



March 4, 1998

John MacKenzie
D. Mark Goodwin & Associates
P.O. Box 90606
Albuquerque, New Mexico 87199

RE: REVISED DRAINAGE PLAN FOR BEST WESTERN-ATRIUM (F16-D10) REVISION
DATED 2/23/98

Dear Mr. MacKenzie:

Based on the information provided on your February 23, 1998 resubmittal, the above referenced site is approved for Foundation & Building Permit.

Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

Also, prior to Certificate of Occupancy release, the following must be submitted:

1. Engineer Certification per the DPM checklist.
2. Concurrence from the State Highway Department for work done within their R/W.

If I can be of further assistance, please feel free to contact me at 924-3986.

C: Andrew Garcia
File

Sincerely

Bernie J. Montoya
Bernie J. Montoya CE
Associate Engineer

Good for You, Albuquerque!



FREE OFFICE

March 11, 1998

Mr. Krithika Sundaram
Best Western Inn
3010 East Hwy 66
Gallup, NM 87301

Subject: **Driveway Permit #3-2417**

Dear Mr. Sundaram:

Attached are the signed Driveway Permits which you requested on behalf of Best Western for access to Interstate 25 East Frontage Road at mile marker 228.61 in Bernalillo County, NM. The two (2) driveways are to be located on the east side of the existing Frontage Road.

You are hereby authorized to construct two 25 foot wide driveways with 25' radius curb returns within State rights of way. You will be required to submit a Utility Permit Application for our approval prior to the construction of your proposed manhole and outfall drain pipe at this location.

In the future the Department may eliminate any left turn movements based on level of service and/or safety concerns.

All work performed within State rights of way must meet or exceed the New Mexico State Highway and Transportation Department's Standard Specification for Highway and Bridge Construction, 1996 Edition.

If we can be of further assistance please call us at 841-2700.

Sincerely,



Katherine J. Trujillo
District 3 Traffic Engineer

xc: Julian Vigil
Steve Harris
DTE file

G. **ANSON**
GOVERNOR

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DEPARTMENT

Secretary
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General Office
P.O. Box 1149
Santa Fe, N.M.
87504-1149
505-827-5100

District One Office
P.O. Box 231
Deming, N.M.
88031-0231
505-546-2603

District Two Office
P.O. Box 1457
Roswell, N.M.
88202-1457
505-624-3300

District Three Office
P.O. Box 91750
Albuquerque, N.M.
87199-1750
505-841-2700

District Four Office
P.O. Box 30
Las Vegas, N.M.
87701-0030
505-454-3600

District Five Office
P.O. Box 4127
Coronado Station
Santa Fe, N.M.
87502-4127
505-827-9500

District Six Office
P.O. Box 2159
Milan, N.M.
87021
505-285-6623

**NEW MEXICOSTATE HIGHWAY AND TRANSPORTATION
DEPARTMENT**

INTRA-DEPARTMENTAL CORRESPONDENCE

DATE: March 2, 1998

SUBJECT: Best Western - Atrium Revised On-site Plan Submittal

TO: Julian Vigil
District Three Permit Section

FROM: Raymunda A. Van Hoven *R. Van Hoven*
Drainage Engineer

This is to confirm drainage approval of the drainage plan. The on-site layout is changed but did not affect the discharge plan onto the State highway.

In my IDC dated 6/2/97, I approved the drainage plan. Enclosed is the revised drainage plan for your reference.

With enclosure

xc: George Herrera
Kathy Trujillo, DO#3
✓ John McKenzie, DMG



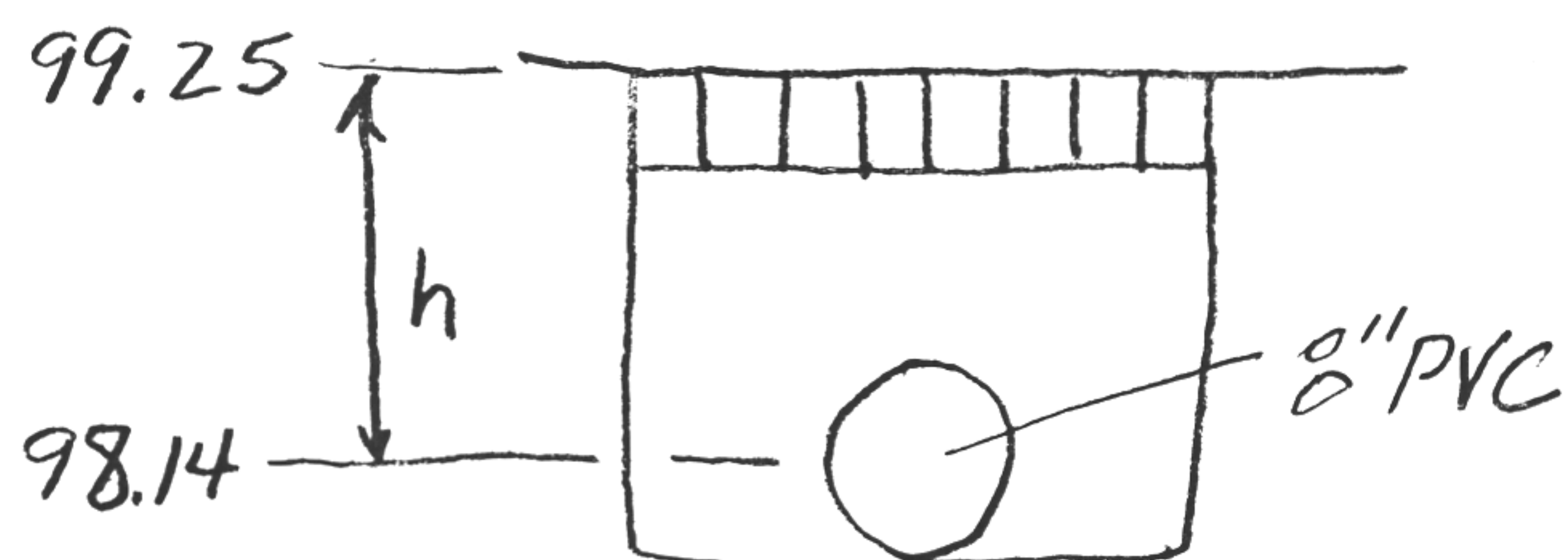
D. Mark Goodwin & Associates, P.A.
Consulting Engineers

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmgs@swcp.com

PROJECT Best Western
SUBJECT Drainage
BY JMM DATE 1-11-99
CHECKED _____ DATE _____
SHEET _____ OF _____

The approved plan has been revised due to a field change which happened during construction. Instead of a concrete run-down and spillway to the pond from the south parking lot (Drainage Basin A), a type "D" drop inlet and an 8" PVC storm drain to the pond was constructed.

The capacity of this new arrangement can be determined as follows:



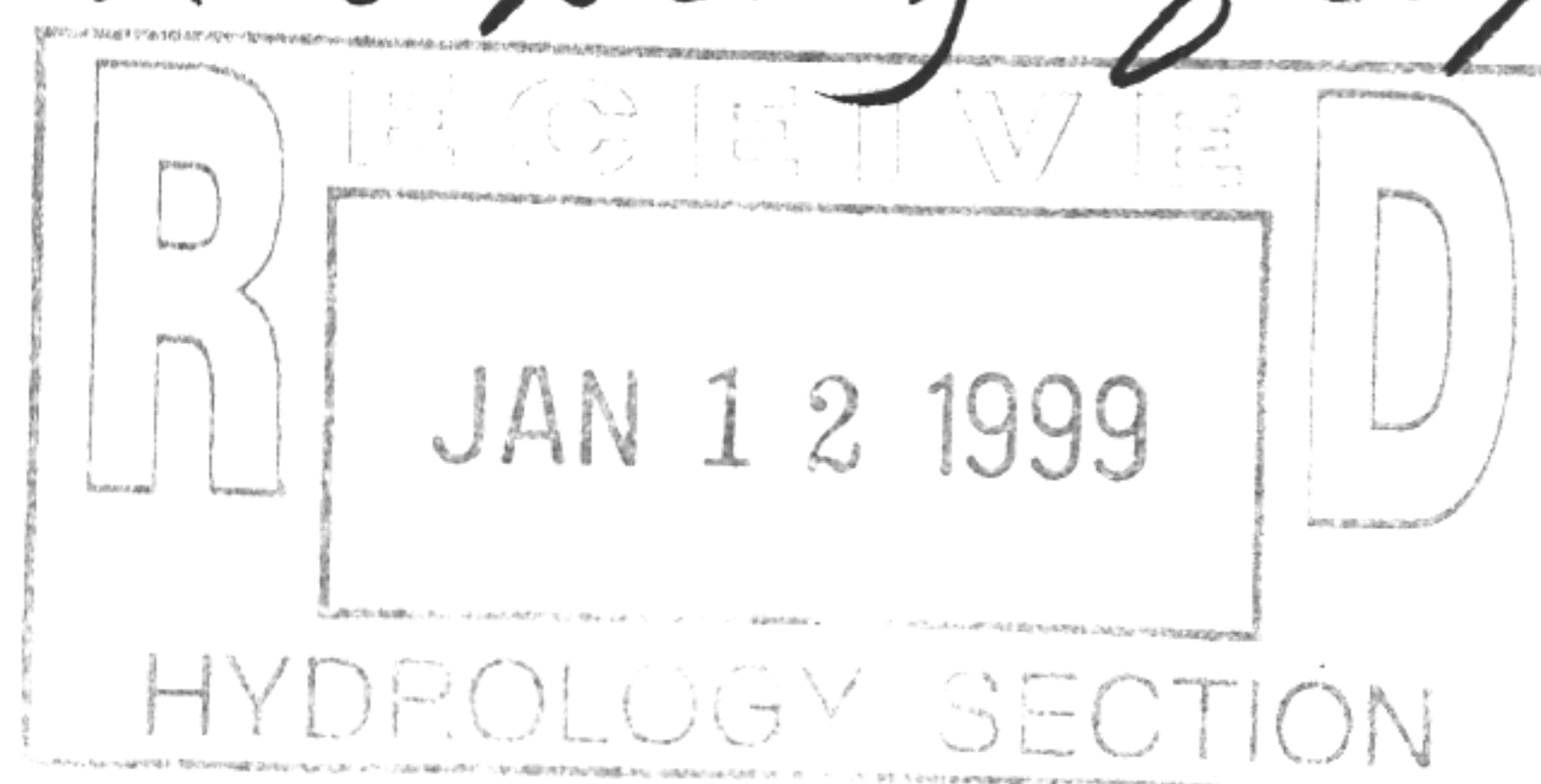
$$Q = 0.70 A \sqrt{2gh}$$

$$A = \pi (0.67)^2 = 1.41 \text{ SF} \quad h = 1.11'$$

$$Q = 0.70 (1.41) \sqrt{2(32.2)(1.11)}$$

$$Q = 8.3 \text{ cfs}$$

Since Basin A discharges only 4.66 cfs the storm drain would have plenty of capacity.



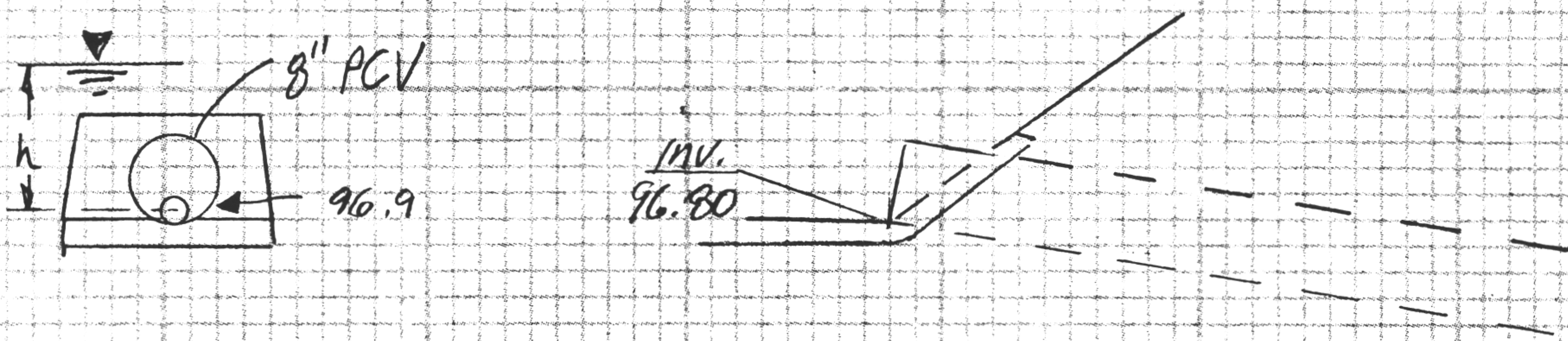


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Consulting Engineers and Surveyors

PROJECT Best Western - Ran Amer.
SUBJECT Drainage
BY JMM DATE 2-23-98
CHECKED _____ DATE _____
SHEET 1 OF _____

DISCHARGE CALCULATIONS

Discharge from this site will be throttled to a rate of 0.1 cfs/ac. At 2.54 acres, this translates to a rate of 0.254 cfs. A 4" dia. PVC outfall will be capped with a 2.5" dia. hole bored in the cap as shown below.



Flow will be controlled by the size of the opening and the variable head as storm water detention deepens.

$$Q = 0.6(A)\sqrt{2gh} \quad A = \frac{\pi(1.875)^2}{4} = 0.028 \text{ ft}^2 \quad h = 1.106'$$

@ 97.0 $Q = 0.6(0.028)\sqrt{64.4(0.1)}$
 $Q = 0.043 \text{ cfs}$

$$@ 98.0: Q = 0.6(0.028)\sqrt{2(32.2)(1.106)} = 0.14 \text{ cfs}$$

$$\text{At Elev. } 99.0: Q = 0.20 \text{ cfs}$$

$$\text{At Elev. } 100.0: Q = 0.24 \text{ cfs}$$

$$\text{At Elev. } 100.5: h = 3.606 \text{ ft}$$

$$Q = 0.6(0.028)\sqrt{2(32.2)(3.606)} = 0.26 \text{ cfs}$$

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Consulting Engineers and Surveyors

PROJECT Best Western - Pan American
SUBJECT Drainage
BY JMM DATE 2/23/98
CHECKED _____ DATE _____
SHEET 2 OF _____

PONDING CALCULATIONS

Pond Area A

Elev.	Area	Avg. Area	Depth	Vol.	Cum. Vol.
96.80	0	900	0.2	180	.0041
97	1800	2145	1.0	2145	0.0533
98	2490	2840	1.0	2840	0.1185
99	3190	7018	1.0	7018	0.280
100	10845	12942	0.5	6471	0.4295
100.5	15039				

Pond Area B

Elev	Area	Avg. Area	Depth	Vol.	Cum. Vol.
98.20	0	1494	0.80	1195	0.0274
99.00	2988	8829	1.0	8,829	0.2301
100.00	14670	17100	0.5	8,550	0.4263
100.50	19530				

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CONSULTING ENGINEERS & SURVEYORS

PROJECT Best Western - Atrium
SUBJECT Drainage
BY QMM DATE 2 23 98
CHECKED _____ DATE _____
SHEET 3 OF _____

POND A RUNDOWN

Basin A Discharge $Q = 6.3 \text{ cfs}$ $H = 0.67'$

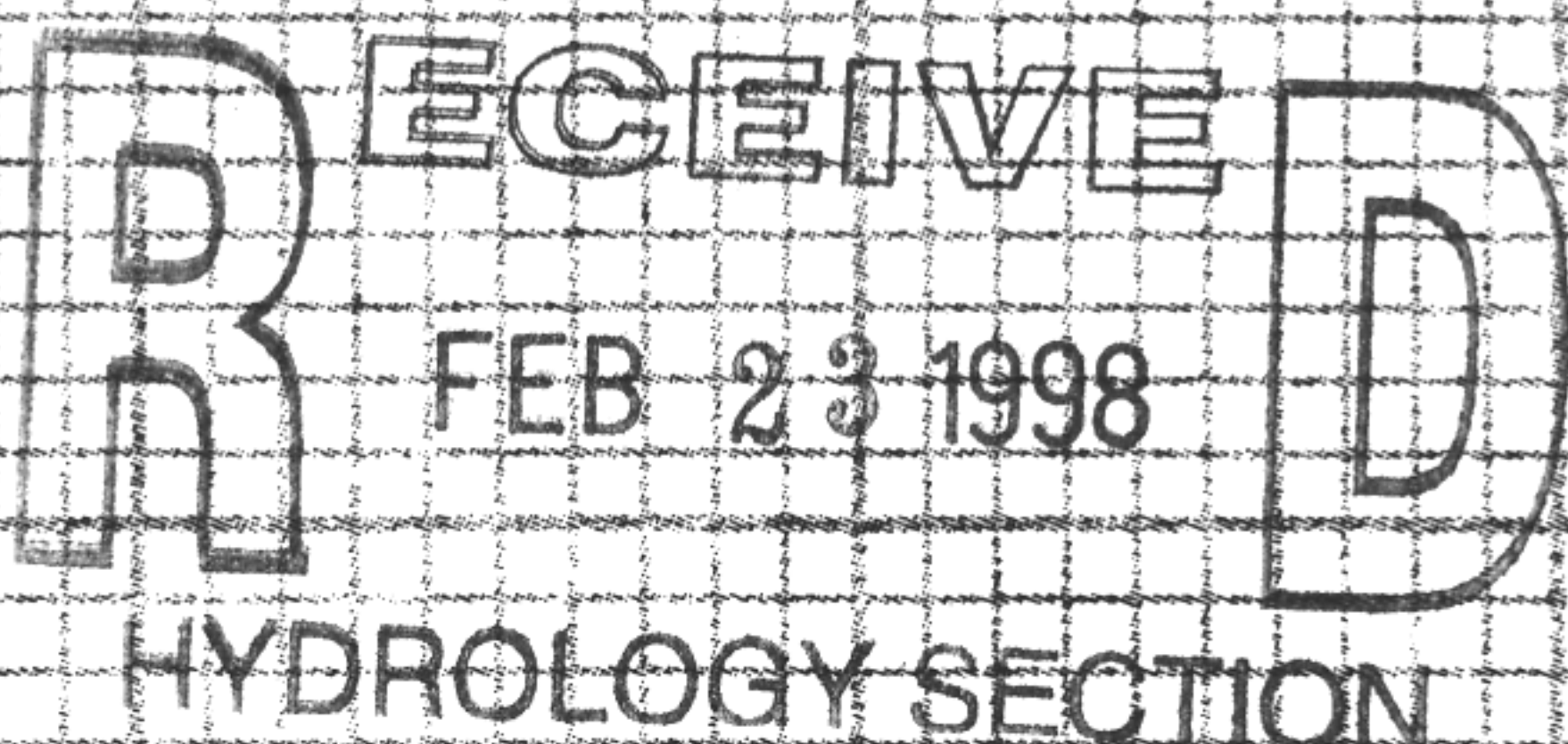
$$L = \text{Weir Length} = \frac{Q}{2.9(H)^{1.5}} = \frac{6.3}{2.9(0.67)^{1.5}} = 3.96'$$

use 4' width

POND A SPILLWAY

Max Site Discharge = 11 cfs

$$L = \frac{Q}{2.9(H)^{1.5}} = \frac{11}{2.9(0.5)^{1.5}} = 10.73 \text{ ft use 11'}$$



4

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 02/23/1998
START TIME (HR:MIN:SEC) = 09:35:43 USER NO.= M_GOODWN.I01
INPUT FILE = bestwest.dat

START TIME=0.0

***** HYDROGRAPH FOR BEST WESTERN ATRIUM HOTEL

RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=2.02 IN RAIN SIX=2.43 IN
RAIN DAY=2.70 IN DT=0.033 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40
HR.

DT = .033000 HOURS END TIME = 5.973000 HOURS

.0000	.0023	.0046	.0070	.0094	.0119	.0145
.0171	.0197	.0225	.0252	.0281	.0311	.0341
.0372	.0404	.0437	.0471	.0506	.0542	.0579
.0618	.0658	.0700	.0743	.0789	.0836	.0886
.0938	.0993	.1051	.1107	.1165	.1227	.1312
.1568	.1973	.2566	.3386	.4474	.5874	.7628
.9781	1.2378	1.3540	1.4354	1.5067	1.5710	1.6301
1.6847	1.7357	1.7834	1.8283	1.8706	1.9105	1.9483
1.9841	2.0181	2.0503	2.0809	2.1100	2.1296	2.1363
2.1427	2.1488	2.1546	2.1601	2.1655	2.1706	2.1756
2.1804	2.1851	2.1896	2.1940	2.1983	2.2024	2.2064
2.2104	2.2142	2.2180	2.2217	2.2253	2.2288	2.2322
2.2356	2.2389	2.2422	2.2454	2.2485	2.2516	2.2546
2.2576	2.2606	2.2634	2.2663	2.2691	2.2718	2.2746
2.2772	2.2799	2.2825	2.2851	2.2876	2.2901	2.2926
2.2950	2.2974	2.2998	2.3022	2.3045	2.3068	2.3091
2.3114	2.3136	2.3158	2.3180	2.3201	2.3223	2.3244
2.3265	2.3286	2.3306	2.3326	2.3347	2.3367	2.3386
2.3406	2.3425	2.3445	2.3464	2.3483	2.3502	2.3520
2.3539	2.3557	2.3575	2.3593	2.3611	2.3629	2.3646
2.3664	2.3681	2.3698	2.3716	2.3733	2.3749	2.3766
2.3783	2.3799	2.3816	2.3832	2.3848	2.3864	2.3880
2.3896	2.3912	2.3927	2.3943	2.3958	2.3974	2.3989
2.4004	2.4019	2.4034	2.4049	2.4064	2.4078	2.4093
2.4107	2.4122	2.4136	2.4150	2.4165	2.4179	2.4193
2.4207	2.4221	2.4234	2.4248	2.4262	2.4275	2.4289

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HYDROLOGY SECTION

*TWO HYDROGRAPHS FOR ON-SITE 2.54 AC DRAINAGE BASIN
*WILL BE CREATED FOR SUBBASIN A AND B

*BASIN A

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.0017 SQ MI
PER A=0.0 PER B=18.0 PER C=0.0 PER D=82.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 5.5036 CFS UNIT VOLUME = .9972 B = 526.28 P60 = 2.0200

5

AREA = .001394 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.033000

K = .132208HR TP = .133300HR K/TP RATIO = .991810 SHAPE CONSTANT, N = 3.559824
UNIT PEAK = .74530 CFS UNIT VOLUME = .9825 B = 324.67 P60 = 2.0200
AREA = .000306 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.033000

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.94064 INCHES = .1760 ACRE-FEET
PEAK DISCHARGE RATE = 4.66 CFS AT 1.518 HOURS BASIN AREA = .0017 SQ. MI.

*BASIN B

COMPUTE NM HYD ID=2 HYD NO=101.2 AREA=0.0023 SQ MI
PER A=0.0 PER B=18.0 PER C=0.0 PER D=82.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 7.4460 CFS UNIT VOLUME = .9978 B = 526.28 P60 = 2.0200
AREA = .001886 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.033000

K = .132208HR TP = .133300HR K/TP RATIO = .991810 SHAPE CONSTANT, N = 3.559824
UNIT PEAK = 1.0084 CFS UNIT VOLUME = .9864 B = 324.67 P60 = 2.0200
AREA = .000414 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.033000

PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 101.20

RUNOFF VOLUME = 1.94064 INCHES = .2381 ACRE-FEET
PEAK DISCHARGE RATE = 6.30 CFS AT 1.518 HOURS BASIN AREA = .0023 SQ. MI.

ADD HYD ID=2 HYD NO=102.1 ID=1 ID=2
PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 102.10

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6

RUNOFF VOLUME = 1.94050 INCHES = .4140 ACRE-FEET
PEAK DISCHARGE RATE = 10.96 CFS AT 1.518 HOURS BASIN AREA = .0040 SQ. MI.

ROUTE RESERVOIR ID=7 HYD NO=107 INFLOW ID=2 CODE=24

OUTFLOW(CFS) STORAGE(ACFT) ELEVATION (FT)

0.0	0.0	96.8
0.043	0.0041	97.0
0.14	0.0533	98.0
0.20	0.1460	99.0
0.24	0.5101	100.0
0.26	0.8558	100.5

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
---------------	-----------------	----------------	-------------------	------------------

.00	.00	96.80	.000	.00
.79	.00	96.80	.000	.00
1.58	8.32	99.11	.185	.20
2.38	.52	99.59	.361	.22
3.17	.11	99.59	.361	.22
3.96	.08	99.57	.353	.22
4.75	.07	99.54	.343	.22
5.54	.08	99.51	.333	.22
6.34	.01	99.49	.323	.22
7.13	.00	99.45	.309	.22
7.92	.00	99.41	.295	.22
8.71	.00	99.37	.281	.21
9.50	.00	99.33	.267	.21
10.30	.00	99.29	.253	.21
11.09	.00	99.26	.239	.21
11.88	.00	99.22	.225	.21
12.67	.00	99.18	.212	.21
13.46	.00	99.14	.198	.21
14.26	.00	99.11	.185	.20
15.05	.00	99.07	.171	.20
15.84	.00	99.03	.158	.20
16.63	.00	98.99	.145	.20
17.42	.00	98.85	.132	.19
18.22	.00	98.72	.120	.18
19.01	.00	98.59	.108	.18

PEAK DISCHARGE = .224 CFS - PEAK OCCURS AT HOUR 2.71

MAXIMUM WATER SURFACE ELEVATION = 99.598

MAXIMUM STORAGE = .3639 AC-FT INCREMENTAL TIME= .033000HRS

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 09:35:50

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