CERTIFICATE OF AUTHENTICITY

THIS IS TO CERTIFY THAT THE FOLLOWING ELECTRONIC RECORDS ARE TRUE AND ACCURATE REPRODUCTIONS OF THE ORIGINAL RECORDS OF JAMES CITY COUNTY GENERAL SERVICES DEPARTMENT- STORMWATER DIVISION; WERE SCANNED IN THE REGULAR COURSE OF BUSINESS PURSUANT TO GUIDELINES ESTABLISHED BY THE LIBRARY OF VIRGINIA AND ARCHIVES; AND HAVE BEEN VERIFIED IN THE CUSTODY OF THE INDIVIDUAL LISTED BELOW.

BMP NUMBER: **PC004**

DATE VERIFIED: **June 5, 2012**

QUALITY ASSURANCE TECHNICIAN: **Leah Hardenbergh**

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA

Stormwater Division

MEMORANDUM

DATE: March 13, 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: PC004

PIN: 4521100001B

Subdivision, Tract, Business or Owner Name (if known): Berkeley's Green

Property Description: Common Area Berkeley's Green Section(s) 3 & 4

Site Address:

(For internal use only) **Box** 1 **Drawer:** 1

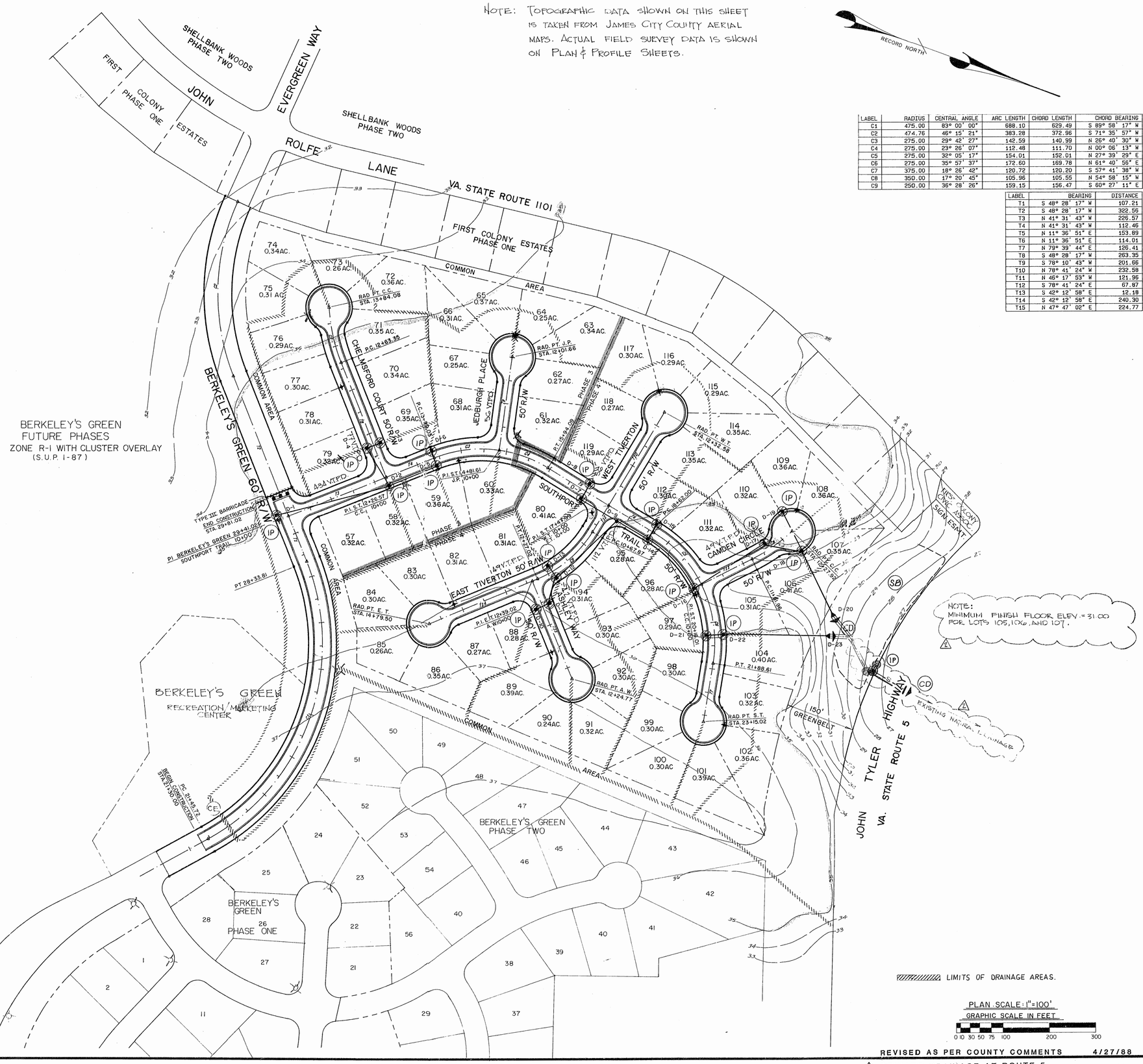
Agreements: (in file as of scan date) **N** **Book or Doc#:** **Page:**

Comments

A.F. 40704

PC004

NOTE: TOPOGRAPHIC DATA SHOWN ON THIS SHEET IS TAKEN FROM JAMES CITY COUNTY AERIAL MAPS. ACTUAL FIELD SURVEY DATA IS SHOWN ON PLAN & PROFILE SHEETS.



BERKELEY'S GREEN
FUTURE PHASES
ZONE R-1 WITH CLUSTER OVERLAY
(S.U.P. 1-87)

LABEL	RADIUS	CENTRAL ANGLE	ARC LENGTH	CHORD LENGTH	CHORD BEARING
C1	475.00	83° 00' 00"	688.10	629.49	S 89° 58' 17" W
C2	474.76	46° 15' 21"	383.28	372.96	S 71° 35' 57" W
C3	275.00	29° 42' 27"	142.59	140.99	N 26° 40' 30" W
C4	275.00	23° 26' 07"	112.48	111.70	N 00° 06' 13" W
C5	275.00	32° 05' 17"	154.01	152.01	N 27° 39' 29" E
C6	275.00	35° 57' 37"	172.60	169.78	N 61° 40' 56" E
C7	375.00	18° 26' 42"	120.72	120.20	S 57° 41' 38" W
C8	350.00	17° 20' 45"	105.96	105.55	N 54° 58' 15" W
C9	250.00	36° 28' 26"	159.15	156.47	S 60° 27' 11" E

LABEL	BEARING	DISTANCE
T1	S 48° 28' 17" W	107.21
T2	S 48° 28' 17" W	322.56
T3	N 41° 31' 43" W	226.57
T4	N 41° 31' 43" W	112.46
T5	N 11° 36' 51" E	153.89
T6	N 11° 36' 51" E	114.01
T7	N 79° 39' 44" E	126.41
T8	S 48° 28' 17" W	263.35
T9	S 78° 10' 43" W	201.66
T10	N 78° 41' 24" W	232.58
T11	N 46° 17' 53" W	121.96
T12	S 78° 41' 24" E	67.87
T13	S 42° 12' 58" E	12.18
T14	S 42° 12' 58" E	240.30
T15	N 47° 47' 02" E	224.77

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DES.	B.L.M.
DWN.	B.S.G.
CHK.	N.H.M.
DATE	2.17.88

LAND DEVELOPMENT INCORPORATED

BERKELEY'S GREEN PHASES 3&4

PRELIMINARY PLAT, GEOMETRICS, EROSION AND SEDIMENT CONTROL

JAMES CITY COUNTY, VIRGINIA

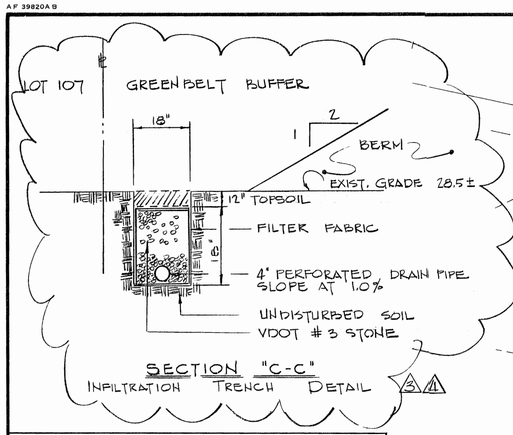
PROJ. NO.	85040
FLD. BK. NO.	
SHEET	2 OF 12
DWG.	2701W

REVISED AS PER COUNTY COMMENTS 4/27/88

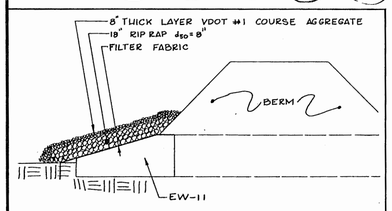
REVISED DRAINAGE AT ROUTE 5 7/27/88

PC004_BERKELEYS_GREEN_PHASES_3&4 - 003

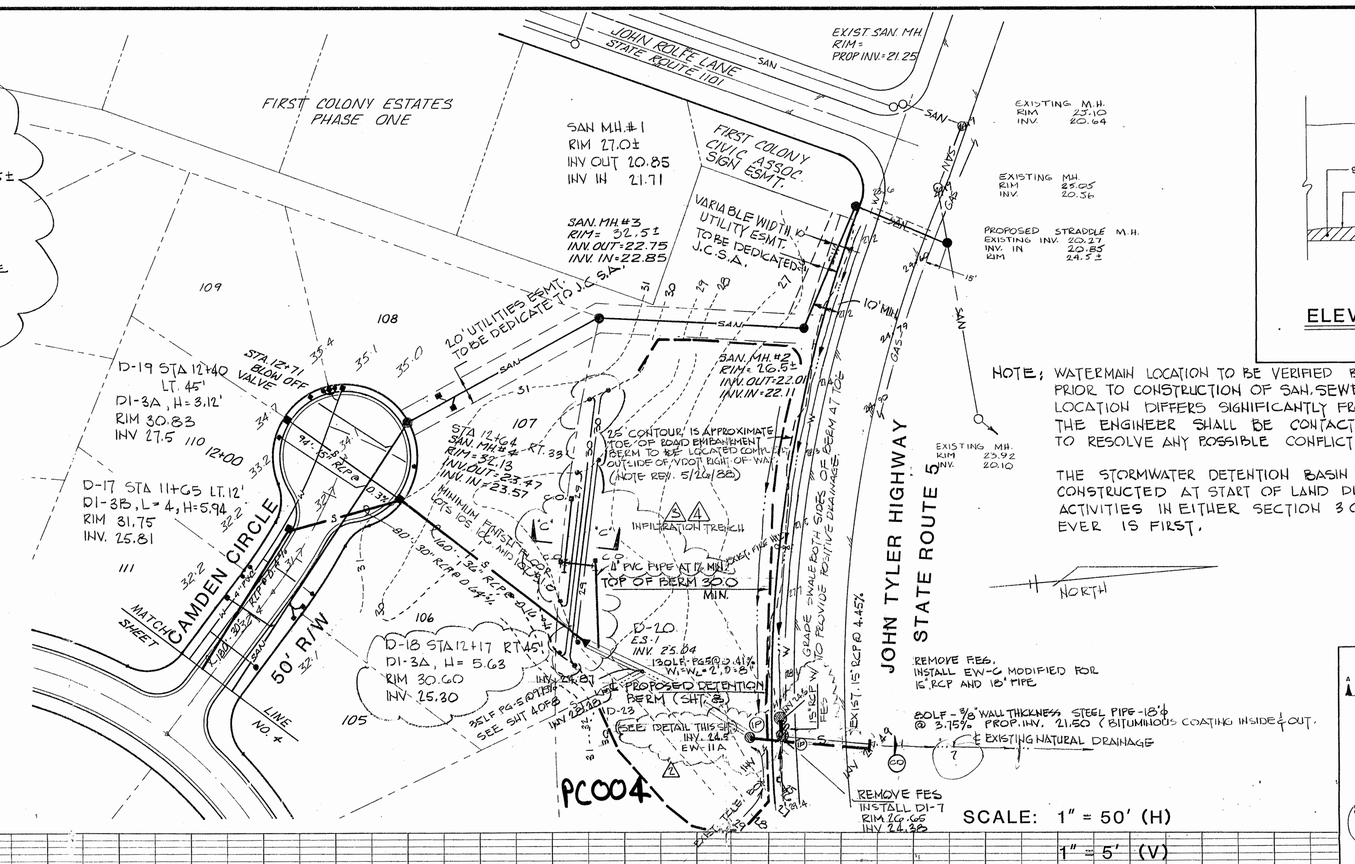
A F 39820A B



SECTION "C-C"
INFILTRATION TRENCH DETAIL



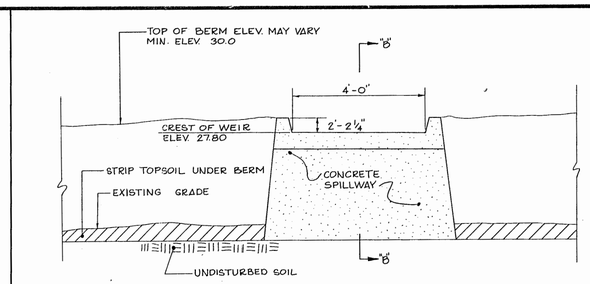
INLET PROTECTION DETAIL
DETENTION POND OUTFALL
N.T.S.



HOTE; WATERMAIN LOCATION TO BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION OF SAN. SEWER, IF ACTUAL LOCATION DIFFERS SIGNIFICANTLY FROM PLANS THE ENGINEER SHALL BE CONTACTED IMMEDIATLY TO RESOLVE ANY POSSIBLE CONFLICT.

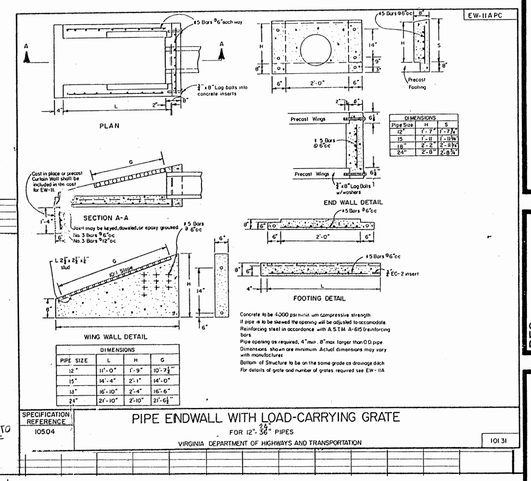
THE STORMWATER DETENTION BASIN SHALL BE CONSTRUCTED AT START OF LAND DISTURBING ACTIVITIES IN EITHER SECTION 3 OR 4, WHICH-EVER IS FIRST.

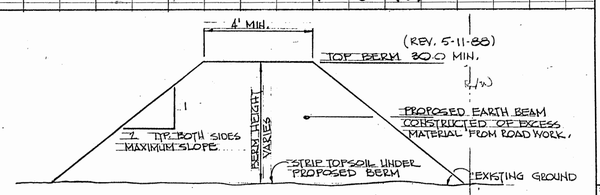
SCALE: 1" = 50' (H)
1" = 5' (V)



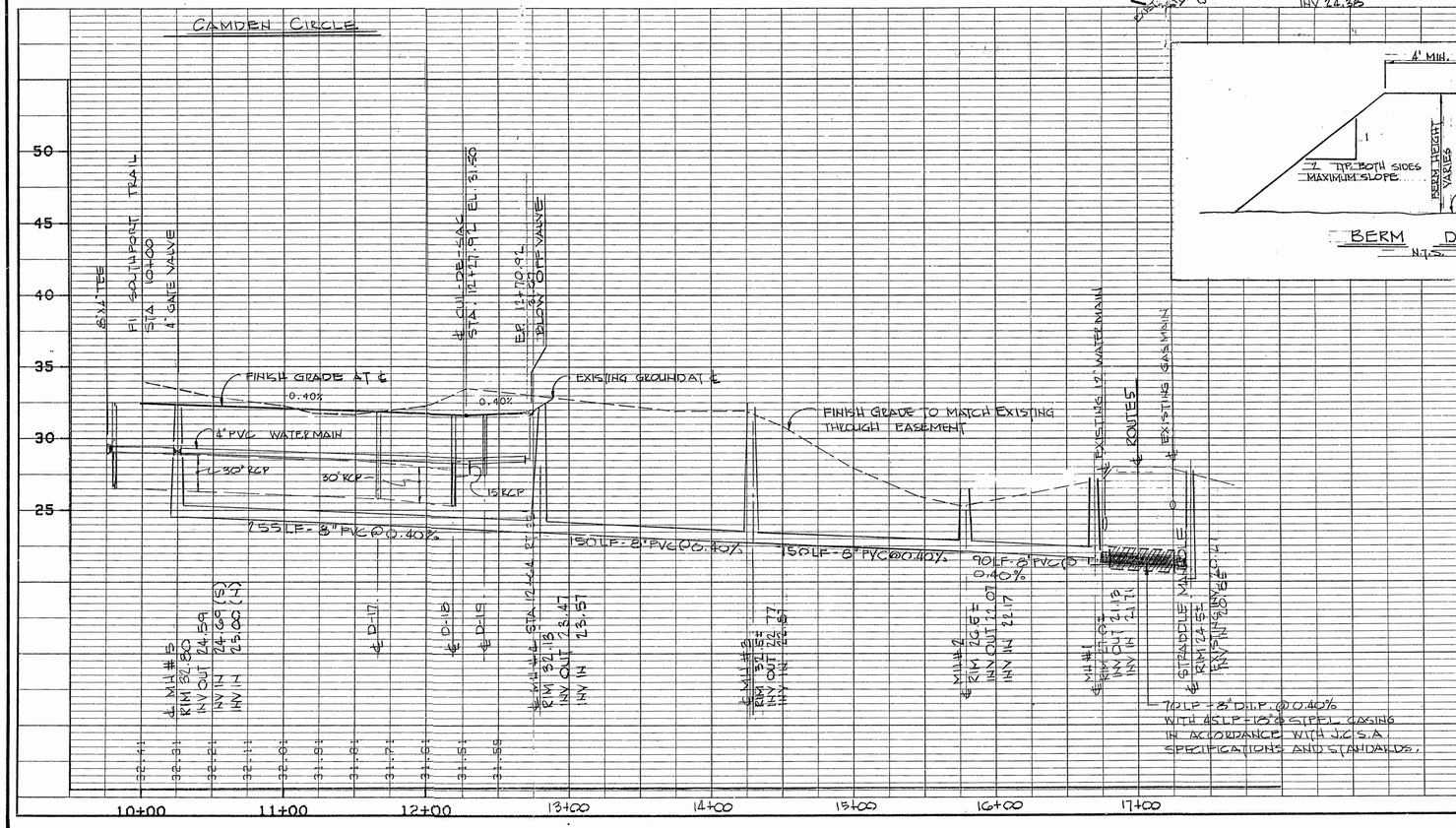
ELEVATION OF BERM AT EMERGENCY SPILLWAY
N.T.S.

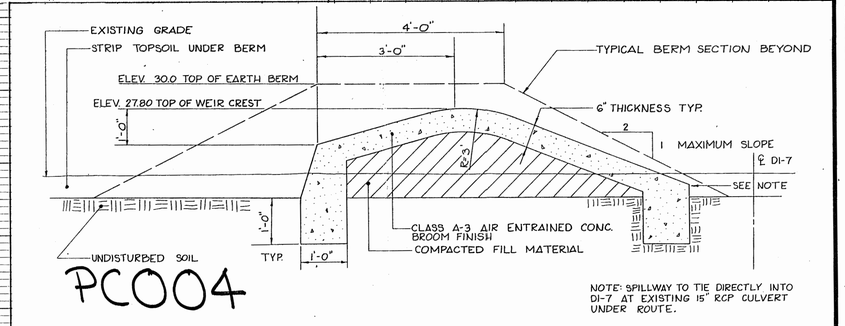
PC004





BERM DETAIL
N.T.S.
(REV. 5/26/88)





PC004

NOTE: SPILLWAY TO TIE DIRECTLY INTO DI-7 AT EXISTING 15" RCP CULVERT UNDER ROUTE.

EMERGENCY SPILLWAY
SECTION "B"-"B"
N.T.S.

4	INFILTRATION TRENCH DETAILS	8/22/88
3	INFILTRATION TRENCH AND D-18	8/18/88
2	REVISED DRAINAGE AT ROUTE 5	7/27/88
	REVISED AS PER COUNTY COMMENTS	4/27/88

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VIRGINIA BEACH - WILLIAMSBURG, VIRGINIA

DES. B.L.M.
DWN. L.T./B.S.G.
CHK. N.H.M.
DATE 2-17-88

LAND DEVELOPMENT INCORPORATED
BERKELEY'S GREEN PHASES 3&4
PLAN & PROFILE
JAMES CITY COUNTY, VIRGINIA

PROJ. NO. 85040
FLD. BK. NO.
SHEET 6 OF 12
DWG. 2697W

PC004

Page 1 of 36

HYDROLOGICAL STUDY FOR

BERKELEY'S GREEN PHASES 3 & 4

ROUTE 5 AT JOHN ROLFE LANE

JAMES CITY COUNTY, VIRGINIA

BY

LANGLEY & McDONALD, P.C.

204 PACKETTS COURT

WILLIAMSBURG, VIRGINIA 23185

4/27/88

PC004

TABLE OF CONTENTS

SECTION 1 - NARRATIVE AND PROJECT DESCRIPTION

SECTION 2 - BASIN DATA AND STAGE-STORAGE-DISCHARGE

SECTION 3 - STORMWATER ROUTING FOR 2-YEAR AND 25-YEAR STORMS

SECTION 4 - INLET COMPUTATION

PC004

SECTION 1

NARRATIVE

AND

PROJECT DESCRIPTION

PC004

PROJECT DESCRIPTION

Narrative: Berkeley's Green Phases 3 & 4 is a single family residential cluster development. The lot layout design generally provides smaller lots with buffers between the primary roads such as John Tyler Highway and Greensprings Road and the lots. Additional buffers are provided between the major phases of development and between the lots and the project's spine road.

The existing topography is very flat on fully wooded land gently sloping toward Route 5 and John Rolfe Lane. Drainage is provided throughout by utilizing a curb and gutter road section (in 1 1/2 foot of cut typically). The stormwater is collected by inlets and then conveyed through a pipe system to its outfall under Route 5. On the project side of Route 5 an earth berm is proposed to create a detention structure in a natural depression. An 18" culvert is proposed to convey the 2-year storm from the basin without use of the spillway. The 25-year storm routed through the structure results in a total discharge from the basin of 24 cfs, 15.4 cfs through the 18" culvert and 8.6 cfs over the spillway and then through the existing 15" culvert.

Additionally, this drainage plan allows overland flow, that naturally follows a path west toward John Rolfe Lane, to be directed toward the detention basin. This plan will thereby reduce the drainage problems along John Rolfe Lane. The resulting drainage area directed toward Route 5 is managed resulting in developed runoff rates approximately equal to existing runoff rates.

The road grading plan allows the individual lots to achieve positive drainage away from the building site toward the roadway.

PC004

The Erosion Sedimentation Control plan is to be accomplished by providing a construction entrance, and stabilized construction road during the initial construction. Later, the road surfaces are to be weather proofed by application of the asphalt base course during the building construction. The road grade will direct runoff to the inlets which will eliminate the introduction of sediment into the piping system. All of the runoff will be routed through the detention basin which shall act as a temporary sediment trap until the project has been stabilized.

The following pages show the detail computation for this project.

Methodology: The rational/Pagan method has been employed in the stormwater computations. Both the 2-year and the 25-year storms have been considered by this design. An additional culvert has been proposed under Route 5 to provide adequate capacity.

PC004

SECTION 2

BASIN DATA

AND

STAGE-STORAGE-DISCHARGE

PC004

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VIRGINIA BEACH - WILLIAMSBURG, VIRGINIA

Subject: BERKELEY'S GREEN PHASE 3&4 - DRAINAGE
Computed By: BLM Checked By:

Project No. 85040
Client: LAND DEVELOPMENT
Date: 4-25-88 Sheet No.

SUMMARY SHEET

EXISTING CONDITION

AREA = 24.0 Ac.
C = 0.25
CA = 6.0

t_c = 30 min.

i(2) = 2.6 IN/HR
i(25) = 4.2 IN/HR

Computer prog.

Q_2 = 15.6 cfs

Q_{2pre} 16.2 Q_{2post} = 32.6 cfs

Q_{25} = 25.2 cfs

D_{max} = 27.5 ✓
Q_{out} = 13.1 ✓
0.4 ac ft.

DEVELOPED CONDITION

FROM ROUTING AT CRITICAL STORM AND PEAK DISCHARGE:

Q_{25pre} = 44.7
Q_{25post} = 73.5

Q_2 = 13.4 cfs

Q_{25} = 24.0 cfs

D_{max} = 27.9
Q_{out} = 15.9 cfs ✓

PC004

STORMWATER ROUTING
RATIONAL / PAGAN METHOD
REFERENCE: VIRGINIA DEPT. OF TRANSPORTATION DRAINAGE MANUAL

BY: LANGLEY and McDONALD, P.C.
204-C PACKETS COURT
WILLIAMSBURG, VIRGINIA 23185

DATE: APRIL 22, 1988

**** BASIN DATA ****

Drainage Area (acres)	31.2 acres
C (runoff coeffient)	0.35
CA=	10.92
t(c) (min) =	25 min
time increment=	5 min

Pond Data
Stage - Storage - Discharge

Elevation ft.	Storage cu. ft.	Outflow cfs	2S/t	2S/t+"O"
25.0	0.0	0.0	0.0	0.0
25.2	600.0	1.8	4.0	5.8
25.4	1200.0	3.6	8.0	11.6
25.6	2100.0	5.1	14.0	19.1
25.8	3600.0	6.2	24.0	30.2
26.0	5700.0	7.4	38.0	45.4
26.2	7900.0	8.2	52.7	60.9
26.4	10500.0	9.1	70.0	79.1
26.6	13200.0	9.9	88.0	97.9
26.8	16200.0	10.6	108.0	118.6
27.0	20500.0	11.3	136.7	148.0
27.2	23500.0	11.9	156.7	168.6
27.4	28000.0	12.5	186.7	199.2
27.6	33000.0	13.1	220.0	233.1
27.8	38200.0	13.6	254.7	268.2
28.0	43700.0	15.2	291.3	306.6
28.2	50000.0	17.8	333.3	351.2
28.4	56000.0	21.0	373.3	394.3
28.6	59000.0	24.5	393.3	417.8

PC004

LANGLEY & McDONALD, P.C.
WILLIAMSBURG, VIRGINIA
04/22/88

ORIFICE

ORIFICE = 18.00 INCHES

ELEV. (FT.)	FLOW (CFS)
24.50	0.00
24.70	.40
24.90	1.14
25.10	2.09
25.30	3.22
25.50	4.50
25.70	5.92
25.90	7.45
26.10	7.84
26.30	8.72
26.50	9.51
26.70	10.25
26.90	10.93
27.10	11.57
27.30	12.18
27.50	12.76
27.70	13.32
27.90	13.85
28.10	14.36
28.30	14.86
28.50	15.34
28.70	15.80
28.90	16.26
29.10	16.70
29.30	17.12
29.50	17.54
29.70	17.95
29.90	18.35

FORMULA USED Q = C * A * SQR 2gh HEAD > Dia

Q = 3 * D * HEAD^1.5 HEAD < Dia

PC004

PAGE
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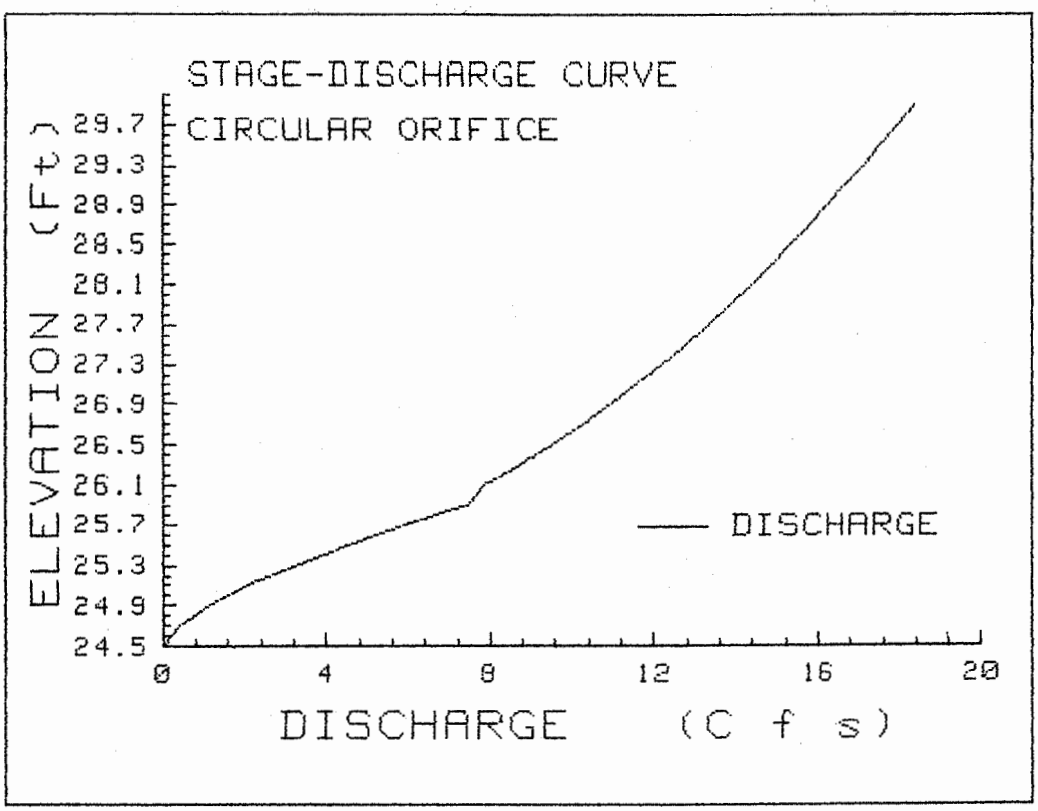
WILLIAMSBURG, VIRGINIA
04/22/88



PC004

LANGLEY & McDONALD, P.C.
WILLIAMSBURG, VIRGINIA
04/22/88

ORIFICE

ORIFICE = 15.00 INCHES

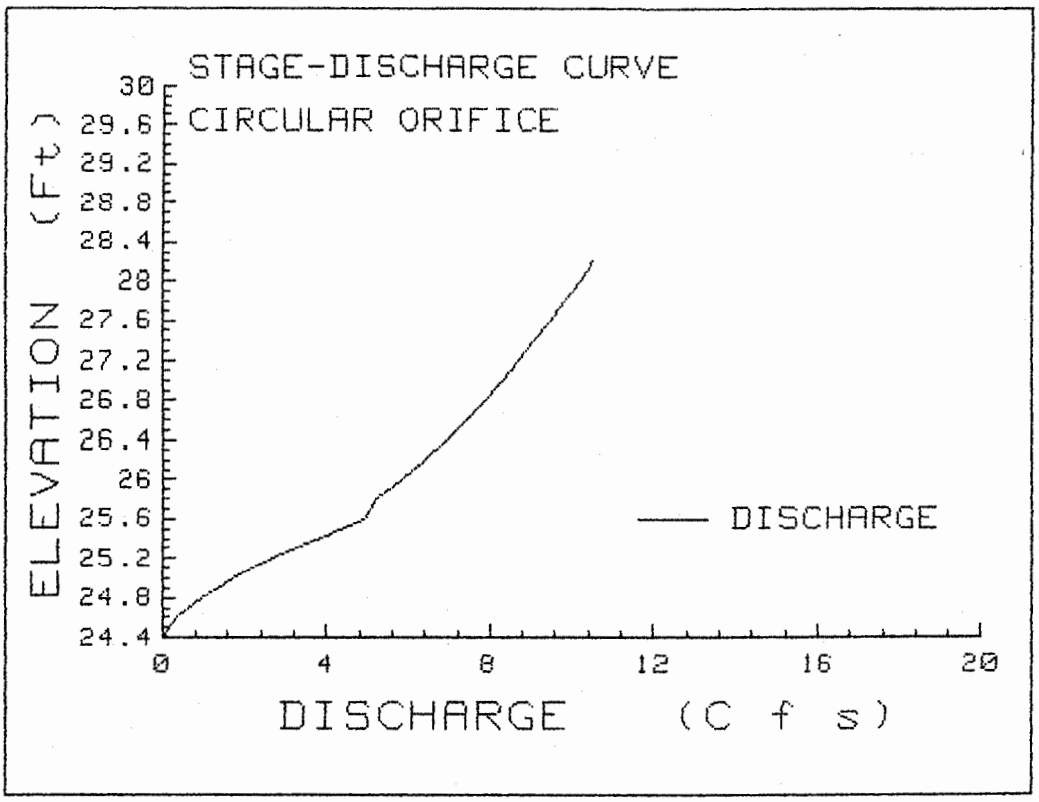
ELEV. (FT.)	FLOW (CFS)
24.40	0.00
24.60	.34
24.80	.95
25.00	1.74
25.20	2.68
25.40	3.75
25.60	4.93
25.80	5.20
26.00	5.83
26.20	6.41
26.40	6.93
26.60	7.42
26.80	7.87
27.00	8.30
27.20	8.71
27.40	9.11
27.60	9.48
27.80	9.84
28.00	10.19
28.20	10.53

FORMULA USED Q = C * A * SQR 2gh HEAD > Dia

Q = 3 * D * HEAD^1.5 HEAD < Dia

PC004

PAGE
LANGLEY & McDONALD, P.C.
WILLIAMSBURG, VIRGINIA
04/22/88



PC004

SECTION 3

STORMWATER ROUTING FOR 2-YEAR AND 25-YEAR STORMS

PC004

********* 2 year return storm **********

i(2)= 3.00 "/hr

Q(p)= 32.76 cfs

t(c)= 25.00 min

duration= 66.75 min [t(b)= 2.67*t(c)]

Inflow Hydrograph/Routing

	A	B	C	D	E
	Time (min)	inflow"I" (cfs)	2S/t-(O) (cfs)	2S/t+(O) (cfs)	outflow"O" (cfs)
	0	0.00	0.0	0.0	0.0
	5	6.55	3.0	6.6	1.8
	10	13.10	12.4	22.6	5.1
	15	19.66	32.7	45.2	6.2
	20	26.21	62.1	78.6	8.2
t(c)	25	32.76	99.9	121.1	10.6
	30	28.84	138.9	161.5	11.3
	35	24.91	168.9	192.7	11.9
	40	20.99	189.8	214.8	12.5
	45	17.07	202.8	227.8	12.5
	50	13.14	208.0	233.0	12.5
	55	9.22	205.4	230.4	12.5
	60	5.30	194.9	219.9	12.5
	65	1.37	176.6	201.6	12.5
	70	0.00	154.2	178.0	11.9
	75	0.00	131.6	154.2	11.3
	80	0.00	110.4	131.6	10.6
	85	0.00	90.7	110.4	9.9
	90	0.00	72.5	90.7	9.1
	95	0.00	56.0	72.5	8.2
	100	0.00	41.2	56.0	7.4
	105	0.00	28.8	41.2	6.2
	110	0.00	18.6	28.8	5.1
	115	0.00	11.4	18.6	3.6
	120	0.00	7.8	11.4	1.8
	125	0.00	4.2	7.8	1.8
	130	0.00	4.2	4.2	0.0

S= 33080.42 c.f.

Elev (max)= 27.7 feet

Q(peak)= 13.4 cfs

PC004

********* 2 year return storm **********

t(d)= 30 min
i(2)= 2.70 "/hr
Q(p)= 29.48 cfs
t(c)= 25.00 min
duration= 71.75 min [t(b)= 30 min + 1.67*t(c)]

Inflow Hydrograph/Routing

	A Time (min)	B inflow"I" (cfs)	C 2S/t-(O) (cfs)	D 2S/t+(O) (cfs)	E outflow"O" (cfs)
	0	0.00	0.0	0.0	0.0
	5	5.90	2.3	5.9	1.8
	10	11.79	9.8	20.0	5.1
	15	17.69	26.8	39.3	6.2
	20	23.59	51.6	68.1	8.2
t(c)	25	29.48	85.0	104.7	9.9
duration=	30	29.48	122.8	143.9	10.6
	35	25.95	154.4	178.2	11.9
	40	22.42	177.8	202.8	12.5
	45	18.89	194.1	219.1	12.5
	50	15.36	203.4	228.4	12.5
	55	11.83	205.6	230.6	12.5
	60	8.30	200.7	225.7	12.5
	65	4.77	188.7	213.7	12.5
	70	1.24	170.9	194.7	11.9
	75	0.00	148.4	172.2	11.9
	80	0.00	125.8	148.4	11.3
	85	0.00	104.6	125.8	10.6
	90	0.00	84.9	104.6	9.9
	95	0.00	66.7	84.9	9.1
	100	0.00	50.3	66.7	8.2
	105	0.00	35.5	50.3	7.4
	110	0.00	23.0	35.5	6.2
	115	0.00	12.8	23.0	5.1
	120	0.00	5.6	12.8	3.6
	125	0.00	5.6	5.6	0.0

S= 32707.88 c.f.
Elev (max)= 27.7 feet
Q(peak)= 13.4 cfs

PC004

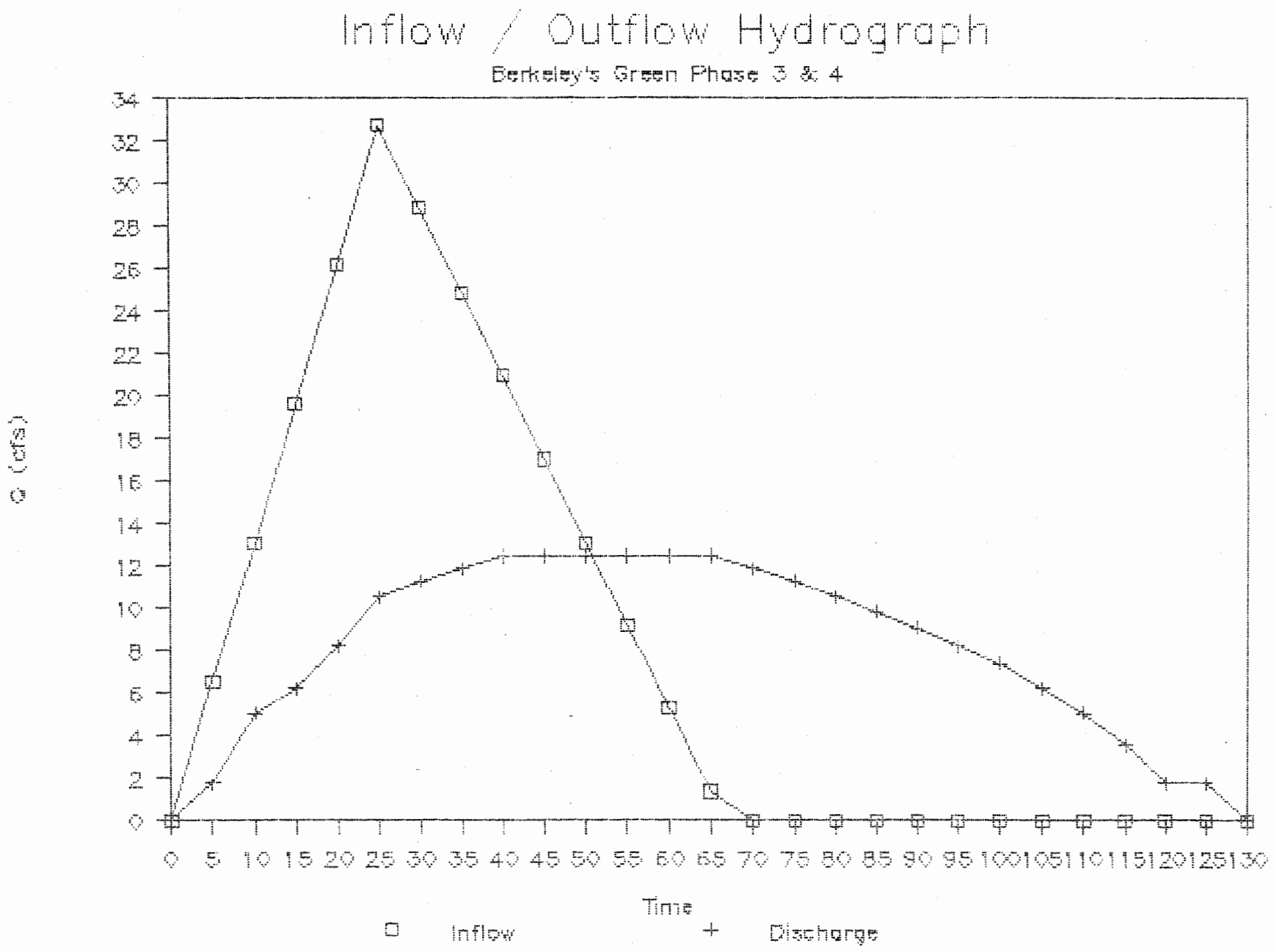
********** 2 year return storm **********

t(d)= 40 min
i(2)= 2.20 "/hr
Q(p)= 24.02 cfs
t(c)= 25.00 min
duration= 81.75 min [t(b)= 40 min + 1.67*t(c)]

Inflow Hydrograph/Routing

	A Time (min)	B inflow"I" (cfs)	C 2S/t-(O) (cfs)	D 2S/t+(O) (cfs)	E outflow"O" (cfs)
	0	0.00	0.0	0.0	0.0
	5	4.80	4.8	4.8	0.0
	10	9.61	9.1	19.2	5.1
	15	14.41	20.6	33.1	6.2
	20	19.22	39.4	54.2	7.4
t(c)	25	24.02	64.5	82.7	9.1
	30	24.02	92.8	112.6	9.9
	35	24.02	119.7	140.9	10.6
duration=	40	24.02	145.2	167.8	11.3
	45	21.15	166.6	190.4	11.9
	50	18.27	181.0	206.0	12.5
	55	15.39	189.6	214.6	12.5
	60	12.52	192.5	217.5	12.5
	65	9.64	189.7	214.7	12.5
	70	6.76	181.1	206.1	12.5
	75	3.88	167.9	191.7	11.9
	80	1.01	149.0	172.8	11.9
	85	0.00	127.4	150.0	11.3
	90	0.00	106.3	127.4	10.6
	95	0.00	86.6	106.3	9.9
	100	0.00	68.4	86.6	9.1
	105	0.00	51.9	68.4	8.2
	110	0.00	37.1	51.9	7.4
	115	0.00	24.6	37.1	6.2
	120	0.00	14.5	24.6	5.1
	125	0.00	7.3	14.5	3.6
	130	0.00	3.7	7.3	1.8
	135	0.00	3.7	3.7	0.0

S= 30756.29 c.f.
Elev (max)= 27.5 feet
Q(peak)= 12.8 cfs


Inflow / Outflow Hydrograph
Berkeley's Green Phase 3 & 4
Q (cfs)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130
Time
Inflow
Discharge

PC004

PC004

********* 25 year return storm **********

i(25)= 4.60 "/hr

Q(p)= 50.23 cfs

t(c)= 25.00 min

duration= 66.75 min [t(b)= 2.67*t(c)]

Inflow Hydrograph/Routing

	A Time (min)	B inflow"I" (cfs)	C 2S/t-(O) (cfs)	D 2S/t+(O) (cfs)	E outflow"O" (cfs)
	0	0.00	0.0	0.0	0.0
	5	10.05	6.4	10.0	1.8
	10	20.09	24.1	36.6	6.2
	15	30.14	57.9	74.3	8.2
	20	40.19	107.0	128.2	10.6
t(c)	25	50.23	173.6	197.4	11.9
	30	44.22	242.0	268.1	13.1
	35	38.20	293.9	324.4	15.2
	40	32.18	328.6	364.3	17.8
	45	26.17	351.4	387.0	17.8
	50	20.15	355.7	397.7	21.0
	55	14.14	354.3	390.0	17.8
	60	8.12	340.9	376.6	17.8
	65	2.11	315.5	351.2	17.8
	70	0.00	287.1	317.6	15.2
	75	0.00	260.0	287.1	13.6
	80	0.00	233.9	260.0	13.1
	85	0.00	207.7	233.9	13.1
	90	0.00	182.7	207.7	12.5
	95	0.00	158.9	182.7	11.9
	100	0.00	136.3	158.9	11.3
	105	0.00	115.2	136.3	10.6
	110	0.00	95.5	115.2	9.9
	115	0.00	77.3	95.5	9.1
	120	0.00	60.8	77.3	8.2
	125	0.00	46.0	60.8	7.4
	130	0.00	31.2	46.0	7.4
	135	0.00	18.7	31.2	6.2
	140	0.00	11.5	18.7	3.6
	145	0.00	7.9	11.5	1.8
	150	0.00	4.3	7.9	1.8
	165	0.00	4.3	4.3	0.0

S= 56501.21 c.f.

Elev (max)= 28.5 feet

Q(peak)= 21.6 cfs

PC004

********* 25 year return storm **********

t(d)= 30 min
i(25)= 4.30 "/hr
Q(p)= 46.96 cfs
t(c)= 25.00 min
duration= 71.75 min [t(b)= 30 min + 1.67*t(c)]

Inflow Hydrograph/Routing

	A Time (min)	B inflow"I" (cfs)	C 2S/t-(O) (cfs)	D 2S/t+(O) (cfs)	E outflow"O" (cfs)
	0	0.00	0.0	0.0	0.0
	5	9.39	5.8	9.4	1.8
	10	18.78	21.5	34.0	6.2
	15	28.17	52.0	68.4	8.2
	20	37.56	98.0	117.7	9.9
t(c)	25	46.96	158.7	182.5	11.9
duration=	30	46.96	226.5	252.6	13.1
	35	41.33	284.3	314.8	15.2
	40	35.71	325.7	361.3	17.8
	45	30.09	355.9	391.5	17.8
	50	24.46	368.4	410.4	21.0
	55	18.84	369.7	411.7	21.0
	60	13.22	359.7	401.7	21.0
	65	7.59	344.9	380.5	17.8
	70	1.97	318.8	354.4	17.8
	75	0.00	290.3	320.8	15.2
	80	0.00	263.1	290.3	13.6
	85	0.00	237.0	263.1	13.1
	90	0.00	210.9	237.0	13.1
	95	0.00	185.9	210.9	12.5
	100	0.00	162.1	185.9	11.9
	105	0.00	139.5	162.1	11.3
	110	0.00	118.3	139.5	10.6
	115	0.00	98.6	118.3	9.9
	120	0.00	78.9	98.6	9.9
	125	0.00	62.4	78.9	8.2
	130	0.00	45.9	62.4	8.2
	135	0.00	31.1	45.9	7.4
	140	0.00	18.6	31.1	6.2
	145	0.00	11.4	18.6	3.6
	150	0.00	7.8	11.4	1.8
	165	0.00	4.2	7.8	1.8
	170	0.00	4.2	4.2	0.0

S= 58601.27 c.f.
Elev (max)= 28.6 feet
Q(peak)= 24.0 cfs

PC004

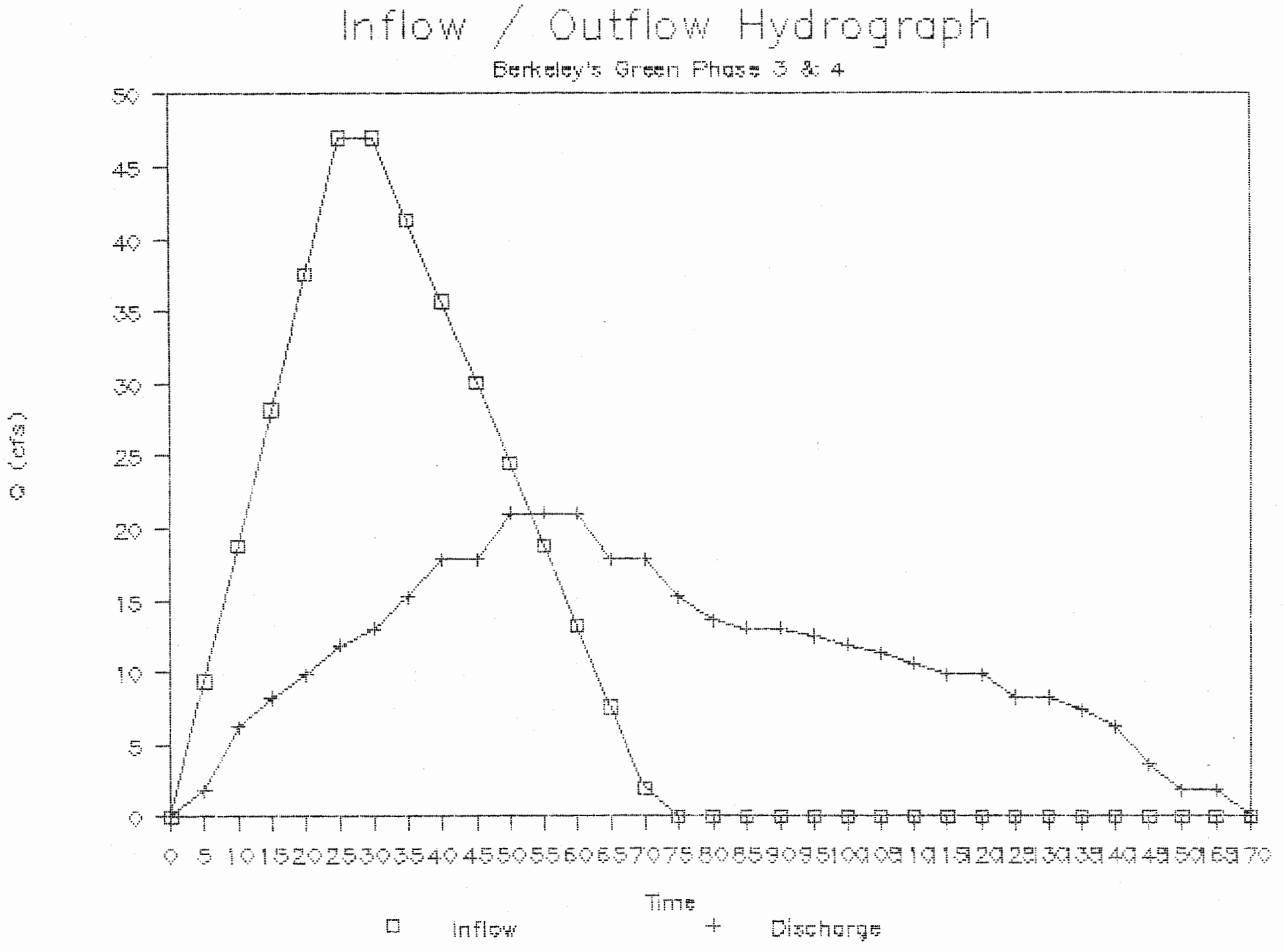
********* 25 year return storm **********

t(d)= 40 min
i(25)= 3.60 "/hr
Q(p)= 39.31 cfs
t(c)= 25.00 min
duration= 81.75 min [t(b)= 40 min + 1.67*t(c)]

Inflow Hydrograph/Routing

	A Time (min)	B inflow"I" (cfs)	C 2S/t-(O) (cfs)	D 2S/t+(O) (cfs)	E outflow"O" (cfs)
	0	0.00	0.0	0.0	0.0
	5	7.86	4.3	7.9	1.8
	10	15.72	17.7	27.8	5.1
	15	23.59	42.2	57.0	7.4
	20	31.45	79.1	97.2	9.1
t(c)	25	39.31	127.2	149.8	11.3
	30	39.31	180.9	205.9	12.5
	35	39.31	233.4	259.5	13.1
duration=	40	39.31	281.5	312.0	15.2
	45	34.60	319.8	355.4	17.8
	50	29.90	348.6	384.3	17.8
	55	25.19	361.7	403.7	21.0
	60	20.48	365.4	407.4	21.0
	65	15.77	359.6	401.6	21.0
	70	11.06	350.8	386.4	17.8
	75	6.36	332.6	368.2	17.8
	80	1.65	310.1	340.6	15.2
	85	0.00	281.3	311.7	15.2
	90	0.00	254.1	281.3	13.6
	95	0.00	228.0	254.1	13.1
	100	0.00	203.0	228.0	12.5
	105	0.00	178.0	203.0	12.5
	110	0.00	154.2	178.0	11.9
	115	0.00	131.6	154.2	11.3
	120	0.00	110.4	131.6	10.6
	125	0.00	90.7	110.4	9.9
	130	0.00	72.5	90.7	9.1
	135	0.00	56.1	72.5	8.2
	140	0.00	41.3	56.1	7.4
	145	0.00	28.8	41.3	6.2
	150	0.00	18.6	28.8	5.1
	165	0.00	11.4	18.6	3.6
	170	0.00	7.8	11.4	1.8
	175	0.00	4.2	7.8	1.8
	180	0.00	4.2	4.2	0.0

S= 57955.44 c.f.
Elev (max)= 28.5 feet
Q(peak)= 23.3 cfs


Inflow / Outflow Hydrograph
Berkeley's Green Phase 3 & 4
Q (cfs)
50
45
40
35
30
25
20
15
10
5
0
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135 140 145 150 155 160 165 170
Time
Inflow
Discharge

PC004

PC004

SECTION 4

INLET COMPUTATIONS

shall be in accordance with Tables I and I-A for the appropriate traffic group and conditions, and shall be an approved type as shown in Table IV.

C. Curb Cut Ramps

Curb cut ramps for the handicapped shall be included in accordance with State law.

D. Mountable Curbs

Roll-type or mountable curb and gutter may be considered on an individual case by case basis, and only for dead-end, cul-de-sac, or loop streets which have fixed traffic generation. When considering such curb and gutter, sufficient storm sewer receptacles (drop inlets), shall be provided to make the installation comparable to the VDH&T standard CG-6 from a hydraulic standpoint. The gutter flow for a ten-year frequency shall not exceed a depth of four inches. Prior review and approval of the design by the district drainage engineer shall be required for the use of this type of curb and gutter in each instance.

E. Bridges and Culverts

a. Capacity

All bridges and culverts shall be of HS-20-44 loading and military loading in accordance with the current bridge design specifications established by AASHTO. Design calculations utilized in the design shall be submitted with each bridge plan in order to expedite Departmental review.

b. Width

Clear widths shall be provided on all structures in accordance with the Department's geometric criteria.

c. Hydraulic and Hydrologic Design

1. General

Hydraulic and drainage design, and the criteria to be used, shall be in accordance with the Department's "Drainage Manual."

All design criteria and methods of analysis shall be subject to approval by the Department. A copy of the hydrologic and hydraulic design data and computations shall be submitted to the Department at the same time as the plans are submitted for review.

2. Documentation

All design data shall be properly recorded and shall include all pertinent data (survey, hydrology, hydraulic, flood plain studies) necessary to verify the design.

3. Hydrology

Peak discharges shall be determined by methods appropriate for the size, location, and character of the watersheds involved. Where flood plain reports have been prepared for the area, they shall be considered in the design. If these flood plains are affected by tides, tidal action reports shall be included. Appropriate design storm frequencies shall be utilized depending upon the risk of damage to both adjacent property and the roadway. Minimum design criteria applicable to the roadway may not be acceptable because of adjacent property damage potential, thus requiring higher design criteria.

4. Hydraulic Design

No exact criteria for flood frequency or allowable headwater/backwater values can be set which will apply generally to various locations. In the hydraulic design of drainage structures, the following risk evaluations should be considered:

a. Damage to adjacent property
b. Damage to the roadway and/or structure
c. Traffic interruption
d. Hazard to human life
e. Damage to stream and flood plain environment.

Hydraulic design and analysis techniques shall be appropriate for the type of structure or system of structures involved and may require flood profiles and water surface profile analyses. In areas involving flood plains, the Federal Flood Insurance requirements relative to zoning and hydraulic design to accommodate the 100-year flood shall be provided.

F. Dams

Whenever dams are to be utilized as roadways, an alternate way of ingress and egress which is open to the public must be provided. Plans for dams which are designated for such use shall be reviewed and approved by the Hydraulics Sections of the Department's Location and Design Division prior to construction. A formal agreement must be executed between the developer and the Department regarding the relative responsibility of the maintenance of various elements prior to acceptance.

PC004

PROJECT Berkeley's Green 3 & 4
HEC12 Version: V2.30 User S/N: 77010134 Run Date: 04-25-1988

==========

INLET NUMBER D-1 LENGTH 6.0 STATION 29+50 BG

DRAINAGE AREA = 1.300 ACRES C VALUE = .350 CA = 0.455
RAINFALL INTENSITY FOR THE FIRST SIDE 5.00
RAINFALL INTENSITY FOR THE OTHER SIDE 5.00
SUM CA= 0.455 INT= 4.50 CFS= 2.275 CO= 0.000 GUTTER FLOW= 2.275

GUTTER SLOPE = 0.0040 FT/FT PAVEMENT CROSS SLOPE = 0.0208 FT/FT

SPREAD AT A SLOPE OF .004 (ft./ft.) IS 10.11 (ft.)

XXXXXXXXXX CURB INLET IN A SUMP XXXXXXXXXX
P EFFEC. LENGTH (ft) = 9.60 H (ft) = 0.460
DEPTH OF WATER (ft) = 0.22 SPREAD (ft) = 10.56

==========

INLET NUMBER D-1 LENGTH 6.0 STATION 29+50 BG

DRAINAGE AREA = 1.300 ACRES C VALUE = .350 CA = 0.455
RAINFALL INTENSITY FOR THE FIRST SIDE 3.50
RAINFALL INTENSITY FOR THE OTHER SIDE 3.50
SUM CA= 0.455 INT= 3.50 CFS= 1.592 CO= 0.000 GUTTER FLOW= 1.592

GUTTER SLOPE = 0.0040 FT/FT PAVEMENT CROSS SLOPE = 0.0208 FT/FT

SPREAD AT A SLOPE OF .004 (ft./ft.) IS 9.63 (ft.)

XXXXXXXXXX CURB INLET IN A SUMP XXXXXXXXXX
P EFFEC. LENGTH (ft) = 9.60 H (ft) = 0.460
DEPTH OF WATER (ft) = 0.17 SPREAD (ft) = 8.32

==========

INLET NUMBER D-2 LENGTH 8.0 STATION 12+26.5 SOUTH

DRAINAGE AREA = 1.300 ACRES C VALUE = .350 CA = 0.455
DRAINAGE AREA = 0.380 ACRES C VALUE = .350 CA = 0.133
RAINFALL INTENSITY FOR THE FIRST SIDE 5.00
RAINFALL INTENSITY FOR THE OTHER SIDE 5.00
SUM CA= 0.588 INT= 5.00 CFS= 2.940 CO= 0.000 GUTTER FLOW= 2.940

GUTTER SLOPE = 0.0038 FT/FT PAVEMENT CROSS SLOPE = 0.0338 FT/FT

SPREAD AT A SLOPE OF .004 (ft./ft.) IS 7.93 (ft.)

XXXXXXXXXX CURB INLET IN A SUMP XXXXXXXXXX
P EFFEC. LENGTH (ft) = 10.70 H (ft) = 0.460
DEPTH OF WATER (ft) = 0.24 SPREAD (ft) = 7.17

PC004

ROJECT BERKELEY'S GREEN 3 & 4
EC12 Version: V2.30 User S/N: 77010134 Run Date: 04-26-1988

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NLET NUMBER D-2 LENGTH 8.0 STATION 12+26.5 RT

RAINAGE AREA = 1.300 ACRES C VALUE = .350 CA = 0.455
RAINAGE AREA = 0.380 ACRES C VALUE = .350 CA = 0.133
AINFALL INTENSITY FOR THE FIRST SIDE 3.50
AINFALL INTENSITY FOR THE OTHER SIDE 3.50
UM CA= 0.588 INT= 3.50 CFS= 2.068 CO= 0.010 GUTTER FLOW= 2.068

UTTER SLOPE = 0.0038 FT/FT PAVEMENT CROSS SLOPE = 0.0338 FT/FT

SPREAD AT A SLOPE OF .004 (ft./ft.) IS 6.85 (ft.)

XXXXXXXXXX CURB INLET IN A SUMP XXXXXXXXXX
P EFFEC. LENGTH (ft) = 10.70 H (ft) = 0.460
DEPTH OF WATER (ft) = 0.19 SPREAD (ft) = 5.67

==========

NLET NUMBER D-3 LENGTH 8.0 STATION 10+75 RT

RAINAGE AREA = 1.350 ACRES C VALUE = .350 CA = 0.472
RAINAGE AREA = 0.180 ACRES C VALUE = .350 CA = 0.063
AINFALL INTENSITY FOR THE FIRST SIDE 5.00
AINFALL INTENSITY FOR THE OTHER SIDE 5.00
UM CA= 0.535 INT= 5.00 CFS= 3.037 CO= 0.720 GUTTER FLOW= 3.037

UTTER SLOPE = 0.0040 FT/FT PAVEMENT CROSS SLOPE = 0.0345 FT/FT

SPREAD AT A SLOPE OF .004 (ft./ft.) IS 7.88 (ft.)

XXXXXXXXXX CURB INLET IN A SUMP XXXXXXXXXX
P EFFEC. LENGTH (ft) = 10.70 H (ft) = 0.460
DEPTH OF WATER (ft) = 0.25 SPREAD (ft) = 7.18

==========

NLET NUMBER D-3 LENGTH 8.0 STATION 10+75 RT

RAINAGE AREA = 1.350 ACRES C VALUE = .350 CA = 0.472
RAINAGE AREA = 0.180 ACRES C VALUE = .350 CA = 0.063
AINFALL INTENSITY FOR THE FIRST SIDE 3.50
AINFALL INTENSITY FOR THE OTHER SIDE 3.50
UM CA= 0.535 INT= 3.50 CFS= 1.874 CO= 0.120 GUTTER FLOW= 1.994

UTTER SLOPE = 0.0040 FT/FT PAVEMENT CROSS SLOPE = 0.0345 FT/FT

SPREAD AT A SLOPE OF .004 (ft./ft.) IS 6.80 (ft.)

XXXXXXXXXX CURB INLET IN A SUMP XXXXXXXXXX
P EFFEC. LENGTH (ft) = 10.70 H (ft) = 0.460
DEPTH OF WATER (ft) = 0.18 SPREAD (ft) = 5.20

```
NLET NUMBER D-4              LENGTH    8.0          STATION  10+75 LT

RAINAGE AREA =  1.450 ACRES        C VALUE = .350        CA =  0.507
RAINAGE AREA =  0.360 ACRES        C VALUE = .350        CA =  0.126
AINFALL INTENSITY FOR THE FIRST SIDE   5.00
AINFALL INTENSITY FOR THE OTHER SIDE   5.00
UM CA=   0.633 INT=  5.00  CFS=   3.168  CO=  0.000 GUTTER FLOW=   3.168

UTTER SLOPE = 0.0040 FT/FT        PAVEMENT CROSS SLOPE =  0.0345 FT/FT


   SPREAD AT A SLOPE OF .004 (ft./ft.) IS  8.11 (ft.)

      XXXXXXXXXX CURB INLET IN A SUMP XXXXXXXXXX
   P EFFEC. LENGTH (ft) = 10.70                    H (ft) = 0.460
   DEPTH OF WATER (ft) =   0.25            SPREAD (ft)  =  7.38


NLET NUMBER D-4              LENGTH    8.0          STATION  10+75 LT

RAINAGE AREA =  1.450 ACRES        C VALUE = .350        CA =  0.507
RAINAGE AREA =  0.360 ACRES        C VALUE = .350        CA =  0.126
AINFALL INTENSITY FOR THE FIRST SIDE   3.50
AINFALL INTENSITY FOR THE OTHER SIDE   3.50
UM CA=   0.633 INT=  3.50  CFS=   2.217  CO=  0.000 GUTTER FLOW=   2.217

UTTER SLOPE = 0.0040 FT/FT        PAVEMENT CROSS SLOPE =  0.0345 FT/FT


   SPREAD AT A SLOPE OF .004 (ft./ft.) IS  7.01 (ft.)

      XXXXXXXXXX CURB INLET IN A SUMP XXXXXXXXXX
   P EFFEC. LENGTH (ft) = 10.70                    H (ft) = 0.460
   DEPTH OF WATER (ft) =   0.20            SPREAD (ft)  =  5.82


NLET NUMBER D-5              LENGTH    2.5          STATION  13+35 RT

RAINAGE AREA =  0.330 ACRES        C VALUE = .350        CA =  0.116
UM CA=   0.116 INT=  5.00  CFS=   0.577  CO=  0.000 GUTTER FLOW=   0.577

UTTER SLOPE = 0.0040 FT/FT        PAVEMENT CROSS SLOPE =  0.0338 FT/FT

PREAD      W      W/T      SW        SW/SX      Eo       a      S'W      SE
 4.31     1.5     0.35   0.0833      2.5      0.75     2.9    0.161   0.154

      XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
   REQUIRED LENGTH (ft) =  3.5                EFFICIENCY= 0.90
   CFS INTERCEPTED=  0.52                  CFS CARRYOVER=  0.06


NLET NUMBER D-5              LENGTH    2.5          STATION  13+35 RT

RAINAGE AREA =  0.330 ACRES        C VALUE = .350        CA =  0.116
UM CA=   0.116 INT=  3.50  CFS=   0.404  CO=  0.000 GUTTER FLOW=   0.404
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NLET NUMBER D-5 LENGTH 2.5 STATION 13+35 RT

RAINAGE AREA = 0.330 ACRES C VALUE = .350 CA = 0.116
UM CA= 0.116 INT= 3.50 CFS= 0.404 CO= 0.000 GUTTER FLOW= 0.404

UTTER SLOPE = 0.0040 FT/FT PAVEMENT CROSS SLOPE = 0.0338 FT/FT

PREAD	W	W/T	SW	SW/SX	Eo	a	S'W	SE
3.61	1.5	0.42	0.0833	2.5	0.83	2.9	0.161	0.167

XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
REQUIRED LENGTH (ft) = 2.8 EFFICIENCY= 0.98
CFS INTERCEPTED= 0.39 CFS CARRYOVER= 0.01

==========

NLET NUMBER D-6 LENGTH 4.0 STATION 13+35 LT

RAINAGE AREA = 1.050 ACRES C VALUE = .350 CA = 0.367
UM CA= 0.367 INT= 5.00 CFS= 1.837 CO= 0.000 GUTTER FLOW= 1.837

UTTER SLOPE = 0.0040 FT/FT PAVEMENT CROSS SLOPE = 0.0338 FT/FT

PREAD	W	W/T	SW	SW/SX	Eo	a	S'W	SE
7.19	1.5	0.21	0.0833	2.5	0.51	2.9	0.161	0.116

XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
REQUIRED LENGTH (ft) = 6.7 EFFICIENCY= 0.81
CFS INTERCEPTED= 1.48 CFS CARRYOVER= 0.36

==========

NLET NUMBER D-6 LENGTH 4.0 STATION 13+35 LT

RAINAGE AREA = 1.050 ACRES C VALUE = .350 CA = 0.367
UM CA= 0.367 INT= 3.50 CFS= 1.286 CO= 0.000 GUTTER FLOW= 1.286

UTTER SLOPE = 0.0040 FT/FT PAVEMENT CROSS SLOPE = 0.0338 FT/FT

PREAD	W	W/T	SW	SW/SX	Eo	a	S'W	SE
6.19	1.5	0.24	0.0833	2.5	0.58	2.9	0.161	0.127

XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
REQUIRED LENGTH (ft) = 5.5 EFFICIENCY= 0.91
CFS INTERCEPTED= 1.17 CFS CARRYOVER= 0.12

==========

NLET NUMBER D-7 LENGTH 4.0 STATION 16+93 RT

RAINAGE AREA = 0.510 ACRES C VALUE = .350 CA = 0.178
UM CA= 0.178 INT= 5.00 CFS= 0.892 CO= 0.000 GUTTER FLOW= 0.892

UTTER SLOPE = 0.0040 FT/FT PAVEMENT CROSS SLOPE = 0.0338 FT/FT

PREAD	W	W/T	SW	SW/SX	Eo	a	S'W	SE
5.28	1.5	0.28	0.0833	2.5	0.65	2.9	0.161	0.139

PC004

INLET NUMBER D-7 LENGTH 4.0 STATION 16+93 RT

DRAINAGE AREA = 0.510 ACRES C VALUE = .350 CA = 0.178
SUM CA= 0.178 INT= 5.00 CFS= 0.892 CO= 0.000 GUTTER FLOW= 0.892

GUTTER SLOPE = 0.0040 FT/FT PAVEMENT CROSS SLOPE = 0.0338 FT/FT

SPREAD	W	W/T	SW	SW/SX	Eo	a	S'W	SE
5.28	1.5	0.28	0.0833	2.5	0.65	2.9	0.161	0.139

XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
REQUIRED LENGTH (ft) = 4.4 EFFICIENCY= 0.98
CFS INTERCEPTED= 0.88 CFS CARRYOVER= 0.01

INLET NUMBER D-7 LENGTH 4.0 STATION 16+93 RT

DRAINAGE AREA = 0.510 ACRES C VALUE = .350 CA = 0.178
SUM CA= 0.178 INT= 3.50 CFS= 0.625 CO= 0.000 GUTTER FLOW= 0.625

GUTTER SLOPE = 0.0040 FT/FT PAVEMENT CROSS SLOPE = 0.0338 FT/FT

SPREAD	W	W/T	SW	SW/SX	Eo	a	S'W	SE
4.48	1.5	0.33	0.0833	2.5	0.73	2.9	0.161	0.151

XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
REQUIRED LENGTH (ft) = 3.6 EFFICIENCY= 1.00
CFS INTERCEPTED= 0.62 CFS CARRYOVER= 0.00

INLET NUMBER D-8 LENGTH 6.0 STATION 16+93 LT

DRAINAGE AREA = 1.000 ACRES C VALUE = .350 CA = 0.350
SUM CA= 0.350 INT= 5.00 CFS= 1.750 CO= 0.000 GUTTER FLOW= 1.750

GUTTER SLOPE = 0.0040 FT/FT PAVEMENT CROSS SLOPE = 0.0338 FT/FT

SPREAD	W	W/T	SW	SW/SX	Eo	a	S'W	SE
7.05	1.5	0.21	0.0833	2.5	0.52	2.9	0.161	0.117

XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
REQUIRED LENGTH (ft) = 6.5 EFFICIENCY= 0.99
CFS INTERCEPTED= 1.73 CFS CARRYOVER= 0.02

INLET NUMBER D-8 LENGTH 6.0 STATION 16+93 LT

DRAINAGE AREA = 1.000 ACRES C VALUE = .350 CA = 0.350
SUM CA= 0.350 INT= 3.50 CFS= 1.225 CO= 0.000 GUTTER FLOW= 1.225

GUTTER SLOPE = 0.0040 FT/FT PAVEMENT CROSS SLOPE = 0.0338 FT/FT

SPREAD	W	W/T	SW	SW/SX	Eo	a	S'W	SE
6.06	1.5	0.25	0.0833	2.5	0.59	2.9	0.161	0.128

XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
REQUIRED LENGTH (ft) = 5.3 EFFICIENCY= 1.00
CFS INTERCEPTED= 1.23 CFS CARRYOVER= 0.00

PC004

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==========================================================================
INLET NUMBER D-10 ;          LENGTH    4.0          STATION  10+40 RT

DRAINAGE AREA =  0.870 ACRES        C VALUE = .350        CA =  0.304
SUM CA=   0.304 INT=  5.00  CFS=   1.522  CO=  0.000 GUTTER FLOW=   1.522

GUTTER SLOPE = 0.0065 FT/FT        PAVEMENT CROSS SLOPE =  0.0345 FT/FT

SPREAD      W      W/T      SW        SW/SX       Eo       a      S'W      SE
  5.92     1.5     0.25   0.0833      2.4        0.60    2.9    0.160   0.130

      XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
   REQUIRED LENGTH (ft) =  6.7                EFFICIENCY= 0.81
   CFS INTERCEPTED=  1.23                 CFS CARRYOVER=  0.29


==========================================================================
INLET NUMBER D-10            LENGTH    4.0          STATION  10+40 RT

DRAINAGE AREA =  0.870 ACRES        C VALUE = .350        CA =  0.304
SUM CA=   0.304 INT=  3.50  CFS=   1.066  CO=  0.000 GUTTER FLOW=   1.066

GUTTER SLOPE = 0.0065 FT/FT        PAVEMENT CROSS SLOPE =  0.0345 FT/FT

SPREAD      W      W/T      SW        SW/SX       Eo       a      S'W      SE
  5.06     1.5     0.30   0.0833      2.4        0.67    2.9    0.160   0.142

      XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
   REQUIRED LENGTH (ft) =  5.5                EFFICIENCY= 0.91
   CFS INTERCEPTED=  0.97                 CFS CARRYOVER=  0.10


==========================================================================
INLET NUMBER D-11            LENGTH    4.0          STATION  10+40 LT

DRAINAGE AREA =  1.160 ACRES        C VALUE = .350        CA =  0.406
SUM CA=   0.406 INT=  5.00  CFS=   2.030  CO=  0.000 GUTTER FLOW=   2.030

GUTTER SLOPE = 0.0065 FT/FT        PAVEMENT CROSS SLOPE =  0.0345 FT/FT

SPREAD      W      W/T      SW        SW/SX       Eo       a      S'W      SE
  6.69     1.5     0.22   0.0833      2.4        0.54    2.9    0.160   0.121

      XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
   REQUIRED LENGTH (ft) =  7.9                EFFICIENCY= 0.72
   CFS INTERCEPTED=  1.47                 CFS CARRYOVER=  0.56


==========================================================================
INLET NUMBER D-11            LENGTH    4.0          STATION  10+40 LT

DRAINAGE AREA =  1.160 ACRES        C VALUE = .350        CA =  0.406
SUM CA=   0.406 INT=  3.50  CFS=   1.421  CO=  0.000 GUTTER FLOW=   1.421

GUTTER SLOPE = 0.0065 FT/FT        PAVEMENT CROSS SLOPE =  0.0345 FT/FT

SPREAD      W      W/T      SW        SW/SX       Eo       a      S'W      SE
  5.75     1.5     0.24   0.0833      2.4        0.61    2.9    0.160   0.132
```

PC004

INLET NUMBER D-11 LENGTH 4.0 STATION 10+40 LT

DRAINAGE AREA = 1.160 ACRES C VALUE = .350 CA = 0.406
SUM CA= 0.406 INT= 3.50 CFS= 1.421 CO= 0.000 GUTTER FLOW= 1.421

GUTTER SLOPE = 0.0065 FT/FT PAVEMENT CROSS SLOPE = 0.0345 FT/FT

SPREAD	W	W/T	SW	SW/SX	Eo	a	S'W	SE
5.75	1.5	0.26	0.0833	2.4	0.61	2.9	0.160	0.132

XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
REQUIRED LENGTH (ft) = 6.4 EFFICIENCY= 0.83
CFS INTERCEPTED= 1.18 CFS CARRYOVER= 0.25

==========

INLET NUMBER D-12 LENGTH 6.0 STATION 11+80 LT

DRAINAGE AREA = 1.160 ACRES C VALUE = .350 CA = 0.406
SUM CA= 0.406 INT= 5.00 CFS= 2.030 CO= 0.870 GUTTER FLOW= 2.900

GUTTER SLOPE = 0.0040 FT/FT PAVEMENT CROSS SLOPE = 0.0345 FT/FT

SPREAD	W	W/T	SW	SW/SX	Eo	a	S'W	SE
8.56	1.5	0.18	0.0833	2.4	0.44	2.9	0.160	0.105

XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
REQUIRED LENGTH (ft) = 8.6 EFFICIENCY= 0.88
CFS INTERCEPTED= 2.56 CFS CARRYOVER= 0.34

==========

INLET NUMBER D-12 LENGTH 6.0 STATION 11+80 LT

DRAINAGE AREA = 1.160 ACRES C VALUE = .350 CA = 0.406
SUM CA= 0.406 INT= 3.50 CFS= 1.421 CO= 0.350 GUTTER FLOW= 1.771

GUTTER SLOPE = 0.0040 FT/FT PAVEMENT CROSS SLOPE = 0.0345 FT/FT

SPREAD	W	W/T	SW	SW/SX	Eo	a	S'W	SE
7.00	1.5	0.21	0.0833	2.4	0.52	2.9	0.160	0.118

XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
REQUIRED LENGTH (ft) = 6.5 EFFICIENCY= 0.99
CFS INTERCEPTED= 1.75 CFS CARRYOVER= 0.02

==========

INLET NUMBER D-13 LENGTH 6.0 STATION 11+80 LT

DRAINAGE AREA = 1.330 ACRES C VALUE = .350 CA = 0.465
SUM CA= 0.465 INT= 5.00 CFS= 2.327 CO= 0.000 GUTTER FLOW= 2.327

GUTTER SLOPE = 0.0040 FT/FT PAVEMENT CROSS SLOPE = 0.0345 FT/FT

SPREAD	W	W/T	SW	SW/SX	Eo	a	S'W	SE
7.83	1.5	0.19	0.0833	2.4	0.48	2.9	0.160	0.111

XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
REQUIRED LENGTH (ft) = 7.6 EFFICIENCY= 0.94
CFS INTERCEPTED= 2.19 CFS CARRYOVER= 0.14

PC004

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==========================================================================
INLET NUMBER D-13            LENGTH    6.0        STATION  11+80 LT

DRAINAGE AREA =  1.330 ACRES        C VALUE = .350        CA =  0.465
SUM CA=   0.465 INT=  3.50  CFS=   1.629  CO=  0.000 GUTTER FLOW=   1.629

GUTTER SLOPE = 0.0040 FT/FT        PAVEMENT CROSS SLOPE =  0.0345 FT/FT

SPREAD      W      W/T      SW        SW/SX       Eo       a      S'W      SE
  6.76     1.5     0.22   0.0833      2.4       0.54     2.9    0.160   0.121

      XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
    REQUIRED LENGTH (ft) =  6.2                EFFICIENCY= 1.00
    CFS INTERCEPTED=  1.63                 CFS CARRYOVER=  0.00


==========================================================================
INLET NUMBER D-14            LENGTH    6.0        STATION  18+59 RT

DRAINAGE AREA =  1.000 ACRES        C VALUE = .350        CA =  0.350
SUM CA=   0.350 INT=  5.00  CFS=   1.750  CO=  0.490 GUTTER FLOW=   2.240

GUTTER SLOPE = 0.0040 FT/FT        PAVEMENT CROSS SLOPE =  0.0345 FT/FT

SPREAD      W      W/T      SW        SW/SX       Eo       a      S'W      SE
  7.71     1.5     0.19   0.0833      2.4       0.48     2.9    0.160   0.112

      XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
    REQUIRED LENGTH (ft) =  7.4                EFFICIENCY= 0.95
    CFS INTERCEPTED=  2.12                 CFS CARRYOVER=  0.12


==========================================================================
INLET NUMBER D-14            LENGTH    6.0        STATION  18+59 RT

DRAINAGE AREA =  1.000 ACRES        C VALUE = .350        CA =  0.350
SUM CA=   0.350 INT=  3.50  CFS=   1.225  CO=  0.020 GUTTER FLOW=   1.245

GUTTER SLOPE = 0.0040 FT/FT        PAVEMENT CROSS SLOPE =  0.0345 FT/FT

SPREAD      W      W/T      SW        SW/SX       Eo       a      S'W      SE
  6.03     1.5     0.25   0.0833      2.4       0.59     2.9    0.160   0.129

      XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
    REQUIRED LENGTH (ft) =  5.3                EFFICIENCY= 1.00
    CFS INTERCEPTED=  1.25                 CFS CARRYOVER=  0.00


==========================================================================
INLET NUMBER D-15            LENGTH    8.0        STATION  18+59 LT

DRAINAGE AREA =  1.580 ACRES        C VALUE = .350        CA =  0.553
SUM CA=   0.553 INT=  5.00  CFS=   2.765  CO=  0.000 GUTTER FLOW=   2.765

GUTTER SLOPE = 0.0040 FT/FT        PAVEMENT CROSS SLOPE =  0.0338 FT/FT

SPREAD      W      W/T      SW        SW/SX       Eo       a      S'W      SE
  8.50     1.5     0.18   0.0833      2.5       0.44     2.9    0.161   0.105

      XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
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PC004

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==========================================================================
INLET NUMBER D-15            LENGTH   8.0        STATION  18+59 LT

DRAINAGE AREA =  1.580 ACRES        C VALUE = .350        CA =  0.553
SUM CA=   0.553 INT=  5.00  CFS=   2.765  CO=  0.000 GUTTER FLOW=   2.765

GUTTER SLOPE = 0.0040 FT/FT        PAVEMENT CROSS SLOPE =  0.0338 FT/FT

SPREAD      W      W/T      SW        SW/SX      Eo       a      S'W     SE
  8.50     1.5     0.18   0.0833      2.5       0.44    2.9    0.161  0.105

      XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
   REQUIRED LENGTH (ft) =  8.4                EFFICIENCY= 1.00
   CFS INTERCEPTED=  2.75                 CFS CARRYOVER=  0.01


==========================================================================
INLET NUMBER D-15            LENGTH   8.0        STATION  18+59 LT

DRAINAGE AREA =  1.580 ACRES        C VALUE = .350        CA =  0.553
SUM CA=   0.553 INT=  3.50  CFS=   1.936  CO=  0.000 GUTTER FLOW=   1.936

GUTTER SLOPE = 0.0040 FT/FT        PAVEMENT CROSS SLOPE =  0.0338 FT/FT

SPREAD      W      W/T      SW        SW/SX      Eo       a      S'W     SE
  7.35     1.5     0.20   0.0833      2.5       0.50    2.9    0.161  0.114

      XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
   REQUIRED LENGTH (ft) =  6.9                EFFICIENCY= 1.00
   CFS INTERCEPTED=  1.94                 CFS CARRYOVER=  0.00


==========================================================================
INLET NUMBER D-16            LENGTH   6.0        STATION  20+16 RT

DRAINAGE AREA =  0.460 ACRES        C VALUE = .350        CA =  0.161
DRAINAGE AREA =  0.460 ACRES        C VALUE = .350        CA =  0.161
RAINFALL INTENSITY FOR THE FIRST SIDE   5.00
RAINFALL INTENSITY FOR THE OTHER SIDE   5.00
SUM CA=   0.322 INT=  5.00  CFS=   1.610  CO=  0.130 GUTTER FLOW=   1.740

GUTTER SLOPE = 0.0040 FT/FT        PAVEMENT CROSS SLOPE =  0.0338 FT/FT


     SPREAD AT A SLOPE OF .004 (ft./ft.) IS  5.36 (ft.)

      XXXXXXXXXX CURB INLET IN A SUMP XXXXXXXXXX
   P EFFEC. LENGTH (ft) =  8.70                H (ft) = 0.460
   DEPTH OF WATER (ft) =   0.19           SPREAD (ft)  =  5.51


==========================================================================
INLET NUMBER D-16            LENGTH   6.0        STATION  20+16 RT

DRAINAGE AREA =  0.460 ACRES        C VALUE = .350        CA =  0.161
DRAINAGE AREA =  0.460 ACRES        C VALUE = .350        CA =  0.161
RAINFALL INTENSITY FOR THE FIRST SIDE   3.50
RAINFALL INTENSITY FOR THE OTHER SIDE   3.50
SUM CA=   0.322 INT=  3.50  CFS=   1.127  CO=  0.000 GUTTER FLOW=   1.127

GUTTER SLOPE = 0.0040 FT/FT        PAVEMENT CROSS SLOPE =  0.0338 FT/FT
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==========================================================================
INLET NUMBER D-16            LENGTH   6.0        STATION  20+16 RT

DRAINAGE AREA =  0.460 ACRES        C VALUE = .350        CA =  0.161
DRAINAGE AREA =  0.460 ACRES        C VALUE = .350        CA =  0.161
RAINFALL INTENSITY FOR THE FIRST SIDE   3.50
RAINFALL INTENSITY FOR THE OTHER SIDE   3.50
SUM CA=   0.322 INT=  3.50  CFS=   1.127  CO=  0.000 GUTTER FLOW=   1.127

GUTTER SLOPE = 0.0040 FT/FT        PAVEMENT CROSS SLOPE =  0.0338 FT/FT


     SPREAD AT A SLOPE OF .004 (ft./ft.) IS  4.26 (ft.)

        XXXXXXXXXX CURB INLET IN A SUMP XXXXXXXXXX
    P EFFEC. LENGTH (ft) =  8.70                H (ft) = 0.460
    DEPTH OF WATER (ft) =   0.15          SPREAD (ft)  =  4.34


==========================================================================
INLET NUMBER D-17            LENGTH   4.0        STATION  11+65 LT

DRAINAGE AREA =  1.000 ACRES        C VALUE = .350        CA =  0.350
SUM CA=   0.350 INT=  5.00  CFS=   1.750  CO=  0.010 GUTTER FLOW=   1.760

GUTTER SLOPE = 0.0040 FT/FT        PAVEMENT CROSS SLOPE =  0.0345 FT/FT

SPREAD      W      W/T      SW        SW/SX      Eo       a      S'W     SE
  6.98     1.5     0.21   0.0833      2.4       0.52    2.9    0.160  0.118

        XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
    REQUIRED LENGTH (ft) =  6.5                EFFICIENCY= 0.82
    CFS INTERCEPTED=  1.45                CFS CARRYOVER=  0.31


==========================================================================
INLET NUMBER D-17            LENGTH   4.0        STATION  11+65 LT

DRAINAGE AREA =  1.000 ACRES        C VALUE = .350        CA =  0.350
SUM CA=   0.350 INT=  3.50  CFS=   1.225  CO=  0.000 GUTTER FLOW=   1.225

GUTTER SLOPE = 0.0040 FT/FT        PAVEMENT CROSS SLOPE =  0.0345 FT/FT

SPREAD      W      W/T      SW        SW/SX      Eo       a      S'W     SE
  5.99     1.5     0.25   0.0833      2.4       0.59    2.9    0.160  0.129

        XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
    REQUIRED LENGTH (ft) =  5.3                EFFICIENCY= 0.92
    CFS INTERCEPTED=  1.13                CFS CARRYOVER=  0.10


==========================================================================
INLET NUMBER D-18            LENGTH   2.5        STATION  11+87 RT

DRAINAGE AREA =  0.570 ACRES        C VALUE = .350        CA =  0.199
DRAINAGE AREA =  0.230 ACRES        C VALUE = .350        CA =  0.080
RAINFALL INTENSITY FOR THE FIRST SIDE   5.00
RAINFALL INTENSITY FOR THE OTHER SIDE   5.00
SUM CA=   0.280 INT=  5.00  CFS=   1.400  CO=  0.080 GUTTER FLOW=   1.480

GUTTER SLOPE = 0.0040 FT/FT        PAVEMENT CROSS SLOPE =  0.0208 FT/FT
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PC004

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==========================================================================
INLET NUMBER D-18            LENGTH   2.5        STATION  11+87 RT

DRAINAGE AREA =  0.570 ACRES        C VALUE = .350        CA =  0.199
DRAINAGE AREA =  0.230 ACRES        C VALUE = .350        CA =  0.080
RAINFALL INTENSITY FOR THE FIRST SIDE   5.00
RAINFALL INTENSITY FOR THE OTHER SIDE   5.00
SUM CA=   0.280 INT=  5.00  CFS=   1.400  CO=  0.080 GUTTER FLOW=   1.480

GUTTER SLOPE = 0.0040 FT/FT        PAVEMENT CROSS SLOPE =  0.0208 FT/FT


     SPREAD AT A SLOPE OF .004 (ft./ft.) IS  7.65 (ft.)

        XXXXXXXXXX CURB INLET IN A SUMP XXXXXXXXXX
    P EFFEC. LENGTH (ft) =  5.20                  H (ft) = 0.460
    DEPTH OF WATER (ft) =   0.24           SPREAD (ft)  = 11.50


==========================================================================
INLET NUMBER D-18            LENGTH   2.5        STATION  11+87 RT

DRAINAGE AREA =  0.570 ACRES        C VALUE = .350        CA =  0.199
DRAINAGE AREA =  0.230 ACRES        C VALUE = .350        CA =  0.080
RAINFALL INTENSITY FOR THE FIRST SIDE   3.50
RAINFALL INTENSITY FOR THE OTHER SIDE   3.50
SUM CA=   0.280 INT=  3.50  CFS=   0.980  CO=  0.000 GUTTER FLOW=   0.980

GUTTER SLOPE = 0.0040 FT/FT        PAVEMENT CROSS SLOPE =  0.0208 FT/FT


     SPREAD AT A SLOPE OF .004 (ft./ft.) IS  6.24 (ft.)

        XXXXXXXXXX CURB INLET IN A SUMP XXXXXXXXXX
    P EFFEC. LENGTH (ft) =  5.20                  H (ft) = 0.460
    DEPTH OF WATER (ft) =   0.19           SPREAD (ft)  =  9.06


PROJECT  BERKELEY'S GREEN 3 & 4
HEC12 Version: V2.30   User S/N: 77010134              Run Date:  04-26-1988


==========================================================================
INLET NUMBER D-19            LENGTH   2.5        STATION  12+40 LT

DRAINAGE AREA =  0.320 ACRES        C VALUE = .350        CA =  0.112
DRAINAGE AREA =  0.230 ACRES        C VALUE = .350        CA =  0.080
RAINFALL INTENSITY FOR THE FIRST SIDE   5.00
RAINFALL INTENSITY FOR THE OTHER SIDE   5.00
SUM CA=   0.192 INT=  5.00  CFS=   0.962  CO=  0.000 GUTTER FLOW=   0.962

GUTTER SLOPE = 0.0040 FT/FT        PAVEMENT CROSS SLOPE =  0.0208 FT/FT


     SPREAD AT A SLOPE OF .004 (ft./ft.) IS  5.59 (ft.)
```

PC004

PROJECT BERKELEY'S GREEN 3 & 4
HEC12 Version: V2.30 User S/N: 77010134 Run Date: 04-26-1988

==========

INLET NUMBER D-19 LENGTH 2.5 STATION 12+40 LT

DRAINAGE AREA = 0.320 ACRES C VALUE = .350 CA = 0.112
DRAINAGE AREA = 0.230 ACRES C VALUE = .350 CA = 0.080
RAINFALL INTENSITY FOR THE FIRST SIDE 5.00
RAINFALL INTENSITY FOR THE OTHER SIDE 5.00
SUM CA= 0.192 INT= 5.00 CFS= 0.962 CO= 0.000 GUTTER FLOW= 0.962

GUTTER SLOPE = 0.0040 FT/FT PAVEMENT CROSS SLOPE = 0.0208 FT/FT

SPREAD AT A SLOPE OF .004 (ft./ft.) IS 5.59 (ft.)

XXXXXXXXXX CURB INLET IN A SUMP XXXXXXXXXX
P EFFEC. LENGTH (ft) = 5.20 H (ft) = 0.460
DEPTH OF WATER (ft) = 0.19 SPREAD (ft) = 8.95

==========

INLET NUMBER D-19 LENGTH 2.5 STATION 12+40 LT

DRAINAGE AREA = 0.320 ACRES C VALUE = .350 CA = 0.112
DRAINAGE AREA = 0.230 ACRES C VALUE = .350 CA = 0.080
RAINFALL INTENSITY FOR THE FIRST SIDE 3.50
RAINFALL INTENSITY FOR THE OTHER SIDE 3.50
SUM CA= 0.192 INT= 3.50 CFS= 0.674 CO= 0.000 GUTTER FLOW= 0.674

GUTTER SLOPE = 0.0040 FT/FT PAVEMENT CROSS SLOPE = 0.0208 FT/FT

SPREAD AT A SLOPE OF .004 (ft./ft.) IS 4.60 (ft.)

XXXXXXXXXX CURB INLET IN A SUMP XXXXXXXXXX
P EFFEC. LENGTH (ft) = 5.20 H (ft) = 0.460
DEPTH OF WATER (ft) = 0.15 SPREAD (ft) = 7.06

PC004

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==========================================================================
INLET NUMBER D-21            LENGTH   8.0        STATION  21+16 RT

DRAINAGE AREA =  1.140 ACRES        C VALUE = .350        CA =  0.399
SUM CA=   0.399 INT=  5.00  CFS=   1.995  CO=  0.000 GUTTER FLOW=   1.995

GUTTER SLOPE = 0.0090 FT/FT        PAVEMENT CROSS SLOPE =  0.0345 FT/FT

SPREAD      W      W/T      SW        SW/SX      Eo       a      S'W     SE
  6.20     1.5     0.24   0.0833      2.4       0.58    2.9    0.160  0.127

      XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
   REQUIRED LENGTH (ft) =  8.4                EFFICIENCY= 1.00
   CFS INTERCEPTED=  1.99                 CFS CARRYOVER=  0.01


==========================================================================
INLET NUMBER D-21            LENGTH   8.0        STATION  21+16 RT

DRAINAGE AREA =  1.140 ACRES        C VALUE = .350        CA =  0.399
SUM CA=   0.399 INT=  3.50  CFS=   1.396  CO=  0.000 GUTTER FLOW=   1.396

GUTTER SLOPE = 0.0090 FT/FT        PAVEMENT CROSS SLOPE =  0.0345 FT/FT

SPREAD      W      W/T      SW        SW/SX      Eo       a      S'W     SE
  5.31     1.5     0.28   0.0833      2.4       0.65    2.9    0.160  0.138

      XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
   REQUIRED LENGTH (ft) =  6.8                EFFICIENCY= 1.00
   CFS INTERCEPTED=  1.40                 CFS CARRYOVER=  0.00


==========================================================================
INLET NUMBER D-22            LENGTH   6.0        STATION  21+45 LT

DRAINAGE AREA =  0.920 ACRES        C VALUE = .350        CA =  0.322
SUM CA=   0.322 INT=  5.00  CFS=   1.610  CO=  0.000 GUTTER FLOW=   1.610

GUTTER SLOPE = 0.0090 FT/FT        PAVEMENT CROSS SLOPE =  0.0345 FT/FT

SPREAD      W      W/T      SW        SW/SX      Eo       a      S'W     SE
  5.66     1.5     0.26   0.0833      2.4       0.62    2.9    0.160  0.134

      XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
   REQUIRED LENGTH (ft) =  7.4                EFFICIENCY= 0.95
   CFS INTERCEPTED=  1.53                 CFS CARRYOVER=  0.08


==========================================================================
INLET NUMBER D-22            LENGTH   6.0        STATION  21+45 LT

DRAINAGE AREA =  0.920 ACRES        C VALUE = .350        CA =  0.322
SUM CA=   0.322 INT=  3.50  CFS=   1.127  CO=  0.000 GUTTER FLOW=   1.127

GUTTER SLOPE = 0.0090 FT/FT        PAVEMENT CROSS SLOPE =  0.0345 FT/FT

SPREAD      W      W/T      SW        SW/SX      Eo       a      S'W     SE
  4.82     1.5     0.31   0.0833      2.4       0.70    2.9    0.160  0.146

      XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
   REQUIRED LENGTH (ft) =  6.1                EFFICIENCY= 1.00
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CFS INTERCEPTED= 1.53 CFS CARRYOVER= 0.00

PC004

==========

INLET NUMBER D-22 LENGTH 6.0 STATION 21+45 LT

DRAINAGE AREA = 0.920 ACRES C VALUE = .350 CA = 0.322
SUM CA= 0.322 INT= 3.50 CFS= 1.127 CO= 0.000 GUTTER FLOW= 1.127

GUTTER SLOPE = 0.0090 FT/FT PAVEMENT CROSS SLOPE = 0.0345 FT/FT

SPREAD	W	W/T	SW	SW/SX	Eo	a	S'W	SE
4.82	1.5	0.31	0.0833	2.4	0.70	2.9	0.160	0.146

XXXXXXXXXX CURB INLET ON A CONTINUOUS GRADE XXXXXXXXXX
REQUIRED LENGTH (ft) = 6.1 EFFICIENCY= 1.00
CFS INTERCEPTED= 1.13 CFS CARRYOVER= 0.00