
MARK GOODWIN

& ASSOCIATES
CONSULTING ENGINEERS

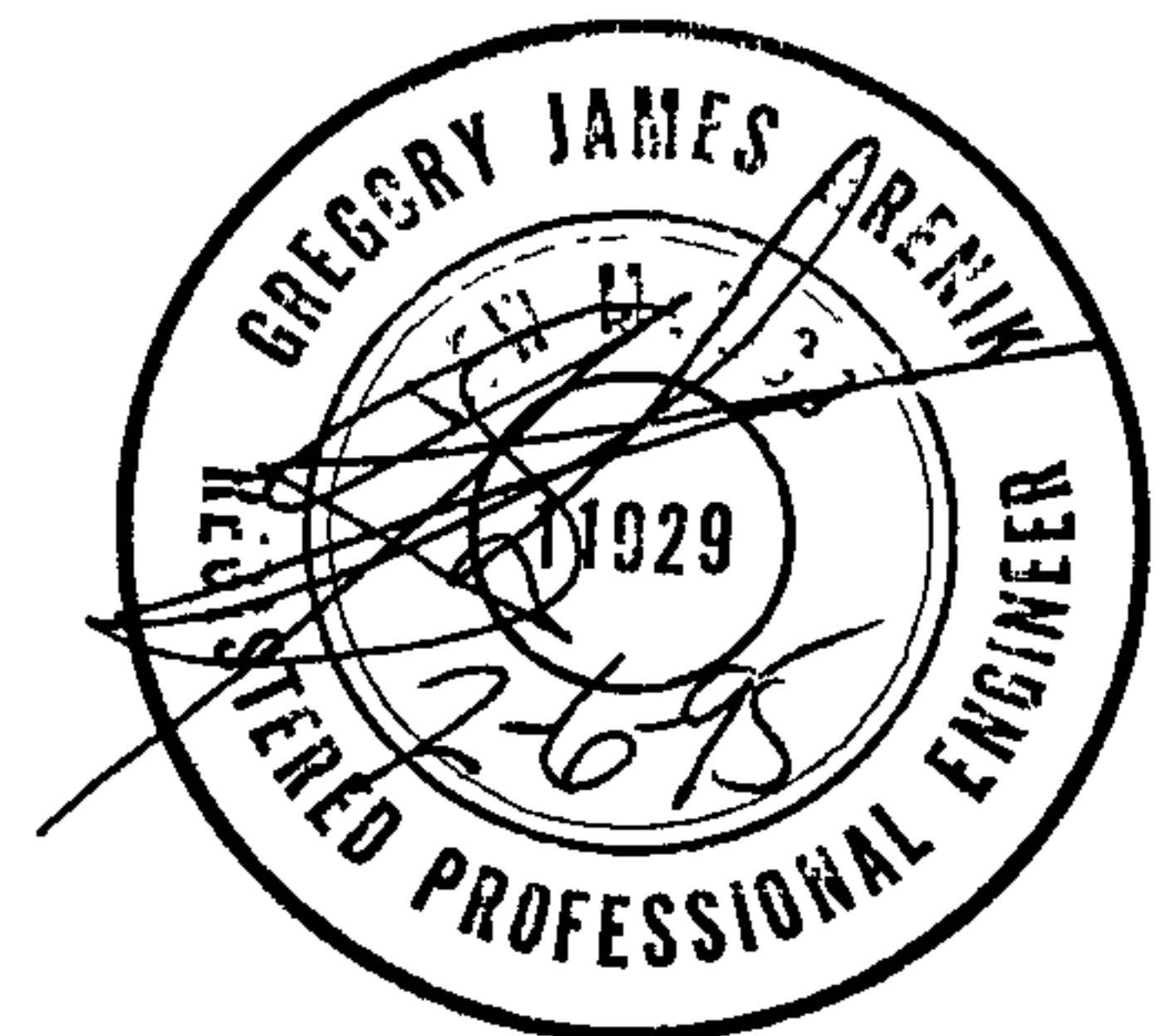
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DRAINAGE REPORT
for
MIAMI ROAD
TOMPIRO SUBDIVISION

Prepared For

SH Co.
331 Wellesley NE
Albuquerque, NM 87106

February 1995



PURPOSE

The purpose of this report is to analyze the storm drain system for Miami Road between 72nd Street and the tie into the future West Bluff box culvert at 57th Street. The drainage basin for this area needed to be defined to accomplish the analysis.

EXISTING CONDITIONS

The outlined area encompasses residential and business zoned tracts to include public thoroughfares. The comprised basin is approximately 138.1 + 2 acres between 72nd, 57th, Miami and Ouray (Appendix A). The basin is currently approaching full development with scattered existing structures.

The basin slopes from west to east approximately 0.61 percent. Vegetative cover is typical of west side property, and the soils are sandy. ~~The site currently drains overland and ponds in the numerous playas within the basin.~~ Existing conditions were not considered, only future conditions were analyzed.

HYDROLOGIC ANALYSIS

AHYMO and HYDRAFLOW was utilized for this analysis, with the intent to discharge and convey 100% of developed runoff to the outfall point. ~~SAD 218 hydrologic analysis was utilized to assist in determining the basin boundaries.~~ All of the pertinent hydrologic parameters and calculation methods are located in Appendix B of this report.

PROPOSED MANAGEMENT PLAN

As a fully developed basin, this plan proposes to convey 100% of developed runoff through a storm drain system beginning at Ladera and Ouray to the outfall point at 57th and Miami. ~~The future conditions for the entire basin generate 0.353 cfs.~~

The proposed storm drain system assumes each of the residential and business basins will discharge their runoff directly to designated manholes (see Appendix B). Basin P1 and 68th Street between Miami and Ouray discharges into Manhole #1, Basin P2.1 into Manhole #2 and Basin P2.2 into Manhole #3. Basin P3 and 64th between Basin Line and Ouray into Manhole #4. Basins R2 and R3 will discharge to Manhole #7 and Basin R5.1 into Manhole #8. Basin R4 and street flow will discharge into Manhole #9. Basin R5.2 will discharge into Manhole #10 and R6 discharges into Manhole #11. B1 discharges into Manhole #12 and street flow into Manhole #13. B2 is the final basin discharging into the system at Manhole #14.

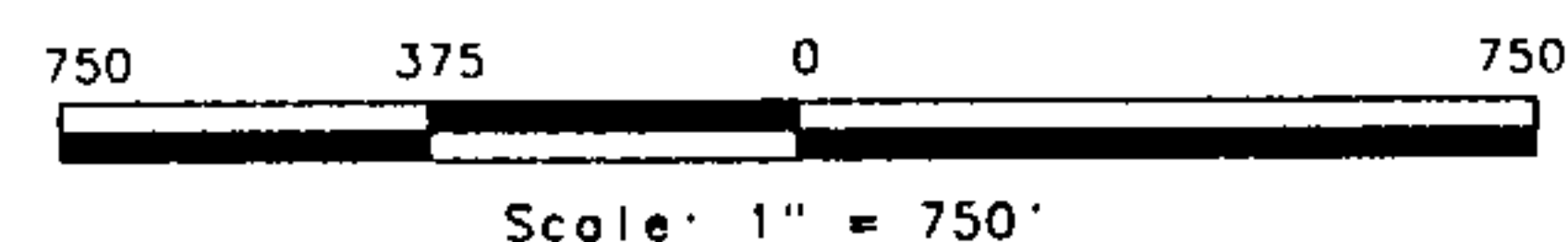
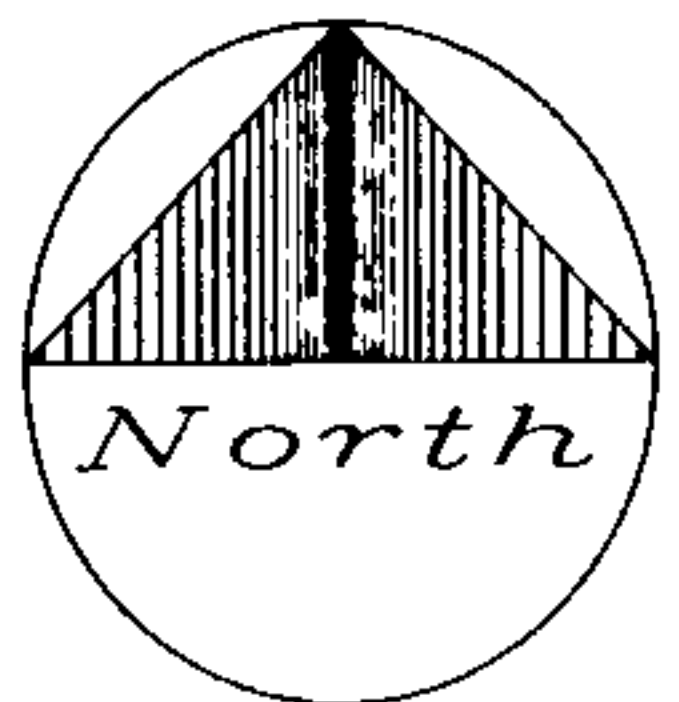
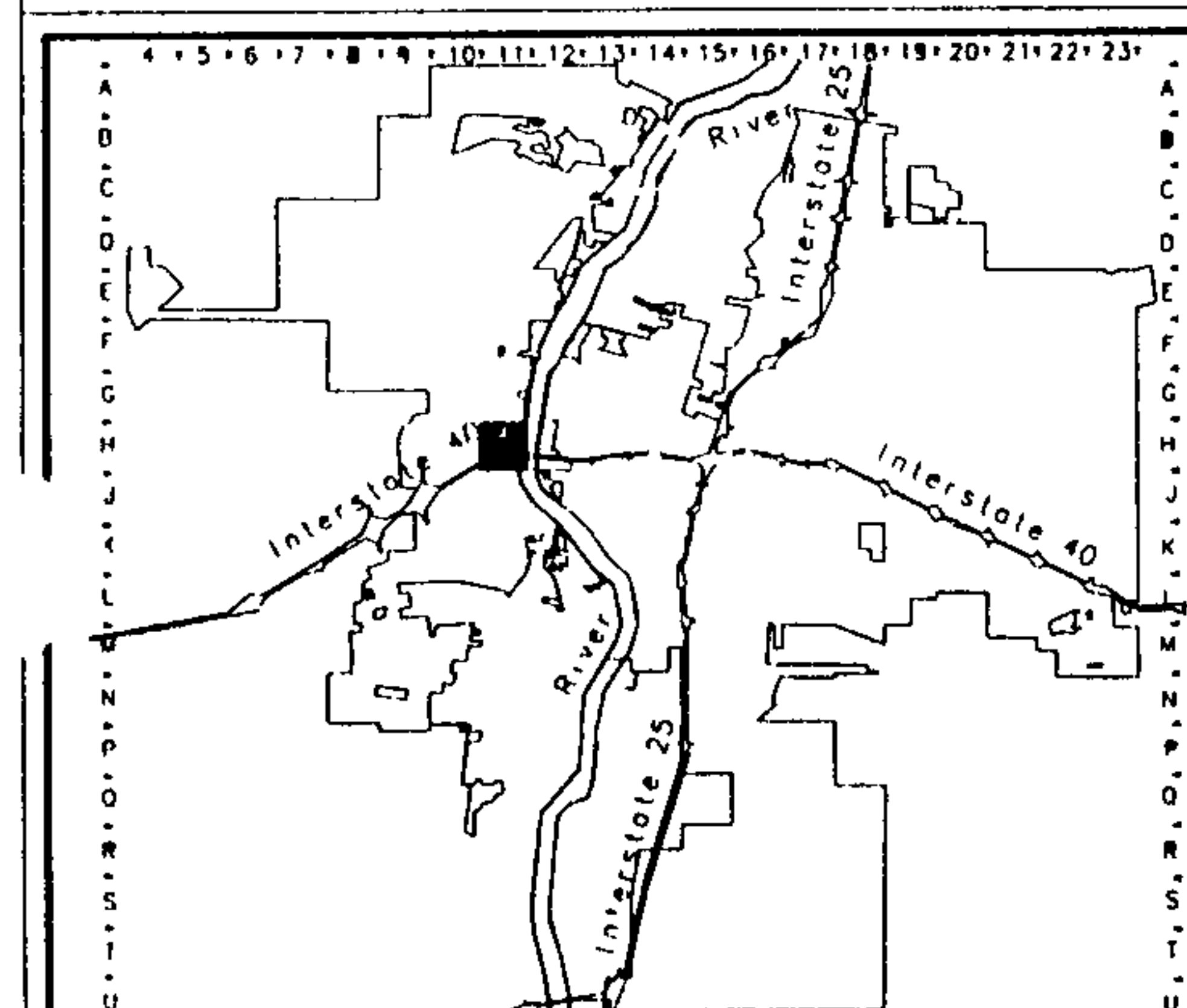
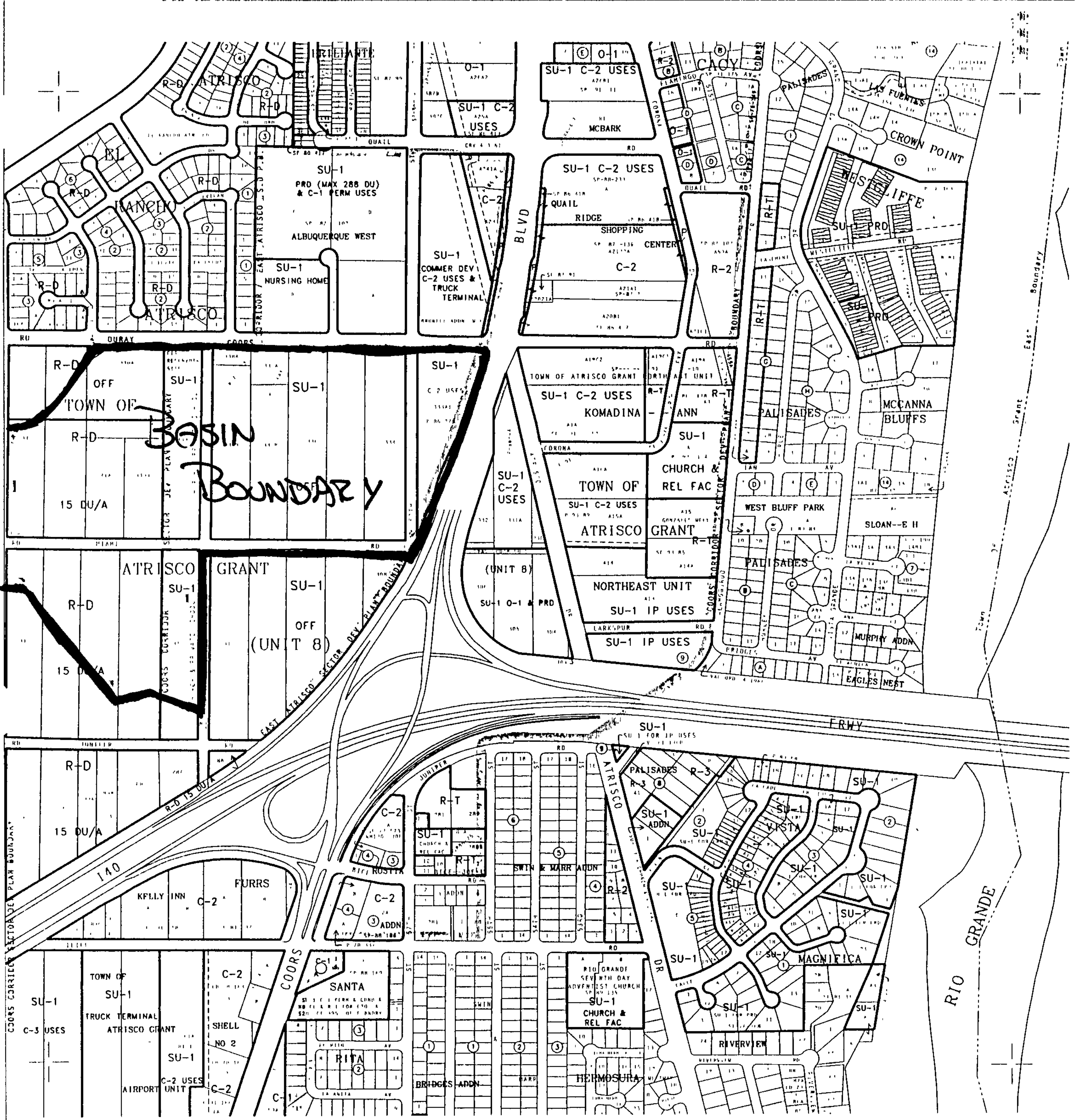
The generated runoff from the streets is assumed to be collected by a series of storm inlets on Miami at three separate locations and tie into the storm system through the designated manholes (see Appendix B). The first series of inlets will collect all street flow west of 64th to include Basin R1 then discharge into Manhole #3. The second collection point will collect runoff on Miami between 64th and Estancia then discharge into Manhole #4. The third collection point will collect runoff from 57th, Miami, and Estancia at 57th with a connection to Manhole #7.

~~There are no off-site flows impacting or entering this basin. Ouray has been excluded from this analysis because of it's improved conditions and drainage is assumed to be collected elsewhere.~~

CONCLUSIONS

This storm drain system can adequately convey only the outlined basin to the outfall point at the future West Bluff box culvert at 57th Street. The implementation of this storm drain system will have reduced the amount of storm runoff reaching Ponding Area 4 from the same FEMA Map 35 000 02 000 21C. Also this report has shown the proposed conveyance of storm water can be accomplished while meeting all current City requirements.

APPENDIX A



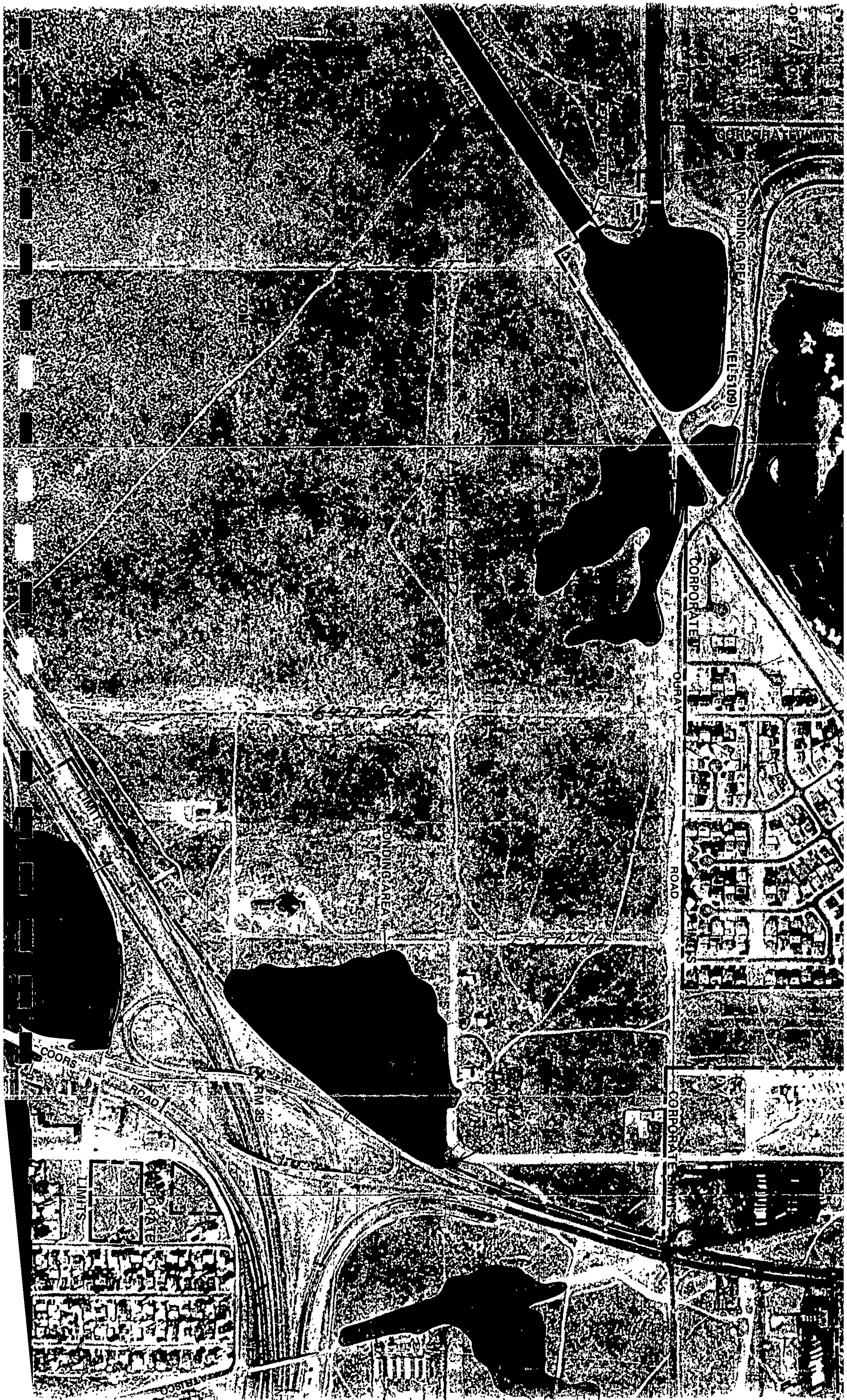
A G I S
 Albuquerque Geographic Information System
 City of Albuquerque
 © Planning Department July 03, 1993

LEGAL DESCRIPTION

T10N
 R2E
 SEC 11

UNIFORM PROPERTY CODE
 1-011-059

H-11-Z



APPENDIX B



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

PROJECT MIAMI ROAD
SUBJECT STORM SEWER
BY RM DATE 16 FEB 95
CHECKED _____ DATE _____
SHEET _____ OF _____

*COMPUTATIONS FOR TIME OF CONCENTRATION

THE ADDITIONAL BASINS INCREASE REACH LENGTH OVER
4000' BUT LESS THAN 12000

$$t_c = \left[\frac{(12000 - L)}{12000} * K * S^{0.5} \right] + \left[\frac{(L - 4000) * K_N * \left(\frac{L_{CA}}{L} \right)^{0.33}}{552.2 * S^{0.45}} \right]$$

$$K = 3 \quad K_N = 0.021 \quad \left(\frac{L_{CA}}{L} \right) = 1 \quad S = 0.005$$

FROM AHYMD

• ANALYSIS POINT #1

$L = 5385'$ FROM CENTROID

$$t_c = 0.4717$$

$$T_p = \frac{2}{3} * t_c = 0.3145$$

• ANALYSIS POINT #2

$L = 4960'$ FROM CENTROID

$$t_c = 0.4582$$

$$T_p = \frac{2}{3} * t_c = 0.3055$$

• ANALYSIS POINT #3

$L = 4535'$ FROM CENTROID

$$t_c = 0.4447$$

$$T_p = 0.2965$$

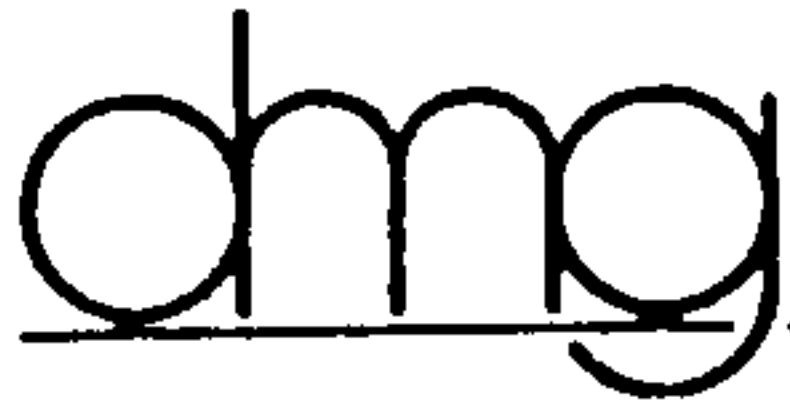
• ANALYSIS POINT #4

$L = 3835'$ BASIN BELOW 4000' USE OTHER FORMULA

$$t_c = \left(\frac{L}{V} \right) / 3600$$

$$V = 10 * K * \sqrt{S}$$

CONTINUED ON NEXT PAGE



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PROJECT MIAMI ROAD
SUBJECT STORM SEWER
BY RM DATE 16 FEB 94
CHECKED _____ DATE _____
SHEET _____ OF _____

* TIME OF CONCENTRATION (CONTINUED)

$$K=3.0 \quad S=0.0075$$

• ANALYSIS POINT #4

$$L=3835' \quad S=0.0075$$

$$t_c = 0.4100$$

$$T_p = \frac{2}{3} * t_c = 0.2734$$

• ANALYSIS POINT #5

$$L=2835' \quad S=0.01$$

$$t_c = 0.2625$$

$$T_p = 0.1750$$

• ANALYSIS POINT #6

$$L=2505' \quad S=0.01$$

$$t_c = 0.2319$$

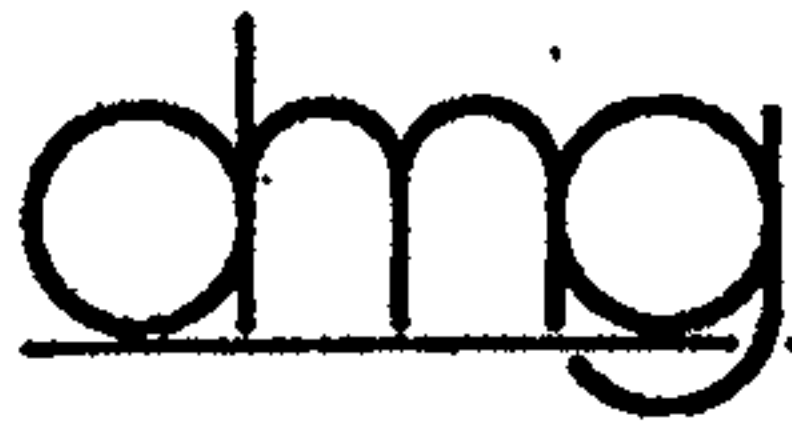
$$T_p = 0.1546$$

• ANALYSIS POINT #7

$$L=2055 \quad S=0.01$$

$$t_c = 0.1903 < 0.20$$

USE $T_p = 0.1333$ FOR DOWNSTREAM BASINS



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PROJECT MIAMI ROAD STORM DRAINAGE
SUBJECT DRAINAGE
BY RM DATE 6 FEB
CHECKED _____ DATE _____
SHEET _____ OF _____

STREET FLOW CAPACITY

TOTAL STREET FLOW FOR MA#3 AP3

AHYMO RESULTS

$$Q = 19.16 \text{ cfs}$$

FROM DPM BOOK 2 PLATE 22.3 D-2

FOR $Q = 10 \text{ cfs}$ & SLOPE = 1.00% HALF STREET SECTION

$$\text{DEPTH OF FLOW} = 0.45'$$

$$V = 29 \text{ fps}$$

$$EG = d + \frac{V^2}{2g}$$

$$EG = 0.58'$$

8" STANDARD CURB & GUTTER REQUIRED

NUMBER OF STORM INLETS REQUIRED

1ST STORM INLET $d = 0.45'$ SLOPE = 1.00%

$$Q = 5.8 \text{ cfs CAPACITY}$$

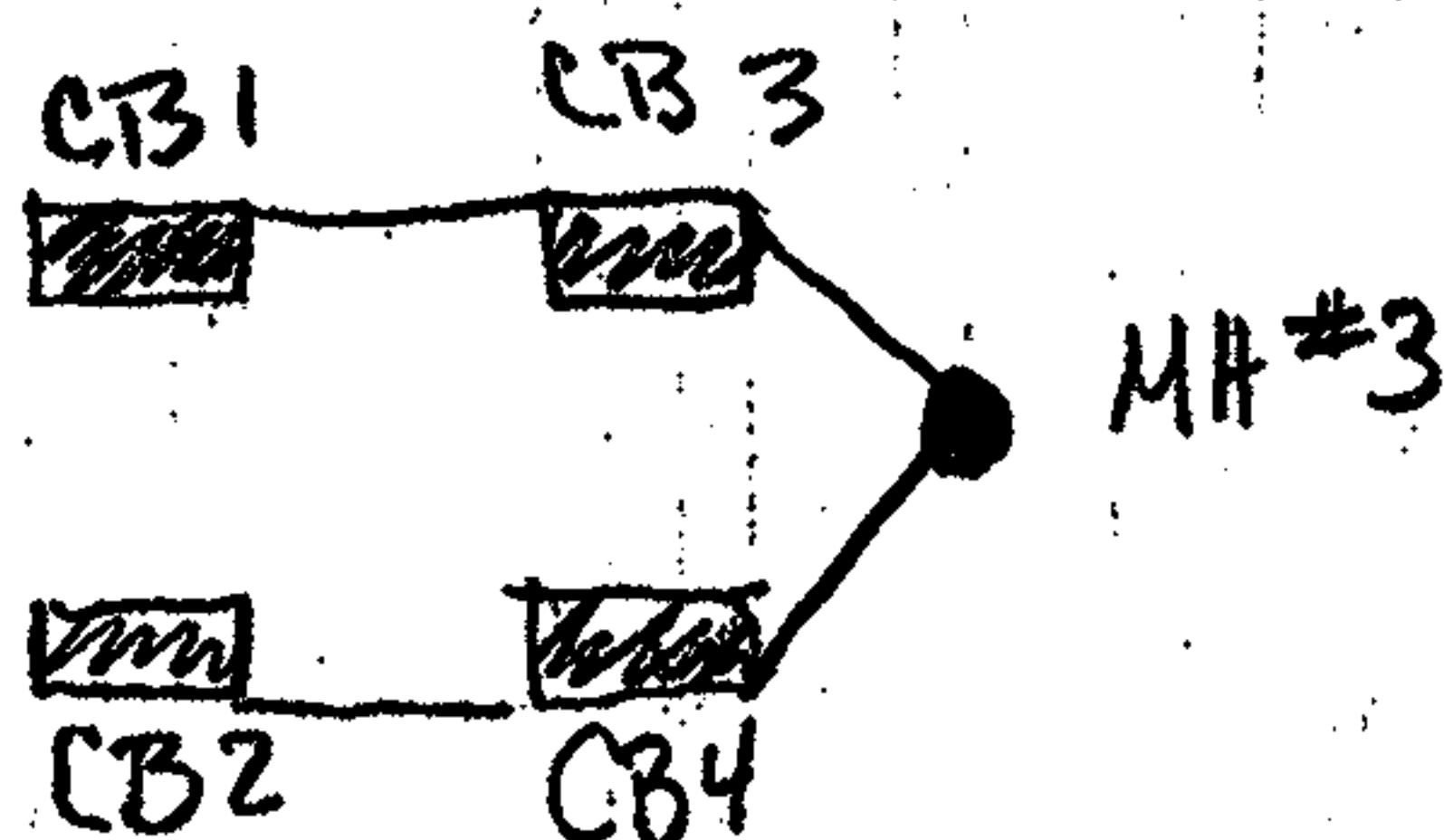
TYPE DBL "A" INLET

2ND STORM INLET $d = 0.35'$ SLOPE = 1.00%

$$Q = 3.2 \text{ cfs CAPACITY}$$

TYPE DBL "C" INLET

* THE CONFIGURATION OF STORM INLETS TO COLLECT FLOW AT ANALYSIS POINT 3



CB1 & 2 TYPE DBL "A"s

CB3 & 4 TYPE DBL "C"s

TOTAL FLOWS PASSING CB's

$$9.58 - 5.8 - 3.2 = 0.58 \text{ cfs ON HALF STREET SECTION}$$



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PROJECT MIAMI ROAD STUDY
SUBJECT DRAINAGE
BY DM DATE 6 FEB
CHECKED _____ DATE _____
SHEET _____ OF _____

STORM INLET ANALYSIS (CONTINUED)

TOTAL FLOW PASSING STORM INLETS @ ANALYSIS POINT 3

$$Q = 11.6 \text{ cfs} \quad * \text{ MUST BE ADDED TO AP4}$$

ANALYSIS POINT 4

AA/MO RESULTS

$$Q = 4.64 \text{ cfs}$$

TOTAL Q ON STREET

$$Q = 4.48 + 1.06 = 5.54 \text{ cfs}$$

USE SAME CONFIGURATION OF STORM INLETS AS AP3

FLOW ON HALF STREET SECTION

$$Q = 2.82 \text{ cfs} \quad @ \text{ SLOPE} = 100\%$$

$$\text{DEPTH OF FLOW} = 0.31'$$

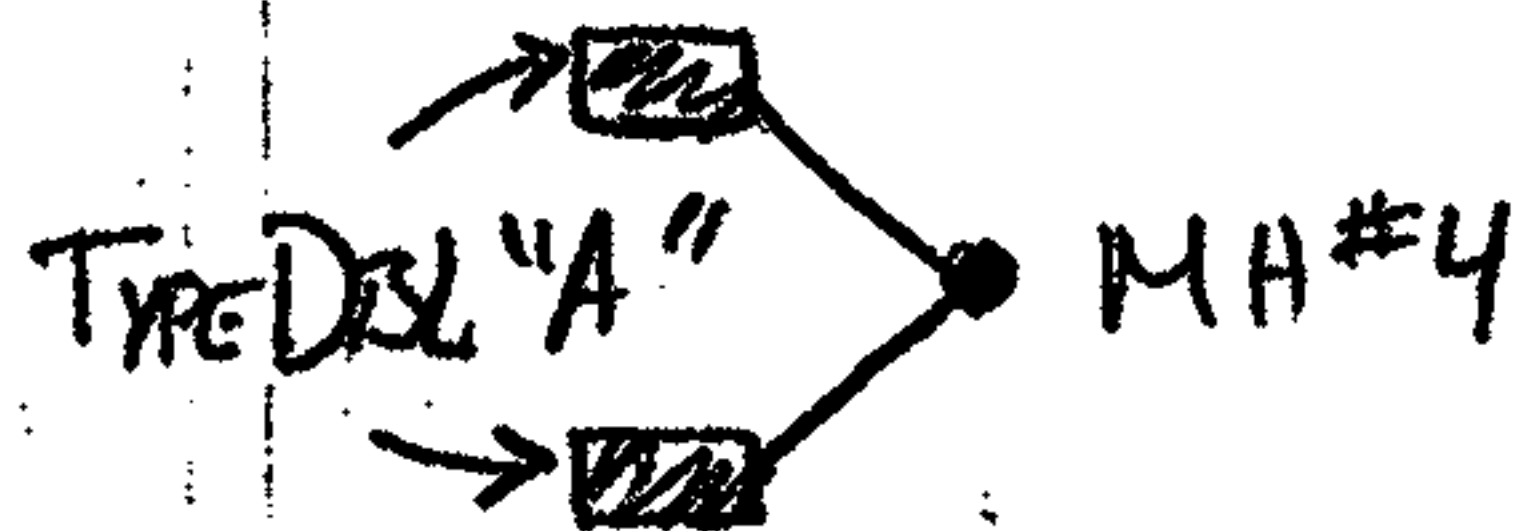
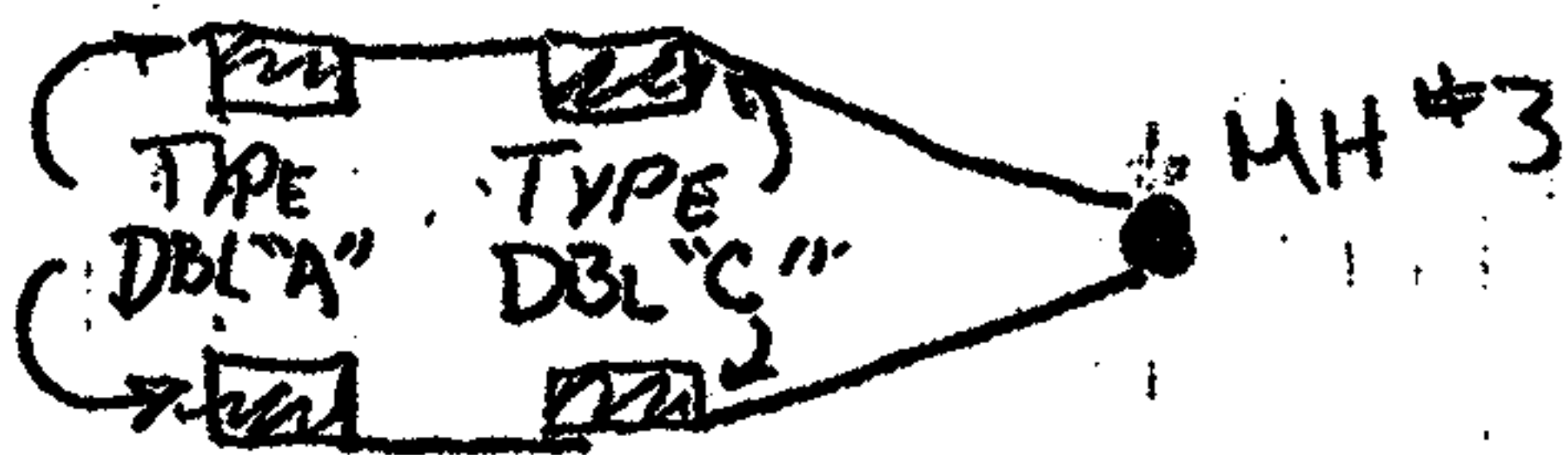
1ST STORM INLET

$$Q_{\text{CAPACITY}} = 2.5 \text{ cfs}$$

NO FURTHER STORM INLETS REQUIRED

∴ STORM INLETS WEST OF MIAMI & ESTANCIA

CONTAIN CAPACITY TO COLLECT STORM RUNOFF
ON MIAMI ROAD





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PROJECT MIAMI ROAD STUDY
SUBJECT DRAINAGE
BY DM DATE 6 FEB 9
CHECKED _____ DATE _____
SHEET _____ OF _____

STORM INLETS EAST OF ESTANCIA & MIAMI

FROM AHYMO RESULTS

TOTAL $Q = 10.37 \text{ cfs}$ FOR
MIAMI, 57th & ESTANCIA

FOR HALF STREET SECTION

$Q = 5.19 \text{ cfs}$

INLETS WILL BE IN SUMP CONDITION
@ MH#7

USE NOMOGRAPH FOR SUMP CONDITIONS

$$Q/P = 3.0 \text{ H}^{3/2}$$

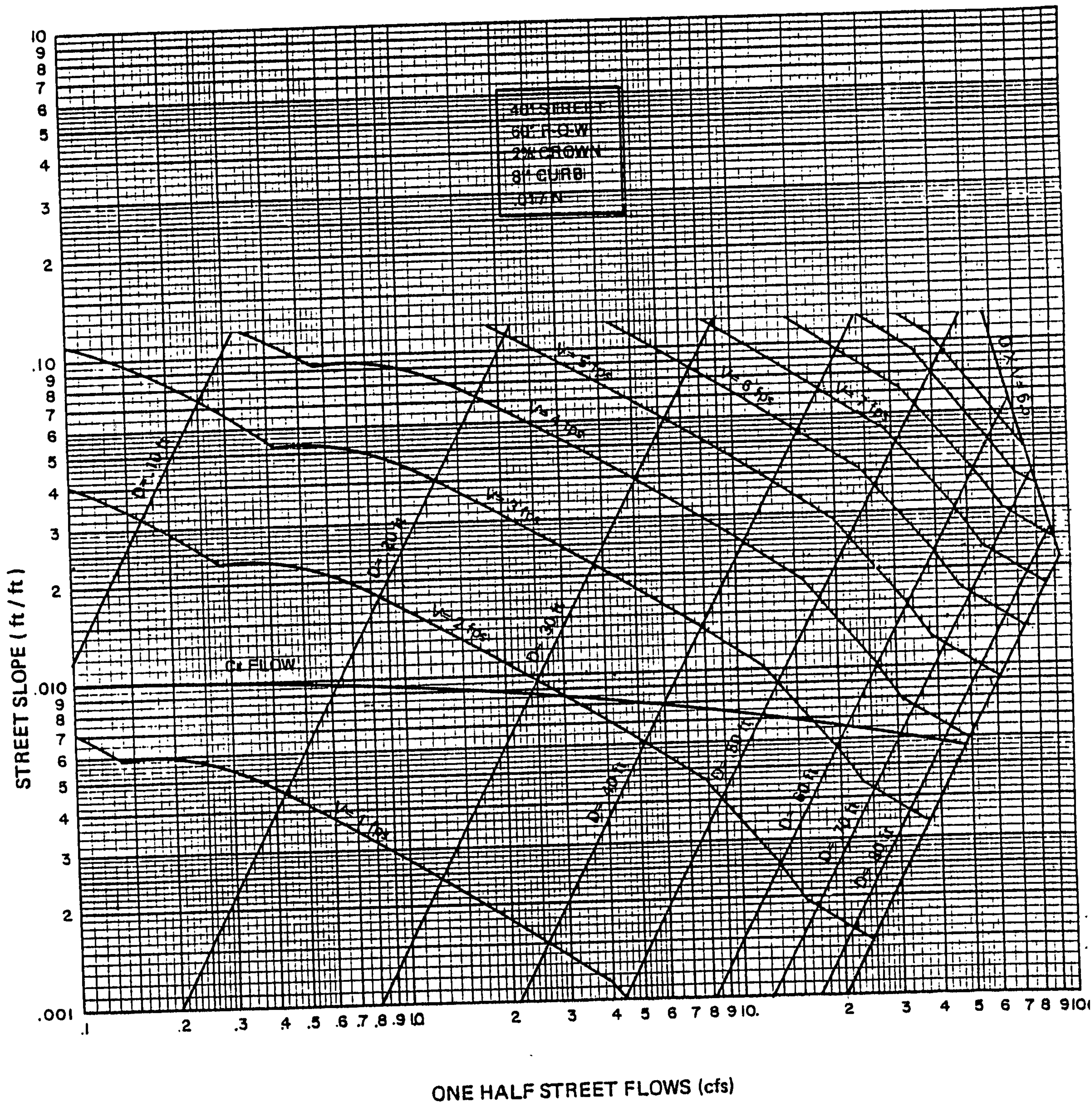
$P = 9 + 2b$ CANNOT USE BACK OF CURB AS PART OF PERIMETER
 $P = 8$

$$Q = 8(3)(0.67)^{3/2}$$

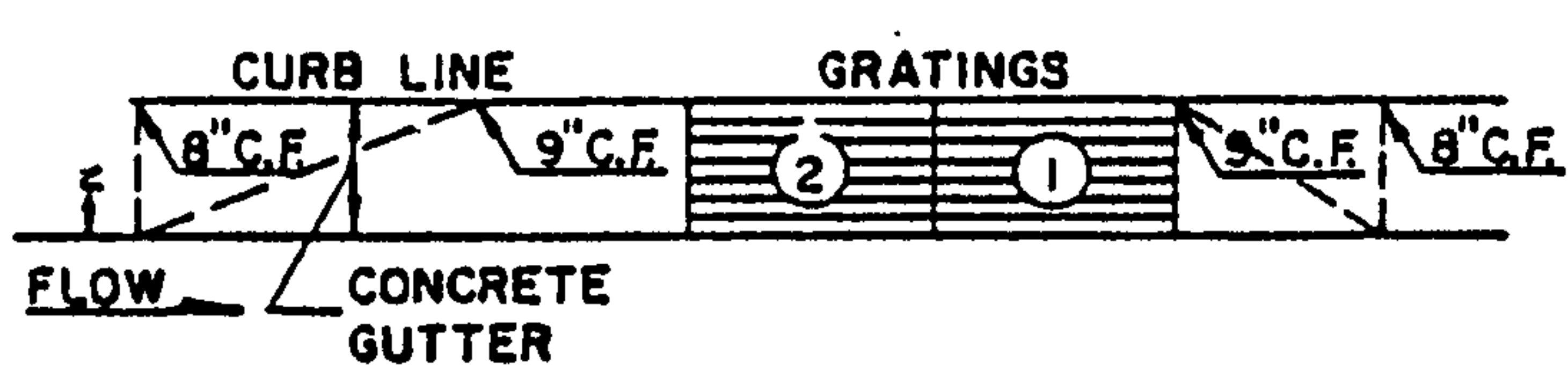
$Q = 13.06 \text{ cfs}$ CAPACITY OF SINGLE GRATE TYPE "C"

∴ ONE TYPE "C" INLET IN SUMP CONDITION
CONTAINS CAPACITY OF STREET FLOW @
ANALYSIS POINT 7 MH#7

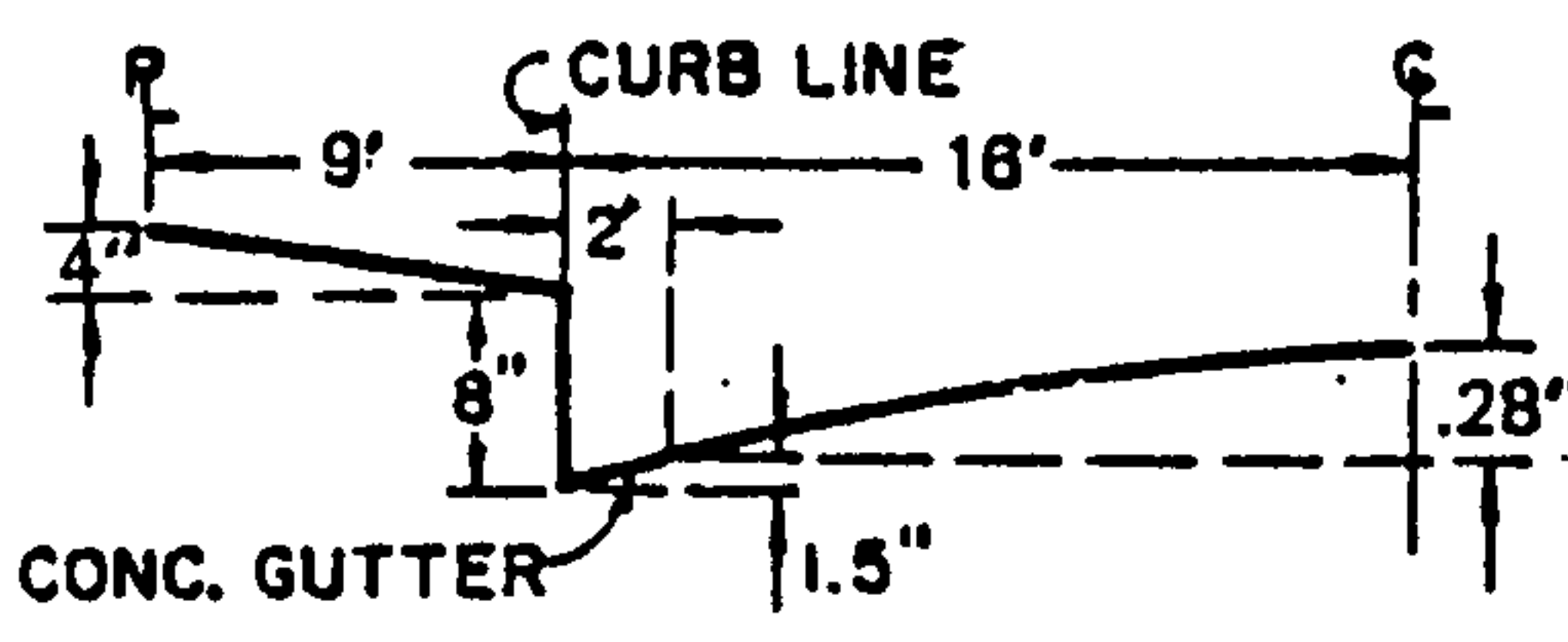
STREET CAPACITY



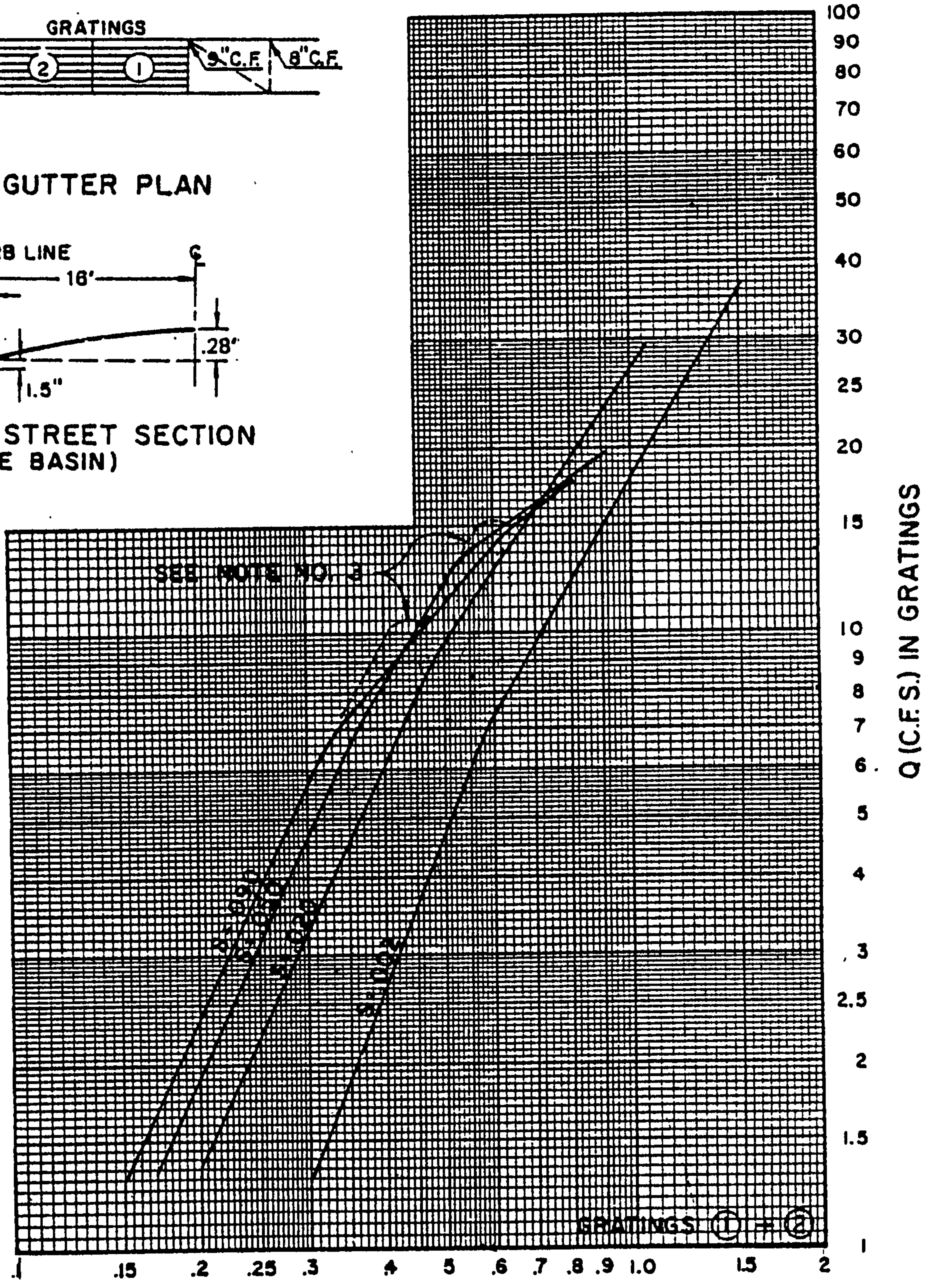
GRATING CAPACITIES FOR TYPE DOUBLE "C," AND "D"



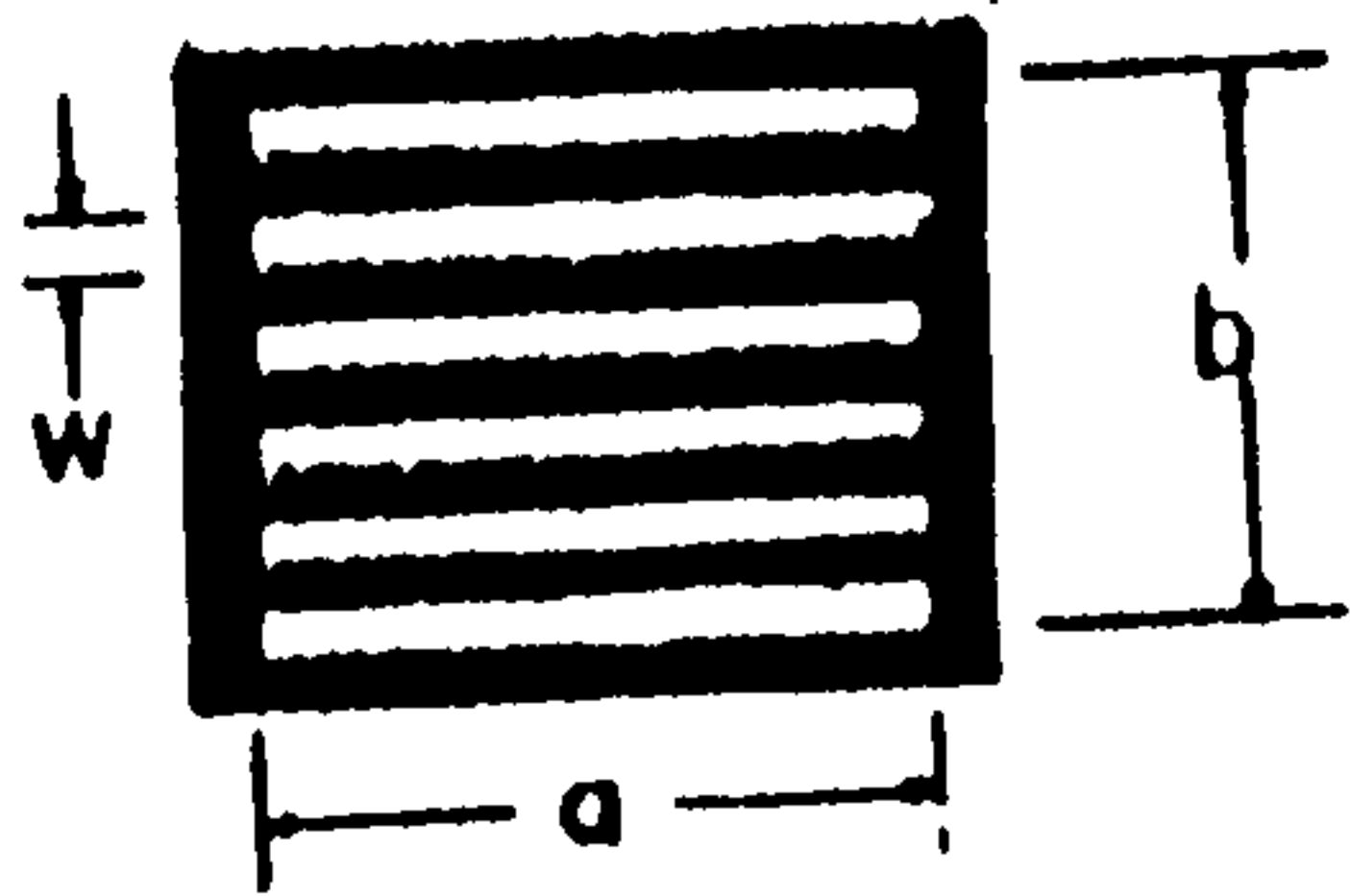
GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION (ABOVE BASIN)

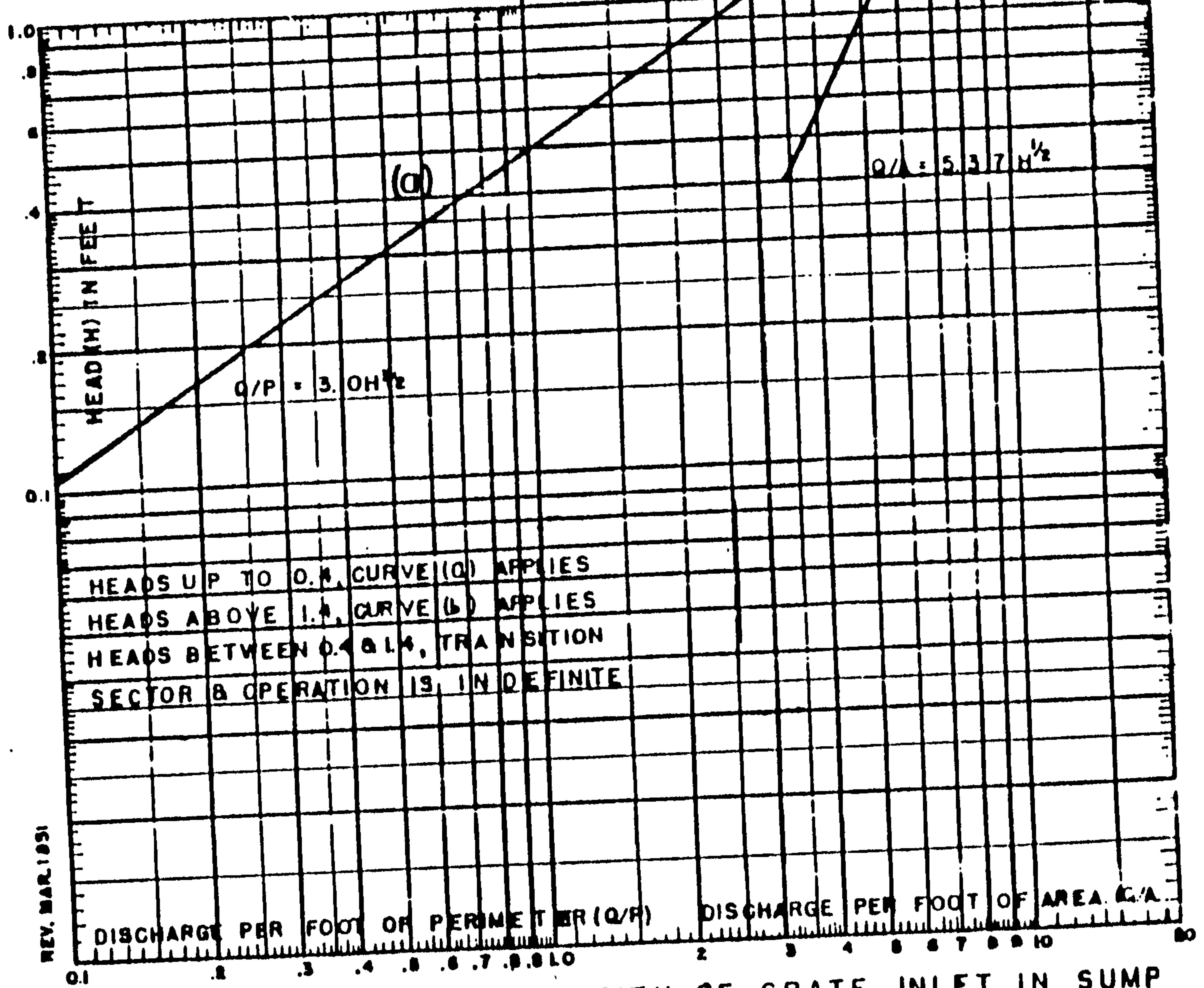


D = DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE



$$P = 2(a + b)$$

$$A = 6QW$$



BUREAU OF PUBLIC ROADS
DIVISION TWO WASH., D.C.

CAPACITY OF GRATE INLET IN SUMP
WATER PONDED ON GRATE

HYDRAULIC ANALYSIS

Run date: 01-04-1980
File: C:MIAMI3.ST3

Return Period = 100 Yrs
Rainfall file: Your_County

LINE 1 / Q = 353.9 / HT = 72 / WID = 72 / N = .013 / L = 20 / JLC = .25

1 / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	74.16	72.00	68.16	12.52	76.59	0.00	21.33	28.27
UPSTRM	74.12	66.75	68.56	12.94	76.72	37.42	19.94	27.35

Drainage area (ac) =	0	Slope of invert (%) =	2.000
Runoff coefficient =	0	Slope energy grade line (%) =	0.645
Time of conc (min) =	25	Critical depth (in) =	60.07
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	353.9	Confluence angle (deg) =	0
Default Q (cfs) =	353.93	Natural ground elev (ft) =	94.5
Line capac. (cfs) =	599.0	Line storage (cuft) =	556

LINE 2 / Q = 338.0 / HT = 72 / WID = 72 / N = .013 / L = 145 / JLC = .25

2 / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	74.77	72.00	68.56	11.96	76.99	0.00	19.94	28.27
UPSTRM	75.35	64.07	70.01	12.72	77.86	45.08	17.16	26.58

Drainage area (ac) =	0	Slope of invert (%) =	1.000
Runoff coefficient =	0	Slope energy grade line (%) =	0.598
Time of conc (min) =	25	Critical depth (in) =	58.70
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	337.9	Confluence angle (deg) =	-135
Default Q (cfs) =	337.96	Natural ground elev (ft) =	93.18
Line capac. (cfs) =	423.6	Line storage (cuft) =	3976

16
16
16
16

LINE 3 / Q = 328.1 / HT = 60 / WID = 60 / N = .013 / L = 330 / JLC = .25

3 / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	75.98	60.00	70.01	16.71	80.31	0.00	18.16	19.63
UPSTRM	81.22	60.00	73.31	16.71	85.55	0.00	16.4	19.63

Drainage area (ac) = 0	Slope of invert (%) = 1.000
Runoff coefficient = 0	Slope energy grade line (%) = 1.587
Time of conc (min) = 23	Critical depth (in) = 57.73
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 328.1	Confluence angle (deg) = 135
Default Q (cfs) = 328.11	Natural ground elev (ft) = 94.71
Line capac. (cfs) = 260.5	Line storage (cuft) = 6479

LINE 4 / Q = 267.0 / HT = 60 / WID = 60 / N = .013 / L = 330 / JLC = .25

4 / DNLN = 3

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	82.30	60.00	73.31	13.60	85.17	0.00	16.4	19.63
UPSTRM	85.77	60.00	76.61	13.60	88.64	0.00	14.55	19.63

Drainage area (ac) = 0	Slope of invert (%) = 1.000
Runoff coefficient = 0	Slope energy grade line (%) = 1.051
Time of conc (min) = 21	Critical depth (in) = 54.90
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 267	Confluence angle (deg) = 0
Default Q (cfs) = 267	Natural ground elev (ft) = 96.17
Line capac. (cfs) = 260.5	Line storage (cuft) = 6479

1A
1B
1C
1D

LINE 5 / Q = 239.3 / HT = 54 / WID = 54 / N = .013 / L = 450 / JLC = .25

5 / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	86.49	54.00	76.61	15.05	90.00	0.00	15.05	15.90
UPSTRM	93.15	54.00	81.11	15.05	96.67	0.00	12.62	15.90

Drainage area (ac) =	0	Slope of invert (%) =	1.000
Runoff coefficient =	0	Slope energy grade line (%) =	1.481
Time of conc (min) =	19	Critical depth (in) =	51.41
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	239.3	Confluence angle (deg) =	0
Default Q (cfs) =	239.3	Natural ground elev (ft) =	98.24
Line capac. (cfs) =	196.7	Line storage (cuft) =	7156

LINE 6 / Q = 184.3 / HT = 54 / WID = 54 / N = .013 / L = 380 / JLC = .25

6 / DNLN = 5

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	94.03	54.00	81.11	11.59	96.12	0.00	12.62	15.90
UPSTRM	97.37	54.00	84.91	11.59	99.45	0.00	10.28	15.90

Drainage area (ac) =	0	Slope of invert (%) =	1.000
Runoff coefficient =	0	Slope energy grade line (%) =	0.878
Time of conc (min) =	16	Critical depth (in) =	47.80
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	184.2	Confluence angle (deg) =	0
Default Q (cfs) =	184.28	Natural ground elev (ft) =	99.7
Line capac. (cfs) =	196.7	Line storage (cuft) =	6043

LINE 7 / Q = 130.5 / HT = 54 / WID = 54 / N = .013 / L = 400 / JLC = .25

7 / DNLN = 6

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	97.89	54.00	84.91	8.21	98.94	0.00	10.28	15.90
UPSTRM	99.65	54.00	88.91	8.21	100.70	0.00	10.28	15.90

Drainage area (ac)	=	0	Slope of invert (%)	=	1.000
Runoff coefficient	=	0	Slope energy grade line (%)	=	0.441
Time of conc (min)	=	14	Critical depth (in)	=	39.31
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	0.0
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	0.0
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	0
Flow contrib (cfs)	=	130.5	Confluence angle (deg)	=	0
Default Q (cfs)	=	130.52	Natural ground elev (ft)	=	103.7
Line capac. (cfs)	=	196.7	Line storage (cuft)	=	6361

LINE 8 / Q = 114.7 / HT = 54 / WID = 54 / N = .013 / L = 330 / JLC = .25

8 / DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	99.91	54.00	88.91	7.21	100.72	0.00	10.28	15.90
UPSTRM	101.04	54.00	92.21	7.21	101.84	0.00	10.29	15.90

Drainage area (ac)	=	0	Slope of invert (%)	=	1.000
Runoff coefficient	=	0	Slope energy grade line (%)	=	0.340
Time of conc (min)	=	12	Critical depth (in)	=	36.85
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	0.0
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	0.0
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	0
Flow contrib (cfs)	=	114.6	Confluence angle (deg)	=	0
Default Q (cfs)	=	114.67	Natural ground elev (ft)	=	107
Line capac. (cfs)	=	196.7	Line storage (cuft)	=	5248

1A
1A
1A
1A

LINE 9 / Q = 94.5 / HT = 48 / WID = 48 / N = .013 / L = 383.33 / JLC = .25

9 / DNLN = 8

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	101.24	48.00	92.21	7.52	102.12	0.00	10.79	12.56
UPSTRM	102.90	48.00	94.80	7.52	103.78	0.00	12.19	12.57

Drainage area (ac)	=	0	Slope of invert (%)	=	0.676
Runoff coefficient	=	0	Slope energy grade line (%)	=	0.433
Time of conc (min)	=	10	Critical depth (in)	=	34.50
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	0.0
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	0.0
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	0
Flow contrib (cfs)	=	94.5	Confluence angle (deg)	=	90
Default Q (cfs)	=	94.52	Natural ground elev (ft)	=	111
Line capac. (cfs)	=	118.1	Line storage (cuft)	=	4817

LINE 10 / Q = 94.5 / HT = 48 / WID = 48 / N = .013 / L = 383.33 / JLC = .25

10 / DNLN = 9

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	103.12	48.00	94.80	7.52	104.00	0.00	12.19	12.56
UPSTRM	104.78	48.00	96.71	7.52	105.66	0.00	13.19	12.57

Drainage area (ac)	=	0	Slope of invert (%)	=	0.498
Runoff coefficient	=	0	Slope energy grade line (%)	=	0.433
Time of conc (min)	=	8	Critical depth (in)	=	34.50
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	0.0
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	0.0
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	0
Flow contrib (cfs)	=	94.5	Confluence angle (deg)	=	0
Default Q (cfs)	=	94.52	Natural ground elev (ft)	=	113.9
Line capac. (cfs)	=	101.4	Line storage (cuft)	=	4817

1A
1A
1A
1A

LINE 11 / Q = 94.5 / HT = 48 / WID = 48 / N = .013 / L = 383.33 / JLC = .25

11 / DNLN = 10

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	105.00	48.00	96.71	7.52	105.88	0.00	13.19	12.56
UPSTRM	106.66	48.00	98.63	7.52	107.54	0.00	8.77	12.57

Drainage area (ac) =	0	Slope of invert (%) =	0.501
Runoff coefficient =	0	Slope energy grade line (%) =	0.433
Time of conc (min) =	6	Critical depth (in) =	34.50
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	94.5	Confluence angle (deg) =	0
Default Q (cfs) =	94.52	Natural ground elev (ft) =	111.4
Line capac. (cfs) =	101.7	Line storage (cuft) =	4817

LINE 12 / Q = 87.8 / HT = 48 / WID = 48 / N = .013 / L = 450 / JLC = .25

12 / DNLN = 11

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	106.88	48.00	98.63	6.99	107.64	0.00	8.77	12.56
UPSTRM	108.56	48.00	100.88	6.99	109.32	0.00	7.62	12.57

Drainage area (ac) =	0	Slope of invert (%) =	0.500
Runoff coefficient =	0	Slope energy grade line (%) =	0.373
Time of conc (min) =	3	Critical depth (in) =	33.24
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	87.7	Confluence angle (deg) =	0
Default Q (cfs) =	87.78	Natural ground elev (ft) =	112.5
Line capac. (cfs) =	101.6	Line storage (cuft) =	5654

1A
1B
1C
1D

LINE 13 / Q = 65.6 / HT = 48 / WID = 48 / N = .013 / L = 425 / JLC = .25

13 / DNLN = 12

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	108.75	48.00	100.88	5.22	109.17	0.00	7.62	12.56
UPSTRM	109.63	48.00	103.00	5.22	110.06	0.00	5	12.57

Drainage area (ac) = 0	Slope of invert (%) = 0.499
Runoff coefficient = 0	Slope energy grade line (%) = 0.208
Time of conc (min) = 1	Critical depth (in) = 28.73
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 65.5	Confluence angle (deg) = -90
Default Q (cfs) = 65.56	Natural ground elev (ft) = 112
Line capac. (cfs) = 101.5	Line storage (cuft) = 5340

LINE 14 / Q = 44.8 / HT = 48 / WID = 48 / N = .013 / L = 200 / JLC = .25

14 / DNLN = 13

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	109.74	48.00	103.00	3.56	109.94	0.00	5	12.56
UPSTRM	109.98	48.00	104.00	3.56	110.18	0.00	2	12.57

Drainage area (ac) = 0	Slope of invert (%) = 0.500
Runoff coefficient = 0	Slope energy grade line (%) = 0.097
Time of conc (min) = 0	Critical depth (in) = 23.74
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 44.7	Confluence angle (deg) = 0
Default Q (cfs) = 44.78	Natural ground elev (ft) = 110
Line capac. (cfs) = 101.6	Line storage (cuft) = 2513

START

TIME=0.0

***** HYDROGRAPH FOR MIAMI ROAD ANALYSIS: WESTBLUFF OUTFALL

RAINFALL

TYPE=1 RAIN QUARTER=0.0 IN

RAIN ONE=1.87 IN RAIN SIX=2.20 IN

RAIN DAY=2.66 IN DT=0.03333 HR

*

*FUTURE CONDITIONS IS THE SOLE CONSIDERATION IN THIS ANALYSIS

*EACH AREA WILL REFLECT DIFFERENT LAND TREATMENT TYPES

*THE THREE RECOGNIZED AREAS, RESIDENTIAL, BUSINESS, & STREETS

*

* STORM DRAIN SYSTEM ANALYSIS POINTS

*

*THESE ANALYSIS POINTS ASSUME RESIDENTIAL DISCHARGE INTO THE

*STORM DRAIN WILL OCCUR AT THE NORTHWEST AND SOUTHWEST CORNER

*OF ALL STREET INTERSECTIONS. STREET DISCHARGE WILL OCCUR AT

*LABELED ANALYSIS POINTS.

*

*THE FIRST ANALYSIS POINT OCCURS AT LADERA, 68TH STREET & DURAY

*BASIN P1 BORDERS 72ND, 68TH, LADERA AND NORTHERN HALF OF MIAMI
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.0339 SQ MI

PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0

TP=0.3145 HR MASS RAINFALL=-1

PRINT HYD

ID=1 CODE=1

*STREET FLOW

*68TH STREET BETWEEN MIAMI & INTERSECTION OF DURAY & LADERA

COMPUTE NM HYD ID=2 HYD NO=101.2 AREA=0.0017 SQ MI

PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0

TP=0.3145 HR MASS RAINFALL=-1

PRINT HYD

ID=2 CODE=1

*ADDING HYDROGRAPHS FOR FIRST ANALYSIS POINT 101.3 MH#1

ADD HYD ID=3 HYD NO=101.3 ID=1 ID=2

PRINT HYD

ID=3 CODE=1

*THE SECOND ANALYSIS POINT OCCURS EAST OF MH#1 ON DURAY

*BASIN P2.1 BORDERS 68TH, DURAY & NORTHERN HALF OF MIAMI

COMPUTE NM HYD ID=4 HYD NO=101.4 AREA=0.0166 SQ MI

PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0

TP=0.3055 HR MASS RAINFALL=-1

PRINT HYD

ID=4 CODE=1

*ADDING HYDROGRAPHS FOR SECOND ANALYSIS POINT 101.5 MH#2

ADD HYD ID=5 HYD NO=101.3 ID=3 ID=4

PRINT HYD

ID=5 CODE=1

*THE THIRD ANALYSIS POINT OCCURS EAST OF MH#2 ON DURAY

*BASIN P2.2 BORDERS 64TH, AND DURAY

COMPUTE NM HYD ID=6 HYD NO=101.6 AREA=0.0175 SQ MI

PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0

TP=0.2965 HR MASS RAINFALL=-1

PRINT HYD

ID=6 CODE=1

*THE NINTH ANALYSIS POINT OCCURS EAST OF MIAMI AND ESTANCIA

*SUBBASIN R6 BORDERS NORTHERN MIAMI AND EASTERN ESTANCIA
COMPUTE NM HYD ID=35 HYD NO=101.35 AREA=0.0140 SQ MI 1k
PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0 1k
TP=0.1333 HR MASS RAINFALL=-1 1k
PRINT HYD ID=35 CODE=1 1k

*ADDING HYDROGRAPHS FOR NINTH ANALYSIS POINT 101.36 MH#11
ADD HYD ID=36 HYD NO=101.36 ID=34 ID=35
PRINT HYD ID=36 CODE=1

*THE TENTH ANALYSIS POINT OCCURS EAST OF AP9

*SUBBASIN B1 BORDERS NORTHERN MIAMI AND WESTERN 57TH
COMPUTE NM HYD ID=37 HYD NO=101.37 AREA=0.0249 SQ MI
PER A=0.0 PER B=15.0 PER C=0.0 PER D=85.0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=37 CODE=1

*ADDING HYDROGRAPHS FOR TENTH ANALYSIS POINT 101.38 MH#12
ADD HYD ID=38 HYD NO=101.38 ID=36 ID=37
PRINT HYD ID=38 CODE=1

*THE ELEVENTH ANALYSIS POINT OCCURS AT MIAMI AND 57TH

*STREET FLOWS FROM ESTANCIA, MIAMI AND 57TH COMBINE

*ESTANCIA BETWEEN MIAMI & DURAY

COMPUTE NM HYD ID=39 HYD NO=101.39 AREA=0.0017 SQ MI
PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=39 CODE=1

*MIAMI BETWEEN ESTANCIA & 57TH

COMPUTE NM HYD ID=41 HYD NO=101.41 AREA=0.0010 SQ MI
PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=41 CODE=1

*57TH BETWEEN MIAMI AND DURAY

COMPUTE NM HYD ID=42 HYD NO=101.42 AREA=0.0010 SQ MI
PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=42 CODE=1

*ADDING HYDROGRAPHS FOR ELEVENTH ANALYSIS POINT 101.45 MH#13
ADD HYD ID=43 HYD NO=101.43 ID=39 ID=41
PRINT HYD ID=43 CODE=1

ADD HYD ID=44 HYD NO=101.44 ID=42 ID=43
PRINT HYD ID=44 CODE=1

ADD HYD ID=45 HYD NO=101.45 ID=38 ID=44
PRINT HYD ID=45 CODE=1

*THE TWELFTH ANALYSIS POINT OCCURS AT SUBBASIN B2 & 57TH

*SUBBASIN B2 BORDERS EASTERN 57TH AND COORS BLVD

COMPUTE NM HYD ID=46 HYD NO=101.46 AREA=0.0065 SQ MI
PER A=0.0 PER B=15.0 PER C=0.0 PER D=85.0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=46 CODE=1

*ADDING HYDROGRAPHS FOR TWELFTH ANALYSIS POINT 101.47 MH#14
ADD HYD ID=47 HYD NO=101.47 ID=45 ID=46

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*STREET FLOW EAST OF ESTANCIA AND MIAMI
*SUBBASIN R1 BORDERS 72ND AND MIAMI
*THIS SUBBASIN WILL BE ASSUMED TO STREET FLOW
COMPUTE NM HYD      ID=21 HYD NO=101.21 AREA=0.0032 SQ MI
                    PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0
                    TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=21 CODE=1

*MIAMI BETWEEN 72ND & 64TH
COMPUTE NM HYD      ID=22 HYD NO=101.22 AREA=0.0032 SQ MI
                    PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
                    TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=22 CODE=1

*64TH BETWEEN MIAMI & DORAY
COMPUTE NM HYD      ID=23 HYD NO=101.23 AREA=0.0011 SQ MI
                    PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
                    TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=23 CODE=1

*64TH BETWEEN MIAMI & SOUTH BASIN LINE
COMPUTE NM HYD      ID=24 HYD NO=101.24 AREA=0.0002 SQ MI
                    PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
                    TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=24 CODE=1

*ADDING HYDROGRAPHS FOR STREET FLOW PORTION OF AP7
ADD HYD             ID=25 HYD NO=101.25 ID=21 ID=22
PRINT HYD           ID=25 CODE=1

ADD HYD             ID=26 HYD NO=101.26 ID=23 ID=24
PRINT HYD           ID=26 CODE=1

ADD HYD             ID=27 HYD NO=101.27 ID=25 ID=26
PRINT HYD           ID=27 CODE=1

*ADDING HYDROGRAPHS FOR SEVENTH ANALYSIS POINT 101.29   MH#9
ADD HYD             ID=28 HYD NO=101.28 ID=19 ID=27
PRINT HYD           ID=28 CODE=1

ADD HYD             ID=29 HYD NO=101.29 ID=18 ID=28
PRINT HYD           ID=29 CODE=1

*THE EIGHTH ANALYSIS POINT OCCURS AT MIAMI AND ESTANCIA

*SUBBASIN R5.2 BORDERS NORTHERN HALF OF MIAMI, AND ESTANCIA
COMPUTE NM HYD      ID=31 HYD NO=101.31 AREA=0.0272 SQ MI
                    PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0
                    TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=31 CODE=1

*STREET FLOW
*MIAMI BETWEEN 64TH & ESTANCIA
COMPUTE NM HYD      ID=32 HYD NO=101.32 AREA=0.0016 SQ MI
                    PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
                    TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=32 CODE=1

*ADDING HYDROGRAPHS FOR EIGHTH ANALYSIS POINT 101.34   MH#10
ADD HYD             ID=33 HYD NO=101.33 ID=31 ID=32
PRINT HYD           ID=33 CODE=1

ADD HYD             ID=34 HYD NO=101.34 ID=29 ID=33
PRINT HYD           ID=34 CODE=1

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*ADDING HYDROGRAPHS FOR THIRD ANALYSIS POINT 101.7 MH#3
ADD HYD ID=7 HYD NO=101.7 ID=5 ID=6
PRINT HYD ID=7 CODE=1

*THE FOURTH ANALYSIS POINT OCCURS AT OURAY AND 64TH

*BASIN P3 BORDERS OURAY, AND 64TH

COMPUTE NM HYD ID=8 HYD NO=101.8 AREA=0.0043 SQ MI
PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0
TP=0.2734 HR MASS RAINFALL=-1
PRINT HYD ID=8 CODE=1

*STREET FLOW

*64TH BETWEEN BASIN LINE & OURAY

COMPUTE NM HYD ID=9 HYD NO=101.9 AREA=0.0006 SQ MI
PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
TP=0.2734 HR MASS RAINFALL=-1
PRINT HYD ID=9 CODE=1

*ADDING HYDROGRAPHS FOR FOURTH ANALYSIS POINT 101.12 MH#4

ADD HYD ID=11 HYD NO=101.11 ID=8 ID=9
PRINT HYD ID=11 CODE=1

ADD HYD ID=12 HYD NO=101.12 ID=7 ID=11
PRINT HYD ID=12 CODE=1

*THE FIFTH ANALYSIS POINT OCCURS AT 64TH STREET & MIAMI

*SUBBASIN R2 BORDERS 64TH AND NORTHERN HALF OF MIAMI

COMPUTE NM HYD ID=13 HYD NO=101.13 AREA=0.0096 SQ MI
PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0
TP=0.1750 HR MASS RAINFALL=-1
PRINT HYD ID=13 CODE=1

*SUBBASIN R3 BORDERS 64TH AND SOUTHERN HALF OF MIAMI

COMPUTE NM HYD ID=14 HYD NO=101.14 AREA=0.0065 SQ MI
PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0
TP=0.1750 HR MASS RAINFALL=-1
PRINT HYD ID=14 CODE=1

*ADDING HYDROGRAPHS FOR FIFTH ANALYSIS POINT 101.16 MH#7

ADD HYD ID=15 HYD NO=101.15 ID=13 ID=14
PRINT HYD ID=15 CODE=1

ADD HYD ID=16 HYD NO=101.16 ID=12 ID=15
PRINT HYD ID=16 CODE=1

*THE SIXTH ANALYSIS POINT OCCURS EAST OF MIAMI AND 64TH

*SUBBASIN R5.1 BORDERS 64TH, NORTHERN HALF OF MIAMI

COMPUTE NM HYD ID=17 HYD NO=101.17 AREA=0.0122 SQ MI
PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0
TP=0.1546 HR MASS RAINFALL=-1
PRINT HYD ID=17 CODE=1

*ADDING HYDROGRAPHS FOR SIXTH ANALYSIS POINT 101.18 MH#8

ADD HYD ID=18 HYD NO=101.18 ID=16 ID=17
PRINT HYD ID=18 CODE=1

*THE SEVENTH ANALYSIS POINT OCCURS EAST OF AP6

*SUBBASIN R4 BORDERS 64TH, SOUTHERN HALF OF MIAMI, AND ESTANCIA

COMPUTE NM HYD ID=19 HYD NO=101.19 AREA=0.0264 SQ MI
PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0
TP=0.1333 HR MASS RAINFALL=-1

FINISH

11
11
11
AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model T, January, 1994
RUN DATE (MDN/DAY/YR) = 01/04/1980
START TIME (HR:MIN:SEC) = 13:21:16 USER NO. = M_GOODWN.101
INPUT FILE = MIAMI2.DAT

START TIME=0.0

***** HYDROGRAPH FOR MIAMI ROAD ANALYSIS: WESTBLUFF OUTFALL

RAINFALL TYPE=1 RAIN QUARTER=0.0 IN

RAIN ONE=1.87 IN RAIN SIX=2.20 IN

RAIN DAY=2.66 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2

- PEAK AT 1.40 HR.

DT =	.033330 HOURS	END TIME =	5.999400 HOURS
.0000	.0016	.0033	.0050 .0067 .0085 .0103
.0122	.0141	.0160	.0180 .0201 .0222 .0243
.0266	.0289	.0312	.0337 .0362 .0388 .0415
.0443	.0472	.0502	.0534 .0567 .0601 .0637
.0675	.0715	.0758	.0809 .0865 .0924 .1050
.1334	.1771	.2398	.3254 .4379 .5814 .7600
.9780	1.1804	1.2649	1.3363 1.3997 1.4575 1.5106
1.5600	1.6061	1.6493	1.6900 1.7284 1.7646 1.7989
1.8314	1.8623	1.8915	1.9193 1.9456 1.9518 1.9576
1.9630	1.9682	1.9732	1.9780 1.9825 1.9869 1.9912
1.9953	1.9993	2.0031	2.0068 2.0104 2.0140 2.0174
2.0207	2.0240	2.0272	2.0303 2.0333 2.0363 2.0392
2.0420	2.0448	2.0475	2.0502 2.0528 2.0554 2.0580
2.0605	2.0629	2.0653	2.0677 2.0700 2.0723 2.0746
2.0768	2.0790	2.0812	2.0833 2.0855 2.0875 2.0896
2.0916	2.0936	2.0956	2.0976 2.0995 2.1014 2.1033
2.1051	2.1070	2.1088	2.1106 2.1124 2.1141 2.1159
2.1176	2.1193	2.1210	2.1227 2.1244 2.1260 2.1276
2.1292	2.1308	2.1324	2.1340 2.1355 2.1371 2.1386
2.1401	2.1416	2.1431	2.1446 2.1460 2.1475 2.1489
2.1504	2.1518	2.1532	2.1546 2.1560 2.1573 2.1587
2.1600	2.1614	2.1627	2.1640 2.1654 2.1667 2.1680
2.1692	2.1705	2.1718	2.1731 2.1743 2.1756 2.1768
2.1780	2.1792	2.1804	2.1817 2.1829 2.1840 2.1852
2.1864	2.1876	2.1887	2.1899 2.1910 2.1922 2.1933
2.1944	2.1956	2.1967	2.1978 2.1989 2.2000

*

*FUTURE CONDITIONS IS THE SOLE CONSIDERATION IN THIS ANALYSIS

*EACH AREA WILL REFLECT DIFFERENT LAND TREATMENT TYPES

*THE THREE RECOGNIZED AREAS RESIDENTIAL BUSINESS, & STREETS

* STORM DRAIN SYSTEM ANALYSIS POINTS

*THESE ANALYSIS POINTS ASSUME RESIDENTIAL DISCHARGE INTO THE
 *STORM DRAIN WILL OCCUR AT THE NORTHWEST AND SOUTHWEST CORNER
 *OF ALL STREET INTERSECTIONS. STREET DISCHARGE WILL OCCUR AT
 *LABELED ANALYSIS POINTS.

*THE FIRST ANALYSIS POINT OCCURS AT LADERA, 68TH STREET & OURAY

*BASIN P1 BORDERS 72ND, 68TH, LADERA AND NORTHERN HALF OF MIAMI

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.0339 SQ MI
 PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0
 TP=0.3145 HR MASS RAINFALL=-1

K = .171403HR TP = .314500HR K/TP RATIO = .545000 SHAPE
 CONSTANT, N = 7.106420
 UNIT PEAK = 28.364 CFS UNIT VOLUME = .9996 B = 526.28
 P60 = 1.8700
 AREA = .016950 SQ MI IA = .10000 INCHES INF = .04000 I
 NCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033330

K = .309054HR TP = .314500HR K/TP RATIO = .982685 SHAPE
 CONSTANT, N = 3.593454
 UNIT PEAK = 17.628 CFS UNIT VOLUME = .9992 B = 327.09
 P60 = 1.8700
 AREA = .016950 SQ MI IA = .50000 INCHES INF = 1.25000 I
 NCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.31643 INCHES = 2.3801 ACRE-FEET
 PEAK DISCHARGE RATE = 41.70 CFS AT 1.700 HOURS BASIN AREA =
 .0339 SQ. MI.

*STREET FLOW

*68TH STREET BETWEEN MIAMI & INTERSECTION OF OURAY & LADERA

COMPUTE NM HYD ID=2 HYD NO=101.2 AREA=0.0017 SQ MI

PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0

TP=0.3145 HR MASS RAINFALL=-1

K = .171403HR TP = .314500HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420

UNIT PEAK = 2.8447 CFS UNIT VOLUME = .9956 B = 526.28

P60 = 1.8700

AREA = .001700 SQ MI IA = .10000 INCHES INF = .04000 I
NCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 101.20

RUNOFF VOLUME = 1.96548 INCHES = .1782 ACRE-FEET
PEAK DISCHARGE RATE = 3.09 CFS AT 1.700 HOURS BASIN AREA =
.0017 SQ. MI.

*ADDING HYDROGRAPHS FOR FIRST ANALYSIS POINT 101.3 MH#1

ADD HYD ID=3 HYD NO=101.3 ID=1 ID=2

PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 101.30

RUNOFF VOLUME = 1.34739 INCHES = 2.5582 ACRE-FEET
PEAK DISCHARGE RATE = 44.78 CFS AT 1.700 HOURS BASIN AREA =
.0356 SQ. MI.

*THE SECOND ANALYSIS POINT OCCURS EAST OF MH#1 ON OURAY

*BASIN P2.1 BORDERS 68TH, OURAY & NORTHERN HALF OF MIAMI

COMPUTE NM HYD ID=4 HYD NO=101.4 AREA=0.0166 SQ MI

PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0

TP=0.3055 HR MASS RAINFALL=-1

K = .166498HR TP = .305500HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 14.298 CFS UNIT VOLUME = .9994¹ B = 526.28
P60 = 1.8700
AREA = .008300 SQ MI IA = .10000 INCHES 1¹ INF = .04000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .300210HR TP = .305500HR K/TP RATIO = .982685 SHAPE
CONSTANT, N = 3.593454
UNIT PEAK = 8.8865 CFS UNIT VOLUME = .9984 B = 327.09
P60 = 1.8700
AREA = .008300 SQ MI IA = .50000 INCHES INF = 1.25000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 101.40

RUNOFF VOLUME = 1.31643 INCHES = 1.1655 ACRE-FEET
PEAK DISCHARGE RATE = 20.78 CFS AT 1.700 HOURS BASIN AREA =
.0166 SQ. MI.

*ADDING HYDROGRAPHS FOR SECOND ANALYSIS POINT 101.5 MH#2

ADD HYD ID=5 HYD NO=101.3 ID=3 ID=4

PRINT HYD ID=5 CODE=1

PARTIAL HYDROGRAPH 101.30

RUNOFF VOLUME = 1.33754 INCHES = 3.7237 ACRE-FEET
PEAK DISCHARGE RATE = 65.56 CFS AT 1.700 HOURS BASIN AREA =
.0522 SQ. MI.

*THE THIRD ANALYSIS POINT OCCURS EAST OF MH#2 ON DURAY

*BASIN P2.2 BORDERS 64TH, AND DURAY

COMPUTE NM HYD ID=6 HYD NO=101.6 AREA=0.0175 SQ MI
PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0
TP=0.2965 HR MASS RAINFALL=-1

CONSTANT, N = 7.106420

UNIT PEAK = 15.531 CFS UNIT VOLUME = .9992 B = 526.28

P60 = 1.8700

AREA = .008750 SQ MI IA = .10000 INCHES INF = .04000 I

INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

= .033330

K = .291366HR TP = .296500HR K/TP RATIO = .982685 SHAPE

CONSTANT, N = 3.593454

UNIT PEAK = 9.6527 CFS UNIT VOLUME = .9985 B = 327.09

P60 = 1.8700

AREA = .008750 SQ MI IA = .50000 INCHES INF = 1.25000 I

INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

= .033330

PRINT HYD

ID=6 CODE=1

PARTIAL HYDROGRAPH 101.60

RUNOFF VOLUME = 1.31643 INCHES = 1.2287 ACRE-FEET

PEAK DISCHARGE RATE = 22.35 CFS AT 1.667 HOURS BASIN AREA =

.0175 SQ. MI.

*ADDING HYDROGRAPHS FOR THIRD ANALYSIS POINT 101.7 MH#3

ADD HYD ID=7 HYD NO=101.7 ID=5 ID=6

PRINT HYD ID=7 CODE=1

PARTIAL HYDROGRAPH 101.70

RUNOFF VOLUME = 1.33223 INCHES = 4.9523 ACRE-FEET

PEAK DISCHARGE RATE = 87.78 CFS AT 1.700 HOURS BASIN AREA =

.0697 SQ. MI.

*THE FOURTH ANALYSIS POINT OCCURS AT DURAY AND 64TH

*BASIN P3 BORDERS DURAY, AND 64TH

COMPUTE NM HYD ID=8 HYD NO=101.8 AREA=0.0043 SQ MI

PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0

TP=0.2734 HR MASS RAINFALL=-1

K = .149003HR

TP = .273400HR

K/TP RATIO = .545000

SHAPE

CONSTANT, N = 7.106420

P60 = 1.8700
AREA = .002150 SQ MI IA = .10000 INCHES INF = .04000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .268666HR TP = .273400HR K/TP RATIO = .982685 SHAPE
CONSTANT, N = 3.593454
UNIT PEAK = 2.5722 CFS UNIT VOLUME = .9945 B = 327.09
P60 = 1.8700
AREA = .002150 SQ MI IA = .50000 INCHES INF = 1.25000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=8 CODE=1

PARTIAL HYDROGRAPH 101.80

RUNOFF VOLUME = 1.31643 INCHES = .3019 ACRE-FEET
PEAK DISCHARGE RATE = 5.79 CFS AT 1.667 HOURS BASIN AREA =
.0043 SQ. MI.

*STREET FLOW

*64TH BETWEEN BASIN LINE & OURAY

COMPUTE NM HYD ID=9 HYD NO=101.9 AREA=0.0006 SQ MI
PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
TP=0.2734 HR MASS RAINFALL=-1

K = .149003HR TP = .273400HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 1.1550 CFS UNIT VOLUME = .9897 B = 526.28
P60 = 1.8700
AREA = .000600 SQ MI IA = .10000 INCHES INF = .04000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=9 CODE=1

PARTIAL HYDROGRAPH 101.90

RUNOFF VOLUME = 1.96548 INCHES = .0629 ACRE-FEET
PEAK DISCHARGE RATE = 1.18 CFS AT 1.633 HOURS BASIN AREA =
.0006 SQ. MI.

ADD HYD ID=11 HYD NO=101.11 ID=8 ID=9

PRINT HYD ID=11 CODE=1

PARTIAL HYDROGRAPH 101.11

RUNOFF VOLUME = 1.39570 INCHES = .3647 ACRE-Feet
PEAK DISCHARGE RATE = 6.97 CFS AT 1.667 HOURS BASIN AREA =
.0049 SQ. MI.

ADD HYD ID=12 HYD NO=101.12 ID=7 ID=11

PRINT HYD ID=12 CODE=1

PARTIAL HYDROGRAPH 101.12

RUNOFF VOLUME = 1.33640 INCHES = 5.3171 ACRE-Feet
PEAK DISCHARGE RATE = 94.52 CFS AT 1.700 HOURS BASIN AREA =
.0746 SQ. MI.

*THE FIFTH ANALYSIS POINT OCCURS AT 64TH STREET & MIAMI

*SUBBASIN R2 BORDERS 64TH AND NORTHERN HALF OF MIAMI

COMPUTE NM HYD ID=13 HYD NO=101.13 AREA=0.0096 SQ MI

PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0

TP=0.1750 HR MASS RAINFALL=-1

K = .095375HR TP = .175000HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 14.435 CFS UNIT VOLUME = .9990 B = 526.28
P60 = 1.8700
AREA = .004800 SQ MI IA = .10000 INCHES INF = .04000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .171970HR TP = .175000HR K/TP RATIO = .982685 SHAPE
CONSTANT, N = 3.593454
UNIT PEAK = 8.9715 CFS UNIT VOLUME = .9985 B = 327.09
P60 = 1.8700
AREA = .004800 SQ MI IA = .50000 INCHES INF = 1.25000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PARTIAL HYDROGRAPH 101.13

RUNOFF VOLUME = 1.31643 INCHES = .6740 ACRE-FEET
 PEAK DISCHARGE RATE = 16.83 CFS AT 1.533 HOURS BASIN AREA =
 .0096 SQ. MI.

*SUBBASIN R3 BORDERS 64TH AND SOUTHERN HALF OF MIAMI

COMPUTE NM HYD ID=14 HYD NO=101.14 AREA=0.0065 SQ MI

PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0

TP=0.1750 HR MASS RAINFALL=-1

K = .095375HR TP = .175000HR K/TP RATIO = .545000 SHAPE
 CONSTANT, N = 7.106420
 UNIT PEAK = 9.7737 CFS UNIT VOLUME = .9987 B = 526.28
 P60 = 1.8700
 AREA = .003250 SQ MI IA = .10000 INCHES INF = .04000 I
 NCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033330

K = .171970HR TP = .175000HR K/TP RATIO = .982685 SHAPE
 CONSTANT, N = 3.593454
 UNIT PEAK = 6.0745 CFS UNIT VOLUME = .9978 B = 327.09
 P60 = 1.8700
 AREA = .003250 SQ MI IA = .50000 INCHES INF = 1.25000 I
 NCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033330

PRINT HYD ID=14 CODE=1

PARTIAL HYDROGRAPH 101.14

RUNOFF VOLUME = 1.31643 INCHES = .4564 ACRE-FEET
 PEAK DISCHARGE RATE = 11.40 CFS AT 1.533 HOURS BASIN AREA =
 .0065 SQ. MI.

*ADDING HYDROGRAPHS FOR FIFTH ANALYSIS POINT 101.16 MH#7

ADD HYD ID=15 HYD NO=101.15 ID=13 ID=14

PRINT HYD ID=15 CODE=1

PARTIAL HYDROGRAPH 101.15

RUNOFF VOLUME = 1.31639 INCHES = 1.1303 ACRE-FEET

.0161 SQ. MI.

ADD HYD ID=16 HYD NO=101.16 ID=12 ID=15
PRINT HYD ID=16 CODE=1

PARTIAL HYDROGRAPH 101.16

RUNOFF VOLUME = 1.33285 INCHES = 6.4474 ACRE-Feet
PEAK DISCHARGE RATE = 114.67 CFS AT 1.667 HOURS BASIN AREA =
.0907 SQ. MI.

*THE SIXTH ANALYSIS POINT OCCURS EAST OF MIAMI AND 64TH

*SUBBASIN R5.1 BORDERS 64TH, NORTHERN HALF OF MIAMI

COMPUTE NM HYD ID=17 HYD NO=101.17 AREA=0.0122 SQ MI
PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0
TP=0.1546 HR MASS RAINFALL=-1

K = .084257HR TP = .154600HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 20.765 CFS UNIT VOLUME = .9996 B = 526.28
P60 = 1.8700
AREA = .006100 SQ MI IA = .10000 INCHES INF = .04000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .151923HR TP = .154600HR K/TP RATIO = .982685 SHAPE
CONSTANT, N = 3.593454
UNIT PEAK = 12.906 CFS UNIT VOLUME = .9992 B = 327.09
P60 = 1.8700
AREA = .006100 SQ MI IA = .50000 INCHES INF = 1.25000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=17 CODE=1

PARTIAL HYDROGRAPH 101.17

RUNOFF VOLUME = 1.31643 INCHES = .8566 ACRE-Feet
PEAK DISCHARGE RATE = 23.09 CFS AT 1.533 HOURS BASIN AREA =
.0122 SQ. MI.

*ADDING HYDROGRAPHS FOR SIXTH ANALYSIS POINT 101.18 MH#8

ADD HYD ID=18 HYD NO=101.18 ID=16 ID=17

PRINT HYD ID=18 CODE=1

PARTIAL HYDROGRAPH 101.18

RUNOFF VOLUME = 1.33090 INCHES =
PEAK DISCHARGE RATE = 130.52 CFS AT 1.633 HOURS BASIN AREA =
1.029 SQ. MI.

*THE SEVENTH ANALYSIS POINT OCCURS EAST OF AP6

*SUBBASIN R4 BORDERS 64TH, SOUTHERN HALF OF MIAMI, AND ESTANCIA

COMPUTE NM HYD ID=19 HYD NO=101.19 AREA=0.0264 SQ MI

PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0

TF=0.1333 HR MASS RAINFALL=-1

K = .072649HR TF = .133300HR K/TF RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 52.114 CFS UNIT VOLUME = .9992 B = 526.28
P60 = 1.8700
AREA = .013200 SQ MI IA = .10000 INCHES INF = .04000 I
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .130922HR TF = .133300HR K/TF RATIO = .982685 SHAPE
CONSTANT, N = 3.593448
UNIT PEAK = 32.390 CFS UNIT VOLUME = .9999 B = 327.09
P60 = 1.8700
AREA = .013200 SQ MI IA = .50000 INCHES INF = 1.25000 I
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=19 CODE=1

PARTIAL HYDROGRAPH 101.19

RUNOFF VOLUME = 1.31643 INCHES =
PEAK DISCHARGE RATE = 53.98 CFS AT 1.500 HOURS BASIN AREA =
1.0264 SQ. MI.

*STREET FLOW EAST OF ESTANCIA AND MIAMI

*SUBBASIN R1 BORDERS 72ND AND MIAMI

*THIS SUBBASIN WILL BE ASSUMED TO STREET FLOW

COMPUTE NM HYD ID=21 HYD NO=101.21 AREA=0.0032 SQ MI

PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 6.3169 CFS UNIT VOLUME = .9976 B = 526.28
P60 = 1.8700
AREA = .001600 SQ MI IA = .10000 INCHES INF = .04000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE
CONSTANT, N = 3.593448
UNIT PEAK = 3.9260 CFS UNIT VOLUME = .9967 B = 327.09
P60 = 1.8700
AREA = .001600 SQ MI IA = .50000 INCHES INF = 1.25000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=21 CODE=1

PARTIAL HYDROGRAPH 101.21

RUNOFF VOLUME = 1.31643 INCHES = .2247 ACRE-FEET
PEAK DISCHARGE RATE = 6.56 CFS AT 1.500 HOURS BASIN AREA =
.0032 SQ. MI.

*MIAMI BETWEEN 72ND & 64TH

COMPUTE NM HYD ID=22 HYD NO=101.22 AREA=0.0032 SQ MI

PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 12.634 CFS UNIT VOLUME = .9985 B = 526.28
P60 = 1.8700
AREA = .003200 SQ MI IA = .10000 INCHES INF = .04000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD

ID=22 CODE=1

PARTIAL HYDROGRAPH 101.22

RUNOFF VOLUME = 1.96548 INCHES = .3354 ACRE-FEET
 PEAK DISCHARGE RATE = 8.96 CFS AT 1.500 HOURS BASIN AREA =
 .0032 SQ. MI.

*64TH BETWEEN MIAMI & DURAY

COMPUTE NM HYD ID=23 HYD NO=101.23 AREA=0.0011 SQ MI
 PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 CONSTANT, N = 7.106420
 UNIT PEAK = 4.3429 CFS UNIT VOLUME = .9969 B = 526.28
 P60 = 1.8700
 AREA = .001100 SQ MI IA = .10000 INCHES INF = .04000 I
 NCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033330

PRINT HYD ID=23 CODE=1

PARTIAL HYDROGRAPH 101.23

RUNOFF VOLUME = 1.96548 INCHES = .1153 ACRE-FEET
 PEAK DISCHARGE RATE = 3.08 CFS AT 1.500 HOURS BASIN AREA =
 .0011 SQ. MI.

*64TH BETWEEN MIAMI & SOUTH BASIN LINE

COMPUTE NM HYD ID=24 HYD NO=101.24 AREA=0.0002 SQ MI
 PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 CONSTANT, N = 7.106420
 UNIT PEAK = .78961 CFS UNIT VOLUME = .9840 B = 526.28
 P60 = 1.8700
 AREA = .000200 SQ MI IA = .10000 INCHES INF = .04000 I
 NCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033330

PRINT HYD ID=24 CODE=1

RUNOFF VOLUME = 1.96548 INCHES = .0210 ACRE-FEET
PEAK DISCHARGE RATE = .57 CFS AT 1.500 HOURS BASIN AREA =
.0002 SQ. MI.

*ADDING HYDROGRAPHS FOR STREET FLOW PORTION OF AP7

ADD HYD ID=25 HYD NO=101.25 ID=21 ID=22

PRINT HYD ID=25 CODE=1

PARTIAL HYDROGRAPH 101.25

RUNOFF VOLUME = 1.64087 INCHES = .5601 ACRE-FEET
PEAK DISCHARGE RATE = 15.51 CFS AT 1.500 HOURS BASIN AREA =
.0064 SQ. MI.

ADD HYD ID=26 HYD NO=101.26 ID=23 ID=24

PRINT HYD ID=26 CODE=1

PARTIAL HYDROGRAPH 101.26

RUNOFF VOLUME = 1.96510 INCHES = .1362 ACRE-FEET
PEAK DISCHARGE RATE = 3.65 CFS AT 1.500 HOURS BASIN AREA =
.0013 SQ. MI.

ADD HYD ID=27 HYD NO=101.27 ID=25 ID=26

PRINT HYD ID=27 CODE=1

PARTIAL HYDROGRAPH 101.27

RUNOFF VOLUME = 1.69561 INCHES = .6963 ACRE-FEET
PEAK DISCHARGE RATE = 19.16 CFS AT 1.500 HOURS BASIN AREA =
.0077 SQ. MI.

*ADDING HYDROGRAPHS FOR SEVENTH ANALYSIS POINT 101.29 MH#9

ADD HYD ID=28 HYD NO=101.28 ID=19 ID=27

PRINT HYD ID=28 CODE=1

PARTIAL HYDROGRAPH 101.28

RUNOFF VOLUME = 1.40204 INCHES = 2.3498 ACRE-Feet
 PEAK DISCHARGE RATE = 73.15 CFS AT 1.500 HOURS BASIN AREA =
 .0341 SQ. MI.

ADD HYD ID=29 HYD NO=101.29 ID=18 ID=28

PRINT HYD ID=29 CODE=1

PARTIAL HYDROGRAPH 101.29

RUNOFF VOLUME = 1.34861 INCHES = 9.8538 ACRE-Feet
 PEAK DISCHARGE RATE = 184.28 CFS AT 1.567 HOURS BASIN AREA =
 .1370 SQ. MI.

*THE EIGHTH ANALYSIS POINT OCCURS AT MIAMI AND ESTANCIA

*SUBBASIN R5.2 BORDERS NORTHERN HALF OF MIAMI, AND ESTANCIA

COMPUTE NM HYD ID=31 HYD NO=101.31 AREA=0.0272 SQ MI
 PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 CONSTANT, N = 7.106420
 UNIT PEAK = 53.694 CFS UNIT VOLUME = .9992 B = 526.28
 P60 = 1.8700
 AREA = .013600 SQ MI IA = .10000 INCHES INF = .04000 I
 NCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033330

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE
 CONSTANT, N = 3.593448
 UNIT PEAK = 33.371 CFS UNIT VOLUME = .9999 B = 327.09
 P60 = 1.8700
 AREA = .013600 SQ MI IA = .50000 INCHES INF = 1.25000 I
 NCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033330

PRINT HYD ID=31 CODE=1

PARTIAL HYDROGRAPH 101.31

RUNOFF VOLUME = 1.31643 INCHES = 1.9097 ACRE-FEET
PEAK DISCHARGE RATE = 55.62 CFS AT 1.500 HOURS BASIN AREA =
.0272 SQ. MI.

11
11
11
11

*STREET FLOW

*MIAMI BETWEEN 64TH & ESTANCIA

COMPUTE NM HYD ID=32 HYD NO=101.32 AREA=0.0016 SQ MI

PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE

CONSTANT, N = 7.106420

UNIT PEAK = 6.3169 CFS UNIT VOLUME = .9976 B = 526.28

P60 = 1.8700

AREA = .001600 SQ MI IA = .10000 INCHES INF = .04000 I

INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .0333330

PRINT HYD ID=32 CODE=1

PARTIAL HYDROGRAPH 101.32

RUNOFF VOLUME = 1.96548 INCHES = .1677 ACRE-FEET
PEAK DISCHARGE RATE = 4.48 CFS AT 1.500 HOURS BASIN AREA =
.0016 SQ. MI.

*ADDING HYDROGRAPHS FOR EIGHTH ANALYSIS POINT 101.34 MH#10

ADD HYD ID=33 HYD NO=101.33 ID=31 ID=32

PRINT HYD ID=33 CODE=1

PARTIAL HYDROGRAPH 101.33

RUNOFF VOLUME = 1.35247 INCHES = 2.0774 ACRE-FEET
PEAK DISCHARGE RATE = 60.10 CFS AT 1.500 HOURS BASIN AREA =
.0288 SQ. MI.

ADD HYD ID=34 HYD NO=101.34 ID=29 ID=33

PRINT HYD ID=34 CODE=1

PARTIAL HYDROGRAPH 101.34

RUNOFF VOLUME = 1.34928 INCHES = 11.9311 ACRE-FEET
PEAK DISCHARGE RATE = 239.30 CFS AT 1.533 HOURS BASIN AREA =
.1658 SQ. MI.

*THE NINTH ANALYSIS POINT OCCURS EAST OF MIAMI AND ESTANCIA

*SUBBASIN R6 BORDERS NORTHERN MIAMI AND EASTERN ESTANCIA

COMPUTE NM HYD ID=35 HYD NO=101.35 AREA=0.0140 SQ MI
PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 27.636 CFS UNIT VOLUME = .9990 B = 526.28
P60 = 1.8700
AREA = .007000 SQ MI IA = .10000 INCHES INF = .04000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE
CONSTANT, N = 3.593448
UNIT PEAK = 17.176 CFS UNIT VOLUME = .9995 B = 327.09
P60 = 1.8700
AREA = .007000 SQ MI IA = .50000 INCHES INF = 1.25000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=35 CODE=1

PARTIAL HYDROGRAPH 101.35

RUNOFF VOLUME = 1.31643 INCHES = .9829 ACRE-FEET
PEAK DISCHARGE RATE = 28.63 CFS AT 1.500 HOURS BASIN AREA =
.0140 SQ. MI.

*ADDING HYDROGRAPHS FOR NINTH ANALYSIS POINT 101.36 MH#11

ADD HYD ID=36 HYD NO=101.36 ID=34 ID=35

PRINT HYD ID=36 CODE=1

PARTIAL HYDROGRAPH 101.36

RUNOFF VOLUME = 1.34672 INCHES = 12.9141 ACRE-Feet
PEAK DISCHARGE RATE = 267.00 CFS AT 1.533 HOURS BASIN AREA =
.1798 SQ. MI.

1A
1A
1A
1A

*THE TENTH ANALYSIS POINT OCCURS EAST OF AP9

*SUBBASIN B1 BORDERS NORTHERN MIAMI AND WESTERN 57TH

COMPUTE NM HYD ID=37 HYD NO=101.37 AREA=0.0249 SQ MI

PER A=0.0 PER B=15.0 PER C=0.0 PER D=85.0

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 83.561 CFS UNIT VOLUME = .9992 B = 526.28
P60 = 1.8700
AREA = .021165 SQ MI IA = .10000 INCHES INF = .04000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE
CONSTANT, N = 3.593448
UNIT PEAK = 9.1648 CFS UNIT VOLUME = .9988 B = 327.09
P60 = 1.8700
AREA = .003735 SQ MI IA = .50000 INCHES INF = 1.25000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=37 CODE=1

PARTIAL HYDROGRAPH 101.37

RUNOFF VOLUME = 1.77077 INCHES = 2.3516 ACRE-Feet
PEAK DISCHARGE RATE = 64.03 CFS AT 1.500 HOURS BASIN AREA =
.0249 SQ. MI.

*ADDING HYDROGRAPHS FOR TENTH ANALYSIS POINT 101.38 MH#12

ADD HYD ID=38 HYD NO=101.38 ID=36 ID=37

PRINT HYD ID=38 CODE=1

PARTIAL HYDROGRAPH 101.38

RUNOFF VOLUME = 1.79830 INCHES = 15.2656 ACRE-Feet

.2047 SQ. MI.

*THE ELEVENTH ANALYSIS POINT OCCURS AT MIAMI AND 57TH

*STREET FLOWS FROM ESTANCIA, MIAMI AND 57TH COMBINE

*ESTANCIA BETWEEN MIAMI & DURAY

COMPUTE NM HYD ID=39 HYD NO=101.39 AREA=0.0017 SQ MI
PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 6.7117 CFS UNIT VOLUME = .9976 B = 526.28
P60 = 1.8700
AREA = .001700 SQ MI IA = .10000 INCHES INF = .04000 I
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=39 CODE=1

PARTIAL HYDROGRAPH 101.39

RUNOFF VOLUME = 1.96548 INCHES = .1782 ACRE-FEET
PEAK DISCHARGE RATE = 4.76 CFS AT 1.500 HOURS BASIN AREA =
.0017 SQ. MI.

*MIAMI BETWEEN ESTANCIA & 57TH

COMPUTE NM HYD ID=41 HYD NO=101.41 AREA=0.0010 SQ MI
PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 3.9481 CFS UNIT VOLUME = .9965 B = 526.28
P60 = 1.8700
AREA = .001000 SQ MI IA = .10000 INCHES INF = .04000 I
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=41 CODE=1

RUNOFF VOLUME = 1.96548 INCHES = .1048 ACRE-FEET
PEAK DISCHARGE RATE = 2.80 CFS AT 1.500 HOURS BASIN AREA =
.0010 SQ. MI.

*57TH BETWEEN MIAMI AND DURAY

COMPUTE NM HYD ID=42 HYD NO=101.42 AREA=0.0010 SQ MI

PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 3.9481 CFS UNIT VOLUME = .9965 B = 526.28
P60 = 1.8700
AREA = .001000 SQ MI IA = .10000 INCHES INF = .04000 I
INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=42 CODE=1

PARTIAL HYDROGRAPH 101.42

RUNOFF VOLUME = 1.96548 INCHES = .1048 ACRE-FEET
PEAK DISCHARGE RATE = 2.80 CFS AT 1.500 HOURS BASIN AREA =
.0010 SQ. MI.

*ADDING HYDROGRAPHS FOR ELEVENTH ANALYSIS POINT 101.45 MH#13

ADD HYD ID=43 HYD NO=101.43 ID=39 ID=41

PRINT HYD ID=43 CODE=1

PARTIAL HYDROGRAPH 101.43

RUNOFF VOLUME = 1.96528 INCHES = .2830 ACRE-FEET
PEAK DISCHARGE RATE = 7.57 CFS AT 1.500 HOURS BASIN AREA =
.0027 SQ. MI.

ADD HYD ID=44 HYD NO=101.44 ID=42 ID=43

PRINT HYD ID=44 CODE=1

RUNOFF VOLUME = 1.96527 INCHES = .3878 ACRE-FEET
PEAK DISCHARGE RATE = 10.37 CFS AT 1.500 HOURS BASIN AREA =
.0037 SQ. MI.

ADD HYD ID=45 HYD NO=101.45 ID=38 ID=44

PRINT HYD ID=45 CODE=1

PARTIAL HYDROGRAPH 101.45

RUNOFF VOLUME = 1.40837 INCHES = 15.6534 ACRE-FEET
PEAK DISCHARGE RATE = 337.96 CFS AT 1.533 HOURS BASIN AREA =
.2084 SQ. MI.

*THE TWELFTH ANALYSIS POINT OCCURS AT SUBBASIN B2 & 57TH

*SUBBASIN B2 BORDERS EASTERN 57TH AND COORS BLVD

COMPUTE NM HYD ID=46 HYD NO=101.46 AREA=0.0065 SQ MI

PER A=0.0 PER B=15.0 PER C=0.0 PER D=85.0

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 21.813 CFS UNIT VOLUME = .9988 B = 526.28
P60 = 1.8700
AREA = .005525 SQ MI IA = .10000 INCHES INF = .04000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE
CONSTANT, N = 3.593448
UNIT PEAK = 2.3924 CFS UNIT VOLUME = .9948 B = 327.09
P60 = 1.8700
AREA = .000975 SQ MI IA = .50000 INCHES INF = 1.25000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=46 CODE=1

PARTIAL HYDROGRAPH 101.46

.0065 SQ. MI.

1A
1A
1A

*ADDING HYDROGRAPHS FOR TWELFTH ANALYSIS POINT 101.47 MH#14

ADD HYD ID=47 HYD NO=101.47 ID=45 ID=46

PRINT HYD ID=47 CODE=1

PARTIAL HYDROGRAPH 101.47

RUNOFF VOLUME = 1.41933 INCHES = 16.2673 ACRE-FEET

PEAK DISCHARGE RATE = 353.93 CFS AT 1.533 HOURS BASIN AREA =

.2149 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 13:23:15

***EXTRACT FROM SAD 218
DRAINAGE REPORT***

interceptor. In the interim, the developer of these properties can dedicate the easement for the I-40 interceptor and provide retention within this easement.

72nd Street

South of Juniper, 72nd Street will only carry street flows, as the Laurelwood Subdivision to the west is designed to drain into the detention pond at Hanover and 72nd. A low point will be established at Iliff to direct street flows to the east. There will also be a low point at Juniper to direct the street flows and the flows from the Cielo Dorado Subdivision eastward along Juniper. A high point will be established south of Miami and catch basins installed to connect to a 30" stub-out which drains north across Ladera.

Areas East Of 72nd Street

The natural boundary at the north of the drainage area under consideration is a slight ridge between Juniper and Miami. Developed areas to the north of this ridge can drain to Miami and down Miami to the east. The Westbluff Drainage Management Plan calls for a 54" storm drain to intercept these flows in Miami at Estancia Rd. and conduct them into the I-40 interceptor.

The other boundaries of the drainage area considered are 72nd Street (excepting Cielo Dorado Subdivision) to the west, I-40 to the south and 64th Street to the east.

The subject area has been divided into basins and 100-year flow and volume calculations have been performed. The calculations are appended to this report.

Flows from drainage Areas A-1 and A-2 are directed south on 68th to catch basins which conduct the run-off into retention Pond 1. Area A-3 drains into Juniper and street flows are intercepted by catch basins in Juniper at 64th and conducted to retention Pond No. 2. Area A-7 drains into Iliff and flows are conducted into Pond 1. Area A-4 flows are conducted into Pond 2.

The developer of tracts within Area A-5 will provide on-site retention in the future right-of-way of the I-40 interceptor. Area A-6, after development, is expected to drain into 72nd Street.

Veranda Drive

This short segment of road will carry only street flows and discharge to Glenwood Drive. No storm drain improvements are recommended for this street. The flows from Veranda Drive will discharge to existing inlets on Glenwood Drive.

Indian Farm Lane

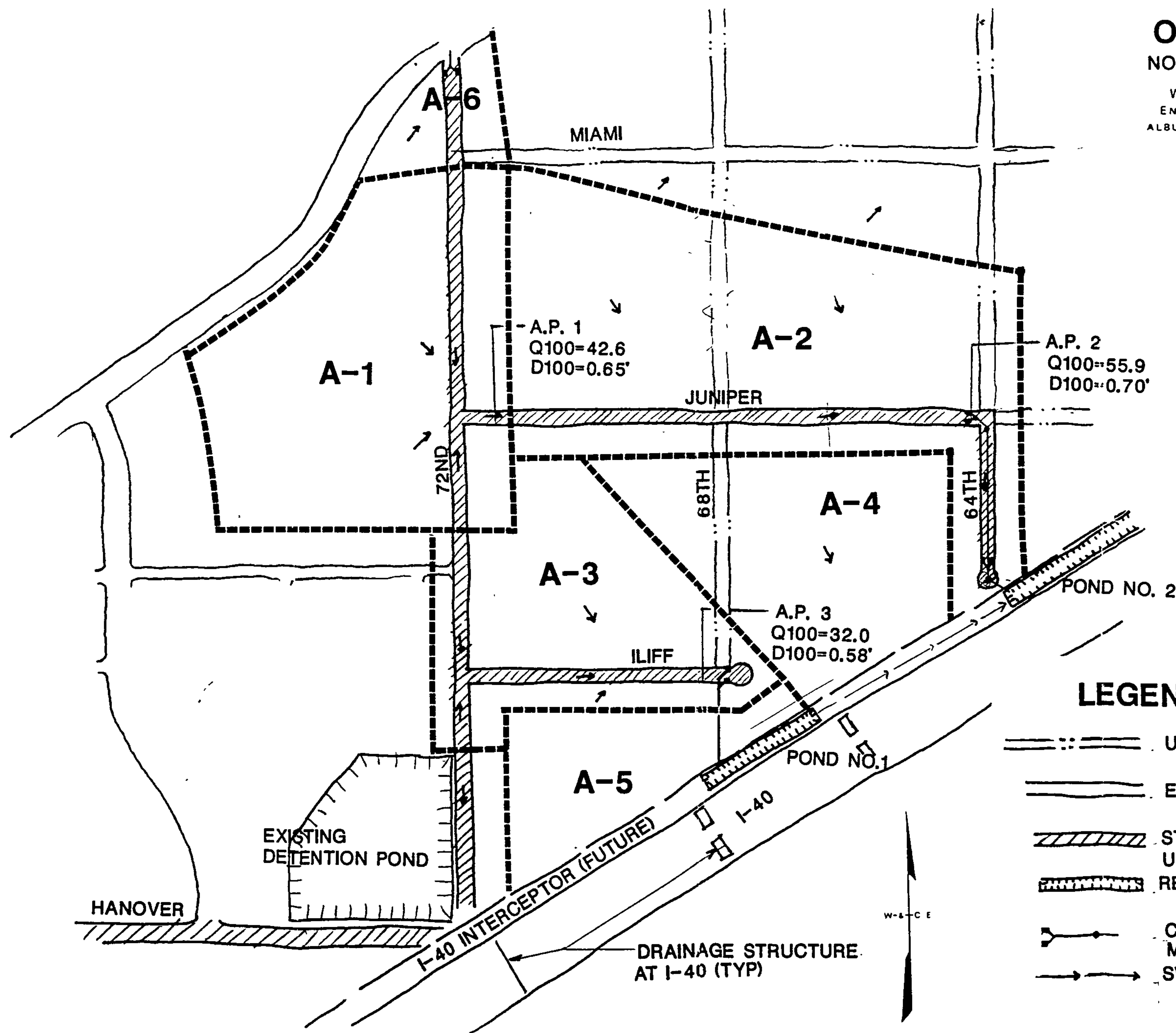
This proposed street improvement will extend the existing 20 foot wide roadway approximately 150 feet east and 950 feet south. The existing right-of-way width is 24 feet wide. The proposed street section is a 20

OPTION 'A'

NO IMPROVEMENTS TO 68TH

WILSON & COMPANY
ENGINEERS & ARCHITECTS
ALBUQUERQUE NEW MEXICO

SAD #218



LEGEND

- UNIMPROVED STREET
- == EXISTING STREET
- /// STREET TO BE IMPROVED UNDER THIS PROJECT
- RETENTION POND
- CATCH BASINS, STORM DRAIN, MANHOLE
- SWALE

Figure 12

E X H I B I T "A"
To Subdivision Improvements Agreement
DEVELOPMENT REVIEW BOARD (DRB) REQUIRED INFRASTRUCTURE LISTING
for Tompiro Subdivision

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are the Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

ON-SITE

<u>Size</u>	<u>Type Improvement</u>	<u>Location</u>	<u>From</u>	<u>To</u>
28' FF	Residential Street 4' Sidewalk (deferred) * Standard Curb & Gutter *	Tompiro Drive	Gran Quivira Road	Tenabo Road
28' FF	Residential Street 4' Sidewalk (deferred) * Mountable Curb & Gutter *	Gran Quivira Road	Tompiro Drive	Estancia Drive
28' FF	Residential Street 4' Sidewalk (deferred) * Mountable Curb & Gutter *	Tenabo Road	Tompiro Drive	Estancia Drive
28' FF	Residential Street 4' Sidewalk (deferred) * Mountable Curb & Gutter *	Las Humanas Road	Tompiro Drive	Estancia Drive
28' FF	Residential Street 4' Sidewalk (deferred) * Mountable Curb & Gutter *	Tompiro Drive	Tenabo Road	Las Humanas Road
6"	PVC Waterline	Tompiro Drive	Gran Quivira Road	Las Humanas Road
6"	PVC Waterline	Gran Quivira Road	Tompiro Drive	Estancia Drive
6"	PVC Waterline	Tenabo Road	Tompiro Drive	Estancia Drive
6"	PVC Waterline	Las Humanas Road	Tompiro Drive	Estancia Drive
Water infrastructure to include valves, fittings, valve boxes, hydrants and services.				
8"	SAS Gravity Line	Tompiro Drive	Gran Quivira Road	Las Humanas Road
8"	SAS Gravity Line	Gran Quivira Road	Tompiro Drive	Estancia Drive
8"	SAS Gravity Line	Tenabo Road	Tompiro Drive	Estancia Drive
8"	SAS Gravity Line	Las Humanas Road	Tompiro Drive	Estancia Drive
Sanitary Sewer to include manholes and services.				

* - both sides

D.R.B. Case No. 94-326
D.R.C. Project No. _____
Date Submitted 9/9/94 2-6-95
Prelim. Plat Approved _____
Prelim. Plat Expires _____

<u>Size</u>	<u>Improvements</u>	<u>Location</u>	<u>From</u>	<u>To</u>
24"	RCP	Cul-de-sac		
30"	RCP	15' Public Drainage Easement	Cul-de-sac	Miami Road

Storm drain to include catch basins.

N/A Temporary Retention Pond with Maintenance Agreement

OFF-SITE

<u>Size</u>	<u>Improvements</u>	<u>Location</u>	<u>From</u>	<u>To</u>
24' E-E	Temporary Paving	Estancia Drive	North Property Line	Ouray
18' Perm. Pvmt.	Residential Street	Estancia Drive	Miami Road	North Property Line
6' Temp. Pvmt.	6' Sidewalk, E side Std Curb & Gutter, E side			
18' Perm. Pvmt. **	Residential Street	Miami Road	Estancia Drive	East Property Line
6' Temp. Pvmt. **	6' Sidewalk, N side Std Curb & Gutter, N side			
8" **	SAS Gravity Line	Miami Road	Estancia Drive	East Property Line
Sanitary Sewer to include manholes and services.				
8"	PVC Waterline	Estancia Drive	North Property Line	Miami Road
10" **	PVC Waterline	Miami Road	Estancia Drive	East Property Line
Water infrastructure to include valves, fittings, valve boxes, hydrants and services.				
48" * *	RCP	Miami Road	Estancia Drive	15' Public Drainage Easement
54" **	RCP	Miami Road	15' Public Drainage Easement	East Property Line

Storm drain to include manholes.

N/A Residential Street Lights Per DPM

Engineer's Certification for Grading and Drainage per DPM including Perimeter Walls as shown on the Grading Plan for Release of SIA and Financial Guarantees.

** To be Bonded - Not Built

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Tompiro Subdivision ZONE ATLAS/DRNG, FILE#: H-11 / 1048
DRB #: 94-326 EPC #: _____ WORK ORDER #: _____
LEGAL DESCRIPTION: 337B & 338B, Atrisco Grant
CITY ADDRESS: _____

ENGINEERING FIRM: Mark Goodwin & Associates, PA CONTACT: Gregory J. Krenik, PE
ADDRESS: PO Box 90606 PHONE: 345-2010
OWNER: Skip Hines CONTACT: Skip Hines
ADDRESS: 331 Wellesley NE PHONE: 266-6848
ARCHITECT: N/A CONTACT: _____
ADDRESS: _____ PHONE: _____
SURVEYOR: Harris Surveying CONTACT: Tony Harris
ADDRESS: 2412 Monroe NE PHONE: 889-8056
CONTRACTOR: N/A CONTACT: _____
ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

☒ DRAINAGE REPORT
☒ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☒ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION
☐ OTHER

PRE-DESIGN MEETING:

☐ YES
☒ NO
☐ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

☐ SKETCH PLAT APPROVAL
☒ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D APPROVAL
☐ S. DEV. PLAN FOR BLDG PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☒ FINAL PLAT APPROVAL
☐ FOUNDATION PERMIT APPROVAL
☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATION OF OCCUPANCY APPROVAL
☐ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ S.A.D. DRAINAGE REPORT
☐ DRAINAGE REQUIREMENTS
☒ OTHER Work Order (Specify)

DATE SUBMITTED: 9-14-94

BY: _____

Gregory J. Krenik, PE

SEP 15 1994



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

September 6, 1994

Gregory J. Krenik, PE
Mark Goodwin & Associates, PA
PO Box 90606
Albuquerque, NM 87199

RE: TOMPIRO SUBDIVISION (H-11/D48) ENGINEER'S STAMP DATED 8/22/94

Dear Mr. Krenik:

Based upon your 8/22/94 submittal, the following items will need to be addressed prior to gaining Hydrology Division approval.

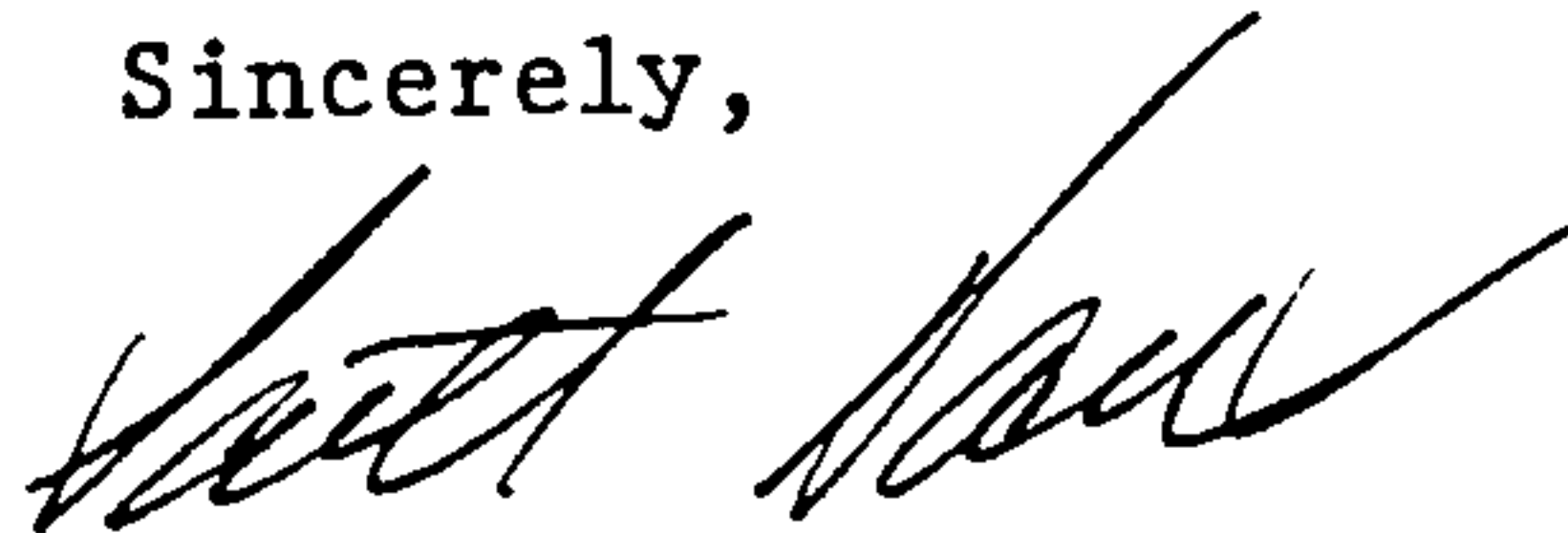
1. The 72" storm drain in Miami which you refer to as, existing, has not yet been constructed. It appears, in talking with the appropriate officials, the construction of that system, West Bluff Phase II, is still a ways off. If your project gains the necessary approvals, it will more than likely proceed to construction prior to the West Bluff system. This being the case, a temporary alternative would be for an appropriate number of lots to be set aside for a retention facility. Once the West Bluff system is constructed and the storm drain tie-in is made, the pond site could then be reclaimed for development. If you choose to go this route, please consider the following:
 - a) The facility would need to be designed for two times a 100 year 10 day storm event with an adequately designed emergency spillway. Fencing would be required for depths greater than 18".
 - b) The cost for the construction of the storm drain tie from your site to the West Bluff improvements would need to be financially guaranteed.

If the decision is made to proceed with the construction of the temporary retention facility, please address its design with your resubmittal.

2. Please show an analysis of the flow conditions in Estancia Drive resulting from a 100 year 6 hour storm event. I am interested in seeing what the flow depth is once the proposed curb & gutter is constructed along the east side of the roadway. Depending on the flow depth, it may be necessary to provide water blocks into the site or consider standard curb & gutter near the intersection.
3. Permission will have to be obtained from adjacent property owners if it will be necessary to encroach on their property during construction.

If I can be of further assistance, feel free to contact me at 768-3622.

Sincerely,



Scott Davis

PWD, Hydrology Division

18785

c: Andrew Garcia
File



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

September 22, 1994

Gregory J. Krenik
Mark Goodwin & Associates, PA
PO Box 90606
Albuquerque, NM 87199

RE: TOMPIRO SUBDIVISION (H-11/D48) ENGINEER'S STAMP DATED 9/14/94

Dear Mr. Krenik:

Based upon your 9/15/94 resubmittal, the referenced project is approved for Preliminary Plat, Final Plat and Work Order.

Please keep in mind that an Agreement and Covenant will be required addressing the maintenance of the temporary retention facility.

If I can be of further assistance, feel free to contact me at 768-3622.

Cordially,

Scott Davis
PWD, Hydrology Division

(wp+8785)
c: Andrew Garcia
File

Figure 12

EXHIBIT "A"
To Subdivision Improvements Agreement
DEVELOPMENT REVIEW BOARD (DRB) REQUIRED INFRASTRUCTURE LISTING
for Tompiro Subdivision

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are the Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

ON-SITE

<u>Size</u>	<u>Type Improvement</u>	<u>Location</u>	<u>From</u>	<u>To</u>
28' FF	Residential Street 4' Sidewalk (deferred) * Standard Curb & Gutter *	Tompiro Drive	Gran Quivira Road	Tenabo Road
28' FF	Residential Street 4' Sidewalk (deferred) * Mountable Curb & Gutter *	Gran Quivira Road	Tompiro Drive	Estancia Drive
28' FF	Residential Street 4' Sidewalk (deferred) * Mountable Curb & Gutter *	Tenabo Road	Tompiro Drive	Estancia Drive
28' FF	Residential Street 4' Sidewalk (deferred) * Mountable Curb & Gutter *	Las Humanas Road	Tompiro Drive	Estancia Drive
28' FF	Residential Street 4' Sidewalk (deferred) * Mountable Curb & Gutter *	Tompiro Drive	Tenabo Road	Las Humanas Road
6"	PVC Waterline	Tompiro Drive	Gran Quivira Road	Las Humanas Road
6"	PVC Waterline	Gran Quivira Road	Tompiro Drive	Estancia Drive
6"	PVC Waterline	Tenabo Road	Tompiro Drive	Estancia Drive
6"	PVC Waterline	Las Humanas Road	Tompiro Drive	Estancia Drive
Water infrastructure to include valves, fittings, valve boxes, hydrants and services.				
8"	SAS Gravity Line	Tompiro Drive	Gran Quivira Road	Las Humanas Road
8"	SAS Gravity Line	Gran Quivira Road	Tompiro Drive	Estancia Drive
8"	SAS Gravity Line	Tenabo Road	Tompiro Drive	Estancia Drive
8"	SAS Gravity Line	Las Humanas Road	Tompiro Drive	Estancia Drive
Sanitary Sewer to include manholes and services.				

* - both sides

D.R.B. Case No. 94-326
D.R.C. Project No. _____
Date Submitted 9/9/94
Prelim. Plat Approved _____
Prelim. Plat Expires _____

<u>Size</u>	<u>Improvements</u>	<u>Location</u>	<u>From</u>	<u>To</u>
18"	RCP	Cul-de-sac		
30"	RCP	Cul-de-sac		
Storm drain to include catch basins.				

N/A Temporary Retention Pond with Maintenance Agreement

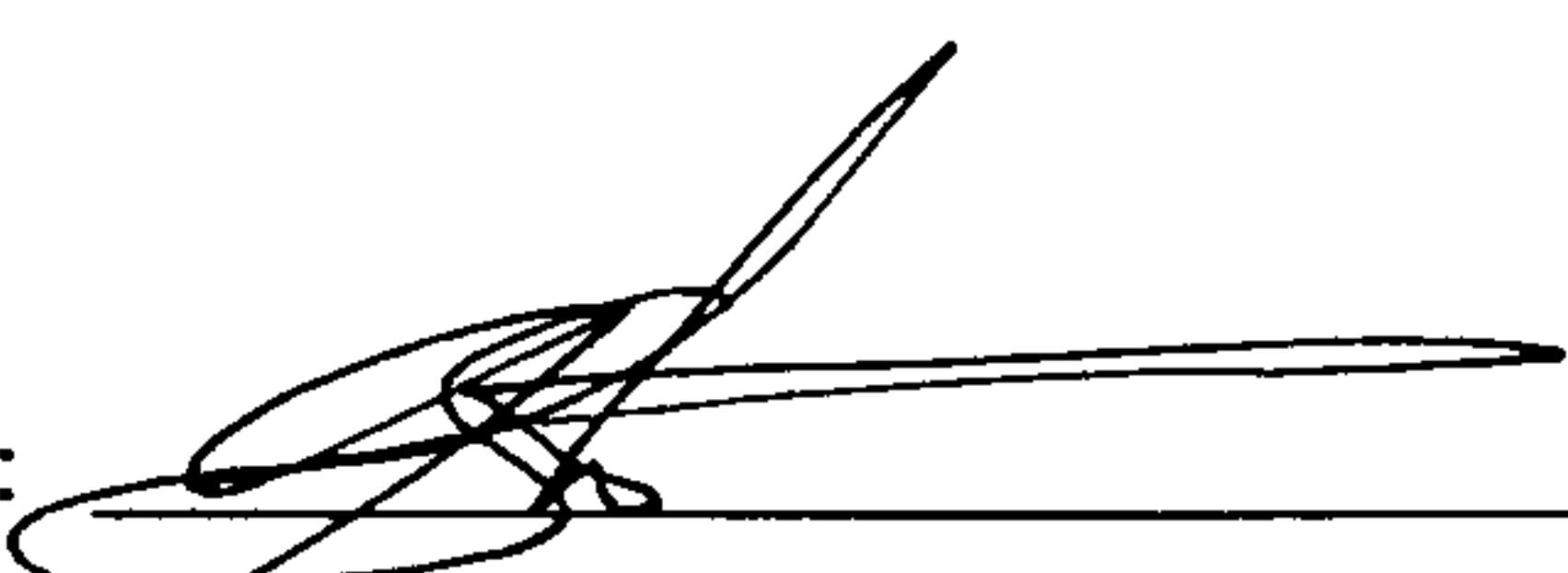
OFF-SITE

<u>Size</u>	<u>Improvements</u>	<u>Location</u>	<u>From</u>	<u>To</u>
24' E-E	Temporary Paving	Estancia Drive	North Property Line	Ouray
~~24'~~ 18" Perm. Pvmt.	Residential Street	Estancia Drive	Miami Road	North Property Line
~~6'~~ Temp. Pvmt.	6' Sidewalk, E side Std Curb & Gutter, E side			
~~24'~~ 18" Perm. Pvmt.	Residential Street	Miami Road	Estancia Drive	East Propert Line
~~6'~~ Temp. Pvmt.	6' Sidewalk, N side Std Curb & Gutter, N side			
8"	SAS Gravity Line	Miami Road	Estancia Drive	East Property Line
Sanitary Sewer to include manholes and services.				
8"	PVC Waterline	Estancia Drive	North Property Line	Miami Road
10"	PVC Waterline	Miami Road	Estancia Drive	East Property Line
Water infrastructure to include valves, fittings, valve boxes, hydrants and services.				
54"	RCP	Miami Road	Estancia	~~East Property Line~~ 15' Public DRAINAGE EASEMENT
Storm drain to include manholes.				
N/A	Residential Street Lights	Per DPM		

Engineer's Certification for Grading and Drainage per DPM including Perimeter Walls as shown on the Grading Plan for Release of SIA and Financial Guarantees. ~~_____~~

60" RCP MIAMI ROAD 15' Public DRAINAGE EASEMENT EAST PROPERTY LINE

D.R.B. Case No. 94-326
D.R.C. Project No. _____
Date Submitted 9/9/94
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Prepared By: 

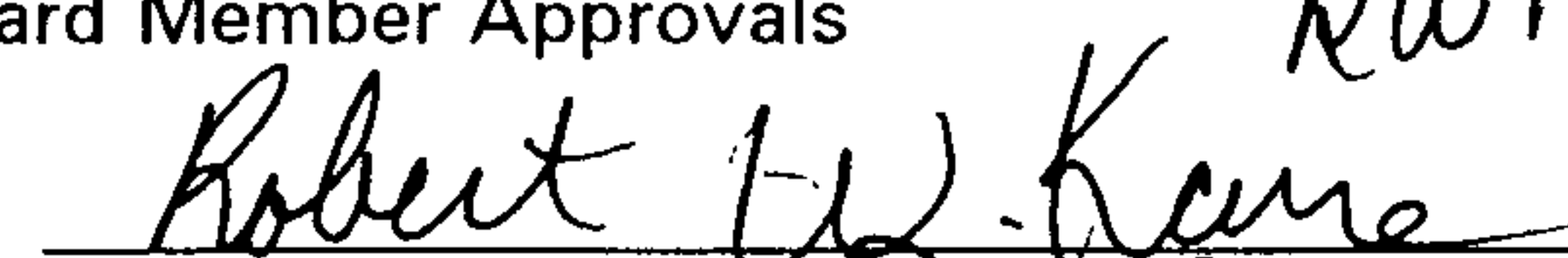
Print Name: Gregory J. Krenik, PE

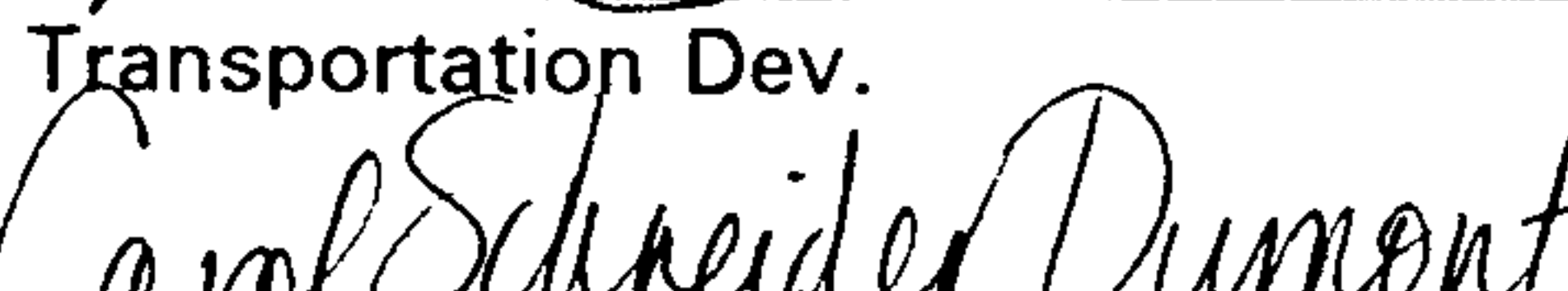
Firm: Mark Goodwin & Associates, PA

Page 3 of 3

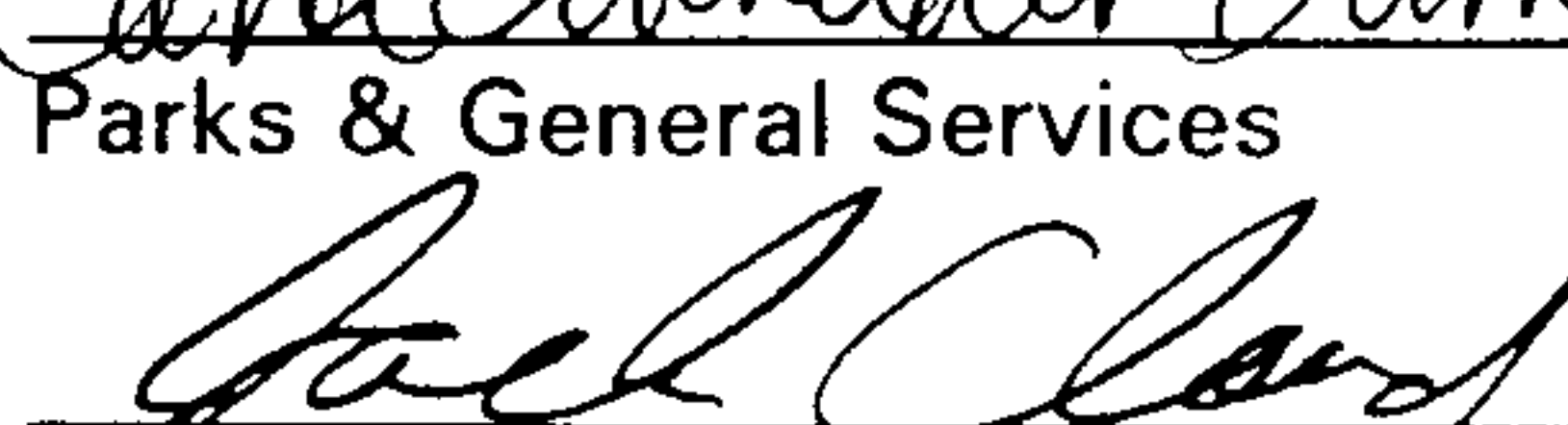
Development Review Board Member Approvals

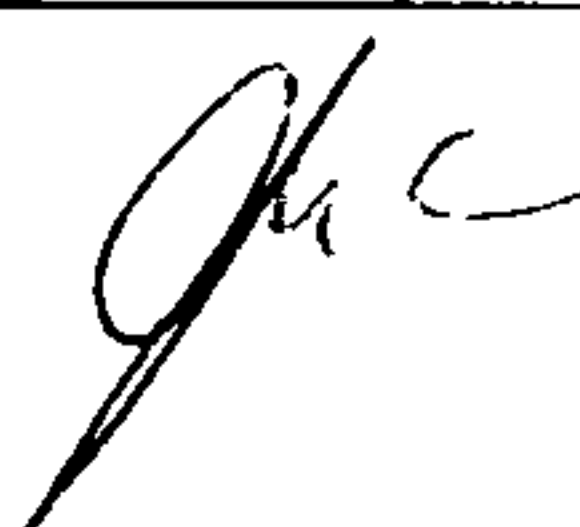
 2-28-95 9-13-94
Transportation Dev. Date

RWK 2-28-95
 2-13-94
Utility Dev. Date

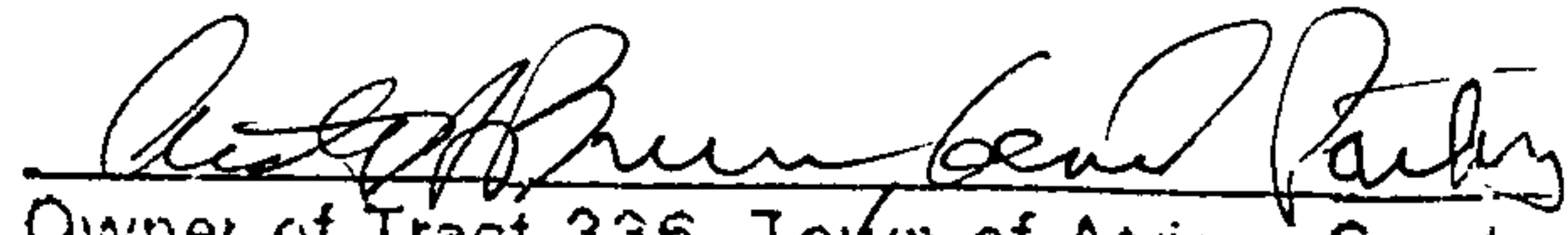
 2-28-95 9-13-94
Parks & General Services Date

 2-28-95 9-13-94
Engineer/AMAFCA Date

 9-13-94
DRB Chairman Date

 2-28-95 Date

As the owner of Tract 336, Town of Atrisco Grant, I give SH Co. permission to grade at a 3:1 slope on my property along our common property line so as to avoid a retaining wall. I understand that no runoff will cross over from the Tompiro Subdivision onto my property.

 10/10/85
Owner of Tract 336, Town of Atrisco Grant

H11-1D48

VERBAL 4/17/95

Agreement and Covenant must be
processed prior to approval request

POM

CONTRACT CONTROL FORM
PRELIMINARY REVIEW

H-11/D48

Project # 5096 AC

CLH # 9501179

Contact Person Jhuma

Phone No. 768-2505

(file with SIA)

Type of Agreement: Agreement & Covenant

NEW OR EXT. #

Description/Project: Tompkins Sub'd.

Public Works/Div: Eng. Design

Developer: FGH Limited Liabil. Co.

Contract Amount \$ - 0 -

SIA Contract Period: (see SIA)

Contract Amount \$ _____

SW'S Contract Period: _____

Project Completed Date _____

DRAFT CONTRACT:

Recd by Legal: _____ Rejected/Returned to Dept: _____

Returned to Legal: _____ Approved: _____ Initials: _____

FINANCIAL GUARANTY:

Letter of Credit No. _____ Date _____ Attached: Yes _____ No _____ Initial _____

Other: Type _____ No _____ Attached: Yes _____ No _____ Initial _____

FINAL CONTRACT REVIEW

APPROVALS REQUIRED:

Purchasing:

Asst. City Attorney:

CIP: Hydr.

City Attorney:

CAO:

Other:

Council:

Date Delivered

Returned to Dept

Approved by

Approval Date

4-24-95 / TRL

4-24-95 / TRL

EC No: _____

Approved: _____

Date: _____

DISTRIBUTION:

User Department

Vendor

City Clerk

Treasury

Date:

By:

Returned to
Mark Goodwin
for missing
Notice Address

JPC 4-28-95

PRELIMINARY REVIEW

Project # 5096 AC

CLH # 9501179

Contact Person Jhuma

Phone No. 768-2505

NEW OR EXT. #

(file with SIA)

Type of Agreement: Agreement & Covenant

Description/Project: Tompkins Sub'd.

Public Works/Div: Eng. Design

Developer: FGH Limited Liabil. Co.

Contract Amount \$ - 0 -

SIA Contract Period: (see SIA)

Contract Amount \$ _____

SW'S Contract Period: _____

Project Completed Date _____

DRAFT CONTRACT:

Recd by Legal: _____ Rejected/Returned to Dept: _____

Returned to Legal: _____ Approved: _____ Initials: _____

FINANCIAL GUARANTY:

Letter of Credit No. _____ Date _____ Attached: Yes _____ No _____ Initial _____

Other: Type _____ No _____ Attached: Yes _____ No _____ Initial _____

FINAL CONTRACT REVIEW

APPROVALS REQUIRED:

	Date Delivered	Returned to Dept	Approved by	Approval Date
Purchasing:	<u>1</u>	<u>1</u>		
Asst. City Attorney:	<u>4-24-95 / TRL</u>	<u>1</u>		
~~CIP:~~ <u>Hydr.</u>	<u>4-24-95 / TRL</u>	<u>1</u>	<u>JPC</u>	<u>5-2-95</u>
City Attorney:	<u>1</u>	<u>1</u>		
CAO:	<u>1</u>	<u>1</u>		
Other:	<u>1</u>	<u>1</u>		
Council:	<u>1</u>	<u>1</u>		
FC No: _____		Approved: _____		Date: _____

DISTRIBUTION:

User Department
Vendor
City Clerk
Treasury

Date: _____ By: _____

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Tompiro Subdivision ZONE ATLAS/DRNG, FILE#: H-11/448
DRB #: 94-326 EPC #: _____ WORK ORDER #: _____
LEGAL DESCRIPTION: 337B & 338B, Atrisco Grant
CITY ADDRESS: _____

ENGINEERING FIRM: <u>Mark Goodwin & Associates, PA</u>	CONTACT: <u>Gregory J. Krenik, PE</u>
ADDRESS: <u>PO Box 90606</u>	PHONE: <u>345-2010</u>
OWNER: <u>Skip Hines</u>	CONTACT: <u>Skip Hines</u>
ADDRESS: <u>331 Wellesley NE</u>	PHONE: <u>266-6848</u>
ARCHITECT: <u>N/A</u>	CONTACT: _____
ADDRESS: _____	PHONE: _____
SURVEYOR: <u>Harris Surveying</u>	CONTACT: <u>Tony Harris</u>
ADDRESS: <u>2412 Monroe NE</u>	PHONE: <u>889-8056</u>
CONTRACTOR: <u>N/A</u>	CONTACT: _____
ADDRESS: _____	PHONE: _____

TYPE OF SUBMITTAL:

☐ DRAINAGE REPORT
☐ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☐ GRADING PLAN
☐ EROSION CONTROL PLAN
☒ ENGINEER'S CERTIFICATION
☐ OTHER

PRE-DESIGN MEETING:

☐ YES
☐ NO
☐ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

☐ SKETCH PLAT APPROVAL
☐ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D APPROVAL
☐ S. DEV. PLAN FOR BLDG PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☐ FINAL PLAT APPROVAL
☐ FOUNDATION PERMIT APPROVAL
☐ BUILDING PERMIT APPROVAL
☒ CERTIFICATION OF OCCUPANCY APPROVAL
☐ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ S.A.D. DRAINAGE REPORT
☐ DRAINAGE REQUIREMENTS
☐ OTHER _____ (Specify)

DATE SUBMITTED: 11-16-95

BY: _____

Gregory J. Krenik, PE

NOV 17

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Tompiro Subdivision ZONE ATLAS/DRNG, FILE#: H-11 / 1048
DRB #: 94-326 EPC #: WORK ORDER #:
LEGAL DESCRIPTION: 337B & 338B, Atrisco Grant
CITY ADDRESS:

ENGINEERING FIRM: <u>Mark Goodwin & Associates, PA</u>	CONTACT: <u>Gregory J. Krenik, PE</u>
ADDRESS: <u>PO Box 90606</u>	PHONE: <u>345-2010</u>
OWNER: <u>Skip Hines</u>	CONTACT: <u>Skip Hines</u>
ADDRESS: <u>331 Wellesley NE</u>	PHONE: <u>266-6848</u>
ARCHITECT: <u>N/A</u>	CONTACT: <u> </u>
ADDRESS: <u> </u>	PHONE: <u> </u>
SURVEYOR: <u>Harris Surveying</u>	CONTACT: <u>Tony Harris</u>
ADDRESS: <u>2412 Monroe NE</u>	PHONE: <u>889-8056</u>
CONTRACTOR: <u>N/A</u>	CONTACT: <u> </u>
ADDRESS: <u> </u>	PHONE: <u> </u>

TYPE OF SUBMITTAL:

☒ DRAINAGE REPORT
☒ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☒ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION
☐ OTHER

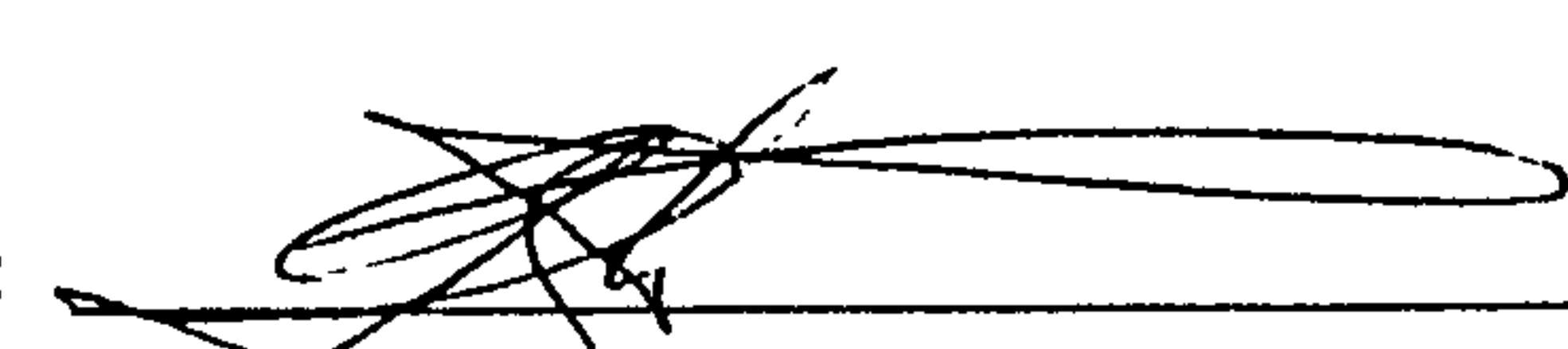
PRE-DESIGN MEETING:

☐ YES
☒ NO
☐ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

☐ SKETCH PLAT APPROVAL
☒ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D APPROVAL
☐ S. DEV. PLAN FOR BLDG PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☒ FINAL PLAT APPROVAL
☐ FOUNDATION PERMIT APPROVAL
☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATION OF OCCUPANCY APPROVAL
☐ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ S.A.D. DRAINAGE REPORT
☐ DRAINAGE REQUIREMENTS
☒ OTHER Work Order (Specify)

DATE SUBMITTED: 3-10-95

BY: 

Gregory J. Krenik, PE

*VERBAL: Submittal
is ok for request but not until
the agreement & covenants has been
processed.*

MAR 14



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

November 14, 1995

Greg Krenik
Mark Goodwin & Associates
P.O. Box 90606
Albuquerque, NM 87199

RE: ENGINEER CERTIFICATION FOR FINANCIAL GUARANTEE RELEASE
ON TOMPIRO SUBDIVISION (H11-D48) CERTIFICATION STATEMENT
DATED 9/28/95.

Dear Mr. Krenik:

Based on the information provided on your November 3, 1995 submittal, Engineer Certification for the above referenced site is not acceptable for the following reasons:

1. As-built pond calculations which indicate that the pond as it exists has the required capacity.
2. Copy of the acceptance letter for W.O. 5096.90, if available.
3. It is my understanding that all the developed run-off from the individual lots will drain to the street. Please identify on your certification to that effect. Also, no cross-lot line drainage is allowed unless there is a common drainage easement identified on the plat.

If I can be of further assistance, please feel free to contact me at 768-2667.

Sincerely,

Bernie J. Montoya, CE
Engineering Associate

BJM/dl

c: Andrew Garcia
Skip Hines
File

/95050645

AGREEMENT AND COVENANT

This Agreement and Covenant, between the City of Albuquerque, New Mexico ("City") and FGH LIMITED LIABILITY CO., ("User") is made in Albuquerque, New Mexico and is entered into as of the date of recording this Agreement with the Bernalillo County Clerk.

1. Recital. The User is the owner of certain real property ("User's Property") located at 5900 Gran Quivara NW & 2300 Tompiro, in Albuquerque, New Mexico, and more particularly described as:

Lots 6 and 7, Block 1, Tompiro Subdivision
(Previously filed information: Revised Tract 337, Unit 8
Town Of Atrisco Grant, recorded 12/14/77, book B14, folio 8)

The City is the owner of certain real property, easement or public right-of-way ("City's Property") in the vicinity of, contiguous to, abutting or within User's Property, and more particularly described as:

Easement within Lots 6 and 7, Block 1

The User wishes to construct upon, improve or repair and to maintain the following "Improvement" on the City's Property (or already has done so):

Temporary retention ponds

A sketch of the proposed or existing Improvement is attached as Exhibit A and made a part of this Agreement.

The City agrees to permit the Improvement to exist on the City's Property provided the User complies with the terms of this Agreement.

2. City Use of City's Property and City Liability. The City has the right to enter upon the City's Property at any time and perform whatever inspection, installation, maintenance, repair, modification or removal ("Work") it deems appropriate without liability to the User. If the Work affects the Improvement the City will not be financially or otherwise responsible for rebuilding or repairing the Improvement. The User promptly will repair the Improvement to the City's satisfaction. The cost of repairing the Improvement will be paid by User.

3. User's Responsibility for Improvement. The User will be solely responsible for constructing, maintaining, repairing and, if required, removing the Improvement, all in accordance with standards required by the City as per the approved Grading and Drainage Plan H-11/D48 on file at City Hydrology. The User will be solely responsible for paying all related costs. The User will not permit the Improvement to constitute a hazard to the health or safety of the general public or to interfere with the City's use of the City's Property. The User will conform with all

applicable laws, ordinances and regulations.

4. Use of the Improvement. If the City's Property is a public right-of-way, it shall be open to the use of the general public at all times, subject to reasonable curtailment during periods of construction, maintenance or repair.

5. Demand for Repair, Modification or Removal. The City may send written notice ("Notice") to the User requiring the User to repair, modify or remove the Improvement within 30 days ("Deadline") and the User will comply promptly with the requirements of the Notice. If removal is demanded, the City also may require the User to return the City's Property to its original condition by the Deadline. The User will perform all required work by the Deadline, at User's sole expense.

6. Failure to Perform by User and Emergency Work by City. If the User fails to comply with the terms of the Notice by the Deadline stated, or, if the City determines that an emergency condition exists, the City may perform the work itself. The City then may assess the User for the cost of the work and for any other expenses or damages which result from User's failure to perform. The User agrees promptly to pay the City the amount assessed. If the User fails to pay the City within thirty (30) days after the City gives the User written notice of the amount due, the City may impose a lien against User's Property for the total resulting amount.

7. Cancellation of Agreement and Release of Covenant. This Agreement may be cancelled and User's covenants released by the City at will by the City's mailing to the User notice of the City's intention to record a Cancellation and Release with the Bernalillo County Clerk. The Cancellation and Release will be effective thirty (30) days after the date of mailing the notice to the User unless a later date is stated in the notice or the Cancellation and Release. After the effective date, the City will record the Cancellation and Release with the Bernalillo County Clerk.

8. Condemnation. If any part of the User's Property is ever condemned by the City, the User will forego all claims to compensation for any portion of User's structure which encroaches on City Property and for severance damage to the remaining portion of User's structure on User's Property.

9. Assessment. Nothing in this Agreement shall be construed to relieve the User, his heirs, assigns and successors from an assessment against User's Property for improvements to the City Property under a duly authorized and approved Special Assessment District. The parties specifically agree that the value of the Improvement will not reduce the amount assessed by the City.

10. Notice. For purposes of giving formal written notice to the User, User's address is:

FGH Limited Liability Co.
Mr. Frank "Skip" Hines, Jr.
331 Wellesley NE
Albuquerque, NM 87106

Notice may be given to the User either in person or by mailing the notice by regular U.S. mail, postage paid. Notice will be considered to have been received by the User within 3 days after the notice is mailed if there is no actual evidence of receipt. The User may change User's address by giving written notice of the change by certified mail, return receipt requested, to the City Engineer at P.O. Box 1293, Albuquerque, New Mexico 87103.

11. Indemnification. The User agrees to defend, indemnify and hold harmless the City, its officials, agents and employees from and against any and all claims, actions, suits or proceedings of any kind brought against said parties as a result of User's use of the City's Property. To the extent, if at all, Section 56-7-1 NMSA 1978 is applicable to this Agreement, this Agreement to indemnify will not extend to liability, claims, damages, losses or expenses, including attorney's fees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications by the indemnitee, or the agents or employees of the indemnitee; or (2) the giving of or the failure to give direction or instructions by the indemnitee, where such giving or failure to give directions or instructions is the primary cause of bodily injury to persons or damage to property.

12. Term. This Agreement shall continue until revoked by the City pursuant to Section 7 above.

13. Binding on User's Property. The covenants and obligations of the User set forth herein shall be binding on User, his heirs, assigns and successors and on User's Property and constitute covenants running with User's Property until released by the City.

14. Entire Agreement. This Agreement contains the entire agreement of the parties and supersedes any and all other agreements or understandings, oral or written, whether previous to the execution hereof or contemporaneous herewith.

15. Changes of Agreement. Changes to this Agreement are not binding unless made in writing, signed by both parties.

3039

16. Construction and Severability. If any part of this Agreement is held to be invalid or unenforceable, the remainder of the Agreement will remain valid and enforceable if the remainder is reasonably capable of completion.

17. Captions. The captions to the sections or paragraphs of this Agreement are not part of this Agreement and will not affect the meaning or construction of any of its provisions.

CITY OF ALBUQUERQUE

USER: (FGH Limited Liability Co.)

By: [Signature]

Lawrence Rael

Chief Administrative Officer

Dated: 5/18/95

By: [Signature]

Its: Partner

Dated: 4/12/95

APPROVED:

Reviewed by:

[Signature]
Robert E. Gurule, Director
Public Works Department

[Signature] 4/24/95
Rick Roybal, City Engineer
Construction Management/PWD

[Signature] 4/24/95 JPC 5/2/95

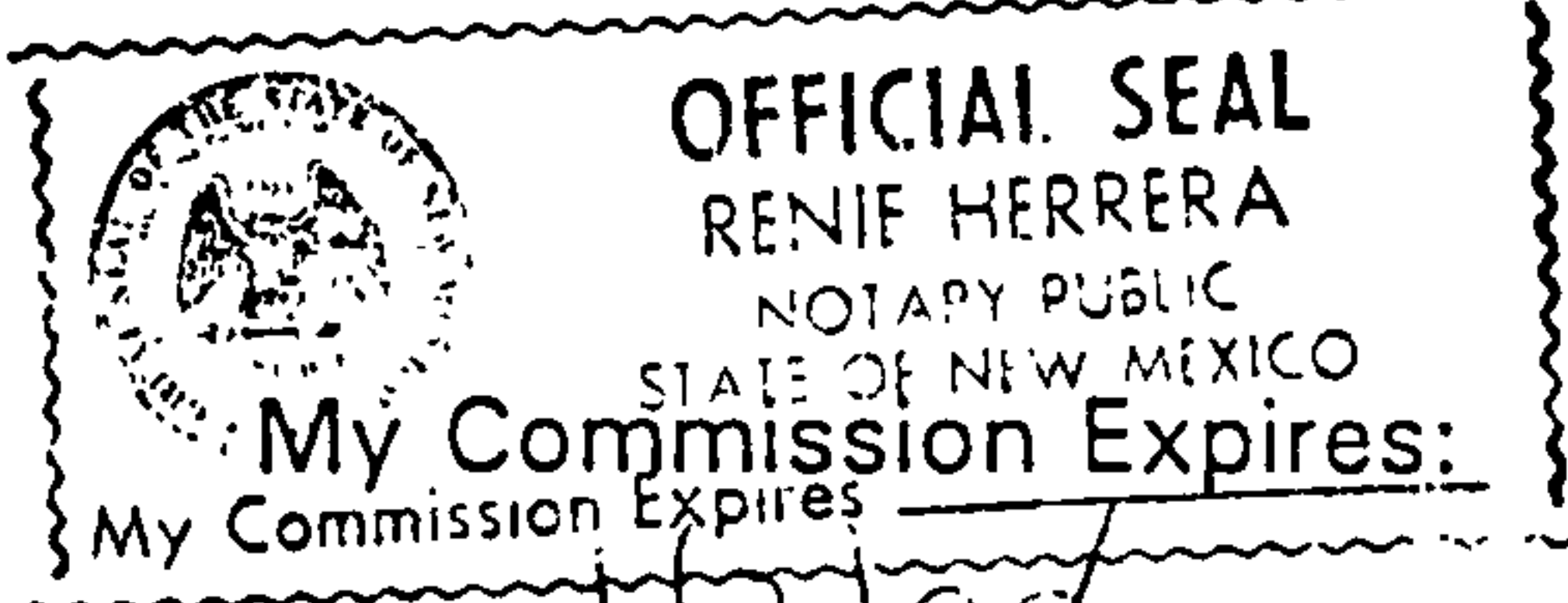
CITY'S ACKNOWLEDGEMENTS

STATE OF NEW MEXICO)

) ss

COUNTY OF BERNALILLO)

This instrument was acknowledged before me on May 18, 1995, by Lawrence Rael, Chief Administrative Officer for the City of Albuquerque, a New Mexico municipal corporation, on behalf of the corporation.



[Signature]
Notary Public

3040

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on May 17,
1995, by Robert E. Gurule, Director, Public Works Department for the City of
Albuquerque, a New Mexico municipal corporation, on behalf of the corporation.

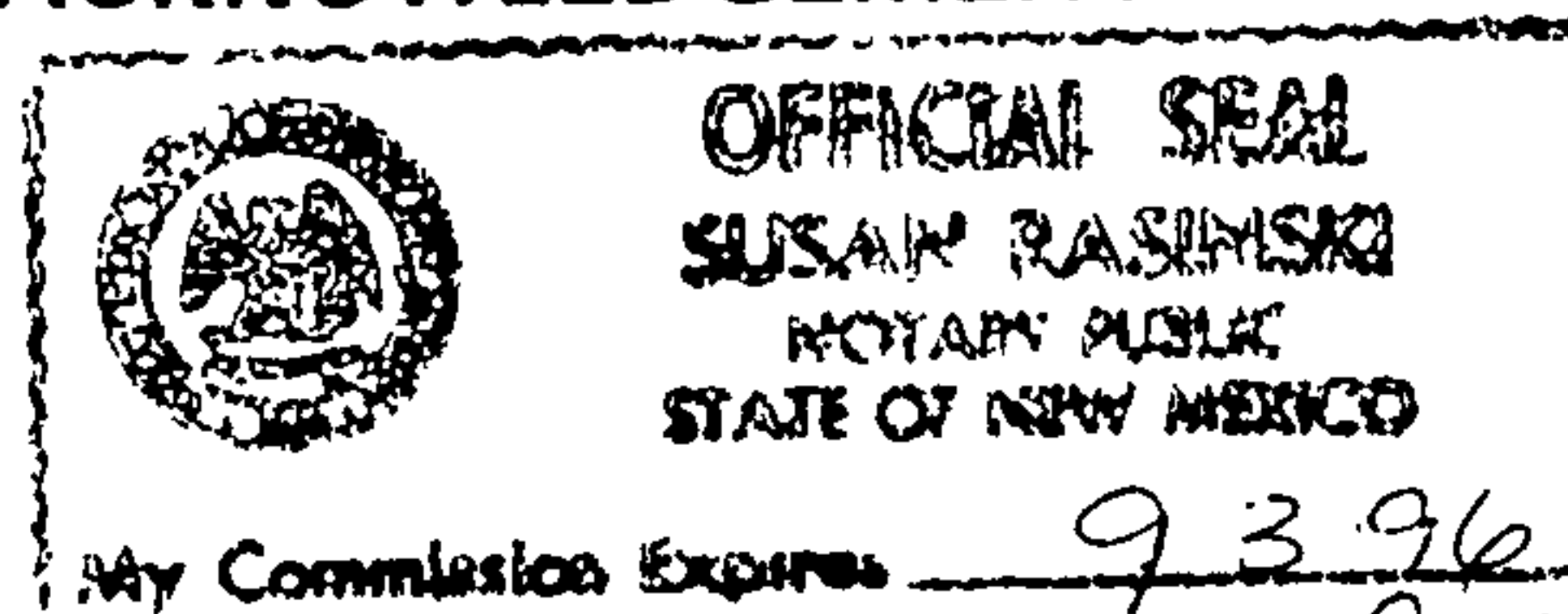
Telicia Liron
Notary Public

My Commission Expires:

1-27-98

USER'S ACKNOWLEDGEMENT

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)



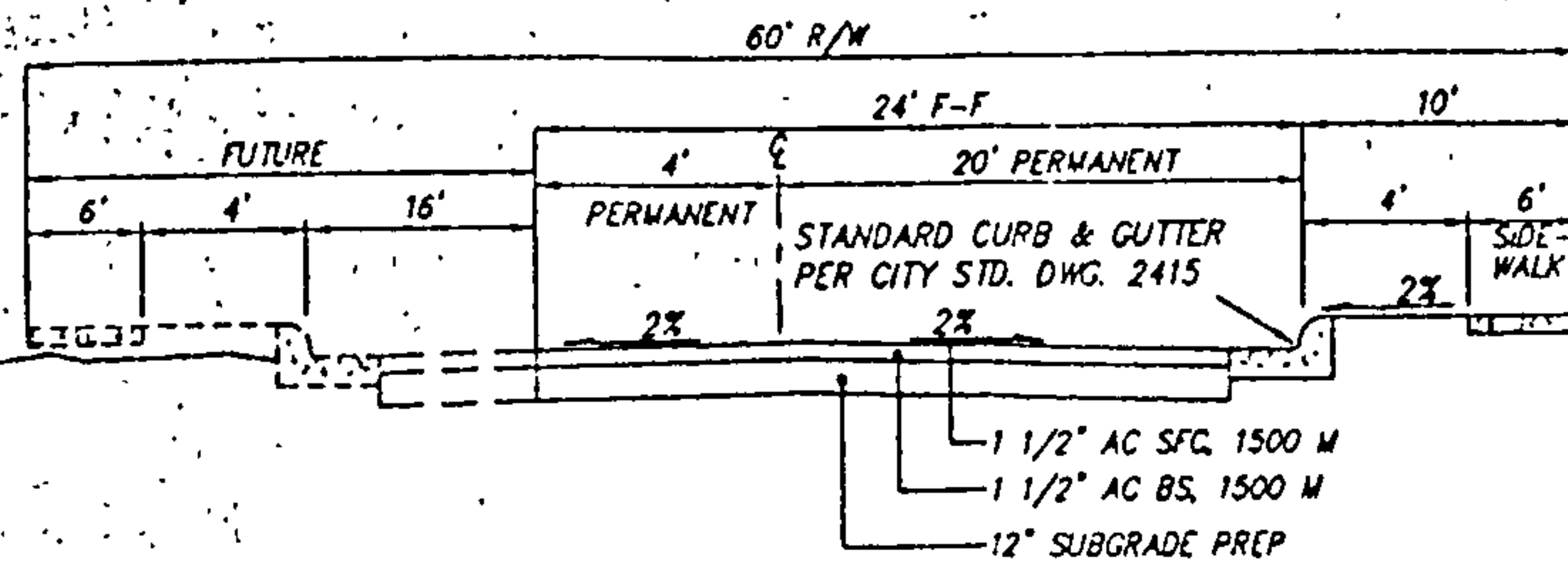
This instrument was acknowledged before me on April 12,
1995, by Frank Hines Jr., partner, on behalf of _____.

Susan Rasinski
Notary Public

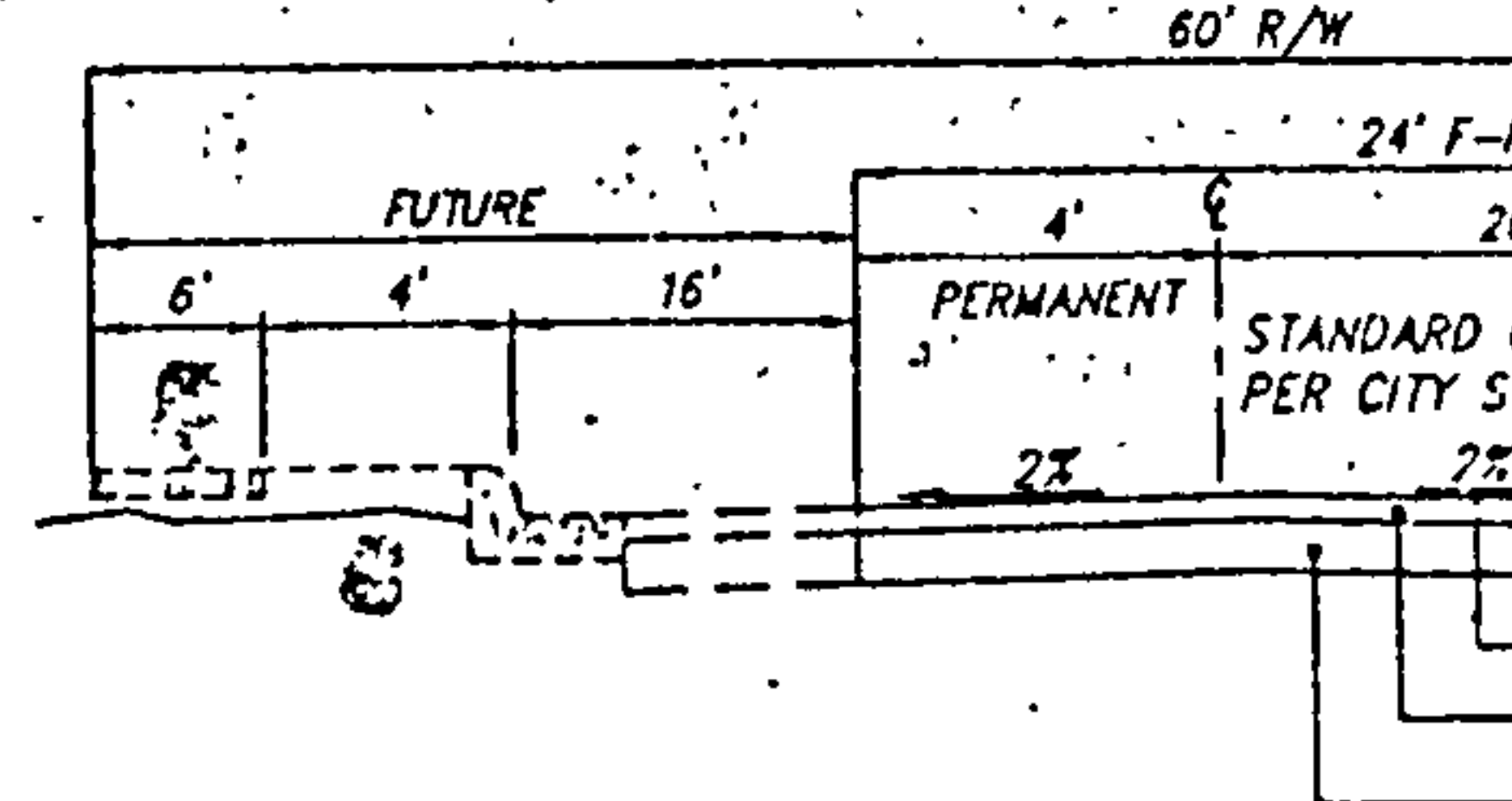
My Commission Expires:

9-3-96

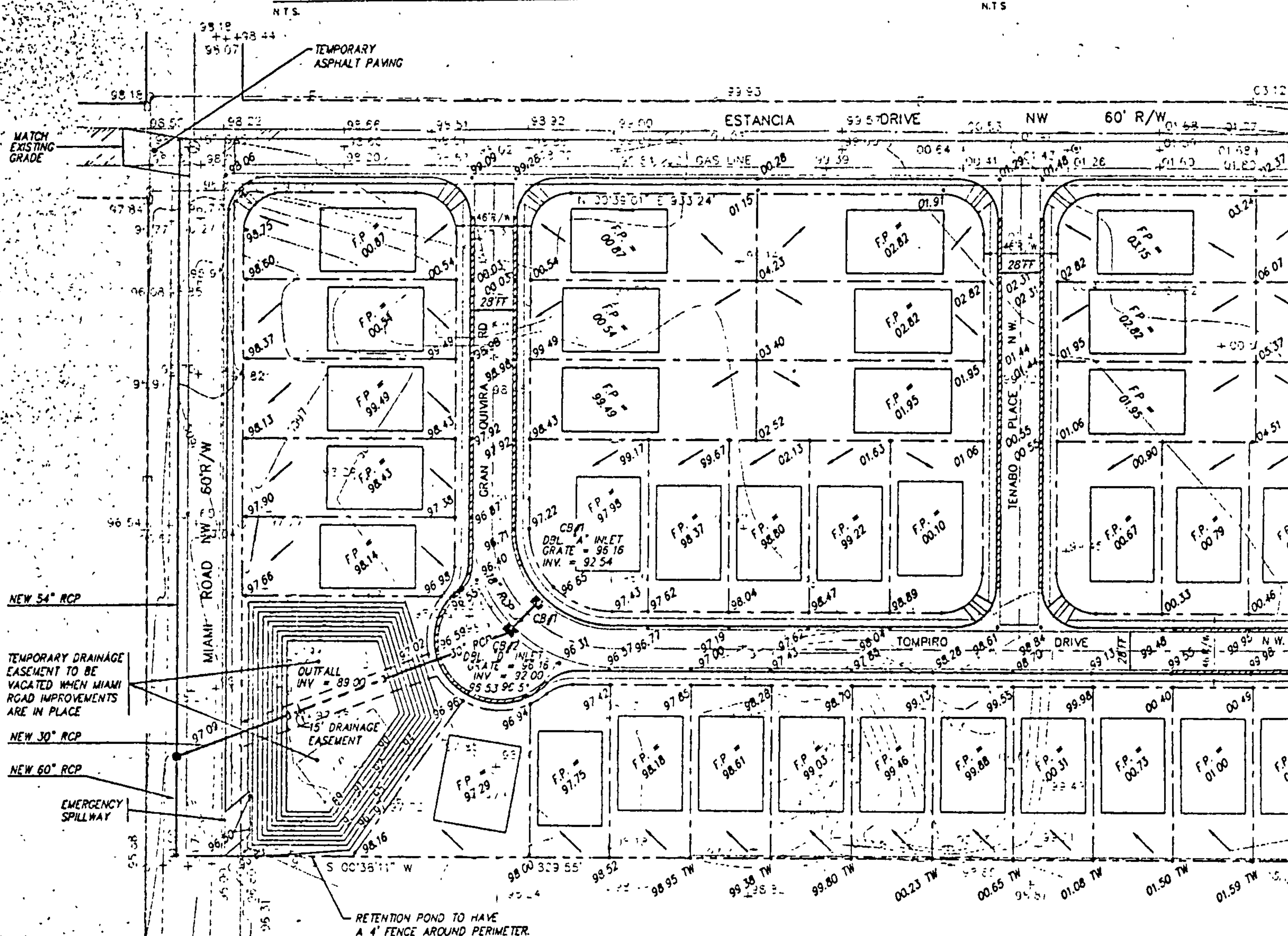
STATE OF NEW MEXICO
COUNTY OF BERNALILLO
FILED FOR RECORD
1995 MAY 22 AM 10:42
B572 EG 3036-
JULY 1 2000
CO. CLERK
[Signature]



MIAMI ROAD N.W. SECTION



ESTANCIA DRIVE N.W.



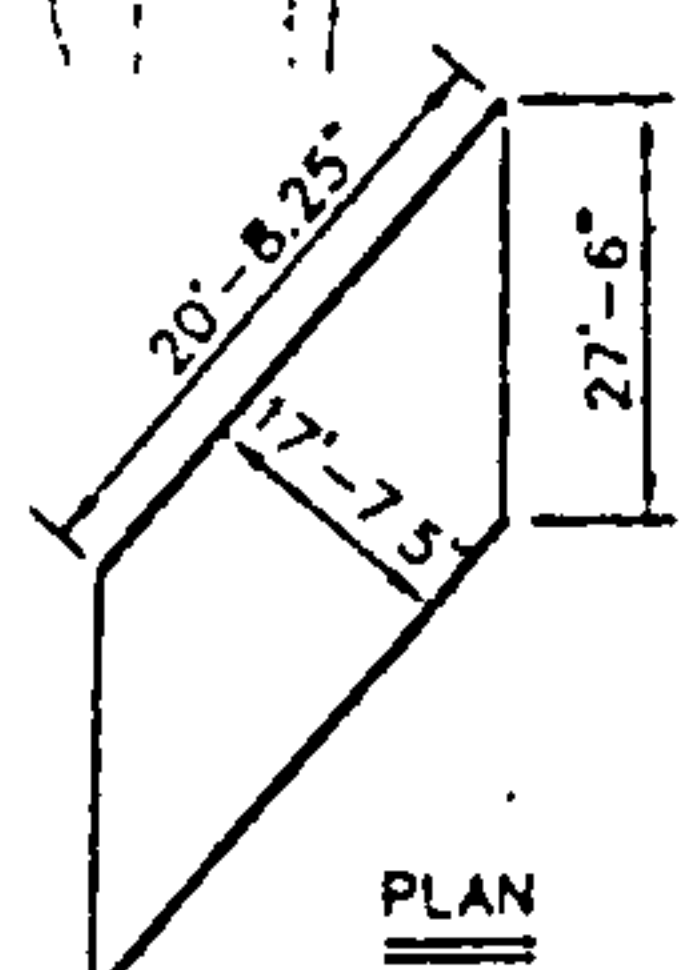
TEMPORARY DRAINAGE EASEMENT TO BE VACATED WHEN MIAMI ROAD IMPROVEMENTS ARE IN PLACE

NEW 30" RCP

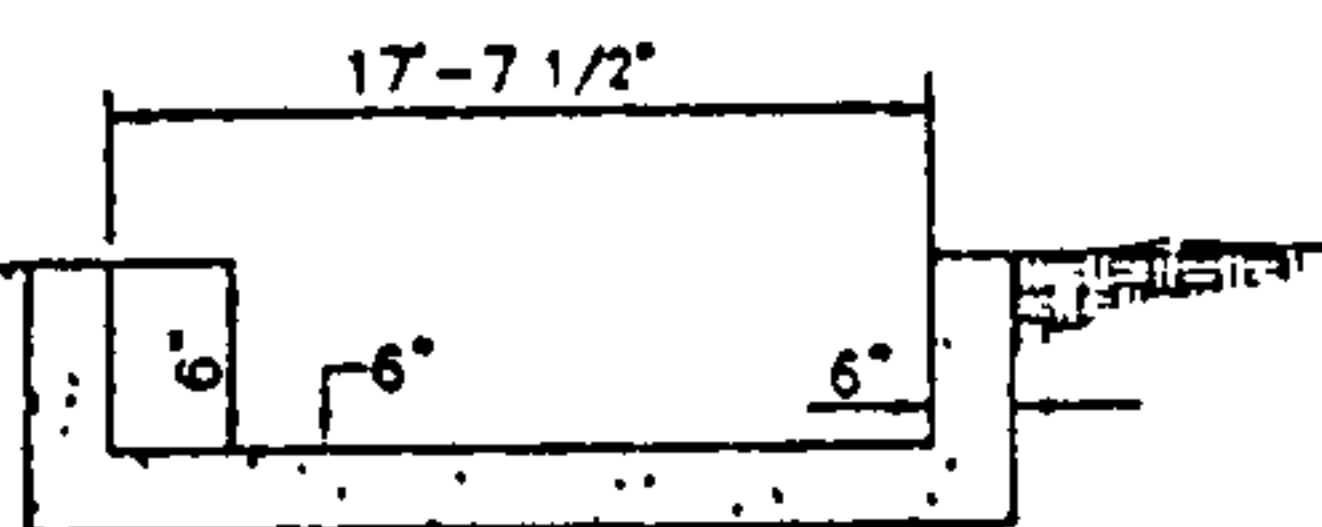
NEW 60" RCP

EMERGENCY SPILLWAY

RETENTION POND TO HAVE A 4' FENCE AROUND PERIMETER.



PLAN



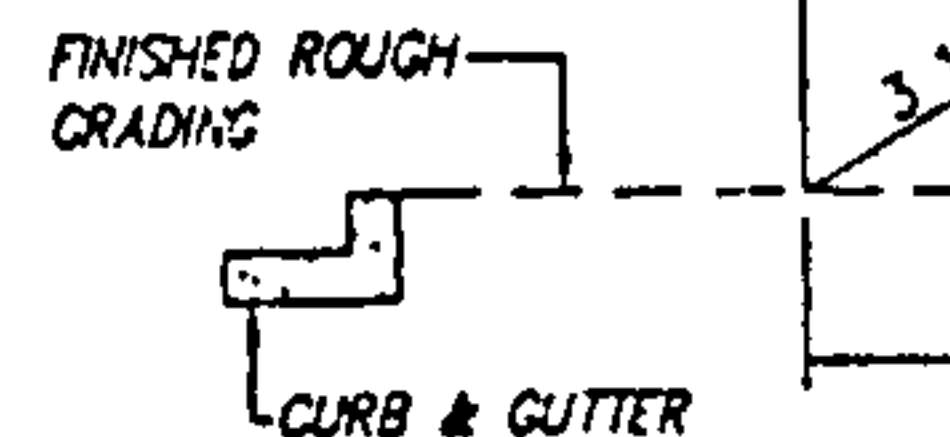
SECTION

SPILLWAY DETAIL

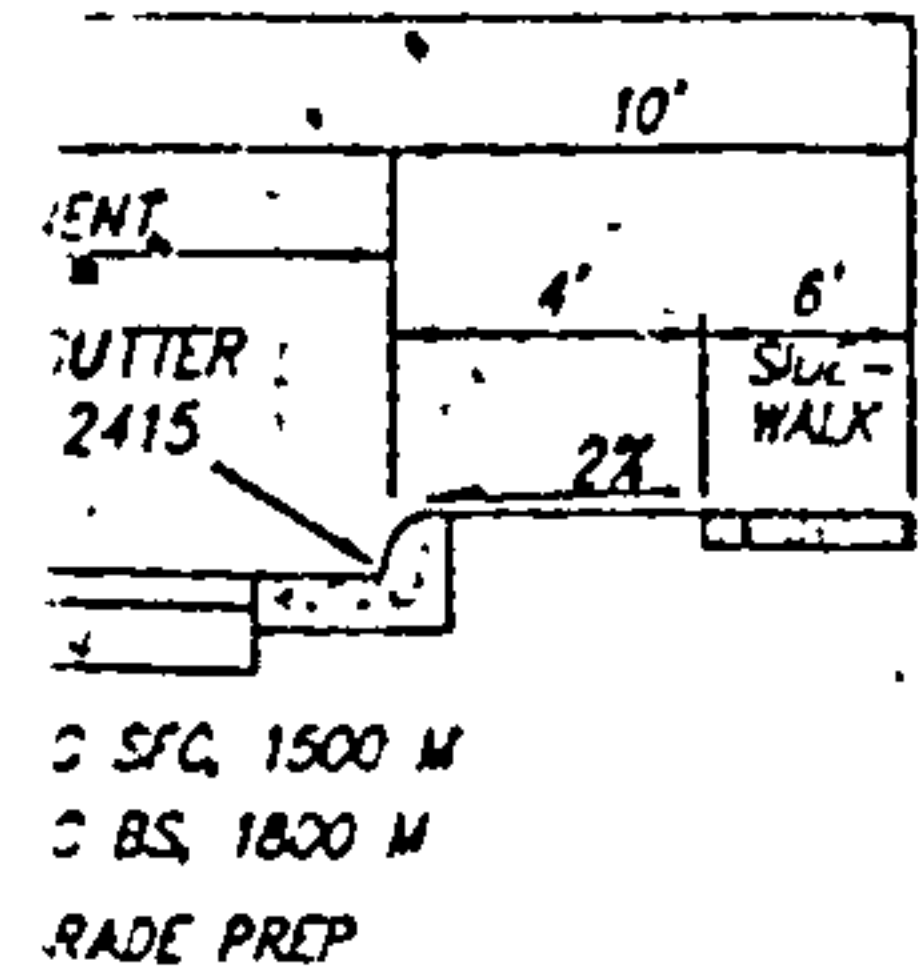
N.T.S.

EROSION CONTROL NOTES

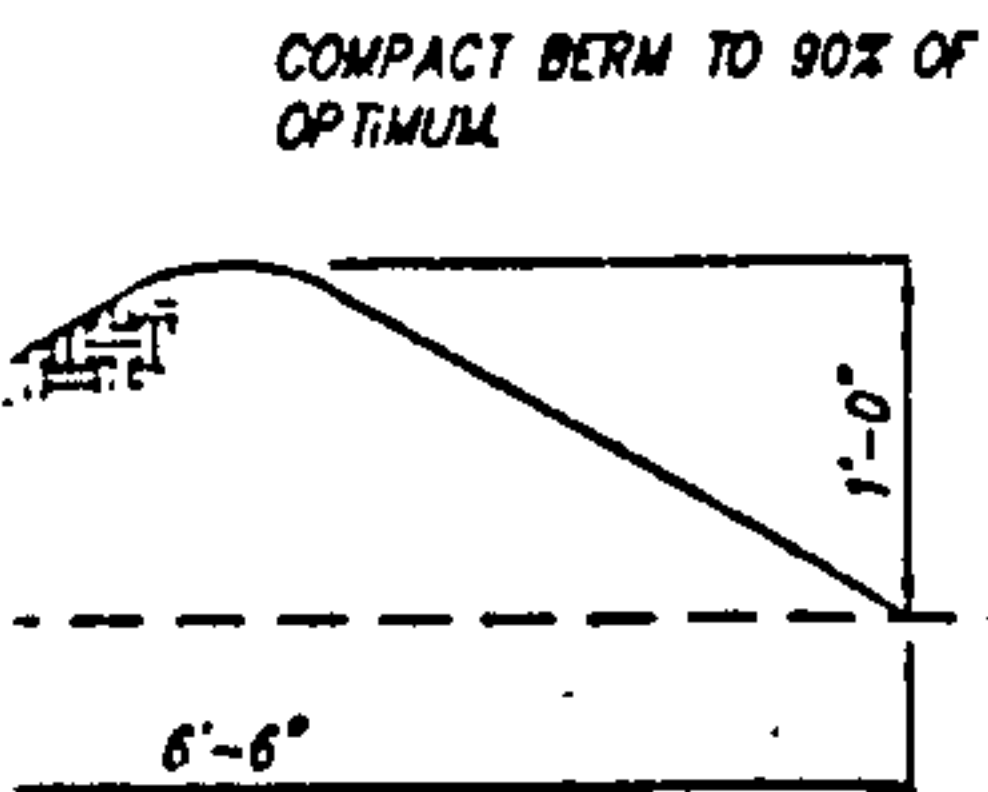
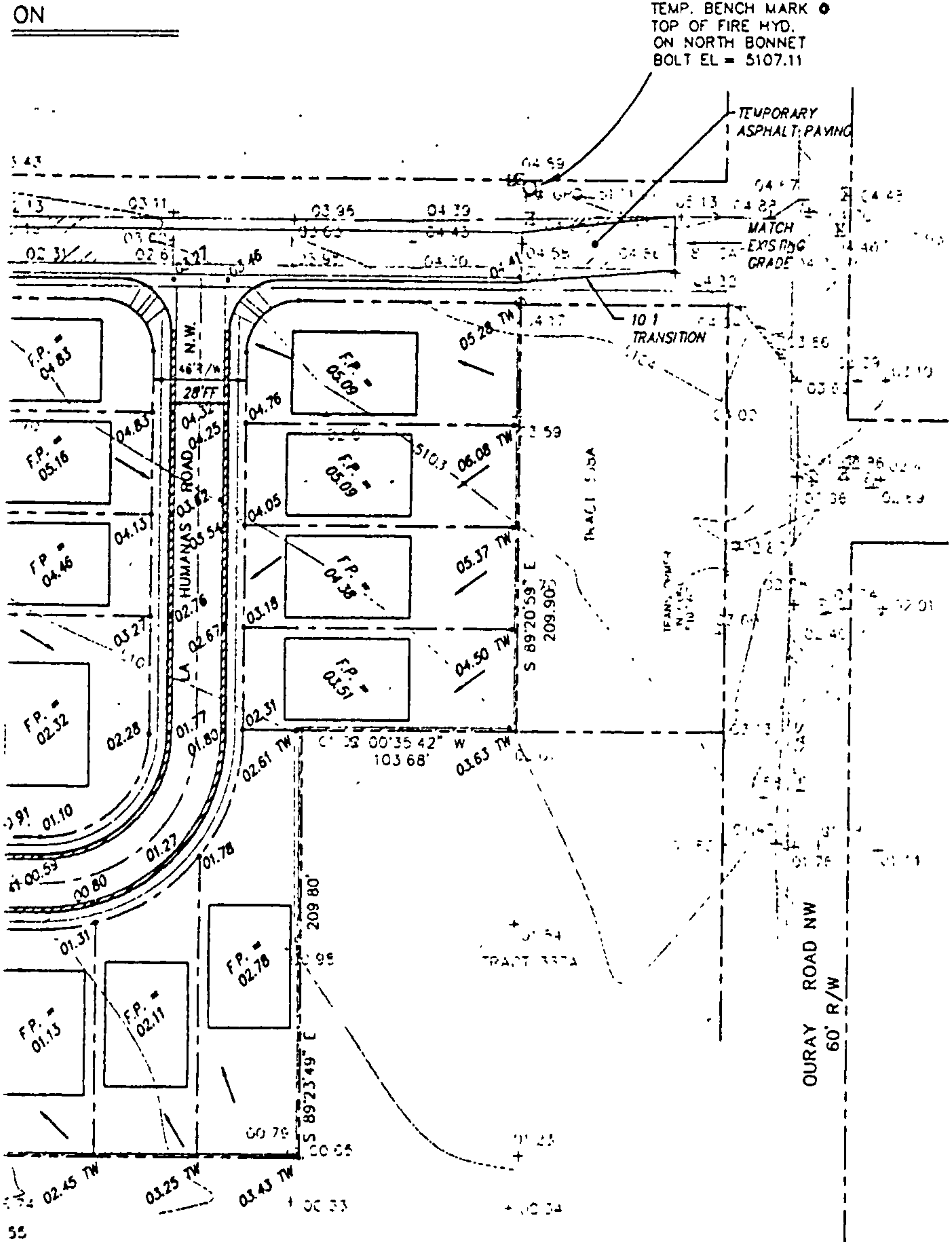
1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR KEEPING ALL SEDIMENT OUT OF EXISTING RIGHT-OF-WAY.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING UP ANY SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.
4. EROSION CONTROL BERMS ARE REQUIRED AROUND THE ENTIRE SITE.
5. ALL EROSION CONTROL BERMS MUST BE IN PLACE AND ENGINEER CERTIFIED PRIOR TO BUILDING PERMIT RELEASE.



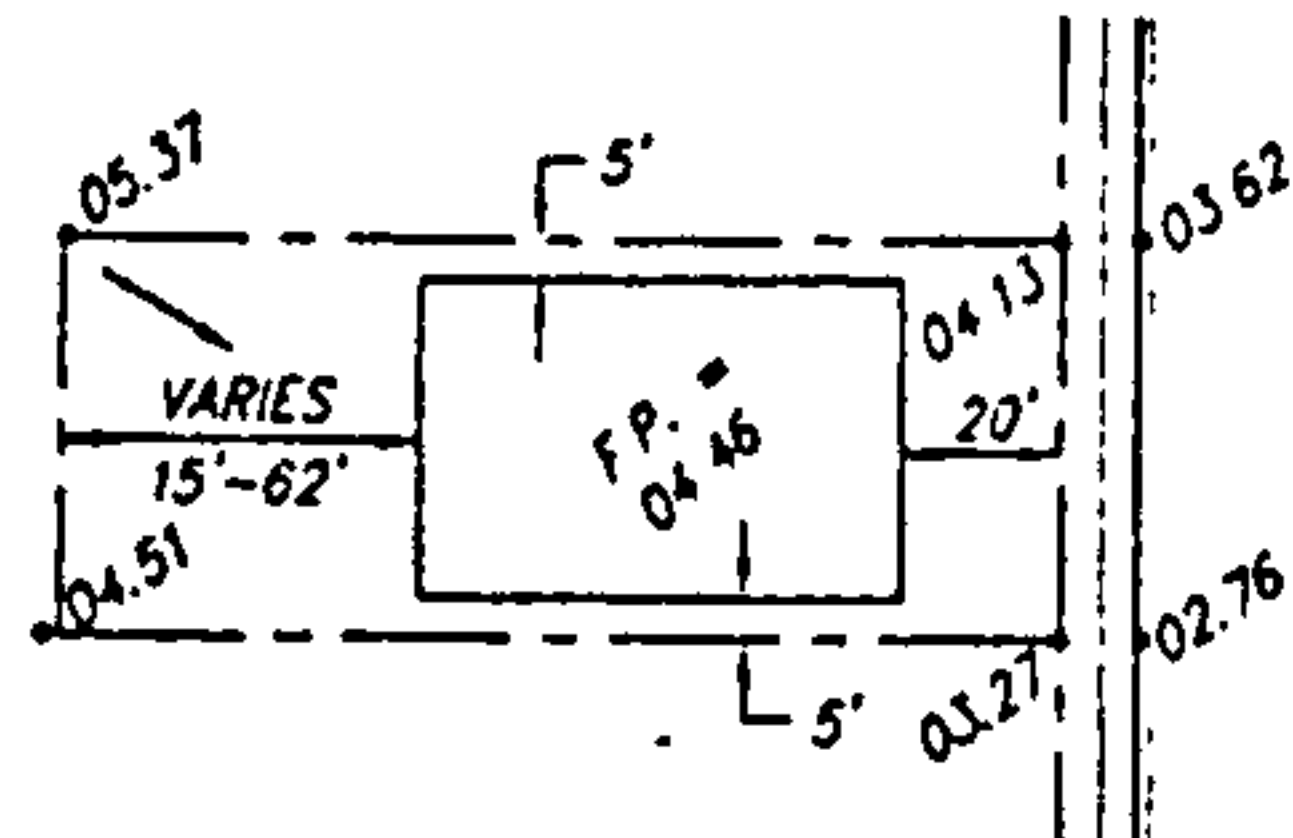
EROSION CONTROL



ON

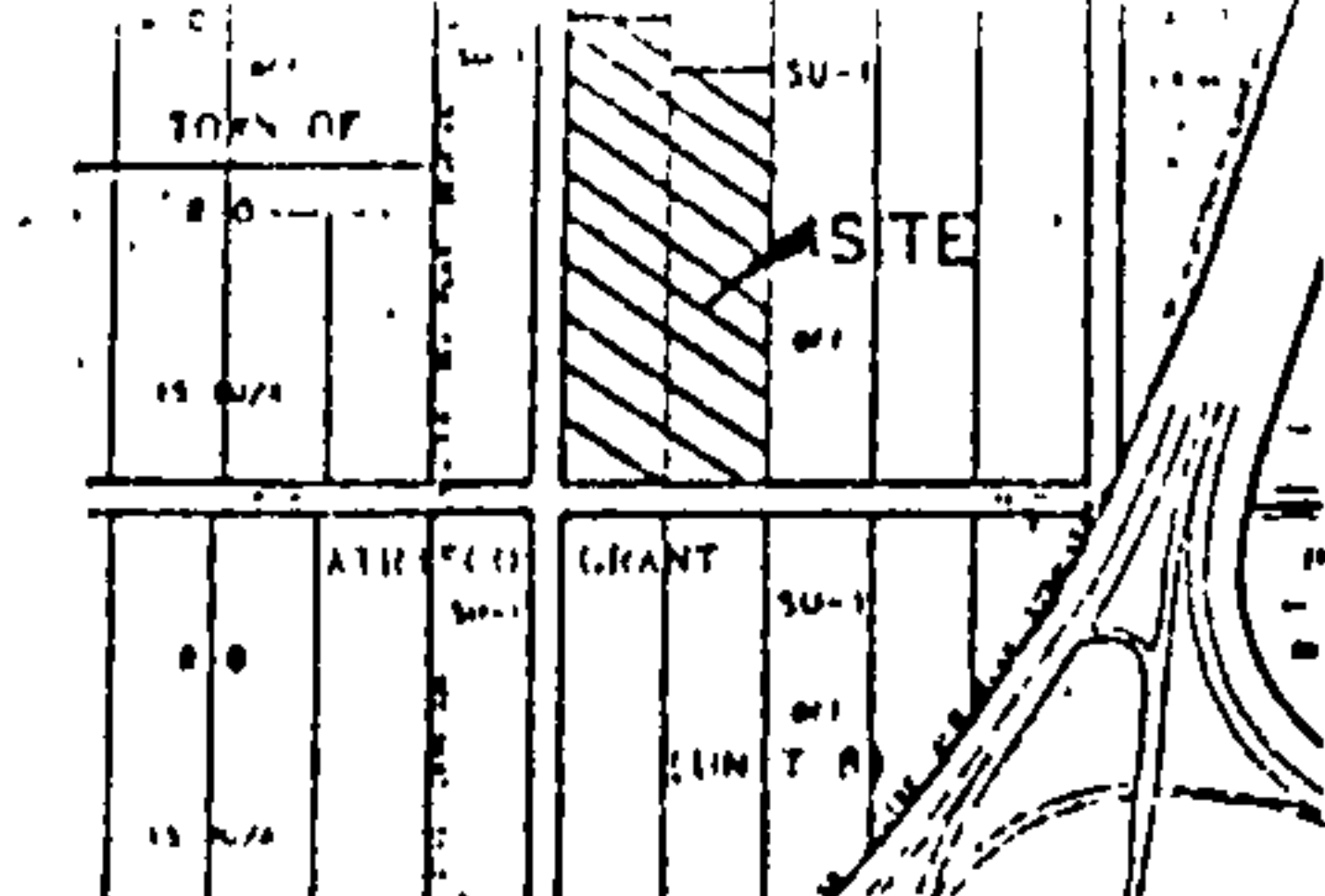


DETAIL N.T.S.



TYPICAL LOT GRADING DETAIL N.T.S.

SCALE: 1" = 50'



TBM (TEMPORARY BENCHMARK)

LOCATED AT TOP OF FIRE HYDRANT ON NORTH BONNET OF NORTH-WEST CORNER OF PROPERTY. BOLT ELEVATION = 5107.11

LEGAL DESCRIPTION

TOWN OF ATRISCO GRANT, TRACTS 337B & 338B

NOTES

1. CONTRACTOR MUST OBTAIN A TOPSOIL DISTURBANCE PERMIT FROM THE ENVIRONMENTAL HEALTH DIVISION PRIOR TO CONSTRUCTION.
2. CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST EDITION SHALL GOVERN ALL WORK.
3. THE CONTRACTOR SHALL CONFORM TO ALL CITY, COUNTY, STATE AND FEDERAL DUST CONTROL MEASURES AND REQUIREMENTS AND WILL BE RESPONSIBLE FOR PREPARING AND OBTAINING ALL NECESSARY APPLICATIONS AND APPROVALS.
4. THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE LOTS INTO PUBLIC RIGHT-OF-WAY. THIS CAN BE ACHIEVED BY CONSTRUCTING TEMPORARY BERMS AS PER DETAIL THIS SHEET AND WETTING THE SOIL TO KEEP IT FROM BLOWING.
5. THE EARTHWORK CONTRACTOR SHALL STOCKPILE ENOUGH MATERIAL ADJACENT TO RETAINING WALL LOCATIONS TO BE UTILIZED FOR WALL BACKFILL.
6. ALL CONCRETE CURBING TO BE 4000 PSI @ 28 DAYS. REFER TO SECTION 101 OF CITY SPECIFICATIONS FOR FLYASH CONTENT.

LEGEND

- PROPERTY LINE
- EXISTING SPOT ELEVATION
- EXISTING CONTOUR
- EDGE OF ASPHALT
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- RETAINING WALL (DESIGN BY OTHERS)
- FINISHED PAD
- PROPOSED MOUNTABLE CURB & GUTTER
- FLOW ARROW

dmg MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS & SURVEYORS
P.O. BOX 90606
ALBUQUERQUE, NEW MEXICO 87199
(505) 345-2010

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

TITLE TOMPIRO SUBDIVISION
GRADING AND DRAINAGE PLAN

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER
DR. CHAIRMAN	DR. CHAIRMAN	3-28-95	WATER	DR. CHAIRMAN
TRANSPORTATION	TRANSPORTATION	3-13-95	WASTE WATER	TRANSPORTATION
HYDROLOGY	HYDROLOGY	3-13-95		HYDROLOGY

PROJECT NO. 5096.90 MAP NO. H11 SHEET 4 OF 4

EXHIBIT "A"

Figure 12

E X H I B I T " A "

To Subdivision Improvements Agreement

DEVELOPMENT REVIEW BOARD (DRB) REQUIRED INFRASTRUCTURE LISTING

for Tompiro Subdivision

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are the Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

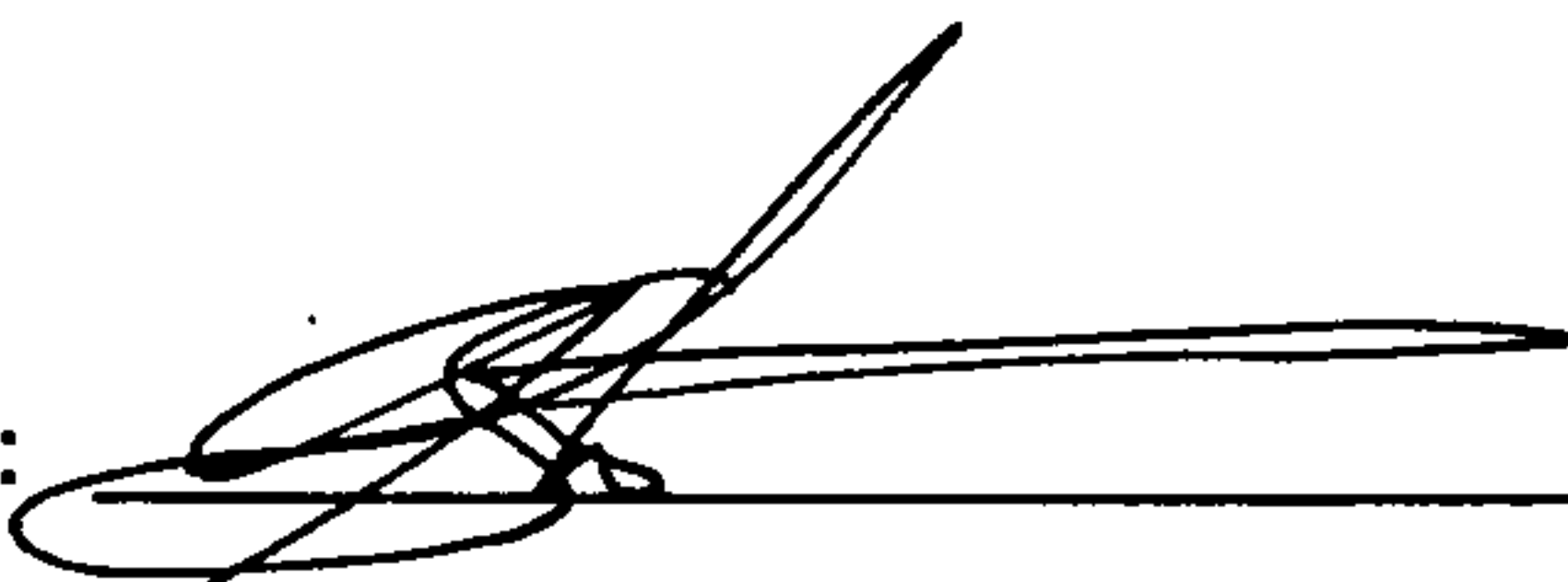
ON-SITE

<u>Size</u>	<u>Type Improvement</u>	<u>Location</u>	<u>From</u>	<u>To</u>
28' FF	Residential Street 4' Sidewalk (deferred) * Standard Curb & Gutter *	Tompiro Drive	Gran Quivira Road	Tenabo Road
28' FF	Residential Street 4' Sidewalk (deferred) * Mountable Curb & Gutter *	Gran Quivira Road	Tompiro Drive	Estancia Drive
28' FF	Residential Street 4' Sidewalk (deferred) * Mountable Curb & Gutter *	Tenabo Road	Tompiro Drive	Estancia Drive
28' FF	Residential Street 4' Sidewalk (deferred) * Mountable Curb & Gutter *	Las Humanas Road	Tompiro Drive	Estancia Drive
28' FF	Residential Street 4' Sidewalk (deferred) * Mountable Curb & Gutter *	Tompiro Drive	Tenabo Road	Las Humanas Road
6"	PVC Waterline	Tompiro Drive	Gran Quivira Road	Las Humanas Road
6"	PVC Waterline	Gran Quivira Road	Tompiro Drive	Estancia Drive
6"	PVC Waterline	Tenabo Road	Tompiro Drive	Estancia Drive
6"	PVC Waterline	Las Humanas Road	Tompiro Drive	Estancia Drive
Water infrastructure to include valves, fittings, valve boxes, hydrants and services.				
8"	SAS Gravity Line	Tompiro Drive	Gran Quivira Road	Las Humanas Road
8"	SAS Gravity Line	Gran Quivira Road	Tompiro Drive	Estancia Drive
8"	SAS Gravity Line	Tenabo Road	Tompiro Drive	Estancia Drive
8"	SAS Gravity Line	Las Humanas Road	Tompiro Drive	Estancia Drive
Sanitary Sewer to include manholes and services.				

* - both sides

Engineer's Certification for Grading and Drainage per DPM including Perimeter Walls as shown on the Grading Plan for Release of SIA and Financial Guarantees. [REDACTED]

D.R.B. Case No. 94-326
D.R.C. Project No. _____
Date Submitted 9/9/94
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Prepared By: 

Print Name: Gregory J. Krenik, PE

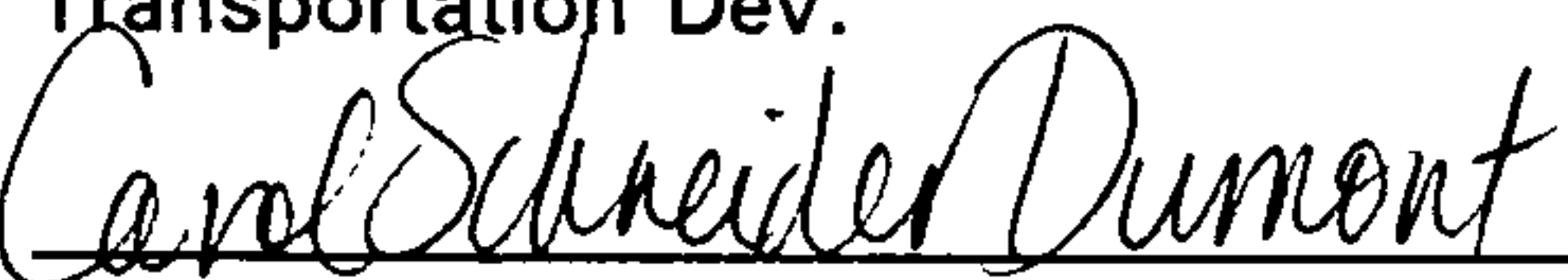
Firm: Mark Goodwin & Associates, PA

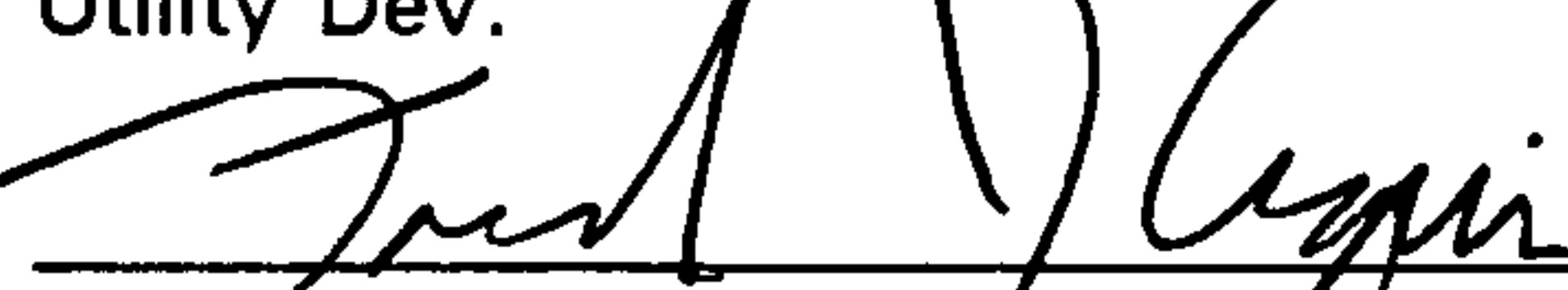
Page 3 of 3

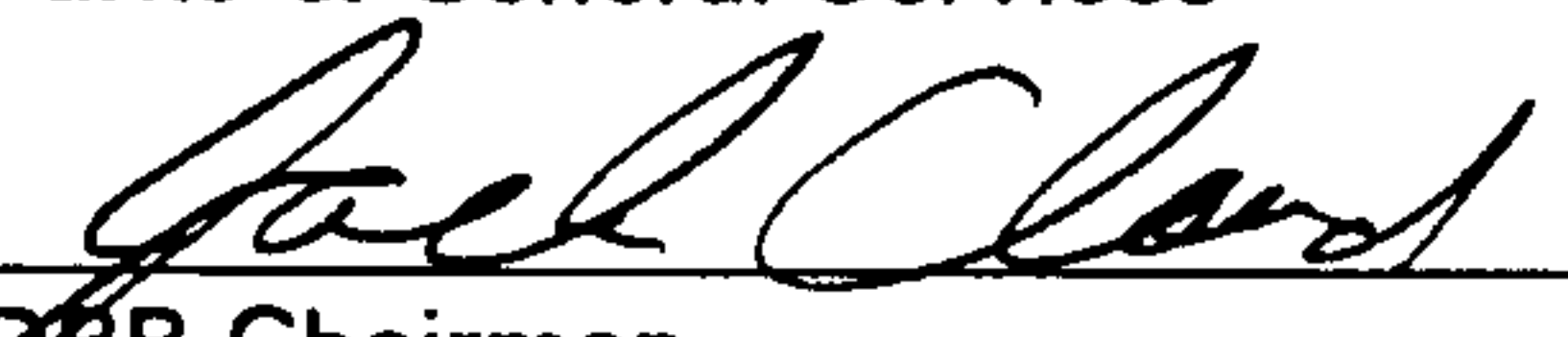
Development Review Board Member Approvals

 9-13-94
Transportation Dev. Date

 9-13-94
Utility Dev. Date

 9-13-94
Parks & General Services Date

 9/13/94
Engineer/AMAFCA Date

 9-13-94
DRB Chairman Date

IMPORTANT MESSAGE

FOR _____

DATE _____ TIME _____ A.M.
P.M.

WHILE YOU WERE AWAY

M _____

OF _____

PHONE NO. _____

TELEPHONED		RET'D YOUR CALL	
PLEASE CALL		URGENT	
WILL CALL AGAIN		WANTS TO SEE YOU	

MESSAGE _____

Milo (Diane Lucero)
5720 Miami Rd
Estancia Hall Street
823-1813

SIGNED *HH*

247g

10/11/19

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

259-2955
243-2955
2420-3420

35.16 - 33.35 37.74

21.9
015

2394 20.75 23.34

DRAINAGE INFORMATION SHEET

8785

PROJECT TITLE: Tompiro Subdivision ZONE ATLAS/DRNG, FILE#: H-11/048
DRB #: 94-326 EPC #: _____ WORK ORDER #: _____
LEGAL DESCRIPTION: 337B & 338B, Atrisco Grant
CITY ADDRESS: _____

ENGINEERING FIRM: Mark Goodwin & Associates, PA CONTACT: Gregory J. Krenik, PE
ADDRESS: PO Box 90606 PHONE: 345-2010
OWNER: Skip Hines CONTACT: Skip Hines
ADDRESS: 331 Wellesley NE PHONE: 266-6848
ARCHITECT: N/A CONTACT: _____
ADDRESS: _____ PHONE: _____
SURVEYOR: Harris Surveying CONTACT: Tony Harris
ADDRESS: 2412 Monroe NE PHONE: 889-8056
CONTRACTOR: N/A CONTACT: _____
ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

☒ DRAINAGE REPORT
☒ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☒ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION
☐ OTHER

PRE-DESIGN MEETING:

☐ YES
☒ NO
☐ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

☐ SKETCH PLAT APPROVAL
☒ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D APPROVAL
☐ S. DEV. PLAN FOR BLDG PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☒ FINAL PLAT APPROVAL
☐ FOUNDATION PERMIT APPROVAL
☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATION OF OCCUPANCY APPROVAL
☐ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ S.A.D. DRAINAGE REPORT
☐ DRAINAGE REQUIREMENTS
☒ OTHER Work Order (Specify)

DATE SUBMITTED: 8-22-94

BY: _____

Gregory J. Krenik, PE

AUG 22 1994

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Tompiro Subdivision ZONE ATLAS/DRNG, FILE#: H-11/048
DRB #: 94-326 EPC #: _____ WORK ORDER #: _____
LEGAL DESCRIPTION: 337B & 338B, Atrisco Grant
CITY ADDRESS: _____

ENGINEERING FIRM: Mark Goodwin & Associates, PA CONTACT: Gregory J. Krenik, PE
ADDRESS: PO Box 90606 PHONE: 345-2010
OWNER: Skip Hines CONTACT: Skip Hines
ADDRESS: 331 Wellesley NE PHONE: 266-6848
ARCHITECT: N/A CONTACT: _____
ADDRESS: _____ PHONE: _____
SURVEYOR: Harris Surveying CONTACT: Tony Harris
ADDRESS: 2412 Monroe NE PHONE: 889-8056
CONTRACTOR: N/A CONTACT: _____
ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

CHECK TYPE OF APPROVAL SOUGHT:

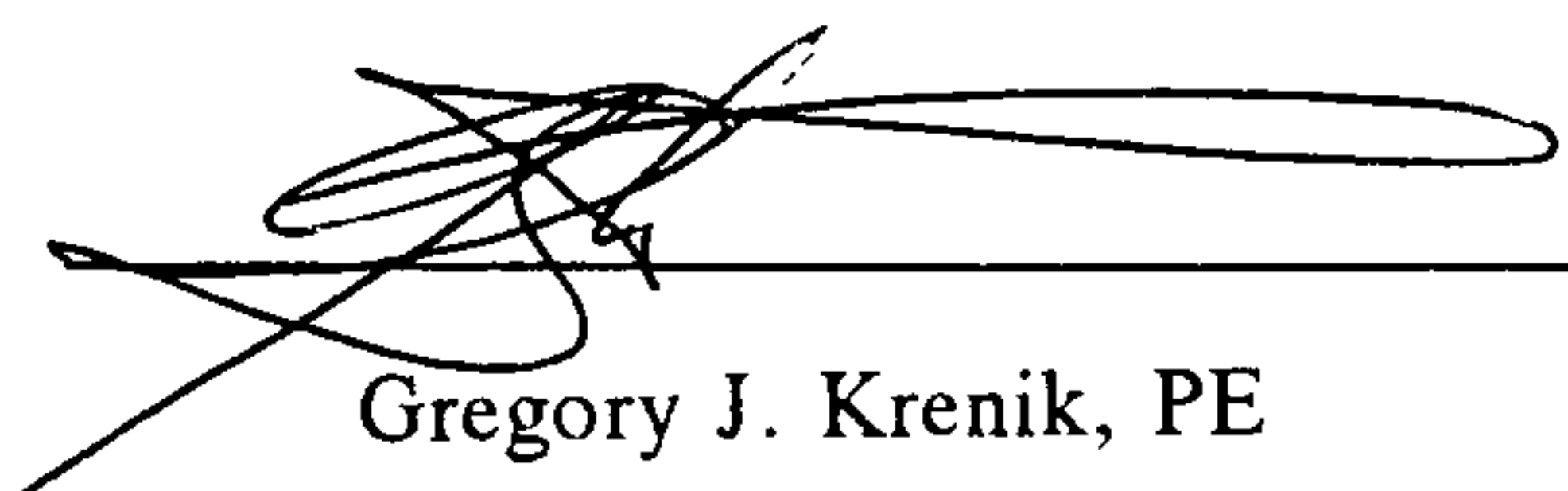
☐ DRAINAGE REPORT
☐ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☐ GRADING PLAN
☐ EROSION CONTROL PLAN
☒ ENGINEER'S CERTIFICATION
☐ OTHER

☐ SKETCH PLAT APPROVAL
☐ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D APPROVAL
☐ S. DEV. PLAN FOR BLDG PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☐ FINAL PLAT APPROVAL
☐ FOUNDATION PERMIT APPROVAL
☐ BUILDING PERMIT APPROVAL
☒ CERTIFICATION OF OCCUPANCY APPROVAL
☐ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ S.A.D. DRAINAGE REPORT
☐ DRAINAGE REQUIREMENTS
☐ OTHER _____ (Specify)

PRE-DESIGN MEETING:

☐ YES
☐ NO
☐ COPY PROVIDED

DATE SUBMITTED: 11-2-95

BY: 
Gregory J. Krenik, PE

NOV - 31



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

November 27, 1995

Greg Krenik
Mark Goodwin & Associates
P.O. Box 90606
Albuquerque, NM 87199

RE: REVISED ENGINEER CERTIFICATION FOR FINANCIAL GUARANTEE
RELEASE @ TOMPIRO SUBDIVISION (H11-D48) ENGINEER CERTIFICATION
STATEMENT DATED 11/16/95.

Dear Mr. Krenik:

Based on the information provided on your November 17, 1995 resubmittal, Engineer Certification for the above referenced site is acceptable for Financial Guarantee release.

Please be advised that all developed run-off must remain and exit out towards the street.

Also, once the system on Miami Rd. NW becomes available, it will be the developers task to connect to the system.

If I can be of further assistance, please feel free to contact me at 768-2667.

Sincerely,

Bernie J. Montoya, CE
Engineering Associate

BJM/dl

c: Andrew Garcia
Skip Hines
File



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

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 345-2010

November 16, 1995

*Mr. Bernie Montoya
Hydrology Division
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103*

Re: Tompiro Subdivision

Dear Mr. Montoya:

This letter is part of the resubmittal and an itemized response to our conversation on the referenced project.

- 1) The pond volume calculations are included.*
- 2) The lots along Miami Road were graded the way the original grading plan showed. The back yards drain to Miami Road.*

Very Truly Yours,

MARK GOODWIN & ASSOCIATES, P.A.

A handwritten signature in black ink, appearing to read 'Gregory J. Krenik', is written over a horizontal line.

*Gregory J. Krenik, P.E.
Project Manager*

GJK: smr

NOV 17 1995



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

PROJECT TOMPIRO SUBDIVISION
SUBJECT ASBUILT POND CALCS
BY GJK DATE 11-16-95
CHECKED _____ DATE _____
SHEET 1 OF _____

ASBUILT POND VOLUME

CONTOUR 89 HAS AN AREA OF 6,488 SF

CONTOUR 97 HAS AN AREA OF 12,438 SF

THE ASBUILT SPILLWAY ELEV. = 96.60

ELEV	AREA	VOLUME
89	6488	0
97	12438	75,704

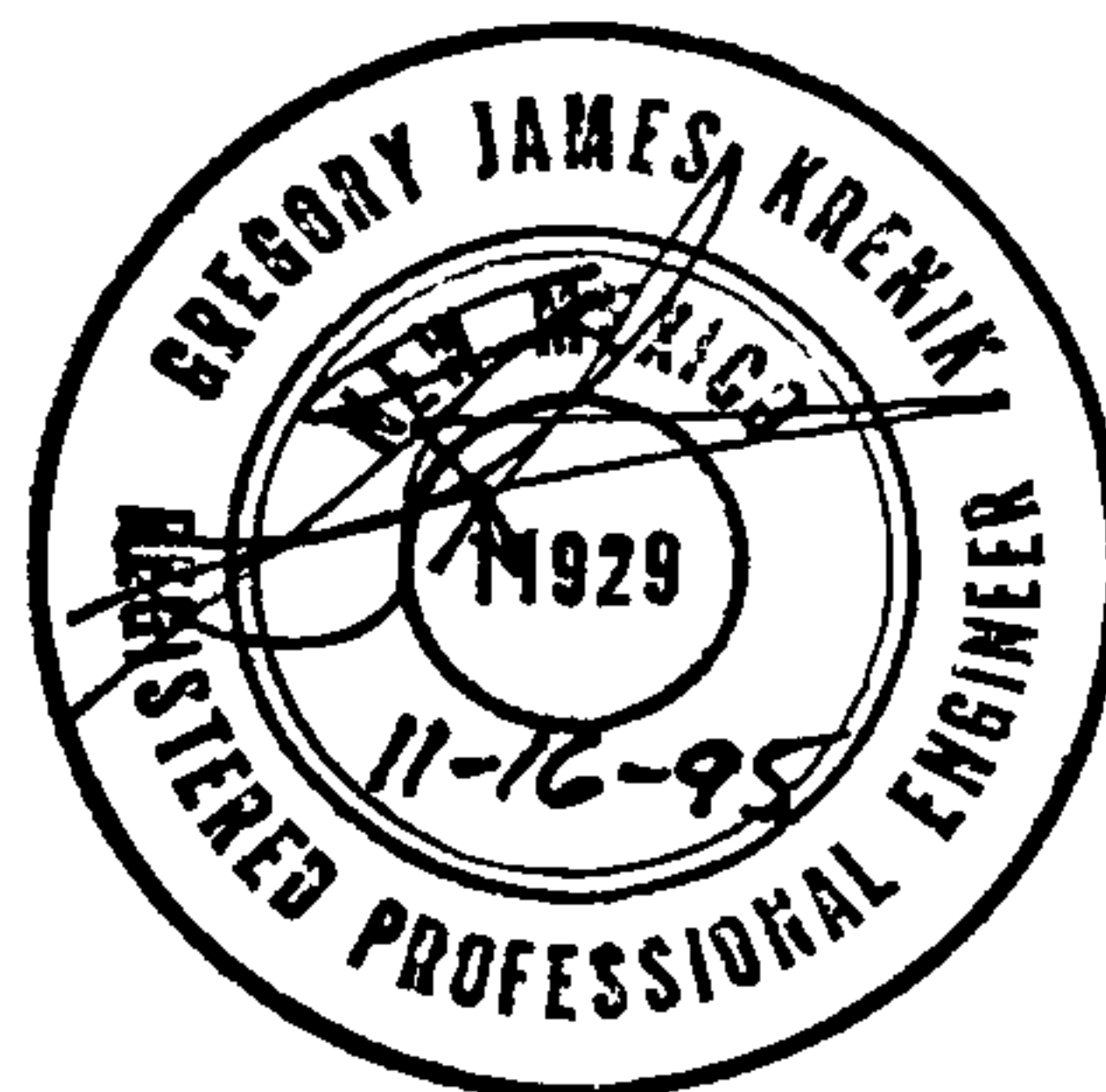
FIND VOLUME AT SPILLWAY = 96.60

$$\frac{.4}{8} \frac{x}{75704} = x = 3,785$$

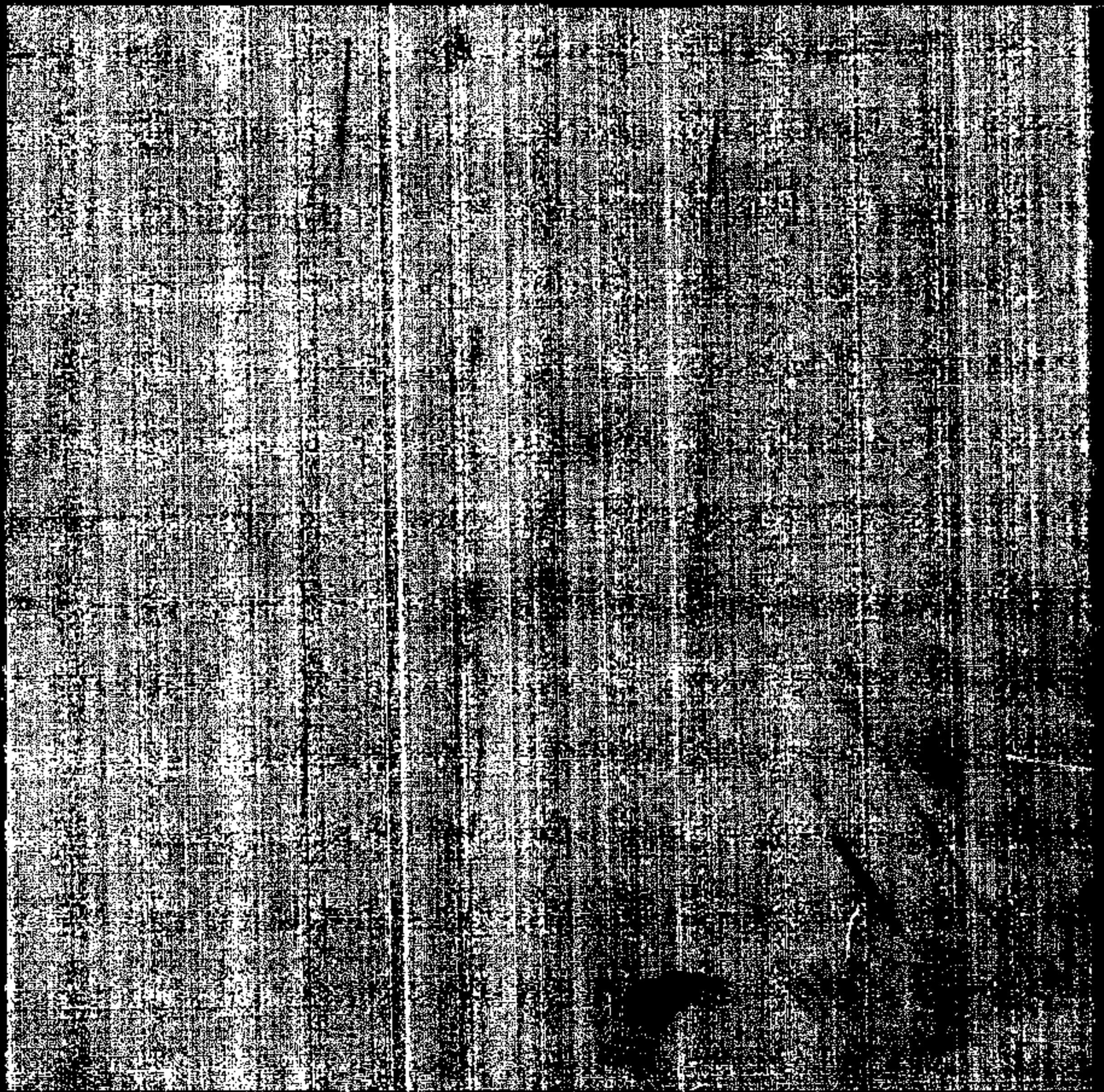
$$75,704 - 3,785 = 71,919 \text{ CF} > 62,335 \text{ CF}$$

FROM ORIGINAL
CALCULATIONS.

OK







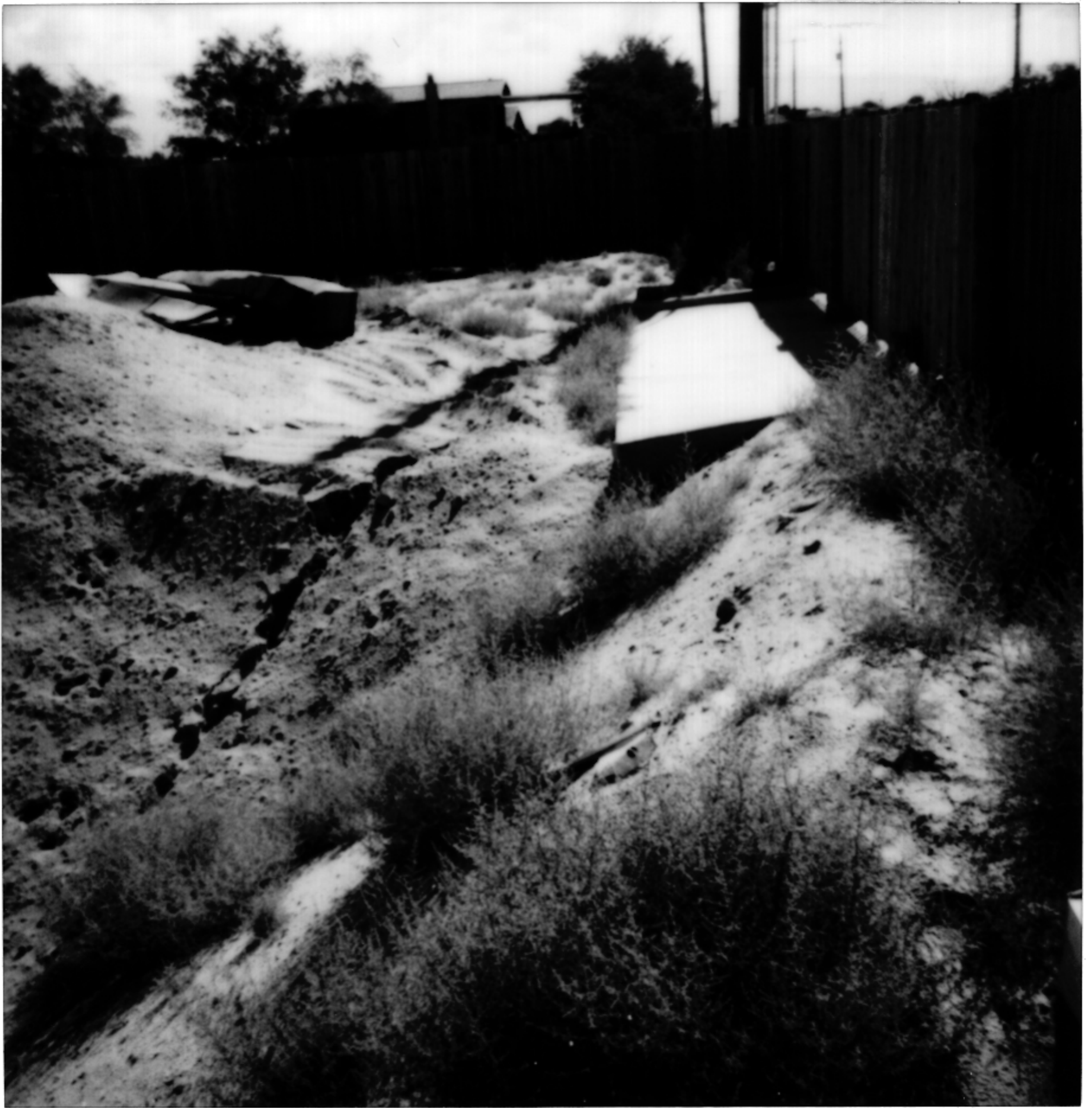
FOI 090101-3

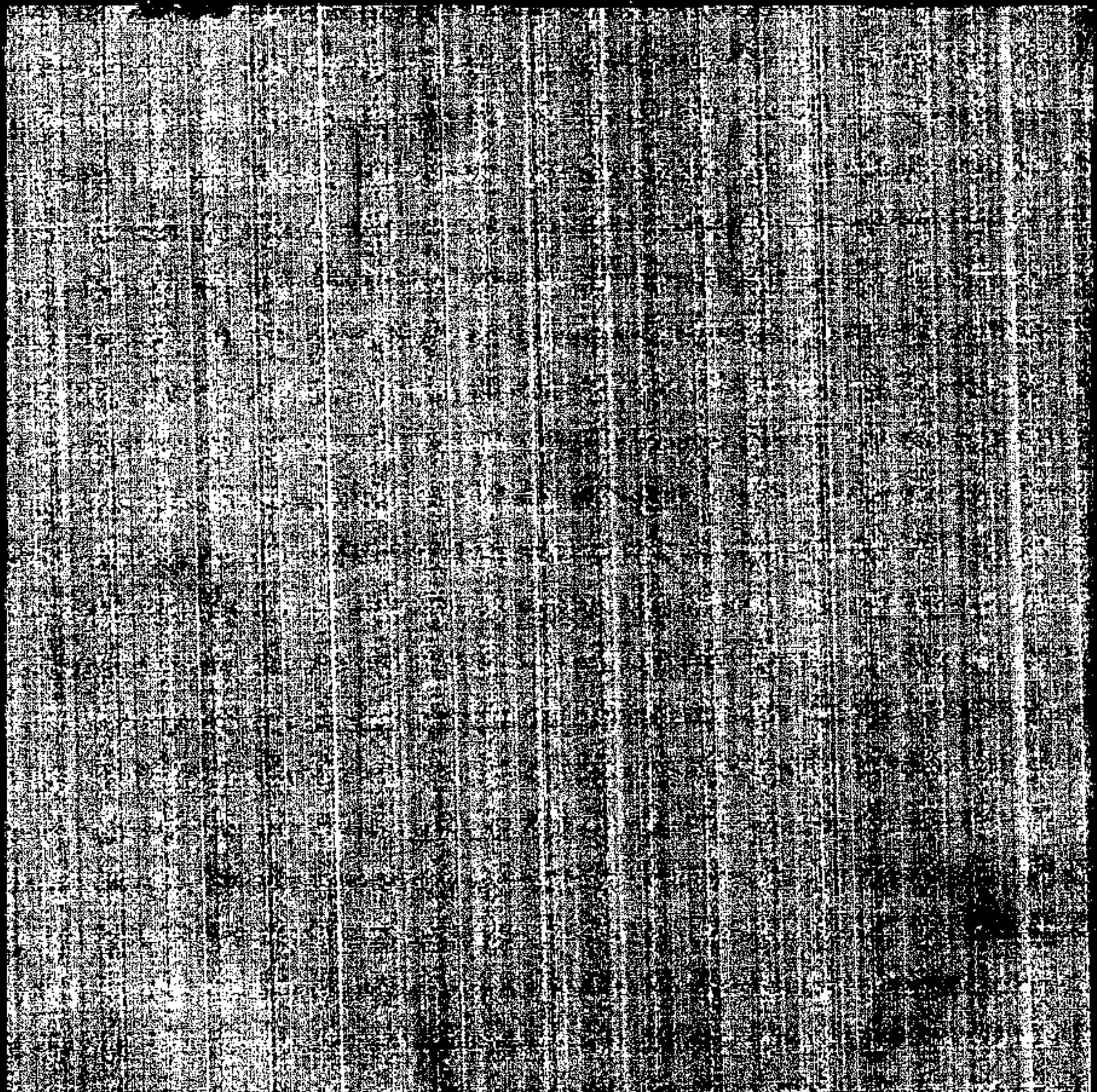
8-28-56
Miami 6611



8-28-56

Mr. Quinn Hill





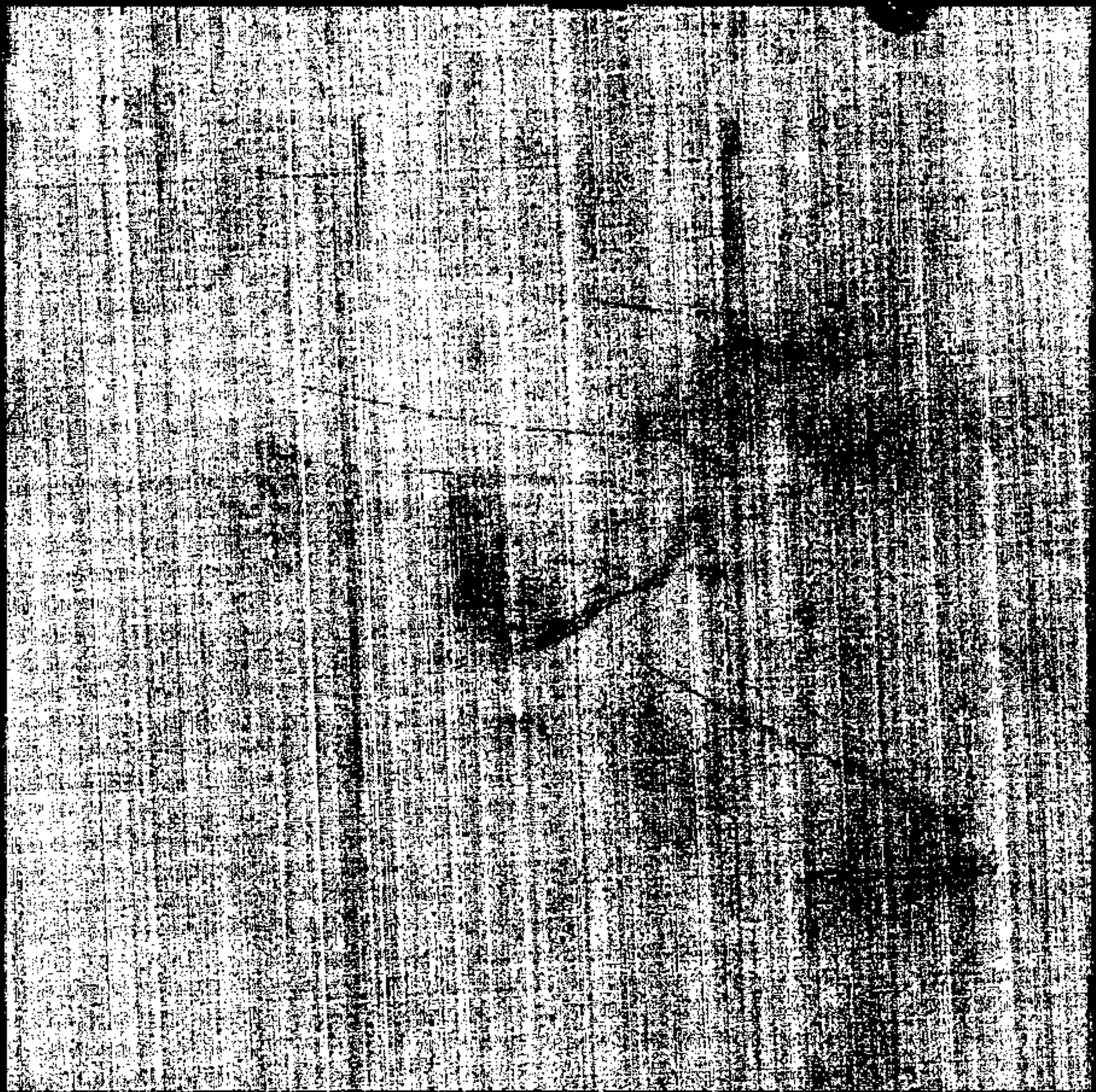
20040

FOR PROIMA 3

8-28-56

M. am. All



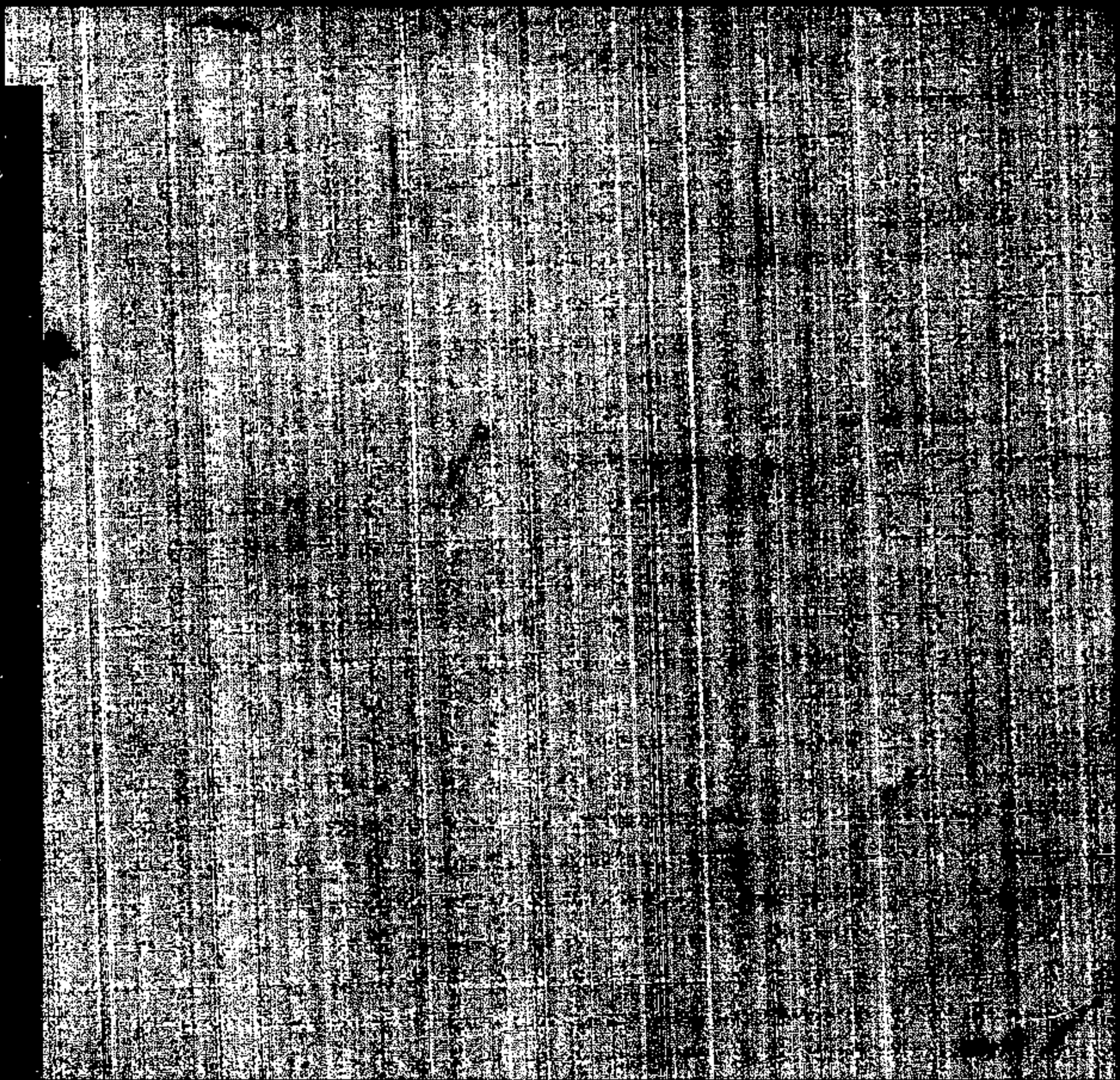


201 30110 63

8-28-96

Miami 644



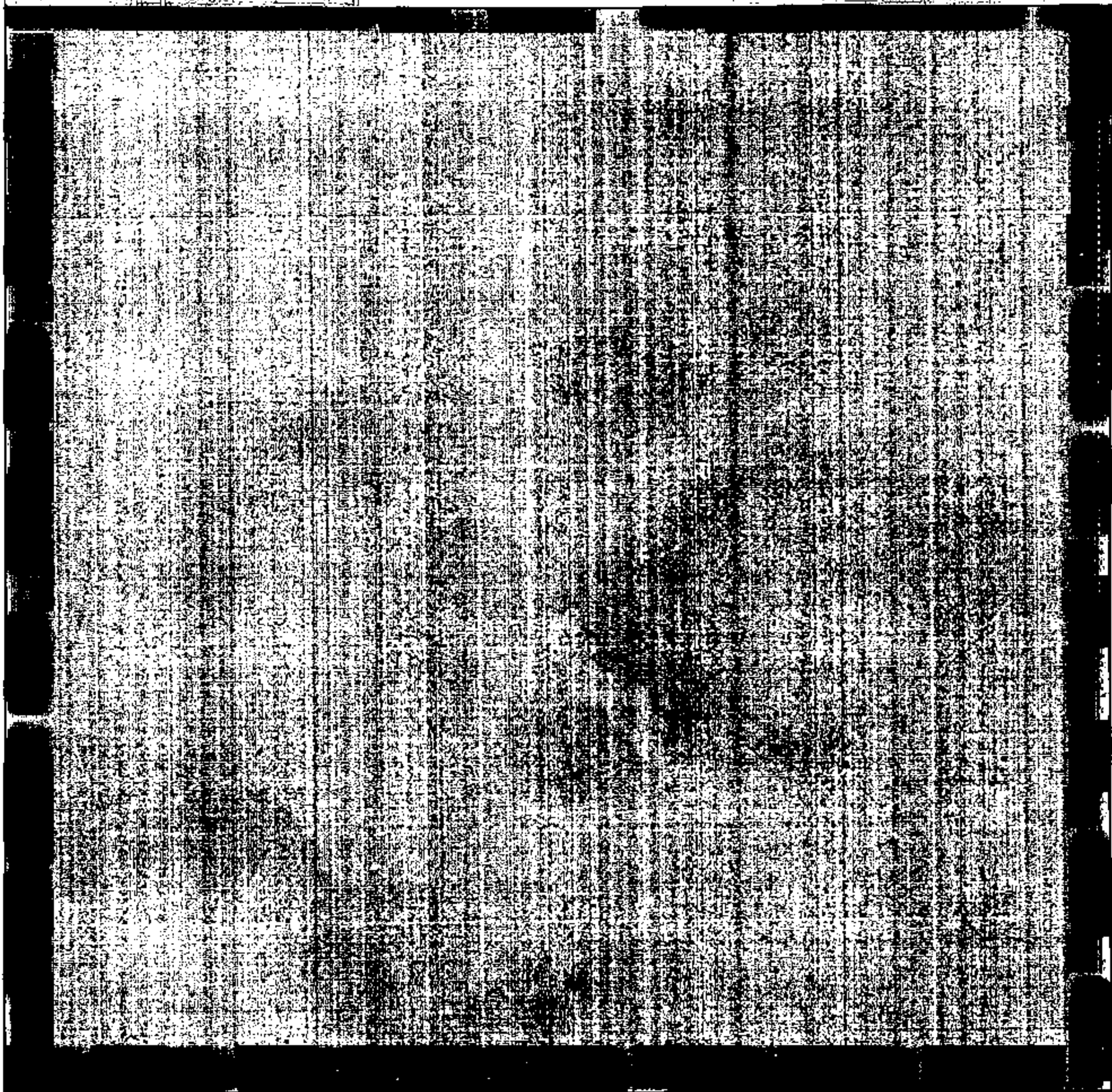


100100003

8-28-86

Miami H 11





FOI APPROVED

8-28-86

Miami #11



POLAROID

8-28-56

Mini H-61





201 ADDING 3

8-28-56

Miami H-41

D.R.B. Case No. 94-326
D.R.C. Project No. _____
Date Submitted 9/9/94 2-6-95
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Prepared By: _____

Print Name: Gregory J. Krenik, PE

Firm: Mark Goodwin & Associates, PA

Page 3 of 3

Development Review Board Member Approvals

Transportation Dev.	Date	Utility Dev.	Date
Parks & General Services	Date	Engineer/AMAFCA	Date
DRB Chairman	Date		



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

PROJECT TOMPIRO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GSK DATE 9-14-94
CHECKED _____ DATE _____
SHEET 7 OF _____
REVISED 3-10-95

• SIZE EMERGENCY SPILLWAY

• SIZE OUTFALL AS A WEIR

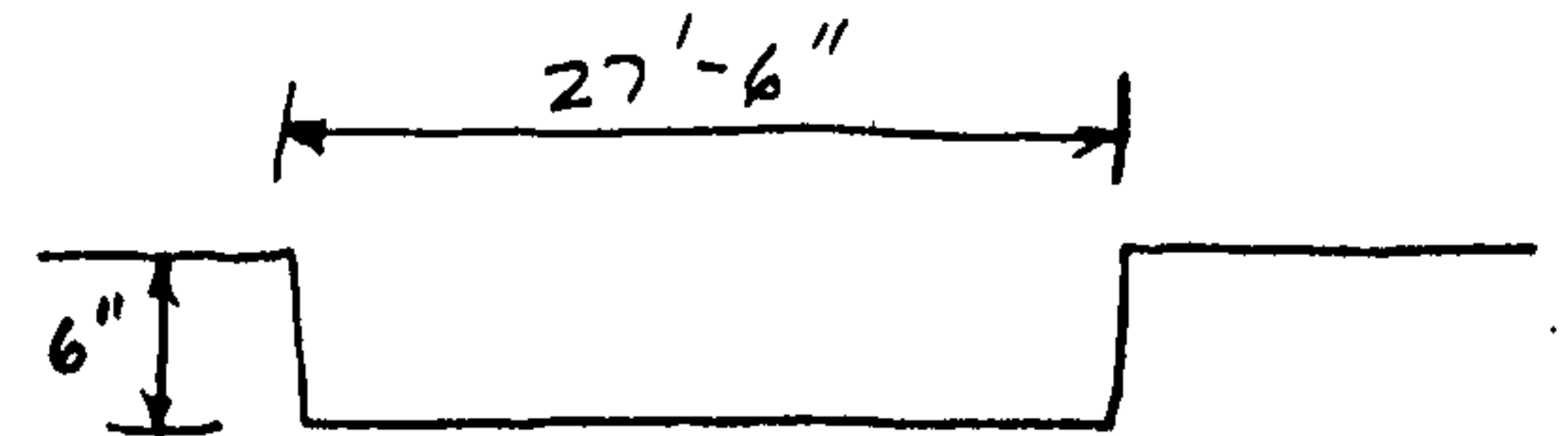
$$Q = 2.95 L H^{1.5}$$

$$H = 6''$$

$$Q = 28.64 \text{ CFS}$$

$$L = \frac{28.64}{2.95 (.5)^{1.5}}$$

$$= 27.46' \text{ SAY } 27'-6''$$



• SIZE WIDTH

$$S = 0.0119$$

$$S = \frac{.48}{20,687} = 0.0232$$

USE WIDTH OF 17.6276 OR 17'-7 1/2"

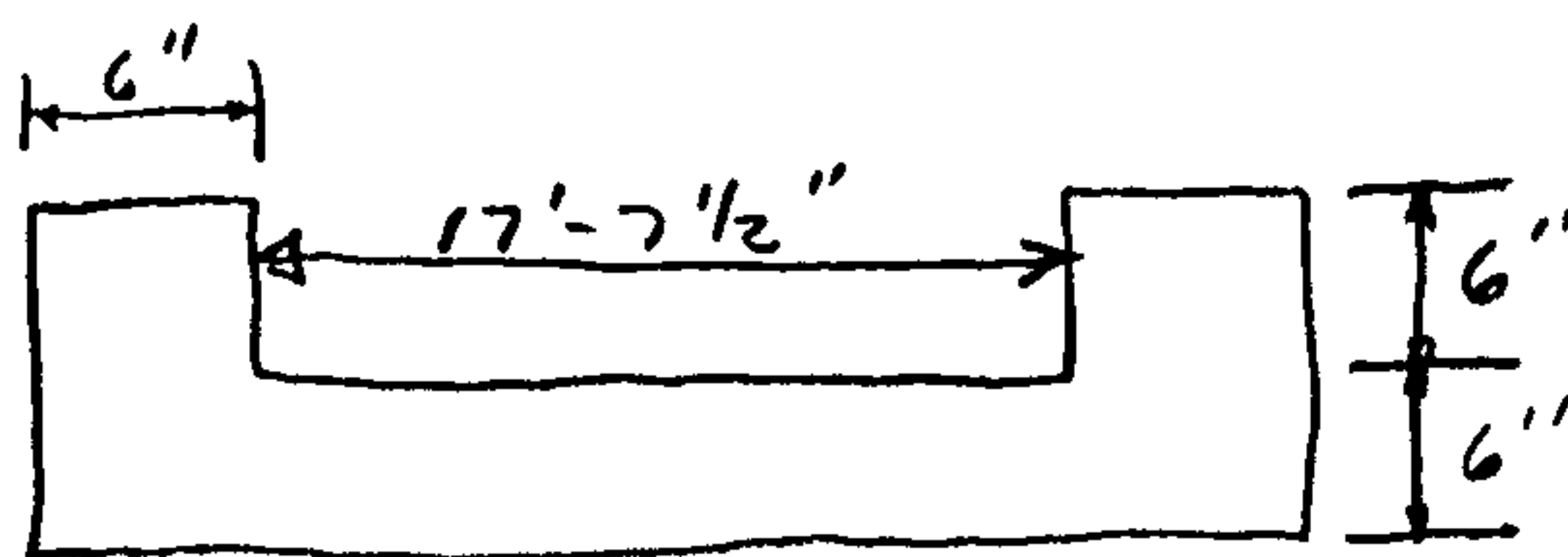
$$d = 0.25$$

$$WP = 18.125$$

$$A = 4.40625$$

$$V = 6.7818 \text{ F/S}$$

$$Q = 29.882 \text{ CFS} \approx 28.64 \text{ CFS} \text{ OK}$$



SECTION OF SPILLWAY

APPENDIX A



**CITY OF ALBUQUERQUE
NEW MEXICO**

WEST BLUFF DRAINAGE PLAN

ANDREWS, ASBURY & ROBERT, INC.

RECEIVED

MAR 31 1987

**PLANNING
HYDROLOGY**

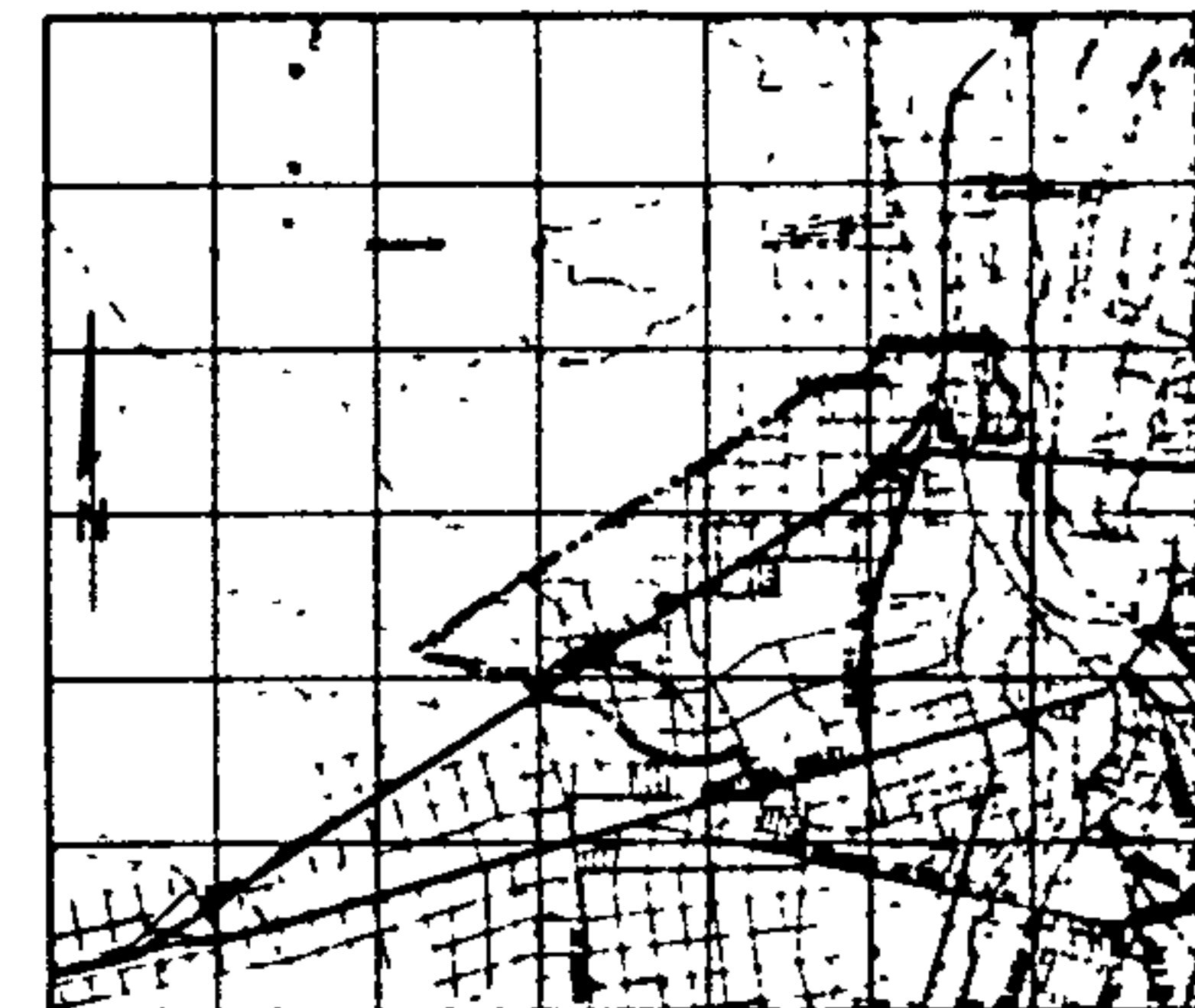


CITY OF ALBUQUERQUE
NEW MEXICO

WEST BLUFF DRAINAGE PLAN

PHASE III
FINAL
IMPROVED CONDITIONS REPORT
JANUARY, 1987

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
ALBUQUERQUE NEW MEXICO



VICINITY MAP

INDEX

<u>DESCRIPTION</u>	<u>SHEET No.</u>
TITLE SHEET	1
NARRATIVE	2 THRU 7
APPENDIX 'A' EXISTING AND PROPOSED UTILITIES & FACILITIES	A-1 THRU A-12
APPENDIX 'B' SUMMARY OF HYDROLOGIC AND HYDRAULIC ANALYSES	B-1 THRU B-5
APPENDIX 'C' SUMMARY OF EXISTING STORM DRAINS	C-1 THRU C-5
APPENDIX 'D' SUMMARY OF PROPOSED STORM DRAINS	D-1 THRU D-2
APPENDIX 'E' SUMMARY OF EXISTING CROSSING STRUCTURES	E-1 THRU E-3
APPENDIX 'F' SUMMARY OF PROPOSED DRAINAGE FACILITIES	F-1 THRU F-3
MODELING MAP	ENCLOSURE

WEST BLUFF DRAINAGE PLAN PHASE III

I. INTRODUCTION

THE CITY OF ALBUQUERQUE HAS RETAINED THE ENGINEERING FIRM OF ANDREWS, ASBURY & ROBERT, INC. TO PROVIDE A DRAINAGE PLAN OF THAT PORTION OF WESTERN METROPOLITAN ALBUQUERQUE HEREINAFTER REFERRED TO AS THE WEST BLUFF

THE DRAINAGE PLAN IS PRESENTED IN THREE PHASES:

- I. PRELIMINARY ENGINEERING REPORT
- II. EXISTING CONDITIONS REPORT
- III. IMPROVED CONDITIONS REPORT

THIS SUBMITTAL REPRESENTS THE THIRD PHASE OF THE PLAN, I.E., THE IMPROVED CONDITIONS REPORT. THIS IMPROVED CONDITIONS REPORT HAS BEEN COMPILED FROM DATA OBTAINED FROM THE PRELIMINARY ENGINEERING REPORT (PHASE I), AND THE EXISTING CONDITIONS REPORT (PHASE II) TOGETHER WITH ADDITIONAL INFORMATION REQUIRED TO PERFORM THIS PHASE OF THE WEST BLUFF DRAINAGE PLAN.

II. LIMITS OF STUDY AREA

THE LIMITS OF THE AREA TO BE STUDIED ARE GEOGRAPHICALLY DEFINED AS BEGINNING AT THE FAR WEST BOUNDARY POINT, A POINT ON THE SOUTHERN EDGE OF THE LADERA CHANNEL OF THE LADERA DRAINAGE SYSTEM, APPROXIMATELY ONE MILE WEST OF 98TH STREET (NOLASCO STREET), THEN FOLLOWING THE LADERA DRAINAGE SYSTEM, BEING THE AREA'S NORTHERN BOUNDARY, TO REDLANDS ROAD, THEN EAST TO THE TOPOGRAPHIC FEATURE COMMONLY KNOWN AS THE BLUFF, LOCATED DIRECTLY WEST OF THE RIO GRANDE, THEN SOUTHERLY ALONG THE BLUFF TO INTERSTATE HIGHWAY 40, THEN WESTERLY ALONG INTERSTATE HIGHWAY 40 AND AROUND THE NORTHERLY AND WESTERLY PORTION OF THE INTERSTATE HIGHWAY 40 AND COORS BOULEVARD INTERCHANGE TO COORS BOULEVARD, THEN SOUTHERLY ALONG COORS BOULEVARD TO CENTRAL AVENUE, THEN WESTERLY ALONG CENTRAL AVENUE TO AIRPORT ROAD, THEN NORTH AND WEST TO THE POINT OF BEGINNING (SEE KEY MAP SHEET 7 INCLUDED HEREINAFTER).

III. PURPOSE

THE PURPOSE OF THE WEST BLUFF DRAINAGE PLAN IS TO PROVIDE A DOCUMENT FOR USE IN MANAGEMENT OF STORM WATER WITHIN THE LIMITS OF THE STUDY AREA.

PHASE I OF THE WEST BLUFF DRAINAGE PLAN PROVIDES AN EVALUATION OF EXISTING REPORTS AND PLANS AND IMPACTS OF SAME RELATIVE TO THE WEST BLUFF.

PHASE II OF THE WEST BLUFF DRAINAGE PLAN DEFINES THE 10 YEAR AND 100 YEAR FLOOD HAZARD AREAS FOR THE EXISTING CONDITIONS.

THE GENERAL SCOPE OF PHASE III OF THE WEST BLUFF DRAINAGE PLAN PROVIDES AN EVALUATION OF THE PROPOSED DRAINAGE FACILITIES REQUIRED FOR A TOTALLY IMPROVED WATERSHED FOR THE 10 YEAR AND 100 YEAR STORM EVENTS IN ACCORDANCE WITH THE CITY OF ALBUQUERQUE'S DRAINAGE ORDINANCES.

IV. LAND USE

CURRENT AND PROPOSED LAND USE WITHIN THE THE WEST BLUFF STUDY AREA WERE EVALUATED TO DETERMINE THE MAXIMUM IMPROVED LAND USE DENSITIES. LAND USE PLANS CURRENTLY ADOPTED BY THE CITY OF ALBUQUERQUE AND UTILIZED FOR PHASE III ARE THE FOLLOWING PLANS:

- I. COORS CORRIDOR PLAN
- II. EL RANCHO ATRISCO PHASE III
- III. ATRISCO BUSINESS PARK PLAN
- IV. EAST ATRISCO SECTOR DEVELOPMENT PLAN

PROPOSED LAND USE PLANS FOR THIS AREA ARE LIMITED TO THE EL RANCHO ATRISCO, PHASE V PLAN WHICH ADDRESSES ONLY THE AREA NORTH OF INTERSTATE HIGHWAY 40 AND WEST OF UNSER BOULEVARD.

LAND USE FOR THE REMAINING AREA WAS DETERMINED FROM CURRENT CITY ZONING MAPS. PORTIONS OF THE STUDY AREA ARE CURRENTLY WITHIN BERNALILLO COUNTY JURISDICTION, HOWEVER FOR PHASE III THESE AREAS WERE CONSIDERED TO BE RE-ZONED TO CONFORM WITH EXISTING AND PROPOSED LAND USES SURROUNDING THEM.

V. METHODS

THE 10 YEAR AND 100 YEAR FLOOD EVENTS WERE ANALYZED FOR THE WEST BLUFF STUDY AREA BY MEANS OF THE HYMO COMPUTER MODEL AS DEVELOPED FOR THE "ALBUQUERQUE MASTER DRAINAGE STUDY". THE METHODS, ASSUMPTIONS, AND MODELING TECHNIQUES OUTLINED IN THE "ALBUQUERQUE MASTER DRAINAGE STUDY" WERE UTILIZED; HOWEVER, SUCH OUTLINES ARE NOT INCLUDED IN THIS DOCUMENT, BUT ARE INCORPORATED BY REFERENCE ONLY.

VI. RESULTS

THE RESULTS OF THE COMPUTER MODELING FOR THIS IMPROVED CONDITIONS REPORT ARE PRESENTED WITHIN THE SIX APPENDICES OF THIS PHASE OF THE WEST BLUFF DRAINAGE PLAN. THE DESCRIPTION OF APPENDICES 'A' THROUGH 'F' FOLLOWS:

APPENDIX 'A' - THIS APPENDIX, TITLED "EXISTING AND PROPOSED UTILITIES AND FACILITIES", IS COMPOSED OF PHOTO BASED TOPOGRAPHICAL MAPS AT 1" = 400' SCALE. SHOWN ON THESE MAPS ARE EXISTING DRAINAGE FACILITIES AND MAJOR UTILITIES, PROPOSED DRAINAGE FACILITIES AND MASTER PLANNED UTILITIES, MASTER PLANNED MAJOR STREETS, TOGETHER WITH UPLAND ANALYSIS POINTS FOR THE COMPUTER MODEL.

APPENDIX 'B' - THIS APPENDIX, TITLED "SUMMARY OF HYDROLOGIC AND HYDRAULIC ANALYSES", CONTAINS DISCHARGE FLOW DEPTH AND FLOW VELOCITY INFORMATION AT HYDROLOGICALLY STRATEGIC LOCATIONS FOR THE 10 YEAR AND 100 YEAR IMPROVED CONDITIONS RUNOFF EVENTS.

APPENDIX 'C' - THIS APPENDIX, TITLED "SUMMARY OF EXISTING STORM DRAINS", IS A COMPILATION OF AVAILABLE EXISTING STORM DRAIN INFORMATION BASED ON AS-BUILT DRAWINGS AS PROVIDED BY THE CITY ENGINEER. HORIZONTAL AND VERTICAL LOCATION OF EXISTING STORM DRAINS MUST BE FIELD VERIFIED AT TIME OF PRELIMINARY DESIGN. THE TOTAL 10 YEAR AND 100 YEAR DISCHARGES SHOWN IN THIS APPENDIX ARE FOR THE IMPROVED CONDITIONS WITH ALL PROPOSED UPLAND DRAINAGE FACILITIES IN PLACE.

WEST BLUFF DRAINAGE PLAN PHASE III

APPENDIX 'D' - THIS APPENDIX, TITLED "SUMMARY OF PROPOSED STORM DRAIN FACILITIES", LISTS STORM DRAINS REQUIRED TO MEET THE MINIMUM DESIGN CRITERIA FOR FLOW IN STREETS PER THE CITY OF ALBUQUERQUE DRAINAGE ORDINANCES AND POLICIES

APPENDIX 'E' - THIS APPENDIX, TITLED "SUMMARY OF EXISTING CROSSING STRUCTURES", CONTAINS INFORMATION RELATIVE TO EXISTING CROSSING STRUCTURES WITHIN THE WEST BLUFF AREA.

APPENDIX 'F' - THIS APPENDIX, TITLED "SUMMARY OF PROPOSED CHANNELS AND BOX STRUCTURES", CONTAINS DISCHARGE, FLOW DEPTH AND FLOW VELOCITY INFORMATION FOR THE MAJOR DRAINAGE FACILITIES, I.E., WEST BLUFF OUTFALL, I-40 INTERCEPTOR, WEST MESA DIVERSION AND UNSER DIVERSION FOR THE STRUCTURES AS ASSUMED IN THE COMPUTER MODELING FOR THE 10 YEAR AND 100 YEAR STORM EVENTS. THE FLOW DEPTHS AND FLOW VELOCITIES SHOWN IN THIS APPENDIX ARE CALCULATED FOR NORMAL DEPTH, AND DO NOT REPRESENT THE ULTIMATE BACKWATER ANALYSIS.

THE PROPOSED IMPROVEMENT SIZES, ALIGNMENTS AND LOCATIONS DEPICTED IN THESE APPENDICES ARE NOT MEANT TO BE FINAL BUT EACH MUST BE DETERMINED IN THEIR PRELIMINARY DESIGN.

VII. PROPOSED FLOOD MITIGATION MEASURES

THE DRAINAGE SOLUTION PROPOSED FOR THE MANAGEMENT OF STORM WATER WITHIN THE STUDY AREA INCORPORATES BOTH STRUCTURAL AND NON-STRUCTURAL MEASURES. THE STRUCTURAL MEASURES HAVE BEEN GROUPED INTO CHANNELS AND BOX STRUCTURES AND STORM DRAIN FACILITIES. THE CHANNELS AND BOX STRUCTURES ARE THOSE FACILITIES WHICH WILL PREVENT LARGE UPLAND AREAS FROM INUNDATING DOWNSTREAM AREAS FOR A DEVELOPED WATERSHED. THE STORM DRAIN FACILITIES ARE THOSE FACILITIES WHICH WILL DISCHARGE TO A CHANNEL OR BOX STRUCTURE. THE MAJORITY OF THE STUDY AREA RELIES ON STRUCTURAL MEASURES FOR THE MITIGATION OF STORM RUNOFF. A SMALL PORTION OF THE STUDY AREA UTILIZES NON-STRUCTURAL MEASURES (I.E. DETENTION AREAS) FOR THE MITIGATION OF FLOOD WATER. THIS AREA IS THAT PORTION OF THE STUDY AREA THAT LIES EAST OF UNSER BOULEVARD AND SOUTH OF BLUEWATER ROAD.

A. STRUCTURAL FLOOD MITIGATION MEASURES

THE STRUCTURAL DRAINAGE FACILITIES, AS PROPOSED UNDER PHASE III OF THE WEST BLUFF DRAINAGE PLAN, ARE DEFINED BY THE FOLLOWING MAJOR ELEMENTS:

1. WEST BLUFF OUTFALL
2. I-40 INTERCEPTOR
3. WEST MESA DIVERSION
4. UNSER DIVERSION

THE WEST BLUFF OUTFALL IS THAT PORTION OF THE SYSTEM THAT WILL CONVEY STORM FLOWS THROUGH EXISTING CONCRETE BOX CULVERTS UNDER COORS BOULEVARD, NORTH OF INTERSTATE HIGHWAY 40 AND COORS BOULEVARD INTERCHANGE, TO THE RIO GRANDE.

THE I-40 INTERCEPTOR WILL INTERCEPT FLOWS GENERATED NORTH OF INTERSTATE HIGHWAY 40, ALONG THE NORTH RIGHT-OF-WAY OF INTERSTATE HIGHWAY 40, AND CONVEY THE STORM FLOW TO THE WEST BLUFF OUTFALL.

THE WEST MESA DIVERSION WILL INTERCEPT FLOWS GENERATED FROM A PORTION OF THE STUDY AREA LOCATED SOUTH OF INTERSTATE HIGHWAY 40 AND CONVEY THE RUNOFF UNDER INTERSTATE HIGHWAY 40, USING EXISTING CONCRETE BOX CULVERTS, TO THE I-40 INTERCEPTOR.

THE UNSER DIVERSION WILL INTERCEPT FLOWS GENERATED FROM THAT PORTION OF THE STUDY AREA LOCATED SOUTH OF INTERSTATE HIGHWAY 40 AND WEST OF THE WEST BOUNDARY OF THE AIRISCO BUSINESS PARK AND CONVEY THE RUNOFF TO UNSER BOULEVARD. THE UNSER DIVERSION AND THE EXISTING UNSER BOULEVARD STORM DRAIN, WILL DISCHARGE SOUTH INTO FACILITIES PROPOSED IN UNSER BOULEVARD TO THE AMOLE DEL NORTE DRAINAGE SYSTEM.

THE DRAINAGE FACILITIES, AT THE TIME OF PRELIMINARY DESIGN, SHALL ADDRESS AND INCORPORATE JOINT-USE ASPECTS (I.E. OPEN SPACE BUFFER STRIP, LANDSCAPING, BICYCLE PATHS, JOGGING TRAILS, ETC.) WITH THE PROPOSED FACILITIES, AS REQUIRED BY THE LAND USE PLANS CURRENTLY ADOPTED BY THE CITY OF ALBUQUERQUE FOR THIS AREA OF THE WEST MESA. THE PROPOSED CHANNELS AND BOX STRUCTURES ARE PRESENTED IN APPENDIX 'F'.

THE STORM DRAIN FACILITIES ARE DEFINED AS THOSE FACILITIES WHICH COLLECT RUNOFF AND DISCHARGE TO A CHANNEL OR BOX STRUCTURE. THE PROPOSED STORM DRAIN FACILITIES ARE LISTED IN APPENDIX 'D'.

B. NON-STRUCTURAL FLOOD MITIGATION MEASURES

NON-STRUCTURAL MEASURES, FOR THE MANAGEMENT OF STORM RUNOFF, ARE PROPOSED FOR THAT PORTION OF THE STUDY AREA WHICH LIES EAST OF UNSER BOULEVARD AND SOUTH OF BLUEWATER ROAD. THIS PORTION OF THE STUDY AREA WILL UTILIZE THE EXISTING STORM SEWER IN BLUEWATER ROAD EAST OF COORS BOULEVARD AS THE OUTFALL FOR STORM RUNOFF. HOWEVER, DUE TO THE LIMITED CAPACITY OF THE EXISTING STORM DRAIN IN BLUEWATER ROAD, NON-STRUCTURAL MEASURES WILL REQUIRE THE DETENTION OF ALL RUNOFF FOR A PERIOD OF TWO (2) HOURS FROM THE TIME THE STORM BEGINS. AFTER THE TWO HOURS OF DETENTION TIME, FLOWS FROM THIS PORTION OF THE STUDY AREA WILL BE REQUIRED TO DISCHARGE AT A RATE NOT TO EXCEED 0.20 CFS/ACRE.

WEST BLUFF DRAINAGE PLAN PHASE III

VIII. SYSTEM IMPROVEMENT IDENTIFICATION AND CONSTRUCTION PRIORITY RANKING

A. SYSTEM IMPROVEMENT IDENTIFICATION

THE PROPOSED DRAINAGE FACILITIES HAVE BEEN ASSIGNED A SYSTEM IMPROVEMENT NUMBER TO FACILITATE PRIORITY RANKING, IDENTIFICATION AND REFERENCE.

THE SYSTEM IMPROVEMENT NUMBERS FOR CHANNELS AND BOX STRUCTURES ARE A FIVE DIGIT (XXX XX) NUMBER WHICH RELATES TO THE MAJOR DRAINAGE BASIN WHICH THE IMPROVEMENT DRAINS AND THE DISTANCE IN THOUSANDS OF FEET FROM THE BEGINNING OF THE SYSTEM TO THE END OF THE SYSTEM MEASURED CONTINUOUSLY UPSTREAM FROM THE PROPOSED OUTFALL. FOR EXAMPLE, CONSIDER SYSTEM 613.20. THE FIRST DIGIT (6) INDICATES THAT THE IMPROVEMENT DRAINS BASINS WITH UPLAND ANALYSIS POINTS NUMBERED IN THE SIX HUNDREDS. THE NEXT FOUR DIGITS (13.20) INDICATE THAT THE IMPROVEMENT BEGINS THIRTEEN THOUSAND FEET UPSTREAM FROM ITS PROPOSED OUTFALL AND ENDS TWENTY THOUSAND FEET UPSTREAM.

THE SYSTEM IMPROVEMENT NUMBERS FOR THE STORM DRAINS ARE A THREE DIGIT (XXX) NUMBER WHICH CORRESPONDS TO THE UPLAND ANALYSIS POINT WHERE THE FACILITY DISCHARGES INTO A CHANNEL OR BOX STRUCTURE.

B. CONSTRUCTION PRIORITY RANKING

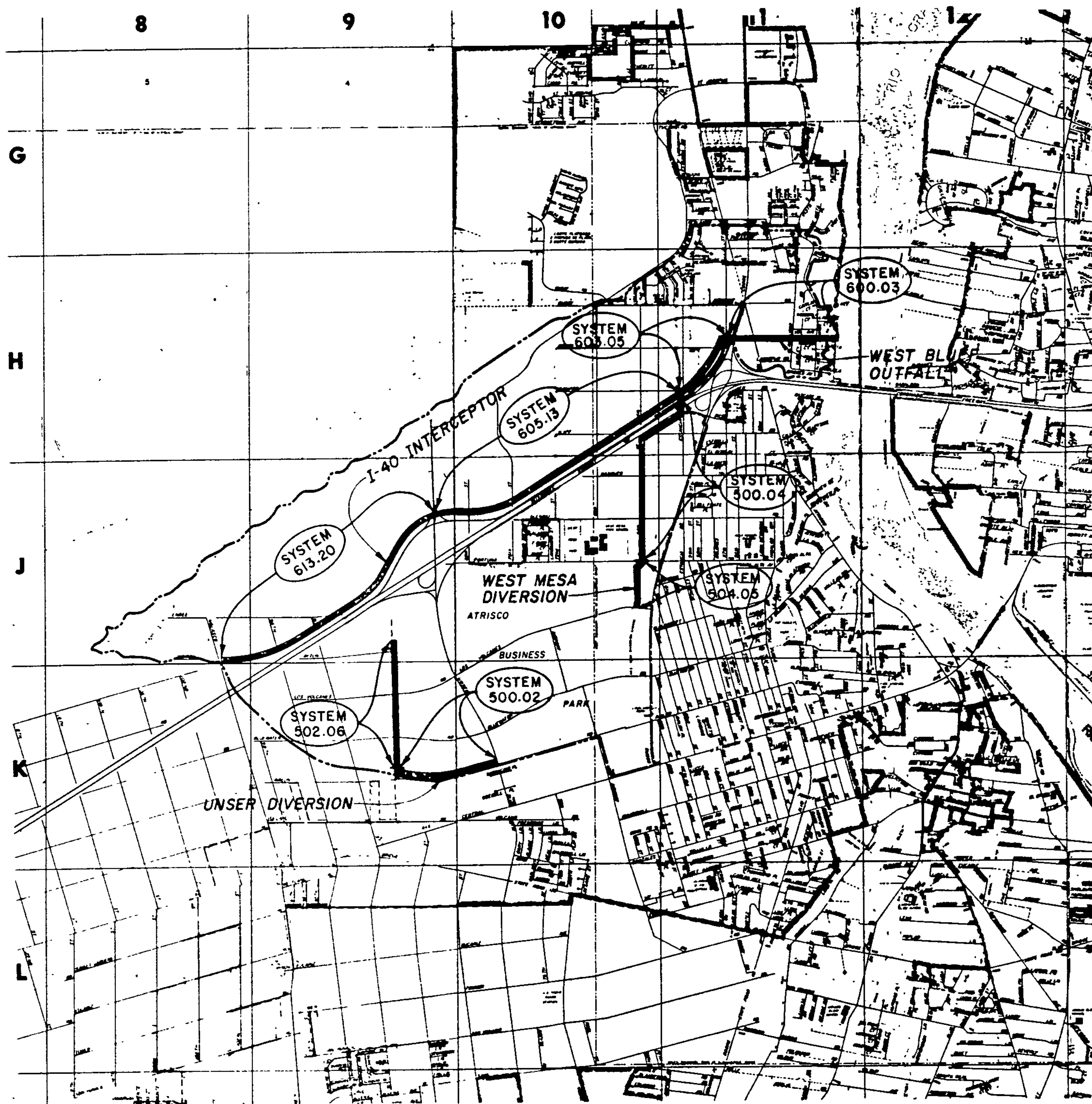
THE PROPOSED STRUCTURAL MITIGATION MEASURES ARE SUMMARIZED IN APPENDICES 'D' AND 'F' AND HAVE BEEN ASSIGNED A CONSTRUCTION PRIORITY RANKING AS SHOWN IN THE FOLLOWING TABLE. THE PRIORITY RANKING IS BASED ON PROBABLE FLOOD DAMAGES ASSOCIATED WITH EACH PROJECT. SUCH FLOOD DAMAGES WERE WEIGHTED AND ANALYZED BY THE METHODS OUTLINED IN THE "ALBUQUERQUE MASTER DRAINAGE STUDY"; HOWEVER, SUCH OUTLINES ARE NOT INCLUDED IN THIS DOCUMENT AND ARE INCORPORATED BY REFERENCE ONLY. ADDITIONALLY, THE AREAS WITHIN THE STUDY AREA BOUNDARY THAT ARE PROVIDED WITH A POSITIVE DRAINAGE OUTFALL BY THE CONSTRUCTION OF THE PROPOSED FLOOD MITIGATION MEASURES WERE WEIGHTED AT ONE POINT PER ACRE.

SYSTEM IMPROVEMENT NUMBER	AREA PROVIDED WITH POSITIVE DRAINAGE OUTFALL (A.C.)	AREA FLOODED (A.C.)	WEIGHTED FLOOD TOTALS	PRIORITY RANKING
CHANNELS AND BOX STRUCTURES				
600.03	2,000	39	2,039	A
603.05	1,756	30	1,786	A
605.13	835	0	835	B
613.20	425	0	425	B
500.04	750	19	769	B
504.05	480	9	489	B
500.02	210	0	210	B
502.06	145	0	145	C
STORM DRAINS				
104	113	0	113	C
205	5	0	5	D
404	34	6	34	D
506	62	0	62	D
512	155	0	155	C
518	135	3	138	C
530	67	8	75	D
630	171	3	174	C
633	208	0	208	B

IX. AVAILABLE RIGHT-OF-WAY FOR MAJOR DRAINAGE FACILITIES

AN EVALUATION OF THE AVAILABLE RIGHTS-OF-WAY FOR THE PROPOSED DRAINAGE FACILITIES IS PRESENTED IN THE FOLLOWING TABLE:

PROPOSED DRAINAGE FACILITY	LIMITS	SUBDIVISION	REMARKS
WEST BLUFF OUTFALL SYSTEM 600.03	FROM: MUNICIPAL LIMITS (RIO GRANDE) TO: ALAMOGORDO DR.	LANDS OF E.H. SLOAN	CITY PARK, INTENDED FOR USE AS LOCATION FOR DRAINAGE STRUCTURE
WEST BLUFF OUTFALL SYSTEM 600.03	FROM: ALAMOGORDO DR. TO: SOUTHERN UNION GAS CO. EASEMENT	TRACT A-15, TOWN OF ATRISCO GRANT, NORTHEAST UNIT	NO EXISTING R/W OR EASEMENT
WEST BLUFF OUTFALL SYSTEM 600.03	FROM: SOUTHERN UNION GAS CO. EASEMENT TO: EAST R/W OF COORS BLVD.	TRACTS 330, 331 & 332 TOWN OF ATRISCO GRANT NORTHEAST UNIT	NO EXISTING R/W OR EASEMENT
I-40 INTERCEPTOR SYSTEM 603.05	FROM: WEST R/W OF COORS BLVD. TO: ESTANCIA DR.	TRACTS 333, 308 THRU 331 & 286, TOWN OF ATRISCO GRANT, UNIT 8	NO EXISTING R/W OR EASEMENT
I-40 INTERCEPTOR SYSTEM 605.13	FROM: ESTANCIA DR. TO: 64TH STREET	TRACTS 286 THRU 291, TOWN OF ATRISCO GRANT UNIT 8	NO EXISTING R/W OR EASEMENT
I-40 INTERCEPTOR SYSTEM 605.13	FROM: 64TH STREET TO: 72ND STREET	TRACTS 292, 267 THRU 270, 275, TOWN OF ATRISCO GRANT, AIRPORT UNIT	NO EXISTING R/W OR EASEMENT
I-40 INTERCEPTOR SYSTEM 605.13	FROM: 72ND STREET TO: LAURELWOOD PKWY.	TRACTS 226 THRU 231 TOWN OF ATRISCO GRANT, AIRPORT UNIT	NO EXISTING R/W OR EASEMENT
I-40 INTERCEPTOR SYSTEM 605.13	FROM: LAURELWOOD PKWY. TO: UNSER BLVD.	UNSER BLVD. INTERCHANGE RIGHT-OF-WAY	STATE HWY. DEPT. R/W PERMISSIVE USE FOR DRAINAGE AVAILABLE
I-40 INTERCEPTOR SYSTEM 613.20	FROM: UNSER BLVD. TO: 1500'E. OF 90TH STREET	UNSER BLVD. INTERCHANGE RIGHT-OF-WAY	STATE HWY. DEPT. R/W PERMISSIVE USE FOR DRAINAGE AVAILABLE
I-40 INTERCEPTOR SYSTEM 613.20	FROM: 1500'E. OF 90TH STREET TO: 900'W. OF 90TH STREET	TOWN OF ATRISCO GRANT, UNIT 5	NO EXISTING R/W OR EASEMENT
I-40 INTERCEPTOR SYSTEM 613.20	FROM: 900'W. OF 90TH STREET TO: 98TH STREET	90TH ST. INTERCHANGE RIGHT-OF-WAY	STATE HWY. DEPT. R/W PERMISSIVE USE FOR DRAINAGE AVAILABLE
WEST MESA DIVERSION SYSTEM 500.04	FROM: I-40 TO: 64TH STREET	KELLY INN, TRACTS 289, 290, 263 THRU 265, TOWN OF ATRISCO GRANT, AIRPORT UNIT	NO EXISTING R/W
WEST MESA DIVERSION SYSTEM 500.04	FROM: I-40 TO: FORTUNA RD.	TOWN OF ATRISCO GRANT, AIRPORT UNIT	PROPOSED STRUCTURE WITHIN 64TH ST. R/W
WEST MESA DIVERSION SYSTEM 504.05	FROM: FORTUNA RD. TO: LOS VOLCANES RD.	TRACT R, ATRISCO BUSINESS PARK	TRACT PLATTED 150' WIDE, INTENDED FOR USE AS LOCATION FOR DRAINAGE STRUCTURE. NO R/W OR EASEMENT INDICATED
UNSER DIVERSION SYSTEM 500.02	FROM: UNSER BLVD. TO: AVALON RD.	TRACT H-2 & H-1, ATRISCO BUSINESS PARK, UNIT 2	PLATTED TRACTS, INTENDED FOR USE AS LOCATION FOR DRAINAGE STRUCTURE, NO R/W OR EASEMENT DEDICATED
UNSER DIVERSION SYSTEM 502.06	FROM: AVALON RD. TO: DAYTON RD.	TRACTS B-7, B-8 & B-14, TOWN OF ATRISCO GRANT, UNIT 5, LOT 2, ATRISCO BUSINESS PARK, UNIT 2, TRACTS T & J, ATRISCO BUSINESS PARK	NO EXISTING R/W OR EASEMENT



SCALE: 1" = 2000'



LEGEND

- STUDY AREA BOUNDARY
- PROPOSED MAJOR SYSTEM ALIGNMENT
- SYSTEM 500.05 SYSTEM NUMBER

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ALBUQUERQUE NEW MEXICO

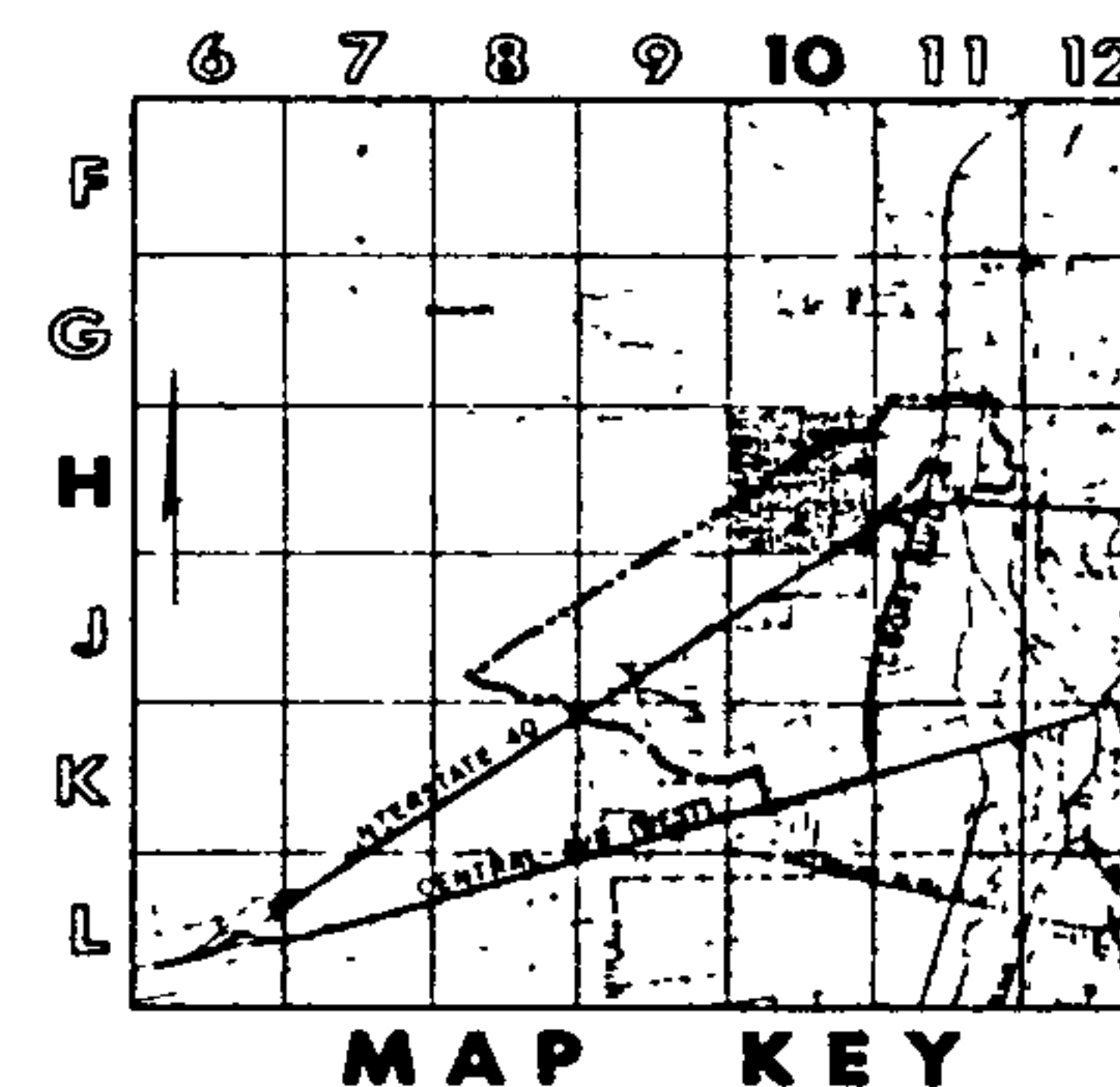
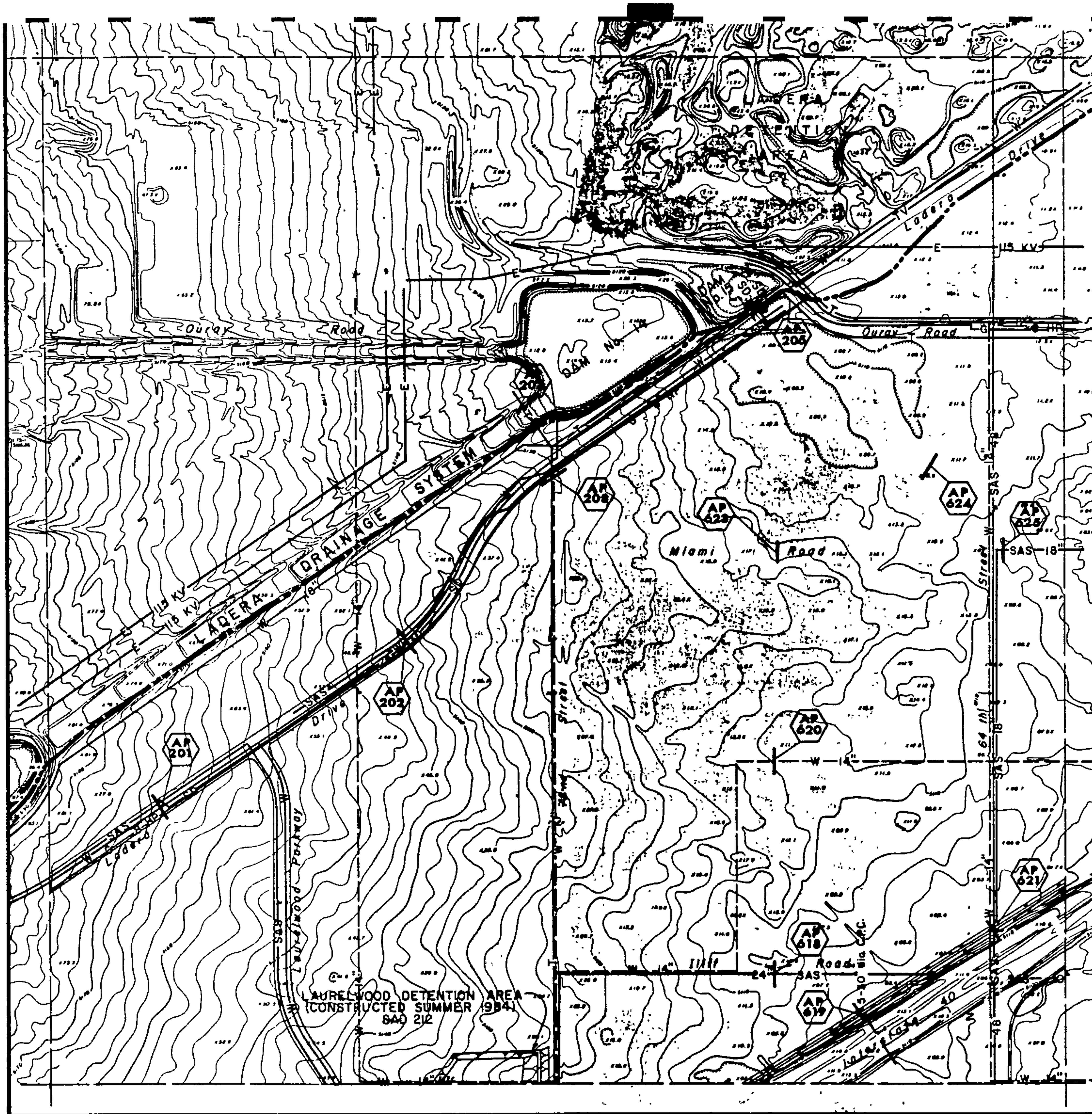
KEY MAP

WEST BLUFF DRAINAGE PLAN

APPENDIX 'A'
EXISTING AND PROPOSED
UTILITIES AND FACILITIES

WEST BLUFF DRAINAGE PLAN

APPENDIX 'A'
A-1



SCALE: 1" = 400'



LEGEND

- STUDY AREA BOUNDARY
- SAS EXISTING SANITARY SEWER LINE, 10" & LARGER
- S MASTERPLANNED SANITARY SEWER LINE
- SD EXISTING STORM DRAIN LINE, 12" & LARGER
- SD PROPOSED STORM DRAIN LINE, 24" & LARGER
- W EXISTING WATERLINE, 8" & LARGER
- W MASTERPLANNED WATERLINE
- G EXISTING GAS LINE
- G MASTERPLANNED GAS LINE
- T EXISTING TELEPHONE LINE
- E EXISTING ELECTRIC LINE
- TV CABLE TELEVISION
- EXISTING DEVELOPMENT
- ANALYSIS POINT
- CPC CONCRETE PIPE CULVERT
- CBC CONCRETE BOX CULVERT
- EXISTING CHANNEL OR STRUCTURE
- PROPOSED CHANNEL
- PROPOSED CROSSING STRUCTURE
- PROPOSED CONCRETE BOX STRUCTURE
- PLANNED STREET ALIGNMENT

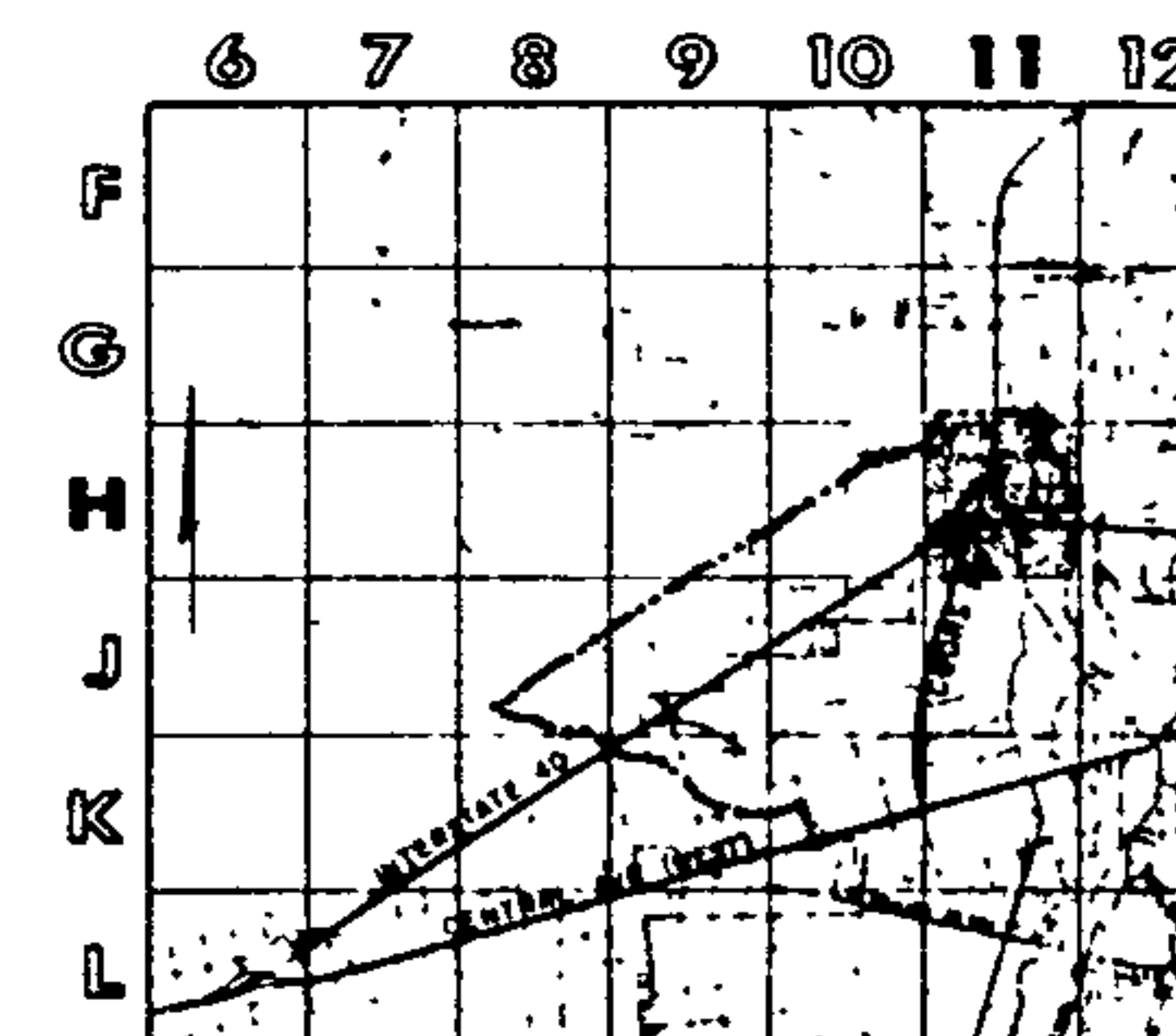
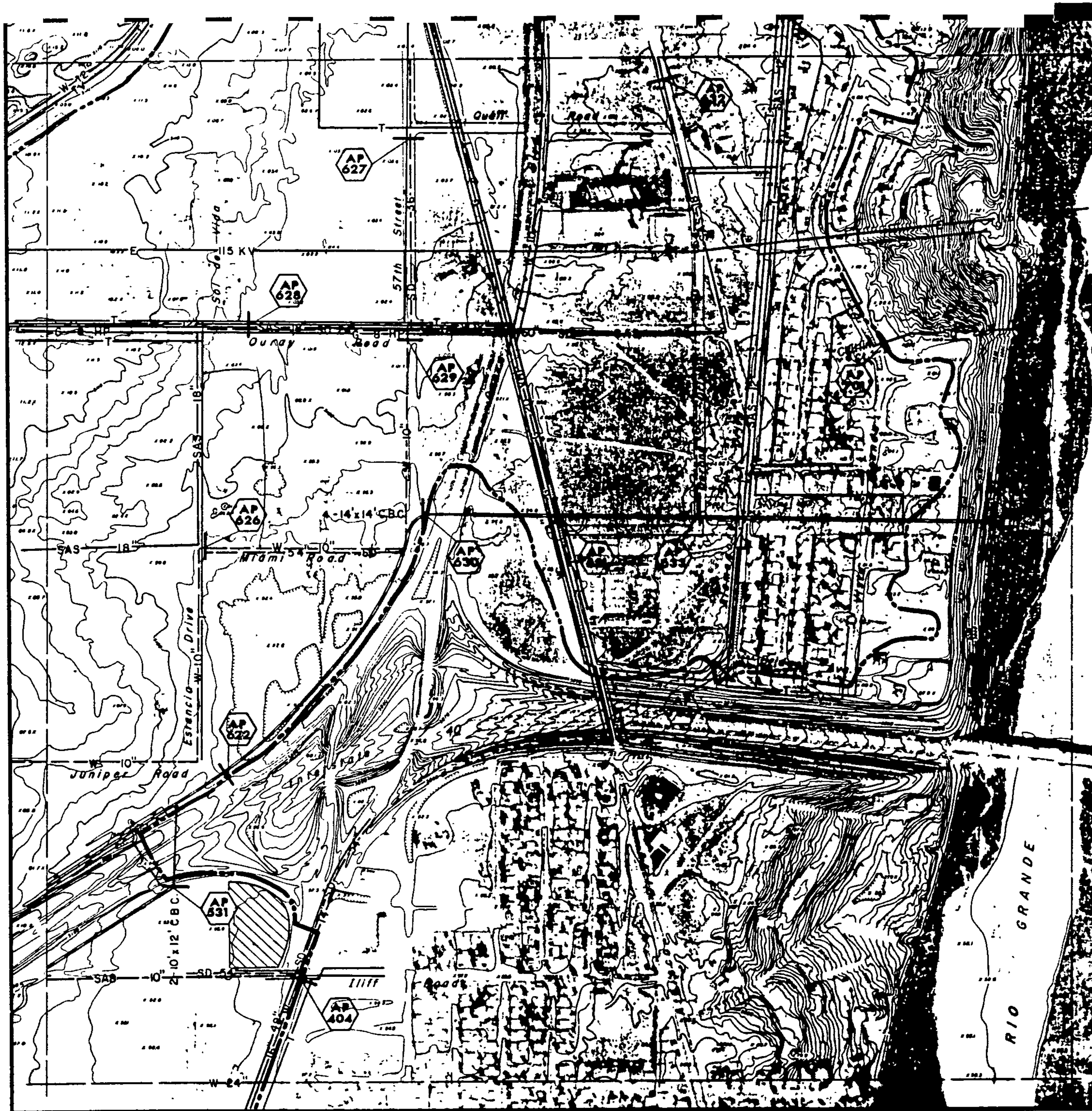
BASE MAPPING COMPILED FROM EXISTING AERIAL PHOTOGRAMMETRIC MAPPING PREPARED FOR THE NATIONAL FLOOD INSURANCE PROGRAM, CITY OF ALBUQUERQUE. PHOTOGRAPH DATED OCTOBER 8, 1980.

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS

ALBUQUERQUE NEW MEXICO

WEST BLUFF DRAINAGE PLAN

H 10



MAP KEY



SCALE: 1" = 400'



LEGEND

- STUDY AREA BOUNDARY
- SAS EXISTING SANITARY SEWER LINE, 10" & LARGER
- S MASTERPLANNED SANITARY SEWER LINE
- SD EXISTING STORM DRAIN LINE, 12" & LARGER
- SD PROPOSED STORM DRAIN LINE, 24" & LARGER
- W EXISTING WATERLINE, 8" & LARGER
- W MASTERPLANNED WATERLINE
- G EXISTING GAS LINE
- G MASTERPLANNED GAS LINE
- T EXISTING TELEPHONE LINE
- E EXISTING ELECTRIC LINE
- TV CABLE TELEVISION
- EXISTING DEVELOPMENT
- ANALYSIS POINT
- CPC CONCRETE PIPE CULVERT
- CBC CONCRETE BOX CULVERT
- EXISTING CHANNEL OR STRUCTURE
- PROPOSED CHANNEL
- PROPOSED CROSSING STRUCTURE
- PROPOSED CONCRETE BOX STRUCTURE
- PLANNED STREET ALIGNMENT

BASE MAPPING COMPILED FROM EXISTING AERIAL PHOTOGRAMMETRIC MAPPING PREPARED FOR THE NATIONAL FLOOD INSURANCE PROGRAM, CITY OF ALBUQUERQUE. PHOTOGRAPH DATED OCTOBER 8, 1980.

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS

ALBUQUERQUE NEW MEXICO

WEST BLUFF DRAINAGE PLAN

H 11

APPENDIX 'D'
SUMMARY OF
PROPOSED STORM DRAINS

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
ALBUQUERQUE NEW MEXICO

WEST BLUFF DRAINAGE PLAN

APPENDIX 'D'
D-1

11-11-11

WEST BLUFF DRAINAGE PLAN

SUMMARY OF PROPOSED STORM DRAINS

			PIPE SIZE (inches)	LENGTH (feet)	SLOPE (ft/ft)	DESIGN CAPACITY (cfs)	MAP No.	COMMENTS	SYSTEM No.
LOCATION	FROM	TO							
LADERA DRIVE	90 th STREET	1,750' EAST OF 90 th STREET	24	1,750	0.0217	29	J-9		104
LADERA DRIVE	1,750' W. OF 90 th STREET	2,190' EAST OF 90 th STREET	48	440	0.0228	188	J-9		104
LADERA DRIVE	2,190' W. OF 90 th STREET	LADERA DRAINAGE SYSTEM, DAM NO. 12	60	650	0.0086	206	J-9		104
LADERA DRIVE	LADERA DRIVE	LADERA DRAINAGE SYSTEM, DAM NO. 15	24	95	0.0157	25	H-10		205
ILIFF ROAD	ESTANCIA DRIVE	I-40 VEE DITCH	54	1,450	0.005	121	H-11	PARALLELS EXISTING S.D. FROM ILIFF & COORS TO VEE DITCH	404
90 th STREET	BLUEWATER ROAD	AVALON ROAD	30	1,500	0.0200	50	K-9		506
90 th STREET	AVALON ROAD	UNSER DIVERSION	42	300	0.0150	107	K-9		506
UNSER BOULEVARD	UNSER DIVERSION	AMOLE DEL NORTE SYSTEM	90	UNDETERMINED	0.010	665	K-10	PROPOSED S.D. LEAVES STUDY AREA SEE AMOLE DEL NORTE DRAINAGE STUDY	
BLUEWATER ROAD	AIRPORT ROAD	WEST MESA FEEDER	66	1,800	0.0038	193	K-10		518
WEST MESA FEEDER	BLUEWATER ROAD	LOS VOLCANES ROAD (WEST MESA DIVERSION)	84	1,900	0.0012	206	K-10 J-10		518
LOS VOLCANES	500' W. OF AIRPORT ROAD	AIRPORT ROAD	60	500	0.007	189	J-10		512
LOS VOLCANES	AIRPORT ROAD	WEST MESA DIVERSION	84	2,350	0.006	461	J-10		512
HANOVER ROAD	550' W. OF 64 th STREET	WEST MESA DIVERSION	48	550	0.006	96	J-10		530
HANOVER ROAD	650' E. OF 64 th STREET	WEST MESA DIVERSION	42	650	0.004	55	J-10		530
MIAMI ROAD	ESTANCIA DRIVE	I-40 INTERCEPTOR	54	950	0.0105	175	H-11		630
OURAY ROAD	SOL DE VIDA	57 th STREET	24	900	0.004	12	H-11		633
57 th STREET	QUAIL ROAD	OURAY ROAD	36	1,100	0.004	37	H-11		633
OURAY ROAD	57 th STREET	COORS BOULEVARD	48	450	0.005	95	H-11		633
OURAY ROAD	COORS BOULEVARD	CORONA DRIVE	60	1,040	0.0068	200	H-11		633
CORONA DRIVE	PHEASANT ROAD	OURAY ROAD	54	1,600	0.0034	99	H-11		633
CORONA DRIVE	OURAY ROAD	WEST BLUFF OUTFALL	66	1,000	0.012	343	H-11		633

APPENDIX 'F'
SUMMARY OF
PROPOSED CHANNELS & BOX STRUCTURES

WEST BLUFF DRAINAGE PLAN

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
ALBUQUERQUE NEW MEXICO

APPENDIX 'F'
F-1

...

WEST BLUFF DRAINAGE PLAN

SUMMARY OF PROPOSED CHANNELS & BOX STRUCTURES

FACILITY	REACH LENGTH	LOCATION	DESCRIPTION	HYDROLOGIC AND HYDRAULIC ANALYSIS						SLOPE (ft/ft)	DESIGN CAPACITY (cfs)	COMMENTS	SYSTEM No.
				10 YEAR			100 YEAR						
				PEAK DISCHARGE (cfs.)	FLOW DEPTH (ft.)	VELOCITY (ft./sec.)	PEAK DISCHARGE (cfs.)	FLOW DEPTH (ft.)	VELOCITY (ft./sec.)				
I-40 INTERCEPTOR	7000 FEET	98th STREET (AP601)	2 - 10' X 6' CBC	141	1.5	4.7	338	3.1	5.5	0.021	338	(J-8) EXISTING STRUCTURE TO REMAIN	613.20
I-40 INTERCEPTOR		CHANNEL (AP602)	CONCRETE CHANNEL, 10' BTM. WIDTH, 2:1 SIDE SLOPES	202	1.3	12.7	484	2.1	16.6	0.0160	484	(J-9)	613.20
I-40 INTERCEPTOR		90th STREET (AP605)	CONCRETE CHANNEL, 10' BTM. WIDTH, 2:1 SIDE SLOPES	279	1.5	14.6	700	2.5	19.1	0.0177	700	(J-9)	613.20
I-40 INTERCEPTOR		CHANNEL (AP607)	CONCRETE CHANNEL, 10' BTM. WIDTH, 2:1 SIDE SLOPES	318	1.8	13.0	807	3.0	17.0	0.0114	807	(J-9)	613.20
I-40 INTERCEPTOR		UNSER BOULEVARD (AP610)	4 - 6' X 4' CBC	374	3.0	5.2	867	5.9	9.3	0.0167	867	(J-9) EXISTING STRUCTURE TO REMAIN	605.13
I-40 INTERCEPTOR		LAURELWOOD PARKWAY (AP611)	CONCRETE CHANNEL, 10' BTM. WIDTH, 2:1 SIDE SLOPES	361	2.0	12.9	884	3.2	16.6	0.0100	884	(J-10)	605.13
I-40 INTERCEPTOR	8000 FEET	CHANNEL (AP617)	CONCRETE CHANNEL, 10' BTM. WIDTH, 2:1 SIDE SLOPES	364	2.3	11.1	1,010	3.9	14.7	0.0065	1,010	(J-10) OUTFLOW FROM LAURELWOOD DETENTION AREA ENTERS CHANNEL	605.13
I-40 INTERCEPTOR		CHANNEL (AP619)	CONCRETE CHANNEL, 10' BTM. WIDTH, 2:1 SIDE SLOPES	363	2.3	11.1	1,035	4.4	12.7	0.0042	1,035	(H-10)	605.13
I-40 INTERCEPTOR		CHANNEL (AP621)	CONCRETE CHANNEL, 10' BTM. WIDTH, 2:1 SIDE SLOPES	393	2.6	9.7	1,124	4.5	13.0	0.0042	1,124	(H-10)	605.13
I-40 INTERCEPTOR		CONFLUENCE OF WEST MESA DIVERSION	10' X 12' CBC	707	5.1	14.0	1,835	10.7	17.1	0.0058	1,835	(H-11)	603.05
I-40 INTERCEPTOR		E. OF ESTANCIA DRIVE (AP622)	10' X 12' CBC	713	5.1	14.0	1,848	10.8	17.1	0.0058	1,848	(H-11)	603.05
I-40 INTERCEPTOR		MIAMI ROAD	12' X 12' CBC	785	4.6	14.3	2,036	9.4	18.0	0.0058	2,036	(H-11)	603.05
	2000 FEET												
WEST BLUFF OUTFALL		COORS BOULEVARD (AP630)	1 - 14' X 14' CBC	784	3.5	15.8	2,036	7.1	20.6	0.0081	2,036	(H-11)	600.03
WEST BLUFF OUTFALL		E. OF COORS BOULEVARD	10' X 12' CBC	784	4.8	16.2	2,036	10.2	19.9	0.0080	2,036	(H-11)	600.03
WEST BLUFF OUTFALL		400' E. OF COORS BOULEVARD (AP631)	10' X 12' CBC	805	4.9	16.3	2,093	10.5	20.0	0.0080	2,093	(H-11)	600.03
WEST BLUFF OUTFALL		CORONA DRIVE (AP633)	10' X 12' CBC	904	5.4	16.7	2,349	11.5	20.4	0.0080	2,349	(H-11)	600.03
	3000 FEET												

GRAY ROAD

ROAD

LIMITS

CORPORATE LIMITS

ZONE

516

PONDING AREA 4

X RM 35

LIMITS

COORS

ROAD

LIMITS

CORPORATE

ROAD

DRIVE

ATRISCO

INTERSTATE 40

INTERSTATE 40

BRIDGE

CORPORATE

PONDING AREA 3

CORPORATE

STATE 40

Refer to the Flood Insurance Rate Map (FIRM) for the community shown on this map to determine the flood zones and structures in the zones established.

To determine if flood insurance is available, contact your insurance agent or the National Flood Insurance Program at (800) 638-6620.

500

500

NATIO

FLO

CIT

P.F.

CALCULATIONS



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

PROJECT TOMPIRO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GJK DATE 7-27-94
CHECKED _____ DATE _____
SHEET 1 OF _____

REVISED 1-18-95

TOTAL AREA : 8,495.87 AC = 0.0132748 SQ MI
PAVEMENT : 0.99832 AC
SIDEWALK : 0.34718 AC } 3,879.94 AC 45,669.8 D
PADS (46) : 2.53444 AC
LANDSCAPE : 2,307.97 AC 27.1655 % TYPE B
2,307.97 AC 27.1655 % TYPE C

$$DT = 0.03333 \text{ HR}$$

$$TP = 0.1333 \text{ HR}$$

$$P_1 = 1.90 \text{ in}$$

$$P_6 = 2.20 \text{ in}$$

$$P_{24} = 2.65 \text{ in}$$

FROM HYMO OUTPUT (sheets 2+3)

$$Q = 28.64 \text{ CFS}$$

$$V_6 = 0.9558 \text{ AC-FT}$$

$$V_{100-10} = 0.9558 + \frac{3,879.94 (3.67 - 2.2)}{12}$$

$$= 1.431 \text{ AC-FT}$$

$$= 62,335 \text{ CF}$$

- DETERMINE INLET CAPACITY USE 2 100 YR 6 HR STORMS

$$Q \text{ per inlet} = 14.32 \text{ CFS} \times 2 = 28.64 \text{ CFS}$$

$$Q/p = 3.0 H^{3/2} \text{ (SHEET 5)}$$

USE A DOUBLE D AND DOUBLE A

$$P = (2 + 6.5) \times 2 = 17.0$$

$$\text{DEPTH OF WATER ABOVE GRATE} = H = 0.68 \approx 0.67 \text{ OK}$$

- 24" CONNECTOR PIPE BETWEEN INLETS
AT 1.9 % CAN CARRY 30 CFS - SEE NOMO SHEET 4

- SIZE OUTFALL USE 2 100 YR 6 HR STORMS

$$Q = 28.64 \times 2 = 57.28 \text{ CFS}$$

FROM NOMO SHEET 4

$$30" \text{ RCP @ } 2.6 \% \text{ CARRIES } 60 \text{ CFS OK}$$

2

```

START          TIME=0.0
***** HYDROGRAPH FOR TUMFIRD SUBDIVISION
RAINFALL       TYPE=1 RAIN QUARTER=0.0 IN
               RAIN ONE=1.90 IN RAIN SIX=2.20 IN
               RAIN DAY=2.65 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.013275 SQ MI
               PER A=00.00 B=27.1655 C=27.1655 D=45.669
               IF=0.1333 HR MASS RAINFALL=-1
PRINT HYD      ID=1 CODE=1
FINISH
  
```

AMFHD FRUSHAH (AMFMD194) - AMFCA Hydrologic Model - January, 1994
 RUN DATE (MON/DAY/YR) = 07/19/1994
 START TIME (HR:MIN:SEC) = 09:43:22 USER NO. = M_GOODDWN.101
 INPUT FILE = HINES.DAT

```

START          TIME=0.0
***** HYDROGRAPH FOR TUMFIRD SUBDIVISION
RAINFALL       TYPE=1 RAIN QUARTER=0.0 IN
               RAIN ONE=1.90 IN RAIN SIX=2.20 IN
               RAIN DAY=2.65 IN DT=0.03333 HR
  
```

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2

- PEAK AT 1.40 HR.

DT = .033330 HOURS			END TIME = 5.999400 HOURS			
.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0113	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

COMPUTE HYD

ID=1 HYD NO=101.1 AREA=0.013275 SQ MI

PER. A=00.00 B=27.1655 L=27.1655 D=45.669

IP=0.1333 HR MASS RAINFALL=-1

3

K = .072649HR IP = .133300HR K/IP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 23.935 CFS UNIT VOLUME = .9989 B = 526.28
P60 = 1.9000
AREA = .006063 SQ MI IA = .10000 INCHES INF = .04000 I
CHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .118483HR IP = .133300HR K/IP RATIO = .888844 SHAPE
CONSTANT, N = 3.990548
UNIT PEAK = 19.183 CFS UNIT VOLUME = .9997 B = 354.54
P60 = 1.9000
AREA = .007212 SQ MI IA = .42500 INCHES INF = 1.04000 I
CHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD

ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

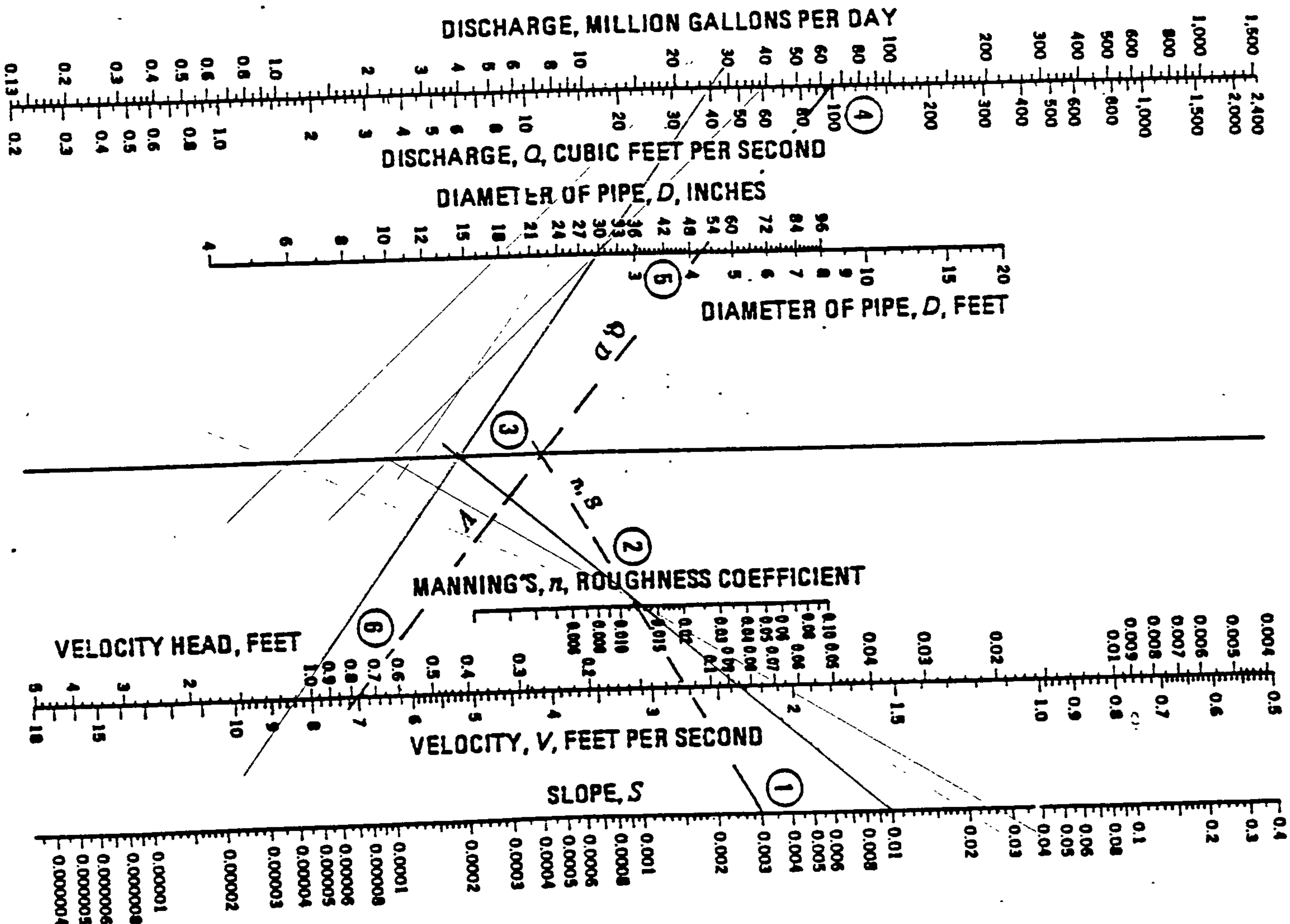
RUNOFF VOLUME = 1.34996 INCHES = .9558 ACRE-Feet
PEAK DISCHARGE RATE = 28.64 CFS AT 1.500 HOURS BASIN AREA =
.0133 SQ. MI.

FINISH

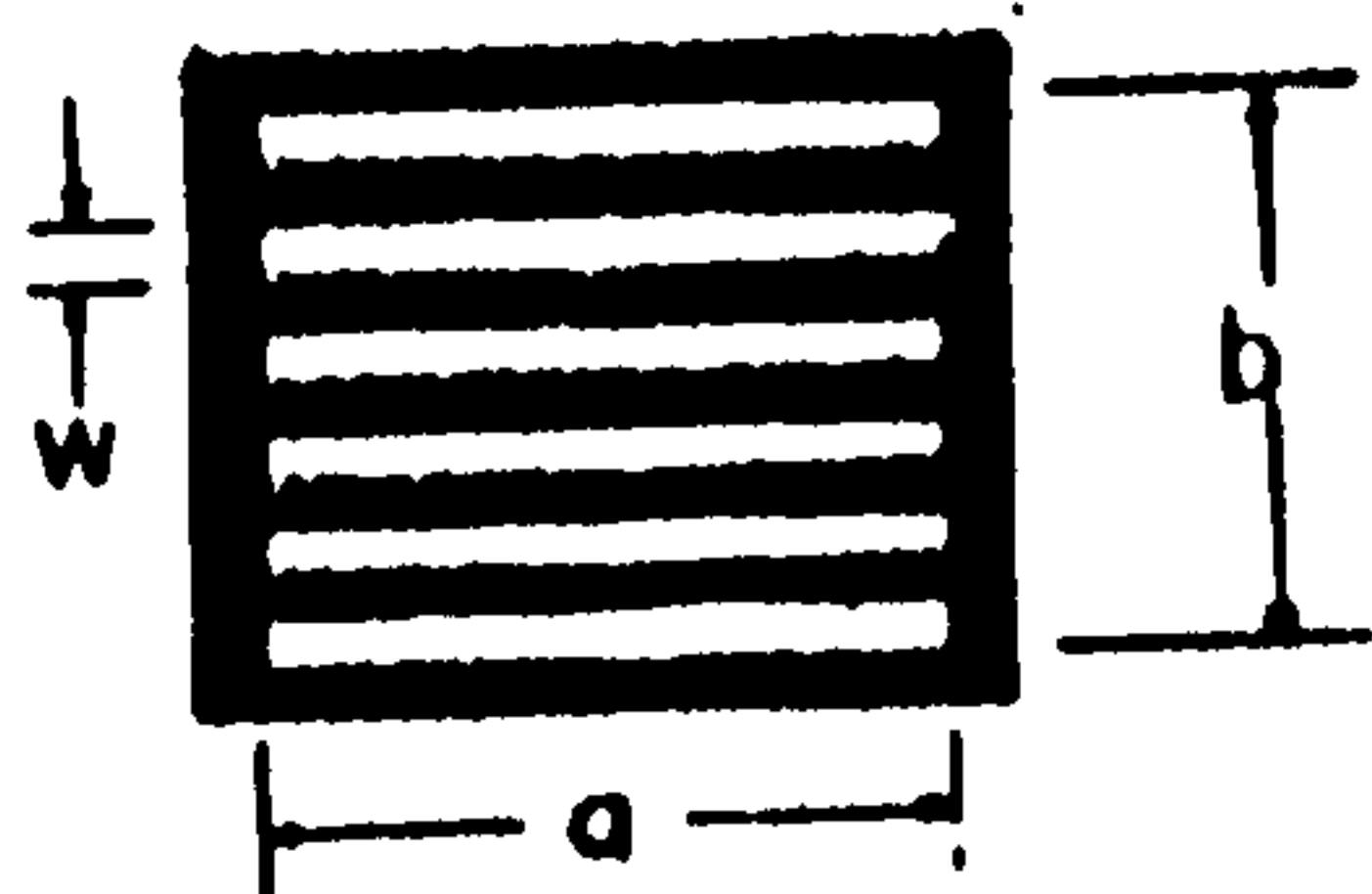
NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 09:43:31

Reference: American Concrete Pipe Association (1980).

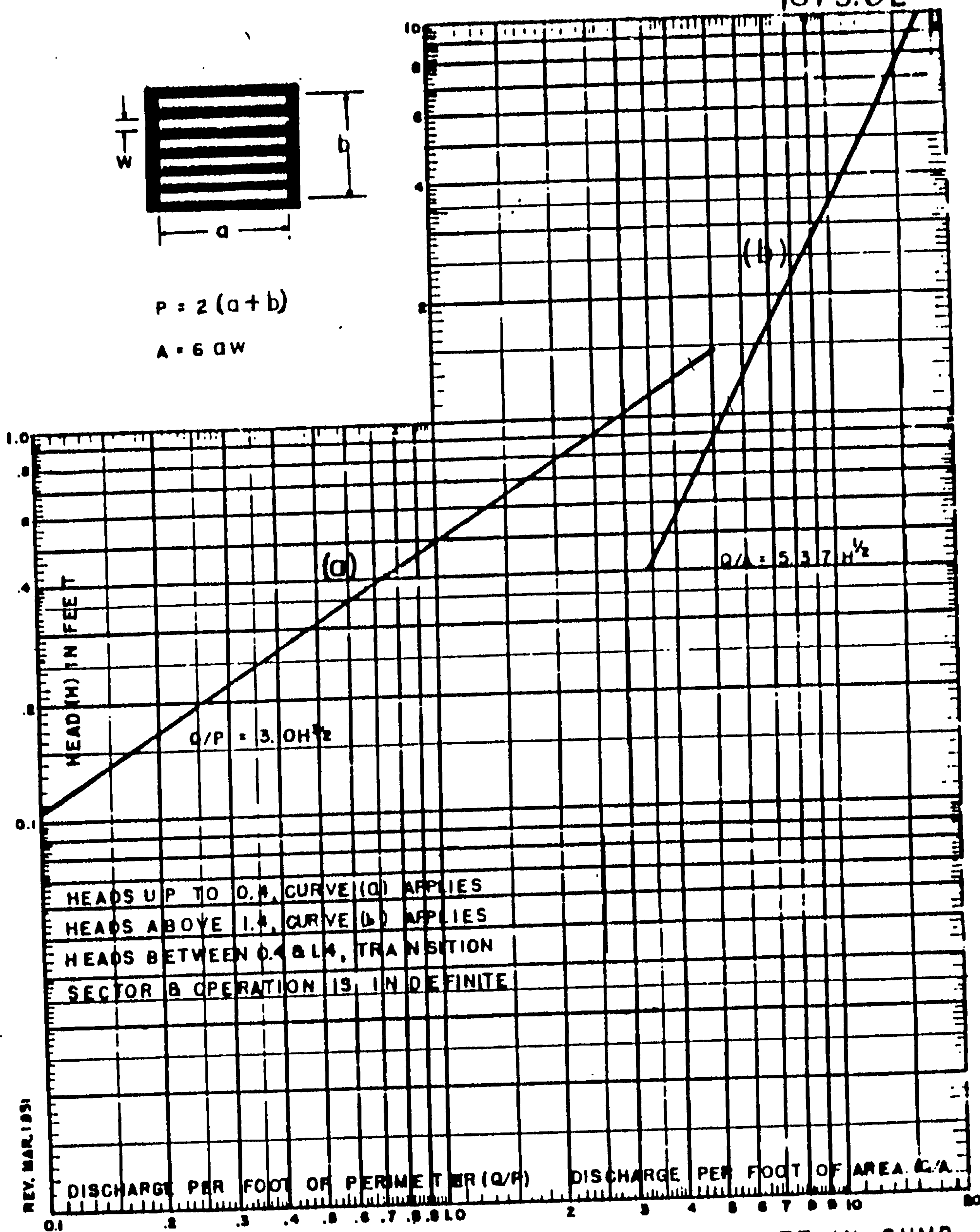


B) Circular Pipe Solution



$$P = 2(a + b)$$

$$A = 6aw$$



BUREAU OF PUBLIC ROADS
DIVISION TWO WASH, D.C.

CAPACITY OF GRATE INLET IN SUMP
WATER PONDED ON GRATE



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

PROJECT TOMPIRO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GJK DATE 7-27-94
CHECKED _____ DATE _____
REV. 9-14-94 SHEET 6 OF _____
3-10-95

STREET HYDRAULIC CALCULATIONS

- DETERMINE STREET CAPACITY AT NORTHSIDE OF INTERSECTION OF TOMPIRO AND TENABO.

$$Q = 15/46 \times 28.64 = 9.34 \text{ CFS}$$

$$S = 0.0085 \quad N = 0.017$$

USE MOUNTABLE CURB SECTION

$$d = 0.31$$

$$WP = 28.62$$

$$A = 4.175$$

$$V = 2.233 \text{ F/S}$$

$$Q = 9.32 \text{ CFS} \approx 9.34 \text{ OK}$$

$$V^2/2g + d = 0.39 < 1.33 + 1.2 \text{ OK}$$

TRANSITION FROM MOUNTABLE + STANDARD C+G AT THIS POINT

GRAN QUIVIRA AND TENABO WILL BE MOUNTABLE C+G BECAUSE FLOW ON THESE STREETS IS LESS THAN THE ABOVE.

- DETERMINE STREET CAPACITY ON TOMPIRO BEFORE CULDESAC.

$$Q = 33/46 \times 28.64 = 20.55 \text{ CFS}$$

$$S = 0.0085 \quad N = 0.017$$

USE STANDARD CURB SECTION

$$d = 0.46$$

$$WP = 28.92$$

$$A = 6.75$$

$$V = 3.055 \text{ F/S}$$

$$Q = 20.62 \text{ CFS} \approx 20.55 \text{ CFS OK}$$

$$V^2/2g + d = 0.60 < 1.67 + 1.2 \text{ OK}$$

- SIZE POND FOR 62,335 CF

ELEV	AREA	STORAGE (CF)
89	6017	0
90	7003	6510
91	8058	14,040.5
92	9179	22,659
93	10,368	32,432.5
94	11,625	43,429
95	12,949	55,716
96	14,341	69,361
97	15,915	84,489

← 62,335 HAS AN
ELEV = 95.49

MARK GOODWIN

& ASSOCIATES
CONSULTING ENGINEERS

dmg

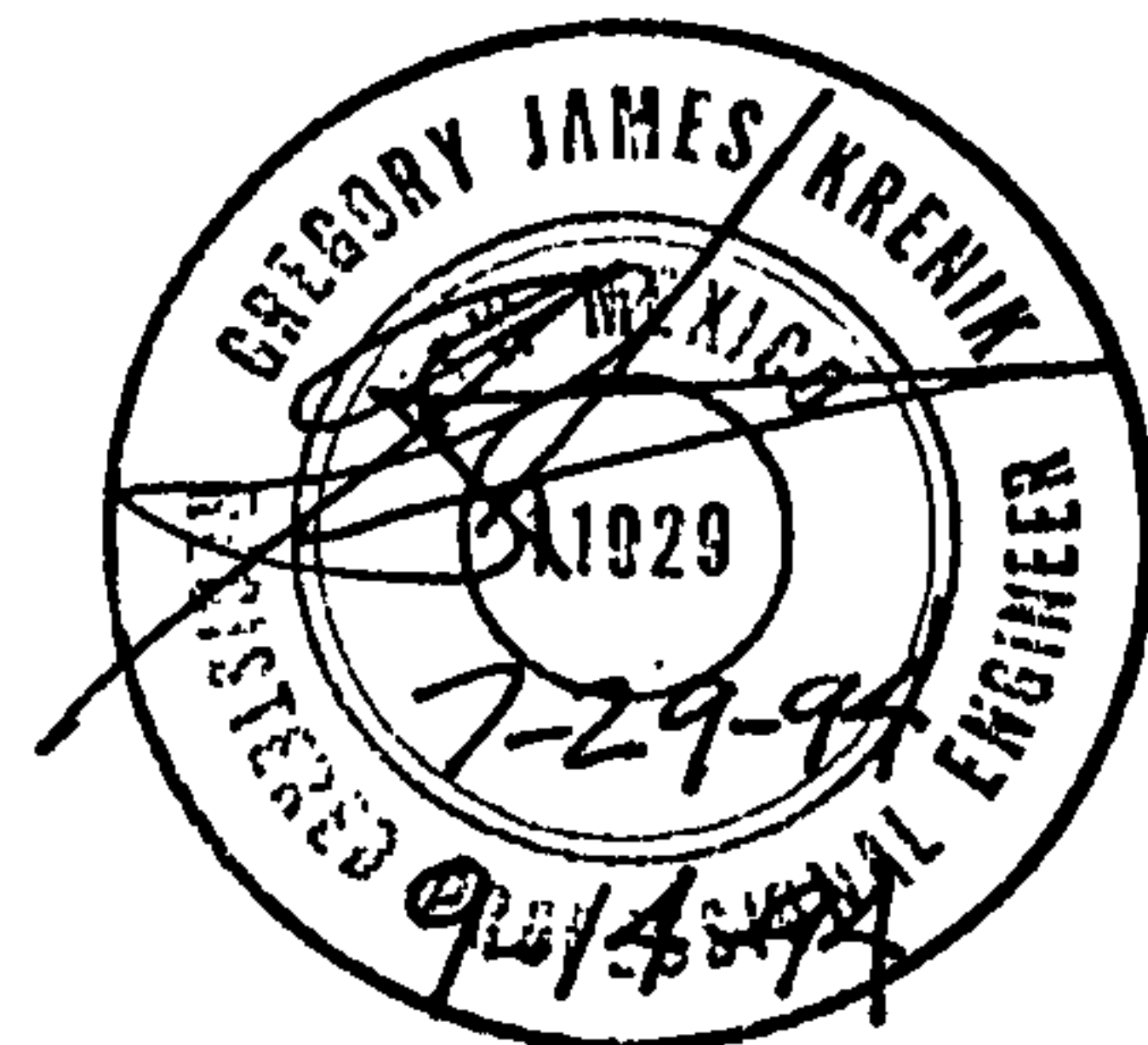
DRAINAGE REPORT
for
TOMPIRO SUBDIVISION

MAR 1 4

Prepared For

SH Co
331 Wellesley NE
Albuquerque, NM 87106

July 1994



1-18-95
3-10-95

PURPOSE

The purpose of this report is to present the drainage management plan for the Tompiro Subdivision to obtain final plat and work order approval. All applicable ordinances and the DPM were utilized to prepare this plan.

EXISTING CONDITIONS

The project comprises an area of 8.49587 acres at the northwest corner of the I-40-Coors interchange (better known as the Town of Atrisco Grant-Unit 8). This site is bounded by Estancia Drive to the west, Ouray Road to the north and Miami Road to the south. (See attached Vicinity Map.)

The tract slopes from northwest to southeast at approximately 1%. Vegetation cover is typical of west side property, and the soils are sandy. The property drains overland to Ponding Area 4 per the FEMA maps (see attached Flood Map). There are no off-site flows that enter this site as all flow is carried in the road rights-of-way.

HYDROLOGIC ANALYSIS

HYMO was used for this analysis and all pertinent hydrology parameters, and calculation methods are located in the appendix of this report.

PROPOSED MANAGEMENT PLAN

As a developed site, this plan proposes to retain all runoff for the 100 year-10 day storm in a temporary retention pond until the improvements in Miami Road are completed. This will occur at the southeast corner through two inlets which will drain through 30" RCP into the pond. The temporary pond comprises two lots. Once the Miami Road improvements are completed, the pond will be vacated and split back to two lots. Once the improvements ~~(a 54" RCP in Miami Road connected to the West Bluff box culvert system, Appendix "A")~~ are completed, the site will discharge 28.64 cfs through 30" RCP to the 54" RCP. The West Bluff Drainage Plan prepared by Andrews, Asbury & Roberts, Inc. (March 31, 1987) calls for a 54" RCP along Miami Road to handle the runoff from the surrounding areas (Appendix "A"). ~~Reports since then have indicated a diversion from Dam 14 that would increase the flows such that a 72" RCP would be required. This diversion is not designed yet so we will use the 54" RCP as our connection for this report.~~ *SEE DRAINAGE REPORT FOR MIAMI ROAD PREPARED BY MARK GOODWIN AND ASSOC. DATED 2-16-95 FOR DESIGN OF THE 54" AND 60" RCP WHICH RUNS ALONG THE FRONTAGE IN MIAMI ROAD.*

INTERIM EROSION CONTROL

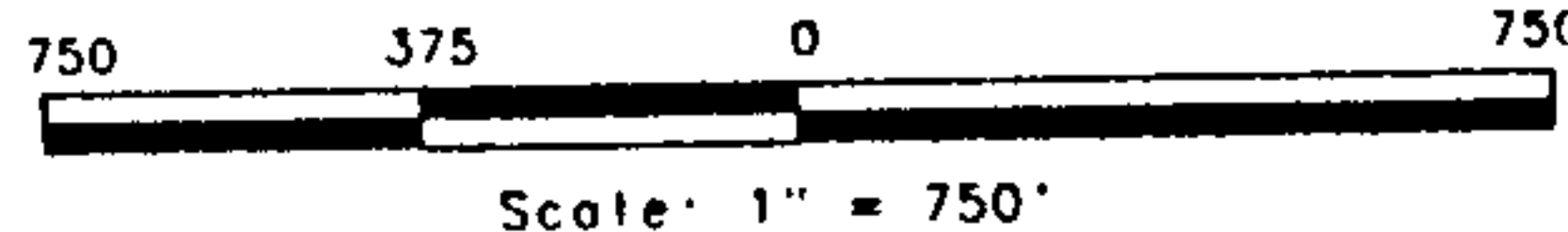
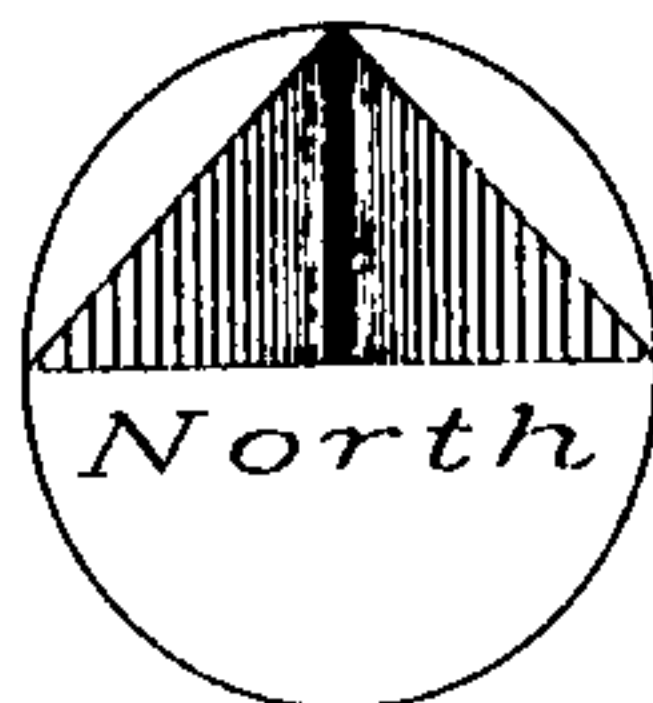
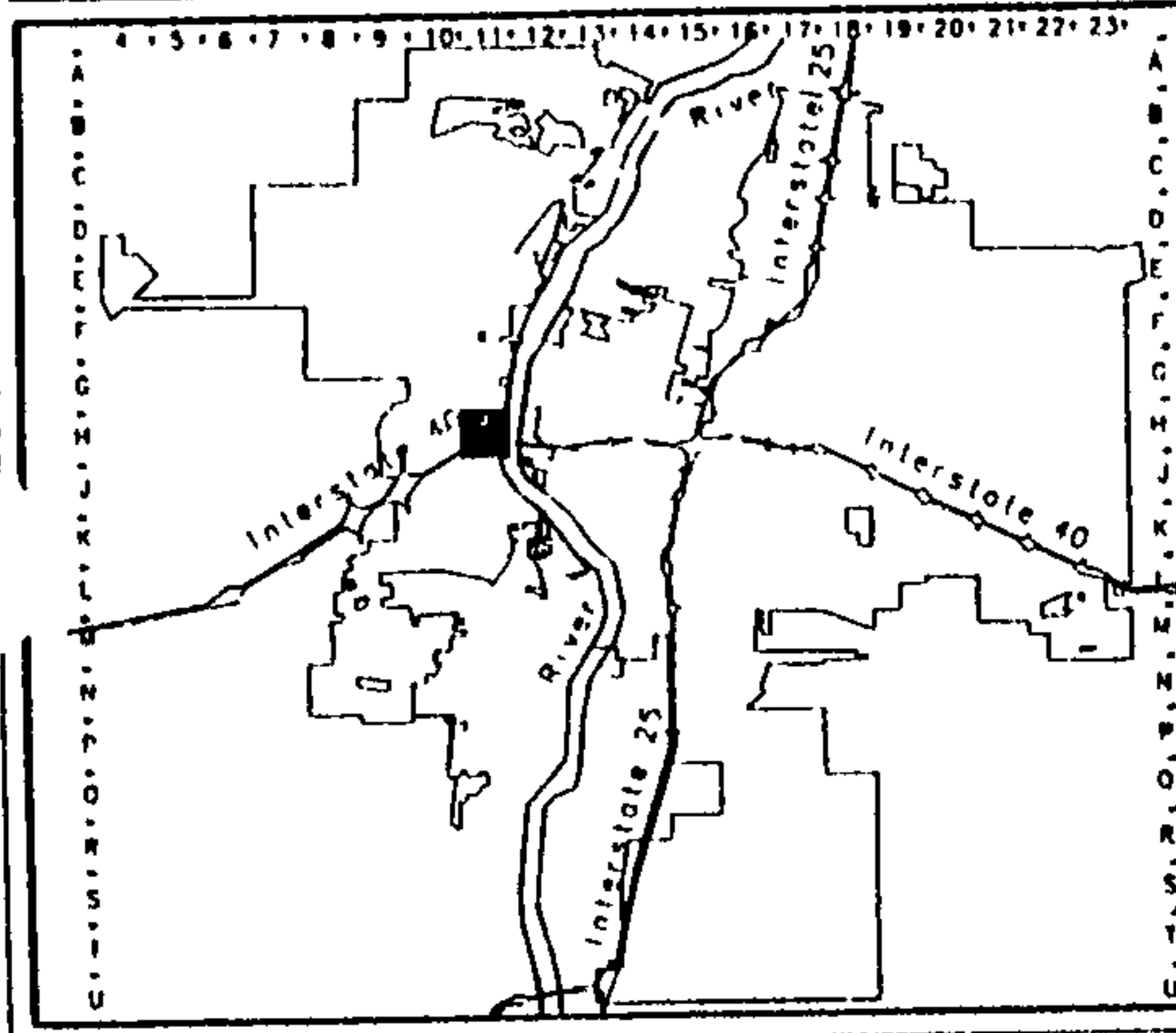
3-10-95

Due to the sensitive nature of the sandy soils associated with the site, an Erosion Control Plan is part of this report and project.

The plan centers on the fact that storm waters will not be allowed free discharge during the construction process until all street paving is accomplished.

CONCLUSIONS

The proposed Tompiro Subdivision, comprising 46 lots on 8.49587 acres, can be readily accommodated through the implementation of this plan. It has been shown in this report that the internal conveyance of storm water can be accomplished while meeting all current City requirements.



Albuquerque **G**eographic **I**nformation **S**ystem
City of Albuquerque

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LEGAL DESCRIPTION

T10N

R2E

SEC 11

UNIFORM PROPERTY CODE

1-011-059

H-11-Z

MARK GOODWIN

& ASSOCIATES
CONSULTING ENGINEERS

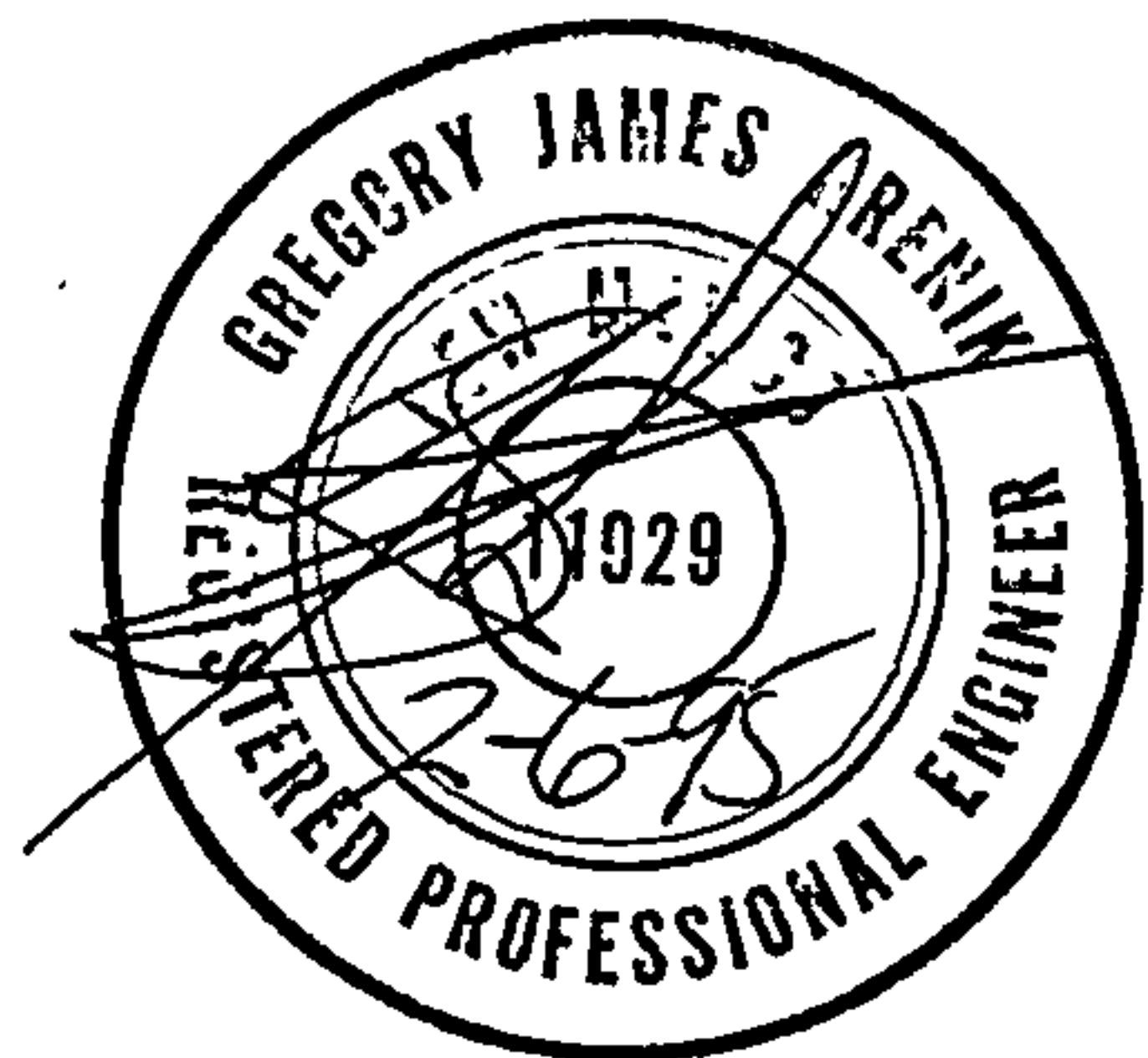
dmg

DRAINAGE REPORT
for
MIAMI ROAD
TOMPIRO SUBDIVISION

Prepared For

SH Co.
331 Wellesley NE
Albuquerque, NM 87106

February 1995



PURPOSE

The purpose of this report is to analyze the storm drain system for Miami Road between 72nd Street and the tie into the future West Bluff box culvert at 57th Street. The drainage basin for this area needed to be defined to accomplish the analysis.

EXISTING CONDITIONS

The outlined area encompasses residential and business zoned tracts to include public thoroughfares. ~~The comprised basin is approximately 90.368 acres between 72nd, 57th, Miami and Ouray (Appendix A).~~ The basin is currently ~~approaching full development~~ with scattered existing structures.

The basin slopes from west to east approximately 0.61 percent. Vegetative cover is typical of west side property, and the soils are sandy. The site currently drains overland and ponds in the numerous playas within the basin. Existing conditions were not considered, only future conditions were analyzed.

HYDROLOGIC ANALYSIS

AHYMO and HYDRAFLOW was utilized for this analysis, with the intent to discharge and convey 100% of developed runoff to the outfall point. SAD 218 hydrologic analysis was utilized to assist in determining the basin boundaries. All of the pertinent hydrologic parameters and calculation methods are located in Appendix B of this report.

PROPOSED MANAGEMENT PLAN

As a fully developed basin, this plan proposes to convey 100% of developed runoff through a storm drain system beginning at 64th to the outfall point at 57th and Miami. ~~The future conditions for the entire basin generate $Q = 310.90$ cfs.~~

The proposed storm drain system ~~assumes each of the residential and business basins will discharge their runoff directly to designated manholes (see Appendix B).~~ Basins R2 and R3 will discharge to Manhole #1 and Basin R5.1 into Manhole #2. Basin R4 and street flow will discharge into Manhole #3. Basin R5.2 will discharge into Manhole #4 and R6 discharges into Manhole #5. B1 discharges into Manhole #6 and street flow into Manhole #7. B2 is the final basin discharging into the system at Manhole #8.

The generated runoff from the streets is assumed to be collected by a series of storm inlets at three separate locations and tie into the storm system through the designated manholes (see Appendix B). The first series of inlets will collect all street flow west of 64th to include Basin R1 then discharge into Manhole #3. The second collection point will collect runoff on Miami between 64th and Estancia then discharge into Manhole #4. The third collection point will collect runoff from 57th, Miami, and Estancia at 57th with a connection to Manhole #7.

~~There are no off-site flows impacting or entering this basin. There is a natural playa at the intersections of Ladera & Ouray, and 72nd & Ladera. This has been excluded from this analysis because this area has been identified as a flood zone for Ponding Area 8. This information has been confirmed by FEMA Map No. 35 00002 000 21C.~~

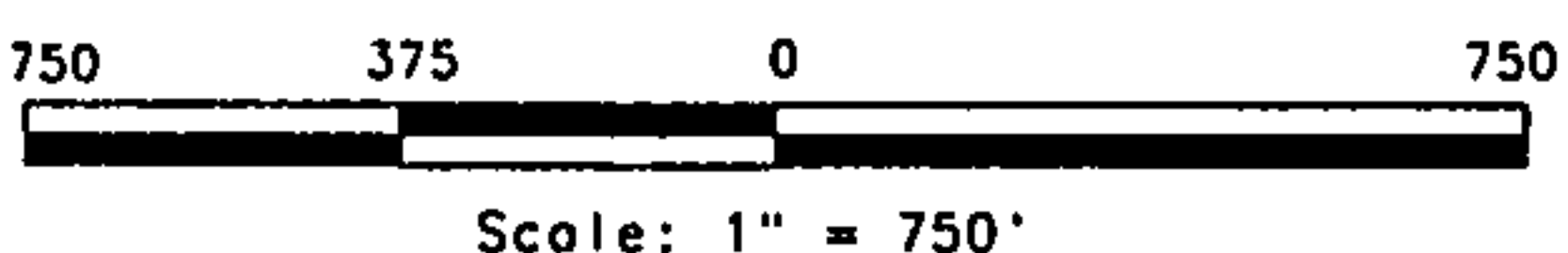
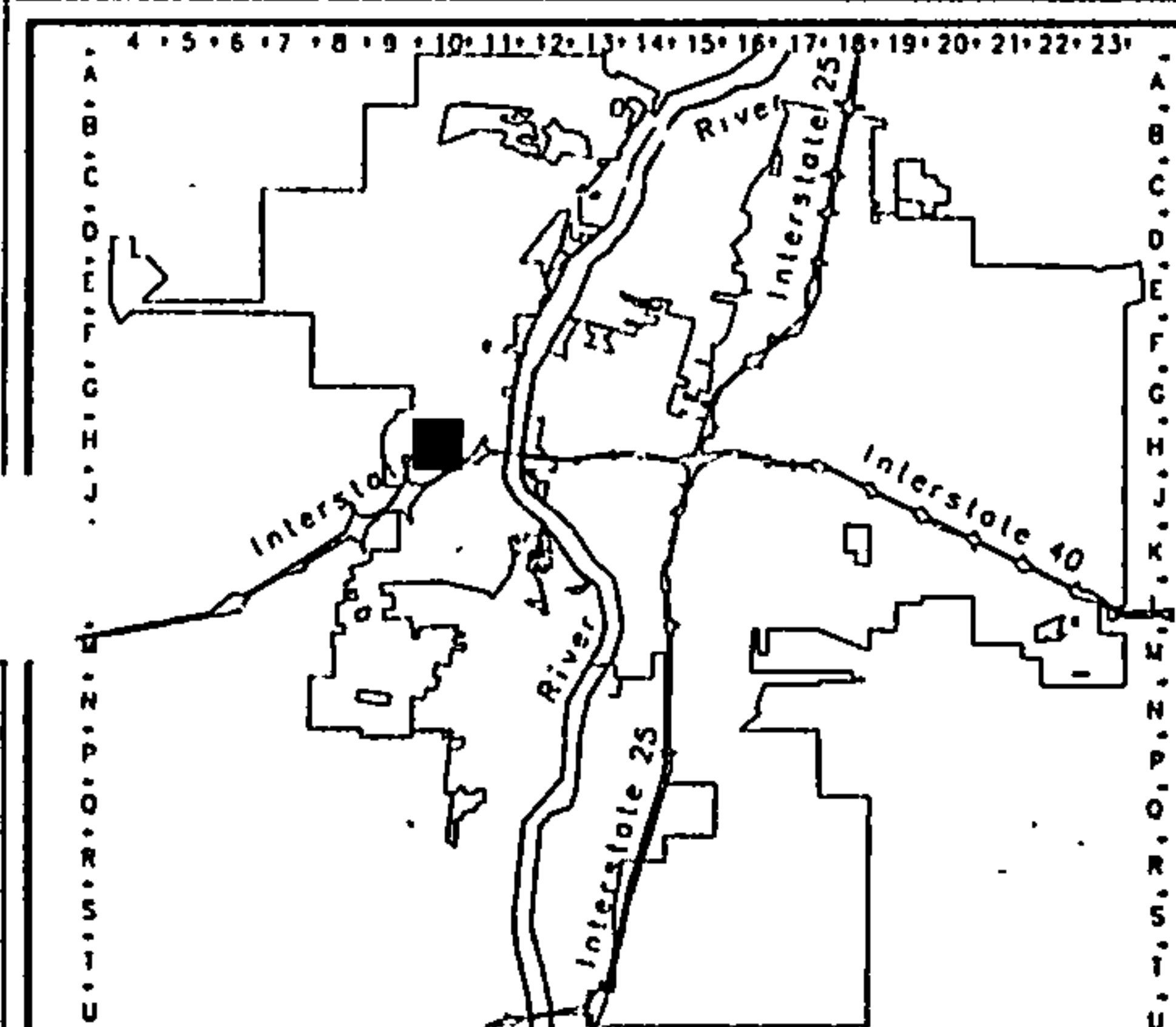
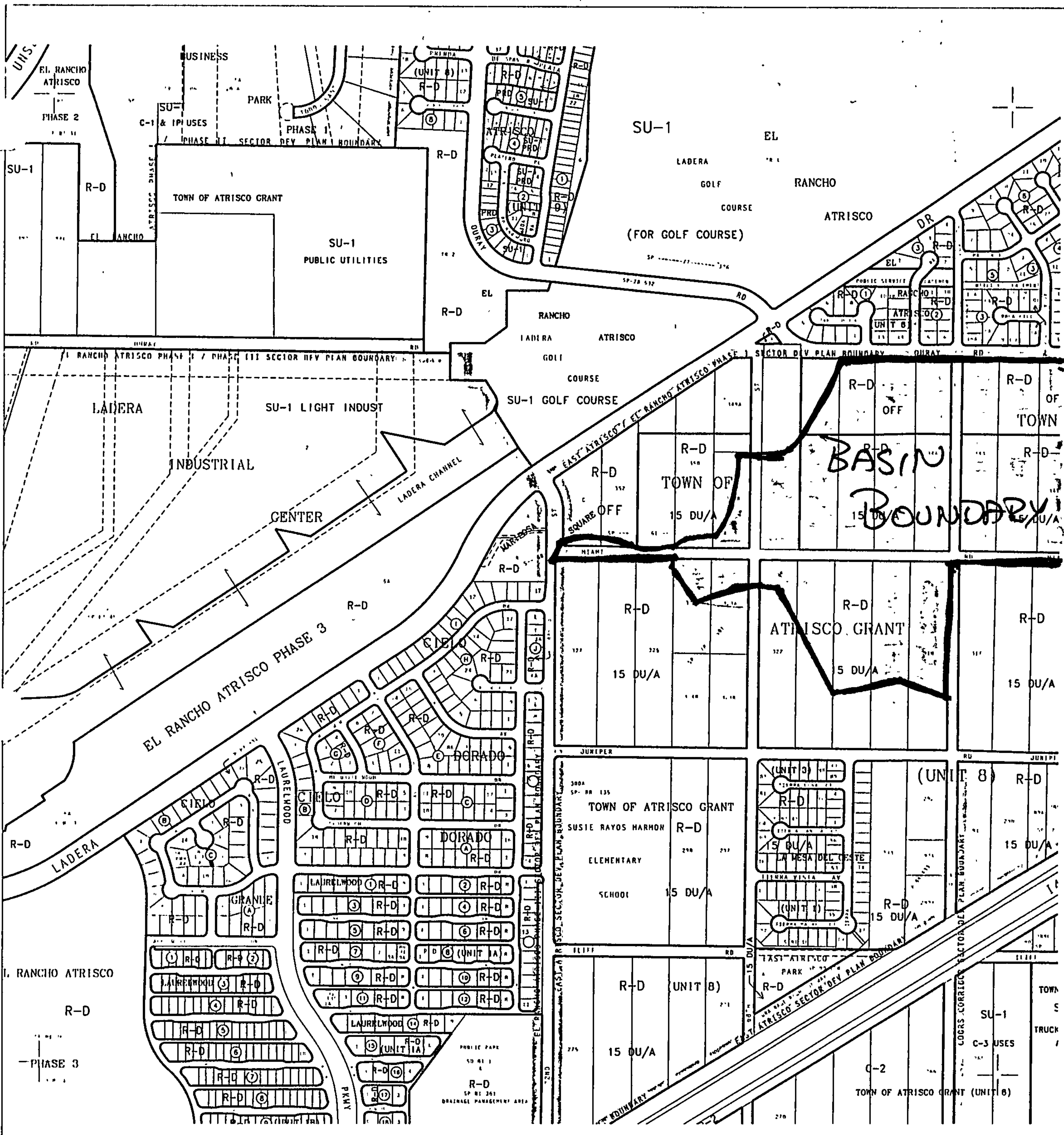
-playa
excluded
from
study

CONCLUSIONS

This storm drain system can adequately convey only the outlined basin to the outfall point at the future West Bluff box culvert at 57th Street. The implementation of this storm drain system will have reduced the amount of storm runoff reaching Ponding Area 4 from the same FEMA Map 35 000 02 000 21C. Also this report has shown the proposed conveyance of storm water can be accomplished while meeting all current City requirements.

APPENDIX A

4 3 T



Abuquerque **G**eographic **I**nformation **S**ystem
City of Albuquerque

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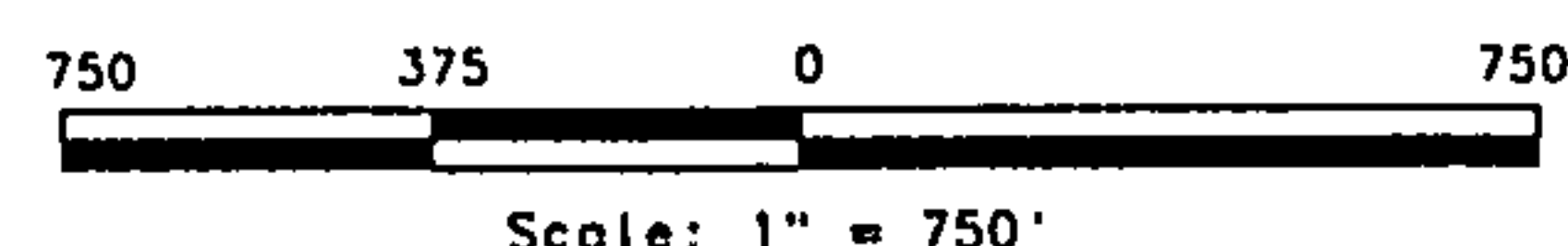
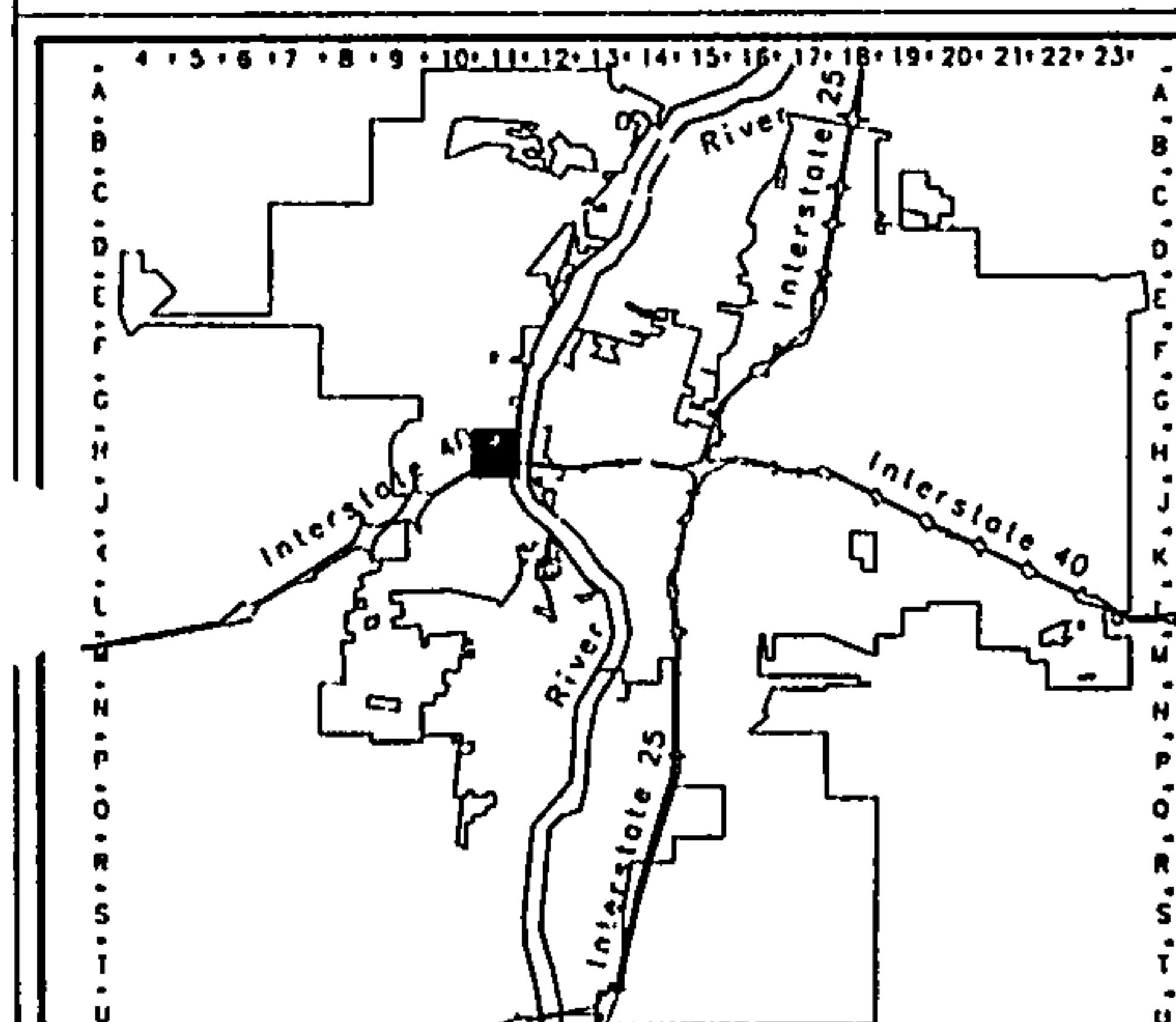
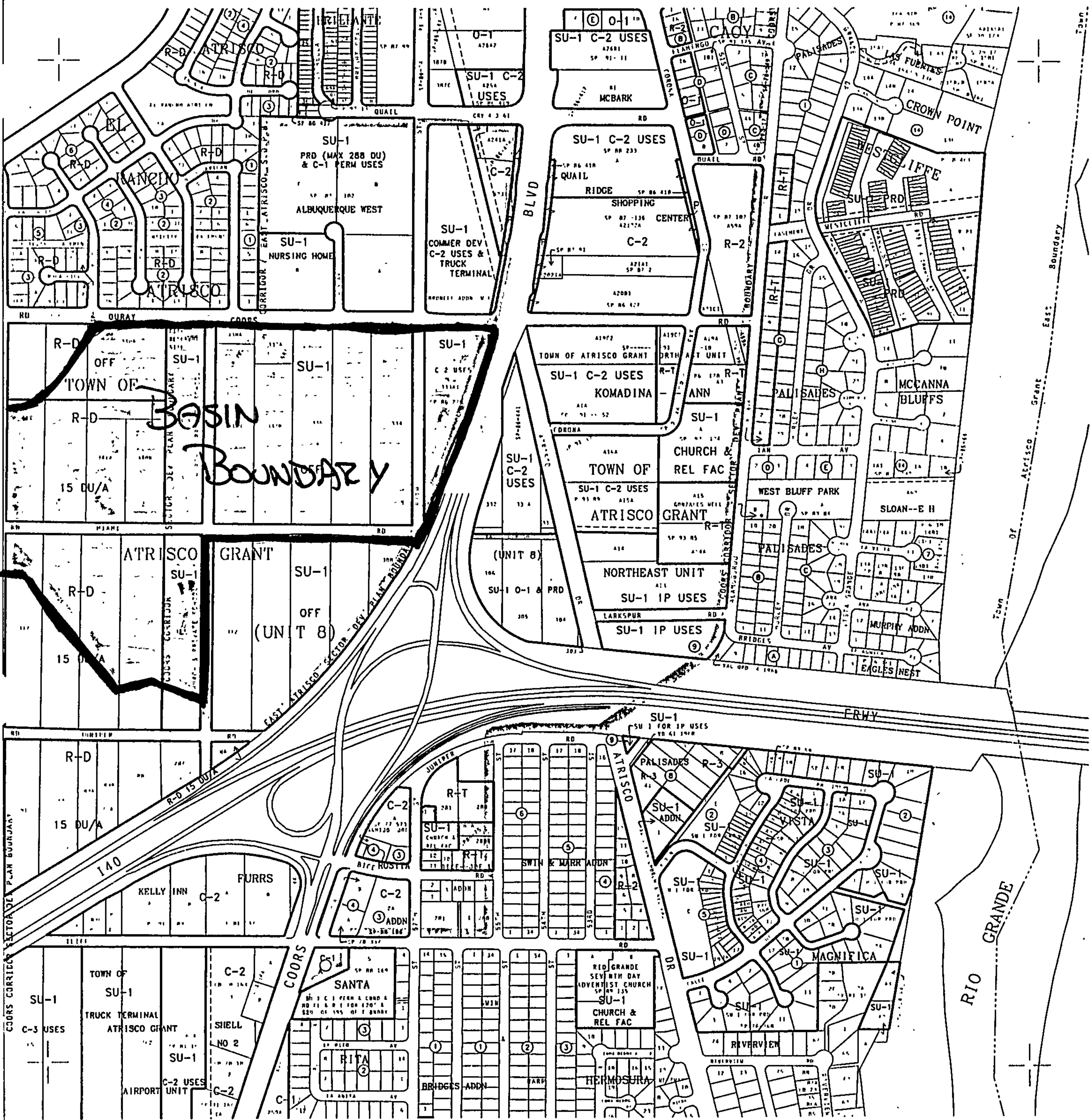
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H-10-Z

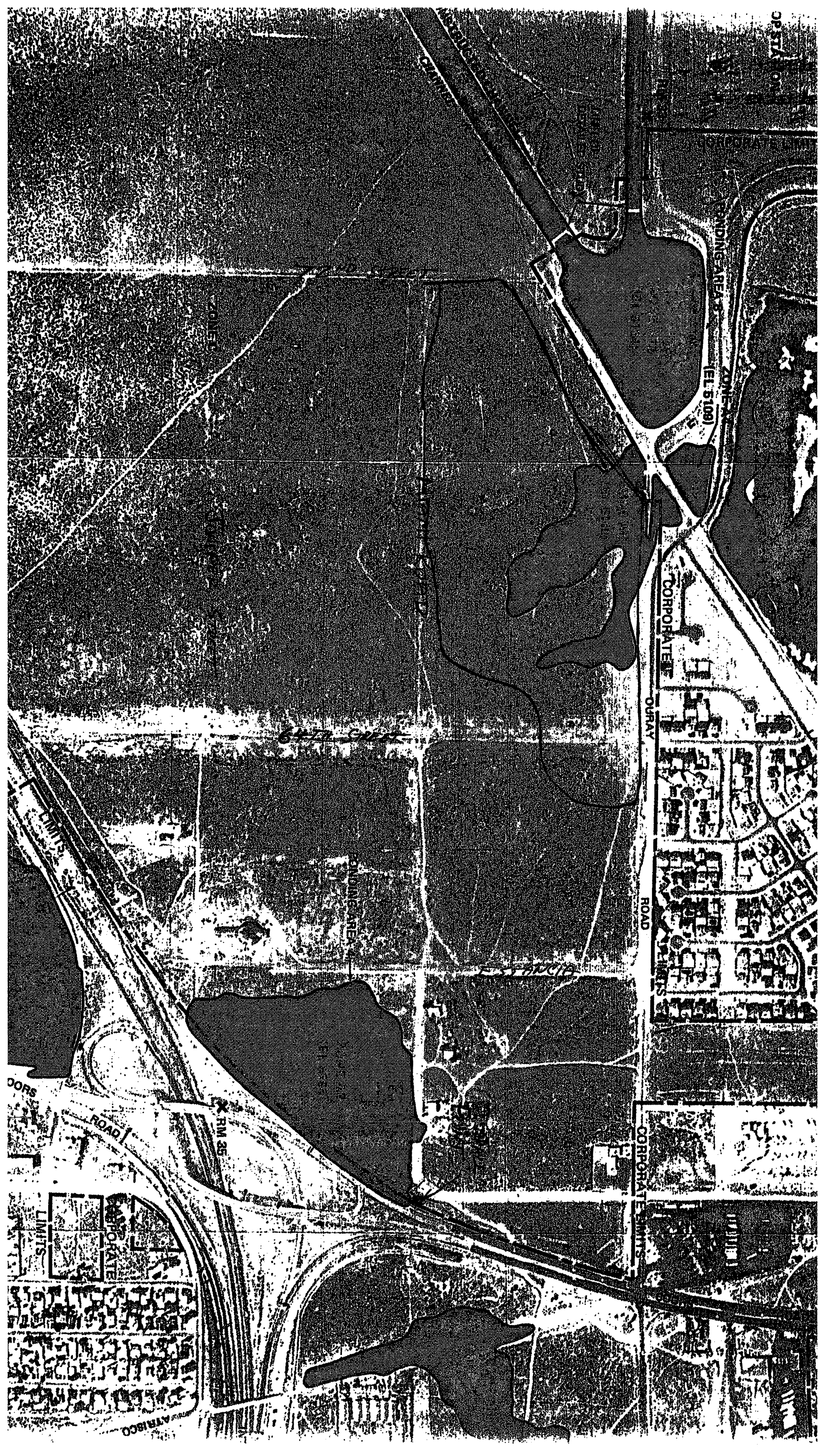


A G I S
 Albuquerque Geographic Information System
 City of Albuquerque
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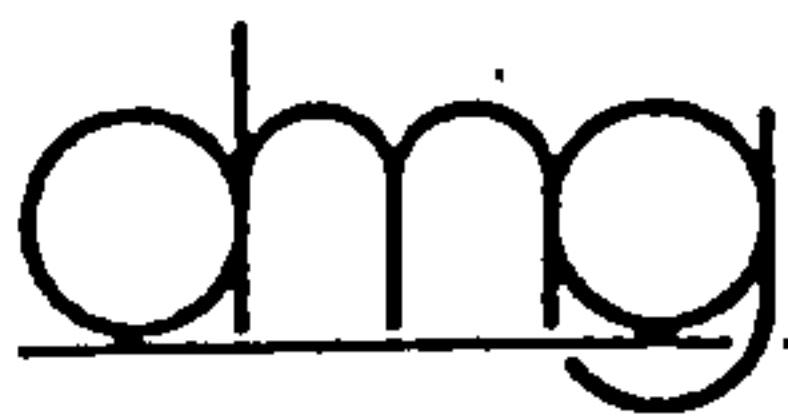
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 R2E
 SEC 11

UNIFORM PROPERTY CODE
 1-011-059

H-11-Z

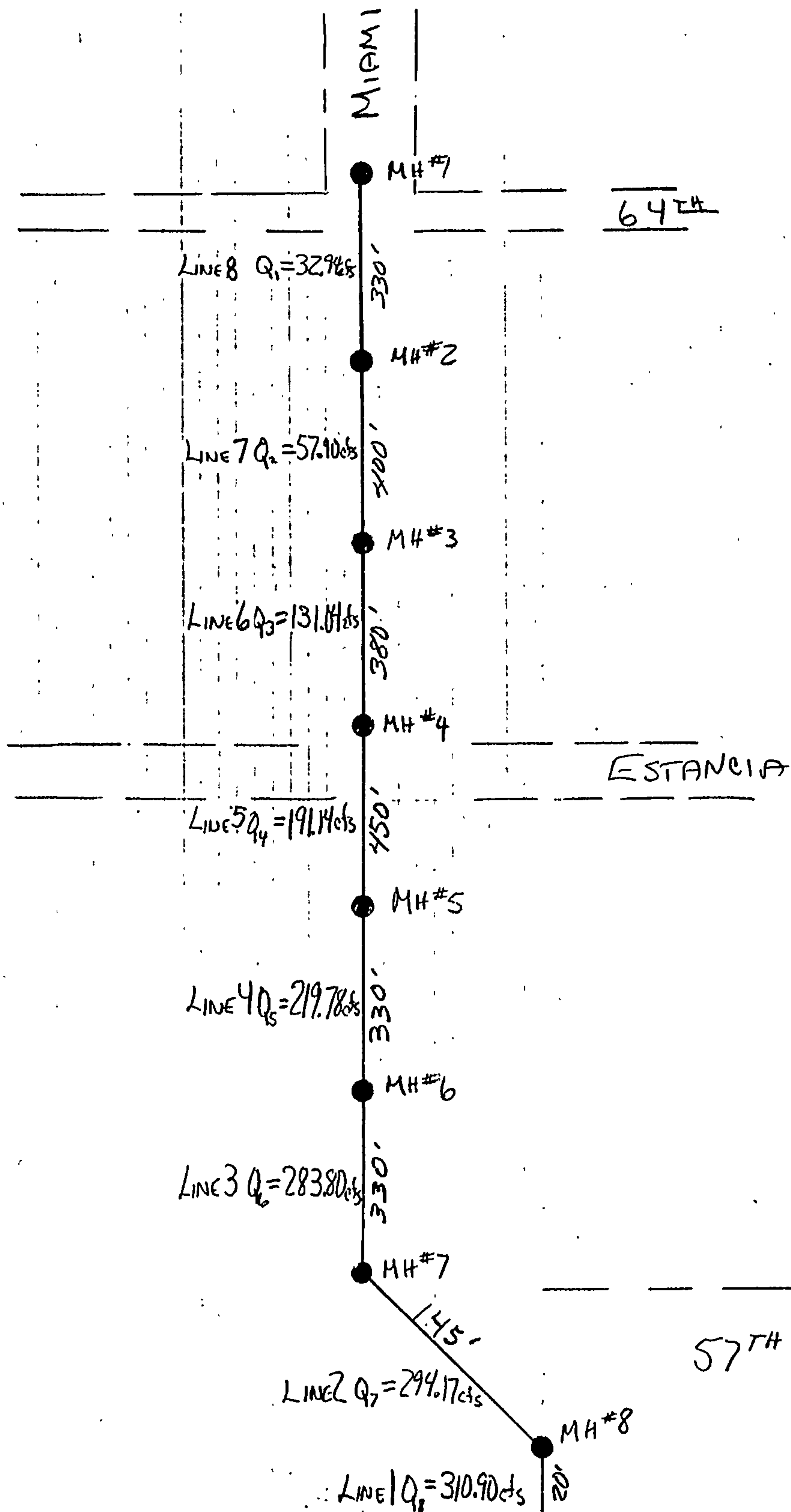


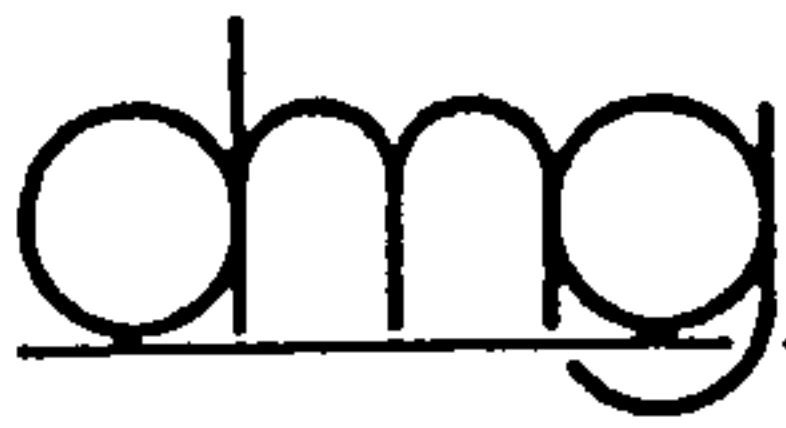
APPENDIX B



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

PROJECT MIAMI ROAD STUDY
SUBJECT DRAINAGE
BY RM DATE 2 FEB 94
CHECKED _____ DATE _____
SHEET _____ OF _____





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

PROJECT MIAMI ROAD STUDY
SUBJECT DRAINAGE
BY RM DATE 2 FEB 94
CHECKED _____ DATE _____
SHEET _____ OF _____

MH#1 Rim = 107⁰⁰
Inv NW = 102⁰⁰
Inv SW = 102⁰⁰
Inv E = 102⁰⁰

MH#2 Rim = 103²⁰
Inv E = 96²²
Inv W = 96²²

MH#3 Rim = 99²⁰
Inv E = 89⁰⁰
Inv N = 89⁰⁰

MH#4 Rim = 98⁰⁰
Inv E = 84⁶²
Inv W = 84⁶²

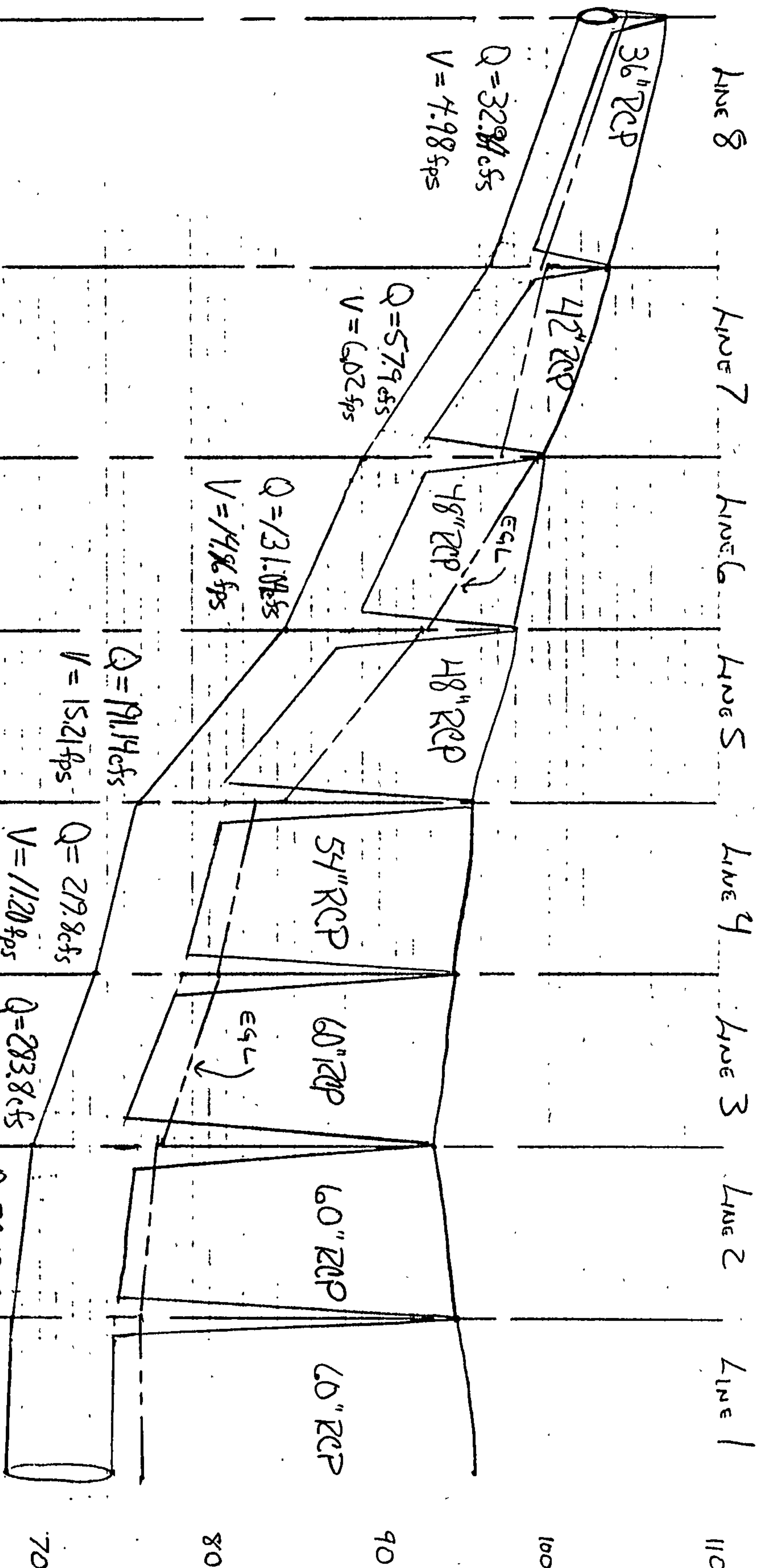
MH#5 Rim = 96¹²
Inv E = 76⁰⁰
Inv W = 76⁰⁰

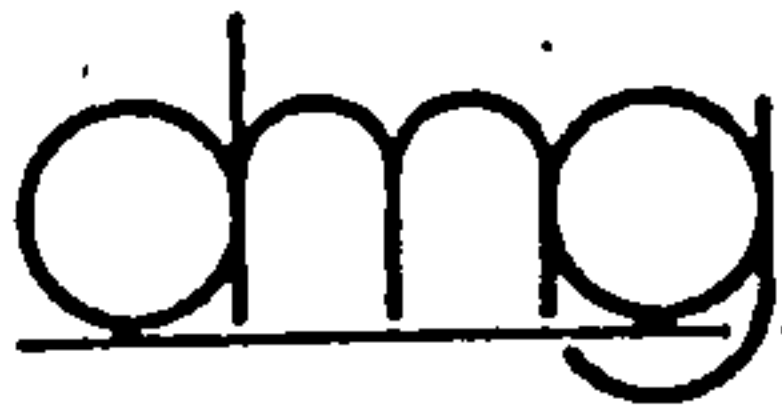
MH#6 Rim = 94²⁴
Inv E = 73³⁶
Inv W = 73³⁶

MH#7 Rim = 93¹⁸
Inv NE = 69⁸⁶
Inv W = 69⁸⁶

MH#8 Rim = 94⁵⁰
Inv SW = 68³⁶
Inv E = 68³⁶

TIE IN = 68¹⁶ (INVERT)





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

PROJECT MIAMI ROAD STORM DRAIN
SUBJECT DRAINAGE
BY ZM DATE 6 FEB 94
CHECKED _____ DATE _____
SHEET _____ OF _____

STREET FLOW CAPACITY

TOTAL STREET FLOW FOR MA#3 AP3

AHYMO RESULTS

$$Q = 19.16 \text{ cfs}$$

FROM DPM BOOK 2 PLATE 22.3 D-2

FOR $Q = 10 \text{ cfs}$ & $\text{SLOPE} = 1.00\%$ HALF STREET SECTION

$$\text{DEPTH OF FLOW} = 0.45'$$

$$V = 2.9 \text{ fps}$$

$$EG = 1 + V^2/2g$$

$$EG = 0.58'$$

8" STANDARD CURB & GUTTER REQUIRED

NUMBER OF STORM INLETS REQUIRED

1ST STORM INLET $d = 0.45'$ $\text{SLOPE} = 1.00\%$

$$Q = 5.8 \text{ cfs CAPACITY}$$

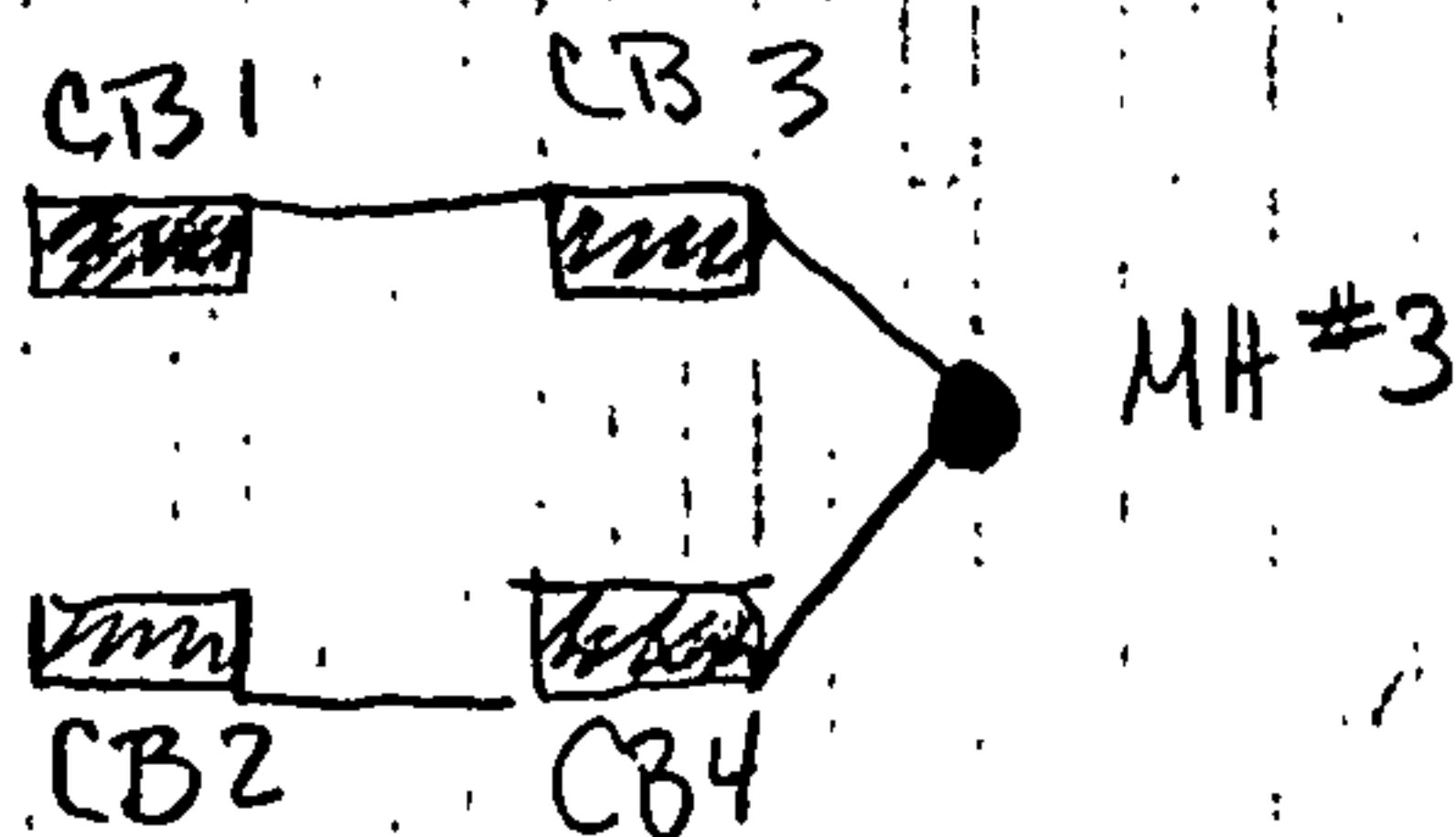
TYPE DBL "A" INLET

2ND STORM INLET $d = 0.35'$ $\text{SLOPE} = 1.00\%$

$$Q = 3.2 \text{ cfs CAPACITY}$$

TYPE DBL "C" INLET

* THE CONFIGURATION OF STORM INLETS TO COLLECT FLOW AT
ANALYSIS POINT 3

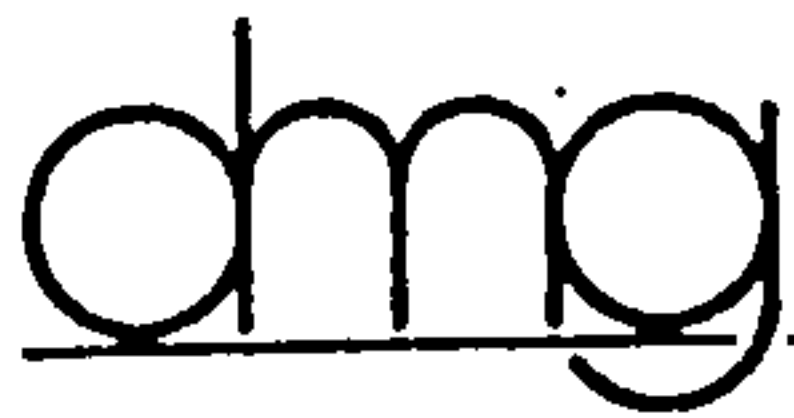


CB1 & 2 TYPE DBL "A"s

CB3 & 4 TYPE DBL "C"s

TOTAL FLOWS PASSING CB's

$$9.58 - 5.8 - 3.2 = 0.58 \text{ cfs ON HALF STREET SECTION}$$



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

PROJECT MIAMI ROAD STUDY
SUBJECT DRAINAGE
BY DM DATE 6 FEB 94
CHECKED _____ DATE _____
SHEET _____ OF _____

STORM INLET ANALYSIS (CONTINUED)

TOTAL FLOW PASSING STORM INLETS @ ANALYSIS POINT 3

$$Q = 11.6 \text{ cfs} \text{ * MUST BE ADDED TO AP4}$$

ANALYSIS POINT 4

AAHMO RESULTS

$$Q = 4.64 \text{ cfs}$$

TOTAL Q ON STREET

$$Q = 4.48 + 1.06 = 5.54 \text{ cfs}$$

USE SAME CONFIGURATION OF STORM INLETS AS AP3

FLOW ON HALF STREET SECTION

$$Q = 2.82 \text{ cfs @ SLOPE} = 100\%$$

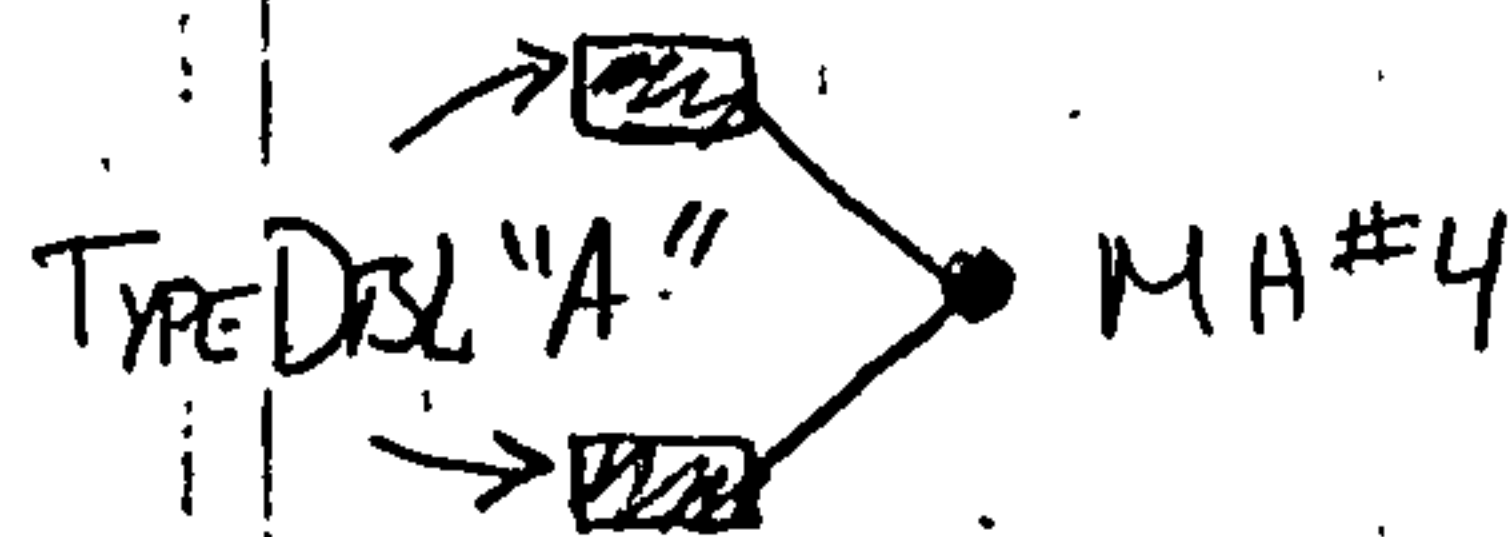
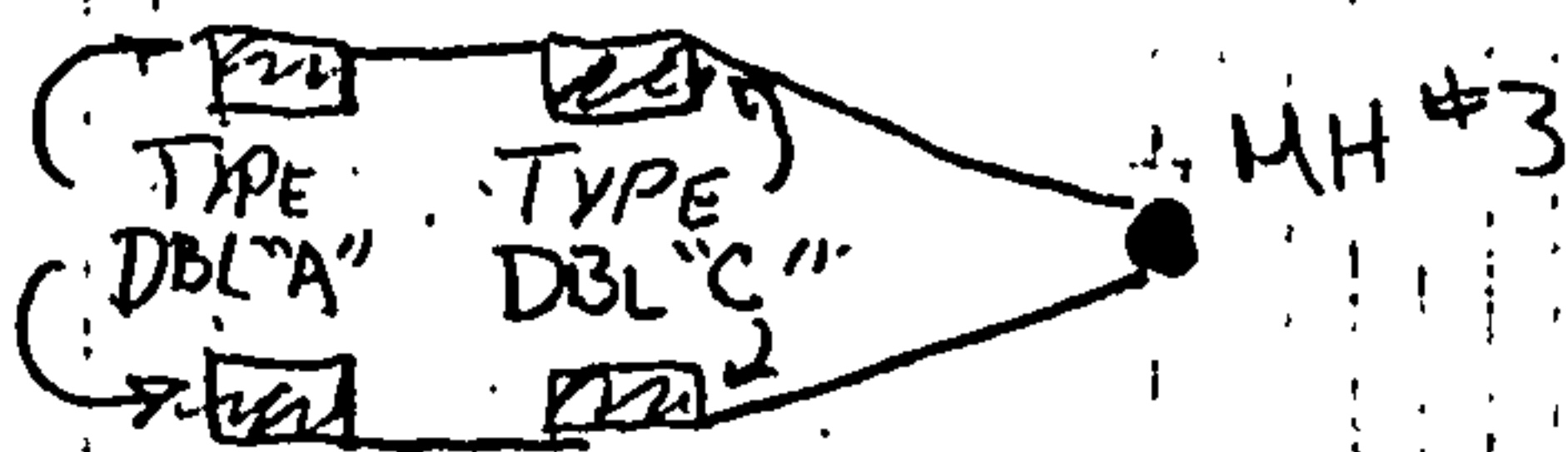
$$\text{DEPTH OF FLOW} = 0.31'$$

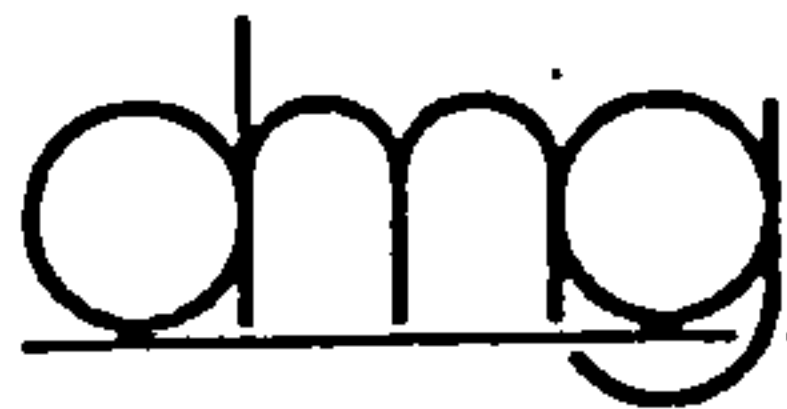
1ST STORM INLET

$$Q_{\text{CAPACITY}} = 2.5 \text{ cfs}$$

NO FURTHER STORM INLETS REQUIRED

- STORM INLETS WEST OF MIAMI & ESTANGIA
- CONTAIN CAPACITY TO COLLECT STORM RUNOFF ON MIAMI ROAD





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

PROJECT MIAMI ROAD STUDY
SUBJECT DRAINAGE
BY DM DATE 6 FEB 94
CHECKED _____ DATE _____
SHEET _____ OF _____

STORM INLETS EAST OF ESTANCIA & MIAMI

FROM AHYMO RESULTS

TOTAL $Q = 10.37 \text{ cfs}$ FOR
MIAMI, 57TH & ESTANCIA

FOR HALF STREET SECTION

$Q = 5.19 \text{ cfs}$

INLETS WILL BE IN SUMP CONDITION

@ MH #7

USE NOMOGRAPH FOR SUMP CONDITIONS

$$Q/P = 3.0 H^{3/2}$$

$P = a + 2b$ (CANNOT USE BACK OF CURB AS PART OF PERIMETER)

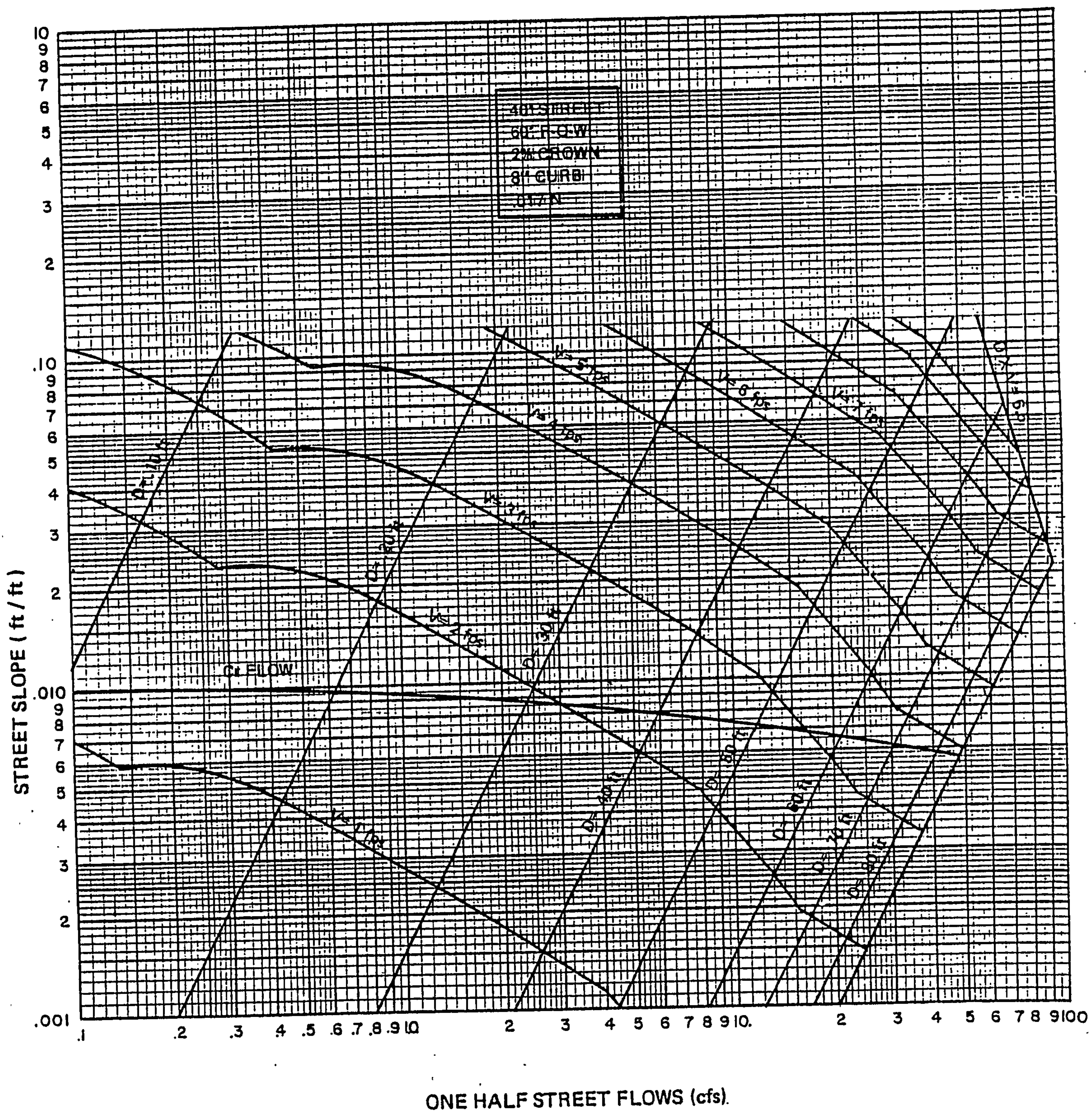
$$P = 8$$

$$Q = 8(3)(0.67)^{3/2}$$

$Q = 13.06 \text{ cfs}$ CAPACITY OF SINGLE GRATE TYPE "C"

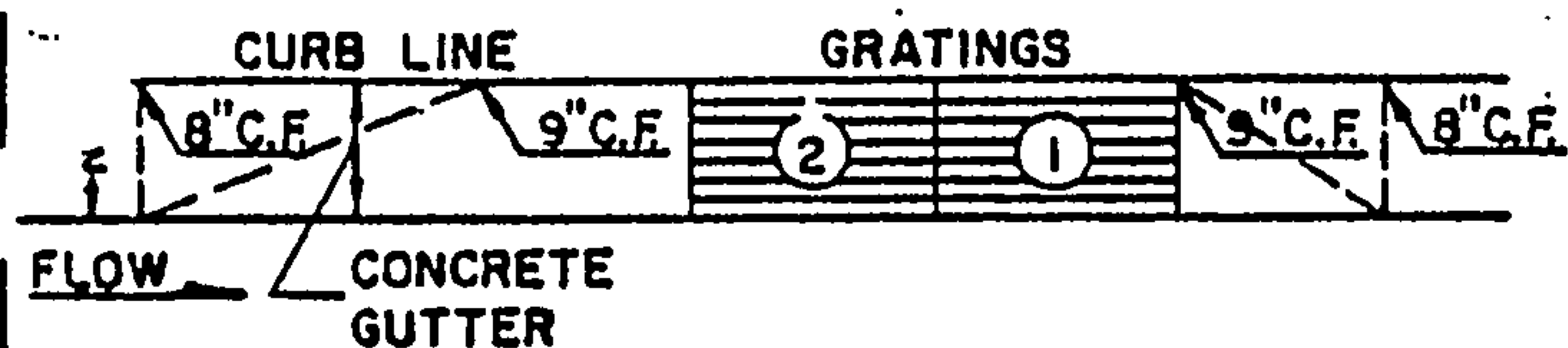
∴ ONE TYPE "C" INLET IN SUMP CONDITION
CONTAINS CAPACITY OF STREET FLOW @
ANALYSIS POINT 7 MH #7

STREET CAPACITY

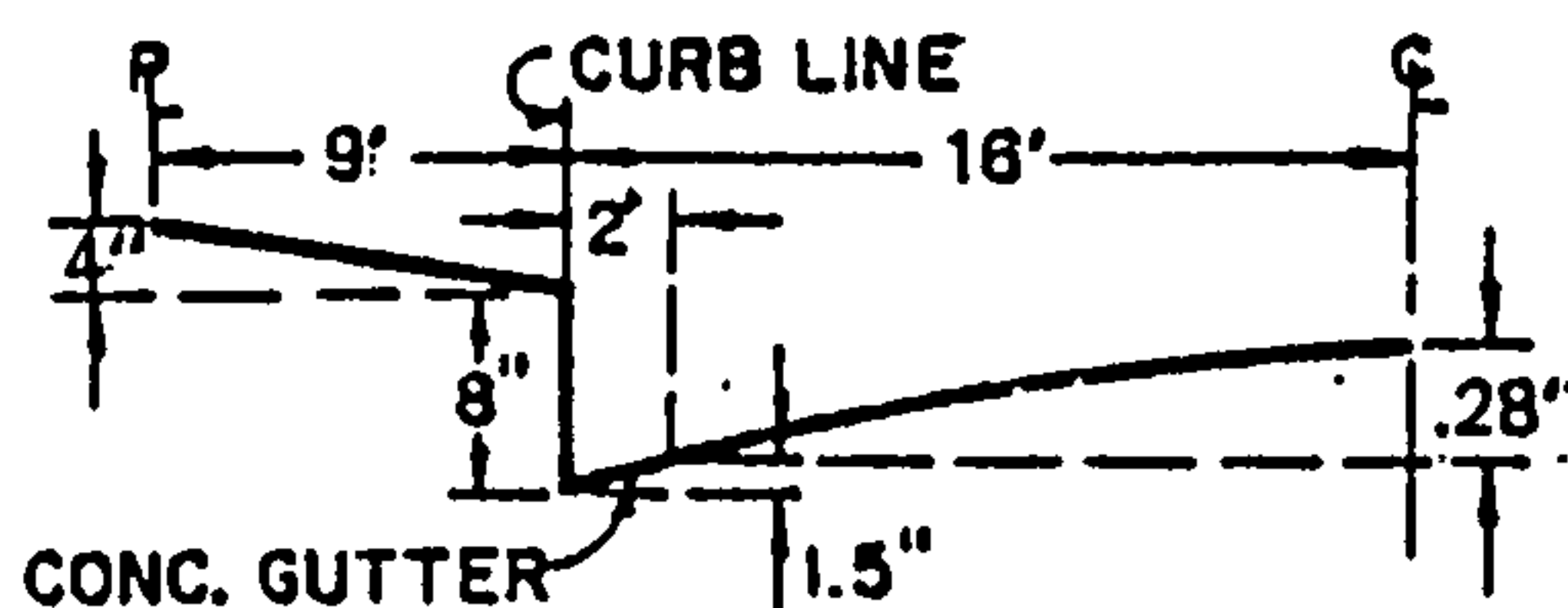
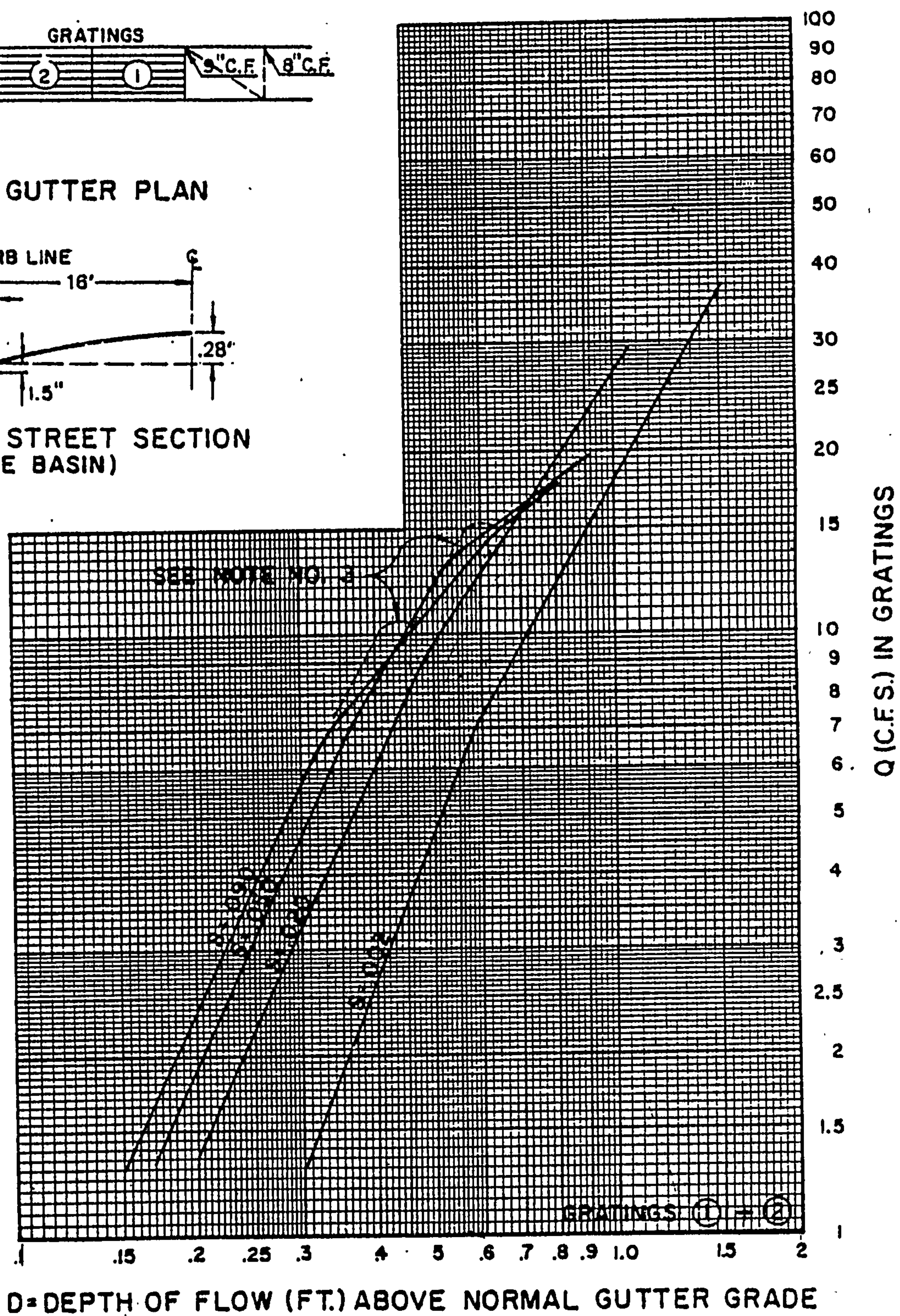


GRATING CAPACITIES FOR TYPE DOUBLE

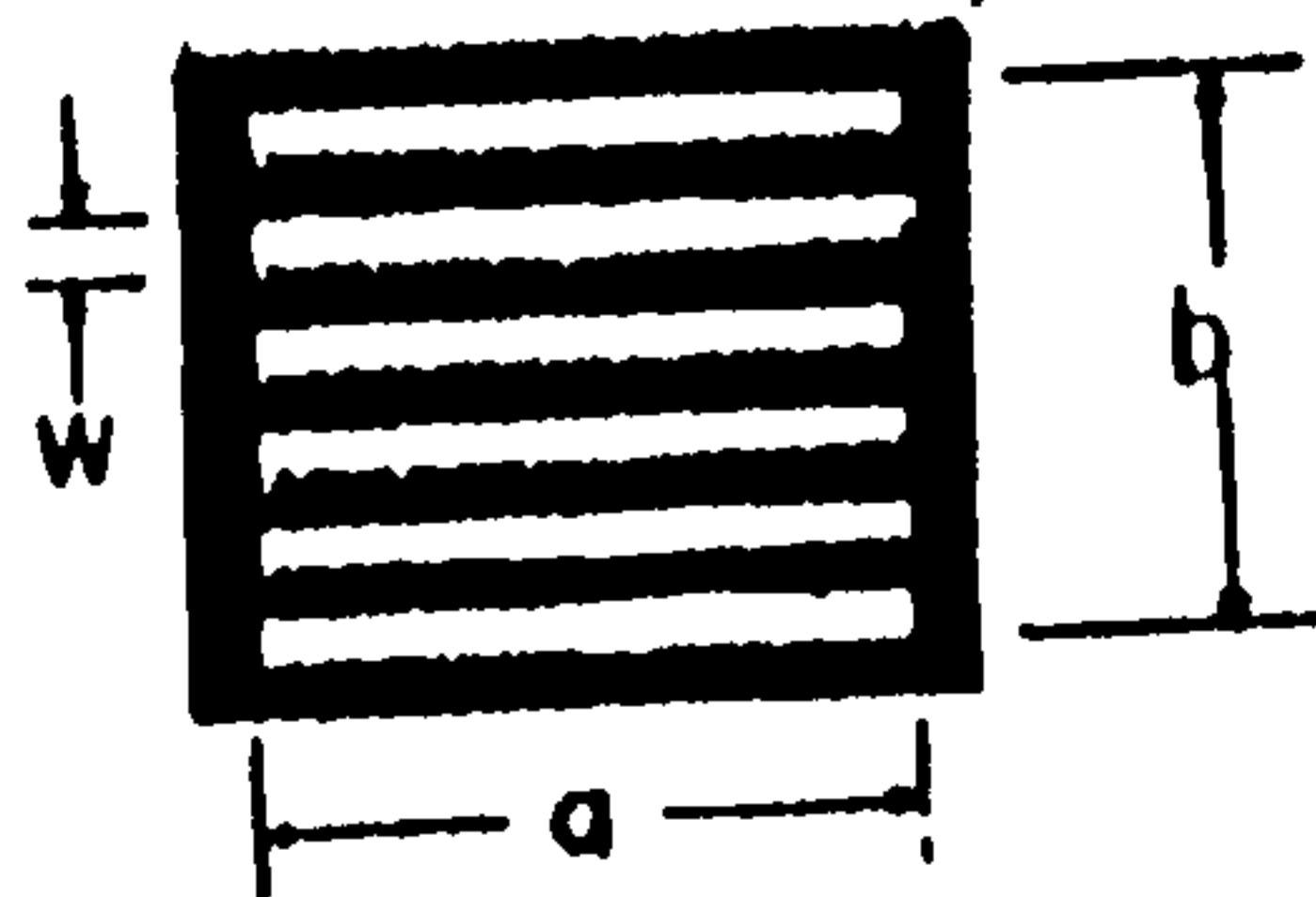
"C," AND "D"



GRATING & GUTTER PLAN

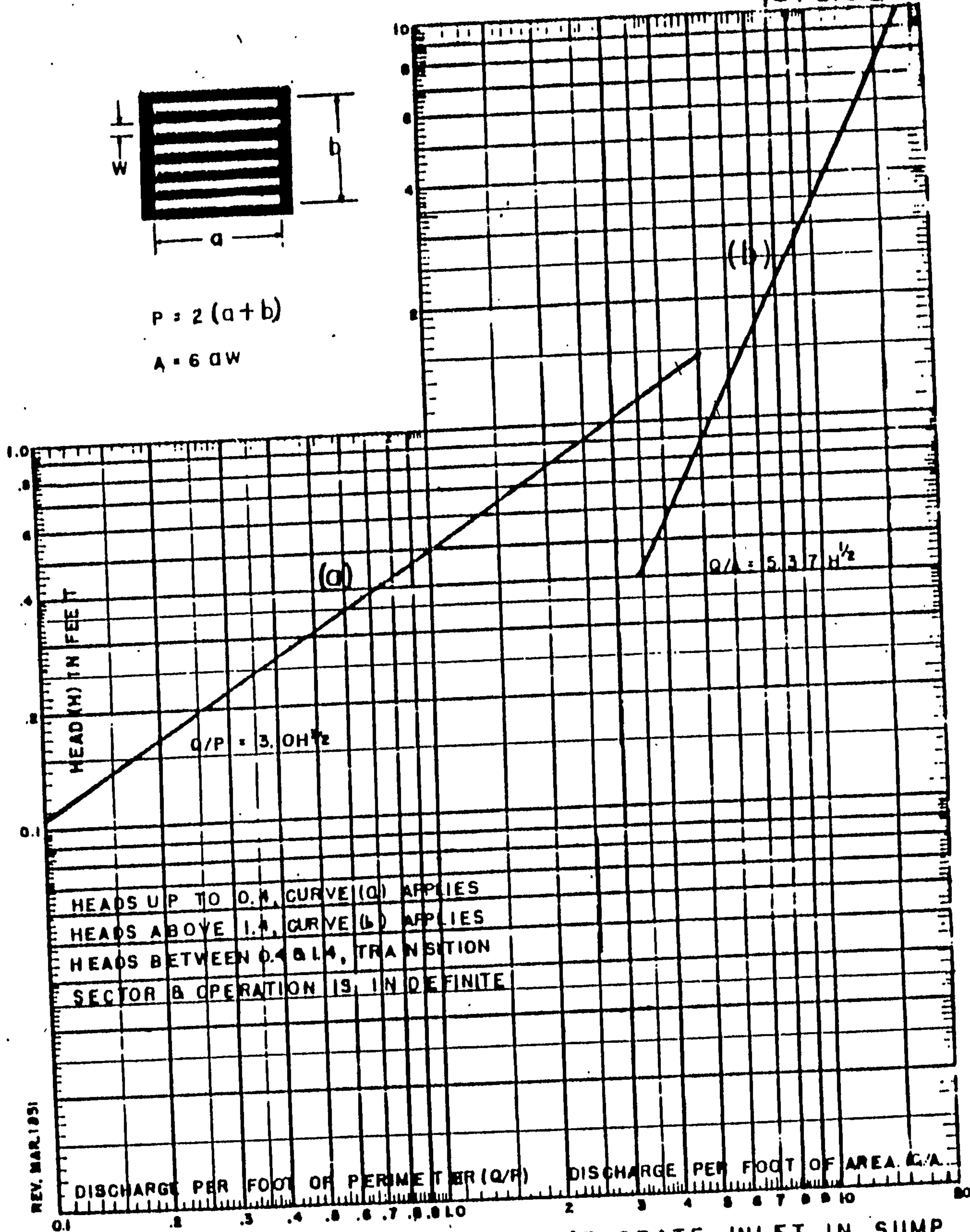
TYPICAL HALF STREET SECTION
(ABOVE BASIN)

1073.02



$$P = 2(a + b)$$

$$A = 6.0W$$



BUREAU OF PUBLIC ROADS
DIVISION TWO WASH, D.C.

CAPACITY OF GRATE INLET IN SUMP
WATER PONDED ON GRATE

HYDRAULIC ANALYSIS

Run date: 01-04-1980

File: c:\miami3.ST3

Return Period = 100 Yrs
Rainfall file: Your_County

LINE 1 / Q = 310.9 / HT = 60 / WID = 60 / N = .013 / L = 20 / JLC = .25

1 / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	73.16	60.00	68.16	15.84	77.05	0.00	22.33	19.63
UPSTRM	73.45	60.00	68.36	15.83	77.34	0.00	21.13	19.63

Drainage area (ac) =	0	Slope of invert (%) =	1.000
Runoff coefficient =	0	Slope energy grade line (%) =	1.425
Time of conc (min) =	13	Critical depth (in) =	57.12
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	310.8	Confluence angle (deg) =	-45
Default Q (cfs) =	310.9	Natural ground elev (ft) =	94.5
Line capac. (cfs) =	260.5	Line storage (cuft) =	393

LINE 2 / Q = 294.2 / HT = 60 / WID = 60 / N = .013 / L = 145 / JLC = .25

2 / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	74.42	60.00	68.36	14.98	77.91	0.00	21.13	19.63
UPSTRM	76.27	60.00	69.86	14.98	79.76	0.00	18.31	19.63

Drainage area (ac) =	0	Slope of invert (%) =	1.034
Runoff coefficient =	0	Slope energy grade line (%) =	1.276
Time of conc (min) =	12	Critical depth (in) =	56.45
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	294.1	Confluence angle (deg) =	45
Default Q (cfs) =	294.17	Natural ground elev (ft) =	93.18
Line capac. (cfs) =	264.9	Line storage (cuft) =	2847

LINE 3 / Q = 283.8 / HT = 60 / WID = 60 / N = .013 / L = 330 / JLC = .25

3 / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	77.14	60.00	69.86	14.46	80.39	0.00	18.31	19.63
UPSTRM	81.06	60.00	73.36	14.45	84.31	0.00	16.34	19.63

Drainage area (ac)	=	0	Slope of invert (%)	=	1.061
Runoff coefficient	=	0	Slope energy grade line (%)	=	1.187
Time of conc (min)	=	11	Critical depth (in)	=	55.71
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	0.0
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	0.0
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	0
Flow contrib (cfs)	=	283.7	Confluence angle (deg)	=	0
Default Q (cfs)	=	283.8	Natural ground elev (ft)	=	94.71
Line capac. (cfs)	=	268.2	Line storage (cuft)	=	6479

LINE 4 / Q = 219.8 / HT = 54 / WID = 54 / N = .013 / L = 340 / JLC = .25

4 / DNLN = 3

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	81.87	54.00	73.36	13.82	84.84	0.00	16.84	15.90
UPSTRM	86.12	54.00	76.00	13.82	89.09	0.00	15.66	15.90

Drainage area (ac)	=	0	Slope of invert (%)	=	0.776
Runoff coefficient	=	0	Slope energy grade line (%)	=	1.249
Time of conc (min)	=	9	Critical depth (in)	=	50.80
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	0.0
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	0.0
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	0
Flow contrib (cfs)	=	219.7	Confluence angle (deg)	=	0
Default Q (cfs)	=	219.78	Natural ground elev (ft)	=	96.17
Line capac. (cfs)	=	173.3	Line storage (cuft)	=	5407

LINE 5 / Q = 191.1 / HT = 48 / WID = 48 / N = .013 / L = 420 / JLC = .25

5 / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	86.86	48.00	76.00	15.21	90.46	0.00	16.16	12.56
UPSTRM	94.30	48.00	84.67	15.21	97.89	0.00	9.56	12.57

Drainage area (ac)	=	0	Slope of invert (%)	=	2.064
Runoff coefficient	=	0	Slope energy grade line (%)	=	1.771
Time of conc (min)	=	6	Critical depth (in)	=	46.18
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	0.0
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	0.0
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	0
Flow contrib (cfs)	=	191.1	Confluence angle (deg)	=	0
Default Q (cfs)	=	191.14	Natural ground elev (ft)	=	98.24
Line capac. (cfs)	=	206.4	Line storage (cuft)	=	5277

LINE 6 / Q = 131.0 / HT = 48 / WID = 48 / N = .013 / L = 400 / JLC = .25

6 / DNLN = 5

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	95.20	48.00	84.67	10.43	96.89	0.00	9.56	12.56
UPSTRM	98.53	48.00	89.00	10.43	100.22	0.00	6.69	12.57

Drainage area (ac)	=	0	Slope of invert (%)	=	1.083
Runoff coefficient	=	0	Slope energy grade line (%)	=	0.832
Time of conc (min)	=	4	Critical depth (in)	=	40.62
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	0.0
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	0.0
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	0
Flow contrib (cfs)	=	131	Confluence angle (deg)	=	0
Default Q (cfs)	=	131.04	Natural ground elev (ft)	=	99.7
Line capac. (cfs)	=	149.5	Line storage (cuft)	=	5026

LINE 7 / Q = 57.9 / HT = 42 / WID = 42 / N = .013 / L = 400 / JLC = .25

7 / DNLN = 6

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	98.95	42.00	89.00	6.02	99.51	0.00	7.19	9.62
UPSTRM	100.20	41.79	96.72	6.02	100.77	5.93	3.47	9.62

Drainage area (ac)	=	0	Slope of invert (%)	=	1.930
Runoff coefficient	=	0	Slope energy grade line (%)	=	0.313
Time of conc (min)	=	2	Critical depth (in)	=	27.95
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	0.0
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	0.0
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	0
Flow contrib (cfs)	=	57.9	Confluence angle (deg)	=	0
Default Q (cfs)	=	57.9	Natural ground elev (ft)	=	103.7
Line capac. (cfs)	=	139.8	Line storage (cuft)	=	3847

LINE 8 / Q = 32.9 / HT = 36 / WID = 36 / N = .013 / L = 330 / JLC = .25

8 / DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	100.34	36.00	96.72	4.66	100.68	0.00	3.97	7.07
UPSTRM	104.04	22.00	102.00	7.28	104.86	35.10	2	4.53

Drainage area (ac)	=	0	Slope of invert (%)	=	1.600
Runoff coefficient	=	0	Slope energy grade line (%)	=	1.205
Time of conc (min)	=	0	Critical depth (in)	=	21.95
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	0.0
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	0.0
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	0
Flow contrib (cfs)	=	32.9	Confluence angle (deg)	=	0
Default Q (cfs)	=	32.94	Natural ground elev (ft)	=	107
Line capac. (cfs)	=	84.4	Line storage (cuft)	=	1913

START TIME=0.0

***** HYDROGRAPH FOR MIAMI ROAD ANALYSIS: WESTBLUFF OUTFALL

RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.87 IN RAIN SIX=2.20 IN
RAIN DAY=2.66 IN DT=0.03333 HR

*
*FUTURE CONDITIONS IS THE SOLE CONSIDERATION IN THIS ANALYSIS
*EACH AREA WILL REFLECT DIFFERENT LAND TREATMENT TYPES
*THE THREE RECOGNIZED AREAS, RESIDENTIAL, BUSINESS, & STREETS
*

* STORM DRAIN SYSTEM ANALYSIS POINTS

*
*THESE ANALYSIS POINTS ASSUME RESIDENTIAL DISCHARGE INTO THE
*STORM DRAIN WILL OCCUR AT THE NORTHWEST AND SOUTHWEST CORNER
*OF ALL STREET INTERSECTIONS. STREET DISCHARGE WILL OCCUR AT
*MH#3 & MH#7.
*

*THE FIRST ANALYSIS POINT OCCURS AT 64TH STREET & MIAMI

*SUBBASIN R2 BORDERS 64TH AND NORTHERN HALF OF MIAMI
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.0096 SQ MI
PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1

*SUBBASIN R3 BORDERS 64TH AND SOUTHERN HALF OF MIAMI
COMPUTE NM HYD ID=2 HYD NO=101.2 AREA=0.0065 SQ MI
PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=2 CODE=1

*ADDING HYDROGRAPHS FOR FIRST ANALYSIS POINT 101.3 MH#1
ADD HYD ID=3 HYD NO=101.3 ID=1 ID=2
PRINT HYD ID=3 CODE=1

*THE SECOND ANALYSIS POINT OCCURS EAST OF MIAMI AND 64TH

*SUBBASIN R5.1 BORDERS 64TH, NORTHERN HALF OF MIAMI
COMPUTE NM HYD ID=4 HYD NO=101.4 AREA=0.0122 SQ MI
PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=4 CODE=1

*ADDING HYDROGRAPHS FOR SECOND ANALYSIS POINT 101.5 MH#2
ADD HYD ID=5 HYD NO=101.3 ID=3 ID=4
PRINT HYD ID=5 CODE=1

*THE THIRD ANALYSIS POINT OCCURS EAST OF AP2

*SUBBASIN R4 BORDERS 64TH, SOUTHERN HALF OF MIAMI, AND ESTANCIA
COMPUTE NM HYD ID=6 HYD NO=101.6 AREA=0.0264 SQ MI
PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=6 CODE=1

*STREET FLOW EAST OF ESTANCIA AND MIAMI
*SUBBASIN R1 BORDERS 72ND AND MIAMI
*THIS SUBBASIN WILL BE ASSUMED TO STREET FLOW

COMPUTE NM HYD ID=7 HYD NO=101.7 AREA=0.0032 SQ MI
PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=7 CODE=1

*MIAMI BETWEEN 72ND & 64TH
COMPUTE NM HYD ID=8 HYD NO=101.8 AREA=0.0032 SQ MI
PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=8 CODE=1

*64TH BETWEEN MIAMI & DURAY
COMPUTE NM HYD ID=9 HYD NO=101.9 AREA=0.0011 SQ MI
PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=9 CODE=1

*64TH BETWEEN MIAMI & SOUTH BASIN LINE
COMPUTE NM HYD ID=11 HYD NO=101.11 AREA=0.0002 SQ MI
PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=11 CODE=1

*ADDING HYDROGRAPHS FOR STREET FLOW PORTION OF AP3
ADD HYD ID=12 HYD NO=101.12 ID=7 ID=8
PRINT HYD ID=12 CODE=1

ADD HYD ID=13 HYD NO=101.13 ID=9 ID=11
PRINT HYD ID=13 CODE=1

ADD HYD ID=14 HYD NO=101.14 ID=12 ID=13
PRINT HYD ID=14 CODE=1

*ADDING HYDROGRAPHS FOR THIRD ANALYSIS POINT 101.18 MH#3
ADD HYD ID=15 HYD NO=101.15 ID=6 ID=14
PRINT HYD ID=15 CODE=1

ADD HYD ID=16 HYD NO=101.16 ID=5 ID=15
PRINT HYD ID=16 CODE=1

*THE FOURTH ANALYSIS POINT OCCURS AT MIAMI AND ESTANCIA

*SUBBASIN R5.2 BORDERS NORTHERN HALF OF MIAMI, AND ESTANCIA
COMPUTE NM HYD ID=17 HYD NO=101.17 AREA=0.0272 SQ MI
PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=17 CODE=1

*STREET FLOW
*MIAMI BETWEEN 64TH & ESTANCIA
COMPUTE NM HYD ID=18 HYD NO=101.18 AREA=0.0016 SQ MI
PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=18 CODE=1

*ADDING HYDROGRAPHS FOR FOURTH ANALYSIS POINT 101.21 MH#4
ADD HYD ID=19 HYD NO=101.19 ID=17 ID=18
PRINT HYD ID=19 CODE=1

ADD HYD ID=21 HYD NO=101.21 ID=16 ID=19
PRINT HYD ID=21 CODE=1

*THE FIFTH ANALYSIS POINT OCCURS EAST OF MIAMI AND ESTANCIA

*SUBBASIN R6 BORDERS NORTHERN MIAMI AND EASTERN ESTANCIA
COMPUTE NM HYD ID=22 HYD NO=101.22 AREA=0.0140 SQ MI

PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0
TP=0.1333 HR MASS RAINFALL=-1
ID=22 CODE=1

PRINT HYD

*ADDING HYDROGRAPHS FOR FIFTH ANALYSIS POINT 101.23 MH#5
ADD HYD ID=23 HYD NO=101.23 ID=21 ID=22
PRINT HYD ID=23 CODE=1

*THE SIXTH ANALYSIS POINT OCCURS EAST OF AP5

*SUBBASIN B1 BORDERS NORTHERN MIAMI AND WESTERN 57TH
COMPUTE NM HYD ID=24 HYD NO=101.24 AREA=0.0249 SQ MI
PER A=0.0 PER B=15.0 PER C=0.0 PER D=85.0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=24 CODE=1

*ADDING HYDROGRAPHS FOR SIXTH ANALYSIS POINT 101.25 MH#6
ADD HYD ID=25 HYD NO=101.25 ID=23 ID=24
PRINT HYD ID=25 CODE=1

*THE SEVENTH ANALYSIS POINT OCCURS AT MIAMI AND 57TH

*STREET FLOWS FROM ESTANCIA, MIAMI AND 57TH COMBINE
ESTANCIA BETWEEN MIAMI & DURAY
COMPUTE NM HYD ID=26 HYD NO=101.26 AREA=0.0017 SQ MI
PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=26 CODE=1

*MIAMI BETWEEN ESTANCIA & 57TH
COMPUTE NM HYD ID=27 HYD NO=101.27 AREA=0.0010 SQ MI
PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=27 CODE=1

*57TH BETWEEN MIAMI AND DURAY
COMPUTE NM HYD ID=28 HYD NO=101.28 AREA=0.0010 SQ MI
PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=28 CODE=1

*ADDING HYDROGRAPHS FOR SEVENTH ANALYSIS POINT 101.32 MH#7
ADD HYD ID=29 HYD NO=101.29 ID=26 ID=27
PRINT HYD ID=29 CODE=1

ADD HYD ID=31 HYD NO=101.31 ID=28 ID=29
PRINT HYD ID=31 CODE=1

ADD HYD ID=32 HYD NO=101.32 ID=25 ID=31
PRINT HYD ID=32 CODE=1

*THE EIGHTH ANALYSIS POINT OCCURS AT SUBBASIN B2 & 57TH

*SUBBASIN B2 BORDERS EASTERN 57TH AND COORS BLVD
COMPUTE NM HYD ID=33 HYD NO=101.33 AREA=0.0065 SQ MI
PER A=0.0 PER B=15.0 PER C=0.0 PER D=85.0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=33 CODE=1

*ADDING HYDROGRAPHS FOR EIGHTH ANALYSIS POINT 101.34 MH#8
ADD HYD ID=34 HYD NO=101.34 ID=32 ID=33
PRINT HYD ID=34 CODE=1

FINISH

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 RUN DATE (MON/DAY/YR) = 01/04/1980
 START TIME (HR:MIN:SEC) = 03:58:14 USER NO. = M_GOODWN.101
 INPUT FILE = MIAMI2.DAT

START TIME=0.0

***** HYDROGRAPH FOR MIAMI ROAD ANALYSIS: WESTBLUFF OUTFALL

RAINFALL TYPE=1 RAIN QUARTER=0.0 IN

RAIN ONE=1.87 IN RAIN SIX=2.20 IN

RAIN DAY=2.66 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2

- PEAK AT 1.40 HR.

DT =	.033330 HOURS			END TIME =	5.999400 HOURS	
.0000	.0016	.0033	.0050	.0067	.0085	.0103
.0122	.0141	.0160	.0180	.0201	.0222	.0243
.0266	.0289	.0312	.0337	.0362	.0388	.0415
.0443	.0472	.0502	.0534	.0567	.0601	.0637
.0675	.0715	.0758	.0809	.0865	.0924	.1050
.1334	.1771	.2398	.3254	.4379	.5814	.7600
.9780	1.1804	1.2649	1.3363	1.3997	1.4575	1.5106
1.5600	1.6061	1.6493	1.6900	1.7284	1.7646	1.7989
1.8314	1.8623	1.8915	1.9193	1.9456	1.9518	1.9576
1.9630	1.9682	1.9732	1.9780	1.9825	1.9869	1.9912
1.9953	1.9993	2.0031	2.0068	2.0104	2.0140	2.0174
2.0207	2.0240	2.0272	2.0303	2.0333	2.0363	2.0392
2.0420	2.0448	2.0475	2.0502	2.0528	2.0554	2.0580
2.0605	2.0629	2.0653	2.0677	2.0700	2.0723	2.0746
2.0768	2.0790	2.0812	2.0833	2.0855	2.0875	2.0896
2.0916	2.0936	2.0956	2.0976	2.0995	2.1014	2.1033
2.1051	2.1070	2.1088	2.1106	2.1124	2.1141	2.1159
2.1176	2.1193	2.1210	2.1227	2.1244	2.1260	2.1276
2.1292	2.1308	2.1324	2.1340	2.1355	2.1371	2.1386
2.1401	2.1416	2.1431	2.1446	2.1460	2.1475	2.1489
2.1504	2.1518	2.1532	2.1546	2.1560	2.1573	2.1587
2.1600	2.1614	2.1627	2.1640	2.1654	2.1667	2.1680
2.1692	2.1705	2.1718	2.1731	2.1743	2.1756	2.1768
2.1780	2.1792	2.1804	2.1817	2.1829	2.1840	2.1852
2.1864	2.1876	2.1887	2.1899	2.1910	2.1922	2.1933
2.1944	2.1956	2.1967	2.1978	2.1989	2.2000	

*

*FUTURE CONDITIONS IS THE SOLE CONSIDERATION IN THIS ANALYSIS

*EACH AREA WILL REFLECT DIFFERENT LAND TREATMENT TYPES

*THE THREE RECOGNIZED AREAS, RESIDENTIAL, BUSINESS, & STREETS

*

* STORM DRAIN SYSTEM ANALYSIS POINTS

*

*THESE ANALYSIS POINTS ASSUME RESIDENTIAL DISCHARGE INTO THE
*STORM DRAIN WILL OCCUR AT THE NORTHWEST AND SOUTHWEST CORNER
*OF ALL STREET INTERSECTIONS. STREET DISCHARGE WILL OCCUR AT
*MH#3 & MH#7.

*

*THE FIRST ANALYSIS POINT OCCURS AT 64TH STREET & MIAMI

*SUBBASIN R2 BORDERS 64TH AND NORTHERN HALF OF MIAMI

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.0096 SQ MI
PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 18.951 CFS UNIT VOLUME = .9988 B = 526.28
P60 = 1.8700
AREA = .004800 SQ MI IA = .10000 INCHES INF = .04000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE
CONSTANT, N = 3.593448
UNIT PEAK = 11.778 CFS UNIT VOLUME = .9991 B = 327.09
P60 = 1.8700
AREA = .004800 SQ MI IA = .50000 INCHES INF = 1.25000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.31643 INCHES = .6740 ACRE-FEET
PEAK DISCHARGE RATE = 19.64 CFS AT 1.500 HOURS BASIN AREA =
.0096 SQ. MI.

*SUBBASIN R3 BORDERS 64TH AND SOUTHERN HALF OF MIAMI

COMPUTE NM HYD ID=2 HYD NO=101.2 AREA=0.0065 SQ MI.
PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 12.831 CFS UNIT VOLUME = .9985 B = 526.28
P60 = 1.8700
AREA = .003250 SQ MI IA = .10000 INCHES INF = .04000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE
CONSTANT, N = 3.593448
UNIT PEAK = 7.9747 CFS UNIT VOLUME = .9986 B = 327.09
P60 = 1.8700
AREA = .003250 SQ MI IA = .50000 INCHES INF = 1.25000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 101.20

RUNOFF VOLUME = 1.31643 INCHES = .4564 ACRE-FEET
PEAK DISCHARGE RATE = 13.30 CFS AT 1.500 HOURS BASIN AREA =
.0065 SQ. MI.

*ADDING HYDROGRAPHS FOR FIRST ANALYSIS POINT 101.3 MH#1

ADD HYD ID=3 HYD NO=101.3 ID=1 ID=2

PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 101.30

RUNOFF VOLUME = 1.31640 INCHES = 1.1303 ACRE-FEET
PEAK DISCHARGE RATE = 32.94 CFS AT 1.500 HOURS BASIN AREA =
.0161 SQ. MI.

*THE SECOND ANALYSIS POINT OCCURS EAST OF MIAMI AND 64TH

*SUBBASIN R5.1 BORDERS 64TH, NORTHERN HALF OF MIAMI

PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 CONSTANT, N = 7.106420
 UNIT PEAK = 24.083 CFS UNIT VOLUME = .9989 B = 526.28
 P60 = 1.8700
 AREA = .006100 SQ MI IA = .10000 INCHES INF = .04000 I
 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033330

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE
 CONSTANT, N = 3.593448
 UNIT PEAK = 14.968 CFS UNIT VOLUME = .9994 B = 327.09
 P60 = 1.8700
 AREA = .006100 SQ MI IA = .50000 INCHES INF = 1.25000 I
 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033330

PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 101.40

RUNOFF VOLUME = 1.31643 INCHES = .8566 ACRE-FEET
 PEAK DISCHARGE RATE = 24.95 CFS AT 1.500 HOURS BASIN AREA =
 .0122 SQ. MI.

*ADDING HYDROGRAPHS FOR SECOND ANALYSIS POINT 101.5 MH#2

ADD HYD ID=5 HYD NO=101.3 ID=3 ID=4

PRINT HYD ID=5 CODE=1

PARTIAL HYDROGRAPH 101.30

RUNOFF VOLUME = 1.31640 INCHES = 1.9869 ACRE-FEET
 PEAK DISCHARGE RATE = 57.90 CFS AT 1.500 HOURS BASIN AREA =
 .0283 SQ. MI.

*THE THIRD ANALYSIS POINT OCCURS EAST OF AP2

*SUBBASIN R4 BORDERS 64TH, SOUTHERN HALF OF MIAMI, AND ESTANCIA

COMPUTE NM HYD ID=6 HYD NO=101.6 AREA=0.0264 SQ MI

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 52.114 CFS UNIT VOLUME = .9992 B = 526.28
P60 = 1.8700
AREA = .013200 SQ MI IA = .10000 INCHES INF = .04000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE
CONSTANT, N = 3.593448
UNIT PEAK = 32.390 CFS UNIT VOLUME = .9999 B = 327.09
P60 = 1.8700
AREA = .013200 SQ MI IA = .50000 INCHES INF = 1.25000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=6 CODE=1

PARTIAL HYDROGRAPH 101.60

RUNOFF VOLUME = 1.31643 INCHES = 1.8535 ACRE-FEET
PEAK DISCHARGE RATE = 53.98 CFS AT 1.500 HOURS BASIN AREA =
.0264 SQ. MI.

*STREET FLOW EAST OF ESTANCIA AND MIAMI

*SUBBASIN R1 BORDERS 72ND AND MIAMI

*THIS SUBBASIN WILL BE ASSUMED TO STREET FLOW

COMPUTE NM HYD ID=7 HYD NO=101.7 AREA=0.0032 SQ MI

PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 6.3169 CFS UNIT VOLUME = .9976 B = 526.28
P60 = 1.8700
AREA = .001600 SQ MI IA = .10000 INCHES INF = .04000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE
CONSTANT, N = 3.593448
UNIT PEAK = 3.9260 CFS UNIT VOLUME = .9967 B = 327.09
P60 = 1.8700
AREA = .001600 SQ MI IA = .10000 INCHES INF = 1.25000 I
NCHES PER HOUR

INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

033330

PRINT HYD

ID=7 CODE=1

PARTIAL HYDROGRAPH 101.70

RUNOFF VOLUME = 1.31643 INCHES
PEAK DISCHARGE RATE = 6.56 CFS AT 1.500 HOURS BASIN AREA = .0032 SQ. MI.

*MIAMI BETWEEN 72ND & 64TH

COMPUTE NM HYD ID=8 HYD ND=101.8 AREA=0.0032 SQ MI

PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 12.634 CFS UNIT VOLUME = .9985 B = 526.28
P60 = 1.8700
AREA = .003200 SQ MI IA = .10000 INCHES INF = .040001
INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD

ID=8 CODE=1

PARTIAL HYDROGRAPH 101.80

RUNOFF VOLUME = 1.96548 INCHES
PEAK DISCHARGE RATE = 8.96 CFS AT 1.500 HOURS BASIN AREA = .0032 SQ. MI.

*64TH BETWEEN MIAMI & OURAY

COMPUTE NM HYD ID=9 HYD ND=101.9 AREA=0.0011 SQ MI

PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 4.3429 CFS UNIT VOLUME = .9969 B = 526.28
P60 = 1.8700
AREA = .001100 SQ MI IA = .10000 INCHES INF = .040001
INCHES PER HOUR

= .033330

PRINT HYD

ID=9 CODE=1

PARTIAL HYDROGRAPH 101.90

RUNOFF VOLUME = 1.96548 INCHES = .1153 ACRE-FEET
PEAK DISCHARGE RATE = 3.08 CFS AT 1.500 HOURS BASIN AREA =
.0011 SQ. MI.

*64TH BETWEEN MIAMI & SOUTH BASIN LINE

COMPUTE NM HYD ID=11 HYD NO=101.11 AREA=0.0002 SQ MI

PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = .78961 CFS UNIT VOLUME = .9840 B = 526.28
P60 = 1.8700
AREA = .000200 SQ MI IA = .10000 INCHES INF = .04000 I
NCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD

ID=11 CODE=1

PARTIAL HYDROGRAPH 101.11

RUNOFF VOLUME = 1.96548 INCHES = .0210 ACRE-FEET
PEAK DISCHARGE RATE = .57 CFS AT 1.500 HOURS BASIN AREA =
.0002 SQ. MI.

*ADDING HYDROGRAPHS FOR STREET FLOW PORTION OF AP3

ADD HYD ID=12 HYD NO=101.12 ID=7 ID=8

PRINT HYD ID=12 CODE=1

PARTIAL HYDROGRAPH 101.12

RUNOFF VOLUME = 1.64087 INCHES = .5601 ACRE-FEET
PEAK DISCHARGE RATE = 15.51 CFS AT 1.500 HOURS BASIN AREA =
.0064 SQ. MI.

ADD HYD

ID=13 HYD NO=101.13 ID=7 ID=11

PRINT HYD

ID=13 CODE=1

PARTIAL HYDROGRAPH 101.13

RUNOFF VOLUME = 1.96510 INCHES = .1362 ACRE-Feet
PEAK DISCHARGE RATE = 3.65 CFS AT 1.500 HOURS BASIN AREA =
.0013 SQ. MI.

ADD HYD

ID=14 HYD NO=101.14 ID=12 ID=13

PRINT HYD

ID=14 CODE=1

PARTIAL HYDROGRAPH 101.14

RUNOFF VOLUME = 1.69561 INCHES = .6963 ACRE-Feet
PEAK DISCHARGE RATE = 19.16 CFS AT 1.500 HOURS BASIN AREA =
.0077 SQ. MI.

*ADDING HYDROGRAPHS FOR THIRD ANALYSIS POINT 101.18 MH#3

ADD HYD

ID=15 HYD NO=101.15 ID=6 ID=14

PRINT HYD

ID=15 CODE=1

PARTIAL HYDROGRAPH 101.15

RUNOFF VOLUME = 1.40204 INCHES = 2.5498 ACRE-Feet
PEAK DISCHARGE RATE = 73.15 CFS AT 1.500 HOURS BASIN AREA =
.0341 SQ. MI.

ADD HYD

ID=16 HYD NO=101.16 ID=5 ID=15

PRINT HYD

ID=16 CODE=1

PARTIAL HYDROGRAPH 101.16

RUNOFF VOLUME = 1.36320 INCHES = 4.5367 ACRE-Feet
PEAK DISCHARGE RATE = 131.04 CFS AT 1.500 HOURS BASIN AREA =
.0624 SQ. MI.

*SUBBASIN R5.2 BORDERS NORTHERN HALF OF MIAMI, AND ESTANCIA

COMPUTE NM HYD ID=17 HYD NO=101.17 AREA=0.0272 SQ MI

PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 53.694 CFS UNIT VOLUME = .9992 B = 526.28
P60 = 1.8700
AREA = .013600 SQ MI IA = .10000 INCHES INF = .04000 I
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE
CONSTANT, N = 3.593448
UNIT PEAK = 33.371 CFS UNIT VOLUME = .9799 B = 327.09
P60 = 1.8700
AREA = .013600 SQ MI IA = .50000 INCHES INF = 1.25000 I
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=17 CODE=1

PARTIAL HYDROGRAPH 101.17

RUNOFF VOLUME = 1.31643 INCHES = 1.9097 ACRE-FEET
PEAK DISCHARGE RATE = 55.62 CFS AT 1.500 HOURS BASIN AREA =
.0272 SQ. MI.

*STREET FLOW

*MIAMI BETWEEN 64TH & ESTANCIA

COMPUTE NM HYD ID=18 HYD NO=101.18 AREA=0.0016 SQ MI

PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 6.3169 CFS UNIT VOLUME = .9976 B = 526.28
P60 = 1.8700
AREA = .001600 SQ MI IA = .10000 INCHES INF = .04000 I
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

MIAMI HYD

ID=18 LUDE=1

PARTIAL HYDROGRAPH 101.18

RUNOFF VOLUME = 1.96548 INCHES = .1677 ACRE-FEET
PEAK DISCHARGE RATE = 4.48 CFS AT 1.500 HOURS BASIN AREA =
.0016 SQ. MI.

*ADDING HYDROGRAPHS FOR FOURTH ANALYSIS POINT 101.21 MH#4

ADD HYD ID=19 HYD NO=101.19 ID=17 ID=18

PRINT HYD ID=19 CODE=1

PARTIAL HYDROGRAPH 101.19

RUNOFF VOLUME = 1.35247 INCHES = 2.0774 ACRE-FEET
PEAK DISCHARGE RATE = 60.10 CFS AT 1.500 HOURS BASIN AREA =
.0288 SQ. MI.

ADD HYD ID=21 HYD NO=101.21 ID=16 ID=19

PRINT HYD ID=21 CODE=1

PARTIAL HYDROGRAPH 101.21

RUNOFF VOLUME = 1.35981 INCHES = 6.6141 ACRE-FEET
PEAK DISCHARGE RATE = 191.14 CFS AT 1.500 HOURS BASIN AREA =
.0912 SQ. MI.

*THE FIFTH ANALYSIS POINT OCCURS EAST OF MIAMI AND ESTANCIA

*SUBBASIN R6 BORDERS NORTHERN MIAMI AND EASTERN ESTANCIA

COMPUTE NM HYD ID=22 HYD NO=101.22 AREA=0.0140 SQ MI

PER A=0.0 PER B=50.0 PER C=0.0 PER D=50.0

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 27.636 CFS UNIT VOLUME = .9990 B = 526.28
P&O = 1.8700

INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

= .033330

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE
CONSTANT, N = 3.593448
UNIT PEAK = 17.176 CFS UNIT VOLUME = .9995 B = 327.09
P60 = 1.8700
AREA = .007000 SQ MI IA = .50000 INCHES INF = 1.25000 I
NCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

= .033330

PRINT HYD

ID=22 CODE=1

PARTIAL HYDROGRAPH 101.22

RUNOFF VOLUME = 1.31643 INCHES = .9829 ACRE-FEET
PEAK DISCHARGE RATE = 28.63 CFS AT 1.500 HOURS BASIN AREA =
.0140 SQ. MI.

*ADDING HYDROGRAPHS FOR FIFTH ANALYSIS POINT 101.23 MH#5

ADD HYD ID=23 HYD NO=101.23 ID=21 ID=22

PRINT HYD ID=23 CODE=1

PARTIAL HYDROGRAPH 101.23

RUNOFF VOLUME = 1.35404 INCHES = 7.5970 ACRE-FEET
PEAK DISCHARGE RATE = 219.78 CFS AT 1.500 HOURS BASIN AREA =
.1052 SQ. MI.

*THE SIXTH ANALYSIS POINT OCCURS EAST OF AP5

*SUBBASIN B1 BORDERS NORTHERN MIAMI AND WESTERN 57TH

COMPUTE NM HYD ID=24 HYD NO=101.24 AREA=0.0249 SQ MI

PER A=0.0 PER B=15.0 PER C=0.0 PER D=85.0

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 83.561 CFS UNIT VOLUME = .9992 B = 526.28
P60 = 1.8700
AREA = .021165 SQ MI IA = .10000 INCHES INF = .04000 I
NCHES PER HOUR

= .033330

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE
CONSTANT, N = 3.593448
UNIT PEAK = 9.1648 CFS UNIT VOLUME = .9988 B = 327.09
P60 = 1.8700
AREA = .003735 SQ MI IA = .50000 INCHES INF = 1.25000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=24 CODE=1

PARTIAL HYDROGRAPH 101.24

RUNOFF VOLUME = 1.77077 INCHES = 2.3516 ACRE-FEET
PEAK DISCHARGE RATE = 64.03 CFS AT 1.500 HOURS BASIN AREA =
.0249 SQ. MI.

*ADDING HYDROGRAPHS FOR SIXTH ANALYSIS POINT 101.25 MH#6

ADD HYD ID=25 HYD NO=101.25 ID=23 ID=24

PRINT HYD ID=25 CODE=1

PARTIAL HYDROGRAPH 101.25

RUNOFF VOLUME = 1.43379 INCHES = 9.9486 ACRE-FEET
PEAK DISCHARGE RATE = 283.80 CFS AT 1.500 HOURS BASIN AREA =
.1301 SQ. MI.

*THE SEVENTH ANALYSIS POINT OCCURS AT MIAMI AND 57TH

*STREET FLOWS FROM ESTANCIA, MIAMI AND 57TH COMBINE

*ESTANCIA BETWEEN MIAMI & OURAY

COMPUTE NM HYD ID=26 HYD NO=101.26 AREA=0.0017 SQ MI

PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 6.7117 CFS UNIT VOLUME = .9976 B = 526.28
P60 = 1.8700
AREA = .001700 SQ MI IA = .10000 INCHES INF = .04000 I
NCHES PER HOUR

.033330

PRINT HYD

ID=26 CODE=1

PARTIAL HYDROGRAPH 101.26

RUNOFF VOLUME = 1.96548 INCHES = .1782 ACRE-FEET
PEAK DISCHARGE RATE = 4.76 CFS AT 1.500 HOURS BASIN AREA =
.0017 SQ. MI.

*MIAMI BETWEEN ESTANCIA & 57TH

COMPUTE NM HYD ID=27 HYD NO=101.27 AREA=0.0010 SQ MI
PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 3.9481 CFS UNIT VOLUME = .9965 B = 526.28
P60 = 1.8700
AREA = .001000 SQ MI IA = .10000 INCHES INF = .04000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD

ID=27 CODE=1

PARTIAL HYDROGRAPH 101.27

RUNOFF VOLUME = 1.96548 INCHES = .1048 ACRE-FEET
PEAK DISCHARGE RATE = 2.80 CFS AT 1.500 HOURS BASIN AREA =
.0010 SQ. MI.

*57TH BETWEEN MIAMI AND OURAY

COMPUTE NM HYD ID=28 HYD NO=101.28 AREA=0.0010 SQ MI
PER A=0.0 PER B=0.0 PER C=0.0 PER D=100.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 3.9481 CFS UNIT VOLUME = .9965 B = 526.28
P60 = 1.8700
AREA = .001000 SQ MI IA = .10000 INCHES INF = .04000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PARTIAL HYDROGRAPH 101.28

RUNOFF VOLUME = 1.96548 INCHES = .1048 ACRE-FEET
PEAK DISCHARGE RATE = 2.80 CFS AT 1.500 HOURS BASIN AREA =
.0010 SQ. MI.

*ADDING HYDROGRAPHS FOR SEVENTH ANALYSIS POINT 101.32 MH#7

ADD HYD ID=29 HYD NO=101.29 ID=26 ID=27

PRINT HYD ID=29 CODE=1

PARTIAL HYDROGRAPH 101.29

RUNOFF VOLUME = 1.96528 INCHES = .2830 ACRE-FEET
PEAK DISCHARGE RATE = 7.57 CFS AT 1.500 HOURS BASIN AREA =
.0027 SQ. MI.

ADD HYD ID=31 HYD NO=101.31 ID=28 ID=29

PRINT HYD ID=31 CODE=1

PARTIAL HYDROGRAPH 101.31

RUNOFF VOLUME = 1.96527 INCHES = .3878 ACRE-FEET
PEAK DISCHARGE RATE = 10.37 CFS AT 1.500 HOURS BASIN AREA =
.0037 SQ. MI.

ADD HYD ID=32 HYD NO=101.32 ID=25 ID=31

PRINT HYD ID=32 CODE=1

PARTIAL HYDROGRAPH 101.32

RUNOFF VOLUME = 1.44849 INCHES = 10.3364 ACRE-FEET
PEAK DISCHARGE RATE = 294.17 CFS AT 1.500 HOURS BASIN AREA =
.1338 SQ. MI.

*THE EIGHTH ANALYSIS POINT OCCURS AT SUBBASIN B2 & 57TH

*SUBBASIN B2 BORDERS EASTERN 57TH AND COORS BLVD

COMPUTE NM HYD ID=33 HYD NO=101.33 AREA=0.0065 SQ MI
PER A=0.0 PER B=15.0 PER C=0.0 PER D=85.0
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
CONSTANT, N = 7.106420
UNIT PEAK = 21.813 CFS UNIT VOLUME = .9988 B = 526.28
P60 = 1.8700
AREA = .005525 SQ MI IA = .10000 INCHES INF = .04000 I
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .130992HR TP = .133300HR K/TP RATIO = .982685 SHAPE
CONSTANT, N = 3.593448
UNIT PEAK = 2.3924 CFS UNIT VOLUME = .9948 B = 327.09
P60 = 1.8700
AREA = .000975 SQ MI IA = .50000 INCHES INF = 1.25000 I
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=33 CODE=1

PARTIAL HYDROGRAPH 101.33

RUNOFF VOLUME = 1.77077 INCHES = .6139 ACRE-FEET
PEAK DISCHARGE RATE = 16.72 CFS AT 1.500 HOURS BASIN AREA =
.0065 SQ. MI.

*ADDING HYDROGRAPHS FOR EIGHTH ANALYSIS POINT 101.34 MM#8

ADD HYD ID=34 HYD NO=101.34 ID=32 ID=33

PRINT HYD ID=34 CODE=1

PARTIAL HYDROGRAPH 101.34

RUNOFF VOLUME = 1.46342 INCHES = 10.9502 ACRE-FEET
PEAK DISCHARGE RATE = 310.90 CFS AT 1.500 HOURS BASIN AREA =
.1403 SQ. MI.

FINISH

***EXTRACT FROM SAD 218
DRAINAGE REPORT***

interceptor. In the interim, the developer of these properties can dedicate the easement for the I-40 interceptor and provide retention within this easement.

72nd Street

South of Juniper, 72nd Street will only carry street flows, as the Laurelwood Subdivision to the west is designed to drain into the detention pond at Hanover and 72nd. A low point will be established at Iliff to direct street flows to the east. There will also be a low point at Juniper to direct the street flows and the flows from the Cielo Dorado Subdivision eastward along Juniper. A high point will be established south of Miami and catch basins installed to connect to a 30" stub-out which drains north across Ladera.

Areas East Of 72nd Street

The natural boundary at the north of the drainage area under consideration is a slight ridge between Juniper and Miami. Developed areas to the north of this ridge can drain to Miami and down Miami to the east. The Westbluff Drainage Management Plan calls for a 54" storm drain to intercept these flows in Miami at Estancia Rd. and conduct them into the I-40 interceptor.

The other boundaries of the drainage area considered are 72nd Street (excepting Cielo Dorado Subdivision) to the west, I-40 to the south and 64th Street to the east.

The subject area has been divided into basins and 100-year flow and volume calculations have been performed. The calculations are appended to this report.

Flows from drainage Areas A-1 and A-2 are directed south on 68th to catch basins which conduct the run-off into retention Pond 1. Area A-3 drains into Juniper and street flows are intercepted by catch basins in Juniper at 64th and conducted to retention Pond No. 2. Area A-7 drains into Iliff and flows are conducted into Pond 1. Area A-4 flows are conducted into Pond 2.

The developer of tracts within Area A-5 will provide on-site retention in the future right-of-way of the I-40 interceptor. Area A-6, after development, is expected to drain into 72nd Street.

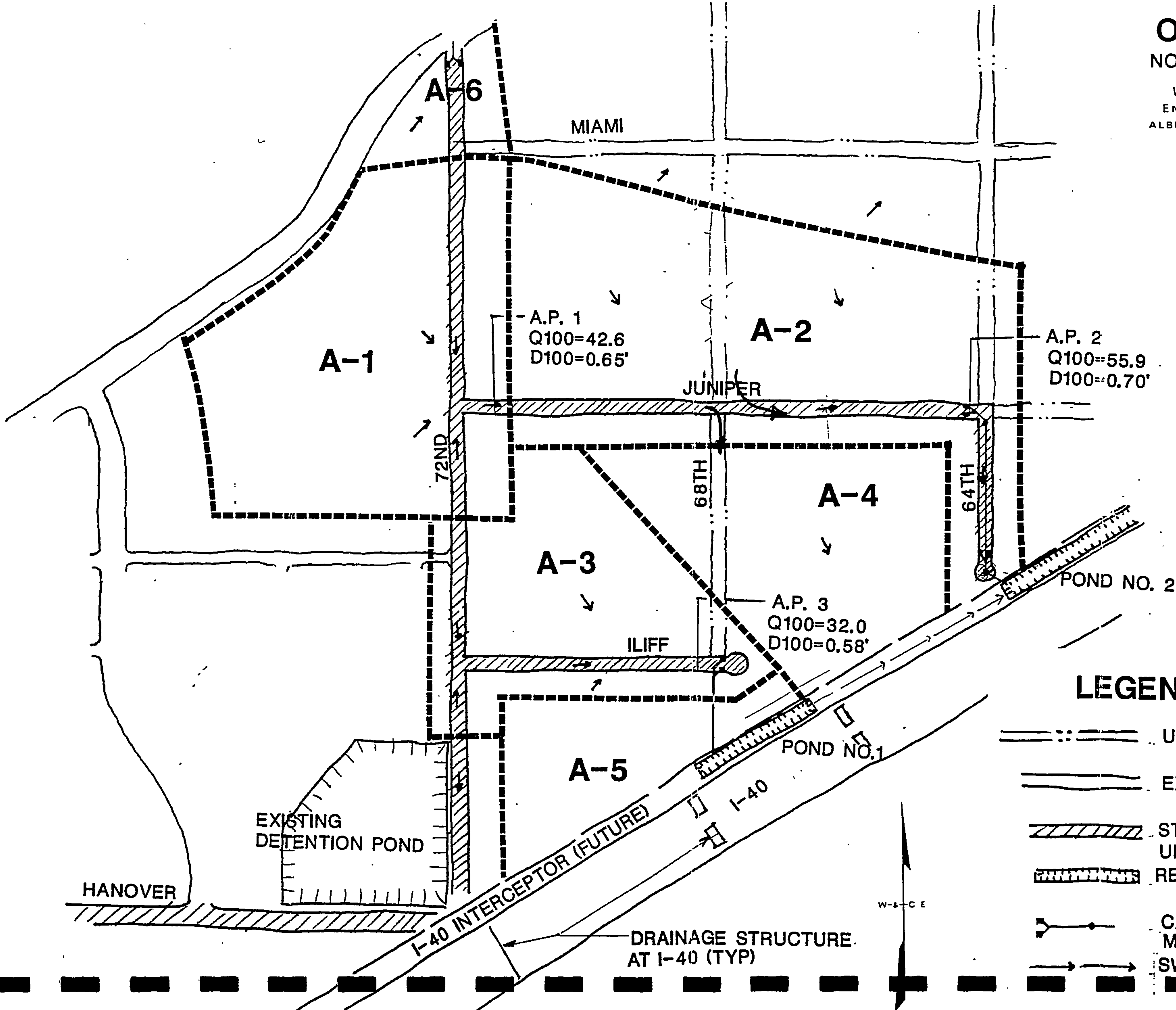
Veranda Drive

This short segment of road will carry only street flows and discharge to Glenwood Drive. No storm drain improvements are recommended for this street. The flows from Veranda Drive will discharge to existing inlets on Glenwood Drive.

Indian Farm Lane

This proposed street improvement will extend the existing 20 foot wide roadway approximately 150 feet east and 950 feet south. The existing right-of-way width is 24 feet wide. The proposed street section is a 20

SAD #218



LEGEND

- UNIMPROVED STREET.
- EXISTING STREET
- STREET TO BE IMPROVED UNDER THIS PROJECT
- RETENTION POND
- CATCH BASINS, STORM DRAIN, MANHOLE
- SWALE

Figure 12

EXHIBIT "A"
To Subdivision Improvements Agreement
DEVELOPMENT REVIEW BOARD (DRB) REQUIRED INFRASTRUCTURE LISTING
for Tompiro Subdivision

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are the Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

ON-SITE

<u>Size</u>	<u>Type Improvement</u>	<u>Location</u>	<u>From</u>	<u>To</u>
28' FF	Residential Street 4' Sidewalk (deferred) * Standard Curb & Gutter *	Tompiro Drive	Gran Quivira Road	Tenabo Road
28' FF	Residential Street 4' Sidewalk (deferred) * Mountable Curb & Gutter *	Gran Quivira Road	Tompiro Drive	Estancia Drive
28' FF	Residential Street 4' Sidewalk (deferred) * Mountable Curb & Gutter *	Tenabo Road	Tompiro Drive	Estancia Drive
28' FF	Residential Street 4' Sidewalk (deferred) * Mountable Curb & Gutter *	Las Humanas Road	Tompiro Drive	Estancia Drive
28' FF	Residential Street 4' Sidewalk (deferred) * Mountable Curb & Gutter *	Tompiro Drive	Tenabo Road	Las Humanas Road
6"	PVC Waterline	Tompiro Drive	Gran Quivira Road	Las Humanas Road
6"	PVC Waterline	Gran Quivira Road	Tompiro Drive	Estancia Drive
6"	PVC Waterline	Tenabo Road	Tompiro Drive	Estancia Drive
6"	PVC Waterline	Las Humanas Road	Tompiro Drive	Estancia Drive
Water infrastructure to include valves, fittings, valve boxes, hydrants and services.				
8"	SAS Gravity Line	Tompiro Drive	Gran Quivira Road	Las Humanas Road
8"	SAS Gravity Line	Gran Quivira Road	Tompiro Drive	Estancia Drive
8"	SAS Gravity Line	Tenabo Road	Tompiro Drive	Estancia Drive
8"	SAS Gravity Line	Las Humanas Road	Tompiro Drive	Estancia Drive
Sanitary Sewer to include manholes and services.				

* - both sides

D.R.B. Case No. 94-326
D.R.C. Project No. _____
Date Submitted 9/9/94 2-6-95
Prelim. Plat Approved _____
Prelim. Plat Expires _____

<u>Size</u>	<u>Improvements</u>	<u>Location</u>	<u>From</u>	<u>To</u>
24"	RCP	Cul-de-sac		
30"	RCP	15' Public Drainage Easement	Cul-de-sac	Miami Road

Storm drain to include catch basins.

N/A Temporary Retention Pond with Maintenance Agreement

OFF-SITE

<u>Size</u>	<u>Improvements</u>	<u>Location</u>	<u>From</u>	<u>To</u>
24' E-E	Temporary Paving	Estancia Drive	North Property Line	Ouray
18' Perm. Pvmt.	Residential Street	Estancia Drive	Miami Road	North Property Line
6' Temp. Pvmt.	6' Sidewalk, E side Std Curb & Gutter, E side			
18' Perm. Pvmt. **	Residential Street	Miami Road	Estancia Drive	East Property Line
6' Temp. Pvmt. **	6' Sidewalk, N side Std Curb & Gutter, N side			
8" **	SAS Gravity Line	Miami Road	Estancia Drive	East Property Line
Sanitary Sewer to include manholes and services.				
8"	PVC Waterline	Estancia Drive	North Property Line	Miami Road
10" **	PVC Waterline	Miami Road	Estancia Drive	East Property Line
Water infrastructure to include valves, fittings, valve boxes, hydrants and services.				
48" * *	RCP	Miami Road	Estancia Drive	15' Public Drainage Easement
54" **	RCP	Miami Road	15' Public Drainage Easement	East Property Line

Storm drain to include manholes.

N/A Residential Street Lights Per DPM

Engineer's Certification for Grading and Drainage per DPM including Perimeter Walls as shown on the Grading Plan for Release of SIA and Financial Guarantees.

** To be Bonded - Not Built

D.R.B. Case No. 94-326
D.R.C. Project No. _____
Date Submitted ~~9/9/94~~ 2-6-95
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Prepared By: _____

Print Name: Gregory J. Krenik, PE

Firm: Mark Goodwin & Associates, PA

Page 3 of 3

Development Review Board Member Approvals

_____ Transportation Dev.	_____ Date	_____ Utility Dev.	_____ Date
_____ Parks & General Services	_____ Date	_____ Engineer/AMAFCA	_____ Date
_____ DRB Chairman	_____ Date		