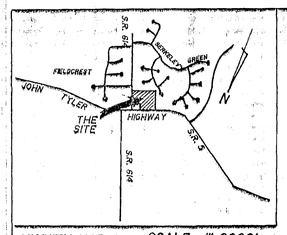


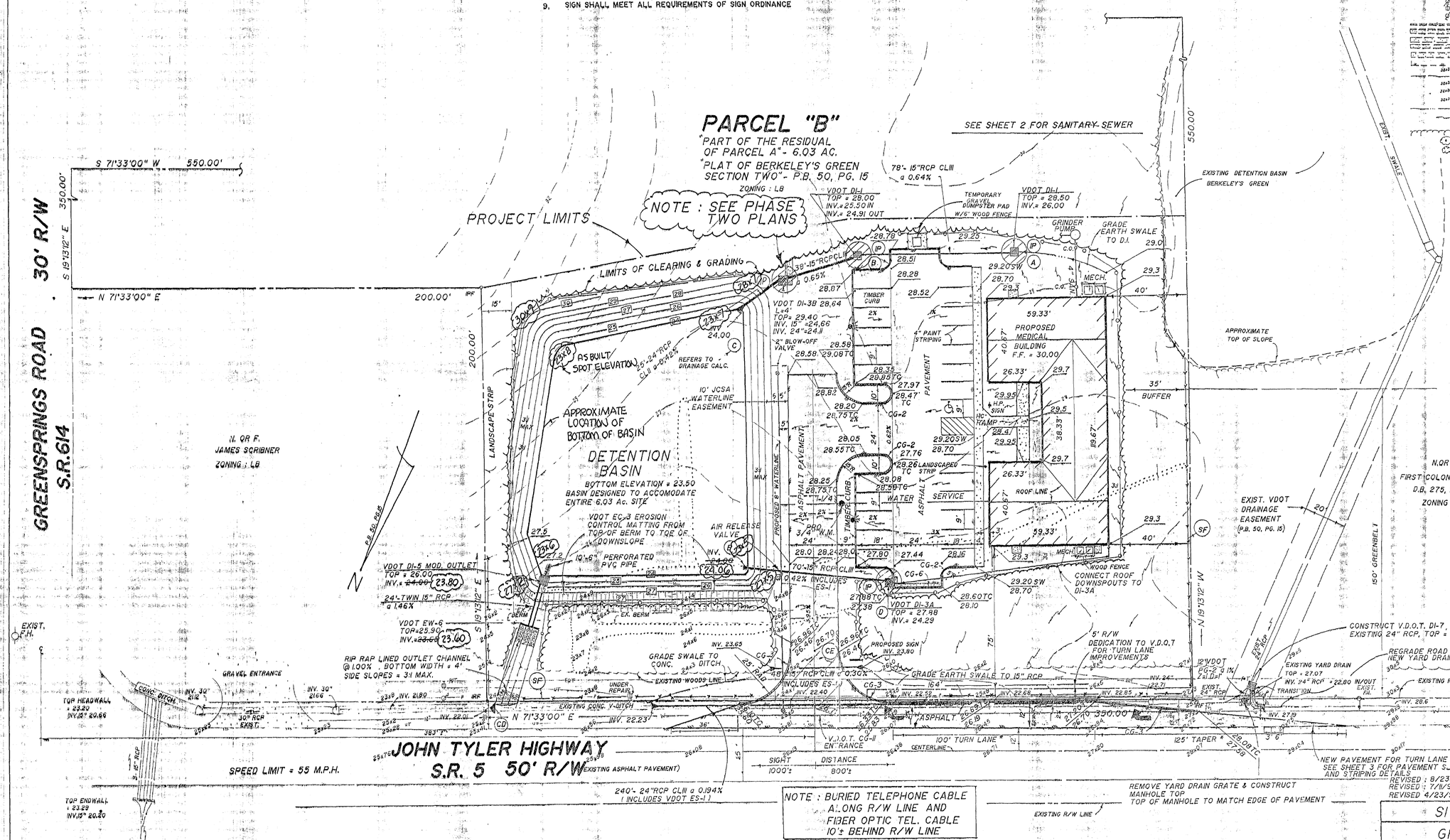
VICINITY MAP SCALE : 1"=2000'

LAND USE SUMMARY

1. ZONING OF SITE: LB
2. TAX MAP 45-2 I-5C
3. AREA TABULATIONS
   AREA WITHIN PROJECT LIMITS : 79,250 SF = (100.0%)
   NEW MEDICAL BLDG : 6,230 SF = (7.9%)
   PARKING,DRIVES,ETC: 15,000 SF = (18.9%)
   NET OPEN SPACE : 58,020 SF = (73.2%)
4. BUILDING CONSTRUCTION: FRAME & MASONRY (BOCA USE = BUSINESS)
5. MAXIMUM BUILDING HEIGHT: 27
6. THE PROJECTED OVERALL IMPERVIOUS AREA OF ENTIRE SITE = 60%
   THE PROJECTED OVERALL IMPERVIOUS AREA WITHIN PROJECT LIMITS = 26.8%
7. PARKING REQUIRED:
   OFFICE : 6230 SF / 250 = 25 SPACES
8. PARKING PROVIDED:
   (25) - 9'x18' STANDARD SPACES
   (1) - HANDICAP SPACE (VAN ACCESSIBLE)

GENERAL NOTES

1. ALL SITE CONSTRUCTION SHALL BE IN ACCORDANCE WITH JAMES CITY COUNTY STANDARDS AND SPECIFICATIONS, AND VDOT STANDARDS AND SPECIFICATIONS.
2. CONTRACTOR TO VERIFY THE EXISTENCE AND LOCATION OF ALL UTILITIES WITHIN PROXIMITY OF ALL PROJECT CONSTRUCTION.
3. ANY UTILITY REQUIRED TO BE RELOCATED DUE TO ANY CONSTRUCTION COINCIDENT WITH THIS PROJECT SHALL BE RELOCATED AT THE OWNER/DEVELOPER'S EXPENSE.
4. REGULAR PARKING SPACES WITHIN PAVED PARKING SHALL BE MARKED WITH 4" WHITE PAINTED LINES. HANDICAP SPACES SHALL BE MARKED WITH 4" BLUE PAINTED LINES.
5. EACH HANDICAP SPACE SHALL HAVE AN ABOVE GROUND HANDICAP PARKING SIGN. SIGNS SHALL BE POLE MOUNTED 4' MIN. HEIGHT TO 7' MAX. HEIGHT. SIGNS SHALL CONFORM TO SPECIFICATION R7-8 (12" x 18") PER "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
6. DUMPSTER PAD SHALL BE 7" THICK CONCRETE. DUMPSTER TO BE SCREENED ON THREE SIDES BY EITHER MASONRY OR WOOD FENCE (6' HEIGHT).
7. THE WATERLINE SHALL BE INSTALLED BY THE DEVELOPER
8. ALL NEW UTILITY SERVICE SHALL BE PLACED UNDERGROUND.
9. SIGN SHALL MEET ALL REQUIREMENTS OF SIGN ORDINANCE



LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	BUILDING SETBACK	
	EASEMENT LINE	
	CENTERLINE	
	BUILDING	
	STORM SEWER PIPE	18" STORM
	SANITARY SEWER PIPE	4" SANITARY
	WATERLINE	8" WATER
	GAS LINE	
	TELEPHONE LINE	
	ELECTRIC LINE	
	MANHOLE	
	DROP INLET	
C.O.	CLEANOUT	C.O.
	WATER METER	
	WATER VALVE	
FH	FIRE HYDRANT	
	ELEC. TRANSFORMER	
	UTILITY POLE	
	TELE. JUNCTION BOX	
	LIGHT POLE	
	CONC. CURB	
	CONC. CURB & GUTTER	
	CONC. SIDEWALK	
	CONC. SWALE /DITCH	
	CONC. PAVEMENT	
	BITUMINOUS PAVEMENT	
32+61	GROUND ELEVATION	
30	ELEVATION CONTOUR	30
32+61	FINISHED GRADE	32.61 FG
32+61TC	TOP OF CURB ELEV.	32.61 TC
32+61EP	EDGE OF PAVEMENT	32.61 EP
	DITCH	
	DIRECTION OF FLOW	
	TRAFFIC DIRECTION	ONE WAY
	WOODS LINE	
	TREE	
	SHRUB	
	TREE PROTECTION	
	SIGN	
	POLE LIGHT	

EROSION & SEDIMENT CONTROL LEGEND

- (SF) - SILT FENCE
- (CE) - STONE CONSTRUCTION ENTRANCE
- (TP) TREE PROTECTION
- (IP) INLET PROTECTION

DELINEATED WETLANDS BY ESPEY,HUSTON & ASSOC.

NOTE : BURIED TELEPHONE CABLE ALONG R/W LINE AND FIBER OPTIC TEL. CABLE 10'± BEHIND R/W LINE

NOTE : ALL SANITARY SEWER AND WATER LINES ARE TO BE INSTALLED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE JAMES CITY SERVICE AUTHORITY.

SHEET INDEX

1. SITE PLAN
2. OFFSITE SANITARY SEWER
3. DETAILS , PROFILES & NOTES
4. EROSION AND SEDIMENTATION CONTROL DETAILS

50' 25' 0 25' 50'
SCALE : 1" = 25'

DEVELOPER : C. RICHARD DOBSON BUILDERS, INC.
CONTACT : MIKE ARMENTROUT 873-7707

SURVEYOR : CAMPBELL LAND SURVEYING, INC.
CONTACT : DAVID CAMPBELL, L.S. 890-0837

11-14-97
DETENTION BASIN AS-BUILT

REVISED : 8/23/96 PER V.D.O.T. & J.C.C.
REVISED : 7/11/96
REVISED 4/23/96 : PER J.C.C. & V.D.O.T COMMENTS

SITE DEVELOPMENT PLAN

GREENSPRINGS COMMONS

PART OF PARCEL B - BERKELEY'S GREEN - SECTION 2

JAMES CITY COUNTY, VIRGINIA

Louis M. Penci, Inc.
863 Catalina Drive
Newport News, VA 23608 (804) 874-6388

Campbell Land Surveying, Inc.
P.O. Box 855
Yorktown, VA 23692 (804) 890-0837

DATE	SCALE	DESIGN/DRAWN	CHECK/APPROVED	SHEET
2/22/96	1"=25'	LMP/DPC	LMP/DPC	1 of 4

JOB NO 96-0006

AILS : NOT TO SCALE

GREENSRINGS ROAD S.R. 614

S 19°13'12" E

45'

350.00'

140'

N 71°33'00" E
200.00'

N. OR F.
SCRIBNER

S 71°33'00" W

45'

C. RICHARD DOBSON BUILDERS, INC.
P.B. 50, PG. 15

PARCEL B
6.03 AC.

20'

*15'

200.00'
S 19°13'12" E

CONSERVATION AREA
(HATCHED)
SHALL REMAIN IN ITS NATURAL
CONDITION WITH RESPECT TO LEAF
LITTER, GROUND COVER, UNDERSTORY
VEGETATION AND TREE CANOPY.

N 71°33'00" E

18'

30'

50'

30

15'

350.00'

550.00'

30'

550.00'

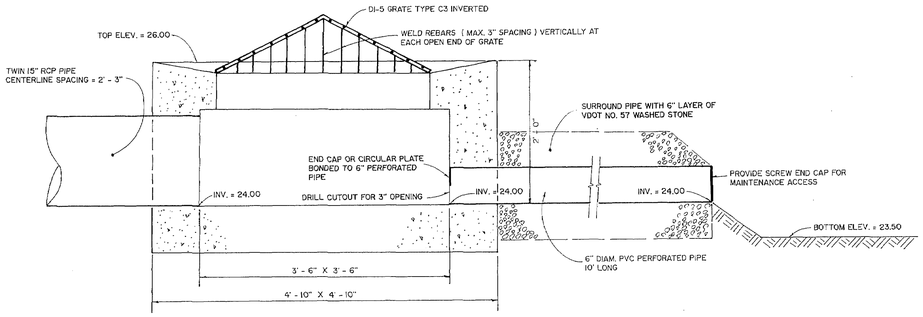
N 19°13'12" W

PLAN DATE: 3·6·96
REVISION: * 4·25·96
REVISION: * 8·30·96
REVISION: 9·16·96

SEP 1996
RECEIVED
PLANNING DEPARTMENT

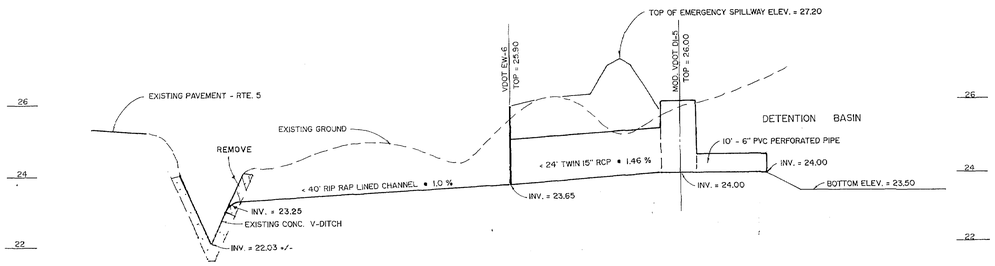
D

Greensprings Commons
NATURAL OPEN SPACE



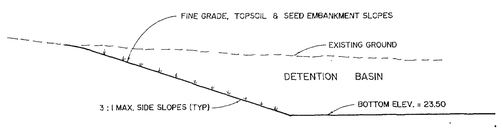
MODIFIED VDOT DI-5

SCALE : 1" = 1'



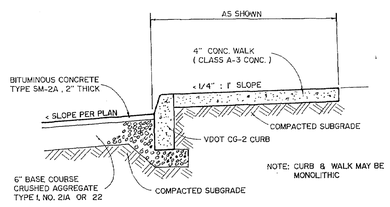
PROFILE - DETENTION BASIN OUTFALL

SCALE : 1" = 10' HOR. & 1" = 2' VERT.



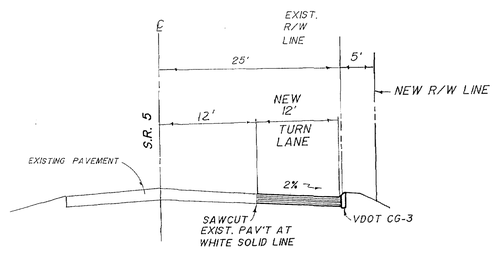
DETENTION BASIN SECTION DETAIL

SCALE : 1" = 3'



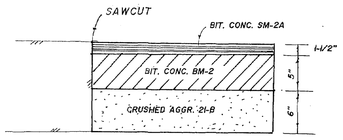
SIDEWALK / PAVEMENT SECTION

N. T. S.



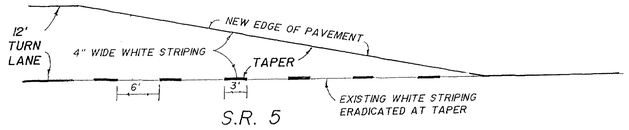
ROUTE 5
TURN LANE SECTION

N.T.S.



PAVEMENT SECTION
WITHIN ROUTE 5 R/W

N.T.S.



S.R. 5

PAINT STRIPING DETAIL
TAPER AREA

N.T.S.

DETENTION BASIN MAINTENANCE PLAN

THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR DIRECTING AND OVERSEEING THE SCHEDULED MAINTENANCE OF THE ON-SITE DETENTION BASIN FACILITY. THE MAINTENANCE REQUIREMENTS ARE OUTLINED AS FOLLOWS:

ROUTINE MAINTENANCE:

A. MOWING - THE UPPER STAGE SIDE SLOPES AND EMERGENCY SPILLWAY EMBANKMENT SHALL BE MOWED TO DISCOURAGE WOODY GROWTH AND TO CONTROL WEEDS. THE FREQUENCY OF MOWING SHALL DEPEND ON VISUAL INSPECTIONS PERFORMED AT LEAST FOUR TIMES A YEAR.

B. INSPECTIONS - THE ENTIRE DETENTION BASIN AREA AND OUTLET CONTROL STRUCTURE SHALL BE INSPECTED ON AN ANNUAL BASIS. INSPECTION PRIORITIES SHALL INCLUDE CHECKING FOR SIDE SLOPE OR EMBANKMENT EROSION, TREE GROWTH, CONDITION OF THE OUTLET CONTROL STRUCTURE, AND THE ACCUMULATION OF SEDIMENT OR CLOGGING OF THE OUTLET CONTROL STRUCTURE.

C. DEBRIS AND LITTER REMOVAL - ANY ACCUMULATION OF DEBRIS AND LITTER NEAR THE OUTLET CONTROL STRUCTURE, PARTICULARLY FLOATABLE DEBRIS, SHALL BE REMOVED DURING SCHEDULED MOWING OPERATIONS OR AS NEEDED.

NON-ROUTINE MAINTENANCE:

A. STRUCTURAL REPAIRS AND REPLACEMENT - REPAIRS OR REPLACEMENT OF THE OUTLET CONTROL STRUCTURE SHALL BE PERFORMED ON AN AS-NEEDED BASIS TO INSURE PROPER OPERATION.

B. SEDIMENT REMOVAL - AFTER EACH SIGNIFICANT RAINFALL, THE BASIN AREA SHALL BE INSPECTED FOR ACCUMULATION OF SEDIMENT OR DEBRIS WHICH MAY HINDER THE PERFORMANCE OF THE OUTLET CONTROL STRUCTURE.

VDOT NOTES

1. ALL MATERIALS AND CONSTRUCTION WITHIN THE PUBLIC RIGHT OF WAY SHALL BE IN ACCORDANCE WITH CURRENT VIRGINIA DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS AND STANDARDS.
2. PERMITS MUST BE OBTAINED FROM THE VIRGINIA DEPARTMENT OF TRANSPORTATION BEFORE CONSTRUCTION IS STARTED WITHIN THE EXISTING RIGHT OF WAY.
3. PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL CONSULT THE ENGINEER AND VERIFY THE APPROVAL OF THE PLANS BY THE VARIOUS AGENCIES.
4. THE CONTRACTOR SHALL VERIFY THE ELEVATIONS OF ALL POINTS OF CONNECTION OR PROPOSED WORK TO EXISTING CURBS, SANITARY LINES, WATER LINES, ETC. PRIOR TO CONSTRUCTION.
5. WHEN SOILS OCCUR THAT ARE UNSUITABLE FOR FOUNDATIONS, SUBGRADES, OR OTHER ROADWAY PURPOSES, THE CONTRACTOR SHALL BE REQUIRED TO EXCAVATE SUCH MATERIAL BELOW THE GRADE SHOWN ON THE PLANS. THE AREAS SO EXCAVATED SHALL BE BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED IN ACCORDANCE WITH VDOT SPECIFICATIONS. THE CONTRACTOR SHALL IMMEDIATELY INFORM THE ENGINEER UPON DISCOVERY OF THE UNSUITABLE MATERIAL. CONCURRENCE OF THE DEVELOPER SHALL BE OBTAINED BEFORE ADDITIONAL ON-SITE WORK IS UNDERTAKEN.
6. ALL STORM SEWER PIPE SHALL BE REINFORCED TONGUE AND GROOVE CONCRETE PIPE IN ACCORDANCE WITH ASTM-C-76 OR ALTERNATIVE PIPE THAT HAS BEEN APPROVED ON THE PLANS.
7. TEMPORARY DRAINAGE DURING CONSTRUCTION IS TO BE PROVIDED BY THE CONTRACTOR TO RELIEVE AREAS THAT MAY CAUSE DAMAGE TO ROADWAYS OR ADJACENT PROPERTY.
8. ALL CONCRETE SHALL BE CLASS A3-AE(AIR ENTRAINED 3,000 PSI).
9. CURB AND GUTTER SHALL HAVE 4" OF AGGREGATE BASE 21B UNDER THE CURB AND GUTTER AND AGGREGATE SHALL EXTEND 1' BEYOND THE BACK OF THE CURB.
10. ALL ENTRANCES ARE TO BE BUILT IN ACCORDANCE WITH VDOT STANDARDS.
11. DESIGN OR SPECIFIED MATERIALS CHANGES FROM THE APPROVED PLANS NEED TO BE RE-SUBMITTED TO VDOT. A LETTER NEEDS TO ACCOMPANY THE REVISED PLANS AND/OR DRAINAGE CALCULATIONS WHICH SHALL BE SUBMITTED TO VDOT FOR REVIEW AND APPROVAL BY THE RESIDENT ENGINEER.
12. VDOT IS TO RECEIVE WRITTEN NOTIFICATION 48 HOURS PRIOR TO THE START OF ANY WORK.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL UTILITIES, WHETHER OR NOT SHOWN ON THE PLANS, AND SHALL REPAIR AT HIS OWN EXPENSE ALL UTILITIES DAMAGED BY CONSTRUCTION. MISS UTILITY MUST BE CONTACTED AT 1-800-552-7001 72 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.
14. ALL STORM SEWER PIPES, DROP INLETS, AND CURB INLETS SHALL BE CLEANED OF DEBRIS AND ERODED MATERIAL DURING THE LAST STAGES OF CONSTRUCTION.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING, WITH MATCHING MATERIALS, ANY PAVEMENT, DRIVEWAYS, WALKS, CURBS, ETC. THAT MUST BE CUT OR THAT ARE DAMAGED DURING CONSTRUCTION.
16. ANY ERRORS, CONFLICTS, OR DISCREPANCIES IN THIS PLAN SHALL BE REPORTED TO THE ENGINEER FOR RESOLUTION BEFORE PROCEEDING WITH THE WORK.
17. COMPACTION REPORTS, WITH PROCTOR, ARE REQUIRED FOR SUBGRADE, SUBBASE, BASE, SURFACE COURSES, CULVERTS, DRAINAGE STRUCTURES, AND UTILITIES WITHIN THE RIGHT OF WAY BY A CERTIFIED MATERIALS TEST LAB IN ACCORDANCE WITH VDOT SPECIFICATIONS AND STANDARDS.
18. INSTALLATION OF PIPE CULVERTS, STORM SEWERS, AND DRAINAGE STRUCTURES SHALL HAVE BEDDING MATERIAL IN ACCORDANCE WITH VDOT SPECIFICATIONS AND STANDARDS. BACKFILL SHALL BE SUITABLE MATERIAL FREE OF DEBRIS, TREE ROOTS, AND EXCESS MOISTURE, AND COMPACTED.
19. VDOT APPROVAL OF THESE PLANS WILL EXPIRE THREE YEARS FROM THE DATE OF APPROVAL.
20. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
21. DRAINAGE SYSTEMS THAT ARE NOT DRAINING RUNOFF FROM VDOT STREETS WILL NOT BECOME VDOT MAINTENANCE RESPONSIBILITIES.
22. THE PREPARER OF THESE PLANS CERTIFY THAT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF THESE PLANS CONFORM TO ALL VDOT STANDARDS AND COUNTY ORDINANCES, COMPREHENSIVE PLANS AND REGULATIONS.

REVISED 4/23/96 : PER J.C.C. & V.D.O.T COMMENTS

DETAILS, PROFILES & NOTES

GREENSPRINGS COMMONS

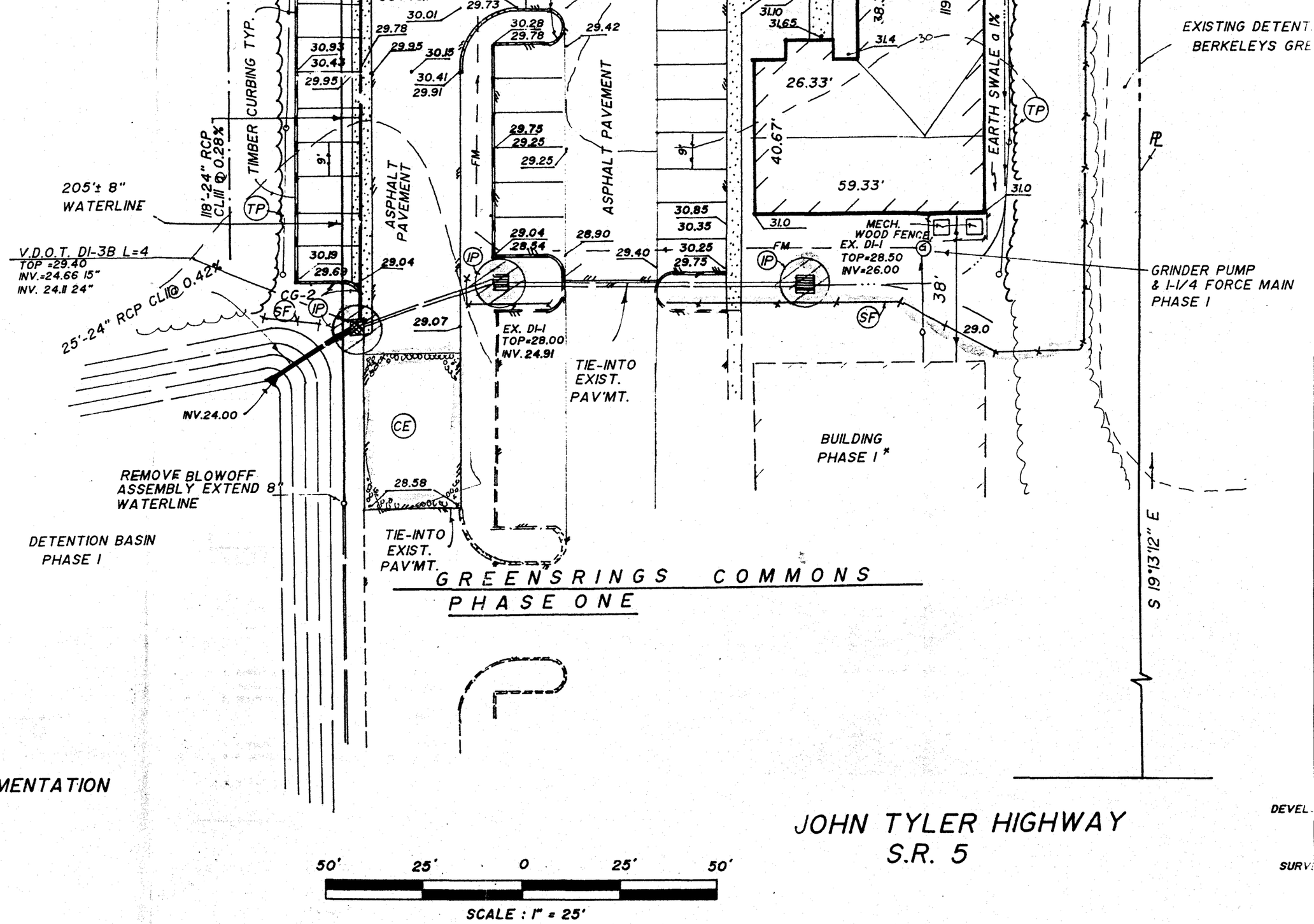
PART OF PARCEL B - BERKELEY'S GREEN - SECTION 2

JAMES CITY COUNTY, VIRGINIA

Louis M. Penci, Inc.
863 Catalina Drive
Newport News, VA 23608 (804) 874-6388

Campbell Land Surveying, Inc.
P. O. Box 855
Yorktown, VA 23692 (804) 890-0837

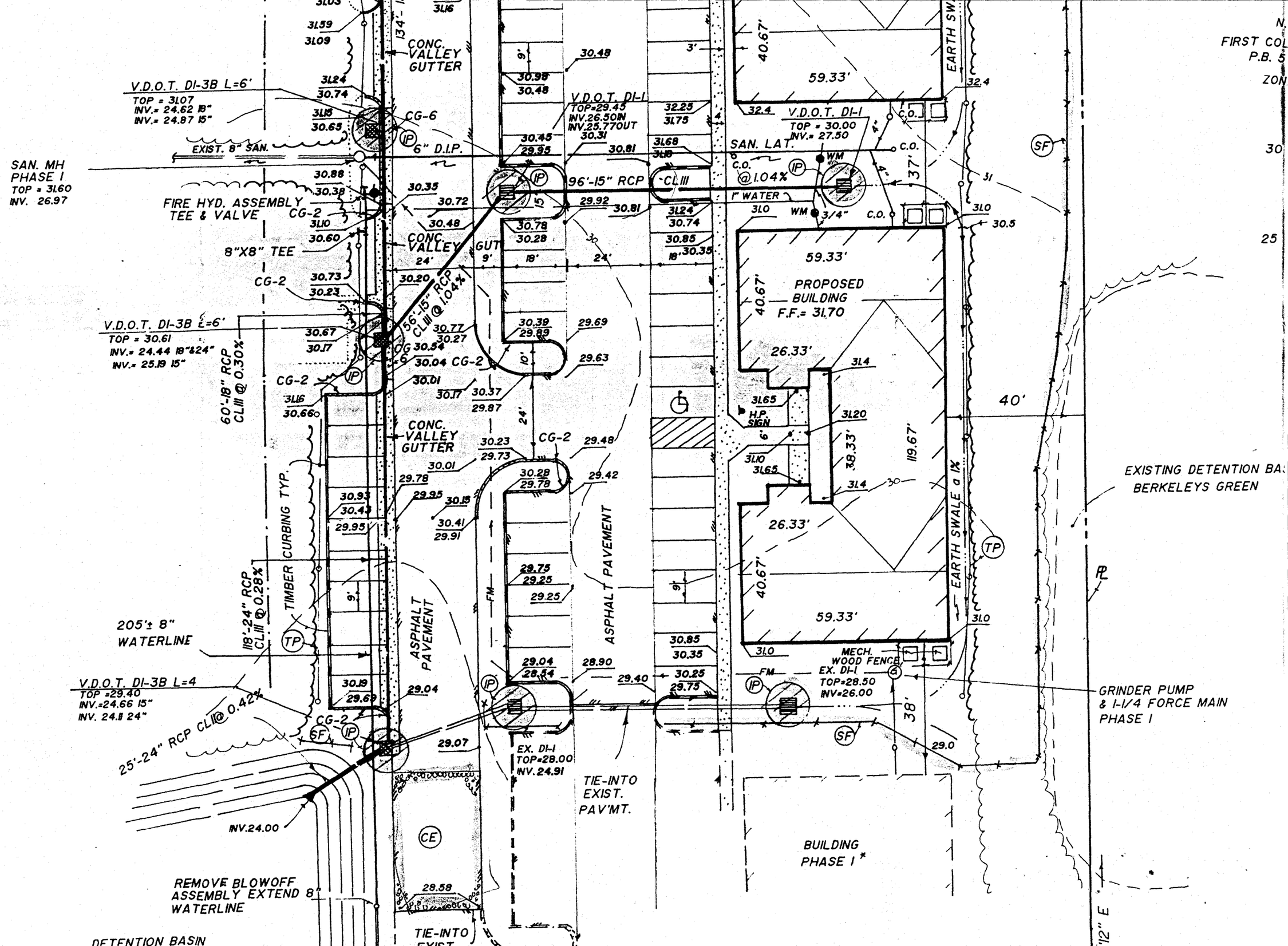
DATE	SCALE	DESIGN/DRAWN	CHECK/APPROVED	SHEET
2/22/96	AS SHOWN	LMP/LMP	DPC	3 of 4



SHEET INDEX

1. SITE PLAN
2. EROSION AND SEDIMENTATION CONTROL DETAILS

GREENSPRINGS COMMONS (ROUTE 5)
S-67-96

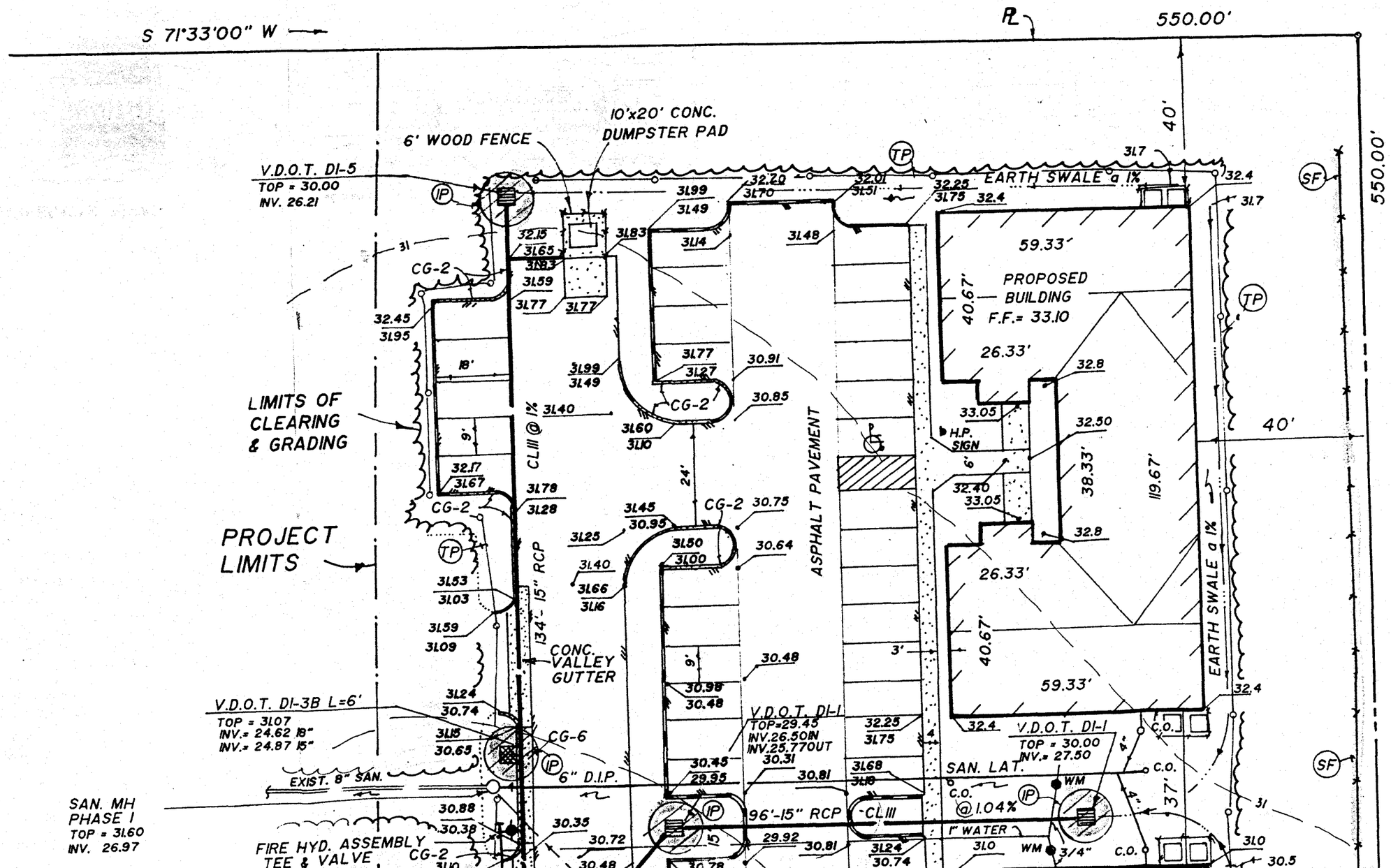

V.D.O.T. DI-3B L=6'
TOP = 31.07
INV.= 24.62 18"
INV.= 24.87 15"
CONC. VALLEY GUTTER
CG-6
EXIST. 8" SAN.
6" D.I.P.
SAN. MH PHASE I
TOP = 31.60
INV. 26.97
FIRE HYD. ASSEMBLY TEE & VALVE
CG-2
8"X8" TEE
V.D.O.T. DI-3B L=6'
TOP = 30.61
INV.= 24.44 18"&24"
INV.= 25.19 15"
60'-18" RCP CL III @ 0.30%
56'-15" RCP CL III @ 1.04%
96'-15" RCP CL III
V.D.O.T. DI-1
TOP=29.45
INV.26.50IN
INV.25.77OUT
V.D.O.T. DI-1
TOP = 30.00
INV.= 27.50
SAN. LAT.
@ 1.04%
1" WATER
3/4"
59.33'
40.67'
PROPOSED BUILDING
F.F.= 31.70
26.33'
H.P. SIGN
38.33'
119.67'
EARTH SWALE @ 1%
40'
37'
38'
FIRST COL
P.B. 5
ZON
EXISTING DETENTION BA
BERKELEYS GREEN
CONC. VALLEY GUTTER
TIMBER CURBING TYP.
118'-24" RCP CL III @ 0.28%
ASPHALT PAVEMENT
205'± 8" WATERLINE
V.D.O.T. DI-3B L=4
TOP =29.40
INV.=24.66 15"
INV. 24.11 24"
25'-24" RCP CL II @ 0.42%
INV.24.00
EX. DI-1
TOP=28.00
INV. 24.91
TIE-INTO EXIST. PAV'MT.
MECH. WOOD FENCE
EX. DI-1
TOP=28.50
INV=26.00
GRINDER PUMP & 1-1/4 FORCE MAIN PHASE I
BUILDING PHASE I *
REMOVE BLOWOFF ASSEMBLY EXTEND 8" WATERLINE
DETENTION BASIN
TIE-INTO EXIST.
112" E

COUNTY
CATIONS.
ES WITHIN

COINCIDENT
S EXPENSE.
WITH 4"
BLUE PAINTED

RKING SIGN.
IGNS SHALL
RM TRAFFIC

ENED ON



GREENSPRINGS COMMONS
PART OF PARCEL B - BERKELEY'S GREEN SECTION 2

JAMES CITY COUNTY, VIRGINIA

STORMWATER RUNOFF ANALYSIS
& DETENTION BASIN DESIGN

FEBRUARY 1996

LOUIS M. PENCI, INC.

LAND PLANNING SUBDIVISIONS SITE PLANS
STORMWATER MANAGEMENT BMP DESIGN

863 Catalina Drive - Newport News, Virginia 23608 - (804) 874-6388

PARCEL 'B' RTE. 5

DETENTION BASIN DESIGN CRITERIA

USE EXTENDED DRY DETENTION DESIGN 4 (SHALLOW MARSH)
USE 24 HR STORMS: 2YR RAINFALL = 3.5"
10YR RAINFALL = 5.75"
100YR RAINFALL = 8.00"
POST DEVELOPMENT 2YR & 10YR. RELEASE NOT TO EXCEED PRE-DEVELOPMENT

PRE-DEVELOPMENT CONDITIONS

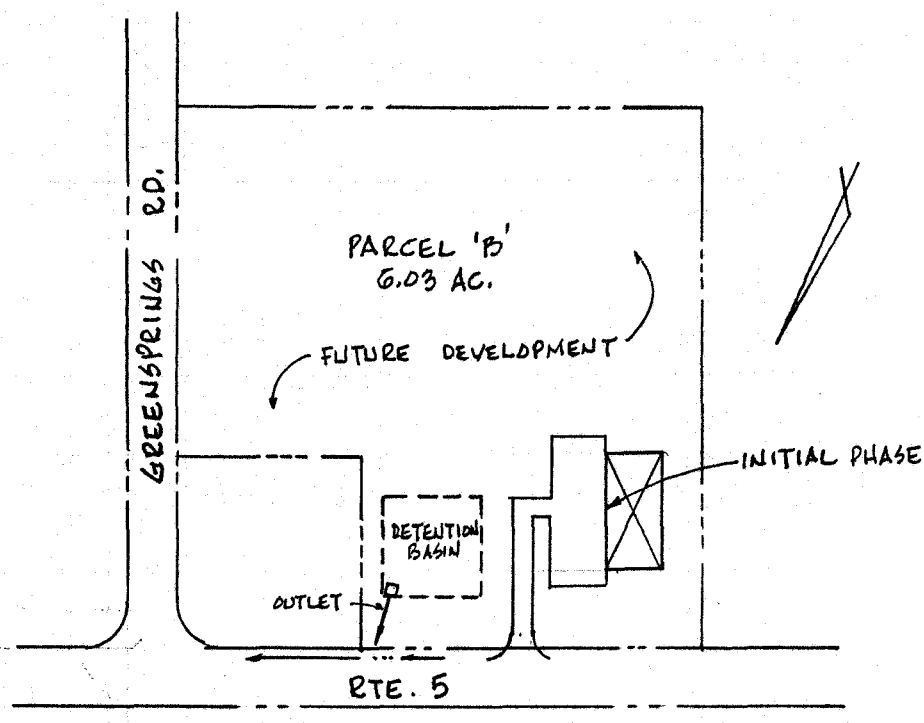
- AREA = 6.03 ACRES (TOTAL PARCEL)
- USE SOIL CLASS 'D' (SCS MAP #21) ok
  WOODS = 6.03AC, CN = 77
- HYDRAULIC LENGTH = 550'
- AVG. GROUND SLOPE = 1.0%

Q_2 = 8.94 CFS
Q_{10} = 20.81 CFS
T_c = 0.86

POST DEVELOPMENT CONDITIONS

- AREA = 6.03 ACRES (TOTAL PARCEL)
- USE SOIL CLASS 'D' (SCS MAP #21)
  60% IMPERVIOUS AREA, CN = 98
  40% GREEN AREA, CN = ~~80~~ ✓
  } AVERAGE CN = ~~91~~ ok
- HYDRAULIC LENGTH = 550'
- AVG. SLOPE = 0.7%

~~74 - Good open space~~
~~70~~
T_c = 0.52



22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD

DESIGN 4 (SHALLOW MARSH)

REQUIRED VOLUME: 1" STORM * R_V * AREA A = 6.03 AC = 262,667 SF

$R_V = 0.05 + 0.009(I)$ I = IMPERVIOUS RATIO = 60%

$= 0.05 + 0.009(60)$

$= 0.59$

VOL = (0.083')(0.59)(262,667 S.F) = 12,863 CF ✓

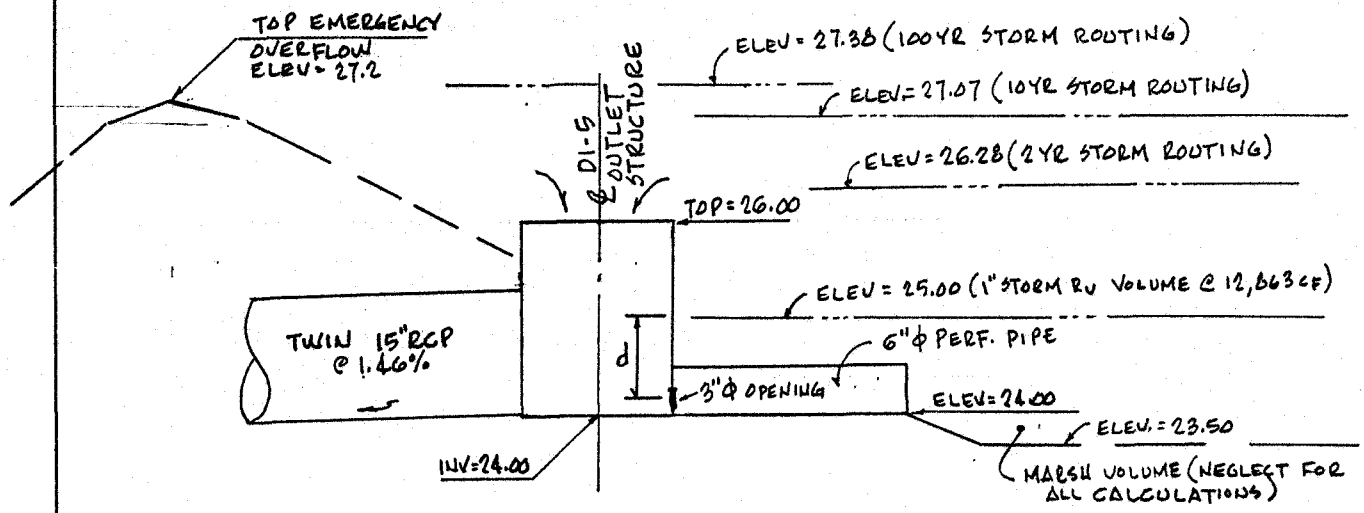
REQUIRED MARSH VOLUME: 0.45" * R_V * AREA

VOL = (0.037')(0.59)(262,667 SF) = 5812 CF ✓ (5949 CF PROVIDED)

use 0.7' deep - 8.5" ⇒ 8308 ft² surface area - 44 lb/ac - Phos.

BASIN STORAGE VOLUME

ELEV.	AREA (SF)	$(A_i+A_j)/2$	VOLUME (CF)	TOTAL VOLUME (CF
23.5	11,556	0	0	0
24.0	12,240	(11,898)	(5949) ← MARSH VOLUME ONLY - DOES NOT REFLECT IN TOTAL VOLUME FOR DETENTION	
25.0	13,608	12,924	12,924	12,924
26.0	14,976	14,292	14,292	27,216
27.0	16,344	15,660	15,660	42,876
27.5	17,028	16,686	8,343	51,219



SEDIMENT STORAGE REQ'D = 67 CY * 6.03 AC = 404 CY = 10,908 CF (ELEV = 24.84)

CALC. INCREMENTAL Q THROUGH 3"ϕ ORIFICE AT BOTTOM

$Q = C_o A (2gd)^{0.5}$

$C_o = 0.61$

$A = 0.0491$

$1/2 d = 0.1250$

INCREMENTAL DRAWDOWN TIME = $\frac{\text{DIFF. STORAGE VOLUME}}{Q}$

(SEE NEXT SHEET FOR DRAWDOWN SUMMARY)

BASIN DRAWDOWN SUMMARY FOR 1" STORM Rv VOLUME

RISE	VOL(CF)	D	Q(OUT)	TIME(HR)	SUM(HR)	
1.000	12924.00	0.875	0.2248	0.7984	0.7984	
0.950	12277.80	0.825	0.2183	0.8222	1.6206	
0.900	11631.60	0.775	0.2116	0.8483	2.4689	
0.850	10985.40	0.725	0.2047	0.8771	3.3460	
0.800	10339.20	0.675	0.1975	0.9090	4.2550	
0.750	9693.00	0.625	0.1900	0.9446	5.1996	
0.700	9046.80	0.575	0.1823	0.9849	6.1845	
0.650	8400.60	0.525	0.1742	1.0307	7.2152	
0.600	7754.40	0.475	0.1657	1.0836	8.2988	
0.550	7108.20	0.425	0.1567	1.1456	9.4443	
0.500	6462.00	0.375	0.1472	1.2195	10.6639	
0.450	5815.80	0.325	0.1370	1.3100	11.9739	
0.400	5169.60	0.275	0.1260	1.4241	13.3980	
0.350	4523.40	0.225	0.1140	1.5744	14.9724	
0.300	3877.20	0.175	0.1005	1.7852	16.7576	
0.250	3231.00	0.125	0.0850	2.1123	18.8699	
0.200	2584.80	0.075	0.0658	2.7270	21.5969	
0.150	1938.60	0.025	0.0380	4.7232	26.3201	
0.100	1292.40	0.000	0.0000	0.0000	26.3201	*Weir Flow Neglected
0.050	646.20	0.000	0.0000	0.0000	26.3201	*Weir Flow Neglected
0	0.00	0.000	0.0000			

SUMMARY OF RUNOFF ANALYSIS AND DETENTION BASIN PERFORMANCE

2 YR - 24 HR PRE-DEVELOPMENT PEAK DISCHARGE	= 8.94 CFS
2 YR - 24 HR POST DEVELOPMENT PEAK DISCHARGE	= 18.73 CFS
2 YR - 24 HR POST DEVELOPMENT ROUTING DISCHARGE	= 3.42 CFS @ Elevation 26.28
10 YR - 24 HR PRE-DEVELOPMENT PEAK DISCHARGE	= 20.81 CFS
10 YR - 24 HR POST DEVELOPMENT PEAK DISCHARGE	= 33.69 CFS
10 YR - 24 HR POST DEVELOPMENT ROUTING DISCHARGE	= 18.40 CFS @ Elevation 27.07
100 YR - 24 HR POST DEVELOPMENT ROUTING DISCHARGE	= 45.27 CFS @ Elevation 27.38

DETERMINE ANNUAL WETLAND LOADING

- LOWER STAGE (SHALLOW MARSH) VOLUME = 5949 CF / 43560 = 0.14 AC-FT
- NUTRIENT LOAD $[(P)(P_j)(R_v)/12](c)(A)(2.72)$
  N = [(44)(0.9)(0.59)/12](2.00)(6.0)(2.72) = 63.55 #/yr.
  P = [(44)(0.9)(0.59)/12](0.26)(6.0)(2.72) = 8.26 #/yr.
- AVERAGE ANNUAL LOADING PER WETLAND ACRE
  LOWER STAGE AREA (6" DEPTH) = 0.14 AC-FT / 0.5 FT = 0.28 AC
  N = 63.55/0.28 = 227 lbs/acre/yr.
  P = 8.26/0.28 = 30 lbs/acre/yr. → 44 lb/ac
  0.5' deep use 8303 ft²

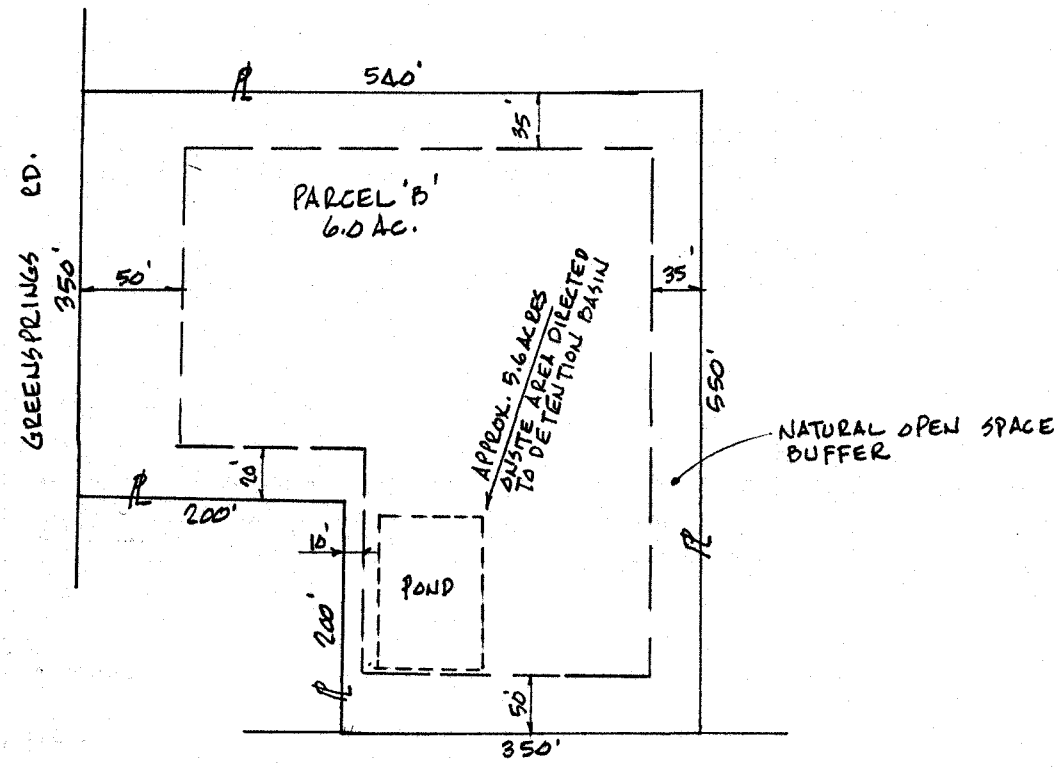
BMP POINT SYSTEM

A. STRUCTURAL:
DRY EXT. POND (#3) @ 9 pts x 93% = 8.4 pts

B. NATURAL OPEN SPACE:
28% OF SITE @ 0.1 per 1% = 2.8 pts
provided on plat - 18%

10.2 pts total ✓

ok.



pre Q_2 = 5 cfs
post Q_2 = 12

HYDROGRAPH REPORT

RECORD NUMBER : 1
TYPE : COMPUTED FLOOD
DESCRIPTION : 2YR 24HR PRE-DEVELOPMENT

[HYDROGRAPH INFORMATION]

Peak Discharge.....	=	8.94 (cfs)
Volume.....	=	0.71 (acft)
Time Interval.....	=	3 (min)
Time to Peak.....	=	726.00 (min)
Time of Base.....	=	1479.00 (min)
Multiplication factor.....	=	1.00

[UNIT HYDROGRAPH INFORMATION]

Unit hydrograph #.....	=	1
Unit hydrograph type.....	=	CURVILINEAR UH
Peak Discharge.....	=	18.89 (cfs)
Shape Factor.....	=	484.00
Time Interval.....	=	3 (min)
Time to Peak.....	=	14.41 (min)
Time of Base.....	=	72.07 (min)
Rainfall Excess.....	=	1.00 (in)
Basin Lag Time.....	=	12.97 (min)

[BASIN DESCRIPTION]

Watershed Area.....	=	6.00 (ac)
Curve Number.....	=	77

[TIME CONCENTRATION -- SCS LAG]

Channel Slope (S).....	=	0.01000
Flow Length (L).....	=	550.00 (ft)
Time of Concentration.....	=	21.62 (min)

[RAINFALL DESCRIPTION]

Distribution Type.....	=	SCS II
Total Precipitation.....	=	3.50 (in)
Return Period.....	=	2 (yr)
Storm Duration.....	=	24.00 (hr)

HYDROGRAPH REPORT

RECORD NUMBER : 3
TYPE : COMPUTED FLOOD
DESCRIPTION : 2YR 24HR POST-DEVELOPMENT

[HYDROGRAPH INFORMATION]

Peak Discharge	=	18.73	(cfs)
Volume	=	1.27	(acft)
Time Interval	=	2	(min)
Time to Peak	=	722.00	(min)
Time of Base	=	1470.00	(min)
Multiplication factor	=	1.00	

[UNIT HYDROGRAPH INFORMATION]

Unit hydrograph #	=	3	
Unit hydrograph type	=	CURVILINEAR UH	
Peak Discharge	=	25.71	(cfs)
Shape Factor	=	484.00	
Time Interval	=	2	(min)
Time to Peak	=	10.59	(min)
Time of Base	=	52.94	(min)
Rainfall Excess	=	1.00	(in)
Basin Lag Time	=	9.53	(min)

[BASIN DESCRIPTION]

Watershed Area	=	6.00	(ac)
Curve Number	=	91	

[TIME CONCENTRATION -- SCS LAG]

Channel Slope (S)	=	0.00700	
Flow Length (L)	=	550.00	(ft)
Time of Concentration	=	15.88	(min)

[RAINFALL DESCRIPTION]

Distribution Type	=	SCS II	
Total Precipitation	=	3.50	(in)
Return Period	=	2	(yr)
Storm Duration	=	24.00	(hr)

HYDROGRAPH REPORT

RECORD NUMBER : 6
TYPE : RESER STOR. IND
DESCRIPTION : 2yr post routing

[HYDROGRAPH INFORMATION]

Peak Discharge.....	=	3.42 (cfs)	(2yr pre = 8.94 cfs)
Volume.....	=	0.64 (acft)	
Time Interval.....	=	2 (min)	
Time to Peak.....	=	748.00 (min)	
Time of Base.....	=	1644.00 (min)	
Peak Elevation.....	=	26.28 (ft)	

[RESERVOIR STRUCTURE INFORMATION]

Reservoir #.....	=	1
Description.....	=	ONSITE DETENTION BASIN
Storage type.....	=	MAN STAGE/STOR
Max storage.....	=	49550.40 Cuft
Discharge type.....	=	COMP STAGE/DISC
Max discharge.....	=	48.17 cfs

[RESERVOIR INFORMATION]

Reservoir #.....	=	1
Reservoir Description.....	=	ONSITE DETENTION BASIN

[INFLOW HYDROGRAPH INFORMATION]

Hydrograph #.....	=	3
Hydrograph Description.....	=	2YR 24HR POST-DEVELOPMENT

HYDROGRAPH REPORT

RECORD NUMBER : 2
TYPE : COMPUTED FLOOD
DESCRIPTION : 10YR 24HR PRE-DEVELOPMENT

[HYDROGRAPH INFORMATION]

Peak Discharge	=	20.81	(cfs)
Volume	=	1.63	(acft)
Time Interval	=	3	(min)
Time to Peak	=	726.00	(min)
Time of Base	=	1485.00	(min)
Multiplication factor	=	1.00	

[UNIT HYDROGRAPH INFORMATION]

Unit hydrograph #	=	2	
Unit hydrograph type	=	CURVILINEAR UH	
Peak Discharge	=	18.89	(cfs)
Shape Factor	=	484.00	
Time Interval	=	3	(min)
Time to Peak	=	14.41	(min)
Time of Base	=	72.07	(min)
Rainfall Excess	=	1.00	(in)
Basin Lag Time	=	12.97	(min)

[BASIN DESCRIPTION]

Watershed Area	=	6.00	(ac)
Curve Number	=	77	

[TIME CONCENTRATION -- SCS LAG]

Channel Slope (S)	=	0.01000	
Flow Length (L)	=	550.00	(ft)
Time of Concentration	=	21.62	(min)

[RAINFALL DESCRIPTION]

Distribution Type	=	SCS II	
Total Precipitation	=	5.75	(in)
Return Period	=	10	(yr)
Storm Duration	=	24.00	(hr)

HYDROGRAPH REPORT

RECORD NUMBER : 4
TYPE : COMPUTED FLOOD
DESCRIPTION : 10YR 24HR POST-DEVELOPMENT

[HYDROGRAPH INFORMATION]

Peak Discharge.....	=	33.69 (cfs)
Volume.....	=	2.36 (acft)
Time Interval.....	=	2 (min)
Time to Peak.....	=	722.00 (min)
Time of Base.....	=	1474.00 (min)
Multiplication factor.....	=	1.00

[UNIT HYDROGRAPH INFORMATION]

Unit hydrograph #.....	=	4
Unit hydrograph type.....	=	CURVILINEAR UH
Peak Discharge.....	=	25.71 (cfs)
Shape Factor.....	=	484.00
Time Interval.....	=	2 (min)
Time to Peak.....	=	10.59 (min)
Time of Base.....	=	52.94 (min)
Rainfall Excess.....	=	1.00 (in)
Basin Lag Time.....	=	9.53 (min)

[BASIN DESCRIPTION]

Watershed Area.....	=	6.00 (ac)
Curve Number.....	=	91

[TIME CONCENTRATION -- SCS LAG]

Channel Slope (S).....	=	0.00700
Flow Length (L).....	=	550.00 (ft)
Time of Concentration.....	=	15.88 (min)

[RAINFALL DESCRIPTION]

Distribution Type.....	=	SCS II
Total Precipitation.....	=	5.75 (in)
Return Period.....	=	10 (yr)
Storm Duration.....	=	24.00 (hr)

HYDROGRAPH REPORT

RECORD NUMBER : 5
TYPE : RESER STOR. IND
DESCRIPTION : 10yr post routing

[HYDROGRAPH INFORMATION]

Peak Discharge..... = 18.40 (cfs) (10YR pre = 20.81 cfs)
Volume..... = 1.73 (acft)
Time Interval..... = 2 (min)
Time to Peak..... = 732.00 (min)
Time of Base..... = 1662.00 (min)
Peak Elevation..... = 27.07 (ft)

[RESERVOIR STRUCTURE INFORMATION]

Reservoir #..... = 1
Description..... = ONSITE DETENTION BASIN
Storage type..... = MAN STAGE/STOR
Max storage..... = 49550.40 Cuft
Discharge type..... = COMP STAGE/DISC
Max discharge..... = 48.17 cfs

[RESERVOIR INFORMATION]

Reservoir #..... = 1
Reservoir Description..... = ONSITE DETENTION BASIN

[INFLOW HYDROGRAPH INFORMATION]

Hydrograph #..... = 4
Hydrograph Description..... = 10YR 24HR POST-DEVELOPMENT

HYDROGRAPH REPORT

RECORD NUMBER : 7
TYPE : COMPUTED FLOOD
DESCRIPTION : 100 YR POST-DEVELOPMENT

[HYDROGRAPH INFORMATION]

Peak Discharge.....	=	48.45 (cfs)
Volume.....	=	3.47 (acft)
Time Interval.....	=	2 (min)
Time to Peak.....	=	722.00 (min)
Time of Base.....	=	1476.00 (min)
Multiplication factor.....	=	1.00

[UNIT HYDROGRAPH INFORMATION]

Unit hydrograph #.....	=	4
Unit hydrograph type.....	=	CURVILINEAR UH
Peak Discharge.....	=	25.71 (cfs)
Shape Factor.....	=	484.00
Time Interval.....	=	2 (min)
Time to Peak.....	=	10.59 (min)
Time of Base.....	=	52.94 (min)
Rainfall Excess.....	=	1.00 (in)
Basin Lag Time.....	=	9.53 (min)

[BASIN DESCRIPTION]

Watershed Area.....	=	6.00 (ac)
Curve Number.....	=	91

[TIME CONCENTRATION -- SCS LAG]

Channel Slope (S).....	=	0.00700
Flow Length (L).....	=	550.00 (ft)
Time of Concentration.....	=	15.88 (min)

[RAINFALL DESCRIPTION]

Distribution Type.....	=	SCS II
Total Precipitation.....	=	8.00 (in)
Return Period.....	=	100 (yr)
Storm Duration.....	=	24.00 (hr)

HYDROGRAPH REPORT

RECORD NUMBER : 8
TYPE : RESER STOR. IND
DESCRIPTION : 100yr post routing

[HYDROGRAPH INFORMATION]

Peak Discharge.....	=	45.27 (cfs)
Volume.....	=	2.84 (acft)
Time Interval.....	=	2 (min)
Time to Peak.....	=	724.00 (min)
Time of Base.....	=	1674.00 (min)
Peak Elevation.....	=	27.38 (ft)

[RESERVOIR STRUCTURE INFORMATION]

Reservoir #.....	=	1
Description.....	=	ONSITE DETENTION BASIN
Storage type.....	=	MAN STAGE/STOR
Max storage.....	=	49550.40 Cuft
Discharge type.....	=	COMP STAGE/DISC
Max discharge.....	=	48.17 cfs

[RESERVOIR INFORMATION]

Reservoir #.....	=	1
Reservoir Description.....	=	ONSITE DETENTION BASIN

[INFLOW HYDROGRAPH INFORMATION]

Hydrograph #.....	=	7
Hydrograph Description.....	=	100 YR POST-DEVELOPMENT

RESERVOIR REPORT

RECORD NUMBER : 1
STORAGE TYPE : MAN STAGE/STOR
DISCHARGE TYPE : COMP STAGE/DISC
DESCRIPTION : ONSITE DETENTION BASIN

[RATING CURVE LIMIT]

Minimum Elevation..... = 24.00 (ft)
Maximum Elevation..... = 27.50 (ft)
Elevation Increment..... = 0.10 (ft)

[STAGE STORAGE INFORMATION]

Input file = NULL
Output file = NULL

[Manual Storage vs. Elevation]

ELEVATION (ft)	STORAGE (cf)
25.00	12924.00
26.00	27216.00
27.00	42876.00
27.50	51219.00

[STAGE DISCHARGE INFORMATION]

OUTLET STRUCTURE:
STR # : 1
TYPE : STAND PIPE WEIR
DESCRIPTION : BASIN OUTLET STRUCTURE

STR # : 2
TYPE : TRAPEZOIDAL WEIR
DESCRIPTION : EMERGENCY OVRFLOW

RESERVOIR REPORT

RECORD NUMBER : 1
STORAGE TYPE : MAN STAGE/STOR

DISCHARGE TYPE : COMP STAGE/DISC
DESCRIPTION : ONSITE DETENTION BASIN

[Reservoir Discharge Value vs. Stage]
(the elevation increment is 0.1)

STAGE (ft)	ELEVATION (ft)	CONTOUR AREA (sqft)	STORAGE (cuft)	DISCHARGE (cfs)
0.00	24.00	0.00	0.00	0.00
0.10	24.10	38772.00	1292.40	0.00
0.20	24.20	38772.00	2584.80	0.00
0.30	24.30	38772.00	3877.20	0.00
0.40	24.40	38772.00	5169.60	0.00
0.50	24.50	38772.00	6462.00	0.00
0.60	24.60	38772.00	7754.40	0.00
0.70	24.70	38772.00	9046.80	0.00
0.80	24.80	38772.00	10339.20	0.00
0.90	24.90	38772.00	11631.60	0.00
1.00	25.00	38772.00	12924.00	0.00
1.10	25.10	39145.09	14353.20	0.00
1.20	25.20	39456.00	15782.40	0.00
1.30	25.30	39719.07	17211.60	0.00
1.40	25.40	39944.57	18640.80	0.00
1.50	25.50	40140.00	20070.00	0.00
1.60	25.60	40311.00	21499.20	0.00
1.70	25.70	40461.88	22928.40	0.00
1.80	25.80	40596.00	24357.60	0.00
1.90	25.90	40716.00	25786.80	0.00
2.00	26.00	40824.00	27216.00	0.00
2.10	26.10	41117.14	28782.00	0.73
2.20	26.20	41383.64	30348.00	2.07
2.30	26.30	41626.96	31914.00	3.80
2.40	26.40	41850.00	33480.00	5.84
2.50	26.50	42055.20	35046.00	8.17
2.60	26.60	42244.61	36612.00	10.74
2.70	26.70	42420.00	38178.00	13.53
2.80	26.80	42582.86	39744.00	16.53
2.90	26.90	42734.48	41310.00	17.70
3.00	27.00	42876.00	42876.00	18.13
3.10	27.10	43107.68	44544.60	18.54
3.20	27.20	43324.88	46213.20	18.95
3.30	27.30	43528.91	47881.80	29.40
3.40	27.40	43720.94	49550.40	48.17

— where is 3" release orif.

OUTLET STRUCTURE REPORT

RECORD NUMBER : 1
TYPE : STAND PIPE WEIR
DESCRIPTION : BASIN OUTLET STRUCTURE

[RATING CURVE LIMIT]

Minimum Elevation..... = 24.00 (ft)
Maximum Elevation..... = 27.50 (ft)
Elevation Increment..... = 0.10 (ft)

[STANDPIPE INFORMATION]

DESCRIPTION : RECTANGULAR STAND PIPE

[OUTLET STRUCTURE INFORMATION]

Width..... = 3.20 (ft)
Height..... = 3.20 (ft)
Crest Length..... = 12.80 (ft)
Crest Elevation..... = 26.00 (ft) ✓
Fraction Open Area..... = 0.58600

[RECTANGULAR STAND PIPE EQUATION]

ORIFICE EQ: Q = Co*A(2gh)^0.5
WEIR EQ: Q = Cw*L*H^exp
Coefficient Co ..... = 0.60000 ✓
Coefficient Cw ..... = 3.08000 ✓
Exponential..... = 1.50000

[DEFINITIONS]

H = Headwater depth above inlet control section invert, (ft)
A = Wetted area, (sqft)
L = Crest length, (ft)

[CULVERT INFORMATION]

OUTLET STRUCTURE REPORT

RECORD NUMBER : 1
TYPE : STAND PIPE WEIR
DESCRIPTION : BASIN OUTLET STRUCTURE

DESCRIPTION : CIRCULAR CONCRETE/sq edge/headwall

[OUTLET STRUCTURE INFORMATION]

Circular Radius..... = 0.62500 (ft)
Culvert Invert Elevation..... = 24.00000 (ft)
Slope..... = 0.01460
Manning's N-value..... = 0.01300
Orifice Coefficient..... = 0.50000
Tailwater..... = 23.04000 (ft)
Number barrels..... = 2

[UNSUBMERGED EQUATION]

H/Diam = Hc/Diam + K *(Q/A*Diam^0.5))^M - 0.5*S^2
Coefficient K..... = 0.00980
coefficient M..... = 2.00000

[SUBMERGED EQUATION]

H/Diam = c*(Q/(A*Diam^0.5))^Z + Y - 0.5*S^2
Coefficient c..... = 0.03980
Coefficient Y..... = 0.67000

[DEFINITIONS]

H = Headwater depth above inlet control section invert, (ft)
Diam = Inerior height of culvert barrel, (ft)
Hc = Specific head at critical depth (dc + Vc^2/2g), (ft)
Q = Discharge, (cuft/s)
A = Full cross sectional area of culvert barrel, (sqft)
S = Culvert barrel slope, (ft/ft)

[Stand Pipe Discharge Value vs. Stage]
(the elevation increment is 0.1)

STAGE	ELEVATION (ft)	ORIFICE (cfs)	WEIR (cfs)	STAND PIPE (cfs)	CULVERT (cfs)	TOTAL FLOW (cfs)
0.00	24.00	0.00	0.00	0.00	0.00	0.00
0.10	24.10	0.00	0.00	0.00	0.00	0.00
0.20	24.20	0.00	0.00	0.00	0.00	0.00
0.30	24.30	0.00	0.00	0.00	0.03	0.00
0.40	24.40	0.00	0.00	0.00	0.75	0.00

OUTLET STRUCTURE REPORT

RECORD NUMBER : 1
TYPE : STAND PIPE WEIR
DESCRIPTION : BASIN OUTLET STRUCTURE

[Stand Pipe Discharge Value vs. Stage]
(the elevation increment is 0.1)

STAGE	ELEVATION (ft)	ORIFICE (cfs)	WEIR (cfs)	STAND PIPE (cfs)	CULVERT (cfs)	TOTAL FLOW (cfs)
0.50	24.50	0.00	0.00	0.00	1.79	0.00
0.60	24.60	0.00	0.00	0.00	2.47	0.00
0.70	24.70	0.00	0.00	0.00	3.22	0.00
0.80	24.80	0.00	0.00	0.00	4.03	0.00
0.90	24.90	0.00	0.00	0.00	4.87	0.00
1.00	25.00	0.00	0.00	0.00	5.75	0.00
1.10	25.10	0.00	0.00	0.00	6.62	0.00
1.20	25.20	0.00	0.00	0.00	7.49	0.00
1.30	25.30	0.00	0.00	0.00	8.35	0.00
1.40	25.40	0.00	0.00	0.00	9.22	0.00
1.50	25.50	0.00	0.00	0.00	10.08	0.00
1.60	25.60	0.00	0.00	0.00	10.80	0.00
1.70	25.70	0.00	0.00	0.00	11.49	0.00
1.80	25.80	0.00	0.00	0.00	12.13	0.00
1.90	25.90	0.00	0.00	0.00	12.73	0.00
2.00	26.00	0.00	0.00	0.00	13.31	0.00
2.10	26.10	0.00	0.00	0.73	13.87	0.73
2.20	26.20	0.00	0.00	2.07	14.40	2.07
2.30	26.30	0.00	0.00	3.80	14.92	3.80
2.40	26.40	0.00	0.00	5.84	15.43	5.84
2.50	26.50	0.00	0.00	8.17	15.91	8.17
2.60	26.60	0.00	0.00	10.74	16.38	10.74
2.70	26.70	0.00	0.00	13.53	16.83	13.53
2.80	26.80	0.00	0.00	16.53	17.27	16.53
2.90	26.90	0.00	0.00	19.73	17.70	17.70
3.00	27.00	0.00	0.00	39.42	18.13	18.13
3.10	27.10	0.00	0.00	43.61	18.54	18.54
3.20	27.20	0.00	0.00	47.81	18.95	18.95
3.30	27.30	0.00	0.00	52.01	19.34	19.34
3.40	27.40	0.00	0.00	56.20	19.73	19.73

OUTLET STRUCTURE REPORT

RECORD NUMBER : 2
TYPE : TRAPEZOIDAL WEIR
DESCRIPTION : EMERGENCY OVRFLOW

[RATING CURVE LIMIT]

Minimum Elevation..... = 27.20 (ft)
Maximum Elevation..... = 27.50 (ft)
Elevation Increment..... = 0.10 (ft)

[OUTLET STRUCTURE INFORMATION]

Weir Angle..... = 3.12000
Crest Elevation..... = 27.20 (ft)
Crest Length..... = 120.00 (ft)

Coefficient Cw..... = 2.65000
Exponential..... = 1.50000

[TRAP EQUATION]

Q = Cw*tan(ang/2)H^exp
H = Headwater depth above inlet control section invert, (ft)
ang = Weir Angle, (rad)

[Culvert Weir Discharge Value vs. Stage]
(the elevation increment is 0.1)

STAGE	ELEVATION (ft)	FLOW (cfs)
0.10	27.30	10.06
0.20	27.40	28.44

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name:

Comment: POND OUTLET CHANNEL 2YR STORM FLOW

Solve For Depth

Given Input Data:

Bottom Width.....	4.00 ft	
Left Side Slope..	3.00:1 (H:V)	n=.05
Right Side Slope.	3.00:1 (H:V)	V=1.9 fps
Manning's n.....	0.035	
Channel Slope....	0.0100 ft/ft	d=0.45'
Discharge.....	3.42 cfs	

Computed Results:

Depth.....	0.36 ft
Velocity.....	1.87 fps
Flow Area.....	1.83 sf
Flow Top Width...	6.16 ft
Wetted Perimeter.	6.28 ft
Critical Depth...	0.26 ft
Critical Slope...	0.0299 ft/ft
Froude Number....	0.60 (flow is Subcritical)

Open Channel Flow Module, Version 3.3 (c) 1991
Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name:

Comment: POND OUTLET CHANNEL 10YR STORM FLOW

Solve For Depth

Given Input Data:

Bottom Width.....	4.00 ft
Left Side Slope..	3.00:1 (H:V)
Right Side Slope.	3.00:1 (H:V)
Manning's n.....	0.035
Channel Slope....	0.0100 ft/ft
Discharge.....	18.40 cfs

Computed Results:

Depth.....	0.89 ft
Velocity.....	3.08 fps
Flow Area.....	5.97 sf
Flow Top Width...	9.36 ft
Wetted Perimeter.	9.65 ft
Critical Depth...	0.72 ft
Critical Slope...	0.0229 ft/ft
Froude Number....	0.68 (flow is Subcritical)

Open Channel Flow Module, Version 3.3 (c) 1991
Haestad Methods, Inc. * 37 Brookside Rd * Waterbury, Ct 06708

Calculated By: LP Date: 2-20-96
Checked By: Date:
N= 0.013 RCP
Storm Frequency 10 YEAR

Project No.:
Project Desc. PAREL 'B' - ROUTE 5
JAMES CITY CO.
Sheet of Sheets

STORM DRAINAGE COMPUTATION SHEET

LOCATION				RUN-OFF										PIPE - CHANNEL DESIGN						HYDRAULIC GRADE LINE								
				AREA-ACRES					TIME OF FLOW - MIN.																			
LINE	RUN	FROM	TO	INCREMENT	TOTAL	RUN-OFF COEFF.	INCREMENTAL CA	ACCUMULATED CA	TO INLET/ UPPER REACH	WITHIN REACH CONVEYANCE	TIME OF CONCENTRATION	INTENSITY	DISCHARGE C.F.S.	PIPE SIZE	CHANNEL SECTION	SLOPE FT./FT.	CAPACITY FULL C.F.S.	VELOCITY FULL F.P.S.	DESIGN VELOCITY F.P.S.	CONVEYANCE LENGTH FT.	INVERT UPSTREAM	INVERT DOWNSTREAM	FRICTION SLOPE FT./FT.	VELOCITY F.P.S.	$V^2/2G$ FT.	H.G.L. ELEV. UPSTREAM	H.G.L. ELEV. DOWNSTREAM	COVER ELEV. TOP OF BANK
		A	B	0.20	0.20	0.45	0.090	0.090	5			7.0	0.63	15"		0.0064	5.16	4.20	2.7	78	26.00	25.50	0.0001	0.51				28.50
		B	C	0.45	0.45	0.85	0.383	0.473	5			7.0	3.31	15"		0.0064	5.16	4.20	4.4	64	24.91	24.50	0.0026	2.69	.11			28.00
																						27.1						
		D	E	0.45	0.45	0.85	0.383	0.383	5			7.0	2.68	15"		0.0042	4.18	3.40	3.6	72	24.30	24.00	0.0017	2.18				27.88
		F	G	0.45	0.45	0.30	0.135	0.135	7			6.6	0.89	15"		0.0030	3.53	2.87	2.4	72	23.82	23.60	0.0002	0.72				

JAMES CITY COUNTY
ENVIRONMENTAL DIVISION
BMP INFORMATION WORKSHEET

(45-2)01 - 5C

Applicant to submit one worksheet for each proposed BMP.

1. Project Name: GREENSPRINGS COMMONS

2. Location of BMP (street address or closest building lot number):

   3435 JOHN TYLER HIGHWAY

3. Owner Information: Name: BERKELEYS, LC

   Mailing Address: 739 THIMBLE SHOALS BLVD, SUITE 105

   NEWPORT NEWS, VA.

4. BMP Data: Drainage area served by BMP: 6.03 acres.

   BMP Type (Check One):

BMP TYPE	BMP DESIGN NO.'S	BMP POINTS
A. **Extended Dry Detention**	☐ Design 2 (6 - 12 hours) ☐ Design 3 (24 hours) ☒ Design 4 (Shallow Marsh)	4 6 9
B. **Wet Pond**	☐ Design 5 (0.5 inch/imp acre) ☐ Design 6 (2.5 V) ☐ Design 7 (4.0 V) ☐ Design 7A (10-15 V)	6 8 9 10
C. **Infiltration (Trench, Basin, Porous Pavement)**	☐ Design 8 (0.5 in/imp acre) ☐ Design 9 (1.0 in/imp. acre) ☐ Design 10 (2 year storm)	9 10 11
D. **Grassed Swale**	☐ Design 15 (Check Dams)	2
E. **Water Quality Inlet**	☐ Design 11 (400 cubic feet/imp. acre)	2

Storage Volumes in Acre Feet: Water Quality 0.3 2 Year Storm * 0.64

* (Include Water Quality Volume for Dry Detention Basins)

Type of release structure: RCP

Size of structure: TWIN 15" ϕ w/ 3" ϕ orifice

5. Site Information:

   Site Area in Acres: 6.03 Name of Receiving Stream: POWHATAN CREEK

   Other property and acreage served by BMP: None

BMPWrkSt.frm