APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEM
HOWARD COUNTY HEALTH DEPARTMENT

COUNTY HEALTH OFFICER: _____ DATE: 2-27-85

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING

PLANNING DIRECTOR: _____ DATE: 3-7-85

CHIEF; DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION: _____ DATE: 3-7-85

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

DIRECTOR: _____ DATE: 2-4-85

CHIEF, BUREAU OF ENGINEERING: _____ DATE: 2/26/85

These plans have been reviewed for the Howard Soil Conservation District and meet the technical requirements for small pond construction, soil erosion and sediment control.

_____ 2/22/85
U.S. Soil Conservation Service — Date

These plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.

APPROVED: _____ 2/22/85
Howard Soil Conservation District — Date

Plan Number

APPROVED
PLANNING BOARD
OF HOWARD COUNTY
DATE **2-6-85**

RIVERS CORP. PARK SECT 1 AREA 2 OPEN SPACE LOT#1

RIVERS CORP. PARK SECT. 1 AREA 2 OPEN SPACE LOT#1

RIVERS CORP. PARK SECT. 1 AREA 2 OPEN SPACE LOT#1

RIVERS CORP. PARK SECT. 1 AREA 2 PARCEL A-3

RIVERS CORP. PARK SECT. 1 AREA 2 OPEN SPACE LOT#1

RIVERS CORP. PARK SECT. 1 AREA 2 OPEN SPACE LOT#1

RIVERS CORP. PARK SECT. 1 AREA 1 PARCEL A-1

Est. Woods

Est. Woods

Open Space Atrium

Open Space Atrium

PROPOSED 160,400 F.F. 262 ± SF.

STORM WATER MANAGEMENT FACILITY Extended Detention Dam #1

S 00° 22' 55" E - 482.41'

S 52° 38' 11" W - 250.21'

S 44° 08' 16" E

S 31° 45' 50" E - 280.09'

N 87° 41' 50" W - 315.00'

DUE EAST 345.00'

DUE NORTH

DUE WEST 1101.00'

N 30° 31' 28" W - 370.44'

N 59° 28' 32" E - 332.20'

N 24° 27' 24" E

S 50° 31' 45" E

N 39° 28' 32" E - 322.20'

N 50° 31' 45" W

N 39° 28' 32" E - 402.32'

N 50° 31' 45" W - 315.00'

N 39° 28' 32" E - 220.11'

N 24° 27' 24" E

N 50° 31' 45" W

N 39° 28' 32" E - 402.32'

N 50° 31' 45" W - 315.00'

N 39° 28' 32" E - 220.11'

N 24° 27' 24" E

N 50° 31' 45" W

N 39° 28' 32" E - 322.20'

N 50° 31' 45" W - 315.00'

STRUCTURE SCHEDULE

NO.	TYPE	INV. IN	INV. OUT	TOP ELEV.	REMARKS
I-1	DBL. 'S' COMB.	342.50	342.19	360.00 **	HO. CO. STD. correct-4.24
I-2	DBL. 'S' GRATE	352.35	351.85	360.00 **	HO. CO. STD. correct-4.24
I-3	DBL. 'S' GRATE	353.76	353.20	360.00 **	HO. CO. STD. correct-4.24
I-4	DBL. 'S' GRATE	355.00	354.83	360.00 **	HO. CO. STD. 80-4.24
I-5	DBL. 'S' GRATE	—	355.00	359.00 **	HO. CO. STD. 80-4.24
I-6	DBL. 'S' GRATE	—	353.52	357.00 **	HO. CO. STD. 80-4.24
I-7	DBL. 'S' COMB.	—	347.00	356.50 **	HO. CO. STD. 80-4.24
I-8	DBL. 'S' COMB.	346.50	346.50	355.00 **	HO. CO. STD. 80-4.24
I-9	DBL. 'S' COMB.	—	355.12	359.00 **	HO. CO. STD. 80-4.24
E-1	METAL END SEC.	340.50	—	—	HO. CO. STD. 80-6.01
E-2	TYPE 'A' HDWL	347.00	346.06	—	HO. CO. STD. 80-6.11
E-3	TYPE 'A' HDWL	347.20	346.00	—	HO. CO. STD. 80-6.11 *
E-4	TYPE 'A' HDWL	358.08	357.82	—	HO. CO. STD. 80-6.11 *
M-1	STD. MH.	340.65	340.22	354.00	HO. CO. STD. G-5.03

* USE STANDARD DETAIL FOR 18" PIPE.
** TOP OF GRATE ELEVATION.

STORMWATER MANAGEMENT MAINTENANCE SCHEDULE

Maintenance Item	1	2	3	4	5	6
Maintenance Frequency	8	7	8	8	7	8
Repair Duration *	9	10	9	9	10	9

1. Clean Out Silt
2. Clean Out Trash
3. Check Weir Clogging
4. Check Slope Stabilization
5. Cut Grass
6. Check Structural Integrity
7. Every Two Weeks
8. Every Three Months
9. One Week Maximum
10. Two Days

* All Maintenance, Inspection, & Repair Shall Be The Responsibility Of The Owner
* Inspect All Above Items After Each Major Rainfall & Repair If Required.

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEM
HOWARD COUNTY HEALTH DEPARTMENT
COUNTY HEALTH OFFICER: _____ DATE: 2-1-85

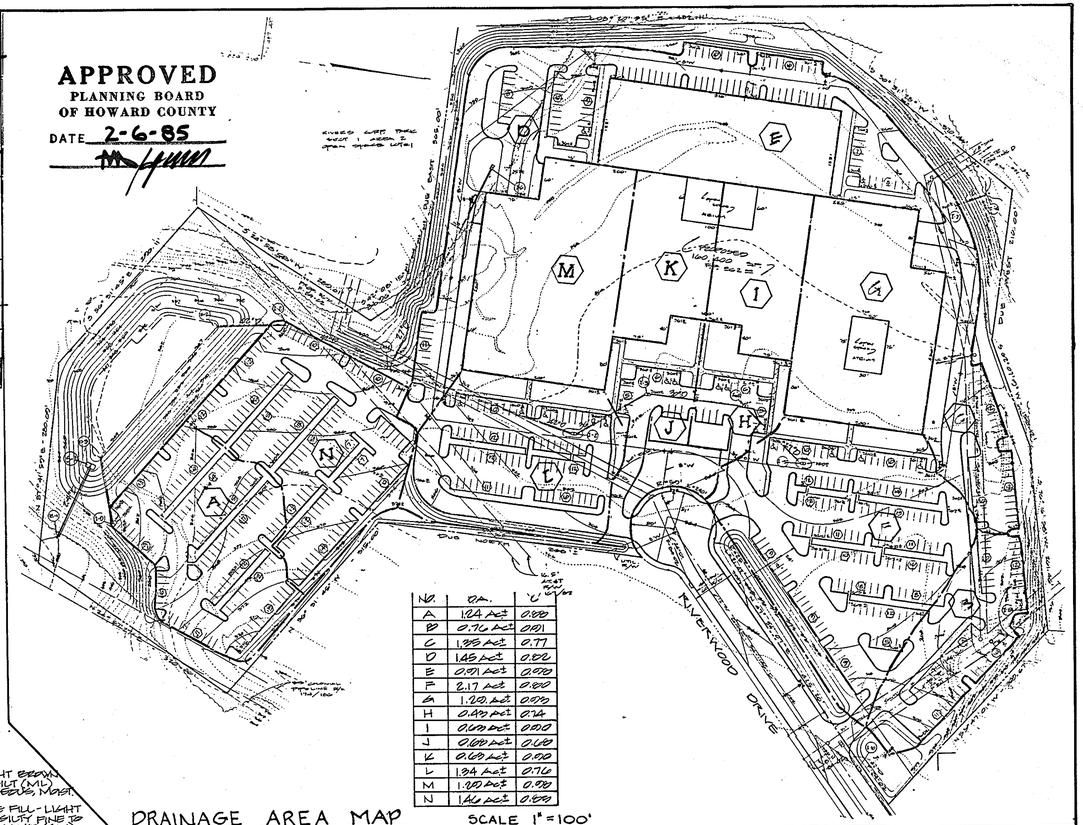
APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING
PLANNING DIRECTOR: _____ DATE: 3-7-85
CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION: _____ DATE: 2-7-85

APPROVED: FOR PUBLIC WATER, PUBLIC SEWERAGE, STORM DRAINAGE SYSTEMS, AND ROADS.
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
DIRECTOR: _____ DATE: 2-26-85
CHIEF, BUREAU OF ENGINEERING: _____ DATE: 2/26/85

HOWARD SOIL CONSERVATION DISTRICT
THIS DEVELOPMENT IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
DISTRICT: _____ DATE: 2/22/85
APPROVED: HOWARD SOIL CONSERVATION DISTRICT

REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS
SIGNATURE: _____ DATE: 2/22/85
THE UNITED STATES SOIL CONSERVATION SERVICE

APPROVED
PLANNING BOARD
OF HOWARD COUNTY
DATE 2-6-85



NO.	DA.	'C'
A	1.24 Ac±	0.80
B	0.74 Ac±	0.81
C	1.85 Ac±	0.77
D	1.48 Ac±	0.82
E	0.91 Ac±	0.70
F	2.17 Ac±	0.82
G	1.20 Ac±	0.83
H	0.49 Ac±	0.74
I	0.09 Ac±	0.80
J	0.08 Ac±	0.68
K	0.69 Ac±	0.80
L	1.24 Ac±	0.76
M	1.20 Ac±	0.78
N	1.40 Ac±	0.83

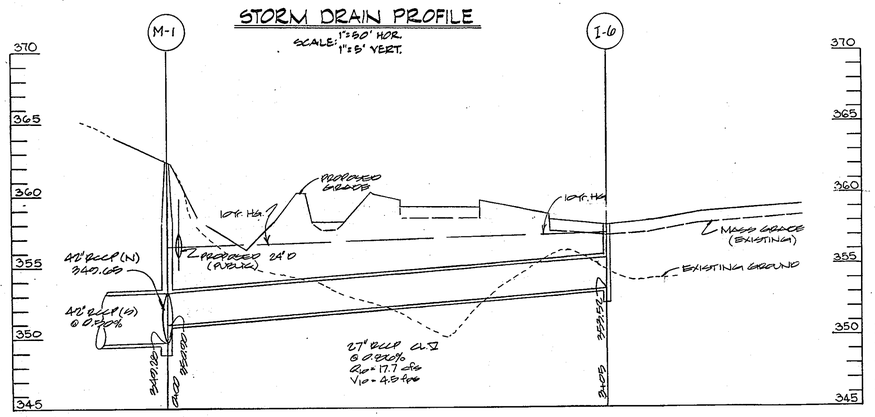
DRAINAGE AREA MAP SCALE 1" = 100'

GENERAL NOTES

1. Maximum building height = 30'.
2. All areas not being paved or receiving building coverage shall be stabilized in accordance with the plans approved by the Howard Soil Conservation District.
3. Any damage to public rights-of-way and/or adjacent properties shall be repaired immediately at the contractor's expense.
4. The contractor shall maintain at least a 2' level bench behind all curb and gutter in fill areas.
5. The contractor shall verify all existing utilities to his own satisfaction before starting construction.
6. All slopes shall be 2:1 or flatter.
7. All work shall be done in accordance with Howard County Standard Specifications and Details for Construction, or as shown on these plans.
8. The contractor shall notify the C & P Telephone Co. and the Gas and Electric Company five days prior to starting work shown on these plans by calling "Miss Utility". Call collect 1-559-0100.
9. For details of ramps and signs for the handicapped see the Maryland Building Code for the Handicapped and Aged and as shown hereon.
10. The contractor shall maintain a minimum of 3.5' cover over all proposed water lines.
11. All rip-rap shall be placed on filter cloth.
12. The contractor or developer shall contact the Construction Inspection/Survey Division, 24 hours in advance of commencement of work at 992-2417 or 792-7272.
13. The contractor shall remove all existing paving, curb and gutter, etc. that may interfere with proposed construction.
14. All utilities installed shall receive full trench compaction.
15. All water main tees, bends, caps, etc. shall be buttressed in accordance with Howard County design requirements.

STORM DRAIN PROFILE

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



SOIL BORING INFORMATION (SEE SHEET 3 OF 7 FOR LOCATION OF BORINGS)

B-1 N.T.S.

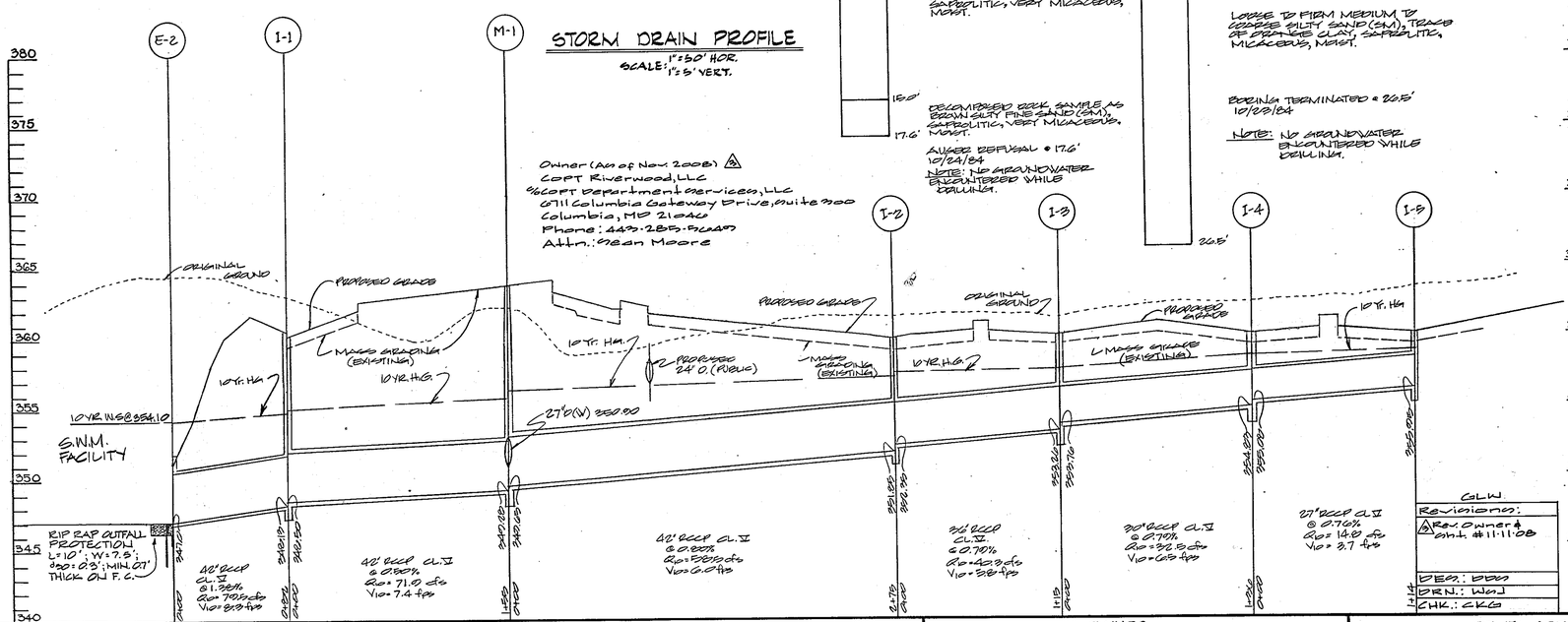
0.0' TOPSOIL
POSSIBLE FILL - BROWN FINE TO MEDIUM SILTY SANDY GRAVEL WITH TRACE FINE MICACEOUS SAND AND LITTLE ROCK FRAGMENTS, MICACEOUS, MOIST.
2.0'
POSSIBLE FILL - BROWN FINE SANDY SILT (ML), MICACEOUS, MOIST.
5.0'
FIRM LIGHT TO DARK BROWN SILTY FINE SANDY (SM), SAPROLITIC, VERY MICACEOUS, MOIST.
15.0'
DECOMPOSED ROCK, SAMPLE AS BROWN SILTY FINE SAND (SM), SAPROLITIC, VERY MICACEOUS, MOIST.
17.6'
AUGER REFUSAL @ 17.6' 10/24/84
NOTE: NO GROUNDWATER ENCOUNTERED WHILE DRILLING.

B-2

0.5' TOPSOIL
2.0'
FILL LIGHT BROWN SANDY SILT (ML), MICACEOUS, MOIST.
5.5'
POSSIBLE FILL - LIGHT BROWN SILTY FINE TO COARSE SAND (SM), SAPROLITIC, MICACEOUS, MOIST.
LOOSE TO FIRM MEDIUM TO COARSE SILTY SAND (SM), TRACE OF FRIABLE CLAY, SAPROLITIC, MICACEOUS, MOIST.
BORING TERMINATED @ 26.5' 10/23/84
NOTE: NO GROUNDWATER ENCOUNTERED WHILE DRILLING.
26.5'

STORM DRAIN PROFILE

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

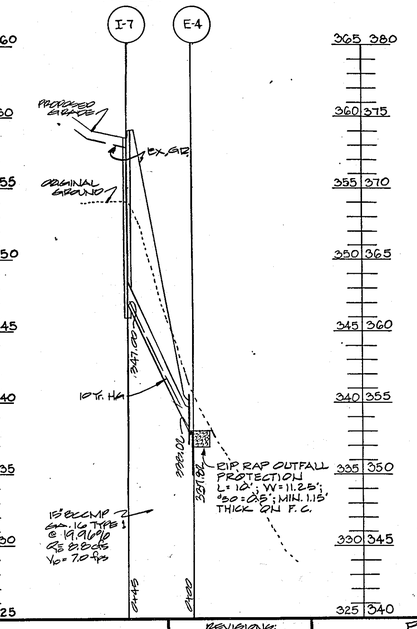


Owner (As of Nov. 2008)
COPT Riverwood, LLC
c/o COPT Department Services, LLC
6711 Columbia Gateway Drive, Suite 300
Columbia, MD 21046
Phone: 443-285-5400
Attn.: Sean Moore

GLW Revisions:
2 Rev. Owner & add. #11-11-08
DES.: DBD
DRN.: WMJ
CHK.: CKG

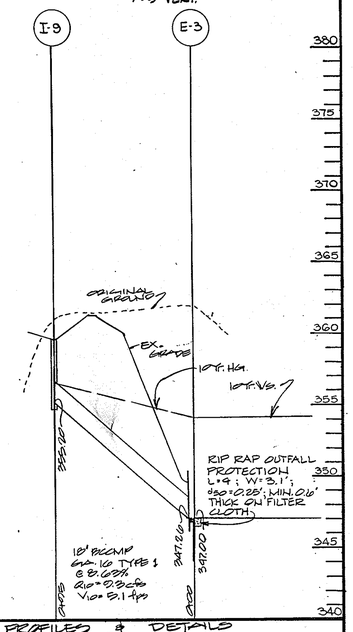
STORM DRAIN PROFILE

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



STORM DRAIN PROFILE

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



ENGINEER
GEORGE WILLIAM STEPHENS, JR. & ASSOCIATES INC.
ENGINEERS & SURVEYORS
303 ALLEGHENY AVENUE
TOWSON, MARYLAND, 21204

ENGINEER
BY Jagbarate Chaganbu 8930 11-8-84
REG. NO. DATE

OWNER
THE HOWARD RESEARCH AND DEVELOPMENT CORP.
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
992-6033

DEVELOPER / CONTRACT PURCHASER
CASE - RIXON
c/o
MANEKIN CORPORATION
8325 GUILFORD ROAD COLUMBIA MD. 21046
995-1670

DEVELOPER
BY _____ GEN. PARTNER 11-8-84
TITLE DATE

REVISIONS:
10/8/08 CHANGED INV IN & OUT FOR E-4. CHANGED HGL ON PROFILE. CHANGED I-14, CL I PROFILE FOR E-4. CHANGED 1/0 FROM ST 106-4 TO PROP 1/0 TO E-4. (C.I.A.H)

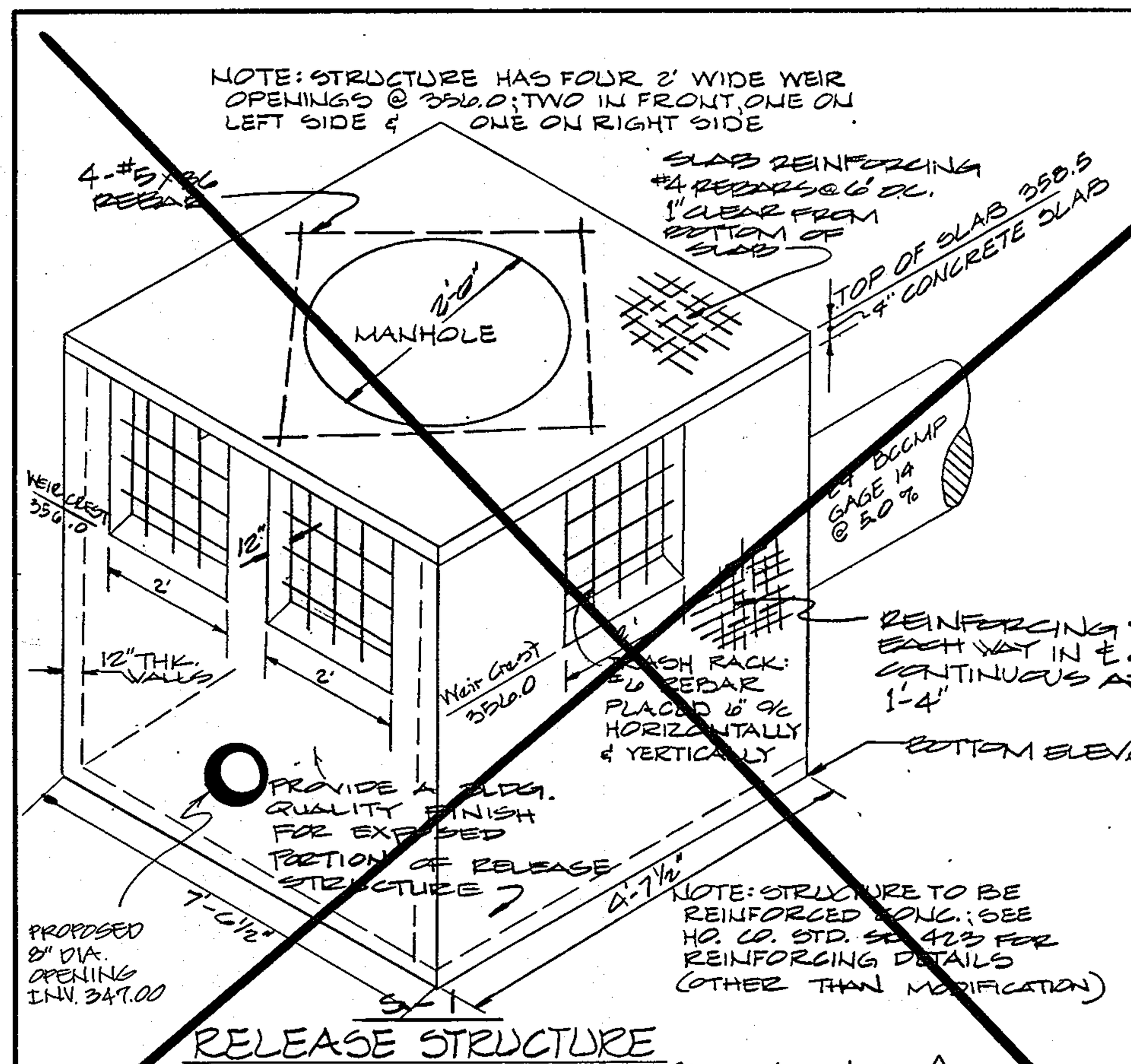
DESIGNED BY: EH/RWC
DRAWN BY: CBD/DER
CHECKED BY: RWC/TC

HOWARD CO. MD.
SCALE: AS SHOWN

PROFILES & DETAILS
PROPOSED OFFICE FOR RESEARCH & DEVELOPMENT
RIVERS CORPORATE PARK
SECT. 1 AREA 2 PARCEL A
COLUMBIA
TAX MAP # 42

ELECT. DIST# 6
NOV. 8, 1984
SHEET 2 OF 7

SDP-85-89c

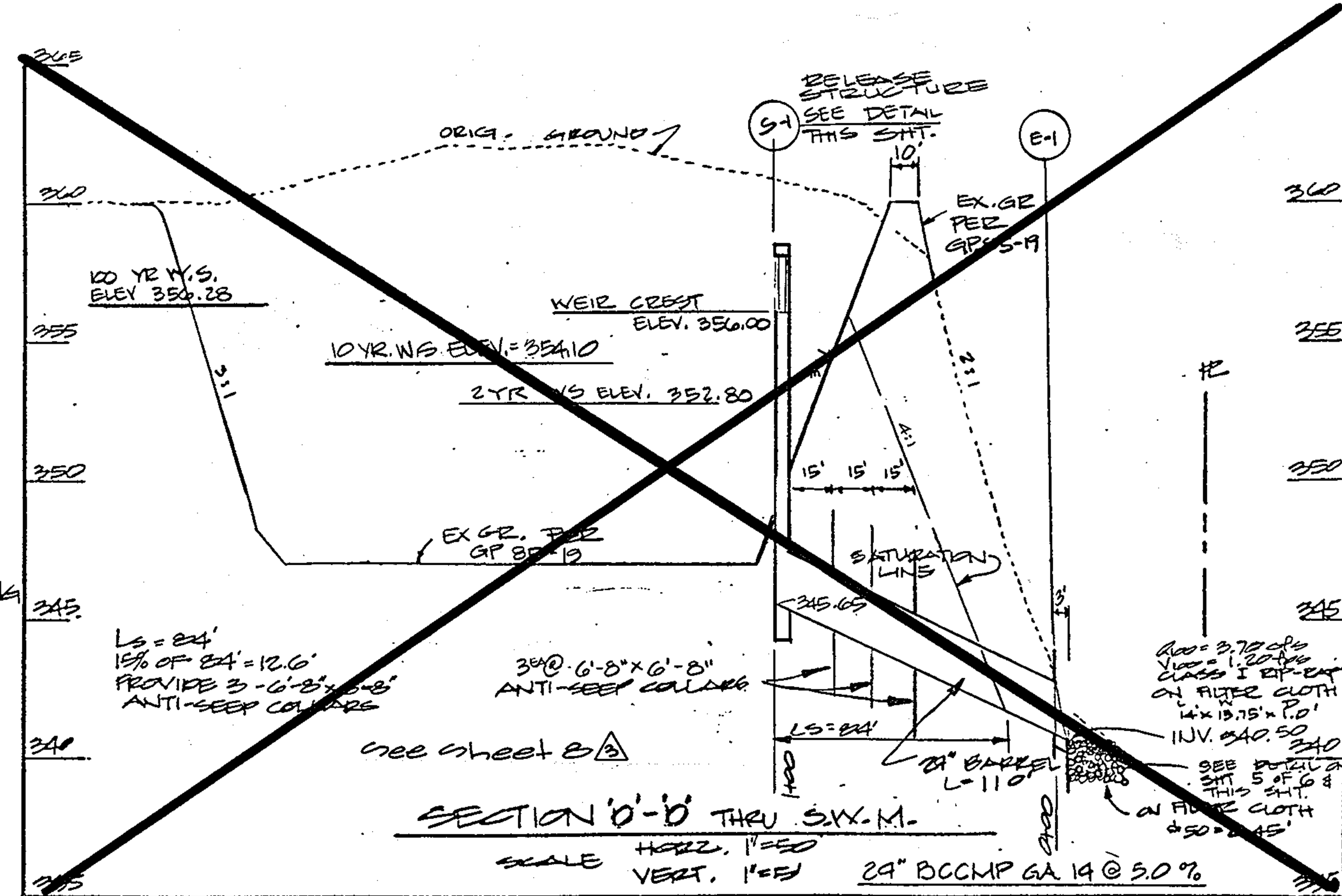


RELEASE STRUCTURE

NOT TO SCALE

DOUBLE 'S' TYPE INLET - HOWARD COUNTY STD. 9.23

see sheet 8 ③



SECTION 'D'-'D' THRU S.W.M.

SCALE HORZ. 1"=50 VERT. 1"=5

24" BCCMP GA 14 @ 5.0 %

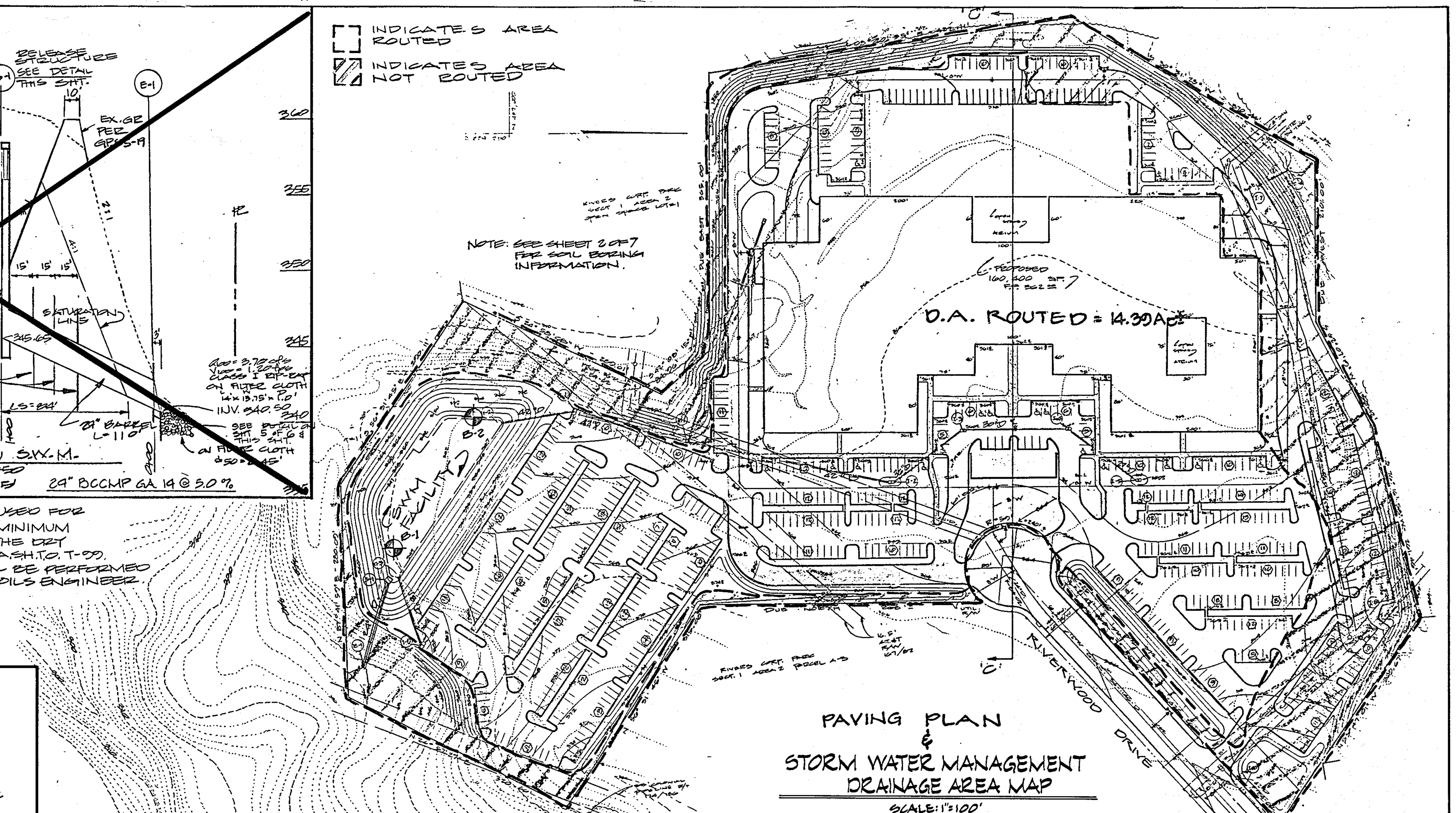
NOTE: ALL SUITABLE MATERIAL SHALL BE USED FOR THE EMBANKMENT AND ROLLED TO A MINIMUM DEGREE OF COMPACTION OF 95% OF THE DRY UNIT WEIGHT AS DETERMINED BY A.A.S.H.T.O. T-99. CONSTRUCTION OF SWM POND SHALL BE PERFORMED UNDER STRICT SUPERVISION OF A SOILS ENGINEER.

APPROVED
PLANNING BOARD
OF HOWARD COUNTY
DATE 2-6-85

[ ] INDICATES AREA ROUTED

[/] INDICATES AREA NOT ROUTED

NOTE: SEE SHEET 2 OF 7 FOR SOIL BORING INFORMATION.



PAVING PLAN
&
STORM WATER MANAGEMENT
DRAINAGE AREA MAP

SCALE: 1"=100'

SECTION NUMBER	ROAD AND STREET CLASSIFICATION	PAVEMENT MATERIALS: FULL DEPTH BIT. CONC. ALTERNATE	PAVEMENT MATERIALS: GRANULAR BASE ALTERNATES
P-1 ALL OTHER PAV. AREAS NOT SHADED	PARKING AREAS AND TRAVELWAYS APARTMENTS AND COMMERCIAL-INDUSTRIAL ZONES WITH NO HEAVY TRUCKS	1" BIT. CONC. SURFACE; 4" BIT. CONC. BASE	1" BIT. CONC. SURFACE; 2" BIT. CONC. BASE; PRIME; 5" CRUSHER RUN BASE COURSE OR 4" DENSE GRADED STABILIZED AGGREGATE BASE COURSE
P-2	RESIDENTIAL ZONES LOCAL, CUL-DE-SAC STS. ALLEYS AND PRIVATE ROADS SERVING INDIVIDUAL LOTS; PARKING AREAS APARTMENTS AND COMMERCIAL-INDUSTRIAL ZONES WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY	1 1/2" BIT. CONC. SURFACE; 5" BIT. CONC. BASE	1 1/2" BIT. CONC. SURFACE; 2 1/2" BIT. CONC. BASE; PRIME; 8" CRUSHER RUN BASE COURSE; 2 COURSES OF 6" DENSE GRADED STABILIZED AGGREGATE BASE COURSE

STORM WATER MANAGEMENT DATA

TOTAL AREA OF SITE 20.3 Ac±

ALLOWABLE (EXISTING) 2YR. RELEASE RATE = 5.08 c.f.s.
" " 10 YR. " " = 13.88 c.f.s.

SOIL GROUP 'C'; PREVIOUSLY MASS GRADED

TOTAL DRAINAGE AREA TO POND = 14.30 Ac±

PROP. RCN = 92

PROP. 2YR INFLOW = 50.41 c.f.s.
10 YR " = 89.88 c.f.s.
100 YR " = 134.06 c.f.s.

PROP. PEAK RELEASE FROM POND

2 YR = 0 c.f.s. ; STORAGE PROVIDED = 121,700 C.F.
10 YR = 0 c.f.s. ; " = 223,075 C.F.
100 YR = 3.7 c.f.s. ; " = 236,000 C.F.

WATERSHED AREA = 14.30 Ac

STRUCTURAL CLASS - "a"

STORAGE HEIGHT PRODUCT - 5.42 Ac.FT. x 9.28 Ft = 50.3 Ac.ft

PRINCIPLE SPILLWAY - 100 YR.

FREEBOARD ABOVE 100 YR. W.S. - 360.00 - 356.28 = 3.72' > 1.0'

NOTE: INFILTRATION METHOD HAS BEEN USED FOR 2 & 10 YR. STORMS.

RATE OF INFILTRATION = 2.41"/HR

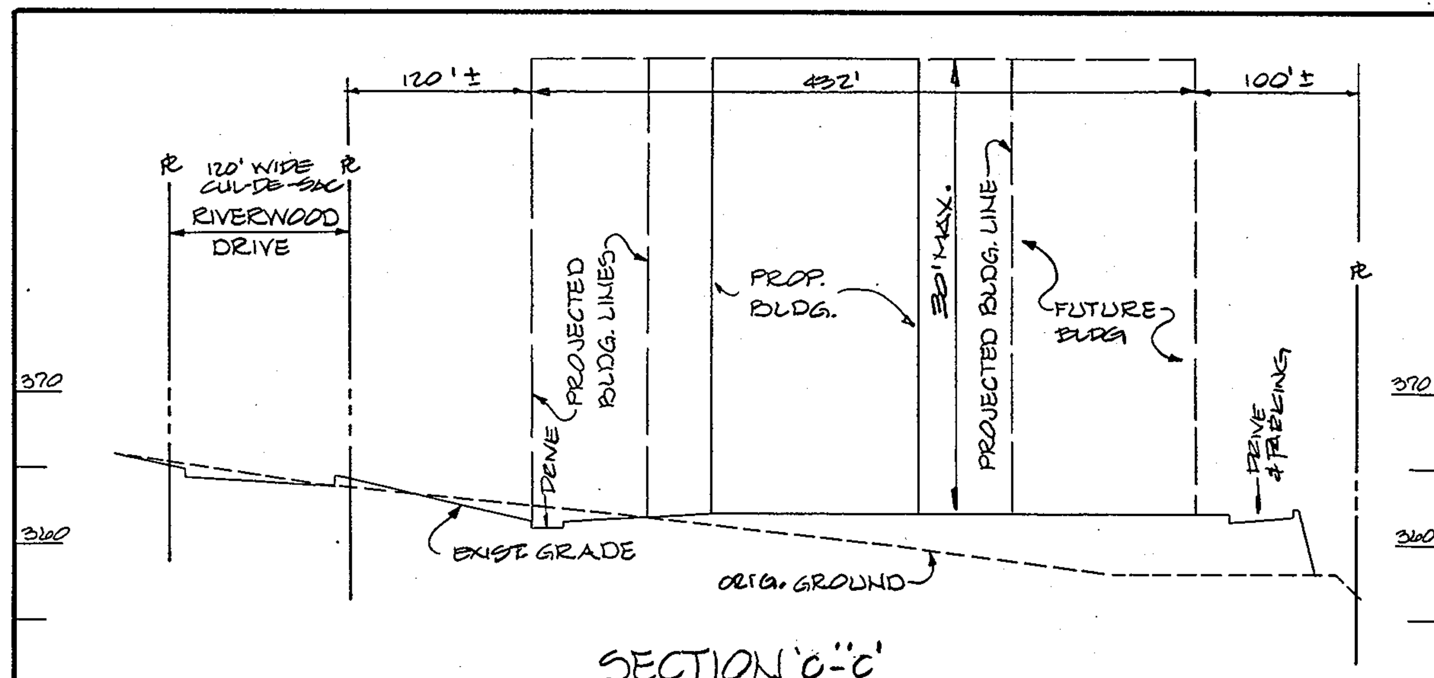
MAX. PONDING TIME IS LESS THAN 48 HRS.

see sheet 8 ③

HANDICAP RAMP

SLOPES AND ELEVATIONS							
	A	B	C	D	E	F	G
A-1	362⁶	362⁴	362²	361⁷	2%	0.77%	—
A-2	360⁶	360⁵	361⁰	360⁴	2%	3.85%	—
A-3	360⁶	360⁵	361⁰	360⁴	2%	3.85%	—
A-4	360⁵	360⁴	361¹	360⁵	2%	5.38%	—
B-1	360⁶	361²	360⁸	361⁴	360⁴	361⁰	3.33%
B-2	361⁰	361⁰	360⁴	361⁰	360⁴	361⁰	0.00%
B-3	360⁵	361³	360⁴	361⁰	360⁸	361⁴	3.89%
C-1	360⁶	360⁵	361⁰	360⁴	2%	0.56%	—
C-2	360⁶	360⁵	361⁰	360⁴	2%	3.85%	—
C-3	361⁷	361⁶	362³	361⁷	2%	5.38%	—
C-4	361⁰	360⁹	361⁶	361⁰	2%	5.38%	—

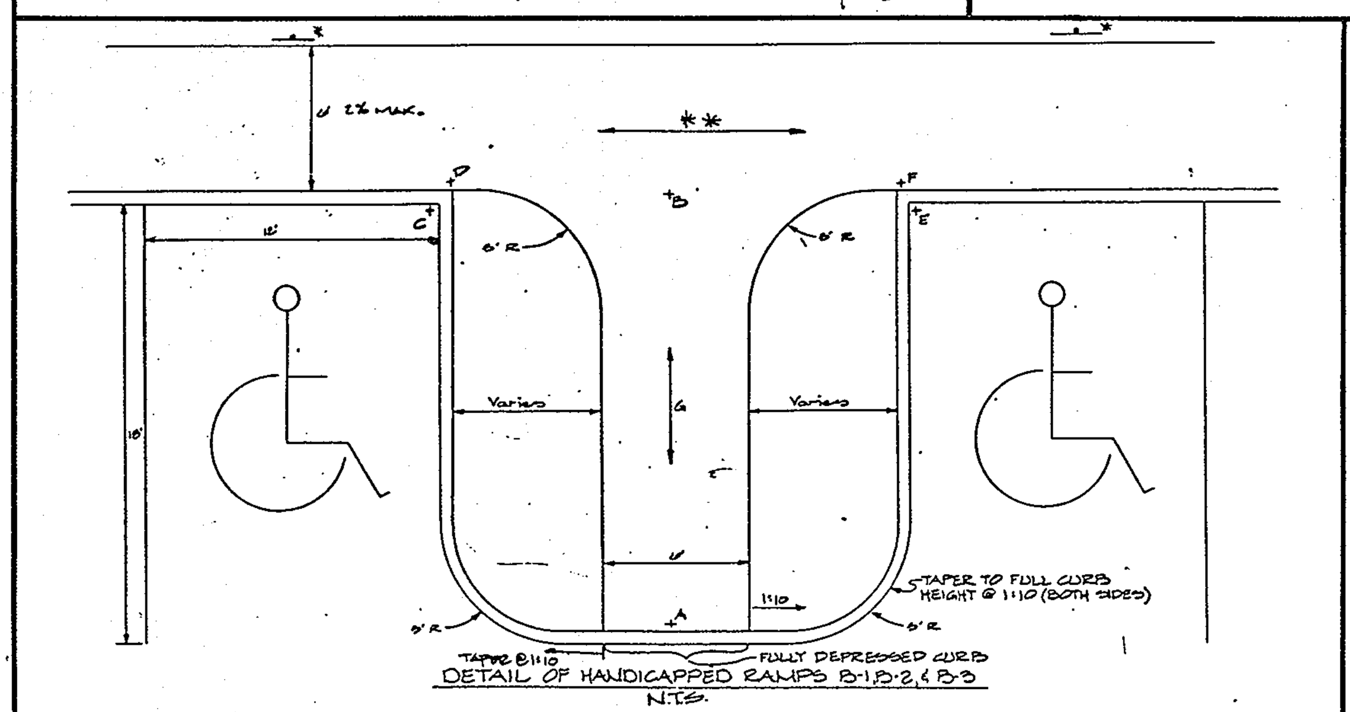
* ONE SIGN CENTERED ON EACH PARKING SPACE
** SEE SHT 1 OF 6 FOR CONTINUED GRADES & SLOPES



SECTION 'C'-'C'

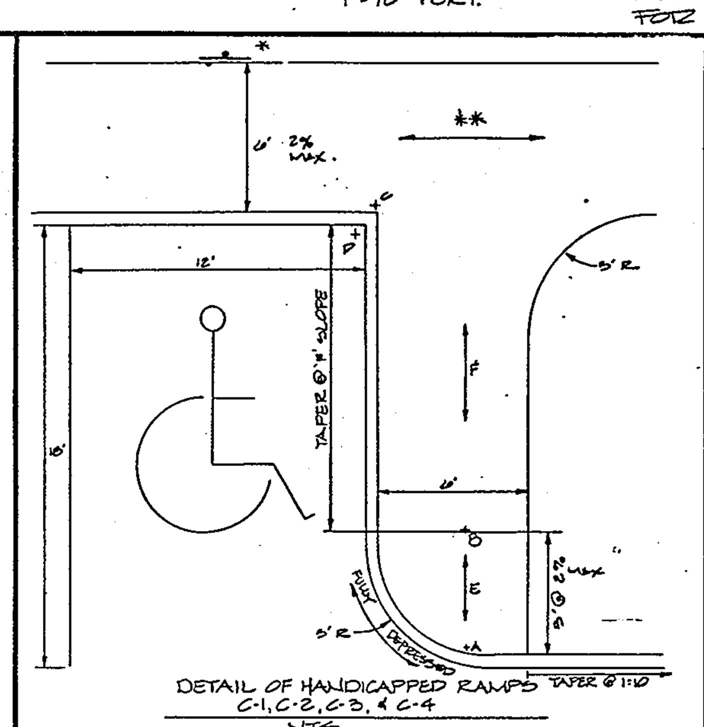
SCALE: 1"=100' HOR. 1"=10' VERT.

SEE SWM D.A. MAP FOR SECT. LOCATION



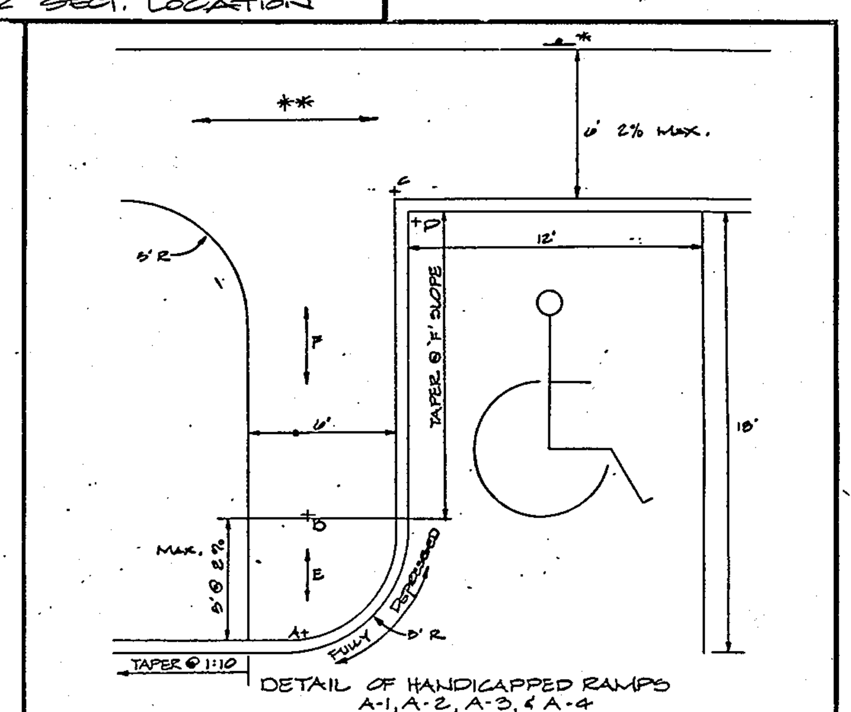
DETAIL OF HANDICAPPED RAMPS B-1, B-2, & B-3

N.T.S.



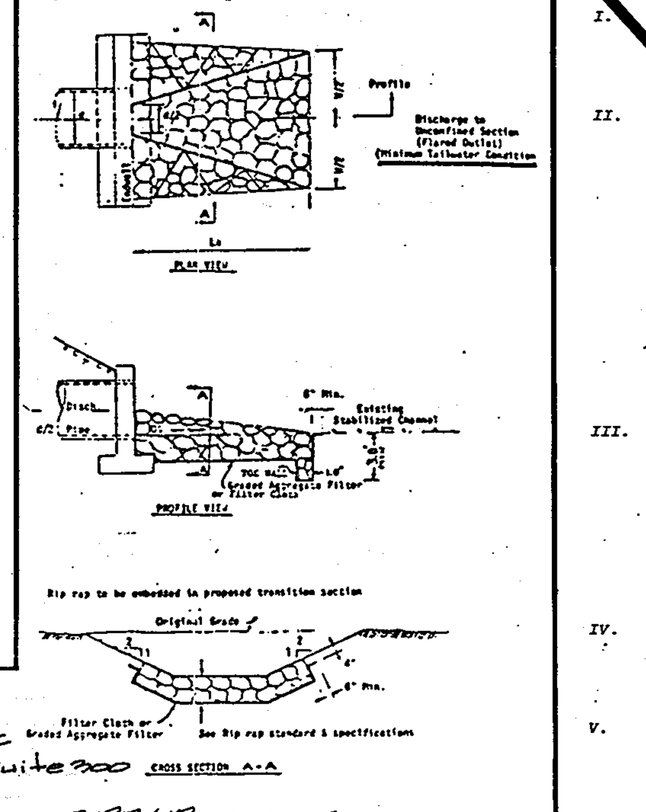
DETAIL OF HANDICAPPED RAMPS C-1, C-2, C-3, & C-4

N.T.S.



DETAIL OF HANDICAPPED RAMPS A-1, A-2, A-3, & A-4

N.T.S.



RIPRAP OUTLET PROTECTION FOR E-1

N.T.S.

STORM WATER MANAGEMENT POND CONSTRUCTION SPECIFICATIONS

I. SITE PREPARATION
The fill area and borrow area shall be cleared and grubbed to remove all trees, vegetation, roots and other objectionable material. The topsoil from the embankment area and borrow area shall be removed and stockpiled. The topsoil shall be spread on the completed fill area.

II. EARTH FILL
A) FILL MATERIAL shall be obtained from on-site under the supervision of a soils engineer. It shall be free from roots, stumps, wood rubbish, oversized stones frozen or other objectionable material. Fill areas shall be constructed to the elevation shown on the plan to allow for anticipated settlement.
B) PLACEMENT: Areas on which fill will be placed shall be scarified prior to placement of fill. Fill materials shall be placed in layers 6" thick maximum (before construction) and shall be continuous over the entire length of fill. The most porous material shall be placed in areas no adjacent to ponded water.
C) 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 compacted to the specified density. (see sheet 3) Fill material shall contain sufficient moisture so that the required degree of compaction can be obtained with the equipment used.

III. STRUCTURAL BACKFILL
Backfill material shall be the type and quality specified for the adjoining fill material. The fill shall be placed in horizontal layers 4" thick maximum and compacted by hand tamping or manually directed power tampers or plate vibrators. At no time during backfilling operations shall driven equipment be allowed to operate any closer than four feet measured horizontally to any part of a structure. Under no circumstances shall the contractor drive equipment over any part of a concrete structure or pipe unless there is a compacted fill of 24" or greater over the structure or pipe. Materials shall fill completely all spaces under and adjacent to newly installed pipe.

IV. CONCRETE
Concrete shall meet the minimum requirements set forth in the Maryland State Highway Administration "Specifications for Construction and Materials" January 1982 Section 918.06 - "Portland Cement Concrete Mixtures", Mix No. 3 Reinforcing steel shall be A.S.T.M. A 615, Grade 60.

V. STABILIZATION
The storm water management facility will be stabilized with "Permanent Slope Seeding" as follows:
After spreading 4" topsoil seed with a mixture of 30% innoculated crown vetch and 70% Kentucky 31 Tall Fescue applied at a rate of 60 lbs./Ac. 10-20-20 fertilizer shall be applied at a rate of 25 lbs./1000 square feet lime at a rate of 92 lbs/1000 square feet mulch area with unweathered small grain straw at a rate of 1½ T/Ac. anchor with rapid curing asphalt (R.C.-70, R.C.-250 or R.C.-800) at a rate of 0.1 Gal. S.Y.

VI. PIPE CONDUIT
24" B.C.C.M.P. Gage 14 shall be used. Provide watertight connections. All pipe and pipe placement shall meet applicable Howard County Requirements as outlined in Howard County's latest edition of "Standard Specifications and Details for Construction".

VII. FILTER CLOTH
MIRAFI 1405 or equivalent shall be used.

see sheet 8 ③

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEM HOWARD COUNTY HEALTH DEPARTMENT

COUNTY HEALTH OFFICER: ________ DATE: 3-7-85

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING

PLANNING DIRECTOR ________ DATE 3-7-85

CHIEF; DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION: ________ DATE 3-7-85

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

DIRECTOR: ________ DATE: 2-26-85

CHIEF, BUREAU OF ENGINEERING: ________ DATE: 2/26/85

HOWARD SOIL CONSERVATION DISTRICT

THIS DEVELOPMENT IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT: ________ DATE 2/22/85

APPROVED: HOWARD SOIL CONSERVATION DISTRICT

REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS

SIGNATURE: ________ DATE 2/22/85

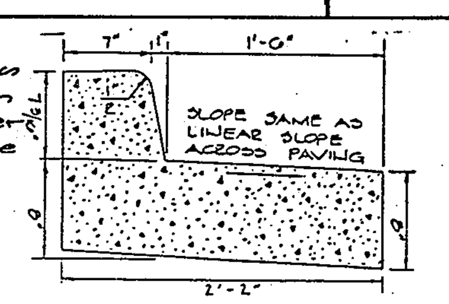
THE UNITED STATES SOIL CONSERVATION SERVICE

Professional Certification ③
I hereby certify that these documents were prepared or approved by me, and I am a duly licensed professional engineer under the laws of the state of Maryland license No. 12975 expiration date May, 2010.

For Rev. # 3

11-12-08

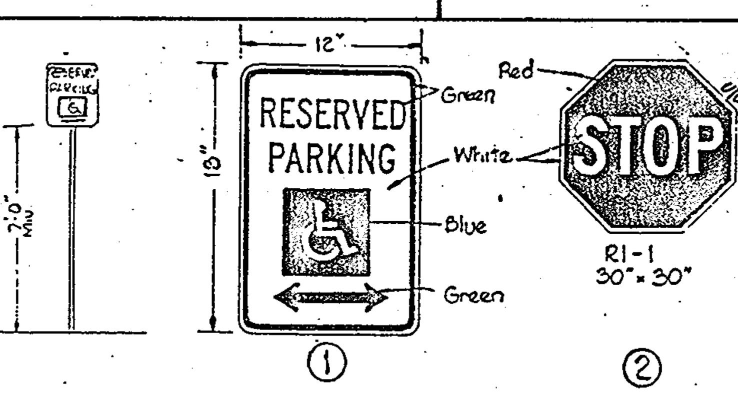
GLW
Revisions:
11-11-08 Riser and Barrel Replaced For Maintenance Rev. Owner & cht. # ③
DES.: DDG
DRN.: WGJ
CHK.: CKG



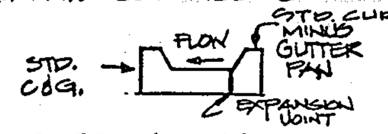
REVERSE SLOPE CURB & GUTTER

NO SCALE

NOTE: TO BE USED WHERE PAVEMENT CROSS-SLOPE FALLS AWAY FROM FACE OF CURB



Owner (As of Nov. 2008) ③
COPT Riverwood, LLC
c/o COPT Development Services, LLC
6711 Columbia Gateway Drive, Suite 300
Columbia, MD 21046
Phone: 443-285-5640
Attn.: Sean Moore



CURB CUT DETAIL

NOT TO SCALE

ENGINEER

GEORGE WILLIAM STEPHENS, JR. & ASSOCIATES INC.
ENGINEERS & SURVEYORS
303 ALLEGHENY AVENUE
TOWSON, MARYLAND, 21204

ENGINEER

BY: ________ 8930 11-8-84
REG. NO. DATE

OWNER
THE HOWARD RESEARCH AND DEVELOPMENT CORP.
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
992-6033

DEVELOPER / CONTRACT PURCHASER
CASE - RIXON
c/o
MANEKIN CORPORATION
8325 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
995-1670

DEVELOPER

BY: ________ GEN. PARTNER 11-8-84
TITLE DATE

DES: RWR
DWG: DRR
CHK: RWR / TC

REVISIONS
4/3/85 (CAH) CHANGED 10YR. WS ELEV. SECT. D-D THRU S.W.M.
6-2-87 (CAH) ADDED 8" DIA. OPENING TO RELEASE STRUCTURE S-1.

PROFILES & DETAILS
FOR
PROPOSED OFFICE FOR RESEARCH & DEVELOPMENT
RIVERS CORPORATE PARK
SECT. 1 AREA 2 PARCEL A
COLUMBIA
TAX MAP # 41

HOWARD CO. MD.
SCALE: AS SHOWN
ELECT. DIST. # 6
NOV. 8, 1984
SHT. 3 OF 9 ③

SDP-85-89C
SDP 85-89

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEM
HOWARD COUNTY HEALTH DEPARTMENT

COUNTY HEALTH OFFICER — DATE 2-27-85

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING

PLANNING DIRECTOR — DATE 3-7-85

CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION — DATE 3-7-85

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

DIRECTOR: — DATE 2-26-85

CHIEF, BUREAU OF ENGINEERING: — DATE 2-26-85

HOWARD SOIL CONSERVATION DISTRICT

THIS DEVELOPMENT IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT: — DATE 2/22/85

APPROVED: HOWARD SOIL CONSERVATION DISTRICT

REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS

SIGNATURE: — DATE: 2/22/85

THE UNITED STATES SOIL CONSERVATION SERVICE

APPROVED
PLANNING BOARD
OF HOWARD COUNTY
DATE **2-6-85**

NOTE: All Sediment Traps Shown Must Be Fenced & Warning Signs Posted Around Their Perimeter In Accordance With Vol. 1 Chap. 12, Of The Ho. Co. Design Manual, Storm Drainage

LIMIT OF DISTURBANCE

D.A. LIMIT TO BASIN #1

EX. E.D.

EX. BASIN #2

BACKFILL UPON INSTALLATION OF STORM DRAINS & INLET PROTECTION

INLET PROTECTION

D.A. TO BASIN #1 = 14.39 AC.±

RIP RAP OUTFALL PROTECTION SEE SHT 2 OF 7

EX. TEMPORARY SEDIMENT BASIN & STORMWATER MANAGEMENT

EX. MOUNTABLE E.D.

REMOVE EX. E.D.

EX. MOUNT. S.C.E. 50'x24'

DUE NORTH

16.5' AT&T R/W 167/62

RIVERS CORP. PARK SECT. 1 AREA 2 PARCEL A-3

RIVERS CORP. PARK SECT. 1 AREA 2 OPEN SPACE LOT #1

RIVERWOOD DRIVE

EX. STONE OUTLET TRAP; REMOVE AS SOON AS C & G IS INSTALLED

VICINITY MAP
1" = 2000'

PROJECT SITE

NEW MD RTE 32
COLUMBIA PIKE
GUILFORD ROAD
GUILFORD END
DIELECTRIC DRIVE

INLET TRAP @ I-7
DRAINAGE AREA = 1.33 Ac±
STORAGE VOLUME REQUIRED = 1.35 x 67 x 27 = 2442 C.F.
STORAGE PROVIDED = 2,703 C.F.
INLET CREST ELEV. = 358.50
BOTTOM OF TRAP = 357.00
TOP OF EMBANKMENT = 359.50
CLEANOUT ELEV. = 357.75

AREA OF SUBMITTAL = 20.3 Ac±
DISTURBED AREA = 18.13 Ac±
789,740 S.F.
AREA TO BE VEGETATIVELY STABILIZED = 9.9 Ac±

NOTE: FOR EXACT BLDG. & PARKING LOCATION SEE SHEET #1 OF 7.

NOTE: FOR EXISTING EROSION CONTROL DESIGN SEE G.P. 85-19.

NOTE: FOR SEQUENCE OF OPERATION SEE SHEET #5 OF 7.

PLAN
1" = 50'

Owner (As of Nov, 2008)
COPT Riverwood, LLC
&
COPT Development Services, LLC
6711 Columbia Gateway Drive, Suite 300
Columbia, MD 21046
Phone: 443-285-5400
Attn.: Sean Moore

APPROXIMATE EARTH QUANTITIES

ALL AREAS PRE-GRADED BY GP. 85-19 TO SUB-GRADE ;
EXCAVATION & FILL = 0.0 C.Y.±

GLW
Revisions:
Rev Owner # Sht. # 11-11-08
DES.: DSD
DRN.: WJJ
CHK.: CKG

DEVELOPER'S CERTIFICATE

"I certify that all development and/or construction will be done according to these plans, 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. I also authorize periodic on-site inspection by the Howard Soil Conservation District or their authorized agents as are deemed necessary. Deviation from this plan will not be made unless authorized by the Howard Soil Conservation District.

Signature of Developer — 11/3/04 Date

ENGINEER'S CERTIFICATE

"I certify that this plan for land construction, erosion, and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions. This plan was prepared in accordance with the requirements of the Howard Soil Conservation District.

Signature of Engineer — 8930 Reg. No. — 11-8-84 Date

OWNER:
THE HOWARD RESEARCH AND DEVELOPMENT CORP.
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
ATT.: CARYN

MULTIPLE ST. / CONTRACT SUBMISSION
CASE: - TIKON
C/O
MANAGING DEVELOPMENT IN COLUMBIA, PART 2, SEC. 1

GEORGE WILLIAM STEPHENS JR. AND ASSOCIATES INC
ENGINEERS
303 ALLEGHENY AVE. TOWSON, MD. 21204
(301) 825-6120

DES.: RWR / EH
DWG.: DRR
CHK.: RWR / TC

REVISIONS

GRADING, EROSION & SEDIMENT CONTROL & TEMPORARY STORM WATER MANAGEMENT PLAN FOR
PROPOSED OFFICE FOR RESEARCH & DEVELOPMENT
RIVERS CORPORATE PARK
SECT. 1 AREA 2 PARCEL A-1
COLUMBIA
TAX MAP #41

HO. CO. MD.
SCALE: 1" = 50'
ELECT. DIST # 6
SHT. 4 OF 7
NOV. 8, 1984

SDP-85-89c

SEDIMENT BASIN CONSTRUCTION SPECIFICATIONS

Site Preparation

Areas under the embankment shall be cleared, grubbed, and stripped of topsoil to remove trees, vegetation, roots or other objectionable material. In order to facilitate clean-out and restoration, the pool area (measured at the top of the pipe spillway) will be cleared of all brush, trees, and other objectionable materials.

Embankment

The fill material shall be taken from approved areas shown on the plans. It shall be clean mineral soil free of roots, woody vegetation, oversized stones, rocks, or other objectionable material. Relatively pervious materials such as sand or gravel (Unified Soil Classes GW, GP, SW & SP) shall not be placed in the embankment. Areas on which fill is to be placed shall be scarified prior to placement of fill. The fill material shall contain sufficient moisture so that it can be formed by hand into a ball without crumbling. If water can be squeezed out of the ball, it is too wet for proper compaction. Fill material shall be placed six-inch to eight-inch thick continuous layers over the entire length of the fill. Compaction shall be obtained by routing and hauling the construction equipment over the fill so that the entire surface of each layer of the fill is traversed by at least one wheel or tread track of the equipment or by the use of a compactor. The embankment shall be constructed to an elevation 10 percent higher than the design height to allow for settlement.

Pipe Spillways

The riser shall be securely attached to the barrel or barrel stub by welding the full circumference making a watertight structural connection. The barrel stub must be attached to the riser at the same percent (angle) of grade as the outlet conduit. The connection between the riser and the riser base shall be watertight. All connections between barrel sections must be achieved by approved watertight band assemblies. (See page 18.22 for details.) The barrel and riser shall be placed on a firm, smooth foundation of impervious soil. Pervious materials such as sand, gravel, or crushed stone shall not be used as backfill around the pipe or anti-seep collars. The fill material around the pipe spillway shall be placed in four inch layers and compacted under and around the pipe to at least the same density as the adjacent embankment.

A minimum depth of two feet of hand compacted backfill shall be placed over the pipe spillway before crossing it with construction equipment. Steel base plates on risers shall have at least 2-1/2 feet of compacted earth, stone or gravel placed over it to prevent flotation.

Emergency Spillway

The emergency spillway shall be installed in undisturbed ground. The achievement of planned elevations, grades, design width, entrance and exit channel slopes are critical to the successful operation of the emergency spillway and must be constructed within a tolerance of ± 0.2 feet.

Vegetative Treatment

Stabilize the embankment and emergency spillway in accordance with the appropriate vegetative Standard and Specifications immediately following construction. In no case shall the embankment remain unstabilized for more than seven(7) days.

Erosion and Pollution Control

Construction operations shall be carried out in such a manner that erosion and water pollution will be minimized. State and local laws shall be complied with concerning pollution abatement.

Safety

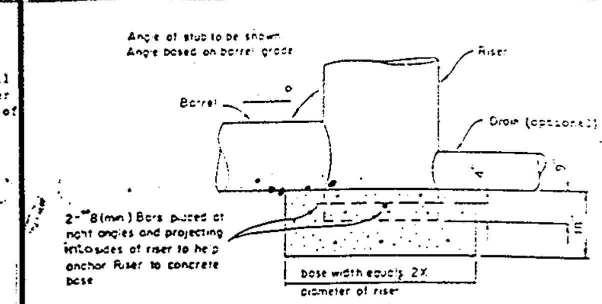
State and local requirements shall be met concerning fencing and signs, warning the public of hazards of soft sediment and floodwater.

Maintenance

1. Repair all damages caused by soil erosion and construction equipment at or before the end of each working day.
2. Sediment shall be removed from the basin when it reaches the specified distance below the top of the riser. This sediment shall be placed in such a manner that it will not erode from the site. The sediment shall not be deposited downstream from the embankment, adjacent to a stream or flood plain.

Final Disposal

When temporary structures have served their intended purpose and the contributing drainage area has been properly stabilized, the embankment and resulting sediment deposits are to be leveled or otherwise disposed of in accordance with the approved sediment control plan. The proposed use of a sediment basin site will often dictate final disposition of the basin and any sediment contained therein. If the site is scheduled for future construction, then the basin material and trapped sediments must be removed, safely disposed of, and backfilled with a structural fill. When the basin area is to remain open space the pond may be pumped dry, graded and back filled.



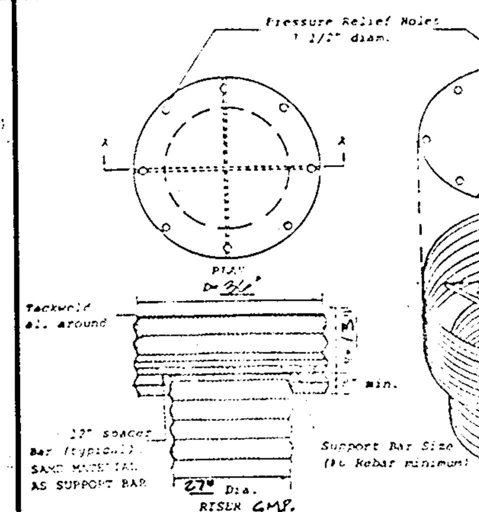
RISER BASE DETAIL

NOTES

1. The concrete base shall be poured in such a manner to insure that the concrete fills the bottom of the riser to the invert of the outlet pipe to prevent the riser from breaking away from the base.
2. With aluminum or aluminized pipe, the embedded section must be painted with zinc chromate or equivalent.
3. Riser base may be sized as computed using floatation with a factor of safety of 1.2.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE COLLEGE PARK, MARYLAND	RISER BASE DETAIL SEDIMENT BASIN

OPTIONAL SEDIMENT BASIN DEWATERING DEVICE I WITH 6" PERFORATED RISER



Top stiffener (if required) is 3x3x1/4 angle welded to top and oriented perpendicular to corrugations.

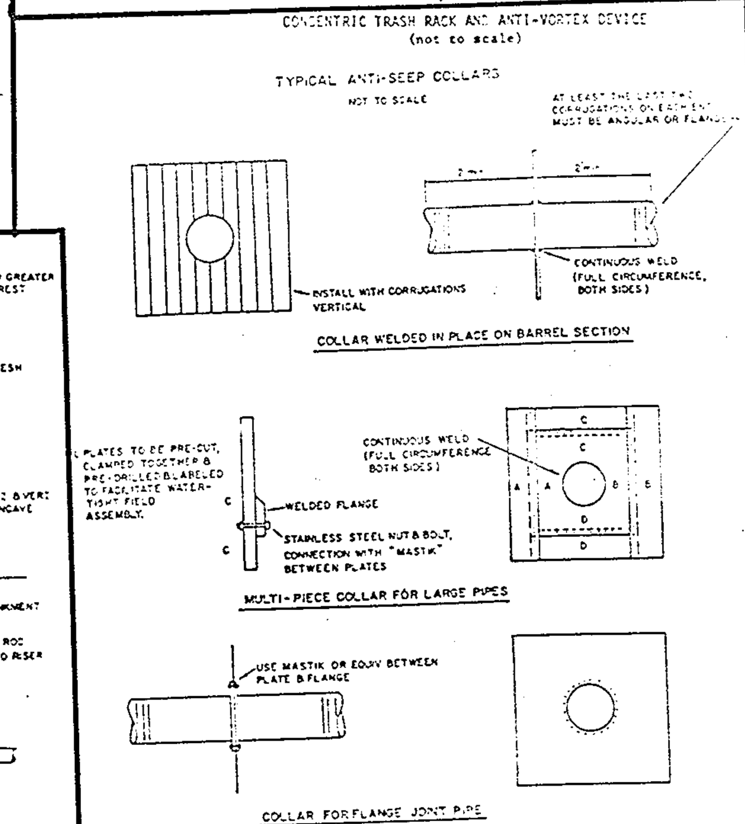
Top is 16 gage corrugated metal or 1/8" steel plate. Pressure relief holes may be ommitted, if ends of corrugations are left fully open when corrugated top is welded to cylinder.

Cylinder is 16 gage corrugated metal pipe or fabricated from 1/8" steel plate.

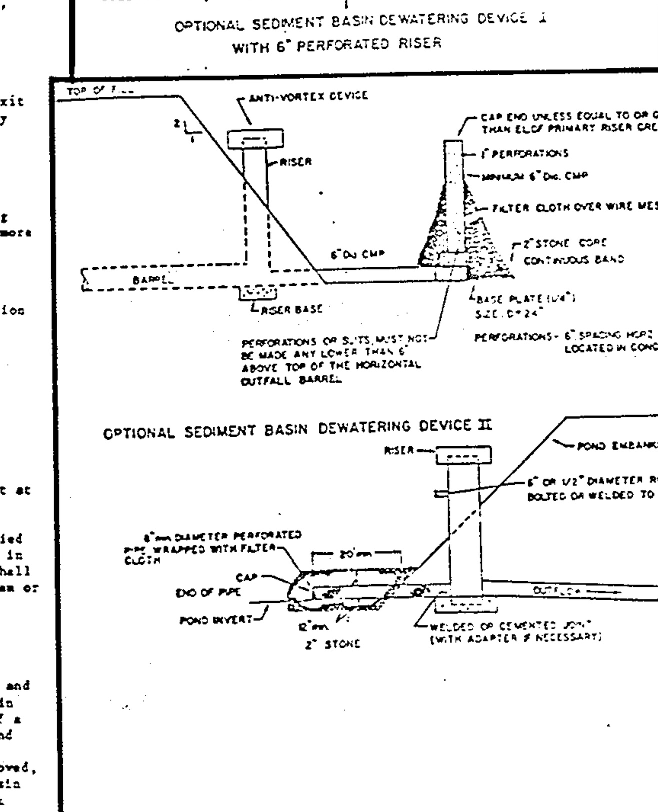
Notes:
1) The cylinder must be firmly fastened to the top of the riser.
2) Support bars are welded to the top of the riser or attached by straps bolted to top of riser.

SEDIMENT BASIN #1

CONCENTRIC TRASH RACK AND ANTI-VORTEX DEVICE (not to scale)



U.S DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE COLLEGE PARK, MARYLAND	ANTI-SEEP COLLAR	STANDARD DRAWING S8



U.S DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE COLLEGE PARK, MARYLAND	OPTIONAL SEDIMENT BASIN DEWATERING DEVICES	STANDARD DRAWING S8

GENERAL NOTES

1. Any change to the grading proposed on this plan requires it to be re-submitted to the Soil Conservation District.
2. All slopes 2:1 are to be stabilized with "Permanent Slope Seeding" immediately after grading operation (see note #13).
3. All other disturbed areas not intended to be paved or receive building coverage shall be stabilized with "Permanent Seeding" (see note #12).
4. Any damage to diversion dikes, sediment basin, silt fence, etc. during grading operation or utility installation shall be repaired immediately.
5. The sediment trap shall be cleaned out when silt deposits reach elevation shown on the plan.
6. The sediment basin shall be cleaned out when silt deposits reach elevations shown on the plan.
7. No sediment control measure shall be removed without permission from the Sediment Control Inspector.
8. Upon installation of storm drains, inlets shall be kept plugged until site is stabilized. Positive drainage must be maintained at all times.
9. During the layout of sediment control practices shown hereon, minor adjustments can and will be made to assure the arrest and control of any sediment before it leaves the construction site. These said changes require approval from the Sediment Control Inspector and the Soil Conservation District.
10. All site work is to be done in accordance with "Standards and Specifications for Soil Erosion and Sediment Control in Developing Areas", July 1975, and this plan of sediment control approved by the Howard County Soil Conservation District and the Department of Public Works.
11. At the end of each working day, all sediment control measures will be inspected and left in operational condition.
12. PERMANENT SEEDING: (PROVIDE WITHIN 14 DAYS)

    Seedbed Preparation: Loosen upper 3 inches of soil by raking, discing or other acceptable means before seeding.

    Soil Amendments: Apply 2 T./Ac (92 Lbs./1,000 S.F.) Dolomitic Limestone and 600 Lbs./Ac. (14 Lbs./1,000 S.F.) 0-20-20 fertilizer. Harrow or disc lime and fertilizer into upper 3 inches of soil. At time of seeding, apply 400 Lbs./Ac. (9.2 Lbs./1,000 S.F.) of 38-0-0 Ureaform fertilizer and 500 Lbs./Ac. (11.5 Lbs./1,000 S.F.) of 10-20-20 fertilizer.

    Seeding: For periods March 1-April 30 and August 1-October 15, seed with 60 Lbs./Ac. (1.4 Lbs./1,000 S.F.) of Kentucky 31 Tall Fescue. For the period May 1 - July 31, seed with 60 Lbs./Ac. of Kentucky 31 Tall Fescue and 2 Lbs./Ac. (0.5 Lbs./1,000 S.F.) of Weeping Lovegrass. During the period of October 16 - February 28, protect site by: Option (1) 2 T./Ac. of well anchored straw mulch and seed as soon as possible in the Spring. Option (2) Use sod. Option (3) Seed with 60 Lbs./Ac. of Kentucky 31 Tall Fescue and mulch with 2 T./Ac. well anchored straw.

    Mulching: Apply 1.5-2 T./Ac (70-90 Lbs./1,000 S.F.) of unrotted, small grain straw immediately after seeding. Anchor mulch immediately after application using 200 Ga./Ac. (5 Ga./1,000 S.F.) of emulsified asphalt on flat areas. On slopes 8 feet or higher, use 348 Ga./Ac. (8 Ga./1,000 S.F.) for anchoring.

    Maintenance: Inspect all seeded areas and make needed repairs, replacements and reseedings.
13. PERMANENT SLOPE SEEDING: (PROVIDE WITHIN 7 DAYS) Spread 4 inches of topsoil, seed shall be a mixture of 30% innoculated Crownvetch and 70% Kentucky 31 Tall Fescue applied at a rate of 60 Lbs./Ac. fertilizer and mulching shall be the same as Note #12 above.
14. TEMPORARY SEEDING: (PROVIDE WITHIN 7 DAYS)

    Seedbed Preparation: See Note #12.

    Soil Amendments: Apply 600 Lbs./Ac. (15 Lbs/Ac. (15 Lbs./1,000 S.F.) of 10-20-10 fertilizer.

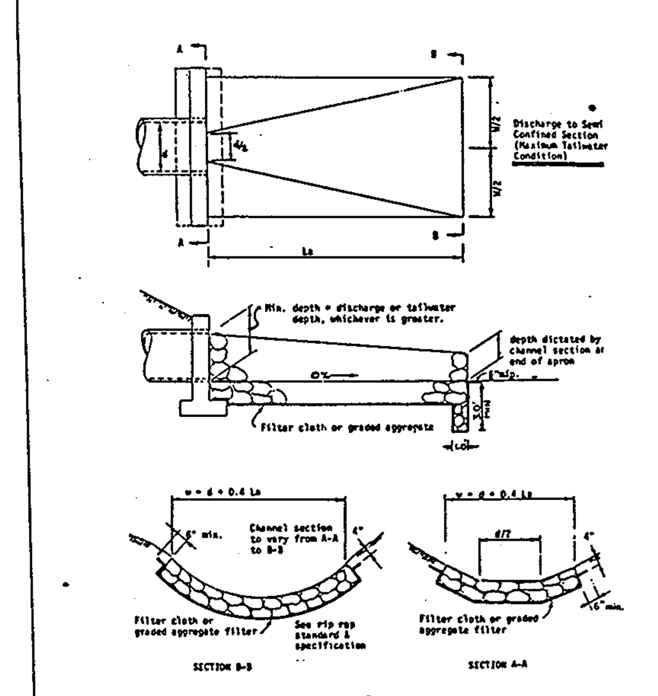
    Seeding: For periods March 1 - April 30 and from August 15 - November 15, seed with 2.5 Bu./Ac. (3.2 Lbs./1,000 S.F.) of Annual Rye. For the period May 1 - August 14, seed with 3 Lbs./Ac. (0.07 Lbs./1,000 S.F.) of Weeping Lovegrass.

    Mulching: See Note #12.
15. Disturbed earth left idle for more than 14 days shall be stabilized with temporary seed and mulch (see note #14).
16. *All areas not being paved or receiving building coverage shall be stabilized in accordance with the plans approved by the Howard Soil Conservation District.*
17. *Any damage to public rights-of-way and/or adjacent properties shall be repaired immediately at the contractor's expense.*
18. *The contractor shall maintain at least a 2' level bench behind all curb and gutter in fill areas.*
19. *The contractor shall verify all existing utilities to his own satisfaction before starting construction.*
20. *All slopes shall be 2:1 or flatter.*
21. *All work shall be done in accordance with Howard County Standard Specifications and Details for Construction, or as shown on these plans.*
22. *The contractor shall notify the C & P Telephone Co. and the Gas and Electric Company five days prior to starting work shown on these plans by calling "Miss Utility". Call collect 1-559-0100.*
23. *All rip-rap shall be placed on filter cloth.*
24. *The contractor or developer shall contact the Construction Inspection/Survey Division, 24 hours in advance of commencement of work at 992-2417 or 792-7272.*
25. *The contractor shall remove all existing paving, curb and gutter, etc. that may interfere with proposed construction.*
26. FOLLOWING INITIAL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN;
    a. SEVEN CALENDER DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1
    b. FOURTEEN DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.

Sequence of Operation

1. *Notify the Howard County Department of Licenses and Permits Inspector 48 hours before beginning work.*
2. INSPECT AND REPAIR ALL SEDIMENT CONTROL MEASURES INSTALLED UNDER GP. 85-10 AS REQUIRED.
3. INSPECT & REPAIR (IF REQUIRED) EX. BARREL (24" BCCMP) & RISER (27" BCCMP) & USE FOR TEMPORARY SEDIMENT BASIN & STORM WATER MANAGEMENT.
4. INSTALL ALL NEW STORM DRAINS WITH INLET PROTECTION & ALL CURBS & INLET TRAP AT I-7.
5. DEWATER EXISTING SEDIMENT BASIN #2 INTO STRUCTURE I-6 AND BACKFILL AS NECESSARY. MAINTAIN DRAINAGE TO I-6
6. BEGIN BUILDING CONSTRUCTION & INSTALL REMAINING UTILITIES.
7. STABILIZE ALL AREAS REDISTURBED BY ABOVE OPERATIONS.
8. AS SOON AS SITE IS STABILIZED WITH GRASS AND/OR BASE-STONE (BUILDING & PAVING AREAS)
    A) CLEAN OUT TEMPORARY BASIN #1 } DRY WEATHER ONLY
    B.) INSTALL S-1, RELEASE STRUCTURE } MIN. 5 DAY FORECAST.)
    C) STABILIZE IMMEDIATELY.
9. AFTER OBTAINING PERMISSION FROM SEDIMENT CONTROL INSPECTOR REMOVE ALL REMAINING SEDIMENT CONTROL DEVICES & STABILIZE THESE AREAS IMMEDIATELY. AND CONVERT THE SEDIMENT BASIN TO STORM WATER MANAGEMENT POND.
10. EXISTING SEDIMENT TRAP MUST NOT BE REMOVED UNTIL THE DRAINAGE AREA IS STABILIZED

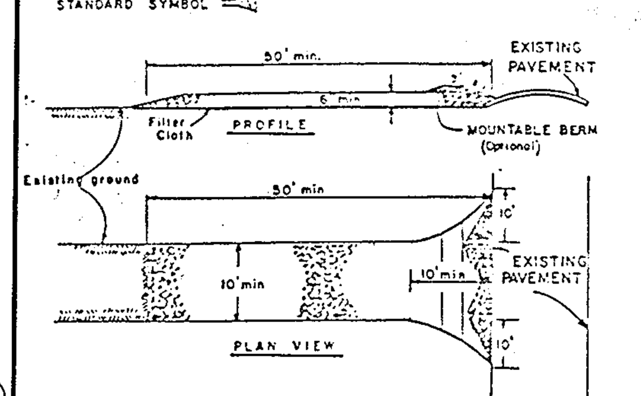
APPROVED
PLANNING BOARD
OF HOWARD COUNTY
DATE 2-6-85
[signature]



FOR E-2 & E-3

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE COLLEGE PARK, MARYLAND	RIPRAP OUTLET PROTECTION-III	STANDARD DRAWING ROP-III

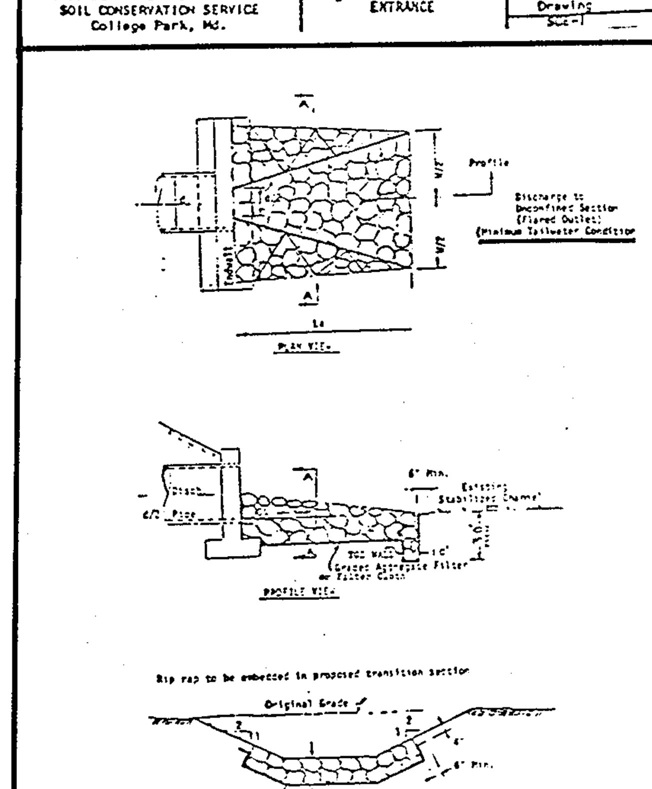
STABILIZED CONSTRUCTION ENTRANCE
not to scale



CONSTRUCTION SPECIFICATIONS

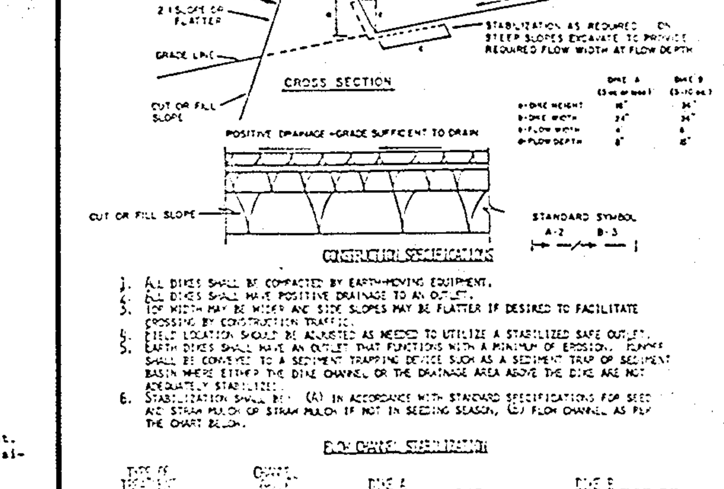
1. Stone Size - Use 2" stone, or reclaimed or recycled concrete equivalent.
2. Length - As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum length would apply).
3. Thickness - Not less than six (6) inches.
4. Width - Ten (10) foot minimum, but not less than 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



FOR E-1 & E-4

U.S DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE COLLEGE PARK, MARYLAND	RIPRAP OUTLET PROTECTION-I	STANDARD DRAWING ROP-I



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. RUNOFF SHALL BE CONVEYED 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.

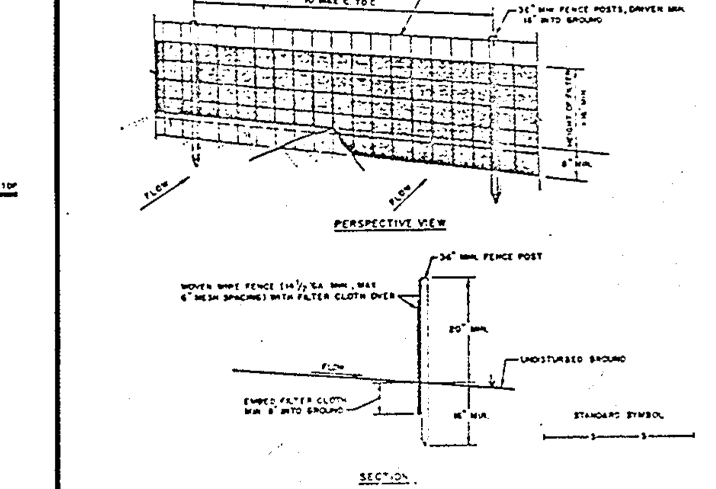
FLOW CHANNEL STABILIZATION

TYPE OF TREATMENT	CHANNEL GRADE	DIKE A	DIKE B
1	.5-3.0%	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 E-1

SILT FENCE



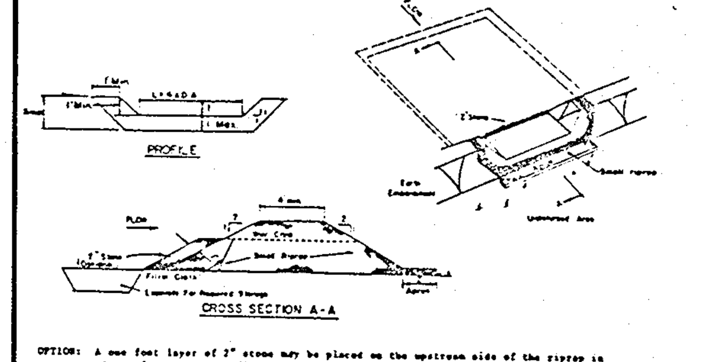
CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

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 2" HARDWOOD
FENCE: WOVEN WIRE, 14 GA. 6" MAX. MESH OPENING
FILTER CLOTH: FILTER X, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUAL
PREFABRICATED UNIT: GEOFAB, ENVIROFENCE, OR APPROVED EQUAL

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

STONE OUTLET SEDIMENT TRAP V

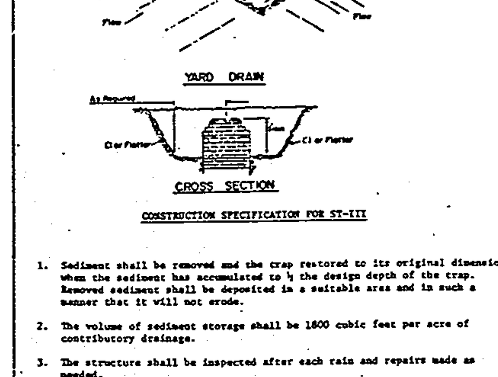


OPTION: A one foot layer of 2" stone may be placed on the upstream side of the riprap in place of the embedded filter cloth.

CONSTRUCTION SPECIFICATIONS FOR ST-V

1. Area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
2. The fill material for the embankment shall be free of roots and other woody vegetation as well as over-sized stones, rocks, organic material or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed.
3. All cut and fill slopes shall be 2:1 or flatter.
4. The stone used in the outlet shall be small riprap 4"-8" along with a 1' thickness of 2" aggregate placed on the up-grade side on the small riprap or embedded filter cloth in the riprap.
5. Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to ½ the design depth of the trap.
6. The structure shall be inspected after each rain and repairs made as needed.
7. Construction operations shall be carried out in such a manner that erosion and water pollution is minimized.
8. The structure shall be removed and the area stabilized when the drainage area has been properly stabilized.

STORM INLET SEDIMENT TRAP ST-III @ I-7

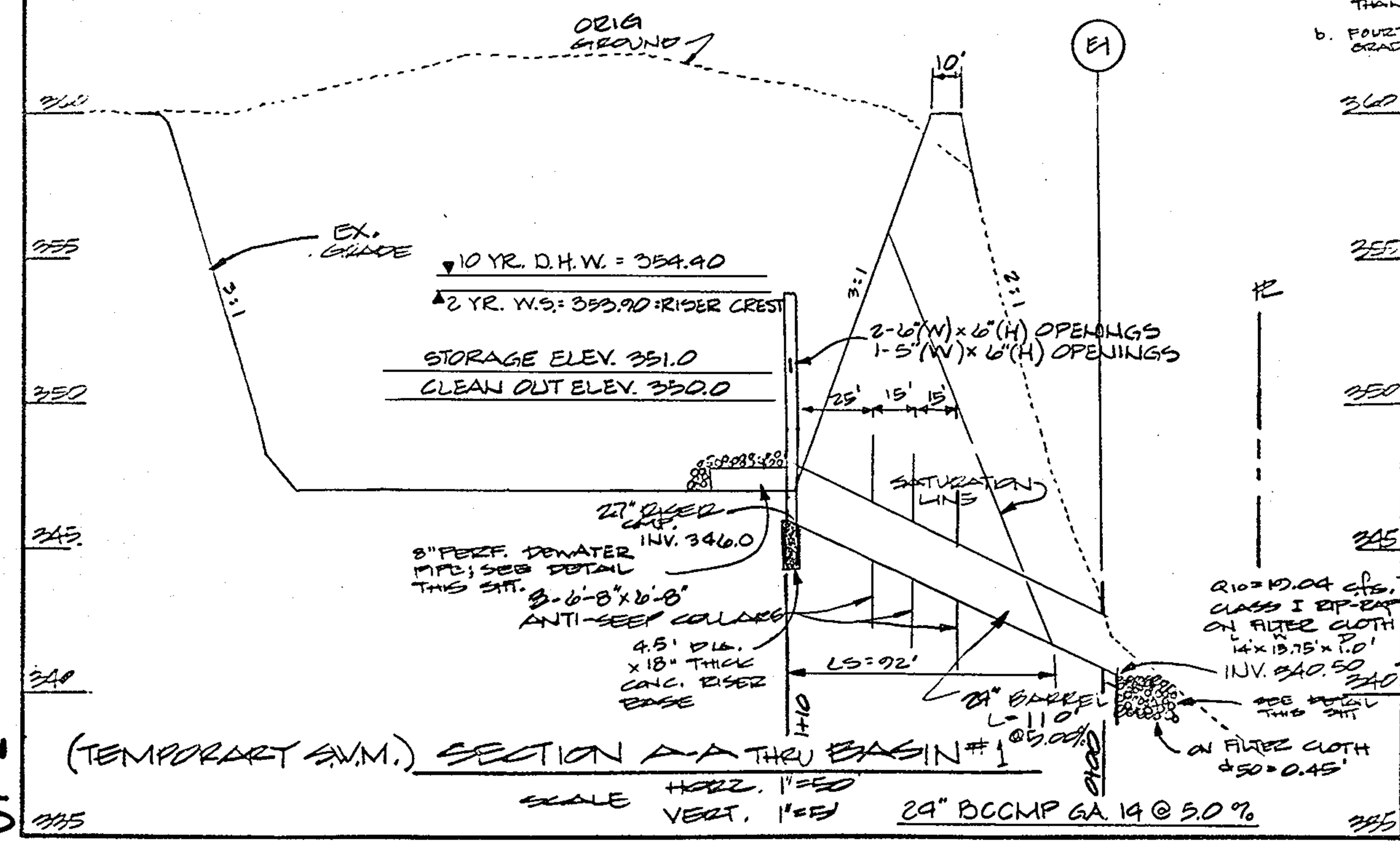


CONSTRUCTION SPECIFICATION FOR ST-III

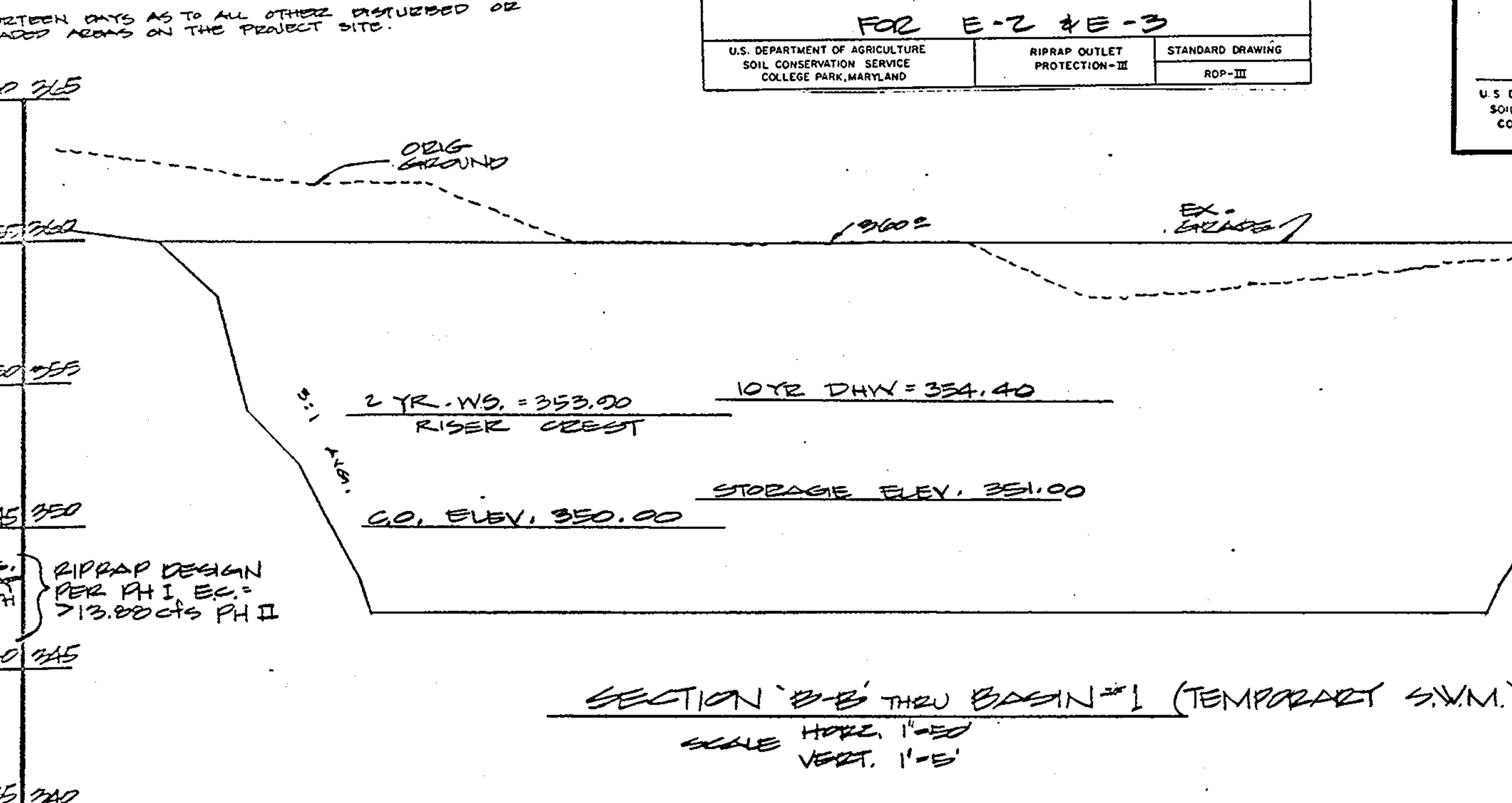
1. Sediment shall be removed and the trap restored to its original dimensions when the sediment has accumulated to ½ the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
2. The volume of sediment storage shall be 1800 cubic 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



(TEMPORARY S.W.M.) SECTION A-A THRU BASIN #1
SCALE HORZ. 1"=50
VERT. 1"=5
24" BCCMP GA. 14 @ 5.0%



SECTION 'B-B' THRU BASIN #1 (TEMPORARY S.W.M.)
SCALE HORZ. 1"=50
VERT. 1"=5'

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEM
HOWARD COUNTY HEALTH DEPARTMENT

COUNTY HEALTH OFFICER [signature] DATE: 2-27-01

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING

PLANNING DIRECTOR [signature] DATE: 3-7-85

CHIEF; DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION:

[signature] DATE 3-7-85

APPROVED:

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

DIRECTOR: [signature] DATE: 2-26-85

CHIEF, BUREAU OF ENGINEERING: [signature] DATE: 2-26-85

HOWARD SOIL CONSERVATION DISTRICT

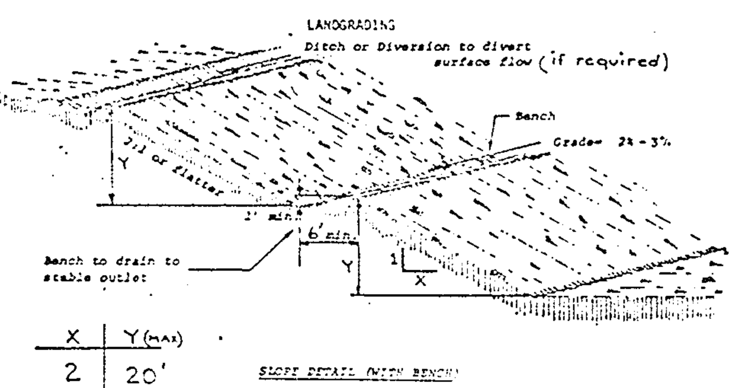
THIS DEVELOPMENT IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT: [signature] DATE 2/22/85

APPROVED: HOWARD SOIL CONSERVATION DISTRICT

REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS

SIGNATURE: [signature] DATE: 2/22/85

THE UNITED STATES SOIL CONSERVATION SERVICE

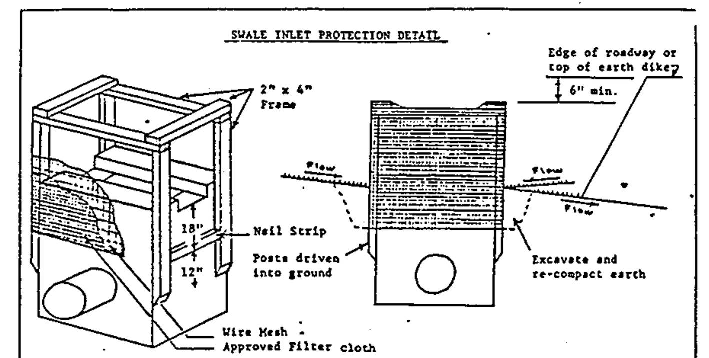


X	Y (MAX)
2	20'
3	30'
4	40'

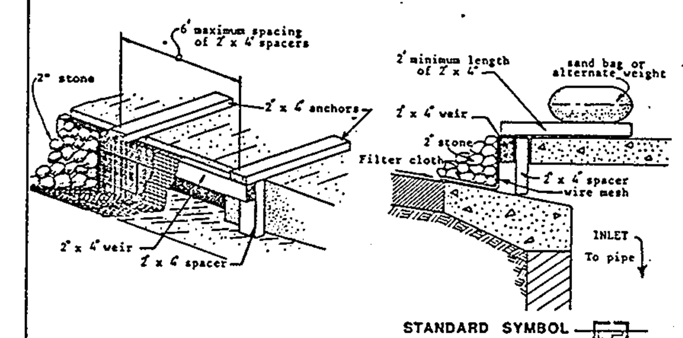
Construction Specifications

1. All graded or disturbed areas including slopes shall be protected during clearing and construction in accordance with the approved sediment control plan until they are permanently stabilized.
2. All sediment control practices and measures shall be constructed, applied and maintained in accordance with the approved sediment control plan and the "Standards and Specifications for Soil Erosion and Sediment Control in Developing Areas".
3. Topsoil required for the establishment of vegetation shall be stockpiled in amount necessary to complete finished grading of all exposed areas.
4. Areas to be filled shall be cleared, grubbed and stripped of topsoil to remove trees, vegetation, roots or other objectionable material.
5. Areas which are to be topsoiled shall be scarified to a minimum depth of three inches prior to placement of topsoil.
6. All fills shall be compacted as required to reduce erosion, slippage, settlement, subsidence or other related problems. Fill intended to support buildings, structures and conduits, etc., shall be compacted in accordance with local requirements or codes.
7. All fill to be placed and compacted in layers not to exceed 8 inches in thickness.
8. Except for approved landfills, fill material shall be free of brush, rubbish, rocks, logs, stumps, building debris and other objectionable materials that would interfere with or prevent construction of satisfactory fills.
9. Frozen materials or soft, mucky or highly compressible materials shall not be incorporated into fills.
10. Fill shall not be placed on a frozen foundation.
11. All benches shall be kept free of sediment during all phases of development.
12. Seeps or springs encountered during construction shall be handled in accordance with the Standard and Specifications for Subsurface Drain or other approved method.
13. All graded areas shall be permanently stabilized immediately following finished grading.
14. Stockpiles, borrow areas and spoil areas shall be shown on the plans and shall be subject to the provisions of this Standard and Specifications.

Owner (As of Nov. 2008) 3
COPT Riverwood, LLC
c/o COPT Development Services, LLC
6711 Columbia Gateway Drive Suite 300
Columbia, MD 21046
Phone: 443-285-5647
Attn: Sean Moore



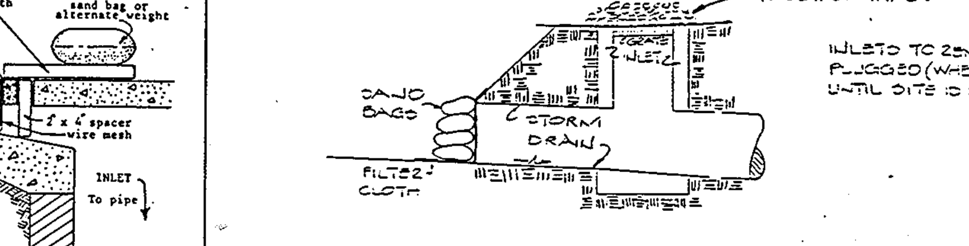
STANDARD SYMBOL



STANDARD SYMBOL

U.S DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE COLLEGE PARK, MARYLAND	INLET PROTECTION DETAIL	STANDARD DRAWING IPD-1

NOTE: AT THE END OF EACH WORKING DAY DURING LAYOUT & CONSTRUCTION OF STORM DRAINS, THE UPPER END OF THE INCOMPLETE SYSTEM SHALL BE PLUGGED TO PREVENT SEDIMENTATION OF PIPE SYSTEM.



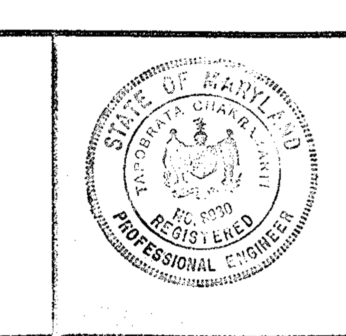
INTERIM STORM DRAIN PLUGGING DETAIL
NO SCALE

GLW

Revisions:
3 Rev. owner & cnt. # 11-11-08

DES.: DDG
DRN.: WGJ
CHK.: CKG

GEORGE WILLIAM STEPHENS JR. AND ASSOCIATES INC
ENGINEERS
303 ALLEGHENY AVE. TOWSON, MD. 21204
(301) 825-8120



ENGINEER'S CERTIFICATE

"I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION, & SEDIMENT CONTROL REPRESENTS A PRACTICAL & WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS.

THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

[signature] 8930 11-8-84
SIGNATURE OF ENGINEER REG. NO. DATE

OWNER

THE HOWARD RESEARCH AND DEVELOPMENT CORP.
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
992-6035

DEVELOPER / CONTRACT PURCHASER

CASE - DIXON
c/o
MANEKIN CORPORATION
[illegible]

DEVELOPER'S CERTIFICATE

"I CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, 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 & 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. DEVIATION FROM THIS PLAN WILL NOT BE MADE UNLESS AUTHORIZED BY THE HOWARD SOIL CONSERVATION DISTRICT.

[signature] GEN PARTNER 11-8-84
SIGNATURE OF DEVELOPER TITLE DATE

DES. BY: RWZ
DWG. BY: DLB/RWZ
CHK. BY: T.C.

REVISIONS
10-25-84 REV. PER SCS COMMENTS

PROFILES & DETAILS
PROPOSED OFFICE FOR RESEARCH & DEVELOPMENT
RIVERS CORPORATE PARK
SECT. 1 AREA 2 PARCEL A-1
COLUMBIA
TAX MAP 41

HO. CO., MD.
SCALE: AS SHOWN
SHT. 5 OF 9 3
ELECT. DIST. 6
NOV. 6, 1984

SDP-85-89c

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEM
HOWARD COUNTY HEALTH DEPARTMENT

COUNTY HEALTH OFFICER _____ DATE 2-27-85

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING

PLANNING DIRECTOR _____ DATE 3-7-85

CHIEF, DIVISION OF LAND DEVELOPMENT
AND ZONING ADMINISTRATION:

_____ DATE 3-7-85

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

DIRECTOR _____ DATE 2-26-85

CHIEF, BUREAU
OF ENGINEERING _____ DATE 2-26-85

These plans have been reviewed for the Howard Soil Conservation District and meet the technical requirements for small pond construction, soil erosion and sediment control.

_____ 2/22/85
U.S. Soil Conservation Service Date

These plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.

APPROVED: _____ 2/22/85
Howard Soil Conservation District Date

Plan Number:

APPROVED
PLANNING BOARD
OF HOWARD COUNTY
DATE 2-6-85

RIVERS CORP. PARK
SECT. 1 AREA 2
OPEN SPACE LOT#1

RIVERS CORP. PARK
SECT. 1 AREA 2
OPEN SPACE LOT#1

RIVERS CORP. PARK
SECT. 1 AREA 2
OPEN SPACE LOT#1

RIVERS CORP. PARK
SECT. 1 AREA 2 PARCEL A-3

RIVERS CORP. PARK
SECT. 1 AREA 2
OPEN SPACE LOT#1

RIVERS CORP. PARK
SECT. 1 AREA 2
OPEN SPACE LOT#1

RIVERS CORP. PARK
SECT. 1 AREA 1 PARCEL A-1

PROPOSED
160,400
FF: 362 SF

PLACE PARKING AREA
TO BE SURCHARGE FOR
FUTURE CONSTRUCTION

STORM WATER MANAGEMENT FACILITY

RIVERWOOD DRIVE

VICINITY MAP
1" = 2000'

PROJECT SITE

SITE DATA

AREA OF SITE: 28.90 AC±

TOTAL FLOOR AREA:
PRESENT: 160,400 SF
FUTURE: 35,600 SF
200,000 SF TOTAL

EXISTING USE: VACANT

PROPOSED USE: 120,000 SF - OFFICE
35,000 SF - MANUFACTURING
20,000 SF - WAREHOUSE

PARKING REQUIRED:
120,000 @ 2/1000 = 240 PS
35,000 @ 1/2 EMP = 10
20,000 @ 1/2 EMP = 10 PS
400 - TOTAL PS
(8 HANDICAPPED)

PARKING PROVIDED:
346 STD @ 9'x18' 1/2 ASPHALT
16 HCP @ 12'x18' 1/2 ASPHALT
362 - TOTAL PS

FLOOR AREA RATIO:
.46/1 / 21 ½ = .22 F.A.R.

ZONING REFERENCE
PLAT ENT. 7-80

ZONING CORRECTIVE ORDER
SECT: ; AREA: ; LOT #:
PLAT #

EXISTING ZONING
NT INDUSTRIAL

OPEN SPACE: 22.1 AC. REQ'D
7.4 AC / 20.9 = 36 %

LEGEND

- INDICATES EX. BUILDING
- INDICATES PROP. BUILDING
- INDICATES EX. OR PROP. STORM DRAIN
- INDICATES PRIVATE STORM DRAIN
- INDICATES EX. OR PUBLIC WATER
- INDICATES EX. OR PUBLIC SEWER
- INDICATES PRIVATE SEWER
- INDICATES PARKING SPACE PER HCDD
- INDICATES HANDICAP RAMP - DETAIL (SEE SHEET 3 OF 6)
- INDICATES SIGN - DETAIL (SEE SHEET 3 OF 6)

PLAN
1" = 50'

Owner (As of Nov. 2008)
CORT Riverwood, LLC
c/o CORT Development Services, LLC
6711 Columbia Gateway Drive, Suite 300
Columbia, MD 21046
Phone: 443-285-5400
Attn. Sean Moore

DAFT-McCUNE-WALKER, INC.
LAND PLANNING CONSULTANTS
LANDSCAPE ARCHITECTS
ENGINEERS
☐ 530 E. JOPPA ROAD
TOWSON, MD 21204
TELEPHONE: (301) 296-3333
☐ 5501 TWIN KNOLLS ROAD, SUITE 107
COLUMBIA, MD 21045
TELEPHONE: BALTO. (301) 992-0025
WASH. (301) 621-5607

GEORGE WILLIAM STEPHENS JR. AND ASSOCIATES INC
ENGINEERS
303 ALLEGHENY AVE., TOWSON, MD. 21204
(301) 825-8120

STATE OF MARYLAND — ROBERT C. GLW — NO. 379 — REGISTERED LANDSCAPE ARCHITECT

ENGINEER'S CERTIFICATE

"I certify that this plan for sand construction, erosion, and sediment control represents a practical and workable plan based on my personal knowledge of the area conditions. This plan was prepared in accordance with the requirements of the Howard Soil Conservation District. I have notified the developer that no plan showing the Howard Soil Conservation District with a red line "As Built's" This plan within 30 days of completion.

_____ _____ _____
Signature of Engineer Reg. No. Date

DEVELOPER'S CERTIFICATE

"I certify that all development and construction will be done according to these plans, and that the 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. I also authorize periodic on-site inspection by the Howard Soil Conservation District or their authorized agents as are deemed necessary. Deviation from this plan will be made only with authority by the Howard Soil Conservation District. I will provide the Howard Soil Conservation District with a red line "As Built's" of the plan within 30 days of completion.

_____ 11-8-08
Signature of Developer Date

OWNER
THE HOWARD RESEARCH AND DEVELOPMENT CORP.
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
992-6000

DEVELOPER / CONTRACT PURCHASER
CASEY - RIXON
c/o
KAWEEKIN CORPORATION
8221 BRECKENRIDGE
COLUMBIA, MD 21045

GLW
Revisions
△ Rev. Owner & Engr. # 11-11-08

DES.: DDD
DRN.: WCJ
CHK.: GLW

Revisions

DESIGNED: GLW
DRAWN: DDD/DWG
CHECKED: DWG/MC

ADDRESS CHART

LOT NUMBERS	STREET ADDRESS

SUBDIVISION NAME
RIVERS CORPORATE PARK

SECT./AREA
1/2

LOT/PARCEL NO.
A-1

BLOCK
-

ZONE
NT

TAX/ZONE MAP
42

BUS. ID NO.

CENSUS TRACT

WATER CODE

SEWER CODE

PLANTING PLAN
PROPOSED OFFICE FOR RESEARCH & DEVELOPMENT
RIVERS CORPORATE PARK
SECT. 1 AREA 2 PARCEL A
COLUMBIA
TAX MAP # 42

HO. CO. MD.
SCALE: 1" = 50'
SHEET 6 OF 9
ELECT. DIST. # 6
NOV 8, 2008

SDP-85-89C

85002-

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

COUNTY HEALTH OFFICER: _____ DATE: 2-27-85

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING

PLANNING DIRECTOR: _____ DATE: 3-7-85

CHIEF; DIVISION OF LAND DEVELOPMENT
AND ZONING ADMINISTRATION:

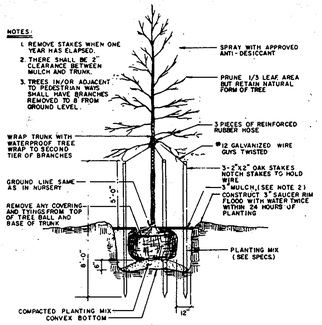
_____ DATE: 3-7-85

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

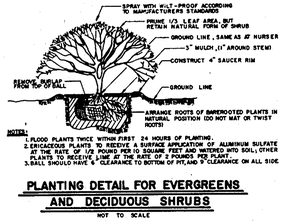
DIRECTOR: _____ DATE: 2-26-85

CHIEF, BUREAU
OF ENGINEERING: _____ DATE: 2-26-85

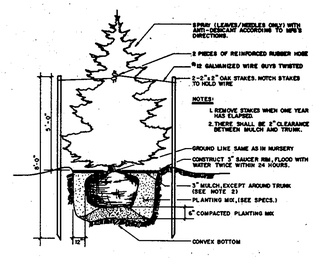
APPROVED
PLANNING BOARD
OF HOWARD COUNTY
DATE 2-6-85



PLANTING DETAIL FOR TREES 1¼"-4" CAL.
NOT TO SCALE



PLANTING DETAIL FOR EVERGREENS
AND DECIDUOUS SHRUBS
NOT TO SCALE



PLANTING DETAIL
FOR EVERGREEN TREES 3'-8' TALL
NOT TO SCALE

Plant List

KEY	APPROX. QUANT	BOTANICAL NAME	COMMON NAME	SIZE	COND.	REMARKS
		SHADE TREES				
T-1	13	QUERCUS ACUTISSIMA	SAWTOOTH OAK	2½-3"CAL.	B&B	
T-2	23	QUERCUS ALBA	WHITE OAK	2½-3"	B&B	
T-3	18	ACER RUBRUM 'OCT. GLORY'	OCTOBER GLORY MAPLE	2½-3"	B&B	
T-4	4	SALIX NIOBE	NIOBE WILLOW	1¾-2"	B&B	
T-5	13	ZELKOVA SERRATA	ZELKOVA	3-3½	B&B	HEAVY
T-6	5	GLEDITSIA TRIACANTHOS INER. 'SUNBURST'	SUNBURST HONEYLOCUST	3-3½	B&B	HEAVY
T-7	9	LIQUIDAMBAR STYRACIFLUA	SWEETGUM	2½-3"	B&B	
T-8	7	KOLREUTERIA PANICULATA	GOLDEN RAINTREE	2½-3"	B&B	
T-9	5	MAGNOLIA GRANDIFLORA	SOUTHERN MAGNOLIA	2½-3"	B&B	
T-10	7	PLATANUS ACERIFOLIA	LONDON PLANE TREE	2½-3"	B&B	
		FLOWERING TREES				
F-1	11	PRUNUS SERRULATA 'KWANZAN'	KWANZAN CHERRY	2-2½"CAL.	B&B	
F-2	14	MALUS THEIFERA	TEA CRABAPPLE	2-2½"	B&B	
F-3	6	CRATAEGUS PHAENOPYRUM	WASHINGTON HAWTHORN	2-2½"	B&B	
F-4	8	PYRUS CALLERYANA 'REDSPIRE'	REDSPIRE PEAR	2-2½"	B&B	
F-5	7	CHIONANTHUS VIRGINICUS	FRINGE TREE	2-2½"	B&B	
F-6	6	AMELANCHIER CANADENSIS	SERVICEBERRY	2-2½"	B&B	
F-7	4	PRUNUS SUBHIRTELLA PENDULA	WEEPING CHERRY	2-2½"	B&B	
		EVERGREEN TREES				
E-1	50	PINUS STROBUS	WHITE PINE	6-8'	B&B	
E-2	34	PICEA ABIES	NORWAY SPRUCE	6-8'	B&B	
E-3	75	PINUS THUNBERGI	JAPANESE BLACK PINE	6-8'	B&B	
E-4	6	CEDRUS DEODORA	DEODOR CEDAR	6-8'	B&B	
E-5	10	CHAMAECYPARIS OBTUSA	HINOKI CYPRESS	6-8'	B&B	
E-6	7	ILEX CORNUTA 'BURFORDII'	BURFORD HOLLY	6-8'	B&B	
		SHRUBS				
S-1	17	EUONYMUS SIEBOLDI	SIEBOLD EUONYMUS	24-30"	B&B	
S-2	8	EUONYMUS ALATUS	WINGED EUONYMUS	24-30"	B&B	
S-3	65	NANDINA DOMESTICA	HEAVENLY BAMBOO	2½-3'	B&B	
S-4	16	TAXUS BACCATA REPANDENS	SPREADING ENG. YEW	24-30"	B&B	
S-5	41	ILEX CRENATA 'HETZI'	HETZ JAP. HOLLY	2½-3'	CONT.	
S-6	24	MAHONIA BEALII	LEATHERLEAF MAHONIA	2½-3'	CONT.	
S-7	15	AZALEA 'POLAR BEAR'	AZALEA -WHITE	18-24"	CONT.	
S-8	14	PIERIS JAPONICA	ANDROMEDA	18-24"	B&B	
S-9	58	JUNIPERUS PROCUMBENS NANA	DWARF JAP. JUNIPER	15-18"	CONT.	
S-10	266	JUNIPERUS CONFERTA	SHORE JUNIPER	15-18"	CONT.	
S-11	67	JUNIPERUS HORIZONTALIS 'WILTONII'	BLUE RUG JUNIPER	15-18"	CONT.	
S-12	32	FORSYTHIA INTERMEDIA SPECTABILIS	SHOWY BORDER FORSYTHIA	3-4'	B&B	
S-13	28	CORNUS SERICEA	RED-TWIG DOGWOOD	3-4'	B&B	
S-14	10	CORNUS STOLONIFERA LUTEA	YELLOW-TWIG DOGWOOD	3-4'	B&B	
S-15	960	OPHIOPOGON JAPONICUS	MONDO GRASS	1 GAL.	CONT.	
S-16	41	PINUS MUGO MUGO	MUGO PINE	15-18"	B&B	
		GROUND COVERS				
G-1	12,900	PACHYSANDRA TERMINALIS	PACHYSANDRA	2¼" POTS		
G-2	1800	EUONYMUS FORTUNEI COLORATUS	PURPLE LEAVED EUONYMUS	2¼" POTS		
G-3	260	LIRIOPE MUSCARI 'BIG BLUE'	'BIG BLUE' LIRIOPE	1 GAL.		
G-4	1000	VINCA MINOR	VINCA	2¼" POTS		
		PERENNIALS				
P-1	1000	CROCUS				
P-2	500	DAFFODILS				

GEORGE WILLIAM STEPHENS JR. AND ASSOCIATES INC
ENGINEERS
303 ALLEGHENY AVE. TOWSON, MD. 21204
(301) 825-8120

DAFT-McCUNE-WALKER, INC.
LAND PLANNING CONSULTANTS
LANDSCAPE ARCHITECTS
ENGINEERS
530 E. JOPPA ROAD
TOWSON, MD 21204
TELEPHONE: (301) 296-3333
5501 TWIN KNOLLS ROAD, SUITE 107
COLUMBIA, MD 21045
TELEPHONE: BALTO. (301) 992-0025
WASH. (301) 621-5607

STATE OF MARYLAND — ROBERT C. CARR — REGISTERED LANDSCAPE ARCHITECT — NO. 270

11/8/04

Owner (As of Nov. 2008) 3
Loft Riverwood, LLC
%Loft Development Services, LLC
6711 Columbia Gateway Drive, Suite 300
Columbia, MD 21046
Phone: 443-285-5440
Attn.: Sean Moore

SUBDIVISION NAME		SECT/AREA	LOT/PARCEL
RIVERS CORPORATE PARK		1/2	PARCEL 'A'
PLAT	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DIST.	CENSUS TRACT
WATER CODE		SEWER CODE	

GLW

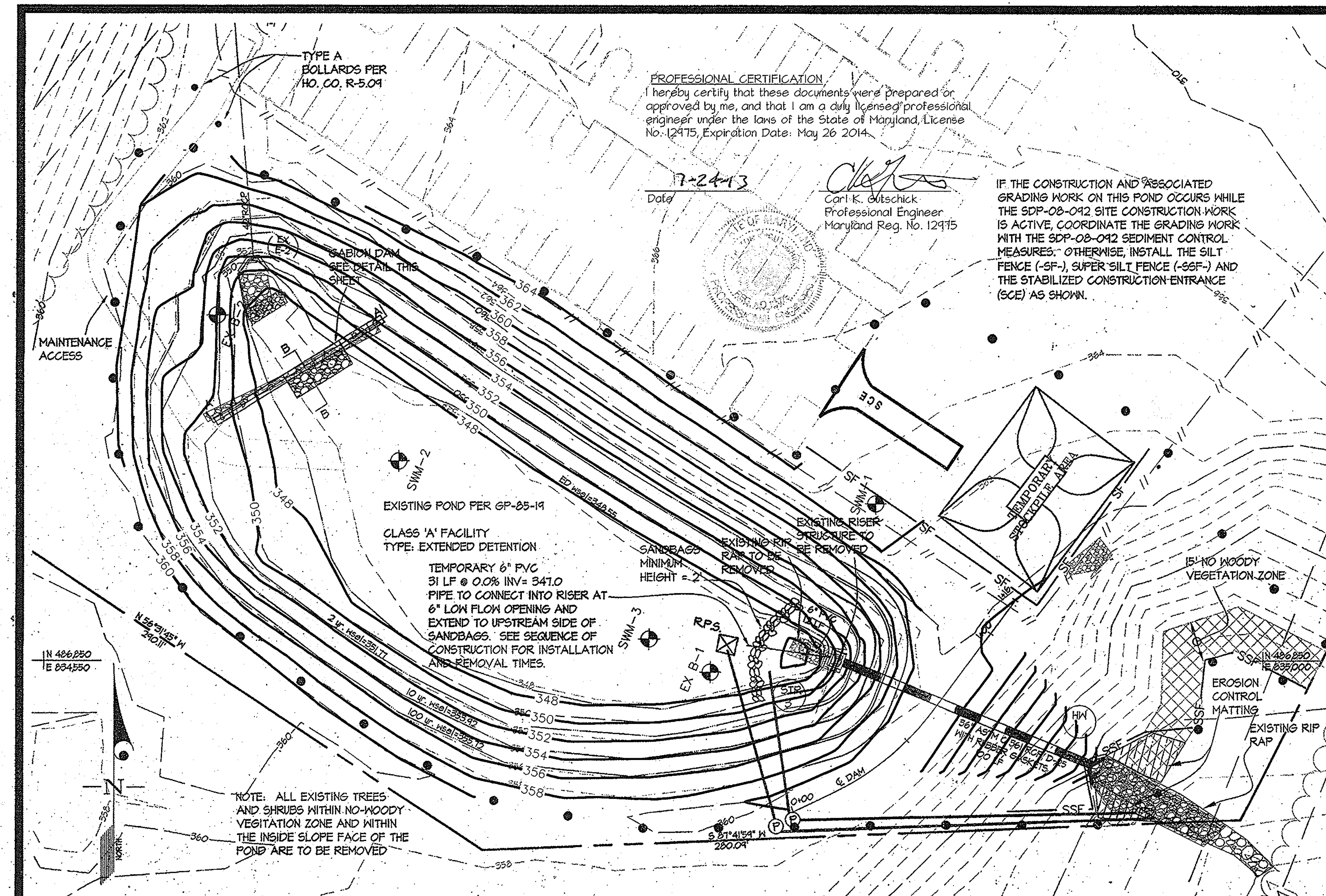
REVISIONS
3 Add owner & Revised 11-11-08

DES.: DDD
DRN.: WDJ
CHK.: CKD

PLANTING PLAN DETAILS
PROPOSED OFFICE FOR RESEARCH & DEVELOPMENT
RIVERS CORPORATE PARK
SECTION 1 AREA 2 PARCEL A
COLUMBIA
TAX MAP #42

HO. CO. MD. ELECT. DIST. #6
SHEET 7 OF 7 3 NOV. 8, 1984

SDP-85-89c

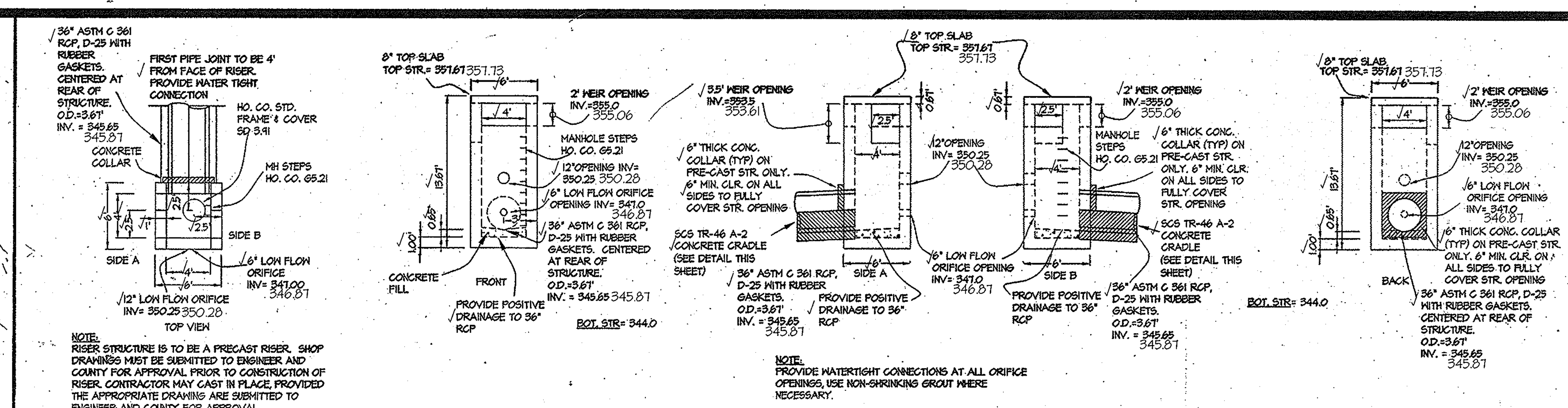


PROFESSIONAL CERTIFICATION
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 12975, Expiration Date: May 26 2014.

7-24-13
Date

Carl K. Gutschick
Professional Engineer
Maryland Reg. No. 12975

EXISTING STORMWATER MANAGEMENT FACILITY ENLARGEMENT SCALE: 1" = 30'



NOTE:
RISER STRUCTURE IS TO BE A PRECAST RISER. SHOP DRAWINGS MUST BE SUBMITTED TO ENGINEER AND COUNTY FOR APPROVAL PRIOR TO CONSTRUCTION OF RISER. CONTRACTOR MAY CAST IN PLACE, PROVIDED THE APPROPRIATE DRAWING ARE SUBMITTED TO ENGINEER AND COUNTY FOR APPROVAL.

NOTE:
PROVIDE WATERTIGHT CONNECTIONS AT ALL ORIFICE OPENINGS, USE NON-SHRINKING GROUT WHERE NECESSARY.

RISER STRUCTURE 3 DETAILS SCALE: 1/8" = 1'

STORM WATER MANAGMENT DATA

TOTAL AREA OF SITE 20.3 AC±
SOIL GROUP 'C', PREVIOUSLY MASS GRADED
DRAINAGE AREA NOT ROUTED= 5.41 AC
RCN= 80 Tc= 0.1 HOURS
TOTAL DRAINAGE AREA TO POND= 14.39 AC±
PROPOSED RCN = 92
PROPOSED Tc= 0.1 HOURS
POND IS AN EXCAVATED FACILITY, STRUCTURAL CLASS 'A'

EXISTING CONDITION
DA= 19.8 AC
RCN= 74
PEAK RELEASE RATES:
2YR= 22.39 CFS
10YR= 52.75 CFS

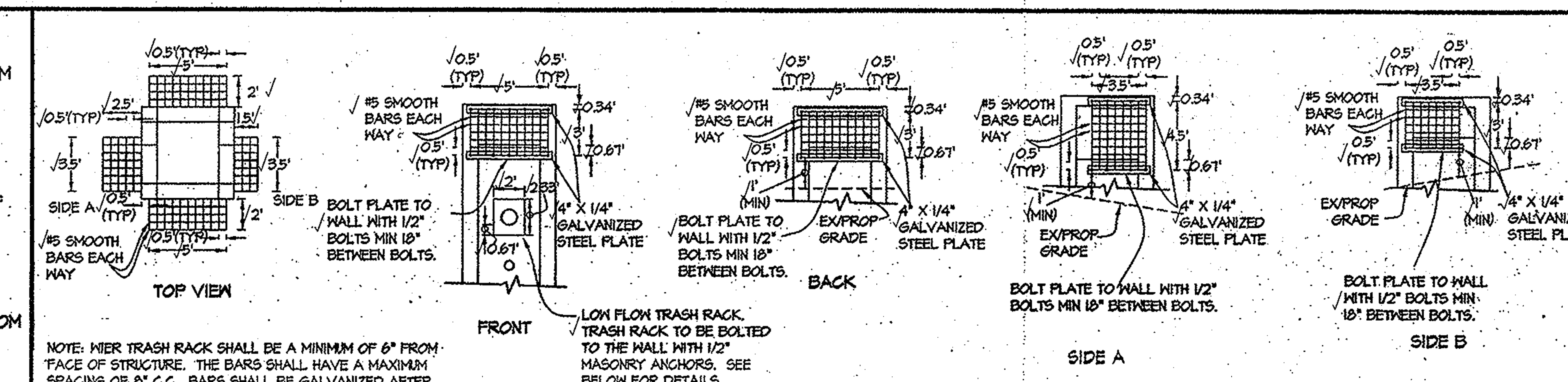
PROPOSED PEAK RELEASE FROM UNMANAGED AREA
2YR= 11.33 CFS
10YR= 23.57 CFS
100YR= 37.63 CFS

PROPOSED PEAK RELEASE FROM POND:
2YR= 3.80 CFS
10YR= 9.45 CFS
100YR= 44.04 CFS

PROPOSED PEAK WSEL IN POND:
ED WSEL= 348.55'
2YR= 351.77'
10YR= 353.92'
100YR= 355.72'

PROPOSED COMBINED PEAK FROM POND AND UNMANAGED
2 YR= 12.11 CFS
10 YR= 29.16 CFS
100 YR= 58.51 CFS

Outfall: Precast Riser Structure to 36" RCP
T.O.D. = 359.30



NOTE: WIER TRASH RACK SHALL BE A MINIMUM OF 6" FROM FACE OF STRUCTURE. THE BARS SHALL HAVE A MAXIMUM SPACING OF 8" C.C. BARS SHALL BE GALVANIZED AFTER FABRICATION AND PAINTED BATTLESHIP GREY. WIER TRASH RACK SHALL BE REMOVABLE

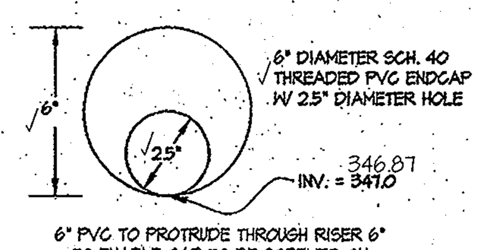
RISER STRUCTURE 3 TRASH RACK DETAILS SCALE: 1/8" = 1'

PUMP-AROUND LEGEND

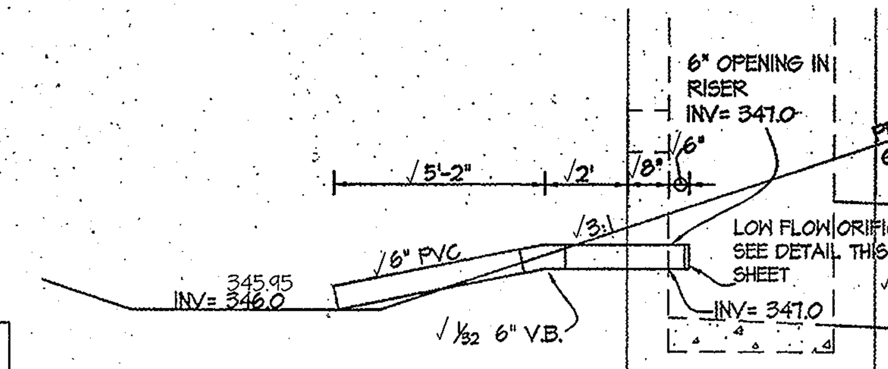
- SANDBAGS
- P PUMP
- HOSE
- DEWATERING DEVICE

SEDIMENT CONTROL LEGEND

- – – 600 – – EXISTING CONTOUR
- 600 PROPOSED CONTOUR
- • • • • • LIMIT OF DISTURBANCE
- ——SSF—— PROPOSED SUPER SILT FENCE



ED ORIFICE DETAIL SCALE: N.T.S.



LOW FLOW INVERTED SIPHON DETAIL N.T.S.

SEE THIS SHEET FOR RISER DETAILS

SEQUENCE OF CONSTRUCTION FOR 2008 REVISIONS

1. SCHEDULE A PRE-CONSTRUCTION MEETING WITH SEDIMENT CONTROL INSPECTOR (SCI) AND OBTAIN GRADING PERMIT (1 DAY).

2. INSTALL SANDBAGS, REMOVABLE PUMPING STATION, AND SILT FENCE. (2-3 DAYS)

3. WITH ALL MATERIALS ON SITE, AND A 5-DAY CLEAR (NO PRECIPITATION) WEATHER FORECAST FROM THE NWS, OBTAIN PERMISSION FROM SCI TO REMOVE THE EXISTING RISER, OUTFALL PIPE AND END SECTION (2 DAYS). POND MUST BE DRY PRIOR TO START OF WORK.

4. INSTALL NEW RISER STRUCTURE, OUTFALL PIPE, AND LOW FLOW PIPE THROUGH SANDBAGS. (3 DAYS)

5. INSTALL ANTI-SEEP COLLARS, CONCRETE CRADLE AND END WALL. (10 DAYS)

6. UPON RECEIVING PERMISSION FROM THE SCI, RECONSTRUCT EMBANKMENT PER GEOTECHNICAL ENGINEER'S RECOMMENDATIONS (5 DAYS).

7. STABILIZE EMBANKMENT ONCE CONSTRUCTION IS FINISHED AND REMOVE SANDBAGS AND 6" TEMPORARY PIPE. (1 DAY)

8. OBTAIN AS-BUILT APPROVAL FROM H.S.C.D.

DEVELOPER'S/BUILDER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

COPT Riverwood, LLC
By: [signature] 11/24/08
Signature of Developer/Builder Roger A. Waesche, Jr. Executive Vice President Date

ENGINEER'S CERTIFICATE

"I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

[signature] 1/29/09
Engineer's Signature Date

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 12975, EXPIRATION DATE: MAY 26, 2010.

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

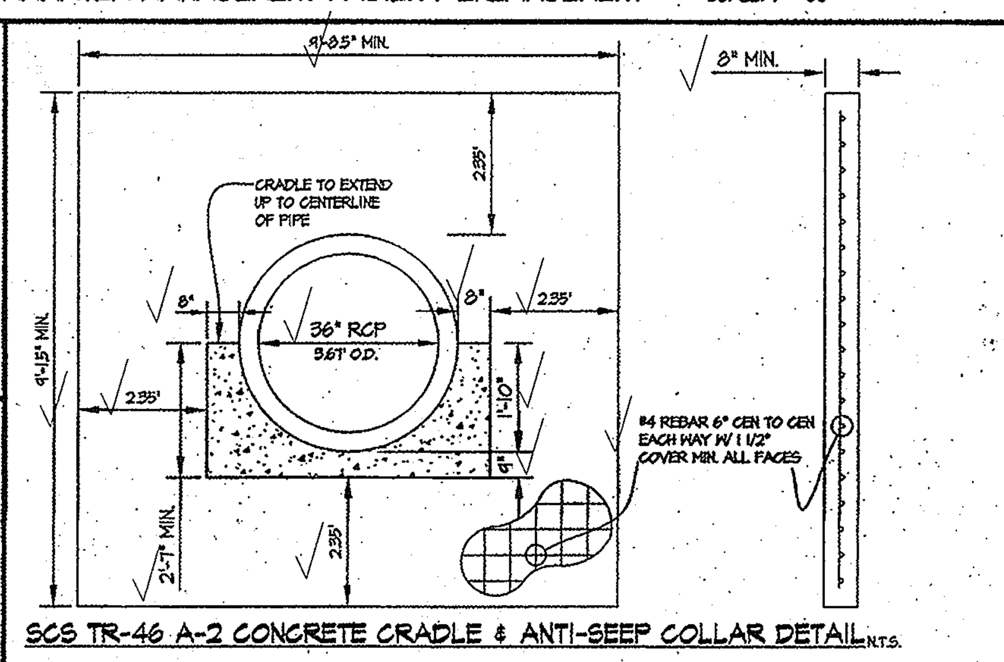
Howard Soil Conservation District Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Director Date

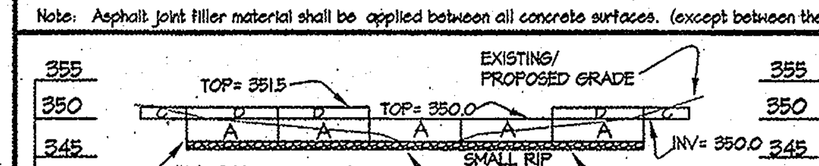
Chief, Division of Land Development Date

Chief, Development Engineering Division Date

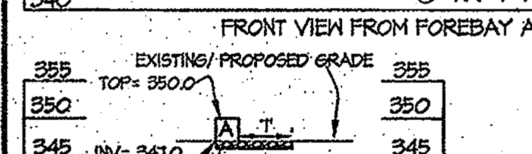


SCS TR-46 A-2 CONCRETE CRADLE & ANTI-SEEP COLLAR DETAIL N.T.S.

Note: Asphalt joint filler material shall be applied between all concrete surfaces. (except between the pipe and cradle)



FRONT VIEW FROM FOREBAY A-A SCALE: 1"= 20'



PROFILE THROUGH FOREBAY B-B SCALE: 1"= 20'

GABION SIZES			
LETTER CODE	LENGTH	WIDTH	HEIGHT
A	12'	3'	3'
C	6'	3'	1'-6"
D	12'	3'	1'-6"

OPERATION AND MAINTENANCE SCHEDULE
STORMWATER MANAGEMENT FACILITY
POND

ROUTINE MAINTENANCE (BY OWNER)

1. THE FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHOULD BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE POND IS FUNCTIONING PROPERLY.

2. TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES A YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES, THE BOTTOM OF THE POND, AND MAINTENANCE ACCESS SHOULD BE MOWED AS NEEDED.

3. DEBRIS AND LITTER NEXT TO THE OUTLET STRUCTURE SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.

4. VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS RIPRAP OUTLET AREA SHALL BE REPAIRED AS SOON AS IT IS NOTICED.

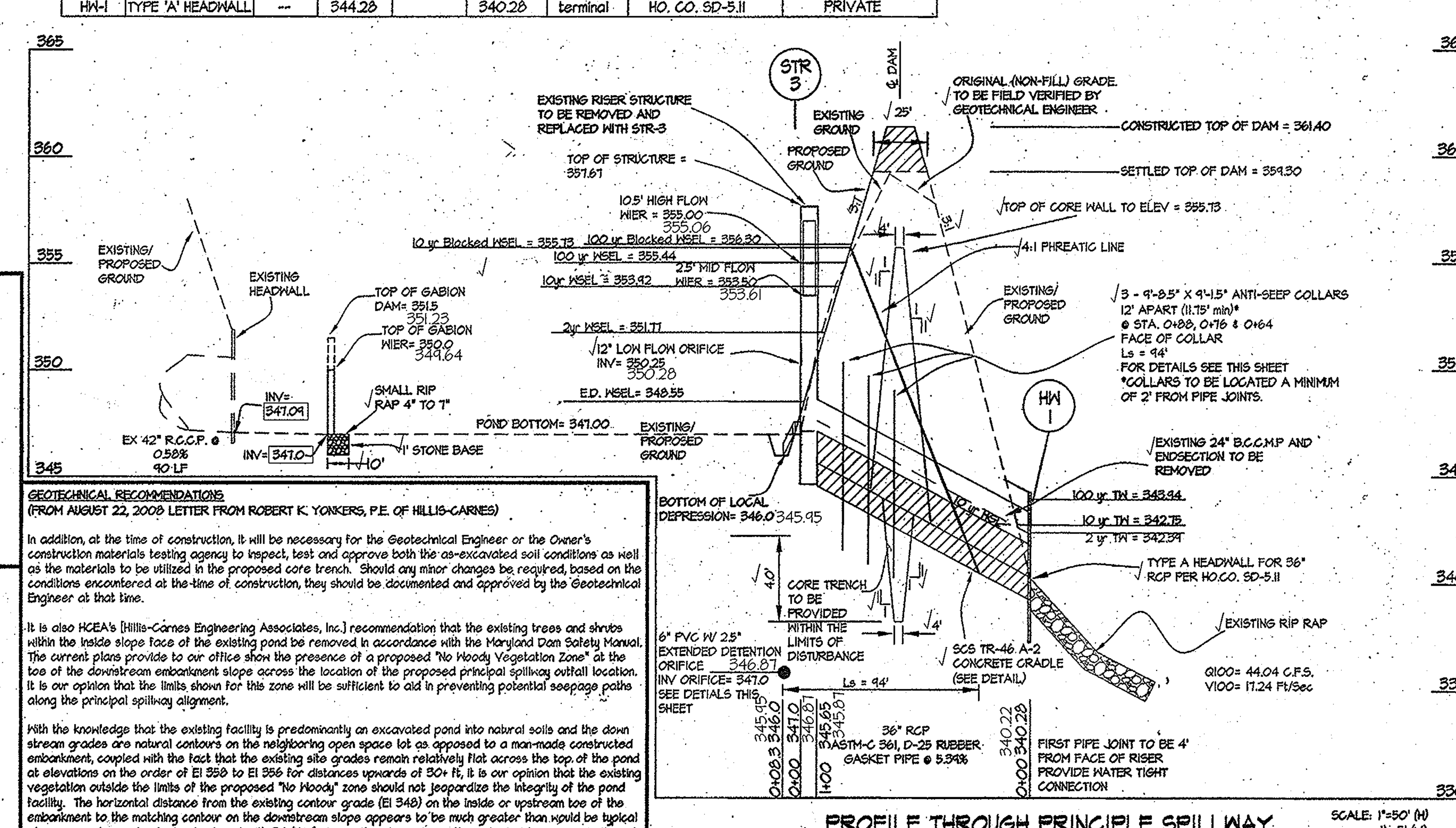
NON-ROUTINE MAINTENANCE (BY OWNER)

1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER, AND THE PIPES SHALL BE REPAIRED UPON DETECTION OF ANY DAMAGE. THE COMPONENTS SHOULD BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.

2. SEDIMENT SHOULD BE REMOVED WHEN ITS ACCUMULATION SIGNIFICANTLY REDUCES THE DESIGN STORAGE, INTERFERES WITH THE FUNCTION OF THE RISER, WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, OR WHEN DEEMED NECESSARY.

STRUCTURE SCHEDULE

NO.	TYPE	WIDTH (INSIDE)	TOP ELEVATION UPPER	TOP ELEVATION LOWER	INVERT ELEVATION UPPER	INVERT ELEVATION LOWER	STANDARD DETAIL	OWNERSHIP & MAINTENANCE
HW-1	TYPE 'A' HEADWALL	--	344.28		340.22 340.28	terminal	HO. CO. SD-5.11	PRIVATE



GEOTECHNICAL RECOMMENDATIONS
(FROM AUGUST 22, 2008 LETTER FROM ROBERT K. YONKERS, P.E. OF HILLIS-CARNES)

In addition, at the time of construction, it will be necessary for the Geotechnical Engineer or the Owner's construction materials testing agency to inspect, test and approve both the as-excavated soil conditions as well as the materials to be utilized in the proposed core trench. Should any minor changes be required, based on the conditions encountered at the time of construction, they should be documented and approved by the Geotechnical Engineer at that time.

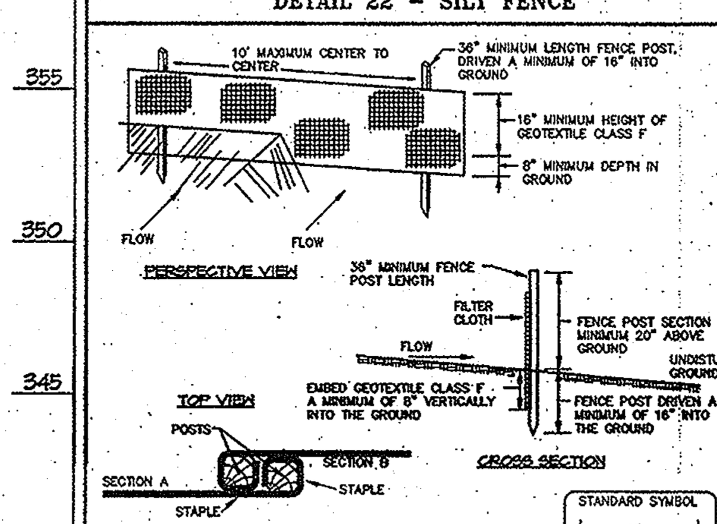
It is also HCEA's [Hillis-Carnes Engineering Associates, Inc.] recommendation that the existing trees and shrubs within the inside slope face of the existing pond be removed in accordance with the Maryland Dam Safety Manual. The current plans provide to our office show the presence of a proposed "No Woody Vegetation Zone" at the toe of the downstream embankment slope across the location of the proposed principal spillway outfall location. It is our opinion that the limits shown for this zone will be sufficient to aid in preventing potential seepage paths along the principal spillway alignment.

With the knowledge that the existing facility is predominantly an excavated pond into natural soils and the down stream grades are natural contours on the neighboring open space lot as opposed to a man-made constructed embankment, coupled with the fact that the existing site grades remain relatively flat across the top of the pond at elevations on the order of El 358 to El 356 for distances upwards of 50+ ft, it is our opinion that the existing vegetation outside the limits of the proposed "No Woody" zone should not jeopardize the integrity of the pond facility. The horizontal distance from the existing contour grade (El 348) on the inside or upstream toe of the embankment to the matching contour on the downstream slope appears to be much greater than would be typical of a man-made constructed embankment with 3:1 (H:V) slopes thereby reducing the potential for seepage through the embankment. This is further supported by the fact that the existing pond did not appear to show any signs of failures or seepage along the downstream slope at the time of our field investigation.

PROFILE THROUGH PRINCIPLE SPILLWAY SCALE: 1"=50' (H) 1"= 5' (V)

ASBUILTS

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 1 1/2" x 1 1/2" square (minimum) cut, or 1 3/4" 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.

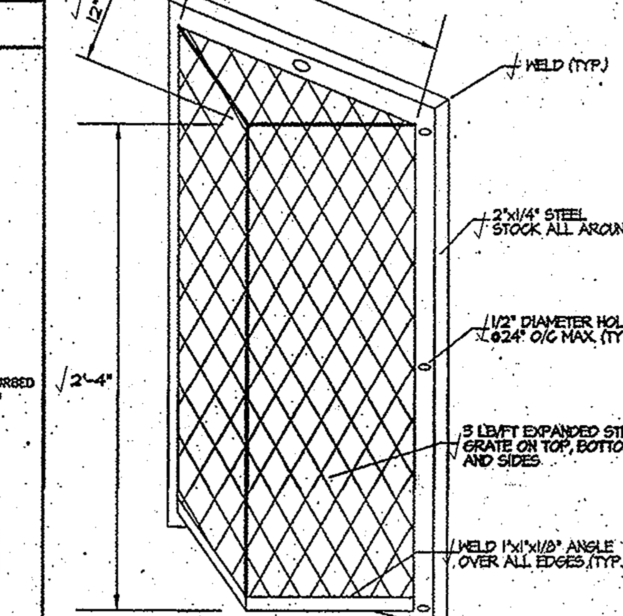
2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft / 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.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE | PAGE E - 16 - 3 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



NOTES FOR TRASH RACK

1. TRASH RACK TO BE CENTERED OVER OPENINGS.
2. STEEL TO CONFORM TO ASTM A-36.
3. ALL SURFACES TO BE COATED WITH ZRC COLD GALVANIZING COMPOUND AFTER WELDING.
4. TRASH RACK TO BE FASTENED TO THE WALL WITH 1/2" MASONRY ANCHORS. TRASH RACK TO BE REMOVABLE.
5. BOTTOM OF TRASH RACK TO BE LEFT OPEN (HOODED) AND SET 6" BELOW INVERT OF 12" OPENING

DETAIL FOR LOW FLOW TRASH RACK PROTECTTION FOR STRUCTURES STR-3
NTS

ASBUILT SHEET 1 OF 1

GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE – SUITE 250 – BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

L:\CADD\DRAWINGS\06003\SCANS\REDLINE\06003Sheet 08 & 09.dwg | DES. dds | DRN. dds | CHK. CKG

DATE	REVISION	BY	APP'R.
12/1/2008	SHEETS 8 & 9 ADDED FOR POND MAINTENANCE △3	dds	

PREPARED FOR:
OWNER/DEVELOPER
COPT Riverwood, LLC
c/o COPT DEVELOPMENT SERVICES, LLC.
6711 COLUMBIA GATEWAY DRIVE, SUITE 300
COLUMBIA, MD 21046
Phone: 443-285-5649
Attn.: SEAN MOORE

REVISED STORMWATER MANAGEMENT DETAILS & SEDIMENT CONTROL PLAN

PROPOSED OFFICE FOR RESEARCH & DEVELOPMENT
RIVERS CORPORATE PARK
SECTION 1, AREA 2
COLUMBIA

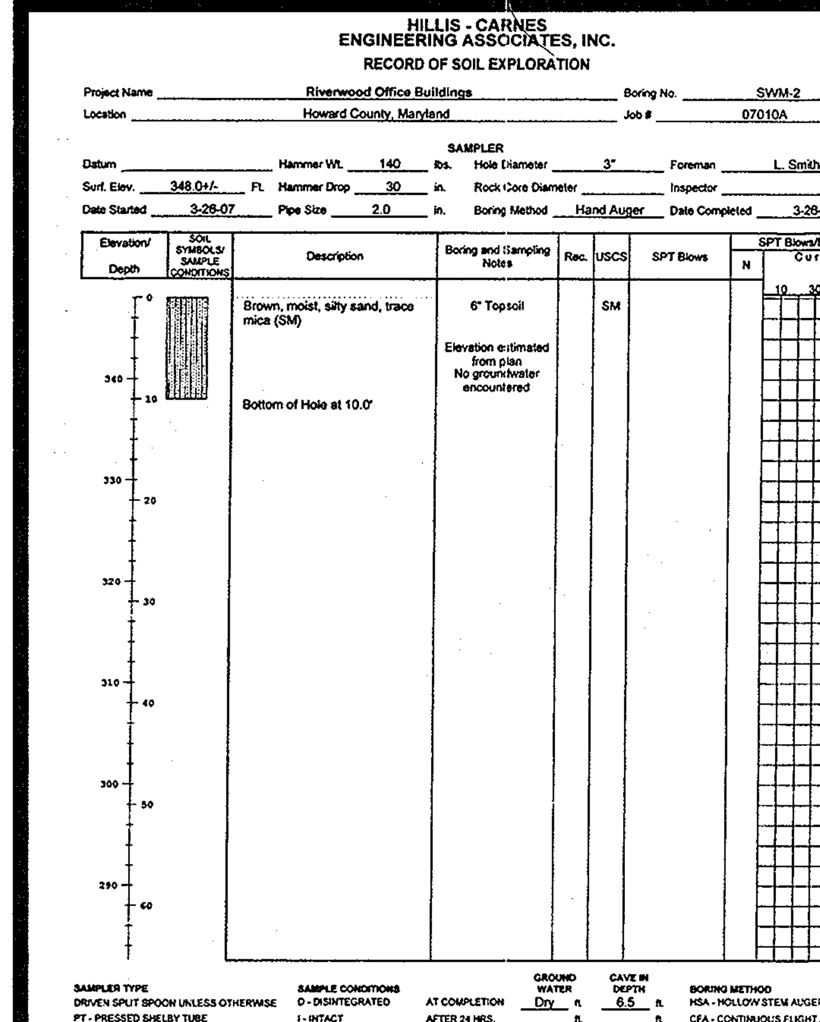
GUILFORD ELECTION DISTRICT No. 6
HOWARD COUNTY, MARYLAND

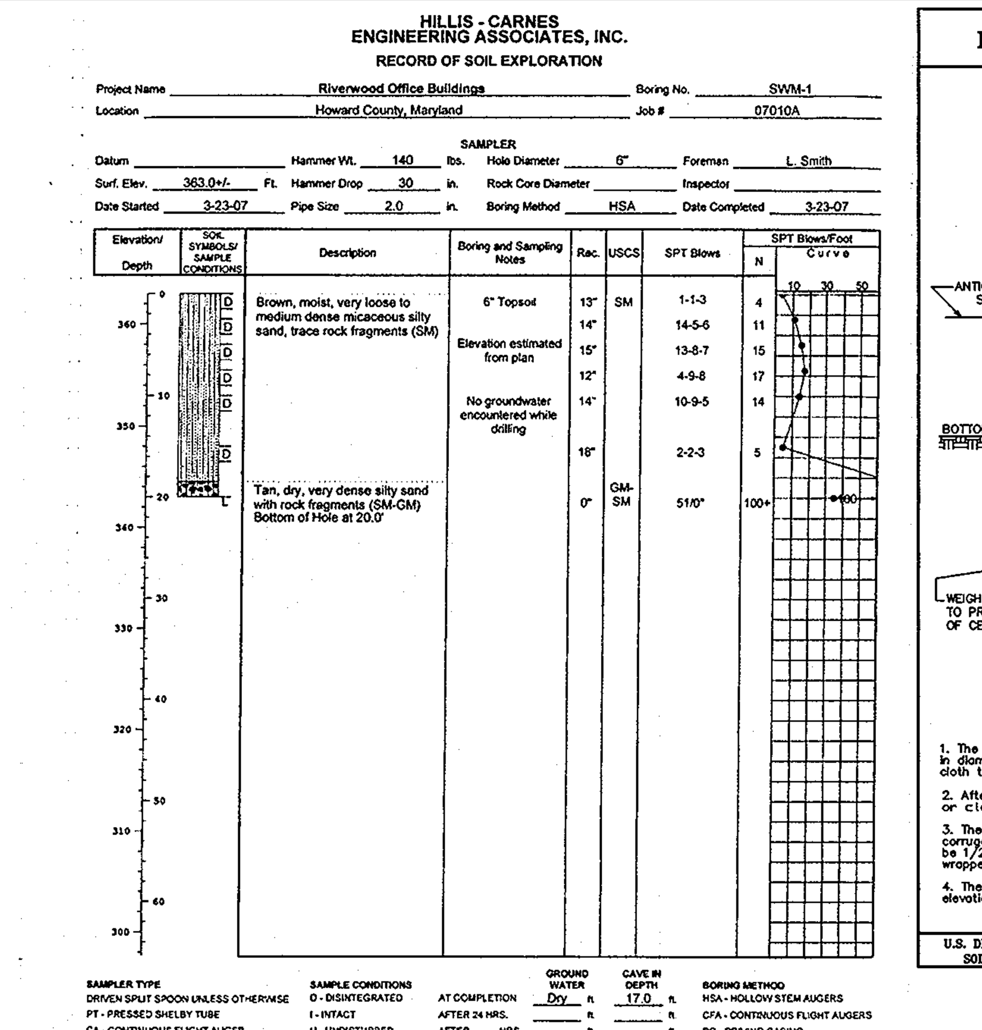
SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT-EC, IND	06003
DATE APR., 2012 DECEMBER, 2008	TAX MAP – GRID 41 – 12	SHEET 8 OF 9 △3

© GLW 2012

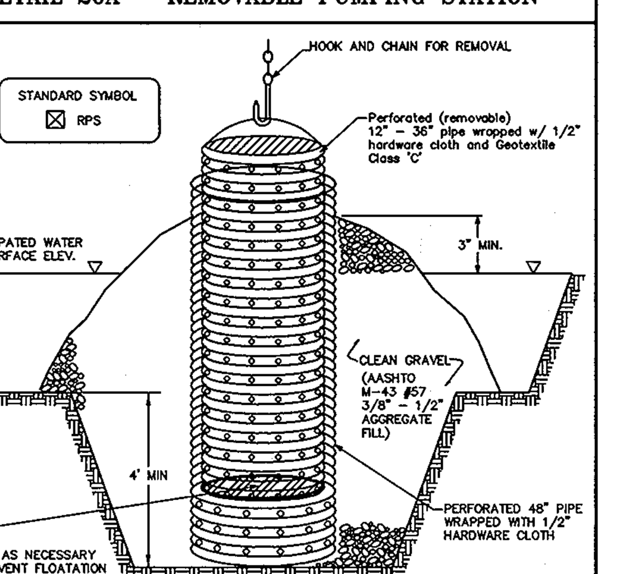
As-Built

GP-09-06 SDP-85-89c





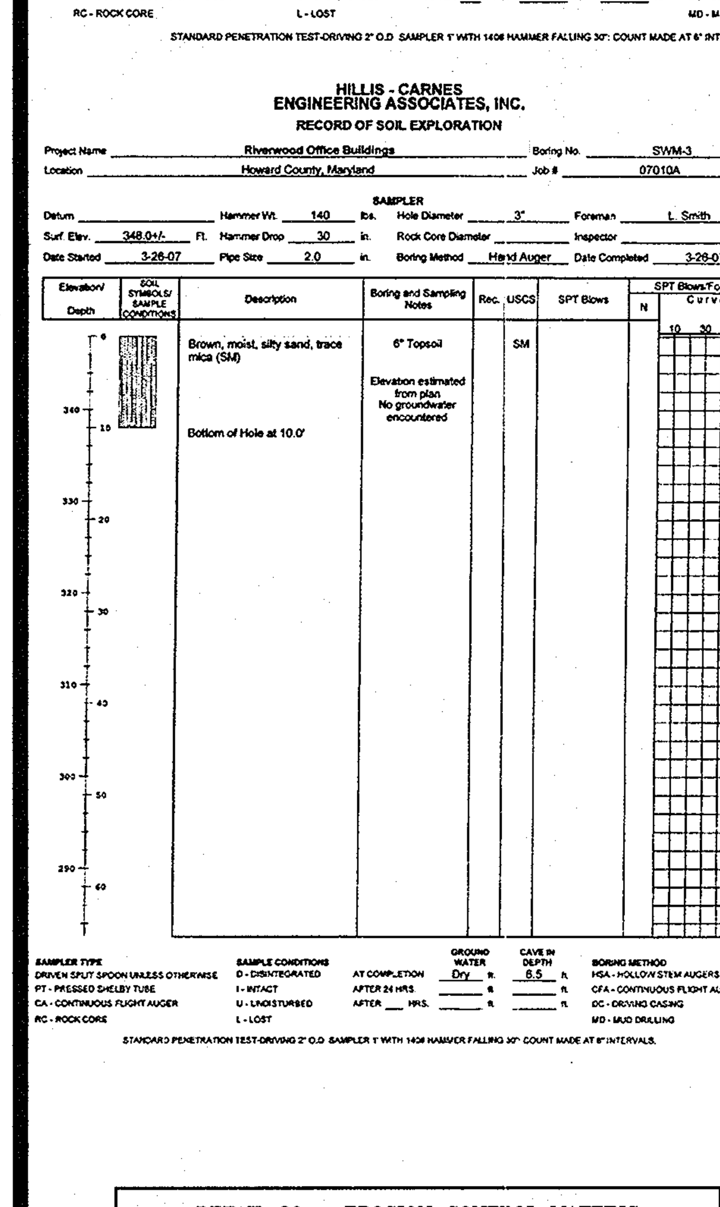
DETAIL 20A – REMOVABLE PUMPING STATION



Construction Specifications

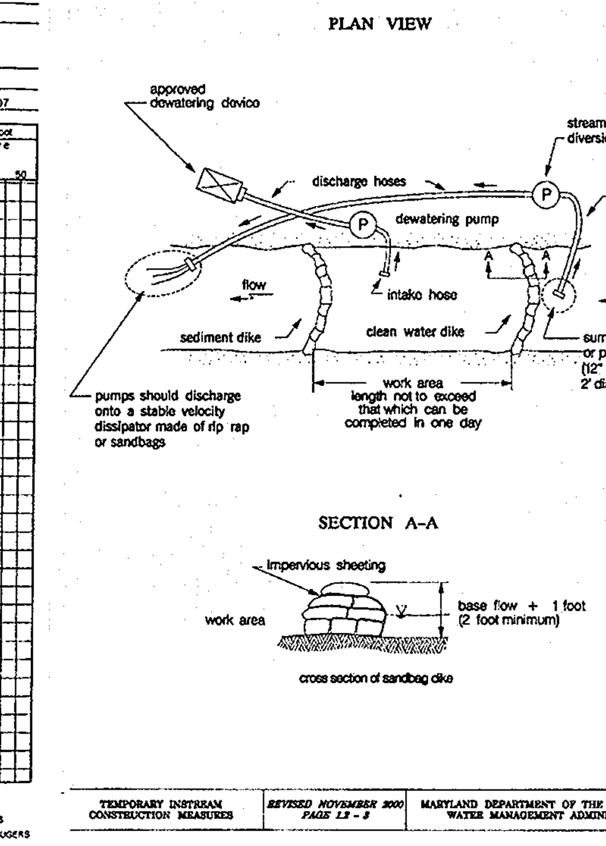
1. The outer pipe should be 48" dia. or shall, in any case, be at least 4" greater in diameter than the center pipe. The outer pipe shall be wrapped with 1/2" hardware cloth to prevent backfill material from entering the perforations.
2. After installing the outer pipe, backfill around outer pipe with 2" aggregate or clean gravel.
3. The inside stand pipe (center pipe) should be constructed by perforating a corrugated or PVC pipe between 12" and 36" in diameter. The perforations shall be 1/2" X 6" slits or 1" diameter holes 6" on center. The center pipe shall be wrapped with 1/2" hardware cloth first, then wrapped again with Geotextile Class C.
4. The center pipe should extend 12" to 18" above the anticipated water surface elevation or riser crest elevation when dewatering a basin.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE D - 12 - 5	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



Maryland's Guidelines To Waterway Construction
DETAIL 1.2: PUMP-AROUND PRACTICE

PLAN VIEW



TEMPORARY INSTREAM CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 1.2 - 3	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

MGWC 1.2: PUMP-AROUND PRACTICE

Temporary measure for dewatering in-channel construction sites

DESCRIPTION

The work should consist of installing a temporary pump around and supporting measures to divert flow around in-stream construction sites.

IMPLEMENTATION SEQUENCE

Sediment control measures, pump-around practices, and associated channel and bank construction should be completed in the following sequence (refer to Detail 1.2):

1. Construction activities including the installation of erosion and sediment control measures should not begin until all necessary easements and/or right-of-ways have been acquired. All existing utilities should be marked in the field prior to construction. The contractor is responsible for any damage to existing utilities that may result from construction and should repair the damage at his/her own expense to the county's or utility company's satisfaction.
2. The contractor should notify the Maryland Department of the Environment or WMA sediment control inspector at least 5 days before beginning construction. Additionally, the contractor should inform the local environmental protection and resource management inspection and enforcement division and the provider of local utilities a minimum of 48 hours before starting construction.
3. The contractor should conduct a pre-construction meeting on site with the WMA sediment control inspector, the county project manager, and the engineer to review limits of disturbance, erosion and sediment control requirements, and the sequence of construction. The contractor should stake out all limits of disturbance prior to the pre-construction meeting so they may be reviewed. The participants will also designate the contractor's staging areas and flag all trees within the limit of disturbance which will be removed for construction access. Trees should not be removed within the limit of disturbance without approval from the WMA or local authority.
4. Construction should not begin until all sediment and erosion control measures have been installed and approved by the engineer and the sediment control inspector. The contractor should stay within the limits of the disturbance as shown on the plans and minimize disturbance within the work area whenever possible.
5. Upon installation of all sediment control measures and approval by the sediment control inspector and the local environmental protection and resource management inspection and enforcement division, the contractor should begin work at the upstream section and proceed downstream beginning with the establishment of stabilized construction entrances. In some cases, work may begin downstream if appropriate. The sequence of construction must be followed unless the contractor gets written approval for deviations from the WMA or local authority. The contractor should only begin work in an area which can be completed by the end of the day including grading adjacent to the channel. At the end of each work day, the work area must be stabilized and the pump around removed from the channel. Work should not be conducted in the channel during rain events.
6. Sandbag dikes should be situated at the upstream and downstream ends of the work area as shown on the plans, and stream flow should be pumped around the work area. The pump should discharge onto a stable velocity dissipater made of riprap or sandbags.

TEMPORARY INSTREAM CONSTRUCTION MEASURES — *MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISED NOVEMBER 2000*

PAGE 1.2 - 1

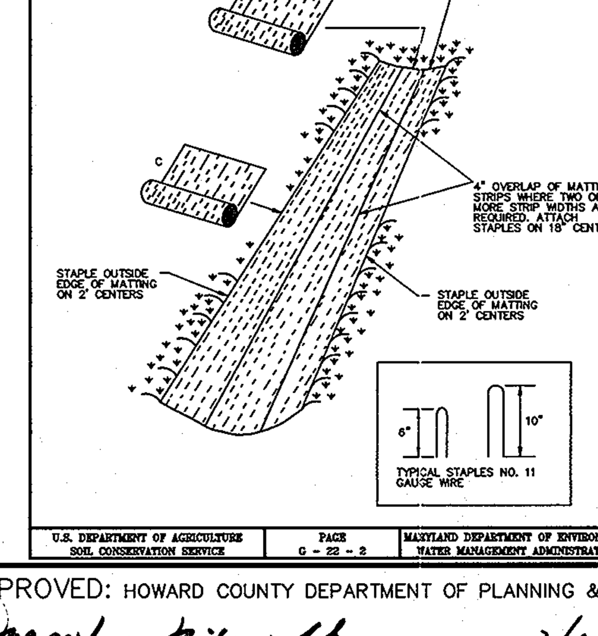
MGWC 1.2: PUMP-AROUND PRACTICE

7. Water from the work area should be pumped to a sediment filtering measure such as a dewatering basin, sediment bag, or other approved source. The measure should be located such that the water drains back into the channel below the downstream sandbag dike.
8. Traversing a channel reach with equipment within the work area where no work is proposed should be avoided. If equipment has to traverse such a reach for access to another area, then timber mats or similar measures should be used to minimize disturbance to the channel. Temporary stream crossings should be used only when necessary and only where noted on the plans or specified. (*See Section 4, Stream Crossings, Maryland Guidelines to Waterway Construction*).
9. All stream restoration measures should be installed as indicated by the plans and all banks graded in accordance with the grading plans and typical cross- sections. All grading must be stabilized at the end of each day with seed and mulch or seed and matting as specified on the plans.
10. After an area is completed and stabilized, the clean water dike should be removed. After the first sediment flush, a new clean water dike should be established upstream from the old sediment dike. Finally, upon establishment of a new sediment dike below the old one, the old sediment dike should be removed.
11. A pump around must be installed on any tributary or storm drain outfall which contributes baseflow to the work area. This should be accomplished by locating a sandbag dike at the downstream end of the tributary or storm drain outfall and pumping the stream flow around the work area. This water should discharge onto the same velocity dissipater used for the main stem pump around.
12. If a tributary is to be restored, construction should take place on the tributary before work on the main stem reaches the tributary confluence. Construction in the tributary, including pump around practices, should follow the same sequence as for the main stem of the river or stream. When construction on the tributary is completed, work on the main stem should resume. Water from the tributary should continue to be pumped around the work area in the main stem.
13. The contractor is responsible for providing access to and maintaining all erosion and sediment control devices until the sediment control inspector approves their removal.
14. After construction, all disturbed areas should be regraded and revegetated as per the planting plan.

TEMPORARY INSTREAM CONSTRUCTION MEASURES — *MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISED NOVEMBER 2000*

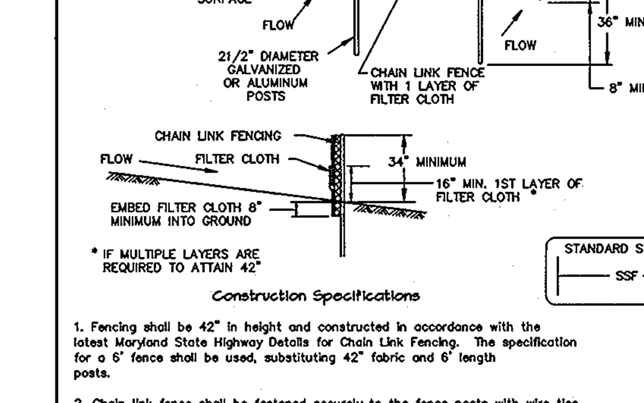
PAGE 1.2 - 2

DETAIL 30 – EROSION CONTROL MATTING



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE G - 22 - 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 33 – SUPER SILT FENCE

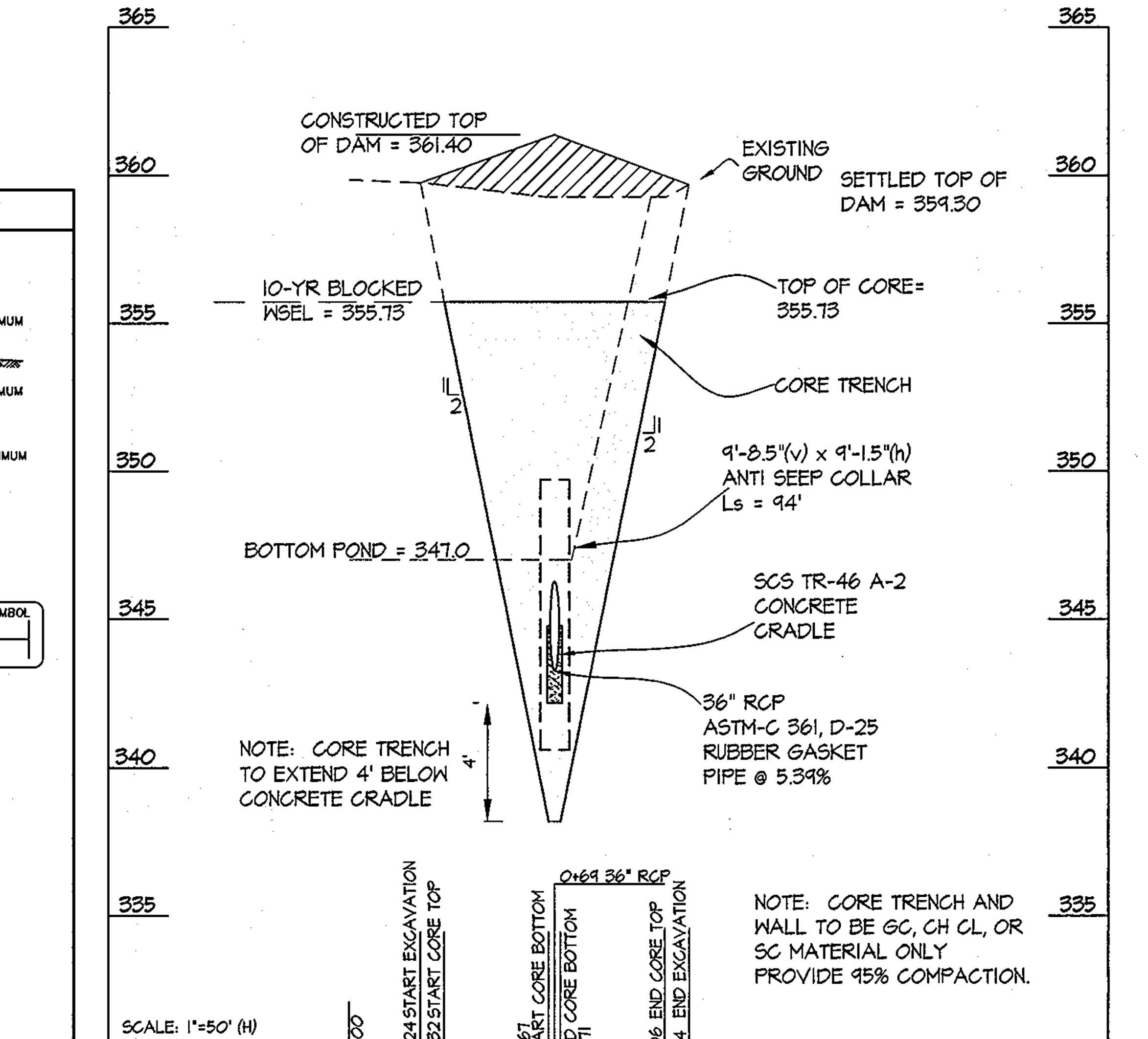


Construction Specifications

1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.
2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.
3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.
4. Filter cloth shall be embedded a minimum of 8" into the ground.
5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.
6. 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
7. Filter cloth 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/ft /minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

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



PROFILE ALONG CENTERLINE OF EMBANKMENT

CONSTRUCTION SPECIFICATIONS

These specifications are appropriate to all ponds. 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 20 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.

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 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.

When required by the reviewing agency 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).

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 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 other embankment materials.

Pipe Conduits

All pipes shall be circular in cross section.

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

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, prepunched 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 o-ring 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.

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.

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 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 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 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.

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.

OPERATION AND MAINTENANCE

An operation and maintenance plan in accordance with Local or State Regulations will be prepared for all ponds. As a minimum, the dam inspection checklist located in Appendix A shall be included as part of the operation and maintenance plan and performed at least annually. Written records of maintenance and major repairs needs to be retained in a file. The issuance of a Maintenance and Repair Permit for any repairs or maintenance that involves the modification of the dam or spillway from its original design and specifications is required. A permit is also required for any repairs or reconstruction that involve a substantial portion of the structure. All indicated repairs are to be made as soon as practical.

STANDARD AND SPECIFICATIONS FOR TOPSOIL

DEFINITION

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

PURPOSE

TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.

CONDITIONS WHERE PRACTICE APPLIES

I. THIS PRACTICE IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPE 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 SUPPLIED OF MOISTURE AND PLANT NUTRIENTS.

C. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.

D. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.

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

CONSTRUCTION AND MATERIAL SPECIFICATIONS

I. TOPSOIL SALVAGED FROM THE EXISTING SITE MAY BE USED PROVIDED THAT IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE RESPECTIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-SCS IN COOPERATION WITH MARYLAND AGRICULTURAL EXPERIMENTAL STATION.

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

A. TOPSOIL SHALL BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY A AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. REGARDLESS, TOPSOIL SHALL NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND SHALL CONTAIN LESS THAN 5% BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1 1/2" IN DIAMETER.

B. TOPSOIL MUST BE FREE OF PLANT PARTS SUCH AS BERMUDA GRASS, QUACKGRASS, JOHNSONGRASS, NUTSEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.

C. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, GROUND LIMESTONE SHALL BE SPREAD AT THE RATE IF 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:

A. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION - SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS (OR SEE SEEDING NOTES).

IV. FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES:

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

1. PH FOR TOPSOIL SHALL BE BETWEEN 6.0 AND 7.5. IF THE TESTED SOIL DEMONSTRATES A PH OF LESS THAN 6.0, SUFFICIENT LIME SHALL BE PRESCRIBED TO RAISE THE PH TO 6.5 OR HIGHER.

2. ORGANIC CONTENT OF TOPSOIL SHALL BE NOT LESS THAN 1.5 PERCENT BY WEIGHT.

3. TOPSOIL HAVING SOLUBLE SALT GREATER THAN 500 PARTS PER MILL SHALL NOT BE USED.

4. NO SOD OR SEED SHALL BE PLACED ON SOIL WHICH HAS BEEN WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHOTO-TOXIC MATERIALS.

NOTE: TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.

B. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 2.0 VEGETATIVE STABILIZATION - SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS (OR SEE SEEDING NOTES).

V. TOPSOIL APPLICATION

A. WHEN TOPSOILLING, MAINTAIN NEEDED EROSION AND SEDIMENT CONTROL PRACTICES SUCH AS DIVERSION, GRADE STABILIZATION STRUCTURES, EARTH DIKES, SLOPE SILT FENCE AND SEDIMENT TRAPS AND BASINS.

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

C. 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 TOPSOILLING OR OTHER OPERATIONS SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER.

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

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:

A. 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:

1. 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.

2. 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.

3. COMPOSTED SLUDGE SHALL BE APPLIED AT A RATE OF 1 TON/1,000 SQUARE FEET.

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

REFERENCES: GUIDELINE SPECIFICATIONS, SOIL PREPARATION AND SODDING. MD-VA PUB. #1, COOPERATIVE EXTENSION SERVICE, UNIVERSITY OF MARYLAND AND VIRGINIA POLYTECHNIC INSTITUTES. REVISED 1973.

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. (410) 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 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
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 AND 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 SEEDINGS, SOD, TEMPORARY SEEDINGS AND MULCHING (SEC. G). 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.

TOTAL AREA OF SITE (PARCELS A1 & C3)	:	20.30 ± ACRES
AREA DISTURBED	:	0.17 ± ACRES
AREA TO BE ROOFED OR PAVED	:	0.0 ± ACRES
AREA TO BE VEGETATIVELY STABILIZED	:	0.17 ± ACRES
TOTAL CUT	:	1,600 ± CU. YDS.
TOTAL FILL	:	1,600 ± CU. YDS.
OFF-SITE WASTE/BORROW AREA LOCATION	:	NONE

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 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. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO 3 PIPE LENGTHS OR THAT WHICH SHALL BE BACKFILLED AND STABILIZED WITHIN 1 WORKING DAY, WHICHEVER IS SHORTER.

PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREA 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 (UNLESS 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 SQUARE FEET) 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 TIME OF SEEDING, APPLY 400 LBS PER ACRE 30-0-0 UREA-FORM 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 OF 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/1000 SQ 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 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

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 (UNLESS PREVIOUSLY LOOSENED).

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 OCTOBER 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, WEED-FREE, 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.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

[signature] 2/11/09
Director — Date

[signature] 2/10/09
Chief, Division of Land Development — Date

[signature] 2/6/09
Chief, Development Engineering Division — Date

DEVELOPER'S/BUILDER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

COPT Riverwood, LLC

By: [signature] 11/24/08
Signature of Developer/Builder Roger A. Waesche, Jr. Executive Vice President — Date

ENGINEER'S CERTIFICATE

"I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

[signature] 1/29/09 [signature]
Engineer's Signature — Date

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 12975, EXPIRATION DATE: MAY 26, 2010.

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

[signature]
Howard Soil Conservation District

2/5/09
Date

GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE – SUITE 250 – BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

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DATE	REVISION	BY	APP'R.
12/1/2008	SHEETS 8 & 9 ADDED FOR POND MAINTENANCE △3	dds	

PREPARED FOR:
OWNER/DEVELOPER
COPT Riverwood, LLC
c/o COPT DEVELOPMENT SERVICES, LLC.
6711 COLUMBIA GATEWAY DRIVE, SUITE 300
COLUMBIA, MD 21046
Phone: 443-285-5649
Attn.: SEAN MOORE

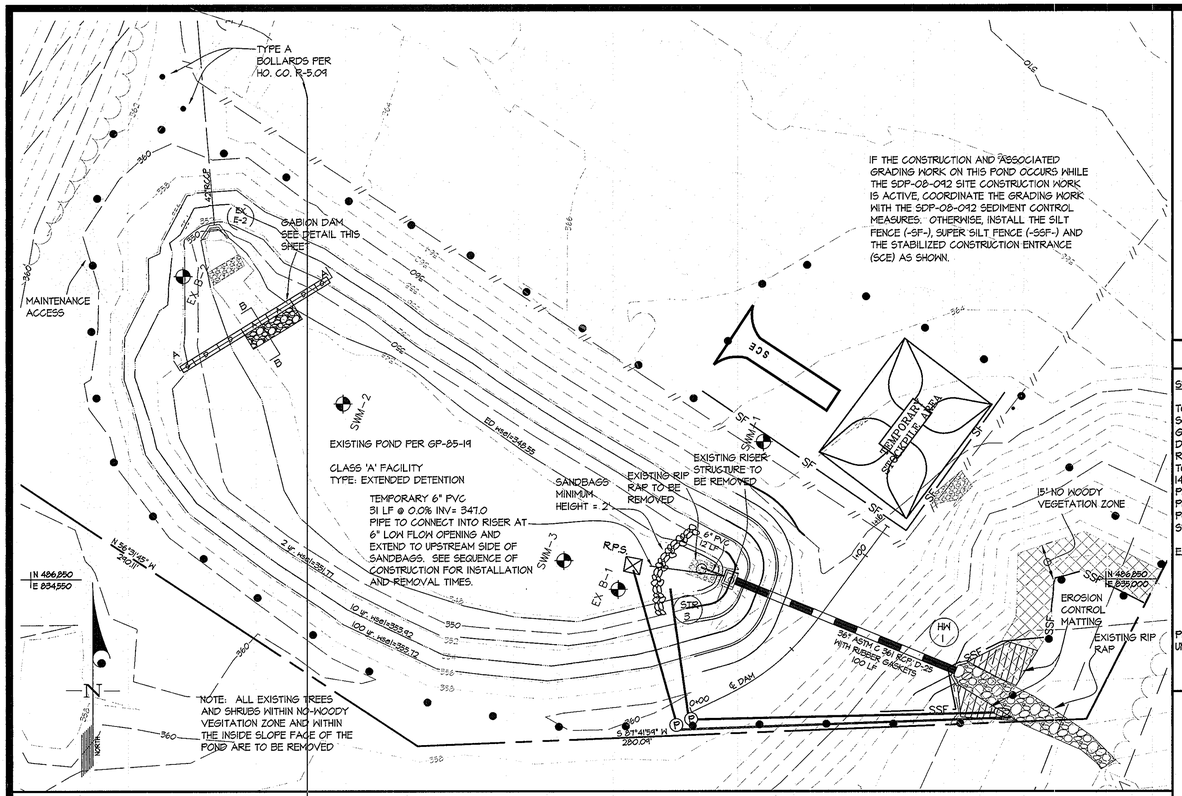
REVISED STORMWATER MANAGEMENT DETAILS

PROPOSED OFFICE FOR RESEARCH & DEVELOPMENT
RIVERS CORPORATE PARK
SECTION 1, AREA 2, PAR. A-1
COLUMBIA

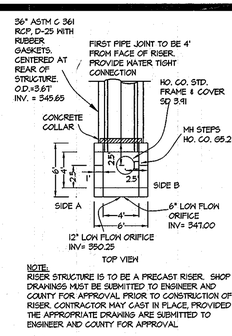
GUILFORD ELECTION DISTRICT No. 6 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT-EC, IND	06003
DATE	TAX MAP - GRID	SHEET
DECEMBER, 2008	41 - 12	9 OF 9 △3

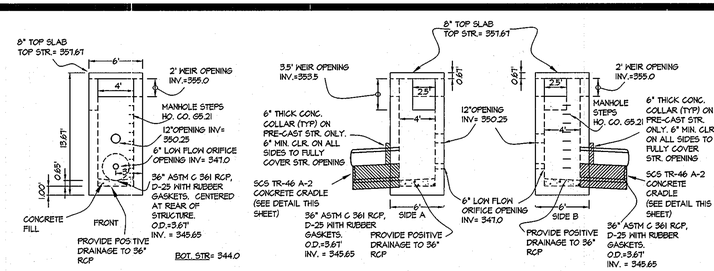
(GP-09-06) SDP-85-89c



EXISTING STORMWATER MANAGEMENT FACILITY ENLARGEMENT SCALE: 1" = 30'

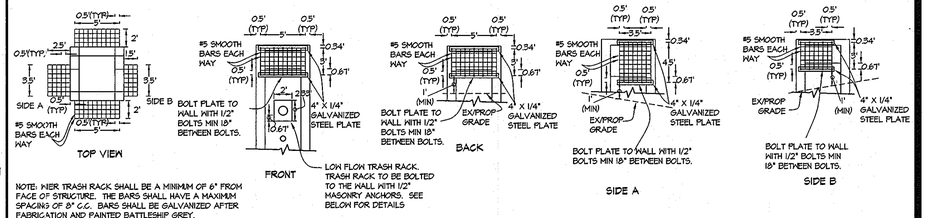


NOTE:
RISER STRUCTURE IS TO BE A PRECAST RISER. SHOP DRAWINGS MUST BE SUBMITTED TO ENGINEER AND COUNTY FOR APPROVAL PRIOR TO CONSTRUCTION OF RISER. CONTRACTOR MAY CAST IN PLACE, PROVIDED THE APPROPRIATE DRAWING ARE SUBMITTED TO ENGINEER AND COUNTY FOR APPROVAL



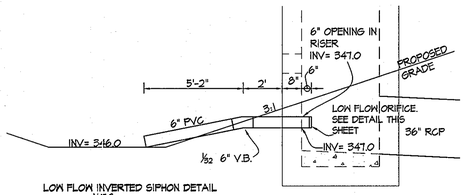
NOTE:
PROVIDE WATERTIGHT CONNECTIONS AT ALL ORIFICE OPENINGS, USE NON-SHRINKING GROUT WHERE NECESSARY.

RISER STRUCTURE 3 DETAILS SCALE: 1/8" = 1'



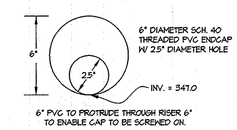
NOTE: WEIR TRASH RACK SHALL BE A MINIMUM OF 6" FROM FACE OF STRUCTURE. THE BARS SHALL HAVE A MAXIMUM SPACING OF 3" C.C. BARS SHALL BE GALVANIZED AFTER FABRICATION AND PAINTED BATTLESHIP GREY. WEIR TRASH RACK SHALL BE REMOVABLE

RISER STRUCTURE 3 TRASH RACK DETAILS SCALE: 1/8" = 1'



LOW FLOW INVERTED SIPHON DETAIL N.T.S.

.SEE THIS SHEET FOR RISER DETAILS

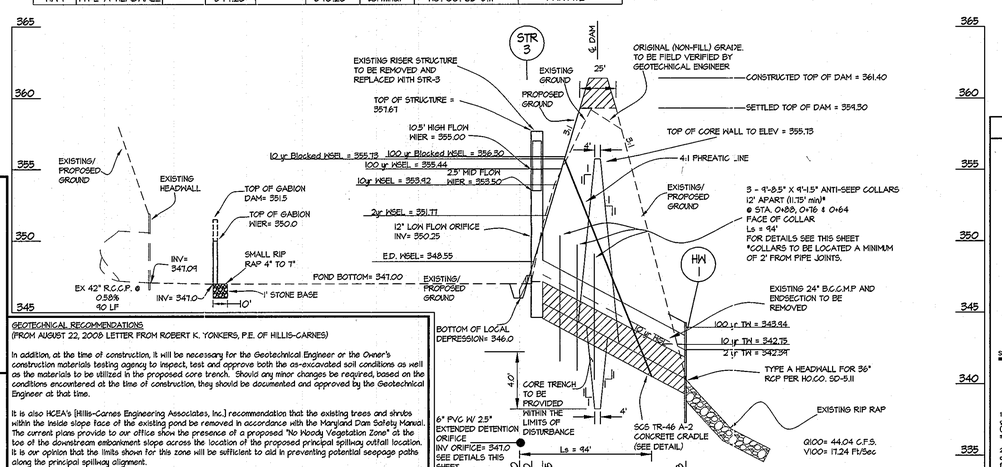


6" PVC TO PROTRUDE THROUGH RISER 6" TO ENABLE CAP TO BE SCREWED ON.

ED ORIFICE DETAIL SCALE: N.T.S.

STRUCTURE SCHEDULE

NO.	TYPE	WIDTH (INSIDE)	TOP ELEVATION UPPER	TOP ELEVATION LOWER	INVERT ELEVATION UPPER	INVERT ELEVATION LOWER	STANDARD DETAIL	OWNERSHIP & MAINTENANCE
HW-1	TYPE 'A' HEADWALL	--	344.28		340.28	terminal	HO. CO. SD-5.11	PRIVATE



PROFILE THROUGH PRINCIPLE SPILLWAY

SCALE: H=50' (H) I= 5' (V)

GEOTECHNICAL RECOMMENDATIONS
(FROM AUGUST 22, 2008 LETTER FROM ROBERT K. YONKERS, P.E. OF HILLIS-CARNES)

In addition, at the time of construction, it will be necessary for the Geotechnical Engineer or the Owner's construction materials testing agency to inspect, test and approve both the as-excavated soil conditions as well as the materials to be utilized in the proposed core trench. Should any minor changes be required, based on the conditions encountered at the time of construction, they should be documented and approved by the Geotechnical Engineer at that time.

It is also HCEA's (Hillis-Carnes Engineering Associates, Inc.) recommendation that the existing trees and shrubs within the inside slope face of the existing pond be removed in accordance with the Maryland Dam Safety Manual. The current plans provide to our office show the presence of a proposed "No Woody Vegetation Zone" at the toe of the downstream embankment slope across the location of the proposed principal spillway outfall location. It is our opinion that the limits shown for this zone will be sufficient to aid in preventing potential seepage paths along the principal spillway alignment.

With the knowledge that the existing facility is predominantly an excavated pond into natural soils and the down stream grades are natural contours on the neighboring open space lot as opposed to a man-made constructed embankment, coupled with the fact that the existing site grades remain relatively flat across the top of the pond at elevations on the order of El 358 to El 356 for distances upwards of 30+ ft, it is our opinion that the existing vegetation outside the limits of the proposed "No Woody" zone should not jeopardize the integrity of the pond facility. The horizontal distance from the existing contour grade (El 348) on the inside or upstream toe of the embankment to the matching contour on the downstream slope appears to be much greater than would be typical of a man-made constructed embankment with 3:1 (H:V) slopes thereby reducing the potential for seepage through the embankment. This is further supported by the fact that the existing pond did not appear to show any signs of failures or seepage along the downstream slope at the time of our field investigation.

STORM WATER MANAGMENT DATA

TOTAL AREA OF SITE 20.3 AC±
SOIL GROUP 'C'; PREVIOUSLY MASS GRADED
DRAINAGE AREA NOT ROUTED= 5.41 AC
RCN= 80 Tc= 0.1 HOURS
TOTAL DRAINAGE AREA TO POND= 14.39 AC±
PROPOSED RCN = 92
PROPOSED Tc= 0.1 HOURS
POND IS AN EXCAVATED FACILITY, STRUCTURAL CLASS 'A'

EXISTING CONDITION
DA= 19.8 AC
RCN= 74
PEAK RELEASE RATES:
2YR= 22.34 CFS
10YR= 52.75 CFS

PROPOSED PEAK RELEASE FROM UNMANAGED AREA
2YR= 11.33 CFS
10YR= 23.51 CFS
100YR= 31.63 CFS

PROPOSED PEAK RELEASE FROM POND:
2YR= 3.80 CFS
10YR= 9.45 CFS
100YR= 44.04 CFS

PROPOSED PEAK WSEL IN POND:
ED WSEL= 348.55'
2YR= 351.71'
10YR= 353.92'
100YR= 355.72'

PROPOSED COMBINED PEAK FROM POND AND UNMANAGED
2 YR= 12.11 CFS
10 YR= 29.16 CFS
100 YR= 58.51 CFS

Outfall: Precast Riser Structure to 36" RCP
T.O.D. = 354.30

DEVELOPER'S/BUILDER'S CERTIFICATE

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COPT Riverwood, LLC
By: Signature of Developer/Builder — Printed Name & Title — Date 11/24/08

ENGINEER'S CERTIFICATE

"I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

Engineer's Signature — Date 1/29/09

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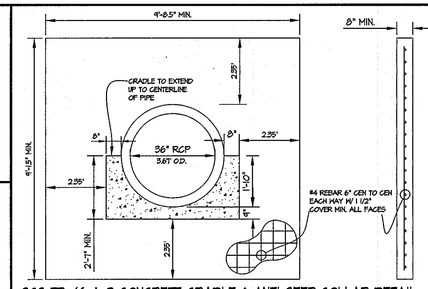
THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Howard Soil Conservation District — Date 2/5/09

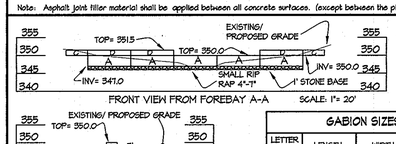
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Director — Date 2/10/09
Chief, Division of Land Development — Date 2/10/09
Chief, Development Engineering Division — Date 2/6/09

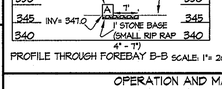


SCS TR-46 A-2 CONCRETE CRADLE & ANTI-SEEP COLLAR DETAIL N.T.S.

Note: Asphalt joint filler material shall be applied between all concrete surfaces. (except between the pipe and cradle)



FRONT VIEW FROM FOREBAY A-A SCALE: 1"= 20'



PROFILE THROUGH FOREBAY B-B SCALE: 1"= 20'

GABION SIZES

LETTER CODE	LENGTH	WIDTH	HEIGHT
A	12'	3'	3'
C	6'	3'	1'-6"
D	12'	3'	1'-6"

OPERATION AND MAINTENANCE SCHEDULE
STORMWATER MANAGEMENT FACILITY

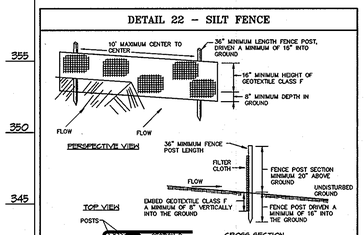
ROUTINE MAINTENANCE (BY OWNER) POND

1. THE FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHOULD BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE POND IS FUNCTIONING PROPERLY.
2. TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES A YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES, THE BOTTOM OF THE POND, AND MAINTENANCE ACCESS SHOULD BE MOWED AS NEEDED.
3. DEBRIS AND LITTER NEXT TO THE OUTLET STRUCTURE SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
4. VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS RIPRAP OUTLET AREA SHALL BE REPAIRED AS SOON AS IT IS NOTICED.

NON-ROUTINE MAINTENANCE (BY OWNER)

1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER, AND THE PIPES SHALL BE REPAIRED UPON DETECTION OF ANY DAMAGE. THE COMPONENTS SHOULD BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
2. SEDIMENT SHOULD BE REMOVED WHEN ITS ACCUMULATION SIGNIFICANTLY REDUCES THE DESIGN STORAGE, INTERFERES WITH THE FUNCTION OF THE RISER, WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, OR WHEN DEEMED NECESSARY.

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 1 1/2" x 1 1/2" square (minimum) cut, or 1 3/4" 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 pound 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 ft / 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.

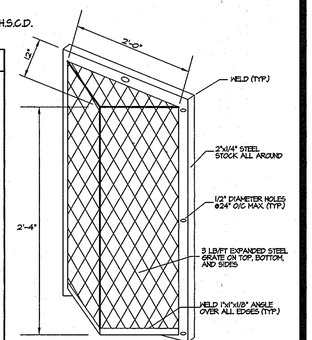
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE E - 15 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

SEQUENCE OF CONSTRUCTION FOR 2008 REVISIONS

1. SCHEDULE A PRE-CONSTRUCTION MEETING WITH SEDIMENT CONTROL INSPECTOR (SCI) AND OBTAIN GRADING PERMIT (1 DAY).
2. INSTALL SANDBAGS, REMOVABLE PUMPING STATION, AND SILT FENCE. (2-3 DAYS)
3. WITH ALL MATERIALS ON SITE, AND A 5-DAY CLEAR (NO PRECIPITATION) WEATHER FORECAST FROM THE NWS, OBTAIN PERMISSION FROM SCI TO REMOVE THE EXISTING RISER, OUTFALL PIPE AND END SECTION (2 DAYS). POND MUST BE DRY PRIOR TO START OF WORK.
4. INSTALL NEW RISER STRUCTURE, OUTFALL PIPE, AND LOW FLOW PIPE THROUGH SANDBAGS. (3 DAYS)
5. INSTALL ANTI-SEEP COLLARS, CONCRETE CRADLE AND END WALL. (10 DAYS)
6. UPON RECEIVING PERMISSION FROM THE SCI, RECONSTRUCT EMBANKMENT PER GEOTECHNICAL ENGINEER'S RECOMMENDATIONS (5 DAYS).
7. STABILIZE EMBANKMENT ONCE CONSTRUCTION IS FINISHED AND REMOVE SANDBAGS AND 6" TEMPORARY PIPE. (1 DAY)
8. OBTAIN AS-BUILT APPROVAL FROM H.S.C.D.

SEDIMENT CONTROL LEGEND	
- - - 600 - - -	EXISTING CONTOUR
600	PROPOSED CONTOUR
• • • • •	LIMIT OF DISTURBANCE
——SSF——	PROPOSED SUPER SILT FENCE

PUMP-AROUND LEGEND: SANDBAGS; P PUMP; HOSE; DEWATERING DEVICE



NOTES FOR TRASH RACK

1. TRASH RACK TO BE CENTERED OVER OPENINGS.
2. STEEL TO CONFORM TO ASTM A-36.
3. ALL SURFACES TO BE COATED WITH ZRC GOLD GALVANIZING COMPOUND AFTER WELDING.
4. TRASH RACK TO BE FASTENED TO THE WALL WITH 1/2" MASONRY ANCHORS. TRASH RACK TO BE REMOVABLE.
5. BOTTOM OF TRASH RACK TO BE LEFT OPEN (HOODED) AND SET 8" BELOW INVERT OF 12" OPENING

DETAIL FOR LOW FLOW TRASH RACK PROTECTION FOR STRUCTURES STR-3
NTS

GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, PLANNERS, LANDSCAPE ARCHITECTS
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