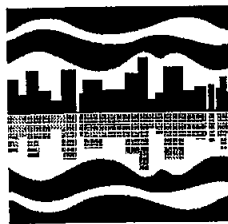


HUFFAKER VILLAGE PHASE 1

HYDROLOGY

PREPARED FOR: Estate of Thelma Jaksick
Lakeridge Shores
2500 Spinnaker
Reno, NV 89509

PREPARED BY: Shawn K. Gooch, P.E.



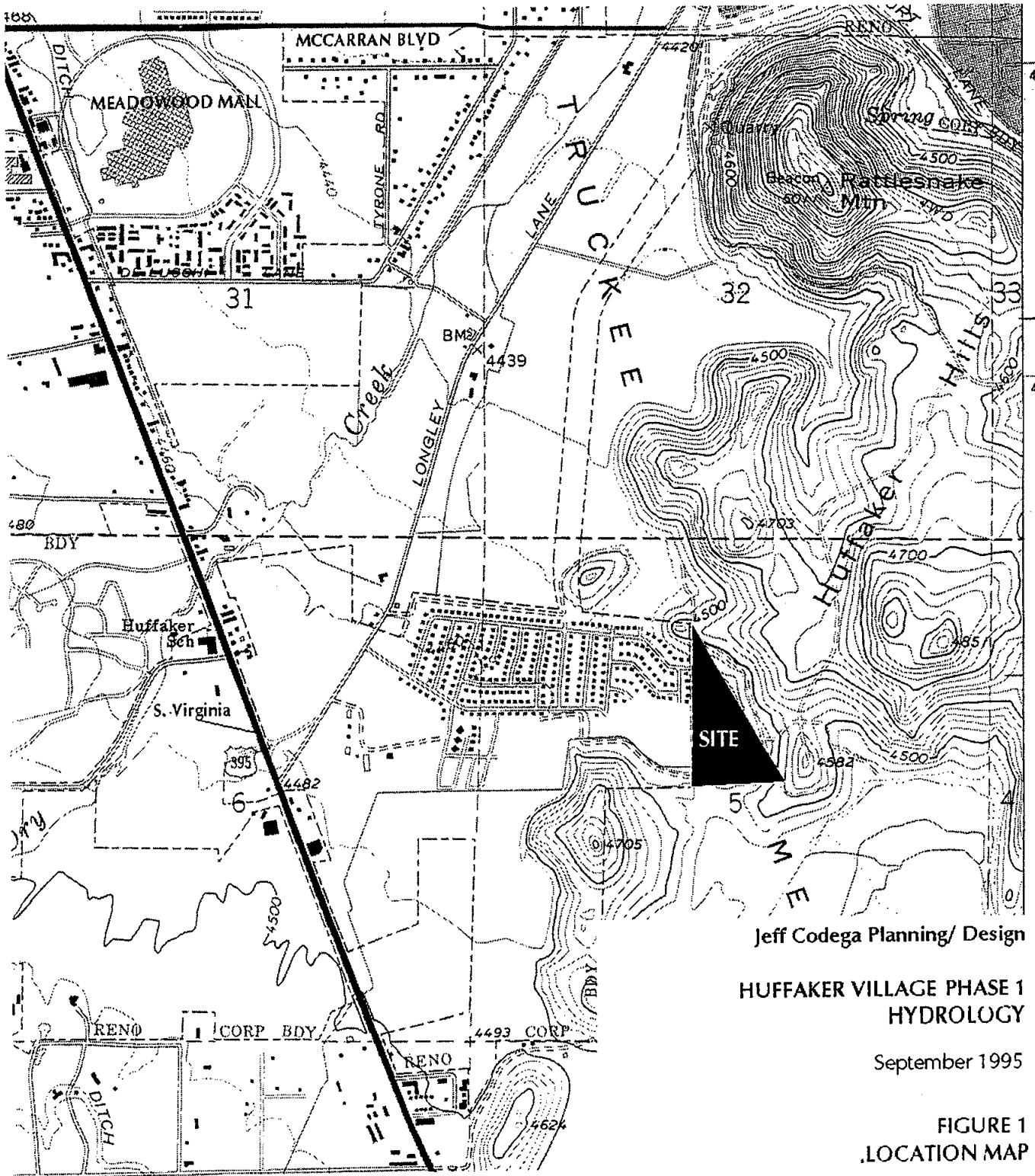
JEFF CODEGA
PLANNING/DESIGN, INC.

planners ■ landscape architects ■ engineers

433 West Plumb Lane Reno, Nevada 89509 Phone (702) 322-5100 Fax (702) 322-1551

SEPTEMBER 27, 1995

1373.0003



Jeff Codega Planning/ Design

**HUFFAKER VILLAGE PHASE 1
HYDROLOGY**

September 1995

**FIGURE 1
LOCATION MAP**

INTRODUCTION

The following report represents the hydraulic and hydrologic analysis for the Huffaker Village subdivision. The development consists of 22.4 acres and is located on the east of the existing Huffaker Hills Subdivision at the East terminus of East Huffaker Drive. Specifically in the south east 1/4 of the north west 1/4 of section 5, range 20 east, township 18 north in south east Reno. The development is bounded to the north and east by undeveloped land, to the south by the future IGT facility and to the west by undeveloped land further to the west by the existing Huffaker Hills subdivision. Moana Lane extension is planned to pass the site directly to the east but it is still in the planning phase. Figure 1 is a site map showing the location of the project in relation to these features.

METHODOLOGY

The peak discharges for the project were calculated using the Rational Method:

$$Q=CiA$$

Where;

- Q= peak discharge in cubic feet per second,
- C= Rational discharge coefficient based on surface characteristics,
- i= peak rainfall intensity in inches per hour based on basin travel times,
- A= basin area in acres.

Where travel times were calculated to be less than 10 minutes a travel time of 10 minutes was used.

EXISTING SITE DESCRIPTION

The site is currently undeveloped but structural fill was imported and rough grading has been done to fill in a depression that was created when the Huffaker Hills Subdivision was constructed. Prior to this grading and filling the site existed as irrigated agricultural land. A portion of the depression still exists to the south of the site that completely captures the 100 year runoff. Historically irrigation water was routed through the site through ditches and concrete channels around the east side of the site. The destination of the water was the Quilici property to the north of Huffaker Hills subdivision. Several remnants of these conveyance structures are still in place on the site. The current alignment of these ditches is through the Huffaker Hills subdivision. The irrigation ditches that historically flowed through the site are abandon.

Discharges from the site in the existing condition are based on a Rational C of 0.35 for rural land, from City of Reno Public Works Design Manual, an area of 13.0 acres, and a 5 year intensity of 1.40 inches per hour and a 100 year intensity of 3.8 inches per hour. All travel

times calculated for the site and areas contributing to the site were less than 10 minutes therefore a travel time of 10 minutes was used in all cases. Based on these factors the existing condition discharges are as follows;

$$Q_5=11.0 \text{ cubic feet per second}$$

$$Q_{100}= 29.8 \text{ cubic feet per second}$$

Based on the FEMA Flood Insurance Rate Maps for the City of Reno panel 32031C 3159-E dated September 30, 1994 the site lies completely within an unshaded flood zone X, areas of minimal flooding.

PROPOSED CONDITIONS

Both the Phase 1 condition and the final developed site were modeled in this report. The final developed site needed to be modeled to determine the pipe sizes of the portion of the site to be constructed first. This was because the down stream portion of the site is to be constructed first.

The hydrology for this report assumes that the fully developed site will consist of single family residential with a Rational C of 0.60 and that all travel times are 10 minutes. Rainfall intensities for a 10 minute travel time are 1.4 inches per hour for the 5 year storm and 3.8 inches per hour for the 100 year storm. Based on these factors the proposed condition discharges are as follows;

$$Q_5=18.8 \text{ cubic feet per second}$$

$$Q_{100}= 51.1 \text{ cubic feet per second}$$

Detention of runoff will be provided with this project along the eastern boundary of the site between the site and the future alignment of the Moana Lane extension. This Detention basin will detain the flows arriving along the eastern boundary of the site. Only minimal detention will be required for the 100 year storm because the down stream storm drain has adequate capacity to carry the 5 year storm under the street. With minor detention the 100 year storm will be able to be conveyed in the storm drain as well. The 100 year storm was modeled using HEC-1 to verify that the 100 year storm could exit the site without significant flooding to adjacent properties. The critical location is at the intersection of Autumn Hills Drive and Berry Hills Drive. This is the location where the Huffaker Village storm drain will connect with the Autumn Hills storm drain. The watershed contributing to the Autumn Hills Drive\Berry Hills Drive intersection is shown in Figure 2. The Huffaker Hills storm drain has the capacity to convey 30 cubic feet per second, the remainder will be routed through the detention basin. The HEC-1 runs are included in the appendix.

With detention the routed flows from the site and the off-site areas were determined using the Intelesolve program Hydraflow to be:

$$Q_5=15.7 \text{ cubic feet per second}$$

$$Q_{100}=34.7 \text{ cubic feet per second}$$

Discharges to catch basins were calculated using the Rational equation. The watershed boundaries for the individual catch basins for Phase 1 are shown on Figure 3 and the final developed site on Figure 4. Both Figures 3 and 4 are to be found in the map pockets. Table 1 shows the catch basin discharge calculations and results for the final developed site. The discharges for the Phase 1 condition are less in all cases due to the diversion of future site flows into the detention pond and the depressed area on the south area of the site.

The storm drain for the project was designed using the Intelesolve program Hydraflow to design the sizes of the storm drain pipes and calculate the hydraulic grade line for the 5 year storm. The summary output for the 5 year storm is attached.

TABLE 1

Catch Basin	Area Acres	Rational C	i_5 in/hr	i_{100} in/hr	Q_5 cfs	Q_{100} cfs
1	3.16	0.60	1.4	3.8	2.7	7.2
2	1.60	0.60	1.4	3.8	1.4	3.6
3	3.08	0.60	1.4	3.8	2.6	7.0
4	1.43	0.60	1.4	3.8	1.2	3.3
5	1.56	0.60	1.4	3.8	1.3	3.6
6	3.01	0.60	1.4	3.8	2.5	6.9
7	1.26	0.60	1.4	3.8	1.1	2.9
8	1.89	0.60	1.4	3.8	1.6	4.3
9	1.29	0.60	1.4	3.8	1.1	2.9
10	1.91	0.60	1.4	3.8	1.6	4.4
11	0.96	0.60	1.4	3.8	0.8	2.2

CONCLUSIONS

The Huffaker storm drain has the capacity to convey the runoff from the 5 year event from the developed project and the runoff from the 100 year will flow underground and down the street with out causing significant flooding of adjacent properties. All runoff from the site, up to the 100 year event, will flow into the Autumn Hills Storm Drain system. Extreme runoff events in excess of the 100 year event will flow down Autumn Hills Drive then into the open area to the north of Huffaker Hills Subdivision.

The peak discharge from the site in the interim condition, constructed as Phase 1, will be smaller than the final developed discharge due to the detention characteristics of the depressed area on the south side of the site.

Development of this project should not adversely impact neighboring or down stream properties.

```

*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* MAY 1991 *
* VERSION 4.0.1E *
* Lahey F77L-EM/32 version 5.01 *
* Dodson & Associates, Inc. *
* RUN DATE 09/27/95 TIME 14:13:14 *
*****

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*****
*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 551-1748
*
*****

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X X XXXXXXX XXXXX X
X X X X X XX
X X X X X X
XXXXXXXX XXXX X XXXXX X
X X X X X X
X X X X X X
X X XXXXXXX XXXXX XXX

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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE. THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
 NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
 DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
 KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*DIAGRAM

```

1 ID *****
2 ID Jeff Codega Planning/Design
3 ID 433 West Plumb Lane
4 ID Reno NV 89509
5 ID (702) 322-5100 Fax (702) 322-1551
6 ID
7 ID
8 ID HUFFAKER VILLAGE
9 ID FINAL DEVELOPEMENT
10 ID
11 ID JCPD JOB 1373.01
12 ID
13 ID
14 ID
15 ID
16 ID RAIN FALL DATA FROM NOAA ATLAS 2, VOLUME VII
17 ID LAG TIME COMPUTED WITH THE UPLAND METHOD AND THE PROCEDURES DESCRIBED IN TR
18 ID CURVE NUMBER FROM TR-55 AND NEH-4
19 ID ROUTING PREFORMED WITH MODIFIDE PULS
20 ID
21 ID ===== 100 YEAR, 24 HOUR EVENT=====
22 ID
23 ID
24 ID #####
25 IT 1 1441
26 IO 3 0

27 KK HUF0F1 OFFSITE AREA NORTHERN SIDE DRAINS TO AUTUMN HILS DRIVE
28 BA .0320
29 PH 1 .48 .73 1.08 1.20 1.32 1.62 2.16 2.88
30 LS 81 0
31 UD .167

32 KK ROUTE
33 KM RESERVOIR ROUTING,EXISTING DEPRESSION SOUTH OF SITE.
34 KM
35 RS 1 STOR -1
36 SQ 0 2 3 5 6 8 9 10 12
37 SE 4447 4447.87 4448.71 4450.04 4451.89 4454.28 4455.54 4455.75 4456
38 SA 0 .0001 .218 .150 .182 .214 .260 .294 .345
39 SE 4447 4449 4450 4451 4452 4453 4454 4455 4456

40 KK HUF0N HUFFAKER VILLAGE DEVELOPED SITE DRAINS TO AUTUMN HILS DRIVE
41 BA .0350
42 PH 1 .48 .73 1.08 1.20 1.32 1.62 2.16 2.88
43 LS 81 80
44 UD .167

45 KK SITE FLOWS GENERATED FROM SITE AND UPHILL OF SITE
46 HC 2
    
```

RUNOFF SUMMARY
 FLOW IN CUBIC FEET PER SECOND
 TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
HYDROGRAPH AT	HUFOF1	3.	12.20	1.	0.	0.	0.03		
ROUTED TO	ROUTE	3.	12.20	1.	0.	0.	0.03	4448.94	12.20
HYDROGRAPH AT	HUFON	19.	12.18	2.	1.	1.	0.04		
2 COMBINED AT	SITE	23.	12.18	3.	1.	1.	0.07		
HYDROGRAPH AT	HUFOF3	6.	12.20	1.	0.	0.	0.03		
2 COMBINED AT	AHD	29.	12.18	4.	2.	2.	0.09		
DIVERSION TO	PIPE	29.	0.02	4.	2.	2.	0.09		
HYDROGRAPH AT	STREET	0.	0.02	0.	0.	0.	0.09		
ROUTED TO	ROUTE	0.	0.02	0.	0.	0.	0.09	4450.00	0.00

*** NORMAL END OF HEC-1 ***

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*DIAGRAM

```

1 ID *****
2 ID Jeff Codega Planning/Design
3 ID 433 West Plumb Lane
4 ID Reno NV 89509
5 ID (702) 322-5100 Fax (702) 322-1551
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8 ID HUFFAKER VILLAGE
9 ID PHASE 1 DEVELOPEMENT
10 ID
11 ID JCPD JOB 1373.01
12 ID
13 ID
14 ID
15 ID
16 ID RAIN FALL DATA FROM NOAA ATLAS 2, VOLUME VII
17 ID LAG TIME COMPUTED WITH THE UPLAND METHOD AND THE PROCEDURES DESCRIBED IN TR
18 ID CURVE NUMBER FROM TR-55 AND NEH-4
19 ID ROUTING PREFORMED WITH MODIFIDE PULS
20 ID
21 ID ===== 100 YEAR, 24 HOUR EVENT=====
22 ID
23 ID
24 ID #####
25 IT 1 1441
26 IO 3 0

27 KK HUFOF1 OFFSITE AREA NORTHERN SIDE DRAINS TO AUTUMN HILS DRIVE
28 BA .0289
29 PH 1 .48 .73 1.08 1.20 1.32 1.62 2.16 2.88
30 LS 81 0
31 UD .167

32 KK ROUTE
33 KM RESERVOIR ROUTING,EXISTING DEPRESSION SOUTH OF SITE.
34 KM
35 RS 1 STOR -1
36 SQ 0 2 3 5 6 8 9 10 12
37 SE 4447 4447.87 4448.71 4450.04 4451.89 4454.28 4455.54 4455.75 4456
38 SA 0 .0001 .218 .150 .182 .214 .260 .294 .345
39 SE 4447 4449 4450 4451 4452 4453 4454 4455 4456

40 KK HUFOF2 OFFSITE AREA SOUTHERN SIDE DRAINS TO DEPRESSION SOUTH OF SITE
41 BA .0242
42 PH 1 .48 .73 1.08 1.20 1.32 1.62 2.16 2.88
43 LS 81 0
44 UD .167

45 KK ROUTE
46 KM RESERVOIR ROUTING,EXISTING DEPRESSION SOUTH OF SITE.
47 KM
48 RS 1 STOR -1
49 SQ 0 5
50 SE 4452.5 4455.5
    
```


SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT LINE	(V) ROUTING	(--->) DIVERSION OR PUMP FLOW
NO.	(.) CONNECTOR	(<---) RETURN OF DIVERTED OR PUMPED FLOW
27	HUFOF1	
	V	
	V	
32	ROUTE	
	.	
	.	
40	.	HUFOF2
	.	V
	.	V
45	.	ROUTE
	.	.
	.	.
53	.	.
	.	HUFON
	.	.
	.	.
58	SITE.....	
	.	
	.	
60	.	HUFOF3
	.	.
	.	.
65	AHD.....	
	.	
	.	
68	.	-----> PIPE
67	STREET	
	V	
	V	
71	ROUTE	

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

RUNOFF SUMMARY
 FLOW IN CUBIC FEET PER SECOND
 TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
HYDROGRAPH AT	HUFOF1	26.	12.18	3.	1.	1.	0.03		
ROUTED TO	ROUTE	6.	12.53	3.	1.	1.	0.03	4452.06	12.53
HYDROGRAPH AT	HUFOF2	22.	12.18	2.	1.	1.	0.02		
ROUTED TO	ROUTE	1.	16.23	1.	0.	0.	0.02	4453.08	16.48
HYDROGRAPH AT	HUFON	23.	12.18	2.	1.	1.	0.01		
3 COMBINED AT	SITE	28.	12.18	6.	2.	2.	0.07		
HYDROGRAPH AT	HUFOF3	33.	12.18	3.	1.	1.	0.03		
2 COMBINED AT	AHD	61.	12.18	9.	4.	4.	0.09		
DIVERSION TO	PIPE	34.	12.18	8.	3.	3.	0.09		
HYDROGRAPH AT	STREET	27.	12.18	1.	0.	0.	0.09		
ROUTED TO	ROUTE	5.	12.33	1.	0.	0.	0.09	4450.24	12.33

*** NORMAL END OF HEC-1 ***

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*DIAGRAM

```

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18 ID CURVE NUMBER FROM TR-55 AND NEH-4
19 ID ROUTING PREFORMED WITH MODIFIDE PULS
20 ID
21 ID ===== 5 YEAR, 24 HOUR EVENT=====
22 ID
23 ID
24 ID #####
25 IT 1 1441
26 IO 3 0

27 KK HUF0F1 OFFSITE AREA NORTHERN SIDE DRAINS TO AUTUMN HILLS DRIVE
28 BA .0289
29 PH 20 0.18 .28 .40 .52 .60 .78 1.02 1.42
30 LS 81 0
31 UD .167

32 KK ROUTE
33 KM RESERVOIR ROUTING,EXISTING DEPRESSION SOUTH OF SITE.
34 KM
35 RS 1 STOR -1
36 SQ 0 2 3 5 6 8 9 10 12
37 SE 4447 4447.87 4448.71 4450.04 4451.89 4454.28 4455.54 4455.75 4456
38 SA 0 .0001 .218 .150 .182 .214 .260 .294 .345
39 SE 4447 4449 4450 4451 4452 4453 4454 4455 4456

40 KK HUF0F2 OFFSITE AREA SOUTHERN SIDE DRAINS TO DEPRESSION SOUTH OF SITE
41 BA .0242
42 PH 20 0.18 .28 .40 .52 .60 .78 1.02 1.42
43 LS 81 0
44 UD .167

45 KK ROUTE
46 KM RESERVOIR ROUTING,EXISTING DEPRESSION SOUTH OF SITE.
47 KM
48 RS 1 STOR -1
49 SQ 0 5
50 SE 4452.5 4455.5
    
```


SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT LINE	(V) ROUTING	(--->) DIVERSION OR PUMP FLOW
NO.	(.) CONNECTOR	(<---) RETURN OF DIVERTED OR PUMPED FLOW
27	HUFOF1	
	V	
	V	
32	ROUTE	
	.	
	.	
40	.	HUFOF2
	.	V
	.	V
45	.	ROUTE
	.	.
	.	.
53	.	.
	.	HUFON
	.	.
	.	.
58	SITE.....	
	.	
	.	
60	.	HUFOF3
	.	.
	.	.
65	AHD.....	
	.	
	.	
68	----->	PIPE
67	STREET	
	V	
	V	
71	ROUTE	

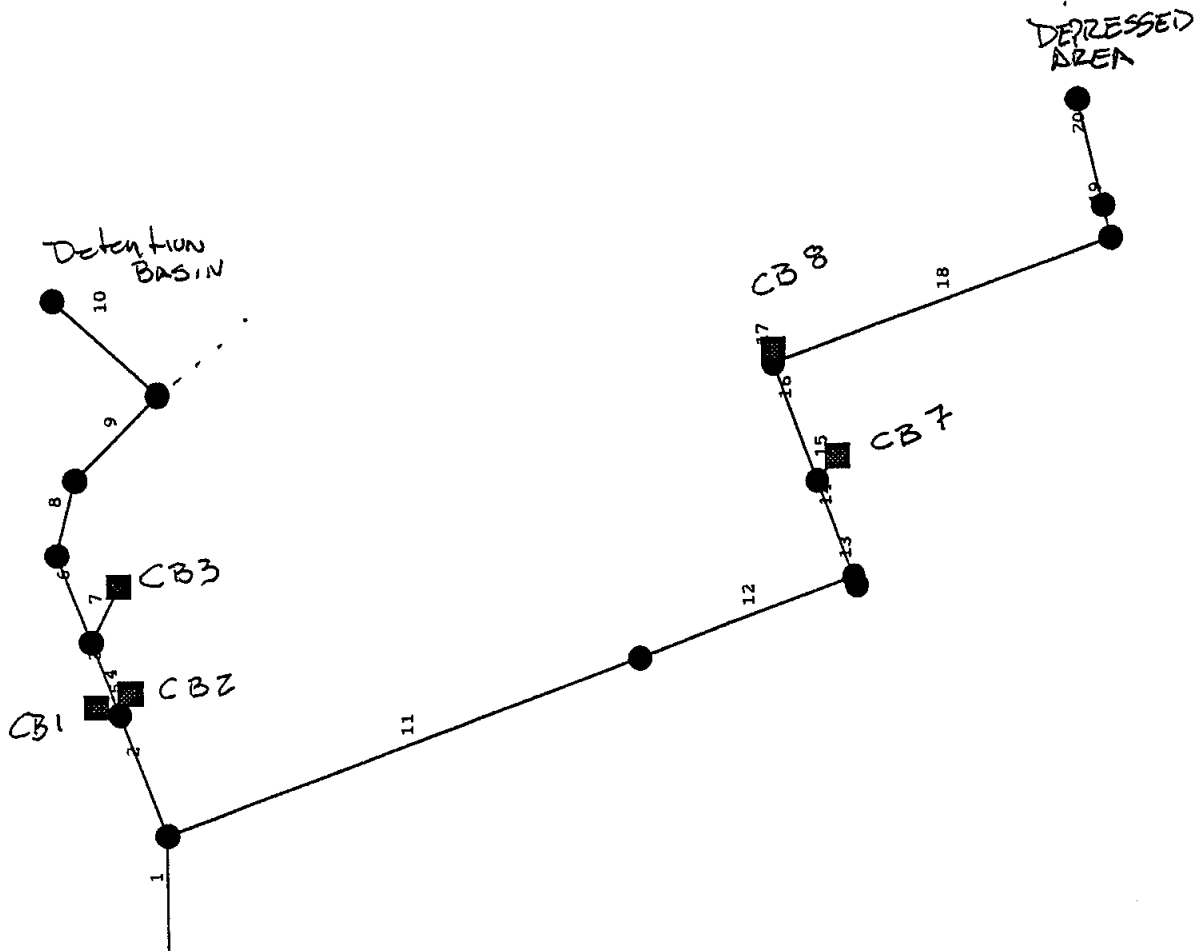
(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

RUNOFF SUMMARY
 FLOW IN CUBIC FEET PER SECOND
 TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
HYDROGRAPH AT	HUFOF1	3.	12.20	0.	0.	0.	0.03		
ROUTED TO	ROUTE	3.	12.22	0.	0.	0.	0.03	4448.72	12.22
HYDROGRAPH AT	HUFOF2	3.	12.20	0.	0.	0.	0.02		
ROUTED TO	ROUTE	0.	22.17	0.	0.	0.	0.02	4452.63	21.90
HYDROGRAPH AT	HUFON	8.	12.18	1.	0.	0.	0.01		
3 COMBINED AT	SITE	11.	12.18	1.	1.	1.	0.07		
HYDROGRAPH AT	HUFOF3	6.	12.20	1.	0.	0.	0.03		
2 COMBINED AT	AHD	17.	12.18	2.	1.	1.	0.09		
DIVERSION TO	PIPE	17.	0.02	2.	1.	1.	0.09		
HYDROGRAPH AT	STREET	0.	0.02	0.	0.	0.	0.09		
ROUTED TO	ROUTE	0.	0.02	0.	0.	0.	0.09	4450.00	0.00

*** NORMAL END OF HEC-1 ***

Phase 1 layout



09-27-1995

No. Lines: 20

IDF file: RENOCANO.IDF

Proj. file: HUFFP1SD.STM

Storm sewer tabulation

Line #	Line ID	Inc. Area (ac)	Rnoff coeff (C)	Incrt CA	Sum CA	Tc (min)	Rnfall Int. (in/hr)	Total runoff (cfs)	Add. flow (cfs)	Total flow (cfs)	Capac @ full (cfs)	Line size (in x in)	Line len. (ft)	Line slope (%)	HGL slope (%)	Vel. up (ft/s)	Vel. down (ft/s)	HGL up (ft)	HGL down (ft)	Invert up (ft)	Invert down (ft)	Dns line
10	detention ba	0.0	0.00	0.00	0.00	0.0	0.00	0.0	4.0	4.0	2.3	12 c	145	0.50	1.38	5.1	5.2	4449.46	4447.46	4447.22	4446.50	9
9		0.0	0.00	0.00	0.00	0.8	0.00	0.0	4.0	4.0	14.4	24 c	121	0.47	0.23	3.9	2.5	4446.94	4446.50	4446.50	4445.93	8
8		0.0	0.00	0.00	0.00	1.5	0.00	0.0	4.0	4.0	14.3	24 c	80	0.46	0.06	3.1	2.1	4446.78	4446.73	4445.93	4445.56	6
6		0.0	0.00	0.00	0.00	1.9	0.00	0.0	4.0	4.0	13.9	24 c	98	0.44	0.04	2.3	1.6	4446.65	4446.61	4445.56	4445.13	3
3		0.0	0.00	0.00	1.85	10.4	1.41	2.6	0.0	6.6	14.8	24 c	82	0.50	0.07	2.9	2.3	4446.48	4446.43	4445.13	4444.72	2
2		0.0	0.00	0.00	4.78	10.8	1.37	6.5	0.0	10.5	13.0	24 c	136	0.38	0.30	4.5	4.2	4446.11	4445.70	4444.72	4444.20	1
1		0.0	0.00	0.00	6.67	15.6	1.08	7.2	0.0	19.2	33.8	36 c	121	0.30	0.38	4.9	5.4	4445.32	4444.86	4443.70	4443.34	0
4	CB 1	2.9	0.60	1.75	1.75	10.0	1.44	2.5	0.0	2.5	7.4	10 c	25	13.12	9.11	5.1	4.6	4448.71	4446.43	4448.00	4444.72	2
5	CB 2	2.0	0.60	1.18	1.18	10.0	1.44	1.7	0.0	1.7	7.4	10 c	25	13.12	8.60	4.2	3.1	4448.58	4446.43	4448.00	4444.72	2
7	CB 3	3.1	0.60	1.85	1.85	10.0	1.44	2.7	0.0	2.7	20.5	18 c	65	4.42	3.09	3.8	1.5	4448.62	4446.61	4448.00	4445.13	3
13		0.0	0.00	0.00	0.00	0.0	0.00	0.0	7.0	7.0	24.1	30 c	10	0.40	0.09	2.3	2.3	4448.76	4448.76	4447.30	4447.26	12
12		0.0	0.00	0.00	0.00	11.4	1.33	2.5	0.0	10.5	24.1	30 c	240	0.40	0.24	5.1	3.5	4448.35	4447.78	4447.26	4446.30	11
11		0.0	0.00	0.00	1.89	12.7	1.24	2.3	0.0	10.3	24.1	30 c	525	0.40	0.32	5.1	3.4	4447.37	4445.70	4446.30	4444.20	1
15	CB 7	1.3	0.60	0.76	0.76	10.0	1.44	1.1	0.0	1.1	4.8	10 c	33	5.61	5.42	3.5	3.0	4452.00	4450.21	4451.54	4449.69	14
14		0.0	0.00	0.00	1.89	10.8	1.37	2.6	0.0	3.6	6.9	18 c	107	0.50	0.59	3.6	4.3	4450.01	4449.38	4449.19	4448.66	12
17	CB 8	1.9	0.60	1.13	1.13	10.0	1.44	1.6	0.0	1.6	7.1	10 c	15	12.33	12.25	4.1	4.0	4452.42	4450.58	4451.85	4450.00	16
16		0.0	0.00	0.00	1.13	10.1	1.43	1.6	0.0	2.6	6.2	18 c	130	0.40	0.16	3.2	2.0	4450.42	4450.21	4449.71	4449.19	14
20		0.0	0.00	0.00	0.00	0.0	0.00	0.0	1.0	1.0	2.4	12 c	115	0.53	0.46	3.1	2.5	4452.90	4452.37	4452.47	4451.86	19
19		0.0	0.00	0.00	0.00	0.6	0.00	0.0	0.0	1.0	6.8	18 c	35	0.49	0.54	2.6	2.8	4452.26	4452.07	4451.86	4451.69	18
18		0.0	0.00	0.00	0.00	0.8	0.00	0.0	0.0	1.0	7.1	18 c	369	0.54	0.40	2.8	0.9	4452.07	4450.58	4451.69	4449.71	16

PROJECT FILE: HUFFP1SD.STM I-D-F FILE: RENOCAÑO.IDF TOTAL NUMBER OF LINES: 20 RUN DATE: 09-27-1995

NOTES: c = circular; e = elliptical; b = box; Intensity = 12.86878 / (Tc + 3.799999)^.8352506; Return period = 5 Yrs.

Phase 1 5/20/95

Inlet Report

Line #	Line ID	Drng area (ac)	Inlet time (min)	Intensity (in/hr)	Runoff coef (C)	Q = CIA (cfs)	Q carry (cfs)	Inlet type	Inlet length (ft)	Grate area (sqft)	Grate perim (ft)	Cap factor (K)	Gutter slope (ft/ft)	Gross slope (ft/ft)	Q captured (cfs)	Q bypass (cfs)	Spread (ft)	DnS inlet #
1		0.0	0.0	0.00	0.00	0.00	0.18	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.18	0.00	0
2		0.0	0.0	0.00	0.00	0.00	0.18	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.18	0.00	1
3		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	2
4	CB 1	2.9	10.0	1.44	0.60	2.52	0.00	Comb.	3.0	2.0	6.0	25	0.00	0.02	2.34	0.18	12.10	2
5	CB 2	2.0	10.0	1.44	0.60	1.69	0.00	Comb.	2.0	2.0	6.0	25	0.00	0.02	1.69	0.00	10.42	2
6		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	3
7	CB 3	3.1	10.0	1.44	0.60	2.66	0.29	Comb.	2.0	2.0	6.0	25	0.00	0.02	2.95	0.00	12.50	5
8		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	6
9		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	8
10	detention ba	0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	9
11		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	1
12		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	11
13		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	12
14		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	12
15	CB 7	1.3	10.0	1.44	0.60	1.09	0.00	Comb.	3.0	2.0	6.0	25	0.00	0.02	1.09	0.00	8.83	14
16		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	14
17	CB 8	1.9	10.0	1.44	0.60	1.63	0.00	Comb.	3.0	2.0	6.0	25	0.01	0.02	1.34	0.29	8.66	7
18		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	16
19		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	18
20		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	19

PROJECT FILE: HUFFP1SD.STM
 I.D.-F FILE: RENOCANO.IDF
 TOTAL NUMBER OF LINES: 20
 RUN DATE: 09-27-1995

NOTES: Inlet N-Values = .016 ; Average inlet throat height = 6 in.; Intensity = 12.86878 / (Inlet time + 3.799999) ^ .8352506; Return period = 5 Yrs.

Phase 1 System

Storm sewer fabrication

Line #	Line ID	Inc. Area (ac)	Rnoff coeff (C)	Incr CA	Sum CA	Tc (min)	Rnfal Int. (in/hr)	Total runoff (cfs)	Add. flow (cfs)	Total flow (cfs)	Capac @ full (cfs)	Line size (in x in)	Line len. (ft)	Line slope (%)	HGL slope (%)	Vel. up (ft/s)	Vel. down (ft/s)	HGL up (ft)	HGL down (ft)	Invert up (ft)	Invert down (ft)	DnS line
10	detention ba	0.0	0.00	0.00	0.00	0.0	0.00	0.0	7.0	7.0	2.3	12 c	145	0.50	4.48	8.9	8.9	4457.09	4450.59	4447.22	4446.50	9
9		0.0	0.00	0.00	0.0	0.8	0.00	0.0	7.0	7.0	14.4	24 c	121	0.47	0.11	2.2	2.2	4450.52	4450.38	4446.50	4445.93	8
8		0.0	0.00	0.00	0.0	1.5	0.00	0.0	7.0	7.0	14.3	24 c	80	0.46	0.11	2.2	2.2	4450.31	4450.22	4445.93	4445.56	6
6		0.0	0.00	0.00	0.0	1.9	0.00	0.0	7.0	7.0	13.9	24 c	98	0.44	0.11	2.2	2.2	4450.14	4450.03	4445.56	4445.13	3
3		0.0	0.00	0.00	6.9	10.4	3.74	6.9	0.0	13.9	14.8	24 c	82	0.50	0.44	4.4	4.4	4449.73	4449.37	4445.13	4444.72	2
2		0.0	0.00	0.00	17.4	10.8	3.64	17.4	0.0	24.4	13.0	24 c	136	0.38	1.35	7.8	7.8	4448.43	4446.59	4444.72	4444.20	1
1		0.0	0.00	0.00	19.0	15.6	2.85	19.0	0.0	34.0	33.8	36 c	121	0.30	0.75	5.6	7.4	4446.11	4445.20	4443.70	4443.34	0
4	CB 1	2.9	0.60	1.75	1.75	10.0	3.83	6.7	0.0	6.7	7.4	10 c	25	13.12	10.90	12.3	12.3	4452.09	4449.37	4448.00	4444.72	2
5	CB 2	2.0	0.60	1.18	1.18	10.0	3.83	4.5	0.0	4.5	7.4	10 c	25	13.12	4.91	8.3	8.3	4450.59	4449.37	4448.00	4444.72	2
7	CB 3	3.1	0.60	1.85	1.85	10.0	3.83	7.1	0.0	7.1	20.5	18 c	65	4.42	0.53	4.0	4.0	4450.37	4450.03	4448.00	4445.13	3
13		0.0	0.00	0.00	0.0	0.0	0.00	0.0	7.0	7.0	24.1	30 c	10	0.40	0.00	1.9	1.8	4449.07	4449.07	4447.30	4447.26	12
12		0.0	0.00	0.00	6.7	11.4	3.52	6.7	0.0	14.7	24.1	30 c	240	0.40	0.23	5.2	3.9	4448.65	4448.09	4447.26	4446.30	11
11		0.0	0.00	0.00	6.2	12.7	3.27	6.2	0.0	14.2	24.1	30 c	525	0.40	0.21	5.0	2.9	4447.70	4446.59	4446.30	4444.20	1
15	CB 7	1.3	0.60	0.76	0.76	10.0	3.83	2.9	0.0	2.9	4.8	10 c	33	5.61	3.65	5.6	5.3	4452.29	4451.08	4451.54	4449.69	14
14		0.0	0.00	0.00	6.9	10.8	3.64	6.9	0.0	7.9	6.9	18 c	107	0.50	0.98	4.5	5.8	4450.78	4449.73	4449.19	4448.66	12
17	CB 8	1.9	0.60	1.13	1.13	10.0	3.83	4.3	0.0	4.3	7.1	10 c	15	12.33	7.02	8.0	8.0	4452.67	4451.61	4451.85	4450.00	16
16		0.0	0.00	0.00	4.3	10.1	3.81	4.3	0.0	5.3	6.2	18 c	130	0.40	0.30	3.0	3.0	4451.47	4451.08	4449.71	4449.19	14
20		0.0	0.00	0.00	0.0	0.0	0.00	0.0	1.0	1.0	2.4	12 c	115	0.53	0.46	3.1	2.5	4452.90	4452.37	4452.47	4451.86	19
19		0.0	0.00	0.00	0.0	0.6	0.00	0.0	0.0	1.0	6.8	18 c	35	0.49	0.33	2.8	2.3	4452.25	4452.13	4451.86	4451.69	18
18		0.0	0.00	0.00	0.0	0.8	0.00	0.0	0.0	1.0	7.1	18 c	369	0.54	0.14	2.3	0.6	4452.13	4451.61	4451.69	4449.71	16

PROJECT FILE: HUFFP1SD.STM I-D-F FILE: RENOCANO.IDF TOTAL NUMBER OF LINES: 20 RUN DATE: 09-27-1995

NOTES: c = circular; e = elliptical; b = box; Intensity = 26.39179 / (Tc + 2.1) ^ .7741072; Return period = 100 Yrs.

Phase 1 100 YR

Inlet Report

Line #	Line ID	Drng area (ac)	Inlet time (min)	Intensity (in/hr)	Runoff coef (C)	Q = C/A (cfs)	Q carry (cfs)	Inlet type	Inlet length (ft)	Grate area (sqft)	Grate perim (ft)	Cap factor (K)	Gutter slope (ft/ft)	Gross slope (ft/ft)	Q captured (cfs)	Q bypass (cfs)	Spread (ft)	DnS inlet #
1		0.0	0.0	0.00	0.00	0.00	3.87	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	3.87	0.00	0
2		0.0	0.0	0.00	0.00	0.00	3.53	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	3.53	0.00	1
3		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	2
4	CB 1	2.9	10.0	3.83	0.60	6.71	0.00	Comb.	3.0	2.0	6.0	25	0.00	0.02	4.32	2.39	17.48	2
5	CB 2	2.0	10.0	3.83	0.60	4.50	0.00	Comb.	2.0	2.0	6.0	25	0.00	0.02	3.37	1.14	15.05	2
6		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	3
7	CB 3	3.1	10.0	3.83	0.60	7.08	1.87	Comb.	2.0	2.0	6.0	25	0.00	0.02	8.95	0.00	27.50	5
8		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	6
9		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	8
10		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	9
11	detention ba	0.0	0.0	0.00	0.00	0.00	0.34	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.34	0.00	1
12		0.0	0.0	0.00	0.00	0.00	0.34	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.34	0.00	11
13		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	12
14		0.0	0.0	0.00	0.00	0.00	0.34	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.34	0.00	12
15	CB 7	1.3	10.0	3.83	0.60	2.90	0.00	Comb.	3.0	2.0	6.0	25	0.00	0.02	2.55	0.34	12.75	14
16		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	14
17	CB 8	1.9	10.0	3.83	0.60	4.34	0.00	Comb.	3.0	2.0	6.0	25	0.01	0.02	2.47	1.87	12.50	7
18		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	16
19		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	18
20		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	19

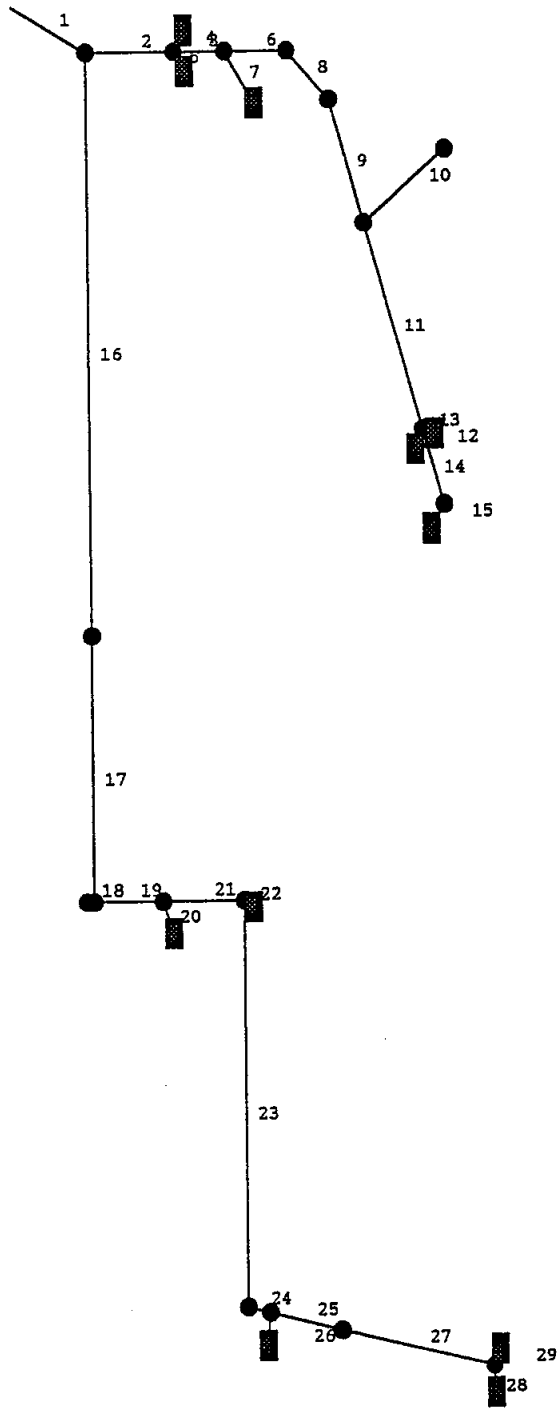
PROJECT FILE: HUFFP1SD.STM I-D-F FILE: RENOCANO.IDF TOTAL NUMBER OF LINES: 20 RUN DATE: 09-27-1995

NOTES: Inlet N-Values = .016 ; Average inlet throat height = 6 in.; Intensity = 26.39179 / (Inlet time + 2.1) ^ .7741072; Return period = 100 Yrs.

Phase 1 100 YR

~~2/2~~

FINAL LAYOUT



Storm Sewer Rehabilitation

Line #	Line ID	Inc. Area (ac)	Rioff coeff (C)	Incr CA	Sum CA	Tc (min)	Rnfal Int. (in/hr)	Total runoff (cfs)	Add. flow (cfs)	Total flow (cfs)	Capac @ full (cfs)	Line size (in x in)	Line len. (ft)	Line slope (%)	HGL slope (%)	Vel. up (ft/s)	Vel. down (ft/s)	HGL up (ft)	HGL down (ft)	Invert up (ft)	Invert down (ft)	DnS line
10	detention ba	0.0	0.00	0.00	0.00	0.0	0.00	0.0	4.0	4.0	2.3	12 c	145	0.50	1.46	5.1	5.1	4450.21	4448.09	4447.22	4446.50	9
9		0.0	0.00	0.00	3.60	11.8	1.30	4.7	0.0	8.7	14.4	24 c	121	0.47	0.14	3.8	3.0	4447.86	4447.70	4446.50	4445.93	8
8		0.0	0.00	0.00	3.60	12.4	1.26	4.5	0.0	8.5	14.3	24 c	80	0.46	0.11	3.1	2.8	4447.55	4447.46	4445.93	4445.56	6
6		0.0	0.00	0.00	3.60	12.9	1.23	4.4	0.0	8.4	13.9	24 c	98	0.44	0.14	2.9	2.7	4447.33	4447.19	4445.56	4445.13	3
3		0.0	0.00	0.00	5.45	13.4	1.19	6.5	0.0	10.5	14.8	24 c	82	0.50	0.22	3.4	3.3	4447.01	4446.83	4445.13	4444.72	2
2		0.0	0.00	0.00	8.38	13.9	1.17	9.8	0.0	13.8	13.0	24 c	136	0.38	0.39	4.7	4.7	4446.48	4445.95	4444.72	4444.20	1
1		0.0	0.00	0.00	12.76	20.0	0.91	11.7	0.0	22.7	33.8	36 c	121	0.30	0.60	4.8	6.3	4445.59	4444.86	4443.70	4443.34	0
4	CB 1	2.9	0.60	1.75	1.75	10.0	1.44	2.5	0.0	2.5	7.4	10 c	25	13.12	7.51	5.1	4.6	4448.71	4446.83	4448.00	4444.72	2
5	CB 2	2.0	0.60	1.18	1.18	10.0	1.44	1.7	0.0	1.7	7.4	10 c	25	13.12	7.00	4.2	3.1	4448.58	4446.83	4448.00	4444.72	2
7	CB 3	3.1	0.60	1.85	1.85	10.0	1.44	2.7	0.0	2.7	20.5	18 c	65	4.42	2.20	3.8	1.5	4448.62	4447.19	4448.00	4445.13	3
12	CB 4	1.4	0.60	0.86	0.86	10.0	1.44	1.2	0.0	1.2	3.7	10 c	22	3.27	0.02	3.6	2.3	4451.50	4451.49	4451.00	4450.28	11
11		0.0	0.00	0.00	3.60	10.6	1.39	5.0	0.0	5.0	13.1	18 c	210	1.80	1.45	4.8	2.8	4451.13	4448.09	4450.28	4446.50	9
13	CB 5	1.6	0.60	0.94	0.94	10.0	1.44	1.3	0.0	1.3	4.1	10 c	18	4.00	0.15	3.8	2.5	4451.52	4451.49	4451.00	4450.28	11
15	CB 6	3.0	0.60	1.81	1.81	10.0	1.44	2.6	0.0	2.6	3.4	10 c	30	2.83	2.00	5.2	4.8	4452.22	4451.62	4451.50	4450.65	14
14		0.0	0.00	0.00	1.81	10.2	1.42	2.6	0.0	2.6	6.9	18 c	75	0.49	0.06	2.4	1.7	4451.54	4451.49	4450.65	4450.28	11
18		0.0	0.00	0.00	0.00	0.0	0.00	0.0	7.0	7.0	24.1	30 c	10	0.40	0.12	2.2	2.1	4448.86	4448.85	4447.30	4447.26	17
17		0.0	0.00	0.00	4.39	15.7	1.08	4.7	0.0	11.7	24.1	30 c	240	0.40	0.24	5.1	3.6	4448.44	4447.87	4447.26	4446.30	16
16		0.0	0.00	0.00	4.39	17.0	1.02	4.5	0.0	11.5	24.1	30 c	525	0.40	0.28	5.3	3.1	4447.43	4445.95	4446.30	4444.20	1
20	CB 7	1.3	0.60	0.76	0.76	10.0	1.44	1.1	0.0	1.1	4.8	10 c	33	5.61	4.78	3.5	2.1	4452.00	4450.43	4451.54	4449.69	19
19		0.0	0.00	0.00	4.39	15.1	1.10	4.8	0.0	4.8	6.9	18 c	107	0.50	0.65	3.8	4.8	4450.20	4449.50	4449.19	4448.66	17

PROJECT FILE: HUFFSD.STM

I-D-F FILE: RENOCAÑO.IDF

TOTAL NUMBER OF LINES: 29

RUN DATE: 09-27-1995

NOTES: c = circular; e = elliptical; b = box; Intensity = 12.86878 / (Tc + 3.799999) ^ .8352506; Return period = 5 Yrs.

FINAL 5 year

LINE	ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
47	KK HUF0F3 HUFFAKER HILLS DEVELOPED EAST END DRAINS TO AUTUMN HILLS DRIVE
48	BA .027
49	PH 1 .48 .73 1.08 1.20 1.32 1.62 2.16 2.88
50	LS 87 0
51	UD .167
52	KK AHD AUTUMN HILLS DRIVE
53	HC 2
54	KK STREET FLOW INTO STORM DRAIN ELSE IS IN STREET
55	DT PIPE
56	DI 0 10 30 40 60 100
57	DQ 0 10 30 34 34 34
58	KK ROUTE
59	KM RESERVOIR ROUTING, IN AUTUMN HILLS DRIVE OVER HIGH POINT
60	KM
61	RS 1 STOR -1
62	SQ 0 0 10 35
63	SE 4449 4450 4450.5 4451
64	SA .15 1 1.75
65	SE 4449 4450 4450.5
66	ZZ

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT	(V) ROUTING	(--->) DIVERSION OR PUMP FLOW
LINE		
NO.	(.) CONNECTOR	(<---) RETURN OF DIVERTED OR PUMPED FLOW
27	HUFOF1	
	V	
	V	
32	ROUTE	
	.	
	.	
40	. HUFON	
	.	.
	.	.
45	SITE.....	
	.	
	.	
47	. HUFOF3	
	.	.
	.	.
52	AHD.....	
	.	
	.	
55	.-----> PIPE	
54	STREET	
	V	
	V	
58	ROUTE	

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

 *
 * FLOOD HYDROGRAPH PACKAGE (HEC-1) *
 * MAY 1991 *
 * VERSION 4.0.1E *
 * Lahey F77L-EM/32 version 5.01 *
 * Dodson & Associates, Inc. *
 * RUN DATE 09/27/95 TIME 14:13:14 *

 *
 * U.S. ARMY CORPS OF ENGINEERS
 * HYDROLOGIC ENGINEERING CENTER
 * 609 SECOND STREET
 * DAVIS, CALIFORNIA 95616
 * (916) 551-1748
 *

Jeff Codega Planning/Design
 433 West Plumb Lane
 Reno NV 89509
 (702) 322-5100 Fax (702) 322-1551

HUFFAKER VILLAGE
 FINAL DEVELOPEMENT

JCPD JOB 1373.01

RAIN FALL DATA FROM NOAA ATLAS 2, VOLUME VII
 LAG TIME COMPUTED WITH THE UPLAND METHOD AND THE PROCEDURES DESCRIBED IN TR
 CURVE NUMBER FROM TR-55 AND NEH-4
 ROUTING PREFORMED WITH MODIFIDE PULS

===== 100 YEAR, 24 HOUR EVENT=====

#####

26 IO

OUTPUT CONTROL VARIABLES

IPRNT 3 PRINT CONTROL
 IPLOT 0 PLOT CONTROL
 QSCAL 0. HYDROGRAPH PLOT SCALE

IT

HYDROGRAPH TIME DATA

NMIN 1 MINUTES IN COMPUTATION INTERVAL
 IDATE 1 0 STARTING DATE
 ITIME 0000 STARTING TIME
 NQ 1441 NUMBER OF HYDROGRAPH ORDINATES
 NDDATE 2 0 ENDING DATE
 NDTIME 0000 ENDING TIME
 ICENT 19 CENTURY MARK

COMPUTATION INTERVAL 0.02 HOURS
 TOTAL TIME BASE 24.00 HOURS

ENGLISH UNITS

DRAINAGE AREA SQUARE MILES
 PRECIPITATION DEPTH INCHES

LENGTH, ELEVATION FEET
 FLOW CUBIC FEET PER SECOND
 STORAGE VOLUME ACRE-FEET
 SURFACE AREA ACRES
 TEMPERATURE DEGREES FAHRENHEIT

*** **

 * *
 27 KK * HUFOF1 * OFFSITE AREA NORTHERN SIDE DRAINS TO AUTUMN HILLS DRIVE
 * *

SUBBASIN RUNOFF DATA

28 BA SUBBASIN CHARACTERISTICS
 TAREA 0.03 SUBBASIN AREA

PRECIPITATION DATA

29 PH DEPTHS FOR 1-PERCENT HYPOTHETICAL STORM
 HYDRO-35 TP-40 TP-49
 5-MIN 15-MIN 60-MIN 2-HR 3-HR 6-HR 12-HR 24-HR 2-DAY 4-DAY 7-DAY 10-DAY
 0.48 0.73 1.08 1.20 1.32 1.62 2.16 2.88 0.00 0.00 0.00 0.00

STORM AREA = 0.03

30 LS SCS LOSS RATE
 STRTL 0.47 INITIAL ABSTRACTION
 CRVNBR 81.00 CURVE NUMBER
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

31 UD SCS DIMENSIONLESS UNITGRAPH
 TLAG 0.17 LAG

VALUE EXCEEDS TABLE IN LOGLOG 0.01667 0.01667 24.00000

UNIT HYDROGRAPH
 52 END-OF-PERIOD ORDINATES

3.	8.	16.	25.	38.	53.	67.	78.	85.	88.
88.	85.	80.	74.	67.	58.	48.	40.	34.	29.
25.	22.	19.	16.	14.	12.	10.	9.	7.	6.
5.	5.	4.	3.	3.	2.	2.	2.	2.	1.
1.	1.	1.	1.	1.	1.	0.	0.	0.	0.
0.	0.								

HYDROGRAPH AT STATION HUFOF1

TOTAL RAINFALL = 2.88, TOTAL LOSS = 1.66, TOTAL EXCESS = 1.22

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
(CFS)	(HR)	6-HR	24-HR	72-HR	24.00-HR

29.	12.18	(CFS)	3.	1.	1.	1.
		(INCHES)	0.861	1.214	1.214	1.214
		(AC-FT)	1.	2.	2.	2.

CUMULATIVE AREA = 0.03 SQ MI

*** **

```

*****
*
32 KK * ROUTE *
*
*****

```

RESERVOIR ROUTING, EXISTING DEPRESSION SOUTH OF SITE.

HYDROGRAPH ROUTING DATA

35 RS	STORAGE ROUTING										
	NSTPS		1	NUMBER OF SUBREACHES							
	ITYP		STOR	TYPE OF INITIAL CONDITION							
	RSVRIC	-1.00	INITIAL CONDITION								
	X	0.00	WORKING R AND D COEFFICIENT								
38 SA	AREA	0.0	0.0	0.2	0.2	0.2	0.2	0.3	0.3	0.3	
39 SE	ELEVATION	4447.00	4449.00	4450.00	4451.00	4452.00	4453.00	4454.00	4455.00	4456.00	
36 SQ	DISCHARGE	0.	2.	3.	5.	6.	8.	9.	10.	12.	
37 SE	ELEVATION	4447.00	4447.87	4448.71	4450.04	4451.89	4454.28	4455.54	4455.75	4456.00	

COMPUTED STORAGE-ELEVATION DATA

STORAGE	0.00	0.00	0.07	0.26	0.42	0.62	0.86	1.13	1.45
ELEVATION	4447.00	4449.00	4450.00	4451.00	4452.00	4453.00	4454.00	4455.00	4456.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	0.00	0.00	0.00	0.00	0.07	0.08	0.26	0.40	0.42	0.62
OUTFLOW	0.00	2.00	3.00	3.44	4.94	5.00	5.52	6.00	6.09	6.93
ELEVATION	4447.00	4447.87	4448.71	4449.00	4450.00	4450.04	4451.00	4451.89	4452.00	4453.00
STORAGE	0.86	0.93	1.13	1.30	1.37	1.45				
OUTFLOW	7.77	8.00	8.57	9.00	10.00	12.00				
ELEVATION	4454.00	4454.28	4455.00	4455.54	4455.75	4456.00				

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 0. TO 3.
 THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
 THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

*** **

HYDROGRAPH AT STATION ROUTE

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.00-HR
6.	12.55	(CFS) 3.	1.	1.	1.
		(INCHES) 0.861	1.214	1.214	1.214
		(AC-FT) 1.	2.	2.	2.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.00-HR
1.	12.55	0.	0.	0.	0.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.00-HR
4452.40	12.55	4448.92	4447.63	4447.63	4447.63

CUMULATIVE AREA = 0.03 SQ MI

*** **

 * *
 40 KK * HUFON * HUFFAKER VILLAGE DEVELOPED SITE DRAINS TO AUTUMN HILLS DRIVE
 * *

SUBBASIN RUNOFF DATA

41 BA SUBBASIN CHARACTERISTICS
 TAREA 0.04 SUBBASIN AREA

PRECIPITATION DATA

42 PH DEPTHS FOR 1-PERCENT HYPOTHETICAL STORM

HYDRO-35			TP-40				TP-49				
5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
0.48	0.73	1.08	1.20	1.32	1.62	2.16	2.88	0.00	0.00	0.00	0.00

STORM AREA = 0.04

43 LS SCS LOSS RATE
 STRTL 0.47 INITIAL ABSTRACTION
 CRVNBR 81.00 CURVE NUMBER
 RTIMP 80.00 PERCENT IMPERVIOUS AREA

44 UD SCS DIMENSIONLESS UNITGRAPH
 TLAG 0.17 LAG

VALUE EXCEEDS TABLE IN LOGLOG 0.01667 0.01667 24.00000

UNIT HYDROGRAPH
 52 END-OF-PERIOD ORDINATES

3.	9.	17.	28.	42.	58.	74.	86.	93.	96.
96.	93.	87.	81.	73.	63.	53.	44.	37.	32.
27.	24.	20.	18.	15.	13.	11.	9.	8.	7.

3. 2. 2. 2. 1.
1. 1. 0. 0. 0.

i = 2.55

IR 24.00-HR
' 2.
2.538
i. 5.

HYPOTHETICAL STORM

..... TP-49

12-HR	24-HR	2-DAY	4-DAY	7-DAY	10-DAY
2.16	2.88	0.00	0.00	0.00	0.00

0.03

EA

*** **

24.00000

HILL OF SITE

HYDROGRAPH

PERIOD ORDINATES

45.	57.	66.	72.	74.
49.	41.	34.	29.	25.
10.	8.	7.	6.	5.
2.	2.	2.	1.	1.
0.	0.	0.	0.	0.

TO COMBINE

*

IS = 1.63

24.00-HR
3.
1.905
7.

.OW
HR 24.00-HR
1. 1.
25 1.625
2. 2.

* **

*** **

D DRAINS TO AUTUMN HILLS DRIVE

53 HC

HYDROGRAPH COMBINATION

ICOMP

2 NUMBER OF HYDROGRAPHS TO COMBINE

HYDROGRAPH AT STATION AHD

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW				
		6-HR	24-HR	72-HR	24.00-HR	
95.	12.18	(CFS) 12.	5.	5.	5.	
		(INCHES) 1.154	1.825	1.825	1.825	
		(AC-FT) 6.	9.	9.	9.	

CUMULATIVE AREA = 0.09 SQ MI

*** **

* *

54 KK

* STREET *

FLOW INTO STORM DRAIN ELSE IS IN STREET

* *

DT

DIVERSION

ISTAD PIPE DIVERSION HYDROGRAPH IDENTIFICATION

DI	INFLOW	0.00	10.00	30.00	40.00	60.00	100.00
DQ	DIVERTED FLOW	0.00	10.00	30.00	34.00	34.00	34.00

DIVERSION HYDROGRAPH PIPE

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW				
		6-HR	24-HR	72-HR	24.00-HR	
34.	12.05	(CFS) 9.	4.	4.	4.	
		(INCHES) 0.932	1.603	1.603	1.603	
		(AC-FT) 5.	8.	8.	8.	

CUMULATIVE AREA = 0.09 SQ MI

HYDROGRAPH AT STATION STREET

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW				
		6-HR	24-HR	72-HR	24.00-HR	
61.	12.18	(CFS) 2.	1.	1.	1.	
		(INCHES) 0.222	0.222	0.222	0.222	
		(AC-FT) 1.	1.	1.	1.	

CUMULATIVE AREA = 0.09 SQ MI

*** **

 * *
 58 KK * ROUTE *
 * *

RESERVOIR ROUTING, IN AUTUMN HILLS DRIVE OVER HIGH POINT

HYDROGRAPH ROUTING DATA

61 RS STORAGE ROUTING
 NSTPS 1 NUMBER OF SUBREACHES
 ITYP STOR TYPE OF INITIAL CONDITION
 RSVRIC -1.00 INITIAL CONDITION
 X 0.00 WORKING R AND D COEFFICIENT

64 SA AREA 0.2 1.0 1.8

65 SE ELEVATION 4449.00 4450.00 4450.50

62 SQ DISCHARGE 0. 0. 10. 35.

63 SE ELEVATION 4449.00 4450.00 4450.50 4451.00

COMPUTED STORAGE-ELEVATION DATA

STORAGE 0.00 0.51 1.19
 ELEVATION 4449.00 4450.00 4450.50

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE 0.00 0.51 1.19 2.30
 OUTFLOW 0.00 0.00 10.00 35.00
 ELEVATION 4449.00 4450.00 4450.50 4451.00

*** **

HYDROGRAPH AT STATION ROUTE

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.00-HR
14.	12.37	(CFS) 2.	1.	1.	1.
		(INCHES) 0.222	0.222	0.222	0.222
		(AC-FT) 1.	1.	1.	1.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.00-HR
1.	12.37	1.	1.	1.	1.

A

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.00-HR
4450.58	12.37	4450.10	4450.02	4450.02	4450.02

CUMULATIVE AREA = 0.09 SQ MI

RUNOFF SUMMARY
 FLOW IN CUBIC FEET PER SECOND
 TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
HYDROGRAPH AT	HUFOF1	29.	12.18	3.	1.	1.	0.03		
ROUTED TO	ROUTE	6.	12.55	3.	1.	1.	0.03	4452.40	12.55
HYDROGRAPH AT	HUFON	57.	12.18	6.	2.	2.	0.04		
2 COMBINED AT	SITE	63.	12.18	8.	3.	3.	0.07		
HYDROGRAPH AT	HUFOF3	33.	12.18	3.	1.	1.	0.03		
2 COMBINED AT	AHD	95.	12.18	12.	5.	5.	0.09		
DIVERSION TO	PIPE	34.	12.18	9.	4.	4.	0.09		
HYDROGRAPH AT	STREET	61.	12.18	2.	1.	1.	0.09		
ROUTED TO	ROUTE	14.	12.37	2.	1.	1.	0.09	4450.58	12.37

*** NORMAL END OF HEC-1 ***

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

*DIAGRAM

```

1 ID *****
2 ID Jeff Codega Planning/Design
3 ID 433 West Plumb Lane
4 ID Reno NV 89509
5 ID (702) 322-5100 Fax (702) 322-1551
6 ID
7 ID
8 ID HUFFAKER VILLAGE
9 ID FINAL DEVELOPEMENT
10 ID
11 ID JCPD JOB 1373.01
12 ID
13 ID
14 ID
15 ID
16 ID RAIN FALL DATA FROM NOAA ATLAS 2, VOLUME VII
17 ID LAG TIME COMPUTED WITH THE UPLAND METHOD AND THE PROCEDURES DESCRIBED IN TR
18 ID CURVE NUMBER FROM TR-55 AND NEH-4
19 ID ROUTING PREFORMED WITH MODIFIDE PULS
20 ID
21 ID ===== 5 YEAR, 24 HOUR EVENT=====
22 ID
23 ID
24 ID #####
25 IT 1 1441
26 IO 3 0

27 KK HUF0F1 OFFSITE AREA NORTHERN SIDE DRAINS TO AUTUMN HILS DRIVE
28 BA .0320
29 PH 20 0.18 .28 .40 .52 .60 .78 1.02 1.42
30 LS 81 0
31 UD .167

32 KK ROUTE
33 KM RESERVOIR ROUTING,EXISTING DEPRESSION SOUTH OF SITE.
34 KM
35 RS 1 STOR -1
36 SQ 0 2 3 5 6 8 9 10 12
37 SE 4447 4447.87 4448.71 4450.04 4451.89 4454.28 4455.54 4455.75 4456
38 SA 0 .0001 .218 .150 .182 .214 .260 .294 .345
39 SE 4447 4449 4450 4451 4452 4453 4454 4455 4456

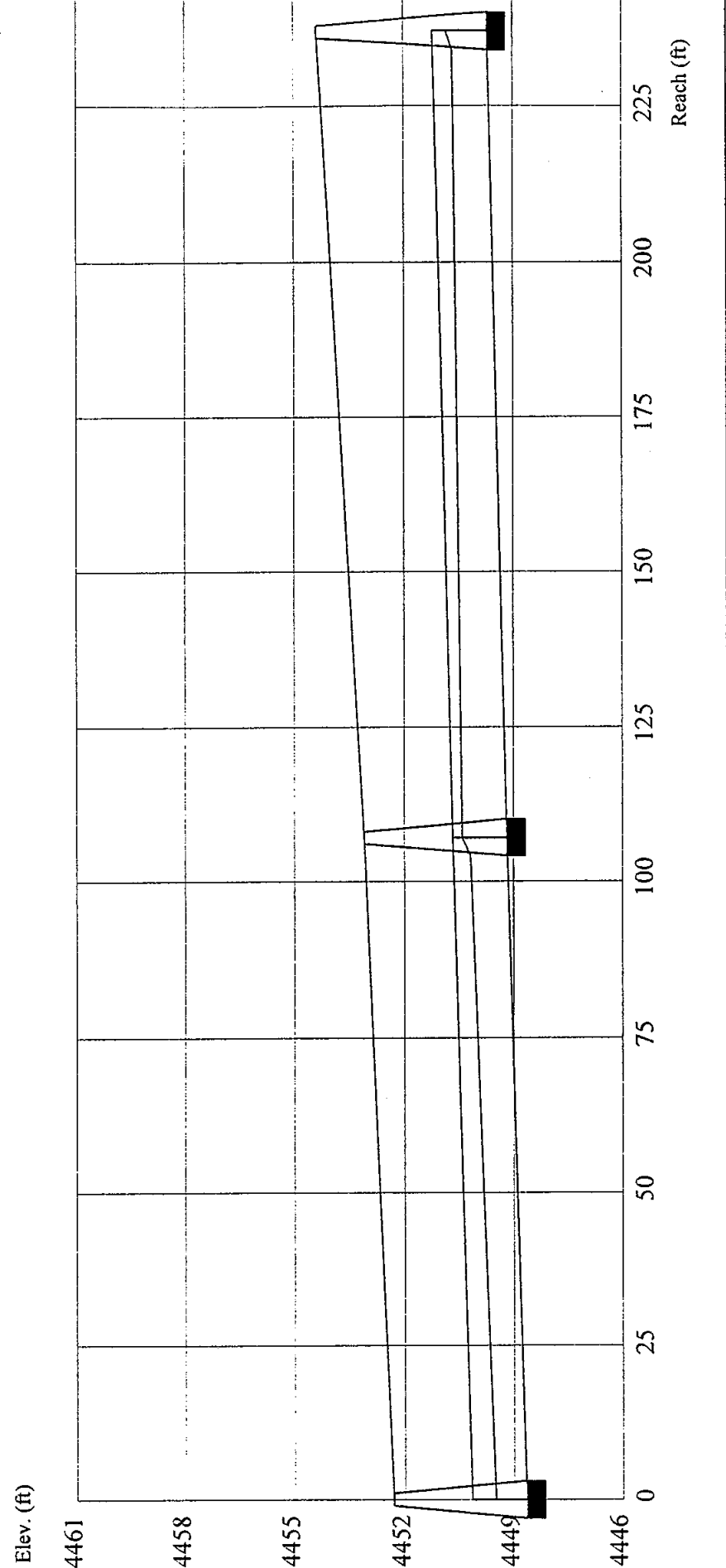
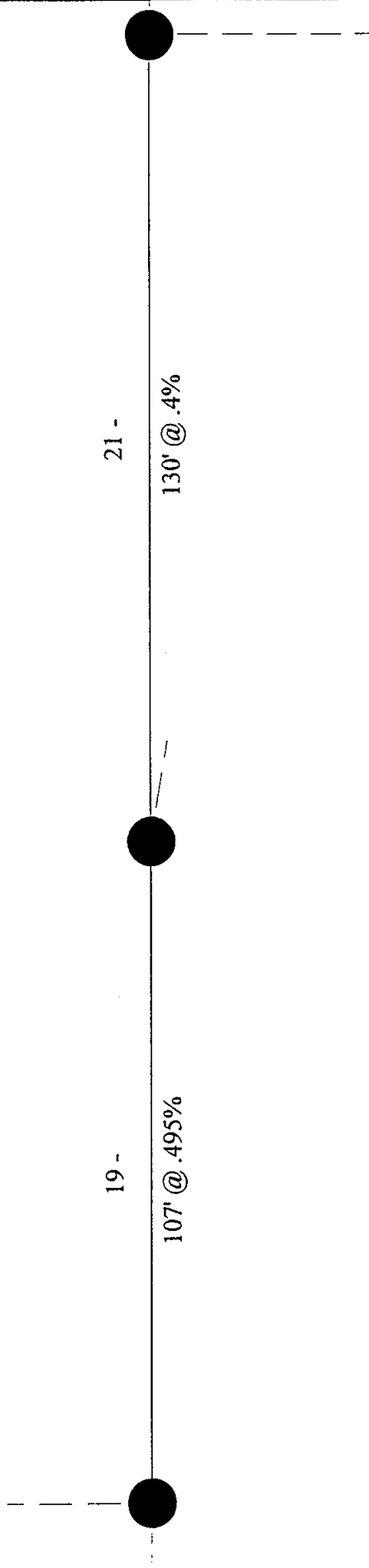
40 KK HUFON HUFFAKER VILLAGE DEVELOPED SITE DRAINS TO AUTUMN HILS DRIVE
41 BA .0350
42 PH 20 0.18 .28 .40 .52 .60 .78 1.02 1.42
43 LS 81 80
44 UD .167

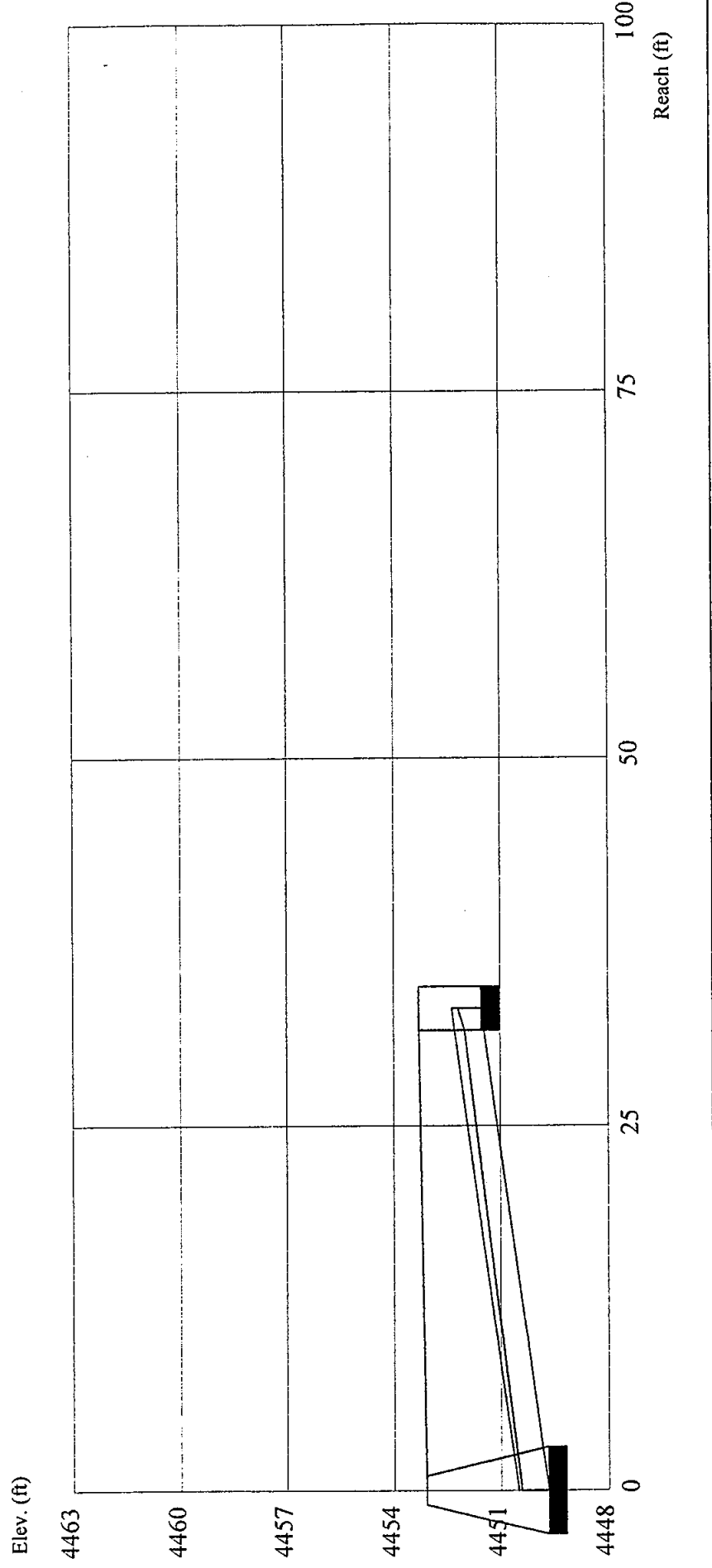
45 KK SITE FLOWS GENERATED FROM SITE AND UPHILL OF SITE
46 HC 2
    
```

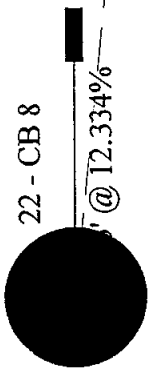

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT	(V) ROUTING	(--->) DIVERSION OR PUMP FLOW
LINE		
NO.	(.) CONNECTOR	(<---) RETURN OF DIVERTED OR PUMPED FLOW
27	HUFOF1	
	V	
	V	
32	ROUTE	
	.	
	.	
40	.	HUFON
	.	.
	.	.
45	SITE.....	
	.	
	.	
47	.	HUFOF3
	.	.
	.	.
52	AHD.....	
	.	
	.	
55	----->	PIPE
54	STREET	
	V	
	V	
58	ROUTE	

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION







Elev. (ft)

4463

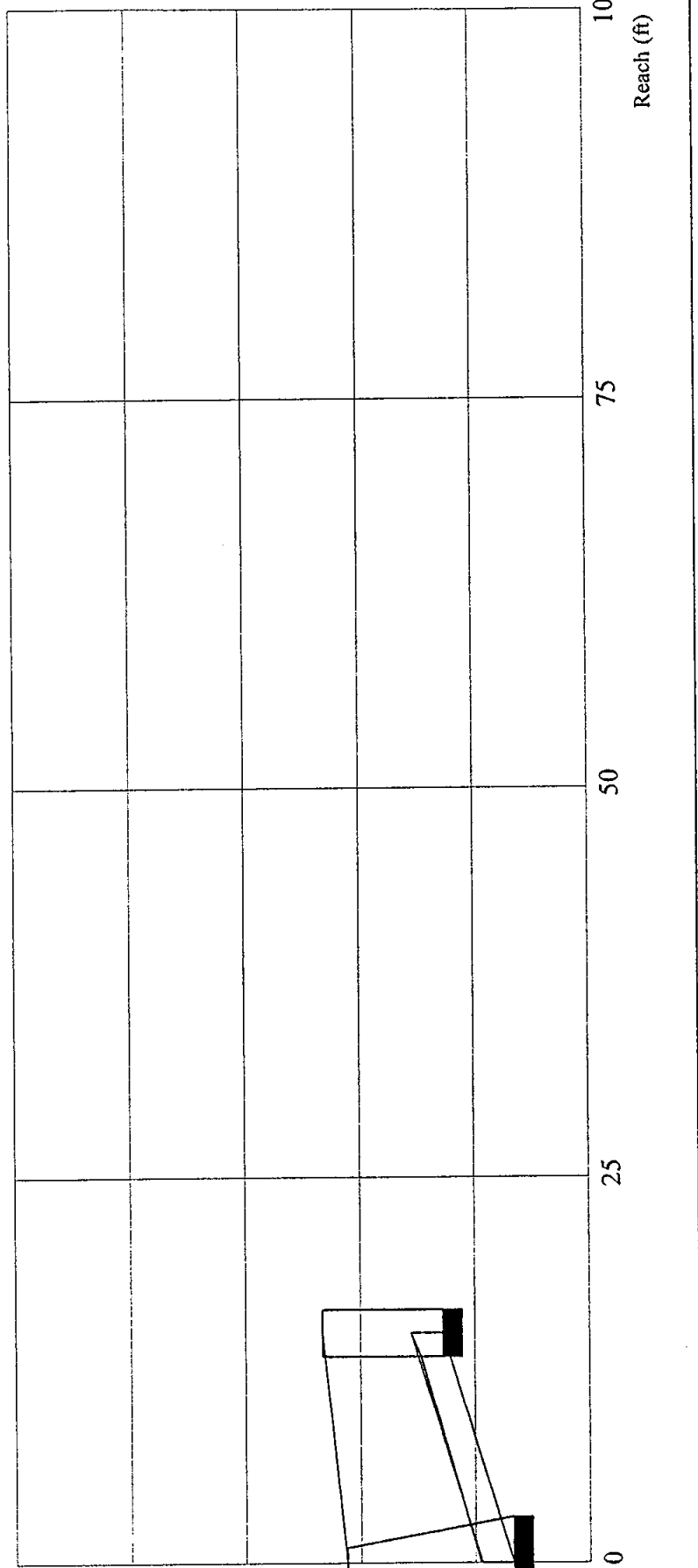
4460

4457

4454

4451

4448



75

50

25

0

100

Reach (ft)

23 -

369' @ .537%

Elev. (ft)

4471

4466

4461

4456

4451

4446

0

50

100

150

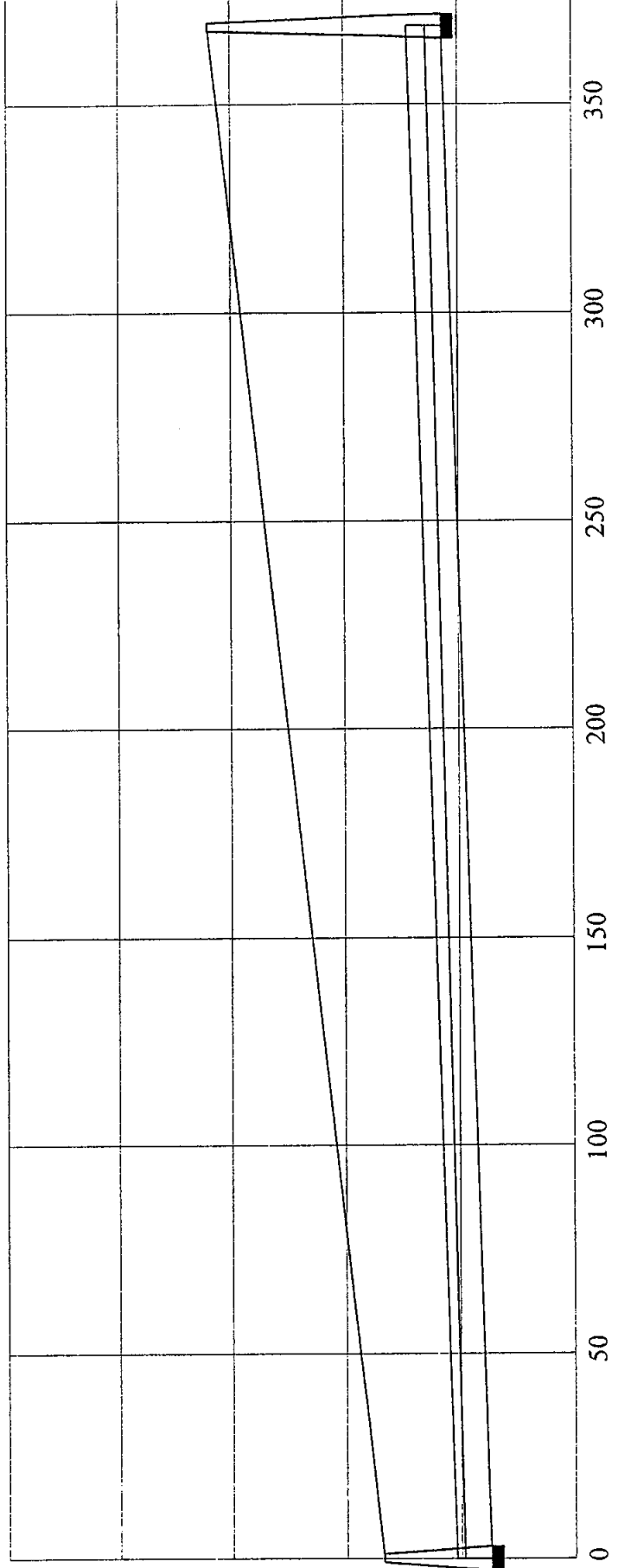
200

250

300

350

Reach (ft)



27 -
245' @ 3.073%

25 -
115' @ .531%

24 -
35' @ .485%

Elev. (ft)

4473

4468

4463

4458

4453

4448

0

50

100

150

200

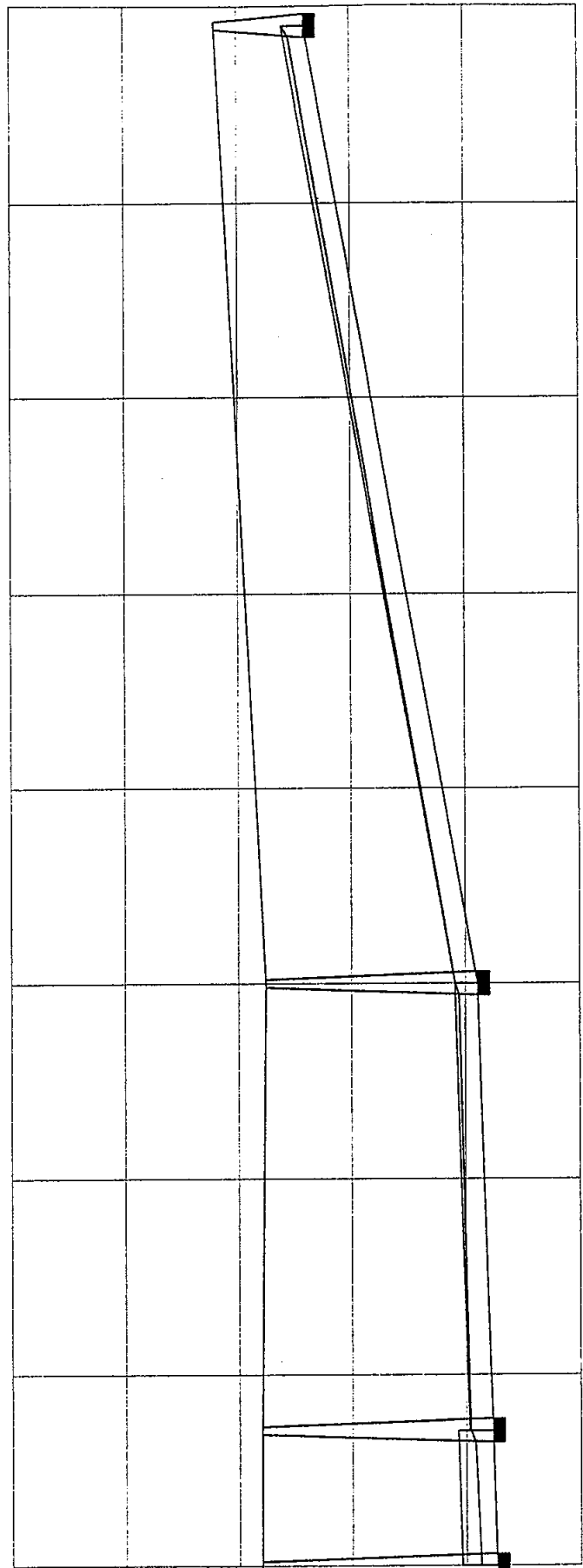
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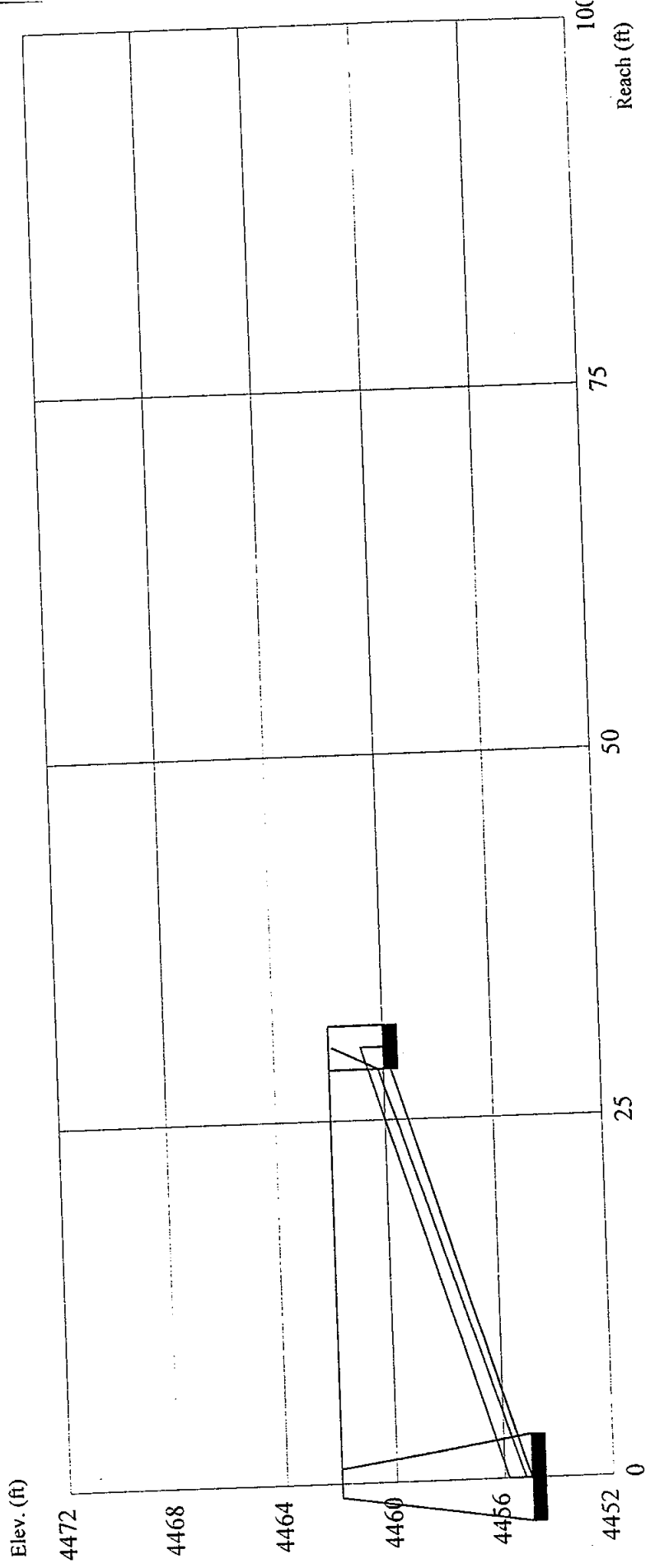
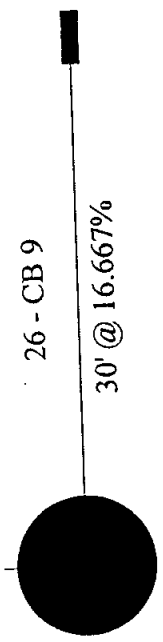
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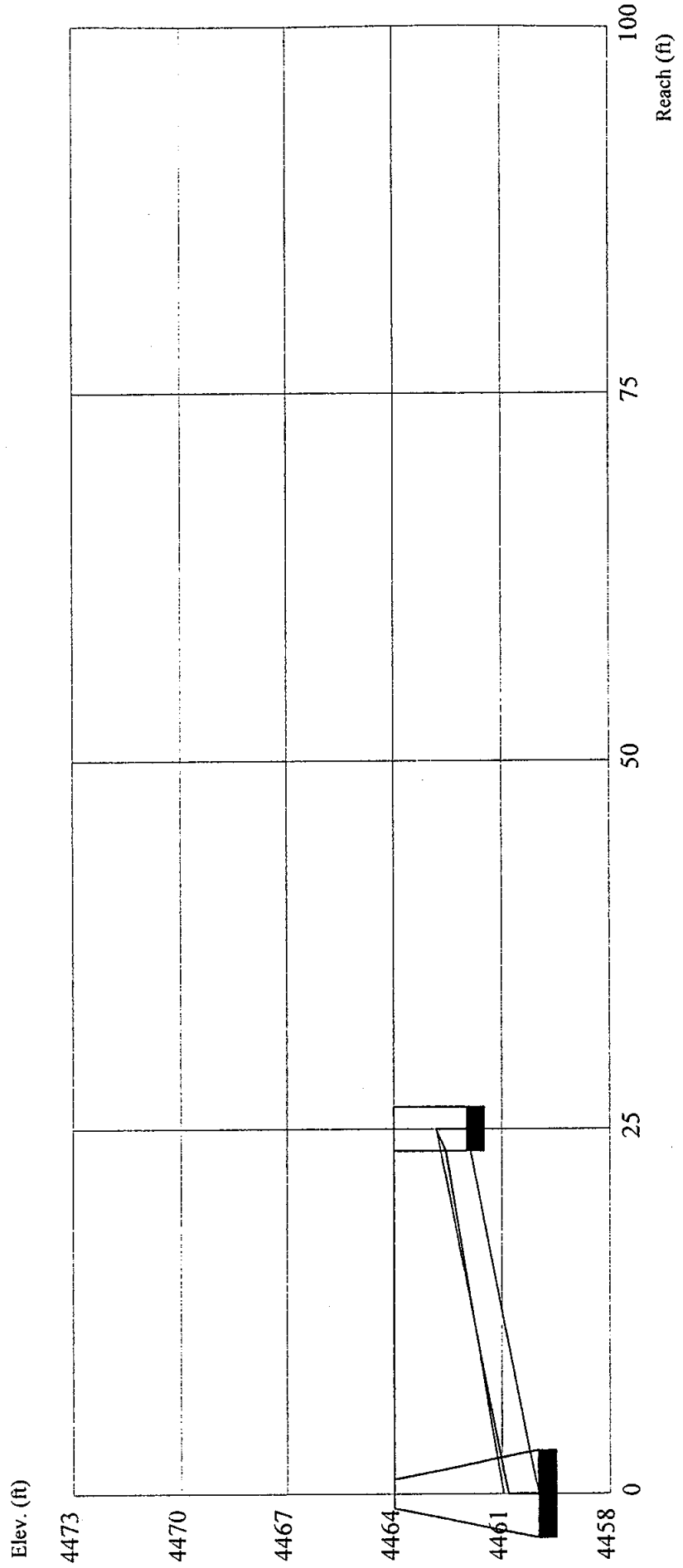
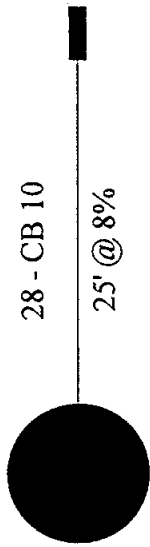
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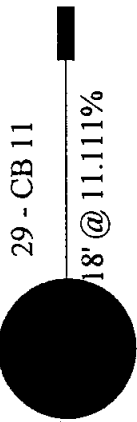
400

Reach (ft)









Elev. (ft)

4473

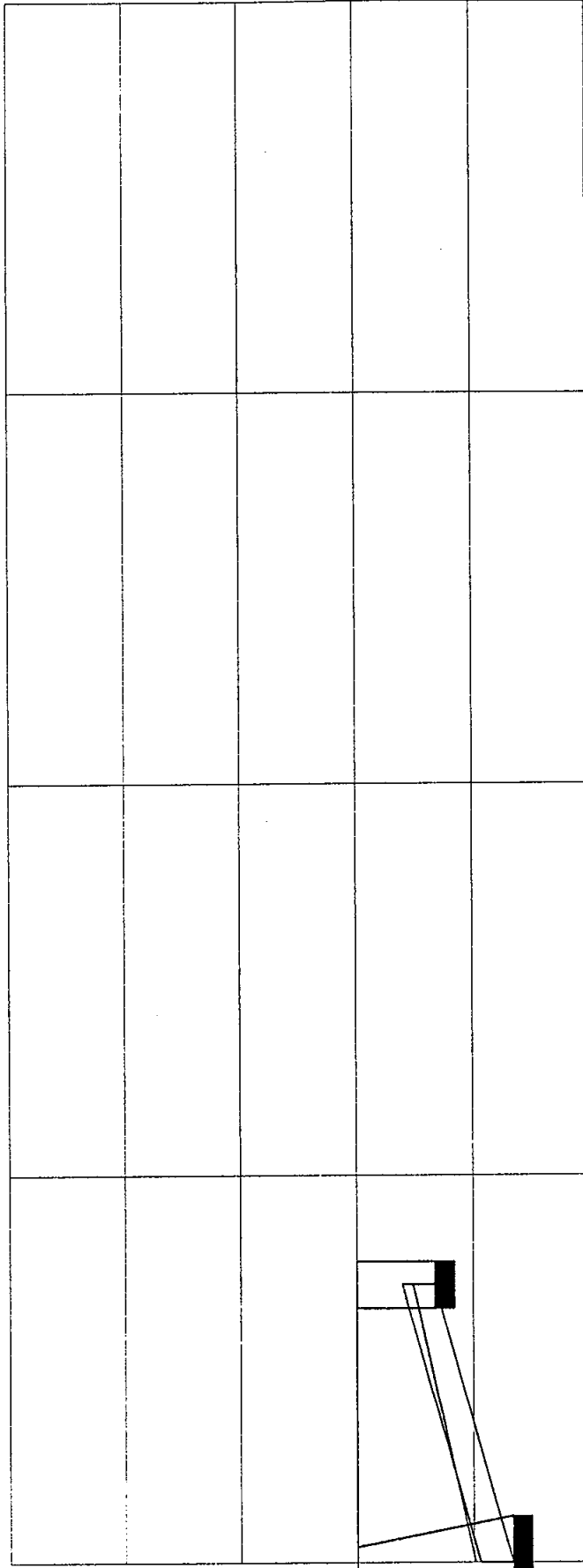
4470

4467

4464

4461

4458



0

25

50

75

100

Reach (ft)

Line #	Line ID	Inc. Area (ac)	Rnoff coef (C)	Incr CA	Sum CA	Tc (min)	Rnfall Int. (in/hr)	Total runoff (cfs)	Add. flow (cfs)	Total flow (cfs)	Capac @ full (cfs)	Line size (in x in)	Line len. (ft)	Line slope (%)	HGL slope (%)	Vel. up (ft/s)	Vel. down (ft/s)	HGL up (ft)	HGL down (ft)	Invert up (ft)	Invert down (ft)	Dns line
10	detention ba	0.0	0.00	0.00	0.00	0.0	0.00	0.0	4.0	4.0	2.3	12 c	145	0.50	1.46	5.1	5.1	4457.86	4455.73	4447.22	4446.50	9
9		0.0	0.00	0.00	3.60	11.8	3.45	12.4	0.0	16.4	14.4	24 c	121	0.47	0.61	5.2	5.2	4455.31	4454.57	4446.50	4445.93	8
8		0.0	0.00	0.00	3.60	12.4	3.33	12.0	0.0	16.0	14.3	24 c	80	0.46	0.58	5.1	5.1	4454.17	4453.71	4445.93	4445.56	6
6		0.0	0.00	0.00	3.60	12.9	3.25	11.7	0.0	15.7	13.9	24 c	98	0.44	0.56	5.0	5.0	4453.32	4452.77	4445.56	4445.13	3
3		0.0	0.00	0.00	5.45	13.4	3.16	17.2	0.0	21.2	14.8	24 c	82	0.50	1.02	6.8	6.8	4452.06	4451.22	4445.13	4444.72	2
2		0.0	0.00	0.00	8.38	13.9	3.09	25.9	0.0	29.9	13.0	24 c	136	0.38	2.03	9.5	9.5	4449.82	4447.06	4444.72	4444.20	1
1		0.0	0.00	0.00	12.76	20.0	2.41	30.7	0.0	41.7	33.8	36 c	121	0.30	0.90	6.1	8.1	4446.49	4445.40	4443.70	4443.34	0
4	CB 1	2.9	0.60	1.75	1.75	10.0	3.83	6.7	0.0	6.7	7.4	10 c	25	13.12	10.90	12.3	12.3	4453.95	4451.22	4448.00	4444.72	2
5	CB 2	2.0	0.60	1.18	1.18	10.0	3.83	4.5	0.0	4.5	7.4	10 c	25	13.12	4.91	8.3	8.3	4452.45	4451.22	4448.00	4444.72	2
7	CB 3	3.1	0.60	1.85	1.85	10.0	3.83	7.1	0.0	7.1	20.5	18 c	65	4.42	0.53	4.0	4.0	4453.11	4452.77	4448.00	4445.13	3
12	CB 4	1.4	0.60	0.86	0.86	10.0	3.83	3.3	0.0	3.3	3.7	10 c	22	3.27	2.61	6.0	6.0	4461.10	4460.52	4451.00	4450.28	11
11		0.0	0.00	0.00	3.60	10.6	3.69	13.3	0.0	13.3	13.1	18 c	210	1.80	1.86	7.5	7.5	4459.64	4455.73	4450.28	4446.50	9
13	CB 5	1.6	0.60	0.94	0.94	10.0	3.83	3.6	0.0	3.6	4.1	10 c	18	4.00	3.11	6.6	6.6	4461.08	4460.52	4451.00	4450.28	11
15	CB 6	3.0	0.60	1.81	1.81	10.0	3.83	6.9	0.0	6.9	3.4	10 c	30	2.83	11.58	12.7	12.7	4464.60	4461.12	4451.50	4450.65	14
14		0.0	0.00	0.00	1.81	10.2	3.79	6.8	0.0	6.8	6.9	18 c	75	0.49	0.49	3.9	3.9	4460.89	4460.52	4450.65	4450.28	11
18		0.0	0.00	0.00	0.00	0.0	0.00	0.0	7.0	7.0	24.1	30 c	10	0.40	0.08	1.5	1.5	4449.52	4449.52	4447.30	4447.26	17
17		0.0	0.00	0.00	4.39	15.7	2.84	12.5	0.0	19.5	24.1	30 c	240	0.40	0.23	4.9	4.1	4449.14	4448.60	4447.26	4446.30	16
16		0.0	0.00	0.00	4.39	17.0	2.69	11.8	0.0	18.8	24.1	30 c	525	0.40	0.23	4.5	3.8	4448.29	4447.06	4446.30	4444.20	1
20	CB 7	1.3	0.60	0.76	0.76	10.0	3.83	2.9	0.0	2.9	4.8	10 c	33	5.61	2.03	5.3	5.3	4453.31	4452.64	4451.54	4449.69	19
19		0.0	0.00	0.00	4.39	15.1	2.92	12.8	0.0	12.8	6.9	18 c	107	0.50	1.68	7.2	7.5	4451.83	4450.03	4449.19	4448.66	17

PROJECT FILE: HUFFSD.STM I-D-F FILE: RENOCA.NO.IDF TOTAL NUMBER OF LINES: 29 RUN DATE: 09-27-1995

NOTES: c = circular; e = elliptical; b = box; Intensity = 26.39179 / (Tc + 2.1) ^ .7741072; Return period = 100 Yrs.

FINAL 100 YR

Storm Sewer Tabulation

Line #	Line ID	Inc. Area (ac)	Rnoff coeff (C)	Incr CA	Sum CA	Tc (min)	Rnfall Int. (in/hr)	Total runoff (cfs)	Add. flow (cfs)	Total flow (cfs)	Capac @ full (cfs)	Line size (in x in)	Line len. (ft)	Line slope (%)	HGL slope (%)	Vel. up (ft/s)	Vel. down (ft/s)	HGL up (ft)	HGL down (ft)	Invert up (ft)	Invert down (ft)	DnS line
22	CB 8	1.9	0.60	1.13	1.13	10.0	3.83	4.3	0.0	4.3	7.1	10 c	15	12.33	4.57	8.0	8.0	4455.56	4454.87	4451.85	4450.00	21
21		0.0	0.00	3.63	3.63	14.4	3.02	10.9	0.0	10.9	6.2	18 c	130	0.40	1.26	6.2	6.2	4454.28	4452.64	4449.71	4449.19	19
28	CB 10	1.9	0.60	1.15	1.15	10.0	3.83	4.4	0.0	4.4	5.8	10 c	25	8.00	4.66	8.0	8.1	4474.75	4473.58	4462.00	4460.00	27
27		0.0	0.00	1.72	1.72	10.1	3.80	6.5	0.0	6.5	5.8	12 c	245	3.07	3.91	8.3	8.3	4472.50	4462.92	4460.00	4452.47	25
25		0.0	0.00	1.72	1.72	11.5	3.50	6.0	0.0	6.0	2.4	12 c	115	0.53	3.32	7.7	7.7	4462.01	4458.19	4452.47	4451.86	24
24		0.0	0.00	2.50	2.50	12.1	3.38	8.4	0.0	8.4	6.8	18 c	35	0.49	0.75	4.8	4.8	4457.84	4457.58	4451.86	4451.69	23
23		0.0	0.00	2.50	2.50	12.3	3.34	8.3	0.0	8.3	7.1	18 c	369	0.54	0.73	4.7	4.7	4457.58	4454.87	4451.69	4449.71	21
26	CB 9	1.3	0.60	0.77	0.77	10.0	3.83	3.0	0.0	3.0	8.3	10 c	30	16.67	8.57	5.7	5.4	4460.76	4458.19	4460.00	4455.00	24
29	CB 11	1.0	0.60	0.58	0.58	10.0	3.83	2.2	0.0	2.2	6.8	10 c	18	11.11	1.18	4.0	4.0	4473.79	4473.58	4462.00	4460.00	27

PROJECT FILE: HUFFSD.STM I-D-F FILE: RENOCANO.IDF TOTAL NUMBER OF LINES: 29 RUN DATE: 09-27-1995

NOTES: c = circular; e = elliptical; b = box; Intensity = 26.39179 / (Tc + 2.1)^.7741072; Return period = 100 Yrs.

FINAC 100YR

Inlet Report

Line #	Line ID	Drng area (ac)	Inlet time (min)	Intensity (in/hr)	Runoff coeff (C)	Q = C/A (cfs)	Q carry (cfs)	Inlet type	Inlet length (ft)	Grate area (sqft)	Grate perim (ft)	Cap factor (K)	Gutter slope (ft/ft)	Gross slope (ft/ft)	Q captured (cfs)	Q bypass (cfs)	Spread (ft)	D/S inlet #
1		0.0	0.0	0.00	0.00	0.00	4.39	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	4.39	0.00	0
2		0.0	0.0	0.00	0.00	0.00	4.05	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	4.05	0.00	1
3		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	2
4	CB 1	2.9	10.0	3.83	0.60	6.71	0.86	Comb.	3.0	2.0	6.0	25	0.00	0.02	4.66	2.91	18.29	2
5	CB 2	2.0	10.0	3.83	0.60	4.50	0.00	Comb.	2.0	2.0	6.0	25	0.00	0.02	3.37	1.14	15.05	2
6		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	3
7	CB 3	3.1	10.0	3.83	0.60	7.08	2.58	Comb.	2.0	2.0	6.0	25	0.00	0.02	9.66	0.00	27.50	5
8		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	6
9		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	8
10	detention ba	0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	9
11		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	9
12	CB 4	1.4	10.0	3.83	0.60	3.29	0.00	Comb.	2.0	2.0	6.0	25	0.00	0.02	2.58	0.71	12.83	7
13	CB 5	1.6	10.0	3.83	0.60	3.59	0.00	Comb.	2.0	2.0	6.0	25	0.00	0.02	2.72	0.86	13.25	4
14		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	11
15	CB 6	3.0	10.0	3.83	0.60	6.92	0.00	Comb.	3.0	1.9	6.0	25	0.00	0.02	6.92	0.00	22.50	12
16		0.0	0.0	0.00	0.00	0.00	0.34	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.34	0.00	1
17		0.0	0.0	0.00	0.00	0.00	0.34	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.34	0.00	16
18		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	17
19		0.0	0.0	0.00	0.00	0.00	0.34	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.34	0.00	17
20	CB 7	1.3	10.0	3.83	0.60	2.90	0.00	Comb.	3.0	2.0	6.0	25	0.00	0.02	2.55	0.34	12.75	19

PROJECT FILE: HUFFSD.STM I-D-F FILE: RENOCANO.IDF TOTAL NUMBER OF LINES: 29 RUN DATE: 09-27-1995

NOTES: Inlet N-Values = .016 ; Average inlet throat height = 6 in.; Intensity = 26.39179 / (Inlet time + 2.1) ^ .7741072; Return period = 100 Yrs.

FINAL 100% R

Inlet Report

Line #	Line ID	Drng area (ac)	Inlet time (min)	Intensity (in/hr)	Runoff coeff (C)	Q = CIA (cfs)	Q carry (cfs)	Inlet type	Inlet length (ft)	Grate area (sqft)	Grate perim (ft)	Cap factor (K)	Gutter slope (ft/ft)	Gross slope (ft/ft)	Q captured (cfs)	Q bypass (cfs)	Spread (ft)	DnS inlet #
21		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	19
22	CB 8	1.9	10.0	3.83	0.60	4.34	0.00	Comb.	3.0	2.0	6.0	25	0.01	0.02	2.47	1.87	12.50	7
23		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	21
24		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	23
25		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	24
26	CB 9	1.3	10.0	3.83	0.60	2.96	2.63	Comb.	3.0	2.0	6.0	25	0.00	0.02	5.59	0.00	20.00	20
27		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	25
28	CB 10	1.9	10.0	3.83	0.60	4.39	0.00	Comb.	3.0	2.0	6.0	25	0.03	0.02	1.76	2.63	10.22	26
29	CB 11	1.0	10.0	3.83	0.60	2.21	0.00	Comb.	3.0	2.0	6.0	25	0.00	0.02	2.21	0.00	10.00	22

PROJECT FILE: HUFFSD.STM

I-D-F FILE: RENOCANO.IDF

TOTAL NUMBER OF LINES: 29

RUN DATE: 09-27-1995

NOTES: Inlet N-Values = .016 ; Average inlet throat height = 6 in.; Intensity = 26.39179 / (Inlet time + 2.1) ^ .7741072; Return period = 100 Yrs.

FINAL 100XR

Storm Sewer Rehabilitation

Line #	Line ID	Inc. Area (ac)	Rnoff coeff (C)	Incr CA	Sum CA	Tc (min)	Rnfal Int. (in/hr)	Total runoff (cfs)	Add. flow (cfs)	Total flow (cfs)	Capac @ full (cfs)	Line size (in x in)	Line len. (ft)	Line slope (%)	HGL slope (%)	Vel. up (ft/s)	Vel. down (ft/s)	HGL up (ft)	HGL down (ft)	Invert up (ft)	Invert down (ft)	DnS line
22	CB 8	1.9	0.60	1.13	1.13	10.0	1.44	1.6	0.0	1.6	7.1	10 c	15	12.33	10.40	4.1	3.0	4452.42	4450.86	4451.85	4450.00	21
21		0.0	0.00	0.00	3.63	14.4	1.14	4.1	0.0	4.1	6.2	18 c	130	0.40	0.19	3.5	2.7	4450.67	4450.43	4449.71	4449.19	19
28	CB 10	1.9	0.60	1.15	1.15	10.0	1.44	1.6	0.0	1.6	5.8	10 c	25	8.00	6.41	4.1	3.0	4462.57	4460.97	4462.00	4460.00	27
27		0.0	0.00	0.00	1.72	10.1	1.43	2.5	0.0	2.5	5.8	12 c	245	3.07	2.94	4.4	3.1	4460.66	4453.45	4460.00	4452.47	25
25		0.0	0.00	0.00	1.72	11.5	1.32	2.3	0.0	2.3	2.4	12 c	115	0.53	0.41	3.3	2.9	4453.28	4452.81	4452.47	4451.86	24
24		0.0	0.00	0.00	2.50	12.1	1.27	3.2	0.0	3.2	6.8	18 c	35	0.49	0.68	3.6	4.1	4452.61	4452.37	4451.86	4451.69	23
23		0.0	0.00	0.00	2.50	12.3	1.26	3.1	0.0	3.1	7.1	18 c	369	0.54	0.41	4.1	2.2	4452.37	4450.86	4451.69	4449.71	21
26	CB 9	1.3	0.60	0.77	0.77	10.0	1.44	1.1	0.0	1.1	8.3	10 c	30	16.67	16.67	10.4	10.4	4460.21	4455.21	4460.00	4455.00	24
29	CB 11	1.0	0.60	0.58	0.58	10.0	1.44	0.8	0.0	0.8	6.8	10 c	18	11.11	7.98	3.2	1.5	4462.40	4460.97	4462.00	4460.00	27

PROJECT FILE: HUFFSD.STM I-D-F FILE: RENOCANO.IDF TOTAL NUMBER OF LINES: 29 RUN DATE: 09-27-1995

NOTES: c = circular; e = elliptical; b = box; Intensity = 12.86878 / (Tc + 3.799999) ^ .8352506; Return period = 5 Yrs.

FINAL 5 Year

inlet Report

Line #	Line ID	Drng area (ac)	Inlet time (min)	Intensity (in/hr)	Runoff coeff (C)	Q = CIA (cfs)	Q carry (cfs)	Inlet type	Inlet length (ft)	Grate area (sqft)	Grate perim (ft)	Cap factor (K)	Gutter slope (ft/ft)	Cross slope (ft/ft)	Q captured (cfs)	Q bypass (cfs)	Spread (ft)	DnS inlet #
1		0.0	0.0	0.00	0.00	0.00	0.18	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.18	0.00	0
2		0.0	0.0	0.00	0.00	0.00	0.18	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.18	0.00	1
3		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	2
4	CB 1	2.9	10.0	1.44	0.60	2.52	0.00	Comb.	3.0	2.0	6.0	25	0.00	0.02	2.34	0.18	12.10	2
5	CB 2	2.0	10.0	1.44	0.60	1.69	0.00	Comb.	2.0	2.0	6.0	25	0.00	0.02	1.69	0.00	10.42	2
6		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	3
7	CB 3	3.1	10.0	1.44	0.60	2.66	0.29	Comb.	2.0	2.0	6.0	25	0.00	0.02	2.95	0.00	12.50	5
8		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	6
9		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	8
10	detention ba	0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	9
11		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	9
12	CB 4	1.4	10.0	1.44	0.60	1.23	0.00	Comb.	2.0	2.0	6.0	25	0.00	0.02	1.23	0.00	8.88	7
13	CB 5	1.6	10.0	1.44	0.60	1.35	0.00	Comb.	2.0	2.0	6.0	25	0.00	0.02	1.35	0.00	9.17	4
14		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	11
15	CB 6	3.0	10.0	1.44	0.60	2.60	0.00	Comb.	3.0	1.9	6.0	25	0.00	0.02	2.60	0.00	12.50	12
16		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	1
17		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	16
18		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	17
19		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	17
20	CB 7	1.3	10.0	1.44	0.60	1.09	0.00	Comb.	3.0	2.0	6.0	25	0.00	0.02	1.09	0.00	8.83	19

PROJECT FILE: HUFFSD.STM
 I-D-F FILE: RENOCANO.IDF
 TOTAL NUMBER OF LINES: 29
 RUN DATE: 09-27-1995

NOTES: Inlet N-Values = .016 ; Average inlet throat height = 6 in.; Intensity = 12.86878 / (Inlet time + 3.799999) ^ .8352506; Return period = 5 Yrs.

FNAC 5 year

inlet Report

P

Line #	Line ID	Drng area (ac)	Inlet time (min)	Intensity (in/hr)	Runoff coeff (C)	Q = CIA (cfs)	Q carry (cfs)	Inlet type	Inlet length (ft)	Grate area (sqft)	Grate perim (ft)	Cap factor (K)	Gutter slope (ft/ft)	Gross slope (ft/ft)	Q captured (cfs)	Q bypass (cfs)	Spread (ft)	DnS inlet #
21		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	19
22	CB 8	1.9	10.0	1.44	0.60	1.63	0.00	Comb.	3.0	2.0	6.0	25	0.01	0.02	1.34	0.29	8.66	7
23		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	21
24		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	23
25		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	24
26	CB 9	1.3	10.0	1.44	0.60	1.11	0.69	Comb.	3.0	2.0	6.0	25	0.00	0.02	1.81	0.00	10.00	20
27		0.0	0.0	0.00	0.00	0.00	0.00	MH	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.00	25
28	CB 10	1.9	10.0	1.44	0.60	1.65	0.00	Comb.	3.0	2.0	6.0	25	0.03	0.02	0.95	0.69	7.07	26
29	CB 11	1.0	10.0	1.44	0.60	0.83	0.00	Comb.	3.0	2.0	6.0	25	0.00	0.02	0.83	0.00	5.00	22

PROJECT FILE: HUFFSD.STM I-D-F FILE: RENOCANO.IDF TOTAL NUMBER OF LINES: 29 RUN DATE: 09-27-1995

NOTES: Inlet N-Values = .016 ; Average inlet throat height = 6 in.; Intensity = 12.86878 / (inlet time + 3.799999) ^ .8352506; Return period = 5 Yrs.

FINAL 5 year

1-

121' @ .298%

Elev. (ft)

4456

4453

4450

4447

4444

4441

0

25

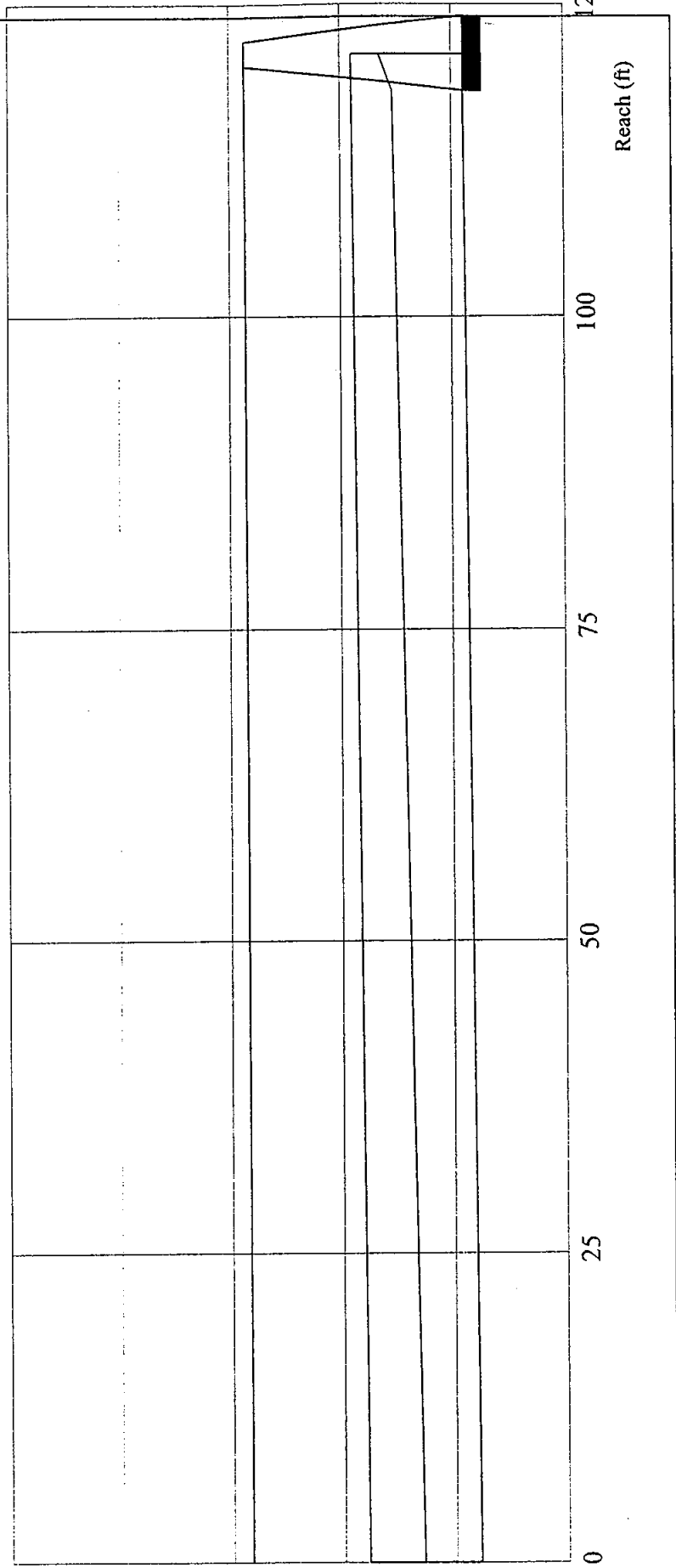
50

75

100

125

Reach (ft)



6 -
-98' @ .439%

3 -
82' @ .5%

2 -
136' @ .382%

Elev. (ft)

4457

4454

4451

4448

4445

4442

300

250

200

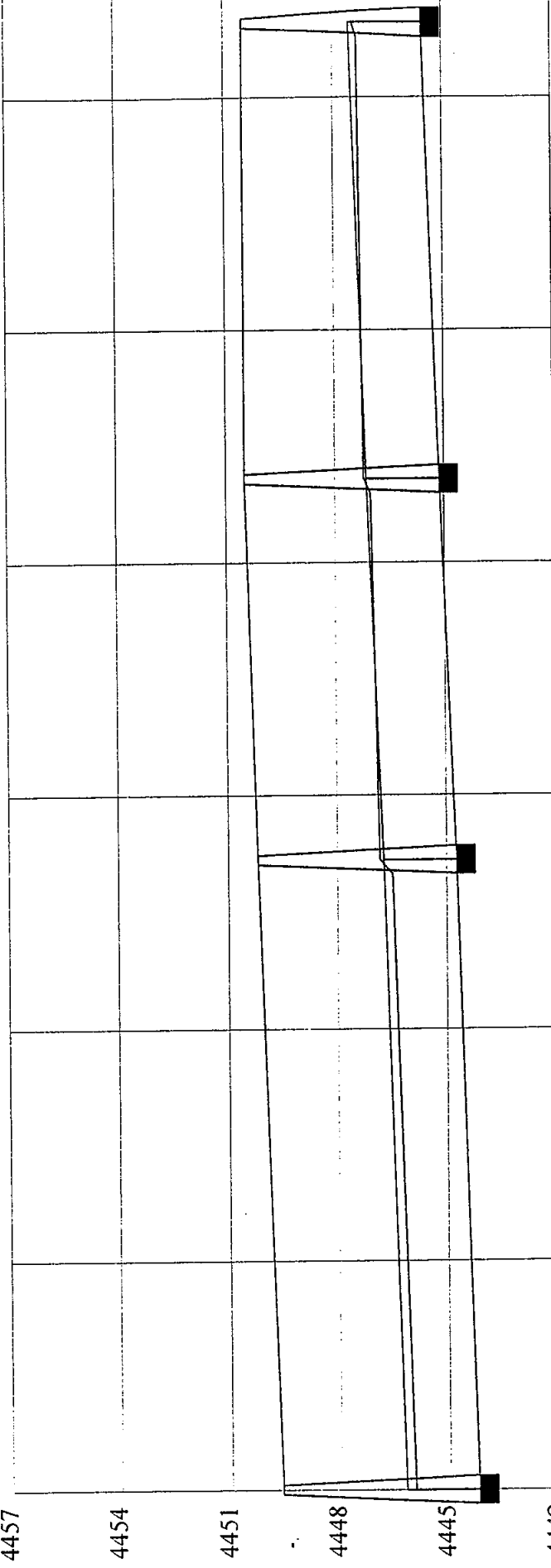
150

100

50

0

Reach (ft)



4 - CB 1

25' @ 13.119%

Elev. (ft)

4457

4454

4451

4448

4445

4442

0

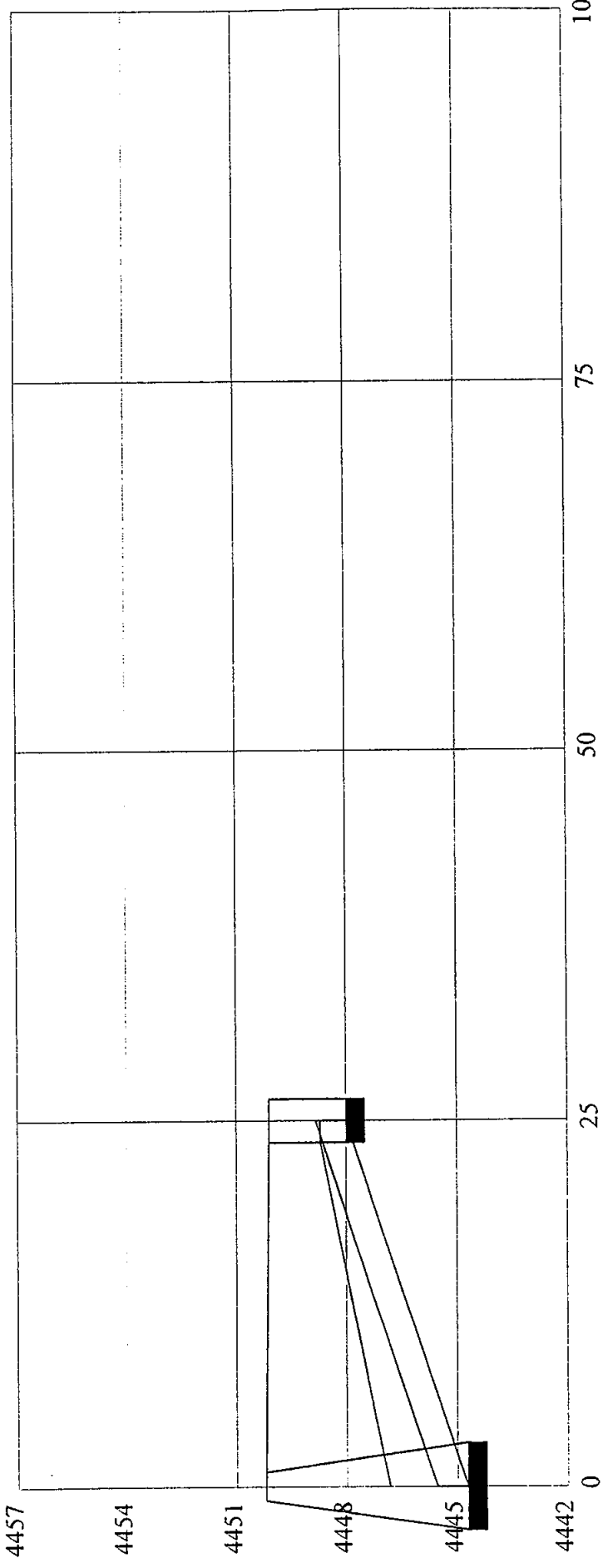
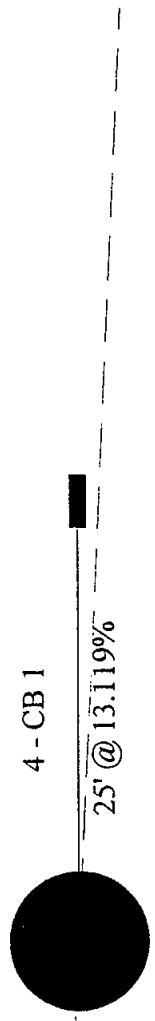
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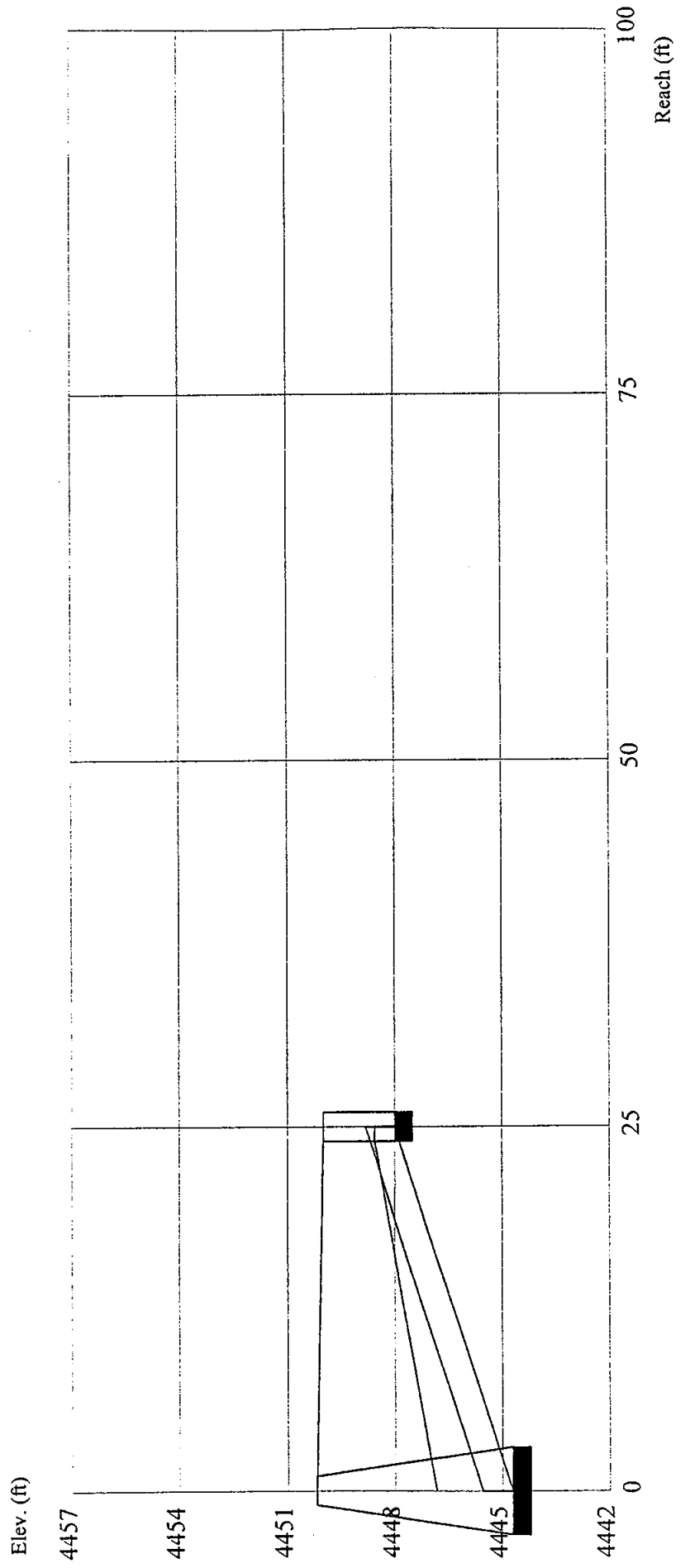
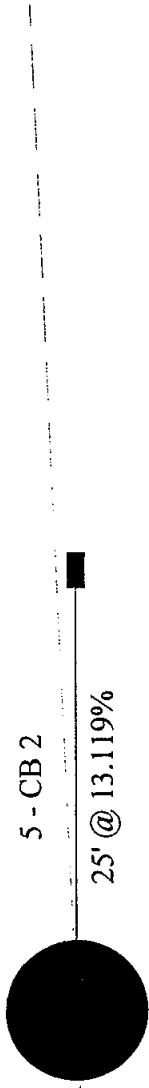
50

75

100

Reach (ft)





10 - detention basin

145' @ .497%

Elev. (ft)

4459

4456

4453

4450

4447

4444

0

25

50

75

100

125

Reach (ft)

0

25

50

75

100

125

150

175

200

225

250

275

300

325

350

375

400

425

450

475

500

525

550

575

600

625

650

675

700

725

750

775

800

825

850

875

900

925

950

975

1000

1025

1050

1075

1100

1125

1150

1175

1200

1225

1250

1275

1300

1325

1350

1375

1400

1425

1450

1475

1500

1525

1550

1575

1600

1625

1650

1675

1700

1725

1750

1775

1800

1825

1850

1875

1900

1925

1950

1975

2000

2025

2050

2075

2100

2125

2150

2175

2200

2225

2250

2275

2300

2325

2350

2375

2400

2425

2450

2475

2500

2525

2550

2575

2600

2625

2650

2675

2700

2725

2750

2775

2800

2825

2850

2875

2900

2925

2950

2975

3000

3025

3050

3075

3100

3125

3150

3175

3200

3225

3250

3275

3300

3325

3350

3375

3400

3425

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3725

3750

3775

3800

3825

3850

3875

3900

3925

3950

3975

4000

4025

4050

4075

4100

4125

4150

4175

4200

4225

4250

4275

4300

4325

4350

4375

4400

4425

4450

4475

4500

4525

4550

4575

4600

4625

4650

4675

4700

4725

4750

4775

4800

4825

4850

4875

4900

4925

4950

4975

5000

5025

5050

5075

5100

5125

5150

5175

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5225

5250

5275

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5950

5975

6000

6025

6050

6075

6100

6125

6150

6175

6200

6225

6250

6275

6300

6325

6350

6375

6400

6425

6450

6475

6500

6525

6550

6575

6600

6625

6650

6675

6700

6725

6750

6775

6800

6825

6850

6875

6900

6925

6950

6975

7000

7025

7050

7075

7100

7125

7150

7175

7200

7225

7250

7275

7300

7325

7350

7375

7400

7425

7450

7475

7500

7525

7550

7575

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