Stormwater Division

MEMORANDUM

DATE: March 12, 2010

TO: Michael J. Gillis, Virginia Correctional Enterprises Document Management Services

FROM: Jo Anna Ripley, Stormwater

PO: 270712

RE: Files Approved for Scanning

General File ID or BMP ID: WC084

PIN: 1330800072

Subdivision, Tract, Business or Owner Name (if known): Wellington

Property Description: Lot 72 Section 3

Site Address: 8408 Attelborough Way

(For internal use only) **Box** 22 **Drawer:** 9

Agreements: (in file as of scan date) **Y** **Book or Doc#:** 030000229 **Page:** 000005625

Comments

Date Record Created:

Created By:

WS_BMPNO: WC084

Print Form

PRINTED ON:
Friday, March 12, 2010
3:50:53 PM

WATERSHED	WC
BMP ID NO	084
PLAN NO	S-37-01
TAX PARCEL	
PIN NO	
CONSTRUCTION DATE	
PROJECT NAME	Wellington Sec 3
FACILITY LOCATION	
CITY-STATE	
CURRENT OWNER	
OWNER ADDRESS	
OWNER ADDRESS 2	
CITY-STATE-ZIP CODE	
OWNER PHONE	
MAINT AGREEMENT	Yes
EMERG ACTION PLAN	No

Get Last BMP No

Return to Menu

MAINTENANCE PLAN	Yes
SITE AREA acre	20.22
LAND USE	
old BMP TYP	
JCC BMP CODE	
POINT VALUE	
SVC DRAIN AREA acres	
SERVICE AREA DESCRI	
IMPERV AREA acres	0.00
RECV STREAM	
EXT DET-WQ-CTRL	No
WTR QUAL VOL acre-ft	
CHAN PROT CTRL	No
CHAN PROT VOL acre-ft	
SW/FLOOD CONTROL	No
GEOTECH REPORT	No

CTRL STRUC DESC	RCP Riser
CTRL STRUC SIZE inches	48
OTLT BARRL DESC	RCP Barrel
OTLT BARRL SIZE inch	18
EMERG SPILLWAY	Yes
DESIGN HW ELEV	42.96
PERM POOL ELEV	na
2-YR OUTFLOW cfs	0.00
10-YR OUTFLOW cfs	0.00
REC DRAWING	No
CONSTR CERTIF	No

LAST INSP DATE

Inspected by:

INTERNAL RATING

MISC/COMMENTS

Dry Pond BMP # 3, Sec 3. Prelim info logged.

Additional Comments:

COPY

COUNTY OF JAMES CITY, VIRGINIA

DECLARATION OF COVENANTS

INSPECTION/MAINTENANCE OF DRAINAGE SYSTEM

THIS DECLARATION, made this 24th day of December, 2002, between Wellington LLC, and all successors in interest, ("COVENANTOR(S),") owner(s) of the following property: Wellington Section Three aka; 4106 Rose Lane (adjacent to Mirror Lakes) project name, Wellington Section Three, Document No. _____, Deed Book _____, Page No. _____; Instrument No. 000005625, and the County of James City, Virginia ("COUNTY.")

WITNESSETH:

We, the COVENANTOR(S), with full authority to execute deeds, mortgages, other covenants, and all rights, titles and interests in the property described above, do hereby covenant with the COUNTY as follows:

1. The COVENANTOR(S) shall provide maintenance for the drainage system including any runoff control facilities, conveyance systems and associated easements, hereinafter referred to as the "SYSTEM," located on and serving the above-described property to ensure that the SYSTEM is and remains in proper working condition in accordance with approved design standards, and with the law and applicable executive regulations. The SYSTEM shall not include any elements located within any Virginia Department of Transportation rights-of-way.

2. If necessary, the COVENANTOR(S) shall levy regular or special assessments against all present or subsequent owners of property served by the SYSTEM to ensure that the SYSTEM is properly maintained.

3. The COVENANTOR(S) shall provide and maintain perpetual access from public right-of-ways to the SYSTEM for the COUNTY, its agent and its contractor.

4. The COVENANTOR(S) shall grant the COUNTY, its agent and its contractor a right of entry to the SYSTEM for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the SYSTEM.

5. If, after reasonable notice by the COUNTY, the COVENANTOR(S) shall fail to maintain the SYSTEM in accordance with the approved design standards and with the law and applicable executive regulations, the COUNTY may perform all necessary repair or maintenance work, and the COUNTY may assess the COVENANTOR(S) and/or all property served by the SYSTEM for the cost of the work and any applicable penalties.

Instrument # 030000229
Recorded on Jan. 6, 2003

6. The COVENANTOR(S) shall indemnify and save the COUNTY harmless from any and all claims for damages to persons or property arising from the installation, construction, maintenance, repair, operation or use of the SYSTEM.

7. The COVENANTOR(s) shall promptly notify the COUNTY when the COVENANTOR(S) legally transfers any of the COVENANTOR(S)' responsibilities for the SYSTEM. The COVENANTOR(S)' shall supply the COUNTY with a copy of any document of transfer, executed by both parties.

8. The covenants contained herein shall run with the land and shall bind the COVENANTOR(S) and the COVENANTOR(S)' heirs, executors, administrators, successors and assignees, and shall bind all present and subsequent owners of property served by the SYSTEM.

9. This COVENANT shall be recorded in the County Land Records.

IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of the date first above written.

COVENANTOR(S)
Wellington LLC By
Charles E. Glisan
Charles E. Glisan

Print Name/Title Vice President

ATTEST:

Kerrie Lusk

COVENANTOR(S)

_____

Print Name/Title _____

ATTEST:

_____

COMMONWEALTH OF VIRGINIA
~~CITY~~/COUNTY OF York

I hereby certify that on this 24 day of December, 2002, before the subscribed, a Notary Public of the State of Virginia, and for the City/County of Gloucester, aforesaid personally appeared Charles E Glisan and did acknowledge the aforegoing instrument to be their Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 24 day of December, 2002.

Kellie L Kranulec
Notary Public

My Commission expires: 5-31-04

Approved as to form:

Asst. County Attorney

This Declaration of Covenants prepared by:

Charles E. Glisan
(Print Name)

Vice President
(Title)

632 Hampton Hwy.
(Address)

Yorktown, Va. 23693
(City) (State) (Zip)

drainage.pre

AES CONSULTING ENGINEERS
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax: (757) 220-8994
E-Mail: aes@aesva.com

PROJECT Wellington Sections II & III
PROJECT NO. 8223-6
SUBJECT Drainage
SHEET NO. 1 OF 1
CALCULATED BY MWA DATE 1/5/03

Basin #3 WC084

D.A. = 8.00 Ac

R/W = 0.86 Ac Remainder lots/open = 7.14 Ac

Use 40% IMP for lots/open = 2.86 Ac

TOTAL IMP = 0.86 Ac + 2.86 Ac = 3.72 Ac

% IMP = $\frac{3.72 \text{ Ac}}{8.00 \text{ Ac}}$ (100) = 46.5%

K_v = (0.007)(46.5) + 0.05 = 0.47

WQ_v = 1" $\left(\frac{1'}{12''}\right)$ (8.00 Ac) $\left(\frac{43560 \text{ SF}}{1 \text{ Ac}}\right)$ (0.47) = 13,649 CF

Detain for 24 hours At elev. = 39.45

$\frac{13,649 \text{ CF}}{86,400 \text{ sec}}$ = 0.16 CFS h = $\frac{39.45 - 36.00}{2}$ = 1.73 FT

Size orifice $Q = CA\sqrt{2gh}$

$0.16 = (0.6)A\sqrt{2(32.2)(1.73)}$

0.16 = 6.33A A = 0.025

0.025 FT² = A = 0.09 FT = 1.08 IN DIA = 2.15 IN

MIN Allowed = 3 IN DIA orifice

Channel Protection

Channel Protection Volume

Post Development Watershed Data

Area = 8.00 Acres 0.0125sq.mi.
Runoff Curve No. = 80
Time of Concentration = 0.245 hr.
Return Period = 1 Yr.

Runoff Depth = 2.8 in.

Initial Abstraction (From TR55 Equation 2-2)

Ia = (200/CN)-2

Ia = 0.500

Unit Peak Discharge (From TR55 Equation for Exhibit 4)

log(Qu) = C0+C1 log(Tc)+C2(log(Tc))²

Qu = 737.60 csm/in

Ratio of Peak Outflow Discharge to Peak Inflow Discarge

(From Maryland Stormwater Design Manual Figure D.11.2)

Qo/Qi = 0.024

Ratio of Volume of Storage to Volume of Runoff (From TR55 Figure 6.1)

Vs/Vr = C0+C1(Qo/Qi)+C2(Qo/Qi)²+C3(Qo/Qi)³

Vs/Vr = 0.649

Vs = 0.477 Ac-Ft
Vs = 20763 cu.ft.

Table F-2

Coefficients for the equations used to generate figure 6-1

Rainfall Dist.	C0	C1	C2	C3
I, IA	0.66	-1.76	1.96	-0.73
II, III	0.682	-1.43	1.64	-0.804

Average Release Rate

Qi = 10.16 cfs
Qo/Qi = 0.02
Qo = 0.24 cfs

Reservoir Report

Reservoir No. 1 - PH3 DRY POND

Hydraflow Hydrographs by Intelisolve

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	36.00	835	0	0
2.00	38.00	4,110	4,945	4,945
4.00	40.00	8,140	12,250	17,195
6.00	42.00	11,855	19,995	37,190
8.00	44.00	15,865	27,720	64,910
10.00	46.00	20,890	36,755	101,665

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise in	= 18.0	3.0	0.0	0.0
Span in	= 18.0	3.0	0.0	0.0
No. Barrels	= 1	1	0	0
Invert El. ft	= 36.00	36.00	0.00	0.00
Length ft	= 80.0	10.0	0.0	0.0
Slope %	= 2.50	5.00	0.00	0.00
N-Value	= .013	.013	.000	.000
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len ft	= 12.60	4.00	0.00	0.00
Crest El. ft	= 40.80	42.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	0.00	0.00
Weir Type	= Riser	Rect	---	---
Multi-Stage	= Yes	No	No	No

Exfiltration Rate = 0.00 in/hr/sqft Tailwater Elev. = 0.00 ft

Note: All outflows have been analyzed under inlet and outlet control.

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.00	0	36.00	0.00	0.00	---	---	0.00	0.00	---	---	---	0.00
2.00	4,945	38.00	0.35	0.31	---	---	0.00	0.00	---	---	---	0.31
4.00	17,195	40.00	0.48	0.46	---	---	0.00	0.00	---	---	---	0.46
6.00	37,190	42.00	19.39	0.05	---	---	19.33	0.00	---	---	---	19.39
8.00	64,910	44.00	22.90	0.02	---	---	22.76	37.67	---	---	---	60.45
10.00	101,665	46.00	25.87	0.01	---	---	25.36	106.56	---	---	---	131.93

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	5.72	5	725	22,766	----	------	------	EXISTING CONDITIONS
2	SCS Runoff	10.89	5	720	30,004	----	------	------	PROPOSED CONDITIONS
3	Reservoir	0.45	5	895	30,004	2	39.93	16,793	PH3 DRY POND ROUTED

Proj. file: 8223-06-PH3.GPW	Return Period: 1 yr	Run date: 01-11-2003

Hydrograph Plot

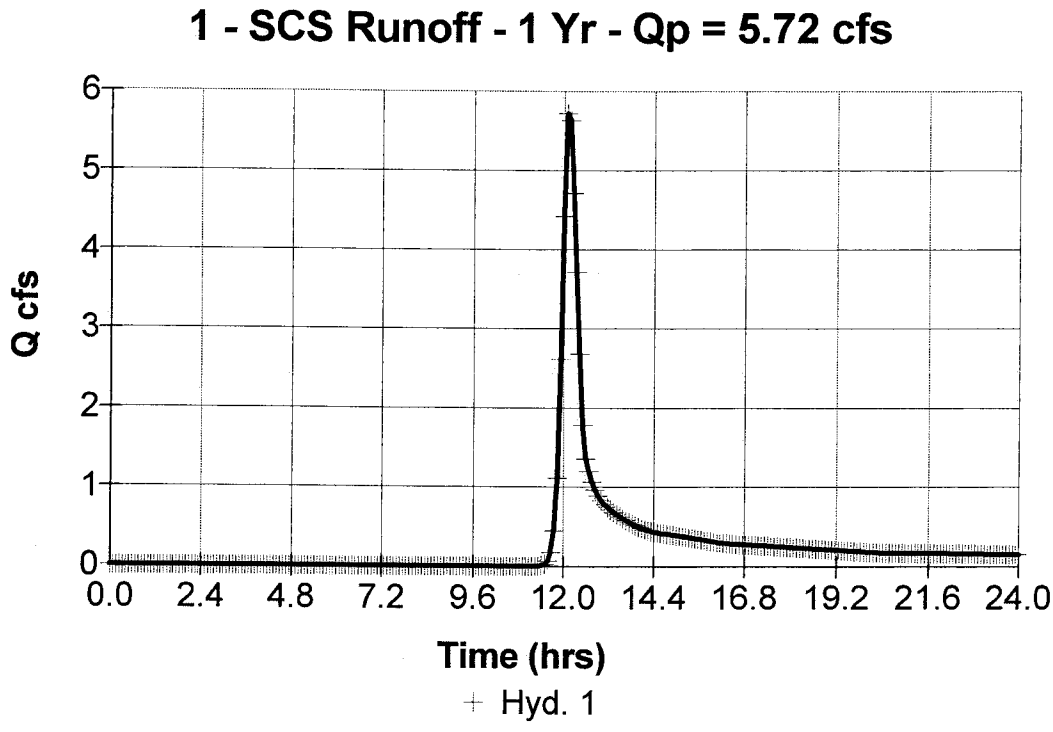
Hydraflow Hydrographs by Intelisolve

Hyd. No. 1

EXISTING CONDITIONS

Hydrograph type	= SCS Runoff	Peak discharge	= 5.72 cfs
Storm frequency	= 1 yrs	Time interval	= 5 min
Drainage area	= 8.00 ac	Curve number	= 74
Basin Slope	= 5.4 %	Hydraulic length	= 1100 ft
Tc method	= LAG	Time of conc. (Tc)	= 17.6 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 22,766 cuft



Hydrograph Plot

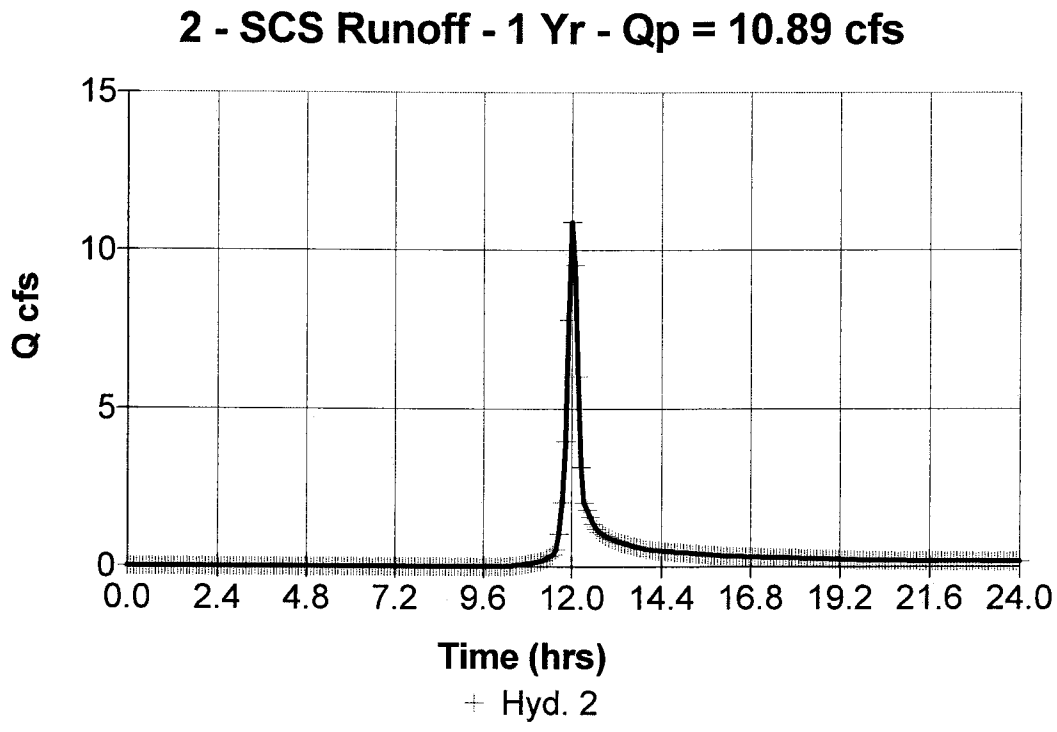
Hydraflow Hydrographs by Intelisolve

Hyd. No. 2

PROPOSED CONDITIONS

Hydrograph type	= SCS Runoff	Peak discharge	= 10.89 cfs
Storm frequency	= 1 yrs	Time interval	= 5 min
Drainage area	= 8.00 ac	Curve number	= 80
Basin Slope	= 5.4 %	Hydraulic length	= 1100 ft
Tc method	= LAG	Time of conc. (Tc)	= 14.7 min
Total precip.	= 2.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 30,004 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

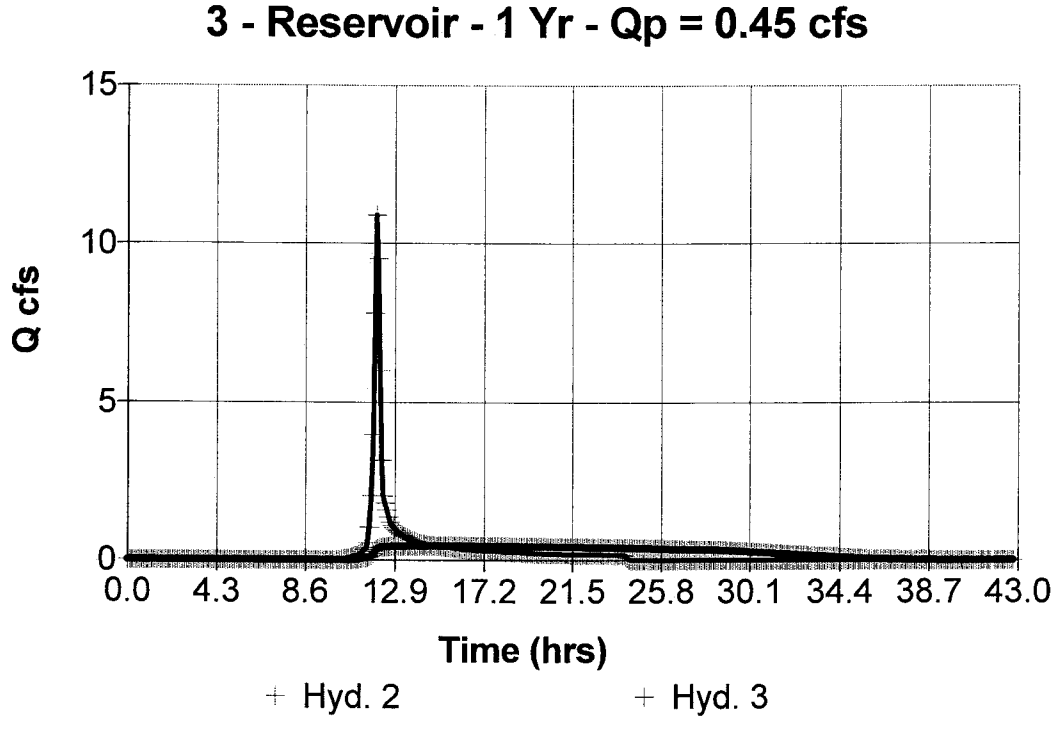
Hyd. No. 3

PH3 DRY POND ROUTED

Hydrograph type	= Reservoir	Peak discharge	= 0.45 cfs
Storm frequency	= 1 yrs	Time interval	= 5 min
Inflow hyd. No.	= 2	Reservoir name	= PH3 DRY POND
Max. Elevation	= 39.93 ft	Max. Storage	= 16,793 cuft

Storage Indication method used.

Hydrograph Volume = 30,004 cuft



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	9.65	5	725	36,007	----	------	------	EXISTING CONDITIONS
2	SCS Runoff	16.43	5	720	44,550	----	------	------	PROPOSED CONDITIONS
3	Reservoir	1.00	5	810	44,550	2	40.83	25,462	PH3 DRY POND ROUTED

Proj. file: 8223-06-PH3.GPW	Return Period: 2 yr	Run date: 01-11-2003

Hydrograph Plot

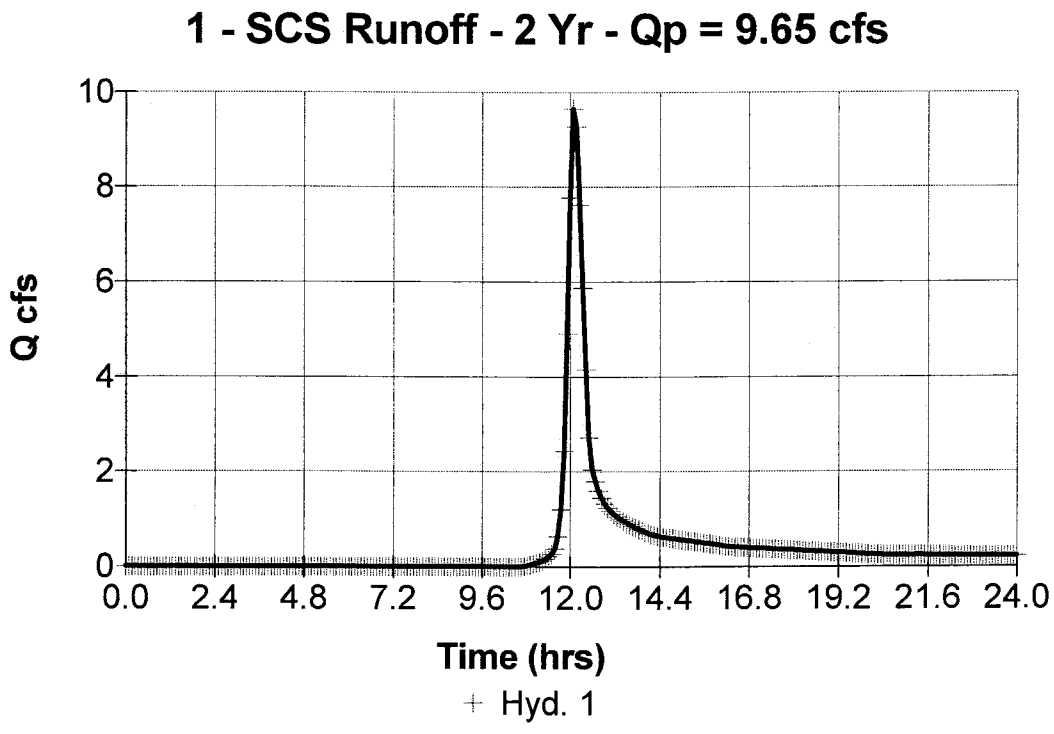
Hydraflow Hydrographs by Intelisolve

Hyd. No. 1

EXISTING CONDITIONS

Hydrograph type	= SCS Runoff	Peak discharge	= 9.65 cfs
Storm frequency	= 2 yrs	Time interval	= 5 min
Drainage area	= 8.00 ac	Curve number	= 74
Basin Slope	= 5.4 %	Hydraulic length	= 1100 ft
Tc method	= LAG	Time of conc. (Tc)	= 17.6 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 36,007 cuft



Hydrograph Plot

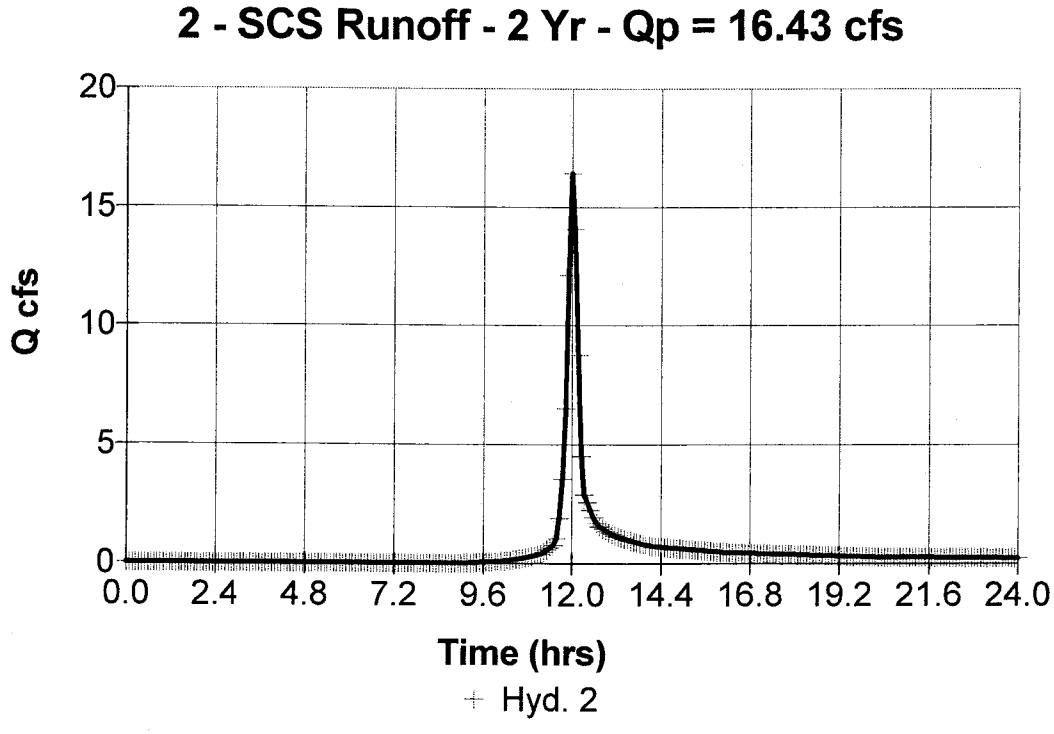
Hydraflow Hydrographs by Intelisolve

Hyd. No. 2

PROPOSED CONDITIONS

Hydrograph type	= SCS Runoff	Peak discharge	= 16.43 cfs
Storm frequency	= 2 yrs	Time interval	= 5 min
Drainage area	= 8.00 ac	Curve number	= 80
Basin Slope	= 5.4 %	Hydraulic length	= 1100 ft
Tc method	= LAG	Time of conc. (Tc)	= 14.7 min
Total precip.	= 3.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 44,550 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

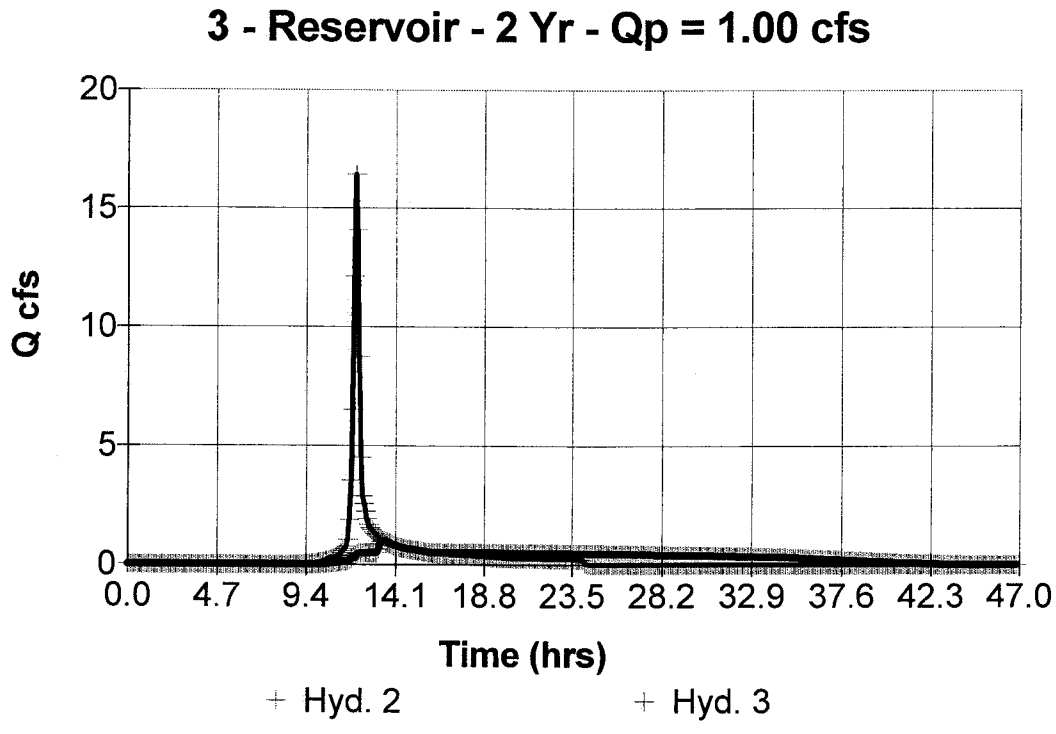
Hyd. No. 3

PH3 DRY POND ROUTED

Hydrograph type	= Reservoir	Peak discharge	= 1.00 cfs
Storm frequency	= 2 yrs	Time interval	= 5 min
Inflow hyd. No.	= 2	Reservoir name	= PH3 DRY POND
Max. Elevation	= 40.83 ft	Max. Storage	= 25,462 cuft

Storage Indication method used.

Hydrograph Volume = 44,550 cuft



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	24.75	5	725	87,626	----	------	------	EXISTING CONDITIONS
2	SCS Runoff	36.17	5	720	98,045	----	------	------	PROPOSED CONDITIONS
3	Reservoir	19.12	5	730	98,045	2	41.88	35,966	PH3 DRY POND ROUTED

Proj. file: 8223-06-PH3.GPW | Return Period: 10 yr | Run date: 01-11-2003

Hydrograph Plot

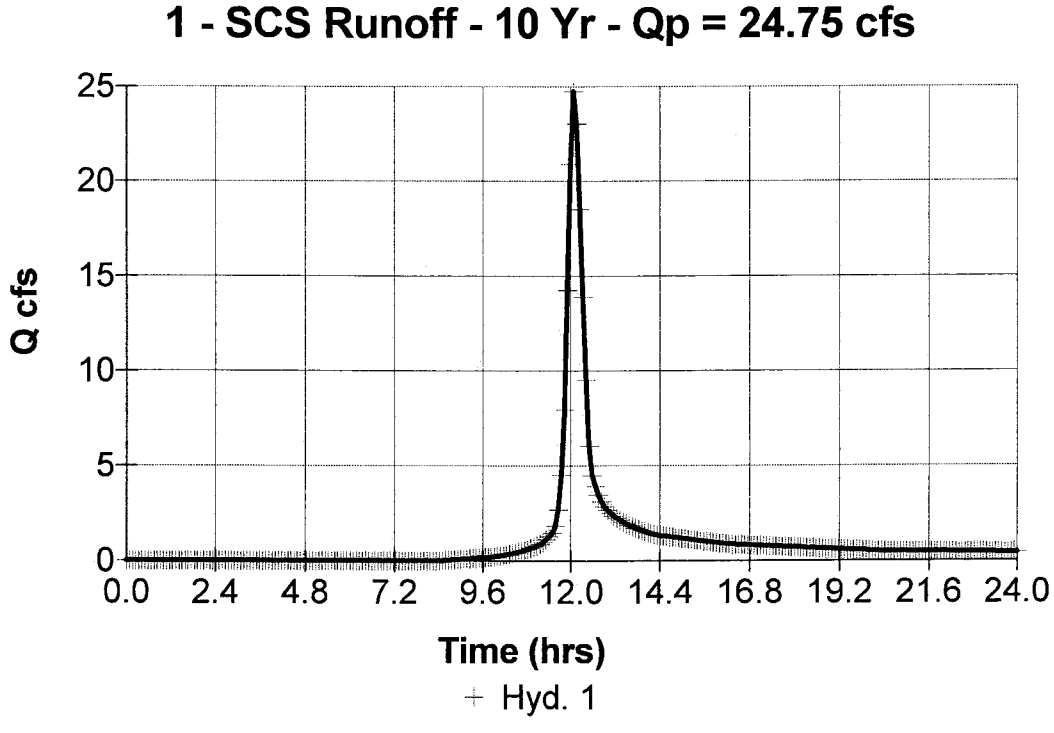
Hydraflow Hydrographs by Intelisolve

Hyd. No. 1

EXISTING CONDITIONS

Hydrograph type	= SCS Runoff	Peak discharge	= 24.75 cfs
Storm frequency	= 10 yrs	Time interval	= 5 min
Drainage area	= 8.00 ac	Curve number	= 74
Basin Slope	= 5.4 %	Hydraulic length	= 1100 ft
Tc method	= LAG	Time of conc. (Tc)	= 17.6 min
Total precip.	= 5.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 87,626 cuft



Hydrograph Plot

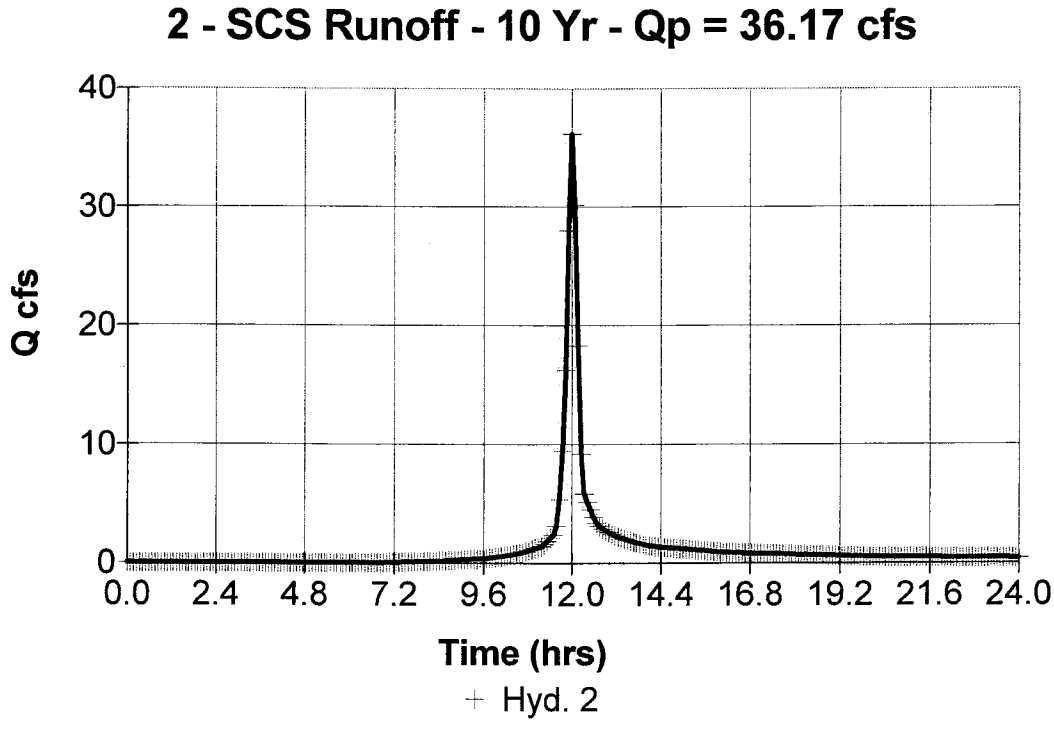
Hydraflow Hydrographs by Intelisolve

Hyd. No. 2

PROPOSED CONDITIONS

Hydrograph type	= SCS Runoff	Peak discharge	= 36.17 cfs
Storm frequency	= 10 yrs	Time interval	= 5 min
Drainage area	= 8.00 ac	Curve number	= 80
Basin Slope	= 5.4 %	Hydraulic length	= 1100 ft
Tc method	= LAG	Time of conc. (Tc)	= 14.7 min
Total precip.	= 5.80 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 98,045 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

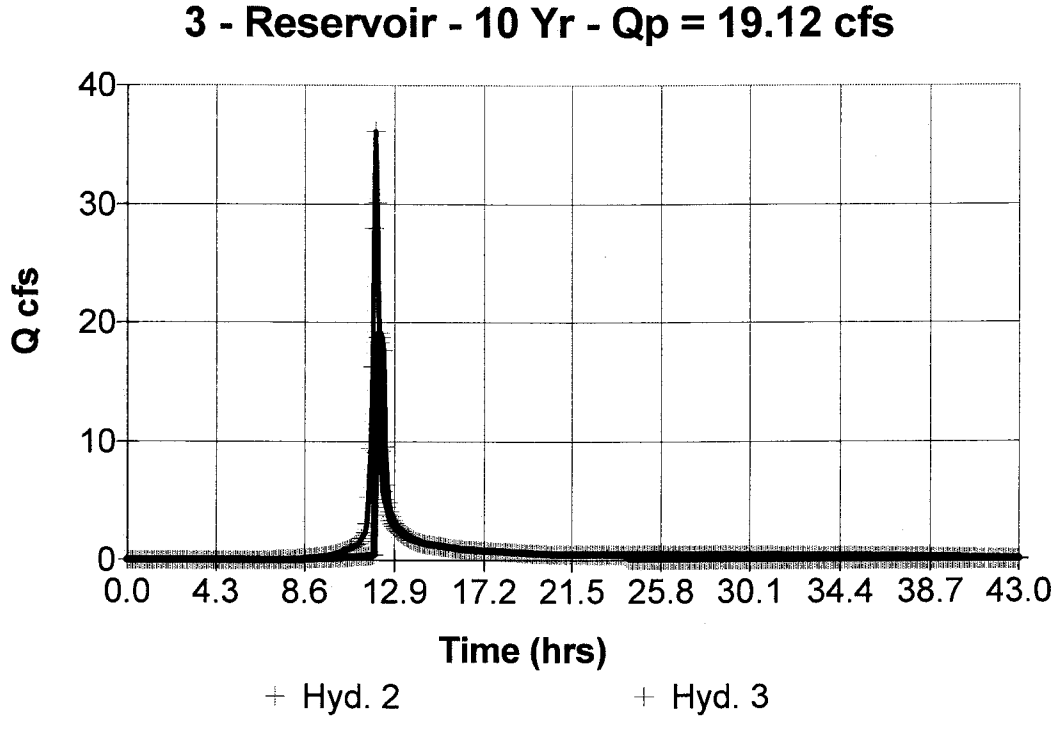
Hyd. No. 3

PH3 DRY POND ROUTED

Hydrograph type	= Reservoir	Peak discharge	= 19.12 cfs
Storm frequency	= 10 yrs	Time interval	= 5 min
Inflow hyd. No.	= 2	Reservoir name	= PH3 DRY POND
Max. Elevation	= 41.88 ft	Max. Storage	= 35,966 cuft

Storage Indication method used.

Hydrograph Volume = 98,045 cuft



Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	SCS Runoff	40.55	5	725	143,042	----	------	------	EXISTING CONDITIONS
2	SCS Runoff	55.72	5	720	153,141	----	------	------	PROPOSED CONDITIONS
3	Reservoir	33.62	5	730	153,141	2	42.96	50,442	PH3 DRY POND ROUTED

Proj. file: 8223-06-PH3.GPW	Return Period: 100 yr	Run date: 01-11-2003

Hydrograph Plot

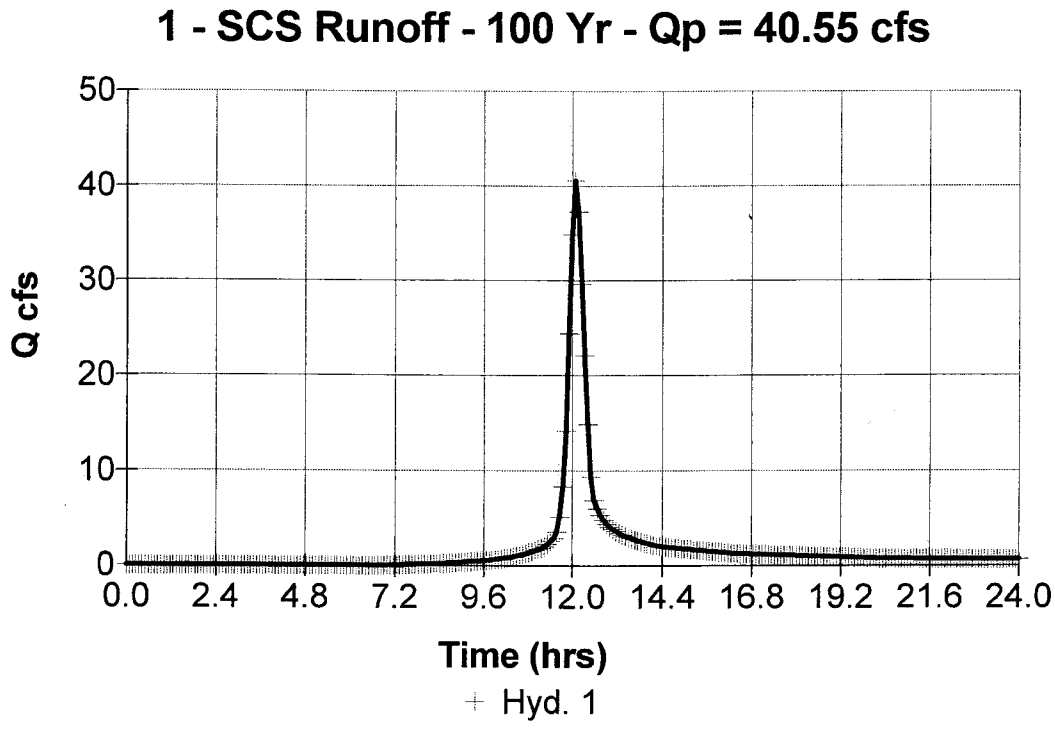
Hydraflow Hydrographs by Intelisolve

Hyd. No. 1

EXISTING CONDITIONS

Hydrograph type	= SCS Runoff	Peak discharge	= 40.55 cfs
Storm frequency	= 100 yrs	Time interval	= 5 min
Drainage area	= 8.00 ac	Curve number	= 74
Basin Slope	= 5.4 %	Hydraulic length	= 1100 ft
Tc method	= LAG	Time of conc. (Tc)	= 17.6 min
Total precip.	= 8.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 143,042 cuft



Hydrograph Plot

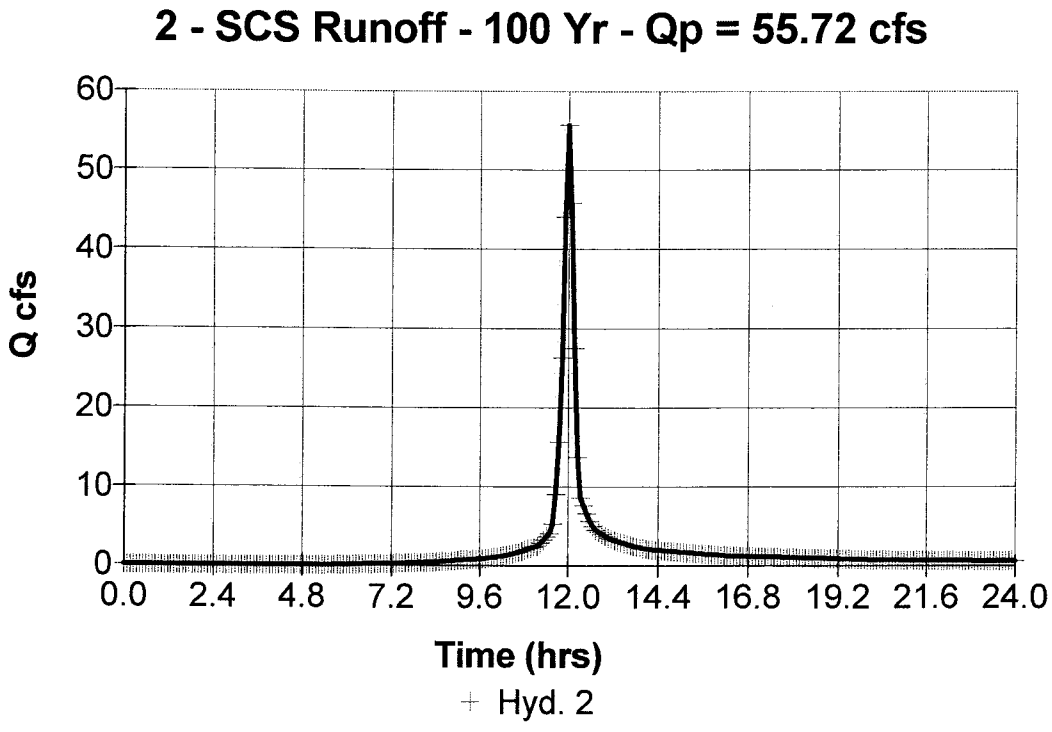
Hydraflow Hydrographs by Intelisolve

Hyd. No. 2

PROPOSED CONDITIONS

Hydrograph type	= SCS Runoff	Peak discharge	= 55.72 cfs
Storm frequency	= 100 yrs	Time interval	= 5 min
Drainage area	= 8.00 ac	Curve number	= 80
Basin Slope	= 5.4 %	Hydraulic length	= 1100 ft
Tc method	= LAG	Time of conc. (Tc)	= 14.7 min
Total precip.	= 8.00 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

Hydrograph Volume = 153,141 cuft



Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

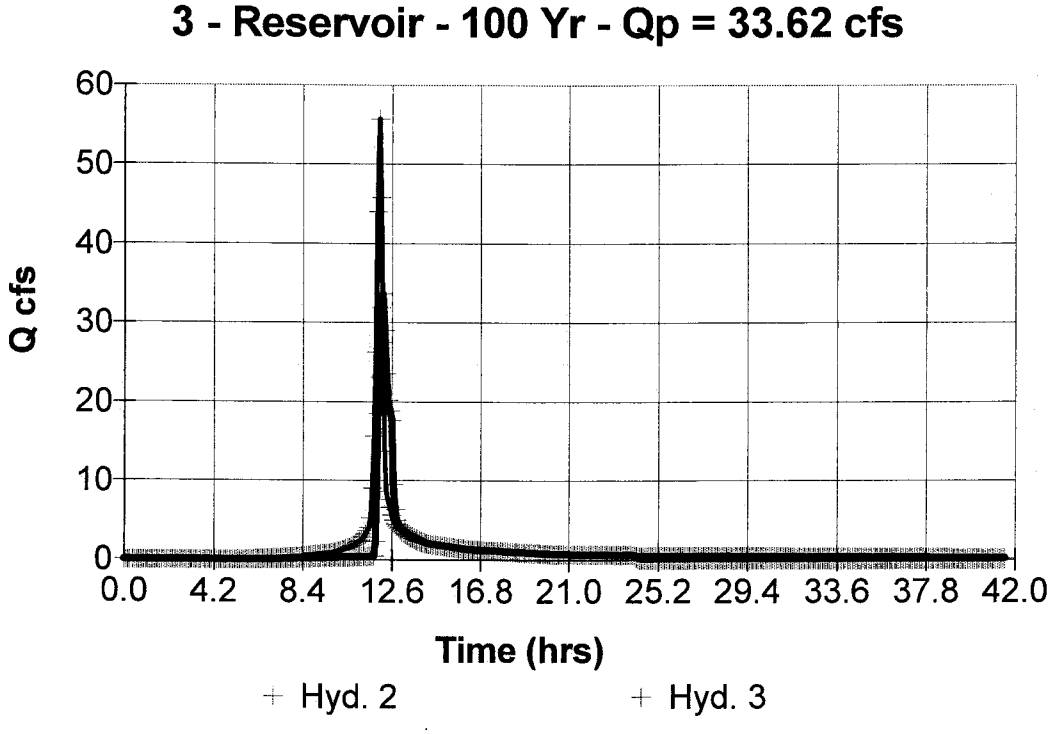
Hyd. No. 3

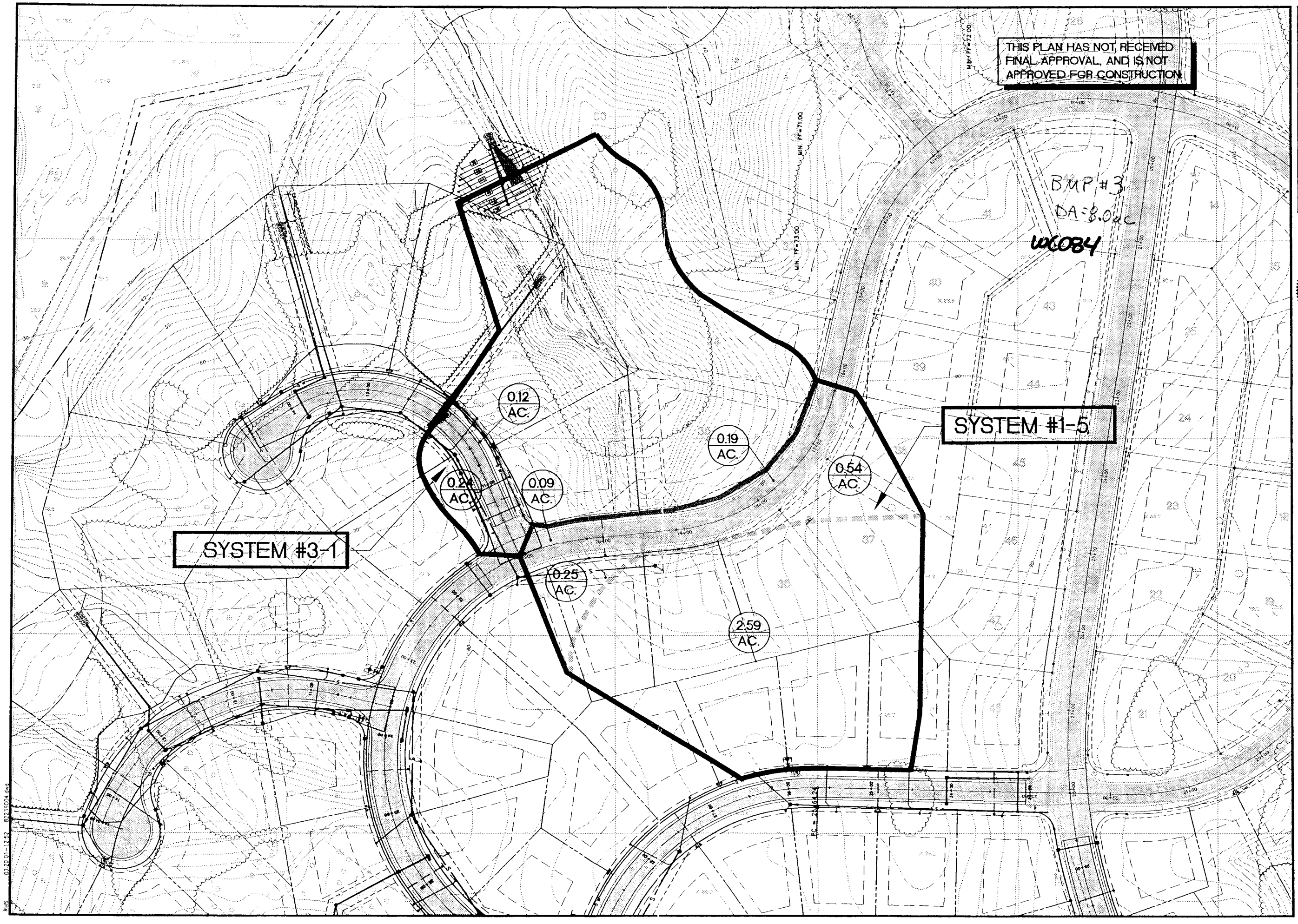
PH3 DRY POND ROUTED

Hydrograph type	= Reservoir	Peak discharge	= 33.62 cfs
Storm frequency	= 100 yrs	Time interval	= 5 min
Inflow hyd. No.	= 2	Reservoir name	= PH3 DRY POND
Max. Elevation	= 42.96 ft	Max. Storage	= 50,442 cuft

Storage Indication method used.

Hydrograph Volume = 153,141 cuft





No.	DATE	REVISION / COMMENT / NOTE	BY

COMMONWEALTH OF VIRGINIA
G. ARCHER MARSTON, III
No. 018232
3/28/01
PROFESSIONAL ENGINEER

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994
CONSULTING ENGINEERS

SECTION 3 DRY POND DRAINAGE AREA MAP
WELLINGTON
SECTION III
OWNER/DEVELOPER: WELLINGTON, L.L.C.

JAMES CITY COUNTY — STONEHOUSE DISTRICT — VIRGINIA

Designed	Drawn
HWP/CWG	RMS/HBK
Scale	Date
1"=50'	3/28/01

Project No.
8223-06

Drawing No.
M

AES CONSULTING ENGINEERS
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax: (757) 220-8994

PROJECT: WELLINGTON SECTION 2
PROJECT NO.: 8223-6-2
SUBJECT: Spread Calcs
SHEET NO.: 1 OF 3
DATE: 3/2/2001
BY: CWG Revised : HWP

STORM WATER INLET COMPUTATIONS

INLET Number	Type	Length	Station	Drainage Area (Ac)	C	CA	Σ CA	i in/hr	Q-Inter (CFS)	Q Carry-Over (CFS)	Qt Gutter Flow	S Gutter Slope (ft/ft)	Sx Cross Slope (ft/ft)	T(Spread)	W (ft)	W/T	Sw (ft/ft)	Sw/Sx	Eo(#10)	n	Local Dep.	a	S'w =a/(12W)	Se (ft/ft) =Sx+SwEo	Lt (ft) 15 P Effec L	L/Lt (ft) d	E(#16) (ft) h	Q Int CFS d/h	Q Carryover Spread	Remark
ROAD A	ASHAN. TON WAY																													
RIGHT STATION																														
SUMP				0.63	0.35	0.221	0.221	4	0.882		0.882	0.001	0.02	9	Flow Approaching From Down Station															
SS 2-1-3	DI-3C	6	R 31+49								2.068	0.001	0.02		2		0.08								9.6	0.196	0.27	0.726	9.8	
				0.61	0.35	0.214	0.214	4	0.854	0.332	1.186	0.001	0.02	10	Flow Approaching From Up Station															
SS 2-1-4	DI-3B	8	R 32+48	1.56	0.4	0.624	0.624	4	2.496	0.229	2.725	0.041	0.02	6.4	2	0.313	0.08	4	0.74	0.015	2	3.44	0.143	0.126	11.6	0.69	0.878	2.394	0.332	
SS 2-2-7	DI-3B	4	R 36+08	0.55	0.4	0.22	0.22	4	0.88		0.88	0.044	0.02	2.8	2	0.714	0.08	4	0.989	0.015	2	3.44	0.143	0.162	7.6	0.526	0.739	0.651	0.229	
ROAD A	ASHAN. TON WAY																													
LEFT STATION																														
SUMP				0.07	0.6	0.042	0.042	4	0.168		0.168	0.001	0.02	3.9	Flow Approaching From Down Station															
SS 2-1-2	DI 3-A	2.5	L 31+49								0.576	0.001	0.02		2		0.08								6.1	0.112	0.27	0.415	5.6	
				0.17	0.6	0.102	0.102	4	0.408	0	0.408	0.001	0.02	6.5	Flow Approaching From Up Station															
ROAD J																														
SUMP				0.14	0.6	0.084	0.084	4	0.336		0.336	0.001	0.02	5.8	Flow Approaching From Left Station															
SS 2-3-2	DI-3A	2.5									0.72	0.001	0.02		2		0.08								6.1	0.128	0.27	0.474	6.4	
				0.16	0.6	0.096	0.096	4	0.384		0.384	0.001	0.02	6.3	Flow Approaching From Right Station															
ROAD K	LEICHESTER SOUTH																													
SS 2-2-9	DI-3A	2.5	R 8+51	0.22	0.5	0.11	0.11	4	0.44		0.44	0.032	0.02	1.8	2	1.111	0.08	4	1	0.015	2	3.44	0.143	0.163	6.1	0.41	0.613	0.27	0.17	
SUMP				0.2	0.5	0.1	0.1	4	0.4	0.17	0.57	0.001	0.02	7.5	Flow Approaching From Down Station															
SS 2-2-8	DI-3C	6	R 9+55								1.17	0.001	0.02		2		0.08								9.6	0.13	0.27	0.481	6.5	
				0.25	0.6	0.15	0.15	4	0.6		0.6	0.001	0.02	7.7	Flow Approaching From Up Station															
HIGHPOINT																														
SS 2-2-11	DI-3B	6	R 11+54	0.83	0.35	0.291	0.291	4	1.162		1.162	0.03	0.02	4.1	2	0.488	0.08	4	0.928	0.015	2	3.44	0.143	0.153	9.6	0.625	0.829	0.963	0.199	
SUMP				0.46	0.35	0.161	0.161	4	0.644	0.199	0.843	0.001	0.02	8.8	Flow Approaching From Right Station															
SS 2-2-12	DI-3A	2.5									1.073	0.001	0.02		2		0.08								6.1	0.16	0.27	0.593	8	
				0.07	0.6	0.042	0.042	4	0.168	0.063	0.231	0.001	0.02	4.6	Flow Approaching From Left Station															
SS 2-2-10	DI-3B	4	L 11+54	0.1	0.6	0.06	0.06	4	0.24		0.24	0.03	0.02	1.1	2	1.818	0.08	4	1	0.015	2	3.44	0.143	0.163	7.6	0.526	0.739	0.177	0.063	

AES CONSULTING ENGINEERS
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax: (757) 220-8994

PROJECT: WELLINGTON SECTION 2
PROJECT NO.: 8223-6-2
SUBJECT: Spread Calcs
SHEET NO.: 2 OF 3
DATE: 3/2/2001
BY: CWG

STORM WATER INLET COMPUTATIONS

INLET Number	Type	Length	Station	Drainage Area (Ac)	C	CA	Σ CA	I in/hr	Q-Inter (CFS)	Q Carry-Over (CFS)	Qt Gutter Flow	S Gutter Slope (ft/ft)	Sx Cross Slope (ft/ft)	T(Spread)	W (ft)	W/T	Sw (ft/ft)	Sw/Sx	Eo(#10)	n	Local Dep.	a	Sw =a/(12W)	Se (ft/ft) =Sx+SwEo	Lt (ft) 15 P Effec L	L/Lt (ft) d	E(#16) (ft) h	Q Int CFS d/h	Q Carryover Spread	Remark
ROAD I	WELLINGTON WAY																													
RIGHT STATION																														
SS 2-2-6	DI-3A	2.5	(A)L 36+08	0.07	0.6	0.042	0.042	4	0.168		0.168	0.044	0.02	#N/A	2	#N/A	0.08	4	#N/A	0.015	2	3.44	0.143	#N/A	6.1	0.41	0.613	0.103	0.065	
SS 2-2-3	DI-3BB	4	R 11+61	0.17	0.6	0.102	0.102	4	0.408	0.065	0.473	0.048	0.02	1.7	2	1.176	0.08	4	1	0.015	2	3.44	0.143	0.163	7.6	0.526	0.739	0.35	0.123	
SUMP				0.32	0.4	0.128	0.128	4	0.512	0.123	0.635	0.001	0.02	7.8	Flow Approaching From Down Station															
SS 2-4-13	DI-3C	6	R 13+54								1.12	0.001	0.02		2		0.08								9.6	0.128	0.27	0.474	6.4	
				0.12	0.35	0.042	0.042	4	0.168	0.317	0.485	0.001	0.02	7.1	Flow Approaching From Up Station															
SS 2-2-14	DI-3B	4	R 14+01	0.76	0.4	0.304	0.304	4	1.216	0	1.216	0.014	0.02	5.6	2	0.357	0.08	4	0.767	0.015	2	3.44	0.143	0.13	7.6	0.526	0.739	0.899	0.317	
HIGHPOINT																														
SS 2-4-5	DI-3B	4	R 19+40	0.43	0.4	0.172	0.172	4	0.688	0	0.688	0.033	0.02	2.5	2	0.8	0.08	4	0.995	0.015	2	3.44	0.143	0.163	7.6	0.526	0.739	0.509	0.179	
SUMP				0.32	0.35	0.112	0.112	4	0.448	0.179	0.627	0.001	0.02	7.8	Flow Approaching From Down Station															
SS 2-4-4	DI-3C	6	R 20+50								1.126	0.001	0.02		2		0.08								9.6	0.128	0.27	0.474	6.4	
				0.25	0.35	0.088	0.088	4	0.35	0.148	0.498	0.001	0.02	7.1	Flow Approaching From Up Station															
SS 2-4-3	DI-3B	4	R 21+36	0.1	0.6	0.06	0.06	4	0.24	0.33	0.57	0.023	0.02	2.7	2	0.741	0.08	4	0.989	0.015	2	3.44	0.143	0.162	7.6	0.526	0.739	0.421	0.148	
SS 2-4-11	DI-3B	4	R 23+18	0.63	0.35	0.221	0.221	4	0.882	0.384	1.266	0.073	0.02	3.1	2	0.645	0.08	4	0.982	0.015	2	3.44	0.143	0.161	7.6	0.526	0.739	0.936	0.33	
SS 2-4-12	DI-3A	2.5	R 24+56	0.62	0.4	0.248	0.248	4	0.992		0.992	0.073	0.02	2.6	2	0.769	0.08	4	0.989	0.015	2	3.44	0.143	0.162	6.1	0.41	0.613	0.608	0.384	

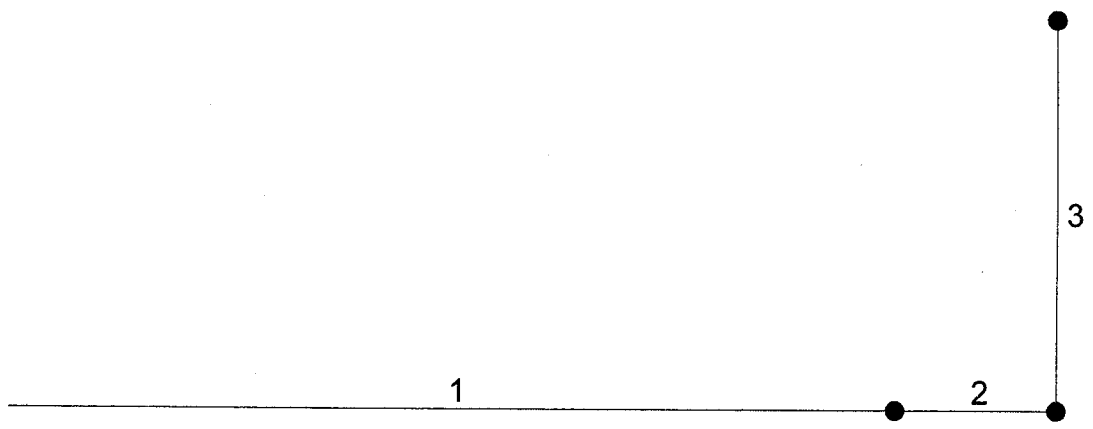
AES CONSULTING ENGINEERS
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax: (757) 220-8994

PROJECT: WELLINGTON SECTION 2
PROJECT NO.: 8223-6-2
SUBJECT: Spread Calcs
SHEET NO.: 3 OF 3
DATE: 3/2/2001
BY: CWG

STORM WATER INLET COMPUTATIONS

INLET Number	Type	Length	Station	Drainage Area (Ac)	C	CA	Σ CA	I in/hr	Q-Inter (CFS)	Q Carry-Over (CFS)	Qt Gutter Flow	S Gutter Slope (ft/ft)	Sx Cross Slope (ft/ft)	T(Spread)	W (ft)	W/T	Sw (ft/ft)	Sw/Sx	Eo(#10)	n	Local Dep.	a	Sw =a/(12W)	Se (ft/ft) =Sx+SwEo	Lt (ft) 15 P Effec L	L/Lt (ft)	d E(#16) (ft)	h	Q Int CFS d/h	Q Carryover Spread	Remark
ROAD I - WELLINGTON WAY																															
LEFT STATION																															
SS 2-2-2	DI-3AA	2.5	L 11+61	0.09	0.6	0.054	0.054	4	0.216		0.216	0.048	0.02	#N/A	2	#N/A	0.08	4	#N/A	0.015	2	3.44	0.143	#N/A	6.1	0.41	0.613	0.132	0.084		
SUMP				0.12	0.6	0.072	0.072	4	0.288	0.084	0.372	0.001	0.02	6.2	Flow Approaching From Down Station																
SS 2-2-15	DI-3CC	6	L 13+54								0.804	0.001	0.02		2		0.08								9.6	0.112	0.27	0.415	5.6		
				0.18	0.6	0.108	0.108	4	0.432		0.432	0.001	0.02	6.7	Flow Approaching From Up Station																
HIGHPOINT																															
SUMP				0.22	0.6	0.132	0.132	4	0.528	0	0.528	0.001	0.02	7.3	Flow Approaching From Down Station																
SS 2-4-9	DI-3C	6	L 20+50								0.964	0.001	0.02		2		0.08								9.6	0.118	0.27	0.437	5.9		
				0.05	0.6	0.03	0.03	4	0.12	0.316	0.436	0.001	0.02	6.7	Flow Approaching From Up Station																
SS 2-4-2	DI-3A	2.5	L 21+36	0.34 .34?	0.6	0.204	0.204	4	0.816	0	0.816	0.023	0.02	3.8	2	0.526	0.08	4	0.948	0.015	2	3.44	0.143	0.156	6.1	0.41	0.613	0.5	0.316		

Hydraflow Plan View



Project file: 8223-6-2-1.stm	IDF file: JCCstormsewer.IDF	No. Lines: 3	09-19-2002

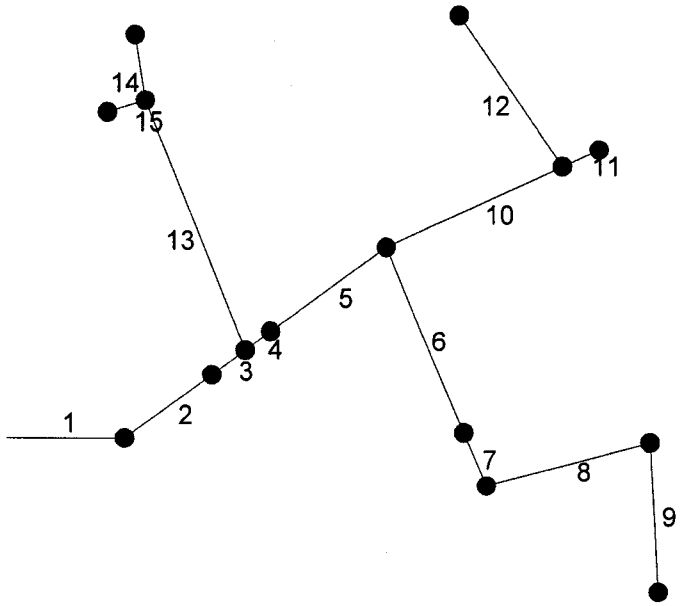
Hydraflow Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Up	Dn	Up	Dn	Up	Dn	
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	227.0	~~0.14~~ .24	2.94	0.60	0.08	1.06	5.0	5.6	7.0	7.42	29.57	9.77	18	7.93	72.50	54.50	73.54	55.01	79.56	56.00	SS 2-1-2 TO 2-1-
2	1	41.0	1.24	2.80	0.35	0.43	0.98	5.0	5.4	7.0	6.87	7.52	4.82	18	0.51	72.71	72.50	73.84	73.63	79.56	79.56	SS 2-1-3 TO 2-1-
3	2	100.0	1.56	1.56	0.35	0.55	0.55	5.0	5.0	7.1	3.89	13.14	3.97	15	4.14	76.85	72.71	77.64	74.20	81.35	79.56	SS 2-1-4 TO 2-1-

Project File: 8223-6-2-1.stm | IDF File: JCCstormsewer.IDF | Total number of lines: 3 | Run Date: 09-19-2002

NOTES: Intensity = 143.72 / (Inlet time + 19.20) ^ 0.94; Return period = 10 Yrs. ; Initial tailwater elevation = 55.01 (ft)

Hydraflow Plan View



Project file: 8223-6-2-2.stm	IDF file: JCCstormsewer.IDF	No. Lines: 15	01-02-2003

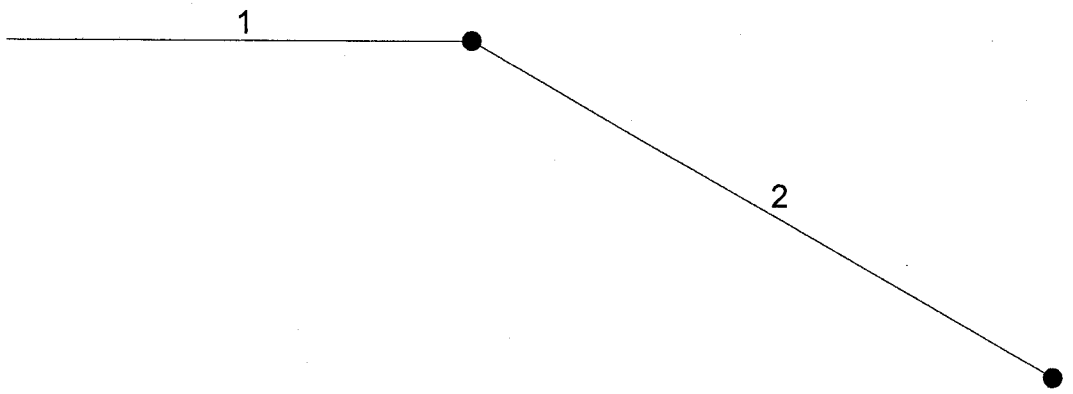
Hydraflow Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Up	Dn	Up	Dn	Up	Dn	
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	100.0	0.21	6.21	0.60	0.13	2.46	5.0	12.0	5.6	13.78	44.15	9.21	24	3.81	60.00	56.19	61.31	56.97	65.00	67.00	SS 2-2-1A TO 2-
2	1	86.0	0.00	6.00	0.00	0.00	2.33	0.0	11.7	5.7	13.17	80.89	5.54	24	12.79	71.00	60.00	72.29	61.59	81.75	65.00	SS 2-2-2 TO 2-2-
3	2	33.0	0.17	6.00	0.60	0.10	2.33	5.0	11.7	5.7	13.20	18.28	7.81	18	3.03	72.00	71.00	73.36	72.37	81.75	81.75	SS 2-2-3 TO 2-2-
4	3	25.0	0.69	4.45	0.35	0.24	1.66	10.0	11.2	5.7	9.54	30.29	5.90	18	8.32	74.08	72.00	75.26	74.32	77.20	81.75	SS 2-2-4 TO 2-2-
5	4	113.0	1.01	3.76	0.35	0.35	1.42	10.0	10.9	5.8	8.24	21.91	5.55	18	4.35	79.00	74.08	80.10	75.35	84.00	77.20	SS 2-2-5 TO 2-2-
6	5	141.0	0.07	1.29	0.60	0.04	0.51	5.0	7.1	6.6	3.35	14.39	3.60	15	4.96	86.00	79.00	86.73	80.65	93.00	84.00	SS 2-2-6 TO 2-2-
7	6	41.0	0.55	1.22	0.40	0.22	0.47	5.0	6.9	6.6	3.09	11.93	4.09	15	3.41	87.40	86.00	88.10	86.78	93.00	93.00	SS 2-2-7 TO 2-2-
8	7	142.0	0.45	0.67	0.35	0.16	0.25	5.0	6.0	6.9	1.68	13.16	2.59	15	4.15	93.30	87.40	93.82	88.35	98.86	93.00	SS 2-2-8 TO 2-2-
9	8	102.0	0.22	0.22	0.40	0.09	0.09	5.0	5.0	7.1	0.63	12.30	1.72	15	3.63	97.00	93.30	97.32	94.01	101.73	98.86	SS 2-2-9 TO 2-2-
10	5	160.0	0.17	1.46	0.50	0.09	0.56	5.0	10.2	5.9	3.32	14.13	3.59	15	4.79	86.66	79.00	87.39	80.65	95.42	84.00	SS 2-2-10 TO 2-2
11	10	33.0	0.83	0.83	0.35	0.29	0.29	10.0	10.0	6.0	1.73	5.03	3.55	15	0.61	91.00	90.80	91.53	91.32	95.42	95.42	SS 2-2-11 TO 2-2
12	10	134.0	0.46	0.46	0.40	0.18	0.18	5.0	5.0	7.1	1.31	4.57	1.96	15	0.50	87.33	86.66	87.85	87.70	91.58	95.42	SS 2-2-12 TO 2-2
13	3	188.0	0.44	1.38	0.35	0.15	0.57	5.0	10.5	5.9	3.32	4.71	2.71	15	0.53	73.00	72.00	74.81	74.32	77.30	81.75	SS 2-2-13 TO 2-2
14	13	45.0	0.76	0.76	0.40	0.30	0.30	10.0	10.0	6.0	1.81	6.81	1.48	15	1.11	73.50	73.00	74.96	74.93	77.57	77.30	SS 2-2-14 TO 2-2
15	13	33.0	0.18	0.18	0.60	0.11	0.11	5.0	5.0	7.1	0.77	5.62	0.63	15	0.76	73.25	73.00	74.93	74.93	77.30	77.30	SS 2-2-15 TO 2-2

Project File: 8223-6-2-2.stm | IDF File: JCCstormsewer.IDF | Total number of lines: 15 | Run Date: 01-02-2003

NOTES: Intensity = 143.72 / (Inlet time + 19.20) ^ 0.94; Return period = 10 Yrs. ; Initial tailwater elevation = 56.97 (ft)

Hydraflow Plan View



Project file: 8223-6-2-3.stm	IDF file: JCCstormsewer.IDF	No. Lines: 2	09-19-2002

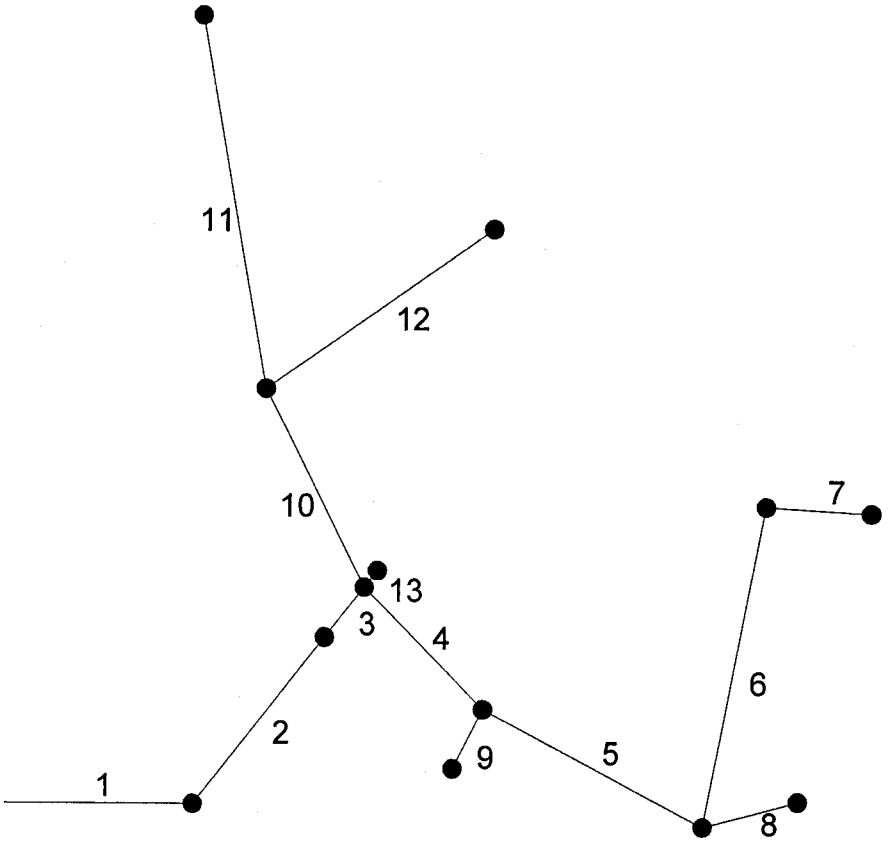
Hydraflow Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
1	End	90.0	0.00	0.30	0.60	0.00	0.18	0.0	5.7	6.9	1.25	30.44	7.38	15	22.22	64.00	44.00	64.45	44.18	72.00	53.00	SS 2-3-2 TO 2-3-
2	1	130.0	0.30	0.30	0.60	0.18	0.18	5.0	5.0	7.1	1.28	18.78	2.94	15	8.46	75.00	64.00	75.45	64.52	79.08	72.00	SS 2-3-3 TO 2-3-

Project File: 8223-6-2-3.stm | IDF File: JCCstormsewer.IDF | Total number of lines: 2 | Run Date: 09-19-2002

NOTES: Intensity = 143.72 / (Inlet time + 19.20) ^ 0.94; Return period = 10 Yrs. ; Initial tailwater elevation = 44.18 (ft)

Hydraflow Plan View



Project file: 8223-6-2-4.stm	IDF file: JCCstormsewer.IDF	No. Lines: 13	09-19-2002

Hydraflow Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Up	Dn	Up	Dn	Up	Dn	
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	100.0	0.00	4.62	0.00	0.00	1.91	0.0	13.4	5.4	10.29	25.72	5.82	18	6.00	50.00	44.00	55.02	54.06	60.50	48.00	SS 2-4-1B TO 2-
2	1	100.0	0.39	4.62	0.60	0.23	1.91	5.0	13.1	5.4	10.37	46.01	6.28	18	19.20	69.20	50.00	70.43	55.42	75.52	60.50	SS 2-4-2 TO 2-4-
3	2	30.0	0.13	4.23	0.60	0.08	1.68	5.0	13.0	5.4	9.12	9.59	5.70	18	0.83	69.45	69.20	70.68	70.53	75.52	75.52	SS 2-4-3 TO 2-4-
4	3	82.0	0.32	1.89	0.35	0.11	0.82	10.0	12.5	5.5	4.56	7.33	2.58	18	0.49	69.85	69.45	71.35	71.22	74.54	75.52	SS 2-4-4 TO 2-4-
5	4	128.0	0.43	1.35	0.60	0.26	0.58	10.0	11.7	5.7	3.28	4.04	2.68	15	0.39	70.35	69.85	71.78	71.45	76.16	74.54	SS 2-4-5 TO 2-4-
6	5	140.0	0.33	0.62	0.35	0.12	0.22	10.0	10.5	5.9	1.27	16.42	2.11	15	6.46	79.40	70.35	79.85	71.90	86.00	76.16	SS 2-4-6 TO 2-4-
7	6	56.0	0.29	0.29	0.35	0.10	0.10	10.0	10.0	6.0	0.61	5.11	1.75	15	0.62	79.75	79.40	80.07	80.01	84.00	86.00	SS 2-4-7 TO 2-4-
8	5	52.0	0.30	0.30	0.35	0.11	0.11	10.0	10.0	6.0	0.63	5.45	0.52	15	0.71	70.72	70.35	71.90	71.90	74.00	76.16	SS 2-4-8 TO 2-4-
9	4	30.0	0.22	0.22	0.60	0.13	0.13	5.0	5.0	7.1	0.94	4.57	0.77	15	0.50	70.00	69.85	71.46	71.45	74.54	74.54	SS 2-4-9 TO 2-4-
10	3	100.0	0.54	1.81	0.35	0.19	0.63	10.0	11.2	5.8	3.64	13.00	3.80	15	4.05	73.50	69.45	74.26	71.22	79.40	75.52	SS 2-4-10 TO 2-4
11	10	162.0	0.71	0.71	0.35	0.25	0.25	10.0	10.0	6.0	1.48	18.64	2.32	15	8.33	87.00	73.50	87.49	74.60	90.93	79.40	SS 2-4-11 TO 2-4
12	10	140.0	0.56	0.56	0.35	0.20	0.20	10.0	10.0	6.0	1.17	5.46	2.06	15	0.71	74.50	73.50	74.93	74.60	79.00	79.40	SS 2-4-12 TO 2-4
13	3	10.0	0.40	0.40	0.35	0.14	0.14	10.0	10.0	6.0	0.84	7.91	0.68	15	1.50	69.60	69.45	71.22	71.22	69.60	75.52	SS 2-4-13 TO 2-4

Project File: 8223-6-2-4.stm | IDF File: JCCstormsewer.IDF | Total number of lines: 13 | Run Date: 12-05-2002

NOTES: Intensity = 143.72 / (Inlet time + 19.20) ^ 0.94; Return period = 10 Yrs. ; Initial tailwater elevation = 54.06 (ft)

CONSULTING ENGINEERS
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax: (757) 220-8994

PROJECT: WELLINGTON SECTION 3
PROJECT NO.: 8223-6-3
SUBJECT: Spread Calcs
SHEET NO.: 1 OF 3
DATE: 03-01-01
BY: CWG REV: HWP

STORM WATER INLET COMPUTATIONS

INLET Number	Type	Length	Station	Drainage Area (Ac)	C	CA	Σ CA	I in/hr	Q-Inter (CFS)	Q Carry-Over (CFS)	Qt Gutter Flow	S Gutter Slope (ft/ft)	Sx Cross Slope (ft/ft)	T(Spread)	W (ft)	W/T	Sw (ft/ft)	Sw/Sx	Eo(#10)	n	Local Dep.	a	S'w =a/(12W)	Se (ft/ft) =Sx+SwEo	Lt (ft) 15 P Effec L	L/Lt (ft)	d E(#16) (ft)	h	Q Int CFS d/h	Q Carryover Spread	Remark
ROAD B RIGHT STATION																															
3-5-3	DI-3A	2.5	28+70	0.11	0.6	0.066	0.066	4	0.264		0.264	0.03	0.02	1.2	2	1.667	0.08	4	1	0.015	2	3.44	0.143	0.163	6.1	0.41	0.613	0.162	0.102		
SUMP				0.05	0.6	0.03	0.03	4	0.12	0.102	0.222	0.001	0.02	4.4	Flow Approaching From Down Station																
3-5-2	DI-3A	2.5	29+46								0.582	0.001	0.02		2		0.08								6.1	0.112	0.27	0.415	5.6		
				0.15	✓ 0.6	0.09	0.09	4	0.36		0.36	0.001	0.02	6	Flow Approaching From Up Station																
HIGHPOINT																															
SUMP				0.11	✓ 0.6	0.066	0.066	4	0.264		0.264	0.001	0.02	5	Flow Approaching From Down Station																
3-6-3	DI-3A	2.5	34+22								0.648	0.001	0.02		2		0.08								6.1	0.12	0.27	0.444	6		
				0.16	✓ 0.6	0.096	0.096	4	0.384		0.384	0.001	0.02	6.3	Flow Approaching From Up Station																
ROAD B LEFT STATION																															
3-4-4	DI-3B	6	25+69	0.58	0.4	0.232	0.232	4	0.928		0.928	0.0475	0.02	2.8	2	0.714	0.08	4	0.989	0.015	2	3.44	0.143	0.162	9.6	0.625	0.829	0.769	0.159		
SUMP				1.14	0.35	0.399	0.399	4	1.596	0.159	1.755	0.001	0.02	12	Flow Approaching From Up Station																
3-3-8	DI-3C	6	24+05								2.398	0.001	0.02		2		0.08								9.6	0.2	0.27	0.741	10		
				0.36	0.35	0.126	0.126	4	0.504	0.139	0.643	0.001	0.02	7.9	Flow Approaching From Down Station																
3-3-7	DI-3B	6	23+64	0.58	0.35	0.203	0.203	4	0.812		0.812	0.0475	0.02	2.5	2	0.8	0.08	4	0.995	0.015	2	3.44	0.143	0.163	9.6	0.625	0.829	0.673	0.139		
HIGHPOINT																															
3-6-5	DI-3B	4	33+82	1.22	0.35	0.427	0.427	4	1.708		1.708	0.022	0.02	6.2	2	0.323	0.08	4	0.767	0.015	2	3.44	0.143	0.13	7.6	0.526	0.739	1.263	0.445		
SUMP				0.1	0.6	0.06	0.06	4	0.24	0.445	0.685	0.001	0.02	8.1	Flow Approaching From Down Station																
3-6-4	DI-3C	6	34+22								1.735	0.001	0.02		2		0.08								9.6	0.168	0.27	0.622	8.4		
				0.1	0.6	0.06	0.06	4	0.24	0.81	1.05	0.001	0.02	9.5	Flow Approaching From Up Station																
3-6.6	DI-3B	4	34+61	2.22	0.35	0.777	0.777	4	3.108		3.108	0.022	0.02	8.1	2	0.247	0.08	4	0.634	0.015	2	3.44	0.143	0.111	7.6	0.526	0.739	2.298	0.81		

CONSULTING ENGINEERS
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax: (757) 220-8994

PROJECT: WELLINGTON SECTION 3
PROJECT NO.: 8223-6-3
SUBJECT: Spread Calcs
SHEET NO.: 2 OF 3
DATE: 03-01-01
BY: CWG

STORM WATER INLET COMPUTATIONS

INLET Number	Type	Length	Station	Drainage Area (Ac)	C	CA	Σ CA	I in/hr	Q-Inter (CFS)	Q Carry-Over (CFS)	Qt Gutter Flow	S Gutter Slope (ft/ft)	Sx Cross Slope (ft/ft)	T(Spread)	W (ft)	W/T	Sw (ft/ft)	Sw/Sx	Eo(#10)	n	Local Dep.	a	S'w =a/(12W)	Se (ft/ft) =Sx+SwEo	Lt (ft) 15 P Effec L	d L/Lt (ft)	h E(#16) (ft)	Q Int CFS d/h	Q Carryover Spread	Remark
ROAD C RIGHT STATION																														
SUMP				0.05	0.6	0.03	0.03	4	0.12		0.12	0.001	0.02	3.4	Flow Approaching From Down Station															
3-7-2	DI-3A	2.5									0.37	0.001	0.02		2		0.08								6.1	#N/A	0.27	#N/A	#N/A	
				0.05	0.6	0.03	0.03	4	0.12	0.13	0.25	0.001	0.02	4.8	Flow Approaching From Up Station															
3-7-3	DI-3A	2.5	24+06	0.14	0.6	0.084	0.084	4	0.336		0.336	0.045	0.02	1.3	2	1.538	0.08	4	1	0.015	2	3.44	0.143	0.163	6.1	0.41	0.613	0.206	0.13	
HIGHPOINT																														
SUMP				0.16	0.6	0.096	0.096	4	0.384		0.384	0.001	0.02	6.3	Flow Approaching From Down Station															
3-5-7	DI-3A	2.5	29+22								0.576	0.001	0.02		2		0.08								6.1	0.112	0.27	0.415	5.6	
				0.08	0.6	0.048	0.048	4	0.192		0.192	0.001	0.02	4.1	Flow Approaching From Up Station															
ROAD C LEFT STATION																														
SUMP				1.06	0.35	0.371	0.371	4	1.484		1.484	0.001	0.02	11	Flow Approaching From Up Station															
3-7-1	DI-3C	6									2.12	0.001	0.02		2		0.08								9.6	0.196	0.27	0.726	9.8	
				0.13	0.5	0.065	0.065	4	0.26	0.376	0.636	0.001	0.02	7.8	Flow Approaching From Down Station															
3-7-4	DI-3A	2.5	24+06	0.54	0.45	0.243	0.243	4	0.972		0.972	0.045	0.02	3	2	0.667	0.08	4	0.984	0.015	2	3.44	0.143	0.161	6.1	0.41	0.613	0.596	0.376	
HIGHPOINT																														
3-5-6	DI-3B	6	29+17	0.59	0.35	0.207	0.207	4	0.826		0.826	0.04	0.02	2.7	2	0.741	0.08	4	0.989	0.015	2	3.44	0.143	0.162	9.6	0.625	0.829	0.685	0.141	
SUMP				0.29	0.35	0.102	0.102	4	0.406	0.141	0.547	0.001	0.02	7.4	Flow Approaching From Down Station															
3-5-4	DI-3C	6	(B) 29+46								0.908	0.001	0.02		2		0.08								9.6	0.118	0.27	0.437	5.9	
				0.02	0.35	0.007	0.007	4	0.028	0.333	0.361	0.001	0.02	6.1	Flow Approaching From Up Station															
3-5-5	DI-3B	6	(B) 29+72	1.39	0.35	0.487	0.487	4	1.946		1.946	0.04	0.02	5.6	2	0.357	0.08	4	0.767	0.015	2	3.44	0.143	0.13	9.6	0.625	0.829	1.613	0.333	

CONSULTING ENGINEERS

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax: (757) 220-8994

PROJECT	WELLINGTON SECTION 3
PROJECT NO.	8223-6-3
SUBJECT	Spread Calcs
SHEET NO.	3 OF 3
DATE	03-01-01
BY	CWG

STORM WATER INLET COMPUTATIONS

INLET Number	Type	Length	Station	Drainage Area (Ac)	C	CA	Σ CA	I in/hr	Q-Inter (CFS)	Q Carry-Over (CFS)	Qt Gutter Flow	S Gutter Slope (ft/ft)	Sx Cross Slope (ft/ft)	T(Spread)	W (ft)	W/T	Sw (ft/ft)	Sw/Sx	Eo(#10)	n	Local Dep.	a	Sw =a/(12W)	Se (ft/ft) =Sx+SwEo	Lt (ft) 15 P Effec L	L/Lt (ft)	d (ft)	E(#16)	h (ft)	Q Int CFS d/h	Q Carryover Spread	Remark
ROAD F			DUNPATRICK WAY																													
RIGHT STATION																																
3-1-2	DI-3A	2.5	12+09	0.12	0.6	0.072	0.072	4	0.288		0.288	0.066	0.02	5.3	2	0.377	0.08	4	0.821	0.015	2	3.44	0.143	0.138	6.1	0.41	0.613	0.177	0.111			
SUMP				0.11	0.6	0.066	0.066	4	0.264	0.111	0.375	0.001	0.02	3.5	Flow Approaching From Down Station																
3-2-3	DI-3A	2.5	13+84.5								0.639	0.001	0.02		2		0.08								6.1	0.12	0.27	0.444	6		
				0.11	0.6	0.066	0.066	4	0.264		0.264	0.001	0.02	2.4	Flow Approaching From Up Station																
ROAD F			DUNPATRICK WAY																													
LEFT STATION																																
3-1-3	DI-3A	2.5	12+09	0.24	0.4	0.096	0.096	4	0.384		0.384	0.066	0.02	6.3	2	0.317	0.08	4	0.74	0.015	2	3.44	0.143	0.126	6.1	0.41	0.613	0.235	0.149			
SUMP				0.31	0.4	0.124	0.124	4	0.496	0.149	0.645	0.001	0.02	5	Flow Approaching From Down Station																
3-2-4	DI-3C	6	13+84.5								1.108	0.001	0.02		2		0.08								9.6	0.128	0.27	0.474	6.4		
				0.07	0.6	0.042	0.042	4	0.168	0.295	0.463	0.001	0.02	4.1	Flow Approaching From Up Station																
3-2-5	DI-3B	4	14+15	0.81	0.35	0.284	0.284	4	1.134		1.134	0.0475	0.02	9.8	2	0.204	0.08	4	0.564	0.015	2	3.44	0.143	0.101	7.6	0.526	0.739	0.839	0.295			
ROAD G																																
RIGHT STATION																																
3-3-9	DI-3B	4	11+64	0.23	0.6	0.138	0.138	4	0.552		0.552	0.065	0.02	7.4	2	0.27	0.08	4	0.67	0.015	2	3.44	0.143	0.116	7.6	0.526	0.739	0.408	0.144			
SUMP				0.08	0.6	0.048	0.048	4	0.192	0.144	0.336	0.001	0.02	3.1	Flow Approaching From Down Station																
3-3-3	DI-3A	2.5	13+08								0.672	0.001	0.02		2		0.08								6.1	0.12	0.27	0.444	6		
				0.14	0.6	0.084	0.084	4	0.336		0.336	0.001	0.02	3.1	Flow Approaching From Up Station																
ROAD G			HELMSDALE RD																													
LEFT STATION																																
3-4-3	DI-3A	2.5	(B) 25+69	0.17	0.6	0.102	0.102	4	0.408		0.408	0.0475	0.02	6.5	2	0.308	0.08	4	0.74	0.015	2	3.44	0.143	0.126	6.1	0.41	0.613	0.25	0.158			
3-3-6	DI-3B	4	10+47	0.13	0.6	0.078	0.078	4	0.312	0.158	0.47	0.0208	0.02	6.9	2	0.29	0.08	4	0.705	0.015	2	3.44	0.143	0.121	7.6	0.526	0.739	0.347	0.122			
3-3-5	DI-3B	4	11+64	0.07	0.35	0.025	0.025	4	0.098	0.122	0.22	0.065	0.02	4.4	2	0.455	0.08	4	0.902	0.015	2	3.44	0.143	0.149	7.6	0.526	0.739	0.163	0.057			
SUMP				0.26	0.4	0.104	0.104	4	0.416	0.057	0.473	0.001	0.02	4.2	Flow Approaching From Down Station																
3-3-4	DI-3C	6	13+08								1.425	0.001	0.02		2		0.08								9.6	0.142	0.27	0.526	7.1		
				0.57	0.35	0.2	0.2	4	0.798	0.153	0.951	0.001	0.02	6.3	Flow Approaching From Up Station																
3-3-4A	DI-3B	4	14+00	0.42	0.35	0.147	0.147	4	0.588		0.588	0.0475	0.02	7.6	2	0.263	0.08	4	0.67	0.015	2	3.44	0.143	0.116	7.6	0.526	0.739	0.435	0.153			
ROAD H			CHERRYSTONE LANE																													
SUMP				0.2	0.6	0.12	0.12	4	0.48		0.48	0.001	0.02	4.2	Flow Approaching From Down Station																
3-6-7	DI-3A	2.5									0.768	0.001	0.02		2		0.08								6.1	0.128	0.27	0.474	6.4		
				0.12	0.6	0.072	0.072	4	0.288		0.288	0.001	0.02	2.7	Flow Approaching From Up Station																

Hydraflow Plan View

Project file: 8223-6-3-1.stm	IDF file: JCCstormsewer.IDF	No. Lines: 2	09-19-2002

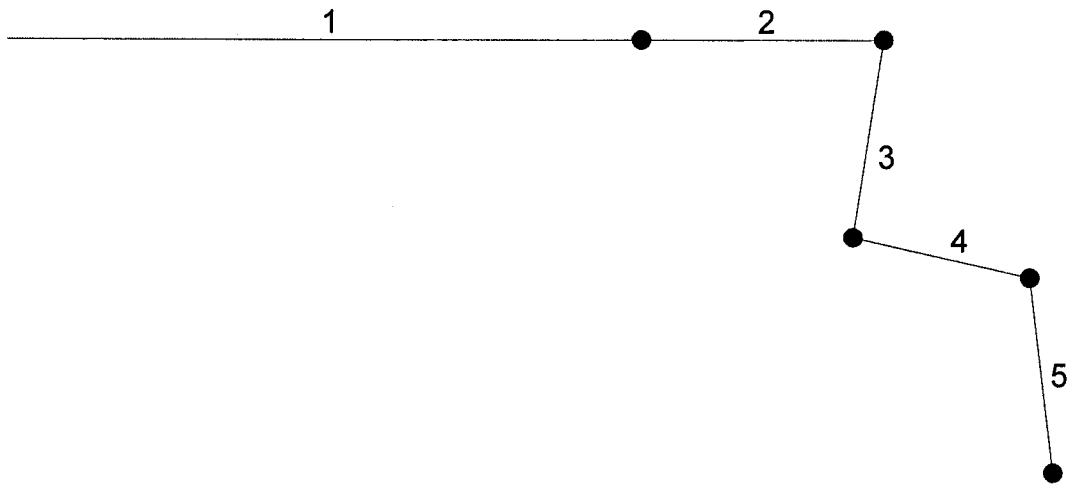
Hydraflow Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Up	Dn	Up	Dn	Up	Dn	
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	190.0	0.12	0.36	0.60	0.07	0.22	5.0	5.2	7.1	1.53	23.66	2.31	15	13.42	66.00	40.50	66.49	41.83	70.57	42.00	SS 3-1-2 TO 3-1-
2	1	33.0	0.24	0.24	0.60	0.14	0.14	5.0	5.0	7.1	1.03	4.63	2.53	15	0.52	66.17	66.00	66.58	66.52	70.57	70.57	SS 3-1-3 TO 3-1-

Project File: 8223-6-3-1.stm | IDF File: JCCstormsewer.IDF | Total number of lines: 2 | Run Date: 09-19-2002

NOTES: Intensity = 143.72 / (Inlet time + 19.20) ^ 0.94; Return period = 10 Yrs. ; Initial tailwater elevation = 41.83 (ft)

Hydraflow Plan View



Project file: 8223-6-3-2.stm	IDF file: JCCstormsewer.IDF	No. Lines: 5	01-02-2003

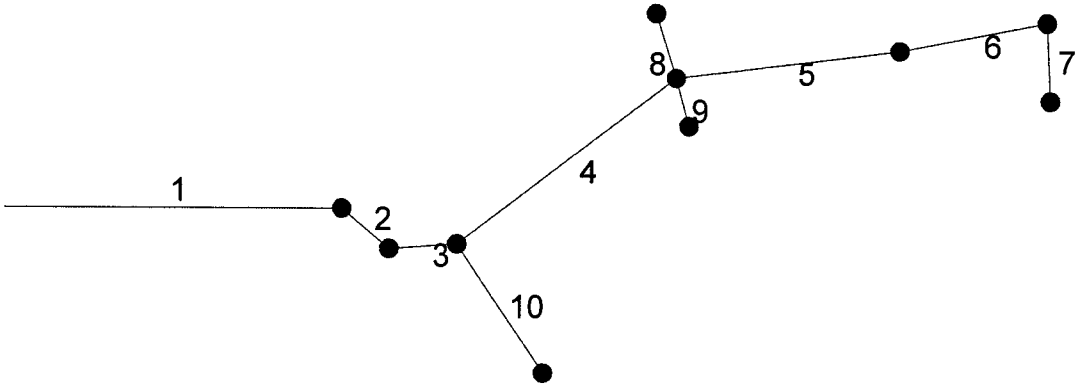
Hydraflow Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Up	Dn	Up	Dn	Up	Dn	
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	130.0	0.00	1.41	0.00	0.00	0.57	0.0	10.6	7.8	4.43	15.30	7.72	15	5.62	44.30	37.00	45.14	37.47	50.00	38.50	SS 3-2-1a TO 3-2
2	1	50.0	0.00	1.41	0.00	0.00	0.57	0.0	10.6	7.8	4.44	28.88	10.68	15	20.00	56.00	46.00	56.84	46.34	64.00	50.00	SS 3-1a TO 3-2-2
3	2	41.0	0.22	1.41	0.60	0.13	0.57	5.0	10.4	7.8	4.45	9.13	6.13	15	2.00	58.80	57.98	59.64	58.61	63.52	64.00	SS 3-2-3 TO 3-2-
4	3	37.0	0.38	1.19	0.40	0.15	0.44	5.0	10.2	7.9	3.44	4.75	2.88	15	0.54	59.00	58.80	60.12	60.04	63.52	63.52	SS 3-2-4 TO 3-2-
5	4	40.0	0.81	0.81	0.35	0.28	0.28	10.0	10.0	7.9	2.25	8.84	2.85	15	1.88	59.75	59.00	60.35	60.24	63.80	63.52	SS 3-2-4 TO 3-2-

Project File: 8223-6-3-2.stm | IDF File: JCCstormsewer.IDF | Total number of lines: 5 | Run Date: 01-02-2003

NOTES: Intensity = 273.95 / (Inlet time + 26.30) ^ 0.99; Return period = 100 Yrs. ; Initial tailwater elevation = 37.47 (ft)

Hydraflow Plan View



Project file: 8223-6-3-3.stm	IDF file: JCCstormsewer.IDF	No. Lines: 10	01-02-2003

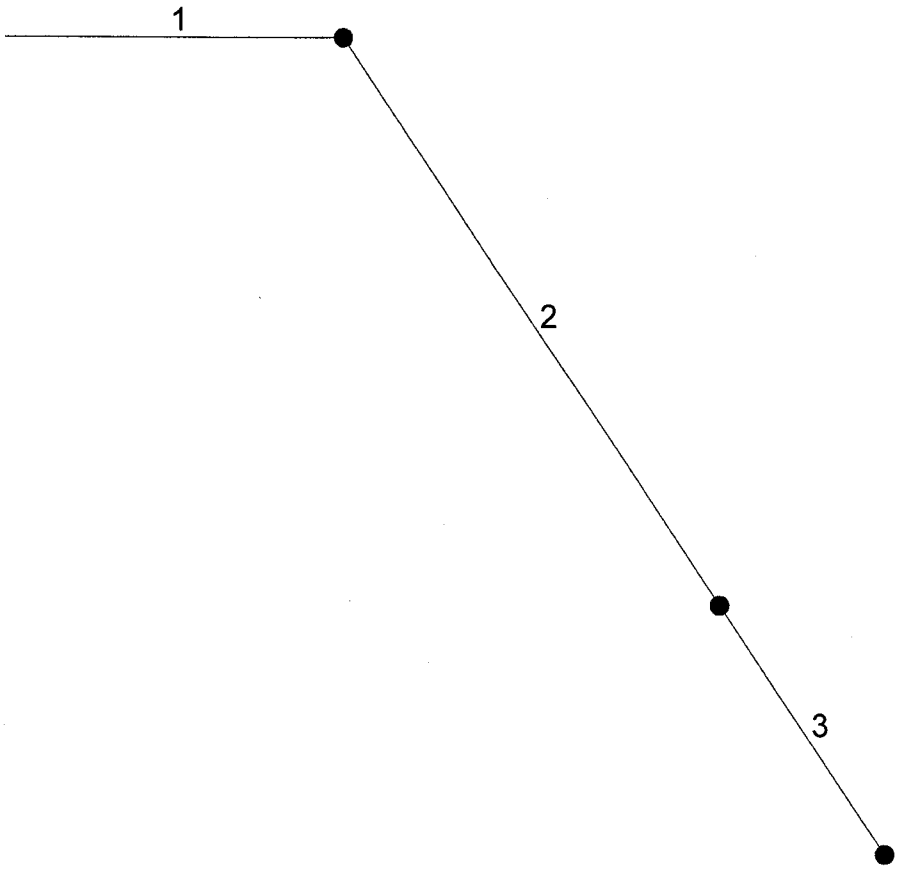
Hydraflow Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Up	Dn	Up	Dn	Up	Dn	
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	162.0	0.00	4.51	0.00	0.00	1.77	0.0	11.2	7.7	13.61	73.27	11.89	24	10.49	52.00	35.00	53.31	35.59	59.00	38.00	SS 3-3-2 TO 3-3-
2	1	30.0	0.22	4.51	0.60	0.13	1.77	5.0	11.1	7.7	13.64	29.20	5.46	24	1.67	52.50	52.00	53.81	53.76	59.13	59.00	SS 3-3-3 TO 3-3-
3	2	33.0	0.83	4.29	0.35	0.29	1.64	10.0	11.0	7.7	12.65	12.93	7.16	18	1.52	53.00	52.50	54.75	54.27	59.13	59.13	SS 3-3-4 TO SS
4	3	133.0	0.07	3.04	0.60	0.04	1.20	5.0	10.6	7.8	9.37	10.38	5.31	18	0.98	54.30	53.00	56.48	55.42	64.18	59.13	SS 3-3-5 TO 3-3-
5	4	109.0	0.13	2.21	0.60	0.08	0.83	5.0	10.4	7.9	6.56	15.46	8.92	15	5.73	65.50	59.25	66.52	59.83	71.10	64.18	SS 3-3-6 TO 3-3-
6	5	72.0	0.58	2.08	0.40	0.23	0.76	10.0	10.2	7.9	5.98	6.81	5.49	15	1.11	66.30	65.50	67.28	66.61	71.44	71.10	SS 3-3-7 TO 3-3-
7	6	38.0	1.50	1.50	0.35	0.52	0.52	10.0	10.0	7.9	4.17	4.68	3.40	15	0.53	66.50	66.30	67.96	67.80	71.02	71.44	SS 3-3-8 TO 3-3-
8	4	33.0	0.23	0.23	0.60	0.14	0.14	5.0	5.0	9.2	1.27	5.62	3.38	15	0.76	59.50	59.25	59.95	59.66	64.18	64.18	SS 3-3-9 TO 3-3-
9	4	24.0	0.53	0.53	0.35	0.19	0.19	10.0	10.0	7.9	1.47	5.89	1.20	15	0.83	54.50	54.30	56.93	56.92	57.00	64.18	SS 3-3-10 TO 3-3
10	3	75.0	0.42	0.42	0.35	0.15	0.15	10.0	10.0	7.9	1.17	14.44	2.02	15	5.00	56.75	53.00	57.18	55.42	60.85	59.13	SS 3-3-4 TO 3-3-

Project File: 8223-6-3-3.stm | IDF File: JCCstormsewer.IDF | Total number of lines: 10 | Run Date: 12-06-2002

NOTES: Intensity = 273.95 / (Inlet time + 26.30) ^ 0.99; Return period = 100 Yrs. ; Initial tailwater elevation = 35.59 (ft)

Hydraflow Plan View



Project file: 8223-6-3-4.stm	IDF file: JCCstormsewer.IDF	No. Lines: 3	07-24-2001

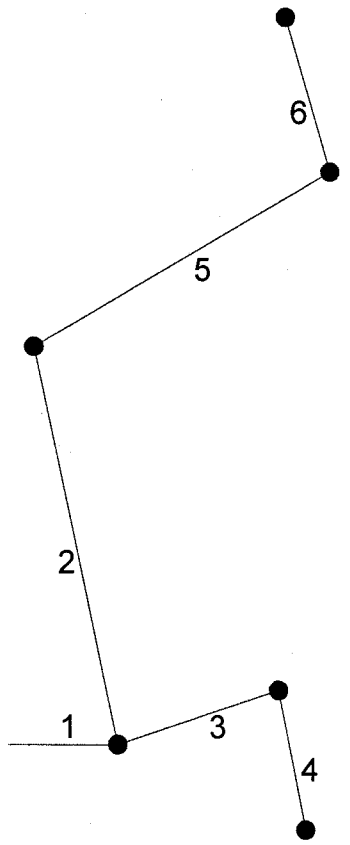
Hydraflow Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Up	Dn	Up	Dn	Up	Dn	
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	50.0	0.00	0.75	0.00	0.00	0.33	0.0	10.6	7.8	2.61	26.39	3.59	15	16.70	71.35	63.00	72.00	63.81	76.50	65.00	SS 3-4-2 TO 3-4-
2	1	87.0	0.17	0.75	0.60	0.10	0.33	5.0	10.2	7.9	2.64	4.59	3.54	15	0.51	71.79	71.35	72.44	72.19	76.57	76.50	SS 3-4-3 TO 3-4-
3	2	38.0	0.58	0.58	0.40	0.23	0.23	10.0	10.0	7.9	1.84	4.80	3.11	15	0.55	72.00	71.79	72.55	72.48	76.57	76.57	SS 3-4-4 TO 3-4-

Project File: 8223-6-3-4.stm | IDF File: JCCstormsewer.IDF | Total number of lines: 3 | Run Date: 07-24-2001

NOTES: Intensity = 273.95 / (Inlet time + 26.30) ^ 0.99; Return period = 100 Yrs. ; Initial tailwater elevation = 63.81 (ft)

Hydraflow Plan View



Project file: 8223-6-3-5.stm	IDF file: JCCstormsewer.IDF	No. Lines: 6	09-19-2002

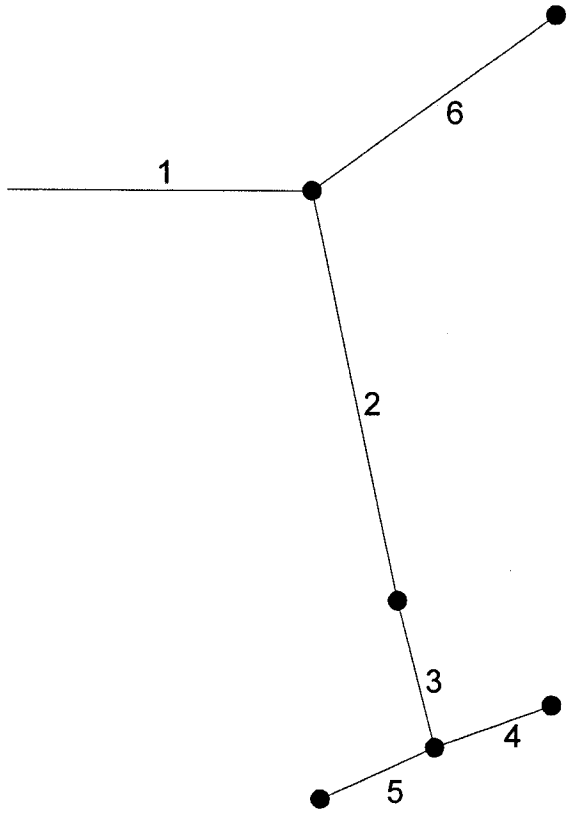
Hydraflow Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
1	End	25.0	0.20	2.94	0.60	0.12	1.33	5.0	11.0	5.8	7.72	10.50	6.13	18	1.00	70.25	70.00	71.31	70.96	76.47	70.25	SS 3-5-2 TO 3-5-
2	1	75.0	0.13	0.96	0.60	0.08	0.58	5.0	10.5	5.9	3.38	4.60	2.76	15	0.51	70.63	70.25	72.04	71.83	79.00	76.47	SS 3-5-3 TO 3-5-
3	1	38.0	0.31	1.78	0.40	0.12	0.64	5.0	10.2	5.9	3.79	13.86	3.90	15	4.61	72.00	70.25	72.78	71.83	76.47	76.47	SS 3-5-4 TO 3-5-
4	3	26.0	1.47	1.47	0.35	0.51	0.51	10.0	10.0	6.0	3.07	5.66	2.86	15	0.77	72.20	72.00	73.14	73.12	76.61	76.47	SS 3-5-5 TO 3-5-
5	2	75.0	0.59	0.83	0.60	0.35	0.50	10.0	10.0	6.0	2.97	4.54	2.42	15	0.49	71.00	70.63	72.31	72.15	78.80	79.00	SS 3-5-6 TO 3-5-
6	5	30.0	0.24	0.24	0.60	0.14	0.14	5.0	5.0	7.1	1.03	5.89	3.26	15	0.83	74.25	74.00	74.66	74.36	78.83	78.80	SS 3-5-7 TO 3-5-

Project File: 8223-6-3-5.stm | IDF File: JCCstormsewer.IDF | Total number of lines: 6 | Run Date: 09-19-2002

NOTES: Intensity = 143.72 / (Inlet time + 19.20) ^ 0.94; Return period = 10 Yrs. ; Initial tailwater elevation = 70.96 (ft)

Hydraflow Plan View



Project file: 8223-6-3-6.stm	IDF file: JCCstormsewer.IDF	No. Lines: 6	01-02-2003

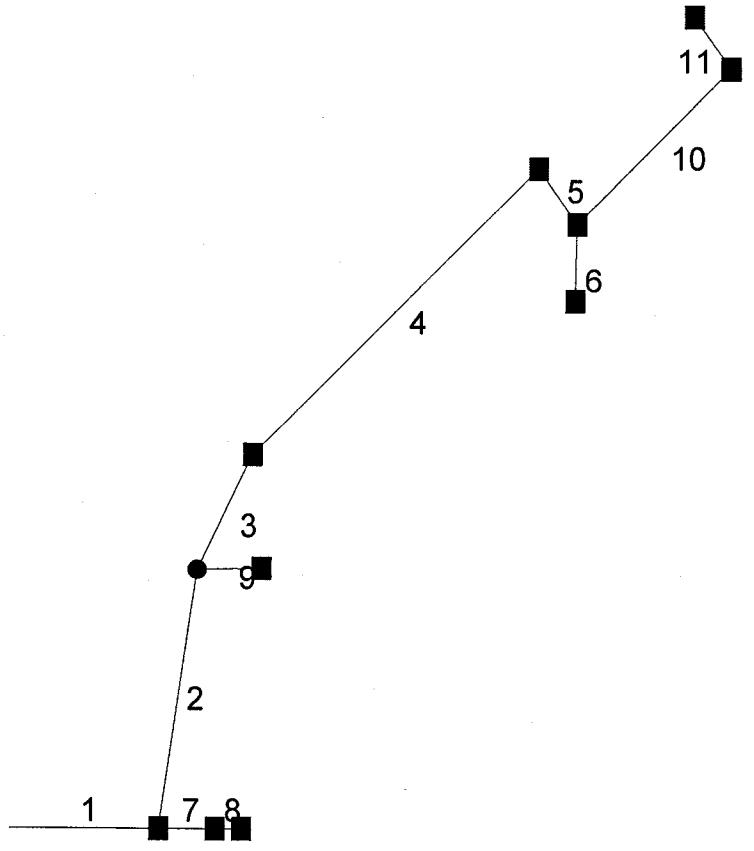
Hydraflow Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
1	End	35.0	0.00	4.13	0.00	0.00	1.60	0.0	15.6	5.1	8.10	15.44	9.66	15	5.71	70.00	68.00	71.76	68.64	75.00	68.00	SS 3-6-2 TO 3-6-
2	1	105.0	0.27	3.81	0.60	0.16	1.41	5.0	15.4	5.1	7.18	16.67	6.13	15	6.67	77.00	70.00	78.07	72.33	82.72	75.00	SS 3-6-3 TO 3-6-
3	2	38.0	0.18	3.54	0.40	0.07	1.25	5.0	15.2	5.1	6.38	8.11	5.67	15	1.58	77.60	77.00	78.61	78.17	82.72	82.72	SS 3-6-4 TO 3-6-
4	3	38.0	1.22	1.22	0.35	0.43	0.43	15.0	15.0	5.1	2.20	9.94	2.65	15	2.37	78.50	77.60	79.13	79.17	83.00	82.72	SS 3-6-5 TO 3-6-
5	3	38.0	2.14	2.14	0.35	0.75	0.75	15.0	15.0	5.1	3.85	9.94	3.94	15	2.37	78.50	77.60	79.29	79.17	83.00	82.72	SS 3-6-6 TO 3-6-
6	1	88.0	0.32	0.32	0.60	0.19	0.19	5.0	5.0	7.1	1.37	19.16	2.19	15	8.81	77.75	70.00	78.22	72.33	82.25	75.00	SS 3-6-7 TO 3-6-

Project File: 8223-6-3-6.stm | IDF File: JCCstormsewer.IDF | Total number of lines: 6 | Run Date: 01-02-2003

NOTES: Intensity = 143.72 / (Inlet time + 19.20) ^ 0.94; Return period = 10 Yrs. ; Initial tailwater elevation = 68.64 (ft)

Hydraflow Plan View



Project file: 8223-6-3-7.stm	IDF file: JCCstormsewer.IDF	No. Lines: 11	09-20-2002

Hydraflow Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr	Total		Incr	Total	Inlet	Syst					Size	Slope	Up	Dn	Up	Dn	Up	Dn	
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	78.0	0.10	2.87	0.60	0.06	1.46	5.0	10.9	5.8	8.48	80.98	10.90	24	12.82	64.00	54.00	65.03	54.44	70.03	54.00	S3-1 TO S3-2
2	1	115.0	0.00	1.87	0.00	0.00	1.02	0.0	10.6	5.9	5.99	12.19	5.34	15	3.57	68.10	64.00	69.08	65.66	72.50	70.03	S3-2 TO S3-6
3	2	58.0	0.21	1.37	0.60	0.13	0.82	5.0	6.6	6.7	5.51	11.99	5.03	15	3.45	70.10	68.10	71.04	69.60	74.28	72.50	S3-6 TO S3-6A
4	3	197.0	0.16	1.16	0.60	0.10	0.70	5.0	5.9	6.9	4.79	7.88	4.56	15	1.49	73.03	70.10	73.91	71.38	77.84	74.28	S3-6A TO S3-8
5	4	32.0	0.16	1.00	0.60	0.10	0.60	5.0	5.8	6.9	4.15	6.25	3.38	15	0.94	73.33	73.03	74.67	74.54	77.84	77.84	S3-8 TO S3-9
6	5	34.0	0.16	0.16	0.60	0.10	0.10	5.0	5.0	7.1	0.68	13.52	1.59	15	4.38	74.82	73.33	75.15	74.94	78.92	77.84	S3-9 TO 3-10
7	1	30.0	0.11	0.90	0.60	0.07	0.38	5.0	10.1	6.0	2.27	41.29	1.93	24	3.33	65.00	64.00	65.57	65.66	70.03	70.03	S3-3 TO S 3-2
8	7	14.0	0.79	0.79	0.40	0.32	0.32	10.0	10.0	6.0	1.89	30.22	2.67	24	1.79	65.25	65.00	65.74	65.65	70.80	70.03	S3-3 TO S 3-4
9	2	34.0	0.50	0.50	0.40	0.20	0.20	10.0	10.0	6.0	1.19	4.57	0.97	15	0.50	68.27	68.10	69.61	69.60	72.29	72.50	S3-7 TO S 3-6
10	5	106.0	0.14	0.68	0.60	0.08	0.41	5.0	5.2	7.1	2.88	9.86	3.29	15	2.33	75.80	73.33	76.48	74.94	80.96	77.84	S3-9 TO S3-7-1
11	10	30.0	0.54	0.54	0.60	0.32	0.32	5.0	5.0	7.1	2.31	5.27	2.21	15	0.67	76.00	75.80	76.91	76.90	80.96	80.96	S3-7-1 TO 3-7-2

Project File: 8223-6-3-7.stm | IDF File: JCCstormsewer.IDF | Total number of lines: 11 | Run Date: 09-20-2002

NOTES: Intensity = 143.72 / (Inlet time + 19.20) ^ 0.94; Return period = 10 Yrs. ; Initial tailwater elevation = 54.44 (ft)

James City County Environmental Division
Stormwater Management / BMP Inspection Report
Detention and Retention Pond Facilities

County BMP ID Code (if known): WC084

Name of Facility: Dry Pond 1 (Sec. 3) BMP No.: 1 of 1 Date: 6/5/2007

Location: OFF DOWNPATRICK WAY (EAST)

Name of Owner: AMERICAN EASTERN INC

Name of Inspector: M. MAJDOSKI / T. BUCHITE

Type of Facility: DRY POND

Weather Conditions: SUNNY 85° Type: ☑ Final Inspection ☐ County BMP Inspection Program ☐ Owner Inspection

If an inspection item is not applicable, mark NA, otherwise mark the appropriate column.

O.K. - The item checked is in adequate condition and the maintenance program is currently satisfactory. No action required.
Routine - The item checked requires attention, but does not present an immediate threat to the function/integrity of the BMP.
Urgent - The item checked requires immediate attention to keep the BMP operational and to prevent damage to the facility.

Provide an explanation and details in the comment column, if routine or urgent are marked.

Facility Item	O.K.	Routine	Urgent	Comments
Embankments and Side Slopes:				
Grass Height	✓			
Vegetation Condition	✓			
Tree Growth	✓			
Erosion	✓			
Trash & Debris	✓			
Seepage	✓			
Fencing or Benches	N/A			
Interior Landscaping/Planted Areas: ☐ None ☐ Constructed Wetland/Shallow Marsh ☑ Naturally Established Vegetation				
Vegetated Conditions	✓			
Trash & Debris		✓		MINOR DEBRIS + TRASH
Floating Material	✓			
Erosion		✓		MINOR EROSION
Sediment		✓		2"-3" OF SEDIMENT BUILDUP
Dead Plant	✓			
Aesthetics	✓			
Other				
Notes:				

Facility Item	O.K.	Routine	Urgent	Comments
Water Pools: ☐ Permanent Pool (Retention Basin) ☐ Shallow Marsh (Detention Basin) ☑ None, Dry (Detention Basin)				
Shoreline Erosion				
Algae				
Trash & Debris				
Sediment				
Aesthetics				
Other				
Inflows (Describe Types/Locations):				
Condition of Structure	✓			
Erosion		✓		
Trash and Debris		✓		
Sediment		✓		1"-2" OF SEDIMENT BUILD UP
Outlet Protection		✓		
Other				
Principal Flow Control Structure - Riser, Intake, etc. (Describe Type):				
Condition of Structure	✓			
Corrosion		✓		SOME MINOR RUST ON ANTI-VORTEX DEVICE
Trash and Debris		✓		
Sediment		✓		
Vegetation	✓			
Other				
Principal Outlet Structure - Barrel, Conduit, etc. :				
Condition of Structure	✓			
Settlement	✓			
Trash & Debris		✓		
Erosion/Sediment		✓		
Outlet Protection		✓		CLEAR OUT VEGETATION AROUND OUTFALL
Other				
Emergency Spillway (Overflow):				
Vegetation	N/A			CONCRETE SPILLWAY
Lining	N/A			
Erosion		✓		
Trash & Debris		✓		
Other				
Notes:				

Facility Item	O.K.	Routine	Urgent	Comments
Nuisance Type Conditions:				
Mosquito Breeding	✓			
Animal Burrows	✓			
Graffiti	✓			
Other				
Surrounding Perimeter Conditions:				
Land Uses	✓			
Vegetation	✓			
Trash & Debris	✓			
Aesthetics	✓			
Access /Maintenance Roads or Paths	✓			
Other				

Remarks:

Overall Environmental Division Internal Rating: 3/5

Signature: [illegible] **Date:** 6/5/2007

Title: ENV. INSPECTOR

SWMProg\BMP\CoInspProg\InspForms\DetRct.wpd

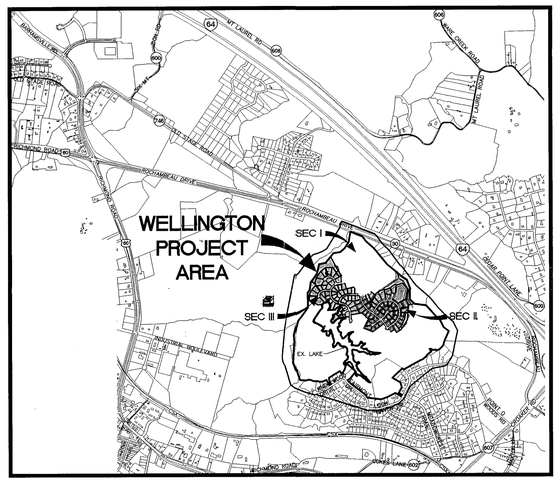
BMP
RECORD DRAWINGS
WELLINGTON
SECTION II AND III

WELLINGTON, L.L.C.

JAMES CITY COUNTY, VIRGINIA

LEGEND

EXISTING		PROPOSED
EX. W	WATER	W
EX. S	SANITARY SEWER	S
	STORM SEWER	
EX. FM	FORCE MAIN	F.M.
	MANHOLE	
	CURB DROP INLET	
	YARD DROP INLET	
	FLARED END SECTION	
	VALVE	
	FIRE HYDRANT ASSEMBLY	
	BLOW-OFF VALVE	
	AIR RELEASE ASSEMBLY	
	CLEAN OUT	
	WATER METER	
	STREETLIGHT	
	CENTERLINE/BASELINE	
	RIGHT OF WAY	
	PROPERTY LINE	
	℄ DITCH/SWALE	
	CONCRETE LINED DITCH	
	EC-3 LINED DITCH	
	EXISTING TREELINE	
	LIMITS OF CLEARING	
	SILT FENCE	
	INLET PROTECTION	
	CHECK DAM	
	STRAW BALE BARRIER	
	RIP RAP	
	REVERSE ROLL TOP GUTTER	
25.1	GROUND ELEVATION	25.1
	PROPOSED TOP OF CURB ELEV.	TOC ELEV
	GRADING LINE TIE-IN	
80	EXISTING CONTOUR ELEV.	
	PROPOSED CONTOUR ELEV.	80
	GRADING BY OTHERS	80



VICINITY MAP (APROX. SCALE 1"=2000')

MARCH 28, 2001
PROJECT NO. 8223-06

"THE STORMWATER BMP, AND DRAINAGE STRUCTURE LOCATIONS AND GRADES SHOWN ON THESE DRAWINGS, ARE ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF AND I CERTIFY THAT I, OR MY AGENT, HAVE MADE SUFFICIENT INSPECTION TO ENSURE THE ACCURACY OF THIS STATEMENT."

VAN MARC BENNETT — DATE 5/30/06

COMMONWEALTH OF VIRGINIA
VAN MARC BENNETT
5/30/06
No. 26628
4/18/2006
PROFESSIONAL ENGINEER

CONSULTING ENGINEERS
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	OVERALL DEVELOPMENT PLAN
3	OVERALL UTILITY PLAN
4	OVERALL DRAINAGE PLAN
5	STREET TREE PLANTING PLAN
	SECTION 2:
6	ENVIRONMENTAL INVENTORY & PH. 1 E&S PLAN
6A	ENVIRONMENTAL INVENTORY & PH. 1 E&S PLAN
7	PRELIMINARY PLAT
8	PRELIMINARY PLAT
9	ROAD AND UTILITY PLAN
10	ROAD AND UTILITY PLAN
11	DRAINAGE, EROSION AND SEDIMENT CONTROL PLAN
12	DRAINAGE, EROSION AND SEDIMENT CONTROL PLAN
13	ROAD AND UTILITY PROFILES
14	ROAD AND UTILITY PROFILES
15	OFF-SITE SANITARY SEWER PROFILES
	SECTION 3:
16	ENVIRONMENTAL INVENTORY & PH. 1 E&S PLAN
17	ENVIRONMENTAL INVENTORY & PH. 1 E&S PLAN
18	PRELIMINARY PLAT
19	PRELIMINARY PLAT
20	ROAD AND UTILITY PLAN
21	ROAD AND UTILITY PLAN
22	DRAINAGE, EROSION AND SEDIMENT CONTROL PLAN
23	DRAINAGE, EROSION AND SEDIMENT CONTROL PLAN
24	ROAD AND UTILITY PROFILES
25	ROAD AND UTILITY PROFILES
	NOTES & DETAILS
26	CUL-DE-SAC UNWRAPS
27	POND NOTES AND DETAILS
28	E&S NOTES AND DETAILS
29	NOTES AND DETAILS
30	NOTES AND DETAILS

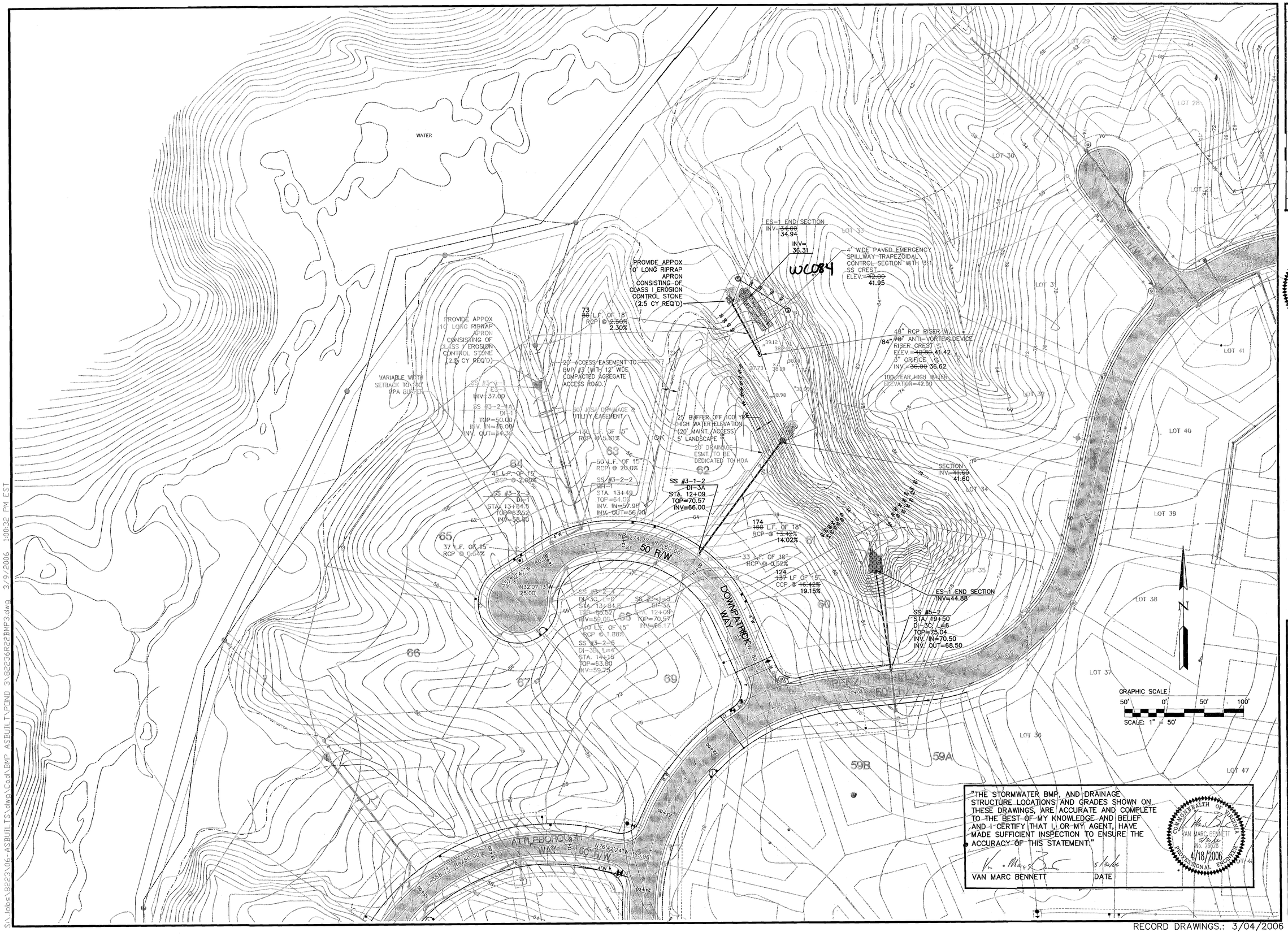
PROPOSED ROAD NAMES

ASHINGTON WAY----------ROAD "A"
PENZANCE PLACE----------ROAD "B"
GUILDFORD LANE----------ROAD "C"
TYNEMOUTH WAY ----------ROAD "D"
OLDHAM COURT ----------ROAD "E"
DOWNPATRICK WAY ----------ROAD "F"
ATTLEBOROUGH WAY----------ROAD "G"
BECKENHAM COURT----------ROAD "H"
WELLESLEY WAY ----------ROAD "I"
GLISAN COURT----------ROAD "J"
LEICESTER NORTH & SOUTH----ROAD "K"

No.	DATE	REVISION / COMMENT / NOTE	BY
4	3/04/06	REVISED BMP DRAWINGS PER J.C.C. COMMENTS	TCS
3	2/7/03	REVISED PER J.C.C. COMMENTS	HWP
2	1/1/03	REVISED PER J.C.C. COMMENTS	HWP
1	9/20/02	REVISED PER J.C.C. COMMENTS	HWP

RECORD DRAWINGS.: 3/04/2006

S:\Jobs\8223\06-ASBUILTS\dwg\Cad\BMP ASBUILT\POND 3\8223SR01BMP3.dwg 4/21/2006 1:19:17 PM EST



"THE STORMWATER BMP, AND DRAINAGE STRUCTURE LOCATIONS AND GRADES SHOWN ON THESE DRAWINGS, ARE ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF AND I CERTIFY THAT I, OR MY AGENT, HAVE MADE SUFFICIENT INSPECTION TO ENSURE THE ACCURACY OF THIS STATEMENT."

VAN MARC BENNETT — DATE 5/31/06

COMMONWEALTH OF VIRGINIA — VAN MARC BENNETT — No. 26628 — 4/18/2006 — PROFESSIONAL ENGINEER

No	DATE	REVISION / COMMENT NOTE	BY
1	3/04/06	REVISED BMP DRAWINGS PER J.C.C. COMMENTS	TCS

COMMONWEALTH OF VIRGINIA — G. ARCHER MARSTON, III — No. 010232 — PROFESSIONAL ENGINEER

5248 Olde Towne Road-Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994
CONSULTING ENGINEERS

DRAINAGE, EROSION AND SEDIMENT CONTROL PLAN

WELLINGTON
SECTION 1
OWNER/DEVELOPER: WELLINGTON, L.L.C.

JAMES CITY COUNTY \ STONEHOUSE DISTRICT — VIRGINIA

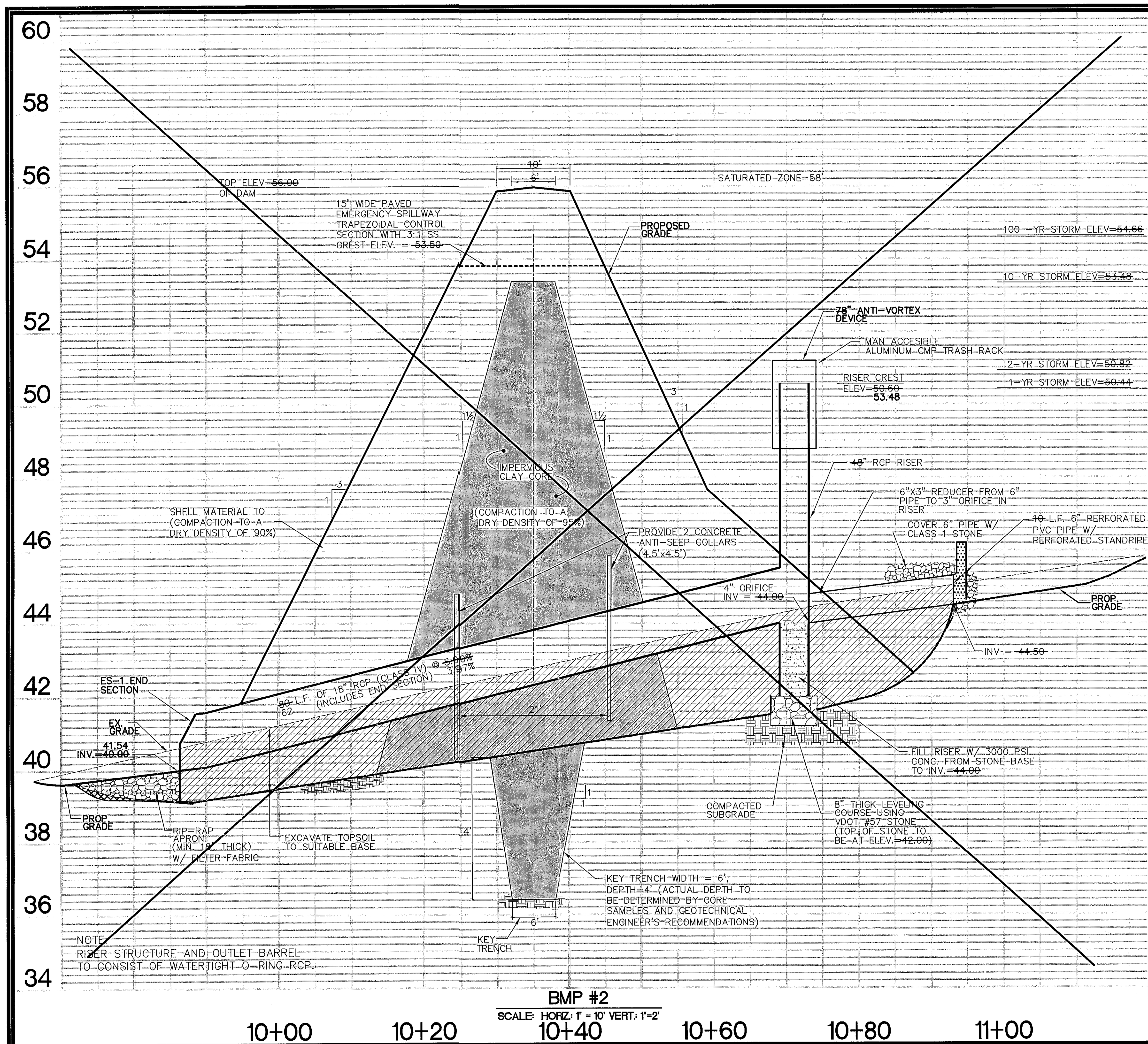
Designed	Drawn
HWP/CWG	MEG
Scale	Date
1"=50'	4/18/06

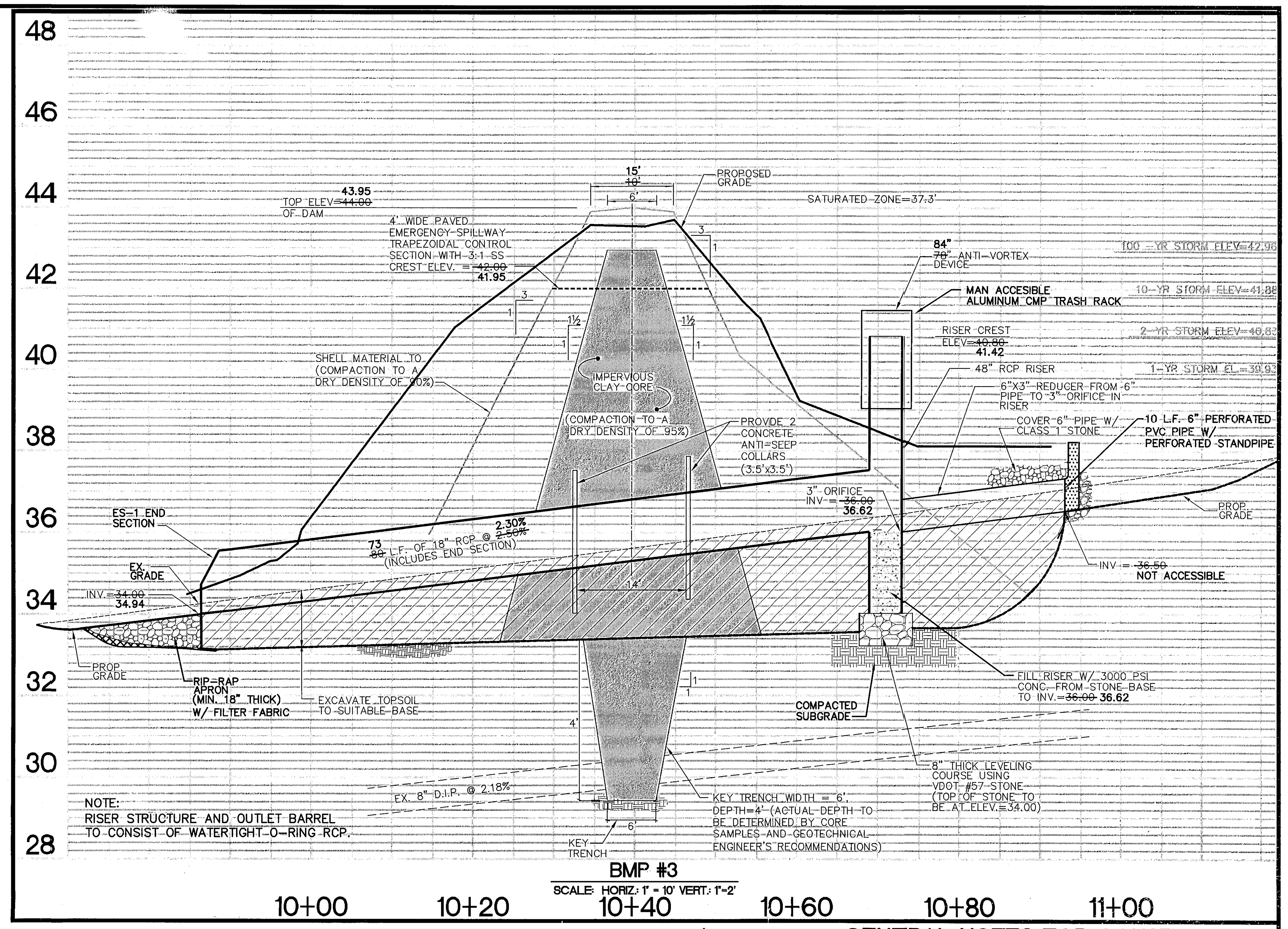
Project No. 8223-06

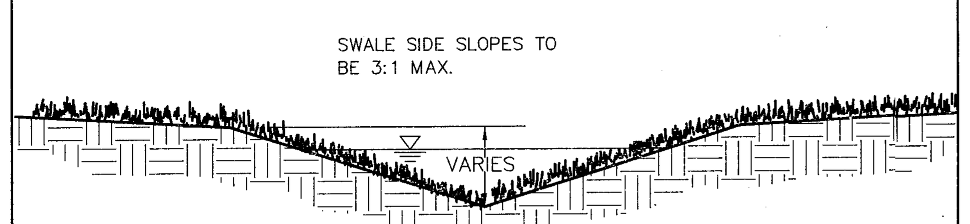
Drawing No. 22

RECORD DRAWINGS.: 3/04/2006

S:\Jobs\8223\06-ASBUILTS\dwg\Cad\BMP ASBUILTS\POND 3\822336R22BMP3.dwg 3/9/2006 1:00:32 PM EST



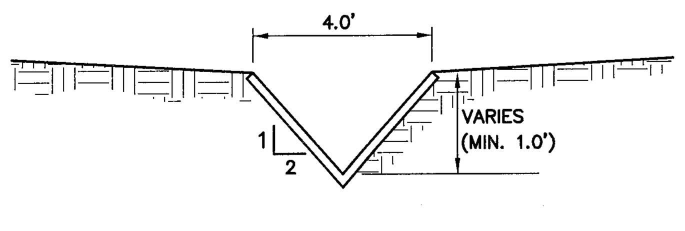




TYP. SWALE DETAIL

N.T.S.

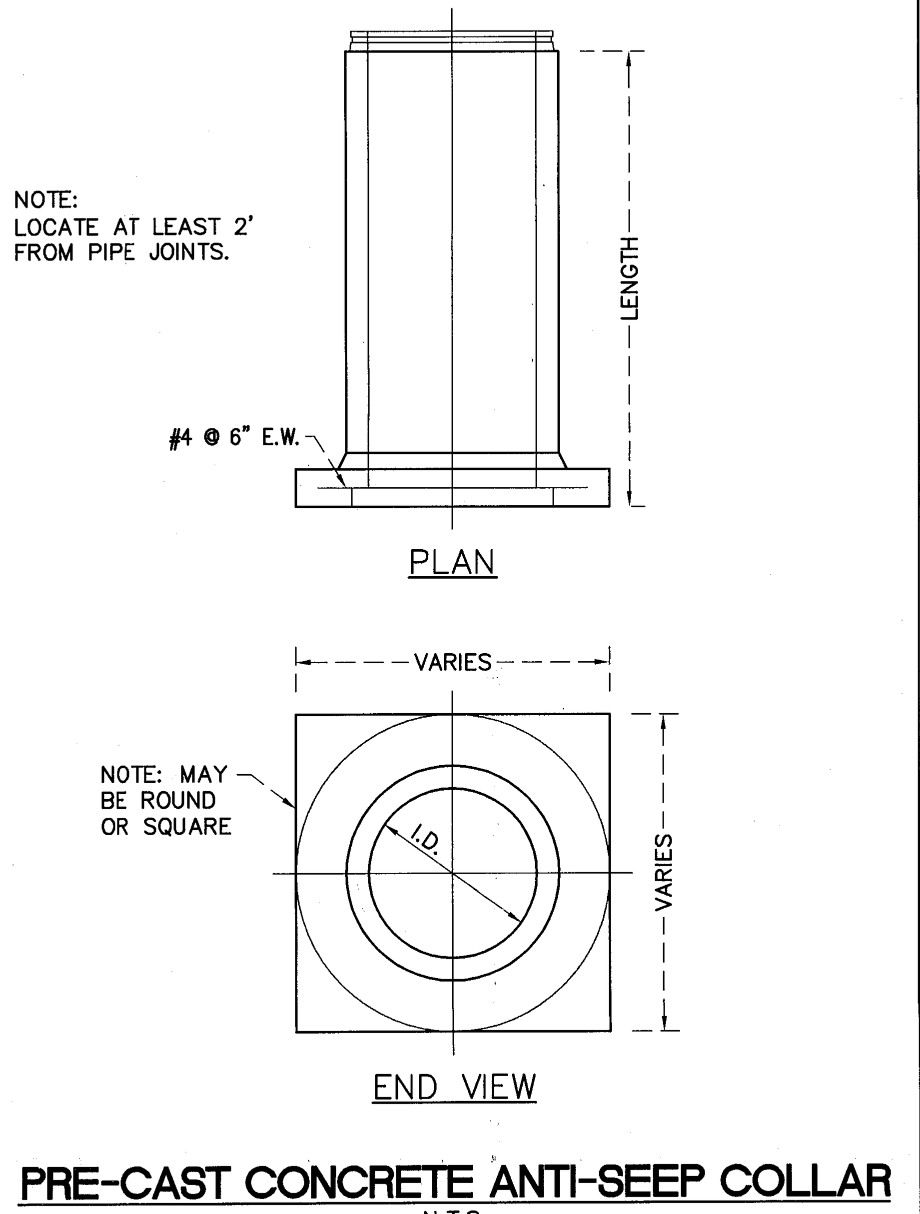
D-swale.dwg



CONCRETE LINED DITCH SECTION

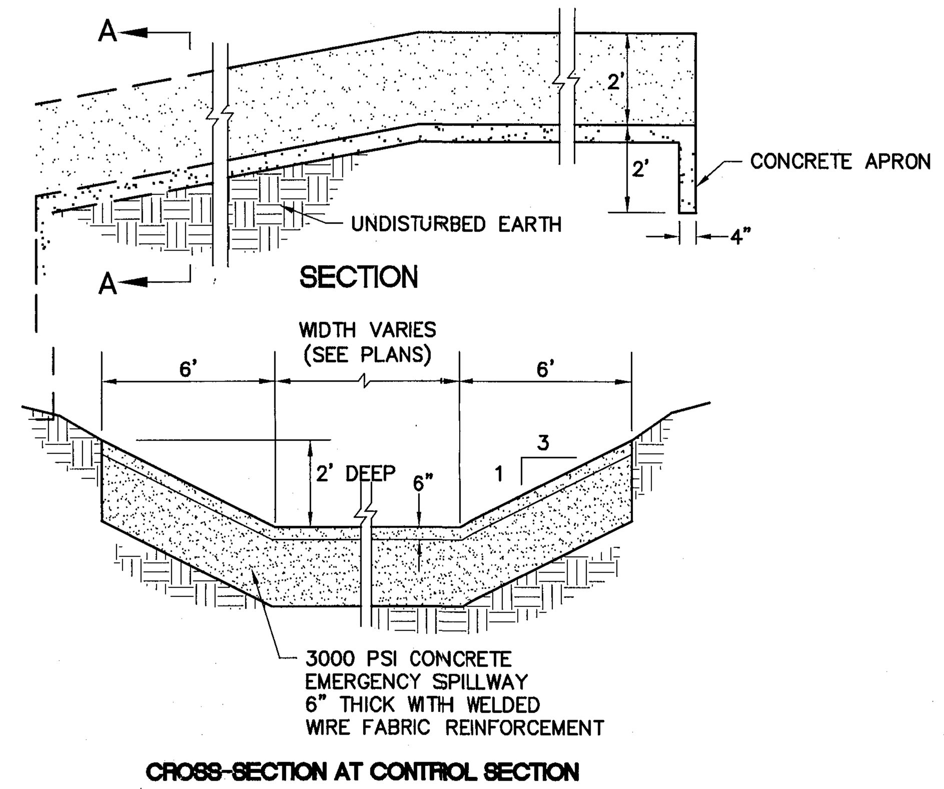
N.T.S.

D-SWALE2.dwg



PRE-CAST CONCRETE ANTI-SEEP COLLAR

N.T.S.



EXCAVATED EARTH SPILLWAY

N.T.S.

"THE STORMWATER BMP, AND DRAINAGE STRUCTURE LOCATIONS AND GRADES SHOWN ON THESE DRAWINGS, ARE ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF AND I CERTIFY THAT I, OR MY AGENT, HAVE MADE SUFFICIENT INSPECTION TO ENSURE THE ACCURACY OF THIS STATEMENT."

5/30/06

VAN MARC BENNETT — DATE

COMMONWEALTH OF VIRGINIA — VAN MARC BENNETT — No. 26628 — PROFESSIONAL ENGINEER — 4/18/2006

STORMWATER MANAGEMENT/ BMP FACILITY MAINTENANCE PLAN

PROPER MAINTENANCE OF THIS FACILITY IS ENCOURAGED TO PREVENT THE INTRODUCTION OF DEBRIS AND SEDIMENT IN TO THE FACTILITY, SPILLWAY(S) AND DOWNSTREAM WATERWAYS. FOLLOWING INSTALLATION OF THE FACILITY AND ESTABLISHMENT OF VEGETATION IN DISTURBED AREAS, INSPECTIONS FOR SEDIMENT BUILDUPS WILL BE PERFORMED AT LEAST QUARTERLY. IT IS ANTICIPATED THAT UNDER NORMAL CONDITIONS, SEDIMENT REMOVAL FROM THE FACILITY WILL BE REQUIRED ONCE EVERY 10 YEARS. IF OTHER CONSTRUCTION OR RELATED ACTIVITIES ARE PERFORMED ON UPSLOPE PARCELS, ADEQUATE PROTECTION SHOULD BE PROVIDED AND INSPECTIONS PERFORMED AT LEAST ONCE WEEKLY OF THESE NEWLY DISTRIBUTED AREAS AS WELL AS INSPECTIONS FOR ACCUMULATED SEDIMENTS AT THE BMP FACILITY.

A DESIGNATED REPRESENTATIVE OF THE OWNER WILL INSPECT THE BMP STRUCTURE AFTER EACH SIGNIFICANT RAINFALL EVENT OR THE FOLLOWING WORKING DAY IF A WEEKEND OR HOLIDAY OCCURS. A SIGNIFICANT RAINFALL FOR THIS STRUCTURE IS DEFINED AS ONE (1) INCH OR MORE OF GAUGED RAINFALL WITHIN A 24 HOUR PERIOD. ONCE PER YEAR, A REPRESENTATIVE OF THE COUNTY MAY JOINTLY INSPECT THE STRUCTURE. APPROPRIATE ACTION, PERFORMED AT THE COST OF THE OWNER, WILL BE TAKEN TO ENSURE APPROPRIATE MAINTENANCE. KEYS TO LOCKED ACCESS POINTS SHALL BE MADE AVAILABLE TO COUNTY INSPECTION PERSONNEL UPON REQUEST. INSPECTION AND MAINTENANCE OF THE FACILITY WILL CONSIST OF THE FOLLOWING ADDITIONAL MEASURES:

1. THE INSPECTION FOR SEDIMENT BUILDUP WILL BE PERFORMED BY VISUAL INSPECTION AND A PHYSICAL DETERMINATION OF SEDIMENT DEPTH WITHIN THE STORAGE AREA. SEDIMENT REMOVAL IS REQUIRED USING A RUBBER-WHEELED BACKHOE. AT THE SAME TIME, OR AT LEAST ONCE PER YEAR, THE RISER BOTTOM AND OUTLET PIPE SHALL BE CLEANED OF ACCUMULATED SEDIMENTS. DISPOSE OF SEDIMENTS REMOVED FROM THE FACILITY AT AN ACCEPTABLE DISPOSAL AREA. SEDIMENT SHALL NOT BE ALLOWED TO ACCUMULATE IN DEPTHS GREATER THAN 1-FOOT. NO SEDIMENT SHALL BE ALLOWED TO ACCUMULATE TO PREVENT THE PROPER FUNCTION OF ANY PIPE OR CULVERT.

2. PERFORM MAINTENANCE MOWING OF GRASSED AREAS AT LEAST TWICE EACH YEAR. GRASSES SUCH AS TALL FESCUE SHOULD BE MOWED IN EARLY SUMMER AFTER EMERGENCE OF THE HEADS ON COOL SEASON GRASSES AND IN LATE FALL TO PREVENT SEEDS OF ANNUAL WEEDS FROM MATURING. MOWING OF LEGUMES CAN BE LESS FREQUENT. TREES AND SHRUBS SHOULD NOT BE PERMITTED TO GROW ON ANY PART OF THE GRADED EMBANKMENT.

3. PERFORM SOIL SAMPLING ON STABILIZED BMP SOIL AREAS ONCE EVERY FOUR (4) YEARS. SOIL SAMPLING AND TESTING SHOULD BE PERFORMED BY A QUALIFIED INDEPENDENT TESTING LABORATORY. APPLY ADDITIONAL LIME AND FERTILIZER IN ACCORDANCE WITH TEST RECOMMENDATIONS.

4. IN STABILIZED BMP AREAS, IF VEGETATION COVERS LESS THAN 40% FERTILIZE AND SEED IN ACCORDANCE WITH RECOMMENDATIONS FOR NEW SEEDLINGS, AS LISTED IN DAM CONSTRUCTION NOTES. IF VEGETATION COVERS MORE THAN 40% SURFACES, LIME FERTILIZE AND OVERSEED IN ACCORDANCE WITH CURRENT SEEDLING RECOMMENDATIONS.

5. PERFORM QUARTERLY INSPECTIONS OF THE RELEASE STRUCTURES, RISER SECTION AND CREST OF SPILLWAY FOR THE OBSERVANCE OF COLLECTED DEBRIS. IMMEDIATELY REMOVE ANY DEBRIS TO MAINTAIN THE INTEGRITY OF THE STRUCTURE AND PROVIDE AN ATTRACTIVE APPEARANCE. DURING QUARTERLY INSPECTIONS, THE POND DRAIN VALVE, USUALLY LEFT IN THE VALVE "CLOSED" POSITION, SHALL BE INSPECTED AND OPERATED THROUGH TWO COMPLETE FULL-OPEN TO FULL-CLOSE TO FULL-OPEN CYCLES.

6. PERFORM YEARLY STRUCTURAL INSPECTIONS OF THE FACILITY FOR DAMAGE STRUCTURAL INSPECTION SHALL BE PERFORMED ON THE CONCRETE RISER, ANTI-VORTEX DEVICE, TRASH RACK, ORIFICE/WEIR(S), OUTLET BARREL AND POND EMBANKMENT. IF DAMAGE IS EVIDENT, FURTHER INVESTIGATION BY A PROFESSIONAL ENGINEER MAY BE REQUIRED TO ASSESS THE CONTINUED INTEGRITY OF THE STRUCTURE.

7. PERFORM QUARTERLY INSPECTIONS OF THE GRADED SIDE SLOPES OF THE FACILITY FOR SIGNS OF ANIMAL/ RODENT BORROWS OR SLOPE EROSION. IMMEDIATELY PERFORM NECESSARY REPAIRS, REFILLING OR RESEEDING AS APPROPRIATE.

8. RECORD KEEPING. THE LANDOWNER OR DESIGNATED REPRESENTATIVE SHALL KEEP REASONABLE, ACCURATE WRITTEN RECORDS OR INSPECTIONS PERFORMED FOR THE STRUCTURE. RECORDS SHALL DOCUMENT ROUTINE MAINTENANCE AND/OR REPAIRS PERFORMED. COPIES SHALL BE PROVIDED TO THE COUNTY UPON REQUEST.

9. THE FACILITY SHALL NOT BE MODIFIED IN ANY WAY WITHOUT PRIOR CONSENT/APPROVAL OF THE COUNTY

GENERAL NOTES FOR CONSTRUCTION OF STORMWATER BASINS

1. THE CONTRACTOR SHALL PROVIDE ALL WORK AND MATERIALS NEEDED TO CONSTRUCT THE STORMWATER BASIN, STORMWATER MANAGEMENT PONDS, BEST MANAGEMENT PRACTICES, SEDIMENT BASINS AND SEDIMENT TRAPS. THE WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND MATERIALS NEEDED FOR THE COMPLETION OF GRADING AND EARTHWORK ASSOCIATED WITH THE CONSTRUCTION.

2. THE CONTRACTOR SHALL CONSULT AND PROVIDE FOR THE SERVICES OF A GEOTECHNICAL ENGINEER. THE GEOTECHNICAL ENGINEER SHALL PROVIDE TEST RESULTS ON PLACED DAM MATERIALS, IDENTIFYING SOIL CLASSIFICATION, PERMEABILITY, PLASTICITY INDEX, AND COMPACTION. ALL TESTS SHALL BE IN CONFORMAINCE WITH ASTM STANDARDS. THE COST OF THE SERVICES OF THE GEOTECHNICAL ENGINEER SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. SATISFACTORY GEOTECHNICAL REULTS ARE NEEDED PRIOR TO FINAL APPROVAL.

3. ALL INSPECTIONS REQUIRED FOR THE WORK SHALL BE PERFORMED BY A GEOTECHNICAL ENGINEER AT THE EXPENSE OF THE GENERAL CONTRACTOR.

4. ON-SITE EXCAVATED MATERIAL, IF DETERMINED SUITABLE FOR USE IN DAM CONSTRUCTION BY A GEOTECHNICAL ENGINEER, MAY BE USED FOR DAM CONSTRUCTION. SHOULD ADDITIONAL MATERIAL BE REQUIRED, THE CONTRACTOR SHALL IDENTIFY THE NEED FOR MATERIAL TO THE OWNER, AS ADDITIONAL BORROW MATERIAL MAY BE AVAILABLE ON-SITE. ALL EXCAVATED MATERIAL DETERMINED BY THE GEOTECHNICAL ENGINEER TO BE UNSUITABLE SHALL BE DISPOSED OF PROPERLY AT THE CONTRACTOR'S EXPENSE. ALL EXCAVATED MATERIAL NOT REQUIRED FOR BACKFILLING SHALL EITHER BE DEPOSITED ON SITE AND SPREAD BY THE CONTRACTOR, OR SHALL BE DEPOSITED IN ANOTHER AREA ON THE SITE AS DIRECTED BY THE OWNER. THE CONTRACTOR SHALL PROVIDE PROPER STABILIZATION, AND EROSION AND SEDIMENT CONTROL MEASURES AS MAY BE REQUIRED TO CONTROL EROSION AND SEDIMENTATION AT EARTHWORK AND STOCKPILE LOCATIONS PER THE VESCH THIRD EDITION.

5. UNDERCUT FOR THE FOUNDATION OF THE DAM EMBANKMENT SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATION. THE FOUNDATION SHALL BE BACKFILLED WITH SOILS CLASSIFIED AS SM, SC, OR CL UNDER THE UNIFIED SOIL CLASSIFICATION SYSTEM. SOILS SHALL HAVE A MINIMUM OF 15% BY WEIGHT FINES, HAVING A PLASTICITY INDEX OF 30% AND A PERMEABILITY OF 0.0004 IN./SEC. OR LESS. FILL SHALL BE COMPACTED IN 12-INCH LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, TO A DRY DENSITY OF 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). EXCAVATION FOR THE DAM KEY SHALL BE IN ACCORDANCE TO THE GEOTECHNICAL ENGINEER'S RECOMMENDATION. HEIGHT, DEPTH, AND WIDTH OF THE KEY SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS. THE KEY SHALL BE FORMED USING SOILS CLASSIFIED AS SC OR CL, WITH A PERMEABILITY OF 0.0004 IN./SEC. OR LESS.

6. THE DAM CORE SHALL BE AS CONSTRUCTED WITH NON-EXPANSIVE SC OR CL CLAYEY MATERIAL WITH PERMEABILITY OF 0.0004 IN./SEC. OR LESS. THE FILL OF THE CORE SHALL BE MADE IN 12-INCH LIFTS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER, TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). SIZE, SHAPE, WIDTH, DEPTH, AND HEIGHT OF THE DAM CORE SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS. TO COVER THE DAM CORE, A SILTY FINE SAND OR CLAYEY SOIL (SM, SC, OR CL) SHALL BE PLACED. A VEGETATIVE COVER USING VDOT EC-2 EROSION CONTROL BLANKETS SHALL BE PLACED ON DAM SLOPES AND CREST TO PREVENT EROSION.

7. UPON COMPLETION, THE CONSTRUCTION OF THE DAM WILL BE CERTIFIED BY A GEOTECHNICAL ENGINEER WHO HAS INSPECTED THE STRUCTURE DURING CONSTRUCTION.

8. A RECORD DRAWING (AS-BUILT) SHALL BE SUBMITTED, REVIEWED, AND APPOVED PRIOR TO RELEASE OF THE POSTED BOND / SURETY.

RECORD DRAWINGS.: 3/04/2006

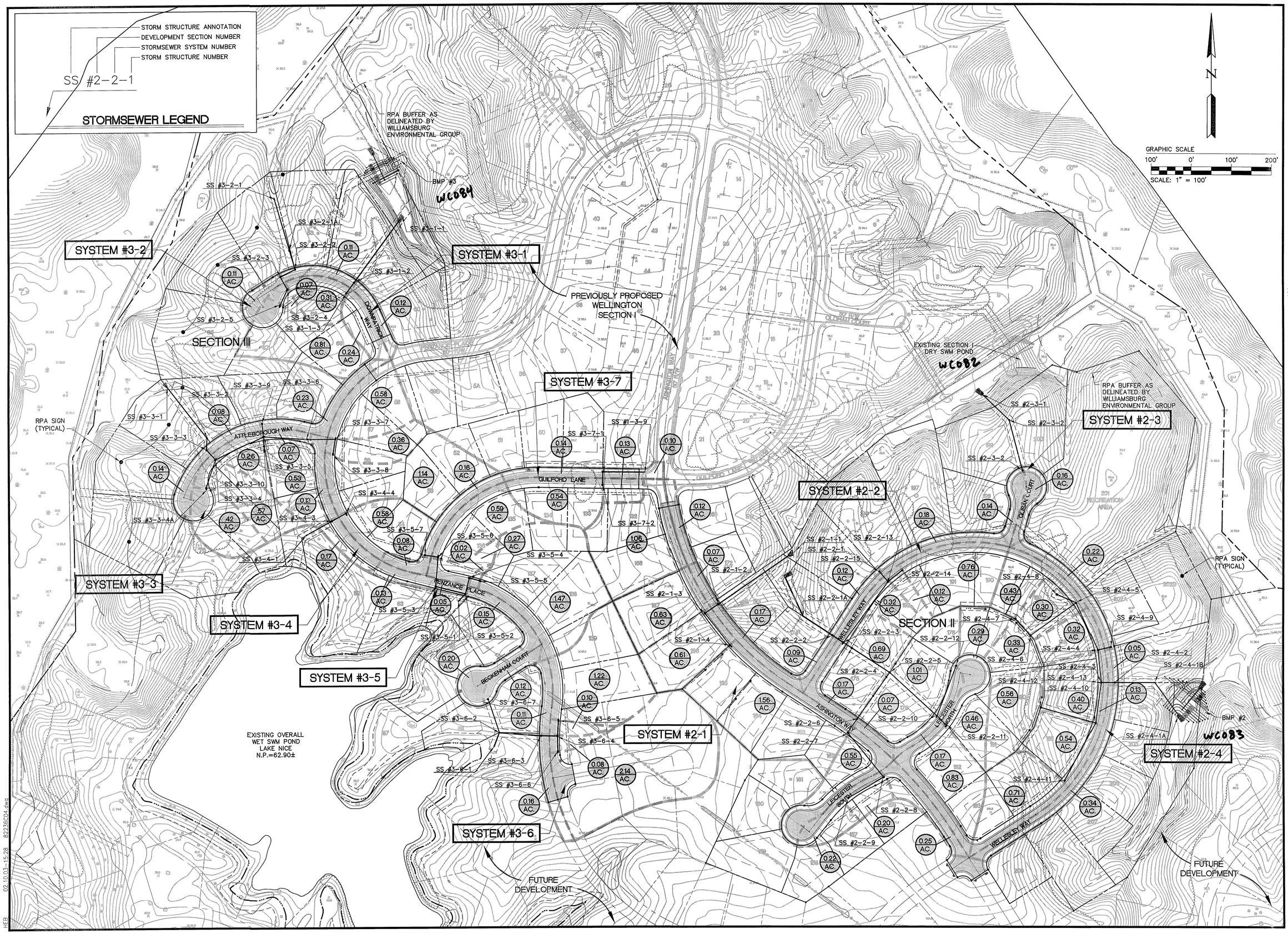
No.	DATE	REVISION / COMMENT / NOTE	BY
1	3/04/06	REVISED BMP DRAWINGS PER J.C.C. COMMENTS	TCS

COMMONWEALTH OF VIRGINIA — G. ARCHER MARSTON, III — No. 018232 — PROFESSIONAL ENGINEER

AES CONSULTING ENGINEERS
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994

POND NOTES AND DETAILS
WELLINGTON
SECTION II
OWNER/DEVELOPER: WELLINGTON, L.L.C.
JAMES CITY COUNTY — STONEHOUSE DISTRICT — VIRGINIA

Designed	Drawn
HWP/CWG	MEG
Scale	Date
1"=100'	4/18/06
Project No.	
8223-06	
Drawing No.	
27	



No.	DATE	REVISION / COMMENT / NOTE	BY
3	2/7/03	REVISED PER J.C.C. COMMENTS	HWP
2	1/1/03	REVISED PER J.C.C. COMMENTS	HWP
1	9/20/02	REVISED PER J.C.C. COMMENTS	HWP

COMMONWEALTH OF VIRGINIA
G. ARCHER MARSTON, III
No. 08232
2/1/03
PROFESSIONAL ENGINEER

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994
CONSULTING ENGINEERS

OVERALL DRAINAGE PLAN
WELLINGTON
SECTION II AND III
OWNER/DEVELOPER- WELLINGTON, L.L.C.

JAMES CITY COUNTY STONEHOUSE DISTRICT VIRGINIA

Designed HWP/CWG	Drawn RMS/HBK
Scale 1"=100'	Date 3/28/01
Project No. 8223-06	
Drawing No. 4	

02.10.03-15:28 82236C04.dwg
HEB

WC084

PROVIDE APPOX 10' LONG RIPRAP APRON CONSISTING OF CLASS I EROSION CONTROL STONE (2.5 CY REQ'D)

ES-1 END SETION INV=34.00

4' WIDE PAVED EMERGENCY SPILLWAY TRAPEZOIDAL CONTROL SECTION WITH 3:1 SS CREST ELEV.=42.00

80 L.F. OF 18" RCP @ 2.50%

48" RCP RISER W/ 78" ANTI-VORTEX DEVICE RISER CREST ELEV.=40.80 3" ORIFICE INV.=36.00

100 YEAR HIGH WATER ELEVATION=42.90

PROVIDE APPOX 10' LONG RIPRAP APRON CONSISTING OF CLASS I EROSION CONTROL STONE (2.5 CY REQ'D)

VARIABLE WIDTH SETBACK TO 100' RPA BUFFER

20' ACCESS EASEMENT TO BMP #3 (WITH 12' WIDE COMPACTED AGREGATE ACCESS ROAD.)

SS #3-2-1 ES-1 INV=37.00

SS #3-2-1A DI-1 TOP=50.00 INV. IN=46.00 INV. OUT=44.30

30' JCSA DRAINAGE & UTILITY EASEMENT

130 L.F. OF 15" RCP @ 5.61%

25' BUFFER OFF 100 YR HIGH WATER ELEVATION (20' MAINT./ACCESS) 5' LANDSCAPE

SS #3-1-1 ES-1 INV=40.50

20' DRAINAGE ESMT. TO BE DEDICATED TO HOA

190 L.F. OF 18" RCP @ 13.42%

SS #3-1-2 DI-3A STA. 12+09 TOP=70.57 INV=66.00

33 L.F. OF 18" RCP @ 0.52%

MIN. F.F.=71.2

MIN. F.F.=62.0

5' LANDSCAPE PRESERVATION EASEMENT

50 L.F. OF 15" RCP @ 20.0%

SS #3-2-2 MH-1 STA. 13+49 TOP=64.00 INV. IN=57.98 INV. OUT=56.00

41 L.F. OF 15" RCP @ 2.00%

SS #3-2-3 DI-1 STA. 13+84.5 TOP=63.52 INV=58.80

37 L.F. OF 15" RCP @ 0.54%

50' R/W

SS #3-2-4 DI-3C, L=6' STA. 13+84.5 TOP=63.52 INV=59.00

40 L.F. OF 15" RCP @ 1.88%

SS #3-2-5 DI-3B, L=4' STA. 14+15 TOP=63.80 INV=59.75

SS #3-1-3 DI-3A STA. 12+09 TOP=70.57 INV=66.17

Not Installed

DOWNPATRICK WAY

PENZANCE PLACE 50' R/W

LANCELOT WAY 50' R/W

WATER

LOT 29 LOT 28 LOT 30 LOT 31 LOT 33 LOT 32 LOT 41 LOT 40 LOT 39 LOT 38 LOT 37 LOT 36 LOT 47 LOT 48

60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 79 56 57 58 59A 59B 50 51 52 49

GRAPHIC SCALE

50' 0' 50' 100'

SCALE: 1" = 50'

N

No.	DATE	REVISION / COMMENT / NOTE	BY
3	2/7/03	REVISED PER J.C.C. COMMENTS	HWP
2	1/1/03	REVISED PER J.C.C. COMMENTS	HWP
1	9/20/02	REVISED PER J.C.C. COMMENTS	HWP

COMMONWEALTH OF VIRGINIA
G. ARCHER MARSTON, III
No. 018232
2/7/03
PROFESSIONAL ENGINEER

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994
CONSULTING ENGINEERS

DRAINAGE, EROSION AND SEDIMENT CONTROL PLAN
WELLINGTON
SECTION III
OWNER/DEVELOPER: WELLINGTON, L.L.C.

JAMES CITY COUNTY STONEHOUSE DISTRICT VIRGINIA

Designed HWP/CWG	Drawn RMS/HBK
Scale 1"=50'	Date 3/28/01
Project No. 8223-06	
Drawing No. 22	

02.10.03-15:44 82236022.dwn

HEB

SECTION 3

BMP WC-084

RECEIVED
MAY 31 2006
ENVIRONMENTAL DIVISION

James City County, Virginia
Environmental Division

Stormwater Management / BMP Facilities
Record Drawing and Construction Certification Forms

(Note: In accordance with the requirements of the Chesapeake Bay Preservation Ordinance, Chapter 23, Section 23-10(4), BMP's shall be designed and constructed in accordance with the manual entitled James City County Guidelines for Design and Construction of Stormwater Management BMP's. Erosion and sediment control policy and approved plans generally require that at the completion of the project and prior to release of surety, an "as-built" plan prepared by a registered Professional Engineer or Certified Land Surveyor must be provided for the drainage system for the project, including any Best Management Practice (BMP) facilities. In addition, for BMP facilities involving the construction of an impounding structure or dam embankment, certification is required by a Professional Engineer who has inspected the structure during its construction. Currently there are over 20 water quality type BMP's accepted by the County.)

Section 1 - Site Information:

Project Name: WELLINGTON, SECTION II
Structure/BMP Name: BMP #3
Project Location: 1000' SOUTH OF ROCHAMBEAU DRIVE
BMP Location: BETWEEN SECTION I AND SECTION III, 460' NORTH OF PENZANCE PLACE
County Plan No.: S - 37 - 01

Project Type:
- ☑ Residential
- ☐ Business
- ☐ Commercial
- ☐ Office
- ☐ Institutional
- ☐ Industrial
- ☐ Public
- ☐ Roadway
- ☐ Other _____

Tax Map/Parcel No.: (13-3)(1-12)
BMP ID Code (if known): _____
Zoning District:: R-1
Land Use: SINGLE FAMILY RESIDENTIAL
Site Area (sf or acres): 31.7

Brief Description of Stormwater Management/BMP Facility: EXTENDED DETENTION DRY POND

Nearest Visible Landmark to SWM/BMP Facility: INTERSECTION OF DOWNPATRICK WAY AND PENZANCE PLACE

Nearest Vertical Ground Control (if known):
- ☑ JCC Geodetic Ground Control
- ☐ USGS
- ☐ Temporary
- ☐ Arbitrary
- ☐ Other

Station Number or Name: 302
Datum or Reference Elevation: 80.80
Control Description: MAIN STATION
Control Location from Subject Facility: APPROXIMATELY 2500'± DUE NORTH OF BMP #3

Section 2 - Stormwater Management / BMP Facility Construction Information:

PreConstruction Meeting Held for Construction of SWM/BMP Facility: ☐ Yes ☐ No ☑ Unknown
Approx. Construction Start Date for SWM/BMP Facility: _____
Facility Monitored by County Representative during Construction: ☐ Yes ☐ No ☑ Unknown
Name of Site Work Contractor Who Constructed Facility: AMERICAN EASTERN, INC.
Name of Professional Firm Who Routinely Monitored Construction: _____
Date of Completion for SWM/BMP Facility: UNKNOWN
Date of Record Drawing/Construction Certification Submittal: APRIL 20, 2006

(Note: Record Drawing and Construction Certifications are required within thirty (30) days of the completion of Stormwater Management and/or BMP facility construction. Record Drawings and Construction Certifications must be reviewed and approved by the James City County Environmental Division prior to final inspection, acceptance and bond or surety release.)

Section 3 - Owner / Designer / Contractor Information:

Owner/Developer: *(Note: Site Owner or Applicant responsible for development of the project.)*

Name: AMERICAN EASTERN, INC.
Mailing Address: 632 HAMPTON HIGHWAY
YORKTOWN, VA 23693
Business Phone: 757-867-8800 Fax: 757-867-7188
Contact Person: DICK ASHE Title: PRESIDENT

Design Professional: *(Note: Professional Engineer or Certified Land Surveyor responsible for the design and preparation of plans and specifications for the Stormwater Management / BMP facility.)*

Firm Name: AES CONSULTING ENGINEERS
Mailing Address: 5248 OLDE TOWNE ROAD, SUITE 1
WILLIAMSBURG, VA 23188
Business Phone: 757-253-0040
Fax: 757-220-8994
Responsible Plan Preparer: HOWARD PRICE
Title: PROJECT MANAGER
Plan Name: WELLINGTON SECTION II AND III
Firm's Project No. 5223-06
Plan Date: 3/28/01
Sheet No.'s Applicable to SWM/BMP Facility: 4 / 22 / 27 / ____ / ____

BMP Contractor: *(Note: Site Work Contractor directly responsible for construction of the Stormwater Management / BMP facility.)*

Name: AMERICAN EASTERN
Mailing Address: 632 HAMPTON HIGHWAY
YORKTOWN, VA 23693
Business Phone: 757-867-8800
Fax: 757-867-7188
Contact Person: DICK ASHE
Site Foreman/Supervisor: MATT LUSK
Specialty Subcontractors & Purpose (for BMP Construction Only): _____

Section 4 - Professional Certifications:

Certifying Professionals: *(Note: A Registered Professional Engineer or Certified Land Surveyor is responsible for preparation of a Record Drawing, sometimes referred to as an As-Built plan, for the drainage system for the project including any Stormwater Management/BMP Facilities. A Registered Professional Engineer is responsible for the inspection, monitoring and certification of Stormwater Management / BMP facilities during its construction.)*

Record Drawing and Construction Certifications for Stormwater Management / BMP Facilities

Record Drawing Certification

Firm Name: AES Consulting Engineers
Mailing Address: 5248 Olde Towne Road, Ste 1
Williamsburg, VA 23188
Business Phone: 757-253-0040
Fax: 757-220-8994

Name: V. Marc Bennett
Title: Senior Project Manager

Signature: V. Marc Bennett
Date: 4/20/06

I hereby certify to the best of my knowledge and belief that this record drawing represents the actual condition of the Stormwater Management / BMP facility. The facility appears to conform with the provisions of the approved design plan, specifications and stormwater management plan, except as specifically noted.

COMMONWEALTH OF VIRGINIA
VAN MARC BENNETT
4/20/06
No. 26628
PROFESSIONAL ENGINEER

_____ (Seal)

Virginia Registered Professional Engineer or Certified Land Surveyor

Construction Certification

Firm Name: _____
Mailing Address: _____
Business Phone: _____
Fax: _____

Name: _____
Title: _____

Signature: _____
Date: _____

I hereby certify to the best of my knowledge and belief that this Stormwater Management/BMP facility was monitored and constructed in accordance with the provisions of the approved design plan, specifications and stormwater management plan, except as specifically noted.

_____ (Seal)

Virginia Registered Professional Engineer

STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

I. Methods and Presentation: *(Required for all Stormwater Management / BMP facilities.)*

XX 1. All constructed facilities meet approved design plans, unless otherwise shown. Record information or deviations from approved design plan shown in clearly annotated format and/or boxed beside design values.

XX 2. Elevations to the nearest 0.1' unless higher accuracy is needed to show positive drainage.

XX 3. All plan sheets labeled with "RECORD DRAWING" in large text in lower right hand corner (Approved County Plan Number and BMP ID Code can be included if known).

XX 4. All plan sheet revision blocks modified to indicate date and record drawing status.

XX 5. All plan sheets have certification statements and certifying professional's signature and seal.

II. Minimum Standards: *(Required for all Stormwater Management / BMP facilities, as applicable.)*

XX 1. All requirements of Section I (Methods and Presentation) apply to this section.

XX 2. Plan Views: Show general location, arrangement and dimensions. Location and alignment shall generally match approved design plans.

XX 3. Profile or elevations along top or berm of the facility. At a minimum, elevations are required at each end, at intervals not to exceed 50 feet and where low spots may be present. Top of embankment or berm elevations must be no less than design elevation plus any settlement allowances.

XX 4. Top widths, berm widths and embankment side slopes.

XX 5. Show length, width and depth of facility or grading, contours or spot elevations as required to verify permanent pool and design storage volumes were met or were reasonably close to the approved design. Evaluation of as-built grading, contours, spot elevations, or cross-sections, may be necessary by the professional to ensure approved design configurations, depths and volumes were closely maintained. If grading or elevations are significantly different from the approved plan, the Environmental Division shall be contacted immediately to determine whether the variation is acceptable or whether further evidence will be required. Facilities which do not closely resemble approved plan grades, elevations or configurations may require regrading by the Contractor; check volumetric computations; and/or a check hydraulic routing to ensure approved design water surface elevations, discharges or freeboard were closely maintained.

XX 6. Cross-section of the embankment through the principal spillway or outlet barrel. Must extend at least 100 ft. downstream of the pipe outlet or to recorded site property line, whichever is closer. Proper correlation is required between principal spillway (control structure) crest, emergency spillway crest, orifice and weirs and the top of the dam or facility. All elevations and dimensions must reasonably match the design plan or be sequentially relative to each other and the facility must reflect the required design storage volume(s) and/or design depth.

XX 7. Profile or elevations along the entire centerline of the emergency spillway. Emergency spillway may be steeper, but no flatter or narrower than design.

XX 8. Elevation of the principal spillway crest or outlet crest of the structure.

XX 9. Primary control structure (riser) diameter or dimensions, height, type of material and base size. Indicate provisions for access that are present such as steps, ladders, etc.

XX 10. Dimensions, locations and elevations of outlet orifices, weirs, slots and drains.

XX 11. Type and size of anti-vortex and trash rack device. Height, diameter, dimensions, bar spacings (if applicable) and elevations relative to the principal spillway crest. Indicate if lockable hatch is present or not.

INC [redacted]

INC [redacted]

XX 14. Elevation of the principal spillway barrel (outlet pipe) inlet and outlet invert.

XX 15. Outlet barrel diameter, length, slope, type and thickness class of material and type of flared end sections, headwall or endwall.

XX 16. Outfall protection dimension, type and ~~depth of~~ rock and if underlain filter fabric is present.

XX 17. BMP interior and periphery landscaping zones conform with arrangements and requirements of the approved design plan.

XX 18. Maintenance plan taken from approved design plan transposed onto record drawing set.

N/A 19. Fencing location and type, if applicable to facility.

XX 20. BMP vicinity properly cleaned of stockpiles and construction debris.

XX 21. No visual signs of erosion or channel degradation immediately downstream of facility.

XX 22. Any other information formally requested by the Environmental Division specific to the constructed SWM/BMP facility.

STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

III. Group A - Wet Ponds *(Includes A-1 Small Wet Ponds; A-2 Wet Ponds; A-3 Wet Ext Det Ponds.)*

N/A A1. All requirements of Section II, Minimum Standards, apply to Group A facilities.

N/A A2. Principal spillway consists of reinforced concrete pipe with O-Ring gaskets for watertight joint construction.

N/A A3. Sediment forebays or pretreatment devices provided at inlets to pond. Generally 4 to 6 ft. deep.

N/A A4. Access for maintenance and equipment is provided to the forebay(s). Access corridors are at least 12 ft. wide, have a maximum slope of 15 percent and are adequately stabilized to withstand heavy equipment or vehicle use.

N/A A5. Adequate fixed vertical sediment depth markers installed in the forebay(s) for future sediment monitoring purposes.

N/A A6. Pond liner (if required) provided. Either clay liners, polyliners, bentonite liners or use of chemical soil additives based on requirements of the approved plan.

N/A A7. Minimum 6 percent slope safety bench extending a minimum of 15 feet outward from normal pool edge and/or an aquatic bench extending a minimum of 10 feet inward from the normal shoreline with a maximum depth of 12 inches below the normal pool elevation, if applicable, per the approved design plans. (Note: Safety benches may be waived if pond side slopes are no steeper than 4H:1V).

N/A A8. No trees are present within a zone 15 feet around the embankment toe and 25 feet from the principal spillway structure.

N/A A9. Wet permanent pool, typically 3 to 6 feet deep, is provided and maintains level within facility.

N/A A10. Low flow orifice has a non-clogging mechanism.

N/A A11. A pond drain pipe with valve was provided.

N/A A12. Pond side slopes are not steeper than 3H:1V, unless approved plan allowed for steeper slope.

N/A A13. End walls above barrels (outlet pipe) greater than 48 inch in diameter are fenced to prevent a fall hazard.

STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

IV. Group B - Wetlands *(Includes B-1 Shallow Marsh; B-2 Ext Det Shallow Wetlands; B-3 Pond Wetland System and B-4 Pocket Wetland)*

N/A B1. Same requirements as Group A Wet Ponds.

N/A B2. Minimum 2:1 length to width flow path provided across the facility.

N/A B3. Micropool provided at or around outlet from BMP (generally 3 to 6 ft. deep).

N/A B4. Wetland type landscaping provided in accordance with approved plan. Includes correct pondscaping zones, plant species, planting arrangements, wetland beds, etc. Wetland plants include 5 to 7 emergent wetland species. Individual plants at 18 inches on center in clumps.

N/A B5. Adequate wetland buffer provided (Typically 25 ft. outward from maximum design water surface elevation and 15 ft. setback to structures).

N/A B6. No more than one-half (½) of the wetland surface area is planted.

N/A B7. Topsoil or wetland mulch provided to support vigorous growth of wetland plants.

N/A B8. Planting zones staked or flagged in field and locations subsequently established by appropriate field surveying methods for record drawing presentation.

STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

V. Group C - Infiltration Practices

(Includes C-1 Infiltration Trench; C-2 Infiltration Trench; C-3 Infiltration Basin; and C-4 Infiltration Basin)

N/A C1. All requirements of Section II, Minimum Standards, apply to Group C facilities as applicable.

N/A C2. Facility is not located on fill slopes or on natural ground in excess of six (6) percent.

N/A C3. Pretreatment devices provided prior to entry into the infiltration facility. Acceptable pretreatment devices include sediment forebays, sediment basins, sediment traps, sump pits or inlets, grass channels, plunge pools or other acceptable measures.

N/A C4. Three (3) or more of the following pretreatment devices provided to protect long term integrity of structure: grass channel; grass filter strip; bottom sand layer; upper filter fabric layer; use of washed bank run gravel aggregate.

N/A C5. Sides of infiltration practice lined with filter fabric.

N/A C6. Facility was not used for erosion and sediment control purposes and sediment was prevented from entering the facility to the greatest extent possible during construction.

N/A C7. Stabilization and acceptable vegetative cover established over contributing drainage area prior to conveyance of stormwater to the facility.

N/A C8. Minimum one hundred (100) foot separation horizontally from any known water supply well and minimum one hundred (100) foot separation upslope from any building.

N/A C9. Minimum twenty-five (25) foot separation down gradient from any structure.

N/A C10. Stormwater outfalls provided for overflow associated with larger design storms.

N/A C11. No visual signs of erosion or channel degradation immediately downstream of facility.

N/A C12. Facility does not currently cause any apparent surface or subsurface water problems to downgrade properties.

N/A C13. Observation well provided.

N/A C14. Adequate, direct access provided to the facility for future maintenance, operation and inspection.

STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

VI. Group D - Filtering Systems *(Includes D-1 Bioretention Cells; D-2 Surface Sand Filters; D-3 Underground Sand Filters; D-4 Perimeter Sand Filters; D-5 Organic Filters; and D-6 Pocket Sand Filters)*

N/A D1. All requirements of Section II, Minimum Standards, apply to Group D facilities.

N/A D2. Sediment pretreatment devices provided.

N/A D3. For D-1 BMPs (Bioretention Cells), pretreatment consisting of a grass filter strip below level spreader (deflector); a gravel diaphragm; and mulch and planting soil layers were provided.

N/A D4. For D-1 BMPs (Bioretention Cells), plantings consist of native plant species; vegetation provided was based on zones of hydric tolerances; trees and understory of shrubs and herbaceous materials were provided; woody vegetation is absent from inflow locations; and trees are located around facility perimeter.

N/A D5. Facility was not used for erosion and sediment control purposes and sediment was prevented from entering the facility to the greatest extent possible during construction.

N/A D6. No visible signs of accumulated silt/sediment were present in the facility following construction or alternately, accumulated silt/sediment was properly removed .

N/A D7. Filtering system is off-line from storm drainage conveyance system.

N/A D8. Overflow outlet has adequate erosion protection.

N/A D9. Deflector, diversion, flow splitter or regulator structure provided to divert the water quality volume to the filtering structure.

N/A D10. Minimum four (4) inch perforated underdrain provided in a clean aggregate envelope layer beneath the facility.

N/A D11. Minimum fifty (50) foot separation from any slope fifteen (15) percent or greater. Minimum one hundred (100) foot separation horizontally from any known water supply well. Minimum one hundred (100) foot separation upslope and twenty-five (25) foot separation downslope from any building.

N/A D12. Stabilization and acceptable vegetative cover established over contributing drainage area prior to conveyance of stormwater to the facility.

N/A D13. No visual signs of erosion or channel degradation immediately downstream of facility.

N/A D14. Adequate, direct access provided to the pretreatment area and/or filter bed for future maintenance.

STORMWATER MANAGEMENT / BMP FACILITIES
AS-BUILT PLAN CHECKLIST

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

VII. Group E - Open Channel Systems

(Includes E-1 Wet Swales (Check Dams); E-2 Dry Swales;and E-3 Biofilters)

N/A E1. All requirements of Section II, Minimum Standards, apply to Group E facilities as applicable.

N/A E2. Open channel system has constructed longitudinal slope of less than four (4) percent.

N/A E3. No visual signs of erosion in the open channel system's soil and/or vegetative cover.

N/A E4. Open channel side slopes are no steeper than 2H:1V at any location. Preferred channel sideslope is 3H:1V or flatter.

N/A E5. No visual signs of ponding are present at any location in the open channel system, except at rock check dam locations for E-1 systems (Wet Swales).

N/A E6. For E-2 BMPs (Dry Swales), an underdrain system was provided.

N/A E7. Treated timber or rock check dams provided as pretreatment devices for the open channel system.

N/A E8. Gravel diaphragm provided in areas where lateral sheet flow from impervious surfaces are directly connected to the open channel system.

N/A E9. Grass cover/stabilization in the open channel system appears adaptable to the specific soils and hydric conditions for the site and along the channel system.

N/A E10. Open channel system areas with grass covers higher than four (4) to six (6) inches were properly mowed.

N/A E11. Facility was not used for erosion and sediment control purposes and sediment was prevented from entering the facility to the greatest extent possible during construction.

N/A E12. No visible signs of accumulated silt/sediment were present in the facility following construction or alternately, accumulated silt/sediment was properly removed and no adverse affects to the function of the facility are anticipated.

N/A E13. For E-3 BMPs (Biofilters), the bottom width is six (6) feet maximum at any location.

N/A E14. For E-3 BMPs (Biofilters), sideslopes are 3H:1V maximum at any location.

N/A E15. For E-3 BMPs (Biofilters), the constructed channel slope is less than or equal to three (3) percent at any location.

N/A E16. For E-3 BMPs (Biofilters), the constructed grass channel is approximately equivalent to the constructed roadway length.

STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

VIII. Group F - Extended Dry Detention

(Includes F-1 Timber Walls; and F-2 Dry Extended Detention with Forebay)

XX F1. All requirements of Section II, Minimum Standards, apply to Group F facilities.

XX F2. Basin bottom has positive slope and drainage from all basin inflow points to the riser (or outflow) location.

N/A F3. Timber wall BMP used in intermittent stream only. (ie. Prohibited in perennial streams.)

N/A F4. Forebay provided approximately 20 ft. upstream of the facility. Forebays generally 4 to 6 feet in depth.

XX F5. A reverse slope pipe, vertical stand pipe or mini-barrel and riser was provided to prevent clogging.

XX F6. Principal spillway and outlet barrel provided consisting of reinforced concrete pipe ~~with O-Ring gaskets for watertight joint construction~~.

N/A F7. Mini-barrel and riser, if used, contains a removable trash rack to reduce clogging.

XX F8. Low flow orifice, if used, has a minimum diameter of three (3) inches or two (2) inches if internal orifice control was utilized and a small, cage type external trash rack.

N/A F9. Timbers properly reinforced or concrete footing provided if soil conditions were prohibitive.

N/A F10. Timber wall cross members extended to a minimum depth of two (2) feet below ground elevation.

XX F11. Protection against erosion and scour from the low flow orifice and weir-flow trajectory provided.

XX F12. Stilling basin or standard outlet protection provided at principal spillway outlet.

XX F13. Adequate, direct access provided to the facility. Access corridor to facility is at least ten (10) feet wide, slope is less than twenty (20) percent and appropriate stabilization provided for equipment and vehicle use. Access extends to forebay, standpipe and timber wall, as applicable.

XX F14. No visual signs of undercutting of timber walls or clogging of the low orifice were present.

XX F15. No visual signs of erosion or channel degradation immediately downstream of facility.

XX F16. No visible signs of accumulated silt/sediment were present in the facility following construction or alternately, accumulated silt/sediment was properly removed and no adverse affects to the function of the facility are anticipated.

STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

IX. Group G - Open Spaces *(Includes All Open Space Types G-1; G-2; and G-3)*

N/A G1. All requirements of Section II, Minimum Standards, apply to Group G facilities as applicable.

N/A G2. Constructed impervious areas appear to conform with locations indicated on the approved plan and appear less than sixty (60) percent impervious in accordance with the requirements of the James City County Chesapeake Bay Preservation Ordinance.

N/A G3. Dedicated open space areas are in undisturbed common areas, conservation easements or are protected by other enforceable instruments that ensures perpetual protection.

N/A G4. Provisions included to clearly specify how the natural vegetated areas utilized as dedicated open space will be managed and field identified (marked).

N/A G5. Adequate protection measures were implemented during construction to protect the defined dedicated open space areas.

N/A G6. Dedicated open space areas were not disturbed during construction (ie. cleared, grubbed or graded).

STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

X. Storm Drainage Systems (Associated with BMP's Only)

(Includes all incidental stormwater drainage conveyance systems associated with SWM/BMP facilities such as onsite or offsite storm drains, open channels, inlets, manholes, junctions, outlet protections, deflectors, etc. These facilities are external to the treatment function of, but are directly associated with drainage to and/or from a constructed SWM/BMP facility. The intent of this portion of the certification is to accurately identify the type and quantity of inflow or outflow points associated with the facility for future reference. The Professional may use his/her own discretion to determine inclusive facilities to meet the intent of this section. As a general rule, storm drainage systems would include incidental facilities to the nearest access structure upslope or downslope from the normal physical limits of the facility or 800 feet of storm drainage conveyance system length, whichever is less.)

XX SD1. All requirements of Section II, Minimum Standards, apply to Storm Drainage Systems.

XX SD2. Horizontal location of all pipe and structures relative to the SWM/BMP facility.

XX SD3. Type, top elevation and invert elevation of all access type structures (inlets, manholes, etc.).

XX SD4. Material type, size or diameter, class, invert elevations, lengths and slopes for all pipe segments.

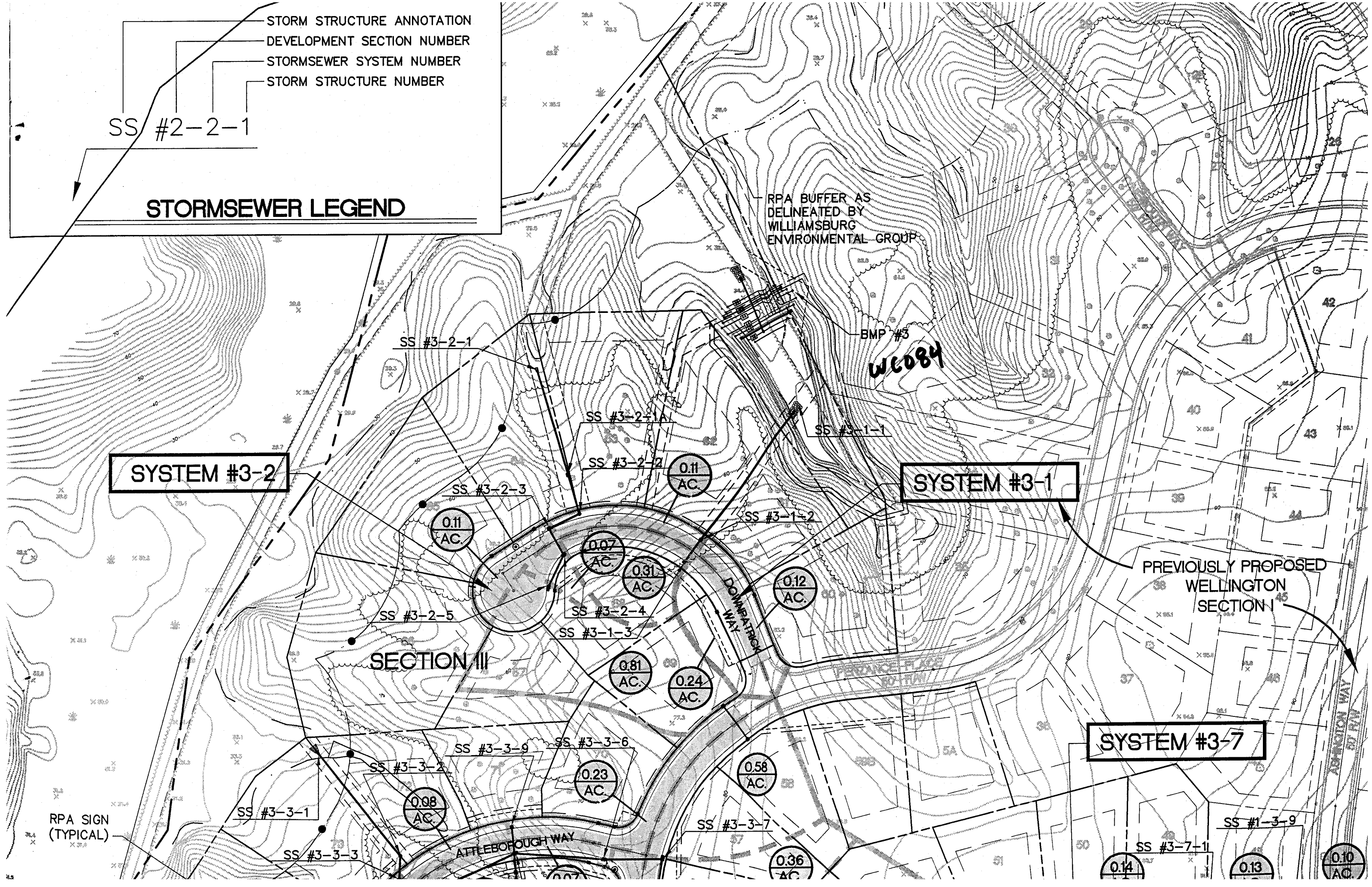
XX SD5. **Class, length, width and depth of riprap and outlet protections or dimensions of special energy dissipation structures.**

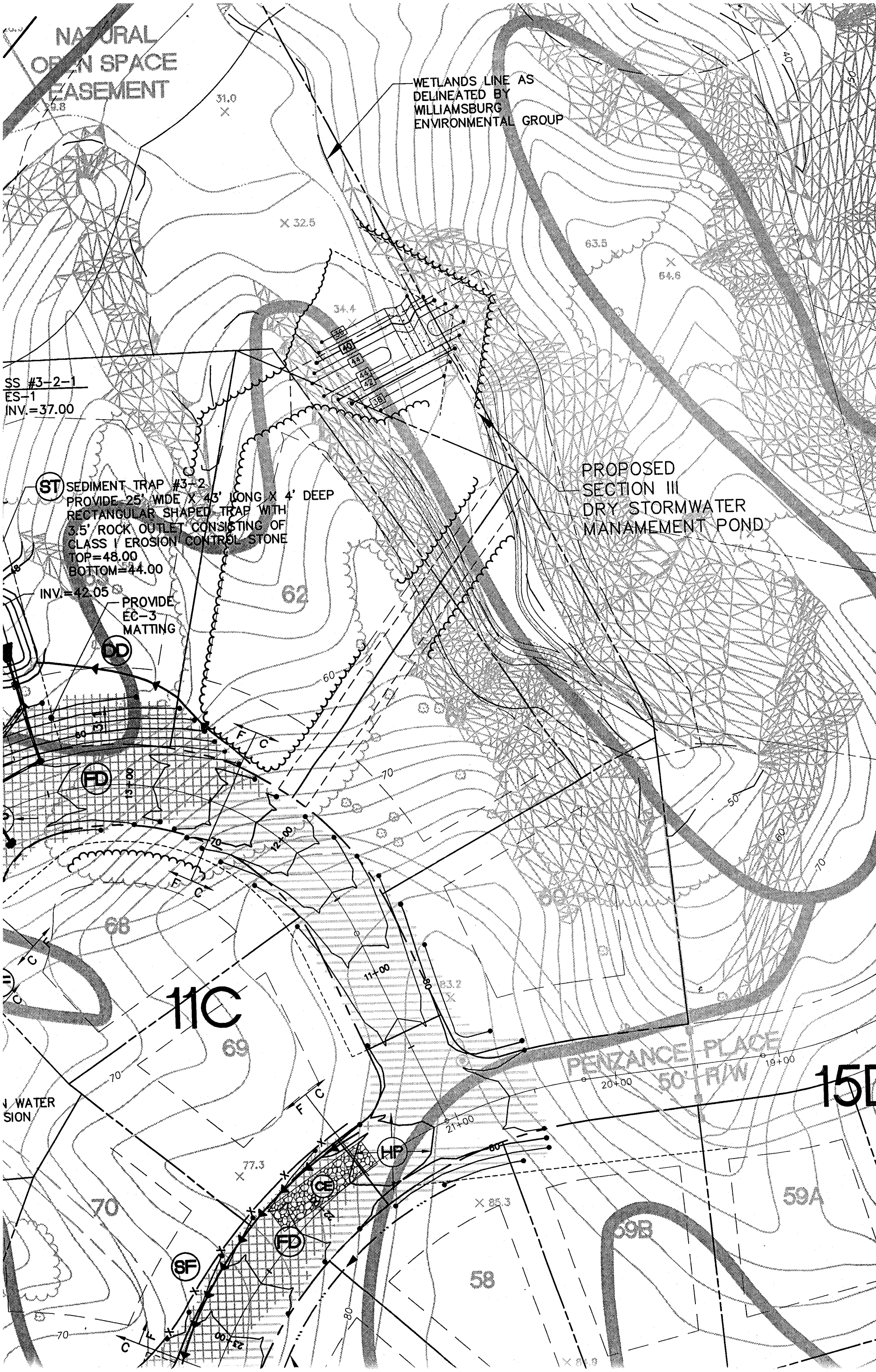
XII. Other Systems

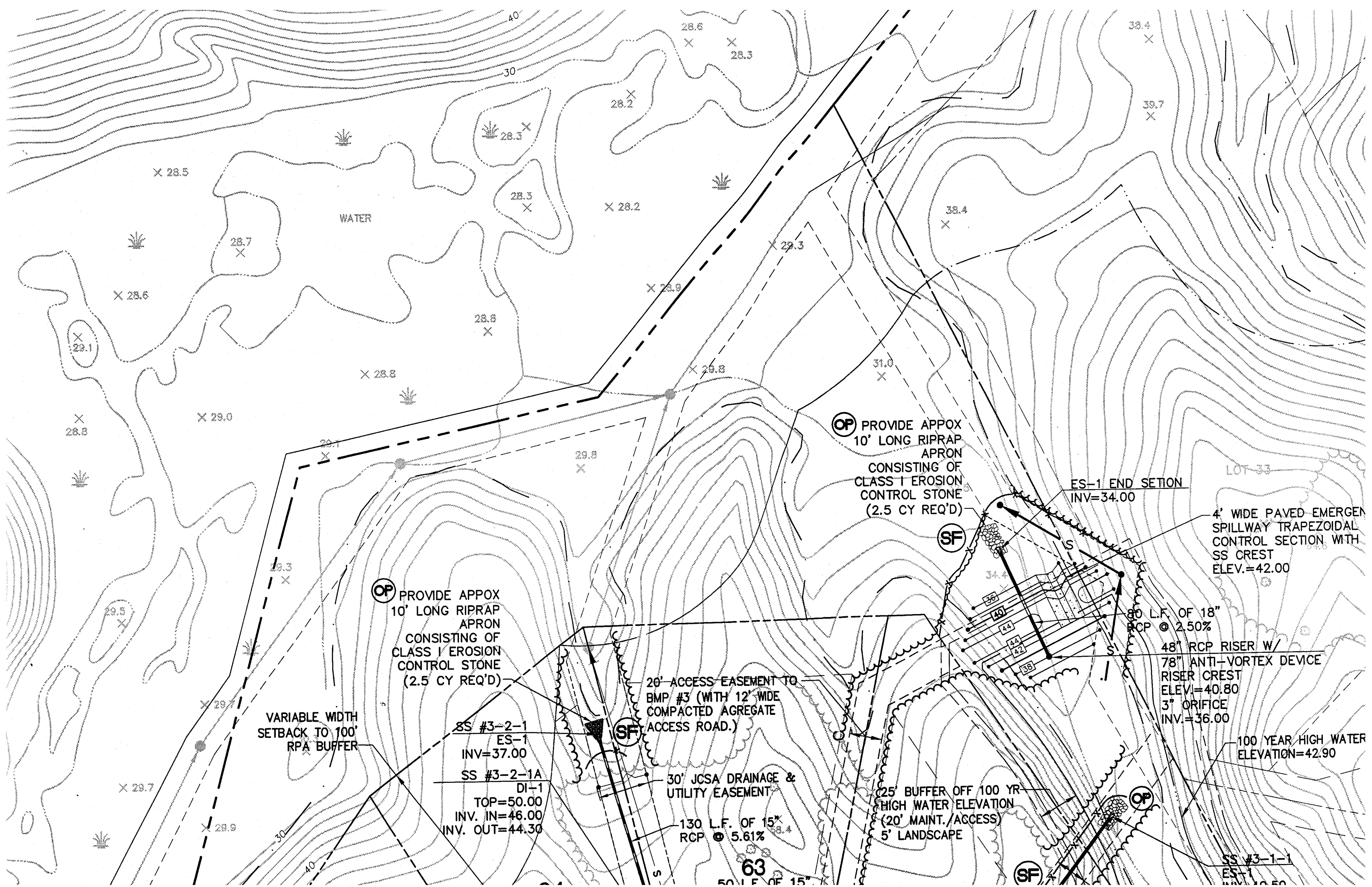
(Includes any non-typical, specialty, manufactured or innovative stormwater management/BMP practices or systems generally accepted for use as or in conjunction with other acceptable stormwater management / BMP practices. Requires evidence of prior satisfactory industry use and prior Environmental Division approval, waiver or exception .)

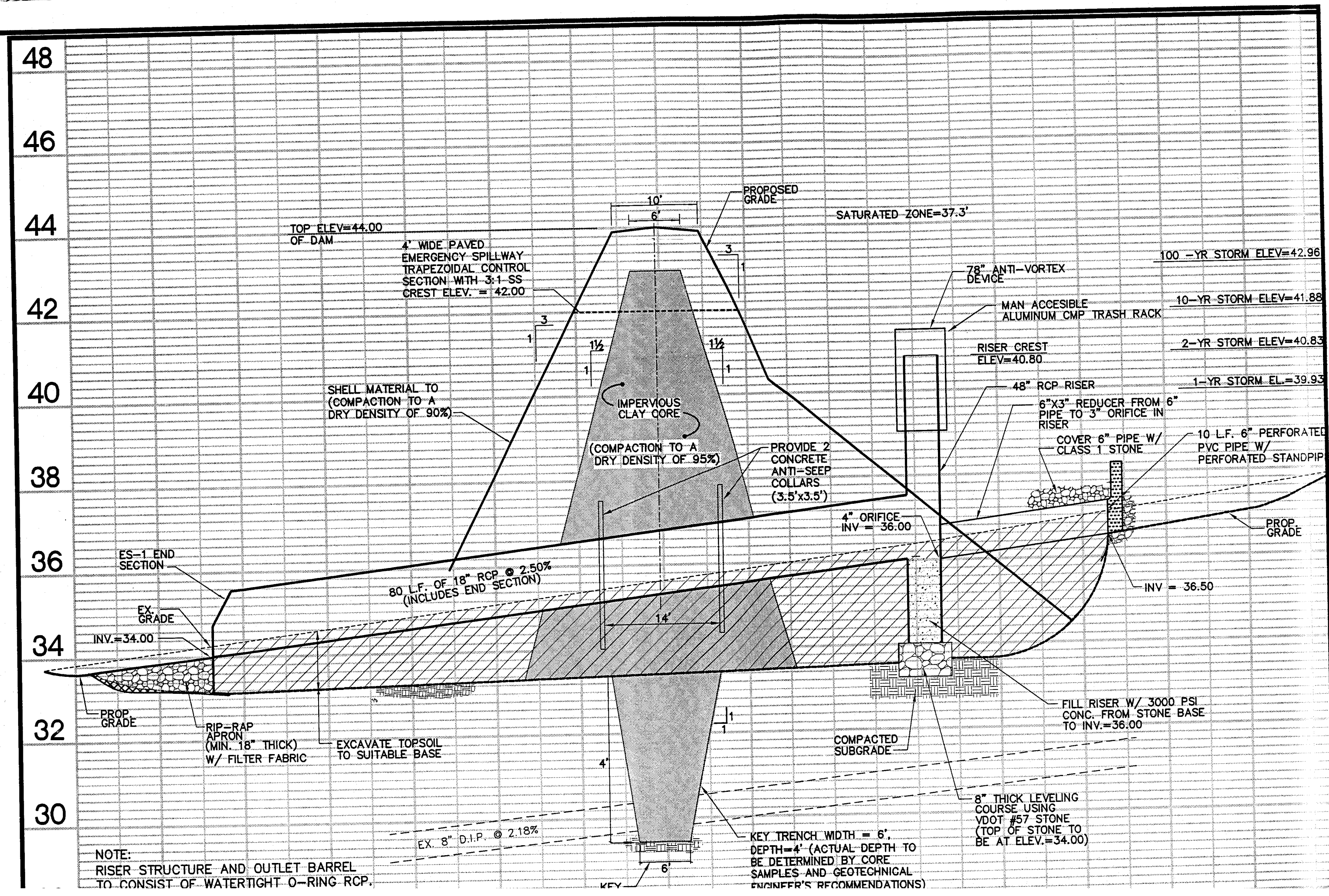
N/A O1. All requirements of Section II, Minimum Standards, apply to this section.

N/A O2. Certification criteria to be determined on a case-by-case basis by the Environmental Division specific to the proposed SWM/BMP facility.

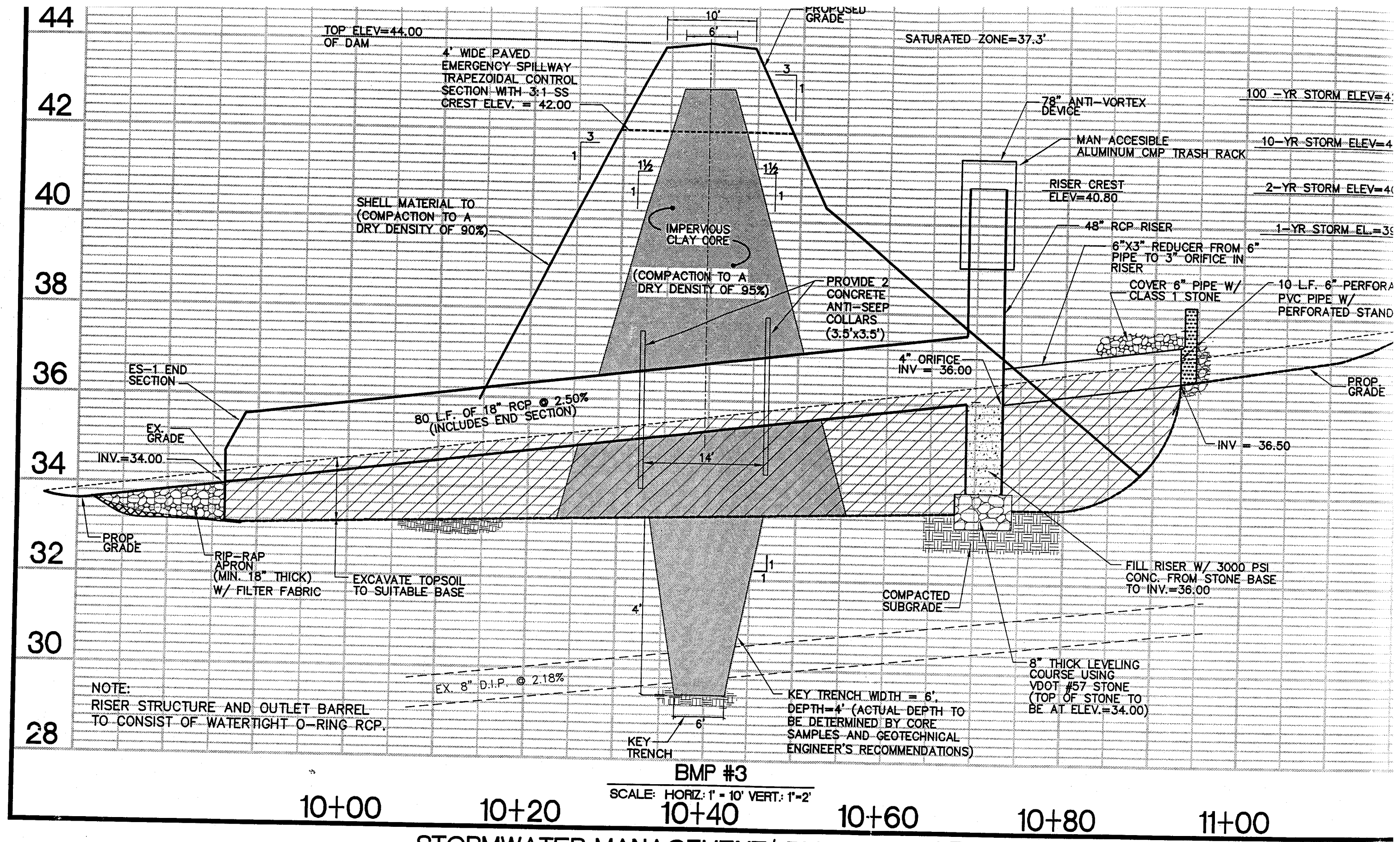

STORM STRUCTURE ANNOTATION
DEVELOPMENT SECTION NUMBER
STORMSEWER SYSTEM NUMBER
STORM STRUCTURE NUMBER
SS #2-2-1
STORMSEWER LEGEND
RPA BUFFER AS DELINEATED BY WILLIAMSBURG ENVIRONMENTAL GROUP
BMP #3
WC084
SS #3-2-1
SS #3-2-1A
SS #3-1-1
SS #3-2-2
SS #3-2-3
SS #3-1-2
SS #3-2-5
SS #3-2-4
SS #3-1-3
SS #3-3-9
SS #3-3-6
SS #3-3-2
SS #3-3-1
SS #3-3-3
SS #3-3-7
SS #3-7-1
SS #1-3-9
SYSTEM #3-2
SYSTEM #3-1
SYSTEM #3-7
SECTION III
PREVIOUSLY PROPOSED WELLINGTON SECTION I
DONAGHPATRICK WAY
ATTLEBOROUGH WAY
ASHINGTON WAY
RPA SIGN (TYPICAL)
0.11 AC.
0.11 AC.
0.07 AC.
0.31 AC.
0.12 AC.
0.81 AC.
0.24 AC.
0.23 AC.
0.58 AC.
0.08 AC.
0.36 AC.
0.14
0.13
0.10 AC.


NATURAL OPEN SPACE EASEMENT
WETLANDS LINE AS DELINEATED BY WILLIAMSBURG ENVIRONMENTAL GROUP
SS #3-2-1
ES-1
INV.=37.00
ST SEDIMENT TRAP #3-2
PROVIDE 25' WIDE X 43' LONG X 4' DEEP RECTANGULAR SHAPED TRAP WITH 3.5' ROCK OUTLET CONSISTING OF CLASS I EROSION CONTROL STONE
TOP=48.00
BOTTOM=44.00
INV.=42.05
PROVIDE EC-3 MATTING
DD
FD
PROPOSED SECTION III DRY STORMWATER MANAMEMENT POND
11C
15D
PENZANCE PLACE
50' R/W
HP
CE
SF
58
59A
59B
69
70
68
62
63.5
64.6
34.4
31.0
32.5
77.3
83.2
85.3
11+00
12+00
19+00
20+00
21+00
23+00


WATER
PROVIDE APPOX 10' LONG RIPRAP APRON CONSISTING OF CLASS I EROSION CONTROL STONE (2.5 CY REQ'D)
ES-1 END SETION INV=34.00
4' WIDE PAVED EMERGEN SPILLWAY TRAPEZOIDAL CONTROL SECTION WITH SS CREST ELEV.=42.00
80 L.F. OF 18" RCP @ 2.50%
48" RCP RISER W/ 78" ANTI-VORTEX DEVICE RISER CREST ELEV.=40.80 3" ORIFICE INV.=36.00
100 YEAR HIGH WATER ELEVATION=42.90
PROVIDE APPOX 10' LONG RIPRAP APRON CONSISTING OF CLASS I EROSION CONTROL STONE (2.5 CY REQ'D)
20' ACCESS EASEMENT TO BMP #3 (WITH 12' WIDE COMPACTED AGREGATE ACCESS ROAD.)
VARIABLE WIDTH SETBACK TO 100' RPA BUFFER
SS #3-2-1 ES-1 INV=37.00
SS #3-2-1A DI-1 TOP=50.00 INV. IN=46.00 INV. OUT=44.30
30' JCSA DRAINAGE & UTILITY EASEMENT
130 L.F. OF 15" RCP @ 5.61%
25' BUFFER OFF 100 YR HIGH WATER ELEVATION (20' MAINT./ACCESS) 5' LANDSCAPE
SS #3-1-1 ES-1
LOT 33
63



COMMONWEALTH OF VIRGINIA
G. ARCHER



BMP #3

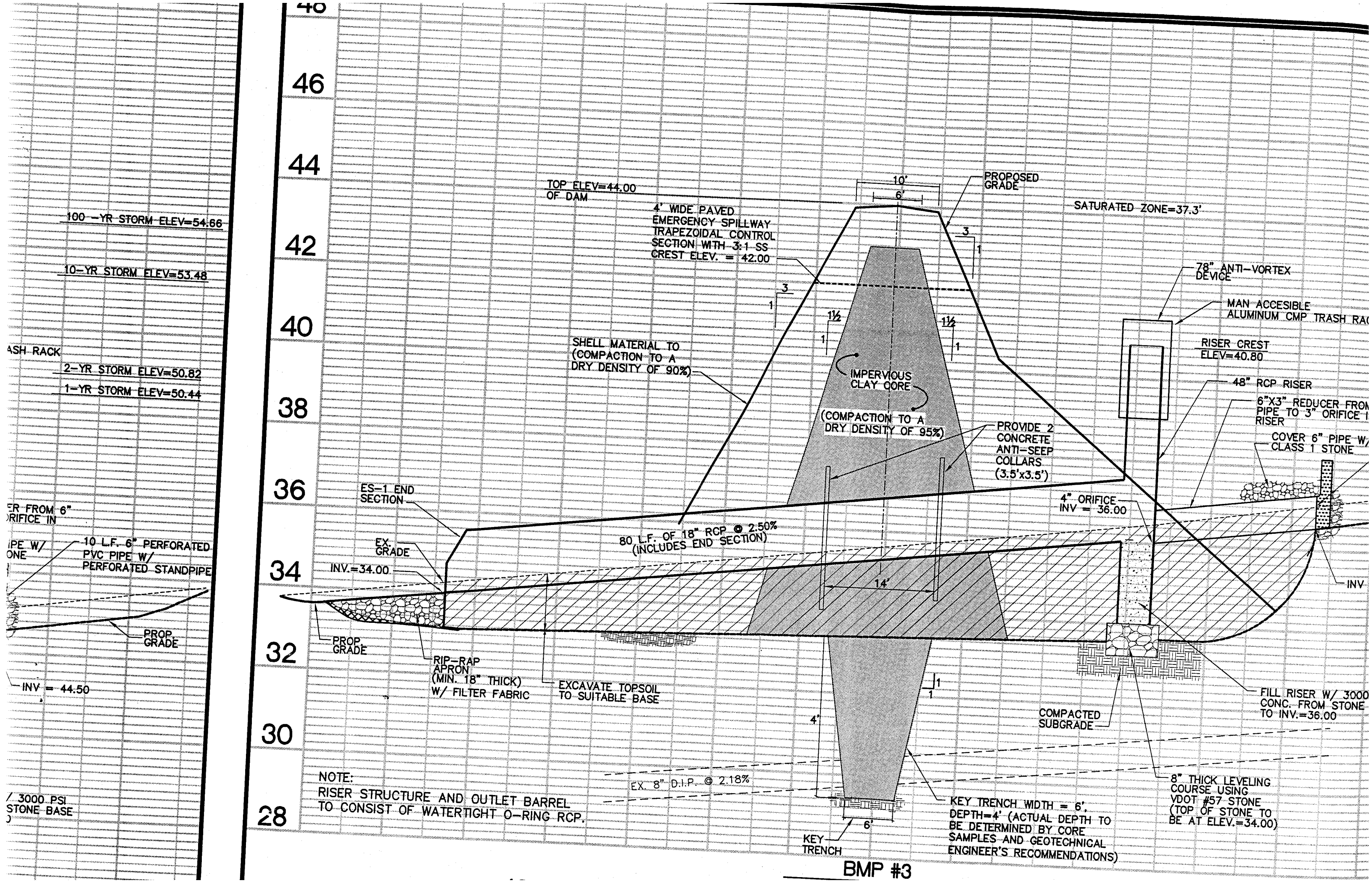
SCALE: HORIZ.: 1" = 10' VERT.: 1"=2'

STORMWATER MANAGEMENT/ BMP FACILITY MAINTENANCE PLAN

PROPER MAINTENANCE OF THIS FACILITY IS ENCOURAGED TO PREVENT THE INTRODUCTION OF DEBRIS AND SEDIMENT IN TO THE FACTILITY, SPILLWAY(S) AND DOWNSTREAM WATERWAYS. FOLLOWING INSTALLATION OF THE FACILITY AND ESTABLISHMENT OF VEGETATION IN DISTURBED AREAS, INSPECTIONS FOR SEDIMENT BUILDUPS WILL BE PERFORMED AT LEAST QUARTERLY. IT IS ANTICIPATED THAT UNDER NORMAL CONDITIONS, SEDIMENT REMOVAL FROM THE FACILITY WILL BE REQUIRED ONCE EVERY 10 YEARS. IF

GENERAL NOTES FOR CONSTRUCTION OF STORMWATER BASINS

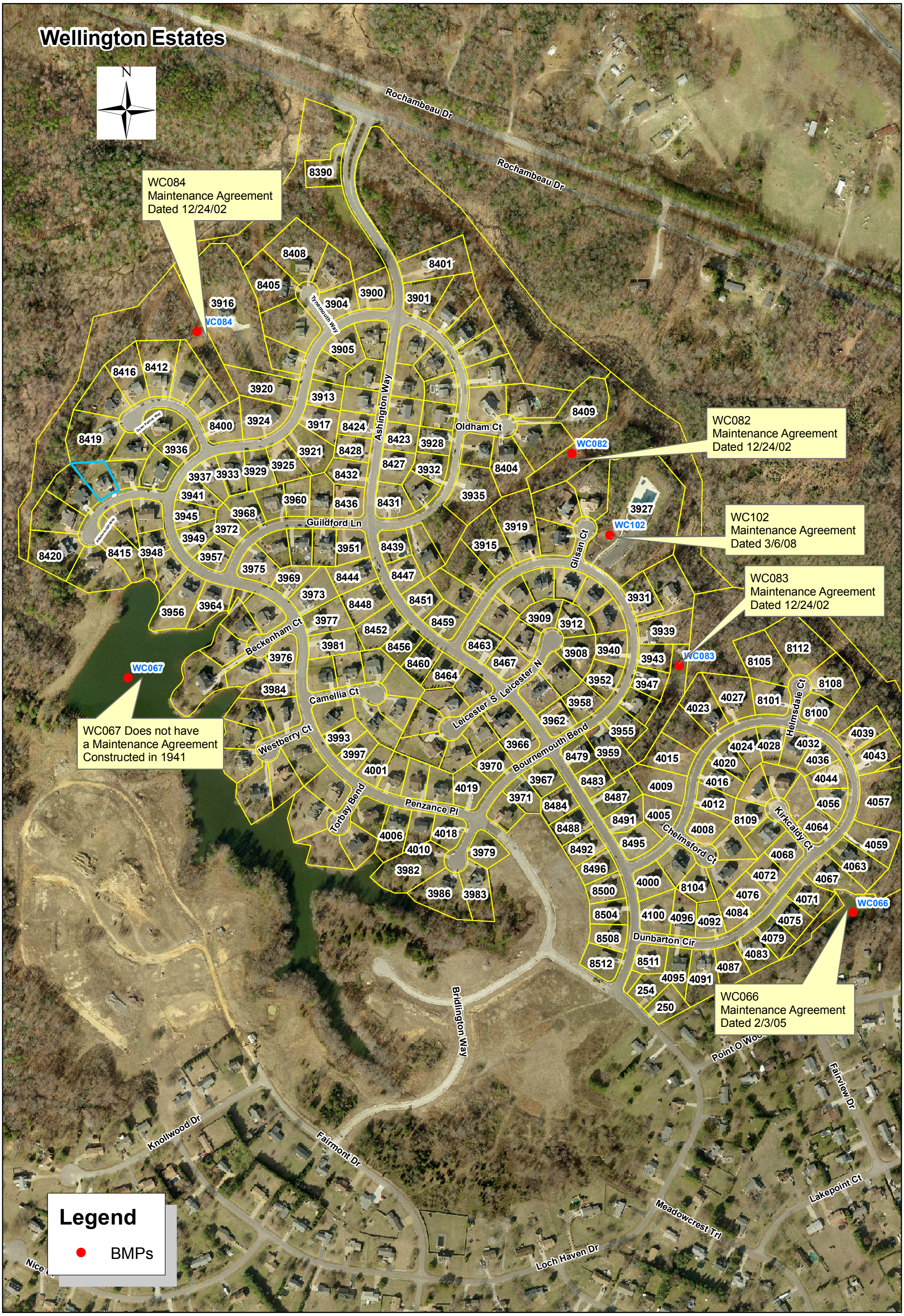
1. THE CONTRACTOR SHALL PROVIDE ALL WORK AND MATERIALS NEEDED TO CONSTRUCT THE STORMWATER BASIN, STORMWATER MANAGEMENT PONDS, BEST MANAGEMENT PRACTICES, SEDIMENT BASINS AND SEDIMENT TRAPS. THE WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND MATERIALS NEEDED FOR THE COMPLETION OF GRADING AND EARTHWORK ASSOCIATED WITH THE CONSTRUCTION


100-YR STORM ELEV=54.66
10-YR STORM ELEV=53.48
ASH RACK
2-YR STORM ELEV=50.82
1-YR STORM ELEV=50.44
ER FROM 6"
ORIFICE IN
IPE W/
ONE
10 L.F. 6" PERFORATED
PVC PIPE W/
PERFORATED STANDPIPE
PROP.
GRADE
INV = 44.50
/ 3000 PSI
STONE BASE
46
44
42
40
38
36
34
32
30
28
TOP ELEV=44.00
OF DAM
4' WIDE PAVED
EMERGENCY SPILLWAY
TRAPEZOIDAL CONTROL
SECTION WITH 3:1 SS
CREST ELEV. = 42.00
10'
6'
PROPOSED
GRADE
SATURATED ZONE=37.3'
3
1
1½
1
SHELL MATERIAL TO
(COMPACTION TO A
DRY DENSITY OF 90%)
IMPERVIOUS
CLAY CORE
(COMPACTION TO A
DRY DENSITY OF 95%)
PROVIDE 2
CONCRETE
ANTI-SEEP
COLLARS
(3.5'x3.5')
78" ANTI-VORTEX
DEVICE
MAN ACCESIBLE
ALUMINUM CMP TRASH RA
RISER CREST
ELEV=40.80
48" RCP RISER
6"X3" REDUCER FRO
PIPE TO 3" ORIFICE
RISER
COVER 6" PIPE W/
CLASS 1 STONE
4" ORIFICE
INV = 36.00
INV
ES-1 END
SECTION
EX.
GRADE
INV.=34.00
80 L.F. OF 18" RCP @ 2.50%
(INCLUDES END SECTION)
14'
PROP.
GRADE
RIP-RAP
APRON
(MIN. 18" THICK)
W/ FILTER FABRIC
EXCAVATE TOPSOIL
TO SUITABLE BASE
4'
COMPACTED
SUBGRADE
FILL RISER W/ 3000
CONC. FROM STONE
TO INV.=36.00
EX. 8" D.I.P. @ 2.18%
8" THICK LEVELING
COURSE USING
VDOT #57 STONE
(TOP OF STONE TO
BE AT ELEV.=34.00)
KEY TRENCH WIDTH = 6',
DEPTH=4' (ACTUAL DEPTH TO
BE DETERMINED BY CORE
SAMPLES AND GEOTECHNICAL
ENGINEER'S RECOMMENDATIONS)
6'
KEY
TRENCH
NOTE:
RISER STRUCTURE AND OUTLET BARREL
TO CONSIST OF WATERTIGHT O-RING RCP.
BMP #3

From this point forward the file is not certified. The list below details the documents that have been added to the file, the person that added the documents and the date they were added.

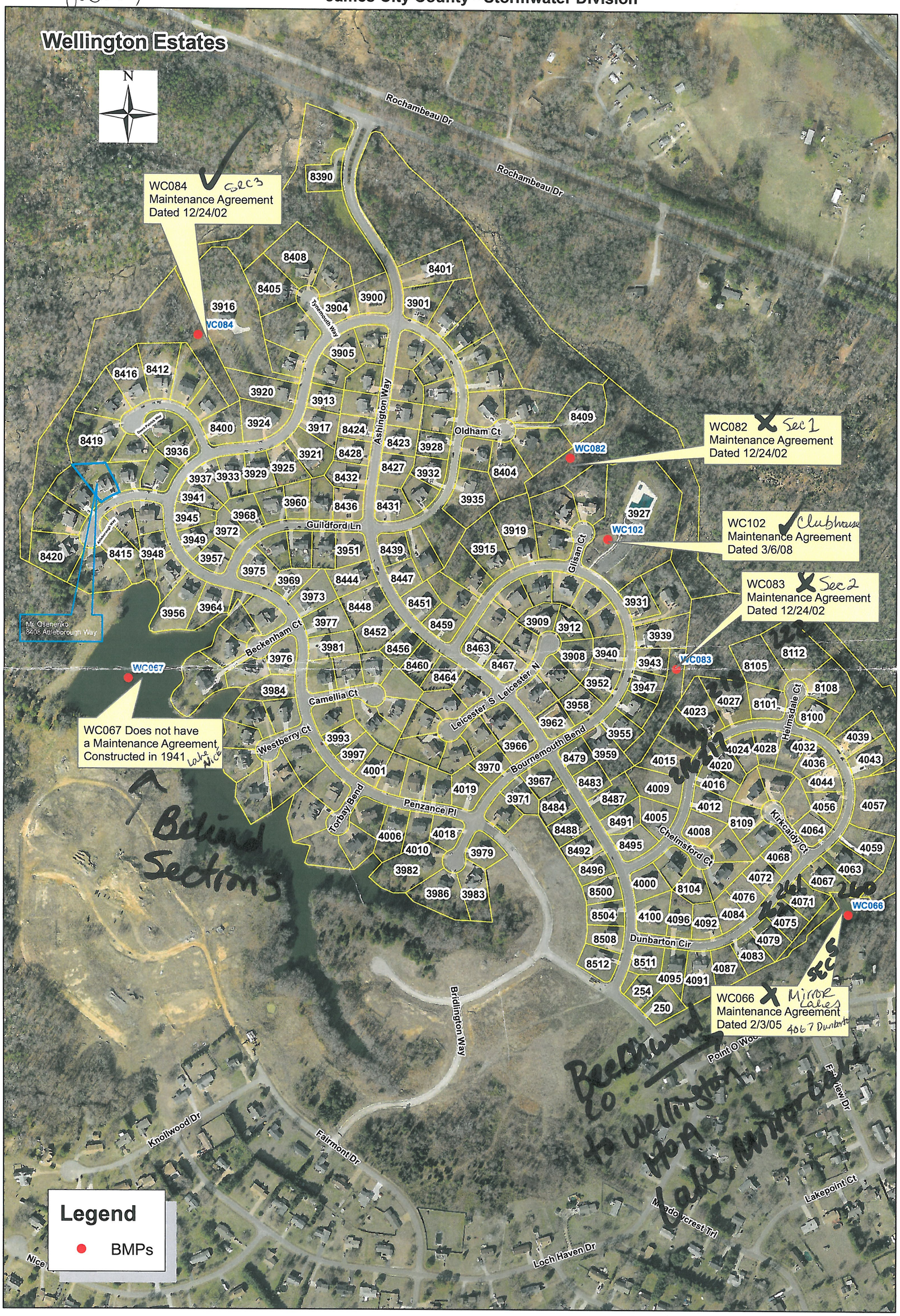
Name	Content	Date
Jo Anna Ripley	Map showing BMPs in Mirror Lakes/Wellington and the date of the maintenance agreement	6/20/2013

James City County - Stormwater Division

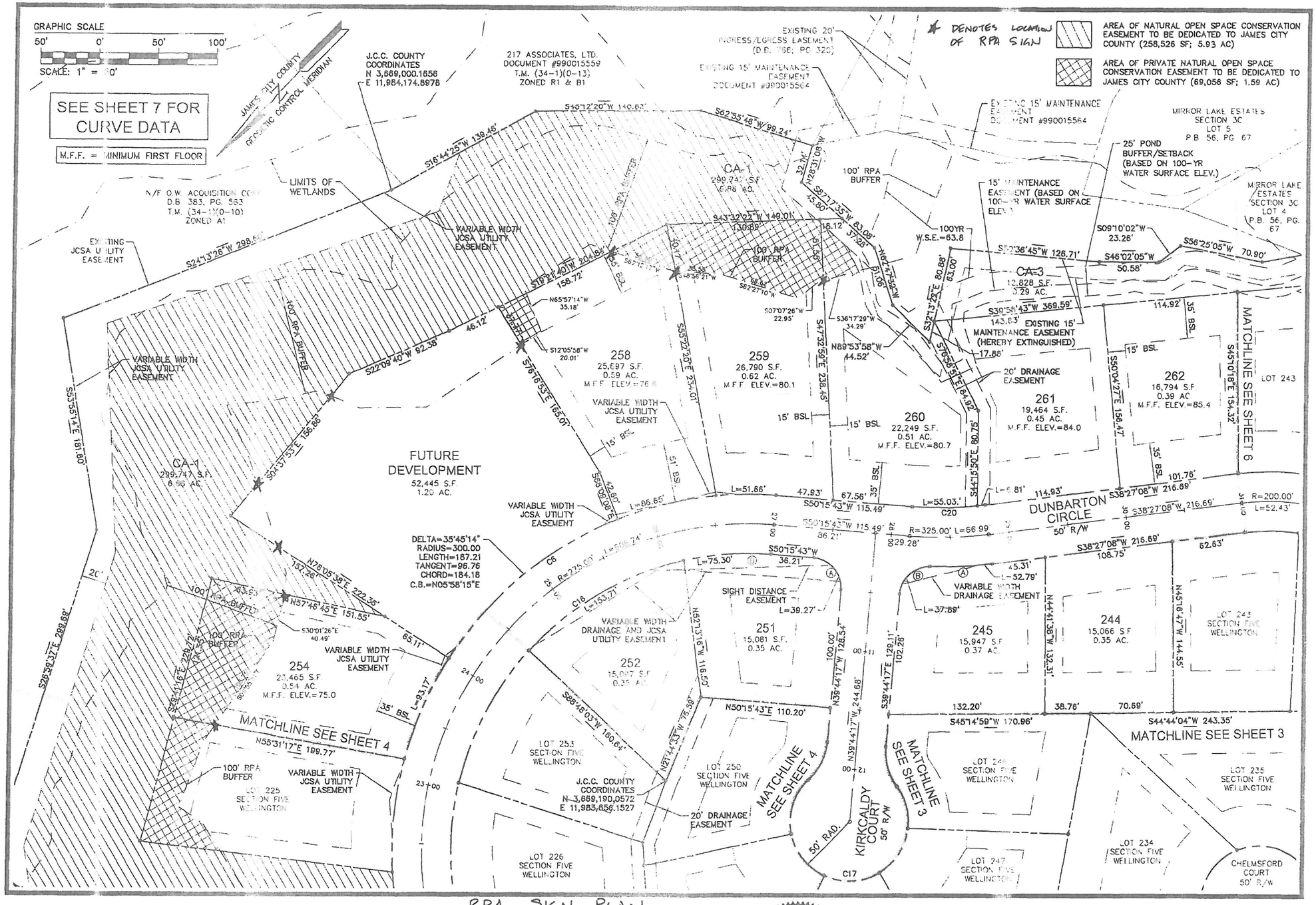


WC066, WC 082, WC083, WC084, WC102, WC 067

James City County - Stormwater Division



WC066



RPA SIGN PLAN

AES
CONSULTING ENGINEERS
WILLIAMSBURG • RICHMOND

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994

PLAT OF SUBDIVISION
WELLINGTON
SECTION FIVE
LOTS 124-131, 210-254, 258-270 (65 LOTS)
BEING THE PROPERTY OF
WELLINGTON, L.L.C.
STONEHOUSE DISTRICT JAMES CITY COUNTY VIRGINIA

COMMONWEALTH OF VIRGINIA
2/21/05
G.T. WILSON, JR.
No. 1183
LAND SURVEYOR

No.	DATE	REVISION / COMMENT / NOTE	BY
1	5/4/05	REVISED PER JCC COMMENT LETTER DATED 4/27/05	VMB

Designed VMB/JAG	Drawn AWT
Scale 1"=50'	Date 2/21/05
Project No. 8223-9	
Drawing No. 5 of 7	

WC066

5-29-03

JUL 2005 RECEIVED

AREA OF NATURAL OPEN SPACE CONSERVATION EASEMENT TO BE DEDICATED TO JAMES CITY COUNTY (258,526 SF; 5.93 AC)

AREA OF PRIVATE NATURAL OPEN SPACE CONSERVATION EASEMENT TO BE DEDICATED TO JAMES CITY COUNTY (69,056 SF; 1.59 AC)

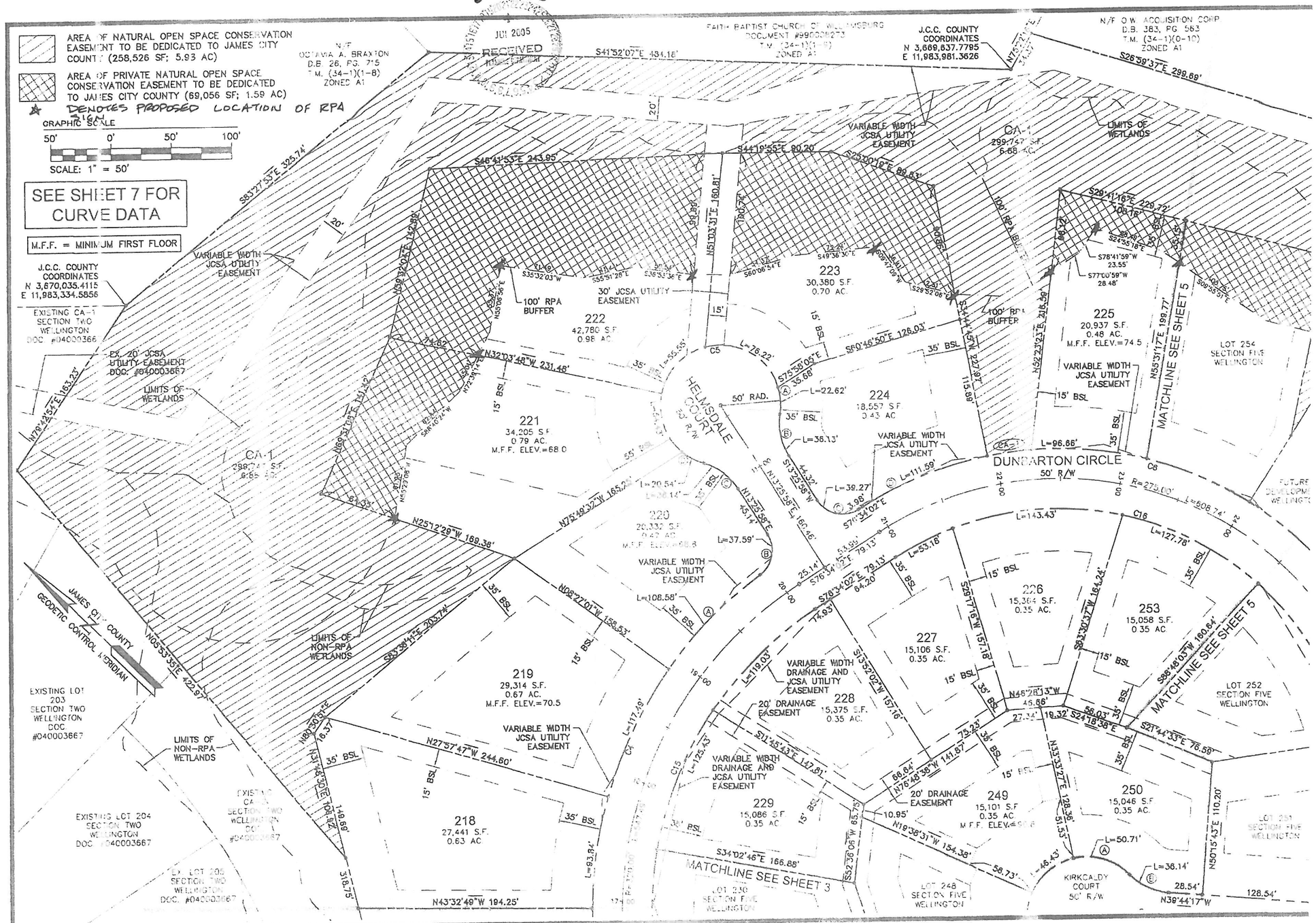
☆ DENOTES PROPOSED LOCATION OF RPA SIGN

GRAPHIC SCALE 50' 0' 50' 100'

SCALE: 1" = 50'

SEE SHEET 7 FOR CURVE DATA

M.F.F. = MINIMUM FIRST FLOOR



RPA SIGN PLAN

AES CONSULTING ENGINEERS
WILLIAMSBURG • RICHMOND

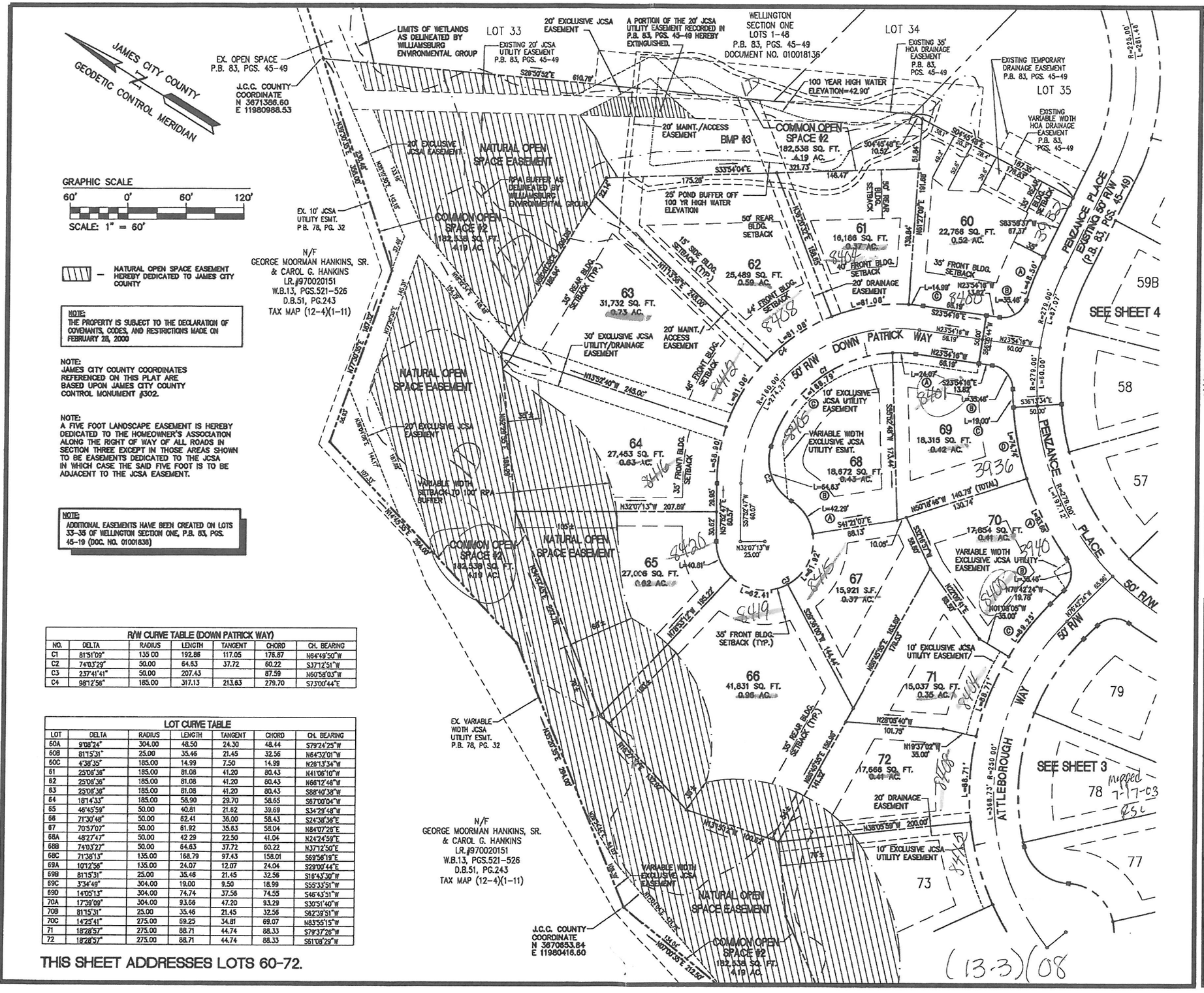
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994

PLAT OF SUBDIVISION
WELLINGTON
SECTION FIVE
LOTS 124–131, 210–254, 258–270 (66 LOTS)
BEING THE PROPERTY OF
WELLINGTON, L.L.C.
STONEHOUSE DISTRICT JAMES CITY COUNTY VIRGINIA

COMMONWEALTH OF VIRGINIA
2/2/05
G.T. WILSON, JR.
No. 1183
LAND SURVEYOR

No.	DATE	REVISION / COMMENT / NOTE	BY
1	5/4/05	REVISED PER J.C.C. COMMENT LETTER DATED 4/27/05	VMB

Designed VMB/JAG	Drawn AV
Scale 1"=50'	Date 2/2
Project No. 8223-9	
Drawing No. 4 of 7	



R/W CURVE TABLE (DOWN PATRICK WAY)						
NO.	DELTA	RADIUS	LENGTH	TANGENT	CHORD	CH. BEARING
C1	81°51'09"	135.00	192.86	117.05	176.87	N64°49'50"W
C2	74°03'29"	50.00	64.63	37.72	60.22	S37°12'51"W
C3	237°41'41"	50.00	207.43		87.59	N60°58'03"W
C4	98°12'56"	185.00	317.13	213.63	279.70	S73°00'44"E

LOT CURVE TABLE						
LOT	DELTA	RADIUS	LENGTH	TANGENT	CHORD	CH. BEARING
60A	9°08'24"	304.00	48.50	24.30	48.44	S79°24'25"W
60B	81°15'31"	25.00	35.46	21.45	32.56	N64°32'01"W
60C	4°38'35"	185.00	14.99	7.50	14.99	N26°13'34"W
61	25°08'36"	185.00	81.08	41.20	80.43	N41°06'10"W
62	25°08'36"	185.00	81.08	41.20	80.43	N66°12'46"W
63	25°08'36"	185.00	81.08	41.20	80.43	S88°40'38"W
64	18°14'33"	185.00	58.90	29.70	58.65	S67°00'04"W
65	46°45'59"	50.00	40.81	21.62	39.69	S34°29'48"W
66	71°30'48"	50.00	62.41	36.00	58.43	S24°38'36"E
67	70°57'07"	50.00	61.92	35.63	58.04	N84°07'26"E
68A	48°27'47"	50.00	42.29	22.50	41.04	N24°24'59"E
68B	74°03'27"	50.00	64.63	37.72	60.22	N37°12'50"E
68C	71°38'13"	135.00	168.79	97.43	158.01	S69°56'19"E
69A	10°12'56"	135.00	24.07	12.07	24.04	S29°00'44"E
69B	81°15'31"	25.00	35.46	21.45	32.56	S16°43'30"W
69C	3°34'49"	304.00	19.00	9.50	18.99	S55°33'51"W
69D	14°05'13"	304.00	74.74	37.56	74.55	S46°43'51"W
70A	17°39'09"	304.00	93.66	47.20	93.29	S30°51'40"W
70B	81°15'31"	25.00	35.46	21.45	32.56	S82°39'51"W
70C	14°25'41"	275.00	69.25	34.81	69.07	N83°55'15"W
71	18°28'57"	275.00	88.71	44.74	88.33	S79°37'26"W
72	18°28'57"	275.00	88.71	44.74	88.33	S61°08'29"W

THIS SHEET ADDRESSES LOTS 60-72.

No.	DATE	REVISION / COMMENT / NOTE	BY
1	4/17/03	REVISED PER COUNTY COMMENTS	JFS

COMMONWEALTH OF VIRGINIA
G.T. WILSON, JR.
CERTIFICATE No. 1183
CERTIFIED LAND SURVEYOR
3/17/03

CONSULTING ENGINEERS
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994

PLAT OF SUBDIVISION WELLINGTON SECTION THREE

LOTS 49-58, 59A, 59B, 60-89 AND 132-140
BEING THE PROPERTY OF
WELLINGTON, L.L.C.

STONEHOUSE DISTRICT JAMES CITY COUNTY VIRGINIA

Designed	Drawn
HWP	JFS
Scale	Date
1"=60'	3/17/03

Project No. 8223-6

Drawing No. 2 OF 4

03.21.03-13:56 822306P02.dwg

JFS