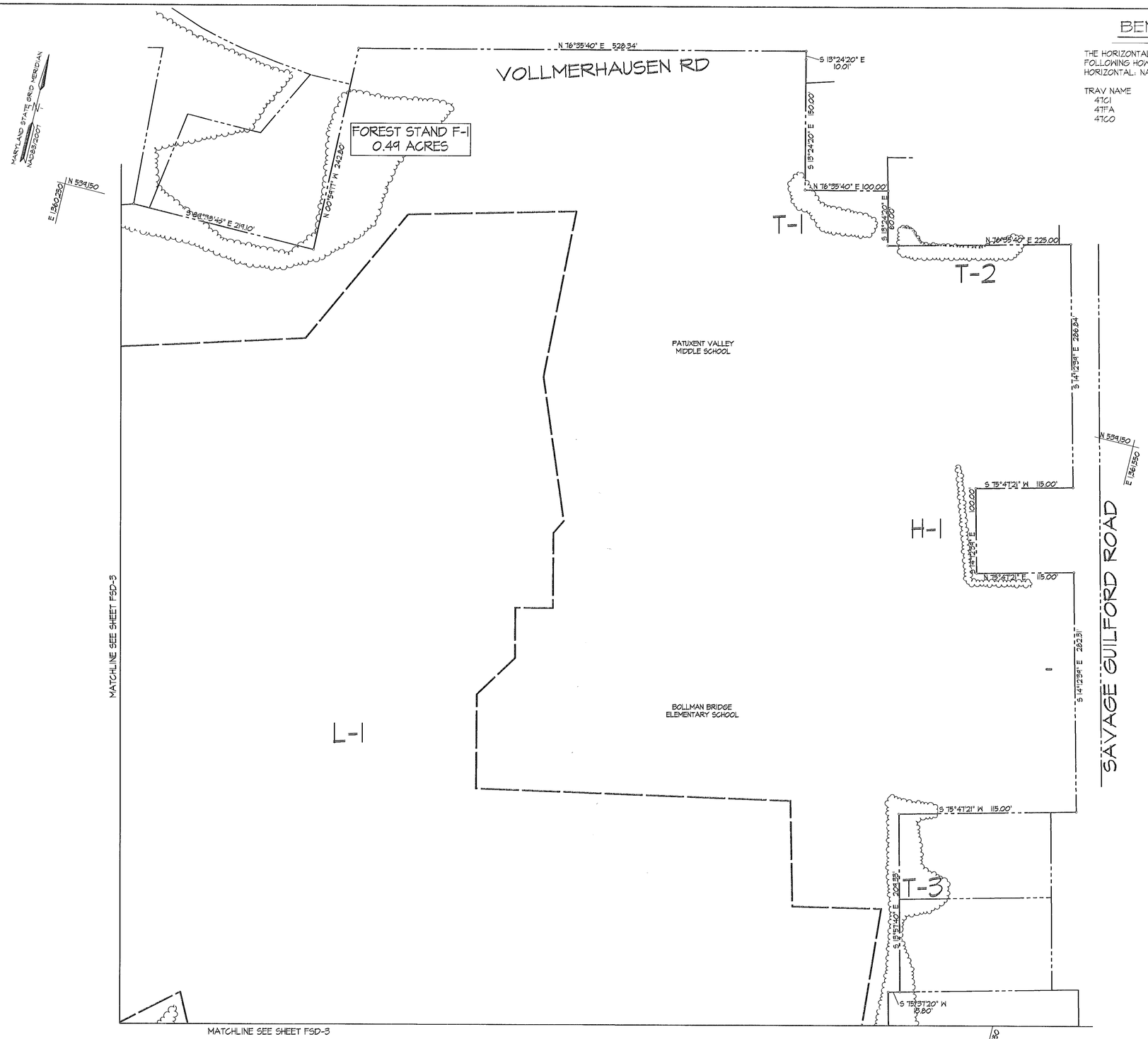
29L Atlantic Avenue #150, Ocean View, DE 19970, P: 302.449.2492 F: 302.449.2493

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

COUNTY FILE # SDP-87-96

PLOTTED: 7/13/16 AM on Friday, May 20, 2011
BY: Bernard Siskelman Division: P:\89_Howard County Develop GMA Emp
FILE: M:\2010\2110057\drawings\C-FSD-1.dgn



FOREST STAND DELINEATION

SCALE: 1" = 60'

GRAPHIC SCALE

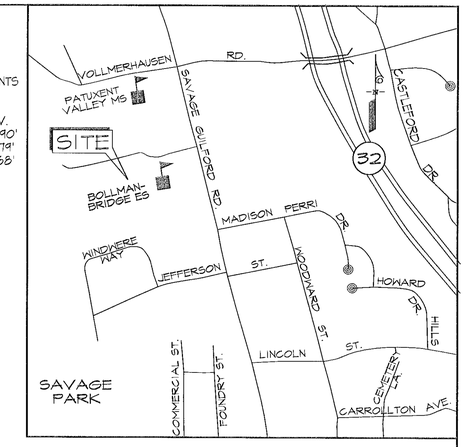
60' 0 60' 120'

(IN FEET)
1 INCH = 60 FT.

BENCHMARK DATA

THE HORIZONTAL AND VERTICAL DATUMS ARE BASED ON THE FOLLOWING HOWARD COUNTY GEODETIC SURVEY CONTROL POINTS
HORIZONTAL: NAD 83/07 VERTICAL: NAVD 88

TRAV NAME	NORTH	EAST	ELEV.
47C1	539613.68	1362608.48	260.90'
47FA	536345.20	1361008.50	258.79'
47C0	540529.69	1362460.50	285.68'



VICINITY MAP

SCALE: 1" = 1000'

LEGEND

- EX. INDEX CONTOUR
- EX. INTERMEDIATE CONTOUR
- EX. STORM DRAIN
- EX. SANITARY SEWER
- EX. WATER
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- EX. BUSHES
- EX. LIGHT POLE
- EX. FIRE HYDRANT
- EX. WATER METER
- EX. SIGN
- EX. TREE
- EX. PROPERTY LINE
- SOIL LINE
- STEEP SLOPES 15% TO 25%
- STEEP SLOPES 25% AND GREATER
- EX. FOREST

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

THIS PLAN WAS PREPARED BY:

Andrea E. Lake 5-24-11
ANDREA E. LAKE DATE
MD DEPARTMENT OF NATURAL RESOURCES
QUALIFIED PROFESSIONAL PER COMAR 08.19.18.01

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/2/11
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/06/11
DIRECTOR — DATE 6/6/11

AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet.

CHARLES J. CROVO, SR. NO. 13204 — Date 5/31/17

REVISED BY: FISHER COLLINS & CARTER, INC.

(REVISED)
FOREST STAND DELINEATION
BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

ZONED R-20
TAX MAP No. 47, GRID 5, PARCEL 25
ELECTION DISTRICT 06
8200 SAVAGE GUILFORD ROAD
JESSUP, MD 20794

FSD-2

ISSUE DATE: 03-10-11
SHEET 24 OF 40

		DATE	REVISIONS
Drafting	TDB	05/20/11	REVISED SITE DEVELOPMENT PLAN
Check	JCH	7-1-16	REVISED SHEET NUMBER
Design	BES		
Check	NGW		

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936 RIDGEBROOK ROAD
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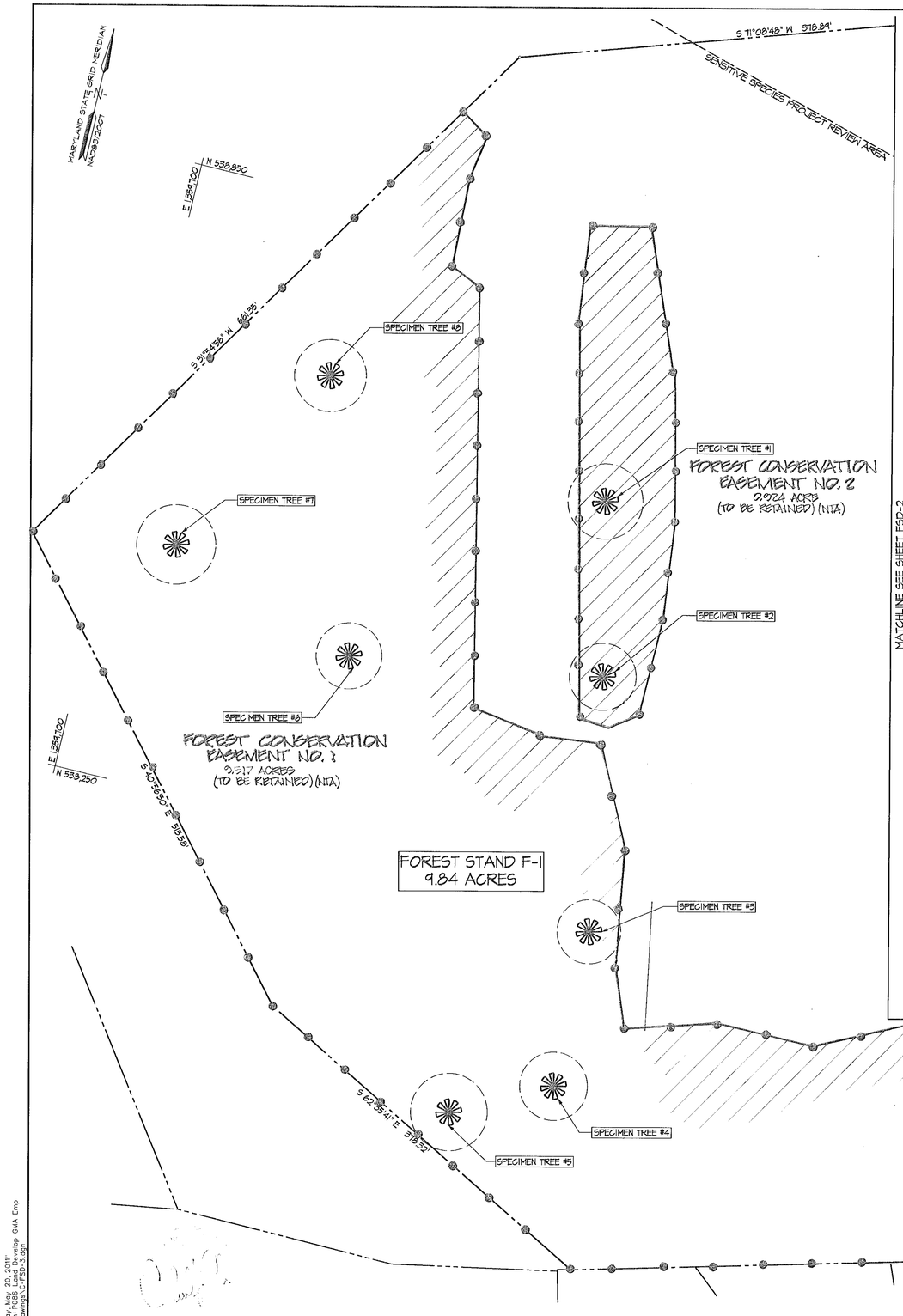
Ocean View, DE 19970
P: 302.449.2492 F: 302.449.2493

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

COUNTY FILE # SDP-87-96

PLOTTED: 11:00 AM on Friday, May 20, 2011
BY: Bartolo, Bryan E. (Bryan.Bartolo@kci.com)
FILE: M:\2010\270057\drawings\FSD-2.dgn



GENERAL NOTES

1. THE TOPOGRAPHY SHOWN ON THIS PLAN WAS OBTAINED BY HOWARD COUNTY AERIAL TOPOGRAGHY AND SUPPLEMENTED BY A FIELD SURVEY CONDUCTED BY KCI TECHNOLOGIES IN JULY 2010.

2. THERE ARE NO WETLANDS, STREAMS OR OTHER BODIES OF WATER LOCATED ON SITE.

3. NO 100-YEAR FLOOD PLAIN EXISTS ON THIS PROPERTY PER FEMA F.I.R.M MAP NO. 240044 0043B DATED DECEMBER 4, 1986. THE MAP INDICATES THAT THE PROPERTY SHOWN HEREIN LIES WITHIN ZONE "C", AREAS OF MINIMAL FLOODING.

4. THE PROPERTY BOUNDARIES ON THIS PLAN WERE OBTAINED BY KCI TECHNOLOGIES.

5. THE SUBJECT PROPERTY IS NOT WITHIN OR ADJACENT TO A RARE THREATENED OR ENDAGERED SPECIES EVALUATION AREA ACCORDING TO THE U.S. FISH AND WILDLIFE SERVICE LETTER RECIEVED NOVEMBER 9, 2010.

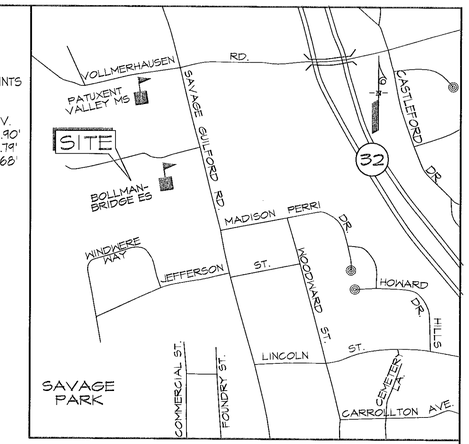
7. THERE ARE NO HISTORIC BUILDINGS WITHIN OR ADJACENT TO THE SUBJECT PROPERTY, AS CONFIRMED BY THE MARYLAND HISTORIC TRUST. THERE ARE NO SCENIC OR HISTORIC ROADS ON OR ADJACENT TO THE SUBJECT PROPERTY.

6. THERE ARE EIGHT (8) SPECIMEN TREE WITHIN THE PROPERTY. THESE TREES WHERE LOCATED DURING THE FIELD SURVEY CONDUCTED BY KCI TECHNOLOGIES ON NOVEMBER 29, 2010.

BENCHMARK DATA

THE HORIZONTAL AND VERTICAL DATUMS ARE BASED ON THE FOLLOWING HOWARD COUNTY GEODETIC SURVEY CONTROL POINTS
HORIZONTAL: NAD 83/07 VERTICAL: NAVD 88

TRAV NAME	NORTH	EAST	ELEV.
47CI	539613.68	1362608.48	260.90'
47FA	536345.20	1361008.50	258.79'
47CO	540529.69	1362460.50	285.68'



VICINITY MAP

SCALE: 1" = 1000'

SITE STATISTICS TABLE

GROSS TRACT AREA	46.51 ACRES
EXISTING WOODLAND AREA	10.33 ACRES
100-YEAR FLOODPLAIN	0.00 ACRES

FOREST STAND SUMMARY TABLE

FOREST TYPE	TULIP POPLAR
DOMINANT SIZE CLASS	15"-25"
DOMINANT TREE	FAGUS GRANDIFOLIA
DOMINANT CANOPY TREE	LIRIODENDRON TULIPIFERA
TREES PER ACRE	250 TREES / ACRE
DEAD TREES PER ACRE	50 TREES / ACRE
COMMON UNDERSTORY SPECIES	REGENERATIVE SPECIES
FOREST STUCTURE VALUE	GOOD
% CANOPY COVERAGE	75%
% UNDERSTORY COVERAGE	25%
% HERBACEOS COVERAGE (WOODY VINES)	10%
% DOWNED WOODY MATERIAL	15%
% INVASIVE SPECIES	10%

SPECIMEN TREE CHART

NUMBER	SIZE	BOTANICAL / COMMON NAME	CONDITION	DISPOSITION
1	36.5"	QUERCUS VELUNTINA / BLACK OAK	GOOD	REMAIN
2	32.5"	QUERCUS VELUNTINA / BLACK OAK	POOR	REMAIN
3	31.0"	QUERCUS RUBRA / RED OAK	GOOD	REMAIN
4	33.0"	QUERCUS PALUSTRIS / PIN OAK	GOOD	REMAIN
5	37.5"	QUERCUS PALUSTRIS / PIN OAK	FAIR	REMAIN
6	32.0"	LIRIODENDRON TULIPIFERA / TULIP POPLAR	GOOD	REMAIN
7	38.5"	QUERCUS RUBRA / RED OAK	GOOD	REMAIN
8	35"	QUERCUS RUBRA / RED OAK	POOR	REMAIN

SOILS TABLE

SOIL TYPE	DESCRIPTION	HYDRIC (YES OR NO)	K-VALUE
Fa	Fallsington sandy loam, 0 to 2 percent slopes	YES	.32
LeB	Legore silt loam, 3 to 8 percent slopes, stony	NO	.32
LrF	Legore - Relay gravelly loams, 25 to 65 percent slopes, very stony	NO	.32
UcB	Urban land-Chillum-Beltsville complex, 0to 5 percent slopes	NO	.37

AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet

CHARLES J. CROVO, JR. NO. 13204 — Date 5/31/11

LEGEND

- EX. INDEX CONTOUR
- EX. INTERMEDIATE CONTOUR
- EX. STORM DRAIN
- EX. SANITARY SEWER
- EX. WATER
- EX. ELECTRIC
- EX. METAL FENCE
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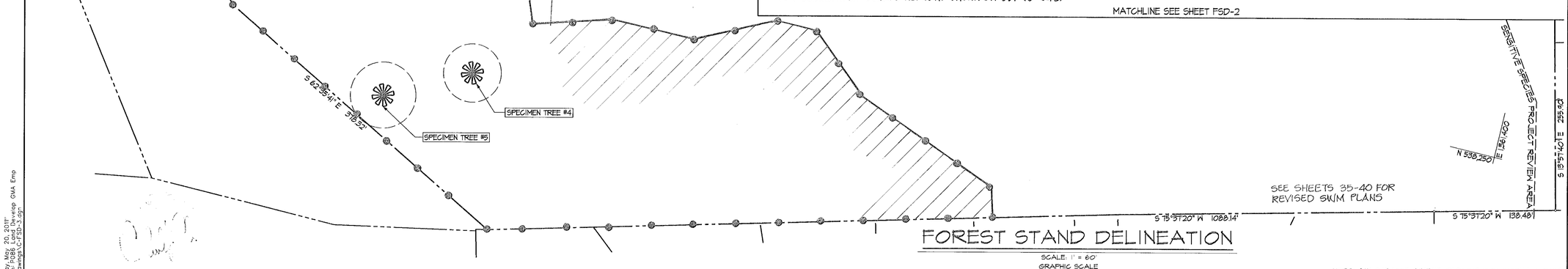
- STEEP SLOPES 15% TO 25%
- STEEP SLOPES 25% AND GREATER
- EX. FOREST
- SPECIMEN TREE
- CRITICAL ROOT ZONE
- DENOTES FOREST CONSERVATION RETENTION AREA

THE FOREST CONSERVATION EASEMENTS NO. 1 AND NO. 2 ARE BEING SHOWN TO FULFILL THE FOREST OBLIGATION REQUIREMENT FOR ELEMENTARY SCHOOL NO. 4, AS SHOWN ON SDP 12-042.

MATCHLINE SEE SHEET FSD-2



SEE SHEETS 35-40 FOR REVISED SWM PLANS

FOREST STAND DELINEATION

SCALE: 1" = 60'
GRAPHIC SCALE
60' 0 60' 120'
(IN FEET)
1 INCH = 60FT.

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

THIS PLAN WAS PREPARED BY:

Andrea E. Lake — 5-24-11 DATE
ANDREA E. LAKE
MD DEPARTMENT OF NATURAL RESOURCES
QUALIFIED PROFESSIONAL PER COMAR 08.19.16.01

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/6/11
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/06/11
DIRECTOR — DATE 6/6/11

(REVISED)
FOREST STAND DELINEATION

BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

ZONED R-20
TAX MAP No. 47, GRID 5, PARCEL 25
ELECTION DISTRICT 06
8200 SAVAGE GUILFORD ROAD
JESSUP, MD 20794

FSD-3

ISSUE DATE: 03-10-11
SHEET 30 OF 40

Drafting	TDB	DATE	REVISIONS
Check	JGH	05/20/11	REVISED SITE DEVELOPMENT PLAN
Design	BES	7/6/12	REVISED FOREST CONSERVATION EASEMENT
Check	NGW	7-1-16	REVISED SHEET NUMBER

FISHER COLLENBACH & BERGING
REVISION 7/6/12
REVISION 7/1/16

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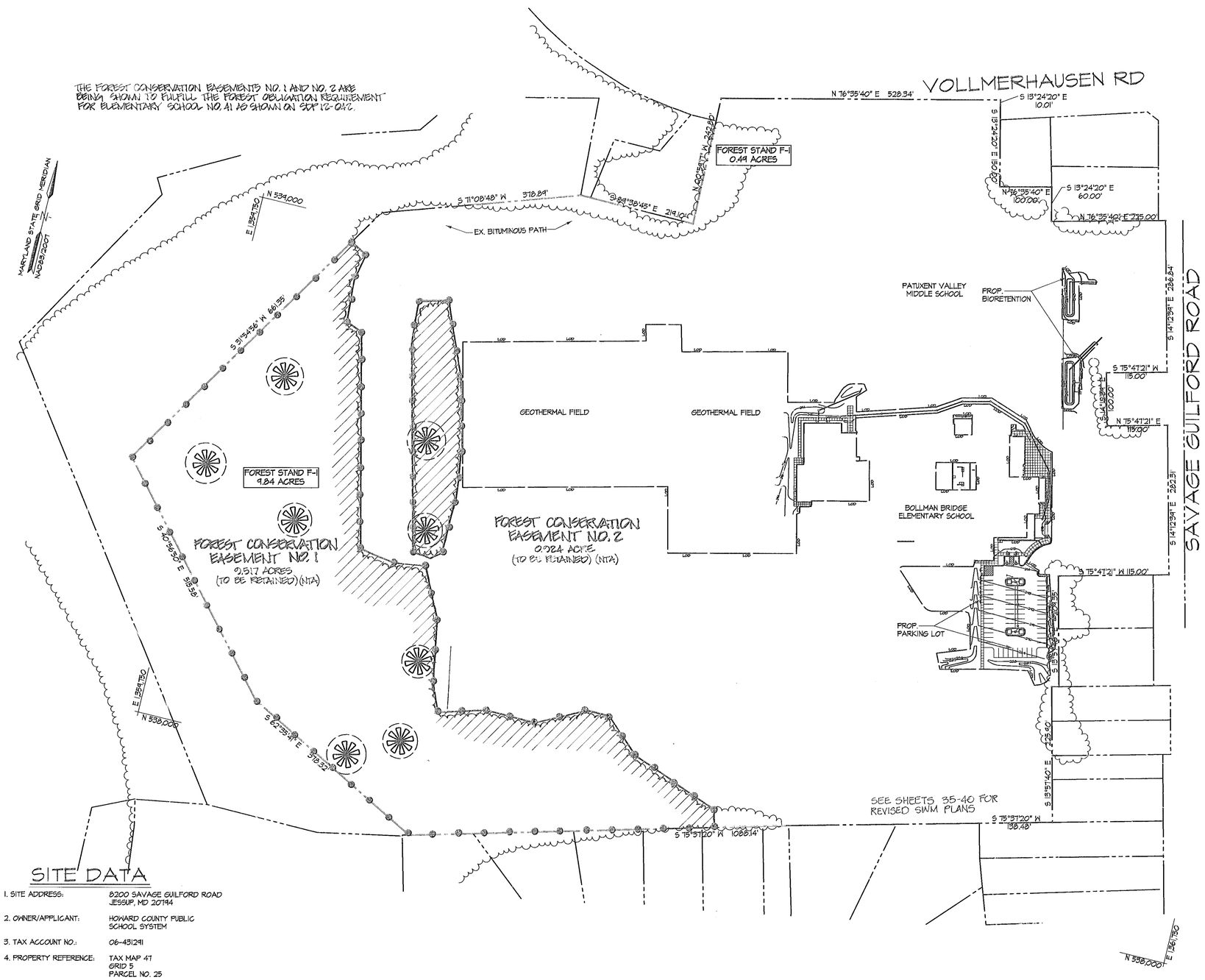
29L Atlantic Avenue #150, Ocean View, DE 19970 — P: 302.449.2492 F: 302.449.2493

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

COUNTY FILE # SDP-87-96

PLOTTED: 11:00 AM on Friday, May 20, 2011
BY: Bernard Spielman, Division: PDRB, Land Develop. GMA Emp
FILE: M:\2005\27005\77\drawings\C-FSD-3.dgn

THE FOREST CONSERVATION EASEMENTS NO. 1 AND NO. 2 ARE BEING SHOWN TO FULFILL THE FOREST OBLIGATION REQUIREMENT FOR ELEMENTARY SCHOOL NO. 41 AS SHOWN ON SDP 12-042.



BENCHMARK DATA

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HORIZONTAL: NAD 83/01 VERTICAL: NAVD 88

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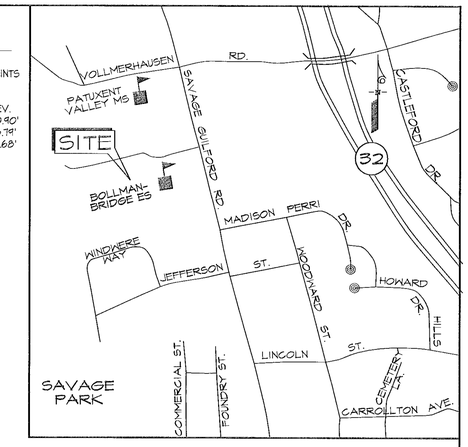

VICINITY MAP

SCALE: 1" = 1000'

LEGEND

- EX. INDEX CONTOUR
- EX. INTERMEDIATE CONTOUR
- EX. STORM DRAIN
- EX. SANITARY SEWER
- EX. WATER
- EX. ELECTRIC
- EX. METAL FENCE
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- EX. PROPERTY LINE
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- STEEP SLOPES 15% TO 25%
- STEEP SLOPES 25% AND GREATER
- EX. FOREST
- SPECIMEN TREES
- CRITICAL ROOT ZONE
- DENOTES FOREST CONSERVATION RETENTION SIGN.

AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet.

CHARLES J. CROVO, JR. NO. 19704 — Date 5/31/11

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

THIS PLAN WAS PREPARED BY:

ANDREA E. LAKE — DATE 5-24-11
MD DEPARTMENT OF NATURAL RESOURCES
QUALIFIED PROFESSIONAL PER COMAR 08.19.16.01

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/2/11
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/06/11
DIRECTOR — DATE 6/6/11

SITE DATA

1. SITE ADDRESS: 8200 SAVAGE GUILFORD ROAD JESSUP, MD 20794
2. OWNER/APPLICANT: HOWARD COUNTY PUBLIC SCHOOL SYSTEM
3. TAX ACCOUNT NO.: 06-431241
4. PROPERTY REFERENCE: TAX MAP 47 GRID 5 PARCEL NO. 25
5. TAX ASSESMENT DISTRICT: 06
6. ZONING: R-20
   EXISTING USE: BOLLMAN BRIDGE ELEMENTARY SCHOOL/ PATUXENT VALLEY MIDDLE SCHOOL
7. AREA OF SITE: 46.564 ACRES TOTAL
8. LIMIT OF DISTURBANCE: 299,936 SF / 6.88 ACRES
9. THIS SITE LIES WITHIN FEMA ZONE C (AREAS OF MINIMAL FLOODING) AS SHOWN ON F.I.R.M. MAP NO. 240044-0043-B AND DATED DECEMBER 4, 1986.

ASHRA CRUMLING AND CHATERLING
REVISION 7/16/12. REVISION 7/1/16

OVERALL FOREST CONSERVATION PLAN

SCALE: 1" = 100'
100' 0 100' 200'
SCALE: 1" = 100'

Drafting	TDB	DATE	REVISIONS
Check	JCH	05/20/11	REVISED SITE DEVELOPMENT PLAN
Design	BES	7/16/12	REVISED FOREST CONSERVATION EASEMENT
Check	NCW	7-1-16	REVISE SHEET NUMBER

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
936 RUTLEDGE ROAD, SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818
www.kci.com

OWNER
SCOTT WASHINGTON
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
10910 ROUTE 108
ELLICOTT CITY, MD 21042
PHONE: (410) 313-6807

DEVELOPER
SCOTT WASHINGTON
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
10910 ROUTE 108
ELLICOTT CITY, MD 21042
PHONE: (410) 313-6807

gilbert — Gilbert Architects Inc.
10451 Mill Run Circle, Suite 400, Owings Mills, MD 21117, P: 410.356.8856 F: 410.654.8802
626 North Charlotte Street, Lancaster, PA17603, P: 717.291.1077 F: 717.392.3923
291 Atlantic Avenue #150, Ocean View, DE 19970, P: 302.449.2492 F: 302.449.2493

(REVISED)
FOREST CONSERVATION PLAN

BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

ZONED R-20
TAX MAP No. 47, GRID 5, PARCEL 25
ELECTION DISTRICT 06
8200 SAVAGE GUILFORD ROAD
JESSUP, MD 20794

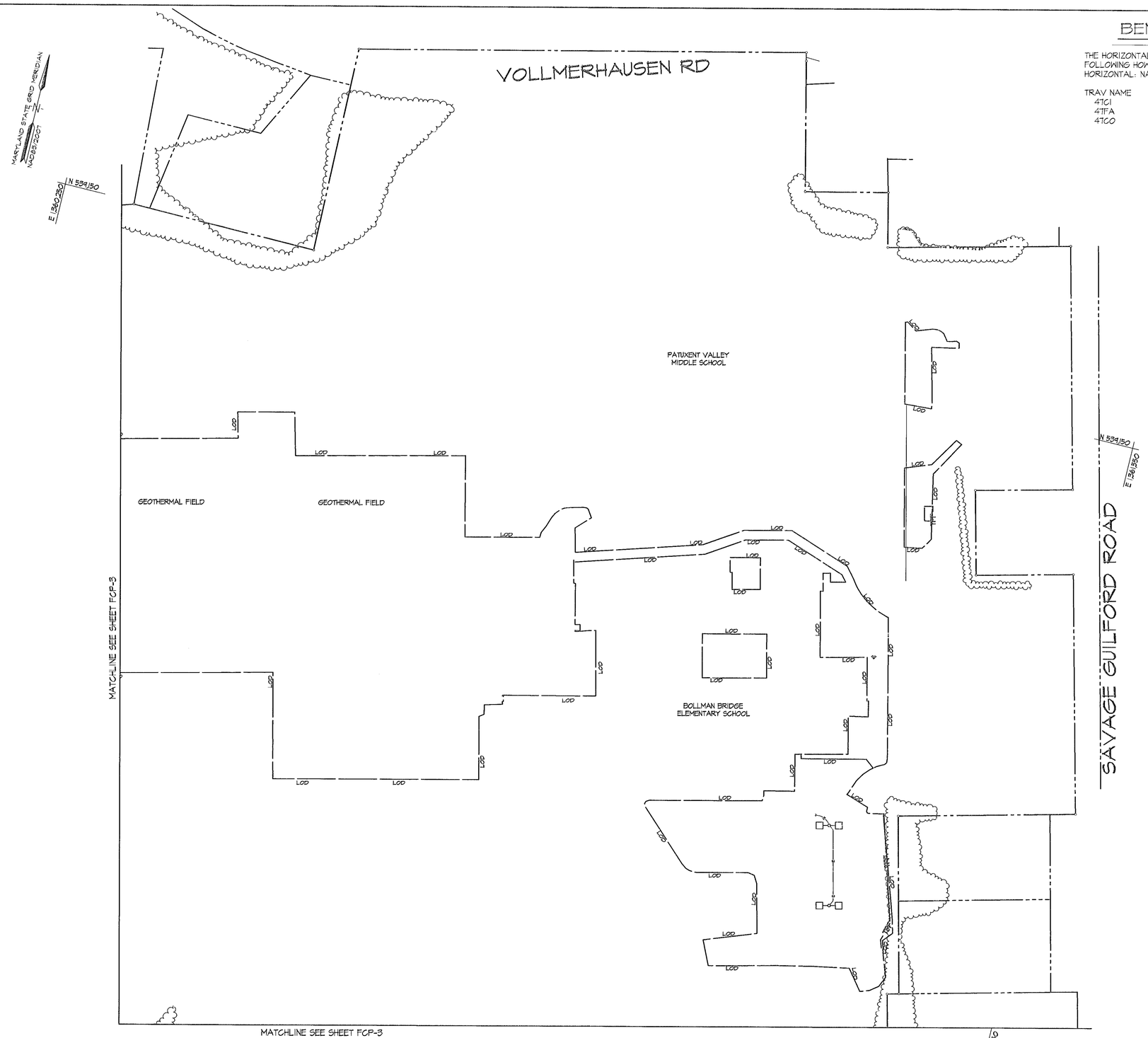
FCP-1

ISSUE DATE: 03-10-11
SHEET 31 OF 40

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

COUNTY FILE # SDP-87-96

PLOTTED: 10:53 AM on Friday, May 20, 2011
BY: Brian Schoch, User: bschoch, Layout: FCP-1 OVERALL
FILE: M:\2010\2700577\drawings\C-FCP-1-OVERALL.dgn



FOREST CONSERVATION PLAN

SCALE: 1" = 60'

GRAPHIC SCALE

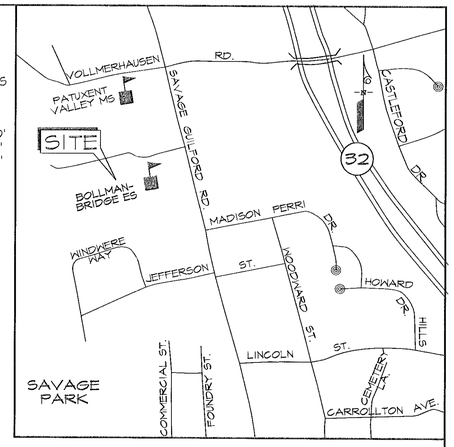
60' 0 60' 120'

(IN FEET)
1 INCH = 60FT.

BENCHMARK DATA

THE HORIZONTAL AND VERTICAL DATUMS ARE BASED ON THE FOLLOWING HOWARD COUNTY GEODETIC SURVEY CONTROL POINTS
HORIZONTAL: NAD 83/07 VERTICAL: NAVD 88

TRAV NAME	NORTH	EAST	ELEV.
47C1	539613.68	1362608.48	260.90'
47FA	536345.20	1361008.50	258.79'
47C0	540529.69	1362460.50	285.68'



VICINITY MAP

SCALE: 1" = 1000'

LEGEND

- EX. INDEX CONTOUR
- EX. INTERMEDIATE CONTOUR
- EX. STORM DRAIN
- EX. SANITARY SEWER
- EX. WATER
- EX. ELECTRIC
- EX. METAL FENCE
- EX. WOODS LINE
- EX. CURB AND GUTTER
- EX. POWER POLE
- EX. MANHOLE
- EX. INLET
- EX. BOLLARD
- EX. GUY WIRE
- EX. BUSHES
- EX. LIGHT POLE
- EX. FIRE HYDRANT
- EX. WATER METER
- EX. SIGN
- EX. TREE
- EX. PROPERTY LINE
- SOIL LINE
- STEEP SLOPES 15% TO 25%
- STEEP SLOPES 25% AND GREATER
- EX. FOREST
- TPF — BLAZE ORANGE TREE PROTECTION FENCE

AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet.

CHARLES J. CROOO, JR. NO. 19204 — Date 5/31/12

REVISED 7/11/16
FRANK, WILLIAMS & CHAITKIN

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

THIS PLAN WAS PREPARED BY:

Andrea E. Lake — 5-24-11
ANDREA E. LAKE — DATE
MD DEPARTMENT OF NATURAL RESOURCES
QUALIFIED PROFESSIONAL PER COMAR 08.19.16.01

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/2/11
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/02/11
DIRECTOR — DATE 6/6/11

(REVISED)

FOREST CONSERVATION PLAN

BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

ZONED R-20
TAX MAP No. 47, GRID 5, PARCEL 25
ELECTION DISTRICT 06
8200 SAVAGE GUILFORD ROAD
JESSUP, MD 20794

FCP-2

ISSUE DATE: 03-10-11
SHEET 32 OF 40

Drafting	TDB	DATE
Check	JCH	05/20/11
Design	BES	
Check	NCW	

REVISIONS
REVISED SITE DEVELOPMENT PLAN
REVISE SHEET NUMBER

KCI TECHNOLOGIES
ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
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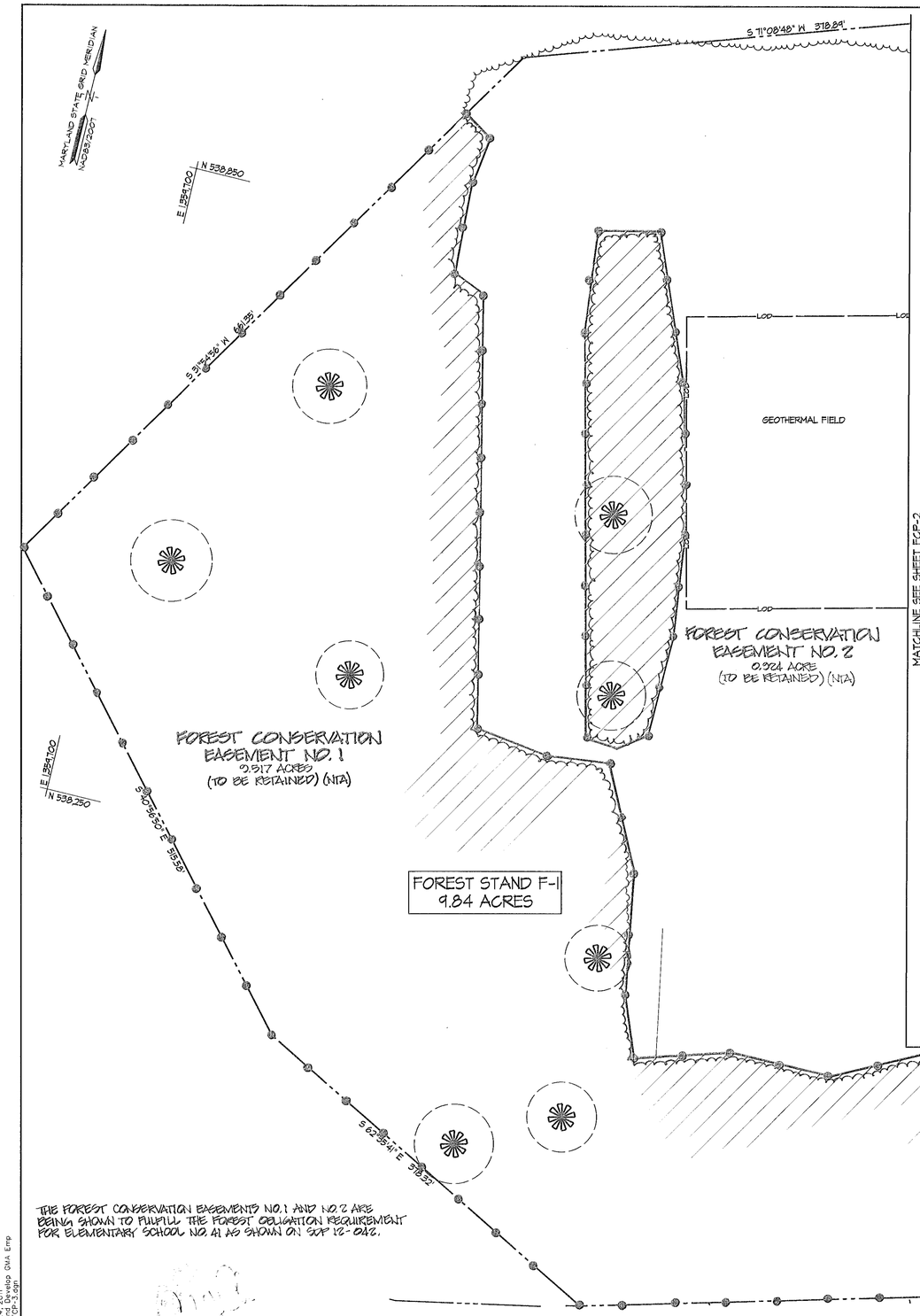
THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

COUNTY FILE # SDP-87-96

PLOTTED: 11:55 AM on Friday, May 20, 2011
BY: Bernard Spaman Division: Plans Land Develop GMA Emp
FILE: M:\2010\2760577\drawings\FCP-2.dgn



THE FOREST CONSERVATION EASEMENTS NO.1 AND NO.2 ARE BEING SHOWN TO FULFILL THE FOREST OBLIGATION REQUIREMENT FOR ELEMENTARY SCHOOL NO. 41 AS SHOWN ON SDP 12-042.

PROPERTY LINES AND TRAVERSE REVISED 7/1/12
REVISED 7/11/12

SITE DATA

1. SITE ADDRESS: 8200 SAVAGE GUILFORD ROAD JESSUP, MD 20794
2. OWNER/APPLICANT: HOWARD COUNTY PUBLIC SCHOOL SYSTEM
3. TAX ACCOUNT NO.: 06-431291
4. PROPERTY REFERENCE: TAX MAP 47 GRID 5 PARCEL NO. 25
5. TAX ASSESMENT DISTRICT: 06
6. ZONING: R-20

   EXISTING USE: BOLLMAN BRIDGE ELEMENTARY SCHOOL/ PATUXENT VALLEY MIDDLE SCHOOL
7. AREA OF SITE: 46.569 ACRES TOTAL
8. LIMIT OF DISTURBANCE: 299,963 SF / 6.88 ACRES (SEE WP-11-080)
9. THIS SITE LIES WITHIN FEMA ZONE C (AREAS OF MINIMAL FLOODING) AS SHOWN ON F.I.R.M. MAP NO. 240044-0043-B AND DATED DECEMBER 4, 1986.
10. WAIVER PETITION WP-11-080 WAS SUBMITTED TO HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING ON NOVEMBER 16, 2010 REQUESTING THAT THE NET TRACT AREA FOR FOREST CONSERVATION MITIGATION REQUIREMENTS BE RESTRICTED TO THE LIMIT OF DISTURBANCE, APPROXIMATELY 3.74 ACRES. A RECONSIDERATION APPROVAL LETTER DATED 3/31/11 FOR WP-11-080 ALLOWS THE LIMIT OF DISTURBANCE OF 6.88 ACRES TO BE USED TO COMPUTE THE FOREST CONSERVATION OBLIGATION FOR THIS PROJECT.
11. THE FOREST CONSERVATION OBLIGATION FOR THE 6.88 ACRE LOD FOR THE PROPOSED IMPROVEMENTS/ADDITIONS PER THE RED-LINE REVISION SUBMISSION OF 3/25/11 IS 1.03 ACRES OF AFFORESTATION AND IT HAS BEEN MET BY A FEE-IN-LIEU PAYMENT OF $33,650.10 MADE TO THE HOWARD COUNTY FOREST CONSERVATION FUND.

EXPLANATION OF PRIORITY

MAXIMUM PRIORITY HAS BEEN GIVEN TO THE RETENTION OF EXISTING TREES DURING THE DESIGN OF BOLLMAN BRIDGE ELEMENTARY SCHOOL. EIGHT SPECIMEN TREES WERE FOUND ON SITE AS CONFIRMED IN A FIELD INVESTIGATION BY KCI TECHNOLOGIES, INC ON NOVEMBER 29, 2010. IN ACCORDANCE WITH WP-11-080, APPROVED ON JANUARY 13, 2011, THE NET TRACT AREA FOR THE FOREST CONSERVATION OBLIGATION WILL BE BASED ON THE LIMIT OF DISTURBANCE OF 3.74 ACRES. THE FOREST CONSERVATION OBLIGATION OF 0.56 ACRES WILL BE MET THROUGH A PAYMENT OF FEE-IN-LIEU.

SEQUENTIAL TIMETABLE

1. FIELD LOCATION OF RETENTION BOUNDARY AS SHOWN ON PRELIMINARY FCP.
2. FIELD LOCATION OF THE PROPOSED L.O.D., AND REVISION OF FCP PER ANY DISAGREEMENT BETWEEN THE RETENTION BOUNDARY AND THE L.O.D..
3. FIELD ADJUSTMENT AND STAKING OF THE RETENTION.
4. OBTAINMENT OF FINAL FCP APPROVAL FROM COUNTY.
5. NOTIFICATION TO COUNTY FOR INSPECTION OF INSTALLED DEVICES.
6. CONSTRUCTION BEGINS.
7. CONSTRUCTION ENDS.
8. NOTIFICATION TO COUNTY OF COMPLETION OF CONSTRUCTION FOR INSPECTION.

FOREST PROTECTION REPORT

TREE PROTECTION FENCE SHALL BE PLACED ALONG THE L.O.D. ADJACENT TO THE EXISTING TREES TO PROVIDE VISIBLE PROTECTION TO THE TREES. IN ORDER TO MEET BOTH OF THESE REQUIREMENTS, THE FOLLOWING PROTECTION DEVICES SHALL BE EMPLOYED AS SPECIFIED:

BLAZE ORANGE TREE PROTECTION FENCE (DETAIL 1)
- FENCING WILL BE PLACED ALONG THE BOUNDARY OF THE L.O.D. AND THE ADJACENT TREES IN ORDER TO PROVIDE IDENTIFICATION AND PROTECTION TO THE EXISTING TREES TO BE PROTECTED.
- THE BOUNDARY FOR THE FENCE SHALL BE STAKED AND FLAGGED PRIOR TO INSTALLATION.
- DAMAGE TO ROOTS SHOULD BE AVOIDED.
- FENCING SHALL BE MAINTAINED THROUGHOUT ALL CONSTRUCTION RELATED ACTIVITIES.

CONSTRUCTION EQUIPMENT IS PROHIBITED FROM ENTERING ANY AREA SURROUNDED BY TREE PROTECTION FENCING.

BENCHMARK DATA

THE HORIZONTAL AND VERTICAL DATUMS ARE BASED ON THE FOLLOWING HOWARD COUNTY GEODETIC SURVEY CONTROL POINTS
HORIZONTAL: NAD 83/07 VERTICAL: NAVD 88

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47FA	536345.20	1361008.50	258.79'
47C0	540529.69	1362460.50	285.68'

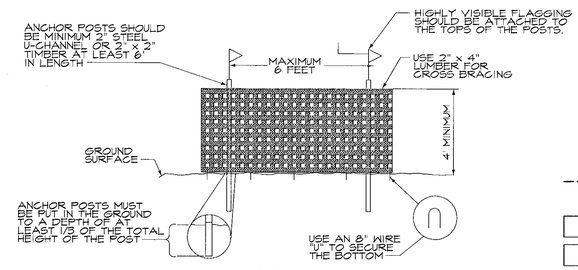
KCI Technologies Inc. 4/20/2011

Forest Conservation Worksheet

Net Tract Area			
A	Limit of Disturbance per WP-11-080		6.88 ac.
B	Area within 100-year Floodplain		0.00 ac.
C	Area to Remain in Agricultural Production		0.00 ac.
D	Net Tract Area (2x(A-B-C))	E=	6.88 ac.
	Institutional Development Area		
E	Afforestation Threshold (D x 15%)	E=	1.03 ac.
F	Conservation Threshold (E x 20%)	F=	1.38 ac.
Existing Forest Cover			
G	Existing Forest Cover (excluding floodplain)		6.00 ac.
H	Area of Forest Above Afforestation Threshold (1) If G-E then H=G and H=0 go to L (2) If G=E then H=G; go to I	H=	6.00 ac.
I	Area of Forest Above Conservation Threshold (1) If G>F then I=0; go to L (2) If G<F then I=G-F; go to J	I=	6.00 ac.
Break Even Point			
J	Forest Retention Above Threshold with no Mitigation (1) If I=0 then J=C-E x[-1]; go to K (2) If I>0; J=0; go to L	J=	0.00 ac.
K	Clearing Permitted Without Mitigation (K=G-J)	K=	0.00 ac.
Proposed Forest Clearing			
L	Total Area of Forest to be Cleared		
M	Total Area of Forest to be Retained (M=G-L)	M=	0.00 ac.
Planting Requirements			
N	Reforestation for Clearing Above the Conservation Threshold (1) If L>K then N=0; P=0; Q=0; R=0; S=0; go to T (2) If M>=F then N=L x 0.25; P=0; go to Q (3) If M<F then N=L x [2]; go to P	N=	0.00 ac.
P	Reforestation for Clearing Below the Conservation Threshold (1) If Q>F and M>F then P=0; Q=0; go to R (2) If Q>F and M<=F then P=2 x (F-M); Q=0; go to H (3) If Q<=F then P=2 x L; Q=0; go to R	P=	0.00 ac.
Q	Credit for Retention Above the Conservation Threshold (1) If M>F then Q=M-F; go to R (2) If M<=F then Q=0; go to R	Q=	0.00 ac.
R	Total Reforestation Required (1) If Q>N and M>F then R=0; S=0; go to T (2) If Q>N and M<=F then R=F-M; S=0; go to T (3) If Q<=N and M>F then R=N-P; go to S	R=	0.00 ac.
S	Total Afforestation Required (1) If G>E and M>E then S=E-G; go to T (2) If G<E and M>E then S=E-M; go to T	S=	1.03 ac.
T	Total Reforestation and Afforestation Requirement T=(R+S)	T=	1.03 ac.

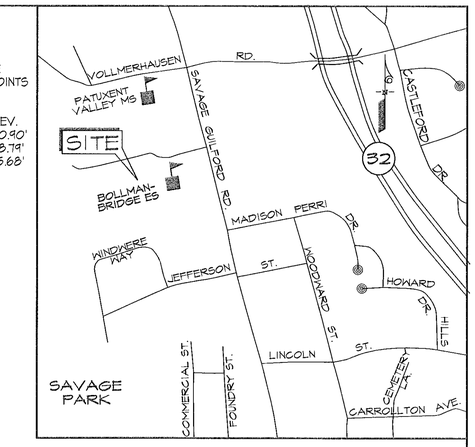
Note: Use 0 for all negative numbers that result from the calculations.

Stated FCW.xls Page 1 of 1



DETAIL 1.
BLAZE ORANGE
TREE PROTECTION FENCE

SCALE: N.T.S.



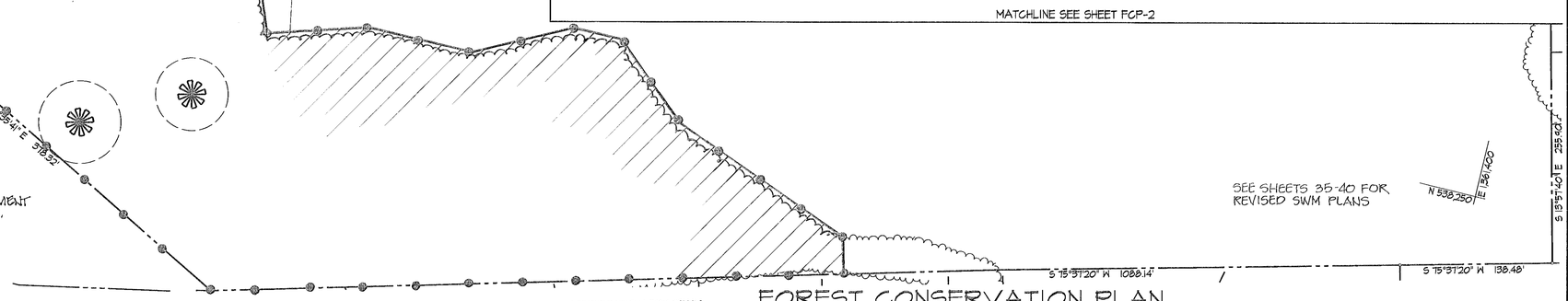
VICINITY MAP

SCALE: 1" = 1000'

LEGEND

- EX. INDEX CONTOUR
- EX. INTERMEDIATE CONTOUR
- EX. STORM DRAIN
- EX. SANITARY SEWER
- EX. WATER
- EX. ELECTRIC
- EX. METAL FENCE
- EX. WOODS LINE
- EX. CURB AND GUTTER
- EX. POWER POLE
- EX. MANHOLE
- EX. INLET
- EX. BOLLARD
- EX. GUY WIRE
- EX. BUSHES
- EX. LIGHT POLE
- EX. FIRE HYDRANT
- EX. WATER METER
- EX. SIGN
- EX. TREE
- EX. PROPERTY LINE
- SOIL LINE
- STEEP SLOPES 15% TO 25%
- STEEP SLOPES 25% AND GREATER
- EX. FOREST
- SPECIMEN TREE
- CRITICAL ROOT ZONE
- DENOTES FOREST CONSERVATION RETENTION SIGN

MATCHLINE SEE SHEET FCP-2



AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet.

CHARLES J. ORONO, SR. NO. 19604 — Date 5/31/12

FOREST CONSERVATION PLAN

SCALE: 1" = 60'
GRAPHIC SCALE
60' 0 60' 120'
(IN FEET)
1 INCH = 60FT.

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

THIS PLAN WAS PREPARED BY:

Andrea E. Lake — 5-24-11
ANDREA E. LAKE — DATE
MD DEPARTMENT OF NATURAL RESOURCES
QUALIFIED PROFESSIONAL PER COMAR 08.19.16.01

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/8/11
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/08/11
DIRECTOR — DATE 6/9/11

(REVISED)
FOREST CONSERVATION PLAN NOTES AND DETAILS

BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

ZONED R-20
TAX MAP No. 47, GRID 5, PARCEL 25
ELECTION DISTRICT 06
8200 SAVAGE GUILFORD ROAD
JESSUP, MD 20794

FCP-3

ISSUE DATE: 03-10-11
SHEET 33 OF 40

Drafting	TDB	DATE	REVISIONS
Check	JCH	05/20/11	REVISED SITE DEVELOPMENT PLAN
Design	BES	7/6/12	REVISED FOREST CONSERVATION EASEMENT
Check	NCW	7-1-16	REVISE SHEET NUMBER

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD, SPARKS, MARYLAND 21152
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OWNER
SCOTT WASHINGTON
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10910 ROUTE 108
ELLICOTT CITY, MD 21042
PHONE: (410) 313-6671

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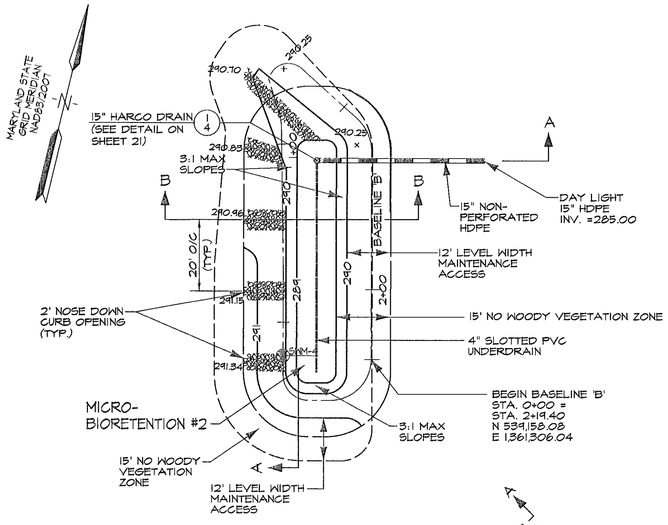
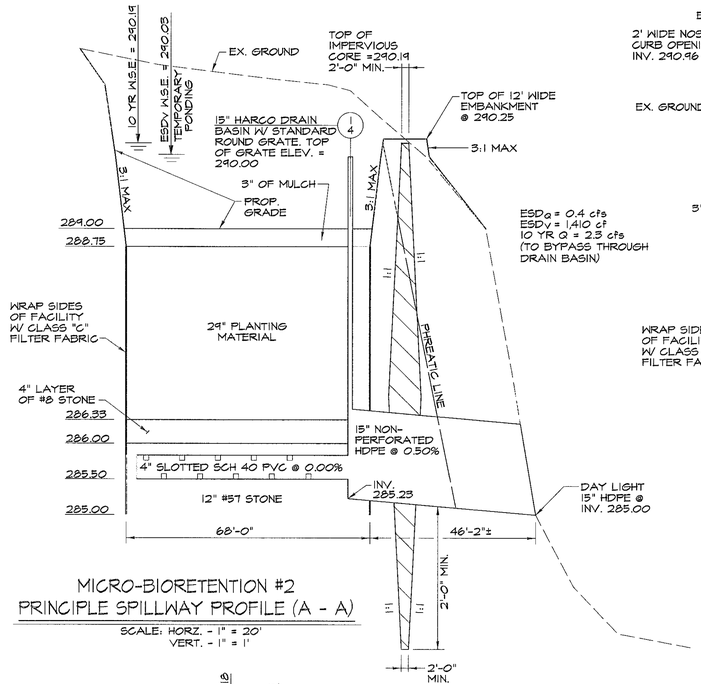
THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

COUNTY FILE # SDP-87-96

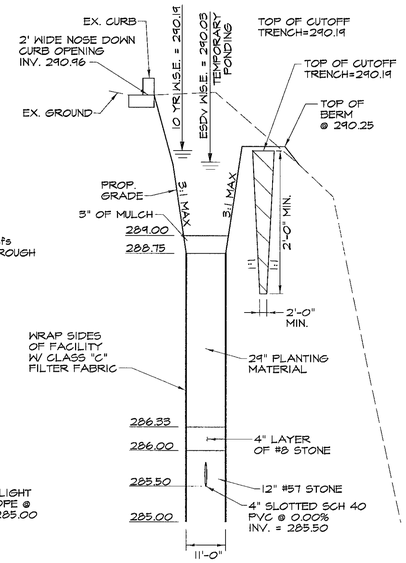
PLOTTED: 7/08/11 AM on Tuesday, May, 24, 2011
BY: Andrea Lake FILE: W:\2005\27105377\drawings\FCP-3.dgn





MICRO-BIORETENTION #2
PRINCIPLE SPILLWAY PROFILE (A - A)

SCALE: HORZ. - 1" = 20'
VERT. - 1" = 1'



MICRO-BIORETENTION #2
SECTION (B - B)

SCALE: HORZ. - 1" = 20'
VERT. - 1" = 1'

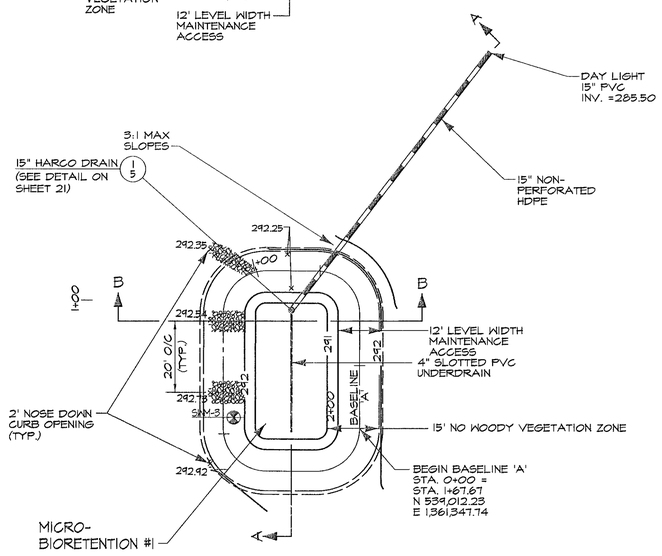
AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet.

CHARLES J. BRONO, SR. NO. 13204 — 5/31/13 Date

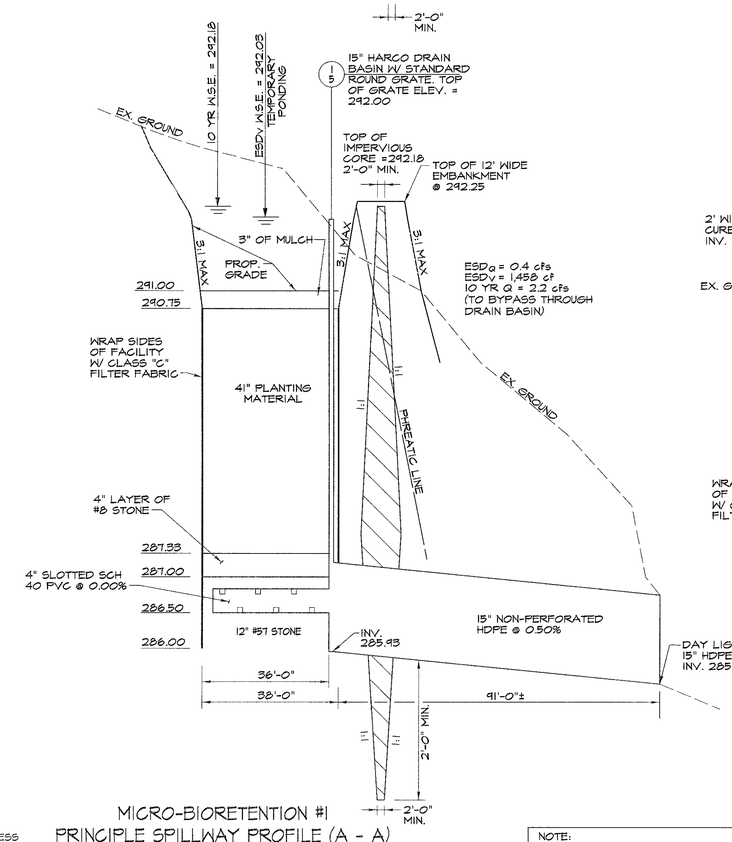
BASELINE 'A' DATA			
STA.	BEARING/ RADIUS	DISTANCE/ ARC LENGTH	CHORD
0+00			
	12' R	18.85'	S 31°33'44" W 16.97'
0+18.85			
		14.0'	S 76°33'44" W
0+32.85			
	12' R	18.85'	N 58°26'57" W 16.97'
0+51.70			
		32.13'	N 13°26'57" W
0+83.83			
	12' R	18.85'	N 31°33'44" E 16.97'
1+02.68			
		14.0'	N 76°33'44" E
1+16.68			
	12' R	18.85'	S 58°26'57" E 16.97'
1+35.53			
		32.13'	S 13°26'57" E
1+67.67			

BASELINE 'B' DATA			
STA.	BEARING/ RADIUS	DISTANCE/ ARC LENGTH	CHORD
0+00			
	11.50' R	18.06'	S 31°33'03" W 16.26'
0+18.06			
		6.00'	S 76°33'03" W
0+24.06			
	7' R	11.00'	N 58°26'57" W 9.90'
0+35.06			
		30.07'	N 13°26'57" W
0+65.13			
		39.47'	N 14°23'32" W
1+04.60			
	10' R	2.73'	N 22°12'04" W 2.72'
1+07.33			
		11.30'	N 30°00'47" W
1+18.63			
		1.45'	N 14°54'13" E
1+20.08			
	5.5' R	9.42'	N 66°34'23" E 8.63'
1+30.00			
		20.57'	S 61°40'27" E
1+50.57			
	12.75' R	10.73'	S 37°33'42" E 10.42'
1+61.30			
		58.10'	S 13°26'57" E
2+19.40			



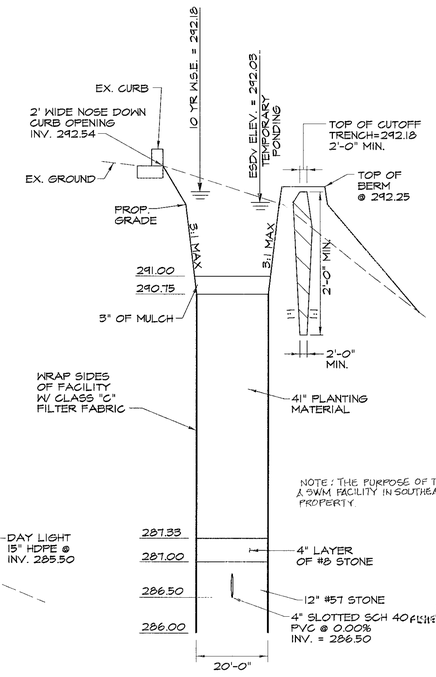
PLAN VIEW

SCALE: 1"= 20'



MICRO-BIORETENTION #1
PRINCIPLE SPILLWAY PROFILE (A - A)

SCALE: HORZ. - 1" = 20'
VERT. - 1" = 1'



MICRO-BIORETENTION #1
SECTION (B - B)

SCALE: HORZ. - 1" = 20'
VERT. - 1" = 1'

MICRO-BIORETENTION # 1 PLANTING SCHEDULE					
KEY	QTY.	BOTANICAL / COMMON NAME	SIZE	CONDITION	COMMENT
SHRUBS					
MP	8	MYRICA PENSYLVANICA / BAY BERRY	6-12'	CONTAINER	
HERBACEOUS					
	20	EUPATORIUM MACULATUM / SPOTTED JOE-PYE WEED	12-18"	CONTAINER	1' O.C. MIN.
	30	RUDBECKIA LACINIATA / TALL CONE FLOWER	12-18"	CONTAINER	1' O.C. MIN.

MICRO-BIORETENTION # 2 PLANTING SCHEDULE					
KEY	QTY.	BOTANICAL / COMMON NAME	SIZE	CONDITION	COMMENT
SHRUBS					
MP	10	MYRICA PENSYLVANICA / BAY BERRY	6-12'	CONTAINER	
HERBACEOUS					
	20	EUPATORIUM MACULATUM / SPOTTED JOE-PYE WEED	12-18"	CONTAINER	1' O.C. MIN.
	30	RUDBECKIA LACINIATA / TALL CONE FLOWER	12-18"	CONTAINER	1' O.C. MIN.

NOTE: THE PURPOSE OF THIS REDLINE IS TO INSTALL A SWM FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 3/26/13

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3/26/13

DIRECTOR — 3-21-13 DATE

NOTE:
BOTH M-6 MICRO-BIORETENTIONS WILL UTILIZE THE 15" DRAINS AND 15" HDPE TO BYPASS THE 10 YEAR STORM EVENT. SEE SWM REPORT FOR SUPPORTING COMPUTATIONS.

GRAPHIC SCALE

20 0 10 20 40

(IN FEET)
1 INCH = 20FT.

LEGEND

- EX. INDEX CONTOUR
- EX. INTERMEDIATE CONTOUR
- EX. STORM DRAIN
- EX. CURB AND GUTTER
- EX. LIGHT POLE
- EX. TREE
- SWM-3 — SOIL BORING
- 240.70 x — PROP. SPOT ELEVATION
- 240 — PROP. CONTOUR
- PROP. STORM DRAIN
- PROP. HARCO DRAIN
- 15' NO WOODY VEGETATION ZONE
- 12' LEVEL WIDTH MAINTENANCE ACCESS
- PROP. RIP RAP

NOTE:
SEE SHEET 21 FOR EMBANKMENT PROFILES AND HARCO DRAIN DETAILS

SEAL:

STORMWATER MANAGEMENT DETAILS

BOLLMAN BRIDGE ELEMENTARY SCHOOL
ADDITIONS AND ALTERATIONS

ZONED R-20
TAX MAP No. 41, GRID 5, PARCEL 25
ELECTION DISTRICT 06
8200 SAVAGE GUILFORD ROAD
JESSUP, MD 20794

34

ISSUE DATE: 1-24-13
SHEET 34 OF 40

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. 36361 EXPIRATION DATE: 10-20-14

Drafting	TDB	DATE	REVISIONS
Check	JCH	05/20/11	REVISED SITE DEVELOPMENT PLAN
Design	BES	1/29/13	1 REVISE SWM FACILITIES
Check	NCW	7-1-16	34 REVISED SHEET NUMBER

KCI TECHNOLOGIES — ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS
936 Ridgebrook Road, Sparks, Maryland 21152
Telephone (410) 316-7800
Fax (410) 316-7818
www.kci.com

OWNER
SCOTT WASHINGTON
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
10910 ROUTE 108
ELLICOTT CITY, MD 21042
PHONE: (410) 313-6801

DEVELOPER
SCOTT WASHINGTON
MANAGER OF DESIGN AND PRECONSTRUCTION SERVICES
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
10910 ROUTE 108
ELLICOTT CITY, MD 21042
PHONE: (410) 313-6801

gilbert

Gilbert Architects Inc.

10451 Mill Run Circle, Suite 400, Owings Mills, MD 21117 — P: 410.356.8856 F: 410.654.8802
626 North Charlotte Street, Lancaster, PA17603 — P: 717.291.1077 F: 717.392.3923
29L Atlantic Avenue #150, Ocean View, DE 19970 — P: 302.449.2492 F: 302.449.2493

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

COUNTY FILE # SDP-87-96

PLOTTED: 04-26 PM, on Thursday, March 07, 2013
PLOT SCALE: 1:1 USER: nicholasw, Charles Brono
FILE: M:\2010\2710057\Drawings\C-15_REDLINE_SWM_DETS.dgn

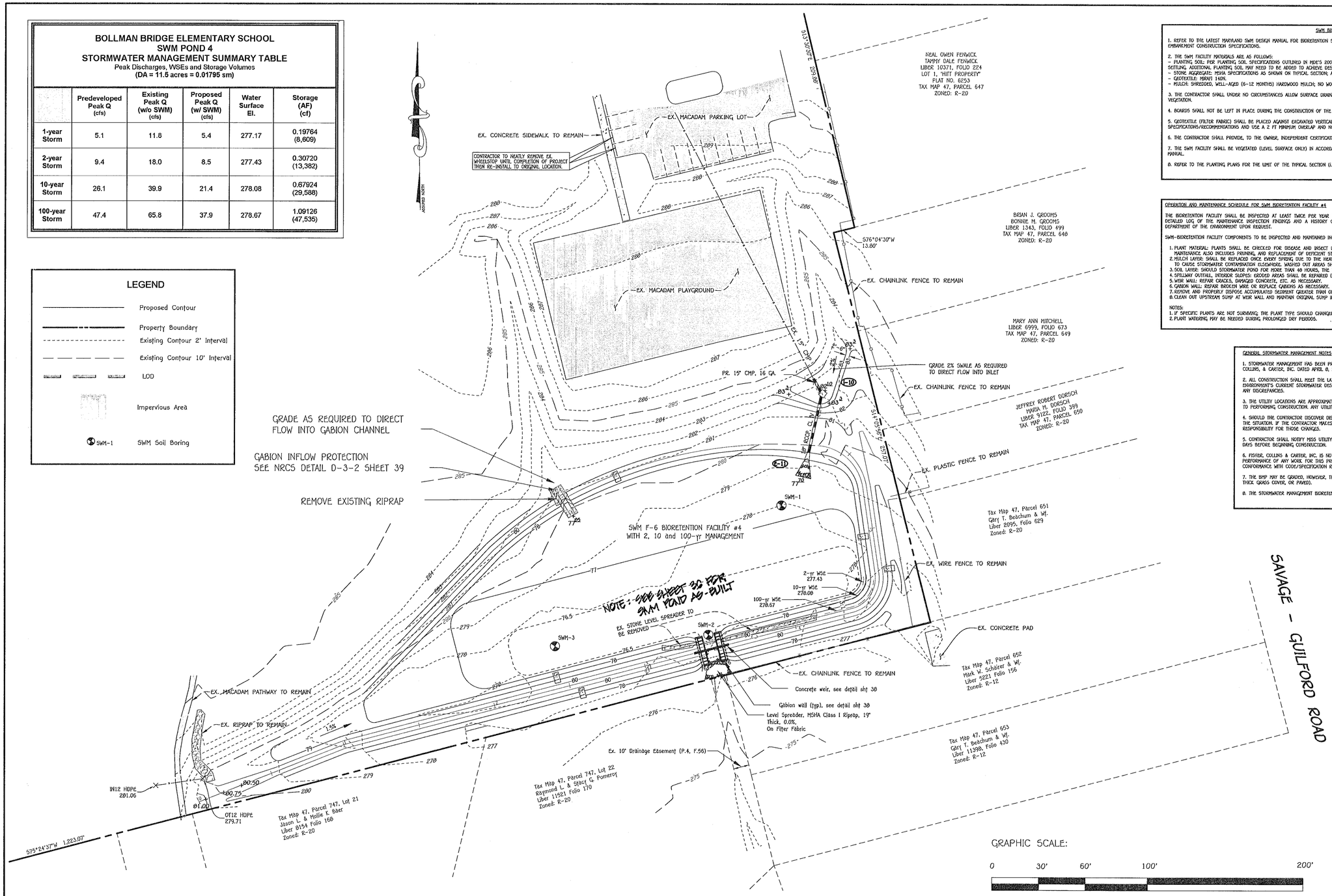
BOLLMAN BRIDGE ELEMENTARY SCHOOL
SWM POND 4
STORMWATER MANAGEMENT SUMMARY TABLE

Peak Discharges, WSEs and Storage Volumes
(DA = 11.5 acres = 0.01795 sm)

	Predeveloped Peak Q (cfs)	Existing Peak Q (w/o SWM) (cfs)	Proposed Peak Q (w/ SWM) (cfs)	Water Surface El.	Storage (AF) (cf)
1-year Storm	5.1	11.8	5.4	277.17	0.19764 (8,609)
2-year Storm	9.4	18.0	8.5	277.43	0.30720 (13,382)
10-year Storm	26.1	39.9	21.4	278.08	0.67924 (29,588)
100-year Storm	47.4	65.8	37.9	278.67	1.09126 (47,535)

LEGEND

- Proposed Contour
- Property Boundary
- Existing Contour 2' Interval
- Existing Contour 10' Interval
- LOD
- Impervious Area
- SWM-1 — SWM Soil Boring



SWM BIORETENTION FACILITY #4 NOTES AND SPECIFICATIONS

1. REFER TO THE LATEST MARYLAND SWM DESIGN MANUAL FOR BIORETENTION SPECIFICATIONS FOR INFORMATION NOT LISTED HEREIN AND FOR ADDITIONAL INFORMATION. SEE SHEET 39 FOR EMBANKMENT CONSTRUCTION SPECIFICATIONS.

2. THE SWM FACILITY MATERIALS ARE AS FOLLOWS:
- PLANTING SOIL: PER PLANTING SOIL SPECIFICATIONS OUTLINED IN MDE'S 2000 SWM MANUAL, APPENDIX B.4. DO NOT MECHANICALLY COMPACT PLANTING SOIL, BUT CAN BE "WATERED" TO FACILITATE SETTLING. ADDITIONAL PLANTING SOIL MAY NEED TO BE ADDED TO ACHIEVE DESIGN ELEVATION SHOULD NATURAL SETTLING OCCUR.
- STONE AGGREGATE: MSHA SPECIFICATIONS AS SHOWN ON TYPICAL SECTION; AGGREGATE MUST BE WASHED, AND BE FREE OF FINES, SAND, DIRT & DEBRIS.
- GEOTEXTILE: MIRAFI 140N.
- MULCH: SHREDDED, WELL-AGED (6-12 MONTHS) HARDWOOD MULCH; NO WOOD CHIPS OR FINE MULCH.

3. THE CONTRACTOR SHALL UNDER NO CIRCUMSTANCES ALLOW SURFACE DRAINAGE INTO THE SWM POND UNTIL ALL UPSTREAM AREAS HAVE BEEN STABILIZED (i.e., PAVED, OR HAVE WELL-ESTABLISHED VEGETATION.

4. BOARDS SHALL NOT BE LEFT IN PLACE DURING THE CONSTRUCTION OF THE BIORETENTION BMP.

5. GEOTEXTILE (FILTER FABRIC) SHALL BE PLACED AGAINST EXCAVATED VERTICAL SURFACES. SCARIFY EARTH PRIOR TO GEOTEXTILE PLACEMENT. INSTALL GEOTEXTILE PER MANUFACTURER'S SPECIFICATIONS/RECOMMENDATIONS AND USE A 2 FT MINIMUM OVERLAP AND NOTCH ENDS WITH A 9" MINIMUM BURY OR EQUIVALENT ANCHORING METHOD.

6. THE CONTRACTOR SHALL PROVIDE, TO THE OWNER, INDEPENDENT CERTIFICATION THAT THE PLANTING SOILS AND OTHER MATERIALS MEET THE SPECIFICATIONS.

7. THE SWM FACILITY SHALL BE VEGETATED (LEVEL SURFACE ONLY) IN ACCORDANCE WITH THE PLANTING PLAN AND THE BMP SPECIFICATIONS IN MDE'S CURRENT STORMWATER MANAGEMENT DESIGN MANUAL.

8. REFER TO THE PLANTING PLANS FOR THE LIMIT OF THE TYPICAL SECTION (i.e., PLANTING SOIL, AGGREGATE, ETC.). IN GENERAL IT IS THE LEVEL SURFACE OF THE BIORETENTION FACILITY.

OPERATION AND MAINTENANCE SCHEDULE FOR SWM BIORETENTION FACILITY #4

THE BIORETENTION FACILITY SHALL BE INSPECTED AT LEAST TWICE PER YEAR (ONCE EACH IN THE SPRING AND FALL) AND AFTER HEAVY STORMS. THE OWNER IS RESPONSIBLE FOR MAINTAINING A DETAILED LOG OF THE MAINTENANCE INSPECTION FINDINGS AND A HISTORY OF THE COMPLETED WORK. THE LOG SHALL BE MADE AVAILABLE TO HOWARD COUNTY DPZ AND/OR THE MARYLAND DEPARTMENT OF THE ENVIRONMENT UPON REQUEST.

SWM-BIORETENTION FACILITY COMPONENTS TO BE INSPECTED AND MAINTAINED INCLUDE THE ITEMS AS FOLLOWS:

1. PLANT MATERIAL: PLANTS SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION. REMOVE AND REPLACE DEAD OR DYING VEGETATION CONSIDERED BEYOND TREATMENT (SEE NOTE BELOW). MAINTENANCE ALSO INCLUDES PRUNING, AND REPLACEMENT OF DEFICIENT STAKES AND WIRE.
2. MULCH LAYER: SHALL BE REPLACED ONCE EVERY SPRING DUE TO THE HEAVY METALS GENERATED FROM THE PARKING LOT. THE OWNER SHALL PROPERLY DISPOSE OF THE OLD MULCH SO AS NOT TO CAUSE STORMWATER CONTAMINATION ELSEWHERE. WASHED OUT AREAS SHALL BE REPAIRED AS NECESSARY.
3. SOIL LAYER: SHOULD STORMWATER POND FOR MORE THAN 48 HOURS, THE TOP 6 INCHES (MINIMUM) OF THE SOIL LAYER SHALL BE REPLACED. THE OLD SOILS SHALL BE PROPERLY DISPOSED.
4. SPILLWAY OUTFALL, INTERIOR SLOPES: ERODED AREAS SHALL BE REPAIRED (FILLED IN AND SEEDED) AS NEEDED. BARE AREAS SHALL BE TREATED AND RE-SEEDED.
5. WEIR WALL: REPAIR CRACKS, DAMAGED CONCRETE, ETC. AS NECESSARY.
6. GABION WALL: REPAIR BROKEN WIRE OR REPLACE GABIONS AS NECESSARY. FILL-IN ERODED AREA ADJACENT TO WALLS.
7. REMOVE AND PROPERLY DISPOSE ACCUMULATED SEDIMENT GREATER THAN ONE (1) INCH.
8. CLEAN OUT UPSTREAM SUMP AT WEIR WALL AND MAINTAIN ORIGINAL SUMP INVERT ELEVATION.

NOTES:
1. IF SPECIFIC PLANTS ARE NOT SURVIVING, THE PLANT TYPE SHOULD CHANGED TO BETTER SUITED SPECIES.
2. PLANT WATERING MAY BE NEEDED DURING PROLONGED DRY PERIODS.

GENERAL STORMWATER MANAGEMENT NOTES

1. STORMWATER MANAGEMENT HAS BEEN PROVIDED WITH ONE (1) SWM BIORETENTION FACILITY. PLEASE REFER TO THE SWM REPORT PREPARED BY FISHER, COLLINS, & CARTER, INC. DATED APRIL 8, 2016.

2. ALL CONSTRUCTION SHALL MEET THE LATEST EDITION OF THE HOWARD COUNTY STANDARDS AND SPECIFICATIONS, AND THE MARYLAND DEPARTMENT OF THE ENVIRONMENT'S CURRENT STORMWATER DESIGN MANUAL, OR AS SHOWN ON THESE PLANS. THE CONTRACTOR SHALL CONSULT THE ENGINEER SHOULD THERE BE ANY DISCREPANCIES.

3. THE UTILITY LOCATIONS ARE APPROXIMATE. CONTRACTOR SHALL TEST PIT ALL KNOWN EXISTING UTILITIES TO VERIFY, SIZE, SHAPE, LOCATION, AND TYPE PRIOR TO PERFORMING CONSTRUCTION. ANY UTILITY DAMAGED DUE TO CONSTRUCTION MUST BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.

4. SHOULD THE CONTRACTOR DISCOVER DISCREPANCIES BETWEEN THE PLANS AND FIELD CONDITIONS, THE OWNER IS TO BE NOTIFIED IMMEDIATELY TO RESOLVE THE SITUATION. IF THE CONTRACTOR MAKES FIELD CORRECTIONS OR ADJUSTMENTS WITHOUT NOTIFYING THE OWNER, THEN THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR THOSE CHANGES.

5. CONTRACTOR SHALL NOTIFY MISS UTILITY 1-800-257-7777 AND THE HOWARD COUNTY DEPARTMENT OF INSPECTION LICENSES & PERMITS THREE (3) WORKING DAYS BEFORE BEGINNING CONSTRUCTION.

6. FISHER, COLLINS & CARTER, INC. IS NOT RESPONSIBLE FOR THE CONTRACTOR'S UTILIZATION OF MEN, MATERIALS, EQUIPMENT, OR SAFETY MEASURES IN THE PERFORMANCE OF ANY WORK FOR THIS PROJECT. THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR PERFORMING THE WORK CORRECTLY AND IN CONFORMANCE WITH CODE/SPECIFICATION REQUIREMENTS.

7. THE BMP MAY BE GRADED, HOWEVER, THE PLANTING SOIL IN THE BMP SHALL NOT BE INSTALLED UNTIL ALL UPSTREAM AREAS HAVE BEEN STABILIZED (i.e., THICK GRASS COVER, OR PAVED).

8. THE STORMWATER MANAGEMENT BIORETENTION BMP FOR THIS PROJECT WILL BE PRIVATELY OWNED AND MAINTAINED.

GRAPHIC SCALE:

0 30' 60' 100' 200'

AS-BUILT CERTIFICATION FOR PSWM

Note: There is no "AS BUILT" information provided on this sheet.

CHARLES J. CROVO, SR. NO. 13204 — 5/31/17 Date

OWNER & DEVELOPER
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
Harriet Tubman Building
8045 Harriet Tubman Lane
Columbia, Maryland 21044

NOTE: THE PURPOSE OF THIS PLAN IS TO INSTALL A STORMWATER MANAGEMENT FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

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

"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. 13204, Expiration Date: November 3, 2016."

CHARLES J. CROVO SR., P.E. — 7/11/16 DATE

DATE	DESCRIPTION
	REVISION BLOCK

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Director – Department of Planning and Zoning — 7-21-16 Date

Chief, Division of Land Development — 7-21-16 Date

Chief, Development Engineering Division — 7-20-16 Date

PREPARED FOR
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
HARRIET TUBMAN BUILDING
8045 HARRIET TUBMAN LANE
COLUMBIA, MARYLAND 21044
Attention SCOTT WASHINGTON
410-313-6805

STATE OF MARYLAND — CHARLES J. CROVO — No. 13204 — PROFESSIONAL ENGINEER

ADDRESS CHART

LOT/PARCEL#	STREET ADDRESS
P. 25	8200 SAVAGE – GUILFORD ROAD
	JESSUP, MARYLAND 20794

PERMIT INFORMATION CHART

SUBDIVISION NAME			SECTION/AREA		LOT/PARCEL NO.
BOLLMAN BRIDGE ELEM. SCHOOL			N/A		P. 25
PLAT# OR L/F	GRID#	ZONING	TAX MAP#	ELECT. DISTR.	CENSUS TRACT
572/380	5	R-20	47	SIXTH	6064

STORMWATER MANAGEMENT
BIORETENTION FACILITY #4

"REVISED SITE DEVELOPMENT PLAN"
BOLLMAN BRIDGE
ELEMENTARY SCHOOL

ZONED R-20 TAX MAP No.: 47 GRID No.: 5 PARCEL No.: 25
SIXTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: JULY 1, 2016

SHEET 35 OF 40

THERE IS NO "AS BUILT" INFORMATION PROVIDED ON THIS SHEET

SDP-87-96

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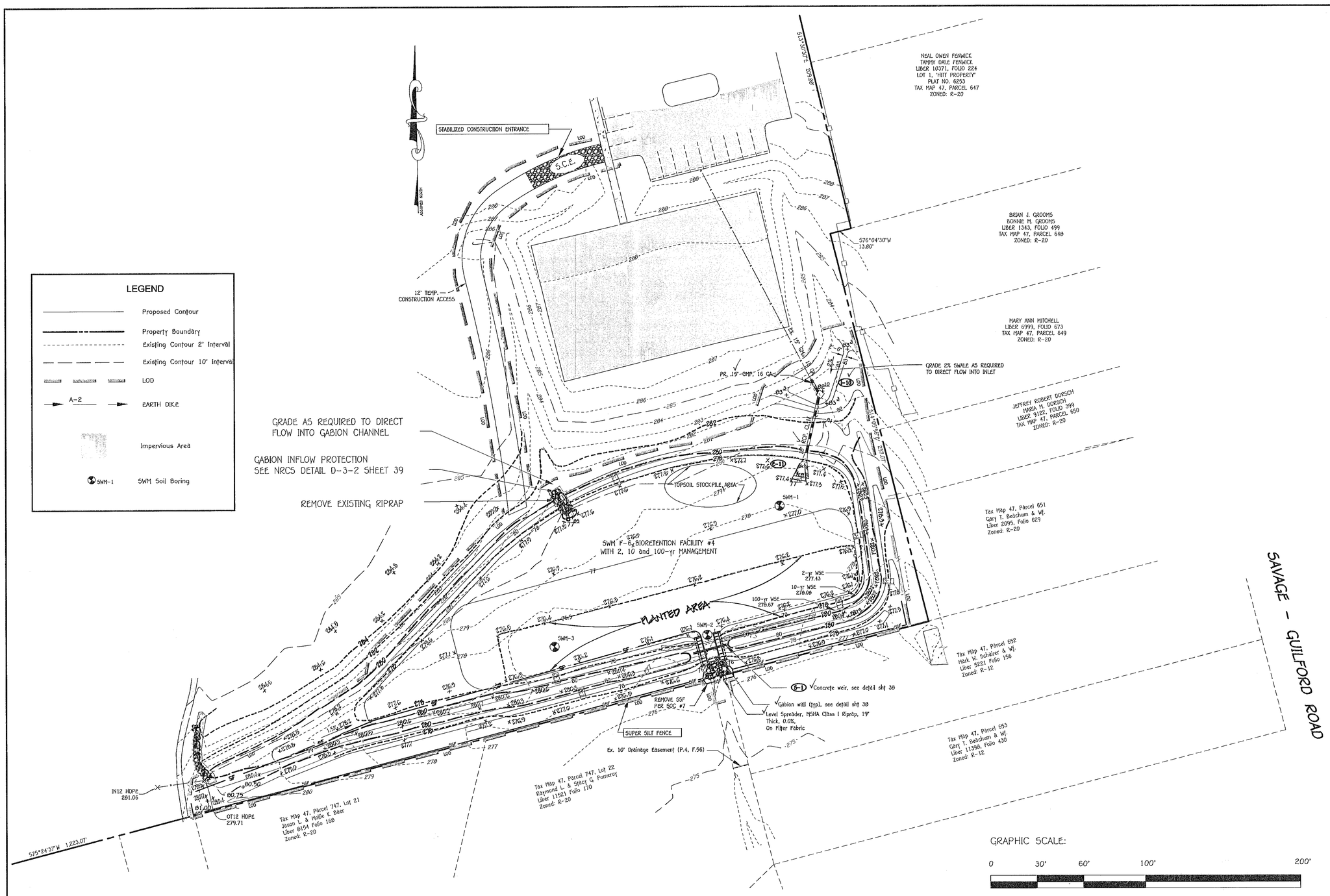


SEQUENCE OF CONSTRUCTION

1. OBTAIN GRADING PERMIT. (1 DAY)
2. NOTIFY MISS UTILITY (1-800-257-7777) 48 HOURS BEFORE STARTING WORK. NOTIFY THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION (410-313-1855) THREE (3) WORKING DAYS PRIOR TO STARTING WORK. (1 DAY)
3. INSTALL PERIMETER CONTROLS: S.C.E. AND PERIMETER SUPER SILT FENCE. (1 DAY)
4. WITH APPROVAL FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, AND DURING DRY FORECAST, CONSTRUCT CONCRETE WEIR AND GABION WALLS W/ NECESSARY CORE TRENCH PORTIONS), PLUNGE POOL AND RIPRAP OUTALL LEVEL SPREADER. (2 WEEKS)
5. CONSTRUCT REMAINING CORE TRENCH, EARTH EMBANKMENT AND ADJACENT OUTSIDE SWALES. (3 WEEKS)
6. EXCAVATE/GRADE REMAINING POND AND IMMEDIATELY STABILZE. (1 WEEK)
7. INSTALL STORM DRAIN TO E-11 AND GABION INFLOW PROTECTION. (1 WEEK)
8. STABILIZE ALL DISTURBED AREAS IN ACCORDANCE WITH THE PERMANENT SEEDING SPECIFICATIONS. (3 DAYS)
9. DURING DRY FORECAST, INSTALL BIORETENTION TYPICAL SECTION (AGGREGATE, PLANTING SOIL) WITH PLANTS & MULCH PER PLANTING PLAN. (1 WEEK)
10. FOLLOWING SUCCESSFUL STABILIZATION (i.e., FULLY-ESTABLISHED VEGETATION (3" GRASS OR PAVING) OF ALL DISTURBED AREAS, OBTAIN PERMISSION FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR TO REMOVE ALL REMAINING SEDIMENT & EROSION CONTROL DEVICES AND THEN STABILIZE THOSE AREAS DISTURBED BY THIS PROCESS WITH PERMANENT SEEDING. (3 DAYS)

MAINTENANCE NOTE:

THE CONTRACTOR SHALL INSPECT AND PROVIDE THE NECESSARY MAINTENANCE ON ALL SEDIMENT CONTROL DEVICES/PRACTICES ON A DAILY BASIS, AND IMMEDIATELY AFTER A RAINFALL.

AS-BUILT CERTIFICATION FOR PSWM

I hereby certify that the facility shown on the plan was constructed as shown on the "AS BUILT" plans and complies with the approved plans and specifications. I have verified that the contributing drainage area is sufficiently stabilized to prevent clogging of the underdrain and S/WM facility.

CHARLES J. CROWD, SR. No.13204 — 5/31/17 Date

OWNER & DEVELOPER
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
Harriet Tubman Building
8045 Harriet Tubman Lane
Columbia, Maryland 21044

NOTE: THE PURPOSE OF THIS PLAN IS TO SHOW SEDIMENT CONTROL MEASURES FOR A STORMWATER MANAGEMENT FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

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

ENGINEER'S CERTIFICATE

"I certify that this plan for sediment and erosion control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District."

Signature of Engineer — 7/11/16 Date

DEVELOPER'S CERTIFICATE

"I/We certify that all development and construction will be done according to this plan 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."

Scott W. Wood — 7/11/16 Date
Signature of Developer

"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. 13204, Expiration Date: November 3, 2016."

CHARLES J. CROWD, SR., P.E. — 7/11/16 DATE

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

Howard SCD — 7/12/16 Date

DATE	DESCRIPTION
	REVISION BLOCK

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Director - Department of Planning and Zoning	7-21-16 Date
Chief, Division of Land Development	7-21-16 Date
Chief, Development Engineering Division	7-20-16 Date

PREPARED FOR
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
HARRIET TUBMAN BUILDING
8045 HARRIET TUBMAN LANE
COLUMBIA, MARYLAND 21044
Attention SCOTT WASHINGTON
410-313-6805

STATE OF MARYLAND — CHARLES J. CROWD — No. 13204 — PROFESSIONAL ENGINEER

ADDRESS CHART

LOT/PARCEL#	STREET ADDRESS
P. 25	8200 SAVAGE - GUILFORD ROAD
	JESSUP, MARYLAND 20794

PERMIT INFORMATION CHART

SUBDIVISION NAME			SECTION/AREA	LOT/PARCEL NO.	
BOLLMAN BRIDGE ELEM. SCHOOL			N/A	P. 25	
PLAT# OR L/F	GRID#	ZONING	TAX MAP#	ELECT. DISTR.	CENSUS TRACT
572/380	5	R-20	47	SIXTH	6064

SWM BIORETENTION FACILITY #4
EROSION & SEDIMENT CONTROL PLAN

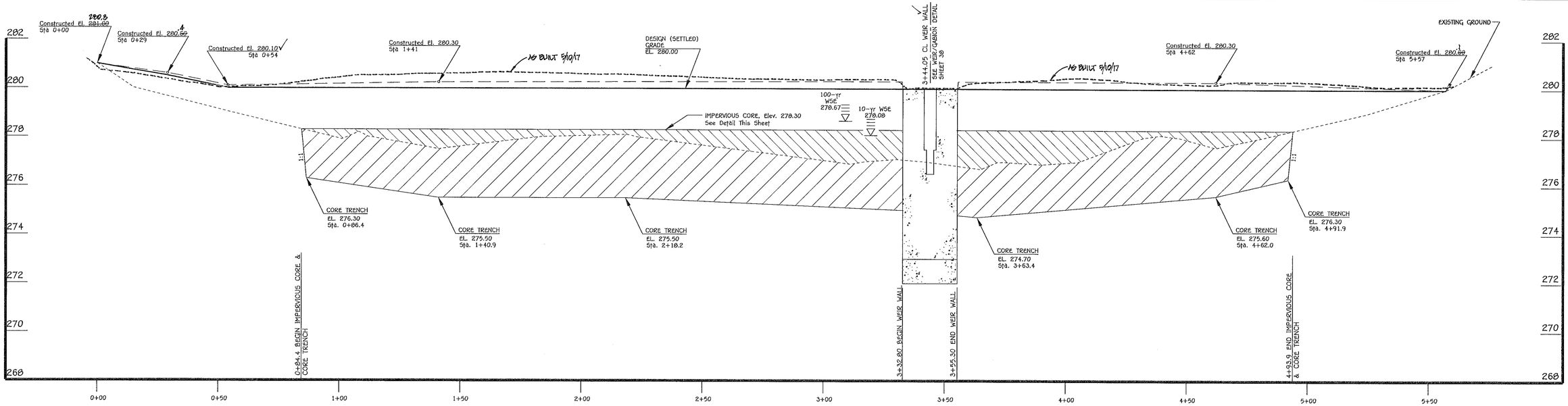
"REVISED SITE DEVELOPMENT PLAN"
BOLLMAN BRIDGE ELEMENTARY SCHOOL

ZONED R-20 TAX MAP No.: 47 GRID No.: 5 PARCEL No.: 25
SIXTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: JULY 1, 2016

SHEET 36 OF 40

"AS BUILT" SDP-87-96

I:\2011\11247\dwg 2015\SDP-87-96 REDLINE SHEET 35-40.dwg, SHEET 36, 7/6/2016 3:18:21 PM, 1:1



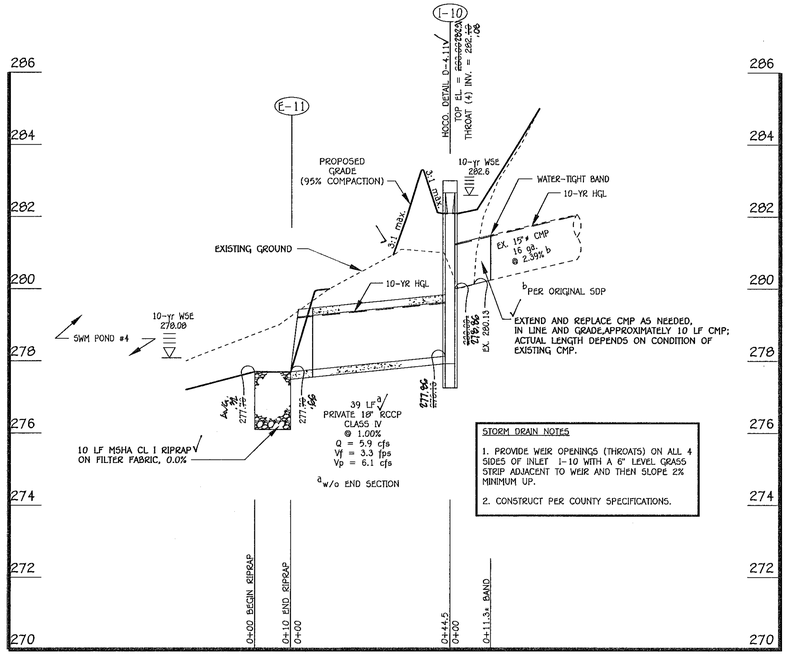
CL EMBANKMENT PROFILE

SCALE:
HORZ: 1" = 20'
VERT: 1" = 2'

AS-BUILT CERTIFICATION FOR PSWM

I hereby certify that the facility shown on the plan was constructed as shown on the "AS BUILT" plans and complies with the approved plans and specifications. I have verified that the contributing drainage area is sufficiently stabilized to prevent clogging of the underground SWM Facility.

CHARLES J. CROVO, SR. NO. 13204 — 5/31/17 Date



STORM DRAIN NOTES

1. PROVIDE WEIR OPENINGS (THROATS) ON ALL 4 SIDES OF INLET I-10 WITH A 6" LEVEL GRASS STRIP ADJACENT TO WEIR AND THEN SLOPE 2% MINIMUM UP.

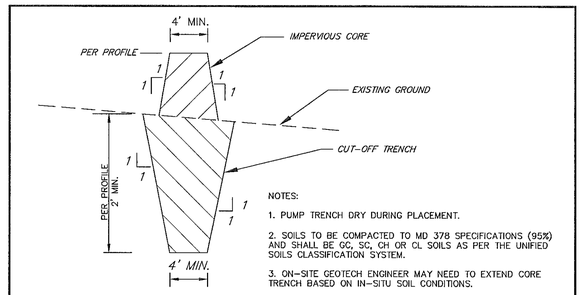
2. CONSTRUCT PER COUNTY SPECIFICATIONS.

STORM DRAIN PROFILE I-10 TO E-11

SCALE:
HORZ: 1" = 20'
VERT: 1" = 2'

STRUCTURE SCHEDULE

STRUCTURE NO.	OWNERSHIP AND MAINTENANCE	TOP ELEVATION	INV.IN	INV.OUT	COORDINATES	WIDTH	TYPE	REMARKS
I-1	PRIVATE	~~283.00~~ 282.00	~~280.00~~ 279.80 (15")	~~279.50~~ 279.30 (18")	N 538348.02 E 1361411.13	-	D INLET	D - 4.11
E-1	PRIVATE	279.~~50~~ 30	-	~~277.00~~ 277.96 (18")	N 538310.40 E 1361402.13	18"	CONC. END SECTION	D - 5.51
S-1	PRIVATE	280.0/4	-	-	N 538107.19 E 1361350.56 N 538101.65 E 1361329.27	-	WEIR WALL	SEE SHEET 38



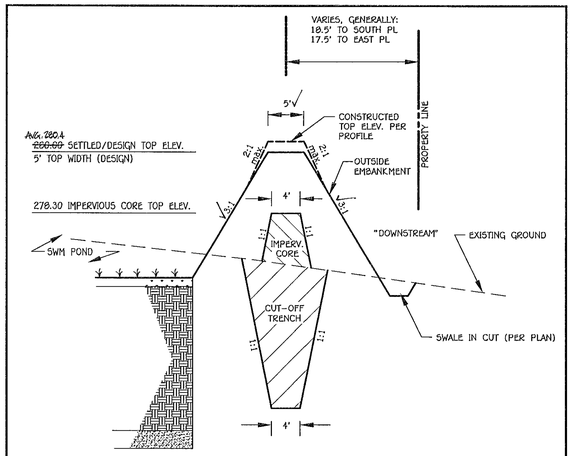
NOTES:

1. PUMP TRENCH DRY DURING PLACEMENT.

2. SOILS TO BE COMPACTED TO MD 378 SPECIFICATIONS (95%) AND SHALL BE GC, SC, CH OR CL SOILS AS PER THE UNIFIED SOILS CLASSIFICATION SYSTEM.

3. ON-SITE GEOTECH ENGINEER MAY NEED TO EXTEND CORE TRENCH BASED ON IN-SITU SOIL CONDITIONS.

CUT-OFF TRENCH & IMPERVIOUS CORE DETAIL



NOTES:
1. SEE THIS SHEET FOR EMBANKMENT CONSTRUCTION PROFILE.

2. SEE CUT-OFF TRENCH AND IMPERVIOUS CORE DETAIL THIS SHEET.

TYPICAL SWM POND EMBANKMENT SECTION

NTS

NOTE: THE PURPOSE OF THIS PLAN IS TO SHOW PROFILES FOR NEW STORMWATER MANAGEMENT FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

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

"Professional Certification. I hereby certify 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. 13204, Expiration Date: November 3, 2016."

CHARLES J. CROVO, SR., P.E. — 7/6/16 DATE

DATE	DESCRIPTION
	REVISION BLOCK

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Director - Department of Planning and Zoning — 7-21-16 Date

Chief, Division of Land Development — 7-21-16 Date

Chief, Development Engineering Division — 7-20-16 Date

PREPARED FOR
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
HARRIET TUBMAN BUILDING
8045 HARRIET TUBMAN LANE
COLUMBIA, MARYLAND 21044
Attention SCOTT WASHINGTON
410-313-6805

STATE OF MARYLAND — CHARLES J. CROVO — No. 13204 — PROFESSIONAL ENGINEER — AS-BUILT 5/31/17

ADDRESS CHART

LOT/PARCEL#	STREET ADDRESS
P. 25	8200 SAVAGE - GUILFORD ROAD JESSUP, MARYLAND 20794

PERMIT INFORMATION CHART

SUBDIVISION NAME			SECTION/AREA		LOT/PARCEL NO.
BOLLMAN BRIDGE ELEM. SCHOOL			N/A		P. 25
PLAT# OR L/F	GRID#	ZONING	TAX MAP#	ELECT. DISTR.	CENSUS TRACT
572/380	5	R-20	47	SIXTH	6064

SWM BIORETENTION FACILITY #4 PROFILES & TYPICAL EMBANKMENT SECTION

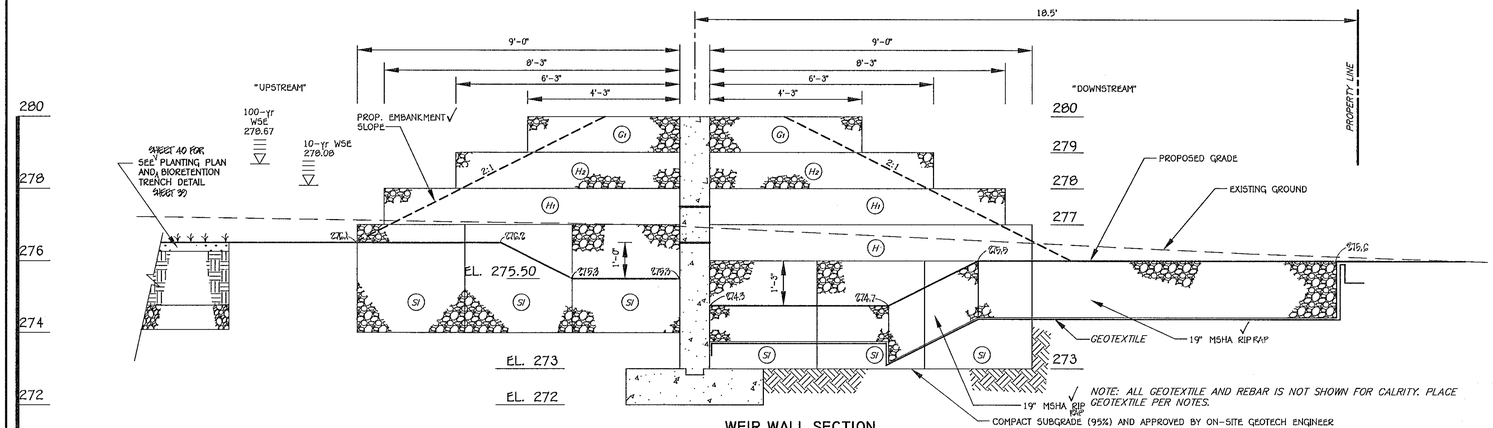
"REVISED SITE DEVELOPMENT PLAN"
BOLLMAN BRIDGE ELEMENTARY SCHOOL

ZONED R-20 TAX MAP No.: 47 GRID No.: 5 PARCEL No.: 25
SIXTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: JULY 1, 2016

SHEET 37 OF 40

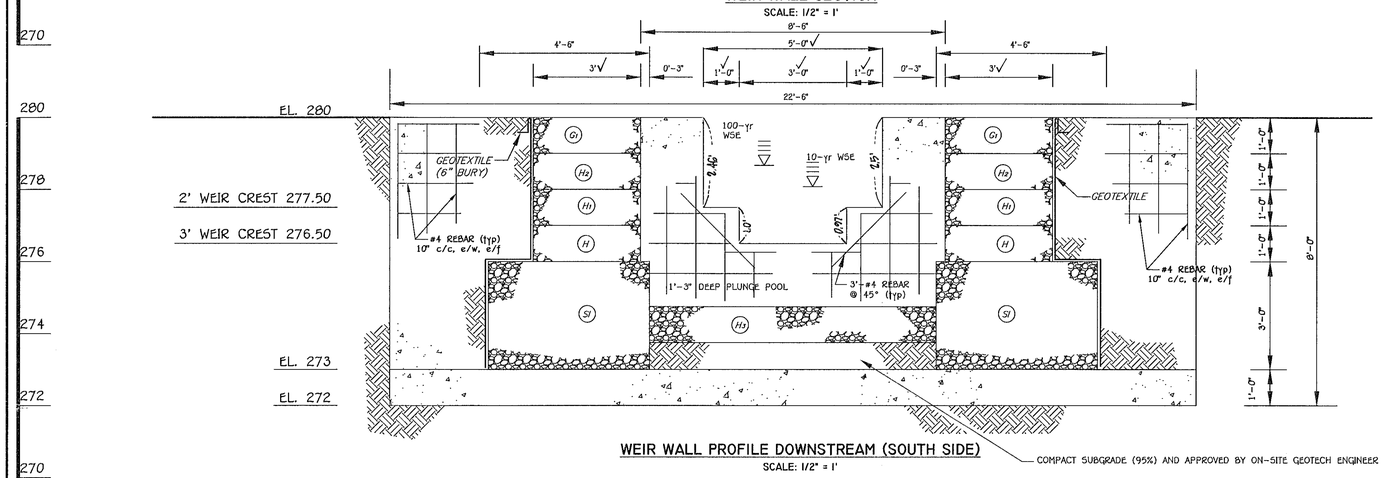
"AS BUILT" SDP-87-96

I:\2011\11047\dwg 2015\SDP-87-96 REDLINE SHEET 35-40.dwg, SHEET 37, 7/7/2016 9:15:13 AM, 1:1



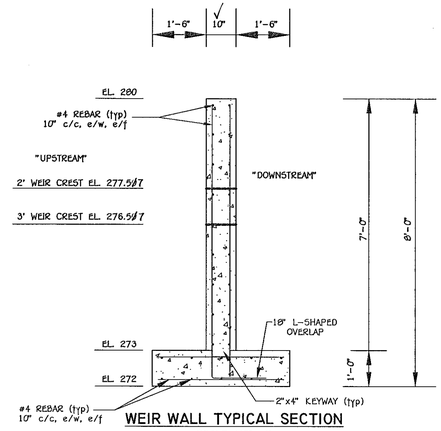
WEIR WALL SECTION

SCALE: 1/2" = 1'



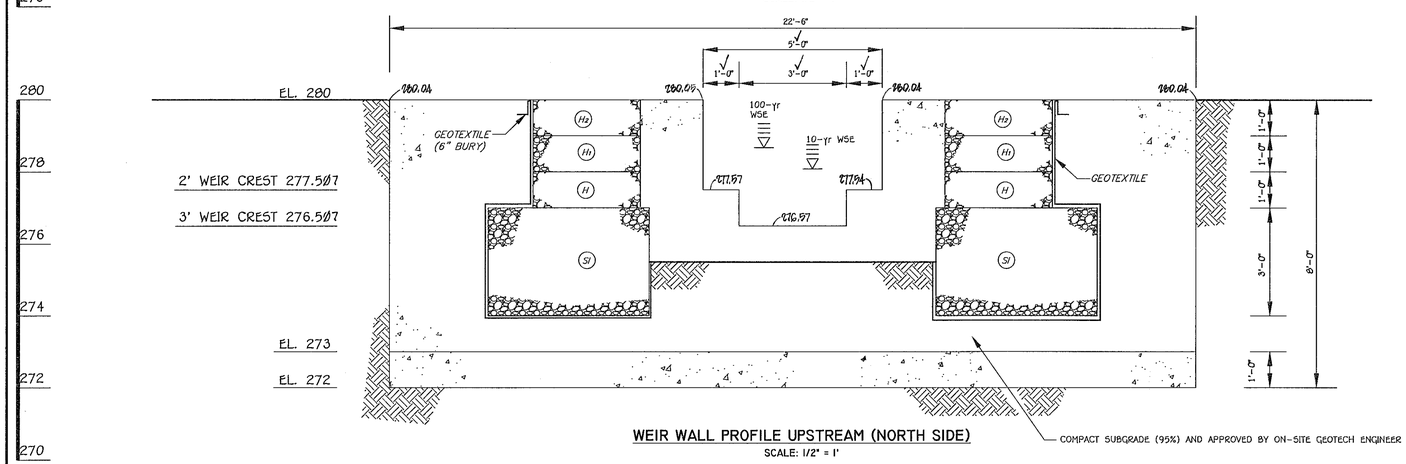
WEIR WALL PROFILE DOWNSTREAM (SOUTH SIDE)

SCALE: 1/2" = 1'



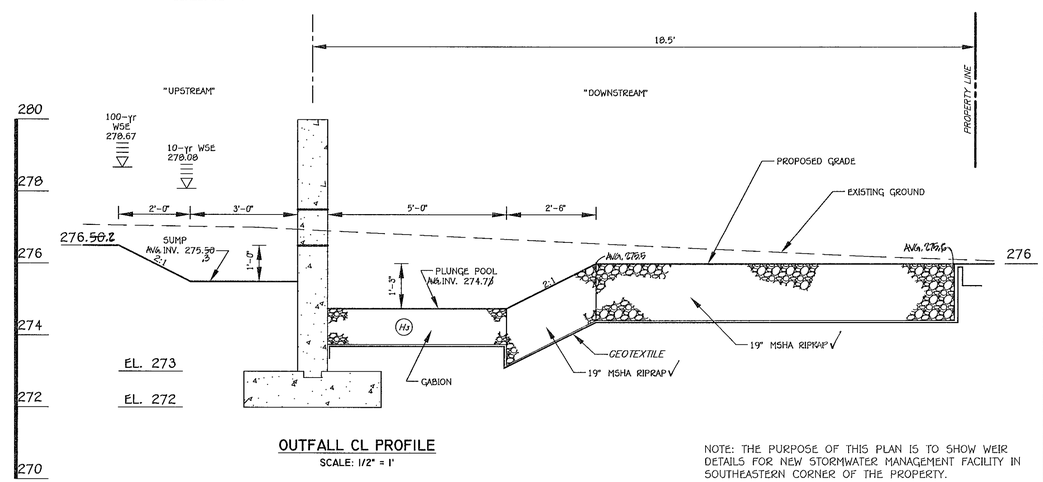
WEIR WALL TYPICAL SECTION

SCALE: 1/2" = 1'



WEIR WALL PROFILE UPSTREAM (NORTH SIDE)

SCALE: 1/2" = 1'



OUTFALL CL PROFILE

SCALE: 1/2" = 1'

NOTE: THE PURPOSE OF THIS PLAN IS TO SHOW WEIR DETAILS FOR NEW STORMWATER MANAGEMENT FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

GABION WEIR SCHEDULE

(Gabion Basket Quantities)

MANUFACTURER'S LETTER CODE/DIMENSIONS	QUANTITY
(S1) 4.5' x 3' x 3'	12
(H) 9' x 3' x 1'	2
(H1)[a] 8'-3" x 3' x 1'	4
(H2)[a] 6'-3" x 3' x 1'	4
(H3)[a,b] 8' x 2.5' x 1'	2
(G1)[a] 4'-3" x 3' x 1'	4

[a] H1 and H2 are "H" GABIONS BUT NEED TO BE MODIFIED (FOLDED) TO ACHIEVE THE DESIRED LENGTH. G1 IS A MODIFIED LENGTH G GABION.

[b] H3 gabions can be 3' wide and 2' wide as an alternative.

AS-BUILT CERTIFICATION FOR PSWM

I hereby certify that the facility shown on the plan was constructed as shown on the "AS BUILT" plans and complies with the approved plans and specifications. I have verified that the contributing drainage area is sufficiently stabilized to prevent clogging of the underground SWM Facility.

CHARLES J. CROVO, SR. NO. 13204 Date

GABION WALL NOTES

1. GABIONS SHALL BE MANUFACTURED BY MACCAFERRI GABIONS INC. THE INSTALLATION SHALL FOLLOW THE MANUFACTURER'S SPECIFICATIONS.

2. THE GABION BASKETS SHALL BE PVC COATED AND FILLED WITH CLEAN 4" – 7" STONE. THE GABION STONE SHALL BE MANUALLY AND CAREFULLY PLACED TO CREATE TIGHT, INTERLOCKING AGGREGATE WITH MINIMAL VOIDS.

3. GABIONS SHALL BE PLACED ON GEOTEXTILE FABRIC (MACCAFERRI MACTEX N47 OR APPROVED EQUAL) AT ALL SOIL/GABION INTERFACES. GEOTEXTILE MEETING NONWOVEN SPECIFICATIONS IN NRCS SEDIMENT CONTROL MANUAL STANDARDS & SPECIFICATIONS (pg H.1) FOR NON-WOVEN GEOTEXTILE IS ALSO ACCEPTABLE.

4. GABIONS SHALL BE CAREFULLY PLACED WITH NO DAMAGED WIRE. EARTH FOUNDATION SHALL BE FIRM. SOIL AROUND GABIONS SHALL BE WELL-COMPACTED (95%).

5. GABIONS SHALL BE FASTENED TOGETHER WITH MANUFACTURER-SPECIFIED WIRING (LACING) OR RINGS. RINGS SHALL MEET ASTM A975-97 SECTION MAXIMUM SPACING. SEE MACCAFERRI'S INSTALLATION GUIDE.

6. EMBANKMENT SLOPE ADJACENT TO GABIONS IS 2:1 AND SHALL SMOOTHLY TRANSITION INTO 3:1 SLOPES WITHIN 6'± FROM GABIONS.

7. ATTACH (ANCHOR) GABIONS TO WEIR WALL USING STEEL FLAT BARS AND BOLTS. SEE DETAIL SHT 39.

8. WHERE THE STANDARD GABION DIMENSION NEEDS TO BE MODIFIED, FOLD THE MESH MATERIAL AS PER MACCAFERRI GUIDELINES (i.e., DO NOT CUT THE MESH). CONTACT MACCAFERRI, INC. FOR SPECIFIC DIMENSION ADJUSTMENT/FOLD METHOD.

9. THE GABIONS SHALL REST ON A COMPACTED SUBGRADE APPROVED BY THE GEOTECHNICAL ENGINEER FOR 2,000 psf (MINIMUM).

CONCRETE WEIR WALL NOTES

1. CONCRETE SHALL BE MSHA MIX No. 3.

2. CONSTRUCTION TO FOLLOW HOWARD COUNT STANDARDS AND SPECIFICATIONS EXCEPT AS NOTED ON THESE PLANS.

3.REINFORCEMENT SHALL BE #4 DEFORMED STEEL, FREE OF RUST AND MEET ASTM A615, GRADE 60 WITH 2" COVER.

4. CHAMFER ALL EXPOSED EDGES 3/4" x 3/4".

5. THE VERTICAL WALL REBAR SHALL EXTEND INTO THE BASE AND TERMINATE WITH AN 18" L-SHAPED OVERLAP

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

"Professional Certification. I hereby certify 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. 13204, Expiration Date: November 3, 2016."

CHARLES J. CROVO, SR., P.E. 7/11/16 DATE

DATE	DESCRIPTION
	REVISION BLOCK

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Director – Department of Planning and Zoning 7-21-16 Date

Chief, Division of Land Development 7-21-16 Date

Chief, Development Engineering Division 7-20-16 Date

PREPARED FOR
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
HARRIET TUBMAN BUILDING
8045 HARRIET TUBMAN LANE
COLUMBIA, MARYLAND 21044
Attention SCOTT WASHINGTON
410-313-6805

STATE OF MARYLAND – CHARLES J. CROVO – No. 13204 – PROFESSIONAL ENGINEER

AS BUILT 5/31/17

ADDRESS CHART	
LOT/PARCEL#	STREET ADDRESS
P. 25	8200 SAVAGE – GUILFORD ROAD
	JESSUP, MARYLAND 20794

PERMIT INFORMATION CHART					
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BOLLMAN BRIDGE ELEM. SCHOOL			N/A		P. 25
PLAT# OR L/F	GRID#	ZONING	TAX MAP#	ELECT. DISTR.	CENSUS TRACT
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SWM BIORETENTION FACILITY #4
WEIR WALL DETAILS

"REVISED SITE DEVELOPMENT PLAN"
BOLLMAN BRIDGE
ELEMENTARY SCHOOL

ZONED R-20 TAX MAP No.: 47 GRID No.: 5 PARCEL No.: 25
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SHEET 38 OF 40

"AS BUILT" SDP-87-96

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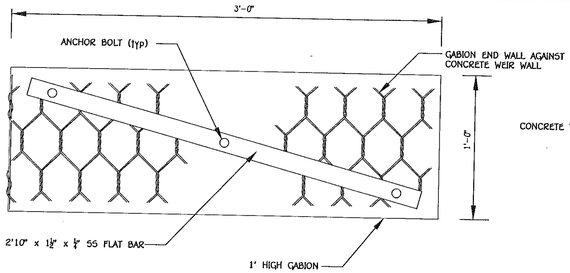
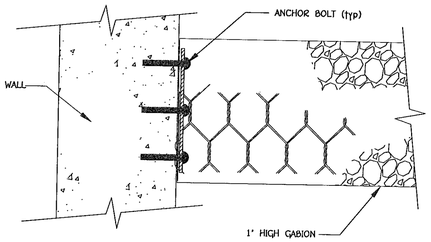


GABION-WEIR WALL CONNECTION DETAIL (INSIDE FACE OF GABION AGAINST WEIR WALL)

SCALE:
1" = 1/2'

NOTES:

1. CONTRACTOR TO VERIFY ALL GABIONS ARE "TIED" TOGETHER AND INITIALLY INSTALLED FIRMLY AGAINST CONCRETE WEIR WALL (i.e., no gaps between WALL AND GABIONS).
2. STEEL FLAT BAR SHALL BE STAINLESS STEEL AND ATTACHED TO WALL WITH 3.5" (min.) ANCHOR BOLTS (REMOVABLE, i.e., INSERTED INTO A THREADED FITTING EMBEDDED INTO CONCRETE)
3. PLACE FLAT BAR SNUG AGAINST GABION MESH WITHOUT DAMAGE TO PVC COATING.
4. ONLY 1' HIGH GABIONS SHALL BE CONNECTED; BURIED GABIONS DO NOT NEED TO BE ANCHORED TO WEIR WALL BUT SHALL STILL ABUT AGAINST WEIR WALL.

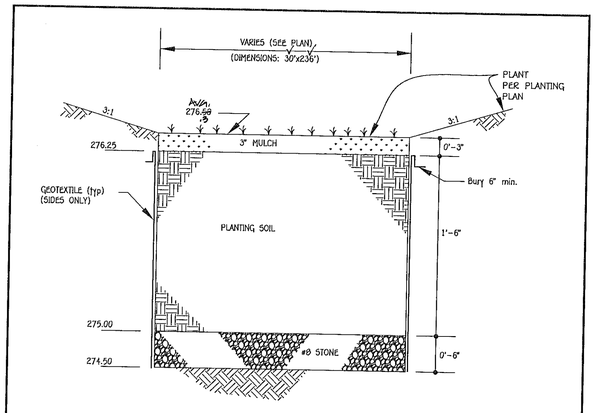


SECTION (TYP)

SCALE:
1" = 1/2'

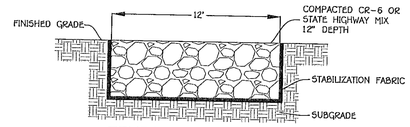
GABION-CONCRETE WEIR WALL ATTACHMENT DETAIL

SCALE:
1" = 1/2'



BIORETENTION/PLANTING AREA TYPICAL SECTION

NTS

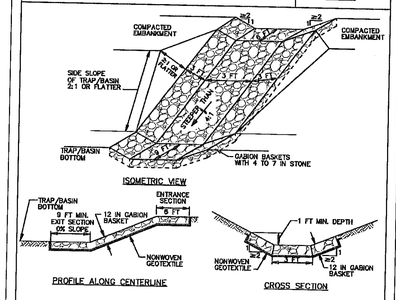


TEMPORARY ACCESS ROAD

NO SCALE

DETAIL D-3-2 GABION INFLOW PROTECTION

STANDARD SYMBOL GI 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 TRAPZOIDAL 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

D.12

Pond MD-378: N.R.C.S. – JANUARY 2000 CONSTRUCTION SPECIFICATIONS FOR SMALL EARTHEN DAMS

These specifications are appropriate to all ponds within the scope of the Standard for practice MD-378. All references to ASTM and AASHTO specifications apply to the most recent version.

Site Preparation
Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped of topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1. All trees shall be cleared and grubbed within 15 feet of the toe of the embankment.
Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush, and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 25-foot radius around the inlet structure shall be cleared.
All cleared and grubbed material shall be disposed of outside and below the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

Earth Fill
Material – The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6", frozen or other objectionable materials. Fill material for the center of the embankment, and cut off trench shall conform to Unified Soil Classification GC, SC, CH, or CL and must have at least 30% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment if designed by a geotechnical engineer. Such special designs must have construction supervised by a geotechnical engineer. Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required to prevent erosion of the embankment.
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).
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.
Embankment Core – The core shall be parallel to the centerline of the embankment as shown on the plans. The top width of the core shall be a minimum of four feet. The height shall extend up to at least the 10 year water elevation or as shown on the plans. The side slopes shall be 1 to 1 or flatter. The core shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability. In addition, the core shall be placed concurrently with the outer shell of the embankment.

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 un-confined 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.

Pipe Conduits
All pipes shall be circular in cross section.
Reinforced Concrete Pipe – All of the following criteria shall apply for reinforced concrete pipe:
1. Materials – Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM C-361.
2. Bedding – Reinforced concrete pipe conduits shall be laid in a concrete bedding / cradle for their entire length. This bedding / cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 50% of its out-side diameter with a minimum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flowable fill may be used as described in the "Structure Backfill" section of this standard. Gravel bedding is not permitted.
3. Laying pipe – Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 4 feet from the riser.
4. Backfilling shall conform to "Structure Backfill".
5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.
Plastic Pipe – The following criteria shall apply for plastic pipe:
1. Materials – 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 unstable 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.
Drainage Diaphragms – When a drainage diaphragm is used, a registered professional engineer will supervise the design and construction inspection.

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.

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 riprap and shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 921.09, Class C.

Care of Water During Construction
All work on permanent structures shall be carried out in areas free from water. The Con-tractor 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, in-stall, 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 or directed 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 be-low 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 ac-companying 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.

AS-BUILT CERTIFICATION FOR PSWM
I hereby certify that the facility shown on the plan was constructed as shown on the "AS BUILT" plans and complies with the approved plans and specifications. I have verified that the contributing drainage area is sufficiently stabilized to prevent clogging of the underground PSWM facility.
CHARLES J. CROVO, SR. No. 13204
5/21/10
Date

NOTE: THE PURPOSE OF THIS PLAN IS TO SHOW DETAILS AND SPECS FOR NEW STORMWATER MANAGEMENT FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

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

ENGINEER'S CERTIFICATE

"I certify that this plan for sediment and erosion control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District."
Signature of Engineer — Date 7/11/16

"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. 13204, Expiration Date: November 3, 2016."
CHARLES J. CROVO, SR., P.E. — DATE 7/11/16

DEVELOPER'S CERTIFICATE

"I/We certify that all development and construction will be done according to this plan 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 of Developer — Date 7/11/16

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.
Howard SCD — Date 7/12/16

DATE	DESCRIPTION
	REVISION BLOCK

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Director – Department of Planning and Zoning	7-21-16 Date
Chief, Division of Land Development	7-21-16 Date
Chief, Development Engineering Division	7-20-16 Date

PREPARED FOR
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
HARRIET TUBMAN BUILDING
8045 HARRIET TUBMAN LANE
COLUMBIA, MARYLAND 21044
Attention SCOTT WASHINGTON
410-313-6805

STATE OF MARYLAND — CHARLES J. CROVO — No. 13204 — PROFESSIONAL ENGINEER

AS BUILT 5/31/17

ADDRESS CHART

LOT/PARCEL#	STREET ADDRESS
P. 25	8200 SAVAGE – GUILFORD ROAD
	JESSUP, MARYLAND 20794

PERMIT INFORMATION CHART

SUBDIVISION NAME			SECTION/AREA		LOT/PARCEL NO.
BOLLMAN BRIDGE ELEM. SCHOOL			N/A		P. 25
PLAT# OR L/F	GRID#	ZONING	TAX MAP#	ELECT. DISTR.	CENSUS TRACT
572/380	5	R-20	47	SIXTH	6064

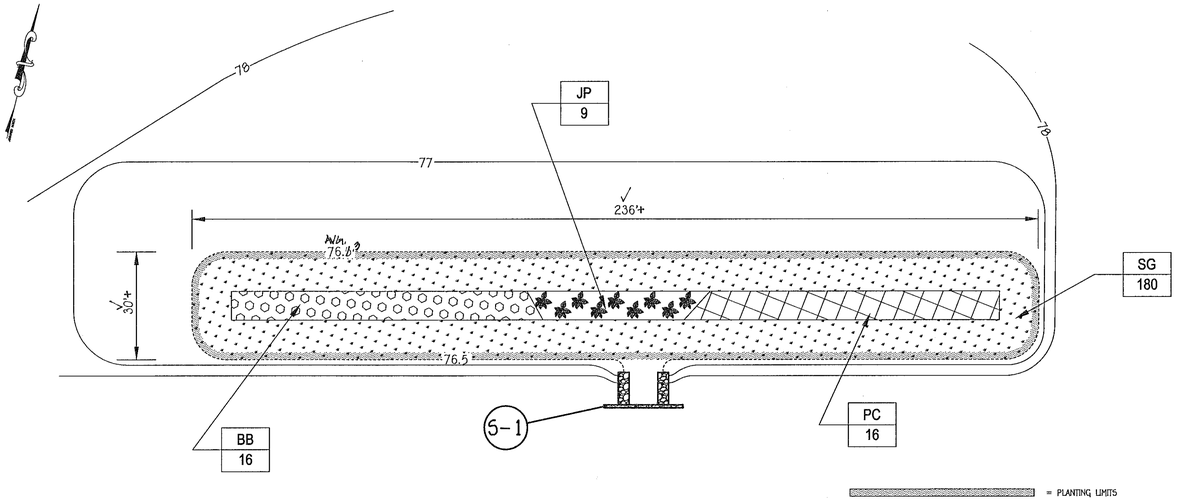
SWM BIORETENTION FACILITY #4
CONSTRUCTION DETAILS & SPECIFICATIONS

"REVISED SITE DEVELOPMENT PLAN"
BOLLMAN BRIDGE
ELEMENTARY SCHOOL

ZONED R-20 TAX MAP No.: 47 GRID No.: 5 PARCEL No.: 25
SIXTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: JULY 1, 2016

SHEET 39 OF 40

"AS BUILT" SDP-87-96



SWM #4 (F-6 BIORETENTION) PLANTING PLAN

SCALE:
1" = 20'

BIORETENTION FACILITY (BMP) PLANTING SCHEDULE

KEY	PLANT NAME	MIN. SIZE	QUANTITY	NOTES	SYMBOL
SG	SWITCH GRASS (*Panicum virgatum*)	1 qt	180	Grass @ 5' c/c min.	
JP	JOE PYE WEED (*Eupatorium maculatum 'Gatoway'*)	1 gal	9	Perennial @ 5' c/c min.	
PC	PURPLE CONEFLOWER (*Echinacea Purpurea*)	1 qt	16	Flower @ 5' c/c min.	
BB	BEEBALM (*Monarda didyma*)	1 qt	16	Flower @ 5' c/c min.	

PLANTING SPECIFICATIONS:
1. PLANT INSTALLATION SHALL BE PER MDE SPECIFICATIONS IN THE 2000 STORMWATER DESIGN MANUAL, PER THE PROJECT SPECIFICATIONS AND AS BELOW.

ADDITIONAL SPECIFICATIONS:
1. PLANT BMP LEVEL SURFACE AS SHOWN IN THE ABOVE TABLE WITH AN EVEN DISTRIBUTION DENSITY. STABILIZE BMP SIDE SLOPES WITH PERMANENT GRASS SEED PER NRCS SPECIFICATIONS. SIDE SLOPE PERMANENT GRASS AREAS SHALL HAVE 3" OF CLEAN TOPSOIL ON TILLED SUB-SOIL AND CURLEX MATTING. WATER AS NECESSARY UNTIL ESTABLISHED VEGETATION.

2. THE CONTRACTOR SHALL PROVIDE PLANT MAINTENANCE AND GUARANTEE IN ACCORDANCE WITH THE PROJECT LANDSCAPING SPECIFICATIONS.

3. PLANT MATERIAL SHALL CONFORM TO THE U.S. STANDARD FOR NURSERY STOCK BY THE AMERICAN ASSOCIATION OF NURSERYMEN.

4. PLANTING PERENNIALS & GRASSES: ROOT SYSTEMS SHALL BE SPLIT OR CRUMBLED. POTTED PLANTS SHALL BE SET SO THAT THE TOP OF THE POT IS EVEN WITH EXISTING GRADE.

5. TREAT THE MULCHED AND PLANTED AREA WITH A PRE-EMERGENT HERBICIDE.

6. ALL PLANTS MUST BE THOROUGHLY AND REGULARLY WATERED PRIOR TO ACCEPTANCE.

HOWARD SOIL CONSERVATION DISTRICT (HSCD) STANDARD SEDIMENT CONTROL NOTES

1. A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID), 410-313-1855 AFTER THE FUTURE LOD AND PROTECTED AREAS ARE MARKED CLEARLY IN THE FIELD. A MINIMUM OF 48 HOUR NOTICE TO CID MUST BE GIVEN AT THE FOLLOWING STAGES: A. PRIOR TO THE START OF EARTH DISTURBANCE,

B. UPON COMPLETION OF THE INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING,

C. PRIOR TO THE START OF ANOTHER PHASE OF CONSTRUCTION OR OPENING OF ANOTHER GRADING UNIT, D. PRIOR TO THE REMOVAL OR MODIFICATION OF SEDIMENT CONTROL PRACTICES.

OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE. OTHER RELATED STATE AND FEDERAL PERMITS SHALL BE REFERENCED, TO ENSURE COORDINATION AND TO AVOID CONFLICTS WITH THIS PLAN.

2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND REVISIONS THERETO.

3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION IS REQUIRED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED AREAS ON THE PROJECT SITE EXCEPT FOR THOSE AREAS UNDER ACTIVE GRADING.

4. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR TOPSOIL (SEC. B-4-2), PERMANENT SEEDING (SEC. B-4-5), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-3). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES IF THE GROUND IS FROZEN. INCREMENTAL STABILIZATION (SEC. B-4-1) SPECIFICATIONS SHALL BE ENFORCED IN AREAS WITH >15' OF CUT AND/OR FILL. STOCKPILES (SEC. B-4-8) IN EXCESS OF 20 FT. MUST BE BENCHED WITH STABLE OUTLET. ALL CONCENTRATED FLOW, STEEP SLOPE, AND HIGHLY ERODIBLE AREAS SHALL RECEIVE SOIL STABILIZATION MATTING (SEC. B-4-6).

5. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE, AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE CID.

6. SITE ANALYSIS:

TOTAL AREA OF SITE:	46.95 ACRES
AREA DISTURBED:	1.4 ACRES
AREA TO BE ROOFED OR PAVED:	0.0 ACRES
AREA TO BE VEGETATIVELY STABILIZED:	1.4 ACRES

7. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.

8. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE CID. THE SITE AND ALL CONTROLS SHALL BE INSPECTED BY THE CONTRACTOR WEEKLY; AND THE NEXT DAY AFTER EACH RAIN EVENT. A WRITTEN REPORT BY THE CONTRACTOR, MADE AVAILABLE UPON REQUEST, IS PART OF EVERY INSPECTION AND SHOULD INCLUDE:

- INSPECTION DATE
- INSPECTION TYPE (ROUTINE, PRE-STORM EVENT, DURING RAIN EVENT)
- NAME AND TITLE OF INSPECTOR
- WEATHER INFORMATION (CURRENT CONDITIONS AS WELL AS TIME AND AMOUNT OF LAST RECORDED PRECIPITATION)
- BRIEF DESCRIPTION OF PROJECT'S STATUS (E.G., PERCENT COMPLETE) AND/OR CURRENT ACTIVITIES
- EVIDENCE OF SEDIMENT DISCHARGES
- IDENTIFICATION OF PLAN DEFICIENCIES
- IDENTIFICATION OF SEDIMENT CONTROLS THAT REQUIRE MAINTENANCE
- IDENTIFICATION OF MISSING OR IMPROPERLY INSTALLED SEDIMENT CONTROLS
- COMPLIANCE STATUS REGARDING THE SEQUENCE OF CONSTRUCTION AND STABILIZATION REQUIREMENTS
- PHOTOGRAPHS
- MONITORING/SAMPLING
- MAINTENANCE AND/OR CORRECTIVE ACTION PERFORMED

OTHER INSPECTION ITEMS AS REQUIRED BY THE GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES (NPDES, MDE).

9. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH CAN AND SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.

10. ANY MAJOR CHANGES OR REVISIONS TO THE PLAN OR SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE HSCD PRIOR TO PROCEEDING WITH CONSTRUCTION. MINOR REVISIONS MAY ALLOWED BY THE CID PER THE LIST OF HSCD-APPROVED FIELD CHANGES.

11. DISTURBANCE SHALL NOT OCCUR OUTSIDE THE L.O.D. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 AC. PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE CID. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE CID, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.

12. WASH WATER FROM ANY EQUIPMENT, VEHICLES, WHEELS, PAVEMENT, AND OTHER SOURCES MUST BE TREATED IN A SEDIMENT BASIN OR OTHER APPROVED WASHOUT STRUCTURE.

13. TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE FOR REDISTRIBUTION ONTO FINAL GRADE.

14. ALL SILT FENCE AND SUPER SILT FENCE SHALL BE PLACED ON-THE-CONTOUR, AND BE IMBRICATED AT 25' MINIMUM INTERVALS, WITH LOWER ENDS CURLED UPHILL BY 2' IN ELEVATION.

15. STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUSIVE):

- USE I AND IP MARCH 1 - JUNE 15
- USE III AND IIIP OCTOBER 1 - APRIL 30
- USE IV MARCH 1 - MAY 31

16. A COPY OF THIS PLAN, THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND ASSOCIATED PERMITS SHALL BE ON-SITE AND AVAILABLE WHEN THE SITE IS ACTIVE.

STANDARD STABILIZATION NOTE

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

A.) THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND

B.) SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

PERMANENT SEEDING NOTES (B-4-5)

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 INTENSIVE MANAGEMENT. IRRIGATION REQUIRED IN THE AREAS OF CENTRAL MARYLAND AND EASTERN SHORE. RECOMMENDED CERTIFIED KENTUCKY BLUEGRASS CULTIVARS SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANKING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.

II. KENTUCKY BLUEGRASS/PERENNAL 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 PERENNAL RYEGRASS CULTIVARS/CERTIFIED KENTUCKY BLUEGRASS SEEDING RATE: 2 POUNDS MIXTURE PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANKING 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 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. ILL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES, LEVEL AND RAKE THE AREAS TO PREPARE A PROPER SEEDBED. REMOVE STONES AND DEBRIS OVER 1 1/2 INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL POSE NO DIFFICULTY.

E. IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (1/2 TO 1 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TEXTURE) UNTIL THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.

PERMANENT SEEDING SUMMARY

HARDINESS ZONE (FROM FIGURE B.3): 6B SEED MIXTURE (FROM TABLE B.3): 8					FERTILIZER RATE (10-20-20)			LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	N	P_2O_5	K_2O	
8	TALL FESCUE	100	MAR. 1-MAY 15 AUG. 1-OCT. 15	1/4-1/2 IN.	45 LBS. 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)

TEMPORARY SEEDING NOTES (B-4-4)

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.

TEMPORARY SEEDING SUMMARY

HARDINESS ZONE (FROM FIGURE B.3): 6B SEED MIXTURE (FROM TABLE B.1):			FERTILIZER RATE (10-20-20)	LIME RATE
SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS		
BARLEY	96	3/1 - 5/15, 8/15 - 10/15	1"	436 LB/AC (10 LB/ 1000 SF)	2 TONS/AC (90 LB/ 1000 SF)
OATS	72	3/1 - 5/15, 8/15 - 10/15	1"		
RYE	112	3/1 - 5/15, 8/15 - 10/15	1"		

NOTE: THE PURPOSE OF THIS PLAN IS TO SHOW PLANTINGS FOR NEW STORMWATER MANAGEMENT FACILITY IN SOUTHEASTERN CORNER OF THE PROPERTY.

AS-BUILT CERTIFICATION FOR PSWM

I hereby certify that the facility shown on the plan was constructed as shown on the "AS BUILT" plans and complies with the approved plans and specifications. I have verified that the contributing drainage area is sufficiently stabilized to prevent clogging of the underground SWM Facility.

CHARLES J. CROMO, JR. NO. 13204 — 5/31/17 Date

ENGINEERING ASSOCIATES, INC. — RECORD OF SOIL EXPLORATION

Project Name: Bollman Bridge Elementary School — Boring No.: SWM-1
Location: Howard County, Maryland — Job #: 16054A

SAMPLER: Datum ____ Hammer Wt. 140 lbs. Hole Diameter 6" Foreman J. Russell; Surf. Elev. 277.94 ft Hammer Drop 30 in. Rock Core Diameter ____ Inspector ____; Date Started 2-15-16 Pipe Size 2.0 in. Boring Method HSA Date Completed 2-15-16

Elevation/ Depth	Soil Symbols/ Sample Conditions	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	Curve
0	D	Brown, moist, stiff to soft sandy CLAY, trace gravel (CL)	4" Topsoil	15"		1-3-5	8	
2.75	D			10"		3-8-7	15	
5	D	Orange Brown, very moist to wet, loose silty SAND (SM)	Groundwater encountered at 9.5' while drilling	12"		3-2-3	5	
7.5	D			16"		2-2-3	5	
10		Bottom of Hole at 10.0'	Backfilled after 24 hrs					
15								
20								
25								
30								

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE

SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST

AT COMPLETION: GROUND WATER Dry ft., CAVE IN DEPTH 3.2 ft.; AFTER 24 HRS. ____ ft., ____ ft.; AFTER ___ HRS. ____ ft., ____ ft.

BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGER; DC - DRIVING CASING; MD - MUD DRILLING

ENGINEERING ASSOCIATES, INC. — RECORD OF SOIL EXPLORATION

Project Name: Bollman Bridge Elementary School — Boring No.: SWM-2
Location: Howard County, Maryland — Job #: 16054A

SAMPLER: Datum ____ Hammer Wt. 140 lbs. Hole Diameter 6" Foreman J. Russell; Surf. Elev. 277.38 ft Hammer Drop 30 in. Rock Core Diameter ____ Inspector ____; Date Started 2-15-16 Pipe Size 2.0 in. Boring Method HSA Date Completed 2-15-16

Elevation/ Depth	Soil Symbols/ Sample Conditions	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	Curve
0	D	CLAY, trace gravel (CL) Fill	5" Topsoil	5"		4-2-2	4	
2.75	D	Black, moist, loose to medium dense silty SAND, trace clay and gravel (SM)		5"		21-7-6	13	
5	D	Fill - Asphalt Millings	Groundwater encountered at 8.0' while drilling	8"		3-2-3	5	
7.5	D	Brown, wet, dense silty SAND, little gravel, trace clay (SM-GM)		14"		21-17-18	35	
10		Bottom of Hole at 10.0'	Backfilled after 24 hrs					
15								
20								
25								
30								

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE

SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST

AT COMPLETION: GROUND WATER 5.7 ft., CAVE IN DEPTH 5.7 ft.; AFTER 24 HRS. ____ ft., ____ ft.; AFTER ___ HRS. ____ ft., ____ ft.

BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGER; DC - DRIVING CASING; MD - MUD DRILLING

ENGINEERING ASSOCIATES, INC. — RECORD OF SOIL EXPLORATION

Project Name: Bollman Bridge Elementary School — Boring No.: SWM-3
Location: Howard County, Maryland — Job #: 16054A

SAMPLER: Datum ____ Hammer Wt. 140 lbs. Hole Diameter 6" Foreman J. Russell; Surf. Elev. 277.89 ft Hammer Drop 30 in. Rock Core Diameter ____ Inspector ____; Date Started 2-15-16 Pipe Size 2.0 in. Boring Method HSA Date Completed 2-15-16

Elevation/ Depth	Soil Symbols/ Sample Conditions	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	SPT Blows/Foot N	Curve
0	D	Brown, moist, medium stiff sandy CLAY, trace gravel (CL) Fill	4" Topsoil	18"		2-3-5	8	
2.75	D	Black/Brown, moist, medium dense silty SAND with gravel (SM)		10"		11-13-9	22	
5	D	Fill - Asphalt Millings	Groundwater encountered at 8.0' while drilling	14"		5-8-10	18	
7.5	D	Brown, moist, medium dense silty SAND, little to some gravel (SM-GM)		8"		11-12-12	24	
10		Bottom of Hole at 10.0'	Backfilled after 24 hrs					
15								
20								
25								
30								

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE

SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST

AT COMPLETION: GROUND WATER Dry ft., CAVE IN DEPTH 4.0 ft.; AFTER 24 HRS. ____ ft., ____ ft.; AFTER ___ HRS. ____ ft., ____ ft.

BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGER; DC - DRIVING CASING; MD - MUD DRILLING

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

ENGINEER'S CERTIFICATE

"I certify that this plan for sediment and erosion control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District."

Signature of Engineer — Date 7/11/16

"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. 13204, Expiration Date: November 3, 2016."

CHARLES J. CROMO, SR., P.E. — DATE 7/11/16

DEVELOPER'S CERTIFICATE

"I/We certify that all development and construction will be done according to this plan 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 of Developer — Date 7/11/16

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

Howard SCD — Date 7/12/16

DATE	DESCRIPTION
	REVISION BLOCK

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Director - Department of Planning and Zoning — Date 7-21-16
Chief, Division of Land Development — Date 7-21-16
Chief, Development Engineering Division — Date 7-20-16

PREPARED FOR
HOWARD COUNTY PUBLIC SCHOOL SYSTEM
HARRIET TUBMAN BUILDING
8045 HARRIET TUBMAN LANE
COLUMBIA, MARYLAND 21044
Attention SCOTT WASHINGTON
410-313-6805

STATE OF MARYLAND — CHARLES J. CROMO JR. — No. 13204 — PROFESSIONAL ENGINEER

AS-BUILT 5/31/17

ADDRESS CHART	
LOT/PARCEL#	STREET ADDRESS
P. 25	8200 SAVAGE - GUILFORD ROAD JESSUP, MARYLAND 20794

PERMIT INFORMATION CHART					
SUBDIVISION NAME			SECTION/AREA		LOT/PARCEL NO.
BOLLMAN BRIDGE ELEM. SCHOOL			N/A		P. 25
PLAT# OR L/F	GRID#	ZONING	TAX MAP#	ELECT. DISTR.	CENSUS TRACT
572/380	5	R-20	47	SIXTH	6064

SWM BIORETENTION FACILITY #4
PLANTING PLAN & BORING LOGS

"REVISED SITE DEVELOPMENT PLAN"
BOLLMAN BRIDGE
ELEMENTARY SCHOOL

ZONED R-20 TAX MAP No.: 47 GRID No.: 5 PARCEL No.: 25
SIXTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: JULY 1, 2016

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"AS BUILT" SDP-87-96

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