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City of Albuquerque

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February 9, 1989

Jeff Mortensen, P.E.
Jeff Mortensen & Associates, Inc.
811 Dallas, NE
Albuquerque, New Mexico 87110

RE: DRAINAGE PLAN FOR UNIVERSITY OF PHOENIX
(D-17/DJ) ENGINEER'S STAMP DATED JANUARY 25, 1989

Dear Mr. Mortensen:

Based on the information provided on your submittal of January 25, 1989, the above referenced plan is approved for Building Permit.

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

If I can be of further assistance, please feel free to call me at 768-2650.

Cordially,

Bernie J. Montoya
Bernie J. Montoya, C.E.
Engineering Assistant

BJM/bsj
(WP+882)

REVISED DRAINAGE MANAGEMENT PLAN FOR:

REVISED: NOVEMBER, 1990
PREPARED BY: BOHANNAN-HUSTON, INC.

JOURNAL CENTER

The purpose of this revised drainage management plan is to update the plan to reflect the development of Journal Center since the plan was first approved in 1984. Since that time, Journal Center has been replatted, new streets constructed and new businesses have moved in. All new development has conformed to the 1984 plan and individual development plans have been approved by the City. The drainage concepts and basins remain substantially identical to the 1984 drainage management plan.

Additional functions of the updated plan will be to guide engineers in preparing future drainage plans and aiding City review of these future plans. Drainage basins which have been altered slightly have been re-analyzed and are shown in the table below to have no significant nor adverse impact on drainage facilities.

The criteria used for the minor re-analysis performed in this updated plan remained identical to that previously used and approved in the original 1984 plan.

1984 TEXT

3. Section RC of the Drainage Ordinance stipulates that the curb flow line depth shall not exceed 0.5 feet during the 10-year storm in arterial street sections. As the values indicate, this criteria is exceeded at several locations along Jefferson Street.

As provided in Section 6H of the Ordinance, a variance to the requirement outlined in No. 3 is requested for the following reasons:

1. Considerable expense has already been applied to the construction of drainage facilities in the area. The Pino Arroyo Channel and Jefferson Street storm sewer represent an investment of approximately 2 million dollars. Design was guided and approved based upon criteria in effect at the time assuming free discharge from all parcels.
2. The total length of street over which the criteria is exceeded is approximately 3000 feet. This represents a relatively short distance compared to the total length of Jefferson Street running through and south from the project.

BASED ON THE INFORMATION PRESENTED IN THIS PLAN, IT IS PROPOSED THAT A FREE DISCHARGE MANAGEMENT APPROACH BE APPROVED FOR ALL PARCELS WITHIN THE PARK, AND THAT A VARIANCE TO SECTION 8C BE GRANTED FOR THE 10-YEAR FLOW CRITERIA IN JEFFERSON STREET.

The purpose of this plan is to outline drainage patterns, flow rates and facility capacities for the Journal Center Industrial/Commercial Park. The plan also serves to update recommendations made in an October 1980 report entitled *Journal Center Interim Drainage Report* based on current thinking outlined in the Drainage Ordinance and Development Process Manual (DPM).

It is proposed that runoff from sites be allowed to discharge to street rights-of-way or facilities in a free discharge manner. This runoff will be directed to three primary outfalls: the North Pino Arroyo Channel, Jefferson Street storm drain and Los Angeles Blvd. The North Pino Arroyo Channel is concrete lined with grass free board and discharges runoff into the North Division Channel. The Jefferson Street storm drain discharges into the Domingo Baca Arroyo, north of Los Angeles Blvd. Runoff collected in Los Angeles Blvd. discharges into the North Division Channel. The accompanying plan identifies flow directions and the location of the primary outfalls.

Runoff rates and facility capacities are contained in the tables below. Based on this information, three points should be highlighted:

1. Current runoff criteria yields flow rates less than those used in the 1980 report.
2. Approximately 1/2 cfs will be directed to Los Angeles Blvd. during the 100-year storm. 226 cfs is collected in the storm drain system and conveyed to the Domingo Baca Arroyo. The 1/2 cfs represents a figure less than the undeveloped flow rate from the site prior to its development.

LOCATION MAP

ZONE ATLAS D-17-Z

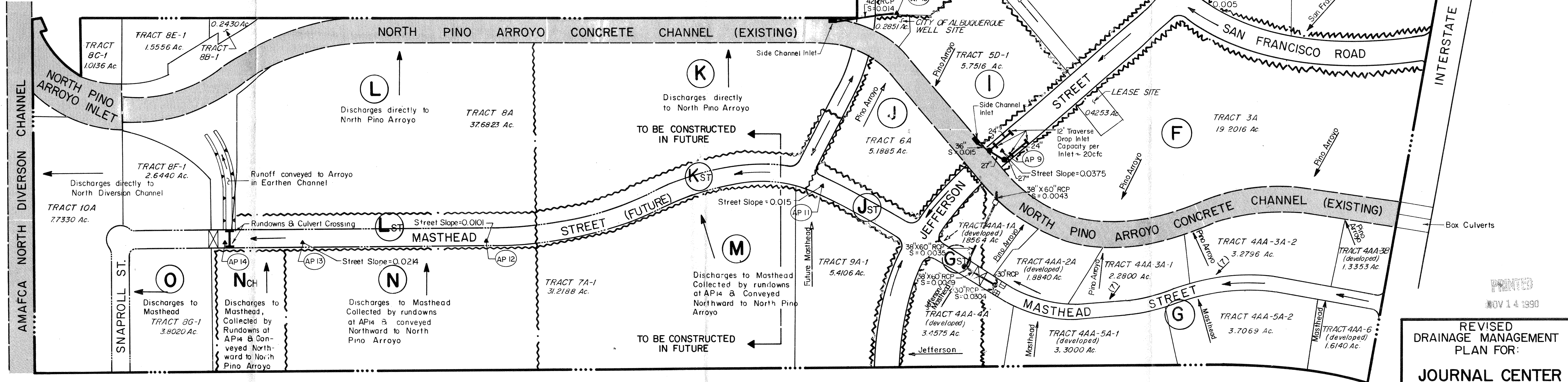
BASIN HYDROLOGY (Developed Conditions)

STREET & STORM SEWER HYDRAULICS

BASIN ID	AREA	DISCHARGES TO	LONGEST REACH (FT)	SLOPE (AVERAGE)	TC (MIN.)	INTENSITY (IN/HR.)	Q 100	Q 100 1980 REPORT	AP	CONTRIBUTING BASIN(S)	10-YEAR STORM (all values cfs)				100-YEAR STORM (all values cfs)				COMMENTS		
											Q	STREET CAPACITY	SEWER(SS) CAPACITY	FLOW IN STREET	FLOW IN SS	Q	STREET CAPACITY	SS CAPACITY		FLOW IN STREET	FLOW IN SS
A	16.2	Headline	1200	0.02	10.0	4.7	61	95	1	A, OF-1	64	112	N.A.	64	N.A.	98	112	N.A.	98	N.A.	Street has adequate capacity
B-1	18.0	Jefferson	1650		10.0	4.7	68	N.A.	2	B-1	45	18'-East half of street	N.A.	45	N.A.	68	200	N.A.	45	N.A.	10 year street capacity exceeded
C	27.6	Diversion Berm	1200		10.0	4.7	102	116	3	OF-1, A, B-1	109	36'-Full street section (30" RCP)	59	69	40 *	166	200	59	126	40	" " "
D-1	14.3	Tiburon	1000		10.0	4.7	54	N.A.	4	OF-1, A, B-1, Street	113	30'-Full street section	59	73	40	176	170	59	136	40	" " "
E-1	13.1	Jefferson	1100		10.0	4.7	49	N.A.	5	D-1	35	100	107 (48" RCP)	0	35	54	100	107	0	54	Basin D-1 runoff collected in Triple 'C' inlets
F	19.6	Pino Arroyo	1250		10.4	4.6	72	73	6	C	67	N.A.	120 (48" RCP)	N.A.	67	102	N.A.	120	N.A.	102	Basin C runoff collected in 48" RCP inlet
G	22.5	Pino Arroyo	1250		10.4	4.6	83	84	7	Street, OF-1, A, B-1, C, D-1	211	36 (72" RCP)	64	147	321	180	232	96	226	90 cfs discharged to Paseo del Norte	
H-1	29.1	Tiburon	1600		10.0	4.7	109	N.A.	8	E-1	32	9'-East half of street	N.A.	32	N.A.	49	104	N.A.	49	N.A.	10 year street capacity exceeded
I	5.2	Pino Arroyo	450		10.0	4.7	20	21	9	E-1, Street	46	25'-East half of street	83 (36" RCP)	0	46	69	200	83	0	69	74 cfs collected by inlets
J	4.5	Pino Arroyo	450		10.0	4.7	17	19	10	H-1	72	N.A.	110 (42" RCP)	N.A.	72	109	N.A.	110	N.A.	109	Runoff conveyed to Pino Arroyo
K	3.0	Jefferson	500		10.0	4.7	12	12	11	Gst, Jst	10	160	N.A.	10	N.A.	15	160	N.A.	10	N.A.	" " "
L	29.1	Tiburon	1600		10.0	4.7	109	N.A.	12	API1, Kst, M	76	N.A.	N.A.	76	N.A.	116	130	N.A.	116	N.A.	" " "
M	25.5	Masthead	1200		10.0	4.7	96	87	13	API2, N	108	N.A.	N.A.	108	N.A.	165	160	N.A.	165	N.A.	" " "
N	13.0	Masthead	1200		10.0	4.7	49	51	14	API3, Nch	117	N.A.	N.A.	N.A.	N.A.	178	N.A.	N.A.	N.A.	N.A.	Runoff collected in concrete rundowns
Nch	3.4	Masthead	650		10.0	4.7	13	14													
O	5.3	Snaproll	650	0.02	10.0	4.7	20	22													
A-1	9.4	Headline	1100	0.02	10.0	4.7	35	—	N.A. - Not Applicable												

NOTES

1. Basin Hydrology based on DPM Criteria, Chapter 22 (DPM Edition, 1984).
 - a. TC - Plate 22.2 13-1 (10 minute minimum)
 - b. Intensity - Plate 22.2 D-2
 - c. 'C' for 85% Impervious = 0.80
 - d. Plate 22.2 C-1
 - e. 100 year rainfall = 2.2 in. - Plate 22.2 D-1
2. Street capacities determined using DPM Criteria, Chapter 22, Plates 22.3 D-1 thru 22.3 D-4 (DPM Edition, 1984).
3. Storm sewer sized to operate under pressure flow - Plate 22.3 B-5.
4. $Q_{10} = 0.657(Q_{100})$ - Plate 22.2 D-1 (DPM Edition, 1984).
5. Jefferson Street classified as min. arterial - 10 year street capacities based on 0.5' at curb flowline.
6. Double 'B' and 'C' inlets assumed to collect an average of 10cfs during 100-year flow.
7. The south half (max.) of these lots may drain to Masthead Street as necessary.
8. The drainage basin for this 37 cfs (100-year storm) discharge is located east of and within the right-of-way of I-25. Calculations for this discharge can be found under City Drainage File D-17/D30. Handling of this 37 cfs discharge will occur as follows:
 - a. Interim (undeveloped) Basin A and B-1 Plan - As shown, flow is discharged to the surface and will drain by overland flow to Headline Road.
 - b. Ultimate Plan - With the development of Basins A and B-1, the flow will be carried by surface facilities or underground storm drains to the Domingo Baca Arroyo or to Headline Road. This extension of drainage facilities may be performed in phases, i.e., each development will construct only its required portion of the facility, in accordance with the Drainage Ordinance and approved site-specific drainage plans.
9. The 37 cfs (100-year) offsite flow is labeled OF-1. The 10-year storm value is 24 cfs.
10. Drainage from Basin A-1 and Tract H (offsite) should be directed to the Domingo Baca Arroyo as much as possible.



LEGEND

- PROPERTY LINE
- BASIN DIVIDE
- WATER BLOCK
- DOUBLE 'B' INLET
- DOUBLE 'C' INLET
- DOUBLE 'D' INLET
- TRIPLE 'C' INLET
- STORM SEWER & MANHOLE
- MAJOR FLOW DIRECTION & DISCHARGE LOCATION
- ANALYSIS POINT
- DEVELOPED TRACTS ARE NOTED AS SUCH

REVISED DRAINAGE MANAGEMENT PLAN FOR:

JOURNAL CENTER

OCTOBER 1990

RECEIVED
NOV 15 1990
HYDROLOGY DIVISION
ORIGINAL PLAN JULY 1984
REVISION NO. 4 NOVEMBER 1990

JOB No 9011001
3-6-90
10-10-90
11-14-90